THE WAR EACH SOLDIER BRINGS HOME:
AMERICAN GREAT WAR VETERANS AS MEDIATORS OF MILITARISM'S GEOGRAPHIES

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The final copy of this dissertation has been examined by the signatories, and we find that both the content and the form meet acceptable presentation standards of scholarly work in the above mentioned discipline.

Abstract

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The war each soldier brings home: American Great War veterans as mediators of militarism's geographies

Dissertation directed by Professor William R. Travis

Geographies of militarism seeks to both broaden and deepen the traditional purview of military geography, examining times and locations distant from battlefields, and delving into the emplaced, embodied experiences of individual soldiers. Combining this framework with other geographical theory about the mutually constitutive relationship of individuals and places, my dissertation brings these two strands of critical military geography together to argue that militaristic ideologies and practices act not only at the scale of the individual soldier but through him. The particularities of an individual's military service predict not only of his own outcomes, but also influence broader trends that register in demographic metrics, popular rhetoric and spatial structures.

Focusing on rural American veterans of the First World War (an understudied subpopulation of an understudied conflict), I conceptualize these individuals as existing at the crossroads of home and front and use quantitative methodologies inspired by life course analysis and population geography to examine how these rhetorically dichotomous places were connected through the medium of individuals' movements and social relationships. Specifically, I employ North Dakota's WWI military roster, the 1930 US Census and a novel linked dataset that knits these two sources into quasi-longitudinal, military-civilian observations. Combining these individual data with county-level summaries, I analyze how the experience of particular military and civilian places predicted postwar social and spatial mobility and marital status, and how veteran status in concert with other characteristics predicted postwar population patterns. I chart the shifting articulation of military and civilian space through the aggregation of individuals at particular times and locations, and show how individual soldiers' stories both met in places and helped to compose the character of those places. I conduct these analyses with logistic and regular regressions, spatial statistics, maps and visualizations.

My findings suggest the importance of the interaction of factors, and argue that the complexity and nuance of place-based, multi-scalar relationships cannot be read from dominant narratives of WWI based in the better studied European context. By drawing on geography and placing the soldier at the heart, my dissertation contributes a different and complementary perspective to WWI historiography while advancing geographies of militarism.

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Abbreviations

- **AEF**: American Expeditionary Forces. The American army and marines overseas. In most of my analyses I focus on army who made up the vast majority of America's ground forces: the marines had a reputation as an elite force and men could only enlist in this branch, leading to rather different patterns in its population.
- **ICPSR**: The Inter-University Consortium for Political and Social Research. The social sciences organization that hosts the data repository from which I acquired datasets of published population and agricultural census summaries. https://www.icpsr.umich.edu/
- **IPUMS**: Integrated Public Use Microdata Sample. Population data from around the world, standardized for comparability, including the complete count US census data that I use in here. https://usa.ipums.org/usa/
- **MPC**: the Minnesota Population Center at the University of Minnesota. The organization responsible for compiling, coding and disseminating IPUMS data. https://pop.umn.edu/
- **NHGIS:** the National Historical Geographic Information System. Provides summary and time series data as well as geographical boundary shapefiles for the United States at various geographical scales from 1790 to the present. I acquired the county boundaries used in my dissertation, with some modifications, from this data provider. https://www.nhgis.org/

Chapter 1: Introduction and literature review

Chapter abstract

As the centenary of the First World War comes to a close, the relative paucity of research on Americans' experience of the conflict becomes all the more apparent. The country's low casualty rate, the fact that perhaps only a quarter of its soldiers ever served in a battle, and the geographic distance from the trenches have too often been an excuse for neglect rather than an invitation to scholarly investigation. Yet recent developments in Great War studies, largely on Europe and from a critical cultural perspective, not only prompt new questions to advance work on the United States but also open new avenues to approach these questions with interdisciplinary methodologies. A focus on the 'hybridity' of the civilian-turned soldier-turned veteran both recalls postwar American concerns about the reintegration of returning doughboys and offers a point of engagement with demographic life course theory. Using the individual who both inscribes and disrupts the boundary between civilian and military spaces to expose the limitations of the home-front dichotomy, the forefront of First World War studies presents an opportunity to apply critical military geography. In this chapter I review inspirational literature and methodologies and then outline my own research, which investigates individual American service members as the locus of processes set in motion or inflected by WWI military service and the attendant emergence of civilian population patterns. I particularly focus on the heartland of America, rural locations and men with agricultural backgrounds, chronically understudied places and subpopulations. With the centennial of the Armistice, it is all the more imperative to stress the Great War's deep and lasting importance beyond 1918. A focus on the individual soldier can be viscerally powerful but, with the right mix of methods, it can also provide a better understanding of the everyday civilian milieu the war helped to create.

Inspirations

Dichotomy and duality:

Of all the songs sung by American doughboys in the First World War, none appears to have been more popular than George M. Cohan's *Over there* (Keene, 2011, p. 74). Written in 1917, the song, whose sheet music would sell 2 million copies, called young men to pack up their things, leave home and fight overseas, promising not to "come back till it's over, Over There" (K. E. R. Smith, 2003, p. 36; "Vintage audio - Over There," n.d.). Cohan's song speaks to the persistent dichotomy of home and front, a rhetorical framework for understanding war as something separate from everyday, domestic life, a framework that was further supported in the wartime United States by perceived physical distance from the battlefields of France (Favret, 2005). Yet *Over there* also appeals to these young men to "make your daddy glad" and to make "your sweetheart… proud her boy's in line." As much as the archetypical American soldier of patriotic songs and propaganda was fitted into a world of military duty he, like his real and living counterpart, was also formed in more intimate terms, as a member of a family and of a civilian community (James, 2009). Myriad personal relationships bound each soldier not only to comrades, unit, and crusading cause but also to family, hometown, and nation. Moving between home and front, from civilian to combatant to veteran, individual soldiers both inscribed and collapsed the distance between 'over here' and 'over there.'

Home and front were constructed as two very different places. Civilian employment in war industries and civilian purchases of war bonds made the conflict materially and logistically possible; the conflict altered patterns of daily life and domestic relations and, Kent (2009) argues, caused society-wide psychic trauma that would persist for decades (Coffman, 1998; Cornebise, 1983; Eighmey, 2010; James, 2009; Kennedy, 2004; Kent, 2009; Proctor, 2010; Zieger, 2000). However, civilians did not experience the Great War in the way that soldiers did. Writing about the British experience, Booth (1996, p. 21) states bluntly that "soldiers inhabited a world of corpses…civilians experienced the death of their soldiers as corpselessness." Even in the United States, which unlike other belligerents repatriated its dead, the material evidence of the cost of war was absent or at least sanitized for civilians in a way that was impossible for service members inhabiting the Western Front. Booth (1996, p. 23) continues that this viscerally powerful difference in how the war was experienced was but one manifestation of a "spatial logic" of civilian versus military spaces, commenting that condemnation of German *Kriegsverrat*, the doctrine whereby resistant civilians in occupied territories could be treated as combatants, was all the more severe in Allied countries where discourse kept these two spaces strictly segregated. In any case, a different sort of morality applied in military space, as an American with the 306th Machine Gun Battalion wrote, "If we were back home and killed a man, we would be electrocuted or hung for it- but over here, it's perfectly all right" (Schweitzer, 2003, cited by Keene, 2011, p. 133)). The distinction between home and front was "not just a geographical distinction but a normative one" (Cronier, 2007, p. 58). A number of contemporary writers, and historians after them, described a chasm that opened between soldiers who experienced the Great War quite literally embedded in the battlefield and civilians who experienced the war at a distance and through representations.[1] In this gap between home and front, World War I's soldiers supposedly became a Lost Generation (Barbusse, 1916/2014; Corrigan, 2003; Remarque, 1982; Stephen, 1996; Winter & Prost, 2005).

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[1] It was not that civilians were uninterested in the war, or in soldiers' own perceptions of it. On the contrary, there was a palpable public demand for "thin volumes by dead officers," in the United Kingdom hundreds of thousands went to the cinema to see the behind-the-lines documentary, *The Battle of the Somme* (1916), while the eponymous battle was still raging, and Barbusse's fictionalized trench memoir, *Le feu* (1916), translated as *Under fire* (1917) was a best-seller in America until it was banned (Stephen, 1996; Winter, 2004b, p. x). Rather, civilians' view of the war was filtered through a particular set of representations. Such representations could be quite gruesome. Images of ruins, destroyed forests and dead enemy combatants were common (Keene, 2011, p. 154). For instance, postcards in an American nurse's scrapbook, now preserved by the Colorado Historical Society, include images of destroyed landscapes and ruins as well as of enemy men being shot through the neck or head. Other images are titled "remains of a boche" and "Frits fini near Belloy'" [sic]; piles of skulls in a trench are captioned simply "Germans" (Vaille, 1918). In spite of bans on publishing images of their own nation's dead, newspapers and other media still enabled a sort of voyeurism among civilians which, coupled with patriotic platitudes, could enrage the men who were actually fighting, leaving the British War Poets who have so shaped the memory of the Great War to sardonically parrot shibboleths or fantasize about tanks tearing through music halls (Owen, 1921; Sassoon, 1917; Stephen, 1996).

However, as more recent scholarship has convincingly argued, the isolation and alienation of Great War soldiers has been exaggerated (Hynes, 1991; Winter, 2006). Discourse, whether popular or propagandistic, whether pro- or anti-war, relied as much on undermining as on maintaining the home/front and soldier/civilian dichotomy. Patriotic songs romanticized and exoticized service "Over There," but recruitment and war bonds posters also depicted Huns breaking down the doors of quiet kitchens, rhetorically asking men if they would join the fight in Europe rather than waiting for war to come to America (Cohan, 2002; Flagg, 1917; James, 2009; Rawls, 1988). Blurring the abstract and the intimate, propaganda not only played on the duty to 'make the world safe for democracy' but to protect one's own home from tyranny, with both 'soldier sons' and 'patriotic mothers' called upon to defend the boundaries between the domestic sphere and the warzone for the good of their families as well as for the good of the country (Garner & Slattery, 2012; James, 2009). Similarly, while lithographed soldiers bid their fathers farewell with the admonition to "buy gov't war bonds" and gray-haired matrons on sheet music covers offered, "America, here's my boy," isolationists sang "I didn't raise my boy to be a soldier," reminding listeners that no battlefield victory could repair a "blighted home" and that young men sent to war would only "shoot some other mother's darling boy" (Bryan & Piantadosi, 1915; Harris, 1917; Lange & Sterling, 1917).

Nor was playing off the separation and connection of home and front just a top-down imposition of government rhetoric: individuals willingly participated in creating this discourse and such dualistic iconography circulated not just via official sources but through more personal means like postcard images and memoirs (Laffin, 1988; Purseigle, 2004; Roberts, 2008; Van Emden, 2014). For five francs, American soldiers could purchase a collection of poems and sketches by a pair of doughboys[2] entitled *I was there*, dedicated "to our mothers," showing scenes of no man's land and describing

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[2] Of rather uncertain origins, 'doughboy' became the nickname of American soldiers, much like the English 'Tommy' or French 'poilu.'

everything from the soldiers' issued equipment to 'salvaging' equipment from its previous owners after a battle ("Howard R. Huston papers," 1917).[3] In local newspapers, readers followed not only accounts of the movements of foreign armies, but letters from soldiers themselves describing their personal part in the greatest conflict of a generation, sent to the papers for publication by the readers' own friends and neighbors ("World War I," 1915). Indeed, separation and connection working in tandem performed essential emotional work for soldiers. American soldiers were encouraged to write to their mothers ("'Mother is thinking of you; write to her often.'") and found respite in correspondence from siblings and sweethearts that tethered them to a world away from the training camp and the trench (Garner & Slattery, 2012, p. 37; Van Emden, 2011). A University of Colorado student turned soldier noted that he valued the post as it allowed him to feel as though he were "with the home folks again" (Strange, 1917). In the war's aftermath, the duality of home and front continued to provide meaning: as one fictionalized account declared, the "great lesson" brought back by returning doughboys was "the real appreciation of home and country" (van Zandt, 1919).

Exploring the dichotomy between home and front by emphasizing their separation remains analytically productive when creatively pursued. Booth (1996, p. 22) provides an intriguing reading when she writes that "the fracture between combatant experience and civilian perception of [World War I was]… so profound that the idea of a homecoming became impossible" until soldiers could provide "disturbingly explicit descriptions of combat" and "civilians could begin to realize the space that separated them from soldiers." Ziino (2007) examines the effect of the material separation of home and front on the spatial structuring of grief: he writes that for families of the Australian dead physical distance re-inscribed the felt separation of places and deepened the feeling of loss. Drawing connections between WWI and the War of Terror, Hawkins (2014, p. 96) argues that war remains as it was a century

[3] Another edition of *"I was there" with the Yanks on the Western Front, 1917-1919* was later published in New York (Baldridge & Baukhage, 1919).

ago a “modern project...radicalising and categorizing...ordering and, when necessary, subordinating,” thus not only re-imposing a home/front binary opposition but alienating today’s American veterans and their narratives from the postmodern culture of their generation. However, conceiving of home and front in terms of a dynamic connection rather than a division, while not denying the importance of difference, offers a more holistic understanding of militarism and its wider implications. Research in this latter vein has provided the greatest inspiration for my own.

New directions in Great War historiography via the contextualized individual:

The individual has always been important to understanding the First World War, from wartime demand for personal testimonies, to collection of oral histories as the generation began to fade away, to an academic emphasis on the subjective meaning of personal engagement with the places of conflict that paralleled the meteoric rise of cultural history (Chickering, 2011; Johnson, 1917; Purseigle, 2004; Saunders, 2004; Stephen, 1996; Strange, 1917; Winter & Prost, 2005). Both popular and scholarly audiences have maintained that “the scale of deaths” and “overwhelming” destruction of the conflict meant that “‘the truth’ of the war… [could] only be reasonably examined from the perspective of the ordinary” soldier (R. J. Wilson, 2012a, p. 13). Even official histories of the war could admit the importance of understanding WWI through “the feelings of the private soldier- on whose bearing so much depended” (Aspinall-Oglander, 1929, p. 173). More recent critiques of top-down, objectivist military history – and indeed of previous work on war experience – have added theoretical rigor to this bottom-up focus on the contextualized individual.

Consideration of the individual soldier (or noncombatant) and his or her relationship to *both* civilian and military contexts has become central to Great War historiography. In the last fifteen years, World War I scholars have used art, first person narratives, and newspaper accounts to not just “strive for the moment and the individual” (A. G. Brown, 2008, p. 280), but to understand the individual in place. Exploring how soldiers' and civilians' identities were formed and complicated by ties to both home and front, investigating how such "transectional" or "hybrid" identities needed to be renegotiated within postwar communities through memorial representations and practices, some of the most interesting current research moves beyond an inward focus on personal experience to an emphasis on socially-situated corporeality (Black, 2004; Chickering, 2007, p. 469; Cronier, 2007, p. 152; Sneddeker, 1999; R. J. Wilson, 2012a). For instance, Kinder (2015, p. 8) in his book on war-induced disability, writes that modern war's "most defining feature" is its effect on human bodies, but rather than resting on an examination of individual "rupturing, wounding and destroying" he extends his study to delve into the social meaning of injury and perceptions of sacrifice. Similarly, Dumenil (2004, p.46), writing of soldiers' suffering, notes this "experience was always individual as it was related to this bodily economy," but also that "this suffering was the common denominator of the war as it was lived by millions of combatants," providing a basis for a communal alternative identity to the one lived by civilians. R.J. Wilson (2012a, p. 149) writes in his ethnohistory that British soldiers came to define themselves in distinction from civilians as they dug trenches, strung wire, and engaged with the battlefield landscapes they had created, "the values and meanings that soldiers attributed to their material surroundings also act[ing] recursively to shape the identities, behaviours and actions of the troops." Yet, Wilson (2012a, p. 74) also notes that "pre-war regional and class identities were significant factors in soldiers' perceptions" of themselves and their wartime surroundings. Likewise commenting on the duality of soldiers' contextualized identities, Cronier (2004, p. 144, 2007, p. 83) remarks that the soldier home on leave was at once "a kind of monster," an embodiment of the front in the uniform he wore and the virtues it was meant to symbolize, but also "a typical street figure" as familiar in the city "as the "rag-and-bone man", the "sweeper'" [and] the "local policeman."' She goes on to write that "some combatants felt cheated by the identity assigned to them, based on appearance, while their own criteria of value prized front line experience," suggesting that identities were malleable and contested as well as pointing to (at least perceived) emplaced experience in military spaces as a mark of authority and authenticity (Cronier, 2007, p. 86). Place-based identities could also be mobilized: Mansfield (1995) describes English farm workers on a general strike in 1923 marching between village war memorials, wearing their uniforms to bring the symbol of their sacrifice with them. Calling on a half-mythologized military past for justification, these veterans bound it to the present and the local through the performance and public display to air their demands. Wilson, Cronier, and others have demonstrated that at the front, in the rear, during wartime, and even after veterans came home permanently at the war's end, a military-civilian tension animated the life of the individual soldier.

While not written by self-identified geographers, the studies cited above clearly reflect the importance of space, place and scale in their emphasis on context. Parallels can be seen between these works and theory that is consciously geographical. In his analysis of the practices of everyday life that created soldiers' identities and the landscape in which they lived, R.J. Wilson (2012a) cites Lefebvre (2004) for the hypothesis that places and identities are co-constituted through the rhythmic, everyday movement of bodily performance. However, such a formulation also speaks to an extensive body of geographical work that describes identity as place-based and landscape as a process (Castree, 2009; Driver & Samuel, 1995; Wylie, 2007, 2009). When Wilson or fellow historian John Keegan (1983, p. 62) describe soldiers' understandings of their surroundings as being structured by previously seen representations – the latter writing that the soldier "confronted with the need to make sense of something he does not understand… will turn to look at what someone else has already made of a similar set of events as a guide" – they speak to a host of cultural geography theories about perception and proprioception (Albers & James, 1988; Crang, 1997; Minca, 2007; Wylie, 2006). Casey (2001) suggests the body is not in direct, naïve contact with the world but rather experiences it through societally and culturally influenced patterns of bodily actions; Tyner (2009) that military discipline provides such a pattern of bodily action to demarcate and maintain territory in space; Burchell (2013) that this disciplined bodily movement becomes internalized to the point that it is habitual and nearly subconscious. Meigs (1997, p. 5) argues that American doughboys' "experience was both real to them and not,...mediated…at every step" and that "for World War 1 soldiers, the fighting war and the war of interpretation took place simultaneously." In speaking of the insinuations of material and discourse, these authors speak to geographical scholarship on the nature of landscapes, places and bodies as "duplicitous" (Cresswell, 1996, p. 13; Daniels, 1989).

Cronier's work echoes that of cultural geographer Tim Cresswell, who writes on place as a normative construct and the formation and transgression of the boundaries between the "military" and "civilian" in the late 20th century. Much as Cronier's (2004, p. 144) *permissionaire* must contend with his troubled identity as a "combatant among civilians" when within what has been defined as a civilian space, the residents of the Greenham Common Women's Peace Camp that Cresswell (1994, p. 35) describes, as female protesters "living away from home, on the edge of a military (and therefore masculine)" space, are criticized by the media and government as "out of place." The machinations surrounding images of femininity that characterized these anti-war protestors as more transgressive in the idyllic English countryside than the military base around which they were camped recall Garner & Slattery's (2012) discussion of how representations of motherhood were coopted and contorted from maternally protective to sacrificial in pro-war rhetoric of the Great War. Similarly Sneddeker (1999, pp. 49, 52), in an article on WWI commemorative practice, comments that while victory parade participants included civilian "women from the Junior League strewing flowers," nurses who actually served abroad, outside their domestically assigned sphere, received "no official homecoming;" memorial practices such as these used strategies of spatialized performance to re-impose normality and peacetime boundaries. On the other hand, while the seeming stability and (perhaps unconsciously) accepted meaning of domestic places could thus be mobilized to (re)define individuals, challenging these meanings through the transgression of the rhetorical and physical boundaries they supported could also reveal the instability of those meanings: are home and front truly separate places if housewives and mothers could make a camp on the border of a military base and if Mansfield's malcontents could still embody the First World War's effects years after the Armistice (Cresswell, 1996; Lowenthal, 1985; Szpunar, 2010; Thrift, 2009; Whelan, 2014a; Jay Winter, 2007)?

In short, novel work in Great War historiography highlights the centrality of the creative, reciprocal relationship between individuals – as disciplined bodies or socially-constructed selves– and places. Though billed as works of history and war culture, scholarship like Wilson's, Cronier's, Mansfield's and others' present these places and individuals in terms of multiscalar, multilocal relationships, and of materiality and discursive meaning that cannot be disentangled. The spatial turn in WWI studies goes beyond traditional military geography, suggesting applications of critical military geography and what Rachel Woodward (2005) calls geographies of militarism.

Military geography and geographies of militarism:

Both military history and military geography have a long pedigree, with the latter having emerged as a discrete subfield in the nineteenth century. However, for many years most research in military geography was conducted by and for military insiders and while wider interest was rekindled at the start of the twenty-first century, the sub-discipline has arguably suffered for having endured such a long period of insularity, lack of engagement with wider trends in geography, and publicatory quiescence (Galgano & Palka, 2011; Linn, 2009).[4] Traditional military geography has within it the

[4] Exceptions to the rule included chapters within Semple's (1903) *American history and its geographic conditions* and Brigham's (1903) *Geographic influences in American history* for academic audiences, Douglas Wilson Johnson's books on topography and strategy published during and after the Great War, and an 1899 publication reprinted by the Cambridge Geographical Series aimed at a general readership (D. W. Johnson, 1917, 1921; Maguire 1899/2011; Palka, 2011). Galgano and Palka (2011, p.2) write that only seven "legitimate" books on military geography were published between 1998 and 2011, two of which were by Galgano and Palka themselves, the others by Winters, Woodward, Collins, Flint, and National Geographic.

capacity to engage with topics of current interest to the discipline: take for instance Paddy Griffith's (1994) focus on scale in his analysis of the development of British Army tactics in which he describes how the army, over time and through heavy cost, advanced from undifferentiated frontal advances to a reliance on small, heterogeneously composed platoons able to make use of heterogeneously composed, local terrain. In general however, the purview of military geography has remained narrow. While Winters (1998) provides a fascinating overview of human-environment interactions in the conduct of various historical battles, a "sustained analysis of how military personnel actually look at and interact with landscapes of operation," that is, a more nuanced and individual-centric appreciation of such human-environment interactions, "is notable by its absence" (Woodward, 2014, p.48). Last year, the *Journal of Historical Geography* published a special issue on military mobilities. The introductory editorial takes on a host of topics, making examples of how military prerogatives were intermeshed with the infrastructure of everyday life in the defensible design of 1930s Germany's road network, and of the militarization of civilian into soldierly bodies through training drills (Merriman & Peters, 2017). The remaining articles in the issue approach their case studies from inventive angles, however they make but small steps beyond military logistics, maneuvers and the conventional time-spaces of war (Forsyth, 2017; Fox, 2017; Gray, 2017; Williams, 2017). In short, traditional military geography has largely continued its myopic focus on battlefield terrain and the geopolitical strategies that play out over it in wartime, even though the impacts of military practices and ideologies extend far beyond these confines and are deeply insinuated in individual lives.

Woodward (2004, 2005, 2014) argues that fully understanding the implications of military activity requires expanding inquiry into 'geographies of militarism,' those geographies which are not the focus of traditional 'terrain and tactics' scholarship but that are yet connected to them through supply and social networks and the normalization of militaristic ideologies and practices. More broadly, Woodward and others have encouraged critical work on both the experiential and representational aspects of military geographies, on the embedded, embodied and emplaced as well as the (sometimes but not always) distant but connected (Farish, 2009; Rech, Bos, Jenkings, Williams, & Woodward, 2015). From a phenomenological perspective, scholars have begun focusing on soldiers' perceptions and embodied experiences of military landscapes, taking an interest in place-making practices, war cultures and field craft (Helphand, 2006; Saunders, 2004). Cast in the language of cultural geography, these studies work in terms of places dwelt in by "existential insiders" (Relph, 1976), and of subjects being intimately enfolded within the depths of the landscape they see (Wylie, 2006). From the representational perspective, studies have examined how militarism is normalized by the dispersal of military installations across the landscape and how military memorials become sites for the contestation of meaning (Black, 2004; Gordon & Osborne, 2004; Szpunar, 2010; Woodward, 2005). While the link between frontline and home front has conventionally been thought of in terms of supply lines and geopolitics, these studies instead trace the circulation of images and iconography. A focus on representations and their reach has stirred debate as to whether distant places and quotidian objects become militarized, or rather are "always already militarized," whether seemingly civilian geographies are always already geographies of militarism (Cowen, 2012; Enloe, 2000).[5]

I propose that what is needed now is a geography of militarism that engages with both emplaced experience and non-traditional places of inquiry, a geography of militarism that focuses not just on being embedded in the times and spaces of war, and not just on identifying distant spatial manifestations of military activities. Rather, we need a geography of militarism that emphasizes how the material and discursive connections between civilian and military spaces operate through the medium of these individual soldiers. Such a framework allows multiscalar analysis and an assessment of overlapping contexts. Such a framework enables inquiry to built up from the scale of the individual – the

[5] Enloe (2000) provides a can of soup with weapons-shaped pasta as an example of the encroachment of militarism into home and the blurring of the boundary surrounding civilian space; Cowen (2012) argues that as modern canning technology developed out of military needs, the can of soup was "always already militarized."

scale and which choices are made, movements undertaken, and demographic processes actually occur – and provides an avenue to work around fallacies associated with aggregated data (Kasakoff & Adams, 2000). A recent history conference described the individual as existing at “the heart of the Great War,” at the “crossroads between the civilian and military worlds” (“In the heart of the Great War,” 2017). In this dissertation, I take this inspiration and seek to make it explicitly geographical.

Framing and operationalizing the dissertation

Doreen Massey’s concept(s) of place and space:

Geographies of militarism and critical and historical geographies more broadly provide a plethora of options for framing my dissertation. Of all the opportunities available within the discipline, the work of Doreen Massey has served my research most. Massey’s work discusses connections, history and scale, and does so in ways that work in tandem with the recent thrust of Great War historiography and that fit with the social sciences methodologies and data that have channeled my research. Massey’s definition of space allows places to be different: for rural places to be different from urban places, for military places to be different from civilian places, for homefronts in America to be different from those in Britain. In a recent interview, Massey commented, “space is the dimension of things being, existing at the same time: of simultaneity… what that means is that space is the dimension that presents us with the existence of the other” (Social Science Bites, 2013). In Massey’s (1999, p. 274) telling, space is “the sphere of the existence of multiplicity, of the possibility of the existence of difference”: space – or space-time, as Massey prefers – militates against teleology and as such a spatial understanding is arguably essential to practicing history critically and to challenging objectivist grand narratives (Ian N. Gregory & Ell, 2005; Massey, 2005; Simon, 2014; Social Science Bites, 2013).

"If space is … a simultaneity of stories-so-far,” Massey (2005, p. 130) continues, “then places are collections of those stories.” Other geographers have defined place as a geographic grid location, affective attachment, or as locale or material setting (Castree, 2009; Withers, 2009). Reliance solely on place as physical location or morphology has been criticized for being too simplistic, while relying solely on place as a locus of identity has been criticized as too insular, too static, and too monolithic: too reliant on "the certainties of humanism" (Thrift, 2009, p. 91). In contrast to the "too parochial" sense of place proposed by humanistic geographers like Relph and Ley (Castree, 2009, p. 152), Massey's places are dynamic, "permeable" and networked together (Massey, 2005, p. 149). These connecting relationships are multiscalar, "from the immensity of the global to the intimately tiny" (Sparke, 2007, p. 396). They are mutable, as one "very different set of spatial relations" might supersede another (Allen, Massey, & Cochrane, 1998, p. 75). They are social, material and rhetorical. In contrast to what would be expected from bare materiality or untroubled topophilia, the meeting of stories to form places can be antagonistic and contestation plays an important role in the system Massey proposes: "distinct stories coexist, meet up, affect each other, come into conflict or cooperate" (Massey 1999, p. 274). A soldier and his story moving through wartime traces a trajectory that runs through and, with the intersecting trajectories of other individuals, creates and connects the places of home and front, which can materially exist on opposite sides of the world or exist in distinct spheres in the soldier's psyche, discursively defined in opposition to each other. Via movements and social relationships, evolving in space-time and place, the individual soldier is also reciprocally created. As Massey's geographies are "defined in terms of the entities 'within' it" and "constituted through social relations" so too are the "entities" themselves constituted by spatialized and emplaced relationships (Massey, 1999, p. 262). Thus, as in R.J. Wilson's (2012a) book, the soldier is constituted through the battlefield, and as in Sneddeker's (1999) article, the veteran is constituted by carrying the story crafted at the front through his hometown.

Massey's theory also allows for places themselves to have identities that evolve over time. Wainwright & Barnes (2009, p. 975) distinguish between two forms of time, writing "space is affiliated with a temporality that is infinite, divisible, ever present, the space in which the infinite flow of ‘nows’ streams by. By contrast, place is associated with memory, cyclical time, seasonality, birth, and death. Place is where time is deposited, where time collects.” For Massey, both forms of time give places their particularity. For instance, in her breakout book, *Spatial divisions of labor* (1984), Massey emphasizes that the specificities of places develop from flows and connections, but also from the accreted “layers” of past connections (Callard, 2010). It is this accumulation of connections over history, and the contestable narratives about them, that build a place’s identity (Massey, 1995, p. 186). As Massey (1995, p. 183, 2005, p. 139) writes elsewhere, “places… are always constructed out of articulations of social relations (trading connections, the unequal links of colonialism, thoughts of home) which are not only internal to that locale but which link them to elsewhere. Their 'local uniqueness' is always already a product of wider contacts.” To suggest a Great War example relevant to my dissertation, the northern Great Plains was cast, and continues to be envisioned, as an isolated place, a hard frontier won by self-sufficient homesteaders, but it was in actuality connected to urban, eastern and even foreign places by commodity and capital flows. In fact, these economic networks made the large-scale, cash-crop, incipiently mechanized agriculture on which the region depended feasible. The coming of the First World War did not erase the accumulated impact of these past flows, but it did alter and add to them, and stretched new connections between farms, training camps and European battlefields as the trajectories of young men’s lives carried them from civilian to military places and back again.[6] This nuance that Massey adds to the understanding of places through more than one kind of temporality –

[6]Massey (1995, pp. 189–190) herself offers another example apropos to the study of WWI, a conflict that radically altered the political landscape of Europe, replacing empires with new or ‘reborn’ nation states. She writes, “the boundaries of nation states are temporary, shifting phenomena which enclose, not simply 'spaces', but relatively ephemeral envelopes of space-time. The boundaries, and the naming of the space-time within them, are reflections of power, and their existence has effects. Within them there is an active attempt to 'make places.’” She continues that the “particular characterization of that envelope of space-time, that place” which is dominant at any given time “is only maintained by the exercise of power relations in some form. The identity of places, indeed the very identification of places as particular places, is always in that sense temporary, uncertain, and in process.”

that places are “always in the state of becoming” yet tethered to and important ways shaped by past configurations, by the depth of history – is perhaps the most uniquely useful part of her theory for the purposes of my dissertation (Withers, 2009, p. 642).

Using Massey’s oeuvre as a foundation is not without its challenges, however. Massey’s definitions of place can be confusing: places can sound more like a system or more like nodes within that system when she describes them as “porous networks of social relations” or "a constellation of processes rather than a thing” versus as “articulated moments in networks,” “envelope[s] of space-time,” “spatio-temporal events,” or “the general condition of our being together" (Callard, 2010, p. 221; Massey, 1991, p. 28, 1995, p. 188, 2005, pp. 130, 141, 154). Space(-time) and place can be difficult to clearly distinguish as Massey describes both as changeable, networked, reflective of power inequalities and produced through relationships . Indeed, Wainwright & Barnes (2009, p. 970) critique this lack of distinction: “there is no clear division between space and place because both are cut from the same cloth of multiplicitous relations;” indeed, her critics contend, Massey does not clearly identify space or place because “she denies any essential difference between them.” Space and place are in any case difficult concepts (Withers, 2009),[7] and Massey is not the only theorist to problematize supposedly neutral and empty space as “disrupted, active… generative” and contested not just as “a piece of turf” but for “the sort of reality that it constitutes”(Massey, 1999, p. 274; Molotch, 1993, p. 888). However,

[7] As Withers (2009, p. 638) puts it, “like space, its regular epistemic dancing partner in geographical ubiquity and metaphysical imprecision, place is a widespread yet complex term." Geographers are unable to agree on meanings. Place might be a special kind of space: according to Cresswell (1996, p. 3), place “is ‘social space”’; Carter (1987, cited by Withers, 2009, p. 647) defines place as “’space with a history.”’ Place might really be the experiential landscape of the likes of J.B. Jackson (e.g. Jackson, 1986), leaving aside ‘landscape’ to denote the representational aspects of landscape analyzed by Cosgrove (e.g. Cosgrove, 1998) and ‘terrain’ for the purely material (Wylie, 2007). Then there is the added complication of contrasting cultural definitions. For instance, while Foucault tends to use ‘space’ when referring to the abstract and ‘place’ when “there is a sense of intimacy or subjectivity,” P. Johnson (2006, pp. 77–79) comments that “there are complex and subtle relational differences in English and French between space [espace] and place [lieu]” and that the statement from *On other spaces* that reads “space takes for us the form of relationships among sites” in translation originally began with “emplacement,” a word that encapsulates “the formal, spatial qualities of certain places, which are 'both mythical and real,' and specific historical mutations” (Foucault, 1986, p. 23).

as challenging as maintaining a distinction between space and place is, Wainwright & Barnes (2009, p. 971) argue that "given the long history of these concepts and their centrality to Western thought, space and place" – and all the concepts that have adhered to this core opposition – "cannot be made to disappear."

My own greatest difficulty with Massey's work centers less in the nebulousness of space/place in her writings but rather on her treatment of individuals, or lack thereof. As much as Massey's is critical, Marxist and feminist work, as much as she stresses power imbalances and the politics of how places are connected to (or disconnected from) each other, the individuals who build the connections and are either benefited or inhibited by them remain rather shadowy figures. For instance, her evocative description of a "global sense of place" as she walks along Kilburn High Road focuses more on the objects that mark the place as networked and hybrid – the IRA graffiti, the sari shops – than on the people who made and maintain those networks (Massey, 1991). While the "entities" that Massey describes as being in a constitutive relationship with space-time might be people – the reading that I have found most helpful – they could just as easily be places or perhaps even objects. As with space and place, Massey's ambiguity can open up room for new applications of her theory, but the lack of precision offers little guidance for how to apply that theory with consistency. In Massey's work, individuals are not wholly absent but neither are they at the heart of the discussion.

As mentioned in an earlier section, some of the most fascinating war culture studies have delved into socially-situated corporeality, that is, how individuals relate to discursive and material contexts through soldiers' and civilians' bodies. Critical population geographer James Tyner (2009), in his book on war and violence, notes that it is at the scale of the body that discipline and state-sanctioned ideologies are enforced, and that it is through the movements and actions of bodies that territory is claimed and held (see also N. C. Johnson, 2003; Marston, 1989). Working from Foucault and Lefebvre, Tyner (2009) specifies his own version of the dynamism, emergence, contestation and the co-constitution of individuals and places: bodies are unstable entities (p. 22), whose materiality does not exist outside of a discursive, disciplinary framework (p. 23), but is rather “situated in historical processes within particular places” (p.7). “We reproduce and are produced by space just as we produce and are produced by discourse...the meanings and uses of space are never separate from the contestation over bodies and populations” (Tyner, 2009, p. 34; see also Tyner, 2013, 2015). Tyner’s own work on the Khmer Rouge’s use of moral exclusion, genocide and forced migration applies this theoretical framework to describe how “killing bodies in an attempt to regulate populations” is “legitimized and sustained through complex imaginative geographies” (Tyner, 2009, pp. 49, 39). Applying this same framework to the study of the Great War, one might describe how the doughboys’ military training was meant not just to physically prepare their bodies for battle, but to make them into the embodiment of patriotic virtues, proper deportment, cleanliness and the rhetoric of the American crusade. Or one might describe how even after death, American soldiers’ bodies maintained the territory they had won and a space for the United States in contemporary appreciations of sacrifice: although the US government allowed and funded repatriation, it “worried…that depopulating France of Americans’ gravesites reduced the power of the collective gravesite to convey the scope of the nation’s sacrifice.” As a result, after 70% of American bodies were returned, the government grouped the rest “into eight national cemeteries where ample spacing between graves helped bolster the physical presence of American war dead on foreign soil” (Keene, 2011, p. 192). As this small selection of examples suggest, retaining an emphasis on individuals particularly through a focus on bodies and embodied experiences provides a space to explore the myriad effects of war that a strict adherence to Massey’s work alone cannot provide.

My concept of space, place, and individuals:

Bearing these critiques and gaps in mind, in framing my dissertation I draw heavily on Massey’s work, but supplement it with other geographical understandings. Thus, I tend to use ‘place’ to refer to geographies that *appear* more bounded and stable like ‘home’ and ‘front,’ while using ‘space’ for geographies that are more abstract, but no less real, contestable or powerful, like ‘military space,’ ‘civilian space’ and ‘domestic space.’ In my usage, places are viscerally evocative, they have an identity and often an inertia marked by the accretion of residues of the past that may be “unconscious” but which are nevertheless ubiquitous and tend to have a normalizing influence (Cresswell, 1996; Lowenthal, 1985, p. 185). I think of place as the “scale of everyday life” (Castree, 2009, p. 153), the level at which fictive kinship, a feeling of community, and personal identity are established and communicated (Winter, 2006, p. 143), but with the realization that the scale of everyday life is actually far more expansive than it is generally perceived to be. Places can be quite particular, for instance the family home (which by the turn of the century had become deliberately sacrosanct and discursively bounded (Gillis, 1996)) or a portion of a trench, but these specific places are also models of an ideal, they are synecdoche for the places of ‘home’ and ‘front’ as I use them throughout this dissertation. The difference between places and spaces is more a continuum than a definitive frontier, and the separation between places is readily malleable, as evidenced by long-time soldiers describing the front *as* home (Barbusse, 1916/2014; Remarque, 1929/1982).

My appreciation of the individual-place relationship on which my dissertation is founded can be summarized as follows:

- Co-constitution:
    - Individuals (identities, bodies) and contexts (societies, rhetoric, populations, places, time-spaces) are creatively bound, materially and discursively.
    - Places and life courses shape each other through emplaced, embodied experiences.

- The places of home and front –and “civilian” and “military” spaces – not only exist in connection with each other, but they exist *because* of their connection to each other, and this connection is made through the medium of individuals.

- Emergence:
    - The thinking, feeling, relating, doing individual is the locus of processes from which patterns arise.
    - Individual choices about migration or marriage, or impositions on individual bodies inducted into the military, produce measurable population geographies.
- Dynamism:
    - Rather than being static and confined, places are changed by the mobility, hybridity and transgression of individuals, and are influenced by the build-up not of simply endogenous characteristics but of changeable and distant connections.
    - Individuals are hybridized through their experiences of place, building up residues of these experiences across the course of their lives.
    - Places and life stories are always in a state of becoming.

Historical demography approaches and population geography as a means of empirically operationalizing a theoretical framework of place:

While the project of problematizing the “positivist grand narrative” of military history and pushing forward geographies of militarism has largely been advanced through qualitative methods, demographic studies of veterans suggest that quantitative methodologies may productively engage with the questions of emergence, hybridity, and multiscalar, multilocal relationships raised by the war culture scholars cited above (MacLean & Elder, 2007; R. J. Wilson, 2012a, p. 14; Woodward, 2005). Demography can be focused on the biological factors that influence individual behaviors and give rise to emergent population metrics like birth, migration, and death rates, however scholars have also emphasized that the empirically measureable interplay of individual and context is entangled in material and cultural conditions, or have stressed the role of geopolitics and armed conflict in these interactions (Brunborg & Urdal, 2005; Dribe, Klüsener, & Scalone, 2013; Ekamper, Poppel, & Mandemakers, 2011; Mayer & Schoepflin, 1989). Life course theory has long been a popular way of thinking about demographic events like marriage and home leaving as embedded within historically- and socially-contingent circumstances (Uhlenberg, 1996).[8] In life course theory, the individual is at the heart, but is also at the crossroads of multiple contexts (Elder & Pellerin, 1998; Giele & Elder, 1998; Hareven, 1978). Thus, transitions between different roles or relationships is "synchronized" between historical, family and individual timelines, the timing of these events being a compromise among – or an adaptation to the strongest of – these timelines' demands (Hareven, 1977; Hareven & Masaoka, 1988, p. 58). Thus, all the members of a cohort of individuals born within a range of years will be "exposed to a slice of historical experience," but their responses to this stimulus and their impact on further historical developments will be shaped by membership in various gender, racial or occupational subpopulations, their position within a household, and the accumulation of their own personal experience over time, the material and discursive meaning of each of these characteristics themselves being historically contingent (Elder, 1978, p. 35; Gillis, 1996; Hareven, 1978; Uhlenberg, 1996).

Life course analysis and historical demography are not always explicitly geographical, but as with war culture studies conscious attention to place and space is productive. For instance, one of the first life course studies to examine the cumulative effects of past experiences focused on how past migration predicted future migration, with the experienced migrant having gained knowledge about how and where to move and having built broader social networks to support such migration through previous

[8] Uhlenberg (1996, p. 228) notes that demographic and life course approaches have been conceptually linked since at least the 1960s.

mobility (Sidney, 1954, 1964, cited by Uhlenberg, 1996, p. 227). Kasakoff & Adams (2000) provide a compelling example of how statistical and social science methodologies can provide an effective way to formalize the relationship between the individual and place-based context. In order to understand the dynamic patterns of mobility and mortality across space and time in 19th century America, Kasakoff & Adams (2000, p. 115) "had to consider the accumulated lifetime experiences of the population, experiences that for many, if not the majority, took place in more than one locality and occupation." The authors definitively conclude that country-born individuals moving to cities in an era when rapid urbanization was causing overcrowding and attendant insalubrious living conditions were protected from morbidity by the residue of their healthy rural childhoods. The authors further suggest that there may be places where the changing mix of urban- and rural-origin inhabitants altered those places' aggregate demographic characteristics (Kasakoff & Adams, 2000, pp. 124–126). In other words, Kasakoff & Adams were able take a measure of how place constitutes individual outcomes and to posit that individual characteristics may shape the emergent characteristics of places.[9]

With life course and demographic theory, I can empirically approach Massey's 'entities,' whether individuals or the places whose broad demographic patterns they constitute (Giele & Elder, 1998; Mortimer & Shanahan, 2003). These theories suggest classic, quantifiable markers by which to study personal outcomes and emergent populations. In this dissertation I will be focusing on marriage (Chapter 2) and mobility (Chapter 3) as individual characteristics shaped by accumulated experiences of place. I will be examining how the distributions of cohort members and subgroups of cohort members

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[9] Interestingly, in his article on the effects of variations in Civil War veterans' wartime spatial mobility, Chulhee Lee (2008, p. 864) provides an extensive footnote citing research that found that rural to urban migrants in the nineteenth century were more susceptible to disease after they moved, suggesting that rather than bringing the protection of previous health migrants brought a vulnerability that had been cultivated in earlier life conditions. Further, such migration has been accepted as a cause for the period's national decline in health. Though different in substance, Lee and Kasakoff & Adams' findings are similar in mechanism: knock-on effects of emplaced experiences having the capacity to shape emergent population geographies.

arise from individual characteristics and how they coincide with other geographic patterns (Chapters 4 and 5).

A review of military demography and military population histories:

The historically and geographically contingent connections between the military and the civilian are not only multi-scalar (operating between individual and context) and multi-local (home/ front), but also multi-temporal (prewar/ wartime/ postwar). Life course analysis work on veterans clearly shows that military experiences earlier in life affects individual civilian outcomes in terms of marital stability, criminality, educational attainment, socioeconomic status, and health. These impacts can be on the veterans themselves, for instance in the health outcomes of Civil War veterans analyzed as part of one of the longest running population studies (Costa & Kahn, 2010; Fogel, 1993) or health outcomes of American WWI draft registrants analyzed with one of the most comprehensive and integrated population databases (K. Smith, Fraser, Hanson, & Reed, 2015). However, as life trajectories are connected, military service has also been empirically shown to impact the lives of others – of fellow soldiers, of siblings, of spouses – through social relationships. For instance, work by and Costa & Kahn (2010) and Laschever (2013) examines the long term impact of relationships between soldiers. Costa & Kahn (2010) argue that unit cohesiveness, based on pre-enlistment similarity among troops drawn largely en masse from the same communities, was associated with increased wartime mortality and decreased post-war morbidity for Union soldiers; they also maintain that the diversity of units composed rather more haphazardly in the later years of the Civil War may have broadened soldiers' horizons and impacted veterans' mobility (Costa & Kahn, 2008). Further highlighting the influence of wartime social networks, Laschever (2013) argues that First World War veterans, brought together quite randomly in regionally composed units, leveraged their wartime camaraderie into better socioeconomic outcomes than enjoyed by civilians without such connections. Turning to effects on siblings, Elder and Pellerin (1998, p.272) remark upon studies of veterans conducted by the senior author that the deliberate application of life course theory's "concept of interdependent lives" allowed the researchers to approach not just the experience of soldiers, but also "the indirect experience of social change via family members such as children's experience of war mobilization via the enlistment of older brothers." Addressing spouses, Gimbel and Booth (1994) find that Vietnam War combat veterans had higher rates of divorce and domestic violence. In contrast, Kelty, Kamp and Segal (2010) observe that the families of post-draft military personnel were more stable than those of their peers. In this last pair of examples especially, we see that outcomes are personally, geographically and historically contingent. Indeed in their review of *Military service in the life course*, MacLean & Elder (2007, p. 175), find that such contingencies preclude general conclusions about the benefits or detriments of military service per se, except that "veterans exposed to combat have suffered worse outcomes than noncombat veterans and than nonveterans."

Individual demographic processes can also have effects on or be affected by wider populations and population geographies. For instance, in examining the Second World War, a conflict far more studied in America than the First, Sampson & Laub, (1996, p. 348) stress the importance of "macro-induced experiences" like natural disasters, war, and such specific war experiences as overseas service in altering individual's life trajectories, but Goldscheider and Goldscheider (1994) comment that mass enlistment during the Second World War altered family formation trends via individual choices about home leaving, nuptiality and fertility, giving impetus to the Baby Boom and its subsequent, society-wide effects. To take a First World War example, Abramitzky, Delavande, & Vasconcelos (2011) measured and mapped the effects of war-induced mortality rates on postwar marriage patterns in France. Serving in regionally-composed regiments sent by military planners to particular locations along the front, individual *poilus* suffered individual deaths. Their accumulated loss left a pattern of sex differentials in their home *départements*, with areas that had sent their fighting men to the most dangerous sectors having imbalances “reaching 864 men per 1000 women” (Abramitzky et al., 2011, p. 125). In this context, individual surviving men and women found that their personal marriage prospects were different than those of the generation before the war or of contemporaries living in regions with lower war-induced mortality rates. In high mortality areas, men married more, women married less, and men were less likely to marry below their own social class. Particular military places (sectors) operated through individual processes (deaths) to produce patterns in civilian places (*départements*) that then impacted individual opportunities for marriage and thus further shaped the population-level characteristics of those places.

In short, as MacLean & Elder (2007) and others studying veteran experiences and outcomes have shown, the methods of historical demography provide an effective means of operationalizing life course theory and analyzing the relationships between contexts – both civilian and military– and individuals. Such formalizations likewise, though not perfectly aligned with critical war studies and critical geography, at least have essential connections to these theoretical frameworks, as well as to the framework of co-constitution, emergence and dynamism that I outlined above. Offering a host of examples and evidence of the importance of particular times and places, the body of work on military demography from a life course perspective further suggests topics of interest for my study of American Great War soldiers and veterans.

Gaps in Great War historiography to be addressed:

A short history of Great War historiography:

The historiography of the Great War, weighted heavily in Anglophone literature towards the British and Commonwealth experience, has evolved over the course of last century, often running with the current of history as a discipline (Winter & Prost, 2005; see also Wilson, 2012; Todman, 2011; Todman, 2005). Looking for facts, scholars in the immediate aftermath of the war set themselves the task of determining why the war had happened and which belligerent nation was most to blame; narratives from the soldiers' point of view, though considered "'too narrow" for inclusion in official histories, were yet popular and likewise made "'a violent effort of objectivity"' or were subjected to it by other veterans of the war (Renouvin, 1939, Isaac, n.d., cited by Winter & Prost, 2005, pp. 14, 12).[10] These efforts were followed in the late 1920s and 1930s by a soul-searching phase, epitomized by the mud, blood, incompetence, and futility conveyed by *All quiet on the Western Front* (1929) and by the rediscovered works of British "trench poetry" generally written by middle class, privately educated officers (Corrigan, 2003; Stephen, 1996).[11] While the writings of this period may not have been truly reflective of the perspectives of most common soldiers, they were personal, visceral, and on a human level. Perceived to convey at least a "fictional truth" (Winter, 2004: xiv), these readings of the war left an "enduring artistic and literary legacy" which could be "profoundly misleading" and that "could not be readily challenged by historians who possessed neither firsthand knowledge of events at the higher level nor access to primary sources" (Beckett, 2002: vii).

While more of these primary sources would become available after the Second World War, a new wave of Great War historiography was driven more by reactions to the more proximal conflict, expanding academic and public interest with the approach of the fifty year anniversary, and as the decades wore on, the need to collect oral histories before the WWI generation disappeared (Todman, 2011; Winter & Prost, 2005). This new wave did not dislodge the powerful and persistent readings of the war that had developed in the soul-searching phase. Indeed, reading the war from below, from the

[10] Winter & Prost (2005:14-15) also refer to the work of Norton Cru, a veteran commissioned by the Carnegie Endowment for International Peace who meticulously reviewed 300 books for factuality, at least in reference to his own experiences, in producing his *Temoins* (1929).

[11] While the trench poets were writing and publishing during the war, their work was far less popular and of far smaller volume than other contemporary poetry that expressed more conventional themes like patriotism. Stephen (1996, pp. 134, 104) comments that it could be said during the conflict that the average common soldier, unlike the trench poets, "may hate the war but rarely loses faith with or condemns it" while in the war's aftermath "time tends to make as many survivors see the war through rose-tinted spectacles as see it in shades of red."

at least supposed soldiers' viewpoint, fed well into social, Marxist, and populist perspectives,[12] as well as into the postmodern and relativistic cultural history paradigm that became well established in history generally by the 1980s (Sandberg, 2012; Winter & Prost, 2005; Appleby, Hunt & Jacob, 1994). Analytical history, despite having developed in a nineteenth century drive to make history more scientific, despite coming to a head with the quantitative revolutions in the 1950s, and despite fitting well with the positivist way military history was being and had been taught in military colleges, did not present much of a challenge to popular or civilian academic Great War historiography until the early 1990s (Palka, 2011; Todman, 2005; R. J. Wilson, 2012a; Woodward, 2014). Sometimes callously applied (e.g. Terraine, 1992), appearing long after much of the discipline of history had become disenchanted by promises of 'real' science and quantification, and failing to provide a compelling alternative to cultural history's personal and emotive telling of the conflict, analytical and quantitative perspectives on the Great War that could provide empirically-grounded insights have remained in the minority. [13] Indeed some Great War historians have become alarmed at the loss of context provided by the social sciences in the push towards more postmodern and post-structural readings of the war (Chickering, 2011).

In the United Kingdom and the Commonwealth, the last few years of centennial commemorations have shown that the struggle between alternative readings of the Great War and denouncements of novel, persistent or recurring misreadings are still fierce where the conflict holds a prominent place in popular memory (Faulkner, 2013; "Great War Forum," 2018). Academic interest maintains a dedicated journal, society, and biannual conference ("International Society for First World War Studies," 2018). Yet, there remain great gaps in our knowledge of how the war affected certain places and groups of individuals, such as the rural American populations I research. There remain great

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[12] Winter and Prost (2005) cite Ducasse, Meyer & Perreux, 1959; Ferro, 1969; populist AJP Taylor, 1964, respectively, as representative examples of social, Marxist and populist perspectives on the Great War.

[13] Bodenhamer (2008) recently argued that history is a unique discipline *because* it seeks cause and effect in the particulars, and not in universal laws like science.

opportunities to leverage the inspirations of cultural history readings of the war by empirically grounding them in geographical analysis as I have attempted to do in this dissertation.

The United States:

It is almost a cliché that the Great War is America's forgotten war. The United States' experience of the first modern global armed conflict has arguably been largely ignored for many reasons, from relatively low causality rates to the nation's relatively late entry into what many contemporaries referred to and what many of the country's archives still catalog as 'the European War' (Winter & Prost, 2005). The number of Americans committed to the cause was by no means miniscule. A quarter of the American population was subject to draft registration and 20% of men aged 18-45 (those ages liable to Selective Service) were in the military at the time of the Armistice (Ancestry.com, 2018c; Keene, 2015, p. 79). Of the over 4 million in service, half were sent overseas, comprising about 2% of the country's total population (Keene, 2015, p. 79).[14] At the time of the Meuse Argonne Offensive, the costliest battle in American history, the number of Americans in theater matched the number of British troops that were in Belgium and France at any one time since 1916 (Van Emden, 2011, p. 4; Yockelson, 1998). On the other hand, in a US government publication, the chief of the General Staff's statistics branch, while describing the Great War as "undoubtedly the bloodiest war which has ever been fought," also commented that American deaths were a tenth of those "in the ranks of the enemy" and a fifth of those experienced in the Civil War. American loses were "heavy when counted in terms of lives and suffering, but light compared with the enormous price paid by the nations at whose sides [the American Expeditionary Forces] fought"(Ayres, 1919). At war's end, American casualties at 116,516 dead and

[14] Keene (2015, p. 79) gives these numbers more specifically as a total of "4,412,533, a figure that included 3,893,340 soldiers, 462,229 sailors, 54,690 marines, and 2,294 Coast Guard troops." Note that these numbers are slightly different than those given by other sources, for instance Clodfelter (2008, p. 462).

approximately 320,000 wounded were an order of magnitude less than those of the major combatants (Byerly, 2014; Prost, 2014); of all the French and British young men aged 19 to 22 at the start of the war, one third would be dead before it ended (Keegan, 1998: 430-1, 453). Indeed, most scholars argue that United States' greatest contributions to the war effort were in money and materiel rather than men.[15]

The short duration of America's official involvement led to a different experience of the conflict, both by soldiers themselves and by their civilian friends and family members, than it was for the British and Commonwealth soldiers and civilians on whom so much Anglophone scholarship of the war is based. As already mentioned, Americans were implicated personally, disturbingly, and willingly in the conflict long before war was officially declared in April 1917 (Coffman, 1998; Garner & Slattery, 2012; Kennedy, 2004; Purseigle, 2004; Zieger, 2000). Images of war and militaristic discourses freely circulated within the country between 1914 and 1917, and perceived foreign threats were leveraged into official militarization and unofficial 'preparedness' schemes that also served as a means of addressing homegrown concerns about morality, gender, class, race and ethnicity (Coffman, 1998; Gutierrez, 2014; Meyer, 2004; Zieger, 2000). The complete moral isolation that supposedly came with neutrality – "Let all Europe fight, if they must…we will love while others hate/ Peace will reign in our USA" – was a fiction, and the government's attempt to remain discursively aloof by calling itself an "associated" rather than an "allied" power was vain (Nathan & Klickman, 2014). Thus, it was not that the United States was unaffected by the Great War in its first three years, rather that it was affected differently when its soldiers finally became enmeshed bodily in traditionally defined military places. American soldiers

[15] Little (2011, p.140) comments that charity proved to be "America's greatest contribution" to the outcome of the war as thousands of Americans solicited funds, donated food and knitted socks under the auspices of various humanitarian groups, noting that it was the United States' prolonged official neutrality that allowed these US-based organizations to operate largely unmolested by the powers at war. Similarly, Crichlow (2000, p.viii) contends that the United States' "substantial" contribution to Germany's defeat was largely economic, not only through provision of credit and supplies to the Allies before April 1917, but also through the threat of an army, raised far from the ravages of the front, that could live off the fat accumulated over nearly three years of what might be called war profiteering, an imbalance in costs and profits that Zieger (2000) concludes was the basis of America's rise to superpower.

benefitted from the years of hard lessons learned by their earlier-engaged allies and served largely during a period of advance rather than prolonged, entrenched stalemate (Zieger, 2000, p. 64). During the post-Armistice occupation, which lasted for many doughboys as long as their time in combat, service members “were, first of all, as much tourists as soldiers" (Kennedy, 2004, p. 205). A number of historians contend that under these circumstances, Americans’ vision of themselves as crusaders, of battle as purification, and of the war as worthwhile were not as thoroughly undermined by the realities of combat as those of other nations’ soldiers (Gutierrez, 2014; J. Keene, 2014; Kennedy, 2004; Le Naour, 2004).[16] At least some contemporary Americans also realized that their experience was different. In a diary entry on November 11, 1918, later reprinted in a magazine, nurse Lillian Weir remarked, “What it meant to the French, who'd been in the midst of war for four years, we couldn't tell"(“Lilian McKnight Weir, Cavalier County #1630,” 2000).

The United States’ distance from Europe also made the differences among its subpopulations’ experiences of the Great War unique. The home-front dichotomy has already been introduced and problematized at the start of this chapter. Here, I further note that the juxtaposition between civilians and soldiers was different in the United States than it was in the United Kingdom. War is a brutalizing phenomenon. Kent (2009) writes that a sort of shellshock afflicted the whole of British society in the aftermath of the Great War, pointing to a decade’s worth of violent aftereffects from imperial atrocities in Ireland and India to the ruthless treatment of strikers and suffragettes closer to home. Postwar

[16] It should be mentioned, however, that Van Emden (2011, p. 84) has found that the narrative of “personal purification” was resilient among some subsets of British soldiers and that a number of British historians have argued against the mud, blood and futility narrative of the war, contending that even men who had been in the trenches for four years could find meaning and worth in their experiences (Corrigan, 2003; Hart, 2010; Todman, 2005). Neither was every American veteran happy with having served. Christ A. Menge (1953), in a typed manuscript of recollections commented that he "was very much disappointed and alarmed when [he] noticed the effect the War Declaration produced on many well-balanced, substantial citizens" and argued that soldiers were "forced to fight in foreign lands for a cause which [was] quite vague to many of them… I was glad when the war ended," he continued, "Prices had gone out of all reason and there were many shortages of goods...I did live up to the slogan that nobody was to make money out of the war. We were fighting to make the World Safe for Democracy. It proved to be a big joke."

America was likewise marked by seemingly war-born callousness and phobias: the Red Scare, the Palmer raids, acts to limit immigration, the resurrection of the Ku Klux Klan, Prohibition. Keene (2015, p. 78) argues that the “spike in the use of violence to achieve political ends” in the United States during this period was due to the normalization of such political violence among civilians as well as among soldiers. However, the embodied experience of the war among American civilians was again far different from that of their European contemporaries. Philip Gibbs, a British official war reporter recalled in 1921, "'England was all in- all her men, all her women, and no escape for any of them in the service of death.” While strategic bombing in WWI never approached the level of the Blitz, “no living body in England was exempt from the menace of destruction. Death came out of the skies, and choose old men and women, nursing mothers, babies, anyone. The enemy attacked them in little homes in back streets, in big factory centres, in the heart of London"' (cited by Kent, 2009, p. 15). Over the course of the war 15,000 Britons died on civilian ships, another 1,266 in such bombardments as Gibbs describes; in 1915 *The Lancet* was publishing on “civilian war neuroses” (Kent, 2009, pp. 15, 19). In contrast, while the influenza epidemic that circled the globe on the coattails of armies claimed a great number of American civilian lives, no civilians were directly killed by the war in the United States (Billings, 2005). Whatever little solidarity might have been gained by British soldiers and civilians through mortal threat, the war experience of American military personnel, at least those 1 million that served in combat, was that much more different from that of US civilians.

The field of American Great War historiography is not completely empty. The work of Coffman (1998), Keene (2011), Kennedy (2004), Meigs (1997), Zieger (2000) and others have shown that time, distance and geographic location are not excuses for a lack of academic investment, but rather of substantive importance, having discernible effects on the experience and representation of the war. Material distance helped the United States maintain its proclaimed neutrality, allowed it to be a safe place to grow crops and train troops, and kept civilians from threats of bodily harm and, to some degree, the brutalization of proximate war. My introduction has been at pains to describe the home-front dichotomy; here I stress that the United States had its own version of this duality. The uniqueness of Americans' experience of the war "cannot be stated too strongly," and is worthy of further study (Meigs, 1997, p. 1).

Sub-national differences: mapping, cross-tabulations and a preview of data

Geographical and historical differences make the United States an interesting foil for the better-studied Britain in First World War research. However, as Purseigle (2004, p. 95) stresses, it is necessary not just to compare and contrast countries, but to get "beyond and below the nations." The American experience of the Great War was not monolithic. Alongside the real differences one would expect to find between soldiers and civilians on the basis of war culture studies and demographic research (Booth, 1996; MacLean & Elder, 2007; Winter & Robert, 1997, 2007), one would expect that veterans would also play a unique role in mediating the effects of the conflict across time and space. If place and life course are mutually constitutive, as Kasakoff & Adams (2000) and Massey (2005) would have us believe, then we would expect this mediation to vary from location to location and from subpopulation to subpopulation, producing variable geographies.

Basic maps and tabulations suggest that this is so. In these demonstrations of the subnational variability of veteran patterns and why it is important to ask questions about the Great War at finer scales, I use the 1930 complete count US census, one of the two big historical microdatasets that I will describe more fully in the next chapter and use throughout the rest of the dissertation. Such individually scaled and spatiotemporally located data work well with the theoretical outlook held by Massey, life course demographers and the war culture scholars cited above: that of embedded individual lives and emergent patterns of place. Further, such data allow me to circumvent some of the problems associated with pre-aggregated data that was not composed for the research at hand, particularly the issue that

Kasakoff & Adams (2000, p. 115) describe in which theoretically relevant variations within the aggregated population are obscured, leading to "potentially *misleading means*…[and] summaries of dubious convenience." Instead, I can identify subpopulations of interest to my particular research questions on the basis of these variations and examine how these characteristics coincide. With such data I can interrogate the interaction of different facets of what Chickering (2007, p. 469) calls "transectional" identities within specific historical and geographical contexts.[17] While data-driven projects have often been critiqued, I acknowledge my reliance on such data sources for the formation and feasibility of my research and leave contending with some of the implications of this reliance for Chapter 6.

Each of the maps and tables presented here use what I refer to as the WWI Cohort.[18] The 1930 US census identifies those who were "in the military of naval service of the United States" during times of war as veterans and records in "Which war or expedition?" they participated (U.S. Department of Commerce. 1930. *Instructions to enumerators,* pp 41-2, cited by Doetsch, 2012, p. 8). With these individuals so identified, I was able to extract both civilian and veteran men of similar ages – i.e. men who were also born between the 2.5th and 97.5th percentiles of birth years of enumerated WWI service members – from a machine readable database of the census made available by the Minnesota Population Center (MPC) as part of the Integrated Public Use Microdata Sample (IPUMS) project (Ruggles, Genadek, Goeken, Grover, & Sobek, 2013).[19] Identified WWI veterans make up 17.6% of this

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[17] Chickering (2007), in his total history of an Alsatian town during the war, provides a thought-provoking discussion of the way different socially-constructed identities 'transected' each other within bodied subjects, complicating any attempt to describe differential experiences of the war in terms of religious confession, political leaning, gender or socioeconomic status alone.

[18] A cohort, simply put, is "a *meaningful* aggregate" of individuals who experience historical time at roughly similar ages Uhlenberg (1996, p. 228, emphasis added). I will also note here that while in demography 'generation' has a meaning distinct from 'cohort,' with the former identifying relative familial positions such as grandparent, parent, child and the latter identifying the intersection of personal and historical timelines, I will generally being using 'generation' in the more colloquial sense, as a near synonym with cohort.

[19] Over the course of my doctorate, the MPC has been improving and revising their complete count US census datasets. At the start of my work, 1930 census data was only available in text fields; most of the fields have since

cohort of men born between 1880 and 1902 inclusive. The census also identifies the county that each individual was resident in, allowing me to map population patterns at a relatively fine resolution but also across the breadth of the country.[20]

In Figure 1.1, I map the members of the WWI Cohort and WWI veterans.[21] While the population density of veterans and civilian men of similar age more broadly conform to the distribution of the American population as a whole (Figure 1.1a), mapping the percentage of the male population within each county that falls within this cohort suggests that men were involved in spatialized relationships particular to members of their generation (Figure 1.1b). Figure 1.1c is a local indicator of spatial autocorrelation (LISA) cluster map: it shows in red and pink where values of an indicator are significantly higher and in blue where values are significantly lower than what would be expected if the spatial distribution of these values were random after accounting for known patterns. In making this assessment, the LISA map shown here takes into account each county's value as well as that of its neighbors.[22] Using a methodology that will be expanded upon in Chapter 5, here I predict where we would expect to find WWI veterans based on the underlying pattern of where WWI Cohort members live, logging both the dependent and the independent variable and mapping the residuals of this model.

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been coded and standardized. While the dataset version I use for the dissertation was largely already coded including the identification of veterans, my identification of *World War I* veterans from among this group was based on the transcribed text string.

[20] For the maps presented here and in most other places in the dissertation, I slightly modify county boundaries and identifiers to deal with small or problematic geographies, such as the five boroughs of New York City or Virginia's independent cities. These modifications, based on those used by Fishback, Kantor, & Willis (2002) and Gutmann et al. (2016), are described more fully in Chapter 3.

[21] 'Missing or unmapped' counties either have no recorded resident population (e.g. Yellowstone National Park), no listed veteran population (Pickaway County, Ohio and Clayton County, Iowa), or are island counties which were removed to simplify the building and comparing of spatial weights.

[22] Thus, red counties are high values next to counties with high values, pink counties are high values next to low values, dark blue counties are low values next to other low-valued counties and light blue counties are low values next to high value counties. Calculating spatial statistics requires a model of spatial relationships to be specified. For the map shown in Figure 1.1c, the spatial relationships are modelled on the basis of queen's contiguity: that is, whether counties share an edge or a corner. In a later chapter (Chapter 5), while I also examined the effect of modelling spatial relationships in this way, I ultimately used a different model.

The fact that the distribution of veterans is not sufficiently explained in a statistical sense by the underlying cohort population, as shown by the colored counties, further indicates that veterans were involved in spatialized relationships that were particular to those with military service experience, whether this was due to factors caused by that service, to pre-existing characteristics that brought them into military service, or to conditions that coincided with but were not necessarily causally related to being a veteran.

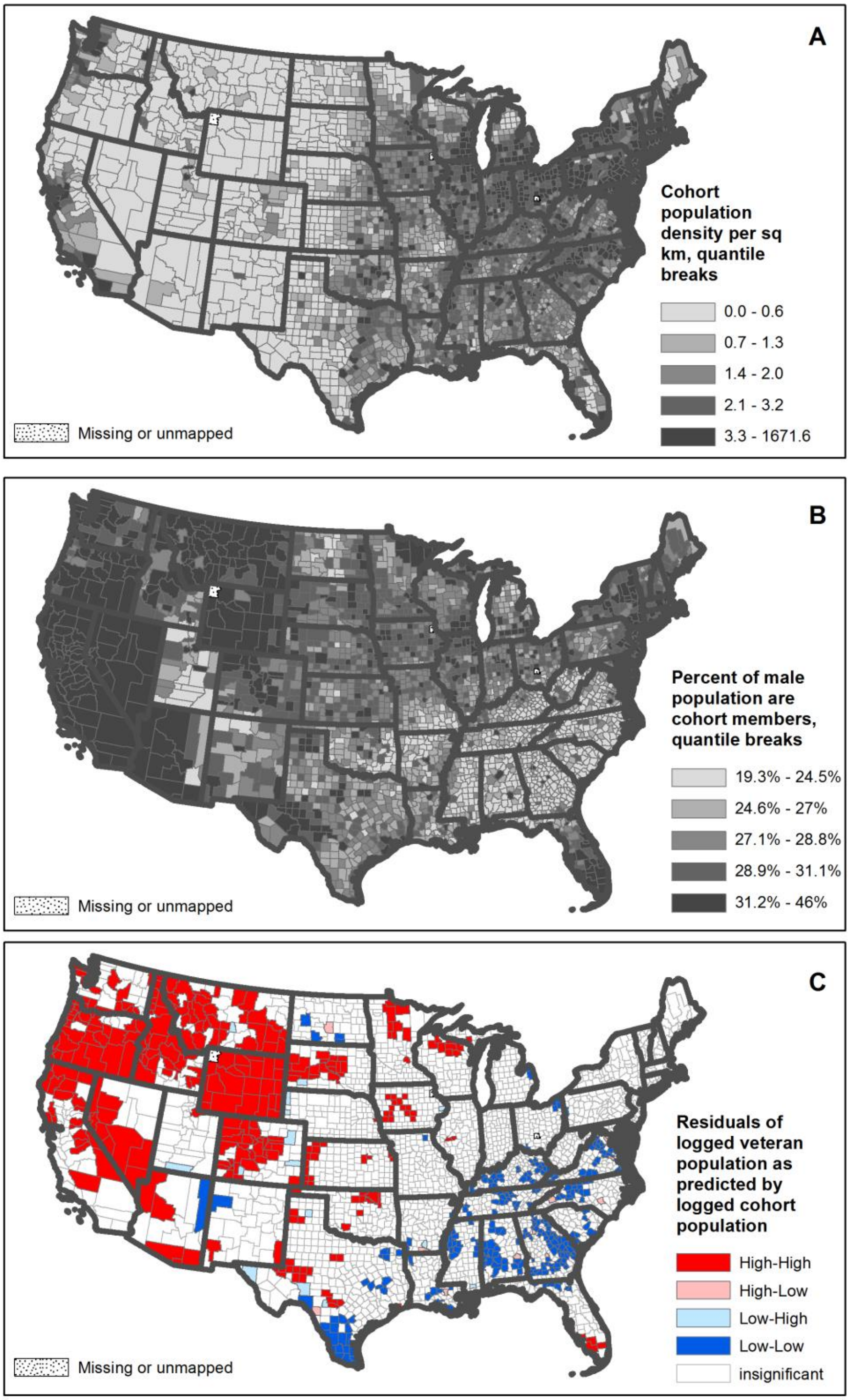

Figure 1.1: Mapping the WWI Cohort (men born 1880-1902) in 1930. See text including footnotes for details of map construction including calculation of panel C's local indicators of spatial autocorrelation. Data sources: 1930 population census data via the Minnesota Population Center (Ruggles, et al., 2013); 1930 county boundaries modified from NHGIS (Manson, et al., 2017).

Looking at the coincidence of individual characteristics is also informative and suggestive of important subpopulation differences. In Tables 1.1- 3, I cross tabulate WWI veteran status with race, nativity and occupation, respectively.[23] In 1930, there are significantly more white enumerated veterans than non-white veterans, and significantly fewer foreign-born veterans than would be expected based on the percent of the population these groups comprise (Tables 1.1-2).[24] This finding is somewhat perplexing, as from literature we know that both African Americans and the foreign-born served in higher numbers than their proportion of the prewar population (Keene, 2011, p. 93).[25] African Americans were overdrafted and while they tended to be relegated to labor battalions rather than combat units, they also received inferior housing, clothing and medical care, and were more likely to die of disease than their European American counterparts (Keene, 2002, p. 72). While self-identification as a soldier could be a matter of pride, in some parts of the country it could also be dangerous for African Americans: African American veterans were sometimes the deliberate targets of mob violence as the number of lynchings surged in the postwar period (Keene, 2015; R. J. Wilson, 2012b). The apparent loss of non-white veterans may thus be due to there actually being fewer of them or due to them being miscounted. The apparent decrease in the proportion of foreign-born might also reflect actual changes

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[23] The MPC provides detailed codes for race, nativity and occupation, which I have condensed here such that any person not coded as white by the MPC is coded as non-white; those who have at least one foreign-born parent are coded as second generation; and occupations are reduced to five categories according to a rubric described more fully in Chapter 3. Fuller descriptions of how the detailed nativity and occupation codes were condensed to these few categories are found in subsequent chapters.

[24] It should be noted, however, that with such large samples it would be surprising if these findings were not significant.

[25] Elsewhere, Keene (2002, p. 74) writes, "officials estimated that 13% of … men [of non-officer rank] were black and 18% were foreign-born, although these groups only made up 10% and 14.5% of the total population respectively." Draft boards had separate quotas for white and non-white draftees and, as will be described more fully in Chapter 5, these numbers could be manipulated by those in power. There were few ethnic or nativity restrictions on who could serve in the US military. Those who had been born in the Austro-Hungarian Empire were barred (though many served as volunteers in specially composed units in other armies), as were the German-born unless they were already in service and had the recommendation of their commander. Non-citizens were not required to serve, although many did, with military service being a means to fast-track naturalization from May 1918; 280,000 men followed this route to citizenship (Keene, 2011, pp. 107–109).

as these individuals may have returned to their birthplaces or be an artefact of enumeration. The relationship between observed and expected farming veterans (Table 1.3), in contrast, aligns with what literature would lead one to believe: that there should be fewer farming veterans as farmers were less likely to serve in the military in the first place and (though American death rates overall were relatively low) as rural people were more susceptible to death due to disease in crowded training camps and cantonments (Doetsch, 2012; Keene, 2011, p. 164).

Table 1.1: Cross-tabulations of veteran status with race in the 1930 census
Amongst the WWI Cohort (males born 1880-1902)

		Race		
		non-white	white	total
non-veteran	frequency	1,916,997	14,424,509	16,341,506 (82.42%)
	expected	1,784,422	14,557,084	
veteran	frequency	248,057	3,237,727	3,485,784 (17.58%)
	expected	380,632	3,105,152	
total	frequency	2,165,054 (10.92%)	17,662,236 (89.08%)	19,827,290
chi squared				62894 (p<0.0001)
Cramer's V				0.0563

Table 1.2: Cross-tabulations of veteran status with nativity in the 1930 census
Amongst the WWI Cohort (males born 1880-1902)

		Nativity				
		Foreign-born	2nd generation	3rd generation	Unknown	Total
non-veteran	frequency	3,718,880	3,007,596	9,615,027	3	16,341,506 (82.42%)
	expected	3,380,035	3,175,469	9,786,000	2	
veteran	frequency	382,145	845,228	2,258,411	0	3,485,784 (17.58%)
	expected	720,990	677,355	2,087,438	1	
total	frequency	4,101,025 (20.68%)	3,852,824 (19.43%)	11,873,438 (59.88%)	3 (0.00%)	19,827,290
chi squared						260688 (p<0.0001)
Cramer's V						0.11466

Table 1.3: Cross-tabulations of veteran status with occupation in the 1930 census *Amongst the WWI Cohort (males born 1880-1902)*							
		Occupation					
		Farming	Blue collar	White collar	None	Unknown	Total
non-veteran	frequency	3,367,864	6,868,911	3,133,521	24,242	2,946,968	16,341,506 (82.42%)
	expected	3,115,473	6,790,188	3,396,872	23,972	3,015,002	
veteran	frequency	412,166	1,369,682	987,933	4,843	711,160	3,485,784 (17.58%)
	expected	664,557	1,448,405	724,582	5,113	643,126	
total	frequency	3,780,030 (19.06%)	8,238,593 (41.55%)	4,121,454 (20.79%)	29,085 (0.15%)	3,658,128 (18.45%)	19,827,290
chi squared							246376 (p<0.0001)
Cramer's V							0.11147

In Figure 1.2, for each county's 1930 population, I calculate the odds of various postwar outcomes on the basis of WWI veteran status; in each panel I also provide the results for the same odds ratios calculated on the basis of the WWI Cohort population across the entire US. The first panel of Figure 1.2 tells a similar story to Table 1.3: veterans have lower odds of being in a farming occupation than civilians do. However, also note that the strength and the significance of this relationship varies across space. Similarly, while nationally veterans are less likely to be married, unemployed or illiterate than their civilian contemporaries (assuming no other controls), for veterans in certain counties these relationships are stronger, weaker or indeed reversed compared to the national trend, suggesting the importance of localized differences that would be glossed over with more coarsely aggregated data. In the second panel, it is clear that global industrialized warfare at least intersected with something as intimate and domestic as family formation. To explain the patterns in the bottom panels, one could posit that lower chances of unemployment and illiteracy point to either positive selection into the military or to the benefits of training and literacy programs to the soldiers that received them. Although one cannot prove causality from these maps and figures based on cross sectional data, we can argue that the experience of military spaces and postwar populations were in some way related, and suggest that these relationships were filtered through the particularities of subnational places.

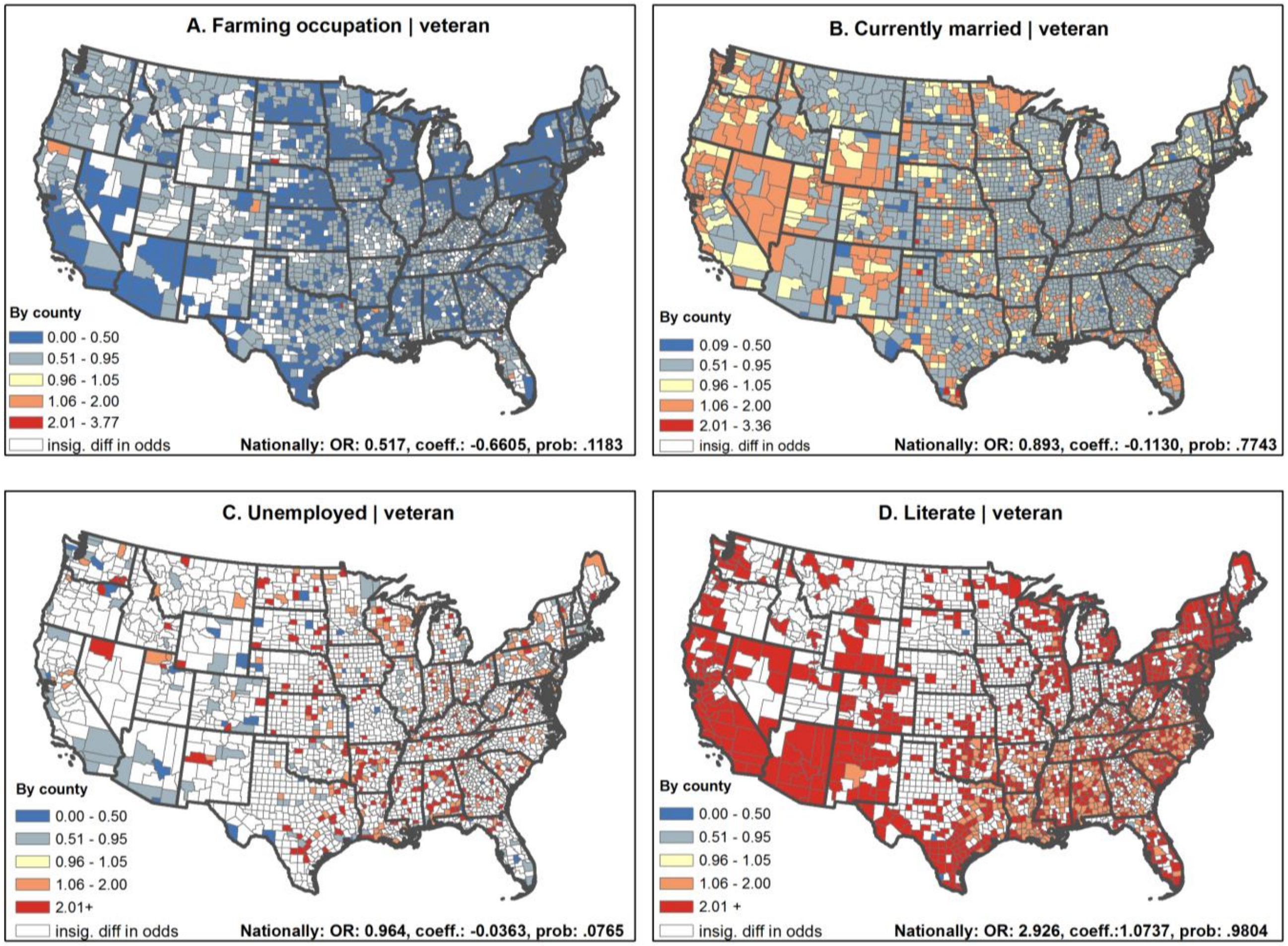

Figure 1.2: WWI veteran vs. non-WWI veteran odds ratios for 1930 outcomes among the WWI Cohort (men born 1880-1902). Odds ratios are calculated as the odds of a given outcome given one condition versus the odds of the outcome given a different condition. Thus an odds ratio of 0.50 in panel A means that a veteran is half as likely to be farming in 1930 than a civilian, whereas an odds ratio of 1.0 means he is just as likely, and an odds ratio of 2.00 means he is twice as likely. For these maps, odds ratios were calculated separately for every county as well as for the whole country. Data sources: 1930 population census data via the Minnesota Population Center (Ruggles, et al., 2013); 1930 county boundaries modified from NHGIS (Manson, et al., 2017).

These places were dynamic. In Figure 1.3, I map WWI cohort and WWI veteran populations by birth state and 1930 residence state, the two space-time points available in the census for surviving members of cohort. Mapping by birth place is admittedly sort of a mash up between life course time and historical time, as are the change maps at the bottom of the figure. The imprecise timing of events does not preclude informative insights – for instance, Ekamper et al's (2011, p. 154) study of declining rates of endogamy in the Netherlands could not tell when spouses actually moved residence, nor could Schlichting, Tuckel, & Maisel's (2006) discussion of the Great Migration rely on anything but state of birth and current residence to suggest patterns of population movement – though it might make one eager to see some of the work done on a finer temporal scale later in the dissertation. In any case, the maps here show that a higher percentage of those who were born in the west and higher percentage of those who lived in the west in 1930 were veterans versus civilians (panels A and C). These patterns may be reflective of nativity, citizenship and racial patterns of population in the east and how these characteristics impacted patterns of military service entry. States' shares of veterans tend to follow wider population patterns, with high population states having high shares of these subpopulations (panels B and D). Note in comparing the right and the left panels so far described that approaching population numbers from different angles and alternative aggregations is instructive: the south is not devoid of veterans but they do make up a strikingly lower proportion of the WWI Cohort there. I will return to a discussion of unique patterns in the south and other regions in Chapter 5.

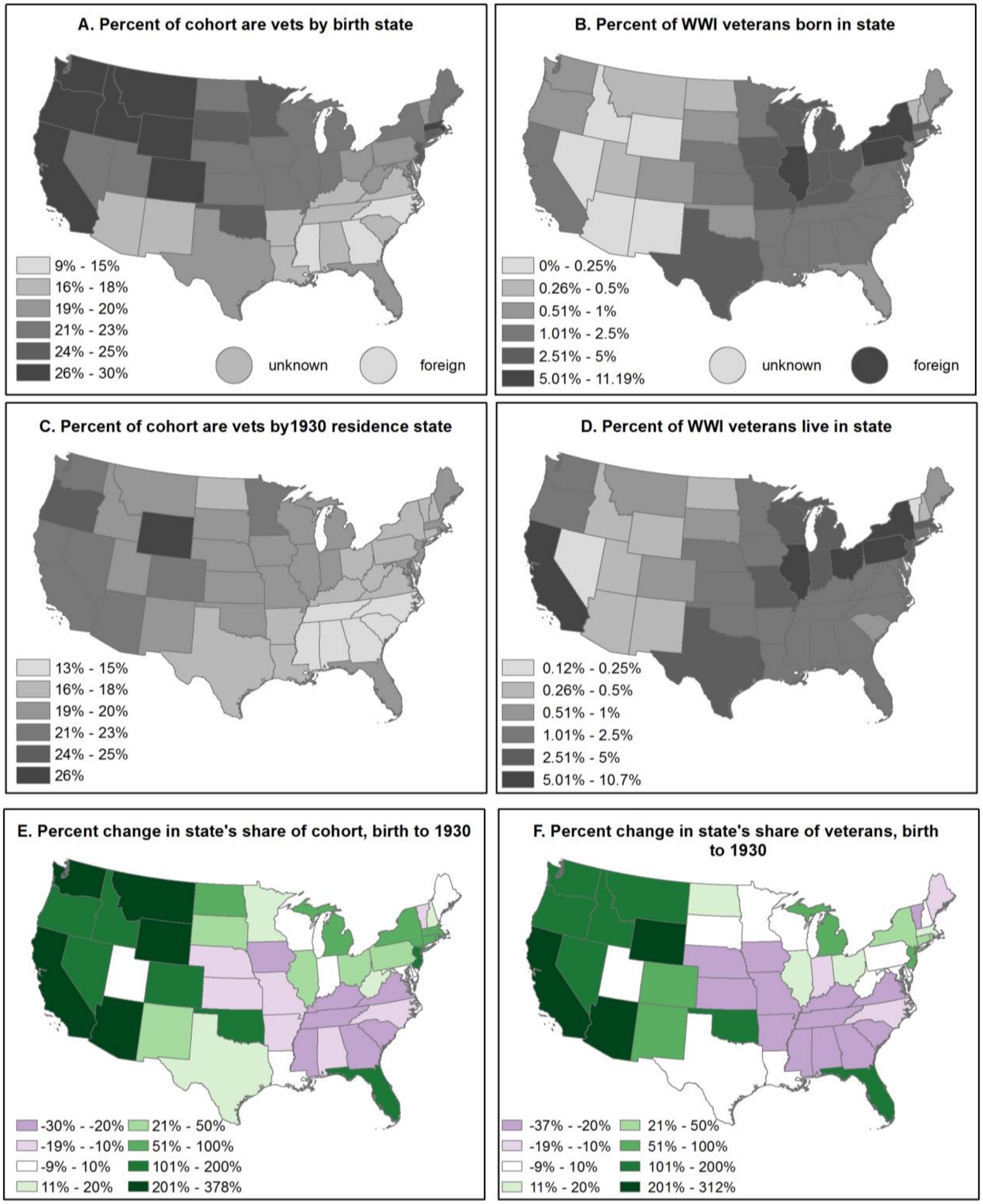

Figure 1.3: WWI Cohort and WWI veterans by birth and 1930 residence states, manual breaks. Data sources: 1930 population census data via the Minnesota Population Center (Ruggles, et al., 2013); 1930 county boundaries modified from NHGIS (Manson, et al., 2017).

The bottom panels of Figure 1.3 represent change over time and offer a first glimpse of the spatial movement that I will address at a finer scale and with more nuance in Chapter 3. The south and portions of the midwest lose shares of the WWI cohort and veteran populations to other regions over the life courses of these men. Some of this lifetime movement may reflect a secular trend of urbanization, and the need for working-aged men from these largely rural regions where urban centers were fewer and smaller to move farther in pursuit of urban jobs and opportunities. The rural characteristics of these rather coarsely defined places appear to have had an influence on individual men of particular circumstances, and their mobilities appear to have had an effect on subsequent population patterns.

Rural places and individuals:

A number of reliable references on WWI America, including Coffman's (1998), Keene's (2011) and Zieger's (2000) books, do not include index entries for 'farm', 'agrarian', 'crop' or 'rural' or for organizations that were central to rural people's wartime and civilian lives, such as 'grange' or 'farm bureau.' WWI books which do provide some focus on rural or agricultural topics usually do so as a sidenote, providing hints of the significance of agricultural commodities to the prosecution of the war and discussing opposition to price controls and shifts in political party alignments that grew out of these conflicts (Chambers, 1987; Fleming, 2003; Kennedy, 2004). These snippets – passing mentions of the deeper integration of middle-American farmers into an international system with real, material impacts at home through increased planting, mechanization and debt – are tantalizing but largely undeveloped. Farmers tend to be presented as firmly entrenched in the civilian and indeed anti-war half of a false dichotomy between home and front. There has not been much research into rural individuals as capable of movement and direct war experience, or of soldiers as constitutive of rural geographies.

Offer (1989, p. 1) states bluntly that “agrarian resources decided the war,” and argues further that concerns surrounding access to food and raw materials predisposed Europe to war and had an effect on treaty negotiations. As mentioned, the United States’ initial engagement with the Great War and arguably its greatest impact on the outcome was through its commodities: when war was declared in April 1917, the United States and its agricultural heartland were already deeply enmeshed as the country had been selling weapons and wheat to the Entente since the outbreak (Kennedy, 2004). Agrarian opposition to the war, expressed in the strength of political organizations like the Non-Partisan League and in anemic support of Red Cross and Liberty Bond campaigns, was in some places related to religious convictions or ethnic backgrounds; however, more often it was related to concerns over who would control and profit from the sale of these commodities (Fleming, 2003; Iseminger, 1992; Keith, 2004; Kennedy, 2004). The early decades of the twentieth century had been a golden age for American farmers, with gross farm income doubling and average farm value trebling (Danbom, 2017, p. 151). War demand exacerbated these trends, with the US shipping 9 million more tons of food to Europe in the conflict’s first year than it had done prewar (Eighmey, 2010, p. 36). Fear of losing out on the opportunity presented by the Great War was coupled with traditional animosities towards banks, railroads and eastern elites to reshape and reinvigorate long-standing urban-rural tensions (Keene, 2015). Wartime also produced other, unexpected shifts via commodities. Voluntary rationing changed diets and promoted a new ideal of slimness, decreasing postwar demand for certain foodstuffs; wartime styles meant shorter skirts into the 1920s and less need for the cotton cloth to produce them (Danbom, 2017, p. 127). War-induced and secular changes altered the places that US soldiers left when they entered service, those they encountered upon their return, and those that they would live in as veterans in the years after the war. In the work there has been on the creation of this context, little study has been directed towards what the dynamism of these domestic places meant for soldiers themselves. I will address this question of place dynamism in Chapter 5.

Ermacora (2015), in the International Encyclopedia of the First World War's entry on Rural Society, writes, "it could be said that the First World War was a peasants' war; in fact, this social group still represented the majority in almost every belligerent nation and was massively mobilised both in the armies and on the home fronts." The population of the United States transitioned from predominantly rural to predominantly urban over the course of the 1910s, and some of this shift was due to a war-enhanced but long standing tendency of young men to leave the farm for the city, drawn by opportunities or driven by restlessness and the "sense that the nation was passing you by, leaving you behind" (Blanke, 2002, p. 5; Cather, 1922; Chambers, 1987, p. 156; Danbom, 2017, p. 123; US Census Bureau, 1993). Just as home and front were not separate, neither, Higbie (1997) reminds us, could rural exist without urban. Military service, however, presented a new avenue of mobility that, as will be shown in Chapter 4, brought at least some rural individuals into closer contact with urban places.

Great War historiography has recently benefited from investigations of seemingly peripheral places in what was truly a worldwide conflict (Compagnon, 2004; Glaser, 2014; Xu, 2005). Geographies of militarism's emphasis on places, spaces, landscapes and lives that are physically or temporally distant from battlefields, and the ways through which they are linked materially and discursively to those foci of traditional military geography, opens a space for examining rural issues in the light of war. As per usual, the United States presents an interesting but overlooked setting. Some agricultural and rural patterns were similar in America to those in Europe – in the reluctance to go to war for instance – but quite different in others, at least in possessing a different mix of internal variations, from family small holders to large tenanted estates, from subsistence to market capitalist concerns (Ermacora, 2015). The choice of North Dakota and its service members as a case study was based primarily on the availability of detailed and comprehensive individual records, but it is also serendipitous. Set in the Northern Great Plains, the Dakotas were "a post-industrial commercial frontier" characterized by large farms with "small per acre income[s]" and wide open spaces between relatively weak towns and great distances to commodity markets. The Northern Great Plains were, and are, Danbom (2017, pp. 135–137) writes, a place dependent on its connections to other places, on the flows of outside capital and demand, on the inward and outward rush of population in response to market and climatic conditions. Perhaps even more so than other agricultural regions of the country, North Dakota appeared to fit the stereotype of the rural as marginal and depopulated, as a place whose identity was defined more by absence than by presence (Bryant, Paniagua, & Kizos, 2011). Yet, even this supposedly empty place, existing in interaction with other places, was constitutive of individual life courses, something I address by way of individual social and spatial mobilities in Chapter 3.

Soldiers as the medium, quantitative geography as the methodology

The First World War was characterized as a total war in part for how its effects stretched from the global level of geopolitics and international supply lines to the intimate level of families and communities, insinuating itself into everyday life. War influenced the way individuals ate (voluntarily wheatless and meatless days in the US, rationing in Europe), how they thought about the combatants (pamphlets and posters contrasting Allied civilization with brutish *Boche Kultur*), and the way they interacted with their communities (window displays declared, "You are fighting for France when you buy [liberty bonds]. Your neighbors and friends are watching YOU") (Avey, 2013; Eighmey, 2010; James, 2009; "Military-Wars-World War I," 1919; Rawls, 1988). War influenced patterns of work and movement (although as this dissertation will show it did so in sometimes unexpected and complicated ways). Yet as much as World War I's relationships to individuals could be a top down process of government-directed patriotism and mobilization, I also use this dissertation to argue that individuals, particularly soldiers, were themselves a medium of change, that life course trajectories also worked from the bottom up to influence emergent population patterns.

Quantitative, geographically-informed methodologies allowed me to pursue these arguments. As mentioned earlier in the overview of Great War historiography, statistical analyses have often been regarded with suspicion. The techniques of the social sciences have often been justly criticized for obscuring the individual and erasing rather than highlighting the specificities of place (I.N. Gregory, 2008; Schuurman, 2006): "counting decontextualizes" (M. W. Wilson 2011, p. 865). However, as Ian Gregory (2008) argues, a fear and loathing of statistics comes more from a poor application of methods rather than an irredeemably bad methodology. The supposedly intractable positivism and lack of theorization in quantitatively-based subfields like historical GIS and population geography can be overcome (Crampton & Krygier, 2006; Graham, 2000; I. N. Gregory & Geddes, 2014; Pickles, 1995; Schwanen & Kwan, 2009; Tyner, 2015; M. W. Wilson, 2011). Ian Gregory and his collaborators, using Massey's formulation of space as "'the sphere of the existence of multiplicity"' have demonstrated in their work with historical populations that spatial statistics based on appropriate data and employing local rather than global measures can explore nuances (I. N. Gregory & Healey, 2007; I. N. Gregory & Ell, 2005, p. 151). Giordano, Knowles, & Cole (2014, p. 5) comment, "spatial analysis and geovisualization can complement and help specify the humanistic understanding of space and place by exploring and quantifying relationships among things and people to discover and visualize spatial patterns of activity." Giordano, Knowles, & Cole's collection of studies of Holocaust geographies of death, individuals, populations, and abstractions is exemplary of the provocative and insightful work that can be done with critically-minded historical GIS, a paradigm that has come to be known as spatial history (I. N. Gregory & Geddes, 2014; Simon, 2014). Population geographer Elspeth Graham (1999) warns we must be ever vigilant against the threat of falling back into positivistic habits, but approached with the humility that Giordano et al. (2014, p. 8) display when they admit that their models are not reality but rather a means "to ask new questions and see historical circumstances" from a new perspective, quantitative methodologies can add a productive counterpoint to the predominantly qualitative academic discourse about the First World War. This is what I have attempted to accomplish with my dissertation.

Outline of the dissertation:

This chapter has described the current state of Great War historiography and war culture studies and their inspirational focus on the contextualized individual “at the crossroads between the military and the civilian worlds” (“In the heart of the Great War,” 2017). On the one hand, there were important differences between civilians and soldiers and later between civilians and veterans. Each group had interactions with landscapes, people and events that could only be experienced in particular wartime places. American civilians did not sleep in trenches, did not meet dismembering death or shell-scarred landscapes face to face as did service members who served in combat zones, and, while subject to a host of government imposed or community enforced restrictions on their daily behavior, were not subject to the bodily discipline of the military training camp. On the other hand, those who served in the Great War and the places they inhabited did not exist in isolation. Whatever separation might have been felt, whatever alienation might have been described by the literati who shaped persistent tropes, home and front, both physically and as normative constructs, were connected. Individuals did not nakedly engage with wartime landscapes, but rather perceived them through the lens of past representations, and the embodied experiences they had left marks on their bodies and their life courses that would persist as they returned to the civilian sphere. These traces can be found in humanities studies, but they can also be measured, as evidenced by the body of work created by historical demographers. Focused through a theoretical framework developed from Doreen Massey’s work and others’, historical population geography provides the methods to take the inspiration of war culture studies and put it to use in social sciences analyses that will shed light on the United States and rural places.

Having used this introduction to describe the relationship of places and individuals as co-constitutive, dynamic and emergent, having provided examples of life course analysis studies that have modelled these relationships, and having sketched the gaps in Great War historiography in Chapter 1, I use Chapter 2 to describe the datasets that I obtained or created that enable me to use an explicit geographical focus and quantitative methods to approach the question of rural Americans' emplaced wartime and postwar experience. The complete count 1930 US Census data provided by the Minnesota Population Center and the observations in the database I built from HathiTrust's scans of North Dakota's WWI military roster, being spatiotemporally located and collected at the individual level, will allow me in subsequent chapters to examine the co-existence and interaction of characteristics and to build up alternative aggregations that are more suitable for my research questions about small, understudied populations (Fraser, 1931; Ruggles et al., 2013). Much as the current task of cutting edge Great War historiography has been to reveal the connections between the military and civilian worlds through the individual, the largest preparatory task of my dissertation has been to retie the connections between military and civilian data through record linkage based on individual observations. In Chapter 2, now an article published by *Historical Methods*, I provide details of the data cleaning, protocol selection, and quality control steps I undertook to create my linked datasets, as well as an initial analysis of marital status outcomes conducted largely for the purposes of showing the usefulness of such linked records (Cunningham, 2018a).

Chapter 3 is the first fully analytical section, examining overseas service and the experience of military spaces more broadly as it pertains to mobility, both social and geographical. Overseas service had particular rhetorical importance for Americans. As mentioned above, the United States' physical geographical relationship to the front was quite different than that of the countries where the war was waged or that were, like Great Britain, in "ridiculous proximity" to the trenches (Fussell, 2000, p. 74). As read in the song lyrics cited in this introductory chapter's opening paragraph, and as will be described more fully in Chapter 3, the material distinction undergirded a discursive one. If emplaced experience really does constitute individuals, if overseas places specifically or military spaces more generally (as proxied by duration of service) inflect soldiers' life courses, then one might expect to see a measureable effect in the characteristics of their postwar lives. If military and civilian places are connected within individual life courses, then one might expect to see evidence of their interaction. The outcomes measured in Chapter 3 for ordinary North Dakotans linked to the census are inspired on the one hand by recent studies of doughboy mobility conducted with linked data by Doetsch (2012) and Laschever (2013) and on the other by contemporary concerns expressed in popular culture. The focus here, unlike that of Doetsch (2012) and Laschever (2013), is on formerly farming individuals from mostly rural origins, thus addressing one of the gaps in Great War historiography.

Chapter 3 focuses on the reciprocal relationship of place and individual as it works from the former to the latter; Chapter 5 will shift directions and focus on individual characteristics as producing emergent place characteristics. Chapter 4 provides a transition between these chapters. Whereas Chapters 3 and 5 use statistical models to describe the co-constitution of place and soldier this section makes these connections visible through maps and charts. Leveraging the ability to aggregate big historical microdata in alternative ways, I use the locations and dates available in North Dakota's roster and the linked roster-census data to convey the dynamism of America's always already militarized domestic geography.

In the final analytical chapter, I move further into describing postwar geographies, widening my dissertation's scope to the entire contiguous United States. In mapping and conducting spatial regressions on the veteran population in 1930 and the county-level contexts in which they lived, the breadth of the nation and the variation between its regions become the object of the investigation rather than the contextual backdrop for a discussion of North Dakota's service members. Chapter 5 does still, however, retain a focus on agricultural individuals and rural places. Of the WWI Cohort, over 96% of farmers and farm laborers lived in rural places, 48% of rural people were employed in farming occupations and nearly a quarter of the non-farming population also lived in rural areas in 1930. While farming occupations and rural settings do not completely coincide, and while one might expect non-farming individuals to also affect and be affected by rural and indeed agricultural patterns, in this chapter farming veterans are my prime concern. I devote the first part of Chapter 5 to weaving together literature on America's evolving agricultural context in the first three decades of the twentieth century and that on rural reaction to the war, conscription and military service. I then use the complete count 1930 census data to move beyond existing literature to focus on the 'rural' and the 'agricultural' not just as it pertains to a political interest bloc often set in opposition to the war and international entanglements, but as it forms one facet of veterans' hybridity. Largely a descriptive chapter, I use county level aggregates and control for the geographical distribution of farming members of the WWI Cohort to see where the populations of veterans within that cohort are smaller or larger than expected, and which contextual conditions predict their presence. The findings in this chapter, particularly as regards regional differences in contextual-population associations suggest avenues for future, more causally-oriented work.

I conclude my dissertation with a reflection on the data and quantitative methods that I have used, on both what they reveal and what they may obscure about individual lives and their constitutive connections to places. Reviewing the findings of the other chapters, I offer my contribution to Great War historiography as an example of interdisciplinary research and as a step towards further exploration of a neglected corner of this field. Beyond the particular subject matter pursued here, however, I also offer my dissertation as a work of critical war studies and an addition to the subdisciplines of historical geography, spatial history and geographies of militarism.

Chapter 2: Enabling geographies of militarism: re-tying civilian-military connections via record linkage

Chapter abstract:

In this predominantly methodological chapter, I describe the two big historical microdatasets that have made my research possible: a database of complete count US census data made available by the Minnesota Population Center (MPC) and a database that I parsed from text files derived from scans of North Dakota's First World War military roster and made available by HathiTrust. After briefly reviewing the challenges and promises of working with such datasets and describing my pre-processing methods, I describe the automated process I used to link the census data and roster data together and to assess the quality of the resultant quasi-longitudinal datasets. These linked datasets enable a more holistic accounting of the connections between individual military experiences and emergent civilian population patterns, allowing for the subsequent analytical sections to show how quantitative methods can be used to question the adequacy of traditional WWI narratives, and provide an example of how, even with limited resources, the usefulness of historical microdatasets can be leveraged through record linkage. Substantively, through the analyses in this chapter I find that being married in 1930 is significantly and positively predicted for veterans versus civilians (but only if civilian characteristics like age are taken into account), and that among veterans only certain aspects of military service (entry method and promotion) consistently and significantly predict marital outcomes.

A version of this chapter with alternative introductory and concluding material has been published as:

Cunningham, A. R. (2018). After "it's over Over There": using record linkage to enable the reconstruction of World War I veterans' demography from soldiers' experiences to civilian populations. *Historical Methods*, *51*(4), 203-29. https://doi.org/10.1080/01615440.2018.1510351

Chapter introduction:

Until recently, most population data were only readily available in summary form and the aggregation strategies chosen by their compilers tended to obscure rather than highlight internal variations of interest for particular research questions (Kasakoff & Adams, 2000). The analytical versatility of such data and their ability to satisfy theoretical requirements are limited (I.N. Gregory, 2008; Schuurman, 2006). Historical data that are finely scaled, detailed, comprehensive, longitudinal and geographically located are becoming increasingly available, allowing researchers to preserve variability across a population and to interrogate the interaction of different facets of what Chickering (2007, p. 469) calls “transectional” identities within specific spatiotemporal contexts. With these big historical microdata, empirical investigation can start at the individual level where demographic processes are actually occurring and conduct statistical analyses that would be inappropriate to undertake with coarser data (Ruggles, 2014). One can leverage these data with visualization and mapping technologies, iteratively building models of reality, experimenting with alternative and potentially more suitable aggregations, and exploring patterns at multiple scales (Travis, 2015). Comprehensive historical microdata portend “transformative research on demographic and economic changes and the spatial organization of society” (Ruggles, 2014, p. 287).

However, big historical microdatasets are often insufficiently holistic to delve into relationships that evolve across time and space. In the case of reconstructing prewar-wartime-postwar trajectories, available records typically reflect the rhetorical dichotomy between home and front with the military and civilian details of an individual’s life course segregated into separate records compiled by different government offices and held by different genealogical or academic organizations. Other studies have shown the promise of using record linkage to overcome this difficulty in the study of the First World War. The Utah Population Database project has been at work linking draft registration cards, complete count US census data and vital records to examine veterans’ health outcomes, finding that veterans were at greater hazard for death due to mental disorder complications than their brothers or members of the general public when controlling or adjusting for civilian characteristics (K. Smith et al., 2015). Doetsch (2012) and Laschever (2013) in their doctoral dissertation and working paper, respectively, linked individual census data and draft registration cards and found that military service could enhance social and spatial mobility, with acquired skills or the ties of comradeship opening up opportunities for advancement, or at least providing protection against downward mobility, provided one were white.

On the one hand, Doetsch, Laschever and Smith et al's footsteps can be daunting ones to follow for scholars who would like to conduct their own studies with big historical microdata, especially when striving for reproducibility (and thus being discomfited by Doestch and Laschever's manual methods) and when conducting the bulk of the labor alone rather than with a large and well-funded research team. On the other hand, these three linked record-based studies inspire new questions about America's Great War experience and how it compares to conflicts which have been studied in more depth. Cohan's song, quoted at the start of this dissertation, emphasizes the connections soldiers retained to their homes and families; did childhood household conditions and aspects of young adulthood predict characteristics of military service? Did overseas service predict positive social outcomes for some WWI veterans, as it did for the younger WWII veterans studied by Sampson & Laub (1996)? Were WWI combat versus noncombat veterans more prone to divorce and domestic instability, as were combat veterans of the Vietnam War (Gimbel & Booth, 1994), or were WWI veterans' households, like those of post-draft American military personnel, more stable than the households of their peers (Kelty, Kleykamp, & Segal, 2010)? Such questions are too tantalizing to dismiss even in the face of data-based and methodological difficulties.

Thus, the present chapter has two main goals: first, in explaining my process of data preparation and matching, to provide an adaptable example of how record linkage can be pursued by others with similarly limited resources; and second, in conducting preliminary analyses spanning the two sides of the linked data, to gauge record linkage's capacity to enhance our understanding of military-civilian relationships in a particular American context. In outline, in this chapter I first describe data drawn from newly accessible sources, North Dakota's WWI military roster and the complete count 1930 US censuses, and the cleaning, standardizing and categorizing decisions I needed to make in order for these two sources to be linkable. I follow this with a summary of the various linkage protocols I tested. In particular, I highlight the use of three different string comparison algorithms to measure the discrepancies between the names in the census and those in the roster, and the thresholds applied to these measurements in an effort to produce the largest and most credible matched military-civilian dataset. I then discuss the application of weights and other modifications to the linked datasets to prepare them for use in analysis. I present a flow chart of these data preparation steps in Figure 2.1.

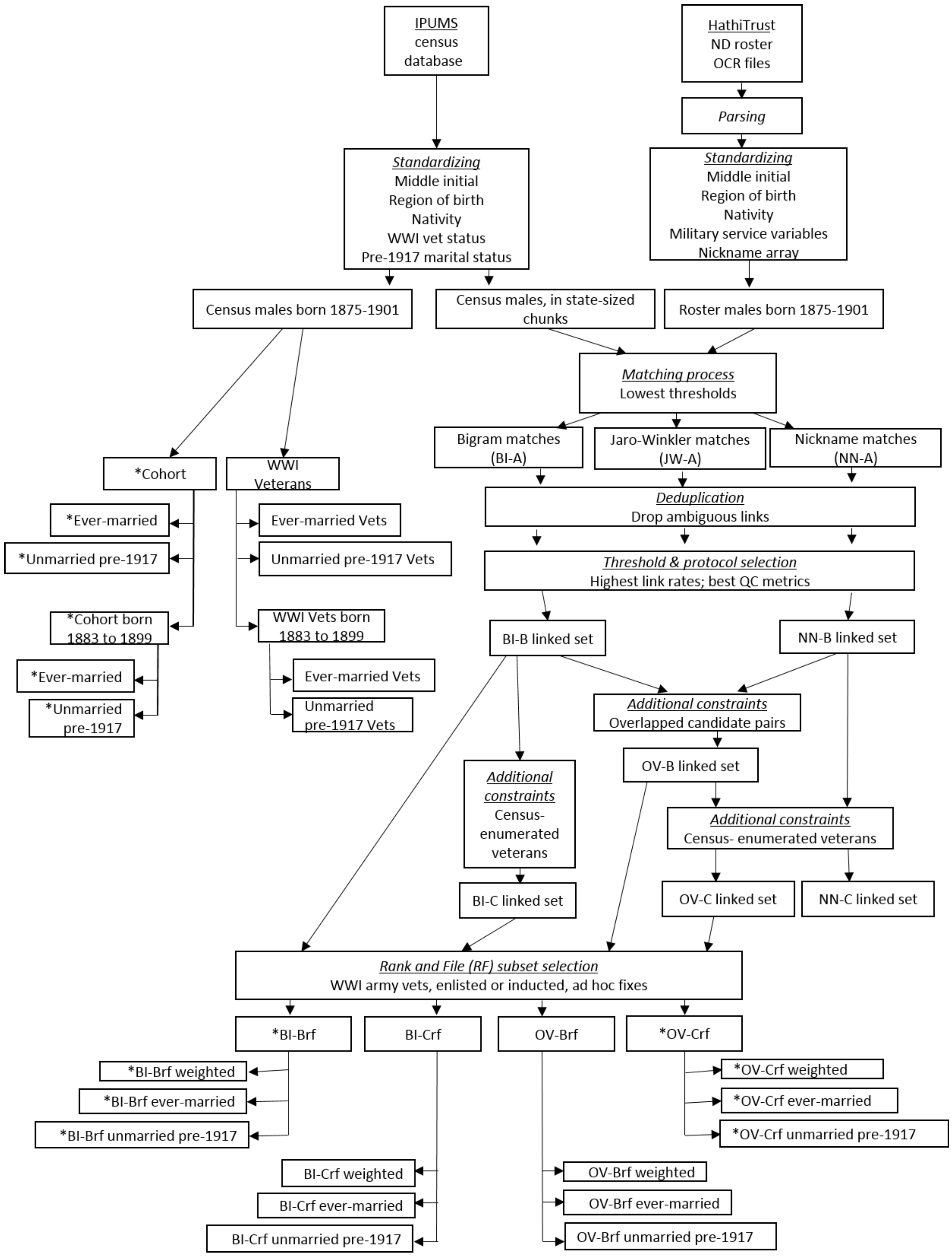

Figure 2.1: **Flow-chart of data processing.** Asterisks denote datasets used in the analysis in this chapter.

In the second part of this chapter, I conduct simple logistic regressions predicting marital status in 1930. I use this outcome both to examine the effects of weighting and to discuss the results that can be gained from the linked data vis a vis those that can be gained using census data in isolation. According to Meigs (1997, p. 135), who used extensive archival sources in his study of American Great War veterans, "in many war diaries and journals, enlistment and marriage bracket the war experience." Of great symbolic importance to how individuals understood their own lives, marriage is also an important demographic life course transition, its occurrence and timing being normative in both senses of the word (Hareven & Masaoka, 1988). Controlling for civilian characteristics, in the census-only models I examine the effect of being a WWI veteran while in the linked data models I focus on particular aspects of military service that have been found to be predictive of postwar outcomes in other demographic studies or that animated contemporary imaginaries of Great War experience: overseas service, combat service, timing of service entry, wounding, disability and promotions (Bartlett, 1937; Chickering, 2007; Cronier, 2007; Fussell, 2000; J. D. Keene, 2011; Kinder, 2015; MacLean & Elder, 2007; Remarque, 1982; Sampson & Laub, 1996; Schram, 2008).

Data sources and data preparation:

1930 census data:

My linked datasets are derived from two types of historical microdata sources, one containing civilian records and the other military. The first, complete count US census data, are commonly used and documentation for the copy of it that I employ, a machine-readable database produced by the Minnesota Population Center, is readily available on the IPUMS website (Minnesota Population Center, n.d.-a; Ruggles et al., 2013).[26] For much of its history, the United States Census Bureau aimed to collect information about every individual in the country every ten years, consistently including details about surnames and given names, ages, birth places, household relationships, and place of residence. The phrasing of the enumerators' queries and the additional questions asked changed from decade to decade, reflective of contemporary concerns such as immigration or unemployment (Anderson, 1988). In 1930, the census form included two columns to record information about military service, one identifying veterans of war and one identifying the conflict in which the respondent participated. According to the instructions provided to enumerators, those in military service during wartime, regardless of location of service, were to be listed as veterans, while those "in the military or naval service of the United States during peace times *only* [were] not to be listed as veterans." (U.S. Department of Commerce. 1930. *Instructions to enumerators,* pp 41-2, cited by Doetsch, 2012, p. 8). The Minnesota Population Center has already standardized many of the census variables, but I made a few modifications to suit the purposes of my research. I broke the given names into their constituent parts of first name and middle name(s), if present, and extracted the middle initial. Based on the IPUMS coding identifying veterans and the original "Which war or expedition?" text string, I created a binary variable for First World War service.[27] In most of the dissertation I will refer to WWI veterans simply as 'veterans' and those who are not veterans of the Great War as civilians even though a tiny number of Spanish-American War and Civil War veterans are included in this group.[28] I collapsed the hundreds of own and parental birthplace codes into state or regional codes to align with the coarser birthplace

[26] For my work, I use restricted versions of the census in which names are retained as these are required for the linkage process. The version available online is anonymized, but notes on the standardization of variables, the universe they cover, and their comparability to other decadal censuses apply to both versions.

[27] When I created the linked dataset, which war or expedition had not yet been coded by IPUMS. Enumerators were meant to enter "WW" as an abbreviation for World War (I) veterans (US Census Bureau, 2018).

[28] In the 1930 census, a small number of men served in a war preceding WWI and did not serve in the Great War itself. As they make up such a small fraction of the population, I generally include these 20,305 individuals among the 16,356,147 male civilians in the WWI Cohort (men born 1880-1902) and refer to them as such.

precision available from the military data described below. For use as dependent variables, I created a binary for being currently married and a binary for being divorced from IPUMS' six–category marital status variable. Where possible, I also add a binary variable for pre-1917 marital status. The average American recruit was unmarried, a national classification system having eventually been implemented that deferred the drafting of married men, provided they were adequately supporting their dependents (Keene, 2011, p. 33). Though this classification system was not put into place until after the training camps had been filled with the first wave of inductees, and though the granting of exemptions and deferrals was at the discretion of local draft boards, being married before the war, like nativity and age, probably had an influence on who entered the military and their subsequent outcomes (Chambers, 1987, p. 191). Because age of marriage is recorded for all currently married individuals aged 12 or older in the 1930 census, pre-war marital status can be reasonably guessed for the currently married and the never married, but not the 5.31% of the male population of these ages who were divorced or widowed. I left surname, age and SEI, a measure of socioeconomic status based on occupation, education and income, untouched. I also left other geographical information, such as county of residence, unaltered for the purposes of matching. The edits I made to these data for other analyses are described in the relevant subsequent chapters (Chapters 3-5).

Military data:

In contrast to the IPUMS census data, the type of military records I employ have rarely been used in academic analysis (cf. Laschever, 2013; Megginson, 1995). Such detailed and comprehensive state-compiled records are especially valuable in the absence of surviving federal records (Schaefer, 2009; “The 1973 fire, National Personnel Records Center,” n.d.).[29] The particular source I use, the *Roster of the men and women who served in the Army or Naval Service (including the Marine Corps) of the United States or its allies from the state of North Dakota in the World War, 1917-1918,* includes both men and women, both those who served overseas and those who remained in stateside training camps for the duration of the war. It includes those who died, as well as those who survived to continue a career in the military, to be discharged or, in the case of three men, to desert. Each *Roster*[30] record begins with a first, last and often middle name of one of the more than 30,000 Great War service members “who claimed North Dakota as their home residence” and provides information about the individual’s prewar civilian life – place and date of birth, prewar occupation and often parents’ ethnicity[31] – as well as a full statement of service (Fraser, 1931, p. 3). The statement of service includes the following details: dates and locations of entering and leaving military service; dates of changes in unit, of changes in rank, and of overseas service; and notations about service in named battles or sectors, commissions, wounds, disabilities, citations, and burials, if applicable.

North Dakota’s WWI roster is particularly well suited to computer-aided processing as it is digitally available as page scan images and optical character recognition (OCR) text files from HathiTrust, and because its formatting and lack of abbreviations make the OCR relatively accurate, though not infallible. In Figure 2.2, I present an artificial example of a roster entry, ersatz text recognition errors

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[29] Rosters, some consisting of only names and branch of service, are known to have been published for the following states: Connecticut, Colorado, Maine, Maryland, Nebraska, North Dakota, Ohio, South Carolina, Utah and Vermont (Adjutant General, Colorado National Guard, 1941; Fraser, 1931; H. T Johnson, Adjutant General, 1927; Nebraska Secretary of State, 1925; Ohio Adjutant General, 1926; *Roster of Maine in the military service of the United States and allies in the World War, 1917-1919*, 1929, *Service records*, 1941; South Carolina Adjutant General, 1932; State of Maryland, 1933; Warrum, 1924).

[30] In this dissertation I use *Roster* as the short title of the published document, leaving ‘roster’ to indicate the dataset I derived.

[31] The *Roster’s* short introduction does not provide much description of the information it contains or how data like parental origins were standardized. I use the word ‘ethnicity’ here to describe this field because individuals were listed as being “of Scotch parents” or “of English parents” and rather than “of parents born in the United Kingdom,” but it is not entirely clear how origins in places with less territorial integrity were classified.

included.[32] In order to transform this entry and its real-life counterparts into a searchable database, I built a parsing code in the Python programming language. In short, the code breaks up (tokenizes) the entire text of one the roster's four volumes into single words (tokens), retaining the original order of those words, and then reads the file word by word, stringing them back together as necessary, comparing individual tokens and groups of tokens (substrings) to known patterns.[33] Using a relatively simple structure of loops, if-then statements, regular expressions, and a Levenshtein edit distance calculation drawn from Chaput's (2016) Whoosh Python library, a run of capital letters after a carriage return can be identified as Sgt. Morton's name, Minnesota can be identified as his birth state from the known abbreviation 'Minn' and its position in relation to the 'born' keyword, and his mother's place of birth can be identified as Scotland, in spite of the typo, as 'Seotch' is close enough to 'Scotch' to be recognized. The formatting of the records up through occupation are quite standardized, but the service information following it is less so, especially for particular groups. The records of women, sailors, marines, commissioned officers, those who served with other Allied forces, or those with substantial pre-WWI military service are more difficult to parse than those of males who were 'enlisted' or 'inducted' into the American army for the First World War.

[32] Due to restrictions imposed by the data provider, image scans and OCR texts cannot be reproduced here. They may, however, be viewed online at: https://catalog.hathitrust.org/Record/008230948 .

[33] The most basic form of the tokenization code, which I subsequently modified, was drawn from the response to a question on the Stack Overflow forum (AnnaRaven, 2013).

MORTON, FERDINAND JOSEPH. Army number 1,234,567; registrant, Cass county; born, Dilworth, Minn., Nov. 12; 1889, of American-Seotch parents; occupation, machinist; inducted at Bowbells on sept. 4 1917; sent to Camp Dodge, Iowa; served in Battery C, 338th Field Artillery, to April 21, 1918; Company F, 138th Infantry, to discharge. Grades: Corporal, May 1, 1918; Sergeant. Nov. 13, 1918; overseas from May 7, 1918, to April 28, 1919; wounded, slightly. June 17, 1918; wounded, slightly, Oct. 4, 1918. Engagements: Offensive: Meuse-Argonne. Defensive Sectors: Gerardmer (Alsace); Grange-le-Comte (Lorraine). Discharged at Chicago, 1ll., on June 7, 1919, as a Sergeant.

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Figure 2.2: **An artificial example of a North Dakota military roster entry.**

After parsing the text of the roster, I standardized some but not all of the extracted variables. From a practical standpoint, it would be very time-consuming to attempt to correct all the names and birth dates in the data sources, and in many cases it would not actually be possible to determine the correct values. Further, permitting small name and birthdate discrepancies between the sources to be linked helps protect against the possibility of missing a correct link when the true match is obscured by incidental inaccuracies in the data arising from poor transcription, misremembered dates, or indeed misreported dates as men may have lied about their age to enlist underage or avoid the draft (Chambers, 1987; Goeken, Huynh, Lynch, & Vick, 2011). Rather than trying to 'fix' these variables, I will be using a range of dates to allow some fuzziness in birth years and string comparison algorithms to allow some variance in names in the matching process. Of the three name comparison methods I employ, only one requires any pre-linkage name standardization. For the Nickname protocol, to each first name I attached an array of aliases based on the American English Nickname Collection, a dataset created by Carvalho, Kiran, & Borthwick (2012) using a record linkage algorithm on billions of public records to calculate the probability that an alias was associated with a particular given name. For this array, I retained only single part names and alias-given name pairs with a 'conditional alias probability' of greater than 0.004, and then for each given name reduced the array as necessary to the top six aliases. Thus, for instance, the name Robert is associated with Robert, Bob, Robt, Rob, Bobby and Roberto, while the name Rob is associated with Rob, Robert, Robt, Bob and Robin.

Standardizing other variables was more straightforward from a computer coding if not a historical perspective. With the *Roster* published in 1931, based on records written in 1917 or 1918, and referring to time of birth in the 1890s, 1880s or earlier, birthplaces may be listed within borders that no longer existed. Nineteen percent of men in the parsed roster database with a known year of birth were born before North Dakota and South Dakota became separate states in 1889; four percent of the men have “Dakota Territory” recorded as their state of birth, a handful of these in towns that cannot be unambiguously assigned to a modern state. One in five US service members was foreign-born, many having come from one of the multiethnic empires that was dissolved during the Great War and its subsequent conflicts (Keene, 2011, p. 93). For example, a Bohemian of military age would have been born within the confines of the Austro-Hungarian Empire, but after the war would likely find his hometown in Czechoslovakia. Divining the ethnicity of the American-born is even more difficult: for 13% of the native born in the roster, information about parentage is not explicitly given and guessing at this variable is problematic.[34] To handle the locational difficulties, I applied birthplace aggregations to both the roster and the census data. For linkage and quality control purposes own birth states listed as North or South Dakota (or an easily recognized mistranscription thereof) were standardized to ‘Dakota’ and foreign birthplaces of service members and of their fathers were translated to regions of birth: to ‘Canada,’ ‘British Isles,’ ‘Scandinavia,’ ‘continental Europe’ or ‘Other.’ For analysis, these categories were

[34] Among men in the 1930 census within the age group that I would attempt to link, the cohort of men born 1875-1901, 96% of the foreign-born have the same IPUMS birthplace code as each of their parents, while only 78% of native Americans’ fathers and 80% of their mothers were born in the United States (with 57% and 61% of WWI veterans of these ages having fathers and mothers born in the same coded birth state, respectively). In the roster database, parental ethnicity is also unspecified for 99% of the foreign born.

further collapsed into foreign-born, native-born of known native parents, native-born of at least one known foreign parent, and native-born of unknown parents.

The roster's military service variables were also standardized for the sake of analysis. Working through the record, those not in the American military had their branch recoded as 'Other.' Information about draft registration was reduced to a registrant/not a registrant binary, leaving off details about location or reasons for not registering. As the vast majority of individuals in the roster entered military service by being 'inducted' (drafted) or (voluntarily) 'enlisted,' any other method of service entry was recoded as other.[35] There is a good deal of overlap in draft registration and entry method categories: one could not be drafted until after the Selective Service registration system had been established, and, as the war progressed, voluntary enlistment was suspended first in the army (the only branch to which the draft ever applied) in late 1917 and then in other branches in 1918 (Chambers, 1987; Keene, 2011); thus for analysis purposes I also created a combined registration-entry variable.[36] Age of service entry was calculated from the birthdate to the entry date. Promotions ('Grades'), overseas service, wounding and disability were reduced to binary categories for the absence or presence of these notations although the *Roster* provides additional details about timing and severity. Having listed information about service in named battles and sectors ('Engagements') is taken as a proxy for frontline and combat service, although this probably underestimates exposure as it does not include such activities as trench

[35] Peek (2016) comments that 'inducted' did not necessarily mean 'drafted' in American Great War military records, however this was the common usage of the term both in the statement of service cards extant in other states' collections and in quasi military publications (*Army-Navy-Air Force register and defense times*, 1919; "World War I United States Military Records, 1917 to 1918," 2017). The proportion of 'enlisted' to 'inducted' service members in the roster is also comparable to the proportions of 'enlisted' and 'drafted' service members reported in other publications: induction through the Selective Service accounted for nearly three quarters of the United States' WWI military force (Chambers, 1987, p. 200).

[36] Among army members in the roster, only six individuals are listed as having been 'inducted' without having been registered. Although war was declared in April, the first wave of draft registration did not occur until June 5, 1917; voluntary enlistment was discontinued in the army in December 1917 and for other branches of service in August 1918 (Keene, 2011, p. 59). Therefore, among those of non-officer ranks in the army, three combined variables are possible: unregistered/enlisted, registered/enlisted, and registered/inducted.

raids; participation in engagements is coded as a binary.[37] Methods of leaving service were simplified to 'discharged' ('discharged,' 'released,' 'relieved'), 'died' ('died,' 'died of wounds,' 'killed in action') or 'other,' while duration of service was calculated from the entry date to death or discharge date.

At the end of the parsing and standardization process, Sergeant Morton from Figure 2.2 would have an entry in the database with variables providing details of his civilian-military biography, an abridged version of which I present in Figure 2.3. Were Sergeant Morton not a fictional character, his record would join about 99% of the other roster entries successfully extracted from the raw text files. I include a summary of the prewar civilian and military service information in this database as Table 2.1. Additional processing and standardization of the roster data, which allowed me to track and aggregate the times and locations of individuals' military service events and associate them with other data sources, are described in more detail in Chapters 3 (occupational coding, refinement of the linked data set, geocoding events and associating them with county-level characteristics) and 4 (timestamping, mapping, visualizing and animating aggregated events).

[37] Duration of combat exposure is even more difficult to calculate. As units were often detached and attached to other units, determining how long an individual's company was directly involved in any of the listed engagements, which could last for a few days or several weeks, would require reference to the order of battle for particular dates and regiments and such attached and detached units would need to be specifically named, which is not always the case. Determining a particular individual's duration of participation in named battles would require both reference to analogue morning report roll calls and the unsupportable assumption that all members of a unit were instantaneously in the line at the same time (*Order of battle of the United States land forces in the World War*, 1988).

```
Name_position_1: MORTON
Name_position_2: FERDINAND
Name_position_3: JOSEPH
Middle_initial: J
Branch: Army
Combined_registration_entry: registrant inducted
Region_of_birth_linkage: Minnesota
Region_of_birth_analysis: Other US
Year_of_birth: 1889
Fathers_region_of_birth: USA
Nativity: native born of foreign or mixed parentage
Prior_service_binary: 0
Overseas_binary: 1
Engagement_binary:1
Promotion_binary: 1
Commission_binary: 1
Wounding_binary:1
Disability_binary:0
Service_exit_method: discharged
Service_entry_year: 1917
Service_exit_year: 1919
Months_in_service: 20
Age_at_entry: 28
```

Figure 2.3: **An excerpt of the parsed roster database derived from the record in Figure 2.2.**

Table 2.1: Composition of the population in North Dakota's WWI military roster, including breakdown of prewar civilian characteristics and military service characteristics				
			#	*% of total male population*
	Women		241	N/A
	Men		30,764	100.0%
Amongst males in the Roster (N=30,764)	*Branch*	Army	28,139	91.5%
		Navy	2,030	6.6%
		Marine Corps	437	1.4%
		Other	158	0.5%
	Registered for draft?	Yes	24,335	79.1%
		No	6,398	30.8%
		Unknown [A]	31	0.1%
	Entry method	Enlisted	10,889	35.4%
		Inducted	19,314	62.8%
		Other known method	529	1.7%
		Unknown [A]	32	0.1%
	Place of birth	Known North Dakota	9,366	30.4%
		Other US [B]	15,757	51.2%
		Foreign born	5,223	17.0%
		Unknown [A]	418	1.4%
	Year of birth	Known	30,357	98.7%
		Unknown [A]	407	1.3%
	Parents' nativity	Both American	8,647	28.1%
		Foreign or mixed	13,095	42.6%
		Unknown [A]	9,022	29.3%
	Unknown service characteristics in following variables due to misparsing [C]	Unknown	133	0.4%
	Pre-WWI military service	Yes	1,299	4.2%
		No	29,332	95.3%
	Service location	Overseas	16,523	53.7%
		Domestic only	14,108	45.9%
	Engagements	Yes	9,181	29.8%
		No	21,450	69.7%
	Promotions	Yes	16,270	52.9%
		No	14,361	46.7%
	Commissions	Yes	495	1.6%
		No	30,136	98.0%
	Wounded	Yes	2,049	6.7%
		No	28,582	92.9%
	Recognized disability	Yes	2,448	8.0%
		No	28,183	91.6%

	Exit method [C]	Discharged, relieved, or released	29,130	94.7%
		Died or killed	1,308	4.3%
		Other known method	186	0.6%
		Unknown [C]	140	0.5%

Notes: In the full roster of 31,076 individuals, 31 have an unknown registration status, 33 have an unknown entry method, 24 have an unknown POB, 414 have an unknown YOB, 9114 have unknown parentage, 2466 have an unknown prewar occupation, 140 have an unknown service location, and 267 have an unknown method of service exit.
[A] For most criteria, 'Unknown' includes those listed as 'unknown' in the roster as well as victims of parsing errors. For these tabulations parsed years of birth prior to 1850 or after 1902 are assumed to be errors.
[B] Many but not all Dakota Territory towns can be assigned to a modern state of birth; unlocated Dakota Territory towns are recorded here as 'Other US.'
[C] The commonly recurring Unknown value of 133 reflects records for which the first, prewar civilian portion of the record parsed while the less standardized statement of service portion did not. Exit method is unknown for an additional 7 individuals.

Linkage code structure:

The size and historical particularities of the data sources, a desire to ensure that results would be reproducible, and financial and time constraints shaped my choice of software and the linkage protocols I explored. In the early stages of the project, I tested a number of free, off the shelf record linkage programs, subsequently abandoning them for their lack of a user community or training documents, the inability to script processes, or the inability to adapt software intended for twenty-first century data to sources lacking social security numbers and exact birthdates (K. Campbell, Deck, Cox, & Broderick, n.d.; Christen et al., 2011; Jurczyk, Lu, Xiong, Cragan, & Correa, 2011). Ultimately, I identified possible matches between the roster and the census sources using Stata, sifting through and further processing the resulting dataset using SAS, Python and R.[38] This work, and the adherence to

[38] Stata and SAS are both proprietary statistical programs; R is a statistical programming language; Python is a coding language with packages capable of performing statistical analysis. For this chapter, I ran the actual statistical models in SAS.

reproducible automated methods, are greatly indebted to Bjorn Eriksson (2015), who generously shared the text and the Stata matching code of his doctoral dissertation, code which I adapted for my own data, protocols and limitations.

Candidate pair suggestion:

My process for linking North Dakota's WWI military roster to the 1930 census can be thought of in two not quite discrete parts, a candidate pair suggestion portion and a candidate pair selection portion. The suggestion portion is especially time- and resource-intensive. For linking the census to the roster, I thus used three methods to make the process manageable: limiting the dataset I sought to match to males born 1875 to 1901,[39] running pilot studies on a 16-state portion of the census data to select the most promising protocols before running more complete matches with all 48 states plus the District of Columbia, and using a framework of nested loops in the matching script to break the census data into workable chunks in two outer loops before allowing the innermost loop to perform the actual matching and name comparison calculations.

For each of the 1930 residence states, for each of the birth years 1875 to 1901 as written in the census, and for each of seven variations on the birth year (calculated by adding or subtracting up to three years from the enumerator-recorded birth year) my Stata matching code selects the subset of individuals resident in that state who are recorded as having been born in that variation year, and then

[39] The first two waves of the draft, carried out in the spring on 1917 and summer of 1918, targeted men aged 21-31, born 1886-1897, while the third wave, conducted less than 2 months before the Armistice, expanded the draft to 18-45 year olds, those born 1872 to 1900. However, less than half a percent of the roster records have birth years listed before 1875, less than half a percent in 1900 or later. On the assumption that registering or enlisting underage was not uncommon I chose 1875 as my older cutoff but shifted by younger cutoff to 1901. The 2.5th and 97.5th percentiles of recorded birth years for identified male veterans in the census and for all male entries in the roster are 1880 to 1902 and 1883 to 1889 respectively.

performs an exact match: roster state/region of birth to census state/region of birth, and roster year of birth to census birth year variation. Roster-census pairs that match on these criteria form a subset (block). My code then performs one of three name comparison protocols on the pairs within the block. In the first (used only in the 16-state pilot study), my code compares the first names and last names in the roster with those in the census and measures their similarity using James Feigenbaum's (2016) implementation of the Jaro-Winkler metric, a metric which tweaks the edit distance to put more emphasis on matching first letters. In the second, my code uses a bigram comparison on both names using Julio Raffo's (2017) Matchit script, breaking the names into overlapping pairs of letters and examining those for agreement. In the third, my code uses the Jaro-Winkler method on the last name and compares the first name in one source to the nickname array attached to the other, using the token comparison function in Matchit. My script only keeps candidate links if both the surname and given name similarities exceed certain thresholds or, in the case of the nickname comparison, if the surname threshold is exceeded and there is a match in the nickname array. I denote the datasets resulting from the Jaro-Winkler, bigram and nickname linkage protocols by the prefixes 'JW-', 'BI-' and 'NN-'. As the calculations within each birth year variation block finishes, the results are written to a file that is then successively appended as the outer loops end until a file of candidate pairs is built for each 1930 residence state.

As a demonstration of how the Stata matching code works, consider the artificial example presented in Table 2.2. There are four roster entries (A, B, C, D) and up to five theoretically possible census links (1, 2, 3, 4, 5) for each roster entry. Given names, surnames, and year of birth are provided, as are raw birthplaces with standardized birth states/regions in parentheses. Some of the census individuals are enumerated as being WWI veterans, which I denote here with 'WW.' The notations just right of the census names, 'JW', 'BI' and 'NN,' denote whether the names of the roster and census individuals match according to one of the three name comparison algorithms, using the thresholds with the highest match rates in the 16-state pilot study.[40]

[40] Jaro-Winkler scores of 0.9 on the surname and 0.7 on the given name, bigram scores of 0.8 on the surname and 0.6 on the given name, or, for the nickname protocol, a Jaro-Winkler similarity of 0.9 on the surname and a match on the name/nickname in the token comparison.

Table 2.2: A record linkage example: comparing candidate roster-census pairs by name comparison metrics, region of birth, year of birth and census-enumerated veteran status

	Roster individuals		Census individuals									
			1		2		3		4		5	
Given name	A	Benny	Benjamin	JW NN	Bennie	JW BI NN	Ben	JW BI NN	Benny	JW BI NN	Ben	JW BI NN
Surname		Goodman	Godman	JW BI	Gutmann		Godman	JW BI	Goodman	JW BI	Goodman	JW BI
ROB		Bismarck D.T. (Dakota)	ND (Dakota)		ND (Dakota)		ND (Dakota)		SD (Dakota)		ND (Dakota)	
YOB		1887	1887		1887		1887		1888		1889	
Vet?					WW				WW		WW	
Match?			*Yes:* *using JW, NN protocols*		*No*		*Yes:* *using JW, BI, NN protocols*		*Yes:* *using JW, BI, NN protocols*		*Yes:* *using JW, BI, NN protocols*	
Given name	B	Glenn	Glyn	JWN N	Glen	JW BI NN	Glen	JW BI NN	Glen	JW BI NN	Glenn	JW BI NN
Surname		Miller	Muller	JW	Miller	JW BI	Mills		Mille	JW BI	Miller	JW BI
ROB		Minneapolis Minn. (MN)	MN (MN)		MN (MN)		MN (MN)		MN (MN)		ND (Dakota)	
YOB		1892	1891		1895		1891		1891		1892	
Vet?					WW						WW	
Match?			*Yes:* *using JW, NN protocols*		*Yes:* *using JW, BI, NN protocols*		*No*		*Yes:* *using JW, BI, NN protocols*		*No*	

Given name	C	Billie	Will	JW NN	Billy	JW BI NN	Willie	JW BI NN	Billie	JW BI NN		
Surname		Holiday	Holiday	JW BI	Holiday	JW BI	Holidae	JW BI	Holiday	JW BI		
ROB		Regina Sask. (Canada)	ND (Dakota)		Canada (Canada)		Canada (Canada)		ND (Dakota)			
YOB		1889	1889		1884		1887		1889			
Vet?			WW				WW		WW			
Match?			*No*		*No*		*Yes:* *using JW, BI, NN* *protocols*		*No*			
Given name	D	Bix	Leon		Bill	JW						
Surname		Beiderbecke	Beiderbecke	JW BI	Beider	BI						
ROB		Ireland (BIsles)	Ireland (BIsles)		Ireland (BIsles)							
YOB		1889	1889		1900							
Vet?			WW									
Match?			*No*		*No*							

Notes on abbreviations in this table:
ROB: state/region of birth, with standardized value in parentheses.
YOB: year of birth.
WW: denoted as a WWI veteran in the census.
JW: Roster and census name similarity using Jaro-Winkler method above chosen threshold (0.7 given, 0.9 surname).
BI: Roster and census name similarity using bigram method above chosen threshold (0.6 given, 0.8 surname).
NN: Roster and census name similarity using nickname method above chosen threshold (given in array, JW 0.9 surname).

For Record A, with the roster individual and all the census individuals having been born in North Dakota, South Dakota or Dakota Territory, region of birth is standardized to 'Dakota;' with all the census individuals being born in the same region as the roster individual and within 3 years on either side of the roster individual's year of birth, there are five possible matches in the block. Record D's two possibilities are both within the British Isles 1886-1892 block. In contrast, the blocking stage removes the fifth possible census match from Record B as this census individual has a region of birth in Dakota, not in Minnesota, even though the first and last names are an exact match according to every name comparison protocol. Only the third census option for Record C is retained as the other census records' birth regions are not matches or their years of birth are too far off.

When the names are compared, some roster-census pairs may exceed the agreement threshold of one algorithm but not the others. Thus for Record A, the Jaro-Winkler and nickname approaches would keep Census Individuals 1,3,4 and 5 whereas the bigram protocol would discard Census Individual 1. For Record B, the bigram algorithm is likewise more restrictive, limiting the census choices to Census Individuals 2 and 4. For Record C, three of four census individuals have similar enough names to the roster as measured by the bigram algorithm, but this is irrelevant as Census Individual 3 is the only choice within the block. Record D, with an unusual nickname that does not occur in the American English Nickname Collection, has no possible census matches with a high enough name similarity score for both the first and last names. At the end of the link suggestion process, Record A and B are ambiguously linked, Record C has a single match, and Record D has none. Note that even some of the pairs that are identified as matches by every protocol may not include a census-enumerated veteran.

Candidate pair and linkage protocol selection:

In order to choose the best linkage protocols, after removing any ambiguous links (pairs that shared a census or roster individual with another pair), I examined both the number of links and, following Eriksson (2015), computer-calculated quality control metrics. In Figures 2.4 and 2.5, I graph the relationships between name comparison thresholds, the number of 1930 census states included in the linkage process, linkage rates, and quality control metrics for the two most promising comparison methods, BI and NN.[41] In Figure 2.4, the thresholds are held constant at 0.8 for last names and 0.6 for first names in the BI datasets and 0.9 for the last name in the NN datasets. To order the addition of states, I ranked the states by the number of North Dakota-born 1875-1901 cohort members resident in the state, the number of 1875-1901 cohort members born in other states residing in North Dakota in 1930, and then averaged the two rankings.[42] In Figure 2.5, all the census data are used. In both figures, the solid black lines represent the total percentage of unambiguous links out of the 30,764 men in the roster, while the other lines represent the quality control metrics as a percentage of the total unambiguous links. These metrics were calculated from the number of: known matches and mismatches between paired roster and census individuals' middle initials (pairs missing a middle initial from either the census or the roster are not included in either sum);[43] candidate pairs with an individual identified by the roster as having died before 1930; roster-census matches in father's region of birth,

[41] In the 16 state pilot study, when using the most promising thresholds as determined by match rates and metrics, the Jaro-Winkler method (using a surname threshold of 0.9 similarity and a first name threshold of 0.7) produced an unambiguous match rate of 22.4%, compared to a rate of 29.5% for the Nickname method and 31.5% for the Bigram method.

[42] State census data were thus added in the following order: North Dakota, Minnesota, Wisconsin, Illinois, South Dakota, Iowa, Michigan, Montana, Indiana, New York, California, Ohio, Washington, Missouri, Nebraska, Oregon, Pennsylvania, Texas, Kansas, Colorado, Massachusetts, Virginia, Oklahoma, Idaho, New Jersey, Kentucky, Wyoming, West Virginia, Maryland, Tennessee, Arkansas, Maine, Connecticut, Florida, Arizona, Georgia, Louisiana, District of Columbia, North Carolina, Utah, Alabama, Vermont, Nevada, New Hampshire, Rhode Island, New Mexico, Mississippi, South Carolina, and Delaware.

[43] In the cohort of men born 1875 to 1901 in the census, 58.1 % are missing a middle initial entirely; among males in the roster, 25.5% are missing this variable.

both allowing and disallowing this information to be imputed from the service member's own birthplace; candidate pairs in which the roster and census years of birth are within a year of each other; and pairs in which the census individual is enumerated as a veteran.

Previous studies that linked WWI military records to census data have achieved linkage rates of 28-85% (Bailey, Hatton, & Inwood, 2015; Cranfield & Inwood, 2015; Doetsch, 2012; Laschever, 2013; K. Smith et al., 2015). Here in the roster-1930 linkage, linkage rates, like quality metrics, flatten out after 15 states for both the BI and NN protocols, as seen in Figure 2.4. The match rates for the BI protocol increase until the surname and given name similarities are at 0.8 and 0.6 then begin to drop (though the quality metrics continue to rise) while the NN rates and metrics do not really flatten out until after the 0.9 threshold is reached, as seen in Figure 2.5. Table 2.3 summarizes the results for the BI and NN protocols at these thresholds when all the available state data are included, where the former has a linkage rate of 33.4% and the latter a rate of 31.4%. Linked subsets that I use later in this chapter to delve into the analytical implications of record linkage decisions are highlighted in the table.

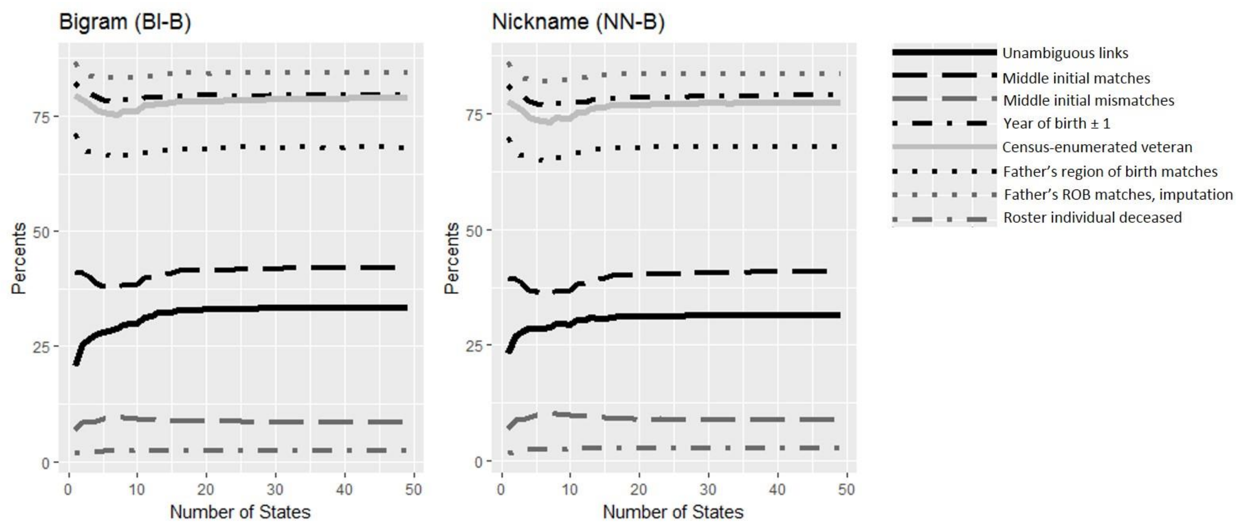

Figure 2.4: **Comparing linkage rates and quality control metrics to number of 1930 census states considered in linkage process.** This figure uses the bigram protocol at 0.8 and 0.6 surname and first name thresholds (left) and nickname protocol at 0.9 surname threshold (right). For 'Father's ROB matches, imputation' father's region of birth in the roster is recoded from unknown to match the service member's.

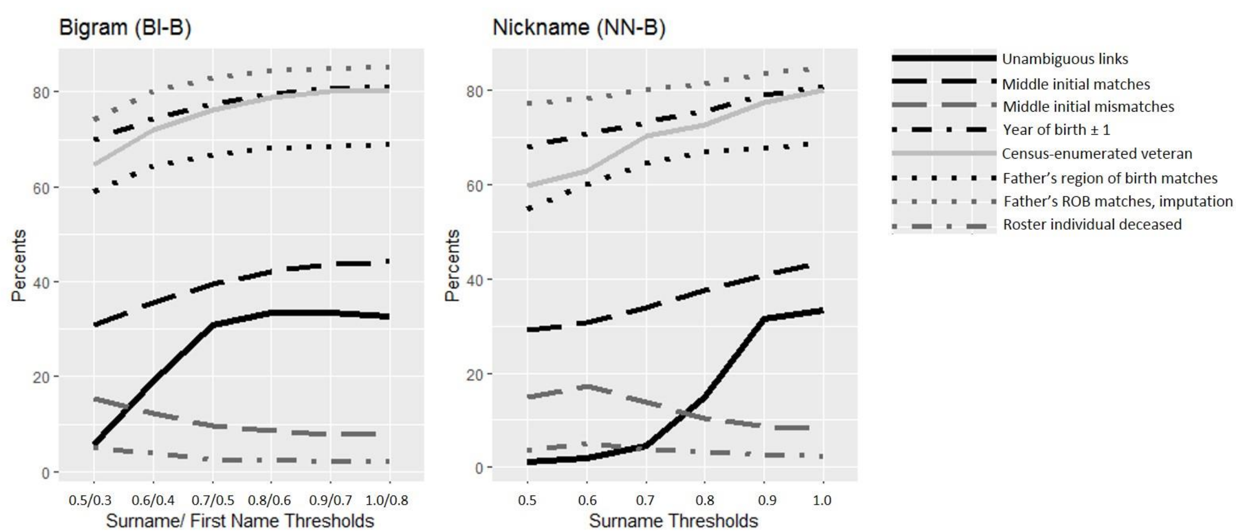

Figure 2.5: Comparing linkage rates and quality control metrics to name comparison thresholds using all 1930 census states. This figure uses the bigram name comparison (left) and the nickname name comparison (right). For 'Father's ROB matches, imputation' father's region of birth in the roster is recoded from unknown to match the service member's.

Table 2.3: Comparison of linkages performed using different name comparisons and constraints, providing rates of linkage and quality control metrics for all links, ambiguous links, unambiguous links, and additionally constrained links

Set name	*Description*	*# and % of roster males (30,764) linked*	*Number and percent of linked observations satisfying criteria*						
			Middle initial match	*Middle initial mismatch*	*Dead by 1930*	*Father's ROB matches (no imp.)*	*Father's ROB matches (imp. allowed)*	*YOB within one year*	*Listed as WWI vet in census*
BI-A	Bigram: All links	142,914 464.5%	11,458 8.0%	44,675 31.3%	9,436 6.6%	41,399 29.0%	114,960 80.4%	67,954 47.5%	43,646 30.5%
BI-Y	Bigram: Ambiguous	132,625 431.1%	7,127 5.4%	43,807 33.0%	9,199 6.9%	34,388 25.9%	106,291 80.1%	59,762 45.1%	35,527 26.8%
BI-B	Bigram: Deduplicated	10,289 33.4%	4,331 42.1%	868 8.4%	237 2.3%	7,011 68.1%	8,669 84.3%	8,192 79.6%	8,119 78.9%
BI-X	Bigram: Deduplicated: Not WWI in census	2,170 7.1%	442 20.4%	419 19.3%	141 6.5%	1,205 55.5%	1,696 78.2%	1,359 62.3%	0 0.0%
BI-C	Bigram: Deduplicated: WWI in census	8,119 26.4%	3,889 47.9%	449 5.5%	96 1.2%	5,806 71.5%	6,973 85.9%	6,833 84.2%	8,119 100%
NN-A	Nickname: All links	203,200 660.5%	13,671 6.7%	61,942 30.5%	13,079 6.4%	54,519 26.8%	163,713 80.6%	94,888 46.7%	58,330 28.7%
NN-Y	Nickname: Ambiguous	193,545 629.1%	9,726 5.0%	61,099 31.6%	12,820 6.6%	47,978 24.8%	155,655 80.4%	87,270 45.1%	50,849 26.3%
NN-B	Nickname: Deduplicated	9,655 31.4%	3,945 40.9%	843 8.7%	259 2.7%	6,541 67.7%	8,058 83.5%	7,618 78.9%	7,481 77.5%
NN-X	Nickname: Deduplicated: Not WWI in census	2,174 7.1%	428 19.7%	428 19.7%	170 87.8%	1,165 53.4%	1,651 75.9%	1,345 61.9%	0 0%
NN-C	Nickname: Deduplicated: WWI in census	7,481 24.3%	3,517 47.0%	415 5.5%	89 1.2%	5,376 71.9%	6,407 85.6%	6,273 83.9%	7,481 100%

OV-B	Overlap of BI-B & NN-B	6,818 22.2%		3,146 46.1%	417 6.1%	112 1.6%	4,899 71.9%	5,823 85.4%	5,646 82.3%	5,671 83.2%
OV-X	Overlap: Deduplicated: Not WWI in census	1,147 3.7%		306 26.7%	183 16.0%	66 5.8%	720 62.8%	923 80.4%	815 71.1%	0 0%
OV-C	Overlap: Deduplicated: WWI in census	5,671 18.4%		2,840 50.1%	234 4.1%	46 0.8%	4,179 73.4%	4,900 86.4%	4,831 85.2%	5,671 100%

Notes: Datasets examined include links meeting or exceeding the following name similarity thresholds: 0.8 and 0.6 surname and given name similarity for the bigram method; a match within the alias array and 0.9 surname similarity using a Jaro Winkler calculation for the nickname method.
Candidate pairs missing a middle initial in either source are not included in the match or mismatch sums.
Where imputation (imp.) is allowed, father's ROB (region of birth) is assumed to be the same as the roster individual's.
Highlighted linked sets were further reviewed and used to compose analysis sets for empirical testing; of these analysis sets, I report in this chapter the results for the least and most constrained sets, those based on BI-B and OV-C.

x

Throwing out ambiguous links (deduplication) is common practice in linked data studies (Eriksson, 2015; Long & Ferrie, 2005). Indeed, examining the discrepancies in the quality control metrics for the BI and NN matches in Table 2.3 among all links, ambiguous links, and unambiguous links (-A, -Y, and -B in the table) suggests that simple deduplication dramatically improves the credibility of the datasets: middle initial matches increase, middle initial mismatches and the number of linked deceased service members decrease. However, even cursory manual review of the linked data suggests that some of the unambiguous candidate pairs may yet be incorrect. What criteria would be best for tightening the candidate pair selection process? First, I consider the overlap (OV-) of the best two protocols, retaining only pairs identified in both the deduplicated BI and deduplicated NN linked samples using each protocols' best thresholds. Second, previous studies linking US Great War military records to the 1930 census have insisted that the candidate be identified as a WWI veteran in the census (Doetsch, 2012; Laschever, 2013). Anecdotally, those who did not serve overseas may have viewed their lack of service at the front as shameful and may not have self-identified as veterans, and while the proportions within the matches of those who served overseas versus those who did not are comparable to published percentages, those linked individuals listed in the roster as having served abroad are indeed significantly more likely to be enumerated as veterans in the census (Keene, 2011). In Table 2.3, where candidate pairs have been limited to enumerated veterans (suffixed with -C in the table) the quality control metrics do improve and in most cases appear in stark contrast to those candidate pairs where this constraint has not been satisfied (suffixed with–X in Table 2.3). While requiring an overlap and census identification improves the confidence in the linked datasets, it substantially reduces the number of linked observations available for analysis.

Composition of data subsets for analysis:

In order to explore the effects of protocol selection on what can be substantively gained from record linkage, I performed some basic analyses with the 1930 linked data. The deduplicated and constrained BI and OV datasets provide good starting points for these analyses. However, to make the comparison of the linkage protocols more straightforward, I made additional adjustments. The great majority of those who served in the war from North Dakota and from the United States in general served in the army and entered this branch of the military through voluntary enlistment or the draft.[44] Less than 1% of the men in the roster have extensive previous military service and fewer than 2% received a commission after starting service (the latter has a significant effect on the odds of linkage while the former does not); these individuals could be considered career military and are probably different from men who served only during wartime.[45] I therefore restricted both the linked datasets and the theoretically linkable roster data to surviving rank and file American army veterans: enlistees and inductees with no commissioned service and no known military service prior to April of 1917, the month that the United States declared war. To avert problems with small cell sizes, I also removed the unlinkable (e.g. those with unknown years or places of birth) and those with unusual or unidentifiable registration or end of service information.

Examining these adjusted rank and file (RF) subsets, denoted with the 'rf' suffix, certain variables significantly predict the odds of linkage, as calculated using univariate logistic regressions with

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[44] Over three quarters of American First World War service members served in the army, and nearly three quarters of them were conscripted (Chambers, 1987, p. 200; Coffman, 1998, p. 357; J. D. Keene, 2002, p. 73).

[45] Here, "extensive pre-war service" means those individuals whose records have long notations about service prior to 1917, such as in the Punitive Expedition against Mexico in 1916. In the full roster, 4.2% of male individuals have entry dates before April 1917; there are 26,891 members of the US Army (95.6%) whose entrance into the armed forces was known to be in 1917 or 1918.

linkage success as the dependent variable (Table 2.4). Those with foreign or unknown parentage are less likely to link, as are those who were inducted, were wounded, ended service with a recognized disability, and those who were older, whether age is examined by using a continuous variable or by splitting the soldiers into older and younger categories based on the median home-leaving age of men in 1920 (i.e. 24 years old, Gutmann, Pullum-Piñón, and Pullum 2002, p. 534, figure 1). In some record linkage studies (e.g. Long & Ferrie, 2005), the linked dataset is reweighted in an effort to keep the proportions in the linked sample representative of the population from which it was drawn. However, the breakdown of the RF Subset veterans in 1930 may be different from that of 1917/18's soldiers for substantive as well as incidental reasons. Foreign-born soldiers may still be somewhere in the United States but not link because of Anglicization of their names, or their numbers may have dropped in reality because they were more likely than native-born soldiers to have moved abroad, back to their country of origin. In actuality, there may be fewer disabled soldiers in 1930 than appear in the roster due to higher postwar mortality. As Franco, Malhotra, Simonovits, & Zigerell (2017) comment, weighting in such instances might do more harm than good. Further, the application of a weighting regime to the RF Subsets is complicated by small cell sizes. A Cartesian cross of all five variables that consistently predict linkage success in the various linked samples (registration/entry, own/parental nativity, age group, promotions, disability) produces ninety-five categories in the theoretically linkable subset, some of which have cell sizes in the single digits; up to half a dozen of these combinations are missing entirely in the linked samples. Retaining age and nativity, only a single military variable can be added without producing cells sizes of five or less. To address the mechanical difficulties of weighting, I constructed a weight based on the cross-product of nativity, age and a binary for having received promotions; to account for Franco et al.'s warning, I examined both weighted and unweighted variations of the models.[46]

[46] Weights were computed as the proportion that a particular Cartesian cross comprises in the theoretically linkable roster over the proportion that same cross comprises in the linked dataset. For instance, foreign-born veterans who entered service after turning 24 and who received no promotions make up 8.13 % of the theoretically linkable roster data, but only 5.18 % of the BI-Brf linked dataset and 3.51% of the OV-Crf linked dataset; individuals of this type thus received a weight of 1.57 and 2.32, respectively.

Table 2.4: Odds of linkage of Rank and File Subset using different linkage protocols, calculated using univariate logistic regressions predicting for linkage success *(surviving enlisted or inducted army veterans with no prior service or commissions; ad hoc fixes applied, n=23,767)*					
		Bigram protocols		*Overlap protocols*	
		BI-Brf *n =8,352* *(35.1% of 23,767)*	BI-Crf *n =6,638* *(27.9% of 23,767)*	OV-Brf *n=5,510* *(23.2% of 23,767)*	OV-Crf *n=4,613* *(19.4% of 23,767)*
Variable	*Value*	*Odds & significance compared to variable reference category*			
Combined registration/entry method (vs Unregistered /enlisted)	Registered/ enlisted	0.960 p = 0.4346	0.954 p = 0.3920	0.95 p = 0.3808	0.943 p = 0.3487
	Registered/ inducted	0.905 p = 0.0119	0.875 p = 0.0016	0.863 p = 0.0009	0.849 p = 0.0005
Year of birth	(continuous)	1.036 p <0.0001	1.042 p <0.0001	1.046 p <0.0001	1.045 p <0.0001
Age at service entry	(continuous)	0.965 p <0.0001	0.959 p <0.0001	0.956 p<0.0001	0.957 p<0.0001
Entry before median home-leaving age (<24)? (vs Yes)	No, entry at median age or older (>=24)	0.821 p <0.0001	0.815 p <0.0001	0.766 p<0.0001	0.785 p<0.0001
Combined own/parental birthplace (vs Native born of known native parents)	Foreign-born/ parents assumed to be foreign-born	0.444 p<0.0001	0.397 p<0.0001	0.339 p<0.0001	0.335 p<0.0001
	Native-born/ at least one known foreign-born parent	0.881 p<0.0001	0.903 p = 0.0028	0.924 p = 0.0280	0.939 p = 0.0990
	Native-born/parentage unknown	0.757 p<0.0001	0.726 p<0.0001	0.775 p<0.0001	0.745 p<0.0001
Service location (vs Domestic only)	Overseas	1.005 p = 0.8501	1.097 p = 0.0014	0.994 p = 0.8532	1.064 p = 0.0580

Engagements (vs None)	With named offensives, defensives and/or sectors	0.963 p =0.1989	1.023 p = 0.4557	0.966 p = 0.2953	1.015 p = 0.6757
Promotions (vs None)	Received promotion(s)	1.106 p =0.0002	1.175 p<0.0001	1.098 p = 0.0024	1.078 p<0.0001
Wounds (vs None)	Received wound(s)	0.899 p=0.046	0.935 p = 0.2349	0.952 p =0.4169	0.883 p =1.0000
Recognized Disability (vs None)	Received Surgeon's Certificate of Disability	0.810 p<0.0001	0.821 p = 0.0002	0.806 p = 0.0001	0.820 p = 0.0011
Months in service	(continuous)	1.002 p=0.3327	1.007 p =0.001	1.001 p = 0.6609	1.005 p = 0.0178

Finally, I used one variable linked from the census to further refine the analysis datasets. The census data can be used to impute prewar marital status, subject to the limitations mentioned earlier. Some variations of the currently married model below are run just on those known to be unmarried before 1917 to remove this confounding effect. In the divorce models, the input datasets were reduced to the ever-married. In Table 2.5, I summarize the proportions and means for the all marital statuses, previously unmarried, and ever-married variations on the least and most constrained linked RF datasets, BI-Brf and OV-Crf.[47] Below this, Table 2.6 presents the summary statistics of similar variables in the census-only data for the cohort born 1875 to 1901, the years I attempted to link, as well as for a narrower range of birth years, 1886-1899, based on the 2.5th and 97.5th percentiles of birth years of those in the roster's RF Subset.

[47] The population proportions for nativity, age, registration/entry, promotions and disability in the linked samples are significantly different from those of the full RF Subset in the roster. Further reducing the linked subsets according to 1930 marital status does not cause significant differences in any additional variables.

Table 2.5: Population proportions of categorical variables and means of continuous variables in the Rank and File subset of the Roster and the Rank and File subsets of two of the linked datasets
(among surviving enlisted or inducted army veterans with no pre-WWI service or commissions; ad hoc fixes applied)

	Unlinked dataset	*Linked datasets*					
		Bigram-Brf Subsets			*Overlap-Crf Subsets*		
	Roster RF Subset *n= 23,767*	All marital statuses *n =8,352 (35.1% of 23,767)*	Known unmarried pre-1917 *n =7,587 (31.9% of 23,767)*	Ever married *n =6,506 (27.4% of 23,767)*	All marital statuses *n=4,613 (19.4% of 23,767)*	Known unmarried pre-1917 *n =4,364 (18.4% of 23,767)*	Ever married *n=3,579 (15.1% of 23,767)*
Variable Value	Number & percent represented by value in dataset [percent of cell have experienced outcome of interest by 1930][A]						
Own/parental nativity [roster]							
Foreign-born/ parents assumed to be foreign-born	4,431 18.6%	1,023 12.3% [72.7%]	891 11.7% [71.9%]	773 11.9% [1.8%]	403 8.7% [71.0%]	388 8.9% [71.7%]	293 8.2% [1.0%]
Native-born of known native parents	6,454 27.2%	2,605 31.2% [79.1%]	2,338 30.8% [80.1%]	2,139 32.9% [1.7%]	1,483 32.2% [79.0%]	1,374 31.5% [80.8%]	1,219 34.1% [1.6%]
Native-born/ at least one known foreign-born parent	10,375 43.7%	3,875 46.4% [73.8%]	3,596 47.4% [74.3%]	2,950 45.3% [1.5%]	2,271 49.2% [73.9%]	2,174 49.8% [75.0%]	1,727 48.3% [1.6%]
Native-born/ parentage unknown	2,507 10.6%	849 10.2% [73.1%]	762 10.0% [73.1%]	644 9.9% [1.9%]	456 9.9% [71.9%]	428 9.85 [72.9%]	340 9.5% [1.8%]

Own/parental nativity [census]							
Foreign-born/ parents assumed to be foreign-born	---	1,023 12.3% [72.7%]	891 11.7% [71.9%]	773 11.9% [1.8%]	403 8.7% [71.0%]	388 8.9% [71.7%]	293 8.2% [1.0%]
Native-born of known native parents	---	3,208 38.4% [79.2%]	2,845 37.5% [80.0%]	2,639 40.6% [1.7%]	1,787 38.7% [78.6%]	1,657 38.0% [80.4%]	1,462 40.9% [1.6%]
Native-born/ at least one known foreign-born parent	---	4,121 49.3% [72.8%]	3,851 50.8% [73.3%]	3,094 47.6% [1.5%]	2,423 52.5% [73.1%]	2,319 53.1% [74.2%]	1,824 51.0% [1.6%]
Age at entry							
Less than median home leaving age (<24)	9,628 40.5%	3,642 43.6% [77.8%]	3,493 46.0% [79.3%]	2,913 44.8% [1.7%]	2,088 45.3% [77.0%]	2,028 46.5% [78.6%]	1,654 46.2% [1.9%]
Median home leaving age or older (>=24)	14,139 59.5%	4,710 56.4% [73.3%]	4,094 54.0% [72.7%]	3,593 55.2% [1.6%]	2,525 54.7% [73.5%]	2,336 53.5% [74.3%]	1,925 53.8% [1.3%]
Marital status in 1930							
Married	---	6,283 75.2%	5,741 75.7%	6,283 96.6%	3,463 75.1%	3,330 76.3%	3,463 96.8%
Divorced	---	106 1.3%	----	106 1.6%	56 1.2%	----	56 1.6%
Widowed		117 1.4%	----	117 1.8%	60 1.3%	----	60 1.7%
Never married	---	1,846 22.1%	1,846 24.3%	---	1,034 22.4%	1,034 23.7%	---
Marital status before 1917							
Unmarried	---	7,587 90.8% [75.7%]	7,587 100% [75.7%]	5,741 88.2% [0.0%]	4,364 94.6% [76.3%]	4,364 100% [76.3%]	3,330 93.0% [0.0%]

Married	---	542 6.5% [100%]	----	542 8.3% [0%]	133 2.9% [100%]	----	133 3.7% [0.0%]
Unknown	---	223 2.7% [0.0%]	----	223 3.4% [47.5%]	116 2.5% [0.0%]	----	116 3.2% [48.3%]
Registration/ entry							
Unregistered/ enlisted	3,203 13.5%	1,184 14.2% [78.0%]	1,072 14.15 [79.6%]	965 14.8% [2.7%]	688 14.9% [78.2%]	646 14.8% [80.2%]	560 15.7% [2.5%]
Registered/ enlisted	3,013 12.7%	1,085 13.0% [81.7%]	965 12.7% [82.4%]	915 14.1% [1.4%]	618 13.4% [81.6%]	573 13.1% [83.1%]	521 14.6% [1.3%]
Registered/ drafted	17,551 73.9%	6,083 72.8% [73.5%]	5,550 73.2% [73.8%]	4,626 71.1% [1.5%]	3,307 71.7% [73.2%]	3,145 72.1% [74.3%]	2,498 70.0% [1.4%]
Service location							
Domestic only	11,189 47.1%	3,925 47.0% [73.9%]	3,563 47.0% [73.9%]	2,996 46.1% [14%]	2,114 45.8% [74.1%]	2,000 45.8% [75.0%]	1,614 45.1% [1.4%]
Overseas	12,578 52.9%	4,427 53.0% [76.4%]	4,024 53.05 [77.2%]	3,510 54.0% [1.8%]	2,499 54.2% [75.9%]	2,364 54.2% [77.4%]	1,965 54.9% [1.7%]
Promoted?							
No	11,951 50.3%	4,063 48.7% [71.9%]	3,710 48.9% [72.3%]	3,034 46.6% [1.7%]	2,190 47.5% [71.6%]	2,075 47.6% [72.8%]	1,625 45.4% [1.7%]
Yes	11,816 49.7%	4,289 51.4% [78.3%]	3,877 51.1% [78.9%]	3,472 53.4% [1.6%]	2,423 52.5% [78.2%]	2,289 52.5% [79.5%]	1,954 54.6% [1.5%]
Engagements?							
No	16,280 68.5%	5,765 69.0% [75.3%]	5,217 68.8% [75.8%]	4,500 69.2% [1.6%]	3,148 68.2% [75.3%]	2,966 68.0% [76.5%]	2,451 68.5% [1.6%]

Yes	7,487 31.5%	2,587 31.0% [75.0%]	2,370 31.2% [75.5%]	2,006 30.8% [1.7%]	1,465 (31.8%) [74.6%]	1,398 32.0% [75.9%]	1,128 31.5% [1.6%]
Wounded?							
No	22,051 92.8%	7,787 93.4% [75.2%]	7,074 93.2% [75.6%]	6,062 93.2% [1.6%]	4,280 92.8% [75.1%]	4,043 92.6% [76.6%]	3,324 92.9% [1.5%]
Yes	1,716 7.2%	565 6.76% [76.3%]	513 6.8% [76.4%]	444 6.8% [2.3%]	333 7.2% [74.2%]	321 7.4% [75.7%]	255 7.1% [2.0%]
Disabled?							
No	21,656 91.1%	7,700 92.2% [75.3%]	7,001 92.3% [75.7%]	5,998 92.2% [1.6%]	4,260 92.4% [75.2%]	4,024 92.2% [76.5%]	3,313 92.6% [1.6%]
Yes	2,111 8.9%	652 7.8% [74.9%]	586 7.7% [75.4%]	508 7.8% [2.4%]	353 7.7% [73.4%]	340 7.8% [74.4%]	266 7.4% [1.5%]
	Mean & standard deviation						
Year of birth [roster]	1892.84 sd=3.68	1893.14 sd=3.59	1893.41 sd=3.41	1893.25 sd=3.5	1893.30 sd=3.48	1893.45 sd=3.36	1893.41 sd=3.37
Age at service entry [roster]	24.86 sd=3.71	24.54 sd=3.61	24.28 sd=3.43	24.42 sd=3.53	24.38 sd=3.50	24.23 sd=3.38	24.26 sd=3.40
Age in 1930 [roster]	37.16 sd=3.68	36.86 sd=3.59	36.59 sd=3.41	36.75 sd=3.50	36.70 sd=3.48	36.55 sd=3.36	36.59 sd=3.37
SEI	---	25.89 sd=24.77	25.83 sd=24.81	27.74 sd=25.21	27.60 sd=25.65	27.52 sd=25.69	29.52 sd=26.00
Months in service	13.56 sd=11.03	13.66 sd=7.30	13.66 sd=7.33	13.82 sd=7.30	13.84 sd=7.36	13.86 sd=7.37	13.96 sd=7.36

[A] Being currently married is the outcome of interest for the full and previously unmarried sets; being divorced is the outcome of interest for the ever-married sets.
As age and nativity can be derived from either source, [census] and [roster] identify the origin of the variable in question.

Table 2.6: Population proportions of categorical variables and means of continuous variables within the census-only cohorts

(Men born between given years inclusive, living in 48 contiguous states or District of Columbia)

	Census cohort 1875- 1901 datasets			*Census cohort 1886- 1899 datasets*		
	Full cohort *n=29,866,397*	Known unmarried pre-1917 *n=19,422,808*	Ever-married *n=22,159,203*	Full cohort *n=12,298,756*	Known unmarried pre-1917 *n=7,779,831*	Ever-married *n=10,352,498*
Variable Value	Number & percent of value in dataset [percent of cell have experienced outcome of interest by 1930] [A]					
Own/parental nativity						
Foreign-born/ parents assumed to be foreign-born	5,465,995 18.3% [72.9%]	3,129,385 16.1% [58.7%]	4,174,145 18.9% [1.2%]	2,533,713 20.6% [79.0%]	1,620,770 20.8% [71.6%]	2,072,541 20.0% [1.1%]
Native-born of known native parents	18,413,978 61.7% [72.0%]	12,051,358 62.1% [63.5%]	14,014,672 63.3% [2.0%]	7,309,531 59.4% [82.3%]	4,454,658 57.3% [77.8%]	6,319,086 61.0% [2.0%]
Native-born/ at least one known foreign-born parent	5,986,420 20.0% [63.3%]	4,242,063 21.8% [54.5%]	3,970,383 17.95 [1.8%]	2,455,511 20.0% [19.0%]	1,704,403 21.9% [71.0%]	1,960,870 19.0% [1.8%]
Native-born/ parentage unknown	4 0% [50.0%]	2 0% [50.0%]	3 0% [0%]	1 0% [100%]	---	1 0% [0%]
Age in 1917						
Less than median home leaving age	15,631,195 52.3% [60.0%]	14,683,698 75.6% [59.6%]	9,697,799 43.85 [1.7%]	5,432,138 44.2% [78.4%]	4,648,308 59.8% [78.2%]	4,416,828 42.7% [1.8%]
Median home leaving age or older	14,235,202 47.7% [81.8%]	4,739,110 24.4% [62.6%]	12,461,404 56.25 [1.8%]	6,866,618 55.8% [82.2%]	3,131,523 40.3% [70.3%]	5,935,670 57.4% [1.8%]
Marital status in 1930						
Married	21,025,472 70.4%	11,715,614 56.7%	21,025,472 94.8%	9,899,499 80.5%	5,833,573 75.0%	9,899,499 95.6%

Divorced	391,368 1.3%	---	391,368 1.8%	185,066 1.5%	---	185,066 1.8%
Widowed	742,363 2.5%	---	742,363 3.4%	267,933 2.2%	---	267,933 2.6%
Never married	7,707,194 25.8%	7,707,194 39.7%	---	1,946,258 15.8%	1,946,258 25.0%	---
Marital status before 1917						
Unmarried	19,422,808 65.0% [60.3%]	19,422,808 100% [60.3%]	11,715,614 52.9% [0%]	7,779,831 63.3% [75.0%]	7,779,831 100% [75.0%]	5,152,841 49.8% [0%]
Married	9,309,858 31.2% [100%]	---	9,309,858 42.0% [0%]	4,065,926 33.1% [100%]	---	4,065,926 39.3% [0%]
Unknown	1,133,731 3.8% [0%]	---	1,133,731 5.1% [34.5%]	452,999 3.6% [0%]	---	1,133,731 11.0% [16.3%]
Veteran status						
No	26,286,127 88.0% [69.5%]	16,277,322 83.8% [56.9%]	19,272,434 87.0% [1.7%]	9,225,262 75.0% [81.4%]	5,039,284 64.8% [72.9%]	787,602 75.9% [1.7%]
Yes	3,580,270 12.0% [77.2%]	3,145,486 16.2% [78.0%]	2,886,769 13.0% [2.3%]	3,073,494 25.0% [24.2%]	2,740,547 35.2% [78.9%]	2,494,896 24.1% [2.2%]
	Mean & standard deviation					
Age in 1917	23.29 sd=9.82	18.59 sd=7.96	25.42 sd=9.15	24.34 sd=3.90	22.97 sd=3.64	24.47 sd=3.89
Age in 1930	36.30 sd=9.82	31.59 sd=7.96	38.42 sd=9.15	37.34 sd=3.90	35.97 sd=3.64	37.47 sd=3.89
SEI	22.14 sd=22.64	21.70 sd=22.54	23.12 sd=22.9	23.51 sd=23.29	2.84 sd=23.81	24.21 sd=23.48

Notes: [A] Being currently married is the outcome of interest for the full and previously unmarried sets; being divorced in the outcome of interest for the ever-married sets.

Building and comparing analysis models:

Recall that I will be examining the relationship of civilian and military characteristics to the likelihood that a man was married in 1930. The models I present here are relatively simple, using only main effects, a squared term and an interaction term. Nonetheless, these basic models are sufficient to explore the impact of record linkage choices and whether record linkage methods leverage our ability to use big historical microdata to study wartime-postwar connections. Having first explored the relationship of 1930 marital status with civilian and military predictors using univariate models, I composed multivariate logistic models that included one variation of each of the peacetime control variables for nativity (the version drawn from the census) and age (age at service entry as recorded in the roster or age in 1917 as calculated from the census), as well as SEI. In the multivariate census-alone models I tried adding an interaction between age and veteran status. In the multivariate linked data models, I only retained those military service variables that were significantly predictive in the univariate models for any of the subsets' outcomes. Surprisingly, participation in engagements (affecting about a third of the roster and linked sample populations) and being wounded or being granted a Surgeon's Certificate of Disability (each affecting less than 10% of these populations) are not significantly predictive of the outcomes of interest. I experimented with interacting military variables with age of entry and likewise kept the significant interaction, that between age and duration of service. Of the linked data models, here I only present the results for BI-Brf and OV-Crf, subsets derived from the least and most constrained linkage protocols, respectively.

Table 2.7 presents multivariate models for being currently married in 1930, utilizing every observation in the linked RF Subsets regardless of prewar marital status. I use Table 2.7 to highlight the effect of weighting. Weighting the linked datasets to bring their proportions of nativity-age group-promotion status back in line with that of the theoretically linkable RF Subset does not much change the direction or magnitude of the model coefficients. The same stability is generally seen when moving from the less to the more constrained linkage protocols. For instance, in the unweighted BI-Brf model (model 1), a veteran who was native-born of native parents, inducted at 24, served fourteen months with overseas service but no promotions, with an SEI of 27 has a 77.9% chance of being married in 1930 and, when the model is weighted (model 2), a 77.8% chance. In the OV-Crf models (models 3 and 4), the same person would have a 76.7% and a 77.9% chance of this outcome, respectively. In Table 2.8, I present variations on the unweighted marital status models that include just those known to be unmarried pre-1917. Examining the models without interactions (model 1 versus model 3), reducing the linked subsets in this way slightly shifts outcomes: our hypothetical inductee now has a 79.8% or 79.2% chance of being married in 1930 depending on the linkage protocol.

Table 2.7: Multivariate logistic models predicting being currently married in 1930, comparing linkage protocols and the effects of weighting on two of the linked Rank and File Subsets				
	BI-Brf		OV-Crf	
	1: unweighted	2: weighted	3: unweighted	4: weighted
Variable / Value	Odds, (estimates) & significance			
Nativity [census]				
Foreign born	---	----	----	---
Native born/ native parents	1.200 (0.1822) p=0.0322	1.199 (0.1816) p=0.0342	1.281 (0.2476) p=0.0527	1.313 (0.2724) p=0.0329
Native born/ foreign parent	0.880 (-0.1281) p=0.1111	0.870 (-0.1397) p=0.084	0.996 (-0.0043) p=0.972	0.999 (-0.0013) p=0.9916
Age of service entry [roster]	1.353 (0.3023) p=0.0003	1.333 (0.2874) p=0.0014	1.668 (0.5115) p<0.0001	1.694 (0.5271) p=0.0001
Entry age squared [roster]	0.993 (-0.0066) p<0.0001	0.994 (-0.0064) p=0.0002	0.989 (-0.0107) p<0.0001	0.989 (-0.0111) p<0.0001
SEI	1.013 (0.0129) p<0.0001	1.013 (0.013) p<0.0001	1.012 (0.0119) p<0.0001	1.012 (0.0122) p<0.0001
Registration/entry				
Unregistered/ enlisted	---	---	---	---
Registered/ enlisted	1.058 (0.0564) p=0.643	1.061 (0.0593) p=0.637	0.952 (-0.0490) p=0.7636	1.008 (0.0078) p=0.9645
Registered/ drafted	0.736 (-0.3066) p=0.005	0.754 (-0.2828) p=0.0129	0.622 (-0.4751) p=0.0012	0.665 (-0.408) p=0.0104
Service location				
Domestic only	---	---	---	---
Overseas	1.125 (0.1177) p=0.0862	1.117 (0.1104) p=0.1177	1.134 (0.1254) p=0.1747	1.116 (0.1099) p=0.2695
Promoted?				
No	---	---	---	---
Yes	1.324 (0.2805) p<0.0001	1.296 (0.259) p<0.0001	1.337 (0.2901) p=0.0002	1.304 (0.2655) p=0.0013
Months in service	0.987 (-0.0131) p=0.0242	0.988 (-0.0123) p=0.0422	0.981 (-0.0192) p=0.0128	0.981 (-0.0189) p=0.0245

Intercept	(-2.3513) p=0.0221	(-2.1453) p=0.0534	(-4.8699) p=0.0011	(-5.0387) p=0.0025
Diagnostics				
Number of observations	8,351	8,351	4,612	4,612
…of which are currently married	6,283	6,283	3,463	3,463
AIC of intercept and covariates *(of intercept only)*	9,070 (9,350)	9,147 (9,422)	5,023 (5,180)	5,089 (5,258)
Notes: As age and nativity can be derived from either source, [census] and [roster] identify the origin of the variable in question.				

Table 2.8: Multivariate logistic models predicting being currently married in 1930, using linked RF subsets reduced to those known to be unmarried pre-1917, comparing linkage protocols and effect of interaction term				
	BI-Brf		OV-Crf	
	1: no interaction	2: with interaction	3: no interaction	4: with interaction
Variable Value	Odds, (estimates) & significance			
Own/parental nativity [census]				
Foreign born	---	---	---	---
Native born/ native parents	1.273 (0.2412) p=0.0084	1.283 (0.2494) p=0.0065	1.342 (0.2942) p=0.0272	1.350 (0.3303) p=0.0242
Native born/ foreign parent	0.923 (-0.0805) p=0.3476	0.929 (-0.0742) p=0.3871	0.996 (-0.0035) p=0.9775	0.999 (-0.0013) p=0.9915
Age at service entry [roster]	1.838 (0.6089) p<0.0001	(0.6037) p<0.0001	2.004 (0.695) p<0.0001	(0.6965) p<0.0001
Age at entry squared [roster]	0.987 (-0.0131) p<0.0001	0.988 (-0.0123) p<0.0001	0.986 (-0.0145) p<0.0001	0.986 (-0.0136) p<0.0001
SEI	1.015 (0.0149) p<0.0001	1.015 (0.0150 p<0.0001	1.013 (0.0132) p<0.0001	1.014 (0.01340 p<0.0001
Registration/ entry				
Unregistered/ enlisted	---	---	---	---
Registered/ enlisted	0.931 (-0.0717) p=0.5877	0.986 (-0.0136) p=0.9193	0.893 (-0.1136) p=0.5164	0.978 (-0.0225) p=0.8994
Registered/ drafted	0.631 (-0.4599) p=0.0001	0.662 (-0.4127) p=0.0006	0.555 (-0.5894) p=0.0002	0.594 (-0.5215) p=0.001
Service location				
Domestic only	---	---	---	---
Overseas	1.200 (0.1820) p=0.0126	1.210 (0.1906) p=0.0092	1.182 (0.1676) p=0.0835	1.200 (0.1821) p=0.0611
Promoted?				
No	---	---	---	---
Yes	1.319 (0.2766) p<0.0001	1.319 (0.2768) p<0.0001	1.336 (0.2899) p=0.0004	1.341 (0.2932) p=0.0004
Months in service	0.984 (-0.0166) p=0.0076	(0.0413) p=0.1066	0.978 (-0.0221) p=0.0064	(0.05960 p=0.0803

Interaction of entry age and service duration	---	(-0.0024) p=0.0196	---	(-0.0035) p=0.0135
Intercept	(-5.8251) p<0.0001	(-6.1745) p<0.0001	(-6.9134) p<0.0001	(-7.5177) p<0.0001
Diagnostics				
Number of observations	7,587	7,587	4,364	4,364
…of which are currently married	5,741	5,741	3,330	3,330
AIC of intercept and covariates (of intercept only)	8,050 (8,419)	8,046 (8,419)	4,593 (4,778)	4,588 (7,448)
Notes: As age and nativity can be derived from either source, [census] and [roster] identify the origin of the variable in question.				

Likewise, using all the information that the census alone might provide on such an individual (who may now have served in any branch, been an officer, and may or may not have had any connection to North Dakota on the eve of the war), reducing the 1875-1901 cohort dataset to those known to be unmarried before 1917 causes only a small shift in probability: when calculated with the interaction term from .823 to .833, as seen in Table 2.9 (model 2 versus model 3). Looking more closely at model 3, being native-born of native-born parents, having a higher SEI, and being older in 1917 (and therefore older in 1930), predict higher chances of being married, all other variables held at their means or reference categories. Among American men, having served in the First World War apparently had a positive effect on marriage outcomes, provided the 5.1% of this cohort who are divorced or widowed are removed so that pre-1917 marital status may be considered,[48] provided the population under consideration is reduced to the 65% who were known to be unmarried before 1917, or provided age is interacted with veteran status. The interaction itself is negative. Entering military service– or the

[48] Results of models using all individuals with known pre-war marital status are not shown here. As pre-1917 marital status is only known for those who are currently or ever-married, in a dataset which only includes those with known prior marital status, those who are married by 1917 are by definition married in 1930. Removing previously married individuals does not alter the coefficients of the remaining variables, but does make the tables summarizing their analysis cleaner.

measured and unmeasured factors associated with being a veteran – appears to be disruptive, but only negatively so to older or already married members of the cohort. The hypothetical service member, using the known to be unmarried pre-1917 with interaction term model, has a .8403 probability of being married in 1930 if he had been 21 at the start of the war, a .833 probability if he were 24 (the median home-leaving age in this period), and a .704 probability if he were 31. Were he not a First World War veteran of these ages, he would have a .803, .815 and .742 probability of being married in 1930. Using the more narrowly defined cohort of men born 1886 to 1899 in a similar model with an age-veteran status interaction (Table 2.9, model 6), each of these probabilities are somewhat lower, but veterans continue to have higher probabilities of marriage than civilians of the same age. However, using the same main effects and interaction term and testing for divorce among the ever-married in the 1875-1901 cohort, while the coefficient of war service is itself negative, that of military service's interaction with age is positive.[49] Our 24 year old test subject, by the time he is 37 in 1930, has a slightly higher probability of divorce (.025) than a non-WWI veteran of the same characteristics (.009).

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[49] The tables for divorce are not reproduced here as there were no significant results when such models were run on the linked datasets. The coefficients for the census-only 1875-1901 model were as follows: intercept -5.1626; native born or native parents 0.5468; native born with at least one foreign parent: 0.4395; native born of unknown parentage: -2.6147; age in 1930 0.0324; squared of 1930 age -0.00031; SEI -0.00532; veteran status -0.7081; interaction of 1930 age and veteran status 0.028.

Table 2.9: Multivariate logistic models predicting being currently married in 1930, using census cohort subsets with all pre-1917 marital statuses, or reduced to those known to be unmarried pre-1917						
	Census 1875-1901 cohort			*Census 1886-1899 cohort*		
	1: Full cohort No interaction term	2: Full cohort With interaction term	3: Known unmarried pre-1917 With interaction term	4: Full cohort No interaction term	5: Full cohort With interaction term	6: Known unmarried pre-1917 With interaction term
Variable Value	Odds, (estimates) & significance					
Own/parental nativity [census]						
Foreign born	---	---	---	---	---	--
Native born/ native parents	1.048 (0.342) p<0.0001	1.407 (0.3418) p<0.0001	1.596 (0.4672) p<0.0001	1.280 (0.2471) p<0.0001	1.279 (0.24560 p<0.0001	1.238 (0.2135) p<0.0001
Native born/ foreign parent	0.860 (-0.1506) p<0.0001	0.860 (-0.1514) p<0.0001	0.899 (-0.1067) p<0.0001	0.889 (-0.1177) p<0.0001	0.888 (-0.1188) p<0.0001	0.840 (-0.1748) p<0.0001
Native born/ parentage unknown	0.45 (-0.7984) p=0.4369	0.446 (-0.8077) p=0.4325	0.728 (-0.3181) p=0.8221	32.543 (3.4826) p=0.7485	29.776 (3.3937) p=0.7547	---
Age in 1917	1.394 (0.3321) p<0.0001	(0.332) p<0.0001	(0.4231) p<0.0001	1.27 (0.188) p<0.0001	(0.2715) p<0.0001	(0.2387) p<0.0001
Age in 1917 squared	0.995 (-0.0055) p<0.0001	0.995 (-0.0054) p<0.0001	0.991 (-0.0088) p<0.0001	0.997 (-0.00322) p<0.0001	0.995 (-0.00453) p<0.0001	0.994 (-0.0062) p<0.0001
SEI	1.007 (0.00708) p<0.0001	1.007 (0.00706) p<0.0001	1.006 (0.0057) p<0.0001	1.01 (0.009910 p<0.0001	1.01 (0.00978) p<0.0001	(0.00997) p<0.0001

Veteran?						
No	---	---	---	---	---	---
Yes	0.859 (-0.1518) p<0.0001	(1.5349) p<0.0001	(1.2018) p<0.0001	0.795 (-0.2294) p<0.0001	(2.1165) p<0.0001	(0.5972) p<0.0001
Interaction of 1917 age and veteran status	---	(-0.0743) p<0.0001	(-0.045) p<0.0001	---	(-0.1006) p<0.0001	(-0.0159) p<0.0001
Intercept	(-3.5853) p<0.0001	(-3.6086) p<0.0001	(-4.2212) p<0.0001	(-1.4684) p<0.0001	(-2.704) p<0.0001	(-1.3954) p<0.0001
Diagnostics						
Number of observations	29,866,397	29,866,397	19,422,808	12,298,756	12,298,756	7,779,831
…of which are currently married	21,025,472	21,025,472	11,715,614	9,899,499	9,899,499	5,833,573
AIC of intercept and covariates (of intercept only)	31,877,092 (36,284,723)	31,796,075 (36,284,723)	23,325,207 (26,092,511)	11,959,616 (12,139,060)	11,913,561 (12,139,060)	8,519,186 (8,752,603)

Does knowing more about soldiers' experiences shed light on the nuances of military-civilian relationships? Is the effort expended on linking the census to comprehensive service records rewarded with a better understanding of the impacts of the Great War than traditional battlefield-focused military history or use of just the 1930 census can provide? Consider a few probabilities for our 24-year-old third generation American that can only be calculated with the combined census-roster data. Using a model that includes those known to be unmarried before the war, an interaction between age and duration of service, and observations linked using the OV-C protocol (Table 2.8, model 4) if the only difference in this individual's civilian-military biography was that he spent the war stateside, his probability of marriage would be reduced from .793 to .762.[50] If the only change were his deciding to enlist after having registered or were his reception of a promotion, his probability of being married would have increased to .863 or .837, respectively. His serving seven months predicts an 82% chance of being wed, but twenty-eight months a 73.2% chance (vs 79% for fourteen months). Starting fourteen months of service as a 21 year old, a 24 year old, or a 31 year old changes the probability of marriage from .775 to .793, to .655. Addressing several characteristics at once, the imaginary soldier here has a better chance of being married in 1930 than the fictional Sergeant Morton of an earlier section who, assuming the same SEI and pre-war marital status, would have only a 70.4% chance of having a wife. Using the larger and more loosely constrained BI-Brf dataset instead (Table 2.8, model 2), every tested probability is slightly higher (the hypothetical third generation American's chances being 80.8% and Sgt. Morton's being 72.2%), but the same trends are repeated: higher chances associated with enlistment, overseas service, and promotions; steadily lower chances associated with increased service duration; and a 24-

[50] In this calculation, all the third generation American's other characteristics are held constant: his civilian characteristics, his fourteen months of service, and his lack of promotions.

year-old entrant having better chances of current marriage than a 21-year-old or 31-year-old, with a 31-year-old having the worst chances of all..[51]

Conclusion:

In 1932, 17,000 American WWI veterans marched on Washington to demand early payment of promised bonuses in the face of the Depression, arguing that military service had had a negative impact on all soldiers (Bartlett, 1937; Kinder, 2015; Schram, 2008). Yet, among the veterans studied here, not only was military service often associated with better outcomes, but particularly bad experiences in service were statistically insignificant. In stark contrast to the more thoroughly studied experience of Europeans fighting in Europe – for whom home was in "ridiculous proximity" to the front, war "a comprehensive presence whose very banality… numbed perceptions," and the soldier on leave from the front a "typical street figure" – only half of America's four and a half million service members even left the US: these numeric and geographic realities not only gave overseas service great discursive importance but may have had material consequences as well (Fussell, 2000, p. 74; Chickering, 2007, p. 90; Cronier, 2007, p. 83; Keene, 2011, p. 33). Depending on the model, overseas service may or may not be a significant predictor of postwar marriage, but all things being equal such service increased the odds of marriage for the linked North Dakota soldiers analyzed here by 20%.

Based on studies of veterans of other conflicts, one would expect that exposure to the horrors of the front, which perhaps a quarter of American service members experienced, would have detrimental effects: MacLean & Elder (2007) concluded in their review of life course studies that while

[51] I also ran models on linked datasets that had been reduced by narrowing the range of birth years to the 2.5th and 97.5th percentile birth years among males in the roster and among the RF Subset: 1883-1899 and 1886-1899. Coefficients and tested probabilities were similar to those presented here for the 1875-1901 linked datasets.

the outcome of military service was historically and geographically contingent, combat service consistently produced worse outcomes. Yet, at least with the classifications available from the roster such exposure was insignificantly predictive for linked veterans. Remarque's (1982) classic WWI novel, *All quiet on the Western Front,* finds younger characters worrying that they, unlike their older peers who had established marital or occupational foundations before the war, would be at a disadvantage on their return to civilian life. Here, the coefficients of the census-only models suggest that the relationship of age with military service favored the young, aligning with Sampson & Laub's (1996) finding that World War II service generally had a positive effect on later life provided one started such service early, though the linked North Dakota data suggest there may be a more complicated story among veterans themselves. This of course does not prove that war was not hell – in their own words, many doughboys stated that it was (Gutierrez, 2014), and a century of studies on war wounds, shellshock and PTSD have shown that at least certain kinds of military experiences could have devastating physical and emotional effects (e.g MacDonald et al., 2011; Myers, 1915). It does however suggest that reducing all Great War experience to 'mud, blood and futility' is to deny the complexity of that experience and its aftermath and to foreclose the possibility that individual soldiers, in this conflict or in others, had the agency to have positive outcomes (Corrigan, 2003; Stephen, 1996).

In any case, this work suggests that an understanding of the First World War and its effect on American populations cannot be read directly from popular narratives or the outcomes of other conflicts. America's material distance from the front, the short duration of its official involvement and the relatively low percentages of its population committed and killed have made the American history of WWI relatively understudied, but also present the opportunity for novel work in Great War historiography, founded in these very distinctions and exploiting them to frame studies like this one that aim at the importance of variations in military experience (Winter & Prost, 2005). The models employed here also show the usefulness of record linkage and quantitative and computer-aided methods generally in furthering this goal. The geographic and temporal distinction between civilian and soldier was and is rhetorically resonant, politically expedient, and perhaps emotionally necessary, but keeping the study of these stages of the lifecourse separate impedes a holistic accounting of the effects of war (Apel, 2012; Schram, 2008; Van Emden, 2011; Woodward, 2005). In the next two chapters I will extend this accounting to the relationship of both civilian and military places to postwar socioeconomic and spatial patterns, first as they apply to individual mobility outcomes and then as they apply to dynamic population geographies.

Chapter 3: "How ya gonna keep 'em down on the farm, after they've seen Paree?" World War I military service and rural Americans' postwar mobility

Chapter abstract:

In the preceding chapter, I used the outcome of marital status as predicted with and without the benefit of First World War roster data as a venue for exploring the implications of record linkage protocol decisions and arguing for the usefulness of more detailed information about how individuals' life courses flowed through places. Going forward, I will be examining connections between civilian and military service characteristics and the places in which they are embedded from a more purely substantive standpoint, focusing in this chapter on individual outcomes and in a later chapter on the population geographies that emerge from them. Here, I am particularly concerned with overseas service – that rhetorically resonant marker of 'doing one's bit' that has been found to be of great importance in demographic studies of other conflicts and combatants – and its relationship to spatial and social mobility. Using a more finely tuned version of a linked rank and file dataset introduced in Chapter 2, I find that for the average North Dakota army veteran overseas service, when considered in univariate models, had a negative association with one's 1930 socioeconomic index (SEI) and a positive association with one's likelihood of moving between county of entry and county of residence among all prewar occupations; overseas service had a positive association with SEI, changing counties and changing occupations among those who were in farming occupations before the war. However, using increasingly complicated models, I also find that these relationships appeared to operate differently not only among different subpopulations but also when interacted with both individual and contextual civilian attributes. Indeed, when considered as part of these more holistic appreciations of veterans' lives, the effect of overseas service may be insignificant, a proxy for disruption in the life course more generally, or only important for select groups of individuals. In short, while North Dakota doughboys' mobility outcomes were related to the experiences they had in military spaces a decade previously, they cannot be properly considered in isolation from the contexts and characteristics of their prewar civilian lives. Further, echoing the substantive results of the previous chapter, in Chapter 3 I find that military service

was not necessarily associated with negative outcomes and that variations in postwar conditions were often more consistently and significantly associated with time spent in military service than the locations of that service, suggesting the importance of widening the expectations and the definitions of military geography.

Introduction:

"How ya gonna keep 'em down on the farm
After they've see Paree?
How ya gonna keep 'em away from Broadway
Jazzin around and paintin' the town […]
They'll never want to see a rake or plow
And who the deuce can parleyvous a cow?
How ya gonna keep 'em down on the farm
After they've see Paree?"

--S.M. Lewis & J. Young (1919), *How ya gonna keep 'em down on the farm (after they've seen Paree)?*

"He was still staring out at the wet fields…'I thought' [he] when on, 'that maybe I would go up to Omaha tomorrow and find out where the training camps are to be located, and have a talk with the men in charge of the enlistment station… I'm not coming back here."

--W. Cather (1922), *One of ours*, p. 106-7.

***

Historical background:

On February 27, 1919, Victor released "How ya gonna keep 'em down on the farm (after they've seen Paree)?", by composer Walter Donaldson and lyricists Joe Young and Sam Lewis. Styled as a conversation conducted half in jest between an elderly farming couple, the song speculates as to whether farm boys-turned-soldiers, released from their duties in Europe, will settle back into rural life (S. M. Lewis, Joe, Donaldson, Pasternak, & Fields, 1919). The cover art of the song's sheet music depicted a bearded and bespectacled corncob-pipe-smoking gentleman in the foreground (and a can-can dancer in the background), and February's phonograph was complete with barnyard animal noises accompanying Arthur Fields' vocals and Josef Pasternak's orchestra: this was truly a novelty song ("How

’ya gonna keep ’em down on the farm,” n.d.). Yet it also spoke to serious contemporary concerns about the effects of overseas service, and its subject matter’s relevance was likely a factor in Nora Bayes’ March 1919 recording of the song for Columbia Records reaching #2 on US Top 100 charts (Holsinger, 1999; “Top songs of 1919,” n.d.). While ‘Mother’ insists that “farmers always stick to the hay,” her husband’s contention that it was “a mystery” how “the boys” could be induced to remain in agricultural employment after their transatlantic experiences echoed the worry of economists and some government administrators. In short, it was feared that doughboys, having experienced the world beyond their parochial backgrounds, and having gained new skills or at least rising expectations through their service, would resist returning to the farms and factories of their prewar lives (Keene, 2011).

Such concern resonated with long-standing tropes about young men’s restlessness in the heartland of America, their desire to escape the stifling isolation of rural life, and the effects of military service. In trying to make sense of the first global industrialized war, Americans looked to the Civil War, in some ways a precursor of the Great War in its use of conscripted soldiers, devastating new weaponry and trench warfare. Although the ordinary person did not have the statistics to measure how Union Army service promoted postwar social mobility among some socioeconomic groups or to appreciate the nuances that underlay the contemporary belief that (unwounded) Civil War veterans had become more spatially mobile, most Americans would have known family or community members with memories of that earlier conflict or would have been exposed to its popular narratives (Cather, 1922; Costa & Kahn, 2004, 2008; Lee, 2007, 2008; Meigs, 1997; Trout, 1999).[52] In the Civil war era, five decades before Lewis and Young’s caricatures worried about keeping their sons “away from harm,” both moral and financial,

[52] In his studies conducted on Union Army veterans from the Early Indicators project, Chulhee Lee (2007, pp. 681–682, 2008) found that military service promoted upward social mobility among soldiers from unskilled backgrounds by giving them the opportunity to acquire useful skills, and that the chances, distances and directionality of postwar migration was predicted by the characteristics of a soldier’s wartime movements, with experience of more distant, more varied places giving individuals more “information on other places and reducing psychological resistance to moving to a new territory.”

other songsters were already warning would-be rural emigrants that the city's "many attractions" could lead to "vices and sins," "frauds and deceptions" and other economic "hazard[s]" (von Rochow, 1871).

Even at the turn of the century, a time of unprecedented rural prosperity, young men continued to leave the farm for higher urban cash incomes (Gardner, 2006, p. 108). Progressive efforts to stem this tide, from the Country Life Commission's (1908) recommendations to improve roads and communications and thus lessen social isolation, to congressional acts and allocations to improve rural education and thus agricultural productivity and contentment, were largely unsuccessful (Blanke, 2002, p. 5; Hurt, 2002, p. 176). Even during this Golden Age, good fortune was not universal, and even agricultural areas marked by increasing yields and land values remained "economically marginal" regions compared to other parts of the nation (Danbom, 2017, p. 136). As Danbom (2017, p. 136) writes, "the Great Plains prove[d] to be America's most disappointing frontier." For many young men in North Dakota, as elsewhere in rural America, military service could seem like a way out, the Western Front a new and perhaps the only remaining horizon (Trout, 1999). If the popularity of her novel, *One of ours,* is to be taken as any indication, Willa Cather's (1922) agriculturalist-turned-soldier protagonist "was not the only farmer boy who wished himself…beside the Marne." [53]

The Civil War failed to provide a precedent for what was arguably the most defining feature of Americans' experience of the First World War: 2% of the nation's population serving overseas (Keene, 2015, p. 79).[54] Service in the European theater, far across the Atlantic and yet, as recruitment posters

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[53] Although other authors criticized Cather's Pulitzer Prize- winning work, arguing that without frontline experience herself Cather could not possible write a credible Great War story, "hundreds of admiring letters Cather received from former servicemen in 1922" lauded her description of a directionless young man from Kansas who left an unfulfilling rural life for a meaningful death at the Front, noting how much they saw themselves in the title character's experiences (Trout, 1999). As one obituary declared of a North Dakotan soldier, *"'*he could not resist the temptation to get into the game like the young hero he was*"'* (clipping from *Minot Independent,* "Howard R. Huston papers," 1917).

[54] While the more recent Spanish American War had been fought abroad, it was an ill-fitting archetype for the Great War in other ways. It was in many respects a colonial 'small war' (Moreman, 1996), involving few people (~280,000) – none of them draftees – and few deaths (2,061) (Livingston, 1998). In coming to grips with the Great

warned, still threateningly close to the United States, had an abiding rhetorical importance (James, 2009; Ziino, 2007). In early debates over whether and how the United States should involve itself in the Great War, controversies swirled around the need to put boots on French ground and the argument that National Guardsmen could not be required to fight overseas (Keith, 2004, p. 23). In the event, of the over four million men who served in the First World War, about half did serve abroad (Kinder, 2015, p. 5). Perhaps half of these served in combat, although that definition is surprisingly slippery: fronts became rear and vice versa in the war of movement that had developed by the time most American soldiers arrived (Krause, 2015), and while the American Expeditionary Forces originally only awarded gold service chevrons after six months of service "in the 'Zone of Advance,'… an ensuing controversy on how to define this geographical area caused AEF headquarters to relent in July 1918 and award the chevron to all troops who served in the theater of operations under Pershing's command" (Keene, 2011, p. 131). In any case, those who spent the war entirely in the United States were awarded a silver chevron after half a year's service, an insignia that, Keene (2011, p. 131) continues, became a "badge of shame." Overseas service had a higher memorial value: the Unknown Soldier buried at Arlington in 1921 was chosen from one of four exhumed in France though a third of American deaths occurred on US soil (Arlington National Cemetery, n.d.; Prost, 2014), and even a recent article on a website describing itself as providing "authentic and unfiltered perspectives on military and veterans issues," while lamenting that "the First World War is mostly forgotten," describes the planned national memorial as honoring "the more than 2 million Doughboys who went 'over there'," and does not mention the 2 million others who served in the United States (Schogol, 2018). Overseas service also had a higher monetary value,

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War, both official documents and ordinary people tended to think of it in relation to the Civil War (Ayres, 1919; Browne & Pillsbury, 1921; Meigs, 1997; Trout, 1999).

with the government eventually agreeing to pay veterans a ‘bonus’ of $1.25 for each day of service abroad, but only $1 for each day of domestic service (Dickson & Allen, 2004, p. 5).

Although Selective Service would come to completely replace voluntary enlistment in the army by the end of 1917, propaganda for morale building and for volunteers for other branches of service continued to make appeals not only to duty and honor but to seizing opportunity. Posters declared “The United States Army builds men” through “crafts”, “character” and “physique,” while the Navy was billed as “the service for travel and training” and “a wonderful opportunity for you” (Paus, 1919; Reuterdahl, 1918; Ruttan, 1917); young men were told that overseas service would provide “an education” as well as “adventure” (Flagg, 1917; Wharton, 1919). Such enticements were meant to be more than bluster. When it was discovered that 7% of inductees could not speak English and that a quarter could not read or write in any tongue, language and literacy programs were instituted (Chambers, 1987, p. 251), and 1.5 million men took part in educational opportunities provided to them including enrolling in European colleges or the purpose-built American Expeditionary Forces University (Coffman, 1998, p. 358). Vigorous health was promoted through dental care, vaccinations and dietary standards (Youmans, 1995). Thriftiness was enforced by requiring those with dependents to send part of their pay home and those without to put money into savings accounts (Keene, 2011). Legislation “created a cordon of vicelessness” around military installations, and charitable and government agencies went to work both at stateside training camps and overseas to provide wholesome diversions and “moral protection” for servicemen before and during deployment as well as after the Armistice (Kennedy, 2004; War Camp Community Recreation Fund, 1917; War Department Commission on Training Camp Activities, 1918; Zieger, 2000, p. 90). Military service – the formation of military subjects within military spaces – was meant to make better Americans, and promised to improve soldiers’ own post-war prospects.

The post-war period and the end of millions of soldiers’ service came more quickly than General Pershing and other military and government officials had expected (Kennedy, 2004). By February 1919, training camps, where half of the four-million-man army had remained for the duration of the war, were demobilized, and while the war department had intended to stagger men's return to civilian life and thus mitigate economic disruption, public pressure caused the demobilization process to speed up, peaking in June 1919 by which point 2.7 million soldiers had been discharged (Coffman, 1998, p. 357; Keene, 2011; Kinder, 2015). The government, fearing a rise of radicalism, wanted to ensure returning soldiers' re-employment (Keene, 2015, p. 85), but reintegration programs were lackluster at best: they failed to address the postwar agricultural depression or changes in industry, provided little succor to those veterans who had returned without recognized disabilities and, it was charged, gave insufficient support to those who had (Kinder, 2015). Most men were simply given a train ticket to the destination of their choosing and sent on their way, left to compete with war workers and government employees who had also been released into the civilian labor pool (Kinder, 2015). Although the circumstances of the First World War were not the only cause of rapid changes in agriculture during this period, they did exacerbate existing trends towards mechanization, deeper entanglement in a monoculture- and market-based economy, and farm consolidation, all of which, coupled with plummeting crop prices and land values, reduced rural opportunities especially on mid-sized farms (Danbom, 2017; Gardner, 2006; Hurt, 2002). Throughout the next decade, veterans' groups would allege that military service, coupled with government inaction, had been detrimental to their prospects of economic advancement (Bartlett, 1937; Keene, 2001).

War by definition made individuals spatially and socially mobile. Military commitments took individual men from the spaces of their everyday lives and moved them to training camps or sent them abroad; it brought them into new if temporary occupations as soldiers. Depending on one's outlook, one might hope or fear that these changes would permanently alter a man's geographic or economic life course trajectory into the postwar period. Depending on the observer, whether a war propagandist or veterans' association representative, the changes induced by emplaced military experiences could be cast as positive or negative results. Can analyzing the postwar outcomes of individuals describe a pattern of association between their mobility and the characteristics and locations of their service, and add nuance to these contradictory narratives? The Great War possessed a novel spatiality because its battlefields were an ocean away, because it was feasible to traverse that ocean with men and materiel, and because of changes within the United States itself that allowed it to supply food, fiber and soldiers on an industrial scale. What would be wrought by this new geography of militarism? How would it interact with new domestic geographies in a period of rapid change to affect individual mobilities? What population patterns and discourses would evolve from the Great War experiences of farming individuals from the Great Plains, whose occupational group was no longer in the majority and whose home was no longer a frontier?

Previous work:

The body of work on the aftermath of American Great War experiences includes two studies, mentioned briefly in the preceding chapter, which examine socioeconomic and spatial mobility outcomes a decade after the conflict's end by using military data linked to the 1930 census. Ethan Doetsch's (2012) doctoral dissertation uses data from across the nation but focuses particularly on the Great Migration. Ron Laschever's (2013) working paper focuses on the members of a particular regiment and their civilian neighborhoods as a venue to test a new statistical methodology for disentangling endogenous and exogenous effects. In both studies, the 1930 census was selected in part because it contains the two columns which identify WWI veterans, but also because by 1930, unlike by 1920, it is believed that veterans' patterns would have had a chance to equilibrate: even the last members of the army of occupation would have returned by this point and even those who may have returned temporarily to a childhood home – as many WWII veterans are known to have done briefly upon their demobilization – would have had time to establish more stable postwar patterns (Goldscheider & Goldscheider, 1994).

Manually linking 1917 draft registration cards to the 1930 census, Doetsch was able to test for the effects of prewar, civilian characteristics like occupation, race and family structure on the probability of conscription and, in having observation points before and after the shock of possible military service, was able to control for these prewar variables when examining the differences between the outcomes of veterans and of nonveterans. While white veterans gained some protection from downward socioeconomic mobility and were more likely to make an interstate move than white non-veterans, Doetsch (2012, pp. iii–iv, 5, 46) also found that military service had no such significant impact on the outcomes of black veterans versus non-veterans. Doetsch (2012, pp. 41–42) further notes that while whites who were in farming occupations before the war had lower odds of service than white men in other occupations, agricultural employment did not likewise protect African American men from the draft. Finally, men of either race who were farming before the war were no more likely to leave such occupations if they had served than if they had remained civilians (Doetsch, 2012, p. iv). Laschever used draft registration cards, service data drawn from Maryland's published WWI military roster, and data about a selection of each linked individual's closest neighbors in 1930 to examine whether the ties an individual developed within his wartime company and his postwar civilian community were predictive of his employment outcomes. Controlling for both civilian and military confounding variables, such as age, marital status, prewar occupation, prewar county of residence, and wounds and promotions received, Laschever (2013, p. 1) found that a member of one's own company "gaining employment, all else equal, increase[d] a veteran's likelihood of employment by 0.8 percentage points." Both of these studies extend our understanding of how military and civilian life are intermeshed and show the promise of using longitudinal, linked datasets to explore these interconnections. Doetsch and Laschever empirically solidify anecdotal evidence that some soldiers sought to leverage their wartime experience into better opportunities in new locales (Keene, 2011, pp. 185–187).

However, the work of Laschever and Doetsch also suggests additional avenues of inquiry. As already seen in Chapter 2's preliminary analyses, and as shown in demographic work on soldiers and veterans, the specificities of military service matter (MacLean & Elder, 2007). Neither the census nor the draft registration cards that Doestch uses can speak to these particularities. Laschever's paper does include many details of military service both at the scale of the individual soldier – wounds, ranks, commissions, citations – and aggregated to the characteristics of his company or battalion – percent of the unit wounded, percent of unit killed, unit's highest average rank. However, in focusing solely on the 313th Infantry Regiment, Laschever's study is constrained to individuals who were drafted, were sent overseas and who all experienced less than two months of combat service. Further, Laschever's 313th Infantry Regiment was composed of men from Maryland, Pennsylvania and the District of Columbia, and was nicknamed 'Baltimore's Own' for the large number of its members from that city (Cowan, 1999). By 1930, 60 to 100% of these places' populations were defined as urban by the US Census Bureau (1995), exceeding the percentage of urban residents in the United States as a whole. Rural versus urban is not one of the controls that the author employs, and the while dummies for states, counties and farming occupation are included, Laschever's paper does not explore their impact in detail. With a sample of linked individuals spread across the entire country (n = 6,848), neither does Doestch delve into more localized rural-urban or agricultural patterns.

In short, many aspects of place are yet unexplored. The rural lacuna in Great War historiography remains. There has been little written, whether in classic books or in cutting-edge articles employing novel methodologies, on the relationship of farmers and rural communities to war. There has been little work closely examining the interactions of rural/urban, domestic/foreign and civilian/military places with individual characteristics, or conceiving of rural or agriculturally-employed individuals as "local time spaces" capable of movement and military experience (Massey, 1999, p. 262). There is still much to be discovered about the doughboys in Lewis and Young's lyrics: about the individual who is a farm boy, a soldier and a veteran, who brings the civilian and military together in his own life course, and through whom war continued to affect the American heartland long after the Armistice. Using the work of Laschever and Doetsch as a firm foundation, with this chapter I move forward to focus more explicitly on place and on the interaction of rural and military places through the medium of individuals.

A first look at farming veterans with 1930 census data:

It is possible to begin addressing this blind spot using newly available big historical microdata and assessing measurable individual outcomes using quantitative methods. Before moving into the analyses possible with the linked North Dakota data, composed as described in Chapter 2, first consider Tables 3.1-4, based on data available from the 1930 census alone and providing a nation-wide backdrop for how military service, occupation and spatial mobility were related to each other. These cross tabulations are based on men born between 1880 and 1902, the 2.5th and 97.5th percentile of birth years of enumerated WWI veterans. I refer to this group as the WWI Cohort, and its members will be the focus of the analyses in Chapter 5. As noted by Doetsch (2012, pp. iv, 46) and as cited above, although veterans were no more likely to leave farming than civilians, those in farming occupations were less likely to serve than those with other pre-war occupations in the first place. Indeed, as reflected in Table 3.1, whether via draft deferrals which were increasingly granted to farmers and farm laborers (Chambers, 1987, p. 190) or via individualized or localized resistance to military service (Bissett, n.d.; Hachey, 1993; Keith, 2004), in 1930 there were fewer farming WWI veterans than would be expected from these groups' shares of the cohort population. At first glance, Table 3.2 shows that veterans were less mobile than expected between their birth and 1930, but if only those who were native-born are considered, veterans were more spatially mobile than expected, with 40% of American-born veterans having moved outside their state of birth compared to 33% of civilians. [55] Bringing veteran status, occupation and spatial mobility together in Table 3.3, fewer farming civilians and more farming veterans have moved than expected. A line of causality cannot be drawn with such cross sectional data: military service may have broadened horizons and encouraged subsequent movement, or those who were already more mobile may have been more likely to enter military service, whether voluntarily out of a desire for adventure or, unable to secure a deferral on the basis of being an indispensable member of an industrial or agricultural enterprise, through the draft (Chambers, 1987; Keith, 2004). However, military service is in any case strongly associated with spatial mobility even among the farming population, and even while the farming population was more sedentary than the population as a whole (79% versus 65% of the native-born living in their state of birth), more than 1 in 5 native-born farming individuals had made an interstate move since birth.

[55] As mentioned in the previous chapter, in this dissertation I will often refer to WWI veterans simply as 'veterans' and to other men simply as 'civilians' though a small number of the latter (20,305 of 16,356,147 men) had served only in previous wars. Veterans of other wars who did not also serve in the Great War make up 0.58% of all IPUMS-identified male veterans born 1880-1902 and 0.12 % of those that I refer to as 'civilians.'

Table 3.1: Cross-tabulations of veteran status with farming occupation, 1930 *Amongst the WWI Cohort (males born 1880-1902)*				
		Occupation in 1930		
		non-farming	farming	total
non-veteran	frequency	12,973,642	3,367,864	16,341,506 (82.42%)
	expected	13,226,033	3,115,473	
veteran	frequency	3,073,618	412,166	3,485,784 (17.58%)
	expected	2,821,227	664,557	
total	frequency	16,047,260 (80.94%)	3,780,030 (19.06%)	19,827,290
chi squared				146698 (p<0.0001)
Cramer's V				-0.08513

Notes: 'farming' includes those coded as farmers and farm laborers in IPUMS data. WWI veteran status defined by IPUMS veteran coding and parsed 'Which war?' column text.

Table 3.2: Cross-tabulations of veteran status with movement between birth state or foreign region of birth to 1930 residence state *Amongst the WWI Cohort (males born 1880-1902)*								
		Among all birthplaces				Among native-born only		
		moved	same state	total		moved	same state	total
non-veteran	frequency	7,895,457	8,446,049	16,341,506 (82.42%)		4,176,575	8,446,049	12,622,624 (80.26%)
	expected	7,845,865	8,495,641			4,349,081	8,273,542	
veteran	frequency	1,623,999	1,861,785	3,485,784 (17.58%)		1,241,854	1,861,785	3,103,639 (19.74%)
	expected	1,673,591	1,812,193			1,069,348	2,034,291	
total	frequency	9,519,456	10,307,834	19,827,290		5,418,429	10,307,834	15,726,263
chi squared				3429.5 (p<0.0001)				52896.0 (p<0.0001)
Cramer's V				0.0132				-0.058

Notes: WWI veteran status defined by IPUMS veteran coding and parsed 'Which war?' column text. Movement based on agreement or disagreement in IPUMS BPL and STATEFIP codes.

Table 3.3: Cross-tabulations of veteran status with movement between birth state or foreign region of birth to 1930 residence state *Amongst the WWI Cohort (males born 1880-1902), in a farming occupation in 1930*								
		Among all birthplaces				Among native-born only		
		moved	same state	total		moved	same state	total
non-veteran	frequency	953,202	2,414,662	3,367,864 (89.1%)		650,552	2,414,662	3,065,214 (88.63%)
	expected	958,053	2,409,811			668,038	2,397,176	
veteran	frequency	122,099	290,067	412,166 (10.9%)		103,194	290,067	393,261 (11.37%)
	expected	117,248	294,918			85,708	307,553	
total	frequency	1,075,301	2,704,729	3,780,030		753,746	2,704,729	3,458,475
chi squared				314.8 (p<0.0001)				5146.9 (p<0.0001)
Cramer's V				-0.0091				-0.0386
Notes: 'farming' includes those coded as farmers and farm laborers in IPUMS data. WWI veteran status defined by IPUMS veteran coding and parsed 'Which war?' column text.								

In Table 3.4, I compare the socioeconomic index (SEI) assigned by the Minnesota Population Center (MPC) among different, "transectional" subpopulations in the WWI Cohort, to use Chickering's (2007, p. 469) term. First cited in Chapter 1, Chickering's social history of a German border town emphasizes how single characteristics are insufficient to describe wartime experiences. Thus Table 3.4 examines subpopulations defined by the overlap – the "transect" – of categories. Unlike spatial mobility and being employed in agriculture, which depending on personal or contextual circumstances could be an indication of prosperity or disadvantage, SEI provides an ordered and unidirectional measure of socioeconomic standing. Here one almost immediately sees the importance of making a space in Great War historiography for rural and farming individuals. The farming population has a much lower mean SEI than the non-farming population, and while native-born movers as a whole appear to have a slightly higher socioeconomic standing than those living in their birth state, for native-born farmers and farm laborers this relationship is reversed. Likewise, while veterans have a significantly higher SEI compared to civilians as a whole, among just farming men, veterans have a slightly lower socioeconomic status.

Table 3.4: Comparing socioeconomic index (SEI) across veteran and farming statuses *Amongst the WWI Cohort (males born 1880-1902)*				
Population	Subset	Mean	Standard deviation	# observations
Men born 1880-1902	non-veteran	22.21	22.39	16,341,506
	veteran	27.34	25.90	3,485,784
Men born 1880-1902	non-farming	25.60	25.00	16,047,260
	farming	12.52	3.79	3,780,030
Farming men born 1880-1902	non-veteran	12.54	3.75	3,367,864
	veteran	12.34	4.09	412,166
Native men born 1880-1902	moved birth- 1930	24.79	24.70	5,418,429
	did not move birth - 1930	23.09	22.73	10,307,833
Native farming men born 1880-1902	moved birth- 1930	12.31	4.06	753,746
	did not move birth - 1930	12.75	3.58	2,704,729
Native veterans born 1880-1902	moved birth- 1930	28.12	26.84	1,241,854
	did not move birth - 1930	27.54	25.64	1,861,785
Notes: All differences in means are significant at p<0.0001. SEI coded by IPUMS. Maximum SEI among farming individuals is 36; among all occupations is 96. 'Farming' includes those coded as farmers and farm laborers in IPUMS data. WWI veteran status defined by IPUMS veteran coding and parsed 'Which war?' column text.				

To delve more deeply into the relationships sketched out with the 1930 census data and to exploit the inquiries that Doestch and Laschever have inspired with regards to service variations and rural and agricultural characteristics, more detail is required. In the sections below, I begin with a description of the civilian and military data that I employ that allow these investigations and an overview of how they were prepared for use. The first steps of this process were covered in Chapter 2, but here I describe the subsequent steps by which one version of the individual-scale linked Rank and File Subset was further refined, recoded, and associated with county-level civilian place characteristics. Next, I use univariate regressions to test if duration, overseas service and frontline service are predictive of SEI, residing in a different county in 1930 than the county of service entry, and, among those farming prewar, moving to another occupation. In other words, I look to see if there is statistical support for the popular perception that experience of military and especially foreign places was related to postwar civilian outcomes amongst people from a predominantly but not entirely rural part of the country.

Having examined the results of these rather simplistic models for different subgroups of the linked rank and file population, subset by occupation and entry method, I then take a step back and look at what predicts the military independent variables themselves. I use both these sets of models – the univariate models predicted by and the models predicting service duration and locations – to discuss convolutions of age, entry method and service duration and explain the choices I implemented to try to clarify the relationships between the military characteristics of interest and mobility outcomes. Then I move on to building multivariate models predicting SEI, intercountry migration and farm-leaving starting with individual prewar civilian predictors, adding contextual civilian predictors, and then adding data on duration, overseas service and frontline service, testing out various interactions and specifications. Not all of the steps in constructing the models are presented in the body of Chapter 3, though some of these variations may be found in the appendix. At the end of all this modeling, meant to tease out whether aspects of military service, particularly overseas service, were related to certain occupational and geographical outcomes, I conclude with a discussion of whether doughboys from agricultural backgrounds stayed “down on the farm.”

Data and data preparation:

Individual-level census, roster and linked data

For the analyses in Chapter 3, I used a variation of one of the rank and file linked subsets described in Chapter 2. To recap, I use an un-anonymized version of the Minnesota Population Center’s 1930 census database, which includes an indication of WWI veteran status and demographic data for every enumerated individual in the 48 contiguous states plus the District of Columbia (Ruggles et al., 2013). The accessibility and comprehensiveness of this database allows me to investigate small groups and, along with its locational coding (at the level of the county), allows me to visualize and analyze small places. I made various modifications to simplify the data, for instance reducing state or country of birth data to a few nativity categories, at least for the purposes of analysis. For this chapter, I also simplified the occupational coding from IPUMS' nearly 300 OCC1950 codes as summarized in Table 3.5. Reducing the codes in this way reduces some of the uncertainty inherent in classifying individual's occupation: thus 'BANK TELLER' no longer needs to be distinguished from 'BANK CASHIER' nor 'HUCKSTER' from 'SALESMAN.' However, the connection between the occupation text transcribed from the census manuscript and the OCC1950 coding is not always transparent, as the latter takes other census information into account, such as industry and ownership. For instance, of the 5,825,998 individuals given an OCC1950 code of 100, the code for farmers, 91.4% have an occupational text field of 'FARMER' and nearly all the rest have a text field of an identifiable variation or misspelling of 'FARMER;' however, over a thousand individuals denoted as 'LABORER' or 'FARM LABORER' have also received this code rather than those assigned to farm laborers. Of the 3,988,862 individuals coded as farm laborers, 238,225 are recorded in the occupation text string simply as 'FARMER,' while 2,326,557 of 6,648,817 recorded simply as 'LABORER' are coded as *farm* laborers. A handful of other textstrings do not appear to correspond to agriculturalists at all. Further, over 2.6 million members of the WWI cohort are coded with '979,' a notation indicating that the transcribed occupations have not been standardized; of these 97% do have some text information, one of over half a million unique text strings. The '979' observations are also missing variables derived from occupation, industry and ownership, the most important for my purposes being SEI. In the linked data (reintroduced below), I was able to translate many of the as yet unstandardized 1930 occupation strings into one of the categories listed in Table 3.5, and did so for the farm-leaving model. For the other models, however, I dropped the '979' observations.

Table 3.5: Condensing IPUMS occupation classifications

OCC1950 codes	Occupations	Five codes	Farming codes
100-199	farmers	farming	known farming
800-899	farm laborers		
<100	professionals	white collar	known not farming
200-299	managers		
300-499	clerical and sales		
500-699	craftsmen and operatives	blue collar	
700-799	services		
900-978	blue collar laborers		
980-996	non workers	none (in linked data: all unemployed were recorded by roster as students in 1917/18)	
979	not yet coded	unknown occupation	Unknown (in linked data: census occupation manually recoded where possible to known farming or known not farming among those recorded by roster as farming in 1917/18)
997, 999	missing, blank		

The coding and recoding of occupation data in the census also provided the means of simplifying the occupation data provided in my second big historical microdata source, North Dakota's WWI military roster. As mentioned previously, state military rosters are invaluable in the absence of surviving federal records and North Dakota's four volumes, available as OCR'ed text via HathiTrust, are particularly useful for providing information on both prewar civilian and wartime military characteristics (Fraser, 1931; Schaefer, 2009; "The 1973 fire, National Personnel Records Center," n.d.). Limited in some ways – to those with a connection to North Dakota, a very rural state with a particular agricultural, economic and ethnic setting – the roster's service diversity and the analysis it allows complements earlier work with other military records. In addition to the standardization that I undertook as described in Chapter 2, for this section I also standardized prewar occupations. To do so, I built a dictionary of text string- OCC1950 code pairs based on the 1930 census data. While the OCC1950 code enhances comparability across decadal censuses, being based on 1950 occupations it has no dedicated codes for some occupations that were still rather common in the decade before World War I, like steel workers, farriers or sharecroppers;[56] I manually edited the dictionary to account for these missing occupations. The IPUMS census data distinguishes between blue collar laborers and farm laborers, but in the roster some men are described simply as "laborer[s]" As I cannot clearly assign them as a particular kind of laborer, in the analyses I either left such men as a separate category (in the SEI and spatial movement models) or removed them (in defining the sample population for the farm-leaving model). In the linked data, all of the unemployed were listed by the roster as 'student.'

When I linked the census and the roster data together, I experimented with different linkage methods and different quality control protocols, trying to balance credibility and having a sufficient sample size for analysis. For this chapter, I decided to use the data linked on the basis of bigram name comparisons, further constrained to those roster-census pairs that include an enumerated WWI veteran (referred to in Chapter 2 as the BI-C linked dataset).[57] I once again only considered surviving rank and file non-career army veterans who entered military service either via conscription or voluntary enlistment, who did not receive commissions, and who only began service during the Great War. [58] Additionally, for Chapter 3 I also removed those with extreme ages or service durations (those outside the 1st and 99th

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[56] On the other hand, piano tuners get their own category, as do five different categories of mechanics and "Garage laborers and car washers and greasers." (Minnesota Population Center, n.d.-b)

[57] Since the time the linked datasets were built, the MPC has coded the "which war?" text string into a standardized variable. While my definition of WWI veterans was based on the original text string, none of the linked individuals used in this chapter were not coded as WWI veterans in the MPC's updated database.

[58] In the *Roster*, the beginning of service is denoted by one of four keywords, two of which pertain to males in non-officer ranks, namely 'enlisted' and 'inducted.' 'Inducted' is taken to mean 'drafted' as this was the common usage of the term on statement of service cards and in period publications; the proportions of 'enlisted' to 'inducted' in the roster data also align with those known for voluntary versus drafted service entry (*Army-Navy-Air Force register and defense times*, 1919; "World War I United States Military Records, 1917 to 1918," 2017; Chambers, 1987).

percentiles of these variables after removing impossible values such as negative numbers). After applying these constraints, the remaining individuals represent 23,059 theoretically linkable men in the roster. From the thus already constrained linked dataset, I have further only retained those with known prewar marital statuses, with known prewar and postwar occupations, and known counties of entry. For the models using men of all prewar occupations, this meant removing all the observations with missing or ‘979’ OCC1950 occupation codes; for the models using men formerly known be farming this meant removing those individuals whose 1930 occupations were unknown even after manual recoding. The linked dataset with all known prewar occupations thus includes 21.1% of the theoretically linkable dataset described here (4,589 men), while the linked formerly farming dataset includes 11.3% of the theoretically linkable roster individuals or 24.6% of theoretically linkable prewar farmers and farm laborers (2,609 men).

The roster contains information related to the places that an individual served, including the locations of draft registration, entry, training and exit; notations about overseas service and lists of Western Front sectors and engagement; as well as an indication of how long an individual served, that is, of how long an individual spent in military spaces more broadly defined whether domestic training camps or battlefields. To assign a standardized county of entry and thus to provide a means of attaching place information via this location to the individual records, I parsed the roster’s entry location information into town and state. I then ran these location strings through a Google API geocoder to identify coordinates and create points. With some towns disappearing over the decades or with some locations’ names in the roster dataset being marred by typos, the geocoded file needed a good deal of manual cleaning and supplemental research using historical gazetteers, and genealogical and local history websites such as Ghosts of North America and FortWiki (Larson, 2018; Stanton, Thayer, Dilley, & Beck, 2018). In order to attach prewar contextual characteristics, I then intersected these points with a slightly modified 1910 county boundary file from NHGIS to attach county fips codes (Manson, Schroeder, Van Riper, & Ruggles, 2017).[59] For the unusual entry places that were listed only by county – and for the registration places that were mostly listed by county – I simply used the 1910 county name to attach the fips code and associated centroid. These fips codes could then be used to easily attach published county-level data via a tabular join.[60]

In order to be able to judge whether a person had moved residence between service entry and 1930, I also needed to assign his entry point and 1930 residence to time-invariant boundaries as a number of counties changed shape over those two decades.[61] First, a handful of counties in the IPUMS data, as noted in the documentation, do not have fips codes that align with those traditionally assigned to those counties: I recoded these (Minnesota Population Center, n.d.-a). In preparation for the work presented in Chapters 4 and 5, and following the example of Fishback, Kantor, and Willis (2002), I also collapsed small and problematic geographies such that, for instance, Virginia's independent cities are subsumed in the counties that surround them and New York's five boroughs become one unit. The 1930 residence 'county' was assigned on the basis of these modified 'fishfip' codes. I then intersected the entry location points with a similarly modified shapefile to attach this new coding to the 1917/18 entry location: thus a change in the fishfip reflects an individual crossing a boundary between the start of his military record and 1930 rather than a boundary crossing him.

[59] The 1910 county boundaries available from NHGIS and the counties listed in the aggregate data from ICPSR that I will describe momentarily do not quite match. In South Dakota, the NHGIS county boundary shapefile for 1910 lacks Shannon and Washington counties, includes Pine Ridge Reservation as a county, and has only slivers of Washabaugh and Bennett counties. In the shapefile, I merged Pine Ridge, Washabaugh and Bennett counties into one 'county.' I added or modified the geographical identifiers in the ICPSR data to match the available county identifiers in the modified NHGIS files: in most cases, a simple recoding. The 1910 geographical identifiers for the troublesome South Dakota counties were reset to that for 'Pine Ridge County.'

[60] I followed a similar procedure of geocoding and tabular joins to associate place information with training and exit locations in subsequent chapters.

[61] As will be seen in Chapter 4, soldiers were often discharged (and had their official records end) at specially built demobilization camps rather than in their home towns, therefore comparing 1930 residential location to service entry location is the most appropriate measure of postwar, civilian spatial mobility.

Pre-aggregated agricultural and population census data

The civilian contextual data attached to each individual's entry location and, if possible, registration location, are derived from 1910 aggregate population and agricultural census data made available via ICPSR (Haines, Fishback, & Rhode, 2016; Haines & Inter-university Consortium for Political and Social Research, 2010).[62] While these data are already available at the county level, this scale also seems appropriate as the county was the "basic organization unit" for implementing the draft, the scale at which the militarization of the population was implemented (Keith, 2004, p. 59). The era of the Great War was a time of rapid urbanization and rural to urban migration was of great concern to contemporaries, so I have included the urban percent of the county population as one of the predictors. In the first of the maps shown in Figure 3.1, two east-west bands of higher urbanization in North Dakota follow the paths of the states two main railroads.[63] As will be described more fully in Chapter 5, the decades around the turn of the century were also a time of rapid change in the agriculture of the Great Plains, developing within a wider, national context of economic development but also reflecting regional patterns (Sylvester & Gutmann, 2008). Maps of the three measures of this agricultural context that I employed in this chapter's analyses fill the remainder of Figure 3.1: average farm value, percent of farms operated by tenants, and percent of farm acres in wheat. The 1910s were a period of unprecedented prosperity, with rising crop prices and rising land values (Danbom, 2017; Gardner, 2006; Hurt, 2002). High land values in the northern Great Plains and western midwest had been associated with speculation and high levels of tenancy, a form of tenure that, while typically a marker of poor economic

[62] The only modification I made to the 1910 data was to add or modify the geographical identifiers in the ICPSR data to match the available county identifiers in the NHGIS files, modified to account for the South Dakota issues mentioned in the previous footnote.

[63] The maps in Figure 3.1 include the top five entry states among the linked farming dataset: North Dakota, Minnesota, Montana, South Dakota and Iowa. The boundaries used here the 1910 NHGIS boundaries modified to account for 'Pine Ridge County' in South Dakota. A version of these maps with these variables aggregated to the modified 1930 county boundaries used to define prewar-1930 intercounty migration (and used in calculations in Chapters 4 and 5) may be found in the appendix, Appendix Figure 3.1.

conditions, was often viewed as a step in a farming life course from farm laborer to farm owner, and was a form of tenure that spread rapidly in the first three decades of the twentieth century (Gardner, 2006, p. 55; Hachey, 1993, p. 45; Saloutos & Hicks, 1951, pp. 12–15, 24–25; United States Census of Agriculture, 1952, p. 72). Wheat farming also tended to be associated with speculation in the Dakotas' early days: large 'bonanza' farms relied on capital investment and (initially horse-drawn) mechanization to leverage economies of scale and produce wheat as a cash crop (Tweton & Jelliff, 1976). Wheat acreage would also greatly expand and prices would rise during the Great War in response to European and military demand (Eighmey, 2010; Ermacora, 2015).

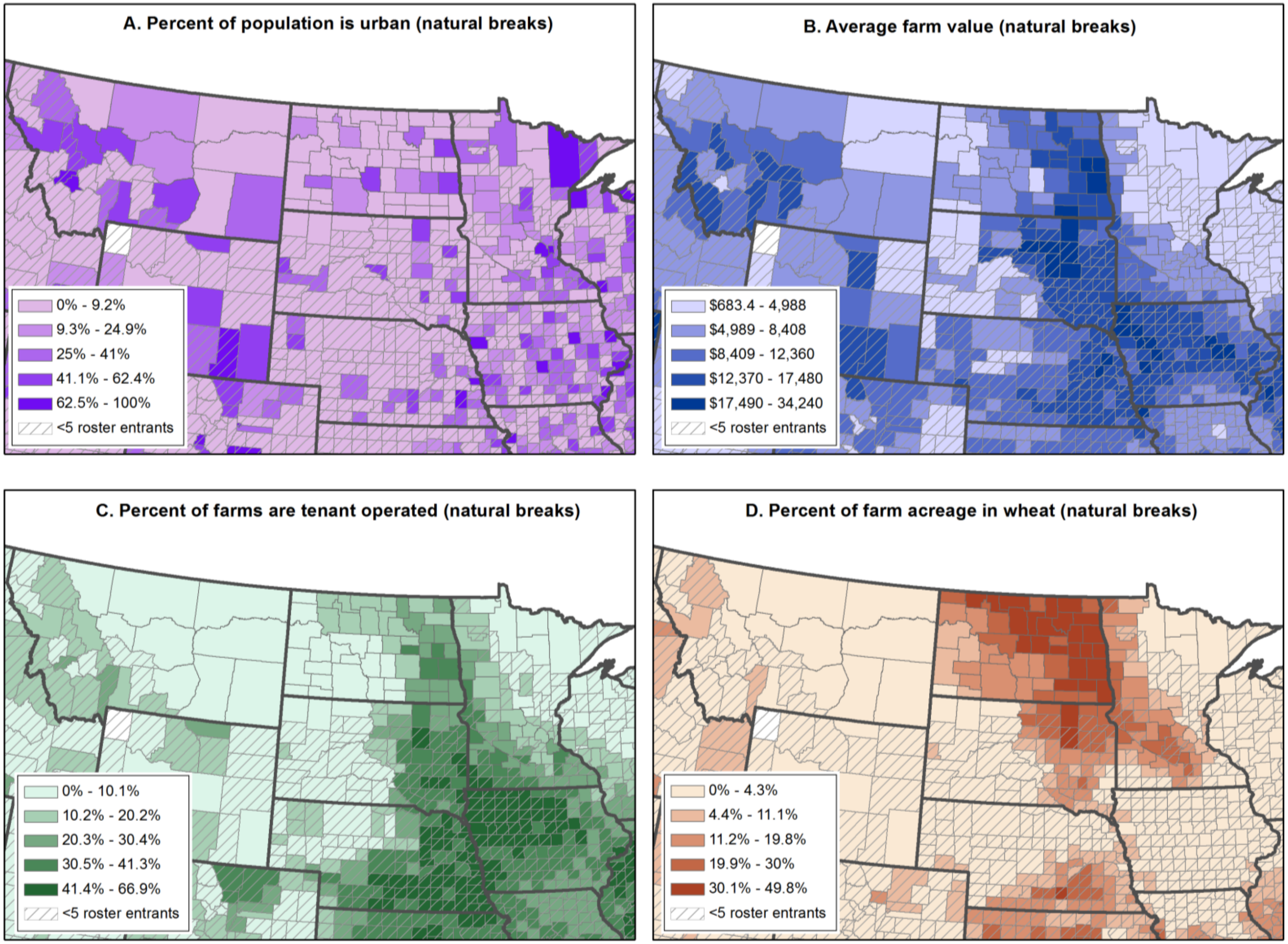


Figure 3.1: Agricultural context of North Dakota and nearby states, 1910. Including the top five entry states among the linked farming dataset: North Dakota, Minnesota, Montana, South Dakota and Iowa. Data sources: Fraser, 1931, via HathiTrust; 1910 US Agricultural Census data via Haines, Fishback & Rhode (2016); 1910 county boundaries modified from NHGIS (Manson, et al., 2017).

Summary of the linked data:

Table 3.6 summarizes the refined linked datasets used in this chapter with reference to theoretically linkable rank and file soldiers. Within the linked data, I include summary statistics for all individuals, for just draftees, for prewar farming men who either volunteered or were drafted, and for just previously farming draftees. As is common in record linkage studies, foreign-born individuals are more difficult to link, though as mentioned in Chapter 2 the apparent drop in their proportion might reflect incidental difficulties related for instance to name changes or may reflect substantive changes in the population as foreign-born individuals may have returned to their places of birth.[64] Also as is common in record linkage studies, the proportions of movers to non-movers shifts: there is a higher proportion of people who moved between birth and service entry in the theoretically linkable subset than in the actually linked subset, as seen when comparing the two left most data columns in the table. While not directly measurable, it may be supposed that a similar pattern would apply over the 1917/18-1930 period, with the linked population appearing less mobile than the roster population from which it is drawn. It is therefore likely that results showing a group within the linked subset to be more spatially mobile would underestimate how much more. The percent of prewar white collar individuals is lower in the full versus the linked rank and file data, even if the unknowns are removed from the denominator. If occupations are sticky, this might result in the linked data having a slightly higher proportion of postwar white collar workers than it should. The 1910 contextual variables' and the military variables' measures are quite similar between the leftmost data columns, though there are slightly more promoted, unwounded and non-disabled individuals in the linked dataset to be analyzed here.

[64] Chapter 1 also mentioned a discrepancy between the expected and observed numbers of different subgroups of veterans: numbers based on nativity and numbers based on race. Race is not one of the variables recorded in North Dakota's military roster, likely because so few North Dakota residents in this period were non-white.

Table 3.6: Comparing surviving rank and file soldiers in the roster to those in the linked datasets							
			Surviving rank and file soldiers[A] (n=23,059)	Rank and file soldiers analyzed here (linked to census with known census outcomes; known prewar place, occupation and marital information; additional adjustments)			
				All prewar occupations [C]		Prewar farming individuals [C]	
				Drafted or volunteered (n=4,859)	Drafted only (n=3,617)	Drafted or volunteered (n=2,609)	Drafted only (n=2,087)
	Variable	*Value*					
Roster variables	Own and parental nativity [B]	Foreign-born	4,326 (18.76%)	554 (11.40%)	451 (12.47%)	318 (12.19%)	269 (12.89%)
		Native-born, foreign or mixed parentage (2nd gen)	10,101 (43.81%)	2,520 (51.86%)	1,990 (55.02%)	1,384 (53.055)	1,182 (56.64%)
		Native-born, native parents (3rd gen.)	6,252 (27.12%)	1,785 (36.74%)	1,1176 (32.51%)	907 (34.76%)	636 (30.47%)
		Native-born, unknown parents	2,369 (10.27%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
		Unknown	8 (0.03%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
	Year of birth[B]	*mean (standard deviation)*	1892.9 (sd=3.46)	1893.97 (sd=3.31)	1893.56 (sd=3.00)	1894.08 (sd=3.05)	1893.75 (sd=2.76)
	Age in 1930[B]	*mean (standard deviation)*	37.1 (sd=3.46)	36.03 (sd=3.31)	36.44 (sd=3.00)	35.92 (sd=3.05)	36.25 (sd=2.76)
	Prewar occupation, classified using census-based dictionary	Farming [C]	10,593 (45.94%)	2,358 (48.53%)	1,903 (52.615)	2,609 (100%)	2,087 (100%)
		Blue collar	4,559 (19.77%)	1,010 (20.79%)	666 (18.41%)	0 (0%)	0 (0%)
		Unspecified “laborer”	2,020 (8.76%)	353 (7.26%)	274 (7.58%)	0 (0%)	0 (0%)
		White collar	3,581 (15.53%)	909 (18.71%)	662 (18.30%)	0 (0%)	0 (0%)

		Known unemployed (in linked data, all were students)	967 (4.19%)	229 (4.71%)	112 (3.105)	0 (0%)	0 (0%)
		Blank/ not given	1,339 (5.81%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
	Draft registration status and entry method	Unregistered volunteer	2,855 (12.38%)	625 (12.86%)	0 (0%)	256 (9.81%)	0 (0%)
		Registered volunteer	2,923 (12.68%)	617 (12.7%)	0 (0%)	266 (10.20%)	0 (0%)
		Registered draftee	17,278 (74.94%)	3,617 (74.44%)	3,617 (100%)	2,087 (79.99%)	2,087 (100%)
	Months in service	*mean (standard deviation)*	13.59 (sd=6.85)	13.77 (sd=6.93)	11.56 (sd=5.67)	13.31 (sd=6.78)	11.51 (sd=5.49)
	Service duration, categorical	6 months or less	3,144 (13.63%)	629 (12.95%)	600 (16.59%)	315 (12.07%)	306 (14.66%)
		>6 to 12 months	6,682 (28.98%)	1,422 (29.27%)	1,300 (35.94%)	849 (32.54%)	798 (38.24%)
		>12 to 18 months	7,107 (30.82%)	1,466 (30.17%)	1,222 (33.78%)	798 (30.59%)	708 (33.92%)
		More than 18 months	6,126 (26.57%)	1,342 (27.62%)	495 (13.69%)	647 (24.80%)	275 (13.18%)
	Share of service time overseas[E]	*mean (standard deviation)*	0.37 (sd=0.37)	0.37 (sd=0.37)	0.33 (sd=0.37)	0.36 (sd=0.37)	0.32 (sd=0.37)
	Share of service time overseas, *among those who served abroad*[E]	*mean (standard deviation)*	0.69 (sd=0.17)	0.69 (sd=0.17)	0.70 (sd=0.18)	0.69 (sd=0.17)	0.70 (sd=0.18)
	Service location, categorical	Domestic only	10,752 (46.63%)	2,219 (45.67%)	1,912 (52.86%)	1,261 (48.33%)	1,136 (54.43%)
		Overseas, non- frontline	4,994 (21.66%)	1,110 (22.84%)	629 (17.39%)	492 (18.86%)	313 (15.00%)
		Overseas with named engagements of sectors	7,313 (31.71%)	1,530 (31.49%)	1,076 (29.75%)	856 (32.81%)	638 (30.57%)

	Promoted	No	11,549 (50.09%)	2,320 (47.75%)	1,995 (55.16%)	1,440 (55.19%)	1,280 (61.33%)
		Yes	11,507 (49.91%)	2,539 (52.25%)	1,622 (44.84%)	1,169 (44.81%)	807 (38.67%)
	Wounded	No	21,424 (92.92%)	4,523 (93.08%)	3,408 (94.22%)	2,418 (92.68%)	1,962 (94.01%)
		Yes	1,632 (7.08%)	336 (6.92%)	209 (5.78%)	191 (7.32%)	125 (5.99%)
	Disabled	No	21,094 (91.49%)	4,514 (92.9%)	3,378 (93.39%)	2,430 (93.14%)	1,948 (93.34%)
		Yes	1,962 (8.51%)	345 (7.10%)	239 (6.61%)	179 (6.86%)	139 (6.66%)
	Moved state, birth to registration [B,D]	No	5,585 (24.22%)	1,482 (30.50%)	1,292 (35.72%)	809 (31.01%)	742 (35.55%)
		Yes	14,616 (63.39%)	2,727 (56.12%)	2,313 (63.95%)	1,534 (58.80%)	1,338 (64.11%)
		Unknown/ unregistered	2,858 (12.39%)	650 (13.38%)	12 (0.33%)	266 (10.20%)	7 (0.34%)
	Moved state, birth to entry [B,D]	No	6,079 (29.09%)	1,683 (34.64%)	1,334 (36.88%	908 (34.80%)	765 (36.66%)
		Yes	16,078 (69.73%)	3,176 (65.36%)	2,283 (63.12%)	1,7041 (65.20%)	1,322 (63.34%)
		Unknown	272 (1.18%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
	Moved state, registration to entry	No	17,107 (74.19%)	3,805 (78.31%)	3,346 (92.51%)	2,191 (83.98%)	1,981 (94.92%)
		Yes	1,828 (7.93%)	404 (8.31%)	259 (7.16%)	152 (5.83%)	99 (4.74%)
		Unknown/ unregistered	4,124 (17.88%)	650 (13.38%)	12 (0.33%)	266 (10.20%)	7 (0.34%)
	Moved county, registration to entry	No	15,837 (68.68%)	3,499 (51.43%)	3,226 (89.19%)	2,053 (78.69%)	1,940 (92.96%)
		Yes	3,099 (13.44%)	710 (14.61%)	379 (10.48%)	290 (11.12%)	140 (6.71%)

		Unknown/ unregistered	4,123 (17.88%)	650 (13.38%)	12 (0.33%)	266 (10.20%)	7 (0.34%)
1910 ICPSR aggregate data	Percent of registration county population is urban in 1910, *among placed and registered*	*mean (standard deviation)*	12.02 (sd=17.53)	11.75 (sd=17.29)	11.19 (sd=16.76)	8.76 (sd=15.23)	8.46 (sd=14.94)
	Percent of entry county population is urban in 1910, *among placed*	*mean (standard deviation)*	19.61% (sd=24.54)	19.16 (sd=24.24)	14.35 (sd=21.35)	14.09 (sd=20.79)	10.03 (sd=17.56)
	Average farm value in registration county in 1910 ($1k), *among placed and registered*	*mean (standard deviation)*	10.64 (sd=5.11)	10.61 (sd=5.08)	10.60 (sd=5.08)	10.23 (sd=4.90)	10.28 (sd=4.92)
	Average farm value in entry county in 1910 ($1k), *among placed*	*mean (standard deviation)*	10.63 (sd=5.29)	10.76 (sd=5.31)	10.67 (sd=5.16)	10.41 (sd=5.09)	10.32 (sd=5.01)
	Percent of farms in registration county tenant-operated in 1910, *among placed and registered*	*mean (standard deviation)*	16.36 (sd=10.37)	16.27 (sd=10.33)	16.25 (sd=10.32)	15.60 (sd=10.17)	15.73 (sd=10.20)
	Percent of farms in entry county tenant-operated in 1910, *among placed*	*mean (standard deviation)*	17.64 (sd=10.93)	17.55 (sd=10.76)	17.00 (sd=10.52)	16.59 (sd=10.54)	16.17 (sd=10.37)

	Percent of farm acres in registration county in wheat in 1910, *among placed and registered*	*mean (standard deviation)*	26.98 (sd=12.57)	26.90 (sd=12.56)	27.05 (sd=12.50)	26.23 (sd=12.65)	26.40 (sd=12.63)
	Percent of farm acres in entry county in wheat in 1910, *among placed*	*mean (standard deviation)*	25.21 (sd=13.58)	25.83 (sd=13.31)	26.35 (sd=13.15)	25.88 (sd=12.94)	26.12 (sd=12.90)
1930 census and linked variables	Cleaned IPUMS-coded 1930 census occupation[C]	Farming	---	1,594 (32.81%)	1,358 (37.54%)	1,297 (49.71%)	1,137 (54.48%)
		Blue collar	---	1,639 (33.73%)	1,151 (31.82%)	863 (33.08%)	622 (29.80%)
		White collar	---	1,623 (33.40%)	1,106 (30.58%)	436 (16.71%)	317 (15.19%)
		Known unemployed	---	3 (0.06%)	2 (0.06%)	13 (0.50%)	11 (0.53%)
	SEI, *among known*	*mean (standard deviation)*	---	31.60 (sd=24.25)	30.03 (sd=23.95)	19.27 (sd=18.10)	18.70 (17.54%)
	Marital status before 1917	Unmarried	---	4,724 (97.22%)	3,522 (97.37%)	2,553 (97.85%)	2,048 (98.13%)
		Married	---	135 (2.78%)	95 (2.63%)	56 (2.15%)	39 (1.87%)
	Moved state, entry to 1930	No	---	2,447 (50.36%)	1,982 (54.80%)	1,468 (56.27%)	1,252 (59.99%)
		Yes	---	2,412 (49.64%)	1,635 (45.20%)	1,141 (43.73%)	835 (40.01%)
	Moved county, entry to 1930	No	---	1,580 (32.52%)	1,394 (38.54%)	1,030 (39.48%)	948 (45.42%)
		Yes	---	3,279 (67.48%)	2,223 (61.46%)	1,579 (60.52%)	1,139 (54.58%)

	Notes: [A] Rank and file soldiers make up 79.6% of the full roster. Among rank and file soldiers, 5.43% are listed in the roster (published in 1931) as having died, 4.21% in wartime service. The rank and file soldiers appearing in this table are slightly reduced from those in Chapter 2, those with extreme age and duration data (likely errors) removed. Mean values in this table for rank and file soldiers are calculated amongst those with known data. [B] In the linked dataset, these data are drawn from the census. [C] These numbers will vary between 'all prewar occupations' and 'prewar farming individuals' datasets as they were composed slightly differently: for the former, I removed those who did not have an IPUMS-coded occupation (as these individuals would also be missing reliable SEI data); for the latter, as I only cared about the occupational outcome, I also kept those individuals with manually recoded 1930 occupation data. [D] For 5 individuals, a listed Dakota Territory birthplace could not be assigned to a modern state. [E] While observations with unbelievable overseas durations were removed from the linked data, for the rank and file data they are replaced with NA values and considered to be unknown.

Table 3.6 also highlights the degree to which linked draftees or farming veterans deviate from the patterns of linked rank and file soldiers as a whole. Prewar farming individuals make up the majority of draftees, and a higher percentage of draftees are found amongst formerly farming individuals than amongst the linked population generally. Draftees served less time on average and a lower proportion of them served overseas; while more than half of all rank and file individuals and of all linked rank and file individuals saw overseas service, the majority of prewar farming soldiers only served domestically. Linked draftees appear less mobile, and less urban in their origins though little different from rank and file soldiers by other prewar civilian contextual measures. Postwar, draftees continue to seem rather different when considered in isolation: a plurality are farming, and a higher percentage are sedentary than among all linked soldiers. I will return to the important differences between these subgroups momentarily.

Preliminary model building complications and results:

Univariate outcome models:

I began my outcome analyses with univariate models using service duration, overseas service and frontline service as predictors of SEI, spatial mobility and farm-leaving, asking whether there is statistical evidence of the perceived relationship between "seeing Paree" and staying "down on the farm." Note that in the tables for the logistic models in Table 3.7 and throughout the paper results are reported as estimates rather than odds ratios. I break up Table 3.7 by outcome to improve legibility. As in Table 3.6's summary of the linked data, I ran these univariate models on four different subsets, as shown in Table 3.7: both entry types for men of all prewar occupation, draftees only for men of all prewar occupations, both entry types for prewar farming men, and draftees only for prewar farming men. In these very basic models, the strength, significance and even directionality of effects vary among subsets. In demographic studies of other conflicts, combat service is the only consistent predictor of detrimental outcomes (MacLean & Elder, 2007), however in these models combat or frontline service, proxied by having listed engagements or sectors in one's roster record, are only significant when predicting SEI among men of all occupations (negative) or predicting spatial movement amongst the formerly farming (positive). Overseas service, so important in contemporary discourse, predicts a lower SEI for men of all prewar occupations, a higher SEI for prewar farmers, and a higher chance of leaving farming and of changing counties, but not always significantly. The effect of service duration – of the length of disruption to civilian life – varies not only by linked subset but by specification. When used as a categorical variable, longer service durations generally predict lower SEI, but the effect is not linear with the worst outcomes befalling those who serve 6-12 months; note that in the linked subsets no one serving less than 6 months serves overseas. The effects of service duration seem to move in a consistent direction for spatial mobility only among the formerly farming, and for farm leaving only so long as volunteers are included.

Table 3.7a: Univariate relationships of outcome with service location and duration: SEI *Amongst all linked sample, and subsamples of draftees and prewar farming individuals*					
Prewar occupational subset:		All prewar occupations		Pre-war farming individuals only	
Service entry method subset:		Estimate and standard error for draftees and volunteers, all prewar occupations (n=4,859)	Estimate and standard error for draftees only, all prewar occupations (n=3,617)	Estimate and standard error for draftees and volunteers, prewar farming occupations only (n=2,609)	Estimate and standard error for draftees only, prewar farming occupations only (n=2,087)
Outcome	Predictor				
SEI (continuous)	Engagements/ sectors (vs none)	-2.046** (0.749)	-2.312** (0.870)	0.804 (0.754)	0.589 (0.833)
	Overseas (vs. domestic)	-0.509 (0.699)	-1.494° (0.798)	1.734* (0.708)	1.123 (0.771)
	Share of time overseas (continuous)	-0.860 (0.954)	-1.900° (1.082)	2.111* (0.966)	1.314 (1.049)
	Months in service 6-12 months (vs. <6)	-8.714*** (1.155)	-9.165*** (1.171)	-2.504* (1.193)	-2.658* (1.179)
	Months in service 12-18 months (vs. <6)	-6.866*** (1.149)	-8.642*** (1.183)	-1.335 (1.203)	-1.576 (1.200)
	Months in service >18 months (vs. <6)	-5.197*** (1.165)	-8.880*** (1.441)	-0.033 (1.242)	-1.889 (1.457)
	Months in service (continuous)	-0.002 (0.050)	-0.303*** (0.070)	0.104* (0.053)	0.0002 (0.070)
Significance codes: °p<0.1; *p<0.05; **p<0.01; ***p<0.001					

Table 3.7b: Univariate relationships of outcome with service location and duration: moved county since service *Amongst all linked sample, and subsamples of draftees and prewar farming individuals*					
Prewar occupational subset:		All prewar occupations		Pre-war farming individuals only	
Service entry method subset:		Estimate and standard error for draftees and volunteers, all prewar occupations (n=4,859)	Estimate and standard error for draftees only, all prewar occupations (n=3,617)	Estimate and standard error for draftees and volunteers, prewar farming occupations only (n=2,609)	Estimate and standard error for draftees only, prewar farming occupations only (n=2,087)
Outcome	Predictor				
Moved county since service (logistic)	Engagements/ sectors (vs none)	0.037 (0.066)	0.049 (0.075)	0.204* (0.086)	0.198* (0.096)
	Overseas (vs. domestic)	0.277*** (0.061)	0.127° (0.069)	0.477*** (0.081)	0.327*** (0.089)
	Share of time overseas (continuous)	0.294*** (0.084)	0.123 (0.093)	0.557*** (0.111)	0.388** (0.121)
	Months in service 6-12 months (vs. <6)	-0.110 (0.099)	-0.178° (0.102)	0.236° (0.132)	0.199 (0.135)
	Months in service 12-18 months (vs. <6)	0.070 (0.100)	-0.108 (0.103)	0.493*** (0.134)	0.374** (0.137)
	Months in service >18 months (vs. <6)	0.622*** (0.105)	0.051 (0.127)	1.044*** (0.143)	0.454** (0.168)
	Months in service (continuous)	0.041*** (0.005)	0.008 (0.006)	0.059*** (0.006)	0.030*** (0.008)
Significance codes: °p<0.1; *p<0.05; **p<0.01; ***p<0.001 Notes: movement is defined as having a 1930 county of residence that differs from the county of service entry.					

Table 3.7c: Univariate relationships of outcome with service location and duration: left farming *Amongst all linked sample, and subsamples of draftees and prewar farming individuals*					
Prewar occupational subset:		All prewar occupations		Pre-war farming individuals only	
Service entry method subset:		Estimate and standard error for draftees and volunteers, all prewar occupations (n=4,859)	Estimate and standard error for draftees only, all prewar occupations (n=3,617)	Estimate and standard error for draftees and volunteers, prewar farming occupations only (n=2,609)	Estimate and standard error for draftees only, prewar farming occupations only (n=2,087)
Outcome	Predictor				
Left farming (logistic)	Engagements/ sectors (vs none)	---	---	0.137 (0.083)	0.088 (0.095)
	Overseas (vs. domestic)	---	---	0.316*** (0.079)	0.166° (0.088)
	Share of time overseas (continuous)	---	---	0.431*** (0.107)	0.278* (0.120)
	Months in service 6-12 months (vs. <6)	---	---	0.166 (0.133)	0.127 (0.136)
	Months in service 12-18 months (vs. <6)	---	---	0.366** (0.134)	0.235° (0.138)
	Months in service >18 months (vs. <6)	---	---	0.590*** (0.139)	-0.042 (0.168)
	Months in service (continuous)	---	---	0.034*** (0.006)	0.006 (0.008)
Significance codes: °p<0.1; *p<0.05; **p<0.01; ***p<0.001					

Some of the changes in significance may be related to sample size, but most of the changes from model to model seem to arise from changes in sample composition. American soldiers' age, entry method and service durations – and thus their chances of serving overseas or on the frontline – were convoluted. The first wave of draft registration did not occur until two months after war was declared, voluntary enlistment was discontinued in the army in December 1917 (and for other branches of service in August 1918), and the ages at which a person was subject to the draft shifted over the course of the war (Keene, 2011, p. 59). Although the distinction between volunteers and draftees may have been important because the motivations of each subset might have been very different from each other (Capozzola et al., 2015; van Zandt, 1919), method of entry was affected by government as well as personal choice. Figure 3.2 conveys some of the difficulty in working with these entangled characteristics. If margins associated with the probability of serving overseas among all linked individuals are calculated on the basis of method of entry and age as a continuous variable, as shown in Figure 3.2a, a gap between draftees and volunteers is already evident.[65] This gap becomes even more apparent if age is modelled as a fixed effect, as in Figure 3.2b. The plots for entry methods likewise diverge when considered in interaction with service duration (Figure 3.2c). The relationship of months of service to overseas service probability likewise shifts with age: modelled with age as a continuous predictor and including a squared term for age, the odds of serving abroad rise slightly with age (Figure 3.2d), but as seen in the last panel, when age is modelled as a fixed effect the relationship between age, duration and location of service becomes more erratic (Figure 3.2e).

[65] In Stata, the model underlying the depicted margins is specified as follows: Overseas service probability predicted by age as reported in the census, 1930 age squared, nativity as reported in the census, prewar marital status, prewar occupation, percent of entry county population is urban, entry method and an interaction between entry method and continuous age. Standard errors are clustered by county.

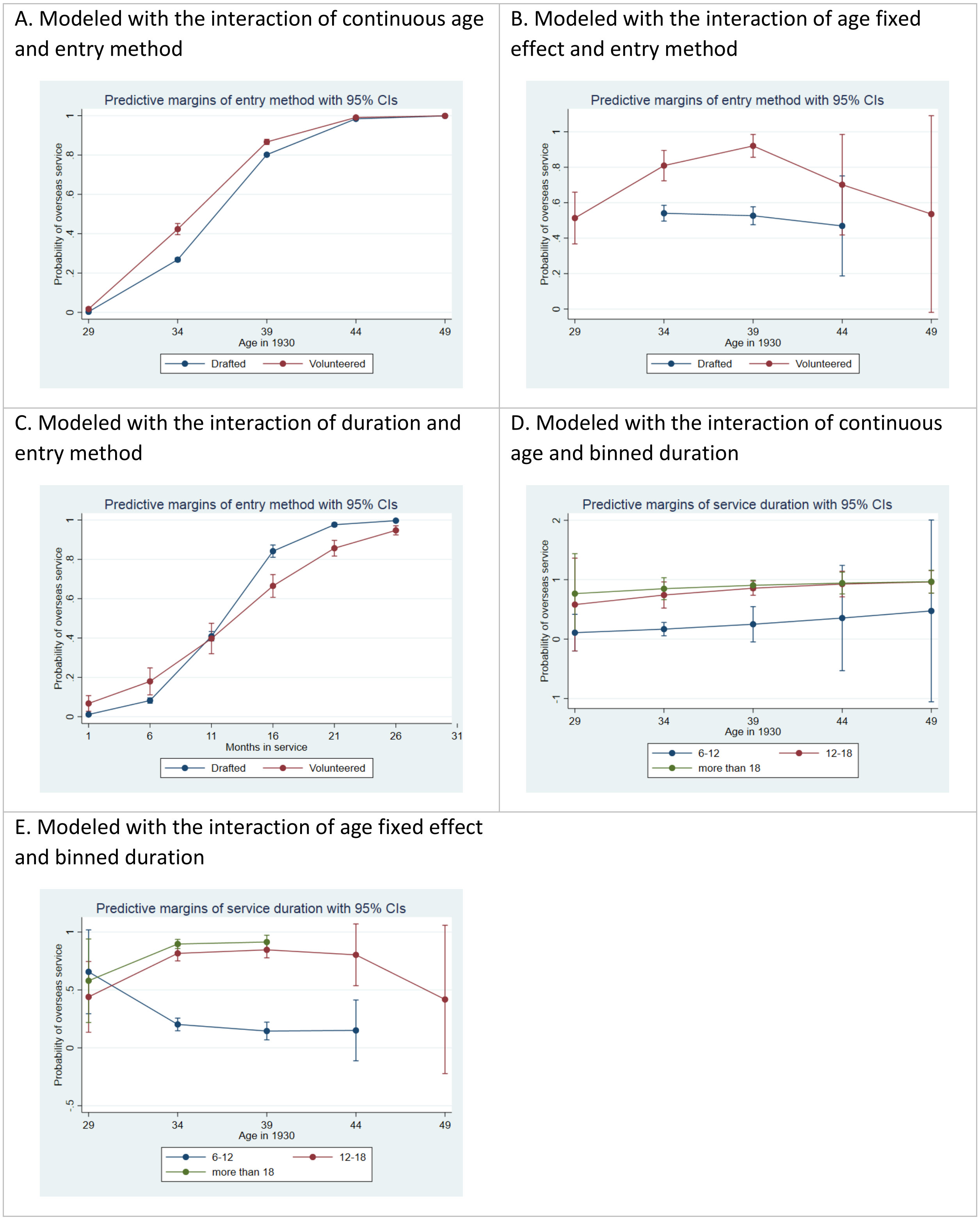


Figure 3.2: Margins plots of the convoluted relationship of age, entry method and service duration in predicting overseas service. See text including footnotes for details of model specification.

Predicting the predictors:

Taking a step back to predict the military service predictors, once again there were complications related to the timing of that service within the individual's life course and within the evolving prosecution of the war. Difficulties remained even when age was specified as a fixed effect. Table 3.8a examines which civilian prewar variables predict duration of service, adding the binary for voluntary versus conscripted entry in its final column (model 5); Table 3.8b looks further at the impact of adding method of entry by interacting it with individual- and contextual-level independent variables. Compared to foreign-born individuals, native born men of native parents tend to serve longer, as do blue collar workers and unspecified laborers compared to farming men. Men from more urban origins serve longer, but the effect is dampened for men of non-farming prewar occupations. Similarly, those who moved states between birth and service entry tend to serve longer, though this effect is reversed amongst unspecified laborers: for prewar farming individuals (the reference category), moving states is associated with an increase in time in service of a little less than 5 weeks, however an unspecified laborer who moves serves about half a month less than one who does not (using Table 3.8a, model 4).[66] Note, however, that when volunteering is added as a predictor, the significance of many of the civilian main effects and interactions disappear and the effect of urban percent switches signs. Now a farmer or a laborer that moved are insignificantly different from sedentary ones and a person of urban origins serves less time than one who entered service in a more rural place. Further, as shown in Table 3.8b, volunteering itself interacts significantly with prewar occupation and the urban percent of the entry county's population. Predicting overseas and frontline service, volunteering is likewise significant and while it as not as disruptive to civilian main effects, it is itself disturbed by the addition of or interaction

[66] The tested interaction between percent urban and occupation was insignificant. Considering the variance inflation factor, there is, perhaps surprisingly, not a multicollinearity problem when using movement and nativity in the same model.

with other military predictors; the display of these service location models are relegated to the appendix (Appendix Table 3.1).

Table 3.8a: Predicting service duration (months) from civilian prewar predictors and entry method among all linked rank and file soldiers					
	(1)	(2)	(3)	(4)	(5)
Second generation	0.383 (0.265)	0.399 (0.263)	0.374 (0.283)	0.366 (0.278)	0.130 (0.232)
Third generation	1.363*** (0.296)	1.321*** (0.295)	1.332*** (0.307)	1.278*** (0.305)	0.411 º (0.236)
Married prewar	-1.439º (0.653)	-1.375º (0.647)	-1.462 º (0.664)	-1.404 º (0.658)	-1.901*** (0.551)
Blue collar	1.836*** (0.319)	2.308*** (0.337)	2.310*** (0.526)	2.797*** (0.605)	1.394** (0.477)
Student	-0.880 (1.247)	2.752 º (1.505)	0.0734 (2.334)	3.045 (1.926)	1.173 (0.892)
Unspecified laborer	1.362** (0.477)	2.045*** (0.540)	2.586*** (0.723)	3.244*** (0.721)	1.778* (0.726)
White collar	-0.0385 (0.341)	0.867* (0.374)	-0.452 (0.414)	0.449 (0.469)	0.198 (0.401)
Moved state, birth-entry	0.973** (0.303)	1.055*** (0.301)	1.196** (0.370)	1.208** (0.375)	0.402 (0.290)
Entry county % urban	0.0194** (0.007)	0.0512*** (0.010)	0.0201** (0.007)	0.0514*** (0.010)	-0.0114 º (0.007)
Blue collar # Entry county % urban		-0.0334** (0.012)		-0.0335** (0.013)	-0.0150 (0.009)
Student # Entry county % urban		-0.105*** (0.024)		-0.102*** (0.028)	-0.0505* (0.020)
Unspec. laborer # Entry county % urban		-0.0478** (0.014)		-0.0469*** (0.014)	0.00301 (0.013)
White collar # Entry county % urban		-0.0517*** (0.011)		-0.0522*** (0.011)	-0.0277** (0.009)
Moved state, birth-entry # Blue collar			-0.703 (0.632)	-0.711 (0.662)	-0.424 (0.523)
Moved state, birth-entry # Student			-1.820 (2.271)	-0.754 (2.093)	-0.488 (1.152)
Moved state, birth-entry # Unspec. lab.			-1.744* (0.860)	-1.720* (0.862)	-1.049 (0.777)
Moved state, birth-entry # White collar			0.655 (0.461)	0.689 (0.452)	-0.153 (0.322)
Volunteered					10.41*** (0.380)
Constant	8.752*** (1.115)	8.277*** (1.123)	8.504*** (1.135)	8.137*** (1.155)	4.314*** (0.800)
Observations	4859	4859	4859	4859	4859
R^2	0.043	0.053	0.046	0.055	0.387
Adjusted R^2	0.038	0.047	0.039	0.048	0.383
AIC	32444.8	32403.6	32440.9	32402.3	30297.2
FE	age	age	age	age	age
Reference categories: for nativity: foreign born; for prewar occupation: farming. Standard errors in parentheses, clustered by county. º p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001					

Table 3.8b: **Further investigation of effects of method of entry on service duration (months) among all linked rank and file soldiers**

	(6)	(7)	(8)
Second generation	0.136	0.134	0.141
	(0.227)	(0.228)	(0.217)
Third generation	0.429^{o}	0.433^{o}	0.424^{o}
	(0.229)	(0.230)	(0.232)
Married prewar	-1.950***	-1.916***	-1.891***
	(0.543)	(0.545)	(0.545)
Blue collar	1.277***	0.884***	0.809***
	(0.249)	(0.192)	(0.190)
Student	-1.950***	-0.904^{x}	-0.858
	(0.573)	(0.539)	(0.569)
Unspecified laborer	1.336***	1.118**	1.004**
	(0.382)	(0.356)	(0.347)
White collar	-0.183	-0.417^{o}	-0.489*
	(0.256)	(0.242)	(0.244)
Moved state, birth-entry	0.159	0.238	0.181
	(0.215)	(0.253)	(0.220)
Entry county % urban	-0.0255***	-0.0254***	-0.00968*
	(0.004)	(0.004)	(0.005)
Volunteered	10.97***	10.74***	11.68***
	(0.505)	(0.568)	(0.504)
Volunteered # Blue collar	-1.360**		
	(0.514)		
Volunteered # Student	1.731^{o}		
	(0.948)		
Volunteered # Unspecified laborer	-1.009		
	(0.688)		
Volunteered # White collar	-1.018^{o}		
	(0.553)		
Volunteered # Moved state, birth-entry		-0.380	
		(0.570)	
Volunteered # Entry county % urban			-0.0443***
			(0.011)
Constant	4.472***	4.517***	4.343***
	(0.837)	(0.805)	(0.799)
Observations	4859	4859	4859
R^2	0.387	0.384	0.389
Adjusted R^2	0.383	0.381	0.385
AIC	30292.7	30306.1	30269.7
Fixed effect:	age	age	age

Reference categories: for nativity: foreign born; for prewar occupation: farming.
Standard errors in parentheses, clustered by county.
^{o} $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Other studies provide good precedents for breaking up models and using fixed effects to clarify relationships. Gratton et al. (2007) decided to perform separate binomial logistic regressions for each census year and for each of four household type outcomes on the grounds that the populations studied in each year (children of various generations and ethnic backgrounds) represented substantially different universes; Gutmann et al. (2002) separated out their regressions by race and sex as they found that these variables interacted significantly with other variables of interest; Kasakoff and Adams (2000) ran separate regressions for each occupation type and migration status in their study of mortality trends; and Florey and Guest (1988) ran separate regressions for occupation change and moving off the farm, running additional tests to understand the relationship between those two factors. Draftees made up the majority of American service members who participated in the Great War, and the majority of individuals in North Dakota's roster (Chambers, 1987, p. 200). The figures and tables presented thus far in this chapter suggest that volunteers were substantively different than draftees, and often in complicated ways. Literature backs this supposition: based on his review of questionnaires issued to American WWI veterans in the 1970s, Meigs (1997, p. 14) notes that 56% of the "better educated" respondents enlisted "enthusiastically," while only 41% of farmers and laborers reported having done so, adding that the latter occupational groups also tended to report very negative memories of induction. A North Dakotan whose unpublished autobiography resides at the state archives in Bismarck recalled that he and a friend, while outraged at the sinking of the *Lusitania* in 1915, decided to enlist in the National Guard rather than joining the Canadian army in order to "get a better job when it does break" ("James Lloyd Monson, Cass county, #1360," 2000). Therefore, while I will reprise the investigation of the effects of volunteering later in this chapter, henceforth most of the models focus solely on those who entered military service through conscription.

Returning to which characteristics predict duration of service considering only draftees (Table 3.9), the necessary models have become a good deal simpler. Only prewar marriage (negative); and blue collar, unspecified laboring and lack of employment (all but the last positive compared to farming) are significantly predictive of service duration among the linked draftees. None of the civilian interactions is significant at $p < 0.05$. Choosing a random linked individual for the purposes of demonstration (id# RosterV1_1083) and using the most simple model in Table 3.9, model 1, such an individual (aged 35 in 1930, third generation, unmarried prewar, moved states since birth, inducted in a county with a 41.59% urban population, working in a blue collar job) would be predicted to serve for a little over 13 months.[67] If he were a farmer instead, his predicted time in service would be a little over a year.

[67] In actuality, RosterV1_1083 is recorded in the *Roster* as having served for over 22 months. As seen in the adjusted R^2 values, none of the models provides a particularly good fit, however there are few other variables available in the roster or the census to try to explain the remaining variation.

Table 3.9: Predicting duration of service (months) for linked rank and file draftees only				
	(1)	(2)	(3)	(4)
Second generation	0.159 (0.240)	0.166 (0.239)	0.139 (0.241)	0.135 (0.237)
Third generation	0.485 (0.310)	0.489 (0.313)	0.468 (0.312)	0.482 (0.311)
Married prewar	-1.784** (0.574)	-1.765** (0.579)	-1.796** (0.584)	-1.767** (0.569)
Blue collar	1.090*** (0.234)	1.042*** (0.300)	1.256* (0.516)	1.084*** (0.236)
Student	-1.160* (0.553)	-0.536 (0.800)	-1.466** (0.531)	-1.177* (0.535)
Unspecified laborer	1.202** (0.379)	1.169** (0.424)	1.828* (0.705)	1.197** (0.380)
White collar	-0.291 (0.259)	0.0446 (0.311)	-0.203 (0.340)	-0.290 (0.260)
Moved state, birth-entry	0.219 (0.251)	0.238 (0.252)	0.321 (0.324)	-0.0158 (0.332)
Entry county % urban	-0.00240 (0.005)	0.00382 (0.009)	-0.00257 (0.005)	-0.0123 (0.008)
Blue collar # Entry county % urban		-0.000436 (0.012)		
Student # Entry county % urban		-0.0233 (0.016)		
Unspec. laborer # Entry county % urban		0.0000864 (0.015)		
White collar # Entry county % urban		-0.0212° (0.011)		
Blue collar #Moved state, birth-entry			-0.252 (0.582)	
Student # Moved state, birth-entry			0.710 (0.806)	
Unspec. laborer #Moved state, birth-entry			-0.887 (0.933)	
Moved state, birth-entry # White collar			-0.137 (0.376)	
Moved state, birth-entry # Entry county % urban				0.0154° (0.009)
Constant	2.702*** (0.804)	2.890*** (0.826)	2.631** (0.849)	2.931*** (0.846)
Observations	3617	3617	3617	3617
R^2	0.137	0.139	0.138	0.138
Adjusted R^2	0.131	0.132	0.131	0.132
AIC	22338.9	22341.8	22344.7	22337.7
Fixed effect:	age	age	age	age

Reference categories: for nativity: foreign born; for prewar occupation: farming.
Standard errors in parentheses, clustered by county.
° $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Turning to predictions of the probability of serving overseas or in a frontline location, refer to Table 3.10; versions of this and subsequent tables predicting binary postwar outcomes using linear probability models rather than logistic models may be found in the appendix (Appendix Tables 3.2, 3.4-3.7). In Table 3.10, while civilian predictors alone would predict that RosterV1_1083 would have a higher chance of serving overseas than his farming counterpart, once service duration is added as an independent variable, occupational differences become insignificant. Prewar occupation and nativity are, however, important in modeling frontline service, whether as main effects or as parts of interactions, even when taking time spent in service and overseas into account. Civilian interactions, interactions of service duration with nativity, occupation and urban percent, and the interaction of an interstate move and share of service spent abroad were insignificant. Using model 6 in Table 3.10, where share of time spent overseas is interacted with entry county urban population percent, a blue collar working man like RosterV1_1083 (assuming his twenty-two moths of recorded service) has a .403 probability of serving in a named engagement or sector. However, a farming individual of otherwise similar characteristics would have a .555 probability of such service. If the chances of frontline service for the blue collar and farming versions of RosterV1_1083 were predicted using the shorter service duration predicted in Table 3.9's first model, they would have a .120 and .173 probability of finding themselves in these places, respectively. In comparing these probabilities, duration has a great but variable effect among prewar occupational groups: there is a discrepancy between blue collar and farming individuals' probability of frontline service, but this gap widens over the months in military service.

Table 3.10: Predicting the location of service for linked rank and file draftees only

	(1)	(2)	(3)	(4)	(5)	(6)
Outcome:	Overseas	Overseas	Frontline	Frontline	Frontline	Frontline
Second generation	0.129 (0.118)	0.138 (0.169)	-0.184 (0.204)	0.317 (0.463)	-0.190 (0.203)	-0.185 (0.206)
Third generation	0.179 (0.114)	0.0939 (0.155)	-0.534** (0.188)	0.620 (0.410)	-0.544** (0.186)	-0.533** (0.189)
Married prewar	-0.530^{o} (0.278)	-0.220 (0.369)	-0.124 (0.375)	-0.130 (0.375)	-0.103 (0.360)	-0.104 (0.381)
Blue collar	0.417*** (0.102)	0.214 (0.163)	-0.595*** (0.168)	-0.601*** (0.169)	0.486 (0.388)	-0.613*** (0.167)
Student	-0.493^{o} (0.277)	-0.326 (0.525)	-0.487 (0.498)	-0.492 (0.496)	-2.919 (3.034)	-0.489 (0.481)
Unspecified laborer	0.258^{o} (0.132)	-0.0184 (0.155)	-0.129 (0.239)	-0.127 (0.242)	0.0736 (0.592)	-0.140 (0.241)
White collar	0.0386 (0.107)	0.0823 (0.134)	-0.543** (0.169)	-0.541** (0.171)	0.534 (0.372)	-0.562*** (0.170)
Entry county % urban	-0.00200 (0.002)	-0.00501 (0.003)	-0.00294 (0.004)	-0.00288 (0.004)	-0.00321 (0.004)	0.0219** (0.008)
Moved state, birth-entry	0.0868 (0.100)	0.0176 (0.128)	-0.0344 (0.113)	-0.0349 (0.113)	-0.0401 (0.113)	-0.0452 (0.115)
Months in service		1.389*** (0.042)	0.179^{o} (0.099)	0.180^{o} (0.099)	0.185^{o} (0.100)	0.191* (0.097)
Duration squared		-0.0364*** (0.001)	-0.000350 (0.003)	-0.000404 (0.003)	-0.000515 (0.003)	-0.000663 (0.003)
Proportion of service abroad			7.315*** (0.312)	8.315*** (0.627)	7.932*** (0.397)	7.815*** (0.379)
2nd generation # Prop. abroad				-0.776 (0.718)		
3rd generation # Prop. abroad				-1.749** (0.660)		
Blue collar # Prop. abroad					-1.611** (0.553)	
Student # Prop. abroad					3.604 (4.748)	
Unspec. laborer # Prop. abroad					-0.315 (0.910)	
White collar # Prop. abroad					-1.586** (0.596)	
Entry county % urban #Prop. abroad						-0.0361** (0.011)
Constant	0.462 (1.267)	-10.75*** (0.907)	-3.716*** (1.014)	-4.627*** (1.003)	-4.451*** (1.083)	-3.979*** (1.007)
Observations	3557	3557	3496	3496	3496	3496
AIC	4749.6	2599.9	1934.1	1934.0	1934.4	1929.1
Fixed effect:	age	age	age	age	age	age

Reference categories: for nativity: foreign born; for prewar occupation: farming; for duration: less than 6 months.
Standard errors in parentheses, clustered by county.
^{o} $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Multivariate outcome model building & results:

In this section of Chapter 3, I move on to predicting postwar outcomes taking both civilian and military predictors into account. I again used age as a fixed effect and in most instances restricted the analyzed dataset to draftees. In building these models, I first constructed versions that only included the prewar civilian variables and possible interactions, removing any that were insignificant at $p<0.05$ or that caused collinearity issues. In each outcome table, the first columns show the effects of the retained civilian variables. The progression of models in the tables then step through the military predictors with models incorporating service duration and/or location using one of the following three specifications: a binned version of service duration, continuous service duration with the binary for overseas service, or a binary for frontline service along with continuous service duration and share of that duration overseas. Of the interactions between the service and prewar civilian variables, I only kept those that were significant in the tables included here.

Predicting veterans' socioeconomic index (SEI):

In models 1 and 2 in Table 3.11, nativity, prewar occupation and, in model 2, urban percent are used to predict SEI among linked draftees.[68] Characteristics that are generally associated with prosperity – being native born of native parents and having an occupation other than farming – predict a higher SEI in these models. Coming from a more urban origin is also associated with a higher socioeconomic index. Adding the military variables does not greatly alter the prewar civilian variables. Service durations longer

[68] Moving state between birth and entry was insignificant. If postwar movements are included, movement between entry and 1930 is positive and significant, and its interactions with prewar occupation are negative and significant for blue collar, laboring, and white collar men. The respective influence of soldiers' moves in the two time periods in the linked data suggests that the apparent benefit of spatial mobility seen in the census cross tabulations in Table 3.4 might come more from later life than earlier life moves. As might be expected, other postwar characteristics like 1930 occupation are also strongly predictive of SEI.

than 6 months negatively impact SEI, though not in a linear fashion, and their only significant interaction with a civilian variable makes the effects of duration itself insignificant. Similarly, overseas service only significantly predicts postwar SEI when including an interaction with urban percent, and frontline service has no significant effect of its own. In either case, the interaction of service location and urban percent tend to dampen those variables' otherwise positive effects. In Figure 3.3, plotting the coefficients of a version of Table 3.11's model 6 that uses standardized rather than raw versions of urban percent and months in service, there is little apparent difference in this outcome between those who served abroad and those who did not. Only among a few subgroups of the population does location of service have a clear effect on the socioeconomic index.

Table 3.11: Predicting the postwar socioeconomic index (SEI) amongst all linked rank and file draftees

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Second generation	1.195	1.109	1.086	1.093	1.045	1.032	1.047	1.028
	(1.033)	(0.916)	(0.920)	(0.908)	(0.932)	(0.927)	(0.931)	(0.932)
Third generation	3.756***	3.620***	3.586***	3.576***	3.573***	3.568***	3.577***	3.587***
	(1.097)	(0.996)	(0.995)	(0.992)	(1.007)	(1.007)	(1.014)	(1.015)
Blue collar	11.39***	10.73***	10.79***	10.79***	10.74***	10.77***	10.74***	10.73***
	(0.890)	(0.832)	(0.835)	(0.827)	(0.835)	(0.825)	(0.841)	(0.841)
Student	41.22***	40.21***	39.97***	39.45***	39.96***	39.73***	39.98***	39.81***
	(2.183)	(2.977)	(2.987)	(2.984)	(2.966)	(2.953)	(2.971)	(2.959)
Unspec. laborer	1.941	1.531	1.536	1.563	1.478	1.503	1.471	1.423
	(1.269)	(1.462)	(1.460)	(1.461)	(1.457)	(1.450)	(1.457)	(1.472)
White collar	32.26***	31.66***	31.59***	31.43***	31.68***	31.59***	31.67***	31.61***
	(0.892)	(1.084)	(1.093)	(1.143)	(1.100)	(1.127)	(1.083)	(1.103)
Entry county % urban		0.0762***	0.0750***	0.174***	0.0752***	0.114***	0.0749***	0.101***
		(0.019)	(0.019)	(0.033)	(0.019)	(0.027)	(0.019)	(0.022)
6-12 months			-2.336*	-0.668				
			(0.942)	(1.104)				
12-18 months			-1.960^{o}	0.288				
			(1.102)	(1.279)				
> 18 months			-1.325	-0.380				
			(1.070)	(1.256)				
6-12 months # Entry county % urban				-0.114**				
				(0.041)				
12-18 months # Entry county % urban				-0.159***				
				(0.039)				
> 18 months # Entry county % urban				-0.0592				
				(0.047)				
Months in service					-0.571^{o}	-0.551^{o}	-0.567^{o}	-0.553^{o}
					(0.308)	(0.310)	(0.310)	(0.313)
Duration squared					0.0199^{o}	0.0192^{o}	0.0204^{o}	0.0201^{o}
					(0.011)	(0.011)	(0.011)	(0.011)
Overseas					0.889	1.967*		
					(0.848)	(0.861)		
Overseas # Entry county % urban						-0.0859*		
						(0.035)		

Proportion of service abroad							1.041 (1.599)	0.923 (1.603)
Frontline							-0.0743 (1.150)	1.109 (1.261)
Frontline # Entry county % urban								-0.0910** (0.032)
Constant	28.12*** (5.172)	25.02*** (5.712)	25.26*** (5.706)	20.40** (6.531)	26.50*** (5.872)	24.55*** (6.383)	26.49*** (5.886)	25.23*** (6.178)
Observations	3617	3617	3617	3617	3617	3617	3617	3617
R^2	0.339	0.343	0.343	0.346	0.343	0.345	0.343	0.344
Adjusted R^2	0.335	0.338	0.339	0.341	0.339	0.340	0.338	0.339
AIC	31790.0	31770.6	31771.2	31763.7	31772.4	31767.4	31774.6	31770.2
Fixed effect:	age	age	age	age	age	age	age	age

Reference categories: for nativity: foreign born; for prewar occupation: farming; for duration: less than 6 months.
Standard errors in parentheses, clustered by county.
° $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

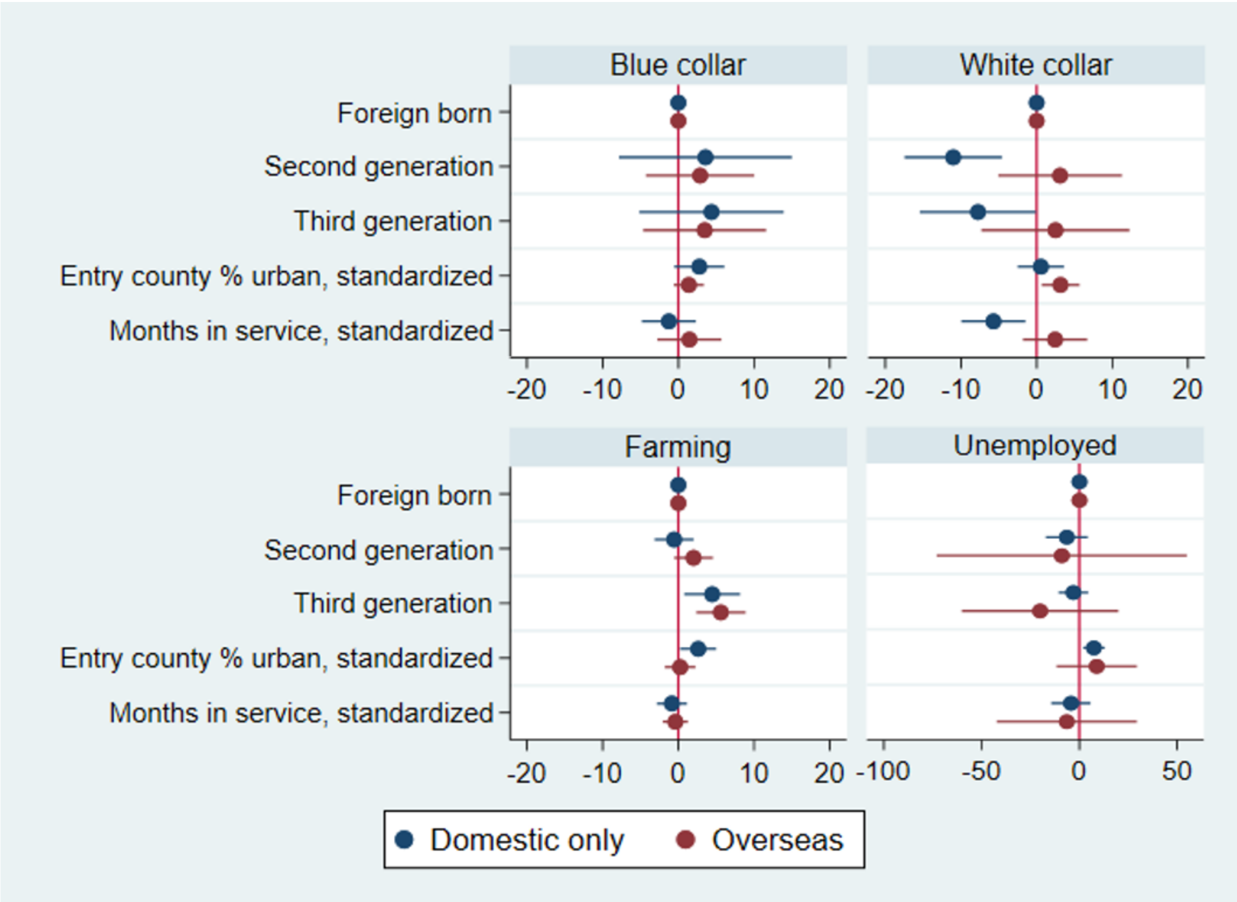


Figure 3.3: Coefficient plots for model predicting socioeconomic index from military and prewar civilian independent variables among rank and file draftees. Based on model 6 in Table 3.11.

Predicting veterans' postwar spatial mobility

In modelling who was likely to move counties between service entry and 1930, the urban percent of the origin county was insignificant unless interacted with prewar occupation. As the effects of the other civilian and military variables in the subsequent models were very similar regardless of whether urban percent and its interaction were included, Table 3.12 presents a reduced version without this variable while the longer table may still be found in the appendix (Appendix Table 3.3); in Table 3.12, only significant interactions are included. Prewar civilian factors that were associated with higher SEI in the previous table are here associated with a higher chance of moving. Prewar movement also positively predicts postwar movement. The effect of duration in service proceeds in a linear fashion for this outcome, however it only becomes significant when interacted with prewar occupation. Thus, for instance, blue collar workers who serve less than 6 months are 5.4 times as likely to move counties as farming people in similar circumstances, but with each additional block of time in service those chances decrease. However, at least some of the effect of duration seen in Table 3.12's model 3 may be due to service location as duration becomes insignificant when the overseas service binary is added. Again, however, overseas service only really becomes noticeably important when used in concert with prewar occupation; frontline service is not significantly predictive in any case. Using RosterV1_1083 with his modeled duration again, Table 3.12's model 5 suggests his chances of making an intercounty move decreased from 83.0% to 81.6% with his overseas service, but had he been a white collar worker, his chances would have declined from 84.9% to 78.7%, and had he been in a farming occupation before the war, going abroad would have increased his chances of a postwar move from 64.7% to 71.5%. In this model, overseas service makes more of a difference amongst former farmers and white collar workers than among blue collar workers, but differences in occupation and its interactions are more important. Similarly, in the margins plots in the panels of Figure 3.4, where margins have been calculated for models that reincorporate urban percent for the x axis, note that for each of the three largest prewar occupations while the overlap of confidence intervals make it difficult to distinguish between the outcomes for overseas versus domestic-only veterans among members of the same occupational group (top register), there are differences between the trajectories of the different occupations themselves (made clearer in the bottom register). The characteristics of one's civilian place of origin matters, and does so in relationship to one's individual characteristics, as evidenced by the different slopes among prewar occupations in the margins plots. The variability of civilian places has a clearer influence on outcomes for most individuals than military place.

Table 3.12: Predicting the probability of an intercounty move between service and 1930, among all linked rank and file draftees						
	(1)	(2)	(3)	(4)	(5)	(6)
Second generation	0.219°	0.217°	0.201	0.214°	0.204°	0.216°
	(0.123)	(0.123)	(0.124)	(0.123)	(0.121)	(0.123)
Third generation	0.739***	0.733***	0.722***	0.730***	0.718***	0.734***
	(0.125)	(0.125)	(0.126)	(0.125)	(0.125)	(0.125)
Blue collar	0.792***	0.782***	1.688***	0.774***	0.979***	0.779***
	(0.107)	(0.108)	(0.434)	(0.107)	(0.164)	(0.107)
Student	1.695***	1.717***	2.203***	1.714***	2.030***	1.719***
	(0.297)	(0.301)	(0.361)	(0.301)	(0.310)	(0.300)
Unspecified laborer	0.750***	0.738***	0.900*	0.733***	0.847***	0.733***
	(0.146)	(0.148)	(0.384)	(0.147)	(0.216)	(0.147)
White collar	0.772***	0.781***	1.200***	0.776***	1.117***	0.779***
	(0.131)	(0.133)	(0.214)	(0.131)	(0.186)	(0.132)
Moved state, birth-entry	0.920***	0.919***	0.923***	0.918***	0.917***	0.918***
	(0.099)	(0.100)	(0.102)	(0.100)	(0.101)	(0.100)
6-12 months		0.0892	0.283*			
		(0.098)	(0.111)			
12-18 months		0.134	0.429***			
		(0.104)	(0.112)			
more than 18 months		0.255°	0.498**			
		(0.144)	(0.155)			
Blue collar # 6-12 months			-0.956*			
			(0.433)			
Blue collar # 12-18 months			-1.041*			
			(0.467)			
Blue collar # more than 18 mos.			-1.103**			
			(0.419)			
Student # 6-12 months			-0.345			
			(0.763)			
Student # 12-18 months			-1.310°			
			(0.735)			
Student # more than 18 mos.			(dropped)			
Unspec. laborer # 6-12 months			-0.385			
			(0.423)			
Unspec. laborer # 12-18 months			-0.119			
			(0.434)			

Unspec. laborer # > 18 months			-0.0233 (0.502)			
White collar # 6-12 months			-0.227 (0.186)			
White collar # 12-18 months			-0.785*** (0.236)			
White collar # more than 18 mos.			-0.548 (0.370)			
Months in service				0.00237 (0.033)	0.00409 (0.034)	0.00809 (0.035)
Duration squared				0.000288 (0.001)	0.000227 (0.001)	0.000163 (0.001)
Overseas				0.0944 (0.122)	0.312* (0.136)	
Blue collar # Overseas					-0.408* (0.201)	
Student # Overseas					-0.980 (0.667)	
Unspec. laborer # Overseas					-0.249 (0.252)	
White collar # Overseas					-0.731*** (0.210)	
Proportion of service abroad						0.0114 (0.201)
Frontline						0.0681 (0.134)
Constant	-0.357 (1.133)	-0.362 (1.133)	-0.797 (1.242)	-0.362 (1.128)	-0.579 (1.175)	-0.381 (1.130)
Observations	3617	3617	3612	3617	3617	3617
AIC	4461.4	4463.9	4465.5	4461.4	4453.6	4463.6
Fixed effect:	age	age	age	age	age	age

Reference categories: for nativity: foreign born; for prewar occupation: farming; for duration: less than 6 months.
Standard errors in parentheses, clustered by county. Interaction of student and duration than 18 months perfectly predicting the outcome is dropped.
° $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

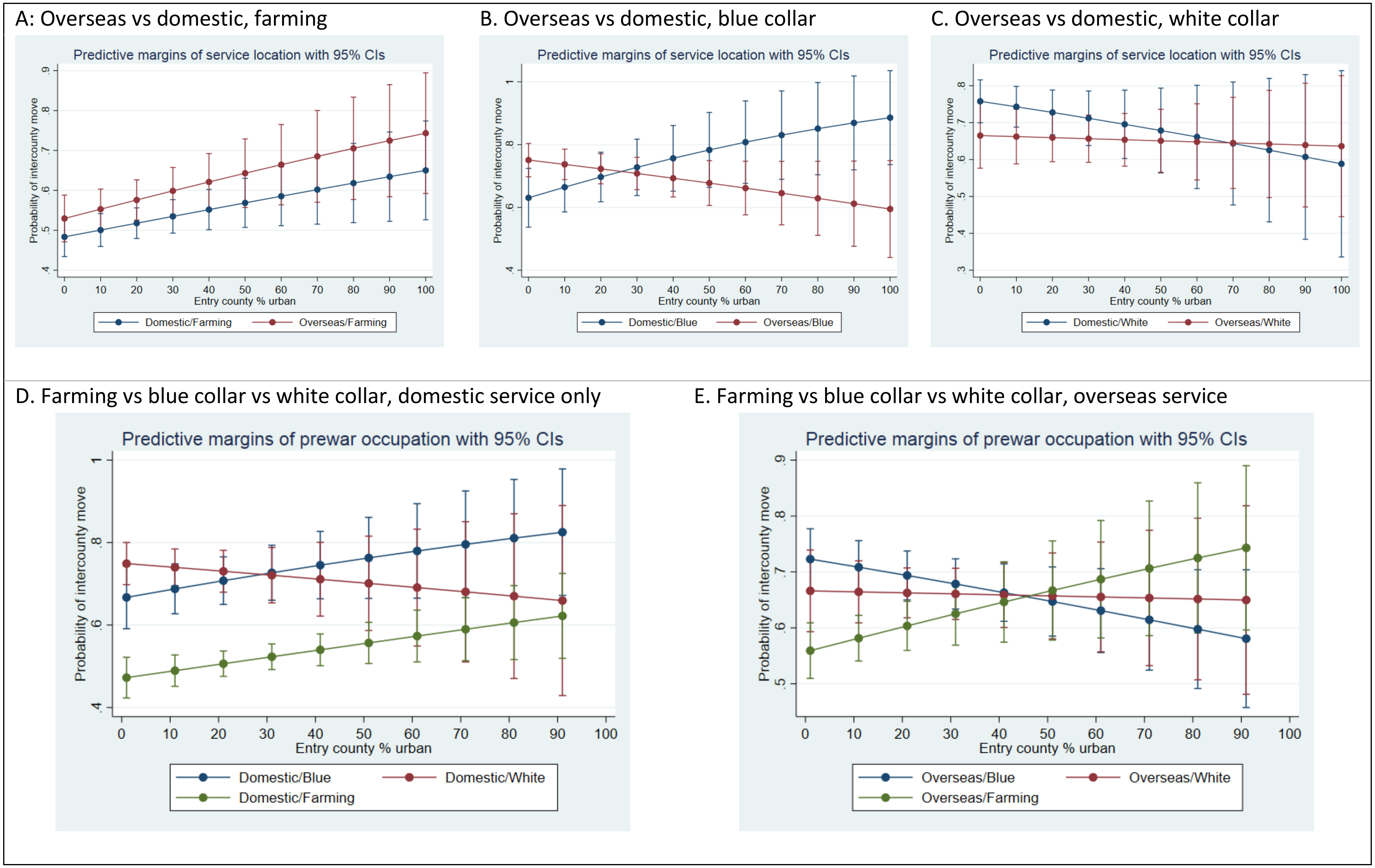


Figure 3.4: Margins plots for model predicting postwar intercounty mobility from military and prewar civilian variables among linked draftees. Based on models in Appendix Table 3.3.

Predicting mobility among formerly farming veterans:

Thus far, I have examined outcomes for linked men of all prewar occupations. Now this chapter turns to focus more closely on men who were in farming in 1917 or 1918. Before examining formerly farming veterans' postwar social and spatial mobility, however, I once again discuss the influence of volunteering versus conscription on emergent patterns. As can be seen in Table 3.13, which cross tabulates prewar occupation and entry method amongst rank and file soldiers, for the farming and 'laborer' populations, in contrast to the other groups, there are significantly fewer volunteers than expected. This aligns with literature on rural skepticism about the war and resistance to military service, a topic that I will address more fully in the background portion of Chapter 5 (Fleming, 2003; Hachey, 1993; Keith, 2004). However, anecdotally, for individuals who were keen to leave farming, volunteering for the Great War provided a convenient escape (Cather, 1922; Trout, 1999). Is there evidence that men from places where farming was less prosperous were especially likely to take this route? In Tables 3.14a and 3.14b, I examine some of the contextual characteristics of a man's county of entry or county of registration, respectively, that may have helped motivate him to choose to leave the farm for the army. These county-level factors were introduced with the maps in Figure 3.1. In the latter table, the sample size is smaller as not every individual who volunteered had registered for the draft, including those who entered military service when they were too old or too young to be subject to conscription.[69] According to these models, third generation farming individuals were more likely to voluntarily enlist than men of other nativities, as were those who moved states between birth and service entry (Table 3.14a). Scrolling down to Tables 3.14b, however, some of the effect of pre-service movement actually seems to originate not in moves before the war itself started, but moves before one's own military service

[69] The only limits on Selective Service registration were based on sex and age. Non-citizens, though not liable to conscription unless they were in the process of naturalization, and members of national origins that were barred from service were still required to register.

started, at least for those who registered: interstate moves before draft registration are insignificant at $p<0.05$, but intercounty moves between registration and entry increase the odds of volunteering by 20 to 32 times, depending on the model.[70] It seems likely that many farming individuals were spatially mobile for the purposes of volunteering. However, that the chances of volunteering are more strongly related to the contextual conditions of the entry county than the registration county would seem to erode the argument that home agricultural conditions caused farming men to choose to enlist. Of the registration place characteristics, only the urban population percentage is positively predictive. The strength and significance of registration and entry county-level predictors, rather than indicating a push from agricultural conditions at home, may be yet another complication related to the timing and method of entry. As will be shown more fully in the maps and diagrams in Chapter 4, the bulk of volunteers began service earlier in the war, at a time when the locations of entry were more concentrated, more closely associated with existing population centers and, as the urban centers that existed in North Dakota tended to be in the eastern part of state, with places that happened to have higher average land values and higher rates of tenancy.

[70] Interstate moves between registration and entry, when used in place of county-level moved, increase the odds of volunteering 4.8 to 5 times.

Table 3.13: Service entry method by prewar occupation
Amongst surviving rank and file population and amongst linked data

		Among rank and file				Among linked rank and file		
		drafted	volunteered	total		drafted	volunteered	total
Farming	frequency	8,703	1,890	10,593 (45.94%)		1,903	455	2,358 (48.53%)
	expected	7,937	2,656			1,755	603	
Blue collar	frequency	3,066	1,493	4,559 (19.77%)		666	3454	1,010 (20.79)
	expected	3,416	1,143			752	258	
Unspecified laborer	frequency	1,579	441	2,020 (8.76%)		274	79	353 (7.26%)
	expected	1,514	506			263	90	
White collar	frequency	2,489	1,092	3,581 (15.53%)		662	247	909 (18.71%)
	expected	2,683	898			677	232	
Student	frequency	500	467	967 (4.19%)		112	117	229 (4.71%)
	expected	725	242			170	59	
Unknown	frequency	941	398	1,339 (5.81%)				
	expected	1,003	336					
total	frequency			23,059				4,859
chi squared				798.13 p<0.0001				168.55 p<0.0001
Cramer's V				0.1860				0.1862

Table 3.14a: Predicting probability of volunteering amongst all linked formerly farming veterans: with entry place characteristics					
	(1)	(2)	(3)	(4)	(5)
Second generation	0.0711 (0.196)	0.0721 (0.196)	0.0697 (0.196)	0.0702 (0.196)	0.0153 (0.207)
Third generation	0.733^{***} (0.189)	0.738^{***} (0.189)	0.736^{***} (0.189)	0.726^{***} (0.189)	0.602^{**} (0.200)
Moved state, birth-entry	0.528^{***} (0.131)	0.582^{***} (0.135)	0.644^{***} (0.135)	0.494^{***} (0.135)	0.623^{***} (0.139)
Entry county average farm value, $1k		0.0188^{o} (0.011)			
Entry county % farms tenanted			0.0199^{***} (0.005)		
Entry country % of farm acreage in wheat				-0.00484 (0.004)	
Entry county % urban					0.0380^{***} (0.003)
Constant	1.619^{*} (0.776)	1.348^{o} (0.792)	1.143 (0.786)	1.788^{*} (0.792)	0.253 (0.791)
Observations	2592	2592	2592	2592	2592
AIC	2214.8	2214.0	2203.1	2215.6	1989.5
Fixed effect:	age	age	age	age	age

Reference categories: for nativity: foreign born.
Standard errors in parentheses, clustered by county.
^{o} $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3.14b: Predicting probability of volunteering amongst all linked formerly farming veterans: with registration place characteristics						
	(1)	(2)	(3)	(4)	(5)	(6)
Second generation	-0.0191 (0.263)	-0.0141 (0.263)	-0.0151 (0.263)	-0.00345 (0.263)	0.00815 (0.267)	-0.0860 (0.264)
Third generation	0.546* (0.255)	0.556* (0.255)	0.556* (0.255)	0.572* (0.255)	0.589* (0.259)	0.460° (0.258)
Moved state, birth-registration	0.131 (0.184)	0.183 (0.191)	0.151 (0.191)	0.226 (0.191)	0.146 (0.184)	0.206 (0.185)
Moved county, registration-entry	2.998*** (0.160)	3.021*** (0.161)	3.010*** (0.161)	3.055*** (0.164)	3.012*** (0.161)	3.473*** (0.194)
Registration county average farm value, $1k		0.0162 (0.016)				
Registration county % farms tenanted			0.00283 (0.008)			
Registration country % of farm acreage in wheat				0.0115° (0.006)		
Registration county % urban					0.0123** (0.005)	0.0287*** (0.005)
Moved county, registration-entry # Registration county % urban						-0.0430*** (0.009)
Constant	-4.363*** (0.842)	-4.562*** (0.865)	-4.429*** (0.857)	-4.763*** (0.875)	-4.469*** (0.845)	-4.719*** (0.858)
Observations	2333	2332	2332	2332	2332	2332
AIC	1267.0	1266.3	1267.1	1263.8	1260.4	1240.1
Fixed effect:	age	age	age	age	age	age

Reference categories: for nativity: foreign born.
Standard errors in parentheses, clustered by county.
° p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001

When predicting the odds of leaving a farming occupation by 1930, volunteering is again a significant predictor, as seen in the four left columns of Table 3.15. If the analyzed sample is reduced to just draftees, as in models 5-9 of the same table, most of the civilian predictors retain similar effect sizes and at least some level of significance.[71] Third generation individuals and those who have been spatially mobile are more likely to leave a farming occupation by 1930, as are those who registered for the Selective Service in a more urban county; note that higher average farm values only predict farm leaving when other county-level variables are not included (model 6 versus model 9). Table 3.16 continues the analysis of occupational change for farming draftees, showing interactions and civilian variables only if they are significant. There is no evidence from this sample that serving in particular military places caused farm boys to abandon the rake and the plow. Indeed, aside from one category of duration – which, with duration not behaving in a linear fashion is in any case difficult to explain – these models do not provide statistically significant evidence that experience of military spaces, more broadly defined as any location where one was in service, was related to prewar farming individuals' social mobility.

[71] Intercounty registration to entry moves, if used in the place of interstate moves, are insignificant.

Table 3.15: Predicting probability of leaving farming using entry method, prewar civilian and registration county characteristics									
	Both entry types				Draftees only				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Second generation	0.00911 (0.137)	0.0202 (0.138)	0.0217 (0.139)	0.0224 (0.139)	-0.00708 (0.156)	0.00843 (0.157)	0.00927 (0.158)	0.00873 (0.157)	-0.00142 (0.156)
Third generation	0.469** (0.145)	0.482*** (0.145)	0.486*** (0.146)	0.486*** (0.146)	0.494** (0.160)	0.511** (0.160)	0.514** (0.161)	0.511** (0.161)	0.503** (0.162)
Moved state, birth-registration	0.358*** (0.072)	0.416*** (0.085)	0.427*** (0.091)	0.393*** (0.084)	0.344*** (0.079)	0.394*** (0.092)	0.402*** (0.097)	0.371*** (0.088)	0.396*** (0.093)
Moved state, registration-entry	0.432* (0.205)	0.481* (0.199)	0.479* (0.198)	0.510** (0.197)	0.378 (0.249)	0.447° (0.251)	0.443° (0.248)	0.471° (0.249)	0.383 (0.248)
Volunteered	0.555*** (0.146)	0.574*** (0.148)	0.578*** (0.150)	0.570*** (0.151)					
Registration county % urban	0.00994*** (0.003)				0.0101** (0.003)				0.00913* (0.004)
Registration county average farm value, $1k		0.0230* (0.010)				0.0214° (0.012)			-0.00716 (0.033)
Registration county % farms tenanted			0.0125° (0.007)				0.0113 (0.007)		0.0127 (0.019)
Registration country % of farm acreage in wheat				0.00649 (0.004)				0.00572 (0.005)	-0.00118 (0.006)
Constant	-0.763 (0.710)	-0.929 (0.738)	-0.891 (0.736)	-0.830 (0.719)	-0.742 (0.724)	-0.886 (0.767)	-0.841 (0.763)	-0.782 (0.746)	-0.886 (0.779)
Observations	2338	2338	2338	2338	2076	2076	2076	2076	2076
AIC	3163.6	3169.7	3167.9	3172.6	2824.4	2830.5	2829.6	2833.2	2827.0
Fixed effect:	age	age	age	age	age	age	age	age	age

Reference categories: for nativity: foreign born.
Standard errors in parentheses, clustered by county.
° p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001

Table 3.16: Predicting probability of leaving farming using prewar civilian and registration county characteristics among draftees				
	(1)	(2)	(3)	(4)
Second generation	-0.00190 (0.155)	-0.0104 (0.153)	-0.0131 (0.156)	-0.0168 (0.155)
Third generation	0.503** (0.161)	0.507** (0.159)	0.495** (0.162)	0.489** (0.162)
Moved state, birth-registration	0.363*** (0.080)	0.363*** (0.078)	0.358*** (0.077)	0.355*** (0.077)
Registration county % urban	0.0105*** (0.003)	0.0105*** (0.003)	0.0104*** (0.003)	0.0104*** (0.003)
6-12 months		0.188 (0.141)		
12-18 months		0.289* (0.144)		
more than 18 mos.		-0.0355 (0.173)		
Months in service			0.0706 (0.049)	0.0615 (0.050)
Duration squared			-0.00288° (0.002)	-0.00250 (0.002)
Overseas service			0.145 (0.154)	
Proportion of service abroad				0.317 (0.254)
Engagements/sectors				-0.0958 (0.159)
Constant	-0.711 (0.746)	-0.893 (0.814)	-1.118 (0.875)	-1.086 (0.890)
Observations *AIC* Fixed effect:	2076 2825.4 age	2076 2824.4 age	2076 2823.4 age	2076 2824.5 age
Reference categories: for nativity: foreign born; for duration: less than 6 months. Standard errors in parentheses, clustered by county. ° $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$				

Finally, having shown that military service aside from volunteering had little impact of leaving farming as an occupation, I now look more closely at whether experience of particular military places and of time spent in military spaces more generally was associated with the spatial mobility of draftees who had been farming before the war. As was noted above, while overseas service decreased the chances of making a postwar intercountry move for white collar and blue collar workers, it increased the chances of such mobility for those who had been farming in 1917/18; the interaction between prewar occupation and service abroad was significant (Table 3.12). In examining all prewar occupations, I only investigated the entry county's urban percent, while here I explore other civilian place characteristics that might have been particularly relevant to farmers and farm laborers. Table 3.17 predicts the likelihood of intercountry moves between service entry and 1930 for formerly farming draftees using the usual individual civilian and military characteristics as well as registration county urban percent, farm value, tenancy and crop regime characteristics; tables predicting interstate moves and using entry county characteristics for independent variables are in the appendix (Appendix Tables 3.8-9). Along with third generation nativity, prewar movement whether pre- or post-registration and urban population percent are all significant positive predictors of spatial mobility, though the latter two variables are only significant at $p<0.1$. Apparently experience of more and more urban places encouraged prewar farmers to broaden their horizons. That those who came from places where wheat was a more dominant crop were less likely to move, with each 1% increase in the acreage of wheat corresponding to a 2% decrease in the chances of moving, is rather surprising. As wheat, higher farm values, tenancy and spatial mobility were historically coupled in the Dakotas (Saloutos & Hicks, 1951), one might expect the effect of wheat to be positive and the effects of value and tenancy to be more consistent and influential. Could it be that some of aspects of agricultural context, while failing to make distinctions within the veteran subpopulation, could apply differently to veterans as a whole than civilians in their cohort and help explain this counterintuitive finding? I will return to the question of veteran versus civilian agricultural patterns in Chapter 5.

Table 3.17: Predicting postwar intercounty spatial mobility among formerly farming draftees

	(1)	(2)	(3)	(4)
Second generation	-0.0277 (0.170)	-0.0393 (0.171)	-0.0359 (0.170)	-0.0329 (0.171)
Third generation	0.545** (0.181)	0.536** (0.181)	0.530** (0.181)	0.532** (0.181)
Moved state, birth-registration	0.989*** (0.114)	0.982*** (0.117)	0.979*** (0.118)	0.979*** (0.118)
Moved county, registration-entry	0.519° (0.282)	0.534° (0.294)	0.537° (0.298)	0.539° (0.299)
Registration county % urban	0.00632° (0.004)	0.00627° (0.004)	0.00619° (0.004)	0.00614° (0.004)
Registration county average farm value, $1k	0.000858 (0.039)	-0.00286 (0.039)	-0.00454 (0.038)	-0.00399 (0.038)
Registration county % farms tenanted	0.0165 (0.021)	0.0191 (0.020)	0.0195 (0.020)	0.0195 (0.020)
Registration country % of farm acreage in wheat	-0.0202** (0.007)	-0.0214** (0.007)	-0.0205** (0.007)	-0.0208** (0.007)
6-12 months		0.378*** (0.113)		
12-18 months		0.523*** (0.098)		
more than 18 mos.		0.553*** (0.166)		
Months in service			0.0920* (0.037)	0.0996* (0.039)
Duration squared			-0.00255* (0.001)	-0.00268° (0.001)
Overseas service			0.106 (0.158)	
Proportion of service abroad				0.0931 (0.276)
Engagements/sectors				-0.0370 (0.175)
Constant	0.570 (0.971)	0.150 (0.953)	-0.154 (0.917)	-0.216 (0.923)
Observations	2076	2076	2076	2076
AIC	2687.5	2680.1	2675.6	2678.1
Fixed effect:	age	age	age	age

Reference categories: for nativity: foreign born; for duration: less than 6 months.
Standard errors in parentheses, clustered by county.
° $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In the models in Table 3.17, in contrast to the models of Table 3.12 where other prewar occupations are considered, location of service and the interactions of overseas service or frontline service with other independent variables are insignificant predictors of postwar spatial mobility. However, spending more months in military service significantly predicts higher probabilities of making an intercountry move. Read in the light of the significant effects of previous mobility and urban origins, perhaps military service provided simply an extended opportunity to engage with one or a series of novel and (as will be seen in Chapter 4) non-rural environments, albeit an opportunity that may not have occurred without the interference of the military in the individual's civilian life course. Indeed, much as Lee (2008, p. 888), hypothesizes about Civil War veterans' postwar mobility, mobility while in service may have been a more important driver when a soldier had had less prewar experience of moving. Young and Lewis's lyrics in *How ya gonna keep 'em down on the farm* cast the source of disruptive wartime influences as foreign and as coming from 'Paree' rather than from military service more broadly. Yet in the linked North Dakota data, when farmers are considered in their own set of models it is not overseas service but military or militarized spaces that predict postwar movement.

Concluding discussion:

In the years surrounding the First World War, American popular and government discourse was animated by the promise and the dread that military service experience would cause social and economic disruption, providing farm boys from the countryside with an avenue to abandon their rural homes and occupations (Keene, 2011). Lewis and Young's lyrics cited at the start of this section, in spite of their folksy tropes, spoke to real worries about rural depopulation (Hurt, 2002; S. M. Lewis et al., 1919), while the restlessness of Willa Cather's Claude Wheeler and the concern it engendered in his family echoed the anxieties of many farming households with draft-aged sons, brothers and husbands

(Trout, 1999). However, the decades and ages under consideration here were already periods of high spatial and social mobility for young men in the United States. The average male recruit was in his early twenties and single (Keene, 2011, p. 33), of an age associated with home-leaving (Goldscheider & Goldscheider, 1994). He was living in a country where rural populations were in decline in spite of prosperity and government programs promoting efficiency and cultural development (Blanke, 2002, p. 5), in a country where "no more than half the families residing in a city at any one time could be found there ten years later" (Chudacoff & Smith, 2005, p. 146). Wartime changes interacted with and exacerbated these existing patterns. For instance, as Chambers (1987, p. 156) notes, the war's need for manpower *further* decreased the supply of farm labor "because many young men had [already] left for more lucrative employment in the cities." How, then, to read cultural artefacts like *How ya gonna keep 'em down on the farm* and their popularity? How to unpack stories like that presented in *One of ours*?

At the surface, and as supported by the univariate models presented here, there was an apparent relationship between longer service and overseas service on the one hand and movement from an agricultural origin on the other, whether in leaving farming as an occupation or leaving the county where one had been so engaged. Backing up farm boys' rosy expectations, again at the basic level of the univariate outcome models, frontline and overseas service – and the adventure and opportunity at least perceived to go with them – was indeed associated with higher SEI in 1930. Statistically speaking, there was a significant relationship between these wartime conditions and postwar outcomes, a relationship strong enough to be noticed by contemporaries, strong enough to inspire a novelty song, and containing enough of a grain of truth for that song to become quite popular.

Yet, as extended quantitative analysis with the multivariate models also shows, the reality was more complicated. What appeared to be a straight line between overseas service and farm leaving was in fact tangled and disrupted by the characteristics of individual soldiers and of the prewar places they had inhabited. Derek Gregory (2015) has described the movement of men in the First World War as a conveyor belt, yet even if military service would generally take one overseas if one stayed in the army long enough, even if being drafted or enlisted led in some way to being just another anonymous, interchangeable cog in the military machine, as seen here individuality did affect outcomes. MacLean & Elder (2007) found in their review of demographic studies of military service's impact on the life course that context is vitally important, but the models presented here show that context is influential not just in and of itself, but rather that places are important in relationship to other places and in how their characteristics are filtered through moving, relating individuals. In predicting one's postwar socioeconomic index, service duration and location are important, but are only significant in so far as they are interacted with the civilian context in the form of urban population percent. Postwar spatial movement is likewise affected by duration and location, but only in so far as they are interacted with personal characteristics in the form of prewar occupation. We see that spatial and social mobility were also intertwined, with the already peripatetic being about 43% more likely to leave farming and with volunteering and the subsequent geographical and occupational shifts it would entail evidentially being effected by farmers' migration to places of entry.

How ya gonna keep 'em down on the farm warned of the harm that threatened farm boys who had been to war. Among other critiques leveled at *One of ours* was that the book did not conform to the trope of disillusionment carried forward by other Great War American writers like Hemingway and Dos Passos (Trout, 1999). Yet the models here suggest that the optimism promoted by government propagandists and embodied by Cather's protagonist may not have been in vain, and least not for all subgroups of the veteran population. While farming individuals by definition have a lower SEI, among those farming veterans who served overseas SEI was higher, although depending on the model specification not always significantly so. Those who chose to enter military spaces were more likely to leave that low SEI occupational category. Spatial mobility has generally been associated with prosperity, with migrants being positively selected (Borjas, 1987; Roy, 1951): veterans in general were more spatially mobile compared to civilians, as were prewar farming men who had been soldiers longer compared to other agriculturalists. That the effects of overseas service can be used to distinguish the reference category of farming individuals from members of other prewar occupations (whose otherwise higher spatial mobility was dampened by foreign service) (Table 3.12)), but not to distinguish between farming individuals (Table 3.17) further shows the value of a more qualitatively precise, transectional focus (and of the finely scaled quantitative data that makes this feasible) when trying to account for veterans' outcomes and their reflection in population metrics and popular culture.

The data used here and the traces of life courses and population patterns that they capture are convoluted, as was seen early in this section with the discussion of age, duration and entry method. It is difficult to assign causality to aspects of military service as they might be correlated with rather than themselves being one of the catalysts of the dynamism of the period. However, even such non-causal correlations point to the multiscalar and multilocal connections between home and front, between military and civilian. Importantly, the findings presented here, especially those predicting pre-war farming individuals' spatial mobility, argue that a narrow focus on traditionally defined military places (i.e. overseas battlefields) misses significant relationships between militarism's geographies and postwar outcomes. Military service, or the unmeasured characteristics that were related to it, affected one's own life course and, as I will expand upon in subsequent chapters, through veterans continued to affect the American heartland long after the Armistice.

Chapter 4: Transitioning between a focus on individual outcomes to a focus on emergent geographies: a visualization interlude

Chapter abstract:

Having spent the previous two chapters of the dissertation immersed in statistical analyses and tabular data, with Chapter 4 I provide a short data visualization interlude. As much as empirical, quantitative work examining populations of Great War soldiers is relatively novel, making these evolving populations visible through cartography has few precedents. While this is an interesting methodological exercise it also encourages a more critical appreciation of how militarism is grounded even in what are generally considered to be civilian places: located by coordinates, we can see where military space was embedded in domestic geographies via individual service members. Charted and mapped, we can see how soldiers and veterans dynamically constituted places. The emergent patterns shown in this chapter, whether cartographic or diagrammatic, also provide a segue between Chapter 3's focus on individual outcomes and Chapter 5's focus on nation-wide geographies.

Chapter introduction:

In this dissertation's introduction, I laid out the overarching framework for my research: the conception that places and individuals create each other. From the discipline of geography, Doreen Massey (1999, p. 262) argues that space time is "defined in terms of the entities 'within' it…through the operation of social relations…and [is] integral to the constitution of the entities themselves." From the discipline of historical population studies, Kasakoff & Adams (2000, p. 115) argue that individuals "[bring] their demographic histories with them" to shape new population patterns. I have spent the last two chapters connecting places together through individual doughboys' records, examining how places might have inflected personal outcomes using regular and logistic models; in the following chapter I will use spatial statistics to analyze the ties between contexts and the distribution of veterans across the country. In this chapter, I visualize such constitutive and emergent relationships. First, I present maps and diagrams using the locations and dates mentioned in North Dakota's WWI roster to track the changing articulation between 'military' and 'civilian' space as men were brought into and then released from military service. Second, I present a flow diagram that traces soldiers through the (largely domestic) places of their military service and on into their postwar lives. In these visualizations, I attempt to convey the dynamism of North Dakotans' domestic military landscape and of service members' own life courses through their co-constitutive relationships.

Data and data preparation:

In the previous chapter, I described how I geocoded the service entry locations present in North Dakota's First World War military roster and intersected these points with modified shapefiles from NHGIS to associate each location with 1910 and 1930 county-scale identification codes, allowing me to attach pre-aggregated data to each individual record on the basis of the former and to tag spatial movement on the basis of the latter. In this chapter, I expand the use of those techniques. For most individuals, the *Roster* not only includes specific event locations, but also specific dates as well as qualitative detail. Using this information, I was able to aggregate service entries and exits by coordinate pair, month and method as well as summing up these measures across the entire period of America's direct involvement in the First World War, from the war declaration of April 1917 to the Treaty of Versailles in June 1919. For the top panel of Figure 4.2, I also aggregated entry information to the 1910 county boundaries available from NHGIS (with a modification for 'Pine Ridge County' in South Dakota as described in the previous chapter) (Manson et al., 2017), while for Figure 4.5 I used geocoded and intersected coordinates and tabular joins to associate individuals' registration, entry, training, exit, and postwar residence information to modified 1930 county boundaries. In a departure from Chapter 3, 'volunteers' in Figure 4.1 and 2 include anyone who was not drafted. For one exit method, death, I aggregated the data to both death location and birth location, including dates beyond the official end of the war. Figures 4.1- 4 are built from all records in the roster database (including those of women), though the top panel in Figure 4.2 only maps US-based events.

For the population maps that provide the backdrops of Figures 4.1, 4.3 and the top panel of 4.4, I used pre-aggregated 1910 population census data from ICPSR directly (aside from the same South Dakota edit) (Haines & Inter-university Consortium for Political and Social Research, 2010); the city locations were geocoded from lists provided by a US Census general report (US Census Bureau, 1913). However, for the place characteristic columns in Figure 4.5, I wanted to use county-level measures from 1910, 1920 and 1930, and thus needed to make some additional modifications to maintain geographic consistency over time. As described already in Chapter 3, I modified downloaded data tables and shapefiles to ensure that all of the county codes and boundaries among the IPUMs, ICPSR and NHGIS sources for each decade could be joined together. For the 1930 boundaries and data, I collapsed small and problematic geographies in the manner pursued by Fishback, Kantor, & Willis (2002), giving each new county-sized geography a ‘fishfip’ code; henceforward, I will call these county-sized geographies simply ‘counties.’ I then intersected the 1910 and 1920 boundaries with the 1930 fishfip counties and used their overlap to reapportion the earlier decades’ urban and total population counts to the new boundaries. I calculated the percent urban population used in Figure 4.5 on the basis of the re-aggregated measures. The individual data used to produce the flows in Figure 4.5 was drawn from those roster records linked to the census using the BI-C protocol described in Chapter 2, and then reduced to rank and file soldiers with 1st-99th percentile ages and service durations, who were known to be farming prewar, and who had a known occupation in 1930 after manually editing the latter.[72]

Shifting domestic military geographies

Entering military service:

Staggering inductions so as not to overwhelm the transit system, the Selective Service called up the first 5% of conscripts on September 5, 1917 (Keene, 2011, p. 42). States having been issued quotas based on estimates of the male population aged 21 to 31 minus the number of men from the state already in service (Keith, 2004, p. 60),[73] and having divided these quotas amongst their counties, Burleigh county’s three men boarded a train in the capital of Bismarck, and another seventeen departed Fargo, North Dakota’s largest city (“Bismarck bids first soldiers fond farewell,” 1917; “Deputy sheriff

[72] Note that while the dataset used in this section originates from the same linked source as that used to produce the analytical dataset used in Chapter 3, the linked dataset used here in Figure 4.5 was subset in a slightly different way (e.g. prewar marital status was not considered, unknown place information was coded as ‘unknown’ rather than removed). Thus, while Chapter 3’s prewar farming subset contains 2,609 observations, Chapter 4’s subset includes 2,723.

[73] In the first wave of the draft, registering men aged 21 to 31 took place on June 5, 1917 (men born June 6, 1886 to June 5 1896), with a two-part second wave registering men who had turned 21 in the intervening months on June 5 and August 24, 1918 (pushing the range of birthdates to June 6, 1886 to August 24, 1897). The final wave of registration, occurring on September 12, 1918 extended the eligible ages from 18 to 45 (birthdates September 11, 1872 to September 12, 1900) (Ancestry.com, 2018c).

feted," 1917). They were sent on their way by hundreds if not thousands of well-wishers ("Big demonstration for Bismarck men," 1917). In Minot (1910 population 6,188), "thousands of citizens" came to watch as ten men from Ward County were "carried thru [sic] the streets in autos decorated with the national colors and … a war eagle with the stars and stripes in his beak." They were accompanied by a drum corps and two companies of soldiers marching "four abreast, spic and span in their new uniforms." As the *Ward County Independent* concluded, "the sight was the most imposing military spectacle ever seen in our city" ("Drafted men shown signal honor," 1917). Even larger demonstrations would accompany the departures of the next 40% of draftees a fortnight later. In some places, inductees were given armbands in lieu of uniforms and subjected to military discipline as soon as they boarded trains (Keene, 2011, p. 42), but whether so marked or not, the same visual narrative was played out in cities and hamlets across the country: ordinary individuals became part of a great army, to be sent en masse into a great cause across the sea and to be materially and morally supported by the civilians that cheered their departure. Abstract militaristic rhetoric became concrete at the scale of the individual, inducted body (Stewart, 1992; Tyner, 2009).

Figure 4.1 shows North Dakotans' entries into military service. The graduated symbols in this and subsequent figures are underlain by a representation of 1910 population density, with the breakpoints for the North Dakota and the national extents being set differently to better show the variation within the state and across the U.S. (Haines & Inter-university Consortium for Political and Social Research, 2010). Likewise, the national map depicts the hundred largest cities in 1910 (US Census Bureau, 1913), whereas the map centered on North Dakota, quite rural even by the standards of the early 20th century America, is overlaid with towns with populations of 2,500 or more, the Census Bureau's cut-off for defining an urban place. The base maps could be called representations of American "civilian" geography, but the term is misleading. A number of the towns on the North Dakota panel were established at or near the sites of frontier army forts, and a map of census data collected as late as 1890, well within the lifetimes of many of men in the roster, would have shown a number of supposedly unpopulated counties in the Dakotas where the original inhabitants had only recently been subdued or removed by military force (Manson et al., 2017; Tweton & Jelliff, 1976). The effects of the First World War on North Dakota's domestic geography were thus less an unprecedented imposition of military into civilian space than a change in the perceived articulation of these never-separate spaces as individuals chose to enlist or were drafted, moved through service and on with their lives. Home was never purely civilian but rather, in Cowen's (2012) phrase, "always already militarized."

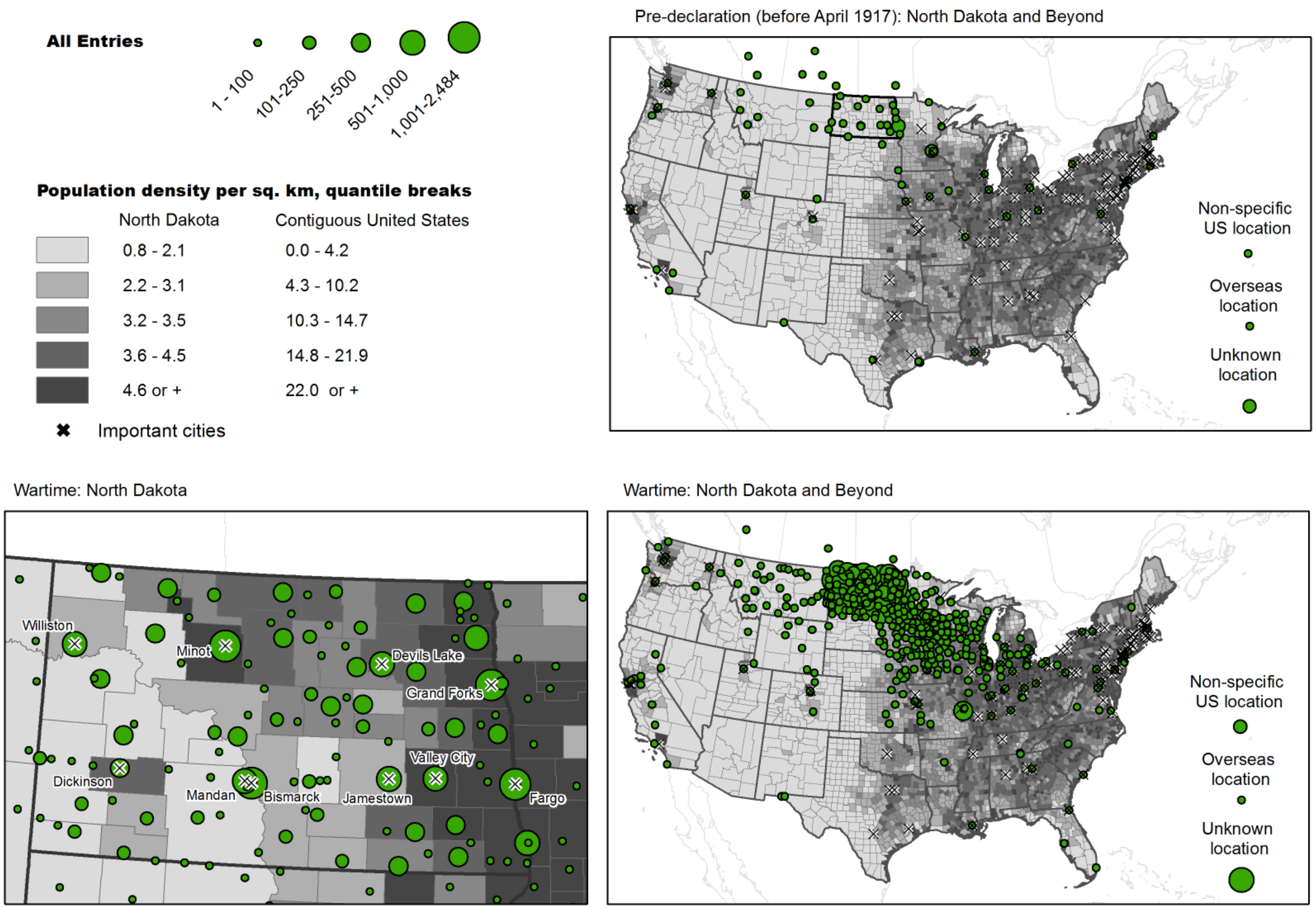
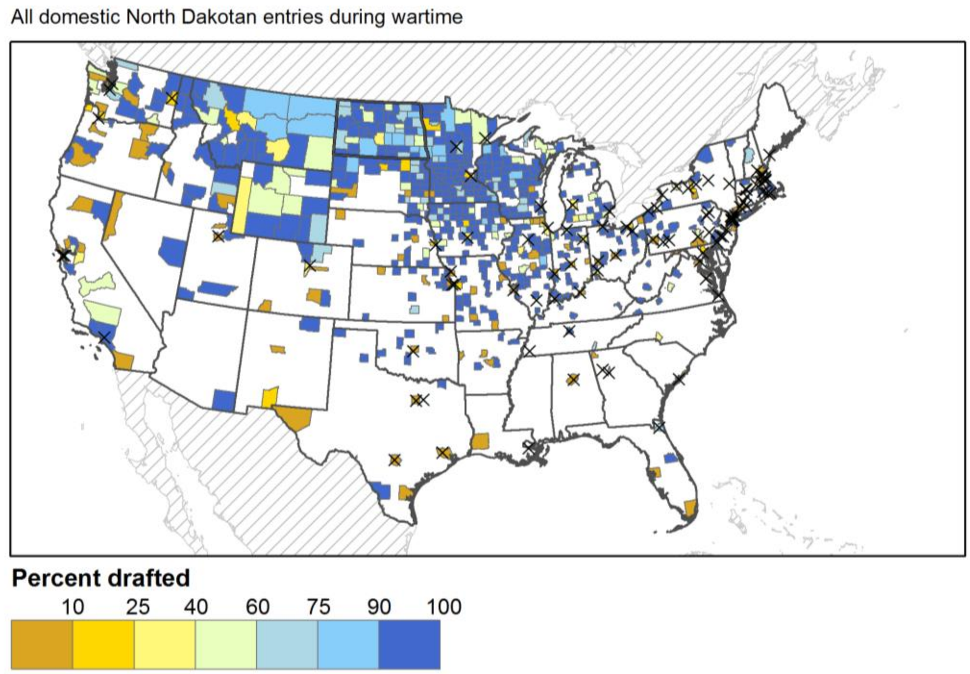


Figure 4.1: **North Dakotans entering military service**. These maps convey the changing geography of the transition into military service via coordinates and its spatial relationship to the underlying population geography of the US in 1910 via county-level population density. Only US population data is shown though some North Dakotan individuals entered service in Canada or Europe. Note that while the representation (breakpoints) for population density is different between the North Dakota-centric and North American frames, the representation of the entry location bubbles is consistent across all frames (and across mapped and unmapped 'non-specific,' 'overseas' and 'unknown' locations). Data sources: Fraser (1931), via HathiTrust; 1910 US Population Census data via Haines & ICPSR (2010) and US Census Bureau (1913); 1910 county boundaries modified from NHGIS (Manson, et al., 2017); country boundaries from Natural Earth (2018).

However, these shifts in articulation could be dramatic. The scale of the Great War was different: the *Bismarck Tribune* called WWI induction the "Greatest Military Movement since Civil War" ("Bismarck bids soldiers goodbye," 1917). So, too, was its spatial expression. North Dakota individuals listed in the roster who entered military service before war was declared by the United States in April 1917 did so within the boundaries of North Dakota or its neighbors, with some entrants scattered across the northern US, along the Mexican border (for the Punitive Expedition), or in Canada (as men, most of them not Canadian-born, enlisted in the Canadian Expeditionary Forces). During the war, while established induction locations persisted, entry became rather less concentrated in urban areas like Fargo (the largest city in North Dakota) and Minneapolis (the largest city in a neighboring state), diffusing even into sparsely populated counties. As seen in the stacked area graph at the bottom of Figure 4.2, the pattern of entries shifted over the war, but remained localized: military mobilization intersected with individual domestic lives close to where they were lived.[74] Cronier (2007) argues that civilians' perceptions of the war were often based on what could be seen going on in the streets of their hometowns and villages. Molotch (1993, p. 891) contends that "any new macro arrangements must display themselves, be tended, and be reinforced through a quotidian existence aligned with them." With the repeated practice of orchestrated farewells for familiar individuals in local places filled with taken-for-granted "cues to memory and behavior," the militarism of the Great War itself became familiar and quotidian (Black, 2004; Favret, 2005; Molotch, 1993; Thrift, 2009, p. 92). While we may doubt Fussell's (2000, p. 22) contention that people at the beginning of the last century all knew what grand words like 'honor' and 'glory' truly meant, as words enunciated in regular send-off speeches they became the vocabulary of everyday discourse.

[74] If entries are aggregated and mapped month by month, their patterns are much like those shown for wartime in Figure 4.1.



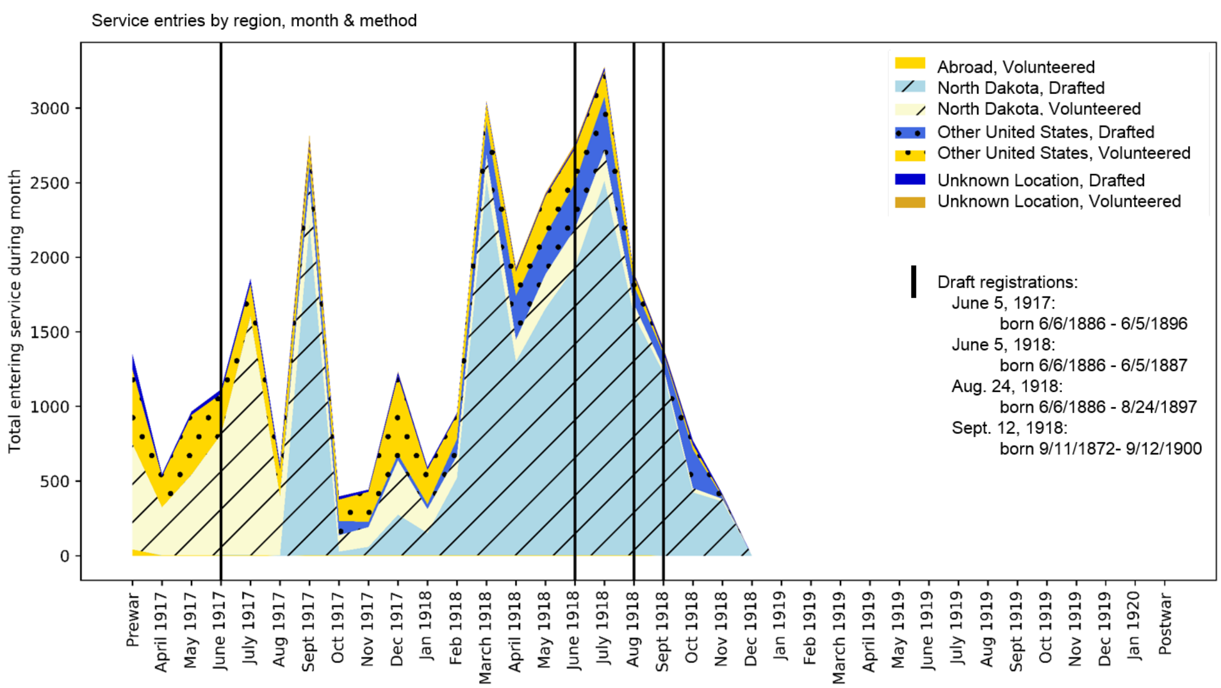


Figure 4.2: North Dakotan military service entry methods. In the top panel, only US locations are included (and thus other countries are hatched out), while the bottom panel includes all entry locations and all times. Data sources: Fraser (1931), via HathiTrust; 1910 US Population Census cities from US Census Bureau (1913); 1910 county boundaries modified from NHGIS (Manson, et al., 2017); country boundaries from Natural Earth (2018).

This is not to say that enthusiasm for military service was of necessity internalized rather than endogenous, as a substantial number of individuals did join the armed forces of their own volition before the United States even declared war. I devoted part of Chapter 3 to describing the entanglement of entry method and the timing of service entry, but as seen in the top panel of Figure 4.2 there was also a geography to being drafted. Most voluntary entries occurred before September 1917 and most did occur in North Dakota. However, enlistees, enrollees and appointees made up a higher percentage of North Dakotan entrants in counties more distant from North Dakota itself, suggesting again as did the models in Tables 3.14a and 3.14b that individuals may have been moving for the express purpose of volunteering, whether before the United States declared war (the first tick mark in the stacked area graph at the bottom of the page) or during the war (the period covered by the map).[75] However, that individuals "who claimed North Dakota as their home residence" were being inducted into military service even via in the draft in so many places across the country, as seen in the swatch of blue from the Great Lakes to Washington state, also points to the spatial mobility of men of military age generally, including those from predominantly rural regions like the northern Great Plains (Fraser, 1931, p. 3).

Exiting military service:

Veterans' returns were often met with as much fanfare and discursive drama as their departures. In mid-June 1919, the month when discharges peaked (Coffman, 1998, p. 359), *The Hope Pioneer* promised a grand homecoming for "Steele County servicemen," with a "parade led by the Million Dollar Band" and to include "Veterans of the World War, Spanish-American, and Civil War. Red Cross Branches. [and] School children representing various branches of service." The front page, nearly

[75] The stacked area charts were created in Python's Matplotlib package ("Matplotlib: Python plotting — Matplotlib 2.1.2 documentation," n.d.).

whole page announcement continued, "every soldier in the county is invited and all urged to march in the parade in uniform if possible, for the home folks are anxious to see all their Boys assembled in one body" (“Homecoming celebration,” 1919). Just two weeks later the same paper advertised a “Welcome Home Day for the soldiers of Steele County” at the county fair in Finley that offered free admission and a meal to all soldiers but was also meant to appeal to civilian spectators: "Army manouvers [sic], drills, and dress parade on the grounds. Two solid hours of the real army game" (“Steele county fair,” 1919). For the Fourth of July, Bismarck offered “a genuine American celebration of our nation's birthday arranged especially in honor of the American Doughboy” (“Independence Day,” 1919). Sneddeker (1999, p. 49), describing American WWI homecoming parades, comments that having veterans traverse the streets of their hometowns while being cheered by – and often accompanied by – neighbors and family members “provided a sense of closure to the experience and offered a hope of a return to the ‘normalcy.”’ However, even in their symbolic re-envelopment in the peacetime community, the doughboys were marked as different when they “marched with fixed bayonets in trench gear;” being escorted not just by loved ones from their prewar lives but also by old soldiers from previous conflicts tied them into a deeper military history (Gustin, 1921; Sneddeker, 1999, p. 52).[76] Commemorative practices thus cemented a new hybrid identity – not as just a civilian or just a soldier but as a veteran – forged in places of military service and now bolstered by performance of that identity in a civilian space (N. C. Johnson, 2003; Whelan, 2014b).[77]

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[76] One of North Dakota’s own examples of the celebratory mélange reconnecting returned doughboys to their own civilian lives and the nation’s past comes from *The Bismarck Tribune* with the headline, “Historical pageant and contest for babies will be features in homecoming celebration parade” (1919).

[77] In writing about the routes and rhetoric of Great War era parades in Ireland, Johnson (2003) describes how contextualization in time and space with other symbols gave individual identity, sacrifice and grief coherence and moral weight. Importantly, this contextualization via commemorative performance, and the discursive purposes it could serve, was accomplished through “juxtaposing in a single real place several spaces, several sites that are themselves incompatible” (Foucault, 1986, p. 25). Thus, Gordon & Osborne (2004, p. 621) describe Canadian memorial displays as "visual condensations of the past," and Jarman (1997) comments that Orange marches’ conflation of the Battle of the Boyne (1690) with the Battle of the Somme (1916) created an essentialized and

While military planners made some effort to stagger returns and send discharged individuals back to their place of origin, pressure to return to normalcy meant that massive numbers of men were let go at once, often simply given a train ticket from a purpose-built demobilization camp to the destination of their choosing (Coffman, 1998; Keene, 2011; Zieger, 2000). As was the case for soldiers generally, North Dakotans' release from service was highly concentrated in time and space: in June 1919, 3,554 individuals recorded in the roster database (12% of all survivors) left military service, 2,446 of them from a single military camp in central Iowa. Their military records do not end where they had left their civilian lives or indeed where they were feted for their service, but where it was expedient for the government; that so many records neglected to include place of exit information is perhaps another indication of this haste. Figure 4.3 shows where soldiers made the transition from military to civilian life in the eyes of the U.S. Army. In showing the location of the government's last notation rather than the places that returned soldiers had to renegotiate their identities in civilian life, Figure 4.3 perhaps also suggests the official abandonment that many veterans felt in the years after the war (Kinder, 2015; Schram, 2008). The coordinates in Figure 4.3 thus in some ways convey "the non-meetings-up, the disconnections and the relations not established, the exclusions" that, as much as connections, "contribute to the specificity of place" (Massey, 2005, p. 130). Comparing Figure 4.1 to Figure 4.3 highlights North Dakota's loss of military prominence. Only a tiny spike of service members were demobilized in North Dakota at the end of 1918.

mythologized space-time in which to situate and concretize Loyalist group identity in Northern Ireland. "Blue, Gray and khaki" parades that featured Civil War veterans and schoolchildren fulfilled a similar purpose in the American context (Fowler, 1917).

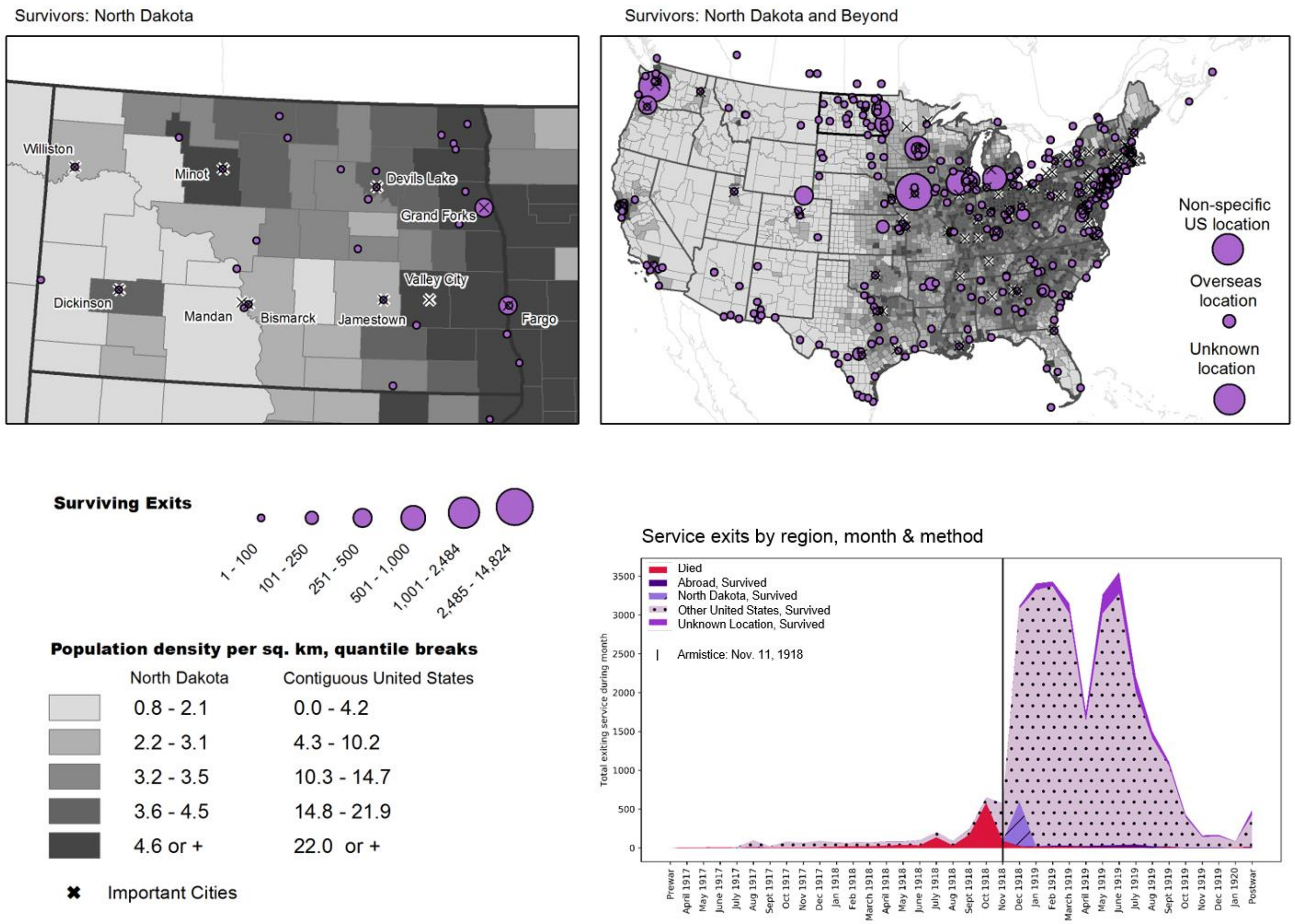

Figure 4.3: **North Dakotans exiting military service**. In concert with Figure 4.1, this figure shows the shifting articulation of military and civilian space via aggregated individuals in domestic places. As in Figure 4.1, exit locations are consistently represented across frames (and between mapped and unmapped locations), but overlay a representation of 1910 county-level population density with different breakpoints in the two frames. Data sources: Fraser (1931), via HathiTrust; 1910 US Population Census data via Haines & ICPSR (2010) and US Census Bureau (1913); 1910 county boundaries modified from NHGIS (Manson, et al., 2017); country boundaries from Natural Earth (2018).

A similarly sized spike one month before the fighting's end captures most of those who left military service through death. In October 1918, 579 individuals lost their lives, 44% of all those whose death in service is recorded in the roster. Although these deaths occurred at the time of the Meuse-Argonne Offensive, only half occurred overseas with the rest, often caused by disease, occurring in the United States.[78] In Figure 4.4, I map all the recorded deaths (including 33 occurring after Versailles) to place of death and to place of birth. Pierre Purseigle (2004, p. 109) argues that the "first implication of industrialized warfare" is the "instilling of death at the heart of local communities." In some of the domestic locations mapped in the top panel, soldiers' deaths may have been quite visible to contemporaries, for instance influenza victims' "'bodies piled up'" in a scene to "'beat any sight they ever had in France after a battle,"' as one training camp physician recalled (Bristow, 2012, p. 51). In other American places the lingering effects of WWI military deaths may have been more difficult to perceive. The personal impact of grief on communities and next of kin "still remains underestimated among historians" (Max Weber Stiftung, 2016), and geographers struggle to map what has been lost (Romanillos, 2015; Tyner, 2009; Wylie, 2009). With the bottom panel of Figure 4.4, in collapsing time to locate the dead to where their lives began and where their families may have lived on, I attempted to map the presence of absence. Indeed, Booth (1996, p. 41) writes that this is the nature of all war memorials, the reminder that "death can only occur at the site of life." This cartography of mortality captures in some way what the maps of demobilization locations do not: Great War militarism's lasting influence on individuals through now severed social relationships.

[78] Influenza was of course a prolific killer (causing an estimated 675,000 American deaths), but other diseases were also prevalent, even in spite of a program of vaccination. In 1917, 30% of army deaths were due to measles. Men from rural origins were particularly susceptible to disease in WWI (Keene, 2011, pp. 164–165), as they had been in the Civil War (Lee, 2007, p. 685).

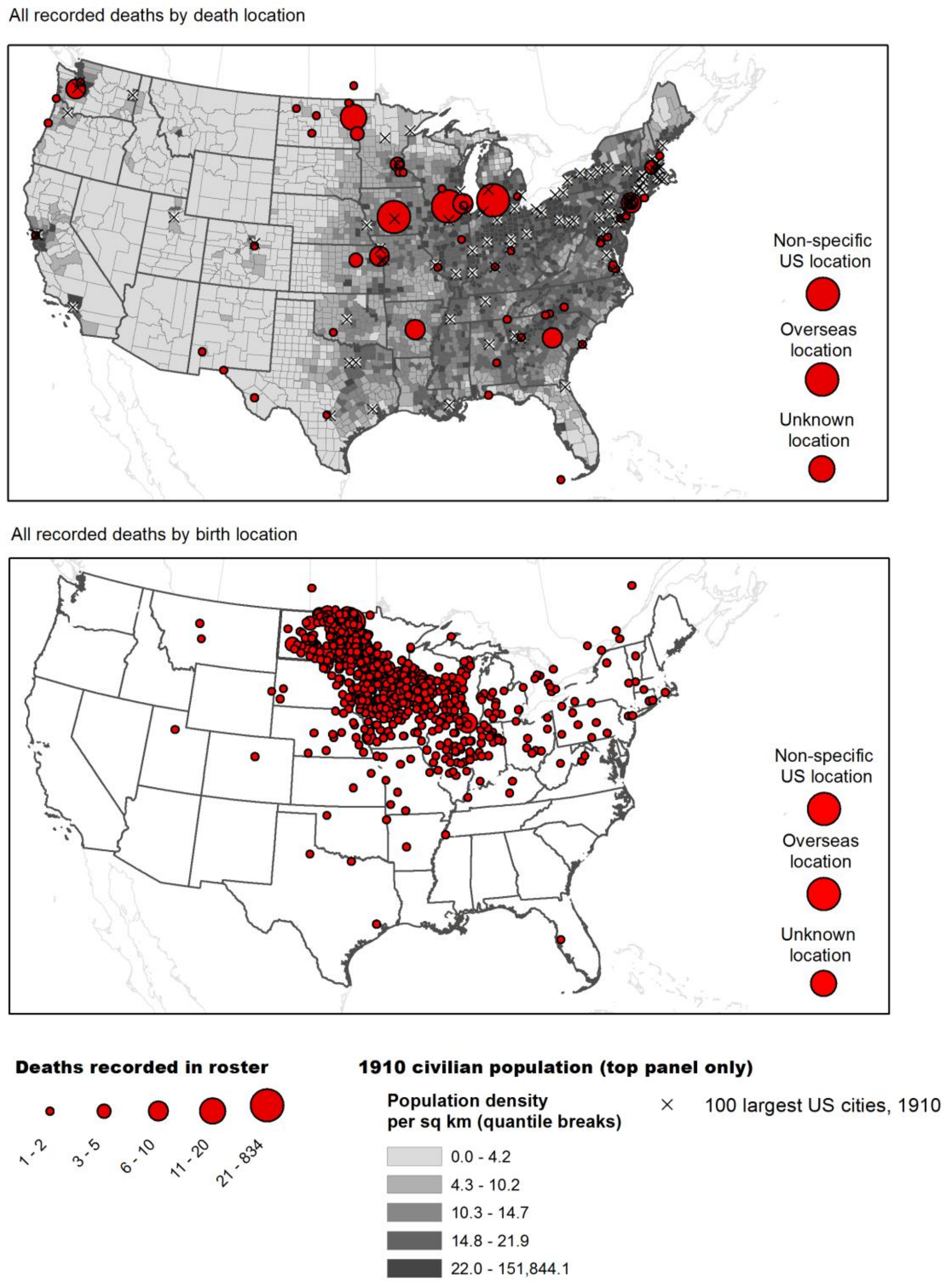

Figure 4.4: North Dakotan deaths. As in Figures 4.1 and 4.2, the size of the bubbles is consistent between panels and between mapped and off-map locations. Data sources: Fraser (1931), via HathiTrust; 1910 US Population Census data via Haines & ICPSR (2010) and US Census Bureau (1913); state and (modified) 1910 county boundaries from NHGIS (Manson, et al., 2017); country boundaries from Natural Earth (2018).

Flow diagrams: from individual life courses to a braided stream

The entry and exit maps are based on points, and while they convey changes in the landscape they give the service members they represent the appearance of spontaneous generation and disappearance. In reality, of course, soldiers followed paths through military/civilian space-time, their lives were not confined to bounded territories and could be described with "a whole range of other spatial….concepts: of flow, disconnection, juxtaposition" (Massey, 2007, p. 404). As Kasakoff & Adams (2000, p. 115) write, "analysis might be better carried out using…streams themselves as categories." In Chapter 3, I examined the effects of passing though wartime places – overseas and frontline – on postwar social and spatial mobility and touched on the differences between registration and entry places in terms of the urban percentage of their populations. With Figure 4.5, I tell the same story by different means, examining individual life trajectories aggregated into population flows.[79]

[79] This visualization was created using the Alluvial package for R (Bojanowski & Edwards, 2016).

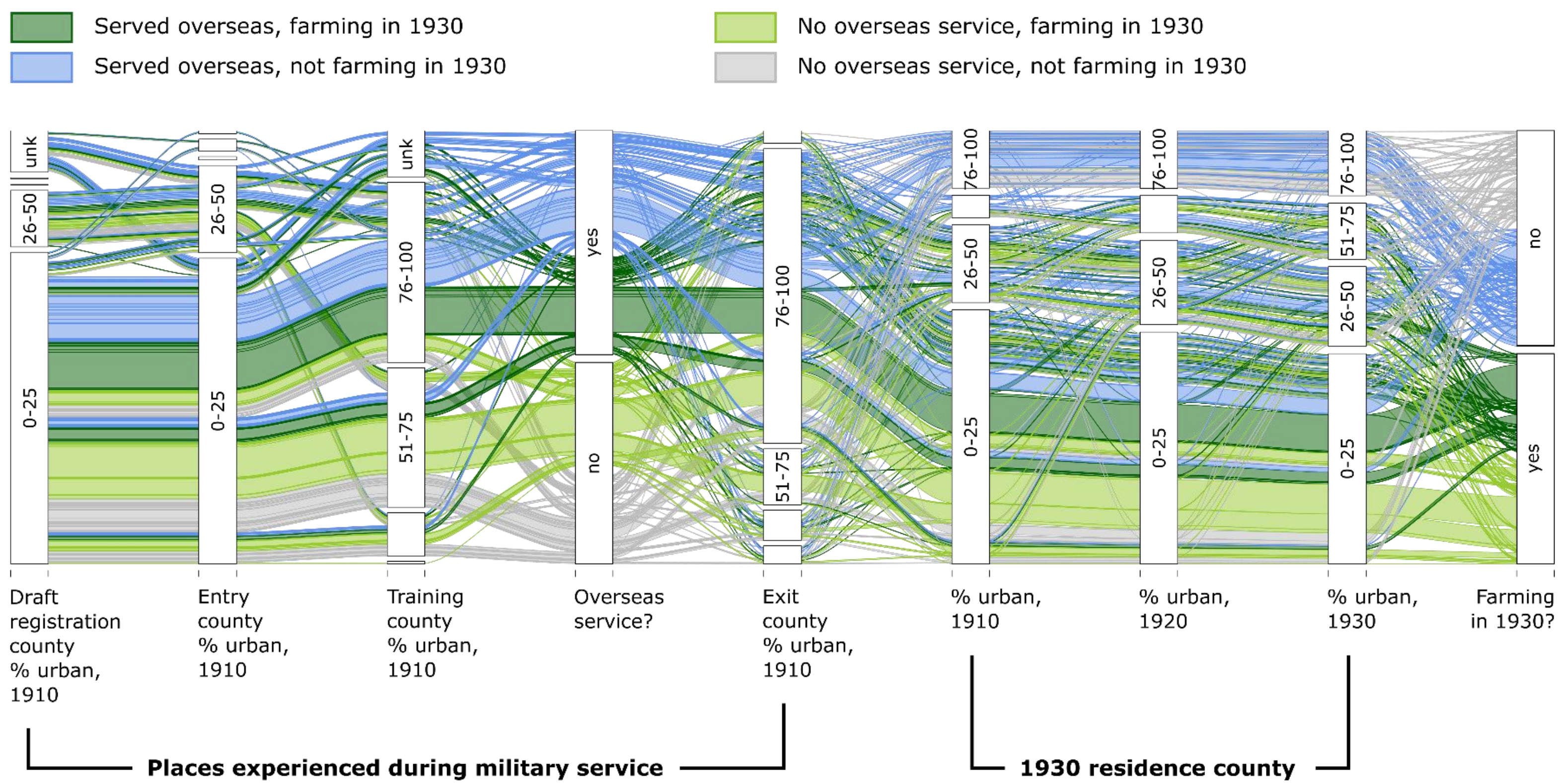

Figure 4.5: Prewar farming individuals' trajectories. To create this figure, 1910 county population, reapportioned to modified 1930 county boundaries, was binned by urban population percent. Linked rank and file individuals who had been farming before the war were tagged by their event locations with this county-level data, with the tags then being concatenated to produce trajectories. Individuals were then aggregated by their full trajectories and these totals passed to Bojanowski and Edwards' (2016) R package which drew the figure. Data sources: Fraser (1931), via HathiTrust; 1910 US Population Census via Haines & ICPSR (2010); using county boundaries derived from NHGIS (Manson, et al., 2017).

North Dakota's largely rural character at the start of the First World War can be read in Table 3.6, but it can also be discerned from Figure 4.5. The majority of rank and file North Dakotans (at least 80%), whether farmers like those shown here or not, registered with the Selective Service (if they were of draftable age) and entered military service in predominantly rural counties. However, they experienced their training and discharge in predominantly urban counties. By the time they appear in the census in 1930, 29.3% of the linked formerly farming veterans visualized here live in counties with populations that are more than half urban and less than half are known to still be employed in agriculture. Significantly more former farmers have switched occupation after overseas service than expected.[80] However, by examining the three dated columns for '1930 Residence county' characteristics and the flows between them, we see that the counties themselves changed over time. While a quarter of these soldiers moved to locations that in 1910 were already more urban than their origin places, the movement of military-age men, both veterans and civilians, also helped contribute to a secular trend of urbanization in the United States (Chambers, 1987; Chudacoff & Smith, 2005). This single figure, tracing the flows of individuals through domestic space as part of their war service, visualizes at once changes in personal, locational characteristics and in place characteristics over time. Individual stories meet up in places and contribute to the character of those places.

Conclusion:

Richard Rubin (2013, p. 11), in his book of oral history spurred by the dwindling number of surviving doughboys, wrote "I doubt a complete history of [the Great W]ar has ever been written, or ever will be. It was too vast, and too strange, to be knowable in its entirety." Yet, as I have tried to show

[80] Although, as we have seen in the previous chapter, the relationship between location of service and farm leaving was a complicated one and, in terms of statistical if not rhetorical significance, other factors supersede oversea service's importance in predicting this outcome.

here, non-traditional methodologies can provide novel ways to appreciate this vastness and strangeness, to “ask new questions and see historical circumstances” from a new perspective (Giordano et al., 2014, p. 8). Here we see that events in Europe reverberated into the United States, dispersing induction points into even the most sparsely populated areas, while the unexpectedly quick end of hostilities on the Western Front caused these articulation points to condense, leaving a seeming gap between where prewar life ended and postwar life began. Yet, the flow diagram goes on to show that not only were origins and destinations connected by the movements of individual doughboys, but that these men tied together a whole constellation of events and places, places whose characteristics these individuals’ own mobility helped to shape. Total war came home through the spectacle of induction, the absence of soldiers and their re-appearance at war’s end, through the communication of wartime experiences and beliefs in commemorative practice, and the quiet weight of millions of individual veterans on postwar population patterns.

Cronier (2004, p. 152) describes the soldier returned from the front to home as “a hybrid…a migrant in his own city,” but while she focuses on the changes wrought on the individual and perceptions of him by war, Massey (1995, p. 183) contends that the places men like him inhabited are “*always already* hybrid” [my emphasis]. Much as Samuel Hynes (1991) has argued that the “gap” the Great War is remembered to have opened in culture and society is largely a “myth,” I argue with the visualizations in this chapter and the analyses throughout this dissertation that military and civilian, home and front are never truly separate, though their connections may be obscured. The individual was and is the crossroads of these spaces, moving, relating and accumulating experiences. Using individual data, I have been able to make these connections and the soldier’s role as the heart of them visible, in some cases in ways that may not have been apparent to contemporaries. However, in making geographical patterns legible in this way, I have also reproduced certain abstractions, erasing the essential individualities of the doughboys I have tallied up, albeit in inventive ways. I will return to this self-reflexive critique in the dissertation’s conclusion.

Chapter 5: After it’s over, Over There: A nationwide examination of farming veterans’ emergent geographies

Chapter abstract:

Chapter 3 was reliant on data that had been linked (as described in Chapter 2) at the individual level, from one entry in North Dakota's military roster to one line in the 1930 census. Yet Chapter 3 and Chapter 4 also demonstrated the usefulness of linking data together in a different way: by location. In this largely descriptive chapter, after weaving together literature about agricultural conditions and rural perceptions of military service, I examine the post-war population patterns that emerged by 1930 from individual veteran and civilian characteristics, and examine them in relationship to other geographical patterns, binding outcomes and predictors by county. Focusing on farming men of WWI-military age, I use this cohort to control for the underlying population distribution and to highlight where the veteran populations' departure from this trend is significantly associated with agricultural patterns. Using maps and spatial regressions, I find that in some regions higher farming veteran populations are associated with markers of greater agricultural modernization. However, the population geographies of veterans compared to those of their cohort are not as dramatically different nor as clearly indicative of the benefits or detriments of military service as the propagandists, veterans' associations, or hegemonic narratives introduced in previous chapters of this dissertation would have one expect. Following on from Chapter 4, the maps and analyses presented here show the dynamism of places as constituted by and emerging from individuals and in making the domestic spatiality of Great War militarism visible furthers my main argument: that the proper purview of military geography extends far beyond its traditional confines.

Chapter introduction:

In his book about combat-induced disability, Kinder (2015, p. 8) writes that modern war's "most defining feature" is its effect on human bodies. While Kinder and others have focused on how military corporeality – bodily injury, the wearing of uniforms, the imposition of discipline – is translated into rhetoric about the meaning of conflict, there has been less work on the other patterns that emerge from the level of individual soldiers (Cornish & Saunders, 2013; Cronier, 2004; Sneddeker, 1999; R. J. Wilson, 2012a). As civilians became soldiers and moved through war service, they congregated, interacted and dispersed, shifting the spatiality of America's military commitments, as seen in the previous chapter. When America's doughboys came back from training camps and Great War battlefronts with their scars, souvenirs, and other residues of their emplaced, embodied experiences, they not only shaped societal discourse, but also the characteristics of the postwar populations they helped to constitute. A few scholars have applied quantitative methods to examine this interaction of military processes and domestic life and the subsequent demographic geography with which those processes intersected (Abramitzky, Boustan, & Eriksson, 2012; Doetsch, 2012; Laschever, 2013). Yet this avenue of inquiry remains largely deserted, in the rural United States as elsewhere, and engagement between statistical analyses and war culture studies, between the study of the material and the discursive expressions of Great War militarism, has been lacking. As much as the study of the effect of WWI on rural populations has been marginalized (in spite of the impetus the war added to changes in rural life), as little as is known about American WWI veterans (in spite of the proportions of men of military age who served), less still is known about the interaction between America's evolving agricultural context and soldiers or veterans themselves.

As mentioned in the previous chapters of this dissertation, it was assumed by both those who supported the war and those who objected to it or highlighted its adverse effects that World War I veterans were different than civilians. These differences in fact register statistically. Tables 1.1 -1.3 have already shown that across the United States the breakdown of veteran versus civilian members of the WWI Cohort in 1930 was different across races, nativities and occupations, a point reintroduced in Table 3.1 which focused solely on the cross tabulation of WWI veteran status and farming versus non-farming occupation.[81] Table 5.1 extends the veteran status by agricultural occupation comparison to show the association of veteran status with having a rural versus urban residence in 1930.[82] Note that there are fewer farming and fewer rural veterans than might be expected from these subsets' proportions of the population. These differences also register spatially. Examine Figure 5.1, a reworking of Figure 1.2 from the introduction.[83] Nationally and within most counties, one sees again that those who were veterans were generally much less likely to be farmers in 1930 than civilian members of their cohort, perhaps not a surprising finding as previous research has found that at least white farming individuals were less likely to serve in the first place than men holding other occupations at the time of their draft registration (Doetsch, 2012, p. iv). The degree of divergence from the national trend varies, however. In portions of Texas and the southwest, and a couple of North Dakota counties, among other locations, veterans are a quarter or less as likely to be farmers or farm laborers than non-veterans, far lower than the national odds ratio of 0.517. For a smattering of counties, mostly but not entirely in the western half of the country, veterans are just as likely as or even more likely to be in a farming occupation than male civilians of the same age group. What conditions might underlie this image?

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[81] Recall that the WWI Cohort includes men in the 1930 census born between 1880 and 1902, these cut off years being derived from the 2.5th and 97.5th percentiles of birth years for men coded by IPUMS as veterans and described as having participated in the World War in that census column's text string.

[82] For reference, while over 96% of farmers and farm laborers in the WWI Cohort lived in rural places as defined by the census (places having 2,500 or fewer inhabitants), nearly a quarter of the non-farming population also lived in rural locations.

[83] The 'Missing or unmapped' counties in this map either have no recorded resident population (Yellowstone National Park) or no recorded WWI veteran population (Clayton County, Iowa and Pickaway County, Ohio).

Table 5.1: Cross-tabulations of veteran status with farming occupation and with residency in 1930

Amongst WWI Cohort (males born 1880-1902)

		Occupation in 1930			Residence county in 1930		
		non-farming	farming	total	rural	urban	total
non-veteran	frequency	12,973,642	3,367,864	16,341,506 (82.42%)	6,525,137	9,816,369	16,341,506 (82.42%)
	expected	13,226,033	3,115,473		6,303,761	10,037,745	
veteran	frequency	3,073,618	412,166	3,485,784 (17.58%)	1,123,271	2,362,513	3,485,784 (17.58%)
	expected	2,821,227	664,557		1,344,647	2,141,137	
total	frequency	16,047,260 (80.94%)	3,780,030 (19.06%)	19,827,290	7,648,408 (38.58%)	12,178,882 (61.42%)	19,827,290
chi squared				146698 (p<0.0001)			71991 (p<0.0001)
Cramer's V				-0.08513			0.0603

Notes: 'farming' includes those coded as farmers and farm laborers in IPUMS data. WWI veteran status defined by IPUMS veteran coding and parsed 'Which war?' column text.

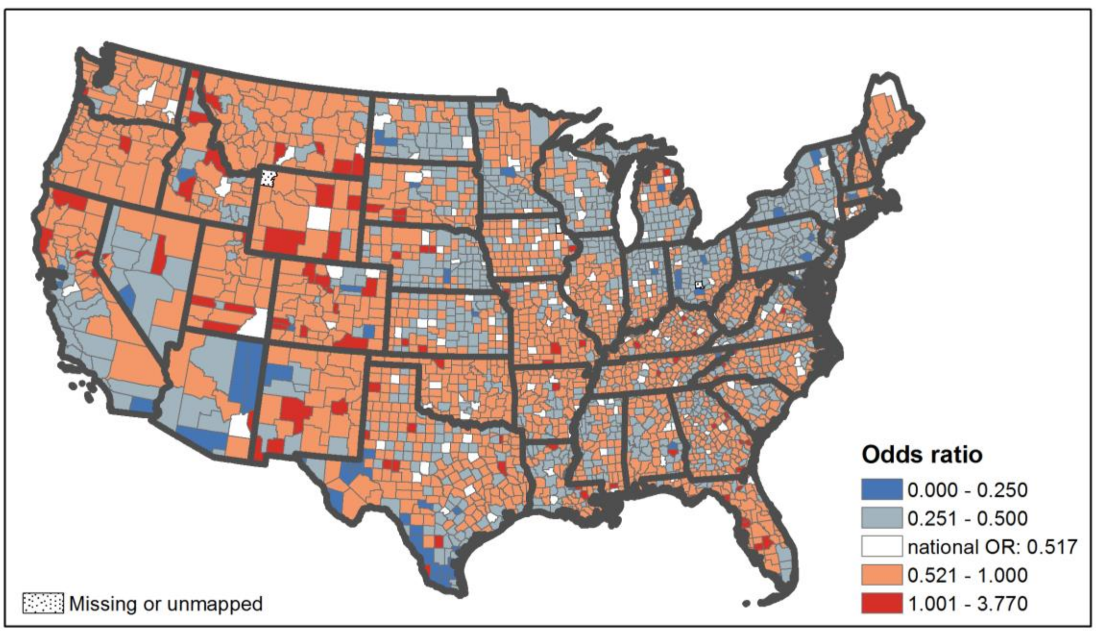

Figure 5.1: Comparison of national and county odds of being in a farming occupation in 1930 if a veteran vs. a non-veteran WWI Cohort members. Note that while nationally veterans are about half as likely as civilian men of similar ages to be farming postwar, these odds vary from county to county. Data sources: 1930 Census data via IPUMS (Ruggles, et al., 2013); modified 1930 county boundaries derived from NHGIS (Manson, et al., 2017).

The first part of the twentieth century saw great changes in agriculture and rural life across the United States, with important regional and localized variations (Sylvester & Gutmann, 2008). In this chapter, I examine whether these dynamic contextual characteristics were associated with greater or lesser county-level populations of Great War veterans after controlling for the underlying cohort populations, which might suggest that veterans were interacting with these contexts in ways that were significantly different than members of their cohort as a whole. First, in the section below I provide a detailed historical background, interweaving literatures on agricultural change and rural perceptions of military service that have been largely separate. This leads into a discussion of making the patterns described in literature amenable to a quantitative methodology, of making the agricultural and population context of 1910 to 1930 measureable. The aggregate county variables that I employ provide metrics of farming prosperity as tied to farm size, value and tenure and how these measures change over time, with the assumption that large, valuable, owned farms were a mark of good fortune although, as I will discuss in more depth, there are complications to this supposition. I also employ other markers of agricultural change, albeit ones measured at a single time point: mechanization, demands for animal and human labor, and mortgages, all reflective of trends towards modernization. Finally, I include variables describing the wider domestic context beyond the farm: measures of urbanization, opportunities and connections outside of agriculture, and census-defined regions. I begin with context maps and simple models to introduce these variables. After calculating regular multivariate regressions, I improve the most promising models by explicitly accounting for geographical dependencies using spatial regressions.

One could frame a null hypothesis that farming veterans distributed themselves like farming men of similar ages did because these subgroups were drawn from the same population and responded in the same way to contextual stimuli. Alternative hypotheses could then hold that (1) more veterans were farming in places where farming was a more prosperous endeavor – evidence that veterans were in position to make a choice to leverage good farming conditions or to leave poor farming for other opportunities – or (2) that more veterans were farming in places where farming was less prosperous – evidence that veterans were more prone to being trapped in disadvantaged farming situations, contrary to propaganda about widening opportunities and aligning with accusations of service-induced opportunity costs. There are difficulties inherent in stating these hypotheses, however. Veterans and civilians may have started out the same and remained the same, may have started out different and merely stayed different; their paths may have started at the same origin and diverged, or their separate trajectories may have converged over the years between 1917/18 and 1930. Further, measured differences in 1930 could be the result of military service successfully driving individuals to disparate outcomes, or of military service driving veterans to be more like civilians but failing to do so completely. In any case, at this stage of rural American Great War historiography, we know very little about how farming veterans compared to farming members of their cohort in general, let alone how circumstances both military and civilian might have underlain these patterns. There has not been empirical, quantitative work to see how populations of veterans may have geographically coincided with the underlying population from which they were drawn, let alone with the agricultural contexts that could be important elements to consider in a future, more causally oriented study. The purpose of this chapter is therefore is visualize and measure such associations between subpopulations and contexts and to prompt questions about these relationships, leaving a fuller discussion of what these maps and models suggest in the light of the previous chapters' results for the dissertation's conclusion.

Interweaving the histories of rural men's military service and early 20th century agricultural contexts:

As noted in the previous chapter, soldiers began their service with much fanfare. Depending on their locations of entry, handfuls or hundreds of young men gathered, were treated to parades and speeches, and were invariably sent off by the cheers of enormous crowds of well-wishers (Keene, 2011). Even places like North Dakota were caught up in the frenzy, where "thousands of citizens" would turn out in support of less than a dozen new doughboys as they boarded trains for training camps in the midwest and beyond ("Drafted men shown signal honor," 1917). Such an outpouring of patriotic sentiment in the heartland might seem surprising given the skepticism if not outright hostility with which many rural Americans had greeted the prospect of European war and conscription. Drawing on a history of discontent once channeled by the Grange and the Populist movement, farming populations especially in the south and the heartland tended to see the war as a means of lining the pockets of eastern and urban financiers and munitions makers who, by the time the United States officially entered the war, had already extended credit and supplies to the Entente (Fleming, 2003). There was little to quell farmers' fears that the control of bankers, railroads and middlemen would only increase and that they themselves would be denied the ability to (continue to) reap the benefits of wartime demand. Sharing the *Grand Forks Herald*'s September 19 front page with an article on the "300,000 men moving to camps today," (1917, p. 1), was an account of a North Dakota congressman's speech warning of monopoly and questioning how the profiteering of brokers and merchants could be considered patriotic while it was "disloyal to consider the condition" of farmers and their means of livelihood ("Control of wheat business after war will be in hands of a few men unless reforms are made, warns Geo. M. Young," 1917). Rural opposition to the war, though it included ethnic and anti-militarist religious elements, was also a manifestation of (particularly poor) farming individuals' long-standing grievances against those who had power over their economic conditions and the ability to undercut their nascent good fortune (Keith, 2004, p. 21).[84]

[84] Keith (2004, p. 21) argues that pro- or anti- preparedness or draft sentiment was more class-based than region-based, writing that "from New York to the smallest whistle-stop in southern Georgia" elites tended to support the war effort more than the more economically disadvantaged.

In the years just prior to First World War, the hardships that had characterized homesteading on the Great Plains and in the west – difficulties that had demanded migration and indebtedness and that had prompted farmers to establish organizations like the Grange and Farmers' Alliance – seemed to have given way to good fortune (Library of Congress, n.d.). Farm values and incomes rose dramatically, and crop prices in the early 1910s were so good that they became the benchmark for what farmers' organizations thought their members deserved (Tontz, 1958, p. 7).[85] These changes were related to agriculturalists being bound more tightly into a wider capitalist market system with its attendant mechanization, mortgages, and the spread of purchased rather than home-produced goods. While Hurt (2002) argues that American farmers had never been nor wanted to be entirely self-sufficient, and while other authors have stressed that technology and consumer amenities were adopted by rural families on their own terms and led to higher standards of living (Fischer, 1987; Kline, 2000), these changes also led to feelings of ambivalence as farmers understood the connection between "greater material abundance" and "being at the mercy of an economic system whose rules they could not influence" (Danbom, 2017, p. 123). Further, prosperity was unevenly distributed, not being shared for instance by sharecroppers in the south, and even in prosperous regions the worrisome movement of farm boys to towns and cities continued.[86] Still, the 1910s have been described as "one of the few truly affluent times in modern rural America" (Alston & Kauffman, 1998; Blanke, 2002, p. 5; Kline, 2000).

The boom was only accentuated by the war. Helped along by favorable growing conditions in 1914-15 and increasing government support (or interference) in such forms as the Extension Service

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[85] In North Dakota, for instance, "improved farm land doubled each decade… between 1890 and 1910" while the "average value of farm land and buildings in the state more than quadrupled" (Higbie, 1997, p. 396).

[86] Gardner (2006, p. 99) notes that until 1940 "farm population did not decline a great deal" as high rural fertility rates ensured that out-migrants were replaced. Still, concern about rural depopulation was expressed throughout the early 20th century in everything from Malthusian fears that not enough food would be produced to fears that an inadequate supply of farm labor would raise crop prices beyond those which Europe was willing to pay, resulting in more American debt (Danbom, 2017, pp. 152–157).

(1914) and the Federal Farm Loan Act (1916), farmland expanded and the price of many commodities doubled (Cameron, 2008; Hachey, 1993).[87] The price of wheat was already \$0.98 a bushel in 1914, having only been that high once in the last 25 years, but rose to \$2.19 by 1919; corn rose from \$0.71 to \$1.50 a bushel and cotton rose from \$7.35 to \$35.34 a pound (United States Census Bureau, 1975b, pp. 511, 517).[88] Price controls kept the price of wheat from rising higher; no such restrictions were placed on cotton, a discrepancy viewed by many as sectional favoritism (Fleming, 2003, p. 282). To feed America's troops and those of the Allied powers, wheat acreage increased by 40% (United States Census Bureau, 1975b, p. 511), spreading into even "the most arid regions of the Great Plains" (Ermacora, 2015), while farmers in the area "undertook considerably higher mortgages than farmers elsewhere" to maintain their momentum (Alston, 1983, p. 893). [89] To clothe and bandage the troops, demand for cotton surged.[90] War demand only favored certain kinds of production, however: that which was commercialized and export-oriented, was based on monoculture, that squeezed out crop rotation, and that was scaffolded by borrowed money (Alston, 1983; Ermacora, 2015).[91]

To maintain this wartime prosperity, pressure groups like the Non-Partisan League (founded 1915) sought to exempt farmers and farm laborers from the draft and use government subsidies to keep

[87] The extension service expanded rapidly during the war as the percentage of counties with farm agents grew from about 50% in 1917 to 90% in 1919, although 400 counties would drop these agencies after the war (Kline, 2000, p. 15).

[88] In the late 1910s, real prices received by farmers were at their highest mark in the whole of the twentieth century (Gardner, 2006, p. 129 figure 5.1).

[89] Many who had previously been reluctant to invest in machinery, better stock or other improvements even in the 'Golden Days' of the early 1910s now did so (Danbom, 2017, pp. 153–154). North Dakota, already producing 17% of the nation's wheat in 1909 with "three times the national average investment in farm machinery," saw machinery per farm increase at rates much higher than the national average between 1910 and 1920 (Higbie, 1997, pp. 395–396).

[90] In terms of bales and harvested acres, cotton production fluctuated during the war years and was at its highest in 1914. However, cotton prices marched steadily upwards (United States Census Bureau, 1975b, p. 517).

[91] There were also localized differences to this prosperity. As one North Dakota oral history interviewee recalled, "*during the First World's [sic] War we didn't have good crops here. Wheat was a good price, but we didn't have good crops here... 1919 was a poor crop*" (Lingt, 1974).

farm labor attractive in the midst of lucrative war industry employment (Chambers, 1987; Hachey, 1993).[92] Rather than grant blanket exemptions for farmers and farm workers, the government eventually instituted a classification system and granted an increasing number of service deferrals (which became de facto exemptions) to farming individuals (Chambers, 1987).[93] However, these deferrals likewise only favored certain types of agriculturalists. According to the regulations of the Selective Service codified in September (after the training camps had already been filled with the first wave of recruits), a man's service could be deferred on the basis of 'dependency' or being a 'skilled' member of a "necessary business or agrarian enterprise" (Chambers, 1987, p. 191).[94] According to the national policy, requests on the basis of the former would only be granted if a man's children, underage siblings or aged parents were dependent on him for support, and only if the support he provided was deemed adequate. The definition of this adequacy, however, was based in the monetized market economy. The key test was whether a man's income was more or less than a soldier's pay (Keene, 2015, p. 85).[95] As Provost Marshal General Enoch Crowder, the official in charge of the Selective Service remarked, "'many registrants both white and colored [were] put in Class I [and immediately susceptible to the draft] on the ground that their allotment and allowances while in the Army would furnish an

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[92] Accentuating an already established pattern, people left the farm and rural areas for war work in the cities, even though "during the war, average rural income had exceeded that of urban wage earners" (Danbom, 2017, p. 178).

[93] Between 1917 and 1918, an increasing number of draft deferral requests were granted, from 43% to 54% for industrial deferments and from 36 to 52% of agricultural deferments. Only workers in shipyards and the merchant marine received blanket exemptions, though Herbert Hoover, then the head of the US Food Administration, advocated for such exemptions to be extended to farmers and farm laborers. The government did, however, grant furloughs to agricultural men from "labor scarce regions" during planting and harvest time (Chambers, 1987, pp. 189–190, 201). Farm laborers were granted a blanket exemption in World War II (Yoder, 2014) .

[94] Anecdotally, Ray Lingt (1974) of Beach, North Dakota recalled a pair of lawyers in his home town, whom he contemptuously referred to as "150% Americans," who "got on the stump" to promote the war but bought sufficient "land so that they wouldn't have to go to war themselves."

[95] Keene (2015, p. 85) continues that, on average, soldiers were paid $30 per month, a sum that was "often supplemented by family allotments of $15-$50 through War Risk Insurance plans" (Keene, 2002, p. 73). Indeed, while farm laborers' wages nearly doubled in every census division between 1909 and 1919, even in the latter year the average farm laborer in the United States was making less than the $45 per month he could have been making as a soldier (United States Census Bureau, 1975a, p. 163).

equivalent support to their dependents’’’ (Keith, 2004, p. 63). Overlapping with the definition of being part of a necessary agrarian enterprise, the Selective Service further clarified in 1918 that deferrals were only to be granted to those on farms producing a surplus rather than subsisting by asking those requesting a deferral to “’state in terms of money value, how much the products of said farm exceed the amount consumed by all persons working on it and their families,’’ and ‘‘why you can not [sic] be easily replaced by another person’"(Keith, 2004, p. 66).[96] In this period, a proportion of many farms’ produce still tended to be used internally, and a portion of many farm laborers’ pay still tended to be in kind rather than in cash, leading to lower apparent productivity and income (Gardner, 2006, pp. 76, 108).[97]

While the Selective Service was founded on ideas of uniformity and top-down expertise, the actual implementation of the draft was left to local boards. These local boards, composed of members of the community appointed by state governors and approved by Crowder, freely bent the given definitions of necessity and dependency (Chambers, 1987, p. 181). Agricultural extension office agents and members of farm bureaus often served on these boards and they were at least perceived as showing favoritism to farmers who supported their scientific and modernizing aims (Danbom, 2017, pp. 166–169). Large farmers with clout could often obtain deferrals for themselves and, if they so chose, for their own laborers and for their own sharecroppers, individuals who almost by definition produced for the market economy. A tenant, whose low monetary income might have technically disqualified him for a deferral, in some cases might be granted one by the local draft board on the basis that tenancies were held in the husband and father’s name and his drafting would result in his family’s – themselves workers – dispossession (Keith, 2004).

[96] Keith (2004, p. 63) notes that these clarifications and the questionnaires of which they were a part, while adding more paperwork, “did not substantially change the substance of the [existing] policy.”

[97] Although Gardner (2006, p. 108) writes that farmers’ incomes and farm laborers’ wages had been historically lower, he also cites Alston and Hatton (1991) that non-monetary income largely closed the gap.

Although it has been argued that "the country immediately embraced the draft as an honorable, efficient, and equitable way to raise an army" (Keene, 2001, p. 2), dissent, tamped down by the draconian Sedition and Espionage Acts, has in recent years been historiographically recovered. The unfairness of a draft system that ultimately exempted the wealthy and reprieved the disadvantaged only through a system of noblesse oblige was resisted in various ways. The Non-Partisan League, formerly meeting the war and compulsory military service with antipathy, changed tactics as described above to try to work within the system for the benefit of farming populations (Hachey, 1993). Individuals claimed ignorance of draft regulations, or exploited gaps in state knowledge: in an era before vital records were consistently kept, in many places there was no official documentation to refute a man's claim that he was under or over age.[98] In some instances, such as the Green Corn Rebellion that involved hundreds of already dissatisfied tenant farmers under threat of farm consolidation in Oklahoma, agriculturalists' resistance to conscription resulted in (short-lived) direct action (Sellars, 2011). Twelve percent of those liable for military service 'deserted' while others failed to register at all (Keith, 2004, p. 58): "more men evaded military service" in the Great War than dodged the draft for Vietnam (Keene, 2014, p. 8).[99]

Yet, a number of rural and farming men still did volunteer or were drafted alongside men from non-rural backgrounds with the belief that the war would be beneficial to them, providing a temporary adventure or a chance to permanently change their circumstances (Cather, 1922). Propaganda declared that military service provided opportunities for young men that would be useful in their post-war lives, developing in them better physiques, skills and moral characters. Military training, like military selection through the draft, was intended to be a progressive project that would produce not only better soldiers but better Americans. As Zieger (2000, p. 90) writes, service members, especially those of laboring or

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[98] It was 1919 before every state kept birth records and well into the 1930s before this information was standardized (Brumberg, Dozor, & Golombek, 2012, p. 407).

[99] By legal definition, American Great War 'deserters' included both those who deserted in the sense of trying to disappear after induction and those who registered for the draft but failed to appear when called up.

immigrant backgrounds, “provided a living opportunity for testing and perfecting methods of improving the quality and character of American life.” Something similar could be said of farm boys: once the Jeffersonian ideal and the paragon of American virtues, after the turn of the century farming and rural people became objects of concern and the target of improvement efforts by government experts (Danbom, 2017; Gardner, 2006; Lobao & Meyer, 2001). Given access to such advantages as language and literacy programs, health and dental care, savings account and wholesome diversions, service members of all backgrounds were meant to end their Great War military service better than they began it (Chambers, 1987; Coffman, 1998; J. D. Keene, 2011; Kennedy, 2004; Youmans, 1995; Zieger, 2000).

On the other hand, there was also concern that military service would prove detrimental. There was some evidence that military service was positively selective. For instance, the medically disabled were exempt from the draft, deferral claims were made on the basis of health conditions, [100] and Allied soldiers and officers often commented with amazement and envy on the apparent vigor of the doughboys, “’magnificent youth from across the sea…radiating strength and health”’ (Doughty, 2001, p. 6). That it was the cream of America’s youth that was going to fight the Hun and die for democracy was both a popular fear and common boast (Kühl, 2013). But whether they were the best and brightest of their generation already or had the potential to become so through military service, the doughboys were perceived as a population at risk of declension. Just as farm boys had long been warned of the ruin that could redound to them if they left the farm for the city (e.g. von Rochow, 1871), it was also widely assumed that being brought into a military space at least had the potential to corrupt or hinder young

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[100] Indeed, the low veteran numbers in the south relative to the rest of the country (as seen in Figure 1.1c) may be related to that region’s relatively poor health in addition to socioeconomic and other differences. Poor nutrition and sanitation on plantations and in the mill towns that had sprung up during the cotton slump of the latter nineteenth century exacerbated high rates of malaria, tuberculosis, yellow fever and hookworm in the region, with quarter to a half of the population suffering from the first affliction in some places, and, according the Rockefeller Sanitary Commission’s 1911 report, 40% infected with the last (Elman, London, & McGuire, 2015, p. 222,203). Poor health was not a guarantee of an exemption, however. Across the country, 30% of whites and 25% of African Americans were deemed unfit for service, though the latter’s civilian life expectancy was 10 years shorter (Chambers, 1987, p. 225).

men, especially impressionable and naïve ones from rural backgrounds. While patriotic mothers worried over their sons' exposure to vice (Hallgren, 2012), and while rural liberals continued to see compulsory military service as an avenue for antidemocratic indoctrination (Keith, 2004, p. 50), the Wilson administration worried about soldiers' exposure to radicalism (Keene, 2015). Based on the archetype of the disabled or poverty-stricken Civil War veteran, with a little imagination Americans could still picture veterans becoming objects of pity (Marten, 2011); with 30% of federal funds still going to pay Union pensions at the turn of the century, the government could still picture veterans becoming a drain on the nation's coffers (Lee, 2000, p. 95).[101] The government mounted an entire public relations campaign to convince soldiers and their loved ones in spite of any evidence to the contrary that modern medicine and scientific management could repair war-torn bodies and undergird postwar opportunities in ways that had been impossible for the corporeal and economic victims of that earlier conflict (Kinder, 2015). While the lingering soldiers of previous wars provided an inspiration of what military experience could be and could mean for one's postwar life (Fowler, 1917; Trout, 1999), they also continued to provide a dark vision of what the country's most recent crop of soldiers could become.

Mirroring the circumstances of their departure, returning veterans met with fanfare and festivities. Monuments and memorial practices like parades provided ways of spatially negotiating the reality of veterans' new hybrid military-civilian identities, using established methods of commemoration to honor service members and tie them to longer histories of militarism while also re-embedding them in the milieu of domestic life (Sneddeker, 1999). However, upon their return, veterans also encountered newly intensified economic realities, with which many were ill-prepared to cope (Kinder, 2015).

[101] In 1910, the census asked, "Is the person a survivor of the Union or Confederate Army or Navy?" and in IPUMS' 1910 dataset, 313,703 individuals are identified as either Union or Confederate veterans (Ruggles et al., 2013; US Census Bureau, 2017). Lee (2000, p. 95) continues that at the start of the 20th century "about 90 percent of those who served in the Union army were on pension rolls" and that with an "annual value of…$135" such pensions would equate to "36 percent of the annual income of nonfarm laborers."

Previously a debtor nation, a circumstance which helped farmers sell their produce competitively on the world market, wartime loans to the Entente powers made America a creditor nation, causing newly indebted countries to prefer to buy agricultural products from other suppliers (Danbom, 2017, pp. 176–177). In the latter years of the war, crop failure due to soil exhaustion brought down production, and as the war ended and the market was glutted crop prices, land value and farm incomes plummeted (Cameron, 2008; Ermacora, 2015). Wheat prices, kept artificially high into 1919 while the Wheat Administration continued its purchases (Fleming, 2003, p. 395), dropped to half their wartime level for most of the 1920s and were lower still into the 1940s; corn prices likewise remained low for decades and those of cotton did not begin to recover until the 1930s (United States Census Bureau, 1975b, pp. 511, 517). Crop prices were in many cases still at or above their prewar levels, but the prices that farmers had to pay for other goods did not decline at the same rate and many had extended themselves such that previous levels of profit were now insufficient (Danbom, 2017, p. 178). During the war, the agricultural extension office had promoted growing more, canning more, and dealing with labor shortages by increasing the use of weed killers and tractors, and while the latter had remained expensive and out of reach for many, farmers who had used loans to buy them or increase their land holdings were pinched (Kosmerick, 2017). Those who made their investments late, after prices for land, stock and machinery had already risen, were especially hurt by the downturn as were those who grew commodities that competed on the world market and those who, in a sort of cruel catch-22, had not been able to mechanize enough to achieve economies of scale (Danbom, 2017, p. 175).

This pattern continued through the 1920s. Mechanization continued apace, with the number of tractors nearly quadrupling between the war's end and 1930, helping to spur an 18% jump in farm productivity. However, it was difficult if not impossible to make a tractor pay on the great majority of American farms, which were smaller than the USDA-estimated 130 acre minimum (Danbom, 2017, p. 184). Farmers needed to borrow funds to acquire more land to make their increasingly mechanized enterprises profitable, and as the number of mortgages increased, "interest payments by farmers amounted to more than 10 percent of the value of farm product sales in the 1920s and early 1930s" (Gardner, 2006, p. 64). However, with lower farm and land values many farmers were unable to secure additional loans (Alston, 1983, p. 894), and across the United States in the interwar period, for the years with reliable data, an average of 100,000 mortgaged farms were foreclosed each year (Alston, 1983, p. 887). As John Boknecht (1974) of Hettinger County, North Dakota recalled, stronger farmers and even people in town bought up land from smaller farmers who could not afford, but also could not survive without, mechanization. Although geographical variations existed (Elman, London, & McGuire, 2015, p. 198), nationally American farming moved in two directions: towards large consolidated farms or towards small farms that could be worked alongside earning necessary, non-farm income. This movement and other aspects of agricultural modernization pushed out midsized farmers and reduced the need for farm laborers, such that in the decade after the boom times of the Great War there was “an absolute rural population decline of 1.2 million people” (Danbom, 2017, p. 184).[102] In the midst of these travails, as they had during the war, farmers’ organizations pushed for commodity subsidies and government price support. Although farm relief bills were introduced multiple times during the 1920s, those that passed were vetoed, that of 1927 with the objection that such support would “put a premium on one-crop farming” and was an example of “sectional” favoritism as well as bureaucratic overreach (Coolidge, 1927). The following administration, while supporting farming cooperatives, also “opposed direct government intervention in the agricultural marketplace;” farmers would have to wait for the New Deal to receive the sorts of relief they demanded (Hurt, 2002, pp. 267–268).

Demobilized into a labor market already flooded with skilled workers and federal employees recently released from their wartime jobs, veterans criticized the government’s lack of adequate re-

[102] Danbom (2017, p. 184) notes that “even through the rural birth rate exceeded the death rate” in this period, the rural population still declined due to the net out-migration of 6.25 million people.

entry support (Coffman, 1998; Kinder, 2015).[103] Arguing that they had been "financially disadvantaged for life" by missing out on the boom, veterans' demands for "adjusted compensation" led to legislation in 1924 granting an additional payment based on duration and location of service, but one not to be paid until 1945 (Keene, 2015, p. 86). As the Great Depression hit the rest of the economy and deepened, an estimated 17,000 veterans marched on Washington in 1932 as part of the Bonus Expeditionary Forces to demand the early payment of these 'bonus' wages, vocally reminding the government that it had long since paid off its debts to war 'profiteers' (Bartlett, 1937).[104] Though peaceful in their protest, the marchers were an "ominous" sign, as Senator Hiram Johnson wrote, "'If the farmers of this Nation who are suffering united, as these men have united…it would not be difficult for a real revolution to start in this country"' (Dickson & Allen, 2004, p. 129). Dismissed as "Communists… hoodlums and ex-convicts" by President Hoover, the Bonus marchers were driven from their interracial camps downtown and on Anacostia Flats by the army in 1932 (Anacostia Park, 2018), and veterans were again denied an early payment of the bonus in 1935 when President Roosevelt vetoed the latest bill. Noting the contributions of the civilian industrial and agricultural workforce to winning the First World War and the benefits that veterans already enjoyed including insurance, disability benefits, and preferential hiring, Roosevelt argued that "the healthy veteran who is unemployed owes his troubles to the depression" afflicting all Americans and as such could not claim an unfair disadvantage (Roosevelt, 1935). But the American public appeared to disagree – as did Congress in overturning the veto – instead accepting

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[103] Based on Chambers's (1987, p. 188) calculation of the armed forces vis a vis the working population, 8% of the workforce had returned from military service to civilian life within just seven months of the Armistice (Coffman, 1998, p. 357).

[104] The number of veterans involved would ebb and flow. "The BEF and police cooperated in keeping a census," and in late June the veterans counted some 21,000 men (Dickson & Allen, 2004, pp. 317, endnote 33).

veterans' narrative of sacrifice and lost opportunity cost over the course of the decade (Keene, 2001, p. 7).[105]

In summary, both those who supported and those who opposed the war argued that veterans were different than civilians, whether better off as the progressive project had promised, or worse as veterans' organizations complained. According to these interpretations, entry into and exit from military service were not just a grand spectacle of great discursive importance, but, in affecting 12% of the American workforce, also moments marking great socioeconomic shifts (Chambers, 1987, p. 188).[106] On the other hand, whereas the British experience of the war that has so dominated Anglophone historiography tells a story of brutal disruption and shattering change (Kent, 2009), one of the few and foremost historians of the American experience of the Great War writes that in the United States the "old order…settled heavily back into place" rather quickly (Kennedy, 2004, p. 287). Though the secular trend of rural outmigration continued, Doetsch (2012, p. iv) maintains that, in spite of all the current fears to the contrary, veterans were no more likely to leave farming by 1930 than civilians. This might suggest that whatever disruptions were bubbling up towards the level of the population from individual veterans across the United States might have been but a blip, subsumed beneath a surface of normality, albeit a normality characterized by the striking dynamism of the age. However veteran populations were shaping the wider populations and population geographies of which they were a part, they might not have been doing so in ways significantly different from their civilian contemporaries.

Different lines of causality could lead to the patterns already hinted at in the table and maps that began this chapter. World War I veterans and civilians could have started out the same and ended

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[105] Note that while Keene (2001, p. 7) argues in her book and articles about the Bonus March that the marchers had popular support, some former veterans remembered the situation differently: "I thought it was kind of dumb to march on Washington, because I knew they wouldn't get any place, because the majority of the people wasn't in sympathy with the veterans" (Sanderson, 1974).

[106] Calculated another way, military service affected 20% of 18-45 year old males (Keene, 2011, p. 33).

up differently in the years after the conflict for good or ill. Alternatively, if veterans started the war at a disadvantage because only the wealthy (and the poor with patrons) were able to secure a deferral and if military service were positive, veterans and civilians would end up on a more even par; likewise, if only the best and brightest were selected into service then if military service had lasting negative effects we would expect to see civilians and veterans in more similar conditions. As mentioned in the introduction of this chapter, it is first necessary to gain a better purchase on veteran population patterns and how they related to contexts across space and time before suppositions about causality can be attempted. The maps and spatial regressions below begin that exploration and prompt some tentative conclusions that will put into discussion with the other chapters' findings in the dissertation's conclusion in Chapter 6.

Measuring and mapping the civilian context:

Data sources and preparation:

To enable this chapter's exploration of the association of population and agricultural patterns, I used simplified occupation codes, derived as described in previous chapters, and a combination of the IPUMS-coded veterans and the text string for 'Which war?' to identify farming Great War veterans and farming non-veterans of the same age group in the 1930 census data provided by the Minnesota Population Center (Ruggles et al., 2013). I then aggregated these individual level data to the county level. I also used pre-tabulated, county-level population and agricultural census data from 1910, 1920 and 1930 available from the Inter-university Consortium for Political and Social Research (ICPSR). From the agricultural census data, compiled and coded by Haines, Fishback, and Rhode (2016), I extracted information about value, size and number of farms for 1910, 1920 and 1930; as well as information about farm to city and city to farm migration, available amenities, crops, livestock, mechanization, farm labor, tenure, and the number of owned farms that are debt free or mortgaged in 1930. From the population census, compiled and coded by Haines and the Inter-university Consortium for Political and Social Research (2010), I drew total populations, racial and nativity percentages, and aggregated economic information about unemployment rates and manufacturing establishments. To these I also added census-defined regions.

I used a series of strategies to make the aggregated data derived from IPUMS and the pre-aggregated data from ICPSR spatially and temporally consistent with each other and with boundary shapefiles from NHGIS. First, for the 1910 data, I merged a handful of South Dakota counties that appeared in various forms in the different datasets.[107] Armstrong County, South Dakota, appears in the 1920 agricultural census data (ICPSR 35206-11) but not in the 1920 NHGIS file; this row's data were assigned to Ziebach County, which eventually enveloped Armstrong and does exist in the NHGIS file for this decade. In the 1920 population census, there are five pairs of counties with combined figures for manufacturing data; I reapportioned these figures to each county on the basis of their 1920 populations.[108] In the 1930 agricultural census dataset (ICPSR 35206-13), five of Virginia's independent cities are totaled up together.[109] As there is little agricultural activity in these units – there are a total of four farms to share amongst the five cities – I removed these data rows. For each decade, and as mentioned in previous sections, I made edits to adjust for small or problematic geographies in the

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[107] As first described in Chapter 3, the NHGIS county boundary shapefile for 1910 lacks Shannon and Washington counties, includes Pine Ridge Reservation as a county, and has only slivers of Washabaugh and Bennett counties. In the shapefile, I merged Pine Ridge, Washabaugh and Bennett counties into one 'county.' Next, on the tabular data end, I added or modified the geographical identifiers in the ICPSR data to match the available county identifiers in the modified NHGIS files: in most cases, a simple recoding. The 1910 geographical identifiers for the troublesome South Dakota counties were reset to that for 'Pine Ridge County.'

[108] These county pairs are Billings and Sioux Counties in North Dakota, Clark and Fremont Counties in Idaho, Lea and Roosevelt Counties in New Mexico, Converse and Natrona Counties in Wyoming, and Mariposa and Mono Counties in California. Except for the North Dakota pair, each pair of counties are neighbors.

[109] These independent cities are Bristol (51520), Danville (51590), Fredericksburg (51630), Hampton (51650) and Martinsville (51690); their original FIPS codes are provided here in parentheses.

manner implemented by Fishback, Kantor, and Willis (2002), recoding their FIPS code identifiers to match the counties that surrounded them (in the case of Virginia's independent cities) or invented shared codes (e.g. New York City becomes "fishfips" 36150). At this point, the geographical identifiers for each year's aggregated census data and each year's boundary files matched. Next, I needed to make the aggregations consistent over time. To do so, as described previously in Chapter 4, I attached the count variables from 1910 and 1920 data to their respective modified shapefiles, and intersected these with the modified 1930 boundaries, thus reapportioning the earlier data according to their spatial overlap with the later geographies. As a final step, I calculated proportions and averages for 1910 and 1920, and the changes between these figures and those of 1930, based on the newly reapportioned and re-aggregated count data. [110] For the remainder of this chapter, I will refer to the re-aggregated, county-scale geographical units as counties.

Contextual patterns:

Mapping single-variable or other simple patterns can be enlightening. As has already been shown in the dissertation's introduction, men born 1880-1902 (the WWI Cohort) make up a larger proportion of all males in the west and a smaller proportion of the male population in the south in 1930, and the number of veterans in these areas is significantly higher and lower, respectively, than what would be expected from the distribution of this cohort (Figure 1.1). Here, mapping the farming subset

[110] A few, unedited inconsistencies remain between the data sources. There are instances (22 counties) where the farm acreage recorded by the census and transcribed by Haines, Fishback, and Rhode (2016) exceeds the total acreage of the NHGIS counties with which they associated (Manson, Schroeder, Van Riper, & Ruggles, 2017). This is likely because farm acreages were recorded at the location of the farm headquarters, which may have been in another county than the actual land. As this condition is only visible in a small percentage of counties (0.7%), as such discrepancies are likely balanced by (invisible) discrepancies in the opposite direction, and as most of the variables to be used in the analyses below have been converted into internally-derived percents or proportions (e.g. percent of farmland cropped = crop acreage as reported in agricultural census/farm acreage as reported in agricultural census), the data are believed to be sufficiently accurate for the uses I put them to here.

of the population, again WWI Cohort populations are denser in the east (mean 0.8 per square kilometer, standard deviation 0.8, Figure 5.2a), but WWI Cohort men make up a larger percentage of the male farming population in the western half of the country (mean 41%, standard deviation 5.6%, Figure 5.2b). Across the south and the interior of America, there are few counties where more than a third of the cohort population are not farming (mean 44.8%, standard deviation 21.8%, Figure 5.2c). As seen in Figure 5.3d, the distribution of the farming cohort as a whole does not perfectly coincide with the locations of Great War veterans within that cohort, with the proportion that veterans comprise ranging from 0 to nearly 55% (mean 11.5%, standard deviation 3.8%).

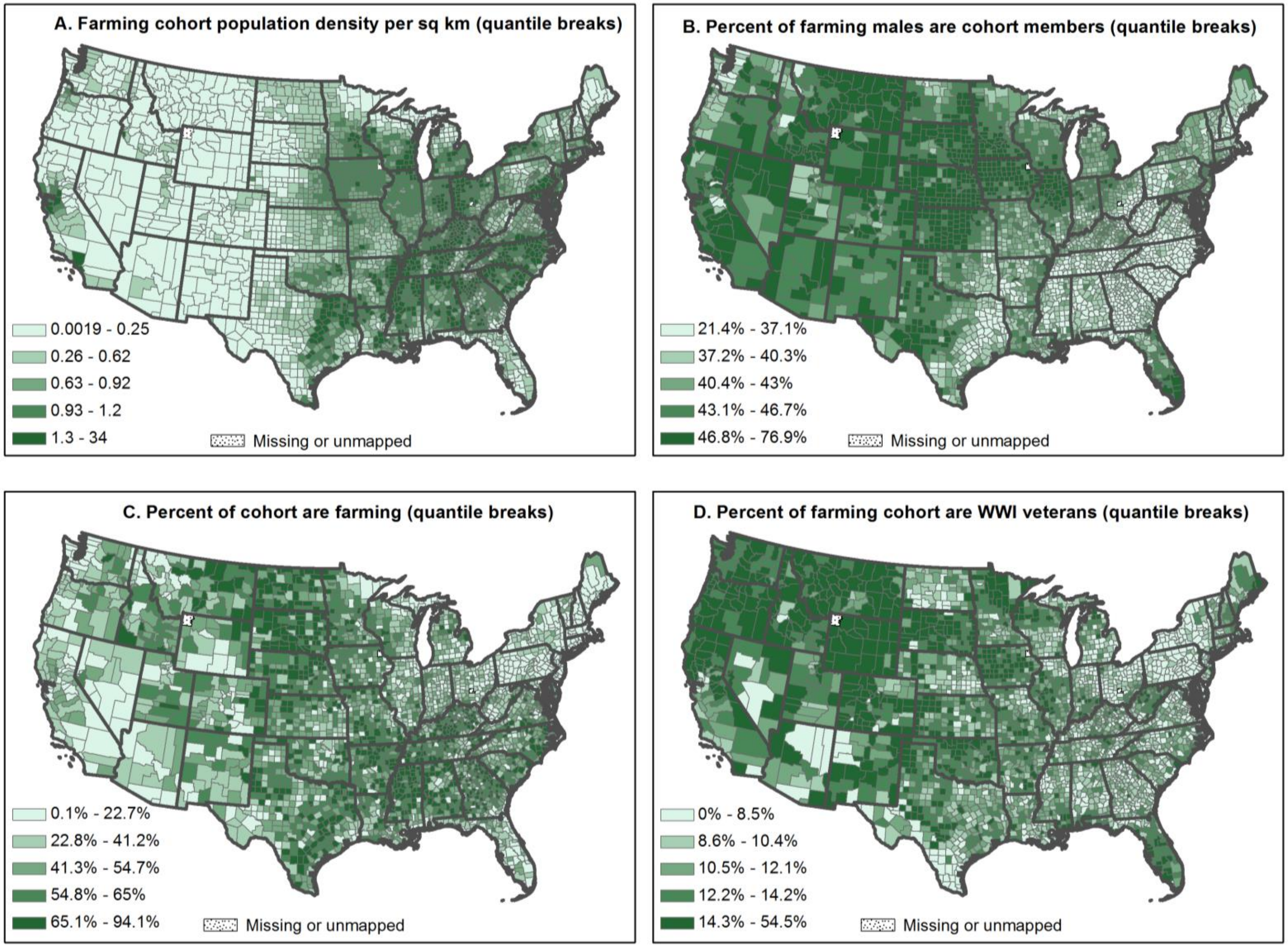

Figure 5.2: The farming WWI Cohort: men born 1880-1902, in farming occupations in 1930. Data sources: 1930 Census data via IPUMS (Ruggles, et al., 2013); modified 1930 county boundaries derived from NHGIS (Manson, et al., 2017).

Moving on in Figure 5.3 to the agricultural context in which these civilian and veteran populations lived, notice that the higher densities of farming individuals do not neatly coincide with the higher percentages of farmland, and that the prevalence of farmland does not directly correspond to more farms for each person. Over time an increase in farmland in some counties was paired with a decrease in the number of farms per person: although the nation's total number of farms would increase until the mid-1930s and not experience a "big decline" until the late 1930s (Gardner, 2006, p. 52), the number of farms per person declined from 1910 by 7% on average to one farm per ten people by 1930 (Figure 5.3d). Although farmland percentage, farms per person, and the share of the cohort population all increase in portions of the west over the mapped decades, they do not do so in tandem, suggesting the complexity of the relationships between farming populations and agricultural contexts.

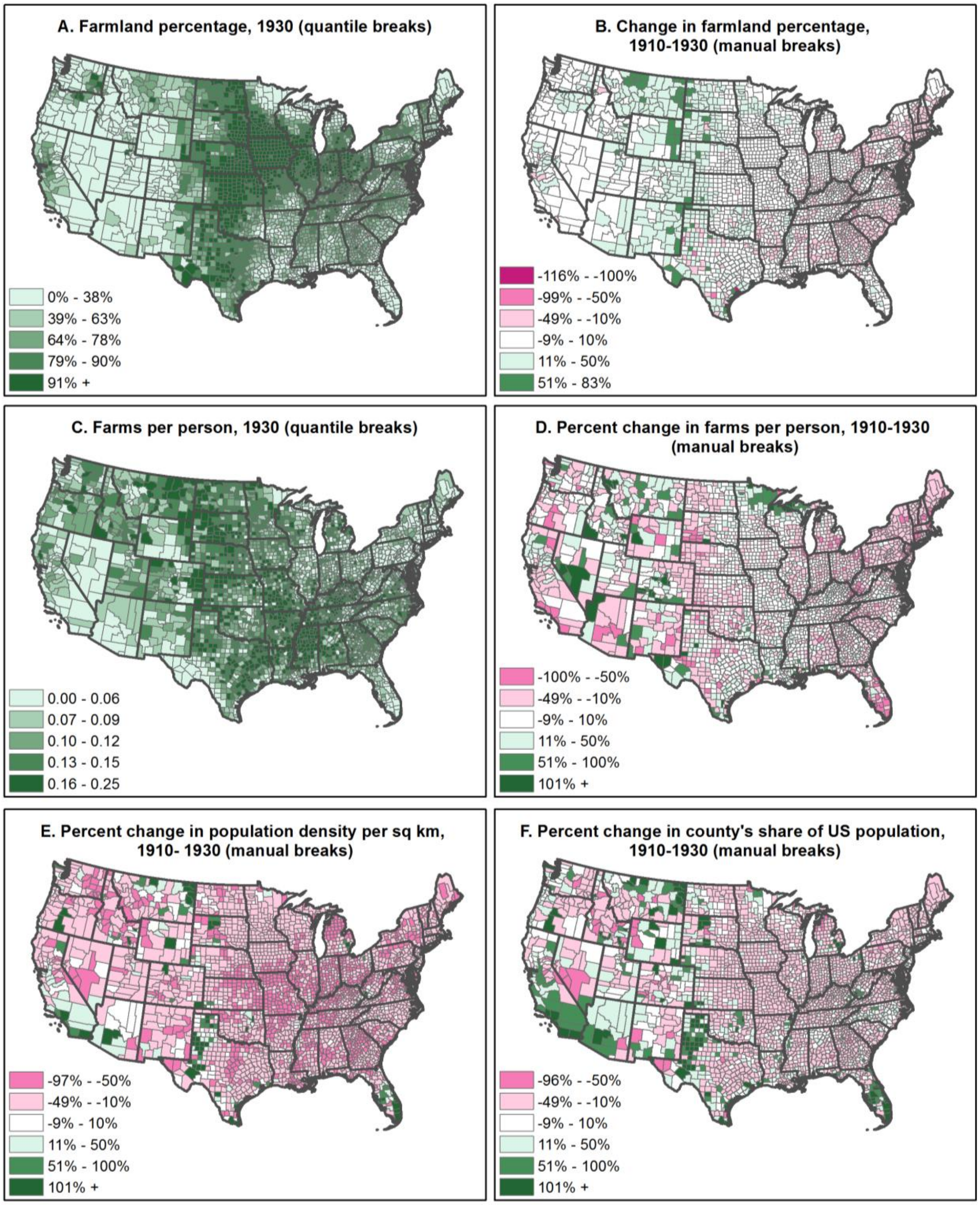

Figure 5.3: Farmland and population patterns in 1930 and change 1910-1930. Data sources: census data via ICPSR (Haines, Fishback & Rhode, 2016 and/or Haines & ICPSR, 2010); modified 1930 county boundaries derived from NHGIS (Manson, et al., 2017)

With Figures 5.4-7, I begin to introduce the contextual variables that I will be using in the statistical models below, including basic measures of farm prosperity (Figure 5.4), additional farm-based measures (Figure 5.5), measures of the wider population context (Figure 5.6), and measures of rural-urban connections (Figure 5.7). Figure 5.4 presents county characteristics for farm value, size and tenure. Some regional differences become immediately apparent in the maps. Average farm value was relatively low in the south in 1930, in spite of rising farm values in many counties over the period from 1910 to 1930.[111] The average farm tended to be smaller in the south, and contrary to the national trend, farm size in the south declined before 1930 (Figure 5.4c-d, Danbom, 2017, p. 117). Farm ownership rates were lowest in the south, portions of the midwest and the Great Plains. Nationally, the proportion of land worked by and the percent of farms run by tenants rose dramatically in the first decade of the twentieth century and would continue to rise until 1935, an increase remarked upon by the census as one the "most significant changes in farm tenure" in the first half of the twentieth century (Gardner, 2006; United States Census of Agriculture, 1952, p. 72); Figure 5.4f reflects this trend.[112] The three agricultural characteristics mapped in Figure 5.4 also interacted with each other in different ways in different regions as described in the literature. Saloutos and Hicks (1951, pp. 14–15, 24–25), in their history of agrarian populism in the "Western Middle West" in the early twentieth century, wrote that in this region high land values were associated with population decline as individuals sold out, as well as with speculation and renters, and that these tenants were in a precarious economic situation due to the shortness of their leases and as they tended to sell their grain to distant markets rather than selling it or

[111] Note however that land values fell nationwide in the period from the 1920s to 1940 (Alston, 1983, p. 894), suggesting that temporal cutoffs are as important as geographical boundaries in framing research questions and interpretation.

[112] Between 1910 and 1930, there was also a marked increase in part owners, that is, farmers who both owned and rented land. The US Agricultural Census report noted that many part owners rented land in order to make economical use of machinery and labor (United States Census of Agriculture, 1952, p. 73).

using it themselves more locally to feed livestock.[113] Being a tenant farmer is often a mark of bad economic conditions (Hachey, 1993, p. 45). Gardner (2006, p. 55) and Saloutos & Hicks (1951, pp. 12–13) also comment, however, that tenancy was often seen as the middle step in a farming life course, as one moved up from laborer and eventually to farm owner. In the south, in contrast, small and poor farms were populated by tenants and sharecroppers who could seldom escape their disadvantaged economic circumstances, and whose numbers grew during the war as laborers moved up the socioeconomic ladder and in the postwar period as foreclosures on farms with defaulted mortgages caused owners to fall (Alston & Kauffman, 1998, pp. 269, 274). Fite (cited by Danbom, 2017 p. 117) describes "the agricultural trap in the south" as arising from farms being too small to live off of, and too small to earn or borrow the money needed to grow and mechanize.

[113] Saloutos & Hicks (1951, p. 5) include North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa, Missouri, Wisconsin and Illinois in the western middle west, which they also refer to as "The Center of Agricultural Discontent." Compared to the census-defined region of the Midwest, Saloutos and Hicks exclude Michigan, Indiana and Ohio from their area of study. Different authors use regional monikers in different and often contradictory ways; for instance, Hurt (2002, p. 276) splits the census's and Saloutos and Hick's region apart, distinguishing between the Great Plains with its "mechanization on an industrial scale" and the "corn and livestock feeding in the Midwest." I tend to favor the census definition, but allow for fuzzier boundaries.

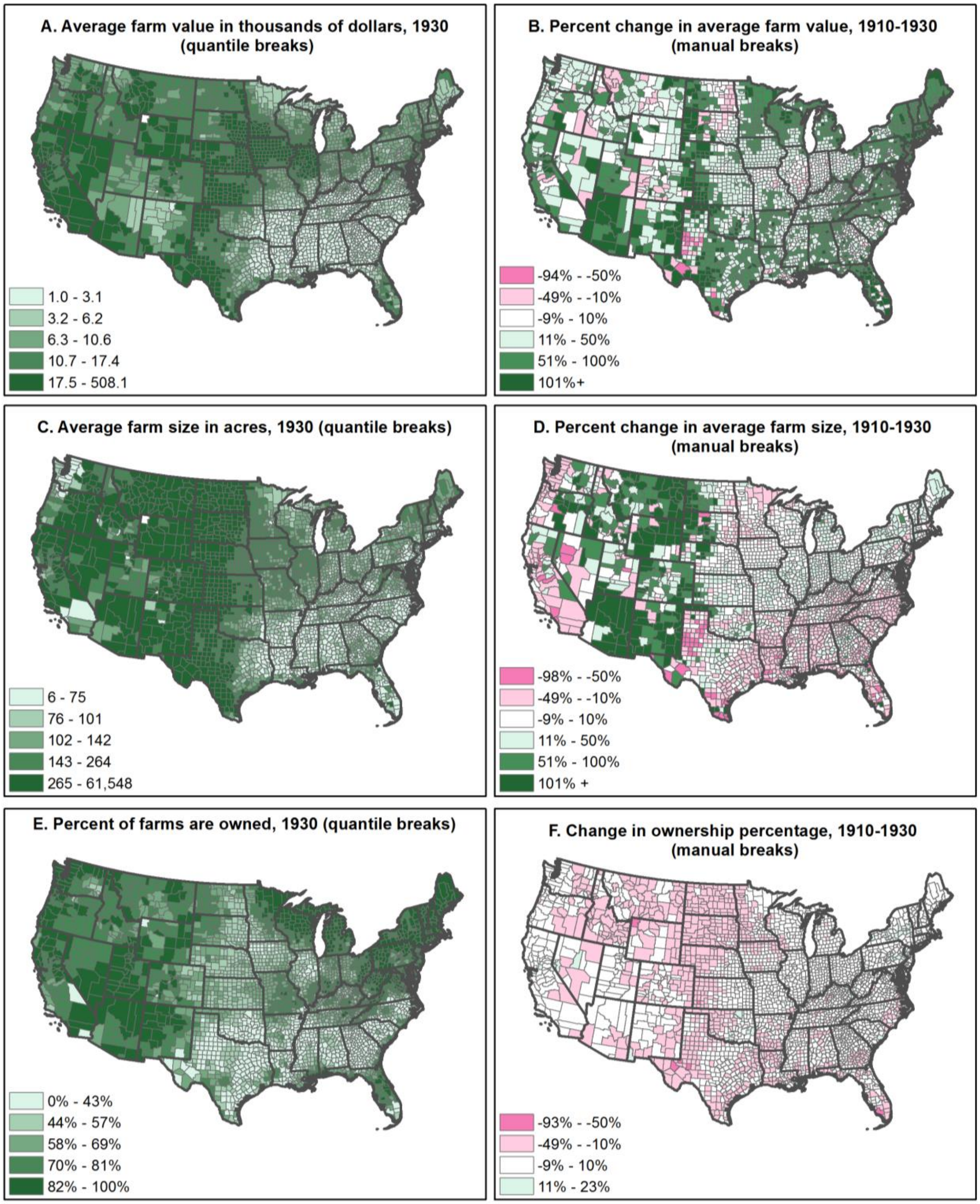

Figure 5.4: Basic farm characteristics in 1930 and change 1910-1930. Data sources: census data via ICPSR (Haines, Fishback & Rhode, 2016); modified 1930 county boundaries derived from NHGIS (Manson, et al., 2017).

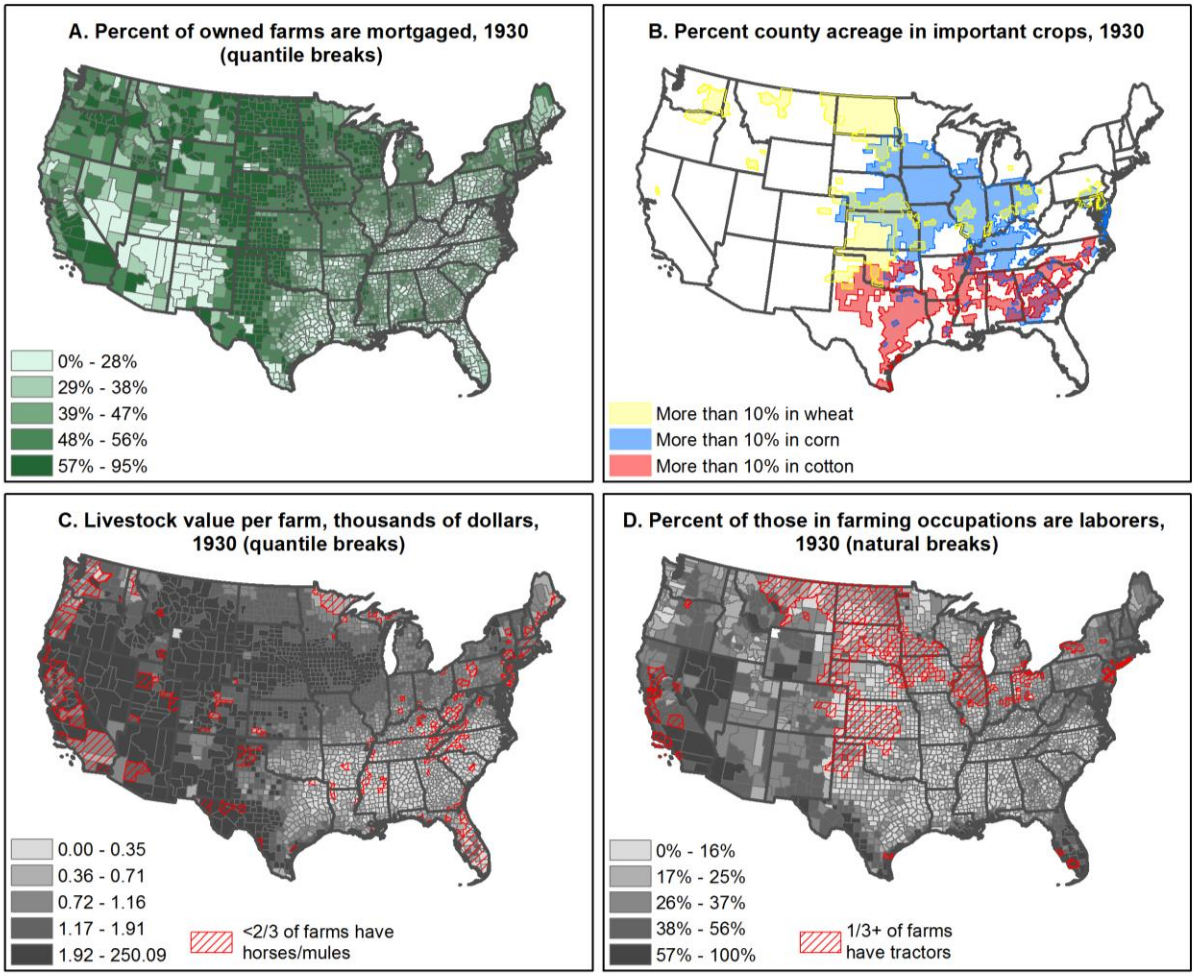

Figure 5.5: Other farm and agricultural characteristics in 1930. Data sources: census data via ICPSR (Haines, Fishback & Rhode, 2016); modified 1930 county boundaries derived from NHGIS (Manson, et al., 2017); panel D occupation data via 1930 Census data via IPUMS (Ruggles, et al., 2013).

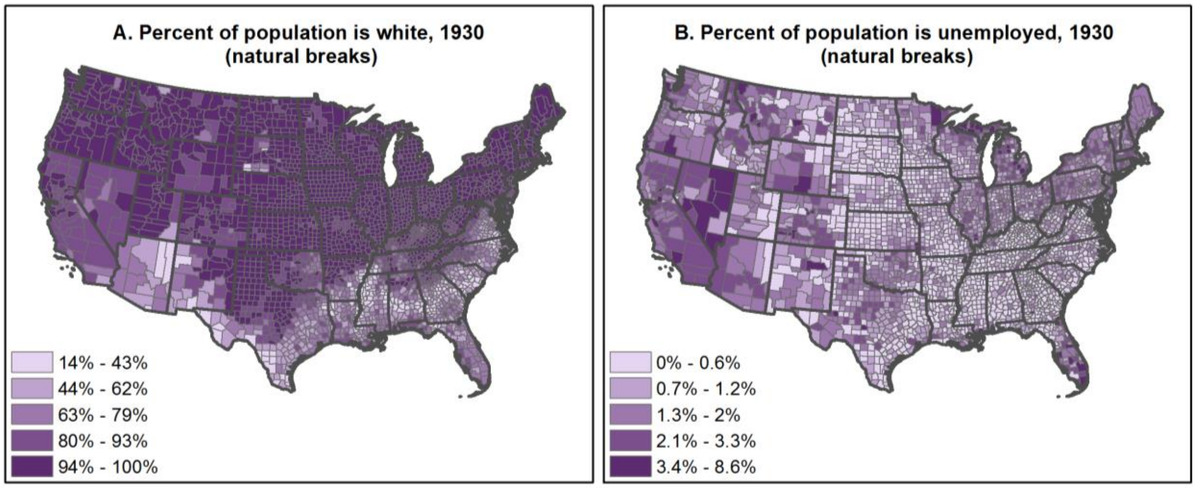

Figure 5.6: Wider population patterns in 1930. Data sources: census data via ICPSR (Haines & ICPSR, 2010); modified 1930 county boundaries derived from NHGIS (Manson, et al., 2017).

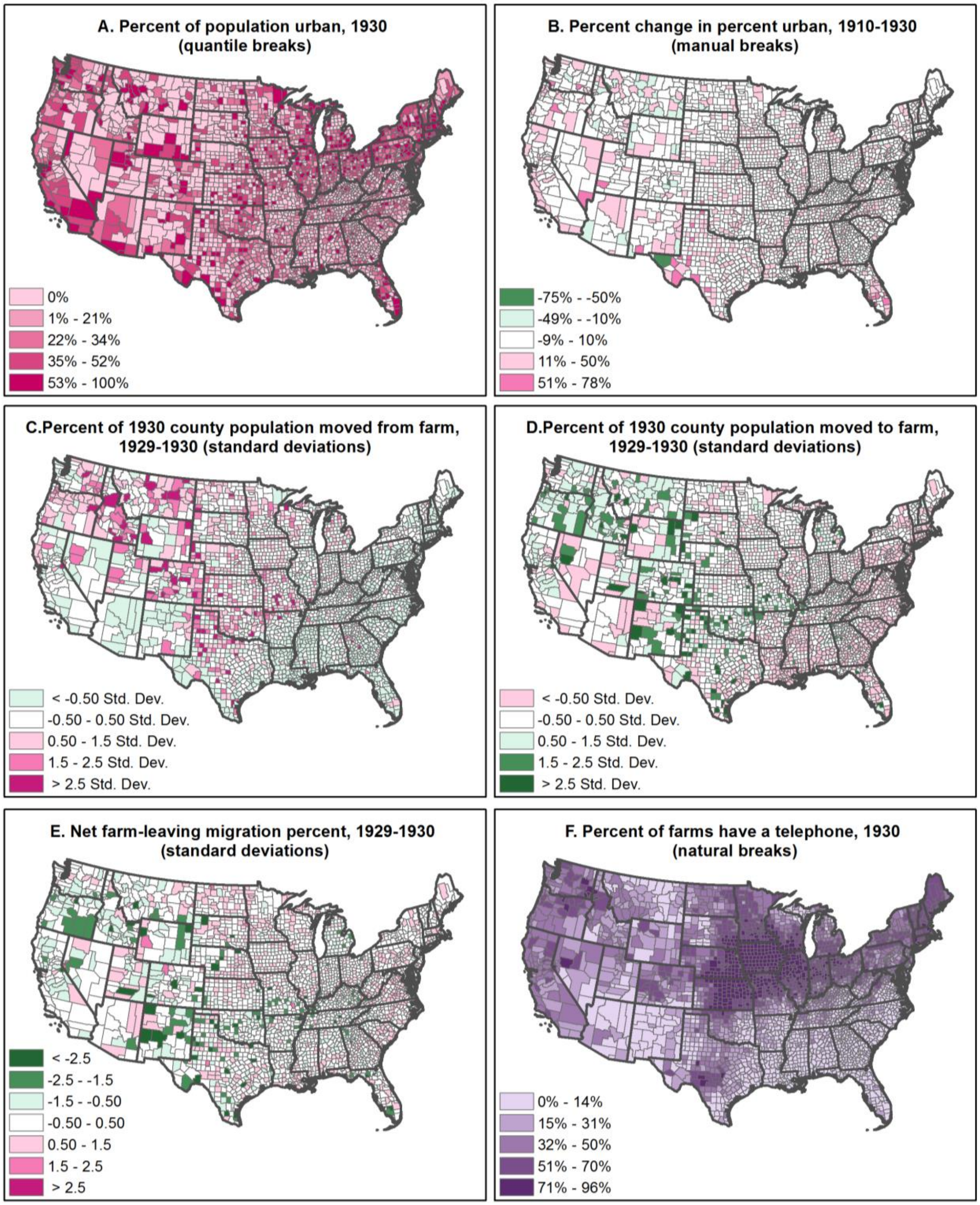

Figure 5.7: Urban patterns and farm connections in 1930 and change over time. Data sources: census data via ICPSR (Haines, Fishback & Rhode, 2016); modified 1930 county boundaries derived from NHGIS (Manson, et al., 2017).

Mortgages were a marker of integration into and dependence on the broader economy and also showed geographic variation: across the United States, Alston (1983, p. 894) notes that in 1930 42% of farms were mortgaged, but that this percentage varied from a low of 17% in West Virginia to a high of 67% in North Dakota; mortgages were particularly prevalent throughout the Great Plains (Figure 5.5a). Crop regimes could also be an indicator of deeper market integration especially in the case of cash crops like cotton and wheat (Figure 5.5b). Wheat farming on the Great Plains had been associated with large, speculative "bonanza" farms in the late 19th century, and even in the early 20th century, after many of these large land holdings were broken up, wheat growing areas retained patterns of industrial agriculture, large farms, high land values and tenancy which encouraged mobility in the population (Higbie, 1997, p. 395; Saloutos & Hicks, 1951, pp. 9–10; Tweton & Jelliff, 1976, pp. 83–86). In contrast to wheat, sold mostly to markets and requiring intensive labor only during planting and harvesting, corn was largely sold locally as feed, and both corn and the livestock it fed could support employment year round (Saloutos & Hicks, 1951, pp. 8–12). During the war, the government encouraged the expansion of both wheat and corn, the former to feed the America's troops and allies as it kept better and European mills and palates were prepared to process and consume it, the latter to make up for wheat's former share of domestic consumption (Eighmey, 2010, pp. 46–47). Cotton cultivation, offering several "point[s] of control" over the sharecropping population, resisted mechanization until WWII and in spite of fears of dependence on monoculture only increased its dominance in southern agriculture during and after WWI (Fite, 1979, pp. 6, 14–16). Indeed, both growing farms in the midwest and shrinking farms on poor quality soil in the south tended to pursue a cash crop strategy (Elman et al., 2015, p. 198).

The prevalence of mortgages and monoculture are both indicators of agricultural modernization. So, too is mechanization. Gardner (2006, pp. 17, 64, 14) comments that for America's major crops "large reductions in labor requirements did not occur until the late 1930s" and that 1910's national ratio of two hired laborers to every owner-operator matched that of the mid 1990s, but he also notes that mechanization did reduce the need for both animal and human workers. In 1930, draft animals were still prevalent across most of the United States (Figure 5.5c) and tractors, one proxy for mechanization were not widely spread outside the midwest, Great Plains and California; although tractors were found on more farms where farm laboring populations are low, similar balances of farm laborers to farmers are also found elsewhere (Figure 5.5d).

Figure 5.6 conveys some of the wider population patterns and wider economic opportunities by which counties were defined. America's nonwhite population was concentrated in the southwest and deep south, important patterns to note in light of known differences between African Americans' and European Americans' experiences of both the Great War and of the Great Migration and these historical events' disruptions to agriculture (Figure 5.6a). African Americans comprised a greater percentage of WWI service members than they did of the population as a whole, tended to be relegated to manual labor units, and while thus less exposed to combat suffered higher morbidity and mortality rates due to disease and poor provisions (Chambers, 1987, p. 225; Keene, 2011, p. 93,101). The Great Migration affected all races, but a veteran-civilian differential in migration rates was only seen among whites (Doetsch, 2012, p. iv). Migration to another region provided one means of changing one's economic circumstances, but more proximate options could also be available. The map of unemployment rates, which tend to be more reflective of urban than rural conditions, suggests where alternatives to farming occupations were possible (Figure 5.6b). However, as Higbie (1997, p. 403) comments, "farm wages and labor supply were largely determined by urban conditions," and thus low unemployment was not a guarantee of off-farm opportunity. Comparing Figures 5.5d and 5.6b, higher percentages of the farming population in laboring positions coincide with higher rates of unemployment.

The final contextual figure (Figure 5.7) explicitly addresses urban-rural connections. Note that in the diverging maps included here I have set the color schemes such that pinks correspond to more urban and green to more rural characters. Note also that high urban population percentages (Figure 5.7a) and high farm land percentages (Figure 5.3a) are not necessarily mutually exclusive: not only can farming individuals who themselves live in rural census-identified places reside in highly urban counties, but to take the examples of Burleigh, Cass and Grand Forks Counties in North Dakota, counties can host populations that are over half urban and still have upwards of 80% of their acreage in farms. The American population as a whole became more urban between 1910 and 1930 (on average counties' urban population proportions increased by 5% between 1910 and 1930 with a standard deviation of 11%, Figure 5.7b), but movement is also discernable over a shorter time period. Figure 5.7c shows population percentages of individuals who moved from farms to "a city, village, or other incorporated place in the last 12 months" (mean 0.62%, standard deviation 0.51%), while Figure 5.7c shows populations moving in the opposite direction to farms in the last year (mean 1.07%, standard deviation 0.95%), and Figure 5.7d shows net farm-leaving migration (mean -0.45%, standard deviation 0.73%) (US Census Bureau, 1932b, p. 2). The story here is not simply one of urbanization, but of flux. Higbie (1997), studying wheat harvesters on the Great Plains from the turn of the century to 1925, stresses the fluidity between urban and rural labor as individuals moved between farms and cities to take advantage of shifting employment opportunities. Indeed, in these maps, higher than average percentages of farm-leaving and of farm-ward movement often appear in tandem in the Great Plains and upper west, suggesting individuals in these areas were taking at least temporary or partial advantage of alternatives to farming through social and spatial mobility. In contrast, Danbom (2017, pp. 114, 117), while noting the "high level of physical mobility in the rural South," also comments that within most of this region there was nowhere to go locally to improve one's economic condition; measures of movement are relatively low in this region, though not uniquely so. Figure 5.7e shows a final measure of farms' connection to a wider context: the prevalence of telephones. Owning such technology was a marker of sufficient prosperity to purchase consumer goods and, Fischer (1987) argues, of farmers' own agency in deciding what modern technology to adopt and how;[114] however, it also provided a means to gain information on distant markets and to maintain ties within rural communities, perhaps providing some of the sociability that Progressive reformers thought was so necessary for keeping individuals on the farm (Fischer, 1987; Kline, 2000).

The patterns in this series of maps align with the already familiar story about changing rural geography in the United States in the first part of the twentieth century: nationally, a decline in agricultural landscapes in the east and their rapid rise in the west due to "lower costs of land, the larger scale of farming, and better connections to export markets;" farm consolidation and modernization; and an urbanizing population; but with important variations related to localized factors such as "timing of settlement" and "cultural inheritances" (Sylvester & Gutmann, 2008, p. 16). The coincidence of the mapped patterns and those described in literature lend confidence that these are appropriate measures for describing the agricultural context I will be analyzing with reference to farming veterans' population geography in this chapter.

Building models of relationships

Although some contextual patterns of county characteristics and those of farming veterans appear to coincide, it is difficult to discern whether the relationships between them are more apparent than real. Using different variables in regression models can allow us to move empirically closer to the associations between veteran status and domestic factors that play out across space and time. Thus, I ran regression models on 3,054 county-scale geographical units and their attendant data, having

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[114] Rural and farm families quickly adopted telephones during the boom times of 1910s, but their prevalence declined "in absolute numbers as well as in proportion of farms with a telephone" in the hard years of the 1920s and 1930s (Fischer, 1987, p. 18). In 1920, the census found that farm households were actually more likely to own telephones than non-farm households, at 39% versus 31% (Kline, 2000, p. 4).

removed a handful of problematic units: counties that have no recorded resident population, that have no recorded veteran population, or that have fewer than 30 farms. I also removed island counties to simplify the building and comparing of spatial weights.[115]

I began by predicting the logged farming veteran population from the logged farming cohort population. As in the set of maps presented in Figure 5.2, in building models it is helpful to consider how the farming cohort – used as an independent variable in the models predicting farming veterans – itself relates to the population and agricultural context during the time period and across space. Thus, I also began a parallel series of models predicting the farming cohort population from the WWI Cohort population as a whole. Modeling the subpopulation of interest as a logged dependent variable while using the underlying population as a logged predictor, a decision informed by the work of Hunter, White, Little, & Sutton (2003) and Gutmann et al., (2016), allows me to control for scale, the relationship between the number of farming men aged 28-50 or farming veterans of the these ages and the populations of which they are a subset, and, as additional independent variables are added, to see the effects of these contextual predictors more clearly. In the most basic of regressions, a 1% increase in a county's cohort population predicts a 0.47% increase in its population of 28- 50 year old males in a farming occupation. A 1% increase in the farming cohort population predicts a 0.9% increase in the number of farming veterans. Much of the variation in the distribution of the population of interest, the farming veterans born 1880-1902, is thus already explained by the distribution of the underlying farming population of the same age group (adjusted R^2 =0.827).

[115] The counties thus removed were: Yellowstone National Park, WY (no population); Pickaway, OH and Clayton, IA (no recorded veterans); Alpine, CA, Armstrong, SD, Esmeralda, NV, Storey, NV, Franklin, FL, San Juan, CO, Suffolk MA, Crane, TX, Kenedy, TX, Loving, TX, and Winkler, TX (fewer than 30 farms); Dukes, MA, Nantucket, MA, and San Juan, WA (islands).

Next, I ran models predicting the subpopulation of interest from the underlying population and one additional contextual variable based on the same themes as presented in the maps above, thus putting metrics of statistical significance and effect strength to the observed patterns; in Tables 5.2a and 5.2b the models are calculated with scaled versions of the additional predictor to allow easy comparison. While different specifications were possible – for instance categorical versus continuous measures; styling variables as shares of farms, share of farmland, or share of population; or assessing the importance of mechanization through the number of tractors normalized by acreage or number of farms, the percent of farms reporting tractors, or various measures of the expense or value of machinery – the ones presented here appeared the most promising. Likewise, other contextual variables that were of interest on their own but which were removed in the process of building the multivariate models were removed from these tables for the sake of simplicity. Table 5.2a thus presents basic measures of farm prosperity, crop regimes, measures related to labor and mechanization, and wider contextual characteristics. Having re-aggregated and standardized county geographies over the decades, I was also able to calculate the predictive power of changes in farm size, value, tenure and urban percent both over the longer time span shown in the maps, and shorter spans (1910-1920 and 1920-1930) shown in Table 5.2b and used in the multivariate models described below. Finally, as a way of capturing otherwise unmeasured contextual variables and as a way to begin accounting for spatial relationships, I also employed US census-defined regions (designated in this paper by capitalized names), as presented in Table 5.2c.

Table 5.2a: Simple models predicting 1930 farming cohort and farming veteran populations in county using underlying populations and an additional variable: scaled 1930 variables					
		Logged farming cohort as predicted by logged cohort population + an additional variable		Logged farming veterans as predicted by logged farming cohort population + an additional variable	
		coefficient	Adj. R^2 =	coefficient	Adj. R^2 =
Basic farming context	Farms per person	0.5722***	0.7381	0.924***	0.83
	Average farm value (in thousands of dollars)	-0.1445***	0.4174	0.0043***	0.8304
	Percent of farms are large (>259 acres)	-0.1184***	0.402	0.004***	0.8393
	Percent of farms are owned	-0.2799***	0.5099	0.0004	0.8268
	Percent of owned farms mortgaged	0.1212***	0.4073	0.0053***	0.8383
Crop and livestock regimes	Percent of farm acres in wheat	0.0305**	0.3851	0.0023**	0.8273
	Percent of farm acres in corn	0.2196***	0.4607	-0.0006	0.8267
	Percent of farm acres in cotton	0.2393***	0.4757	-0.002***	0.8273
	Ratio of crop value to livestock value	0.2587***	0.4828	0.0000	0.8268
Labor and mechanization	Percent of farms using labor	-0.1021***	0.4005	0.0034***	0.8322
	Percent of farms using draft animals	0.2476***	0.4739	0.1056*	0.827
	Machinery expense per farm	-0.0774***	0.3932	0.0004***	0.8332
Wider population context & connections	Percent of county population white	-0.0892***	0.3965	0.0043***	0.8379
	Percent of county population unemployed	-0.384***	0.5789	0.0217**	0.8272
	Percent of county population is urban	-0.4588***	0.5327	-0.001***	0.8277
	Percent of 1930 county population moved from city to farm, 1929-1930	0.0819***	0.3933	0.0796***	0.8354
	Percent of 1930 county population moved from farm to city, 1929-1930	0.1037***	0.3986	0.1791***	0.8395
	Net farm-leaving migration percent, 1929-1930	-0.0327**	0.3853	-0.0446***	0.8284
	Percent of farms have telephone	0.0035	0.3837	0.002***	0.8312

Significance codes: *p<0.05; **p<0.01; ***p<0.001

Notes: Independent variables drawn from whole county populations as reported in ICPSR aggregated census data.

Table 5.2b: Simple models predicting 1930 farming cohort and farming veteran populations in county using underlying populations and an additional variable: scaled change variables					
		Logged farming cohort as predicted by logged cohort population + an additional variable		Logged farming veterans as predicted by logged farming cohort population + an additional variable	
		coefficient	Adj. R^2 =	coefficient	Adj. R^2 =
Farms per person	Percent change in farms per person, 1910-1930	0.0871***	0.3941	0.0007***	0.8276
	Percent change in farms per person, 1910-1920	0.0219	0.3842	0.0005*	0.827
	Percent change in farms per person, 1920-1930	0.1144***	0.4026	0.0001	0.8267
Farm value	Percent change in average farm value, 1910-1930	-0.0997***	0.3973	-0.0061***	0.8328
	Percent change in average farm value, 1910-1920	-0.0035	0.3837	-0.0031***	0.8273
	Percent change in average farm value, 1920-1930	-0.1262***	0.4059	-0.0083***	0.8332
Farm size	Change in percent of farms are large, 1910-1930	-0.1438***	0.417	0.0000	0.8267
	Change in percent of farms are large, 1910-1920	0.0929***	0.3972	0.0000	0.8267
	Change in percent of farms are large, 1920-1930	-0.2863***	0.511	-0.0006**	0.8271
Ownership	Change in percent of farms owned, 1910-1930	-0.0654***	0.3902	0.0058***	0.8329
	Change in percent of farms owned, 1910-1920	-0.0697***	0.391	0.0062***	0.8322
	Change in percent of farms owned, 1920-1930	-0.0101	0.3838	0.0045***	0.8275
Urban percent	Change in percent of county population is urban, 1910-1930	-0.0194	0.3842	-0.0007	0.8268
	Change in percent of county population is urban, 1910-1920	-0.0121	0.3838	-0.0012	0.8269
	Change in percent of county population is urban, 1920-1930	-0.0133	0.3838	0.0001	0.8267
Significance codes: *p<0.05; **p<0.01; ***p<0.001 Notes: Independent variables drawn from whole county populations as reported in ICPSR aggregated census data.					

Table 5.2c: Simple models predicting 1930 farming cohort and farming veteran populations using underlying populations an addition variable: census region					
		Logged farming cohort in county as predicted by logged cohort population + an additional variable		Logged farming veterans in county as predicted by logged farming cohort population + an additional variable	
		coefficient	Adj. R^2 =	coefficient	Adj. R^2 =
	Midwest (reference)	---	---	---	---
	Northeast	-0.6344***		-0.3120***	
	South	0.0146	0.454	-0.1043***	0.8526
	West	-0.4456***		-0.2213***	
Significance codes: *p<0.05; **p<0.01; ***p<0.001					
Notes: Independent variables drawn from whole county populations as reported in ICPSR aggregated census data.					

With no other controls, the results in Tables 5.2a-c need to be taken with a grain of salt, but they already suggest some trends that will be solidified in the multivariate models. Conditions that might be taken as indications of prosperous farming like higher farm values are not necessarily associated with larger farming populations. The urban population provides an important control and farming populations are lower where net outmigration in the last year is higher, but both farm-leaving and farm-ward movement are positively predictive of farming WWI Cohort and farming veteran numbers when controlling for the underlying population. Changes over time can be just as strongly predictive as current conditions. Finally, in predicting the farming veteran population, each census region is significantly different from the Midwest, the region of which North Dakota is a part.

Next, I iteratively built multivariate models from a selection of these and other variables. Some of the variables proved difficult to use in combination, causing multicollinearity problems or stealing each other's significance. There was substantial overlap in what some pairs or groups of the candidate variables were explaining, while other available variables did not discretely measure what I hoped they might capture.[116] I was, however, able to retain predictors in this chapter's analyses that were predictors of interest in Chapter 3: farm value, tenure, wheat cultivation and urban percent. Table 5.3 shows an abridged version of the steps used to model farming veterans; Appendix Table 5.1 does the same for the farming WWI Cohort. Starting with a univariate model using the underlying farming cohort population in model 1, I added variables pertaining to the county's farming context (model 2), then variables pertaining to the county's wider population context (model 3), and finally the census regions (model 4). Although I will be using $p<0.05$ as the cutoff when discussing significant results, in these tables I also indicate where the significance of a predictor is between 0.05 and 0.1.

[116] Some of the variables thus removed from consideration were the foreign-born population percentage (of interest because first generation Americans were known to have served in WWI in a proportion greater than their share of the population, making up 20% of the army (Keene, 2011, p. 93; Slotkin, 2014, p. 306)); measures of manufacturing (of interest as a more precise measure of occupational alternatives); and other modern amenities like paved roads (of interest as a measure of connectivity, their importance reflected by the fact that in the first decade and a half since the passage of the federal post roads act (1916), the US Department of Agriculture spent a third of its budget on roads (Gardner, 2006, p. 181)).

Table 5.3: Building multivariate models predicting logged farming veteran population from 1930 data								
	Main effects models				Regime model			
	1: Farming cohort	2: Farming cohort + farm context	3: Farming cohort + farm context + wider context	4: Farming cohort + farm context + wider context + regions	5: (Farming cohort + farm context + wider context) * region			
					Midwest	*Northeast*	*South*	*West*
Log of farming cohort population	0.903*** (0.007)	0.944*** (0.009)	0.958*** (0.009)	0.959*** (0.008)	0.971*** (0.019)	0.951*** (0.033)	0.959*** (0.013)	0.960*** (0.018)
Average farm value (in thousands of dollars)		-0.001* (0.001)	-0.001* (0.001)	-0.003*** (0.001)	0.001 (0.002)	-0.0002 (0.003)	-0.001 (0.001)	-0.003° (0.002)
Percent of farms are large (>259 acres)		0.003*** (0.0004)	0.004*** (0.0004)	0.002*** (0.0004)	0.002* (0.001)	0.004 (0.006)	-0.002* (0.001)	0.004*** (0.001)
Percent of farms are owned		0.0003 (0.0003)	-0.002*** (0.0004)	-0.002*** (0.0004)	-0.002* (0.001)	0.002 (0.004)	-0.001° (0.001)	0.004* (0.002)
Percent of owned farms mortgaged		0.003*** (0.001)	0.001* (0.001)	0.001** (0.001)	0.0004 (0.001)	-0.007** (0.002)	0.003*** (0.001)	0.002° (0.001)
Percent of farm acres in wheat		-0.008*** (0.001)	-0.008*** (0.001)	-0.007*** (0.001)	-0.007*** (0.001)	-0.009 (0.007)	-0.003° (0.002)	-0.005* (0.003)
Percent of farms reporting labor		0.001* (0.001)	0.0004 (0.001)	0.001* (0.0005)	0.001 (0.001)	0.004 (0.003)	0.00002 (0.001)	0.0002 (0.002)

Percent of farms reporting draft animals		-0.002*** (0.0005)	-0.003*** (0.001)	-0.003*** (0.001)		-0.006*** (0.002)	-0.004° (0.002)	-0.001° (0.001)	-0.002 (0.001)
Percent of farm expense is machinery		0.003*** (0.001)	0.001* (0.001)	0.002** (0.001)		0.002° (0.001)	-0.018*** (0.005)	0.004*** (0.001)	-0.004* (0.002)
Percent of county population white			0.004*** (0.0004)	0.004*** (0.0004)		-0.001 (0.002)	0.001 (0.010)	0.003*** (0.0004)	0.008*** (0.001)
Percent of county population unemployed			0.040*** (0.008)	0.024** (0.008)		-0.026 (0.016)	0.080* (0.037)	0.102*** (0.015)	-0.017 (0.015)
Percent of county population urban			-0.001*** (0.0003	-0.001** (0.0003)		-0.0005 (0.001)	-0.002° (0.001)	-0.001** (0.0005)	-0.001* (0.001)
Percent of county population moved from farm to city			0.091*** (0.013)	0.057*** (0.012)		0.080*** (0.023)	0.098 (0.095)	0.056** (0.018)	0.022 (0.025)
Percent of farms have a telephone			0.001 (0.0003)	0.002*** (0.0004)		0.001 (0.001)	0.006** (0.002)	0.001° (0.001)	0.001 (0.001)
Midwest region (reference)				---					
Northeast region				-0.267*** (0.025)					
South region				0.065** (0.020)					

West region				0.226*** (0.021)				
Constant	-1.543*** (0.052)	-1.929*** (0.075)	-2.047*** (0.081)	-2.187*** (0.087)	-1.504*** (0.224)	-2.102* (0.986)	-2.344*** (0.117)	-2.707*** (0.265)
Diagnostics								
Number of observations (counties)	3,054	3,054	3,054	3,054				3,054
Adjusted R^2	0.827	0.846	0.858	0.872				0.997
AIC	1807.726	1446.051	1219.548	890.7206				727.6372
Moran's I (queens)	0.5179***	0.4671***	0.4176***	0.3639***				0.3215***
Moran's I (IDW)	0.4450***	0.3985***	0.3625***	0.2336***				0.2926***

Significance codes: °p<0.1, *p<0.05; **p<0.01; ***p<0.001. Standard errors appear in parentheses. Shapiro-Wilk values for normality >=0.9; Breush-Pagan statistic for heteroskedasticity significant at p<0.0001. GVIF or VIF measures for multicollinearity <10.

Notes: In this table, each column left of the thick vertical bar presents a single model, whereas all the figures to the right of the bar are part of a regime model, rearranged to highlight the difference between regions/regimes and compared to the US as a whole.

When run as separate models for each region, Midwest (n=1,053), Northeast (n=210), South (n=1,386) and West (n=405) have adjusted R^2 values of 0.828, 0.902, 0.878, and 0.924; and Moran's I (IDW) values of 0.4429, 0.0329, 0.2449, and 0.1550, all of which are significant at p<0.0001, except the Northeast at p<0.1.

Refining models by explicitly accounting for space: regimes and spatial error models

Model fit improves incrementally with the addition of the contextual predictors with the effects of the census regions being particularly strong in modeling the population of farming veterans (Table 5.3, models 1-4). However, each of the other independent variables in the model may have a different effect in different parts of the country. For instance, the regional adoption of mechanization was highly variable, different climatic conditions favored different crop regimes, and racial composition might not be strongly predictive in locations where the non-white population was low during this time period (recall that North Dakota's roster does not even record this information). Thus, my next step was to build regime models in which the census-designated regions were not used as a main effect but instead interacted with every other variable in the model. The resultant regime model predicting farming veterans and that predicting farming cohort members are model 5 in Table 5.3 and Appendix Table 5.1, respectively. In order to highlight the differences among regions and compared to the country as a whole, I have rearranged the regime models so that the effect, significance and standard error of each regional regime is presented in its own column. Model fit improves markedly, but more importantly using the regions as a regime also allows one to begin to discern how the effects of agricultural and population context varied geographically. One sees for instance that, after controlling for the underlying farming population and the other independent variables, the percent of the county population that is white is only significantly predictive of the number of farming veterans in the South and West and that the percent of farms that are owned is only a significant predictor at $p<0.05$ in the Midwest and West, having opposite effects in these two regions. Similarly, higher levels of mechanization, approximated by a higher percentage of farm expenses being paid out for machinery and equipment, significantly predict higher farming veteran populations in the South, but lower populations in the West and Northeast.

Thus far, the models I have presented have not explicitly accounted for how the assumptions of independence made by ordinary statistical procedures are at odds with basic tenets of geography, that “everything is related to everything else, but near things are more related than distant things” (Tobler, 1970, p. 236). The models so far have, in a sense, been ‘aspatial.’ Now, I add a model of these spatial relationships, using weights as calculated using the *spdep* package in R (Bivand et al., 2017). In preparation, I tried different ways of specifying the spatial weights: as queen’s contiguity weights (based on whether counties are adjacent), as inverse distance weights (IDW), and as inverse distance weights with row standardization in which counties with fewer neighbors get a heavier weight. In doing so, I found a trade-off between improving model fit as measured by AIC and reducing spatial autocorrelation as measured by Moran’s I. As the fit of the models was already quite good and as the presence of significant spatial autocorrelation in a model suggests that the significance of the predictors may be exaggerated, I have chosen to concentrate on improving the latter. Likewise, I used AIC, Moran’s I, and Anselin's (2007) decision tree to choose to incorporate space as an error term rather than a lagged term. Thus, I took the regimes models presented in model 5 of Appendix Table 5.1 and Table 5.3 and converted them into spatial error models, using inverse distance weights to account for spatial dependencies. These models are presented in Tables 5.4 and 5.5, for the farming cohort and the farming veteran populations, respectively, again with the results for each region re-arranged into their own columns to allow easy geographical comparison.

Table 5.4: Refining the multivariate regime model predicting 1930 logged farming cohort population from 1930 data by incorporating a spatial error term				
	Midwest	*Northeast*	*South*	*West*
Variables				
Log of cohort population	0.675*** (0.022)	0.783*** (0.038)	0.755*** (0.018)	0.934*** (0.025)
Average farm value (in thousands of dollars)	-0.013*** (0.003)	-0.005 (0.004)	-0.006*** (0.001)	0.001 (0.002)
Percent of farms are large (>259 acres)	-0.006*** (0.001)	-0.011 (0.008)	-0.008*** (0.001)	-0.004*** (0.001)
Percent of farms are owned	-0.002° (0.001)	0.009° (0.005)	-0.009*** (0.001)	0.007*** (0.002)
Percent of owned farms mortgaged	0.011*** (0.002)	0.017*** (0.003)	0.007*** (0.001)	0.015*** (0.002)
Percent of farm acres in wheat	0.005** (0.002)	0.021* (0.010)	0.007* (0.003)	0.006 (0.004)
Percent of farms reporting labor	0.001 (0.002)	-0.001 (0.004)	0.002* (0.001)	0.006** (0.002)
Percent of farms reporting draft animals	0.021*** (0.002)	0.021*** (0.003)	0.007*** (0.001)	0.013*** (0.002)
Percent of farm expense is machinery	0.003* (0.002)	-0.005 (0.007)	0.002 (0.001)	0.003 (0.002)
Percent of county population is white	-0.001 (0.002)	0.0004 (0.014)	-0.001 (0.001)	-0.006*** (0.002)
Percent of county population is unemployed	-0.184*** (0.021)	-0.205*** (0.046)	-0.223*** (0.019)	-0.152*** (0.018)
Percent of county population is urban	-0.007*** (0.001)	-0.014*** (0.002)	-0.011*** (0.001)	-0.011*** (0.001)
Percent of county population moved from farm	0.090*** (0.027)	0.376** (0.116)	0.093*** (0.023)	0.206*** (0.029)
Percent of farms have a telephone	0.003** (0.001)	0.002 (0.003)	0.003** (0.001)	-0.003** (0.001)
Constant	-0.257 (0.331)	-2.102 (1.417)	0.980*** (0.181)	-2.238*** (0.395)
Diagnostics				
Number of observations (counties)	3,054			
AIC	1,968.035			
Moran's I (IDW)	-0.0024			
Significance codes: °p<0.1, *p<0.05; **p<0.01; ***p<0.001. Standard errors appear in parentheses. Shapiro-Wilk value for normality >0.9; Breush-Pagan statistic for heteroskedasticity significant at p<0.0001. Using queen's contiguity weighting, the AIC is 1950.118, the Moran's I is -0.0224*. Notes: In this table, as noted in the text, a single regime model has been rearranged to make differences between regions/regimes easily comparable.				

Table 5.5: Refining the multivariate regime model predicting 1930 logged farming veteran population from 1930 data by incorporating a spatial error term				
	Midwest	*Northeast*	*South*	*West*
Variables				
Log of farming cohort population	0.997*** (0.019)	0.947*** (0.029)	0.947*** (0.013)	0.960*** (0.017)
Average farm value (in thousands of dollars)	0.002 (0.002)	0.001 (0.003)	0.0003 (0.001)	-0.003° (0.002)
Percent of farms are large (>259 acres)	0.002** (0.001)	0.001 (0.006)	-0.002 (0.001)	0.004*** (0.001)
Percent of farms are owned	-0.001 (0.001)	0.002 (0.004)	-0.001° (0.001)	0.003* (0.002)
Percent of owned farms mortgaged	0.0004 (0.001)	-0.008** (0.003)	0.002* (0.001)	0.002° (0.001)
Percent of farm acres in wheat	-0.006*** (0.001)	-0.009 (0.008)	-0.002 (0.002)	-0.005° (0.003)
Percent of farms reporting labor	0.002 (0.001)	0.003 (0.003)	0.001 (0.001)	0.0004 (0.002)
Percent of farms reporting draft animals	-0.006*** (0.002)	-0.005* (0.002)	-0.001 (0.001)	-0.002 (0.001)
Percent of farm expense is machinery	0.0001 (0.001)	-0.012* (0.005)	0.004*** (0.001)	-0.004* (0.002)
Percent of county population is white	-0.0002 (0.002)	0.002 (0.010)	0.004*** (0.001)	0.008*** (0.001)
Percent of county population is unemployed	-0.013 (0.015)	0.089** (0.033)	0.054*** (0.014)	-0.028* (0.013)
Percent of county population is urban	-0.0002 (0.0004)	-0.001 (0.001)	-0.001 (0.0004)	-0.001° (0.001)
Percent of county population moved from farm	0.060** (0.020)	0.128 (0.082)	0.050** (0.017)	0.004 (0.022)
Percent of farms have a telephone	0.001 (0.001)	0.005** (0.002)	0.001 (0.001)	0.002 (0.001)
Constant	-1.733*** (0.233)	-2.176* (1.038)	-2.338*** (0.123)	-2.628*** (0.249)
Diagnostics				
Number of observations (counties)				3,054
AIC				178.302
Moran's I (IDW)				0.0137
Significance codes: °p<0.1, *p<0.05; **p<0.01; ***p<0.001. Standard errors appear in parentheses. Shapiro-Wilk value for normality >0.9; Breush-Pagan statistic for heteroskedasticity significant at p<0.0001. Using queen's contiguity weighting, the AIC is 9.430, the Moran's I is -0.0265*. Notes: In this table, as noted in the text, a single regime model has been rearranged to make differences between regions/regimes easily comparable.				

In addition to removing the spatial autocorrelation, overall model fit improves dramatically in the 1930 models that incorporate an error term, as shown by the drop in AIC in Tables 5.4 and 5.5 versus Appendix Table 5.1 model 5 and Table 5.3 model 5. However, goodness of fit varies from county to county. In Figure 5.8, I map the significant clustering patterns of residuals of both aspatial and spatial error models using the 1930 data, showing where veteran farming populations recorded in the 1930 census are significantly higher (red and pink) or lower (blues) than the veteran farming populations predicted by the models' independent variables. The maps show an improvement in model fit in many counties once contextual variables are included (Figure 5.8b versus 5.8a), even before applying regimes or accounting for the spatial error term (Figure 5.8c). However, even in the spatial error with regimes model, a handful of counties still stand out as inadequately explained deviations. For instance, a swath of unusual values – of lower or higher than expected farming veteran populations clustering together (dark blue or red, respectively), of lower farming veteran populations in the midst of higher ones (light blue), and of higher farming veteran populations in the midst of lower ones (pink) – stretches from southern Texas and into the southwest. A few lower than expected counties remain in North Dakota while a pocket of higher than expected counties persists in Wyoming. Re-introducing a foreign-born or German-born variable, removed for the sake of parsimony as they were not significantly predictive nationally, might help account for these discrepancies considering that non-citizens could not be drafted and immigrants from Central Powers nations were not allowed to fight (Keene, 2011, pp. 36, 108).[117] Some, but not all, of the Texas counties are part of the Neuces Strip, an area where the triracial Farmers and Laborers Protective organization, a cooperative that opposed conscription, was visibly active until it was suppressed in 1915 (Keith, 2004). Adding other as-yet unconsidered variables, such as the density of

[117] North Dakota's ethnic makeup, then as now, was heavily German; nearly half of North Dakotans claimed German ancestry in the 2009 American Communities Survey, whether their forebears had come directly from Germany or by way of other countries like Russia (Krueger, 2001, p. 2011).

Spanish-speakers, or the locations of military installations that may have served as focal points for the veteran population, might also improve the existing models.[118]

[118] While noting the assimilative forces of wartime militarism on the Hispanic population, Christian (1989, p. 569) comments that "many Spanish-speaking Texans remained basically untouched or only marginally affected by American military and civilian war-related activities."

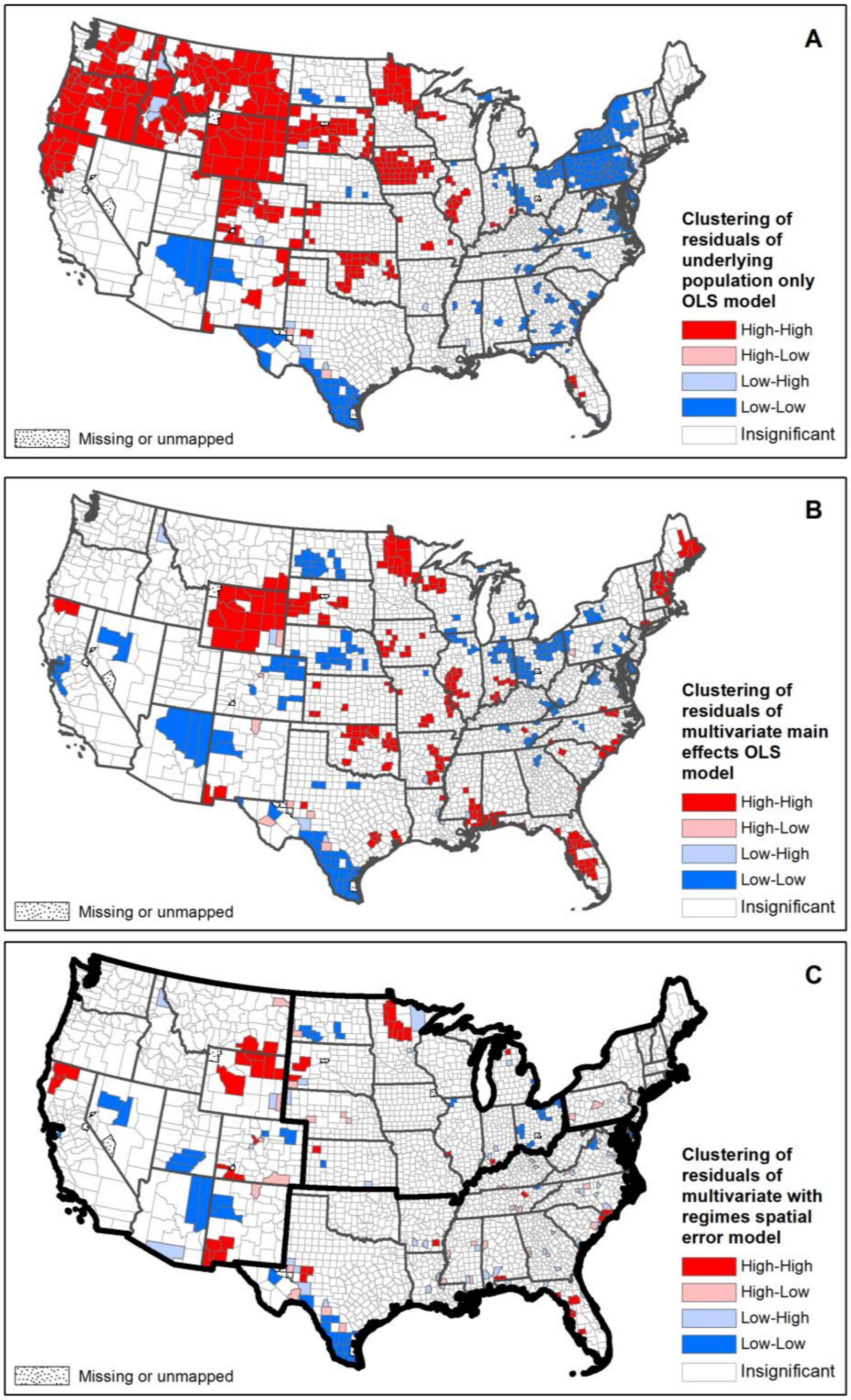

Figure 5.8: Local indicators of spatial autocorrelation among residuals of models predicting the 1930 farming veteran population from 1930 data. See text including footnotes for explanation of spatial regression calculation. Models based on aggregated 1930 individual census data from IPUMS (Ruggles, et al., 2013) and re-aggregated 1930 census data from ICPSR (Haines, Fishback & Rhode, 2016 and/or Haines & ICPSR, 2010); modified 1930 county boundaries derived from NHGIS (Manson, et al., 2017). Heavy outline in panel C denotes census-defined regions.

In the models using changes in agricultural and population conditions over time to predict 1930 populations, model fit also improves with the use of regimes and spatial error terms (Appendix Tables 5.2-7, regime models with spatial error term summarized in Table 5.6). However, while the magnitude of the spatial autocorrelation has decreased, in most of these change over time models it still remains significant, causing the significance of the predictors to be somewhat suspect. Among models predicting the farming cohort, the model including changes between 1920 and 1930 has the lowest AIC, whereas in models predicting farming veterans where the farming cohort is controlled for, the 1910-1920 model has the best fit. As with the 1930 only models, fit varies across space and, whichever time span's characteristics are used, many of the same counties that were poorly predicted in the 1930 models are likewise poorly predicted in the change models (Figure 5.9).

Table 5.6: A summary of regimes with spatial error models using change variables for prediction						
	Predicting farming cohort			Predicting farming veteran cohort		
	1	2	3	4	5	6
Time span	1910-1920	1920-1930	1910-1930	1910-1920	1920-1930	1910-1930
Base year	1910	1920	1910	1910	1920	1910
Variables						
Average farm value (in thousands of dollars), base year	M+, N-, W-	M+, N-, S-	M+, N-, S-, W+	M+, N+, S-	M+, N+, S+	M+, N+
Percent change in average farm value, over span	M+	M-, N-, S-, W-	M-, N-, S-, W-	M+, S-	W+	M+, N+, S+
Percent of farms are large (>259 acres), base year	S-	M-, S-	M-, S-	W+	S+, W+	W+
Change in percent of farms are large, over span	W+	M+	N+,W+	M+,N-	S+, W+	S+
Percent of farms are owned, base year	N-, S-	S-	S-	N+,W+	N+, S+	N+, W+
Change in percent of farms are owned, over span	S-, W-	S-, W-	M-, S-, W-	W+		W+
Percent of population is urban, base year	M-, N-, S-, W-	M-, N-, S-, W-	M-, N-, S-, W-			
Change in percent of population is urban, over span	M-, S-, W-	S-, W-	S-, W-			
Constant	M+, N+, S+, W+	M+, N+, S+, W+	M+, N+, S+, W+	M-, N-, S-, W-	M-, N-, S-, W-	M-, N-, S-, W-
Diagnostics						
Number of observations (counties)	3,054	3,054	3,054	3,054	3,054	3,054
AIC	3,042.226	2,831.629	2,872.755	384.145	413.639	423.262
Moran's I (IDW)	0.0248*	0.0189	0.0231*	0.0243*	0.0256*	0.0269*

Significance codes: *p<0.05; **p<0.01; ***p<0.001
Notes: In this table, only the directionality of significant results (at p<0.05) are reported for each regime/region: Midwest (M), Northeast (N), South (S) and West (W). The underlying population is always positive and significant at p<0.001. Fuller tables with coefficients, standard errors and levels of significance may be found in Appendix Tables 5.2-5.7.

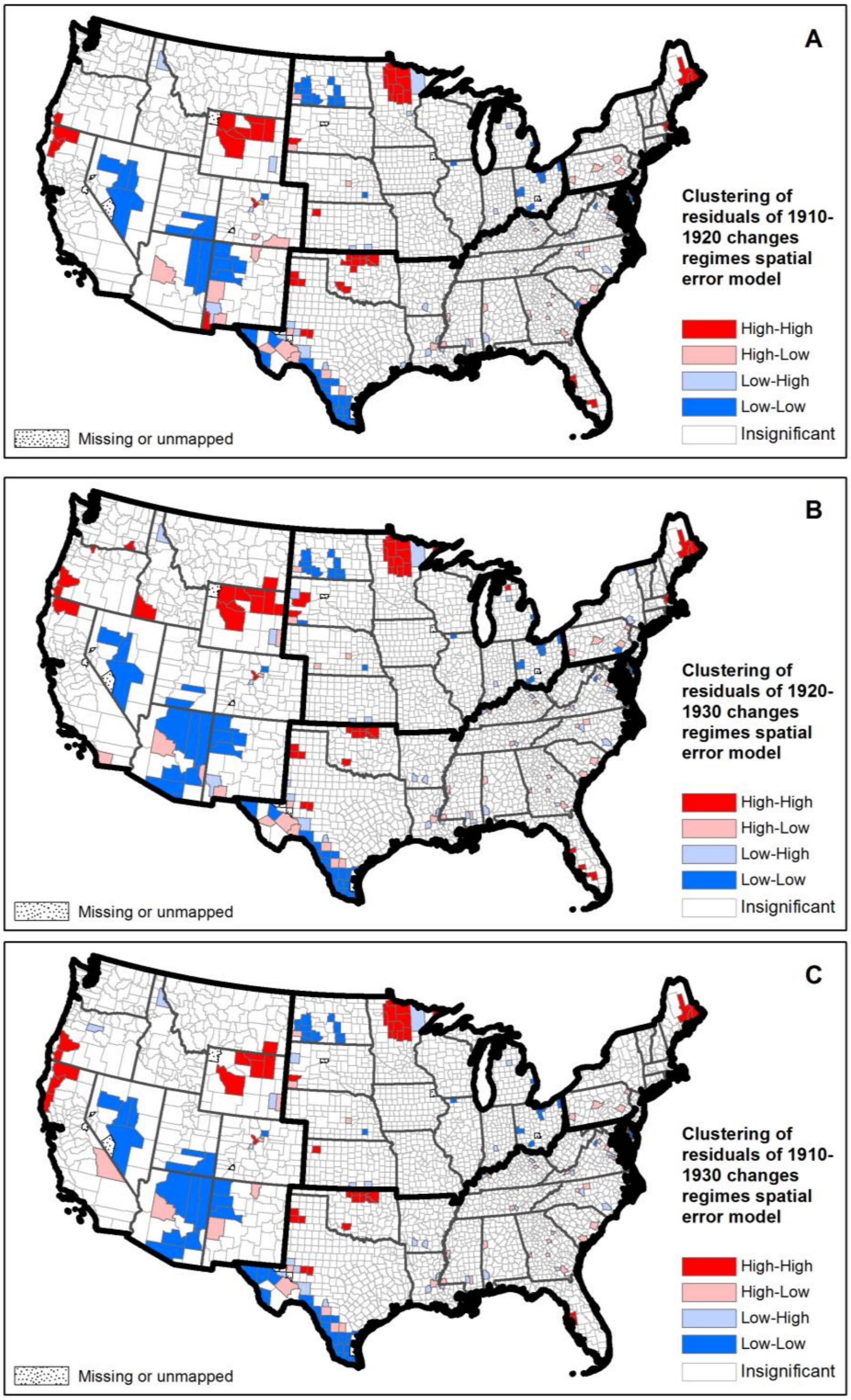

Figure 5.9: Local indicators of spatial autocorrelation among residuals of models predicting the 1930 farming veteran population from change over time data. See text including footnotes for explanation of spatial regression calculation. Models based on aggregated 1930 individual census data from IPUMS (Ruggles, et al., 2013) and re-aggregated 1910, 1920 and 1930 census data from ICPSR (Haines, Fishback & Rhode, 2016 and/or Haines & ICPSR, 2010); modified 1930 county boundaries derived from NHGIS (Manson, et al., 2017). Heavy outline denotes census-defined regions.

Spatial regression results and discussion

Regarded with reference to the models predicting the underlying farming cohort population, the results of the multivariate models for the veteran farming population represent inflections from the trends that describe that underlying population's relationship to the agricultural and demographic context. By many of the measures in many of the regions, veterans do not appear to have been responding to variations in their civilian context over time and space differently than farming males aged 28-50 in general: for farming veterans, there are fewer significant effects than significant ones, and effect sizes tend to be small. For instance, higher average farm values are associated with smaller farming cohort populations in the Midwest and South (Table 5.4), but the coefficients of this predictor among farming veterans is insignificant at $p<0.05$ for all regions (Table 5.5). In most cases where effects are significant for farming veterans, these results represent a moderation in the underlying trends, such that where a variable predicts a higher farming cohort population, once that farming cohort population is controlled for the same variable predicts a lower farming veteran population, or vice versa. The effects of only a few of the 1930 contextual variables are significantly exacerbated amongst the veteran farming population, net of the effects of the farming cohort population: ownership in the West (more positive), mortgages in the South (more positive), machinery value in Northeast and South (more negative and more positive, respectively), unemployment in the West (more negative), farm-leaving movement in the Midwest and South (more positive), and the percent of farms having telephones in the Northeast (more positive). In the change over time models, only the effects of farm value and farm value change are significant and have the same sign for both farming veterans and farming cohort members, and then only in particular regions (Appendix Tables 5.2-7, summarized in Table 5.6).

Substantively, I will focus in this discussion on the Midwest and the South, the two regions where twenty percent of more of men born 1880-1902 were employed in agriculture in 1930. As noted in the introduction and description of the chosen variables, the midwest and south shared a history of agrarian populism and a skepticism of the war, a reliance on commercialized agriculture and cash crops, and a dependence on non-agricultural and non-rural people and institutions. On the other hand, the midwest and south were also quite different in their histories of mechanization, their relationship to tenancy, and changes in farm size. In the two regions, there were different ways of leveraging wartime demand for agricultural products and coping with wartime demands for labor. For instance, in part of the midwest, already on a path towards greater mechanization since the mid nineteenth century (Danbom, 2017, p. 101; Gardner, 2006, p. 14), the drawdown of laboring men prompted an even greater reliance on machinery and the loans with which to purchase it, as a bank advertisement that appeared in North Dakota newspapers in the fall of 1917 and reproduced here as Figure 5.10 attests ("Farm help and the draft," 1917). In the south, little changed since the 1870s, labor-intensive farming persisted long after agriculture in other regions had moved on. The south had the highest percentage of tenants during the period under study, was the only region with sharecroppers, and it was not until the 1930s and the Second World War that consolidation and mechanization drove large numbers renters and laborers off the farm and urban alternatives drew them away from rural life (Fite, 1979, pp. 4, 17–18; United States Census Bureau, 1975b). As mentioned above, southern draft boards met military demands on the agricultural workforce not with modernization but with racialized and class-based interpretations of exemptions while ordinary people met these demands with various forms of resistance (Keith, 2004). How were these similarities and differences reflected in the distribution of the farming veteran population?

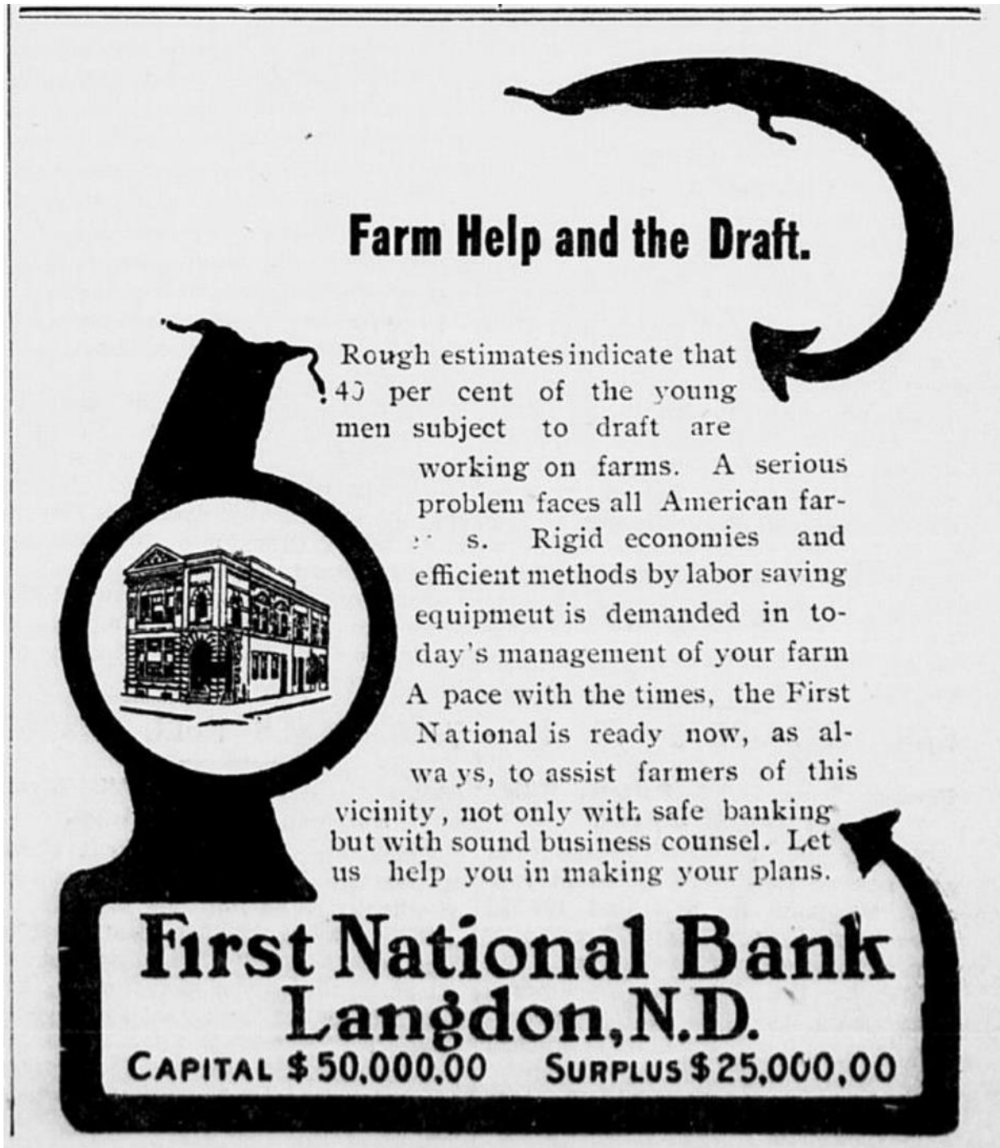

Figure 5.10: A First National Bank advertisement drawing the connection between the draft and a need to use new equipment to make up for the deficit in labor. Similar advertisements appeared in other North Dakota newspapers at the same time. ("Farm help and the draft," 1917).

There had long been a push to make farming more rational and profitable and rural life more comfortable in the hopes of reducing the relative enticements of the city and keeping people on the farm (Kline, 2000, p. 7). During the war, as has been described, there was an even greater push for modernization to ensure a steady supply of food and fiber for American troops and civilians and those of the Allies. In the Midwest and the South, many of the signs of such modernization actually tended to be associated with lower farming populations (Table 5.4, Table 5.6 left half). Fewer farming cohort members where there were more large farms, more owned farms, higher average farm values and, examining Table 5.6, where farm value and ownership had increased between 1910 and 1930, suggests that the shift towards more efficient farming that could leverage and profit from economies of scale was not preventing farm leaving. On the other hand, a higher prevalence of mortgages (the financing that enabled ownership and consolidation) and telephones (an amenity that improved economic and social connections) were associated with higher farming populations. At least in the Midwest, so too was greater investment in mechanization. The insignificance of machinery expense in predicting farming population in the South might reflect the region's low general level of mechanization, while the significant positive effect of labor demand in this region but not the Midwest may reflect the former's continuing dependence on manpower; the use of manpower and animal power seems to go hand in hand, aligning with literature that both tended to be replaced at the same time. Farming populations are lower in more urban counties, a result that might be expected but that provides an important and significant control. That the farming cohort population is lower in counties where unemployment is higher could also be a proxy for urban percent as those with even unprofitable farms tended not to self-identify as out of work. However, coupled with the pattern that there were larger farming populations where there was more movement away from the farm to a city or incorporated place, larger farming populations where there were low levels of unemployment may indicate that having an effective and appealing release valve for extra population, or having the opportunity to take up employment perhaps only temporarily off the farm, ultimately allowed more people to stay farming than may have been possible in the complete absence of non-farming alternatives.[119] Gardner (2006, pp. 102, 346)

[119] Further supporting this explanation recall from Table 5.2 that both higher farm-leaving and farm-ward migration were positively associated with farming populations.

comments that in the latter half of the twentieth century farming individuals' increased mobility and ability to make non-farm incomes improved the lot of those who left and those who stayed behind; perhaps a similar process was already at work in the interwar period. In short, the farming cohort model suggests that farming populations were not necessarily higher where agriculture was more prosperous, but rather where it was more connected financially, technologically, or through migration.

Having set the scene with the farming cohort's relationship to their context, and having found patterns that at least broadly conform to the literature about changes in agricultural and the rural population in the early twentieth century, I turn now to the veterans within this cohort (Table 5.5, Table 5.6, right half). After accounting for the distribution of farming men in general, there is little variability in the farming veteran population left to explain. A county in the Midwest would need another 5% of farms to be large to predict a 1% larger farming veteran population. Farms with draft animals and wheat acreage have a weaker association with veteran numbers, and is only significant in the Midwest, an additional 1% of either related to a farming veteran population lower by 0.6%. Each of these relationships between the veteran population and context run contrary to those between the farming cohort and context in the Midwest. Could this reflect veterans' greater ability to own or find employment on large farms in this region, provided those farms were less tied to one of the region's cash crops and less dependent on animal labor? In the South, more mortgages, more mechanization and higher unemployment predicted more farming veterans, with a positive 1% difference in any of these measures being associated with 0.2%, 0.4% and 5.4% more individuals of this type. In this region, it would seem veterans were more prevalent where laborers' livelihoods might be threatened by modernization but also where the lack of employment alternatives was greater. In both regions, higher levels of farm-leaving movement are strongly predictive of higher veteran numbers, 1% more movers predicting 5-6% more farming veterans. In the Midwest, one finds more farming veterans where the average farm value was already higher in 1910 and 1920, accentuating the pattern of their regional cohort; however changes in average farm value between 1910 and 1930 are positively associated with veterans in both regions, the opposite of the effect seen for the farming cohort in general.

Given the limitations of cross-sectional, aggregate data, is difficult to say definitively whether military service was beneficial or detrimental to the rural population. One can only guess at whether military service might have been bad or good for particular rural individuals based on these analyses at the county level. In spite of such limitations, these analyses can suggest more nuanced narratives about the effects of war and regional difference. First, in many ways farming veterans were quite like the mass of farming men of their generation, whether because they started out similarly and left military unchanged or because the changes that did occur brought initially different populations closer to each other's circumstances. Second, one finds more farming veterans where farming was at least by some measures prosperous, in places with rising farm values and, in the Midwest, larger farms: this association is at least inconsistent with the claim that military service was universally detrimental. Third, however, the interpretation of these associations can be convoluted or contradictory. The findings for the South could be read as veterans being more adept at handling aspects of farm modernization (mechanization, mortgages) and being able to stay in the countryside, perhaps due in part to the better bargaining position left to them as other tenants and laborers left as part of the Great Migration (Danbom, 2017, p. 170). On the contrary, these results could be interpreted as farming veterans being more trapped and unable to move to a city or village even while others – who previous literature suggests may have been positively selected (Tolnay, 2003) – did.

Conclusions:

In the previous chapter, I looked at militarism when and where it was blatantly visible at important junctures between military and civilian life –at induction, demobilization and death – but here

I have explored more distant patterns after a decade of "normality." The Armistice did not end the influence of the Great War on American agriculture, and the conflict, through its impact on the country's rural places and individuals, had lasting effects on the United States. Nearly three years of what might be called war profiteering from wheat as well as weapons underlay America's rise to superpower and its geopolitical and economic commitments could not be simply removed after the war's end in spite of what isolationists may have hoped (Zieger, 2000). When the US Treasury attempted to call in the Allies' debts, funds which had been used to pay for the expansion of US agriculture, European governments sought to cancel their contracts, "threatening ruinous price deflation throughout American agricultural districts;" calls for repayment were subsequently delayed (Kennedy, 2004, p. 333). The demands of war hastened changes in agriculture, and created veterans who, whether due to their soldierly experiences or civilian characteristics that became associated with their status, coped with postwar realities in ways that were different, if subtly, from the responses of men of their generation in general.

Although the census compiled a number of useful summaries from the data it collected in 1930, it never calculated cross tabulations of veterans and farming occupations and contexts, in spite of how relevant both were during the interwar period as manifested in agitation for farm relief and for Adjusted Compensation bonuses. As such, this chapter breaks new ground in mapping and describing these patterns, even if the results of these coincidences can be read in ambiguous ways. This ambiguity in some respects reflects the ambivalence that farmers themselves felt in the face of changes in American agriculture (Danbom, 2017). Dynamism and even its directionality were not new to the twentieth century. The nineteenth century had already set the tone for a system of agriculture that was increasingly politicized and reliant on government policy, though perhaps it was only with the animosity that arose over wartime price controls and the use of food relief to postwar Germany as a geopolitical pawn that this tone became quite so questionable (Danbom, 2017; Fleming, 2003, pp. 282, 325;

Gardner, 2006).[120] Agrarian unrest had deep roots in America, the grievances over prices and property rights that prompted the Green Corn Rebellion and the formation of the Non-Partisan League not being all that different from those that sparked the "back country rebellions" Hurt (2002, p. 61) describes in the thirteen colonies. What had changed, however, was that by the time of the Golden Age, the Great War, and the postwar slump "the farmer was no longer the average American" (Danbom, 2017, p. 175). The shift in the agricultural population's position was material, but it was also a challenge to the cherished discourse of the autonomous yeoman farmer as bedrock of America. At every turn, changes in agriculture told a story of less independence, more reliance on the market economy, and greater productivity but only for the benefit of fewer farmers: a story of an inexorable march from one form of agriculture to another as individuals seeking better prospects walked off the farm (Gardner, 2006, p. 2; Hurt, 2002, p. 276). Yet, leaving the farm might be what saved the farming population and formerly farming individuals (Gardner, 2006, pp. 102, 346). While connections – to the world economy, to sources of investment, to government bureaucracy – could be detrimental, they could also bring prosperity, whether via one's own movement or vicariously through the movement of others.

Such connections insist not only that the insularity of the military and the civilian needs to be broken down, but so too does that of the urban and the rural. As James Malin (cited by Higbie, 1997, p. 412) asks, '"How far is it valid to attempt to write integrated rural history or integrated urban history when rural and urban life were not lived in segregated forms?"' For both farming veterans and farming WWI Cohort members in general, that higher city-ward and farm-ward migration flows predicted higher populations suggested that individuals lived not only in the overlap between home and front, but also at the crossroads of the rural and urban places. This chapter, in its review of literature and its exploration

[120] As examples of increasing government intervention in agriculture in the nineteenth century and prewar years, Danbom (2017, p. 103) and Gardner, (2006, p. 247) list the Homestead Act, Pacific Railroad Act, and foundation of the US Department of Agriculture and land grant colleges to conduct and disseminate research on scientific farming.

of veterans' outcomes en masse, has once again shown the importance of conceiving of places as networked to other places in ways that are malleable over longer and shorter time spans, constitutive of individual and thence emergent characteristics. This chapter shows the importance of nested geographies, from regions internally divided by crop regimes or racial hierarchies to the scale of everyday life as crudely approximated by county boundaries. It has also shown the usefulness of thinking in terms of nested populations in specifying models of subpopulations of interest as drawn from and partially predicted by more broadly defined cohorts.

What is the place of the nested subpopulation of veterans in this story? Rather than arguing that military service was good or bad for individual service members – an impossible task in any case from aggregate data – it is perhaps better and more honest to engage with the ambiguity and ambivalence present in rural America more broadly. In their movements between wartime and civilian spaces, farming veterans helped build the foundations of the patterns seen in the maps and models presented here. Leaving the countryside for the military, they drove the adoption of labor-saving machines in some regions; needing to be fed in their training camps and at the front, they drove the expansion of farmland and individual farms. They helped spur the modernization of American agriculture. In feeling its effects, whether good or ill, veterans were in most ways like but in other ways different from the other men of their generation. That these differences varied across the country again points to the interaction of places through individual experiences, movements and relationships: each region's own history of agricultural development shaped different emergent population patterns, just as military service did. Such findings provide a wider context within which to locate the results presented in Chapter 3.

Chapter 6: Conclusions and reflections

Chapter abstract:

With this dissertation, my goal has been to use population geography to (re-)place the individual American soldier at the heart of the Great War through application of historiography, geographic thought, and quantitative methods. This interdisciplinary task has faced various challenges, from methodological minutia to devising the most productive way to operate within an interdisciplinary space, taking the best from each field of inspiration. One of the greatest challenges with this work, however, might be described as ethical. As I discuss in the first half of this final chapter, working at the individual level but through statistical techniques and government-compiled sources has raised self-reflexive questions about whether these datasets and the analyses I perform can adequately speak to the depth of personal experience and the vibrancy of place. I am, however, encouraged by the humility of other scholars who have faced similar dilemmas as “empiricists, not positivists” (Giordano et al., 2014, p. 12), and by the fact that many doughboys understood their experiences through numbers and their social meaning. While this chapter airs the limitations of quantitative data and methods, it also highlights their ability to speak to the absences left by qualitative, archival sources. I then move on in the second half of the chapter to summarizing what my dissertation has been able to add to our understanding of the American experience of the Great War, describing how a country – in spite of its short official involvement and lack of casualties – and a region in the heartland of that country – in spite of its apparent isolation – were bound to a conflict raging an ocean away through the medium of soldiers themselves. Whatever limitations may arise from my choice of data and methods, I have still been able to advance the arguments made by Woodward (2005) and others for a more nuanced and more holistic appreciation of how armed conflict is insinuated into everyday life, for broadening and deepening military geography into geographies of militarism.

Chapter introduction:

"Maybe it isn't that it's so difficult coming home, but that home isn't a big enough space for all that I must bring to it. America, vast and laid out from one ocean to another, is not a large enough space to contain the war each soldier brings home.

And, even if it could – it doesn't want to."

- Sgt. Brian Turner, US Army (ret.) (2014) *My life as a foreign country: a memoir*, p. 173.

The messiness of history:

On July 12, 1918, 2nd Lieutenant Howard Riggins Huston sent a telegram to his family in North Dakota: "Slightly wounded. Feeling fine. All is well. (signed) Huston." A week later, the *Granville Herald* reported, "Lieutenant Huston Died in France. Prominent young North Dakotan makes the supreme sacrifice- succumbs to wounds received while fighting the Huns." The *Minot Independent*, a paper for which Huston had once worked, lauded the young man for his last noble act to his family – sending the reassuring telegram to soften the blow – and assured its readers that Huston "must have accounted for more than one Hun before he fell," and that his "remains were undoubtedly interred in France with military honors and, after the war, it will be possible to remove them to this country if desired." Huston's family arranged a funeral with an empty casket and, according to an undated obituary, asked the Red Cross to search for his grave at the front. On August 1, the *Deering Enterprise* remarked, "the death of Lieutenant Huston brings the war to our very door," describing him as "an individual loss...[and] a true soldier" ("Howard R. Huston papers," 1917). Historian Pierre Purseigle (2004, p. 109) has written that individual deaths were what truly brought the war home, that in their intimacy they broke down remaining mental barriers between the civilian and the military sphere.

On August 13, 1918, Huston wrote, "Guess you will be in the midst of the harvest when you get this letter. I'd like to be there to drive a binder for you a couple of days and have some fried chicken. I hope you have good crops." Howard R. Huston had not in fact died of wounds in France. As his undated and actual obituary revealed, Lt. Huston continued his military career, returned home and became a businessman, married and lived a family life until his death at 62. He left a remarkable collection for the North Dakota State Archives in Bismarck. Along with the newspaper clippings of his premature obituaries and of his retirement, his archival box contains a book of illustrated soldiers' poetry he annotated for this mother, and, having remained in Europe on a diplomatic mission after the war, photographs of the places he had been as a soldier with captions on the back. These other documents provide a striking glimpse into Huston's military experiences in Europe and his relationships with civilians at home. With the poetry book, having added "To my mother: the Best in the World" under the printed dedication, having written out an explanation to accompany a poem on the belief that one "would not be hit unless their names was 'on the shell,'" Huston navigated the space between being a soldier and a son; he reminds us of the conflicting family and patriotic loyalties both service members and their relatives had to negotiate (Garner & Slattery, 2012; Van Emden, 2011).[121] With the series of photographs, often included in duplicate as though ready for distribution, Huston addresses the captions to "you," the audience. Huston poses beside one of "many little lonesome graves" in Northern France (photograph 3-01) and in front of a headquarters dugout near a village where "we had over 100 casualties" (photograph 3-07). A view "overlooking Bois de Septsarges….will give you a good idea of the contour of the land in the Meuse Argonne fighting" (photograph 3-08), a view of a road through a field "will give you an idae [sic] of the desolation of the country which a battle has been fought [sic]" (photograph 3-15). For one landscape, Huston writes, "In the distance is Mont Faucon. It took 2 days and nights of hard fighting to take this place. I viewed it from the point this picture was taken a number of times while we were forcing Germans out" (photograph 3-05). On another image, the caption reads, "this was a weat [sic] field in July 1918 and into it my company advanced on the 19th...on the spot

[121] Huston's copy of *I was there* is an earlier and somewhat different version of the booklet that was published in New York and that may be viewed via HathiTrust (Baldridge & Baukhage, 1919).

where I stand Pop Crane was killed" (photograph 3-10) ("Howard R. Huston papers," 1917). In these images, Howard Huston personalizes the landscape; he bears witness by standing again in wartime locations and identifying their individual meaning. The photographs seem almost surreal, highlighting the absence/presence of the war in graves and in the ruins of civilian places, conveying some of the dynamism of military places: even these locations of high drama and awful visceral experiences are in Huston's photographs in a state of changing into new, hybrid, postwar places.

Huston's story as revealed in the archive is an example of what official records like the *Roster of men and women who served in the army or naval service (including the Marine corps) of the United States or its allies from the state of North Dakota in the World war, 1917-1918* leave out. Indeed, while Lt. Huston's roster record is already unusually long compared other veterans' entries, nothing in its text even identifies his connection to North Dakota. One of his premature obituaries remarked that as his death was "officially reported there can be no question of its authenticity" (*Deering Enterprise*, 1918), but in leaving his family to believe for "several months" that he was dead, such supposedly unassailable records fail to convey the reality that North Dakotans lived during the war ("Howard R. Huston papers," 1917). In the official record, time flows smoothly. In the official record, the shifting interplay of civilian and military that Huston is at such pains to mediate through sharing and annotating images, is reduced to a few notations about birthdate, nativity and occupation.

Other items in archival collections demonstrate the messiness of history. As mentioned previously, Selective Service was organized at a national level, but implemented at the local level (Chambers, 1987). Quotas were established for each county and large city based on the estimated number of male inhabitants of military age, net of those already in service (Chambers, 1987, p. 227; Keith, 2004, p. 60).[122] June 1917's *Tentative draft regulations* meticulously clarified, "in allocating credits

[122] As a further complication, Chambers (1987, p. endnote 83) comments that the quotas were based on sex and age not actual eligibility so that a location with a high number of non-declarant aliens would have a reduced pool

it is to be borne in mind that credit for an enlisted man in the National Guard is to be given to the county or city of his residence, irrespective of whether or not the organization to which he belongs has its home or other station in said county or city," and students and populations in institutions "such as penitentiaries, jails, asylums, almshouses, etc" should be counted at the location of normal residence *(Tentative draft regulations*, June 15, 1917, p. 3-5, "Charles and Viola Liessman papers," 1909).[123] The assignment of quotas was to be "performed expeditiously…with exactness and without delay" (*Tentative draft regulations*, June 15, 1917, p. 1-2, "Charles and Viola Liessman papers," 1909). In the same box as these fastidiously outlined instructions, however, are the material traces of the policy's implementation: pages upon pages of totals and revised totals; rough drafts, fair copies and revisions; indications of how unsettled and mutable the process of counting actually was.[124] This is how the apportioning of patriotic duty was actually performed, this is how the lives of individual men who might fight and die 'to make the world safe for democracy' became a tally.

Qualification and quantification:

Another view of the individual:

In his book, *War violence and population,* population geographer James Tyner (2009) describes how disciplined bodies conduct tasks and embody discourse to achieve political and military ends. In

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of liable registrants but not a reduced responsibility. Later in the war, once the deferment classification system had been implemented, Class II-IV deferments were only to be effective so long as the local board had supplied Class I manpower sufficient to fill such quotas (Yoder, 2014). There were also separate quotas for whites and non-whites, leaving racists with the quandary of how to maintain an "acceptable" balance both at home and in military places (Keene, 2011, p. 53).

[123] Charles Liessman interpreted draft instructions for all the counties in North Dakota; a box of Selective Service files was accessioned in 1985 with his other records by the North Dakota State Archives.

[124] Indeed, the box also contains chicken scratched summations on scraps of paper, and figures calculated in pencil and crayon on the backs of envelopes. These artefacts are of less certain provenance. While the handwriting and paper quality suggest that these scraps are historic, the accession records are not detailed enough to prove that they were created during the war. In any case, it is still interesting that what could be considered rubbish has become part of the permanent collection.

Chapter 1, where I introduced his work, I provided examples of how his framework could be applied in the context of the Great War, describing the symbolism of trained soldiers, the distribution of war graves, and thus how soldiers' bodies helped produce material and imaginative geographies. For bodies to do this work on behalf of the state, Tyner argues, they need to be categorized and then quantified. Categorization, first of all, defines who one can go to war against. Tyner (2009, p. 49) writes, "both direct violence (that is, those practices applied to bodies) and structural violence (that is, those practices applied to groups or populations) are justified and spatialized through the forwarding a particular representation of "difference" between *bodies in space*." The marks by which different bodies are classified may be material: recall Cronier's (2007) discussion of how wounds, filthy uniforms and other signs of frontline suffering made "the soldier" a type, a carrier for the ascribed meaning of the places of battle. However, this classification also had material and discursive effects on the individuals so classified. Hooper (2001, p. 704), in her critique of Casey's theorization of bodies and places, argues that the particularization and ordering of her body, "like all bodies," is not merely surficial but constitutive of "how [she has] become a bodied subject in a particular place." Further, these categorizations impinge not only on the constitution of the living, embodied subject but also the social meaning of the dead, going so far as to determine which deaths are grievable (Patterson, 2013; Romanillos, 2015), or, in Tyner's (2009) words, which bodies count.[125] Categorization also shapes the wider context. As M. W. Wilson (2011, p. 862) writes, "categories remake the world by constituting the ways in which that world is expressed, interpreted, and accessed." Recall in the introduction that as home and front were classified as separate places, different behaviors were allowed within them and they occupied different spaces within contemporary imaginations.

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[125] In the context of the Great War, this can be seen for instance in restrictions on publishing images of American and allied but not enemy dead. The majority of the images of the war that were available to the American public after the official war declaration were provided by the Signal Corps. The press was prevented from publishing any photographs of dead Americans but there were "numerous pictures of mutilated German dead" (Keene, 2011, p. 154).

Embodiment versus the body count:

Tyner (2009, 2015) and M. W. Wilson (2011) go on to describe how categorization and quantification enable each other. Via "'constructed and enforced equivalences'" that allow individuals or places to be put into groups, these individuals and places become countable (Curtis, 2002, cited by (Tyner, 2009, p. 27). Reciprocally, metrics are "made 'legitimate' through techniques of standardization and objectification to decontextualize, depoliticize, and ultimately qualify certain lives" (M. W. Wilson, 2011, p. 858). Through qualification and quantification, through the transformation of observed lives and locations into data, they become "actionable objects" (M. W. Wilson, 2011, p. 864). Indeed, throughout this dissertation, I have discussed how I have (re)labelled individuals and places to be able to aggregate and analyze them. In Chapter 2, I constructed an imaginary individual of particular, definable characteristics that could be switched on and off to make a point about how the concurrence of these characteristics, only discernable in the linked data with its myriad variables, were predictive of membership in a postwar marital status category. In Chapter 3, I used an identification number, a caricature of the man the record actually refers to, to calculate the likelihood that the individual would end up in one of a series of boxes classifying mobility. In the maps in Chapter 1 and the preparatory work for Chapter 5, I used a binary categorization – neighbor versus non-neighbor – to specify a model of space.[126] I could not have gotten a statistical handle on these men and the population geographies they helped to comprise without a way to tag and tally them, to define them as objects susceptible to analytical action. I have relied on bodies both as the medium of experience and as something that is countable.

However, these practices of knowledge production are not without potential moral pitfalls. First, Hooper (2001) is vehement that the abstraction of 'the body' surreptitiously defaults to and privileges

[126] For Chapter 1 and in testing models for Chapter 5, I used queen's contiguity (adjacency) to model spatial relationships. For the maps and models actually presented as part of Chapter 5, I ultimately employed inverse distance weighting to model these relationships.

certain kinds of bodies. In making bodies or the lives that they define and constitute in some sense interchangeable so that they can be counted, they become to some degree deindividualized. Embodied individuals become a body count. Brian Ireland (2005) highlights the violence that such a reduction enacts. Describing Waikiki's World War I memorial on which 101 names of Hawaiian citizens who died in the war are carved, Ireland first notes that an unorthodox definition of war dead allowed additional names to lengthen the list, and then notes that the names have been placed in the context of a "100% American" memory of the conflict, shutting out all but a narrow appreciation of the war's meaning (Ireland, 2005, p. 55). "Categories (i.e., assumptions and familiar notions) shape knowledge even as they enable it" (Crampton & Krygier, 2006, p. 13). While other scholars have commented that names become sacred through their placement on monuments (as eventually evidenced by the fact that the Vietnam Veterans' Memorial contains nothing else (Inglis, 1992)), Ireland argues that the reduction to names debases those who were called by them, erasing everything else about those persons including what they may or may not have thought about the conflict in which they fought. With their names thus coopted, the dead have lost them. As Cornish & Saunders (2013, p. 6) comment in their introduction to *Bodies in conflict*, the anonymized can never be demobilized.

Second, in categorization and quantification the difficulties of thinking about bodies tend to be obscured rather than solved. Tuan (1977, p. 89) writes that the human body "is not only the condition for experiencing the world...but also an accessible object whose properties we can always observe," but it is not such an easy step from one to the other as Tuan supposes. Stewart (1992, p. 132), for instance, highlights "the problems in imagining the self as place, object, and agent at once." If we must have a metric, in some ways the human body makes sense in spite of its complications. Stewart (1992) continues that the body is already the scale by which we measure everything else: big, small, close, faraway, even the authenticity of representations: authority is bestowed on an image, a souvenir, or the testimony of a soldier who was there by its supposed connection to emplaced, embodied experience

(Ramsay, 2009; Wylie, 2006). However, supposing that the body provides a delimited, irreducible scale is problematic in the context of the Great War. Dismemberment was a very real threat; soldiers' accounts describe the promiscuous mixing of flesh and mud in the battle zone. In short, war was capable of dividing that supposedly indivisible scale and discrete state space upon which my big historical microdata analyses rely. The collapse of the separation of man and terrain took other forms: the land could be anthropomorphized, giving the mud agency or describing the earth like a diseased body, "pitted with great pocks and scabs of plagues," as in Owen's oft-quoted line (Deer, 2009, p. 28; Giblett, 2009, p. 66; Helphand, 2006, p. 32; Owen, 1919/2006). The awful sensuality of the battlefield could permeate the soldier's existence: as one Private H. Cooper recalled, "'the awful stench of the dead seemed to be right inside me'" (cited by Wilson, 2012, p. 155). Kent (2009, p. 6) writes that such an "'obliteration of distinctions' that enable 'things' and people to establish themselves as separate entities" is the very definition of trauma. The body is mutable and capable of radically different responses to wartime stimuli: in the narrative in Harry M. Hunke's WWI service, collected as part of the Veterans' History Project, a description of how mustard gas destroyed his teeth is juxtaposed with the statement that "he weighed 169 pounds when he entered the service, he weighed 230 pounds when he was discharged" ("Harry M Hunke Sr. Morton county, #1173," 2000; State Historical Society of North Dakota, 2018b). All this is not to say that a focus on individuals and bodies should be abandoned, but rather that the challenges that warfare presents to the individual's physical and spiritual intactness should give us pause.

Finally, the big historical microdatasets that I use, datasets that take embodied experiences and codify them into countable objects, are arguably about the control of population just as bringing men into armies is about disciplining bodies. Tyner (2009, pp. 31–33) writes that this control and discipline – biopolitics and anatamopolitics in the Foucauldian terms Tyner employs– are "complementary" and "inherently spatial," and that the former is based in "technologies of power" including demography and statistics. Citing Curtis (2002), Tyner (2009, p. 27) notes that populations are constructed '"through the classification of bodies into larger collectives,'" and that '"it is only on the grounds of such constructed equivalences that it is possible for statistical objects to emerge in the form of regularities and to become the objects of political practice."' In other words, in compiling these census and military service data, in gaining knowledge about the population, the government gained power over individuals. Indeed, on the day that the first 5% of draftees departed for training camps, an article in the *Grand Forks Herald* noted that the Department of Commerce was recommending that federal vital statistics be kept as it was realized that the lack of such records may have hindered the "recent estimate of the population in connection with drafting men to military service" ("Wants Uncle Sam to keep record of births and deaths," 1917). This new appreciation of the need to collect demographic data was part and parcel of what Keith (2004, p. 199) calls the wartime "birth of the American surveillance state." Again, while the origins of the census and military data should not preclude their use – as M. W. Wilson (2011, p. 868) argues, it "is important to recognize that the absence of data is not a better solution" – it does suggest that projects employing them should be self-reflexive and bear in mind their inherent biases.

The meaning of numbers:

It is easy to demonize the state for trying to understand individuals and populations through classification and quantification. However, these knowledges were also produced and reproduced at a more capillary level. Indeed, Great War historiography in general has recently sought to "to balance an acknowledgement of the state's coercive power with a narrative that emphasizes individual agency and empowerment" (Keene, 2014, p. 8). Popular discourse and soldiers' own comprehensions of the war experience were founded on categorization and counting. An advertisement about "helping the [cloth,] meat and milk supply," incidentally preserved on the back of a clipped article, calls on even "wholly unexperienced" stockmen to "start a new flock and clothe a soldier boy for Uncle Sam," wrapping an abstraction in the folksy and the colloquial. In Howard Huston's various premature obituaries, he was described as "a typical American [who] believed in its true democracy", "a real man in every sense of the word and possessed the very highest ideals typical of the brave American soldier." Even the *Minot Independent,* which called him "one of our family," traded in tropes and stereotypes. "The brave young soldier" was the hero, the "Hun" the villain, and "while his father and dear old mother, brothers and sisters are heart-broken over the death of their dearly beloved one, they can gain much consolation in the fact that he lay down his life in the noblest cause for which a country ever went to war." Such categorizations are arguably no less dehumanizing than those employed in government records. Howard Huston's own words move between levels of abstraction. In a letter home that was published in the newspaper, after describing being treated like a son while billeted with an old woman, alone after the death of her sons and husband, Lt. Huston shifts from the personal to the impersonal, noting that the random nature of deaths at the front led him "to develop a good philosophy of life…[and] quit worrying," assuring readers that "all the boys feel the same way about it" ("Howard R. Huston papers," 1917).

On the one hand, newspapers could describe individuals being subsumed into the grand army in a way that may read as callous today:

> "they came from the city and the farm… Some were salesmen, others farm hands. All left everything behind – their jobs, riches, mothers and sisters and some of them wives and children – for a suit of khaki and a rifle and a course of training that will change them into important cogs of the American war machine" ("War grips homes of America today as members of national army depart," 1917).

On the other hand, individuals could be reminded that their small contributions towards the war effort – doing their bit, in the parlance of the time – were valuable and necessary. Pamphlets asserted, "we are doing the small things the Government asks of us… we do not realize that by doing them together we make them of tremendous importance" (Field Division Council of National Defense Americanization Section, 1918). Meigs (1997, p. 23,35), working from questionnaires filled out by WWI veterans in the

1970s, writes that American soldiers saw their experiences in war as “both ‘rare and refined’ and shared by millions,” that “every man could feel what was deepest in him, yet every man ‘”felt exactly the same thing.”’ Rather than seeing themselves as merely part of “drab millions who plodded to death on the featureless plains” or as inconsequential (Keegan, 1998, p. 450), individuals often found meaning in the Great War by seeing themselves as part of the aggregate. As Meigs (1997, p. 44) goes on to argue, the individual soldier, “having learned to think of himself as a… unit operating inside the organism of the Army,” became dependent upon it and would be “without identity, in fact without individuality” if stripped of that context. While war of attrition is essentially founded on having bodies to throw away, even in those European cemeteries meant to emphasize (exaggerate?) the mass of American soldiers, the landscaping, producing perspectives that focus on single graves place the individual at the center (Meigs, 1997, p. 187).

Contemporaries were conscious of the unprecedented scale of the armies and casualties involved in WWI, already beginning to call it “the Great War” by the end of 1915 (Keegan, 1998, p. 224), and Jay Winter (1995, p. 2) reminds us that any attempt to make sense of such a large and traumatic event “was bound to be appallingly difficult; full of ambivalence and confusion, charged with tentativeness and more than a fragment of futility.” However, numbers were central to building this understanding. In the United States, numerical comparisons to the Civil War or the costs borne by Allies helped locate the country’s place in the conflict (Ayres, 1919; Browne & Pillsbury, 1921). Following on from the accounting practices of the Civil War – an event that caused death on such a scale that, Faust (2008) argues, it changed the society’s discursive relationship with mortality – quantification by nation, state, county; by company, battalion, regiment; by arm, rank, cause of death (to name just a few grouping schemes) gave people purchase on meaning (Haulsee, Howe, & Doyle, 1920). These practices of knowledge production are an archetype of the persistent struggle in WWI historiography to understand the individual fighting, living, dying soldier viscerally close-up, but also as part of a context emergent from individuals en masse. [127]

Addressing other silences:

Indisputably, the diversity and depth of individual lives were reduced in official records. The "throwntogetherness of place" is obscured (Massey 2005, p. 141). The richness of lived geographies – spaces that were materially and discursively constructed, places that existed both concretely and imaginatively – is scarcely conveyed when locations become but containers by which to count draft quotas. However, qualitative archival materials are also selective. As part of a collection amassed via a solicitation for veterans' histories, the daughter of James Lloyd Monson of Cass County writes that her submission is an "attempt to get all those bits and pieces together," asking the curator to "pick and choose what you can use and toss the rest" ("James Lloyd Monson, Cass county, #1360," 2000; State Historical Society of North Dakota, 2018b). The North Dakota State Archives holds a number of cassette tapes of interviews with WWI veterans, recorded as part of an oral history project in 1976 (State Historical Society of North Dakota, 2018a). In an interview with Fred Mietz of Wells County, in the midst of series of leading questions, the interviewee's recollection of his discharge from WWI prompts the interviewer to ask if he was drafted. Mr Mietz responds that he enlisted because he "wanted to be in a better branch;" when he notes that he was did not serve overseas the interviewer quickly changes the subject. For the interviewer, stateside service, though affecting and disrupting the lives of as many men as foreign service, is no interest. Why was Howard Huston's brilliantly detailed collection kept? Why was

[127] One of the more striking recent attempts to conceptualize Great War soldiers as individuals within the mass was Paul Cummins and Tom Piper's installation of 888,246 ceramic poppies, one for each British fatality, at the Tower of London at the start of centennial in 2014. Progressively adding the poppies, the flowers appeared to flow from a window, eventually filling the Tower's moat to evoke "blood swept lands and seas of red" (Adam, 2014; M. Brown, 2014).

it donated? Was it the man's later prominence in the community, the excitement of his life story? Was it the curator's sense of history? Was it Huston's own? It is all too easy for the archivist or the researcher to suppose that characteristics of the surviving documents that might be incidental were products of deliberate choice: is it meaningful that the photograph of the "grave of Lt L.O. Crane" is on the grave itself rather than the man standing beside it ("Howard R. Huston papers," 1917)? Were the scraps of paper tallying men already in service kept because even in this rarified form they were perceived to have some connection to real lives and a watershed in history ("Charles and Viola Liessman papers," 1909)?

First person narrations are no guarantee that the descriptions of the experiences they provide are complete or unadulterated (whatever that might mean). In the short autobiography included in Monson's collection, the author describes his time in the frontline with two short sentences: "several very interesting things happened up there. I hope to tell them when I expand this" ("James Lloyd Monson, Cass County, #1360," 2000). An article from *The Register* entitled "Women in military service for America" is included in the veterans' history material for nurse Lilian Weir, née McKnight. Built on diary entries from 1918, Weir's testimony appears as a mix of endogenous reaction and internalized rhetoric and it is difficult to tell where and when the line between them was/is crossed. A diary entry reports, "we dropped anchor safely at Le Havre and exchanged places with the wounded, whose ambulance train we took to Rouen…[I] tried to do my bit for the soldiers;" the magazine article concludes, "those 19 months passed away like a dream; to believe it all is hard. I enjoy my diary, which takes me back to when I nursed those wonderful wounded and sick boys and those who paid the supreme sacrifice so... our own US might still be the 'Land of the free and the home of the brave'" ("Lilian McKnight Weir, Cavalier County #1630," 2000). Nor were the descriptions conveyed during and immediately after the war necessarily unedited, though unclouded by intervening years as in the memoirs. Howard Huston's annotated book of poetry can be surprisingly dark, suggesting a pragmatic and fatalistic attitude, the poet describing the acquisition of a dead man's shoes and puttees thus: "Someone's got to lose, glad I ain't the guy/ If I'm going to use 'em, guess I'll have to hurry/ The next H. E. [high explosive shell] may be meant for me/ I should worry!" (Baldridge & Baukhage, 1919). On the other hand, Huston's letters home are filled with reassurances that he is well and arguments that being a soldier is, really, no more dangerous than being a civilian ("Howard R. Huston papers," 1917).[128] Whatever his conscious or unconscious motivations, Huston provides a censored view of the war experience.

Even leaving aside the fact that of the 30,000 plus individuals in the *Roster* only a handful have left any other academically accessible documentation of their lives, a reliance on more personal records can never provide a total picture of total war. Neither can official or statistical records in isolation. Qualitative and quantitative data and methods reveal different facets of history. In spite of their limitations, quantitative data and methods can speak to the absences left by archival sources and provide them with context. Further, some traditional weaknesses may be remedied by a more critical approach. As Crampton & Krygier (2006, p. 13) explain, "critique does not seek to escape from categories but rather to show how they came to be, and what other possibilities there are." While the categories within my datasets circumscribe the ways that bodies can be (re)defined, identifying for instance who is white and who is black, and whose participation in war is worthy of note, they also provide a view of which abstractions were relevant in dominant contemporary discourse (Anderson, 1988), and as Hooper (2001) reminds us these abstractions and the way they shaped perceptions had material consequences for those so categorized. Numbers can be mobilized to downplay or accentuate. For instance, late twentieth century critiques of the then-hegemonic 'mud, blood and futility' narratives

[128] The poems in Huston's edition of *I was there* get progressively more disturbing from page to page. The last pages of the copy in his archival box actually appear to have been cut out, although it is difficult to tell if their absence is simply the result of poor binding, and it is difficult to surmise whether the (possibly) missing portions continued the darkening trend as the order of the other editions I have found do not match (Baldridge & Baukhage, 1919).

of the Great War stressed that the number of the casualties in the First World War were far lower than those of the Second (Terraine, 1992). Other historians countered: the basic army unit of the turn of the century was a division (~16,000 men), which, at full strength on the march, stretched 14 miles (Keegan, 1998, p. 87); tests done by the British Army at the Musketry School in Hythe in 1907 calculated that given 600 yards of intervening field, two maxim guns would take but one minute “to annihilate a battalion [~1,000 men] advancing in open order” (Evans, 2001, p. 25).[129] “Counting does not remove meaning,” M. W. Wilson (2011, p. 865) insists, rather we need to be aware of the meanings it is made to support.

Against forgetting: a summary of substantive results:

In my dissertation, numbers and categories support my argument that rural Americans’ experience of the first global industrialized war is worthy of deeper, more incisive, more geographically-informed study and indeed what might be called academic remembrance. A number of reasons have been offered to explain why the average American does not remember the First World War. Jay Winter writes that "the Great War was too short and too limited in its devastation to American troops to be inscribed indelibly in collective memory, defined, as Maurice Halbwachs insisted, as the memory of small collectives, the first and foremost of which is the family" (Capozzola et al., 2015, pp. 490–491).[130] In other words, Winter argues that while some households or communities were affected by the sacrifices of war, Americans lacked the critical mass of tragic experiences and losses for the First World War to embed itself in the national psyche the way it had in other countries’ (see also Faust, 2008). As seen in

[129] Numbers given are for British divisions and battalions; “unwieldy” American ‘square’ divisions had 28,000 members (“British Army organisation,” n.d.; “World War I: birth of the modern army division,” n.d.).

[130] By the numbers, 20% (four and half million) of the United States’ draft eligible males served, of whom 87,900-117,000 of the committed forces died (Keene, 2011, p. 33; Prost, 2014). In comparison, the United Kingdom sent 6 million men to a battlefront that could literally be heard in England and lost 715,000-761,000 men (Prost, 2014; Usborne, 2014).

Chapter 2, however, military life (or unmeasured characteristics associated with it) did have an effect on families in terms of household relationships, effects which are no less real for not having been remembered as vividly as the impacts of other wars. In both the tested census-only groups (men born 1875-1901 and men born 1886-1899), WWI veteran status was associated with a higher chance of being married after the war amongst those known to be single at its start. On the other hand, while there are apparent differences in postwar marital outcomes amongst groups that can only be distinguished once detailed military records are attached to the census, these differences are not as dramatic as might be expected from demographic studies of other wars or combatants, or from popular discourses surrounding the Great War that are grounded in the European experience. The probability of being married in 1930 for those linked roster individuals known to be unmarried prewar was higher for those who volunteered, those who served overseas, and those who received a promotion, but only by a few percentage points. The effect size of overseas service is large, increasing the odds of marriage for the linked North Dakota soldiers analyzed here by up to 20% all things being equal, but marriage was also an important an normative life course transition that most men of these ages experienced regardless of how they spent the war years.[131] Winter may be half right: the weight of extreme outcomes was insufficient to make a persistent, popularly apparent mark, but more moderate outcomes were sufficient to provide subtle evidence of military-civilian relationships when they are made legible though statistical analysis.

[131] Recall from Table 2. 8 that while volunteering and promotions are always a significant predictor of postwar marital status, overseas service is significantly predictive at $p<0.05$ only for the larger, less constrained linked dataset; such service is significant at $p<0.1$ for the smaller, more constrained link dataset.

A diversity of experiences and emergent patterns:

Other historians have argued that America's amnesia surrounding the Great War arises from a failure to apply a dominant meaning to the conflict (cited by Keene, 2014, p. 14). Indeed, rapid and unsettling changes in the nineteenth century had already combined with a dramatic increase in literacy to produce a splintering of narratives about how individuals fit into a world of competing knowledges, classes and nation states, and the disruptions of the First World War only exacerbated this trend (Corrigan, 2003; Gildea, 2003; Grieves, 2004; Stephen, 1996; Winter, 1995). As Jay Winter (2004a) writes in *The language of mass death*, "the impossibility of understanding what was happening and the ways in which to refer to it in 1914-18 – and for years after – produced all kinds of poems, novels, memoirs," and there was a strong public demand for these various explanations of the war. World War I was the first war in which more of the wounded survived than died, in which more men were able to return with their own meanings of bodily injury than be silenced (Beckett, 2002, p. 151).

It is no wonder that there was a diversity of memories about the war, arising as they did from a diversity of emplaced, embodied experience trajectories. In Chapter 4, I presented visualizations that conveyed some of this heterogeneity. The geography of the articulations between civilian and military life was shifting and dynamic, and while some individuals found themselves within one of the larger flows of soldiers moving from service location to service location others traced one of myriad thin threads from draft registration to discharge to 1930 residence (Figure 4.5). Soldiers' mobility was something remarked upon in contemporary popular culture, and this social and spatial mobility is not only visible in the Chapter 4's flow diagram, but also in the census-based statistics that introduce Chapter 3. Across the country, among native-born men in the WWI Cohort (men born 1880-1902), and among farming men within that group, WWI veterans were significantly more spatially mobile over their lifetimes than expected (Tables 3.2 and 3.3). However, delving deeper into the data with North Dakota's linked data, the variety of outcomes in social mobility, spatial mobility, and postwar social status amongst different subsets of the veteran population become apparent. A host of civilian and military variables predicted disparate wartime and postwar characteristics and intersected with each other in complex ways. Prewar occupation and marital status significantly predicted service duration (Table 3.9). The inclusion of service duration wiped out the significant effects of prewar characteristics on the modeled probability of service overseas (models 1 and 2, Table 3.10), suggesting that military service was the sort of logistical "machine" that Derek Gregory (2015) describes: once placed on the conveyor belt of military service it seems a man of whatever background would find himself moving almost inevitably towards the European theater. Yet the influence of these civilian characteristics reasserted themselves when predicting frontline service, with nativity, prewar occupation, and even the urban character of the draftees' county of service entry significantly interacting with the share of service spent abroad to predict the chances of being in a named sector or engagement (models 3-6, Table 3.10).

As described in Chapter 3, the convolutions of military and prewar civilian characteristics were such that I was compelled to simplify my analyses, but the diversity of relationships, reflective of the diversity of experiences, continued to manifest themselves. Much as in Chapter 2 a significant interaction with age suggested that military service was linked to a variety of outcomes (with veteran status in the census being related to positive marital outcomes but only for those who were younger and the odds of marriage being best for the linked 24-year-old, worst for the linked 31-year-old, and decreasing with increased service duration), in Chapter 3, service duration and location of service had inconsistent effects on SEI and mobility across different subpopulations and were involved in significant interactions with civilian characteristics. When considering men of all prewar occupations, there was a stronger effect of occupation itself on postwar spatial mobility, but location of service had differential effects *within* occupations: there was a bigger spread in the chances of a postwar intercounty move between overseas and domestically serving men who had been farming before the war than between overseas and domestically serving men who had been blue collar workers, for instance. While farmers were less likely to move and blue collar workers more likely to move relative to each other, overseas service was associated with a greater likelihood of moving within the farming subpopulation and a (tiny bit) lower likelihood of moving within the blue collar population. Aligning with Chickering's (2007, p. 469) assertion that the experiences and identities of individuals in wartime were transectional – that is, that experiences and identities were not shaped by just one individual characteristic like age, race, occupation, or religion, but the unique combination of those characteristics – I also found that while a change in a single variable might have only a small effect on the predicted outcome, small effects did add up. Thus, for the two fictional individuals in Chapter 2, while both were more likely to be married than not, combining shifts in age, nativity, service duration and promotion added up to an 8% difference in their chances of being married in 1930.

Such diversity supports Woodward's (2005) call for geographies of militarism, showing the need to expand and deepen the purview of military geography. My analytical chapters show that we need to consider not just military but also civilian contexts to try to account for different soldiers' outcomes. Formerly farming draftees are more spatially mobile if they came from (were registered in) a more urban county or a county where wheat was a less important crop (Table 3.17). Chapter 4's figure 5 visualizes how the flow of soldiers helped create the postwar civilian context they inhabited. Chapter 5 continues on from Chapter 4's argument that hybrid individuals constitute hybrid population geographies. In examining how veteran populations diverged from overall farming population trends in their associations with America's changing and regionally disparate agricultural contexts, Chapter 5 also shows that veterans' outcomes were not just related to their status as veterans but also civilian place characteristics. Finally, within the subpopulation of linked North Dakota soldiers who had been in farming occupations, I found evidence that men might have made intercounty moves for the purposes of volunteering, and that these moves were not being driven by the conditions where they lived their everyday lives (assuming that they were living in the counties where they registered for Selective

Service) (Tables 3.14-15). In other words, at least for some men military service may have been an opportunity for affirmative choice rather than simply a reaction to conditions or an expression of state power plucking them out of their civilian milieu and into the army. Place shaped rather than determined outcomes and individuals had the agency to reconfigure their spatial and social relationships.

In my dissertation I have also argued that we need to expand military geographies through a broader appreciation of what military spaces are. In Chapter 3, among formerly farming drafted veterans, experience of the traditionally defined places of war, the overseas theater and the frontline, do predict lower chances of postwar intercounty mobility, but their effects are statistically insignificant (Table 3.17). What is consistently significant, however, is the effect of service duration. The longer a farming individual spends in a military space, broadly defined as not just a battlefield but anywhere one is under military discipline, the more likely he is to move after his service. Someone serving 6-12 months in a military space is 46% more likely, serving 12-18 months 69% more likely, and serving more than 18 months 74% more likely to move counties than someone who serves six months or less, even when controlling for individual characteristics and moves made before the war started or his own service began. That part of an individual's time in military space was spent in a training camp embedded within the domestic borders of the United States suggests that military and civilian places were not impermeable. As seen in Chapter 5, based on the distribution of the farming WWI Cohort population in general, there is little evidence that the conditions associated with modernization were keeping the farming population on the farm, in spite of the Country Life Commission and other Progressives belief that they would. For veterans in contrast, in the Midwest, some modern conditions were associated with higher farming populations: counties with more large farms and counties where farm values had been rising had higher farming veteran populations than expected. In other words, military service appeared to have effects that could be measured in postwar civilian spaces. That secular civilian trends and individual service were important predictors of individual and population outcomes suggests the multiscalar nature of these connections.

Finally, it is important to note that some of the outcomes veterans appeared to be disposed towards through their military experience were unexpected in the light of the more dominant popular narratives of the war borrowed from European collective memory. In Chapters 2 and 3, marriage and spatial movement are predicted by characteristics that are traditionally associated with prosperity: being a third generation American and having a higher SEI. However, these outcomes that are generally thought of as marks of higher social standing are also positively predicted by being a WWI veteran. Although farming veterans' SEI across the country is slightly lower than that of their non-veteran farming peers, amongst all the WWI Cohort, military service actually predicts a significantly higher SEI. In Chapter 5, at least some farming veterans are associated with places where farming appears to be more prosperous. Again in Chapters 2 and 3, frontline service, if service in such places has any significant effect at all, is not universally detrimental, a surprising finding given other life course demography studies (MacLean & Elder, 2007). In short, the service members in the roster were not "a generation of men who, even though they may have escaped the shells, were destroyed by the war" as in well-known Great War literature (Remarque, 1982). Nor were they necessarily a group with improved postwar prospects founded in their service, as government propaganda had promised (James, 2009; Rawls, 1988). They were, rather, individuals shaped by uniquely American and uniquely First World War military and civilian contexts.

Returning then to the question of America's lack of memory about the first global, industrialized war, and indeed the first war in which the United States drafted large numbers of men for an overseas expedition, the problem is arguably not that there is no *dominant* narrative, but that there is *only one* narrative. In the literature about war commemoration, Foss (1986) and Jarman (1997), among others, have argued that memorial objects and practices actually gain their acceptance and power through the very ambiguity of their messages.[132] Mansfield (1995, p. 2), whose study of uniformed rural veterans' use of war memorials to legitimize their political demands was cited in this dissertation's introduction, writes that while such memorials were once the flashpoint of class conflict, they have come to be "perceived as embodying a harmony and sense of purpose" that has since been lost. Similarly, Steven Trout (2006, p. 202) writes that it was not any lack of contemporary "intense disagreement" or "widespread uncertainty over the meaning of… participation in World War I" that has given American memorials their present seeming innocuousness, but rather "growing public apathy" with temporal distance from the event. What these authors contend, and what the results I have reported in this dissertation support, is the argument that loss of memory stems from the loss of contestation, the loss of different appreciations of the war founded in different experiences of the conflict and shaped by different relationships to places. Quantitative methodologies have been accused of dehumanizing and deindividualizing, but what comes through here in the nuances that can be interrogated with linked, spatiotemporally located data is the diversity that needs to be honored for the Great War to be remembered.

Where do we go from here? Future work:

From each chapter of my dissertation there is an opportunity for further work reinvigorating American Great War historiography through an appreciation of difference. In Chapter 2, I used a household outcome, marital status, primarily to demonstrate the usefulness of record linkage. However, veterans' households are also of substantive interest. Campbell (2004, p.442) contends, "the household

[132] R. J. Wilson's (2012, p. 101) piece on New York City provides further examples of people's ability to adapt even those monuments that were meant to have but one, hegemonic interpretation: memorials needed official planning approval and were intended to further the project of Americanization, but they "also acted as a means of validating [subaltern groups'] own presence in the city, stressing their place in the history of the United States… [and] became anchors for citizens, attaching them to their place in the city and the country" while also "enabling bereaved families to remember their relatives."

[is] the most basic unit of social and economic organization in the past," providing the "social, physical, cultural and emotional infrastructure" that goes on to shape the macroeconomics and neighborhood patterns (Beveridge, 2011; Marston, 2000, p. 234; Fishman, 1990, cited by Buzar, Ogden and Hall, 2005; Greenow, 1985). It is within households that normative roles are inculcated and that decisions about (re) production and consumption are made (Nyberg 2000, Sassen, 1991, both cited by Buzar, Ogden and Hall, 2005). Households are interesting from the perspective of Great War studies specifically not only because of how wartime discourses negotiated the conflicting family and patriotic loyalties of both service members and their relatives, but also because most soldiers served during a "demographically dense" period of their own life courses (Goldscheider & Goldscheider, 1994, p. 2) and during a historical period marked by broader contemporary structural and attitudinal changes that affected the family lives of draft-age men, especially in rural areas (Garner & Slattery, 2012; Goldscheider & Goldscheider, 1994, p. 2; Ruggles, 2007; Van Emden, 2011). In particular, patterns of young adults moving out of their parents' homes shifted over the twentieth century, with changes in the average age of this transition, changes in parents' living conditions, and changes in which factors predicted parental co-residence (Gratton & Gutmann, 2010; Gutmann et al., 2002; Merchant, Gratton, & Gutmann, 2012; Ruggles, 2007). Rural contexts inflected these patterns as from the nineteenth century until 1930 the probability of inheritance was a strong predictor of home leaving for farm boys, as young people who lived on farms left home later than those who lived in other circumstances, and as farming was highly correlated with co-residence for both younger and older generations (Florey & Guest, 1988; Gutmann et al., 2002; Ruggles, 2007). Further, although family needs still had a large effect on whether and when individuals left their households of origin, the timing of this and other transitions also became increasingly homogenized during the early twentieth century, a change credited with increasing the segregation of sexes and generations, a supposition of great interest considering the dominant narrative of the Lost Generation (Hareven, 1977; Hareven & Masaoka, 1988, p. 58).

With the existing linked dataset and the 1930 census data, one can already ask whether military service or military service of particular types was associated with who left home at all, for indeed Goldscheider & Goldscheider (1994, p. 14) note that before 1929 up to a quarter of children never left their childhood households and that about of a third of the children in their study's 1920s and Great Depression cohorts returned to their parents' home. Linking the roster back to a prewar census would provide a way of testing whether childhood characteristics were predictive of military service as a particular method of home leaving. In fact, I have already successfully linked a portion of the roster to the 1910 census and begun to explore such household dynamics (Cunningham, 2018b). Following life course theory's "principle of linked lives," the identification of other childhood household members also opens the possibility of measuring whether a man's service affected the outcomes of his parents or siblings (MacLean & Elder, 2007, p. 177).

Chapter 3 modelled social and spatial mobility using binary variables: did a person leave a farming occupation or not? Did an individual make an intercounty move after entering military service or not? Were these outcomes predicted by whether or not a person had made a move earlier in life? However, other ways of describing movement may be illuminating. For instance, the distance of the move could be an interesting outcome. Consider Ekamper, Poppel and Mandemakers' (2011, p. 120-21) study of nineteenth and early twentieth century Dutch endogamy. The authors discuss the malleability of space-time with the extension of transit networks, and thus the ability of brides and grooms from different places to meet and marry, but they also comment upon changes in the marriage market driven by the expansion of a common school curriculum, conscription and "national newspapers and political and economic integration" which broke down "mental barriers" between places that had previously hampered marriages to those "perceived as strangers." With alterations in space-time, the "scale of everyday life" was transformed to different degrees dependent on social class. Perhaps there were differences in not just whether a veteran could move, but how far he could move. Perhaps some veterans had characteristics that made them better able to annihilate space by time. Lee (2008) found that both the distance and the direction of Civil War soldiers' deployment were predictive of their spatial mobility after the war. He posits that the prior experience of moving provided such mobile men with more first-hand knowledge about possible destinations, but also gave them the skills and the nerve to do so. Perhaps some veterans learned about distant opportunities and gained models of mobility from their comrades as US Colored Troops who served with men from other regions did in the Civil War (Costa & Kahn, 2008). Perhaps some soldiers had more incentive to move farther. Using the same dataset as Lee, Costa & Kahn (2004) found that Union soldiers who had deserted were more likely to make an interstate move than men who had not, particularly if they had come from areas that strongly supported the war. With the unit and locational information available in the linked dataset, one could measure if service time exposure to more novel places or individuals hailing from them promoted more distant moves to particular destinations.

Chapter 3 focused on civilian and prewar origin place characteristics as possible drivers towards or brakes upon mobility. Perhaps the characteristics of a destination had differential draws depending on an individual's background. A number of informants in the North Dakota State Archives' collections describe their arrival in North Dakota as coming to a frontier full of possibilities: "when we first came here it was all prairies, no farm land" (Boknecht, 1974)*;* "I had always thought of it as a frontier state… the air seemed to be more invigorating and easier to breathe" (Menge, 1953, p. 8). Yet, interviewees also noted how quickly the landscape changed from one of "raw prairie" to one plowed by "great big tractors," and what might have been lost in the process: when they "broke up all this sod, that's when they made the mistake in the first place" (E. Lewis, 1975). Other authors have commented on the lingering geographical imagination of the frontier and how it played into perceptions of foreign military service (Cather, 1922; Trout, 1999), or into feelings of entrapment (Danbom, 2017). Did new frontiers –

agricultural, urban, economic – beckon particular types of veterans from particular types of origin places?

Chapter 4 focused on alternative aggregations of data and visualizations, but only scratched the surface. Perhaps the most compelling analysis Laschever (2013) performed was his examination of overlapping contexts, with each soldier at the center of a company and at the center of a postwar neighborhood. With the locational data in the roster and the 1930 census, this methodology invites adaptation to the North Dakota soldiers and the various multiscalar contexts in which they were embedded. Aitken & Crane (2009) and Travis (2015) argue that GIS and other visualization technologies allow data to be quickly and easily interrogated in exploratory and iterative ways. Having looked at the florescence of entry and discharge locations and the flows through places – "conjunctures of trajectories which have their own temporalities" (Massey, 2005, p. 139) – I could attempt to trace overseas movements in more detail. Having mapped deaths, I could extend corporeal trajectories to final conjunctures at burial locations.

Death, loss and absence are topics that are central to the understanding of militarism and the discursive construction of meanings that allow war deaths to continue to accumulate (Schantz, 2008). They are also topics with which the various subdisciplines of geography continue to struggle (Romanillos, 2015; Tyner, 2009; Wylie, 2009). It is far easier to deal with bodies that are alive, present, and experiencing than those that are dead or missing, an emphasis that Romanillos (2015, p. 565) has called geography's "normative vitalism." Yet, as Gough (2010) argues, the authority to speak on the experience of war falls not only to soldiers far from home, but to its most heroic or pitiable victims. In Chapter 4, I delved however shallowly in to war deaths and their spatialized significance. Any effort to further improve our understanding of postmortem geographies would be a worthwhile endeavor.

Throughout the dissertation, I focused primarily on North Dakota. North Dakota presents a fascinating agricultural story: rapidly developing in terms of farmland, farm value and mechanization in the decades surrounding the turn of the century, and crashing hard in the aftermath of the Great War (Higbie, 1997). However, as seen in the final analytical chapter, other parts of the country were marked by patterns of race, class, tenancy, and farm size worthy of analysis in their own right, not just as a comparison to this quintessentially Northern Great Plains state. In Chapter 5, the South, with its unique racial, occupational and agricultural make up stood out as a region of interest.[133] We already know that African Americans comprised a greater percentage of WWI service members than they did of the population as a whole (Chambers, 1987, p. 225). We know that this was the era of the Great Migration, a period when labor agents came south promising higher wages in northern war-work factories even for unskilled workers, but also a period of apparent positive selection of migrants (Danbom, 2017, p. 119; Tolnay, 2003). We know from Tolnay (2003) that African American migrants tended to have urban rather than rural origins, however, we also know that this was the start of the transition that would cause African Americans to be "virtually entirely uprooted from farming" (Lobao & Meyer, 2001, p. 109). We know from Fligstein (1981, cited by Tolnay 2003, p. 215) that "those areas [counties] affected most strongly by the reorganization of southern agriculture, and by the increase of farm mechanization, experienced the heaviest out migration," but we also know that the relative labor shortage caused by the half million laborers and sharecroppers that left the south between 1916 and 1921 "improved terms for those who stayed" (Danbom, 2017, p. 170). We know from Doetsch (2012, p. iv) that white veterans were more likely to move during the Great Migration than white non-veterans. However, we still do not know much about how all these elements interacted, or how these interactions varied spatially.

Tenancy is a bit difficult to approach, as it is only recorded at the aggregate level. However, an examination of farm laborers would be instructive. As the cross tabulations on the WWI Cohort in Table

[133] In 1930, the census-defined region of the South had 22 times as many nonwhite cohort members as the Midwest and with more than a quarter of its males aged 28-50 being nonwhite, the South's racial makeup was unique.

6.1 show, both race and veteran status intersected with labor in interesting ways: amongst the farming cohort, the number of non-whites and the number of veterans who are described by the census as farm laborers versus farmers is significantly higher than expected. Nationally, among the farming cohort and without other controls, World War I veterans are 22% more likely than civilians to be farm laborers rather than farmers. As has been mentioned, the early part of the century was a time of prosperity for many farmers, however, as Higbie (1997, p. 409) notes of the Great Plains, "harvest wages remained stable over the pre-war years, but the cost of living did not. The purchasing power of farm labor in general steadily declined as the cost of living increased between 1906 and 1916." He continues that even while laborers were paid more during the wartime boom, in most years their purchasing power lagged, and that after the war ended their "wages dropped 33% to the lowest level since 1906." Finer categorizations of the agricultural population could uncover more of these nuances and how they affected veterans.

Table 6.1: Cross-tabulations of being a farm laborer with veteran status and with race in 1930
Amongst the WWI Cohort (males born 1880-1902) in a farming occupation in 1930

		Veteran status				Race		
		non-veteran	veteran	total		non-white	white	total
farmer	frequency	2,602,021	303,318	2,905,339 (76.86%)		437,751	2,467,588	2,905,339 (76.86%)
	expected	2,588,547	316,792			499,556	2,405,783	
farm laborer	frequency	765,843	108,848	874,691 (23.14%)		212,203	662,488	874,691 (23.14%)
	expected	779,317	95,374			150,398	724,293	
total	frequency	3,367,864 (89.1%)	412,166 (10.9%)	3,780,030		649,954 (17.19%)	3,130,076 (82.81%)	3,780,030
chi squared				2779.6***				39906.5***
Cramer's V				0.0271				-0.1027

Notes: 'farming' includes those coded as farmers and farm laborers in IPUMS data. WWI veteran status defined by IPUMS veteran coding and parsed 'Which war?' column text.

In Chapter 5, I used the average farm value across the county, categorized farm size as a binary rather than the eleven categories provided by the agricultural census, and did not distinguish between owners (who owned all the land they operated) and part-owners (who also operated rented land, at least some of them to make economical use of their other resources), nor between tenants who paid their rent in cash and sharecroppers (United States Census of Agriculture, 1952, p. 73). Type of farm, including “crop-specialty,” “cash-grain,” and “self-sufficing” have not yet been transcribed (US Census Bureau, 1932a). Including more detail on these characteristics may help to disentangle the intersections of race, class, resources and veteran status. In this dissertation I used census-defined regions, but within these coarsely drawn boundaries the West includes both portions of the country characterized by ranching and the vegetable and fruit growing regions of California, at this time already worked by migrant labor; the South both the cotton belt and Appalachian farmsteads (Hurt, 2002, p. 276); the Midwest both the Northern Great Plains, with its history of commercial agriculture and early adoption of (albeit initially horse-drawn) mechanization, and the old northwest, a region that was and is far more industrialized and that abandoned wheat production for corn and dairy in part due to its inability to compete with the bonanza farms farther west (Hurt, 2002; Mondale, 1998). Finer regimes might do a better job of balancing the similarities and differences among neighboring geographies.

Beyond the promise of employing alternative fixed effects, geographic variability also encourages future work on other US states that also have WWI military records. Rosters were published for (at least) Connecticut, Colorado, Maine, Maryland, Nebraska, North Dakota, Ohio, South Carolina, Utah and Vermont, although not all of them have a sufficient level of detail to extend the analyses conducted here (Adjutant General, Colorado National Guard, 1941; Fraser, 1931; H.T. Johnson, 1927; Nebraska Secretary of State, 1925; Ohio Adjutant General, 1926; *Roster of Maine in the military service of the United States and allies in the World War, 1917-1919*, 1929; *Connecticut men and women in the armed forces*, 1941; South Carolina Adjutant General, 1932; State of Maryland, 1933; Warrum, 1924).

Four of these states' rosters have been scanned by HathiTrust. Other forms of military service records are extant for California and Georgia (Ancestry.com, 2018a, 2018b). Barbara Gannon's team at the University of Central Florida has been manually transcribing Florida's service records ("Florida in World War I," 2017). While North Dakota's records have allowed me to examine a long-neglected group of veterans, the handful of other extant state records would allow me to study other subpopulations. South Carolina and Maryland's records would help to quantify racial patterns of service in the era of the Great Migration; North Dakota's nearly all white population cannot speak to these questions. Ohio's records, containing locational and relationship information for casualties' next of kin would illuminate a geography of loss; the United States' relatively low death rate is a threadbare excuse for the country's WWI experience remaining a historiographical blind spot, and mapping these data would answer calls from across the field of geography to engage with the spaces of absence and mortality (McGeachan, 2014; Tyner, 2015; Wylie, 2009). Utah's military rolls, while more difficult to access, could be paired with the archived questionnaires completed by the state's veterans to delve into more qualitative aspects of service, for instance how combat affected the spiritual beliefs of soldiers, sailors and nurses.

Conclusion:

Advancing Great War historiography and geographies of militarism:

John Edward Leahy's materials in the state archives at Bismarck include the official record of his military life, his enlistment papers noting his marksmanship and horsemanship skills, his "knowledge of any vocation" or trade, his "physical condition when discharged," "character," and whether typhoid and paratyphoid prophylaxis was completed. His folder also contains the stamped railroad ticket he used to leave Camp Dodge after his demobilization and an envelope from the 1950s with final instructions in case of serious illness or death: to be taken to the veterans' hospital where he had been several times for lack of funds, to be buried beside his daughter in "Lisbom No. Dak [sic]" ("John Edward Leahy

#1549," 2000). John Leahy, like every American soldier, brought the Great War home. He did so by making localized militarization blatantly visible as his individual body was brought under military discipline and constituted into a population under arms in a small Dakota town. He did so in the accumulation of emplaced military service experiences that he carried back with him, whether from an overseas trench or an out-of-state training camp, experiences that evidently shaped his choices and opportunities in domestic life, and through them emergent population characteristics in the postwar places he inhabited, even places as seemingly distant from the conflict as North Dakota. Every American soldier mediated between "civilian" and the "military", between the rhetorically resonant places of home and front. He did so in ways that his contemporaries felt moved to record in documents like the *Roster* and the census and that can be empirically described. In the *Roster* we find that Leahy registered for service in the same county where his daughter was buried, and that he served in the 405th Telegraph Battalion at St Mihiel (Fraser, 1931, p. 1851). An electrician before the war, in 1930 he is listed as a "[telegraph or telephone] lineman;" a widower with three children.

As a particular place, North Dakota provides an interesting lens to examine the First World War's geographies of militarism, as an American place, as a rural place, as a place where a geography of modern, industrialized, global war collided with a geography born – quite recently – of frontier direct and structural violence. The United States presents a novel opportunity to study the First World War quantitatively in even the most basic of ways: the Census Bureau apparently never cross-tabulated 1930 veteran status with other characteristics or compared WWI veterans to civilians in its summary publications. This dissertation has added substantively to what we know about the Great War. What the roster and census also provide, however, are the basic materials for an interdisciplinary, social sciences counterpoint to the critical-cultural forefront of Great War historiography. This dissertation demonstrates a new perspective on the contextualized individual, the individual who moves, marries, and makes decisions within certain constraints to build up emergent societal, population and spatial patterns, patterns that then reciprocally influence individual actions and choices in a dynamic, co-constitutive relationship. Formalizing the connections between individuals and places, as well as the connections between places made via individuals, the techniques of spatial analysis and historical demography help make ordinary veterans' lives legible. The readings thus derived are imperfect, based on archival and official traces and pointing but crookedly to lived, emplaced, embodied experiences. Yet they also illuminate some of the diversity in those experiences and places missed or subsumed in qualitative studies.

The groundswell of (largely European-focused) interest in the Great War provoked by the centenary – and the vociferous debate over whether the fruits of this interest are factual or truthful – are expected to die down now that the centennial of the Armistice has passed (Faulkner, 2013; "Great War Forum," 2018; Todman, 2005). As tragic as it would be for the American experience of WWI to once again fade into obscurity, so too would it be a disappointment if that renewed if temporary interest was not channeled into a dialogue about the persistent and far-reaching implications of all military conflicts. The First World War in some ways stands in contrast to subsequent American wars: after the Great War America once again became isolationist; the aftermath did not see the institution of new social programs like the Second World War did, with the GI bill moving men from military to the middle class and funding suburbanization (Humes, 2006; Keene, 2015). In other ways, there is evidence of continuity: recent studies by the USDA and the Census Bureau found that rural veterans had different demographic and employment attributes than rural non-veterans and urban veterans (Farrigan & Cromartie, 2013; Holder, 2017). The relationship between rural populations and military service, and how this relationship is perceived is still politically relevant (Berkes, 2007, 2011). The First World War has been described as a total war, not only because its causes and effects stretched across the globe, but because they operated from the scale of geopolitics down into the intimacies of everyday life (Chickering, 2007); arguably all wars since have shared these characteristics. The historical geography of the Great War provides points of engagement with geographies of militarism that speak to the nature of armed conflict in our own time.

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I came upon Sergeant Brian Turner's (2014) memoir, from which the title of my dissertation is drawn, near the start of my PhD. *My life as a foreign country* caught me with its title, evocative of literature on historical geography that I had recently read (Basso, 1996; Lowenthal, 1985), but also strange in its juxtaposition of the intimate and the unfamiliar, and its collapsing of the scales between nation and individual. Glancing over the pages in the airport bookstore, seeing that Turner is a veteran of the war in Iraq and a poet – a modern, American war poet both like and unlike the British War Poets who so shaped the understanding of the Great War – I decided to buy the book. The chapters move between the battlefield and inescapable memories of it in America, of his own war, of his father's and his grandfather's. Of all the references to the lingering connections between home and front, the sentences that resonated most were those that I reproduce here as this chapter's epigraph. They reflect the perpetual struggle to make sense of war through reference to the individual and reference to context, measured and qualified by various means. They also speak of connection, alienation, and a desire to ignore or forget. I read in these words a lament not only that there is not enough room for these important stories, but that there has not even been an attempt to make that room; I read Doreen Massey's call for an explicitly geographical framework. With my dissertation, I hope I have provided enough space to accommodate a diversity of military experiences and outcomes, to enable an informed remembrance of a conflict that has only just left living memory. I hope I have provided an academic space for the Great War to come home to America. For indeed, it was always already here.

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Appendix

Appendix Table 3.1: Predicting service location from civilian prewar predictors and entry method among all linked rank and file soldiers										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Outcome:	Overseas	Overseas	Overseas	Overseas	Overseas	Overseas	Frontline	Frontline	Frontline	Frontline
2nd generation	0.0212 (0.106)	0.0173 (0.104)	0.0479 (0.112)	0.0495 (0.113)	0.0844 (0.138)	0.0856 (0.136)	0.00773 (0.106)	0.0167 (0.107)	-0.142 (0.134)	-0.150 (0.137)
3rd generation	0.190* (0.087)	0.182* (0.087)	0.0824 (0.095)	0.0847 (0.095)	0.0209 (0.122)	0.0218 (0.122)	-0.0153 (0.097)	-0.0713 (0.098)	-0.318* (0.136)	-0.334* (0.137)
Married prewar	-0.405^{o} (0.209)	-0.396^{o} (0.211)	-0.521* (0.239)	-0.530* (0.236)	-0.164 (0.281)	-0.175 (0.285)	-0.486* (0.232)	-0.526* (0.241)	-0.307 (0.262)	-0.321 (0.267)
Blue collar	0.485*** (0.085)	0.555*** (0.116)	0.403*** (0.116)	0.378*** (0.080)	0.225* (0.093)	0.231* (0.093)	0.0867 (0.097)	0.0227 (0.094)	-0.472*** (0.133)	-0.460*** (0.127)
Student	-0.205 (0.201)	0.646** (0.224)	0.491* (0.226)	-0.247 (0.173)	0.0750 (0.264)	0.132 (0.268)	-0.593^{o} (0.321)	-0.624* (0.307)	-0.563^{o} (0.317)	-0.621^{o} (0.325)
Unspec. Lab.	0.315* (0.131)	0.353* (0.161)	0.217 (0.153)	0.304* (0.125)	0.0113 (0.130)	0.0232 (0.132)	0.206 (0.131)	0.189 (0.132)	-0.115 (0.169)	-0.131 (0.170)
White collar	0.0228 (0.095)	0.214^{o} (0.119)	0.124 (0.124)	-0.0350 (0.093)	0.0367 (0.095)	0.0305 (0.095)	-0.199^{o} (0.110)	-0.239* (0.109)	-0.429*** (0.124)	-0.452*** (0.126)
Entry county % urban	-0.000319 (0.002)	0.00545* (0.003)	-0.00460^{o} (0.003)	-0.00829*** (0.002)	-0.00855*** (0.002)	-0.00792*** (0.002)	-0.00228 (0.002)	-0.00605*** (0.002)	0.000853 (0.003)	-0.000136 (0.003)
Blue collar # Entry county % urban		-0.00544 (0.003)	-0.00277 (0.004)							
Student # Entry county % urban		-0.0242*** (0.005)	-0.0205** (0.006)							
Unspec. Laborer # Entry county % urban		-0.00335 (0.005)	0.00470 (0.006)							
White collar # Entry county % urban		-0.0106*** (0.003)	-0.00891* (0.004)							
Volunteered			1.844*** (0.173)	1.836*** (0.171)	-0.499* (0.229)	-2.232** (0.832)		0.754*** (0.118)	-1.516*** (0.214)	0.820** (0.308)
Months in service					0.952*** (0.039)	1.048*** (0.074)			0.168** (0.064)	0.170* (0.069)
Duration squared					-0.0206*** (0.001)	-0.0249*** (0.003)			-0.000304 (0.002)	-0.000181 (0.002)

Volunteered # Months in service						0.104* (0.051)				
Proportion of service abroad									6.283*** (0.286)	7.215*** (0.287)
Volunteered # Proportion of service abroad										-3.505*** (0.516)
Constant	-0.839** (0.318)	-0.912** (0.317)	-1.931*** (0.335)	-1.864*** (0.334)	-8.556*** (0.729)	-8.901*** (0.917)	-1.939*** (0.353)	-2.327*** (0.337)	-5.539*** (0.622)	-6.381*** (0.650)
Observations	4859	4859	4859	4859	4859	4859	4855	4855	4855	4855
AIC	6611.2	6594.3	6134.7	6145.5	3751.8	3738.6	5970.2	5887.5	3208.2	3162.3
Fixed effect:	age	age	age	age	age	age	age	age	age	age

Reference categories: for nativity: foreign born; for prewar occupation: farming.
Standard errors in parentheses, clustered by county.
° $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix Table 3.2: Predicting the location of service for linked rank and file draftees only, using a linear probability model (compare to Table 3.10)

	(1)	(2)	(3)	(4)	(5)	(6)
Outcome:	Overseas	Overseas	Frontline	Frontline	Frontline	Frontline
Second generation	0.0304	0.0306	-0.00455	0.00514	-0.00790	-0.00472
	(0.028)	(0.020)	(0.018)	(0.010)	(0.018)	(0.018)
Third generation	0.0426	0.0204	-0.0414*	0.0118	-0.0451*	-0.0413*
	(0.027)	(0.019)	(0.018)	(0.008)	(0.018)	(0.018)
Married prewar	-0.128^{o}	-0.0194	0.000855	-0.00292	-0.0000401	0.00160
	(0.066)	(0.046)	(0.030)	(0.029)	(0.029)	(0.030)
Blue collar	0.0988***	0.0277	-0.0580***	-0.0598***	0.00146	-0.0579***
	(0.024)	(0.018)	(0.017)	(0.017)	(0.006)	(0.017)
Student	-0.0601	0.0490	-0.0201	-0.0248	0.0133	-0.0233
	(0.037)	(0.041)	(0.026)	(0.026)	(0.011)	(0.026)
Unspec. Laborer	0.0619^{o}	0.000243	0.00120	-0.00143	0.00145	0.00154
	(0.032)	(0.021)	(0.022)	(0.022)	(0.011)	(0.022)
White collar	0.00872	0.0202	-0.0405**	-0.0412**	0.00802	-0.0421**
	(0.025)	(0.015)	(0.015)	(0.015)	(0.006)	(0.015)
Entry county % urban	-0.000464	-0.000117	-0.0000374	-0.0000259	-0.0000785	0.000575***
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Moved state, birth-entry	0.0206	0.0109	-0.00142	-0.00176	-0.00226	-0.00175
	(0.023)	(0.015)	(0.010)	(0.010)	(0.010)	(0.010)
Months in service		0.144***	-0.0188***	-0.0191***	-0.0192***	-0.0185***
		(0.006)	(0.003)	(0.003)	(0.003)	(0.003)
Duration squared		-0.00326***	0.000965***	0.000977***	0.000978***	0.000955***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Proportion of service			0.897***	0.964***	0.958***	0.921***
abroad			(0.019)	(0.037)	(0.025)	(0.020)
Second generation #				-0.0286		
Prop. of service abroad				(0.046)		
Third generation #				-0.161***		
Prop. of service abroad				(0.047)		
Blue collar #					-0.164***	
Prop. of service abroad					(0.043)	
Student #					-0.128	
Prop. of service abroad					(0.174)	
Unspec. Laborer # Prop. of					-0.00899	
service abroad					(0.054)	
White collar #					-0.149**	
Prop. of service abroad					(0.045)	
Entry county % urban#						-0.00188*
Prop. of service abroad						(0.001)
Constant	0.00453	-0.380***	0.0843**	0.0617*	0.0567*	0.0539*
	(0.039)	(0.061)	(0.028)	(0.024)	(0.023)	(0.026)
Observations	3617	3617	3617	3617	3617	3617
R^2	0.071	0.504	0.564	0.566	0.567	0.565
Adjusted R^2	0.064	0.500	0.560	0.563	0.563	0.561
AIC	5024.4	2761.7	1660.8	1642.4	1638.9	1655.0
Fixed effect:	age	age	age	age	age	age

Reference categories: for nativity: foreign born; for prewar occupation: farming. Standard errors in parentheses, clustered by county.^{o} $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix Table 3.3: Predicting the probability of an intercounty move between service and 1930, among all linked rank and file draftees, retaining significant interaction between civilian predictors (compare to Table 3.12)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Second generation	0.219°	0.215°	0.212°	0.197	0.209°	0.199°	0.211°
	(0.123)	(0.123)	(0.123)	(0.124)	(0.122)	(0.121)	(0.123)
Third generation	0.734***	0.730***	0.724***	0.713***	0.721***	0.710***	0.726***
	(0.124)	(0.124)	(0.124)	(0.125)	(0.124)	(0.123)	(0.124)
Blue collar	0.764***	0.890***	0.882***	1.819***	0.873***	1.084***	0.878***
	(0.103)	(0.127)	(0.127)	(0.444)	(0.126)	(0.181)	(0.125)
Student	1.653***	1.727***	1.739***	2.467***	1.736***	2.225***	1.745***
	(0.311)	(0.519)	(0.521)	(0.680)	(0.522)	(0.603)	(0.520)
Unspec. Laborer	0.733***	0.713***	0.699***	0.840*	0.695***	0.811***	0.693***
	(0.142)	(0.162)	(0.163)	(0.401)	(0.163)	(0.228)	(0.163)
White collar	0.748***	0.914***	0.920***	1.406***	0.913***	1.294***	0.915***
	(0.125)	(0.140)	(0.141)	(0.209)	(0.139)	(0.160)	(0.139)
Moved state, birth-	0.926***	0.932***	0.931***	0.936***	0.929***	0.930***	0.930***
entry	(0.097)	(0.096)	(0.097)	(0.100)	(0.097)	(0.097)	(0.097)
Entry county % urban	0.00334	0.00814*	0.00816*	0.00843*	0.00812*	0.00836*	0.00806*
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Blue collar #		-0.00917*	-0.00926**	-0.00996**	-0.00922**	-0.00946**	-0.00916*
Entry county % urban		(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Student #		-0.00634	-0.00604	-0.0114	-0.00600	-0.0109	-0.00609
Entry county % urban		(0.014)	(0.014)	(0.016)	(0.014)	(0.014)	(0.014)
Unspec. Laborer #		0.0000980	0.000246	0.000226	0.000185	0.0000108	0.000351
Entry county % urban		(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
White collar # Entry		-0.0115*	-0.0113*	-0.0124*	-0.0112*	-0.0127*	-0.0111*
county % urban		(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
6-12 months			0.0823	0.289**			
			(0.098)	(0.109)			
12-18 months			0.125	0.432***			
			(0.103)	(0.112)			
More than 18 months			0.254°	0.512**			
			(0.142)	(0.158)			
Blue collar #				-0.982*			
6-12 months				(0.435)			

Blue collar # 12-18 months				-1.061* (0.469)			
Blue collar # > 18 months				-1.130** (0.428)			
Student # 6-12 months				-0.474 (0.763)			
Student # 12-18 months				-1.431^{o} (0.824)			
Student # >18 mos.				(dropped)			
Unspec. Laborer # 6-12 months				-0.361 (0.425)			
Unspec. Laborer # 12-18 months				-0.104 (0.446)			
Unspec. Laborer # > 18 months				0.0147 (0.514)			
White collar # 6-12 months				-0.287 (0.187)			
White collar # 12-18 months				-0.845*** (0.235)			
White collar # more > 18 months				-0.621^{o} (0.370)			
Months in service					0.000633 (0.033)	0.00171 (0.034)	0.00720 (0.034)
Duration squared					0.000345 (0.001)	0.000304 (0.001)	0.000199 (0.001)
Overseas					0.0953 (0.122)	0.321* (0.138)	
Blue collar # Overseas						-0.416* (0.201)	
Unemployed # Overseas						-1.059 (0.730)	
Unspec. Laborer # Overseas						-0.250 (0.253)	
White collar # Overseas						-0.763*** (0.200)	
Proportion of service abroad							0.00765 (0.202)

Frontline							0.0658 (0.135)
Constant	-0.491 (1.211)	-0.498 (1.149)	-0.507 (1.152)	-0.944 (1.248)	-0.503 (1.148)	-0.692 (1.171)	-0.521 (1.148)
Observations	3617	3617	3617	3612	3617	3617	3617
AIC	4460.3	4460.7	4463.2	4463.8	4460.8	4452.0	4463.1
Fixed effect:	age	age	age	age	age	age	age

Reference categories: for nativity: foreign born; for prewar occupation: farming; for duration: less than 6 months.
Interaction of student and duration than 18 months perfectly predicting the outcome is dropped.
Standard errors in parentheses, clustered by county.
^{o} $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix Table 3.4a: Predicting the probability of an intercounty move between service and 1930, among all linked rank and file draftees, using a linear probability model (compare to Table 3.12)

	(1)	(2)	(3)	(4)	(5)	(6)
Second generation	0.0445	0.0438	0.0404	0.0435	0.0410	0.0438
	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)
Third generation	0.152***	0.151***	0.148***	0.150***	0.147***	0.151***
	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)
Blue collar	0.168***	0.165***	0.331***	0.163***	0.210***	0.164***
	(0.021)	(0.021)	(0.066)	(0.021)	(0.032)	(0.021)
Student	0.287***	0.291***	0.348***	0.290***	0.338***	0.291***
	(0.036)	(0.037)	(0.045)	(0.037)	(0.036)	(0.037)
Unspec. Laborer	0.162***	0.159***	0.199*	0.158***	0.187***	0.158***
	(0.029)	(0.030)	(0.085)	(0.029)	(0.044)	(0.029)
White collar	0.165***	0.167***	0.250***	0.165***	0.238***	0.166***
	(0.026)	(0.026)	(0.037)	(0.026)	(0.034)	(0.026)
Moved state, birth-entry	0.205***	0.204***	0.204***	0.204***	0.203***	0.204***
	(0.021)	(0.021)	(0.022)	(0.021)	(0.021)	(0.021)
Entry county % urban	0.000622	0.000637	0.000591	0.000635	0.000583	0.000631
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
6-12 months		0.0218	0.0621*			
		(0.022)	(0.026)			
12-18 months		0.0311	0.0963***			
		(0.023)	(0.026)			
more than 18 months		0.0569°	0.114**			
		(0.030)	(0.035)			
Blue collar# 6-12 months			-0.172*			
			(0.069)			
Blue collar# 12-18 months			-0.195**			
			(0.075)			
Blue collar# more than 18 months			-0.213**			
			(0.069)			
Student# 6-12 months			0.0121			
			(0.098)			
Student# 12-18 months			-0.158			
			(0.146)			
Student# more than 18 months			-0.0452			
			(0.063)			

Unspec. Laborer# 6-12 months			-0.0833 (0.094)			
Unspec. Laborer 12-18 months			-0.0353 (0.095)			
# Unspec. Laborer more than 18 months			-0.0200 (0.105)			
White collar# 6-12 months			-0.0423 (0.035)			
White collar# 12-18 months			-0.161*** (0.046)			
White collar# more than 18 months			-0.115 (0.073)			
Months in service				0.00147 (0.007)	0.00173 (0.007)	0.00278 (0.007)
Duration squared				0.0000272 (0.000)	0.0000198 (0.000)	-0.000000755 (0.000)
Overseas				0.0204 (0.026)	0.0722* (0.031)	
Blue collar # overseas					-0.0925* (0.040)	
Student # overseas					-0.134 (0.116)	
Unspec. Lab. # overseas					-0.0614 (0.052)	
White collar # overseas					-0.156*** (0.041)	
Proportion of service abroad						0.00349 (0.043)
Frontline						0.0126 (0.028)
Constant	0.385° (0.197)	0.382° (0.198)	0.321 (0.210)	0.380° (0.198)	0.341° (0.203)	0.376° (0.198)
Observations	3617	3617	3617	3617	3617	3617
R^2	0.107	0.108	0.112	0.109	0.112	0.108
Adjusted R^2	0.101	0.101	0.103	0.102	0.105	0.101
AIC	4696.1	4698.3	4704.3	4695.8	4687.7	4698.1
Fixed effect:	age	age	age	age	age	age

Reference categories: for nativity: foreign born; for prewar occupation: farming; for duration: less than 6 months.
Standard errors in parentheses, clustered by county.
° $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix Table 3.4b: Predicting the probability of an intercounty move between service and 1930, among all linked rank and file draftees, retaining significant interaction between civilian predictors, using a linear probability model (compare to Appendix Table 3.3)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Second generation	0.0445	0.0439	0.0432	0.0394	0.0428	0.0402	0.0431
	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)
Third generation	0.152***	0.151***	0.150***	0.147***	0.149***	0.146***	0.150***
	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)
Blue collar	0.168***	0.194***	0.193***	0.368***	0.191***	0.239***	0.191***
	(0.021)	(0.026)	(0.026)	(0.071)	(0.026)	(0.037)	(0.026)
Student	0.287***	0.346***	0.349***	0.429***	0.348***	0.414***	0.349***
	(0.036)	(0.064)	(0.064)	(0.078)	(0.065)	(0.062)	(0.064)
Unspec. Laborer	0.162***	0.161***	0.158***	0.197*	0.158***	0.187***	0.157***
	(0.029)	(0.034)	(0.035)	(0.088)	(0.034)	(0.048)	(0.035)
White collar	0.165***	0.200***	0.202***	0.307***	0.200***	0.282***	0.201***
	(0.026)	(0.030)	(0.030)	(0.041)	(0.030)	(0.032)	(0.029)
Moved state, birth-entry	0.205***	0.207***	0.206***	0.206***	0.206***	0.205***	0.206***
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
Entry county % urban	0.000622	0.00186*	0.00186*	0.00193**	0.00185*	0.00191**	0.00184*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Blue collar # Entry county % urban		-0.00204**	-0.00204**	-0.00224**	-0.00203**	-0.00211**	-0.00202**
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Student # Entry county % urban		-0.00269°	-0.00264°	-0.00285°	-0.00263°	-0.00304*	-0.00263°
		(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)
Unspec. Laborer # Entry county % urban		-0.000357	-0.000346	-0.000394	-0.000368	-0.000407	-0.000337
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
White collar # Entry county % urban		-0.00251*	-0.00247*	-0.00275**	-0.00245*	-0.00278**	-0.00244*
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
6-12 months			0.0177	0.0646*			
			(0.022)	(0.026)			
12-18 months			0.0271	0.0984***			
			(0.022)	(0.026)			
more than 18 mos.			0.0542°	0.118**			
			(0.030)	(0.035)			
Blue collar # 6-12 months				-0.181**			
				(0.069)			
Blue collar # 12-18 months				-0.202**			
				(0.075)			

Blue collar # more than 18 months				-0.220** (0.071)			
Student # 6-12 months				-0.0296 (0.105)			
Student # 12-18 months				-0.197 (0.157)			
Student # more than 18				-0.0600 (0.057)			
Unspec. Laborer # 6-12 months				-0.0824 (0.094)			
Unspec. Laborer # 12-18 months				-0.0352 (0.096)			
Unspec. Laborer # more than 18 mos.				-0.0186 (0.106)			
White collar # 6-12 months				-0.0631^{o} (0.035)			
White collar # 12-18 months				-0.182*** (0.046)			
White collar # more than 18 months				-0.139^{o} (0.074)			
Months in service					0.000456 (0.007)	0.000620 (0.007)	0.00180 (0.007)
Duration squared					0.0000605 (0.000)	0.0000562 (0.000)	0.0000320 (0.000)
Overseas					0.0208 (0.026)	0.0753* (0.031)	
Blue collar # Overseas						-0.0948* (0.040)	
Student # Overseas						-0.165 (0.117)	
Unspec. Laborer # Overseas						-0.0626 (0.052)	
White collar # Overseas						-0.166*** (0.040)	
Proportion of service abroad							0.00393 (0.042)

Frontline							0.0123 (0.028)
Constant	0.385° (0.197)	0.396* (0.186)	0.394* (0.186)	0.318 (0.201)	0.394* (0.186)	0.353° (0.190)	0.390* (0.186)
Observations	3617	3617	3617	3617	3617	3617	3617
R^2	0.107	0.109	0.110	0.115	0.111	0.115	0.111
Adjusted R^2	0.101	0.102	0.102	0.104	0.103	0.106	0.103
AIC	4696.1	4695.0	4697.5	4701.8	4695.0	4684.9	4697.4
Fixed effect:	age	age	age	age	age	age	age

Reference categories: for nativity: foreign born; for prewar occupation: farming; for duration: less than 6 months.
Standard errors in parentheses, clustered by county.
° $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix Table 3.5: Predicting probability of leaving farming using entry method, prewar civilian and registration county characteristics, using a linear probability model (compare to Appendix Table 3.15)

	Both entry types				Draftees only				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Second generation	0.00304 (0.033)	0.00537 (0.034)	0.00576 (0.034)	0.00594 (0.034)	-0.000960 (0.038)	0.00246 (0.038)	0.00266 (0.039)	0.00257 (0.039)	0.000513 (0.038)
Third generation	0.114^{**} (0.035)	0.117^{**} (0.035)	0.118^{***} (0.035)	0.118^{**} (0.035)	0.121^{**} (0.039)	0.125^{**} (0.039)	0.126^{**} (0.039)	0.126^{**} (0.039)	0.123^{**} (0.039)
Moved state, birth-registration	0.0855^{***} (0.017)	0.0999^{***} (0.020)	0.102^{***} (0.022)	0.0946^{***} (0.020)	0.0823^{***} (0.019)	0.0948^{***} (0.022)	0.0965^{***} (0.023)	0.0894^{***} (0.021)	0.0947^{***} (0.022)
Moved state, registration-entry	0.100^{*} (0.046)	0.112^{*} (0.045)	0.112^{*} (0.045)	0.119^{**} (0.044)	0.0904 (0.058)	0.107^{o} (0.059)	0.106^{o} (0.058)	0.113^{o} (0.058)	0.0913 (0.058)
Registration county % urban	0.00235^{***} (0.001)				0.00242^{**} (0.001)				0.00218^{*} (0.001)
Volunteered	0.131^{***} (0.033)	0.136^{***} (0.034)	0.137^{***} (0.035)	0.135^{***} (0.035)					
Registration county average farm value, $1k		0.00549^{*} (0.002)				0.00514^{o} (0.003)			-0.00167 (0.008)
Registration county % farms tenanted			0.00299^{o} (0.002)				0.00272 (0.002)		0.00301 (0.004)
Registration country % of farm acreage in wheat				0.00155 (0.001)				0.00138 (0.001)	-0.000266 (0.002)
Constant	0.947^{***} (0.052)	0.868^{***} (0.069)	0.872^{***} (0.072)	0.883^{***} (0.072)	0.956^{***} (0.057)	0.878^{***} (0.079)	0.884^{***} (0.083)	0.895^{***} (0.080)	0.917^{***} (0.076)
Observations	2342	2342	2342	2342	2079	2079	2079	2079	2079
R^2	0.049	0.047	0.048	0.046	0.038	0.035	0.035	0.034	0.039
Adjusted R^2	0.040	0.037	0.038	0.036	0.028	0.025	0.026	0.024	0.028
AIC	3319.6	3325.6	3323.9	3328.6	2962.7	2968.9	2967.9	2971.5	2965.3
Fixed effect:	age	age	age	age	age	age	age	age	age

Reference categories: for nativity: foreign born.
Standard errors in parentheses, clustered by county.
^{o} $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix Table 3.6: Predicting probability of leaving farming using prewar civilian and registration county characteristics among draftees, using a linear probability model (compare to Appendix Table 3.16)				
	(1)	(2)	(3)	(4)
Second generation	0.0000711 (0.038)	-0.00194 (0.037)	-0.00260 (0.038)	-0.00349 (0.038)
Third generation	0.123** (0.039)	0.124** (0.039)	0.121** (0.039)	0.120** (0.040)
Moved state, birth-registration	0.0869*** (0.019)	0.0864*** (0.019)	0.0852*** (0.018)	0.0846*** (0.018)
Registration county % urban	0.00252** (0.001)	0.00252** (0.001)	0.00250*** (0.001)	0.00250*** (0.001)
6-12 months		0.0449 (0.033)		
12-18 months		0.0690* (0.034)		
more than 18 months		-0.00841 (0.041)		
Months in service			0.0168 (0.011)	0.0146 (0.012)
Duration squared			-0.000684° (0.000)	-0.000593 (0.000)
Overseas service			0.0346 (0.037)	
Proportion of service abroad				0.0759 (0.061)
Frontline				-0.0229 (0.038)
Constant	1.000*** (0.038)	1.002*** (0.037)	0.968*** (0.051)	0.974*** (0.051)
Observations	2079	2079	2079	2079
R^2	0.036	0.040	0.040	0.041
Adjusted R^2	0.027	0.029	0.029	0.029
AIC	2961.8	2960.7	2961.8	2962.8
Fixed effect:	age	age	age	age

Reference categories: for nativity: foreign born; for duration: less than 6 months.
Standard errors in parentheses, clustered by county.
° $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix Table 3.7: Predicting postwar intercounty spatial mobility among formerly farming draftees, using a linear probability model (compare to Table 3.17)

	(1)	(2)	(3)	(4)
Second generation	-0.00669 (0.040)	-0.00931 (0.040)	-0.00892 (0.040)	-0.00822 (0.040)
Third generation	0.122** (0.041)	0.120** (0.041)	0.118** (0.041)	0.118** (0.041)
Moved state, birth-registration	0.235*** (0.026)	0.232*** (0.026)	0.230*** (0.027)	0.230*** (0.027)
Moved county, registration-entry	0.107° (0.054)	0.110° (0.056)	0.110° (0.057)	0.110° (0.057)
Registration county % urban	0.00138° (0.001)	0.00137° (0.001)	0.00136° (0.001)	0.00134° (0.001)
Registration county average farm value, $1k	0.000203 (0.008)	-0.000664 (0.008)	-0.00105 (0.008)	-0.000922 (0.008)
Registration county % farms tenanted	0.00344 (0.004)	0.00401 (0.004)	0.00408 (0.004)	0.00409 (0.004)
Registration country % of farm acreage in wheat	-0.00432** (0.001)	-0.00454** (0.001)	-0.00434** (0.001)	-0.00440** (0.001)
6-12 months		0.0837** (0.025)		
12-18 months		0.117*** (0.022)		
more than 18 months		0.124*** (0.036)		
Months in service			0.0202* (0.008)	0.0220* (0.009)
Duration squared			-0.000558° (0.000)	-0.000586° (0.000)
Overseas service			0.0247 (0.035)	
Proportion of service abroad				0.0215 (0.060)
Engagements/sectors				-0.00793 (0.038)
Constant	0.965*** (0.088)	0.970*** (0.090)	0.924*** (0.091)	0.919*** (0.092)
Observations	2079	2079	2079	2079
R^2	0.103	0.108	0.110	0.110
Adjusted R^2	0.092	0.097	0.099	0.098
AIC	2823.5	2815.9	2811.2	2813.7
Fixed effect:	age	age	age	age

Reference categories: for nativity: foreign born; for duration: less than 6 months.
Standard errors in parentheses, clustered by county.
° p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001

Appendix Table 3.8: Predicting postwar intercounty spatial mobility among formerly farming draftees, registration county versus entry county characteristics (compare to Table 3.17)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Second generation	-0.0277 (0.170)	-0.0393 (0.171)	-0.0359 (0.170)	-0.0329 (0.171)	-0.0249 (0.169)	-0.0363 (0.170)	-0.0340 (0.170)	-0.0306 (0.170)
Third generation	0.545** (0.181)	0.536** (0.181)	0.530** (0.181)	0.532** (0.181)	0.543** (0.180)	0.533** (0.181)	0.527** (0.181)	0.529** (0.181)
Moved state, birth-registration	0.989*** (0.114)	0.982*** (0.117)	0.979*** (0.118)	0.979*** (0.118)	0.997*** (0.115)	0.993*** (0.118)	0.990*** (0.119)	0.990*** (0.119)
Moved county, registration-entry	0.519^{o} (0.282)	0.534^{o} (0.294)	0.537^{o} (0.298)	0.539^{o} (0.299)	0.337 (0.318)	0.354 (0.331)	0.360 (0.333)	0.361 (0.334)
Registration county % urban	0.00632^{o} (0.004)	0.00627^{o} (0.004)	0.00619^{o} (0.004)	0.00614^{o} (0.004)				
Registration county average farm value, $1k	0.000858 (0.039)	-0.00286 (0.039)	-0.00454 (0.038)	-0.00399 (0.038)				
Registration county % farms tenanted	0.0165 (0.021)	0.0191 (0.020)	0.0195 (0.020)	0.0195 (0.020)				
Registration country % of farm acreage in wheat	-0.0202** (0.007)	-0.0214** (0.007)	-0.0205** (0.007)	-0.0208** (0.007)				
Entry county % urban					0.00526 (0.003)	0.00520 (0.003)	0.00520 (0.003)	0.00517 (0.003)
Entry county average farm value, $1k					0.0202 (0.038)	0.0187 (0.038)	0.0172 (0.037)	0.0177 (0.038)
Entry county % farms tenanted					0.00521 (0.017)	0.00640 (0.017)	0.00663 (0.017)	0.00666 (0.017)
Entry country % of farm acreage in wheat					-0.0176* (0.007)	-0.0181** (0.007)	-0.0173* (0.007)	-0.0175* (0.007)
6-12		0.378*** (0.113)				0.358*** (0.109)		

12-18		0.523*** (0.098)				0.495*** (0.101)		
more than 18		0.553*** (0.166)				0.539** (0.165)		
Months in service			0.0920* (0.037)	0.0996* (0.039)			0.0886* (0.037)	0.0968* (0.039)
Duration squared			-0.00255* (0.001)	-0.00268° (0.001)			-0.00245° (0.001)	-0.00259° (0.001)
Overseas service			0.106 (0.158)				0.105 (0.157)	
Proportion of service abroad				0.0931 (0.276)				0.0892 (0.274)
Engagements/sectors				-0.0370 (0.175)				-0.0413 (0.175)
Constant	0.570 (0.971)	0.150 (0.953)	-0.154 (0.917)	-0.216 (0.923)	0.424 (0.981)	-0.000991 (0.965)	-0.300 (0.925)	-0.367 (0.931)
Observations	2076	2076	2076	2076	2077	2077	2077	2077
AIC	2687.5	2680.1	2675.6	2678.1	2690.4	2684.0	2679.5	2682.0
Fixed effect:	age	age	age	age	age	age	age	age

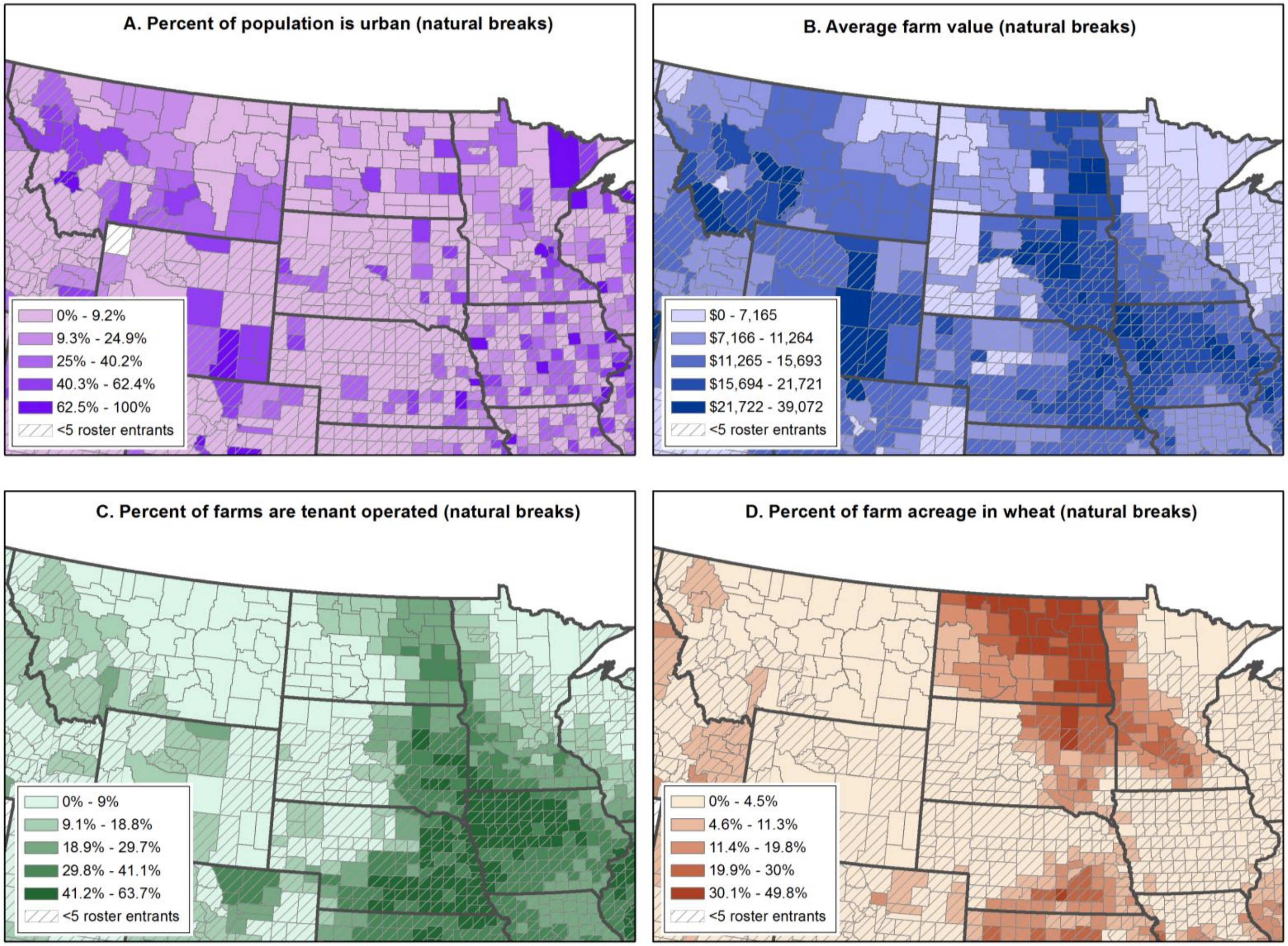
Reference categories: for nativity: foreign born; for duration: less than 6 months.
Standard errors in parentheses, clustered by county.
° $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix Table 3.9: Predicting postwar interstate spatial mobility among formerly farming draftees, registration county versus entry county characteristics (compare to Table 3.17)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Second generation	0.154	0.147	0.160	0.158	0.147	0.141	0.154	0.153
	(0.174)	(0.176)	(0.176)	(0.175)	(0.173)	(0.175)	(0.175)	(0.175)
Third generation	0.641***	0.637***	0.643***	0.648***	0.631***	0.626***	0.633***	0.639***
	(0.182)	(0.187)	(0.185)	(0.184)	(0.180)	(0.185)	(0.183)	(0.182)
Moved state, birth-registration	1.256***	1.254***	1.252***	1.253***	1.254***	1.255***	1.255***	1.257***
	(0.114)	(0.114)	(0.115)	(0.115)	(0.113)	(0.113)	(0.114)	(0.114)
Moved state, registration-entry	0.0632	0.0545	0.0314	0.0265	-0.346	-0.373	-0.401	-0.405
	(0.232)	(0.237)	(0.238)	(0.238)	(0.259)	(0.263)	(0.262)	(0.263)
Registration county % urban	0.00775**	0.00769**	0.00746**	0.00749**				
	(0.003)	(0.003)	(0.003)	(0.003)				
Registration county average farm value, \$1k	0.00782	0.00376	0.00477	0.00366				
	(0.030)	(0.030)	(0.029)	(0.029)				
Registration county % farms tenanted	0.0276^{o}	0.0307^{o}	0.0305^{o}	0.0307^{o}				
	(0.017)	(0.017)	(0.016)	(0.016)				
Registration country % of farm acreage in wheat	-0.0304***	-0.0318***	-0.0316***	-0.0313***				
	(0.007)	(0.007)	(0.007)	(0.007)				
Entry county % urban					0.00506^{o}	0.00513^{o}	0.00511^{o}	0.00508^{o}
					(0.003)	(0.003)	(0.003)	(0.003)
Entry county average farm value, \$1k					0.0237	0.0215	0.0219	0.0214
					(0.031)	(0.032)	(0.031)	(0.031)
Entry county % farms tenanted					0.0181	0.0199	0.0204	0.0204
					(0.014)	(0.014)	(0.014)	(0.014)
Entry country % of farm acreage in wheat					-0.0298***	-0.0307***	-0.0306***	-0.0304***
					(0.007)	(0.007)	(0.007)	(0.007)
6-12 months		0.500***				0.488***		
		(0.136)				(0.135)		
12-18 months		0.570***				0.547***		
		(0.134)				(0.138)		
more than 18 mos.		0.561**				0.553**		
		(0.190)				(0.190)		

Months in service			0.147*** (0.040)	0.143*** (0.042)			0.149*** (0.040)	0.146*** (0.042)
Duration squared			-0.00439** (0.001)	-0.00440** (0.001)			-0.00445** (0.001)	-0.00452** (0.001)
Overseas service			-0.104 (0.137)				-0.122 (0.137)	
Proportion of service abroad				-0.220 (0.269)				-0.257 (0.268)
Frontline				0.166 (0.172)				0.173 (0.173)
Constant	-1.389 (1.066)	-1.879° (1.074)	-2.414* (1.086)	-2.340* (1.099)	-1.518 (1.022)	-2.017° (1.032)	-2.574* (1.054)	-2.507* (1.067)
Observations	2076	2076	2076	2076	2077	2077	2077	2077
AIC	2592.1	2583.9	2581.0	2582.5	2595.6	2588.2	2584.8	2586.3
FE	age	age	age	age	age	age	age	age

Reference categories: for nativity: foreign born; for duration: less than 6 months.
Standard errors in parentheses, clustered by county.
° $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$



Appendix Figure 3.1: Agricultural context of North Dakota and nearby states, 1910, 1910 data aggregated to modified 1930 boundaries. Data sources: Fraser (1931), via HathiTrust; 1910 US Agricultural Census data via Haines, Fishback & Rhode (2016); state and (modified) 1930 county boundaries from NHGIS (Manson, et al., 2017).

Appendix Table 5.1: Building multivariate models predicting logged farming population from 1930 data								
	Main effects models				Regime model			
	1: Cohort	2: Cohort + farm context	3: Cohort + farm context + wider context	4: Cohort + farm context + wider context + regions	5: (Cohort + farm context + wider context) * region			
					Midwest	*Northeast*	*South*	*West*
Log of cohort population	0.468*** (0.011)	0.479*** (0.010)	0.764*** (0.012)	0.784*** (0.012)	0.702*** (0.022)	0.745*** (0.042)	0.768*** (0.018)	0.961*** (0.028)
Average farm value (in thousands of dollars)		-0.011*** (0.001)	-0.008*** (0.001)	-0.009*** (0.001)	-0.014*** (0.003)	-0.009* (0.004)	-0.006*** (0.001)	0.003 (0.003)
Percent of farms are large (>259 acres)		-0.007*** (0.001)	-0.005*** (0.001)	-0.005*** (0.001)	-0.006*** (0.001)	-0.013 (0.008)	-0.009*** (0.001)	-0.004*** (0.001)
Percent of farms are owned		-0.010*** (0.0005)	-0.006*** (0.0005)	-0.006*** (0.001)	-0.004** (0.001)	0.006 (0.006)	-0.010*** (0.001)	0.005* (0.002)
Percent of owned farms mortgaged		0.010*** (0.001)	0.009*** (0.001)	0.010*** (0.001)	0.009*** (0.001)	0.016*** (0.003)	0.008*** (0.001)	0.012*** (0.002)
Percent of farm acres in wheat		0.005*** (0.001)	0.002* (0.001)	0.002° (0.001)	0.004** (0.002)	0.010 (0.009)	0.003 (0.002)	0.004 (0.004)
Percent of farms reporting labor		-0.003*** (0.001)	-0.00000 (0.001)	0.001 (0.001)	0.001 (0.001)	0.0002 (0.004)	0.001 (0.001)	0.008*** (0.002)
Percent of farms reporting draft animals		0.011*** (0.001)	0.008*** (0.001)	0.008*** (0.001)	0.021*** (0.002)	0.025*** (0.003)	0.002* (0.001)	0.013*** (0.002)

Percent of farm expense is machinery		0.006*** (0.001)	0.003*** (0.001)	0.004*** (0.001)	0.004** (0.001)	-0.011° (0.007)	0.003** (0.001)	0.005* (0.002)
Percent of county population white			-0.0004 (0.001)	-0.0002 (0.001)	-0.001 (0.002)	0.013 (0.013)	0.001 (0.001)	-0.005** (0.002)
Percent of county population unemployed			-0.219*** (0.011)	-0.229*** (0.011)	-0.197*** (0.021)	-0.170*** (0.050)	-0.257*** (0.020)	-0.175*** (0.019)
Percent of county population urban			-0.011*** (0.0005)	-0.011*** (0.0005)	-0.008*** (0.001)	-0.014*** (0.002)	-0.011*** (0.001)	-0.011*** (0.001)
Percent of county population moved from farm to city			0.135*** (0.017)	0.116*** (0.017)	0.102*** (0.030)	0.340* (0.134)	0.117*** (0.025)	0.194*** (0.033)
Percent of farms have a telephone			0.0004 (0.0004)	0.001** (0.0005)	0.002* (0.001)	0.003 (0.003)	0.004*** (0.001)	-0.005*** (0.001)
Midwest region (reference)				---				
Northeast region				-0.211*** (0.035)				
South region				0.073** (0.028)				
West region				0.150*** (0.029)				
Constant	3.179*** (0.085)	2.543*** (0.114)	0.708*** (0.120)	0.397** (0.133)	-0.213 (0.316)	-3.038* (1.348)	1.211*** (0.172)	-2.317*** (0.426)

Diagnostics								
Number of observations (counties)	3,054	3,054	3,054	3,054				3,054
Adjusted R^2	0.384	0.632	0.751	0.758				0.997
AIC	5727.266	4160.283	2975.735	2885.805				2492.16
Moran's I (queens)	0.5205***	0.3675***	0.3385***	0.3340***				0.2641***
Moran's I (IDW)	0.4943***	0.3625***	0.3526***	0.3198***				0.2844***

Significance codes: °p<0.1, *p<0.05; **p<0.01; ***p<0.001. Standard errors appear in parentheses. Shapiro-Wilk values for normality >=0.9 except regime model (0.89); Breush-Pagan statistic for heteroskedasticity significant at p<0.0001. GVIF or VIF measures for multicollinearity <10.

Notes: In this table, each column left of the thick vertical bar presents a single model, whereas all the figures to the right of the bar are part of a regime model, rearranged to highlight the difference between regions/regimes and compared to the US as a whole.

When run as separate models for each region, Midwest (n=1,053), Northeast (n=210), South (n=1,386) and West (n=405) have adjusted R^2 values of 0.804, 0.734, 0.752, and 0.804; and Moran's I (IDW) values of 0.1697, 0.1897, 0.2449, and 0.2711, all of which are significant at p<0.0001.

Appendix Table 5.2: Main effects and regime with spatial error models predicting logged farming cohort population from 1910-1920 changes

	1: Main effects model, no spatial error term	2: Regime model with spatial error term			
		Midwest	*Northeast*	*South*	*West*
Log of cohort population, 1930	0.769*** (0.014)	0.645*** (0.026)	0.797*** (0.043)	0.732*** (0.020)	0.879*** (0.027)
Average farm value (in thousands of dollars), 1910	-0.003** (0.001)	0.025*** (0.005)	-0.039*** (0.009)	-0.002 (0.001)	0.017*** (0.004)
Percent change in average farm value 1910-1920	0.0003* (0.0001)	0.001* (0.0003)	0.002 (0.002)	0.0001 (0.0002)	0.00003 (0.0002)
Percent of farms are large (>259 acres), 1910	-0.002*** (0.001)	-0.002 (0.001)	-0.010 (0.011)	-0.006*** (0.001)	-0.001 (0.001)
Change in percent of farms are large, 1910-1920	0.002* (0.001)	-0.002 (0.002)	0.065 (0.035)	0.001 (0.002)	0.007*** (0.002)
Percent of farms are owned, 1910	-0.010*** (0.001)	0.001 (0.002)	-0.011* (0.004)	-0.011*** (0.001)	0.001 (0.003)
Change in percent of farms are owned, 1910-1920	-0.010*** (0.001)	0.006 (0.003)	-0.016 (0.013)	-0.011*** (0.002)	-0.008* (0.003)
Percent of population is urban, 1910	-0.019*** (0.001)	-0.014*** (0.001)	-0.020*** (0.002)	-0.019*** (0.001)	-0.015*** (0.001)
Change in percent of population is urban, 1910-1920	-0.011*** (0.001)	-0.006** (0.002)	-0.006 (0.005)	-0.011*** (0.001)	-0.010*** (0.002)
Midwest region (reference)	---				
Northeast region	-0.452*** (0.038)				
South region	-0.264*** (0.022)				
West region	-0.218*** (0.030)				
Constant	2.008*** (0.121)	1.768*** (0.268)	1.554** (0.501)	2.069*** (0.172)	-0.370 (0.384)

Diagnostics			
Number of observations (counties)	3,054		3,054
AIC	4021.872		3,042.226
Moran's I (IDW)	0.3764***		0.0248*

Standard errors appear in parentheses.
Significance codes: *p<0.05; **p<0.01; ***p<0.001
Shapiro-Wilk value for normality >0.87; Breush-Pagan statistic for heteroskedasticity significant at p<0.0001.
Notes: in this table, the column left of the thick vertical bar presents a single model, whereas all the figures to the right of the bar are part of a regime model, rearranged to highlight the difference between regions/regimes. The AIC value for the regimes model without the spatial error term is 3753.003; the Moran's I is 0.3405***.

Appendix Table 5.3: Main effects and regime with spatial error models predicting logged farming cohort population from 1920-1930 changes						
	1: Main effects model, no spatial error term		2: Regime model with spatial error term			
			Midwest	*Northeast*	*South*	*West*
Log of cohort population, 1930	0.795*** (0.014)		0.695*** (0.025)	0.758*** (0.041)	0.757*** (0.021)	0.909*** (0.028)
Average farm value (in thousands of dollars), 1920	-0.004*** (0.001)		0.005* (0.002)	-0.022*** (0.006)	-0.004** (0.001)	0.004 (0.002)
Percent change in average farm value 1920-1930	-0.006*** (0.0004)		-0.008*** (0.001)	-0.007*** (0.001)	-0.002*** (0.0005)	-0.006*** (0.001)
Percent of farms are large (>259 acres), 1920	-0.001 (0.0005)		-0.002* (0.001)	-0.007 (0.010)	-0.003* (0.001)	0.002 (0.001)
Change in percent of farms are large, 1920-1930	0.005** (0.002)		0.014** (0.005)	0.033 (0.023)	0.003 (0.003)	0.001 (0.003)
Percent of farms are owned, 1920	-0.008*** (0.001)		0.002 (0.002)	-0.007 (0.005)	-0.012*** (0.001)	-0.004 (0.003)
Change in percent of farms are owned, 1920-1930	-0.013*** (0.001)		-0.006 (0.003)	-0.002 (0.011)	-0.011*** (0.002)	-0.012*** (0.003)
Percent of population is urban, 1920	-0.017*** (0.001)		-0.013*** (0.001)	-0.018*** (0.002)	-0.017*** (0.001)	-0.015*** (0.001)
Change in percent of population is urban, 1920-1930	-0.007*** (0.001)		0.003 (0.002)	0.0002 (0.005)	-0.006*** (0.001)	-0.011*** (0.002)
Midwest region (reference)	---					
Northeast region	-0.228*** (0.039)					
South region	-0.210*** (0.024)					
West region	-0.177*** (0.028)					

Constant	1.489*** (0.123)	1.267*** (0.269)	1.741*** (0.495)	1.851*** (0.175)	-0.111 (0.330)
Diagnostics					
Number of observations (counties)	3,054				3,054
AIC	3677.996				2,831.629
Moran's I (IDW)	0.3279***				0.0189

Standard errors appear in parentheses.
Significance codes: *p<0.05; **p<0.01; ***p<0.001
Shapiro-Wilk value for normality >0.87; Breush-Pagan statistic for heteroskedasticity significant at p<0.0001 for main effects model.
Notes: in this table, the column left of the thick vertical bar presents a single model, whereas all the figures to the right of the bar are part of a regime model, rearranged to highlight the difference between regions/regimes. The AIC value for the regimes model without the spatial error term is 3449.617; the Moran's I is 0.3118***.

Appendix Table 5.4: Main effects and regime with spatial error models predicting logged farming cohort population from 1910-1930 changes

	1: Main effects model, no spatial error term	2: Regime model with spatial error term			
		Midwest	*Northeast*	*South*	*West*
Log of cohort population, 1930	0.786*** (0.014)	0.638*** (0.025)	0.773*** (0.043)	0.751*** (0.021)	0.926*** (0.028)
Average farm value (in thousands of dollars), 1910	-0.004*** (0.001)	0.017*** (0.005)	-0.036*** (0.009)	-0.002* (0.001)	0.015*** (0.004)
Percent change in average farm value 1910-1930	-0.001*** (0.0002)	-0.002*** (0.0004)	-0.004*** (0.001)	-0.001** (0.0002)	-0.001*** (0.0003)
Percent of farms are large (>259 acres), 1910	-0.004*** (0.001)	-0.004*** (0.001)	-0.017 (0.011)	-0.006*** (0.001)	-0.002 (0.001)
Change in percent of farms are large, 1910-1930	0.002** (0.001)	0.001 (0.002)	0.047* (0.018)	0.002 (0.002)	0.004** (0.002)
Percent of farms are owned, 1910	-0.010*** (0.001)	-0.0002 (0.002)	-0.007 (0.005)	-0.012*** (0.001)	-0.001 (0.003)
Change in percent of farms are owned, 1910-1920	-0.016*** (0.001)	-0.008** (0.003)	-0.009 (0.010)	-0.015*** (0.002)	-0.016*** (0.002)
Percent of population is urban, 1910	-0.019*** (0.001)	-0.013*** (0.001)	-0.019*** (0.002)	-0.018*** (0.001)	-0.018*** (0.001)
Change in percent of population is urban, 1910-1930	-0.009*** (0.001)	-0.003 (0.001)	-0.005 (0.003)	-0.008*** (0.001)	-0.011*** (0.001)
Midwest region (reference)	---				
Northeast region	-0.314*** (0.038)				
South region	-0.244*** (0.022)				
West region	-0.226*** (0.028)				

Constant	1.895*** (0.118)	2.089*** (0.249)	1.920*** (0.495)	1.943*** (0.176)	-0.415 (0.374)
Diagnostics					
Number of observations (counties)	3,054				3,054
AIC	3745.15				2,872.755
Moran's I (IDW)	0.3428***				0.0231*

Standard errors appear in parentheses.
Significance codes: *p<0.05; **p<0.01; ***p<0.001
Shapiro-Wilk value for normality >0.87; Breush-Pagan statistic for heteroskedasticity significant at p<0.0001.
Notes: in this table, the column left of the thick vertical bar presents a single model, whereas all the figures to the right of the bar are part of a regime model, rearranged to highlight the difference between regions/regimes. The AIC value for the regimes model without the spatial error term is 3511.758; the Moran's I is 0.361***.

Appendix Table 5.5: Main effects and regime with spatial error models predicting logged 1930 farming veteran population from 1910-1920 changes					
	1: Main effects model, no spatial error term	2: Regime model with spatial error term			
		Midwest	*Northeast*	*South*	*West*
Log of farming cohort population, 1930	0.966*** (0.008)	0.980*** (0.018)	0.892*** (0.026)	0.950*** (0.013)	0.971*** (0.015)
Average farm value (in thousands of dollars), 1910	-0.0004 (0.001)	0.010** (0.003)	0.020*** (0.006)	-0.002* (0.001)	-0.002 (0.003)
Percent change in average farm value 1910-1920	-0.0001 (0.0001)	0.001** (0.0002)	0.001 (0.001)	0.0002 (0.0001)	-0.001*** (0.0001)
Percent of farms are large (>259 acres), 1910	0.002*** (0.0004)	-0.0002 (0.001)	0.009 (0.007)	0.001 (0.001)	0.004*** (0.001)
Change in percent of farms are large, 1910-1920	0.002*** (0.001)	0.003* (0.001)	-0.045* (0.022)	0.00000 (0.001)	0.0005 (0.001)
Percent of farms are owned, 1910	0.001* (0.0004)	0.002 (0.001)	0.010*** (0.003)	0.001 (0.001)	0.009*** (0.002)
Change in percent of farms are owned, 1910-1920	0.004*** (0.001)	0.001 (0.002)	0.001 (0.008)	0.001 (0.001)	0.005* (0.002)
Percent of population is urban, 1910	-0.001* (0.0003)	-0.001 (0.0004)	0.0003 (0.001)	0.0001 (0.0004)	-0.001 (0.001)
Change in percent of population is urban, 1910-1920	-0.0005 (0.001)	-0.001 (0.001)	-0.006 (0.003)	0.001 (0.001)	-0.002 (0.001)
Midwest region (reference)	--				
Northeast region	-0.291*** (0.024)				
South region	-0.085*** (0.014)				
West region	0.187*** (0.019)				

Constant	-2.011*** (0.073)	-2.363*** (0.167)	-2.710*** (0.314)	-2.010*** (0.109)	-2.484*** (0.221)
Diagnostics					
Number of observations (counties)	3,054				3,054
AIC	1249.743				384.145
Moran's I (IDW)	0.3690***				0.0243*

Standard errors appear in parentheses.
Significance codes: *p<0.05; **p<0.01; ***p<0.001
Shapiro-Wilk value for normality >0.9; Breush-Pagan statistic for heteroskedasticity significant at p<0.0001.
Notes: in this table, the column left of the thick vertical bar presents a single model, whereas all the figures to the right of the bar are part of a regime model, rearranged to highlight the difference between regions/regimes. The AIC value for the regimes model without the spatial error term is 1054.767; the Moran's I is 0.3243***.

Appendix Table 5.6: Main effects and regime with spatial error models predicting logged farming veteran population from 1920-1930 changes

	1: Main effects model, no spatial error term	2: Regime model with spatial error term			
		Midwest	*Northeast*	*South*	*West*
Log of farming cohort population, 1930	0.966*** (0.008)	0.980*** (0.018)	0.891*** (0.027)	0.954*** (0.013)	0.982*** (0.016)
Average farm value (in thousands of dollars), 1920	0.001** (0.0005)	0.004** (0.001)	0.015*** (0.004)	-0.002* (0.001)	-0.002 (0.002)
Percent change in average farm value 1920-1930	0.001** (0.0003)	0.0002 (0.001)	0.001 (0.001)	-0.00003 (0.0003)	0.001* (0.001)
Percent of farms are large (>259 acres), 1920	0.001*** (0.0003)	0.001 (0.001)	0.003 (0.007)	0.003** (0.001)	0.003*** (0.001)
Change in percent of farms are large, 1920-1930	0.006*** (0.001)	-0.001 (0.003)	0.012 (0.016)	0.007*** (0.002)	0.005* (0.002)
Percent of farms are owned, 1920	0.001 (0.0004)	0.002 (0.001)	0.011*** (0.003)	0.001 (0.001)	0.006*** (0.002)
Change in percent of farms are owned, 1920-1930	-0.006*** (0.001)	-0.003 (0.002)	0.004 (0.007)	-0.002 (0.001)	0.001 (0.002)
Percent of population is urban, 1920	-0.0004 (0.0003)	-0.001 (0.0004)	-0.0001 (0.001)	0.0004 (0.0004)	-0.001 (0.001)
Change in percent of population is urban, 1920-1930	0.00000 (0.001)	0.001 (0.002)	0.001 (0.003)	0.00004 (0.001)	0.00003 (0.001)
Midwest region (reference)	---				
Northeast region	-0.262*** (0.025)				
South region	-0.081*** (0.016)				
West region	0.191*** (0.019)				

Constant	-2.029*** (0.074)	-2.262*** (0.168)	-2.751*** (0.335)	-2.024*** (0.111)	-2.330*** (0.194)
Diagnostics					
Number of observations (counties)	3,054	3,054			
AIC	1189.101	413.639			
Moran's I (IDW)	0.3519***	0.0256*			

Standard errors appear in parentheses.
Significance codes: *p<0.05; **p<0.01; ***p<0.001
Shapiro-Wilk value for normality >0.9; Breush-Pagan statistic for heteroskedasticity significant at p<0.0001.
Notes: in this table, the column left of the thick vertical bar presents a single model, whereas all the figures to the right of the bar are part of a regime model, rearranged to highlight the difference between regions/regimes. The AIC value for the regimes model without the spatial error term is 1064.378; the Moran's I is 0.3179***.

Appendix Table 5.7: Main effects and regime with spatial error models predicting logged farming veteran population from 1910-1930 changes						
	1: Main effects model, no spatial error term		2: Regime model with spatial error term			
			Midwest	*Northeast*	*South*	*West*
Log of farming cohort population, 1930	0.964*** (0.008)		0.979*** (0.018)	0.904*** (0.027)	0.954*** (0.013)	0.966*** (0.015)
Average farm value (in thousands of dollars), 1910	0.0004 (0.001)		0.009** (0.003)	0.019*** (0.005)	-0.001 (0.001)	0.0001 (0.003)
Percent change in average farm value 1910-1930	0.0003** (0.0001)		0.001* (0.0003)	0.001* (0.001)	0.0003* (0.0001)	-0.0002 (0.0002)
Percent of farms are large (>259 acres), 1910	0.002*** (0.0004)		-0.001 (0.001)	0.010 (0.007)	0.002 (0.001)	0.004*** (0.001)
Change in percent of farms are large, 1910-1930	0.002*** (0.001)		0.001 (0.001)	-0.011 (0.012)	0.003* (0.001)	0.002 (0.001)
Percent of farms are owned, 1910	0.0002 (0.0004)		0.001 (0.001)	0.009** (0.003)	0.0001 (0.001)	0.007*** (0.002)
Change in percent of farms are owned, 1910-1920	-0.001 (0.001)		-0.003 (0.002)	0.001 (0.006)	-0.0003 (0.001)	0.004* (0.002)
Percent of population is urban, 1910	-0.0005 (0.0003)		-0.001 (0.0004)	0.0002 (0.001)	-0.00004 (0.0004)	-0.0004 (0.001)
Change in percent of population is urban, 1910-1930	-0.0003 (0.0005)		-0.001 (0.001)	-0.002 (0.002)	0.001 (0.001)	-0.001 (0.001)
Midwest region (reference)	---					
Northeast region	-0.272*** (0.025)					
South region	-0.082*** (0.015)					
West region	0.200*** (0.019)					

Constant	-1.994*** (0.074)	-2.253*** (0.167)	-2.758*** (0.336)	-2.011*** (0.111)	-2.400*** (0.224)
Diagnostics					
Number of observations (counties)	3,054				3,054
AIC	1248.431				423.262
Moran's I (IDW)	0.3711***				0.0269*

Standard errors appear in parentheses.
Significance codes: *p<0.05; **p<0.01; ***p<0.001
Shapiro-Wilk value for normality >0.9; Breush-Pagan statistic for heteroskedasticity significant at p<0.0001.
Notes: in this table, the column left of the thick vertical bar presents a single model, whereas all the figures to the right of the bar are part of a regime model, rearranged to highlight the difference between regions/regimes. The AIC value for the regimes model without the spatial error term is 1120.598; the Moran's I is 0.3358***.