

Spring 2011

Senior Populations and Public Contention: A Study of the Effects of Aging Population Structures on Social and Political Instability

Eric Harris Bernstein
University of Colorado Boulder

Follow this and additional works at: https://scholar.colorado.edu/honr_theses

Recommended Citation

Bernstein, Eric Harris, "Senior Populations and Public Contention: A Study of the Effects of Aging Population Structures on Social and Political Instability" (2011). *Undergraduate Honors Theses*. 659.
https://scholar.colorado.edu/honr_theses/659

This Thesis is brought to you for free and open access by Honors Program at CU Scholar. It has been accepted for inclusion in Undergraduate Honors Theses by an authorized administrator of CU Scholar. For more information, please contact cuscholaradmin@colorado.edu.

Senior Populations and Public Contention:

A Study of the Effects of Aging Population Structures on Social and Political Instability

Eric Harris Bernstein
Department of Political Science
University of Colorado at Boulder

Defended Before University of Colorado at Boulder Faculty Members:

David S. Brown, Department of Political Science
Andy Baker, Department of Political Science
Tim Lyons, Department of Writing and Rhetoric

On April 5th, 2011

ABSTRACT

In this study, I examine the relationship between senior population size and five acts of public contention in a sample of 174 countries over the 41 year period between 1960 and 2000. I define public contention as any act carried out by citizens or permanent residents of a country that indicates social or political contention within that country. I argue that only acts of public contention that are both age sensitive and public-dependent are affected by changes in domestic age structure. I identify all five dependent variables as age sensitive, but find that only guerrilla insurgencies, riots, and anti-government demonstrations are public-dependent, determining that strikes and coups occur as the result of the work of independent organizers and are therefore not affected by changes in domestic age structure. My statistical analysis confirms my predictions and I conclude by discussing the implications of demographic projections for coming decades.

INTRODUCTION

In the first three months of 2011, violent and non-violent protests spread throughout the Middle East and North Africa (MENA). In Egypt, Hosni Mubarak's 30 year rule as President was brought to an end by violent student-led demonstrations (Meyers 2011). In Tunisia, frustration over low employment rates led recent college graduates to take to the streets in protest, forcing authoritarian Tunisian President Ben Ali to step down and flee the country (New York Times 2011). Self-described "youth movements" in Yemen and Bahrain faced violent government oppression, but showed resilience that surprised American diplomats and members of the international press (Bronner 2011; Kasinoff 2011). Public protests were met with similar heavy-handedness in Libya, in a situation which then devolved into what many described as complete civil or revolutionary war (Healy 2011; Kirkpatrick 2011). Less intense, but still notable demonstrations have also occurred in previously peaceful countries like Syria and Lebanon (Associated Press 2011; New York Times 2011). Times of widespread public unrest beg the question, what causes such violent and disruptive public events?

High unemployment rates, due largely to the age structure of many MENA countries may be a significant cause of the political upheaval that began in early 2011. Speaking about Egypt, Marcus Noland of the Parsons Institute for International Economics pointed out that the Egyptian economy performed well in the years leading up to the 2011 uprising, but noted that this was not enough to overcome the economic stress brought on by large youth populations crowding the workforce. "They have," says Mr. Noland, "like other economies in the Middle East, a demographic bulge. So the number of new people entering the job force is about 4 percent a year... Unemployment in Egypt is almost 10 times as high for college graduates as it is for people who have gone through elementary school... and those are precisely the people who you see out

in the streets” (American Public Radio 2011). The demographic bulge to which Noland is referring is a relatively high number of 15 – 24 year olds who are attempting to enter MENA workforces simultaneously. According to Noland, these large youth populations are not just participants in social unrest, they are causes of it. If regional age structure can contribute to enormous social and political upheaval across MENA, then surely the social and political impact of various age structures is a topic that should be studied further.

The relationship between youth bulges and political violence has been examined in a number of quantitative and qualitative studies, but little research exists on the political and social impact of senior populations. This is a gap in public contention literature that must be filled because today’s youths are tomorrow seniors. According to UN projections, the senior population will comprise 16.5% of the global population by 2030 – roughly a 50% increase over the 10.9% that it represented in 2010 (UN Population Division 2009). Although existing youth bulge studies provide a good general framework for how to examine the relationship between senior populations and public contention, many of these studies lack sufficient sample specificity, and examine too many forms of public contention at once. In this study, I identify and avoid these poor research methods and establish the statistical relationship between senior population size and five forms of public contention.

I examine the effect of growing senior populations on riots, strikes, anti-government demonstrations, guerrilla insurgencies, and coups. I refer to these acts and others like them as ‘public contention’, which I define along with other key terms in detail in the following section. Based on my theoretical analysis of these five forms of public contention, I suggest that two characteristics are important in determining the relationship between the size of a senior population and levels of a certain form of public contention: First, I assert that only age sensitive

behaviors – those that are more widely accepted or widely practiced by one age group than by another – are affected by the size of the senior population. Second, I argue that an act of public contention is only affected by changes in the size of a senior population if that act is ‘public-dependent’ – meaning it requires the support or participation of members of the general public and is not organized by any specialized group, referred to as an ‘independent organizer’. I test the validity of my theoretical analysis by statistically examining the five selected forms of public contention with respect to the size of the senior population. Finally, I discuss the implications of the statistical results in the context of current and anticipated global and regional age structures.

BACKGROUND & DEFINITIONS

Causes of age group bulges

Families tend to adjust their reproductive practices in order to maintain an ideal family size, so countries with a high infant mortality rate (IMR) tend to also have high birthrates. When improved healthcare leads to a drop in a given country’s IMR, there is a lag of a few years before the birthrate lowers to make up for higher rates of infant survival (Caldwell 1976). With IMR lowered and birthrate remaining constant, there is a period of rapid youth population growth. Eventually birthrates decrease, causing the population growth rate to decrease as well. The brief period of rapid population growth, however, results in one disproportionately populous age group. The process of lowering IMR and birthrate is called a demographic transition. The generation that results from a demographic transition is relatively larger than other age groups in that country, so it is referred to as an age group bulge.

Historically, an increase in wealth and development was responsible for the decrease in IMR that ultimately led to a demographic transition and an age group bulge, but in the last few

decades of the 20th century, globalization has improved medical conditions, lowered IMRs and initiated demographic transitions all over the world (Khadr and Rashad 2002). Existing age group bulges throughout Asia, MENA, and North and South America that have not already begun exiting the workforce and entering retirement, will do so within the next three decades (UN Population Division 2009). With this in mind, studies examining the relationship between public behavior and senior age group bulges are now necessary.

Defining public contention

For the purposes of this study, I use the term ‘public contention’ to refer to the broad range of public activities that indicate the existence of social or political contention. I hold that an act of public contention must be aimed at affecting some change in governmental policy or social order, or must represent an expression of some political or social dissatisfaction. Furthermore, the event must be carried out or initiated by domestic actors – either citizens or permanent residents of the country in question. For example, I exclude international wars from the definition of public contention because the actors involved are not domestic.

Although all five of the dependent variables that I examine in this study fall within my definition of public contention, it is important to note that many more forms of public contention exist, such as civil and revolutionary war. Although I examine each dependent variable separately, I frequently refer to the broader body of violent and non-violent public unrest as public contention; this term refers to all acts that might fall within the definition I have supplied here. I use the term ‘public contention’ instead of the term ‘political contention’ or ‘domestic conflict’ because not all instances of riots examined in this study are necessarily political in nature and because the word ‘conflict’ is misleading as it implies the use of violence when not all

forms of public contention involve violence; anti-government demonstrations, for example, are, by the definition used in this study, peaceful protests.

Age sensitivity, public-dependence, and independent organizers

When discussing whether or not I expect occurrences of an act of public contention to be affected by changes in domestic age structure, I use the terms ‘age sensitive’, ‘public dependent’, and ‘independently organized’, which I describe below.

I refer to acts of public contention that are generally accepted or widely practiced more by youths than by seniors as ‘age sensitive’. There are a number of theories that might explain why seniors choose to abstain from most forms of public contention. The biological influence school of thought suggests that, based on natural human development, people become more docile and less intrigued by new social and political ideas as they grow older (Huntington 1996; Goldstone 2002). Political alienation theory holds that as citizens grow older, they experience increased feelings of political and social inefficacy and are therefore less likely to participate in acts of public contention (Marsh 1974). Proponents of political alienation theory have hypothesized that this trend is explained by personal frustrations with society and politics; as negative experiences with society and politics build up over a lifetime, older citizens are come to believe their actions will fail to bring about meaningful change and so they eventually abandon all attempts at forcing such a change (Marsh 1974). Finally, rational choice theory posits that seniors are unlikely to engage in publicly contentious behaviors because of the higher opportunity costs that they must pay in doing so (Khadr and Rashad 2002). Older citizens, who have more social responsibilities and are more likely to have families and homes, as well as health problems, risk more when participating in an act of public contention that could result in

municipal punishment or personal injury (Khadr and Rashad 2002). It is also important to note that not all forms of public contention are age sensitive; age sensitivity is best understood as a sliding scale that varies directly with the disruptiveness and intensity of the act in question. For example, violent acts of public contention, like riots, are significantly more age sensitive than peaceful demonstrations (Marsh 1974).

As there is more than one explanation for age sensitivity, public dependence can be explained by a number of theories as well. I refer to acts of public contention that are affected by the demographic make up of a given country as ‘public-dependent’; types of public contention that are not public-dependent are considered ‘independently organized’. Public-dependent forms of public contention, like riots and anti-government demonstration, by definition, require the direct participation of the general population. It is unclear as to how exactly older populations affect public contention, but it is possible that the effect is direct – more older citizens means fewer willing participants, or indirect – older citizens have a pacifying effect on society by increasing family ties or influencing public opinion. Either way, given that both riots and anti-government demonstrations are age sensitive, these sorts of acts of public contention decrease as senior populations grow. Independently organized acts of public contention, on the other hand, are largely inspired and organized by specialized groups – independent organizers - whose age composition and behavior is unlikely to be affected by changes in broader domestic age structure or other broad societal factors. Examples of independent organizers include labor unions and politicians. Independent organizers function as mediators with regard to the types of public contention that they are associated with, exerting an independent impact on the likelihood of those events. Political purges and assassinations, for example, are organized or carried out by government agencies, and therefore are not affected by

growing senior populations or changes in domestic age structure (Schmitt 1992; Connor 1972). Simply put, age-determined social and political attitudes in a demographically older country may place public opinion in opposition to a political purge, but because the decision of whether or not a political purge should be carried out is left to independent organizers and not the general population, public sentiments cannot influence the likelihood of such an event.

EXISTING LITERATURE

In this section I discuss the findings of existing age group studies. Given that so few studies on senior bulges exist, I comment on the findings of a number of youth bulge studies. Youth bulge studies are relevant to this study because, by stating that younger populations have a certain effect on public contention, they imply that older populations have the opposite effect. After discussing these findings in general, I identify methods used in these studies that have led to flawed results. Towards the end of this section and in the THEORY & ARGUMENT section, I establish the theoretical reasoning behind my alternative hypotheses.

Age group bulges and economics

Studies have shown that poor economic performance and high unemployment can lead to increased levels of public contention and greater political instability, so the economic implications of senior populations are important to understand (Alesina et al. 1996). Large senior populations increase the dependency ratio and shrink the workforce, which can slow economic output and place pressure on the governments and workforces that must support them financially (Williamson and Yousef 2002; Bloom and Finlay 2009). One such example is the social security program in the United States, which, it is widely argued, could become insolvent

as a result of the aging baby boomer population (Reutteman 2010). Recent research shows, however, that senior employment has risen in demographically older Eastern European Countries, combatting the potentially negative economic effects of large senior populations (Ingham et al. 2009). Economically, it seems the impact of age group bulges depend on pre-existing institutional conditions and are unclear, but with regard to public contention, it seems that most studies agree.

Youth bulges and public contention

Little or no research has been done on the effect of senior bulges on public contention, but much can be gleaned from existing youth bulge studies. A large body of literature exists to support the claim that the presence of a youth bulge greatly increases a country's risk of experiencing a number of types of public contention. In separate statistical studies, youth bulges have demonstrated a positive correlation with respect to armed domestic conflict, state failure, interstate armed conflict, and civil war (Collier 2000; Esty et al. 1995; Urdall 2004, 2006). This correlation can be explained by a number of factors.

Scholars have put forth a number of theories to explain the quantitative correlation between youth bulges and public contention. High unemployment, caused by rapid growth in the working age population, can create widespread public grievances that encourage individuals to organize for regime change, in the hopes that a political change can bring about improved economic conditions (Urdall 2004, 2006). Also, for primarily economic reasons, youths might be more readily recruited to rebel groups, and so a youth bulge may increase instances of civil and revolutionary war, as well as lower-scale subversive political behaviors, like terrorist attacks (Collier 2000; Lia 2005). Additionally, youth bulge generations are thought to possess strong

ethnic or generational identities, which can lead to a number of forms of public contention aimed at achieving economic, political, or civil equality (Esty et al. 1995). More generally, it has also been stated that youths simply have a larger desire for change and are, for that reason, more willing to support or participate in violent or extreme acts of public contention (Huntington 1996). While none of the aforementioned theories comment directly on the publicly contentious behavior of senior populations, due to the opposing characteristics of youths and seniors, these studies indirectly suggest that larger senior populations decrease the likelihood of the acts of public contention that they examine. This is too broad a generalization; senior populations should be studied independently, so that their unique social and political behaviors can be understood.

Problems with existing literature

Although I do not dispute the general findings of youth bulge studies, many studies of public contention and youth bulges were carried out using flawed statistical measurements and may, for that reason, have incorrectly reported age group populations as determinants of some types of public contention. Youth bulge studies that use broad dependent variables such as “state failure” or “armed domestic conflict”, combine data on a number of types of public contention into one statistical variable. Index measurements like these ignore the nuances of how domestic age structure affects different types of public contention differently.

Many studies have examined both public-dependent and independently organized acts of public contention at once; these studies are likely to produce flawed results. In a study of youth bulges and state failure, the State Failure Task Force included revolutionary wars, ethnic wars, acts of genocide, political purges and “adverse or disruptive regime changes” in its definition of

“state failure” (Esty et al. 1999, 50). Defined as it is, “state failure” can refer to actions that are carried out or initiated by independent organizers like the government, by the general public, or by a foreign government. Unless it can be proven that all of these actors respond identically to changes in a country’s age structure, the results of a study of such a broad dependent variable cannot be accurate for all forms of “state failure”. Similarly, the Uppsala database defines the term “interstate armed conflict” as conflict between the government and a domestic second party, but provides no criteria for defining the second actor involved (Gleditsch et al. 2002, 619).

Because neither the form of violence, nor the second actor is defined, this armed conflict variable could encompass anything from instances of domestic terrorism undertaken by a small number of individuals, to state police action aimed at quelling a violent demonstration, carried out by members of the general population. Between public-dependent and independently organized events, causal and influential factors are likely to change, so statistical studies that use such broadly defined dependent variables are likely to produce results that are false for a number of the types of public contention included in the dependent variable. Political purges provide an interesting case study with which to examine the impact of loosely defined public contention variables on statistical results.

The inclusion of a government action, such as a political purge, in a public contention indicator is questionable because the government is an independent organizer and its actions are therefore not likely to be influenced by changes in domestic age structure. A political purge is essentially a mass elimination – either by exile or murder – of political enemies, carried out by a ruling government entity; it has been argued that ruling entities perform purges in order assert their political or social dominance and thin the ranks of the opposition (Connor 1972). Clearly, purges indicate the existence of public contention, but given that they are carried out by a

government entity, how is the likelihood of a purge affected by changes in a country's age structure? Since shifts in domestic age structure only influence the composition of the government indirectly – through voting patterns or political pressure – and since politicians are almost universally of working or senior age, it is unlikely that a large youth or senior bulge would alter the age composition of the government significantly. Accordingly, there is no clear causal pathway through which domestic age structure could influence the likelihood of a purge. Studies that have combined independently organized forms of public contention, like purges, with public-dependent forms of public contention, like riots, have produced flawed results because the respective forms of public contention have different relationships with domestic age structure.

Studies that have categorized acts of public contention by severity rather than by type have also mixed public-dependent and independently organized forms of public contention. In the Uppsala database, conflict is coded as either minor conflict, intermediate conflict, or war, based on the number of battle deaths incurred per year, with a minimum threshold of twenty-five battle deaths (Gleditsch et al. 2002, 619). Although it is possible that some forms of conflict self-sort when the number of casualties is held constant, this method of differentiating forms of public contention is still significantly flawed. Considering guerrilla insurgencies, it is not difficult to imagine that one relatively minor insurgency could result in just twenty-five battle deaths in a year and be classified by Uppsala as a “minor armed conflict”, while another could result in six hundred deaths for two years and be classified as an “intermediate armed conflict”, and a third insurgency could result in over one thousand battle deaths per year, reaching the Uppsala classification of “war” (Gleditsch et al. 2002, 619). The same variation in battle deaths could easily occur with a number of other forms of domestic conflict, so that each level of

conflict intensity would contain data on a number of different types of public contention. Despite their shared severity, each category of conflict would contain both public-dependent and independently organized events. As a result, scholars attempting to limit the scope of their statistical studies on a casualty-incurred basis still end up with mixed data and unreliable results.

Avoiding previous definition problems

As implied by the preceding analysis, variables analyzed in studies of domestic age structure and public contention should be as uniform as available data allows. Since the public-dependence of an act of public contention does not generally vary, I categorize my dependent variables by contention type. Using riots as an example, it is clear that, although riots can be inspired by a myriad of economic, political, or social conditions, they are, by definition, always carried out by members of the general public, and are therefore always public dependent. Furthermore, independent organizers behave consistently with regard to given forms of public contention; strikes, for example, almost always require the organization of a labor union. Having said this, any variation in public-dependence or independent organization that might occur within a public contention type is assumed to be negligible relative to the broader homogeneity of each dependent variable.

Expanding and improving existing literature

Despite the significant body of literature on the relationship between youth bulges and public contention discussed above, to my knowledge, no large-N studies regarding the effect of senior cohorts on political or social contention exist. Also, although there are many studies of senior political participation on regional or national bases, it seems that there are very few, if any,

studies examining the cross-national social or political behavior of seniors. Scholars have stated that seniors are much more passive than youths, and argued that they are repelled by extreme social or political movements, but this logic has never been supported statistically (Huntington 1996; Goldstone 2002). I aim to provide some quantitative evidence to strengthen the understanding of a topic that has, up to this point, been largely ignored.

THEORY & ARGUMENT

Public contention, age-sensitivity, and public-dependence

Throughout this study, I contend that the impact of senior population size on public contention depends on the characteristics of the act in question. Acts of public contention must be both age sensitive and public-dependent in order for domestic age structure to affect the likelihood of their occurrence. In this section I examine the public-dependence and age sensitivity of each my five dependent variables.

Based on the three age sensitivity theories discussed previously, I find all variables included in this study to be age sensitive, except for strikes. I expect that seniors' commonly held aversion to radical political movements and violence makes them unlikely to support or participate in riots, guerrilla insurgencies, or coups. Due to political alienation theory, I also expect senior populations to demonstrate a lower propensity to engage in anti-government demonstrations than youth populations. Unlike the other dependent variables, I find theoretical evidence that suggests seniors are more likely to participate in a labor strike than youths. Due to high rates of pay and specialization, and their limited geographic mobility, seniors have more incentive to strike for better working conditions than do younger workers, who have less invested in their current employment and can relocate for alternative work with relative ease

(Posner 1984; Freeman and Medoff 1985). Although strikes do represent acts of public protest, to which seniors are typically averse, strikes are aimed at achieving narrow goals, such as better wages and/or working conditions, which should make strikes seem more acceptable to seniors than demonstrations for broad social or political change. Furthermore, the increased incentives to strike that seniors experience as a result of their characteristics in the workforce counteract the disincentives suggested by rational choice theory. Of the five public contention variables included in this study, all except for strikes are identified as age-sensitive, but only those that are also public-dependent should be affected by changes in the size of the senior population.

Due to the broad public participation or support that they require, riots, guerrilla insurgencies, and anti-government demonstrations are considered public-dependent, while coups and strikes, which largely depend on the work of independent organizers, are not. The occurrence of an anti-government demonstration or riot is, by the definition used in this study, dependent on public participation (Databanks International 2010). Guerilla insurgencies, though involving just a small number of combatants relative to a total population, still depend on the general public for full-time volunteers and general support (Arreguín-Toft 2006). Insurgent groups depend on the general public to provide supplies, small sums of money, or simply to lie to government investigators, and are therefore considered public-dependent (Valentino 2004). Strikes, though public-dependent in the sense that workers must participate, are heavily influenced by the strength of labor unions – an independent organizer – that depend largely on amenable domestic political factors to exist (Jenkins 1983; Waddington and Hoffman 2000). The importance of unions as an independent organizer lessens the importance of public support in dictating the prevalence of strikes. Taking this into account, I consider strikes independently organized and not public-dependent. Finally, high-ranking military officers act as independent

organizers when orchestrating a coup and use existing militaries to depose the ruling political elite (Belkin 2003). Coups therefore require neither general public participation nor support. Even in as far as they depend on the willing participation of members of the military, coups are not subject to influence by the size of a country's senior population, because active soldiers are, by most common military guidelines, young (Central Intelligence Agency 2011). Of my five dependent variables, three are both age sensitive and public-dependent.

Given their public-dependence and age sensitivity, riots, anti-government demonstrations, and guerrilla insurgencies should all correlate negatively with the size of a country's senior population. Although the violence involved in a coup may negatively affect public approval, that public approval is not an important factor in determining the likelihood of a coup because coups are not public-dependent; therefore, I expect that coups will not demonstrate a statistically significant relationship with the size of a country's senior population. Lastly, based on the characteristics of seniors in the workforce, I suspect that the senior population will have a positive relationship with strikes, but due to the role of unions as independent organizers of strikes, I do not expect that relationship to be consistently statistically significant.

Given the various theoretical relationships between domestic age structure and my five public contention dependent variables discussed here, and holding their definitions constant, I hypothesize that:

Hypothesis 1: Riots, anti-government demonstrations, and guerrilla insurgencies will decrease as the senior population rises, while coups and strikes, will not respond significantly to changes in the senior population.

RESEARCH DESIGN

In this statistical study, I will examine the relationship between five types of public contention and the size of the senior population. The dataset I used includes economic, political and demographic data on 174 countries covering the 41 year period between 1960 and 2000. To analyze the relationship between my five dependent variables and senior bulge, I combined public contention data from Arthur Banks' Cross-National Time-Series Data Archive (CNTS) with demographic and economic data from the World Development Indicators (WDI) and ran a series of ordinary least squares fixed effects regressions. All political contention variables as well as all control variables are count variables, with the exception of squared and non-squared values of Polity IV score and the brevity of peace variable. Polity IV regime type scores exist on a scale from -10 to 10, with -10 representing a complete autocracy and 10 representing a complete democracy. I explain the reason for squaring Polity IV scores below. Brevity of peace is a statistic that measures a country's risk for violence based on any recent violent occurrences; the variable exists on a decimal scale from 1 to 0.

Dependent variables

The CNTS dataset contains annual records for the number of occurrences of one dozen different forms of publicly contentious behavior. In order to examine the varying relationship between senior populations and different forms of public contention, I chose coups, anti-government demonstration, riots, strikes, and guerilla insurgencies because they vary with respect to age sensitivity and public-dependence. Because the data on these forms of public contention were collected by a third party, I rely on the data collector for their definitions, except

where augmentation of a definition was needed for clarification, in which case assumptions with regards to term definitions were based on the widely held understanding of the term in question.

The CNTS defines a coup as “[an] extra-constitutional or forced change in the top government elite and/or its effective control of the nation's power structure. The term ‘coup’ includes, but is not exhausted by, the term ‘successful revolution’. Unsuccessful coups are not counted” (Databanks International 2010). Although the CNTS definition does not state this explicitly, it is generally accepted that a coup is ordered, organized and/or carried out by a member of the existing military or political elite (Belkin 2003); I assume that this is also true for the coups measured by the CNTS dataset.

The CNTS dataset defines both riots and anti-government demonstrations as demonstrations comprised of one hundred or more people. The dataset differentiates the two on the basis that anti-government demonstrations are considered peaceful, while riots involve “the use of physical force” (Databanks International 2010). The CNTS dataset also distinguishes anti-government demonstrations from riots by stating that anti-government demonstrations are targeted specifically at “government policies or authority”, while riots are not necessarily politically motivated (Databanks International 2010).

The CNTS defines Guerrilla insurgency as, “Any armed activity, sabotage, or bombings carried on by independent bands of citizens or irregular forces and aimed at the overthrow of the present regime” (Databanks International 2010). I assume that the guerrilla insurgencies recorded in the CNTS dataset also possess the traits commonly assigned them by existing conflict literature.

Finally, the CNTS defines a general strike as a labor strike that includes at least one thousand industry workers of multiple employers, and is conducted in protest of national

government policies or authority. I assume that strike-causing grievances can vary from philosophical issues with broad labor policies to objections to more specific policies, such as public wage rates.

Measuring senior populations

Statistically, there are a number of ways to evaluate a country's age structure. In addition to average age and median age, the size of a given age bracket can be measured against a population as a whole, or against the size of any age bracket other than itself. As such, a senior population can be measured relative to the youth (15-24 year old) population, the under-15 population, the working age population, as a percent of the total population, or as a percent of the adult population.

There are a few statistical measurements that must be avoided because they can under- or over-report that statistical significance of a given relationship. Because under-15 populations are generally economically, socially and politically inactive, they play essentially no role in determining the likelihood of the publicly contentious events being examined in this study. Therefore, the under-15 age bracket is typically excluded from age structure measurements in studies of public contention. Additionally, the senior population should not be measured in relation to the youth population because this statistical measure does not realistically reflect a country's age structure, and because measuring the senior population in this way can greatly exaggerate the importance of a shift in either age bracket.

To ensure that my results are not the result of a flawed statistical measurement, I measure the senior population as a portion of the total population, as a portion of the adult population and as a ratio to the working age population. From my theoretical analysis I identify two key

interactions between seniors and the general population. First, economically, larger senior populations represent a higher dependency ratio and can impact a country's workforce by depending on workers for financial support (Khadr and Rashad 2002). Second, socially, large senior populations are thought to deplete the pool of potential participants in violent and extreme forms of public contention by abstaining from most social or political movements (Huntington 1996; Goldstone 2002). All three senior population measurements mentioned here should capture these two key interactions, so I expect the relationship between each measurement and each DV to be nearly identical.

Control variables

Because the acts of public contention in question are caused by a number of disparate and complex factors, I have included several control variables in my statistical models. These control variables were added based on their theoretical importance and on their prevalence in other studies of public contention and domestic age structure.

Regime type is an important factor in determining the likelihood of politically contentious activity. In this study, regime type will be measured by Polity IV score, which is a metric that ranks levels of institutional democracy and autocracy on a scale from -10 to 10 (Jagers and Gurr 1995). Polity IV score is a good indicator of whether increased levels of democracy or autocracy increase or decrease a particular dependent variable, but Polity scores are not a perfect measure of the effect of the full range regime characteristics. Strong democracies and strong autocracies, represented by the polity scores 10 and -10, respectively, experience the least political violence, while the more moderate regimes that fall in between these two categories experience the most (Fox and Hoelscher 2010). When instances of public

contention are clustered near zero on the polity scale, the public contention variable's relationship with the raw Polity IV variable will be bell-shaped and not statistically significant in a linear regression (Muller 1985). This is a problem because, although regime type may not affect all forms of public contention, other regime characteristics may. To fully control for the effect of regime characteristics on public contention, I also control for squared Polity IV score, so that higher variable values correspond to lower risk regimes and lower values correspond to higher risk regimes. Squared values of Polity IV score cannot be used to determine the relationship of a certain regime type with a dependent variable, because autocratic and democratic regimes are combined at one end of the spectrum when the -10 to 10 scale is squared, but they are useful in measuring the effect of 'regime polarity' – that is, how far towards one political extreme a regime is (Muller 1985). Separately, neither of these polity metrics are a perfect measure, but when combined they give a good representation of the impact of various regime characteristics on public contention.

Level of development is another important determinant of the level of public contention in a given country. Countries with generally good transportation and public safety infrastructure, in which citizens experience a higher quality of life and find more gainful employment, are less likely to experience a number of forms of public contention (Weede 1981). There are, however, a number of ways that one can measure level of development.

GDP is the most basic way of statistically accounting for development, but this metric often does not correspond directly to the quality of life experienced by average citizens, because it does not take into account how many people a given GDP must support, and does not account for how a country's wealth is distributed. GDP per capita is an improvement over GDP because it accounts for the size of a given population, but even this does not represent how much money

makes its way to the average citizen; populations in countries with a highly unequal wealth distribution, or in which little is spent on education or public infrastructure, can still experience an extremely low level of development, regardless of total or per capita GDP (Diener and Suh 1997). IMR, on the other hand, is a good indicator of the level of development experienced by a country's average citizen, because it encompasses a number of important aspects of overall development, including wealth distribution, healthcare quality, level of education, and gender equality (Sen 1998). IMR has been used to control for development in a number of studies on political violence. To ensure proper control for development, I regress all statistical models first with IMR as the development control and then with GDP. Throughout the research phase of this study, I also substituted several forms of GDP from various sources at different times, to ensure the results are reliable. Varying the source and form of GDP data did not change the results, so, in order to maximize the number of cases, I use log transformed WDI GDP values in constant year 2000 US dollars.

Both countries with larger populations and countries that have recently experienced acts of public contention may carry more risk for further instances of public contention, so I controlled for both total population size and the length of time that a country has been at peace (Urdall 2004; Hauge 1998). The metric used to measure brevity of peace is coded 0 in a year with no conflict and 1 in a year with conflict. The variable then decreases for every subsequent consecutive year of peace, in order to reflect the shrinking risk of violence. To control for total population, I use log transformed WDI data.

Finally, I include two economic variables on a rotating basis to account for the effect that growth rate, or a change in the growth rate, has on levels of public contention. In as far as it is an indicator of economic performance, the growth rate can be important in determining the

occurrence of certain forms of public contention (Kaufman 1982). In accordance with existing youth bulge studies, I operationalize the growth rate as the average growth for the previous five years (Urdall 2004). Scholars have posited, though, that economic conditions are not as important in determining levels of political contention as are relative economic conditions (Gurr 1970). Simply put, the theory of relative deprivation holds that people are not likely to react strongly to conditions that they have become accustomed to over the span of their lifetimes, but are very likely to react strongly when conditions worsen substantially and economic expectations are suddenly no longer being met. To control for the effect of relative deprivation, I have used the standard statistical measure, which I refer to as 'relative growth'. In accordance with existing studies that incorporate a relative growth variable, I generated the metric by dividing the current year's growth rate by the average growth rate for the previous five years (Urdall 2004). I have multiplied this metric by -1, so that smaller percentages are not regarded as larger values due to their negative signs. I generated both growth and relative growth variables from WDI GDP data based on constant 2000 US dollars.

Furthermore, to ensure that my results were not simply the result of incorrect measurements, I ran all regressions using each of the four possible senior population measurements. These possible metrics are: Percent seniors of total population, percent seniors of adult population (15 + years), ratio of senior to youths (15-24 years), and ratio of seniors to working age population (15 – 64 years).

REGRESSION MODELS

In order to test the impact of senior populations on the five dependent variables, I created three basic statistical models. In every model I controlled for the lag of the dependent variable, the domestic age structure variable, squared and non-squared Polity IV score, logged total population, brevity of peace, and either IMR or logged GDP as a development control. The first model included just those seven independent variables; I then added growth and relative growth, respectively, in the second and third models. I ran this set of three regressions and then substituted logged GDP for IMR and ran each model again. I repeated this process for each of the five dependent variables. It is also worth noting that, because the brevity of peace variable has been used more widely in parametric studies of conflict onset rather than non-parametric studies of conflict occurrence frequency, such as this one, all models were also run without the

Model Number (Rotating Dependent Variable)	Controls (Independent Variables)	Model Number (Rotating Dependent Variable)	Controls (Independent Variables)
Model 1	lag of dependent variable, domestic age structure metric, raw Polity IV, Polity IV squared, total population size, brevity of peace, infant mortality rate	Model 3	Lag of dependent variable, domestic age structure metric, raw Polity IV, Polity IV squared, total population size, brevity of peace, infant mortality rate, relative growth
Model 2	Lag of dependent variable, domestic age structure metric, raw Polity IV, Polity IV squared, total population size, brevity of peace, infant mortality rate, five year growth rate	Model 4	Lag of dependent variable, domestic age structure metric, raw Polity IV, Polity IV squared, total population size, brevity of peace, GDP
Model 5	Lag of dependent variable, domestic age structure metric, Polity IV, Polity IV squared, total population size, brevity of peace, GDP, five year growth rate	Model 6	Lag of dependent variable, domestic age structure metric, raw Polity IV, Polity IV squared, total population size, brevity of peace, GDP, relative growth

brevity of peace control. Doing so had little or no effect on the statistical significance and coefficients of the remaining IVs. The table below describes each model.

Testing Hypothesis 1

Hypothesis 1: Riots, anti-government demonstrations, and guerrilla insurgencies will decrease as the senior population rises, while coups and strikes will not respond consistently to changes in the senior population.

If the data supports H1, this will suggest that my theoretical reasoning with regard the causal link between the size of the senior population and acts of public contention is also correct. In the THEORY & ARGUMENT section, I argued that the relationship between an act of public contention and a growing senior population could be predicted based on whether or not the act in question is both age sensitive and public-dependent. Since all of my dependent variables but coups and strikes are age sensitive and public-dependent, if coups and strikes are not significantly correlated with senior population size, while insurgencies, riots, and anti-government demonstrations are, the lack of public-dependence of coups and strikes likely explain the non-significance. This result would substantiate my quantitative predictions as well as my theory-based assertion that only types of public contention that are both age sensitive and public-dependent are affected by changes in the size of the senior population.

EMPIRICAL RESULTS

With respect to Hypothesis 1, all variables respond to changes in senior population size as expected. With some minor differences, the statistical results for all six models were consistent, regardless of the senior population metric used. With all metrics, I found evidence

that riots, anti-government demonstrations, and guerrilla insurgencies are less likely in countries with larger senior populations. Statistical results also show that strikes and coups are not affected by changes in the size of the senior population, which supports my theoretical argument that coups and strikes are independently organized; this finding was also consistent regardless of the senior population measurement used. The results reported below were generated using the senior bulge measurement.

Riots are negatively correlated with senior bulge in all six models. Shown in Table 1, significant at the 99% confidence level, the senior bulge variable has a coefficient of $-.095$ in Model 3, indicating that an enlargement of the senior bulge by one percent is associated with approximately one less riot per decade in a given country. Riots correlate negatively with squared Polity IV scores, meaning that moderate regimes have experienced more riots than regimes that fall closer to either the democratic or autocratic pole, but raw Polity IV score does not correlate significantly with riots because the pattern of riots in relation to Polity IV is a bell curve, with more occurrences of riots at 0 than at -10 or 10 . This is further statistical confirmation that riots are more common in more moderate regimes but are not more or less common in a democracy than in an autocracy. In Models 2 and 3, which are presented in Table 1, riots are correlated positively with IMR, meaning that as infant mortality rate decreases, so do instances of riots. Though not shown here, when I substitute GDP for IMR as an alternative measure of development, GDP is not statistically significant with respect to riots. Because GDP reflects the level of societal wealth more than the well-being of average citizens, the correlation between riots and IMR, and the lack of correlation between riots and GDP, tells us that, in determining the likelihood of a riot, an individual's well-being with respect to health, education, and social equality, is more important than an individual's theoretical share of national wealth

(Sen 1998). Relative growth is statistically significant at the 90% confidence level in all related models, and has the largest coefficient of all the riot controls included in this study, while growth shows no statistical significance. This suggests, in accordance with relative deprivation theory, that economic performance relative to recent standards is a more significant cause of riots than economic standards themselves.

Like riots, levels of anti-government demonstrations correlate negatively with the size of the senior population and with squared values of a country's Polity IV score. Shown in Table 1, in Models 5 and 6, the coefficient of the senior bulge variable with respect to anti-government demonstration is slightly smaller than the coefficient with respect to riots; a senior bulge that is increased by one percent has historically accounted for one less anti-government demonstration roughly every 12 years. As with riots, countries with moderate regimes – those that fall between complete democracy and complete autocracy – are most likely to experience anti-government demonstrations. Raw Polity IV score is also negatively correlated with anti-government demonstrations, which shows that they have occurred more frequently in countries with autocratic regimes than in countries with democratic regimes. In direct opposition to riot patterns, IMR does not correlate with the occurrence of anti-government demonstrations, but when I replace IMR with GDP, GDP is significant in all three models. This suggests that anti-government demonstrations are affected less by the level of development experienced by individual citizens, and more by a country's overall wealth. Both the five year average growth rate and relative growth are negatively correlated with anti-government demonstrations, implying that economic performance is an important factor in determining the likelihood of anti-government demonstrations. As with riots, when included, the relative growth variable has the largest coefficient of all control variables. The coefficient of .790 at the 99% confidence level

indicates that, a one percent increase in relative growth results in almost eight fewer anti-government demonstrations per decade.

TABLE 1
Dependent Variables listed in top row under the model number
Asterisks next to coefficient values denote statistical significance

Model Number	(2)	(3)	(5)	(6)	(3)
Variables	Riots	Riots	Anti-Gov	Anti-Gov	Guerrilla
Lag Riots	0.302*** (0.0163)	0.301*** (0.0163)			
Senior bulge	-0.0896*** (0.0322)	-0.0952*** (0.0323)	-0.0601* (0.0325)	-0.0703** (0.0328)	-0.0404** (0.0129)
Raw Polity 4	0.000875 (0.00726)	0.000454 (0.00727)	-0.0137** (0.00679)	-0.0140** (0.00679)	-0.00777*** (0.00268)
Polity 4 Squared	-0.0050*** (0.00153)	-0.00498*** (0.00153)	-0.0076*** (0.00144)	-0.0075*** (0.00144)	-0.00172*** (0.000567)
Total Population	0.286 (0.266)	0.202 (0.268)	0.329 (0.216)	0.223 (0.222)	-0.0400 (0.0874)
Brevity of Peace	-0.172 (0.120)	-0.201* (0.122)	-0.0872 (0.115)	-0.132 (0.115)	0.239*** (0.0461)
Infant Mortality Rate	0.00648** (0.00303)	0.00608** (0.00304)			
5 Year Growth	-0 (0)		-0*** (0)		
Relative Growth		-0.470* (0.260)		-0.790*** (0.250)	0.0542 (0.0979)
Lag Anti-Gov. Dem.			0.246*** (0.0165)	0.245*** (0.0165)	
GDP (Logged)			0.192* (0.115)	0.198* (0.116)	-0.0813* (0.0457)
Lag Guerrilla Insurg.					0.256*** (0.0157)
Constant	-1.459 (2.595)	-0.120 (2.676)	-5.906*** (1.676)	-4.171** (1.668)	2.699*** (0.658)
Observations	3,597	3,597	3,597	3,597	3,594
R-squared	0.107	0.107	0.086	0.086	0.112
Number of Countries	144	144	144	144	144

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Guerrilla insurgencies are also correlated negatively with senior bulge, and with both Polity IV metrics, in all six models. In Model 3, shown in Table 1, significant at the 99%

confidence level, the senior bulge variable has a coefficient of $-.04$, meaning that in the past, a one percent increase of seniors relative to the total adult population has resulted in roughly one less guerrilla insurgency every 30 years. Though they are significant at the 99% confidence level, both raw and squared Polity IV scores have small coefficients. The largest coefficient of all controls is associated with the brevity of peace variable, which shows positive correlation at the 99% confidence level in all six models. This indicates that the more recently a country has experienced a domestic conflict, the more likely it is that that country will experience an instance of guerrilla insurgency. As shown in Model 6, GDP is positively correlated with the guerrilla insurgency variable, but in Models 1, 2 and 3, IMR showed no significant correlation with the dependent variable. As with anti-government demonstrations, this suggests that a country's broad level of development is a more influential factor in determining the likelihood of a guerrilla insurgency than the level of development experienced by an average citizen. Neither relative growth nor the five year average growth rate is statistically significant in any model, suggesting that causes of a guerrilla insurgency are primarily political, and not economic.

As predicted, coups bear no statistically significant relationship to senior bulge in any of the six models. Shown in Table 2, Polity IV squared values correlate negatively to coups in all six models, but the coefficients of $-.00113$ in Model 3 and $-.001114$ in Model 6 are small enough to indicate that the practical effect of regime type on coups is negligible. Raw Polity 4 is significant at the 99% confidence level, and has a coefficient that is negative and roughly twice that of squared Polity IV score, indicating that more autocratic regime are more likely to experience a coup. The relative growth variable correlates negatively with coups, with a coefficient of $-.125$ in Model 3; this coefficient is considerably larger than that associated with squared values of Polity IV, suggesting that relative growth contributes more to the likelihood of

a coup than regime type does. Notably, of IMR, GDP, and the five year average growth rate, not one variable is significantly correlated with coups. There are a few possible explanations for this lack of correlation.

First, when compared to the other forms of public contention examined in this study, coups are rare; out of 5,471 sample years, there were only 197 coups recorded, while in 5,372 sample years for guerrilla insurgencies - the next rarest form of public contention – 1,167 insurgencies were recorded. The small number of coup occurrences makes correlation difficult to establish because there is an inflation of zeros and not enough variation in the coup variable. In other words, for every year in which a given level of development or economic performance coincides with a coup, there are many more years when those developmental and economic circumstances occurred and did not lead to a coup. Second, because coups are initiated by a small group of individuals, the motivation for starting a coup will vary enormously from one coup instance to another; military officers initiating a coup could be motivated by specific political conditions, by a personal rivalry, or might just see an opportunity for personal advancement. With such disparate potential causes, it is difficult to argue that the likelihood of a coup is affected by something as broad as IMR or GDP.

Shown in Table 2, strikes are significant and positively correlated with senior bulge in Model 4, but are not significant in Model 6. Significant at the 90% confidence level in Model 4, the coefficient of .028 indicates that a one percent increase in the senior bulge has resulted in only one additional strike roughly every 35 years. The positive sign of the coefficient supports the theory that older workers have a higher incentive and higher likelihood of striking than younger workers. In Models 1, 2, 3, 5 and 6, however, strikes do not correlate with the senior bulge variable, showing that, though some relationship between senior bulge and strikes exists,

senior bulge is not a major cause of labor strikes. Strikes are positively correlated with total population as well as squared and non-squared Polity IV score in all six models. The positive coefficient of both regime type metrics implies that countries with more democratic regimes will experience more labor strikes. The coefficient of both Polity IV score and squared Polity IV score, .015 and .002, respectively, are small, when compared to the coefficient of the total population variable of .460, which accounts for about one additional strike for every two percent increase in population size. Interestingly, strikes do not correlate with measurements of economic conditions or level of development; this is evidence of the importance of independent organizers, like labor unions, whose strength is dependent on domestic political circumstances not examined by this study (Hoffman and Waddington 2000).

Summarizing empirical results

As was argued and supported throughout this study, different forms of public contention react differently to senior bulge growth. This statistical analysis supports the claim that instances of guerrilla insurgencies, anti-government demonstrations, and riots will decrease as senior bulges increase, while coups and strikes will remain largely unaffected. In addition to these conclusions, drawn directly from my original data analysis, I also find support for theory-based claims that only the forms of public contention which are both age sensitive and public-dependent will be affected by changes in the size of a country's senior bulge. Furthermore, though it was not consistently statistically significant, my theoretical analysis resulted in the correct prediction of the direction of the coefficient between senior bulge and strikes. Given these favorable quantitative results, I hope that my interpretation of the causal importance of age sensitivity and public-dependence can function as a framework for predicting the relationship between senior population size and various forms of public contention, in general.

TABLE 2

Dependent Variables listed in top row under the model number
 Asterisks next to coefficient values denote statistical significance

Model Number	(4)	(6)	(3)	(6)
VARIABLES	Strikes	Strikes	Coups	Coups
Lag Strikes	0.139*** (0.0207)	0.133*** (0.0222)		
Senior Bulge	0.0277* (0.0166)	0.00239 (0.0213)	0.00167 (0.00413)	0.00256 (0.00447)
Raw Polity 4	0.0138*** (0.00348)	0.0147*** (0.00395)	-0.00274*** (0.000927)	-0.00277*** (0.000922)
Polity 4 Squared	0.00181*** (0.000692)	0.00197** (0.000814)	-0.00113*** (0.000195)	-0.00111*** (0.000196)
Total Population (Lagged)	0.437*** (0.127)	0.460*** (0.163)	-0.0384 (0.0339)	-0.0239 (0.0300)
Brevity of Peace	0.0336 (0.0561)	0.0146 (0.0655)	-0.0109 (0.0156)	-0.0120 (0.0158)
GDP (Logged)	-0.0690 (0.0661)	-0.0700 (0.0815)		-0.00775 (0.0157)
Relative Growth		-0.128 (0.165)	-0.125*** (0.0333)	-0.121*** (0.0341)
Lag Coups			0.295*** (0.0166)	0.295*** (0.0166)
Infant Mortality Rate			-4.15e-05 (0.000388)	
Constant	-2.536*** (0.812)	-2.350** (1.048)	0.573* (0.339)	0.607*** (0.224)
Observations	2,637	2,309	3,623	3,623
R-squared	0.047	0.043	0.108	0.108
Number of Countries	112	107	144	144

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

DISCUSSION

Implications of projected senior population growth

Although the correlation between senior bulge and my five dependent variables result in small statistical coefficients, when placed in the context of projected senior population growth, we see that the impact of future changes in domestic age structure may not be so modest.

According to UN population projections, the global senior population will more than double in the next 40 years. By 2030, seniors are projected to make up 16.5% of the global adult population – roughly a 51% increase over the 2010 level of 10.9%; that number will reach 22.5% by 2050, meaning that almost a quarter of the world's population will be over 65 years old (UN Population Division 2009). What follows is a hypothetical examination of how rapid senior population growth could magnify the seemingly small impact of senior bulges on certain forms of public contention.

Large projected senior bulge growth suggests the possibility of increased passivity in many key countries and geographic regions in the next several decades. Global senior bulge trends are somewhat skewed by enormous senior population growth in well-developed regions, such as Western Europe and North America, but in the coming decades even less developed regions will see significant growth in their senior bulges, relative to current and previous levels. In 2010, senior populations in the Middle East represented roughly 6.9% of the total adult population, placing that region fall in the “young population” category (Rashad and Khadr 2002). According to UN projections, this number will reach 10.2% by the year 2030, and will hit 14.9% by 2050, more than surpassing the 10% senior threshold that defines a region or country as “mature” (UN Population Division 2009). Extrapolating from the results of this study, we would then expect more than three fewer riots per decade by 2030, and eight fewer riots per decade by

the year 2050, throughout the Middle East. In Latin America and the Caribbean, senior bulge will reach 21.7% by the year 2050 – roughly a 230% increase from the 2010 level of 9.5% (UN Population Division 2009). At the 2050 senior bulge level, Latin American and Caribbean nations could expect around 12 fewer riots, 10 fewer anti-government demonstrations, and about four fewer guerrilla insurgencies per decade. Considering that, according to the CNTS dataset, a worldwide average of just 67 riots and 28 guerrilla insurgencies occurred every year between 1960 and 2000, a reduction of several riots or insurgencies per country per decade is significant.

Although these calculations are useful in illustrating the magnitude of predicted senior population growth, they should not be regarded as meaningful predictions of future events. If predicted age structures do come to pass, senior bulges will likely play an increased role in determining levels of public contention, but these numbers will not necessarily apply. Furthermore, these projections do not take into account other shifting variables that will also affect the likelihood of various forms of public contention in the future.

Pros and cons of a more passive citizenry: Perspectives from the MENA and China

A decrease in the likelihood of various acts of public contention can be seen as a boon for public safety or as a disaster for political and social expression. If the statistical analyses included in this study are correct, then countries with rising senior bulges can expect fewer instances of riots and non-violent protest, as well as fewer guerrilla insurgencies. This positive assessment can lead to an intriguing normative question: How will an increase in general public passiveness affect the well-being of people and governments in senior bulge countries? On one hand, public contention can disrupt economies and lead to death, injury, and loss of property;

conversely, though, acts of public contention are an important method through which oppressed populations can achieve greater social and political freedom.

A decline of disruptions to the normal day-to-day functioning of society, especially a decline of violent disruptions, can benefit national economies and improve public safety. Between mid-January and mid-February of 2011, 300 civilian deaths were confirmed as a result of riots in Egypt; in Yemen, 45 individuals were killed and another 355 were wounded in a single government attack on protesters (Human Rights Watch 2011). In addition to the human costs, violent acts of public contention carry adverse economic implications. Historically, countries that experience unconstitutional changes in leader or leading party, experience lower growth than countries that do not (Alesina et al. 1996). Property damage and loss of sales revenue are two ways in which public disruptions affect economies directly, but more broadly, and perhaps more importantly, political instability discourages private investment because neither foreign or domestic investors will devote capital to building industrial infrastructure that is unlikely to yield profit and is likely to be damaged or destroyed (Feng 2001). In countries with economically struggling populations, such as Egypt or Yemen, any missed development or modernization opportunity is regrettable. The negative economic side-effects of public disruptions should be considered even more unfortunate when one considers the role that poor economic performance can play in causing public contention in the first place. Riots and demonstrations, however, do not occur solely to place the safety of the general public at risk and worsen a country's economic performance; public contention can bring about a number of positive social and political changes.

Despite the sort of human costs and potential economic setbacks described here, recent demonstrations in the MENA bring to mind the benefits of social and political upheaval. It has

been established by a number of studies that engaging in acts of public contention, including violent demonstrations, greatly increases a group's chance of forcing social or political change (Gamson 1989). As a result of massive public unrest, Tunisian and Egyptian citizens will likely be able to elect their own government officials for the first time in history (Khalilzad 2011). If it is safe to assume that populations are better off when they can determine domestic political and social structures for themselves, then this should be seen as a positive development. The weight of political freedom against the loss of human life and livelihood is not something that can be determined objectively, but is something that should be given much careful consideration. As population bulges in MENA mature, and public willingness to engage in various acts of public contention subsides, the sort of revolutions that ousted long-term dictators and promoted the political will of MENA populations in early 2011 may become increasingly rare. Despite the potential economic benefits of increased political stability, a reduction in the public's ability to affect social and political change will be to the detriment of citizens in oppressed countries around the world.

When weighing the economic benefit of increased stability against the political and social downside of decreased public influence, China represents a unique and interesting case study. From 1982 to 2009, China's tertiary education ratio – the ratio of the enrolled undergraduate students to college-aged individuals - rose from 1.1% to 22.7%; in that same time period, China's per capita GDP has increased by over 1800% (World Bank Development Indicators 2009). The benefits of improved education and wealth are significant, but despite widely held expectations that economic growth would bring freedom and democracy, China remains a politically oppressed state (Bueno de Mesquita and Downs 2005). The Chinese government severely limits the freedom of the domestic press, the information access of its citizens, the labor

organization rights of its workers, and maintains a biased and corrupt judiciary system (Human Rights Watch 2010). In reaction to these policies, Chinese citizens rioted 87,000 times in 2005, according to the Chinese Public Security Ministry (Cody 2006). This sort of public disobedience, though a public safety threat, is thought by some to have resulted in a number of reforms that will benefit down-trodden rural farming families (Cody 2006). China seems to have demonstrated an ability to balance economic productivity with successful political activism. This balance can be explained by the power and complexity of China's enormous autocracy, which makes limited concessions and keeps legitimate threats to the government in check (Bueno de Mesquita and Downs 2005). The Chinese government's strategy of making slow and steady concessions of civil and political rights can be considered either despicable or ideal, depending on a person's sociopolitical ideals. Regardless, the question that remains is, what will happen if public pressure for reform ceases?

In 2005, China's senior bulge was just 9.7% - well below the 2005 global average of 14.6% - so China's population was, based on its age structure, likely to engage in acts of public contention for the purpose of achieving social and/or political change (Urdall 2004; UN Population Division 2009). With a population bulge currently of working age, China's senior bulge will explode from 10.2% in 2010 to an estimated 14.3% in 2020 (UN Population Division 2009). Exactly how much this will affect levels of public contention is uncertain, but if the statistical relationships revealed in this study hold true, China should see a decrease in instances of a number of forms of public contention in the coming decade. The effect that this potential decrease in public contention will have on the progress of political freedom in China is similarly difficult to predict, but to the extent that public contention encourages reform and is itself affected by domestic age structure, the outlook is not good. With an oppressive government not

eager to cede influence the people, political freedom in China may suffer as public activism decreases.

The situation of citizens in China and MENA are very different, but we may, nonetheless, learn what to expect from one by studying the other. In China, it seems, the domestic population was able to have their political expression and eat it too, even if political liberties have been spoon-fed at an agonizingly slow pace. Over the past few decades, the size and strength of China's government made positive economic performance possible, even in the face of frequent protests; but with domestic age structure pacifying the general public, how will political rights fair in the coming decade? The proper balance between growth and activism has yet to be struck in MENA, where studies have shown constant instability to be a serious retarding factor with regard to the region's economic growth and development (Ades and Chua 1997). Despite the ideological appeal of political reform, might MENA countries be better off if economic development was achieved sooner, and political freedom was acquired later, as seems to be the case in China? How changes in age structure impact public contention and political rights in China in the coming decade will not only test the importance of the statistical relationships described in this study, it will also provide an opportunity to weigh the benefits of stability against the drawbacks of political oppression.

SUMMARY AND AREAS FOR FURTHER RESEARCH

The aim of this study was to evaluate the effect of senior populations on a variety of forms of public contention and, in doing so, identify the basic causal mechanisms through which seniors affect occurrences of public contention. Theoretical discussion suggested that an act of public contention must be both age sensitive and public-dependent in order for an act of public

contention to be affected by a change in senior population size. The cross-national statistical analysis that I performed shows that anti-government demonstrations, riots, and guerrilla insurgencies are all negatively correlated with senior population size, while strikes and coups are not. These results confirm my hypothesis and, because strikes and coups are both independently organized while the other DVs are each both age sensitive and public-dependent, support the causal relationships that I have suggested on a theoretical basis.

Although this study provides solid statistical and theoretical evidence that the relationship between public contention and senior bulges is causal, the topic is nowhere near exhausted. Similar statistical models should be examined using alternative public contention data and should be applied to new forms of public contention, in order to confirm and expand the results of this study. At the same time, a better practical understanding of how changes in domestic age structure impact levels of public contention would be useful.

Projections, like those in the DISCUSSION section of this study, are useful only in illustrating the results of this specific study, and have little predictive value; in order to understand the magnitude with which larger senior populations affect the number and intensity of various acts of public contention, smaller-N comparative studies are necessary. As mentioned previously, China could be a good focal point for one such case study. Although the 87,000 riots that were reported in China in 2005 seem to dwarf the theoretical impact of senior bulges established by this study, a close examination of riots in China as its population ages over the next ten years might suggest that the impact of China's rapidly aging population is in fact greater than expected. Finally, throughout this study I have argued the importance of studying acts of public contention with increased specificity; terrorist attacks are one specific act that could be examined with respect to changes in domestic age structure in a timely study.

Some scholars have suggested that terrorist groups benefit from easier recruiting during times of large youth bulges, but so far very little statistical evidence has supported this claim (Collier 2000; Lia 2005). To the extent that they recruit and organize terrorist attacks, terrorist group leaders are independent organizers, but further research into the demographics of terrorist organizations needs to be compiled before it can be determined how these groups are affected by changes in domestic age structure. It is possible that terrorist organizations will have a harder time recruiting when older people make up a larger share of a given population, but it is also possible that active recruiting methods can overcome such demographic challenges. Such a study would help describe the impact of independent organizers on the relationship between domestic age structure and public contention, and would lead to a better understanding of a very pertinent contemporary threat to public safety. The studies suggested here would be of great value to both activists and governments in the large number of countries that have, or will soon have, rapidly growing senior populations.

SOURCES

- Ades, Alberto, and Hak B. Chua. 1997. "Thy Neighbor's Curse: Regional Instability and Economic Growth." *Journal of Economic Growth* 2:279-304.
- American Public Radio. 2011. "The Long-term Economic Challenges Egypt Must Overcome." <http://marketplace.publicradio.org/display/web/2011/02/01/pm-the-long-term-challenges-egypt-must-overcome> (March 17, 2011).
- Alesina, Alberto, Sule Ozler, Nouriel Roubini, and Phillip Swagel. 1996. "Political Instability and Economic Growth." *Journal of Economic Growth* 1.2:189-211.
- Arreguin-Toft, Ivan. 2001. "How the Weak Win Wars: A Theory of Asymmetric Conflict." *International Security* 26.1:93-128.

- Associated Press. 2011. "Thousands in Lebanon Demand Hezbollah Be Disarmed." *New York Times*, 13 March 2011
<http://www.nytimes.com/2011/03/14/world/middleeast/14lebanon.html>
- Belkin, Aaron, and Evan Schofer. 2003. "Toward a Structural Understanding of Coup Risk." *The Journal of Conflict Resolution* 47.5:594-620.
- Bloom, David E., and Jocelyn E. Finlay. 2009. "Demographic Change and Economic Growth in Asia." *Asian Economic Policy Review* 4.1:45-64.
- Bloom, David E., and Jeffrey G. Williamson. 1998. "Demographic Transitions and Economic Miracles in Emerging Asia." *The World Bank Economic Review* 12.3:419-55.
- Bouckaert, Peter. 2011. "Egypt: Documented Death Toll From Protests Tops 300"
<http://www.hrw.org/en/news/2011/02/08/egypt-documented-death-toll-protests-tops-300>
(March 17 2011).
- Bronner, Ethan. 2011. "Forces Rout Protesters From Bahrain Square." *New York Times*, 16 March 2011.
<http://www.nytimes.com/2011/03/17/world/middleeast/17bahrain.html>
- Bueno de Mesquita, Bruce, and George W. Downs. 2005. "Development and Democracy." *Foreign Affairs* 84.5:77-86.
- Caldwell, John C. 1976. "Toward A Restatement of Demographic Transition Theory." *Population and Development Review* 2.3/4:321-66.
- Campbell, Andrea Louise. 2002. "Self-Interest, Social Security, and the Distinctive Participation Patterns of Senior Citizens." *American Political Science Review* 96.3:565-574.
- Central Intelligence Agency. 2011. "Military Service Age And Obligation."
<https://www.cia.gov/library/publications/the-world-factbook/fields/2024.html> (March 1 2011).
- Cody, Edward. 2006. "In Face of Rural Unrest, China Rolls Out Reforms." *The Washington Post*, 28 January 2006.
<http://www.washingtonpost.com/wpdyn/content/article/2006/01/27/AR2006012701588.html>

- Collier, Paul. 2000. "Doing Well Out of War: An Economic Perspective." In *Greed and Grievance: Economic Agendas in Civil Wars*, eds. David M. Malone and Mats Berdal. Boulder, CO and London: Lynne Rienner Publishers.
- Connor, Walter D. 1972. "The Manufacture of Deviance: the Case of the Soviet Purge, 1936-1938." *American Sociological Review* 37:403-13.
- Daragahi, Borzou, and Paul Richter. 2011. "Lebanon Government Collapses." *The Los Angeles Times*, 13 January 2011.
<http://articles.latimes.com/2011/jan/13/world/la-fg-lebanon-collapse-20110113>
- Databanks International. 2010. "Variables Listed Alphabetically."
<http://www.databanks.sitehosting.net/Default.htm> (January 15 2011).
- Diener, Ed, and Eunkook Suh. 1997. "Measuring Quality of Life: Economic, Social, and Subjective Indicators." *Social Indicators Research* 40.1/2:189-216.
- Esty, Daniel C., Jack A. Goldstone, Ted R. Gurr, Barbara Harff, Marc Levy, Geoffrey D. Dabelko, Pamela T. Surko, and Alan N. Under. 1995. "Working Papers: State Failure Task Force Report." Woodrow Wilson Center, Washington D.C.
- Feng, Yi. 2001. "Political Freedom, Political Instability, and Policy Uncertainty: A Study of Political Institutions and Private Investment in Developing Countries." *International Studies Quarterly* 45.2:271-94.
- Freeman, Richard B., and James L. Medoff. 1985. "What Do Unions Do?" *Industrial and Labor Relations Review* 38.2:244-245.
- Fox, Sean, and Kristian Hoelscher. 2010. "The Political Economy of Social Violence: Theory and Evidence from a Cross-Country Study." Crisis States Research Centre, London.
- Gamson, William A. 1989. "Reflections On The Strategy of Social Protest." *Sociological Forum* 4.3:455-67.
- Gleditsch, Nils., Petter Wallensteen, Mikael Eriksson, Margareta Sollenberg and Håvard Strand. 2002. "Armed Conflict 1946–2001: A New Dataset." *Journal of Peace Research* 39.5: 615-37.
- Goldstone, Jack A. 2002. "Population And Security: How Demographic Change Can Lead To Violent Conflict." *Journal of International Affairs* 56.1:3-21.

- Gurr, Ted Robert. 1970. *Why Men Rebel*. Princeton, NJ: Princeton University Press.
- Hauge, W., and T. Ellingsen. 1998. "Beyond Environmental Scarcity: Causal Pathways to Conflict." *Journal of Peace Research* 35.3:299-317.
- Healy, Jack. 2011. "Popular Rage Is Met With Violence in Mideast." *New York Times*, 17 February 2011.
<http://www.nytimes.com/2011/02/18/world/middleeast/18protests.html>
- Human Rights Watch. 2010. "China."
<http://www.hrw.org/en/node/87491> (March 8 2011).
- Huntington, Samuel P. 1996. *The Clash of Civilizations and the Remaking of World Order*. New York, NY: Simon & Schuster.
- Ingham, Barbara, Andrejs Chirijevskis, and Fiona Carmichael. 2009. "Implications of an Increasing Old-age Dependency Ratio: The UK and Latvian Experiences Compared." *Pensions: An International Journal* 14.4:221-31.
- Jagers, K., and T. R. Gurr. 1995. "Tracking Democracy's Third Wave with the Polity III Data." *Journal of Peace Research* 32.4:469-82.
- Jenkins, J. Craig. 1983. "Resource Mobilization Theory and the Study of Social Movements." *Annual Review of Sociology* 9:527-53.
- Kasinof, Laura. 2011. "Dozens Injured in Yemen Clashes."
<http://www.bbc.co.uk/go/rss/int/news/-/news/world-middle-east-12762887> (March 10 2011).
- Kaufman, Bruce E. 1982. "The Determinants of Strikes in the United States, 1900-1977." *Industrial and Labor Relation Review* 35.4:473-90.
- Khadr, Zeinab., and Hoda Rashad. 2002. "New Challenges in the Demography of the Arab Region." In *Human Capital: Population Economics in the Middle East*, eds. Ismail Sirageldin. Cairo: American University in Cairo Press.
- Khalilzad, Zalmay. 2011. "A Regional Strategy for Democracy in the Middle East." *The Washington Post*, 15 March, 2001.

http://www.washingtonpost.com/opinions/a-regional-strategy-for-democracy-in-the-middle-east/2011/03/14/ABR8d1Z_story.html

Kirkpatrick, David D. 2011. "Hopes For A Qaddafi Exit, and Worries of What Comes Next." *New York Times*, 21 March 2011.

<http://www.nytimes.com/2011/03/22/world/africa/22tripoli.html>

Lia, Brynjar. 2005. *Globalisation and the Future of Terrorism: Patterns and Predictions*. London: Routledge.

Marsh, Alan. 1974. "Explorations In Unorthodox Political Behaviour: A Scale To Measure Protest Potential." *European Journal of Political Research* 2.2:107-29.

Meyers, Steven L. 2011. "Clinton, in Cairo's Tahrir Square, Embraces a Revolt She Once Discouraged." *New York Times*, 16 March 2011.

<http://query.nytimes.com/gst/fullpage.html?res=9C04EEDB113EF934A25750C0A9679D8B63>

Muller, Edward N. 1985. "Income Inequality, Regime Repressiveness and Political Violence." *American Sociological Review* 50.1:47-61.

New York Times. 2011. "Tunisia."

<http://topics.nytimes.com/top/news/international/countriesandterritories/tunisia>
(March 10 2011).

New York Times. 2011. "Officers Fire On Crowd As Syrian Protests Grow." *New York Times*, 20 March 2011.

<http://www.nytimes.com/2011/03/21/world/middleeast/21syria.html>

Posner, Richard A. 1984. "Some Economics of Labor Laws." *The University of Chicago Law Review* 51.4:988-1011.

Ragan, Apuline K., and James J. Dowd. 1974. "The Emerging Political Consciousness of the Aged: A Generational Interpretation." *Journal of Social Issues* 30.3:137-158.

Reuteman, Rob. 2010. "Will Baby Boomers Bankrupt Social Security?"

http://www.cnbc.com/id/34941334/Will_Baby_Boomers_Bankrupt_Social_Security. (10 March 2011).

- Schmitt, Michael N. 1992. "State-Sponsored Assassination in International and Domestic Law." *Yale Journal of International and Domestic Law* 16:609-52.
- Sen, Amartya, 1998. "Mortality as an Indicator of Economic Success and Failure." *Economic Journal* 108:1-25.
- UN Population Division. 2009. "World Population Prospects: The 2008 Revision Populations Database." <http://esa.un.org/UNPP/> (December 5 2010).
- Urdal, Henrik. 2004. "The Devil in the Demographics The Effect of Youth Bulges on Domestic Armed Conflict 1950-2000." The World Bank, Washington, D.C.
- Urdal, Henrik. 2006. "A Clash of Generations? Youth Bulges and Political Violence." *International Studies Quarterly* 50.3:607-29.
- Valentino, Benjamin, Paul Huth, and Dylan Balch-Lindsay. 2004. "Draining the Sea: Mass Killing and Guerrilla Warfare." *International Organization* 58.2: 375-407.
- Waddington, Jeremy., and Reiner Hoffamn. 2000. "Trade Unions in Europe: Reform, Organisation, and Restructuring." In *Trade Unions In Europe: Facing Challenges and Searching for Solutions*, eds. Jeremy Waddington and Reiner Hoffman. Brussels: ETUI.
- Weede, Erich. 1980. "Income Inequality, Average Income, and Domestic Violence." *The Journal of Conflict Resolution* 25.4:639-54.
- Williamson, Jeffrey G., and Tarik M. Yousef. 2002. "Demographic Transitions and Economic Performance in the Middle East and North Africa." *Human Capital: Population Economics in the Middle East*, eds. Ismail Sirageldin. Cairo: American University in Cairo Press.
- World Bank Development Indicators. 2009. "GDP per capita (current US \$)." <http://data.worldbank.org/indicator/NY.GDP.PCAP.CD> (March 18 2011).
- World Bank Development Indicators. 2009. "School Enrollment, Tertiary (% Gross)." <http://data.worldbank.org/indicator/SE.TER.ENRR> (March 18 2011).