Driven by Identity: Investigating the Origins of American Car Culture and the Modern Landscape 1895 - 1920

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ABSTRACT

In the last decade of the 19th century, European inventors developed one of the most transformative technologies in history: the automobile. In the first two decades of the 20th century the automobile reshaped American society and reorganized infrastructure to accommodate personal transportation by means of internal combustion engine (ICE). More specifically, the popularity of the ICE automobile led to its entrance to the market as a European luxury product, designed by French and German inventors to project the economic status and high-speed prowess of the wealthy elite men that engaged in competitions. When automobiles first appeared, they were sensational in international headlines, but they were expensive and required frequent maintenance; and harsh road conditions throughout the countryside rendered them impractical for most Americans. By the end of the first decade of the 20th century, ICE powered vehicles became more affordable for lower-income Americans due to more efficient production techniques. Although many impracticalities continued to exist, ICE automakers marketed their designs to frame them as indispensable possessions that defined one's economic success and social standing.

By the 1910s to the early 1920s, marketing no longer sold the car as a mechanical tool but as a marker for personal identity: a product that expressed freedom, competence, and one's place in modern American society. In order to position the automobile this way manufacturers described a reciprocal relationship between these gasoline-powered cars and their drivers. The gasoline-powered engine's dominance emerged from a feedback loop in which cultural enthusiasm shaped engineering priorities, which transformed cities with newly paved streets, highways, and filling stations. This transformation emerged as a mutually beneficial relationship between oil companies and automakers. Gradually, the auto industry influenced cultural values,

shaping how Americans spent their time and money. I argue that Americans did not merely adopt the ICE vehicle; they co-produced its meaning and functionality in modern American spaces and ultimately established a car culture.

ACKNOWLEDGEMENTS

When I set out to take on an honors thesis, I did not know the several hats I would have to wear in order to complete the project, only that I had a topic I cared about and a concept of what my argument might be. It is here I would like to offer my sincerest thanks to everyone who kept me going and urged me to move forward, even when I struggled under pressure. Among them are my friends, my family, my peers, and my mentors.

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INTRODUCTION

In the United States, automobiles play a vital role in personal mobility and their pervasiveness in mundane tasks can make it easy to forget where they began and how important personal vehicles became to the American identity. My own interest in this topic did not just come from a previous course, but during a spring break trip in my sophomore year of college. My girlfriend and I drove down I-5 South from Seattle, Washington to the coastal town of Florence, Oregon. There we found ourselves in the midst of the yearly spring "Rhododendron" festival. During the celebration, a carnival comes to town, restaurants on the main street become filled with tourists, and every set of retired grandparents within fifty miles participates in a parade with their refurbished, shiny, noisy, and smelly automobiles. What began as mere curiosity fascinated my history-focused mind. I found myself beginning to question just why these ordinary wealthy people were doing this. Why did they go to such lengths to maintain their cars? Why were these cars so appealing in their shiny prime colored coats? Why were drivers decked out in their pristine leather jackets and aviator glasses for "style" or "chic?" These questions danced in my mind, first as a mere observation, until I realized that Americans have a cultural phenomena that began over a century ago. Automobiles have become embedded in daily life, shaping how Americans travel, communicate, and understand personal freedom. All I can ask is, why? Why do we take such pride in driving when it costs so much to do so?

On August 9, 1899, a writer for the *San Jose Herald* wrote, "The era of the automobile seems to be close at hand."[1] In the early days of American-made automobiles, there were simply no limits to the imagination of the manufacturer or their consumers as quick and convenient

[1] "San Jose Herald 9 August 1899 — California Digital Newspaper Collection." Accessed November 12, 2025. https://cdnc.ucr.edu/?a=d&d=SJH18990809.2.64&e=-------en--20--1--txt-txIN--------.

transportation was an emerging dream. The journalist in this article recounts the general hopes and dreams of a future full of comfort and leisure. He imagines a replacement for the horse-and-buggy that would bring an end to unsanitary streets. He hoped that it would allow automobiles to bring "cleanliness, noiselessness, convenience, and cheapness" and "characterize the era of the automobile."[2] The idea that cars would improve upon everyday life was both popular and fantastical, but not for long. The vision of the future in automobiles was also a competitive one, rooted in the success of efficiency and luxury that could be achieved by American inventors over those of Europe. An article from the *Buffalo Evening News* not eight days after the one from the *San Jose Herald*, written by General Nelson A. Miles of the United States Army, who was said to be the "highest military authority in the world on automobiles" commented:

> "...it is certain that America will evolve the perfect automobile and take from the French, who claim to turn out the best horseless carriages in the world. The palm that rightly belongs to this nation of inventors and originators."[3]

The General goes on to say that America will overtake the "old" countries and speaks to the fact that the emerging electric motor carriage would be the future of American auto.

> "There is no danger in the running of these automobiles, no odor from gasoline, no noise, no vibration. The motive power is carried in a storage battery, and when it runs out it can

[2] "San Jose Herald 9 August 1899 — California Digital Newspaper Collection." Accessed November 12, 2025.
[3] "Buffalo Evening News 17 August 1899 — The NYS Historic Newspapers." Accessed September 2, 2025. https://www.nyshistoricnewspapers.org/?a=d&d=ben18990817-01.1.15&srpos=4&e=------189-en-20--1--txt-txIN-automobile---------.

be renewed at any headquarters for electric lighting. Nothing could be more simple, more luxurious, more enjoyable than a tour in one of these vehicles."[4]

The vision of the automobile as a clean, simple, and luxurious machine reflects the uncertainty of the industry by the turn of the century. Rather than pointing clearly towards the internal combustion engine (ICE), expectations were divided between technologies, revealing that its eventual dominance was far from inevitable.

The future of the automobile was far from certain until Americans developed a striking infatuation with the automobile. This growing obsession was not driven by clear technological superiority, but by cultural expectations that redefined the automobile as a symbol of speed, endurance, and personal freedom. The outcome stems from a societal shift which can be traced to the late 19th and early 20th centuries during what historians of the subject call the "pioneering period" of the automobile.[5] This era lasted from the Gilded Age until the outbreak of World War I and saw the birth of automobiles first in Western Europe and then revitalized in North America. The industry had taken its first steps in small shops that marketed to wealthy elites, and it would later boom in large factories to be mass-produced for the average American. These small workshops arose in large cities such as Paris, France and Stuttgart, Germany, where engineers tested their designs in transnational races and saw the development of the first internal combustion engine. Ultimately, these small companies sold shiny new cars to the rich and famous, spread auto technology to other countries, and instilled a fascination with spectating motorsports to the general public. As automobiles entered the American market, beginning in the

[4] "Buffalo Evening News 17 August 1899 — The NYS Historic Newspapers." Accessed September 2, 2025.
[5] Christopher W. Wells, *Car Country: An Environmental History* (Seattle: University of Washington Press, 2013), 64

1890s, manufacturers, journalists, and consumers collectively began shaping what the car represented in everyday life.

There is a conjured image of a man (or woman) in a dusty coat with those old car goggles, saddled in a muddy vehicle along tree-lined roads. However, this image, while present in many archives, is hard to necessarily argue as a point for exactly why motorists bought their vehicles, but there is an argument about how the myth of pioneering their way through the undiscovered lands heightened personal transport's popularity. The terminology, the imagery, and the sentiment is a play by marketers to prey on the nostalgia of the American motorist. In fact, historians such as Howe connected the previous observations of other historians such as Karl Raitz, to the perseverance of Manifest Destiny in the automobile economy. The "taming" of the frontier in relation to bringing consumer goods to way stations that grew into towns, first by carriage, then by rail, and then by car.[6] This motor tourism is precisely the reason why the wealthy bought their vehicles: to explore the countryside. Internal combustion engine (ICE) powered automobiles proved capable of handling long-distance travel, rugged terrain, and unpaved roads in ways that other engine models could not. The novelty of fast cars driven by daring racers was attractive, but the idea of exploring the American wilderness on muddy roads in dangerous weather appealed even more strongly to those members of the American population who wanted to demonstrate their pioneer spirit. Newspapers and automakers used this image of an American conquering the countryside to sell vehicles, papers, and race tickets to a broad customer base. From this fashion of newly introduced consumerism, the federal government and city planners had to adapt to the rapidly growing population of motorists by shaping interstate highways, compiling rules of the road, and forming new urban centers.

[6] Andrew Howe,. "Hot Cars, Dusty Roads, Clown Motels: Travel Tourism and Americana." *Pacific Coast Philology* 56, no. 2 (2021): 287–310. 193

While nostalgia and frontier mythology colored the public image of early motorists, the realities of automotive innovation defined a distinctly American approach, one rooted not simply in exploration but also in the promise of accessibility and freedom, key concepts that differentiate it from that of Europe. As a general matter, American cars were made to be mass-produced. In contrast, European models were built for luxury and intended to visually define a wealthy status.[7] Ironically, early automobiles in the United States, with the exception of some electric models, were simply modified European models. When auto technology reached American entrepreneurs, it began with a few aspirational racers and eventually grew into crowd-drawing spectacles such as Formula 1, NASCAR, or the Indy 500. During the 1910s, the American market mostly underplayed a rich man's luxurious novelty and emphasized a mass-produced, utilitarian machine, which could be bought and used by both the upper and middle classes.

My thesis is also concerned with the ways in which rural and urban communities had to reconcile the use and regulation of automobiles as they became cheaper and more appealing to middle and lower-income families. Just as much as it was a personal choice that aligned with American identities, car ownership only became possible because of the availability and the convenience of access to essential support infrastructure, such as fuel and body shops. Therefore, my thesis aims to discover how these pieces fit together in order to explain the rise of American motorist culture. These early developments not only transformed transportation, but also Americans' sense of self, freedom, and modernity, an evolution this thesis seeks to explore. The internal combustion engine ultimately enabled automobiles to cross class boundaries and adapt to

[7] W. David Lewis, "Divergent Cultures: The American Response to European Dominance in Automobile RAcing, 1895-1917," *Icon* 7 (2001): 1-34. 1-2. This is not a concept attributed to Europe alone. There were vehicles in almost every corner of the globe by the 1920s to the extent that using the term "European" or "Europe" is rather to understand how western Europe compared to the American continent. Both being of "Western" influence provides a basis for easy comparison.

both rural and urban environments. This thesis argues that the dominance of the internal combustion engine automobile in the United States was not the result of clear technological superiority, but of cultural expectations shaped by motorists, media, and manufacturers, which redefined the automobile as a symbol of speed, endurance, and personal freedom.

Existing historiography suggests that this European-born industry spread to the United States by way of racing and outgrew the confines of the racetrack, entering everyday life. Technology is passed from nation to nation and can cause immense competition between countries; in that respect, technology can only be developed and translated to others by an already existing rich culture with dynamic politics, economy, and social development. Simply put, "technology does not exist in a cultural vacuum," rather it evolves and grows on "social developments."[8] Racing history is slightly earlier than 1895, a date most auto industry historians ,such as Eamon Cofaigh, detail as an important year when the Paris-Bordeaux race in France marked the first high-speed competition.[9] These competitions would span multiple countries and gather swaths of people all interested in seeing these new horseless carriages barreling down broad streets of Paris and into the countryside. France was the cornerstone for motorsports in the early days of automobiles simply because it had the infrastructure and had been significantly farther along in the manufacturing of auto parts than the United States. In fact, until the late 1910s and 20s, European models were imitated by American manufacturers and it would not be until the latter half of the 1920s that American-made autos started winning races both domestically and abroad. Heading into the 1920s, the American auto industry had become more consumerist in nature. While transnational races and coast-to-coast competitions showcased automotive innovation and prowess, the rise of dedicated racetracks and stadiums that contained

[8] Lewis, "Divergent Cultures" 1
[9] Éamon Ó Cofaigh, "Motor Sport in France: Testing-Ground for the World." *The International Journal of the History of Sport* 28, no. 2 (2011): 191–204. https://doi.org/10.1080/09523367.2011.537909.

and organized spectators marked a shift towards commercialized motorsport entertainment, one that promoted both brand prestige and mass consumer appeal.

European automakers were so far ahead before the boom of mass production in the US because they were concerned largely with experimentation in order to discover the most effective designs for racers while maintaining a luxury experience for individuals who could afford it. However, as Thomas Keiserfeld argues, when these models came to America, the focus would shift to creating an economy of supply and demand by mass producing quality cars for a multitude of tasks beyond competition.[10] Henry Ford was the most successful automaker to accomplish mass production during the first decade of the twentieth century with his Model T in 1908, as the first standard, widely available, and reliable vehicle in America. Historians Johnathan Levy and David Nye argue that Ford produced the Model T with the innovative moving assembly line in order to launch a new era of cars by employing a specialized division of labor that resulted in Ford manufacturing nearly half of automobiles in the US alone by the 1920s.[11] To say that Ford was the only automaker to achieve these goals is simply untrue. He was the first of many to figure out the best way to mass-produce vehicles, and while they were easily affordable to the working man, the infrastructure and support systems to maintain such an industry had been a slower development.

Infrastructure in both urban and rural landscapes had been built to accommodate automobiles, rather than paved the way for them, and it began with the partnering of oil companies with automakers. According to Daniel Yegrin, by 1905 gasoline-powered cars outcompeted that of steam and electric to where a dying industry of illumination by oil was

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[10] Thomas Keiserfeld, "Translating Properties into Functions (and Vice Versa): Design, User Culture and the Creation of an American and a European Car (1930-70)." *Journal of Design History* 21, no. 2 (2007): 171–81. https://doi.org/10.1093/jdh/epm023.

[11] Jonathan Levy, *Ages of American Capitalism: A History of the United States*. Random House Publishing Group, (2021), 350 David E. Nye, *America's Assembly Line* (Cambridge, MA: MIT Press, 2013), 19

suddenly revitalized.[12] This was made possible because the byproduct of refining oil into kerosene is gasoline which slowly began replacing other forms of fuel. There is an argument among historians that it was the onset of electric-powered illumination and other wired products that led to such desperation for oil companies. Perhaps that is why electric cars' success was downplayed in order to make them seem far less efficient than internal combustion. While the electric engine had been outperformed by the internal combustion engine,it had not been developed nearly as much. Although oil companies began their gasoline supply in the 1910s, it had not been until the 1920s that America started to see filling stations along national roads. Largely, that was due to a massive mobilization test by the US army in which an army captain by the name of Dwight D. Eisenhower volunteered to be a part of a convoy from Washington D.C. to San Francisco. The trip was long and troubling; it saw broken parts, incredibly slow progress, and overall weariness of the men. It took from the beginning of July to early September for the convoy to reach its destination. It proved that roadwork needed to be done. However, it would not be for another three and half decades for federal action to step in at his order as President of the United States.

Yegrin argues that filling stations and roadside support were largely an invention of the 1920s and that it was not until the end of this decade that traffic lights and laws were widely enforced. This meant that in the early 20th century, the ICE automobile operated within a landscape that lacked basic infrastructure necessary for regular use. A large question that has occupied automotive historians is how the auto industry was able to outmaneuvered established systems of public transit such as trains and trolleys despite these limitations. The answer, according to Yegrin, is that the appeal of automobiles was simply too strong. The efficiency of the ICE and the rapid growth in the population of motorists outpaced the use for public transit,

[12] Daniel Yegrin, *The Prize: The Epic Quest for Oil, Money, & Power* (New York Free Press, 2009), 80

even before the adequate infrastructure existed.[13] According to historians Oliff and Whitt, the development of early infrastructure support came not from automakers or the federal government, but from rural and urban communities focused on infrastructural and environmental reform. Movements such as the "Good Roads" movement, that focused on road building and traffic laws intended to provide safety for non-motorists. However, these developments were as much a response to growing cultural demand as they were a cause of it. In this way, cultural expectations did not follow infrastructure, but instead drove its creation, ultimately transforming the physical geography of the metropolis.[14]

In order to find the answer to how precisely automobiles were entwined into everyday life and, more importantly, into American cultural symbolism, I examined several different forms of primary sources. I read newspapers from online city archives that documented various automobile races and advertisements in order to better understand how cars and motorsports were marketed to consumers. This, combined with commentary, car club magazines, and vehicle ownership numbers in the US, serves to validate the claims made by historians about car ownership and confirmed my own suspicions that automobiles became a consumer item that many deemed essential to the American identity. To find these documents, I used keyword searches in the Purdue University newspaper archive and the *New York Times* archive and utilized specific years recorded in secondary source material to narrow my exploration. I also examined the Ford Motor Company archives and various municipal records looking for evidence of infrastructural and industrial developments. With these elements of evidence, I hope to unravel a century-long evolution of an influential industry that would shape social behaviors for generations.

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[13] Yegrin, *The Prize,* 207-208
[14]Jim Cullen, *The American Dream: A Short History of an Idea That Shaped a Nation*. (New York: Oxford University Press, Incorporated, 2004), 151-152

An important primary source that stands slightly aside from documents and archived newspapers is photographs. However, they lead into one major limitation: they require more interpretation than the written word and often lack clear context, dates, or background details. However, just like art, photography became a method of self-expression during the 19th century into the 20th century, and even when contextual information is lacking, the material realities of the subjects are clear. Where written sources such as articles or commentary overlook certain perspectives, the contents of photographs can help provide insights. In my research, I have used images from my target period to find the what, where, when, and why these photos were taken, but it still does not prove how some motorists would embody the modern American on their own. However, nearly every photo from the first two decades of the 20th century depict families and friends posed in their fancy new Model T's in the countryside or outside of their town houses. This meant I had to look deeper. These photographs have intentionally or unknowingly captured a deeper, more identity-driven meaning behind the objects in these photos. Many of the images I have viewed thus far have shown me several details: the styles and prevalence of certain models, the gender and roughly the social or economic status of the driver, and they usually contain the condition of a specific roadway.

Focusing on the automobile's pioneering period will reveal how early choices about prioritizing the ICE, infrastructure, and regulation shaped the regime of mobility that still influences American life, from suburbanization to the downfall of public transportation. In examining various advertisements and newspapers, I hope to show how marketing no longer sold the car as a mechanical tool but as a marker for personal identity: a product that expressed freedom, competence, and one's place in modern American society. In order to position the automobile this way, manufacturers promoted a reciprocal relationship between these

gasoline-powered cars and their drivers. The gasoline-powered engine's dominance emerged from a feedback loop in which cultural enthusiasm shaped engineering priorities, which transformed cities with newly paved streets, highways, and filling stations.

This thesis is organized into three distinct chapters that investigate the establishment of car culture in America. While the industry developed over a multitude of decades, in chapter one I hope to explain the marketing literature of the period from 1895-1920 came to define the meaning of the ICE-powered automobile. In order to understand the extent to which Americans were instilled with fascination about automobiles during this period, one has to focus on the symbolic ties to freedom through high speed motorsports and automobilism. It was not simply the abstract ideology but the spectacle and the danger of high speed motorsports and transfer of Western culture that was the basis for how the industry would develop. First in small shops in Western Europe to compete between country roadways, and later specialized factories testing on racetracks and ocean-to-ocean races in America. The gas-powered automobile acquired a masculine identity. Its noise, power, mechanical complexity, and association with speed aligned with gendered expectations of what could be considered daring, rugged, and modern. As driving became coded as a male activity, the social momentum of the ICE accelerated. Alternative car models, mainly electric motors, began to lose ground despite their practical advantages, which included easier starting, quieter performance, and lower cost of operation.

Many incorrectly credit Henry Ford with the development of the automobile industry or claim that he was the father of automobiles in their entirety; however neither assertion is true. Chapter two covers how Henry Ford was the first to develop a standard car in 1908, the Model T. It could handle the unpaved and treacherous American landscape at a price that any working man could afford. With a broad customer base, the Model T was a catalyst upon which his

success in mass production at his Highland Park facility in Illinois, enabled the Ford Motor Company to outpace competitors in sales and quality. However, while Henry Ford was influential with his Model T, nothing would have been possible without the improvements to electricity. The years leading up to 1905 saw rapid growth in electric infrastructure, considerable public anxious fascination with electricity, and a brief moment when electric vehicles genuinely appeared to be more promising than ICEs. Early electric cars were quiet, clean, and mechanically simple. In a similar way the mass use of electric street cars in major cities and hubs prior to the wide availability of automobiles meant that people were familiar with the electrically-powered motor. As refined petroleum became cheaper and more abundant, the ICE powered automobiles became more feasible and financially attractive, especially because of ICE cars' ability to travel long distances. Manufacturers, including Ford, leaned into this development and aggressively promoted gasoline powered cars as necessary instruments of everyday life. However, gasoline could not be distributed well until the emergence of filling stations which meant that drivers had to handle the volatile and dangerous substance.

In chapter three I hope to cover how the emergence of filling stations, the paving of highways, and the redesign of the modern metropolis had been a slow development that was intended to accommodate the rapid growth in the number of motorists on the streets. Oftentimes, this "chicken and the egg" routine gets confused because it does make sense that the allocated space for automobiles made it possible for them to thrive, but ICE cars were designed to overcome the harsh road conditions rather than fill an allocated space like highways and boulevards. Early filling stations complicate this dynamic further, because they began as small improvised sites that had petroleum delivered on horse-drawn carriages, or over the counter in small shops. This eventually evolved into a branded and standardized space that both served and

visually attracted the motorist; their ubiquity and visibility enhanced the ability of motorists to travel even further. These stations proliferated during the 1920s, and they were posted along national highways where they could not only help travelers but also ground commerce into road-side towns. In urban environments, the metropolis was redesigned away from electric street cars into grids of motorways and pavement. For the first time, workers did not need to live close to their place of work; rather they could live farther away out of the bustle thanks to their personal transportation. This shift not only facilitated a white middle-class flight to auto-dependent suburbs, but also reinforced patterns of racially segregated access to vehicles and physical amenities, drawing a boundary between those that were part of an automotive society, and those that were constrained by dense urban cores.

Although it started as a foreign curiosity, the gas-powered automobile came to define the American landscape and culture by the 1920s. It became so deeply embedded in American culture that it eventually became difficult for many Americans to imagine their country without it.

CHAPTER 1: The Automobile and the Imagination

In the early days of the American automobile industry, roughly spanning the late 1880s through the end of the 1890s, there was little consensus about what the automobile should be, what it should do, or what social value it might carry. However, by 1905, the internal combustion engine automobile emerged more popular than its competitors: the steam engine and the electric motor. A similar path of development occurred in Europe where motorsports and social status were dominated by wealthy elites especially during the late nineteenth century. While the internal combustion engine's (ICE) widespread use today can make this outcome appear obvious or inevitable, early Americans did not experience the internal combustion engine as a clearly superior technology when it was first introduced in automobiles during the late 1800s and early 1900s. The steep price of vehicles, poor road conditions across the American landscape, and a lack of infrastructure designed for personal travel made automobile ownership impractical for most people, regardless of propulsion type.

Historians have identified several structural barriers that limited early automobile adoption, including mechanical fragility, poor road infrastructure, high costs, and cultural resistance to the automobile. Historians like James Flink, Christopher Wells, Robert Gordon, and John Heitmann emphasize that early automobiles were unreliable, difficult to operate, and poorly suited to the rutted and often impassable roads that dominated the American landscape. Early models remained difficult to operate, requiring hand-cranking and mechanical skill, and when combined with the deeper infrastructural problems of rutted, muddy, and largely unpaved American roads the task of driving was challenging and impractical. These limitations contributed to cultural resistance that emerged in rural communities, where automobiles symbolized wealth, intrusion, and danger shows that the high cost of ownership placed

automobiles far beyond the reach of most working Americans. While these scholars often treat these constraints as distinct problems, this chapter argues that cultural expectations linked these barriers together and shaped which technology would succeed.

[15]Before the age of practical automobiles and before ICE's dominance in the industry, the automobile was a contested technological product. For the early adopters, the automobile functioned less as a tool of necessity, but rather as an instrument of leisure, tourism, and display of wealth. The tradition of motorsports that came over from Europe created a cult following among wealthy urban elites in America. They formed auto clubs, funded the industry, and with the help of newspapers, organized races both to test new designs and to promote the vehicles. They pitted the already established steam engine automobile and the electric motor vehicle against the ICE in endurance and closed track races to show the advantages and disadvantages of each model while encouraging innovation across the board. This chapter argues that the dominance of the ICE emerged not from technical superiority alone, but from cultural shifts driven by motorsports and media representation. Endurance racing, newspaper coverage, and advertising redefined automotive value around speed, distance, danger, and mechanical prowess, all of which appealed especially to men. These were the criteria that increasingly favored gasoline-powered vehicles, reshaping American expectations of what a modern automobile and its driver should be.

The three types of propulsion systems had a surprisingly short number of years of competition before one clear winner emerged from its preferred attributes. However, when the ICE began production in the United States it came at a time when mechanical appliances were

[15] James J. Flink, *America Adopts the Automobile, 1895–1910* (Cambridge, MA: MIT Press, 1970), 24–30, 86–90; Christopher W. Wells, *Car Country: An Environmental History* (Seattle: University of Washington Press, 2013), 54, 147–151; Robert J. Gordon, *The Rise and Fall of American Growth* (Princeton: Princeton University Press, 2016), 129–131; John Alfred Heitmann, *The Automobile and American Life*, 2nd ed. (Jefferson, NC: McFarland, 2009), 20–30.

largely steam powered and slowly being replaced by electricity. Steam power was popular because the people of the 19th century knew it well; it powered factories, boats, locomotives, and tractors, making it a familiar and trusted source of mechanical energy. The steam-engine car appeared to be the more economical option as it fit the expectations of cost, labor, and reliability. It was known to be generally quieter, reach a faster top speed, and more reliable in operation than the internal combustion engine, which, until the 1910s, required a hand-crank to be started. Moreover, the ICE vehicle was noisy, smelly, and at constant risk of breaking down, a serious concern even after the first body shops and filling stations emerged around 1908.[16] Steam also had its flaws; it was terrible on hills, it needed to build a head of steam before operation, and every 20-30 miles the engines needed pure water. Even after the invention of both the flash boiler (1901) to maintain the liquid's boiling point, and the condenser (1902) to recycle exhaust steam, the steam engine dropped in popularity by 1905.[17]

[16] Wells, "The Road to the Model T," 504.
[17] Wells, "The Road to the Model T," 504.

HARPER'S MAGAZINE ADVERTISER.

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*Figure 1.1: "*Locomobile Company of America - Postcards, Photographs, and Epherera."[18]

The decline of steam engines had little to do with performance; steam engines in 1905 could comfortably reach 60 miles per hour while ICE vehicles could only reach a top speed of around 30-35 miles per hour. What steam lacked was not power, but mystique. To many consumers, it signaled an older, well-worn 19th century innovation in a rapidly modernizing world. To pique interest in the market, steam manufacturers leaned heavily on marketing steam's long-standing reputation, not as cutting edge technology, but as a time-tested and well understood method of mechanical power. In *figure 1.1* an advertisement from 1899 stated directly that steam was "the one power universally known and understood."[19] Moreover the ad

[18] "Locomobile Company of America - Postcards, Photographs, and Epherera." Accessed February 3, 2026. https://www.virtualsteamcarmuseum.org/makers/locomobile_1899.html.
[19] "Locomobile Company of America - Postcards, Photographs, and Epherera."

comforts the consumer that if there happened to be any damage to the engine or a need for fuel drivers could obtain repairs at "any" mechanics shop and purchase the "cheapest" fuel from "any" grocery or drug store.[20] These appeals framed steam as reliable, accessible, and familiar. In a culture becoming increasingly captivated by speed, danger, and power, ICEs appeared more glamorous and futuristic than electric or steam-powered vehicles.

By contrast, ICE drivers did not have widespread access to gas stations before the 1910s, nor did electric automobiles have access to charging stations; an overall lack of familiarity or long-standing support system meant that initially steam automobiles had a convenient leg up over their competitors in terms of practicality. This sentiment changed slowly after 1900 because of the attention that ICEs received partly because of their ability to maintain speeds uphill combined with their ability to maneuver more easily. However, ICE engines also received high-visibility publicity in newspapers from their victories in motorsports events, such as when William K. Vanderbilt II reportedly broke a land speed record that had been previously held by a French steam car.[21] In the early years from 1902-1908, steam power still appeared to be a viable and even dominant automotive technology at the highest levels of performance. In 1902 specifically, Leon Serpollet, a French motorist, set a land speed record of 120 kilometers per hour (roughly 74 miles per hour) in a steam-powered vehicle, demonstrating that steam engines were capable of remarkable speed. While impressive, the moment proved to be short-lived. Within months, Vanderbilt, driving an ICE French Mors, surpassed this record. While steam engines had been the backbone of mechanical power in the 19th century, ICE automobiles racked up victories by breaking records that often had little to do with day-to-day driving conditions. These speeds were largely impractical given the poor condition of early 20th century roads,

[20] "Locomobile Company of America - Postcards, Photographs, and Epherera."
[21] Ó Cofaigh, "Motor Sport in France" 196

reinforcing that such records functioned more as spectacle than as indicators of everyday use. However, electric vehicles had simultaneously been promoted in the 1890s to the turn of the century as the automobile of the future, offering quiet, clean, and easy-to-operate alternatives to both steam and gasoline-powered cars.

Figure 1.2: "The snappily-named Morris & Salom Electrobat was a regular sight in New York a century ago."[22]

Electric cars were clean, quick, quiet, and fairly simple to operate. They excelled at urban travel as short-range vehicles for two reasons; their nickel-alkaline battery offered instant power to the motor and road conditions in cities were relatively flat compared to the rough rural terrain. Unlike the ICE vehicles, they did not require a crank to start them. Historian James Flink notes that the first electric automobiles appeared in Iowa in 1892 and could travel about 14 mph, followed closely by the commercially successful Electrobat in 1894 with a speed of 20 mph. Although electric vehicles first appeared in competition in an 1896 race in Rhode Island

[22] "What Were the First Electric Cars?," *Electrifying*, accessed March 25, 2026, https://www.electrifying.com/blog/post/what-were-the-first-electric-cars.

alongside the Duryea Brothers, the spectacle was considered so dull and slow that it originated the cry, "Get a horse!"[23] These were modest speeds compared to racing cars, however they were roughly the average speeds for the long distance races in the 1890s. Early high speed racing models used a similar battery with significant range limitations, but could reliably propel an electric model nearly 60 miles per hour (95-96 kilometers per hour) in a given race during the 1890s, something the ICE was incapable of doing until the 1910s.[24] Even luxury electrics, not racing vehicles, of the 1910s may have been able to achieve that pace as they were advertised as being able to span 40-100 miles at high speeds, however this was likely untrue due to limitations on the battery despite continued efforts by Edison.[25] Early models like the Electrobat, for example (see *figure 1.2*) were carriage automobiles with low maneuverability and not enough charge to surpass the ICE cars in long-distance races or touring. Despite these capabilities, electric vehicles struggled to compete not because they lacked performance, but because they did not align with the growing cultural emphasis on speed and endurance.

Despite the range limitations of early electric models, in 1899 they were reportedly out-producing gasoline-powered cars by a significant margin. Although electric vehicles were expensive, they were practical, especially for urban driving: however, they increasingly failed to compete in the long-distance competitions that favored ICE cars. Nevertheless, the electric car, unlike the steam engines, represented a new technology. Cities were going electric for street lighting, in-home appliances, and even in factories. Electric vehicles constituted a practical alternative to the more glamorous ICE cars, and they had many high profile supporters, such as Thomas Edison. This popularity stemmed not just from their practical advantages, but also from their associations with modernity in urban life. For many consumers, electric vehicles

[23] James J. Flink, *America adopts the automobile: 1895-1910* (Cambridge MA:MIT Press, 1970), 42
[24] Ó Cofaigh, "Motor Sport in France," 195-196
[25] "Test of Edison Auto Battery," *New York Times*, August 19, 1903

represented a logical next step in the growing presence of electricity in homes, businesses, and city infrastructure.

American elites bought EVs for the reason that they were prestigious to own and they were a practical next step in the evolution of urban electricity. By 1899 - 1900, Edison was famous for his perfection of the lightbulb and his work on providing homes with power. He not only built a line of electric vehicles, he advocated directly for their potential as powerful tools with simple motors that were less costly to maintain, and he was going to be the one to do it. Thanks in part to his celebrity status and the modern association with electricity, people found the electric vehicle appealing and they just so happened to be reliable for practical purposes. Tasks such as getting to work, shopping for groceries, short-range errands (such as traveling across town) rendered the electric car incredibly useful. Furthermore, the appeal of the electric models also came from the fact that it was quiet and did not pose a smell the way ICEs did. It was presented to the market as a natural and logical step forward in owning electrical appliances. Contemporary newspapers even, largely from big papers like the New York Times, reminded readers that electric was already part of urban life, noting specifically that "street cars were electric." In-fact, there were plenty of appliances, early trucks, and taxi cabs that made battery usage more widespread, although electrical power ownership until the 1910s was rather limited.

If EVs were presented as modern and practical, what changed in the first decade of the 20th century to propel the less practical and more costly to maintain ICE-powered automobiles to become the vehicle of choice? A key to answering this question is the fact that demand for commercial motor vehicles was only a fraction of the market, while the majority was aimed at private recreational use. There was no single moment in which electric vehicles suddenly disappeared from the market, nor was there an immediate technological failure that rendered

them obsolete. Instead, their decline occurred gradually as the expectations placed on the automobile shifted. There was simply greater demand for vehicles that could travel long distances at higher speeds, a standard that increasingly favored ICE automobiles.

This shift was reinforced by changes in the cost and availability of fuel. During the first decade of the 20th century, gasoline was remarkably inexpensive, in part because it was a byproduct of refining kerosene.[26] Throughout the nineteenth century, oil companies such as Standard Oil had focused primarily on producing kerosene for illumination, generating substantial profits through its widespread use. However, the rapid adoption of electricity for lighting in American homes reduced the demand for kerosene, leaving gasoline as an abundant and relatively cheap byproduct. Rather than rendering the oil industry obsolete, this shift created new opportunities. The rise of the ICE provided a use for gasoline, transforming it from a secondary byproduct into a valuable fuel source. In this way, the growing popularity of ICE automobiles and the changing energy market became mutually reinforcing, helping to establish gasoline-powered vehicles as the dominant form of transportation in the 1920s.
Gasoline-powered automobiles had been designed to use existing resources just like the steam engine and the electric motor. In the place of kerosene or coal being used to heat a container of pure water to build steam, the ICE used gasoline or petroleum which when ignited under pressure powered the engine. This technological efficiency and fuel availability not only secured the ICE's dominance but also laid the groundwork for a new form of public fascination.As automobile design advanced, competitive driving and early motorsports emerged as key arenas where the ICE's power and potential could be displayed. While gasoline made ICE vehicles more practical, cultural demand for speed, endurance, and long-distance travel made them desirable and ultimately dominant.

[26] Wells, "The Road to the Model T," 175

Motorsports did not emerge from the mere existence of automobiles, rather the sport was fostered by specific economic, urban, and social conditions. Prior to 1900 the epicenter of motorsports was in Europe, in France despite the fact that the first patent on the ICE vehicle had been loosely awarded to German automaker Gottlieb Daimler, in 1885.[27] In the last decade of the 19th century, France experienced a second industrial revolution in which small family-owned workshops began opening across the country in large cities such as Paris to work with metal and wood that paved the way for automotive manufacturing with engines and rubber tires. Since bicycle racing was already a popular activity that spanned long distances, these new manufacturers had the basis for an emerging form of endurance racing: motor cars.[28] Paris' motorsport arena was uniquely effective because roads were wider and better conditioned than other cities' infrastructure.

During Napoleon III's reign, he commissioned the streets of Paris to be widened to counter rebellions' barricades; however, decades later automobiles had no trouble conforming to the flow of traffic with paved roads and ample room.[29] When it comes to automobiles and infrastructure, automotive historians often emphasize the concept of the chicken or the egg. For France, roads around its major cities were already fortified by a mix of cobblestone and asphalt making the introduction of mass motor transport easier. However, the United States did not possess such infrastructure as there were very few paved roads going into the 20th century. These road conditions presented an obstacle that later more practical automobile designs would conquer. While France's urban infrastructure and manufacturing culture rendered early automobile usage suitable for competition and visible promotion, these conditions did not make

[27] Cofaigh, Éamon Ó. "Motor Sport in France: Testing-Ground for the World." page 192
[28] Cofaigh, Éamon Ó. "Motor Sport in France: Testing-Ground for the World." page 191
[29] Cofaigh, Éamon Ó. "Motor Sport in France: Testing-Ground for the World." 192

the automobile financially accessible. Only the upper class could truly afford the expense of ownership.

Early automobiles as a general matter, remained prohibitively expensive which meant that participation in motorsports was limited to those few who could afford the price of ownership and competition. In France, in order to consolidate funding for races and to enforce a degree of exclusivity, these elites began the grand tradition of auto clubs in 1895 with the Automobile Club de France (ACF) founded by Count De Dion and Baron de Zuylen with the help of a journalist and editor named Paul Meyan. led largely by members of the French aristocracy and wealthy bourgeoisie, these clubs were essential to the funding behind the scenes of both manufacturers and drivers. Only they had the financial resources to sustain what was, not just in its infancy, an extremely expensive sport. In organizations like the ACF, the members did more than merely regulate races; they actively organized events, attracted new wealthy patrons, and secured an institutional framework that allowed manufacturers such as Renault and Peugeot to test and promote their vehicles.[30] Without the social prestige, capital, social connections, and organizational structure provided by these clubs, early motor racing would likely have remained an unsustainable venture.

By the early 1900s, automobiles had become a cultural attraction, not just for wealthy aristocrats, but also for lower-income enthusiasts. Flink notes that by 1900 automobiles were already featured prominently at country fairs, exhibitions that transformed automobiles into a spectacle of modernity. Manufacturers could showcase speed, power, and the novelty of design to mass audiences. In this context, the automobile's symbolic value as a marker of progress often preceded its practical integration into everyday life. However, manufacturers needed to test their vehicles in order to improve their designs, and clubs were that source of funding, but even more

[30] Cofaigh, Éamon Ó. "Motor Sport in France: Testing-Ground for the World." 191

importantly, manufacturing companies and the drivers representing them gained popularity and fame from reporters.

Newspapers organized the races and promoted each victory by recording each step forward in progress to the rest of the world. In 1891 a journalist by the name of Pierre Giffard ran a paper called *Le Petit Journal,* which was the "largest-selling" newspaper of the 1890s.[31] He used his paper's popularity to sponsor and advertise bike races and automobile endurance runs. He discovered an interest in the automobile when he witnessed a Daimler V-Twin ICE propelled motor carriage take part in a bike race from Paris to Brest and back again. His fascination led him to sponsor a "motoring trial" that took place on seventyeight miles of public roads between Paris and Rouen in 1894.[32] The event aimed to prove the reliability and the potential of the motor car and drew swaths of people featuring thirteen entries of internal combustion propelled vehicles and eight steam-driven entries of which four of which finished the race.[33] No electrics were in the race since long distance driving put them at an insurmountable disadvantage. Their absence from endurance competitions not only reflected technical limitations, but excluded them entirely. The 18 kilometers per hour (about 11 miles per hour) average speed race was such a hit that Giffard had been asked to sponsor yet another race, this time much faster and longer, stretching from Paris to Bordeaux and back.[34] Giffard refused, stating that the open road at high speed would be too dangerous to endorse another event. In his stead, De Dion and Zuylen organised the race themselves through the ACF. Not four years earlier in 1891 Pierre Giffard sponsored a bicycle race on the very same roads.[35] The race acted as a mobile advertisement with two intended consequences: show the skeptics that long-distance travel was possible and to teach

[31] Cofaigh, Éamon Ó. "Motor Sport in France: Testing-Ground for the World." 193
[32] Cofaigh, Éamon Ó. "Motor Sport in France: Testing-Ground for the World." 194
[33] Flink, James J. *America Adopts the Automobile, 1895-1910*. 13
[34] Cofaigh, Éamon Ó. "Motor Sport in France: Testing-Ground for the World." 194
[35] Cofaigh, Éamon Ó. "Motor Sport in France: Testing-Ground for the World." 193

ordinary people to value speed, sense of danger, and mechanical prowess. In this context, motorsports did more than just test the vehicles; they redefined the qualities that made an automobile desirable and while it is unclear whether or not these values were intentional, they were the benchmarks that spectators took away from competitions.

From 1894 onward, the ACF and the *Le Petit Journal* brought together an annual race that started in Paris and spanned public roads to other French cities and back, each year, the distance increased, as did the speed. In 1898, borders were crossed from Paris to Amsterdam, from there it was from Paris to Berlin,Vienna, and Madrid.[36] Each event became more and more internationally popular. Although steam and electric vehicles participated in early competitions, the majority of endurance racing automobiles relied on ICEs, whose ability to sustain speed over long distances increasingly defined competitive success.[37] By 1899, the French automobile industry had largely shifted toward internal combustion engines, a development shaped in part by the influence of Daimler's V-twin engine design and broader technological exchange between German and French manufacturers. Despite the early stage of the automotive industry, European endurance racing had already established a standard by which automotive success was judged, centered on speed over long distances. American automobilism in the first decade of the 20th century existed in the shadow of this European motorsport culture.

These international races had a significant impact on the growing awareness of the automobile in American cultural consciousness. News from European endurance races circulated widely in American newspapers, presenting the automobile as a spectacle of high speeds, danger, and modern engineering long before it became a common sight on American roads. In doing so, this coverage activated a latent demand for precisely these qualities that resonated with

[36] Cofaigh, Éamon Ó. "Motor Sport in France: Testing-Ground for the World." 195
[37] Flink, James J. *America Adopts the Automobile, 1895-1910*. Page 19, Paris-Bordeaux was said to be the most intriguing news in America making 1895 a big year for gaining interest in the automobile.

American audiences. In that respect, France had become the testing ground for the world. Motorsports were the primary context for automobiles, and because Europe had become the authority on auto, many wealthy Americans like William K. Vanderbilt imported automobiles from France and Germany. Many wealthy industrialists and automobile enthusiasts like Vanderbilt, joined auto clubs and participated in motorsports, but in the first years of the 1900s, the goal of fast racing cars did not change. In 1904, in Long Island, New York a Vanderbilt Cup race held by the Automobile Club of America saw the record of one mile in 39 seconds, but each vehicle was still a European model.[38] American racing cars usually lost to European models because they had not yet evolved to the standard set by French dominance in races and it would not be until the 1920s that American-made automobiles would start to win.[39]

Early American races featured a mixture of imported European vehicles and domestically constructed automobiles, placing American inventors in competition with already established European brands. The success of automobilism in Europe was entirely dependent on the functionality of the automobile's mode of propulsion. This meant that since the ICE had taken the spotlight in the European market, companies by Daimler, De Dion, and others left an imprint on American inventors such as Charles Duryea and his brother Frank. The two brothers then crafted their very first ICE vehicle in 1893 after witnessing the ICE's success in Europe. In November 1895 the Chicago *Times-Herald*, following the lead of newspapers abroad, organized the first American automobile race in which Frank Duryea took first place completing his round trip from Chicago to Evanston in eight hours and 44 minutes. Meanwhile Oscar Benz, son of Germany's pioneer motor vehicle inventor, Karl Benz, collapsed from exposure in the bitter cold

[38] W. David Lewis, "Divergent Cultures: The American Response to European Dominance in Automobile Racing, 1895–1917," *Icon* 7 (2001): 1–34, 6
[39] Lewis, "Divergent Cultures," 1

weather.[40] Tales like the Duryea's victory sustained the international edge in early racing, turning drivers into hardy, national icons. Yet as competitions evolved, the emphasis sharpened on speed and distance, amplifying drama for spectators.

This emphasis on speed over utility meant that what mattered most was not practicality (what task the automobile might do), but its speed and endurance (whether it could go faster and farther than its rivals). The 1901 New York-to-Buffalo endurance run impressively captured this spectacle: 72 steam and gasoline vehicles set out on a 465-mile, six-day journey at an average pace of 15 miles per hour, the article narrated hill climbs with stalled engines, and near collisions to heighten the drama.[41] Record-setting runs made drivers into masculine and heroic figures, conquering danger and becoming national champions, staging competitions as a battle of technological and physical fortitude that newspapers eagerly narrated for mass audiences. Of the 72 vehicles that began the race, only a fraction completed the full distance, this meant that endurance and mechanical reliability determined success rather than mere participation. ICE vehicles were particularly well suited to these conditions of success as their ability to refuel quickly and stay in longer distances gave them a clear advantage. This emphasis on endurance and spectacle continued in later competitions. For example, another race four years later, Earl Kiser, an American driver won a race in 1905 in which journalists meticulously recorded his and others' overall times and speeds while detailing crashes and near-misses.[42] These reports did more than document the event. They translated it into a narrative of risk and performance, adding to how success is measured not just in endurance but in high speed danger as well. Reports frequently emphasized the deafening noise of the engines, the constant vibration of the engine,

[40] Lewis, "Divergent Cultures," 3
[41] *The New York Times*. "MOTORS BEGIN LONG RUN." September 10, 1901.
[42] *The New York Times*. "KISER WINS BIG AUTO RACE." July 11, 1905. The language does not specifically incite the reader alone. Using words and phrases like "danger" and "overcome" or "powered through" are some examples of language, but it was the names, the speeds, the records, just like reporting on a hockey or football game.

and the physical strain placed on drivers and mechanics, conditions that highlighted how little these competitions resembled the needs of the everyday consumer. Electric and steam vehicles in this context, while more reliable and easier to operate than ICEs, were generally ill-suited to endurance events due to their limited range and consistent overall performance. Steam in particular required frequent stops and constant attention to maintain a head of steam and electric motors needed to be charged over long periods of time, if accessible.

An aspect of motorsports history that remains true is the sheer danger the sport caused for all who were involved. In these early competition years, cars typically carried both a driver and a riding mechanic, whose entire job was to make sure the vehicle was operational for the entire competition because engine failure was a frequent occurrence that could prove fatal to both the driver and the mechanic. Unfortunately, the rate of failure did not bode well for spectators either as racing did not take place on a raceway but on regular inter-city roads with little to no spectator safety standards, not even guardrails.

In response to the lack of safety standards in both competitive driving and day-to-day use in the United States, an agency called the American Automobile Association (AAA) was formed in 1902. The call for highways, better road conditions, street laws, and even racing regulations was essential to the shift from public racing that aimed to test vehicles against other models to an institutionalized spectator sport. In 1902, it became apparent that motorsports needed regulation and drivers needed rights just as much as pedestrians did, and it was through the AAA that a step in that direction was possible. By 1902, newspapers were already documenting a sharp rise in public hostility within cities toward automobiles. Crowds yelling at passing cars, farmers responding violently in the countryside, and the answer to the anger

resulted in seven to ten miles per hour limits within residential areas.[43] Even with the limits, rural communities had a different idea of what the automobile meant, usually it was some rich guy barreling down country roads. It reached the point where auto clubs became responsible for disciplining members of their society to ensure that the sport did not lose public support because casual use was killing people as often as public races were.[44] Municipal laws and changes only went so far as to imply certain restrictions, but as the automobile became more popular, they became more visible in urban areas.

Although only wealthy Americans could afford reliable personal vehicles before 1908, the overall demand for automobiles expanded rapidly as racing culture gained visibility and prestige. For example, in 1899 there were only around 600 vehicles produced, which makes sense due to costs, but in 1903 there were around 10,576 vehicles, a sharp increase, and even sharper still that by 1910 there were around 200,000 units.[45] The sharp increase in available units likely refers to the increase in motorists as demand had been previously constrained by costs and reliability. In order to address the sudden rise in motorists, one of the more visible changes to urban centers were the adoption of garages and parking centers that used to be urban stables for horses.[46] In order to provide space for the rising number of motorists, the AAA not only lobbied for road laws to accommodate motorists, but it also approved and regulated real-estate to house automobiles and provide closed track racing to both centralize the monetary value of racing but also to contain the violence that the automobiles caused. Early attempts to shift the free form environment of motorsports to a controlled environment had been a difficult task. Flink describes

[43] *The New York Times*. "QUESTION OF SPEED LIMIT; Six Thousand Persons Express Their Views Upon It. Ninety-Five Per Cent. Opposed to Proposed Increase from Eight to Ten Miles an Hour." Archives. May 23, 1902. https://www.nytimes.com/1902/05/23/archives/question-of-speed-limit-six-thousand-persons-express-their-views.html.
[44] Lewis, "Divergent Cultures," 11.
[45] John Alfred Heitmann, *The Automobile and American Life*, 2nd ed. (Jefferson, NC: McFarland & Company, 2009), 19
[46] Wells, *Car Country*, 151

the scene as "dull" for the viewers of the first track race in Rhode Island.[47] It lacked the unpredictability and danger that had become emblematic of endurance competitions. The discontent reception of track racing suggested that spectators were not simply interested because of the high speeds and the thrill of competition but also the risk and the image of a pioneer racing through the wilderness. That being said, the other side of the coin is that the Vanderbilt Cup became widely criticized for the fatal dangers public road racing posed to pedestrians and spectators.

As early as 1902, newspaper reports detailed these severe accidents during public road races, in which both drivers and spectators were injured due to the absence of basic safety measures. In 1907, public outrage halted the cup because of a severe lack of crowd control and safety measures, and while the cup was revived a year later with new promises of safety improvements, the skepticism of spectators remained strong. A man named Samuel Butler, a member of the Automobile Club of America (ACA), suggested that organized races be restricted to closed tracks.[48] These enclosed arenas would protect spectators and provide an opportunity to monetize events more reliably. The proposal marked a shift from the chaotic and dangerous public road races to commercially viable motorsports. For example, in 1909, the Indianapolis Speedway Corporation was created, opening the Indianapolis 500 which not only reduced the risks associated with public road competitions, but also helped institutionalize motorsport as a spectator event. Historian W. David Lewis noted that the development of the speedway was intended to create a singular, large-scale event that could attract a mass audience while showcasing the very same entertainment that could still bring excitement, speed, and danger. He mentions that in its infancy, the Indy 500 circuit could seat nearly 60,000 spectators and acted

[47] Flink, *America Adopts the Automobile*, 42
[48] Lewis, "Divergent Cultures," 12

like the "Mecca" of motorsports.[49] It was built on a 328-acre property outside the city of Indianapolis, the track was specifically designed to handle high-speed competition on tough paved roads.

Technological distinctions between methods of propulsion became more than simple engineering designs, but cultural signifiers as well. Advertisements and popular media translated these differences into identities of the modern American. The identity of an electric vehicle was based on its uses, more specifically its ease of use. Marketing specifically identified with a refined and civilized representation often associated with women drivers, commercial deliveries, domestic tasks, and overall comfort. These attributes were practical, but they inadvertently distanced the electric motor vehicle from the idyllic spectacle-driven, mode of speed, danger, and endurance that was the ICE vehicle. The electric motor vehicle had its issues just like any other early technology: charging a battery took too long, and the distance between charges was incredibly short, and it was expensive.[50]

The first iteration of the car battery was a nickel-iron alkaline battery that Edison designed in 1901. The battery was first said to achieve 50-100 miles on a single charge, but too often this was not the case and they ranged 20-40 miles. A 1903 test of Edison's improved battery demonstrated modest progress where the model managed "seventy five miles" at a steady fifteen mph for seven and a half hours without recharging.[51] But such results meant that electrics lagged behind the expectations set by ICE vehicles. In this way, electric vehicles struggled to maintain cultural value. Edison and other electric proponents promised technological breakthroughs, but it became a subject of ridicule after each year there was no improvement.[52] In

[49] Lewis, "Divergent Cultures," 15
[50] Wells, "The Road to the Model T," 497-523
[51] "Test of Edison Auto Battery," *New York Times*, August 19, 1903
[52] Times, Special To The New York. "INVENTOR EDISON TELLS NEW BATTERY'S POWERS." *The New York Times*, August 4, 1905.

comparison to the fast action and constant visible success of the ICE, the electric vehicle became a "horsey car for horsey people."[53] There is some debate about how much more effective the ICE was than the electric motor because electric automobiles took part in many competitions and broke many land speed records despite glaringly obvious flaws in the endurance, not to mention that many automotive enthusiasts of the 20th century preferred the noise of the latter. Falling gas prices, steady advances in ICE performance, allowed gas powered vehicle manufacturers to capitalize on progress.

Figure 1.3: Internet Archive. "Maxwell Model G Advertisement in Life (Magazine).[54]

[53] Times, Special To The New York. "INVENTOR EDISON TELLS NEW BATTERY'S POWERS." *The New York Times*, August 4, 1905.
[54] Internet Archive. "Maxwell Model G Advertisement in Life (Magazine) on June 23, 1910." Image. January 1, 1910. https://picryl.com/media/maxwell-model-g-advertisement-in-life-magazine-on-june-23-1910-3dcd6f.

Figure 1.4: Taalbi, Josef. "Electric Cars Were Once Marketed as 'Women's Cars'.[55]

Economic Historian Robert J. Gordon argues that the decades between 1870 and 1970 saw the most transformative technological changes in American life, reshaping productivity, mobility, and the daily routine.[56] Gordon's insight that new technologies reorganized everyday life was in-part referring to the way technology is introduced to consumers. The fascination of the automobile in the early 1900s for example, is presented in the form of advertisements and photographs, and divides itself into categories that appeal to different slices of American society. On one hand, these advertisements appealed to patriarchal tradition by depicting men driving fast cars, and on the other, they empowered the trailblazer to forge a way into the American wilderness. An example of masculine advertising is a poster for a Maxwell Model G (see *figure 1.3*) that directly conveys the message that one of a man's biggest achievements in life is owning

[55] Taalbi, Josef. "Electric Cars Were Once Marketed as 'Women's Cars'. Did This Hold Back Their Development over the Next Century?" The Conversation, March 13, 2025. https://doi.org/10.64628/AB.tmuatfun3.
[56] Gordon, *The Rise and Fall of American Growth*, 1–3.

an automobile.[57] Being a successful man in the 1910s was stylish, and owning a car made the boy a man. Certainly ICE-powered automobiles were not marketed solely to men, but the vast majority of marketing was intended to appeal to values associated with manliness. The appeal of the ICE vehicle was closely tied to contemporary ideals of masculinity. Early automotive culture framed the motorist as not simply an operator of a car, but a figure of strength and mastery. ICE vehicles required physical strength to operate, from hand-cranking the engine to managing mechanical failures, driving was active and demanding.[58] In motorsports this image was amplified further. Drivers were portrayed in newspapers as daring individuals who confronted danger and overcame treacherous road conditions at high speeds. These representations aligned closely with expectations of manliness in the 20th century. In this way, the internal combustion engine became more than a mode of transportation; it became a symbol of masculine mastery.

By contrast, marketing of electric vehicles often appealed to a woman's sense of independence. An example of gendered automotive emancipation appeared in August 1899, from a newspaper called the *San Francisco Call,* entitled *The Automobile Girl of 1899* which displayed an illustration of a woman, intended to be the Countess de Castellane, the wife of a French Count, who was apparently driving to pick up her husband. The article serves as an interesting advertisement for the automobile and for vehicle safety. Her story emphasized that she "mastered the trick of the levers in a short time" and that she learned how to be a good motorist.[59] The writing did not, however, complain that men and women were equal in relation to driving, rather it explains that she makes a "polite carriage out of it a lady's carriage."[60] From

[57] Internet Archive. "Maxwell Model G Advertisement in Life (Magazine) on June 23, 1910." Image. January 1, 1910. https://picryl.com/media/maxwell-model-g-advertisement-in-life-magazine-on-june-23-1910-3dcd6f.
[58] Wells, *Car Country*, 54
[59] "San Francisco Call 6 August 1899 — California Digital Newspaper Collection." Accessed November 3, 2025. https://cdnc.ucr.edu/?a=d&d=SFC18990806.2.205.12&srpos=1&e=------189-en--20--1--txt-txIN-automobile-------.
[60] "San Francisco Call 6 August 1899 — California Digital Newspaper Collection." Accessed November 3, 2025. https://cdnc.ucr.edu/?a=d&d=SFC18990806.2.205.12&srpos=1&e=------189-en--20--1--txt-txIN-automobile-------.

there the author details how an "automobile girl" is supposed to drive: with caution.[61] It is an odd juxtaposition, but it does underline the way many thought of the automobile as an everyday item that either men or women could learn to drive and strengthen their independence.

Furthermore, this graphic from Detroit Electric speaks loudly that it is "patriotic" for women to drive their electric vehicles (see *figure 1.4*).[62] Electric engines did not have the same horsepower as an internal combustion engine, and since ICE models were being sold as a masculine product, some electric motor companies like Detroit Electric marketed to women. While there is evidence of gendered marketing, the one truth about EVs (electric vehicles) is that they were more expensive. In the first five years of the 20th century, articles about EVs started to shrink or disappear in favor of ICE auto races, along with that came articles about the novel electric motor car starring in garden shows as boutique quality. A model was sent to a woman in London at $7500 that took eighteen months to build.[63] In stark contrast to earlier findings, this article pronounced EVs as a leisurely urban touring car rather than anything robust like the ICE vehicle.

In the 1890s, the ICE automobile became just another option among three competing technologies, with steam and electric vehicles often offering a more practical and familiar alternative. However, by 1905, this balance had shifted decisively. This change did not occur within a vacuum and did not occur simply because of technological superiority, but through a combination of cultural and economic factors that shaped public perception. Motorsports and newspaper coverage elevated speed, endurance, and danger as the defining qualities of automotive success. Characteristics that consistently favored ICE vehicles over its competitors.

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[61] "San Francisco Call 6 August 1899 — California Digital Newspaper Collection." Accessed November 3, 2025. https://cdnc.ucr.edu/?a=d&d=SFC18990806.2.205.12&srpos=1&e=------189-en--20--1--txt-txIN-automobile-------.
[62] Taalbi, Josef. "Electric Cars Were Once Marketed as 'Women's Cars'. Did This Hold Back Their Development over the Next Century?" The Conversation, March 13, 2025. https://doi.org/10.64628/AB.tmuatfun3.
[63] *The New York Times*. "NOVEL ELECTRIC AUTO IN THE GARDEN SHOW." January 20, 1905.

Simultaneously, low fuel costs and expanding production made gasoline-powered automobiles increasingly viable. Altogether, these forces created growing demand and shaped the next steps of the automotive industry.

CHAPTER 2: Making the Dream Affordable: The Model T

Henry Ford's contributions to the automobile manufacturing process did more than improve production; they specifically addressed the fundamental barriers that had prevented the ICE automobile from becoming a practical tool for everyday Americans. By reducing cost, increasing durability, and restructuring production, Ford transformed the automobile from a recreational novelty into a mass consumer good. Before Ford and his Ford Motor Company, car manufacturing was slow, inconsistent, and expensive to operate. By 1907 there was still a race between electric and ICE automobiles for market dominance, as neither had achieved widespread adoption. Ford's key insight was recognizing that cost and reliability, rather than speed or luxury, were the principal factors preventing the automobile from becoming a necessity to American life. These limitations can be seen in early mass-produced vehicles, which failed to meet practical demands of consumers. This chapter argues that Henry Ford's innovations did not simply make the automobile more affordable, but transformed it into a practical tool that fulfilled the cultural expectations of speed, reliability, and everyday usability established in the early twentieth century.

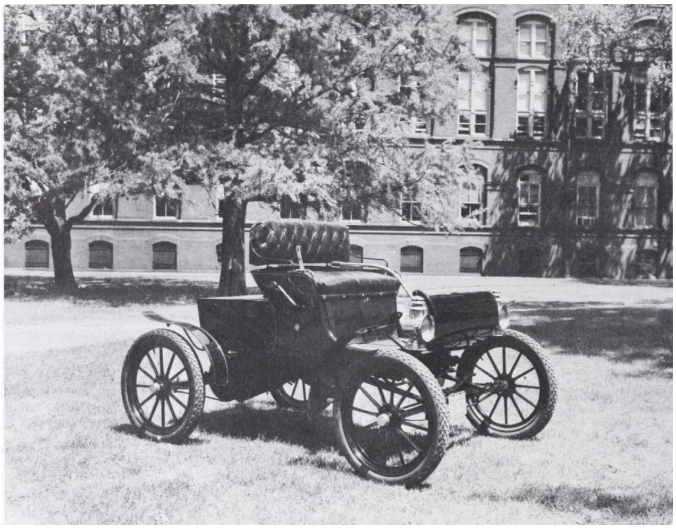

Figure 2.1: "Restored 1903 curved-dash Oldsmobile, the first mass produced car in the world. The curved-dash sold for only $650 and was the most popular American car from its introduction in 1901 to about 1904."[64]

Early ICE cars were impractical, unreliable, and expensive, which limited who could buy them and prevented widespread adoption. For example, in *figure 2.1* the 1903 curved-dash Oldsmobile, perhaps the first mass produced vehicle in the world with a $650 price tag, was likely affordable by the average American worker. However, despite this relative affordability, it remained limited in capacity, engine power, and overall utility. While it could handle light dirt roads, it was primarily suited for short touring rather than consistent, everyday use. The limitations of the Oldsmobile were not unique, but reflected broader constraints that affected early automobiles as a whole. These limitations reveal that affordability alone was not enough to make the automobile practical; what was needed was a vehicle that could reliably meet the everyday demands of its users.

[64] Flink, *America Adopts the Automobile* 40

These limitations were not confined to individual vehicles, but were reinforced by the conditions in which automobiles were expected to operate. According to historian Christopher Wells, cars at this time could not keep up with trains, but in comparison to horses, they went farther, at less cost, and most importantly it came with fewer logistical challenges.[65] In fact, Ford and other auto enthusiasts claimed that the automobile would bring Americans freedom from locomotive time tables altogether. The 1903 oldsmobile could perform this function and was built to be as sturdy as any low-cost vehicle before Ford's Model T in 1908. Henry Ford had designed several cars between 1890 and 1903 when he had worked for Edison and also when he formed his own motor company in 1903. Like most competing models of the period, these early Fords found few buyers because they sold at prices that still placed them beyond the reach of the average worker. They were lighter and somewhat more affordable than luxury touring cars, yet they remained mechanically delicate and dependent on skilled assembly. Wells recounts a 1905 case in which a Turkish buyer purchased an American car specifically because it could withstand rough roads, noting that French cars were built for speed not durability. Ford later demonstrated that automobiles had been built too heavy in the past and that the only solution was a simple, lighter weight design.[66] Taken together, these ideas reveal how expectations and engineering limitations converged in ways that demanded fundamentally different automobiles.

Ford's early efforts operated within the same production logic that constrained the broader industry such as limited durability with high cost assembly. The problem had not simply been designing a cheaper car, but creating a reliable vehicle that could be used by the working and rural classes. Ford identified these structural barriers to adoption and responded not merely with a new vehicle, but with a new model of production. This analysis draws on Robert J.

[65] Wells, "The Road to the Model T," 150
[66] Wells, "The Road to the Model T," 48.

Gordon's argument that the true revolution of the early 20th century came not just from Ford or another manufacturer's inventions, but from the productivity gains unlocked by them.[67] By designing a durable, standardized "Universal Car"[68] and pairing it with unprecedented methods of mass production from electrified and reorganized factories, Ford transformed the automobile industry from an elite-dominated touring machine to a tool accessible to ordinary Americans.

The deep rural-urban divide also shaped early automobile culture and rendered the ICE car appealing to many Americans. Rural communities often resented motorists because their vehicles were symbols of wealth and intrusion. Before 1908 when the Model T was released, rural communities were fearful of the automobile as a symbol of unwelcome change; often rural folks referred to automobiles as "Devil Wagons."[69] Automobiles may have been captivating, but the unfamiliarity of the technology and the damage and violence that cars were capable of inflicting added to the anxiety about a lack of legislation protecting pedestrians. Once safe roads became an unsafe space within both an economic and a social conflict where motorists raced public roads, endangering not just rural community members but also anything that was in the way of a speeding car; sometimes these motorists drove under the influence with so little standing in the way to stop them. Early motorists treated rural roads as their leisure spaces because road trips, and what I've referred to as "tourism," was the primary use of a personal vehicle.[70] Resultant fears and resentments were intensified by the physical reality that early automobiles, the *cheap* ones, were nearly impossible to use on American roads.

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[67] Gordon, *Rise and Fall of American Growth*, 129-131.
[68] Flink, *America Adopts the Automobile*, 36
[69] Heitmann, John Alfred. *The Automobile and American Life. Page 23*
[70] Howe, "Hot Cars, Dusty Roads," 287-310. Tourism was shaped with contemporary roads that followed old horse paths and towns that were at intervals accommodating slower forms of travel.

Figure 2.2: "*1897 Olds 'Motor Wagon'*"[71]

This tension gradually subsided as rural and urban communities became more interconnected. In-fact acceptance of the automobile by Midwestern states in the late 1910s and the early 1920s shifted manufacturing sites from the East Coast to the MidWest.[72] Although this had more to do with renewed access to oil; for example, in 1899, 93 percent of American oil was from the Appalachian and Lima-Indiana oil fields, but after 1901 that changed as a large Spindletop gusher in Beaumont Texas provided so much oil that it made more sense for motor companies to develop out west, mid-west.[73] Filling stations were essential to the automotive industry, in 1901 we started to see the early signs of shifting usage of the automobile. However, before the automotive industry could shift and grow, Americans had to face the glaring issue of road conditions. The streets of expanding cities and the country roads that led to them were simply too rough and inhospitable to automobiles. According to Gordon, "America's 2 million miles of roads in 1904 were largely dirt tracks connecting farms to towns" while other roads were "surfaced" which really just meant they were covered in gravel.[74] In practice this meant that

[71] "Oldsmobile (Curved Dash Runabout) 1903," *Unique Cars and Parts*, https://www.uniquecarsandparts.com/lost_marques_oldsmobile.htm.
[72] Flink, *America Adopts the Automobile*, 66
[73] Wells, "The Road to the Model T," 174
[74] Gordon, Rise and Fall of American Growth, 158

American roads were muddy, rutted, and poorly graded, making them nearly impossible for early automobiles, such as the 1897 Olds in *figure 2.2,* to traverse. The vehicle's carriage-like appearance, its tires, and the power of the engine made it inefficient for travel outside of urban centers. These conditions further demonstrate that early automobiles were not yet practical for widespread use, reinforcing the need for a vehicle that could reliably navigate the realities of the American landscape. Yet even if the road conditions had been ideal, the cost of a reliable automobile was placed far beyond the reach of most working Americans.

There were extensive disparities between the use of cars in urban environments compared to that of rural environments, the reason being that before the Model T, no one in the farming community could afford a car. Wages in the early 20th century made automobile ownership unrealistic for most Americans. As a general matter, automobiles were expensive averaging at around $2,834 (equal to around $80,000 in today's money).[75] And with barely a year's salary able to cover it, the maintenance alone would drive the cost even higher. To put that into perspective, the price of a horse in 1900, was around fifty dollars and did not cost much more to keep fed and cared for. Historian James Flink mentions that the popularity of horses did not fully change between the 1890s and the 1910s, and in his book about the adoption of the automobile he found that horse sales were steady even while the number of automobiles sold in the same years grew almost double.[76] Like the steam engine, horses were familiar and reliable in that Americans knew what to expect, unlike the automobile. The challenge, then, was not simply to produce automobiles, but to create a vehicle that could overcome these financial barriers and function as a practical tool for everyday Americans. Henry Ford ultimately solves the cost of ownership problem by figuring out that the cost of a vehicle could be halved, even cut down to a third of the

[75] Tom Standage A brief history of motion 69
[76] Flink, *America Adopts the Automobile, 8-10, 20-23*

original price. Enter the Model T of 1908. The release of the Model T did not create demand from nothing, but rather it unlocked a level of demand that had been building before. As Heitmann notes, automobile production in the United States increased from around 50,000 cars in 1908 to around 115,000 in 1909, this over double unit increase to the market was due to this new vehicle.[77] Likely, the Model T was Henry Ford's magnum opus, his conquering vehicle that would outsell other automotive manufacturers in a short matter of years.

Figure 2.3: Ford Model T Race Cars during the New York to Seattle Transcontinental Race, June 1909.[78]

[77] Heitmann, John Alfred. *The Automobile and American Life / John A. Heitmann.* McFarland & Co., 2009. Ucb.fb08d9fb.59ab.590f.b99d.7a035960da05. https://research.ebsco.com/linkprocessor/plink?id=85923927-b5f3-3fea-a25a-fb8438643576. 19

[78] "Ford Model T Race Cars during the New York to Seattle Transcontinental Race, June 1909 - The Henry Ford." https://www.thehenryford.org/collections-and-research/digital-collections/artifact/191102.

The Model T (*figure* 2.*3*) introduced in 1908, is often remembered as the car that standardized the industry, but it also addressed the key barriers that had previously limited automobile adoption by combining affordability, durability, and ease of use. Ford's new model could handle rough terrain and could benefit both urban and rural communities. For example, better seen in *figure 2.4*, the Model T's elevated chassis and simple design made it far better suited to the terrain. Where other car companies made heavy-low riding cars that were not easily fixed, Ford's model was designed with 10,000 interchangeable parts that were lightweight and made with durable steel.[79] The high-set chassis and the engine were a prize to behold; a four cylinder, 20 horsepower engine that was held up with a suspension system that could handle the bumps in the road.[80] The suspension system had been the reason that the vehicle succeeded physically in the first place as it kept the wheels on the ground in most terrains.[81] Ford believed in simplicity and too many automobile models were too heavy and lacked power. To address this Ford made his Model T shorter than most cars changing the weight to engine power ratio with which most "touring" cars had trouble with.[82] The Model T underwent thousands of minor changes depending on the intentional use of the vehicle. These changes would range from open air to closed compartments, and from variation of family car with many seats, to an open back for cargo. Among the most important of these incremental improvements was the adoption of an electric starter in 1915, which eliminated the physically demanding hand-crank. The result being a far more accessible machine for ordinary drivers. The practical use of the vehicle is important to its popularity, but even more so in the transcontinental race when its versatility was proved to

[79] Nye, *America's Assembly Line*, 19
[80] Pete Davies, *American Road: The Story of an Epic Transcontinental Journey at the Dawn of the Motor Age* (New York: Henry Holt and Company, 2002), 61
[81] Wells, "The Road to the Model T,". 48
[82] Wells, "The Road to the Model T," 48. A touring car was a common traveling car. The Model T had a narrow closeness to a famous car by Thomas Flyer who won a publicized race the same year the Model T was released.

compete with most expensive machines.[83] The way to prove its worth was an endurance run from New York City to Seattle.

Figure 2.4: 1908 Model T.[84]

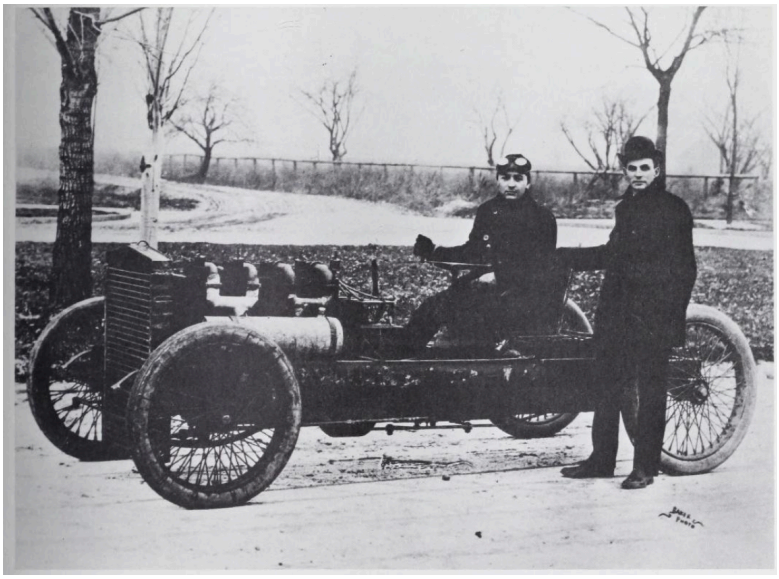

Figure 2.5: "Barney Oldfield, at the wheel, and Henry Ford with the famous 1903 Ford '999' racer."[85]

[83] Wells, "The Road to the Model T," 49
[84] "The Model T." Accessed March 24, 2026. website
[85] Flink, *America Adopts the Automobile*, 42

Figure 2.6: "The winning Ford Model T entry on a rutted, unpaved road during a 1909 transcontinental race from New York City to Seattle, Washington."[86]

Henry Ford, like nearly every automotive manufacturer, began his automobile developments by racing. Ford opened The Ford Motor Company in 1903, but before he set off to build cars that the average person would buy, he built race cars like the Ford 999 racer in *figure 2.5.* The vehicle broke the mile speed record on a closed-track in New York, driven by Barney Oldfield, a rising racecar driver.[87] It gave Ford national attention and his experience demonstrated to him that speed, reliability, and power-to-weight ratio were not just luxuries, but essential design principles. And they were attractive to spectators. It is for this reason that in 1909 when Ford entered his Model T into the transcontinental race from New York City to Seattle (*figure 2.6*), that the design of the vehicle with its lightweight frame, high clearance, and a four cylinder engine out-competed its heavier, and much pricier touring automobiles in the 4,100-mile race in just over 22 days.[88] However, Ford was disqualified in this race because his

[86] "Good Roads Movement." Encyclopædia Britannica. https://www.britannica.com/event/Good-Roads-movement.
[87] Flink, *America Adopts the Automobile*, 327
[88] Wells, "The Road to the Model T," 520

racers swapped engines, likely leading to its 22-day journey (nearly half the previous record). Although Ford had not been eligible to win the competition he knew that exposure in the racing world would draw attention to his universal automobile. And he was right. In this race, the Model T had to outcompete contemporary touring cars that were a great deal heavier. For example, a reason that the Model T did so well was that its weight to power ratio was the same as cars that won races, like the Thomas Flyer from 1906 that won in Paris in 1908, the Flyer cost 3500 US dollars while the Model T, while significantly slower, was only 850 US dollars and was more reliable.[89] In three chunks, Ford's Model T gained significant percentages of the U.S. automotive market: In 1909, it captured 10.8 percent of the market, by 1911 it reached 27 percent, and in 1915 it had gained over 45 percent.[90] However, racing had not been the only reason for Ford's success, it rather had to do with the surplus of automobiles as well. Similarly important, the Model T entered the market at a lower price than its competitors at around $825, placing the reliable car within working-class buyers for the first time.

The key to Ford's success was not just the Model T, but the ability to mass produce it as a consumer good. Ford was not the only industrialist looking to reform and improve the manufacturing process, but he was the first to implement it and perfect it.[91] His business model was intentionally unique because he believed in making a quality product over making a profit. It was a sentiment that was not shared in the capitalist community and earned its own term, Fordism, which is defined as the process by which a manufacturing process is refined.[92] Automotive historian Johnathan Levy frames Fordism primarily as a story about the evolution of capitalism in which Ford himself defines an economic theory. However, Ford himself was a

[89] Wells, "The Road to the Model T," 49
[90] Wells, "The Road to the Model T," 522
[91] Nye, *America's Assembly Line*, 14
[92] Levy, *Ages of American Capitalism*, 348. Large machine tools had not yet been implemented fully into the assembly line until the 1920s.

pragmatist. It was not simply that he wanted to increase the quality of vehicles, he was less interested in abstract economic theory and instead focused on making the physical labor and the materials used cheaper and more accessible. Ford's model of efficiency was not entirely his own invention; it had been a culmination of previous theories of productivity. David E. Nye's America's Assembly Line, pictures "the rational factory" as an early theory in the 18th century by Oliver Evans and Thomas Jefferson who studied an incentivized system. This system took different forms that varied by industry. For example, in Ford's time, processing industries such as steelmaking did not need a vast amount of machines to replace skilled workers whereas the Ford Motor Company factories had combined specialized crews of machine tools and workers.[93] He localized production of certain materials, and coupled with the incentivizing nature of his five dollar a day policy, precision and reward went hand in hand and led to desirable improvements to car assembly.

Before Ford could use the theory of this process called rational industry, he had to reform how factories were organized. Factories had originally been modelled after multi-floor operations that were slow and inefficient to meet consumer demand. Ford changed the game by consolidating these large factories into single-floor operations that worked in tandem with a moving assembly line. Where most factories employed over 60,000 workers, Ford only employed 13,000.[94] It is important to note that the assembly line was a product of these reforms and experimentations rather than the established goal. The theory of these experiments was inspired by Ford's work with Edison in the 1890s and his observations of butcher shops and bakeries. The three industries were similar, but it was the tools and interchangeable parts in the bakery and Edison's workshop and the butcher shop with its reverse assembly line that caught

[93] Nye, *America's Assembly Line*, 19
[94] Levy, *Ages of American Capitalism*, 360

Ford's attention. These observations culminated in the theory that an assembly line was a subdivision of labor, utilizing interchangeable parts, with single function machines, in a sequential order, with a powered belt line delivering work to workers in specialized crews.[95] The theory was sound, but the practicality of using machinery in a factory while creating an efficient model was only made possible by electrical power.

Electrical generation was largely coal fired or steam powered but both methods used bulky equipment, the assembly line had to be seamless and quick. It is unclear how much of Ford's influences were directly involved in the complete designs of his factories and automobiles, but he was able to compile a hybrid coal-gasoline power station that could have powered half of Detroit.[96] With this new generator the implementation of machinery and a moving assembly line was made possible and the first factory to fully implement it was the Highland Park facility in Detroit. The entire process of putting together a Model T took almost 12 and a half hours, however with the assembly line in place in 1913, it took nearly 93 minutes per unit.[97] With the time of assembly shortened, and the cost of production so low, there was a surplus in automobiles, and they could be purchased with ease.

Even though the efficiency of Ford's factory was increased, there was one problem left; who would be willing to work in such repetitive and fast paced conditions? With Ford's specialized crews, he realized that he had cut costs significantly, so he raised the working wage from $2.50 a day to $5 a day in 1914.[98] The raised wages combined with the lowering prices of the Model T which dropped from almost $980 to $397 between 1908 and 1921, meant that a worker could afford his own car after 80 days of work in 1921.[99] The theory of rational factories

[95] Nye, *America's Assembly Line*, 27
[96] Levy, *Ages of American Capitalism* 358
[97] Levy, *Ages of American Capitalism*, 359
[98] Levy, *Ages of American Capitalism*, 361
[99] Nye, *America's Assembly Line*, 31

worked solely on the assumptions that production led to consumption, and it worked. Ford's Model T was affordable and it was quality made. In 1910 America saw nearly 20,000 Model T's sold but by 1916, a mere 8 years since the model was released, nearly 585,000 had been sold.[100] Thirteen years later every household had at least one vehicle in America and Ford had redefined manufacturing.[101] By the mid-1910s, Ford had not only engineered a car that met the needs of ordinary Americans, but had also built the industrial system capable of delivering it to them, completing the transformation that early automobiles had failed to achieve.

The since-established automobile culture that prized speed, luxury, and daring adventure sponsored the space for which the automobile industry ebbed and flowed. Ford was the first to recognize that specific issues that led to the lack of success in personal automobiles could be addressed, and thus pioneered a future in mass manufacturing. As Robert J. Gordon argues, the true revolution of the early 20th century lay not in any single invention but in the productivity gains created when electrified factories, standardized parts, and reorganized labor systems converged.[102] Ford's achievement was to recognize these emerging patterns and build a manufacturing system that translated the Model T from a technical solution into a mass-produced consumer good. The people shaped the culture around the product and it was acutely marketed as such.

[100] Levy, *Ages of American Capitalism*, 349
[101] Levy, *Ages of American Capitalism*, 349
[102] Gordon, *Rise and Fall of American Growth*, 129-131

CHAPTER 3: Making the Dream Practical: The Emergence of Filling Stations

So far this thesis has concerned itself with the contingent and often coincidental history in which the automotive industry emerged, grafting itself to a present-day fascination with and cultural attachment to the automobile. However, I have yet to explain precisely how the industry was affected by the public; how the American landscape was reshaped to accommodate the automobile's new and culturally expansive existence in the 1910s and 20s. As mentioned in chapter 1, during my research I realized that a reciprocal relationship exists between humans and technology in a recognizable pattern, an example of which is the ICE automobile. This pattern is often referred to as a chicken-and-the-egg problem. In this analogy, the automobile industry is the egg and the infrastructure of the American landscape is the chicken. Automobiles required paved roads, fuel distribution networks, and mechanical services in order to function reliably, yet the widespread construction of these systems was only justified after automobiles had begun to proliferate. Each stage of development of the industry therefore depended on the development of infrastructure as a means to an end. Historians such as Christopher Wells, Daniel Yegrin, and Oliff & Whitt describe parts of this reciprocal pattern, showing how roads, cities, and fuel systems expanded only after automobiles had already begun to reshape American life.

For this reason, the role of public transportation in the lives of early 20th century Americans has so far remained largely unexamined in this thesis. However, streetcars, railroads, and interurban tracks had already established their presence across the American landscape before the automobile became widespread. The rise of the automobile did not immediately replace these systems; instead, it gradually reshaped the spaces between them. As automobile ownership expanded, new forms of infrastructure such as filling stations, highways, and roadside

businesses began to emerge, transforming both the built environment and the everyday mobility of Americans with a focus on greater dependence on the car.

European cities followed a different trajectory. Municipal responsibility came first in the redesigning of Paris's boulevards and urban centers in the 19th century, creating an environment that could be molded to the automobile. But the same cannot be said for the United States. American planners, engineers, and reformers had been discussing the need to redesign cities and improve roads since the 1890s, yet these proposals rarely moved beyond reports and conferences. What they lacked was not just financial ability, but a cultural force powerful enough to make such transformations necessary. The automobile supplied that force. Once motorists embraced driving as an expression of personal mobility, narrow roads and old dirt paths meant for horse and buggies suddenly seemed no longer tolerable. The car did not introduce the idea of urban reform; rather, it made it unavoidable.

Daniel Yegrin, an economic historian, argues that gasoline distribution emerged not from long-term municipal planning but rather from broader changes in the oil industry, as electrification of buildings reduced demand for kerosene and left gasoline as an abundant byproduct of refining.[103] Furthermore, Oliff and Whitt, two automotive historians, explain that early road reform came from a movement called *Good Roads*. The movement was a coalition of rural advocates and urban reformers who wanted a system that would both bring rural communities out of the mud and regulate the chaotic motorists speeding along interstate roads. Reformers also sought to regulate motorists through speed limits and early traffic control especially in rural areas. However, these efforts were largely reactive, attempting to manage the consequences of expanding automobile use rather than directing its development. Together these interpretations capture pieces of the story and acknowledge that infrastructure complemented the

[103] Yegrin, *The Prize,* 79-80

ICE. What they do not explain is that these developments were a response to the culture surrounding the automobile , a culture shaped by advertising, the excitement of motorsports, and the symbolic association between driving and personal freedom. This chapter argues that American infrastructure expanded not just because cars existed, but because motorists increasingly demanded a way of life that could only be satisfied by the ICE automobile. And it begins with the story of American roads, whose muddy paths, crowded city streets, and early reform movements reveal how profoundly the automobile forced the landscape to change.

To understand why motorists demanded this new infrastructure, it is necessary to begin with the condition of American roads before the automobile became widespread. At the beginning of the 20th century for instance, the American road system was not designed with the automobile in mind. In fact, most roads outside major cities were dirt paths worn into the ground by horses, carriages, and wagon wheels.[104] These paths consisted of two muddy ruts for wheels to follow, with a strip of grass or stone running between them. It made travel difficult even under favorable weather conditions. Oliff and Whitt focus on rural communities and the development of paved roads, they describe wagon wheels sinking into the mud so deep that travelers were forced to pry their vehicles free from bogs and flooded areas.[105] Without access to drainage and supported roads, when rain fell, these roads quickly became impassable, trapping wagons and early automobiles alike. America's underpaved roads were well known to its people, enough that the call for better roads and infrastructure actually began before the automobile gained its popularity en masse.

[104] Wells, "The Road to the Model T," 513
[105] Martin T. Olliff and David O. Whitten, *Getting Out of the Mud: The Alabama Good Roads Movement and Highway Administration, 1898–1928* (Tuscaloosa: University of Alabama Press, 2017), 17

In 1903, a writer in *The Independent* famously declared that the condition of American roads "put our civilization to shame."[106] The commenter in that issue was likely referring to the success of paving projects in Europe. One point that should be stressed in this context is that America is a rather large country compared to European countries making large infrastructural projects an arduous, time consuming, and expensive task. Moreover, before the automobile became commonplace, the *Good Roads Movement* emerged to advocate for reforming American road conditions. Reformers in this movement argued that roads were unfit for modern transportation within cities, and muddy rural roads isolated farmers from the markets and made travel between states slow and unreliable. The movement came together in the late 1880s and early 90s and lasted into the 1920s as not simply a movement of mobility but also of embracing economic improvement.[107] The movement itself was founded by bicyclists, Albert Pope, a successful bicycle manufacturer, is credited with the birth of the movement as he once said that all new motorists face the same dilemma that there is only one decision when it comes to roads, the bad and the worse.[108] The movement demonstrates that the demand for improved roads existed before automobiles became widespread, but it was the rapid expansion of motor travel that transformed these reform ideas into large-scale infrastructure projects while also expanding the number of people involved in the call for better roads.

To understand the conditions from which road reform came about, it is important to examine the dichotomy between rural and urban communities during this time. Upper and middle class Americans moved to urban centers before the spread of automobiles to be close to jobs, which meant that lower-income Americans were left to the rural landscape. However, there was a shift within the first two decades of the 20th century that saw a reversal of this pattern in

[106] Wells, "The Road to the Model T," 513.
[107] Olliff and Whitten, *Getting Out of the Mud*, 34
[108] Wells, "The Road to the Model T," 40

which wealthy urbanites moved outside the city into small towns, which would later be called the suburbs. Farmers had experienced early motorists as disruptive and privileged, especially on narrow, muddy rural roads. The culprits were typically rich, likely white, men driving recklessly along a slippery road next to someone's property; to the observers, this man seemed to think that he owned the road in his loud and dangerous mode of personal emancipation; he could afford this luxury while the average American could only rely on horses to transport goods and to plow fields. Although Americans may have laughed at the automobile in its early stages and preferred the horse, horses got sick, they got hurt, automobiles did not. The price of ownership and the overall inaccessibility of rural and urban communities meant that roads became a political topic.

By the 1910s, these tensions over road conditions, class, and access had produced a landscape that was improving, but only unevenly. *Good Roads* reformers had succeeded in raising national expectations for what modern transportation should look like, yet the actual experience of travel still depended on where one lived and how much pressure a community could exert on those who could afford to pave the roads. Rural communities for instance, often feared the automobile, referring to them as "devils," only began to soften their stance once road reform rhetoric adapted to include their needs and once cars became affordable to lower-income Americans.[109] Even during Taft's presidency (1909–1913), the growing presence of automobiles began to reshape patterns of transportation, yet there was little coordinated federal effort to reform or fund a national road system.[110] It was not until 1916, during Woodrow Wilson's presidency, that the Federal Aid Road Act marked the first significant federal commitment to road construction, following earlier private efforts such as the Lincoln Highway proposal of

[109] Heitmann, *The Automobile and American Life*, 23
[110] Olliff and Whitten, *Getting Out of the Mud*, 130

1912.[111] The lack of early federal action left much of the responsibility to improve America's roads in the hands of smaller organizations.

The uneven state of American roads encouraged new attempts to build highways through organizations like Good Roads. One of the most prominent of these efforts was the Lincoln Highway Association (LHA) that proposed the construction of a transcontinental highway in 1912 stretching from New York to San Francisco.[112] The funding for such a project would be largely through private donations from manufacturers and reformers together. However, farmers, motorists, and urban reformers all wanted different kinds of roads, and the sudden affordability of the Model T only intensified these competing demands. What emerged was not a unified system but a patchwork of paved city streets, half-finished rural routes, and muddy stretches that reminded travelers how incomplete the nation's infrastructure remained.

Figure 3.1: "In 1919, Captain Dwight D. Eisenhower led an Army expedition through 'darkest America' to dramatize the need for roads suitable for the new automotive age. Sometimes the convoy would do more than six miles per hour."[113]

Small municipal projects and ambitious road projects like the LHA pushed the issue to a federal level. In 1916 the U.S. government passed the Federal Aid Road Act that provided funding to assist in improving rural roads. It marked one of the first significant federal

[111] Olliff and Whitten, *Getting Out of the Mud*, 130
[112] Olliff and Whitten, *Getting Out of the Mud*, 130
[113] Yergin, *The Prize*, 288-289

commitments to road construction. However, such a success did not last. During peacetime after World War I, the U.S. Army convoy in 1919 under observation by Dwight D. Eisenhower was sent to test military mobility across the country from Washington D.C. to San Francisco (see *figure 3.1*). While using trains had been an option, the army discovered that using trucks and cars would cut costs of the overall journey.[114] The mission unveiled numerous problems in its nearly two month journey. They suffered around 230 accidents from rough terrain and could only travel at around five and two-thirds miles an hour, nearly as slow as a locomotive. At their best the convoy moved three to four miles a day.[115] In this environment, new motorists added pressure to expand and standardize the network, revealing that better roads alone could not sustain the growing culture of long-distance mobility. Improved roads made automobile travel more feasible, but motorists still faced another challenge: obtaining reliable fuel.

Like electricity, oil-based infrastructure had to be implemented, a process that often took a long time and was sparsely accessible in the first decade of the twentieth century and even more so in the 1890s when the ICE was introduced. It is likely that one argument for the ICE was that it was harder to implement electricity to far away towns than it was to collect gasoline from oil fields and refineries. However, finding a source of gasoline specifically, was no easy task and was nowhere near the accessibility we have today. Early attempts at filling stations (also known as gas stations) were over-the-counter containers of fuel in small roadside stands, drug stores, general stores, grocery stores, any small building that sold goods likely sold a limited supply of gasoline. Thankfully until the 1908 Model T, there was not a high demand for gasoline meaning only those who were touring needed it. Because automobiles were still relatively rare before 1908, at least among the general public, this loose system of fuel distribution was able to meet

[114] Wells, *Car Country*, 150
[115] Yergin, *The Prize*, 207-208

the needs of early motorists. However, the Model T dramatically increased the number of drivers on American roads. Simply put, small distribution could not hope to keep up with the demand. Oil companies and entrepreneurs began experimenting with dedicated fueling points that allowed motorists to fill their tanks with a formal process.

Figure 3.2: "A motorist fills up at a service station in Fargo, North Dakota, while gasoline is delivered to the station in a dependable horse-drawn wagon."[116]

[116] Yergin, *The Prize*, 288-289

Figure 3.3: "America's love affair with the automobile began in earnest in the 1920s when gasoline was abundant—and cheap."[117]

The formalized filling stations started to become widespread in the 1920s, but in this early period from 1890 to 1910, gasoline distribution remained improvised and often relied on older transportation systems such as horse-drawn wagons (see *figure 3.2*) to deliver fuel to local stores and roadside pumps. In-fact horses were common up until the late 1910s, as was public transportation. Both of which experienced downfalls in popularity and saw the removal from urban centers almost entirely. To understand how the automobile reshaped urban transportation in this way, it is important to remember that cities had been originally designed for much smaller and slower systems of movement. Nineteenth-century streets supported pedestrians, horse-drawn carriages and wagons that moved through commercial centers. Horse-drawn streetcars, often referred to as horse cars, first appeared in the 1830s and represented one of the earliest attempts

[117] Yergin, *The Prize*, 288-289

to organize urban public transportation along pre-determined routes.[118] By placing the cars on rails, a single horse could pull much heavier loads than it normally would. Over time this system evolved into cable cars and eventually electric streetcars, which spread across American cities by the turn of the century.

Streetcars and locomotives were efficient for public transit purposes, but they worked on time tables and horses were messy. The *Good Roads Movement* actually interacted with this concept in that reformers were not simply concerned with improving travel between cities, but also with addressing the unhealthy and congested conditions within urban streets. Horses had long served as the backbone of transportation in American cities, pulling delivery wagons, passenger carriages, and the streetcar, yet this system came with drawbacks. Horses required constant care, produced waste in large quantities, and moved relatively slowly through already narrow city streets. As a result, the growing mixture of transportation began to feel claustrophobic. For instance, Wells describes how when automobiles entered the city scene, streetcars in New York were blocked by traffic once every eight minutes from a mix of pedestrians, horses, bicycles, and increasingly automobiles.[119] Furthermore he mentions that transportation was congested and nearly half of all fatalities in traffic were caused because of it.[120] Wells emphasizes this because of the popularity of the automobile and the increasing congestion of urban streets, nearly every mode of transportation had to compete for limited space and became increasingly unreliable, and even dangerous. As a result, these pressures contributed to declining ridership and the gradual phasing out of streetcars and other public transportation.

Streetcars were efficient and widely used, however, they were limited by fixed routes and schedules, and did not break any land-speed records. This was old technology, where people

[118] Cullen, *The American Dream*, 147
[119] Wells, *Car Country*, 87
[120] Wells, *Car Country*, 88

accepted shared routes and predictable timetables, but the automobile promised emancipation from this constrained travel. It is important to note that the trolley system worked and fares were low, meaning its decline cannot be explained by inefficiency alone, but rather by a shift in what Americans considered convenient and practical transportation. This shift can be observed most clearly in large urban centers such as New York City, where the limitations of streetcar systems became increasingly visible over time. While electric streetcars were initially praised, growing congestion undermined the positives of the system.[121] By the early 20th century, observers were already complaining of the "congestion of traffic" and the daily frustrations it caused for commuters.[122] These issues intensified in the following decades, as reports noted significant increases in delays to streetcars, often caused by other vehicles blocking tracks and disrupting schedules.[123] What had once been considered efficient and dependable was becoming difficult to maintain.

Another prime example of this shift can be seen clearly at the local level in Boulder, Colorado, where the Denver & Interurban Railroad once connected the city to Denver and surrounding communities along what was known as the "kite route" due to the shape the route made on a map.[124] This route was operated by an electric trolley, and by 1908 it was reportedly completing the journey in just over an hour, with passengers noting that "hardly a tremor was felt" even as the cars reached speeds of up to 40 miles per hour.[125] At 70 cents per trip and $1.20 round trip, the route provided an affordable and accessible mode of transportation for a wide range of passengers.[126] The line was also integrated into everyday life, running through central

[121] *The New York Times*. "FOR SURFACE ROAD TRAVEL." August 25, 1897.
[122] Ellison, Mark H. "SURFACE CAR CONGESTION." *The New York Times*, January 6, 1903.
[123] *The New York Times*. "TRAFFIC DELAYS INCREASE." April 7, 1918.
[124] Ira L. Swett, *The Denver & Interurban Railroad* (Los Angeles: Interurbans, 1947), 1
[125] Swett, *Denver & Interurban Railroad*, 16
[126] Swett, *Denver & Interurban Railroad*,16

areas of Boulder and even stopping near the University of Colorado campus.[127] In this example, the interurban was not a failing system, but a highly effective one that met the practical transportation needs of the time. However, its decline is closely linked to the automobile and the rapid need for car-centered infrastructure.

As automobile ownership expanded and road conditions improved, systems like the Boulder interurban were gradually pushed out of the space they had once occupied. As traffic increased over the years, operators found it necessary to abandon city street operation in favor of more isolated routes, a shift that reflected the growing dominance of automobiles in urban space.[128] This was not an isolated case, as all interurbans felt the pressure of the automobile's presence. While Streetcars and interurban systems had once been considered convenient and efficient, the growing distances of urban development and the flexibility offered by automobiles redefined what convenience meant in practice. As a result, rail systems that had once met the needs of urban populations came to be seen as burdensome rather than practical. By the early 1920s, these pressures had become increasingly visible.

Contemporary newspaper accounts described growing congestion and mounting strain on existing transit systems, suggesting that the limitations of streetcars were no longer theoretical but part of everyday experience. In Detroit, for example, municipal street railway profits declined sharply, accompanied by the loss of over five million passengers in a single year.[129] At the same time, transit companies themselves recognized the growing difficulty of maintaining ridership, as industry leaders urged operators to adopt stronger advertising and public outreach in order to remain competitive.[130] The experience of the Denver & Interurban Railroad in Boulder

[127] Swett, *Denver & Interurban Railroad*, 16
[128] Swett, *Denver & Interurban Railroad*, 17
[129] "TimesMachine: July 18, 1924 - NYTimes.Com." Accessed November 12, 2025. https://timesmachine.nytimes.com/timesmachine/1924/07/18/301982582.html?pageNumber=21.
[130] "TimesMachine: October 7, 1924 - NYTimes.Com." Accessed November 12, 2025. https://timesmachine.nytimes.com/timesmachine/1924/10/07/104264915.html?pageNumber=36.

followed a similar trajectory. The line lost ridership and experienced increasing financial difficulty, and after being relocated several times, ultimately ceased operation in 1926.[131] This pattern was not unique to Boulder, but reflected a broader trend seen in cities such as New York, Detroit, and Los Angeles. In the automotive history community, some have argued that this decline was not entirely organic, but the result of a coordinated effort by oil companies and automobile manufacturers. This interpretation suggests that corporate interests capitalized on a shift that was already underway.

This shift was a gradual transformation in Americans' mobility. In the late 19th and early 20th centuries the streetcar and interurban railways despite their advantages were treated as though they were inefficient because the expectations of quick and convenient travel changed with the independence brought by automobiles. Wells argues that growing congestion within urban streets and the increasing presence of automobiles made fixed-route transit more difficult to sustain, as streetcars were forced to compete for space in an increasingly crowded environment.[132] As a result, what had previously functioned well within the structure of the city became less compatible with the demands of urban life. As automobiles loosened Americans from fixed routes and schedules, they did more than replace existing transit systems; they reshaped where people could live.

When urban spaces were first being developed, people moved into cities for work in order to pursue better economic opportunities than those available in rural communities. This pattern of movement concentrated populations in dense urban centers where proximity to jobs and access to public transit were essential to everyday life. However, as the upper and, importantly, the middle class emerged, this pattern began to shift alongside the rise of the

[131] Swett, *Denver & Interurban Railroad*, 2
[132] Wells, *Car Country,* 147-151

automobile. Automobiles allowed for freedom of movement and reduced reliance on fixed transit stations making it possible for people to live at increasing distances from their workplaces. Jim Cullen observes that earlier patterns of urban development were closely tied to rail lines and streetcar routes, which structured both the physical layout of cities and the daily movement of their inhabitants.[133] The rise of the automobile disrupted this relationship, allowing development to spread outward. Cullen's argument is particularly useful here because it demonstrates how transportation systems do more than just move people, they actively shape how society flows in urban space. In this sense, suburbanization can be understood as a direct response to the automobile, as new patterns of mobility enabled individuals to separate home from work and extend the reach of the city into surrounding areas.

The transformation of American transit systems in the early 20th century was not the result of the technological breakthroughs of the automobile, nor was it just the failure of streetcars and interurban trains. Instead, it came about in response to this transformation in mobility in the modern era. The increasing accessibility of automobiles, specifically the ICE automobile, filling stations and paved roads solidified their existence. This shift reveals the reciprocal relationship between technology and infrastructure described throughout this chapter. Automobiles required these services and their expansion followed the growing demand from motorists.

Ultimately, the emergence of suburbs, the decline of public transit, and the expansion of automobile infrastructure, all point to the same conclusion: mobility was no longer defined by fixed routes and collective movement, but the ability of the individual to navigate urban and rural spaces themselves. The automobile did not just change how Americans traveled, it reshaped the

[133] Cullen, *The American Dream*, 147

structure of the American landscape itself, extending the boundaries of the city and redefining the relationship between space, work, and daily life.

CONCLUSION

This thesis argues that the rise of the automobile in America was not simply the result of technological innovation, but a feedback loop in which cultural fascination with mobility shaped the automotive industry and ultimately reorganized infrastructure and everyday life around the internal combustion engine. In the early years of the automobile industry, cars were neither the most practical nor the most reliable means of transportation in the 19th and 20th centuries. Yet public fascination with speed and mechanical power pushed the ICE automobile to the forefront of the market, outpacing its competitors: the electric motor and the steam engine.

The origins of this reciprocal relationship can be traced back to the early cultural development of the automobile, when its meaning was co-defined by both wealthy and average Americans. As discussed in Chapter 1, the ICE did not initially dominate because of technological superiority. In fact it competed with already established alternatives powered by steam and electricity. However, motorsports, newspapers, and advertising helped construct an environment in which the ICE could flourish, supported by American values of freedom and independence as well as chosen values of speed and endurance. Highly publicized races and accounts of heroic drivers overcoming danger through competition shaped not only how automobiles were perceived but what they were expected to do. In this way cultural forces did not simply reflect technological development, but actively guided it, privileging the ICE automobile over its competitors, and despite its impracticalities in comparison to other forms of transportation.

As these cultural expectations took root, they were recognized by entrepreneurs like Henry Ford, who understood that automobiles would remain limited if only wealthy Americans could afford them. Chapter 2 demonstrates how he and his Model T addressed the key barriers

that had previously limited widespread adoption, including cost, durability, and usability. Rather than redefining the automobile entirely, Ford aligned his production methods with values that had been established through cultural diffusion. In doing so he transformed manufacturing from its slow beginnings into a system capable of mass production where the automobile transformed from a recreational novelty into a practical necessity accessible to a much broader population.

The widespread adoption of the automobile then initiated a transformation of the American landscape itself. As discussed in Chapter 3, it was discussed that infrastructure such as paved roads, fuel distribution systems, and mechanical services developed in response to increasing automobile use. Movements such as Good Roads reform, along with the growth of filling stations and roadside services, illustrate how Americans actively reshaped their environment in response to increasing numbers of motorists. At the same time, older systems of public transit, including streetcars, declined as urban spaces reorganized around the needs of the automobile. In this way, the rise of the automobile reflects not just a shift in technology, but a broader pattern in which Americans restructured their physical surroundings to align with cultural priorities.

Together, these developments underscore how the internal combustion engine automobile's dominance was not inevitable, but the result of a cultural transformation in the meaning of transportation. It was in this new culture that mobility was redefined to include the freedom of movement itself, fostering a sense of independence and reshaping expectation of what economic success looked like. By examining this process, it becomes clear that technology does not emerge in isolation, but is closely shaped by the culture around it, just as much as it shapes the society that produces it.

BIBLIOGRAPHY

Primary Sources:

"Buffalo Evening News 17 August 1899 — The NYS Historic Newspapers." Accessed September 2, 2025. https://www.nyshistoricnewspapers.org/?a=d&d=ben18990817-01.1.15&srpos=4&e=--------189-en-20--1--txt-txIN-automobile---------.

Electrifying.Com. "The Very First Electric Cars | Electrifying." Accessed March 25, 2026. https://www.electrifying.com/blog/post/what-were-the-first-electric-cars.

Ellison, Mark H. "SURFACE CAR CONGESTION." *The New York Times*, January 6, 1903.

"Ford Model T Race Cars during the New York to Seattle Transcontinental Race, June 1909 - The Henry Ford." Accessed January 24, 2026. https://www.thehenryford.org/collections-and-research/digital-collections/artifact/191102.

"Good Roads Movement | US Infrastructure, Automobile Industry & Progressivism | Britannica." Accessed March 25, 2026. https://www.britannica.com/event/Good-Roads-movement.

Internet Archive. "Maxwell Model G Advertisement in Life (Magazine) on June 23, 1910." Image. January 1, 1910. https://picryl.com/media/maxwell-model-g-advertisement-in-life-magazine-on-june-23-1910-3dcd6f.

"Locomobile Company of America - Postcards, Photographs, and Epherera." Accessed February 3, 2026. https://www.virtualsteamcarmuseum.org/makers/locomobile_1899.html.

"Oldsmobile." Accessed March 25, 2026. https://www.uniquecarsandparts.com/lost_marques_oldsmobile.htm.

"San Francisco Call 6 August 1899 — California Digital Newspaper Collection." Accessed November 3, 2025.

https://cdnc.ucr.edu/?a=d&d=SFC18990806.2.205.12&srpos=1&e=------189-en--20--1--txt-txIN-automobile-------.

"San Jose Herald 9 August 1899 — California Digital Newspaper Collection." Accessed November 12, 2025. https://cdnc.ucr.edu/?a=d&d=SJH18990809.2.64&e=-------en--20--1--txt-txIN--------.

Taalbi, Josef. "Electric Cars Were Once Marketed as 'Women's Cars'. Did This Hold Back Their Development over the next Century?" The Conversation, March 13, 2025. https://doi.org/10.64628/AB.tmuatfun3.

The Denver & Interurban Railroad. n.d.

"The Model T." Accessed March 24, 2026. https://www.fromtheroad.ford.com/us/en/articles/2021/the-model-t.

The New York Times. "FOR SURFACE ROAD TRAVEL." August 25, 1897.

The New York Times. "KISER WINS BIG AUTO RACE." July 11, 1905.

The New York Times. "MOTORS BEGIN LONG RUN." September 10, 1901.

The New York Times. "NOVEL ELECTRIC AUTO IN THE GARDEN SHOW." January 20, 1905.

The New York Times. "QUESTION OF SPEED LIMIT; Six Thousand Persons Express Their Views Upon It. Ninety-Five Per Cent. Opposed to Proposed Increase from Eight to Ten Miles an Hour." Archives. May 23, 1902. https://www.nytimes.com/1902/05/23/archives/question-of-speed-limit-six-thousand-persons-express-their-views.html.

The New York Times. "TRAFFIC DELAYS INCREASE." April 7, 1918.

Times, Special To The New York. "INVENTOR EDISON TELLS NEW BATTERY'S POWERS." *The New York Times*, August 4, 1905.

Times, Special To The New York. "Test of Edison Auto Battery." *The New York Times*, August 19, 1903.

"TimesMachine: July 18, 1924 - NYTimes.Com." Accessed November 12, 2025. https://timesmachine.nytimes.com/timesmachine/1924/07/18/301982582.html?pageNumber=21.

"TimesMachine: October 7, 1924 - NYTimes.Com." Accessed November 12, 2025. https://timesmachine.nytimes.com/timesmachine/1924/10/07/104264915.html?pageNumber=36.

Secondary Sources:

Cofaigh, Éamon Ó. "Motor Sport in France: Testing-Ground for the World." *The International Journal of the History of Sport* 28, no. 2 (2011): 191–204. https://doi.org/10.1080/09523367.2011.537909.

Cullen, Jim. *The American Dream: A Short History of an Idea That Shaped a Nation*. Oxford University Press, Incorporated, 2004. http://ebookcentral.proquest.com/lib/ucb/detail.action?docID=280924.

Davies, Pete. *American Road: The Story of an Epic Transcontinental Journey at the Dawn of the Motor Age*. Henry Holt and Company, 2002.

Flink, James J. *America Adopts the Automobile, 1895-1910*. With MIT Press. Cambridge, Mass. : MIT Press, 1970. http://archive.org/details/americaadoptsaut00jame.

Gordon, Robert J. "The Rise and Fall of American Growth : The U.S. Standard of Living Since the Civil War - EBSCO." Accessed November 24, 2025. https://research-ebsco-com.colorado.idm.oclc.org/c/j2rgke/ebook-viewer/pdf/zn76oxg335?location=https%25253A%25252F%25252Fresearch-ebsco-com.colorado.idm.oclc.org%25252Fc%25252Fj2rgke%25252Fsearch%25252Fdetails%25252Fzn76oxg335%25253Fdb%25253Dnlebk.

Heitmann, John Alfred. *The Automobile and American Life / John A. Heitmann.* McFarland & Co., 2009. Ucb.fb08d9fb.59ab.590f.b99d.7a035960da05. https://research.ebsco.com/linkprocessor/plink?id=85923927-b5f3-3fea-a25a-fb8438643576.

Howe, Andrew. "Hot Cars, Dusty Roads, Clown Motels: Travel Tourism and Americana." *Pacific Coast Philology* 56, no. 2 (2021): 287–310.

Keiserfeld, Thomas. “Translating Properties into Functions (and Vice Versa): Design, User Culture and the Creation of an American and a European Car (1930-70).” *Journal of Design History* 21, no. 2 (2007): 171–81. https://doi.org/10.1093/jdh/epm023.

Levy, Jonathan. *Ages of American Capitalism: A History of the United States*. Random House Publishing Group, 2021. http://ebookcentral.proquest.com/lib/ucb/detail.action?docID=6073807.

Lewis, W. David. “Divergent Cultures: The American Response to European Dominance in Automobile Racing, 1895-1917.” *Icon* 7 (2001): 1–34.

Nye, David E. *America's Assembly Line*. MIT Press, 2013. http://ebookcentral.proquest.com/lib/ucb/detail.action?docID=3339576.

Olliff, Martin T., and David O. Whitten. *Getting Out of the Mud: The Alabama Good Roads Movement and Highway Administration, 1898-1928*. University of Alabama Press, 2017. http://ebookcentral.proquest.com/lib/ucb/detail.action?docID=4900805.

Samuel, Lawrence R. *The American Dream: A Cultural History*. Syracuse University Press, 2012. http://ebookcentral.proquest.com/lib/ucb/detail.action?docID=3410113.

Standage, Tom. *A Brief History of Motion : From the Wheel, to the Car, to What Comes Next*. New York, Bloomsbury Publishing USA, 2021.

Wells, Christopher W. *Car Country : An Environmental History*. University of Washington Press, 2013.

Wells, Christopher W. “The Road to the Model T: Culture, Road Conditions, and Innovation at the Dawn of the American Motor Age.” *Technology and Culture* 48, no. 3 (2007): 497–523.

Yegrin, Daniel. *The Prize: The Epic Quest for Oil, Money, & Power*. Simon and Schuster, 1991.