

### *Аңдатпа*

Мақалада теміржол жүк және жолаушылар тасымалы нарығының қазіргі жағдайы талданады. ЕАЭО елдері арасындағы теміржол көлігі қызметі мен өзара сауданың өзара әсерінің рөлі бағаланады, жүк және жолаушылар тасымалының көлемі мен динамикасы көрсетілген. Кейбір ТМД елдері мен ЕАЭО теміржолдарында жүк және жолаушылар тасымалдау саласындағы негізгі техникалық-экономикалық көрсеткіштер белгіленді.

**Түйінді сөздер:** теміржол көлігі, жүк тасымалы, жолаушылар тасымалы, жүк айналымы, жолаушылар айналымы, талдау, динамика.

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## **ANALYSIS OF THE STATE AND TRENDS IN THE DEVELOPMENT OF RAIL TRANSPORT IN THE EAEU COUNTRIES**

### *Abstract*

*The article analyzes the current state of the rail freight and passenger transportation market. The role of mutual influence of railway transport services and mutual trade between the EAEU countries was assessed, the magnitude and dynamics of freight and passenger traffic was shown. The main technical and economic indicators in the field of freight and passenger transportation on the railways of some CIS and EAEU countries have been established.*

**Key words:** railway transport, freight traffic, passenger traffic, freight turnover, passenger turnover, analysis, dynamics.

BBK 81.2

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## **EARLY MODES OF TRANSPORT IN THE UNITED STATES**

### *Abstract*

*The belief that modern alternative vehicles and modes of transport continue to fail primarily for technical reasons glosses over the importance of the economic, political, social and cultural dimensions of gasoline powered automobiles. This article investigates the changes that*

*caused manufacturers and customers to abandon bicycles, horses, electric vehicles, cable cars, trolleys, and trains and to overwhelmingly prefer gasoline-powered vehicles from 1890 to 1940 in the United States. It then focuses on the lessons that the historical transition to gasoline vehicles offers modern policymakers.*

**Keywords:** *alternative vehicles, “insurmountable” technical handicaps, horsedrawn carriages, local and transcontinental rail lines, “Locomobile”, Electric vehicles (EVs), The Ford Model T, gasoline automobiles.*

## **1 Introduction**

The allure of the gasoline automobile is somewhat perplexing. Its widespread use has worsened dependence on foreign supplies of oil for many countries, inducing price spikes and fuel shocks and transferring wealth to petroleum producers. Increased reliance on the car has threatened the vitality of urban centers, required the construction of massive roads, highways, and parking structures, degraded communities, and socially excluded individuals that do not own vehicles.

Automobile accidents cause more than 1.2 million deaths per year and injure 25-50 million more, making them the third largest contributor to death and injury in the world. Interstate highways, avenues, streets, and boulevards are noisy and often congested, and gasoline vehicles spew a variety of unhealthy pollutants and particles into the air, contributing to acid rain, ozone depletion, and climate change [1].

Indeed, if we account for all of the costs needed to own and operate a conventional automobile – that is, the time needed at work to pay for it, driving it, getting it repaired, cleaning it, etc. – a car owner spends 1600 hours a year supporting their vehicle. If one averages all car mileage in a given year by the time spent giving such support, we attain an average speed of five miles per hour.

Despite its peculiar status in modern society, however, the rise of the gasoline automobile was by no means inevitable. An almost limitless number of transit options existed for Americans at the beginning of the 20th century. A resident of New York City could leave her apartment in 1899 and take an electric taxi to the subway, where she could catch an underground light train to the Grand Central Terminal, ride a comfortable locomotive to San Francisco, disembark and transit on a cable car or trolley, and then hail a taxi, take a horse, or walk to her final destination. Yet Americans clearly preferred some forms of transportation over others. From 1895 to 1910, electric automobiles were more common in most areas of the United States and Europe than gasoline internal combustion vehicles. In the year 1900, manufacturers produced about 1575 electric vehicles compared to only 936 gasoline cars. The Pope Manufacturing Company, one of the largest and most influential automobile manufacturing companies at that time, produced primarily electric vehicles. Electric vehicles appeared in Chicago, London, New York, and Paris as passenger automobiles and carriages, taxicabs, delivery vans, and even fire engines.

Many engineers and technical experts, including executives from automobile manufacturers and trade associations, explain the demise of the electric vehicle and the rise of the gasoline automobile as solely a technical matter. They note that electric vehicles (EVs) suffered from a series of “insurmountable” technical handicaps, among these expensive batteries with limited cycle lives and long recharging times, poor acceleration, a limited range between 50 and 80 miles (depending on road conditions), and solid tires needed to support the vehicles’ great weight. Nonetheless, the belief that early electric vehicles failed primarily for technical reasons glosses over the importance of the social and cultural dimensions of gasoline automobiles. Technical explanations do not adequately explain why thousands of consumers purchased electric vehicles at the turn of the century. Nor do they not account for why many successful, progressive, and profitable companies continued to purchase EVs for commercial fleets through the 1920s. This article investigates the changes that occurred between 1890 and 1940 in the United States that caused manufacturers and customers to overwhelmingly prefer gasoline

powered vehicles. It then focuses on the lessons that the historical transition to gasoline automobiles offers modern policymakers.

The benefits of exploring the history of early modes of transport in the United States are threefold.

First and most specifically, a deeper understanding of the impediments facing early vehicles has much relevance to current debates about alternative modes of transport. In this past decade, engineers and regulators have proposed natural gas powered cars, hybrid-electric vehicles, vehicle-to-grid systems, flex-fuel automobiles, hydrogen fuel cells, ethanol, second generation biofuels, coal to liquids, tar sands, oil shale, and a host of other alternative fuels and modes as necessary to move away from dependence on gasoline and oil in the transport sector. One recent study, for example, indicated no less than eighteen different options policymakers could use to ease American dependence on foreign supplies of petroleum [2]. Understanding the history of motorized transport, the impediments and challenges faced by vehicles at the turn of the century, helps reveal how consumers accept particular modes of transport but reject others.

Second, an exploration of the early history of automobility renders visible the often hidden negative externalities associated with conventional forms of transport. Gasoline vehicles have a Janus face. Drivers often associate them with freedom and power but also frustration and danger. We even use the term “accidents” to imply that the injury and death caused by automobiles is a natural hazard rather than a manufactured risk. Millions of individuals take the existing transportation sector for granted and tend to uncritically believe that its risks are acceptable. An exploration of the rise and fall of early motor vehicles reminds us, however, that technological development is not predictable, orderly, and progressive, and is instead episodic, contingent, and negotiated. This article, in other words, reveals that the modern system of transport need not have occurred, and thus need not always exist.

Third, and most generally, investigating the early history of motorization in the United States emphasizes the role of social, cultural, political, and economic factors in technological transitions. For modes of transportation, especially automobiles, are more than just functional technologies. They are also means of identification; items of conspicuous consumption; possible abodes of privacy, solitude, and ritual; instruments of aggression and skill; ceremonial initiations into adulthood; and potential hobbies [3]. The development of particular modes of transport are thus deeply altered and affected by social and cultural patterns of courtship, residence, socialization, work habits, education, leisure, and suburbanization. Highlighting these factors in the early history of the automobile has wider importance for those wishing to understand how large-scale technological systems succeed and fail.

## **2 America adopts the electric vehicle, 1890-1905**

At the start of the nineteenth century, no network of roads and highways existed in the United States. Only in New England and between a few select cities such as New York and Washington, DC, did a genuine highway system encourage regular stagecoach traffic, and most transportation was undertaken on steamboats and ferries through waterways and canals. The first American railroad, the Baltimore & Ohio, was planned only in 1827, and it was not until the 1840s that railroads became a dominant form of transportation. By the end of the nineteenth century, however, a person seeking transport in the United States (and many other corners of the world) had to contend with a bewildering array of different options. The early market was divided into at least six distinct segments including those rooted in the world of the horse, those wanting to rely on bicycles, those in favor of trains and subways, those displaying enthusiasm for new steam-powered “horseless” carriages, those desiring gasoline automobiles, and those preferring electric-powered vehicles. The 1890s saw early carriage, bicycle, steam engine, and automobile manufacturers in the United States grapple with an infusion of new designs from overseas, steady competition from other manufacturers, terrible road conditions, and social disagreement about what motor vehicles ought to be. For a variety of technical and social reasons, however, electric vehicles prevailed to become a highly preferred mode of transport by 1902.

## **2.1 Horse**

Because they were abundant and relatively easy to ride, an astronomical number of horses and horse-drawn carriages were still in use at the end of the nineteenth century. Many horse-minded individuals preferred to depend on horses for short distances and trains for longer journeys. They denounced motor vehicles of all types for being too expensive, fast, dirty, and dangerous, and a significant number also had financial stakes in the position of horses in American society. These opponents of motorized transport attacked new gas- and electric-powered machines as “devil wagons” and condemned them for their breakneck speeds and for failing to promote basic standards of decency. Many of these individuals saw mechanized transport as making roads impossible for anything but automobiles, rendering homes uninhabitable because of dust and noise, and placing incredible burdens on taxpayers and workers who had to finance and build roadways [4].

Notwithstanding these advantages, many automobile-minded individuals responded that while horses were comparatively inexpensive, they were slow-paced, limited in range, noisy, and filthy, often dropping excrement into the middle of the road and creating a “headache” for government planners. Horse owner abuse resulted in dozens of horse carcasses rotting in the street every day in large cities, and manure collection presented a substantial burden on municipal budgets. Children wandering the streets to and from school frequently suffered the environmental effects of dung and the sight of dead carcasses. Furthermore, horse-drawn transportation required constant attention and care, so much that wealthy Americans seldom managed horses themselves and often hired coachmen and grooms as intermediaries. The unsightliness and stench of the stable lead most horse owners to keep their horses a respectable distance from their residences. Over the course of a day's work, a horse team might cover 18-20 miles but at an average pace of three to five miles per hour. An experienced horse driver would thus have to avoid pushing a team to exhaustion by providing frequent stops for water and rest. These drawbacks significantly curtailed the use of horses as primary means of transport during the beginning of the 20th century.

## **2.2 Train**

Local and transcontinental rail lines offered quick, safe, and comfortable transportation from coast to coast, and in combination with a personal horse or bicycle could typically fulfill a person's entire transport needs. Light and heavy trains could battle inclement weather such as rain or snow and even penetrate mountains through enormous tunnels. Trains did not require self-operation and enabled passengers to relax, socialize, and sleep during their journey. Trains were also the primary means of transportation for mammoth quantities of freight that had to be moved long distances, and they were fueled by coal, a cheap, domestically available, and plentiful fuel. Trains and subways also avoided congestion, which grew significantly from the 1890s to the 1920s, as streets constructed initially for horsedrawn carriages and pedestrians had to accommodate a mishmash of trolleys, automobiles, bicycles, streetcars, and buses. Urban commuters could effortlessly board a train and sit back as it traveled its own right of way and gathered speed the moment it departed.

Railroads, however, were unable to retail their mass appeal. Their strict adherence to schedules and timetables chafed many passengers. While they avoided much city congestion they were also bound to their tracks, and could only carry people to and from specific points. Furthermore, trains came to be associated with corruption, pollution, and urban decay, and railroad accidents and highly publicized boiler explosions stigmatized the train as being loud and unacceptably dangerous.

## **2.3 Bicycle**

Another serious contender was the bicycle, which gained popularity during the 1880s as people became disgusted with horses and frustrated with railroads. Bicycles did not only create political pressure for roads on which to ride (ironically facilitating the advance of steam, gasoline, and electric automobiles), they also promoted a social and cultural norm of mobility. While rail and ship transportation occurred only in accordance with rigid schedules, bicycles

promoted a culture of individuality. The bicycle, unlike horses and carriages, was also a machine. Riders could travel all day on a bicycle without having to stop other than to rest or eat, and bicycles could easily be “stored” or “parked” by leaning them against poles or taking them inside. Horses, by contrast, had to be saddled, watered, fed, rested, unsaddled, fed again, and placed in a barn or stable at night. Relatively inexpensive, bicycles were more egalitarian than horses (which could cost hundreds of dollars) and automobiles (which could cost thousands of dollars) [5]. Contrary to these benefits, bicycles could not travel at exceptionally high speeds; they required immense physical exertion up and down hills; they did not operate well in inclement weather or at night; and transporting luggage and freight via bicycle was difficult at best and disastrous at worst. The lack of well-paved and smooth roads also made bicycles challenging to ride, and the rapid addition of automobiles and horses to ordinary roads complicated navigation and resulted in bicycle accidents and fatalities.

#### 2.4 Steam powered carriages

Because of the disadvantages to horses, trains, and bicycles, many riders, passengers, and cyclists started quickly preferring motorized vehicles. The earliest and most widely accepted option in the late 1890s was steam-powered horseless carriages. While locomotive engines were bulky and large, stationary steam engines existed in many smaller sizes and were plentiful, already in use at fire pumps, irrigation systems, and factories. Steam powered carriages could reach much higher speeds than horses, bicycles, or locomotives, and even outdid gasoline- and electric-powered vehicles for the first few decades. An 1897 Stanley Steamer could surpass speeds of 120 miles per hour, and was relatively simple to operate with no gears to shift and merely a steam valve to open and close. Those in favor of motorized steam transport were able to foretell of a future where existing transportation methods would become obsolete, where every family would own a steamer that could speed them safely and securely over smooth roads to any destination. Steam carriage advocates promised a new “horseless age” that would free Americans from the tyranny of railroad timetables and crowded seats of trolley cars, a vision of “autopia”. The vision was so widely supported that by 1899 more than two dozen American manufacturers produced hundreds of steam-powered vehicles, with the largest segment of the market dominated by horseless steam-powered carriages such as the “Locomobile”. A transition to smaller, four-wheeled, tiller-driven, privately owned, and distinctly urban centered mode of transport had begun.



Fig. 1 – The best selling 1901 locomobile, a steam powered “Horseless Carriage” [6]

Although steam powered carriages did start momentum towards motorized forms of personal transport, they possessed severe disadvantages compared to gasoline and electric vehicles. The earliest vehicles took a good deal of time to “get up to steam,” and a major problem consisted of water supply. Carrying enough water for a 20 or 30 mile excursion was almost impossible, and public concern with boiler explosions (heightened from the earlier era of steam locomotives) created serious public opposition.

### **2.5 Gasoline powered vehicle**

Gasoline automobiles also existed during this time, although they did not resemble anything close to their current form and also failed to gain widespread acceptance among consumers. The internal combustion engine, which could be fueled by diesel or gasoline, was invented and then perfected by Nikolaus Otto, Gottlieb Daimler, Karl Benz, Wilhelm Maybach, and Rudolf Diesel in the 1860s and 1870s [7]. Most early models had a range between 20 and 100 miles, and in the mid-1880s a good deal of independent invention was occurring on designs but only a very small number of internal combustion engines were being manufactured.

While the internal combustion engine became popular in Europe, particularly Germany, most Americans lacked experience with it. Little was known in the United States about such portable engines, and early models operated at very low horsepower. Awkward and poorly understood ignition systems malfunctioned frequently, and gasoline vehicles were commonly held to be noisy, shaky, and difficult to start. Their primary advantage, the inherent energy density of gasoline compared to steam or electricity (or human and animal power), was largely offset by low powered models, poor reliability, high manufacturing costs, and a scarcity of high octane gasoline. These problems were further worsened by a failure of standardized machinery and manufacturing processes, lack of uniform spare parts, and consistent roadside breakdowns due to routine axle fractures, bearing seizures, and steering and suspension malfunctions.

### **2.6 Electric vehicles**

Electric vehicles (EVs), in contrast to horses, bicycles, trains, steamers, and gasoline vehicles, held many benefits, and became vehicles of choice from 1900 to 1905. Electrified street cars already ran on electric motors, and significant advances in battery technology made electric vehicles popular. Indeed, early EVs had developed far more extensively than other available modes of transport by the turn of the century. Drivers considered passenger and commercial EVs to be neater, and they were especially cleaner than gasoline and steam powered automobiles since they produced no steam or odor. Commercial operators saw many benefits to EVs as well. Commodity suppliers of coal, ice, and beer (among other goods) relied predominately on EVs to distribute their products to customers. Managers found that EVs fit well into the pace of transport: the electric truck traveled faster than the horse wagon, but not so fast as to encourage joyriding or speeding (about the only practical use for a steamer). A battery could do with a rest every now and then, enabling drivers to visit bars and other local patrons for “refreshment.” The operating range of the electric truck was greater than a horse wagon but less than a gas-powered automobile, so shop owners could increase delivery range while maintaining the same distribution system but not have to radically reorganize their entire service and delivery routes. For the risk-averse managers of typical delivery departments, it was easier to change only one variable at a time by relying on EVs instead of overhauling the entire system for gasoline trucks [8].

## **3 The rise of the gasoline powered vehicle, 1905-1940**

Why, then, did gasoline-powered internal combustion vehicles prevail over EVs and other modes of transport? This section divides the discussion into four interrelated categories: technical, economic, political, and socio-cultural. Demarcations between each of the impediments do not really exist in distinct and separate classes. For instance, the outbreak of World War I created a mass market for gasoline-powered trucks and flooded American shops with them after the end of the war, drastically lowering prices. Whether this is an example of a political or economic impediment is unclear. The Woodrow Wilson Administration's plans to develop roads and highways also increased the incentives for freight operators to purchase

conventional vehicles as an alternative to rail transport. Was this factor economic or political? The gasoline automobile was one of the only transportation options available to rural families and farmers, creating a strong constituency in favor of the Model T and creating more political support for the construction of highways. Is this a social or political factor? Dividing the “social” from the “technical,” or even the “economic” from the “political” is counterproductive, since it misses the point that such impediments exist in an integrated nexus, and it is done here only to make such obstacles easier to identify.

### **3.1 Technical factors**

That said, significant technical challenges did confront EVs, and they played an important role in their demise. EVs required special time-consuming recharging stations, as most could travel only 25 miles or so between charges, and their top speeds were usually less than 15 miles per hour. While these lower speeds made them safer than steamers and gasoline cars, EVs performed poorly in hilly areas or on rough roads, and were not well suited for mountains and heavy freight. One critic writing a 1901 article for Life magazine was apparently stranded after test driving an EV up a series of hills. The author wryly noted that “those who have gout should avoid the electric machine, as a steady walk back home of thirty miles is not good for gout”. EVs were thus practical for only short, urban trips that could be completed near charging stations and cities. The gasoline vehicle, in contrast, offered a 70-mile range in 1905 and boasted top speeds above 40 miles per hour.

### **3.2 Economic factors**

Yet the technical factors tell us only a very small part of the story. While engineers and mechanics were improving the internal combustion engine, the battery market for EVs became fragmented and many EV companies went bankrupt due to mismanagement. Early gasoline automobiles cost \$1,000 to \$2,000 whereas electric cars cost \$1,250 to \$3,500. The high initial price of EVs convinced manufacturers to focus only on the luxury market, while those making gasoline powered vehicles designed them for a greater range of consumers. Drivers found it difficult and expensive to have EVs recharged at gasoline stations and hotels, which differed in their rates for charging, while petrol stations listed prices clearly.

The mass production of gasoline vehicles improved their performance and lowered costs. Henry Ford actively devoted his resources to creating a lightweight automobile for mass consumption that could be produced in high volume. Ford, an engineer for Thomas Edison's electric power company, might have begun work on EVs instead of internal combustion engines, but decided that internal combustion engines presented a greater challenge. Ford already knew a great deal about electricity, electric motors, wiring, and batteries, and where EVs did not appear to require much ingenuity, the production of gasoline powered vehicles demanded immense engineering creativity.

Once Ford chose the gasoline engine, he showed no apparent interest in altering his decision, and the success of his business model greatly contributed to the adoption of the gasoline automobile. Ford believed that rather than selling a small number of boutique and expensive automobiles to relatively wealthy drivers, production at a larger scale could reduce costs and also increase profitability. Ford's Model N, a premium two-passenger runabout with front-mounted engine, debuted in 1906 for \$500, making it the cheapest car on the market. After introducing his Model R and Model S (essentially Model Ns with a few cosmetic upgrades), Ford became one of the country's leading manufacturers, generating sales of 8243 vehicles between October 1906 and September 1907. Ford scaled up his mass production techniques with the Model T, which sat above the road like a high-wheeler but had more power than previous models, doubling factory output each year in some cases. As a consequence, the price of the Model T dropped from \$850 in 1908 to \$360 in 1916 and \$298 in 1923. The Model T, in other words, offered low-cost drivers their first high style adventure machine, and after it finally defeated a collection of heavier and pricier touring automobiles in a 4100 mile race from New York to Seattle in 1910, tens of thousands of people wanted one.

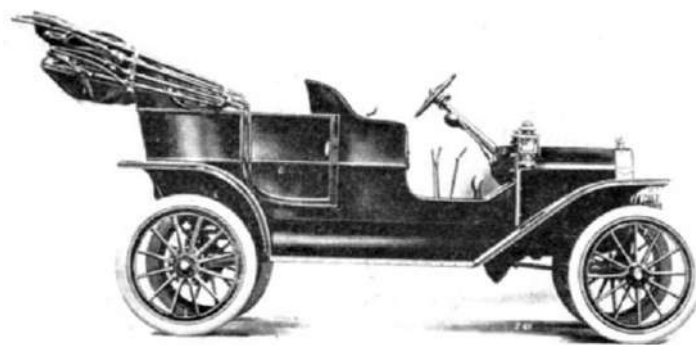


Fig. 2 – The Ford Model T (Circa 1908) [9]

Business strategy played another role. Ford followed a policy at his company that dictated against taking large dividends, or paying executives large salaries, and instead funneled all profits back into research, development, and production. This enabled Ford to experiment with a variety of manufacturing processes and a surprising rate of scrapping and alteration, eventually producing a very effective assembly line [9]. Ford also, progressively, paid his workers very well. In the 1910s, when the prevailing salary for factory workers was about \$2 a day, Ford hiked it to \$5 and reduced the hours of the workday from nine to eight, raising the bar for the entire automobile industry. All the while Ford was refining his marketing and production approaches, EV manufacturers made a series of bungling business errors and poor strategic decisions that saw their production costs soar, their market shrink, and many face bankruptcy [10].

#### 4 Conclusions

It is often mistakenly assumed that technological evolution occurs in a Darwinian world in which all technological possibilities begin on equal footing and advance or stagnate according to relative efficiency or social merit. Such an idyllic notion obscures the fact that all modes of transport require government support. The diffusion of early vehicles in the United States, such as EVs, steamers, gasoline automobiles, streetcars, and railways, has historically been a conflicted process, occurring in fits and starts, associated with different visions and values, success never guaranteed for any option, with eventual dominance achieved by gasoline vehicles slowly over time. Transportation policy and technology thus emerge as the outcome of contingent and uneven development that reflect not so much the planned needs expressed by completely rational manufacturers and drivers, but encompass a web of overlapping technical, economic, political, and socio-cultural elements and priorities.

Within such an environment, the relative success of the gasoline vehicle was connected to more than mere technology. Even though EVs initially had many advantages over gasoline- and steam-powered transport, including quieter operation, cleaner performance, and the seemingly attractive vision of a “horseless America”, they ultimately faced rejection by consumers and industrialists. EV technology, aimed at a luxury market, did not improve rapidly enough compared to gasoline vehicle technology, which was mass produced for many different types of drivers. EVs were more expensive than gasoline vehicles, had slower top speeds, were difficult to charge, and were mostly confined to urban areas. As important, EVs came to be seen as old fashioned and feminine; streetcars and trolleys as tools of corruption; trains as dehumanizing. Gasoline automobiles, instead, were associated with individualism, social renewal, family solidarity, meritocracy, and universality. Manufacturers shrewdly designed dealerships and offered test drives, provided low cost financing and insurance, and implemented aggressive advertising campaigns aimed at men, women, and families. Significant advances in design, many borrowed from carriages, bicycles, trains, and EVs, increased the performance of gasoline vehicles and reduced their cost. The social influence of rural populations, well publicized long-distance races and tours, a series of automobile shows, and linkages between the automobile



industry and other sectors of the economy convinced steel manufacturers, road construction firms, advertising agencies, banks, financiers, insurance companies, and politicians to support the gasoline vehicle. Gasoline automobiles were zealously endorsed during World War I as a military necessity, benefitted from many technological developments that improved their efficiency and range while lowering their cost, were blessed with the construction of highways and roads funded by taxpayers, and were supported by an effectively organized consortium of automobile manufacturers and oil companies. Electric utilities, the primary fuel suppliers for mass transit systems and EVs, and other stakeholders could not agree about how best to position electricity as a fuel for the transportation sector, remained fragmented, and focused on other markets.

The history of motorized transport in the United States reminds us that the success of the gasoline automobile was seamlessly and intimately connected to business strategies, consumer acceptance and values, political support, and economic performance. The relative failure of EVs, streetcars, railroads, and other early modes of transport, and the rise of the gasoline automobile, serve as an important reminder that the decisions we all make about transportation are seldom about technology alone.

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## АМЕРИКА ҚҰРАМА ШТАТТАРЫНДА ЕРТЕ КӨЛІК ТҮРЛЕРІ

### Аңдатпа

Қазіргі заманғы баламалы көлік құралдары мен көлік түрлері сәтсіздікке ұшырайды деген сенім, ең алдымен, техникалық себептерге байланысты бензинмен жүретін автомобильдердің экономикалық, саяси, әлеуметтік және мәдени өлшемдерінің маңыздылығын көрсетеді. Бұл мақалада өндірушілер мен тапсырыс берушілердің велосипедтерден, аттардан, электромобильдерден, аспалы жолдардан, арбалардан және пойыздардан бас тартуына және 1890-1940 жылдар аралығында АҚШ-та бензинмен жүретін көліктерге басымдық беруіне себеп болған өзгерістер қарастырылған. Содан кейін бензинмен жүретін көліктерге көшудің заманауи саясаткерлерге ұсынатын сабақтарына назар аударылады.

**Түйін сөздер:** балама көліктер, «еңсерілмейтін» техникалық кедергілер, ат арбалар, жергілікті және трансұрлықтық теміржол желілері, «Локомотив», Электр машиналары (EV), Ford Model T, бензин автомобильдері.

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## РАННИЕ ВИДЫ ТРАНСПОРТА В СОЕДИНЕННЫХ ШТАТАХ

### Аннотация

Убеждение, что современные альтернативные транспортные средства и виды транспорта продолжают терпеть неудачу, прежде всего по техническим причинам, приукрашивает важность экономических, политических, социальных и культурных аспектов бензиновых автомобилей. В этой статье исследуются изменения, которые заставили производителей и клиентов отказаться от велосипедов, лошадей, электромобилей, канатных дорог, троллейбусов и поездов и в подавляющем большинстве предпочли автомобили с бензиновым двигателем в США с 1890 по 1940 год. Затем в нем рассматриваются уроки, которые исторический переход на бензиновые автомобили предлагает современным политикам.

**Ключевые слова:** альтернативные транспортные средства, «непреодолимые» технические препятствия, конные экипажи, местные и трансконтинентальные железнодорожные линии, «Локомотив», электромобили, Ford Model T, бензиновые автомобили.