

Social Preferences and Transport Policy: The case of US speed limits

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Abstract: This article, in reviewing the long-running US debate on speed limits, illustrates how a different valuation of the trade-off between private mobility needs and safety concerns can shape transport policies. It is argued that the regulatory decentralization debate, together with the speed limit in force in each state, obey the social preferences and valuation given to this trade-off. Such a view is consistent with evidence that higher speed limits are to be found in states with greater private mobility needs, even though their fatality rates might be among the highest in the country. By contrast, lower speed limits and supporters of a low national speed limit are to be found in states that show a greater concern for safety outcomes and which are less dependent on private mobility. By reviewing these events and examining the role played by the main actors and analyzing their motivations, the article identifies important lessons for similar future discussions on transport policy.

Keywords: Speed Limits; Transport Policy; Social Preferences; Policy Analysis.

Introduction

National speed limit reform has been, and still is, one of the most controversial issues in the debate that rages in the United States' transport sector. Indeed, the tension between advocates of regulatory centralization and the supporters of decentralization on the question regarding speed limits has not eased since the Nixon administration introduced the 55-mph national speed limit law in 1974.

Since much of this controversy focuses on the safety effects of speed limits, most of the literature has sought to estimate the impact of changes to the speed limit on road safety outcomes. Unfortunately, the findings have been mixed, providing both parties with fresh empirical evidence to uphold their point of view. However, none of these studies has actually attempted to go beyond the debate on road safety in an attempt at understanding the confrontation itself.

In contrast with earlier studies, the main contribution of this paper lies in the fact that it is the first study to analyze speed limit policy formation rather than its implications for road safety. In fact, this study takes the American speed limit debate to illustrate how different assessments of the trade-off between private mobility and safety can shape transport policy. Thus, this article seeks to shed some light on the factors motivating both sides to the debate, the determinants that usher in each stage of the reform and the role played by interest groups, civil platforms, scholars and political parties.

This study suggests that more than any other element, it is the country's regional diversity, ultimately reflected in the different valuation made of private mobility and safety that is the most important factor in the confrontation regarding speed limits.¹ Similarly, it is this diversity that is the main contributing factor to the current speed limit levels in force today in the United States.

The rest of this paper is organized as follows. In the next section I briefly review the history of speed limit reforms in the US. In the third section I identify the actors in this debate and their main motivations. The mixed findings of the road safety literature are very briefly reviewed in the fourth section, while the fifth is devoted to a discussion of the present-day regional characteristics that seem to have an impact on the positions adopted

¹ The different valuations made of private mobility and road safety in Speed Limit reactions following devolution to the states have been used in Ashenfelter and Greenstone (2004) and in Ashenfelter (2006) to estimate the value of a statistical life. The need to evaluate mobility benefits and safety in a unified context was raised in Haight (1994).

in the debate and on current speed limit levels. Finally, I discuss the lessons that can be learnt and present the conclusions that emerge from this controversial reform process.

1. The history of speed limit reform

Speed limit reform was initiated in 1974 when the Nixon Administration and Congress passed the National Speed Limit Law - a provision contained within the Emergency Highway Energy Conservation Act. As a result, a 55-mph limit was established nationwide and it was calculated that a 2.2% saving could be made in gasoline consumption. The Act was the Federal government's response to the 1973 oil embargo launched by the Arab members of the Organization of Petroleum Exporting Countries (OPEC) against those countries that had allied themselves with Israel in the Yom Kippur war.² In addition to the embargo, the petroleum exporters raised their oil prices to western economies sharply. This supply shock led to a gasoline shortage in US and provided the rationale for the introduction of energy conservation measures.³ But as the introduction of the lower speed limit was the response to the diplomatic conflict between US and Arab nations, it was initially granted temporary status.⁴ However, in 1975, it would become indefinite as the number of traffic injuries and fatalities had been found to have declined significantly in the intervening period (Csere 1995; Forester, McNown and Singell 1984; and Segal 1987).

In fact, although the speed limit law was linked to the Saudi-led oil boycott, Nixon had already committed himself to the centralization of many economic decisions. These included wage and price controls introduced in 1971 that extended far into the everyday life of Americans in an attempt at combating the rising stagflation of the early 70s (Yowell 2005).⁵ As such, the nationalization of energy policy, and in particular that of speed limit regulation, was not only a response to gasoline shortages but arguably a further step along the path to government centralization.

² The Yom Kippur war was the fourth Arab-Israeli war and took place in October 1973. A coalition of Arab states led by Egypt and Syria jointly attacked Israel on Yom Kippur the Jewish Day of Atonement in order to reconquer the territories lost in the Six-Day war in 1967. Western countries and the United States participated with the promise of resupplying all lost tanks and planes and by sending airlift supplies.

³ Gasoline prices were regulated by government and for this reason were never increased to meet demand, leading to local shortages especially in populated urban areas (Yowell 2005).

⁴ The legislation was to expire on June 30, 1975.

⁵ U.S. President Richard Nixon imposed controls on August 15, 1971. According to Bowman and Krause (2003), attempts at decentralization were seemingly overwhelmed by the centralizing actions of the Kennedy-Johnson era, but ostensibly gained in intensity during the Nixon and Reagan-Bush years.

In this regard, the 1974 law, nicknamed “double-nickel”, represented a significant change both in the political status quo and in US transportation industry. Before 1974, speed limit regulation had been decentralized and was included among the powers reserved for the states.⁶ Speed limits dated from 1901 – with Connecticut being the first state to have imposed a limit - and before the reform there were huge disparities in state speed limits.⁷

From the outset, the implementation of a national speed limit was controversial and several western states opposed the measure as contravening their individual state rights. In response to this opposition, the government chose to tie federal highway funds to the prior enactment of a 55-mph speed limit in the states and, subsequently, to the enforcement of the national speed limit in 1978.

When the embargo was finally lifted and the shortage abated at America’s gas stations, several attempts were made by members of the House to amend the speed limit bill. However, for 20 years all such efforts were blocked by the Democratic leadership within Congress (Palmaffy 1996). With the weakening of arguments linked to energy conservation, the main reasons for defending the national speed limit became those of increased road safety and the threat of a rise in fatality rates should speed limits be raised. Indeed, the national speed limit was held up as being a major contributor to the decline in fatality rates, but a driver’s non-compliance did undermine its political validity. According to Haight (1998), laws that criminalize a substantial proportion of the population are undesirable and not likely to last.

Thus, when the leadership and party make-up of Congress changed, the time was ripe for a partial reform that was introduced with the Surface Transportation and Uniform Relocation Act of 1987 (Yowell 2005). This law, which received the backing of the Reagan Administration, because of falling gasoline prices and the reduced need to save energy (Moore 1999),⁸ allowed states to raise their maximum speed limit to 65 mph on rural interstates. Most states immediately took advantage of this partial devolution and increased their limits in line with the new national speed limit. However, a number of eastern states chose to keep the 55-mph limit. The chronology of these reforms is shown in **Table 1**.

⁶ The only exception to this was the Second World War emergency limit of 35 mph.

⁷ Before the centralization of speed limits, Montana and Idaho had no fixed speed limit, while others such as Connecticut, Delaware, Rhode Island and New Jersey fixed their limit at 60 mph.

⁸ I should point out that the highway authorization bill was vetoed by President Reagan who, while agreeing with the speed limit amendment, disagreed with other provisions contained in the bill. On April 2, 1987, the Congress overrode the President's veto. See Segal (1987).

<<Insert table 1 about there >>

This reform did not, however, put an end to the debate on speed limit devolution. Western representatives continued to demand full powers to set higher limits, while supporters of centralization warned of fatality increases as a result of rises in speed limits. In fact, a number of states (Montana, Kansas, Nevada and Wyoming among others) passed laws that would raise their speed limits automatically when the federal cap came off. For this reason, when the newly-elected Republicans took control of both houses in 1994 and sought to devolve many functions assumed by the federal government – within the so-called Republican revolution, one of the first powers to go was the regulation of speed limits (Yowell 2005). Thus, the repeal of the national speed limit was provided for under the National Highway Designation Act of 1995. On November 28, 1995, President Clinton reluctantly signed the legislation and the repeal became effective from December 8 of that year. (Palmafy 1996). In fact, President Clinton claimed to be “deeply disturbed” but signed the bill, nevertheless, to avoid stalling the funds earmarked for highway maintenance (Yowell 2005). Even his Secretary of Transportation, Frederico Peña, implored states, for reasons of safety, to respect the 65-mph limit (Kaye, Mulrine and Wu 1995). Despite these efforts, 33 states raised their speed limits to 70 mph or higher on certain portions of their roadway systems after the repeal, but at various dates as is shown in **Table 2**.

<<Insert table 2 about here>>

Today, even after devolution, the debate is still far from concluded. Hillary Clinton, contender for the Democratic nomination for President, endorsed a return to a 55-mph speed limit in 2006 during a speech to the National Press Club in Washington, DC. However, she recognized that the move would be too unpopular to implement nationwide. It is perhaps for this reason that the Obama administration has yet to propose any amendments in this field.

Moreover, safety advocates, insurance companies and trucking associations are currently lobbying to return to a lower national speed limit. They are joined in their efforts by citizen platforms concerned by safety records that report more than 40,000 deaths each year in the United States – a third of these fatalities occurring in accidents caused by excessive speed. The combined effect of this lobbying has been to keep the debate very much alive.

2. Actors and motivations

Speed limit reform has attracted many resolute actors during the more than 30 years of political and safety debate. In fact, the significance of the reform, its effects on the welfare of more than one interest group, and the controversy surrounding its safety and environmental impacts, have provided vociferous supporters in both camps with well shaped arguments. In this section I introduce some of these key actors and their reasons for joining the debate by distinguishing between interest groups, civil platforms, and political parties.

3.1 Interest groups

The highway safety lobbies wish to see a reduction in speed limits so as to improve road safety outcomes. In order to achieve this they seek a return to a lower, common national speed limit. Before repeal, when a common national limit was in force, they dedicated their time to blocking any reform measures that might allow higher speed limits.

The leading supporters of a national speed limit have been the Insurance Industry - principally via studies conducted by the Insurance Institute for Highway Safety (IIHS),⁹ the American Automobile Association (AAA) - who came out in favor of a 65-mph limit after the findings published in the studies of Lave and Elias (1994, 1997),¹⁰ although they have not taken any action against further increases, and the American Highway Users Federation.¹¹

Recently, the American Trucking Association has called for a national 65-mph speed limit, primarily, to save fuel, but also for safety reasons. Although higher speeds would increase their productivity, large firms understand – according to Clayton Boyce, spokesman for the American Trucking Association (ATA) - that the savings on insurance expenditure, engine wear, maintenance, and fuel far outstrip the additional miles per day

⁹ The Insurance Institute for Highway Safety is an independent, nonprofit, scientific, and educational organization dedicated to reducing the losses - deaths, injuries, and property damage - from crashes on the nation's highways.

¹⁰ The American Automobile Association is a not-for-profit automobile lobby group, service organization, and seller of vehicle insurance.

¹¹ The Highway Users Federation was found in 1970 following the merger of three existing organizations (the National Highways Users Conference, the Automotive Safety Foundation and the Auto Industries Highway Safety Committee).

that might be driven.¹² For these reasons, Tommy Hodges, ATA's first vice chairman, asked Congress before the Subcommittee on Highways and Transit of the House Transportation and Infrastructure Committee on January 27, 2009 to enact a national speed limit of 65 miles per hour.

On the other side of the table sit the independent and small transportation firms, most of whom are represented by the Owner-Operator Independent Drivers Association (OOIDA).¹³ During the truckers' strike of January 1983, one of the initial demands made by the strikers was for the 55-mph limit to be repealed (Segal 1987).

Besides OOIDA, one of the most powerful lobbies within the group campaigning against national speed limits is the National Motorists Association (NMA),¹⁴ which devoted huge efforts to repealing the national speed limit. Its role in both reform measures was vital as James Baxter – president of the NMA – confirmed in a recruitment campaign run in June 1995 for new members when claiming: “we're the ones that legalized 65-mph interstates in '87 and are pushing the present NMSL repeal”. In fact, as he recognizes in a recent interview published in *automobilemag.com*, the NMA “was founded to repeal the 55-mph national maximum speed limit” and “speed limit and speed-limit-related topics have always been among our primary areas of involvement”.¹⁵ It is perhaps for this reason that the number of association members fell by half following repeal. In order to achieve its goals the NMA can call on dedicated volunteers to monitor, publicize, and lobby critical motorist issues.¹⁶

3.2 Civil platforms

Civil platforms and influential advocacy groups also defended the need to avoid raising speed limits in the United States. Along with Ralph Nader, one of the most important figures in this fight was the lawyer Joan Claybrook, who served as head of the National Highway Traffic Safety Administration during the Carter Administration and led the Public

¹² Clayton Boyce outlined ATA's position on national speed limits in US News on March 26, 2008.

¹³ The Owner-Operator Independent Drivers Association is the international trade association representing the interests of independent owner-operators and professional drivers on all issues that affect truckers since 1973.

¹⁴ The National Motorists Association was founded in 1982 to represent and protect the interests of motorists.

¹⁵ Interview published on 13 August, 2009 in www.automobilemag.com

¹⁶ This statement is used by NMA in its official webpage to attract new members. See www.motorists.org/memberbenefits

Citizen group between 1982 and 2008.¹⁷ Mention should also be made of Judie Stone, the president of Advocates for Highway and Auto Safety, and other platforms including the Center for Auto Safety. All these civil platforms played a key role in shaping public opinion against the 1995 repeal and increases in the speed limit.

3.3 Political parties

As is apparent from the historical review above, the political parties played an important role in establishing speed limits. One party that has devoted more efforts than most to this issue is the Green Party. This party, and its leader during the repeal process, Ralph Nader, argued that higher speed limits and the repeal of the 55-mph national limit were an assault on the sanctity of human life. However, Green Party representation in the Congress was - and remains - scarce and its stance on the issue had little political influence on reform.

By contrast, the position adopted by the Democratic Party has been much more influential in developments associated with speed limit reforms. In fact, it is the leading party giving its support to lower speed limits on safety and environmental grounds. Its position on this issue and the majority it enjoyed in Congress led to the blocking of moves by representatives of states in the west to introduce reforms during the 80s, although they were unable to stop the first partial devolution in 1987 following years of well-documented non-compliance. Some years later, now with a Republican majority in both houses (the first time this had happened since 1952), the Clinton Administration was adamant in its rejection of the repeal, but reluctantly had to accept the overturn as outlined above. In fact, Clinton sought to influence individual state decisions through the central department of transportation.

By the 80s growing concern among the Republican Party became evident, particularly in the middle of that decade when several states were found to be in non-compliance with the national speed limit. In fact, in his 1980 election campaign, President Reagan promised to have it abolished, but he was to take a somewhat more relaxed attitude when he took office.¹⁸ An excellent illustration of conservative think tank opinion is provided by Copulos

¹⁷ Public Citizen is a nonpartisan, nonprofit public interest advocacy organization founded by Ralph Nader in 1971 in order to guarantee the individual's right to safe products, a healthy environment and workplace, fair trade, and clean and safe energy sources.

¹⁸ See article by Paul Grimes published in New York Times on December 26, 1982. (www.nytimes.com)

(1986). The report highlights the effects of increasing non-compliance and urges congress to recognize that the 55-mph limit was not a major factor in saving either lives or fuel, while the costs incurred by slower journeys were considerable. The national speed limit law was presented as violating state rights, and was used as a symbol of the commitment on the part of the new Republican majority to limit federal government. Additionally, the law was seen to be undermining the freedom of choice of American citizens and was indicative of Federal government control over them – two key values typically defended by the Republican Party in their political platforms.

Indeed, Republican support for repeal was compelling in the Senate, with only 3 of its 54 senators (5%) casting their vote against. By contrast, opinion was more divided among the Democrats, with 14 out of 46 (30%) voting in favor of repeal. As shown in **Table 3**, the national speed limit that had stood for 21 years was repealed by a majority of 30 votes.

Of greater interest than the overall distribution of votes in the Senate was the position taken by those senators that did not vote according to the expected party line, i.e., the Republicans that voted against repeal and the Democrats that voted in favor. An analysis, however, of their State of origin shows that individual decisions were probably motivated by the constituency they represented. **Table 4** lists the names of these Democrat senators and the state in which they were elected.

As can be seen, most of these senators represented low population density states, which were some of the first to raise the speed limit following repeal. Interesting cases are provided by the votes cast in favor by the senators of Louisiana and Nevada, as well as those cast by the senators of Montana, New Mexico and Vermont. Exceptions to this pattern are provided by the voting behavior of Sen. Kerry in Massachusetts and Sen. Graham in Florida.

Among the three Republicans that voted against the repeal, Sens. Chafee, Hatfield and Warner were elected in Rhode Island, Oregon and Virginia respectively, three states with low speed limits that did not raise the limit following the repeal.

The decisive Republican action taken in the Senate on this issue reflects the party's role in representing those values that they felt were coming under direct "attack" by maintaining a low national speed limit. This, after all, is the party that defends limited federal government and individual liberty over government control.

3.4 Reasoning

Both sides to the debate, the supporters of low national speed limits and those favoring repeal, held a variety of motives for the positions they adopted. These arguments are summarized below:

a) The main grounds for the defense of lower speed limits were the following:

- Road Safety: lives are saved by reducing the incidence and severity of road accidents.
- Lower rates of automobile insurance: higher speed limits lead to more accidents and, thus, to higher auto insurance rates for drivers.
- Environmental concerns: vehicle emissions are cut.
- Economic issues: consumers' save money at the pump thanks to increased fuel efficiency, and consequent fuel savings.
- Foreign Policy: Reduces dependence on foreign oil by reducing demand.
- Benefits of State Uniformity: uniform national speed limit is useful given that people often drive in states other than their own and change residence from one state to another

b) By contrast, the reasons held by those favoring repeal and higher speed limits can be summarized as follows:

- Centralization: The national speed limit violated the right of states to set their own limits as they saw fit. Decisions regarding speed limits should be taken by state officials who best understand traffic and road conditions in a particular state.
- Time savings: Higher speeds favor time savings and lower the cost of road transportation. According to Moore (1999), Americans saved 200 million man-hours in terms of the reduction in time spent on the road after the repeal.
- Engineering: Roads were designed for higher speeds than those permitted by the national speed limit.
- Loss of personal freedom: Personal mobility and driving are considered an essential component of freedom, especially in the western states with their lower rates of urbanization.
- Regionally Discriminatory: Westerners contend that they must frequently travel on roads that stretch for hundreds of miles across open country, with good visibility

and light traffic, and that a 55-mph limit under such circumstances is an unnecessary and burdensome restriction (Segal 1987).

- Average vs. Variance: Fatality rates are strongly related to the variation in speed between vehicles. Variance kills. Therefore, what matters most in setting a speed limit is choosing one that people will obey, hence reducing the variance in the velocity of vehicles (Lave 1985).

3. Road safety evidence

Although initially the national speed limit was a temporary measure introduced to meet goals of energy conservation, its impact on the road fatality rate following its enactment provided the rationale for making the law indefinite. However, its effectiveness in reducing road fatalities and the threats involved from increasing the speed limit were continuously challenged by academic studies. Similarly, though, other studies were conducted, especially after 1987, to demonstrate the positive impact of the 55-mph limit and the undesirable results that would derive from speed limit increases. Thus, the road safety literature presents mixed findings on the effects of speed limits and road safety, a fact that was to push the two sides to the debate further apart. **Table 5** summarizes some of the more influential studies that were conducted, the speed limit reform that was tested and their main findings.

<<Insert table 5 about here >>

Two reasons seem to account for these mixed findings. First, as claimed by Friedman et al. (2009) - one of the most recent studies examining the long-term effects of speed limit increases after the 1995 reform, they are attributable to the fact that most studies were restricted to short post-intervention periods and a small number of states. By contrast, Haight (1998) interprets these mixed results from a political viewpoint arguing that scholars have too frequently played a partisan role in the political battle between parties and civil advocates.

Perhaps this latter opinion helps clarify the confused picture that is derived from the empirical studies. The speed limit issue is in essence a political question and, for this reason, it is virtually impossible to identify one study that has not been designed to support one side of the debate or the other (Haight 1998). Therefore, academic studies have been

used as weapons in this battle and have become an essential source of support for both sides.

4. Economic and geographic determinants of speed limit laws

Having reviewed the roles played by interest groups, civil platforms and political parties, and having examined the mixed findings presented in the literature on road safety, we need now to understand the motives underpinning this controversy. The examination of the political positions adopted by Senators voting against party lines pointed to the importance of their state of origin. Indeed, a geographical and demographic comparison between adopting and non-adopting states provides us with interesting results. **Table 6** distinguishes between states with speed limits over 65 mph and those that did not raise their limits over 65 mph.

<<Insert table 6 about here>>

As can be seen, the states that adopted higher speed limits present relatively low population densities and levels of urbanization, which seem to have a negative influence on the number of private vehicle miles driven per inhabitant as is highlighted in the third column of **Table 6**. By contrast, their income is lower than that of inhabitants in non-adopting states. In addition, their fatality rates per 100 million miles driven in the period immediately prior to repeal were higher, and remain so according to the latest available data (Fatality Accident Reporting System 2007).¹⁹ The same pattern is found when we focus solely on those states that took immediate action following the repeal. Here, we should note that increased fatality rates did not prevent these states from raising their speed limits.

In order to examine more closely the relationship between these variables and speed limit laws it is useful to provide non-parametric median spline regressions. Non-parametric analysis using spline techniques is a suitable tool for examining data in which the functional form relating the variables of interest is unclear.²⁰ By applying this technique I am able to confirm the decreasing relationship between population density and speed limits (**Figure**

¹⁹ We use the fatality rate immediately prior to the repeal to avoid endogeneity problems, since speed limits can have an impact on fatality rates. The same consideration is made when including data related to private vehicle miles driven per inhabitant. An examination of current data does not significantly change these results.

²⁰ More specifically, spline regressions provide polynomial functions by segments, where all segments are interconnected at points or knots. These knots are not necessarily equidistant, but rather the distance separating them depends on the functional relationship being fitted in each case. Spline regressions are particularly useful when some of the variables involved are discrete, which is the case here with speed limits.

1). However, it should be noted that this decreasing relationship is only pronounced until a density level of around 100 is reached. Therefore, the greater the population raises, the lower the speed limit that is set. Moreover, there is a marked turning point – when the density is 100 or higher – at which speed limits remain fixed at 65 mph even if the population increases in density. Thus, states with a population density below 100 inhab/km² can be expected to have enacted higher speed limit laws, while states with a higher density appear to be the ones that choose not to increase their 65-mph limit.

Of the 40 states with densities lower than 100 inhab/km², 31 currently report speed limits higher than 65 mph. By contrast, only 1 – the State of Florida - of the ten states with a higher density enacted a higher speed limit. Likewise, rates of urbanization are also negatively related to speed limit levels until a turning point is reached at around 15%. Beyond this level, higher rates of urbanization do not affect the 65-mph speed limit.

<<Insert Figures 1 about here >>

A further characteristic of states adopting higher speed limits is that of state size. The number of square miles is an important determinant of this policy as illustrated by the third graph in **Figure 1** where we see a clearly increasing relationship between state size and the speed limit. However, the trend stabilizes at around 100,000 square miles.²¹ As is well known, large states tend to have lower population densities and levels of urbanization. For these reasons, we can expect a greater dependency on private mobility. In fact, when we run the same spline relating private miles driven per capita to speed limits this gently increasing pattern is confirmed (see **graph 4** in **Figure 1**).

To highlight this geographical importance further, additional spline regressions were run relating speed limits to geographic longitude and latitude. In the case of longitude, the results show a readily identifiable inverted U-shape relationship, which means that states on both coasts seem to present - on average - lower speed limits than those set by central states. The maximum point in this inverted U-shape function occurs at a longitude of around 100°, where we find the states of Texas, Oklahoma, Kansas, Nebraska, South Dakota and North Dakota. Less clear, however, is the result associated with latitude. The

²¹ The three largest states (Alaska, California and Texas) have been omitted from this regression, since they are significant outliers in terms of their size. Given that they are the only states with an area greater than 150,000 square miles, they would distort the final segment of the spline function, and even more so because they present very different speed limits.

figure presents two peaks in southern and northern states, whereas the pattern for the central states is not clear.

A neighbor effect also seems to have an influence on speed limit decisions, probably because neighboring states tend to share similar demographic characteristics and, therefore, similar preferences as regards private mobility options. Moreover, it is common that neighboring states adopt the same policies. To illustrate this point I include one final spline regression in **Figure 1**. This graph shows that those states for whom more than one third of their neighbors register a current speed limit higher than 65 mph, also present a higher speed limit. A national map is likewise a useful illustration of this tendency (**Figure 2**). The map shows that there would seem to have been a common response based on geographical area. The map highlights regional clusters, which suggests that the decision taken by any one state might be affected by the decisions taken by their neighbors in addition to the fact that they share similar demographic and economic characteristics. Thus, most states retaining the 65 mph limit are on the north-eastern coast, while the western states, with the exception of the coastal states themselves, have the highest speed limits. Most southern and mid-western states also have speed limits above 65 mph, but never higher than 70 mph. These results are consistent with previous spline regressions, confirming the inverted U-shape relationship with geographical longitude. The map also illustrates the fact that latitude does not seem to play a role, given that at almost all latitudes different speed limits are in place.

Interestingly, the correlation between current speed limits and the average speed limit of neighbor states is 0.76, which is a good indication of the regional importance in the debate on speed limit adoption.

<<Insert Figure 2 about here >>

Interestingly these groups of states present similar relationships between their levels of population density and other key elements regarding mobility and road safety. The regression between density and private vehicle miles driven, and the relationship between the fatality rate immediately prior to the repeal and population density are shown in **Figure 3**. As can be seen, there is a decreasing relationship in both instances. In the case of state size, regressions with private miles driven, on the one hand, and with the fatality rate per miles driven, on the other, present the expected positive relationships.

<< **Insert Figure 3 about here** >>

Thus, speed limit laws and individual state reactions to the repeal are well accounted for by demographic, geographic and socio-economic variables. Furthermore, we have seen that states with low levels of urbanization were more likely to set higher speed limits, even though they recorded higher fatality rates.

To a certain extent, these geographic and demographic characteristics illustrate how different states value the underlying trade-off in the speed limit debate, namely the preference for private time savings or road safety. The need for private mobility in areas of low urbanization, which usually goes hand in hand with ideals of individualism and liberty, seems to explain why western and southern states have traditionally defended their right to set higher speed limits despite their poor road safety outcomes. It is this preference for greater mobility over safety - which derives from their geographic and demographic characteristics - that seems to have determined their response to the controversial national 55-mph speed limit and explains their current laws.

Proof of the importance of these preferences is the path dependence found between past speed limits - those in place before the establishment of the national speed limit - and current speed limits. Many states - 21 out of 50 - returned three decades later to the state speed limit in operation before the implementation of the 55-mph national speed limit. If we compute the correlation between previous state speed limits and current limits we find a coefficient of 0.44. This result would seem to confirm that preferences do not change easily over time. Similarly, on the basis of the regional clusters identified above, preferences across border states do not change easily either.

5. Lessons and discussion

The historical review undertaken above, the analysis of the key actors and their motivations in the debate, and the description of the characteristics of the adopting states enable us to identify the lessons that can be learnt, to my way of thinking, from the American speed limit debate. While these lessons shed some light on past events, they also provide guidelines for future discussions in other policy areas.

1. Reducing speed limits in an attempt at cutting energy consumption was not particularly successful according to Government estimates published in the early

80s. The saving was calculated at a figure no higher than 2% and the general conclusion was that reducing speed limits had only a limited impact in terms of wider conservation goals. Recently, mounting environmental concerns have brought the speed limit debate back onto the political agenda given that vehicle emissions appear to be related to speed limits. Although they would seem to be more closely associated with congestion in urban environments. Furthermore, car technology has improved markedly since the early 80s and so any speed limit reductions would probably only have a limited impact on the environment. This will become only too apparent with the expansion of the fleet of electric cars in the future. Rather than speed limits, which only affect the average and the variance of driving speeds, vehicle emissions and energy consumption are more closely related to overall vehicle usage and car stops and goes – attributable primarily to traffic lights and congestion. For this reason, other tools such as congestion tolls or higher fuel taxes might address the problem more adequately, but they obviously imply certain political obstacles given their lack of acceptability (Albalade and Bel 2009).

2. In the case of such controversial issues as that of US speed limits, it is not unusual to find strong empirical and theoretical evidence supporting both sides of the debate. As Haight (1998) highlights, most studies seem to have been conducted with the purpose of supporting one side in the ideological dispute. Consequently, academic and government studies, rather than shedding light on the issue, tend to create confusion and prevent a rapprochement. That said, however, having reviewed the most recent and robust literature on the long-term impact of speed limits, it seems reasonable to conclude that the effect on fatality rates following the repeal of the national speed limit has been small. Considering the problem in the short term, it also seems reasonable to conclude that there have been some increases in fatalities immediately following the introduction of higher limits, but that these have diminished in the long run.
3. Regional heterogeneity, geographic diversity and different assessments and values regarding safety and travel costs have been the main factors in this long-running controversy, even more markedly so than the positions adopted by interest groups and the main political parties. The centralization of the speed limit, which reduced speed limits across the US, failed to account for the country's intrinsic diversity. It is perhaps only natural to expect opposition and discontent when a law seeks to

homogenize a whole territory, particularly when it is so diverse and the law directly impinges on the citizens' values and everyday lives. According to the previous discussion, it would seem sensible to allow states to set their own speed limits. Indeed, the proximity to their constituents means they are in a better position to assess local values and preferences. This would seem to be the view held by Hillary Clinton when she claims "there are things that can be done [...] most of the country where 55 miles an hour doesn't seem like a burden, we have that. In the rest of the country, inflate your tires before you head off into the sunset". If diversity is not taken into consideration, the controversy will never come to an end as it directly affects social preferences.

4. Since preferences and social values remain stable over time and – to some extent – across bordering states, even after years of centralization, devolution results in the adoption of earlier state laws, i.e., those that seem to best match their social values. This path dependence would seem to have been a key determinant of policy in this instance. When social preferences determine policy formation, time dependence and regional effects can be expected.
5. In spite of this, it should be borne in mind that the states that decided to raise their limits immediately to speeds above 65 mph were, precisely, those with the highest fatality rates in the period immediately prior to the repeal. In other words these states, in line with the arguments presented in this article, attached greater value to mobility and travel time than to safety outcomes, which in these instance were of some concern in comparison with the national mean. In addition, these were the states with greater private mobility reflecting their demographic and geographical characteristics. And so it is the main contention of this article that the social evaluation of the trade-off between private mobility and safety was the main factor in this dispute.
6. Once more, speed limit repeal is further proof of the fact that laws, regardless of the provisions they hold, cannot last if the levels of non-compliance are as high as reported.
7. Although speed limit lobbyists, including trucking and motorist associations, consumer advocacy groups and insurance companies, have been active, their actual contribution to the eventual repeal was probably less important than the role played by the assessment and evaluation of private mobility across the country. Likewise,

the major political parties entered the fray with varying degrees of cross-party commitment. While the Republicans had opposed a national speed limit since the 80s, the Democrats were more divided on the issue, especially in the vote taken in the Senate in 1995. However, once again, this division would seem to have been conditioned by individual constituency characteristics in most cases.

The American speed limit war has cooled in recent years. However, rising concern about road safety and the need to meet certain environmental objectives keep the 30-year-old debate alive. Proposals to Congress to study the reintroduction of a national speed limit from the Republican Senator John Warner (R-VA),²² similar demands from the leading trucking association (ATA) and a Democratic majority in the congress in tandem with Barack Obama's administration, mean that it is impossible to rule out another stage in this long-running dispute, which has established itself as the most controversial political and academic discussion in the American transportation sector over the last few decades.

In short, the American speed limit war provides an excellent illustration of how different valuations of private mobility and safety can shape transport policy. The lessons that can be drawn from this debate should be of great use in future policy debates.

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²² In 2008, the Republican US Senator John Warner (R-Virginia) asked US Department of Energy to determine the optimal speed limit were a new national speed limit to be imposed, and to estimate the energy savings that the measure would generate.

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TABLES

Table 1. The timing of interstate speed limit reforms

Year	1974	1987	1995
Legal Reform Framework	National Maximum Speed Law	Surface Transportation and Uniform Relocation Assistance Act	National Highway Designation Act
Motivation	Reduce fuel consumption	End of energy shortages	Devolution to States
Body responsible for setting limit	Federal Government	Federal Government	States
Maximum Speed Limit	55 mph	Permitted 65 mph on rural interstates	No Federal Speed Limit
Number of states changing speed limit ¹	All	41	31

1. Number of states that changed their speed limit within the first two years after Congress passed the law.

Table 2. Current interstate speed limits by State, 2009.

State	Rural	Trucks	Urban	Change to current Rural speed limit
Alabama	70	70	60	05/21/96
Alaska	65	65	65	01/15/88
Arizona	75	75	65	12/08/95
Arkansas	70	65	65	08/19/96
California	70	55	65	01/08/96
Colorado	75	75	55-65	06/24/96
Connecticut	65	65	45-55	10/01/98
Delaware	65	65	50-55	01/17/96
District of Columbia	-	-	50	-
Florida	70	70	70	04/08/96
Georgia	70	70	55-65	07/01/96
Hawaii	55-60	55-60	50	No action
Idaho	75	65	65	05/01/96
Illinois	65	55	55	01/25/96
Indiana	70	65	50-55	07/01/05
Iowa	70	70	55-65	07/01/05
Kansas	70	70	65	03/07/96
Kentucky	70	70	55	07/10/07
Louisiana	70	70	60	08/15/97
Maine	65	65	55	06/12/87
Maryland	65	65	55-60	07/01/95
Massachusetts	65	65	55	01/05/92
Michigan	70	60	70	08/01/96
Minnesota	70	70	45-60	07/01/97
Mississippi	70	70	60-70	02/29/96
Missouri	70	70	55-65	03/13/96
Montana	75	65	65	05/28/99
Nebraska	75	75	60	09/01/96
Nevada	75	75	65	12/08/95
New Hampshire	65	65	55	04/16/87
New Jersey	65	65	55	01/19/98
New Mexico	75	75	65-75	05/15/96
New York	65	65	50-55	08/01/95
North Carolina	75	75	65	08/05/96
North Dakota	75	75	55-75	08/01/03
Ohio	65	65	65	07/01/09
Oklahoma	70-75	70-75	55-65	08/29/96
Oregon	65	55	55-60	06/27/87
Pennsylvania	65	65	55	07/13/95
Rhode Island	65	65	55	05/12/96
South Carolina	70	70	60	04/30/99

South Dakota	75	75	65	04/01/96
Tennessee	70	70	55	03/25/98
Texas	70-80	70	60	02/13/08
Utah	80	75	65	05/01/96
Vermont	65	65	55	04/21/87
Virginia	70	65	55-65	07/01/06,
Washington	70	60	60	03/15/96
West Virginia	70	70	50-60	08/25/97
Wisconsin	65	65	55-65	06/17/87
Wyoming	75	75	60	12/08/95

Source: Insurance Institute for Highway Safety

Table 3. Voting behavior in the Senate on national speed limit repeal, June 21, 1995.

	Yes	No
Total	65	35
Republicans	51	3
Democrats	14	32

Table 4. Democrat senators favoring the repeal by electoral State.

State	Democrats	Democrat Senator favoring the repeal	Second Democrat Senator favoring the repeal
Florida	1/1	Graham (D-FL)	-
Georgia	1/1	Nunn (D-GA)	-
Hawaii	1/2	Inouye (D-HI)	-
Louisiana	2/2	Breaux (D-LA)	Johnston (D-LA)
Massachusetts	1/2	Kerry (D-MA)	-
Montana	1/1	Baucus (D-MT)	-
Nevada	2/2	Bryan (D-NV)	Reid (D-NV)
New Mexico	1/1	Bingaman (D-NM)	-
North Dakota	1/2	Conrad (D-ND)	-
Vermont	1/1	Leahy (D-VT)	-
Virginia	1/1	Robb (D-VA)	-
Wisconsin	1/2	Feingold (D-WI)	-

Table 5. Summary of selected US studies on the relationship between speed limits and safety.

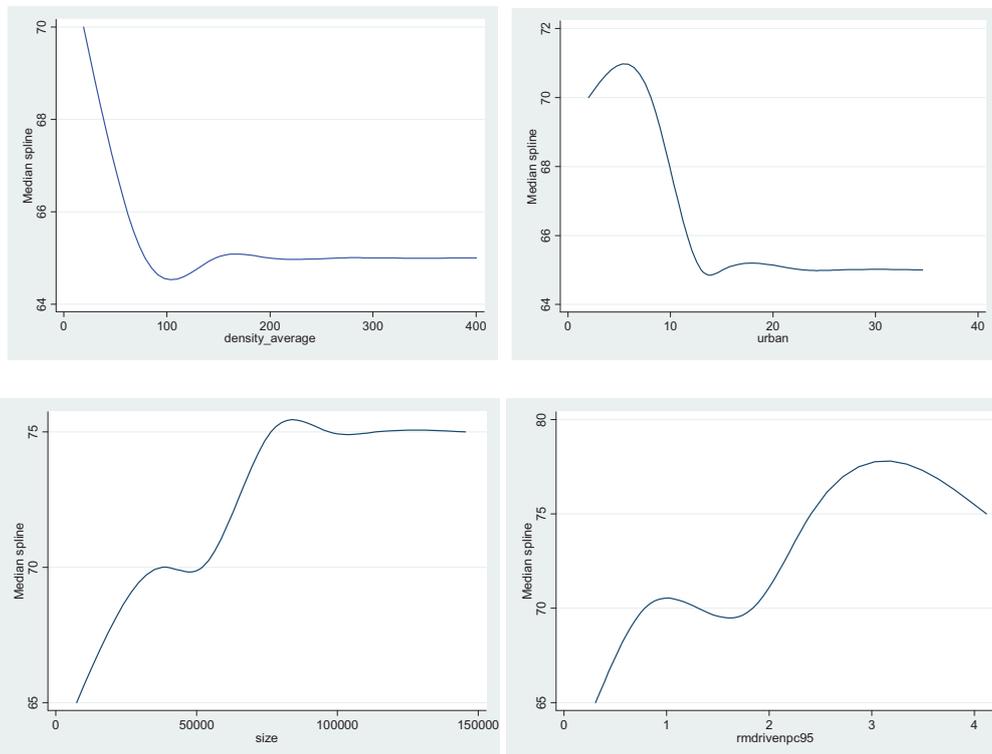
Study	Reform	Findings
Lave (1985)	1974	No statistically discernible relationship between the fatality rate and average speed
Baum et al. (1989)	1987	Increased fatalities
Garber and Graham (1990)	1987	Mixed results depending on the state
Chang and Paniati (1990)	1987	Predicted fatalities were greater than actual fatalities, but in most states no statistical significance
Wagenaar, Streff, and Schultz (1990)	1987	Increase in fatalities and serious injuries
Lave and Elias (1994)	1987	Reduced fatalities
McCarthy (1994)	1987	No system-wide effects on total, fatal, injury-related or property damage accidents.
Lave and Elias (1997)	1987	Reduced fatality rate
Rock (1995)	1987	Rise in number of accidents, deaths and injuries
Farmer et al. (1999)	1995	Increased fatality rates
Houston (1999)	1987	Increased fatality rates on rural interstate highways
Greenstone (2002)	1987	Increased fatality rate on rural interstates, but reduction on non-interstates
Dee and Sela (2003)	1987/1995	No overall effects on fatality rates, but heterogeneous impacts by gender and age
Bartle et al. (2003)	1995	Increase in the number of deaths
Vernon et al. (2004)	1995	No overall effect on crash occurrence
Yowell (2005)	1995	No effects on fatality rates
Friedman et al. (2009)	1995	Increase in road fatalities attributable to higher speed limits

Table 6. Demographic and economic characteristics of States

	Density (population/Km ²)	Urbanization (%)	Private Vehicle-Miles driven per inhabitant (thousands)	Fatality Rate 1994/1995	Fatality Rate 2007	Income (\$)
Current Speed Limit						
>65	31.1	4.1	1,395	1.98	1.57	21,123
≤ 65	139.9	12.07	762	1.43	1.12	25,182
Action after Repeal						
Reaction 1995-1997	44.8	5.1	1,284	1.92	1.52	21,529
No immediate action	103.0	10.11	977	1.55	1.23	24,306

FIGURES

Figure 1. Non-parametric Median Spline Regressions. Relationship between speed limits and regional and geographic variables.



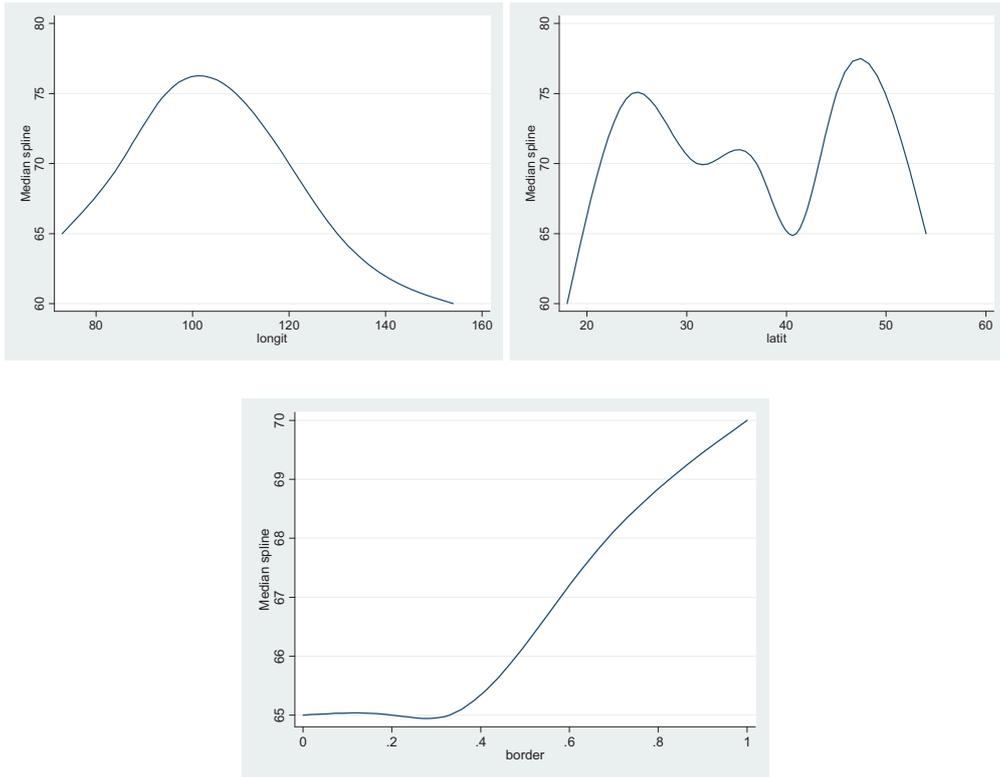


Figure 2. Map of the United States distinguishing between states on the basis of their current rural speed limit.

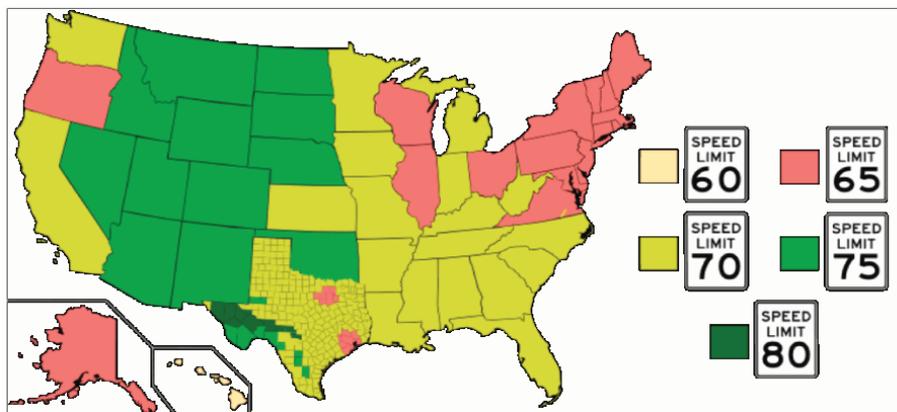


Figure 3. Regression fits: Relationship between Population density and private vehicle miles driven. Relationship between Population density and road fatality rate per 100 miles driven.

