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## Masculinity, Car Culture, and Carbon Emissions

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# Masculinity, Car Culture, and Carbon Emissions

## Abstract

Car culture is a subculture that exists in which people value the aesthetic, cultural, or historical significance of certain vehicles, and who often use their own vehicle as a means of self expression. We assumed that car culture was a dominantly male subculture and wanted to evaluate whether gender in advertising was related to fuel efficiency. We wanted to see how each decade would differ in the terms of the number of gender targeted advertisements. We also wanted to see how fuel economies and marketing strategies changed over time. We also wanted to compare fuel economies of cars that were targeted to a specific gender audience. We based on research on the assumption that car culture in the United States is overwhelmingly male dominant. Our hypothesis was that vehicles in car culture that are predominantly advertised towards men will have lower fuel efficiency than the given CAFE standards each year. We selected twelve vehicles that have remained popular in American car culture and watched commercials for them from the 1970s to present day. Our study then coded these commercials and determined the target gender audience of each. We then found the fuel economy of each vehicle per year and were able to compare it with the set CAFE standards. Our major findings was that each vehicle selected was predominantly below the CAFE standards but they were not predominantly advertised to men. Advertising as a whole was measured to target a gender-neutral audience throughout than a specific gender. We were able to see that cars associated with car culture are generally below the CAFE standards and less fuel efficient.

## Keywords

advertising, marketing, car-culture, emissions

## Disciplines

Environmental Studies | Gender, Race, Sexuality, and Ethnicity in Communication | Public Relations and Advertising

## Comments

Written for ES 400: Senior Seminar

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Masculinity, Car Culture, and Carbon Emissions

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ES 400

Professor Platt

December 16, 2021

Honor Code

We affirm that we have upheld the highest principles of honesty and integrity in our academic work and have not witnessed a violation of the Honor Code.

Ben Hasenkopf, Bobby Steiner

## **Abstract**

Car culture is a subculture that exists in which people value the aesthetic, cultural, or historical significance of certain vehicles, and who often use their own vehicle as a means of self expression. We assumed that car culture was a dominantly male subculture and wanted to evaluate whether gender in advertising was related to fuel efficiency. We wanted to see how each decade would differ in the terms of the number of gender targeted advertisements. We also wanted to see how fuel economies and marketing strategies changed over time. We also wanted to compare fuel economies of cars that were targeted to a specific gender audience. We based on research on the assumption that car culture in the United States is overwhelmingly male dominant. Our hypothesis was that vehicles in car culture that are predominantly advertised towards men will have lower fuel efficiency than the given CAFE standards each year. We selected twelve vehicles that have remained popular in American car culture and watched commercials for them from the 1970s to present day. Our study then coded these commercials and determined the target gender audience of each. We then found the fuel economy of each vehicle per year and were able to compare it with the set CAFE standards. Our major findings was that each vehicle selected was predominantly below the CAFE standards but they were not predominantly advertised to men. Advertising as a whole was measured to target a gender-neutral audience throughout than a specific gender. We were able to see that cars associated with car culture are generally below the CAFE standards and less fuel efficient.

## **Introduction**

“Car culture” refers to a subculture that exists in which people value the aesthetic, cultural, or historical significance of certain vehicles, and who often use their own vehicle as a means of self-expression. The phenomenon of car culture as we know it rose suddenly beginning in the 1950s and peaked in the 60s and 70s (DeWitt, 2014). In many ways, it has had a lasting influence on the culture of the United States as a whole. The causes and effects of this car culture are complex. However, it is abundantly clear that its constituents are, and always have been, predominantly males (Walker et al., 2000). Furthermore, there exists many commonalities among the types of vehicles that are popular within this culture. They are typically either designed or modified to be above average in terms of speed, power, noise, design, or all of the above (DeWitt, 2014). The reason for this is most likely not straightforward. However, the way in which these cars were advertised—both historically and presently—probably played a large role in the hypermasculinization of American car culture. The advertising strategies used to target men depend on the car that is being advertised: whether it be the pickup truck’s glorification of the blue-collar laborer (Fynes, 2017), the muscle car’s promise of sexual success (Walker et al., 2000), or the luxury sedan’s daydream of being rich and prestigious (Sandhu, 2019).

We read through two case studies for preliminary research on the sphere of car culture and advertising. Namrata Sandu published an article on gender stereotypes in Indian automobile advertising. She was able to conclude that compared to the advertising from nine other categories, automobile advertising in India exhibits a clear preference for the male gender (Sandu, 2019). Author Burns et al. (2005) published an article on the differences in the automobile advertising strategies between Europe and the United States. They found that several European countries use safety as a primary advertising strategy, whereas American automobile

advertisers typically try to appeal to the consumer's desire by selling them a lifestyle along with the car itself (Burns et al., 2005).

We read another two case studies as preliminary research on the sphere of car culture and masculinity. A paper written by Linley Walker et al. (2000) proved to be very insightful. The paper analyzed the cultural constructions of masculinity, its causes, and how it leads to a disproportionately high number of young men being injured or killed in car accidents. The authors concluded that the domain of car culture satisfies many of the emotional needs that young men have, such as community and a sense of strength (Walker et al., 2000). They also conclude that it is the combination of car culture's overpowered vehicles with the biological tendency of male risk taking behavior as to why we see an unfortunate high number of young male fatalities in car crashes. An excerpt from a book by Amy Best that we read reiterates a lot of the same. Best writes about how loud and fast cars are an easy and often affordable avenue for young men to express their masculinity (Best, 2006). These articles provided support for our assumptions about why males are attracted to certain types of vehicles.

In this study, we evaluated the advertising of twelve select vehicles from the 1970s through the 2020s. We selected three muscle cars, two sports cars, two luxury sedans, and five light duty trucks. The rationale behind the selection of our twelve vehicles is discussed in the Methods section. We then compared the fuel economy of our study vehicles to the relevant CAFE standards over time. We wanted to use our study to better understand how vehicles that are popular within car culture are advertised and see if these vehicles tend to be below CAFE standards. Our goal was to use our findings to make broader assumptions about the potential link between masculinity, car culture, and elevated CO<sub>2</sub> emissions.

Our research questions that we will attempt to answer are:

1. How will each decade differ in terms of the number of male oriented, gender neutral, or female oriented ads?
2. How do marketing strategies differ between decades?
3. How has the fuel economy of each car improved or declined over time?
4. How does the fuel economy compare between the most male targeted vehicles and the most gender neutral/female targeted vehicles?

For question one, we predicted that we would see a greater proportion of male oriented ads in the older decades, with a greater proportion of gender neutral ads in more recent decades. We also predicted that there would be very few female oriented advertisements throughout all decades.

For question two, we predicted that we would see more ads using the strategy of sexual success in older decades, and a consistent appeal to blue-collar men from our light duty trucks. We also expect there to be an increase in the strategy of design and performance in more recent decades.

For question three, we believed that we would see steady improvements from both our passenger cars and light trucks over time, but that they would still be consistently below the CAFE standards.

For question four, we predicted that male oriented vehicles would have the lowest median mpg, followed by gender neutral, with female oriented vehicles having the highest median. Furthermore, we expected female oriented vehicles to have the shortest range in mpg, followed by male oriented, with gender neutral vehicles having the highest range.

Our overarching hypothesis was that these vehicles would be predominately advertised towards men and would have a lower fuel efficiency than the given CAFE standards each year.

The main factor that makes our research significant is the rate of greenhouse gas emissions in the United States. The US is the second largest emitter of greenhouse gasses. Of our total emittance: 29% comes from transportation, and well over half of that 29% comes from personal vehicles (EPA, 2020). We hope that our findings will be able to highlight the need to further increase our fuel economy standards and to ultimately move away from the combustion engine altogether in favor of electric.

## **Methods**

The makes and models that were selected for the study were the Ford Mustang, Dodge Challenger, Chevrolet Camaro, Ford F-150, Ram 1500, GMC Sierra, Chevrolet Silverado, Chevrolet Corvette, Porsche 911, Jaguar XJ, Land Rover Range Rover, and Mercedes Benz S-Class. The makes and models were specifically selected for the study because they have all been in production since before the 1970s. These vehicles are also staples of car culture and have been praised by car enthusiasts over the years. The study cars also offer a range of different vehicle categories including muscle cars, sports cars, trucks, luxury sedans, and an SUV. The range in different categories was done so that we could note any similarities or differences in the way different categories of cars are advertised to the public. It is important to note that the Dodge Challenger was in production from 1970 until 1984 when it was replaced by the very similar Dodge Daytona. The Dodge Daytona was produced until 1993 and then replaced by the Dodge Challenger when it came back into production. For the 1980s and 1990s advertisements, we will be studying the Dodge Daytona advertisements. The timeline that was studied was the decades from the 1970s until 2021. The 1970s were when we first saw a great deal of commercials being produced by automakers and aired for the public. By using this timeline, we will be able to effectively measure the differences in marketing strategies used by automakers over time.

In our study, we watched and collected data from three advertisements for each make and model from each decade from the 1970s-2020s. This would have given us a total of 216 total commercials involved in the study that data was collected from. We anticipated that in the earlier decades there would be limited commercials, but by the 2020s there would be many commercials for each make and model for each decade. To account for the large quantity of ads, we will be viewing and recording the commercials with the most views. These will include Super Bowl halftime commercials and the commercials with the most views on YouTube.

The study relied on coding each advertisement to collect data. We coded each commercial for the decade, year, make, model, car type, setting, narrator age, narrator gender, and the target gender audience. The target gender audience for each commercial was determined to be male, female, or gender neutral. To determine the target gender audience, we measured specific elements of each commercial that appealed to the different genders (See Appendix 1).

To find the fuel efficiencies of the study vehicles, miles per gallon records from the U.S. Department of Energy and the Office of Fuel Efficiency and Renewable Resources was used. These records span from the 1980s until 2021 (US Dept. of Energy, 2021). For our vehicles from the 1970s, we used the website [fuelly.com](http://fuelly.com) which provides an average mpg from user-reported data. To evaluate our research questions, the miles per gallon of the study vehicles was compared to the corporate average fuel economy standards. The National Highway Traffic Safety Administration sets the corporate average fuel economy for how far a vehicle should travel on one gallon of gas (NHTSA, 2021). To make the CAFE standards equivalent to the mpg on a vehicle sticker, the CAFE standards are adjusted down 20%. (Congressional Research Service, 2021). It is not illegal for automakers to have cars that lie below the CAFE standards. The CAFE

standards serve as a fleetwide average for automakers. By looking at these standards we can evaluate our hypothesis that vehicles that are advertised to males are less efficient.

We created a Microsoft Excel spreadsheet to track the data collected from the commercials. All the data collected from coding each commercial was recorded here. We were able to create figures in Excel to be able to interpret the data in the results. A table containing the count and percentages of the commercials per decade, the settings used, and the makes and models was created. Stacked bar graphs were created to see the target gender by vehicle type, the target gender by decade of the commercial, and the target gender by setting used. Line graphs were then created to compare the CAFE standards set for both passenger vehicles and light duty trucks over time to the study vehicles. The CAFE standards for passenger vehicles and light duty trucks are different so different figures had to be created. A final box plot was created to compare the target gender of the commercials to the mile per gallon of the vehicle being advertised. In doing this, we were able to look for a correlation between commercials that targeted a male audience and fuel inefficiency.

## **Results**

The study concluded with reviewing a total of 207 commercials for the study makes and models. The setting most frequently used was the rural setting at 60% of all commercials recorded (Table 1). The least frequent setting, besides animation which was only one commercial, was in a studio at 10% of all advertisements. Trucks comprised the majority of commercials involved in the study at 34%, followed closely by muscle cars at 25%. SUVs made up the smallest percent of commercials recorded at 8%. All makes and models recorded 18 commercials (3 for every decade) except for the Dodge Challenger/Daytona (17), the Chevrolet

Camaro (16), Land Rover Range Rover (16), and the Mercedes Benz S-Class (15). All decades recorded 36 total advertisements except the 1970s (30), 1980s (35), and the 2020s (34).

The truck car type had the most commercials that were recorded as being directed to a male audience. Out of the total 72 truck advertisements recorded, 42 were directed to a male audience (Table 2). Only 1 truck commercial recorded was advertised to females. Muscle cars were also slightly more targeted to a male audience with 24 out of 51 commercials targeting that audience. It is important to note that muscle cars had the most female targeted advertisements of any other vehicle type at 5. Sedans and sports cars were recorded as being majority gender neutral in their advertising.

The decades in which the majority of commercials recorded were directed to a male audience were the 1970s and the 2000s. In the 1970s, 55% of commercials targeted males while in the 2000s, 61% of commercials targeted males (Figure 3). The decade in which the most advertisements recorded target females was in the 1990s with 8%. The 1980s and 2020s were recorded as the decades with the fewest commercials targeting males. The decades with the majority of commercials recorded as gender neutral were the 1980s (69%), the 1990s (47%), and the 2020s (74%).

The settings most used in targeting males through advertising were rural and suburban (Figure 4). There was also one commercial that was animated that was advertised to men. The setting that recorded the lowest number of male targeted commercials was in the studio. The studio setting was the largest category of commercials marketed as gender neutral. The most used setting in targeting a female audience was also the studio setting. Rural, suburban, and urban were all similar in the number of advertisements that targeted a female audience.

The passenger vehicles in the study were the Chevrolet Corvette, Ford Mustang, Porsche 911, Jaguar XJ/XF, Mercedes Benz S-Class, Chevrolet Camaro, and Dodge Challenger/ Daytona. When compared to the CAFE standards, only three of the passenger vehicles in the study were ever in line with or above the standard. The Porsche 911 was in line with the standards until the early 1980s, the Ford Mustang was above the standards from the late 1970s until the mid -1980s, and the Chevrolet Camaro was above until the early 1980s (Figure 5). The rest of the passenger vehicles in the study were below the CAFE standards for the entire time they were produced.

The light duty trucks in the study were the Ram 1500, Ford F-150, GMC Sierra, Land Rover Range Rover, and Chevrolet's Silverado. The CAFE standards for passenger vehicles and light duty trucks are set differently with light duty trucks being set lower (Figure 6). The only light-duty trucks in the study that were above or in line with the CAFE standards were the Ford F-150, Ram 1500, and Range Rover. The Ford F-150 was briefly above the standards in the mid-1980s, the Ram 1500 was briefly above in the early 1990s, and the Range Rover was above in the late 2010s. All other light-duty trucks were below the CAFE standards for their entire production.

Commercials advertised to a female audience had a higher median miles per gallon than any of the target gender (Figure 7). Commercials that were recorded gender neutral had the lowest median miles per gallon of the vehicles being marketed. Commercials targeted to a male audience had the largest range in miles per gallon. Commercials targeted to females had the smallest range of miles per gallon.

In looking at the breakdown of the different advertising strategies over time there were similar marketing strategies in trucks, luxury sedans, sports cars, and SUVs (Table 8). Muscle

Cars took on the most change over the timeline of the study in the ways they were marketed. Trucks, except the GMC Sierra which focused on price, were continuous in their marketing around blue-collar working men. These were seen in all truck makes and models but there was a greater emphasis over the decades in the Ram 1500, Ford F-150, and Chevrolet Silverado. The Mercedes Benz S-Class and Jaguar XJs made up the luxury sedans in the study and there was continuity in their marketing of luxury, style, and prestige in their vehicles. The sports cars in the study, Porsche 911 and Chevrolet Corvette, were continuous in advertising the vehicle's performance throughout. The SUV in the study, the Land Rover Range Rover, emphasized over time the vehicle's offroading capabilities. Muscle cars underwent the most drastic changes in the marketing strategies used. The Ford Mustang in particular went through the most changes starting with male sexual success, to male friendships, to patriotism, and finishing with brand prestige. The other muscle cars in the study, the Chevrolet Camaro and the Dodge Challenger, underwent similar changes in their marketing overtime and became predominantly gender neutral by the 2020s.

## **Discussion**

*Research Question #1 “How will each decade differ in terms of the number of male oriented, gender neutral, or female oriented ads?”*

Question #1 is answered by Figure 3. We were mostly incorrect in our hypothesis that we would see a greater proportion of male oriented ads in older decades. The '70s did have predominantly male advertising, however the '80s and '90s had relatively low proportions of male oriented ads. The decade with the highest percentage of male ads was the 2000s, which we would classify as a more recent decade. We were correct in our assumption that there would be

very few female oriented advertisements throughout all decades. Female oriented advertisements made up only 5% of our total commercials watched.

*Research Question #2 “How do marketing strategies differ between decades?”*

Question #2 is answered by Table 8 and Figure 3. We were partially correct in our hypothesis for this question. We coded at least one advertisement using sexual strategies in each decade aside from the 2020s. They were most prevalent in the 2010s (five ads) with the ‘90s and ‘70s close behind with four ads. Therefore, we did see a relatively high number of ads using sexual strategies in older decades, but they were most prevalent in the 2010s which is considered a recent decade. Since the 2020s are the only decade where we did not see a commercial using sexual strategies, perhaps our assumption that there would be a decrease in the strategy of sexual success in more recent decades can be considered correct despite the high number of sexual ads in the 2010s.

Our assumption that we would see a consistent appeal to blue-collar men among our light duty trucks was correct. The Ford F-150 used blue-collar labor as its primary advertising strategy in each decade. This strategy was also popular among our other light duty trucks, but began to become less prevalent starting in the 2010s.

Lastly, our assumption that we would see a rise in strategies emphasizing a car’s design or performance in more recent decades was correct. Certain models used this as a primary advertising strategy throughout each decade, including the 911, XJ, and Corvette. The Camaro, Challenger, and Sierra used varying advertising strategies over time before eventually focusing on performance or technology by the 2020s. Interestingly, we did notice a clear preference for gender neutral strategies among our European models compared to our American models.

*Research Question #3 “How has the fuel economy of each car improved or declined over time?”*

Question #3 is answered by Figures 5 & 6. We were incorrect in our assumption that we would see steady improvement in the fuel economies of both our passenger cars and light duty trucks. There was a general uptick in mpg among our light duty trucks, with even a few instances of a vehicle being in line or above standards. However, there was a slight decline in the mpg of our passenger vehicles in the mid ‘80s, with stagnation since then. By and large, there has been little to no change in passenger vehicle fuel economy over the past three decades.

*Research Question #4 “How does the fuel economy compare between the most male targeted vehicles and the most gender neutral/female targeted vehicles?”*

Question #4 is answered by Figure 7. We were correct that female targeted vehicles would have the highest median mpg, but we were incorrect in assuming that gender neutral vehicles would have a higher median than male targeted vehicles. We were also correct that female targeted vehicles would have the shortest range, but incorrect in assuming that gender neutral vehicles would have a larger range than male oriented vehicles.

*Main Hypothesis: “Our study vehicles will be predominately advertised towards men and will have a lower fuel efficiency than the given CAFE standards each year.”*

Every single study vehicle tended to be below the CAFE standards for each given year. There were a few exceptions to this, as mentioned in the Results section. We were correct in our assumption that these study vehicles—which happen to be popular within car culture—would be below emissions standards. However, our main hypothesis pertained to more than just fuel

economy. We predicted that our study vehicles would be “predominantly advertised towards men and have a lower fuel efficiency than the given CAFE standards each year.”

Our results show us that the first component of our main hypothesis may not be correct. Overall, roughly 43% of the total commercials we watched were advertised to men under our criteria, with 52% being classified as gender neutral. Our assumption that our study vehicles would be predominantly advertised towards men is incorrect. You will see in the Figures and Results section that certain types of vehicles within our study group are predominantly advertised towards men, including: trucks, muscle cars, and SUVs. Other types of vehicles, including sports cars and luxury sedans, were overwhelmingly advertised to a gender neutral audience.

### *Interpretations*

The fact that one component of our main hypothesis is supported while the other is not puts us in a unique situation. We can interpret our results and assume that cars that are popular within car culture tend to be below CAFE standards each year. We cannot use our findings and assume that male oriented advertising by itself led to the hypermasculinization of car culture. When we look back at our preliminary research we can identify some other factors that may be at play. Linley Walker’s article shows us that biology could be a factor. Walker’s findings lead her to assert that young men’s biological risk-taking tendencies in conjunction with cultural constructions of masculinity innately draw many boys towards vehicles that are popular within car culture (Walker et al., 2000). Walker alludes to the idea that advertising has contributed to the general cultural conceptions of masculinity: “advertisements by the motor car industry, alcohol distributors and other advertisers, and film and television programs all convey a message about

cars, car use, and masculinity and femininity” (Walker et al., 2000). Walker and her colleagues are essentially arguing that advertising as a whole depicts images of masculinity that play into biological tendencies that men already have, instead of arguing the notion that the car advertising itself is why young men dominate car culture. In other words, car advertising is likely a contributor, but not the main reason behind the hypermasculinization of car culture.

Amy Best’s book reiterates the arguments brought forth by Walker, such as men’s biological tendencies and cultural conceptions of masculinity. She explains how women do not tend to be drawn to overpowered vehicles because power is not seen as a “feminine trait” (Best, 2006). Powerful cars are an easy way for men to appear as strong; all one has to do is hop behind the wheel. She compares buying a powerful car to lifting weights; both are popular avenues for young men who want to appear outwardly strong (Best, 2006). Car advertising in and of itself is not directly responsible for the hypermasculinization of car culture, but rather broader conceptions of masculinity along with biological male tendencies.

Making a car that is exceptionally powerful or fast is typically accomplished by the design of the engine. The V8 engine in particular is coveted in American car culture and has become the staple engine in trucks and muscle cars. The V8 engine produces high amounts of torque (power) and horsepower (speed), but burns fuel at a faster rate than a V6 or I4 engine given its extra cylinders. A common reason that car enthusiasts buy cars with inefficient engines is for the torque or horsepower they produce. Our research leads me to assume that the popularity of these relatively inefficient vehicles is due to their appeal to masculinity and that their inefficiency is in essence a sacrifice deemed willing to make among their enthusiasts.

## *Limitations*

One limitation to our study surrounded the availability of commercials. The 1970s decade had the fewest recorded commercials as some of the study makes and models did not have commercials from this era. The Jaguar XJ had only two commercials, the Land Rover Range Rover only had one commercial, and the Mercedes Benz S-Class had no commercials. There is a relationship between them in that they are all foreign models. There were also missing commercials in the 2020s decade; only one Chevrolet Camaro commercial was produced during this decade.

Another limitation of the study were some of the study vehicles were not produced continuously over time and substitutions had to be made. The Dodge Challenger was first released in 1970 and produced until 1984. In 1984, Dodge replaced the Challenger with the very similar Daytona. The Daytona was produced from 1984 until 1993. The Challenger was then brought back into production starting in 2008. The Camaro was also discontinued in 2002 and brought back in 2010. In the interim, Chevrolet did not officially replace the Camaro, so we used the Chevy SSR for the 2000s data given the SSR's comparability to the Camaro as a mid sized coupe with a large engine. The Jaguar XJ was removed from production in 2019. The XJ was Jaguar's full-sized sedan and was not replaced with another model as part of Jaguar's long term plan to go fully electric (Taylor, 2021). During the 2020s decade, the study looked at commercials of the Jaguar XF. The XF is similar to the XJ, but is a mid-sized sedan. The different sizes of these vehicles could result in differences in fuel efficiency.

The merger of Jaguar and Land Rover is not a limitation to our study, but it is still important to note. The two were independent companies both headquartered in Britain. In 2013,

the two companies combined and are now known as Jaguar Land Rover. The joint company has pledged to have a fully electric fleet of vehicles by 2025 (Taylor, 2021) . This can account for recent models of Range Rover offering fully electric versions and for the removal of the Jaguar XJ from production. It is also important to note that the company had similar advertisements since the merger. Both makes and models advertised their vehicles in partnership with the 2021 James Bond movie “No Time to Die.” These commercials featured the vehicles involved in high speed chases and in other action scenes. The movie itself featured James Bond driving the Range Rover Series III in a similar fashion (Cesari, 2021). The joint Jaguar Land Rover company has adopted the same approach to going fully electric in the future and has implemented similar marketing strategies following their merger.

### *Conclusion*

In sum, we were correct that our study vehicles would be below the given CAFE standards each year (aside from the aforementioned exceptions). We were incorrect in hypothesizing that our study vehicles would be predominantly advertised towards men. While male oriented advertising made up a significant percentage of our data, it was still not the majority. If we were to limit our list of study vehicles to just American models, our hypothesis would have been fully supported. The foreign models’ consistent use of gender neutral advertising strategies likely diluted our data. Given that our study was concerned with car culture in America, it perhaps would have been more beneficial to just include American cars, as it would likely have been more reflective of the American market. Regardless, our findings are still significant in the field of fuel economy, emissions, and car culture. They highlight the potential inefficacy of CAFE standards at reducing emissions. Particularly when you look at Figure 5, each passenger vehicle comes nowhere near meeting standards in recent years. There has also

been little to no improvement among our passenger vehicles' mpg over the past several decades. In my opinion, this is inexcusable. We could use our data as rationale for a new fuel economy standards system with less leeway. The elimination of the credit system that exists within CAFE would be a good start. The credit system essentially enables automakers to buy their way out of meeting standards, and letting another company pick up the slack. Also, it has been established that given the curvilinear form of miles per gallon, smaller improvements on the low end of the spectrum have a more significant impact than larger improvements on the higher end. If we held these vehicles to more strict standards, it would have a substantial impact on emissions.

## Tables and Figures

Table 1:

		Count	% of Total
Setting	Animated	1	0.48
	Rural	125	60.39
	Studio	22	10.63
	Suburban	31	14.98
	Urban	28	13.53
Decade	1970s	30	14.49
	1980s	35	16.91
	1990s	36	17.39
	2000s	36	17.39
	2010s	36	17.39
	2020s	34	16.43
Make and Model	Ford Mustang	18	8.70
	Dodge Challenger	17	8.21
	Chevrolet Camaro	16	7.73
	Ford F150	18	8.70
	Ram 1500	18	8.70
	GMC Sierra	18	8.70
	Chevrolet Silverado	18	8.70
	Chevrolet Corvette	18	8.70
	Porsche 911	18	8.70
	Jaguar XJ	17	8.21
	Range Rover	16	7.73
	Mercedes Benz S-Class	15	7.25
Vehicle Type	Muscle Cars	51	24.64
	Trucks	72	34.78
	SUV	16	7.73
	Sedan	32	15.46
	Sports Cars	36	17.39

Table 1: Count and percentages of total advertisements recorded by setting type, decade, make/model, and vehicle type.

Table 2:

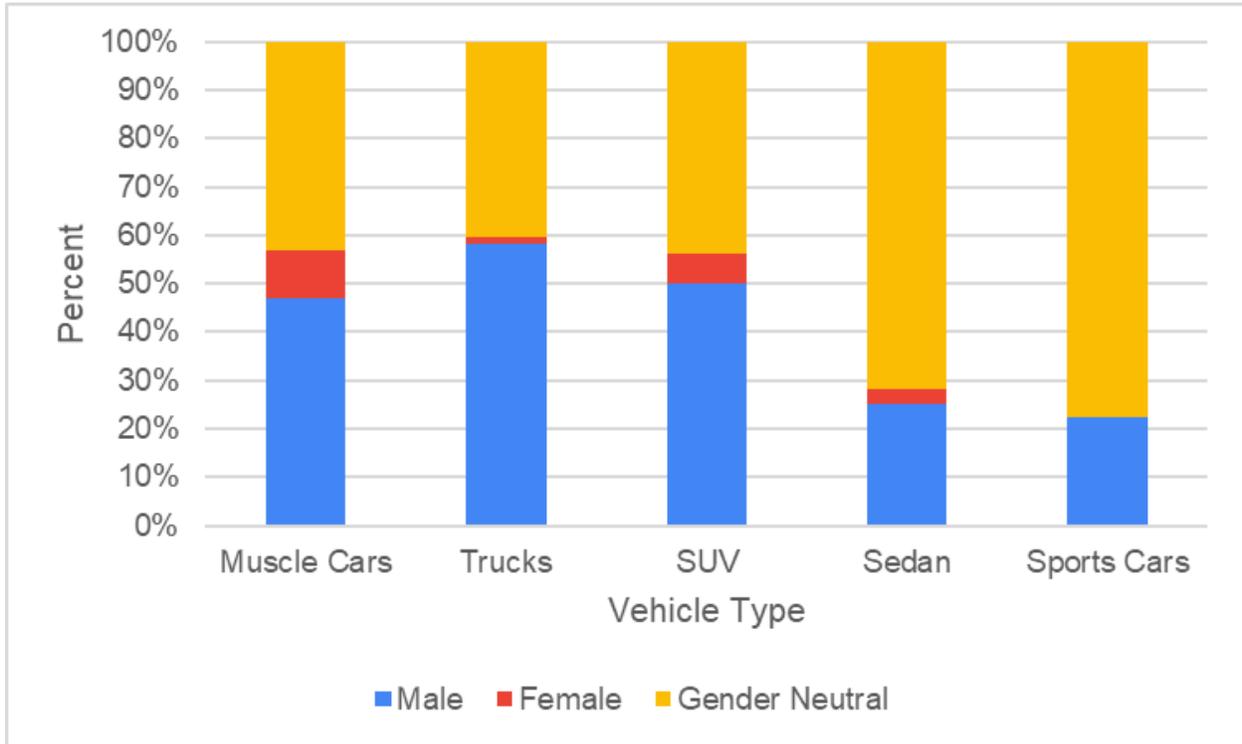


Table 2: Stacked bar chart of the percent of car type advertising to a specific gender.

Figure 3:

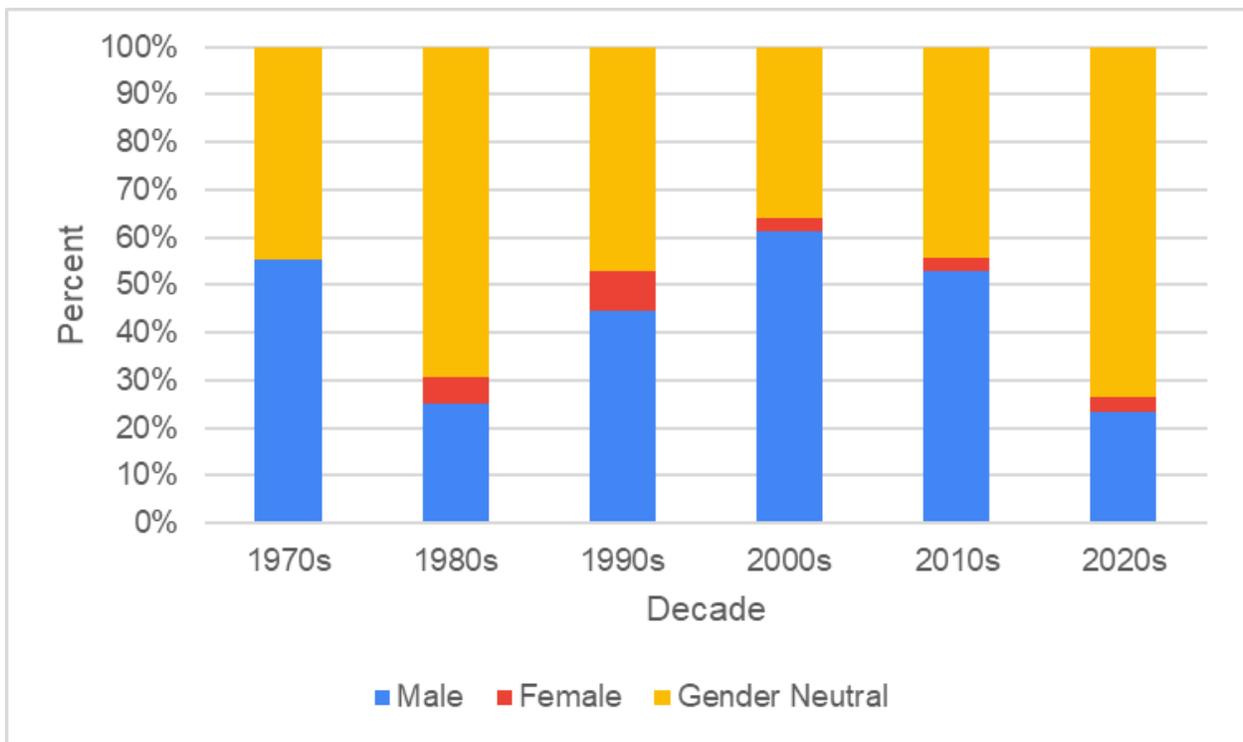


Figure 3: Percent of commercials' target gender by the decade they were produced.

Figure 4:

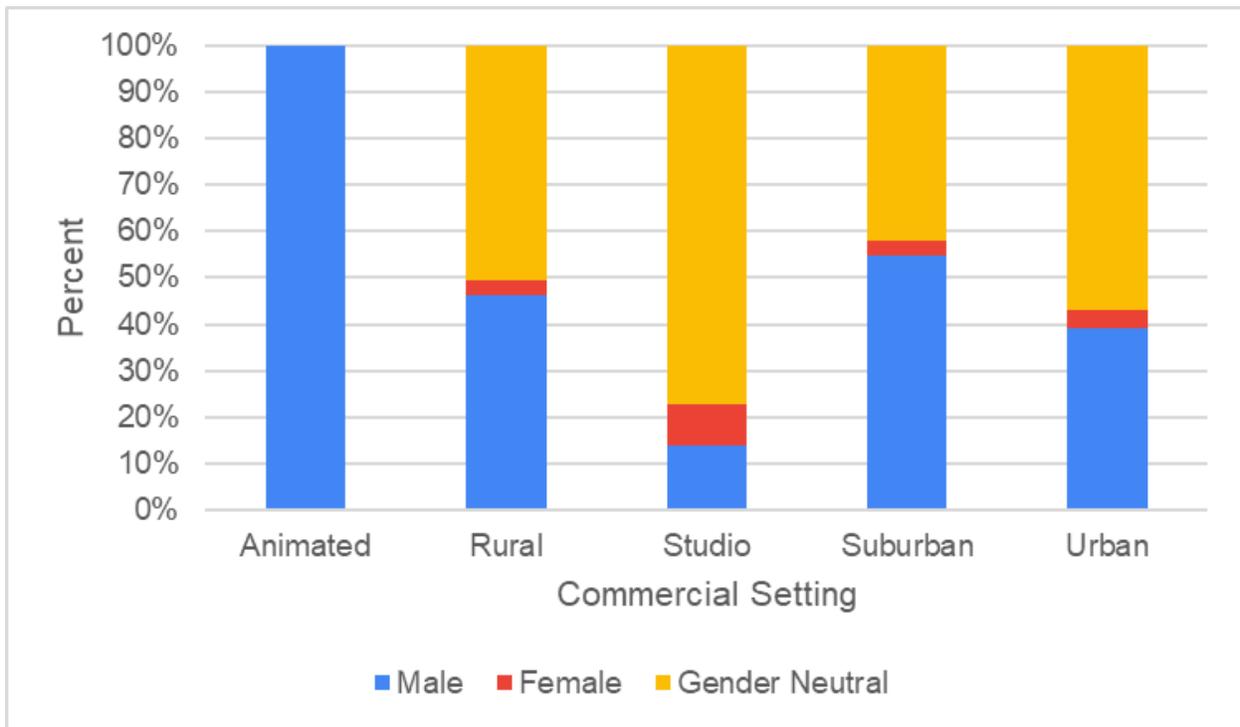


Figure 4: Percent of target gender audience by setting used in commercials.

Figure 5:

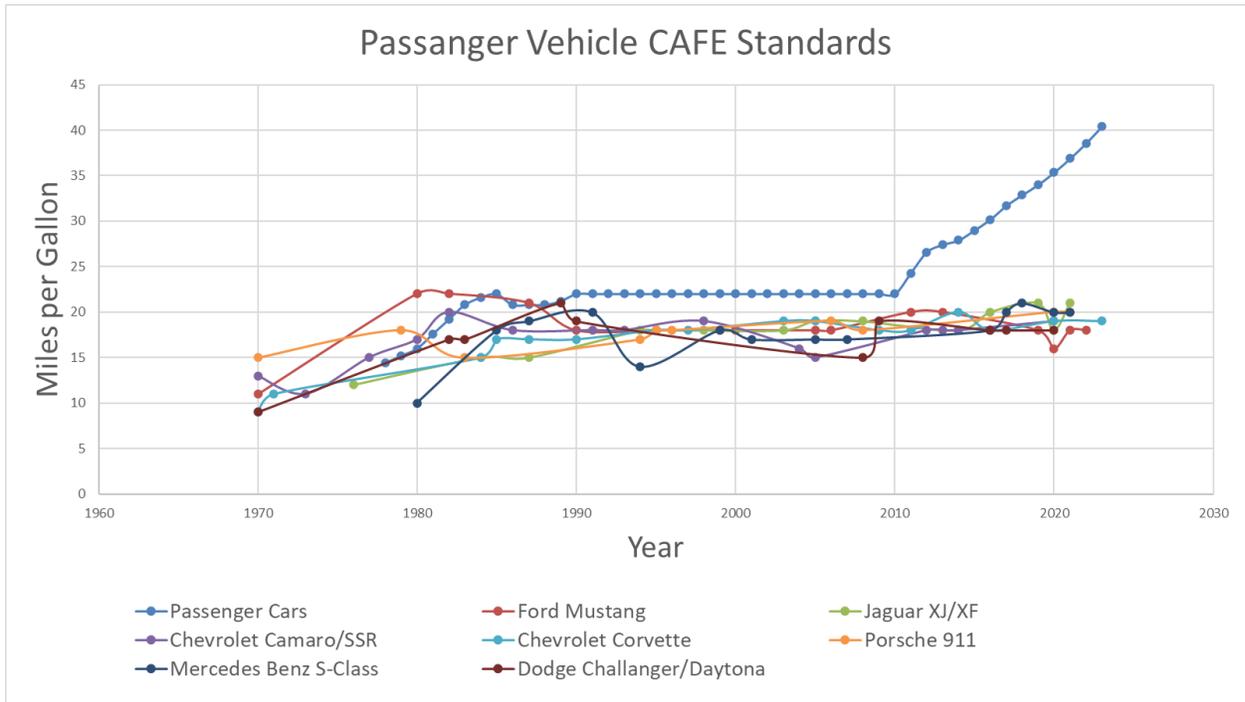


Figure 5: CAFE standards for passenger vehicles compared to the miles per gallon of the passenger vehicles in the study. Porsche 911 was in line with the CAFE standards for one year when they were introduced. The Ford Mustang was above the CAFE standards until the early 1980s when it fell below and would remain throughout.

Figure 6:

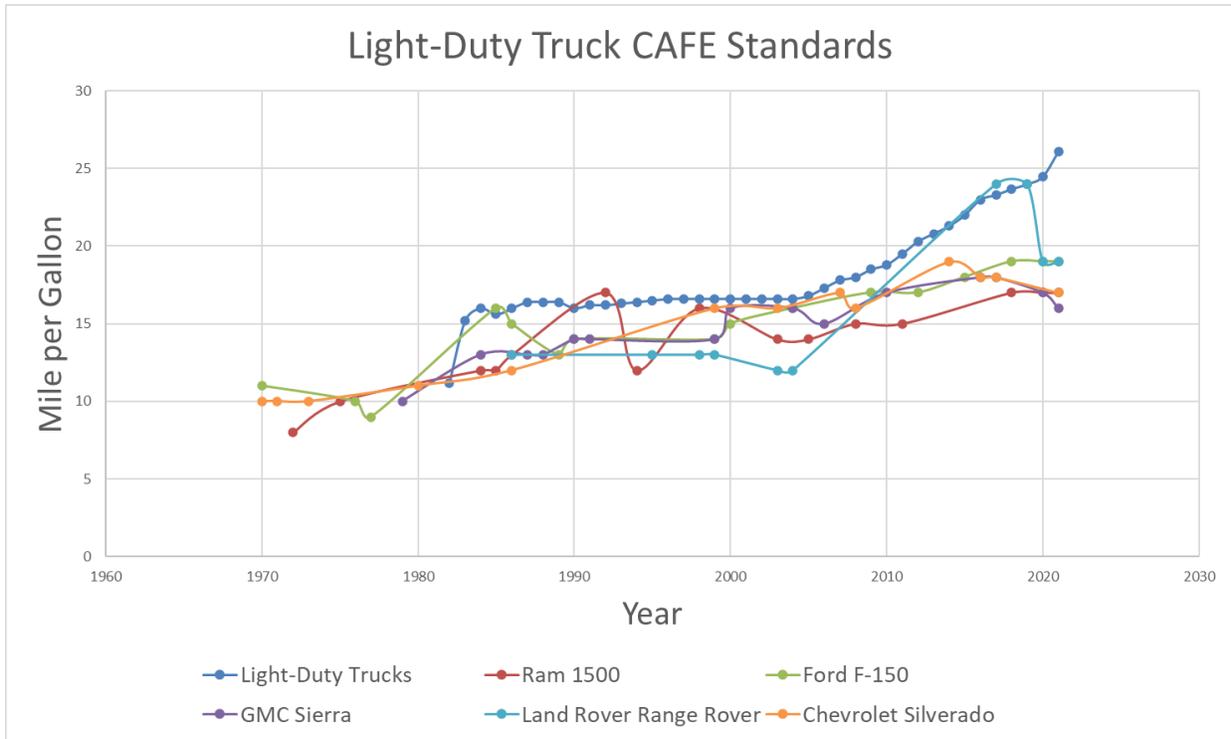


Figure 6: CAFE standards for light trucks compared to the miles per gallon of the light trucks in the study. All light duty trucks were below the CAFE standards throughout.

Figure 7:

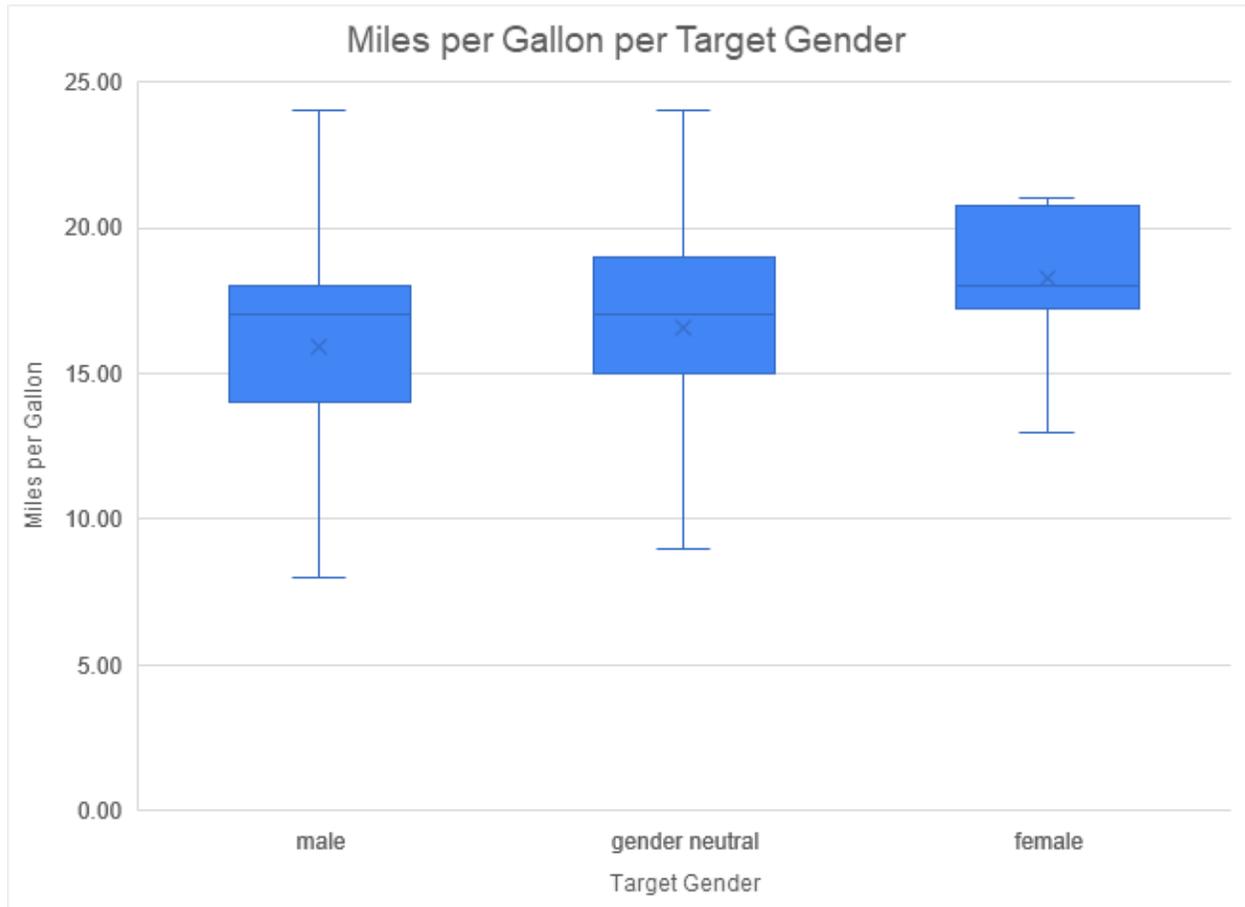


Figure 7: Box plot of miles per gallon per the target gender of the advertisement. The median and interquartile range of the female targeted ads is the highest. Male targeted vehicle advertisements have a higher median miles per gallon than gender neutral advertisements but their range is much larger.

Table 8:

	1970s	1980s	1990s	2000s	2010s	2020s
Ford Mustang	success	fuel economy	male friendships	patriotism	brand prestige	brand prestige
Challenger	race performance	performance	performance	street racing	speed	racing
Chevy Camaro	youth	fuel economy	success	style/design	male friendships	performance
Ford F-150	blue-collar labor					
GMC Sierra	blue-collar labor	practicality	low price	low price	price/technology	new technology
Silverado	price/ features	blue-collar labor	blue-collar labor	blue-collar labor	blue-collar labor	male utility
Chevy Corvette	utility	performance	performance	performance	performance	performance
Porsche 911	performance	performance	style/design	brand prestige	mance	performance
Jaguar XJ	style	luxury	luxury	features	style	performance
Range Rover	farm work	offroading	offroading	prestige	offroading	offroading
S-Class	N/A	luxury	style	control	prestige	new features
Ram 1500	blue-collar labor	utility				

Table 8: Qualitative data of the dominant marketing strategies that were evident in car commercials of the study makes and models over the timeline of the study.

## Appendix A

### YouTube Car Commercial Specifics:

1. **Decade:** 1970s, 1980s, 1990s, 2000s, 2010s, 2020s
2. **Car Make and Model:** Ford Mustang, Dodge Challenger/Daytona, Chevrolet Camaro, Ford F-150, Ram 1500, GMC Sierra, Chevrolet Silverado, Chevrolet Corvette, Porsche 911, Jaguar XJ, Land Rover Range Rover, and Mercedes Benz S-Class
3. **Type of Car:** truck, muscle car, sports car, or SUV
4. **Setting:** Urban, Suburban, Rural, Studio, Animated
5. **Target Gender Audience Scale:** See Below
6. **Narrator Gender:** Male, Female, No Narrator
7. **Narrator Age:** Child, Teen, Middle-aged, Elderly

### Target Gender Audience Scale:

#### Masculine Targeted:

Attractive females shown in a provocative manner

Blue-collar working men

High-speed chases

Off roading

Luxurious or prestigious men

Fatherly figures

**Gender Neutral Targeted:**

Family scenes

Animals

Recreational activities

Mixed gender friend groups

**Feminine Targeted:**

Prestigious or luxurious women

Group of female friends

Business women

Motherly figures

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[ssword=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1](#)

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