

Driving under the influence....."Of social factors"

Abstract

The bulk of the research that seeks to understand driving behavior and decision making has been performed by behavioral psychologists and engineers. These studies have a tendency to focus on the individual driver, examining such topics as road and vehicle design, cognitive skills, and the effects of collisions on the human body. This disparate research has produced a wealth of knowledge but with little unifying theory. The act of driving occurs within social environments that exist at many levels; the same act can be viewed through multiple lenses. In its exploration of the social context, this paper moves from an analysis of the global scale to the regional to the local. Our roads are monitored by police services and illegal acts are punished by judicial systems; these social institutions attempt to modify behavior through punitive measures. These punitive measures are derived from social theories of deviance and deterrence, methods shown here to be flawed. Empirical data derived from observations in Al Ain, UAE, are used in a quasi-experimental design that describes how drivers alter their choice of speed based on their observations of other drivers. This paper concludes by suggesting that, both by examining and legislating for driver behavior, there is a pressing need to situate the driver within his/her social environment.

Keywords

Social context • driving behavior • speeding

© University of Warsaw – Faculty of Geography and Regional Studies

Robert M. Arthur

The American University of Ras Al Khaimah
Ras Al, Khaimah, UAE
e-mail: robert.arthur@aurak.ac.ae

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Introduction

This paper will explore the social influences that impact the individual driver while performing the mundane and routine act of navigating today's road networks. These social influences exist on several scales. The global scale includes globalization in its many manifestations: modernity, sustainability and the world economy. The regional scale at the federal level involves laws, legislation, and regulations. Nested within the larger regions of countries are the smaller regions of states, provinces and emirates that also institute regulations and are responsible for policing and the judicial process. The local scale, at the urban level, involves the setting and enforcement of speed limits, road design, and urban design. Finally we arrive at the societal effects present within the stream of traffic in which the driver is operating. Analysis moves from the general (global and national), to the specific (the local scale) of the individual driver. This discussion situates the driver within a wider social context before examining the immediate influences acting upon the motorist. Speed and traffic flow counts were collected in Al Ain, UAE, over a one week period using traffic counters supplied and installed by the Department of Transportation. The counters were placed mid-block to ensure unrestricted traffic flow. The data was aggregated and analysed in order to define groups, or categories, of drivers. Once these groups were identified, they were evaluated to determine what effect the surrounding traffic flow had on the individual driver's choice of speed.

Global Contexts

Time-space convergence facilitated by modern transport technologies is an important factor of globalization. Mobility, as provided by the automobile generates an increasing desire for the freedom it purports to offer. The car has become the dominant mode of transportation in all developed countries and its use is rapidly increasing in developing countries where the fastest urban growth is occurring. The manufacturing and distribution of automobiles is a global enterprise, where multi-nationals have grown from once local manufacturers. The car's reliance on petroleum products links all auto dependent countries in a geo-political and economic desire to secure lines of supply from oil rich countries. Atmospheric pollution from automobile exhausts contributes a large amount of carbon gasses (Miller & Shaw 2001), a major factor in global warming.

Automobility

The term 'automobility' has been adopted by Urry and other sociologists as the term under which the car, technology and society are intertwined to form a car culture. Latimer and Munro (2006) stop short of such an all-encompassing definition preferring to look at automobility as a cultural system. In their view it defines a system from which researchers can explore the way the automobile has permeated society, the 'social as mobility' as Urry (2000, 2) remarks. Automobility has been likened to a regime (Bohm

et. al. 2006), but one fraught with inconsistencies and antagonisms. For all the that car offers, it also takes away, as in loss of life due to collisions, degradation of the environment, unsustainable production and consumption, congestion and overuse of urban areas.

Modernity and mobility are often considered the handmaidens of globalization, yet the car, the dominant mode of mobility, was noticeably absent in studies of social sciences until relatively recently (Urry 2004; Urry 2006). Since 2000, it has begun to emerge as a topic of research interest in its own right (Sheller & Urry 2000). According to Sheller and Urry there are six main components to automobility. These components combine in a way that reproduces 'the special character of domination' that the car has taken in society. Drawing upon Sheller and Urry (2000) these components are outlined below, with my own examples added:

- A *manufactured object* central to capitalistic production as exemplified by *Fordism* and *Post-Fordism*. Major manufacturers are instantly recognized worldwide, many having achieved iconic status: Mercedes, Toyota, Jaguar, Ford, etc.
- Second to a home, the car is the most important *item of consumption*, conferring upon its owner status, success, mobility, and speed. The car becomes anthropomorphized, sexualized, is often given names, and referred to as 'she' instead of 'it'. The driver feels powerful; at times this feeling leads to aggressive behavior on the road.
- The *machine complex* system insinuates itself into spin off externalities. These include: gasoline sales (which became geo-political during the oil embargo of 1973); urban planning which has redesigned the city to facilitate the car (Los Angeles has 50% of its land devoted to the car); suburbanization; and delivery of retail goods by supermarkets and big box retailers. Global production makes use of such modern transportation methods as *just-in-time* (JIT); and the sales of automobiles by multi-nationals, places the automobile industry at the forefront of globalization.
- The accepted main mode of *mobility* offers individualism, freedom and autonomy. The car has become dominant by marginalizing other forms of transportation: train travel, bike riding, and so forth. Modern life has restructured its time-space constraints as the car offers both freedom and constraints to mobility.
- The car assists reproduction of the dominant *culture* by symbolizing quality of life and 'proper citizenship'. The car as an object of desire in novels, movies and television shows affirms its social importance and prepares youth for a future of car ownership.
- The *environmental effects* of the automobile are the major source of air pollution in modern cities through its consumption of petroleum products. Carbon monoxide contributes as much as one-third of the global atmospheric carbon (Miller & Shaw 2001), causing global warming. NO_x compounds form acid rain; PM₁₀'s (Particulate Matter 10 microns or less) and smaller that promote lung diseases and are considered a major contributor to the alarming growth of asthma amongst children in the 0 – 4 age group (Nastos et al. 2010). As traffic increases on urban arteries, noise pollution has become a greater concern for individuals living close to urban arterial roads. Congestion brought about by this traffic increases pollution and decreases capital production, due to time wasted in traffic jams.

Automobility has completed a reformation of society around automotive production and consumption. It dominates the criminal-judicial system as will be explored below and has become the subject of regulations to restrict emissions and increase safety.

Despite the many technological improvements in automotive and road design the speed at which the automobile negotiates modern cities, such as London or Tokyo, show little improvement over the horse in urban travel speeds: Athens and Tokyo, 18 km/h; and as low as 14.5 km/h in central London (OECD 2004; Transport research 2014 [2008 figures]; Average traffic 2014 [2012 figures]).

The 'American Dream' of owning individual homes on individual plots of land, is facilitated by the automobile, causing cities to grow larger in land area but less efficient land use. Urban spaces are fractionalized into districts, each with its own function vis-a-vis land use planning. This places the family at a distance from many of its activities: shopping, work, schools and recreation. As a result of the effects of automobility, people travel further and more often (Giuliano 2001). Automobility consumes more time, reducing time required for other activities, especially work. Concomitantly; however, the car has become more comfortable and supplies the driver with many luxury features such as in-vehicle DVD movie players for passengers, high quality stereos and a climate controlled interior. Communication technologies keep the driver in contact with the external world as she/he traverses the streets in isolated comfort.

Regional Scale

It is at the regional scale that government regulation and the criminal-judicial system operates. Regulations govern the manufacture of the automobile even though these regulations are at odds with each other. Lighter materials are legislated to make the car more fuel efficient in order to reduce emissions and the reliance on oil; meanwhile, safety regulations require the automobile to be strong enough to resist the forces of a collision, and so require heavier and stronger materials (Lave & Lave 1990). The political agenda to reduce the reliance on oil imports lends more strength to fuel efficiency to the detriment of safety regulations. Installation of seat belts is mandated and local laws proscribe their use. Government testing laboratories crash test vehicles and publically report their findings allowing consumers to compare ratings.

Governments impose taxes on the importation of vehicles, the larger car, the larger the engine, the higher the import duties. The individual is tested on their eyesight, knowledge of the rules of the road and capacity to operate a vehicle. Only after passing such tests will this individual receive a license allowing them to drive. Regulations govern the building of roadways, setting of speed limits, lighting and all aspects of environmental design. Signage is placed to inform the driver of site specific procedures. Intelligent traffic systems are created to assist the driver and reduce congestion, warning the driver of impending traffic jams. However, it is in the monitoring and policing of motorists that the driver is most impacted.

Policing Driving

Traffic violations are the highest reported crimes in the U.S. (Ross 1961). In the emirate of Dubai, 5, 362 speeding tickets are issued daily (www.arabianbusiness.com). The global social cost of automobile collisions amounts to 1.2 million deaths annually with 50 million injured. Without interventions (increased policing, education, awareness campaigns, etc.) these numbers are projected to increase by 65% over the next 20 years (WHO/World Bank 2006; Davergne, 2005). Despite these concerns the automobile remains the dominant mode of transportation in developed countries with developing countries aspiring to equivalency. Through their laws, fines, policing, licensing, and education programs, local government works to reduce this horrifying social toll brought about by automobile driving.

Most traffic violation citations target the singular act of speeding. Surveillance technologies have been employed to

increase the efficiency of policing and to reduce the requirement for human skills in the performance of this task. This section will deal with a number of inconsistencies inherent in this system. As policing is a social institution that directly interacts with the driver, it is important to discuss the effects of this contact. Policing, and the punishment meted out, relies upon the concepts of deviance and deterrence theory, yet the way in which speeding is policed does not fully utilize these concepts. This has a tendency to undermine the desired effects anticipated by the police and law courts. These factors combine to create an attitude of ambivalence amongst the public.

Deviance Theory

The first principle of defining speed as a deviant, thus punishable act, requires an understanding of how the concept of deviance is perceived and defined. Defining a deviant act can be accomplished in several ways:

Statistically 'not normal': any act that deviates from the mean is too simplistic and many individuals engaged in acts that could be defined in this way would not consider themselves, or the act, as deviant. Speeding is one such activity as illustrated by claims that over 80% of motorists speed (Elvik 1997; William 1996; Rothengatter 1991).

Law breaking as deviant: "Hence, traffic law should not be used as a surrogate for normative, reference behavior. It is unspecified (the driver should at all times anticipate all events); and it is downright unrealistic (the driver should at all times maintain a distance that allows him to come to a full stop). Traffic law serves primarily to allocate blame when an accident occurs, and only secondarily to prevent accidents" (Rothengatter 1991, 61).

Normative violation: This is as simplistic and reductionist as the statistical definition. Speeding motorist rarely consider themselves as social deviants nor can the act itself be considered to stray from social norms. The fact that the norm itself is understood ambiguously makes it difficult to portray speeding as a deviant act (Deutschmann 1994).

Social control: A deviant act can be defined by the social response to an act (ed. Sacco 1992). This can be a formal reaction such as a traffic citation. However, except for very high speeds, the speeding violation is called an 'infraction' and is associated with a relatively low fine. By refraining from using the word 'crime' the stigma of the act is diminished. Informal social control can vary from honking of horns, yelling, rude gestures, and in the extreme, 'road rage'. Thus there is ambiguity due to the range of responses from mild to severe, with the severe being least frequent.

This leaves us with no clear explanation as to how and why speeding should be viewed as deviant behavior. Only the final definition includes the social setting. Furthermore, ticketing only blames the driver, deflecting criticism from other areas of road safety and ignores the other dangerous driving activities that contribute to collisions. (Arthur 2009). Many traffic safety experts do not agree that, in itself, speeding is a major causative factor of collisions. Rather, some argue that it contributes to 20% or less of all collisions (Liu & Popoff 1997; Bowie & Walz 1994).

Deterrence Theory

The conviction that, by publically punishing someone for committing an act defined as deviant, the actor will be less likely to repeat the act and the populace will be deterred from this behavior is a theory first spelled out by Cesare Beccaria (1764). The same thinking underlies attempts by regional governments to coerce individual drivers to conform. In needing to provide incontestable evidence to the courts which rely upon this theory, the methods and technologies used to measure speed have become more accurate. Speed measurement is now generally performed by surveillant technologies without the need for human

intervention. Regardless of the advances in measuring speed, Kelly warns us not to neglect the official and unofficial attitudes of the police department.

This being the case, we need to examine how the theory of the office is translated into action. Is there a direct correspondence between an agency's official perspective and its actual working technology? To answer these questions requires us to examine how social-control agencies go about processing their clients (ed. Kelly 1996, 299).

Methods of deterrence can be implemented in several ways:

Absolute deterrence: This requires such a severe punishment that no one would want to risk being caught. For obvious reasons this approach does not make sense for speeding violations.

Cross deterrence: The implication here is that deterring one act serves to deter other offences. This is true for the presence of police cars with radars as the driver is aware that the officer has discretion to add further fines. However, automated speed cameras have removed this effect.

Relative deterrence: This method relies upon an increased presence of either traffic police or surveillant devices, a method adopted in the use of current technologies.

Specific deterrence: This is designed to impact the individual being punished, with the hope that this individual will not wish to incur the punishment a second time. Considering the number of speeding infractions (see above), recidivism is high, implying that this deterrent is ineffective.

General deterrence: This relies upon a common knowledge of deterrence occurring from the punishment of the individual, thus alerting the general public to the punishment and its attendant crime (ed. Kelly 1996; Deutschmann 1994; ed. Sacco 1992).

The three elements: severity, certainty and celerity are required for deterrence to be effective. Severity is relatively low and is not felt equally by all as it acts similarly to a regressive tax, affecting the poor much more than the wealthy. Photo radar has provided a drop in severity as 'black points' are no longer given with speeding tickets; yet it has been argued in some recent discussions that severity might be more important than originally thought (Mendes 2004; Mendes and MacDonald, 2001). Celerity has dramatically decreased as a result of surveillant technologies. A driver might receive a ticket in the mail weeks later, or, as in the U.A.E., the fine does not need to be paid until the vehicle is re-registered, often months later. It is possible to discover violations thanks to advances in e-government; however, the actual punishment is not incurred until the fine is paid. This serves to distance the punishment from the crime, often with the punished not even remembering the specific incident for which they are being punished. Certainty is impossible as not all photo radar cameras are in operation and not all of time. The driver is also capable of learning the location of photo radars and slowing down accordingly only to accelerate shortly after passing the device. The same act illustrates the driver's disregard for the infraction (Arthur, 2009).

Even though deterrence and deviance are socially constructed categories, they appear to disregard other social influences acting simultaneously upon the driver. These deterrent theories unrealistically assume that all will respond to the laws in the same fashion. Several questions suggest themselves following the above discussion:

- If policing is effective then why do so many still engage in speeding?
- If speeding is such an undesirable and potentially lethal act, then why are so many cars constructed with large engines capable of reaching extreme speeds?

Mendes (2004) explains how these classical theories of deterrence on the one hand ignore the individual's perceptions

of risk, and on the other hand, these perceptions influence the driver's choice of speed. The seemingly innate human glorification of speed should not be ignored. Almost anything that moves, from animals to machines to humans competes in races with the glory - and the profits in the case of machines - going to the fastest. Therefore, we cannot explore traffic safety initiatives without considering this social context as a partial explanatory factor (Factor et al., 2007). Huguenin (2005) suggests that the focus on the specific driver be abandoned for increased research into the specificities of social influences. The next section examines how the driver's choice of speed can be influenced through interaction between and observations of, other drivers.

Hybridization

A corollary to the discussion on automobility is the theory of hybridization. The latter describes the phenomenon of the driver and the car as they become 'one' an extension of the driver's body, and of the driver's desires, ego, senses, and even sexuality (Latimer and Munro, 2006; Urry, 2006). As hybrids, drivers are encased in a steel cage which simultaneously functions as an extension of their own self. Here, the driver's body is fragmented into, and disciplined by the machine. The driver's eyes, ears, hands and feet are trained to respond instantly and consistently, by contrast, prosaic human desires to stretch, change position, doze or to look around are suppressed (Latimer and Munro 2006, 40 [paraphrasing Urry same volume]). In Rothengatter's discussion above regarding the expectations of the law (individuals anticipating all events), anticipates this need for the human driver to act more like a machine.

Latimer and Munro (2006) move beyond Urry's definition of hybridism, using the processes of extension to explore how the individual is incorporated into the various relationships between the automobile and the social. Drivers elicit their relationships with the car and all the elements that support the car, or automobility. In their view, these relationships are fluid and changeable depending upon situation, use, and individual. Relationships of extension have various affects: "For example, witnessing cars travel, taking part in their speed and their mobility, 'transports' us into framing society (and ourselves) as technologically advanced, and, specifically, as developing at a pace, a progress gaining in rapidity with each instance witnessed" (Latimer and Munro 2006, 43).

According to Urry (2006), this hybridization creates a sense of anonymity coupled with a sense of power. Driving allows us to detach from the social acts of conversation and account-giving, enabling us to "step outside the widely accepted rituals and customs of social behaviour" (Latimer and Munro 2006, 46). It is within this world of automobility and hybridization that the driver operates. However, Urry's discussion generalizes across a broad global stage and does not incorporate the effects of locality, missing the mediation of local influences. It is upon the individual driver that these processes are visited, and it is the individual's response that is of concern to the present paper. The global scale explains how perceptions of automobility are created. The regional scale operates to govern and regulate mobility, directly affecting the driver's consumption of mobility. It is at this level that the paper explores the reaction of drivers to their immediate social environment; the traffic stream in which they operate.

Imitative Behavior

Ambient conditions, weather, lighting, road surface, traffic flow, and the behavior of other drivers must be taken into account when drivers choose the speed at which they feel comfortable in operating their automobile. Drawn from social-psychological research (Benson and Gresham 2007), the contagion theory has been developed to explain the phenomenon of mob behavior. Contagion theory, through the agency of imitative behavior, explains how the

driver is influenced by the actions of the surrounding stream of traffic and, in turn, influences other drivers (Zaidel, 1992; Phillips, 1986). For imitative behavior to operate all that is needed is for drivers to observe the actions of other drivers; there is no requirement for coercion or communication (Zaidel, 1992).

Connolly and Aberg (1993) hypothesized that several types of drivers could be discerned: those who constantly speed, those who consistently obey the posted speed limit; and those who can be influenced, and, therefore, move between the two outer groups. Furthermore, each individual driver is influenced by the percentage of drivers driving at particular speeds in the surrounding stream of traffic. Depending upon the individual, his/her choice of speed can be influenced by others; the decision is based upon how many vehicles the driver perceives as driving faster or slower. Once that threshold is reached, the driver reacts by slowing down or speeding up.

In previous research (Arthur, 2011), the author emphasizes the importance of temporality, specifically that of the diurnal ebb and flow of traffic. The change in the amount of traffic flow appears to have a direct affect upon speed choice. This is due in part to the fact that heavy traffic flows tend to be self-limiting whereas the overcapacity (ability of the road to bear more vehicles) experienced during hours of light traffic encourages drivers to exceed the speed limit. This overcapacity is extremely important in influencing certain drivers to significantly exceed the speed limits. Following contagion theory, it is not surprising that other drivers follow suit.

Methodology

In order to empirically test the above mentioned hypothesis of Connolly and Aberg, traffic flows and speeds were gathered in Al Ain, the second largest city in the emirate of Abu Dhabi. Traffic counters were placed on a major artery that leads from downtown Al Ain to the Al Ain – Abu Dhabi highway. The counters were in place for a period of one week. Four separate locations were chosen but only one location returned any usable data. This good data was retrieved from the location nearest to downtown Al Ain, one block away from the edge of the city centre. This location has a posted speed limit of 60 km/h. Of the other locations, one had a speed limit of 80 and the remaining two, 100 km/h. The data was unusable because over 90% of the recordings were in the 120+ speed bin (including the 80 km/h zone). Without any differentiation in the data, it could not be used for further analysis. The only conclusion one could draw is to remark on the excessive amount of speeding.

The road characteristics where the counters returned adequate data were as follows: six lane divided road with limited access; a 60 km/h speed limit; the road is well lit during the night time; the pavement quality was very good; and the weather conditions remained hot and dry with good visibility for the entire time of recording. The outbound lanes are separated from the inbound lanes by a wide boulevard, planted with bushes and grass with a fence running down the middle and high curbs on either side. The counters were placed on the three lane portion leading away from the downtown area and located mid-block to ensure the recording of free flowing traffic. It should be noted that photo-radars are commonly set 20 km/h above the speed limit and that this fact is well known by the UAE's drivers.

The raw data was collected in 15 minute intervals, which were then combined into 1 hour units. This data was then aggregated and averaged into a representative average annual daily traffic flow (AADT) in accordance with common engineering practices.

Results

Cluster analysis was utilized to determine if any groups could be identified. Drawing on Connolly and Aberg, clustering was

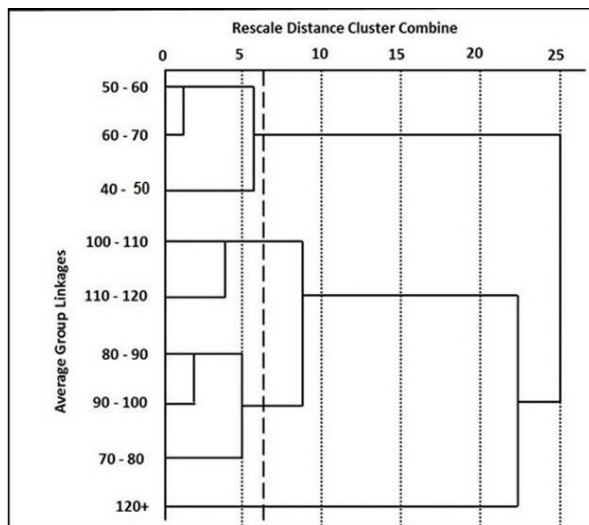


Figure 1. Hierarchical Cluster Dendrogram
Source: Arthur, 2011

set to determine three or four groups. The four group solution was chosen as it appeared to have a satisfactory result with less generalization than the three group solution (Figure 1). The decision for determining the amount of groups was decided by the researcher, either after testing, or as an alternative, *a priori* as informed by theory (Breckenridge 1989).

The four groups were defined as: 1) 'compliant'; those who remained within the allowable speed (within the discretionary range of photo radar cameras), 2) 'speeding'; those who drove just above the allowable speed range, 3) 'high speed'; speeders driving well above the speed limit, and 4) 'excessive'; those driving at extremely dangerous speeds (over 120km/h). It is the two intermediate groups that are of interest as, if we follow Connolly and Aberg, these drivers are likely to be influenced by those around them (Arthur 2011). These groups were analysed in detail to examine how each group changes its choice of speed in relationship to the other, surrounding groups.

A disturbing fact uncovered was that only one group drove at or below the speed limit and that the 'excessive' group drove at 120 km/h or higher, this being higher than double the posted speed limit. Group four remained at or below 10% of the traffic flow except at 4:00am when it reached a peak of 16% of the total traffic flow. Traffic was light at this time with an average of 70 vehicles recorded during that hour. Diurnal patterns influence the traffic as indicated by a higher percentage of speeding occurring during late and early hours with a reduction during the heavier 'rush hour' periods.

Each group was measured by its' percentage of total traffic flow and was examined over a 24 hour period (Figure 2). The two outer groups (Group 1, compliant; and Group 4, excessive) represented the smallest percentage of traffic flow and remained the most stable over the course of the day, as Connolly and Aberg predicted. Group 2, speeding, shows a slight influence from the compliant drivers, but the change was amplified. For example, at 1:00pm, compliant drivers dropped by 8%, speeding drivers dropped by 11%, with the greatest change occurring in the high speeding group, which increased by 17%. The excessive group gained by just short of 2%. The speeding and high speeding groups tended to be almost mirror images of each other; showing the high degree of interaction between these two groups. As they represent the majority of the traffic flow it is understandable that

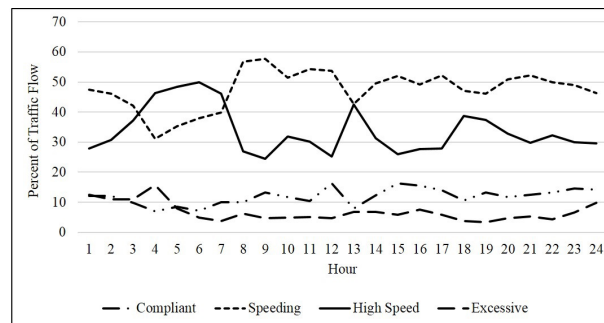


Figure 2. Between groups comparison

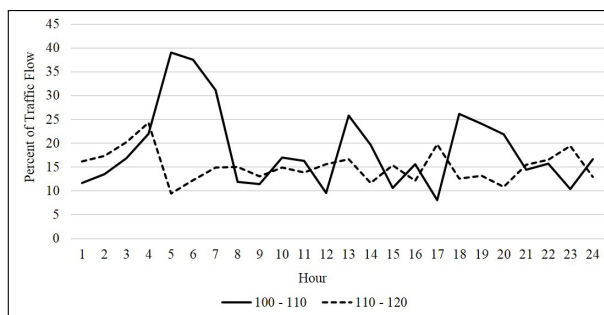


Figure 3. Within group analysis

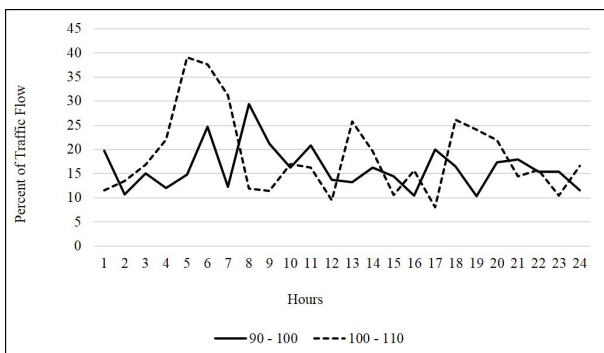


Figure 4. Comparison between 90-100 and 100-110 speed bins

they would have had the most influence on each other. It can be argued that the compliant drivers indirectly influence the high speed drivers through their influence on the speeding drivers. Fortunately, the excessive group appears to have had the least influence. The activity uncovered here agrees with the argument presented by Connolly and Aberg.

As these groups are aggregates, it is important to remember that there would be differentiation within each group as well. Just as in the comparison between groups, it should be expected that there would be a similar pattern within a group. Figure #3 shows the group of high speed drivers broken down into its two constituent speed bins. The mirror imaging discernible between the speeding and high speed drivers can also be seen within the high speed group. A very similar pattern occurs when examining the cusp between the speeding drivers and high speed drivers (90100 and 100110) where the migration between groups would occur (Figure 4).

Conclusion

Using the geographic perspective of scale, the social influences on driving have been discussed. At the global scale, as claimed by Urry and others, the automobile has permeated society to the extent that some claim there is a "culture of driving". Automobility is a major aspect of globalization, the world economy, global environmental and geo-political concerns. It is indicative of modernization being one of the measures of development. At the national scale the social institutions of the criminal justice system and government regulatory bodies are brought into play. The local urban level shows how the automobile has become the most important mode of travel, dominating not only other modes but urban space and design. These scales, while discussed individually, are interlinked, with each affecting the other in many ways. Laws at the local level, for example, environmental regulations, will impact the global scale, just as increased air pollution (global scale) will pressure governments (regional scale) to enact legislation, and the individual concerned citizen can put pressure on their government representatives to vote for such legislation. However, it is not within the scope of this paper to trace the multi-faceted interconnections between these scales. Lastly, at the scale in which the individual driver operates, this paper discusses how the very act of driving is a social act; with drivers influenced by the actions of other drivers. Data

gathered quantitatively demonstrates the interactions between drivers. This research can be used to inform public policy as to what direction policing and public education campaigns should take in order to reduce collisions and increase safety on the roads. The placement of surveillance, whether automated or not, could be improved by paying attention to location and time. If combined with further analysis determining where collisions are occurring at high frequencies (hot spots) and are associated with speeding, there would be a reduction in collisions. This would require a shift in thinking away from deterrence to a more safety oriented approach. If drivers slow down through hot spot locations a reduction in tickets would result, this would be offset by the favourable circumstance of a reduction in collisions.

Motorists act within a fluid social atmosphere with forces generated at all geographic scales and these forces drive the decision making processes of individuals. From automobility to mobility, driving is a social act.

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