



Seat Belt, DWI, and Other Traffic Violations Among Recent Immigrants In Florida and Tennessee



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16. Abstract Phase I of this project identified two States, Florida and Tennessee, that maintain information on drivers' traffic violations and residency status. Phase II analyzed State databases to examine seat belt nonuse, DWI, and other traffic safety violations among drivers of different immigrant status. The Florida Division of Motor Vehicles provided a stratified random sample of 286,746 drivers' records in its database, for the years 2003 to 2009. The Tennessee Department of Safety provided records for 5,680,728 people for 10 years, 2000 to 2010. The analyses suggest that those who have come recently to the country are less likely to be cited for seat belt, speeding, and failure-to-obey violations than more established drivers; but as time goes by and immigrant drivers become more established, they begin to resemble established citizens in terms of the likelihood of being ticketed for these traffic violations. Factors such as age or gender seem to contribute to their likelihood of being cited for seat belt, speeding, or failure-to-obey violations, more than residency status. Of the four traffic citations examined, speeding was the most prevalent in both States, while DWI was the least-often violation listed in the driver records. In both Florida and Tennessee, 1% of all drivers were cited for a speeding violation within 3 months of licensure, independent of residency status. Male drivers and drivers under 21 were more likely to be cited for traffic violations than older drivers (21 and older). The race and ethnic distribution of violation rates varied across the different violations. Compared to other groups, Asians/Pacific Islanders (PIs) were significantly less involved than other racial and ethnic groups in seat belt or DWI violations, but more involved in speeding and failure-to-obey traffic signs and signals violations. White and American Indian drivers were significantly less involved in failure-to-obey citations than drivers of any other group. Recent Hispanic immigrants to Florida were more likely to be arrested for DWI than the more established immigrants. For Asian/PI drivers in Florida, residency status was not a factor in DWI arrests and their DWI rates were substantially lower than the other racial and ethnic groups. The findings from this study are specific to two States and suggest that the role of residency status on traffic violations varied depending on the violation, the racial and ethnic group, and the State.					
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Executive Summary

Some researchers suggest that some minority groups are cited in motor-vehicle incidents because many are recent immigrants¹ who may not understand traffic laws and regulations, especially less acculturated immigrants from countries in which traffic laws are not well enforced (Caetano & Clark, 2000; Cherpitel & Tam, 2000; Caetano & McGrath, 2005). Other evidence suggests just the opposite: that the more acculturated immigrants are, the more they may be at risk (Hunter, Wong, Beighley, & Morral, 2006). For some groups, the role of acculturation on traffic-related risks provides contradictory results depending on the age or gender of the group under consideration (Romano, Tippetts, & Voas, 2006). The effect of immigration status and acculturation on seat belt nonuse, DWI, and other traffic safety risks is unclear.

The National Highway Traffic Safety Administration examined all 50 States to identify those that collected traffic safety data by residency status. As a result of that examination, two States, Florida and Tennessee, were selected for further examination. The goals of this effort were to: (1) estimate the prevalence of seat belt nonuse citations, DWI, and other traffic violations on the different groups of drivers under consideration; (2) study how certain demographic modifiers affect the odds that drivers of different residency status will receive the traffic citations under consideration; and (3) estimate the average time elapsed from licensure to a traffic violation for drivers in each of the resident groups under study.

The Florida Division of Motor Vehicles (DMV) provided traffic record data that includes the birth date and legal presence code that identifies the type of document the applicant presented when applying for a driver's license. The Florida DMV also has an indicator on each driver's record of whether the applicant has provided a legal presence document showing he or she is in the country for a limited period. Based on that documentation, Florida officials were able to separate the drivers' residency status into three separate categories: U.S. citizens, resident aliens, and non-resident aliens. U.S. citizens include drivers who either were born in the United States, or were naturalized citizens. Resident aliens differ from non-resident aliens because the resident aliens have a "green card" (technically, the United States Permanent Resident Card [USCIS Form I-551], formerly the Alien Registration Card or Alien Registration Receipt Card [INS Form I-151])" Florida officials provided a stratified random sample of the total drivers' records in their database at no cost. The total number of Florida drivers sampled was 286,746.

The Tennessee Department of Safety data managers provided the complete set of drivers in their database during the last 10 years, excluding drivers who have either moved out of State or died. Tennessee provided records for 5,680,728 people. Tennessee separated driver residency into four categories: Temporary resident aliens; permanent resident aliens; naturalized U.S. citizens (who were previously aliens); and U.S.-born citizens. Both State databases also contained information on the drivers' age, gender, race, ethnicity, and ZIP Code of residence.

¹ Clear identification of "recent immigrant" was not possible. Therefore, "residency status" was used as a proxy for "time since arrival to the country." "Recent immigrant" refers to drivers with less than full U.S. citizenship.

A descriptive analysis estimated the prevalence of the different traffic citations, and chi-square tests evaluated differences across the groups of interest. Logistic regressions estimated the odds of receiving a citation for non-seat-belt use, speeding, failure to obey a traffic signal or sign, and an arrest for DWI (driving while intoxicated, also known as “driving under the influence” or DUI, in some jurisdictions) for drivers of different residency status. Survival analyses evaluated the rapidity of incurring the violation (i.e., the time elapsed for a driver to receive a citation for each violation type after obtaining a driver’s license).

Of the four traffic citations examined, speeding was the most prevalent in both Florida and Tennessee, while DWI was the least-often violation listed in the driver records. Males in each State were cited at a significantly higher rate than females in each of the four violations. Young drivers under 21 were cited at a significantly higher rate than drivers 21 and older for all 4 of the violations. The race and ethnic distribution of violation rates varied across the different types of violations. Compared to other groups, Asians/Pacific Islanders (PIs) were significantly less involved than other racial and ethnic groups in seat belt or DWI violations, but more involved in speeding and failure-to-obey traffic signs and signals violations. White and American Indian drivers were significantly less involved in failure-to-obey citations than drivers of any other group.

The more U.S. driving experience drivers had, the higher their traffic citation rate. Overall, drivers who were citizens were more likely to be cited for traffic violations than those who were not citizens, but there were variations depending on the type of violation, the driver’s racial and ethnic group, and the State.

U.S. citizens were cited for seat belt violations at a significantly higher rate than drivers who arrived more recently to the country. Such over-involvement was observed among both Asian/PI and Hispanic drivers. A similar pattern was observed for DWI violations in Tennessee. Recent Hispanic immigrants to Florida were more likely to be arrested for DWI than the more established immigrants. For Asian/PI drivers in Florida, residency status was not a factor in DWI arrests and their DWI rates were substantially lower than the other racial and ethnic groups.

This study shows that the role of residency status on traffic violations varied depending on the violation, the racial and ethnic group, and the State of residence of the drivers. The survival analyses evaluated which traffic violations were likely to be committed first by the different groups of newly licensed drivers. Among the four traffic violations under consideration, speeding was more likely to be the first one to occur. In both Florida and Tennessee, 1% of all drivers were cited for a speeding violation within 3 months of licensure, independent of residency status. The three other traffic violations analyzed in this study appeared later in the driving histories, especially for DWI among temporary residents in Florida. It would take more than four and a half years for 1% of temporary residents to be arrested for DWI.

The findings of this study suggest that a uniform conceptualization may not exist with immigrants of different groups, in different States, with regard to their propensity for certain traffic violations. Nevertheless, this effort provides valuable information to researchers:

- The hypothesis that recent immigrants may be cited more for any traffic violation than more established drivers was not supported.

- Using residency status as a proxy for “time since immigration,” there is evidence that recent immigrants might be less likely to be involved in seat belt and speeding violations than U. S. residents.
- The evidence was less clear regarding DWI, with more recent immigrants in Florida being more likely to be arrested for DWI than the more established resident drivers.
- Immigrant status played a different role in the likelihood of traffic violations depending on the traffic violation considered, the racial and ethnic group, and the State in which the drivers reside.

Background

The racial and ethnic composition of the U.S. population is rapidly evolving. This is of importance to traffic safety specialists because there is extensive evidence that the risk of involvement in fatal traffic crashes varies significantly across racial and ethnic groups (e.g., (Bolen, Rhodes, Powell-Griner, Bland, & Holtzman, 2000; Voas, Fisher, & Tippetts, 2002; Boyle & Vanderwolf, 2004). It has been suggested that some minority groups are cited in motor-vehicle incidents because many of them are recent immigrants who may not understand traffic laws and regulations, such as mandatory use of seat belts, especially among less-acculturated immigrants coming from countries in which traffic laws are not well-enforced (Caetano & Clark, 2000; Cherpitel & Tam, 2000; Caetano & McGrath, 2005). However, some evidence suggests just the opposite: that the more acculturated immigrants are, the more they may be at risk (Hunter, Wong, Beighley, & Morral, 2006). Furthermore, for some groups, the role of acculturation on traffic-related risks provides contradictory results depending on the age or gender of the group under consideration (Romano, Tippetts, & Voas, 2006). The effect of immigration status and acculturation on seat belt nonuse and other traffic safety risks is unclear.

Traffic Safety and Recent Immigrants

Relevant to the understanding of driving attitudes of Hispanic, Asian, and other foreign-born drivers in the United States may be the driving behaviors typical in their countries of origin. Traffic reports coming from Latin America and Asia mention an alarmingly high incidence of motor-vehicle crashes showing a lethal combination of seat belt nonuse, alcohol, and pervasive risky driving such as speeding, red-light running, or stop-sign violations (e.g., Mohan, 2004; Silveira, 2003; Odero, Garner, & Zwi, 1997).

Unfortunately, little is known about how driving behavior abroad translate into the behavior of racial and ethnic groups in the United States. Although evidence shows that acculturation tends to increase alcohol consumption and the risk of alcohol-related crashes, Romano, Tippetts, Blackman, and Voas (2005) found that acculturation might reduce the risk associated with the nonuse of seat belts, at least among Hispanics. Arce and Sherrets (2004) argued that, for undocumented Hispanic immigrants, the desire to go unnoticed and avoid law enforcement for fear of being cited for being unlicensed may provide a reason to adhere to traffic laws, when they should not be driving at all without proper licensure.

Culturally based values and perceptions play an important role in shaping health-related disparities. For instance, Blacks and Hispanics, more than Whites, believe their health is dependent upon fate and destiny (Lewis & Green, 2000). This fatalism has been found to contribute to disparities in seat belt use (Peltzer, 2003).² The Motor Vehicle Occupant Safety Survey revealed that Blacks (39%) and Hispanics (37%) were more likely than Whites (23%) and non-Hispanics (25%) to agree with the fatalistic statement, "*if it was your time to die, you'll die*" (Boyle & Vanderwolf, 2004).

² For a review of the role of fatalism on health-related issues involving the Hispanic population, see Abraído-Lanza et al., (2007).

Data on Driver Immigration Status

In 2005, Congress passed the Real ID Act that, among other requirements, asked States to collect information on the citizenship or immigration status of those drivers who apply for a driving license.³ This legislation is relevant to this study because if researchers could obtain information on the drivers' citizenship and residency status from a State, then they could merge it with the drivers' traffic records in that State (citations and/or crashes) and analyze the linked data sets. However, the law was received with mixed enthusiasm, and the deadline for compliance with the law was postponed until 2011. Since its enactment in 2005, some State legislatures have adopted resolutions opposing the Real ID Act, while others have made progress toward compliance with provisions of the Act. The unclear status of the Real ID Act emphasized the importance of Phase I of this study in documenting the existence and availability of immigration status data in the United States.

The outcome of Phase I of this study indicated that most States do not have data on recent immigrants, although the enactment of the Real ID Act in 2005 suggested otherwise. Opposition to the Real ID Act has delayed its implementation in many States. In some cases, there are indications that such opposition may delay implementation permanently. Nevertheless, in responding to inquiries to all 50 States and the District of Columbia, four States indicated the availability of databases potentially useful for this project: California, Florida, New Mexico, and Tennessee.

Of these States, New Mexico does not keep information on the drivers' legal residency status. However, a variable in the State's crash and citation databases (i.e., the drivers' social security number, SSN) could be used as a proxy to individualize undocumented drivers. California, Florida, and Tennessee keep immigration information in their driver licensing records. Of these States, Tennessee requires different licensing for U.S. citizens and non-U.S. citizens and, therefore, keeps separate information for these two types of drivers. As a result, and for analytical purposes, the level of detail of the information available in the Tennessee driver record database is richer than in the other States and, therefore, is highly relevant to this effort. California and Florida DMVs track the immigration status of their drivers in a way that can be matched with citations and arrest data. Such a merging would allow for analyses of the association between immigration status and seat belt nonuse, as established in citation and/or crash data. Both States proved to be extremely good candidates for Phase II. Unfortunately, although the California DMV does have data on the documents that applicants present at the time of licensing (original or renewal) proving citizenship and indicating immigration status, DMV officials have recently learned that there may be problems with the accuracy of some of these data that could affect the quality of information provided. The California DMV is working to fix these problems; however its data was not available for inclusion in Phase II. As a State official communicated to us, *"I think it is fair to characterize California as a State that potentially could provide data [for this project] at some future time."*

³ H.R. 418 (available from The Library of Congress at <http://thomas.loc.gov/cgi-bin/bdquery/z?d109:H.R.418>.)

Objectives

The purpose of this project was to analyze data from two States, Florida and Tennessee, to examine seat belt nonuse and other traffic safety issues among drivers of different immigrant status to:

- Estimate the prevalence of seat belt nonuse citations, DWI, speeding, and failure to obey traffic signals and signs violations among the different groups of drivers under consideration.
- Examine demographic characteristics of drivers of different residency status who receive the four different traffic safety citations.
- Estimate the average time elapsed until a traffic violation occurs for drivers in each of the resident groups under study. Test the hypothesis that nonpermanent residents receive the first citation for seat belt nonuse earlier than drivers in the other residency groups.
- Compare the prevalence rates of citations across the two States in the study.

Methodology

Drivers' license and traffic record data were obtained from the participating States. Those databases were manipulated into a working data file to conduct descriptive and regression analyses.

1. Data Collection and Manipulation

All the data referred to in these studies were contained in the Florida and Tennessee traffic citation databases with the exception of the information on median income per capita. The U.S. Census data were used to retrieve the median income per capita in each driver's residential ZIP Code. The summary tape file 3B (STF 3B) from the Census Bureau compiles racial, ethnic, and socioeconomic information by ZIP Code. From this file, the median income in each driver's ZIP Code was extracted and this variable was used as a proxy to adjust the estimates by socioeconomic status (SES). The Florida and Tennessee databases are described below.

1.1. Florida

Sampling, Group Definitions

Although Florida is not in full compliance with the Real ID Act, Florida's DMV has been collecting information on the legal status of the applicants since October 2002. More specifically, the Florida DMV maintains a record of the birth date/legal presence code that identifies the type of document the applicant presented. The Florida DMV also has an indicator on each driver's record of whether the applicant has provided a legal presence document showing he or she is in the country for a limited period of time. The Florida Uniform Traffic Citation Statistics also maintains records of each driver's seat belt violations (Florida Statute 316.614).

Florida has not produced any official statistics on the number of drivers of different legal residency status to date. However, in response to our inquiries, State DMV officials responded they had an estimated 2 million foreign-born drivers in their database.

Based on that documentation, Florida officials were able to separate the drivers' residency status into three separate categories: U.S. citizens, resident aliens, and non-resident aliens. U.S. citizens include drivers who either were born in the United States, or were naturalized citizens. Resident aliens differentiate from non-resident aliens because the resident aliens had a green card. Non-resident aliens do not have a permanent residence in the State.

Thus, the Florida DMV data does not allow for a clear identification of *recent* immigrants. The database lists the documents that immigrants presented when applying for their *most recent licensing*. Some drivers may have immigrated long ago and obtained their original license at that time (or recently renewed it), or may have been in the county for a long time but only recently applied for a driver's license. Situations like these cannot be well-identified in the current database. The three categories of drivers' residency status provided by the Florida database are nevertheless informative to this project, for immigrants to the United States generally must go

through a process that involves (1) initially having a nonpermanent visa, then (2) after some years acceding to a permanent residency visa ("the green card"), to (3) later being able to apply for citizenship.

The DMV data do not identify the undocumented immigrant population, for they remain outside the licensing system. Also as expected, the DMV data do not identify drivers who came into the country legally, failed either the written knowledge or the driving test, but nevertheless drive unlicensed.

File Description, Re-structuring

Florida officials provided the data sets needed for this study at no cost, albeit the database consists of only a sample of the total drivers' records in their database. To be informative on the prevalence of traffic violations, drivers' records should cover a span of time large enough to allow for such traffic violations to occur. For this study, drivers who entered the Florida DMV database at least 5 years ago were selected for analyses; that is, drivers who entered the Florida DMV system during the years 2001, 2002, and 2003. The residency status of Florida drivers was recorded for the first time in 1998 and was modified in 1999. Since 2000, the input and retention of the resident-based information in the database has not been changed. The period from 2001 to 2003 provided the most post-event driving history for which Florida DMV has complete years of mature data (i.e., all traffic violations occurring from each driver's entry into the database until August 2009). Thus, Florida provided records for drivers entering the system between 2001 and 2003 and covered from 6 years (from 2003 to 2009) to 8 years (2001 to 2009). A standard "exposure" period of 6 years was selected, since all subjects from these years would have had a minimum of 6 years driving post-issuance of their license. Florida enacted a "primary" seat belt law (allowing police officers to stop drivers solely for seat belt violations) on June 30, 2009. Thus, the seat belt data collected for this project correspond to the period during which Florida enforced its "secondary" seat belt law (allowing police officers who have stopped drivers for some other violations to then issue a seat belt violation to drivers who were unbuckled).

Extracting 6 to 8 years of data required considerable time and effort from Florida's data managers. To make such a task feasible, Florida data managers provided a sample of up to 15,000 drivers for the smallest group (non-resident aliens) and two to three times that size for the other groups (resident aliens and citizens). Records of drivers who entered the system during April, May, June, July, and August in any of the years 2001, 2002, or 2003, were requested. For each of these drivers, Florida officials searched the database for any traffic violation that occurred after each driver entered the system up to August 2009; these traffic violations were included in the working database that was analyzed. To ensure that each of the three types of resident drivers being studied (nonpermanent residents, permanent residents, and citizens) was represented in the selected database, Florida data managers provided a sample of more than 10,000 drivers from each group. Both nonpermanent residents and permanent residents were oversampled, assuming that the number of drivers in either of these two groups would be much smaller than the number of drivers who are citizens.

The Florida data managers provided a list of the driver's licenses of all drivers in each of the three groups who entered the system from May to August during 2001, 2002, and 2003. These months were selected because, according to the Florida data managers, they are among the most active months for the DMV. From this list, pools of drivers were randomly selected for

analyses. The selected driver's license numbers were sent to the Florida data managers, who then searched for and extracted the complete DMV information for these drivers, including the complete list of traffic citations issued from 2001 to 2009. The Florida DMV officials then sent the selected sample of drivers for analysis. The total number of Florida drivers sampled was 286,746. The following variables in the Florida database were included in the analyses:

- **Dummy driver's license number** to protect the privacy of the drivers, the driver's license numbers in the database were replaced with non-identifying, randomly generated ID numbers as soon as the data was received.
- **Time (date)** when the driver entered in the system (was issued a license).
- **Residency status** A variable indicating to which of the three residency status groups the driver belongs.
- **Citations received by the driver** From this variable, the number and type of citations received by each driver in the file was extracted, as well as the date each citation occurred.
- **Driver's gender.**
- **Driver's age.**
- **Driver's race and ethnicity.**
- **ZIP Code of Driver's Residency:** This variable was used to extract information about the SES of each selected driver's neighborhood (e.g., median income).

1.2. Tennessee

Sampling, Group Definitions

Tennessee provided records for the 5,680,728 people who were either (a) issued their first or original Tennessee licenses during or after January 2000; or (b) issued license renewal of existing or previous Tennessee licenses, during or after January 2000; or (c) unlicensed in Tennessee, but committed some sort of offense during or after January 2000 and were deemed by police to be residents of Tennessee at the time. While this set of selection criteria pertained to the current decade, records pertaining to events prior to 2000 for these drivers were also received, going back to the point that such events were either purged from current DMV data files, or were not recorded. Depending on the event type, this could have included events going back 20-30 or more years ago.

File Description, Re-structuring

The Tennessee data managers provided the complete set of drivers in their database (during the last 10 years), excluding drivers who moved out of State or died. As discussed, to be informative on the prevalence of traffic violations, drivers' records should cover a span of time large enough to allow for such traffic violations to occur. Tennessee enacted a "primary" seat belt law on July 1, 2004. Unlike Florida, where almost all seat belt citations were recorded under a "secondary" law, the Tennessee database records seat belt violations that were committed under both types of laws.

The following variables in the Tennessee database were included in the analyses:

- **Dummy driver's license number** to protect the privacy of the drivers, Tennessee replaced the driver's license numbers from the database with non-identifying, randomly generated ID numbers.

- **Time (date)** when the driver entered in the system (applied for a license).
- **Residency status** A variable indicating to which residency status group the driver belongs. The following residency categories were available in the file:
 1. ‘Grandfathered’ Immigration/residency status, indicating that original issuance of a Tennessee driving privilege had been prior to January 1, 2001. These were excluded from the analyses reported herein, as their initial immigration status is unknown;
 2. Unknown and/or undocumented residency/immigration status. According to the Tennessee officials, those drivers classified as “unknown residency status” were drivers whose residency status is expected to be progressively clarified in successive licensing renewal cycles (i.e., resident documents for these drivers will be required during the next renewal cycles). These drivers were also excluded from the analyses reported herein, as their initial immigration status is unknown;
 3. Temporary resident aliens;
 4. Permanent resident aliens;
 5. Naturalized U.S. citizens (who were previously aliens); and
 6. U.S. citizens.
- **Citations received by the driver** From this variable, the number and type of citations received by each driver in the file was extracted, as well as the date the citation took place.
- **Driver’s gender.**
- **Driver’s date of birth.**
- **Driver’s race and ethnicity.**
- **Driver’s ZIP Code identification (ZIP Code of driver’s residency)** this variable was used to extract information about the SES of each driver’s neighborhood (median income).

After all the data cleaning and manipulation, 1,859,591 drivers remained in the file for analysis.

2. Analysis

2.1. Overall Strategy

The primary objective of this effort was to use the identified State-based traffic data to estimate the prevalence of seat belt nonuse citations among drivers of different residency status. A secondary objective was to consider the participation of drivers of different residency status on other traffic violations, such as DWI, speeding, and failure-to-obey a traffic signal (e.g., red-light running). The prevalence of the traffic violations has been estimated by gender, age group, and racial and ethnic group.

In addition to providing estimates of prevalence, the role of demographics and SES (median income) in shaping the occurrence of the different traffic violations across the three groups of residents was examined.

To fulfill the objectives of this study the following tasks were performed:

- A descriptive analysis was applied to estimate prevalence, and chi-square tests were performed to evaluate differences across the groups of interest.

- Logistic regressions were applied to estimate the odds of receiving a seat belt nonuse citation (and/or other any of the other traffic violations under study) for drivers of different residency status.
- Survival analysis was applied to evaluate the rapidity of incurring the violation (the time elapsed for a driver to receive his/her citation (for each violation type) after obtaining a driver's license).

2.2. Outcome Measures

For each State, a total of four outcome measures were assessed:

1. Seat belt violation (the primary outcome of interest);
2. DWI or other alcohol violation (including implied consent/administrative sanctions, and refusal to take a breath test);
3. Speeding violations; and
4. Failure-to-obey traffic signals/signage moving violations.

These measures were based on how the different traffic violations are defined in the Florida and Tennessee databases. Readers interested in the criteria used to construct these variables can refer to Tables B-1 and B-2 in Appendix B.

Each of these four outcome measures was computed with three components: first, as a count of such events per person (for tabulating descriptive rates); second, as a reduced binary version of the same counts measure, representing whether the person had ever incurred that violation type within a given exposure period (for the logistic regressions); and thirdly, the length of time until the first such violation, for those who had incurred that violation type (for the survival analyses, in conjunction with the same binary outcome measure also used in the logistic regressions). The analyses and the outcome measures that were used for each are described in more detail below.

2.3. Predictor Variables

Residency Status - In the Florida data file, there were three categories: Full U.S. citizens; non-resident aliens; and resident aliens. The categories for Tennessee were much more differentiated, but fell into four basic categories: Full U.S. citizens (excluding recently naturalized citizens); recently naturalized citizens; permanent lawful resident aliens (including various categories of refugees and permanent asylum recipients); and temporary immigration status (including conditional 2-year resident aliens, valid foreign passport, and visas with various waivers from participating foreign countries).

Additionally, three other groups that were potentially heterogeneous and/or unreliable, in terms of grouping with or contrasting against the four research categories noted above were excluded from the analyses. There were about 30,000 "undocumented" drivers (no residency proof) and 1.1 million drivers of "unknown residency status", whose latest renewal had not yet come back since the law change requiring residency status documentation, and for whom residency documents would be required at their next renewal. Finally, there were roughly 3 million drivers whose status was "grandfathered" into a "full U.S. citizenship" group (but excluded from the analyses for caution) because the DMV examiner verified they had been issued an original driving privilege in Tennessee prior to January 2001. While many, or perhaps

even most, of these might be similar or comparable to the rest of that group that were used (herein labeled as “full U.S. citizenship”), these grandfathered drivers were filtered out so that (a) the homogeneity and reliability of the group definition was more consistent, and (b) they would be more closely comparable to the newly issued “full U.S. citizenship” category in the Florida data set.

Gender - Males versus females

Age - For analysis, grouped into four ranges: younger than 21; 21 to 34; 35 to 64; and 65 and older (designated as 65+).

Race and Ethnicity - The following groups were considered: Asian/PIs (excluding native Hawaiians), Hispanics, Blacks, Whites, and Others. All groups other than Hispanics were considered non-Hispanic in this study.

Time Effects - Because various systemic changes over time within a State’s enforcement, legislative, and administrative/recording systems can each impact the likelihood of a violation showing up on a person’s record, all other things being equal, it was important to control for the temporal effects of when each person entered the sample. Fluctuations in enforcement, or in coding/recording practice, can make rates higher or lower for one year than for another year for the entire State - and may not necessarily reflect differences in driving or seat belt behavior per se. For Florida, a 3-category “Year” variable was incorporated to account for any such immeasurable systemic influences. In Tennessee, wherein exposure years varied more, a 5-category “Year” effect was used.

Years Since Earliest Driving Evidence - For Tennessee (in which some significant portion of our sample came from previously licensed renewals), the time elapsed since their (earlier) original license issue might represent variation in prior driving experience - or at least be a potential surrogate thereof. For these drivers, a measure of years since earliest driving record was computed, which was primarily derived from the “original license date.” This is probably the original Tennessee license date for most Tennessee subjects but clearly wasn’t for others who had various licensing actions and/or violations before their purported “original” license date. Thus, once the analysis has accounted for age, it is reasonable to consider “years since earliest driving event” as a surrogate for driving experience.

2.4. Descriptive Diagnostics

For the descriptive analyses - annual rates per 1,000 drivers - counts of each violation type per driver per each full year exposure for that driver were tabulated. Total violations were then simply divided by the total number of exposure years for drivers in each residency group and demographic stratum. In Florida, where sampled drivers who applied for an initial license (not a renewal) during a limited period (2001 to 2003) were used, an exact 6-year window of post-licensing exposure for each driver was selected, so all violation rates were already standardized to an equivalent period of exposure. In Tennessee, some drivers had more years of exposure than others due to the continual stream of new drivers becoming (re-)licensed, so the rates were adjusted per full calendar years of exposure for any Tennessee driver that was known to be driving and/or licensed as of January 1 of that calendar year, for the years 2005 to 2009. (Around the year 2000, Tennessee decided to begin adding driver’s *residency status* information to the driver license. This information was to be added to each person’s record upon their

applying for license renewal. Because renewal cycles are estimated to last about four to 5 years, it took that long from when the decision to add that information was made until all licenses had been renewed. Thus, while in 2001 *residency status* information was available for only a few drivers in the file, by January of 2005, virtually all drivers had been categorized according to the Tennessee residency classification scheme.) To perform comparisons (*e.g.*, across gender or age groups) we applied chi square tests.

2.5. Logistic Regressions

For the logistic regression analyses, each outcome measure was a binary variable, representing whether that individual driver incurred that violation type at all within the exposure period.

More specifically for Tennessee, with the drivers having varying exposures, this was accomplished on a “person-year” basis in which each [full] calendar year’s exposure was used as a unit or case; drivers with more or fewer years of post-licensing exposure had more or fewer opportunities to be measured as a violator or non-violator within that calendar year. The dependent variables (the five violation types) for the logistic regression analyses represent whether that person incurred that type of violation in that calendar year (1=yes, violated; 0=no, did not have that type of violation that year). Person-years were only included if that person was certain to have a full year exposure for that calendar year. That is, as of January 1 that year, that person was either already beyond their “original” license issue date, or had already been cited for some violation (or crash, or procedural transaction) in Tennessee in recent prior years. If neither of those conditions had happened as of Jan 1, then the person would have no data included for that person-year. Furthermore, if the earliest instance of any one of those events (license issue, any violation or crash or procedural transaction) happens for the first time during a calendar year, then that person’s exposure became activated for the following calendar year. Also, if no events (*i.e.*, no violation, crash, or licensing action) happened within the 5 years from 2000 to 2004, and original license date was in the 2000+ decade, then earlier (pre-2000) events were not considered adequate to trigger that person as an active driver.

For Florida, however, with all drivers having an equivalent exposure period, that person-year adjustment was not necessary, and each person was measured as a violator or non-violator (depending on which of the five outcome types is being analyzed) during the uniform 6-year post-licensing exposure period.

For all logistic regressions, predictor variables were all entered as main effects first, then in subsequent blocks, limited (2-way) interactions were evaluated using a step-wise variable selection method, with only those satisfying the $p < .05$ criterion being allowed to enter in the model. In analyses contrasting among all racial & ethnic groups, Race and Ethnicity was also included as a factor; however, given that most of the variation in Immigration/residency Status was limited within the Hispanic & Asian groups (virtually all Whites and Blacks were U.S. citizens), these ethnic groups were also analyzed separately.

2.6. Survival Analyses

Survival analyses (Cox model) were performed to estimate for drivers of different resident status, the expected time that elapsed since a driver received his/her license until the first seat belt nonuse citation (as well as DWI, and any other traffic violation). For the *survival* analyses, the outcome variable was essentially the same as described above for the logistic regressions,

except that in addition to the binary outcome (traffic violation versus no violation) the time until violation was incorporated, giving further refinement to the rapidity of incurring a violation (as well as adjusting for the varying exposure lengths for the Tennessee sample). Likewise, the same modeling procedures were also used in terms of order of predictor variables (forced entry of main effects, then stepwise selection of interaction terms at $p < .05$) and the separate analyses of Asians/PIs and Hispanics only.

While useful and relevant, the estimates of time until first violation provided in this report should be interpreted with caution, as the "first licensure" group of drivers could not be separated from "renewals." Nevertheless, although referring to a mix of "first licensure" and "renewal" drivers, these estimates do provide information about the relative length of time until a traffic violation for members of the different residence groups (i.e., drivers of which group tend to be cited earlier than drivers of other groups).

Results

This section is organized as follows. Results obtained for Florida are introduced first, followed by those for Tennessee. These results are divided into “descriptive,” “logistic,” and “survival” categories. The descriptive results show basic distribution frequencies for the variables of interest. They are organized as those describing the main demographic variables in the database; and those linking these variables to the traffic violations. The logistic and survival sections show the results of the logistic regression, and survival analysis, respectively.

1. Florida

1.1. Descriptive Analyses

Demographic Variables in the Traffic Citation Database

Table 1 shows the distribution of drivers in the Florida database by residency status. Almost half of the sampled drivers were citizens. Recall that non-resident and resident aliens were oversampled.

Table 1. Residency Status Among Drivers Cited in Florida

	N	Percent
U.S. Citizen	143,030	49.9%
Non-Resident Alien	38,794	13.5%
Resident Alien	104,922	36.6%
Total	286,746	100.0%

Table 2 shows the distribution of drivers in the Florida database by racial and ethnic group. Almost half of the sampled drivers were citizens. Most citizens were White. However, relatively few White drivers were non-citizens. Conversely, relatively more Asian/Pis and Hispanics were non-citizens than citizens. Blacks were more evenly distributed among the three residential groups. The number of American Indians in the sample was too small and results obtained for this group should be taken with extreme caution.

Table 2. Race and Ethnicity Distribution by Residency Status Among Drivers Cited in Florida

	U.S. Citizen	Resident Alien	Nonresident Alien	Total
All	143,030	104,922	38,794	286,746
Asian/PI	1.4%	6.1%	8.0%	3.4%
Black	12.6%	15.9%	10.2%	14.0%
Hispanic	12.7%	55.8%	54.8%	31.0%
American Indian	0.2%	0.1%	0.2%	0.1%
White	71.2%	13.7%	17.1%	46.9%
Other	1.9%	8.3%	9.8%	4.6%
Don't Know/Didn't Answer	0.0%	0.0%	0.0%	0.0%

Table 3 shows the distribution of the drivers in the Florida database by gender. Although there is no significant gender difference among citizens at the 1% alpha level ($p = .02$), there are significantly more males than females among the noncitizen drivers ($p < .001$). The proportion of males is particularly large among non-resident aliens.

Table 3. Gender Distribution by Residency Status Among Drivers Cited in Florida

		U.S. Citizen	Resident Alien	Nonresident Alien
	N	143,030	104,922	38,794
Females	137,309	49.7%	49.3%	37.5%
Males	149,437	50.3%	50.7%	62.5%
All	286,746	100.0%	100.0%	100.0%

Table 4 shows the distribution of the drivers in the Florida database by age group. U.S. citizens have a more balanced age distribution than the two noncitizen groups. Noncitizen drivers tend to be younger than the U.S. citizen drivers.

Table 4. Age Distribution by Residency Status Among Drivers Cited in Florida

Age	U.S. Citizen	Resident Alien	Nonresident Alien
Total	143,030	38,794	104,922
<16	18.7%	15.5%	18.5%
16-20	8.2%	17.1%	10.3%
21-24	7.7%	20.3%	14.6%
25-29	7.2%	14.8%	14.7%
30-34	6.9%	10.8%	12.5%
35-39	6.4%	7.5%	8.8%
40-44	5.7%	5.1%	6.3%
45-49	5.3%	3.1%	4.3%
50-54	5.2%	2.0%	2.7%
55-59	4.0%	1.2%	1.7%
60-64	2.7%	0.6%	0.8%
65-69	1.6%	0.2%	0.3%
70-74	0.9%	0.1%	0.1%
75-79	0.5%	0.0%	0.0%
80+	19.1%	1.8%	4.3%
Total	100.0%	100.0%	100.0%

Traffic Violations

Table 5 shows the average annual violation rates per 1,000 drivers. Speeding is the most common traffic citation among the four traffic violations under consideration. DWI is the less-often cited traffic violation in the database. The prevalence of seat belt nonuse and failure-to-obey citations is intermediate between those types of violations.

Table 5. Average Annual Violation Rates per 1,000 Drivers in Florida

Seat Belt	DWI	Speeding	Failure-to-Obey	Any Moving Violation
149.32	27.65	562.68	219.85	1071.61

Table 6 shows the gender distribution across the different types of violations under consideration. Males were significantly more likely to be cited than females in each of the violations under consideration.

Table 6. Average Annual Violation Rates by Gender per 1,000 Drivers in Florida

Gender	Seat Belt	DWI	Speeding	Failure-to-Obey	Any Moving Violation
Female	86.28	9.45	392.75	153.97	748.30
Male	207.24	44.37	718.82	280.38	1368.67

Table 7 shows the age-based distribution of annual violation rates for the different types of violations under consideration. Being young (under 21) is a predictor for these violations, with rates of all types consistently decreasing with age. However, there is a slight reversal of this trend (of violations decreasing with age) with failure-to-obey violations for those 75 and older

Table 7. Average Annual Violation Rates by Age Group per 1,000 Drivers in Florida

Age Group	Seat Belt	DWI	Speeding	Failure-to-Obey	Any Moving Violation
16-20	297.00	40.76	855.03	314.17	1631.62
21-24	162.41	37.89	629.05	238.47	1183.79
25-29	121.13	27.12	531.08	209.56	1012.65
30-34	104.05	24.88	466.40	206.33	924.23
35-39	91.73	26.25	418.41	197.22	838.10
40-44	76.25	26.22	359.74	171.48	734.65
45-49	63.71	21.08	305.23	143.90	621.75
50-54	48.75	13.54	254.31	117.75	512.68
55-59	37.52	7.83	196.89	94.16	399.51
60-64	28.27	5.98	165.75	71.23	330.01
65-69	21.20	2.80	127.63	60.61	273.85
70-74	24.63	2.27	103.45	36.38	225.09
75-79	16.03	0.73	67.78	41.55	196.79
80+	6.42	0.00	41.08	43.65	169.45

Table 8 shows the race-based and ethnic-based distribution of annual violation rates for the different types of violations under consideration. The race and ethnic distribution of violation rates varied across the different types of violations under consideration. Compared to other groups, Asian/Pis were significantly less likely to be cited than other racial and ethnic groups in seat belt and DWI violations ($p < .01$). Hispanic and Black drivers had the highest seat belt citation rates. Asian/PI, White, and American Indian drivers were significantly less involved in failure-to-obey citations than drivers of any other group ($p < .01$).

Table 8. Average Annual Violation Rates by Race and Ethnicity per 1,000 Drivers in Florida

Race and Ethnicity	Seat Belt	DWI	Speeding	Failure-to-Obey	Any Moving Violation
Asian/Pis	55.45	8.53	472.10	186.04	866.28
Black	231.17	27.01	658.66	259.26	1306.55
Hispanic	151.53	28.55	539.91	252.70	1132.35
American Indian	111.11	59.10	498.82	170.21	938.53
White	135.36	30.41	558.80	185.25	973.32
Other	111.64	14.66	566.93	214.33	1036.09
Unknown	461.54	0.00	769.23	384.62	1230.77

Table 9 shows the average annual violation rates per 1,000 drivers for the different residency status. U.S. citizens were significantly more likely to be cited for seat belt violations than the two noncitizen groups, with non-resident aliens being cited less often for these violations than citizens or resident aliens. There was no difference in DWI violations between U.S. citizens and non-resident aliens; both groups were cited for DWI at a significantly higher rate than resident aliens. As with seat belt violations, U.S. citizens were cited for speeding violations at a significantly higher rate than the other two groups, with nonresident aliens being cited less often than citizens or resident aliens ($p < .01$). No statistical difference in speeding between U.S. citizens and resident aliens was observed (albeit both registered a higher incidence of speeding than the nonresident aliens, $p < .01$). Resident aliens were more likely to be cited in failure-to-obey violations ($p < .01$).

Table 9. Average Annual Violation Rates by Residency Status per 1,000 Drivers in Florida

Residency Status	Seat Belt	DWI	Speeding	Failure-to-Obey	Any Moving Violation
U.S. Citizen	166.05	33.31	605.49	203.91	1069.58
Resident Alien	143.75	18.32	548.17	245.79	1127.23
Nonresident Alien	102.70	31.99	444.12	208.43	928.65

1.2. Logistic Regressions

Logistic regressions were run to investigate the joint contribution of the variables introduced in the previous section to the likelihood of being cited for the different traffic violations under consideration. Because of the relatively large involvement of Hispanics and Asian/Pis in current immigration patterns, separate models were also run for these two groups.

1.2.1. Seat Belt Violations

Table 10 shows the outcome of the logistic regression models for seat belt violations in Florida. Being male increases the likelihood of being cited for a seat belt violation in a given year. This gender effect occurs when all drivers are considered, as well as when only Asian/Pis or Hispanic drivers are considered. For all drivers in the file, Black and Hispanic drivers were more likely to receive seat belt citations, followed by Whites and members of the miscellaneous “Other” group (about half of them American Indians). Asians were less likely to receive a seat belt violation. These findings mimic those coming from the bivariate analysis (see Table 8).

Table 10 also shows that the odds of being cited for seat belt violations decreases with age. Regarding the role of residency status among all drivers in the file, noncitizen drivers were less likely to be cited for a seat belt violation than the citizen drivers. For either Asian/Pis or Hispanic drivers, U.S. citizens were more likely to be cited for seat belt violations than nonresident alien drivers, but as likely as resident-alien. As a contextual variable, a variable denoting the median income was included in drivers’ ZIP Codes, as recorded by the U.S. Census. To make it operational, the variable “median income” was divided into four quartiles according to its distribution in the State. Thus, OR for “median income” in Table 10 should be interpreted as those attributed to an increase in ZIP-Code income from one quartile to the next one. The inclusion of the contextual variable “median income in drivers’ ZIP Code” was statistically significant, with the odds of being cited for seat belt violations decreasing with increasing income.

Table 10. Florida. Logistic Regression Outcome for Seat Belt Violations: All, Asian/PI, and Hispanic Drivers

		All Drivers			Asian/Pis			Hispanics		
		OR	99.99% Wald Confidence Limits		OR	99.99% Wald Confidence Limits		OR	99.99% Wald Confidence Limits	
Residency	Resident Alien vs. U.S. Citizen	0.903	0.846	0.964	1.135	0.702	1.833	0.979	0.881	1.087
Status	Nonresident Alien vs. U.S. Citizen	0.637	0.580	0.700	0.452	0.235	0.866	0.700	0.614	0.799
Gender	M vs. F	2.491	2.361	2.627	3.513	2.307	5.349	2.990	2.731	3.274
Age	<21 vs. 35-64	3.988	3.726	4.268	3.203	1.905	5.384	3.440	3.080	3.842
	21-34 vs. 35-64	1.938	1.802	2.085	1.634	0.986	2.707	1.892	1.694	2.112
	65+ vs. 35-64	0.291	0.212	0.400	0.682	0.040	11.513	0.190	0.077	0.469
Race/Ethnicity	Asian/PI vs. White	0.481	0.397	0.583						
	Black vs. White	1.672	1.556	1.797						
	Hispanic vs. White	1.284	1.198	1.375						
	Other vs. White	0.999	0.509	1.960						
Contextual	Median Income	0.958	0.936	0.980	1.050	0.740	1.489	0.977	0.949	1.007

1.2.2. DWI

Table 11 shows the results for DWI violations. Males had more DWI violations than females. The DWI rates were higher for males than they were for seat belt violations. The odds ratio for male involvement was higher for Asian/PI and Hispanic drivers, than for the case when all drivers are considered. Regarding age, when all drivers are considered, young drivers (< 35 years old) are more likely to be arrested for a DWI violation than drivers of any other age group. For Asian/PI drivers though, age was not a significant factor in explaining DWI violations. For Hispanic drivers, those more likely to receive a DWI violation were younger than 35. Regarding residency status, when all drivers were considered, a U.S. citizen was more likely to be cited for a DWI violation than a non-U.S. citizen. Residency status was not a factor in DWI violations among Asian/PI drivers. A nonresident Hispanic alien was more likely to be arrested for a DWI violation than a resident Hispanic alien.

Table 11. Florida. Logistic Regression Outcome DWI Violations: All, Asian/PI, and Hispanic Drivers

		All Drivers			Asian/Pis			Hispanics		
		OR	99.99% Wald Confidence Limits		OR	99.99% Wald Confidence Limits		OR	99.99% Wald Confidence Limits	
Residency	Resident Alien vs. U.S. Citizen	0.534	0.463	0.616	1.350	0.389	4.687	0.757	0.602	0.952
Status	Nonresident Alien vs. U.S. Citizen	0.821	0.697	0.967	1.149	0.279	4.735	1.313	1.030	1.672
Gender	M vs. F	4.641	4.069	5.293	12.154	2.604	56.728	10.144	7.532	13.661
Age	<21 vs. 35-64	1.747	1.535	1.989	2.173	0.675	6.994	1.589	1.262	1.999
	21-34 vs. 35-64	1.598	1.400	1.825	1.260	0.416	3.816	1.745	1.417	2.149
	65+ vs. 35-64	0.087	0.034	0.225	1.655	0.029	93.074	0.199	0.035	1.152
Race/Ethnicity	Asian/PI vs. White	0.369	0.239	0.569						
	Black vs. White	0.857	0.728	1.009						
	Hispanic vs. White	1.141	0.997	1.306						
	Other vs. White	2.021	0.814	5.016						
Contextual	Median Income	0.955	0.919	0.993	0.999	0.614	1.625	0.977	0.924	1.034

1.2.3. Speeding

Table 12 shows the results for speeding violations. Males were cited for speeding violations at a significantly higher rate than females. Blacks were cited for speeding violations at a significantly higher rate than other groups. No statistically significant difference in the odds of being issued a speeding violation was found among the three other racial and ethnic groups. Similar to the other traffic violations under study, the odds of being cited for a speeding violation tend to decrease with age. The exception to this trend occurs among Asian/Pis and Hispanics, where no difference in odds ratios was detected after the age of 64. Regarding the residency status of all drivers in the file, U.S. citizens were more likely to be cited for speeding than noncitizens. The same finding was observed when only Hispanic drivers were considered. When only Asian drivers were considered, resident alien drivers were as often cited for speeding violations versus U.S. citizens, and nonresident aliens less likely to be cited for speeding.

Table 12. Florida. Logistic Regression Outcome for Speeding Violations: All, Asian/PI, and Hispanic Drivers

		All Drivers			Asian/Pis			Hispanics		
		OR	99.99% Wald Confidence Limits		OR	99.99% Wald Confidence Limits		OR	99.99% Wald Confidence Limits	
Residency	Resident Alien vs. U.S. Citizen	0.946	0.903	0.989	0.891	0.704	1.127	0.885	0.821	0.954
Status	Nonresident Alien vs. U.S. Citizen	0.716	0.674	0.761	0.674	0.512	0.888	0.698	0.637	0.764
Gender	M vs. F	2.051	1.981	2.124	2.806	2.355	3.342	2.549	2.405	2.702
Age	<21 vs. 35-64	3.546	3.395	3.704	2.676	2.089	3.428	3.077	2.856	3.316
	21-34 vs. 35-64	1.866	1.785	1.949	1.648	1.335	2.036	1.891	1.764	2.026
	65+ vs. 35-64	0.315	0.271	0.366	0.103	0.010	1.025	0.226	0.146	0.35
Race/Ethnicity	Asian/PI vs. White	0.948	0.864	1.040						
	Black vs. White	1.081	1.025	1.141						
	Hispanic vs. White	1.020	0.973	1.069						
	Other vs. White	0.848	0.544	1.322						
Contextual	Median Income	1.043	1.018	1.069	1.050	0.926	1.191	1.034	1.005	1.063

1.2.4. Failure-to-Obey

Table 13 shows the results for failure-to-obey violations. Unlike speeding and DWI violations (where White drivers were among those more likely to be cited for those violations), White drivers are less likely to be cited for a failure-to-obey violation than either their Black or Hispanic counterparts. Asian/PI or “Other” (about half of them American Indians) drivers were as likely of being cited for a failure-to-obey violation as White drivers. Similar to the other traffic violations under consideration, males received failure-to-obey violations at a significantly higher rate than females. Regarding age, when all drivers were considered, underage drivers were cited in failure-to-obey violations at a significantly higher rate, with these odds decreasing with age. When only Asian/PI drivers are considered, the odds for drivers 35 to 64 were not statistically different than those 65 and older. Regarding residency status, resident aliens were more likely to be cited for a failure-to-obey violation than drivers who were citizens or nonresident aliens. Among Hispanics, U.S. citizens and resident aliens are more likely to be cited for a failure-to-obey violation than a nonresident alien. Residency status does not play a role in the occurrence of failure-to-obey violations among Asian/PI drivers.

Table 13. Florida. Logistic Regression Outcome for Failure-to-Obey Violations: All, Asian/PI, and Hispanic Drivers

		All Drivers			Asian/Pis			Hispanics		
		OR	99.99% Wald Confidence Limits		OR	99.99% Wald Confidence Limits		OR	99.99% Wald Confidence Limits	
Residency	Resident Alien vs. U.S. Citizen	1.165	1.103	1.230	1.057	0.788	1.417	1.060	0.972	1.157
Status	Nonresident Alien vs. U.S. Citizen	0.933	0.868	1.004	0.837	0.593	1.181	0.866	0.779	0.961
Gender	M vs. F	1.874	1.797	1.955	2.256	1.813	2.809	2.176	2.033	2.328
Age	<20 vs. 35-64	2.323	2.204	2.448	1.680	1.247	2.265	1.855	1.704	2.018
	21-34 vs. 35-64	1.458	1.381	1.539	1.204	0.929	1.560	1.409	1.301	1.525
	65+ vs. 35-64	0.362	0.296	0.443	0.216	0.022	2.160	0.364	0.234	0.567
Race/Ethnicity	Asian/PI vs. White	0.988	0.881	1.109						
	Black vs. White	1.276	1.197	1.360						
	Hispanic vs. White	1.286	1.215	1.361						
	Other vs. White	0.981	0.568	1.694						
Contextual	Median Income	0.994	0.972	1.017	0.976	0.880	1.083	1.000	0.973	1.028

1.3. Survival Analyses

1.3.1. Seat Belt Violations

Table 14 shows the outcome of the survival analysis for seat belt violations in Florida. Male drivers and drivers younger than 35 years old tend to have a shorter time from licensure to a seat belt citation than other drivers in the file. This result was consistently found when all drivers in the file were considered, as well as when only Asian/Pis or Hispanics were analyzed. Black and Hispanic drivers had a shorter time from licensure to a seat belt offense than White drivers, and these showed a shorter time than the Asian/PI drivers. Regarding residency status, when all drivers were considered, U.S. citizens had a shorter time from licensure to a seat belt citation than noncitizens. However, when only Asian/PI or Hispanic drivers were considered, there was no statistical difference in time until first seat belt violation between citizen drivers and resident aliens. Figure A-1 in the Appendix shows that U.S. citizens had a shorter time until seat belt violation.

Table 14. Florida. Survival Analysis Outcome for Seat Belt Violations

		All Drivers			Asian/Pis			Hispanics		
		Hazard Ratio	L99%	U99%	Hazard Ratio	L99%	U99%	Hazard Ratio	L99%	U99%
Residency	Resident Alien vs. U.S. Citizen	0.922	.887	.958	1.074	.804	1.435	1.002	.942	1.066
Status	Nonresident Alien vs. U.S. Citizen	0.844	.798	.893	0.596	.399	.891	0.914	.845	.988
Gender	M vs. F	2.323	2.250	2.399	3.456	2.656	4.495	2.79	2.639	2.949
Age	<21 vs. 35-64	3.613	3.466	3.765	3.001	2.173	4.144	3.144	2.940	3.362
	21-34 vs. 35-64	1.902	1.818	1.989	1.672	1.221	2.291	1.834	1.713	1.964
	65+ vs. 35-64	0.315	.258	.383	0.604	.096	3.804	0.207	.116	.369
Race/Ethnicity	Asian/PI vs. White	0.515	.458	.580						
	Black vs. White	1.588	1.523	1.655						
	Hispanic vs. White	1.256	1.206	1.308						
	Other vs. White	1.015	.675	1.527						

Based on the survival analyses, we estimated the time in weeks since licensure until 1%, and 5% of the drivers in each of the residency groups under consideration were cited for a seat belt violation. U.S. citizens and resident aliens showed an approximately similar time to first seat belt violation, with 1% of the drivers in these groups being cited within 7 to 8 months of licensure. However, the relative time until 5% of the drivers were cited for a seat belt violation was shorter for citizens and resident aliens than for nonresident aliens.

Table 15. Florida. Survival Analysis Outcome. Time Until 1%, 5% Have Incurred a Seat Belt Violation

	1%	5%
U.S. Citizen	31 weeks	144 weeks
Resident Alien	34 weeks	145 weeks
Nonresident Alien	29 weeks	167 weeks

1.3.2. DWI Violations

Table 16 shows the outcome of the survival analysis for DWI violations. As with seat belt violations, male drivers tend to have a shorter time from licensure to a DWI violation than female drivers, and this result was consistently found when all drivers in the file were considered, and when only Asian/Pis or Hispanics were analyzed. The role of age varies among the three groups of drivers. When all drivers are considered, drivers younger than 35 years old have a shorter time from licensure to a DWI citation than older drivers in the file (35 and older); and conversely, drivers 65 and older have a longer time from licensure to a DWI citation. A similar age-based pattern was found among Hispanic drivers. However, among Asian/PI drivers, the difference in time until DWI citation was statistically significant only for underage (younger than 21) drivers, who presented a shorter time to a DWI citation than older drivers (21 and older) (*i.e.*, no statistical difference between drivers 21 to 34, those 35 to 64, and those 65 and older). Regarding race and ethnicity, Hispanic and “Other” (half of them American Indians) drivers had a shorter time from licensure to a DWI offense than White drivers. White drivers showed a shorter time to a DWI offense than their Asian/PI or Black counterparts. Regarding residency status, when all drivers were considered, nonresident aliens had the shortest time from licensure to a DWI citation, followed by U.S. citizens, and then resident aliens. A similar pattern was found for Hispanic drivers. However, when only Asian/PI drivers were considered, both noncitizen groups showed a shorter time to a DWI violation than the U.S. citizens. These results can be graphically viewed in the Appendix (Figure A-4).

Table 16. Florida. Survival Analysis Outcome for DWI Violations

		All Drivers			Asian/Pis			Hispanics		
		Hazard Ratio	L99%	U99%	Hazard Ratio	L99%	U99%	Hazard Ratio	L99%	U99%
Residency	Resident Alien vs. U.S. Citizen	0.549	.502	.601	1.462	.649	3.295	0.776	.671	.897
Status	Nonresident Alien vs. U.S. Citizen	1.054	.950	1.169	1.733	.682	4.404	1.617	1.388	1.884
Gender	M vs. F	4.54	4.176	4.937	10.848	4.165	28.268	9.865	8.150	11.948
Age	<21 vs. 35-64	1.746	1.609	1.894	2.17	1.024	4.597	1.582	1.367	1.831
	21-34 vs. 35-64	1.601	1.472	1.741	1.221	.598	2.495	1.715	1.502	1.957
	65+ vs. 35-64	0.092	.051	.167	1.469	.105	20.623	0.199	.062	.632
Race/Ethnicity	Asian/PI vs. White	0.374	.283	.496						
	Black vs. White	0.865	.780	.959						
	Hispanic vs. White	1.14	1.047	1.241						
	Other vs. White	1.973	1.107	3.517						

Table 17 shows that nonresident aliens tend to reach a 1% of involvement in DWI violations in a significantly shorter time (93 weeks) than drivers from the other two residency groups (135 and 245 weeks, respectively).

Table 17. Florida. Survival Analysis Outcome. Time Until 1%, 5% Have Incurred a Driving While Intoxicated (DWI) Violation

	1%	5%
U.S. Citizens	135 weeks	N/A
Resident Alien	245 weeks	N/A
Nonresident Alien	93 weeks	N/A

N/A = cannot be computed as no group had 5% of its population incur a DWI.

1.3.3. Speeding Violations

Table 18 shows the outcome of the survival analysis for speeding violations. Male drivers tend to have a shorter time from licensure to a speeding violation than female drivers. However, it is interesting to note that for males, the hazard ratio for speeding violations is less than half of the one estimated for DWI violations. This finding matches the results from the logistic regression analyses, which also indicate that gender is significant in all four of these violations.

Regarding race and ethnicity, Black drivers had a shorter time from licensure to a speeding violation than Whites, and Asian/PI drivers had a longer time to a speeding violation.

Regarding residency status, when all drivers were considered, U.S. citizens and nonresident aliens showed a shorter time from licensure to a speeding citation than resident aliens. A similar pattern was observed among Hispanic drivers. Among Asian/PI drivers, residency status had no significant impact on time until a speeding citation. These results can be graphically viewed in the Appendix (Figure A-7).

Table 18. Florida. Survival Analysis Outcome for Speeding Violations

		All Drivers			Asian/Pis			Hispanics		
		Hazard Ratio	L99%	U99%	Hazard Ratio	L99%	U99%	Hazard Ratio	L99%	U99%
Residency	Resident Alien vs. U.S. Citizen	.965	.943	.988	.930	.826	1.046	.917	.883	.951
Status	Nonresident Alien vs. U.S. Citizen	1.012	.980	1.044	1.053	.914	1.213	.979	.935	1.025
Gender	M vs. F	1.783	1.752	1.815	2.385	2.172	2.619	2.180	2.114	2.248
Age	<21 vs. 35-64	2.656	2.597	2.717	2.116	1.865	2.402	2.431	2.339	2.527
	21-34 vs. 35-64	1.726	1.685	1.767	1.506	1.343	1.689	1.722	1.658	1.788
	65+ vs. 35-64	.353	.322	.387	.184	.058	.584	.263	.200	.345
Race/Ethnicity	Asian/PI vs. White	.960	.915	1.008						
	Black vs. White	1.038	1.011	1.066						
	Hispanic vs. White	.990	.967	1.014						
	Other vs. White	.908	.721	1.143						

Table 19 shows the length of time to reach a 1% and 5% involvement in speeding violations by resident status.. The differences by residency status are not statistically significant.

Table 19. Florida. Survival Analysis Outcome. Time Until 1%, 5% Have incurred a Speeding Violation

	1 %	5%
U.S. Citizens	9 weeks	44 weeks
Resident Alien	10 weeks	45 weeks
Nonresident Alien	8 weeks	33 weeks

1.3.4. Failure-to-Obey Violations

Table 20 shows the outcome of the survival analysis for failure-to-obey violations. As with all the violations previously described, male drivers tend to have a shorter time from licensure to a failure-to-obey violation than female drivers. The hazard ratios for males involved in failure-to-obey violations are the lowest of the four violations (seat belt, speeding, DWI, and failure-to-obey).

Regarding race and ethnicity, Black and Hispanic drivers had a shorter time from licensure to a failure-to-obey violation than Whites.

Regarding residency status, when all drivers were considered, resident and nonresident aliens showed a shorter time from licensure to a failure-to-obey citation than U.S. citizens. A similar pattern was observed for Hispanic drivers. Among Asian/PI drivers, residency status had no significant impact on time until a failure-to-obey citation. These results can be graphically viewed in the Appendix (Figure A-10).

Table 20. Florida. Survival Analysis Outcome for Failure-to-Obey Violations

		All Drivers			Asian/Pis			Hispanics		
		Hazard Ratio	L99%	U99%	Hazard Ratio	L99%	U99%	Hazard Ratio	L99%	U99%
Residency	Alien Nonresident vs. U.S. Citizen	1.148	1.112	1.184	1.051	.887	1.246	1.052	1.001	1.105
	Alien Resident vs. U.S. Citizen	1.217	1.167	1.270	1.171	.957	1.433	1.117	1.052	1.186
Gender	M vs. F	1.77	1.727	1.814	2.147	1.884	2.446	2.028	1.948	2.109
Age	<21 vs. 35-64	2.117	2.053	2.182	1.588	1.336	1.888	1.724	1.643	1.810
	21-34 vs. 35-64	1.427	1.382	1.473	1.177	1.010	1.372	1.366	1.304	1.431
	65+ vs. 35-64	0.382	.337	.432	0.206	.046	.918	0.385	.290	.510
Race/Ethnicity	Asian/PI vs. White	1.008	.942	1.078						
	Black vs. White	1.229	1.185	1.275						
	Hispanic vs. White	1.237	1.197	1.278						
	Other vs. White	0.973	.703	1.347						

The findings from Table 21 suggest that both resident and nonresident aliens tend to reach a 1% and 5% involvement in failure-to-obey violations in a shorter time than that of citizens.

Table 21. Florida. Survival Analysis Outcome. Time Until 1%, 5% Have Incurred a Failure-to-Obey Violation

	1 %	5%
U.S. Citizens	21 weeks	97 weeks
Resident Alien	18 weeks	79 weeks
Nonresident Alien	12 weeks	64 weeks

2. Tennessee

2.1. Descriptive Analyses

Demographic Variables in the Traffic Citation Database

Table 22 shows the distribution of drivers of different residency status as they appear in the Tennessee database. There were 6,727,231 drivers in the file. Most drivers were U.S. citizens (96.1%), followed by permanent residents (2.7%), nonpermanent residents (0.5%), and naturalized citizens (0.5%). Recall that this file includes all driver records at the time of analysis in Tennessee.

Table 22. Residency Status Among Drivers Cited in Tennessee

	N	%
U.S.-Born Citizen	6,465,730	96.1%
Naturalized Citizen	32,148	0.5%
Permanent Resident	184,015	2.7%
Nonpermanent Resident	45,338	0.7%
Total	6,727,231	100.0%

Table 23 shows the race and ethnic distribution of the drivers in the Tennessee database, across the four residency categories. Blacks and Whites constitute more than 96% of all U.S. citizens, but only 44% of naturalized citizens, 41% of permanent residents, and 39% of nonpermanent residents. Asian/Pis and Hispanics, who constitute about 3% of U.S. citizens, were 46%, 52%, and 54% of naturalized citizens, permanent residents, and nonpermanent residents, respectively.

Table 23. Race and Ethnic Distribution by Residency Status Among Drivers Cited in Tennessee

	U.S. Citizen	Naturalized Citizen	Permanent Resident	Non-Permanent Resident
All	6,465,730	32,148	184,015	45,338
Asian/PI	0.78%	25.55%	22.40%	41.90%
Black	20.23%	12.57%	15.76%	7.03%
Hispanic	1.91%	20.35%	29.79%	13.69%
American Indian	0.21%	0.31%	0.20%	0.34%
White	76.14%	30.83%	24.71%	32.32%
Other	0.57%	10.19%	6.93%	4.25%
Don't Know/Didn't Answer	0.14%	0.21%	0.21%	0.46%

Table 24 shows the distribution of the drivers in the Tennessee database by gender. There is no significant gender difference across the four residency categories in the file.

Table 24. Gender Distribution by Residency Status Among Drivers Cited in Tennessee

	U.S. Citizen	Naturalized Citizen	Permanent Resident	Nonpermanent Resident
All	6,465,730	32,148	184,015	45,338
Females	43.81%	50.08%	46.24%	42.20%
Males	56.08%	49.83%	53.62%	57.40%
Don't Know/Didn't Answer	0.11%	0.09%	0.14%	0.40%

Table 25 shows the age distribution of the drivers in the Tennessee database. As with gender, there is no difference in age distribution across the four residency categories in the file.

Table 25. Age Distribution by Residency Status Among Drivers Cited in Tennessee

	U.S.-Born Citizen	Naturalized Citizen	Permanent Resident	Nonpermanent Resident
Total	6,465,725	32,148	184,015	45,338
<16	0.1%	0.0%	0.0%	0.0%
16-20	21.5%	6.7%	9.6%	10.3%
21-24	13.0%	8.5%	9.9%	11.8%
25-29	12.2%	12.0%	13.7%	21.8%
30-34	9.7%	12.7%	14.8%	18.7%
35-39	8.8%	14.5%	14.7%	12.4%
40-44	8.1%	12.4%	11.9%	8.0%
45-49	7.2%	9.7%	8.5%	4.5%
50-54	5.8%	6.7%	5.8%	2.6%
55-59	4.6%	4.9%	3.9%	1.8%
60-64	3.5%	4.1%	2.7%	1.1%
65-69	2.3%	2.9%	1.8%	1.4%
70-74	2.2%	3.2%	1.9%	3.6%
75-79	0.2%	0.3%	0.1%	0.4%
80+	0.8%	1.4%	0.6%	1.6%
	100.0%	100.0%	100.0%	100.0%

Traffic Violations

Table 26 shows the average annual violation rates per 1,000 drivers. Speeding is the most prevalent traffic citation among the four under consideration. The prevalence of seat belt citations is intermediate between that of speeding and DWI or failure-to-obey a signal.

Table 26. Average Annual Violation Rates per 1,000 Drivers in Tennessee

Seat Belt	DWI	Speeding	Fail-to-Obey Signal	Any Moving Violation
10.09	6.28	42.92	6.37	58.15

Table 27 shows the gender distribution across the different types of violations under consideration. Males were significantly more likely to be cited than females in each of the violations under consideration ($p < .01$).

Table 27. Average Annual Violation Rates by Gender per 1,000 Drivers in Tennessee

Gender	Seat Belt	DWI	Speeding	Fail-to-Obey Signal	Any Moving Violation
Female	6.26	2.52	36.54	5.10	48.09
Male	14.62	10.07	52.80	8.13	72.76

Table 28 shows the age-based distribution of annual violation rates for the different types of violations under consideration. Each distribution was very similar, with the rate of seat belt, speeding, and failure-to-obey citations decreasing with driver age. The noticeable exception was that underage drivers (age 16 to 20) were less likely to be cited for DWI violations than drivers 21 to 49.

Table 28. Average Annual Violation Rates by Age Group per 1,000 Drivers in Tennessee

Age Group	Seat Belt	DWI	Speeding	Fail-to-Obey Signal	Any Moving Violation
16-20	23.02	5.60	73.98	11.03	103.23
21-24	24.91	12.53	89.39	13.57	122.95
25-29	18.42	11.41	69.86	10.32	94.25
30-34	13.14	9.43	57.78	8.34	76.51
35-39	10.46	8.48	49.77	7.05	65.59
40-44	8.33	8.17	41.41	6.11	55.16
45-49	6.94	6.61	34.58	5.22	46.36
50-54	5.59	4.37	29.30	4.41	39.49
55-59	4.48	2.57	25.30	3.77	34.19
60-64	3.65	1.46	19.99	2.92	27.22
65-69	2.64	0.78	14.48	2.16	20.40
70-74	1.73	0.39	9.25	1.56	14.42
75-79	0.99	0.31	8.33	1.80	14.81
80+	0.84	0.11	4.36	0.92	8.45

Table 29 shows the race- and ethnic-based distribution of annual violation rates for the different types of violations under consideration. Compared to other groups, Asian/Pis were less likely to be cited for seat belt or DWI violations. However, Asian/Pis were among the groups more involved in speeding and failure-to-obey offenses. White drivers and American Indians had less failure-to-obey citations than drivers of any other group.

Table 29. Average Annual Violation Rates by Race and Ethnicity per 1,000 Drivers in Tennessee

Race and Ethnicity	Seat Belt	DWI	Speeding	Fail-to-Obey Signal	Any Moving Violation
Asian/Pis	6.51	2.09	57.04	10.47	79.45
Black	11.02	9.19	57.51	10.88	81.12
Hispanic	11.63	13.11	57.19	11.24	84.26
American Indian	11.97	12.29	46.47	6.55	63.76
White	10.46	5.69	41.70	5.57	55.51
Other	10.44	3.20	54.24	10.11	75.78

Table 30 shows the average annual violation rates per 1,000 drivers for the different residency status categories. U.S.-born citizens and naturalized citizens had more citations for seat belt nonuse violations than the two noncitizen groups. Regarding alcohol violations, there were more DWI violations in the Tennessee database for U.S.-born citizen drivers than noncitizen drivers. Unlike seat belt violations, the involvement of naturalized citizens in DWI violations was similar to that of the noncitizens. Interestingly, speeding violations and failure-to-obey violations showed a different pattern; naturalized citizens was the group most involved in either of these violations, with average annual violation rates higher than that of any other group under review.

Table 30. Average Annual Violation Rates by Residency Status per 1,000 Drivers in Tennessee

Residency Status	Seat Belt	DWI	Speeding	Fail-to-Obey Signal	Any Moving Violation
1 (grandfathered)	7.82	2.91	37.89	5.31	49.66
2 U.S.-Born Citizen	18.96	13.50	69.43	10.65	96.51
3 Naturalized Citizen	16.83	5.91	93.91	15.93	129.21
5 Permanent Resident	12.90	6.21	66.48	13.74	96.92
6 Nonpermanent Resident	2.89	1.65	47.58	7.52	65.40
8 unknown status	2.25	6.52	9.92	1.76	15.16
9 undocumented	8.37	13.03	41.97	10.63	70.17

2.2. Logistic Regressions

The influence of contributing factors of age, gender, race, and ethnicity on the likelihood of being cited for the different traffic violations was investigated in a series of logistic regression analyses. Because of the relatively large involvement of Hispanics and Asian/Pis in current immigration patterns, separate models were also run for these two groups.

2.2.1. Seat Belt Violations

Tables 31-34 show the outcome of the logistic regression for the different traffic violations under study. Table 31 shows the results for seat belt violations in Tennessee, a primary seat belt State since 2004. The results observed for all drivers repeat many of the findings observed above for the bivariate, descriptive analyses. For drivers, being male, either young or elder (a U-shaped curve), being white, and a U.S.-born citizen increases the likelihood of being cited for a seat belt violation in a given year. The odds ratio estimated for two contextual variables (i.e., ZIP-Code-based) suggest that the higher the income and the urban condition of the driver's ZIP Code, the less likely the driver would be cited for a seat belt violation. Also included was a variable labeled "years since licensure" in an attempt to account for "driving experience". Table 31 suggests that the more "driving experience" a driver has, the less likely that he or she would be cited for a seat belt violation in any single year. However, this result should be interpreted with caution because the variable "years since licensure" was used as a proxy for driving experience.

The middle and rightmost columns in Table 31 display the outcomes for the logistic regressions applied only at Asian/PI and Hispanic drivers, the two racial and ethnic groups most associated with current immigration patterns (Pew Hispanic Center, 2008). To some extent, the results for Asian/PI drivers (middle of Table 31) mimic those for all drivers. Males are again more prone to be cited for a seat belt violation than females, albeit the odds for a female Asian/PI driver were lower than for a "typical" driver in the file. Age is also a factor for seat belt violations among Asian/Pis, albeit with a risk curve that departs from the curve corresponding to all drivers. Asian/PI drivers in Tennessee show a risk curve that decreases with age, being higher for drivers 16 to 34, and lower for drivers 65 and older. Interestingly, only the contextual variable "% urban" remained significant when only Asian/PI drivers were considered. The variable "median income" in the ZIP Code was no longer significant. The reasons for this finding are unclear. It could be argued that Asian/PI drivers' decisions about wearing a seat belt are relatively homogeneous across income levels. As with the case when all drivers in the file were considered, the more "driving experience" a driver has, the less likely that he or she would be cited for a seat belt violation in any single year.

Regarding the residency status of Asian/PI drivers, only drivers with a nonpermanent residency status showed a statistically significant difference. Asian/PI drivers with a nonpermanent residency status had fewer citations for a seat belt violation than Asian/PI drivers of any other residency status.

The outcome of the regression model for Hispanics does not differ much from that for Asian/PI drivers. Males are also more likely to have seat belt violation citations than females, with the odds for a female Hispanic driver lower than that for a "typical" driver in the file. Similar to Asian/PI drivers, only the contextual variable "urban" was statistically significant but "median income" in the ZIP Code was not for Hispanic drivers. Reasons for this finding are unclear. The

more “driving experience” a driver has, the less likely that he or she would have citations for a seat belt violation in any single year. Unlike other variables, the role of age on seat belt citations for Hispanics showed a different pattern than that of Asian/PI drivers. Hispanic drivers in Tennessee show a risk curve that peaks for drivers 21 to 34, being lower for drivers of any other age group.

Table 31 shows that for either Asian/PI or Hispanic drivers, nonpermanent residents had fewer seat belt violations. We closely explored this group but found no other clearly significant interaction involving residency status and other variables in the model (not shown in this report).

Table 31. Tennessee. Logistic Regression Outcome for Seat Belt Violations: All, Asian/PI, and Hispanic Drivers

		All Drivers			Asian/Pis			Hispanics		
		OR	99.99% Wald Confidence Limits		OR	99.99% Wald Confidence Limits		OR	99.99% Wald Confidence Limits	
Residency Status	Naturalized Citizen vs. U.S.-Born Citizen	1.198	0.984	1.459	1.061	0.649	1.734	1.003	0.642	1.568
	Permanent Resident vs. U.S.-Born Citizen	0.192	0.128	0.288	0.727	0.527	1.002	0.941	0.788	1.124
	Nonpermanent Resident vs. U.S.-Born Citizen	0.824	0.746	0.911	0.142	0.062	0.327	0.328	0.158	0.683
Gender	M vs. F	2.031	1.978	2.085	3.205	2.315	4.436	2.497	2.064	3.021
Age	<21 vs. 35-64	2.165	2.100	2.232	1.538	1.021	2.316	1.280	0.994	1.648
	21-34 vs. 35-64	0.318	0.280	0.362	1.752	1.251	2.453	1.419	1.180	1.707
	65+ vs. 35-64	1.796	1.735	1.858	0.483	0.108	2.165	0.318	0.107	0.949
Race/Ethnicity	Asian/PI vs. White	0.592	0.512	0.685						
	Black vs. White	0.964	0.933	0.996						
	Hispanic vs. White	0.868	0.798	0.945						
	Other vs. White	0.990	0.761	1.288						
Experience	Years since Licensing	0.872	0.867	0.877	0.896	0.829	0.968	0.891	0.856	0.928
Contextual	Median Income	0.939	0.900	0.980	1.123	0.715	1.765	1.015	0.745	1.382
	% Urban	0.624	0.598	0.651	0.431	0.225	0.825	0.689	0.505	0.940

2.2.2. DWI

Table 32 shows the results for DWI violations. Some interesting differences between the contributors to DWI violations (Table 32) and seat belt violations (Table 31) emerge. For all drivers in the database, the age-based DWI risk curve no longer follows a U-shaped path. Unlike seat belt violations, DWI violations show two distinct peaks; one associated with underage drivers; another associated with the 35- to 64-year-old group. For Asian/Pis though, age was not a factor in DWI violations. For Hispanics, DWI violations peak corresponding to the 21- to 34-year-old group; declining afterwards (35- to 64-year-old group); reaching its minimum at the extremes (underage drivers and drivers 65 and older).

Regarding residency status, Table 32 shows that fewer Asian/PI or Hispanic drivers who were nonpermanent residents had DWI violations than drivers from the other groups. To take a closer look at Hispanic and Asian/PI drivers, interactions involving their residency status with other variables in the model (not shown in this report) were explored. For Hispanic drivers, no interaction was found statistically significant. For Asian/Pis though, a dual age by residency status interaction was found significant. This interaction is interpreted as indicative that naturalized Asian/PI citizens tend to increase their involvement in DWI with age, mirroring the rates for all drivers.

Table 32. Tennessee. Logistic Regression Outcome DWI Violations: All, Asian/PI, and Hispanic Drivers

		All Drivers			Asian/Pis			Hispanics		
		OR	99.99% Wald Confidence Limits		OR	99.99% Wald Confidence Limits		OR	99.99% Wald Confidence Limits	
Residency Status	Naturalized Citizen vs. U.S.-Born Citizen	0.556	0.406	0.761	0.883	0.392	1.987	0.654	0.357	1.197
	Permanent Resident vs. U.S.-Born Citizen	0.166	0.100	0.276	0.886	0.550	1.426	0.854	0.694	1.051
	Nonpermanent Resident vs. U.S.-Born Citizen	0.532	0.464	0.610	0.100	0.026	0.385	0.468	0.239	0.916
Gender	M vs. F	2.678	2.588	2.772	5.614	3.081	10.227	5.611	4.168	7.553
Age	<21 vs. 35-64	1.034	1.004	1.066	0.675	0.335	1.360	0.429	0.292	0.630
	21-34 vs. 35-64	0.167	0.143	0.196	1.528	0.935	2.496	1.253	1.023	1.536
	65+ vs. 35-64	0.281	0.267	0.296	0.627	0.086	4.583	0.087	0.009	0.831
Race/Ethnicity	Asian/PI vs. White	0.396	0.317	0.494						
	Black vs. White	0.734	0.706	0.764						
	Hispanic vs. White	0.961	0.871	1.061						
	Other vs. White	1.405	1.099	1.795						
Experience	Years since Licensing	0.799	0.793	0.805	0.719	0.620	0.834	0.843	0.803	0.886
Contextual	Median Income	0.698	0.664	0.733	0.866	0.453	1.657	0.686	0.483	0.974
	% Urban	0.938	0.892	0.987	1.154	0.401	3.319	0.857	0.596	1.233

2.2.3. Speeding

Table 33 shows the results for speeding violations. Unlike seat belt and DWI violations (where White drivers were among those with more citations for these violations), White drivers had fewer citations for speeding than either their Black or Hispanic counterparts. Only Asian/PI drivers had fewer speeding citations than White drivers. The role of gender on the occurrence of speeding citations does not vary from previous violations, with males consistently receiving more of these violations. Age however, seems to play a different role in speeding violations, in particular among Hispanics. Unlike seat belt and DWI violations, underage Hispanic drivers are often cited in speeding citations.

To take a closer look at Hispanic and Asian/PI drivers, interactions involving their residency status with other variables in the model (not shown in this report) were explored. For Hispanic drivers, most of these interactions were not significant. We found however a significant and inverse three-way interaction between gender (males), age, and residency status (U.S.-Born citizens). This interaction indicated that the likelihood of Hispanic drivers being cited for a speeding violation was particularly low when that driver was a U.S.-born male citizen 65 or older (compared with female nonpermanent resident 25 to 64).

Among Asian/PI drivers we found a significant three-way interaction between gender, age, and residency status, and some two-way interactions among these variables. Noncitizen Asian/PI male drivers (either permanent or nonpermanent residents) were more likely to be cited for speeding than those who were citizens; particularly when they were permanent residents 21 to 34.

Table 33. Tennessee. Logistic Regression Outcome for Speeding Violations: All, Asian/PI, and Hispanic Drivers

		All Drivers			Asian/Pis			Hispanics		
		OR	99.99% Wald Confidence Limits		OR	99.99% Wald Confidence Limits		OR	99.99% Wald Confidence Limits	
Residency Status	Naturalized Citizen vs. U.S.-born Citizen	1.407	1.284	1.540	0.883	0.392	1.987	1.325	1.087	1.616
	Permanent Resident vs. U.S.-Born Citizen	0.636	0.573	0.707	0.886	0.550	1.426	0.977	0.894	1.066
	Nonpermanent Resident vs. U.S.-Born Citizen	0.906	0.864	0.950	0.100	0.026	0.385	0.641	0.497	0.827
Gender	M vs. F	1.388	1.369	1.407	5.614	3.081	10.23	1.894	1.738	2.064
Age	<21 vs. 35-64	1.631	1.605	1.657	0.675	0.335	1.360	1.190	1.048	1.351
	21-34 vs. 35-64	0.428	0.406	0.453	1.528	0.935	2.496	1.533	1.400	1.679
	65+ vs. 35-64	1.234	1.211	1.257	0.627	0.086	4.583	0.307	0.180	0.525
Race/Ethnicity	Asian/PI vs. White	0.917	0.865	0.973						
	Black vs. White	1.153	1.134	1.173						
	Hispanic vs. White	1.119	1.073	1.167						
	Other vs. White	1.002	0.864	1.162						
Experience	Years since Licensing	0.880	0.878	0.883	0.719	0.620	0.834	0.864	0.847	0.882
Contextual	Median Income	1.376	1.346	1.407	0.866	0.453	1.657	1.304	1.128	1.508
	% Urban	1.157	1.129	1.186	1.154	0.401	3.319	1.242	1.052	1.465

2.2.4. Failure-to-Obey

Table 34 shows the results for failure-to-obey violations. White and Asian/PI drivers had fewer citations for a failure-to-obey violation than either their Black or Hispanic counterparts. The role of gender on failure-to-obey violations was consistent with other violations, with males cited at a significantly higher rate than females. Regarding age, young Asian/PI drivers (34 or younger) were significantly more likely to be involved in failure-to-obey violations than older Asian/PI drivers (35 and older). Among Hispanics, failure-to-obey violations were relatively low for underage drivers, peaking with divers 21 to 34, and then lowering again.

Regarding residency status, Table 34 shows that for either Asian/PI or Hispanic drivers, nonpermanent residents had fewer failure-to-obey violations. To take a closer look at Hispanic and Asian drivers, interactions involving their residency status with other variables in the model (not shown in this report) were explored. No significant interaction was found among Hispanic drivers. Among Asian/PI drivers, naturalized citizens 65 and older tended to be involved in failure-to-obey violations at a significantly higher rate than nonpermanent residents younger than 21.

Table 34. Tennessee. Logistic Regression Outcome for Failure-to-Obey Violations: All, Asian/PI, and Hispanic Drivers

		All Drivers			Asian/Pis			Hispanics		
		OR	99.99% Wald Confidence Limits		OR	99.99% Wald Confidence Limits		OR	99.99% Wald Confidence Limits	
Residency Status	Naturalized Citizen vs. U.S.-Born Citizen	1.375	1.128	1.676	1.061	0.649	1.734	1.003	0.642	1.568
	Permanent Resident vs. U.S.-Born Citizen	0.573	0.446	0.738	0.727	0.527	1.002	0.941	0.788	1.124
	Nonpermanent Resident vs. U.S.-Born Citizen	1.065	0.966	1.174	0.142	0.062	0.327	0.328	0.158	0.683
Gender	M vs. F	1.511	1.463	1.561	3.205	2.315	4.436	2.497	2.064	3.021
Age	<21 vs. 35-64	1.510	1.455	1.566	1.538	1.021	2.316	1.280	0.994	1.648
	21-34 vs. 35-64	0.435	0.379	0.499	1.752	1.251	2.453	1.419	1.180	1.707
	65+ vs. 35-64	1.166	1.116	1.218	0.483	0.108	2.165	0.318	0.107	0.949
Race/Ethnicity	Asian/PI vs. White	1.034	0.909	1.177						
	Black vs. White	1.419	1.366	1.473						
	Hispanic vs. White	1.232	1.123	1.351						
	Other vs. White	1.111	0.790	1.561						
Experience	Years since licensing	0.859	0.853	0.866	0.896	0.829	0.968	0.891	0.856	0.928
Contextual	Median Income	1.236	1.176	1.299	1.123	0.715	1.765	1.015	0.745	1.382
	% Urban	1.658	1.56	1.762	0.431	0.225	0.825	0.689	0.505	0.940

2.3. Survival Analyses

2.3.1. Seat Belt

Table 35 shows the outcome of the survival analysis for seat belt violations. When all drivers are considered, male drivers, drivers under 35, and Whites tended to have a shorter time from licensure to a seat belt citation than other drivers in the file. When considering residency status, naturalized citizens experienced a shorter time from licensure to a seat belt citation than U.S.-born citizens, and U.S.-born citizens a shorter time from licensure to a seat belt citation than permanent or nonpermanent residents. This finding is shown in Figure A-13 (see Appendix A). The outcome of the survival analysis for Asian/PI drivers yields very similar results to those shown for all drivers (see middle columns in Table 35, and Figure A-14). For Hispanics, although the role of gender and age among this group did not depart much from that among Asian/Pis and all drivers in general, nonpermanent residents among this group tended to have a longer time until a seat belt citation than Hispanics of other residency groups.

Table 35. Tennessee. Survival Analysis Outcome for Seat Belt Violations

		All Drivers			Asian/Pis			Hispanics		
		Hazard Ratio	L99%	U99%	Hazard Ratio	L99%	U99%	Hazard Ratio	L99%	U99%
Residency Status	Naturalized Citizen vs. U.S.-Born Citizen	1.315	1.169	1.480	1.189	0.892	1.585	1.151	0.886	1.494
	Permanent Resident vs. U.S.-Born Citizen	.933	.878	.991	0.826	0.686	0.996	1.023	0.921	1.137
	Nonpermanent Resident vs. U.S.-Born Citizen	.269	.216	.333	0.214	0.138	0.330	0.408	0.270	0.616
Gender	M vs. F	1.824	1.796	1.852	2.776	2.307	3.339	2.236	2.000	2.499
Age	<21 vs. 35-64	3.237	3.170	3.306	2.581	2.069	3.220	2.061	1.795	2.367
	21-34 vs. 35-64	2.150	2.102	2.198	1.633	1.307	2.040	1.584	1.393	1.801
	65+ vs. 35-64	.332	.300	.367	.278	.076	1.021	.235	.099	.558
Race/Ethnicity	Asian/PI vs. White	.564	.518	.614						
	Black vs. White	.840	.825	.855						
	Hispanic vs. White	.864	.822	.909						
	Other vs. White	1.015	.871	1.182						

Based on the above described analyses, the time in days since licensure until 1%, and 5% of the drivers in each of the four groups under consideration were cited for a seat belt violation was estimated (Table 36). U.S. citizens (either U.S.-born or naturalized) showed a shorter time to first seat belt violation than noncitizens (in particular the temporary residents), with 1% of the U.S. citizen drivers being cited within 10 to 12 months of licensure. The corresponding figure for nonpermanent residents was more than more than 2 years (140 weeks).

Table 36. Tennessee. Survival Analysis Outcome for Seat Belt Violations. Time Until 1%, 5% Have Incurred a Seat Belt Violation

	1 %	5%
U.S.-Born Citizens	44 weeks	201 weeks
Naturalized Citizen	37 weeks	172 weeks
Permanent Resident	50 weeks	220 weeks
Nonpermanent Resident	140 weeks	(~700 weeks; projected)

2.3.2. DWI Violations

Table 37 shows the outcome of the survival analysis for DWI violations. When all drivers were considered, male drivers, and Whites tended to have a shorter time from licensure to a DWI violation than other drivers in the file. Unlike seat belt violations, underage drivers had a longer period from licensure to a DWI violation than drivers 21 to 64. Regarding residency status, U.S.-born citizens exhibited a shorter time from licensure to a DWI citation than any other groups. Figure A-15 shows this finding.

The survival analysis for Asian/PI and Hispanic drivers yielded some different results. Underage drivers from these groups tended to have a shorter time to a DWI violation than older drivers (21 and older) from the same groups. Regarding residency status, Asian/PI or Hispanic drivers who were nonpermanent residents had a longer time until a DWI violation than drivers of other residency groups. Figures A-16 and A-17 show these findings.

Table 37. Tennessee. Survival Analysis Outcome for DWI Violations

		All Drivers			Asian/PIs			Hispanics		
		Hazard Ratio	L99%	U99%	Hazard Ratio	L99%	U99%	Hazard Ratio	L99%	U99%
Residency Status	Naturalized Citizen vs. U.S.-Born Citizen	.668	.559	.798	1.044	0.653	1.668	0.802	0.566	1.137
	Permanent Resident vs. U.S.-Born Citizen	.628	.581	.679	1.044	0.794	1.372	1.063	0.945	1.196
	Nonpermanent Resident vs. U.S.-Born Citizen	.194	.145	.259	0.194	0.098	0.382	0.515	0.346	0.768
Gender	M vs. F	2.614	2.565	2.665	4.959	3.561	6.905	5.236	4.429	6.189
Age	<21 vs. 35-64	1.485	1.453	1.519	1.960	1.391	2.761	1.305	1.111	1.533
	21-34 vs. 35-64	1.931	1.890	1.972	1.798	1.301	2.485	1.571	1.369	1.803
	65+ vs. 35-64	.139	.120	.160	.634	.170	2.361	.029	.002	.381
Race and Ethnicity	Asian/PI vs. White	.347	.306	.394						
	Black vs. White	.765	.749	.781						
	Hispanic vs. White	.856	.809	.906						
	Other vs. White	1.440	1.253	1.656						

Table 38 provides the estimated time in weeks since licensure until 1%, and 5% of the drivers in each of the four groups under consideration were arrested for a DWI violation. U.S. citizens showed a shorter time to a first DWI violation than drivers of any other group (in particular the temporary residents), with 1% of the U.S. citizen drivers being arrested within approximately the first year of being licensed. The corresponding figure for Temporary alien residents was slightly more than 4 years (247 weeks). Thus, compared to seat belt violations, temporary alien residents tend to have a much longer period until a DWI violation.

Table 38. Tennessee. Survival Analysis Outcome. Time Until 1%, 5% Have Incurred an Alcohol (DWI) Violation

	1 %	5%
U.S.-Born Citizens	59 weeks	265 weeks
Naturalized Citizen	84 weeks	433 weeks
Permanent Resident	96 weeks	418 weeks
Nonpermanent Resident	247 weeks	(~1,000 weeks; projected)

2.3.3. Speeding Violations

Table 39 shows the outcome of the survival analysis for speeding violations. When all drivers were considered, male and White drivers tended to have a shorter time from licensure to a speeding citation than other drivers. Underage drivers and drivers younger than 35 had a shorter period from licensure to a speeding citation than drivers 35 to 64. Drivers over 64 had the longest period from licensure to a speeding violation than drivers of any other age group. Regarding residency status, naturalized citizens exhibited a shorter time from licensure to a speeding citation than any other groups, followed by U.S.-born citizens and permanent residents, with nonpermanent residents showing the longest time until a speeding violation. Figure A-15 shows this finding.

The survival analysis for Asian/PI and Hispanic drivers yielded results that were close to those reported for drivers of all racial and ethnic groups. Figures A-16 and A-17 show these findings.

Table 39. Tennessee. Survival Analysis Outcome for Speeding Violations

		All Drivers			Asian/Pis			Hispanics		
		Hazard Ratio	L99%	U99%	Hazard Ratio	L99%	U99%	Hazard Ratio	L99%	U99%
Residency Status	Naturalized Citizen vs. U.S.-Born Citizen	1.556	1.473	1.644	1.315	1.169	1.480	1.586	1.411	1.782
	Permanent Resident vs. U.S.-Born Citizen	.984	.956	1.012	0.906	0.840	0.976	1.041	0.987	1.097
	Nonpermanent Resident vs. U.S.-Born Citizen	.735	.692	.781	0.689	0.622	0.764	0.679	0.583	0.791
Gender	M vs. F	1.340	1.329	1.351	2.148	2.008	2.297	1.821	1.730	1.916
Age	<21 vs. 35-64	1.719	1.701	1.738	1.416	1.298	1.544	1.547	1.446	1.656
	21-34 vs. 35-64	1.679	1.661	1.698	1.429	1.323	1.544	1.536	1.447	1.632
	65+ vs. 35-64	.377	.362	.393	.281	.184	.428	.213	.146	.311
Race and Ethnicity	Asian/PI vs. White	.993	.959	1.028						
	Black vs. White	1.206	1.194	1.217						
	Hispanic vs. White	1.082	1.055	1.110						
	American Indian vs. White	1.052	.967	1.146						

Table 40 provides the estimated time in weeks since licensure until 1%, and 5% of the drivers in each of the four groups under consideration were cited for a speeding violation. Clearly, the period from licensure to speeding in Tennessee is much shorter than that from licensure to DWI violations.

Table 40. Tennessee. Survival Analysis Outcome. Time Until 1%, 5% Have Incurred a Speeding Violation

	1 %	5%
U.S.-Born Citizens	11 weeks	48 weeks
Naturalized citizen	6 weeks	27 weeks
Permanent Resident	13 weeks	48 weeks
Nonpermanent Resident	19 weeks	60 weeks

2.3.4. Failure-to-Obey Violations

Table 41 shows the outcome of the survival analysis for failure-to-obey violations. Overall (when all drivers are considered), male and non-White and non-American Indian drivers tended to have a shorter time from licensure to a speeding citation than other drivers in the file. Underage drivers and drivers 21 to 34 had a shorter period from licensure to a failure-to-obey citation than drivers 35 and older. Drivers 65 and older had the longest time until a failure-to-obey violation. Regarding residency status, naturalized citizens and permanent residents exhibited a shorter time from licensure to a failure-to-obey citation than any other driver in the file. Nonpermanent residents had the longest period until a failure-to-obey violation than drivers of any other residency group.

The survival analysis for Asian/PI and Hispanic drivers yielded results that were very close to those obtained for all drivers.

Table 41. Tennessee. Survival Analysis Outcome for Failure-to-Obey Violations

		All Drivers			Asian/Pis			Hispanics		
		Hazard Ratio	L99%	U99%	Hazard Ratio	L99%	U99%	Hazard Ratio	L99%	U99%
Residency Status	Naturalized Citizen vs. U.S.-Born Citizen	1.629	1.460	1.818	1.516	1.203	1.909	1.298	1.013	1.663
	Permanent Resident vs. U.S.-Born Citizen	1.265	1.197	1.336	1.143	0.984	1.329	1.162	1.047	1.288
	Nonpermanent Resident vs. U.S.-Born Citizen	.757	.661	.868	0.713	0.565	0.900	0.892	0.667	1.191
Gender	M vs. F	1.445	1.420	1.470	1.855	1.618	2.127	1.788	1.609	1.986
Age	<21 vs. 35-64	1.956	1.912	2.001	1.715	1.444	2.039	1.522	1.327	1.746
	21-34 vs. 35-64	1.670	1.632	1.710	1.274	1.084	1.499	1.481	1.312	1.672
	65+ vs. 35-64	.376	.340	.415	.248	.093	.661	.228	.100	.517
Race and Ethnicity	Asian/PI vs. White	1.172	1.091	1.260						
	Black vs. White	1.703	1.672	1.734						
	Hispanic vs. White	1.289	1.225	1.357						
	American Indian vs. White	1.112	.925	1.337						

Table 42 provides the estimated time in weeks since licensure until 1%, and 5% of the drivers in each of the four groups under consideration were cited for a failure-to-obey violation.

Table 42. Tennessee. Survival Analysis Outcome. Time Until 1%, 5% Have Incurred a Failure-to-Obey Violation

	1 %	5%
U.S.-Born Citizens	63 weeks	252 weeks
Naturalized Citizen	32 weeks	148 weeks
Permanent Resident	46 weeks	210 weeks
Nonpermanent Resident	69 weeks	339 weeks

Summary and Discussion

The effort described in this report began in 2008, when NHTSA initiated research to explore the possibility that informative archival data on recent immigrants and seat belt use might be available at the State level. Phase I found that only three States, California, Florida, and Tennessee, keep pertinent information. Traffic citation records in these States contain information on the drivers' violation, and also on their residency status, age, gender, race, and ethnicity.

Residency status data were readily available on four traffic violations, (1) seat belt violations, (2) DWI, (3) speeding, and (4) failure-to-obey traffic signs or signals. Because of the large datasets in Florida and Tennessee, separate analyses for Asian/Pacific Islander and Hispanic drivers allowed a closer look at the two principal racial and ethnic groups involved in immigration trends in the country. Florida is a traditional destination for Hispanic immigrants, many of Cuban descent. Tennessee on the other hand, has recently become a destination for Hispanic immigrants of diverse heritage. Because of the different demographic patterns and datasets in Florida and Tennessee, separate analyses were performed for each State.

The findings show that gender and age were predictors for traffic violation rates. Male drivers and young drivers under 21 were more likely to be cited for traffic violations than drivers 21 and older, but age was not a contributing factor in DWI among Asian/PI drivers in Florida or Tennessee. Although the reason for this age difference is not clear, what is clear is that the role of race, ethnicity, and residency status varied across the four traffic violations.

For residency status overall, the more established a driver is in the country, the more likely he/she would be involved in traffic violations. Overall, drivers who were citizens were more likely to be cited for traffic violations than those who are not citizens, but such a generalization varies depending on the type of violation, the driver's racial and ethnic group, and the State.

U.S. citizens in Florida and Tennessee had significantly more citations for seat belt violations than drivers with the most recent residency status, which was observed among both Asian/PI and Hispanic drivers. A similar pattern was observed regarding speeding and failure-to-obey violations. Broadly speaking, U.S. citizens were also cited for these violations at a significantly higher rate than drivers of the most recent residency status. The residency status of Asian/PI drivers in Florida however, was not associated with failure-to-obey citations. Reasons for this finding are unknown. On one hand, this finding seems to suggest that Asian/PI drivers as a whole were more likely to obey traffic signals than drivers of any other group regardless of their residency status. This conclusion needs to be taken with caution because of the relative small number of Asian/PI drivers in Florida.

The data suggest that those who have come recently to the country are less likely to be cited for seat belt, speeding, and failure-to-obey violations than more established drivers; but as time goes by and immigrant drivers become more established, they begin to resemble established citizens in terms of the likelihood of being ticketed for these traffic violations. For these drivers, factors such as age or gender seem to contribute to their likelihood of being cited for seat belt, speeding, or failure-to-obey violations, more than residency status.

A more complex pattern emerged for DWI violations. On one hand, the pattern of involvement in DWI violations in Tennessee was similar to seat belt, speeding, and failure-to-obey violations: recent Asian or Hispanic immigrants to Tennessee were less likely to be cited for DWI than more established Asian or Hispanic drivers. This was not the case in Florida where recent Hispanic immigrants were more likely to be cited for DWI than more established Hispanic drivers. There were no differences in DWI arrests by residency status among Asian/PI drivers in Florida.

The difference in drinking and driving violations that recent Hispanic immigrants show in Florida and Tennessee underscore the variations that exist within racial and ethnic groups, especially in different areas of the country. Hispanics are not a homogeneous group.

Researchers have offered several explanations for such divergence. A relatively large proportion of Hispanics in Florida are of Cuban descent (Pew Hispanic Center, 2010b), while in Tennessee, most of the Hispanics are of Mexican origin (Pew Hispanic Center, 2010a). It could be argued that the observed difference in DWI citations among recent immigrants in Florida and Tennessee is related to differences in the drinking patterns in the countries of origin of Hispanic immigrants to each of the two States. The literature depicts Cuban-American drivers as less likely to drink and drive than their Mexican-American counterparts (e.g., Caetano, 1993). Patterns of alcohol consumption and drinking-and-driving for recent Hispanic immigrants in Florida may resemble those in their countries of origin more than those in Tennessee. Hispanic immigrants from countries in which drinking and drinking-and-driving are common may take longer to understand that DWI is not tolerated in America. Citation patterns in both States suggests that as Hispanic immigrants adapted to American mainstream norms, their seat belt use and speeding behavior became more like that of “mainstream” drivers.

The odds of being cited for a speeding violation in Tennessee did not follow a one-to-one relationship with residency status. Hispanics in Tennessee who were naturalized citizens were more likely to receive a speeding citation than those who were born in the United States. One suggestion is that because Tennessee is a more recent destination for immigrants, the population of Hispanics who are naturalized citizens is younger with a larger proportion of males than those who are U.S.-born. Because being both young and male tends to increase the frequency of speeding violations, but the observed differences were not statistically significant.

Residency status was not a factor in the likelihood of Asian/PI Florida drivers' involvement in DWI or failure-to-obey violations. This finding may suggest that Asian/PI drivers in Florida were more observant of these traffic laws and regulations than drivers of any other racial and ethnic group.

The survival analyses support the bivariate and logistic regression analyses among the different groups of drivers, four traffic violations, and two States. The survival analyses evaluated which traffic violations were likely to be committed first by the different groups of newly licensed drivers. Among the four traffic violations under consideration, speeding is most often the first one to occur. Both in Florida and Tennessee, 1% of the drivers were cited for a speeding violation within three months of licensure for drivers of all residency statuses. The three other traffic violations appeared later in the driving life. Temporary residents in Florida took more than four and a half years for 1% to be arrested for a DWI violation.

Although non-resident aliens in Florida were less likely to receive a seat belt violation than more established drivers, they had the shortest period of time until 1% were cited for a belt violation. However, they then showed the longest period until reaching the 5% mark.

In summary, this study provides information about the involvement of recent immigrants in seat belt nonuse, DWI, speeding, and failure-to-obey traffic violations in Florida and Tennessee. The hypothesis that recent immigrants were more likely to be involved in any of four traffic violations than more established drivers was not supported. Immigrants differing in country of origin and U.S. State of residence displayed different degrees of involvement across the traffic violations. It is unknown whether these findings apply beyond the two States examined here.

This study shows that besides some broad generalizations (e.g., the first traffic-related event of recent immigrants tend to involve speeding), recent immigrants' traffic safety behaviors vary in the two States under consideration. Programs developed to assist recent immigrants should consider the countries of origin as they relate to U.S. traffic safety laws and expectations. The first three years are the most hazardous for Hispanics who recently immigrated to Florida in terms of impaired driving. In other areas, the traffic safety records of recent immigrants were better than that of U.S residents for three offences: speeding, failure to wear a seat belt, and failure to obey traffic signals. As immigrants become fully adapted to their American communities, they begin to drive, and receive tickets, like everyone else in their community.

Limitations

The information obtained through this research has some limitations: (1) The data used in this study only came from two states and the findings may not be applicable to other regions of the country; (2) Identification of recent immigrant status was achieved only through a proxy, using residency status as a measure of "time since immigration;" (3) Individuals who drive outside of the licensing system are not included. Unlicensed drivers, drivers with non-valid licenses, and illegal immigrants are not reported in the traffic-citation records that were reviewed for this study, and the findings may not be applicable to that portion of risky drivers.

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Appendices

Appendix A

Survival Curves

Appendix B

Criteria Used to Assign Traffic Violations in Florida and Tennessee

Appendix A Survival Curves

A. Florida

a) Seat Belt Violations

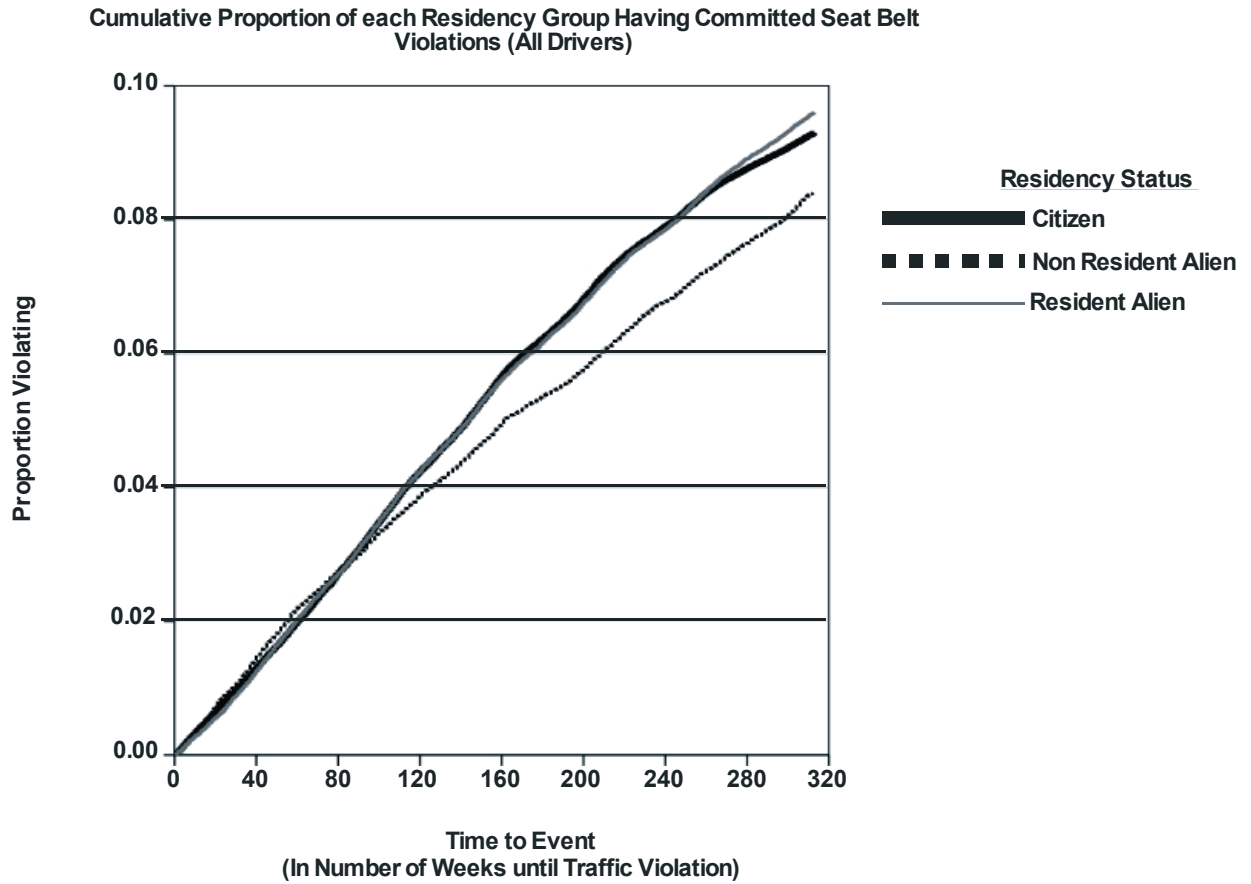


Figure A - 1. Florida. Survival Analysis for Seat Belt Violations. All Drivers
(Years: 2005-2009)

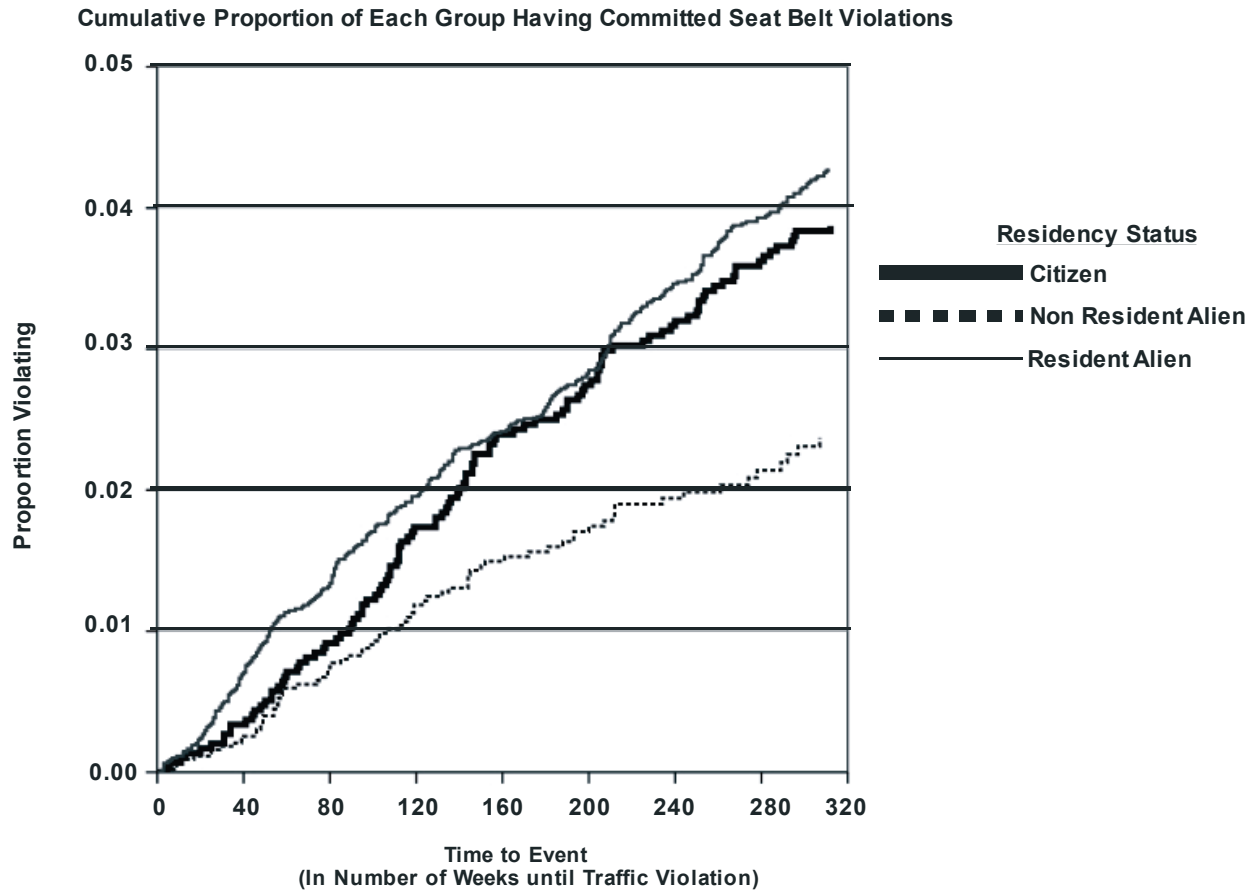


Figure A - 2. Florida. Survival Analysis for Seat Belt Violations. Asian/Pis Only (Years: 2005-2009)

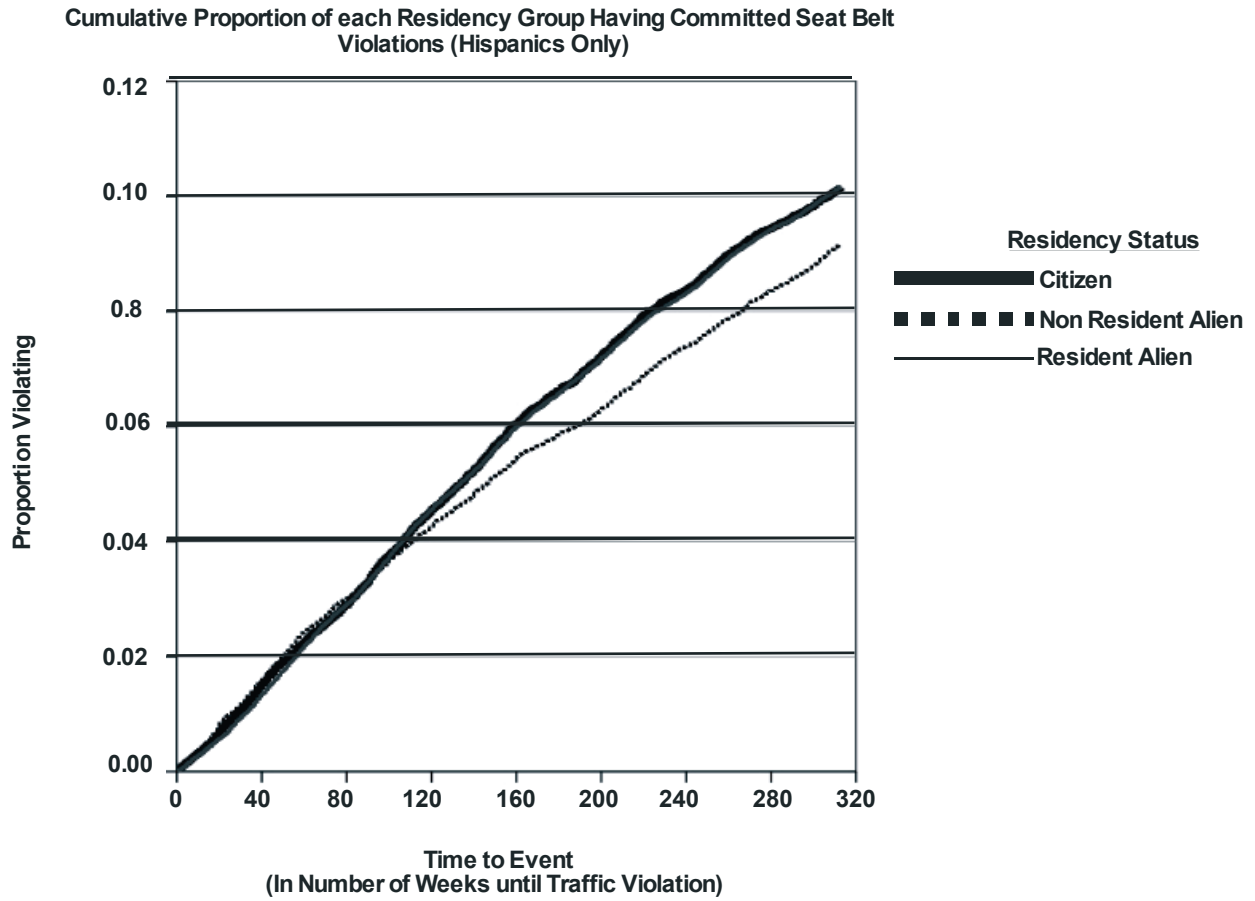


Figure A - 3. Florida. Survival Analysis for Seat Belt Violations. Hispanics Only (Years: 2005-2009)

b) DWI Violations

Cumulative Proportion of each Residency Group Having Committed DWI Violations
(All Drivers)

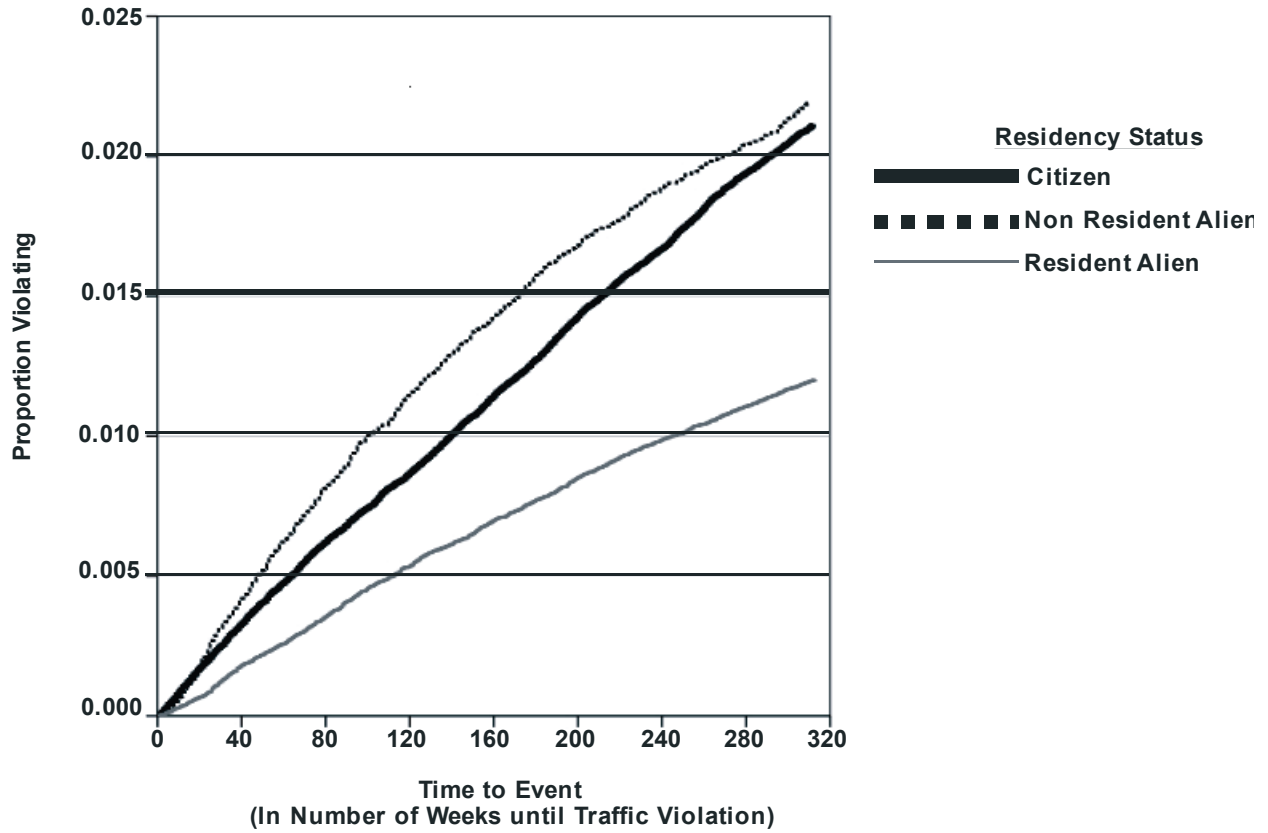


Figure A - 4. Florida. Survival Analysis of DWI Violations. All Drivers
(Years: 2005-2009)

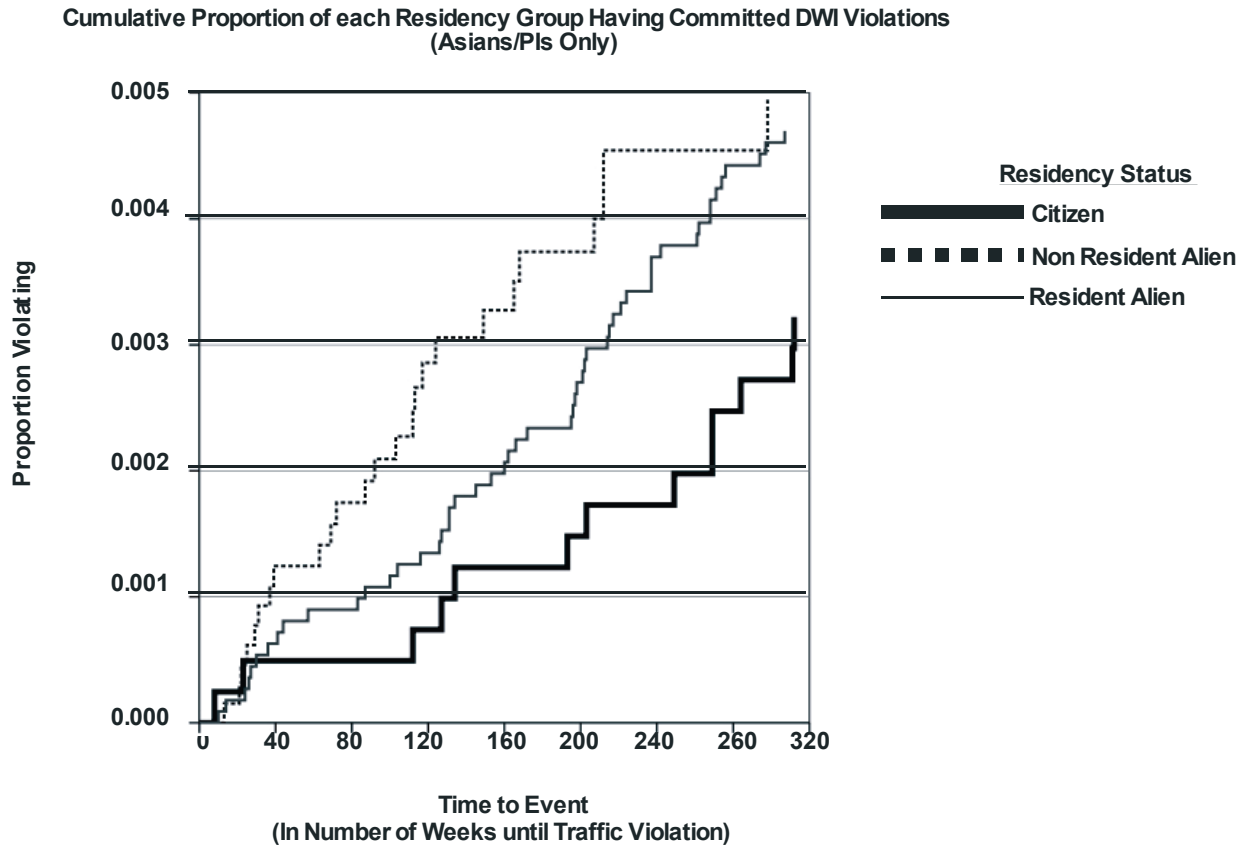


Figure A - 5. Florida. Survival Analysis for DWI Violations. Asian/Pis Only
(Years: 2005-2009)

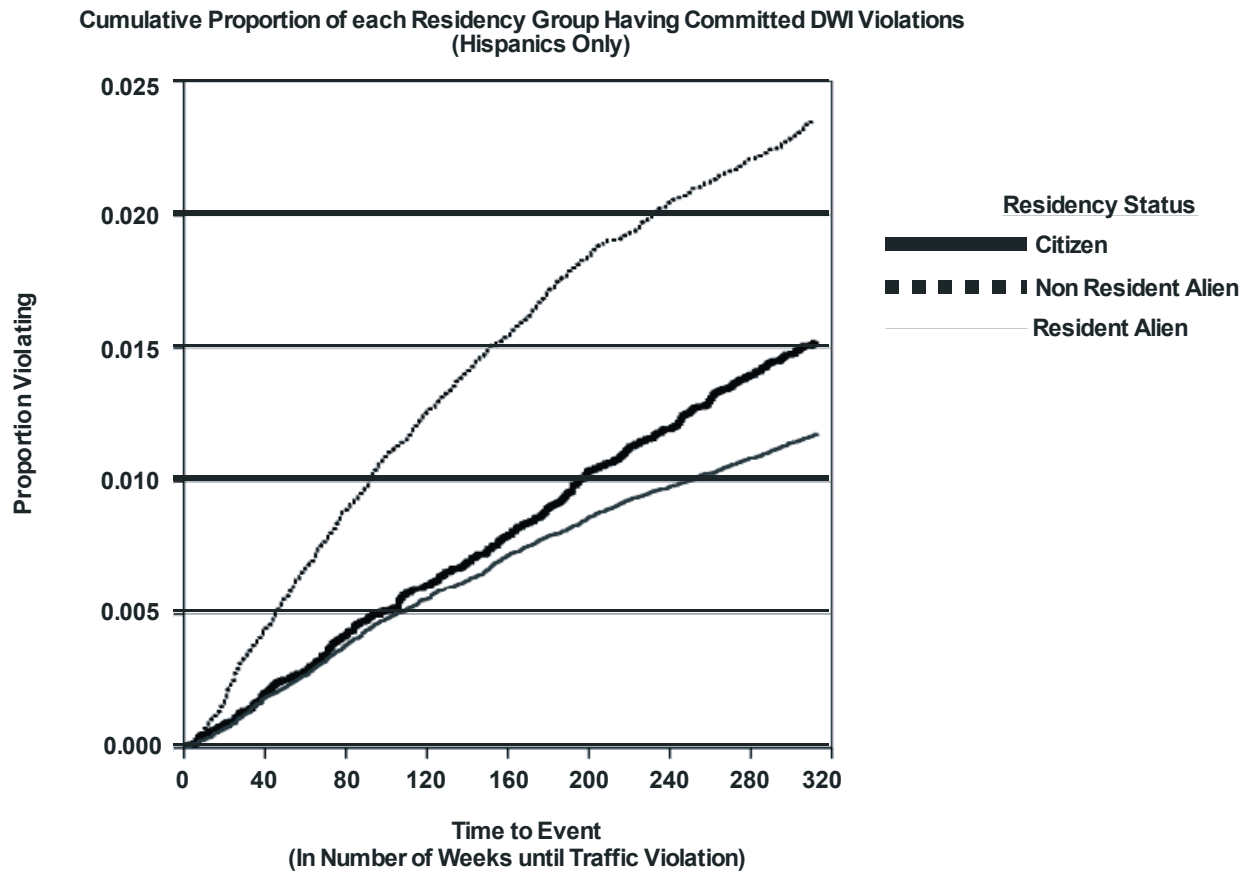


Figure A - 6. Florida. Survival Analysis for DWI Violations. Hispanics Only
(Years: 2005-2009)

c) Speeding Violations

Cumulative Proportion of each Residency Group Having Committed Speeding Violations (All Drivers)

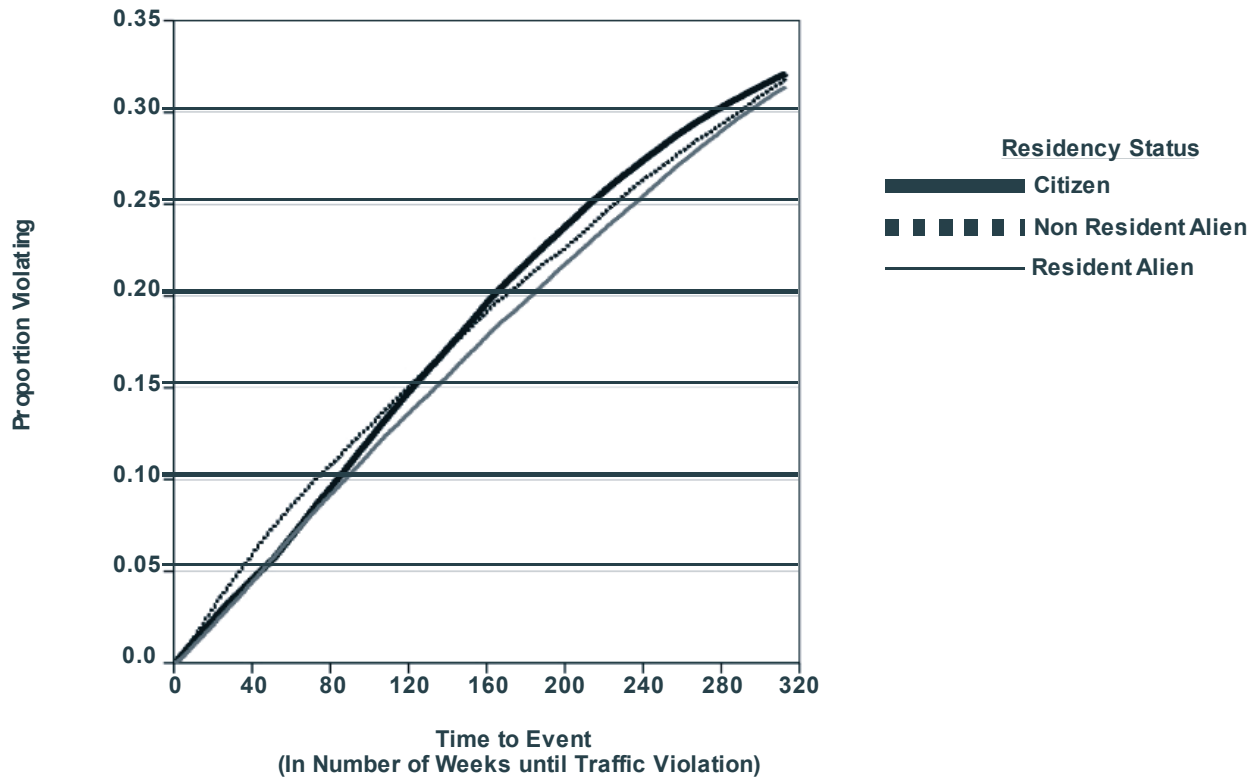


Figure A - 7. Survival Analysis for Speeding Violations. All Drivers (Years: 2005-2009)

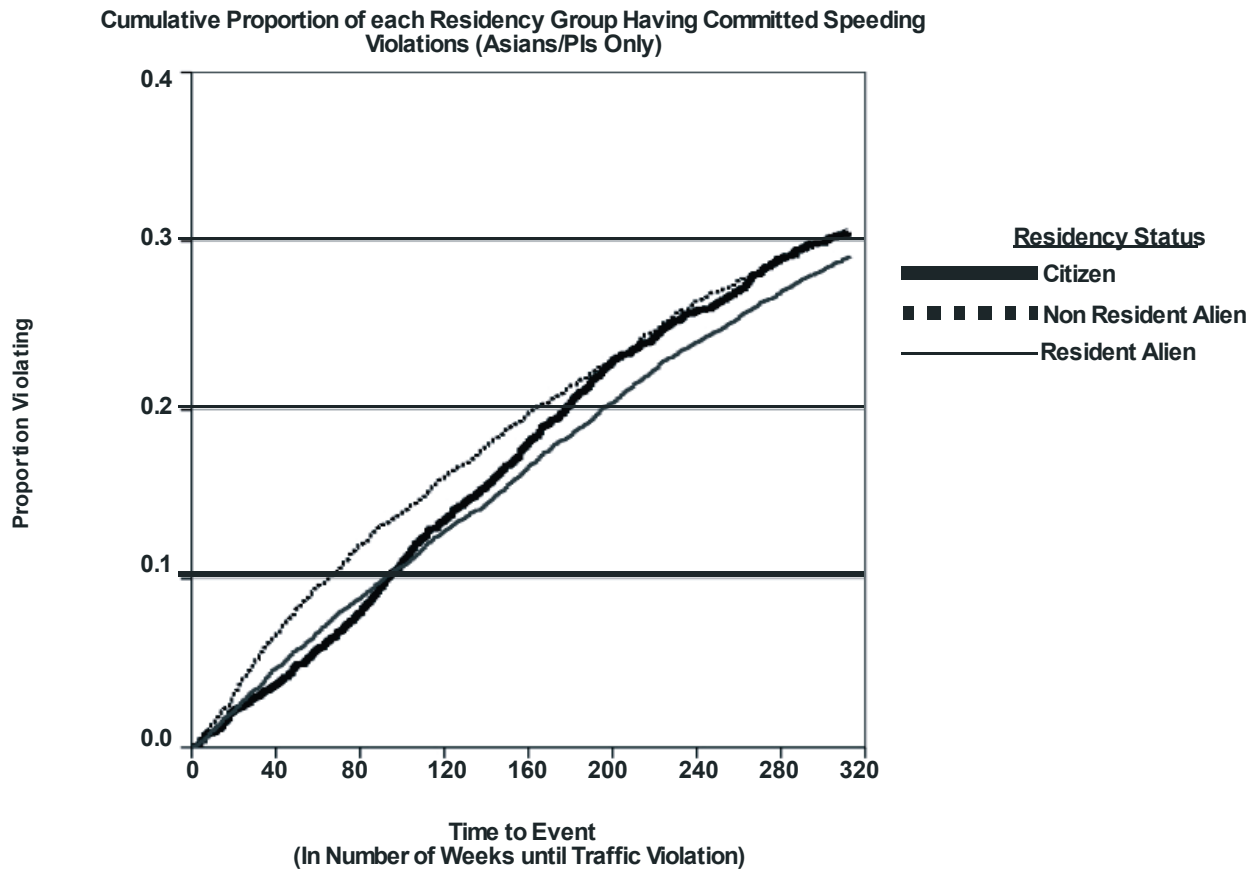


Figure A - 8. Florida. Survival Analysis for Speeding Violations. Asian/PIs Only (Years: 2005-2009)

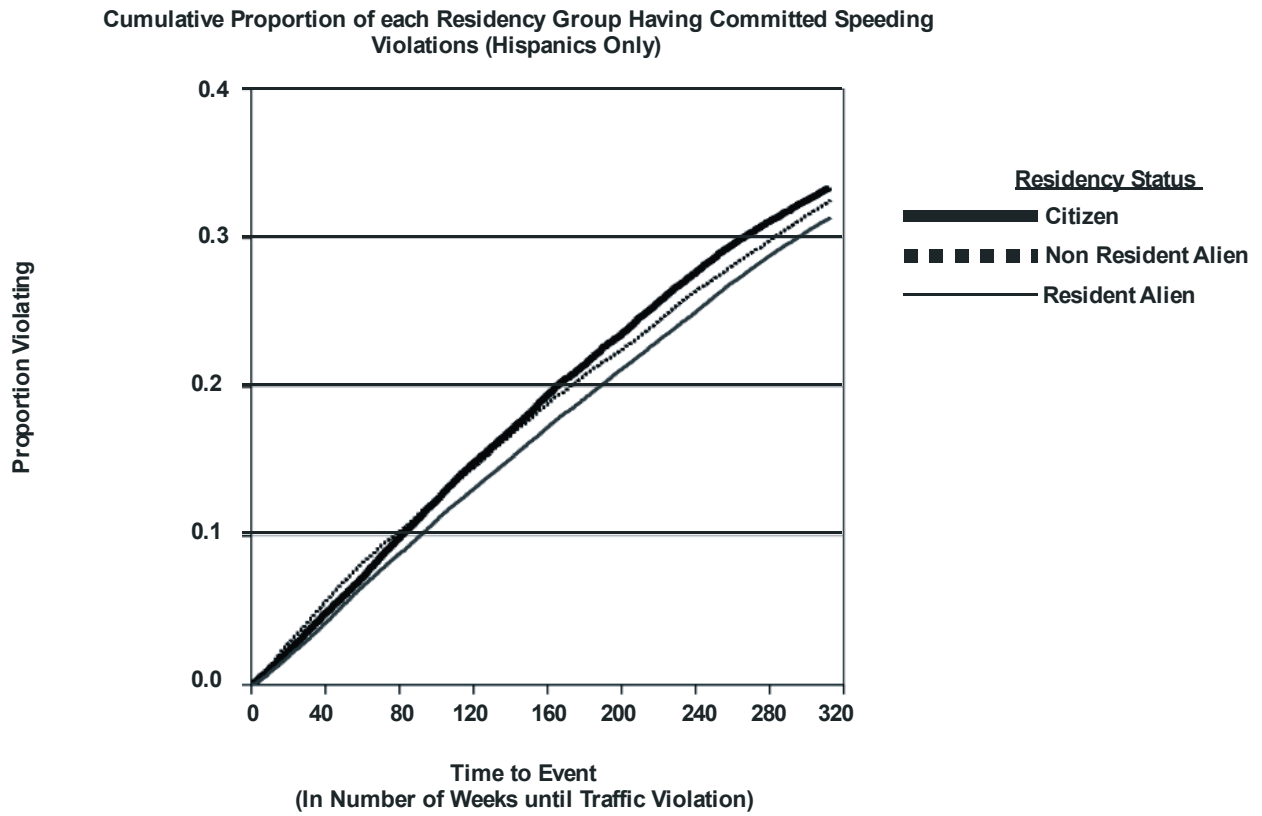


Figure A - 9. Florida. Survival Analysis for Speeding Violations. Hispanics Only (Years: 2005-2009)

d) Failure-to-Obey Violations

Cumulative Proportion of each Residency Group Having Committed FTOS Violations (All Drivers)

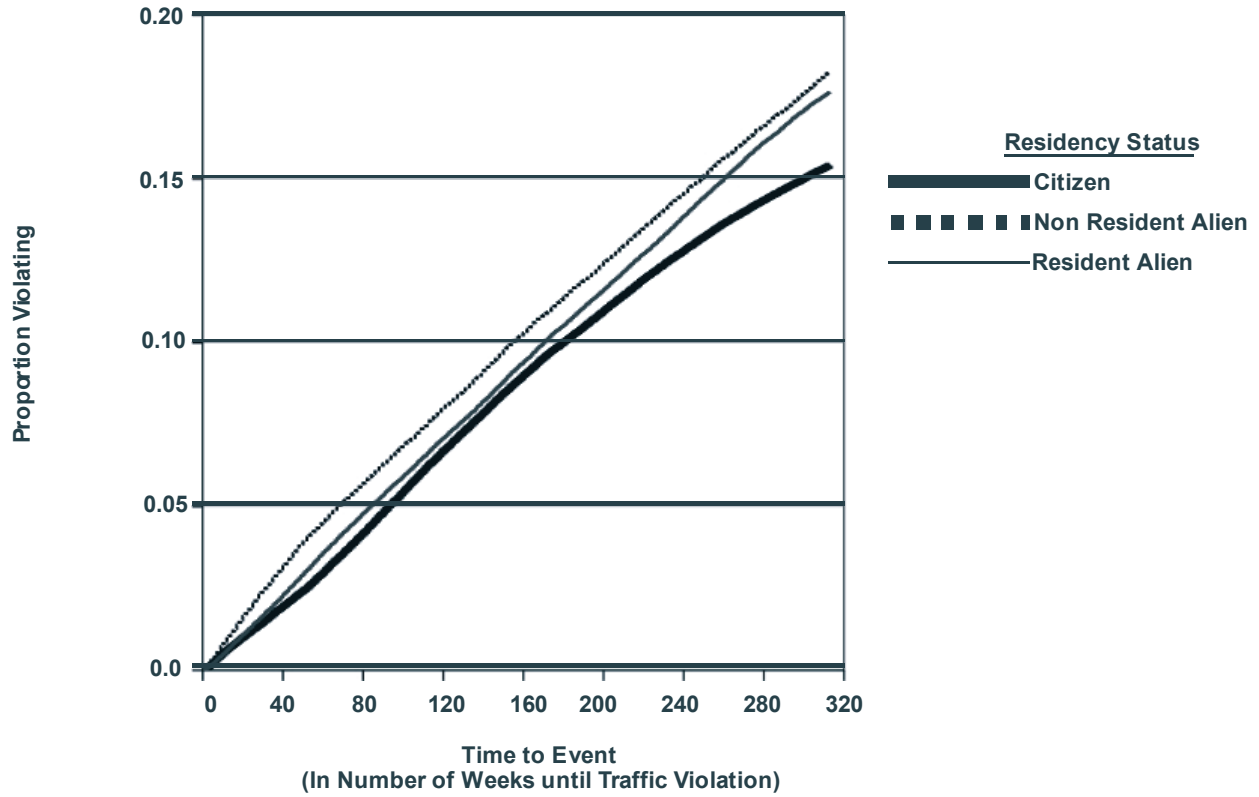


Figure A - 10. Florida. Survival Analysis for FTOS Violations. All Drivers (Years: 2005-2009)

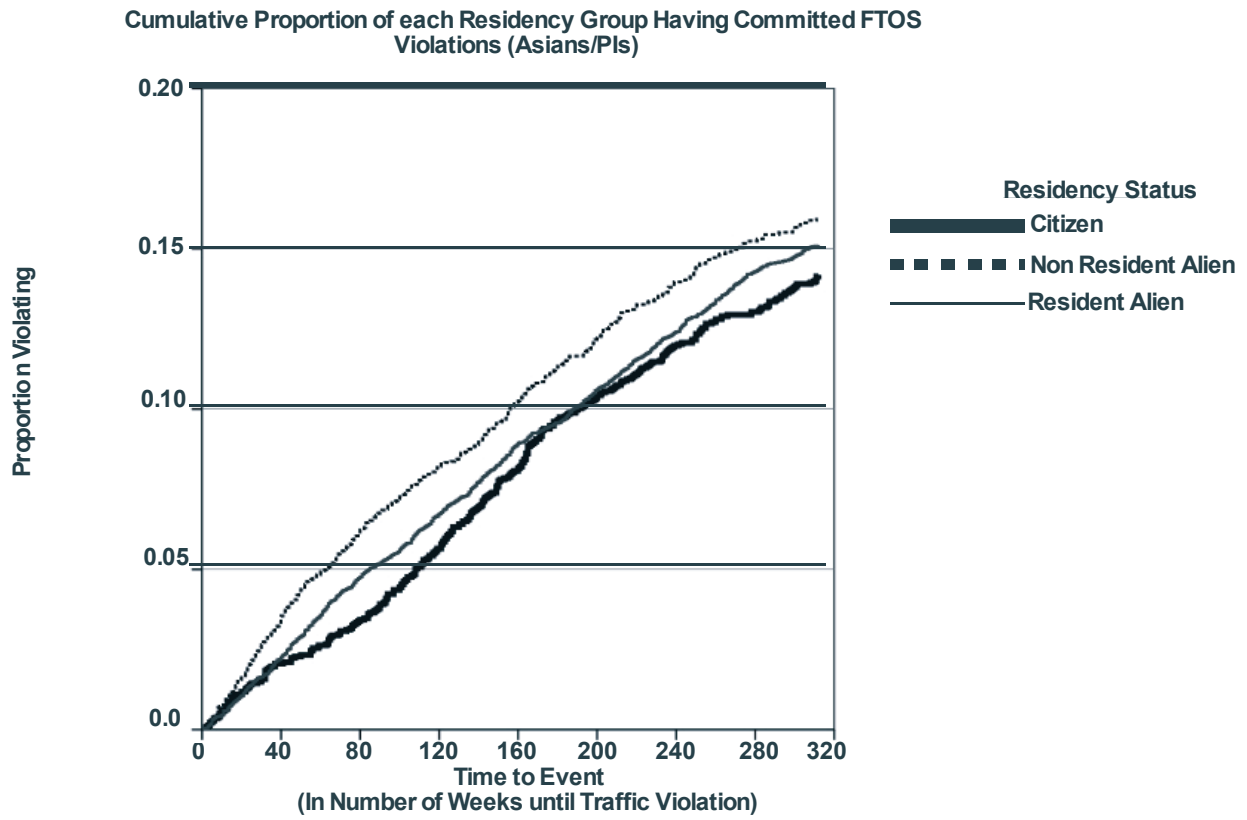


Figure A - 11. Florida. Survival Analysis for FTOS Violations. Asian/Pis (Years: 2005-2009)

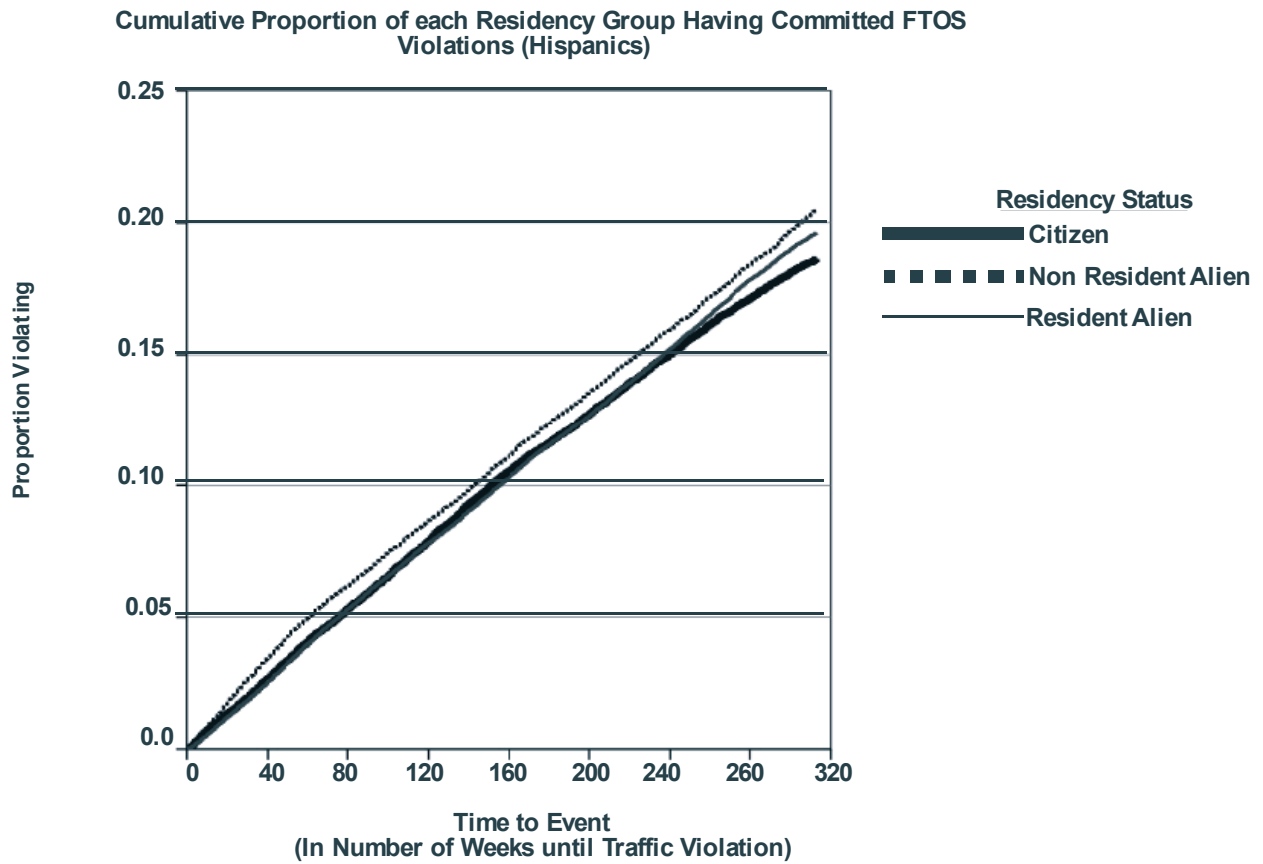


Figure A - 12. Florida. Survival Analysis for FTOS Violations. Hispanics (Years: 2005-2009)

A. Tennessee

a) Seat Belt Violations

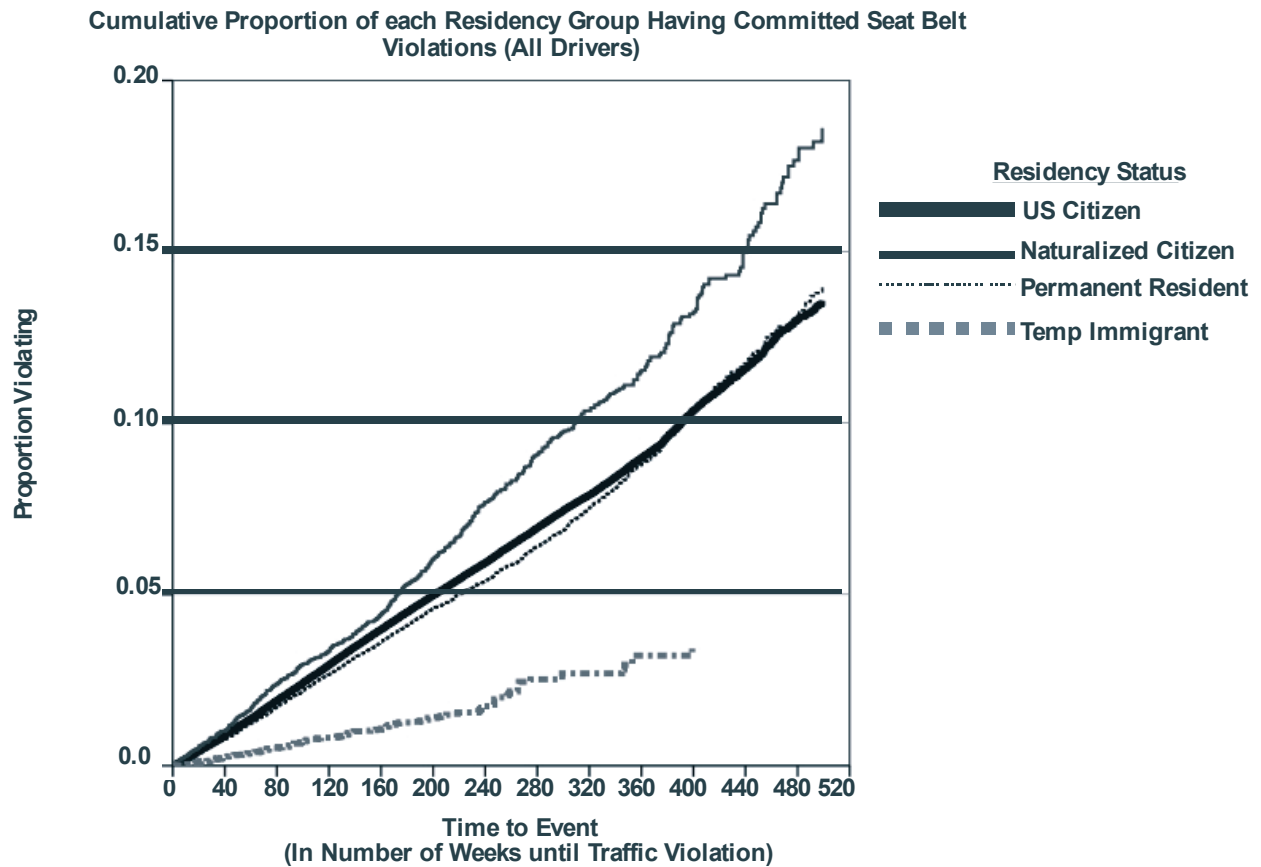


Figure A - 13. Tennessee. Survival Analysis for Seat Belt Violations. All Drivers (Years: 2005-2009)

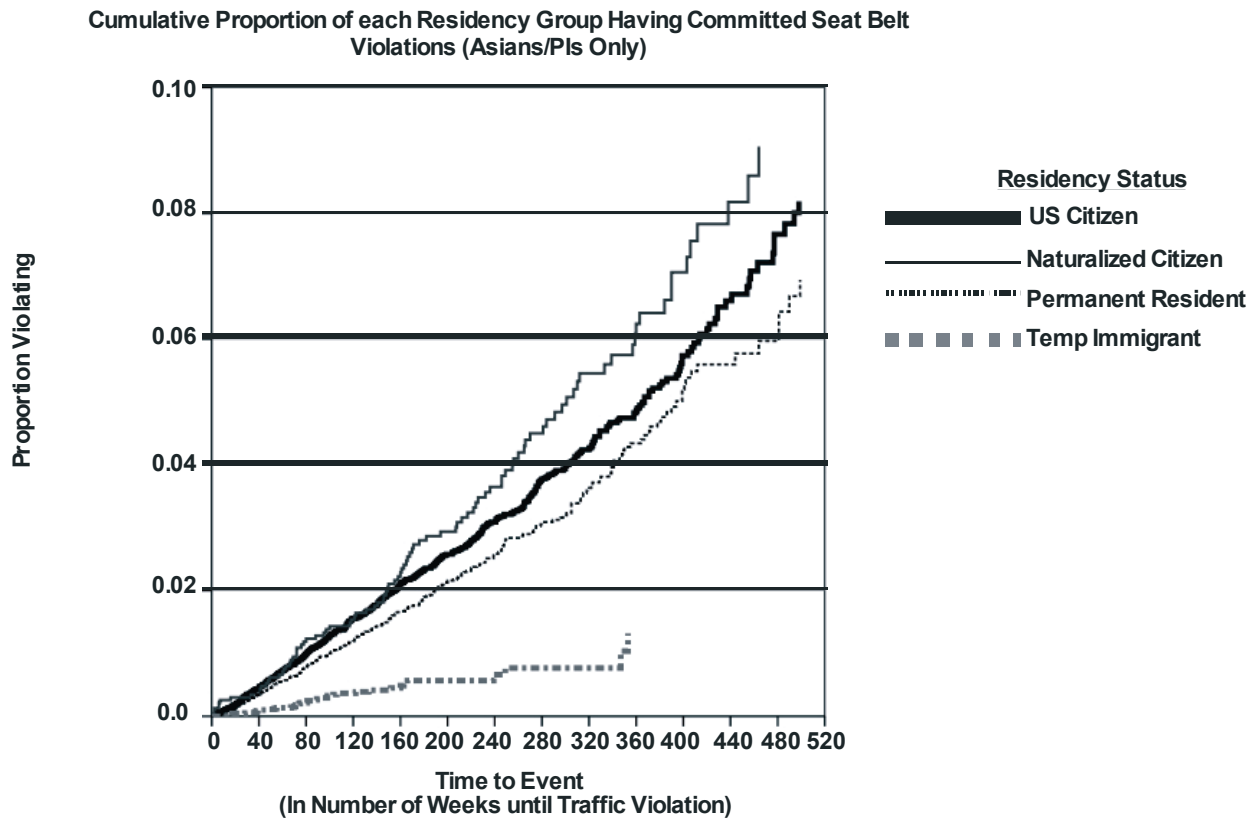


Figure A - 14. Tennessee. Survival Analysis for Seat Belt Violations. Asian/Pis Only (Years: 2005-2009)

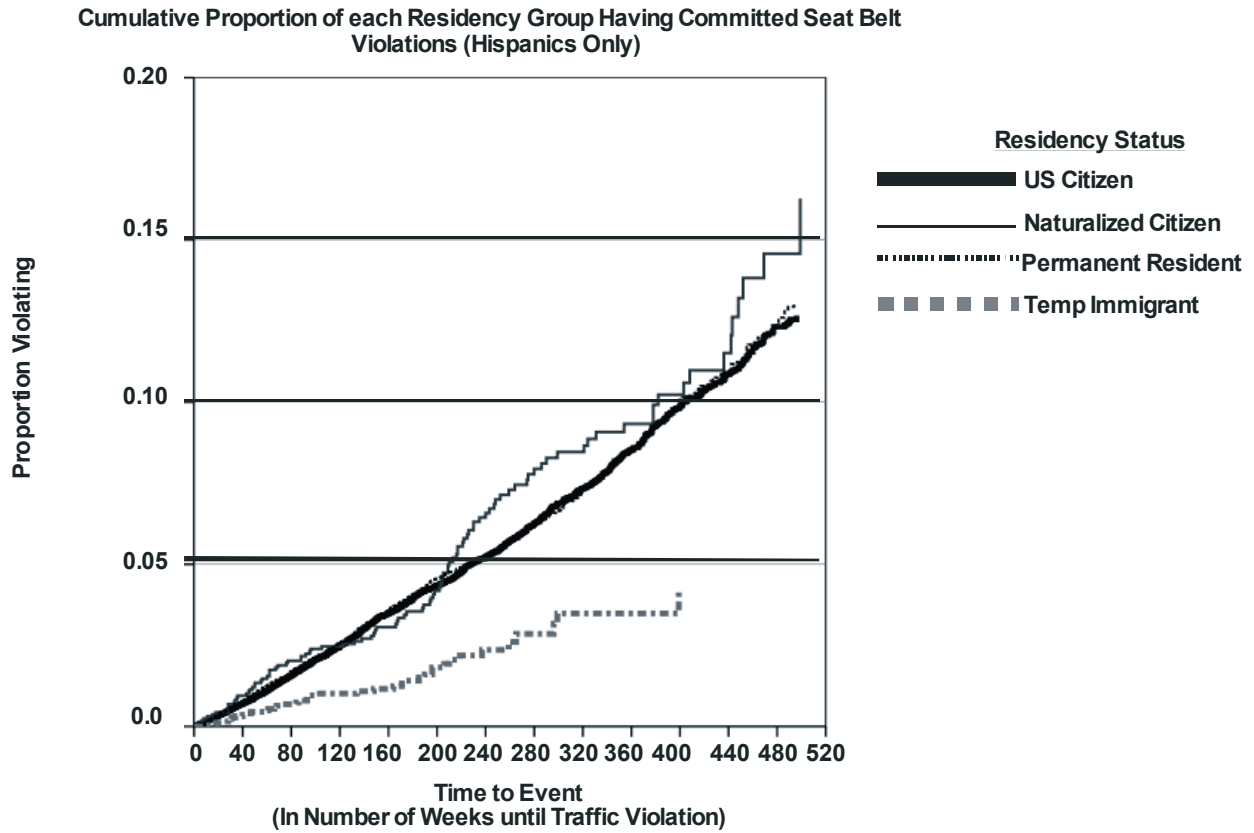


Figure A - 15. Tennessee. Survival Analysis for Seat Belt Violations. Hispanics Only (Years: 2005-2009)

b) DWI Violations

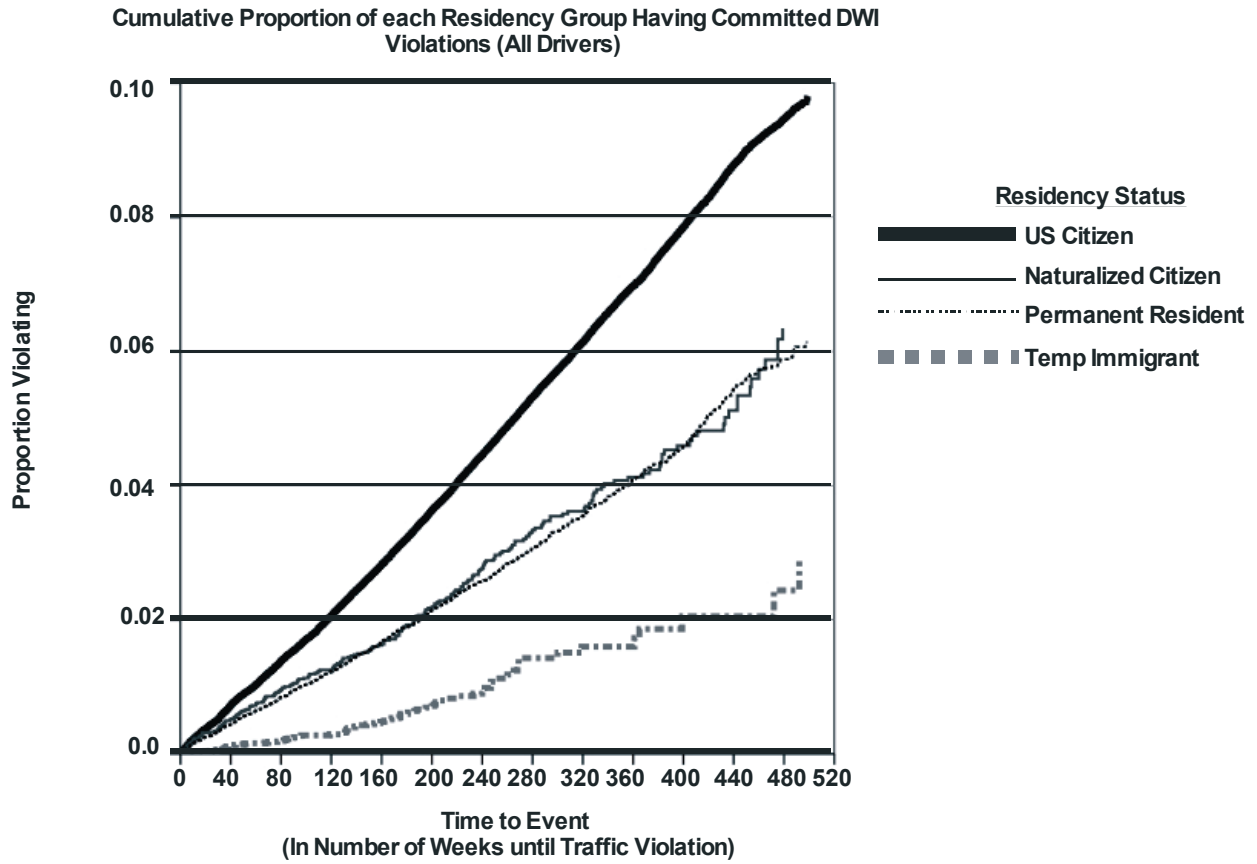


Figure A - 16. Tennessee. Survival Analysis for DWI Violations. All Drivers (Years: 2005-2009)

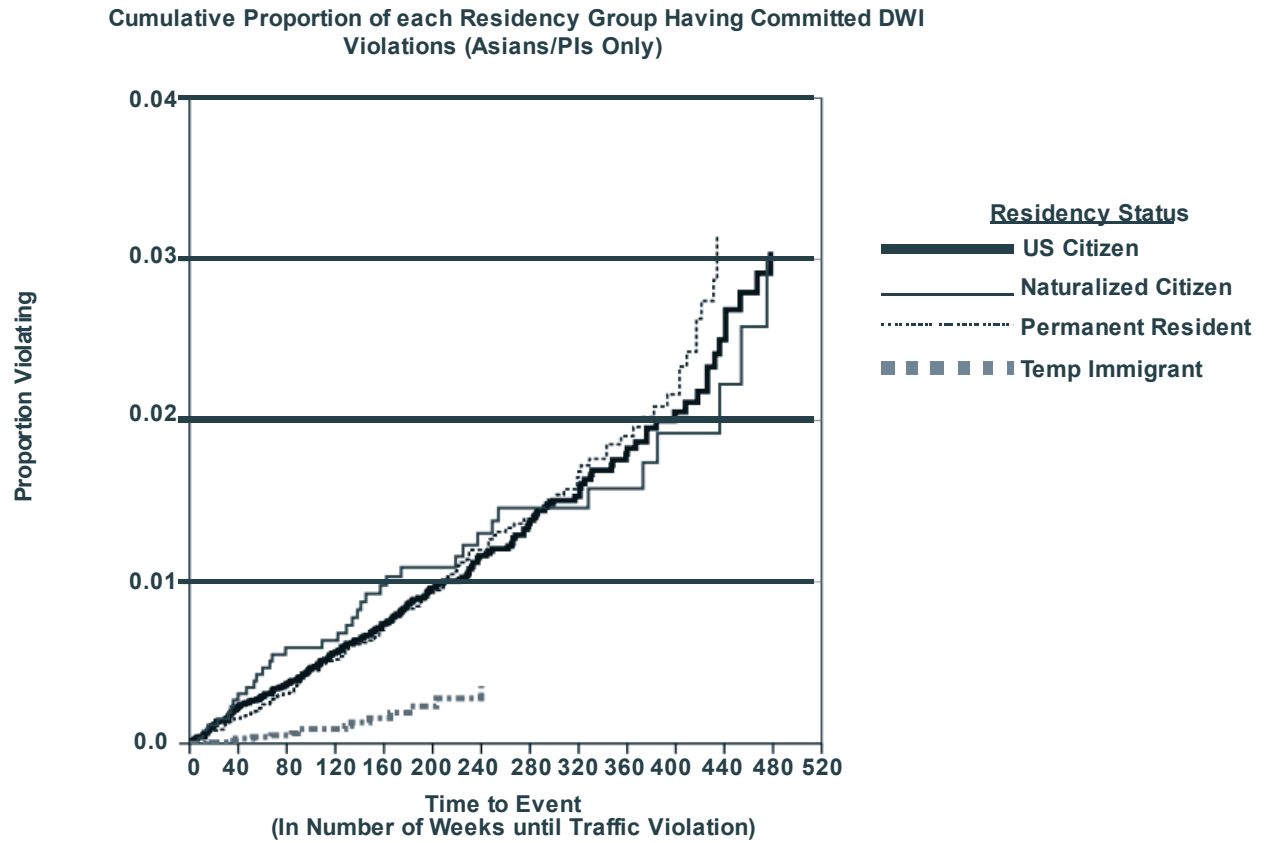


Figure A - 17. Tennessee. Survival Analysis for DWI Violations. Asian/Pis Only (Years: 2005-2009)

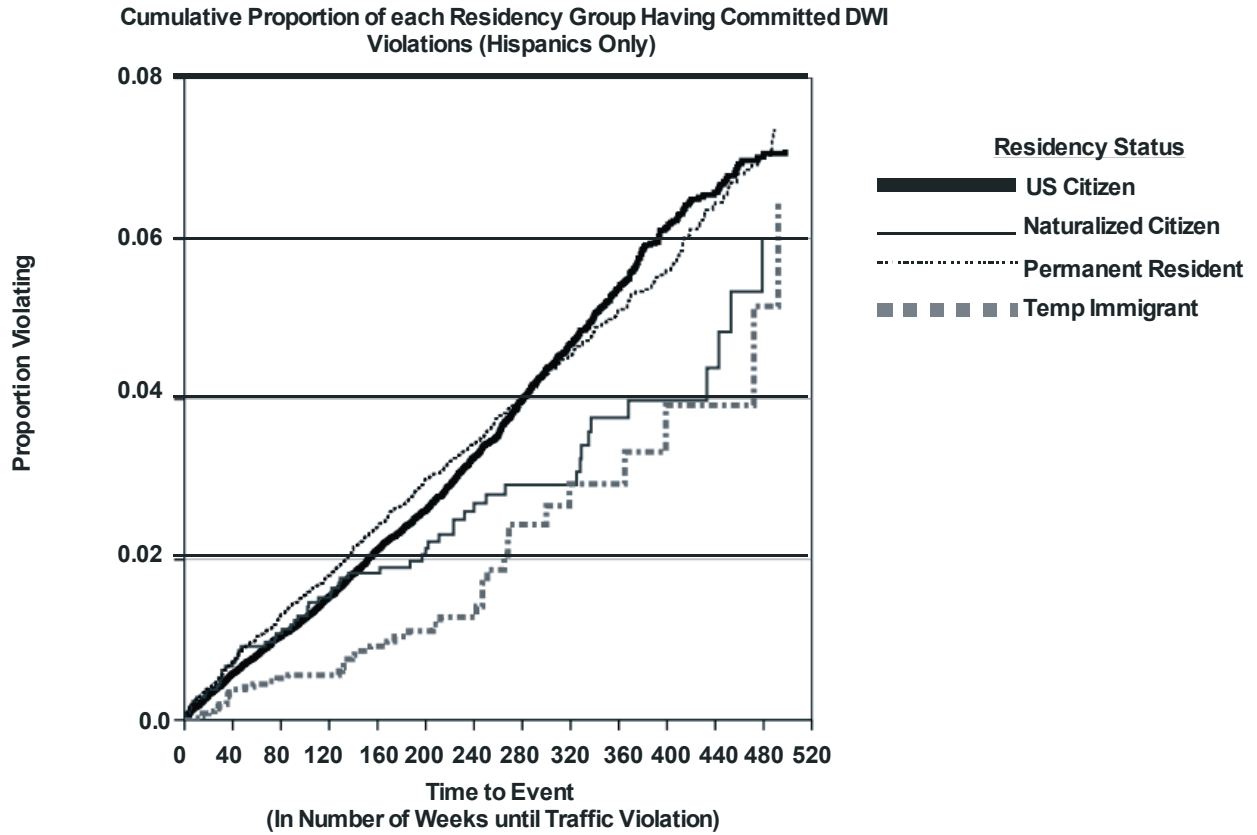


Figure A - 18. Tennessee. Survival Analysis for DWI Violations. Hispanics Only (Years: 2005-2009)

c) Speeding Violations

Cumulative Proportion of each Residency Group Having Committed Speeding Violations (All Drivers)

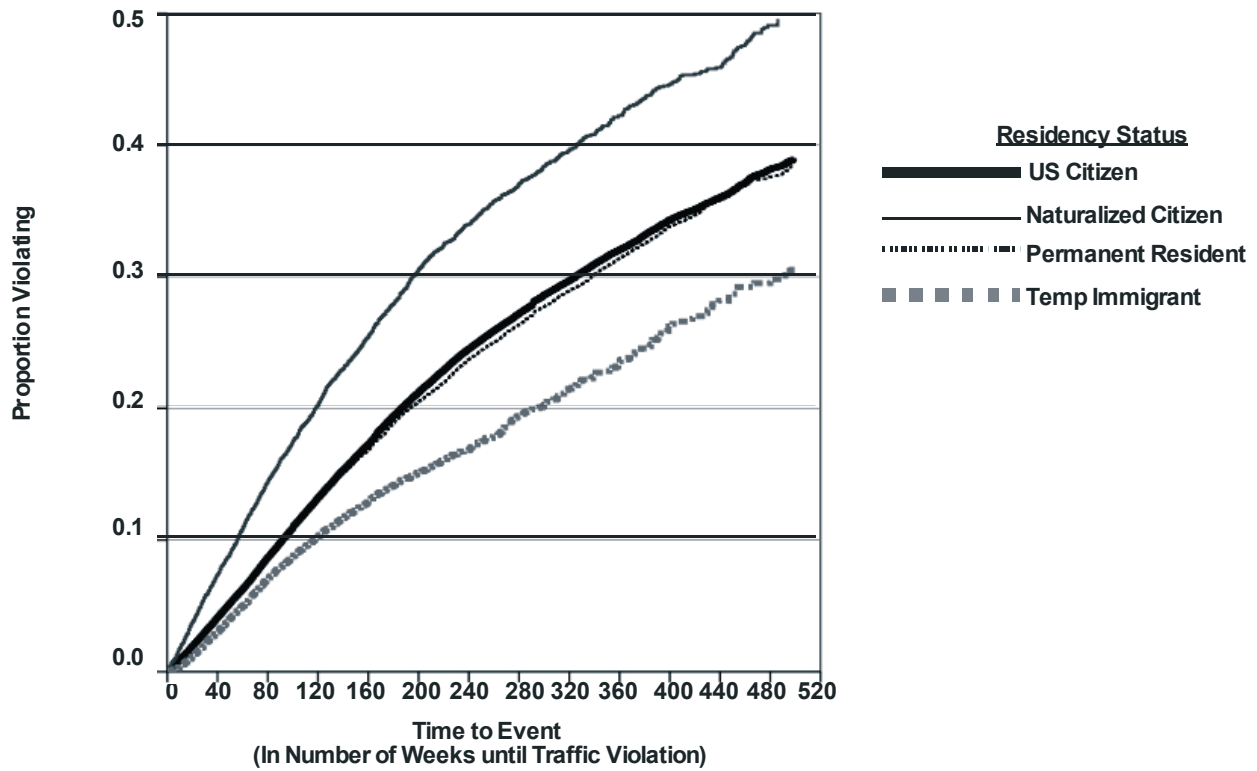


Figure A - 19. Tennessee. Survival Analysis for Speeding Violations. All Drivers (Years: 2005-2009)

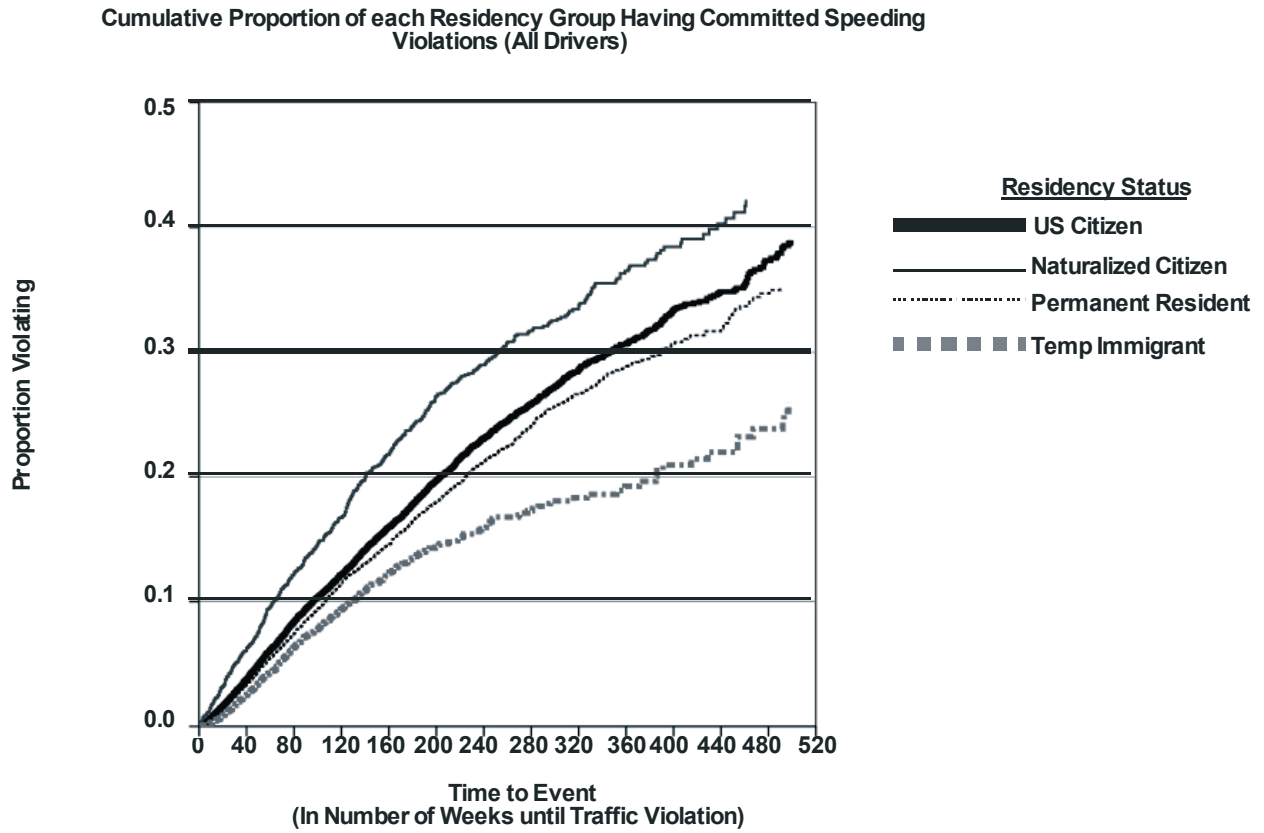


Figure A - 20. Tennessee. Survival Analysis for Speeding Violations. Asian/Pis Only (Years: 2005-2009)

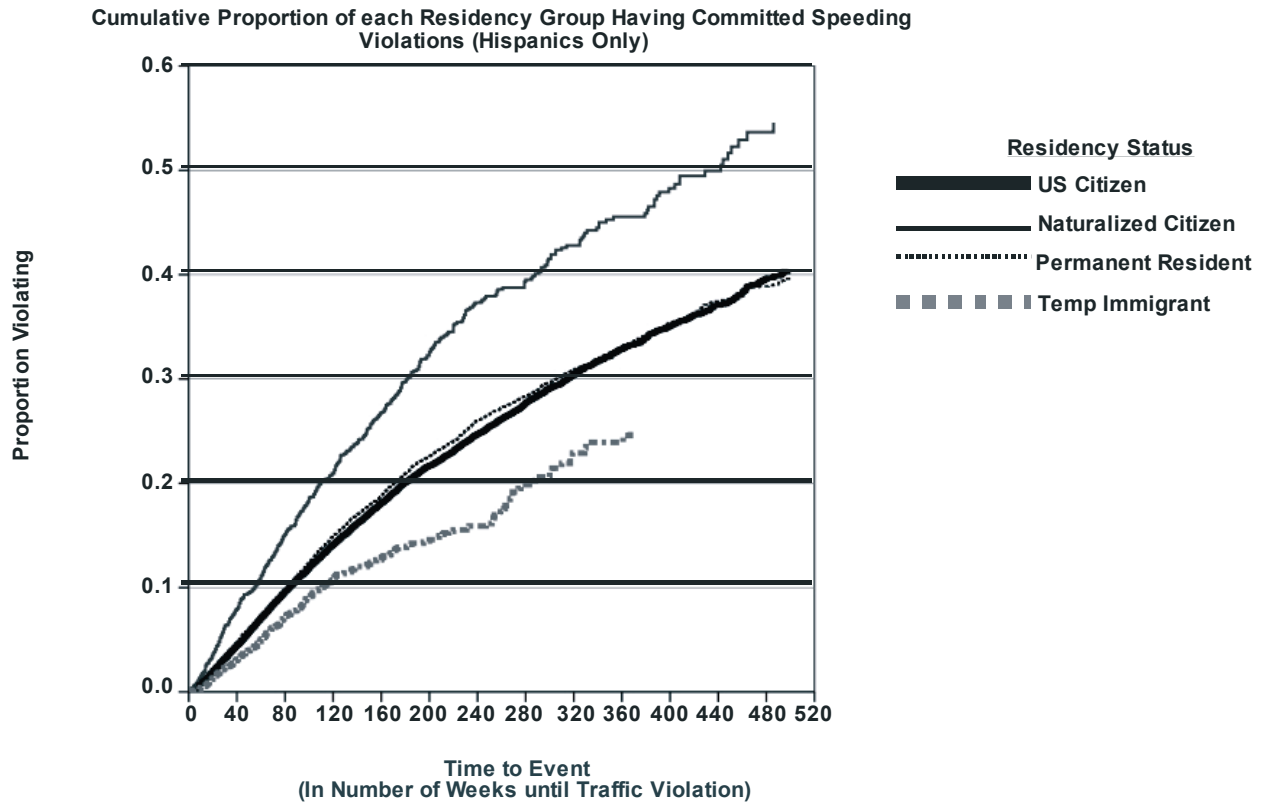


Figure A - 21. Tennessee. Survival Analysis for Speeding Violations. Hispanics Only (Years: 2005-2009)

d) Failure-to-Obey Violations

Cumulative Proportion of each Residency Group Having Committed FTOS Violations (All Drivers)

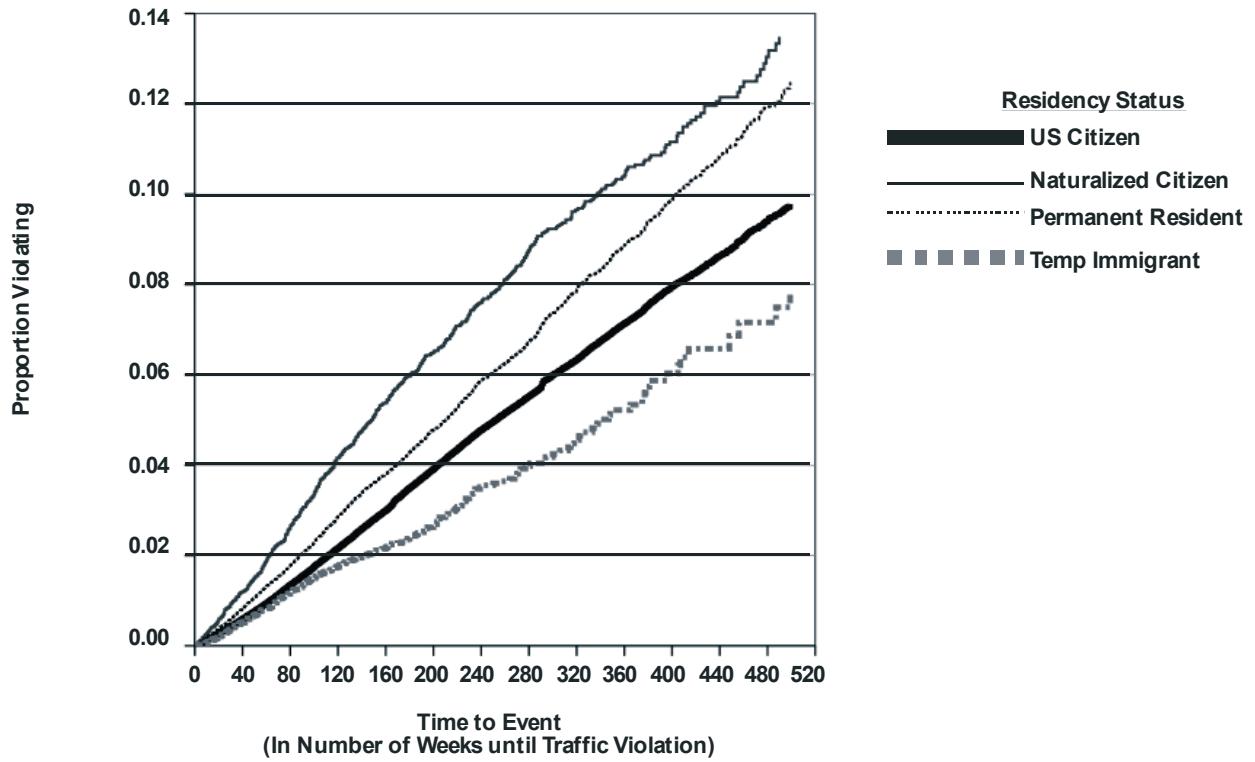


Figure A - 22. Tennessee. Survival Analysis for FTOS Violations. All Drivers (Years: 2005-2009)

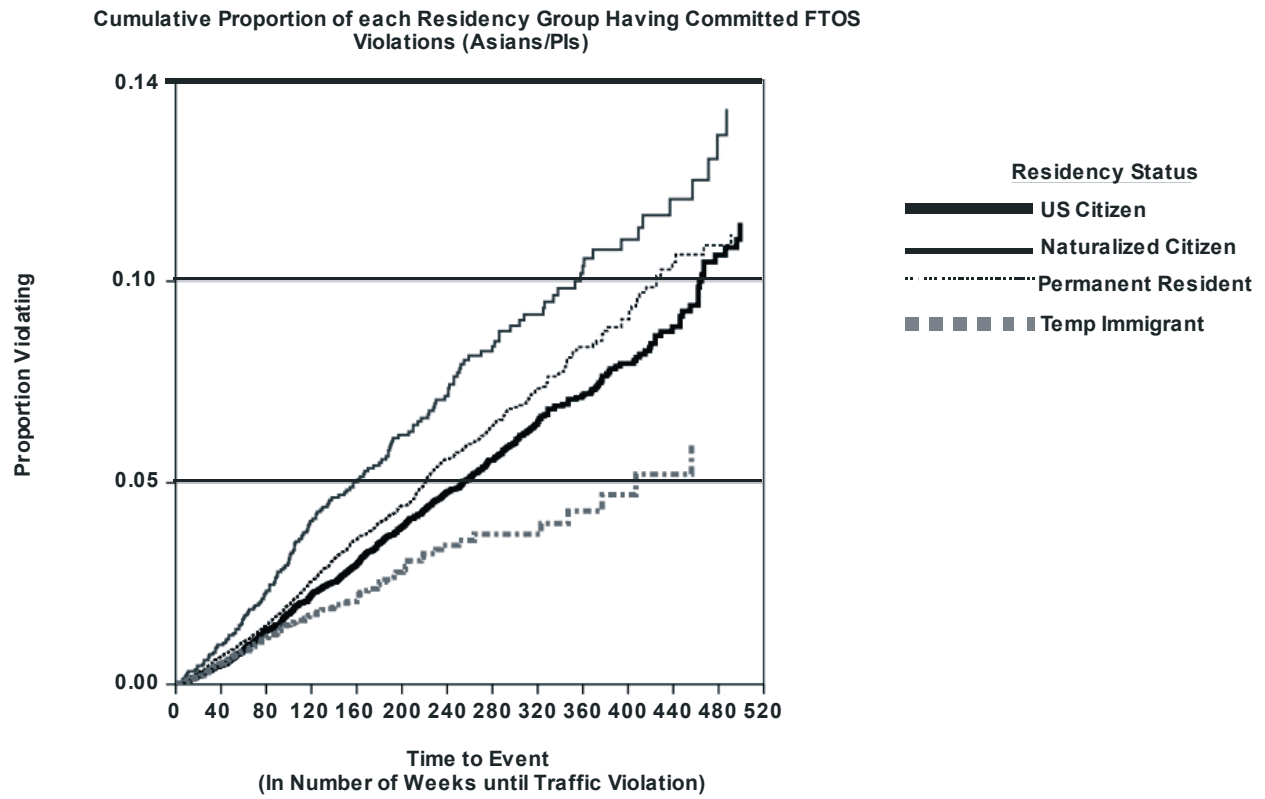


Figure A - 23. Tennessee. Survival Analysis for FTOS Violations. Asian/Pis (Years: 2005-2009)

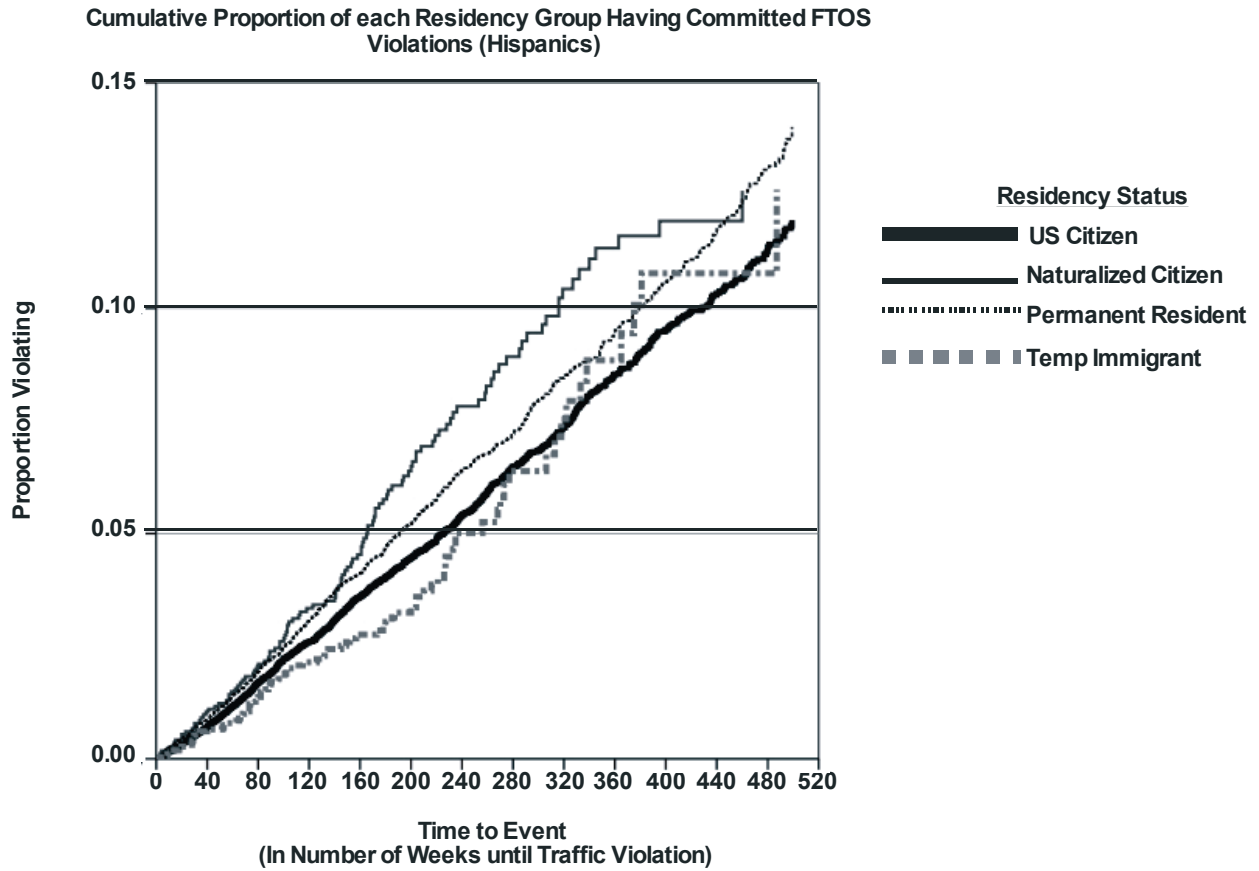


Figure A - 24. Tennessee. Survival Analysis for FTOS Violations. Hispanics (Years: 2005-2009)

Appendix B

Criteria Used to Assign Traffic Violations in Florida and Tennessee

Table B - 1. Criteria Used to Assign Traffic Violation in Florida

Reason for Citation	Seat Belt	Alcohol	Speeding	Failure-to-Obey
ADMINISTRATIVE PER SE		X		
DRIV/ACT PHY CONTROL W/INTOX		X		
VIOL CHAPTER 893 CONTROLD SUBSTANCE		X		
DRIV/ACT PHY CTL-NARC, BARB, STIM		X		
ILLEGAL POSSESSION ALCOHOL OR DRUGS		X		
DRIV W/AN UNLAW BLOOD ALCHL LEV		X		
DUI MANSLAUGHTER		X		
REFUSE SUB BREATH/URINE/BLOOD TEST		X		
OP MV WHILE DISABLED		X		
FELONY-POSS OF CONTROLLED SUBSTANCE		X		
NO/IMPROPER CHILD RESTRAINT DEVICE	X			
SEAT BELT VIOLATION	X			
PERMIT SEAT BELT VIOLATION	X			
SEAT BELT VIOLATION (PASSENGER)	X			
PASSING-POSTED SIGN/HILL/CURVE				X
OPEN CONTAINER-ALCOHOLIC BRV.-OPR		X		
OPEN CONTAINER-ALCHL BRV.-PASSENGER		X		
VIOL-IGNITION INTERLOCK DEVICE	X			
MSRP/AGE OBTAIN ALCHL-VIO 562.11(2)	X			
POSSES OF ALCHL BEV/MINOR-S.562.111		X		
SPEED-ENHANCED PENALTY ZONE			X	
FAIL TO OBEY TRAF INSTR SIGN/DEVICE				X
DISOBEYED BUS/CAR POOL LANE SIGN				X
FAILURE TO OBSERVE STOP SIGN				X
FAIL STOP-INOPERATIVE TRAFFIC SIG				X
R/R CROSSING VIOLATION				X
FAIL TO OBEY TRAFFIC CONTROL DEVICE				X
FAIL TO OBEY STEADY RED INDICATION				X
RACING ON PUBLIC TRAFFICWAY			X	
DRIV TOO FAST FOR CONDITIONS			X	
SPEED IN EXCESS OF POSTED MAXIMUM			X	
SPEED LESS THAN POSTED MINIMUM				X

	Seat Belt	Alcohol	Speeding	Failure-to-Obey
Reason for Citation				
UNLAWFUL SPEED			X	
UNLAWFUL SPEED-RADAR/TIME			X	
SPEED IN POSTED ZONE			X	
SPEED-POSTED ZONE-RADAR/TIME			X	
SPEC HAZ-DRIVING TOO FAST FOR COND			X	
UNLAWFUL SPEED-INTERSTATE HWY			X	
SPEED-INTERSTATE-RADAR/TIME			X	
UNLAWFUL SPEED-4LN-20 MED			X	
SPEED-4LN-20 MED RADAR/TIME			X	
UNLAWFUL SPD - WORK ZONE/SCHOOL ZONE			X	
RACING ON HIGHWAY SPECTATOR			X	
VIOL 316.1926 SPEED>50 MPH			X	
VIOLATION OF 316.1926 MOTORCYCLE/MOPED			X	
DRIVING WRONG WAY ON ONE WAY STREET				X
DRIVING ON WRONG SIDE OF ROAD				X
DRIV WRONG DIR ROTARY INTERSECTION				X
REFUSAL TO SUBMIT TO CHEMICAL TEST		X		
DRIVING UNDER THE INFLUENCE		X		
DUI-PROPERTY DAMAGE/PER. INJ.		X		
DUI-SERIOUS BODILY INJURY		X		
DRIV UNDER THE INFLUENCE-BICYCLE		X		
DUI-PROP. DAMAGE/PER. INJ.-BICYCLE		X		
DUI-SERIOUS BODILY INJURY-BICYCLE		X		
DRIV W/ABILITY IMPAIRED BY ALCOHOL		X		
DRV CMV WHL ALCHL CON .04 OR HIGHER		X		
DRV CMV IN POSS OF CONTROLLED SUB		X		
REFUSED TEST TO DETER ALCHL CON-CMV		X		
SPEED 15 OR MORE MPH OVER LIMIT-CMV			X	
DRV/PHY CTRL CMV WITH ANY ALCOHOL		X		
SPEED 16 OR MORE MPH OVER LIMIT			X	
ILLEGAL POSSESSION ALCOHOL		X		
ADMINISTRATIVE PER SE FOR .10 BAC		X		
ADMINISTRATIVE PER SE FOR .04 BAC		X		
ADMINISTRATIVE PER SE FOR .08 BAC		X		
ADMIN UNLAWFUL BAL(<21).05/HIGHER		X		
UNDERAGE ADMIN PER SE/.02 OR > BAC		X		
ADMIN REFUSE SUBMIT BREATH TEST< 21		X		
ADM REFUSE BREATH/URINE/BLOOD TEST		X		

	Seat Belt	Alcohol	Speeding	Failure-to-Obey
Sanction				
DRIV MV WHILE UNDER THE INFLUENCE		X		
DRV CMV WHL ALCHL CON .04 OR HIGHER		X		
DRV CMV IN POSS OF CONTROLLED SUB		X		
REFUSED TEST TO DETER ALCHL CON-CMV		X		
DRIVE W/UNLAW BAL .X0 OR ABOVE-CMV		X		
DRIV W/UNLAW BAL .08 OR ABOVE-CMV		X		
VIOLATION RAILROAD CROSSING				X
DRIVING UNDER THE INFLUENCE OF ALCH		X		
DRIVING WHL INTOX ALCHL/NARC/DRUGS		X		
DRV UNDER THE INFLU ALCH AND DRUGS		X		
ADMINISTRATIVE PER SE FOR .X0 BAC		X		
ADMINISTRATIVE PER SE FOR .04 BAC		X		
ADMINISTRATIVE PER SE FOR .08 BAC		X		
DRIVING UNDER THE INFLUENCE OF DRUGS		X		
DRIVING UNDER THE INFLUENCE		X		
DRIVING WHILE INTOXICATED MEDICATION		X		
DUI MANSLAUGHTER/DUI/DUBAL/VEH HOM		X		
DRIVING UNDER THE INFLUENCE		X		
DUI/ACT PHY CTL-NARC, BARB, STIM		X		
DRIV W/AN UNLAW BLOOD ALCHL LEV		X		
DUI - SERIOUS BODILY INJURY		X		
DUI-PROPERTY DAMAGE/PERSONAL INJ		X		
VIOL-IGNITION INTERLOCK DEVICE		X		
DUI MANSLAUGHTER		X		
RACING ON PUBLIC TRAFFICWAY			X	
DRIVE W/UNLAW BAL(.08 OR ABOVE)		X		
DRIVE W/UNLAW BAL(.X0 OR ABOVE)		X		
DRIVE W/UNLAWFUL BAL .02(UNDER 2X)		X		
REFUSE SUBMIT BREATH TEST(UNDER 2X)		X		
UNLAWFUL BAL(UNDER 2X).05 OR HIGHER		X		
DWII/ACT PHY CTL-NARC BARB STIM		X		
DWII/ACT PHY CTL-NARC BARB STIM		X		
DRIV W/AN UNLAW BLOOD ALCHL LEV		X		
REFUSAL TO SUBMIT TO BAL TEST (BUI)		X		
OPERATING A VESSEL BAL .02 (UNDER 2X)		X		

Only citation and sanction codes used for this study are listed. An "X" indicates that a violation or sanction coded as indicated in the database would be assigned as a seat belt, alcohol, speeding, or failure-to-obey.

Table B - 2. Criteria Used to Assign Traffic Violation in Tennessee

	Seat Belt	Alcohol	Speeding	Failure-to-Obey
(4) CARELESS OR NEGLIGENT DRIVING				X
(4) CARELESS OR NEGLIGENT DRIVING RESULTING IN ACC-COMM VEH				X
(5) CARELESS OR NEGLIGENT DRIVING - COMMERCIAL VEHICLE				X
(6) CARELESS OR NEGLIGENT DRIVING - HAZ MAT				X
(6) CONTEST RACING - JUVENILE COURT - NO REVOCATION			X	
(6) DRIVING WHILE INTOXICATED - JUVENILE COURT - NO REV		X		
(6) RECKLESS DRIVING				X
(6) RECKLESS DRIVING RESULTING IN ACCIDENT - COMM VEHICLE				X
(6) VEHICULAR HOMICIDE - JUVENILE COURT - NO REVOCATION				X
(7) RECKLESS DRIVING - COMMERCIAL VEHICLE				X
(8) RECKLESS DRIVING - HAZARDOUS MATERIAL				X
(8) RECKLESS ENDANGERMENT BY VEHICLE - MISDEMEANOR				X
(8) DRIVING WHILE ABILITY IMPAIRED - NO SUSPENSION		X		
ADMINISTRATIVE PER SE/DUI/CMV/REV		X		
ADMINISTRATIVE PER SE/DUI/HAZMAT/REV		X		
CHILD ENDANGERMENT DWI - REVOCATION - NOTICE SENT		X		
CHILD ENDANGERMENT INJURY DWI - REVOCATION - NOTICE SENT		X		
CHILD RESTRAINT VIOLATION - AGE 3 AND UNDER	X			
CHILD RESTRAINT VIOLATION - AGES 4 THRU 15 - 1ST OFFENSE	X			
CHILD RESTRAINT VIOLATION - AGES 4 THRU 15 - 2ND OFFENSE	X			
CONTEST RACING ON PUBLIC TRAFFICWAY - NO REV			X	
CONTEST RACING ON PUBLIC TRAFFICWAY-REV-NOTICE SENT			X	
CONTEST RACING ON PUBLIC TRAFFICWAY-SUSP - NOTICE SENT			X	
CONV/ALCOHOLIC BEVRG VIO - 2ND - DRIVING - SUSP		X		
CONV/ALCOHOLIC BEVRG VIO-1ST - DRIVING -SUSP		X		
CONV/ALCOHOLIC BEVRG VIO-2ND-NON-DRIVING-SUSP		X		
CONV/ALCOHOLIC BEVRG VIOL-1ST-NON-DRIVING-SUSP		X		
DRIVING UNDER THE INFLUENCE BY CONSENT-REV-NOTICE SENT		X		

	Seat Belt	Alcohol	Speeding	Failure-to-Obey
DRIVING WHILE IMPAIRED (AGE 16 THRU 20)-NOTICE SENT-SUSP		X		
DRIVING WHILE IMPAIRED-2ND OFFENSE-REVOCAION		X		
DRIVING WHILE IMPAIRED-3RD OFFENSE-REVOCAION		X		
DRIVING WHILE IMPAIRED-4TH OFFENSE-FELONY-REV		X		
DRIVING WHILE INTOXICATED - 1ST OFFENSE - REVOCATION		X		
DRIVING WHILE INTOXICATED - 2ND OFFENSE - REVOCATION		X		
DRIVING WHILE INTOXICATED - 3RD OR SUBSEQUENT - REV		X		
DRIVING WHILE INTOXICATED - NO REV		X		
DRIVING WHILE INTOXICATED - REVOCATION		X		
DRIVING WHILE INTOXICATED - REVOCATION - NOTICE SENT		X		
DRIVING WHILE INTOXICATED - SUSPENSION - NOTICE SENT		X		
DRIVING WHILE INTOXICATED/COMM VEH - NOTICE SENT		X		
DRIVING WHILE INTOXICATED/COMM VEH 2ND OFFENSE		X		
DRIVING WHILE INTOXICATED/HAZ MAT - NOTICE SENT		X		
DRIVING WHILE INTOXICATED-4TH OFFENSE-REVOCATION		X		
DRIVING WHILE REVOKED - REVOCATION - NOTICE SENT		X		
DRIVING WHILE REVOKED/COMM VEH - NOTICE SENT		X		
DRIVING WHILE REVOKED/HAZ MAT - NOTICE SENT		X		
EXCESS SPEED- NOT IND(6),15-25(5),26-35(6),>36(7)			X	
F04 VIOLATION OF SEAT BELT LAW AS DRIVER	X			
FAIL TO SUBMIT TO BLOOD ALCOHOL TEST -SUSP-NOTICE SENT		X		
IMPLIED CONSENT LAW VIOLATION - HAZ MAT - NOTICE SENT		X		
IMPLIED CONSENT LAW VIOLATION- SUSP - NOTICE SENT		X		
IMPLIED CONSENT LAW VIOLATION/SUSP/COM VEH - NOTICE SENT		X		
PERMITTING MINOR TO RIDE W/O PROPER RESTRAINT-AGE 16 OR 17	X			
POSSESSION OF OPEN CONTAINER OF ALCOHOLIC BEVERAGE		X		
POSSESSION OF OPEN CONTAINER OF ALCOHOLIC BEVERAGE - CDL		X		
RACING ON PUBLIC TRAFFICWAY/HAZ MAT-NOTICE SENT			X	
RECKLESS ENDANGERMENT BY VEH -FELONY - REV-				X

	Seat Belt	Alcohol	Speeding	Failure-to-Obey
NOTICE SENT				
SPD-CONST ZN-NO IND(4),1-5(2),6-15(4),16-25(5),26-35(6),36>(8)			X	
SPEEDING 1-5(1),6-15(3),16-25(4),26-35(5),36-45(6),46>8			X	
SPEEDING IN CONSTRUCTION ZONE-CMV -NOT IND(7),1-5(3),6-14(5)			X	
SPEEDING RESULTING IN ACC-CMV - NOT IND(4), 1-5(2), 6-14(4)			X	
SPEEDING-CMV - NOT INDICATED(4), 1-5(2), 6-14(4)			X	
SPEEDING-HAZ MAT - NOT INDICATED(5), 1-5(3), 6-14(5)			X	
VEH HOMICIDE/INTOX PROXIMATE CAUSE/COM VEH-NOTICE SENT		X		
VEH HOMICIDE/INTOXICATE PROX CAUSE/HAZ MAT-NOTICE SENT		X		
VEH HOMICIDE-INTOXICATION PROX CAUSE-REV-NOTICE SENT		X		
VEHICULAR ASSAULT - FELONY - REVOCATION				X
VIOL OF MOTORCYCLE HELMET LAW	X			
VIOL OF SEAT BELT LAW DRIVER/PASS AGE 16-17 - 1ST OFFENSE	X			
VIOL OF SEAT BELT LAW DRIVER/PASS AGE 16-17 - 2ND OFFENSE	X			
VIOLATION OF SEAT BELT LAW AS PASSENGER-AGE 18 OR OVER	X			
An "X" indicates that a violation or sanction coded as indicated in the database would be assigned as wither a seat belt, alcohol, speeding, or failure-to-obey.				

