U.S. Department of Transportation
National Highway Traffic Safety Administration

TRAFFIC SAFETY FACTS
Research Note

NHTSA
www.nhtsa.gov

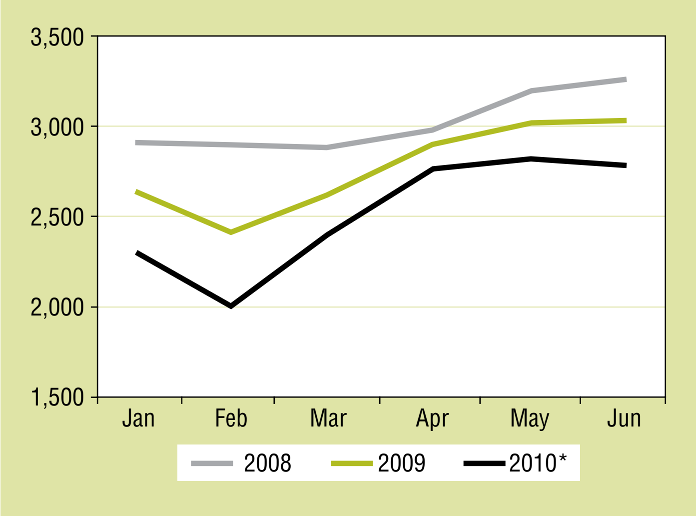
DOT HS 811 123 Summary of Statistical Findings November 2010

Statistical Methodology to Make Early Estimates of Motor Vehicle Traffic Fatalities

Highlights

Beginning with the third quarter of 2008, NHTSA began making quarterly projections of motor vehicle traffic fatalities. The latest such projection was made by NHTSA recently (DOT HS 811 403, September 2010) and showed that fatalities in motor vehicle traffic crashes during the first six months (January through June) of 2010 are projected to decline by about 9.2 percent as compared to the same time period in 2009. The estimated month-to-month fatality counts for 2010 and reported FARS fatalities from January through June during 2008 and 2009 are depicted in Figure 1. This Research Note details the underlying data and the statistical methodology that was used to estimate fatalities during the first half of 2010. This methodology and data will be used to make future estimates and will be continuously evaluated to make refinements to the estimation process.

Figure 1
Reported Fatalities in 2008–2009 and Projected Fatalities In 2010, January to June



*Estimates, NHTSA DOT HS 811 403

1. Introduction

The National Highway Traffic Safety Administration and the highway safety community have an essential need for "real-time" or "near-real-time" data on the number of fatalities resulting from motor vehicle traffic crashes. This data is required to provide timely information to Congress, to report on progress toward meeting agency and Department goals, to assist States in their safety programs, and to inform the public about the state of highway safety. NHTSA's existing data programs, the Fatality Analysis Reporting System (FARS) and the National Automotive Sampling System (NASS), were designed to provide a detailed annual accounting of characteristics of motor vehicle crashes. Because considerable time is necessary to obtain the data these systems require, producing real-time crash fatality data from them is not currently possible. With this emerging data need in mind, Congress authorized NHTSA to develop FastFARS – a fatality reporting system using the FARS infrastructure, but which must provide near-real-time accounting of traffic fatality counts. NHTSA was mandated to develop FastFARS without interrupting the collection of the detailed information in FARS. The success of FastFARS depends on three factors: (1) Reliable and timely notification of crash fatalities within each State; (2) Timely and accurate reporting of fatality counts by each State to NHTSA; and (3) compilation of State fatality counts into a national total. FastFARS operated in a prototype mode in 2006 and 2007 and in a production mode in 2008. While the timeliness and accuracy of Fast-FARS have considerably improved since its inception in 2006, there still remain under-reporting and other non-response problems in various States. To address this issue, NHTSA has developed a statistical procedure that is a combination of adjusting the fatality data reported through Fast-FARS and other independent sources to date in 2010 and modeling the adjusted data to estimate fatalities. This Research Note describes the adjustment procedures as well as the modeling procedure—Time Series Cross Sectional Regression (TSCSR)—that was used to estimate the fatalities in the United States for the first six months of 2010.

2. Data

The data used in this analysis is from several sources such as FARS, FastFARS and monthly fatality counts (MFCs), as described below.

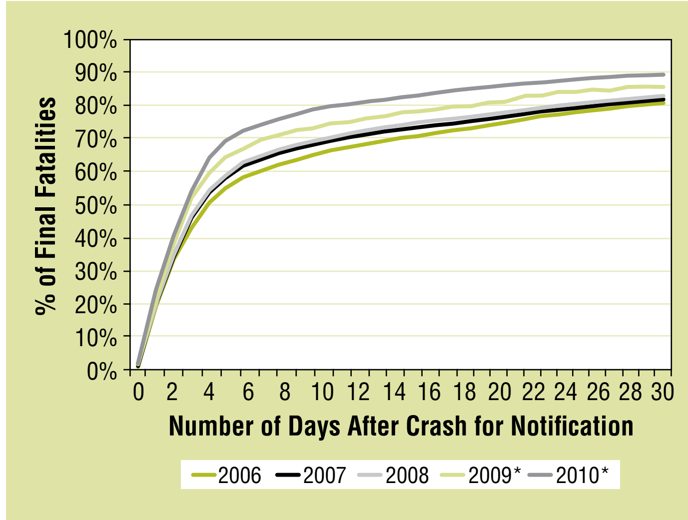
FARS: FARS is a census of fatal traffic crashes within the 50 States, the District of Columbia, Puerto Rico and the U.S. Virgin Islands. To be included in FARS, a crash must involve a motor vehicle traveling on a trafficway and result in the death of a person (occupant of a vehicle or a non-occupant) within 30 days of the crash. Fatality counts, by month, as reported to NHTSA's FARS files from January 2003 to December 2009 are used. Fatalities in Puerto Rico or the U.S. Virgin Islands are not part of the national estimates.

FastFARS (Early Notification): The FastFARS program is designed as an Early Fatality Notification System to capture data from States more rapidly and in real-time. It provides near-real-time notification of fatalities from all jurisdictions reporting to FARS by electronically transmitting fatal crash data. This system is continuously cumulated and updated. In this Research Note, FastFARS data from January 2006 to June 2010 were used from a snapshot taken on August 24, 2010.

Figure 2 shows the cumulative percentage of all crash fatality counts reported within the first 30 days for this recent Fast-FARS file (snapshot). The figure shows that the notification into the FastFARS data system has been steadily improving. In fact, in 2006 while about 80 percent of the traffic fatalities were reported by 30 days from the time of the crash, just about 90 percent of the traffic fatalities were reported within 30 days in 2010. The line for 2010 is based only on crashes reported to date, and there may still be fatal crashes that occurred in 2010 that have not yet been reported into Fast-FARS.

Monthly Fatality Counts (MFC): The MFC data provide monthly fatality counts by State through sources that are independent from the FastFARS or FARS systems. MFCs from January 2003 to June 2010 are used. MFCs are reported mid-month for all prior months of the year.

Figure 2
Cumulative Percentage of All Crash Fatality Counts Reported Within the First 30 Days in FastFARS in 2006–2010 Data Years



*2009 and 2010 FARS data are still being reported

3. Methodology

In the estimation of fatalities in each month (January–June) of 2010, the modeling procedure uses the relationship among FARS, MFC and FastFARS. The fatality counts from MFCs are updated every month and become stable after a certain time. Similarly, the fatality counts from FastFARS are continuously updated due to real-time notification and stabilize after a certain lag time. However, historically FastFARS and MFCs produce marginally different monthly fatality counts from FARS even after they become stable. Also, the difference of FastFARS and MFC from FARS fluctuates over time. Due to this reason, the procedure of estimating traffic fatalities consists of two steps, adjustment of data based on reporting levels followed by modeling using the adjusted data. The TSCSR procedure in SAS was used in the modeling procedure, the details of which can be found in the SAS (1999).

3.1 Adjustment Procedures

Since the two datasets, MFC and FastFARS, which are used as predictor variables in the modeling procedure, have not been finalized for 2009 and 2010, they need to be adjusted (inflated) based on historical reporting patterns. The details of the adjustment procedures for MFC and FastFARS are provided in the following sections.

3.1.1 Adjustment of MFC

The MFCs in crashes that occurred during CY (crash year), CM (crash month), and reported during RY (reporting year) and RM (reporting month), are labeled as: $MFC_{RY,RM}^{CY,CM}$. The most recent MFC snapshot for CY = 2010 and CM = Jan., Feb.,…, Jun., was reported on RY = 2010 and RM = Aug. The 2010 MFCs will continually be updated until late 2011 and hence the "final" fatality counts for $MFC_{RY=2010,RM=Aug}^{CY=2010,CM}$ (CM = Jan., Feb., …, Jun.) are estimated by making an inflation based on reporting patterns in previous years. Historical MFC data is available each year from CY1 to CY2 (CY2 > CY1). The starting file (snapshot) is RM1 = Nov, the most recent reporting month (for each year from CY1 to CY2). The final file (snapshot) with the last reporting year (RY2) and the last reporting month (RM2) for that crash year (CY) is $MFC_{RY2,RM2}^{CY,CM}$. Generally, RY2 = CY+1 and RM2 = December in MFC dataset. Then, the percentage change (i.e., the inflation rate) between these two files (snapshots) for each crash month of the year is given by equation (1) below,

$$\%_{CM}^{CY} = \frac{(MFC_{RY2,RM2}^{CY,CM} - MFC_{RY1=CY,RM1=Oct}^{CY,CM})}{MFC_{RY2,RM2}^{CY,CM}} \qquad (1)$$

where CY = CY1, CY1+1, CY1+2, … , CY2, CM = Jan., Feb., …, Jun.

There are potentially two approaches can be followed for the next step adjustment. The *first approach* is to take the average rate of years between CY1 and CY2:

$$<\%_{CM}> = \frac{\sum_{CY=CY1}^{CY=CY2} \%_{CM}^{CY}}{(CY2 - CY1 + 1)} \qquad (2)$$

Then, the "final" adjusted (inflated) crash fatality counts for the initial raw counts $MFC_{RY=2010,RM=Aug}^{CY=2010,CM}$ is,

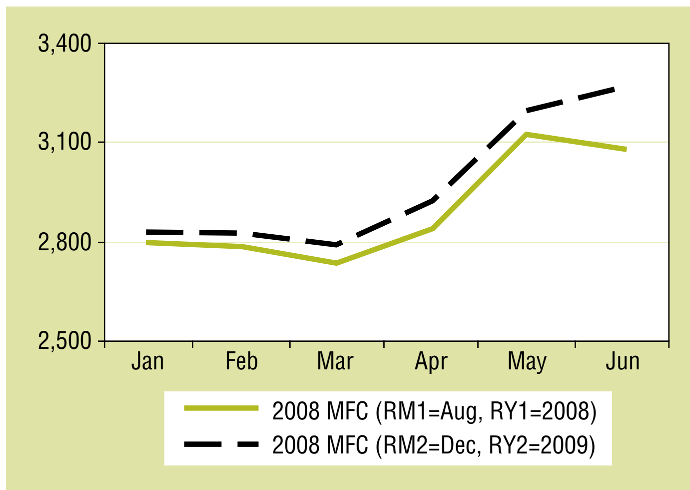
$$Adjusted\_MFC_{RY=2010,RM=Aug}^{CY=2010,CM} = \frac{MFC_{RY=2010,RM=Aug}^{CY=2010,CM}}{(1 - <\%_{CM}>)} \qquad (3)$$

where CM = Jan., Feb., …, Jun.

In the calculations of the average rate $<\%_{CM}>$ in (2), the adjustment (inflation) rate shows an overall decreasing trend as the crash year CY increases from CY1 = 2003 to CY2 = 2008 for every crash month, implying that the reporting to the MFC system has been improving (the lag time between the crash event and the data entered into the system is getting shorter). Consequently, a *second approach* is to use a single ($\%_{CM}^{CY}$) as computed in (1) of the most recent year data to do this adjustment (inflation) for $MFC_{RY=2010,RM=Aug}^{CY=2010,CM}$ in (3). In this study, the second approach is adopted by calculating the inflation rate based on the 2008 MFC data and then this rate is applied to adjust 2009 and 2010 MFC crash fatality counts, as 2008 is the most recent year for which the final MFC data has been reported.

In Figure 3, the MFC 2008 crash fatality data for the first 6 crash months (CY = 2008, CM = Jan., Feb., …, Jun.), reported on the August 2008 (RM1 = Aug. and RY1 = 2008) and the last reporting time December 2009 (RM2 = Dec. and RY2 = 2009), are presented. It shows that the finalized crash fatality data (RM2 = Dec. and RY2 = 2009) is higher than the initial raw fatality counts (RM1 = Aug. and RY1 = 2008) for each crash month, and the adjustment (inflation) rate would increase with the crash month from January to June.

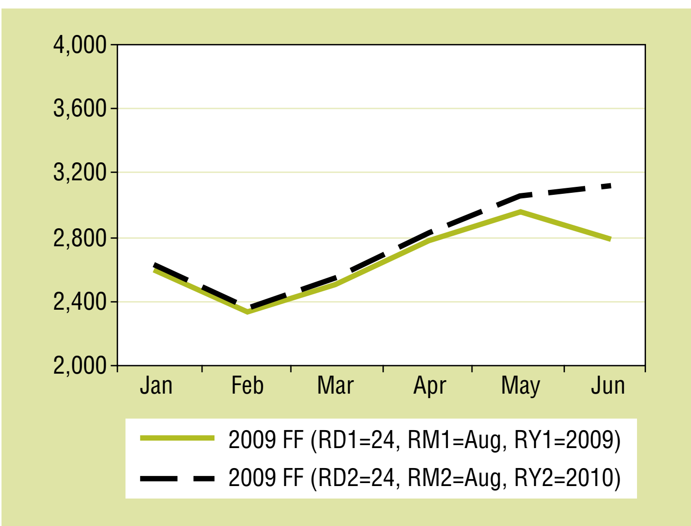
Figure 3
MFC 2008 Crash Fatality Data for the First Six Crash Months Reported in August 2008 and the Last Reporting Time December 2009



3.1.2 Adjustment of FastFARS

The fatality counts from a FastFARS (FF in formulas) reporting crash data file (snapshot) with RY (reporting year), RM (reporting month), and RD (reporting day) that includes all crash fatalities at CY (crash year) and CM (crash month) are labeled as: $FF_{RY,RM,RD}^{CY,CM}$. For instance, for a recent FastFARS crash fatality file (snapshot) reported as of August 24, 2010, this file (snapshot) includes all fatality data for crash year CY = 2006,…, 2010 and crash month CM = Jan., Feb., …, Dec., with reporting time RY1 = 2010, RM1 = Aug. and RD1 = 24. The "final" fatality counts for the initial raw counts: $FF_{RY1=2010,RM1=Aug.,RD1=24}^{CY=2010,CM}$ (CM = Jan., …, Jun.) in 2010 need to be obtained. The most recent year CY = 2009 data was used to calculate the adjustment (inflation) rate ($\%^{CY,CM}_{RY,RM,RD}$) (with the same CM1, RM1 and RD1 as in CY = 2010), and then used to adjust the 2010 FastFARS to get the "final" fatality counts for $FF^{CY=2010,CM}_{RY1=2010,\,RM1=Aug.,\,RD1=24}$. The adjustment procedure is similar to the one in MFC. In Figure 4, based on a recent FastFARS file (snapshot) generated on 08/24/2010, the FastFARS 2009 crash fatality data for the first 10 crash months (CY = 2009, CM = Jan., Feb., …, Jun.), reported on the 2009 (RD1 = 24, RM1 = Aug. and RY1 = 2009) and the late reporting time 2010 (RD2 = 24, RM2 = Aug. and RY2 = 2010), are presented. It shows that the finalized crash fatality data (RD2 = 24, RM2 = Aug. and RY2 = 2010) is higher than the initial raw fatality counts (RD1 = 24, RM1 = Aug. and RY1 = 2009) for each crash month, and the adjustment (inflation) rate would increase with the crash month from January to June. This represents the first adjustment to the FastFARS data.

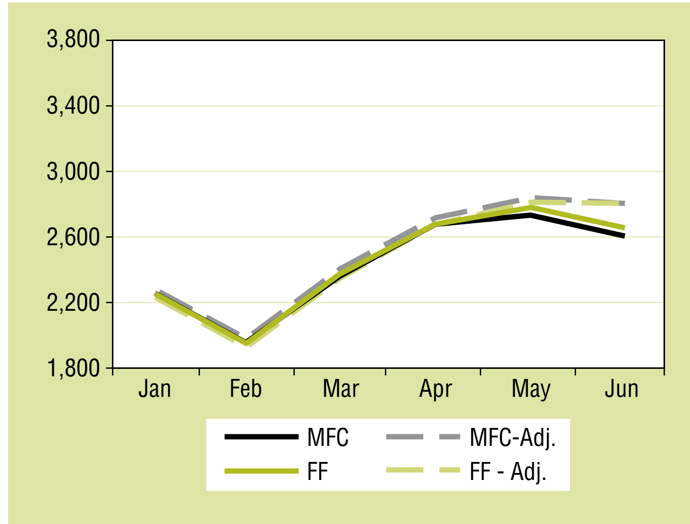
Figure 4
FastFARS 2009 Crash Fatality Data for the First Six Crash Months Reported in August 2009 and the Last Reporting Time August 2010



3.1.3 Results of Adjustments

As an example, based on one recent MFC and FastFARS data file (snapshot), the initial raw fatality counts and the adjusted "final" fatality counts for MFC and FastFARS for the first six crash month of the crash year 2010, are shown in Figure 5. These results confirm the expectation that the final adjusted (inflated) number is higher than the initial raw fatality counts for each crash month, and the adjustment (inflation) rate increases with the crash month from January to June, for both MFC and FastFARS datasets.

Figure 5
MFC, Adjusted MFC, FastFARS, and Adjusted FastFARS For the First Six Months in 2010



3.2 Modeling Procedure

In order to estimate the monthly traffic fatality counts of 2010, Time Series Cross Section Regression (TSCSR), was applied to analyze the data with cross-sectional values (by NHTSA Region) and time series, where FARS, and the adjusted MFC and FastFARS are used as predictor variables in the modeling. A TSCSR model used for fatality prediction is denoted as

$$FARS_{rm} = \beta_0 + \beta_1\, FF_{rm} + \beta_2\; MFC_{rm} + u_{rm}\,, \quad r = 1,\, 2,\, \ldots, 06 \; and \; m = 1,\, 2,\, \ldots,\, M \tag{4}$$

where $FARS_{rm}$ is FARS counts of regions r for month m FF_{rm} is adjusted fatality counts from FastFARS of region r for month m, and MFC_{rm} is adjusted fatality counts from MFC of region r for month m and where M is the length of the time series for each cross-section. In this study, when FastFARS is included in the model, time series of January 2006 to August 2010 data is used, M = 56 due to the availability of FastFARS. (or time series of January 2003 to August 2010 data is used, M = 92, which depends on the predictor variables of TSCSR models) and the number of time points across all 10 Regions are the same, that is, this data is balanced (Fuller & Battese, 1974). In the subsequent analysis, the adjusted FastFARS and MFC are denoted as FastFARS and MFC, respectively. In this model, the variance components u_{rm} in (1) consist of the individual, time-specific random effects and error disturbances and are specified as

$$u_{rm} = v_r + e_m + \varepsilon_{rm}\,, \quad r = 1,\, 2,\, \ldots, 10 \; and \; t = m = 1, \ldots, M \tag{5}$$

where v_r and e_m have a 0 mean and constant variances, σ_v^2 and σ_e^2, respectively and ε_{it} is a error term with

$E(\varepsilon_{rm}) = 0$, and $E(\varepsilon_{rm}\,\varepsilon_{r'm}) = \sigma_\varepsilon^2$ for $r \neq r'$. The parameters are efficiently estimated using the generalized least squares (GLS) method which involves estimating the variance components first and using the estimated covariance matrix thus obtained. Refer to Fuller and Battese (1974) for details.

Model Selection

In the TSCSR model, the variables adjusted MFC and adjusted FastFARS are considered. Table 1 shows three different combinations of predictors considered for a TSCSR model where data time points used are shown respectively. For more details, refer to the appendix.

Table 1
Combination of Predictors in Modeling

Model (data time period)	Predictor		Model Coefficients in (1)
	FF	MFC	
Mod 1 (Jan 06 – Jun 10)	✓		$\beta_1 \neq 0$; $\beta_2 = 0$
Mod 2 (Jan 03 – Jun 10)	✓		$\beta_1 = 0$; $\beta_2 \neq 0$
Mod 3 (Jan 06 – Jun 10)		✓	$\beta_1 \neq 0$; $\beta_2 = 0$

All three fitted TSCSR models considered in this analysis fit the data well with the Buse R-squared measure (R^2) greater than 0.9, which is the most appropriate goodness-of-fit measure for models estimated using GLS, (Buse 1973). In other words, the six fitted models of using different predictor variables explain the historical data from FARS well. Under the assumption that the past relationship among dependent variables (fatality counts from FARS) and predictor variables (MFC and FastFARS) also holds in 2010, fatality counts of each month of 2010 are estimated by using the fitted models. When MFC and FastFARS are already included in a TSCSR model both MFC (p-value < 0.0001) and FastFARS (p-value = 0.08) are statistically significant even when the other variable is already in the model. For these reasons, the fitted model 3 (R^2 = 0.9983) of including MFC and FastFARS as predictor variables is used for the national estimate of fatality counts of 2010.

4. Results

4.1. Estimated fatalities during 2010 (January–June)

The estimates from this fitted model show 14,996 fatalities for the 6-month period from January to June 2010 as shown in Table 2. Fatalities during all six months declined as compared to the fatalities in the corresponding months in 2009. The biggest decline to date in 2010 was an almost 15-percent decline in February, followed by about a 13-percent decline in January. The smallest decline of 4.5 percent was estimated for April 2010. Further details as well as fatality rates per 100 Million VMT have already been published by NHTSA in a separate document (DOT HS 811 403, *Early Estimate of Traffic Fatalities during the First Six Months of 2010*).

Table 2
National Estimate of Fatalities of 2010 and Its Comparison With Fatality Counts From FARS in 2009

Month	Fatalities from FARS in 2009*	Estimate of fatalities of 2010	Difference (2010–2009) (%)
Jan	2,608	2,275	-12.8%
Feb	2,351	2,010	-14.5%
Mar	2,580	2,402	-6.9%
Apr	2,867	2,739	-4.5%
May	3,044	2,809	-7.7%
June	3,059	2,761	-9.7%
Total	**16,509**	**14,996**	**-9.2%**

*FARS annual file in 2009

5. Model Validation

In late 2008, during the development of this model to estimate fatalities in 2008, NHTSA ran some validation tests on FARS data that was already reported (2007). In order to validate the TSCSR model that includes the two predictor variables (MFC and FastFARS), the data was divided into two sets. The data prior to July 2007 (data A) was used to fit a model to predict the data after July 2007 (data B) in order to validate the model. When the simulated estimates and the corresponding actual fatality counts from FARS for the latter half of 2007 are compared, their differences are marginal, as indicated in Table 3.

Table 3
Model Validation (Fatality Count From FARS in 2007 and Estimate of Fatalities)

Month	Fatalities from FARS in 2007*	Estimate of fatalities	Difference (Estimate-FARS) (%)
July	3,800	3,808	0.2%
Aug	3,653	3,672	0.5%
Sept	3,562	3,566	0.1%
Oct	3,569	3,601	0.9%
Nov	3,322	3,358	1.1%
Dec	3,235	3,263	0.9%
Total	**21,141**	**21,270**	**0.6%**

*FARS annual file in 2007

Since 2008, NHTSA has been making a series of projections to estimate fatalities for the first six months, nine months, and the full year. FARS data have since been reported for these time periods and this presents an opportunity to evaluate the estimates with the actual reported data. Table 4 shows the comparison between the projections and the reported data.

Table 4
Model Validation (Reported Fatality Count From FARS and Estimate of Fatalities)

Time Period	Estimated	Reported	Difference (%)
2008 (9 Months)	31,110	31,193	-0.3%
2008 (Full Year)	37,313	37,423	-0.3%
2009 (6 Months)	16,626	16,509*	0.7%
2009 (9 Months)	25,576	25,603*	-0.1%
2009 (Full Year)	33,963	33,808*	0.5%
2010 (6 Months)	14,996	n/a	n/a

*Annual Report File, Final File will be available late 2010

6. Conclusion

NHTSA has applied the TSCSR procedure on adjusted data reported to date in FastFARS as well as using independent polls of MFCs to estimate fatality counts for the first six months of 2010. The estimates show that fatalities, when compared to the corresponding month in 2009, fell in each month from January through June. Overall, fatalities were down 9.2 percent for the first six months combined. Data reported through FARS will be available in fall of 2011.

7. References

1. SAS/ETS(R) (1999). 9.2 User's Guide, Cary, NC: SAS Institute Inc.
2. Fuller, W. A., & Battese, G. E. (1974). Estimation of Linear Models with Crossed-Error Structure, *Journal of Econometrics*, 2, 67–78.
3. Buse, A. (1973). Goodness of Fit in Generalized Least Squares Estimation, *American Statistician*, 27, 106–108.
4. Brockwell, P. J., & Davis, R. A. (1996). Introduction to Time Series and Forecasting. New York: Springer-Verlag.
5. Fuller, W. A. (1962). Introduction to Statistical Time Series, 2nd ed. New York: John Wiley and Sons.
6. Schwarz, G. (1978). Estimating the dimension of a model. *Annals of Statistics*, 6(2), 461–464.

8. Appendix

8.1. Alternative Methodologies Considered

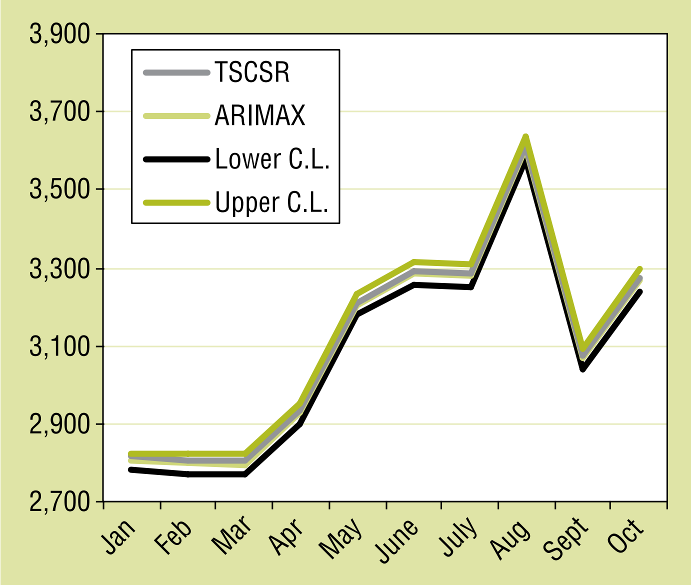
In 2008, as an alternative approach, the Auto Regressive Integrated Moving-Average (ARIMA) model including input time series, also called the ARIMAX model (Brockwell & Davis, 1996, or Fuller, 1996), was considered for predicting the fatality counts in 2008. Note that the data without cross-sectional information is used in the ARMIAX modeling and more coefficients are estimated when this approach is compared with the TSCSR model. For example, the Bayesian Information Criterion (BIC) (Schwarz, 1978) here picked the ARIMAX (3,0,3) model, i.e., six more coefficients were estimated. Table 5 and Figure 6 show that the estimates from the ARIMAX model including MFC and FastFARS are close enough to those from the TSCSR model and fall within the 95 percent C.I.

The TSCSR modeling technique presented in this Research Note was chosen over the ARIMAX technique due to the sparseness (only three years) of known data points available to build the model. In future months, with more data points, it is envisioned that the estimation procedure will transition to a more traditional ARIMAX solution.

Table 5
National Estimate of Crash Fatalities of 2008

Month	TSCSR (MFC,FF)	ARIMAX (MFC, FF)	95% Confidence Limits of ARIMAX	
Jan	2,816	2,803	2,781	2,824
Feb	2,805	2,797	2,772	2,822
Mar	2,804	2,795	2,769	2,822
Apr	2,935	2,927	2,900	2,954
May	3,212	3,205	3,178	3,232
June	3,291	3,285	3,257	3,312
July	3,287	3,281	3,253	3,308
Aug	3,612	3,607	3,580	3,635
Sept	3,075	3,067	3,039	3,095
Oct	3,273	3,267	3,239	3,295
Total	**31,110**	31,033	30,769	31,297

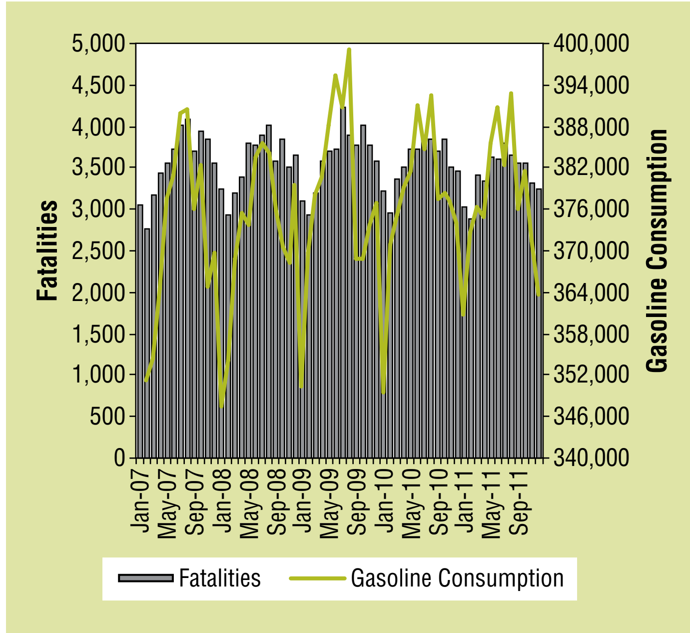
Figure 6
Estimates of Fatality Counts of 2008 From TSCSR and ARIMAX With 95% C.I.



8.2. Alternative Data Considered for Modeling

Monthly Gasoline Consumption: The MGC is an estimate of total gasoline that is sold or delivered by the prime supplier (average consumption per day [unit: 1,000 gallons]). This information is provided by the Energy Information Administration for every State and the District of Columbia. Initially, for evaluating various forecasting models, the MGC from January 2003 to September 2008 were used. Figure 7 presents the cyclical nature of traffic fatalities as well as gasoline consumption with the peak in fatalities and gasoline consumption occurring in the summer months and the lows in the winter months. However, MGC was not at all significant in predicting fatalities when FF and MFC were included in the model, as they are proxies of the fatalities themselves. Hence, MGC was dropped from further models.

Figure 7
Monthly Gasoline Consumption and Traffic Fatalities



8.3. Data Used in Various Models

Table 6
Various Models Evaluated During Development of Methodology to Estimate 2010 Fatalities (Six Month Projection)

Model \ Input	FARS	FastFARS	MFC
Model 1	Jan 2006 ~ Dec 2009	Jan 2006 – Dec 2009 Jan – Jun 2010 is adjusted by 2007 crash rate (Aug 24, 10 snapshot)	
Model 2	Jan 2003 ~ Dec 2009		Jan 2006 – Dec 2008 Jan – Dec 2009 is adjusted by 2008 crash rate (rate1) Jan – Jun 2010 is adjusted by 2008 crash rate (rate2)
Model 3	Jan 2006 ~ Dec 2009	Jan 2006 – Dec 2009 Jan – Jun 2010 is adjusted by 2007 crash rate (Aug 24, 10 snapshot)	Jan 2006 – Dec 2008 Jan – Dec 2009 is adjusted by 2008 crash rate (rate1) Jan – Jun 2010 is adjusted by 2008 crash rate (rate2)

8.4. NHTSA Early Projection References

1. *DOT HS 811 054*, Early Estimate of Motor Vehicle Traffic Fatalities from January to October 2008, December 2008.
2. *DOT HS 811 124*, Early Estimate of Motor Vehicle Traffic Fatalities in 2008, March 2009.
3. *DOT HS 811 207*, Early Estimate of Motor Vehicle Traffic Fatalities for the First Half (Jan–Jun) of 2009, October 2009.
4. *DOT HS 811 255*, Early Estimate of Motor Vehicle Traffic Fatalities for the First Three Quarters (Jan–Oct) of 2009, December 2009.
5. *DOT HS 811 291*, Early Estimate of Motor Vehicle Traffic Fatalities in 2009, March 2010.
6. *DOT HS 811 403*, Early Estimate of Motor Vehicle Traffic Fatalities for the First Half (Jan–Jun) of 2010, September 2010.

For More Information

This Research Note was written by Chou-Lin Chen, Ph.D. (Division Chief) and Rajesh Subramanian (Team Leader) of the Math Analysis Division and by Eun-Ha Choi, Ph.D., Cejun Liu, Ph.D., contractors working with the Mathematical Analysis Division, National Center for Statistics and Analysis, NHTSA. For questions regarding the information presented in this document, please contact rajesh.subramanian@dot.gov.

Additional data and information on the survey design and analysis procedures will be available in upcoming publications to be posted in 2010 at www-nrd.nhtsa.dot.gov/CMSWeb/index.aspx.

U.S. Department of Transportation
National Highway Traffic Safety Administration

This research note and other general information on highway traffic safety may be accessed by Internet users at: www-nrd.nhtsa.dot.gov/CATS/index.aspx