

Application for the 2013 ATSIP Data Visualization Project Award

The Louisiana Strategic Highway Safety Plan (LASHSP) is helping Louisiana aim towards reducing fatality and serious injury crashes across the state. Louisiana is driving towards Destination Zero Deaths on our roads and highways and with the LASHSP we have a comprehensive, multidisciplinary approach to reducing the devastating effects of motor vehicle-related fatalities and injuries. Through a detailed data analysis process, Louisiana has narrowed their focus to the following areas of emphasis areas: Alcohol Impairment, Occupant Protection, Infrastructure, and Young Drivers.

To facilitate the development of action plans and address local needs and concerns, the LASHSP has developed Regional Safety Coalitions across the state. The Regional Safety Coalitions use the procedures of the LASHSP to identify problems within their area and produce the appropriate effective countermeasures. This enables the review of strategies from the statewide plan to determine relevance for the region.

To support the Safety Coalitions, the LSU Highway Safety Research Group (HSRG) at Louisiana State University (LSU) has been asked to supply the relevant data. Within Louisiana, the HSRG is responsible for collecting, maintaining, storing, and analyzing crash data captured from law enforcement agencies. In the past, the HSRG has displayed crash information in tabular layout through their website as displayed seen in Figure 1.

While tabular data is appropriate in some cases, this format lacks ability to visually show trends, easily compare data elements (such as parishes), and quickly identify problem areas. To help address these issues, the HSRG decided to utilize data visualization to assist the Regional Safety Coalitions. By producing visually appealing charts and graphs, the HSRG hopes to display the data in a way that is easily to understand, quickly show problem areas, visually display normalized data for comparisons, and addresses multiple crash data dimensions in a single chart. These Infographics charts will help to tell a story and make the data more compelling.

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2013 ▾

Section D - Where Crashes Occur

D5: Parishes Grouped by Number of Licensed Drivers

Louisiana

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PARISH	FTL AND INJ		INJU-		FATA-		1,000 LICENSED		1000 MIL		PER 100,000 DRIVERS				PER 100 MILLION MILES TRAVLED			
	CRSH	RIES	CRSH	LITIES	DRIVERS	VMT	CRSH	CRSH	INJ	FTL	RANK	RANK	INJ	FTL	RANK	RANK		
CADDO	1033	1293	4	4	0	0	0.00	0.00	1	1	0.00	0.00	1	1	0.00	0.00		
CALCASIEU	935	1495	10	11	0	0	0.00	0.00	1	1	0.00	0.00	1	1	0.00	0.00		
EAST BATON ROUGE	2059	3243	15	15	0	0	0.00	0.00	1	1	0.00	0.00	1	1	0.00	0.00		
JEFFERSON	1689	2579	5	5	0	0	0.00	0.00	1	1	0.00	0.00	1	1	0.00	0.00		
LAFAYETTE	1495	2404	15	16	0	0	0.00	0.00	1	1	0.00	0.00	1	1	0.00	0.00		
ORLEANS	2176	3939	16	16	0	0	0.00	0.00	1	1	0.00	0.00	1	1	0.00	0.00		
ST. TAMMANY	693	1066	7	7	0	0	0.00	0.00	1	1	0.00	0.00	1	1	0.00	0.00		
DRIVER AVERAGE	1440.0	2288.4	10.3	10.6	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0		

PARISHES WITH LICENSED DRIVERS BETWEEN 50000-100000

Figure 1: The HSRG Data Reports website displays summarized crash data in tabular format

The HSRG has developed a series of Crash Data Infographics to inform, educate, and support decision-makers. A template was used to standardize the crash information being produced for all the Regional Safety Coalitions. Visually displaying the data appeals to the viewer's curiosity and allows them to easily identify trends that may have not been noticeable using traditional matrices and tables. Visualization techniques also provide the opportunity for the Regional Safety Coalitions to efficiently accelerate and support decision-making and more effectively adopt countermeasures.

The Regional Safety Coalition encompasses a wide range of users including law enforcement personnel, city/parish officials, engineers, safety professionals, driver education program personnel, and other members of the local community. Generating crash data for such a variety of users can be challenging. The Crash Data Infographics created by the HSRG had to encompass all the emphasis areas represented within the LASHSP, help the state work towards Destination Zero Deaths, and assist the local areas with understanding their data. To help accomplish all the goals, the HSRG wanted to produce visually appealing, easy to understand charts. An example of the Pedestrian and Motorcycle crash data, within the infrastructure emphasis area, can be seen in Figure 2.

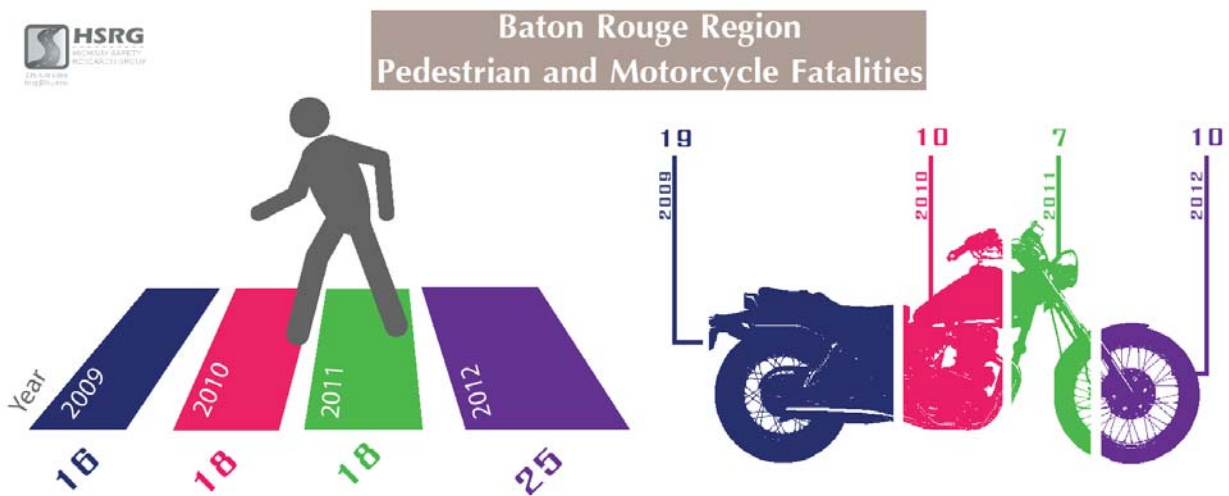


Figure 2: The Baton Rouge Region Pedestrian and Motorcycles is presented in a visual manner to quickly reveal problematic trends

The Crash Data Infographics display crash data from 2009-2012 with charts and representative icons. The icons and other graphics provide a rapid understanding of the subject matter. The Infographics normalize the data through comparison of the driver population among the associated regional parishes. The driver population of each region is shown as the percentage of the state's and region's overall driver population. Normalizing the statistics by driver population provides a reference to easily compare the number of fatalities and serious injuries across parishes within the region and the region against the state (see Figure 3).

South Central Region Fatalities and Serious Injuries

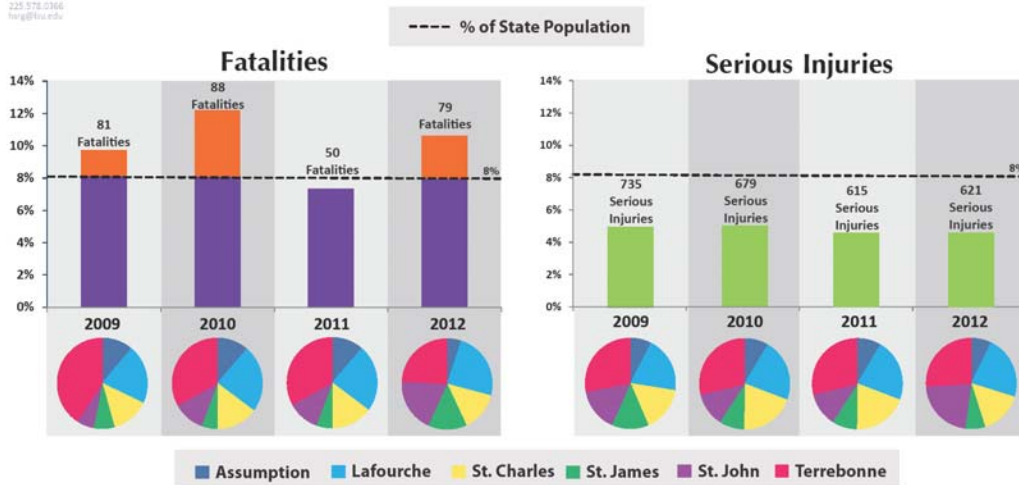


Figure 3: South Central Region Fatalities and Serious Injuries demonstrate the benefits of comparing the region population percentage of the state to the overall fatalities and serious injury percentages of the region.

The Infographics present the different LASHSP emphasis areas and order them into sections according to those areas. The graphics have been additionally broken down to highlight problematic user groups and supplementary crash factors, as seen in Figure 4. Adding in the additional crash factors such as age, gender, or alcohol involvement help identify who, in addition to what, was the cause of the fatality or serious injury.

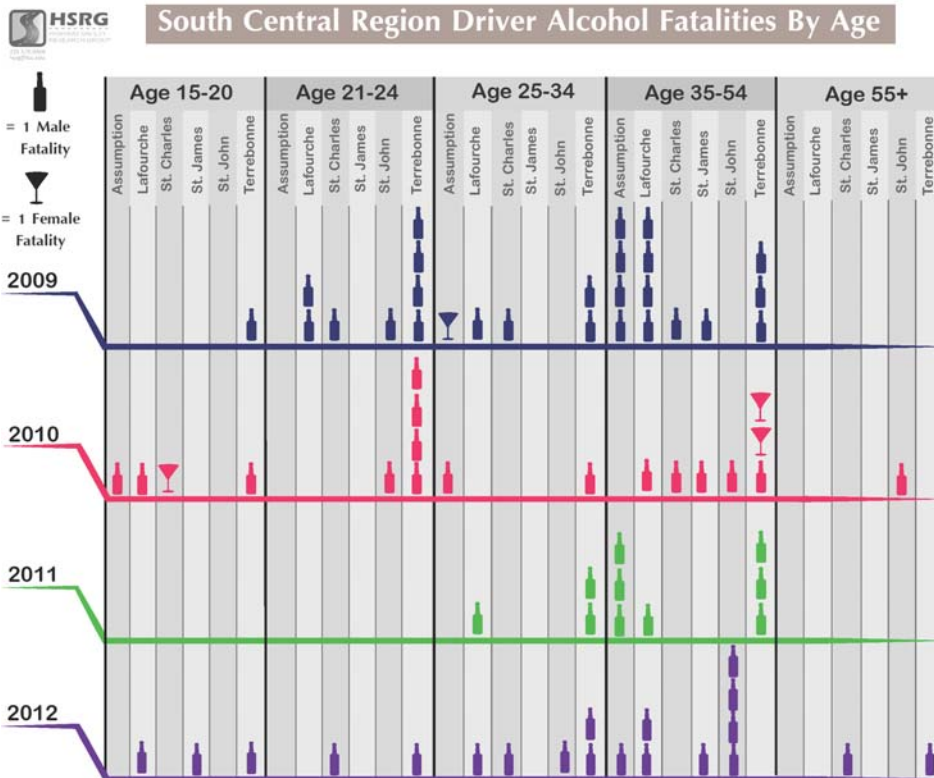


Figure 4: South Central Region Driver Alcohol Fatalities by Age and Gender presents the use of multiple dimensions within a two-dimensional visualization. The Infographic shows viewers the alcohol fatality rates by age, gender, parish, and year.

While the regional emphasis area data displays the regions' parish population, the Infographic set also includes a section highlighting each individual parish and their standing within the specific emphasis area. These parish data sets display the parish's population percentage of the region, its ranking of overall fatalities within the region, and if their emphasis area's fatalities percentage is above or below their population ranking (see Figure 5).

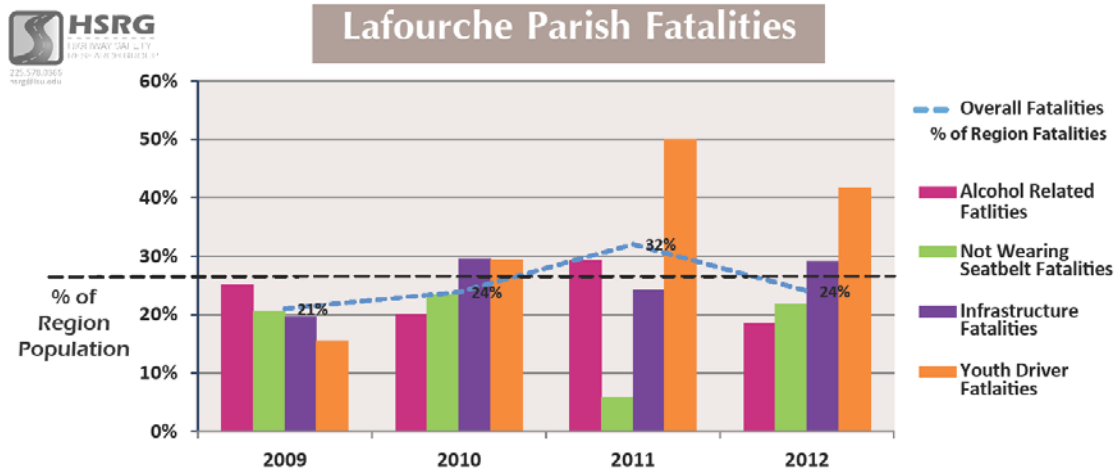


Figure 5: Lafourche Parish Fatalities are presented according to LASHSP emphasis area. The parish is also shown in comparison to the percent of the driver population and overall fatality percent which make up of the region. This graphic method quickly displays where the emphasis area issues exist.

Through distribution and presentation of this data to the Louisiana Regional Safety Coalitions an accelerated awareness of the problems are exemplified. Using data visualization as a methodology for the Regional Safety Coalitions increases complexity, improves understanding, and speeds up the process of evaluation needed to implement countermeasures. Providing the Infographics to the Regional Safety Coalition contributes greatly to the LASHSP's countermeasure selection and therefore assists in driving Louisiana towards the goal of Destination Zero Deaths.

To review the complete Crash Data Infographics for the South Central Regions, please visit <http://www.scpdc.org/wp-content/uploads/southcentraldata.pdf>