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Seat belt usage surveys

The Nevada Department of Public Safety (DPS) Office of Traffic Safety (OTS) contracted with the Transportation Research Center (TRC) at the University of Nevada, Las Vegas (UNLV) to conduct the Statewide Seat Belt Usage Survey for the year 2010. Every year, media and other campaigns like Click it or Ticket are held throughout Nevada during the month of May-June (beginning). These surveys tend to compare the difference in the seatbelt usage before and after the campaigns, and report the results to National Highway Traffic Safety Administration (NHTSA). This project has been with TRC since many years, but in 2010, several improvements were done to enhance the efficiency of data collection procedure, documentation and building a user-interactive system which will give the user capability to explore the data on-line. The following figure shows the software developed.

This software has increased speed of the data input by almost 3 times in the worst case scenario and 4 times in the best case scenario. As far as documentation is concerned, pre-campaign report now covers the data analysis over every site included in the survey, unlike the documentation in the previous years. Also, seatbelt usage rates for the elderly drivers and passengers under 15 years of age have been reported. For the post-campaign/final report, statistics would be used to delve deeper into the data. The user-interactive website providing statewide and site-wise analysis is under development and would be finished at the end of July. This website would have the animation capabilities of flash and would generate the graphs, statewide or site-wise, on the go! This on-line website would also be later converted into a software where the data could be queried on the desktop itself, without the use of Internet.

Research at Center

Analysis of Alternatives for Accommodating Trucks on Urban Freeways in Southern Nevada

The objective of the Analysis of Alternatives for Accommodating Trucks on Urban Freeways in Southern Nevada project is to evaluate five potential alternatives to address truck traffic congestion and accidents involving trucks in the Las Vegas traffic network. The alternatives under consideration include: (i) Truck Only Lanes, (ii) Truck Restricted Lanes, (iii) Truck Only Toll Lanes, (iv) Truck Bypass, and (v) Truckways with Toll. These alternatives are likely to produce system level effects; therefore, a model for the entire Las Vegas traffic network is required to perform the evaluation. In addition, the operational characteristics of the alternatives require capabilities to simultaneously load multiple classes of vehicles (trucks and passenger cars) while assigning them based on the constraints that each alternative imposes. The aforementioned capabilities are not present in the existing Travel Demand Model and are unfeasible for the entire system using micro simulation. Hence, large-scale and simulation-based Dynamic Traffic Assignment model of the Las Vegas traffic network has been built and calibrated.
The alternatives are currently under evaluation and some preliminary results illustrate significant differences across the alternatives.

Regional-level Sustainable Transportation Decision Support System

This project proposes the development of a Regional-level Sustainable Transportation decision support system (DSS) that will enable the evaluation of transportation projects considering simultaneously many key aspects influencing human quality of life and economic growth including travel time, emissions, fuel consumption, accidents, and reliability. The proposed decision support framework will be developed using system dynamics modeling approach and will be able to integrate information from traffic flow model and the emissions estimation model MOBILE. The resulting DSS will potentially assist policy makers at the state and local level to make informed infrastructure planning decisions. The use of this DSS would also help in making sustainable transportation infrastructure planning and development decisions considering both costs and emissions, and would thus jointly benefit state and local transportation entities such as Department of Transportation and the Regional Transportation Commission of Southern Nevada. The DSS will be applied to the LVV traffic network. To illustrate the potential of the proposed modeling approach several transportation projects will be evaluated. The projects to evaluate will be determined through discussions with local, state and national level agencies. Some of the projects to evaluate may include: (i) the transportation impacts of the new airport at Ivanpah dry lake bed; (ii) the I-15 widening between Las Vegas and Barstow; (iii) the US 95/93 widening between Las Vegas and Kingman (US 95) and Needles/I-10 (US 93); and (iv) the deployment of Intelligent Transportation Systems in Las Vegas.

Sustainable Planning for Large-scale Transportation Systems: A Dynamic Simulation-based Model for the Las Vegas Valley

This research seeks to develop an approach to simultaneously consider key transportation effects required for the planning of sustainable transportation systems in the Las Vegas Valley. The effects under consideration include but are not limited to: traffic congestion, fuel consumption, emissions,
safety, reliability, economic impacts, and social impacts such as human health. The different transportation effects will be estimated using an existing Dynamic Traffic Assignment model developed by the University of Nevada, Las Vegas, for the Las Vegas valley traffic network. The DTA model was developed under the sponsorship of the Nevada Department of Transportation and is currently been used to evaluate a number of transportation alternatives. Hence, the objective of this project is not the estimation of the different transportation effects, but the development of a framework that enables the simultaneous consideration of those effects. That is, given the different basic effects associated with each transportation alternative, the problem to be addressed in this research is the determination of a sustainability index that enables a meaningful and easy comparison (ranking) of alternatives. This sustainability index needs to include, to the extent possible, all the consequences of the transportation effects. For example, emissions are outcomes of transportation systems that have consequences and cost in human health and the environment. It is difficult to quantify these consequences/impacts but the sustainability index must consider them.

The Safe Community Partnership

The Safe Community Partnership has several teen driving programs aimed at educating teens about the dangers in a vehicle, both as a driver and as a passenger in a vehicle. Sixteen year old drivers are four-times more likely to die in a crash than a 20 year old, and even twice as likely as a 17 year old driver.

We have a program that brings offending drivers, parents and victims into area high schools to tell their stories of horrific crashes and their outcomes, we work on continuing education with the drivers education teachers in the Clark County School District (5th largest in the nation) and with private driving schools.

Safe Communities works to educate lawmakers and encourage tighter laws governing teens. We have a week of activities every fall for National Teen Driver Safety Week that kicks off this year with a town hall meeting and always wraps with a candlelight memorial to remember and acknowledge teen crash victims.

The highest profile program for teen drivers is our annual PACE Yourself! campaign. Each year teens are recruited to form teams of four or five teens, with at least a minimum, their learners permits. The teams register their intention and are then able to request research and expertise to assist their project if needed.

Each team develops a traffic safety message of their choice in whatever medium they are proficient in. The project is their entry to the program. All entries are invited to the Drivers Edge program where a group of race car drivers teach teens survival driving in real situations behind the wheel.

The top half of finishers are invited to Disneyland for the weekend and a great time.
ensues, including an awards banquet where the winners are announced. In 2010 there were a total of 13 projects honored at the banquet that will go on to educate others. Half were videos or public service announcements for television, there were two original rap songs that will also be re-produced a tee shirt design and several posters. One poster will be produced and distributed to high schools across the state, one will become a bus shelter campaign and one will be distributed for graduation and prom season.

Teen driving fatalities in Clark County have dropped more than 50 percent since we began these programs, with alcohol related fatalities dropping the furthest.

Here are samples of some of the winning campaigns:

![Sample campaigns images]

New Arrivals in the Center

FAST real time traffic control system, JMC

At the TRC we have recently initiated a tie-up with the FAST (Freeway and Arterial System of Transportation) which enables us to receive live traffic data from FAST to our system at TRC, in the university. This data provide us access to the details on the intersection of US95 and I15 and the surrounding areas, displaying various information such as speed limits on different points, on arterials. Using the FAST workstation (one of the softwares installed at TRC with the help of FAST) we can detect 'incidents' and the status of its management. Along with these we will be able to figure out lane volumes and the different speeds at which the traffic is moving on these lanes, Road blocks of any kind due to various reasons. We also have access to feed from each individual monitoring device that has been setup by FAST at various locations. Below is a screen shot of the information provided by FAST workstation software.

![FAST workstation screenshot]

Another interesting tool that we have acquired with the cooperation of FAST is the I2 workbench which is used to monitor all the intersection and traffic signals across the area. This dynamic feed helps us monitor the signal timings which can be further used to study and model these timings and optimise them to minimise congestion in traffic. Below is a screenshot of the feed obtained via I2.
There's plenty of scope for intelligent data processing using these tools, which we are currently working on at TRC, which would be a great step forward in the field of transportation.

**Driving Simulator**

The Driving Simulator, stationed in the Transportation Research Center lab at UNLV and manufactured by Simcraft, is equipped with the latest advanced motion simulation technology. With much confidence, it can be said that as soon as anyone walks in the lab, 'Wow' is the first word that comes out of his mouth. The whole simulation setup, is mounted on a platform with 3-D roll, pitch and yaw capabilities, which accurately monitor a driver's behavior without any delay. This amazing performer can not only be used for transportation studies, but it has been widely used in flight and racing simulations. Only a few people might be there who have not watched the recently released movie - Iron Man 2, but out of those who have been spectators to it, the same driving simulator can be seen in many scenes in his workshop. This might give an idea as to what we can expect about it's uses in the transportation studies.

Transportation, as has been said, is a plank of multi-disciplinary fields. It is not limited to one single problem. Transportation safety, management, planning, economics, policy, infrastructure, operations etc. , all come under the roof of a single word - transportation. Such a wide domain is difficult to be realized in practice without any tool or hardware, but the driving simulator. The driving simulator we have can be programmed to simulate multiple events like driver distraction while texting, drunk driving scenarios, effect of legal and illegal drugs on drivers etc. Also, it can be programmed to train the younger drivers, the elderly drivers and the snow plow operators. Apart from the aforementioned applications, the driving simulator can be an exquisite performer in designing the traffic infrastructure and a whole bunch of tremendous applications.

**Real time data collection using the dual camera, GPS, three-axis accelerometer etc**

TRChas recently purchased a 2CAMERA BLACK BOX with dual camera, GPS, and three-axis accelerometer. It simultaneously captures both front and interior views as well as audio and GPS and guess what!!
it’s pretty COOL!! ? We will be conducting travel runs using the new device and sharing our experiences in driving through different scenarios for example: construction zones, congestion, snow (just kidding). I haven’t mentioned that we are in LAS VEGAS and just for fun we will be conducting travel runs on the STRIP!! This way you’ll know what to expect when you come visit us... Travel runs are crucial for studying flow theory on arterials and signalized intersections. This amazing device integrates all the information that needs to be collected when travel runs are conducted. We are currently interested in conducting travel runs on the I-15/ I-215 intersection. We’re expecting some interesting stuff since the I-15 South Design Build Construction is going on.

Recent Events

‘Click it or ticket’ campaign

The annual ‘Click it or ticket’ campaign kicked off in Las Vegas on Friday, May 21st in the parking lot of the Science and Engineering building. The event, hosted by our Safe Community Partnership, brought local private and public entities together to remind residents of the importance of buckling up every time they get in a vehicle.

The annual campaign includes three weeks or national and local advertising and two weeks of high-intensity enforcement. A seat belt citation will set you back $67.50 (fees and fine) and take a big chunk of time from your day; but that’s the easy scenario. Not being belted if you crash can easily cost your life.

In Nevada in 2009 there were 150 motor vehicle occupant fatalities, half of them, (74) were unbelted. If those 74 people had only taken two seconds to buckle up at least 40 of them would still be alive, many would have walked away from the crash.

Many people helped kick off this important campaign: all local law enforcement agencies, Clark County Fire Department, Clark County School District Transportation, Southern Nevada Health District, the Regional Transportation Commission, Nevada Department of Public Safety, Office of Traffic Safety, Medic West, Nevada Taxicab Authority, Safe Kids Clark County, City of Las Vegas and County Government were all in attendance, plus others.

Speaking at the event was County Commission Chair Lawrence Weekly, advocate Jennifer Stehlar and Emilio Parga, Executive Director and founder of The Solace Tree in Reno, NV whose grief center for families and children gets the majority of their cases from vehicle crashes. Motor vehicle crashes are the leading cause of death in the U.S. for all ages from four to thirty three.
Nevada University Transportation Center

University of Nevada, Las Vegas,
4505 S. Maryland Pkwy,
Mail Stop 454007 Las Vegas, NV 89154-4007, USA Phone: (702) 895-1338, Fax:
(702) 895-4401. NUTC Homepage

NUTC Staff

Pushkin Kachroo, Ph.D., P.E, Director
Erin Breen, Director, Safe Community Partnership
Alexander Paz, Asst.Prof.
Mukund Dangeti, Ph.D, Asst.Research Prof.

Newsletter Editorial Board

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