Impact of COVID-19 Pandemic on Road Safety in Region 6

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$ 100,000

Evaluating the impact of COVID-19 on the safety of Region 6 's road system

COVID-19 was declared a pandemic since March 2020. Different state and local agencies and private employers introduced unprecedented public health measures to contain and reduce its spread and protect the public. These measures included closures of government offices, businesses, major factories, and educational institutions. As a results, driving patterns and behaviors in the United States changed significantly during the COVID-19 pandemic. An analysis of traffic patterns during this period has identified that reduction in the miles traveled has a significant negative correlation with COVID-19 cases and deaths across the USA. Preliminary statistics in the US suggest an increase in fatal crashes over the period of the lockdown in comparison to the same period in previous years. Moreover, while total crashes are down, motor vehicle crashes involving non-motorists became more prevalent. At the same time, non-motorist traffic has increased while motor vehicle traffic and crashes have shifted to the local systems. The main goal of this research is to perform a comprehensive evaluation of the changes in travel patterns, and crash risk factors and severity during COVID-19 pandemic and compare crash characteristics to those immediately before the pandemic at different temporal and spatial levels.

Problem Statement

Officially, COVID-19 was declared by the World Health Organization as a world-wide pandemic in March 2020. Different state and local agencies and private employers introduced public health measures to contain and reduce its spread and protect the public. These measures included closures of government office, business, major factories, and educational institutions. Numerous studies have shown that traffic patterns have changed worldwide as working from home has become dominant, with many facilities, restaurants and retail services being closed due to these measures. Urban traffic around the world, without any exception, has observed a drastic reduction in traffic congestion. However, some agencies observed higher crash rates and crash severity during this period. For example, A study

conducted across the USA reported that minor crashes decreased by up to 23%, but the most severe crashes went up by 18%. The National Safety Council data, reported a 14 % increase in fatality rates in March 2020. During the first three months of 2020 the following states experienced an increase in number of roadway fatalities: Arkansas (16 %), California (8%), Connecticut (42 %), Illinois (11 %), Louisiana (23 %), Nevada (10 %), New York (17 %), North Carolina (10 %), Oklahoma (9%), Tennessee (6%), and Texas (6%). However, a number of states experienced a decrease in roadway fatalities: Arizona (-4%), Hawaii (-32 %), Idaho (-28 %), Iowa (-13 %), Maryland (-13 %), Michigan (-12 %), Oregon (-24 %), and South Carolina (-12 %). Moreover, research on previous economic recessions suggests that these conditions affect the mental wellbeing of people and consequently their behavior on the road. COVID-19 pandemic effects in terms of drivers' behavior, the unusually lower traffic volumes, relaxed traffic laws enforcement, and road safety in general are currently unknown as the unprecedented nature and severity of this pandemic do not resemble anything seen before. However, it is expected factors such as the increased stress and anxiety brought about by the COVID-19 pandemic, job loss and furloughs, increased consumption of alcohol and narcotics, and greater opportunities for speeding and reckless driving, might have increased during this period. As evident from the above review, there has been much emphasis on evaluating the impacts of COVID-19 lockdowns on crash frequency and fatalities. There are also a few studies on crash rate and severity. An in-depth analysis will enable understanding the changes in various traffic incident characteristics and the variables that may be influencing the increased roadway fatality rates during the pandemic.

Objectives

The ultimate goal of this research is to perform a comprehensive evaluation of the changes in crash risk factors and severity during COVID-19 shutdown and compare crash characteristics to those immediately before and after the shutdown. This includes developments of a database of crash reports in Texas, calculation of crash counts and rates, acquiring traffic volumes, and identifying high risk and/or vulnerable groups during the shutdown such as long-haul truck drivers, bicyclists, and pedestrians.

Intended Implementation of Research

The research findings will be convened in the form of a list of recommendations, a technical brief, an educational PowerPoint presentation targeting local communities, and a final report. The project tasks will be implemented in consultation with the City of San Antonio traffic engineers and planners and other interested entities within Region 6.

Anticipated Impacts/Benefits of Implementation

The crash data analysis will include detailed review of the crash narratives and diagrams as part of the crash database building process to help elucidate the true causes of the crashes. The evaluation will include operational and physical characteristics of the crash locations, severity of injuries, environmental conditions, characteristics of drivers and other road users, and motorist behaviors as well as the common characteristics of the built environment that contribute to unsafe actions and conditions. The above evaluation will allow the research team to identify crash hotspots and the unsafe actions that are contributing to these crashes and provide safety countermeasures and recommendations for further study. The analysis will include a thorough investigation of the changes in mobility and travel during the COVID-19 pandemic through detailed analysis of their impact on the spatiotemporal patterns of crashes in a number demographically different counties in Texas.

Web links

- Tran-SET's website https://transet.lsu.edu/research-in-progress/

Tran-SET

Tran-SET is Region 6's University Transportation Center. It is a collaborative partnership between 11 institutions (see below) across 5 states (AR, LA, NM, OK, and TX). Tran-SET is led by Louisiana State University. It was established in late November 2016 "to address the accelerated deterioration of transportation infrastructure through the development, evaluation, and implementation of cutting-edge technologies, novel materials, and innovative construction management processes".

Learn More

For more information about Tran-SET, please visit our website, LinkedIn, Twitter, Facebook, and YouTube pages. Also, please feel free to contact Dr. Momen Mousa (Tran-SET Program Manager) directly at transet@lsu.edu.