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Geography 487
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Research Project Proposal: Alcohol-Related Crashes by Income and Calendar

Research Question

My research question is whether alcohol-related motor vehicle crashes are more likely to increase at the beginning of a month in a low-income area than in a higher-income area. If so, that would suggest increased spending on alcohol from welfare benefits that are disbursed on the first of the month.

This knowledge could help police agencies target law enforcement activities toward the areas and times of the month where alcohol-related crashes are most likely to occur.

Methodology

I will use the independent samples T-test to compare the rate of alcohol-related crashes for the first weeks of the months in 2012 to the rate during last weeks of the month for McKinley County. Then I will do the same with Santa Fe County.

The time period covered will be the months January through November of the latest year for which data is available. December will not be used, because the holidays are likely to increase drinking, which would lead to anomalous data. The rate will be figured as the number of alcohol-related crashes per week per million vehicle miles traveled year.

These two counties represent the ends of the income spectrum in New Mexico. In 2011, McKinley County had state's lowest per capita income, at \$24,079, according to data from the Bureau of Business and Economic Research. Santa Fe was No. 3, at \$43,325.

Data Source

I will ask the New Mexico Department of Transportation, Traffic Safety Division, for the traffic crash data. I will ask for the number of alcohol-related crashes for each day of the year for McKinley County and for Santa Fe County, along with the number of vehicle miles traveled per county per year.

Background

McKinley County is one of the state's worst for drunken driving, according to the Traffic Research Unit at the University of New Mexico. In 2009, McKinley County had 12.50 DWI crashes per 100 million vehicle miles traveled. Santa Fe is not far behind. It is No. 9, with 11.90 DWI crashes per 100 million vehicle miles traveled. Given that the two counties had similar rates, the distribution over the course of a month will suggest whether income has an effect on the rates.

New Mexico has a long-running problem with drunken driving, although much progress has been made in recent years. According to "Examining New Mexico's Comprehensive Impaired Driving Program" from the U.S. Department of Transportation, New Mexico's rate of alcohol-involved crash deaths was the seventh-highest in the country. In 2009, the rate had fallen to 19th in the country. Data from the New Mexico Department of Transportation shows that alcohol-involved crashes have fallen from 3,566 in 2002 to 2,320 in 2011.

Still, alcohol is involved in many of the state's fatal crashes. According to the New Mexico Department of Transportation, in 2002, 49.7 percent of the state's fatal crashes had alcohol involvement. By 2011, that rate had fallen to 42.8 percent.

New Mexico's decline in alcohol-involved crashes followed increased enforcement in targeted counties, among other actions. The U.S. Department of Transportation says the focus was originally on five counties: Bernalillo, Dona Ana, McKinley, Rio Arriba and San Juan. This focus was later expanded to include Santa Fe County. These counties each hired two more officers whose jobs were dedicated to preventing and catching impaired drivers.

McKinley County's work included a unique approach to publicizing the problem, according to the U.S. Department of Transportation. The county developed a sign similar to those used by pizza delivery vehicles. The sign read, "Another Drunk Driver Busted." It was displayed on vehicles whose drivers were arrested for impaired driving as the vehicle was towed on the way to the impound lot.

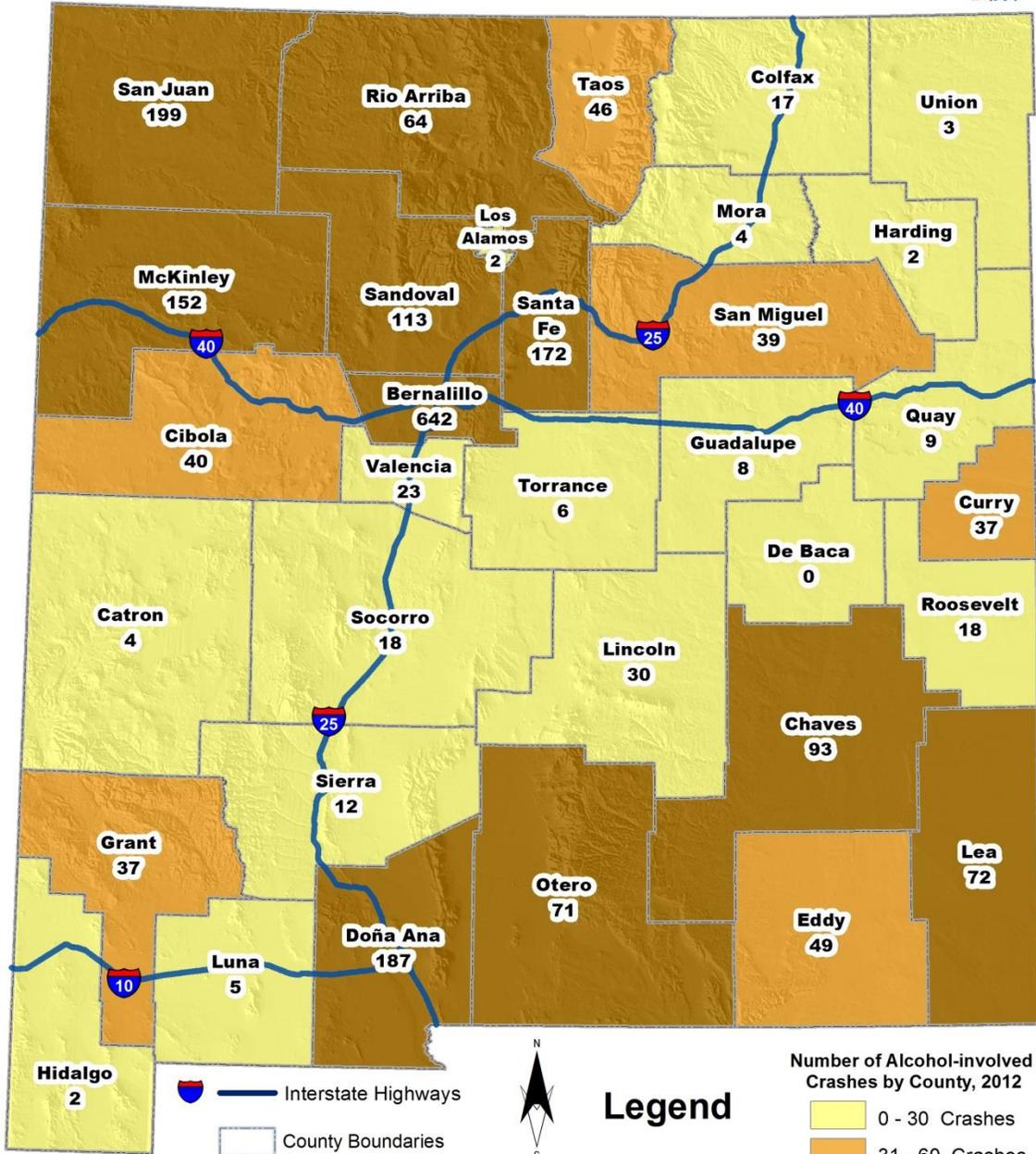
Other enforcement actions are discussed in "New Mexico's Comprehensive Impaired Driving Program: A Case Study," from the U.S. Department of Transportation. A task force, made up of law enforcement officers from the Navajo Nation, Gallup Police Department, McKinley County Sheriff's Office and the New Mexico State Police, was initiated to patrol the McKinley County portion of the Navajo Nation.

The case study also addresses issues of enforcement in the Navajo Nation, part of which is in McKinley County. A major problem is the large area. Crashes involving impaired driving could be more than 100 miles from the nearest patrol car. Another issue is the lack of intoxilyzers to test drivers.

Officers in McKinley County could be better able to target enforcement actions if they know when drunken driving is most likely to occur. I hope to determine that in my research.



Alcohol-involved Crashes by County, 2012



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Legend

Number of Alcohol-involved Crashes by County, 2012

0 - 30 Crashes

31 - 60 Crashes

61 - 642 Crashes

0 25 50 75 100 Miles

Source: UNM Traffic Research Unit, accessed 21 March 2015.

http://www.unm.edu/~dgrint/maps/maps2012/Alc_County12.jpg