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Evaluating the Impact of Social Determinants on Pedestrian Injury in Clark County, Nevada

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BACKGROUND

• Pedestrian crashes are a major public health concern. In 2009 there were over 4,000 pedestrian deaths and 59,000 pedestrian injuries.

• In 2008, NV had the 5th highest pedestrian fatality rate in the nation.

• The Las Vegas metropolitan area accounts for 82% of the fatalities and 75% of pedestrian injuries that take place in NV.

• Las Vegas is an urban, sprawling, metropolis which increased in population size by 83% between 1990 and 2000 and 41.8% from 2000 to 2010.

• Pedestrian fatalities have been positively correlated with urban sprawl, lack of pedestrian facilities, liquor outlet density, and rapid population growth.

• To ensure sustainable communities, pedestrian injury issues in Clark County, NV warrant immediate attention.

OBJECTIVES

In order to understand the social determinants which may impact pedestrian injury rates in an urban, sprawling, western community we conducted an ecologic investigation to compare pedestrian crash rates by social determinants available for census tracts in Clark County, NV.

RESULTS

2,262 pedestrian crashes in 287 census tracts were identified. Off these, 92.4% were injury crashes, and 4.5% resulted in injuries.

The final, selected model for pedestrian crash rate was significant and described 58.2% of the variance in the per capita pedestrian crash rate ($r^2=0.582$, $p<0.001$) with VIF all less than two. The final, selected model for pedestrian fatality rate was significant but described only 8.5% of the variance in the per capita pedestrian fatality rate ($r^2=0.085$, $p<0.001$). Given the low amount of variance described by this model it was discarded.

CONCLUSION

The final model suggests that percentage of households without a vehicle, population density, liquor outlets per square meter, the number of transit stops per square meter, and the percent of the population who walk or use public transit in combination were useful in predicting crash rate. Contrary to previous research, population density was a protective factor for pedestrian crashes.

These results underscore the importance of neighborhood determinants in contributing to pedestrian injury. Results should have implications on injury prevention efforts, regional transit planning, and guide public policy. Public health professionals, city planners, and regional transit authorities must collaborate to successfully enhance pedestrian safety.

LIMITATIONS

The assumption that all individuals living in a Census tract have similar characteristics represents an ecological fallacy.

Three Census tracts were removed from the data set which had total pedestrian crashes greater than the tract population. These represent the Las Vegas 'strip', McCarran Airport, and Mt. Charleston, all popular tourist destinations.

Census data (2000) may not reflect current total population, environmental conditions, or population characteristics.
References