Comparison of Trends in Alcohol-Involved Crashes Among New Mexico Counties

Introduction

In the 1990’s, numerous state and local government agencies implemented programs intended to lower DWI rates in New Mexico. Because so many programs were created in a short period, it is difficult to evaluate the effectiveness of individual programs. However, by examining the differences in trends of alcohol-involved crashes with injuries across counties, patterns may emerge that may identify effective strategies to deal with alcohol-involved crashes.

This study does not establish any linkage between programs and patterns of alcohol-involved crashes with injuries. The focus of this report is on the patterns of change over time. A sharp decrease in the rate of alcohol-involved crashes with injuries that corresponds in time to the implementation of a program is not conclusive evidence that the program caused the decrease. There are many factors involved, and there may be artifacts of the data collection and analysis process that appear to be effects. Missing data may also create the appearance of a change where no real change exists.

County Grouping

New Mexico is a thinly populated state. Most of the population is concentrated in a few relatively urban areas, and only 11 of the 33 counties have populations that are greater than 50,000.

For reasonably stable population-based rates, it is necessary to have a large enough population to count more than a few incidents per year. For this study, 50,000 has been defined as a large enough population. This method requires arranging the 33 counties into 15 groups. Counties that were grouped together were contiguous and to the extent possible, similar in terms of demographic and economic factors. The county groupings are shown in Table 1.

In the lightly populated Southwest and
numbers of alcohol-involved crashes with injuries that were substantially larger than the rest of the groups. These are the county groups with the largest populations.

Policy Implications

- Programs begun in the 1990’s and focusing on DWI arrests, prevention, and treatment may have had a positive effect.
- Recent DFA supported studies suggest that some counties and ethnic groups have successfully reduced alcohol-involved crashes.
- A statewide strategy and mission involving multi-agencies, a continuum of care, sanctions, and proven practices should be produced.
- Taken as one, recent studies show cumulative results and general successes. Well-designed impact evaluations are needed to assess the reasons for differences across counties and ethnic groups. Successful programs should be identified and replicated.
- Standard data collection and objective measures should be expanded in order to evaluate programs.

Summary

This study compares crash data from 1990 through 2001 – the most recent data available – across counties, and groups of counties. Counties are grouped together based on adjacency and where demographics and economic factors are similar. The study does not establish a linkage between programs and crash trends. The focus is on the patterns of change over time. Highlights from county groups are also provided and several policy implications are offered for policy makers.

Northeast corners of New Mexico, the county groups include a large area. A few counties with populations greater than 50,000 were grouped with adjacent smaller counties. These counties are Otero with Lincoln, Valencia with Torrance, McKinley with Cibola, and Santa Fe with Los Alamos.

Statewide Trends

From 1990 through 1992, there was little change in the rate of alcohol-involved crashes with injuries. A steady downward trend characterized the period from 1993 through 1996 and a sharp decline between 1996 and 1997 with a continuing decline to 2001. Overall, the rate of alcohol-involved crashes with injuries declined 48% between 1992 and 2001.

The sharp drop between 1996 and 1997 is concentrated in Bernalillo County, where the rate declined by 32%. For the rest of the state the rate dropped by 14% for the period.

During 1993, DWI arrests rose sharply. The number of DWI arrests per 100,000 people declined from 1993 through 1997 by 25%. The rate of alcohol-involved injury crashes declined 31% over the same period. After 1997, the rate of decline in the arrest rate slowed, declining by only 6% from 1997 through 2001.

On the statewide level, there appear to be turning points in 1993 and 1997. However, the patterns in the counties and county groups are not mirror images of the statewide pattern.

County Comparisons

Table 2 shows the change in population and in the alcohol-involved crashes with injuries rate from 1990 to 2001. The state

<table>
<thead>
<tr>
<th>Group</th>
<th>Counties</th>
<th>2001 Population</th>
<th>2001 Alcohol Involved Serious Injury Crash Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statewide All</td>
<td></td>
<td>1,841,441</td>
<td>65.7</td>
</tr>
<tr>
<td>McKinley/Cibola</td>
<td>McKinley, Cibola</td>
<td>103,287</td>
<td>109.4</td>
</tr>
<tr>
<td>Rio Arriba/Taos</td>
<td>Rio Arriba, Taos</td>
<td>71,965</td>
<td>107.0</td>
</tr>
<tr>
<td>NE New Mexico</td>
<td>Colfax, Guadalupe, Harding, Mora, Quay, San Miguel, Union</td>
<td>70,325</td>
<td>101.0</td>
</tr>
<tr>
<td>San Juan</td>
<td>San Juan</td>
<td>114,575</td>
<td>94.3</td>
</tr>
<tr>
<td>Santa Fe/Los Alamos</td>
<td>Santa Fe, Los Alamos</td>
<td>139,575</td>
<td>77.6</td>
</tr>
<tr>
<td>SW New Mexico</td>
<td>Catron, Grant, Hidalgo, Luna, Sierra, Socorro</td>
<td>96,251</td>
<td>75.8</td>
</tr>
<tr>
<td>Lea</td>
<td>Lea</td>
<td>54,384</td>
<td>73.6</td>
</tr>
<tr>
<td>Otero/Lincoln</td>
<td>Otero, Lincoln</td>
<td>82,142</td>
<td>68.2</td>
</tr>
<tr>
<td>Dona Ana</td>
<td>Dona Ana</td>
<td>176,380</td>
<td>61.2</td>
</tr>
<tr>
<td>Eddy</td>
<td>Eddy</td>
<td>51,247</td>
<td>58.5</td>
</tr>
<tr>
<td>Sandoval</td>
<td>Sandoval</td>
<td>92,578</td>
<td>57.2</td>
</tr>
<tr>
<td>Valencia/Torrance</td>
<td>Valencia, Torrance</td>
<td>84,688</td>
<td>49.6</td>
</tr>
<tr>
<td>E. Central</td>
<td>Curry, DeBaca, Roosevelt</td>
<td>65,200</td>
<td>47.5</td>
</tr>
<tr>
<td>Bernalillo</td>
<td>Bernalillo</td>
<td>567,503</td>
<td>46.5</td>
</tr>
<tr>
<td>Chaves</td>
<td>Chaves</td>
<td>61,406</td>
<td>45.6</td>
</tr>
</tbody>
</table>
population increased 21%, while the alcohol-involved crashes with injuries rate declined by 48%.

Two county groups had very large growths in population: Valencia/Torrance (52%) and Sandoval (45%). Three other groups, Dona Ana, Otero/Lincoln, and Santa Fe/Los Alamos had population growth greater than 25%. The East side of the state had very low population growth over this period, in most cases less than 10%. The population of Lea County decreased 2%.

Statewide, the rate of alcohol-involved crashes with injuries declined by 48% between 1990 and 2001. The four county groups with the largest decreases were Valencia/Torrance, Chaves, Bernalillo, and Southwest NM. The four county groups with the smallest decreases were Sandoval, Santa Fe/Los Alamos, Otero/ Lincoln, and Lea. Crashes and arrests for each county and the state are shown in the Appendix.

Bernalillo County

Bernalillo County accounts for over 30% of the population of New Mexico and is the most urban county in the state. The population grew 18% from 1990 to 2001, similar to the rest of the state. The rate of alcohol-involved crashes with injuries declined over that period, one of the larger changes. Among the county groups, Bernalillo County ranked 14th in the rate of alcohol-involved crashes with injuries. (see Table 1).

The rate of alcohol-involved crashes with injuries in Bernalillo County changed little from 1990 through 1995, and then fell sharply from 1995 to 1996. The rate then rose very slowly from 1996 through 2000. From 2000 to 2001, the rate dropped sharply to below the 1996 level, but it is not clear whether this is a trend or a fluctuation.

The DWI arrest rate rose sharply from 1995 to 1996, concurrently with the drop in the alcohol-involved crashes with injuries rate. It then declined steadily to 2000 and leveled off in 2001. Arrest rates and crash rates appear to be more closely related in this group than in others.

Santa Fe and Los Alamos Counties

Santa Fe/Los Alamos Counties account for 8% of the state’s population and the second largest population in NW New Mexico. Of the two counties, Santa Fe has the largest population and a higher rate of alcohol-involved crashes with injuries than Los Alamos County. This group had a relatively large increase in population and a relatively small decrease in the rate of alcohol-involved crashes with injuries from 1990 to 2001. Santa Fe/Los Alamos ranked 5th in the rate of alcohol-involved crashes with injuries in 2001.

The rate of alcohol-involved crashes with injuries changed very little from 1990 through 1995, and then fell sharply from 1995 to 1996. The rate then rose very slowly from 1996 through 2000. From 2000 to 2001, the rate dropped sharply to below the 1996 level, but it is not clear whether this is a trend or a fluctuation.

The DWI arrest rate rose sharply from 1995 to 1996, concurrently with the drop in the alcohol-involved crashes with injuries rate. It then declined steadily to 2000 and leveled off in 2001. Arrest rates and crash rates appear to be more closely related in this group than in others.

San Juan County

San Juan County accounts for 6% of the population of New Mexico and has historically had high alcohol-involved

<table>
<thead>
<tr>
<th>Group</th>
<th>Counties</th>
<th>% Change in Population 1990-2001</th>
<th>% Change in Alcohol Involved Serious Injury Crash Rate 1990-2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statewide</td>
<td>All</td>
<td>+21%</td>
<td>-48%</td>
</tr>
<tr>
<td>Valencia/Torrance</td>
<td>Valencia, Torrance</td>
<td>+52%</td>
<td>-63%</td>
</tr>
<tr>
<td>Chaves</td>
<td>Chaves</td>
<td>+5%</td>
<td>-55%</td>
</tr>
<tr>
<td>SW New Mexico</td>
<td>Catron, Grant, Hidalgo, Luna, Sierra, Socorro</td>
<td>+22%</td>
<td>-53%</td>
</tr>
<tr>
<td>Bernalillo</td>
<td>Bernalillo</td>
<td>+18%</td>
<td>-53%</td>
</tr>
<tr>
<td>Dona Ana</td>
<td>Dona Ana</td>
<td>+29%</td>
<td>-51%</td>
</tr>
<tr>
<td>Rio Arriba/Taos</td>
<td>Rio Arriba, Taos</td>
<td>+25%</td>
<td>-51%</td>
</tr>
<tr>
<td>NE New Mexico</td>
<td>Colfax, Guadalupe, Harding, Mora, Quay, San Miguel, Union</td>
<td>+12%</td>
<td>-50%</td>
</tr>
<tr>
<td>Eddy</td>
<td>Eddy</td>
<td>+5%</td>
<td>-49%</td>
</tr>
<tr>
<td>San Juan</td>
<td>San Juan</td>
<td>+25%</td>
<td>-47%</td>
</tr>
<tr>
<td>McKinley/Cibola</td>
<td>McKinley, Cibola</td>
<td>+22%</td>
<td>-45%</td>
</tr>
<tr>
<td>E. Central</td>
<td>Curry, DeBaca, Roosevelt</td>
<td>+6%</td>
<td>-44%</td>
</tr>
<tr>
<td>Sandoval</td>
<td>Sandoval</td>
<td>+45%</td>
<td>-37%</td>
</tr>
<tr>
<td>Santa Fe/Los Alamos</td>
<td>Santa Fe, Los Alamos</td>
<td>+27%</td>
<td>-37%</td>
</tr>
<tr>
<td>Otero/ Lincoln</td>
<td>Otero, Lincoln</td>
<td>+28%</td>
<td>-32%</td>
</tr>
<tr>
<td>Lea</td>
<td>Lea</td>
<td>-2%</td>
<td>-23%</td>
</tr>
</tbody>
</table>
crashes with injuries rates. San Juan County had an increase in population and a decrease in the rate of alcohol-involved crashes with injuries similar to the statewide averages. It ranked 4th in the rate of alcohol-involved crashes with injuries in 2001.


DWI arrests in San Juan County peaked in 1993 and then declined, leveling off after 1996. In 2001, there was a sharp upturn in the arrest rate. San Juan County’s arrest rate was 40% higher than the statewide rate in 1993, and 74% higher in 2001.

**McKinley and Cibola Counties**

McKinley/Cibola Counties make up almost 6% of the state population. McKinley County accounts for approximately 75% of the combined population in this group and has a higher crash rate, and so will dominate the rates. This group had an increase in population and a decrease in the rate of alcohol-involved crashes with injuries that were close to the statewide averages. McKinley/Cibola ranked 1st in the alcohol-involved crashes with injuries rate in 2001.

The alcohol-involved crashes with injuries rate in these counties shows a steady decline from 1992 through 1997, and then levels off. In 1996, the rate was high compared to this trend, followed by a step down in 1997. Whether this reflects a trend is a question for further investigation. Between 1992 and 1998, the alcohol-involved crashes with injuries rate fell but the rate remained above the statewide average.

The DWI arrest rate in these counties in 1990-1992 was below the statewide rate, but rose sharply through 1994. In 1994, the arrest rate was double the statewide rate. The rate declined fairly sharply from 1994 to 1996 and then declined more slowly.

**Sandoval County**

Sandoval County makes up 5% of the population of New Mexico. Despite its large land area, its crash patterns are dominated by the urban area around the city of Rio Rancho. Sandoval County had a large increase in population and a relatively small decrease in the alcohol-involved crashes with injuries rate from 1990 to 2001. Sandoval County ranked 11th in the rate of alcohol-involved crashes with injuries for 2001.


The DWI arrest rate has declined steadily from 1993 through 2001. There are fluctuations around the trend, with 1995 being below the trend line. The alcohol-involved arrest rate and the alcohol-involved crashes with injuries rate have both been consistently below the statewide rates.

**Rio Arriba and Taos Counties**

Rio Arriba/Taos Counties contain 4% of New Mexico’s population. These two counties had similar alcohol-involved crashes with injuries rates in 2001. This group had growth in population and a decrease in the alcohol-involved crashes with injuries rate that were similar to the statewide changes from 1990 to 2001. This group ranked 2nd in the alcohol-involved crashes with injuries rate in 2001.

The alcohol-involved crashes with injuries rate has declined steadily from 1990 through 2001. The only year that is below the trend line is 1994. The alcohol-involved crashes with injuries rate has consistently been above the statewide rate. There are no obvious large effects, but unlike most counties, there is a steady trend.

Otero and Lincoln Counties

Otero/Lincoln counties make up approximately 5% of the population of New Mexico. Otero County contains about 75% of the group population. These two counties have significant resort communities in Ruidoso and Cloudcroft, and are subject to cycles in the national economy more than other New Mexico counties. This group had a relatively large change in population and a relatively small change in the alcohol-involved crashes with injuries rate from 1990 to 2001. This group ranked 8th in alcohol-involved crashes with injuries rate in 2001.

The rate of alcohol-involved crashes with injuries was stable from 1990 through 1994, dropped sharply in 1995, spiked in 1996, and then declined through 1997. There was also a second peak in 1996, probably matching a peak in the crash rate, and then the rate declined through 2001.

Chaves County

Chaves County makes up 3% of New Mexico’s population. The population growth in Chaves County was small while the decrease in alcohol-involved crashes with injuries rate was quite large from 1990 to 2001. Chaves County ranked 15th in the alcohol-involved crashes with injuries rate in 2001.

The alcohol-involved crashes with injuries rate was stable from 1990 through 1993, dropped sharply from 1994 through 1997, and after an up tick in 1998, continued to fall. The rate fell 55% from 1993 to 2001. There appears to have been steady progress since 1993.

The DWI arrest rate fell from 1992 to 1998, then rose in 1999 to the 1995 level and has remained there. Both the crash and arrest rates have been consistently below the corresponding statewide rates.

Eddy County

Eddy County in Southeast New Mexico makes up approximately 3% of the population of the state. It had a small growth in population and a moderate decrease in the alcohol-involved crashes with injuries rate from 1990 to 2001. In 2001, Eddy County ranked 10th in the alcohol-involved crashes with injuries rate.

There are two interpretations of the pattern in the rate of alcohol-involved crashes with injuries in Eddy County. One is a steep drop from 1992 through 1994, little change from 1994 through 1998, and then falling again after 1998. This is a steady decline beginning in 1992 and continuing through 2001. The other is a steady increase beginning in 1992 and continuing through 2001. The small population of Eddy County leads to more fluctuation in the rate.

The DWI arrest rate in Eddy County had a strong peak in 1995 and 1996, dropped sharply in 1997, and has trended slowly downward since.
**Doña Ana County**

Dona Ana County is the largest county in Southwest New Mexico and accounts for almost 10% of the state’s population. Dona Ana County had a large increase in population and a moderate decrease in the alcohol-involved crashes with injuries rate from 1990 to 2001. In 2001, Dona Ana County ranked 9th in the alcohol-involved crashes with injuries rate.

The pattern in the rate of alcohol-involved crashes with injuries from 1990 through 1994 is not very clear. It is relatively stable with a low year in 1991 and a high year in 1993. After 1994, the trend is steadily downward with a high year in 1997. The crash rate was quite similar to the statewide crash rate in most years.

The DWI arrest rate has a slow rising trend from 1990 through 1995, with a low year in 1991 that corresponds to a low year in the alcohol-involved crashes with injuries rate. The arrest rate dropped sharply in 1996 and 1997 and on average has trends slowly downward since. The arrest rate has been consistently below the statewide rate.

**Southwest New Mexico**

Catron, Grant, Hidalgo, Luna, Sierra, and Socorro counties make up most of the Southwest quarter of the state of New Mexico. This is a thinly populated area, comprising 5% of the population of the state. The population increase and the decrease in the alcohol-involved crashes with injuries rate were similar to the statewide changes. SW New Mexico ranked 6th in the alcohol-involved crashes with injuries rate in 2001.

The alcohol-involved crashes with injuries rate has a sharp drop in 1995, followed by a steady downward trend from 1996 through 2000. The alcohol-involved crashes with injuries rate declines by more than half over the period, and 1995 appears to be a pivotal year.

The DWI arrest rate shows a huge peak in 1993, which could have caused 1993 to be a low year for crashes. Other than that peak, the arrest rate has been constant. It may have begun a downward trend in 2000.

**Northeast New Mexico**

Colfax, Guadalupe, Harding, Mora, Quay, San Miguel, and Union counties encompass the Northeast quarter of the state of New Mexico. This is another very thinly populated region of the state. This group had low population growth and a moderate decrease in the alcohol-involved crashes with injuries rate from 1990 to 2001. In 2001, it ranked 3rd in the alcohol-involved crashes with injuries rate. The amount of change in the alcohol-involved crashes with injuries rate may be overstated somewhat due to a very high crash rate in 1990.

The alcohol-involved crashes with injuries rate was stable from 1991 through 1995, and then fell sharply from 1995 through 1997. Since 1997, the rate has been stable.

The DWI arrest rate peaked in 1993 and has declined slowly since then. It remained higher than the 1991 level until 2000. Crash and arrest rates have been consistently higher than the corresponding statewide rates.

**Summary**

This paper represents a review of alcohol-involved crashes in New Mexico counties. In reviewing the county patterns, there are apparent effects in different years depending on the area. Table 3 summarizes apparent effects by year.

In 2001, four county groups had arrest rates that were substantially higher than the rest of the state: McKinley/Cibola, Rio Arriba/Taos, NE New Mexico, and San Juan. Five counties had numbers of alcohol-involved crashes with injuries that were substantially larger than the rest of the groups: Bernalillo, Santa Fe/Los Alamos, McKinley/Cibola, San Juan, and Dona Ana. These are also the county groups with the largest populations.

Although the alcohol-involved crash rate has declined in the last decade, there continues to be a pressing need for a continuum of research to guide policies and practices related to DFA funded programs.

**References**


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**Table 3. Counties with apparent effects by year**

<table>
<thead>
<tr>
<th>Year</th>
<th>Counties with effects</th>
<th>Counties with possible effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>Statewide, McKinley/Cibola, Sandoval</td>
<td>Eddy</td>
</tr>
<tr>
<td>1994</td>
<td></td>
<td>Rio Arriba/Taos</td>
</tr>
<tr>
<td>1995</td>
<td>Dona Ana, SW New Mexico, San Juan</td>
<td>Sandoval</td>
</tr>
<tr>
<td>1996</td>
<td>Santa Fe/Los Alamos, Otero/Lincoln, NE New Mexico</td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>Statewide, Bernalillo, Valencia/Torrance, Lea</td>
<td>East Central New Mexico, San Juan, McKinley/Cibola</td>
</tr>
</tbody>
</table>
Statewide, the rate of alcohol-involved crashes with injuries declined by 48% between 1990 and 2001.

Alcohol-involved arrests peaked in 1993.

The rate of alcohol-involved crashes with injuries has declined since 1996, the alcohol-involved arrest rate has increased.

Arrest rates and crash rates appear to be more closely related in this group than in others.
- The rate of alcohol-involved crashes with injuries has declined overall from 1990 to 2001.
- Arrests peaked in 1993.
- Between 1992 and 1998, the alcohol-involved crashes with injuries rate fell but the rate remained above the statewide average.
- In 1994, the arrest rate was double the statewide rate.
• The rate of alcohol-involved crashes with injuries dropped sharply in 2001.

• Alcohol-involved arrests have declined since 1992.

• The rate of alcohol-involved crashes with injuries have declined since 1998.

• Alcohol-involved arrests have declined since 1999.

• The rate of alcohol-involved crashes is steadily declining.

• Since 1999, alcohol-involved arrests have leveled off.
The rate of alcohol-involved crashes have trended up since 1998.
Alcohol-involved arrests have declined sharply since 1998.

The rate of alcohol-involved crashes with injuries have trended steadily down.
Since 1995, alcohol-involved arrests have trended down.

The rate of alcohol-involved crashes with injuries has declined steadily from 1990 through 2001, with some fluctuation.
Alcohol-involved arrests bottomed out and have risen since 1999.
• Steady decline in alcohol-involved crashes since 1995.
• After a steady decline, alcohol-involved arrests rose in 1999 but dropped again in 2000.

• The rate of alcohol-involved crashes have declined mostly since 1990.
• Alcohol-involved arrests have been relatively constant except for a huge spike in 1993.

• The rate of alcohol-involved crashes have been constant since 1997.
• Significant increase in alcohol-involved arrests from 1991-1993, followed by a steady decline.
Alcohol-Involved Crashes with Injuries

The charts below show the number and rate of alcohol-involved crashes with injuries by county group for 1990 and 2001. The counties are shown in order of decreasing rate in each year. The statewide rate in 2001 was about half the rate in 1990.

- The rate of alcohol-involved crashes have trended down since 1993.
- Alcohol-involved arrests have been relatively constant.