Are Drivers With "Less-than-perfect" Driving Records More Likely To Have A Crash Than The General Driving Population?

FDOT is interested in knowing if drivers with a less-than-perfect driving record are more prone to be involved in crashes than the general driving population as a whole. While this is perceived to be likely, it can be verified using real data. We used the data in the DHSMV Data Warehouse to help verify this statistically. We used 2002 crashes for this analysis.

Some assumptions have been used in our analysis:

A less-than-perfect driving record is one where the driver has 6 or more points assigned to their driving record resulting from convictions in the prior 3 years.

To avoid skewing of drivers where they had multiple crashes in 2002, we only considered their point record at the time of the first crash of 2002 they were involved in. Subsequent 2002 crashes are excluded.

Our counts of involvement in a crash does not consider fault (i.e., the driver may not be at fault). We simply considered if the driver was involved.

"Dummy" crash records are included in all of our calculations. Dummies are parked cars, runaway cars, phantom drivers, and hit-and-runs where there were no injuries reported.

We calculated the following numbers using the Data Warehouse and the static Driver License Division DMS016 report output for year-end 2002:

1. All Drivers in a 2002 Crash that were indicated on the report as a Florida Driver   359,154

This is a distinct or unique count of drivers, that is, each driver license number is counted only once. The supplied Florida driver license number has not been validated against the Florida DL database.

2. All Drivers in a 2002 Crash from above whose DL number is in the DL database (this is a subset of the previous number)   299,488

This is a distinct or unique count of drivers, that is, each driver license number is counted only once. The supplied Florida driver license number has been validated against the Florida DL database. This number includes drivers of all point levels, i.e., "good" (<6 points) and "less-than-perfect" (6+ points) drivers.

3. All Drivers in a 2002 Crash from #1 above whose DL number could not be validated in the DL database   59,666

The difference between #1 and #2 above is 59,666. This 59,666 difference represents all Florida drivers reported in crashes that we could not find a DL record for. The DL record may no longer be active in the database (name change) or the number was written or keyed incorrectly.

4. All Licensed Florida Drivers on Dec 31, 2002 (from annual DMS016 report)   14,604,720

This is all licensed drivers in the DL database at 2002 year-end of all point levels, i.e., "good" (<6 points) and "less-than-perfect" (6+ points) drivers. All drivers counted in # 2 above are included in this count. (Presumably all drivers in #1 and #3 above are also included in this count but we cannot validate this against the current DL database.)

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5. Percentage of all Florida drivers (DL numbers not validated) that had crashes in 2002   2.46%

If we assume that all the drivers reported as Florida drivers in crashes were in fact Florida drivers, then the percentage of Florida drivers involved in crashes is 2.46%. This is calculated from 359,154/14,604,720.

6. All Florida Drivers that had a 2002 Crash with 6+ points at time of crash   30,959

For each validated driver license number involved in a crash (those counted in #2 above), we tabulated the total points from prior convictions assigned to their driving record at the time of the crash. Points assigned as a result of citations related to the crash are not included. If the driver had more than one crash in 2002, we <u>only</u> considered the first one chronologically.

It is important to remember that these 30,959 drivers have validated driver license numbers. There are certainly more than 30,959 drivers with crashes in 2002 that had at least 6 points at the time of their first crash, but we cannot validate this as these extra drivers are part of the unverifiable 59,666 drivers in #3 above.

7. All Current Licensed Drivers that had 6+ points on Dec 31, 2002 (point convictions from 1/1/2000 to 12/31/2002)   708,314

Taking the total licensed drivers as of December 31, 2002, we tabulated the total points from prior convictions assigned to their driving record at that time. A subset of #4 above.

8. All Current Licensed Drivers that had 6+ points on Dec 31, 2001 (point convictions from 1/1/1999 to 12/31/2001)   690,070

Taking the total licensed drivers as of December 31, 2002, we tabulated the total points from prior convictions assigned to their driving record one year earlier. A subset of #4 above. This number is lower than # 7 as the general driver population increases every year and so does the number of 6+ point drivers.

9. Percentage of 6+ point Florida drivers on 12/31/02 had crashes in 2002   4.37%

If we consider the number of drivers in 2002 crashes who had 6 or more points at the time of their crash as a percentage of all drivers with 6 or more points at the end of the year, then we get 4.37%. This is calculated from 30,959/708,314.

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Points to consider:

A. The number of all 6+ point drivers to use as a baseline comparison for crashes throughout the year was an evolving number as more 6+ point drivers came into being throughout the year as the general driving population grew. To compare the number of drivers who had 6+ points at the time of their crash to the total population of 6+ point drivers at the time of the crash, we should probably consider using an average of the two numbers, #7 and #8, to get a good 2002 total 6+ point driver comparison number. That average number would be 699,192. Using that number we get 4.42% (30,959/699,192)

   The percentage of Florida 6+ point drivers in crashes is between 4.37% and 4.42%. Using the most conservative numbers, we compare the percentage of all drivers in crashes - 2.46% - to the percentage of 6+ point drivers in crashes - 4.37%. This still is a statistically significant difference – 77% more likely. This difference increases to 79% more likely when comparing 2.46% to 4.42%.

B. If we also consider comparing drivers with less than 6 points in crashes to all drivers with less than 6 points (subtract the less-than-perfect drivers from the totals in each case), we isolate good drivers from the numbers above. Then we would have 13,896,406 total drivers with less than 6 points (14,604,720 – 708,314) and 268,529 drivers with less than 6 points in crashes (299,488 – 30,959), we get a percentage of crash involvement of 1.93% (268,529/13,896,406).

   Comparing the percentage of all good drivers in crashes – 1.93% - to the percentage of 6+ point drivers in crashes - 4.37%, we have a even more significant difference of 126% more likely.

C. We should note that if we were truly able to validate all Florida driver license numbers involved in 2002 crashes we would expect our percentage of 6+ point drivers involved in crashes to be higher. We were not able to determine the driving record of those missing 59,666 DL numbers so they did not get added into the 30,959 (#6 above) but we did consider them as a Florida licensed driver involved in a crash in the 359,154 (#1 above). We can only speculate on what that higher percentage might be.