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Police Injury Crashes and the Intersections of Policy, Technology, and Culture

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Introduction
- Police officer safety is a local problem of national concern.
- Traffic-related incidents were the leading cause of fatalities to officers in the U.S. for 14 of the last 15 years.
- A central repository of statistical data on injuries (other than fatalities) sustained in police crashes does not exist.
- The effect of injuries and loss (personal and property) to agencies and communities they serve is unknown.

Purpose of Study
- Apply theoretical framework (organizational culture) to pattern and problem: frequency and severity of officer-involved motor-vehicle crashes.
- Determine what the chiefs of police agencies in U.S. cities, counties, and state jurisdications believe are salient factors in officer-involved motor-vehicle incidents.
- Test theoretically relevant predictor variables, such as policies, training, and organizational culture, for significant associations with injury crashes.

Research Questions
- What is the relationship between primary enforcement of safety belt laws and police officer traffic injuries?
- What is the relationship between organizational demographics (size, jurisdiction, etc.) and police officer traffic injuries?
- What is the relationship between agencies’ driving training and police officer traffic injuries?
- What is the relationship between organizational culture/behavior and police officer traffic injuries?

Research Hypotheses
H1: The likelihood of police officer injury crashes in states with primary safety belt laws differs from those in states without primary safety belt laws. – Unsupported in preliminary analysis; variable not included in regression equation.
H2: The likelihood of police officer injury crashes in agencies with written driving policies differs from those in agencies without written driving policies. Partially supported in preliminary analysis; proxy included in regression analysis.

Methods
Population: City, county, state police agencies in the United States.
Sample Frame: City and county agencies participating in the FBI’s Uniform Crime Reporting (UCR) system in 2010; randomly selected 500 city, 500 county) agencies and one state police organization in all 50 states in the U.S.
-アクセス: website addresses, names of chiefs, and e-mail address of 923 police chiefs collected on individual agency websites (Dec. 2011- June 2012); Self-administered web-based survey deployed via e-mail in June and closed in July 2012.
-Analytical Approach: Step-wise logistic regression with nominal independent and dependent variables recorded as binary categorical and dichotomous variables. (Injury 1; Injury 0 = no). Culture variables tested with chi-square and t-tests (paired samples and independent samples).

Findings
Logistic Regression Analysis
Predictors of Motor Vehicle Related Injuries

<table>
<thead>
<tr>
<th>Variable</th>
<th>B (S.E.)</th>
<th>Wald df</th>
<th>exp b</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.68 (.33)</td>
<td>3.48 1</td>
<td>5.109</td>
<td>.06</td>
</tr>
<tr>
<td>Policy Permits Cell Phone</td>
<td>2.67 (.83)</td>
<td>9.92 1</td>
<td>14.419</td>
<td>.00**</td>
</tr>
<tr>
<td>Agency Size_record</td>
<td>22.81 2</td>
<td></td>
<td></td>
<td>.00**</td>
</tr>
<tr>
<td>Size (1) Very Small &amp; Small</td>
<td>-3.95 (.87)</td>
<td>19.85 1</td>
<td>.019</td>
<td>.00**</td>
</tr>
<tr>
<td>Size (2) Medium</td>
<td>-1.08 (.42)</td>
<td></td>
<td></td>
<td>.00**</td>
</tr>
</tbody>
</table>

Note: Size (2) + Size (3) = Reference Category; Size (3) Large & Very Large, is the constant in the model; it appears to have an effect but is not statistically significant.

- Policies permitting cell phone use has the strongest effect on the likelihood of injury crashes. Two independent variables:
  - policies permitting cell phone use, and
  - agency size,
  - are statistically significant predictors to injury-crashes involving police officers.
- Cell phones permitted, a policy variable, is statistically significant as a predictor of injuries in motor vehicle incidents. The odds of experiencing injury crashes are 14.42 times greater in agencies with policies permitting cell phones compared with those that don’t, when size of agency is held constant.
- Agency size, a demographic variable, is statistically significant as a predictor of injuries in motor vehicle incidents. The odds of experiencing injury crashes in very small and small agencies are .02 times less than in large and very large agencies when cell phone policy is held constant. In medium agencies, the odds of experiencing injury crashes 1.5 times less than in large and very large agencies, when cell phone policy is held constant.

Conclusions
- This study addresses the gap in the criminal justice and public administration literature on the influence of policy, culture, and technology on police injury crashes. Itquantifies perceptions of a randomly selected national sample of police agency chief executives by asking them what is happening in their own agencies. Chiefs say speed and distractions are major factors in agencies with policies permitting cell phones compared with those that don’t, when size of agency is held constant.
- Agency size, a demographic variable, is statistically significant as a predictor of injuries in motor vehicle incidents. The odds of experiencing injury crashes are 14.42 times greater in agencies with policies permitting cell phones compared with those that don’t, when size of agency is held constant.

Survey Respondents

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics (n=185)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>City</td>
<td>89</td>
<td>56</td>
</tr>
<tr>
<td>County</td>
<td>53</td>
<td>24</td>
</tr>
<tr>
<td>Size (n=185)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small (25 75 officers)</td>
<td>21</td>
<td>13</td>
</tr>
<tr>
<td>Medium (76 to 200 officers)</td>
<td>30</td>
<td>23</td>
</tr>
<tr>
<td>Large (201 to 500 officers)</td>
<td>45</td>
<td>28</td>
</tr>
<tr>
<td>Very Large (500 + officers)</td>
<td>37</td>
<td>23</td>
</tr>
<tr>
<td>Injury variables (n=180)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Death, road struck (n=180)</td>
<td>28</td>
<td>16</td>
</tr>
<tr>
<td>Death, auto (n=178)</td>
<td>41</td>
<td>23</td>
</tr>
<tr>
<td>Death, non (n=178)</td>
<td>18</td>
<td>10</td>
</tr>
<tr>
<td>Death, motorcycle (n=179)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Death, road struck</td>
<td>26</td>
<td>16</td>
</tr>
</tbody>
</table>

Measuring Culture of Driving Safety
This study’s survey included a series of questions on the severity of six hypothetical scenarios based on violations of driving policy. The scenarios were modeled on a study (Klockars et al., 2000) supported by the National Institute of Justice to assess the culture of integrity in police agencies.

Hypothetical Scenarios:
1. Ignoring a supervisor’s command to terminate a pursuit.
2. Exceeding the posted speed limit by 35 mph in violation of agency policy not to exceed 20 mph over the posted limit.
3. Not wearing a safety belt while responding to a call for service.
4. Operating a mobile data terminal while the patrol vehicle is in motion.
5. Talking on a cell phone while driving a patrol vehicle.
6. Composing a text message while driving a patrol vehicle.

Sanctions for policy violations in the same six hypothetical scenarios:
1. None
2. Verbal reprimand
3. Written reprimand
4. Suspension without pay
5. Demotion in rank
6. Dismissal

Means Comparison (t-test) Results
- Paired samples t tests were used to determine if mean differences of scores to quantify chiefs’ perceptions of severity varied significantly from mean scores of their perceptions of how they believe officers in their agencies would view the severity of the same policy violations. All p-values were statistically significant at the .05 Confidence Interval level.
- Paired samples t tests also were used to determine if sanctions police chiefs believe should occur for the six policy violations varied significantly from what they believe officers would occur for the same policy violations in their own agencies. It is interesting to note statistically significant differences in all scores for both categories of policy violation severity and should/would sanctions. This suggests that chiefs believe officers view many policy violations as less severe than chiefs view them.
- Independent samples t tests were used to compare sums of mean scores for two groups of chiefs who selected sanctions (from a scale of 1-5) for policy violations. Findings reveal a statistically reliable difference between the mean number for sanctions that chiefs believe should be imposed for MITD policy violations in agencies with injuries (M = 1.19, SD = .74) compared with those of chiefs in agencies without injuries (M = 1.54, SD = .779), t(151) = 2.264, p = .025, a = .05.

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