Correlational Analysis of Oregon Juvenile Justice Data

Report

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1. Data Description

Data file was provided by Clackamas DA’s Office in Excel format. Some data points were calculated given sources provided by Clackamas DA’s Office. The data file contained information on the following for Oregon counties:

- 2011 Juvenile Arrest Rate per 100,000 persons age 10-17
  - Total arrest
  - Violent index arrest
  - Property crime index arrest
  - Drug crime arrest
- Juvenile recidivism rate reported in 2011 (1 year recidivism rate)
- Juvenile referrals
  - Percentage of referrals closed at intake
  - Percentage of referrals with formal or informal actions taken
- Juvenile petition filed in 2010
- Juvenile detention
  - 2009 detention rate for new criminal offenses
  - Detention usage pre-adjudication (admissions per 100 juveniles in community)
  - Detention usage post-adjudication (admissions per 100 juveniles in community)

Data footnote included the following explanations of the data.

1. Arrest Rates:

1-Year: In order to be included at least 90% of the population in that jurisdiction must covered by a law enforcement agency that reports data.


2. Recidivism Rates:
This is a 12-month referral to referral recidivism rate, which significantly undercounts actual juvenile recidivism for the following reasons:

1. Not all juvenile crime results in an arrest.
2. Not all juvenile arrests result in a referral to juvenile departments.
3. Referral rates do not track past 18-years in Oregon.
4. Referral rates do not record out of state juvenile criminal conduct

Currently the Oregon juvenile directors do not track recidivism data for subcategories of referrals, such as these. However, the data is available in their data system (JJIS) can be produced if directed to do so. Tracking these rates will help local juvenile justice officials track which practices are most successful and also whether or not any risk assessment tools being used to place juveniles in the different categories are accurate or effective, both of which are essential to good juvenile justice policy.

3. 1-year Recidivism Rate:

It is impossible to determine the national juvenile 1-year recidivism rate because states use different measurements. However, only Oregon uses a 1-year measurement. All other stats measure a minimum of 2-years.

4. 3-Year Recidivism Rates:

Does not include any referrals after age 18 which if included, are calculated to increase the rate by 8% and it does not include out of state offenses, which if included, would add up to 11%.

(NOTE: The data file only contained 3-year recidivism rate for State-wide. No county data nor National data were included)

5. Detention:

This rate reflects the percentage of offenders referred to juvenile departments who were detained for any period prior to the adjudication of their case.

Detention rates. Detention rates are a measure of how much juvenile systems in each county utilize detention. The figures have been calculated from Oregon JJIS, and the results shown represent the number of juvenile detention admissions per 100 juveniles in the community. They are divided into two sections, pre-adjudication and post-adjudication. The figures do not differentiate between detention for new crimes, probation violations, or violations of conditional release, since JJIS does not separate those categories in its annual detention report. Measure 11 detentions have been excluded since they are outside of the juvenile system. Detention for warrants has also been excluded since local authorities may not have control over many of those detainees.
2. Analysis

In this analysis we assumed arrest rates and recidivism rates are the indicators of Juvenile Justice System outcome; referrals, petition filed and detention rates are the indicators of the system’s intervention. We, therefore, focused on examining bivariate correlations between each one of the outcome indicators and the intervention indicators.

The analyses were conducted in three waves. The first analyzed the county data for Oregon only. The second analyzed the provided data for states only. Eighteen states were included in the study. The third wave of analysis focused on the provided county-level data from 18 states.

In conducting the bivariate correlation analysis, when the values were missing for a given county in the original data file, the county was excluded from the analysis. When the data value was zero (0) in the original data file, the county was included in the analysis.

Table 2.1: Indicators

<table>
<thead>
<tr>
<th>Outcome indicator</th>
<th>Intervention indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total arrest rate per 100,000 persons age 10-17 (2011)</td>
<td>Percentage of referrals closed at intake</td>
</tr>
<tr>
<td>Drug index arrest rate per 100,000 persons age 10-17 (2011)</td>
<td>Percentage of referrals with formal or informal actions taken</td>
</tr>
<tr>
<td>Property arrest rate per 100,000 persons age 10-17 (2011)</td>
<td>Petitions filed (2010)</td>
</tr>
<tr>
<td>One year recidivism rate (2011)</td>
<td>2010 detention rate for new criminal offenses</td>
</tr>
<tr>
<td></td>
<td>Detention usage pre-adjudication (admissions per 100 juveniles in community)</td>
</tr>
<tr>
<td></td>
<td>Detention usage post-adjudication (admissions per 100 juveniles in community)</td>
</tr>
</tbody>
</table>

3. Results
3.1 Correlation between Total Arrest Rate and Referrals/Petition Filed/Detention by County in Oregon

Correlations between total arrest rate and the intervention indicators (referrals, petition filed, and detention rate) were examined, both within all Oregon counties and within the subset of large Oregon counties.

Inspection of the scatterplot indicated the existence of an outlier county in the correlations between total arrest rate and detention usage post-adjudication. Excluding the outlier counties changed the size of the correlation coefficient substantially.

Correlation coefficients are shown in table 3.1.

Table 3.1: Intervention indicators’ correlations with Total Arrest Rate

<table>
<thead>
<tr>
<th></th>
<th>Percent of referral s closed at intake</th>
<th>Percent of referral with formal / informa l action taken</th>
<th>Percent of petition s filed</th>
<th>Percent of detentio n for new offenses</th>
<th>Detention usage Pre-adjudicatio n</th>
<th>Detention usage Post-adjudicatio n</th>
</tr>
</thead>
<tbody>
<tr>
<td>All OR counties</td>
<td>.439*</td>
<td>-.438*</td>
<td>-.676**</td>
<td>.256</td>
<td>-.232</td>
<td>.074</td>
</tr>
<tr>
<td>OR Counties excludin g outlier</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large OR counties</td>
<td>.213</td>
<td>-.214</td>
<td>-.684**</td>
<td>-.153</td>
<td>-.464†</td>
<td>-.124</td>
</tr>
<tr>
<td>Large OR counties Excludin g outlier</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.305 (w/o Klamath)</td>
</tr>
</tbody>
</table>

*significant at the .05 level
** significant at the .01 level
† approaching significance
The result indicates that there is a negative relationship between total arrest rate and (1) the percentage of referrals that result in a formal or informal action being taken, and (2) the percentage of petitions filed.

In other words:
• When considering all Oregon counties, counties with a higher percentage of referrals resulting in action tend to have a lower total arrest rate.
• When considering all Oregon counties, counties with a higher percentage of petitions filed tend to have a lower total arrest rate.

The results also indicate that there is a strong positive relationship between total arrest rate and (1) percentage of referrals closed at intake. This relationship holds true for all Oregon counties, as well as the large Oregon counties subset.

In other words:
• Counties with a higher percentage of referrals closed at intake tend to have a higher total arrest rate.

When the outlier county (Klamath) was excluded from analysis, there was an additional significant finding. Total arrest rate correlates significantly and positively with (1) detention usage post-adjudication. This relationship holds true only when considering all Oregon counties, regardless of size.

In other words:
• Counties with a higher detention usage post-adjudication tend to have a higher total arrest rate.

The relationship between total arrest rate and (1) detention usage pre-adjudication is negative and approaching significance only when considering large Oregon counties.

In other words:
• There is a weak relationship implying that in large Oregon counties, counties with higher detention usage pre-adjudication have lower total arrest rates.
All Oregon counties

Large OR counties
Oregon Juvenile Justice Data Analysis

All Oregon Counties

Large Oregon counties
Oregon Juvenile Justice Data Analysis

All Oregon Counties

Large Oregon Counties
All Oregon Counties

Large Oregon counties
Oregon Juvenile Justice Data Analysis

All Oregon Counties

All Oregon Counties, excluding outlier Klamath
Correlations between property index arrest rate and the intervention indicators (referrals, petition filed, and detention rate) were examined.

Inspection of the scatterplot indicated the existence of outlier counties. In analysis of all Oregon counties, regardless of size, and the correlation between property index and detention usage post-adjudication, counties Klamath and Harney were considered outliers. In analysis of the large Oregon county subset, Klamath was considered an outlier.

Correlations with and without excluding Harney and Klamath counties are showed in the table 3.2.
Table 3.2: Intervention indicators’ correlations with Property
Index Arrest Rate

<table>
<thead>
<tr>
<th></th>
<th>% of referral closed at intake</th>
<th>% of referrals with formal or informal actions taken</th>
<th>% of petitions filed</th>
<th>Percent of detention for new offenses</th>
<th>Detention usage Pre-adjudication</th>
<th>Detention usage Post-adjudication</th>
</tr>
</thead>
<tbody>
<tr>
<td>All OR counties</td>
<td>.483**</td>
<td>-.482**</td>
<td>-.649**</td>
<td>.0296</td>
<td>-.317</td>
<td>.035</td>
</tr>
<tr>
<td>All OR counties excluding outliers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large OR counties</td>
<td>-.280</td>
<td>-.568*</td>
<td>-.703**</td>
<td>-.199</td>
<td>-.568*</td>
<td>-.10</td>
</tr>
<tr>
<td>Large OR counties excluding outliers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*significant at the .05 level
**significant at the .01 level
†approaching significance

The results indicate that there is a strong negative relationship between the property index arrest rate and (1) the percentage of referrals with formal or informal action taken and (2) the percent of petitions filed. This relationship holds true for all Oregon counties, as well as the large Oregon county subset.

In other words:

- Counties with higher formal or informal action taken increases tend to have lower property index arrest rates.
- Counties with a higher percentage of petitions filed tend to have a lower property index arrest rate.

The results indicate that when considering all Oregon counties, there is a strong positive relationship between the percentage of referrals closed at intake and property index arrest rate.

In other words:
• When considering all Oregon counties, counties with a higher percentage of referrals closed at intake tend to have higher property index arrest rates.

The results indicate that there is a negative relationship between detention usage pre-adjudication and property crime index arrest rate, when considering the large Oregon county subset.

In other words
• When considering large Oregon counties only, counties with higher property crime index arrests tend to have lower detention usage pre-adjudication.

Finally, the results indicate that by excluding the outlier counties (Harney and Klamath), there is a positive correlation between property crime index arrests and detention usage post-adjudication that approaches significance.

In other words:
• The results tenuously suggest that counties with higher detention usage post-adjudication rates tend to have higher property crime index arrests.
Large Oregon Counties

All Oregon Counties
All OR counties, without Harney and Klamath

Large OR counties
3.3 Correlation between Drug Arrest Rate and Referrals/Petition Filed/Detention by County in Oregon

The correlation between drug arrest rate and the intervention indicators (referrals, petition filed, and detention rate) were examined.

Inspection of the scatterplot indicated the existence of outlier counties. In analysis of all Oregon counties the correlation between property index and detention usage post-adjudication, counties Klamath and Harney were considered outliers. In analysis of the large Oregon county subset, Klamath was considered an outlier.

Correlations with and without excluding Harney and Klamath counties are showed in the table 3.3.

<table>
<thead>
<tr>
<th></th>
<th>% of referral closed at intake</th>
<th>% of referrals with formal or informal actions taken</th>
<th>% of petitions filed</th>
<th>Percentag e of Detention for new offences</th>
<th>Detention usage Pre-adjudication</th>
<th>Detention usage Post-adjudication</th>
</tr>
</thead>
<tbody>
<tr>
<td>All OR counties</td>
<td>.468**</td>
<td>-.470**</td>
<td>-.595**</td>
<td>.102</td>
<td>-.217</td>
<td>.022</td>
</tr>
<tr>
<td>All OR counties excluding outliers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large OR counties</td>
<td>.269</td>
<td>-.271</td>
<td>-.614**</td>
<td>-.045</td>
<td>-.405</td>
<td>-.119</td>
</tr>
<tr>
<td>Large OR counties excluding outliers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* significant at the .05 level  
** significant at the .01 level

The results indicate that when considering all Oregon counties, there is a strong, negative relationship between drug crime arrests and (1) the percentage of referrals with formal or informal action taken and (2) the percentage of petitions filed. The relationship between drug crime arrests and the percentage of petitions filed holds true when considering the large Oregon county subset.

In other words:
• When considering all Oregon counties, counties with a higher percentage of referrals with formal or informal action taken tend to have a lower drug crime arrest rate.
• When considering all Oregon counties, or the subset of large Oregon counties, counties with a higher percentage of petitions filed tend to have a lower drug crime arrest rate.

The results indicate that there is a strong, positive correlation between drug crime arrest rate and the percentage of referrals closed at in-take. This relationship does not hold when considering the large Oregon county subset.

In other words:
• When considering all Oregon counties, counties that have a higher percentage of referrals closed at intake tend to have a higher drug crime arrest rate.

Finally, the results indicate that when considering all Oregon counties – and excluding the outlying counties of Klamath and Harney – there is a positive correlation between detention usage post-adjudication and drug crime arrest rate.

In other words:
• When considering all Oregon counties, and excluding outliers, counties with a higher detention usage post-adjudication rate tend to have a higher drug crime arrest rate.

There appears to be no relationship between detention usage pre-adjudication and the drug crime arrest rate.
All Oregon Counties

Large Oregon Counties

Oregon Juvenile Justice Data Analysis
All Oregon Counties, without Harney and Klamath

Large Oregon Counties, without Klamath
3.4 Correlation between Recidivism Rate and Referrals/Petition Filed/Detention by County in Oregon

Correlations between one-year recidivism rate and the intervention indicators (referrals, petition filed, and detention rate) were examined.

Inspection of the scatterplot indicated that Klamath County is an outlier for the correlational analysis between detention usage post-adjudication and one-year recidivism rate. Substantial change in the size of correlation coefficient was observed in the detention usage post-adjudication.

Correlations with and without excluding Klamath County are shown in table 3.4.

Table 3.4: Intervention indicators correlation with One-year Recidivism Rate

<table>
<thead>
<tr>
<th></th>
<th>% of referral closed at intake</th>
<th>% of referrals with formal or informal actions taken</th>
<th>% of petitions filed</th>
<th>Percentage of detention for new offences</th>
<th>Detention usage Pre-adjudication</th>
<th>Detention usage Post-adjudication</th>
</tr>
</thead>
<tbody>
<tr>
<td>All OR counties</td>
<td>.153</td>
<td>-.152</td>
<td>.082</td>
<td>.298</td>
<td>-.065</td>
<td>.055</td>
</tr>
<tr>
<td>All OR counties excluding outliers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.387* (w/o Harney and Klamath)</td>
</tr>
<tr>
<td>Large OR counties</td>
<td>-.039</td>
<td>.027</td>
<td>-.251</td>
<td>.044</td>
<td>.004</td>
<td>.003</td>
</tr>
<tr>
<td>Large OR counties excluding outliers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.474* (w/o Klamath)</td>
</tr>
</tbody>
</table>

* significant at the .05 level

The results indicate that there is a significant, positive relationship between detention usage post-adjudication and one-year recidivism. This relationship holds when considering all Oregon counties - after excluding the outlying counties of Harney and Klamath- and when considering the large Oregon county subset after excluding Klamath County.

In other words:
• After excluding outlying counties, counties with a higher detention usage post-adjudication rate tend to have a higher one-year recidivism rate.

The results indicate that there is no significant correlation between the other intervention variables (percentage of referrals closed at in-take, percentage of referrals in which formal or informal action was taken, percentage of petitions filed, and detention usage pre-adjudication) and the one-year recidivism rate.
Large Oregon Counties
Oregon Juvenile Justice Data Analysis

All Oregon Counties

Large Oregon Counties
All Oregon Counties, without Harney and Klamath
Large Oregon Counties, excluding Klamath