Crime and COVID-19: Effect of changes in routine activities in Mexico City

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Outline

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• Crime and Covid-19 study
• Background
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• Data and methods
• Results
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JDI Latin America and Caribbean Unit

Aims to support improvements in the understanding of crime and the professional development of policing in the Latin America and Caribbean (LAC) region.

Projects in:
• Brazil
• Mexico
• Uruguay
• Argentina
• Jamaica
• Chile
• Belize, and more

www.ucl.ac.uk/jill-dando-institute/research/jdi-latam
Crime and COVID-19: Effect of changes in routine activities in Mexico City

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COVID-19 and Crime Research Seminar
December 9, 2020
Background

COVID-19 represents the largest disruption to public life in our lifetimes.

Flurry of interest into the effects of reduced mobility and changing patterns on crime.

No research to date outside US, Australia, UK.
Relevance

Practical importance

• Has crime changed?

Theoretical importance

• Why?

American Journal of Criminal Justice
https://doi.org/10.1007/s12103-020-09546-0

Crime Rates in a Pandemic: the Largest Criminological Experiment in History

Ben Stickle¹ • Marcus Felson²

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Theoretical perspective

- The Routine Activities Approach (Cohen and Felson):
- Crime events are a function of the daily rhythms and activity in a city.
- A crime occurs when a *motivated* offender encounters a *suitable* target in the absence of *capable* guardians.
- Thus, the dramatic change in urban mobility due to the pandemic likely reduced/changed the rate at which offenders and targets meet.
Data and methods

Data:
• All crimes
• Violent robbery
• Non-violent robbery
• Robbery against residence
• Serious violent crime (non-sexual)
• Sexual violence
• Domestic violence
• VAW helpline calls
• BRT + SCT Passengers

All from datos.cdmx.gob.mx
Methods

1. ARIMA forecasts

Estimate the effect of the pandemic by comparing the observed counts to those forecast by ARIMA models using pre-pandemic data (2017-2020).

2. Linear models with ARIMA errors

Robustly estimate the relationship between crime and urban mobility after accounting for time series properties; avoiding spurious regression problem.

\[
\log(y_t) = \beta \log(x_t) + \frac{\theta(B)\Theta(B^T)}{\phi(B)\Phi(B^T)} z_t
\]
Results
ARIMA Forecasts

Percentage change vs. ARIMA forecast

Period: Post COVID-19 and Post lockdown

Error bars represent 95% confidence interval.

Shaded area represents 95% confidence interval.
LM with ARIMA errors

<table>
<thead>
<tr>
<th>Category</th>
<th>Mobility coefficient (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All crimes</td>
<td>0.167 (0.014)**</td>
</tr>
<tr>
<td>Violent robbery</td>
<td>0.304 (0.020)**</td>
</tr>
<tr>
<td>Non-violent robbery</td>
<td>0.373 (0.020)**</td>
</tr>
<tr>
<td>Robbery against residence</td>
<td>-0.040 (0.037)</td>
</tr>
<tr>
<td>Serious violent crime (non-sexual)</td>
<td>0.080 (0.035)*</td>
</tr>
<tr>
<td>Sexual violence</td>
<td>0.222 (0.047)**</td>
</tr>
<tr>
<td>Domestic violence</td>
<td>0.000 (0.027)</td>
</tr>
<tr>
<td>VAW helpline calls</td>
<td>0.136 (0.033)**</td>
</tr>
</tbody>
</table>
Discussion and conclusion

- Clear reduction in crime* due to the pandemic for most common crimes.
- Serious crime, sexual and domestic violence less clear effect.
- Crime-mobility models suggest part of the decline in some crime categories was likely due to the change in routine activities.
- For all crimes reduction predicted by 50% reduction in mobility was 74% smaller than that estimated by ARIMA forecast.
- Other factors not accounted for: changes to willingness and/or ability to report crimes during lockdown.
- Relationship with mobility helps clarify which reductions are more likely to be related to opportunity factors,
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