



Visualization and Causal Inference of the Mexican Drug War

Valeria Espinosa and Joseph Kelly

vespinos@fas.harvard.edu, kelly2@fas.harvard.edu

Statistics Department, Harvard University

Abstract

In Mexico, the presidency of Felipe Calder n (2006-2012) has been characterized for the war against organized crime, raising many questions regarding security and violence. The main question of interest is if homicide rates increase significantly after a military intervention. Due to the observational nature of the study we explore the feasibility of causal inference for the data obtained. Some of the challenges are the violation of SUTVA (stable unit treatment value assumption), making ignorability feasible and the partial missingness of key variables. In particular, population information is only observed every 5 years and thus the yearly population of municipalities needs to be imputed. There are

Objective

Our goal is to use the potential outcomes framework to answer the question of interest: **Have the Military Interventions Increased Violence?**

SUTVA

- SUTVA - stable unit treatment value assumption
- **No hidden values of treatments** A broad definition of what “military intervention” means in this context helps us think of a two level treatment: receiving a military intervention (defined as ... see paper(that have resulted in deaths?)) or not receiving it.
 - **No interference between units** The main idea is to group neighboring regions that have received military interventions in such a way that distances make the “no interference” assumption more reasonable. For treated regions that are side to side were also assessed in terms of neighboring geographic situation such as lack of highways connecting them We proposed 18 units out of which 5 are eliminated for analysis purposes because the interventions received

Altering Column Spans

You can make columns that span multiple other columns relatively easily. Lengths are defined in the template that make columns look normal-ish if you want to use a four-column layout like this poster. If you want to use a different number of columns, you will have to modify those lengths accordingly at the top of the poster.tex file.

In particular, near the top of the TeX file you will see lines that look like:

```
\setlength{\sepwid}{0.024\paperwidth}
\setlength{\onecolwid}{0.22\paperwidth}
\setlength{\twocolwid}{0.464\paperwidth}
\setlength{\threecolwid}{0.708\paperwidth}
```

Set “sepwid” to be some small length somewhere near 0.025 (this is the space between columns). Then if n is the number of columns you want, you should set

$$\begin{aligned} \text{onecolwid} &= \frac{1}{n}(1 - (n + 1) \times \text{sepwid}), \\ \text{twocolwid} &= 2 \times \text{onecolwid} + \text{sepwid}, \\ \text{threecolwid} &= 3 \times \text{onecolwid} + 2 \times \text{sepwid}. \end{aligned}$$

Block Colours

For the standard blocks there are two colours; one for the title and one for the block body:

```
\setbeamercolor{block title}
{fg=red,bg=white}

\setbeamercolor{block body}
{fg=black,bg=white}
```

The fg colour sets the text colour and bg sets the background colour. For the normal blocks it makes no sense to use a background colour other than white. You *can* change it, but it will look weird!

Others

```
The “alert” block environment looks like this. It also has justified text, but it has a border and a light background to make it stand out. You can create one like so:

\begin{alertblock}{Title}
.....
\end{alertblock}
```

Alert Block Colours

```
You can similarly modify the colours for alert blocks (but try not to overdo it):

\setbeamercolor{block title}
{fg=black,bg=norange}

\setbeamercolor{block body}
{fg=black,bg=white}
```

References

Some references and a graphic to show you how it’s done:

[1] D. W. Kribs, R. Laflamme, D. Poulin, M. Lesosky, Quantum Inf. & Comp. **6** (2006), 383-399.

[2] P. Zanardi, M. Rasetti, Phys. Rev. Lett. **79**, 3306 (1997).