

# Spatial analysis of police encounters and addiction treatment center locations in Tijuana, Mexico

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## INTRODUCTION

- In 2009, Mexico's federal government passed legislation to improve the entry of drug-dependent individuals into addiction treatment (Consejo Nacional contras las Adicciones, 2010)
- Police are now the first point of contact for people who inject drugs (PWID) eligible for diversion to addiction treatment via criminal justice system
- However, there are concerns that the spatial pattern of policing of PWID in Tijuana may impact the uptake addiction treatment (Brouwer et al., 2012; Volkmann et al., 2011)
- In particular, research from other settings has demonstrated that policing near public health interventions for PWID may reduce uptake (Wagner et al., 2013; Bluthenthal et al., 1997)
- This study therefore sought to determine the location of addiction treatment centers and the spatial pattern of police encounters reported by PWID in Tijuana

## METHODS

### Sample

- *Proyecto El Cuete*, a longitudinal observational cohort of adult street-based PWID residing in Tijuana
  - Participants provided geographic data on police interactions, defined as **arrests, detainments, physical assaults, or sexual assaults** in the year 2011
- Locations of certified addiction treatment centers in 2011 were obtained from the Baja California Instituto de Psiquiatria

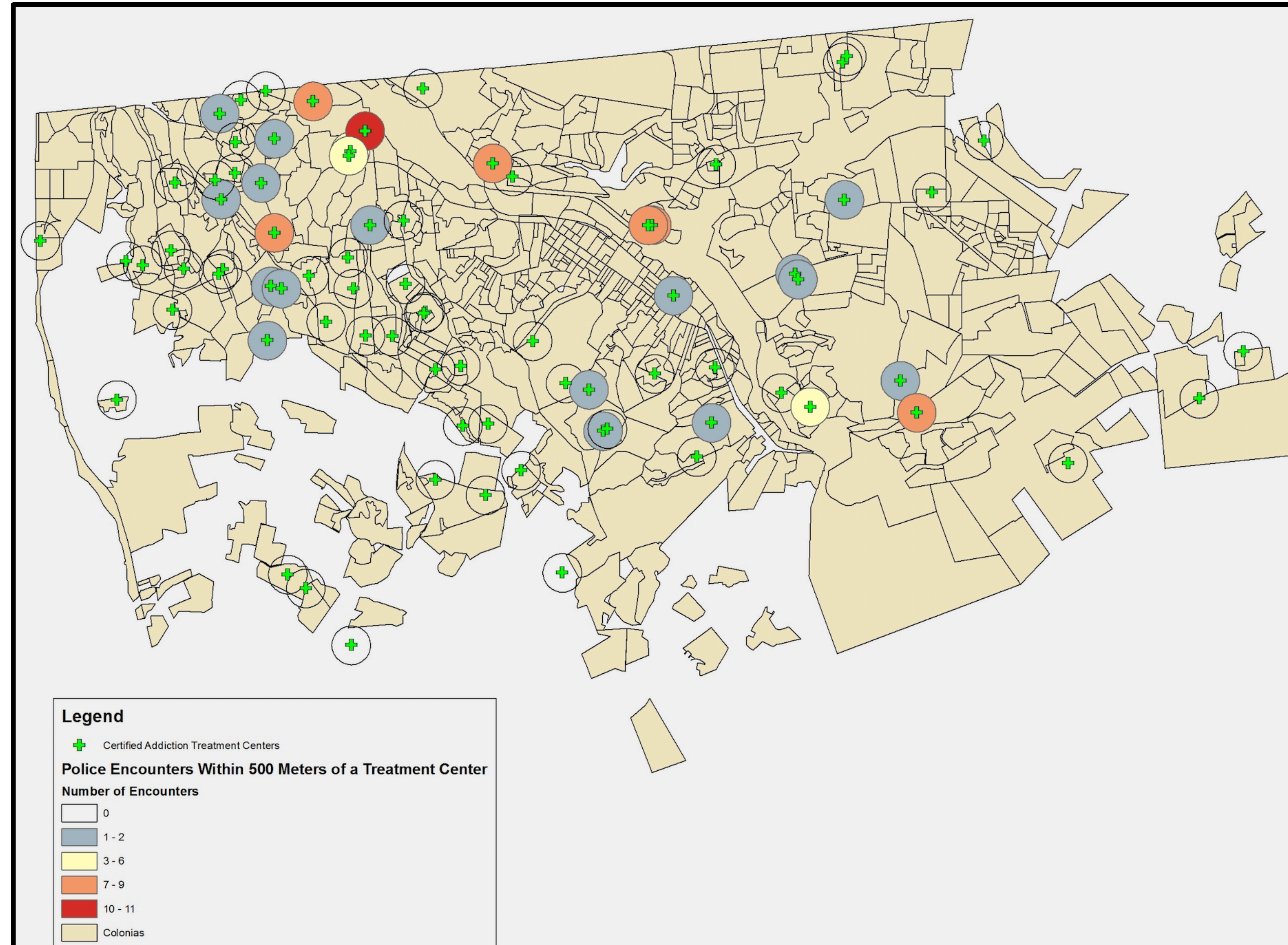
### Analysis

- The proximity of police interactions to addiction treatment centers was mapped using a 500 meter buffer zone
- *T*-tests were employed to compare the mean distance of all police encounters and the median distance of a randomly generated set of events to the nearest addiction treatment center
- Geographically weighted regression (GWR) analyses were undertaken to determine the spatial relationship between locations of police interactions (outcome) and addiction treatment centers (independent variable)

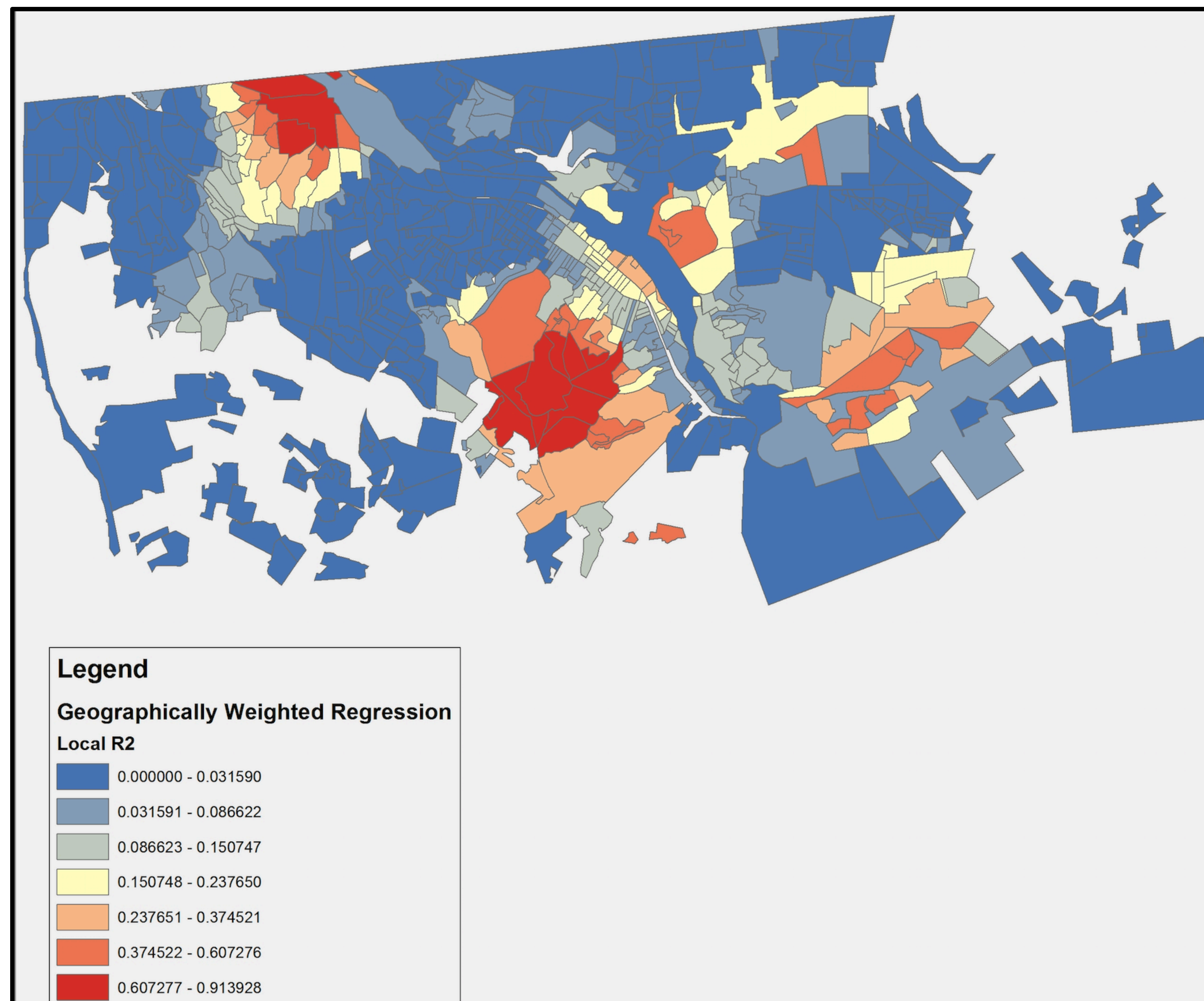
## RESULTS

Participants ( $n = 461$ ) reported 736 police interactions between January and December 2011:

- During this period, 27.5% of all police encounters reported by study participants occurred within 500 meters of a certified addiction treatment center
- *t*-tests suggest that the mean distance of police encounters to treatment center locations was significantly smaller compared with the mean distance of a randomly-generated set of events (773 meters vs. 1,245 meters,  $p < 0.001$ )
- 76% of the variation in the spatial pattern of law enforcement encounters was explained by the location of addiction treatment centers ( $R^2 = 0.76$ ; Sigma = 4.32)



**Figure 1. Reported Police Encounters Within 500 Meters of a Certified Addiction Treatment Center Among People Who Inject Drugs in Tijuana, 2011 ( $n = 46$ )**



**Figure 2. Local  $R^2$  of Geographically Weighted Regression of Reported Police Encounters Among People Who Inject Drugs and Certified Addiction Treatment Centers in Tijuana, 2011 ( $n = 46$ )**

**In 2011, 27.5% of all police encounters reported by study participants occurred within 500 meters of a certified addiction treatment centers**

## DISCUSSION

- In 2011, encounters between police and PWID appear to be spatially correlated with the location of addiction treatment centers in Tijuana
- This spatial correlation occurred despite the legislation of a drug policy reform seeking to increase enrolment and retention of PWID in addiction treatment
- The local  $R^2$  generated by the GWR identified two major geographic areas characterized by a higher than estimated number of addiction treatment centers and a higher than estimated frequency of negative police encounters
- While the Zona Norte, a neighbourhood in the north of Tijuana bordering the United States, is well-known as a site of high frequency of drug-related harms, the findings suggest that an area in Tiuanas south is also potentially a site wherein policing of individuals seeking addiction treatment occurs at a higher than average frequency
- Future research should seek to determine whether potential confounders, including neighbourhood median income, population density, and the location of police stations or other relevant services account for some of the variation in the spatial pattern of negative encounters between police and PWID

## CONCLUSIONS

- Over one quarter of police interactions reported by participants occurred within 500 meters of an addiction treatment center
- Changes in policing practices among Tijuana's drug-using population is likely required to improve the uptake of addiction treatment and reduce HIV transmission among PWID
- The Division of Global Public Health at the University of California, San Diego has therefore undertaken a partnership with the Tijuana Police Department
- This partnership will provide training to police officers to increase their knowledge of the public order benefits of ensuring that PWID are able to attend addiction treatment (Beletsky et al., 2011)

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