

# Using GIS to Determine Emergency Department and Treatment Center Proximity to **Opioid Hot Spots in Tarrant County**

## Background

- The limited research on spatial associations between place features and opioid use disorder (OUD) can be attributed to several factors.
- As such, having comprehensive data on OUD prevalence rates across Tarrant County would be beneficial.
- Recognizing high-risk (hot-spot) areas could potentially enhance the quality of the emergency department response, harm reduction services, and the precision of treatment and prevention strategies.

# **Objective**

- Analyze the spatial relationships between hospitals, emergency departments (EDs), substance treatment centers, and mental health facilities in proximity to opioid highrisk/hot spot areas.
- •Quantify the concentration of treatment providers within identified hot spot areas to assess accessibility and coverage for individuals affected by opioid use disorder.

### Methods

Data were obtained via open source databases in ArcGIS Online Content Portal.

In ArcGIS Pro:

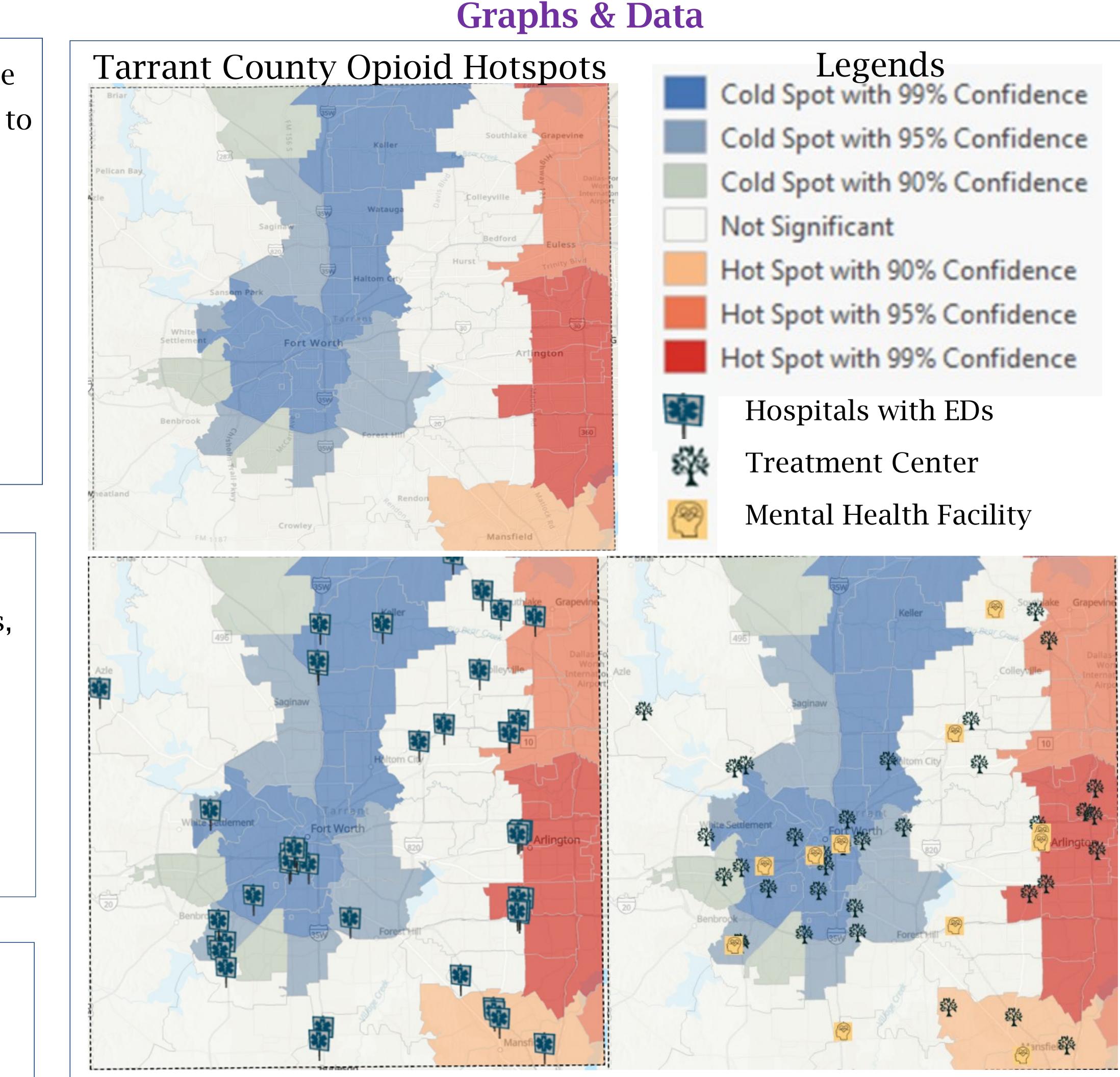
- Set the Tarrant County Boundary map
- Plot opioid hotspots in Tarrant county
- Plot all the following in Tarrant County:
  - Hospitals with EDs
  - Substance treatment centers
  - Mental health facilities

•Quantify the number of facilities in all hotspots.

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# Introduction

As opioid overdose deaths in the United States (US) continue to increase, there is an emergent need to treat those with opioid use disorder (OUD). Understanding geographic variations and their impact on different population groups in the US is now more essential than ever. Significant surges in the usage and misuse of street drugs such as heroin and fentanyl, followed by a corresponding increase in opioid-related deaths, have heightened the urgency for this understanding.



	Hospital with ED	ED with OUD Bridge Clinic	Treatment Center	Mental Health
Cold Spots with 99% confidence	13	1	9	3
Cold Spots with 95% confidence	6	0	7	1
Cold Spots with 90% confidence	1	0	2	0
Not Significant	15	0	7	4
Hot Spots with 90% confidence	4	0	3	1
Hot Spots with 95% confidence	1	0	1	0
Hot Spots with 99% confidence	7	0	8	2
Totals	47	1	37	11

**<u>Complexity of Data:</u>** Collecting and analyzing data on opioid use disorder and geographical features requires comprehensive datasets from various sources, which may not always be readily available or standardized.

We made concerted efforts to acquire more precise data from the Center for Health Statistics, Texas Department of State Health Services. However, our team encountered difficulties in obtaining de-identified raw data from this organization. This is due to the absence of a data use agreement that would allow local organizations access to detailed opioid-related data.

In essence, it's like trying to solve a puzzle without all the pieces – without the right information, it's hard to see the whole picture of what's happening with opioid use and its impact in our community. This issue not only hinders our ability to fully understand the complexities of opioid use disorder and its impacts but also... Perpetuates misinformation & the stigma surrounding this issue.

# Conclusion

Identifying hot spots of opioid-related emergency needs within Tarrant County may help [RE]distribute existing resources efficiently, empower community and Emergency Department (ED) based physicians to advocate for their patients.

There is great potential to build partnerships between John Peter Smith Hospital System (JPS) and local community organizations grounded in a strengths-based approach to supporting individuals impacted by opioid use disorders.

More broadly, this analysis may demonstrate that EDs can use geospatial analysis to address the emergent and longer-term health needs of the communities they are designed

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### Discussion

to serve.

### References