Towards Humanitarian GIScience: Myriad Maps in an Applied Forensic Humanitarian Context

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Contents

- What is **Humanitarian GIScience**?
- Unidentified Human Remains of Probable Migrants (UHRpm)
- Case Study: Migrant Deaths at the Texas-Mexico border
- Some findings
- Concluding observations



What is Humanitarian GIScience?

Humanitarian GIScience

- The application of spatial analytical perspectives and tools to genocide studies, spatial forensics, and, in general, human rights topics and events (Miranker and Giordano 2020)
- A mixed methods approach

Humanitarian Forensic Action (HFA)

• Action conducted to alleviate human suffering and protect the dignity of conflict or disaster victims (Cordner and Tidball-Binz 2017)

Migrant/Border Death

- Transnational forensic cases
- "Dying of migration" (Cuttitta 2020)

NSF-Behavioral and Cognitive Sciences, Human Networks & Data Science Infrastructure, "HNDS-I: Migrant Mortality Mapping Portal Project (M3P2)," 2022-2025



Unidentified Human Remains of Probable Migrants (UHRpm)

UHRpm

- 1. Locate
- 2. Account
- 3. Understand
- 4. Identify
- 5. Notify families



4



Case Study: What we know







⁽US Border Patrol 2022)



Case Study: Problem Statement

Texas' Brooks County Is 'Death Valley' for Migrants

A deputy in one of the counties that has seen a surge in undocumented children says they have found 37 migrants' bodies this year alone.



(NBCNEWS.com 2014)





"DEATH VALLEY FOR

MIGRANTS": THE

INVISIBLE COST OF

Each marker is the geolocated coordinates of a recovered body within Brooks County (2009-2019). [Courtesy Stephanie Leutert, <u>Director of the Mexico Security Initiative at the University of Texas at Austin in LawFare Blog</u>, statistics via Brooks County Sheriff's Office.]

(Spinoza 2022)



Case Study: Research Questions

Where do migrant deaths occur in South Texas?

• Task: Create an unidentified remains mortality profile for South Texas

How might an account for these kinds of deaths serve both forensic and humanitarian aims?

- Task: Examine the **spaces** and **places** of death
- Task: Review how migrant mortality is (or is not) recorded

How does GIScience ameliorate or propel these goals forward?

• Task: Identify hindrances to forensic and humanitarian action



Case Study: Data

• 1,412 recorded cases of migrant deaths

o **2009-2020**

- Sheriff's, Justices of the Peace, and Border Patrol
- 57 interviews and observations

○ IRB #7568

 $\,\circ\,$ March 2021 - July 2021

- Local newspapers (Texas and Mexico)

 1993 2020
 N = 580, n = 65 for analysis here
- Uncertainties
 - Access
 - Representativeness





Case Study: Mixed Methods

• ArcGIS Pro [®] v2.9.3

Spatial Statistics

- For the region (n = 10 counties)
- Per county where at least 40 of records are available
- SaTScan[®] v10.0
 - **o** Space-time cluster analysis
- Qualitative Spatial Representation (QSR)
 - News articles semantic triples (Stell 2019; Murrieta-Flores et al. 2019)
- Interviews (currently working on)
 - **•** Corpus Linguistics (CL)
 - $\,\circ\,$ Hand-drawn map and Google Maps shared by participants
- Social Network Analysis
 - \circ To be decided after completing interviews analysis



Case Study: Some Findings



Spatial Statistics per County (2009-2020)

Expected

1. Border counties river deaths

2. Smaller SD circles when more UHRpm reported

Less expected/ Unexpected

1. **"Blank spaces"** between border counties and nearborder counties. Proximity to Border Patrol checkpoints a factor





Regional Space-Time Scan Statistics

Expected

1. More clustering detected in Brooks County

2. More cases recovered in winter months

Notable/Unexpected

 Nothing detected near the River in Webb County
 "Blankness" along the Gulf Coast and between Jim Hogg/Brooks and Starr/Hidalgo counties





County Space-Time Scan Statistics

Expected

1. More clustering detected in Brooks County

Notable/Unexpected

 Visual (not statistical) nearness to a major roadway or major water way
 Mostly "blank" spaces





PCS: NAD 1983 UTM Zone 14N

Newspaper	Del Rio Herald News (metadata)			O	SR C	onsti	ruction
Year Published	2020 (metadata)						
Element 1	cuña Fire and Civil Protection Department						
(E1)	Aquatic Squad first responders						
Relate 1 (R#)	Organized the search near		Recovered fr		They were		And sent for
Element 2 (E2)	The Rio Grande River	Fire and Civil		Two brothers. Locat	d	The father Crim	Criminal Investigations
E1	The first responders	Pro	otection	the city's north side and	a		Agency/ Office of the State of
R2	Entered the river near	Departr	nent Aquatic Souad	few miles downstream Rancho El Olmo when they were last seen aliv	of e e.		Coahuila General Prosecutor
Element 3	Rancho El Olmo		Juan				
E1	The first responders	Ciudad Acuña	Coahuila, MX				
R3	Recovered from the river	(Cantu 2020, Del Rio Herald News)					
E4	The remains of the two brothers	#64					
	Near Rancho La Vega, in the city's	north side					
R4	and a few miles down the stream	from the					
	place where they were last seen alive						





QSR: 2012





Interviews

Mission, TX Fire Department Dive Team's Tour of Typical Rescue and Recovery Sites in the Rio Grande River





Interviews

Hand-drawn maps







Concluding observations

Where do migrant deaths occur in South Texas?

• Unidentified remains mortality profile for South Texas, most deaths found and reported close to Border Patrol interior Checkpoints

How might an account for these kinds of deaths serve both **forensic and humanitarian aims**?

- Exposes where there are conspicuous gaps in data
 - Lack of access
 - Absence of records

How does GIScience ameliorate or propel these goals forward?

- Situates local knowledge and traditional geospatial analyses together
- "Blank spaces" become areas for action: the silences of the map

To accomplish Humanitarian GISci juxtaposing heterogeneous datasets together can provide a better view of the situation and offer place-specific action



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