

# TRACKING CARTELS: EXPLOITING OPEN SOURCES TO IDENTIFY TRENDS

A Joint Centers of Excellence project supported by the DHS Office of University Programs

## OVERVIEW

The project team, which comprises the joint efforts of researchers from the National Consortium for the Study of Terrorism and Responses to Terrorism (START), the Criminal Investigations and Network Analysis Center (CINA), and the Center for Acceleration Operational Efficiency (CAOE) – all DHS Centers of Excellence – are working together to develop a multi-pronged approach to triangulate open source information about transnational criminal organizations (TCOs) operating in Mexico, Guatemala, Honduras, and El Salvador. The effort includes exploitation of foreign government documents, automatic geocoded information extraction from news articles, and scraping of social media to feed a linked gazetteer and a deep learning algorithm to identify subtle trends a human analyst could miss using traditional analytic methods. The overall goal of the project is to provide new open source tools to the U.S. Government that protect confidential sources and increase international and domestic information sharing.

The government of Guatemala's overall inability to mollify TCOs has resulted in decades of, at times, uncontrolled and unchecked violence against the government and civilians. The project team has obtained comprehensive, official records for violent deaths in Guatemala from 2009 through 2017.

The data include:

- place of death,
- official cause of death, and
- the individual's place of birth among other variables.

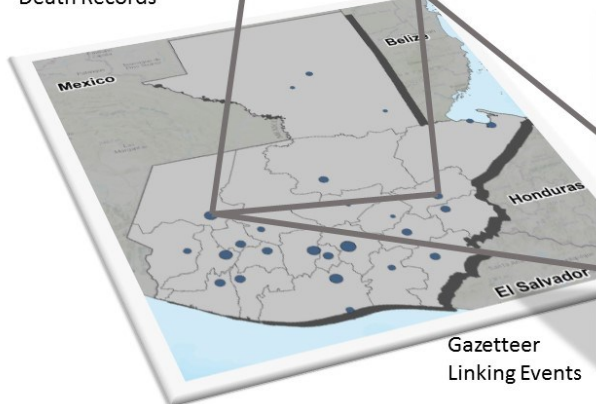
While it is impossible to determine from these records alone which violent deaths are associated with organized violence perpetrated by TCOs as opposed to other forms of violence, when these data are eventually joined with the other aspects of this project that are currently in development, we will be able to link many of these deaths with TCO violence. We expect to eventually be able to exploit these data to identify deeper trends and linkages across Guatemala and the wider region.

## GAZETTEER SEARCH TOOL

ID Number	Location of Death	Birthplace
61451	Jutiapa	Jutiapa
61452	Huehuetenango	Zacapa
61453	Puerto Barrios	Antigua

This visualization shows how the Gazetteer Search Tool functions. The individual projects work together by triangulating data.

Data Discovery:  
Comprehensive  
Death Records



This example illustrates the possibilities of the completed project: Discovered data links to a news article reporting on the death. The linked gazetteer connects the person's birth and death locations with the news article detailing the event.

**START**   
NATIONAL CONSORTIUM FOR THE  
STUDY OF TERRORISM AND RESPONSES TO TERRORISM

**CAOE** | CENTER FOR ACCELERATING  
OPERATIONAL EFFICIENCY  
A DEPARTMENT OF HOMELAND SECURITY CENTER OF EXCELLENCE

 Criminal Investigations  
and Network Analysis  
A DHS CENTER OF EXCELLENCE

## INITIAL FINDINGS

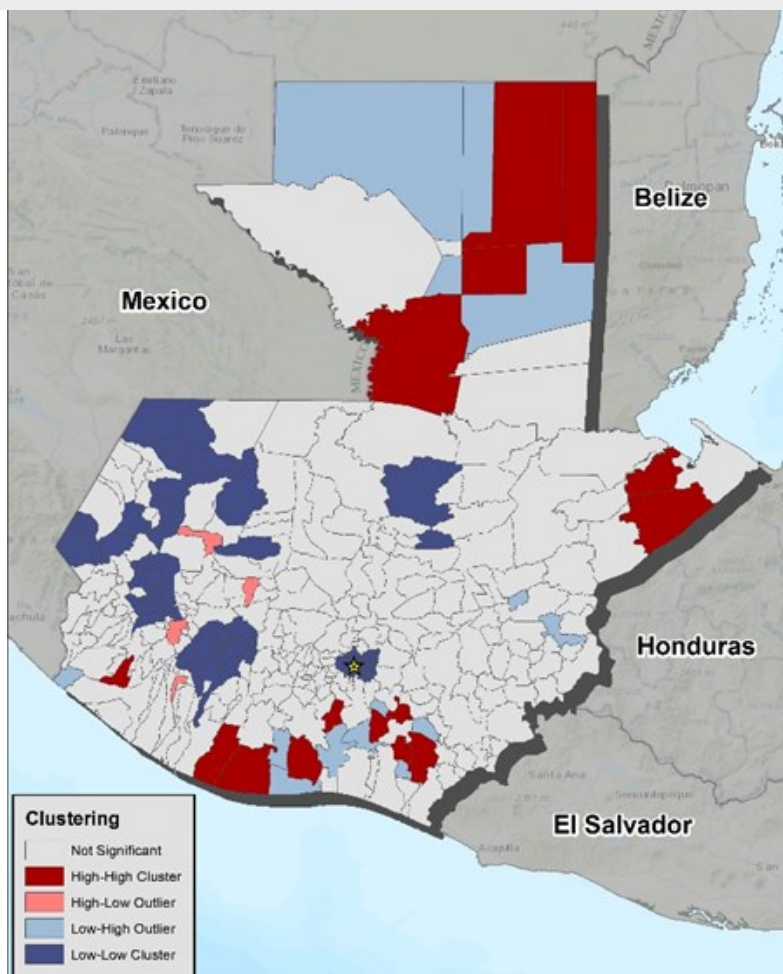
The map details clustering of the deaths at the municipality level. Note the regional clustering.

- The **dark blue** regions are municipalities that have statistically significant low numbers of violent deaths and are surrounded by municipalities that also have low numbers of violent deaths.
- The **dark red** municipalities are the exact opposite – they have statistically significant high levels of violent deaths and their neighbors have high values.

In this type of analysis, the municipalities in light red and light blue are statistically significant outliers.

- The **light red** denotes municipalities with high levels of violent deaths, but are surrounded by municipalities that have low values.
- The **light blue** is the opposite, they have statistically significant low values and their neighbors have high values.

We use this type of analysis to develop hypotheses and prepare for further investigation. For example, typical follow-up questions relate to what underlying factors are correlated with more or fewer murders in the outliers? We expect neighboring municipalities to have similar results statistically. When this does not occur, it requires further investigation.

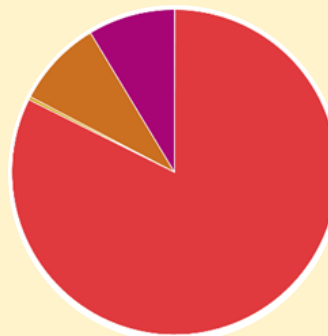


## RESEARCH TEAM

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Violent Deaths in Guatemala, 2017



Of the 3,579 violent deaths in Guatemala not attributed to disease, illness, old age, suicide, or accidents, the vast majority are firearms related, followed by sharp objects (e.g. knives), and unspecified violent deaths.

- Firearms
- Sharp Object
- Unspecified Violent Death
- Arson
- Aggravated Drowning

## CONTACT

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## About the Centers of Excellence Network

The [COE network](#) is an extended consortium of hundreds of universities conducting groundbreaking research to address homeland security challenges. Sponsored by the [Office of University Programs](#), the COEs work closely with the homeland security community to develop customer-driven, innovative tools and technologies to solve real-world challenges.