

Sunday, Bloody Sunday: Causal Evidence from Northern Ireland for the Effect of Ethnic Diversity on Violence

Joseph Brown

University of Massachusetts - Boston

Gordon C. McCord

University of California, San Diego

Paul Zachary

University of California, San Diego

UC San Diego
School of Global Policy and Strategy



Empirical Motivation

- How does ethnic collocation affect conflict intensity?
- Research on ethnicity has estimation and inference challenges
 - No random assignment
 - Large spatial unit of analysis
 - Theories depend on the interaction between ethnic groups
 - Post-onset measures of ethnicity
 - Population sorting bias results towards zero
- Northern Ireland exceptionally data rich



Research Design

- Estimate the effect of ethnic collocation on violence in Belfast during the Troubles
 - 1972 census reports religious affiliation to 100 meter grid cells
 - Endogenous population transfers within Belfast starting 1969
 - Measurement error in census
 - OLS results biased downwards
 - Correct 1972 census with an instrumental variable: location of churches

Census forms burned in Belfast streets

THOUSANDS of census forms were burned in the streets of Belfast over the week-end, and with Civil Rights and other groups throughout the North taking part in a boycott, thousands of others had not been completed when collection commenced on Monday.

Bonfires were made of heaps of census forms at Andersonstown, Ballymurphy, Ardoyne, the Markets area and Springfield Road. As forms burned on waste ground at Anderstown a passing police Land-Rover was stoned and damaged by a crowd of youths, but the two policemen in the vehicle escaped unhurt.

THERE WERE NO POLICE OR SOLDIERS IN THE IMMEDIATE VICINITY WHEN THE FORMS WERE PILED ON THE

FIRE, BUT AS THE CROWD DISPERSED AND MOST OF THE ONLOOKERS HEADED FOR ANDERSONSTOWN ESTATE AN

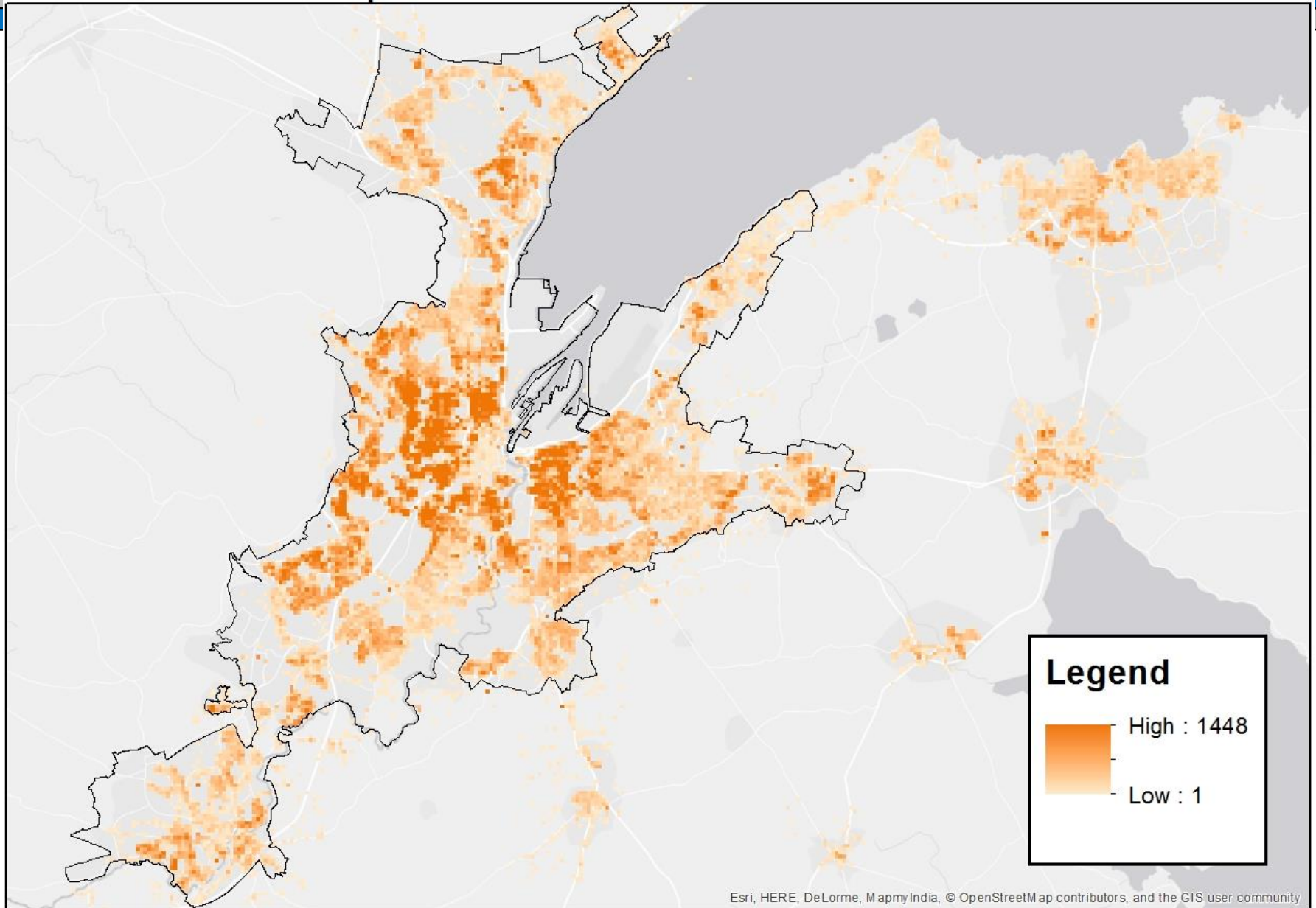
ARMY LORRY AND LAND-ROVER FOLLOWED BY A POLICE LAND-ROVER PASSED THE HOME-GOING GROUP.

Only the police vehicle came under attack. It continued along Andersonstown Road and turned into Glen Road where an assessment of the damage was made by police and soldiers.

Otherwise the destruction of census forms at several points passed without incident.

Members of Republican groups had been collecting them from householders over the week-end and the destruction of hundreds of forms in the New Lodge Road and Markets area on Saturday was followed by a number of other "mini-bonfires" of forms on Sunday. After the fires, members of Republican groups continued to canvass households for forms.

Population of Greater Belfast in 1971



Note: Population data from Northern Ireland General Register Office (1971).

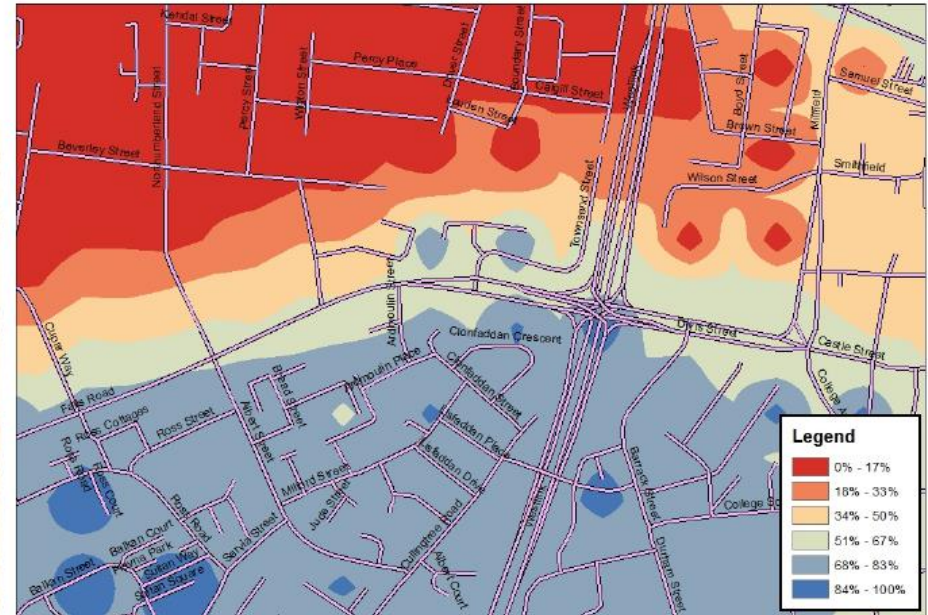
Belfast boundary created from 2005 urban extent data from Northern Ireland Statistics and Research Agency (2005).

Ethnic Diversity Measure

- Diversity measure from the 1972 census for each 100m grid cell in Belfast

$$EthnicDiversity_i = 1 - \left| \frac{(CatholicPopulation_i - ProtestantPopulation_i)}{(CatholicPopulation_i + ProtestantPopulation_i)} \right|$$

- Interpolate missing values via Kriging



Note: Data are interpolated from Northern Ireland General Register Office (1971)

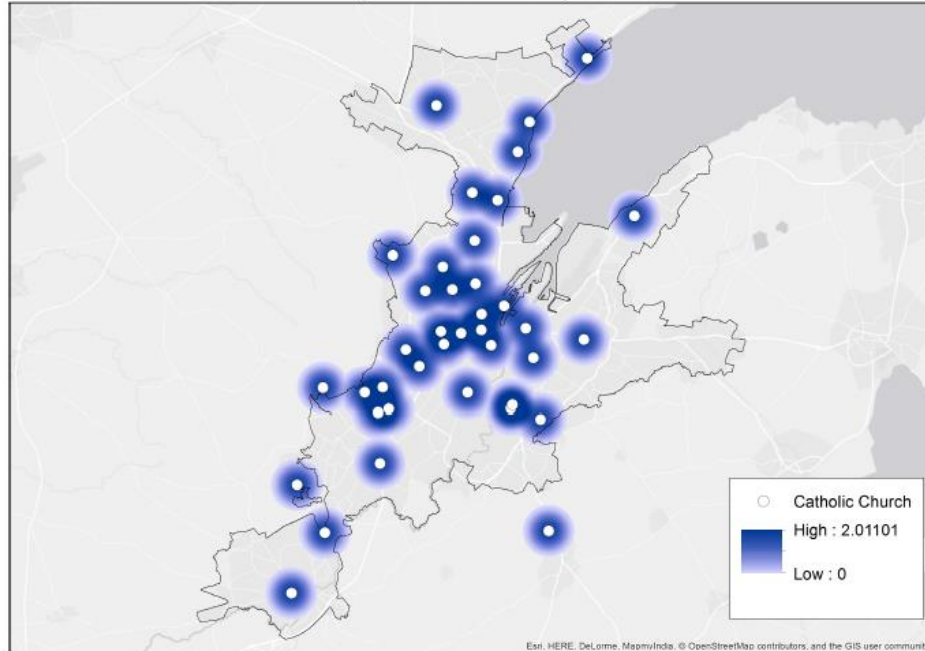
Figure 2: **Left:** Archival map from 1969, prior to ethnic riots. It shows the religion of inhabitants along Divis Street, the boundary between the Protestant Shankill neighborhood and the Catholic Falls neighborhood. Red areas are majority Protestant and blue are majority Catholic. **Right:** The same area (with current streets overlaid) with our interpolated measure of religious demographics based on the 1971 census.



Instrumental Variable

- Correct the 1972 census with an instrumental variable (IV)
 - Geolocate churches built pre-Troubles in Belfast to capture local religious affiliation
 - Estimate kernel densities stretching out from each church location
 - Kernels stretching 500m, 1km, 1.5km, 2km, and 3km
 - Generate a raster dataset of each denomination's church density for every 25-meter grid cell

Kernel Density of Catholic Churches
(1 km bandwidth)



Kernel Density of Protestant Churches
(1 km bandwidth)

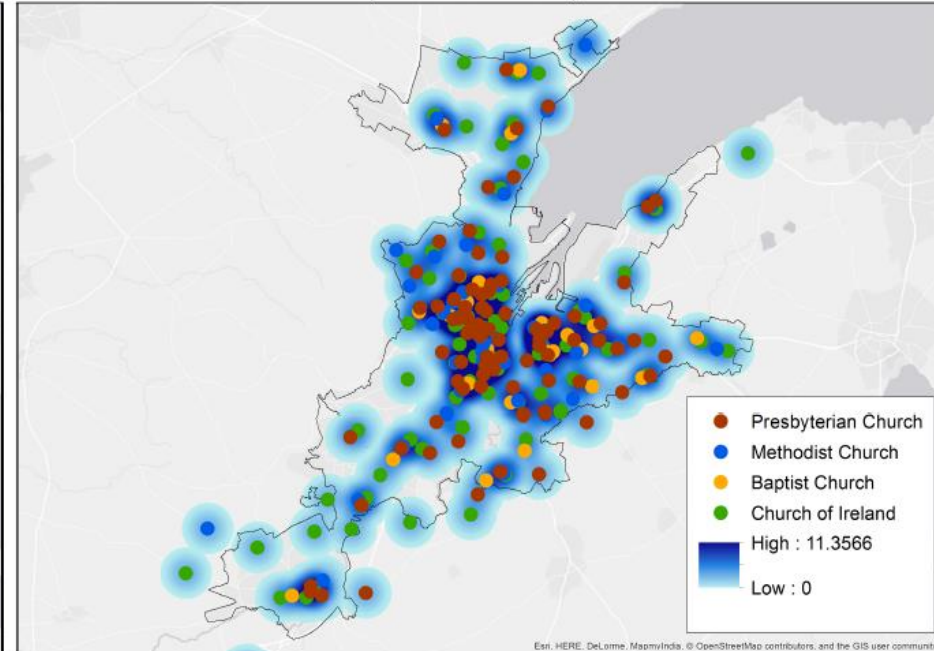
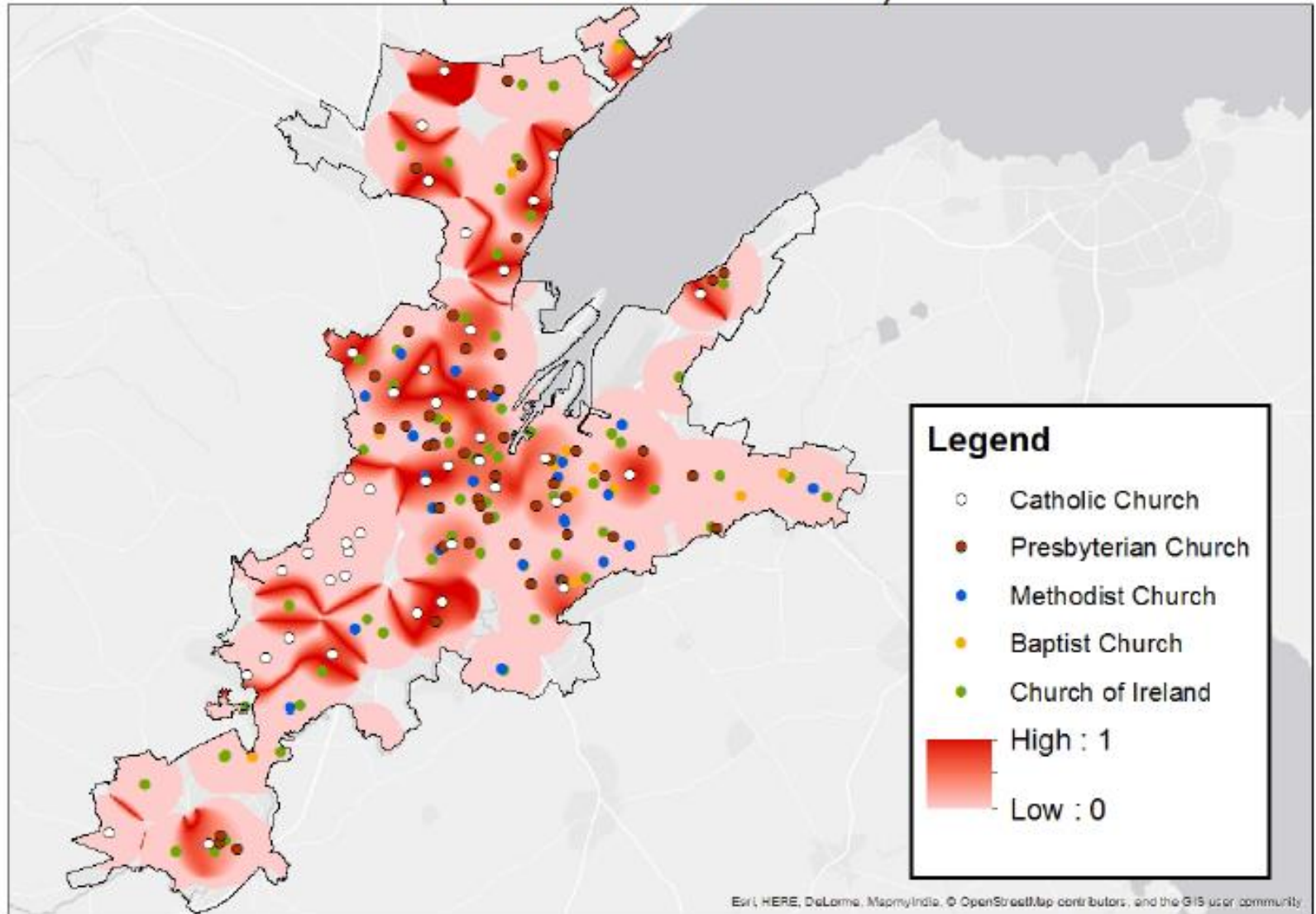


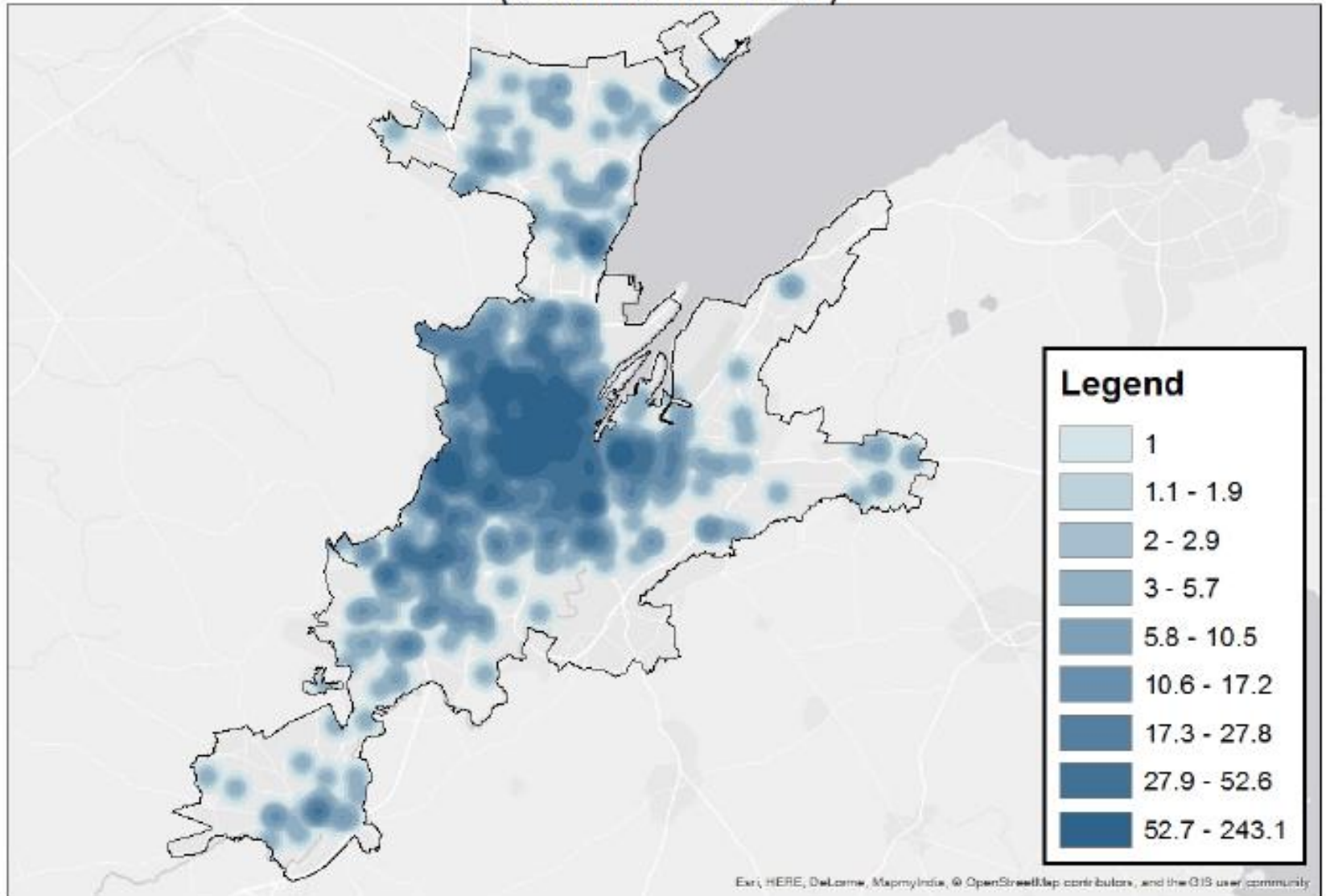
Figure 3: Left: Catholic Churches, location and kernel density with 1 kilometer bandwidth in Belfast. **Right:** Protestant Churches, location and kernel density with 1 kilometer bandwidth in Belfast.

$$ChurchDiversity_i = 1 - \left| \frac{(CatholicChurchDensity_i - ProtestantChurchDensity_i)}{(CatholicChurchDensity_i + ProtestantChurchDensity_i)} \right|$$

Diversity of Catholic & Protestant Churches (1 km kernel bandwidth)



Kernel Density of Victims (500m bandwidth)





Conclusion

- Ethnic diversity has a strong positive effect on the number of victims
 - A grid cell one std. dev. more diverse experiences 1.2-2.2 more deaths
- OLS underestimates the effect of ethnicity on violence
 - Spatial analysis techniques can enhance available datasets in social sciences
 - Correcting census measure increases effect size by at least 50%
- Importance of accounting for local context in studies of conflict dynamics
 - Social networks matter