



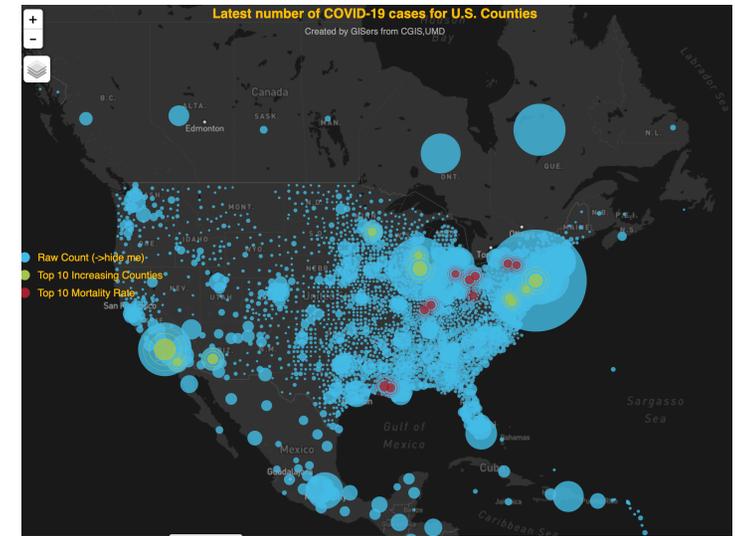
UCGIS GIScience & COVID-19 Panel Session

KATHLEEN STEWART

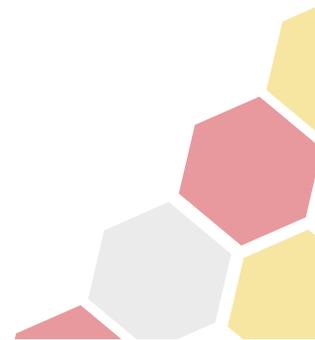
CENTER FOR GEOSPATIAL INFORMATION SCIENCE

UNIVERSITY OF MARYLAND, COLLEGE PARK, MD

STEWARTK@UMD.EDU



UCGIS 2020 Symposium, June 1, 2020



Geospatial efforts and research relating to COVID-19

At the Center for Geospatial Information Science (CGIS) we have been working on different aspects of COVID-19 related research

Junchuan Fan has created

https://smart-spatial.com/ResearchProject/COVID_Count_US.html

Point pulse map

Created using Leaflet, Mapbox and echarts. Data is from the JHU data repository

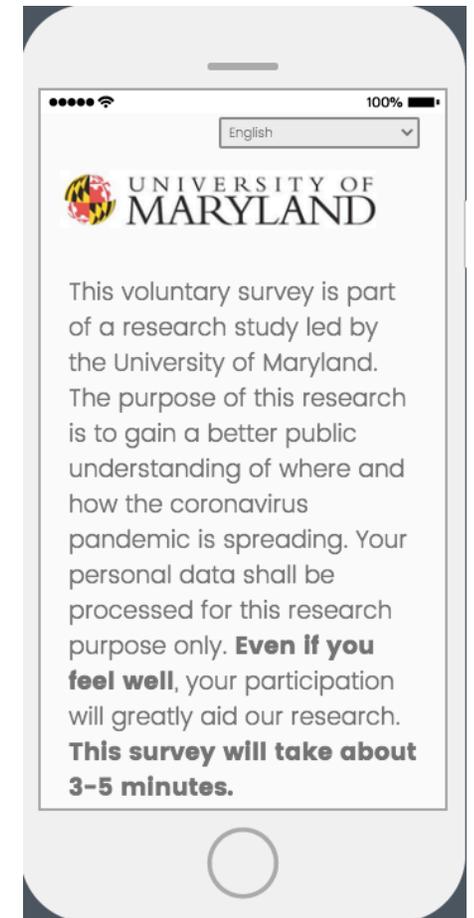
3 layers are created every 6 hours based on the latest data

- All counties with positive cases
- Top 10 counties with highest mortality rate and
- Top 10 counties that are increasing.



COVID-19 World Symptom Survey

- Joint Program in Survey Methodology (JPSM), CGIS from UMD and Facebook Inc.
- JPSM and Facebook
 - *survey design, sample selection, sample weighting*
- CGIS
 - Data pipeline for sharing symptom survey results with researchers and the public
 - public data API for aggregated survey results: data cleaning, data weighting, data aggregation -> public data API
 - individual micro data server



Junchuan Fan, Yao Li, Andres Garcia, Kathleen Stewart



Data pipeline

- Approx. 500k daily responses from over 3,000 regions and approx. 115 countries (55 languages...)
- Estimate *percent of population with **COVID-like illness (CLI)** and **Influenza-like illness (ILI)*** using survey responses and weights provided by Facebook

COVID-like illness refers to a fever and at least one of the following: cough, shortness of breath, or difficulty breathing

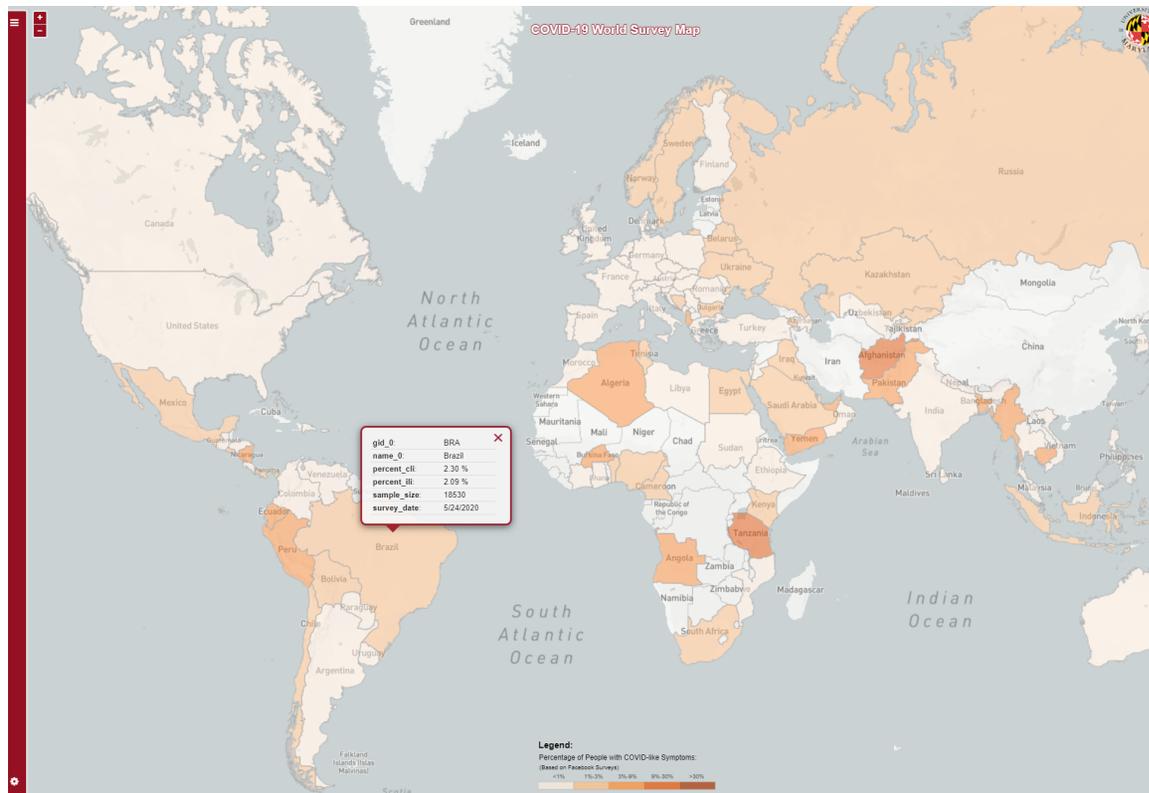
Influenza-like illness refers to a fever and both or either sore throat or cough

- Update database daily to allow researchers to query the database using public API



Geospatial Framework

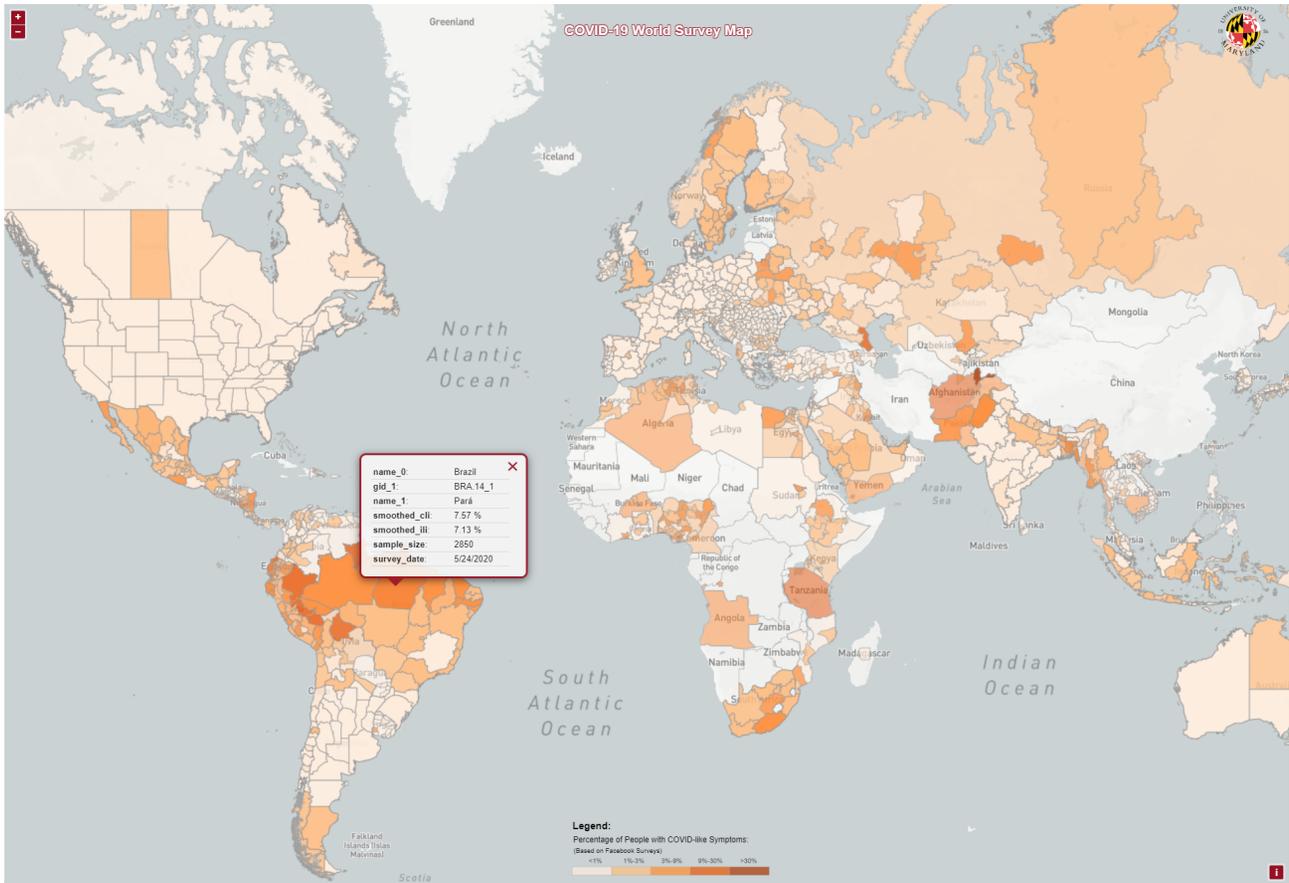
- An open source web-based GIS framework that integrates public data API function with spatial data serving (e.g., WMTS, WFS)
 - OpenLayers + Geoserver + PostGIS + Flask



Sneak
peek of
country-
level map

Percent of
people with
COVID-like
symptoms





Sub-country level results will be also available

Percent of people with COVID- like symptoms



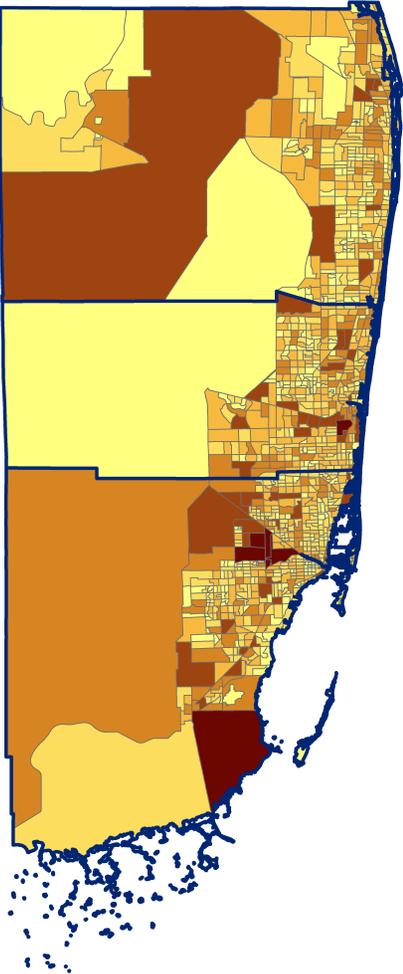
Geospatial efforts and research relating to COVID-19

- We are also undertaking research supported by NSF using passively collected location-based app data captured during the period of the pandemic to quantitatively measure change in collective movement behaviors

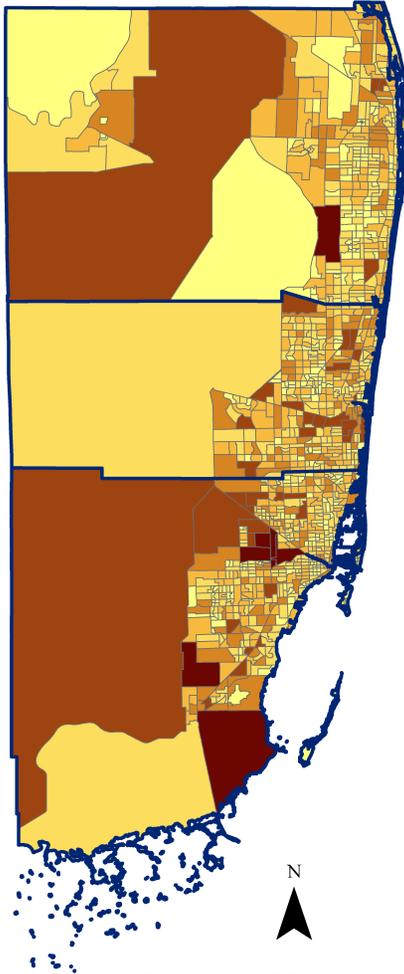


Outgoing trips in Miami-Dade, Broward, and Palm Beach counties by census tract

03/18/2020

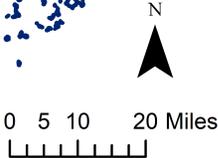


05/06/2020



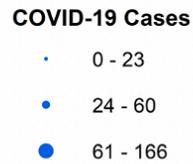
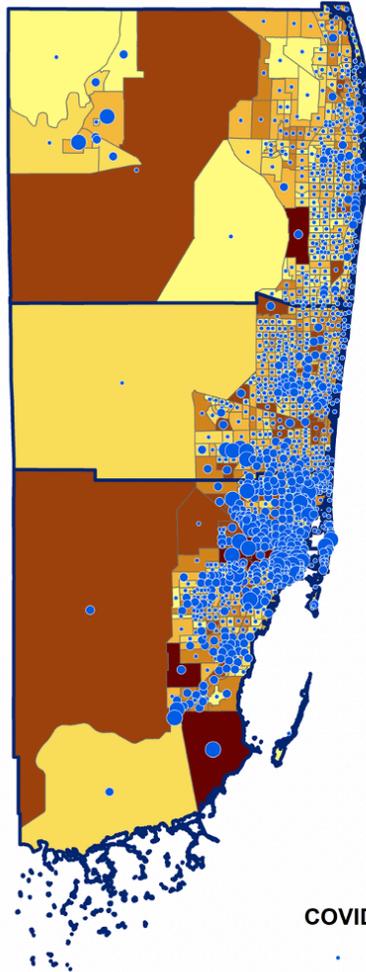
Legend

- County
- Trips
 - 0 - 8566
 - 8567 - 14601
 - 14602 - 22355
 - 22356 - 34456
 - 34457 - 64276
 - 64277 - 193029

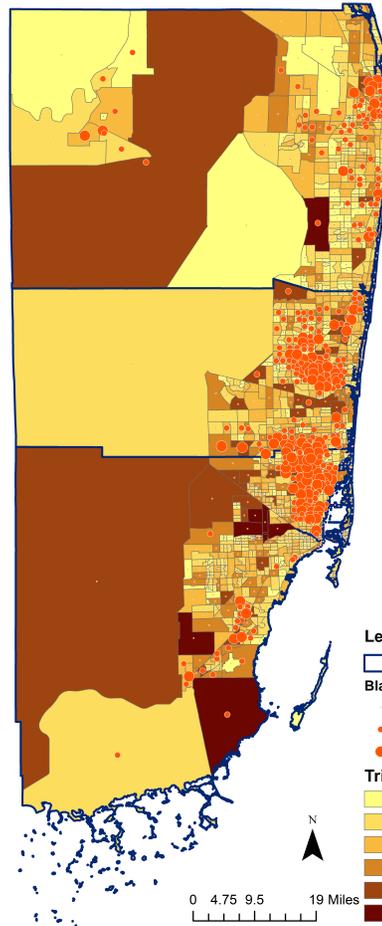


Outgoing trips in Miami-Dade, Broward, and Palm Beach Counties, 05/01/2020-05/10/2020 by census tract

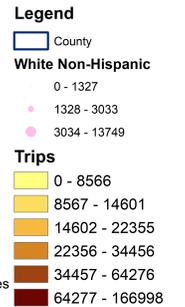
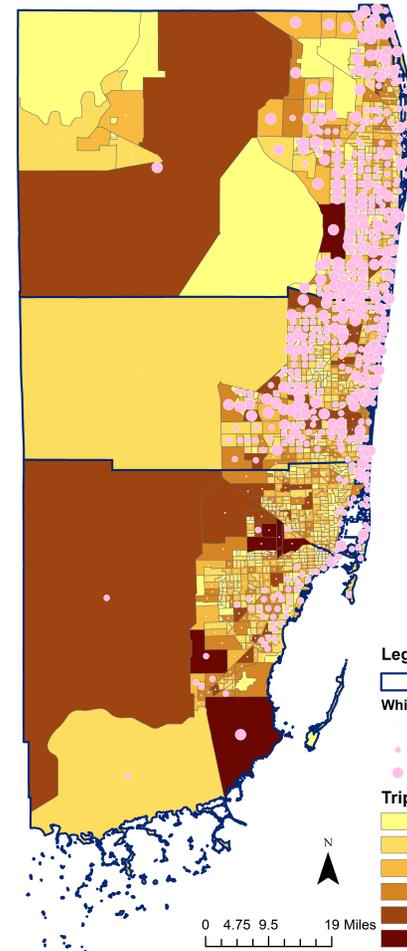
COVID-19 Positive Cases
05/18/2020



Black Non-Hispanic Population

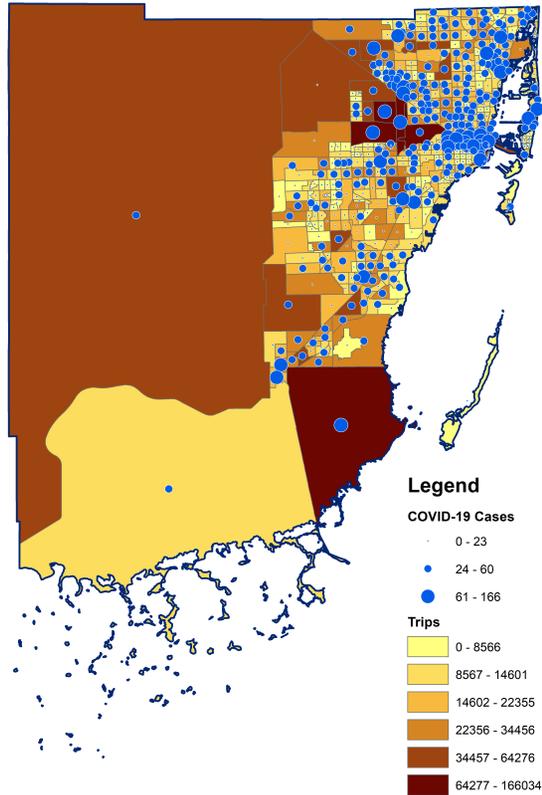


White Non-Hispanic

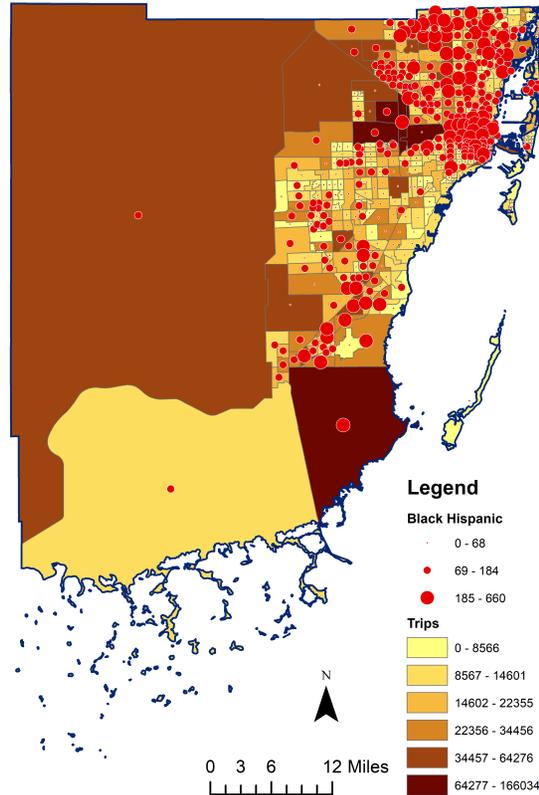


Trips in Miami-Dade County
04/26/2020 - 04/30/2020 by census tract

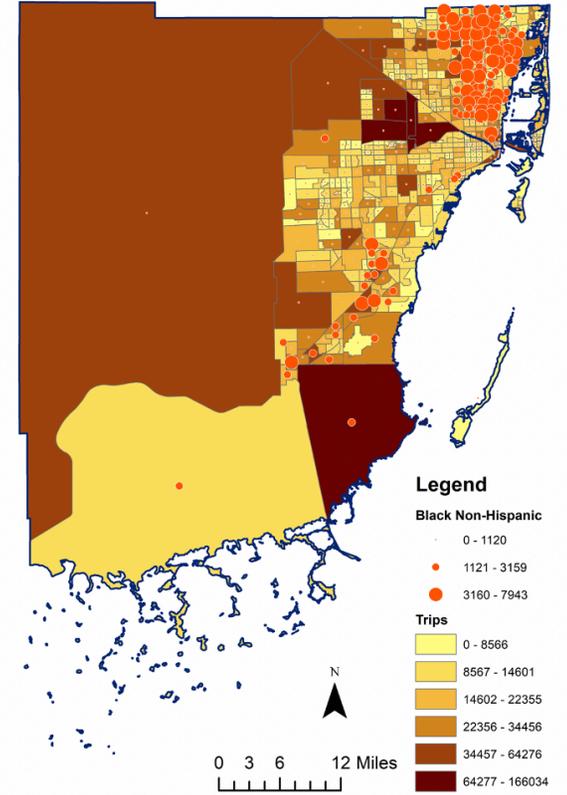
COVID-19 Cases 05/18/2020



Black Hispanic Population



Black Non-Hispanic



COVID-19 positive cases for 05/15/2020 in Prince George's County, MD

And environmental justice (EJ) index scores (census tract)
Collaboration with the SPH at UMD

- green space/distance to parks
- air quality
- walkability
- health-related variables

Prince George's County
15,808 cases, 497 deaths (06/01/2020)

