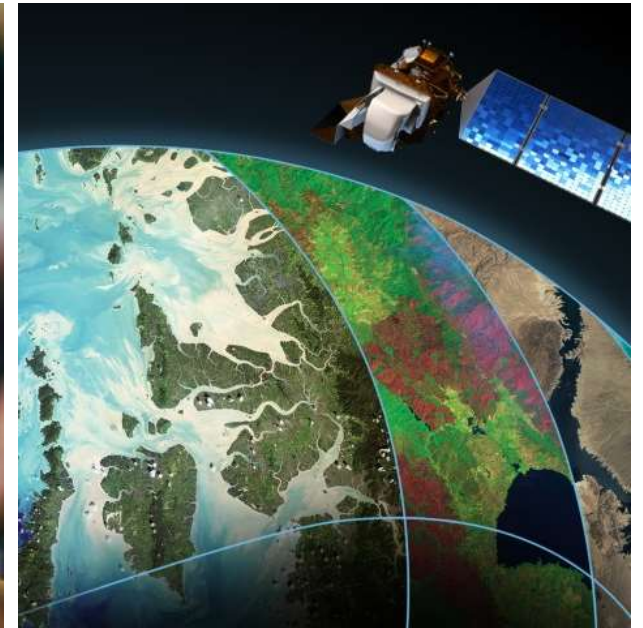


# Humanitarian Aid and Spatial Technology in the Age of Ubiquitous Real-Time Location Data





**Medical Aid**

Direct Relief's Fund for Health Equity Awards \$8.1 Million to 40 Organizations



**Financial Aid**



**Information Aid**

# The Thomas Fire

Mapping Human Behavior in Crises

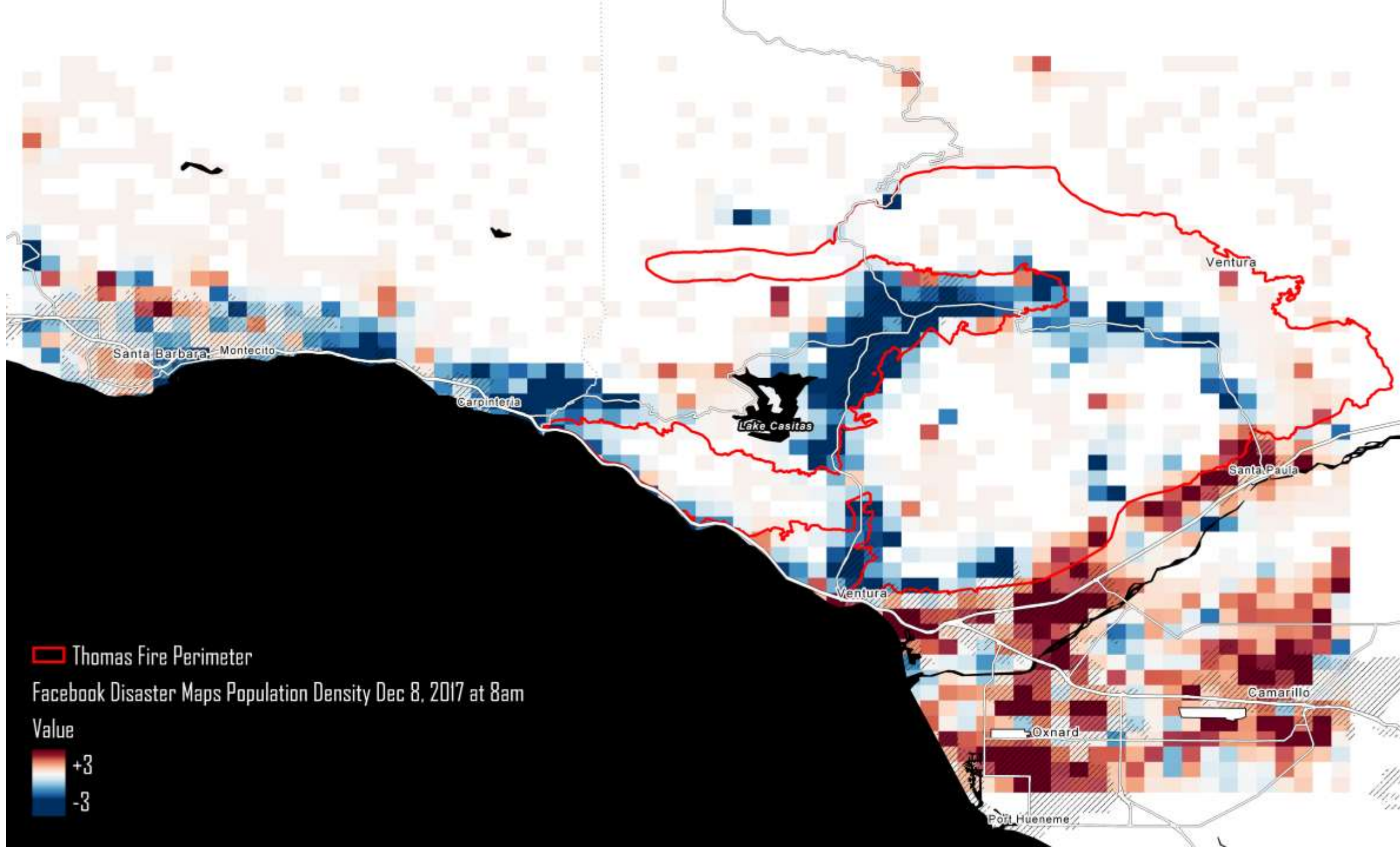


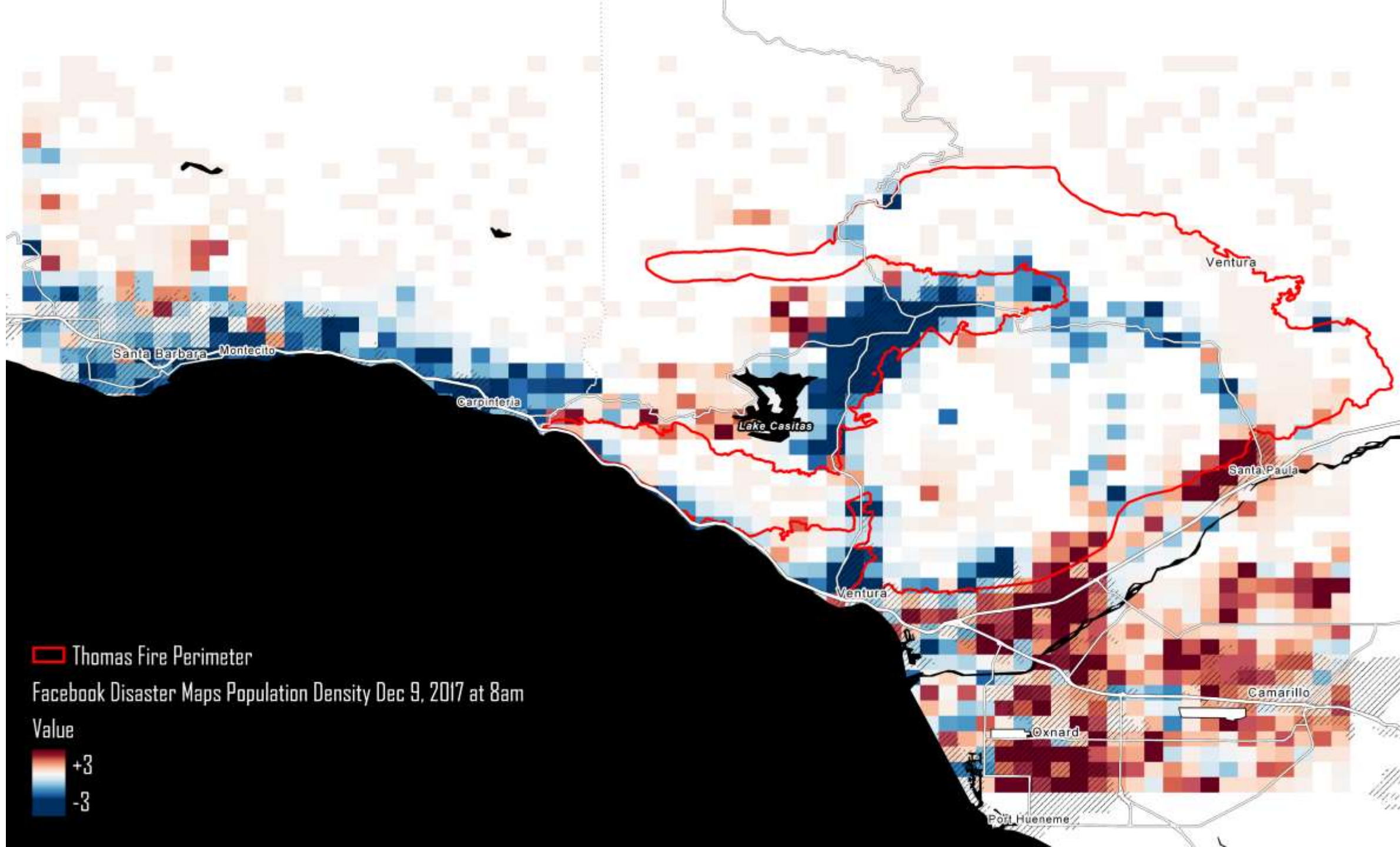




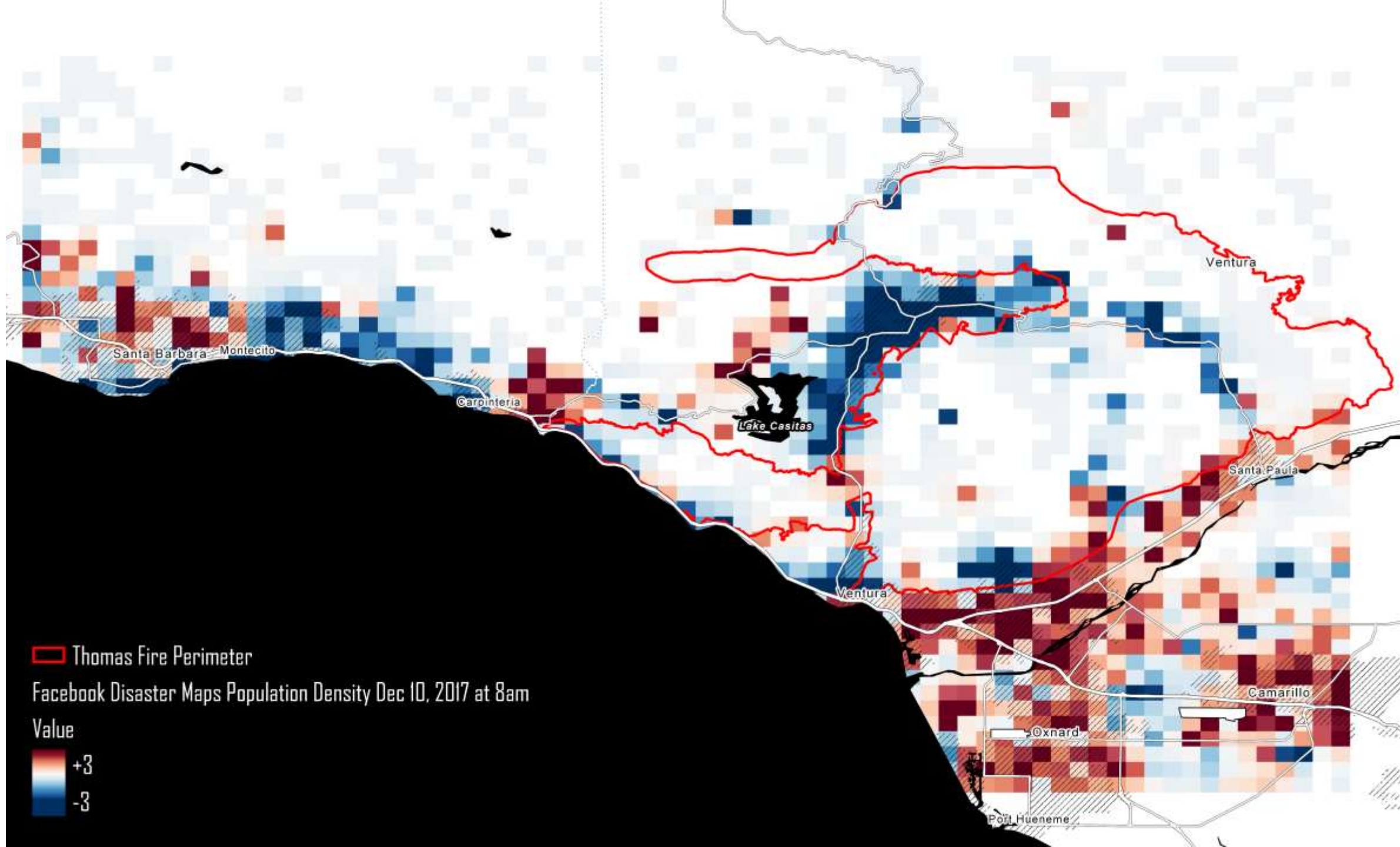












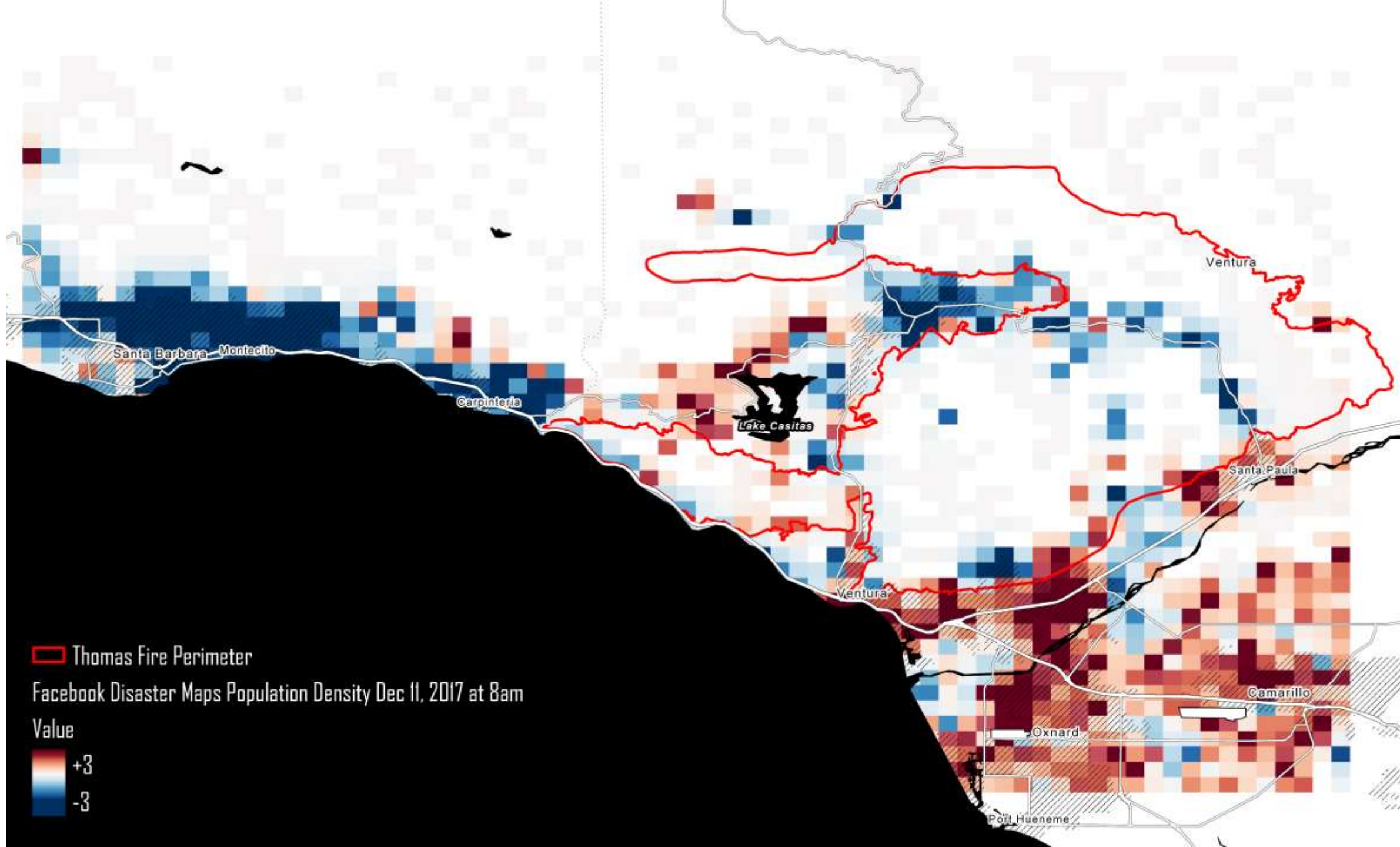
Thomas Fire Perimeter

Facebook Disaster Maps Population Density Dec 10, 2017 at 8am

Value



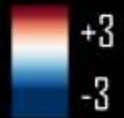


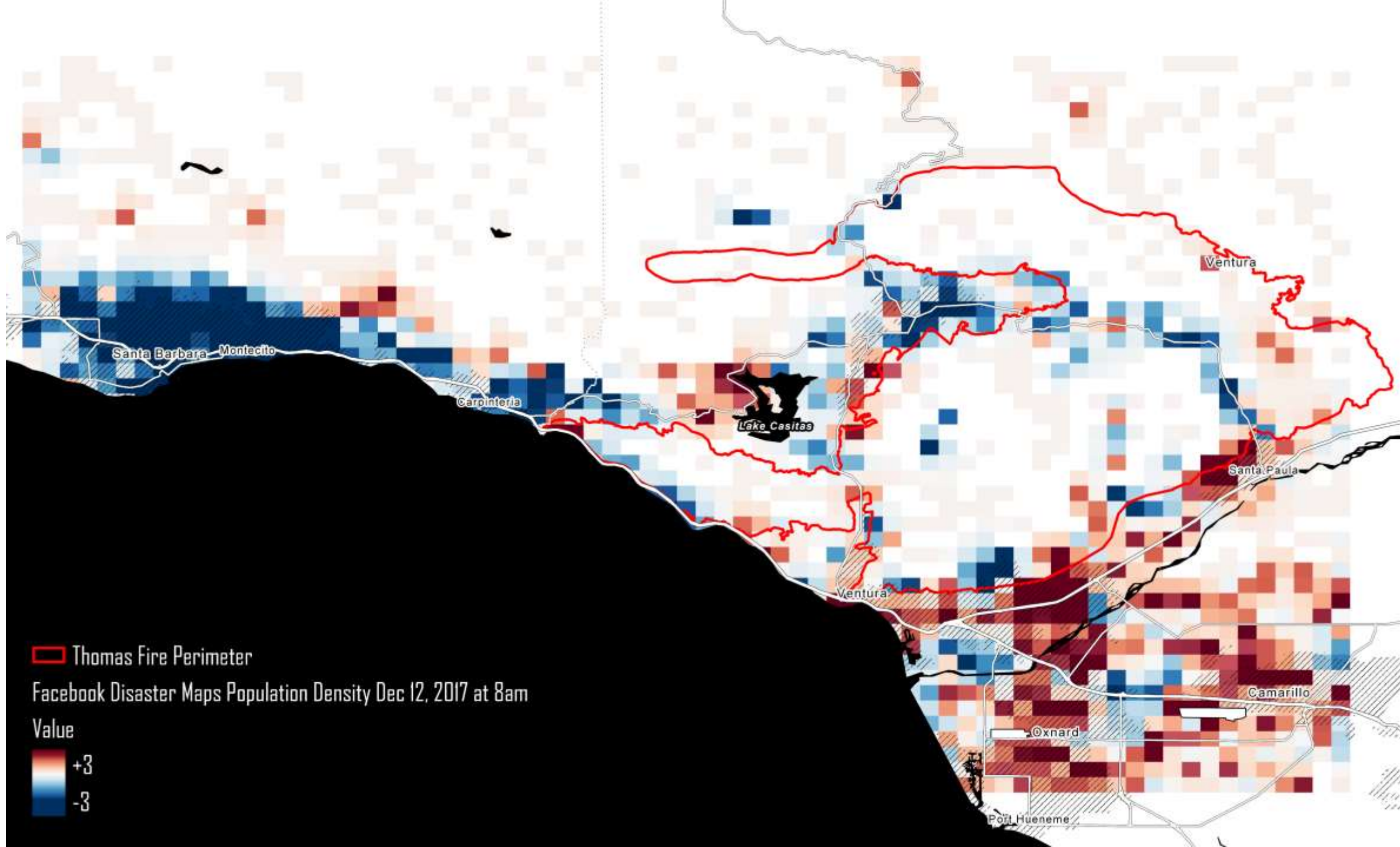


Thomas Fire Perimeter

Facebook Disaster Maps Population Density Dec 11, 2017 at 8am

Value

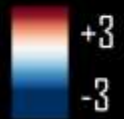




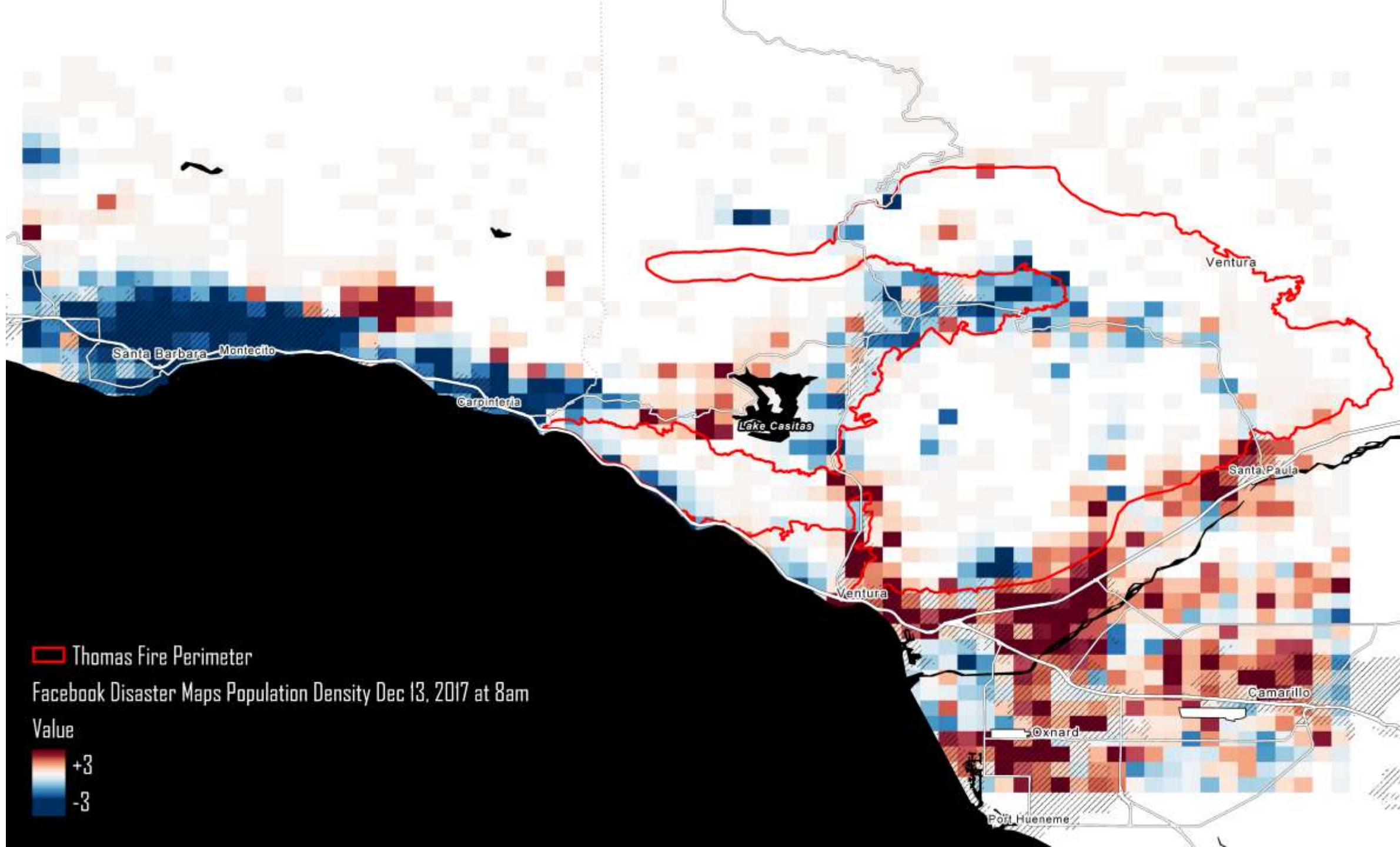
Thomas Fire Perimeter

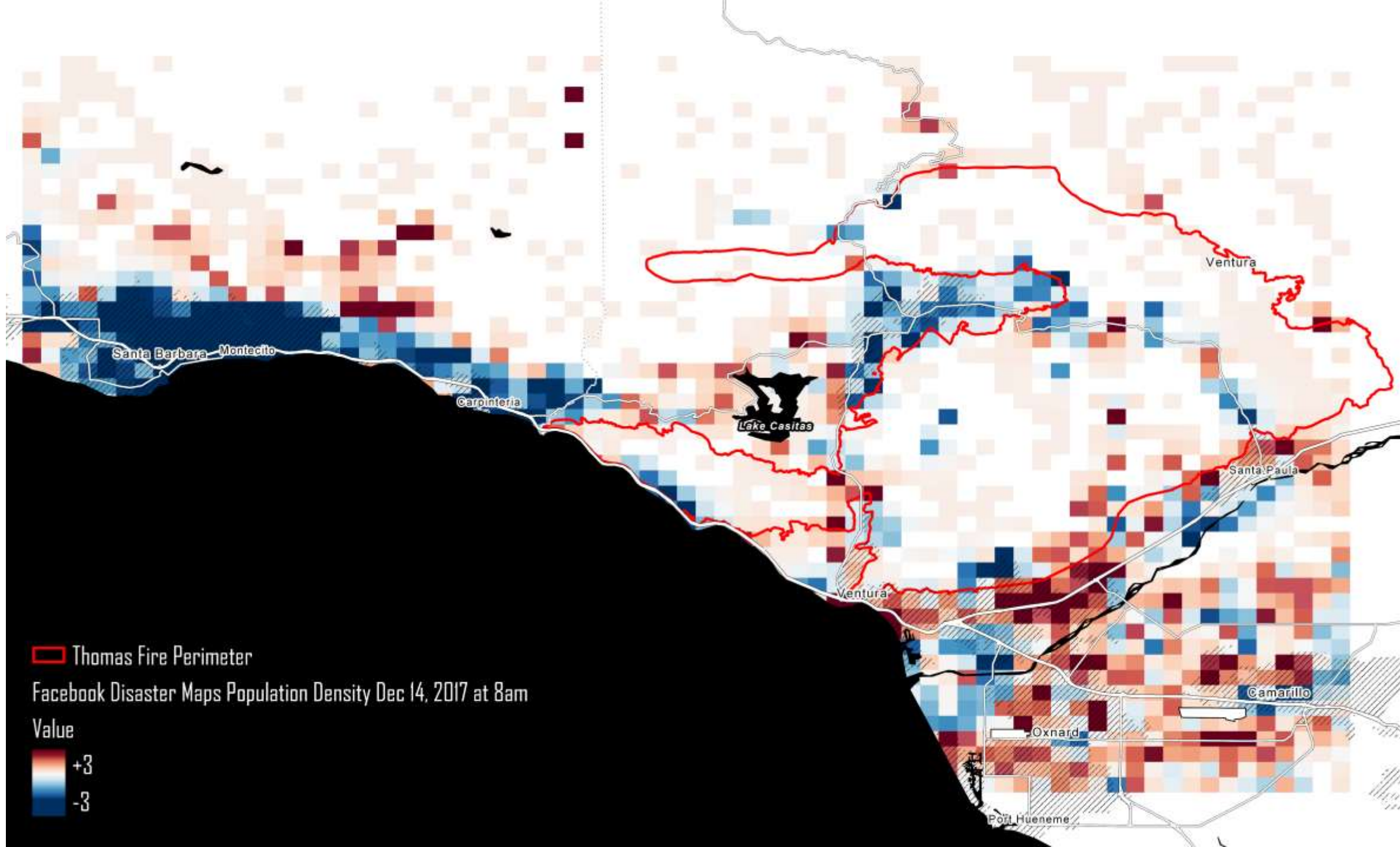
Facebook Disaster Maps Population Density Dec 12, 2017 at 8am

Value

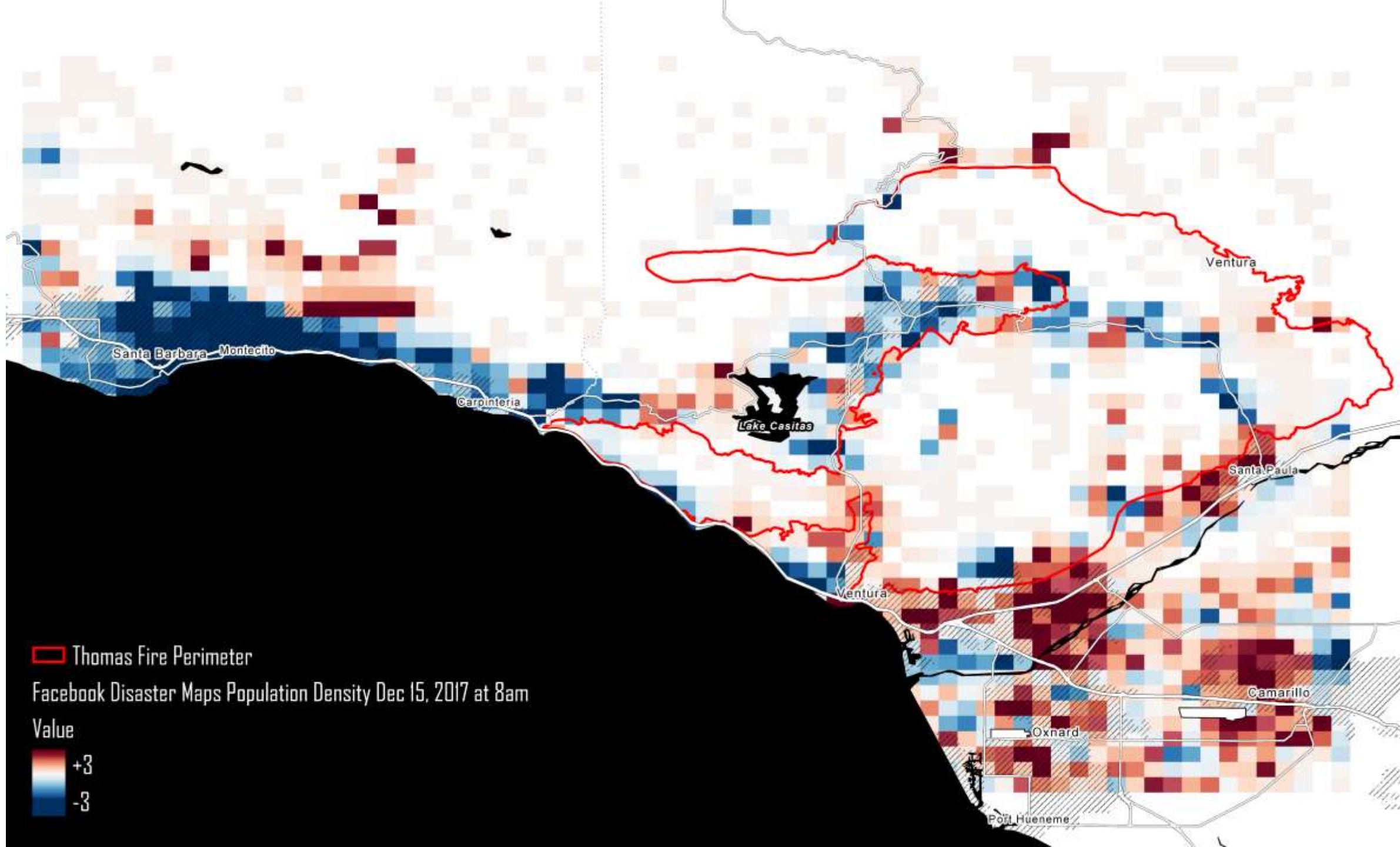


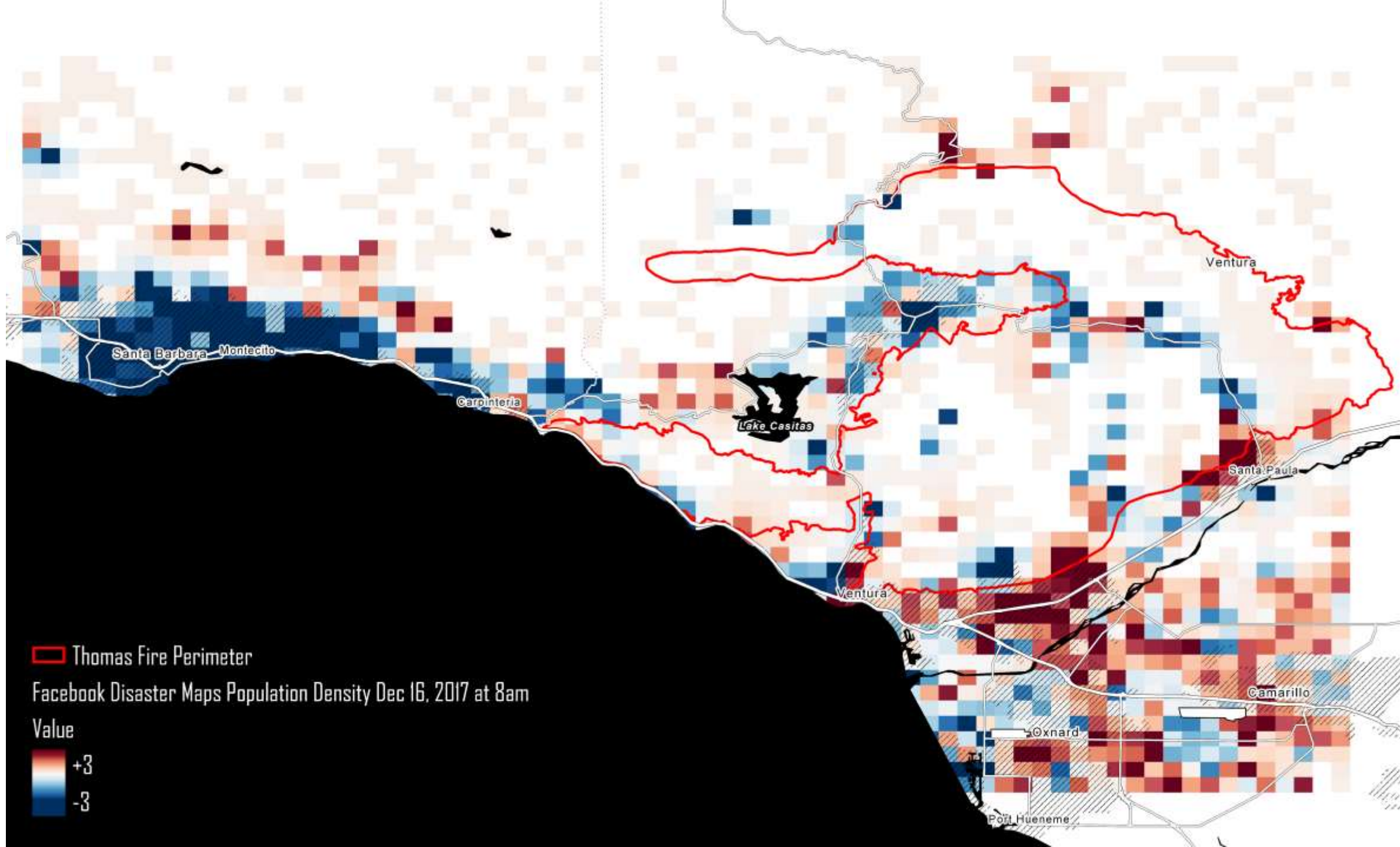












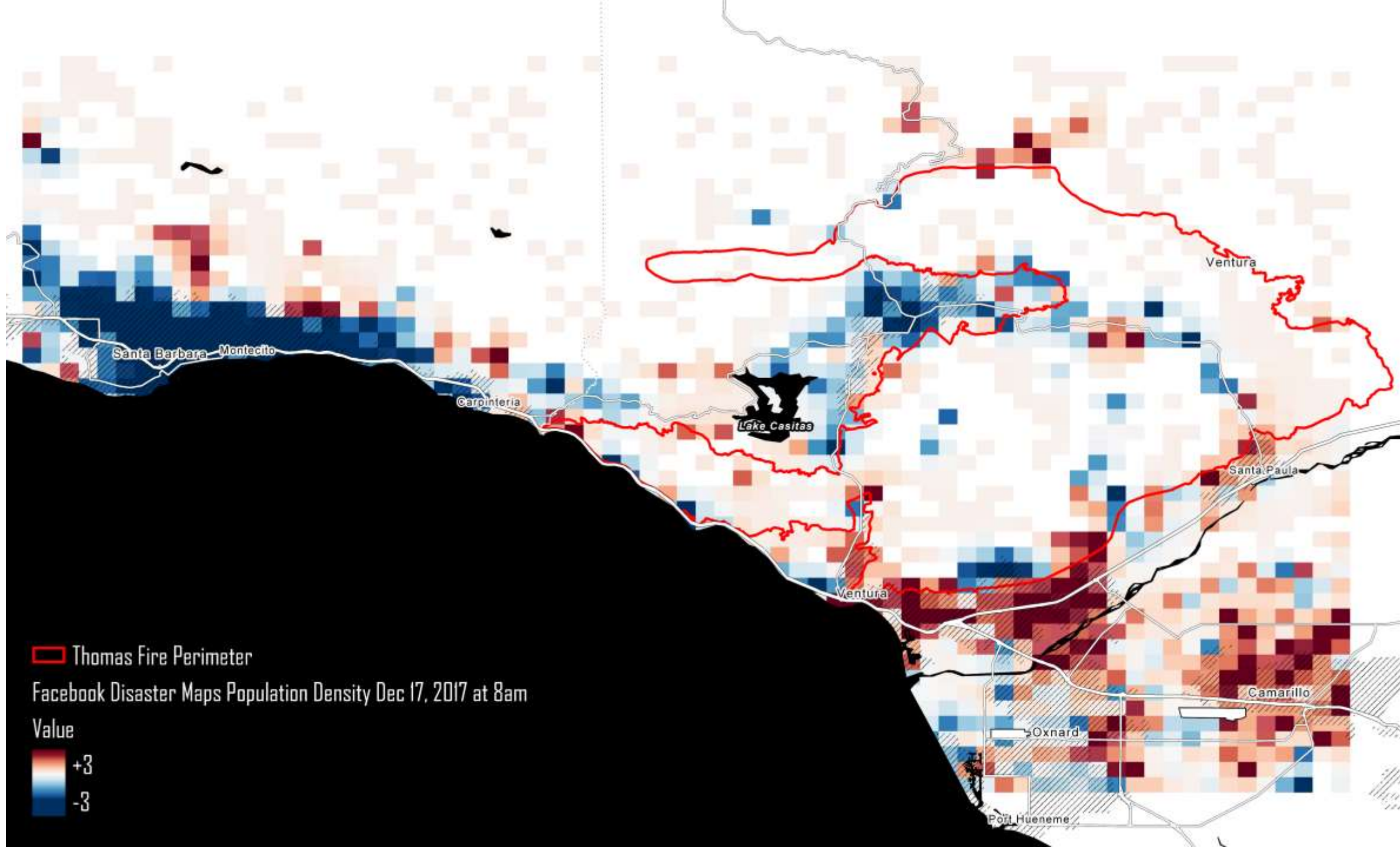
Thomas Fire Perimeter

Facebook Disaster Maps Population Density Dec 16, 2017 at 8am

Value









# Facebook Human Mobility Data

- Opt-in to location services
- 600m2 aggregation for population density change
- 8-hour time increments
- Measured against 90-day baseline
- Non-profit or research data agreement required



# Understanding Crisis Behavior

- When do people evacuate?
- Where do they go?
- How long to they stay away?
- How far do they evacuate?
- How do patterns of behavior change relative to the location, type of event, social vulnerability, and other factors?

# Key Challenges:

- Bias
- Representativeness
- Uncertainty
- Access
- Capacity



# Cyclones Idai & Kenneth

Minimum Viable Modeling and Translational Readiness





# Cyclones Idai and Kenneth

*Mozambique / Malawi / Zimbabwe 2019*

**Killed: 1,355**  
**Injured: ~1,900**  
**Affected: 3,000,000+**



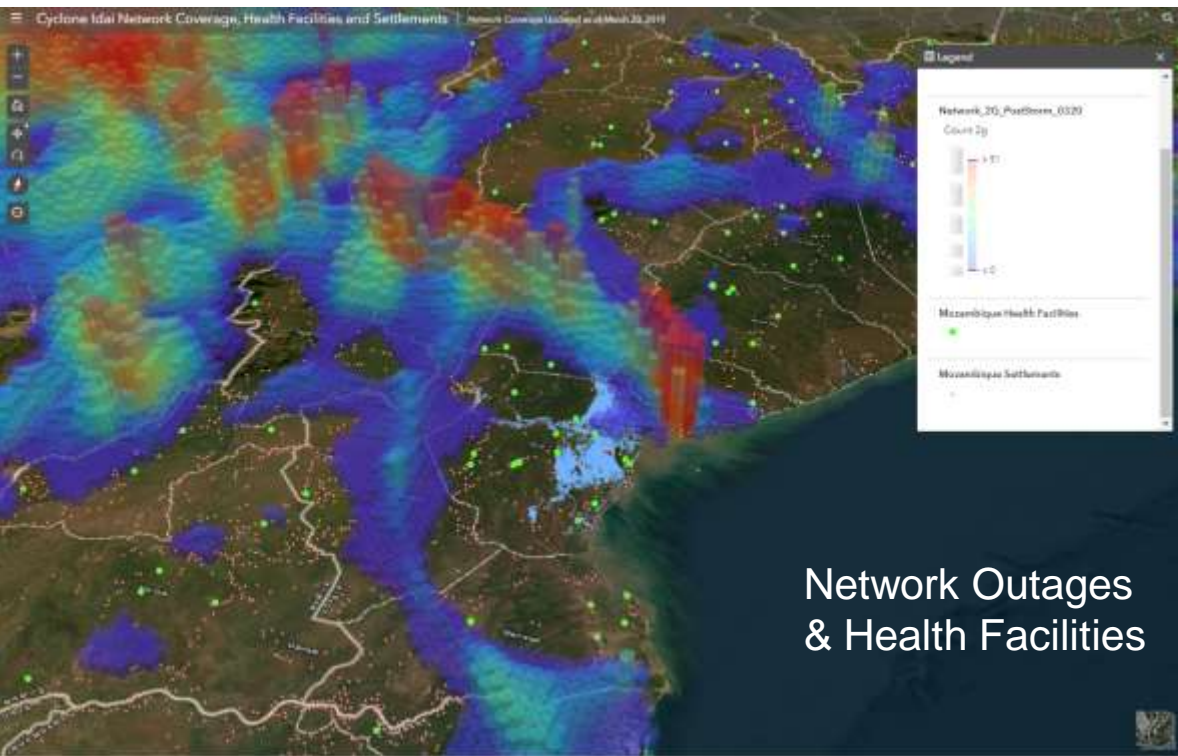
# Cyclones Idai and Kenneth

*Mozambique / Malawi / Zimbabwe 2019*

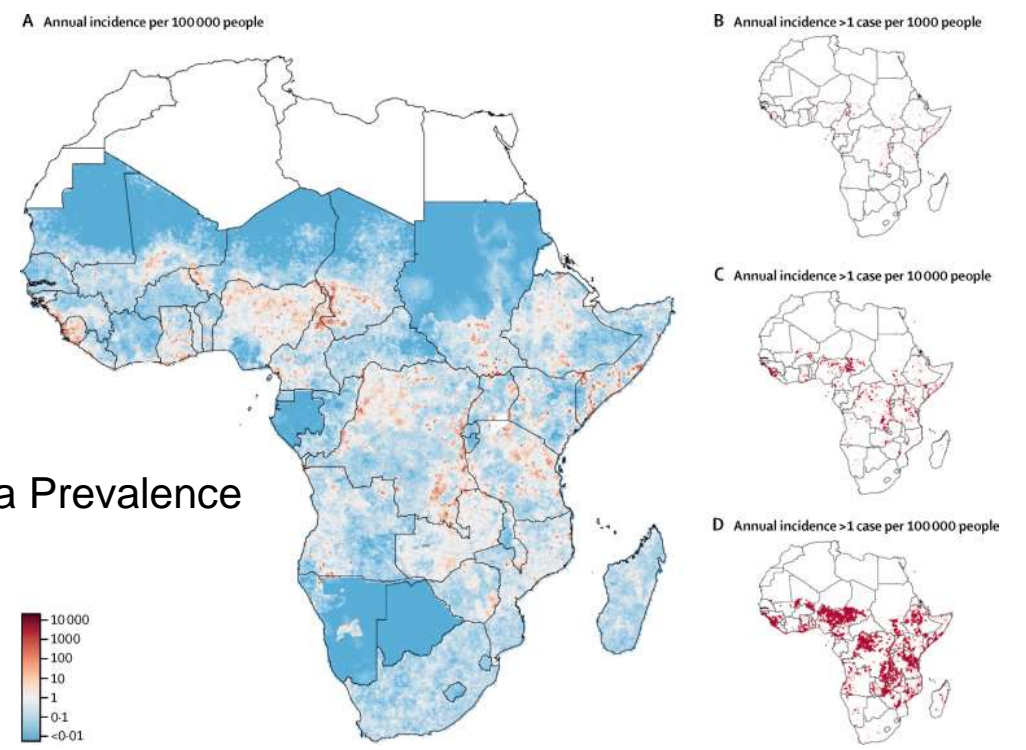


**Cholera Cases: ~7,000**



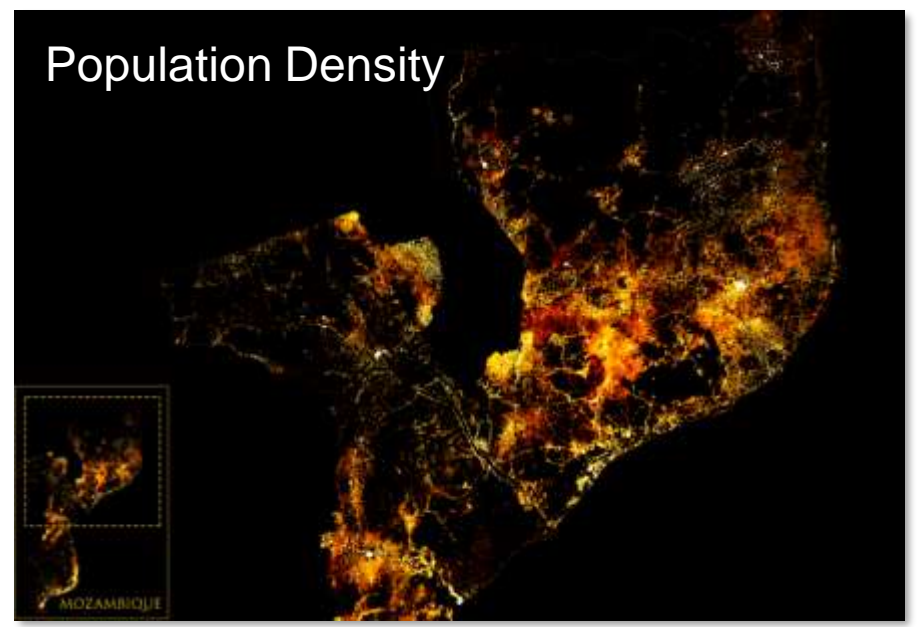
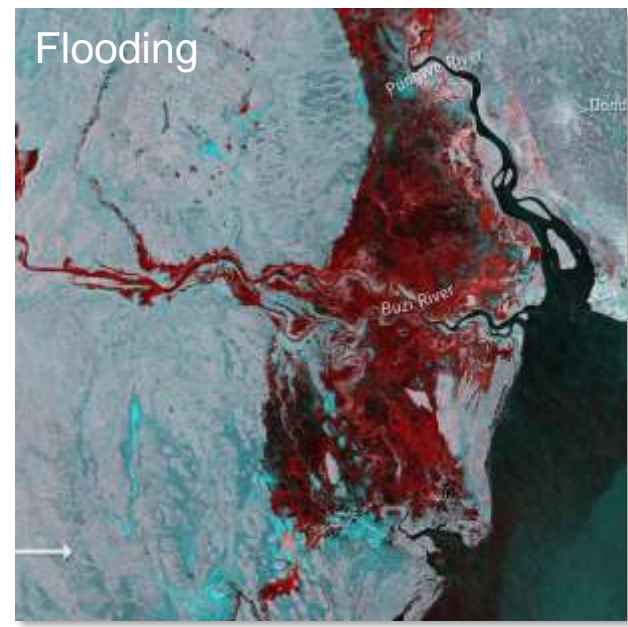


## Cholera Prevalence



## Cholera Treatment Centers

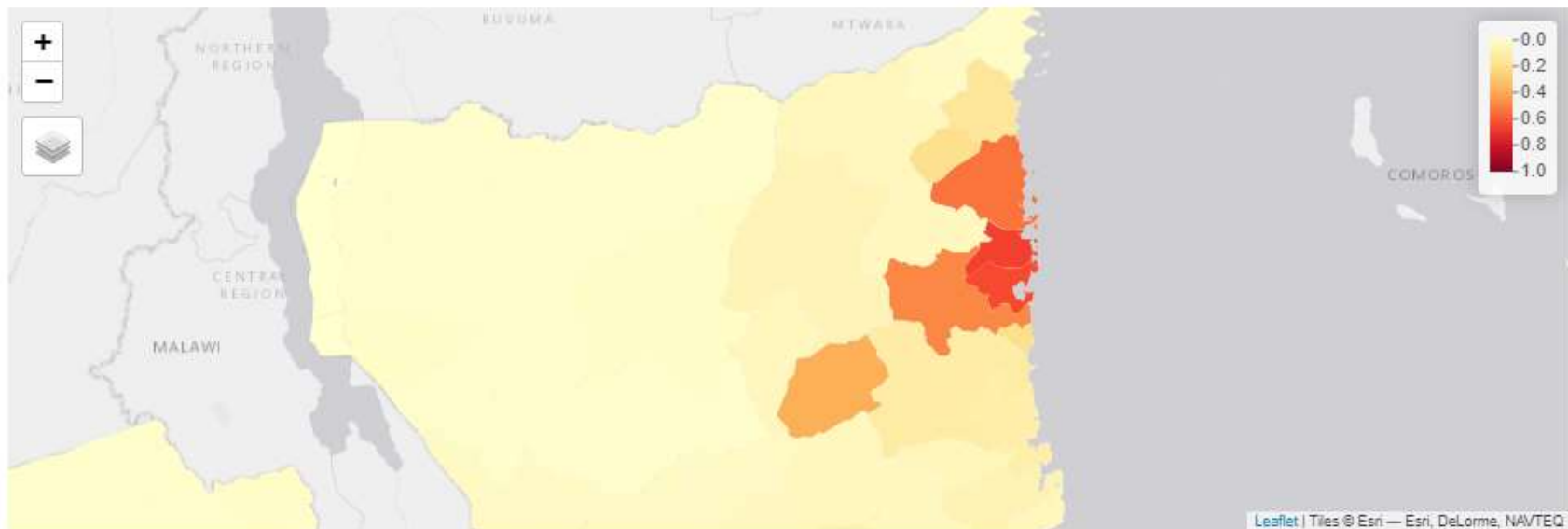
Site	RDTs Performed	Positive RDTs	Cultures on RDT-positive Samples	Positive Cultures	Cultures Pending
ORP Munhava	13	5	0	N/A	N/A
CTC Macurungo	26	15	15	5	2
ORP Chingussura	4	2	2	1	0
CTU Dondo	12	10	9	6	1
CTU Mafambisse	11	6	5	1	0
ORP Nhaconjo	29	12	11	1	1
CTC Nhamatanda	10	8	4	1	2
CTC Búzi	10	4	4	0	4
<b>TOTAL</b>	<b>115</b>	<b>62</b>	<b>50</b>	<b>15*</b>	<b>10</b>





Risk Index Main: Gravity model + flood index

Ancuabe (cases in past week)	4
Balama (cases in past week)	0
Chiure (cases in past week)	0
Macomia (cases in past week)	0
Mecufi (cases in past week)	10
Meluco (cases in past week)	0
Mocimboa da Praia (cases in past week)	0
Montepuez (cases in past week)	0
Mueda (cases in past week)	0
Muidumbe (cases in past week)	0
Namuno (cases in past week)	5
Nangade (cases in past week)	0
Palma (cases in past week)	0
Pemba-Metuge (cases in past week)	99
Quissanga (cases in past week)	0



District	Population
Nampula	1040691.66
Monapo	417314.05
Nacala Velha	379915.24
Namapa	344589.15
Memba	292041.06
Chiure	171263.52
Macomia	114784.99
Mocimboa da Praia	113355.43
Muidumbe	86906.76
Quissanga	38763.74



NEWS + ENGLISH ISAI

Direct Relief continues to respond to Cyclone Idai in Mozambique, and is preparing a 20-pallet shipment for departure from the organization's headquarters this week.

The shipment contains approximately \$3.4 million in medical aid, which will support the work of Health Alliance International, a local nonprofit working to strengthen health systems in the region.

Included in the shipment are more than 1 million defined daily doses of antibiotics, as well as essential medicines to manage chronic conditions like diabetes. Also included are oral rehydration salts, which will be used to help rehydrate people recovering from diseases like cholera.





Prehospital and  
Disaster Medicine

### Article contents

- Abstract
- Footnotes
- References

## Rapid Forecasting of Cholera Risk in Mozambique: Translational Challenges and Opportunities

Published online by Cambridge University Press: 03 September 2019

Rebecca Kahn , Ayesha S. Mahmud, Andrew Schroeder, Luis Hernando Aguilar Ramirez,  
John Crowley, Jennifer Chan  and Caroline O. Buckee

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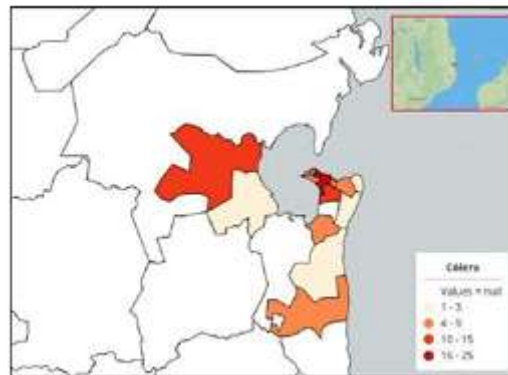
### Abstract

Disasters, such as cyclones, create conditions that increase the risk of infectious disease outbreaks. Epidemic forecasts can be valuable for targeting highest risk populations before an outbreak. The two main barriers to routine use of real-time forecasts include scientific and operational challenges. First, accuracy may be limited by availability of data and the uncertainty associated with the inherently stochastic processes that determine when and where outbreaks happen and spread. Second, even if data are available, the appropriate channels of communication may prevent their use for decision making.

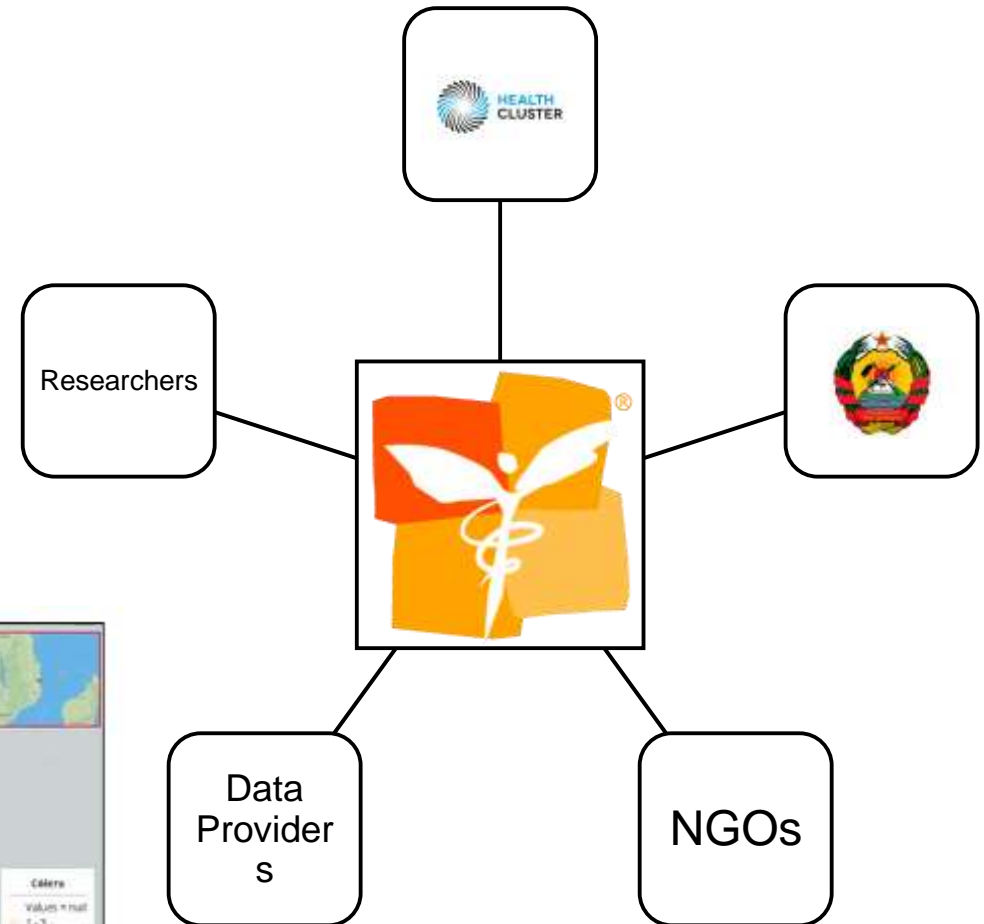
### Population Density



### Cholera Cases



# Translational Readiness





# COVID-19

Mobility and Disease Control





## Protecting Community Health Workers

Community Health Workers (CHWs) need personal protective equipment (PPE) to maintain essential health services and fight COVID-19.

[Donate to Help Equip CHWs with PPE →](#)

[Recent News →](#)

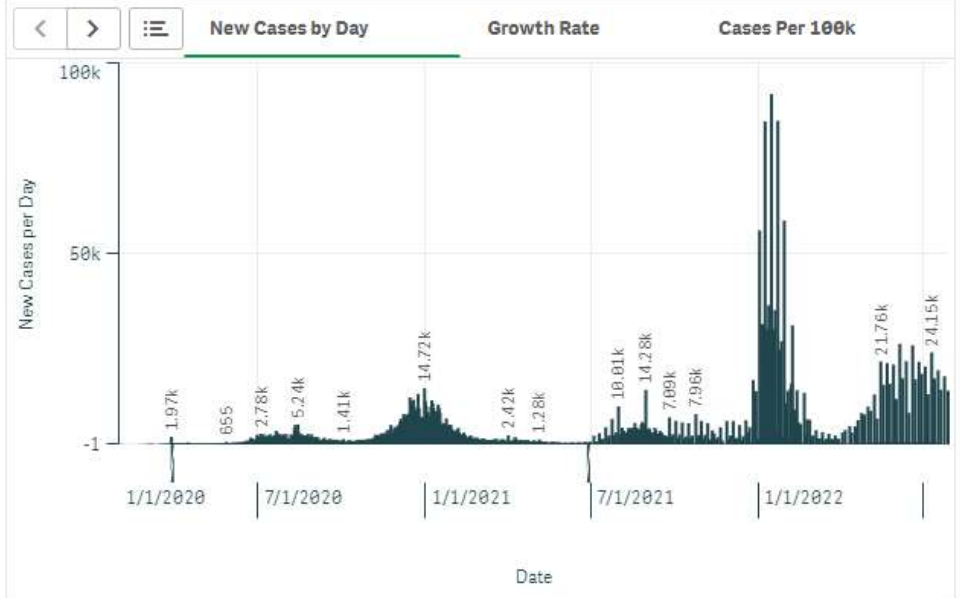
[FAQs →](#)



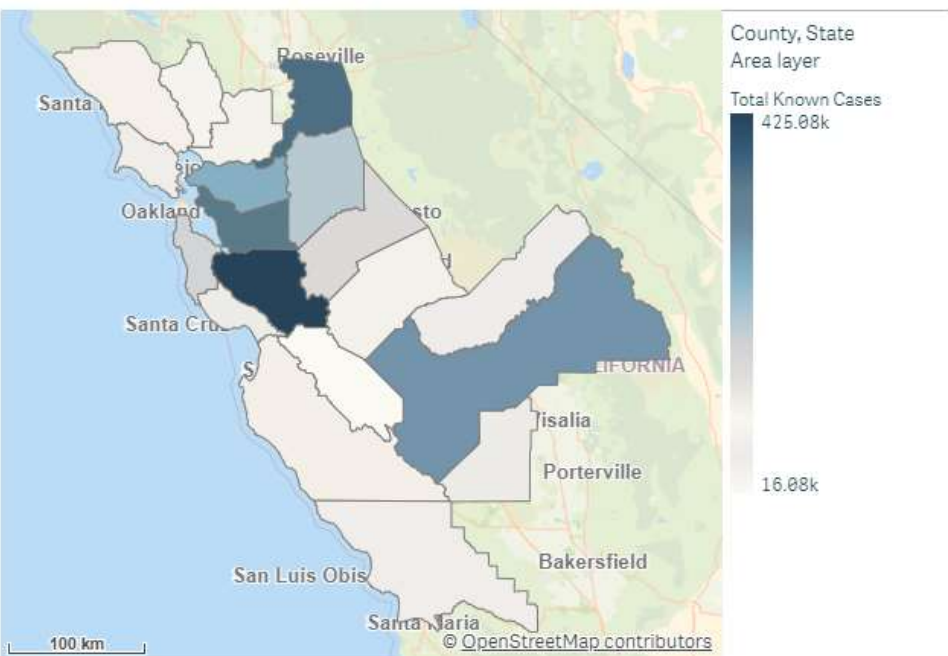
### U.S. COVID-19 Overview

State  County

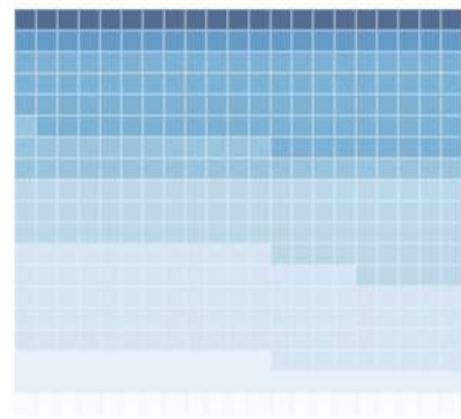
New Cases 8/2/2022 <b>0</b>	Total Known Cases <b>2,931,311</b>	Deaths <b>21,295</b>	Cases per 100k <b>24,052</b>
<small>* states report at different times</small>	3 Day Rolling Growth Rate <b>0.0%</b>	Death to Known Case Ratio <b>0.7%</b>	
Cases Per 100k	New Cases	3 Day Rolling Growth Rate	<b>Total Known Cases</b>



### COVID Spread by Total Known Cases



### Cases Per 100k Rolling 2 Weeks



**How To Use This Sheet**  
This sheet is designed as an overview of case statistics at the nationwide to county level. Select a state and/or county to view metrics and charts for the selected region. In the upper right, select the different tabs for different views of case information.

**About The Data**  
This data is US-centric and goes to a County level. It is updated from source hourly - you can view the last data refresh on the bottom of the sheet.

Most visualizations focused on Confirmed Cases **adjusted for population** (Cases/Million). Estimated population is pulled from the 2018 Social Vulnerability Report.

*Disclaimer: please note that each region has implemented different levels of testing and cadence for reporting, so metrics shown can not be assumed absolute.*





[Read our COVID-19 research and news.](#)

## SHARE

## LETTERS



# Aggregated mobility data could help fight COVID-19

Caroline O. Buckee<sup>1,\*</sup>, Satchit Balsari<sup>2</sup>, Jennifer Chan<sup>3,4</sup>, Mercè Crosas<sup>5</sup>, Francesca Dominici<sup>6</sup>, Urs Gasser<sup>7</sup>, Yonatan H. Grad<sup>1</sup>, Bryan...[+ See all authors and affiliations](#)

Science 10 Apr 2020:  
Vol. 368, Issue 6487, pp. 145-146  
DOI: 10.1126/science.abb8021

## Article

## Info &amp; Metrics

## eLetters



As the coronavirus disease 2019 (COVID-19) epidemic worsens, understanding the effectiveness of public messaging and large-scale social distancing interventions is critical. The research and public health response communities can and should use population mobility data collected by private companies, with appropriate legal, organizational, and computational safeguards in place. When aggregated, these data can help refine interventions by providing near real-time information about changes in patterns of human movement.

Research groups and nonprofit humanitarian agencies have refined data use agreements to stipulate clear guidelines that ensure responsible data practices (1). New tools for specifying different levels of privacy for different users and providing privacy-preserving results, such as the OpenDP platform (2), will effectively manage data access, and aggregation steps have been carefully reviewed on a legal and methodological basis to ensure that the analyses follow ethical guidelines for human participants (3). To monitor social distancing interventions, for example, rather than showing individual travel or behavior patterns, information from multiple devices is aggregated in space and time, so that the data reflect an approximation of population-level mobility (4).



## Science

Vol 368, Issue 6487  
10 April 2020[Table of Contents](#)  
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[New coronavirus outbreak: Framing questions for pandemic prevention](#)

## PERSPECTIVES

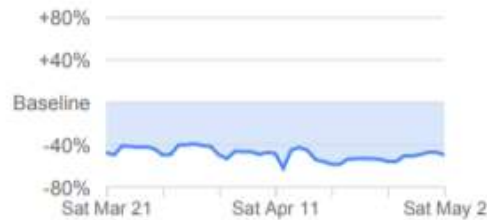


## See how your community is moving around differently due to COVID-19

### California

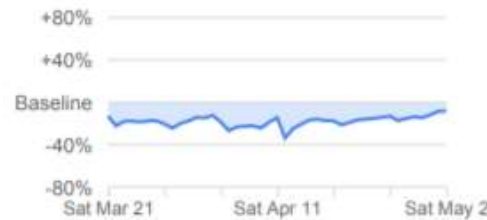
#### Retail & recreation

**-50%** compared to baseline



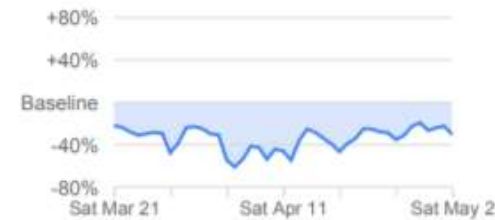
#### Grocery & pharmacy

**-8%** compared to baseline



#### Parks

**-30%** compared to baseline



#### Transit stations

**-43%** compared to baseline



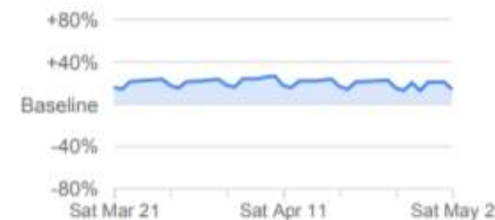
#### Workplace

**-32%** compared to baseline



#### Residential

**+14%** compared to baseline



Change in visits to points of interest (POIs)

Baseline = median day-of-week value between Jan 6 and Feb 5





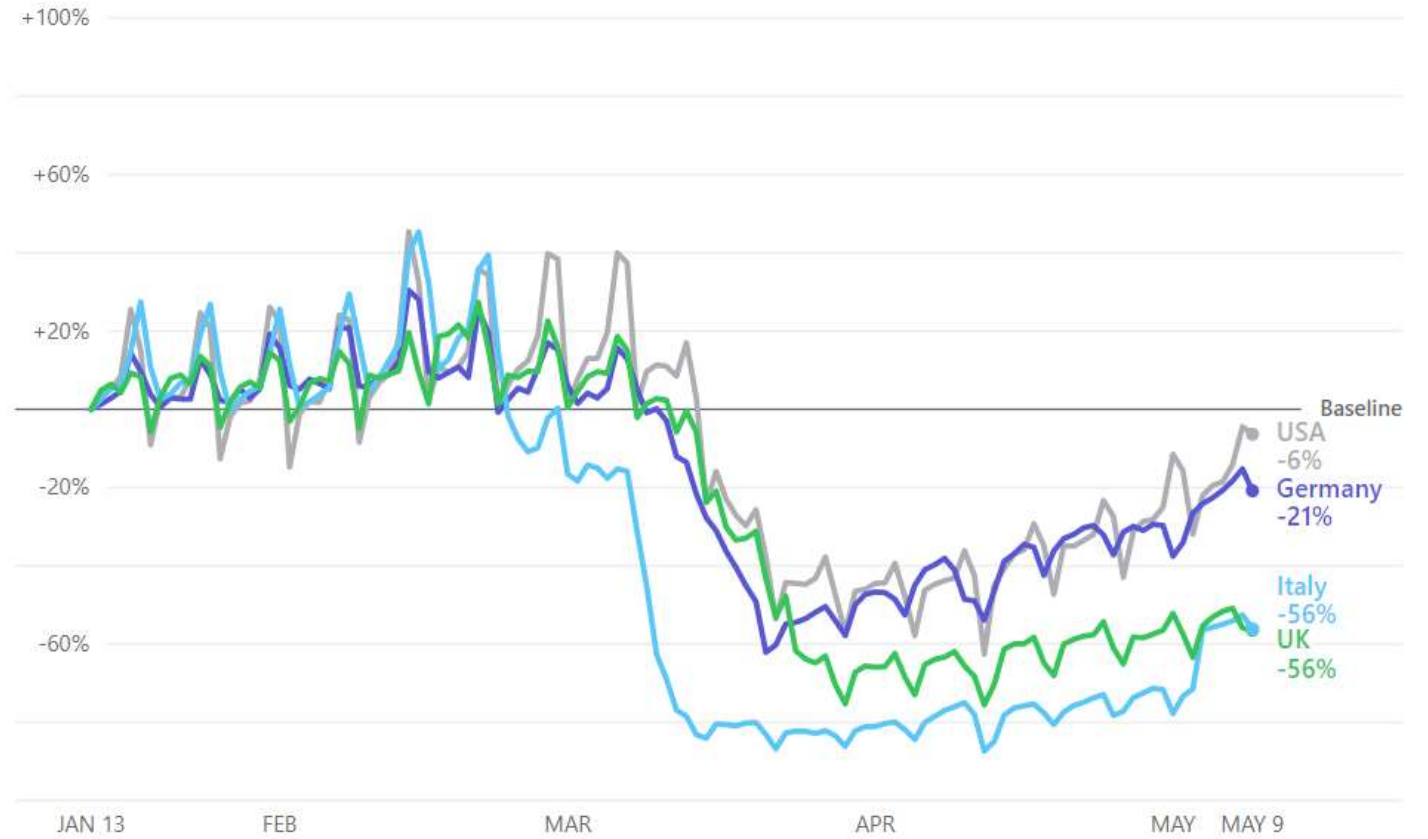
## Mobility Trends Reports

Learn about COVID-19 mobility trends. Reports are published daily and reflect requests for directions in Apple Maps. Privacy is one of our core values, so Maps doesn't associate your data with your Apple ID, and Apple doesn't keep a history of where you've been.

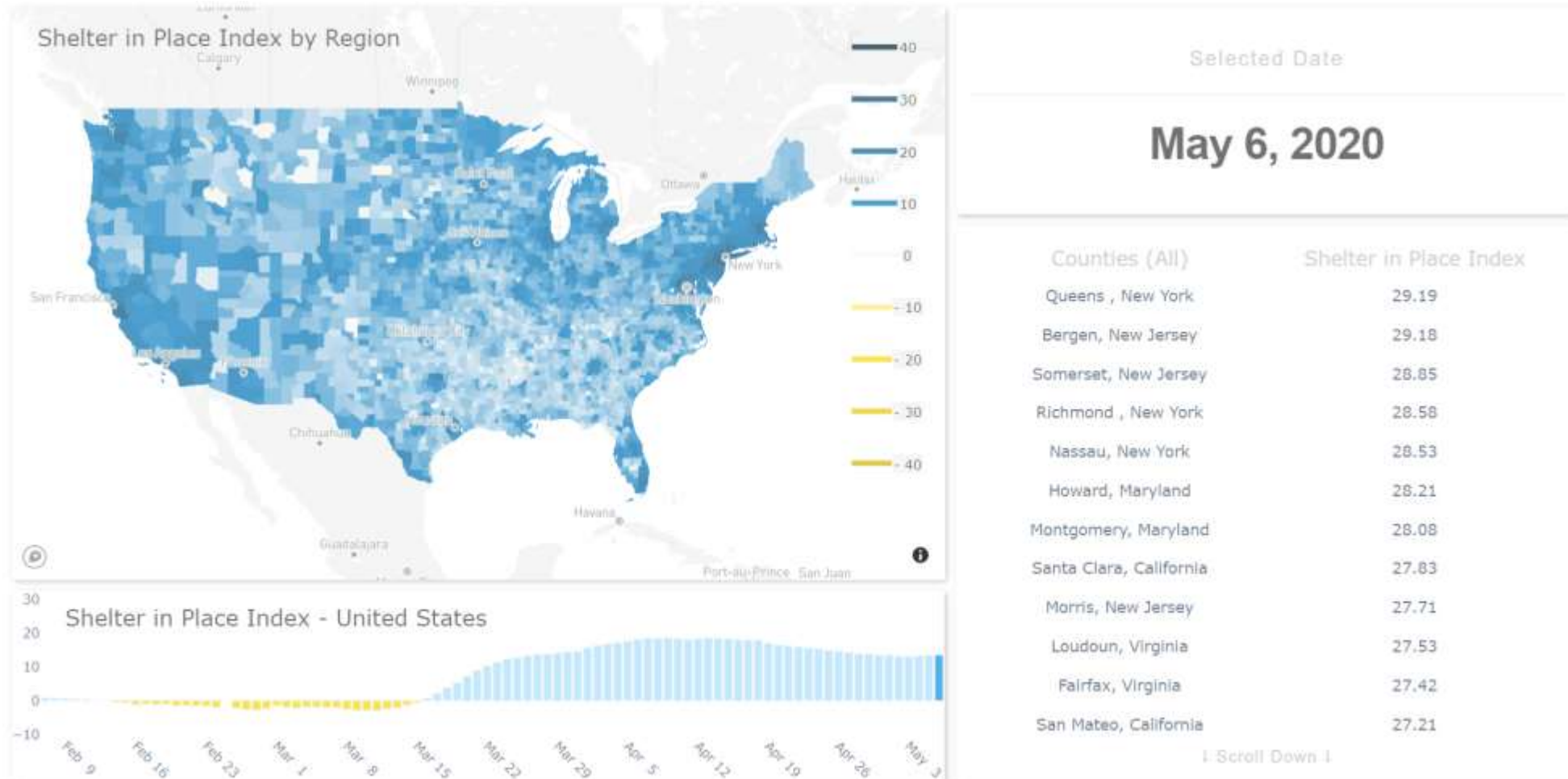


### Requests for travel directions by mode of travel

- Country
- State
- City



**SAFE GRAPH** | Shelter in Place Index: The Impact of Coronavirus on Human Movement



**Proportion of total devices remaining in the home location all day (24 hrs)**  
 7-day rolling average based on Bayesian hierarchical model to control for low sample sizes



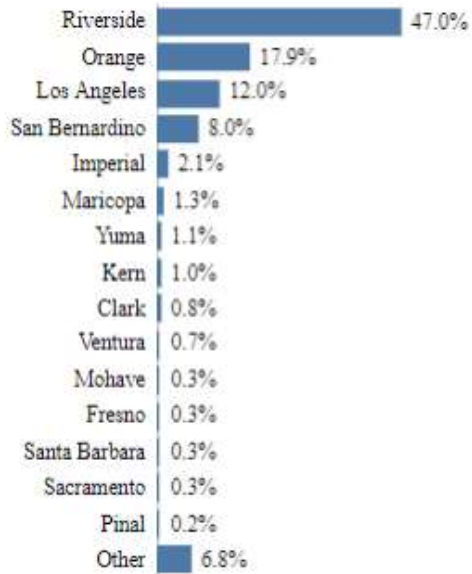
# Mobility Flows by County

Week of 2020-05-04 < >

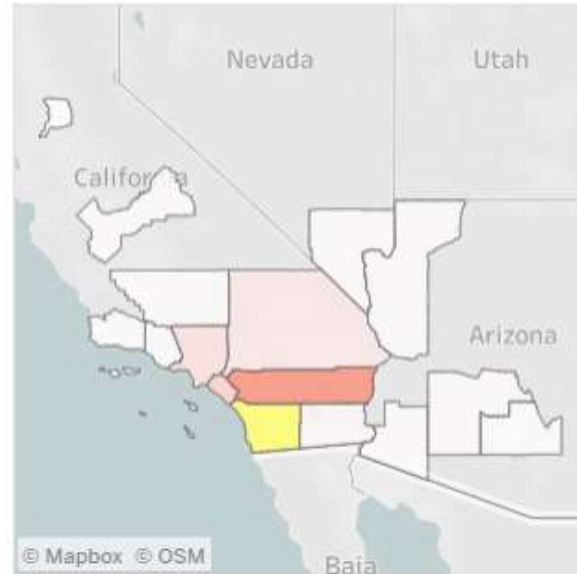
Arrival Rate to San Diego



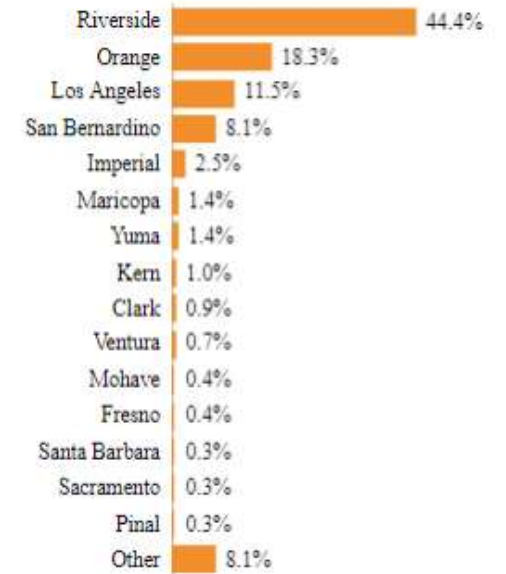
Top Origins



Departure Rate from San Diego



Top Destinations

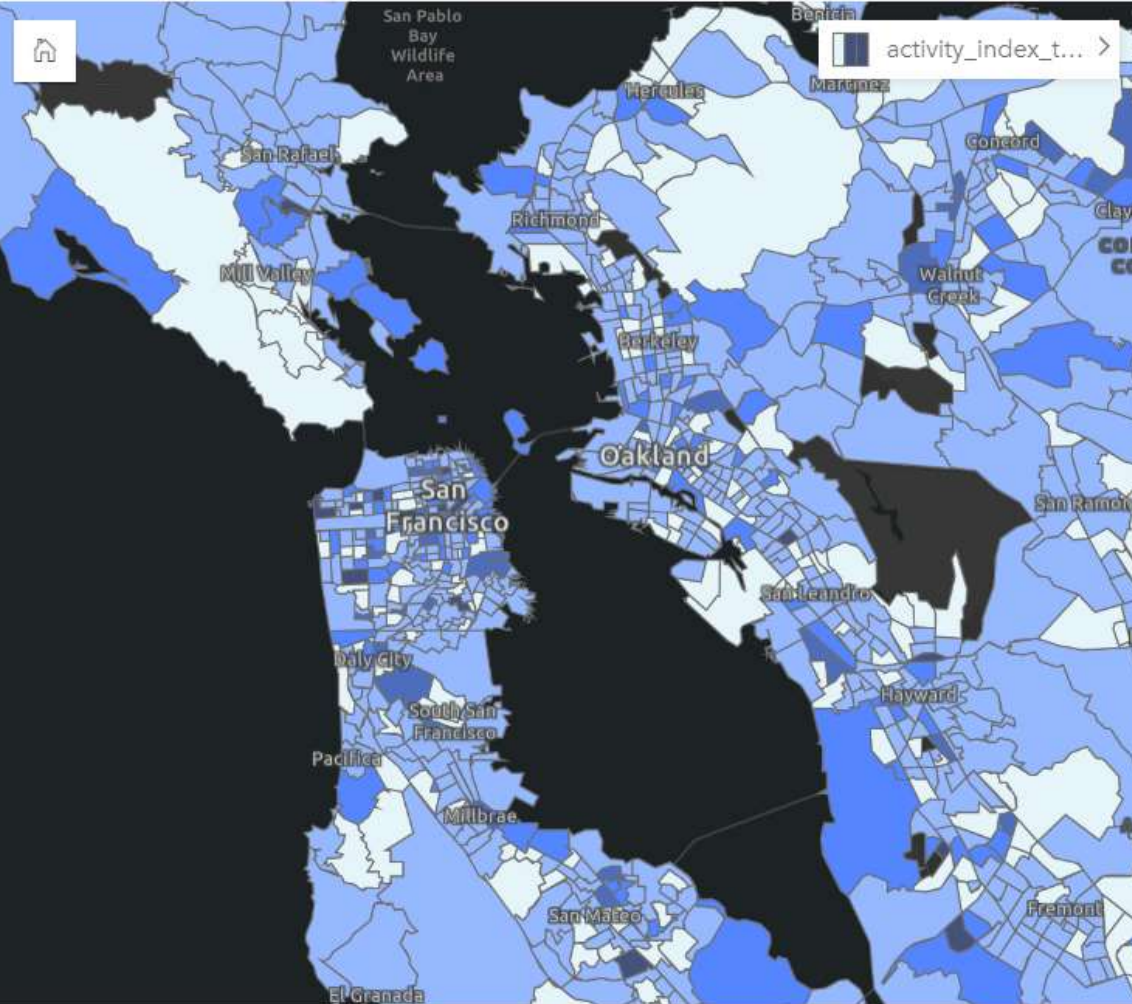


Daily Trend - Net Flow & Total Flow Rates

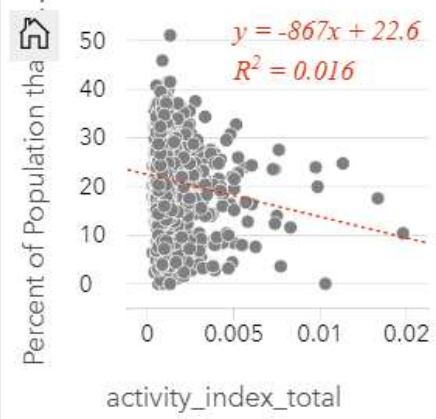


# Telemetry: Activity Density Index

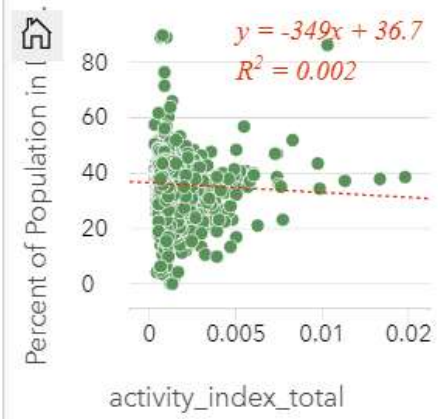
Activity Level Map May 2, 2020



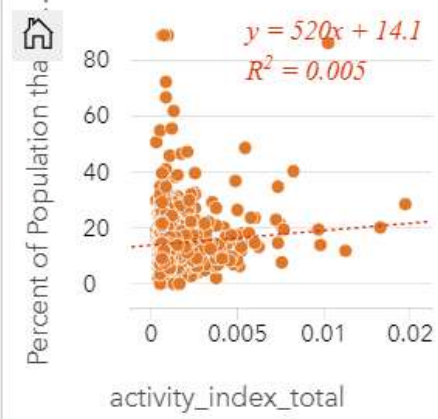
Age Under 18 and ...



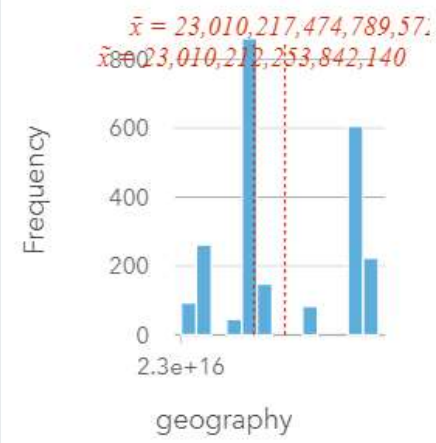
Age 18-65 and Activ...



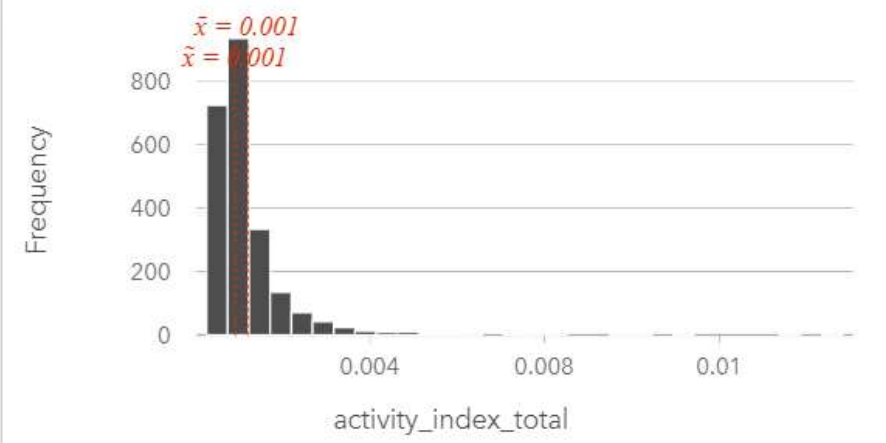
Age 65+ and Activit...



Geography

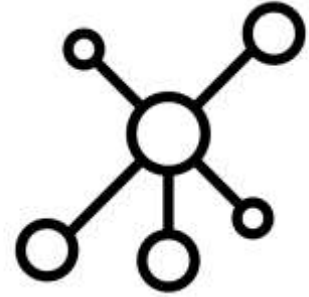










Activity Level Histogram



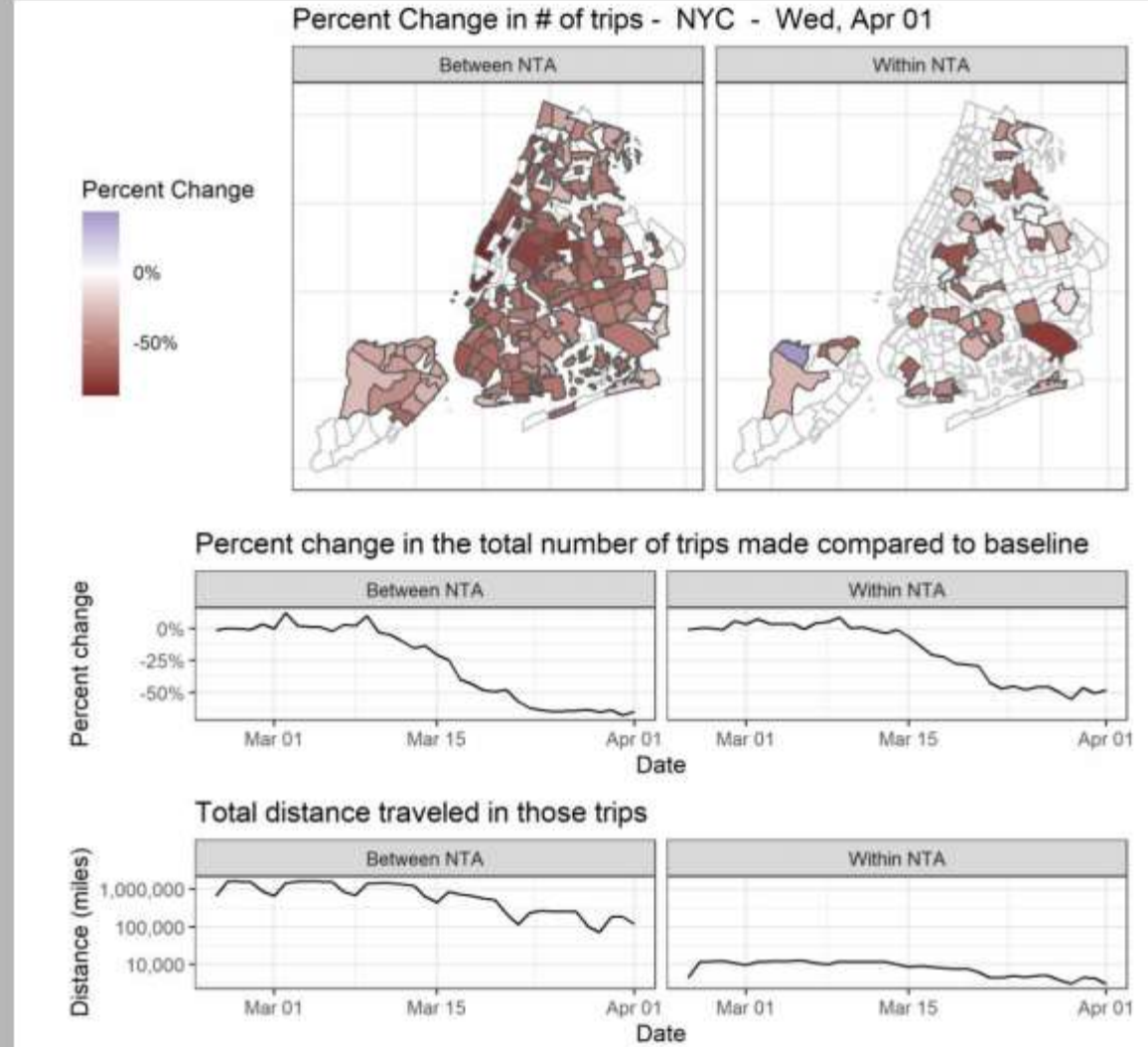


# Covid-19 Mobility Data Network



 <p>Sources of bias, sparsity, and statistical uncertainty in mobility datasets</p>	 <p>Methods for aggregation, and privacy-protective analyses</p>	 <p>Ethical data use and adequacy of consent frameworks</p>	 <p>Analytical pipelines for real-time data use in decision-making</p>
 <p>Socioeconomic and racial disparities in COVID-19 infection rates</p>	 <p>Effectiveness of policy interventions on infection rates</p>	 <p>Community response to social distancing and lockdown interventions</p>	 <p>Simulated reopening scenarios and their impact</p>

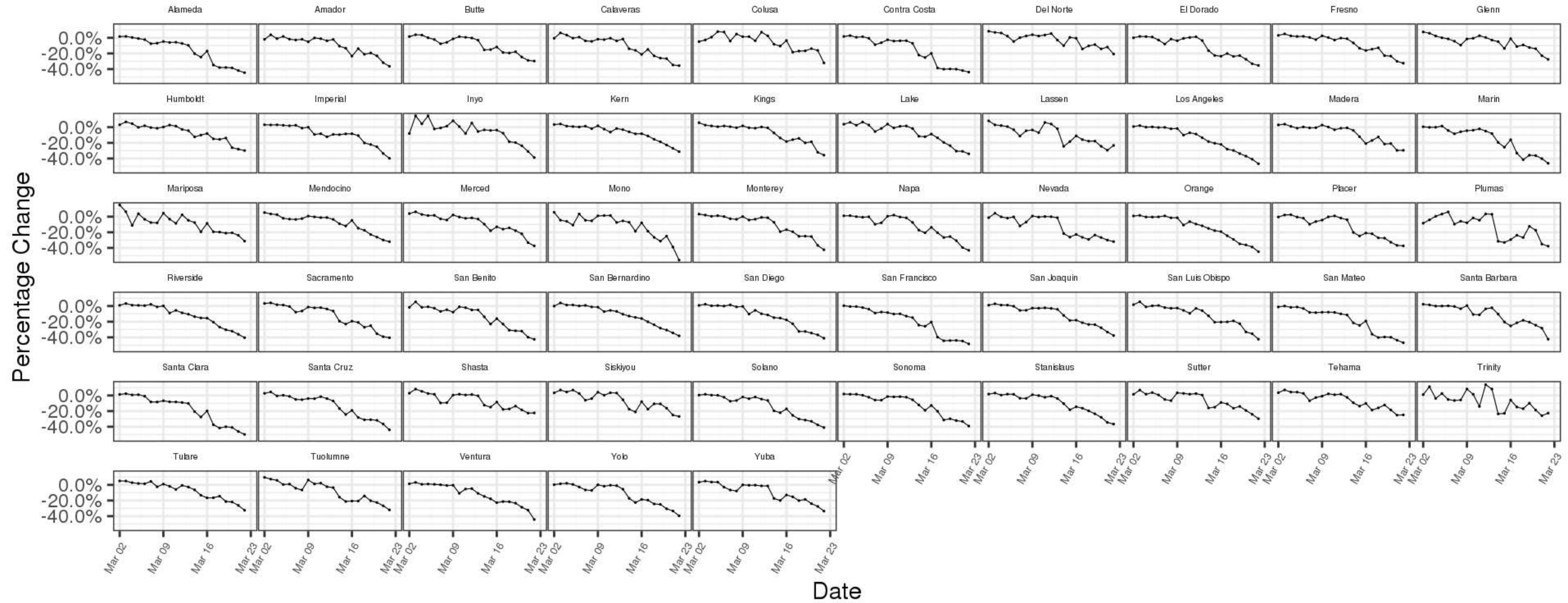
*A sample of themes discussed during the network-wide CMDN meetings*



*Jurisdiction-specific report template components - An example from New York City*

# Relative change in mobility\*, California Counties

% changes are with respect to same day-of-week mobility observed during the last two weeks of February.



\*Based on average number of Bing Level 16 tiles visited by location-history-enabled users





*Dr. Mark Ghaly discusses mobility reports from the COVID-19 Mobility Data Network built with Facebook data during a California press conference on April 10, 2020*

“Having access to the publicly available mobility data from Facebook helped inform our thinking around California’s physical distancing efforts.”

**Dr. Mark Ghaly**  
Secretary of the California Department  
of Health and Human Services

# Santa Clara, CA

Harvard TH Chan School of Public Health

Regional travel network linkages

Change in trips in and out of region

## SAN JOSE

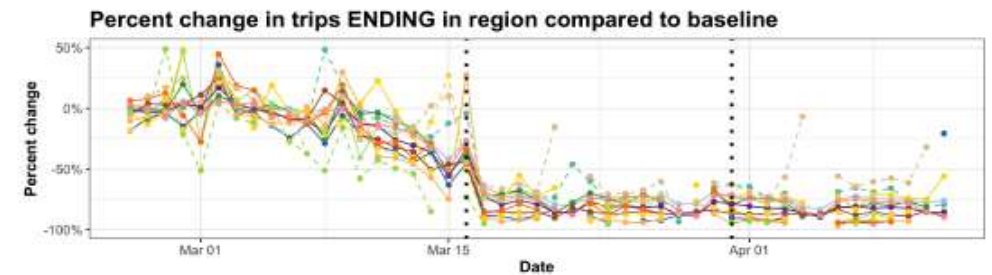
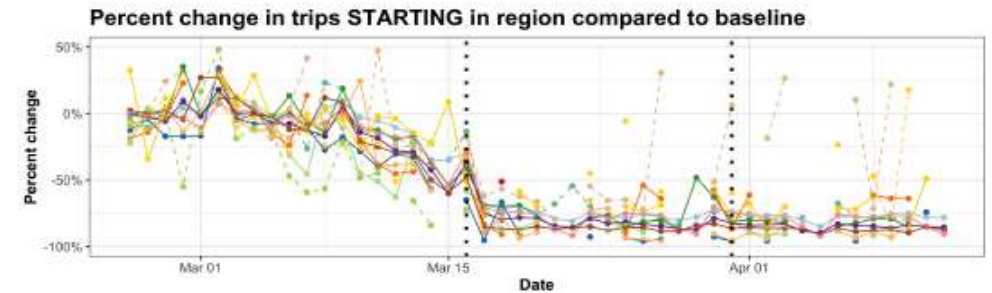


Top 5 destinations of trips  
FROM SAN JOSE on Apr 12

- 1 SAN JOSE
- 2 CAMPBELL
- 3 SANTA CLARA
- 4 MILPITAS
- 5 SUNNYVALE

Top 5 origins of trips  
TO SAN JOSE on Apr 12

- 1 SAN JOSE
- 2 CAMPBELL
- 3 SANTA CLARA
- 4 MILPITAS
- 5 SUNNYVALE



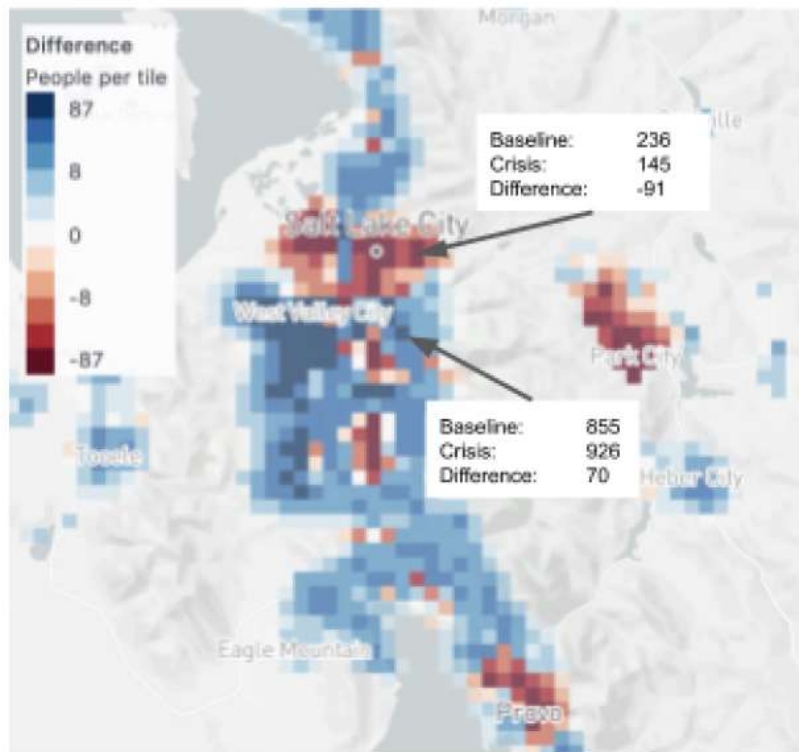
- Inside of county    - - Outside of county
- Alameda County
  - CAMPBELL
  - Contra Costa County
  - CUPERTINO
  - LOS ALTOS
  - LOS GATOS
  - MILPITAS
  - MARIN COUNTY
  - MOUNTAIN VIEW
  - MUNICIPALITY OF SAN JOSE
  - MONTE SERENO
  - MOUNTAIN VIEW
  - NAPA COUNTY
  - PALO ALTO
  - SAN FRANCISCO COUNTY
  - SAN MATEO COUNTY
  - SANTA CLARA
  - SANTA CLARA COUNTY
  - SARATOGA
  - SOLANO COUNTY
  - SUNNYVALE



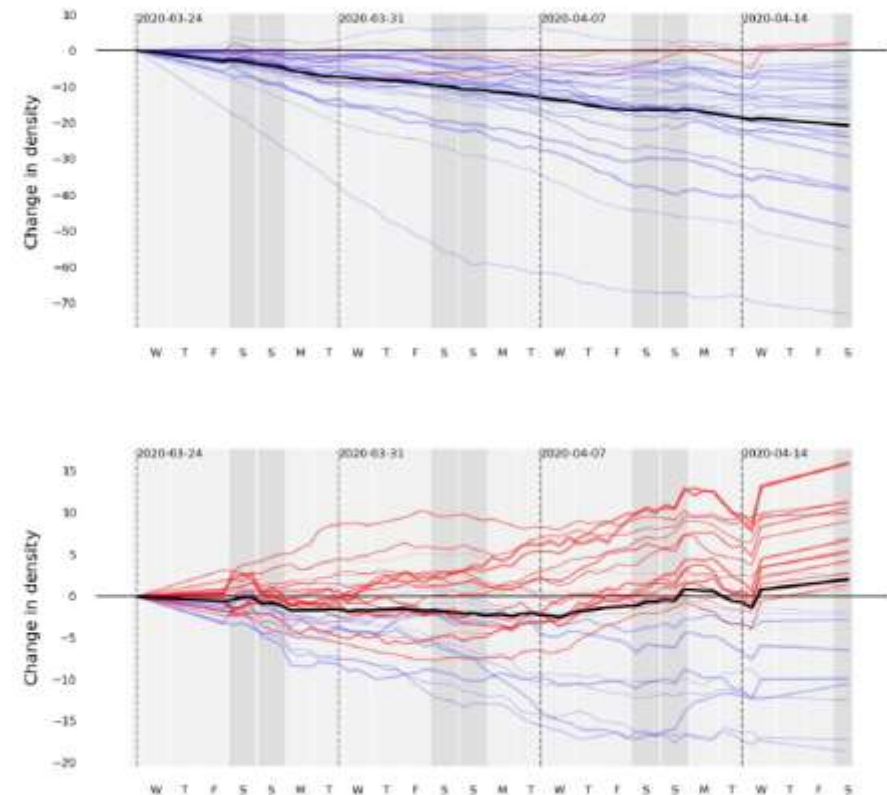
# Salt Lake City, UT

University of Colorado | Colorado State University | National Association of Public Safety GIS (NAPSG)

## FACEBOOK Data for Good



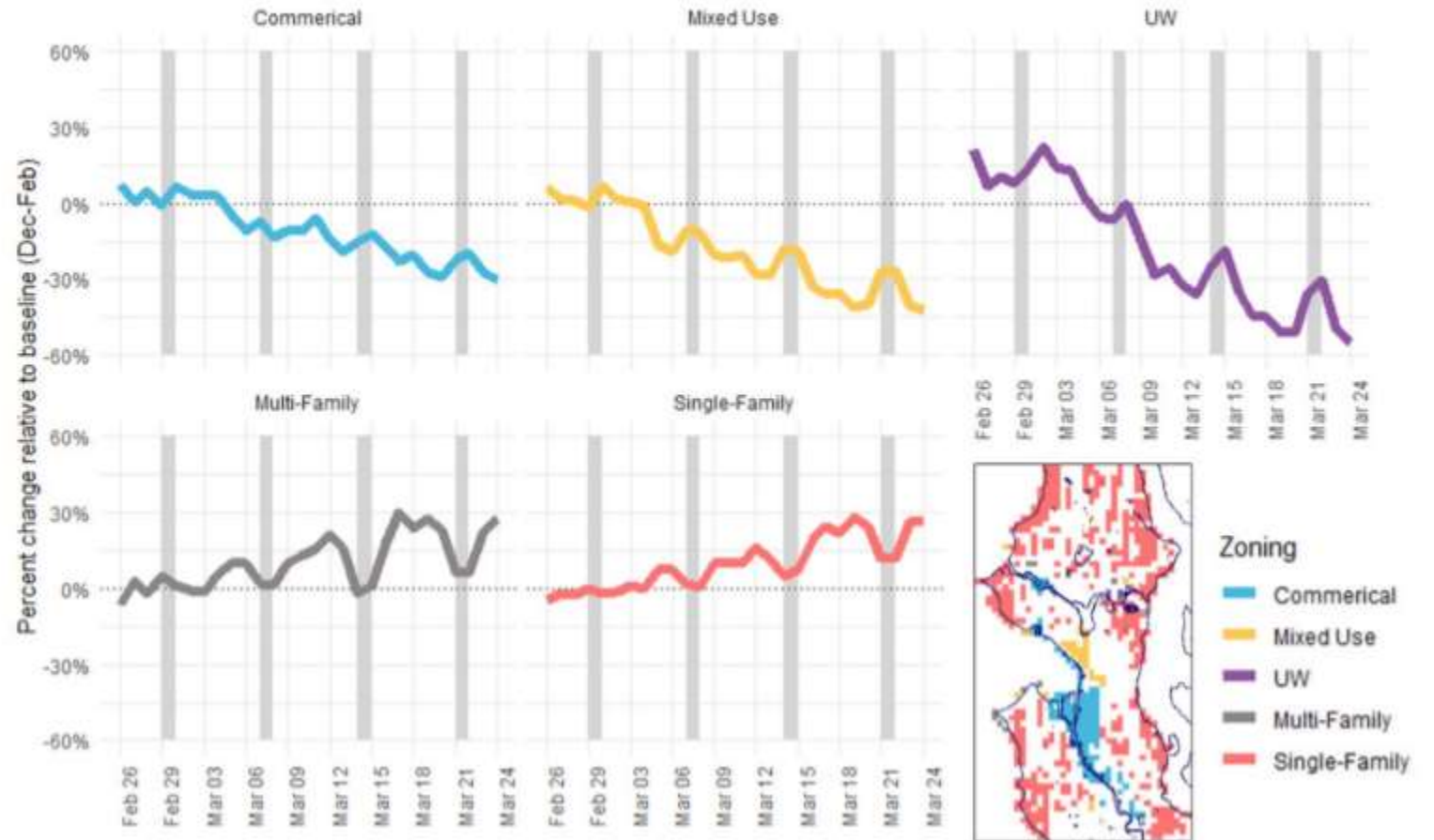
## Change in Population Density Dynamics



# Seattle, WA

Institute of Disease Modeling (IDM) | Gates Foundation | Direct Relief

- Land Use Density Patterns linked to regional movement flows
- Significant reductions in commercial and mixed-use areas
- Increase in residential areas
- Reasonable expectation of reduction in contact rate based on “snowpocalypse” comparison





# New York, NY

Harvard TH Chan School of Public Health

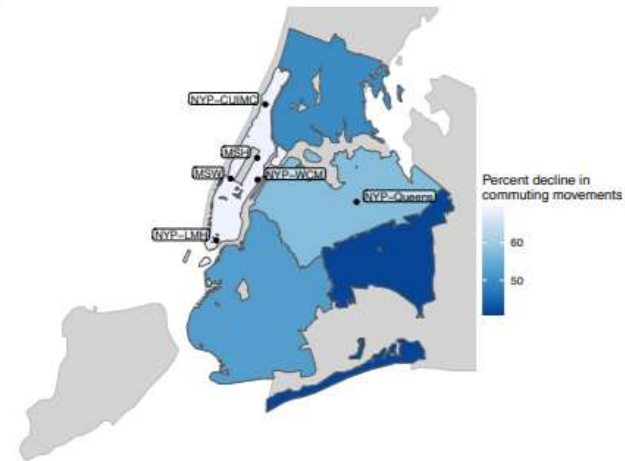
Decline in inter-borough commuting correlates with lower rates of SARS-CoV-2 prevalence

Likely related to increased contact rates and lower opportunities for social distancing by class, race and neighborhood

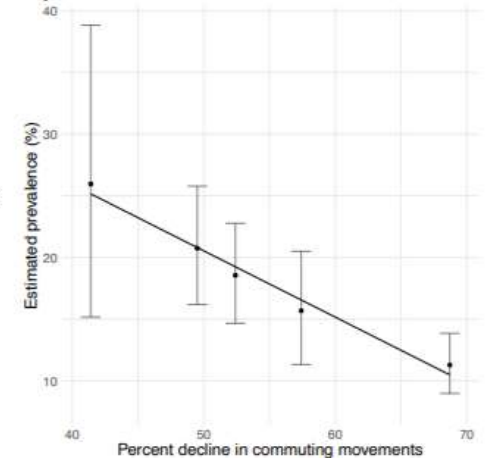
A)



B)



C)




**Figure 2. SARS-CoV-2 prevalence is lower in boroughs with greater declines in commuting movements.** **A)** Estimated mean prevalence of SARS-CoV-2 infection by borough assuming a test with perfect specificity and 90% sensitivity. **B)** Percent decline in commuting movements by borough during the study period compared to the 45 days preceding Feb 26<sup>th</sup>, 2020. Commuting is measured as the total number of morning transits out of each borough and evening transits into each borough. Note the reverse scale, so that deep blue corresponds to higher prevalence in (A) and to a smaller decline in commuting in (B). **C)** Relationship between estimated prevalence of SARS-CoV-2 infection and decline in commuting movements by borough ( $R = -0.88$ , 95% CI  $-0.52, -0.99$ ).

## Measuring mobility to monitor travel and physical distancing interventions: a common framework for mobile phone data analysis

Nishant Kishore, MPH • Mathew V Kiang, ScD • Kenth Engø-Monsen, PhD • Navin Vembar, PhD • Andrew Schroeder, PhD •

Satchit Balsari, MD • et al. [Show all authors](#)

[Open Access](#) • Published: September 01, 2020 • DOI: [https://doi.org/10.1016/S2589-7500\(20\)30193-X](https://doi.org/10.1016/S2589-7500(20)30193-X) •  Check for updates



### Summary

A surge of interest has been noted in the use of mobility data from mobile phones to monitor physical distancing and model the spread of severe acute respiratory syndrome coronavirus 2, the virus that causes COVID-19. Despite several years of research in this area, standard frameworks for aggregating and making use of different data streams from mobile phones are scarce and difficult to generalise across data providers. Here, we examine aggregation principles and procedures for different mobile phone data streams and describe a common syntax for how aggregated data are used in research and policy. We argue that the principles of privacy and data protection are vital in assessing more technical aspects of aggregation and should be an important central feature to guide partnerships with governments who make use of research products.







## Data Readiness

We help to identify and analyze large scale data required to respond to disasters, prior to crises, so that timely access can be pre-negotiated among data brokers and response agencies.



## Methods Readiness

Data needed during public health emergencies varies widely in origin, representativeness, temporal scales, and spatial granularity. Through our international partnerships we are advancing frameworks for standardized analysis and meaningful interpretation of these disparate data streams.



## Translational Readiness

Even when high quality analyses are available, response agencies often do not have embedded local capacity to drive data driven response. We promote translational readiness through training, strengthening data and tools repositories, supporting communities of practice, and facilitating policy development.

# Readiness

- Data agreements, governance standards, and frameworks
  - Data pipelines established
  - Key questions identified
  - Vetted methodologies coded
  - Testing and simulation of workflows
- < Many of these have been solved for remote sensing >**
- Is there a parallel to the International Space Charter for Mobility Data?



# Key Challenges:

- Bias
- Representativeness
- Uncertainty
- Access
- Capacity

# Ukraine

Mobility, Conflict, and Displacement





АДВОКАТ  
НОТАРИУС








# UKRAINE AID TRACKER


Unaudited totals since Jan. 1, 2010

UPDATED 5 AM TODAY


\$1,143,622,715

IN MEDICAL AID 


3,409,728

POUNDS OF MEDICINE AND SUPPLIES 


314,910,964

DOSES OF MEDICINE 

314

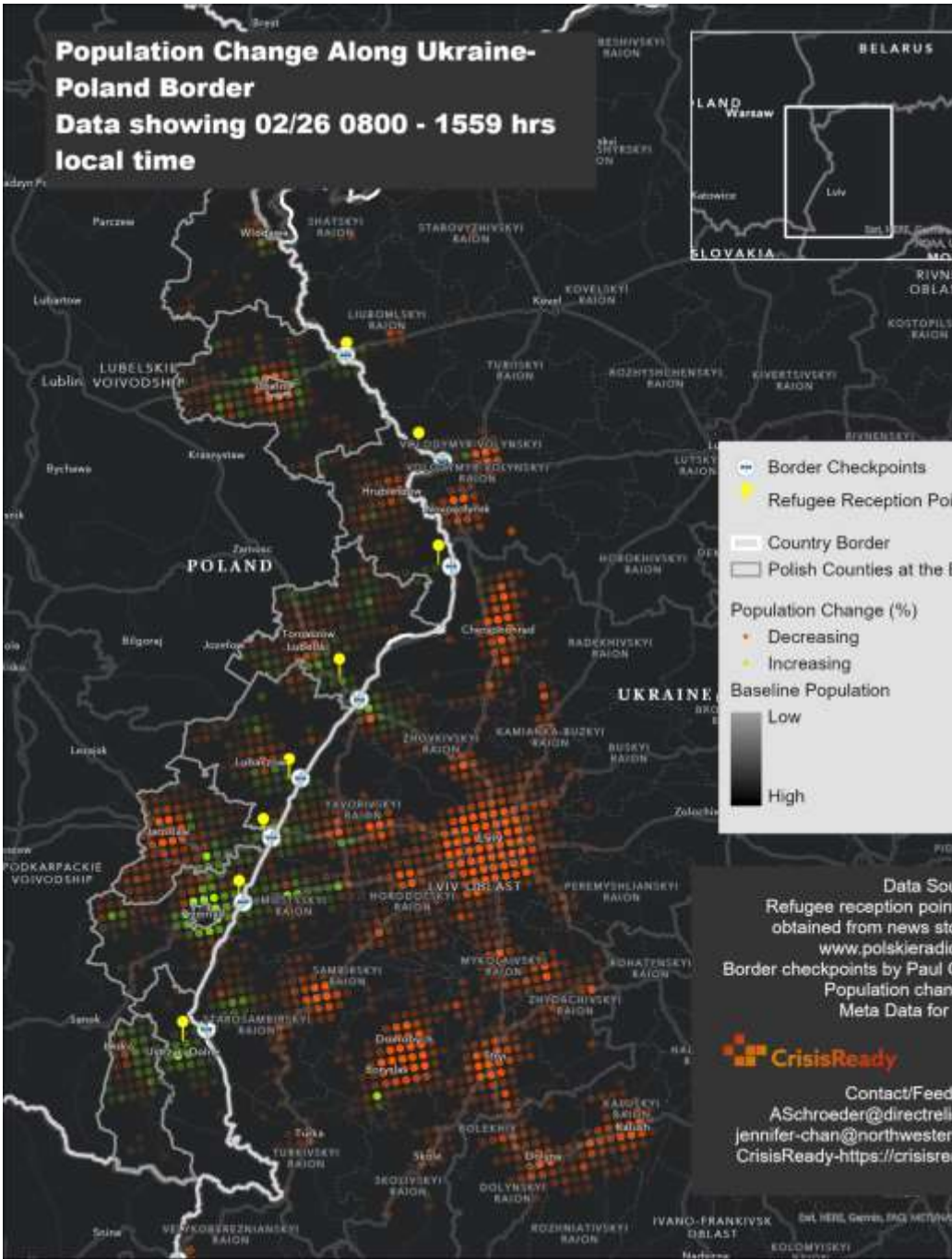
DELIVERIES 

25

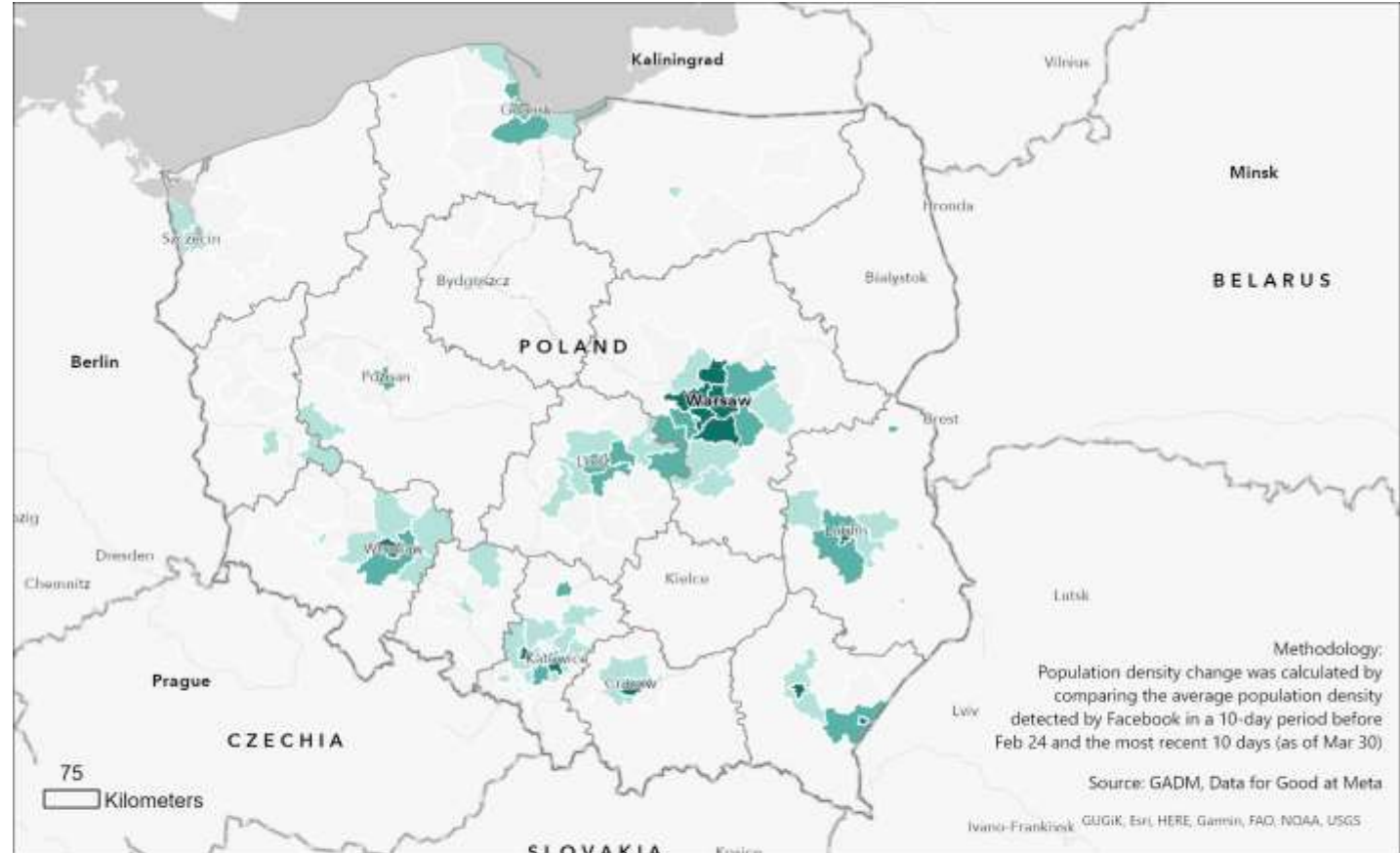
HEALTHCARE PROVIDERS  
SUPPORTED 



**Population Change Along Ukraine-Poland Border**  
**Data showing 02/26 0800 - 1559 hrs**  
**local time**



# Ukraine Refugee Crisis

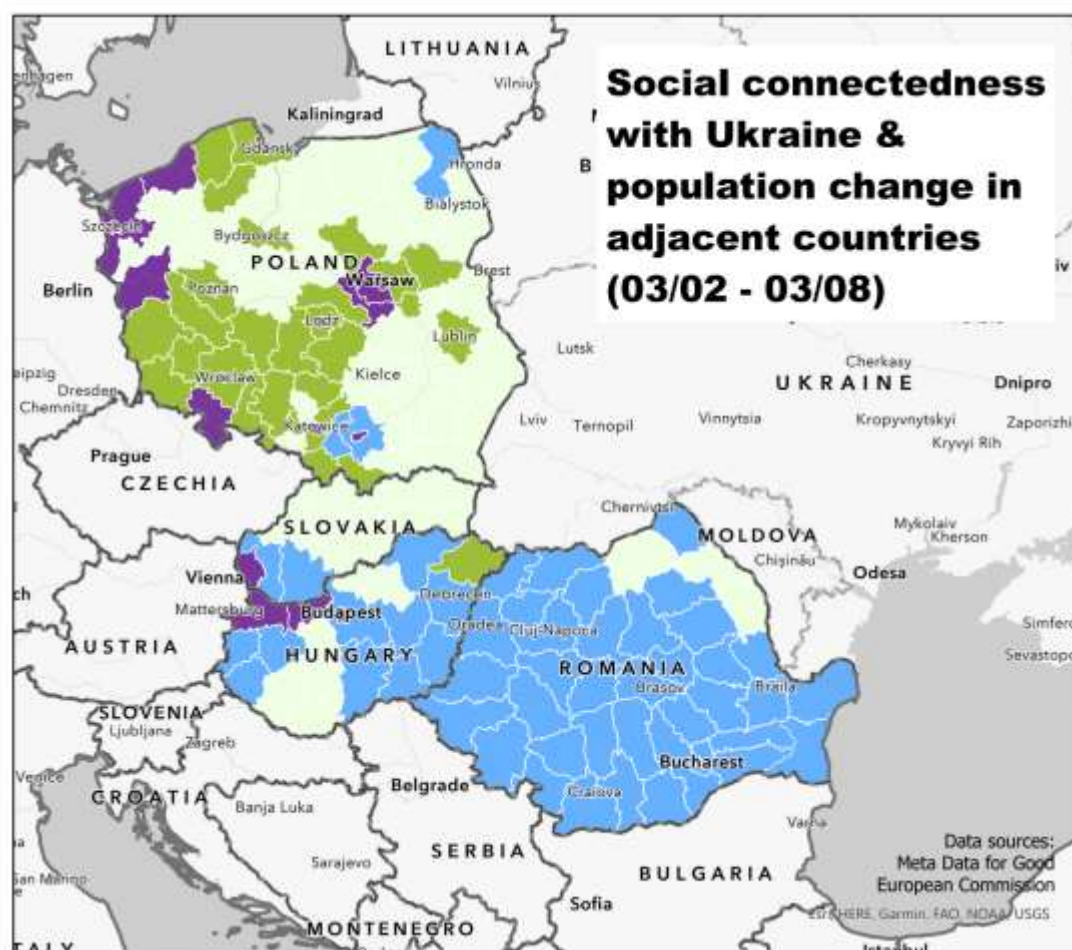


**Poland: Population density change pre-crisis (Feb 8 - 19) to current (Mar 21 - 30)**



Contact & Feedback:  
 communications@crisisready.io  
 mapped by Shenyue Jia





**Social connectedness with Ukraine & population change in adjacent countries (03/02 - 03/08)**

**High population increase & high social connectedness with Ukraine (NUTS 3 admin units)**

CNTR_CODE	NAME_LATN	CNTR_CODE	NAME_LATN
HU	Budapest	PL	Miasto Poznań
HU	Komárom-Esztergom	PL	Miasto Szczecin
HU	Győr-Moson-Sopron	PL	Miasto Kraków
PL	Gorzowski	PL	Trójmiejski
PL	Koszaliński	PL	Katowicki
PL	Miasto Wrocław	PL	Warszawski zachodni
PL	Szczeciński	PL	Miasto Łódź
PL	Żyrardowski	PL	Miasto Warszawa
PL	Wałbrzyski	SK	Bratislavský kraj

Country  
 Population increase  
 Social connectedness



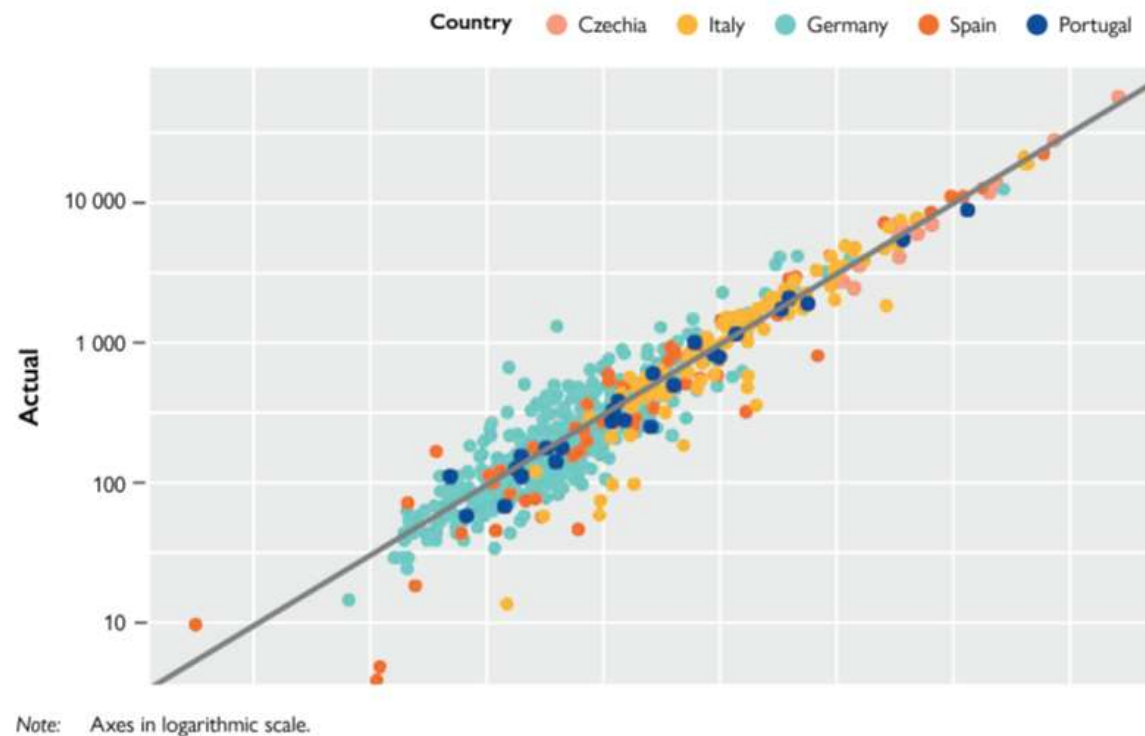
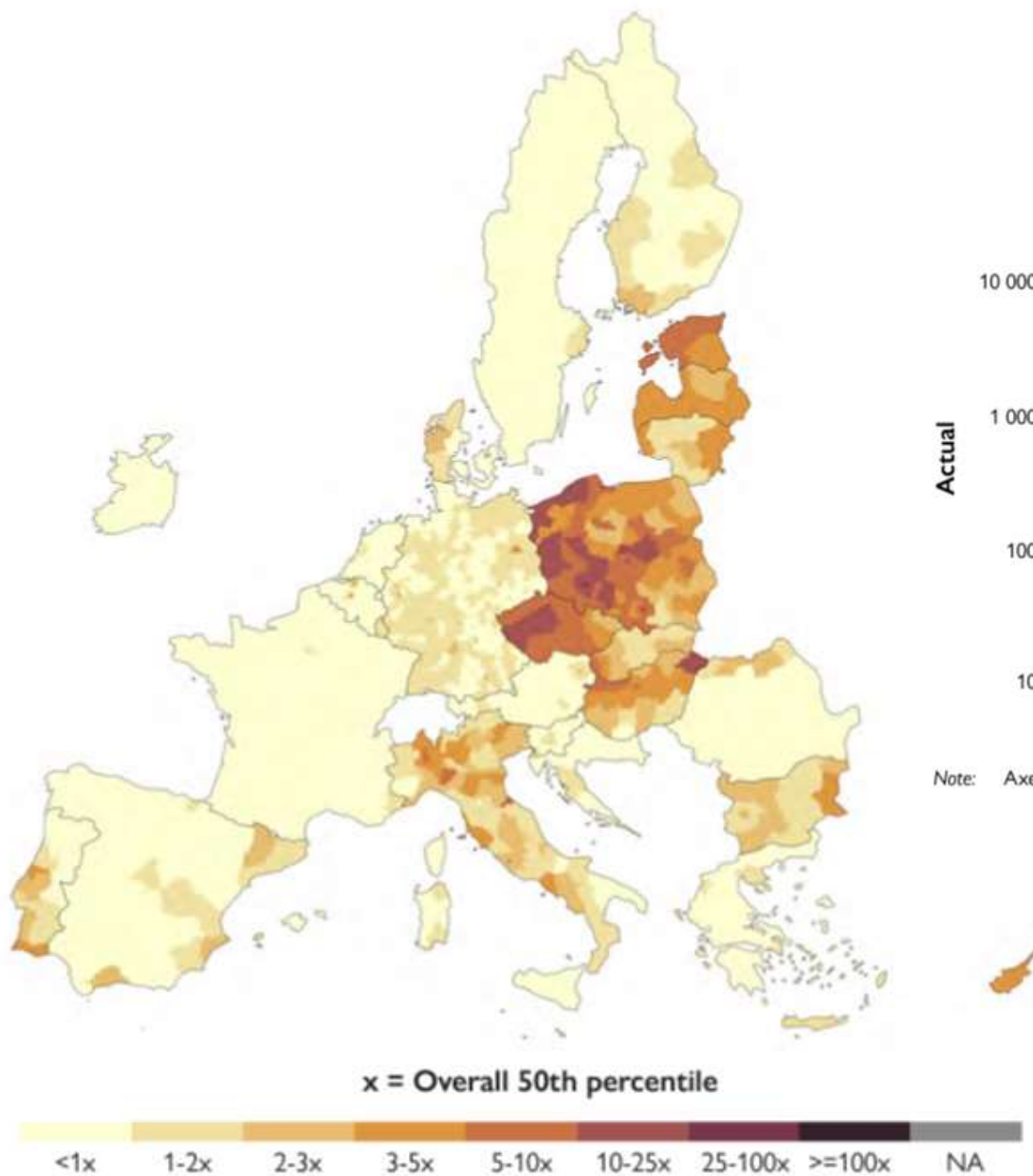
Contact/Feedback:  
 ASchroeder@directrelief.org  
 jennifer-chan@northwestern.edu  
 Mapped by Shenyue Jia |  
 sjia@chapman.edu  
 CrisisReady-https://crisisready.io

Social connectedness index (SCI) is a measurement based on FB friendship connections of Ukraine users. A higher SCI means a greater possibility for people to seek help from. Population change was detected by FB user activities.

# Social Connectedness Index and Mobility

- Social connectedness = aggregated relative strength of on-platform (Facebook) friendship ties between accounts in Ukraine and Admin 2 areas in the EU.
- Prediction of mobility change over time indicated **low likelihood** of refugees remaining in Romania and Hungary (except Budapest) despite population increases, and **high likelihood** of remaining in Poland, Germany, Czech Republic, regardless of short-term increases – which, of course, turned out to be largely correct.
- Emphasis on **CITIES**.

Figure 3. Facebook's Social Connectedness Index (Ukraine to EU27 NUTS-3)



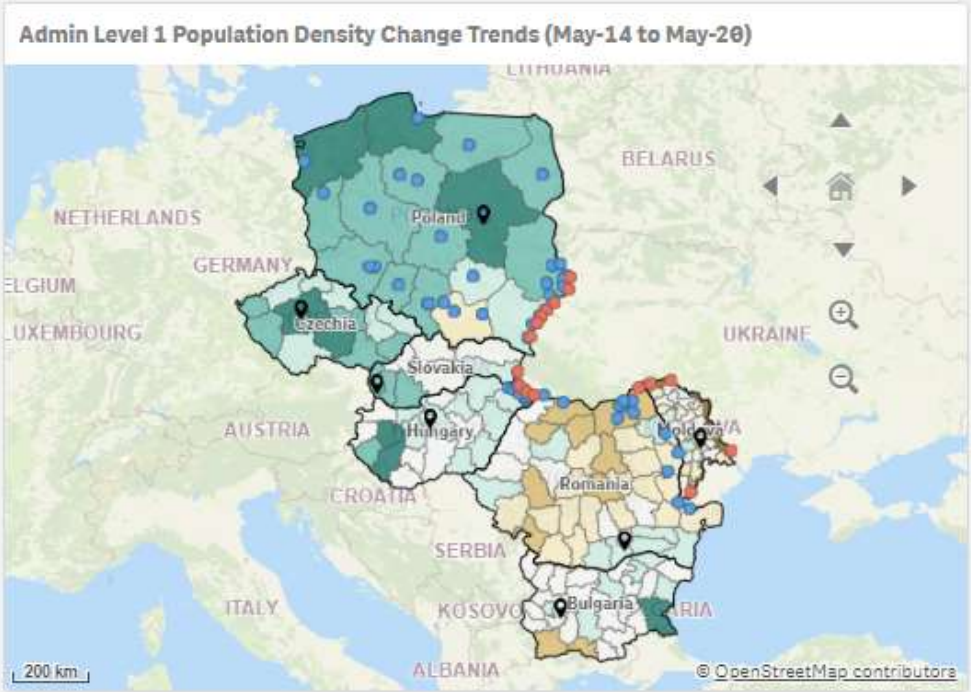




No selections applied

Selections

Select a Country | Select an Admin Lvl. 1 Region | Select an Admin Lvl. 2 Region | Pop. Density Change (Admin Lvl. 1) | Pop. Density Change (Admin Lvl. 2) | **Clear All Filters**



#### Border Crossing Locations (27)

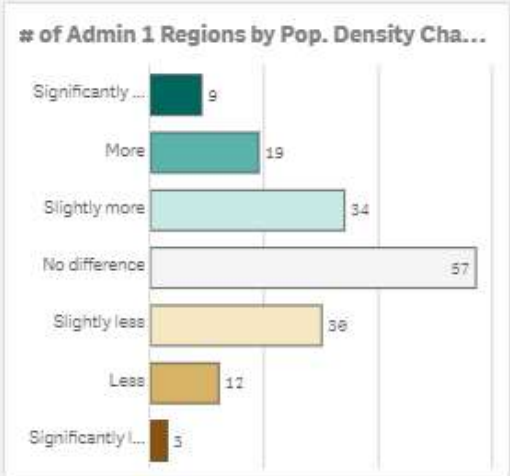
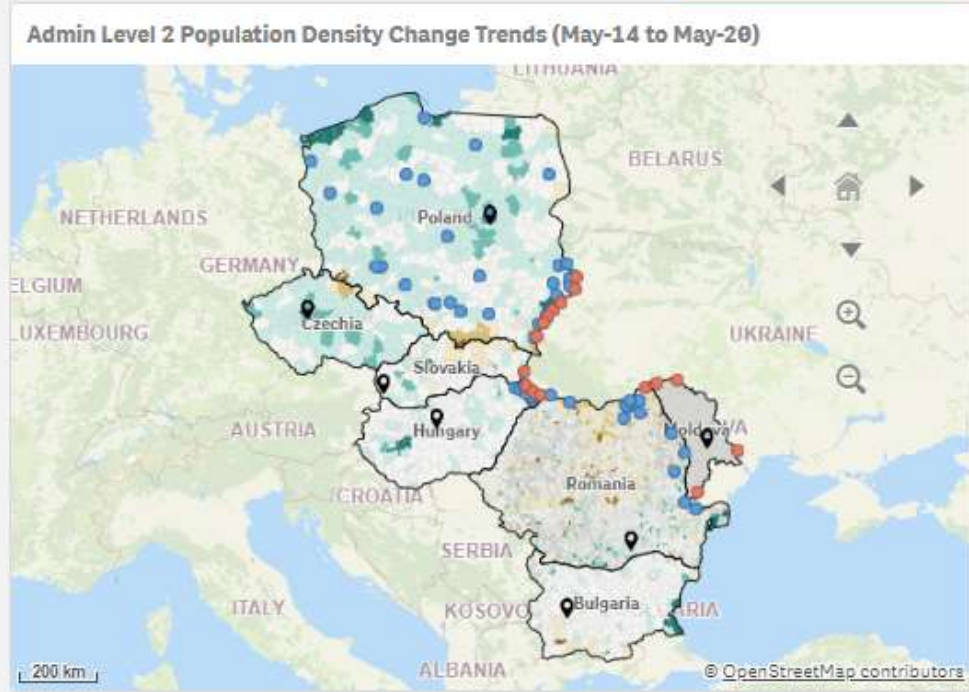
On

#### Refugee Reception Points (59)

On

#### Capital Cities

On



#### Admin 1 Regions Ranked by Pop. Density Changes

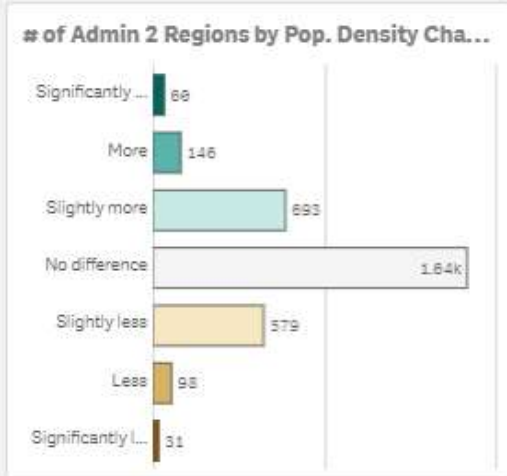
Rank	7-Day Avg	Admin Level 1	Change pattern from Baseline (%)
1	▲	Burgas (BGR)	
2	▲	Somogy (HUN)	
3	▲	Prague (CZE)	
4	▲	Veszprém (HUN)	
5	▲	Mazowieckie (POL)	
6	▲	Středočeský (CZE)	
7	▲	Zachodniopomorskí...	
8	▲	Kraj Vysočina (CZE)	
9	▲	Pomorskie (POL)	

\* % Change from Baseline per day since 24 Feb

#### Admin 2 Regions Ranked by Pop. Density Changes

Rank	7-Day Avg	Admin Level 2	Change pattern from Baseline (%)
1	▲	Nesebar (BGR)	
2	▲	Primorsko (BGR)	
3	▲	Tuzla (ROU)	
4	▲	Farcas (ROU)	
5	▲	Sozopol (BGR)	
6	▲	Balatonföldvári (HUN)	
7	▲	Sulina (ROU)	
8	▲	Priatol (ROU)	
9	▲	Balatonfüred (HUN)	

\* % Change from Baseline per day since 24 Feb



# 316 894



PARTICIPANTS RECEIVING AID\*

# 411 802



PARTICIPANTS RECEIVED MORE THAN 1 CODE

# 26%



ISSUED CODES



PEOPLE WHO RECEIVED MORE THAN 1 CODE ARE MINORS

# 40%

# H/U

Top 10 cities  
with the highest funding

01	Warszawa
02	Kraków
03	Wrocław
04	Poznań
05	Lódź
06	Gdańsk
07	Lublin
08	Katowice
09	Szczecin
10	Bydgoszcz





# Afghanistan and Gaza

Geo-Messaging and Humanitarian Coordination



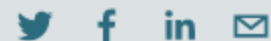


## Empowering Campaign Managers with Mobile Geo-Communication

David Hammel of Balcony Labs Inc. in the U.S. together with their partner Direct-Relief will develop a communication tool that combines smartphone messaging with geographical information systems to enable health campaign managers to communicate directly with health workers and civilians in a specific region of interest to improve the impact of their campaigns. The tool enables managers to send messages such as alerts, instructions, or surveys, directly to target areas, as well as collect geo-specific information in real-time for updating campaign designs and evaluating outcome. Once they have developed the dashboard and mobile software module, in partnership with a leading NGO, they will evaluate its performance in 2-3 campaigns incorporating 100,000 mobile phone users.

[More information about \*Innovations for Improving the Impact of Health Campaigns \(Round 24\)\* →](#)

SHARE THIS



### INITIATIVE

Grand Challenges Explorations

### CHALLENGE

Health Campaigns

### FUNDING DATE

May 1, 2020

### PRINCIPAL INVESTIGATOR

David Hammel

### ORGANIZATION

Balcony Labs Inc.



# What is Geo-Messaging?





# Direct Relief - Data Volunteer

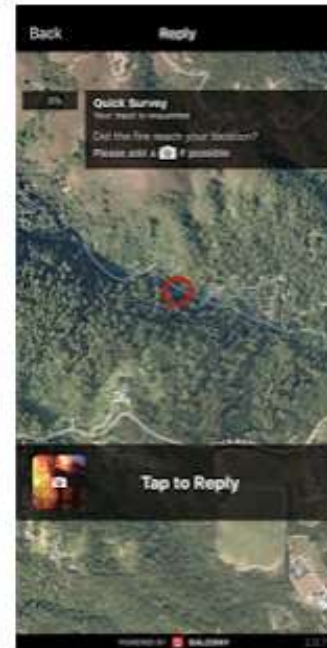
Balcony Labs Inc Communication

**E** Everyone

**i** This app is available for some of your devices

You can share this with your family. [Learn more about Family Library.](#)

Installed



# Taliban Takeover of Afghanistan

## August 2021

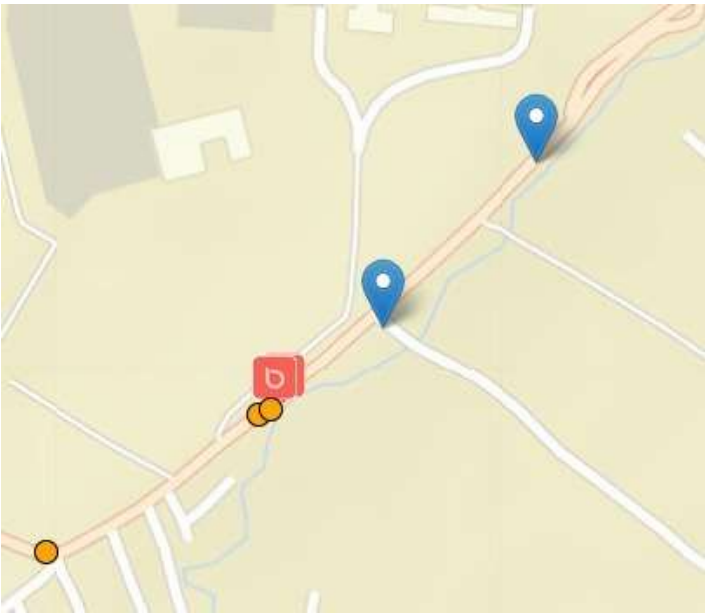
- **April 14<sup>th</sup>** – President Biden announces intention to withdraw US troops
- **July 2<sup>nd</sup>** – Bagram airfield withdrawal completed
- **Evacuation of Robotics Team Begins**
- **August 6<sup>th</sup>** – Taliban seize Zaranj, capital of Nimruz province
- **August 7<sup>th</sup>** – Taliban seize Shebergan, capital Jowzan province
- **August 15<sup>th</sup>** – Taliban enter Kabul
- **Evacuation of AUW students begins**
- **August 26<sup>th</sup>** – Suicide bombing at Abby Gate
- **August 30<sup>th</sup>** – Final planes and US troops depart Kabul







Approach road to Kabul International Airport – August 15, 2021



Sent: Aug 21 08:23 (4 months ago)

Guest 1

FAMILIES

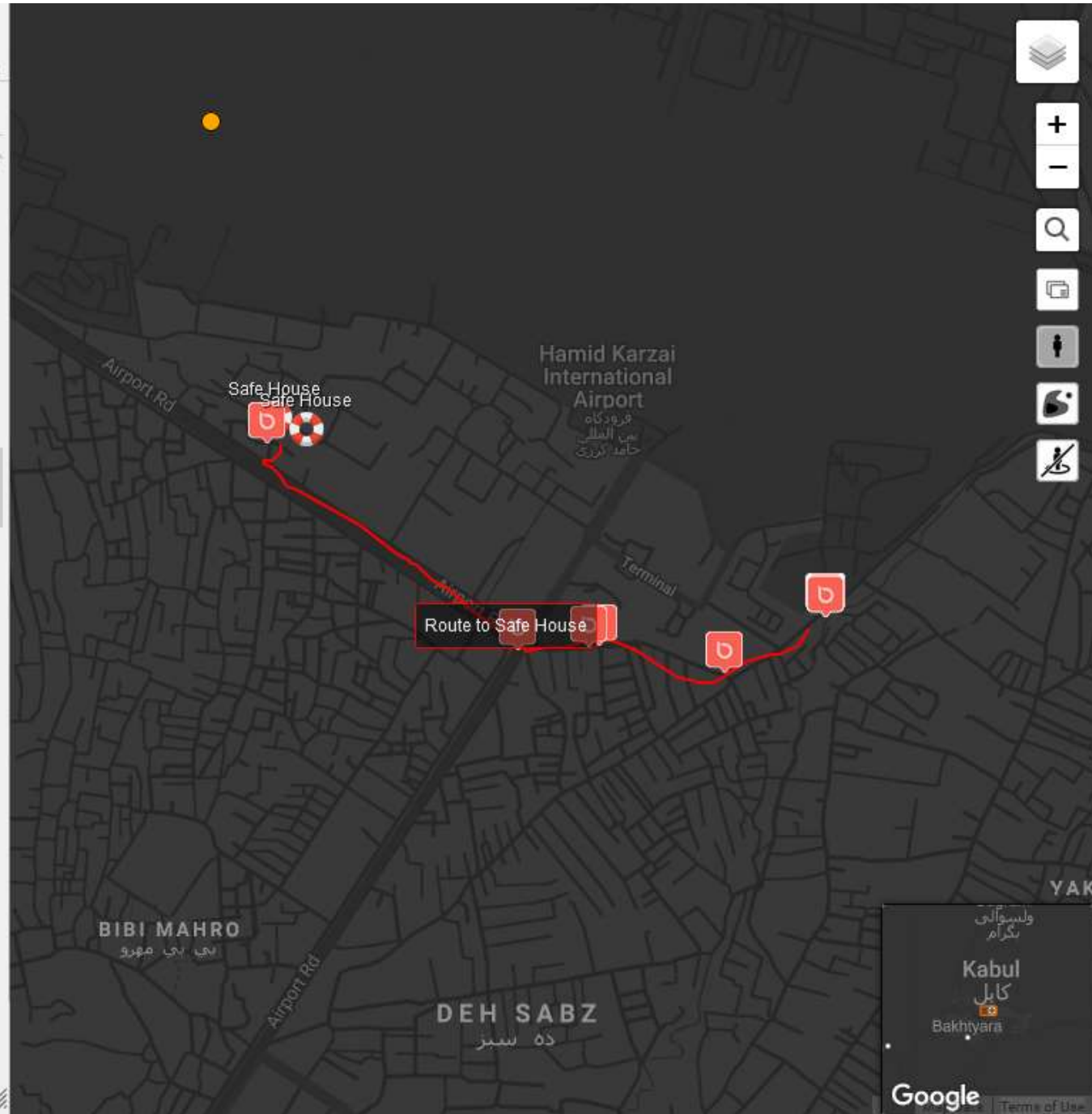
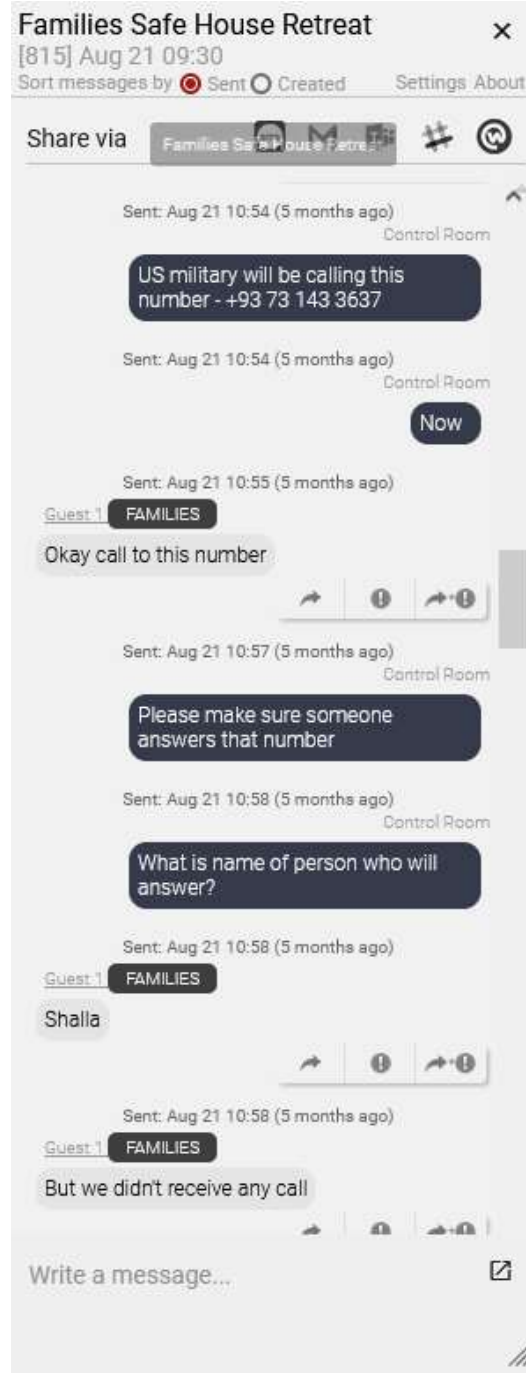
Please act soon. We are in danger of death. We are witnessing the Taliban's violent treatment of the people at every moment



Robotics Team family on the approach road to Kabul International Airport



- Family members of the Afghan Girls Robotics team
- First moved to safe house near the airport from a bus stopped outside the Kabul when the city fell to Taliban.
- Moved towards Abby Gate (British controlled) – attacked by Taliban in the waiting queue – forced to retreat to safe house.





- Secondary return to the Abby Gate via British military held hotel immediately prior to the suicide bombing.
- Rapid development incorporated GPS error monitoring and vector data tracking.



Dear AUW student,  
please follow these instructions to download the app and register. It takes just 1 minute



**1**  
Download the 'Direct Relief - Data Volunteer' app from the App store



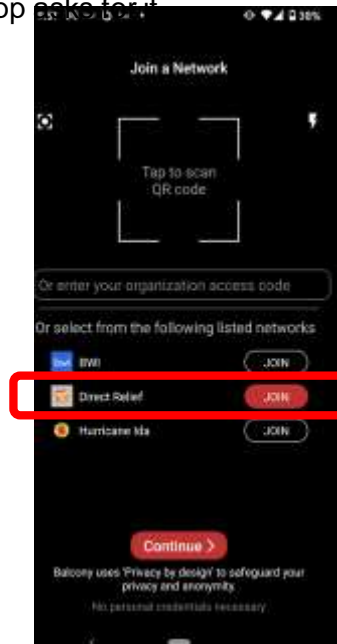
**Android:**  
[https://play.google.com/store/apps/details?id=com.app.balcony.direct\\_relief&hl=en\\_US](https://play.google.com/store/apps/details?id=com.app.balcony.direct_relief&hl=en_US)

**Apple:**  
<https://apps.apple.com/us/app/direct-relief-data-volunteer/id1478820241>

Or scan this QR code to get to the Appstore



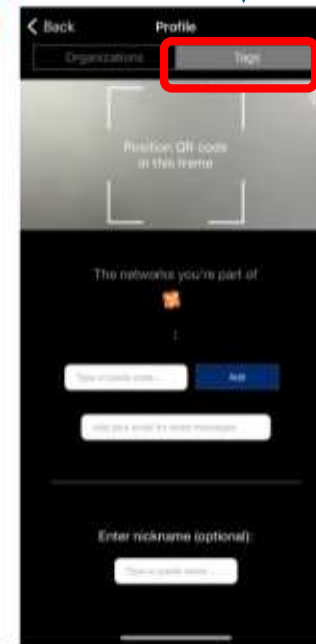
**2**  
Select the 'Direct Relief' account  
Make sure to allow notifications and location share when the app asks for it



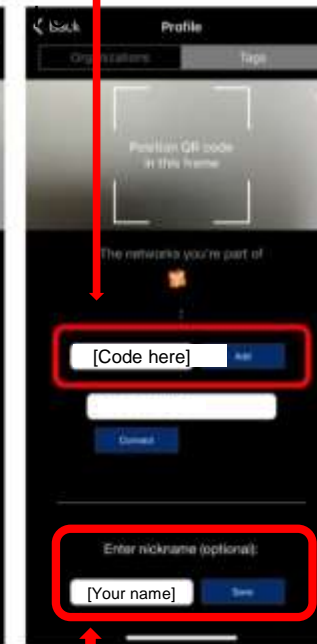
**3**  
Tap on the 'my profile' button



**4**  
Tap on Tags

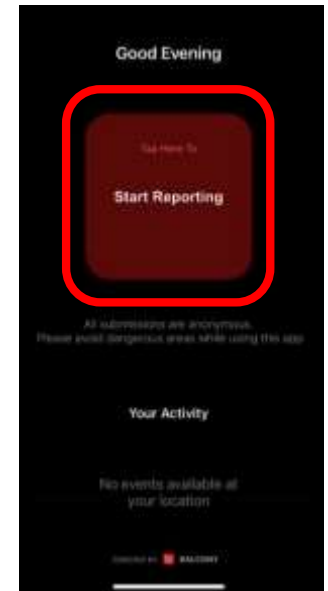


**5**  
You should have received a TAG code at your AUW email address. Please enter the code



Please enter your full name here

**6**  
Please send a test report to confirm success



Welcome onboard!

For any questions, please contact Andrew Schroeder at: [aschroeder@directrelief.org](mailto:aschroeder@directrelief.org)



v0.9.5

Users

Triggers

Tags

Places Library

Dynamic Basemaps

Basemaps

Bridge

Insight

Expand

DR1

Settings

New Event

Sort By **Answers**


Search

All	Active	My Events	Reports	Triggers
Done	is everything still ok on the buses?	30	0	5/22/0
Done	Direct Relief 1358			Aug 27 19:22
Done	Please confirm if you are currently	109	0	47/143/0
Done	Direct Relief 1355			Aug 27 12:55
Done	What is your current status?	112	0	2/23/0
Done	Direct Relief 1157			Aug 26 16:08
Done	Travel status	137	0	4/66/0
Done	Direct Relief 1304			Aug 26 10:37
Done	Can you confirm if you are now mo	59	0	6/19/0
Done	Direct Relief 1273 <b>AUW</b>			Aug 26 07:55
Done	Can you confirm whether you are o	52	0	29/59/0
Done	Direct Relief 1209			Aug 25 14:22
Done	Status Request	142	0	1/37/0
Done	Direct Relief 880			Aug 24 07:48
Done	Welcome to the AUW Kabul airport	142	0	8/101/2
Done	Direct Relief 785			Jun 10 16:45
Done	Demo all	7	0	3/44/21
Done	Direct Relief 708			Aug 31 16:07
Done	Demo notificatio BWI	10	0	9/41/11
Done	Direct Relief 707			Aug 27 20:35
Done	Demo GK Push	10	0	1/19/0
Done	Direct Relief 691			Aug 19 21:35
Done	Demo all	10	0	1/21/5
Done	Direct Relief 690			Aug 19 21:02
Done	Demo Group Chats and Live Capture	9	0	5/28/11
Done	Direct Relief 661			Aug 14 12:37
Done	Can you confirm? 6s	2	0	5/16/2
Done	Direct Relief 652			Aug 13 13:36
Done	Demo 2 V31	11	0	4/56/11

Welcome to the AUW Kabul airport tr [880] Aug 23 20:29

Sort messages by  Sent  Created Settings About

Share via



Sent: Aug 23 16:37 (5 months ago)

Zuhair Anzi Group 11 **AUW**

**AUW**

Sent: Aug 23 16:44 (5 months ago)

Control Room

Yes you may enter AUW as text when it asks for tag or you may use the QR code

Sent: Aug 23 16:48 (5 months ago)

Kamruz **AUW**

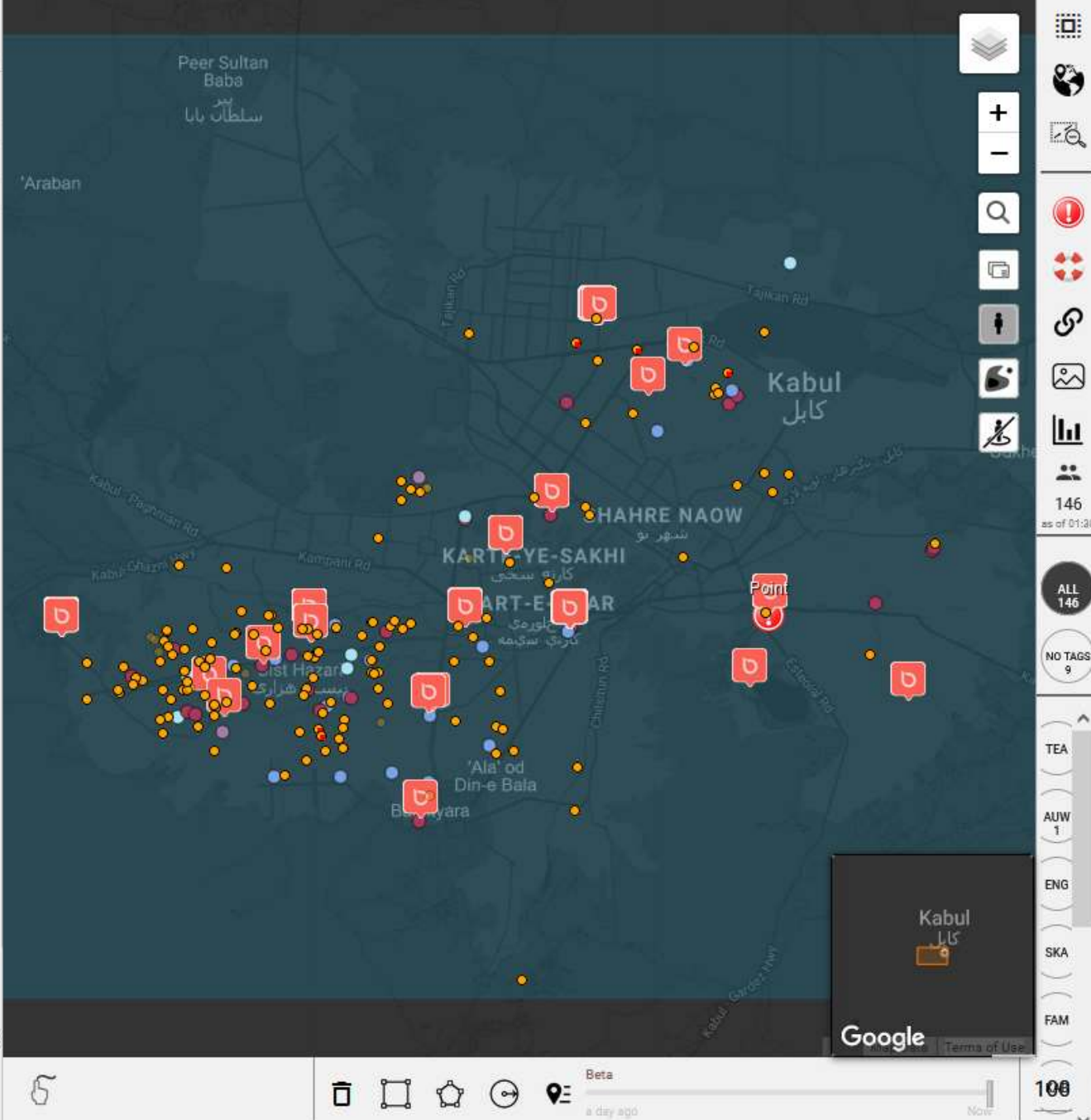
Hi

Sent: Aug 23 16:50 (5 months ago)

Hadisa

**AUW**

Write a message...







v0.9.5



- undefined
- Checkpoints
- Checkpoints (Live from MapHub)

Selective Anonymity Layers

AUW

Define new area

New Event

Support

Google

Google

Kabul

Beta
1 day ago
100
Days
Now



afghanistan

All Languages Share Save Platform

Source Categories: All 12/29/2021-01/12/2022

REFERENCE TERMS (10)

- afghanistan Q
- #afghanistan Q
- taliban Q
- afghans Q
- cricketworldcup Q
- @cricketworldcup Q
- habibkhan Q
- @habibkhan Q
- @bbcvaldahakim Q
- bbcvaldahakim Q

REAL-TIME CONTEXT

- MN: @SkyNews 4:38PM  
Three stories: Afghanistan: PM denies claims he approved animal airlift t.co/B9SERGE62J Truss defends using govt plane for Oz trip t.co/dV3NOFDTNB Boosters increase protection against death from Omicron to 95% in over-50s - UKHSA t.co/iEiF2wKTX
- LN: @Channel4News 4:17PM  
Boris Johnson has denied he authorised animals to be airlifted out of Afghanistan ahead of people as Kabul fell, calling the claims "total rhubarb". @clarefallon reports. t.co/vKtUyxwzQ
- RPR: @cjwerleman 4:39PM  
India gives the game away when a pro-government mouthpiece calls terrorists in Baluchistan "rebels." India sponsors "jihadist" terrorism in Pakistan & Afghanistan to keep both countries destabilized, & drive a wedge between them. I explain this here: https://t.co/WYtVDxjyH3
- LN: @ani\_digital 4:24PM  
India, five Central Asian countries to establish joint working group on Afghanistan Read @ANI Story | t.co/POaoPcXMWL #IndiaCentralAsiaSummit #Afghanistan
- NGO: @pressfreedom 4:17PM  
#Afghanistan: On Wednesday, January 26, about 60 armed members of the Taliban-controlled Kabul police and the the Taliban's intelligence agency, blocked a planned press conference by the Afghanistan Journalists Federation. t.co/1z7RExjlr
- RPR: @bsarwary 4:50PM  
Afghanistan's Under 19 cricket team celebrating their dramatic and nail-biting victory against Sri Lanka, Afghanistan now plays England in U19 Semi Finals #U19CWC2022
- BG: @PinkNews 4:57PM  
Boris Johnson denies ordering Afghanistan animal rescue as LGBT+ people stood stranded in peril t.co/vuCWDP4G
- PF: @ACBofficials 4:18PM  
Afghanistan U19s are through to the top 4!!! They have successfully defended thier total and beat the opponents by 4 runs. Thanks to some

ALERTS

- LN 16d  
Afghan Electricity Company Breshna Says Electricity Supply To Kabul And Surrounding Provinces Cut Due To Technical Problems In Northern Salang: Local News Outlet Via Twitter.
- LN 16d  
At Least Two Killed And One Injured After Bringing Home Unexploded Grenade In Lal Pur, Afghanistan: Local News Outlet Via Twitter.
- GOV 16d  
House Foreign Affairs Democrats Mentions Afghanistan: Official Post Via Twitter.
- GOV 16d  
US Senator Cassidy Mentions Afghanistan: Official Post Via Twitter.
- GOV 16d  
State Department Spokesperson Price Mentions Afghanistan: Official Post Via Twitter.
- CTR 16d  
Cement Factory Worker Killed In Huss In Husain Khel Area Of Baghlan, Afghanistan: Local Source Via Facebook.
- GOV 16d  
US Senator Feinstein Mentions Afghanistan: Official Post Via Twitter.
- BG 16d  
UNICEF Issues Statement On Deaths And Injuries Yesterday In Lal Pur Area Of Nangarhar Province, Afghanistan: Blog Photo Via ReliefWeb.
- BG 16d  
Taliban Reportedly Deployed New Unit Of Al-Badr Force In Spin Boldak, Afghanistan To Be Deployed Along Border With Pakistan: Blog Video Via Twitter.
- GOV 16d  
US Representative Cline Mentions Afghanistan: Official Post Via Twitter.

REFERENCE IMAGES



SUM: 442613 TWEETS RESET TO LATEST EXPAND GRAPH



"afghanistan" All EXPAND AREA







USER

8/26/2021, 6:51:12 AM

---

Waiting for the Taliban's confirmation to allow us entry

---

[view event](#)





v0.9.5



Users



Triggers



Tags



Places Library



Dynamic Basemaps



Basemaps



Bridge



Insight



Expand

DR1



Settings

New Event

Search there has been Sort By Answers

All Active My Events Reports Triggers

Direct Relief 1329 A UW New Report - Dear sir Aug 26 10:47

### New Report - Dear sir

[1329] Aug 26 14:38 Sort messages by Sent Created Settings About

Share via

Message history for this

Sent: Aug 26 10:44 (5 months ago)

Rona.yousufi.Haqiq.group6 A UW

Dear sir there was a bomb explosion.

Sent: Aug 26 10:44 (5 months ago)

Rona.yousufi.Haqiq.group6 A UW

In the north gate

Sent: Aug 26 10:45 (5 months ago)

Control Room

There has been a situation that requires rerouting you and we are figuring that out.

Sent: Aug 26 10:45 (5 months ago)

Rona.yousufi.Haqiq.group6 A UW

Ok dear sir

Sent: Aug 26 10:46 (5 months ago)

Rona.yousufi.Haqiq.group6 A UW

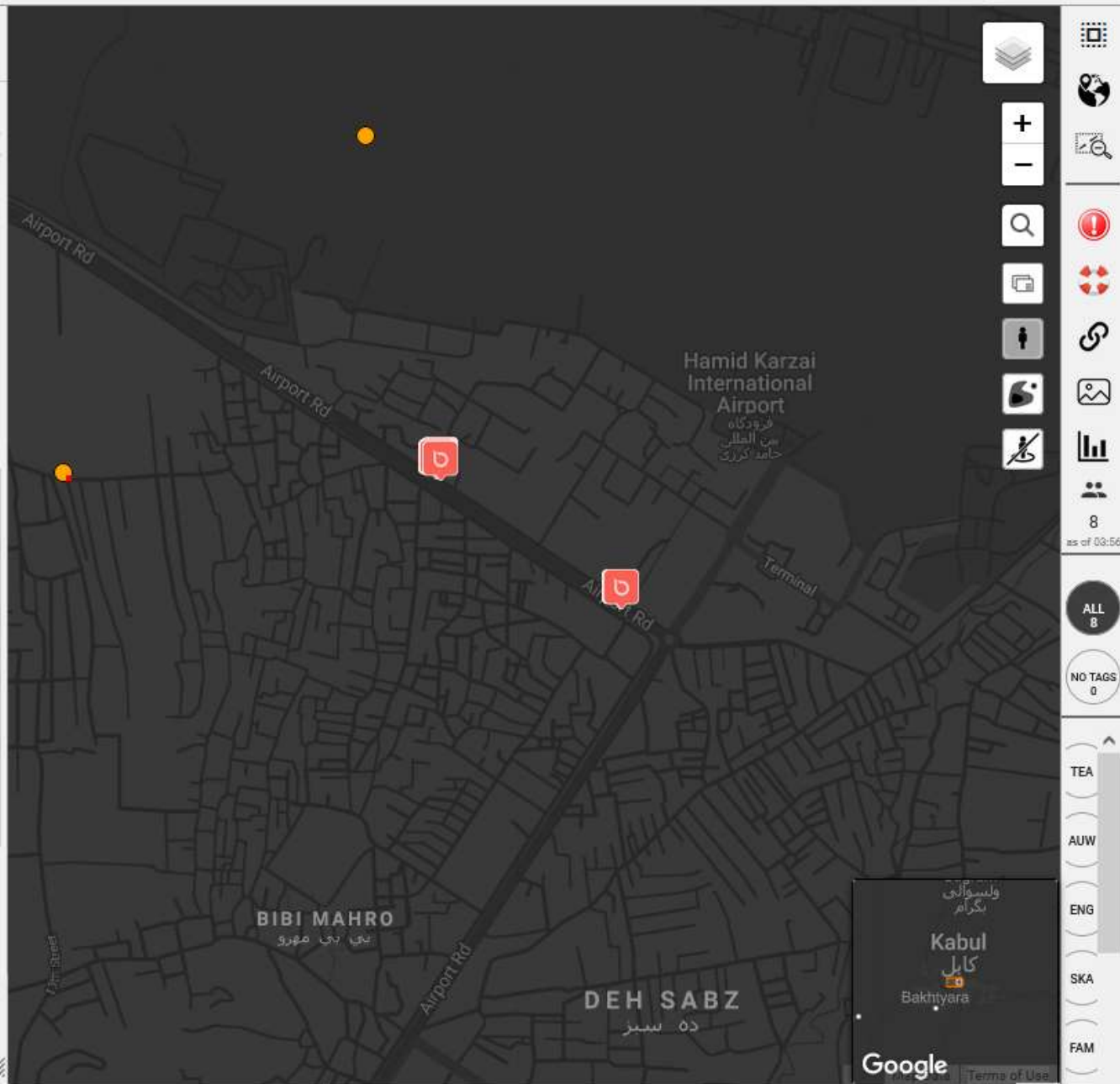
Please dear sir juts kindly request you take us to the airport

Sent: Aug 26 10:47 (5 months ago)

Rona.yousufi.Haqiq.group6 A UW

Please please

Write a message...



Support



8 as of 03:56

ALL 8

NO TAGS 0

TEA

AUW

ENG

SKA

FAM


ولیسوالی  
بگرام

Kabul  
کابل

Bakhtiyara

Google



Please confirm you are ok -- moving 

[1342] Aug 26 17:18

Sort messages by  Sent  Created [Settings](#) [About](#)


Share via 

Sent: Aug 26 10:18 (4 months ago)  
Control Room

Please confirm you are ok -- moving ahead soon.


Sent: Aug 26 10:20 (4 months ago)  
Rona vousufi, Haqjo group6 

Hi dear sir 


Sent: Aug 26 10:20 (4 months ago)  
Rona vousufi, Haqjo group6 

0:00 / 0:18    




Sent: Aug 26 10:21 (4 months ago)  
Rona vousufi, Haqjo group6 


Taliban did not let us 


Sent: Aug 26 10:21 (4 months ago)  
Rona vousufi, Haqjo group6 

To go inside 

Sent: Aug 26 10:21 (4 months ago)  
Rona vousufi, Haqjo group6 

What we have to do? 

Sent: Aug 26 10:22 (4 months ago)  
Rona vousufi, Haqjo group6 

Please tell us what we have to do? 

Sent: Aug 26 10:30 (4 months ago)  
Control Room

For now please just stay where you are.

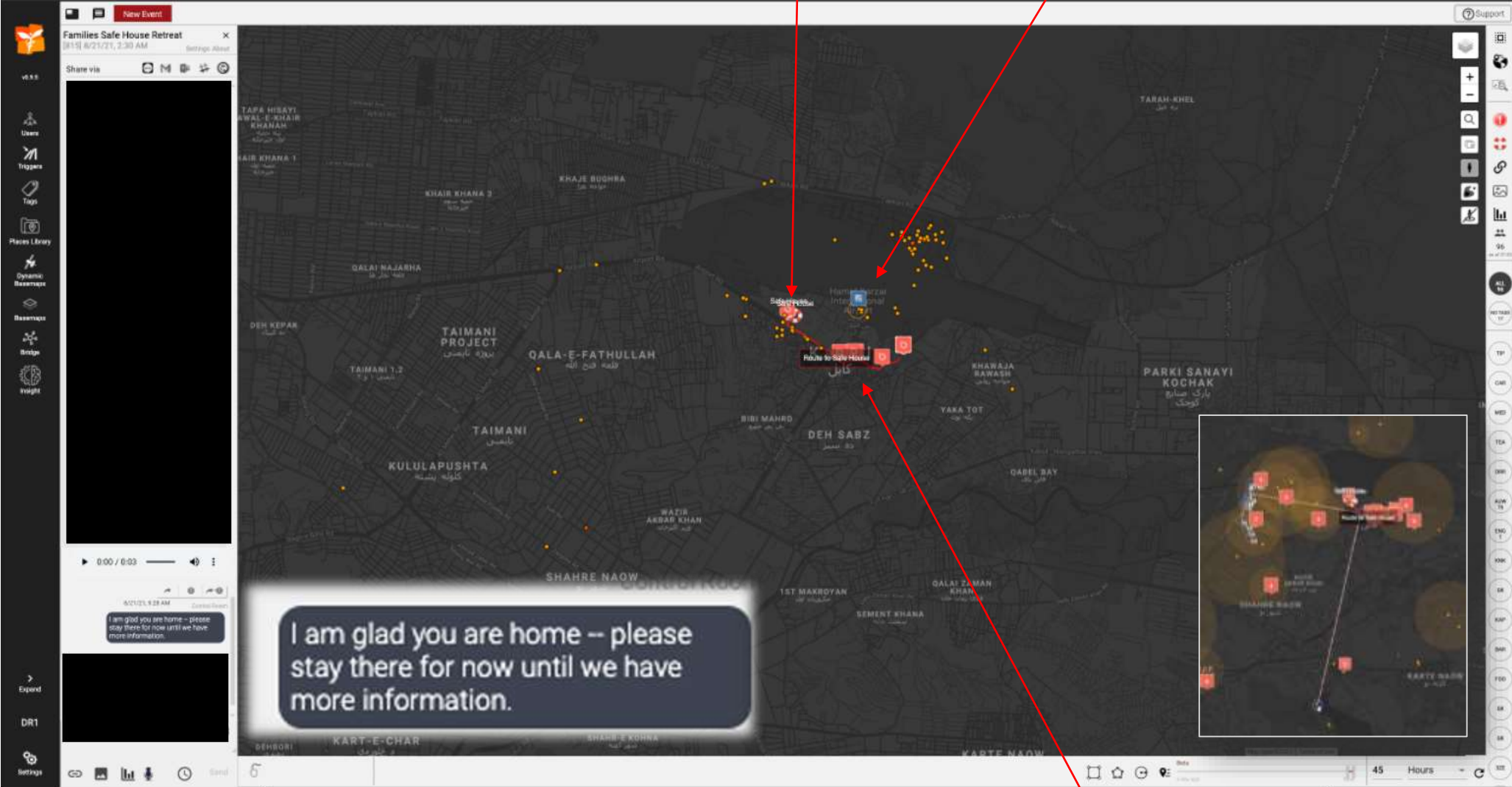




# Re-routing home

AR map pointers

Dataminr alerts



Location-based voice message

Guidance by graphical overlays



v0.9.5



Settings

New Event

Search

Sort By

Answers

All Active My Events Reports Triggers

- Direct Relief 1404 **ENG** Oct 28 12:31  
Zia 1 112/121/2
- Direct Relief 1342 Aug 28 07:47  
Please confirm you are ok – moving 1 13/66/0
- Direct Relief 1259 **AUW** Aug 28 07:47  
Is everything still ok on the buses? 30 5/22/0
- Direct Relief 1358 Aug 27 19:22  
Please confirm if you are currently 109 47/143/0
- Direct Relief 1355 Aug 27 12:55  
What is your current status? 112 2/23/0
- Direct Relief 1157 Aug 26 16:08  
Travel status 137 4/66/0
- Direct Relief 1316 **AUW** Aug 26 10:01  
The wheel has been damaged 1 10/30/0
- Direct Relief 1273 **AUW** Aug 26 07:55  
Can you confirm whether you are o 52 29/59/0
- Direct Relief 1209 Aug 25 14:22  
Status Request 142 1/37/0
- Direct Relief 880 Aug 24 07:48  
Welcome to the AUW Kabul airport 142 8/101/2
- Direct Relief 815 **FAM** Aug 22 00:53  
Families Safe House Retreat 0 34/26/0
- Direct Relief 785 Jun 10 16:45  
Demo all 7 3/44/21
- Direct Relief 708 Aug 31 16:07  
Demo notificatio BWI 10 9/41/11
- Direct Relief 707 Aug 27 20:35  
Demo GK Push 10 1/19/0
- Direct Relief 691 Aug 19 21:35  
Demo all 10 1/21/5

Can you confirm whether you are on i x

[1273] Aug 26 08:18

Sort messages by Sent Created Settings About

**AUW**

Share via

Sent: Aug 26 04:48 (5 months ago)

Guest 5 **AUW**

I hope that we are going to the right gate

Sent: Aug 26 04:55 (5 months ago)

Control Room

I think you are right near Qasaba gate

Sent: Aug 26 04:56 (5 months ago)

Control Room

New Point Added: Qasaba Gate

Sent: Aug 26 04:59 (5 months ago)

Group 3 - Frohar sarwari **AUW**

yes

Sent: Aug 26 05:00 (5 months ago)

Group 3 - Frohar sarwari **AUW**

but why they don,t let us to go inside, what should we do

Sent: Aug 26 05:01 (5 months ago)

Control Room

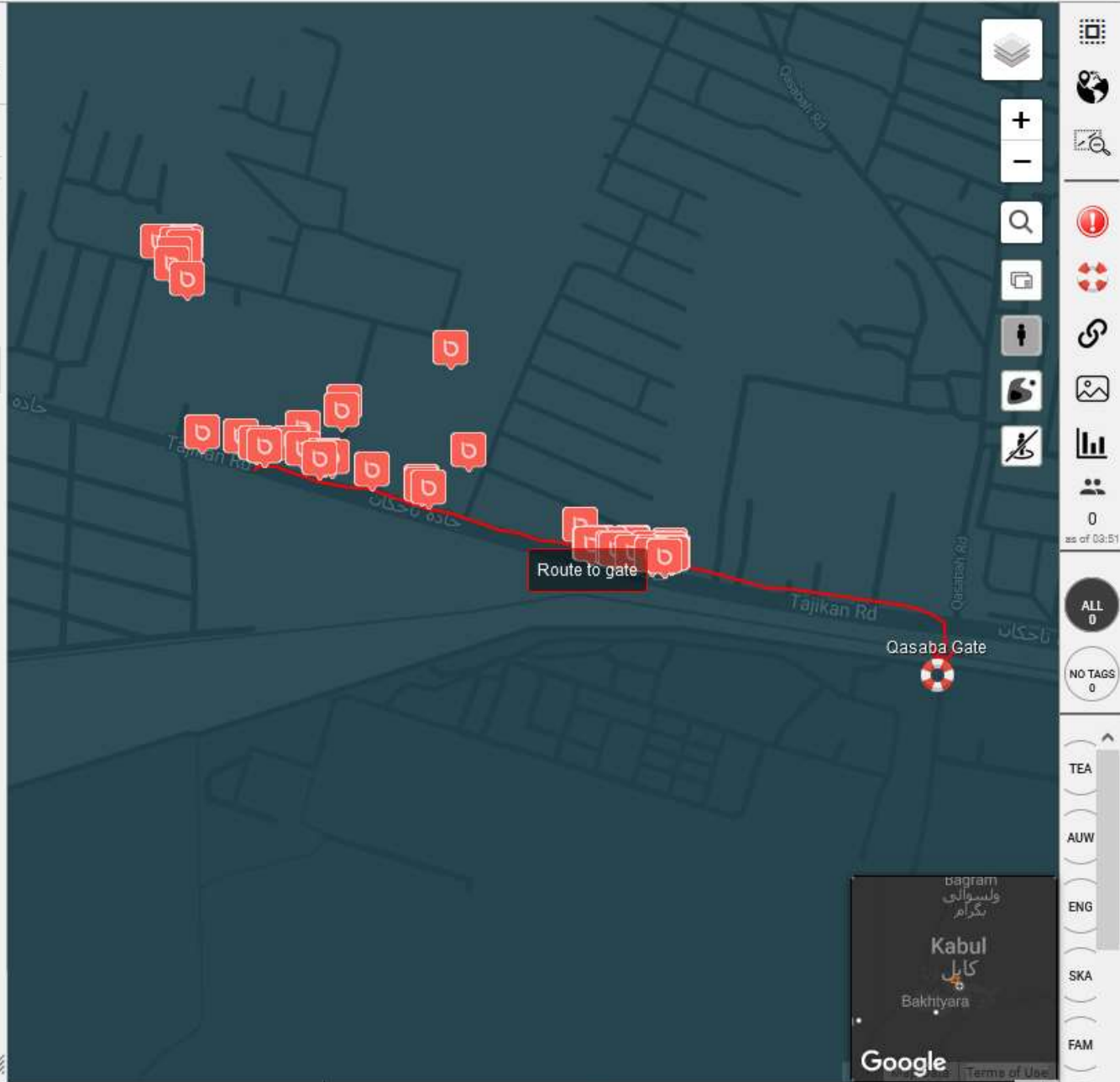
I'm not sure – checking on current status

Sent: Aug 26 05:04 (5 months ago)

Guest 5 **AUW**

Write a message...

Send



Support

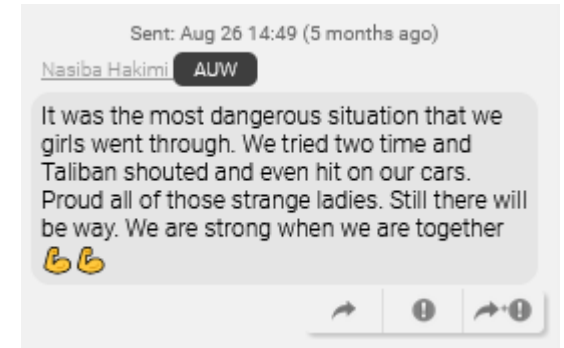
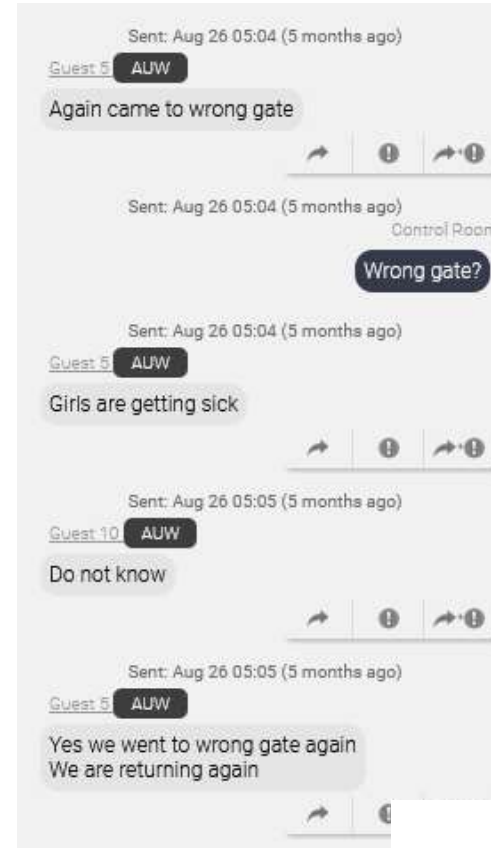
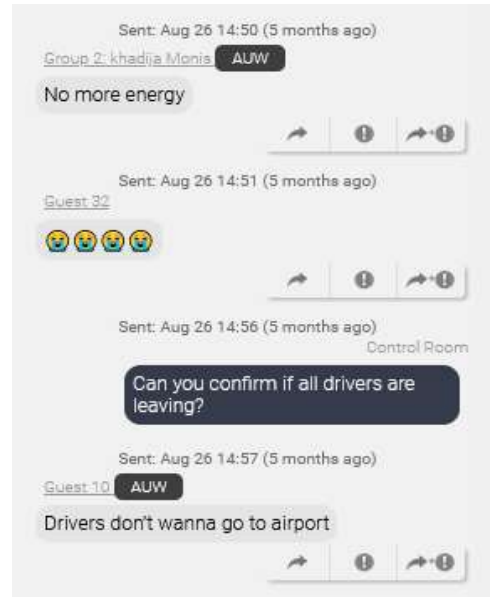
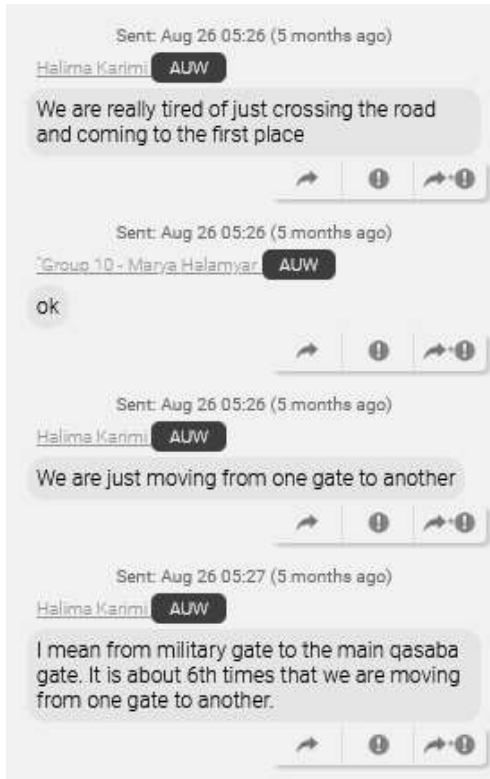


100



Beta a day ago Now





ASIAN UNIVERSITY  
FOR WOMEN



v0.9.5



Settings

New Event

Sort By Answers

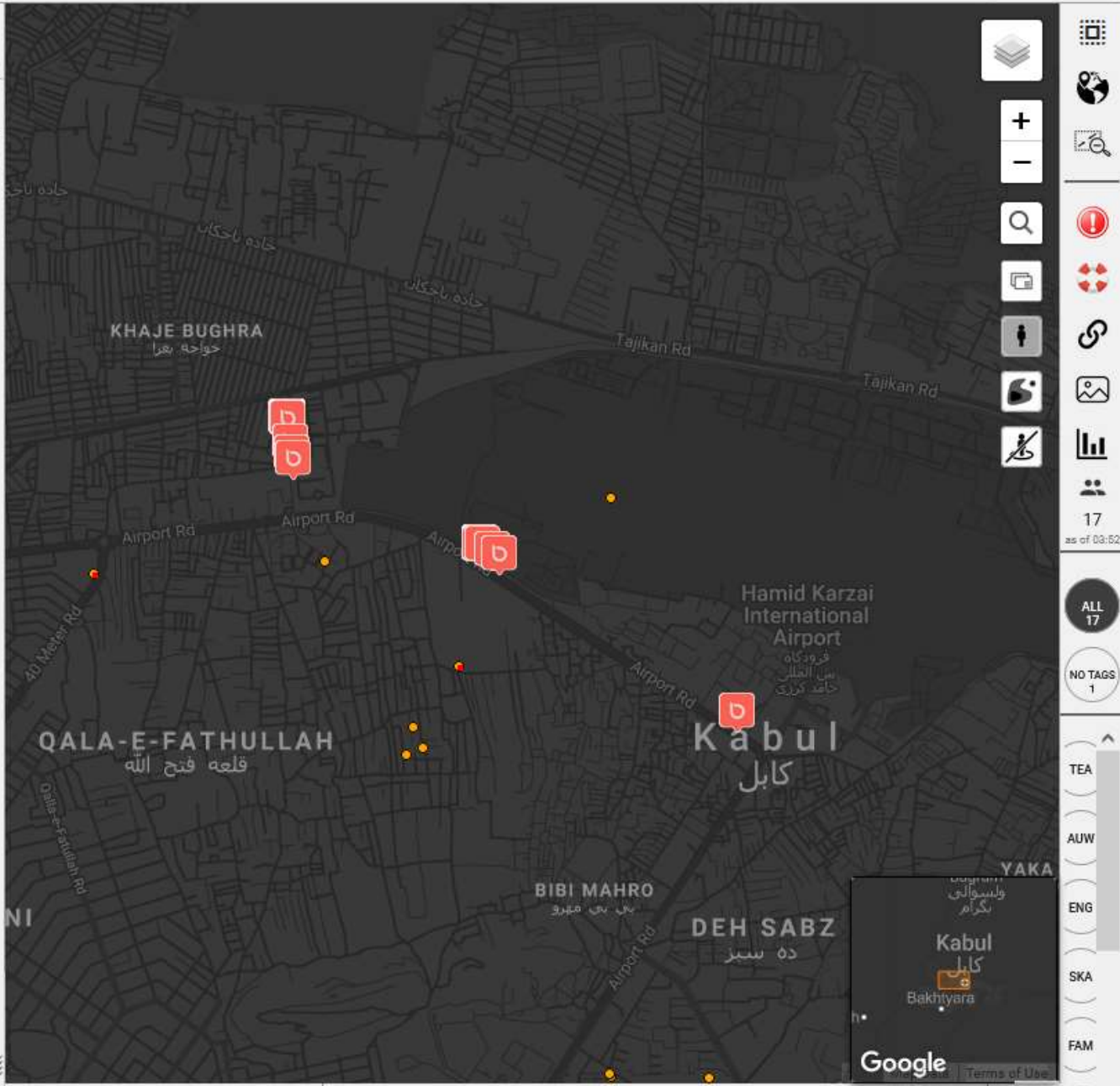
All Active My Events Reports Triggers

- Direct Relief 1404 **ENG** Oct 28 12:31  
Zia 1 112/121/2
- Direct Relief 1342 Aug 28 07:47  
Please confirm you are ok -- movin 13/66/0
- Direct Relief 1259 **AUW** Aug 28 07:47  
Is everything still ok on the buses? 30 5/22/0
- Direct Relief 1358 Aug 27 19:22  
Please confirm if you are currently 47/143/0
- Direct Relief 1355 Aug 27 12:55  
What is your current status? 112 2/23/0
- Direct Relief 1157 Aug 26 16:08  
Travel status 137 4/66/0
- Direct Relief 1316 **AUW** Aug 26 10:01  
The wheel has been damaged 1 10/30/0
- Direct Relief 1273 **AUW** Aug 26 07:55  
Can you confirm whether you are o 52 29/59/0
- Direct Relief 1209 Aug 25 14:22  
Status Request 142 1/37/0
- Direct Relief 880 Aug 24 07:48  
Welcome to the AUW Kabul airport 142 8/101/2
- Direct Relief 815 **FAM** Aug 22 00:53  
Families Safe House Retreat 0 34/26/0
- Direct Relief 785 Jun 10 16:45  
Demo all 7 3/44/21
- Direct Relief 708 Aug 31 16:07  
Demo notificatio BWI 10 9/41/11
- Direct Relief 707 Aug 27 20:35  
Demo GK Push 10 1/19/0
- Direct Relief 691 Aug 19 21:35  
Demo all 10 1/21/5

New Report [1316] Aug 26 12:50

Share via

- Sent: Aug 26 09:09 (5 months ago)  
Rona.yousufi\_Haajo\_group6 **AUW**  
Yes dear sir ❤️😊
  - Sent: Aug 26 09:09 (5 months ago)  
Rona.yousufi\_Haajo\_group6 **AUW**  
Thanks for helping 😊❤️
  - Sent: Aug 26 09:10 (5 months ago)  
Rona.yousufi\_Haajo\_group6 **AUW**  
Please dear sir check each minutes of arriving in the south gate 😊
  - Sent: Aug 26 09:10 (5 months ago)  
Control Room  
I'm watching -- you are going the right way now
  - Sent: Aug 26 09:11 (5 months ago)  
Rona.yousufi\_Haajo\_group6 **AUW**  
Yes dear sir 😊
  - Sent: Aug 26 09:11 (5 months ago)  
Rona.yousufi\_Haajo\_group6 **AUW**  
Moving to dear ❤️😊
- Write a message...



Support

Map navigation and utility icons:

- Layers, Home, Search, Full Screen, Print, Location, Share, Link, Map Style, Scale, 17 as of 03:52, ALL 17, NO TAGS 1, TEA, AUW, ENG, SKA, FAM, Google, Terms of Use

Map navigation and utility icons:

- Link, Image, Chart, Microphone, Clock, Send

Map navigation and utility icons:

- Beta, 100, day ago, Now





v0.9.5

Users

Triggers

Tags

Places Library

Dynamic Basemaps

Basemaps

Bridge

Insight

Expand

DR1

Settings

New Event

Search **Answers**

All Active My Events Reports Triggers

- Direct Relief 1404 **ENG** Oct 28 12:31  
Zia 1 112/121/2
- Direct Relief 1342 Aug 28 07:47  
Please confirm you are ok - moyin 1 13/66/0
- Direct Relief 1259 **AUW** Aug 28 07:47  
Is everything still ok on the buses? 30 5/22/0
- Direct Relief 1358 Aug 27 19:22  
Please confirm if you are currently 109 47/143/0
- Direct Relief 1355 Aug 27 12:55  
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- Direct Relief 707 Aug 27 20:35  
Demo GK Push 10 1/19/0
- Direct Relief 691 Aug 19 21:35  
Demo all 10 1/21/5

Please confirm if you are currently m

[1358] Aug 27 14:27  
Sort messages by Sent Created Settings About

Share via

Control Room

Ok thank you that is helpful to know.  
How many buses there now?

Sent: Aug 27 10:40 (5 months ago)

Group 1 - Guldista Iqbal **AUW**

6 buses.

Sent: Aug 27 10:40 (5 months ago)

Maryam Khadermi **AUW**

7 buses

Sent: Aug 27 10:41 (5 months ago)

Group 1 - Guldista Iqbal **AUW**

Waiting for one more

Sent: Aug 27 10:41 (5 months ago)

Group 3 - Frohar sarwari **AUW**

I don,t know because I sit in 1 bus

Sent: Aug 27 10:42 (5 months ago)

Control Room

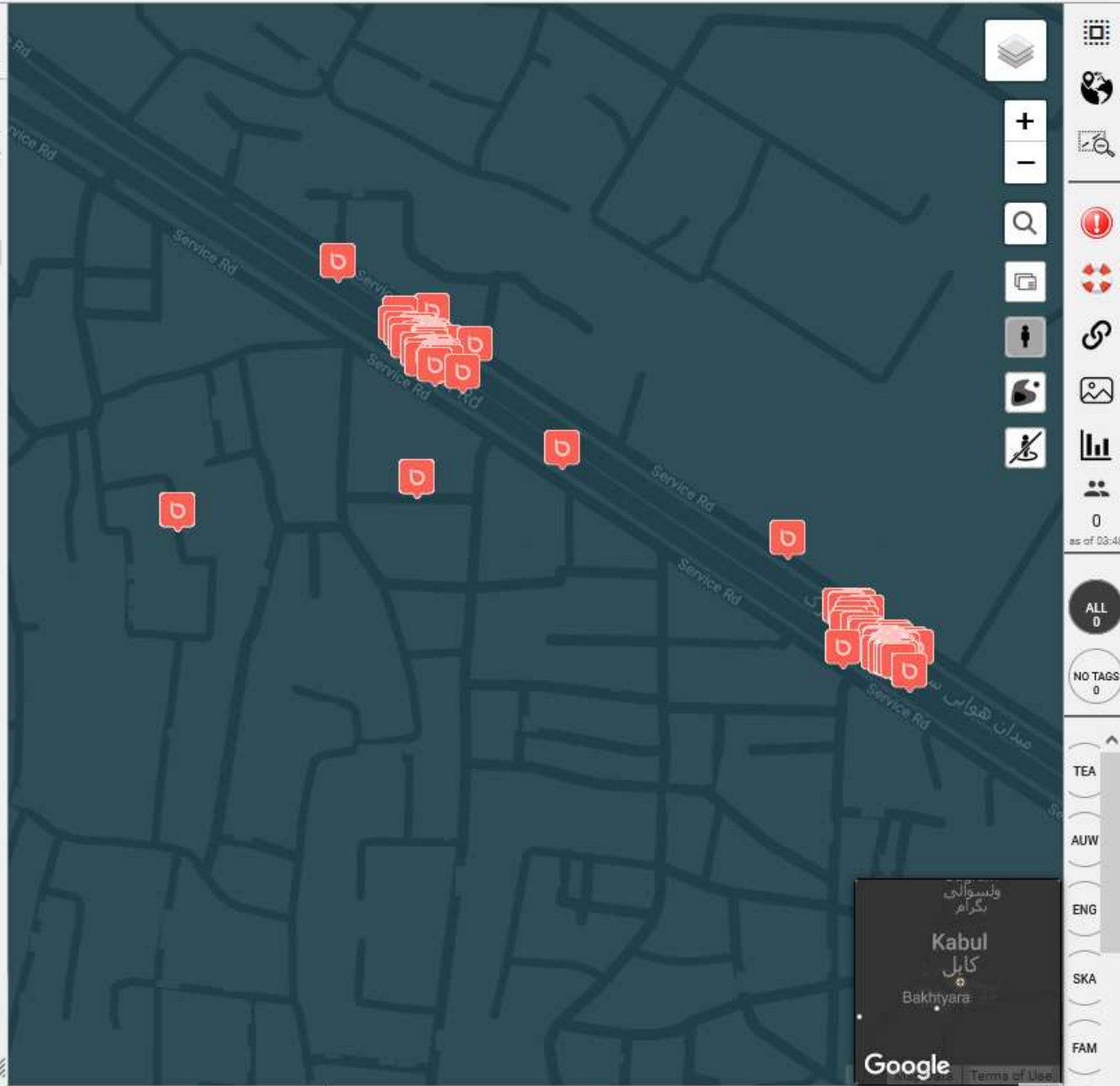
So 6 are there - waiting for one more?

Sent: Aug 27 10:42 (5 months ago)

Group 1 - Guldista Iqbal **AUW**

Yes

Write a message...



Support



0 as of 03:48

ALL 0

NO TAGS 0

TEA

AUW

ENG

SKA

FAM

100





# The move towards South Gate







8/27/21, 10:00 PM  
Group 2: Shokria AYW  
We are inside the airport  
8/27/21, 10:03 PM



transportation group sat together on the floor at the front of the plane. No one spoke, Azami said.

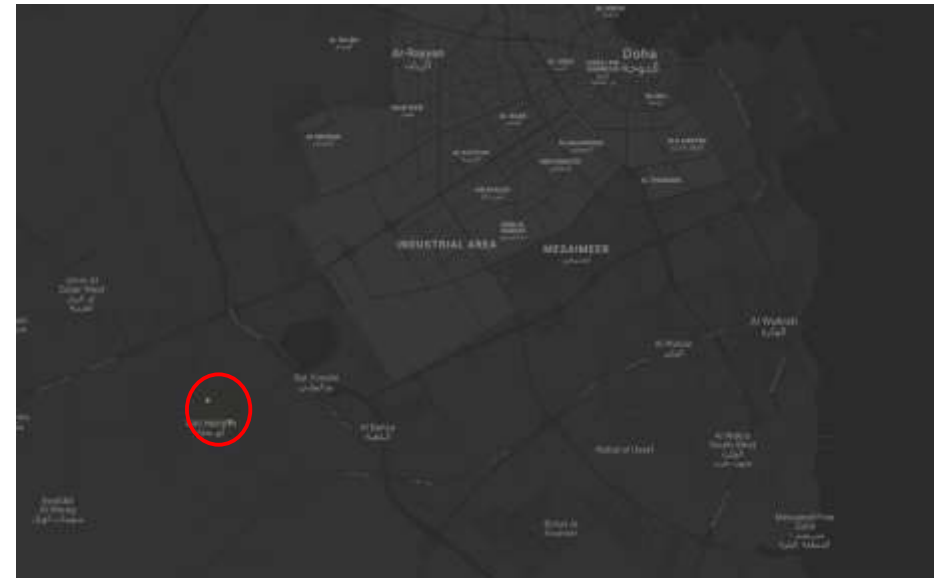
“We all avoided looking at each other. Everyone is so tired, so sad, so heartbroken,” she said. “We didn’t want anyone to see that we are crying out. We felt that if we looked at each other, we might start crying.”

Despite the lack of comfort, not long after takeoff, everyone fell asleep, worn out by stress. Three students missed the flight. Separated from the group to charge their phones, they, too, fell asleep and woke up to find they had been left behind. They were able to get a later military flight to a base in Doha, Qatar, where they volunteered to work as translators.

When I spoke to Azami on Thursday, she was in Spain, en route not to the AUW campus in Bangladesh but to Dulles International Airport, outside Washington, D.C. Because the students had been airlifted out by the American military, they were being taken to the United States, where they expected to be able to stay, at least temporarily. Ahmad said he is talking with American colleges in hopes that some might admit the AUW students.

Students at the American University of Afghanistan have not been as fortunate. Media reports say the **United States has so far failed to get them out of the country.**

With his group all safe, Ahmad has a new focus: He plans to admit 200 additional Afghan students and, when the chaos of the American withdrawal has subsided, bring them to AUW.







The students on board a US military transport plane

Catherine Philp | Sunday December 12 2021, 12:01am, The Sunday Times

**I**t was one o'clock in the morning outside Kabul airport and Sepehra Azami, 25, was crammed into one of seven buses carrying female Afghan students desperate to flee the country. Thousands of people thronged the streets and fear filled the air. Taliban fighters dressed in black turbans and camouflage jackets roamed around toting Kalashnikovs. Hours earlier the blast from a suicide bomb had ripped through the crowd, killing 13 US soldiers and more than 150 civilians.

Terrified families were now trying to claw their way inside vehicles, including the girls' buses, hoping to escape. Sepehra watched as a young woman disembarked from one bus full of young students and began to beg the Taliban fighters to let them through the airport gates.

## A university in Bangladesh evacuates almost 150 young women from Kabul. [🔗](#)



Safa, center, with her friends Tamana, left and Oranous in Doha, Qatar, after being evacuated from Kabul on the weekend. Safa

As gunfire rang out in Kabul, an Afghan college graduate named Batool tried not to show her fear.

For days, she and about 150 other Afghan women — mostly students and alumni of Asian University for Women in Bangladesh — had essentially lived on a convoy of buses that they hoped would get them into the Kabul airport, the center of the U.S. military's last-ditch evacuation efforts.

University officials and volunteers had secured them visas and chartered a plane for them, but several times, the buses failed to make it past Taliban and military checkpoints.



## Update on the AUW Students:

- Upon departure from Afghanistan the students entered Ft. McCoy in Wisconsin for immigration purposes.
- They helped to create an English-language school for Afghans during their time at Ft. McCoy
- All 148 were placed into US universities including Brown, University of Delaware, and Arizona State
- Following August 2021, we helped another ~600 Afghan women leave the country and relocate to the AUW campus in Chattogram, Bangladesh



**The Rise Again School at Ft. McCoy**



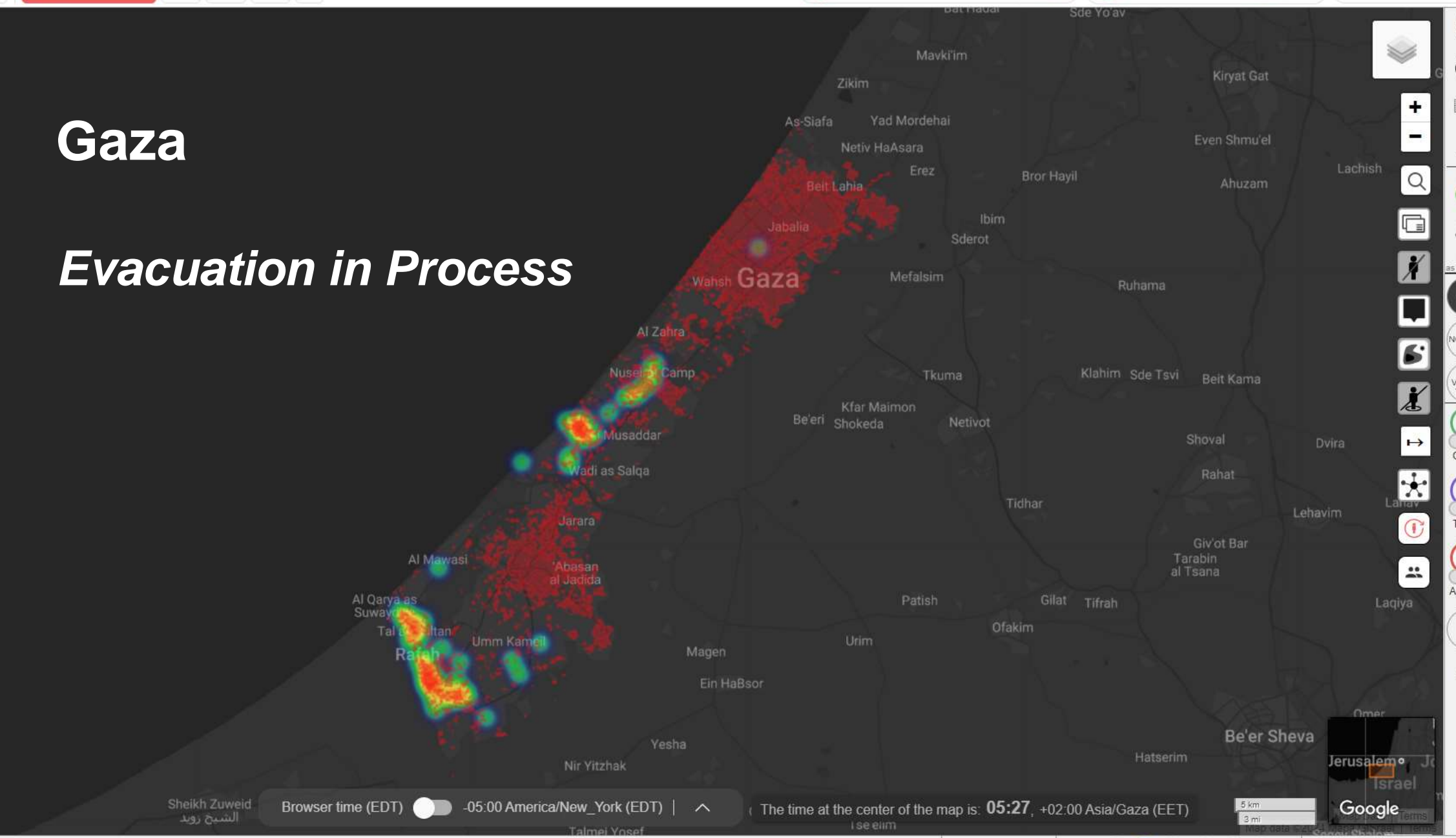


v 1.6.8 (1008)

- Accounts
- Triggers
- Tags
- Places Library
- Dynamic Basemaps
- Basemaps
- User list
- Invitations
- Admin
- Support

# Gaza

## Evacuation in Process



- [Layers]
- [Map Style]
- [Zoom In]
- [Zoom Out]
- [Search]
- [Layers List]
- [88]
- [ALL 88]
- [NO TAGS 11]
- [VISIBLE TAGS]
- [36 Group]
- [4 Team]
- [52 AUW G]
- [+]
- [Download]

# Libya

GeoAI and Near-Real-Time Remote Damage Assessment







Pre-Event Imagery of Central Derna





Post-Event Imagery of Central Derna



Model Source: Segment Geospatial



Post-Event Image Segmentation and Mask Outlines



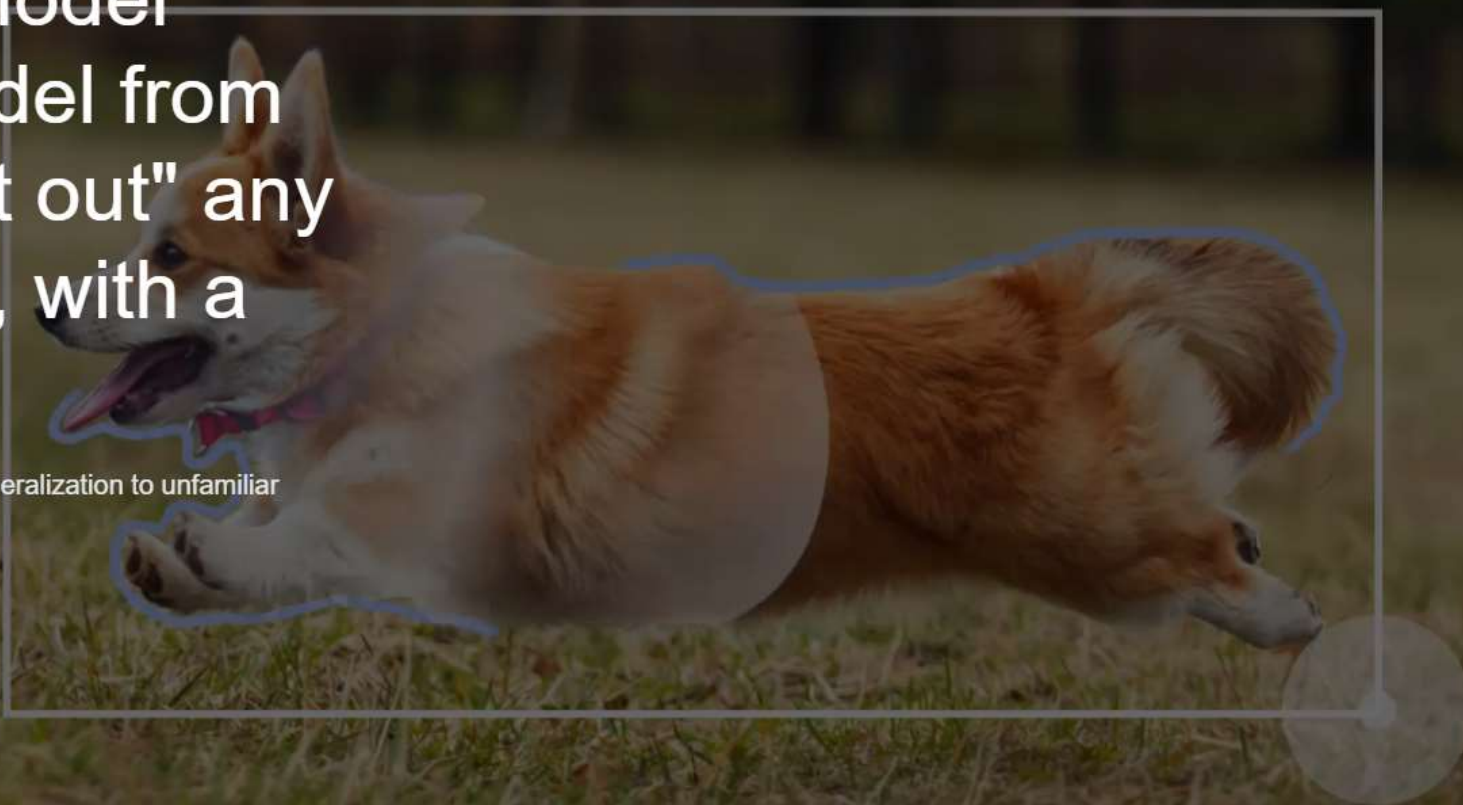


AI Computer Vision Research

## Segment Anything Model (SAM): a new AI model from Meta AI that can "cut out" any object, in any image, with a single click

SAM is a promptable segmentation system with zero-shot generalization to unfamiliar objects and images, without the need for additional training.

[→ Try the demo](#)





[BLOG](#)

# Machine Learning-based Damage Assessment for Disaster Relief

TUESDAY, JUNE 16, 2020

*Posted by Joseph Xu, Senior Software Engineer and Pranav Khaitan, Engineering Lead, Google Research*

Natural disasters, such as earthquakes, hurricanes, and floods, affect large areas and millions of people, but responding to such disasters is a massive logistical challenge. Crisis responders, including governments, NGOs, and UN organizations, need fast access to comprehensive and accurate assessments in the aftermath of disasters to plan how best to allocate limited resources. To this end, very high resolution (VHR) satellite imagery, with up to 0.3 meter resolution, is becoming an increasingly important tool for crisis response, giving responders an unprecedented breadth of visual information about how terrain, infrastructure, and populations are changed by disasters.

However, intensive manual labor is still required to extract operationally-relevant information — collapsed buildings, cracks in bridges, where people have set up temporary shelters — from the raw satellite imagery. As an example, for the 2010 Haiti earthquake, analysts manually examined over 90,000 buildings in the Port-au-Prince area alone, rating the damage each one incurred on a five point scale. Many of these manual analyses take teams of experts many weeks to complete, whereas they are most needed within 48-72 hours after the disaster, when the most urgent decisions are made.

Search blog by keyword or author



Archive

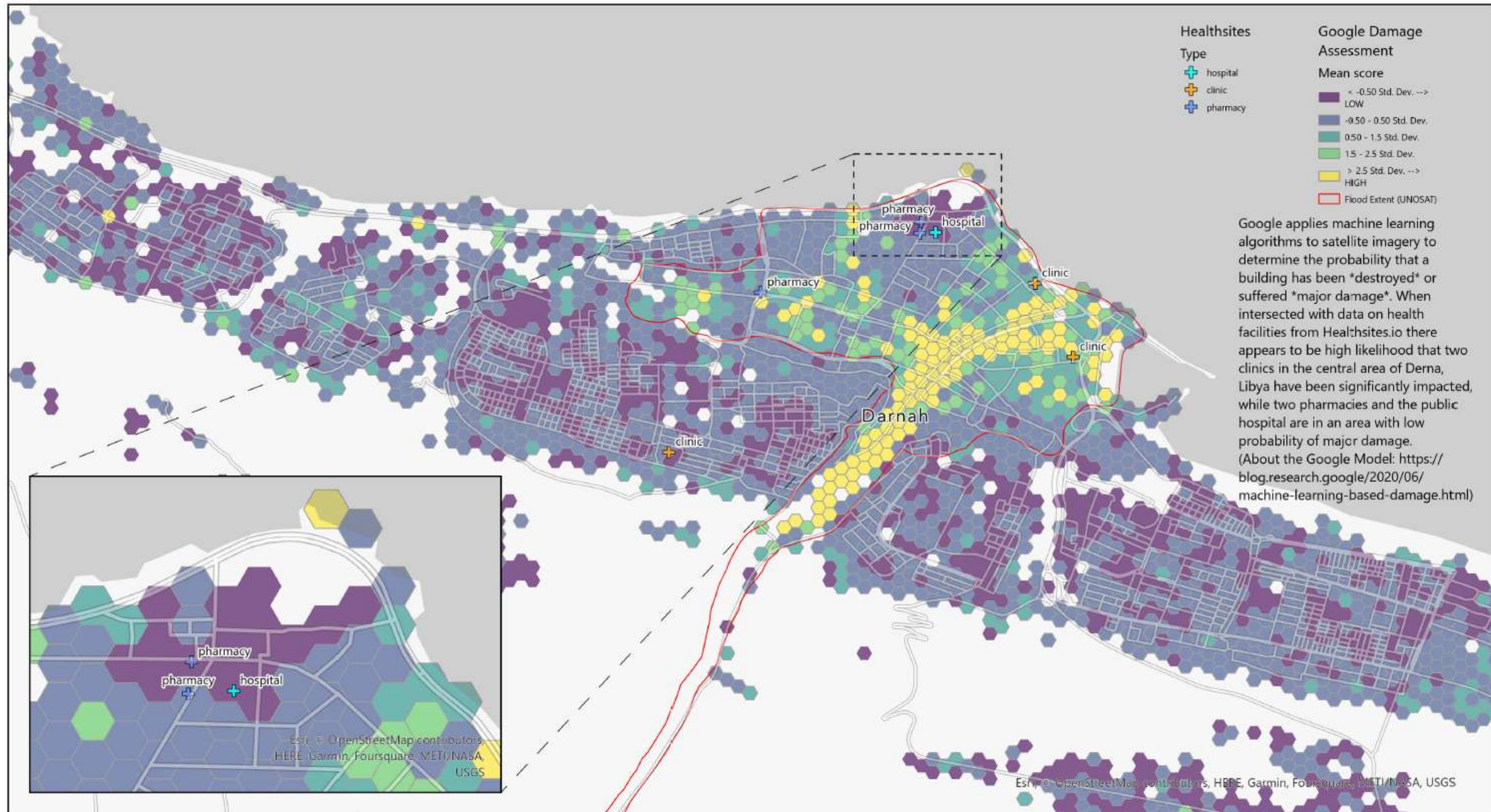


Labels



# Google ML-Derived Damage Assessment and Health Facilities - Derna, Libya

September 25, 2023







**Medical Aid**

Direct Relief's Fund for Health Equity Awards \$8.1 Million to 40 Organizations



**Financial Aid**



**Information Aid**



# Thank you

**Andrew Schroeder, PhD, MPP**

VP of Research and Analysis – Direct Relief

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