

spring2018.upol.cz

Viktor Cap Photography



PRESENTATION
FROM THE

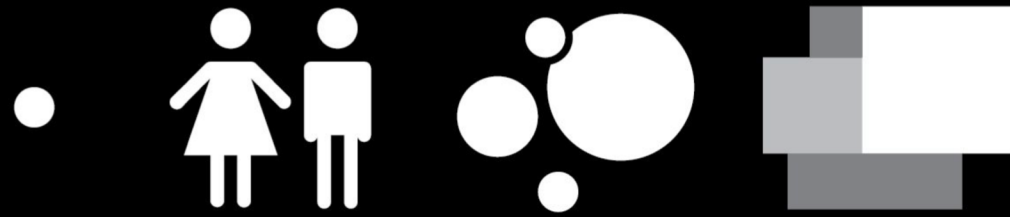
ICA JOINT WORKSHOP



Olomouc
Czech Republic
April 27–30, 2018

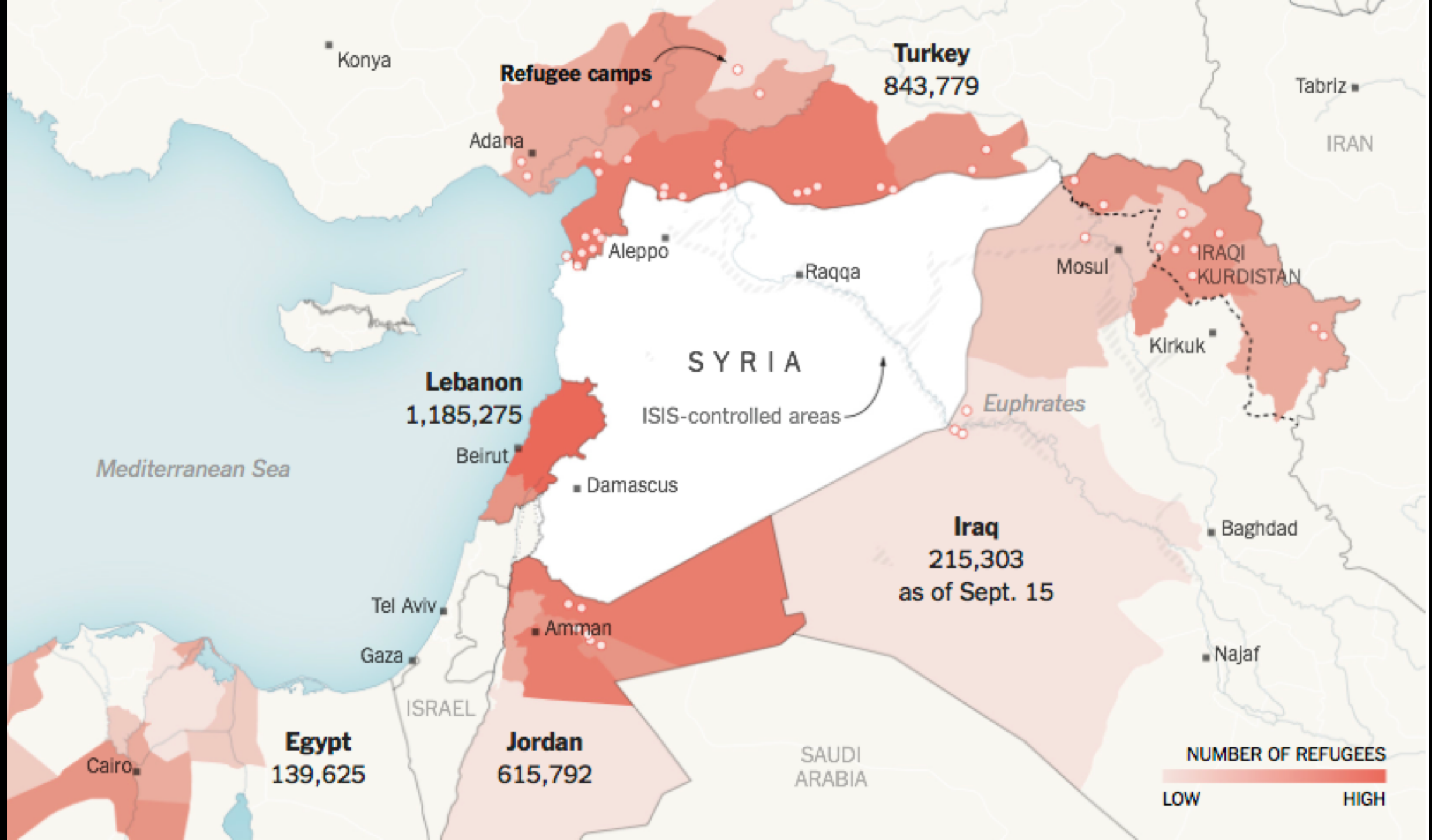


Atlases & Cognition & Usability



humanizing interactive maps

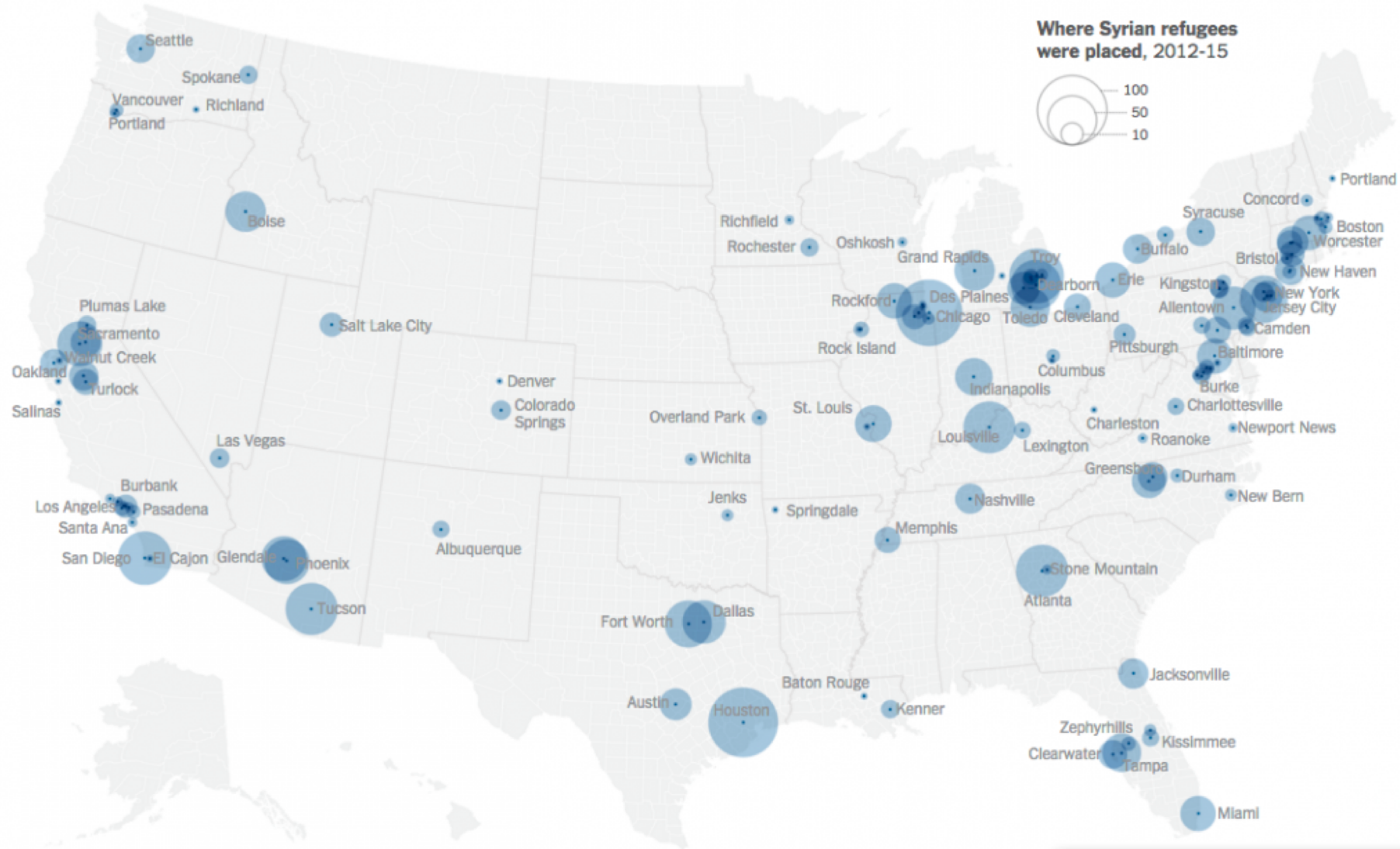
Meghan Kelly, Nick Lally, and Robert Roth | *University of Wisconsin*

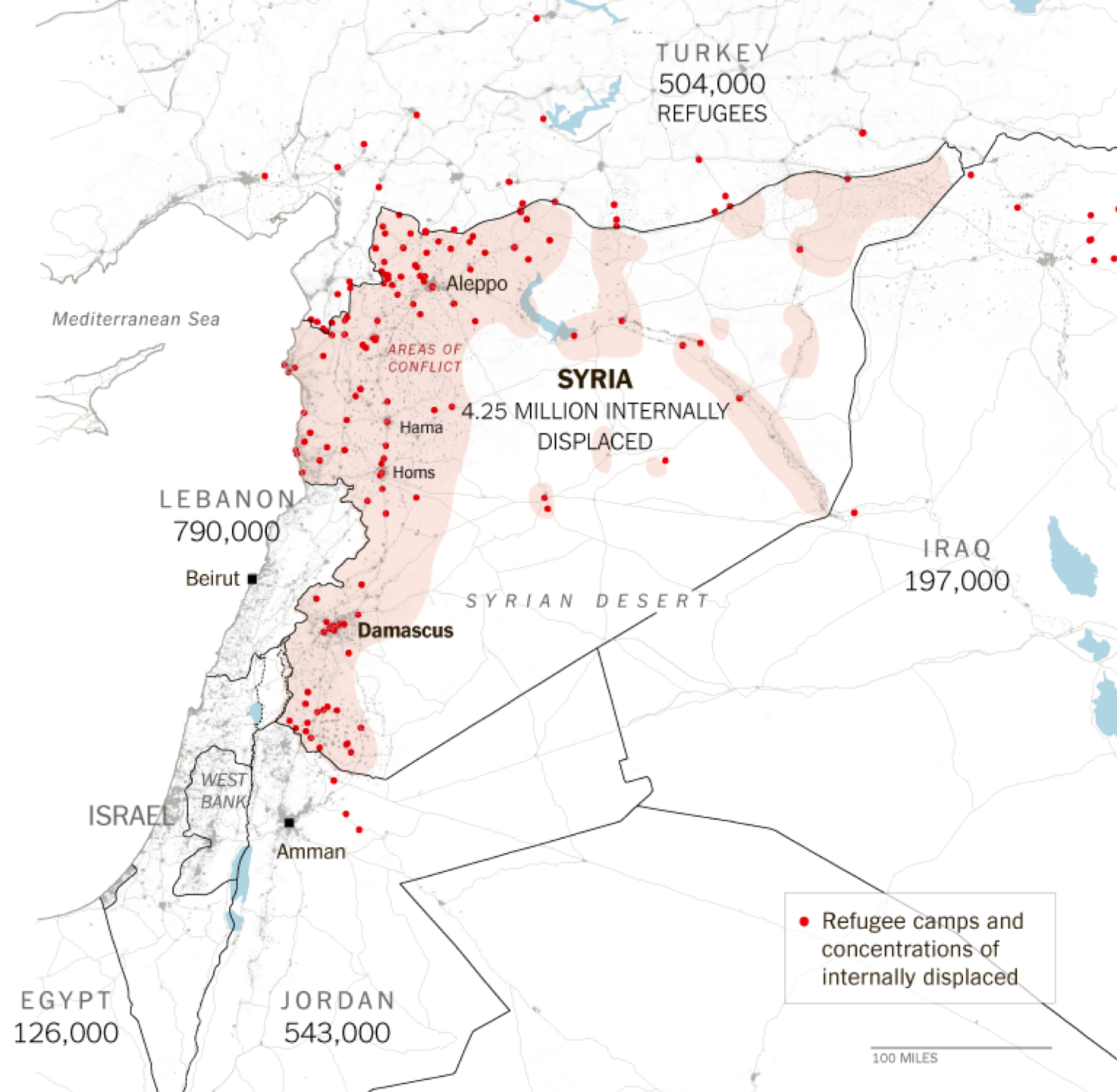


A Trickle of Syrian Refugees Settles Across the United States

By HAEYOUN PARK OCT. 21, 2015

The United States has accepted only a small fraction of the four million refugees who have fled Syria. But they are settling in new places, and more are on the way.



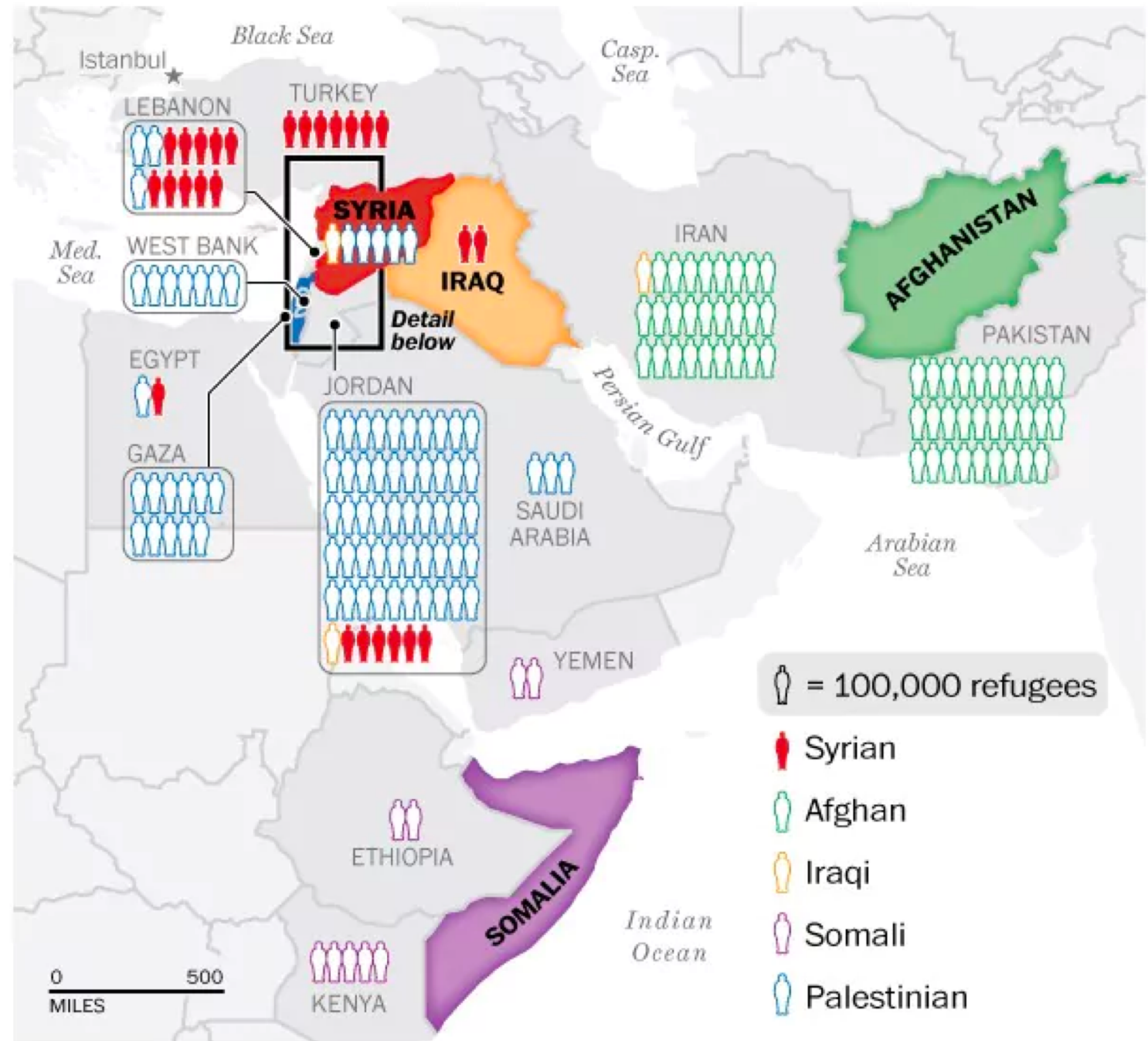


Many will never go home

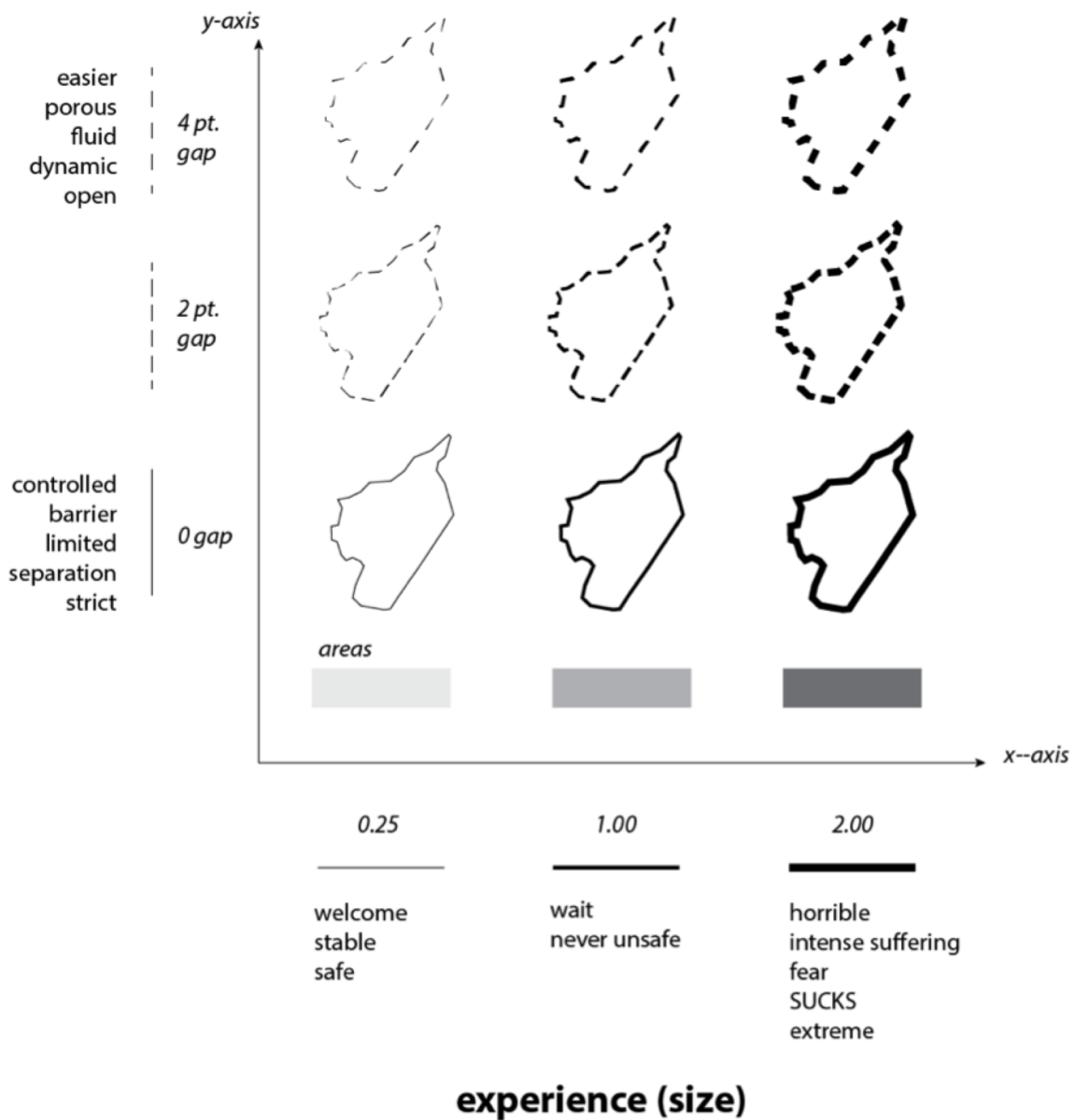
As past conflicts have shown, once people become refugees, they often remain refugees for the rest of their lives. Before the violence in Syria began, about 12 million refugees already populated the region, many from conflicts dating back 65 years.

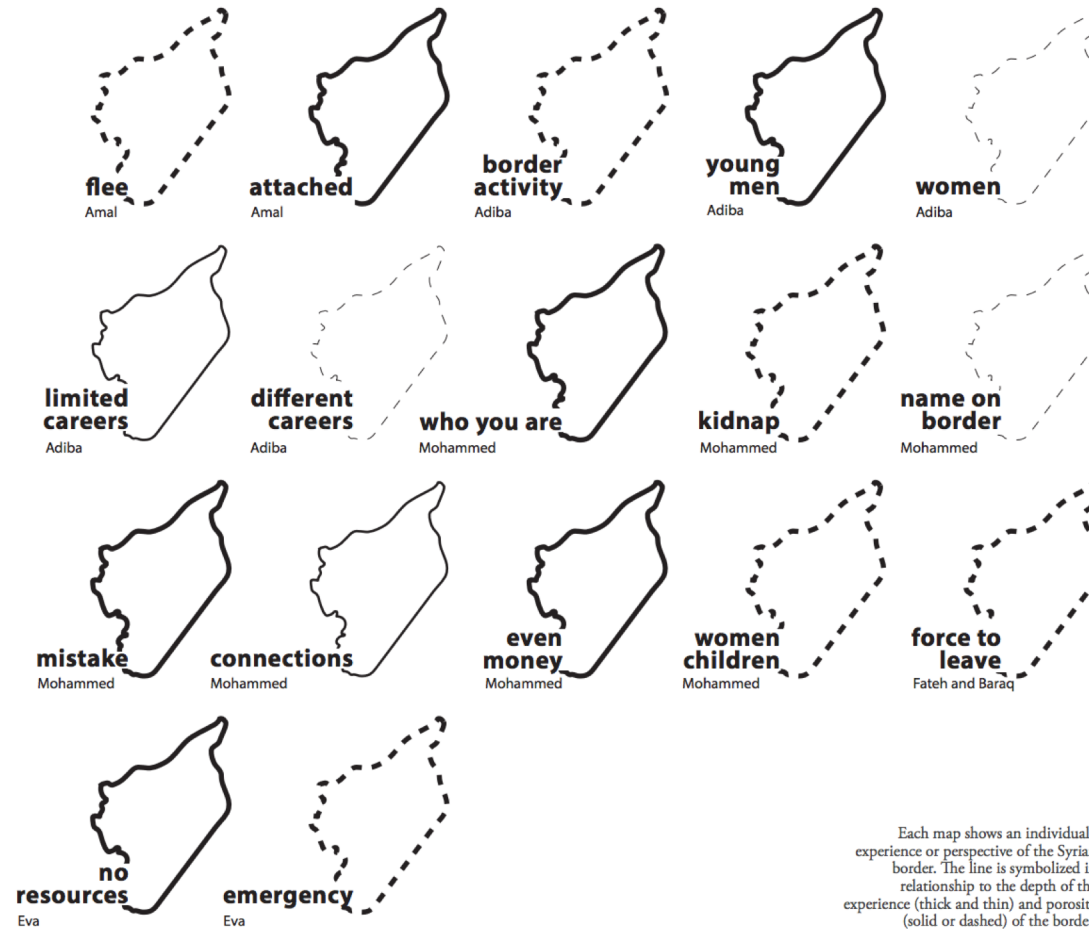
Added regional stress

The massive flow of Syrian refugees into neighboring countries — especially Lebanon, Jordan and Turkey — is crippling fragile economies and damaging delicate political and religious balances in the region.



porosity (arrangement)







Geography 970

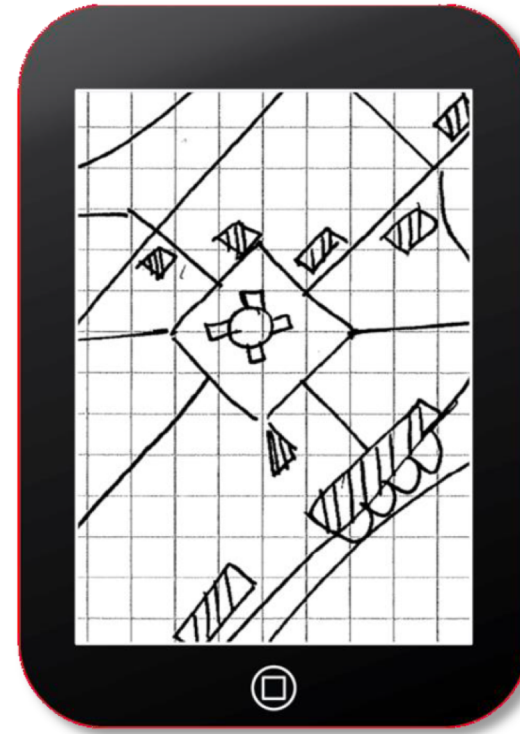
Methodology for an Interactive Cartography

Instructor:

Robert E. Roth, PhD | reroth@wisc.edu
375 Science Hall
Office Hours: Monday & Wednesday, 4-5pm

Discussion (378 Science Hall):

Wednesday 10:30am-1:00pm



Course Motivation

The advent of a digital, interactive medium has had a profound impact on the ways in which maps—and geographic concepts of space and place—are perceived and understood. For many, interactive maps are inescapable: they are in our cars, on our phones, and in our public spaces. Further, professionals in a variety of fields are embracing interactive maps as the front-end of their information systems. Arguably, the renaissance of “geo” throughout popular culture and across professions is due at least in part to the pervasiveness of interactive maps that are location-aware, mobile compatible, and/or web-based. The outlook for such interactive cartography is great.



Meghan Kelly
Feminist Cartographies
Visual Storytelling



Robert Roth
UI/UX
Visual Storytelling



Meghan Kelly
Feminist Cartographies
Visual Storytelling



Nick Lally
Critical Cart
STS



Robert Roth
UI/UX
Visual Storytelling

Visual Storytelling
Critical GIS
Feminist Cartographies
UI/UX

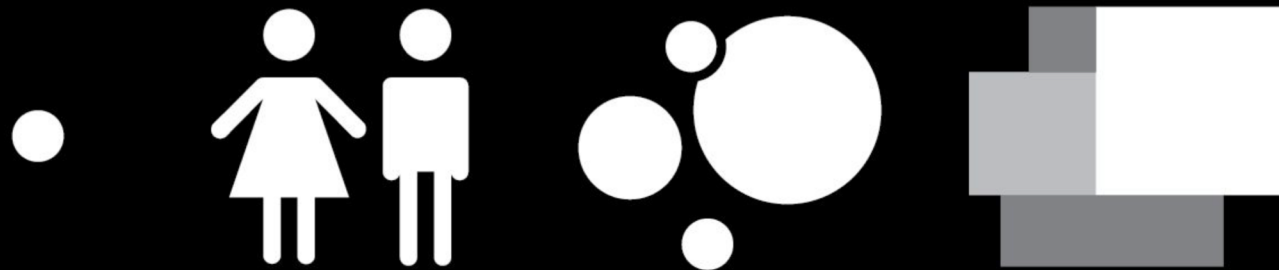
Influences

How does the symbolization of people
impact ***user engagement*** with an
interactive map?

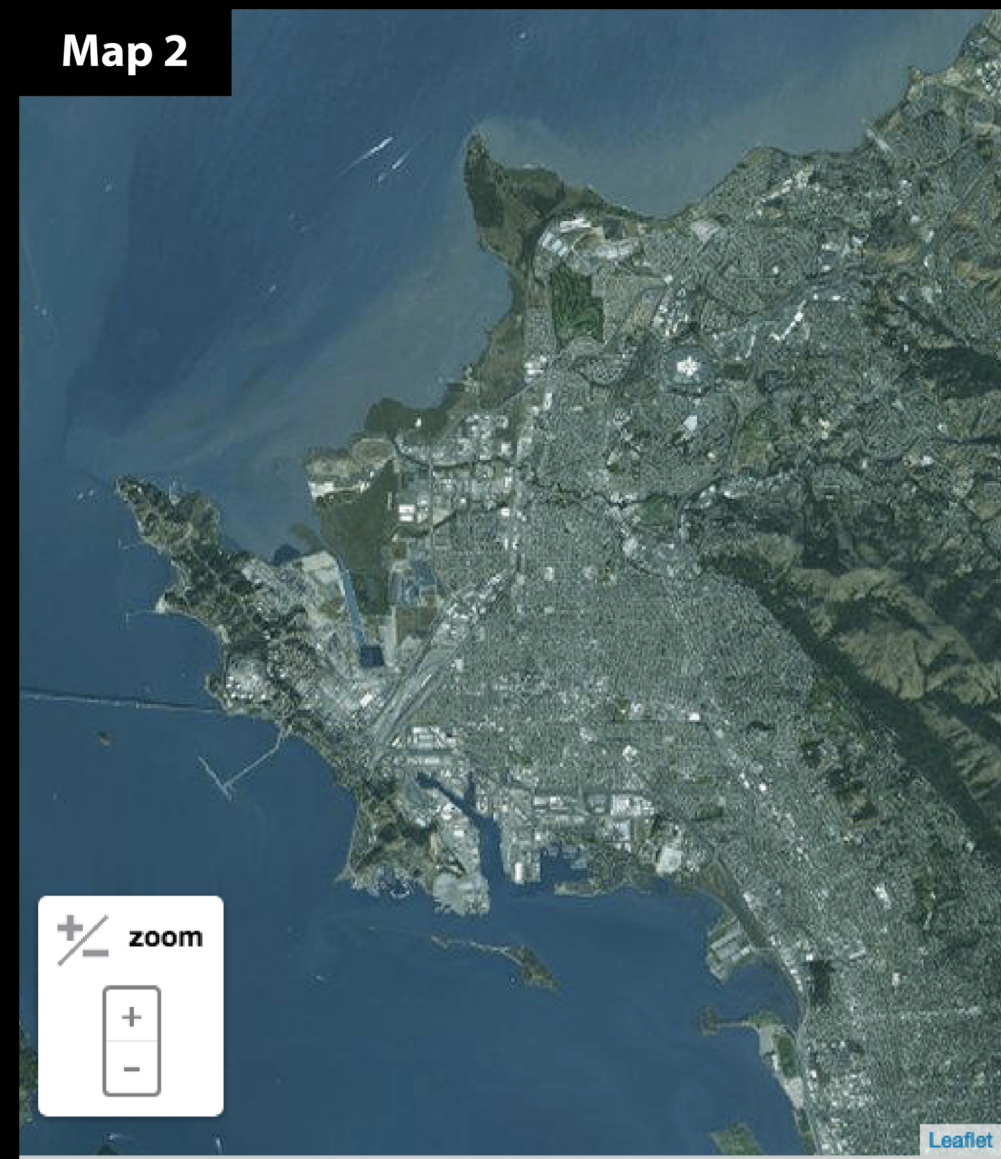
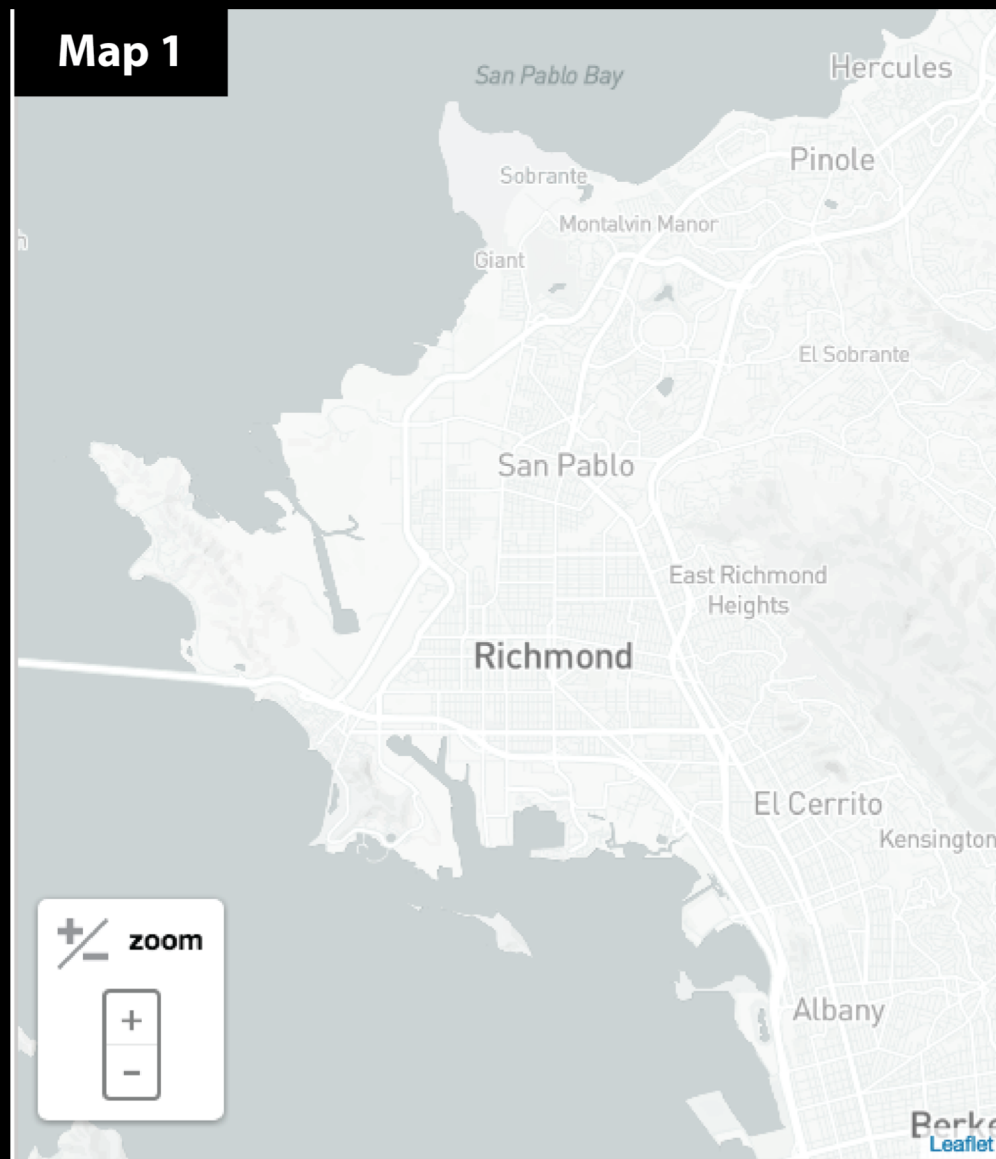
Research Question

Study Design

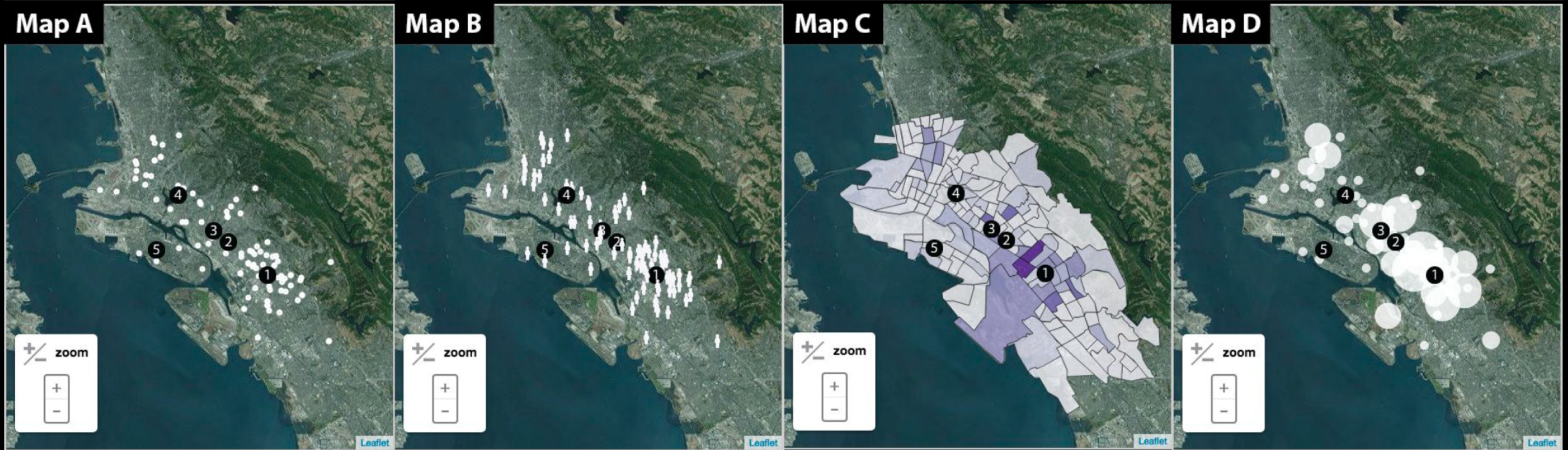
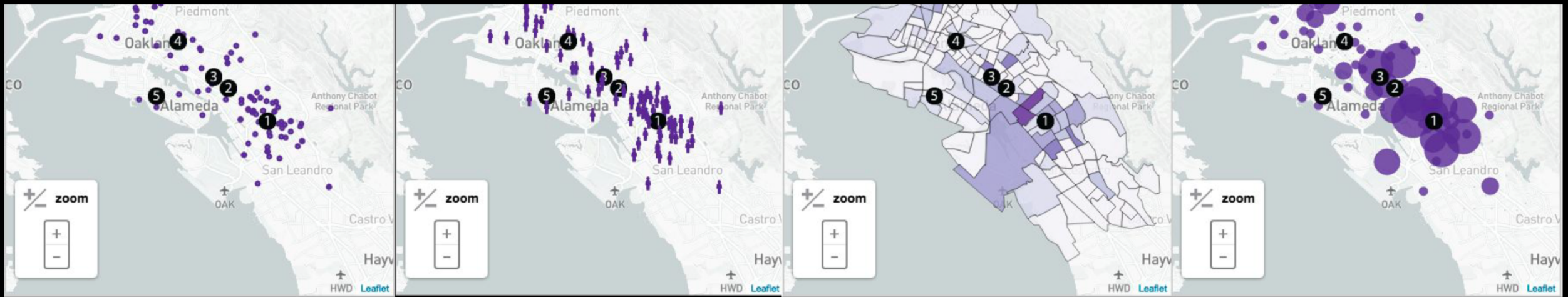
Variables



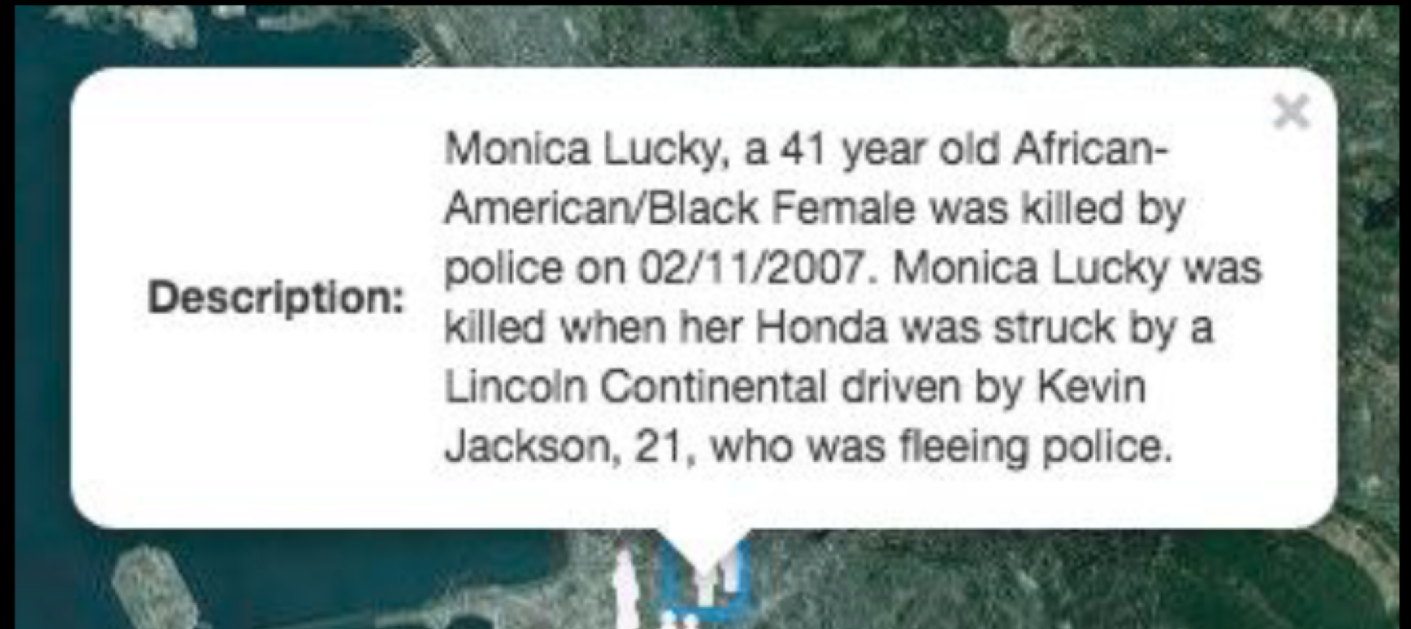
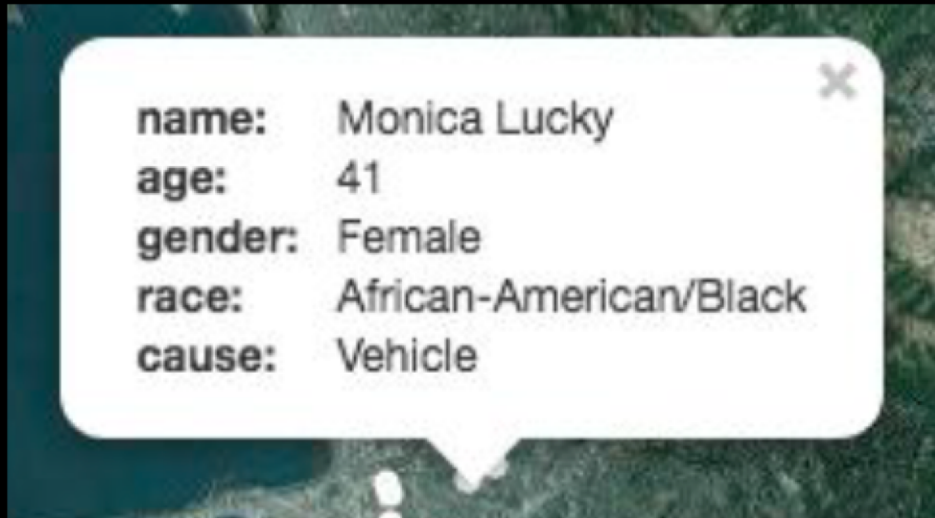
Variables (*Representation*)



Variables (*Base map design*)



Variables (*Representation and Base Maps*)



Variables (*Pop up content*)

MapStudy
Two Case Studies
Participants
Survey Measurements

Study Design



What is MapStudy?

MapStudy is an integrated, modularized framework for the creation of survey applications designed to test cartographic design and interaction hypotheses in a modern web map environment. It leverages Postgresql and PHP on the server side and Javascript, jQuery, Leaflet, and D3 on the client. MapStudy is being developed specifically for use in the University of Wisconsin-Madison Cartography program through the support of the UW-Madison Cartography Lab and the Wisconsin Alumni Research Foundation.

What is the status of MapStudy?

The MapStudy framework is currently in beta release, version 0.1. Note that not all functionality is complete. At this time, Leaflet is the only active map library.

Can I have a preview please?

To see a demo app created with the MapStudy framework, [click here](#).

To access the setup application (which has a live preview feature), [click here](#)

Documentation - Version 0.1

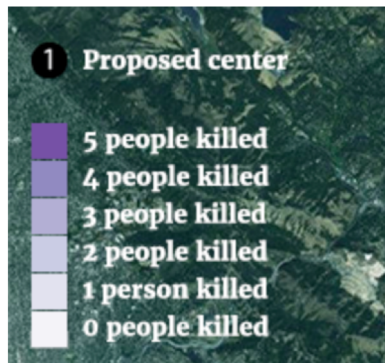
<https://github.com/uwcartlab/mapstudy>

[About the API Documentation](#)

The Role of Interactive Maps in Popular Media

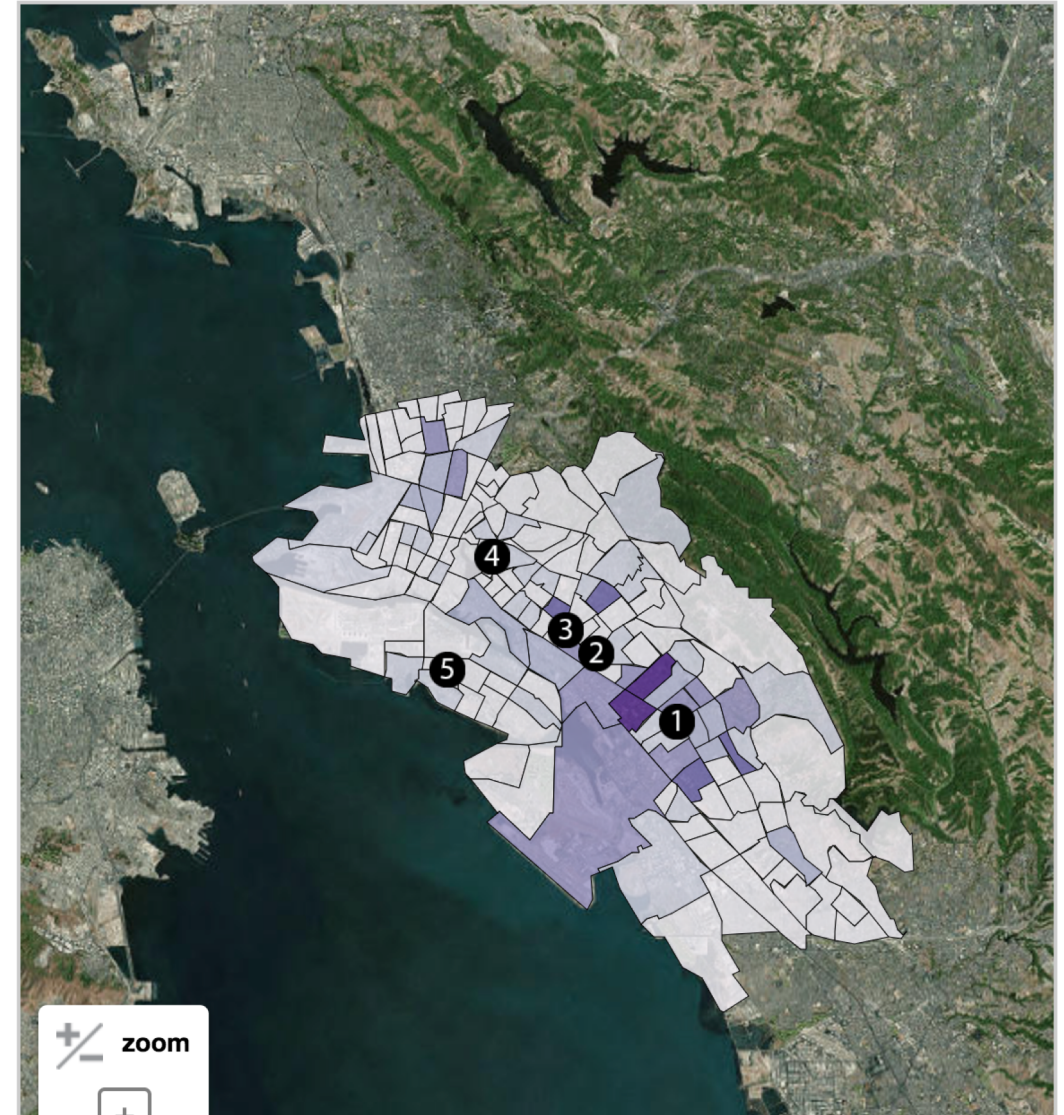
Oakland Case Study (scroll to view all questions)

In order to monitor interactions between police and Oakland residents, the American Civil Liberties Union (ACLU) is developing plans for a police oversight center in the city. This center will allow for the quick deployment of legal observers to incidents involving the police. These observers will be called on to act as witnesses in legal cases while generating valuable data for the city to assess law enforcement practices. The ACLU has proposed potential locations for the center.



* 1. Using the map legend above, the five potential sites, and the distribution of people killed provided in the interactive map, determine which location would be best suited for the new center.

- ☐ Site 1
- ☐ Site 2
- ☐ Site 3
- ☐ Site 4



<https://github.com/uwcartlab/mapstudy>

* Site 1 (1 – Least Suitable, 5 – Most Suitable)

The Role of Interactive Maps in Popular Media

Research Participant Information and Consent Form (*scroll down to review and agree to participate*)

Title of the Study

Mapping People: Using MapStudy to Understand Interactive Maps and the Symbolization of People

Principal Investigators

Robert E. Roth, PhD

375 Science Hall

550 N. Park Street

Madison, WI 53706

Phone: 608-262-1453; Email: reroth@wisc.edu

Meghan Kelly

Email: mkelly22@wisc.edu

Nick Lally

Email: nlally@wisc.edu

Description of Research

You are invited to participate in a study aimed at improving interactive web maps. Specifically, the study investigates how people are represented in interactive maps.

What will my participation involve?

If you decide to participate in this research, you will review two different case studies that include interactive maps. With each case study, you will be given a task to complete. After completing each task, you will respond to a survey of questions related to the case study, task, and the interactive map. The survey will take approximately 30 minutes to complete. You will be compensated \$3 for your participation upon completing the survey.

Carl Sack

@northlandiguana

<https://github.com/uwcart/mapstud>

MapStudy

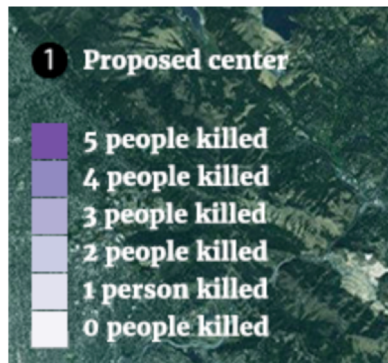
Syrian deaths in Aleppo, Syria
Police shootings in Oakland, California

Two Case Studies

The Role of Interactive Maps in Popular Media

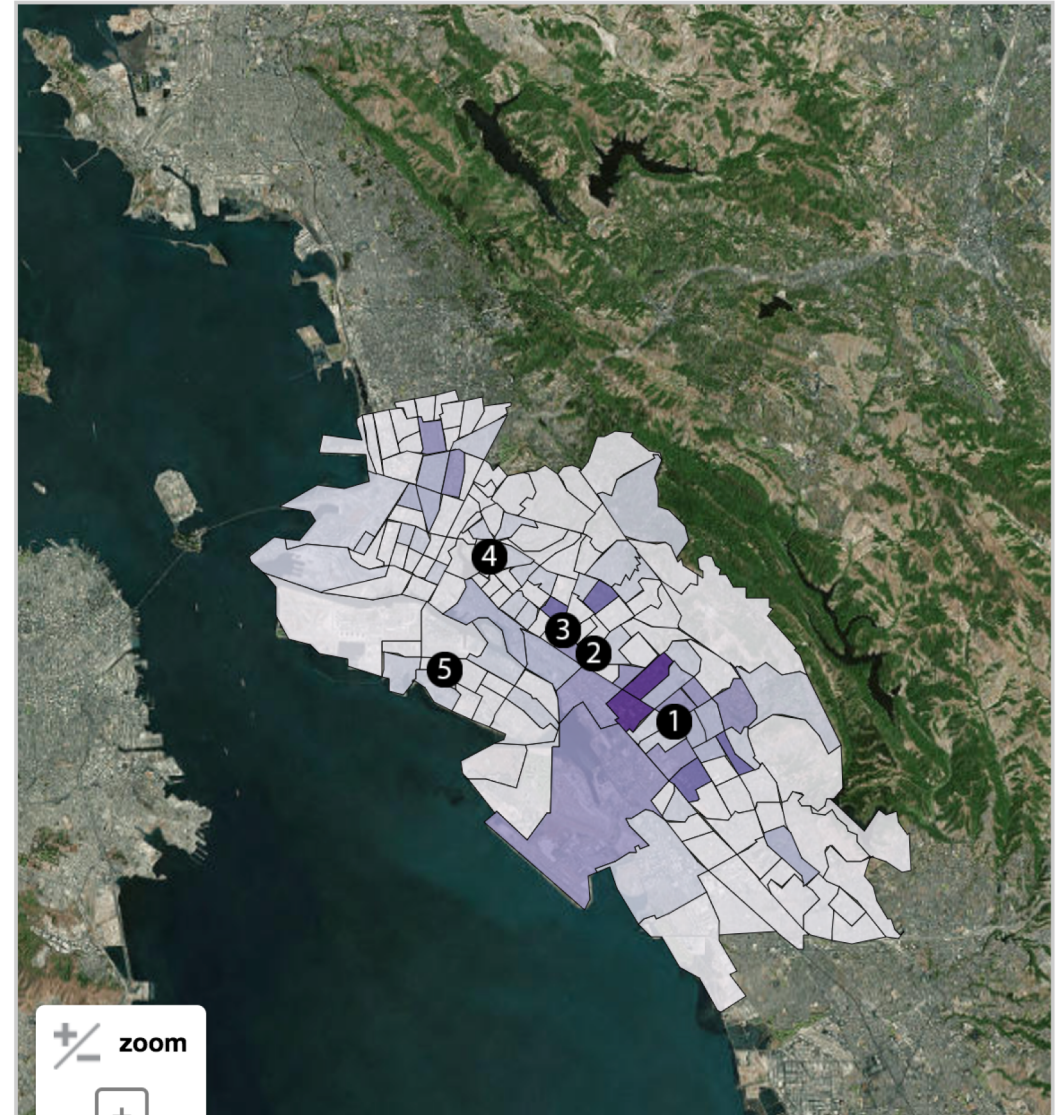
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Two Case Studies

* Site 1 (1 – Least Suitable, 5 – Most Suitable)

Amazon Mechanical Turk

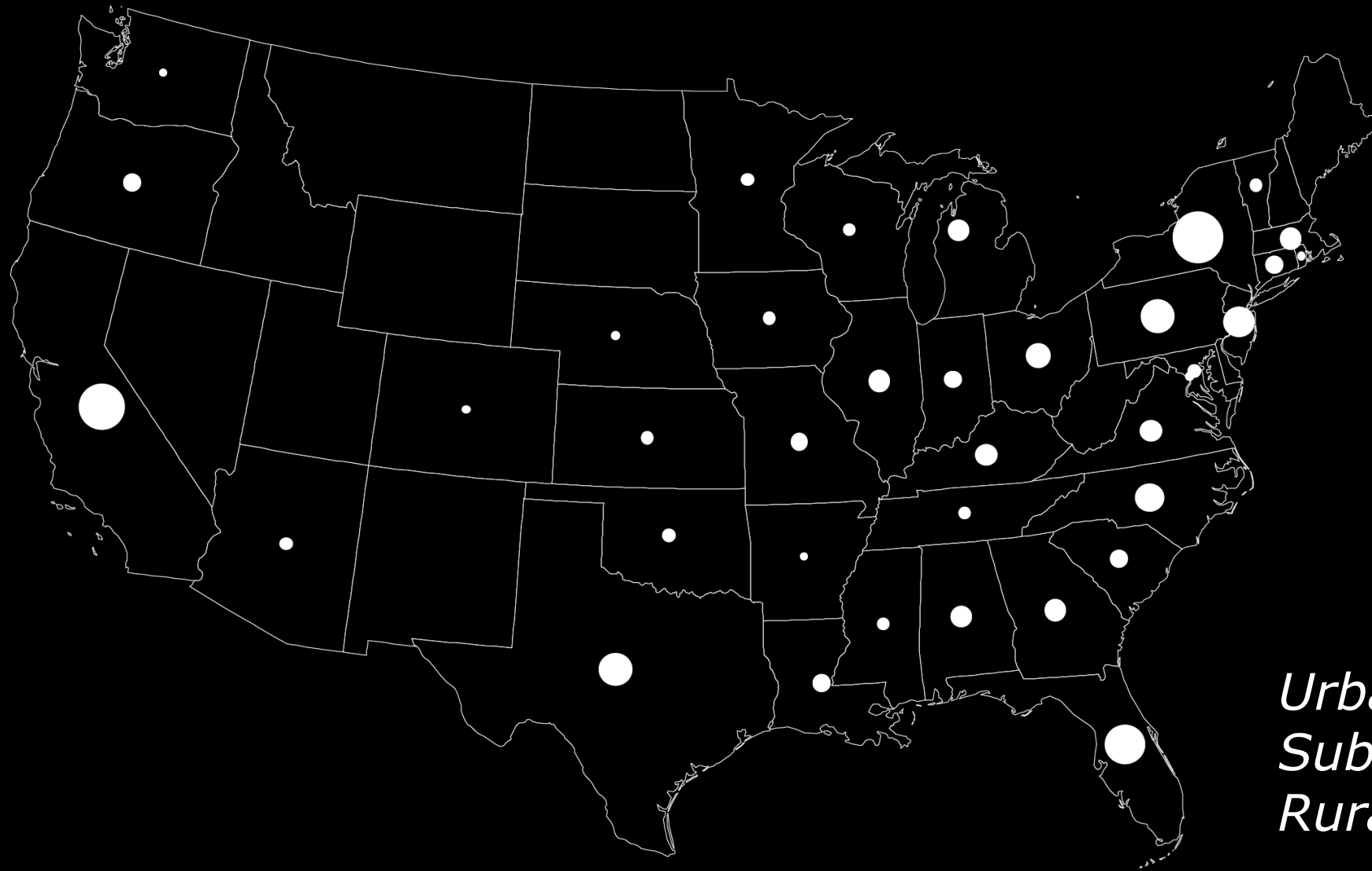
163 participants

recruitment: \$3

8 groups of 20

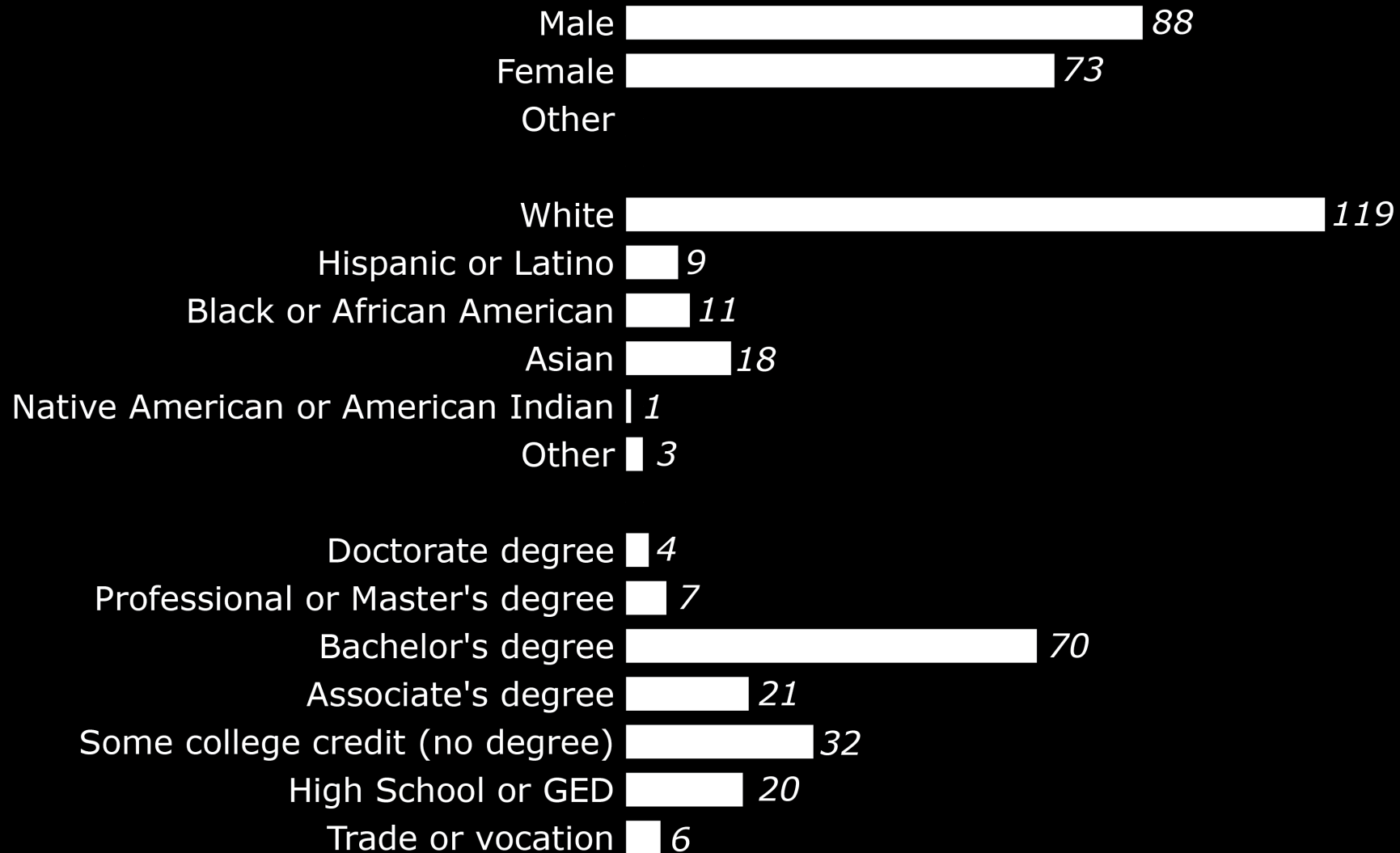
3 participants removed

Participants

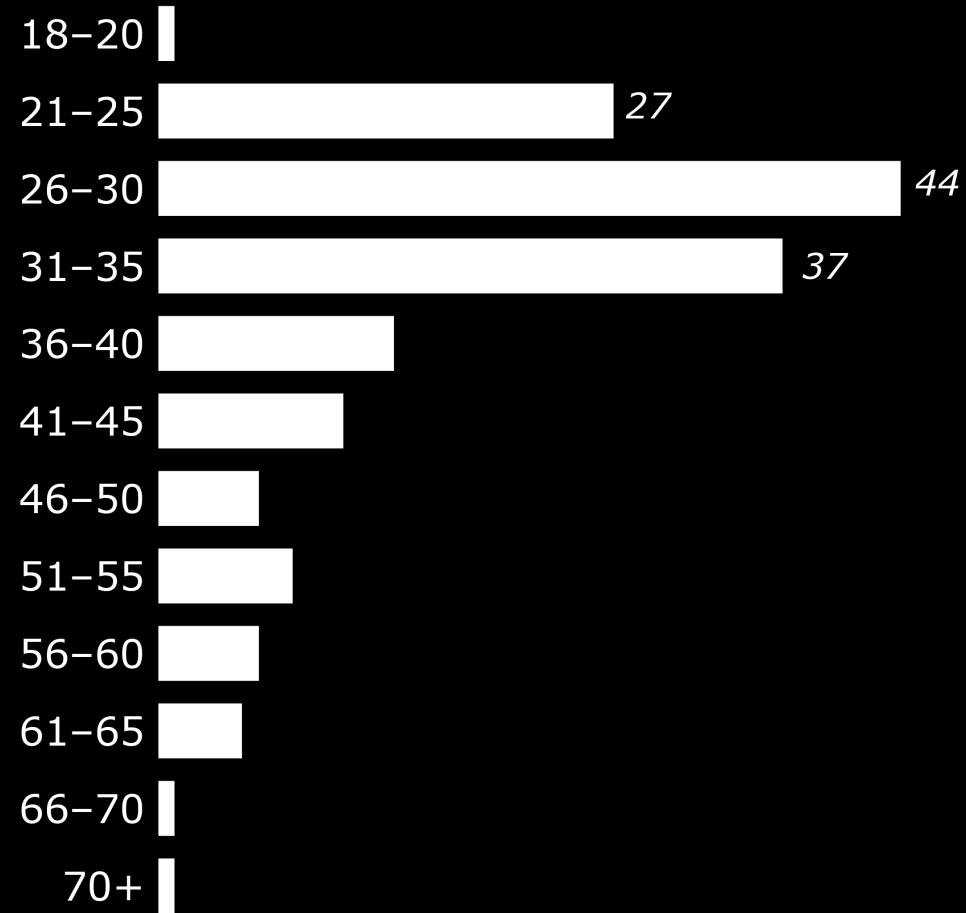


<i>Urban</i>	50
<i>Suburban</i>	78
<i>Rural</i>	33

Participants Characteristics (*Location*)



Participants Characteristics (*Demographics*)



Participants Characteristics (*Demographics*)

Technology

Laptop 50

Desktop 78

Corrected Vision

Yes 33

Color Blindness

Yes 33

Participants Characteristics (*Technology and Vision*)

Familiarity

Politics

Syrian Civil War

Policing Issues

Maps

Print Media

Online Media

Internet / Technology

Interest

Values

Participants Characteristics (*Background*)

How does the symbolization of people
impact ***user engagement*** with an
interactive map?

Survey Measurements

Strategies / Levels of Engagement	Definition	Assessment
<i>Engagement through interaction</i>	Degree to which users interact with an online map and people symbolized in the map	Interaction logging and qualitative survey responses
<i>Affective engagement</i>	Emotional or affective response to online interactive map and people depicted in the map	PANAS Likert survey
<i>Empathetic engagement</i>	Degree to which users empathetically relate to the people depicted in an online interactive map	Qualitative survey responses
<i>Engagement through story comprehension</i>	Degree to which users recall people and stories embedded in an online interactive map	Qualitative survey responses

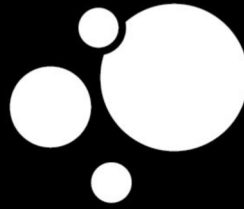
Survey Measurements

Results



Map Type	Total Interactions	
	avg	sd
choropleth	13.12	14.19
dot	9.33	9.51
icon	12.57	15.78
proportional	17.29	21.58
ANOVA (F)		
<i>hypothesis test</i>	3.447	0.017

Results (*Engagement through interaction*)



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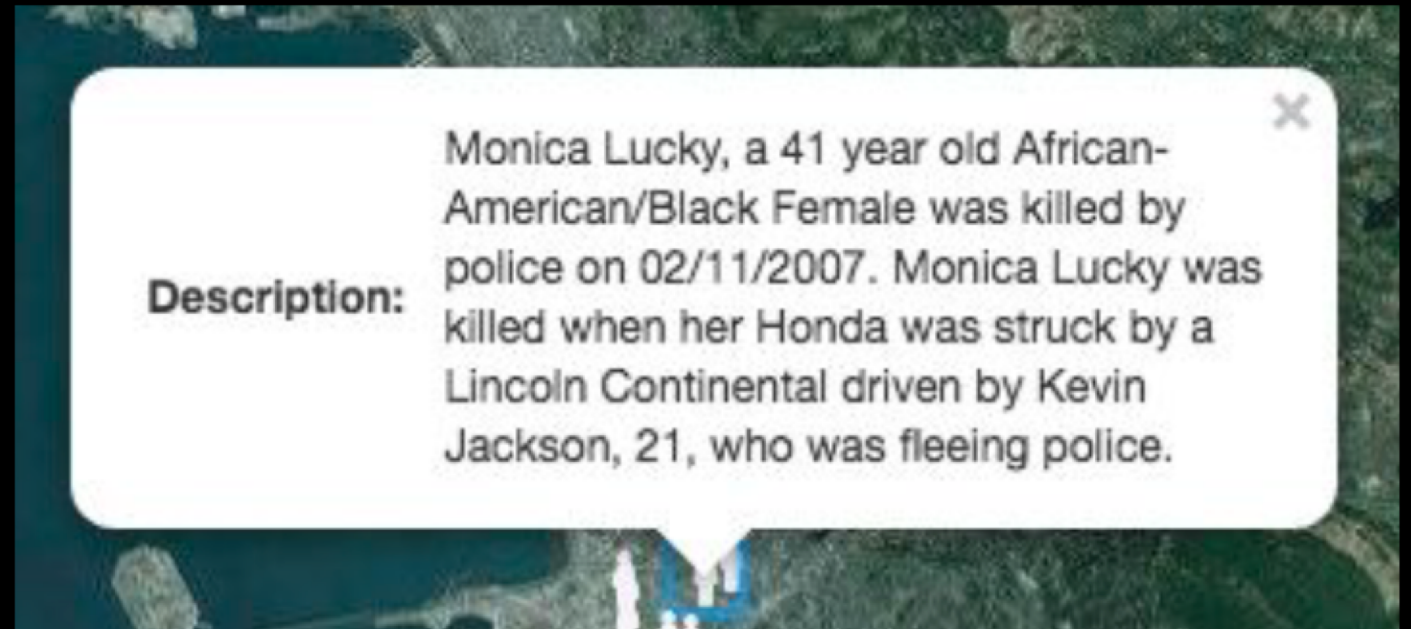
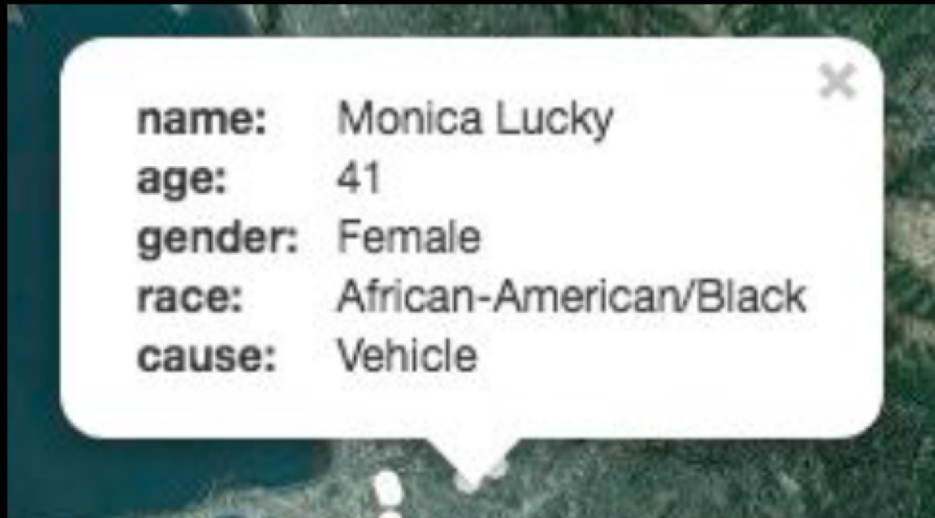
Map Type	Pop Up Clicks	
	avg	sd
choropleth	5.91	9.63
dot	2.06	3.35
icon	2.86	5.81
proportional	4.54	8.96
	ANOVA (F)	
<i>hypothesis test</i>	4.466	0.0043

Results (*Engagement through interaction*)

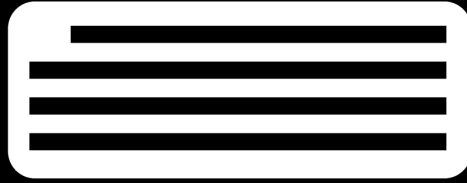
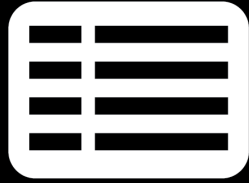


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Results (*Engagement through interaction*)

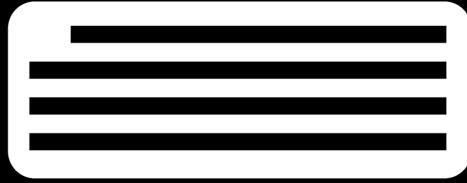
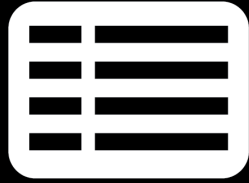


Results (*Engagement through interaction*)



Map Type	Total Interactions	
	avg	sd
qualitative	11.25	12.85
quantitative	14.85	18.5
STUDENT T(t)		
<i>hypothesis test</i>	-2.0373	0.0425

Results (*Engagement through interaction*)



Map Type	Pop Up Clicks	
	avg	sd
qualitative	3	4.84
quantitative	4.64	9.33
STUDENT T(t)		
<i>hypothesis test</i>	-1.9904	0.0477

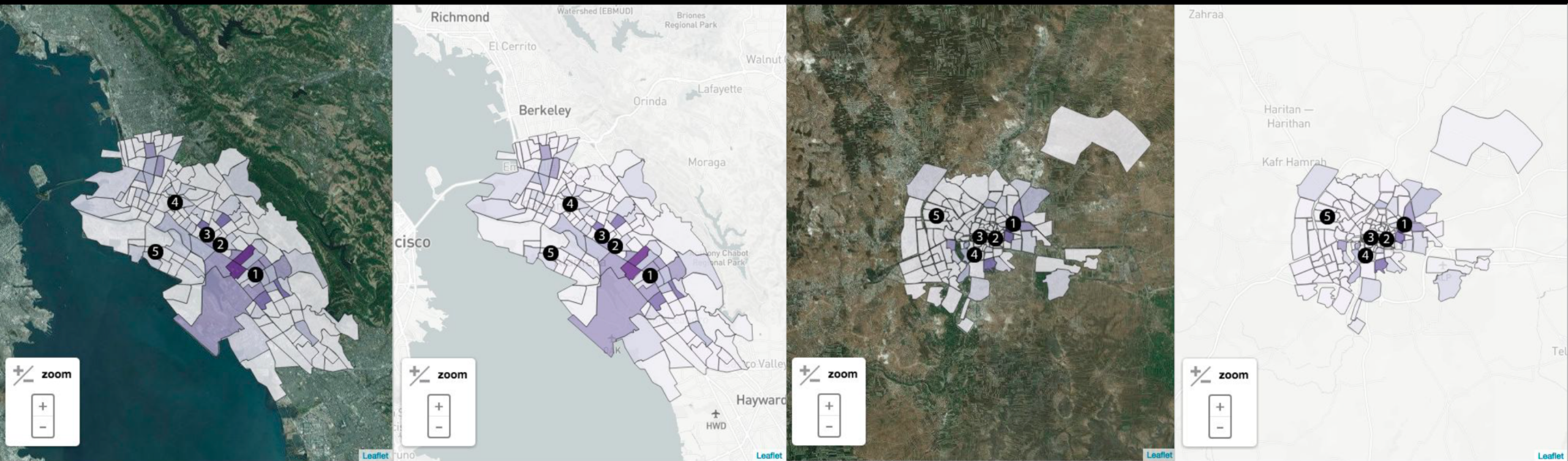
Results (*Engagement through interaction*)

Results (*Affective engagement*)



Map Type	PANAS (negative)	
	avg	sd
choropleth	14.7	6.31
dot	17.49	9.82
icon	18.79	8.33
proportional	17.75	8.38
ANOVA (F)		
<i>hypothesis test</i>	3.577	0.0143

Results (*Affective engagement*)

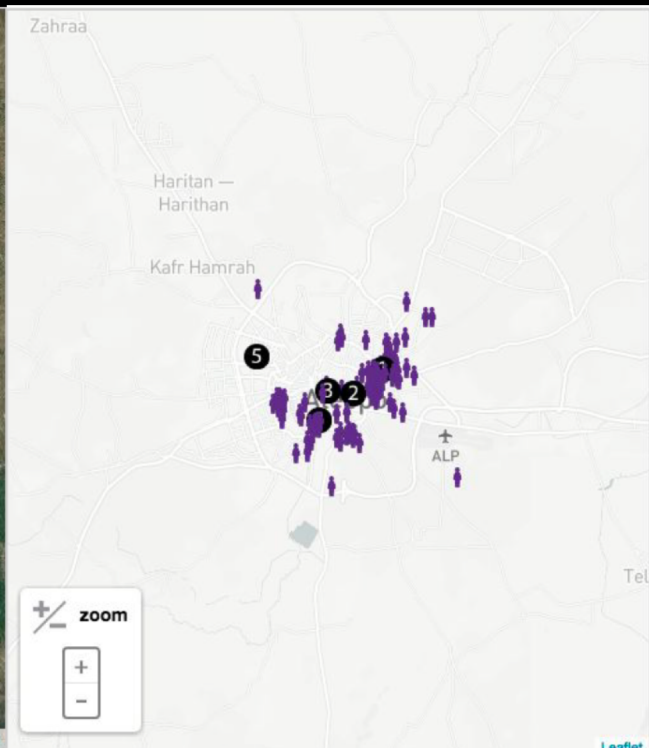
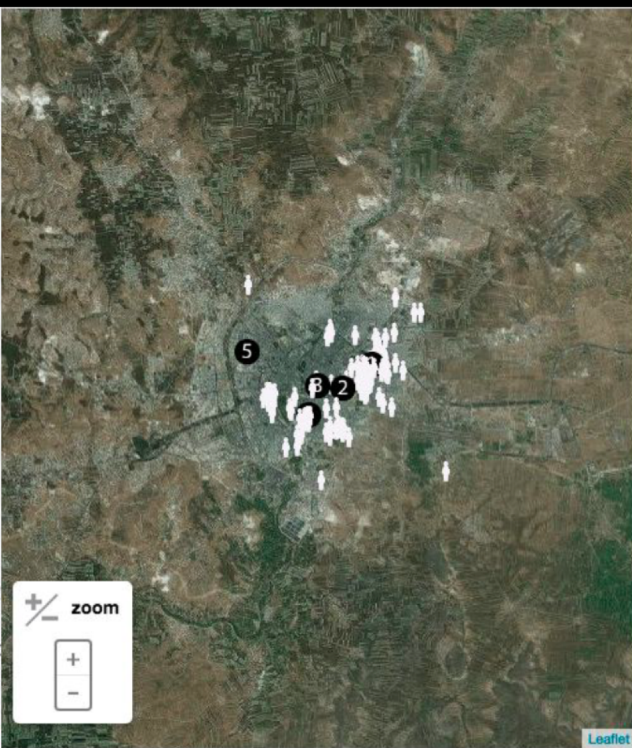
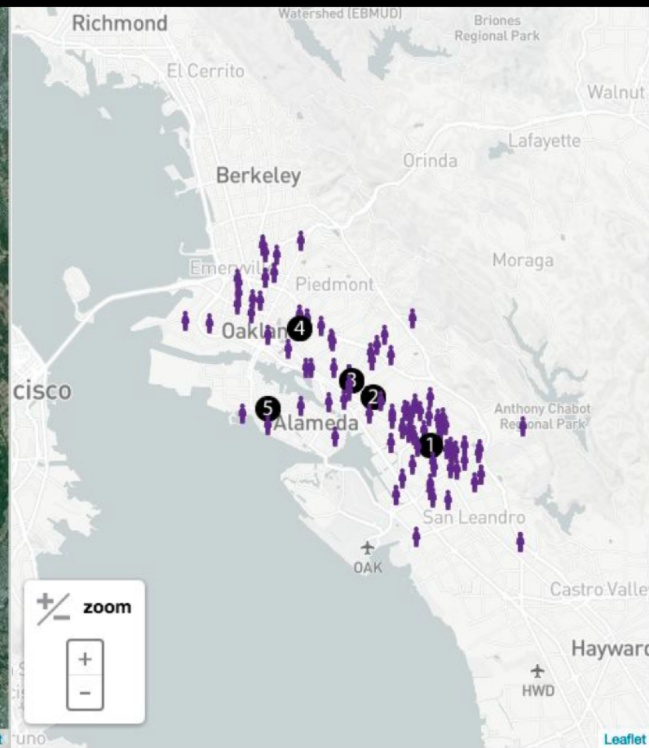


Results (*Affective engagement*)



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proportional	17.75	8.38
ANOVA (F)		
<i>hypothesis test</i>	3.577	0.0143

Results (*Affective engagement*)

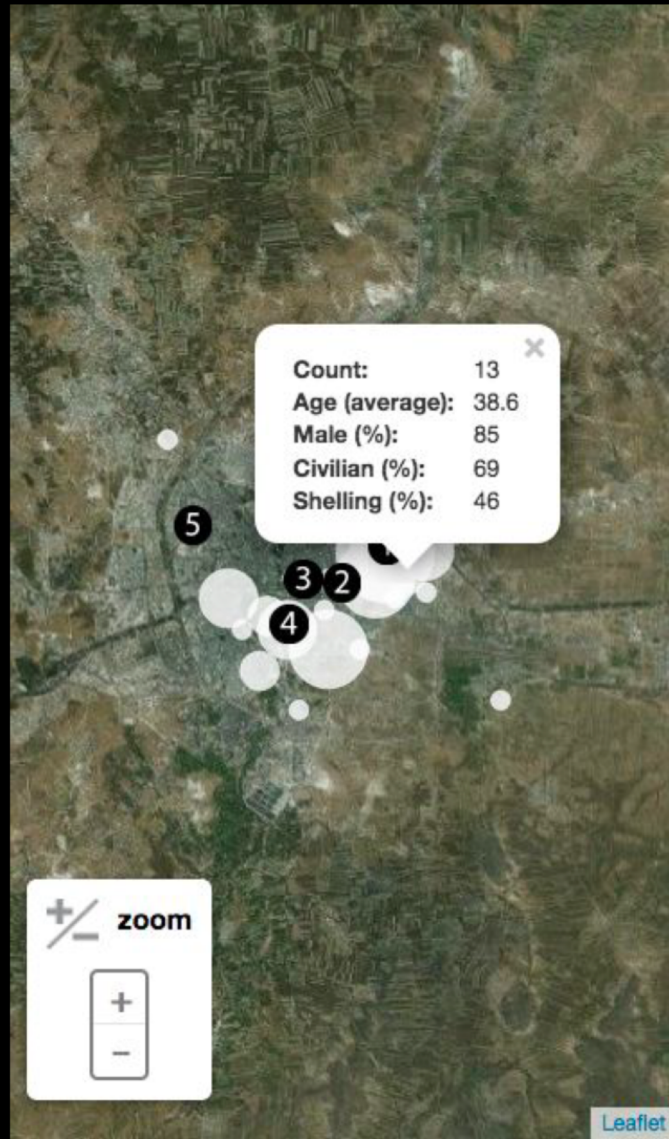


Results (*Affective engagement*)

Results (*Empathetic engagement*)

Quantitative Pop Ups:

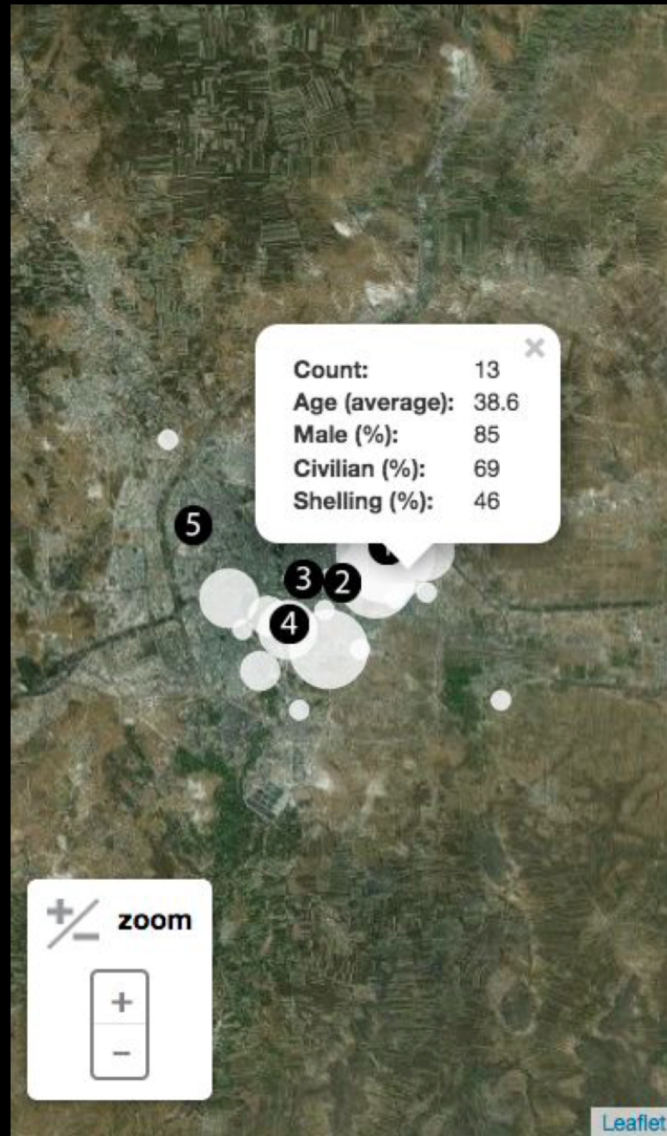
"am i supposed
to even **pretend**
to care about
statistics?"



Results (*Empathetic engagement*)

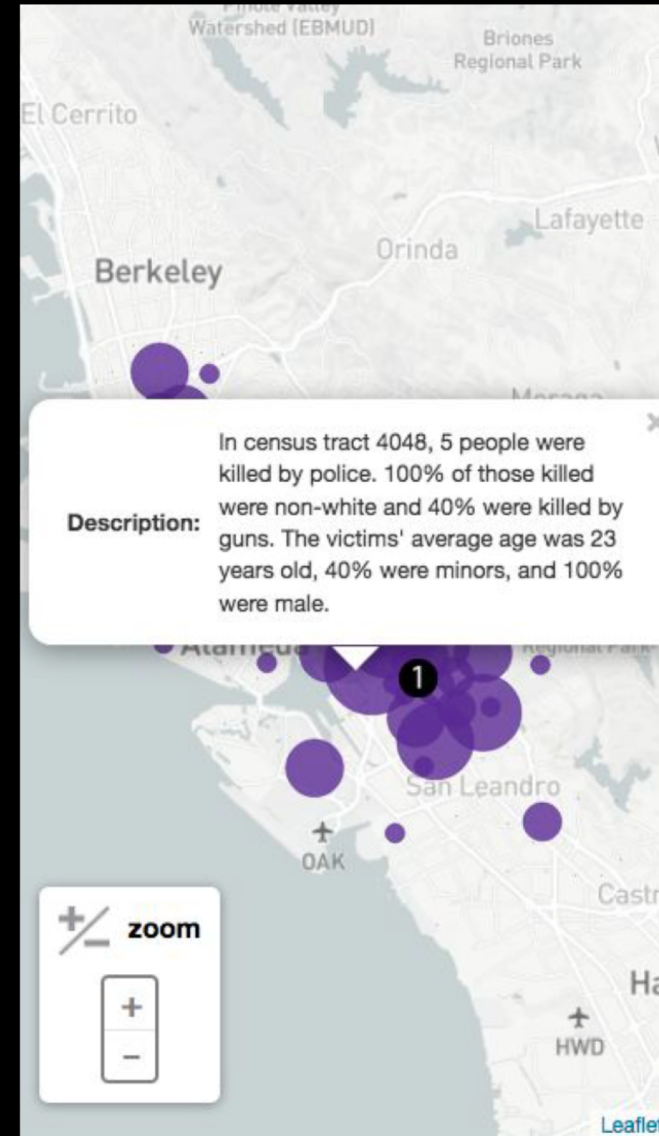
Quantitative Pop Ups:

"am i supposed to even **pretend to care** about statistics?"



Qualitative Pop Ups:

"Im actually **shocked** it felt better than the first map, despite **no data difference.**"



Results (*Empathetic engagement*)

“As I clicked on different people it made
my **heart break** and feel **sad** and
compassionate for these people.”

Results (*Empathetic engagement*)

“As I **clicked on different people** it made
my heart break and feel sad and
compassionate for these people.”

Results (*Empathetic engagement*)

“The people were **relatable** considering i'm
in that age group and i'm black.”

Results (*Empathetic engagement*)

“Not relatable to me as I have never been
anywhere close to this sort of situation.”

Results (*Empathetic engagement*)

Results (*Story comprehension*)

Overall, symbolization and pop up content
influence user engagement with
interactive maps.

Conclusions

Strategies / Levels of Engagement	Definition	Assessment
<i>Engagement through interaction</i>	Degree to which users interact with an online map and people symbolized in the map	Interaction logging and qualitative survey responses
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Conclusions

1. Engagement through Interaction

2. Affective Engagement

3. Empathetic Engagement

4. Engagement through Story Comprehension

Conclusions

1. Engagement through Interaction

2. Affective Engagement

3. Empathetic Engagement

4. Engagement through Story Comprehension

Conclusions

1. Engagement through Interaction
2. Affective Engagement
- 3. Empathetic Engagement**
4. Engagement through Story Comprehension

Conclusions

1. Engagement through Interaction
2. Affective Engagement
3. Empathetic Engagement
- 4. Story Comprehension Engagement**

Conclusions

1. Engagement through Interaction
2. Affective Engagement
3. Empathetic Engagement
4. Engagement through Story Comprehension

Conclusions

Thanks!



Meghan Kelly
@meghankellymaps



Nick Lally
@NickLally



Robert Roth
@RobertERoth

Supported by NSF Career Grant #1555267