

Geographic Information Systems for Public Policy - Lecture I

Introduction

Sergio Rey

Today

- This course
- Introduction to GIS
- GIS and Public Policy

This course

Overview

This course introduces the fundamental concepts of geographic information systems (GIS), geographic information science (GIScience), spatial data, and applications of spatial analysis in the social sciences and public policy.

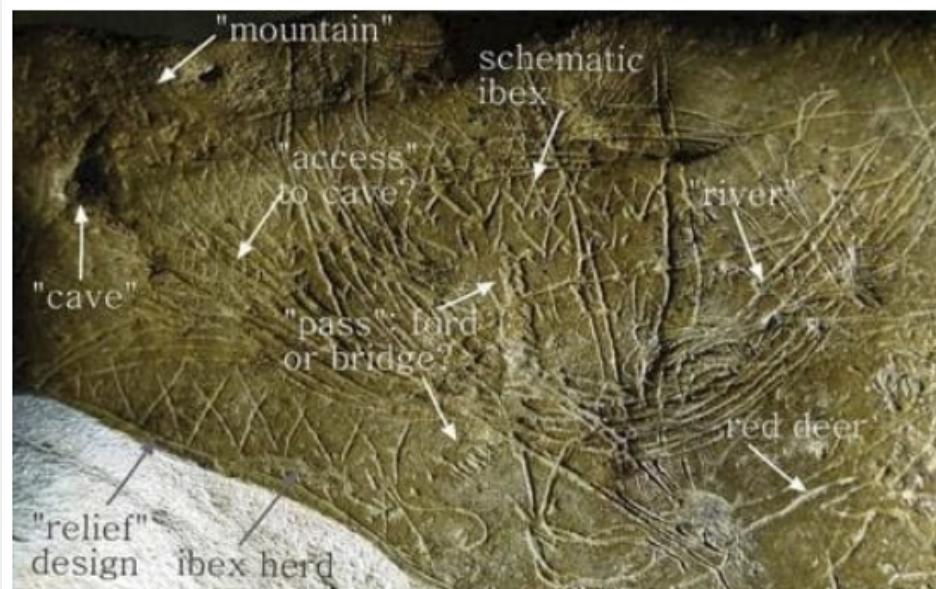
Overview

In the scope of a 10-week quarter course we can only introduce a handful of the key concepts and methods relevant to GIS for Public Policy. As such, the course is not intended as an exhaustive treatment. Instead, the goal is that students will acquire an understanding of the more common and useful methods and practices, and use the course as an entry point for further engagement with the field.

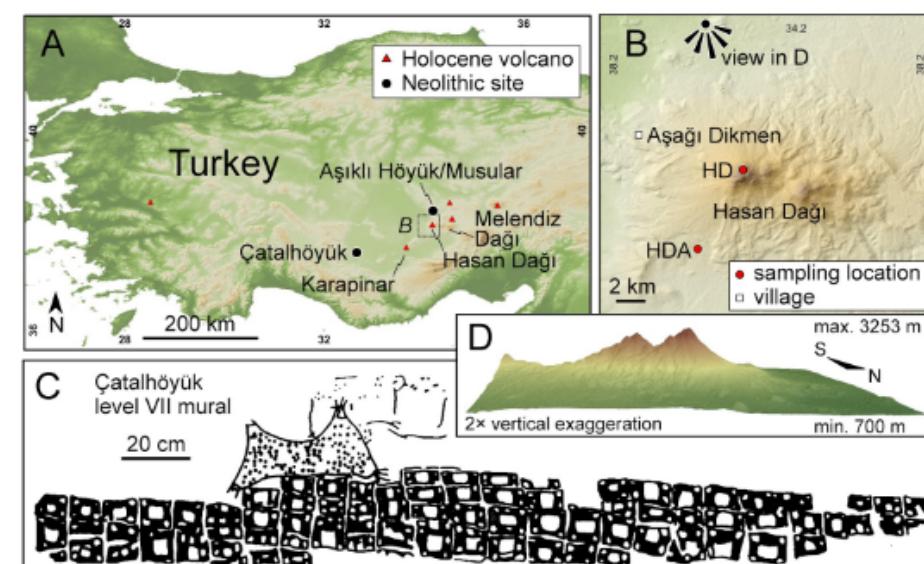
Focus

- Spatial *thinking*
- Spatial *skills*

Spatial Thinking



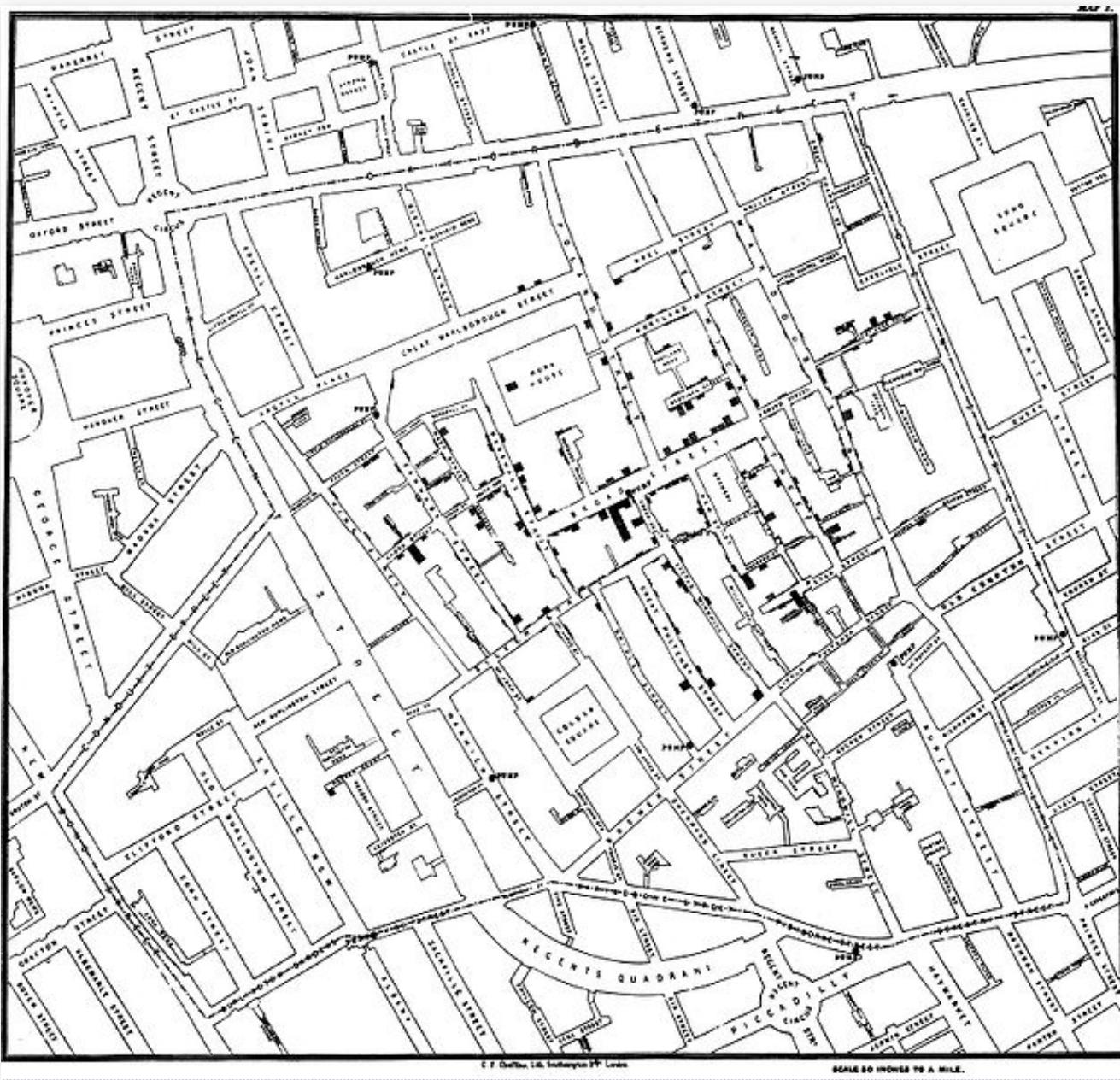
Spanish Cave ~14,000 BP



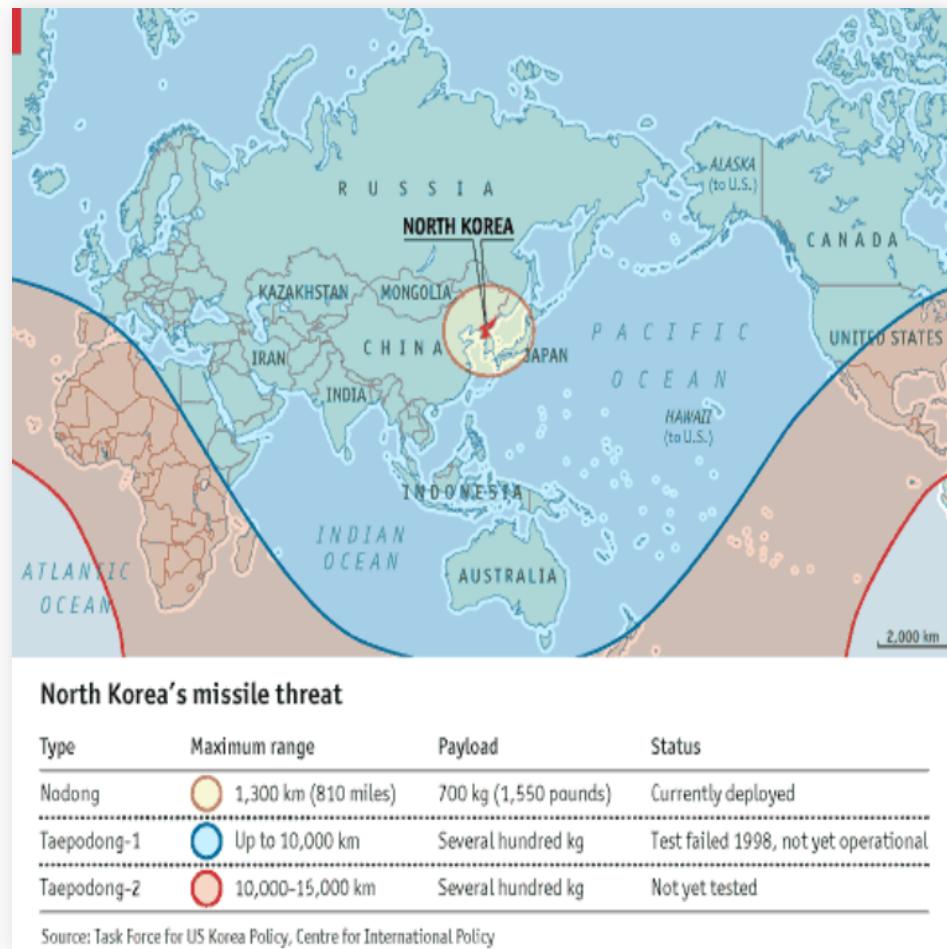
Çatalhöyük Mural ~ 9,000 BP

Earliest human writing ~5100 BP

Early Spatial Analysis



Spatial Thinking is Important



[source]

Course Objectives

At the end of this course students will:

- possess a sound understanding of fundamental spatial concepts and theory;
- know how to locate, import, manipulate, display, and analyze geographical data in open source computational tools;
- have the ability to apply GIScience concepts and methods in public policy and social science research.

Computational Learning

- We will use open source geospatial software throughout the course, primarily QGIS
- No prior programming experience is assumed and all computational concepts are presented in a self-contained manner
- All software for the course will be made available through lab computers. Students are strongly encouraged to install these packages on their personal computers to facilitate working outside of the meeting times.

Course Structure

- We will meet Mondays and Wednesdays.
- First part of the meeting will be in lecture format where we cover core GIS concepts and theory.
- Second part of the meeting will be more hands on where we explore GIS software to engage with the core concepts introduced in part one.

Grading

Component	Points
Exercise 1	15
Exercise 2	15
Exercise 3	15
Exercise 4	15
Midterm exam	10
Final exam	20
Collaboration	10

Exercises

- Four exercises will be introduced in class and are to be completed outside of meeting times.
- Collaboration on exercises is encouraged with the understanding that you alone are responsible for mastering the material
- Collaboration is not allowed on the examinations
- Material from the exercises will form the bases of some examination questions

Exams

- Exams will be given in-class and are closed-book
- Reviews will be held during the meeting prior to the exam
- The final exam will be cumulative
- Makeups for exams will be given in cases of unforeseen emergencies
- Makeups will consist of a 1-hour oral examination

Collaboration

You have the opportunity to earn a total of 10 collaboration points. Collaboration here means you make a contribution that improves the course experience for all.

Points can be earned for the following contributions:

- An approved review question (1 pt)
- An approved answer to a review question (1 pt)

Review Questions

- Can be submitted anytime up to 2 weeks before the midterm or final
- Must be submitted through piazza
- Have to be approved by the professor for credit

Schedule

Code of Conduct

As course instructor, I am dedicated to providing a harassment-free learning experience for all students, regardless of gender, sexual orientation, disability, physical appearance, body size, race, religion, or choice of operating system. All course participants are expected to show respect and courtesy to other students throughout the semester. As a learning community we do not tolerate harassment of participants in any form.

Code of Conduct

- All communication should be appropriate for a professional audience including people of many different backgrounds. Sexual language and imagery are not appropriate in this course.
- Be kind to others. Do not insult or put down other students. Behave professionally. Remember that harassment and sexist, racist, or exclusionary jokes are not appropriate for PBPL273.
- Students violating these rules may be asked to leave the course, and their violations will be reported to the UCR administration.

Introduction to GIS

Geographic Information Systems

- *Geographic*: relates to a specific place on or in relation to the Earth's surface
- *Information*: data to which some value or interpretation has been added
- *Systems*: a system designed to perform a wide range of function on and with GI
- Acronym: **GISystems**

Geographic Information Science

- The *science* behind GISystems
- Coined by Michael Goodchild in 1992
- Acronym: **GIScience**



GIS and Public Policy

Positive Applications of GIS

- applications of GIS to examine a phenomena
- provide scientific evidence and knowledge
- *describe* the world

Environmental Equity



Los Angeles Times Freeway Pollution

Risks of the freeway

How close are you?

Tell us your story

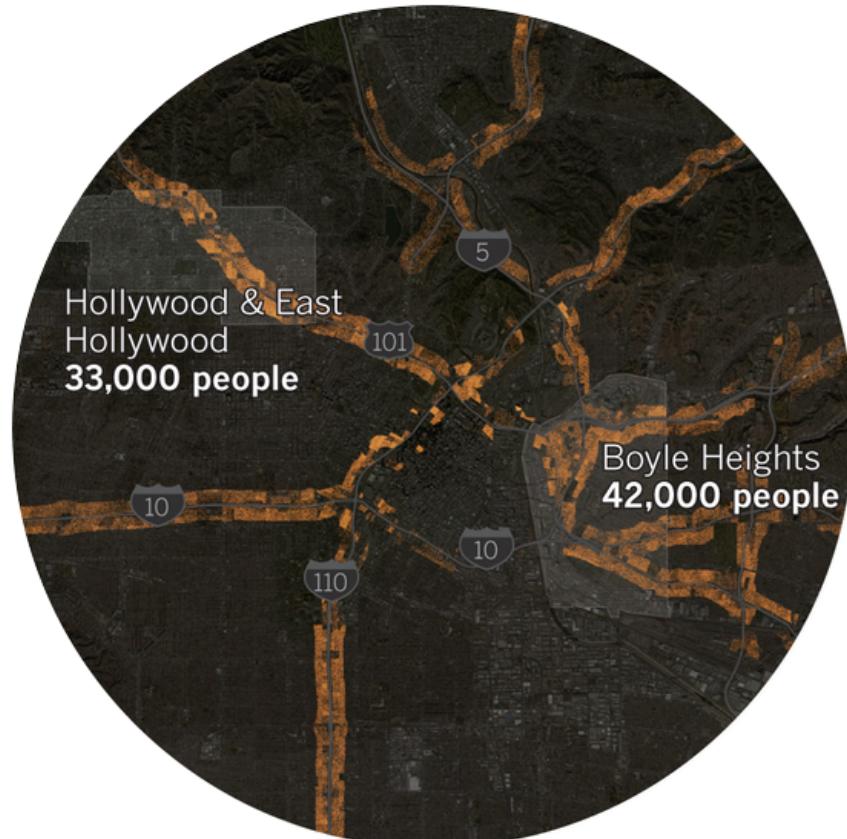


L.A. keeps building near freeways, even though living there makes people sick

Are you one of the 2.5 million Southern Californians already living in the pollution zone?

By TONY BARBOZA AND JON SCHLEUSS

MARCH 2, 2017, 3 A.M.



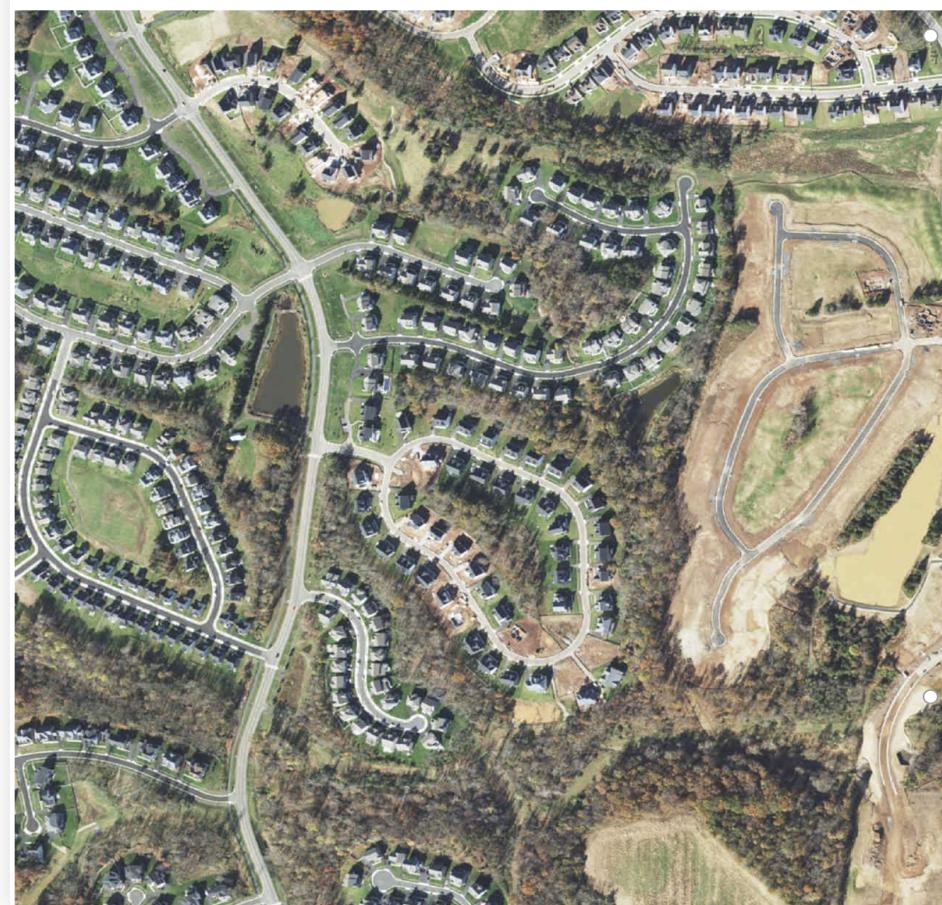
1 dot = 1 person living within 1,000 feet of a freeway in 2010

Land Use Dynamics

Loudoun County, Va., **in 2012**

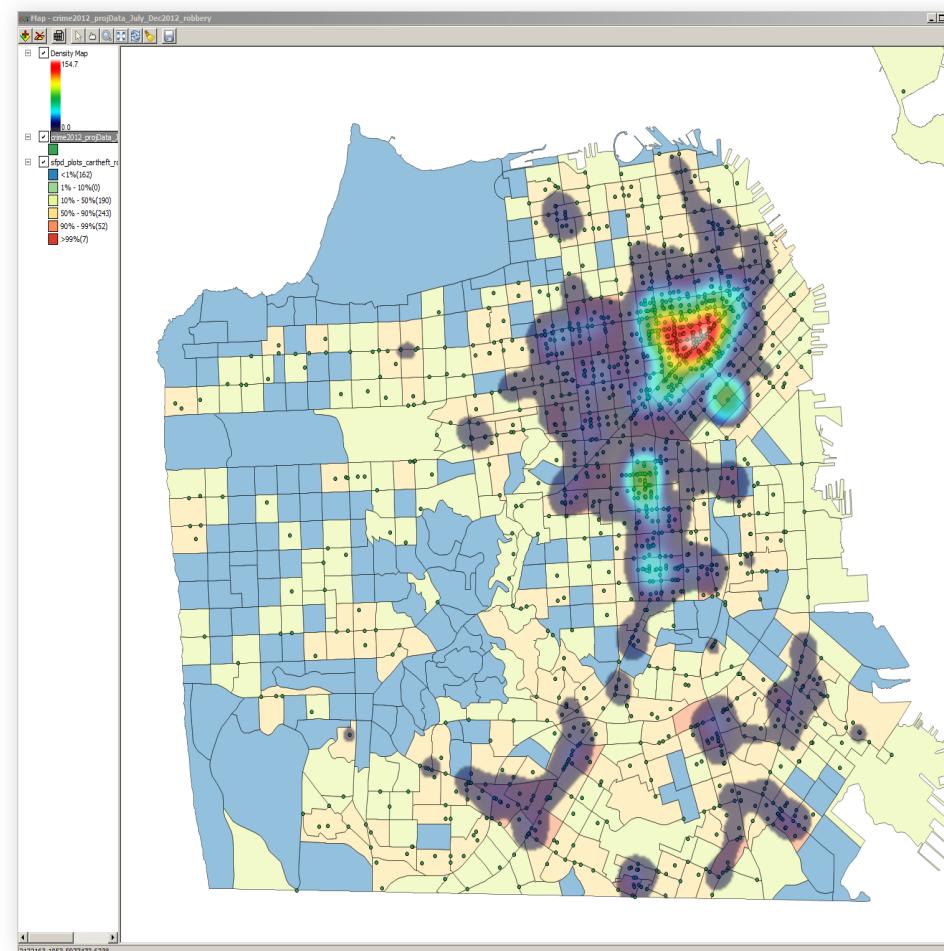


Loudoun County, Va., **in 2018**

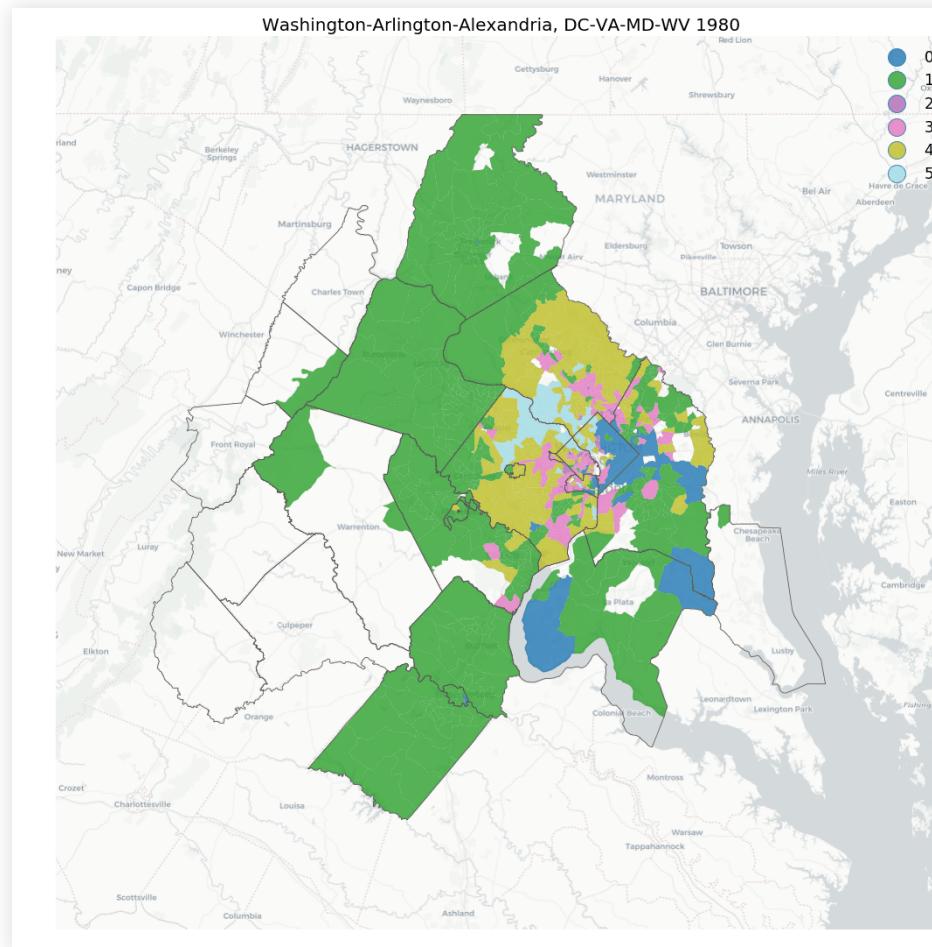


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Spatial Criminology

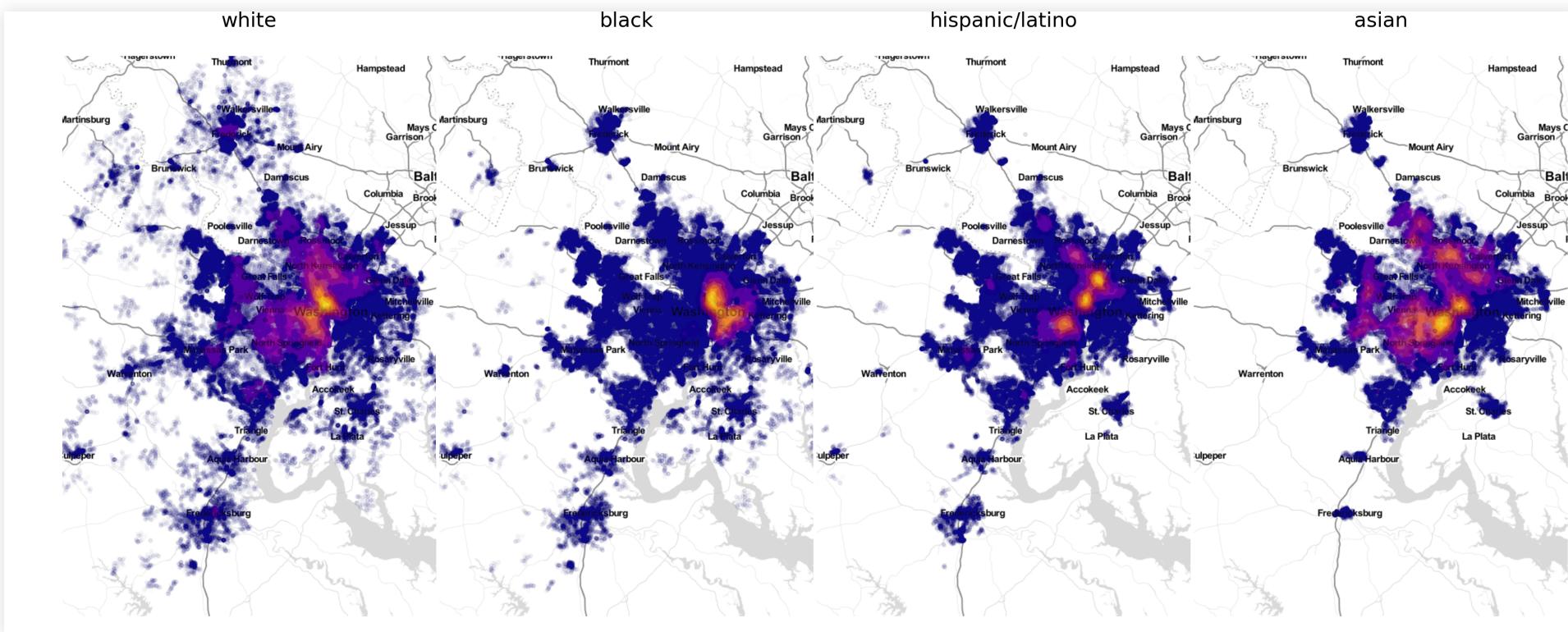


Neighborhood Dynamics



[source]

Segregation



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Spatial Inequality

Normative Applications of GIS

- *Prescriptive*
- *change the world*

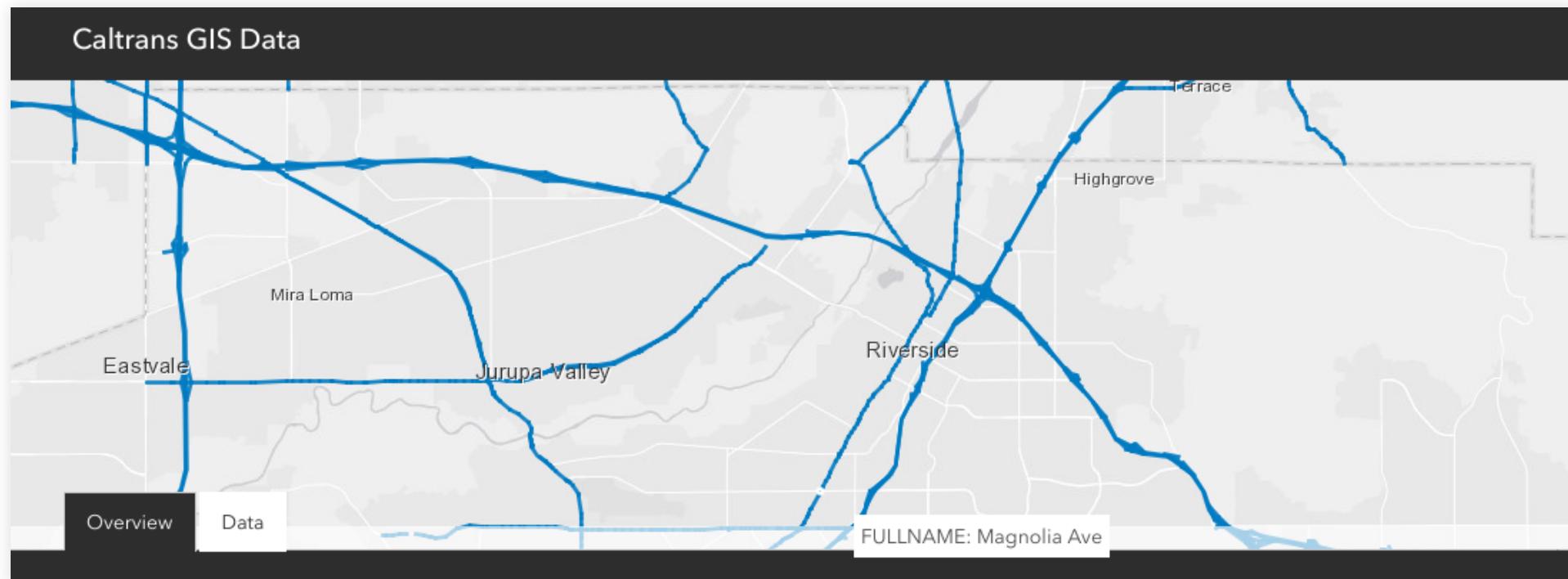
Urban Planning

Here's an example of what a fictional development would look like for the city of Philadelphia:



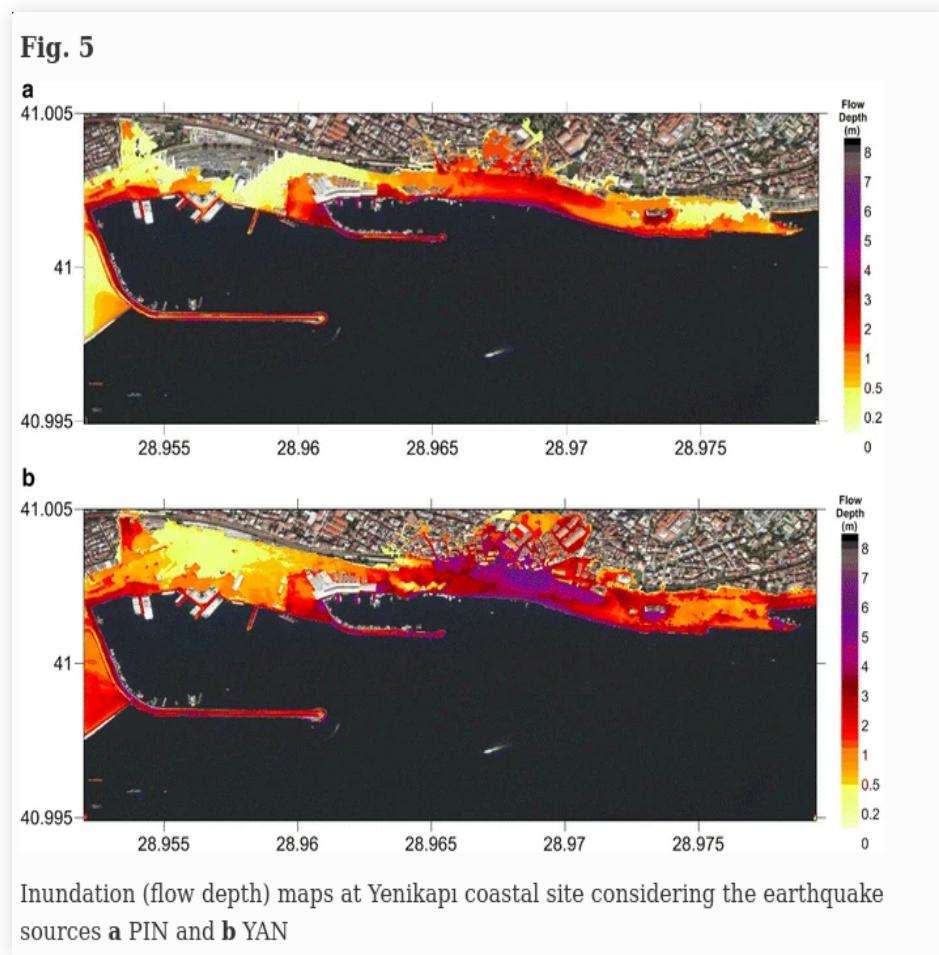
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Transportation



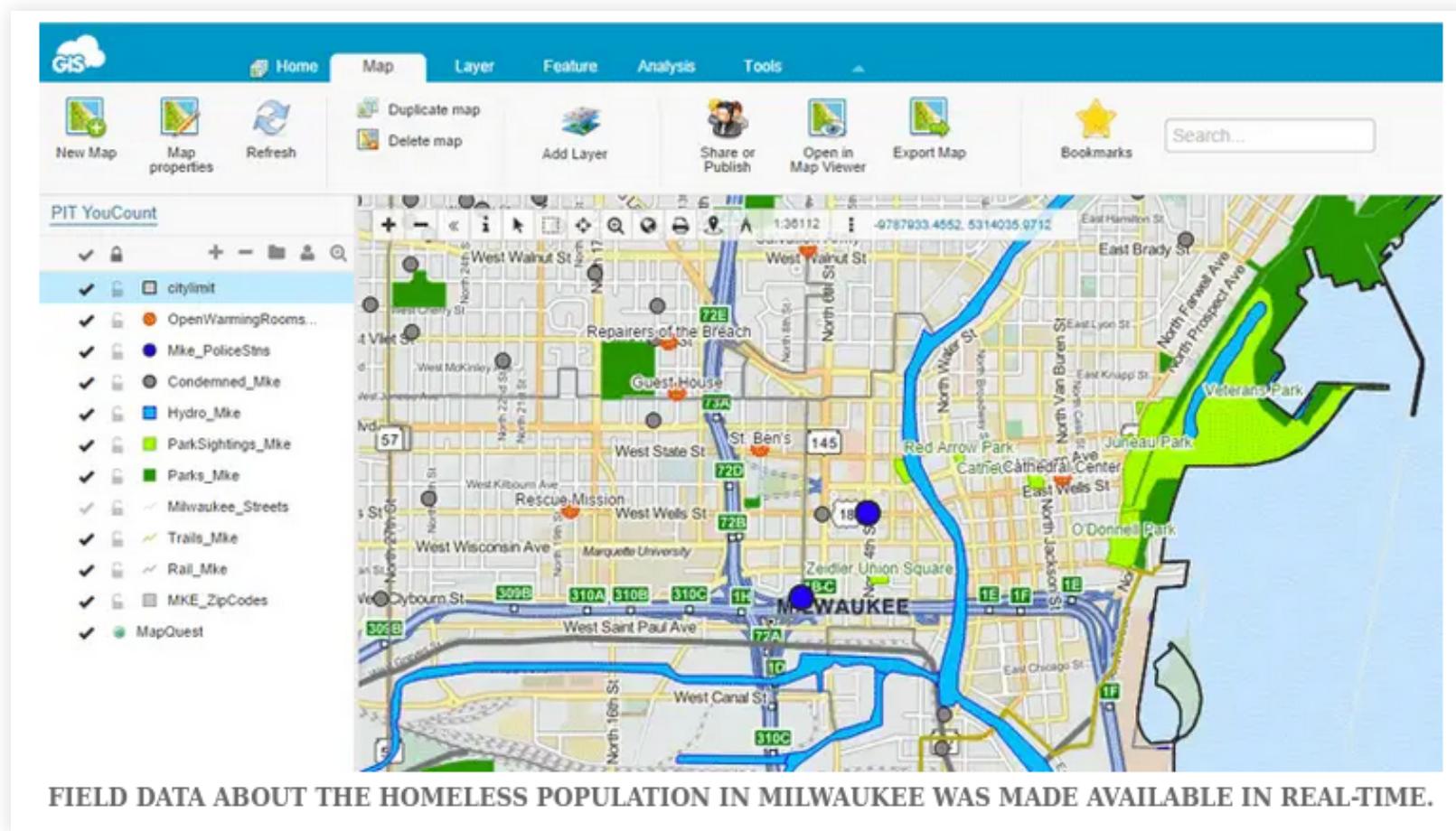
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Disaster Response



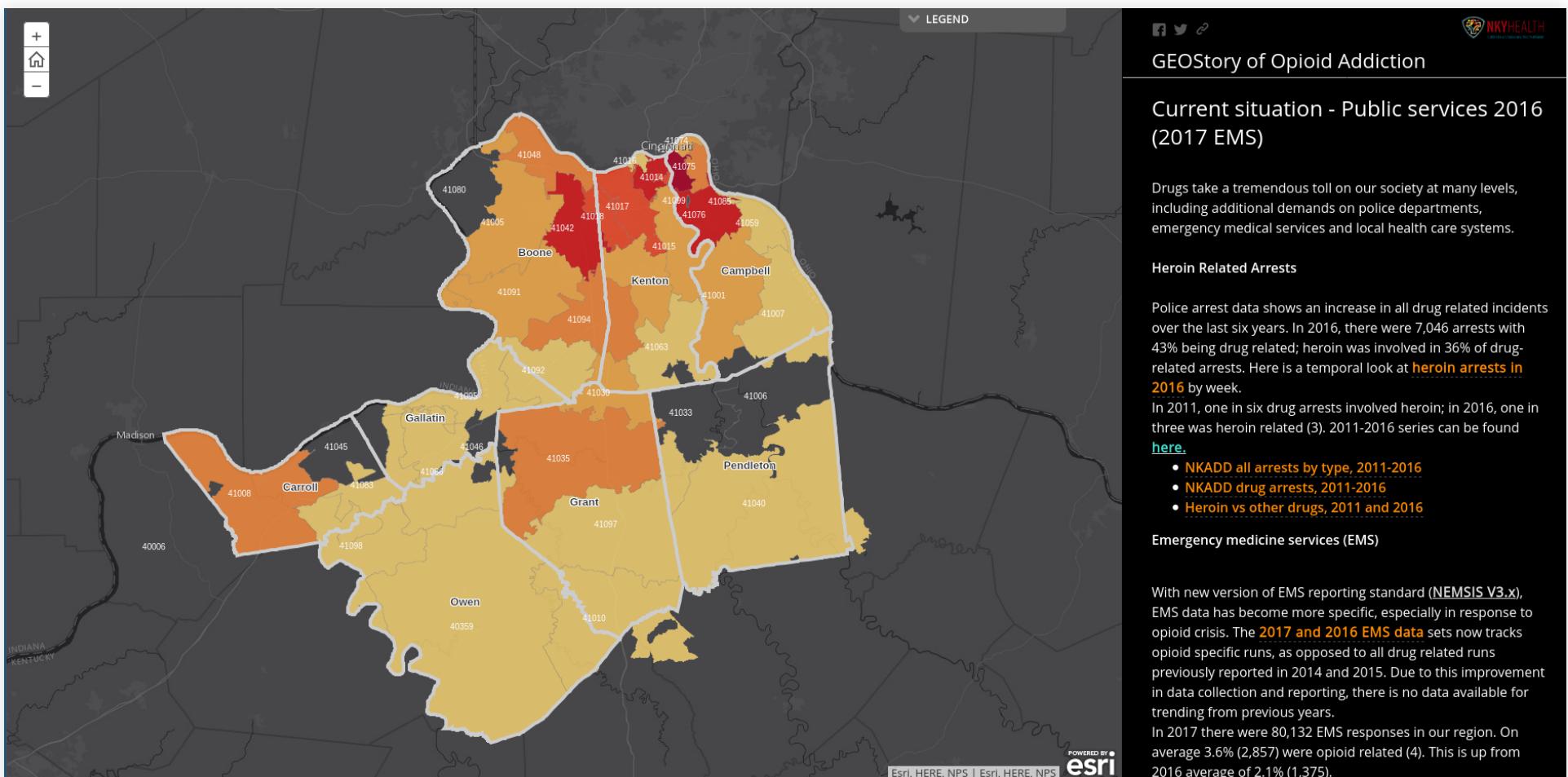
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Homelessness



[source]

Opioid Epidemic



[source]

Introductions

You

Take a few minutes and let us know a bit about
yourself

- Name
- Program/Concentration
- Why you are here

Instructor

My Program



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Center for Geospatial Sciences



Why am I here

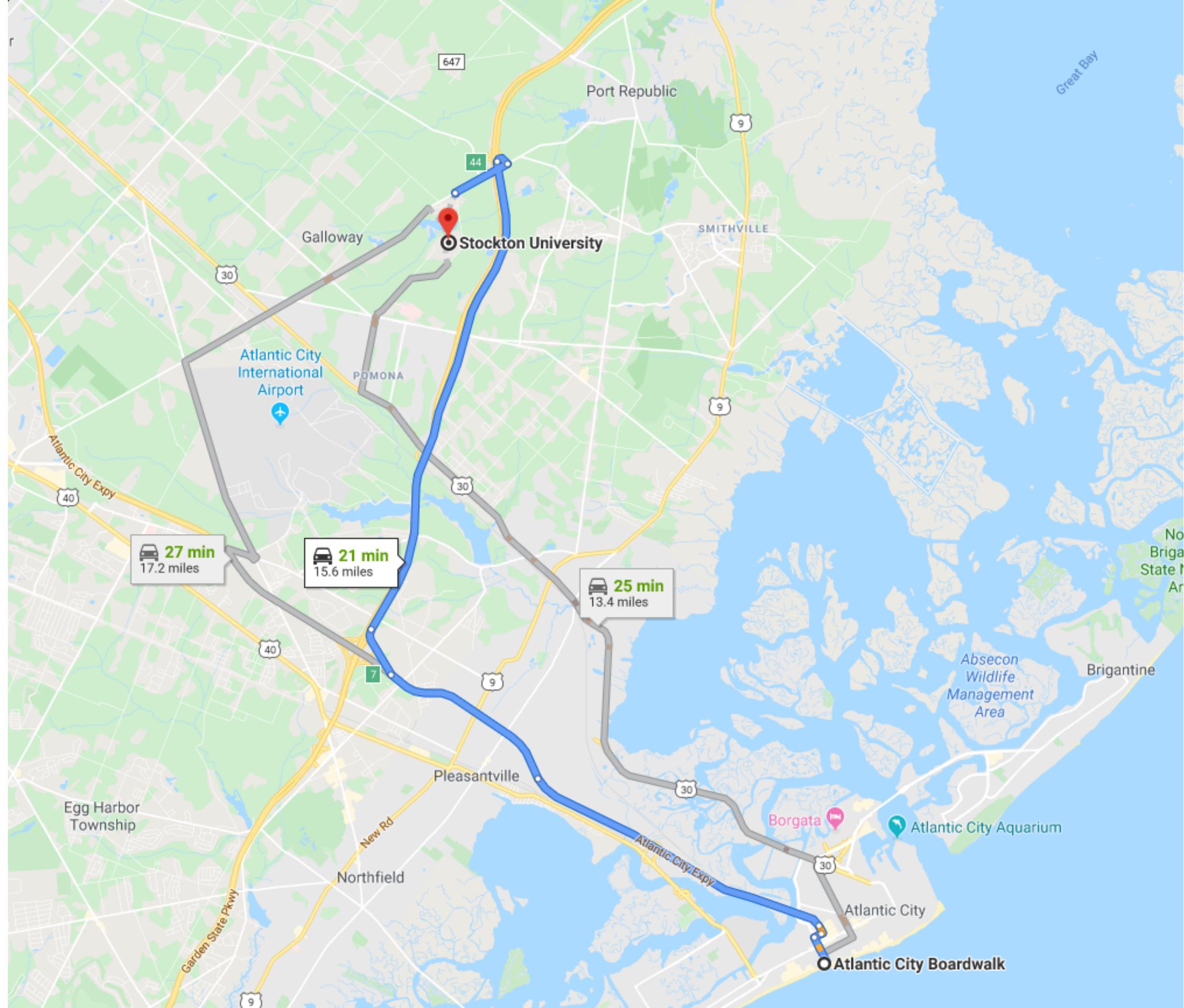


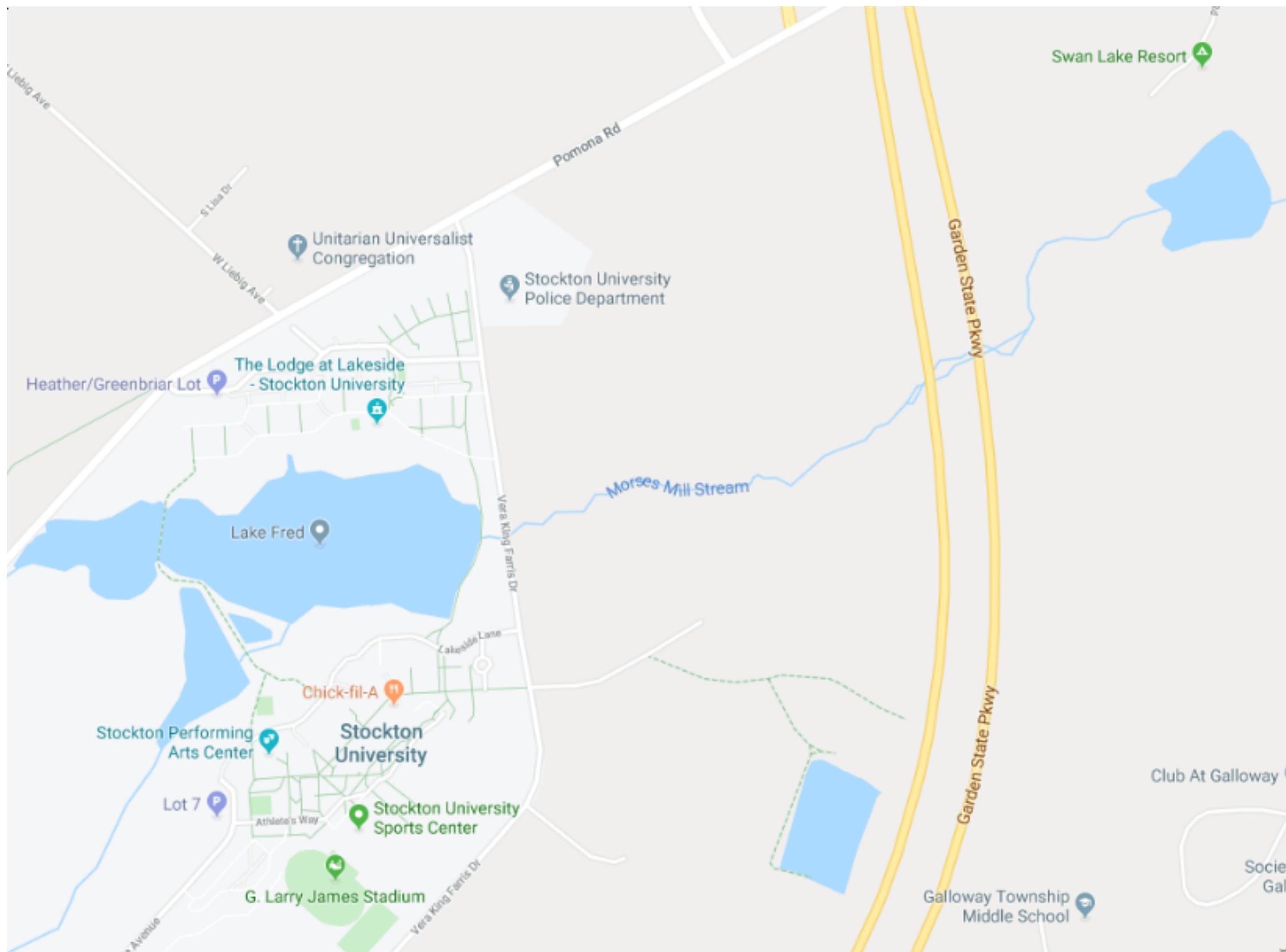
John Sinton is a retired environmental studies professor and a founding member of the Mill River Greenway Initiative. His new book ***Devil's Den to Lickingwater: The Mill River Through Landscape & History*** tells the multifaceted tale of the Mill River in Western Massachusetts, from its emergence after the glaciers 20,000 years ago to the present. Little escapes Sinton's voracious historical appetite – the creation of the landscape, the disappearance and reappearance of native fish and animals, the Mill River as a Native American crossroads, the contrast between English and Native ways of managing the land, the transformations wrought by war, floods and industrial disasters, the extraordinary role of the Mill River in the Industrial Revolution, and exceptional personalities from Sachem Umpanchala to Calvin Coolidge: all this is told through the arc of the Mill River's history —beloved, abused, diverted, and ultimately reclaimed as an integral part of the landscape.

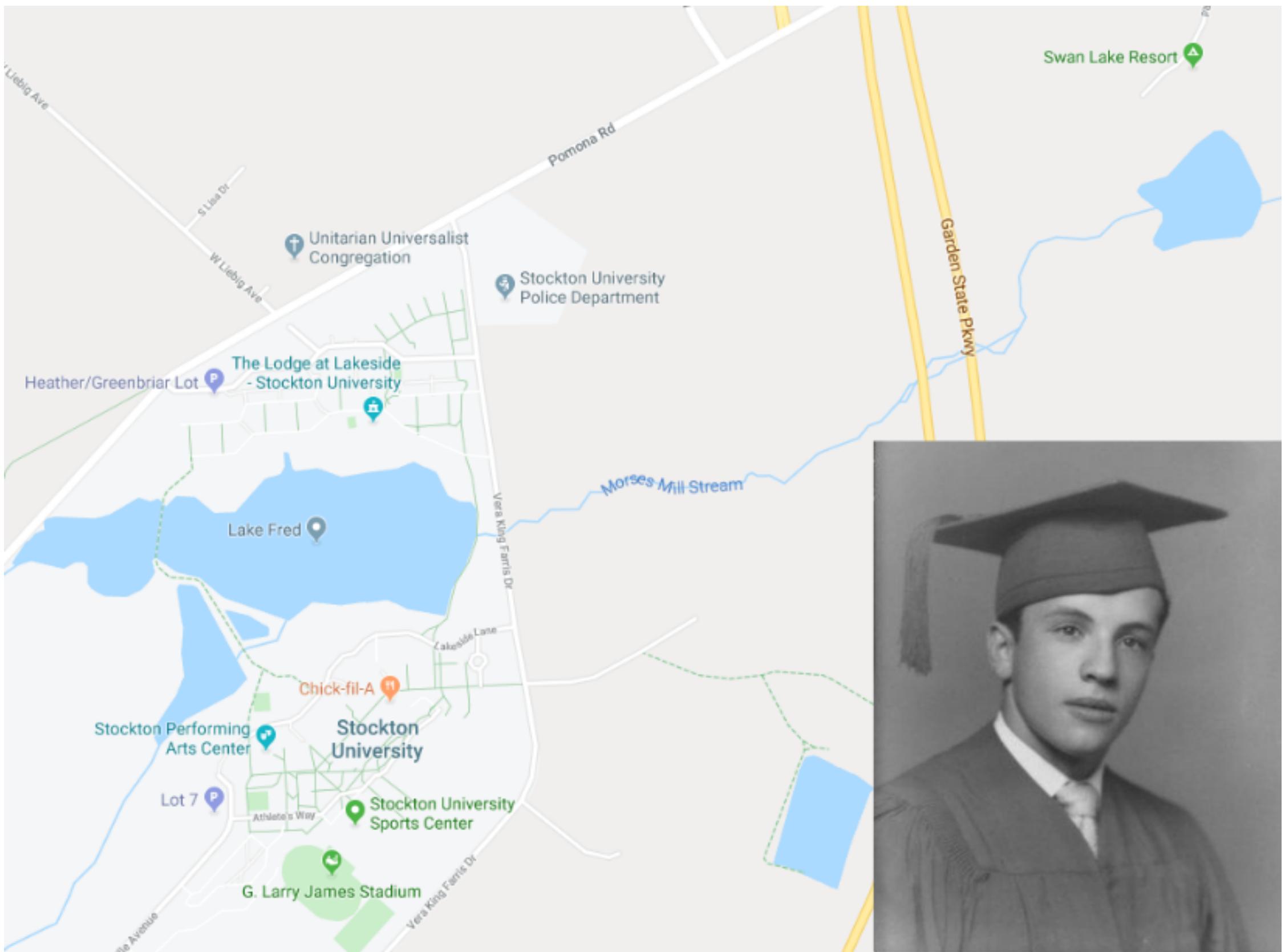


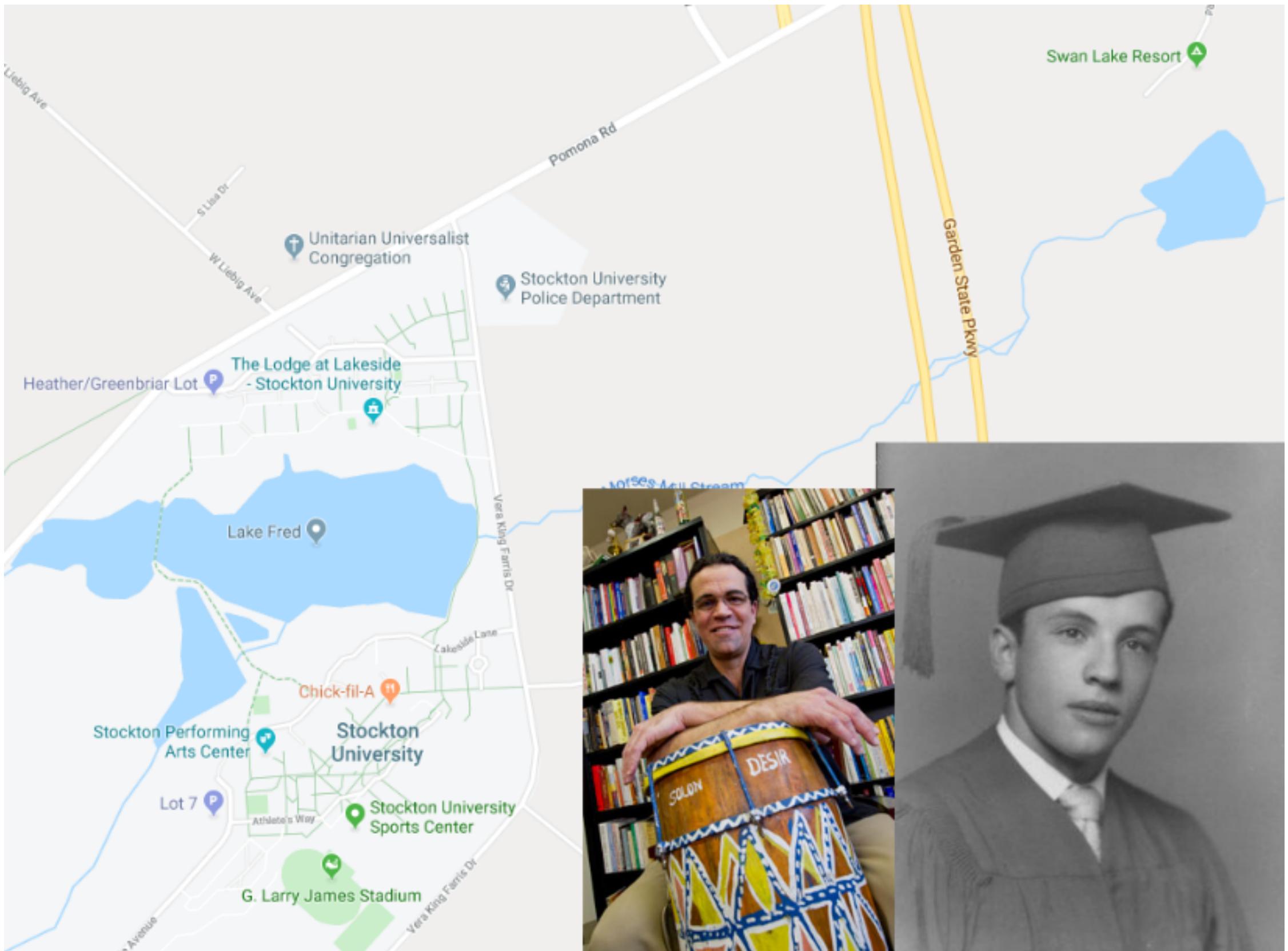
ATLANTIC CITY
1980

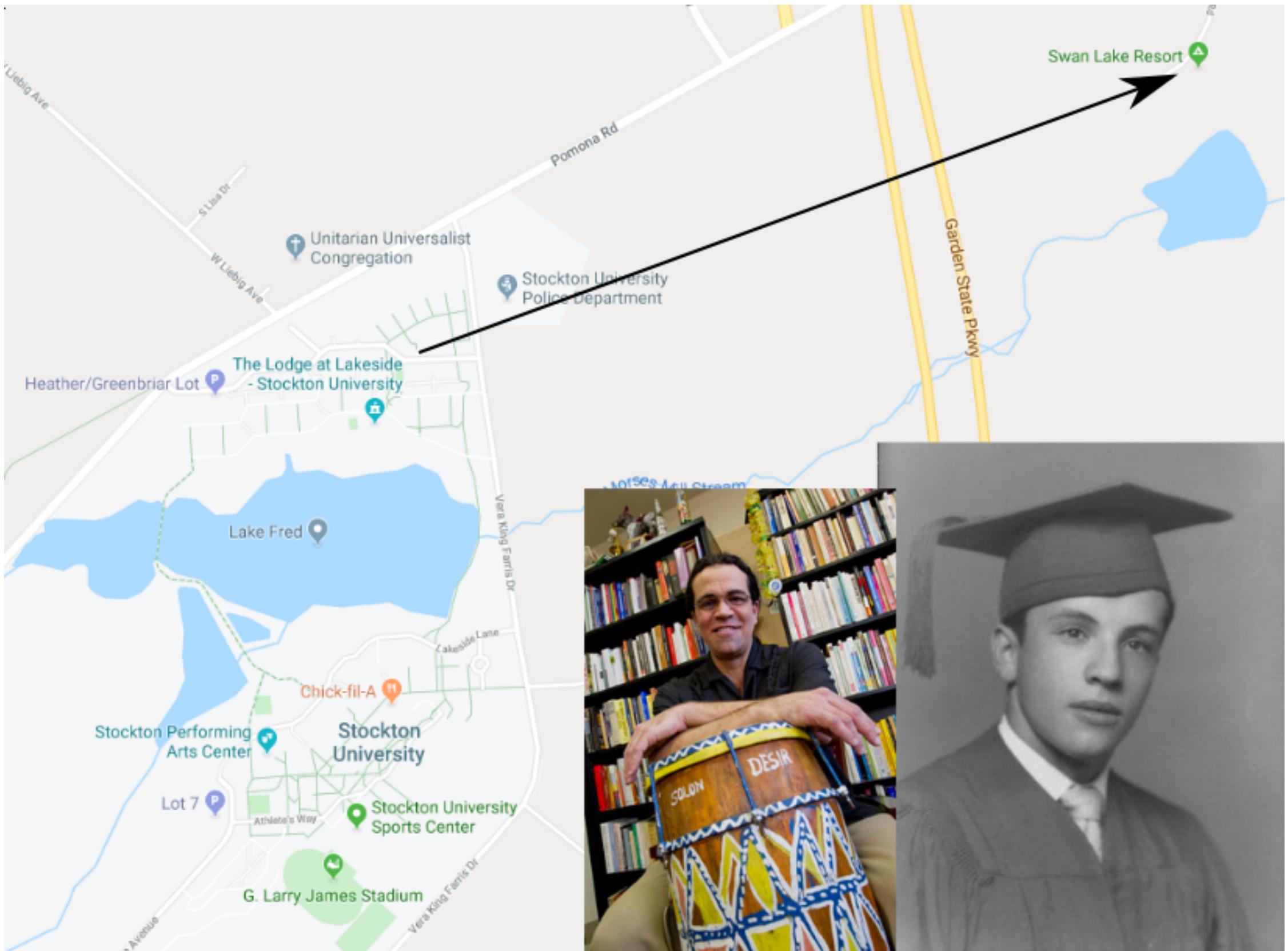
‘Trump turned this place into a
ghost town’











Next Up

- Introduction to QGIS
- Bring your flash drives!



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