

Data and the State

PUBPOL 2130 / INFO 3130

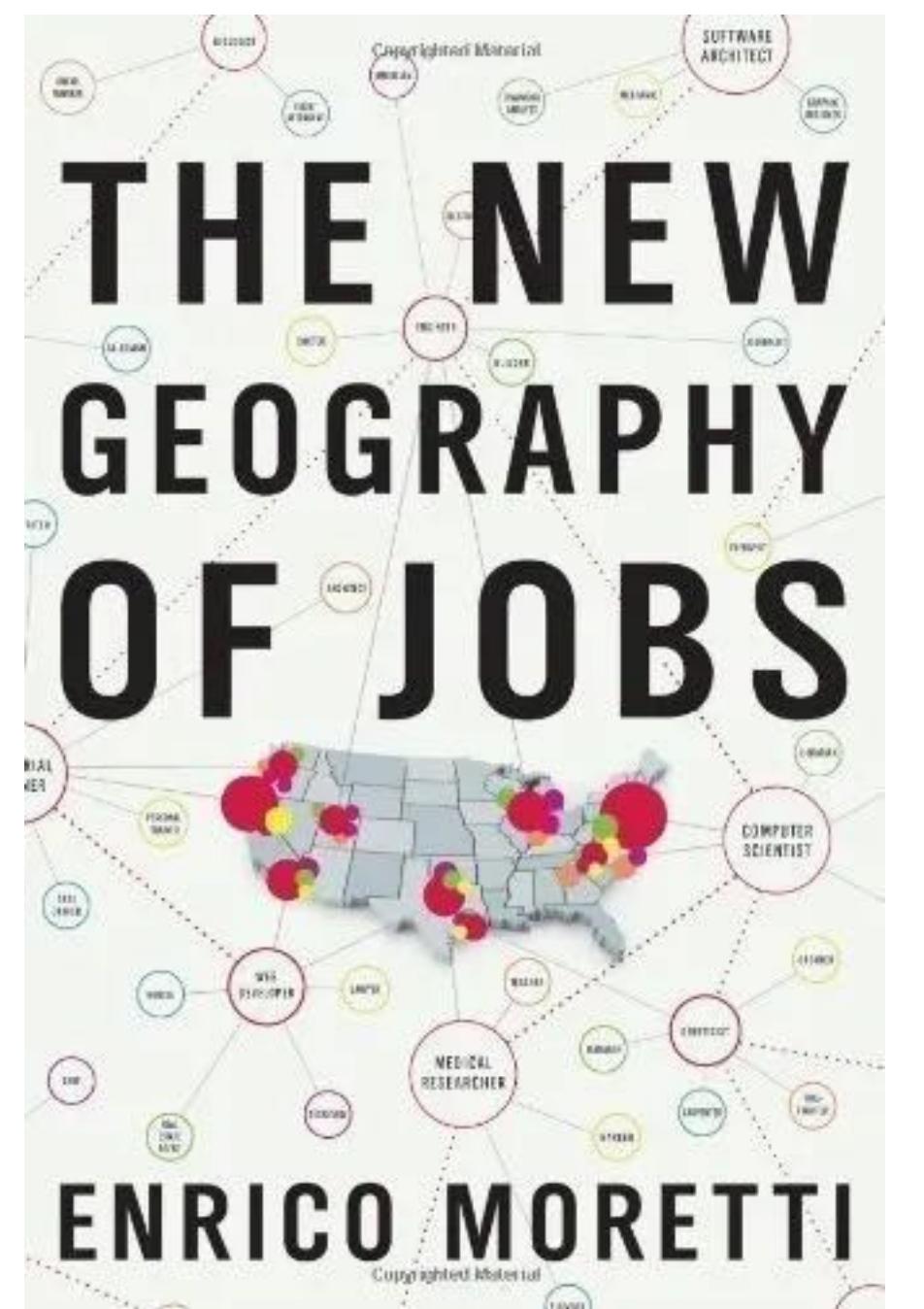


Lessons from organs:
Incentives, Markets, Planning

Lecture 14, Thursday Mar 13

Moretti

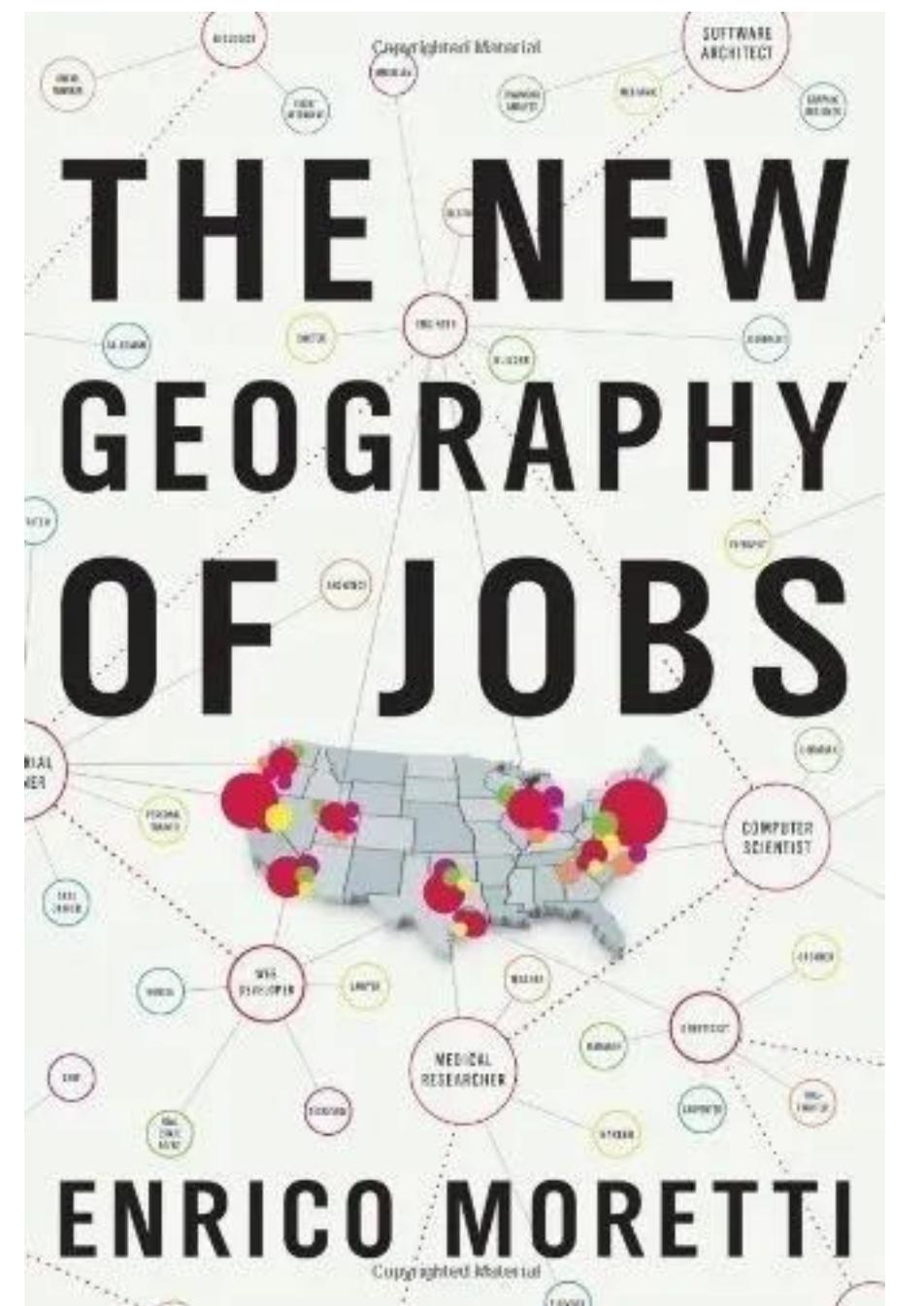
- Enrico Moretti is an economist at UC Berkeley
- Americans are enormously more mobile than residents of other industrialized countries
- He says moves often reflect seeking “stronger economies” — (possibly conflating with lower cost of living)
- Why do college grads have lowest unemployment? Perhaps not college training, but willingness to move
- Policy stagnant since 1930s — unemployment check
- Possible intervention: **mobility voucher**, benefiting both the workers willing to move and the ones who are not



2013

Moretti

- Theory of **spatial mismatch** (Kain, Wilson) – patterns of housing, car ownership, and transit may create barriers to efficient matching of job seekers with jobs
- Universities drive mobility and improve employment, but they are subsidized by states and the states do not necessarily benefit
- Moretti argues for federal subsidies for universities (ironic in 2025)
- **Housing** policy is also essential: housing is 40% of spending
- Homeowners gain much more from a strong economy. Policy interventions? Tax credits, density zoning, rent control, parking,

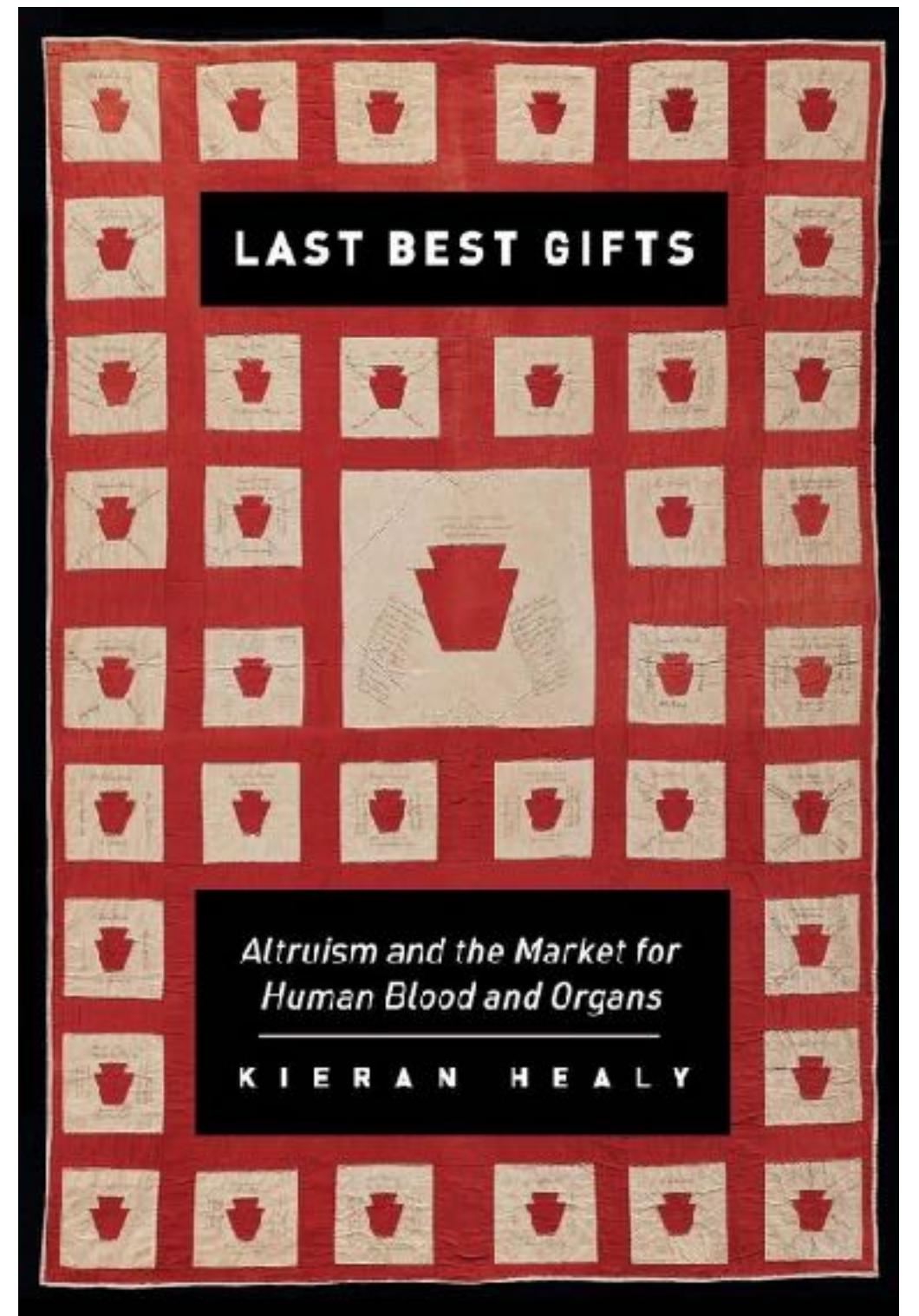


2013

incentives

Healy

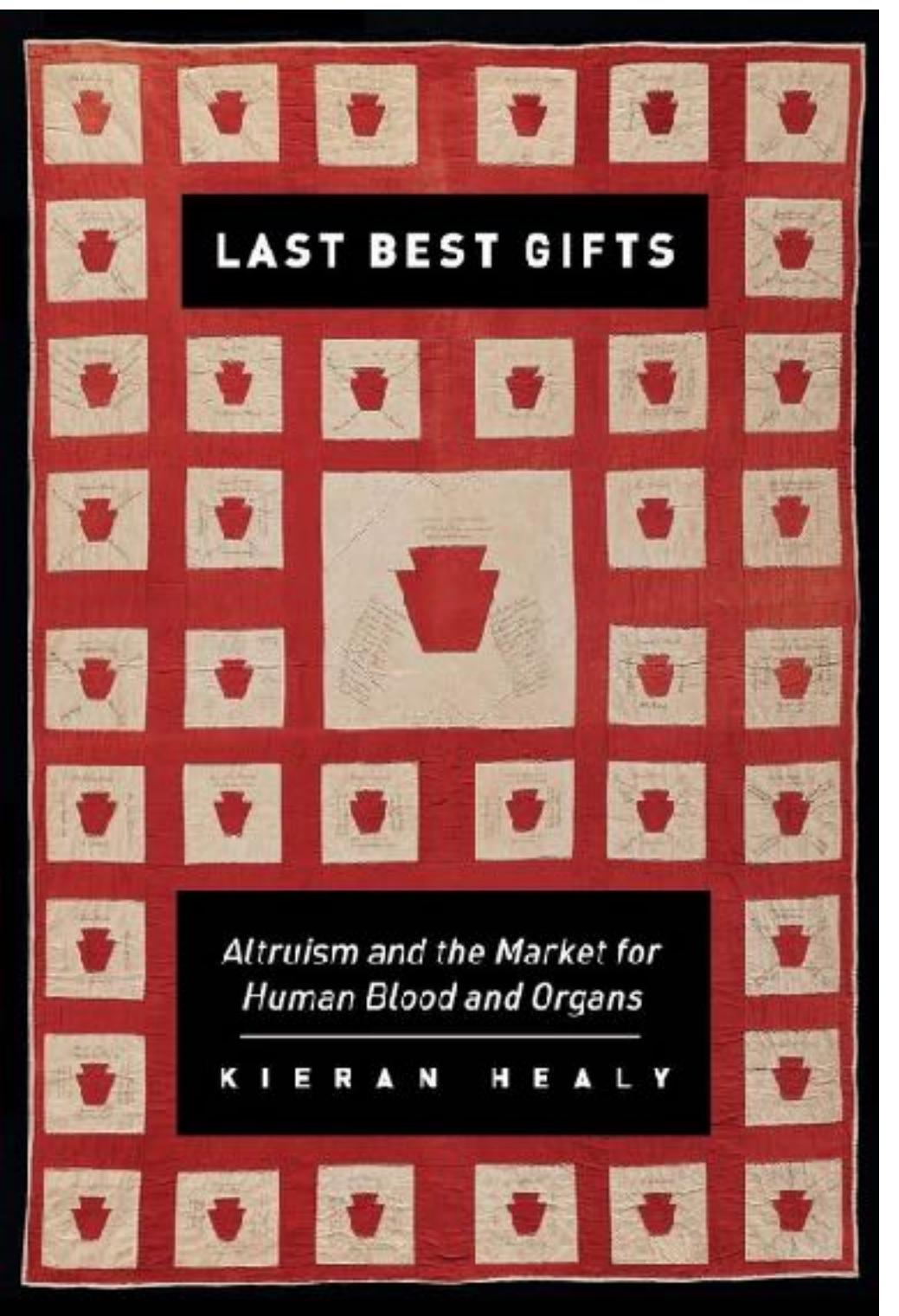
- Kieran Healy is a sociologist at Duke and a member of the Kenan Institute for Ethics
- In this book project, he looks at blood and organ donation, commodification, and exchange
- He proposes to get past the debate about altruism vs markets by emphasizing the role of **organizations**
- Public policy must balance **normative** (moral/ethical/"ought") with **practical** concerns by paying careful attention to incentives and outcomes
- Pure market solutions can undermine elements of **civic duty** (taxes, juries, vaccines)



2006

Healy

- The flow of organs raises issues of bodily autonomy and consent
- Trade and markets are powerful mechanisms for distribution
- But some things resist commodification: love, friendship, respect are “debased” by pay
 - **Hard cases for policy:** prostitution, pregnancy surrogacy
 - **Formerly hard cases:** domestic labor, life insurance
- Organizations can change the logic of participation through their “structure, scope, and strategies”
- Planning and policy design can impact behavior



2006

tools for optimization

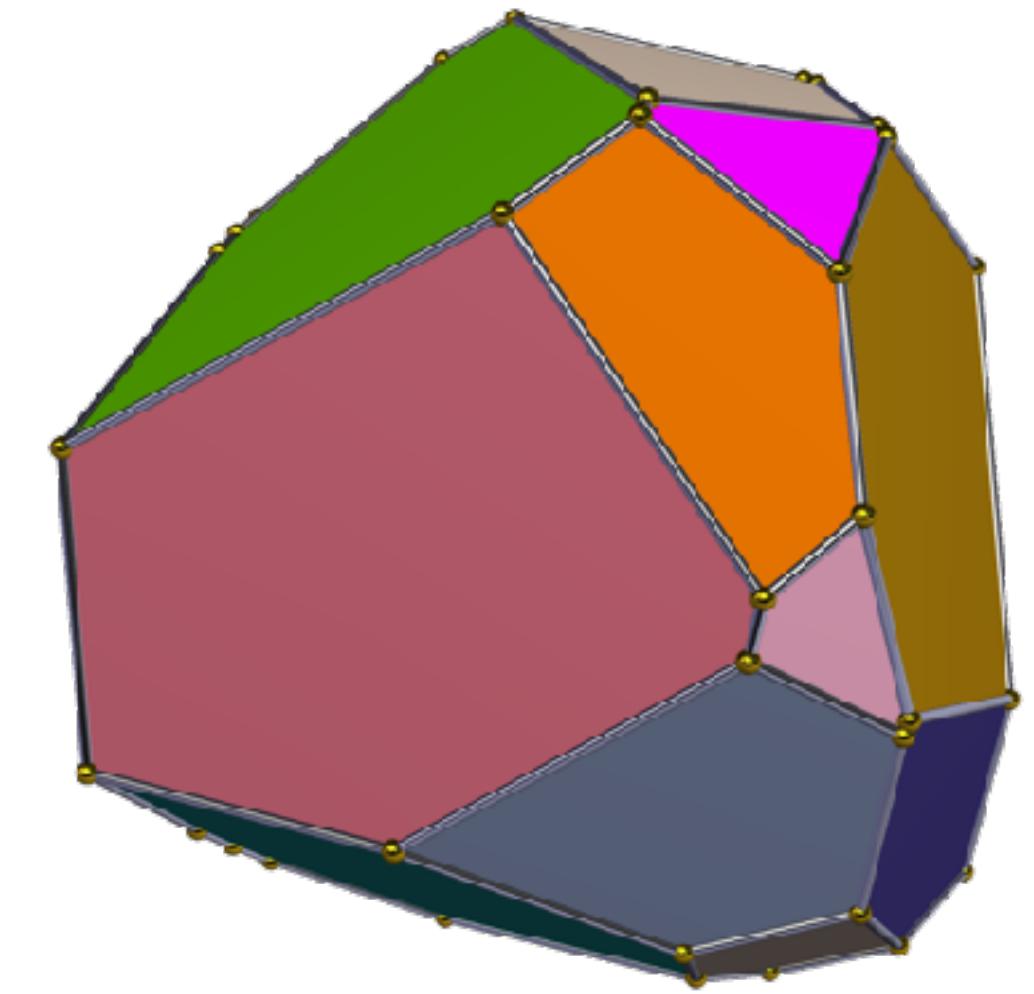
Linear programming

a powerful optimization framework for allocation

- In optimization, the **objective function** is the value that you are trying to maximize or minimize (examples: minimize cost, minimize time, maximize life expectancy)
- **Linear programs** are optimization problems where the constraints are linear inequalities and the objective is a linear function
- The most classic example is Stigler's 1945 "Diet Problem":

For a moderately active man weighing 154 pounds, how much of each of 77 foods should be eaten on a daily basis so that the man's intake of nine nutrients will be at least equal to the recommended dietary allowances (RDAs) suggested by the National Research Council in 1943, with the cost of the diet being minimal?

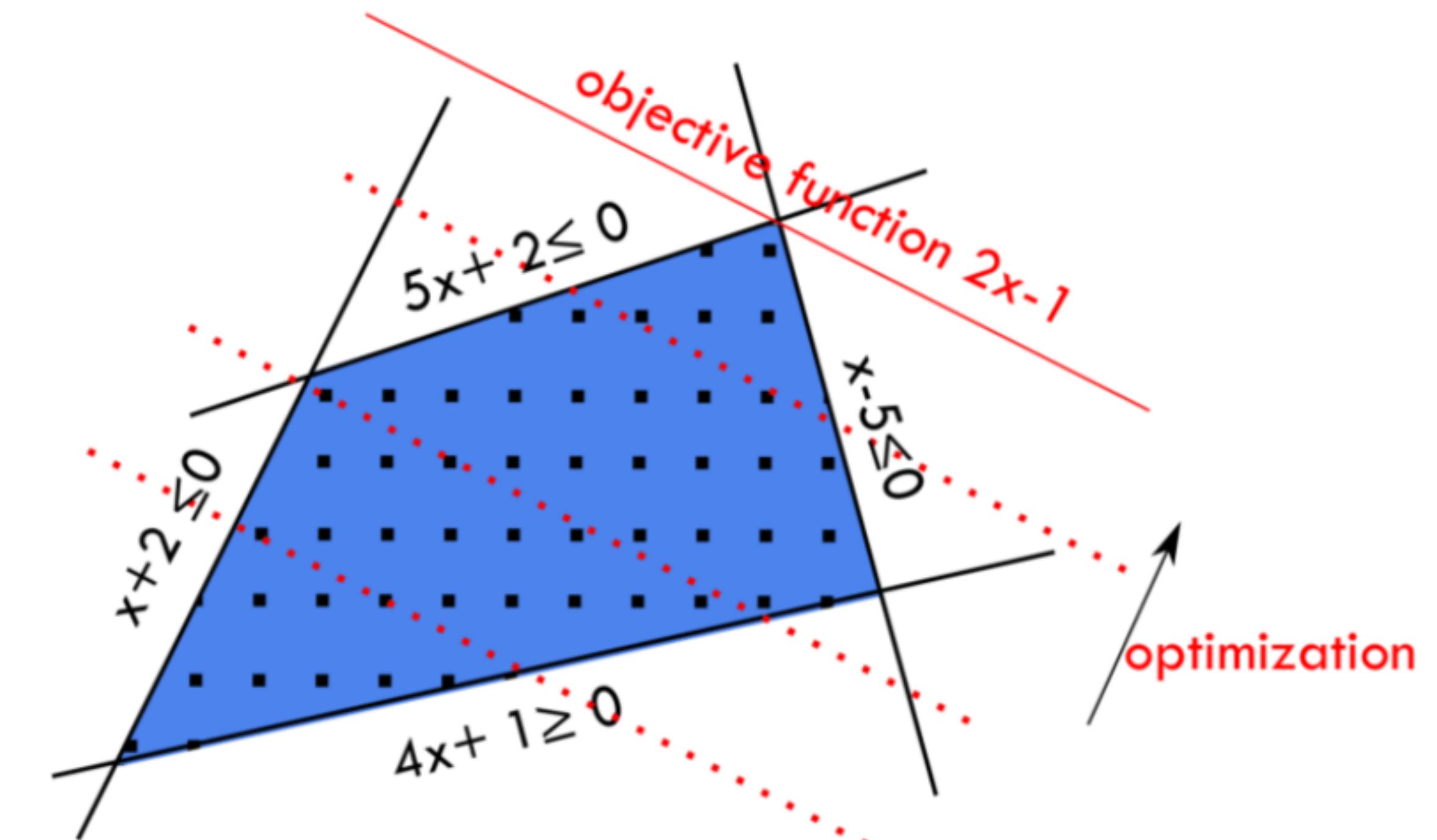
- Constraints: get enough calories, protein, calcium, iron, etc.
- Objective: minimize cost.



Commodity	August 1939	
	Quantity	Cost
Wheat Flour	370 lb.	\$13.33
Evaporated Milk	57 cans	3.84
Cabbage	111 lb.	4.11
Spinach	23 lb.	1.85
Dried Navy Beans	285 lb.	16.80
Pancake Flour	—	—
Pork Liver	—	—
Total Cost		\$39.93

Integer programming

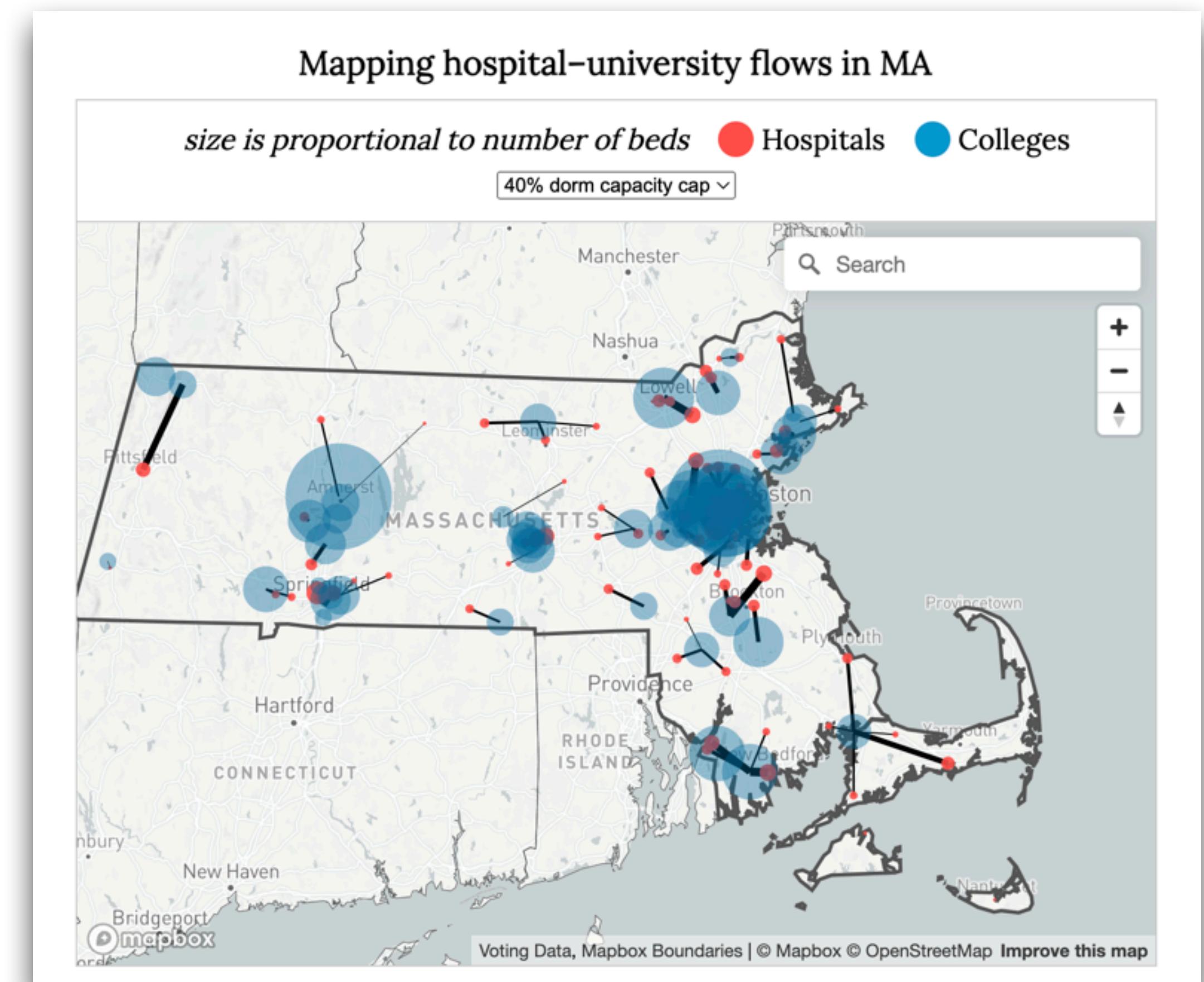
- When the goods are **indivisible** (so you can't have 10.3 livers), then you need to restrict to solutions that are in integers
- In general, this is much harder.



Example: hospital-to-dorm matching

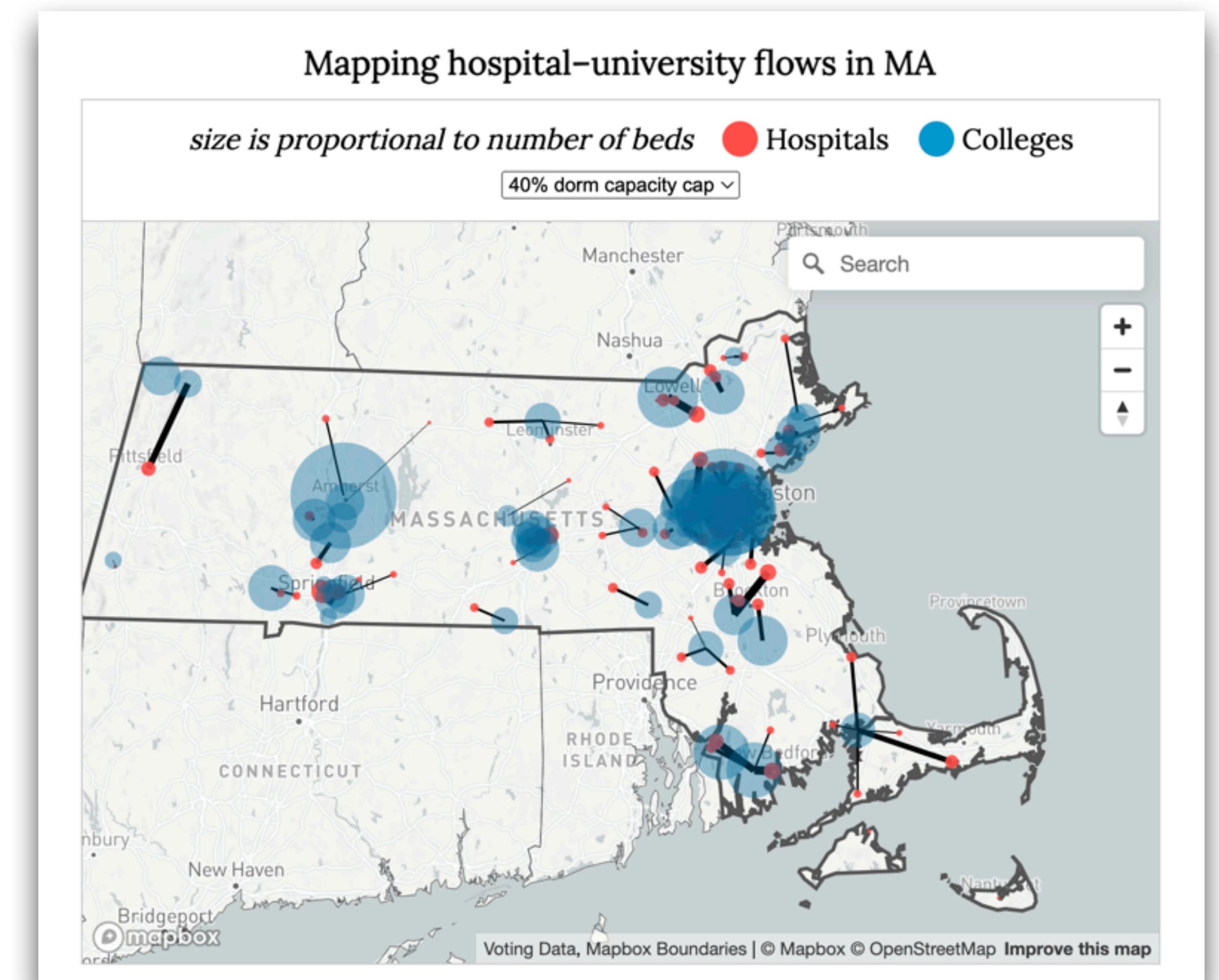
- In Spring 2020, dorms were emptied as students were sent home for COVID shutdown
- Hospitals were overflowing, and fears grew that recovering patients could not be housed
- Tufts president Tony Monaco suggested a matching solution that would send patients to college dorms
- My lab set this up as an integer program and provided solutions that minimized driving time, subject to dorm capacity constraints — see

mggg.org/covid-flows



Example: hospital-to-dorm matching

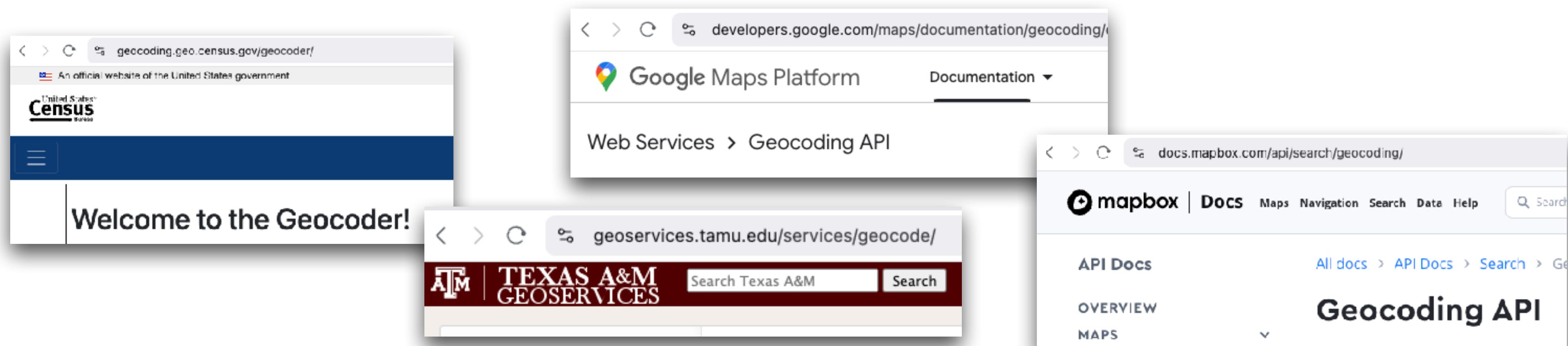
- The math is not hard.
- The geospatial data challenge is:
 - **Source** list of hospitals and bed capacity
 - **Source** list of universities and dorm bed capacity
 - **Locate** them in space
 - Embed in a **network** that records direct connections and travel time

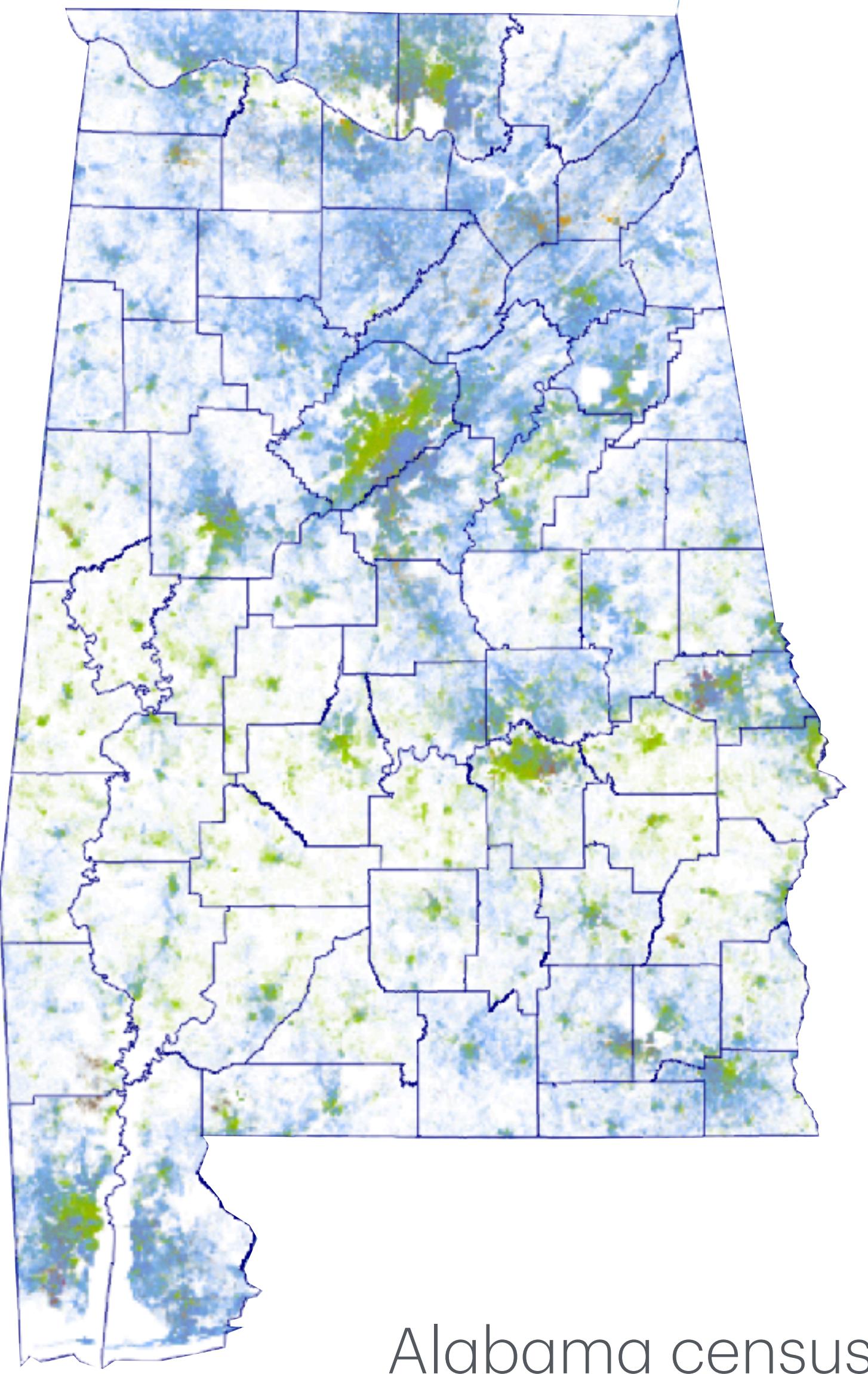


geocoding
and
geolocation

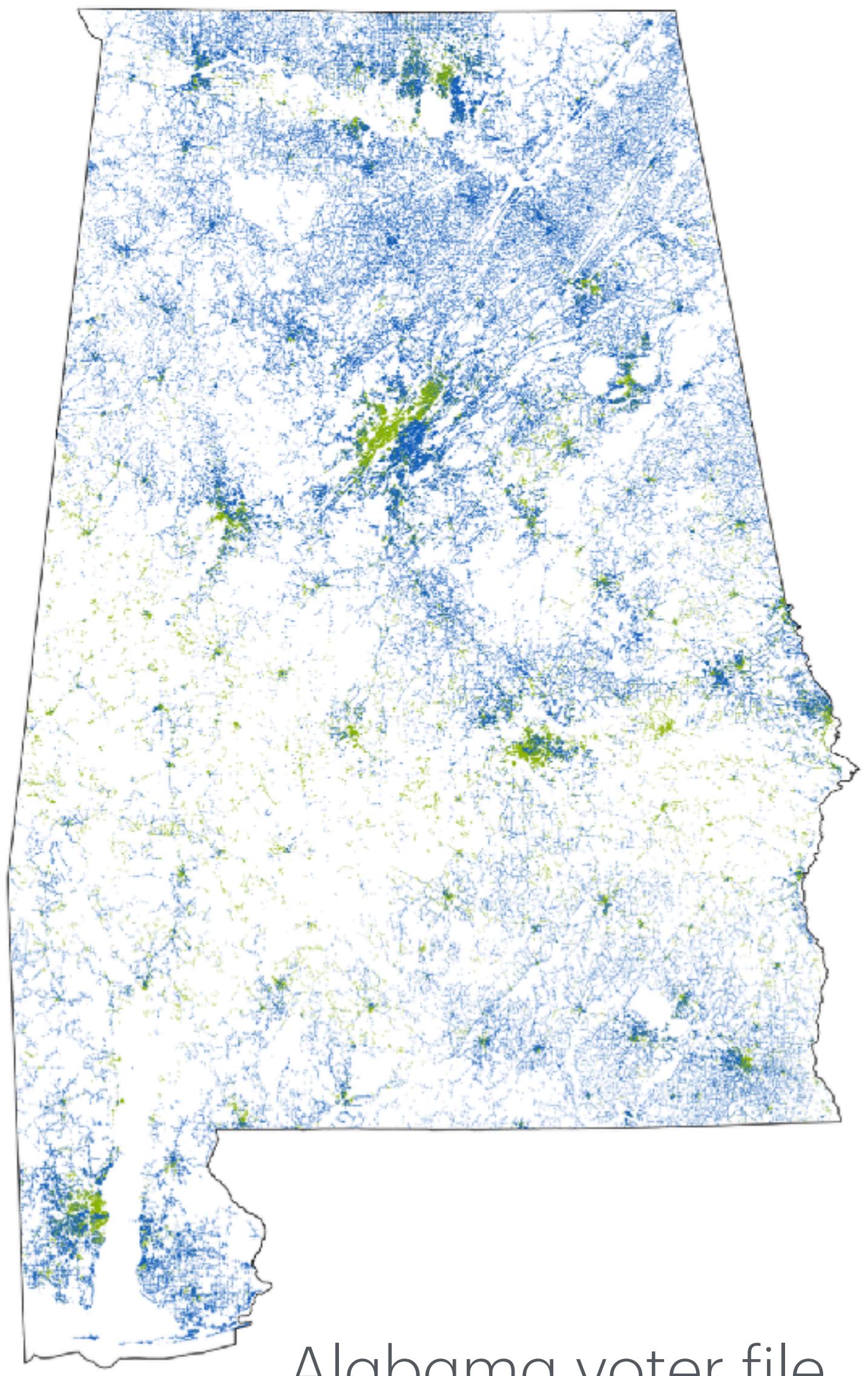
Pinning down **places**

- **Geocoding** is the specific process of converting address information into lat/long coordinates.
- **Reverse geocoding** is the process of identifying a location (e.g., an address) based on the lat/long coordinates.
- **Geolocating** is the more general process of assigning a spatial location to points.



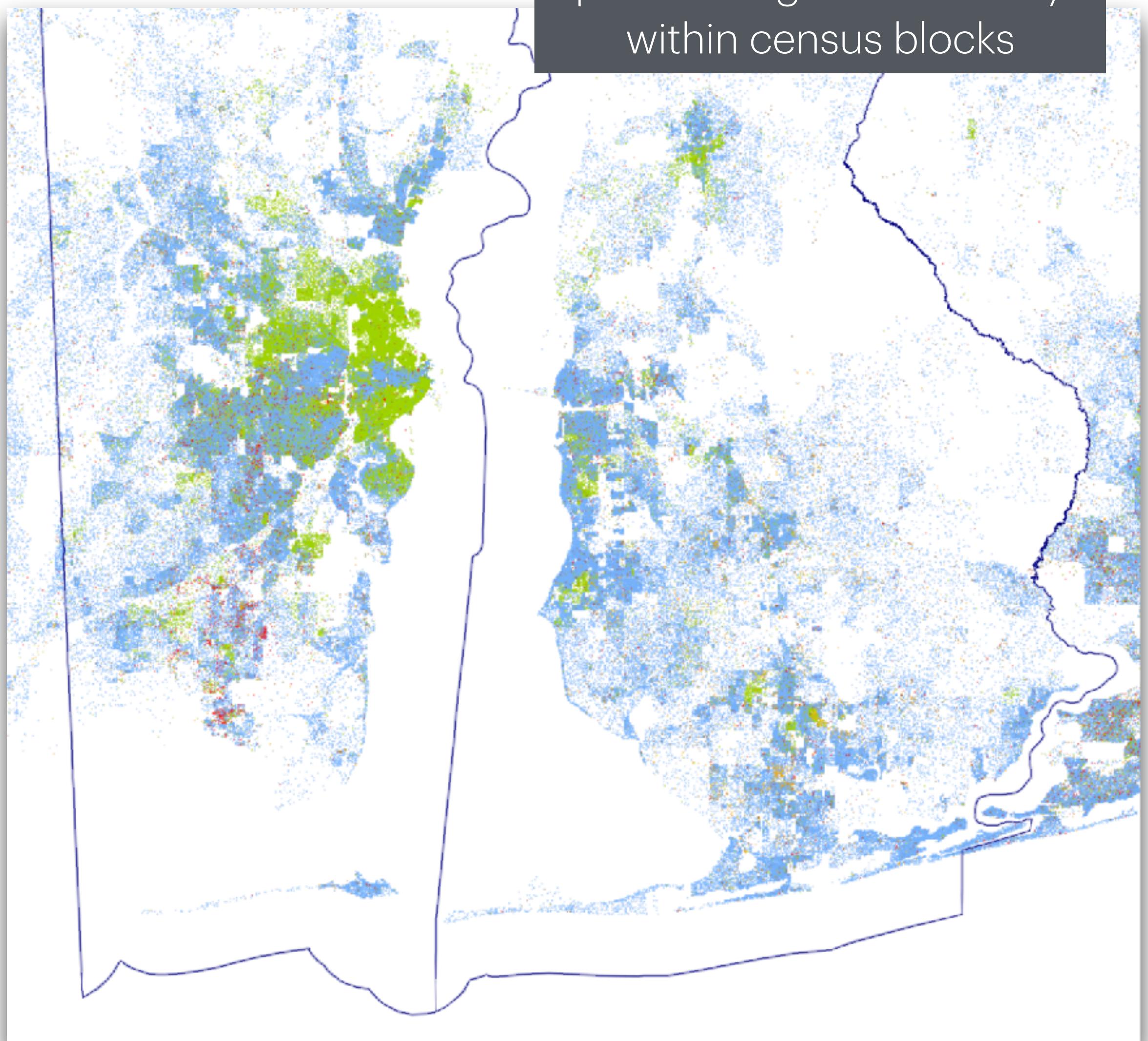


Alabama census data



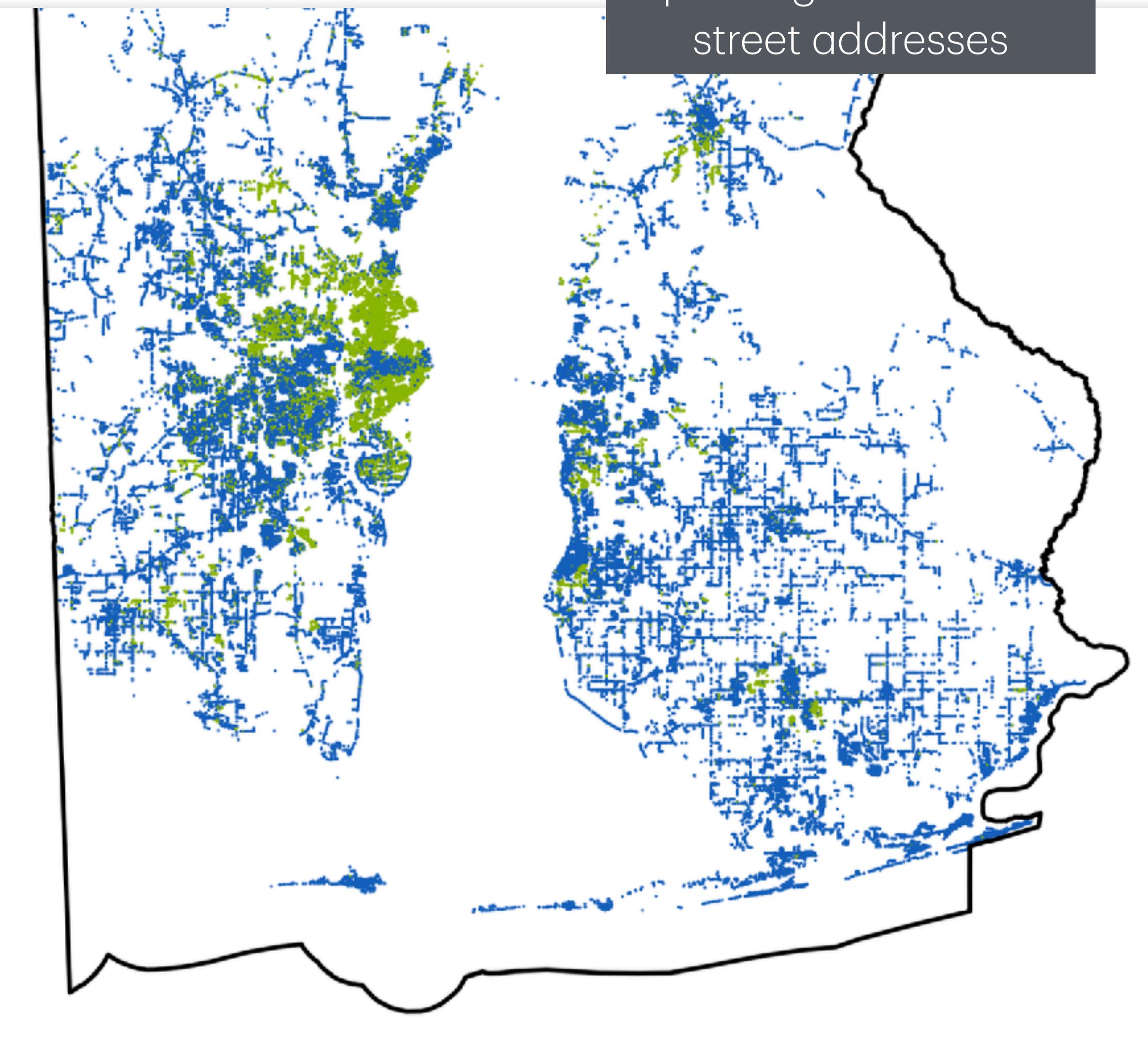
Alabama voter file

points assigned randomly
within census blocks



Alabama census data

points geocoded to
street addresses



Alabama voter file