

Social Determinants of Health, Exploratory Spatial Data Analysis, UPHS

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Social Determinants of Health Fields for Reference

1. Financial Resource Strain
2. Transportation Needs
3. Food Insecurity
4. Alcohol Use
5. Tobacco Use
6. Depression
7. Intimate Partner Violence
8. ...

Exploratory Spatial Data Analysis, Philadelphia Demo

What might result in “health divide”/why need spatial analysis?

→ Social, contextual cause

Living in a low-income neighborhood, food availability, access to general practitioner/hospital,

Collective social practices, access to green space/water facilities, employment rates etc.

→ Proximate, compositional cause

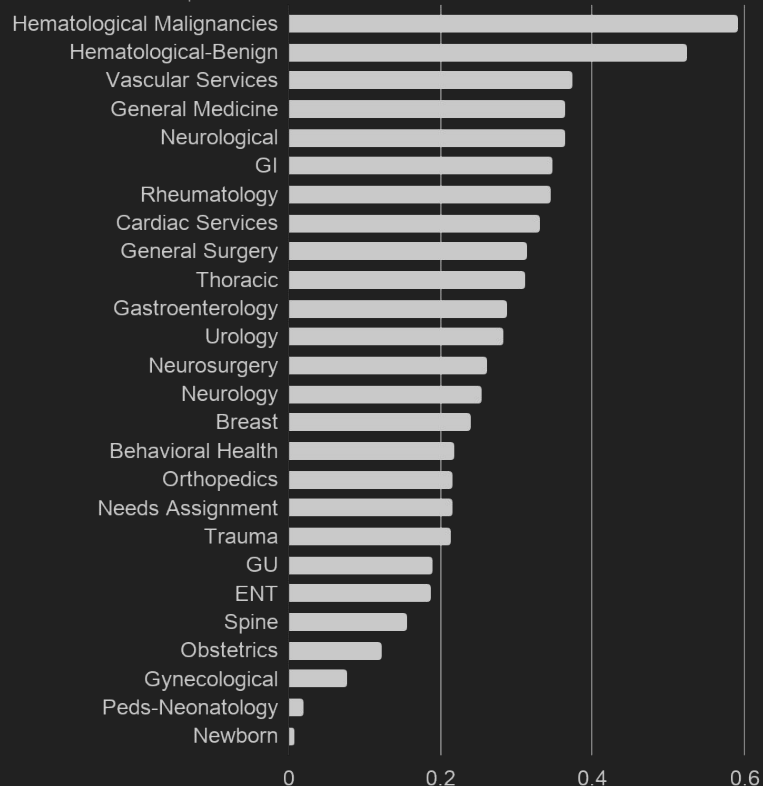
Lifestyle factors, poor diet etc.

→ Clinical, acute factors

Immediate clinical cause.

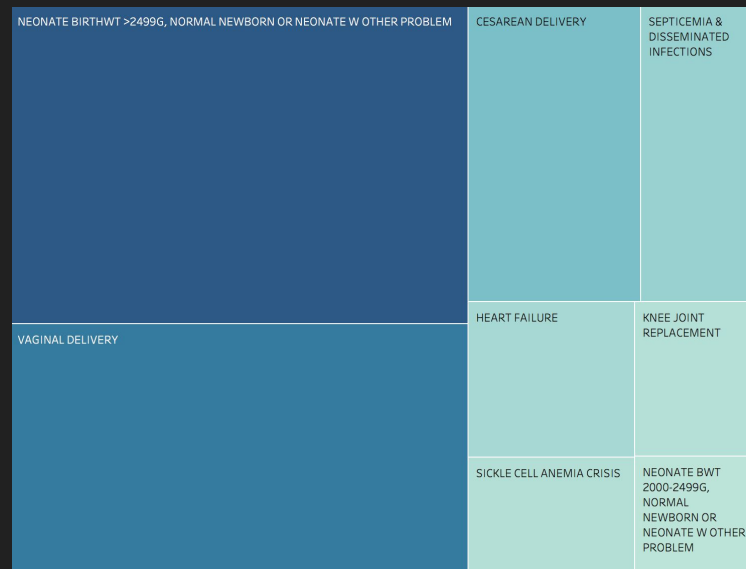
Service Description vs. General Readmission Rate

Service Line 2 Description vs. General Readmission Rate



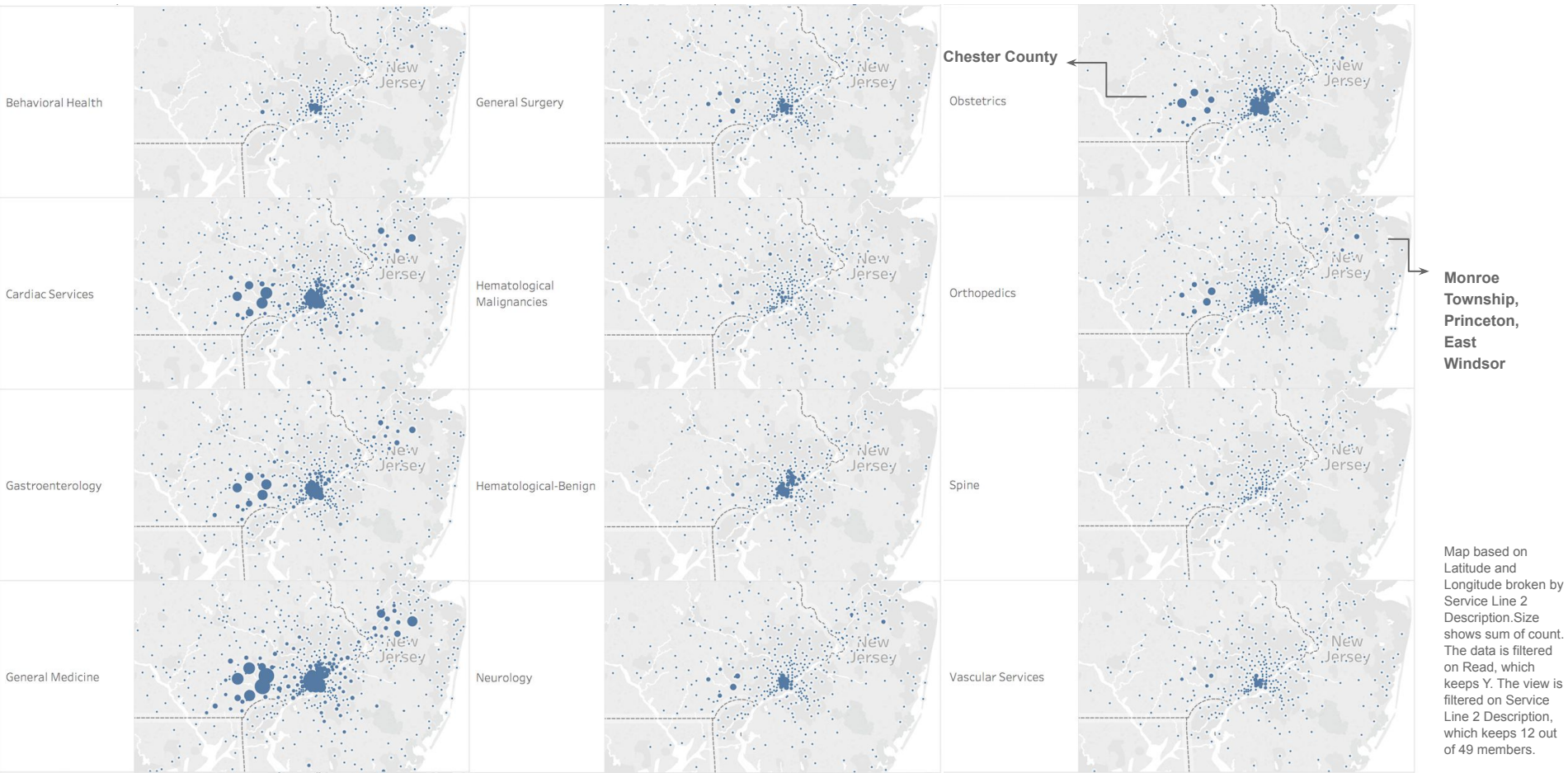
Hematological Disease has higher readmission rate.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4605844/>

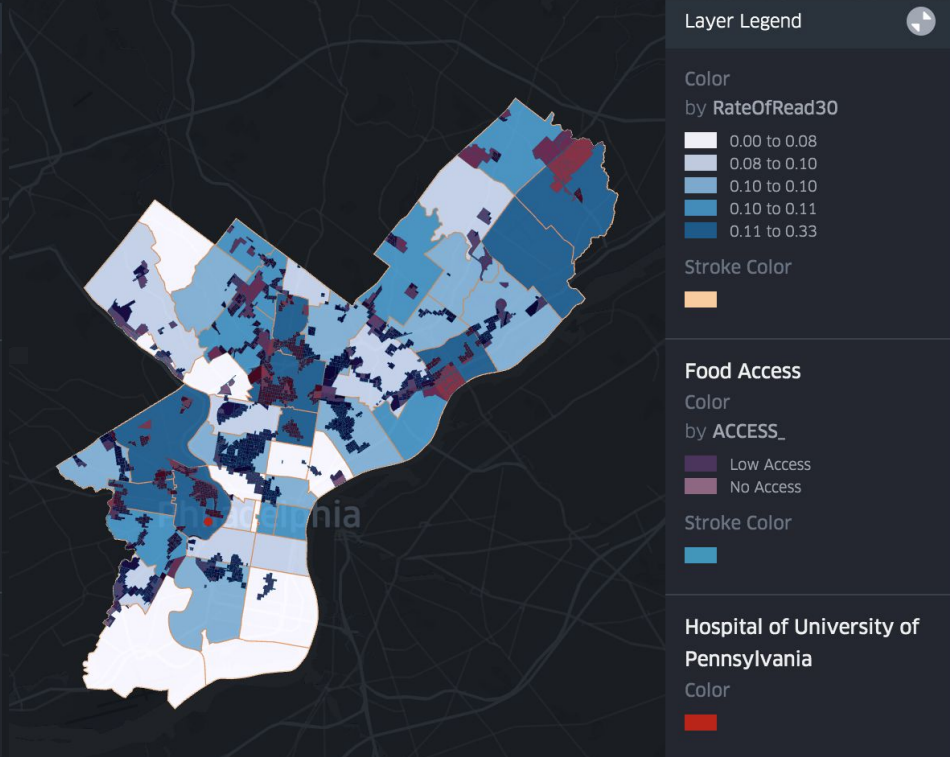
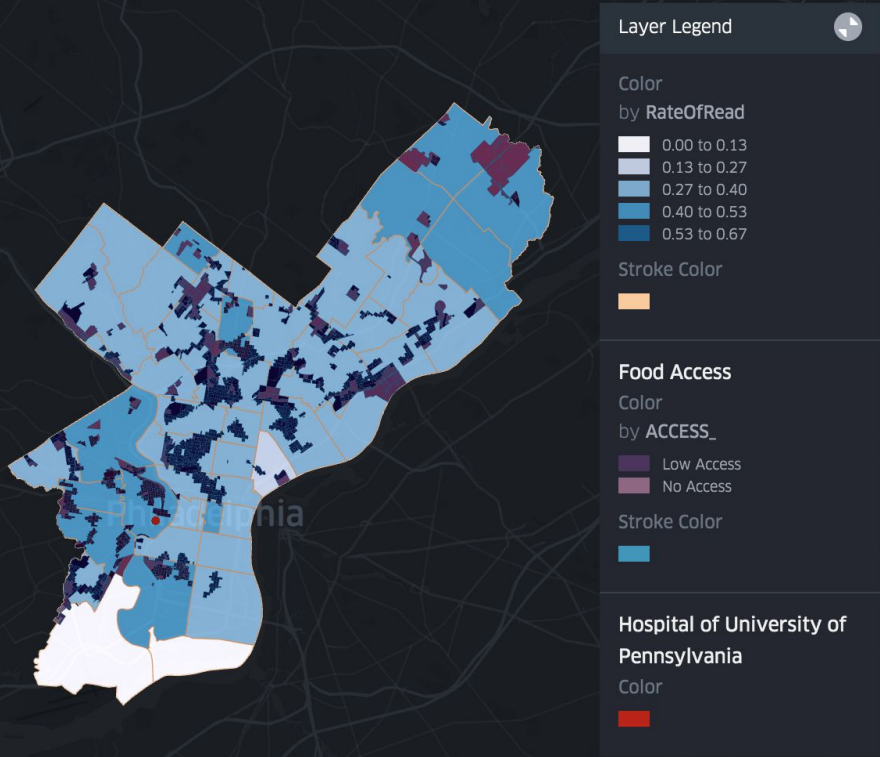


Service Line 2 Description. Color/size shows sum of count.

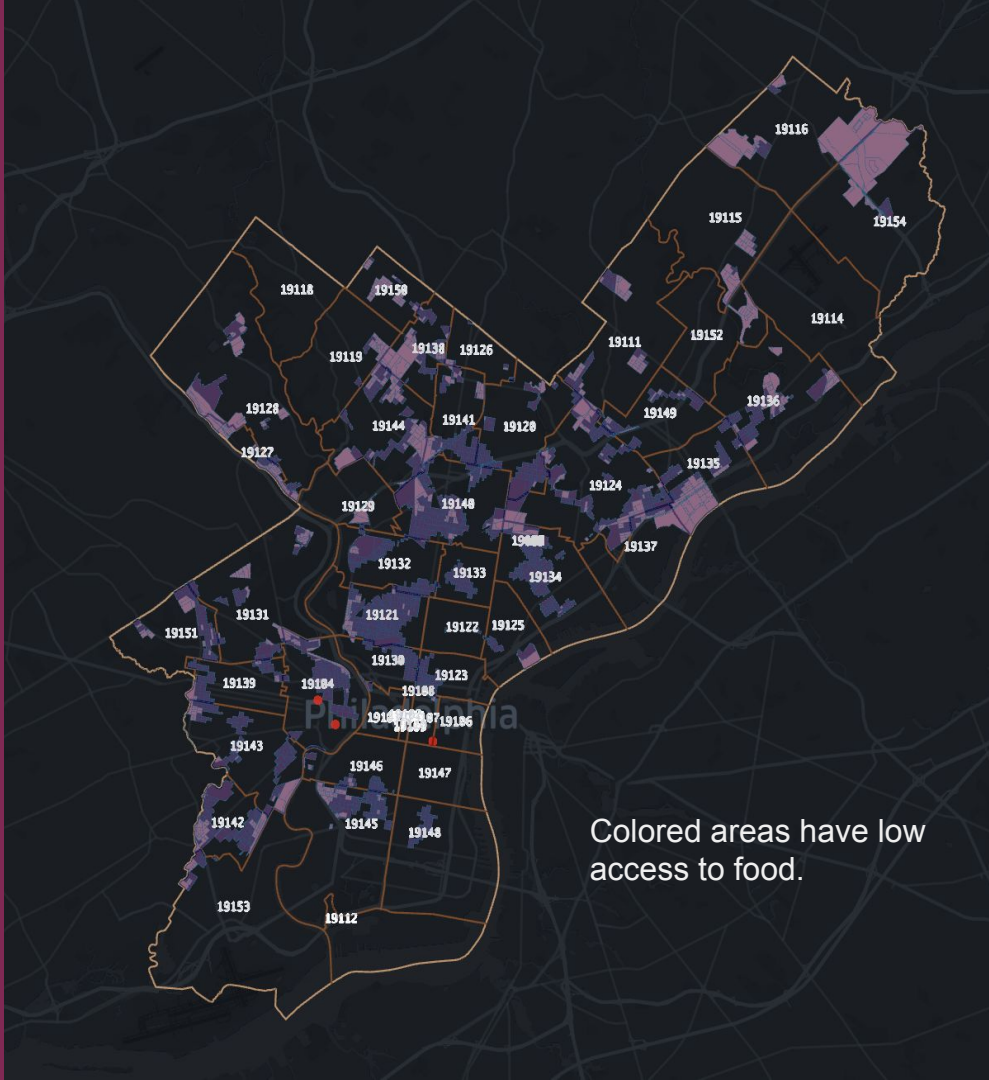
Spatial Clustering of Services Line 2 Description



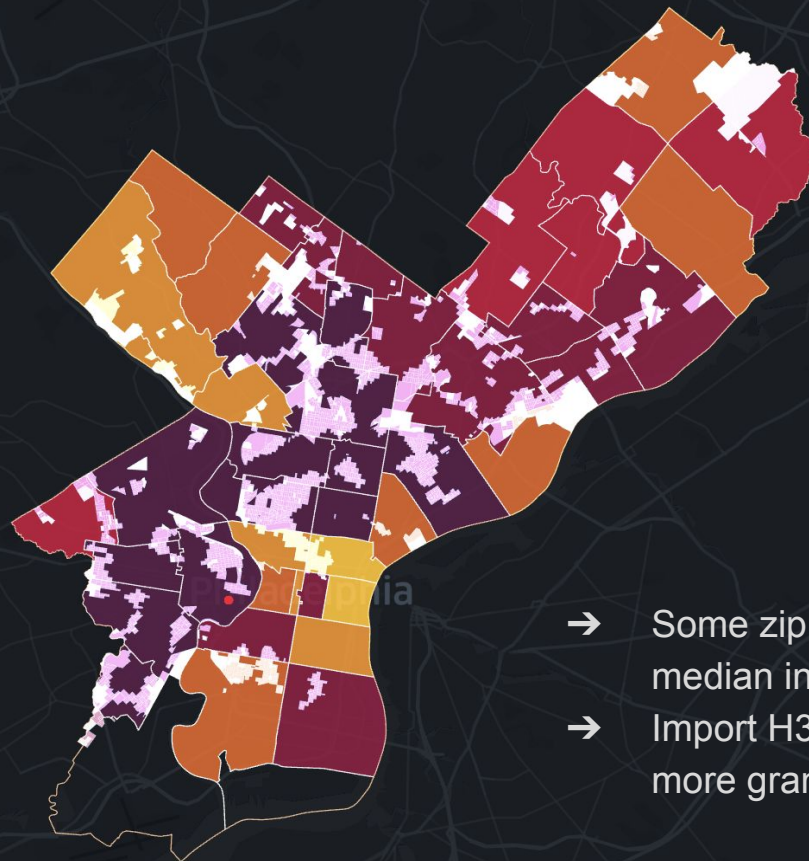
Readmission Rates (General/Within 30 Days) by Zip Codes, Philadelphia



46 Neighborhoods



Median Income/ Food Access by Zip Codes, Philadelphia



- Some zip codes have lower median income.
- Import H3 spatial index for more granular analysis.

Layer Legend

Color

by Med_Income

- 14704.0 to 29514.3
- 29514.3 to 44324.7
- 44324.7 to 59135.0
- 59135.0 to 73945.3
- 73945.3 to 88755.7
- 88755.7 to 103566.0

Stroke Color



Food Access

Color

by ACCESS_

- Low Access
- No Access

Stroke Color



Hospital of University of Pennsylvania

Color



Ethnic Diversity by Zip Codes, Philadelphia

Area needs
further study.

Percentage of white population.
Height shows total population.

Layer Legend

demo1

Color

by Percent_White

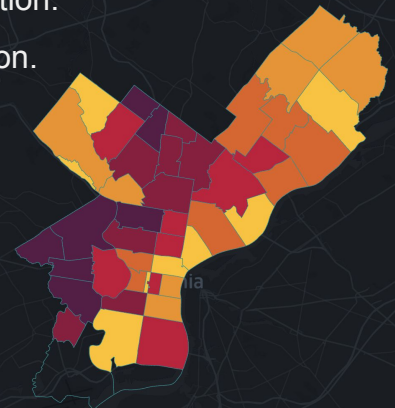


Stroke Color



Height Scale

by Total_Pop



Water Inlets Clustered by H3 Spatial Index, Philadelphia

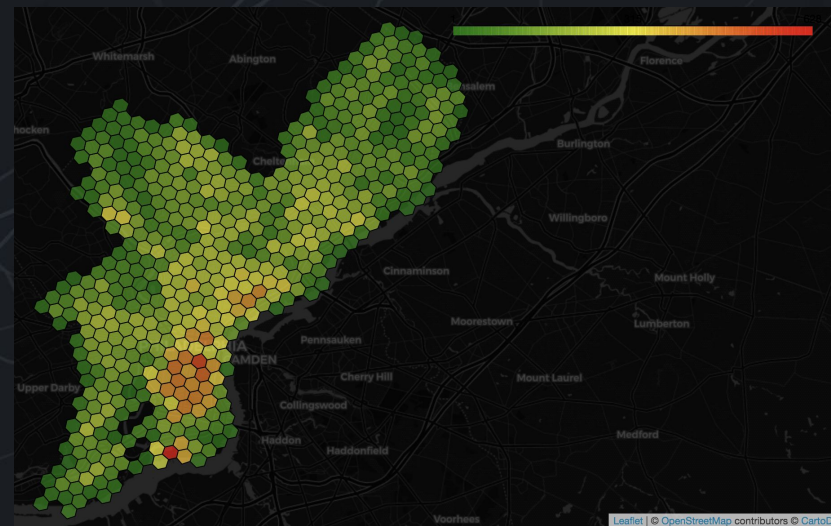
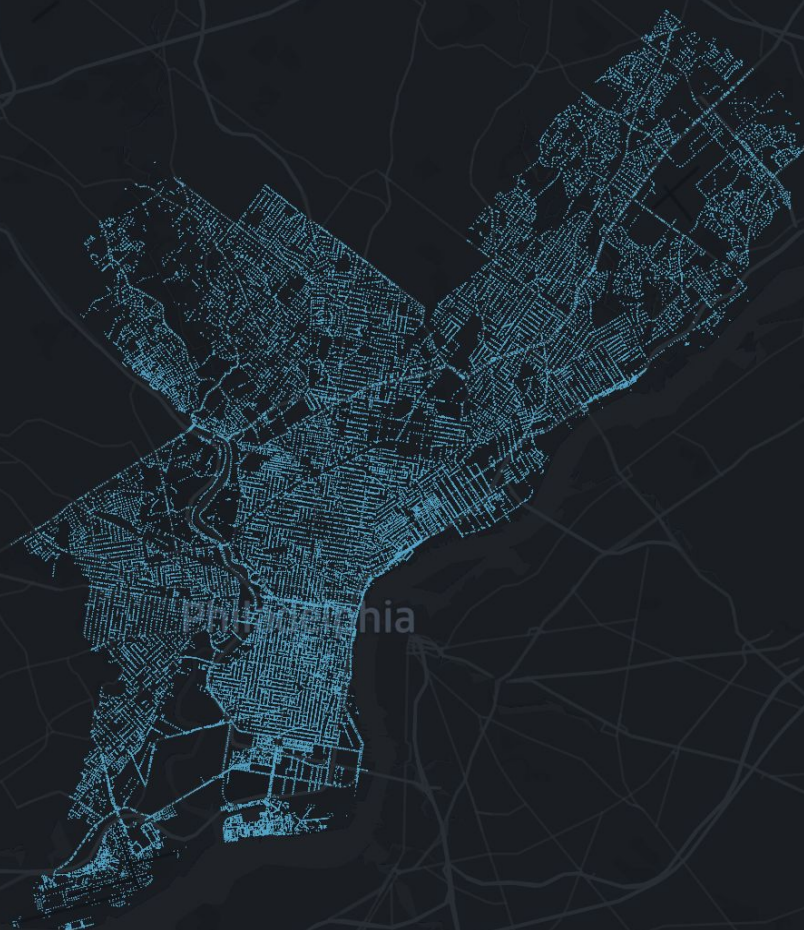


Layer Legend

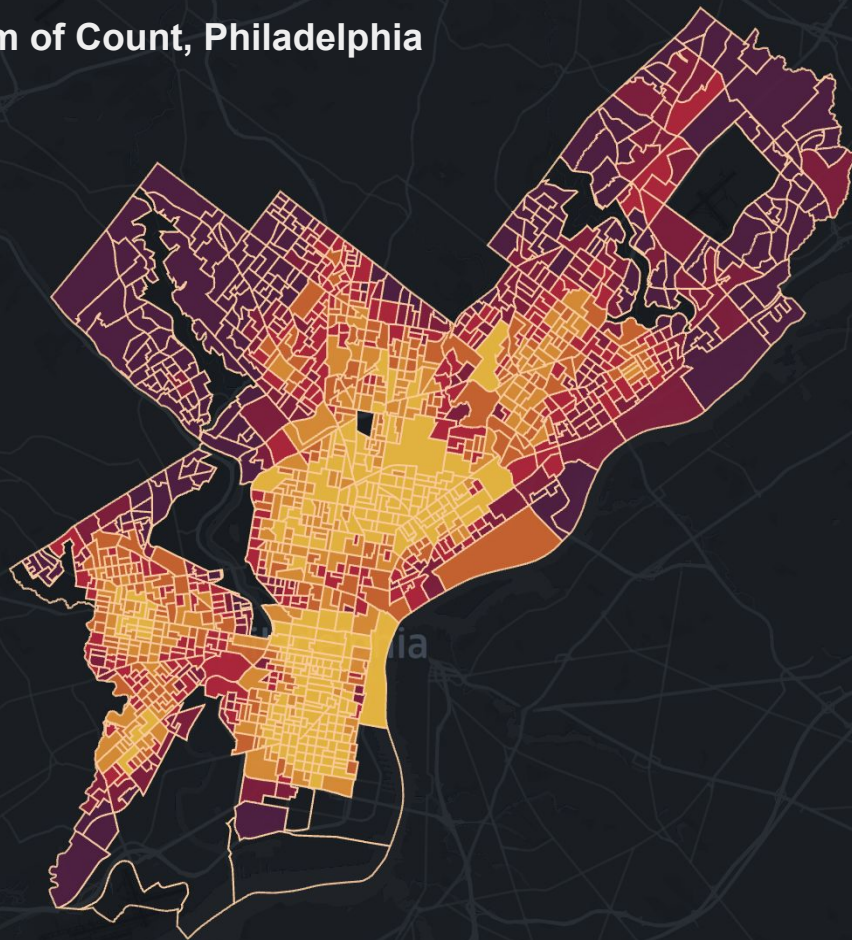


inlets

Color



Neighborhood Food Retail - Low Produce Supply Stores Sum of Count, Philadelphia



Layer Legend

NeighborhoodFoodRetail

Color

by TOTAL_LPSS



Stroke Color



Tobacco Retailers Sum Of Count, Philadelphia



Layer Legend



BUILDING_FOOTPRINTS

Color

by MAX_HGT

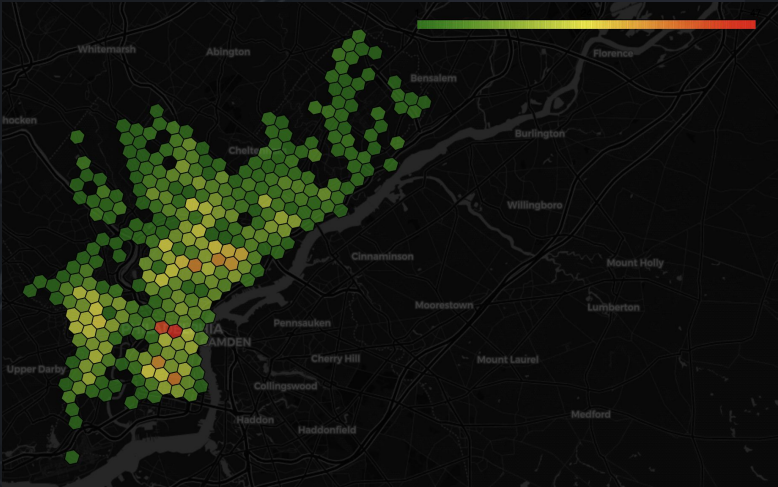
- 1.00 to 26.00
- 26.00 to 29.00
- 29.00 to 31.00
- 31.00 to 35.00
- 35.00 to 982.00

Height Scale

by MAX_HGT

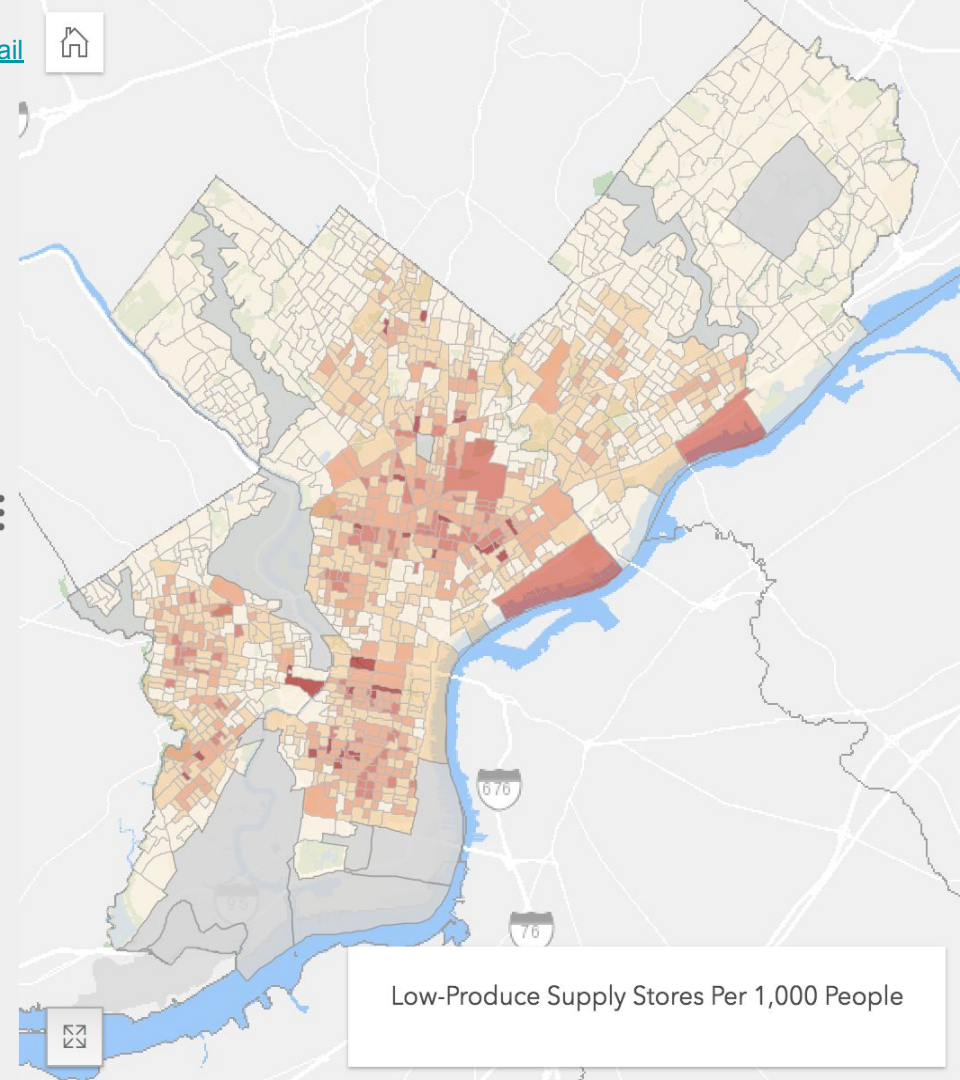
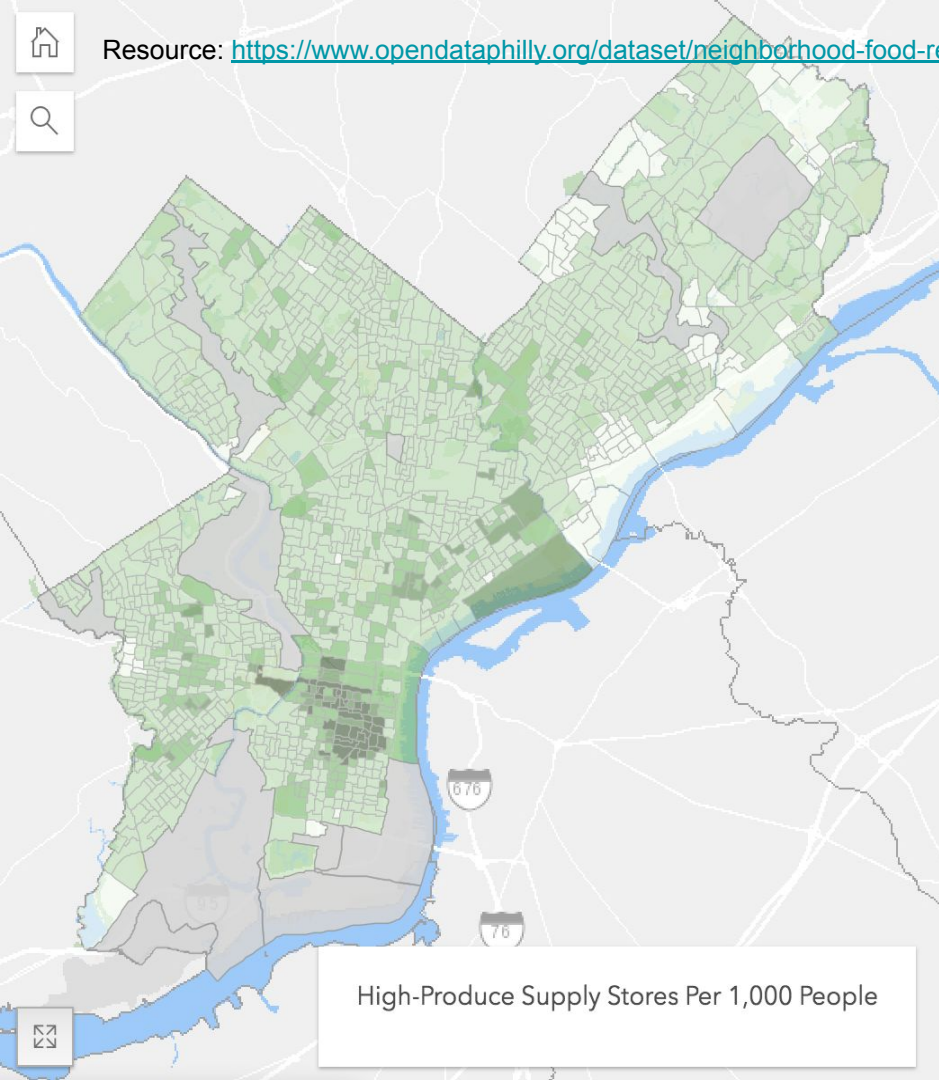
Tabacco Retailers

Color





Resource: <https://www.opendataphilly.org/dataset/neighborhood-food-retail>










Layer Legend

BUILDING_FOOTPRINTS

Color

by MAX_HGT

| | |
|---|-----------------|
|  | 1.00 to 26.00 |
|  | 26.00 to 29.00 |
|  | 29.00 to 31.00 |
|  | 31.00 to 35.00 |
|  | 35.00 to 982.00 |

Height Scale

by MAX_HGT