

## Objective

Determine optimal locations for additional cooling shelters to increase access for populations vulnerable to heat waves

## Heat Vulnerability Index (HVI)

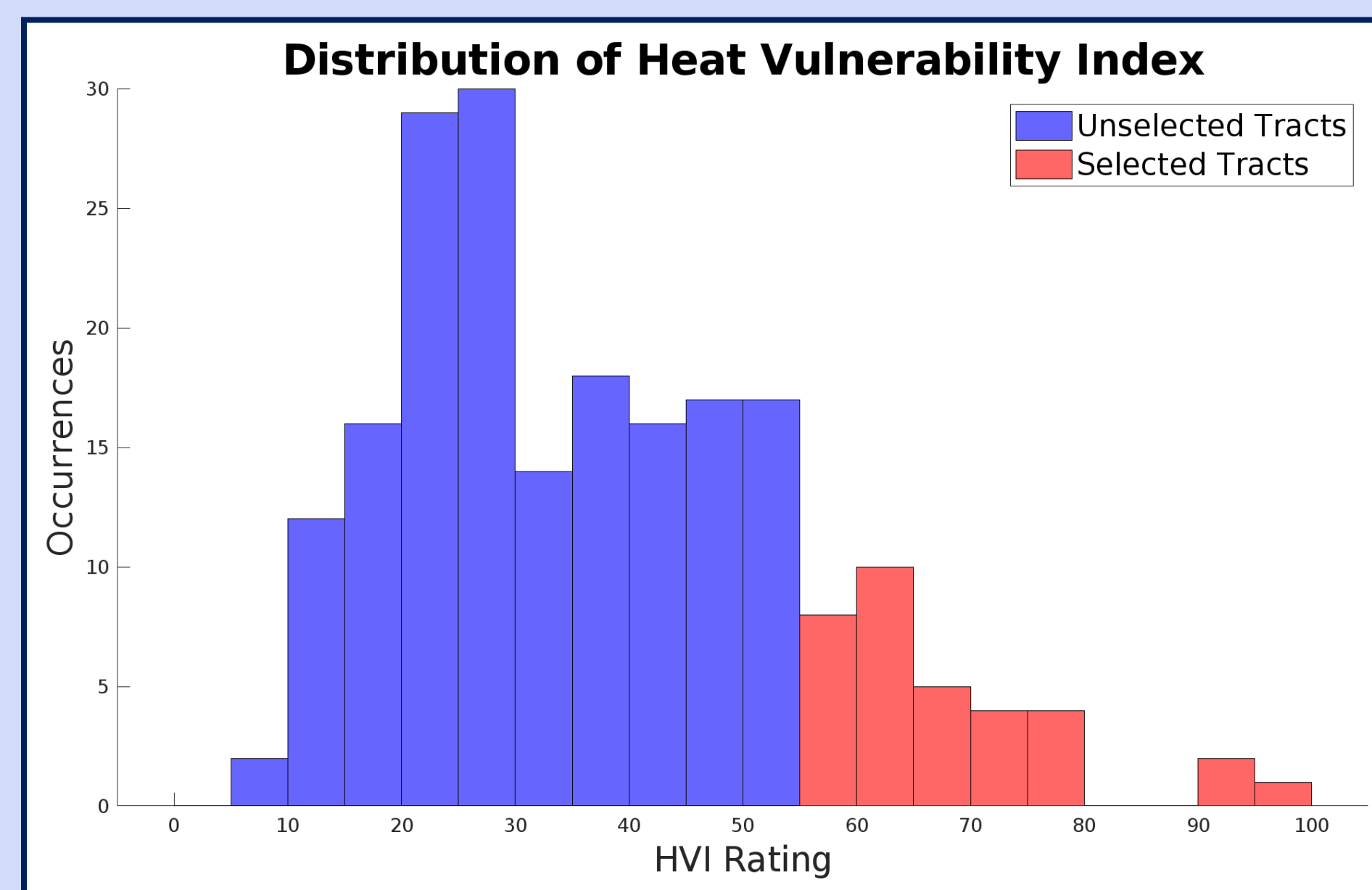
Various demographic factors are correlated with populations disproportionately affected by heat waves

### Vulnerability factors include:

- Elderly
- Below Poverty Line
- No Health Insurance
- No High School Diploma
- Racial Minorities
- Disability
- Unemployment

American Community Survey<sup>1</sup> data was used to analyze these factors for each D.C. Census Tract

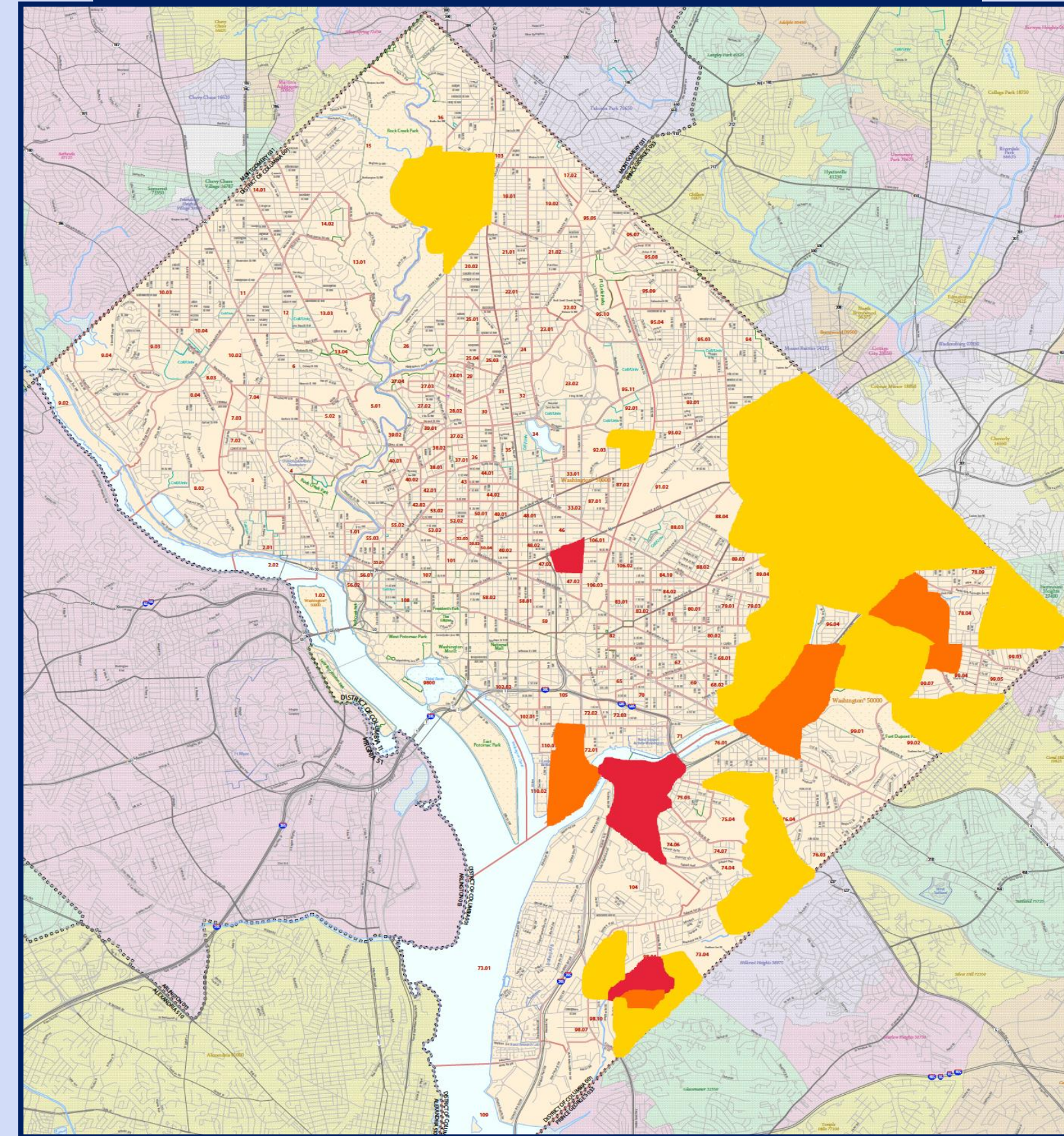
HVI was created by creating a composite of standardized vulnerability factors



Median > Mean → Selected Tracts are tracts with vulnerability One Standard Deviation above the mean

## Analysis

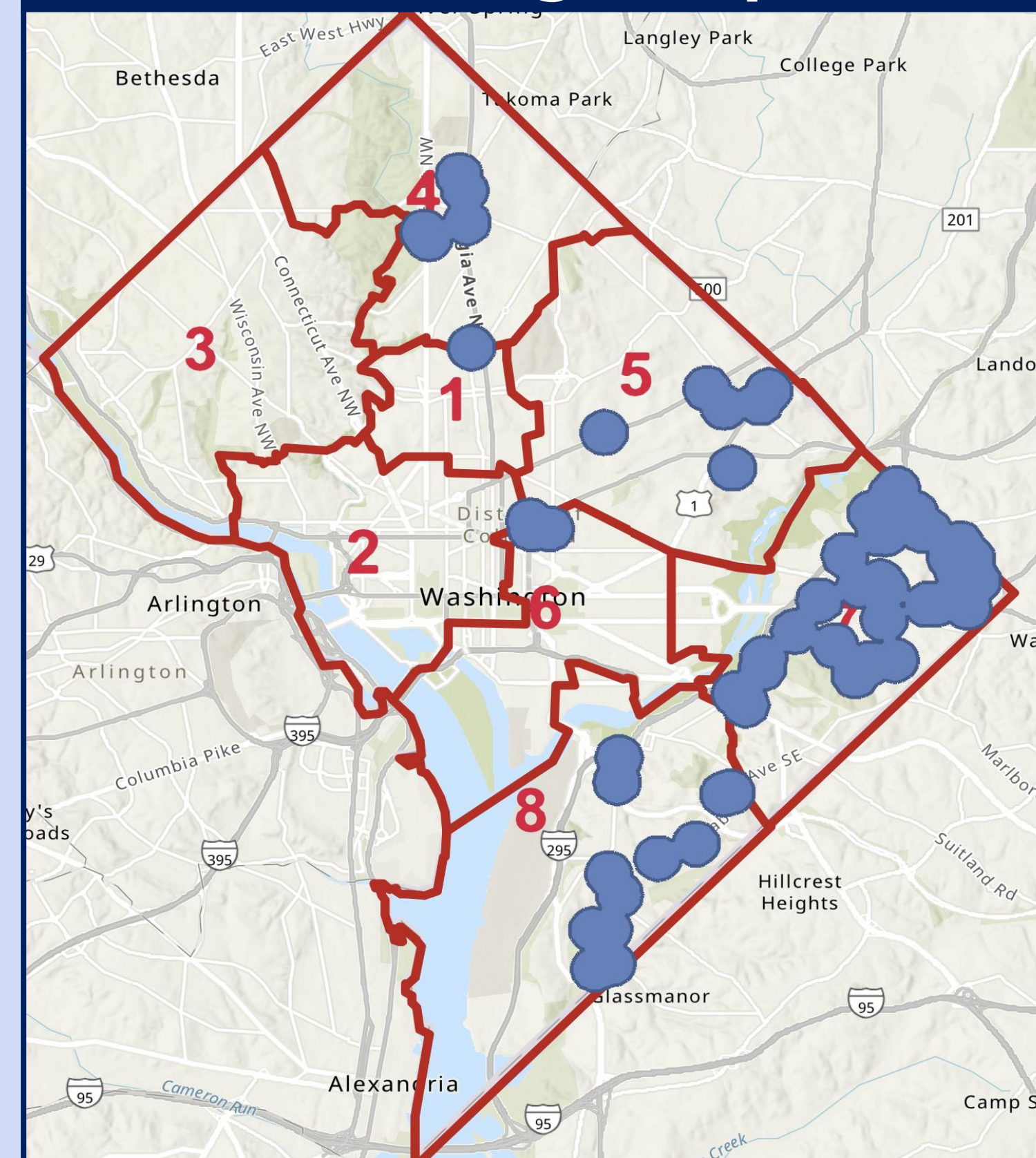
### Most Vulnerable Tracts



Red = Top 30% of Most Vulnerable  
Orange = Middle 30% of Most Vulnerable  
Yellow = Bottom 30% of Most Vulnerable

## Results

### Additional Cooling Shelter Coverage Map



179 Tracts Analyzed  
32 Most Vulnerable Tracts Chosen for Analysis

Currently only Recreational Centers and Libraries are utilized as Cooling Shelters

### Potential New Cooling Shelters:

- Recreational Centers
- Places of Worship

Places of Worship were evaluated based on capacity and current assistance to those in need

Only existing buildings chosen → No cost!

58 Potential New Cooling Shelters within 32 Most Vulnerable Tracts

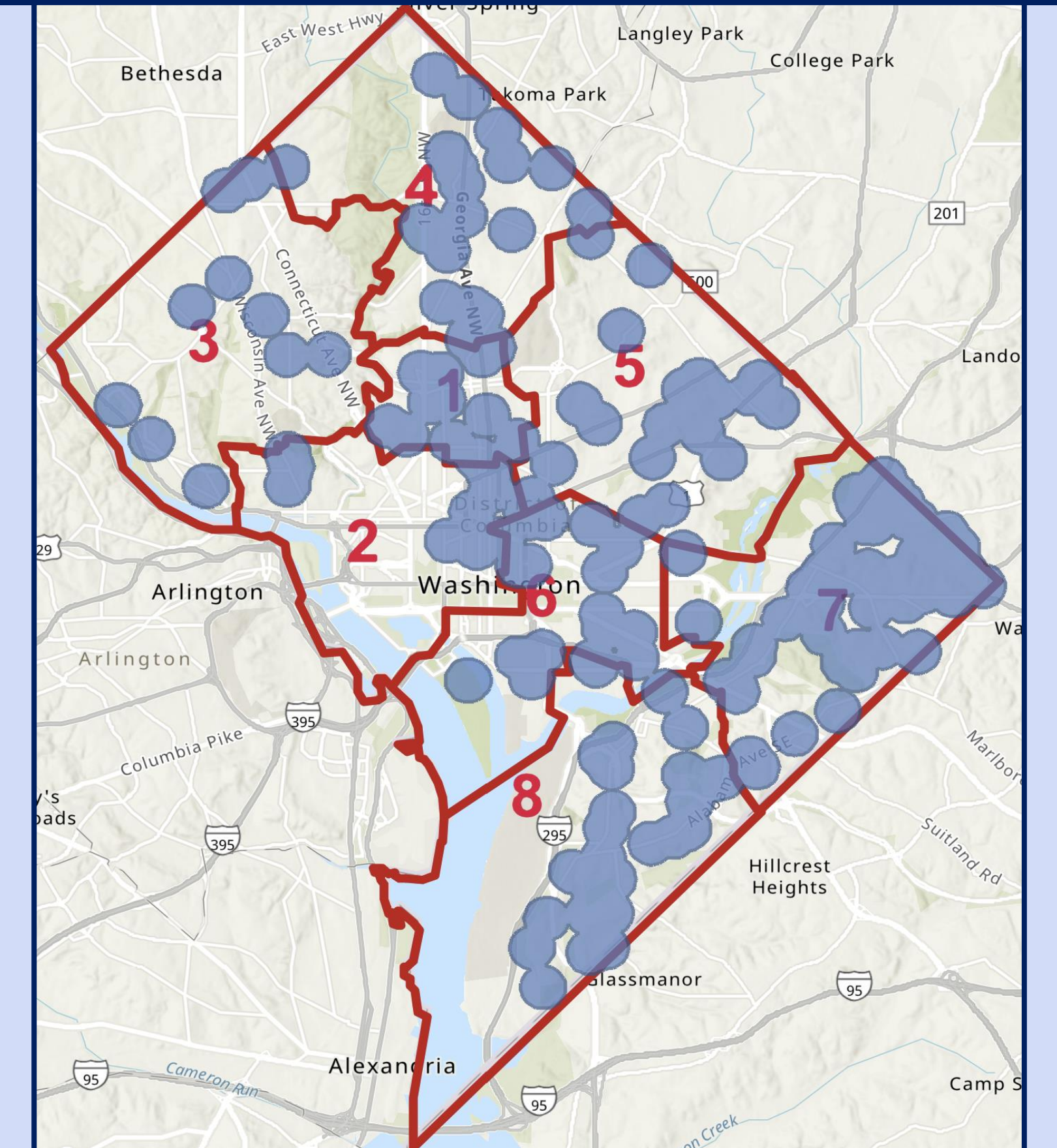
Additional Shelters in Optimal Locations for access for vulnerable populations

8% increase in access within 0.27 mi walking distance

0.27 mi determined to be safe walking distance for vulnerable populations

## Conclusion

### Optimal Cooling Shelter Coverage Map



188 Total Cooling Shelters provide safe spaces for vulnerable populations to escape the heat

Expanded access to cooling shelters could reduce heat related illnesses and hospital visits among vulnerable populations

## Recommendations

1. Implement cooling shelters at 9 Recreational Centers and 49 of Places of Worship
2. Increase outreach to expand awareness of cooling shelters
3. Analyze use of cooling shelters over time to determine usage

## Acknowledgements and References

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(1) ACS 5-Year Economic Characteristics DC Ward. Open Data DC. (accessed Feb. 15, 2024). [https://opendata.dc.gov/datasets/43e7da983bd24f8cbaceb6e654f0da3d\\_42/about](https://opendata.dc.gov/datasets/43e7da983bd24f8cbaceb6e654f0da3d_42/about)