

# “Left in the Dark”

AN ASSESSMENT OF THE CITY OF SAN DIEGO'S STREETLIGHT REPAIR SERVICES

CHHANDARA PECH | CANDIDATE FOR DATA SCIENCE POSITION | OCTOBER 7, 2022

# Objectives

- ▶ Describe the City's current streetlight repair backlog and past performance
- ▶ Develop new methodology to help Transportation Department prioritize their workload, putting an emphasis on equity and public safety

# Key Findings

- ▶ The City has a backlog of streetlight repair tickets that goes back to 2019
- ▶ COVID-19 pandemic further exacerbated backlog
- ▶ City's average days to close out streetlight repair: 261.8
- ▶ Waiting period varies by neighborhoods, but higher crime and higher poverty neighborhoods have longer wait time (these neighborhoods also have higher share of people of color)
  - ▶ Higher crime neighborhoods: 348.8 days
  - ▶ Higher poverty neighborhoods: 323.3 days

# Data Source

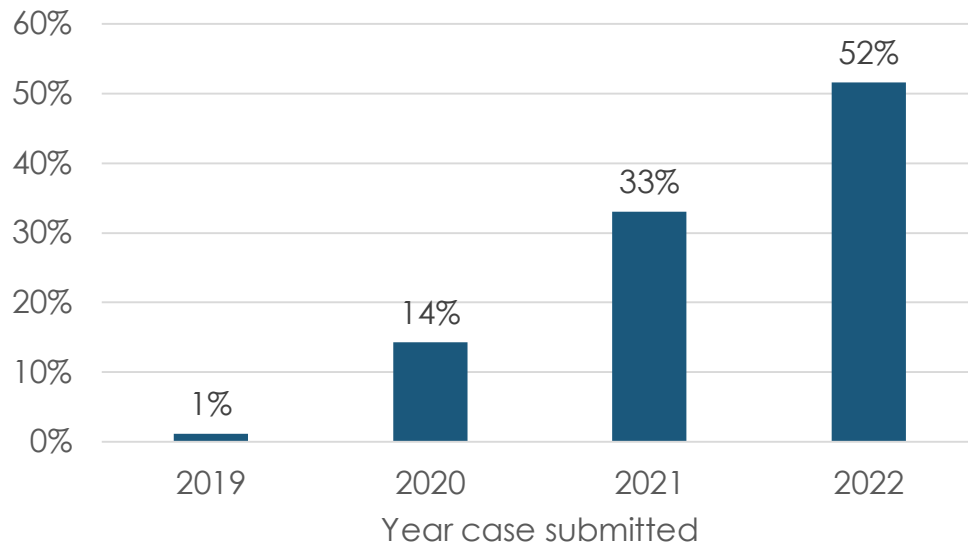
- ▶ Data Sources:
  - ▶ ARJIS Crime Data
    - ▶ Automated Regional Justice Information System is a division of the San Diego Association of Governments (SANDAG) Technical Services Department.
    - ▶ Recent 180 days of San Diego regional crime data as displayed on [crimemapping.com](http://crimemapping.com).
  - ▶ Census Bureau's American Community Survey (2015-19 5-year)
    - ▶ Population and poverty
  - ▶ City of San Diego's "Get it Done"
    - ▶ Requests for streetlight repair
    - ▶ "Open Get it Done Requests" and "Get it Done Requests closed" (2016-2022)

# Methodology

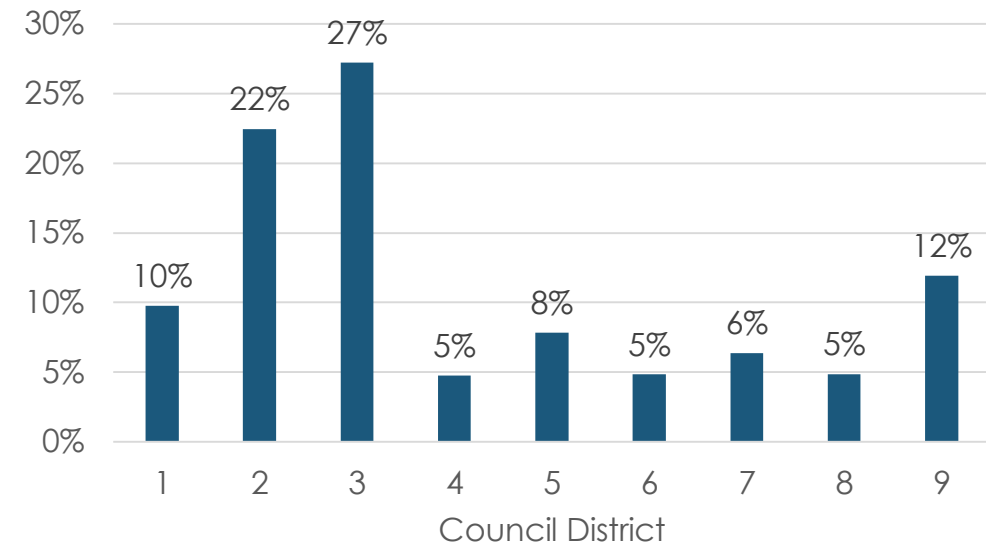
- ▶ Constructed *Crime + Poverty* index for all ZCTA/ZIP Codes (proxy for neighborhoods) in San Diego (see methodology documentation)
  - ▶ Ideally, the preferred unit of analysis should be census tracts
- ▶ Ranked neighborhoods by *Crime + Poverty* index from lowest to highest, with highest being the neighborhoods to prioritize services
- ▶ Overlaid open cases on top of *Crime + Poverty* index map; evaluated and assessed
- ▶ Software utilized: SAS (statistical software), ArcGIS (spatial analysis and mapping), and Excel

# Current Backlog of Cases: ~8,200

## Open Cases by Year



## Open Cases by Council District

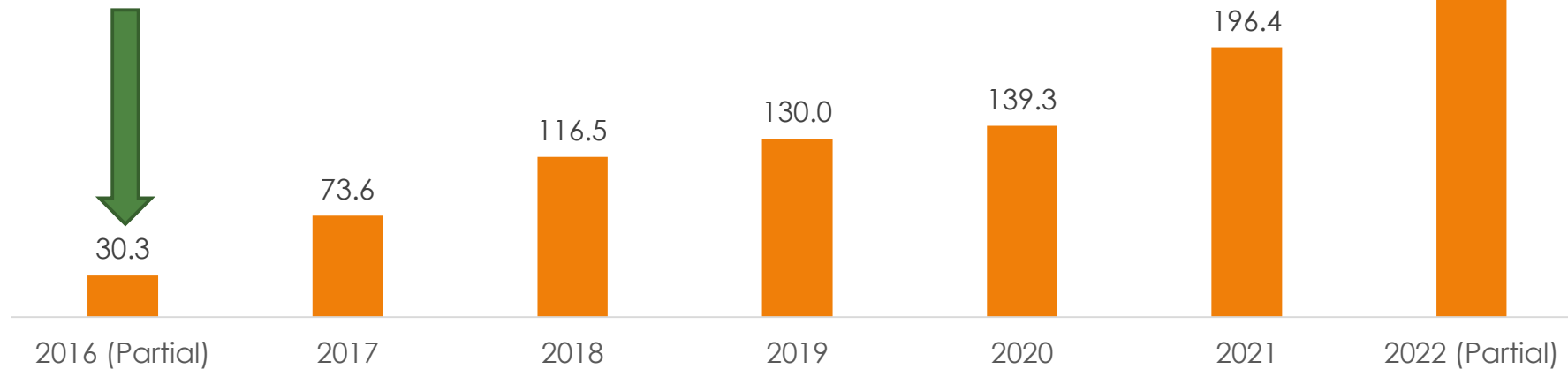


Note: Fewer cases reported in more economically disadvantaged council districts may indicate lack of awareness about the “Get it Done” app. Technological or language barriers may also hinder reporting.

# Assessment of Current and Past Performance

Average Number of Days Between  
Case Submission and Closure

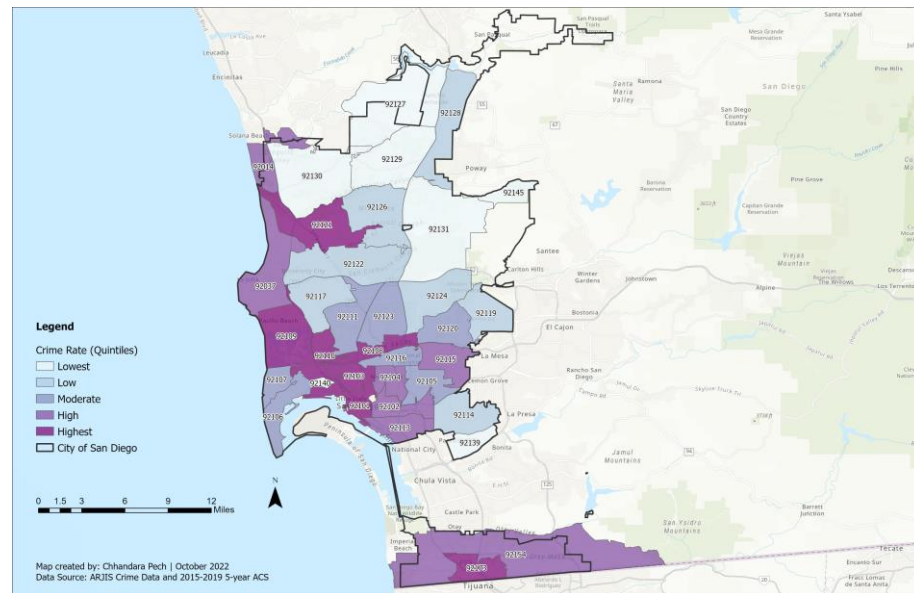
"Get It Done" App Launched  
(5/2016)



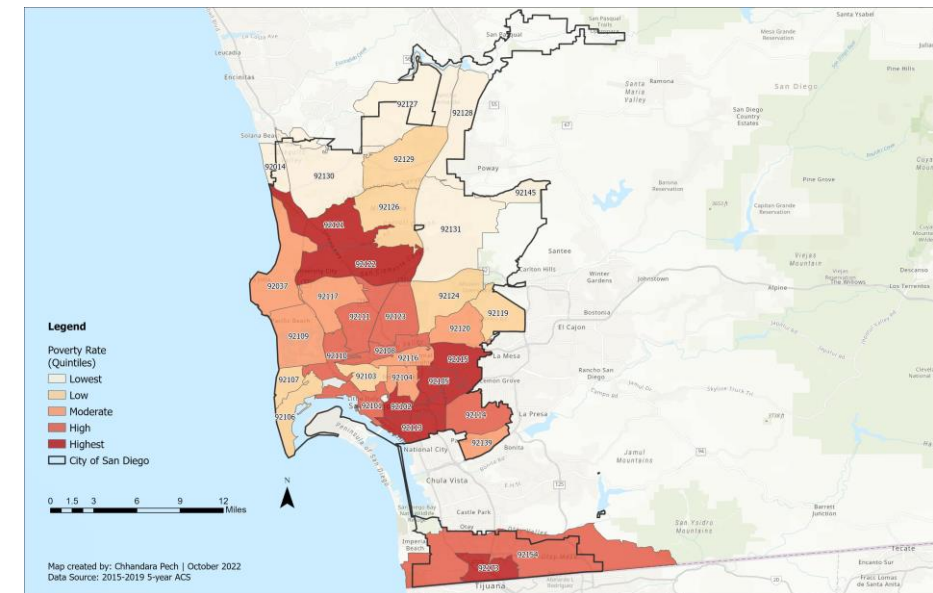
Start of COVID-19 Pandemic

# Spatial distribution of crime and poverty

## Crime Rate



## Poverty Rate

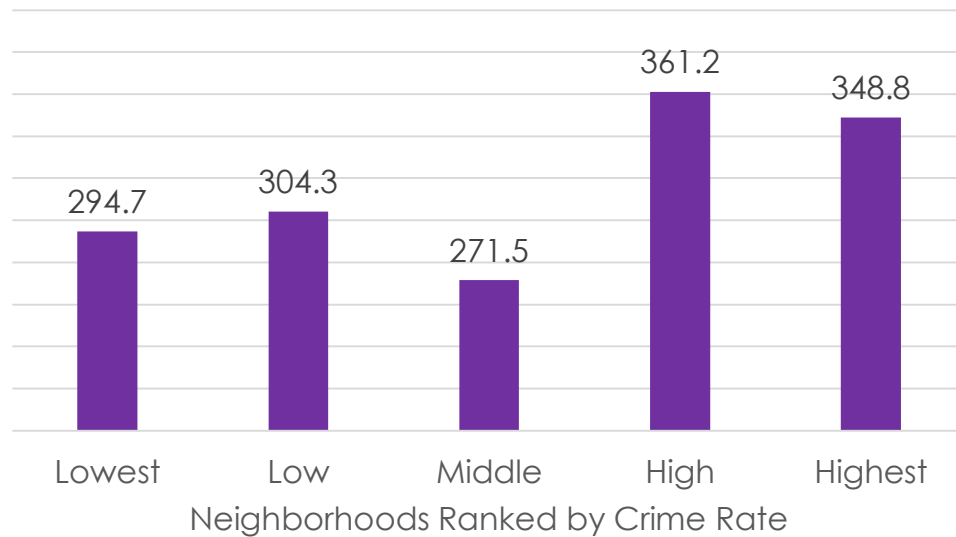


Note: Information displayed at the ZCTA/ZIP Code level; ideally, census tracts is the preferred unit of analysis

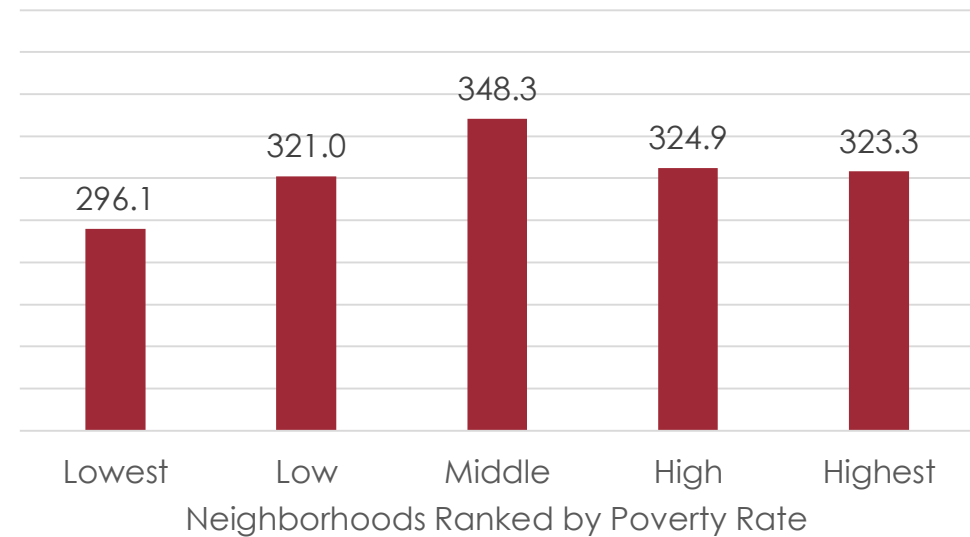


# Average Wait Days Longer in Higher Crime and Higher Poverty Neighborhoods

Average Number of Days Since Case Submission by Neighborhood Crime Rate



Average Number of Days Since Case Submission by Neighborhood Poverty Rate



Note: The analysis uses ZCTA/ZIP codes as the geographic unit of analysis

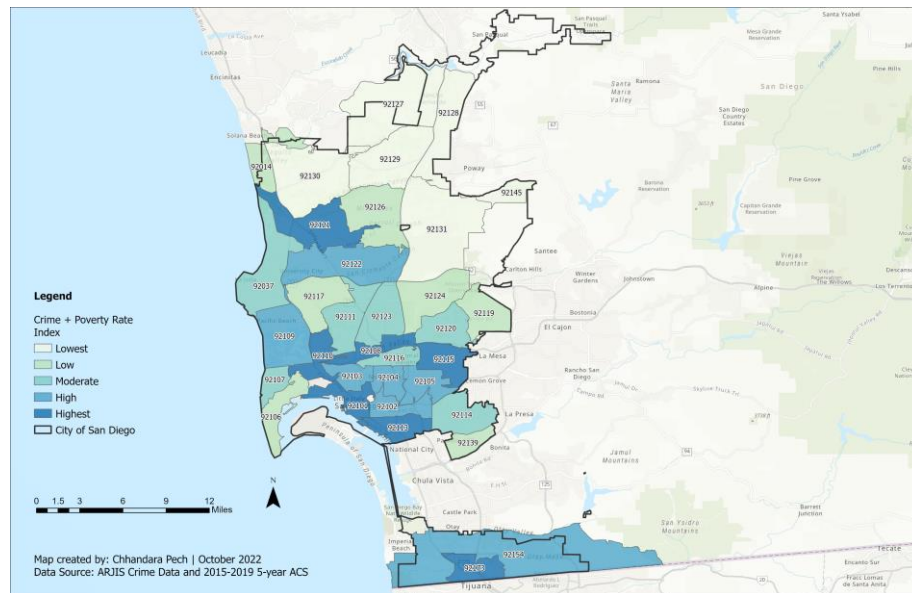
# Components of the Crime + Poverty Index

				Not included in index
Neighborhoods Ranked by C+P Score	Crime + Poverty Score	Crime Rate (per 1K people)	% Poverty	% People of Color
Lowest	10	4	4%	47%
Low	24	8	7%	46%
Moderate	36	10	11%	47%
High	48	15	16%	59%
Highest	59	35	19%	60%

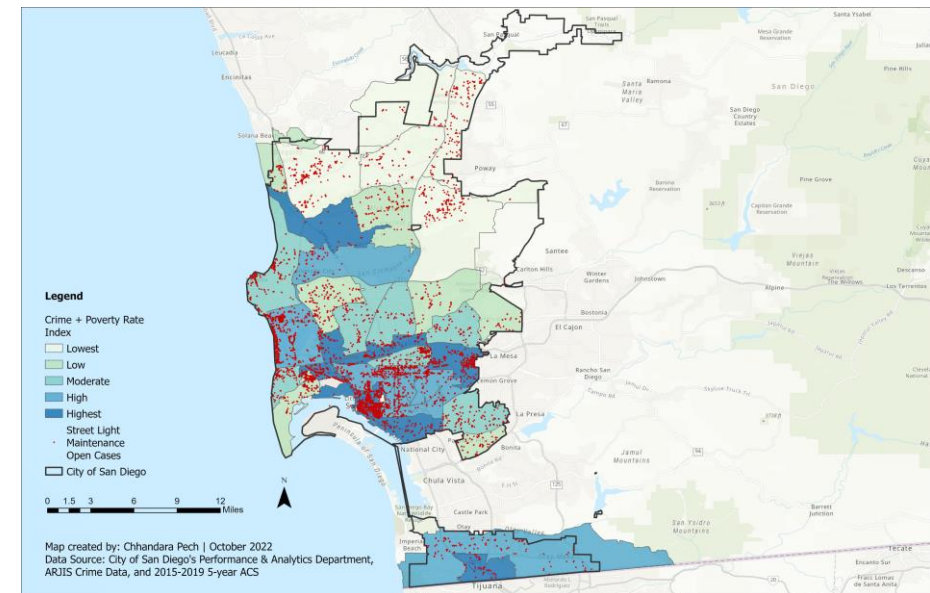
Note: The analysis uses ZCTA/ZIP codes as the geographic unit of analysis  
 People of color includes those who do not identify as non-Hispanic white

# Prioritize open cases in neighborhoods with high crime and high poverty rate

## Crime + Poverty Index



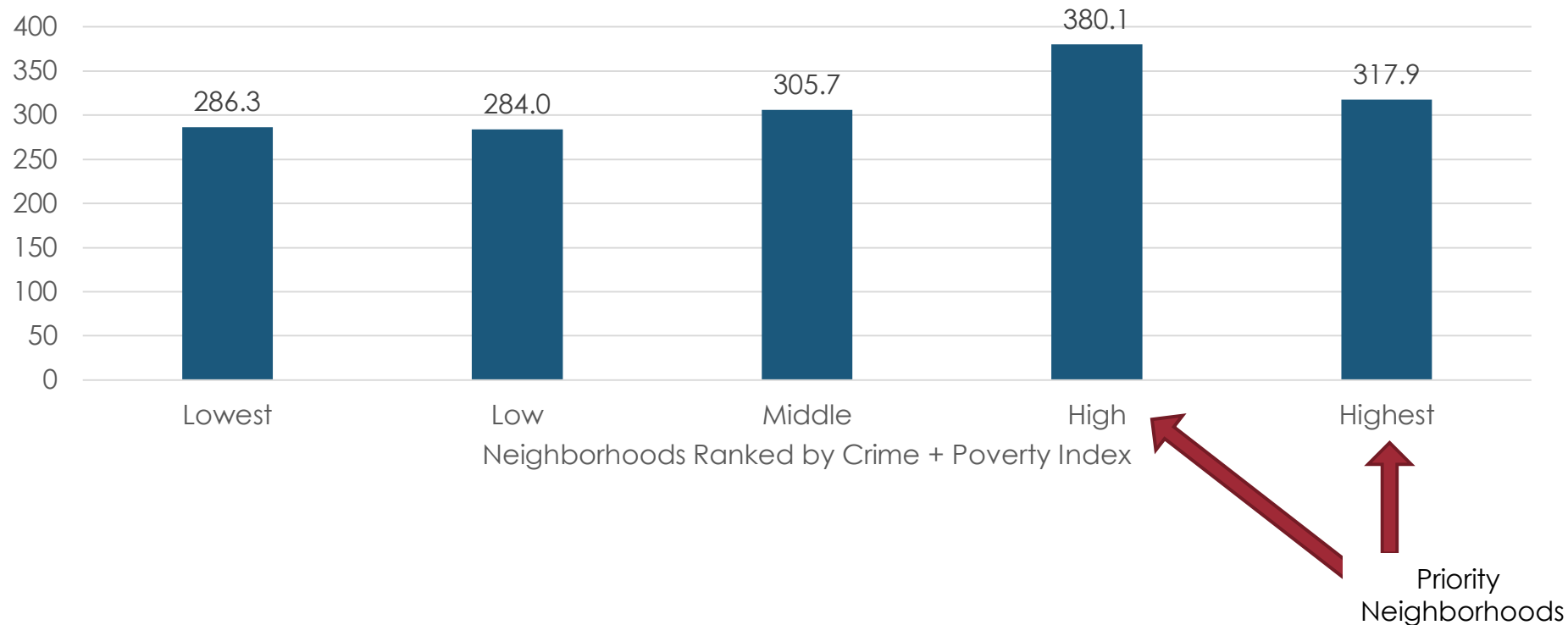
## Open Cases



Note: Information displayed at the ZCTA/ZIP Code level; ideally, census tracts is the preferred unit of analysis

Prioritize open cases in neighborhoods with high crime and high poverty rate

Average Number of Days Since Case Submission by  
Neighborhood C+P Index



# Recommendations

- ▶ Incorporate public safety and equity measures to prioritize open cases for streetlight repairs
  - ▶ Develop a *Crime + Poverty* index at the census tract level for all tracts in the county; rank neighborhoods by *Crime + Poverty* index from lowest to highest score
- ▶ Integrate the neighborhood information into the relational database used by the City to process streetlight repairs
- ▶ Prioritize cases that are in areas with high crime and high poverty
  - ▶ Further prioritization by days cases opened
- ▶ Monitor and perform near real-time assessment.
  - ▶ This will enable the City to determine if the pilot program is meeting its targets in terms of addressing streetlight repairs in priority neighborhoods. If the assessment identifies any deficits relative to desired targets, then the City can make mid-course programmatic changes to address the problem.

# Appendix

Quintile ranges for *Crime + Poverty* components

	Poverty Rate		Crime Rate		Crime + Poverty Score	
	Min	Max	Min	Max	Min	Max
Lowest	1%	5%	1.1	4.9	2	16
Low	6%	9%	5.3	9.3	19	30
Moderate	9%	11%	9.6	11.7	33	40
High	12%	16%	11.7	16.6	42	52
Highest	18%	27%	21.2	73.4	57	62