

# Vehicle-based methane mapping: find gas leaks, prioritize repair

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**Natural gas leaks are ~1/3 of  
US methane emissions**

# Synthesis of new technologies

## New sensor technology



Los Gatos UGGA



LiCor 7700



Picarro TGA

## GSV Car Instrumentation

### Closed-path CH<sub>4</sub> analyzer

- 2Hz data = 15 feet @ 20mph
- Precision ±0.01ppm



GPS unit

- 24 inch precision

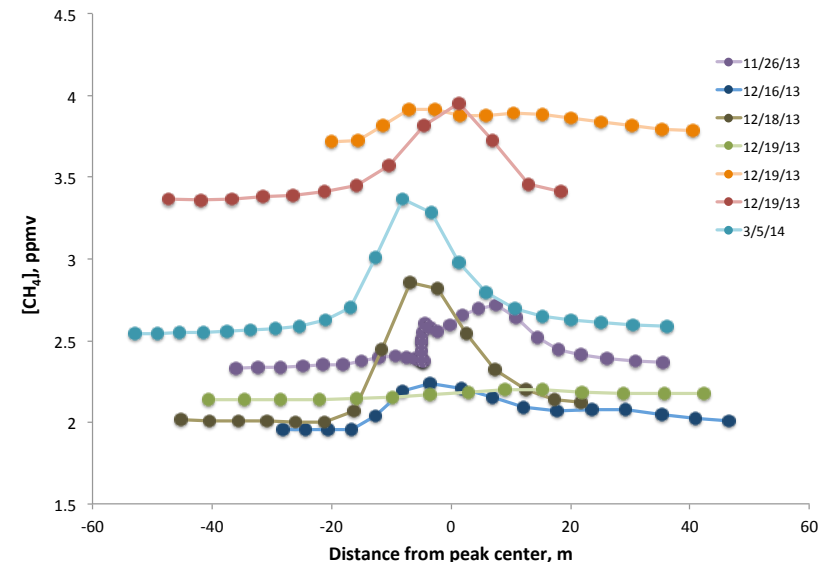
Sample intake

Each component reports performance data that were used in QAQC screening

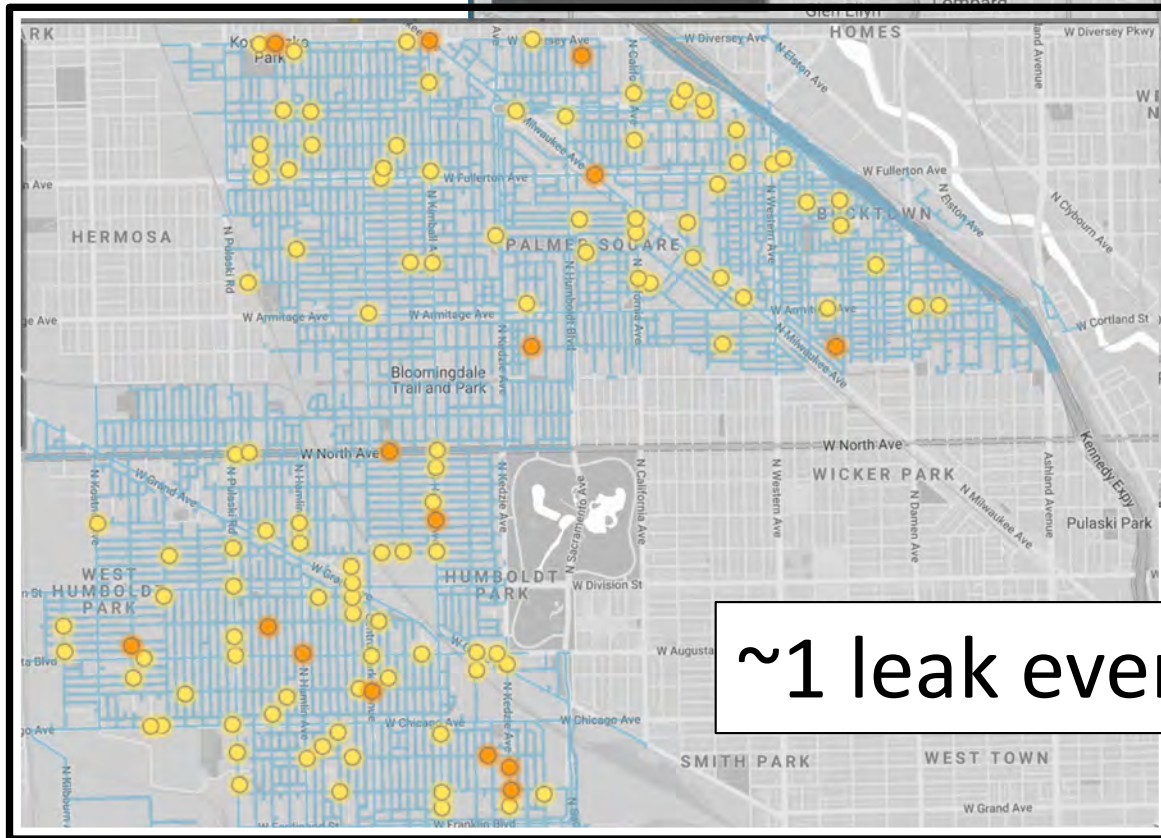
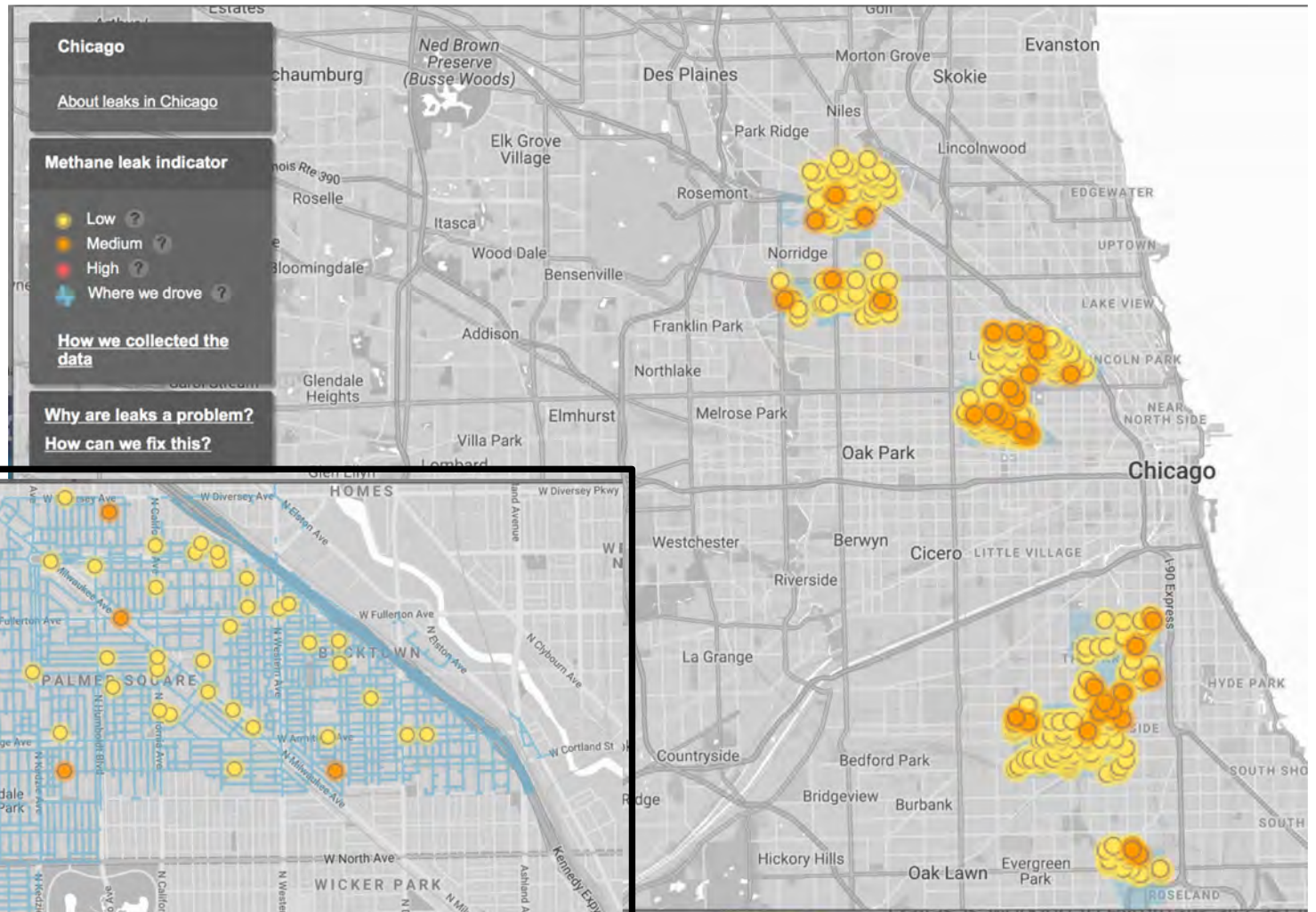
## Controlled release experiments



**Allowed us to vary:**  
 release rate: 2, 5, 10 & 40 L/min  
 Distance 5, 10, 20 and 40m



# Documenting patterns in cities



~1 leak every 3 miles of roadway

# Fast, effective leak size estimates



**CURRENT**



**NEW**

***To learn more, search “EDF Methane Maps”***

# The “fat tail” opportunity: fix biggest to efficiently cut emissions

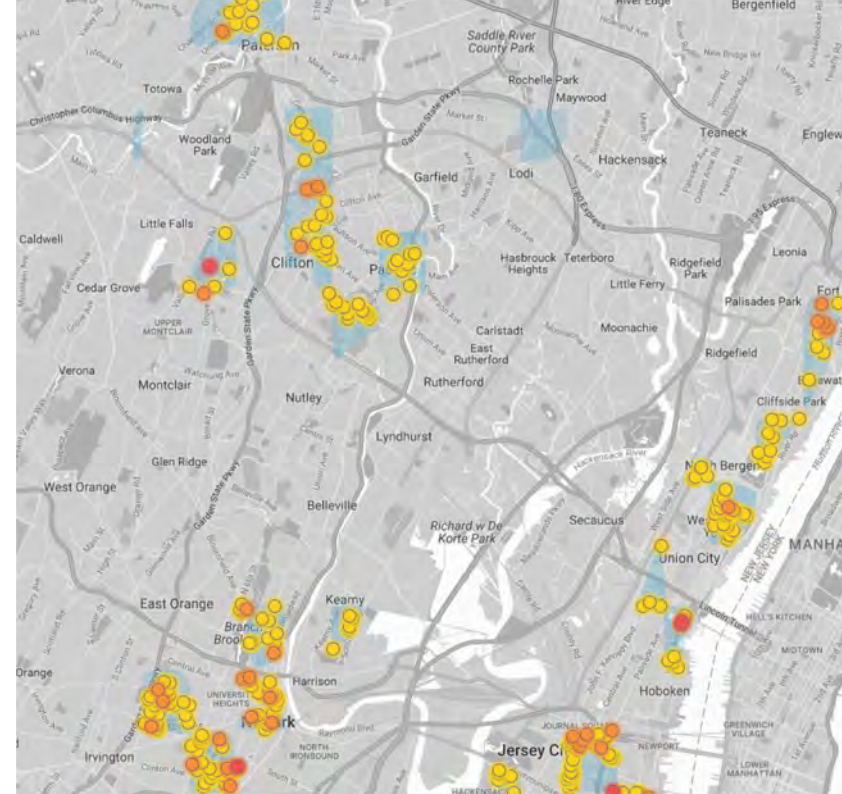
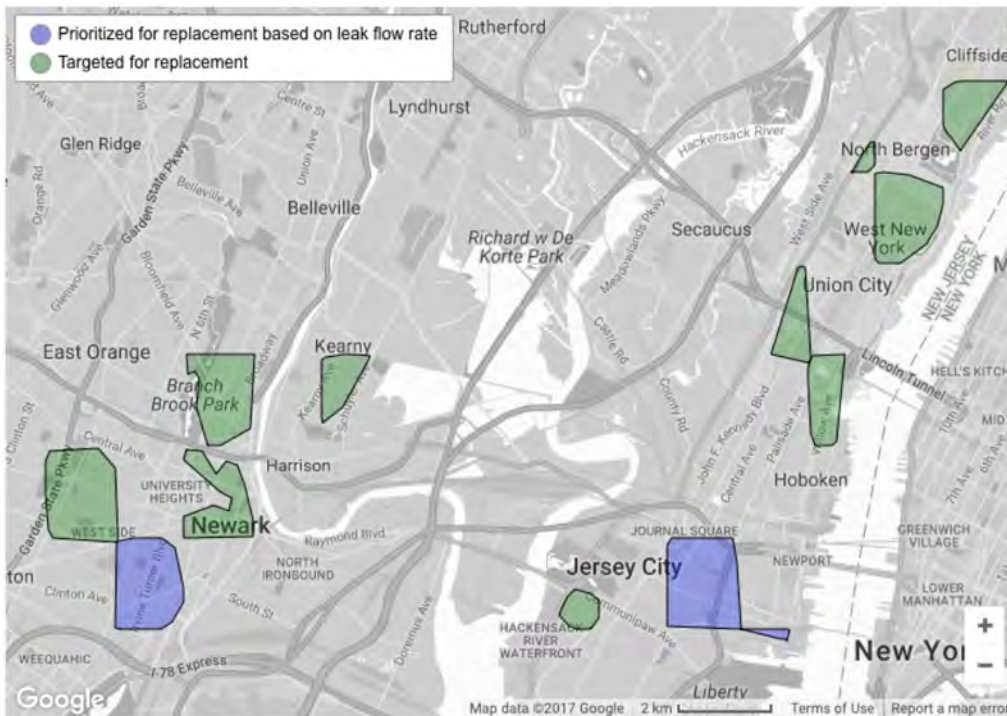
<b>Largest X% of leaks</b>	<b>Emit Y% of total emissions</b>
0.7%	10%
4.6%	25%
20%	50%
50%	74%

*Results from >6000 leaks in 14 cities*

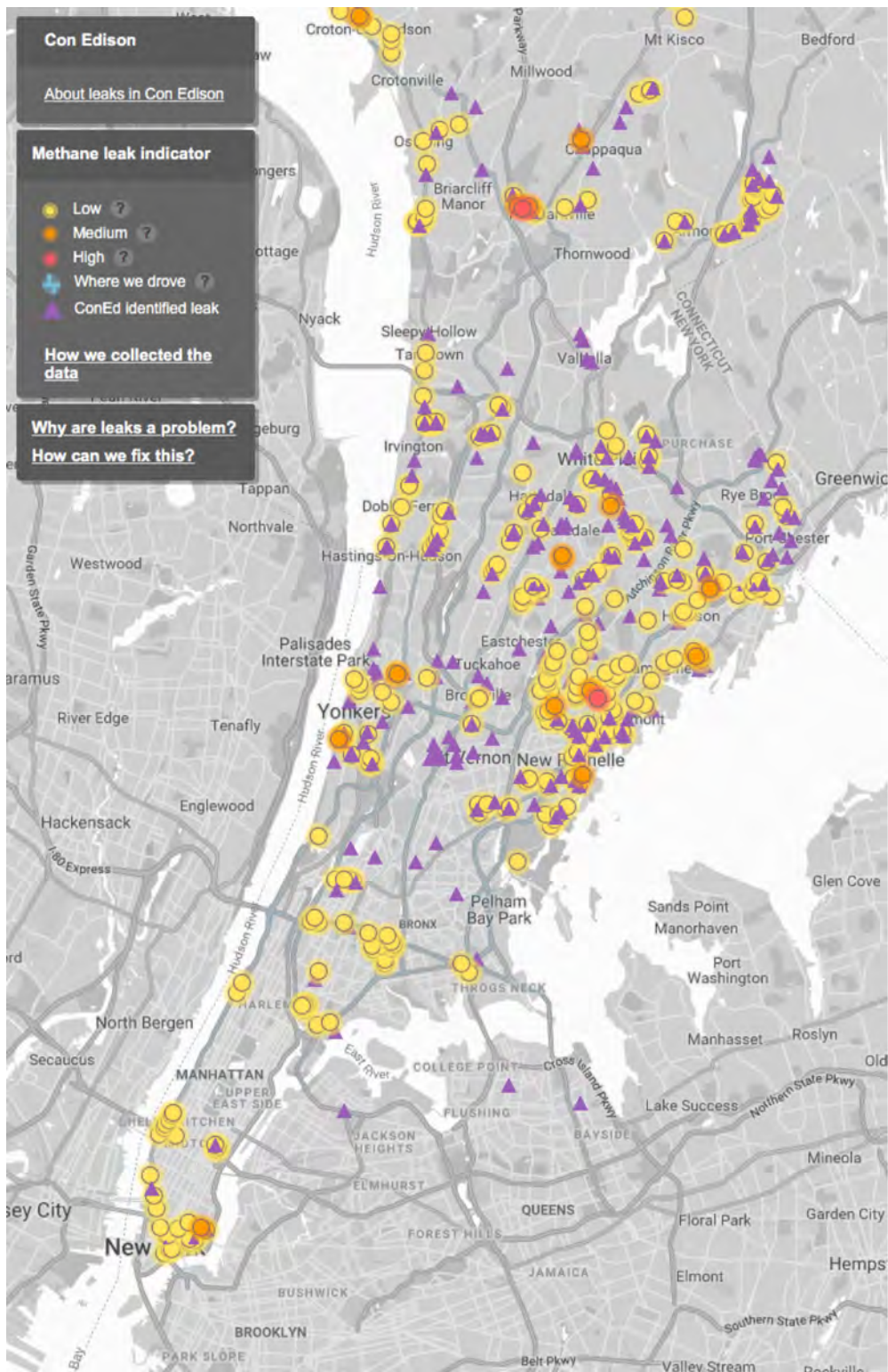
# New Jersey: Helped prioritize \$900,000,000 in pipeline replacement



# PSEG

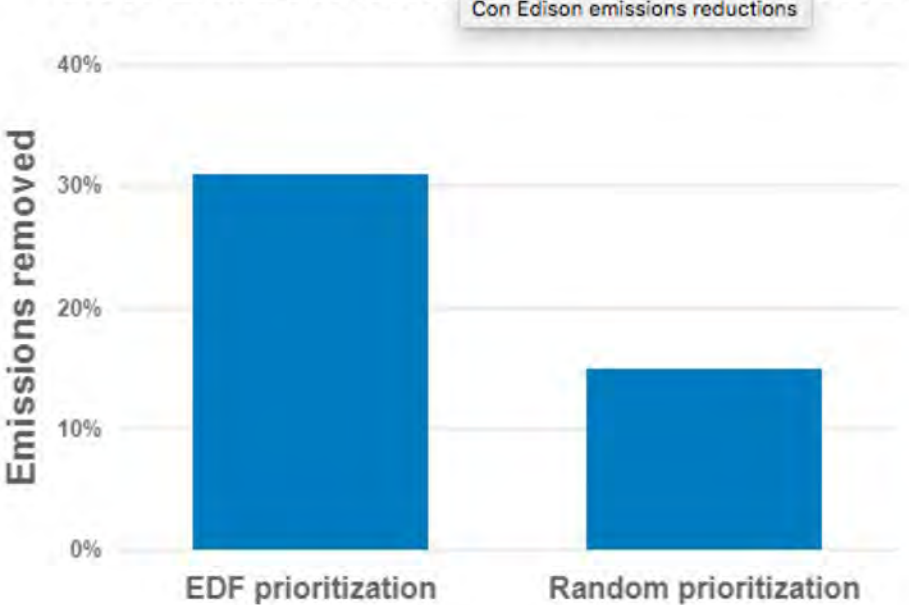


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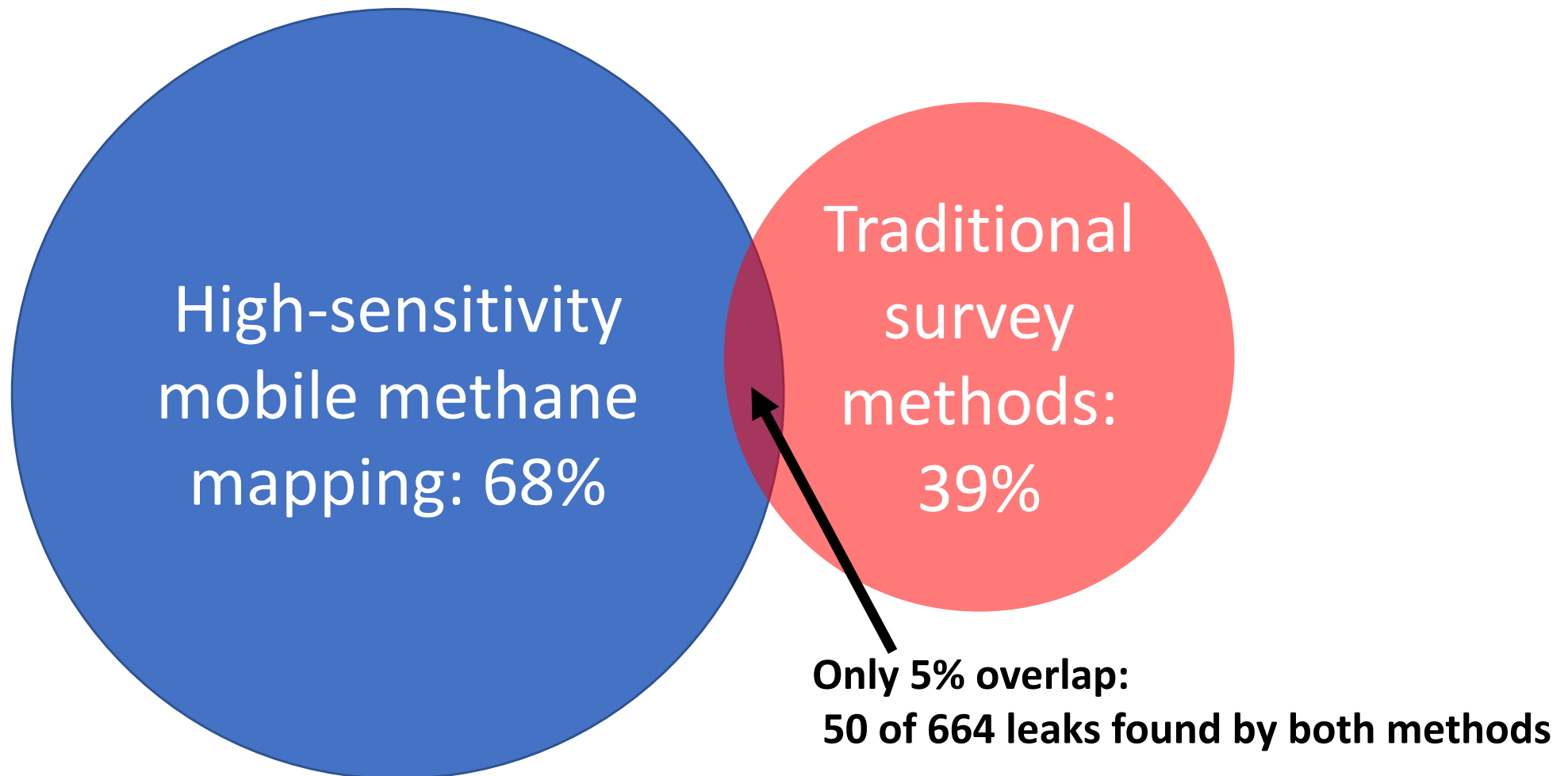
# New York City: Prioritization of repairs reduced emissions by 31%

**Con Edison emissions reductions**





# High sensitivity analyzers find more leaks



# A general pathway for reduced emissions

- Create diverse teams
  - Science, law, industry
- Encourage continual improvement
  - Test, adopt new technologies
  - Improved practices
- To find emissions, you must look for them
- Prioritize repair efforts, start with biggest leaks
- Outcome is win-win