Developing a Community-Engaged Low-cost Air Monitoring Network in Seattle, Washington

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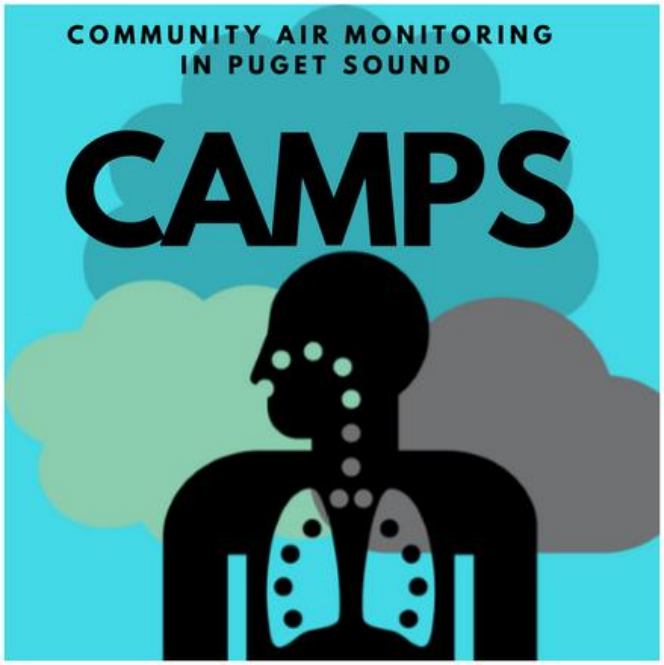
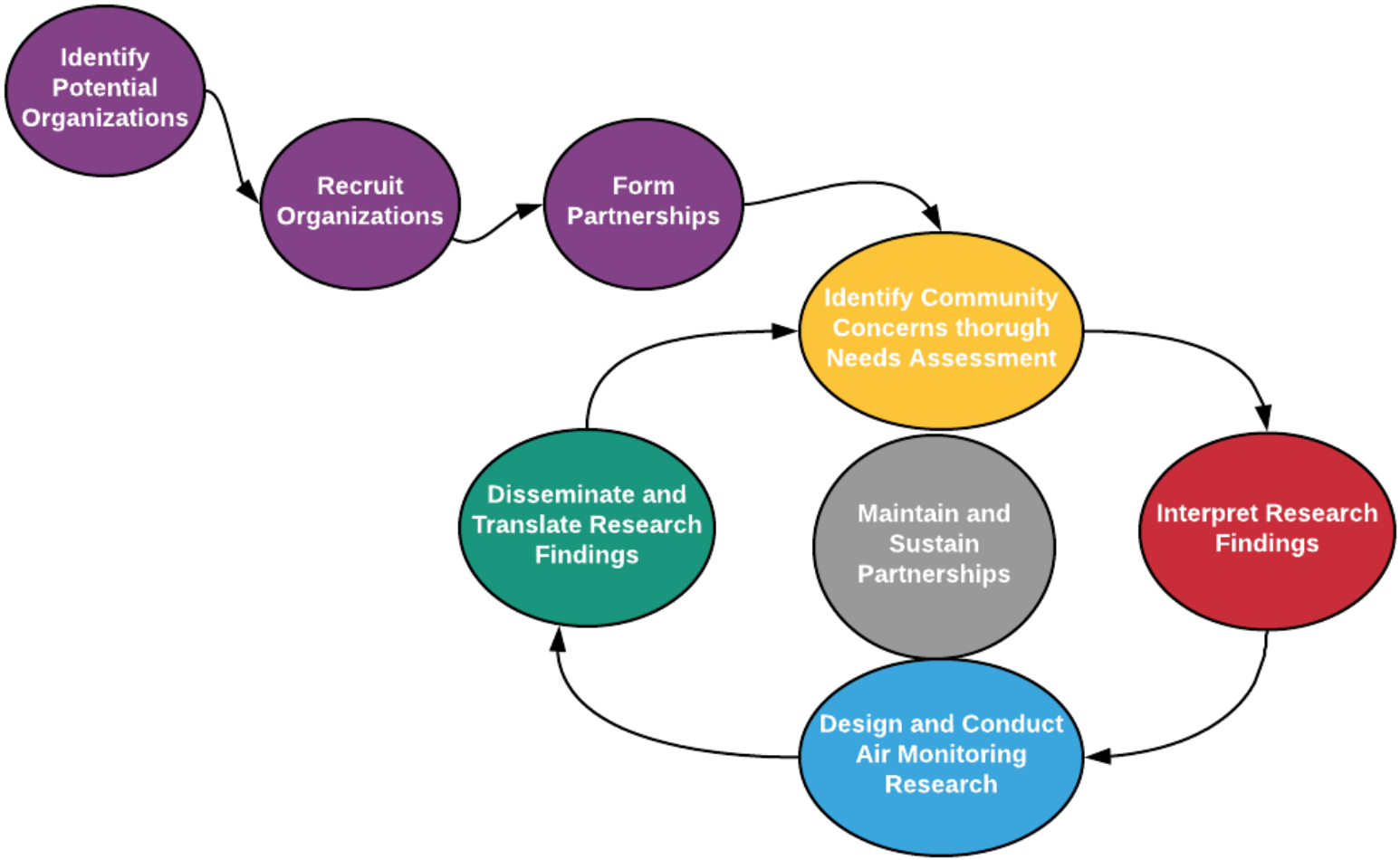
Introduction

- The goal of this study is to collect and provide air quality data to residents
  - To support individual and community actions that reduce air pollution exposures and improve health
  - To provide additional data for the Adult Changes in Thought – Air Pollution study



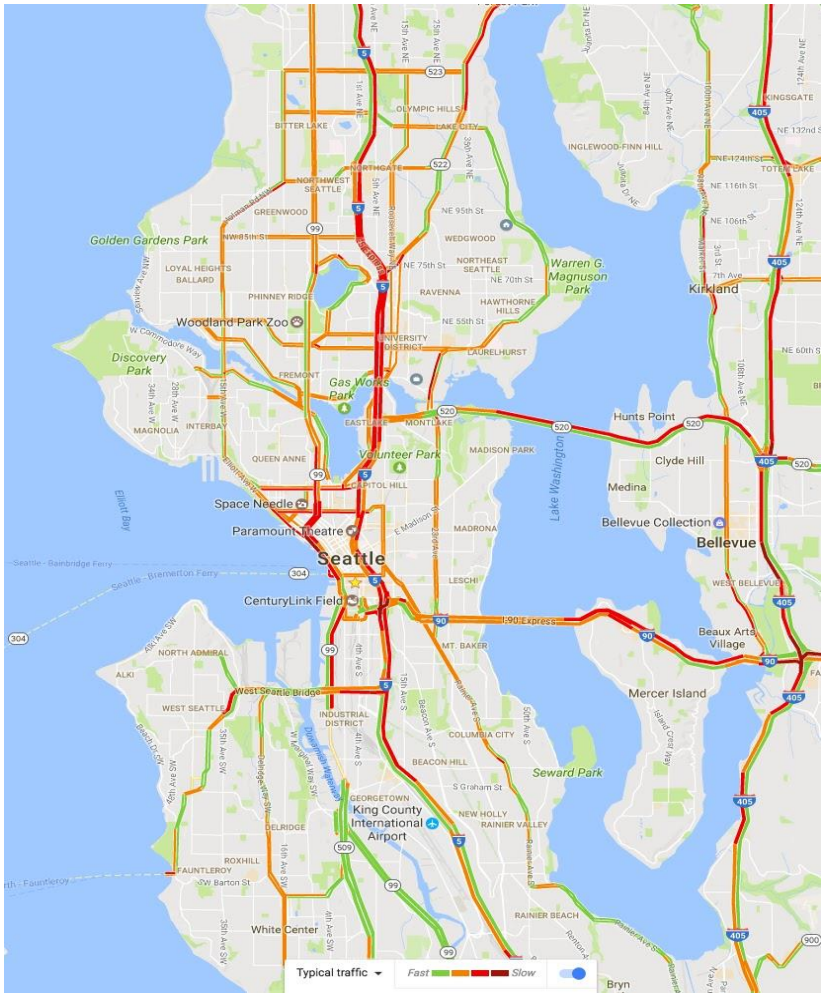
Framework


Identify Potential Organizations
Recruit Organizations
Form Partnerships
Identify Community Concerns thorugh Needs Assessment
Interpret Research Findings
Maintain and Sustain Partnerships
Disseminate and Translate Research Findings
Design and Conduct Air Monitoring Research

Methods

- Who?
  - Child care centers and community organizations
- What?
  - Recruitment of community partners
  - Recruitment of community steering committee members
- When?
  - September 2017 – Present
- Where?
  - Seattle communities concerned with air quality

Methods


Golden Gardens Park
Woodland Park Zoo
Discovery Park
Gas Works Park
Volunteer Park
Space Needle
Paramount Theatre
Seattle
CenturyLink Field
Warren G. Magnuson Park
Kirkland
Hunts Point
Clyde Hill
Medina
Bellevue Collection
Bellevue
Beaux Arts Village
Mercer Island
Lake Washington
Seward Park
King County International Airport
White Center
Typical traffic
Fast
Slow

Methods

- Needs assessment of air quality community concerns
  - Visiting participating child care centers and community organizations
  - Hold public meetings to provide more information about the study to community members

Survey of Community Air Quality

Air Quality Assessment for Seattle Communities

Methods

12. Do you know how to find information about daily air quality?
    a) Yes
    b) No
    c) Don't know

13. If yes, how do you find information about daily air quality?

_____

18. Were you satisfied with the outdoor air quality in your community in this last year?

Not at all	Slightly	Moderately	Very Much	Extremely
☐	☐	☐	☐	☐

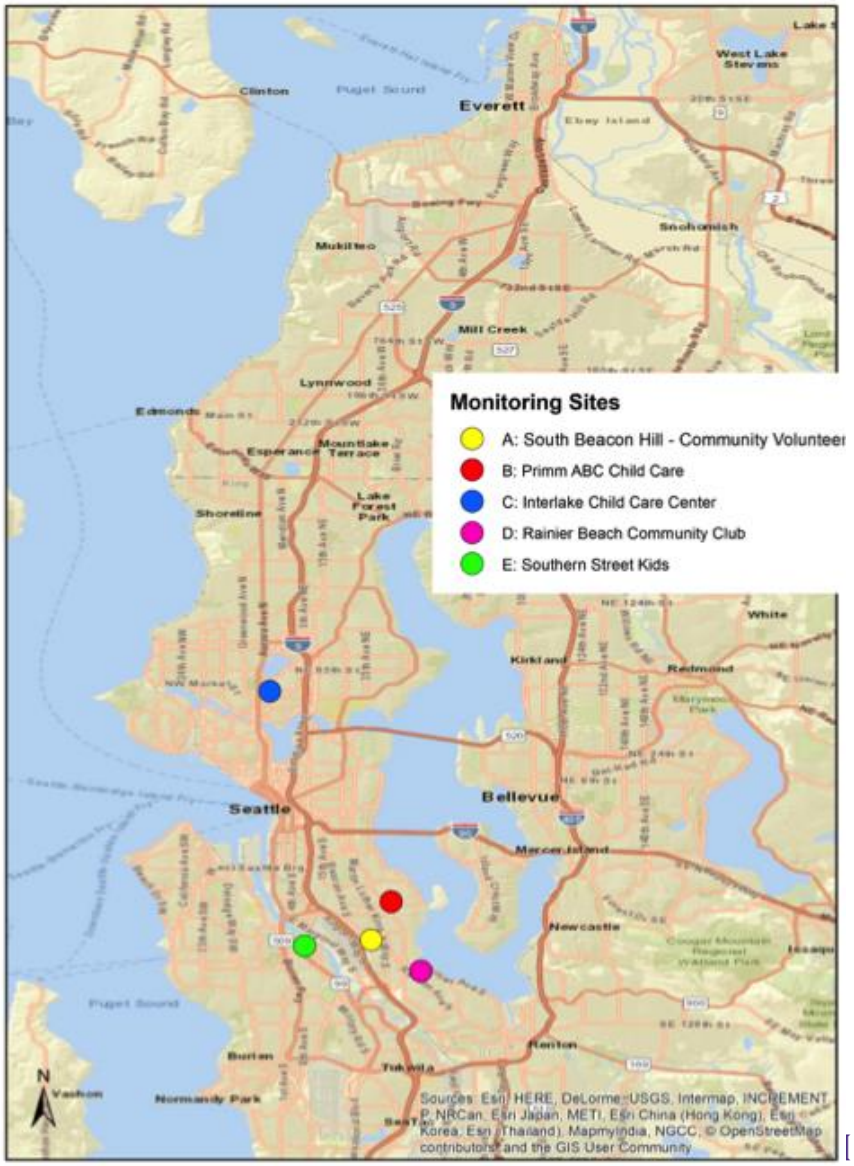
Methods

- Community Steering Committees
  - Volunteers from participating child care centers and community organizations

Methods

- Community Air Monitoring
  - Low-cost air monitors developed in Dr. Edmund Seto's lab at the University of Washington
  - Pollutants measured
    - Particulate matter, nitrogen dioxide, nitric oxide, carbon monoxide, ozone

Methods


Monitoring Sites
A: South Beacon Hill - Community Volunteer
B: Primm ABC Child Care
C: Interlake Child Care Center
D: Rainier Beach Community Club
E: Southern Street Kids
Everett
Mukilteo
Mill Creek
Lynnwood
Edmonds
Shoreline
Lake Forest Park
Kirkland
Redmond
Bellevue
Seattle
Mercer Island
Newcastle
Renton
Tukwila
Burien
Normandy Park
Vashon
Clinton
Snohomish
Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), Mapmyindia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Limitations and Lessons Learned

Limitations

Time commitment of participating in study

Lessons Learned

Visiting centers to talk with parents and conduct needs assessment in person

Holding community meetings after work hours when parents are more likely to attend

Limitations and Lessons Learned

Limitations

Logistics of finding an adequate location for an air monitor

Lessons Learned

Flexibility with where an air monitor can be installed

Limitations and Lessons Learned

Limitations

Concerns of air quality findings

Lessons Learned

Assuring that air quality findings will be used to inform recommendations to reduce the exposure to air pollution

Limitations and Lessons Learned

Limitations

Concerns of who has access to air quality data

Lessons Learned

Assuring joint ownership of data in MOU

Findings

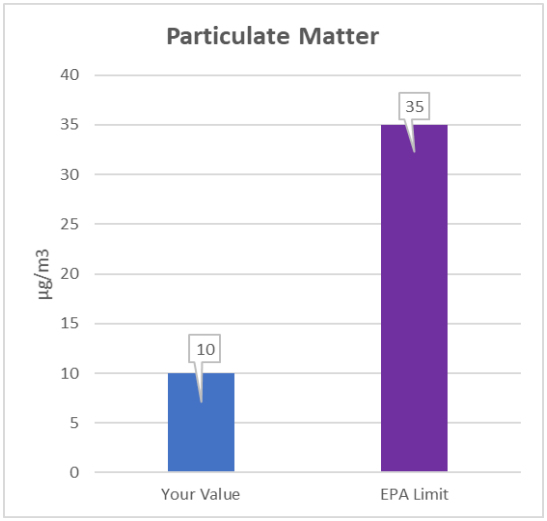
- Strategies in building relationships
  - Clearly laying out benefits for all parties at the start of the study
  - Drafting Memorandum of Understanding (MOU) with community partners
  - Research goals are driven by community concerns
  - Following through with all community partners

- Strategies in maintaining relationships and ensuring trust with community partners
  - Bi-monthly meeting with community steering committee
  - Communicating updates to larger community through a key point person

- Maintaining constant communication with community partners
  - Social media presence
  - Website with quarterly updates
  - Website with needs assessment findings report
  - Website with educational materials

Future

- Next steps
  - Conduct air monitoring in Winter season
  - Conduct focus groups to design report back materials



Particulate Matter	
Your value:	10
EPA limit:	35

Particulate Matter			
Your Values			EPA Limit
Average	Minimum	Maximum	
10	1	93	35

Future

- Next steps
  - Work in conjunction with community steering committees to develop educational materials
  - Host an educational workshop on air quality for all community members

Acknowledgements

- Community Partners
  - Interlake Child Care Center
  - Primm ABC Child Care
  - Southern Street Kids
  - Rainier Beach Community Club

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Thank You!

Questions?

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