Sensing for Community Input on Communicating Air Quality Network Concepts

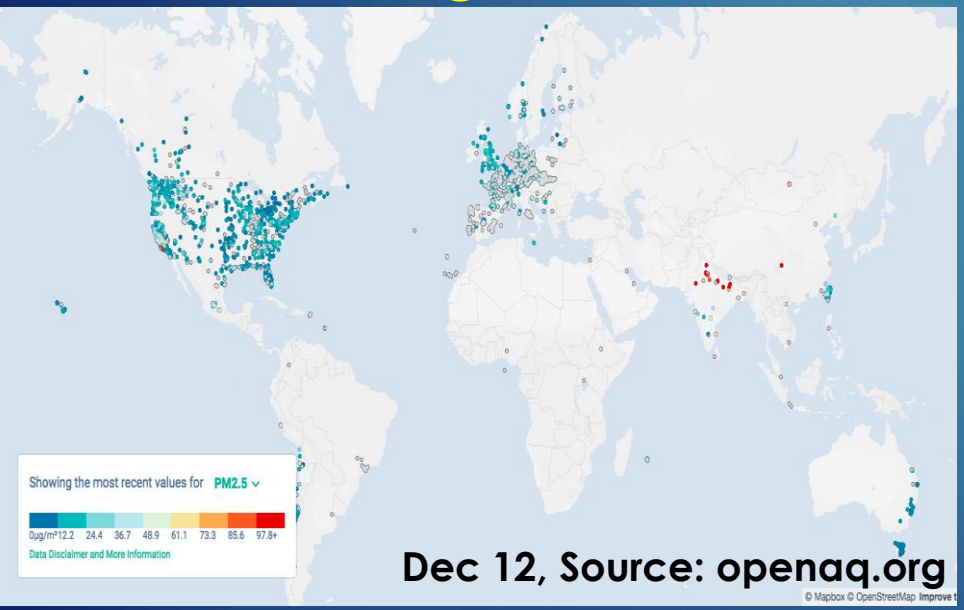
AIR SENSORS INTERNATIONAL CONFERENCE

DATA COMMUNICATIONS SESSION

SEPTEMBER 13, 2018

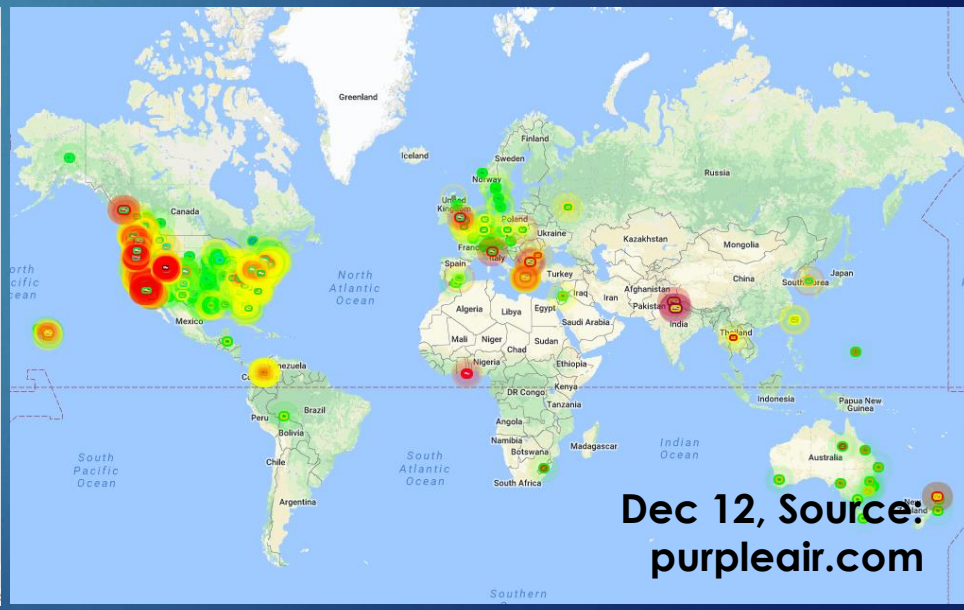
Emerging Network of Low Cost Air Quality Sensors

Traditional Air Quality Monitoring Networks



Dec 12, Source: openaq.org

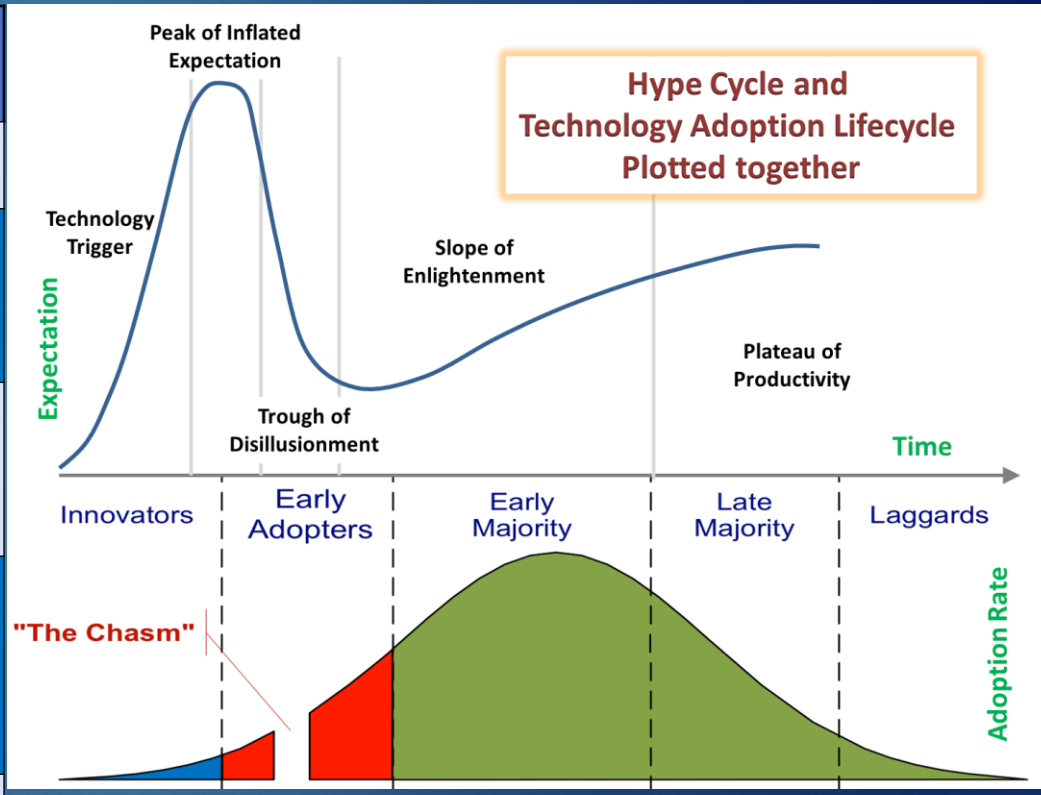
Emerging Sensor Air Quality Networks



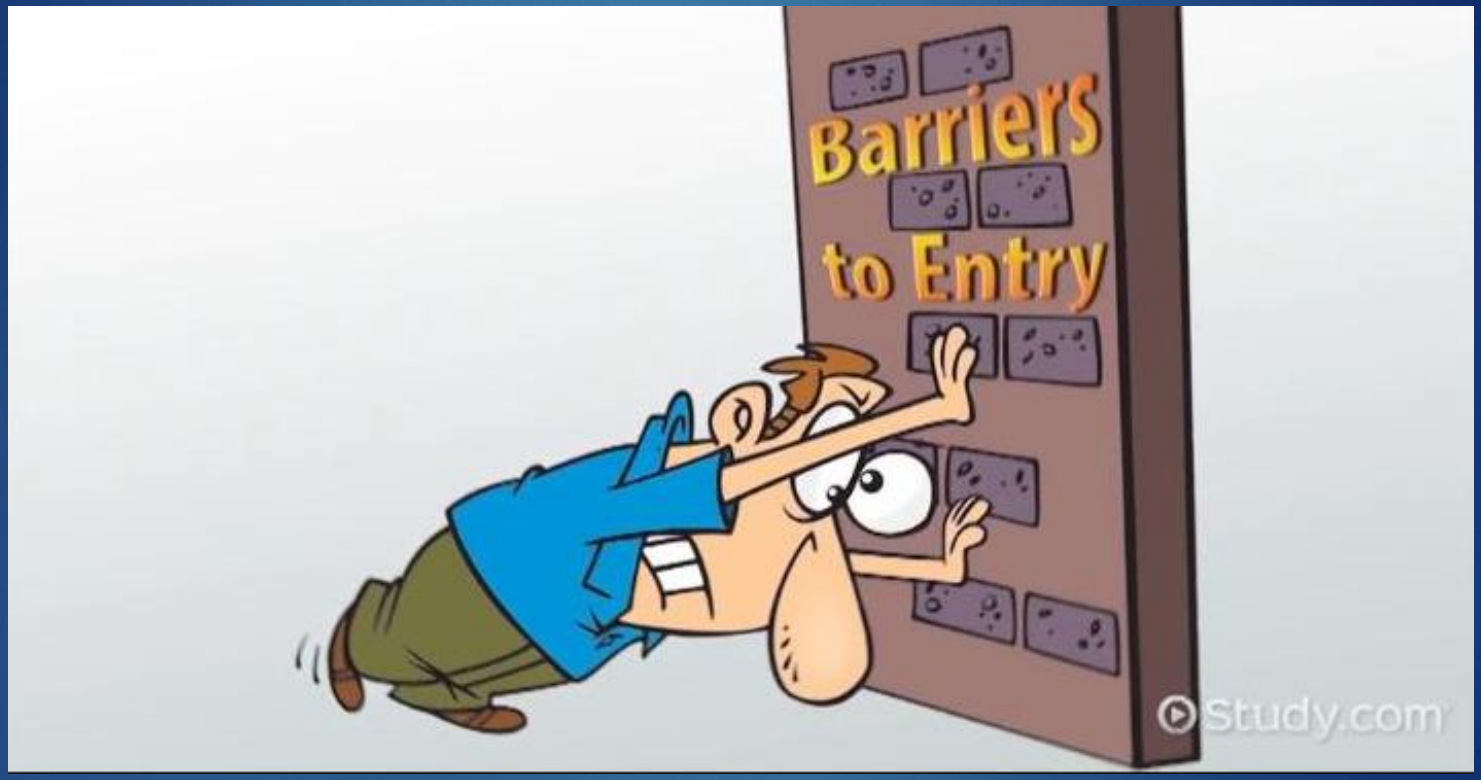
Dec 12, Source: purpleair.com

Community and Sensor Technology Diversity

Communities	Sensors
Air Quality Awareness	Pollutants
Purpose for Air Monitoring	**Application specifications?**
Air Measurements Awareness	Quality
Information Tool Preferences	**Technology platform/ Visualization**
Time priorities	Space distribution
Socioeconomic Factors	**Cost**

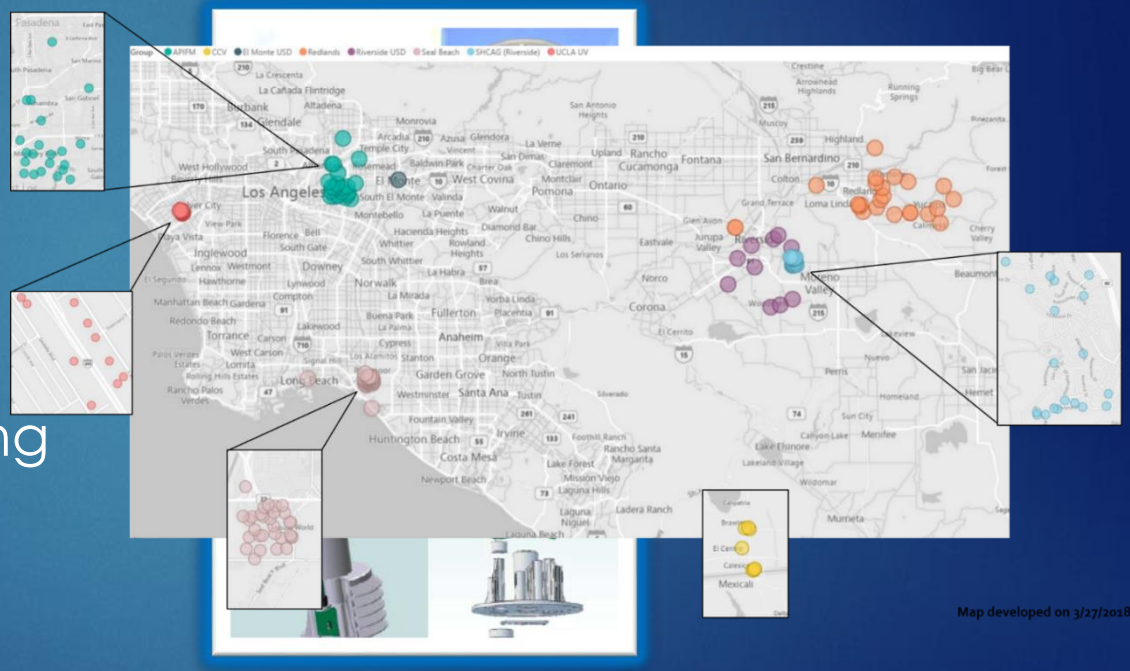


https://setandbma.files.wordpress.com/2012/05/technology-adoption.png


Barriers
to Entry
Study.com

Community Sensor networks Deployed

- Projects
  - Multiple Air Toxics Exposure Study (MATES) V
  - NASA ROSE
  - Near Refinery Monitoring
  - U.S. EPA STAR Grant



- 14 Communities
- 400 Sensors deployed

South Coast AQMD

Engage, educate, and empower California communities on the use and applications of “low-cost” air monitoring sensors

South Coast AQMD

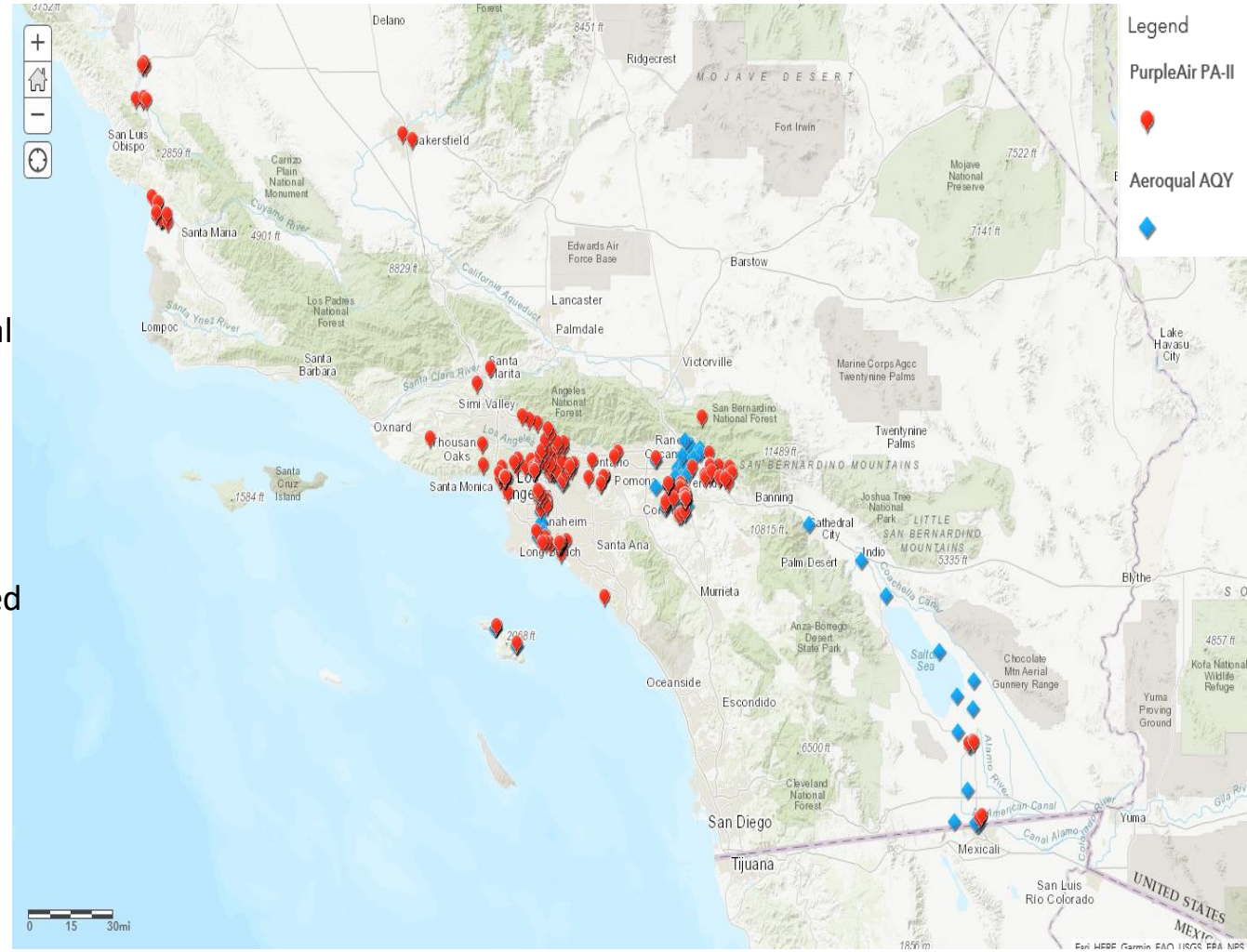
UCLA

STi Sonoma Technology, Inc.

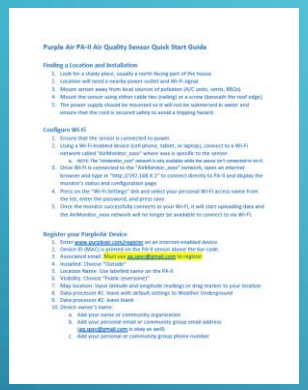
Specific aims:

1. Develop educational material for communities
2. Evaluate / identify candidate sensors for deployment
3. Deploy selected sensors in California communities
4. Communicate lessons learned to the public

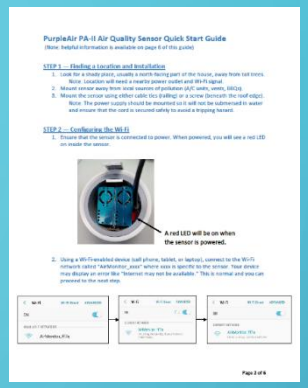
AQ-SPEC
Air Quality Sensor Performance Evaluation Center
www.aqmd.gov/aq-spec

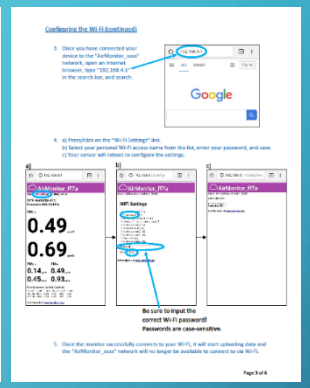


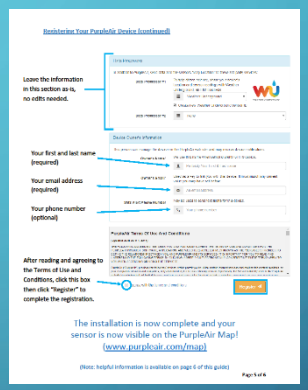
THE INSTALLATION GUIDE EVOLUTION



300 Citizen Scientists Later



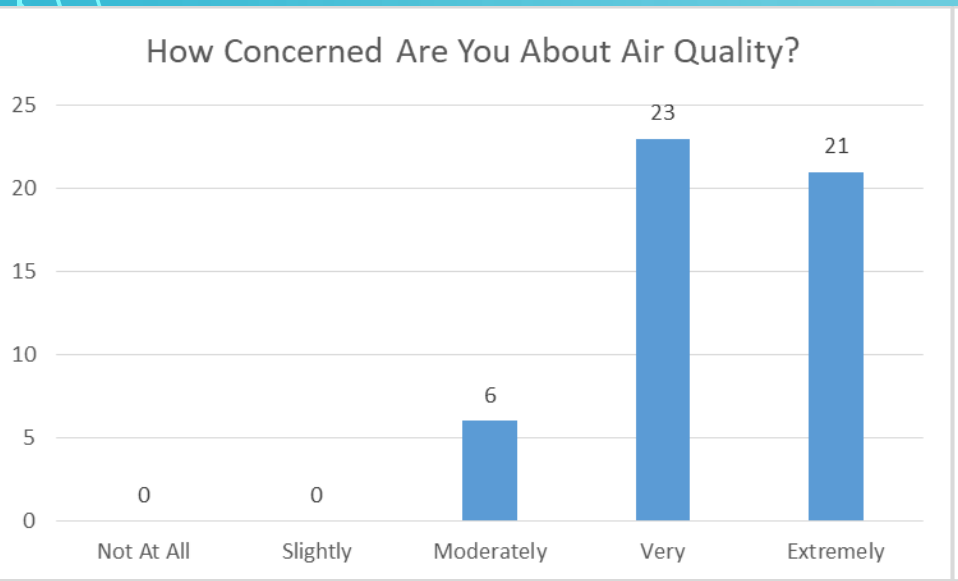


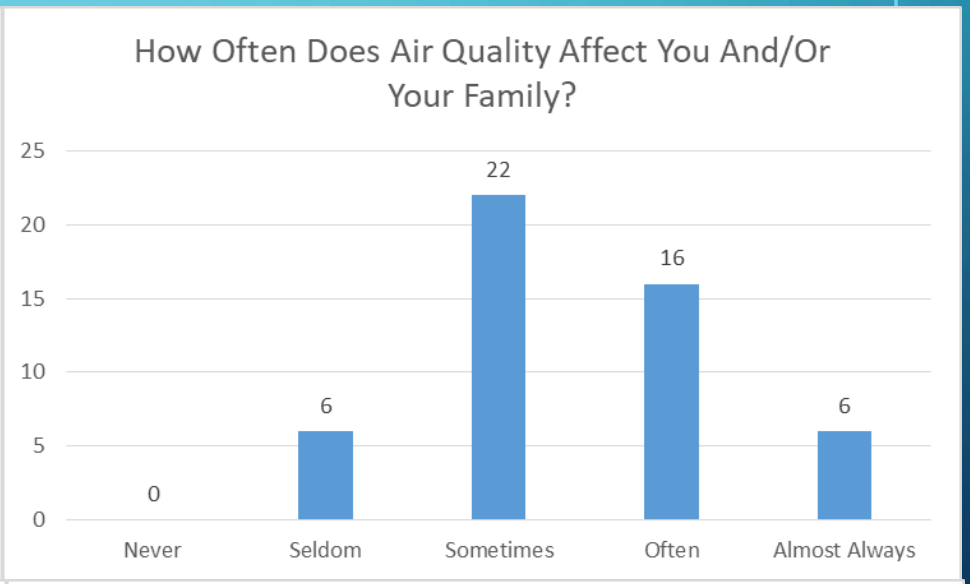


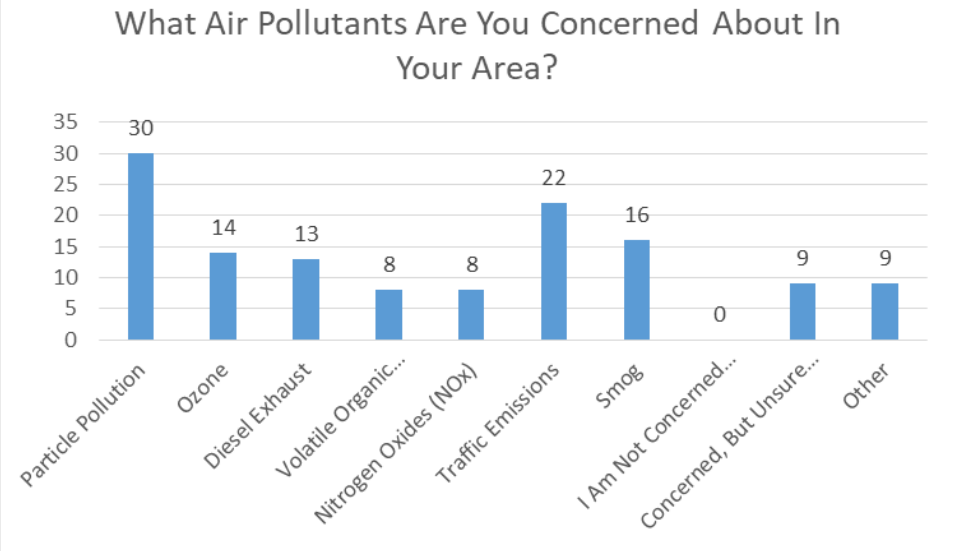
- VERSION 1, TWO PAGES
- CREATED PRIOR TO COMMUNITY GROUP MEETINGS
- INCLUDED BRIEF SENSOR INFORMATION AND INSTRUCTIONS FOR SITING, INSTALLING, CONFIGURING, AND REGISTERING

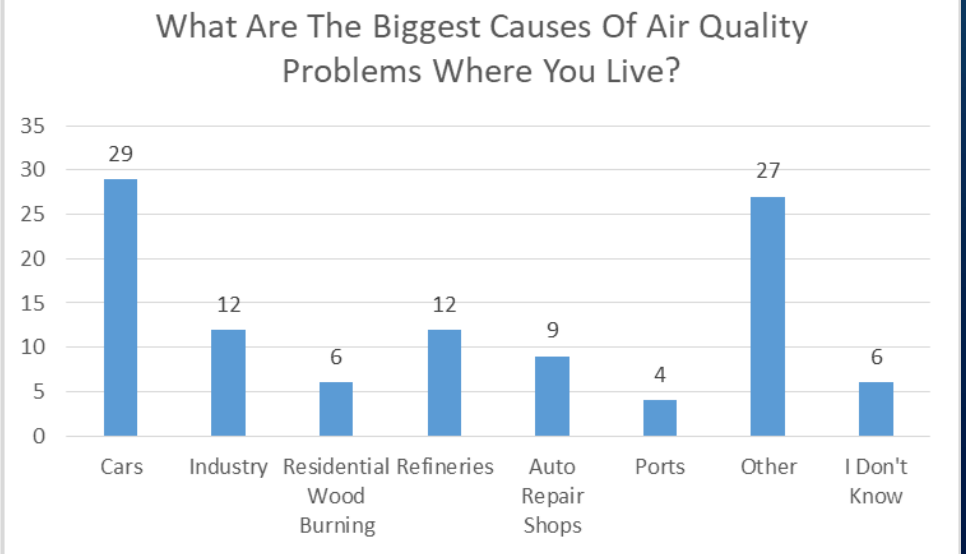
- VERSION 7, SIX PAGES
- INPUT GATHERED FROM COMMUNITY GROUP MEMBERS AND FREQUENTLY ASKED QUESTIONS CONTRIBUTED TO THE MULTIPLE VERSION EDITS
- ADDED SENSOR INFORMATION, IMAGES, SIMPLIFIED INSTRUCTIONS, VISUAL AIDS, AND A “HELPFUL INFORMATION” SECTION

COMMUNITY SURVEYS: AIR QUALITY

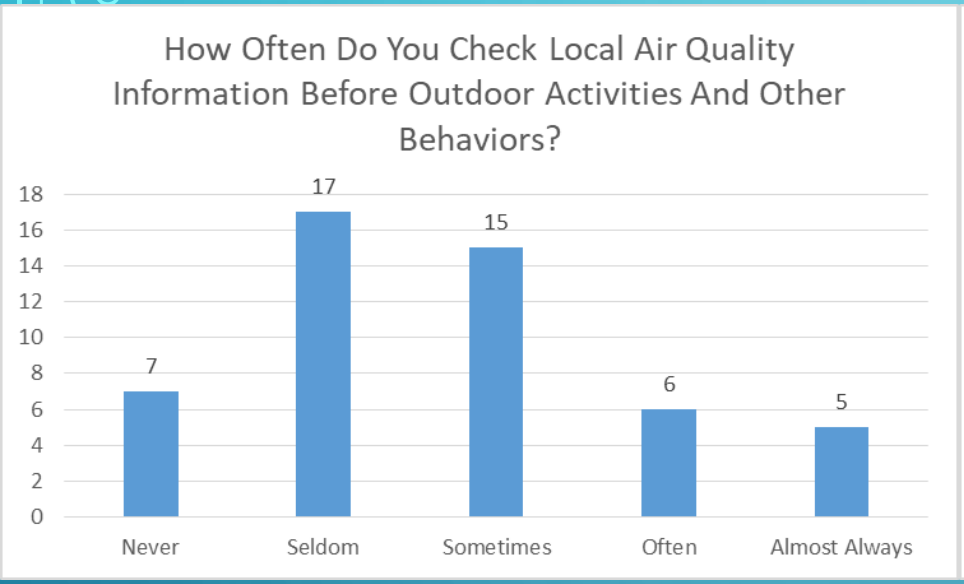


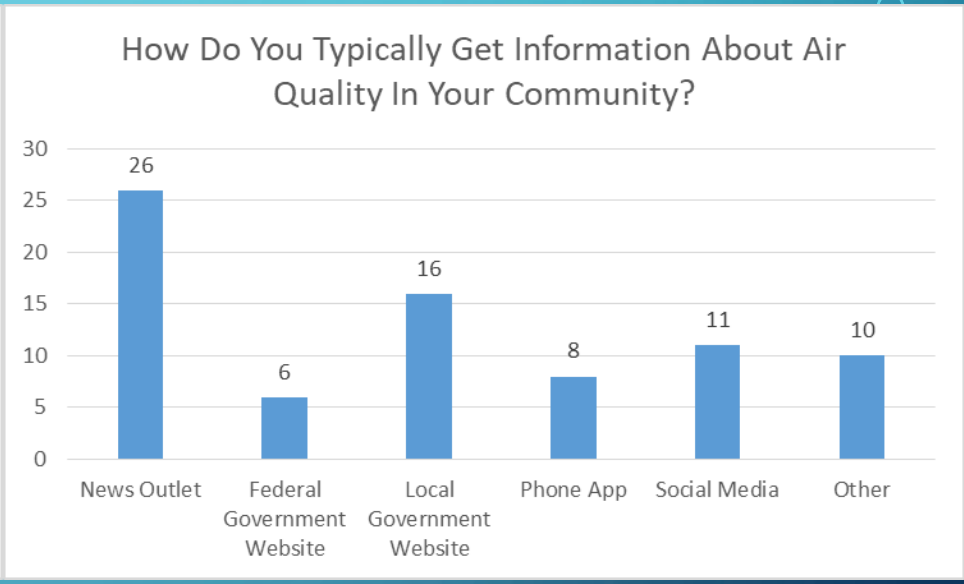




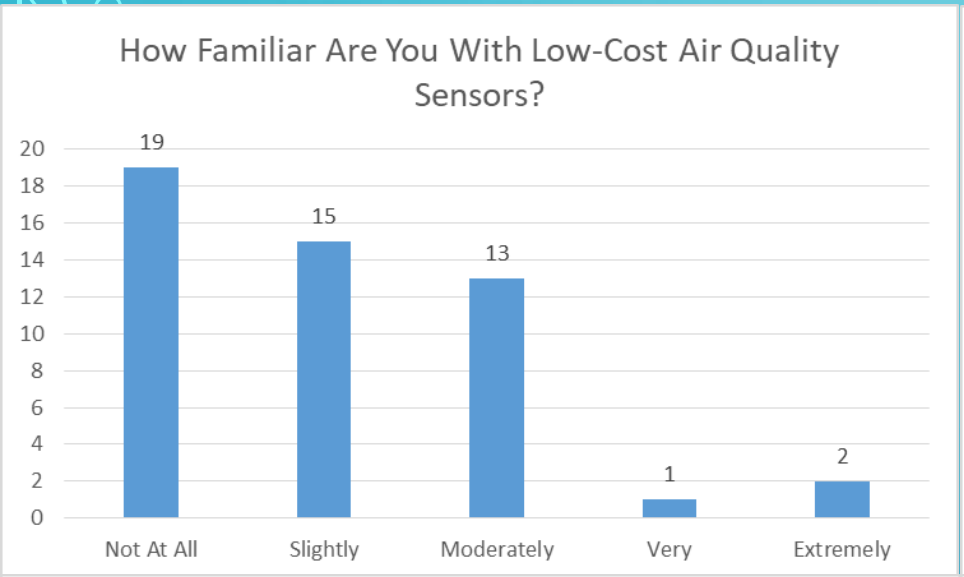


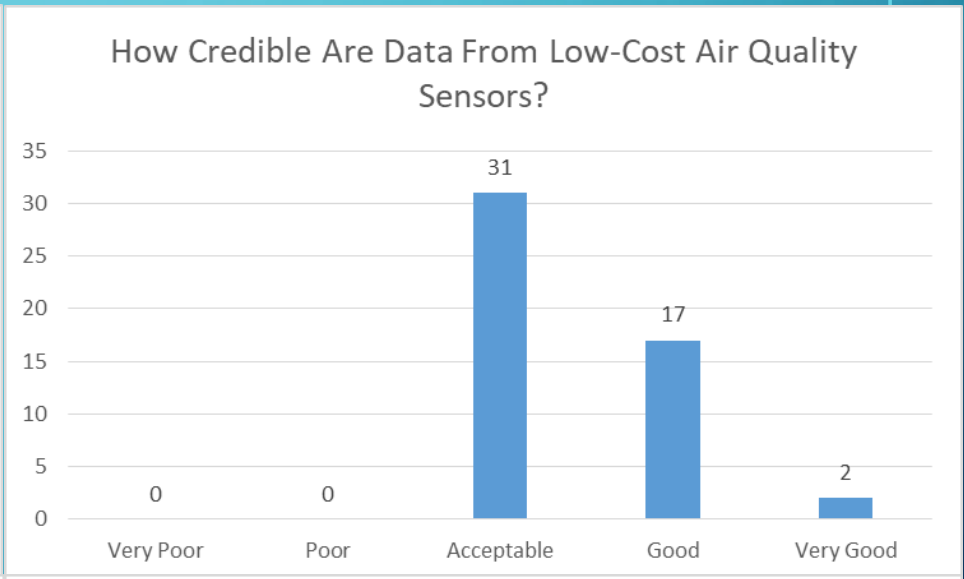
COMMUNITY SURVEYS: AIR QUALITY INFORMATION

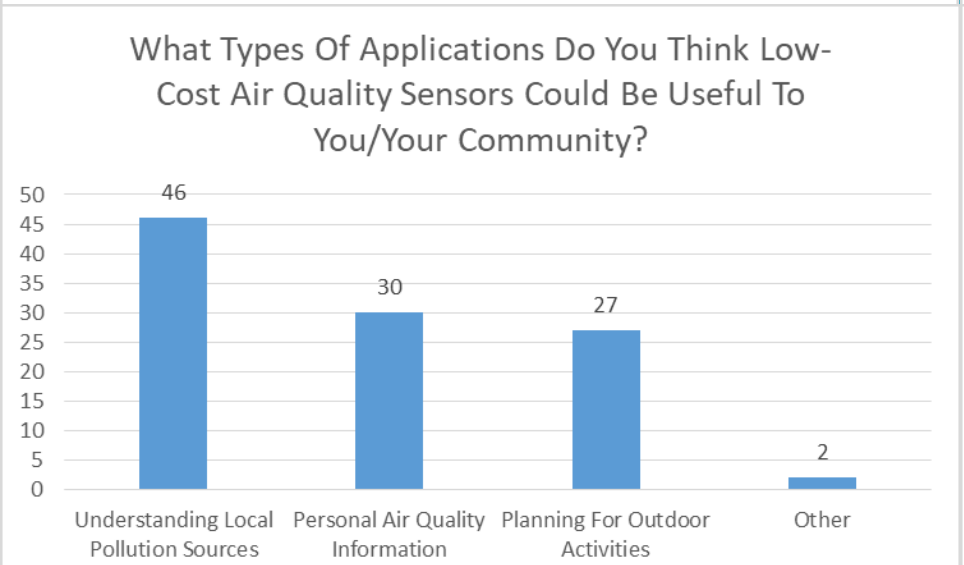


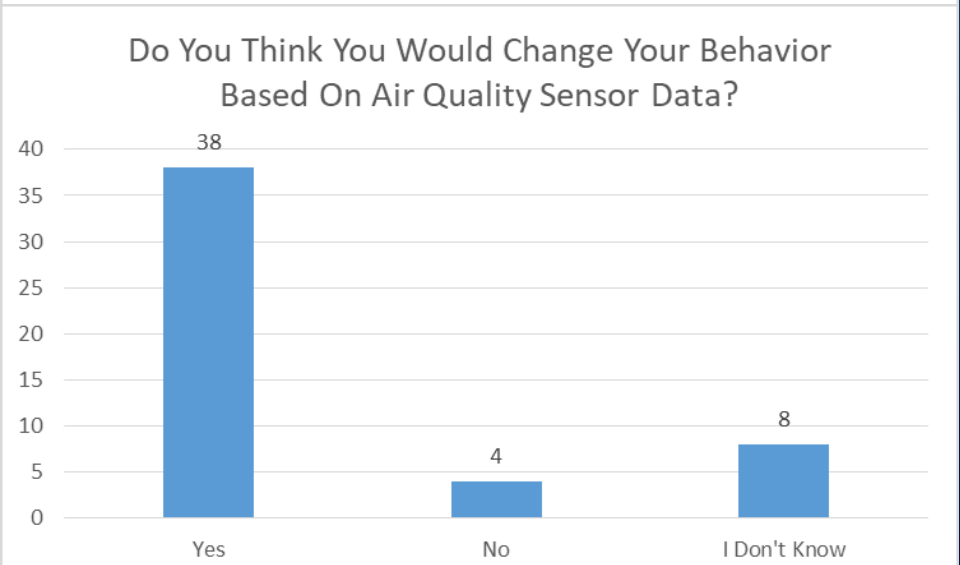


COMMUNITY SURVEYS: SENSORS

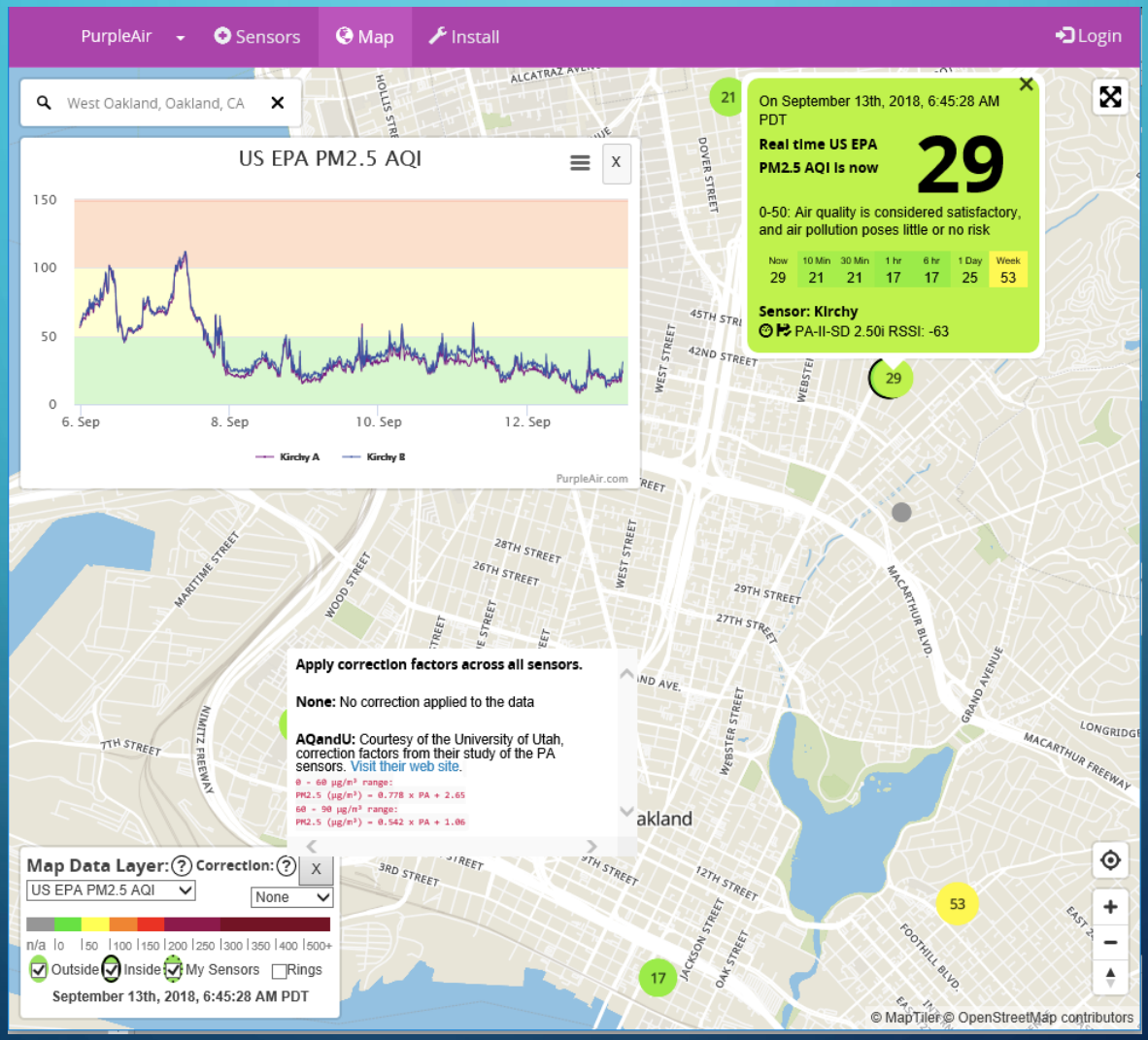








EXPLORING DATA VISUALIZATION



Concluding Thoughts and Next Steps

- Sensor and community diversity a challenge
  - Connect sensors to specific objectives
  - Reduce barriers to entry
- Assessing and communicating sensor capability information
- Collaborative approach: Communication toolboxes are evolving and improving
- Phase II: Further data presentation and visualization improvements and follow up feedback from community