Air Quality and Risk Communication:
Highlights of Preliminary Research on Efficacy of Existing Methods

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"What are the current air quality risk communication practices and how do they influence the knowledge, attitudes and behaviors of at-risk individuals?"

KEY CODES/THEMES	KEY INFORMANT INTERVIEW	PATIENT INTERVIEW	BB MEMBER SURVEY
Knowledge (Air Quality and Health Literacy)	Probably rely on news the most. Elderly less likely and less able to navigate multiple web sites to reach needed information. *"They are staying indoors probably because that's what they are hearing on the news. They are doing what they think the experts are saying."*	Elderly less likely and less able to navigate multiple web sites to reach needed information. Information can be conflicting/unclear.	Local news cited as primary source. Newpaper and TV dominant, but 44% referenced using the web. Those who use AQ sites use them for self-protective behaviors: *"Nice thing about the apps and web site is I can check air quality and forecast before travelling."*
Beliefs and Assumptions (Risk Perceptions, Attitudes, Trust)	Patients trust and rely on respiratory therapists and guest speakers for detailed information, saying visit w/ doctor too short to get enough info. One patient noted they use *"web sites recommended by pulmonary rehab personnel"*	Trust and perception of risk high due to personal exp w/ smoke (difficulty breathing) and self-directed, information-seeking behaviors (using NOAA, air quality agency web sites). Believes TV news (meteorologist specifically) has limited use; may add "hype" that distorts message. Notes: *"It's really disturbing to not just get the actual facts about what's going on."*	Trust varied but federal agencies least likely to be a "go-to" source. Highest degree of trust (80%) placed in doctors. Local sources (air quality agencies followed by health depts) cited much more frequently. Few report ever discussing AQ w/ physician. 28% report Air Quality has no/limited impact on their health. 78% report Air Quality has moderate to strong impact on their health.
Behaviors (Self-Protective, Information-Seeking)	Those who attend BB support group are more likely to seek out AQ information and follow AQ advisories, as they are motivated to reduce discomfort and reduce risk.	Knowledge appears to lead to more protective behaviors but also frustration in lack of specificity. Knowledge appears to be central to having some sense of control over impact of disease and impact of poor air quality.	Majority adhere to risk reduction practices, incl staying indoors and wearing a mask. Some use air filtration. Common write-in response: *"We use air purifier in house, had air conditioning put in house, try to stay in, but wear mask sometimes when we're out. We stay inside a lot."*
Barriers (SES, Chronic Disease, Risk Communicators)	Cost is factor for fixed-income or low-income patients in obtaining all needed medications, which may reduce ability to purchase a/c units, air filters, etc	Lack of clarity and specificity in messages. Masks don't fit over oxygen tubes. N-95 masks don't filter Carbon Dioxide. Noise of air cleaners. Multiple AQ info sites a problem (not familiar w/ WAQA or EPA's AirNow, but uses PSCAA). Oxygen tanks limit outdoor activity when smoky: *"When it's*	Conflicting reports from different sources. *"Have less conflict on reports - one site says it's a-ok, another tells the reality of the bad air quality."*

Data Sources: Literature review, key informant interviews, and mixed-methods survey of lung-disease patients in Pacific Northwest

Messengers - Credibility, trustworthiness, influence

Channels - Type, number, reach and saturation of channels used for communication

Awareness of and Adherence to Air Quality Advisories

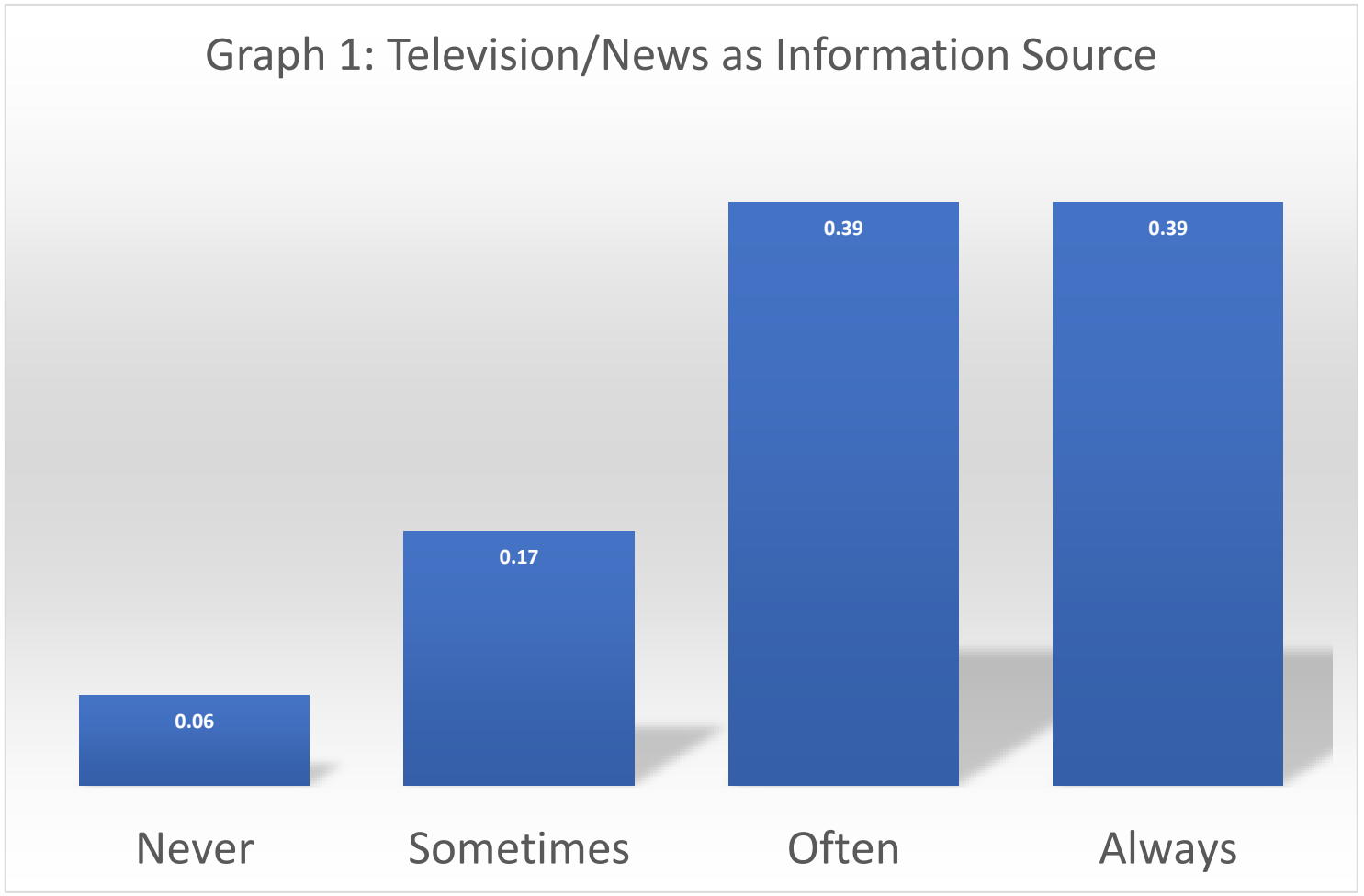
Messages - Content, tone, accuracy, consistency, and cultural relevance

Audience/Message Recipients - Knowledge, attitude, behaviors and SES factors

Observation 1:

Traditional Information Channels Trusted by Most but Not All

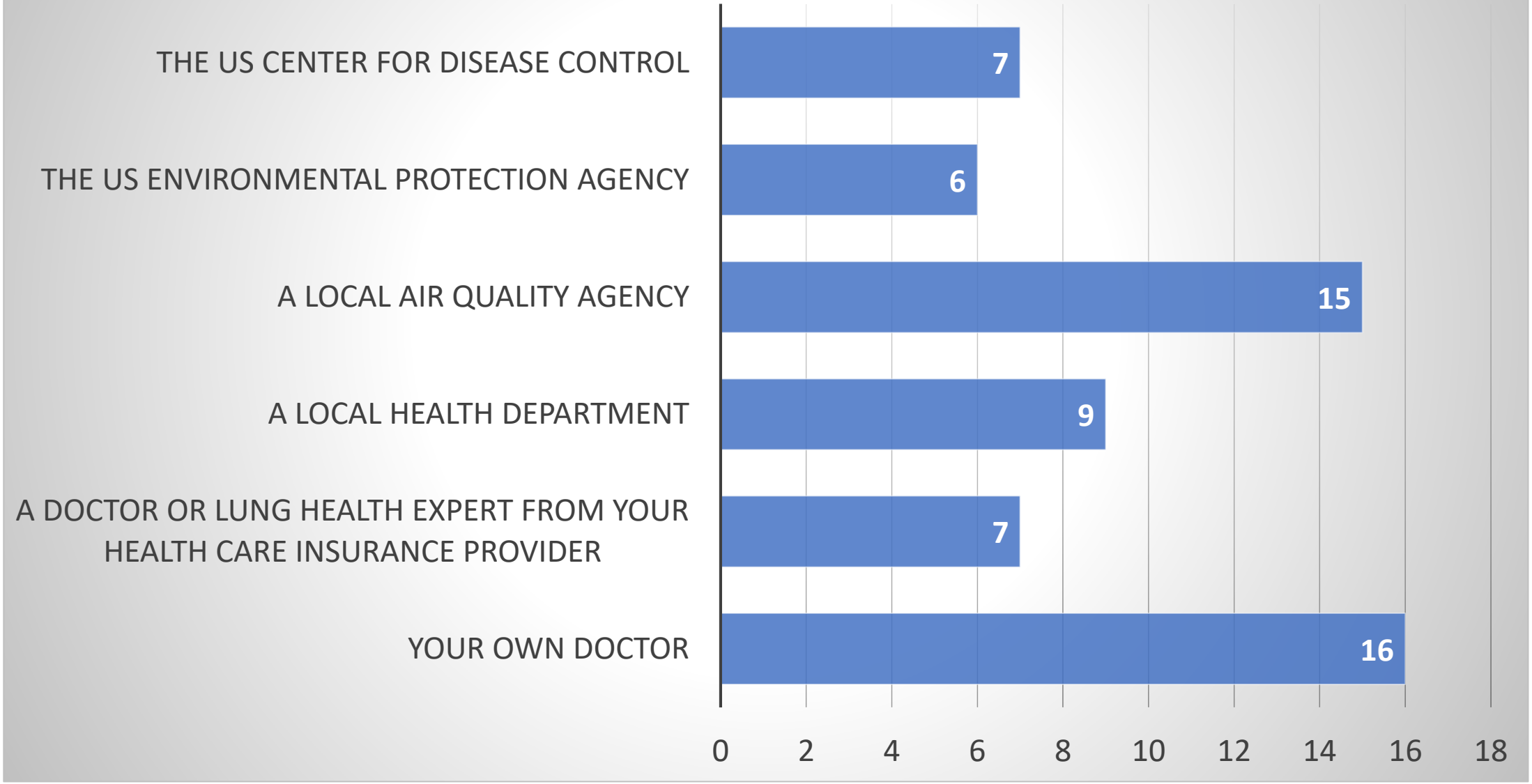
COPD Patient Survey, March, 2019 (n = 22)



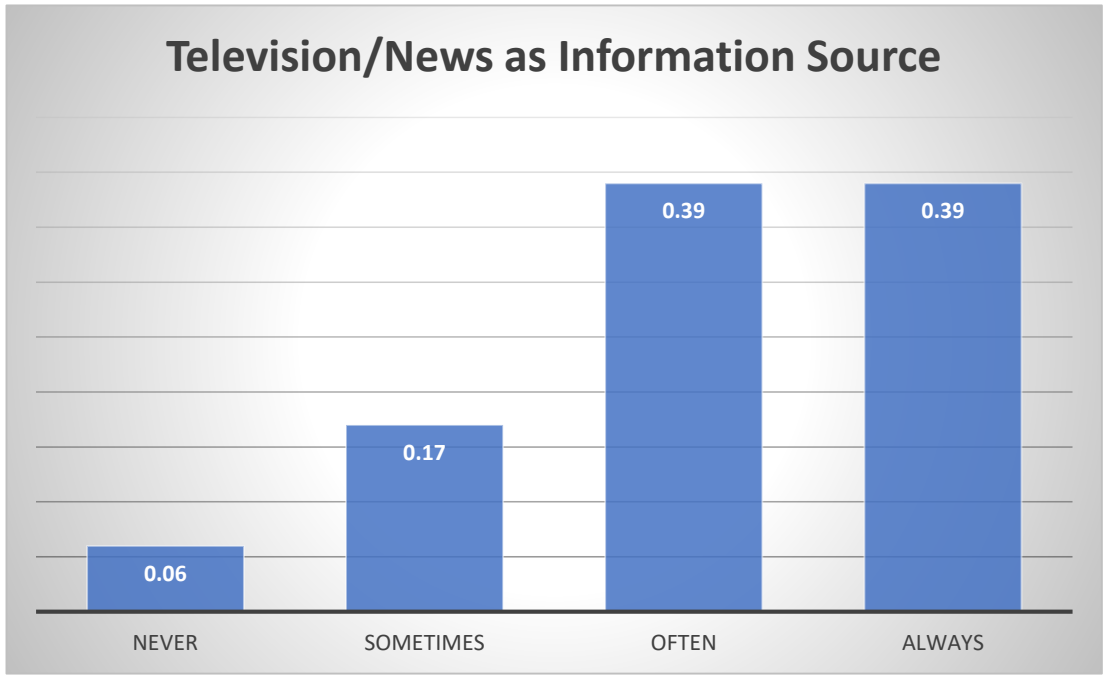
“They are listening to a local meteorologist and the weatherman ***– to them this is an expert in their field and no reason to question that.”***

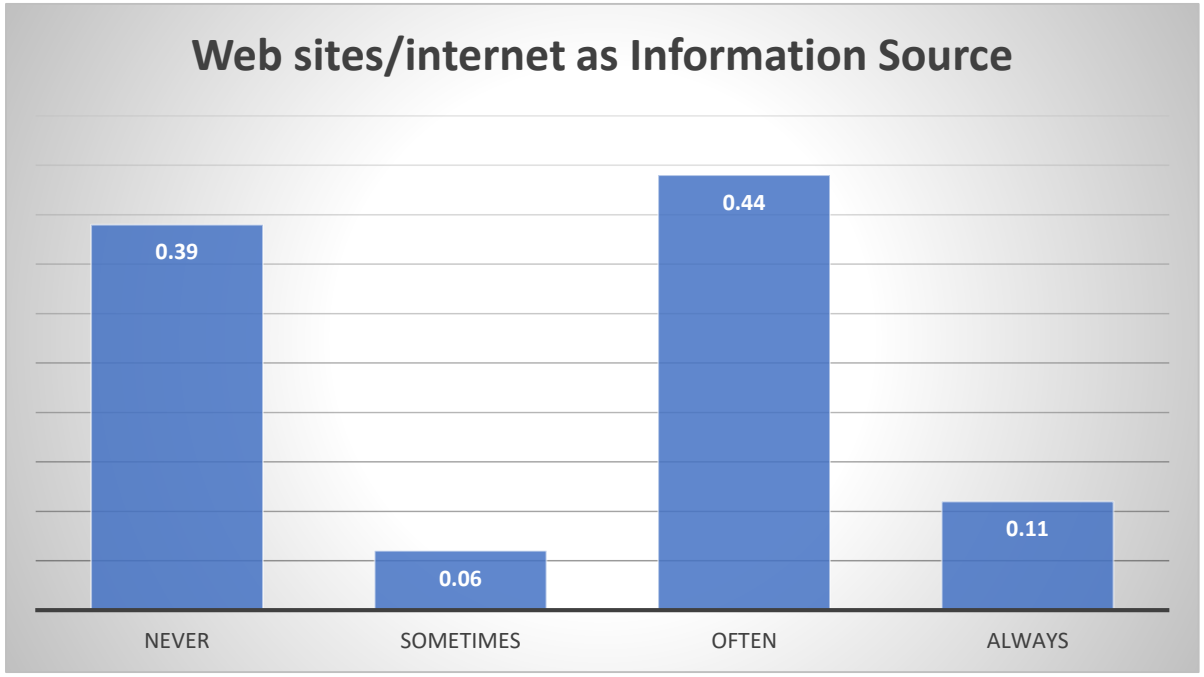
"They (patients) are staying indoors probably because that’s what they are hearing on the news. ***They are doing what they think the experts are saying****."*

Question 8: When you want more information on air quality and your health, which of these sources would you trust? (Check all that apply)



COPD Patient Survey, March, 2019





"The air quality…Is it getting better or worse? I think for a lot of people, older people, it's harder to navigate web sites."

Observation 2:

Conflicting Messages Could Reduce Information-Seeking Behaviors

“Have less conflict on reports - one site says it’s a-ok, another tells the reality of the bad air quality."

“People are just – there’s a high level of frustration with people with the lung disease trying to figure out what you to do.”

“I’m thinking that the majority of people out there that have my situation or similar lung issues, it’s good to have your medical person be able to talk to you about this. But they gotta have specifics. They can’t just say “don’t go out in the smoky air” I’ve heard that one before.”

Terms Used to Describe Air Quality

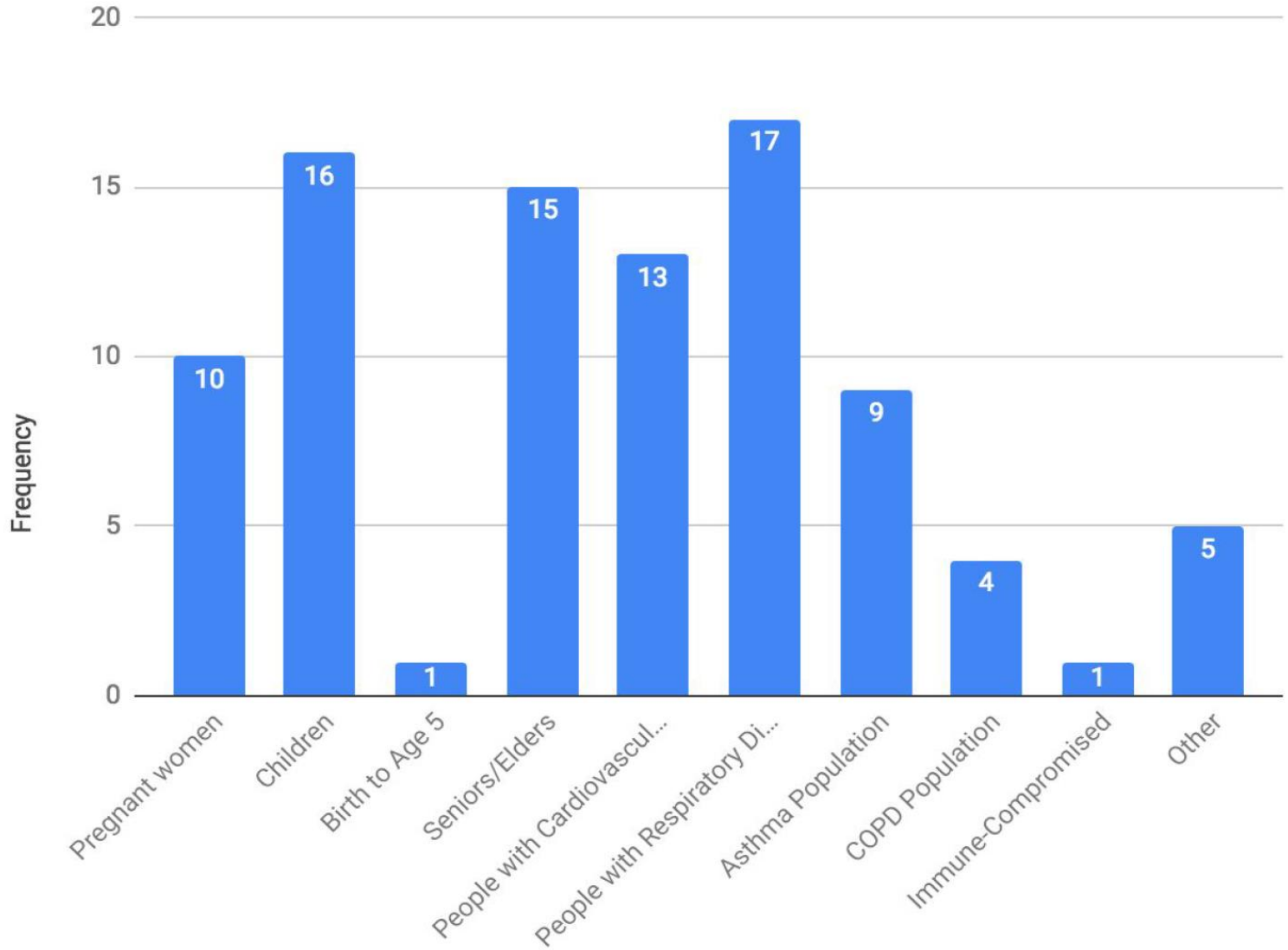
- “**unhealthy** air quality”
- “**unsafe** air quality”
- “**poor** air quality”
- “**bad** air quality”

Terms Used to Describe Those At Risk:

- “vulnerable”
- “susceptible”
- “at-risk”
- “sensitive”
- “the elderly”
- “children”

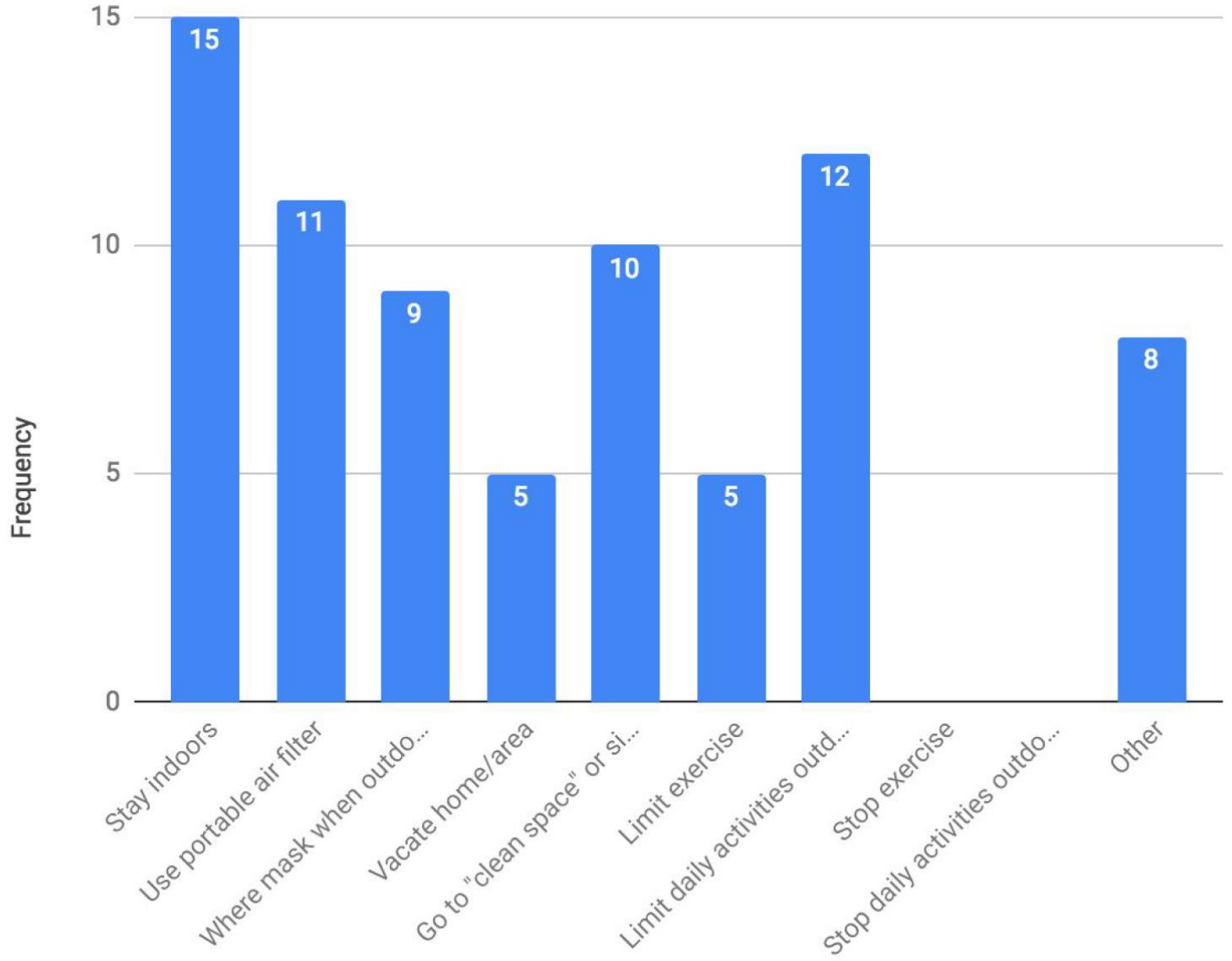
Frequency of Populations Referenced

Scan of Wildfire Risk Communication Materials. August, 2018, Northern California. THHN Intern, Isabel Silbert

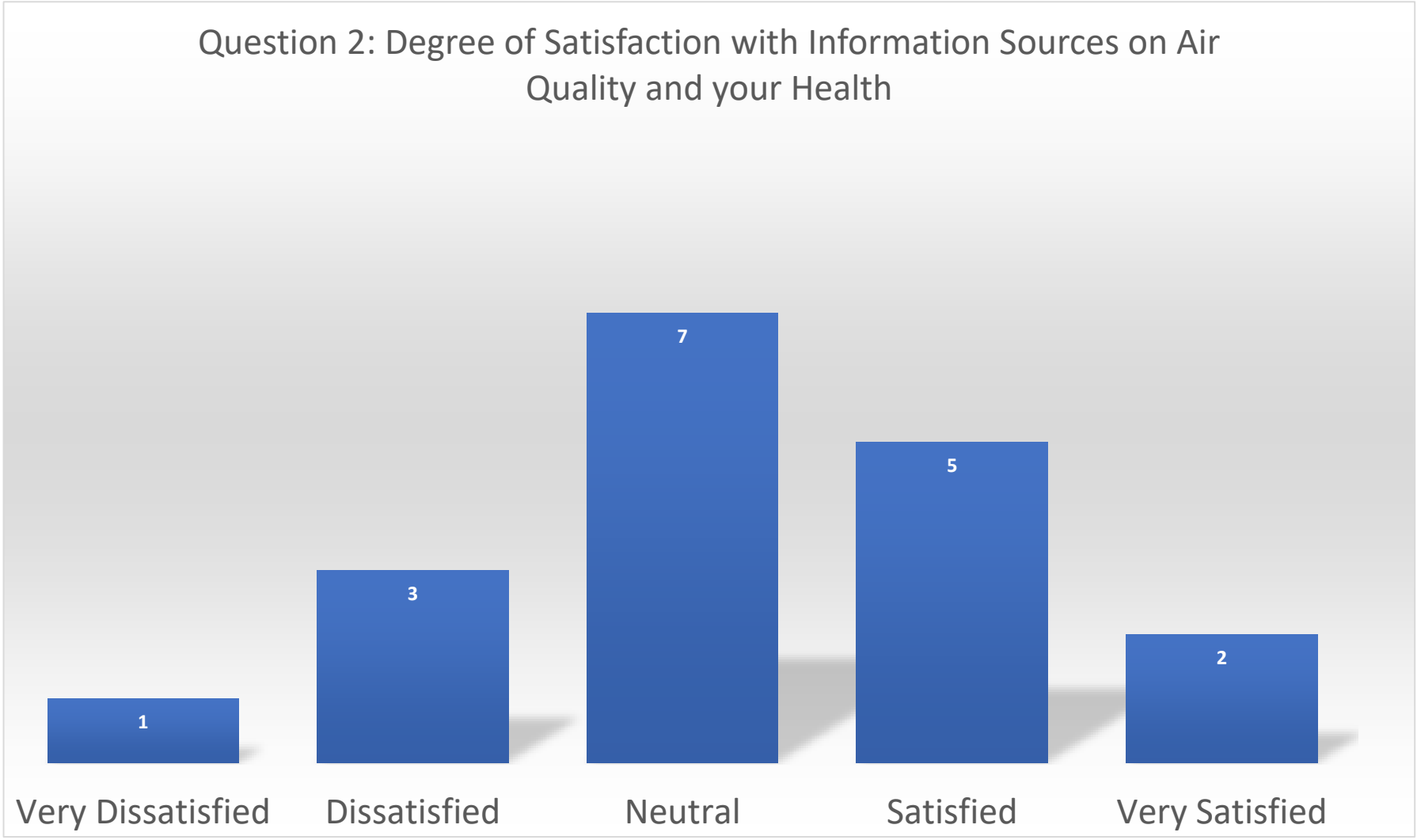


Frequency of Actions Recommended

Scan of Wildfire Risk Communication Materials. August, 2018, Northern California. THHN Intern, Isabel Silbert



COPD Patient Survey, March, 2019 (n = 22)



Observation 3:

Perceptions of indoor environment as being relatively safe.

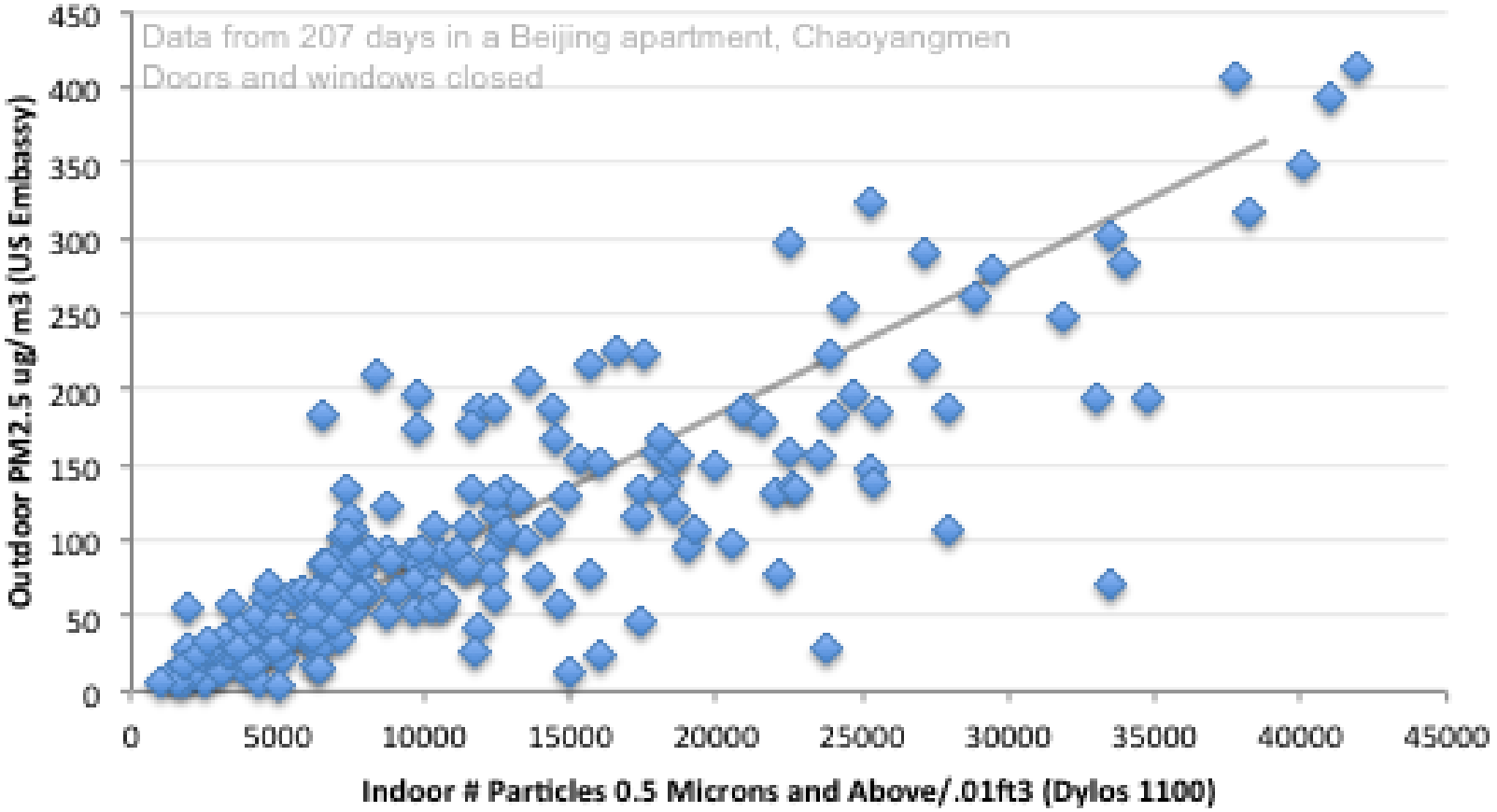
- Risk perception is not an “unbiased appraisal”, but rather ***an attempt to seek the most comforting view within the bounds of the evidence***. *(French fries anyone?)*

- There is a widespread perception that being indoors is safer than being outdoors during episodes of poor air quality.

- Underscores the importance of specificity, where possible, with respect to air quality risk communication. (“Stay indoors” vs. “Stay in a filtered environment.”)

Weinstein, N. D. (1999). What Does It Mean to Understand a Risk? Evaluating Risk Comprehension. JNCI Monographs, 1999(25), 15–20.

Indoor vs. Outdoor Air



Smart Air smartairfilters.com

Observation 4:

The tone that we use varies – and matters

Tone/language used in Air Quality Risk Communication Materials

- Overt **public health tone** …. “exposure”, “exacerbations”, “rates of ED visits and hospitalizations – may instill confidence in some audiences, loss of interest in others

- Overt **government tone** … “Officials from the district are monitoring….” – comfort to some audiences, fear/distrust in others

- Overt **science tone**… “Evidence from toxicological studies generally indicates….” - confidence in some audiences, distrust in others

Failure to follow the drug regimen recommended by a health professional results in approximately 125,000 preventable deaths a year.

— U.S. Centers for Disease Control and Prevention

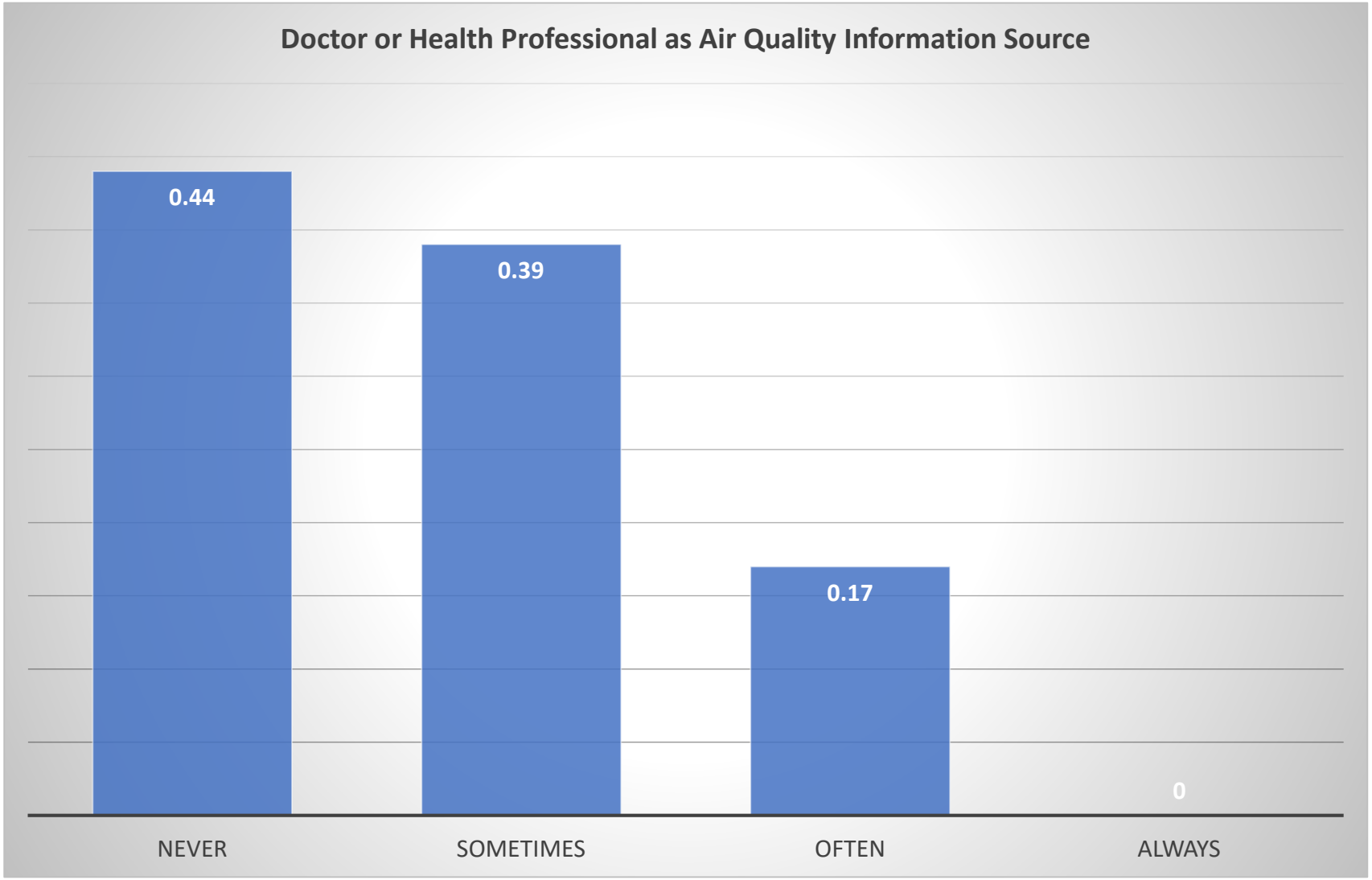
"…people don't fully understand what can happen if they don't take the medicine as it is prescribed. They may take the wrong dose, stop too soon or may not take it at all….." - Jay Rajda, Aetna's chief clinical transformation officer

Observation 5:

Key Sectors Aren't Yet on Board

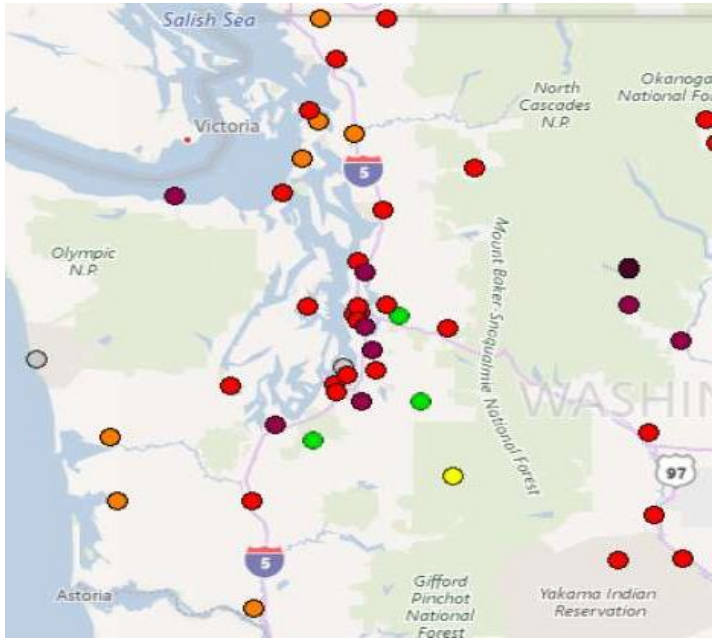
COPD Patient Survey, March, 2019 (n = 22)

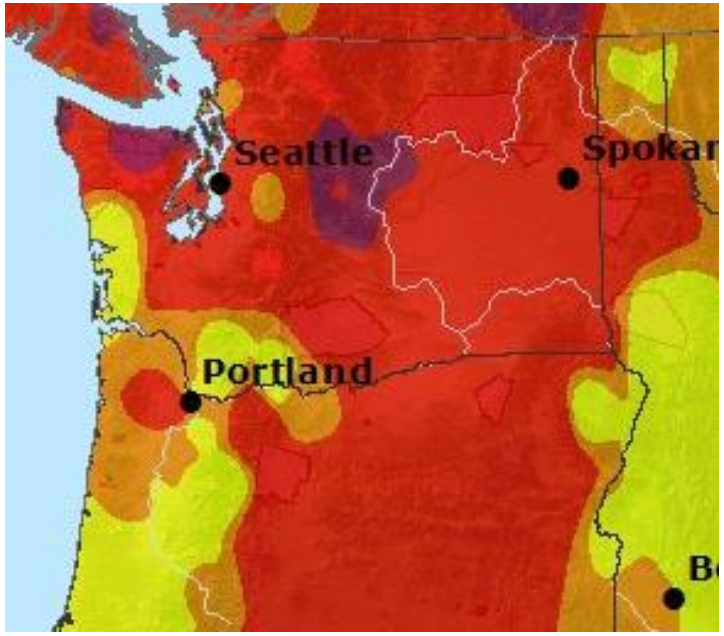
Of those surveyed, 83% reported never or only sometimes learning about air quality from their doctor or a health



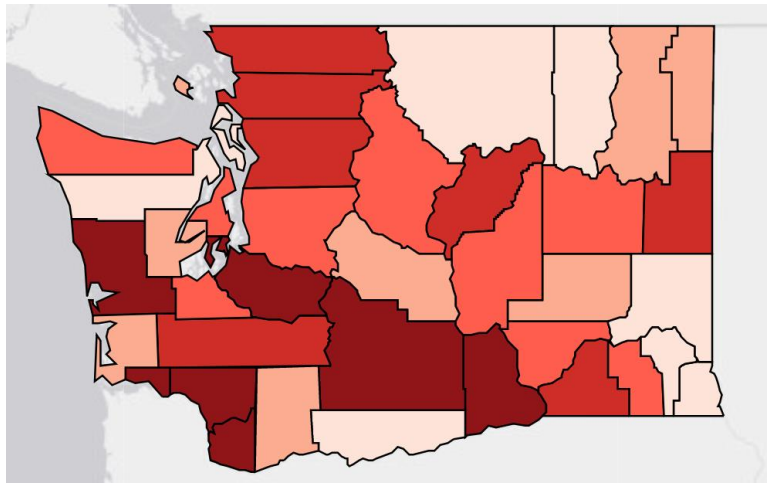
"I think the big thing now is knowing that we're going to be into these wildfire seasons for many years now, there really should be a little sit down with your pulmonologist this time of year – "Hey let's think about this summer" and here's a handout that we have to get you prepared. **Don't just wait for the phone call in July saying "I can't breathe".**

“Every time they have an exacerbation, they lose lung function. So they are then having more frequent interactions with their doctors. So it seems like a pulmonologists’ office would be a good place (for air quality information).”

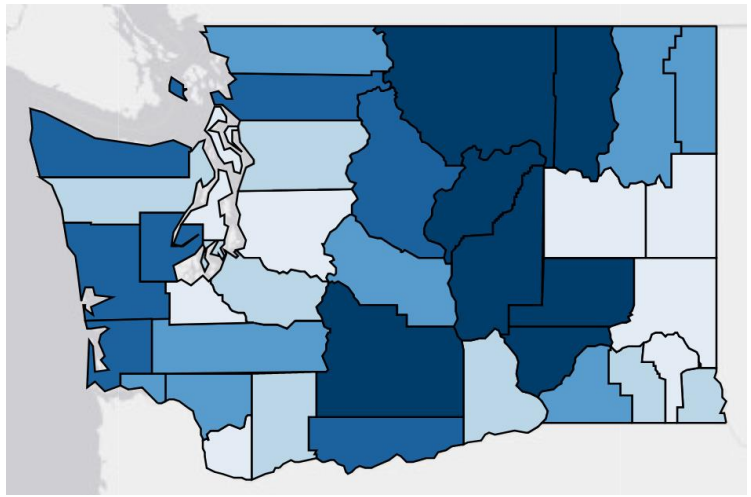

Salish Sea
Victoria
North Cascades N.P.
Olympic N.P.
Mount Baker-Snoqualmie National Forest
Astoria
Gifford Pinchot National Forest
Yakama Indian Reservation
5
97


Seattle
Portland

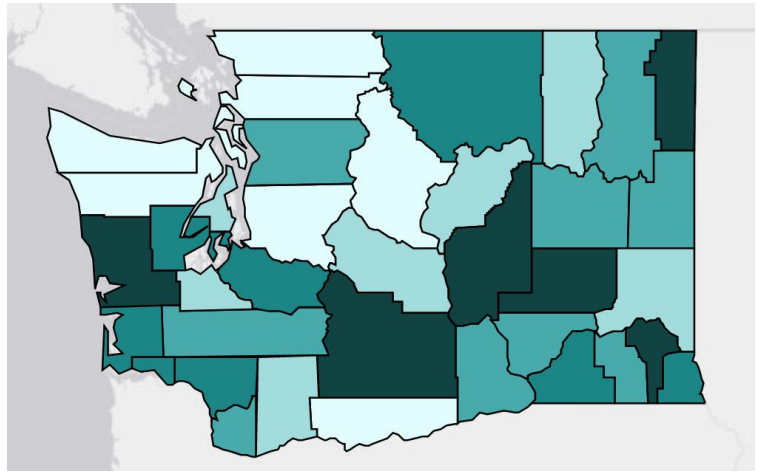
Exposure



Cardiovascular Disease - Hospitalizations Rates per 1,000



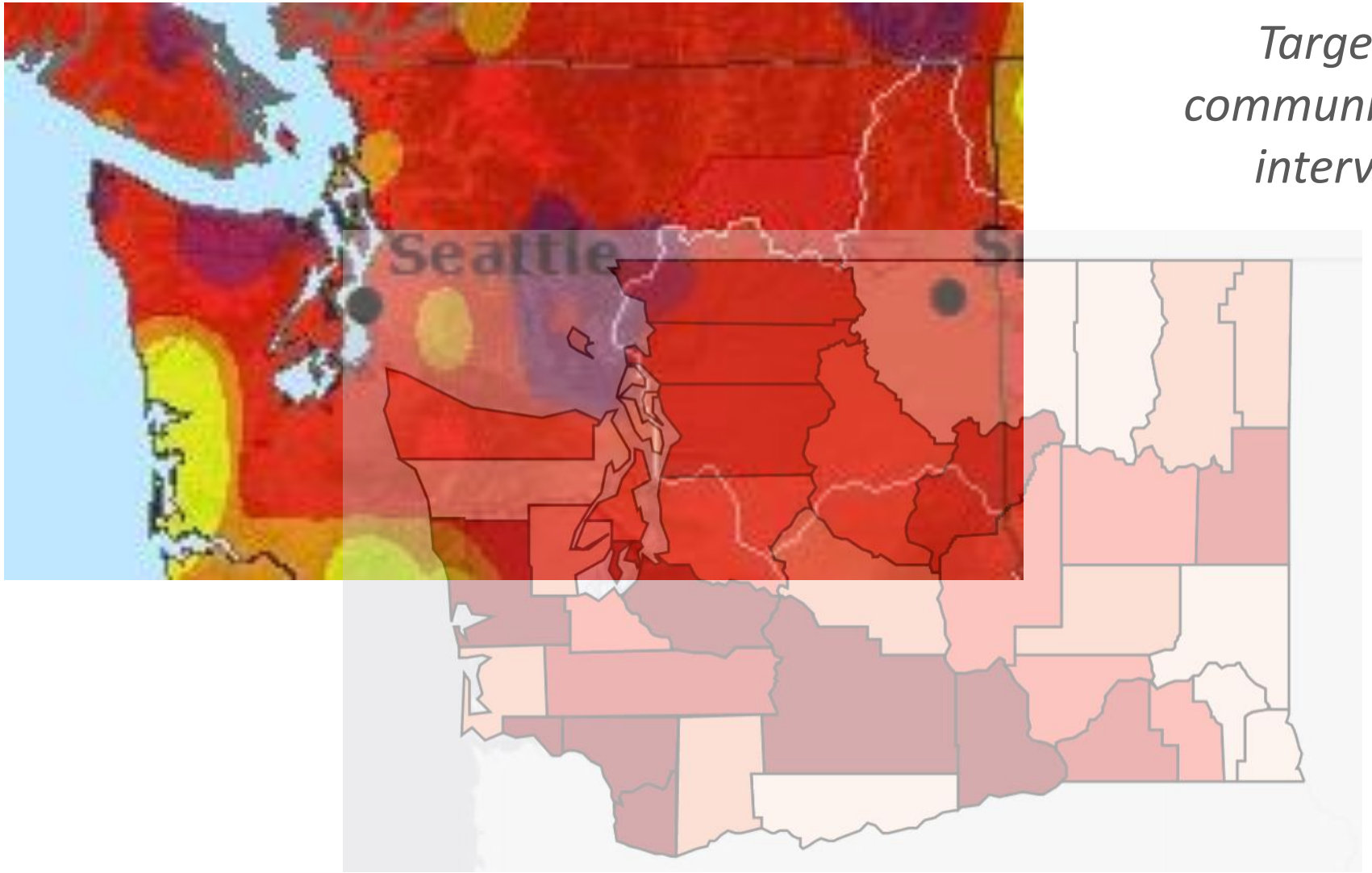
% of Population with no Health Insurance



% of Population with Diabetes

Susceptibility

Source: Interactive Atlas of Heart Disease and Stroke. Center for Disease Control and Prevention



Targeted risk communication and interventions

Themes in the literature…

Environmental literacy

Psychosocial facilitators

Localized data

Physician consult

Concepts and Construct	Source
• Low-cost air quality sensors yield information that is more relevant to the public. Localized data appears to increase personal interest in air quality, may increase perception of health risks associated with exposure to air pollution and may increase adherence to air quality health advisories.	Interviews and Literature Review
• The "Air Quality Index" (AQI) generates inconsistent results different populations. AQI indices appear to be more effective in some sub-populations than others. • Awareness of and trust in the AQI appears to be higher in older populations, more educated and more urban populations.	Literature Review
• Individuals who heard about air pollution from their doctor had a higher adherence to behaviors that reduced their risk, suggesting physicians had more influence than other messengers.	Literature Review
• Personal perceptions of air quality appear to be a more significant driver of an individual's protective behaviors, than actual air quality data.	Interviews and Literature Review
• When personal channels were used for risk communication (from a provider, from localized information, from a friend/peer), versus non-personal channels, there was greater adherence to protective behaviors.	Literature Review

Contact

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