

# Air Quality Outreach At Childcare Centers In Asthma Prevalent Neighborhoods in Philadelphia

## Introduction

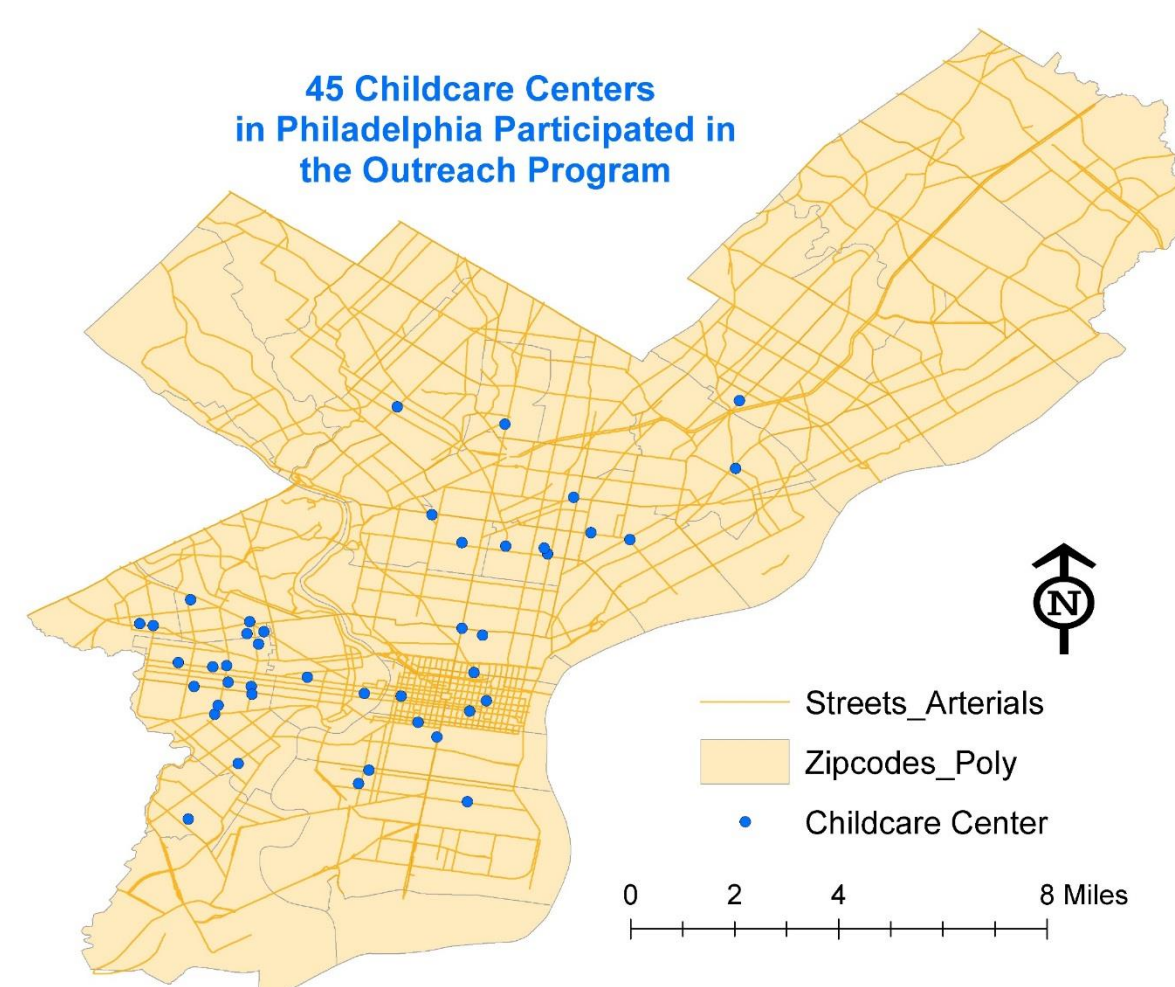
- Philadelphia has 2-3 times higher asthma rates than the Commonwealth of Pennsylvania
- Studies evaluating contributors to asthma have found a variety of outdoor pollutants to be important
- The EPA provides daily air quality information at [www.airnow.gov](http://www.airnow.gov) and [www.airqualitypartnership.org](http://www.airqualitypartnership.org) at which, anyone can sign up to receive free outdoor air quality alerts

## Objectives

- To evaluate baseline knowledge and awareness of staff at childcare centers about poor outdoor air quality, asthma and EPA's AQI
- Increase knowledge about poor outdoor air quality and the illnesses associated with it
- Empower staff at childcare centers to reduce exposure to air pollution by children in their care by encouraging the use of free air quality alerts

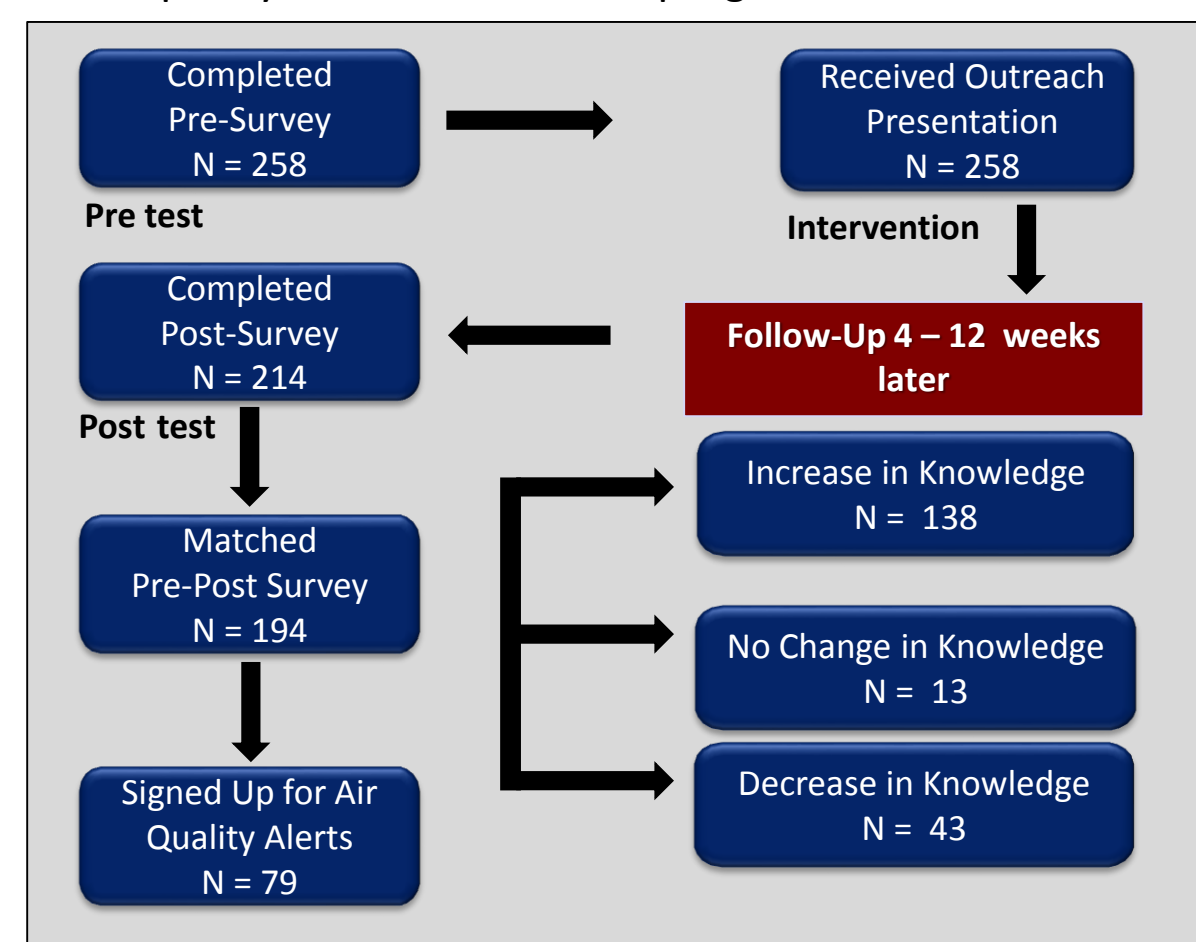
## Methods

- Target population**
  - Staffers at childcare centers in neighborhoods at high risk of asthma in Philadelphia
- Surveys**
  - 22 question survey designed to assess staffers' understanding of how poor air quality impacts children with asthma and their awareness and use of air quality alerts
  - Administered pre outreach program to assess baseline knowledge
  - Same survey administered 4 to 12 weeks later to evaluate changes in staffers' knowledge and behaviors
- The outreach program**
  - 15 minute slide presentation provided in the summer and autumn months of 2015, 2016, and 2017 at 45 childcare facilities on the dangers of poor outdoor air quality and available air quality alert resources
  - Presentation included information about local asthma prevalence, relationship of poor air quality and asthma, and an easy method to sign up to receive air quality alerts
- Statistical analysis:**
  - Frequencies & percentages (categorical)
  - Means  $\pm$  standard deviation (continuous)
  - To assess knowledge pre/post program the paired t-test used



## Results

- Prior to outreach program only 7.2% of staffers received air quality alerts often/always while 73.7% never did
- 4 to 12 weeks post outreach program 38.1% of staffers reported receiving air quality alerts often/always while 33% never did
- 83% of the staffers reported finding information from this presentation useful
- 85% found the presentation Easy or Very Easy to understand
- 52% of the staffers reported changing activities based on air quality after the outreach program



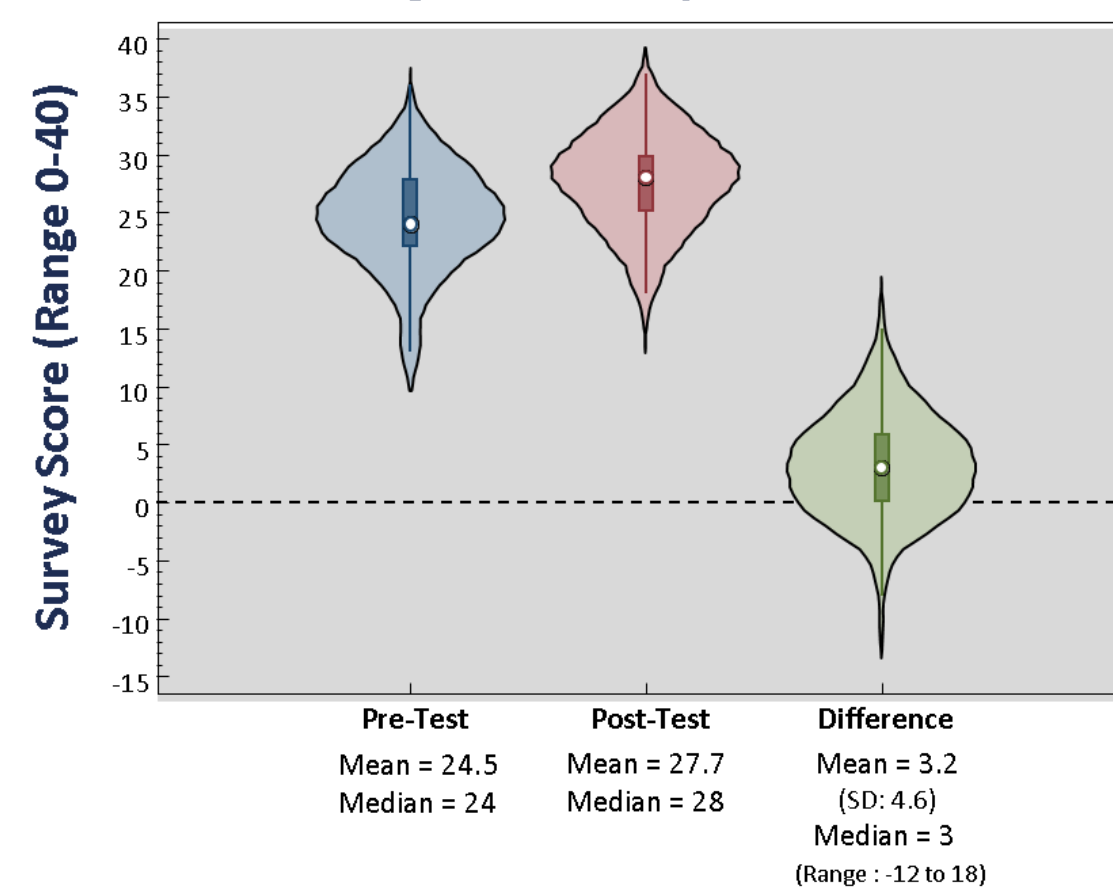
## Daycare Staffer Demographics

Participant Demographics		N	%
Education	High School	25	12.9%
	Some College	71	36.6%
	College Degree	44	22.7%
	Beyond College	48	24.7%
Age	18-29	81	41.7%
	30-50	81	41.7%
	51 and older	29	14.9%
Race	African American, Black	132	68.0%
	White	25	12.9%
	Asian	11	5.7%
	Other / Multi-Racial	18	9.2%
Sex	Female	171	88.1%
Parental Status	Parent	119	61.3%
Smoker	Yes	30	15.5%
Do you or anyone you know have asthma?		131	67.5%
Before the outreach, how often did you receive air quality alerts?	Never	143	73.7%
	Rarely	32	16.5%
	Often	7	3.6%
	Always	7	3.6%

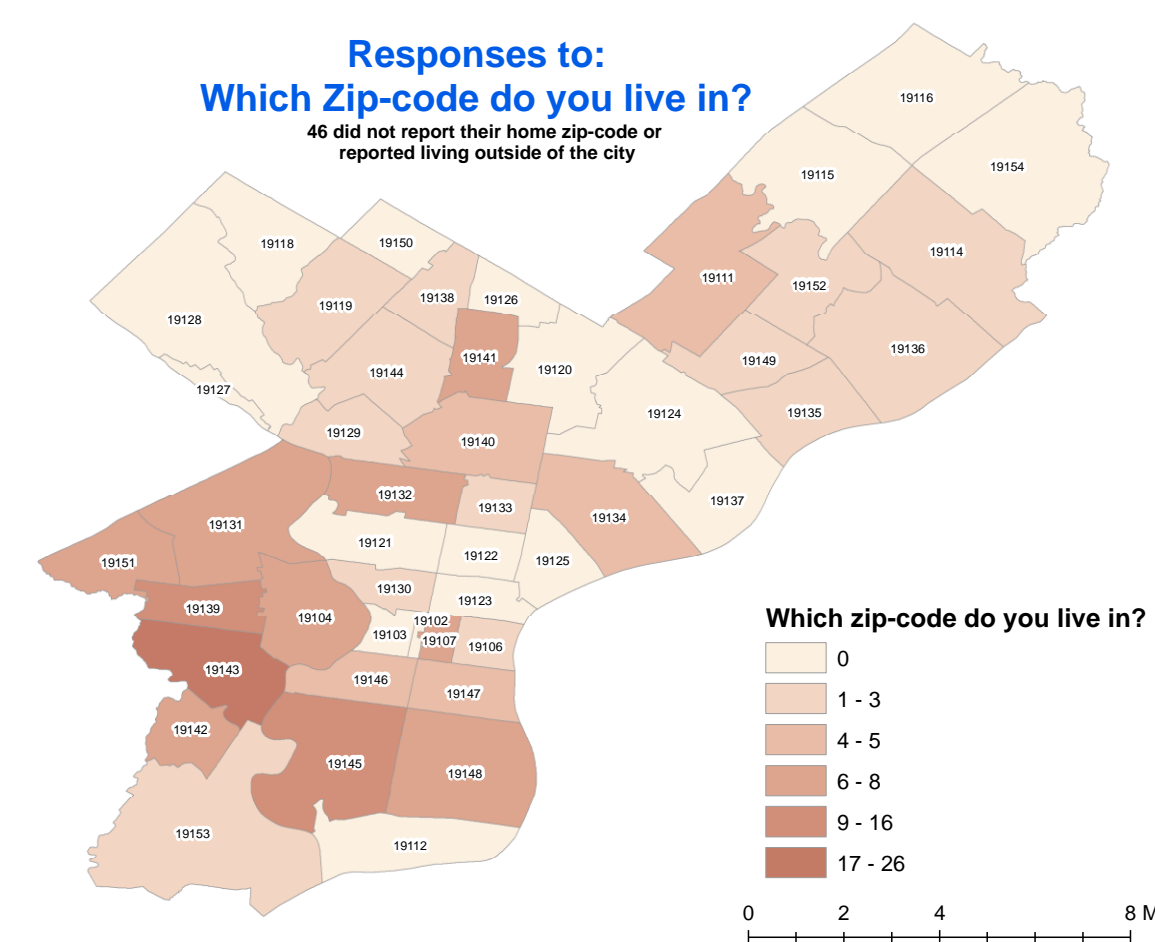
Was the information about air quality that we gave you useful to you? If yes how did you use it? If no, why not?

- "Good to know, I have the information hanging on the wall."
- "I learned that the orange color for air control means it's unhealthy for people sensitive to air pollution."
- "Gave me insight on when to go outside and how the change in the weather can trigger asthma."
- "The information was helpful because, I suffer from allergies + severe sinus problems."
- "I used it to make sure my students were okay to play outside."
- "I downloaded the air quality app which was quite useful for my allergies and my grandkids with asthma."
- "Because it gave me more info on outdoor air quality."
- "I gave the pamphlets to parents."
- "I just shared information with others."
- "I learned there are outside factors that could contribute to asthma flare-ups."
- "Knowing more about air quality helps me plan my day better."
- "I downloaded the APP and shared the info with my family and friends who also downloaded the APP."
- "I check the air quality on a daily basis to help students & Family."
- "I shared the information that I learned with family and friends."
- "This was helpful because it gave detailed information about things that can cause asthma that we can then provide to parents."

## Knowledge Scores Pre/Post Intervention



- There was a 3.2 point mean increase in knowledge score post survey (95% CI: 2.5 -3.8 , p<.0001)
- 73% of respondents performed better post intervention on the knowledge test



## Limitations

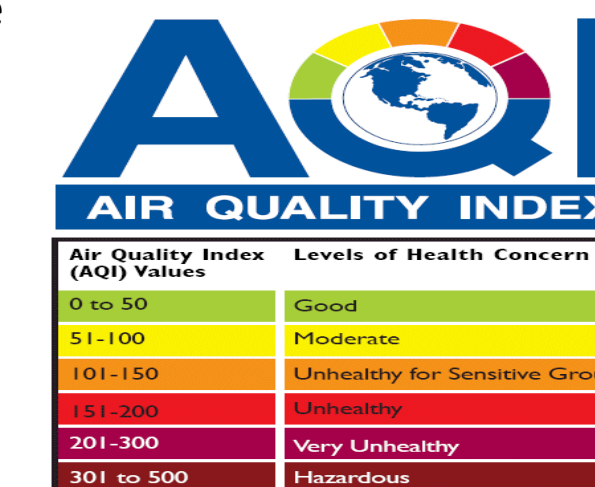
- Convenience sampling and scheduling constraints made it difficult to obtain a randomized sample
- Staff turnover and shift changes made it difficult to follow up with the same cohort for the post-survey
- Presentations were conducted by many individuals with potentially different levels of presentation quality
- Engagement presentations and follow up were during work hours. Some staff may have felt hurried to complete surveys due to work constraints

## Discussion

- First nationally available outreach program to evaluate baseline knowledge and awareness of staff at early learning centers about poor outdoor air quality, asthma and EPA's AQI
- Many staffers had limited knowledge at baseline about poor outdoor air quality and the illnesses associated with it.
- The significant increase in mean knowledge scores, use of air quality alert resources and positive feedback suggests staffers benefited from this community outreach program

## Conclusion

- Although the AQI is easily accessible, we found very limited awareness of this resource among childcare providers who care for children in neighborhoods with high prevalence of asthma
- This easily administered program using nationally available free air quality information was shown to increase the awareness and knowledge of childcare providers to the benefit of children in their care



## Acknowledgements

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