Sense Air

Custom Air Quality Reports

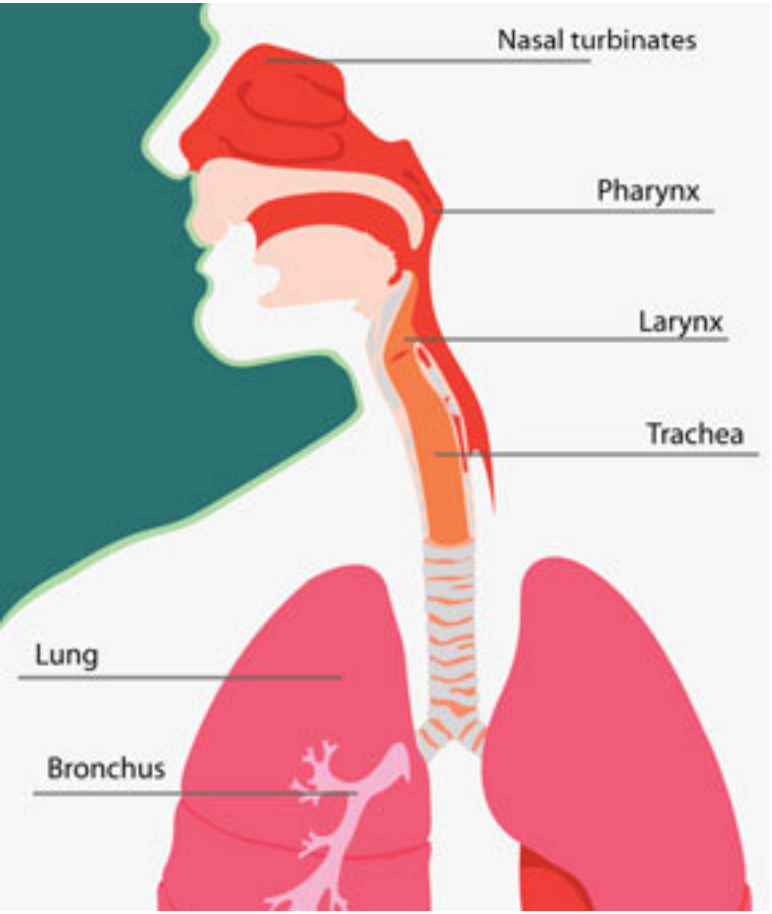
Project Development Team:

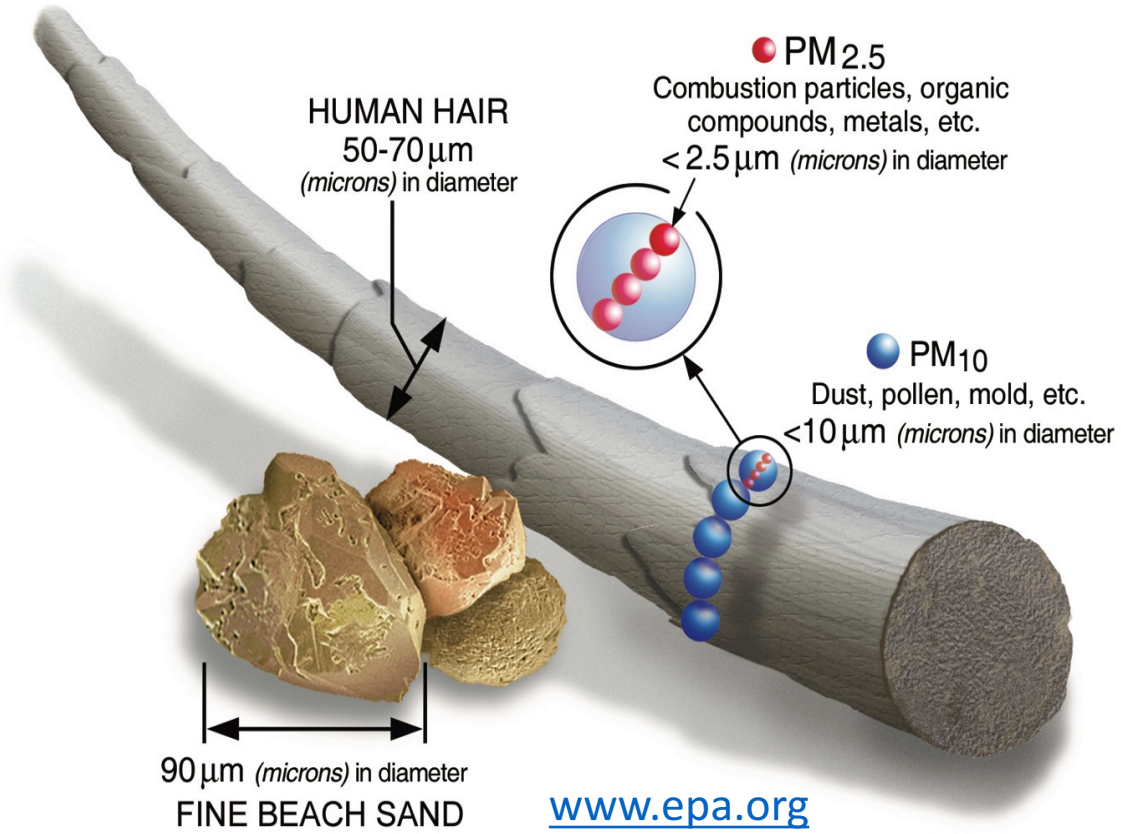
I. Ali[1], A. Boroomand[1], A. Ramirez-Aristizabal[1], J. E. Shay[1]

[1]University of California Merced – NSF-ICGE 2017

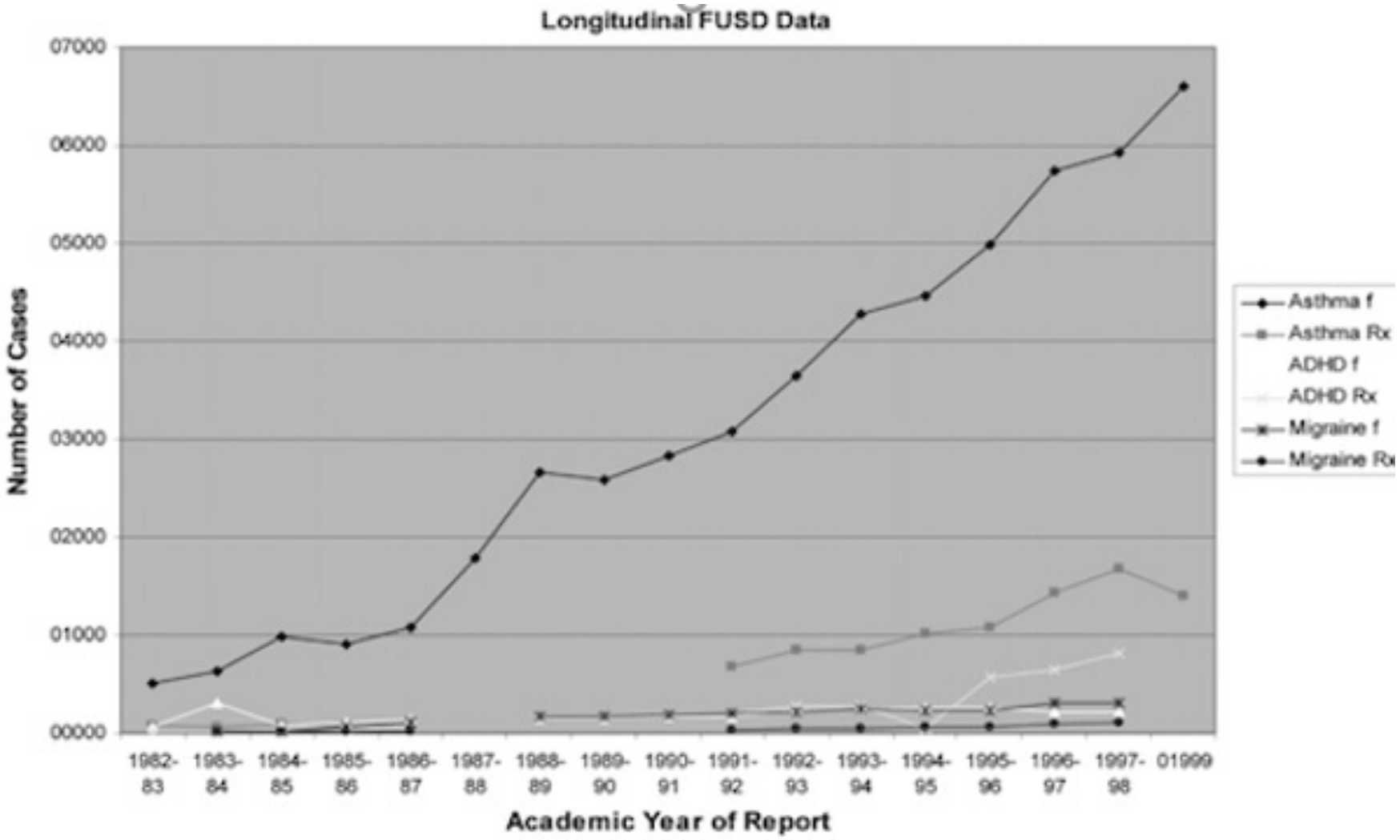
The Environmental Issue

The Air


Nasal turbinates
Pharynx
Larynx
Trachea
Lung
Bronchus


HUMAN HAIR
50-70 µm
(microns) in diameter
PM2.5
Combustion particles, organic compounds, metals, etc.
<2.5 µm (microns) in diameter
PM10
Dust, pollen, mold, etc.
<10 µm (microns) in diameter
90 µm (microns) in diameter
FINE BEACH SAND
www.epa.org

The Health Issue



The Health Issue

Research report

J Epidemiol Community Health 2010;**64**:142—147. doi:10.1136/jech.2009.083576

Outdoor air pollution and uncontrolled asthma in the San Joaquin Valley, California

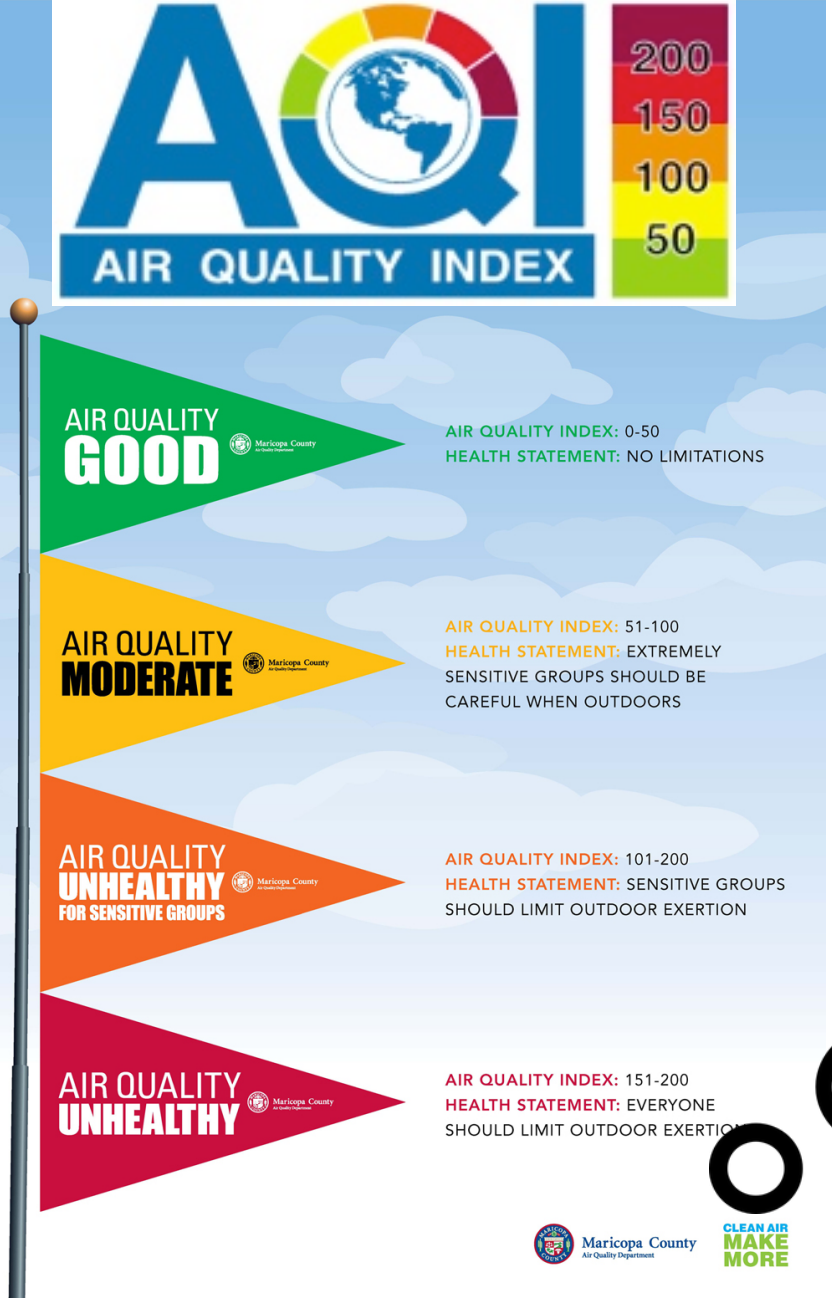
Ying-Ying Meng,[1] Rudolph P Rull,[2,3] Michelle Wilhelm,[4] Christina Lombardi,[1] John Balmes,[5,6] Beate Ritz[4]

Journal of Toxicology and Environmental Health, Part A, 71: 512–520, 2008
Copyright © Taylor & Francis Group, LLC
ISSN: 1528-7394 print / 1087-2620 online
DOI: 10.1080/15287390801907459

Particulate Matter ($PM_{2.5}$, $PM_{10-2.5}$, and PM_{10}) and Children's Hospital Admissions for Asthma and Respiratory Diseases: A Bidirectional Case-Crossover Study

Lokman Hakan Tecer[1], Omar Alagha[2], Ferhat Karaca[2], Gürdal Tuncel[3], and Nilufer Eldes[4]

[1]Environmental Engineering, Balikesir University, Cagis Campus, Balikesir, [2]Environmental Engineering, Fatih University, İstanbul, [3]Environmental Engineering, Middle East Technical University, Ankara, and [4]Department of Pediatric Diseases, Faculty of Medicine, Z.Karaelmas University, Zonguldak, Turkey



RAAN

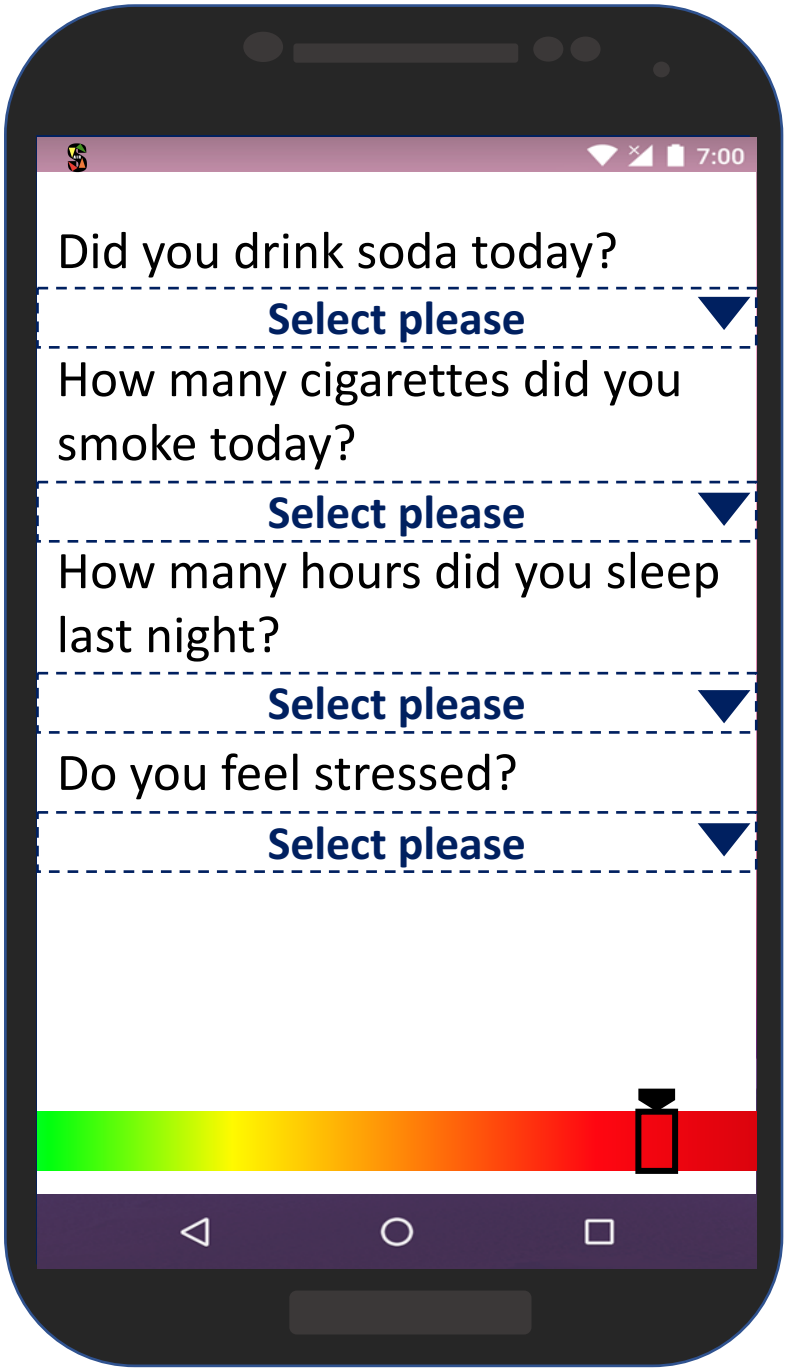
REAL-TIME AIR ADVISORY NETWORK

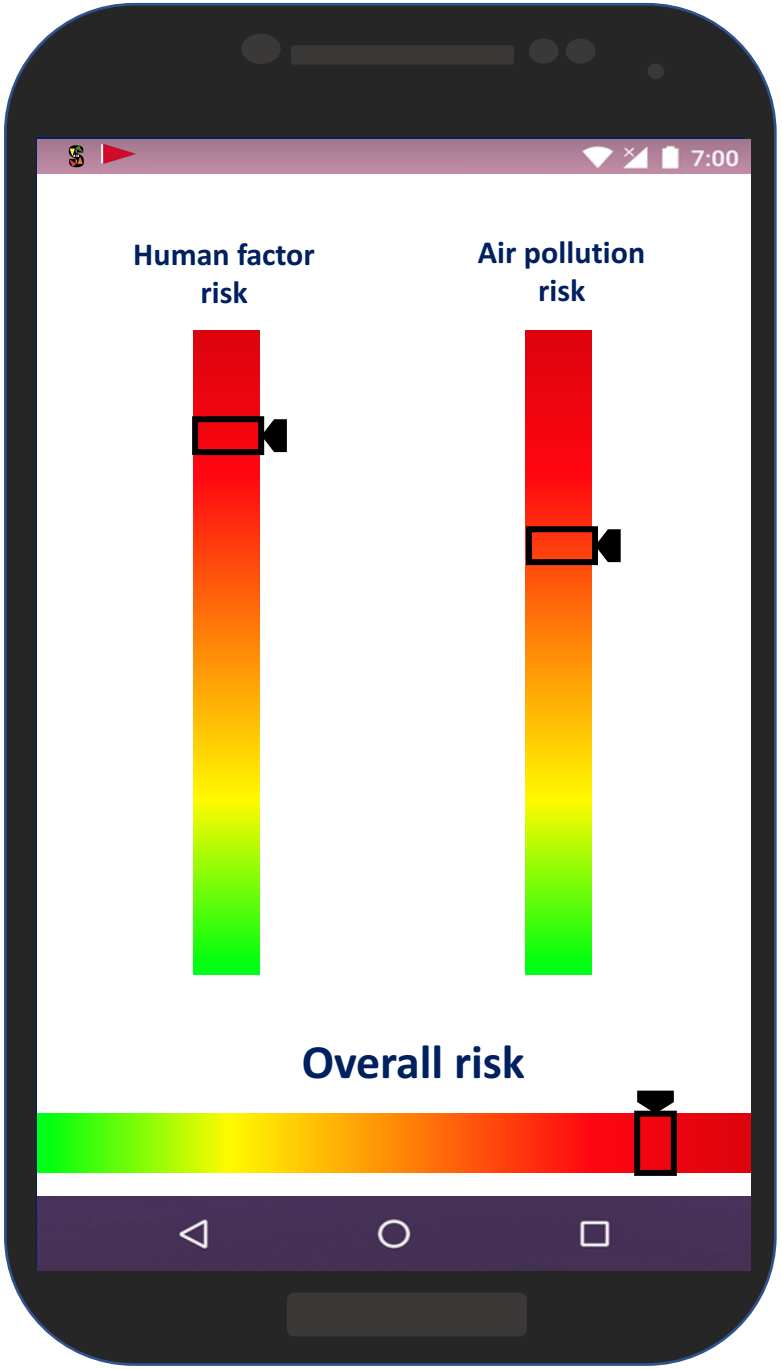
What do these flags mean to you?

AIR

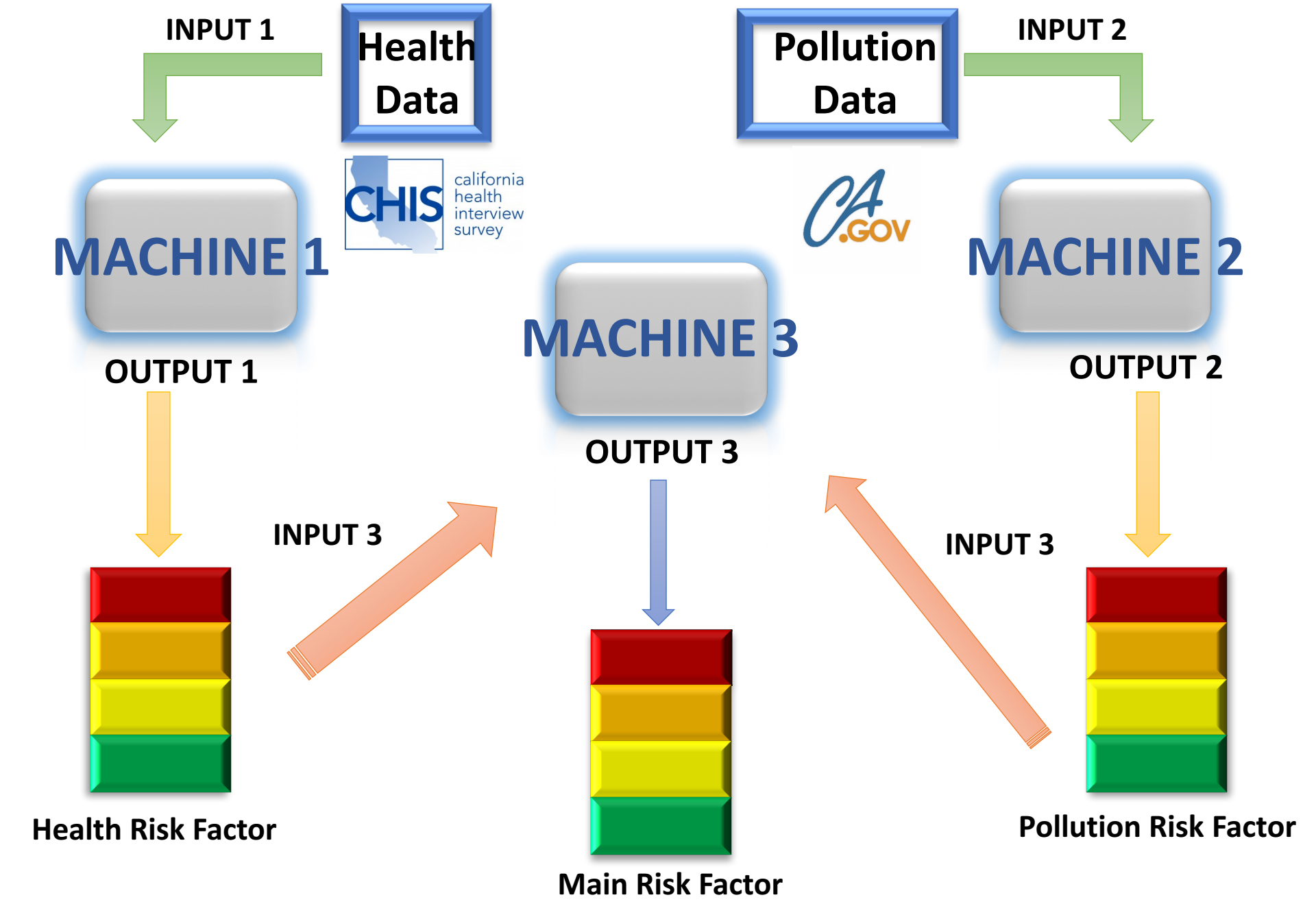
7:00
16 January
MONDAY, 2017
Google
Create
Play
Play Store

7:00
16 January
MONDAY, 2017
Google
Create
Play
Play Store

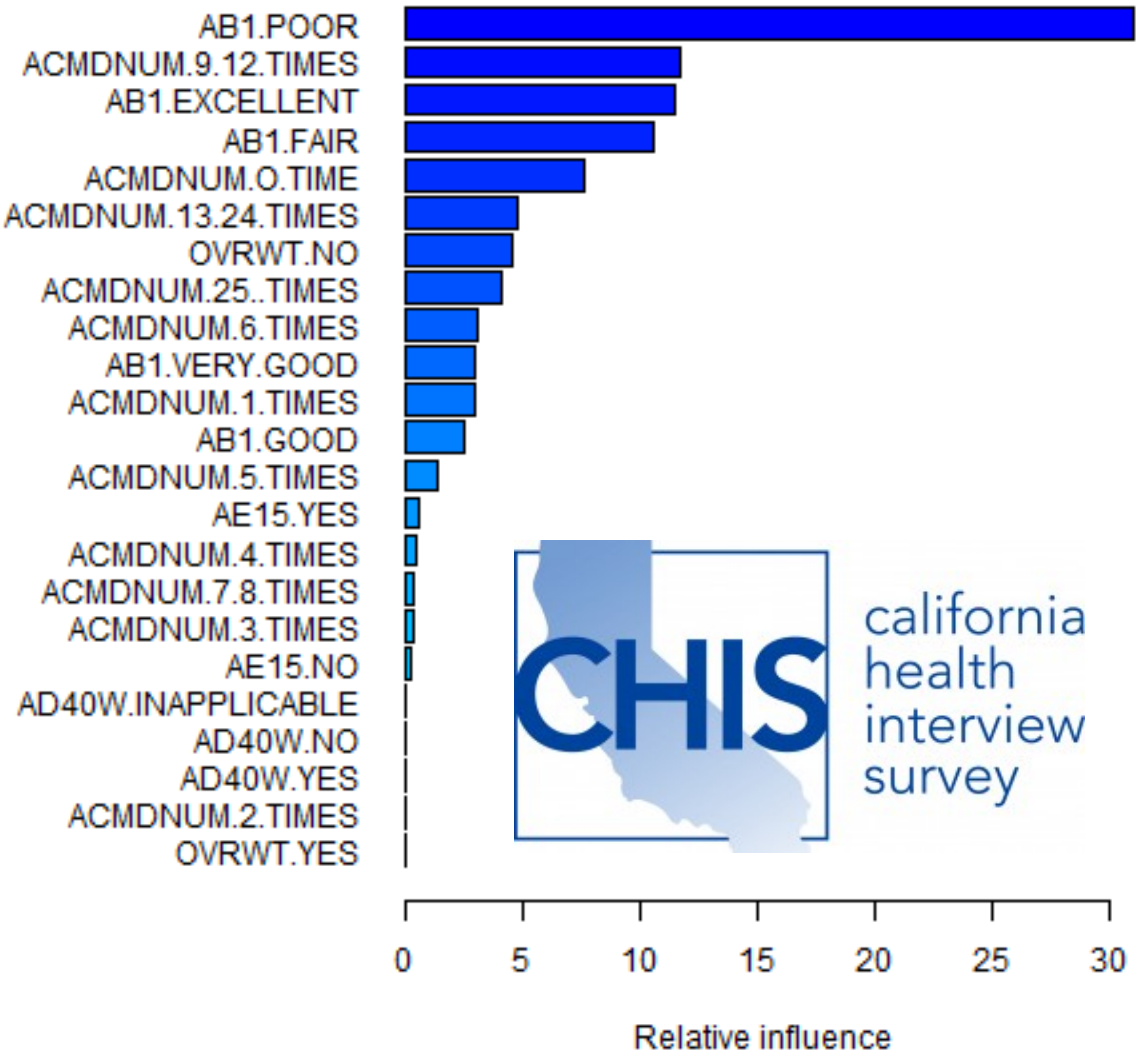

7:00
Did you drink soda today?
Select please
How many cigarettes did you smoke today?
Select please
How many hours did you sleep last night?
Select please
Do you feel stressed?
Select please


7:00
Human factor risk
Air pollution risk
Overall risk

7:00
Your Overall risk is 89%
Personalized tips:
• Stay indoor
• If you are in car set the fan on recirculate
• Drink a glass of milk
• Use vitamin C
• Eat fresh fruit and vegetables
• Make sure you drank enough water
Overall risk


INPUT 1
Health Data
Pollution Data
INPUT 2
CHIS
california health interview survey
CA.GOV
MACHINE 1
MACHINE 2
MACHINE 3
OUTPUT 1
OUTPUT 2
OUTPUT 3
INPUT 3
INPUT 3
Health Risk Factor
Main Risk Factor
Pollution Risk Factor

Results

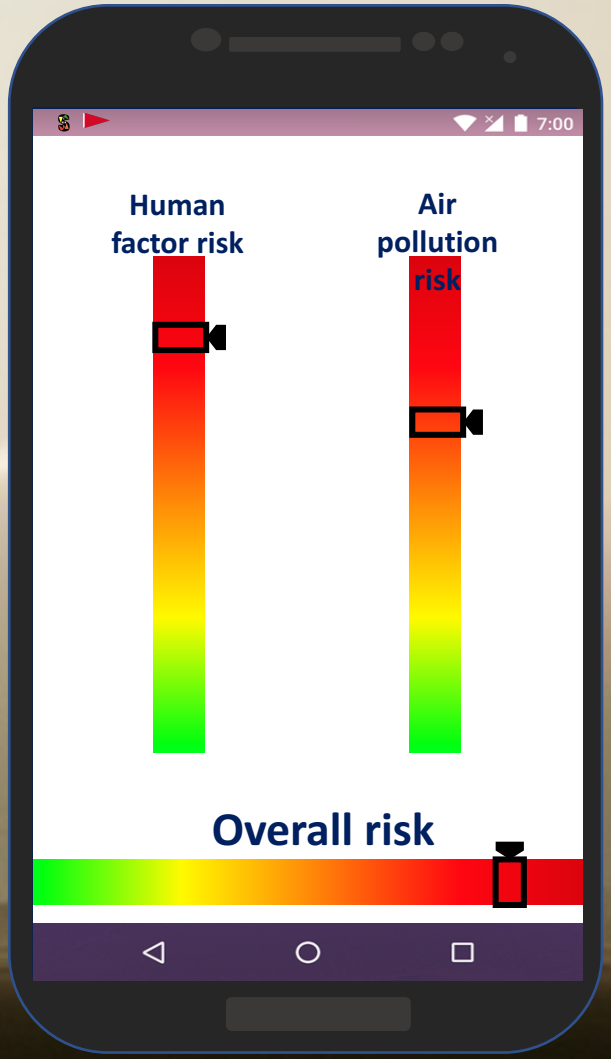


Variable Descriptions
General Health Condition
ER/Urgent care for asthma
Confidence to control and manage asthma
Doctor ever told has asthma
Taking daily medication for asthma
Current asthma
Still has asthma
Asthma last 12 months
Workdays missed due to asthma
Asthma management plan
Have written copy of asthma care plan
Stop smoking one day or longer to quit in past year
Thinking about quitting smoking in last 6 months
number of doctor visits past year
Walked at least 10 minutes for transport
Walked at least 10 minutes for transport in past 6 weeks
Walking

Sense Air Timeline and Progress

***SENSE AIR* PROJECT TIMELINE**				
TASK DESCRIPTION	**JANUARY**	**FEBRUARY**	**MARCH**	**APRIL**
Idea Development and Design				
Networking				
Literature Review				
Considering Data Available				
Collecting Data				
Assessed resources				
Data mining				
Data cleaning and compiling				
Analyzed Data				
Prepped Data for Presentation				

Summary



Moving Forward

Broader Impacts

twitter

UC MERCED
Health Sciences
RESEARCH INSTITUTE

Gratitude and Acknowledgments

Faculty Mentor: Dr. Michael Colvin
Project Advisor: Janice Zdankus (HPE)
Project Advisor: Spike Narayan (IBM)

Dean Juan Meza
Dean Marjorie Zatz
Inaugural NSF-ICGE Team!

THANK
AIR
YOU!