

# Participatory Science Data Management Case Studies

## *Smoke Sense*



# Smoke Sense

## *Improving Data Management for Participatory Science*

Smoke Sense created a platform that collects wildfire smoke observations and serves out real-time recommendations including air quality data, wildfire maps and forecasts, other participant observations, and information on health consequences of smoke exposure.

### ***Project Overview & Goals***

Smoke Sense is a crowdsourcing, participatory science mobile application developed by EPA researchers. The application's focus is on reducing the public health burden of wildfire smoke by increasing public engagement regarding wildfire smoke health risks. The project also increases the evidence base related to wildfire risk communication to encourage health-protective behaviors. Specifically, EPA wants to understand the extent that exposure to wildland fire smoke affects health and productivity, discover what steps people are willing to take to reduce their exposure, and develop health risk communication strategies that encourages protective health behaviors when there is wildfire smoke.

### ***Role of Project Participants***

Users of the Smoke Sense application record their personal observations of wildfire smoke, health symptoms, and behaviors taken to reduce their exposure. They are also able to interact with real-time data provided by the application.

### ***Data Management***

In addition to collecting observations from participants, Smoke Sense integrates and displays air quality data acquired via an Application Programming Interface (API)

from external sources including AirNow and NOAA. Smoke Sense must adhere to requirements defined by the Application Deployment Checklist and FedRAMP.

### ***Data Use***

Smoke Sense data is used by project participants to learn, observe and report wildfire smoke and ways to reduce their exposure. State, local and tribal agencies also use the participant reported data to learn how people experience wildfire smoke in their area.

#### **Issue:**

Air Quality

#### **Location:**

All Regions

#### **Tools:**

Learning & Observation

#### **Contact:**

[Ana Rappold](#)

[Mary Clare Hano](#)

### ***Issues & Lesson's Learned***

Technical issues stem from challenges inherent with mobile application development and the need for privacy and security requirements to be met. Non-technical issues included the need to quickly scale the project and coordinating the expertise required for application development. Obtaining stakeholder buy in and keeping the application development process flexible were essential to overcoming these issues.

## ***Outcomes & Success Factors***

Management support and motivation from the salience of the wildfire smoke issue contributed to the success of Smoke Sense. The application not only provides valuable information to participants, but also moves the needle forward on public health intervention tools using participatory science data.

## ***Opportunities***

The success of Smoke Sense could be used to create a framework for future participatory science application development tools. Such a shareable framework could include tips on obtaining management support, the development processes and expertise used, and other lessons learned.