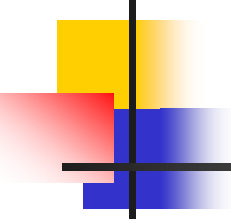


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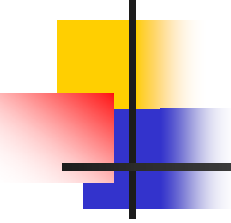
National-Scale Activity Survey (N-SAS)

**Public awareness of and response to
information on air pollution conveyed through
the Air Quality Index (AQI)**

***Overview of Survey Design, Possible Uses of
Data and Status/Timeline***

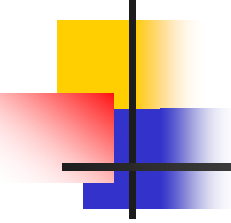
Presented at the
**EPA's Workshop on Environmental Behavior and Decision-Making
(February 13-14, 2008 in New York City)**

Presented by
Zachary Pekar and Susan Stone (EPA) and Carol Mansfield (RTI)



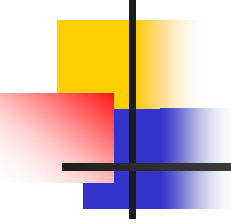
Overview of presentation

- Introduction to N-SAS
- Brief overview of past survey research with bearing on N-SAS (implications for N-SAS design)
- Overview of N-SAS
 - Design elements
 - Goals of the survey (types of information being collected)
- Potential uses of N-SAS results
- Survey timeline



Introduction to N-SAS

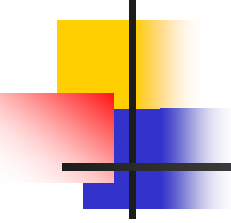
- OVERVIEW: N-SAS is a national-scale survey to collect variety of data related to the AQI and the public's awareness of and response to air pollution (including both averting and mitigating behavior).
- KEY DESIGN ELEMENTS:
 - Two survey designs will be used:
 - Cross-sectional survey (national-scale) measuring awareness, knowledge and stated responses to air quality warnings
 - Longitudinal survey (selected cities) collecting activity diary data to measure actual behavioral changes on poor air quality days.
 - Focus of initial N-SAS will be on the public's response to ozone pollution as conveyed through AQI alerts (later surveys may consider PM)
 - Initial N-SAS will focus on adults 55+ yrs of age (later surveys may consider additional age groups)
- STATUS: N-SAS is currently in the final planning stages and is targeted for summer 2008.

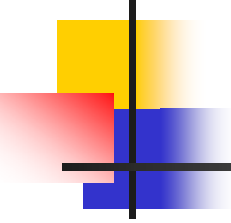


Brief overview of past survey research with bearing on N-SAS

- Roper Green Gauge Survey
- RTI/KN 2000 Health and Aging Survey
- 2006 BRFSS
 - module with four questions about awareness of the AQI and reported behavior change, 6 states administered it
- Individual metro areas conduct surveys
- Research linking air quality warnings to aggregate daily changes in attendance at outdoor events, hospital admissions, health outcomes and driving (for example, Neidell)
- Research on daily activities using diary studies

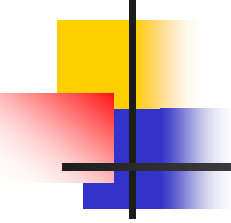
2002 STAR Grant and N-SAS Design

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- **2002 STAR grant** (Mansfield, Van Houtven, Johnson, Pekar, Crawford-Brown)
 - Epi and risk assessment see behavior change as a confounder – economists see behavior change as information about preferences and value
 - Framework for cross-sectional and longitudinal N-SAS design
 - Included questions on awareness, reported behavior, perceptions, health, neighborhood
 - 6 daily activity diaries



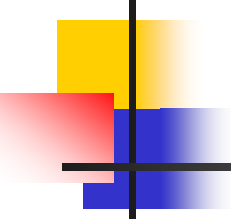
2002 STAR Grant and N-SAS Design, con't

- Sample frame: Harris Interactive Online marketing panel, general and asthma panels
- Inclusion criteria:
 - 35 highest ozone MSA's
 - Child 2 to 12 years old
 - One stay-at-home parent to supervise child during July/August/September 2002



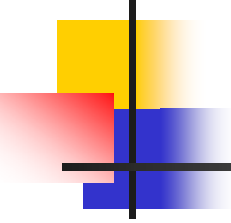
2002 STAR Grant and N-SAS Design, con't

- Parents report relatively high level of ozone alert awareness, particularly if they have child with asthma
- High percentage of parents report reducing child's outdoor time on high ozone days, particularly parents of children with asthma
- Evidence of day-to-day behavioral adjustments w.r.t. high ozone conditions for asthmatics (based on daily diaries)



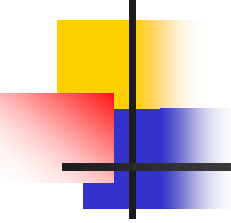
Goals of the N-SAS surveys – the types of information to be collected

- N-SAS will focus on measuring the following:
 - Public's awareness and knowledge of ozone pollution and the health threats posed by ozone (later surveys could include PM)
 - Public's awareness and knowledge of air quality warning systems such as AQI (including range of messages conveyed by these systems)
 - Exposure reduction behavior and emissions reduction behavior (both stated and actual)
 - Willingness to pay for information on air pollution conveyed through systems such as the AQI



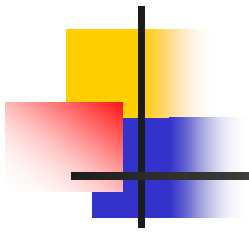
Design Elements – cross-sectional survey

- FOCUS: measure awareness, knowledge and risk perceptions related to air quality and reported behavioral changes (and differentiates these across socio-economic attributes), location (address or major intersection)
- SAMPLE:
 - Representative sample of older adults (55+ yrs) from MSA's that experienced at least one code orange day in the last 3 years
 - Sample size based on ability to compare responses to important subsamples of the population (e.g., stated awareness of AQI)
 - Survey conducted in English, but should Spanish speaking individuals be contacted, survey can be conducted in Spanish (potential for Spanish focus depending on funding)



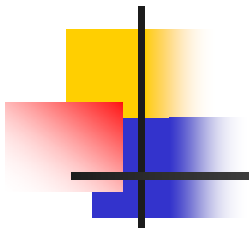
Design Elements – cross-sectional survey (continued)

- **MODE OF ADMINISTRATION:** telephone (RDD). Will include non-response follow-up studies.
- **ADDITIONAL FACTOR:** consider web-panel sample to improve compatibility with longitudinal activity diary survey and to research mode/sample selection issues in future surveys.



Design Elements – Longitudinal survey

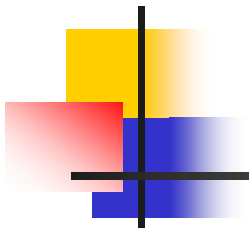
- FOCUS: collect seven 24-hr activity diaries for each member in a sampled group age 55+ years old. Allows actual changes in behavior (related to ozone exposure and emissions of ozone precursors) to be evaluated.
 - Respondents will also answer questions from the cross-sectional instrument in screening and debriefing surveys to allow stated behavior to be contrasted with actual behavior for this population
 - KN has addresses for geographic location



Design Elements – Longitudinal survey (continued)

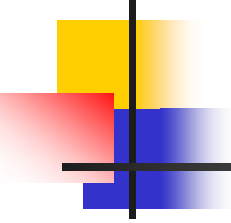
- **SAMPLE:**

- Sample of older adults (55+ yrs) from 3-6 urban areas (selected to represent range of urban conditions in US)
- Sampling frame will include individuals with respiratory and cardiovascular disease (i.e., sensitive subpopulations)
- As with cross-sectional, will be conducted in English (not sure whether Spanish speakers will be covered at this point)
- Sample size and number of diaries per individual based on ability to detect changes of a given size in time outdoors comparing days with high and low ozone pollution



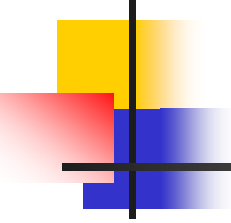
Design Elements – Longitudinal survey (continued)

- **MODE OF ADMINISTRATION:** Knowledge Networks web panel. Non-response follow-up study will be conducted.
 - Web-panel provides advantages over telephone, including the ability to collect more detailed information more frequently and the ability to collect diaries associated with high-ozone days.



Goals of the Survey – Cross-sectional component

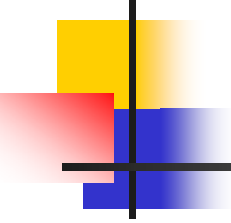
- Collect information on:
 - Respondent characteristics: health status, behavior (time outdoors)
 - Risk perception: perceived magnitude of air pollution problem and individual vulnerability
 - Averting and mitigating behavior (stated): possible actions taken, effectiveness of actions, frequency of action by individual.
 - Knowledge/Awareness of AQI
 - Valuation of air quality warnings (contingent valuation)
 - Geographic location



Goals of the Survey – Longitudinal component

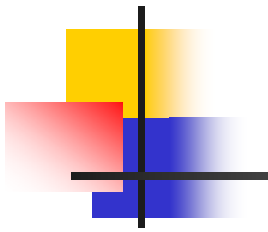
- Collect information on:
 - Daily activities (up to 7 days)
 - Continuous activity data for each diary day with details on type of activity, exertion level, and location (including model and duration of travel)
 - Respondent characteristics (including general health status and status on day of activity survey)
 - Geographic location
 - Stated activity (to support comparison against actual activity)
 - *Additional questions from cross-sectional survey*

Possible Uses of N-SAS Results

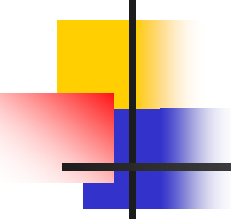


- Accountability initiatives: Effectiveness of air pollution warnings at changing public's behavior.
- Enhance design of information outreach programs such as the AQI:
 - Provide insights into which populations are being reached by AQI (how this might be improved)
 - Provide a national benchmark against which state and regional programs can be compared and for evaluating improvements resulting from future enhancements to the AQI.
 - Insights into how other environmental health risk warning initiatives can be improved and enhanced.

Possible Uses of N-SAS Results (continued)



- Improve exposure and risk modeling:
 - Data on averting and mitigating activity can increase representative of exposure and risk modeling (by potentially reducing exposure misclassification).
 - Detailed activity data for older population can enhance existing data in Comprehensive Human Activity Database (CHAD) used by EPA in micro-environmental exposure modeling.
- Improve economic benefits analysis:
 - Averting and mitigating activity reflects a cost to society. The presence of these activities in response to air pollution (and associated warning information) should be considered in assessing the benefits of air pollution reduction.



N-SAS Timeline

- Pretesting instrument, January 2008
 - Cognitive interviews
 - Spanish language focus group
- Review, January 2008
 - Advisory panel
 - 2 -3 written peer reviews
- Submit ICR to OMB, February 2008
- Data collection, June to September 2008
- Report with basic data analysis, Fall/Winter 2008
- Peer review of report, Winter 2009
- Future waves of data collection?