Marco. . .Polo

Collecting location data 76 times in 28 days

This work was supported by NASA under Contract 80LARC21DA001

Jon Wivagg, David Cantor, Robyn Ferg, Thom Godwin, Eric Jodts, Jean Opsomer, Hanna Popick

Agenda

- Overview of the X-59 airplane

- Design requirements

- Methods

- Survey test background

- Findings from location analysis

Overview

- NASA's X-59 airplane

Lockheed Martin

Design requirements

NASA's X-59 Community Response Testing (CRT)

Design requirements

- Recruit respondents

- Real-time surveys

  - Identify precise location and flight pass (to calculate dose)

  - Single-Event and cumulative (Daily Summary) dose

    - Survey each flight and overall day response

- Key data pushed to dashboard

- End-of-Test survey

Methods

NASA's X-59 Community Response Testing (CRT)

Methods

- Sample addresses (ABS)

- Recruit respondents (mail push-to-web)

  - Household screener

  - Background survey for selected R

- Single Event and Daily Summary surveys (app and web)

  - Push Single Event surveys for each flight pass with timestamp

  - Collect Daily Summary survey each evening with flights

  - Notify by text, email, and/or app notification

  - Graduated incentive structure
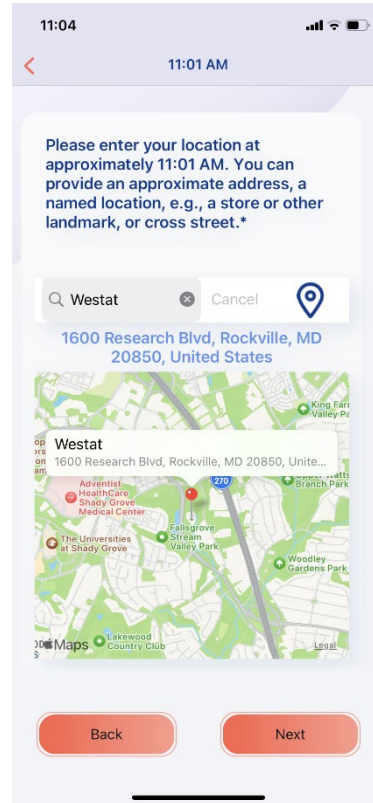
- End-of-Test survey (app and web)

Survey Test Background

NASA's Planning Stage Survey Test

Survey Test Background

- Nashville, Tennessee area

- Recruitment: Aug – Oct 2023

- Survey Test: Oct – Nov 2023

- End-of-Test Survey: Nov 2023

- 5,000 addresses sampled

- 800 recruited

- 602 survey test respondents

- 534 End-of-Test survey respondents

Survey Test Background

- Goal – maximize number of reported locations within Reliable Boom Carpet (RBC).

- Strategy – sample addresses from sub-area within the RBC. This is the Recruitment Region (RR).

- Rationale – People are likely to be at different locations throughout the day, but most of these locations will be close to their home.

Site Selection for Survey Test
Nashville, TN

Location collection in survey (web and app)

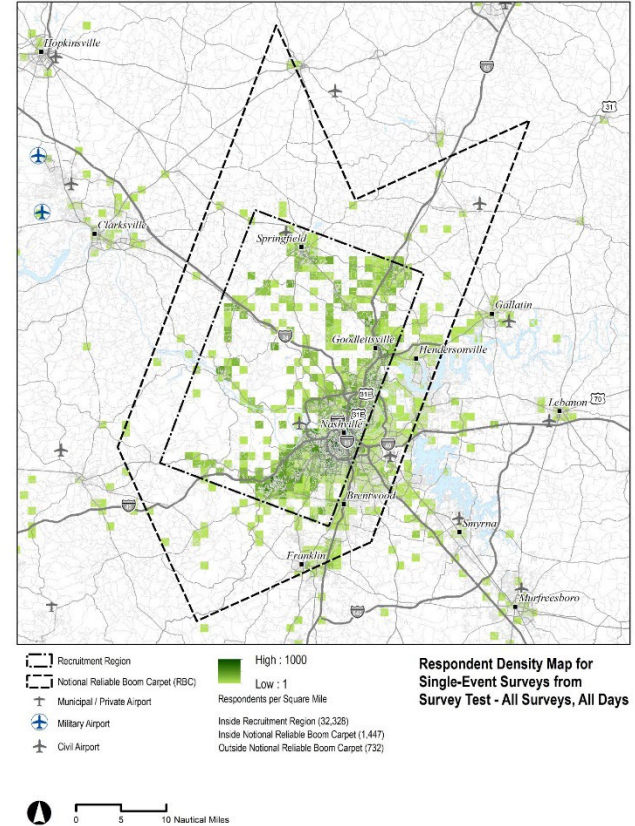# Analysis of location data

NASA's Planning Stage Survey Test

Key Numbers

- 800 total recruited respondents

- 76 simulated "flights"

- 60,800 (800 x 76) location requests (required for survey completion)

- 36,177 locations reported (59.5%)

So where were they?

Location	All Reported	% in Recruitment Region	% in Reliable Boom Carpet
Home	68.2%	99.8%	99.9%
Work/School	9.8%	81.1%	92.7%
Other	22.0%	60.6%	73.3%
Overall	**100%**	**89.4%**	**93.4%**

Respondent Density Map for Single-Event Surveys from Survey Test - All Surveys, All Days

How far were they if they were <u>out</u> of the Recruitment Region?

	Mean distance from Recruitment Region center	Mean distance from Recruitment Region center (outliers removed)
In RR	10.9 miles	--
Out of RR	374.2 miles	24.5 miles

Addresses <u>outside</u> the Reliable Boom Carpet

Location	Percent distribution
Home	0.6%
Work/School	6.5%
Other	88.6%
Total	**100%**

Conclusions

NASA's Planning Stage Survey Test

Conclusions

- With about 93% of all locations in the Reliable Boom Carpet, the sampling was efficient in getting reports from the desired geographic area, with relatively few unusable locations.

- As expected, virtually all home addresses were in the Reliable Boom Carpet. With about 2/3 of reported locations being the respondent's home, the high percentage of home locations helps sampling efficiency because we use ABS.

- Many out-of-area locations were very close to the Reliable Boom Carpet borders, possibly providing a few more usable locations.

Limitation and Other Research

- The study was limited to the Nashville region. Planned future Community Response Test areas may see somewhat different results.

- Other research focuses on incentives, (Hanna Popick tomorrow), demographic representativeness and response rates by mode (Eric Jodts Friday).

Thank you

Jon Wivagg

jonathanwivagg@westat.com

westat.com