It’s a Bird… It’s a Plane… It’s a Survey!: Surveying air passengers at three Baltimore–Washington area airports

National Capital Region Transportation Planning Board

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ICF

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5/13/2022
AAPOR 2022

Background

Regional Air Passenger Survey Overview

- The National Capital Region Transportation Planning Board (TPB) has conducted a regional air passenger survey (APS) at the Washington-Baltimore region's three commercial airports (BWI, DCA, IAD) since 1973. Since 2001, approximately every two years
- Provides critical data on air passenger characteristics, ground access information, and factors that influence airport choice
- Key source of observed data for regional air systems planning and informs long-range regional transportation planning
- Survey conducted as a paper-based intercept survey at boarding gates using a stratified sampling approach

Comprehensive Evaluation of the APS

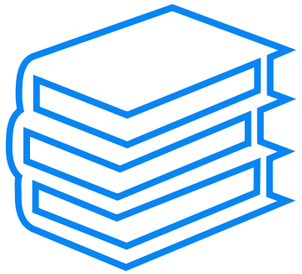
- In recent APS efforts, TPB observed a decline in the overall response rate and the quality of survey responses
  - Partially completed or incomplete surveys
  - Respondents are less willing to provide origin information
  - Length of the questionnaire and survey response burden
- There were also challenges to fielding the APS, including the lengthy process to receive ID badges, shortened training schedule for field staff, and interviewing late arriving passengers
- In response to these methodological concerns, ICF was contracted by TPB to conduct a comprehensive evaluation of the APS

Evaluation Methods

“State of the Practice” Review

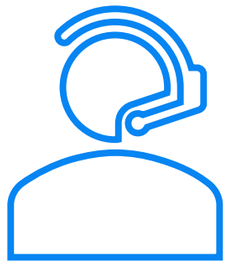
Technical advisory committee

- 6 meetings with key stakeholders
- Informed findings and guided recommendations



Literature review

- Methodological reports from prior APS and other airport surveys
- Focused on sampling, timing, mode, and topics of the surveys



Key informant interviews

- 6 interviews
- Region-level managers and survey managers from other airports
- Semi-structured protocol

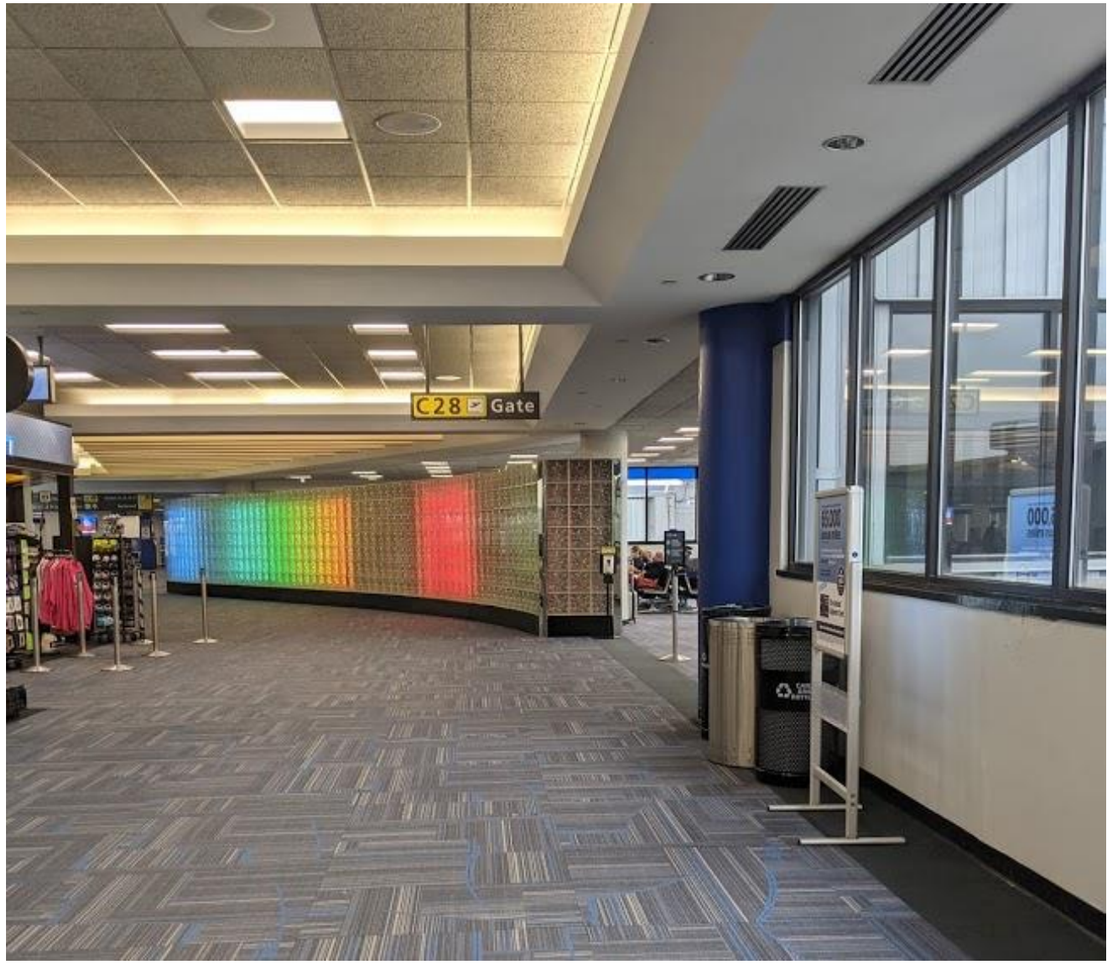
Longitudinal Analysis

- Reviewed prior years of the APS
  - Questionnaires
  - Sampling frames
  - Data collection processes (such as interviewer training materials)

- Response rates based on flight characteristics
  - Logistic regression model based on year, airport, airline, day of the week, flight time, and number of seats
  - Analyzed sampling inefficiencies as a result of disproportionate sampling and intra-cluster correlation

Airport Site Visits

- Provide information about conditions at the airports
- One observer toured the airport with a host, recorded observations and captured photos of key areas (e.g., gates, walkways, post-security areas)
- Spoke with staff members about topics such as:
  - Typical passenger flows
  - Additional surveys carried out at the airport
  - Planned future changes to terminal layout
  - The badging process
- Analyzed and combined information from the three site visits into themes



Key Findings

Summary of findings

THEME 1: OVERALL APPROACH

- Other airports are conducting surveys more frequently, or even on a continuous basis, to keep up with changing priorities

THEME 2: SURVEY DESIGN AND MODE

- Most airport surveys are now conducted via tablet or by QR code, and concerns about COVID-related reluctance may be over-stated
- Late-arriving respondents may be missed by interviewers; these passengers should be offered a take-home option
- Incentives, while not common for air passenger surveys, may help improve response rates

THEME 3: SAMPLING

- Cluster sizes are larger than optimal
- Sampling flights with probability proportional to size (PPS) and reducing the number of explicit strata could reduce design effect
- A “flood the gate” strategy could increase legitimacy and quickness of meeting yield
- Alternative sampling units, such as a “zone” approach to clustering, may reduce ICC and ease interviewer burden

Summary of findings – continued

THEME 4: QUESTIONNAIRE

- The questionnaire is too long and some questions have little or no use
- Item nonresponse may be caused by perceived invasiveness of some items and lack of privacy
- Gate or terminal information is missing from the dataset and could be useful to stakeholders
- Creating a respondent-facing survey name could increase response

THEME 5: TRAINING

- There is a critical need to improve training substantially and train data collectors in refusal conversion more systematically
- Lack of oversight of data collectors may be contributing to low response rates
- Developing a set of FAQs and actively training the data collectors on these could improve effectiveness

THEME 6: DISCUSSION OF AN EMPLOYEE-INCLUSIVE SURVEY

- To increase representativeness, airport employees should be included in ground access surveys

Selected Recommendations

Recommendation: Conduct experiments on all new methods

- Allows for analysis of how changes in methodology can impact trend data
- Provides a chance to test out the logistics of new procedures before implementing them in the full-scale collection
- Tests the effects of any changes on data quality and response rates
- Will entail additional costs
- May slow down the adoption of new design features because these must be tested and assessed before transitioning to “full-scale” data collection

Recommendation: Transition to electronic data collection

Better data quality due to skip logic which only shows questions that apply to the respondent; easier to include additional questions and complex skips

Reduced errors in data processing, particularly in interpreting handwriting

Potential lower costs because of savings on printing and data processing

Simpler multilingual administration

Recommendation: Offer incentives to participants

- Incentives have been shown to increase participation and motivate people who would otherwise not be interested in participating

- Many kinds of survey incentives exist
  - A raffle approach may be more practical for the airport context

- Based on the length of the survey, APS may want to offer a larger raffle incentive of up $500

- APS could experiment with different levels of incentives to determine the point of diminishing returns

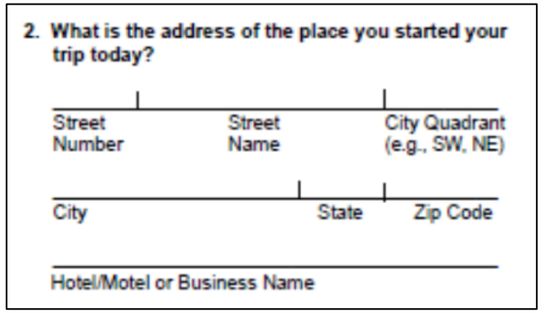
Recommendation: Reduce perceived invasiveness of questions

- The current survey asks:
  - Origin address
  - Whether origin is a private residence
  - Whether respondent lives alone
  - How long the home will be empty (length of trip)

- Survey protocol says little about privacy and data security

- Redesign the instrument to minimize perceived invasiveness, including removing questions or changing the type of response required

- Redesign data collector materials to address privacy

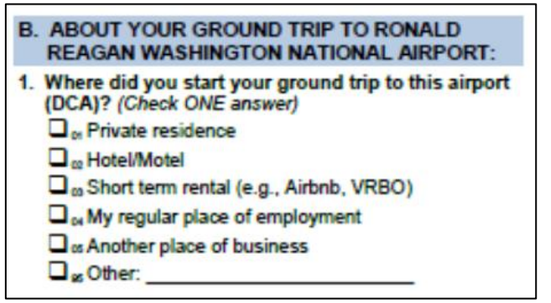


2. What is the address of the place you started your trip today?

Street Number | Street Name | City Quadrant (e.g., SW, NE)

City | State | Zip Code

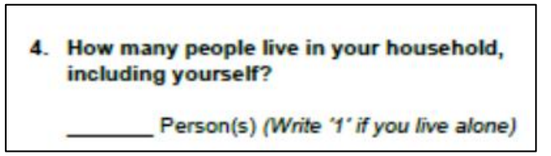
Hotel/Motel or Business Name



B. ABOUT YOUR GROUND TRIP TO RONALD REAGAN WASHINGTON NATIONAL AIRPORT:

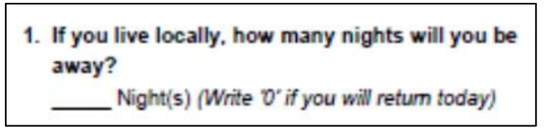
1. Where did you start your ground trip to this airport (DCA)? *(Check ONE answer)*

- ☐ 01 Private residence
- ☐ 02 Hotel/Motel
- ☐ 03 Short term rental (e.g., Airbnb, VRBO)
- ☐ 04 My regular place of employment
- ☐ 05 Another place of business
- ☐ 06 Other: _____



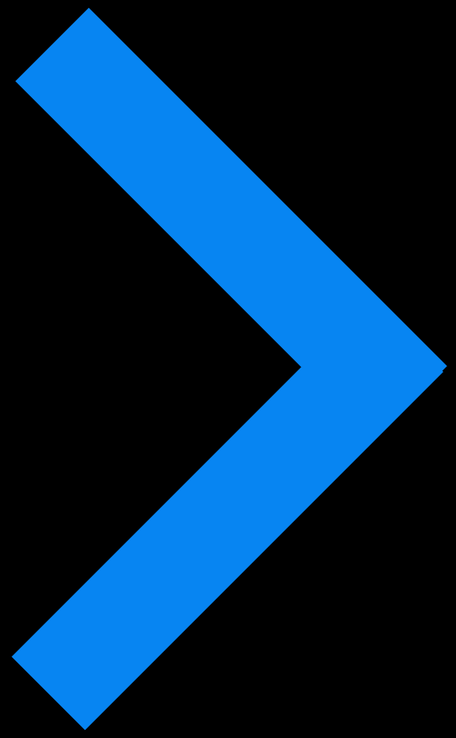
4. How many people live in your household, including yourself?

_____ Person(s) *(Write '1' if you live alone)*



1. If you live locally, how many nights will you be away?

_____ Night(s) *(Write '0' if you will return today)*



Next Steps

TPB Staff Recommendations for Implementation

- Based on ICF's recommendations, TPB staff reviewed and developed recommendations for implementation in the next regional air passenger survey in 2022-2023

- These staff recommendations were presented to TPB's Aviation Technical Subcommittee along with scenarios for each recommendation

- These recommendations were discussed and evaluated by the subcommittee

Methodological Changes in the Next Regional Air Passenger Survey

- The next regional air passenger survey (APS) will incorporate the following recommendations from ICF's APS Response Rate and Quality Study:
  - Full scale pretest in the field to allow for more comprehensive analysis of how changes in methodology can impact trend data or key estimates
  - Implementing an online survey using QR code which provides the benefits of electronic surveys such as incorporating skip logic and reducing respondent burden
  - Offer a participation incentive to randomly selected survey participants in a raffle drawing
  - Provide an interactive map in the survey for respondents to identify trip origin location

Next Steps

- TPB anticipates a start date of July 2022 for the next APS with the following key tasks:

Part 1: Survey Preparation	Part 2: Survey Field Work
Task 1: Project Kick-off and Ongoing Management	Task 5: Administration, Staffing, and Security Procedures
Task 2: Prepare Sampling Approach and Sampling Plan	Task 6: Conduct a Survey Pretest to Evaluate and Refine the Survey Methods
Task 3: Web-based Survey Instrument, Informational Postcard, and Online Survey Dashboard	Task 7: Perform Survey Field Collection
Task 4: Administer Survey Participation Incentive	Task 8: Prepare Data Files and Final Survey Report

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Thank you!

Questions?

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