



THE NATIONAL AVIATION OPERATIONS MONITORING SERVICE

THE NAOMS FIELD TRIAL

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Centers for Public Health Research and Evaluation



- CPHRE
- More than 20 years conducting surveys
- Currently conduct 100+ projects a year
- Clients include CDC, NCI, EPA, other federal agencies and research foundations

Field Trial Design



- A field trial is a normal part of a good research design
- NAOMS field trial designed to study the effects of
 - Mode
 - Recall period
 - Question order
- Other information obtained
 - Quality of data
 - Response rates
 - Cost

Field Trial Design (Cont'd)



- Goal was to complete at least 600 interviews
 - Minimum of 200 interview for each mode
 - Needed to evaluate relative effectiveness

Study Design

Mode



Three interviewing modes were tested

- Self-Administered Mail Questionnaire (SAQ)
- Computer-Assisted Telephone Interview (CATI)
- In-Person

Study Design

Recall Period



Six recall periods were tested

- 1 week
- 2 weeks
- 4 weeks
- 2 months
- 4 months
- 6 months

Study Design

Question Order



- There were four sections to the questionnaire

	QUESTION ORDER 1	QUESTION ORDER 2
Section A	Background Questions	Background Questions
Section B	Safety Events	Topical Questions
Section C	Topical Questions	Safety Events
Section D	Feedback	Feedback

- Two alternative sets of topical questions:
 - Minimum Equipment Lists
 - In-Close Approach Changes

Questionnaire

Background Questions



Section A – Background Questions

Before completing this questionnaire, please review the last **four weeks** in your logbook or other flight records. A recent study found that this will help you recall safety events that happened during that time period.

A3. In order to understand all of the types of flying that you perform, please fill in the types of aircraft, number of **hours**, and number of **legs** flown for each operation during the last four weeks. This information will be used for statistical purposes.

COMMERCIAL OPERATION	Last Four Weeks		
	Aircraft Make/Model	Hours	Legs
Scheduled Major or National	1.		
	2.		
Scheduled Regional	1.		
	2.		
Unscheduled	1.		
	2.		
Cargo	1.		
	2.		

Questionnaire

Safety Related Events



Section B – Safety Related Events

In answering these questions, please report only events that you **personally experienced** on a commercial aircraft on which you were a crewmember. Please do not report other events that someone told you happened.

Below is a list of events that you might have experienced during the last four weeks. For each item, please indicate how many times, if any, you experienced the event. Please do not leave items blank. If you **did not experience the event** in the last four weeks, write “0” in the response box for that item.

Airborne Spatial Deviations	
During the last four weeks, how many times did an aircraft in which you were a crewmember...	
SD1. ...nearly collide with terrain or a ground obstruction while airborne?	
SD2. ...descend below its Minimum Safe Altitude?	
SD3. ...experience a valid GPWS alert?	
SD4. ...enter a MOA, ADIZ, or other special use airspace without appropriate clearance?	
SD5. ...enter any other controlled airspace without appropriate clearance?	
SD6. ...deviate from a route or vector heading for one minute or more?	
SD7. ...deviate from an assigned altitude by more than 300 feet?	

Questionnaire

Minimum Equipment Lists



Section C – Questions on Minimum Equipment Lists (MELs)

The following topical questions relate to practices on the use of Minimum Equipment Lists and the deferral of MEL maintenance items.

MEL Knowledge and Training

MEL1.	Have you read the FAA preamble / introduction to the MEL for the aircraft you are currently flying?	Yes	No	Unsure
MEL2.	Did you receive training at your company regarding the MEL documentation for your aircraft?	Yes	No	Unsure
		↓	SKIP TO MEL5.	
MEL3.	How long did the training last?	HOURS		
MEL4.	Do you believe the training adequately described methods for resolving MEL-related questions or issues?	Yes	No	Unsure

Questionnaire Feedback



Section D – Questionnaire Feedback

Your participation today has helped us in the first test of NASA National Aviation Operations Monitoring Service. Because we're interested in making sure this questionnaire is designed as well as possible, we have included just a few more questions about this survey.

D1. How many minutes did it take you to complete the questionnaire up to this point?	MINS
D2. How confident are you that you reported accurately all the significant safety-related events that you experienced for the time period specified in the survey? <i>(Please check the appropriate box.)</i>	<input type="checkbox"/> not confident at all <input type="checkbox"/> moderately confident <input type="checkbox"/> rather confident <input type="checkbox"/> very confident <input type="checkbox"/> extremely confident
D3. In your opinion, were the questions asked in Section B of this survey relevant to tracking long-term trends in aviation safety?	Yes No

Sample Design



- Sample came from 2-year old database of all certified pilots available on www.landings.com (N=670,000)
- Selected pilots living in U.S. who flew commercially (N=55,000)
- Randomly selected 13,712 names and submitted to Telematch for address and telephone number updates--used only pilots with address/telephone match
- Full implementation will be based on a more current pilot listing

Sample Design



■ In-Person Mode

- All pilots with “301” and “410” telephone prefixes (Baltimore, northern Washington DC) assigned to in-person mode and random cell assignment

■ Self-Administered and Telephone Modes

- Random selection among remaining pilots with addresses/telephone numbers and random assignment to mail and telephone cells
- Total field trial sample equaled 1,251 pilots

3 modes x 4 versions x 6 recall periods = 72 variations

Confidentiality



- Preserving confidentiality an important part of field trial design
 - **Mail.** There were no identifiers on the completed interview or return envelope
 - **Telephone.** There was no link between the interview database and pilot data
 - **In-Person.** The completed interview had no identifiers on it.

- Pilots did not express concern about confidentiality during field trial
 - But protecting participant identity through strict adherence to procedures remains a preeminent NAOMS commitment

Self-Administered (Mail) Mode



■ Four Mailings

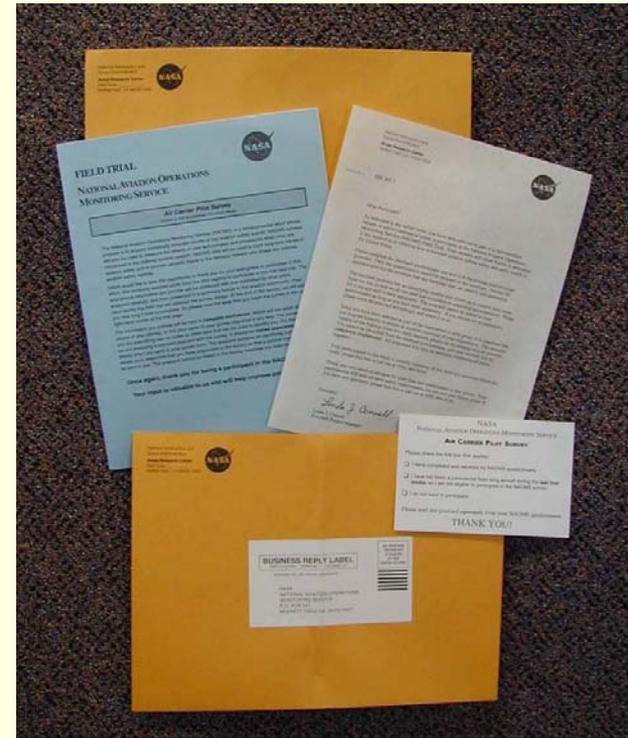
- Advance letter
- First packet one week later
- Reminder postcard two weeks later
- Second packet three weeks later
- Third packet two months later

Self-Administered (Mail) Mode (Cont'd)



- Packet contents
 - Letter
 - Questionnaire
 - Stamped, addressed return envelope
 - Response postcard

- Returned materials required editing and data entry



Telephone (CATI) Mode



- Advance letter
- Call pilots to arrange interview appointment
- Interviewer administers from telephone center
- 10% of interviewer's work is validated by a supervisor for quality control
- Questionnaire pre-programmed into computer so data entered immediately--no additional data entry
- CATI has error checks built into the programs
 - **Requires little editing**
 - **Probes for additional info on unlikely responses**





Calendar
January 2000
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday

In-Person Mode



- Advance Letter
- Interviewer calls to schedule appointment
- Interviewer travels to appointment
- Questionnaire conducted face-to-face
- Interviewer returns completed interview to office for editing and data entry
- In-person mode was terminated early
 - When it became clear that the Telephone mode would yield quality results with high response rates at much less cost

In-Person Mode



Professionalism of Interviewers



- Experienced interviewers chosen
- Interviewers given 16 hours of training
- CATI (telephone) interviewers' work was silently monitored by a supervisor for accuracy and ability to interact effectively with pilots
- In-person interviewers' work was validated by pilot filling out interviewer validation postcard

Professionalism of Interviewers



**National Aviation Operations Monitoring Service
Field Trial**

Quality Control Follow-Up

Interviewer Name: Harriet Gold

1. Place of interview: Airport Other

2. Approximately how long did the interview take? 40 minutes

3. Did the interviewer conduct the interview in a professional manner?
 Yes No

4. Do you have any other comments? HARRIET GOLD
WAS VERY FRIENDLY + PROFESSIONAL
HOPE THE INFO GATHERED IS HELPFUL

**National Aviation Operations Monitoring Service
Field Trial**

Quality Control Follow-Up

Interviewer Name: Ruth Epstein

1. Place of interview: Airport Other

2. Approximately how long did the interview take? 45 minutes

3. Did the interviewer conduct the interview in a professional manner?
 Yes No

4. Do you have any other comments? EXTREMELY PROFESSIONAL,
VERY COURTEOUS, RESPECTFUL, AND PRECISE.
AN ENJOYABLE INTERVIEW!

Bad Addresses & Phone Numbers; Ineligible Pilots



- Bad address/bad telephone number:
 - Mail: 10%
 - Telephone: 14%

- Ineligible (did not fly commercial fixed wing aircraft in assigned recall period) or deceased
 - Mail: 16%
 - Telephone: 20%

- Mainly a consequence of using a two-year old mailing list

Response Rates



- NAOMS received the following response rates
 - For eligible pilots
 - Whose addresses and phone numbers were correctly determined

Telephone	81%
Mail	13%

This is regarded as an outstanding response from both practical and theoretical perspectives

Costs



- Mail and telephone costs are roughly comparable
 - On a completed survey basis

- In-person costs are about 4 times higher
 - Travel costs to / from pilots' homes or offices
 - Pilots generally did not want to be interviewed at airports



Screening for Eligibility



- Attempt to screen all pilots by telephone
- Air Carrier screener
 - Determines pilot has flown in last 60 days as air carrier pilot

Sample Design



- Sample Source
 - Airmen Certification Directory
 - Available online at FAA Oklahoma City

- Samples are drawn among U.S.-based pilots
 - Air carrier (n ~ 55,000) currently available

- Sample drawn on quarterly basis
 - Sampling without replacement for 12 rolling months

Conducting the Interview



- Conduct screening and interviewing using computer-assisted telephone interviewing (CATI)
- Interviewer administers questionnaire from telephone center
- Questionnaire pre-programmed into computer so data entered immediately--no additional data entry
- CATI has most error checks built into the programs--requires little editing
- 10% of each interviewer's work is validated

Sending Advance Letter



- Sent to pilots about a week before calling
- On NASA letterhead/envelopes
- Explains
 - Purpose of study
 - What participation means
 - Confidentiality
 - Who will call
 - Etc.

