An Email Contact Protocol Experiment in a Large-Scale Survey of U.S. Government Employees

DC-AAPOR Summer Conference Preview/Review
Bureau of Labor Statistics Conference Center
Washington, DC
August 3, 2015

Taylor Lewis¹ and Karl Hess¹

¹The opinions, findings, and conclusions expressed in this presentation are those of the authors and do not necessarily reflect those of the U.S. Office of Personnel Management.
Acknowledgments

1. Jim Caplan at the Department of Defense (DoD), for helping us procure the necessary approvals to conduct this experiment on DoD employees sampled as part of the 2015 Federal Employee Viewpoint Survey (FEVS).

2. Bill Dristy at the U.S. Office of Personnel Management, for serving as an IT liaison to the FEVS team and sending out the survey invitations and reminders at our prescribed times.
Outline

I. Introduction
   A. Background on the FEVS
   B. Brief Literature Review

II. Experimental Methods and Data
   A. Traditional Email Contact Protocol (Control)
   B. Rotating Cohort Design
   C. Dynamic Adaptive Design

III. Results

IV. Discussion and Ideas for Further Research
I. Introduction
Background on the FEVS

• The FEVS is an annual organizational climate survey administered by the U.S. Office of Personnel Management (OPM) to a sample of 800,000+ federal employees from 80+ agencies (biennial until 2010)

• Web-based instrument comprised mainly of attitudinal items (e.g., perceptions of leadership, job satisfaction) sent via personalized link embedded in an email message

• Agencies launch in one of two cohorts staggered one week apart for a six-week field period

• Nonrespondents are sent weekly reminder emails
The Federal Employee Viewpoint Survey

**FEVS Sample & Respondent Counts: 2004-2014**

**FEVS Response Rates: 2004-2014**
More on Declining Response Rates

• Many other surveys facing similar response rate declines (de Leeuw and de Heer, 2002; Petroni et al., 2004; Curtain et al., 2005; Brick and Williams, 2013)

• Trend continues despite recent enhancements believed to increase response levels:
  – More inclusive scope – increased sample size over time (all but 16 agencies conduct a census)
  – Aggressive communications campaigns – agencies are provided fillable posters, template email messages to be sent from senior leaders; several agencies disseminate YouTube videos
  – Real-time response rate website – a controlled-access website for agency points-of-contact to track their response rate status and compare to governmentwide rate and that of prior FEVS administrations

• Untapped area of research: evaluating alternative email contact protocols
Literature on Optimizing Contact Times

- Abundance of research in interviewer-administered surveys:
  - Telephone Surveys: Weeks et al., 1987; Greenberg and Stokes, 1990, Brick et al., 1996
  - Face-to-Face Surveys: Purdon et al., 1999; Wagner, 2013
  - Longitudinal Surveys: Lipps, 2012; Durrant et al., 2013

- Important to acknowledge that optimizing contact rates does not guarantee an increase in response rates (Kreuter and Müller, 2014)

- At present, we have no direct way to assess when contact was made after sending an FEVS email invitation (future research could look into this)
Literature on Email Timing in Self-Administered Web Surveys

• Research is scant, but results are mixed:
  1. Faught et al. (2004) – establishment survey; randomly assigned email addresses to one of 14 a.m./p.m. timeblocks defined for seven days of week → found emailing Wednesday morning produced highest response rate

  2. Sauermann and Roach (2013) – 25 experimental groupings in a sample of approx. 25,000 science and engineering professionals; examined combinations of time of day, day of week, lag time between contacts → found no significant effects

• Seems unlikely a single email protocol “treatment” would work best on all survey populations
II. Experimental Methods and Data
Traditional Email Contract Protocol (Control)

- Initial email invitation to participate sent on Tuesday morning of first week of field period

- Five weekly reminders thereafter, also on Tuesday morning

- Final reminder sent on Friday of sixth week (even though surveys stays open through COB following Monday)

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuesday of Week 1</td>
<td>Initial Invitation</td>
</tr>
<tr>
<td>Tuesday of Week 2</td>
<td>Reminder 1</td>
</tr>
<tr>
<td>Tuesday of Week 3</td>
<td>Reminder 2</td>
</tr>
<tr>
<td>Tuesday of Week 4</td>
<td>Reminder 3</td>
</tr>
<tr>
<td>Tuesday of Week 5</td>
<td>Reminder 4</td>
</tr>
<tr>
<td>Tuesday of Week 6</td>
<td>Reminder 5</td>
</tr>
<tr>
<td>Friday of Week 6</td>
<td>Final Reminder with wording &quot;Survey Closes Today&quot;</td>
</tr>
<tr>
<td>Following Monday, COB</td>
<td>Survey Links Deactivated</td>
</tr>
</tbody>
</table>
Alternative #1: Rotating Cohort Protocol

- A static adaptive design, following terminology of Bethlehem et al. (2011)

- Randomly assign employees to one of six timeblocks for initial email invitation, and then cycle through five remaining timeblocks when sending reminders:

<table>
<thead>
<tr>
<th>A.M.</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.M.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
<td>E</td>
</tr>
<tr>
<td></td>
<td></td>
<td>D</td>
<td>F</td>
</tr>
</tbody>
</table>

- All nonrespondents still receive the final reminder on Friday of sixth week.
Alternative #2: Dynamic Adaptive Protocol

- So named per terminology of Bethlehem et al. (2011)

- As with first alternative, employees are randomly assigned to one of six timeblocks for initial email invitation

- At each week’s end, a multinomial logistic regression model fitted using sampling frame covariates (e.g., gender, supervisory status, subagency, minority status) → a vector of six timeblock-specific response propensities generated for each nonrespondent

- Subsequent week’s timeblock assigned stochastically in proportion to these probabilities
Experimental Data Set

- FEVS 2015 sample \((n = 34,799)\) of Department of Defense 4\(^{th}\) Estate (DoD excluding Army, Navy, and Air Force)

- Divided sample randomly into three groups of approximately equal size, each receiving one of the three email contact protocols

- Bulk emailer used to send out invitations simultaneously within a given timeblock
III. Results
Response Rates by Experimental Group

• Traditional contact protocol consistently outperformed two alternatives over field period

• Two alternatives performed nearly identically
Response Rates by Select Demographics

Gender

- Female: 50% Control, 60% Rotating, 50% Adaptive
- Male: 50% Control, 60% Rotating, 50% Adaptive

Minority Status

- Non-Minority: 20% Control, 30% Rotating, 20% Adaptive
- Minority: 50% Control, 60% Rotating, 50% Adaptive

Supervisory Status

- Non-Supervisor: 50% Control, 60% Rotating, 50% Adaptive
- Supervisor/Manager: 50% Control, 60% Rotating, 50% Adaptive
- Executive: 50% Control, 60% Rotating, 50% Adaptive

Pay Level

- < $50,000: 0% Control, 10% Rotating, 0% Adaptive
- $50,001 - $100,000: 50% Control, 60% Rotating, 50% Adaptive
- $100,001 - $150,000: 20% Control, 30% Rotating, 20% Adaptive
- More than $150,000: 0% Control, 10% Rotating, 0% Adaptive
Responses by Day of Work Week

- Bulk of responses arrive in same day as email invitation or reminder, particularly if sent in morning.

- More spill-over to next day when emails go out in afternoon.

- Relatively little spill-over into subsequent week.
Visualizing Impact of Reminders

- Histogram illustrates hourly response counts on days emails go out.

- Intraday heaping indicates upticks in reaction to emails.
IV. Discussion and Ideas for Further Research
Discussion

• Constant Tuesday morning invitation/reminder schedule yielded highest response rate, although the edge was slight

• Possible explanations for Tuesday morning effect:
  – Extra time/days to handle request during work week?
  – Extra time/days of survey open period?
  – Respondents react quicker (e.g., more likely to respond in same day) when invitation/reminder arrives earlier in week?
  – Respondents more likely to be in office and/or checking emails that particular day?

• Unfortunately, our experimental design leaves us unable to contrast the effect relative to a fixed Wednesday/Thursday protocol
Ideas for Future Research

• Investigate additional protocols, such as targeting individual’s response time from prior FEVS, where available

• Verify results on other subsets of FEVS survey population, not just DoD 4th Estate

• Explore methods to assess contact of emails (e.g., via email read receipts)

• Consider personalization of emails to improve response rates, which has proven to be effective in Web-based self-administered surveys (Heerwegh, 2005) just as in paper surveys (Dillman et al., 2007)
References


References (cont’d)


Thanks!

Questions/Comments?
Taylor.Lewis@opm.gov
Karl.Hess@opm.gov