



*a New Day for Federal Service*

# Does “When” Matter?

An Exploration of Timestamp Data on the  
Federal Employee Viewpoint Survey

Federal CASIC Workshops (FedCASIC)

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<sup>1</sup>The 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.



- Background on the FEVS
- Establish our Hypotheses
- Present Results and Conclusions
- Discussion
- Future Experiments

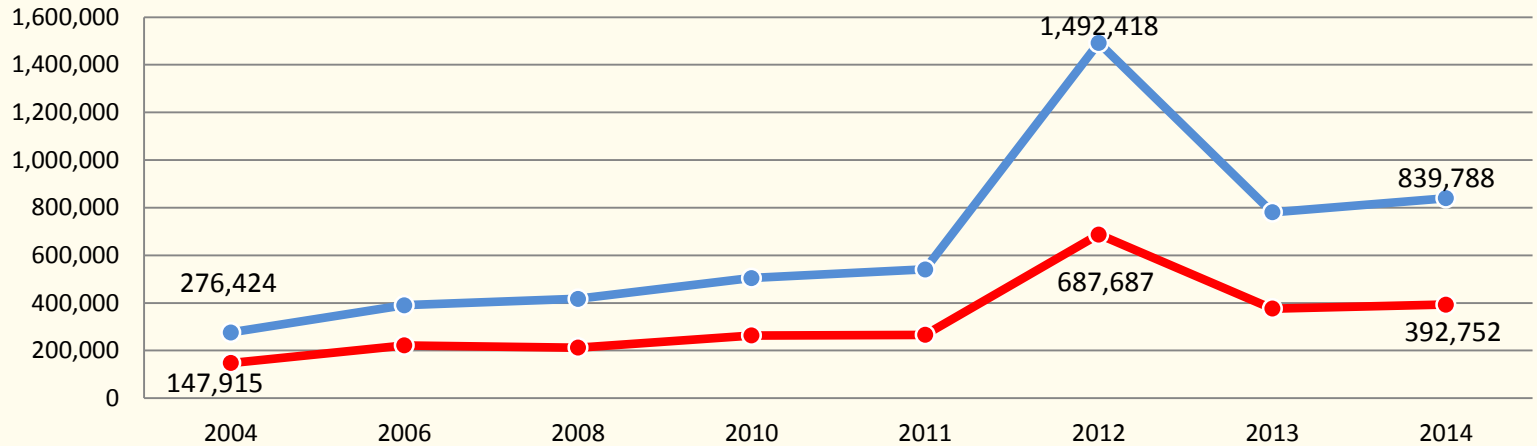


# The Federal Employee Viewpoint Survey

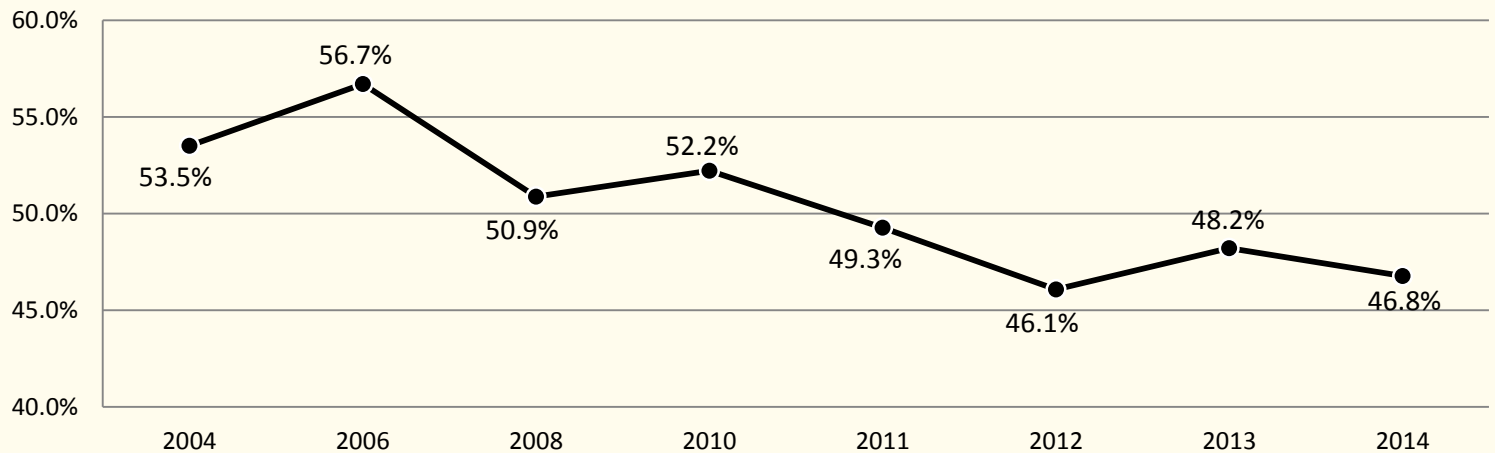
- Annual web survey of federal employees
- Conducted by the Office of Personnel Management (OPM) since 2010
- Previously called the Federal Human Capital Survey (FHCS)
  - Administered in 2002, 2004, 2006, and 2008
- The 2014 FEVS was administered from April until June
- Survey launches occurred in two, six-week-long waves
  - First wave launched the last week of April
  - Second wave launched first week of May (one week after the first wave)
- Survey participants received:
  - One invitation email
  - Five reminder emails sent out approximately the same time of their invitation
  - A final reminder sent on the last day of their wave's survey administration

# The Federal Employee Viewpoint Survey

## FEVS Sample & Respondent Counts, 2004-2014



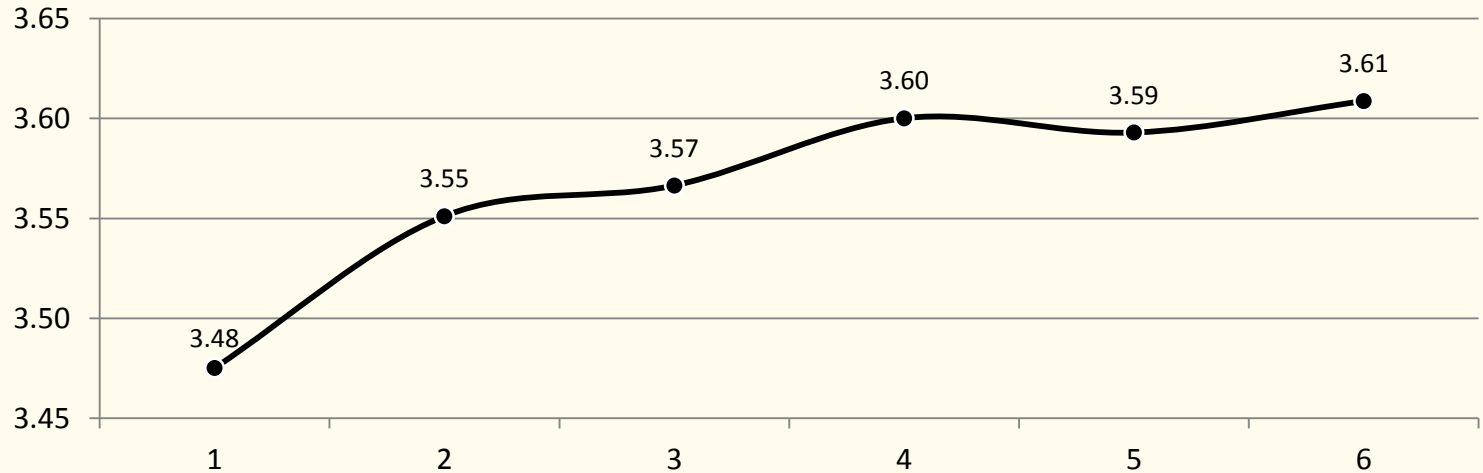
## FEVS Response Rates, 2004-2014



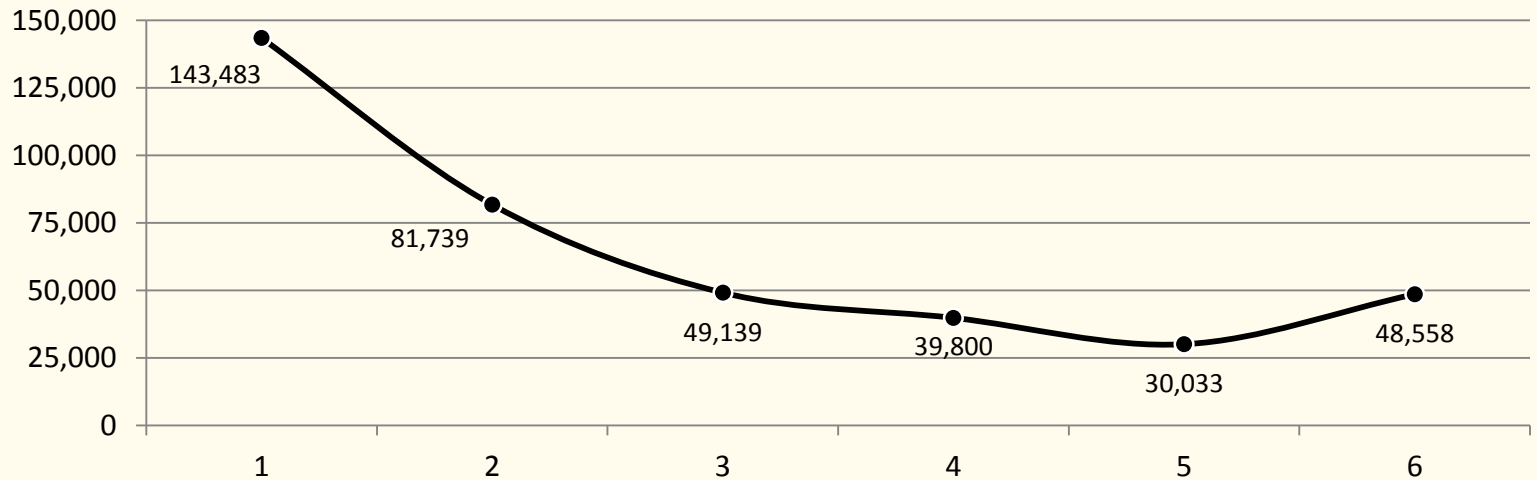


# The Federal Employee Viewpoint Survey

## FEVS Average Score by Weeks in the Field, 2014



## FEVS Number of Responses by Weeks in the Field, 2014



A vertical strip on the left side of the slide shows a close-up of the American flag, focusing on the blue field with white stars and the red and white stripes.

# Does 'When' Matter - Hypotheses

- **Hypothesis 1A:** There will be no practical difference on survey results based on the time of day someone takes the survey.
- **Hypothesis 1B:** There will be no practical difference on survey results based on the day of the week someone takes the survey.
- **Hypothesis 2A:** There will be slight practical differences on survey results when comparing each week of the survey administration.
- **Hypothesis 2B:** There will be no practical difference on survey results based on the wave they were assigned to.



# Does 'When' Matter - Methods

- Surveys are created using Vovici survey software
  - Records time when each survey is opened, last modified, and submitted
  - We used only the last modified time for this study, most complete information
  - Adjusted participants' time and date based their UTC (Universal Time) offset

## Terminology:

- **Time of Day:** time data categorized into 48 half-hour blocks
- **Day of the Week:** designation of Monday through Sunday
- **Week of the Survey:** the week of survey administration
  - Based on dates of invitations and reminder emails for each wave
- **Average Score:** mean of each employee's responses
  - We used the core FEVS items (1 through 71) and exclude demographics
  - Survey responses range from 1 (Strongly Disagree) to 5 (Strongly Agree)



# Does 'When' Matter - Methods

## Measuring the Effect Size of the Relationship

- Tests of statistical significance are not very effective, results almost always significant because of the amount of data
- A measure of effect size, giving us practical significance, is more useful
- **Cohen's  $d$**  is used here to measure the relationship of score and time
  - Mitigates the large and variable n-sizes of the comparison groups
  - Calculated as the difference between the means divided by the pooled standard deviation

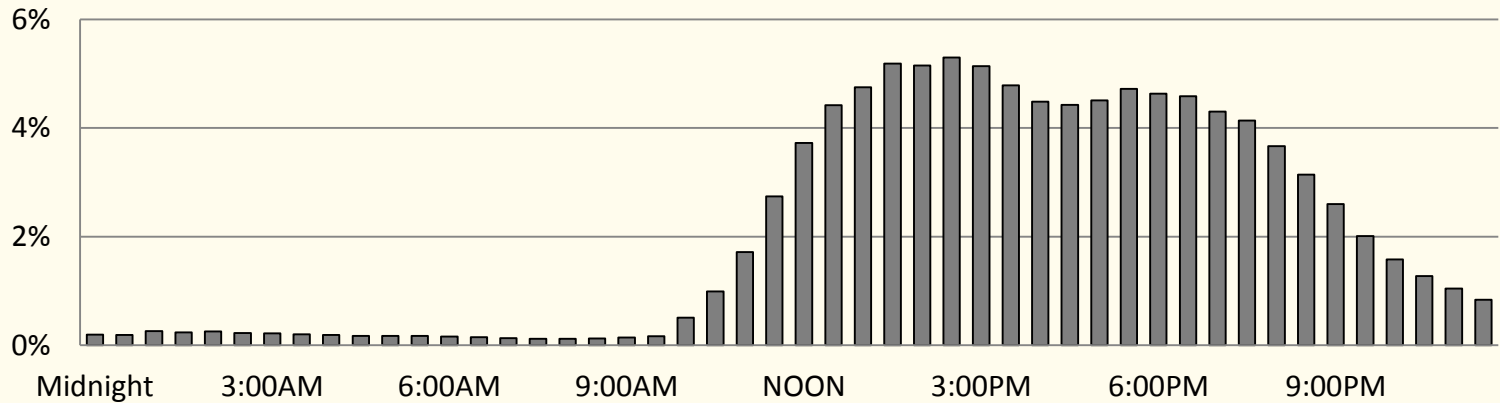
$$d = \frac{\bar{x}_1 - \bar{x}_2}{s_p}$$

$$s_p = \sqrt{\frac{(n_1 - 1) * s_1^2 + (n_2 - 1) * s_2^2}{n_1 + n_2}}$$

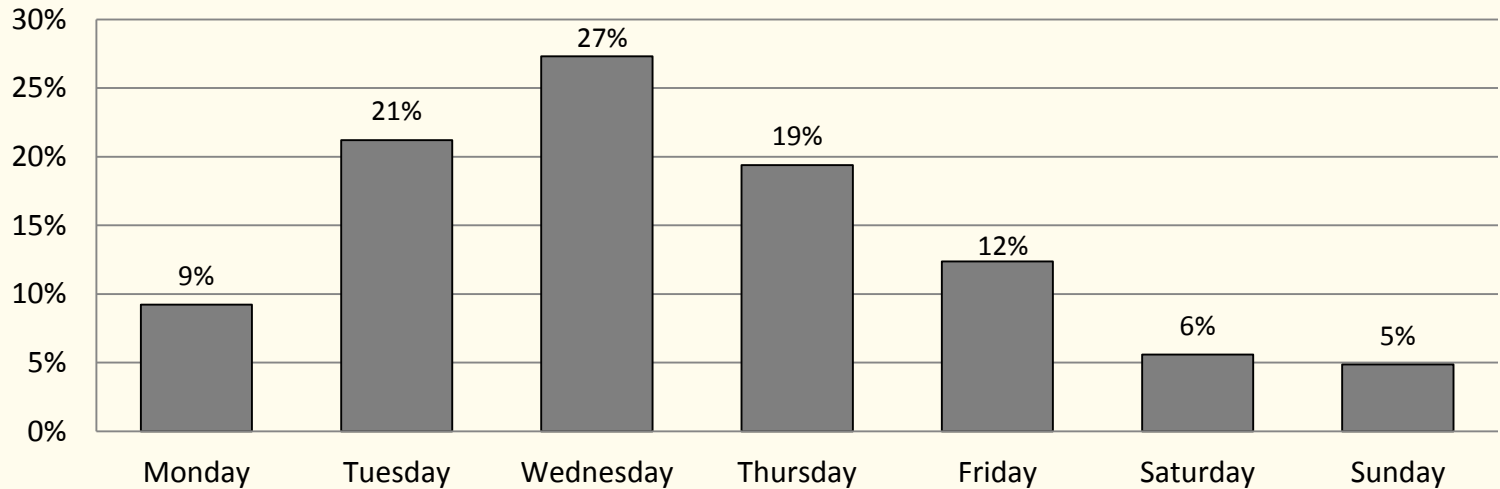


# Does 'When' Matter - Results

## Distribution of Responses by Time of Day



## Distribution of Responses by Day of the Week



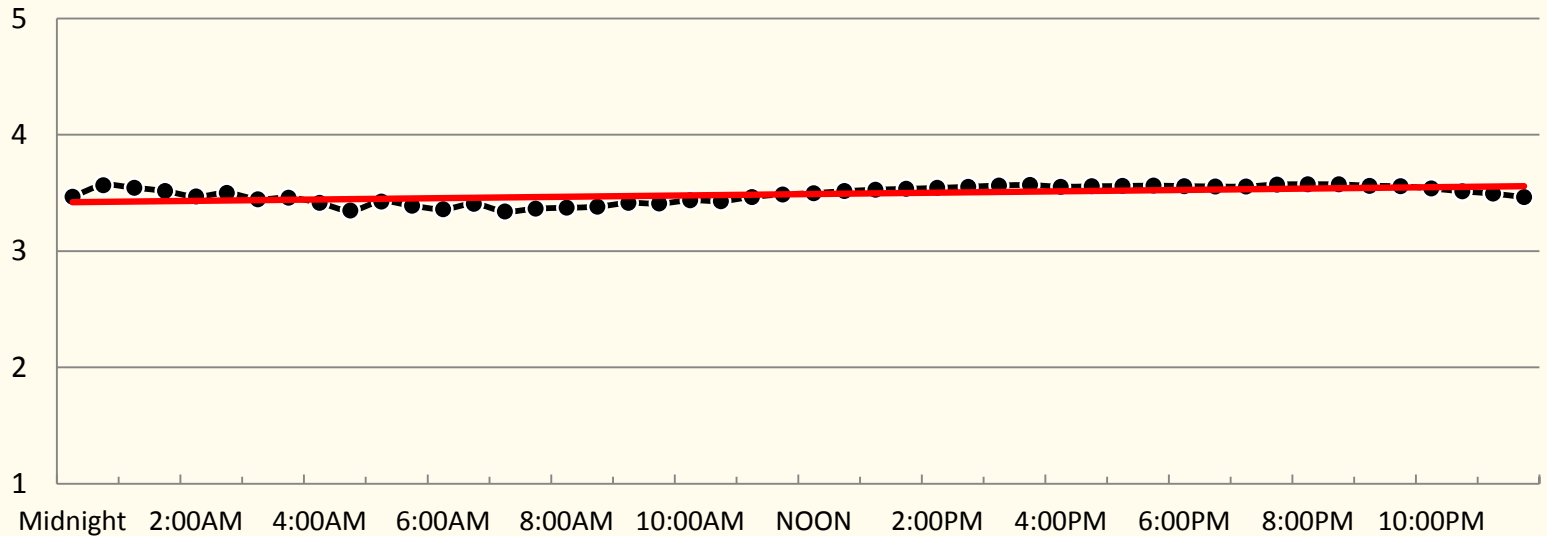
# Does 'When' Matter - Results

## Hypothesis 1A: Relationship between Time of Day and Average Score

### ***d* Values**

Average Effect Size	0.109
Standard Deviation	0.082
Largest Effect Size	0.316
Smallest Effect Size	0.000
Median	0.093

### **Average Scores by Time Block**

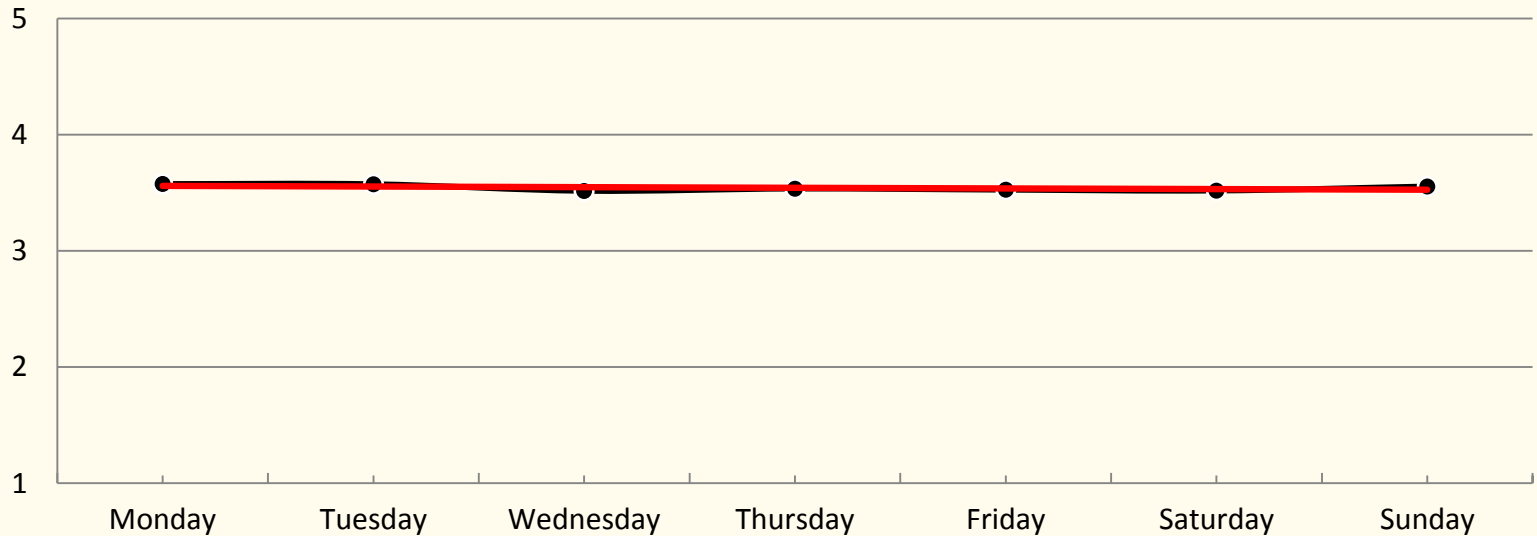


# Does 'When' Matter - Results

## Hypothesis 1B: Relationship between Day of the Week and Average Score

<b><i>d</i> Values</b>	
Average Effect Size	0.085
Standard Deviation	0.053
Largest Effect Size	0.194
Smallest Effect Size	0.008
Median	0.065

### **Average Score by Day of the Week**

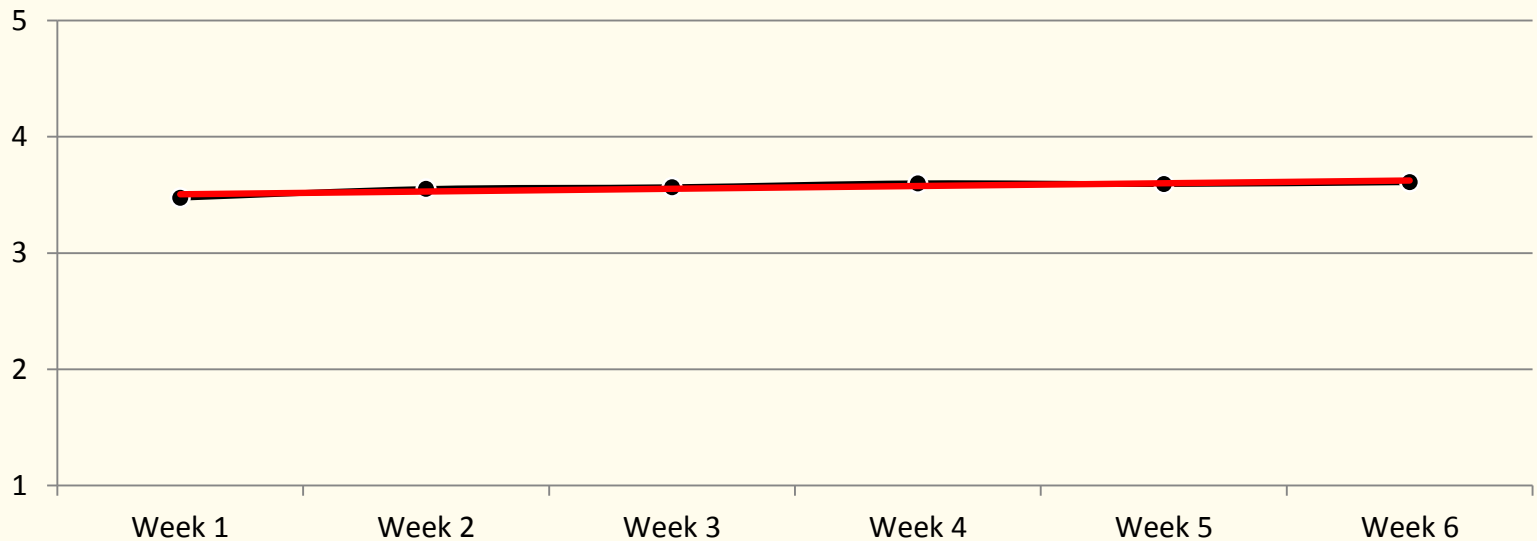


# Does 'When' Matter - Results

## Hypothesis 2A: Relationship between Week of Survey and Average Score

<b><i>d</i> Values</b>	
Average Effect Size	0.074
Standard Deviation	0.054
Largest Effect Size	0.176
Smallest Effect Size	0.010
Median	0.058

### Average Score by Weeks of the Survey







# Does 'When' Matter - Results

## Hypothesis 2B: Relationship between Launch Wave and Average Score

- Difference between the average scores of Wave 1 and Wave 2 is 0.087 percentage points
- $d = 0.115$

Wave	N	Average Score	Standard Deviation
1	150,603	3.487	0.765
2	242,149	3.574	0.740

A vertical strip of an American flag is visible on the left side of the slide, showing the stars and stripes.

# Does 'When' Matter - Results

## Conclusions

- Overall results on the time of day and day of the week show little to no effect sizes regarding the relationship of time and average score on the 71 core FEVS items. For Hypothesis 1A, looking at the time of day, there were a few instances approaching a moderate effect, but for the most part the effects were small and not practical. These findings support both parts of our first hypothesis.
- Aspects of the survey administration – weeks in the field and wave of participation – also demonstrated little to no effects regarding their relationship with average score. While this supports our Hypothesis 2B regarding the wave someone is assigned to, we predicted at least some practical effects for how long the survey was in the field since there was some existing evidence to support a difference. Our second Hypothesis was partially supported.
- **Time does not seem to have much effect on how someone responds.**

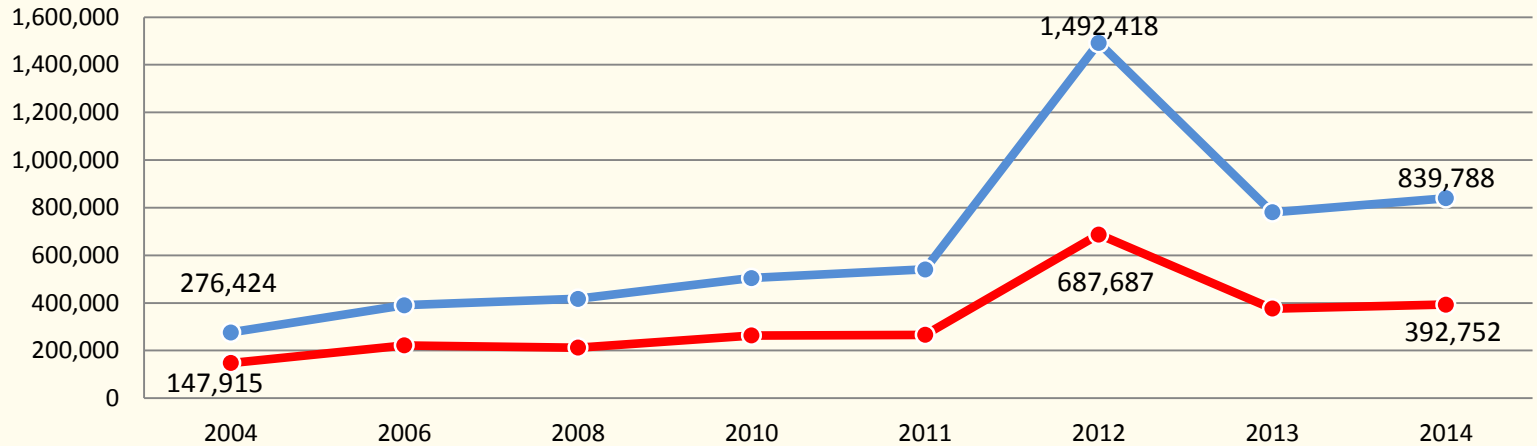


# Does 'When' Matter - Discussion

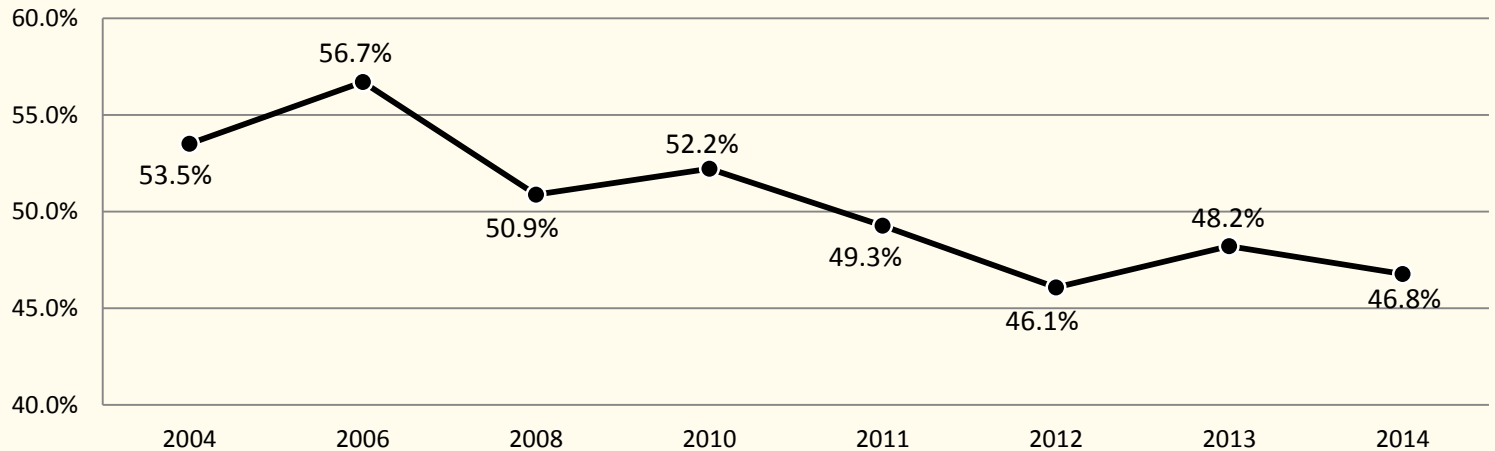
- Failed to reject the null hypothesis, but that's a good thing!
  - Lack of a relationship with time lends credibility to the results (no artifact of time)
- We have worked on ways to better the methodology behind the FEVS
  - In 2012, widespread use of agency-supplied organizational codes to pre-determine where employees work rather than asking participants at the end of the survey. Increases accuracy of results and allows for results much farther down into org.
  - In 2013, devised an alternative stratified random sampling procedure that maximizes the chance smaller components will be able to receive a report of their results.
  - In 2014, made several enhancements to our processes to boost our customer service and some other minor tweaks.
    - Decreased the time to respond to questions from participants
    - Created a portal for agencies to track their response rates during the survey
    - Refined the process to determine eligibility with improved data sources
- Next up for 2015: tackling the problem of declining response rates...

# Does 'When' Matter - Discussion

## FEVS Sample & Respondent Counts, 2004-2014



## FEVS Response Rates, 2004-2014






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# Future Experiments

- Declining response rates threaten not only the face validity of results, but also our ability to provide results at lower and lower levels
- No chance to use incentives (time off, award, lottery, etc.)
- One practical solution is to manipulate the emails  
What can you do with email?
  - You can control who it is sent to.
  - You can control what the content is.
  - You can control when it is sent.
- We have full control of “when” and “what”
- “Who” isn’t something we can really change
- Currently still in the early design phase and subject to change. We are open to practical suggestions and ideas.



# Future Experiments - The When of Emails

- To find out if “when” makes a difference in a person’s propensity to respond to the survey we can:
  - Assign people to one of six blocks of time each week
    - Two blocks per day (morning and afternoon)
    - Tuesday, Wednesday, Thursday
  - Change the day and time people receive their reminder emails
  - Establish a control group receiving the traditional common-time weekly reminders
- Experiment 1A: Rotating Cohorts
  - Randomly assign employees to one of six cohorts
  - Rotate each cohort to a new time block each week
- Experiment 1B: Responsive Design
  - Begin first week with a random cohort assignment
  - At conclusion of each week, using sample frame information, model individuals’ likelihood of responding during the particular time blocks
  - Tailor ensuing week’s reminder schedule based on highest time block response probability (i.e., if we find supervisors respond most frequently on Tuesday mornings, target their follow-up reminders as such)



# Future Experiments - The What of Emails

- Second round of experiments would manipulate factors to find out if “what” goes into the emails makes a difference in a person’s response propensity
- Experiment 2A: Salutation
  - Currently, FEVS emails do not use any kind of salutation
  - Appears to be some modest support in the literature that salutations such as “Dear John Smith” or “Dear OPM Employee” can increase response rates and reduce break-off rates
  - Largely dependent on survey topic and the population of interest
- Experiment 2B: Knowing Whether One’s Work Unit was a Census or a Sample
  - Many agencies push for a census asserting that response rates would be higher if all employees were given the opportunity to participate, not just a random sample
  - To our knowledge, this is an untested assumption
  - Would be of interest to experimentally manipulate messaging about this in emails to employees
- Suggestions from the audience?



## Questions/Comments/Suggestions

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