

Survey features and respondent characteristics that contribute to objective and subjective measures of burden

Robin Kaplan and Scott Fricker

Bureau of Labor Statistics, Office of Survey Methods Research

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Objective Measures of Respondent Burden

- Time to complete survey:
 - ▶ Survey length
 - ▶ Number of questions
 - ▶ Frequency of survey
 - ▶ Time reading instructions
 - ▶ Time gathering and entering data
 - ▶ Time reviewing data



Subjective Measures of Respondent Burden

- Appraisal of how burdensome the survey experience was, for example:

- ▶ Effort
- ▶ Motivation
- ▶ Interest
- ▶ Sensitivity



- "How burdensome did you find this survey?"

Respondent Burden

- Objective measures of burden are related to response rates (e.g., Bradburn, 1978; Rolstad et al., 2011; Crawford et al., 2001)
- Subjective measures of burden are related to data quality, attrition rates, feelings of fatigue (Rolstad et al., 2011; Fricker et al., 2014)
- Few studies have systematically measured subjective burden



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Research Questions



- What survey/respondent characteristics contribute to objective & subjective burden? How does burden affect data quality?
 - ▶ Does respondents' level of engagement / survey fatigue affect burden? (e.g., McCalin et al., 2015)
 - ▶ Does the order of the subjective burden questions affect respondent ratings of the survey? (e.g., Schwarz et al., 1991)



Study Design

(single web survey ~20 min)

1. Activity log task
2. Survey questions about typical time use
3. Level of engagement questions
4. Subjective burden ratings
5. Demographic questions



Activity Log Task

	Activity	Start Time (Hour)	Start Time (Minute)	Start Time (AM or PM)	End Time (Hour)	End Time (Minute)	End Time (AM or PM)
2	Grooming	7	:00	AM	7	:30	AM
3	Eating/Drinking	7	:30	AM	7	:45	AM
4	Travelling & going from place to place	7	:45	AM	8	:15	AM
5	Work & Work-Related activities				12	:45	PM
6	Eating/Drinking				1	:15	PM
7	Work & Work-Related activities				4	:45	PM
8	Shopping				5	:20	PM
9	Travelling & going from place to place				5	:50	PM
10	Sports, exercise, and recreation				7	:00	PM
11	Eating/Drinking				7	:30	PM

- ▼
- Sleeping
- Grooming
- Watching TV
- Working
- Eating / drinking
- Household chores
- Shopping
- Traveling / commuting
- Leisure activity
- Sports / exercise / recreation
- Studying / learning
- Socializing
- Other activity



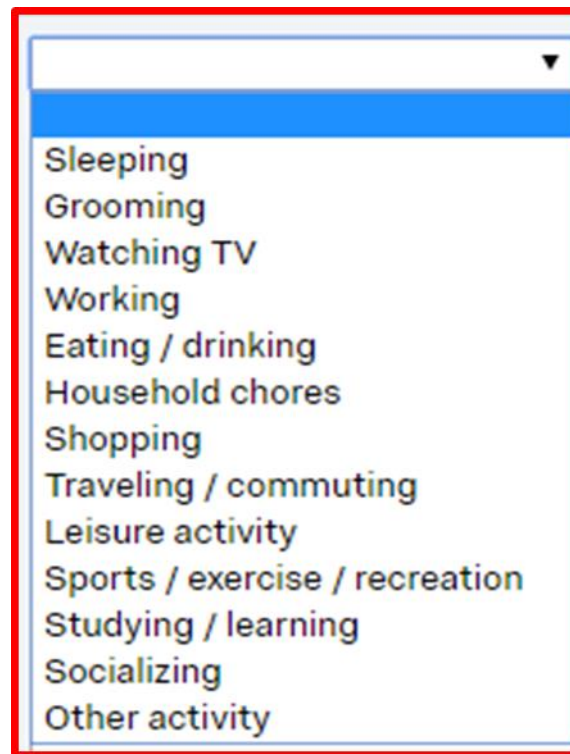
Measures



Objective Burden Measures

Average time on survey

Average time on activity log



Subjective Burden Measures (1-5 scales)

Overall burden

How burdensome was it to complete this survey?

Activity Log burden

How burdensome was it to complete the activity log?

Effort

How effortful was it to complete this survey?

Easy/Difficult

How easy or difficult was it to answer the questions in this survey?

Sensitivity

How sensitive were the questions in this survey?

Interest

How interesting did you find this survey?

Random order

Other Subjective Measures

Fatigue	<p>How well-rested do you feel right now?</p> <ol style="list-style-type: none">1. Not at all rested2. A little rested3. Somewhat rested4. Very rested
Perception of length	<p>Did you feel the length of this survey was too short, about right, or too long?</p> <ol style="list-style-type: none">1. Too short2. About right3. Too long

Engagement measure

Please indicate to what degree you were having each experience described below **while you completed the survey**. Please answer according to what really reflected your experience rather than what you think your experience should have been. *[1 strongly disagree to 5 strongly agree]*

- 1.) I was finding it difficult to stay focused on the survey.
- 2.) I was doing the survey without paying attention.
- 3.) I was preoccupied with the future or the past.
- 4.) I was doing the survey automatically, without being aware of what I was doing.
- 5.) I was rushing through the survey without really being attentive to it.

Results



Participants

N = 1,003

Gender	51.9% female
Average age	46.0
HS degree or lower	34.3%
Some college/Associate's	32.4%
Bachelor's or higher	29.0%
Hispanic, Latino, Spanish origin	6.2%
White	87%
Black/African American	7.3%
American Indian or Alaska Native	2.8%
Asian	5.0%
Native Hawaiian or Other Pacific Islander	0.07%



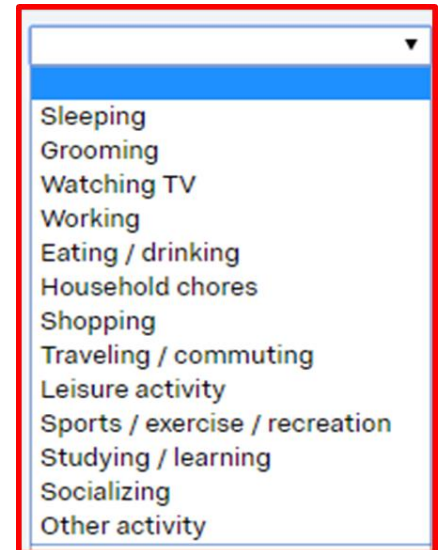
Objective Burden Outcomes

Average time on survey* 20.89 min (SD = 22.70)

Average time on activity log 6.69 min (SD = 5.13)



*Removed n=17 outliers
(participants who took more than 3 standard deviations above the average time to complete the survey)



Subjective Burden Measures (1-5 scales)	Mean	SD
Overall burden How burdensome was it to complete this survey?	1.36	0.66
Activity Log burden How burdensome was it to complete the activity log?	1.79	0.89
Effort How effortful was it to complete this survey?	2.29	1.01
Easy/Difficult How easy or difficult was it to answer the questions in this survey?	1.84	0.83
Sensitivity How sensitive were the questions in this survey?	1.53	0.87
Interest How interesting did you find this survey?	3.11	1.10

Other Subjective Measures

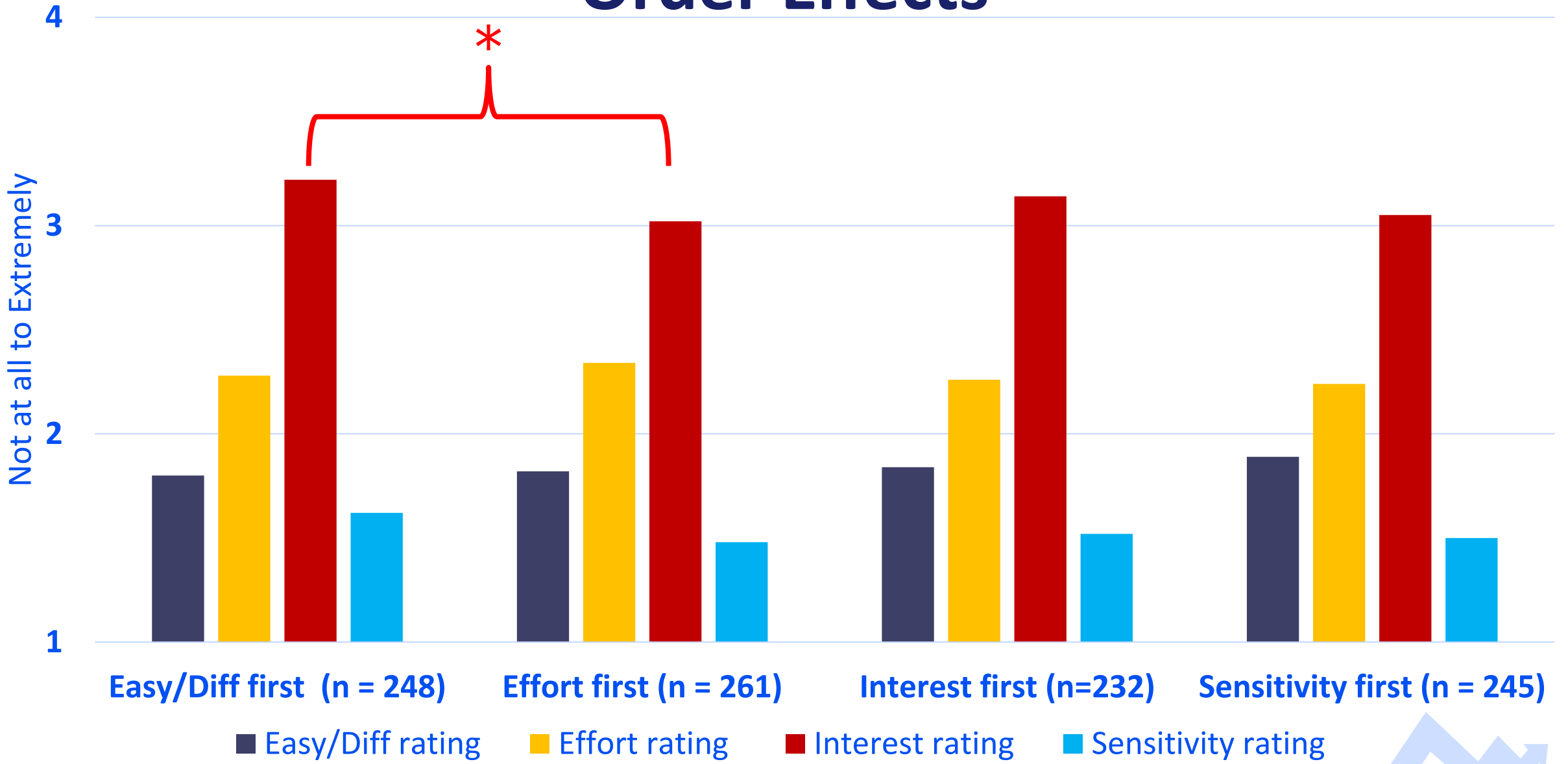
		Mean	SD
Fatigue	<p>How well-rested do you feel right now?</p> <ol style="list-style-type: none">1. Not at all rested2. A little rested3. Somewhat rested4. Very rested	2.86	0.94
Perception of length	<p>Did you feel the length of this survey was too short, about right, or too long?</p> <ol style="list-style-type: none">1. Too short2. About right3. Too long	2.12	0.33

Engagement measure (1 -5 scale)

*All items recoded. Higher scores = more engagement

Overall Mean = 4.44 (SD = 0.76; α = 0.90)	Mean	SD
I was finding it difficult to stay focused on the survey.	4.21	1.04
I was doing the survey without paying attention.	4.57	0.81
I was preoccupied with the future or the past.	4.27	1.02
I was doing the survey automatically, without being aware of what I was doing.	4.54	0.84
I was rushing through the survey without really being attentive to it.	4.60	0.79

Order Effects



Regression Models

Step 1 - Objective Burden Measures

Step 2 - Subjective Burden Measures

Step 3 - Survey Engagement

Step 4 - Respondent Demographics

Outcomes:

Objective burden, Subjective burden, Data quality

Objective Burden (time spent on survey)

Predictor	β	p-value
Time Spent on Activity Log (mean centered)**	0.69	<.001
Burden-Overall	0.05	0.085
Burden-Activity Log	-0.03	0.432
Effort	-0.01	0.709
Easy/Difficult	0.02	0.54
Interest	0.09	0.930
Sensitivity	-0.02	0.612
Well-Rested*	-0.06	0.010
Perception of Survey Length	-0.03	0.177
Survey Engagement	-0.01	0.872
Gender (0 = male; 1 = female)	0.02	0.387
Age	0.05	0.074
Education Level* (0 = no degree; 1 = Associate's or higher degree)	-0.06	0.006

** p < .001
*p < .05



Subjective Burden ("How burdensome was it to complete this survey?")

Predictor	β	p-value
Time Spent on Survey	0.06	0.085
Time Spent on Activity Log (mean centered)	0.01	0.936
Burden-Activity Log**	0.50	< .001
Effort*	0.08	0.002
Easy/Difficult	0.04	0.276
Interest*	-0.07	0.029
Sensitivity*	0.10	0.001
Well-Rested	-0.01	0.577
Perception of Survey Length**	0.10	< .001
Survey Engagement**	-0.12	< .001
Gender (0 = male; 1 = female)	-0.05	0.054
Age	0.01	0.640
Education Level (0 = no degree; 1 = Associate's or higher degree)	0.04	0.134

** p < .001
*p < .05

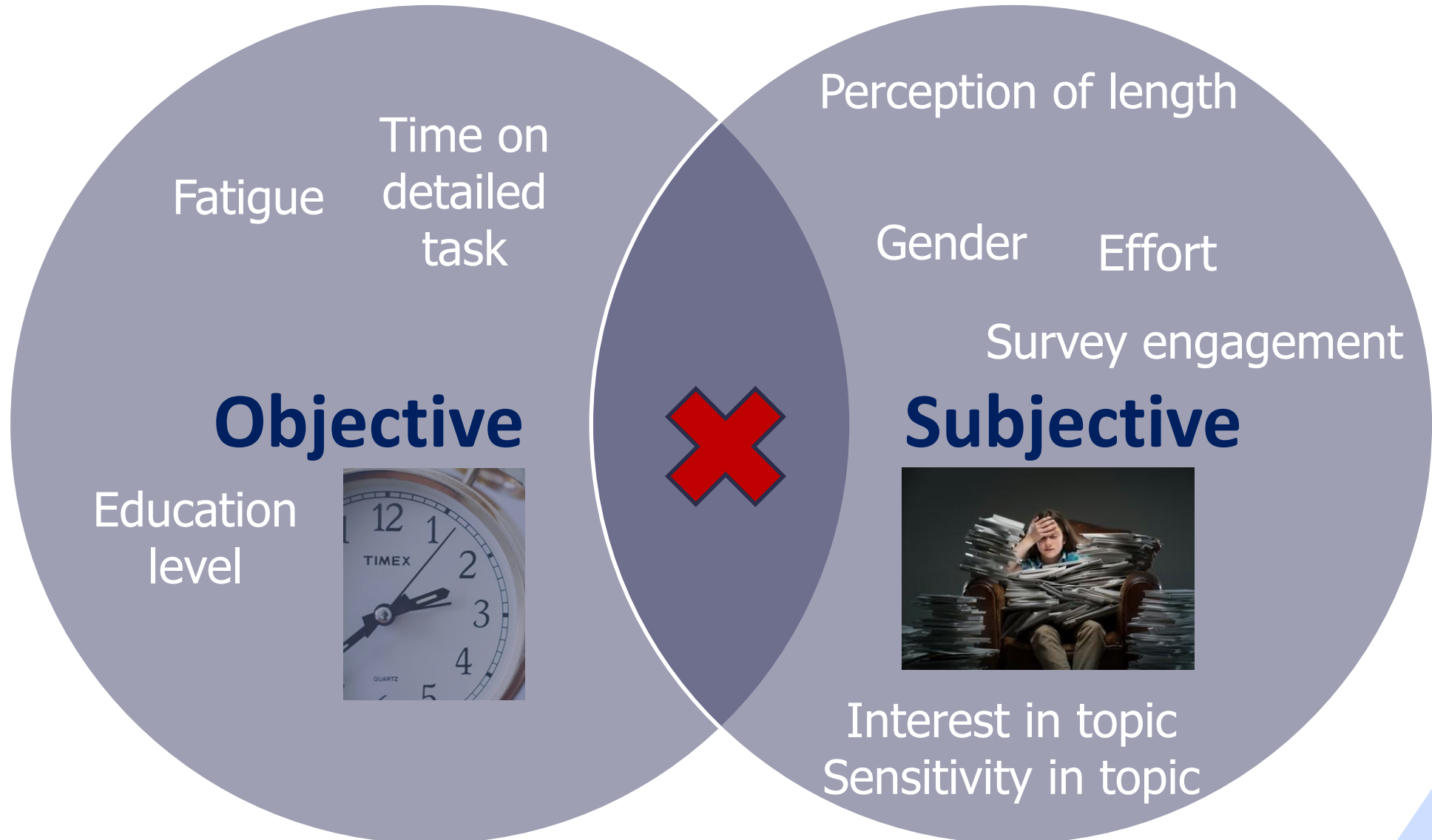


Data Quality: Item-Missing Rate (4%)

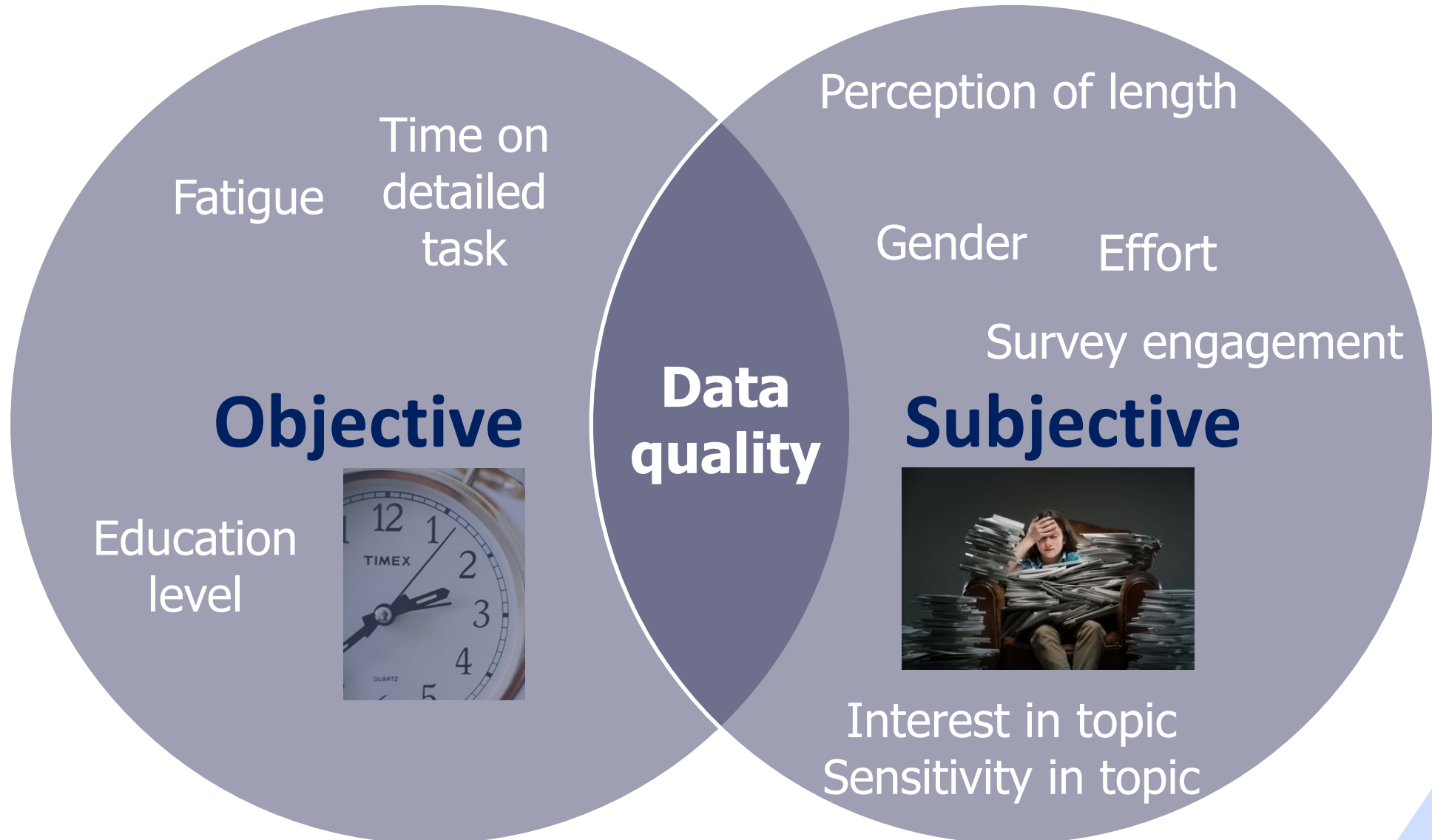
Predictor	β	p-value
Time Spent on Survey*	0.12	0.002
Time Spent on Activity Log** (mean centered)	-0.52	< .001
Burden-Overall	-0.01	0.895
Burden-Activity Log*	-0.13	0.002
Effort	-0.04	0.151
Easy/Difficult	0.04	0.351
Interest*	-0.12	0.019
Sensitivity	-0.02	0.667
Well-Rested	0.01	0.696
Perception of Survey Length	0.05	0.112
Survey Engagement	-0.01	0.963
Gender* (0 = male; 1 = female)	-0.08	0.004 ** p < .001
Age	-0.04	0.269 *p < .05
Education Level (0 = no degree; 1 = Associate's or higher degree)	-0.04	0.217



Summary



Summary



Conclusions & Future Directions



■ Conclusions

- ▶ More than just time contributed to data quality outcomes
- ▶ Easing respondent burden
 - Survey engagement/interest

■ In the future:

- ▶ Burden as a complex, multi-component concept
- ▶ Continue to assess objective and subjective burden within surveys to better understand burden and its relationship to data quality, survey outcomes



Contact Information

Robin Kaplan

Research Psychologist

Bureau of Labor Statistics

Office of Survey Methods Research

www.bls.gov/ore

202-691-7383

Kaplan.rob@bls.gov



Subjective burden measure

- People differ in definition of "burden"
 - ▶ Cognitive testing shows it's a multidimensional concept, consisting of:
 - ▶ Length, difficulty, sensitivity, effort, etc.
 - ▶ Subjective burden measure aligns well with other measures of burden and data quality measures (Fricker et al., 2014)

Participants

- N =1,003 recruited via Qualtrics panel

	Our panel	Census data
Gender	51.9% female	50.8% female
Age	46	38
HS degree or lower	34.3%	39.9%
Some college/Associate's	32.4%	28.6%
Bachelor's or higher	29.0%	31.4%

► Ethnicity/Race (non-quota)

- Hispanic, Latino, Spanish origin (6.2%); White (87.0%); Black or African American (7.3%); American Indian or Alaska Native (2.8%); Asian (5.0%); Native Hawaiian or Other Pacific Islander (.07%)

American Time Use Survey (ATUS)

Introduction:


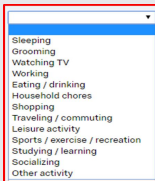
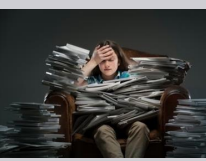
"Now I'd like to find out how you spent your time yesterday, [day of week], [date], from 4:00 in the morning until 4:00 a.m. this morning. I'll be asking where you were and who else was with you. If an activity is too personal, there's no need to mention it."

Sample interview excerpt:


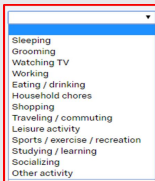
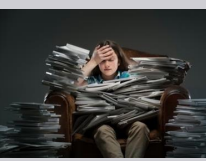
- I: "What were you doing at 4 a.m.?"
- R: "I was sleeping."
- I: "What time did you wake up?"
- R: "7:00."
- I: "Okay. And what did you do next?"




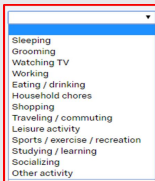
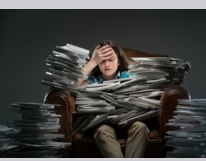
Correlations between Burden Measures

	Objective burden (activity log)	Subjective burden (overall)	Subjective burden (activity log)
Objective burden (total time) 	0.71*	0.07*	0.04
Objective burden (activity log) 	-	0.09*	0.08*
Subjective burden (overall) 	-	-	0.63*


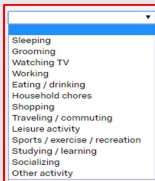
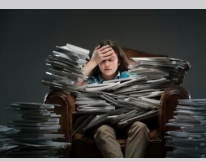
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