

# Measuring Respondent Burden and Its Impacts on Expenditure and Time-Use Estimates

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# Acknowledgments

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- Collaborators

- ▶ Shirley Tsai (BLS)
- ▶ Ting Yan (Westat, 2014 ASA/NSF/BLS Fellow)

“...respondent burden is not a neat, clearly defined topic about which there is an abundance of literature” (Bradburn, 1978: p49)

“Response burden is not a straight forward area to discuss, measure and manage” (Jones, 2012: p1)

# Presentation Objectives

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- Assessments of burden in household surveys
  - ▶ Objective measures
  - ▶ Subjective measures
  - ▶ Impacts on survey outcomes
- Applications in 2 BLS surveys
  - ▶ Contrasting approaches
    - Directly measuring Rs' burden perceptions (CE)
    - Using burden proxies (CPS → ATUS)
  - ▶ Examine effects of “burden” on survey means, regression estimates, and other DQ indicators
- Concluding remarks

# Assessing Burden

## “Objective” Measures

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- Length of the interview
  - ▶ Duration
  - ▶ # of items asked/answered
- Number of interviews completed
- Number of survey requests
- Number of (known) contact attempts

# Assessing Burden

## Subjective Measures

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- Perceptions of survey characteristics (e.g., item/task difficulty, sensitivity, interest) (Graf 2008; Fricker et al, 2012)
- Negative feelings (e.g., annoyance, frustration or inconvenience) (Frankel, 1980)
- Perceptions of time associated with the response task (Giesen 2012)

# Possible Impacts of Burden

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- **Unit nonresponse** (e.g., Groves et al. 1999; Rolstad, Adler, and Rydén 2011)
  - ▶ Panel attrition (e.g., Martin et al. 2001; Fricker et al. 2011)
  - ▶ Delayed responses (e.g., Giesen 2012)
  - ▶ Negative evaluations of surveys (Stocke and Langfeldt; 2004)
- **Item nonresponse** (e.g., Warriner 1991)
  - ▶ Break-offs (e.g., Galesic 2006)
- **Satisficing/Inaccurate reporting** (Krosnick, 1999; Peytchev, 2005)

# BLS Applications

## Study 1

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- Consumer Expenditure Interview Survey (CE)
  - ▶ Longitudinal survey conducted by BLS
    - Provides information on buying habits of American consumers
      - Expenditures, income, consumer characteristics
    - Rotation panel design
      - Panel members are interviewed every quarter up to five times

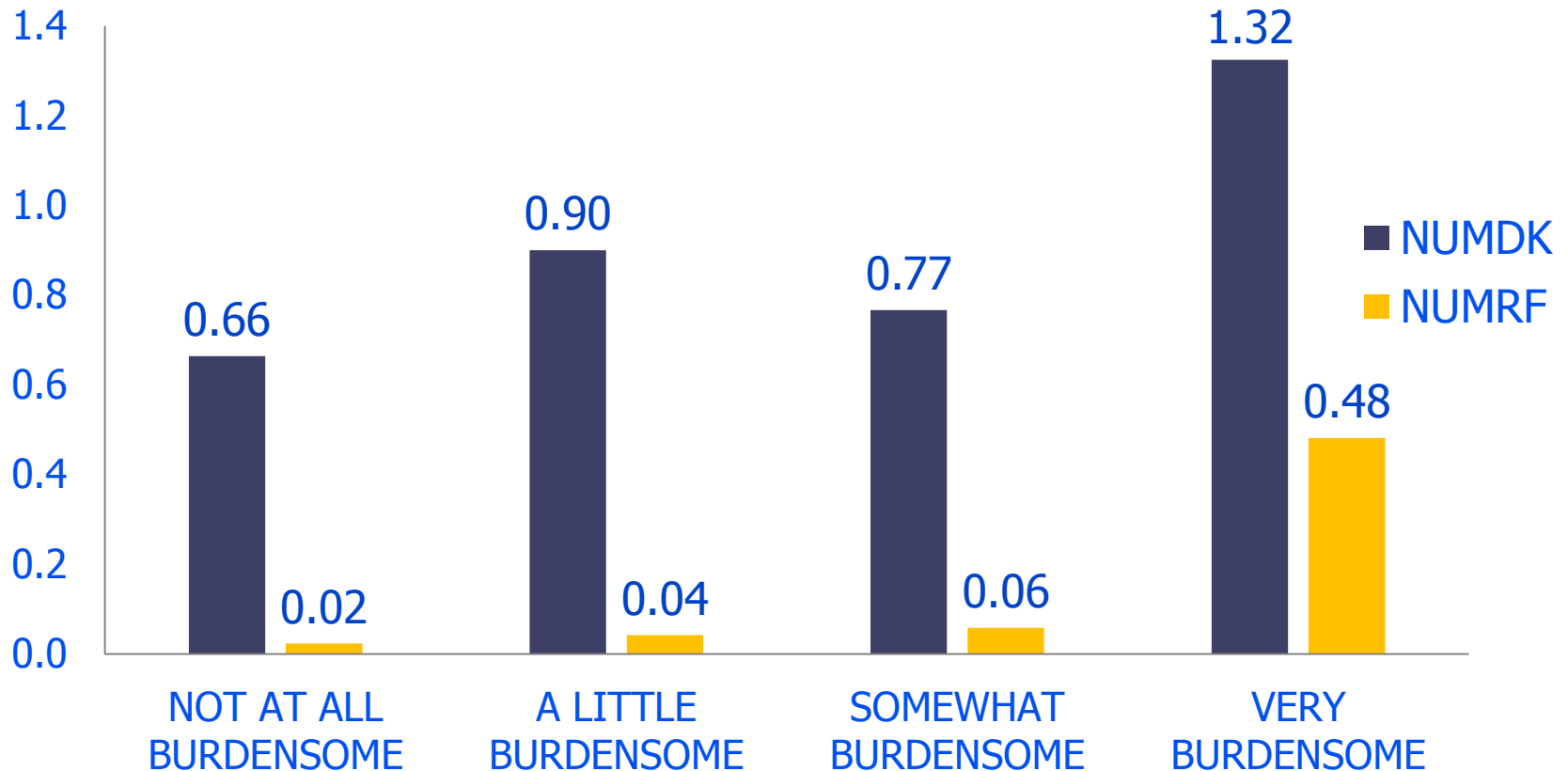


# Burden Measured in CE

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- 5<sup>th</sup> interview is followed by post-survey assessment questions
  - *How burdensome was this survey to you?*
    - Very burdensome (376)
    - Somewhat burdensome (909)
    - A little burdensome (1049)
    - Not at all burdensome (1006)
- Data for this study: 3,340 cases from October 2012 through March 2013

# Number of "Don't Know" and "Refused" Answers by Level of Burden



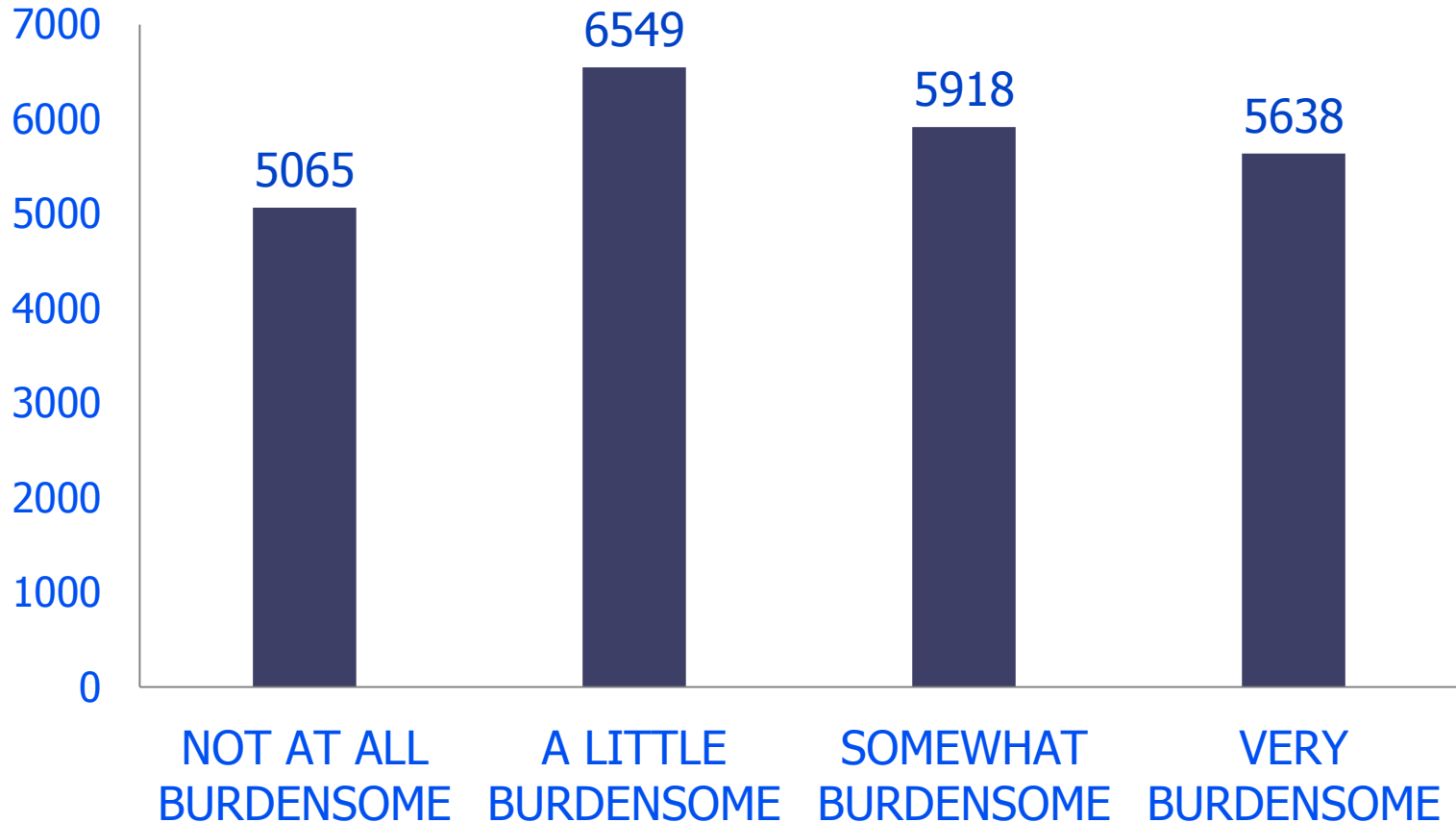
\*NUMDK:  $F(3,3336)=10.18$ ,  $p<.0001$ ; NUMRF:  $F(3, 3336)=59.36$ ,  $p<0.0001$

# Impact of Burden on Reports of Expenditures

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- Unweighted mean expenditure by level of burden
- Difference between estimates of mean expenditure with and without the most burdened respondents

# Unweighted Mean Expenditure by Level of Burden



\*TOTEXPPQ:  $F(3,3336)=13.94, p<.0001$

# Unweighted Mean Expenditure by Level of Burden, cont.

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Total number of expense categories	14
# of expense categories significantly different across levels of burden	11
# of expense categories with least expenditure amount for "very burdensome"	7
# of expense categories with 2nd least expenditure amount for "very burdensome"	4

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# Impact of Burden on Weighted Mean Expenditures

	WITH (n=3340)	WITHOUT (2904)	DIFFERENCE (n=370)
Total Expenditure	\$8636	\$8618	\$19
Food	1251	1235	16
Alcoholic beverages	65	67	-3
Housing	2678	2663	15
Apparel and services	222	225	-3
Transportation	1656	1660	-4
Health care	546	546	-1
Entertainment	400	397	3
Personal care	50	50	0
Reading	21	21	-1
Education	252	246	6
Tobacco	49	51	-2
Miscellaneous	106	110	-4
Cash contributions	386	391	-5
Pensions	956	954	2

# Impact of Burden on CE Regression Coefficients

PSU=1111 DV=log(totexppq)	Model 1 (With "Very burdensome" cases)		Model 2 (Without "Very burdensome" cases)	
	B	SE	B	SE
Intercept	7.81	0.16	7.93	0.18
60 or older	0.28	0.16	0.27	0.17
College or More	0.66	0.14	0.64	0.15
Married	0.56	0.16	0.48	0.17
Single-person Household	0.20	0.19	0.17	0.21
R-Square	0.44		0.39	

# Impact of Burden on CE Regression Coefficients, cont.

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Total number of regression models	37
# of models where regression estimates changed significance level	7



# BLS Applications

## Study 2

- American Time Use Survey (ATUS)
  - ▶ Sample
    - Individuals age 15 and older from HH that have completed the final (8<sup>th</sup>) interview of the Current Population Survey (CPS)
    - 1 person in HH selected
  - ▶ Timing: typically 3 – 5 months after CPS
  - ▶ CATI Interview (24-hour time diary)
    - Person is interviewed once about his/her time on the previous day
    - Rs list activities sequentially, giving type, time information, where they were, and who they were with

# Study 2, cont.

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- Linkage to CPS provides opportunity to examine variables that may be related to burden among ATUS sample members
  - ▶ Respondent concerns captured in CPS Contact History Instrument (CHI)
  - ▶ CPS survey data
    - E.g., CPS NR/REF/NC; income NR; contact attempts; same CPS-ATUS respondent

# ATUS Analysis

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- Univariate and regression analyses examining impact on:
  - ▶ ATUS data quality indicators
    - Unit nonresponse; # of activities reported; missing “basic activity” reports (e.g., no personal care or eating + *can't recall*)
  - ▶ Activity duration estimates
    - Selected: work; socializing/relaxing; sleep
    - Included demographic controls (gender, age, education, hours worked, household size, presence of young child)

# ATUS Analysis, cont.

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- Burden items:
  - ▶ CHI-based R concerns
  - ▶ ATUS R was CPS R
  - ▶ Flag for non-contact in CPS
  - ▶ Flag for refusal in CPS
  - ▶ Propensity for ATUS noncontact
  - ▶ Propensity for ATUS refusal
  - ▶ Income missing in CPS
  - ▶ # of contact attempts in final CPS interview

	<b>ATUS NR</b>	<b># of Reports</b>	<b>Missed Reports</b>	<b>Work Time</b>	<b>Leisure Time</b>	<b>Sleep Time</b>
CHI Concerns	7.3%	ns	5.5%	ns	ns	ns
Same R	8.4%	-2.9	-2.7%	ns	4.0%	1.6%
CPS NC	ns	ns	ns	ns	ns	ns
CPS Ref	14.1%	ns	ns	ns	ns	2.1%
ATUS NC Prop		-2.4	-11.2%	14.0%	ns	3.1%
ATUS REF Prop		4.9	4.7%	ns	-5.4%	-1.8%
Income NR in CPS	1.6%	-3.9	ns	ns	3.5%	ns
# of CPS Contacts	4.3%	ns	1.2%	ns	3.8%	-0.4%

# Summary

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- Self-reported “very burdened” CE Rs had poorer quality data
  - ▶ Removing these cases did not change mean estimates or conclusions from regression models
  - ▶ Tracking subjective measures of burden could help to reduce survey costs
- Burden indicators from CPS were associated with ATUS final outcome status in expected direction
  - ▶ Some evidence of poorer quality reports
  - ▶ Impact on activity duration estimates generally small, but we suspect smaller activity categories could be affected more

# Conclusions, cont.

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- Burden is a subjective phenomenon
- Impact of survey characteristics will be mediated by Rs' psychological experiences and reactions to those characteristics
- Continued conceptual development of "respondent burden" and its measures is necessary
- Tracking burden can inform design decisions, cost and error considerations

# Contact Information

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