

What We Don't Know Could Hurt Us: Some Reflections on the Measurement of Economic Activity

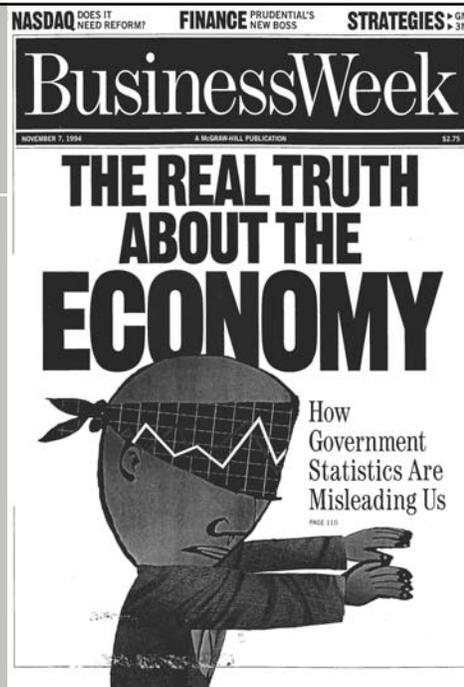
**Katharine G. Abraham
University of Maryland**

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- **Introduction**
- **Shoring up the statistical infrastructure**
 - Protecting data quality
 - Addressing data inconsistencies
 - Filling data gaps
- **Looking to the future**

Introduction

- Production of statistical information about our society generally and economic activity specifically among the earliest and most important federal government functions
- Economic statistics serve diverse purposes
 - Assessment and forecasting
 - Policy analysis
 - Federal program administration
 - Business decision-making and contract administration
- Priorities to ensure that system provides information data users will demand in coming decades?



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Continued Investment Needed to Maintain Quality of *Existing Data*

- Routine maintenance important (e.g., redrawing survey samples, updating data processing systems)
- Statistical programs must adapt to external changes
 - Advances in the technology of data collection (e.g., Web surveys)
 - Changes in the economy and the society (e.g., evolving family structures, growing importance of intangible investments)

Data Users Increasingly Demanding

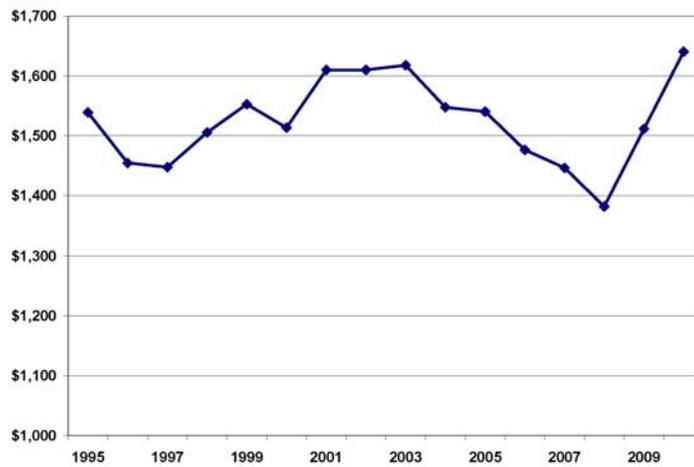
- More timely data
- More comprehensive data
- More detailed data
 - Population subgroups
 - Small geographic areas

Survey Environment Increasingly Difficult

- Harder than in the past to obtain survey responses
 - Gated communities, voice mail, cell-phone-only households
 - Larger share of dual career households
 - Growing number of requests for information from marketing firms
 - Leaner business staffing

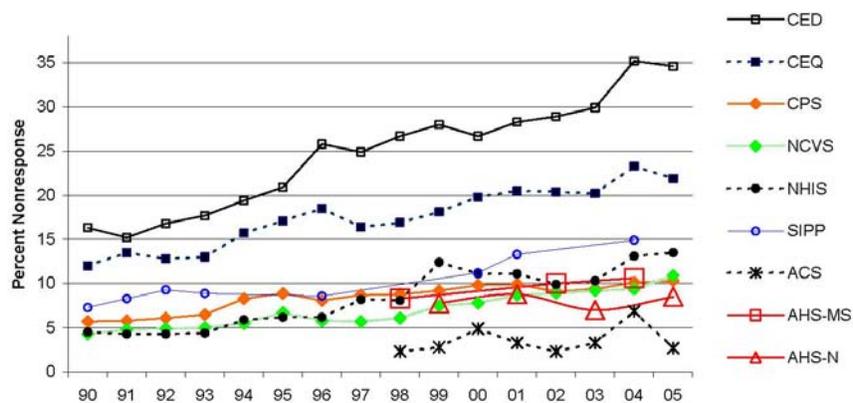
Federal Funding for Eleven Core Statistical Agencies, 1995-2010

(in millions of 2009 dollars, from COPAFS budget table)

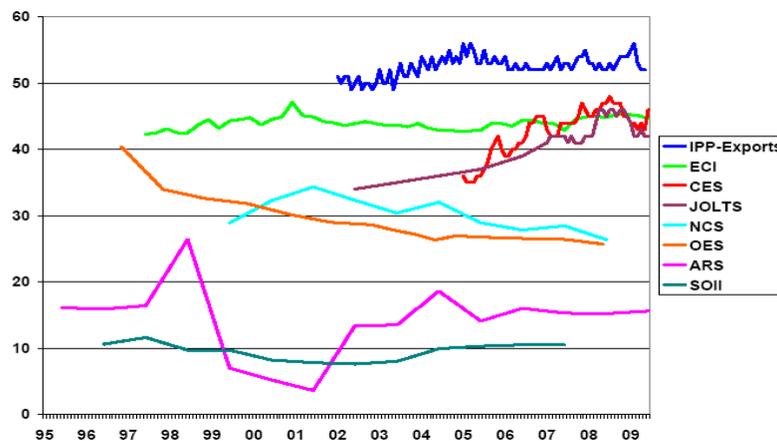


Nonresponse in Selected Household Surveys Conducted by Census

(Bates 2006)



Nonresponse in Selected Establishment Surveys Conducted by BLS (BLS, September 2009)



Agencies Working Hard to Maintain Response Rates

- **Multiple strategies for maintaining or increasing survey response rates**
 - Advance notification; use of priority mail; personal letters; showing how data used
 - Special reporting arrangements
 - Reminder cards, phone calls, FAXs
 - Making survey response mandatory, offering incentives
 - Interviewer training, evaluations based on response rates
- **Limited evidence about what works and what does not**
- **Extra effort raises survey costs**
 - Major factor in skyrocketing cost of the decennial census

Nonresponse and Bias

- Survey nonresponse not necessarily associated with bias in estimates
 - Depends on level of nonresponse and difference between respondents and nonrespondents

$$B(\bar{y}_r) = \bar{y}_r - \bar{y}_t = \left(\frac{n_{nr}}{n}\right)(\bar{y}_r - \bar{y}_{nr})$$

- Meta-analyses show little clear relationship between response rates and bias in household surveys but depends on what is being measured (Groves 2006)
- Relatively little known about nonresponse bias in establishment surveys

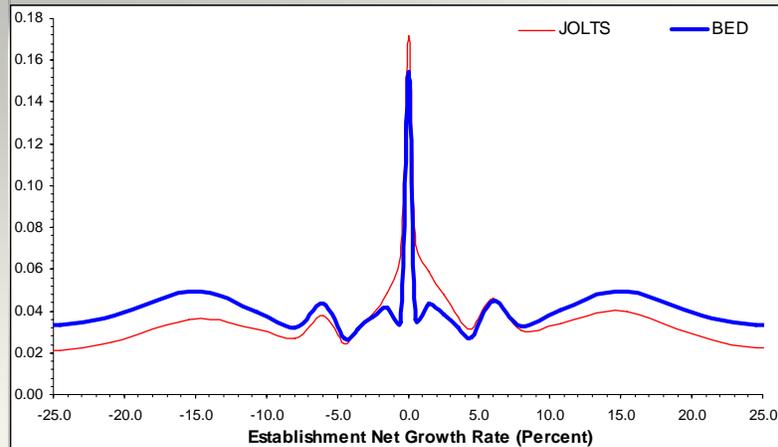
Level of Volunteering Among ATUS Respondents and Nonrespondents

(Abraham, Helms and Presser, 2009)

	N	% who volunteer	Vol Hrs Mean	
			Volunteers	Overall
All CPS supplement respondents	95,337	28.8 (0.1)	129.8 (1.6)	37.4 (0.5)
CPS supplement respondents in ATUS sample	9,004	28.9 (0.6)	131.4 (5.2)	37.9 (1.7)
ATUS respondents	5,079	35.5 (0.8)	131.3 (6.5)	46.6 (2.6)
ATUS nonrespondents	3,925	20.1 (0.8)	131.6 (10.1)	26.4 (2.2)

Distribution of Establishment Growth Rates, JOLTS versus BED, 2001-2006

(Davis, Faberman, Haltiwanger and Rucker, forthcoming)



Implications for Protecting Against Nonresponse Bias

- Standard weighting adjustments based on a limited set of unit characteristics
 - Age, sex, race, sometimes other demographics (household surveys)
 - Region, industry and size (business surveys)
- Would like better information about nonrespondents versus respondents
 - Paradata (information collected in the course of survey operations)
 - Census or administrative sources used to draw survey samples
 - Nonresponse followup surveys

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Dueling Estimates?

- **Related measures – even measures produced by the same statistical agency – sometimes behave quite differently**
 - Expenditure- versus income-based estimates of national output
 - PCE deflator versus CPI
 - CPS versus CES total employment estimates
 - CPS versus OES employment by occupation estimates
 - Distribution of employment across industries and across geography in Census versus BLS business registers
- **Discrepancies cause problems for data users**

Reasons for Data Inconsistencies

- **Some discrepancies reflect conceptual differences**
 - Part of explanation for different behavior of CPI and PCE deflator (not the whole story)
- **Some discrepancies reflect different agency judgments that could in principle be eliminated**
 - Different BEA and BLS decisions about price deflators for industry output series
 - Differences in classification on the BLS and Census business register
- **Some differences reflect reports from different respondents that are incompatible**

Addressing Data Inconsistencies

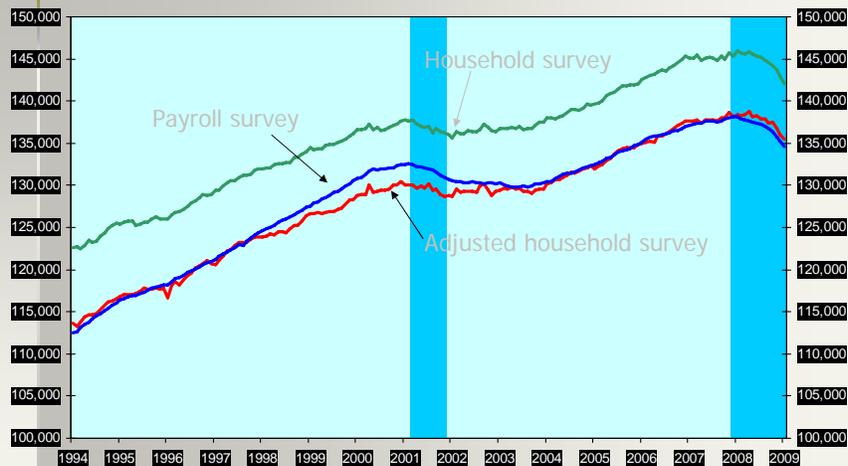
- **Agencies are doing a better job of explaining conceptual differences across series**
 - Reconciliation of CPI and PCE
- **Agencies are working to harmonize estimates**
 - BEA and BLS efforts to agree on common price deflators for industry output measures
 - BLS and Census research on employment register discrepancies
- **Data sharing would help but need IRS legislation**
- **Remaining discrepancies signal potential problems with one or both measures**
 - Discrepancies may be a useful reminder of the limitations of our measurement systems

Individuals and Employers Report Employment Status Differently

(Abraham, Haltiwanger, Sandusky and Spletzer 2009)

	Not in-scope worker in UI	In-scope worker in UI
Not in-scope worker in CPS		
Overall share	37.1%	3.4%
Row share	91.7%	8.3%
Column share	77.9%	6.4%
In-scope worker in CPS		
Overall share	10.5%	49.1%
Row share	17.6%	82.4%
Column share	22.1%	93.6%

Household and Employer Survey Employment Estimates, 1994-2009



Individuals and Employers Report Occupation Differently

(Abraham and Spletzer, Are the New Jobs Good Jobs?, forthcoming)

Occupation	CPS		OES	
	Employment	Percent	Employment	Percent
Management	11,047,302	10.0	6,470,976	5.9
Healthcare Practitioners	5,874,971	5.3	5,474,081	5.0
Other Prof & Technical	7,188,146	6.5	6,087,255	5.5
Sales and Related	14,981,874	13.6	13,487,712	12.2
Office & Admin Support	16,191,229	14.7	19,042,123	17.3
Food Prep & Serving	6,663,697	6.0	9,362,297	8.5
All Other Services	7,225,054	6.6	7,509,735	6.8
Construction & Extraction	5,807,282	5.3	5,133,985	4.7
Production	8,123,199	7.4	8,756,966	8.0
Production Helpers	2,619,859	2.4	4,162,137	3.8
9 other occupations each with <4% of employment	24,464,395	22.2	24,622,294	22.3
Total	110,187,008	100.0	110,109,561	100.0

Differences in How Occupation Reported Affects Estimated Returns to Job Skills

(Abraham and Spletzer, New Evidence on the Returns to Job Skills, 2009)

	CPS Mean (std.dev)	OES Mean (std.dev)	CPS β (se)	CPS β (se)	OES β (se)
Analytic	62.47 (13.77)	60.23 (13.70)	.0218 (.0001)	.0212 (.0001)	.0269 (.0000)
Interpersonal	58.07 (13.10)	56.65 (12.38)	-.0046 (.0001)	-.0041 (.0001)	-.0023 (.0000)
Physical	45.32 (21.32)	46.92 (20.92)	-.0046 (.0001)	-.0045 (.0001)	-.0036 (.0000)
R-Squared			.2337	.2654	.3963
Mean(Dep.Var)			2.61 (0.65) Continuous	2.62 (0.60) Interval	2.64 (0.61) Interval

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Development of Data for Services Lagged Growth in Their Importance

- Standard Industrial Classification (SIC) system developed in 1930s; provided enormous detail for goods production but little detail for services
 - Example: 42 detailed industries in mining, but no detail for Offices and clinics of medical doctors
- As of 2000, data on sales for many services industries collected only once every 5 years and no more frequently than once a year
- No price deflators for many services industries

Significant Recent Improvements in Service Sector Data

- NAICS added detail on services to industry classification system (1997-2005)
- Coverage of Census annual services survey expanded and new quarterly services survey added (2003-present)
- Share of service sector output covered by published Producer Price Index (PPI) series grew from less than 5 percent in 1990 to 75 percent by 2005
- Improved source data will support better output and productivity measures

Data Gaps Remain: Data on the Financial Sector

- Financial crisis has revealed limitations in data for the financial sector (Palumbo and Parker, 2009)
 - Insufficient detail by type of institution
 - Insufficient detail by type of asset
- As financial regulations are rewritten, want to make sure statistical agencies have a seat at the table

Data Gaps Remain: State and Local Data

- Surveys typically too small to support direct estimates, but census or administrative data do not include needed variables
- Modeling approaches combine survey data and census or administrative data (for example, local area unemployment and poverty estimates)
 - American Community Survey data have enormous potential

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Too much and too long, we seem to have surrendered ... community values in the mere accumulation of material things... (T)he gross national product does not allow for the health of our children, the quality of their education, or the joy of their play... (I)t measures everything, in short, except that which makes life worthwhile.

Robert F. Kennedy, March 18, 1968

The biggest question is whether GDP provides a good measure of living standards. In many cases, GDP statistics seem to suggest that the economy is doing far better than most citizens' own perceptions... The fact that GDP may be a poor measure of well-being, or even of market activity, has, of course, long been recognized. But changes in society and the economy may have heightened the problems, at the same time that advances in economics and statistical techniques may have provided opportunities to improve our metrics.

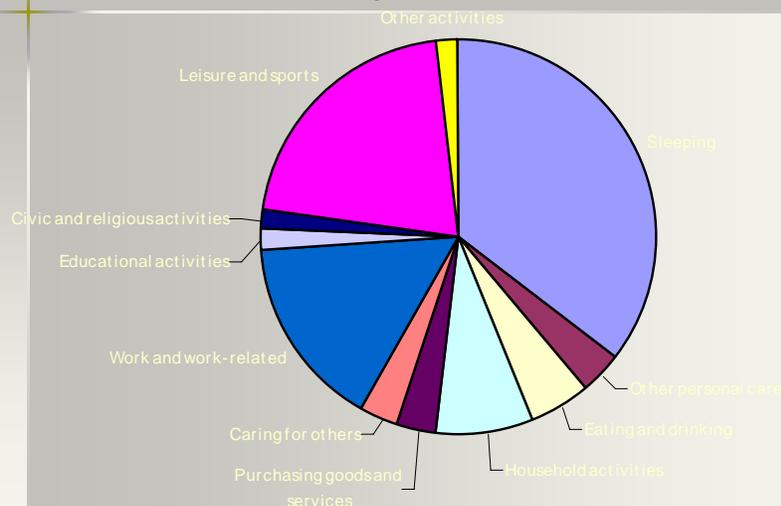
Joseph Stiglitz, September 2009

Defining the Domain for National Accounting

- Conventional economic accounting focused on production of market goods and services
 - Double-entry accounts track *outputs* and *inputs*
 - Gross domestic product often treated as indicator of well-being, but obviously incomplete
- *Time* as well as *money* important in proposals to expand the domain of national accounting
 - Accounting for the production of nonmarket goods and services (e.g., Nordhaus and Tobin 1972, Abraham and Mackie, eds., 2005)
 - Measuring well-being directly (e.g., Easterlin 1974, 2002; Layard 1980, 2005; Juster 1985; Robinson and Godbey, 1997; Krueger and colleagues)

Market Work Only a Small Portion of Average Day

(American Time Use Survey, 2007)

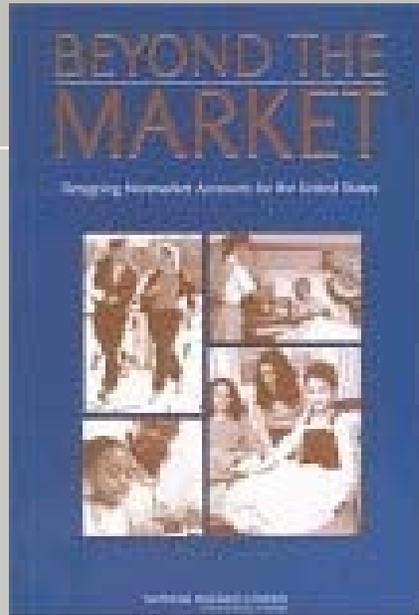


National Income and Product Accounts Focused on Market Activity

Employee compensation	Personal consumption expenditures
+ Production taxes	+ Gross domestic investment
- Subsidies	+ Exports
+ Net operating surplus	- Imports
+ Consumption of fixed capital	+ Government expenditures and investment
= National income	= Gross domestic product
+ Statistical discrepancy	
= Gross domestic product	

Accounting for Nonmarket Production

- To understand the production process in sectors such as education and health, must account for *nonmarket* as well as *market* inputs and outputs
- A full accounting of both market and nonmarket activity could lead to different conclusions about:
 - Performance of key sectors
 - Cyclical fluctuations and (more important) secular trend in aggregate economic output
 - Savings, investment and the sources of economic growth



Example: Developing an Education Account

Inputs:

- Paid labor
- Volunteer labor
- Parent time
- Student time
- Materials
- Fixed capital
- Social capital

Output:

- Increased lifetime productivity in market work
- Increased lifetime productivity in nonmarket activities
- Intangibles: better informed citizenry, lower crime rates

Example: Developing a Health Account

Inputs:

- Paid medical care
- Volunteer labor
- Time invested in own health
- Other consumption items
- Research and development
- Environmental attributes

Output:

- Health status—longevity, quality of life

Time and Well Being

- Direct measures of subjective well-being a useful adjunct to conventional measures of social welfare
 - Beyond a minimum threshold, increases in income do not raise subjective well-being
- Alternative measures possible
 - Global satisfaction measures
 - Measures of utility associated with particular activities
- Time important because of its productive value *and* because of its process benefits (Juster, Courant and Dow 1985)

Strategies for Assessing Direct Effects of Time Allocation on Well-Being

- Researcher judgment (e.g., Aguiar and Hurst, 2007; Ramey and Francis 2007)
- Retrospective questions about how much respondent enjoy different activities (e.g., Juster 1985; Robinson and Godbey 1997)
- Experience sampling method, day reconstruction method, PATS survey (e.g. Csikszentmihalyi 1990; Stone and Shiffman 1994, Krueger and colleagues)

Which Activities Do People Enjoy Most?

	Enjoyment Ratings (1975)	U-Index (2007)
Child care/taking care of children	8.9	19.9
Socializing, talking/Socializing after work or socializing at work	8.0	8.0, 10.0
Work/working	8.0	21.1
Church, religion/praying, worship	7.3	10.5
Cooking	6.2	13.8
TV/watching TV	5.9	9.5
Clean house/housework	4.2	16.1

Note: Ratings of general enjoyment (Robinson and Godbey 1999): 10=enjoy a great deal, 0=dislike a great deal. U-index percent of time negative emotion dominant (Krueger et al Texas DRM survey)

Issues in the Measurement of the Value of Time

- Krueger et al U-index versus measures of net affect
- Average versus marginal enjoyment
- Change in meaning of activities over time
 - Context matters (where, with whom, in what sequence, with what secondary activities)
 - Tastes endogenous
 - Culture a determinant of meaning
- Pleasure not all that matters
 - Potential tradeoffs between current pleasure and future well-being (Aesop's ant and grasshopper)
 - Activities may be *unpleasant* but *satisfying*

US versus France: Allocation of Women's Time

(Krueger, Kahneman, Schkade, Schwartz and Stone, forthcoming)

	Fraction of awake time spent in each activity					
	Work / Commute	Compulsory	Passive leisure	Active leisure	Eating	Other
US	24.6%	35.2%	24.8%	7.5%	6.6%	1.3%
France	21.8%	34.8%	18.1%	10.6%	14.3%	0.5%

	Average U-index per activity					
	Work / Commute	Compulsory	Passive leisure	Active leisure	Eating	Other
US	0.29	0.19	0.15	0.10	0.10	0.15
France	0.26	0.17	0.14	0.09	0.09	0.13

Conclusion

- Great demand for good information about economic activity
- Agencies should be commended for their efforts to protect and enhance the current statistical infrastructure
 - Lots of work still to be done!
- Looking to the future, should anticipate growing interest in broader measures of societal well-being to complement existing market-based statistics