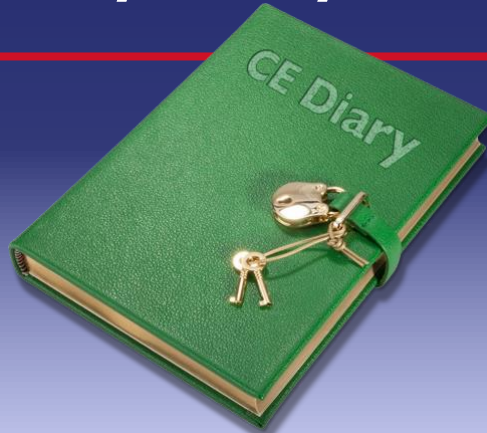


The Evolution of Password Requirements in the Consumer Expenditure Diary Survey

Brandon Kopp

FESAC 2015
June 12th, 2015



This presentation does not reflect BLS Policy

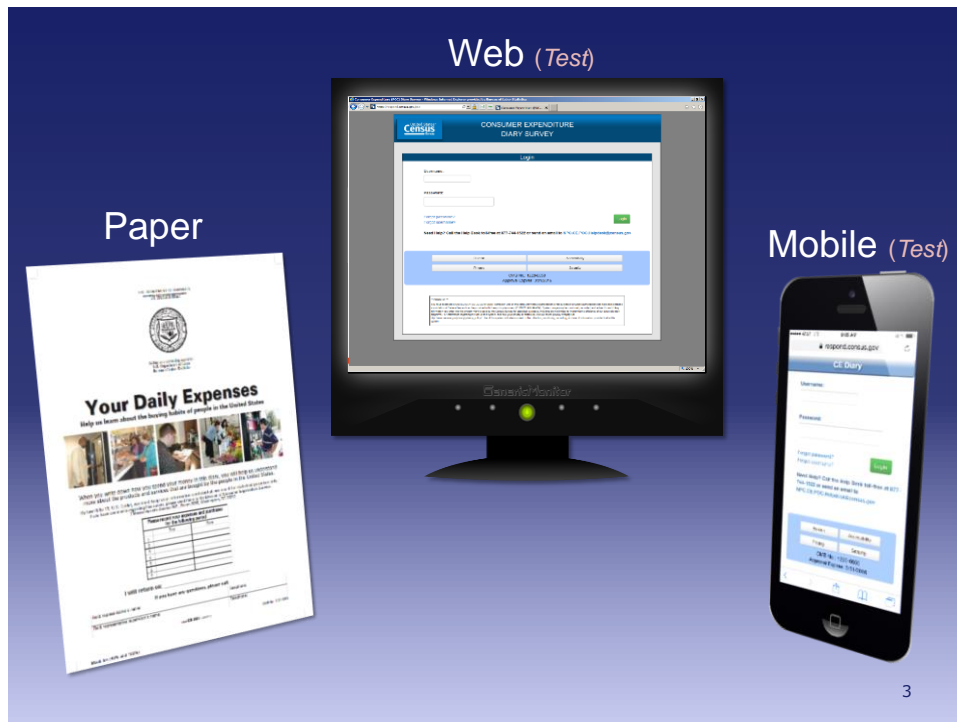
www.bls.gov

The Consumer Expenditure Diary Survey (CED)

- Currently, BLS's only self-administered household survey
- Respondents are asked to enter all of their expenses in as close to real-time as possible
- Respondents complete two, 1-week diaries

	SUN	MON	TUE	WED	THU	(FRI)	SAT	EXAMPLE
2. Food and Drinks for Home Consumption								
Examples: eggs, cereal, tea, beer, apple juice, ground beef, chicken parts, fish, shell parts 2, 3, & 4, pet food								<input type="checkbox"/> Do not include tax for
Please unfold the RIGHT FLAP to see Frequently Asked Questions								
What did you buy or pay for? <small>(See examples above and on the flap!)</small>	Is this item: Mark (X) one column			Total Cost without tax			Mark (X) if purchased for someone not on your list	
wheat bread	<input checked="" type="checkbox"/>							1.49
eggs								1.50
chicken wings								6.78
apples								2.80
beer								4.29
skim milk								2.99





As a Web Survey The CE Diary is Unique

- Respondents access the diary multiple times throughout the diary period
 - ▶ Respondents may be more likely to invest time in learning the instrument (e.g., training materials)
 - ▶ Usability problems are multiplied across repeated experiences
- Because respondents return to the survey multiple times and need access to data they've already entered, a login process is required

As a Password-Protected Website The CE Diary is Unique

- People volunteer their time and effort for limited personal benefit
- Credentials are only usable for 2 weeks
- Putting roadblocks in their way gives people a reason to say "No" or put in less effort

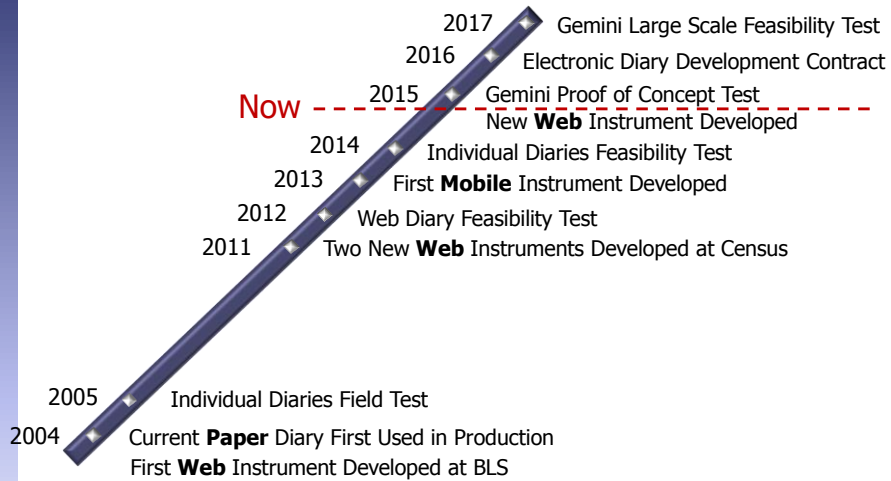


Discussion Topic

- How do we balance security and usability to ensure that web surveys live up to their promise of making survey response more convenient for respondents, while still keeping their data safe?



Diary Development Timeline



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Current Paper Diary (2005)

- The Paper Diary does not have any built-in security measures

U.S. DEPARTMENT OF ECONOMICS
BUREAU OF ECONOMIC ANALYSIS

ADVIS: This diary is used by the U.S. Department of Commerce for the Survey of Consumer Expenditures.

Your Daily Expenses

Help us learn about the buying habits of people in the United States

When you write down how you spend your money in this diary, you will help us understand more about the products and services that are bought by the public in the United States. By law 16 U.S.C. Code, we must keep your information confidential, use it for statistical purposes only. If you have comments regarding this survey, please write them to the Director of Consumer Expenditure Surveys, 2 Massachusetts Avenue, N.E., Room 3000, Washington, D.C. 20541.

Please record your expenses and purchases for the following period:

Day	Date
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

I will return one:

If you have any questions, please call:

Field representative's name	Telephone
Field representative supervisor's name	Telephone

Form CE-404 (1-10-04) OMB No. 1520-004

Black ink (40% and 100%)



First Web Version (2004)

- 21 participants were assigned 10-character account number and password
- They could change password



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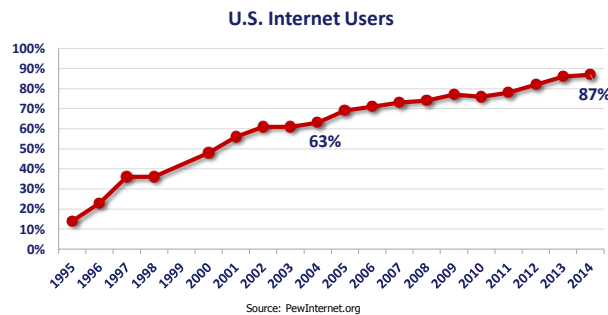
Usability Recommendations First Web Version (2004)

- "Criteria for creating a password are troublesome"
- "if password criteria are not absolutely required, remove them"
- "Make password & ID easier"



Individual Diaries Field Test (2005)

- 38 participants in 20 households were given the choice of the Paper Diary and the new Web Diary
- Only 2 participants chose the Web Diary
- Several participants cited ease of use as a reason for choosing the Paper over the Web Diary.



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Second Web Version (2011)

- 42 participants were given an ID Number
- They entered the ID and received an email
- They then set a username and password

Bureau of Labor Statistics

CONSUMER EXPENDITURE
WEB DIARY

Consumer Expenditure Surveys

Login

- Login by entering the appropriate information and press the "Login" button
- Username and Password are case sensitive

Username:

Password:

Please note: sessions will expire (requiring you to log back in) after 15 minutes of inactivity. No data will be lost.

© 2011 BLS
You have accessed a UNITED STATES GOVERNMENT computer. Use of this computer without authorization or for purposes for which authorization has not been authorized is a violation of Federal law and can be punished with fines or imprisonment (PUBLIC LAW 96-57). System usage may be monitored, recorded, and subject to audit. Use of this system indicates consent to monitoring and recording.

Burdens Statement Accessibility Privacy Security



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Usability Recommendations Second Web Version (2011)

- 52% of participants failed to create a password on the first try
- 31% commented negatively about the account creation process
- "We recommend implementing a PIN login screen."

Create account

To better safeguard the privacy and security of your data, please create an account. The password that you create will help to ensure that only you have access to your information.

Passwords must contain a minimum of the following:

- 8 characters in length
- 1 uppercase character
- 1 lowercase character
- 1 number
- 1 special character from the following: ! # \$ * & ? ~

PLEASE NOTE THAT ALL FIELDS ARE REQUIRED
A valid email is required to create your account. A valid email is required to create your account. A valid email is required to create your account.

Username:

Email:

Confirm Email:

Password:

Confirm Password:

Security Question:

Security Answer:

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Third Web Version (2011)

- 22 participants were assigned a username and 6-digit PIN as a password
- They were not allowed to change their PIN/password

United States Census Bureau

CONSUMER EXPENDITURE DIARY SURVEY

You have been logged out.

Login

- Login by entering the appropriate information and click the "Login" button
- Username and Password are case sensitive

Username: [Forgot username?](#)

Password: [Forgot password?](#)

Please note: sessions will expire (requiring you to log back in) after 15 minutes of inactivity. No data will be lost.

*** WARNINGS ***
You have entered a UNITED STATES GOVERNMENT webpage. Use of this computer system automatically authorizes you to release to other automation systems any information that has been entered in a computer system and can be made available to other government (FEDERAL, STATE, LOCAL) computer systems, as well as to other users of the system. Information entered is not stored and is not subject to backup.

[Privacy Statement](#) [Accessibility](#) [Privacy](#) [Security](#)

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Usability Recommendations

Third Web Version (2011)

- All participants completed a successful log-in using only 1 attempt



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Web Diary Feasibility Test (2013)

- 1,426 respondents were asked to record their expenses using the Web Diary

	Web (N = 890)	Paper (N = 2,522)
Response Rate	32%	61%
Total Recall Rate	21%	9%
Week 1: # of Diary Entries	38	42
Week 2: # of Diary Entries	32	38
Total: # of Diary Entries	70	80



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Web Diary Feasibility Test (2013)

	Web	Paper
<i>Average Age</i>	50.1	49.6
<i>Average CU Size</i>	2.6	2.5
<i>Ethnicity (Hispanic)</i>	12.7%	9.8%
Gender		
<i>Male</i>	48.5%	51.0%
<i>Female</i>	51.5%	49.0%
Education		
<i>Elementary</i>	0.9%	1.4%
<i>High School</i>	21.1%	26.7%
<i>College</i>	78.1%	71.8%
<i>Never Attended</i>	0.0%	0.1%

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Web Diary Feasibility Test (2013)

- How easy or difficult was it to log in?

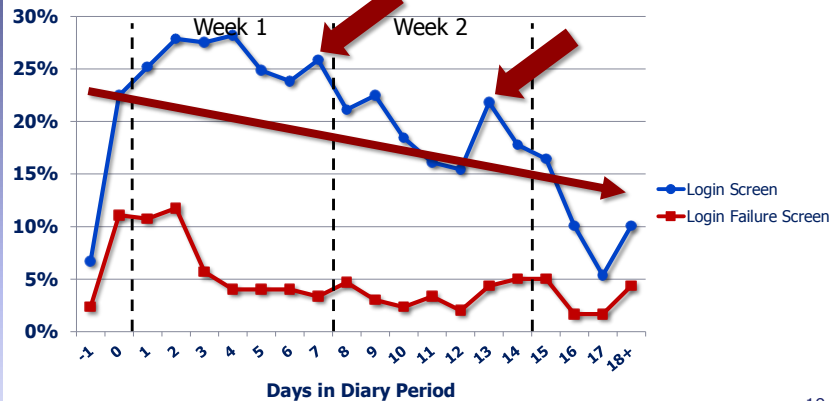
	Percent (n= 296)
Very Easy	38.5%
Easy	28.0%
Neither Easy nor Difficult	13.2%
Difficult	8.1%
Very Difficult	12.2%

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Web Diary Feasibility Test (2013)

■ % of Respondents Who Reached the Login Screen



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First Mobile Version (2013)

- 29 participants assigned 8-digit User ID and 8 character password
- They could change their password
- Respondents do not enter a household roster (i.e., there is no longer PII stored in the Diary)

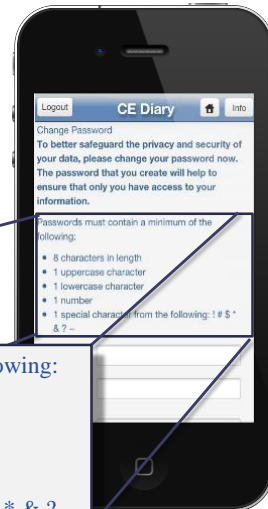


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Usability Recommendations

First Mobile Version (2013)

- Nearly half of participants had trouble logging in with the provided password
- Only 1/3 of participants were able to successfully change their password without assistance
- "Simplify the password"
- "Limit the use of characters that look alike (e.g., 1, l, I, !)"



Passwords must contain a minimum of the following:

- 8 characters in length
- 1 uppercase character
- 1 lowercase character
- 1 number
- 1 special character from the following: ! # \$ * & ? ~



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Your Password

ceG6sZP*

15 keys for an 8 character password!

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Individual Diaries Feasibility Test (2014)

- 1,553 households were given the choice of using the Web *or* Mobile version.

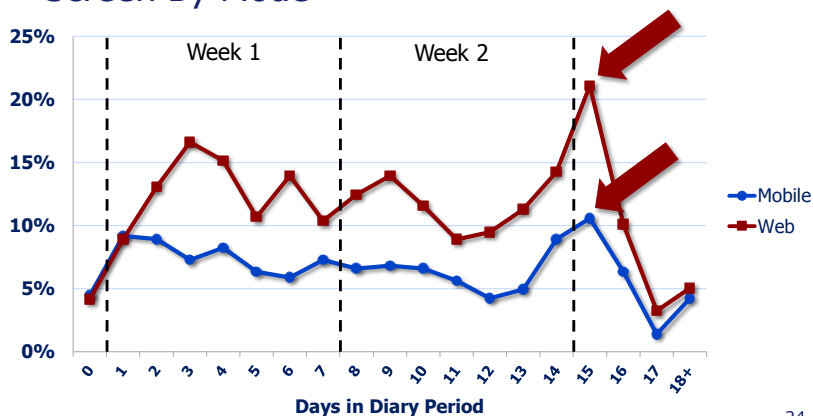
	Web	Mobile	Paper
Response Rate			
Total Recall Rate			
Week 1: # of Diary Entries			
Week 2: # of Diary Entries			
Total: # of Diary Entries			



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Individual Diaries Feasibility Test (2014)

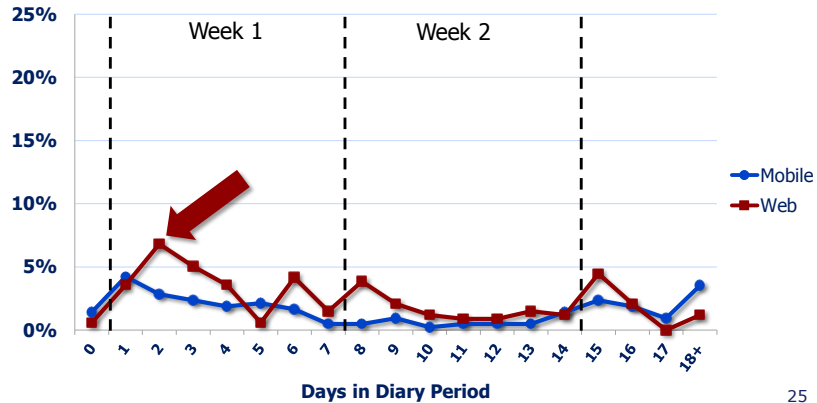
- % of Respondents Who Reached the Login Screen By Mode



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Individual Diaries Feasibility Test (2014)

- % of Respondents Who Reached the Login Failure Screen By Mode



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7-Digit PIN Test (2015)

- 8 participants were assigned 7-Digit PIN
- They (cannot) (within limits)

1	2 ABC	3 DEF
4 GHI	5 JKL	6 MNO
7 PQRS	8 TUV	9 WXYZ
	0	X



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Usability Recommendations

7-Digit PIN Test (2015)

- Participants preferred password over PIN
- Needs further study, especially on Mobile
- Continue with current password requirements

United States Census Bureau

CONSUMER EXPENDITURE DIARY SURVEY

Passwords must contain a minimum of the following:

- 8 characters in length
- 1 uppercase character
- 1 lowercase character
- 1 number
- 1 special character from the following: ! # \$ * & ? ~

Cancel Submit

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Current Web and Mobile Versions (2015)

- Respondents assigned a username and password
- They can change their username and/or password

United States Census Bureau

CONSUMER EXPENDITURE DIARY SURVEY

Login

Username:

Password:

Forgot password? Forgot username?

Need Help? Call the Help Desk toll-free at 877-744-1822 or send an email to NPC.CE.POC.Helpdesk@census.gov

AT&T LTE 9:05 AM 86%

respond.census.gov

CE Diary

Username:

Password:

Forgot password? Forgot username?

Need Help? Call the Help Desk toll-free at 877-744-1822 or send an email to NPC.CE.POC.Helpdesk@census.gov

OMB No.: 1220-0050 Approval Expires: 3/31/2016



Risk Management vs. Risk Elimination

- Organizations **use risk assessments to determine authentication needs** and consider...security in **balancing the need to ensure ease of use** for access to federal...information systems **with the need to protect and adequately mitigate risk.** -NIST 800-53, Rev 4, IA-8

Impact	Likelihood		
	Low	Moderate	High
Low	Low	Low	Mod.
Moderate	Low	Mod.	High
High	Mod.	High	High

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Discussion Topic

- How do we balance security and usability to ensure that web surveys live up to their promise of making survey response more convenient for respondents, while still keeping their data safe?



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