

What Can Web Paradata Tell Us About 2012 Economic Census Business Reporting?

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Methodology Research Conference

Outline

- Paradata Overview
- Economic Census Background
- Analysis
- Instrument Navigation
- Results
- Future Research

Paradata Overview

- “Paradata” refers to the process information that comes as by-product of data collection (Couper 1998)
- Some business survey paradata uses:
 - Examine respondent behavior
 - Analyze instrument performance
 - Investigate data quality
- Existing Census electronic paradata research:
 - American Community Survey
 - Government surveys

Economic Census Background

- Purpose: Official measure of American business and economy; key source data for the Gross Domestic Product (GDP) and other indicators of economic performance
- Frequency: Every 5 years ending in '2' and '7'
- Covers: Approximately 4 million non-farm business establishments with paid employees
- Modes: Paper (all), software (multi-location companies), online (single-location companies)
- Content: Operational status, employment, payroll, receipts/revenue, detail of receipts/revenue, e-commerce activity, class of customer, inventories, selected expenses, detailed cost of materials, etc.

Analysis

- Research is exploratory in nature.
- Data from Centurion logins as of 7/28/13
- Covers 783,492 single-establishment businesses
- Number and type of forms vary
- Data still being collected
- Examined:
 - Frequency of user actions
 - Timing between events
 - Software usage

Main Menu

2012 Economic Census
The foundation for measuring business activity across the U.S. economy

United States
Census
Bureau
Economic Statistics

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Main Menu

Please complete all forms listed below. You will have an opportunity to review your responses at the end of each form.

Company Address

ECON SINGLE

4700 SILVER HILL ROAD
SUITLAND, MD 207640000

- Below are your forms for the 2012 Economic Census. You will be able to submit your data to the Census Bureau once all your forms are completed without errors.
- Note: You can only submit your data once a day.

Submit Forms

Action	Status	Form	OMB	Due Date	Problem Pages	View/Print PDF
Start	Not Started	MC-31106(L): Confectionery	No.: 0607-0938 Expiration: 12/31/2013	Feb. 12, 2013	0 With Errors 0 With Warnings	
Start	Not Started	NC-99530: Ownership or Control	No.: 0607-0938 Expiration: 2013-12-31	Feb. 12, 2013	0 With Errors 0 With Warnings	

Review Screen

Item List	Errors/Warnings
Mailing Address	✓ Ok
Reporting Unit Definition	✓ Ok
Item 1 - Employer Identification Number	✓ Ok
Item 2 - Physical Location	✓ Ok
Item 3 - Operational Status	✗ Errors
Item 4 - Months in Operation	✓ Ok
Item 5 - Sales, Shipments, Receipts, or Revenue	✗ Errors
Item 6 - E-shipments	✓ Ok
Item 7 - Employment and Payroll	✗ Errors
Item 9 - Value of Inventories	✓ Ok
Item 10 - Inventories by Valuation Method	✓ Ok
Item 13 - Assets, Capital Expenditures, Retirements, and Depreciation	✓ Ok
Item 14 - Rental Payments	✓ Ok
Item 16 - Selected Expenses	✓ Ok
Item 17 - Detailed Cost of Materials, Parts, and Supplies	✓ Ok
Item 19 - Type of Operation	✓ Ok
Item 22 - Detail of Sales, Shipments, Receipts, or Revenue	✓ Ok
Item 26 - Receipts from Contract Manufacturing	✓ Ok
Item 30 - Remarks	✓ Ok

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Main Menu - 2nd Visit

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Done Trusted sites 100%

Main Menu – 3rd Visit

2012 Economic Census: Dashboard - Windows Internet Explorer

https://ecapp-centserv.centurion-qa.ssd.census.gov/econ2012/dashboard

2012 Economic Census: Dashboard

2012 Economic Census

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Action	Status	Form	OMB	Due Date	Problem Pages	View/Print PDF
Review	Completed 10/29/2013, 17:03:54	MC-31106(L): Confectionery	No.: 0607-0938 Expiration: 12/31/2013	Feb. 12, 2013	0 With Errors 0 With Warnings	
Review	Completed 10/29/2013, 17:03:18	NC-99530: Ownership or Control	No.: 0607-0938 Expiration: 2013-12-31	Feb. 12, 2013	0 With Errors 0 With Warnings	

Done

Trusted sites 100%

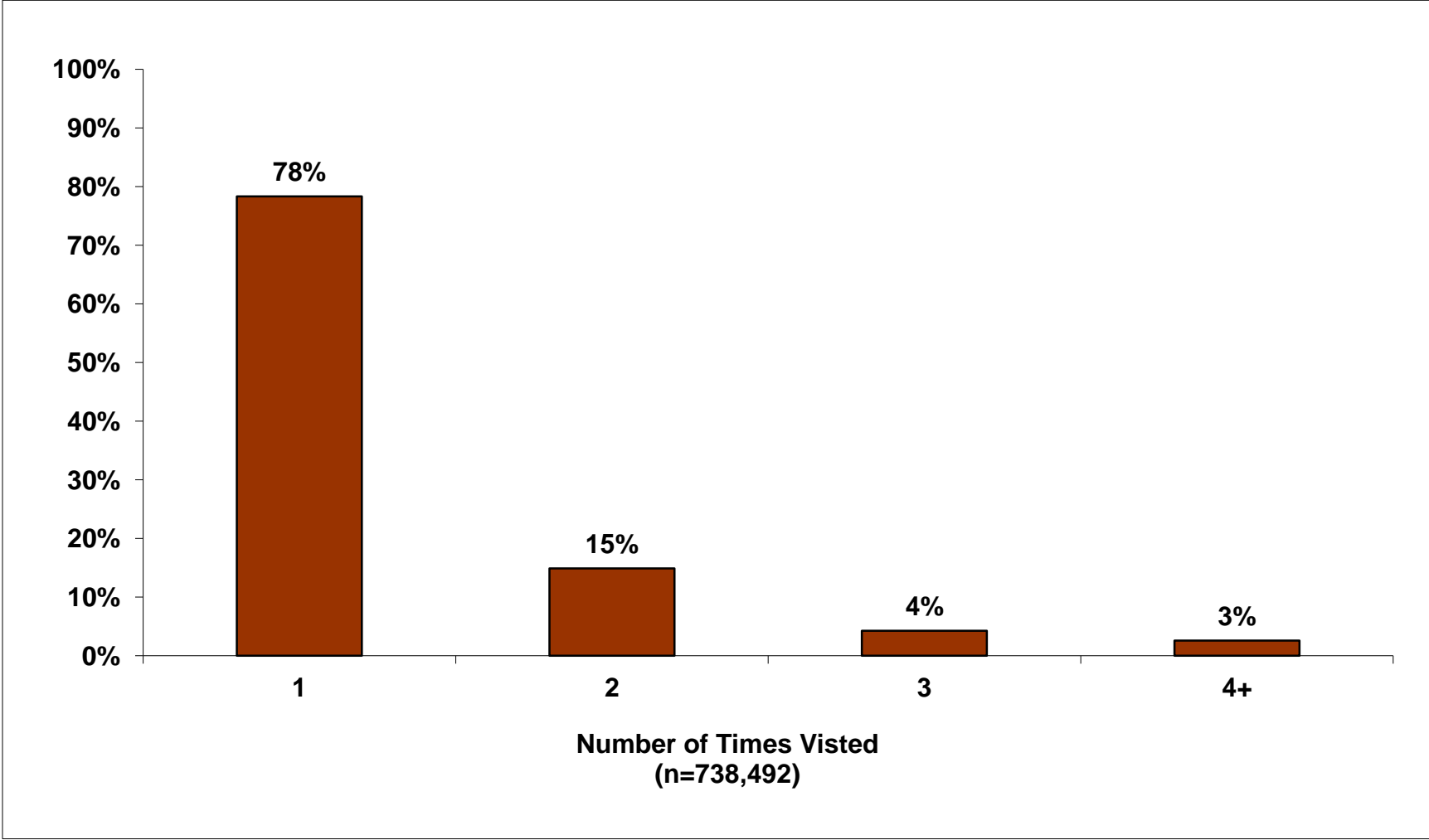
Completing a Questionnaire: Minimum Steps

- Log-in successfully
- Visit the main menu
- Click the start button
- Visit the review screen
- Return to the main menu screen
- Submit the data

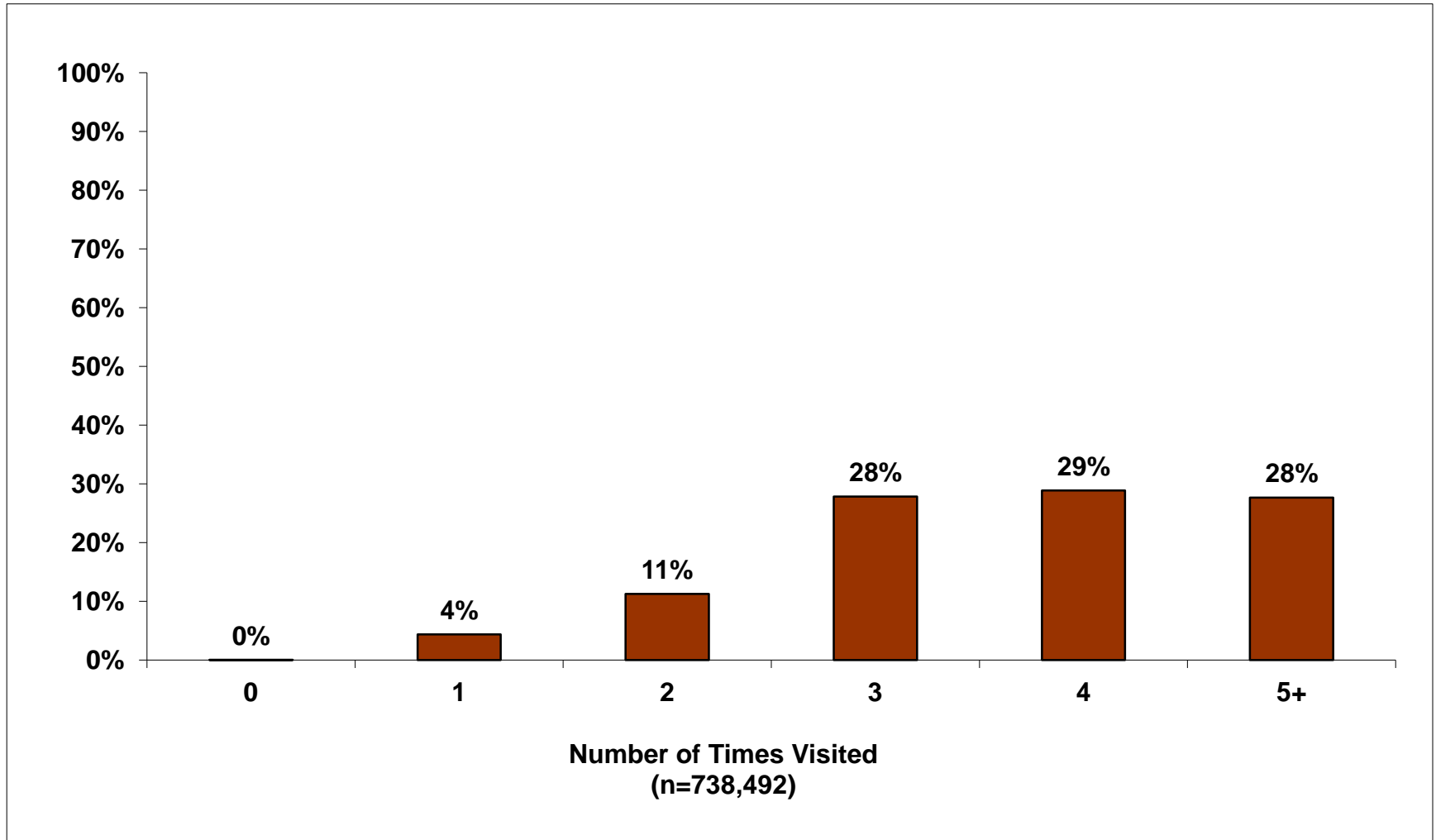
User Actions

- Log-in success
- Main menu visited
- Clicked on the start, resume, or review button
- Review screen visited
- Clicked on a link to a question from the review screen
- Submission
- Log-out

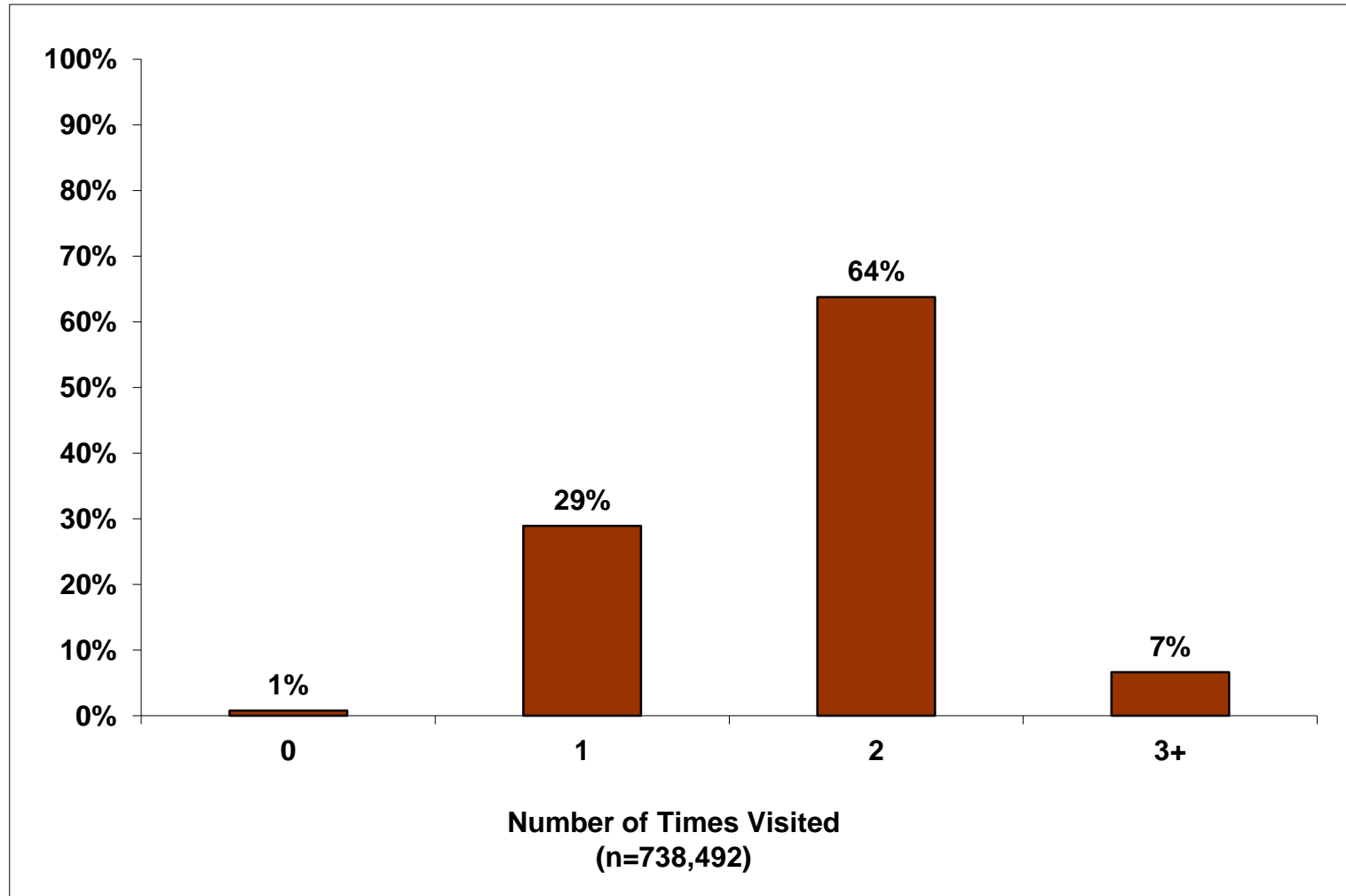
Logged In



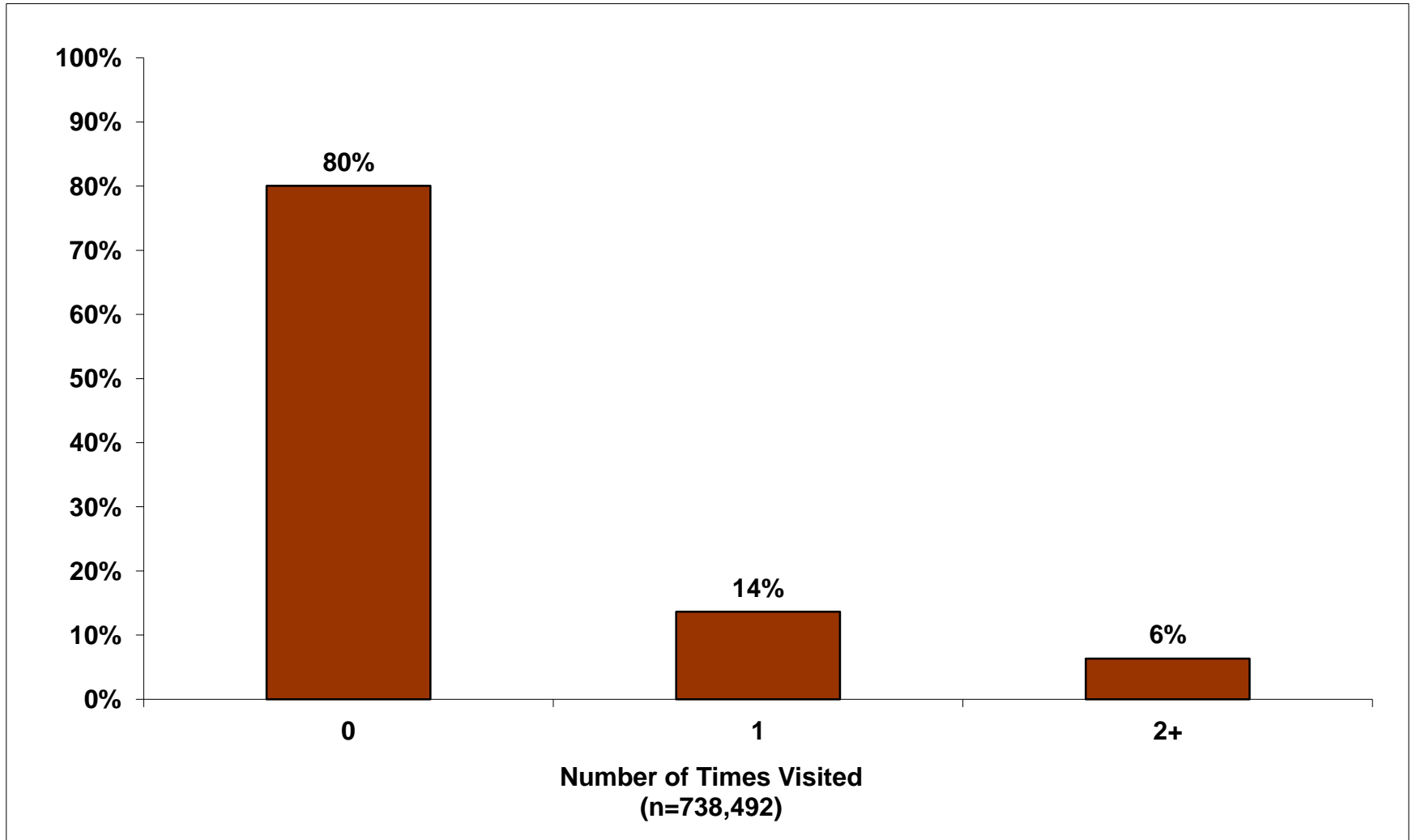
Main Menu



Start Button



Resume Button



Review Button Screen

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2012 Economic Census: Dashboard

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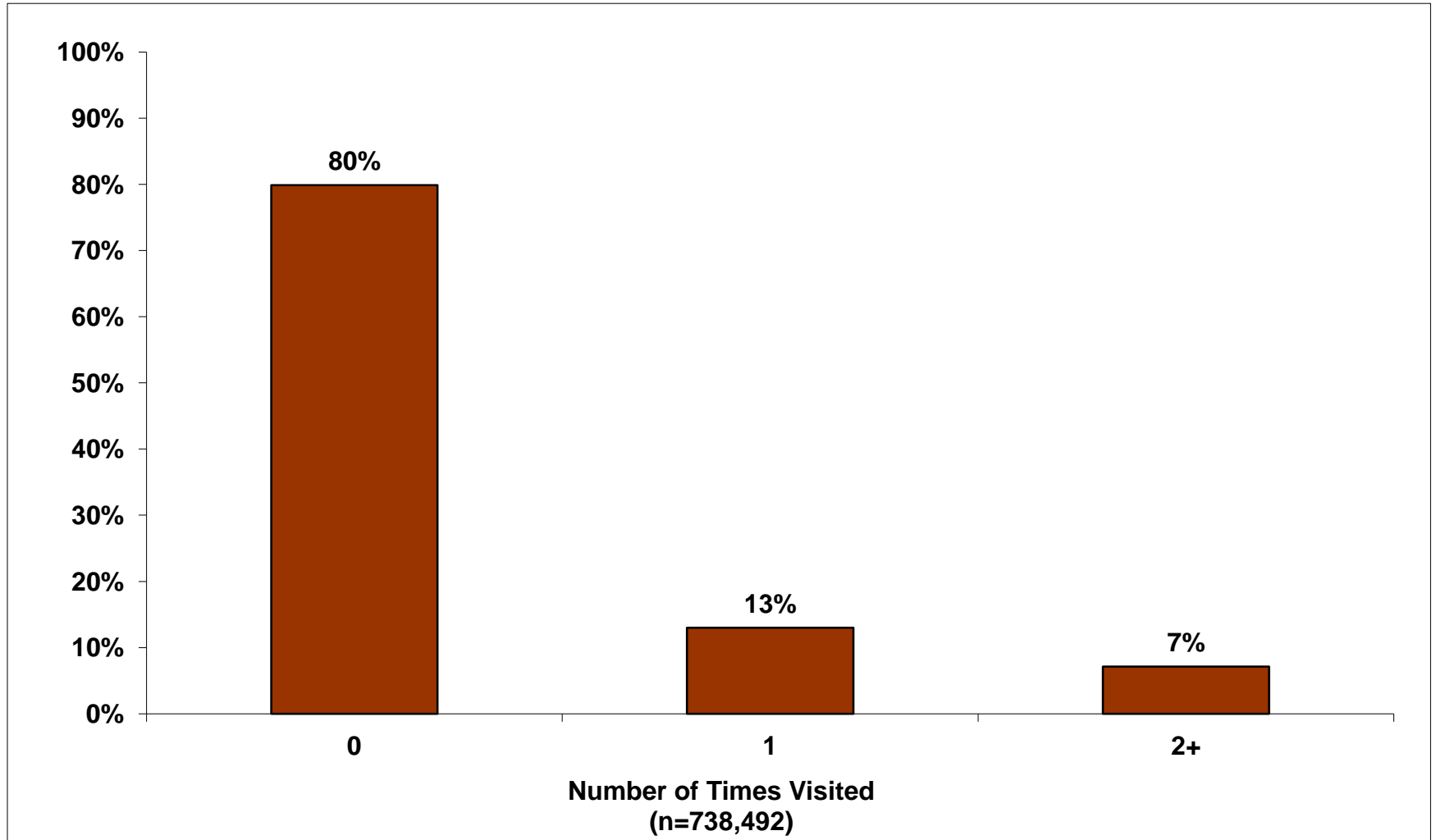
Submit Forms

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Done

Trusted sites 100%

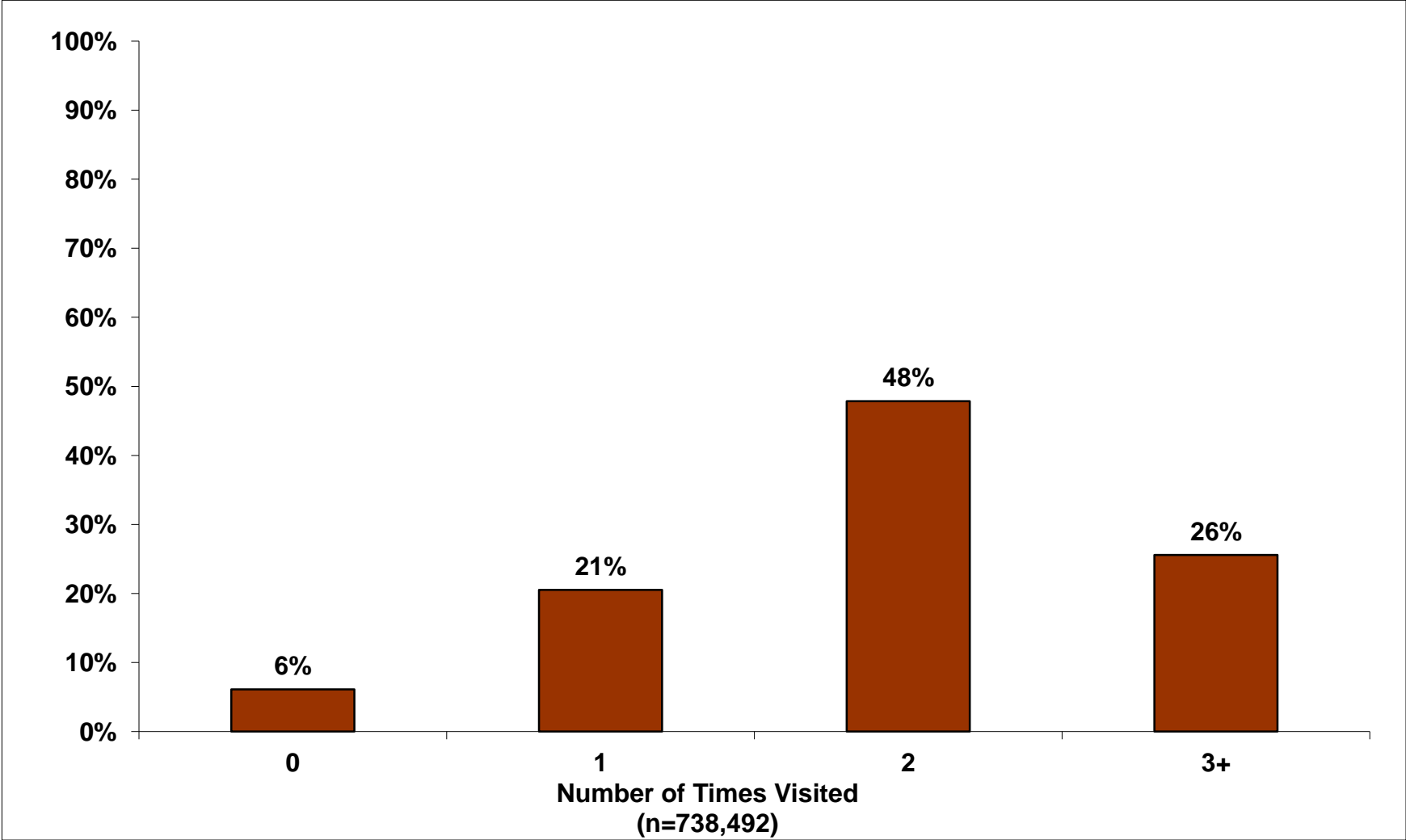
Review Button Data



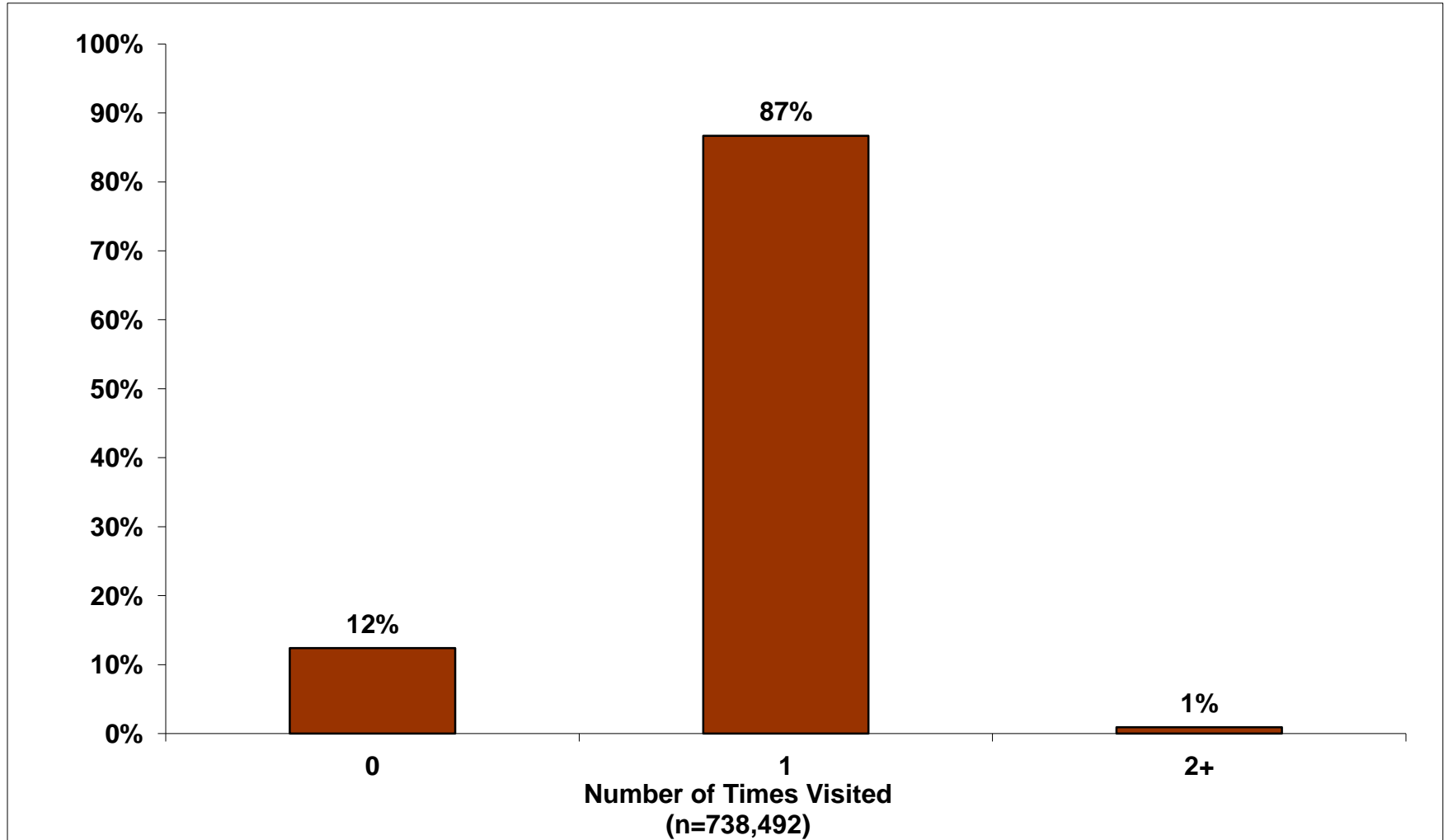
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Item List	Errors/Warnings
Mailing Address	Ok
Reporting Unit Definition	Ok
Item 1 - Employer Identification Number	Ok
Item 2 - Physical Location	Ok
Item 3 - Operational Status	Errors
Item 4 - Months in Operation	Ok
Item 5 - Sales, Shipments, Receipts, or Revenue	Errors
Item 6 - E-shipments	Ok
Item 7 - Employment and Payroll	Errors
Item 9 - Value of Inventories	Ok
Item 10 - Inventories by Valuation Method	Ok
Item 13 - Assets, Capital Expenditures, Retirements, and Depreciation	Ok
Item 14 - Rental Payments	Ok
Item 16 - Selected Expenses	Ok
Item 17 - Detailed Cost of Materials, Parts, and Supplies	Ok
Item 19 - Type of Operation	Ok
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Item 26 - Receipts from Contract Manufacturing	Ok
Item 30 - Remarks	Ok

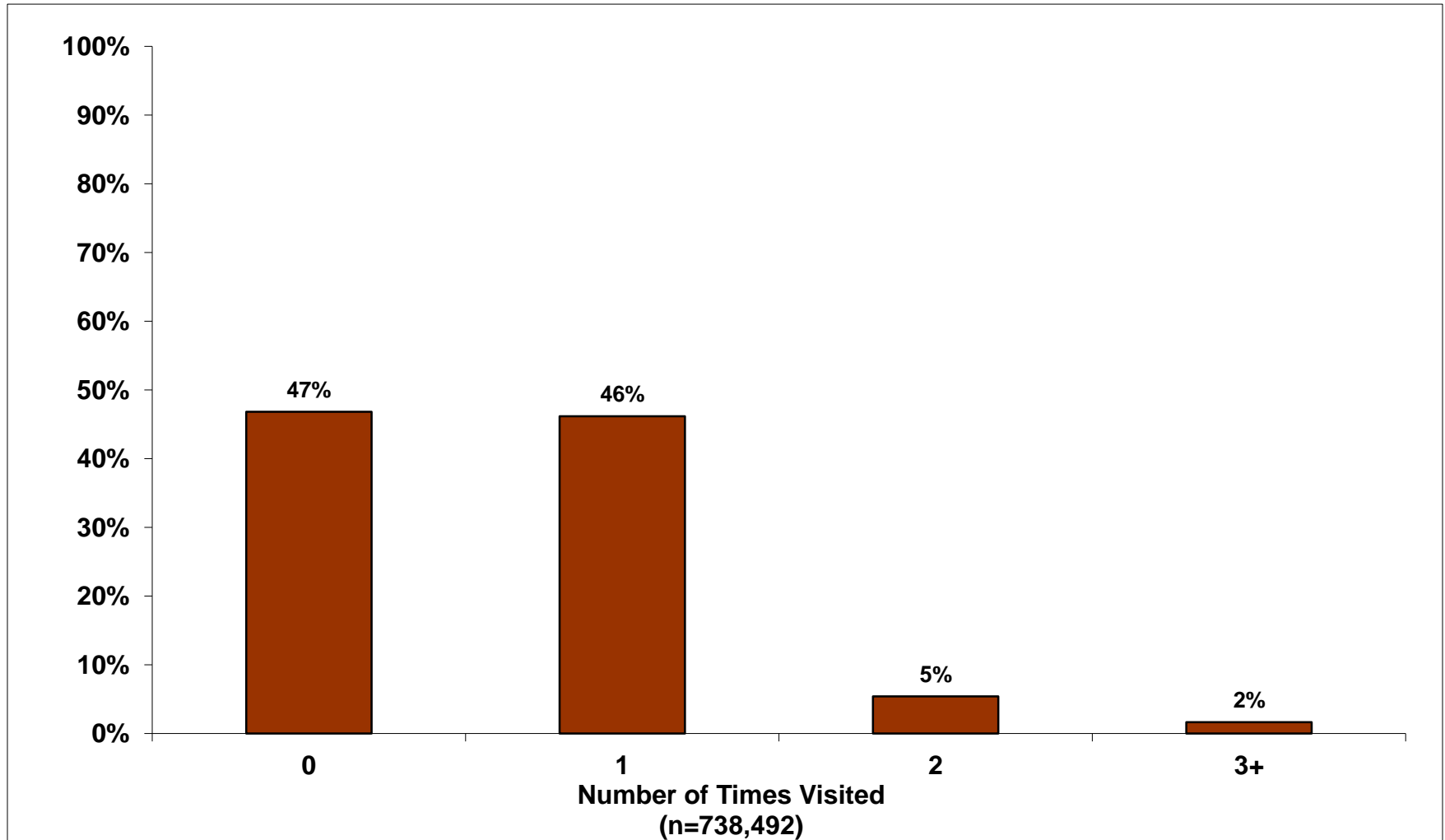
Review Screen



Submit Button



Logout Button

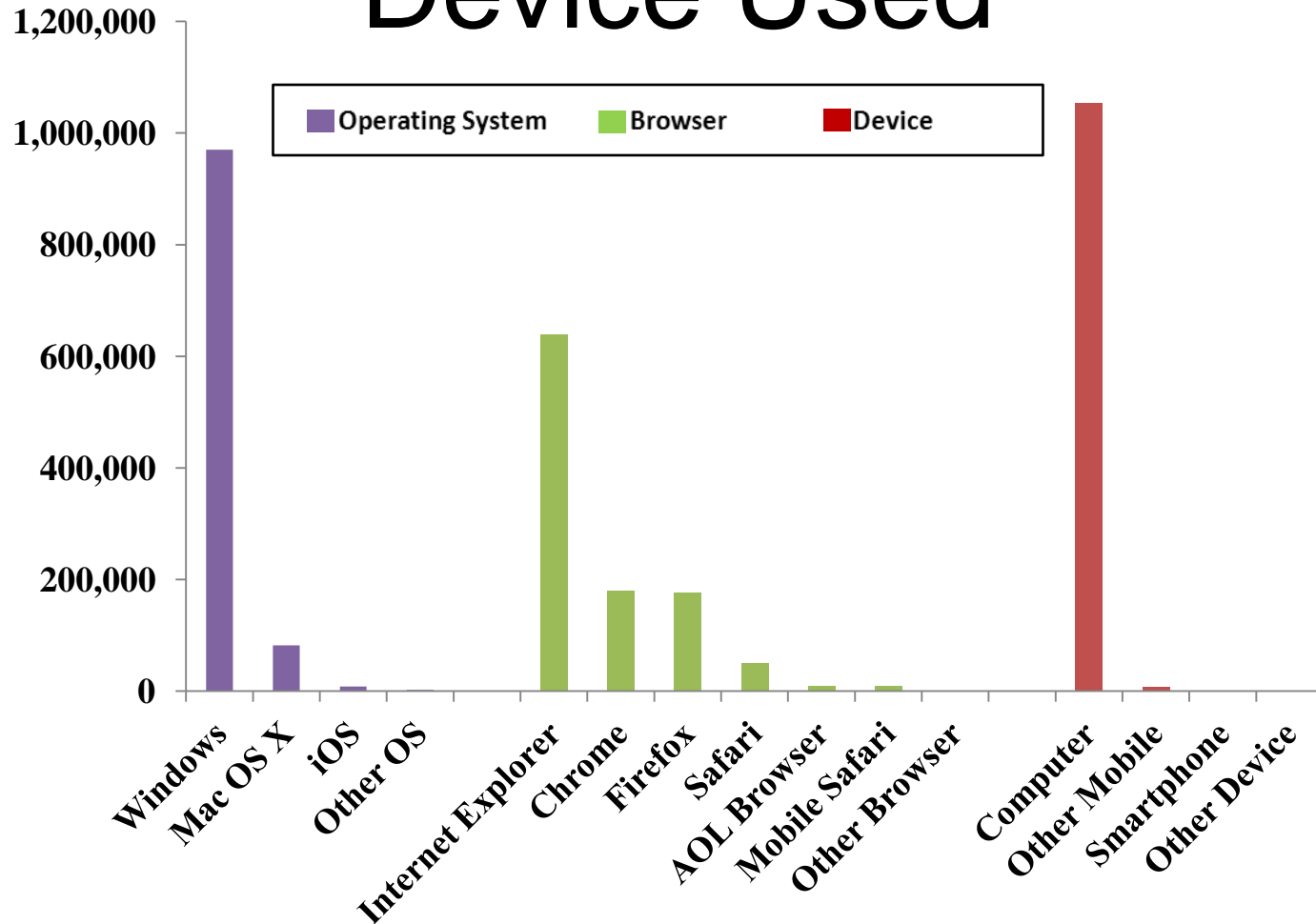


Median Time: First to Last Action

Number of Forms Started	Submitted (n=646,976)	Unsubmitted (n=85,910)
Overall* (n=738,492)	19'12"	10'37"
1 Form (n=214,569)	6'25"	5'17"
2 Forms (n=476,576)	25'07"	21'16"
3 Forms (n=41,741)	32'18"	41'16"

*Includes users that did not start any forms.

Operating System, Browser, and Device Used



Discussion

- Examined server-side paradata from the 2012 Economic Census Centurion software
- Paradata available for all users who successfully logged into the instrument
- Only covers single-establishment businesses
- Macro look at:
 - Frequency of user actions
 - Timing between events
 - Software and hardware usage counts

Discussion cont'd

- Almost 12% of users who logged in never submitted a form
- Half of users who logged into system never logged out
- The fewer number of forms, the less time a user spent in the system
- Users overwhelmingly use Windows, Internet Explorer, and desktop computers.

Future Research

- Integrate work from qualitative research
 - Investigate cases that did not submit
 - Errors and warnings
- Further research into software/hardware
- Incorporate additional auxiliary information
- Use client-side paradata to assist with questionnaire design

Contact Information

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