Using A Predictive Search Database For Address Collection In Federal Surveys

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Outline

o Background on address collection and PSDs
o Experian Address API
o Analysis and results
o Improving survey functionality
o Further recommendations

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Collecting Address Information

Many studies need accurate addresses for incentive payments and future locating efforts.

Manual entry method:

❓	Imprecise
💵	Increase post-collection data cleaning
✉	Undeliverable mailings

What was your permanent address when you last attended Duke University in the 2019-2020 academic year?

Your permanent address is usually your legal residence, such as where you maintain your driver's license or are registered to vote.

☐ Please check here if the address is an international address.

Street Address:
123 Avenue
Apt 101

ZIP Code:
27707
AutoFill City and State from ZIP Code

City:
Durham

State:
North Carolina

Next

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2019–20 National Postsecondary Student Aid Study (NPSAS:20).

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Background on PSDs

Predictive search databases (PSDs) – user types in text, and results appear as the user types, associated with an underlying database.

⏱	Reduce respondent burden
☑	Improve data quality

IES Institute of Education Sciences

Study ID: #demo
Enrollment - B22AMAJ1

What was your major at University of North Carolina - Chapel Hill?

(Please provide your major in the textbox. If you are unable to find a match in the results, please select the "Major not listed" option located at the bottom of the listed results.)

survey

Surveying Engineering
Surveying Technology/**Survey**ing
Survey Research/Methodology
Major not listed

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2020/22 Beginning Postsecondary Students (BPS:20/22).

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Experian Address Validation API

o **How it works:** The Experian Address Validation API will use either a partial or complete address to return a list of suggestions. Selecting a suggestion allows the user to then retrieve a well-formatted address.

o **Coverage:** For the United States - Addresses are accurate to delivery point level (e.g., a single delivery point within an apartment building, block of flats or high rise).

o For more information: https://docs.experianaperture.io/address-validation/experian-address-validation

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2020/22 Beginning Postsecondary Students (BPS:20/22).

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Instrument Functionality - basics

Preserve entered text

USPS formatted address

Address:
3040 cornwallis

Selected:
3040 Cornwallis Rd
Durham, NC 27709

Paradata variable indicates address selected from Experian results.

usermode	formname	itemname	value
WEB	B22G1ADR	B22G1ADSTR	3040 cornwallis
WEB	B22G1ADR	B22G1AD	3040 Cornwallis Rd
WEB	B22G1ADR	B22G1AD2	
WEB	B22G1ADR	B22G1CY	Durham
WEB	B22G1ADR	B22G1ST	NC
WEB	B22G1ADR	B22G1ZP	27709
WEB	B22G1ADR	B22G1FOR	0
WEB	B22G1ADR	B22G1FAD	
WEB	B22G1ADR	B22G1FC	
WEB	B22G1ADR	B22G1FS	
WEB	B22G1ADR	B22G1FZ	
WEB	B22G1ADR	B22G1FCY	
WEB	B22G1ADR	B22G1ADSEL	1

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Analysis & Outcome Measures

Compare permanent address results from the same set of respondents who completed both the NPSAS:20 full-scale survey and the BPS:20/22 field test survey (*n* = 1,620)

NPSAS:20 full-scale collected addresses using the manual-entry method

BPS:20/22 field test collected addresses using the Experian address PSD (and manual)*

Respondent Burden

Measure: Time to complete the address question (in seconds)

Test: *t*-test

Item nonresponse

Measure: Rate of complete addresses (street address, city, state, zip code)

Test: *t*-test

Validity of complete addresses

Measure: The number of addresses resulting in undeliverable contacts
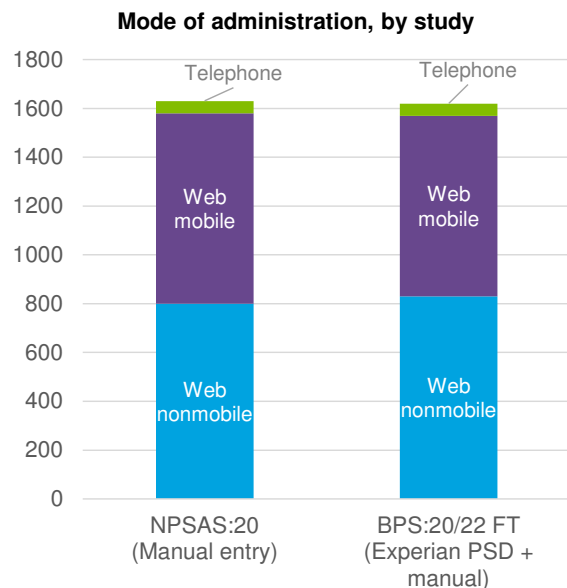
Test: descriptive

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Analysis Cases

2020/22 Beginning Postsecondary Students Field Test Experian Address Analysis Cases: 2021

	Number of cases	Percent
Total	2240	100
Analysis Cases	**1620**	**72.3**
Excluded from analysis	620	27.7
NPSAS:20 nonrespondent	340	15.1
Permanent address timing outlier	250	10.9
NPSAS:20 completed in Spanish	20	0.7
Partial interview	10	0.6
Coded foreign permanent address	10	0.3

NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2020/22 Beginning Postsecondary Students (BPS:20/22) Field Test, and 2019-20 National Postsecondary Student Aid Study (NPSAS:20).
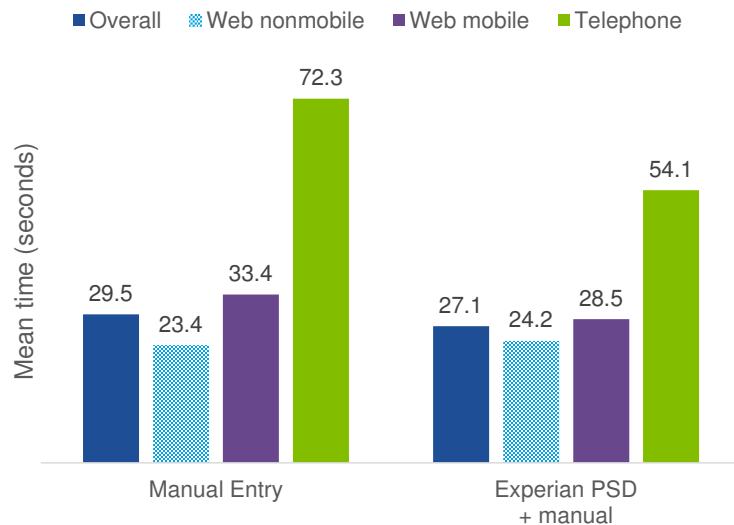
Mode of administration, by study

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Address timing burden by study, overall and by mode of administration: 2019-2021

Legend: ■ Overall ▦ Web nonmobile ■ Web mobile ■ Telephone

Y-axis: Mean time (seconds)

Manual Entry:
- Overall: 29.5
- Web nonmobile: 23.4
- Web mobile: 33.4
- Telephone: 72.3

Experian PSD + manual:
- Overall: 27.1
- Web nonmobile: 24.2
- Web mobile: 28.5
- Telephone: 54.1

Overall, Experian PSD was **2.5 seconds** faster than manual entry.

On average, Experian PSD by web mobile mode was **5 seconds** faster than manual entry.

Telephone interviewers were **18 seconds** faster, on average, administering the Experian PSD.
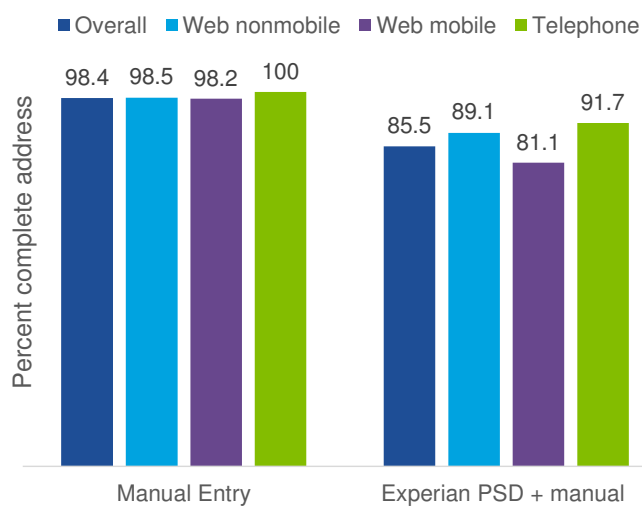
Results significant at ($p < .0001$) level.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2020/22 Beginning Postsecondary Students (BPS:20/22) Field Test, and 2019-20 National Postsecondary Student Aid Study (NPSAS:20).

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Address completion rate by study, overall and by mode of administration: 2019-2021

Legend: ■ Overall ■ Web nonmobile ■ Web mobile ■ Telephone

Y-axis: Percent complete address

Manual Entry:
- Overall: 98.4
- Web nonmobile: 98.5
- Web mobile: 98.2
- Telephone: 100

Experian PSD + manual:
- Overall: 85.5
- Web nonmobile: 89.1
- Web mobile: 81.1
- Telephone: 91.7

Overall, **98 percent** of respondents provided a complete permanent address with manual entry, compared to **85 percent** with Experian PSD + manual entry.

Telephone mode had the highest completion rate for both methods.

⚠ *Complete does not indicate all entries were error free and valid.*

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2020/22 Beginning Postsecondary Students (BPS:20/22) Field Test, and 2019-20 National Postsecondary Student Aid Study (NPSAS:20).

All results significant at ($p < .0001$) level.

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Validity of Complete Addresses

⚠️ Resulting from the manual entry method in NPSAS:20, **1.2 percent** of all BPS-eligible respondents (n = 32,120) check addresses were considered "undeliverable".

This means ~**380 addresses** required manual review/editing by staff.

✉️ BPS:20/22 field test did not obtain any "undeliverable" addresses.

📫 All addresses obtained from the Experian database are complete and accurate.

This reduces labor costs associated with staff resolving "undeliverable" check addresses (i.e., check sent back because not a valid address).

Results summary

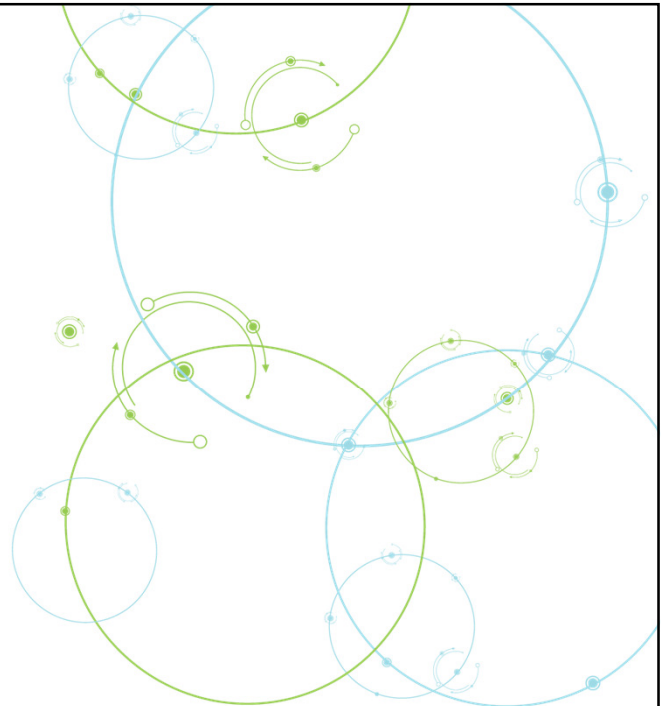⏱️ Respondent Burden

📫 Validity of complete addresses

✅ Item nonresponse → instrument functionality

Instrument Functionality – NR conversion

What is your permanent address?

Your permanent address is usually your legal residence, such as where you maintain your driver's license or are registered to vote.

(Please provide your address in the textbox. If you are unable to find a match in the results, please select the "Address not listed" option located at the bottom of the listed results.)

☐ Please check here if the address is an international address.

Address: *No text entered*

Next

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Instrument Functionality – NR conversion

We would like to get in touch with you again in three years. Please consider providing your address.   *Conversion text*

What is your permanent address?

Your permanent address is usually your legal residence, such as where you maintain your driver's license or are registered to vote.

(Please provide your address in the textbox. If you are unable to find a match in the results, please select the "Address not listed" option located at the bottom of the listed results.)

Street Address:

Manual entry

City:

State: -Select one-

ZIP Code:

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Instrument Functionality – manual entry

What is your permanent address?

Your permanent address is usually your legal residence, such as where you maintain your driver's license or are registered to vote.

(Please provide your address in the textbox. If you are unable to find a match in the results, please select the "Address not listed" option located at the bottom of the listed results.)

☐ Please check here if the address is an international address.

Address:

| 1302 shepherd |

1302 Shepherd Rd, Anderson IN 46012
1302 Shepherd Ln, Cincinnati OH 45215
1302 Shepherd St, Cumberland KY 40823
1302 Shepherd St, Durham NC 27707
1302 Shepherd Rd, Frankfort OH 45628
1302 Shepherd Dr, Franklin TN 37069
1302 Shepherd Pl, Galax VA 24333
Address not listed

Not found

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Instrument Functionality – data validations

⚠ ***A complete address does not indicate all entries were error free and valid when manually entered.***

Soft checks

Please confirm

You provided information for address line 2, but did not provide a street address.
Is that correct?

Change answer   Keep answer and continue

Please confirm

You did not provide a ZIP code.
Is that correct?

Change answer   Keep answer and continue

Hard checks

You must correct the following ✕

Please enter a valid 5-digit ZIP code.

Close

You must correct the following ✕

Please enter a valid city.

Close

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Recommendations for implementing

- **For the best performance and greatest user experience:**
  - Use a combination of Experian API + manual entry (for when address not found, or foreign addresses).
  - Minimize the number of interactions between your website and the API (e.g., search after *x* of characters entered, or after a period of inactivity).
  - Make sure that you delete / over-ride any previous searches captured from the user's input.
  - Prevent browser auto-fill pop up, as this can cover up suggestions or input incorrect data.
  - Make sure it is clear to users that more suggestions are available, they just need to continue to type to refine the search.
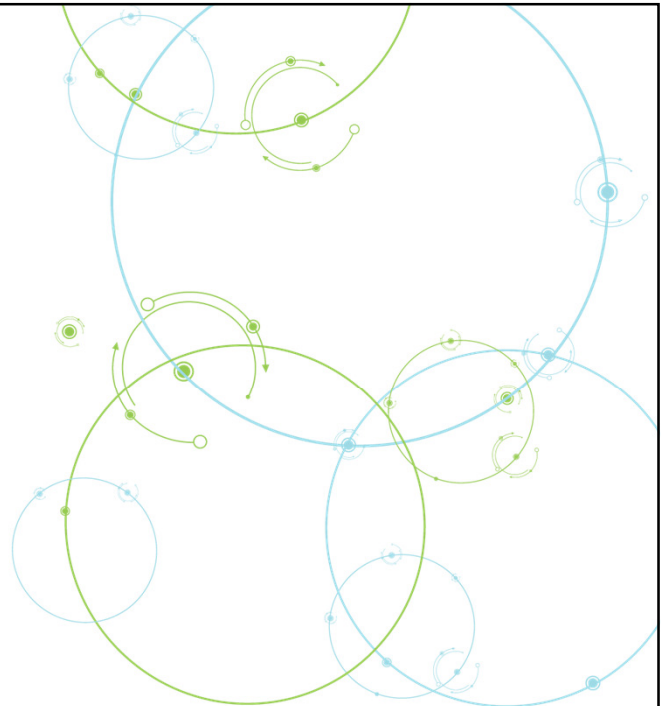
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Future research…

- Our CATI rates were low – how much does an address PSD, like Experian, reduce telephone interviewer burden?
- What populations/studies do these PSDs work best for? Any populations/studies to which a PSD is not appropriate?
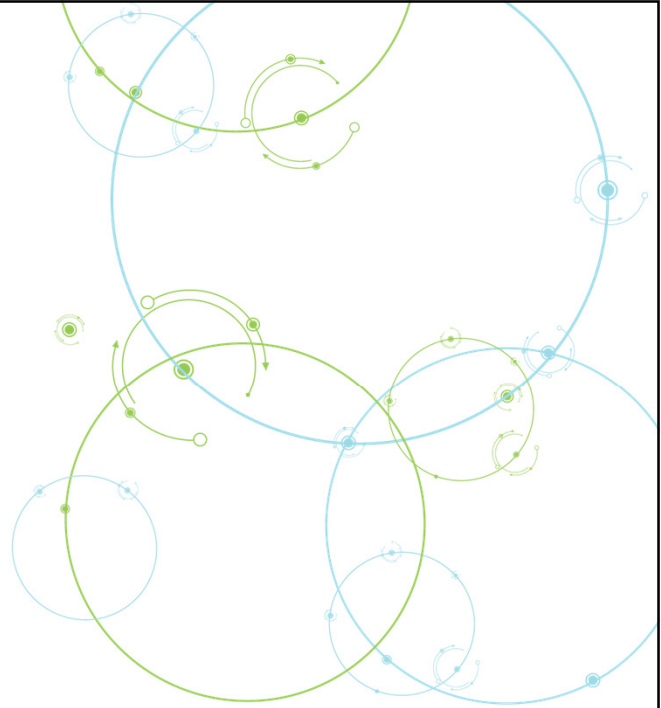
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Thank you!

Contact: hhaynes@rti.org

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References

Experian Address API
https://docs.experianaperture.io/address-validation/experian-address-validation

PSD testing
BPS:12/17 Pilot Study
https://www.reginfo.gov/public/do/DownloadDocument?objectID=67664501
B&B:08/18 Field Test
https://www.reginfo.gov/public/do/DownloadDocument?objectID=80770301