Are Bracket Responses Accurate?
Using IRS W-2 Records to Assess Earnings Edits for the Redesigned CPS ASEC

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U.S. Census Bureau

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This presentation was prepared for the Population Association of America Annual Meetings. All views and any errors are solely those of the author and do not necessarily reflect any official position of the Census Bureau. This presentation is available online as SEHSD Working Paper #2019-22. This project makes use of protected, confidential data. The analyses reported were conducted in a secure setting at the Census Bureau headquarters. All results presented here have been formally reviewed to ensure that no confidential information is disclosed and that it meets the Census Bureau's Disclosure Review Board (DRB) standards; it has been assigned DRB approval number CBDRB-FY19-200.

Email: charles.adam.bee@census.gov
Wage and Salary Earnings Amount

Q48aa

How much did (name/you) earn from this employer before taxes and other deductions during 2014?

✦ Enter dollar amount
✦ Enter 0 for none
Wage and Salary Earnings Amount Range Follow-Up

Q48aarn1 Ask only if the respondent “Doesn’t know” or ‘Refused” Q48aa

Could you tell me if (name/you) earned

less than $45,000
between $45,000 and $60,000
or over $60,000

for the TOTAL yearly amount from this employer before taxes and other deductions during 2014?

1  Less than $45,000
2  Between $45,000 and $60,000
3  Over $60,000

Q48aarn2

Did (name/you) earn

less than $15,000
between $15,000 and $30,000
or over $30,000

from this employer during 2014?
Brackets

• Other household surveys are increasingly using brackets to address rising income non-response.
  • US: SIPP, PSID
  • Internationally: e.g. Statistics South Africa’s Labor Force Survey

• Brackets create options for data users.
  • E.g., Chicoine (2012) develops MLE strategy to use both exact-amount and bracket responses in regression estimation.
  • Census Bureau has recently incorporated bracket responses into production imputation processes.
This Project

- First projects to evaluate the accuracy of bracket responses against individually linked external data sources.
- Today: Preliminary results from this project; more to come.
IRS W-2 Records for Tax Years 2013-2016

• Includes universe of wage and salary W-2 jobs.
  • Filing threshold is $600.
  • Does not include independent contractors.

• Sum of
  • Box 1 total taxable wages, salaries, bonuses, tips
    • Before taxes,
    • Before taxable payroll deductions,
    • After pretax deductions, e.g. health insurance premiums, FSAs, dependent care, parking
    • Also includes some rare fringe benefits
  • Box 12 elective deferred compensation
    • E.g., employee contributions to 401(k), 403(b), etc.

• De-duplicated to address amended returns and erroneous multiple filings for the same job.
**Form W-2 Wage and Tax Statement**

**2014**

- **Employee's social security number**: 22222
- **Employer identification number (EIN)**
- **Employee's name, address, and ZIP code**
- **Employer's name, address, and ZIP code**
- **Control number**
- **Employee's first name and initial**
- **Last name**
- **Suff.**
- **Employee's address and ZIP code**
- **State Employer's state ID number**
- **State wages, tips, etc.**
- **State income tax**
- **Local wages, tips, etc.**
- **Local income tax**
- **Locality name**
Table 1: Tax-Reported Earnings Interval by Intervals of Exact-Amount-Reported Earnings, Unweighted 2017 CPS ASEC

<table>
<thead>
<tr>
<th>W-2 Amount</th>
<th>&lt;$15k</th>
<th>$15k-$30k</th>
<th>$30k-$45k</th>
<th>$45k-$60k</th>
<th>&gt;$60k</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;$15k</td>
<td>0.16</td>
<td>0.03</td>
<td>&lt;.01</td>
<td>&lt;.01</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>$15k-$30k</td>
<td>0.03</td>
<td>0.14</td>
<td>0.02</td>
<td>0.01</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>$30k-$45k</td>
<td>0.01</td>
<td>0.04</td>
<td>0.10</td>
<td>0.03</td>
<td>0.01</td>
</tr>
<tr>
<td>$45k-$60k</td>
<td>&lt;.01</td>
<td>0.01</td>
<td>0.02</td>
<td>0.09</td>
<td>0.02</td>
</tr>
<tr>
<td>&gt;$60k</td>
<td>&lt;.01</td>
<td>&lt;.01</td>
<td>0.01</td>
<td>0.03</td>
<td>0.23</td>
</tr>
</tbody>
</table>

Unweighted count, rounded: 46,000

Agreement rate 0.72
Table 2: Tax-Reported Earnings Interval by Intervals of Imputed Earnings, among Bracket Reporters, Unweighted 2017 CPS ASEC

<table>
<thead>
<tr>
<th>W-2 Amount</th>
<th>&lt;$15k</th>
<th>$15k-$30k</th>
<th>$30k-$45k</th>
<th>$45k-$60k</th>
<th>&gt;$60k</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;$15k</td>
<td>0.15</td>
<td>0.07</td>
<td>0.02</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>$15k-$30k</td>
<td>0.05</td>
<td>0.09</td>
<td>0.04</td>
<td>0.03</td>
<td>0.02</td>
</tr>
<tr>
<td>$30k-$45k</td>
<td>0.01</td>
<td>0.05</td>
<td>0.04</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td>$45k-$60k</td>
<td>0.01</td>
<td>0.02</td>
<td>0.02</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td>&gt;$60k</td>
<td>&lt;.01</td>
<td>0.02</td>
<td>0.03</td>
<td>0.05</td>
<td>0.13</td>
</tr>
</tbody>
</table>

Unweighted count, rounded: 11,000

Agreement rate 0.44

Note: Imputations reflected in this table do not incorporate information from reported brackets.
### Table 3: Tax-Reported Earnings Interval by Survey-Reported Bracket, Unweighted 2017 CPS ASEC

**Cell Proportions**

<table>
<thead>
<tr>
<th>W-2 Amount</th>
<th>&lt;$15k</th>
<th>$15k-$30k</th>
<th>$30k-$45k</th>
<th>$45k-$60k</th>
<th>&gt;$60k</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;$15k</td>
<td>0.17</td>
<td>0.06</td>
<td>0.03</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>$15k-$30k</td>
<td>0.04</td>
<td>0.12</td>
<td>0.05</td>
<td>0.02</td>
<td>0.01</td>
</tr>
<tr>
<td>$30k-$45k</td>
<td>0.01</td>
<td>0.04</td>
<td>0.06</td>
<td>0.04</td>
<td>0.01</td>
</tr>
<tr>
<td>$45k-$60k</td>
<td>&lt;.01</td>
<td>0.01</td>
<td>0.02</td>
<td>0.05</td>
<td>0.02</td>
</tr>
<tr>
<td>&gt;$60k</td>
<td>&lt;.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.05</td>
<td>0.17</td>
</tr>
</tbody>
</table>

Unweighted count, rounded: 11,000

Agreement rate: 0.57
Conclusions

• Brackets are informative.
  • Incorporating brackets into imputation processes reduces burden on end users.
  • Brackets may represent a promising means of capturing information
    • Beyond what’s already available from other covariates,
    • During a period of increasing survey non-response, and
    • When external (e.g., administrative) measures may have error.

• Planned:
  • Summer 2019: Working paper with detailed results.
  • Fall 2019: Public-use microdata file that will use brackets for all income types, as well as other improvements.
Thank You!

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