



Using paradata to monitor interviewers' navigation behavior: A case study from a national household survey in Ghana

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Gina-Qian Cheung, Jennie Williams, Yu-chieh (Jay) Lin, Kyle S. Kwaiser

University of Michigan Survey Research Operations, Survey Research Center



Overview

- Background and instrument
- Research questions:
 - How does the technical design affect instrument navigation by the interviewers?
 - How does interview navigation affect interview length?
- Some observations & next steps



Ghana Socioeconomic Panel Survey

- Sponsored by Economic Growth Center (EGC) at Yale University and carried out by the Institute for Statistical, Social and Economic Research (ISSER) at the University of Ghana.
- The plan is to revisit these households at 3-4 year intervals for 20 years. First wave was completed on *paper* between October 2009 and February 2010.
- Second wave was collaborated with Survey Research Center (SRC) at University of Michigan and conducted on ***Computer-Assisted Personal Interviewing (CAPI)*** between March-December 2014.
- 334 enumeration areas country-wide. Sample size of 5009 households, with approximately 18,000 individuals. Also sample size of 500 split-off households were tracked and interviewed between January-June 2015.
- Interviews are NOT digital recorded for quality monitor purpose



Challenges from Paper to CAI

- Transition from complex grid designs on paper to a computer assisted interview (CAI) instrument.
- Need to have total flexibility to jump in/out from different sections of the instrument (depending on the availability of the knowledge respondents.)
- Need to track real-time status of interviewing progress on multiple respondents/sections within the same instrument.



| Section | 2. members of the HH | 3. HH assets | 4. HH production | 5. non-farm enterprise | 11. consumption module |
|---|--|--|---|--|--|
| 1. Who in the household is most knowledgeable about? | family history, relatives and spouses that don't live in household | land holdings, farm tools, animals, financial assets, household durables | plots, crops, interaction with village officials/ organizations | non-farm business ventures, costs, revenues, employees, assets | how much food the family eats, household bills |
| 2. Name | _____ | _____ | _____ | _____ | _____ |
| 3. ID number | ID ____ | ID ____ | ID ____ | ID ____ | ID ____ |
| 4. Date & time for Individual Interview: dd.mm / time | ____/____/____ | ____/____/____ | ____/____/____ | ____/____/____ | ____/____/____ |
| 5. Checkpoint: Interview Complete? | ____/____/____ | ____/____/____ | ____/____/____ | ____/____/____ | ____/____/____ |
| 1. Yes 2. No Initials and date when the interview was completed | ____ | ____ | ____ | ____ | ____ |
| interview was completed | | | | | |

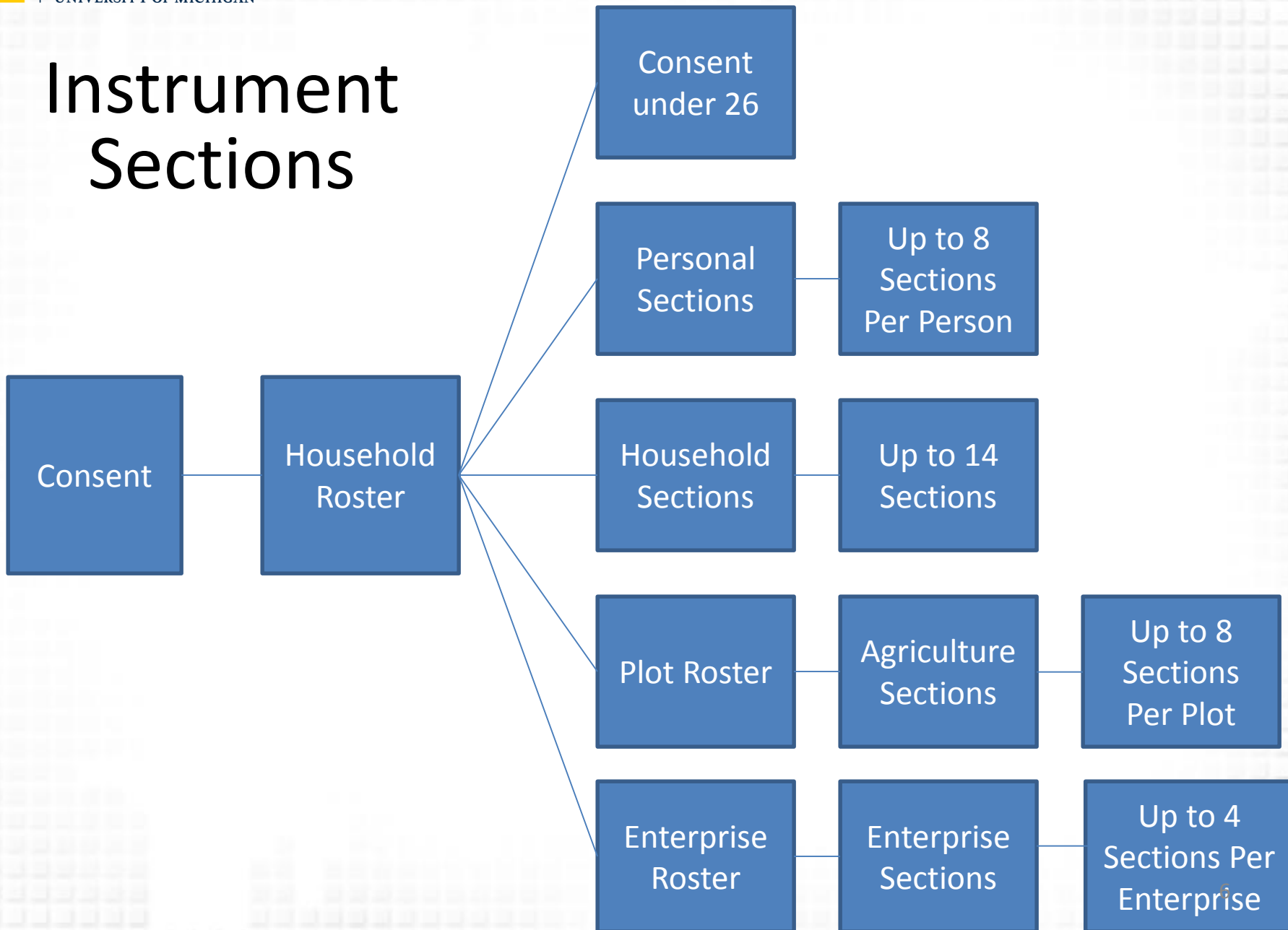
(ii.) *Limited respondent Modules* Enumerator: each of the following sections must be asked to the head of the household, the spouse, and one person RANDOMLY chosen. Please schedule an interview date with these selected household members. Record your initials date and when the interview was completed.

1. Write the names on pieces of papers for the household head to select:

| Section 10. Psych/Personality | Head | Spouse | Randomly chosen individual |
|---|----------------|----------------|----------------------------|
| 6. ID number | ID ____ | ID ____ | ID ____ |
| 7. Name | _____ | _____ | _____ |
| 8. Date & time for Individual Interview: dd.mm/time | ____/____/____ | ____/____/____ | ____/____/____ |
| 9. Checkpoint: Section 10, Psychology/Personality complete? | | | |
| 1. Yes 2. No Initials and date when the interview was completed | ____ | ____ | ____ |



Instrument Sections





Household Roster is completed

Blaise 4.8 Data Entry - c:\blproj\ghana_p\work\householdsurvey

Forms Answer Help

HOUSEHOLD SURVEY **Person Status**

Survey Status

| | | | |
|---------------------------------|--------------------|------------------------------|--------------------|
| <i>S0Consent Forms</i> | | | |
| S01A: Consent | <u>Done</u> | S01B3: Consent for Under 26 | <u>Not Started</u> |
| <i>Rosters</i> | | | |
| S01B2: Household Roster | <u>Done</u> | Person Sections | <u>Not Started</u> |
| S04: Plot Roster | <u>Not Started</u> | Plot Sections | ----n/a---- |
| S05: Non-Farm Enterprise Roster | <u>Not Started</u> | Non-Farm Enterprise Sections | ----n/a---- |
| <i>Household Level Sections</i> | | | |
| S02B: Non-Resident Spouses | <u>Not Started</u> | S03Ai: Animals | <u>Not Started</u> |
| S02A: Non-Resident Relatives | <u>Not Started</u> | S03Aii: Tools | <u>Not Started</u> |
| S10C: Social Networking | <u>Not Started</u> | S03Aiii: Durable Goods | <u>Not Started</u> |
| S10D: Information Seeking | <u>Not Started</u> | S03Bi: Borrowing | <u>Not Started</u> |
| S11: Household Consumption | <u>Not Started</u> | S03Bii: Lending | <u>Not Started</u> |
| S12: Housing Characteristics | <u>Not Started</u> | S03Biii: Out-Transfers | ----n/a---- |
| S04NN: Gathering | <u>Not Started</u> | S03Biv: In-Transfers | ----n/a---- |
| | | S03Bv: Savings | <u>Not Started</u> |

Not all sections have been completed! Please select a section and continue the survey.



Blaise 4.8 Data Entry - c:\blproj\ghana_p\work\householdsurvey

Forms Answer Help

HOUSEHOLD SURVEY Person Status

| Name | Background | Employment | Education | Migration | Health | Womens Health | Mens Health | Children | Pysch/Social |
|------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| SAMUEL KANGA SNR (SNR) | Not Started | Not Started | Not Started | Not Started | Not Started | ---n/a--- | Not Started | ---n/a--- | Not Started |
| SAMUEL KANGA JNR (JNR) | Not Started | Not Started | Not Started | Not Started | Not Started | ---n/a--- | Not Started | ---n/a--- | Not Started |
| RAMAT DOMSON | Not Started | Not Started | Not Started | Not Started | Not Started | Not Started | ---n/a--- | ---n/a--- | ---n/a--- |
| NENYA HANGAH | Not Started | Not Started | Not Started | Not Started | Not Started | ---n/a--- | Not Started | Not Started | Not Started |

Blaise 4.8 Data Entry - c:\blproj\ghana_p\work\householdsurvey

Forms Answer Help

HOUSEHOLD SURVEY **Person Status**

Survey Status

| | | | |
|---------------------------------|-----------------------------|------------------------------|-----------------------------|
| <i>SOConsent Forms</i> | | | |
| S01A: Consent | Done | S01B3: Consent for Under 26 | Not Started |
| <i>Rosters</i> | | | |
| S01B2: Household Roster | Done | Person Sections | Not Started |
| S04: Plot Roster | Not Started | Plot Sections | ---n/a--- |
| S05: Non-Farm Enterprise Roster | Not Started | Non-Farm Enterprise Sections | ---n/a--- |
| <i>Household Level Sections</i> | | | |
| S02B: Non-Resident Spouses | Not Started | S03Ai: Animals | Not Started |
| S02A: Non-Resident Relatives | Not Started | S03Aii: Tools | Not Started |
| S10C: Social Networking | Not Started | S03Aiii: Durable Goods | Not Started |
| S10D: Information Seeking | Not Started | S03Bi: Borrowing | Not Started |
| S11: Household Consumption | Not Started | S03Bii: Lending | Not Started |
| S12: Housing Characteristics | Not Started | S03Biii: Out-Transfers | ---n/a--- |
| S04NN: Gathering | Not Started | S03Biv: In-Transfers | ---n/a--- |
| | | S03Bv: Savings | Not Started |

Not all sections have been completed! Please select a section and continue the survey.



Master Dashboard

Blaise 4.8 Data Entry - c:\blproj\ghana_p\work\householdsurvey

Forms Answer Help

HOUSEHOLD SURVEY Person Status Enterprise Status Agriculture

Survey Status

| | | | |
|---------------------------------|-----------------------------|------------------------------|-----------------------------|
| <i>S0Consent Forms</i> | | | |
| S01A: Consent | Done | S01B3: Consent for Under 26 | Not Started |
| <i>Rosters</i> | | | |
| S01B2: Household Roster | Done | Person Sections | Not Started |
| S04: Plot Roster | Done | Plot Sections | Not Started |
| S05: Non-Farm Enterprise Roster | Done | Non-Farm Enterprise Sections | Not Started |
| <i>Household Level Sections</i> | | | |
| S02B: Non-Resident Spouses | Not Started | S03Ai: Animals | Not Started |
| S02A: Non-Resident Relatives | Not Started | S03Aii: Tools | Not Started |
| S10C: Social Networking | Not Started | S03Aiii: Durable Goods | Not Started |
| S10D: Information Seeking | Not Started | S03Bi: Borrowing | Not Started |
| S11: Household Consumption | Not Started | S03Bii: Lending | Not Started |
| S12: Housing Characteristics | Not Started | S03Biii: Out-Transfers | ----n/a---- |
| S04NN: Gathering | Not Started | S03Biv: In-Transfers | ----n/a---- |
| | | S03Bv: Savings | Not Started |

Not all sections have been completed! Please select a section and continue the survey.



Benefits of this design

- Interviewers have a high-level of autonomy with respect to interview navigation.
- Interviewers are able to switch respondents easily.
- Interviewers are able to jump to any section of questionnaire quickly.
- Development of a questionnaire dashboard to show the status of all the questionnaire sections and all the respondents within the household.



Questions for the design...

- How does instrument design affect instrument navigation?
 - Instrument parallel blocks
- How does interview navigation affect interview length?
 - Order of interview initiation
 - Movements between blocks

By using keystroke data (Paradata)

Timestamps

Hours:Minutes:Seconds:Thousands of a second

Case ID in Blaise database

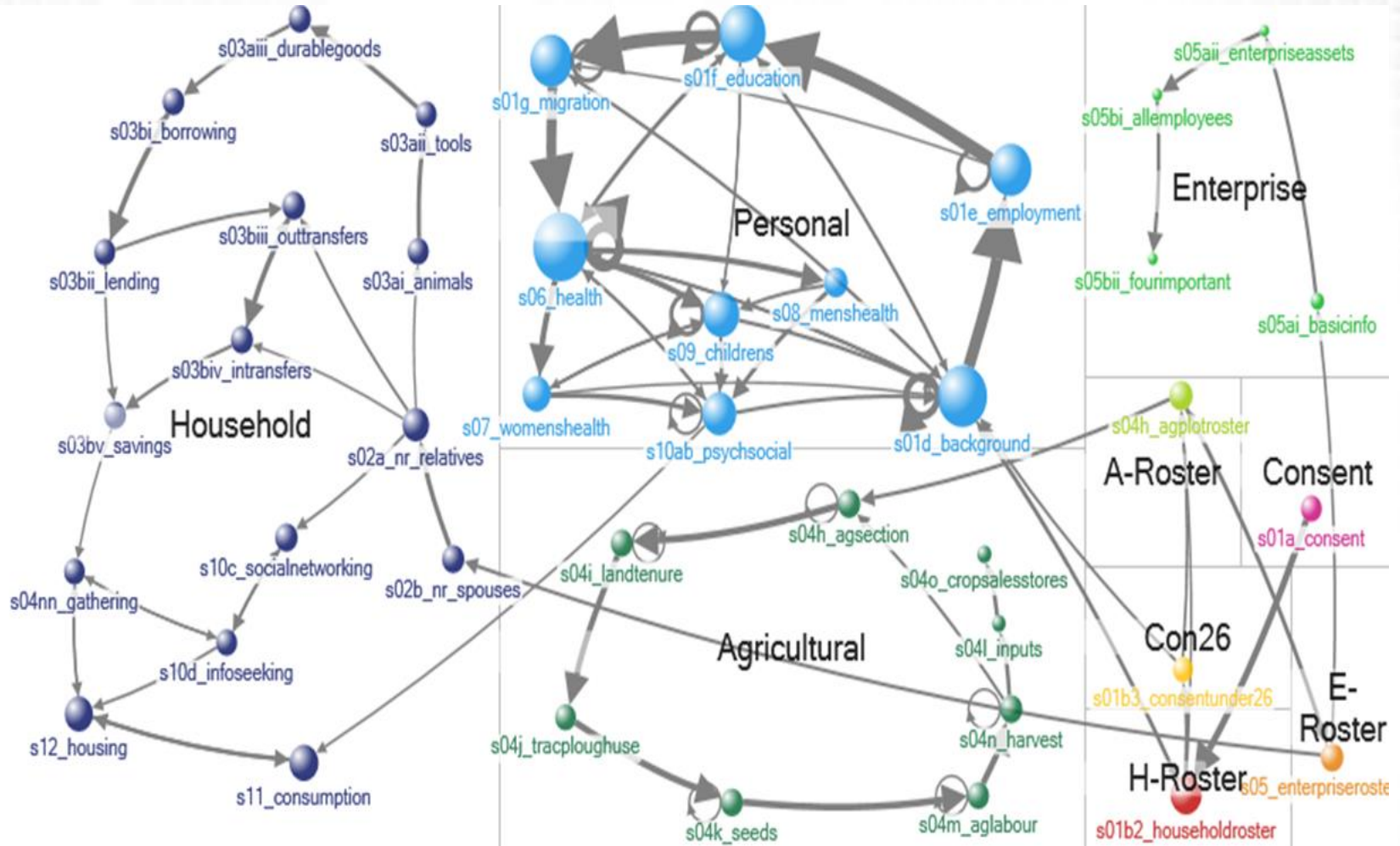
```
"1/17/2012 9:00:06:304 AM", "Enter Form:1", "Key:3975053020 " ← Sample ID
"1/17/2012 9:00:06:304 AM", "Metafile name:C:\blproj\HRS2012\work\HRS12.bmi"
"1/17/2012 9:00:06:304 AM", "Metafile timestamp:Friday, January 06, 2012 1:08:04 PM"
"1/17/2012 9:00:06:304 AM", "WinUserName:14554015" ← Interviewer ID
"1/17/2012 9:00:06:304 AM", "DictionaryVersionInfo:0.0.0.0"
...
"1/17/2012 9:00:12:702 AM", "Enter Field:SecA.StartInterview.A007TRAlive_A", "Status:Normal", "Value:"
"1/17/2012 9:00:13:965 AM", "(KEY:)1[ENTR]" ← Time of first keystroke
"1/17/2012 9:00:14:276 AM", "Action:Store Field Data", "Field:SecA.StartInterview.A007TRAlive_A"
"1/17/2012 9:00:14:328 AM", "Leave Field:SecA.StartInterview.A007TRAlive_A", "Cause:Next Field",
  "Status:Normal", "Value:1"
...
"1/17/2012 9:02:51:681 AM", "Enter Field:SecJ.WORKSTATUS.J005MCurrEmpStatus[1]", "Status:Normal", "Value:"
"1/17/2012 9:02:55:971 AM", "(KEY:)15[BACK][BACK]5[ENTR]"
"1/17/2012 9:03:03:209 AM", "Action:Store Field Data", "Field:SecJ.WORKSTATUS.J005MCurrEmpStatus[1]"
"1/17/2012 9:03:03:256 AM", "Leave Field:SecJ.WORKSTATUS.J005MCurrEmpStatus[1]", "Cause:Next
  Field", "Status:Normal", "Value:5"
...
"1/17/2012 9:13:24:923 AM", "Enter Field:IWComplete", "Status:Normal", "Value:"
"1/17/2012 9:13:28:480 AM", "(KEY:)1[ENTR]"
"1/17/2012 9:13:29:650 AM", "Action:Store Field Data", "Field:IWComplete"
"1/17/2012 9:13:29:728 AM", "Leave Field:IWComplete", "Cause:Next Field", "Status:Normal", "Value:1"
"1/17/2012 9:13:30:056 AM", "Leave Field:IWComplete", "Cause:Exit", "Status:Normal", "Value:1"
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```

Start IW
Audit trail file
information

Question

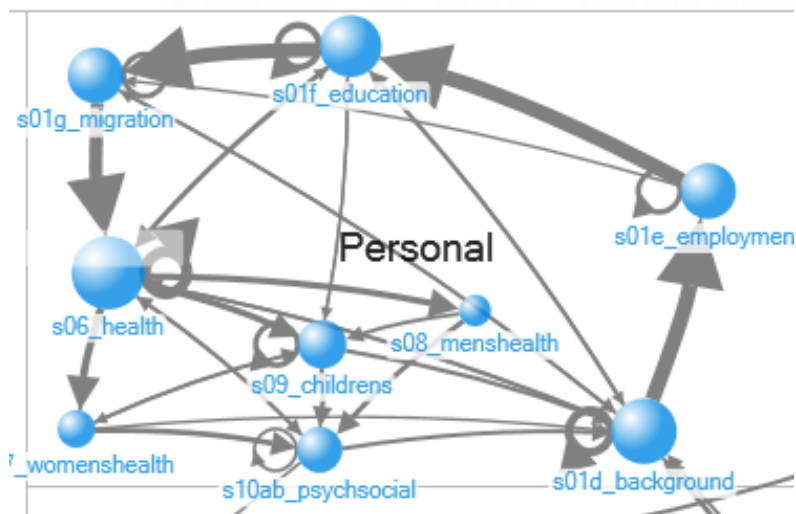
Question
with chang
answer

Complete IW



Notes on most common block moves:

1. Edge Weight ≥ 500
2. Movement within sections dominates
3. Some exceptions (Rosters and Personal to Household)



Blaise 4.8 Data Entry - c:\blproj\ghana_p\work\householdsurvey

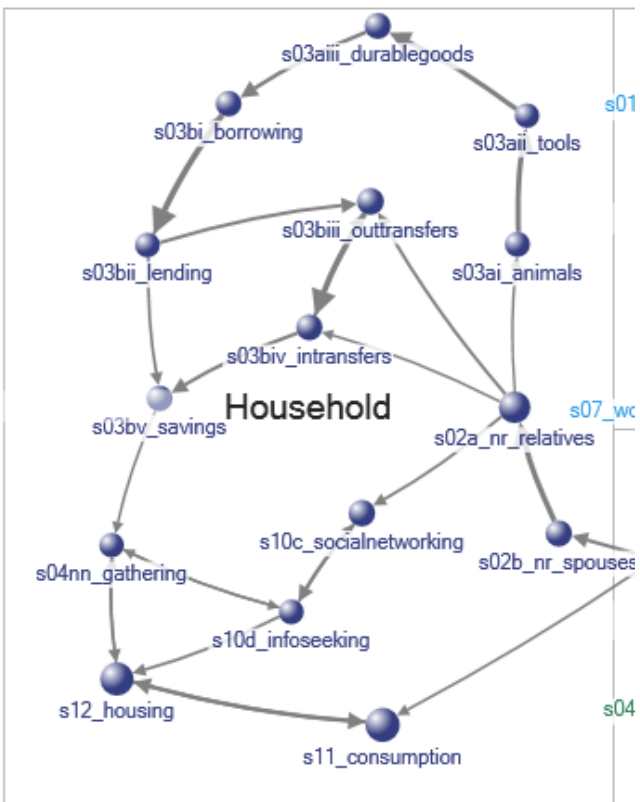
Forms Answer Help

HOUSEHOLD SURVEY Person Status Enterprise Status Agriculture

| Name | Background | Employment | Education | Migration | Health | Womens Health | Mens Health | Children | Pysch/Social |
|----------------|-------------|-------------|-------------|-------------|-------------|---------------|-------------|-------------|--------------|
| ADAM K (AK) | Started | Done | Done | Done | Started | ---n/a--- | Not Started | ---n/a--- | Not Started |
| AMINA A (MINA) | Not Started | Not Started | Not Started | Not Started | Not Started | Not Started | ---n/a--- | ---n/a--- | Not Started |
| ABDUL A | Not Started | Not Started | Not Started | Not Started | Not Started | ---n/a--- | Not Started | ---n/a--- | Not Started |
| TANLIDOW A | Not Started | Not Started | Not Started | Not Started | Not Started | ---n/a--- | ---n/a--- | Not Started | ---n/a--- |
| YUSSIF A | Done | ---n/a--- | Not Started | ---n/a--- | Not Started | ---n/a--- | ---n/a--- | Not Started | ---n/a--- |
| LAILATU A | Done | ---n/a--- | ---n/a--- | ---n/a--- | Not Started | ---n/a--- | ---n/a--- | Not Started | ---n/a--- |

Notes on most common block moves:

1. Tendency to move laterally or within the same questionnaire content
2. Optional sections introduce multiple, common paths



HOUSEHOLD SURVEY | Person Status | Enterprise Status | Agriculture

Survey Status

S0 Consent Forms

S01A: Consent Done S01B3: Consent for Under 26 Done

Rosters

S01B2: Household Roster Done Person Sections Started
 S04: Plot Roster Done Plot Sections Done
 S05: Non-Farm Enterprise Roster Done Non-Farm Enterprise Sections Not Started

Household Level Sections

S02B: Non-Resident Spouses Not Started S03Ai: Animals Done
 S02A: Non-Resident Relatives Not Started S03Aii: Tools Started
 S10C: Social Networking Started S03Aiii: Durable Goods Started
 S10D: Information Seeking Done S03Bi: Borrowing Not Started
 S11: Household Consumption Not Started S03Bii: Lending Done
 S12: Housing Characteristics Not Started S03Biii: Out-Transfers ----n/a----
 S04NN: Gathering Done S03Biv: In-Transfers ----n/a----
 S03Bv: Savings Done

Notes on most common block moves:

1. Tendency to work down the columns
2. Non-Resident Relatives and Household Consumption introduce multiple common paths

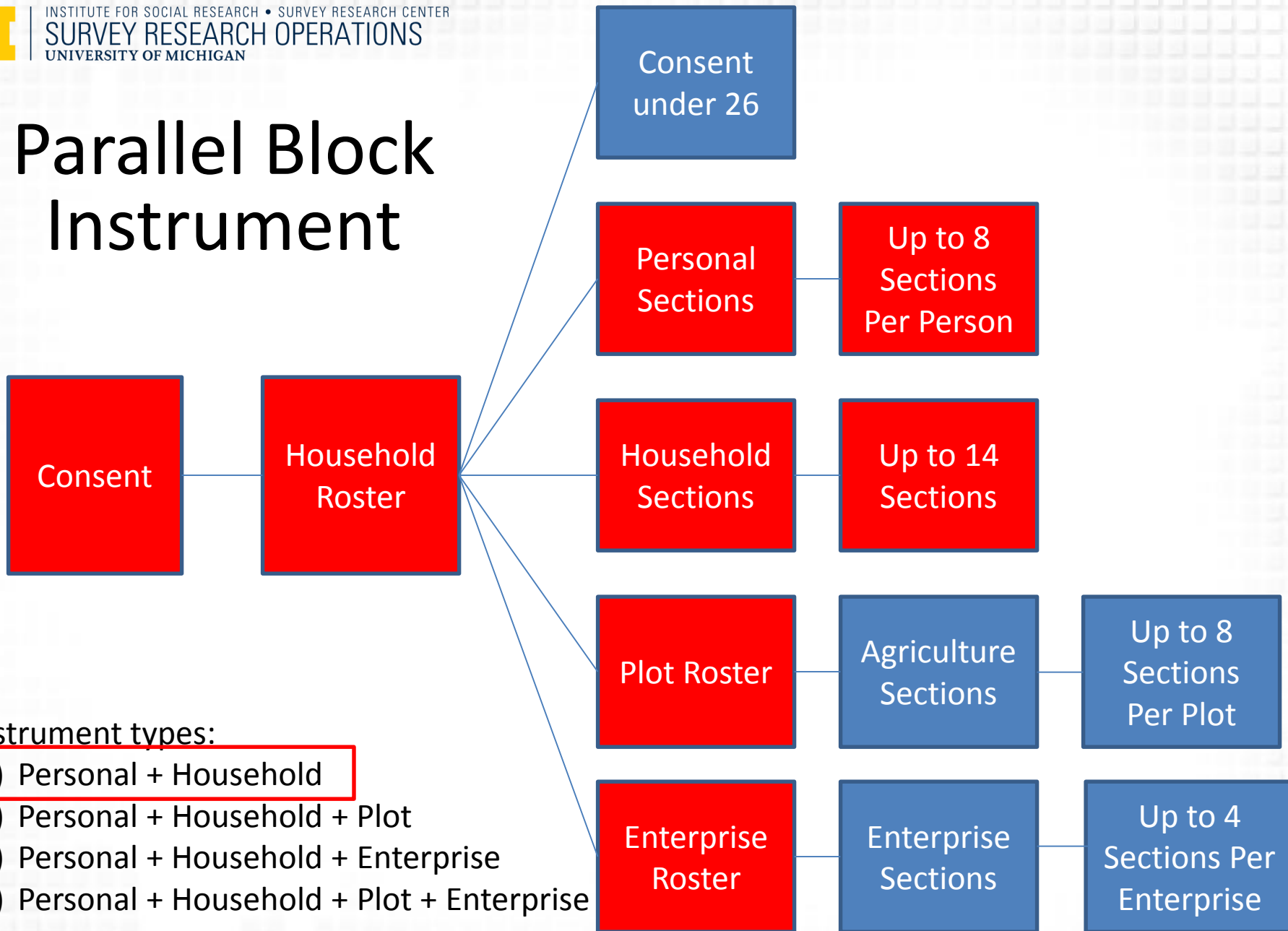


Instrument Parallel Blocks

- We should have some instructions about the optimal interviewing paths for the desired navigation for the instrument parallel blocks
- The parallel blocks programming needs to match with the optimal navigation design
- The **interviewer training** needs to emphasize the design and avoid “jumping around too much”
- How does interview navigation affect interview length?
 - Order of interview initiation
 - Movements between blocks



Parallel Block Instrument

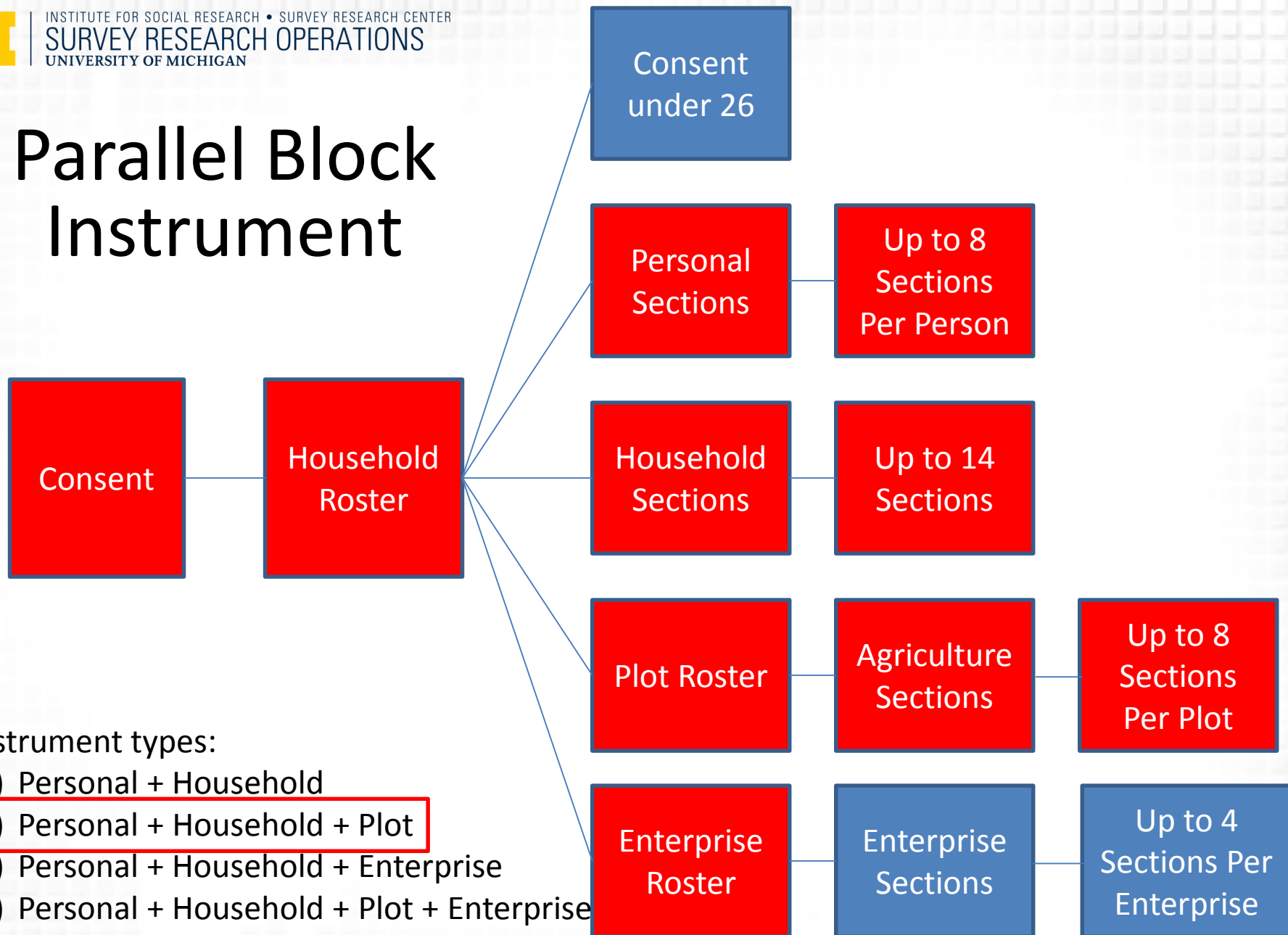


Instrument types:

- (1) Personal + Household
- (2) Personal + Household + Plot
- (3) Personal + Household + Enterprise
- (4) Personal + Household + Plot + Enterprise



Parallel Block Instrument

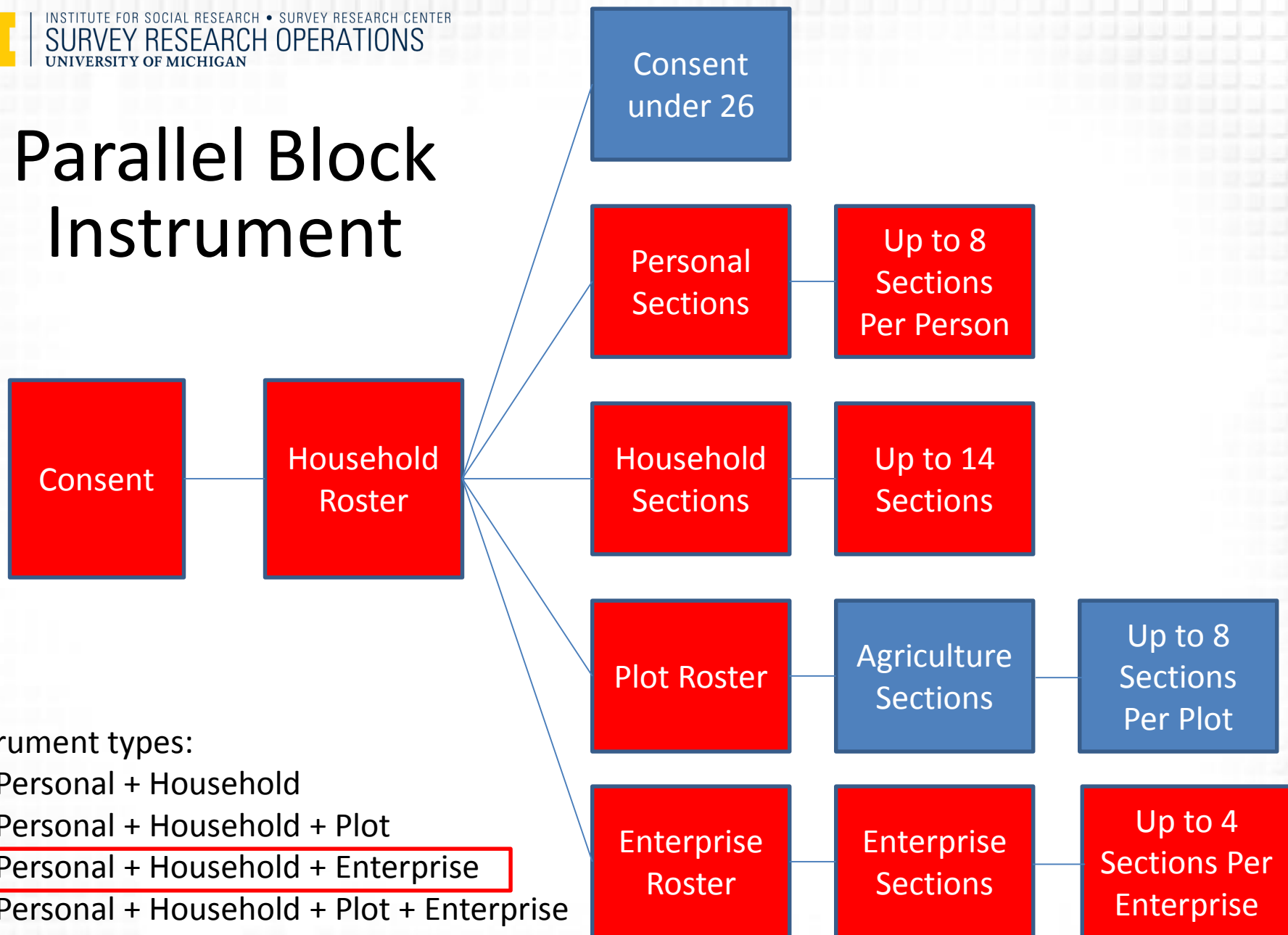


Instrument types:

- (1) Personal + Household
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- (3) Personal + Household + Enterprise
- (4) Personal + Household + Plot + Enterprise



Parallel Block Instrument

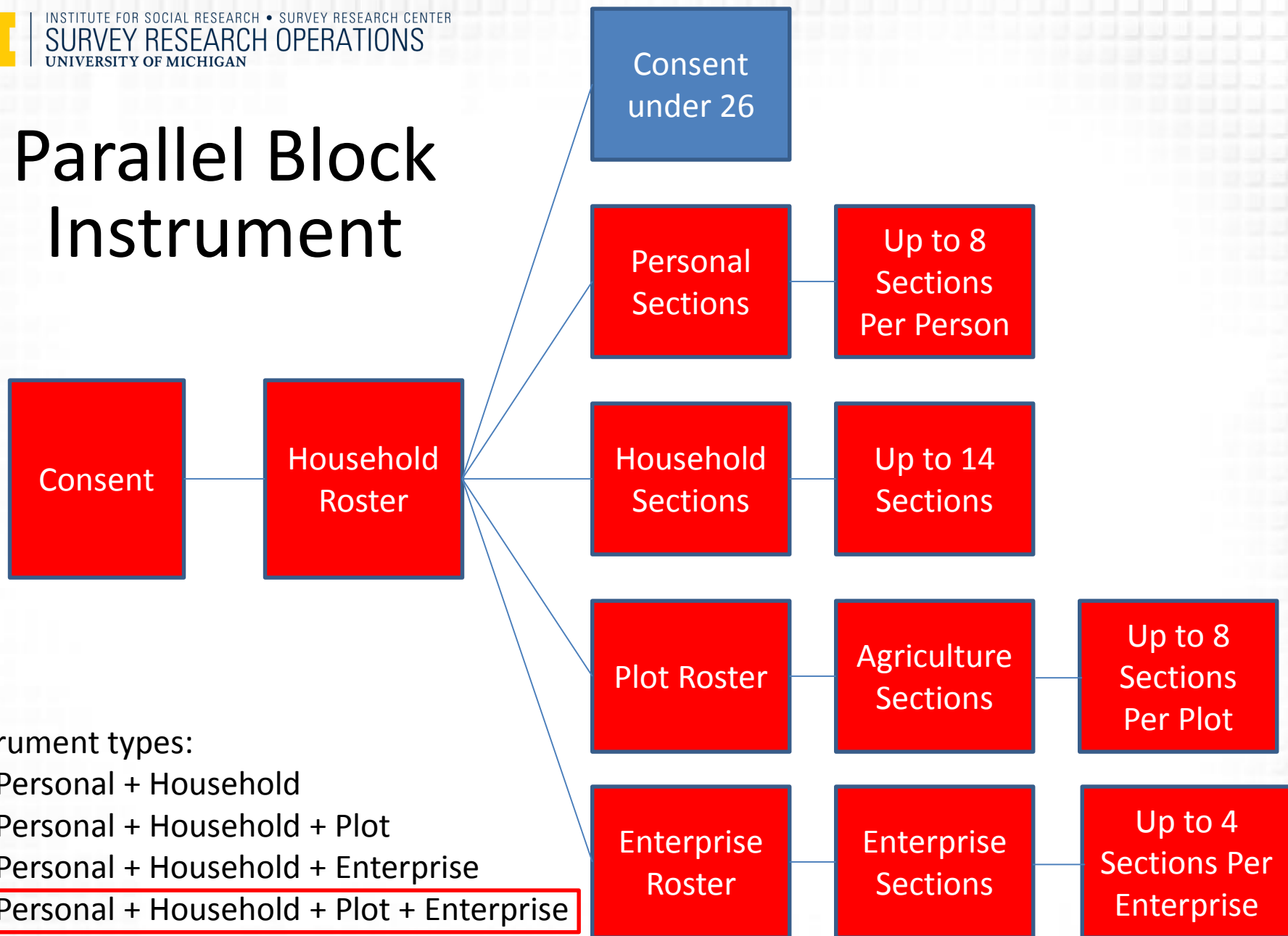


Instrument types:

- (1) Personal + Household
- (2) Personal + Household + Plot
- (3) Personal + Household + Enterprise**
- (4) Personal + Household + Plot + Enterprise



Parallel Block Instrument



Instrument types:

- (1) Personal + Household
- (2) Personal + Household + Plot
- (3) Personal + Household + Enterprise
- (4) Personal + Household + Plot + Enterprise**

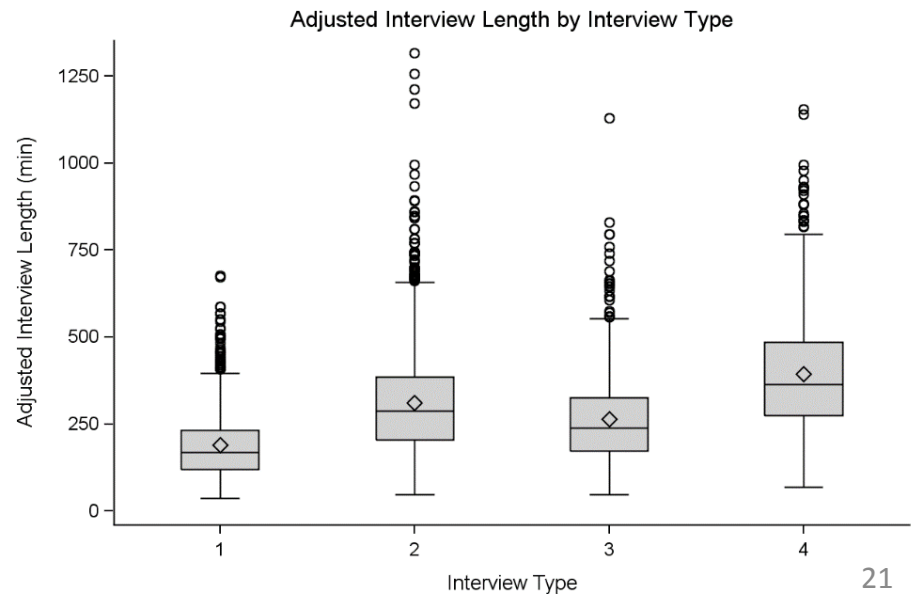
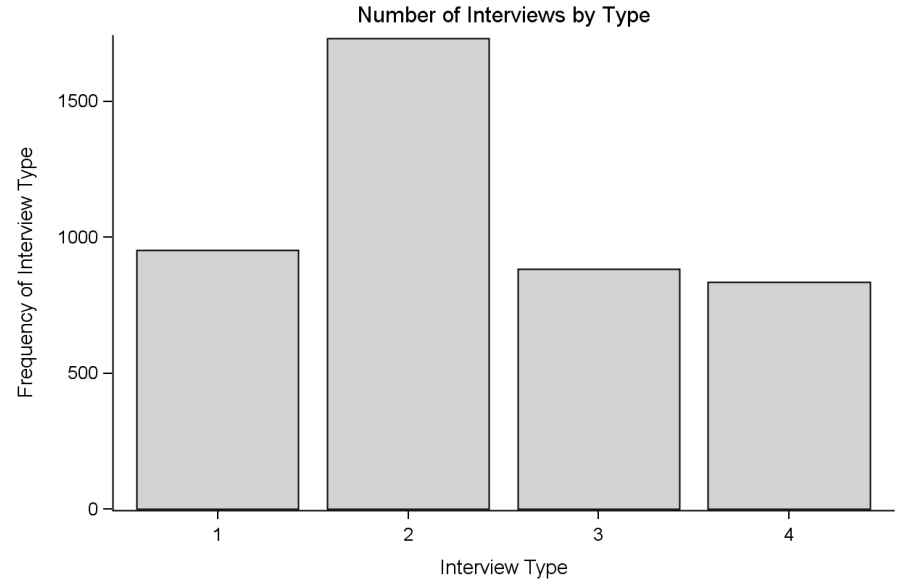


N = 4223 interviews

- Type 1) Personal + Household
- Type 2) Personal + Household + Plot
- Type 3) Personal + Household + Enterprise
- Type 4) Personal + Household + Plot + Enterprise

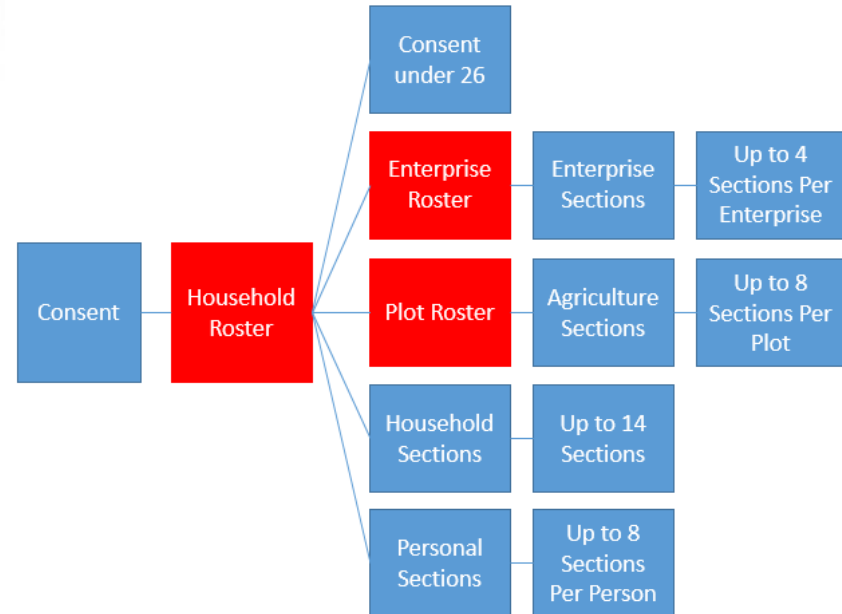
Interview Length

- Adjusted mean 290 (+/- 156) minutes
- Ranged from ~30 minutes to 22 hours
- Type 4 longer than all others ($P < 0.05$)
- Type 1 shorter than all others ($P < 0.05$)
- Type 2 & 3 not different

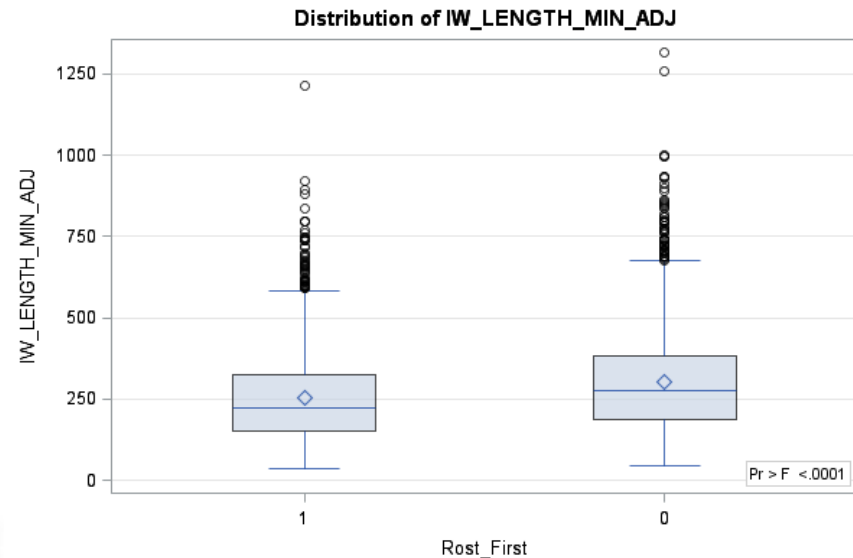


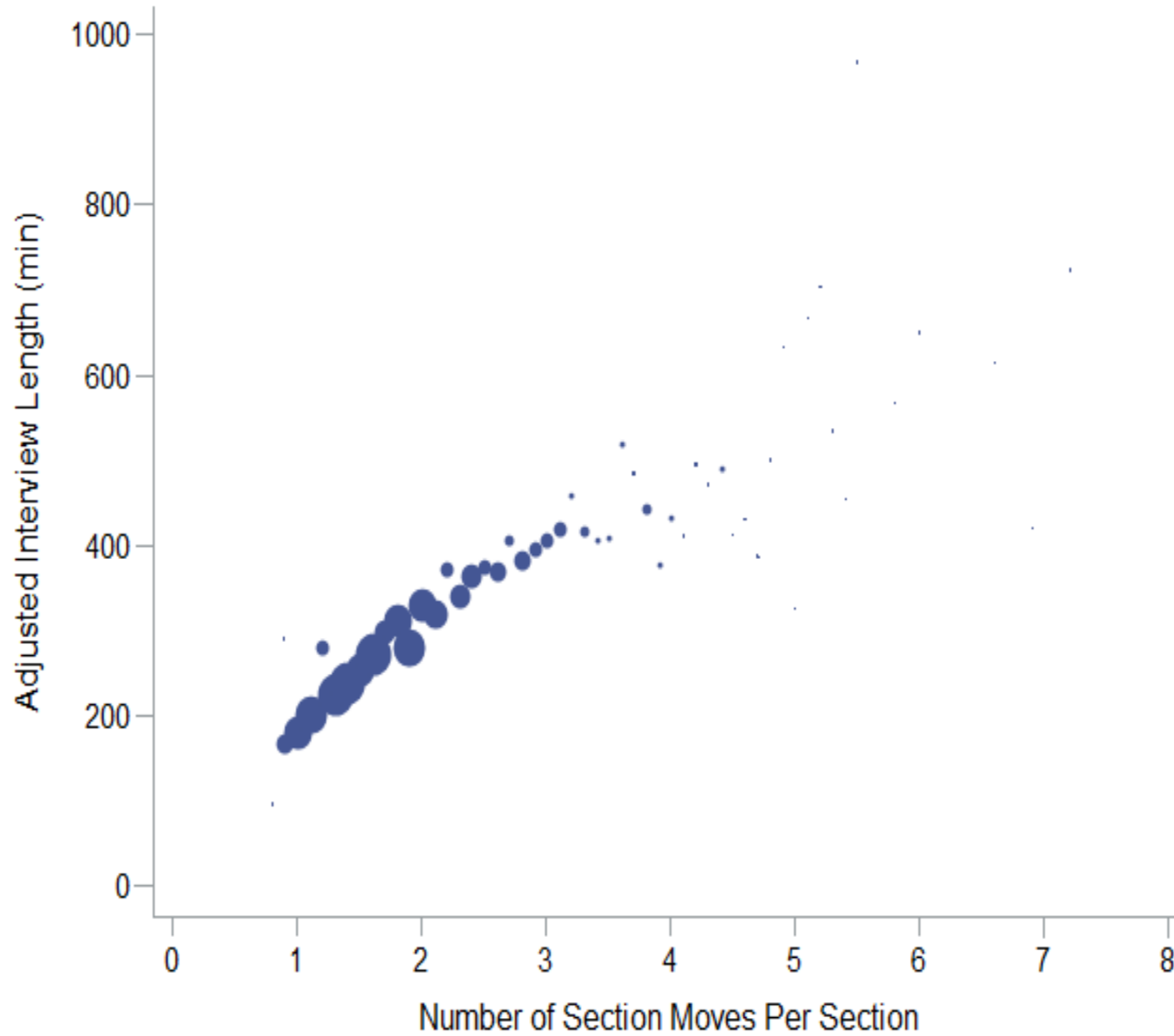
Order of Section Entry

- Split sample into two groups:
 - Completed rosters first
 - Others
- T-test comparison of IW length



- Rosters-first group showed significantly lower interview lengths
 - Ave Roster First: 257.3
 - Ave Others: 280.3
 - $P < .0001$







Some Observations

- Movement between blocks are with a cost
- Interview length increases with increasing movement between blocks
- Some movements are explainable with the instrument design but others are unsure --- why



Next Steps

- More research questions:
 - How are the block movement data associated with interviewer data?
 - How are the block movement data associated with Household size and total plot number?
- Have a debriefing to ask those “why” questions
- Apply all the lessons we learned in this wave to next wave instrument design



Acknowledgements

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Thank you for your attention!

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University of Michigan Survey Research Operations, Survey Research Center