Dimensions of Participation: Physical Measures

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FedCASIC Workshop
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Problem

- Declining response rates in household health surveys
- Concerns over non-response bias
  - Response rates are lower for some key subgroups
- Different groups have different barriers and reasons for non-response
  - Use behavioral as well as demographic data to tailor procedures in adaptive designs
- This presentation is focused on barriers and motivators specific to surveys with physical measures
  - Understand how these barriers vary across subgroups
- Adaptive designs can then minimize non-response biases by tailoring strategies to subgroups
Conceptual Framework for Understanding Reasons for Nonresponse

Engagement Components

1. Segmentation
   - Societal clusters

2. Design Factors
   - Mode, Topic, Length, Burden, Sponsorship

3. Willingness
   - Biometrics + Convenience
Mobile Panel Survey Methods

- To answer these questions, ICF conducted a mobile panel survey of a national adult sample.

- Panel data, while sometimes inadequate for derive representative population estimates, is useful for examining associations between outcomes and potential predictors.

- The results are based on unweighted data (as they should be).
Panel Survey Content

- Health status and health care utilization
- Health interest and personal importance of health issues
- Housing, community, and community involvement
- Volunteerism
- Political activity and voting
- Information related behaviors
- Close friends and attitudes toward friends
- Trust in government and institutions

- Propensity of respond to surveys (generally)
- Propensity to respond to government surveys
- Attitudes toward government surveys
- Propensity to participate in physical measures and specimen collection
- Willingness to participate in physical measures or blood draw
- Demographics
Experimental Conditions & Questions

- 50% phrased for “Health Study”; 50% phrased for “Federal Health Study”

- **Q50**: How willing would you be to have your **height and weight measured by a health representative in your home** for a [federal government] health study?

- **Q51**: How willing would you be to have your **blood pressure measured by a health representative in your home** for a [federal government] health study?

- **Q52**: How willing would you be to have a **health representative use a finger-stick to draw a small sample of blood from your finger in your home** for a [federal government] health study?

- **Q53**: How willing would you be to **measure your waist size in your home** for a [federal government] health study?
Q50: How willing would you be to have your height and weight measured by a health representative in your home for a [federal government] health study?

- All 3 groups have statistically significant associations
- $T_F$ or $T_H$ has a statistically significant association
- $(T_F$ or $T_H)$ and total have statistically significant associations
- Total has statistically significant association

$T_F = $ Federal Government Health Study Treatment

$T_H = $ Health Study Treatment
Q50 x Age Group: Statistically significant associations (combined data)

\[ p < 0.0001 \]
Q50 x Dichotomized Income: Statistically significant associations (combined data)

p<0.0001
Q51: How willing would you be to have your blood pressure measured by a health representative in your home for a [federal government] health study?

<table>
<thead>
<tr>
<th>Co-Variate</th>
<th>Age group</th>
<th>Gender</th>
<th>Income group</th>
<th>Income Dichotmized</th>
<th># people &gt;18</th>
<th>children &lt;6</th>
<th>Children &lt;6 and all others</th>
<th>Marriage status</th>
<th>Highest Grade</th>
<th>Work Last Week</th>
<th>Hispanic</th>
<th>Race Recode</th>
<th>Race/Ethn ICF</th>
<th>Race/Ethn ACS</th>
<th>Region</th>
<th>Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q51All</td>
<td>0.005</td>
<td>0.7704</td>
<td>&lt;.0001</td>
<td>&lt;.0001</td>
<td>0.4259</td>
<td>0.4254</td>
<td>0.0034</td>
<td>0.5665</td>
<td>0.0571</td>
<td>0.5698</td>
<td>0.0635</td>
<td>0.184</td>
<td>0.0145</td>
<td>0.093</td>
<td>0.4133</td>
<td>0.8000</td>
</tr>
<tr>
<td>Q51 Fed</td>
<td>0.0503</td>
<td>0.8243</td>
<td>0.0059</td>
<td>0.0002</td>
<td>0.7051</td>
<td>0.0486*</td>
<td>0.021</td>
<td>0.9599</td>
<td>0.284</td>
<td>0.5115</td>
<td>0.7234</td>
<td>0.2158</td>
<td>0.0324</td>
<td>0.6765</td>
<td>0.1298</td>
<td>0.4434</td>
</tr>
<tr>
<td>Q51 Hlth</td>
<td>0.018</td>
<td>0.9205</td>
<td>&lt;.0001</td>
<td>&lt;.0001</td>
<td>0.0624</td>
<td>0.09385*</td>
<td>0.2176</td>
<td>0.5635</td>
<td>0.1631</td>
<td>0.9473</td>
<td>0.0038</td>
<td>0.2375</td>
<td>0.0064</td>
<td>0.0182</td>
<td>0.7835</td>
<td>0.6642</td>
</tr>
</tbody>
</table>

- All 3 groups have statistically significant associations
- $T_F$ or $T_H$ has a statistically significant association
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- Total has statistically significant association

$T_F$ = Federal Government Health Study Treatment

$T_H$ = Health Study Treatment
Q51 x {Age Group and Income (Dichotomized)}: Statistically significant associations (combined data)

Q51: BP Measured by Health Rep at Home by Age Group
TREATMENT = None, DATA = NATIONAL

Q51: BP Measured by Health Rep at Home by Income
TREATMENT = None, DATA = NATIONAL

p=0.005

p<0.0001
Q52: How willing would you be to have a health representative use a finger-stick to draw a small sample of blood from your finger in your home for a [federal government] health study?

<table>
<thead>
<tr>
<th>Co-Variate</th>
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<th>Gender</th>
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<th>Race/Ethn ACS</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Q52 Combined</td>
<td>0.0400</td>
<td>0.3262</td>
<td>0.0006</td>
<td>&lt;.0001</td>
<td>0.2106</td>
<td>0.6891</td>
<td>0.0163</td>
<td>0.5007</td>
<td>0.0749</td>
<td>0.4639</td>
<td>0.1772</td>
<td>0.015</td>
<td>0.0016</td>
<td>0.0019</td>
<td>0.9928</td>
<td>0.7962</td>
</tr>
<tr>
<td>Q52 Fed</td>
<td>0.7864</td>
<td>0.3873</td>
<td>0.1909</td>
<td>0.0088</td>
<td>0.241</td>
<td>0.0343</td>
<td>0.0083</td>
<td>0.9503</td>
<td>0.0871</td>
<td>0.8981</td>
<td>0.6144</td>
<td>0.3101</td>
<td>0.1026</td>
<td>0.1158</td>
<td>0.9617</td>
<td>0.8937</td>
</tr>
<tr>
<td>Q52 Hlth</td>
<td>0.0079</td>
<td>0.5036</td>
<td>&lt;.0001</td>
<td>&lt;.0001</td>
<td>0.0734</td>
<td>0.4863</td>
<td>0.4979</td>
<td>0.0729</td>
<td>0.1209</td>
<td>0.3823</td>
<td>0.3669</td>
<td>0.0155</td>
<td>0.018</td>
<td>0.044</td>
<td>0.9164</td>
<td>0.2847</td>
</tr>
</tbody>
</table>

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- Total has statistically significant association

\( T_F = \) Federal Government Health Study Treatment

\( T_H = \) Health Study Treatment
Q52 x Dichotomized Income: Willing versus unwilling (combined data)

p<0.0001
Q53: Waist circumference is an important health measure. It is measured by YOU placing a tape measure over your clothes all the way around your body, at the level of your belly button. A health representative in your home would show you how to do it on themselves. How willing would you be to measure your waist size in your home for a [federal government] health study?

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<th>Race/Ethn ACS</th>
<th>Region</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Q53 Combined</td>
<td>&lt;.0001</td>
<td>0.0112</td>
<td>&lt;.0001</td>
<td>&lt;.0001</td>
<td>0.0075</td>
<td>0.2756</td>
<td>0.0008</td>
<td>0.3168</td>
<td>0.0607</td>
<td>0.1512</td>
<td>0.0497</td>
<td>0.0057</td>
<td>0.0039</td>
<td>0.0234</td>
<td>0.8379</td>
<td>0.9344</td>
</tr>
<tr>
<td>Q53 Fed</td>
<td>0.0002</td>
<td>0.0754</td>
<td>0.0142</td>
<td>0.0124</td>
<td>0.5591</td>
<td>0.2454*</td>
<td>0.0082</td>
<td>0.9189</td>
<td>0.6219</td>
<td>0.3781</td>
<td>0.7529</td>
<td>0.1615</td>
<td>0.4284</td>
<td>0.4772</td>
<td>0.6009</td>
<td>0.8146</td>
</tr>
<tr>
<td>Q53 Hlth</td>
<td>0.0045</td>
<td>0.1838</td>
<td>0.0008</td>
<td>&lt;.0001</td>
<td>0.0009</td>
<td>0.2491*</td>
<td>0.0619</td>
<td>0.1452</td>
<td>0.1367</td>
<td>0.4256</td>
<td>0.0639</td>
<td>0.1429</td>
<td>0.0084</td>
<td>0.0508</td>
<td>0.8937</td>
<td>0.6442</td>
</tr>
</tbody>
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$T_F$ = Federal Government Health Study Treatment
$T_H$ = Health Study Treatment
## Associations Between Willingness Outcomes and Possible Predictors (by Condition)

<table>
<thead>
<tr>
<th>Outcome (Willingness)</th>
<th>Age Group</th>
<th>Gender</th>
<th>Income Group</th>
<th>Income Dichot.</th>
<th># People in Home</th>
<th>Children &lt;6</th>
<th>Children &lt;6 and all others</th>
<th>Marriage Status</th>
<th>Highest Grade</th>
<th>Work Last Week</th>
<th>Race/Ethn ACS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q50: How willing would you be to have your height and weight measured by a health representative in your home for a federal government health study?</td>
<td>TFH</td>
<td>T</td>
<td>TH</td>
<td>TFH</td>
<td>H</td>
<td>F</td>
<td>TFH</td>
<td>TH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q51: How willing would you be to have your blood pressure measured by a health representative in your home for a federal government health study?</td>
<td>TFH</td>
<td>TFH</td>
<td>TFH</td>
<td></td>
<td>F</td>
<td>TF</td>
<td></td>
<td></td>
<td></td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>Q52: How willing would you be to have a health representative use a finger-stick to draw a small sample of blood from your finger in your home for a federal government health study?</td>
<td>TH</td>
<td>TH</td>
<td>TFH</td>
<td></td>
<td>F</td>
<td>TF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TH</td>
</tr>
<tr>
<td>Q53: How willing would you be to measure your waist size in your home for a federal government health study?</td>
<td>TFH</td>
<td>T</td>
<td>TFH</td>
<td>TFH</td>
<td>TH</td>
<td></td>
<td>TF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Q50 &amp; Q51 &amp; Q52 &amp; Q53): Not willing to do any physical measures + blood, partial willingness to do physical measures + blood, Somewhat Willing or Very Willing to do all physical measures + blood</td>
<td>TFH</td>
<td>TFH</td>
<td>TFH</td>
<td>T</td>
<td></td>
<td>TFH</td>
<td>T</td>
<td></td>
<td></td>
<td>TF</td>
<td>TFH</td>
</tr>
<tr>
<td>Q56: If you were invited to participate in the home interview, how likely would you be to agree to participate?</td>
<td>T*</td>
<td>T*</td>
<td>T*</td>
<td>T*</td>
<td></td>
<td>T*</td>
<td></td>
<td></td>
<td>T*</td>
<td>T*</td>
<td></td>
</tr>
</tbody>
</table>

* T = Statistically significant association for Total (both conditions)
* F = Statistically significant association for "Federal Health Study" condition
* H = Statistically significant association for "Health Study" condition
Assessing Effect of Federal Health Wording: Multivariate Models

- Multivariate logistic models for Q50, Q51, Q52, Q53
- Include dummy variable for the preface text (condition), Federal Health Survey vs Health Survey
- Also include all the previous demographics among the covariates
- Assess the independent effect of the sponsorship, and wording of these questions, on each indicator of willingness to participate (outcome measure)
Results of Logistic Regression Models

- The text condition is significant for Q51 and Q53 but not for Q50 and Q52.
- Respondents who saw “federal government health study” were less likely to be willing to participate in the given measure (Q51, Q53)

- Q51: How willing would you be to have your blood pressure measured by a health representative in your home for a [federal government] health study?
- Q53: How willing would you be to measure your waist size in your home for a [federal government] health study?
Results of Logistic Regression Models

- Q51: How willing would you be to have your blood pressure measured by a health representative in your home for a [federal government] health study?
Results of Logistic Regression Models

- Q53: How willing would you be to **measure your waist size in your home** for a [federal government] health study?

<table>
<thead>
<tr>
<th>Effect</th>
<th>Point Estimate</th>
<th>95% Wald Confidence Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>textr1</td>
<td>0.769</td>
<td>0.637 - 0.928</td>
</tr>
<tr>
<td>age40_59</td>
<td>0.810</td>
<td>0.637 - 1.029</td>
</tr>
<tr>
<td>age60_up</td>
<td>0.814</td>
<td>0.574 - 1.154</td>
</tr>
<tr>
<td>male</td>
<td>1.285</td>
<td>1.057 - 1.563</td>
</tr>
<tr>
<td>income_reported</td>
<td>2.239</td>
<td>1.621 - 3.094</td>
</tr>
<tr>
<td>child16</td>
<td>1.170</td>
<td>0.870 - 1.575</td>
</tr>
<tr>
<td>some_college</td>
<td>1.350</td>
<td>1.048 - 1.739</td>
</tr>
<tr>
<td>ugrad_degree</td>
<td>1.257</td>
<td>0.989 - 1.598</td>
</tr>
<tr>
<td>grad_degree</td>
<td>1.641</td>
<td>1.170 - 2.302</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effect</th>
<th>Point Estimate</th>
<th>95% Wald Confidence Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>never_married</td>
<td>1.223</td>
<td>0.949 - 1.577</td>
</tr>
<tr>
<td>divorc_sep_widowed</td>
<td>1.176</td>
<td>0.879 - 1.572</td>
</tr>
<tr>
<td>livepartner</td>
<td>1.429</td>
<td>1.010 - 2.024</td>
</tr>
<tr>
<td>nojob_looking</td>
<td>1.301</td>
<td>0.835 - 2.028</td>
</tr>
<tr>
<td>nojob_disabl</td>
<td>1.378</td>
<td>0.916 - 2.073</td>
</tr>
<tr>
<td>nojob_homemaker</td>
<td>1.187</td>
<td>0.796 - 1.770</td>
</tr>
<tr>
<td>nojob_retired</td>
<td>0.843</td>
<td>0.587 - 1.210</td>
</tr>
<tr>
<td>job_oth</td>
<td>0.996</td>
<td>0.597 - 1.661</td>
</tr>
<tr>
<td>acs_black</td>
<td>1.368</td>
<td>0.982 - 1.908</td>
</tr>
<tr>
<td>acs_hisp</td>
<td>1.135</td>
<td>0.879 - 1.466</td>
</tr>
<tr>
<td>acs_aspi</td>
<td>0.963</td>
<td>0.577 - 1.606</td>
</tr>
<tr>
<td>acs_other</td>
<td>0.645</td>
<td>0.413 - 1.006</td>
</tr>
</tbody>
</table>
Summary of Significant Characteristics

- **Age, income, children under 6 and all others, and race/ethnicity** are significant predictors across all Willingness to Participate variables.
  - Willingness to participate in physical measure data collection decreases as age increases.
  - Greater willingness to participate in physical measure data collection is associated with willingness to provide an income amount.
  - Respondents in households with children under 6 are more willing to participate in physical measure data collection than others.
Conclusions

- For the questions assessing willingness to participate in biometric measurements, the characteristics which are most significant are: Age group, Race/Ethnicity and Income.
- Multivariate models suggest that the sponsorship preface (Federal Health Survey) has an independent impact on willingness to participate.
Next Steps

- Additional logistic regression models with interactions and fewer predictors
- Classification and regression models for the willingness to participate outcomes
  - Allow interactions between predictors
  - Provide a better sense of the relative importance of predictors
Thank you!

- **Contact information:**
  - [Ronaldo.lachan@ICF.com](mailto:Ronaldo.lachan@ICF.com)