# Dimensions of Participation: Physical Measures

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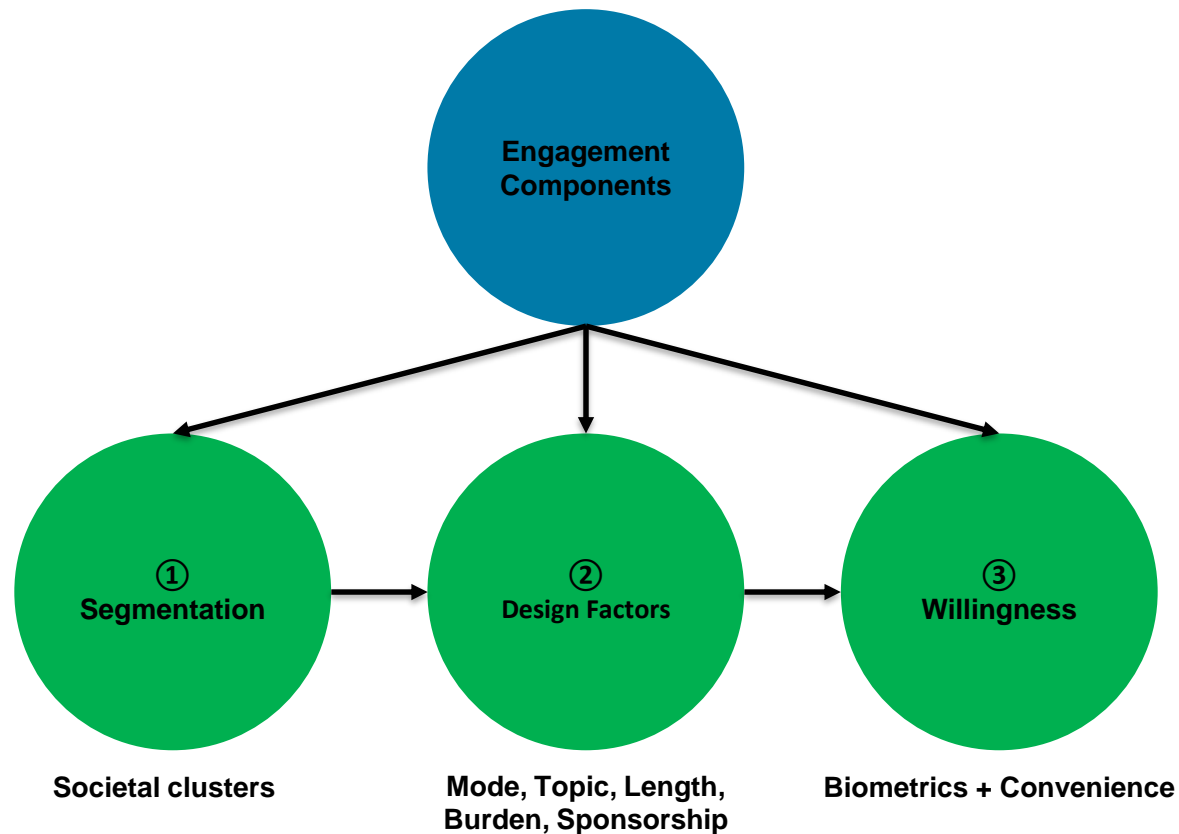
**FedCASIC Workshop**

**April 17, 2019**

# 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**

② **Design Factors**

③ **Willingness**

Societal clusters

Mode, Topic, Length, Burden, Sponsorship

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)

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# 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?

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# 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?
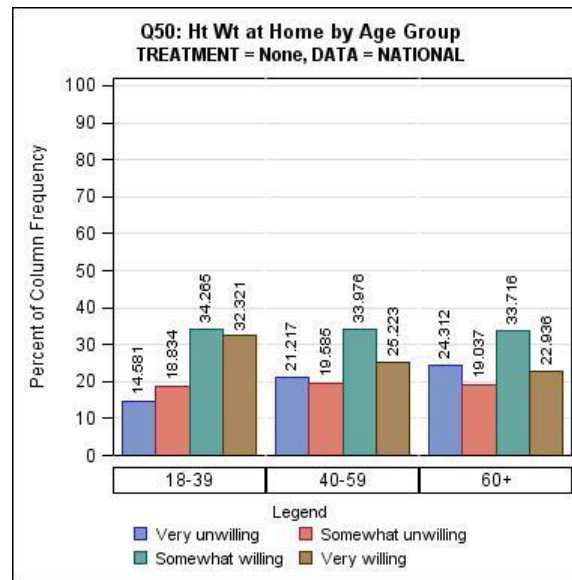
| Co-Variate | Age group | Gender | Income group | Income Dichotmized | # people >18 | children <6 | Children <6 and all others | Marriage status | Highest Grade | Work Last Week | Hispanic | Race Recode | Race/Ethn ICF | Race/Ethn ACS | Region | Division |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q50 | <.0001 | 0.0123 | <.0001 | <.0001 | 0.1702 | 0.1486 | 0.0001 | 0.8262 | 0.0225 | 0.3096 | 0.005 | 0.397 | 0.0044 | 0.0057 | 0.4766 | 0.6247 |
| Q50 Fed | 0.0042 | 0.271 | 0.0567 | 0.0007 | 0.532 | 0.0113* | 0.0021 | 0.9679 | 0.4672 | 0.4143 | 0.4351 | 0.7025 | 0.4812 | 0.6279 | 0.3722 | 0.3151 |
| Q50 Hlth | 0.0423 | 0.0814 | <.0001 | <.0001 | 0.0272 | 0.4308* | 0.0184 | 0.7919 | 0.0509 | 0.629 | 0.0082 | 0.1753 | 0.0076 | 0.0094 | 0.7734 | 0.5134 |

- 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

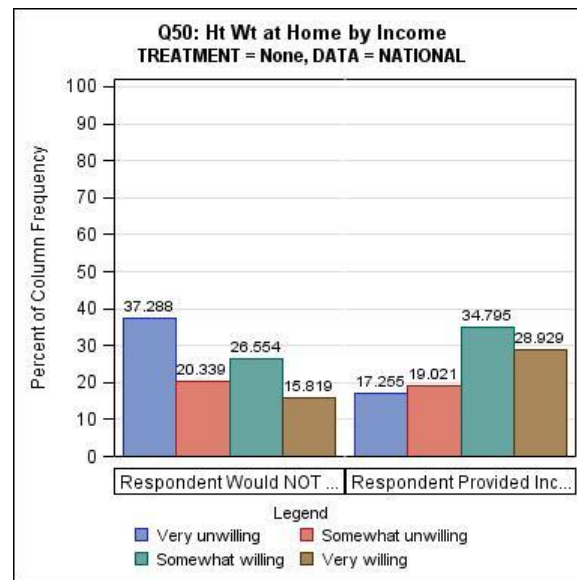$T_F$ = Federal Government Health Study Treatment

$T_H$ = Health Study Treatment

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# 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?
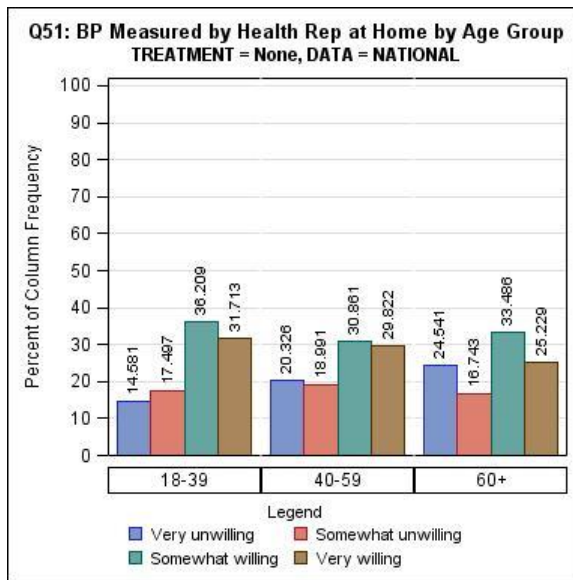
| Co-Variate | Age group | Gender | Income group | Income Dichotmized | # people >18 | children <6 | Children <6 and all others | Marriage status | Highest Grade | Work Last Week | Hispanic | Race Recode | Race/Ethn ICF | Race/Ethn ACS | Region | Division |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q51All | 0.005 | 0.7704 | <.0001 | <.0001 | 0.4259 | 0.4254 | 0.0034 | 0.5665 | 0.0571 | 0.5698 | 0.0635 | 0.184 | 0.0145 | 0.093 | 0.4133 | 0.8000 |
| Q51 Fed | 0.0503 | 0.8243 | 0.0059 | 0.0002 | 0.7051 | 0.0486* | 0.021 | 0.9599 | 0.284 | 0.5115 | 0.7234 | 0.2158 | 0.324 | 0.6765 | 0.1298 | 0.4434 |
| Q51 Hlth | 0.018 | 0.9205 | <.0001 | <.0001 | 0.0624 | 0.09385* | 0.2176 | 0.5635 | 0.1631 | 0.9473 | 0.0038 | 0.2375 | 0.0084 | 0.0182 | 0.7835 | 0.6642 |

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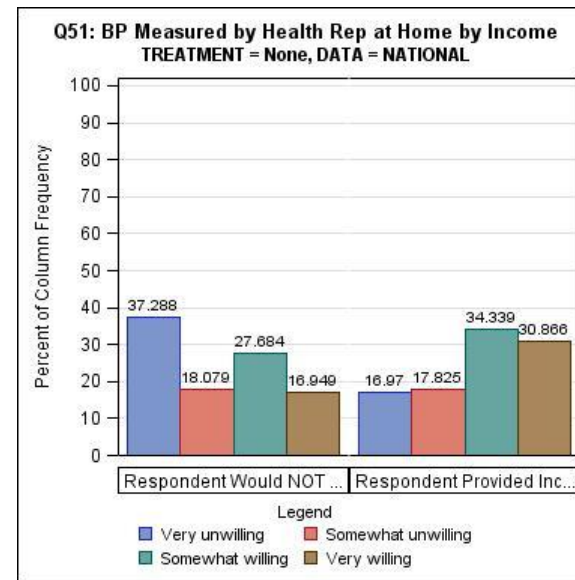- Total has statistically significant association

$T_F$ = Federal Government Health Study Treatment

$T_H$ = Health Study Treatment

# Q51 x {Age Group and Income (Dichotomized)}: Statistically significant associations (combined data)



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?

| Co-Variate | Age group | Gender | Income group | Income Dichotmized | # people >18 | children <6 | Children <6 and all others | Marriage status | Highest Grade | Work Last Week | Hispanic | Race Recode | Race/Ethn ICF | Race/Ethn ACS | Region | Division |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q52 Combined | 0.0400 | 0.3262 | 0.0006 | <.0001 | 0.2106 | 0.6891 | 0.0163 | 0.5007 | 0.0749 | 0.4639 | 0.1772 | 0.015 | 0.0016 | 0.0019 | 0.9928 | 0.7962 |
| Q52 Fed | 0.7864 | 0.3873 | 0.1909 | 0.0088 | 0.241 | 0.0343 | 0.0083 | 0.9503 | 0.0871 | 0.8981 | 0.6144 | 0.3101 | 0.1026 | 0.1158 | 0.9617 | 0.8937 |
| Q52 Hlth | 0.0079 | 0.5036 | <.0001 | <.0001 | 0.0734 | 0.4863 | 0.4979 | 0.0729 | 0.1209 | 0.3823 | 0.3669 | 0.0155 | 0.018 | 0.044 | 0.9164 | 0.2847 |

- All 3 groups have statistically significant associations

- $T_F$ or $T_H$ has a statistically significant association

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$T_F$ = Federal Government Health Study Treatment

$T_H$ = Health Study Treatment

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# 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?
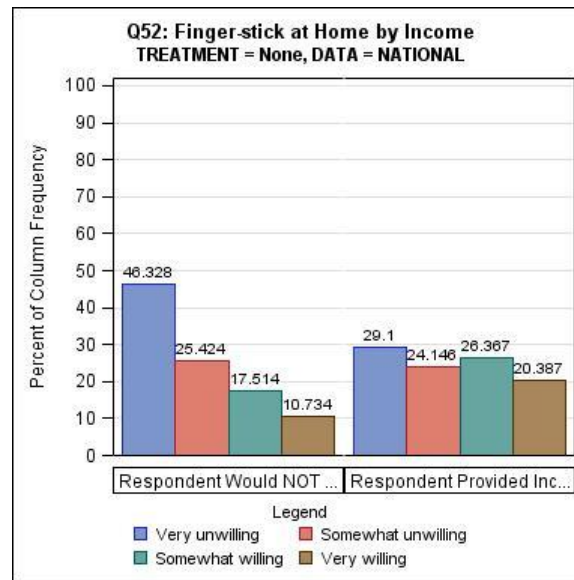
| Co-Variate | Age group | Gender | Income group | Income Dichotmized | # people >18 | children <6 | Children <6 and all others | Marriage status | Highest Grade | Work Last Week | Hispanic | Race Recode | Race/Ethn ICF | Race/Ethn ACS | Region | Division |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q53 Combined | <.0001 | 0.0112 | <.0001 | <.0001 | 0.0075 | 0.2756 | 0.0008 | 0.3168 | 0.0607 | 0.1512 | 0.0497 | 0.0657 | 0.0039 | 0.0234 | 0.8379 | 0.9344 |
| Q53 Fed | 0.0002 | 0.0754 | 0.0142 | 0.0124 | 0.5591 | 0.2454* | 0.0082 | 0.9189 | 0.6219 | 0.3781 | 0.7529 | 0.1615 | 0.4284 | 0.4772 | 0.6009 | 0.8146 |
| Q53 Hlth | 0.0045 | 0.1838 | 0.0008 | <.0001 | 0.009 | 0.2491* | 0.0619 | 0.1452 | 0.1367 | 0.4256 | 0.0639 | 0.1429 | 0.0084 | 0.0508 | 0.8937 | 0.6442 |

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$T_F$ = Federal Government Health Study Treatment

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# Associations Between Willingness Outcomes and Possible Predictors (by Condition)

| Outcome (Willingness) | Age Group | Gender | Income Group | Income Dichot. | # People in Home | Children <6 | Children <6 and all others | Marriage Status | Highest Grade | Work Last Week | Race/ Ethn ACS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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? | TFH | T | TH | TFH | H | F | TFH | | TH | | TH |
| 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? | TFH | | TFH | TFH | | F | TF | | | | H |
| 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? | TH | | TH | TFH | | F | TF | | | | TH |
| Q53: How willing would you be to measure your waist size in your home for a [federal government] health study? | TFH | T | TFH | TFH | TH | | TF | | | | TH |
| {Q50 & Q51 & Q52 & 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 | TFH | | TFH | TFH | T | | TFH | T | | TF | TFH |
| Q56: If you were invited to participate in the home interview, how likely would you be to agree to participate? | T* | T* | T* | T* | | | T* | | | T* | T* |

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

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# 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?

| Odds Ratio Estimates | | |
|---|---|---|
| **Effect** | **Point Estimate** | **95% Wald Confidence Limits** |
| textr1 | 0.819 | 0.678 | 0.990 |
| age40_59 | 0.754 | 0.592 | 0.959 |
| age60_up | 0.774 | 0.546 | 1.097 |
| male | 1.015 | 0.835 | 1.234 |
| income_reported | 2.266 | 1.643 | 3.126 |
| childlt6 | 1.317 | 0.973 | 1.783 |
| some_college | 1.262 | 0.978 | 1.629 |
| ugrad_degree | 1.088 | 0.856 | 1.384 |
| grad_degree | 1.473 | 1.048 | 2.069 |

| Odds Ratio Estimates | | |
|---|---|---|
| **Effect** | **Point Estimate** | **95% Wald Confidence Limits** |
| never_married | 1.123 | 0.871 | 1.449 |
| divorc_sep_widowed | 1.232 | 0.918 | 1.654 |
| livewpartner | 1.178 | 0.835 | 1.660 |
| nojob_looking | 1.037 | 0.673 | 1.597 |
| nojob_disabl | 1.274 | 0.847 | 1.914 |
| nojob_homemaker | 1.123 | 0.748 | 1.686 |
| nojob_retired | 0.880 | 0.612 | 1.264 |
| job_oth | 1.016 | 0.607 | 1.701 |
| acs_black | 1.403 | 1.003 | 1.962 |
| acs_hisp | 1.161 | 0.898 | 1.502 |
| acs_aspi | 0.652 | 0.396 | 1.073 |
| acs_other | 0.677 | 0.434 | 1.057 |

# 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?

| Odds Ratio Estimates | | |
|---|---|---|
| **Effect** | **Point Estimate** | **95% Wald Confidence Limits** |
| textr1 | 0.769 | 0.637 | 0.928 |
| age40_59 | 0.810 | 0.637 | 1.029 |
| age60_up | 0.814 | 0.574 | 1.154 |
| male | 1.285 | 1.057 | 1.563 |
| income_reported | 2.239 | 1.621 | 3.094 |
| childlt6 | 1.170 | 0.870 | 1.575 |
| some_college | 1.350 | 1.048 | 1.739 |
| ugrad_degree | 1.257 | 0.989 | 1.598 |
| grad_degree | 1.641 | 1.170 | 2.302 |

| Odds Ratio Estimates | | |
|---|---|---|
| **Effect** | **Point Estimate** | **95% Wald Confidence Limits** |
| never_married | 1.223 | 0.949 | 1.577 |
| divorc_sep_widowed | 1.176 | 0.879 | 1.572 |
| livewpartner | 1.429 | 1.010 | 2.024 |
| nojob_looking | 1.301 | 0.835 | 2.028 |
| nojob_disabl | 1.378 | 0.916 | 2.073 |
| nojob_homemaker | 1.187 | 0.796 | 1.770 |
| nojob_retired | 0.843 | 0.587 | 1.210 |
| job_oth | 0.996 | 0.597 | 1.661 |
| acs_black | 1.368 | 0.982 | 1.908 |
| acs_hisp | 1.135 | 0.879 | 1.466 |
| acs_aspi | 0.963 | 0.577 | 1.606 |
| acs_other | 0.645 | 0.413 | 1.006 |

# 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!

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