What does *Adaptive Design* mean to you?

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Some Questions to Consider

- What do *responsive* and *adaptive design* mean? Are they the same?
- Do these terms refer to something new in survey research?
- What do they imply about survey goals?
- What do they say about how surveys are executed?
- What do adaptive or responsive designs actually achieve?
- What do they portend for the future of surveys?
Data Collection Management

- No matter which term we use, responsive and adaptive design are about how to manage fieldwork
- Both involve striving for efficiency
- Both concerned with striking a balance between costs and errors
All about website design?
Latin: *re* (again); *spondere* (to swear)
Respond: “To say or do something in reply or as a reaction”
*Responsive*: “Reacting quickly and positively”
Adaptive

- All about clinical trials?
- Latin: *ad* (to); *aptare* (to fit)
- *Adapt*: “To fit or suit to something”
- Modify to meet new circumstances
- *Adaptive*: “fitting, apposite”
Comparison of Terms

- Both have **change** in behavior
- Both have **external trigger**
- The meanings are very close: “adapt in response to…”
- A sense that *adaptive* is more active, controlling; adapt **something** to conditions
Adaptive and Responsive in Survey Methodology

- Terms have been appropriated differently by individuals and organizations
- Adaptive employed by Schouten et al. (2013) and Wagner (2008), inter alia.
- Census: from CreD to CAD
- Propose that we settle on adaptive
Adaptation is NOT New

- Many surveys have adaptive elements, e.g.:
  - Sub-sampling non-respondents
  - Increasing contacts
  - Timing contacts
  - Increasing incentives
  - Tailoring survey invitations
  - Tailoring refusal letters
  - Switching modes
Some Adaptations ARE New

- More centralized, less *ad hoc*, more timely efforts, e.g.
- Using auxiliary data to tailor contacts
- Using auxiliary data, paradata and response data to alter contacts
- Switching modes based on auxiliary data, paradata and response data
- Motivated by a plan and enabled by new systems
Adaptive Design

- A data collection is adaptive to the extent that it:
  - **Plans** fieldwork to achieve cost and quality goals
  - **Monitors** process data and cost and quality indicators
  - Uses auxiliary frame data to **tailor** contact approaches (or impute or adjust)
  - Uses auxiliary data, paradata and response data to **change** contact approaches rapidly
  - Strikes data-based cost/quality tradeoffs
Similarities to Adaptive Design in Clinical Trials

FDA Guidance to Industry --
An adaptive design clinical study:

- includes a prospectively planned opportunity for modification of one or more specified aspects of the study design
- based on analysis of data from subjects in the study.
- Analyses of the accumulating study data are performed at prospectively planned time points within the study.
New Survey Goals

- Adaptive design gives further impetus to reconsider the response rate as the arbiter of quality
- Must consider, too, sample quality measures, key survey estimates quality
- Consider more explicitly the tradeoffs among different survey goals and between those goals and costs
- Adaptive design advances the total survey error perspective
Illustration: 2013 Census Test

- An operational study of NRFU procedures
- Use administrative records to “enumerate” some housing units
- Try an adaptive design approach for cases not enumerated with records
- Compare with a fixed enumeration approach
- Examine two telephone methods
- Reduced contacts
Sample

- Two matched sets of block groups in the Philadelphia area
- Block groups randomly assigned to adaptive or fixed case management approaches
- 2000 sample housing units selected from a universe of 2010 NRFU HHs within these block groups
- 1000 housing units for adaptive and 1000 for fixed case management treatments
## 2013 Census Test Design

<table>
<thead>
<tr>
<th>ADRECs used for “enumeration”</th>
<th>Adaptive Design</th>
<th>Fixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=528</td>
<td>Use administrative records to enumerate before field</td>
<td>N=511</td>
</tr>
<tr>
<td>-CATI telephone</td>
<td>Use administrative records to enumerate before field</td>
<td></td>
</tr>
<tr>
<td>-Max in-person Contacts 3</td>
<td>Decentralized telephone</td>
<td>-Max in-person Contacts 3</td>
</tr>
<tr>
<td>-Model determines days to contact</td>
<td>-FRs determine days to contact</td>
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<td>-CATI telephone</td>
<td>No use of administrative records</td>
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<td>-1 or 3 contacts</td>
<td>Decentralized telephone</td>
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Adaptive Components of 2013 Census Test

- Auxiliary data (phone numbers) added to frame
- Mode allocation and dynamic switching
- Auxiliary data (Admin Records) used to determine number of contacts
- Auxiliary data (2010 NRFU) used for initial response propensity model for case assignment
- Contact history paradata added to response propensity model during fieldwork
More Census Adaptive Design Research

- Some examples:
  - Upcoming Decennial tests
  - National Survey of College Graduates
  - NHIS collaboration: interviewer observations and stopping rules
  - Subsampling in Economic Census
  - Various capabilities in ACS
  - Response propensity scores in several surveys
Example Early Adaptive Design Achievements

- Impressive cost reductions in National Survey of Family Growth due, in part, to AD implementation
- Promising results from CATI implementations at Statistics Canada
- Suggestive findings in Decennial research and testing.
- Ancillary effects on research capabilities across organizations:
  - Systems
  - Employment models
  - Complementary capabilities – e.g. routing
Agenda

- We need much more research on all aspects of adaptive design
- Contributions from different kinds of survey organizations are essential
- Transparency is crucial.
- Understanding where adaptive design fits in current regulatory framework is important
- Resolving the “chicken and egg” problem
The Future

- The survey enterprise faces major challenges
- If we are going to collect data, we will have to do it differently
- Adaptive design is one key element in the Census plan for change
- Whether “full blown” or partial, the adaptive design perspective offers a way to manage the challenges of the current survey environment
References

Thank you

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