



# IMAGINE the POSSIBILITIES

With the global leader in data solutions and technology

Mobile Devices and Modular Survey Design

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# ■ Course Outline

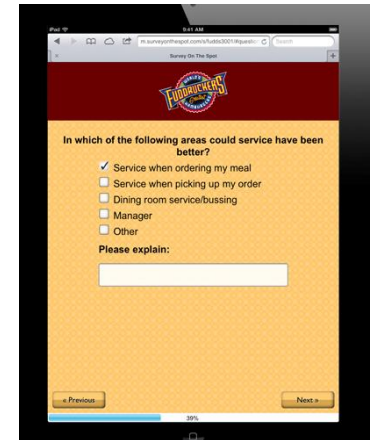
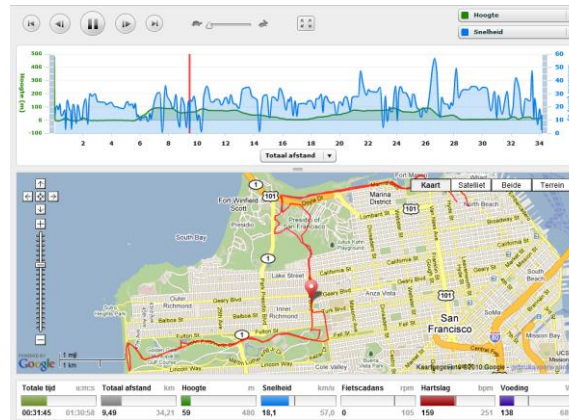
- 1) How Mobile Devices Are Changing the Way Surveys are Fielded
  - Sampling Strategies
  - Contact Methods
  - Passive Data Collection
- 2) How Mobile Devices Are Changing Questionnaire Design
  - General Guidelines
  - Specific Questions Adaption
  - Modularization
- 3) How to Deal with Modularized Surveys
  - Design Perspective
  - Data Analysis/Imputation Perspective



## Versatility of the Mobile Device

# Mobile Phones Have Many Sampling Strategies


- Sampling by Individuals/Phone Numbers
  - Random Digital Dial
  - Database Integration (voter files/customer lists)
  - Online Panels
- Sampling by Location
  - Event based Sampling
  - Geotracking
- Sampling by Occasion
  - Transactional/Customer Satisfaction Surveys
  - Diary Studies



# Mobile Phones Have Many Contact Channels

- Many Ways to Reach Respondents
  - Application, Online/Email, Text/SMS, Call/IVR
  - Make sure you have correct permissions (TCPA)

- Example: Tour of Utah Event

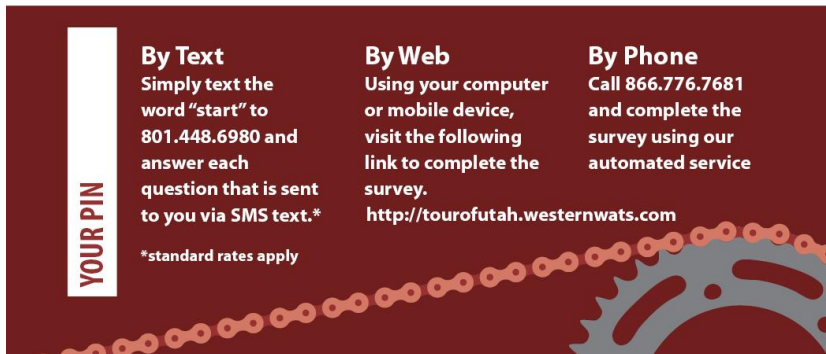
Choose how you want to share your opinion! 

**YOUR PIN**

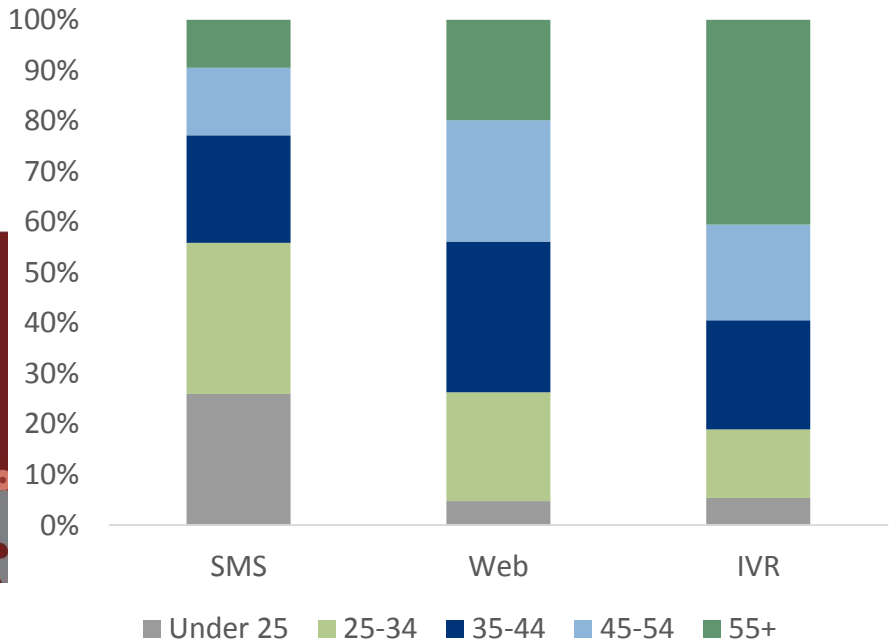
**By Text**  
Simply text the word "start" to 801.448.6980 and answer each question that is sent to you via SMS text.\*  
\*standard rates apply

**By Web**  
Using your computer or mobile device, visit the following link to complete the survey.  
<http://tourofutah.westernwats.com>

**By Phone**  
Call 866.776.7681 and complete the survey using our automated service



Different Contact Channel by Age



# ■ Mobile Phones Have Data to Passively Engage

- Financial or Purchase History
  - ApplePay, PayPal, Amazon
- Health/Exercise Information
  - FitBit, MyFitnessPal, Strava
- Social Network Information
  - Contact List, Facebook, Twitter, Instagram, Pinterest
- Passive Listening
  - Shazam, Pandora, Spotify



**Make Sure You Have Permission!**

**Give Something Back!**

# ■ First Group Activity

Brainstorm how mobile technology can solve traditional survey challenges

5 groups each with a separate case study to share with others.

Make sure you don't just talk about how you get the people, but talk about how you are going to use the data to achieve the research objective.

Reveal the limitations of your research. Clients don't like nasty surprises or empty promises.

Think out of the Box! Come up with a few solutions.



# Mobile Questionnaire Design Principles



## ■ Panelists Who Access Surveys With Mobile Devices

- You think that a standard survey is only for desktops and laptops
  - Over 25% of your sample will likely be on a mobile device
- You can capture and recognize the device that they are using
  - User agent string sent to any website can be parsed
  - Adaptive Survey Design
    - > Show Different Format Based on Different Devices
- Better Respondent Experience -> Better Data

# ■ General Principles

- You have less real estate, so keep it simple in design!
  - Instructions in particular need to be self evident, not explained
  - Remove graphics / background templates that are not helpful
- Length of survey
  - Depends on the audience
  - Most recommendation at 20 minutes maximum
  - Note that the same survey takes longer on mobile device!
- Make it easy for the respondents
  - Large buttons
  - No scrolling or only scrolling down

# ■ Guidelines by Question Type

- Single Select Options
  - Use graphics if able (potentially allow enlargement)
  - Make sure response options are less than 6 or in a defined order
  - Some informational ones with long lists (like the state question) can be done in dropdown
  
- Multi-Select Options
  - If following unimodal design rules make these yes/no items
  - Make it clear they can select multiple things
    - > (graphically as well as in the instructions)

# ■ Guidelines by Question Type

- Open Ends
  - Keep a decent sized box to indicate you want more detail
  - Don't put too many or make them optional
  - Mobile respondent much more likely to have same content with fewer words or phrases
- Short Response Open End
  - Use autosuggest if wanted
- Numeric
  - Make sure the units are clear
  - Don't have too many on one page

# ■ Guidelines by Question Type

- Grids
  - Don't have the answer options go off the screen
    - > Some respondents will scroll to find them, but bad user experience
    - > Can slightly reduce ratings scores
  - Ask the items in the grid one at a time
  - Keep the response options stable
  - Drag & Drop can be very effective
    - > Potentially drag down to a slider scale
  - Know that these will take longer

# ■ Guidelines by Question Type

- Highlighting/Text Selection
  - Make sure that text wraps so no left scrolling needed
- Ranking Questions
  - Make it clear what the ranks are
  - Can use drag and drop
  - Keep it under 6-7 items
  - If more than that consider MaxDiff as an alternative
- Conjoint
  - I personally would avoid it if complex
  - There is an alternative (hybrid of MaxDiff and Conjoint)

# ■ Guidelines by Question Type

- Sliders/Plots
  - Clearly label the axis
  - Allow them to drag onto plot or slider scale (or click)
  - Initial placement can make a big difference
  
- Dial Test/Video
  - **Don't use Flash**
  - Make sure the resolution matches the bandwidth
  - Confirm in survey if they saw it

# ■ Ways to Modularize a Survey

- Find the less important questions
  - Most important questions needed as “hooks”
  - Do not use basic demographics as normally good “hooks”
  - Many times this can be single items in a grid (attitudinal batteries)
  - Maybe it is different brands
- Allocate the less important questions to a module
  - First module gets all important questions + 1 **RANDOM** module
  - Then after finish invite (don't force) respondent to continue
    - > Within-Respondent Modularization (important to improving data quality)
  - Techniques to combine respondents
    - > Across-Respondent Modularization



## ■ Second Group Activity

Keep same groups and give every group the same questionnaire. Every group will take one section:

- Make recommendations on what to cut.
- Change the format to make mobile friendly.
- Feel free to reorder or change the survey.

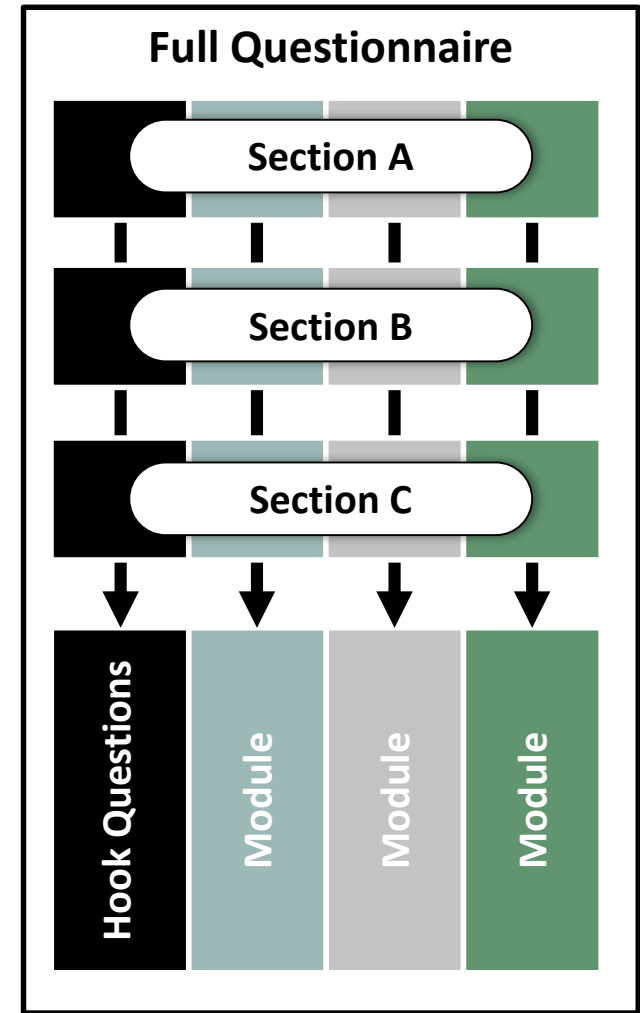
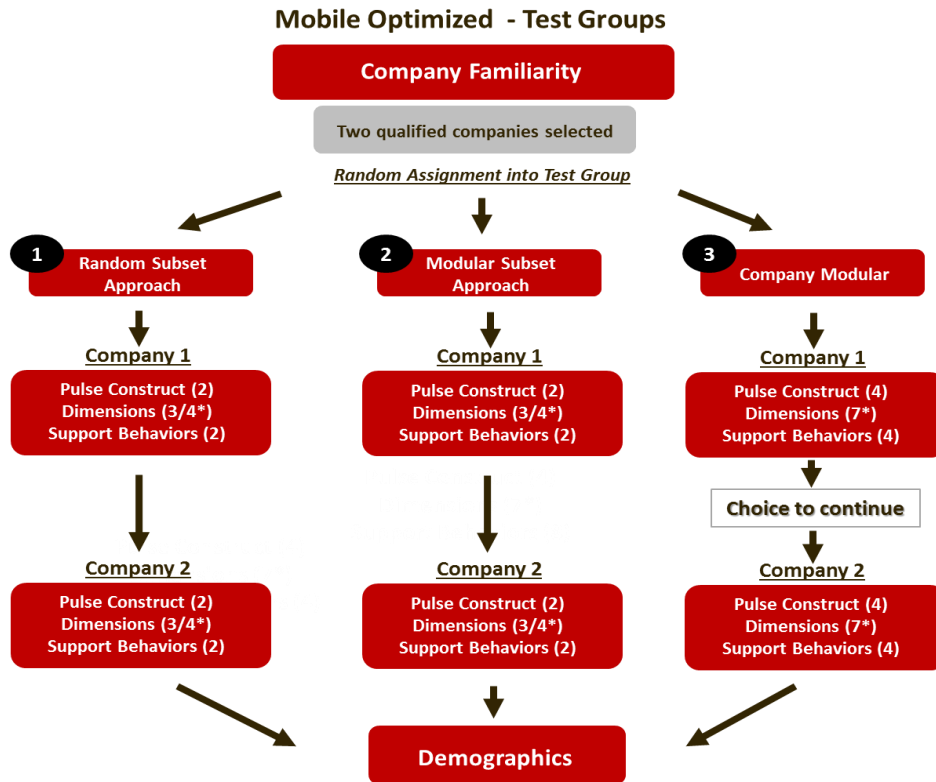
Client did run this study 5 years ago and would like to compare to the results back then. Luckily the client understands that the survey will now need to be adapted. They just want a heads up on what might not be as comparable.

Concentrate on the **Respondent Point of View** and **Don't Forget Modularization!**



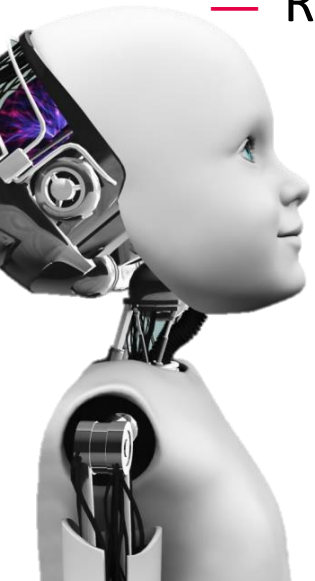
## Dealing with ■ Modularized Survey Data

# Many Ways to Modularize by Design

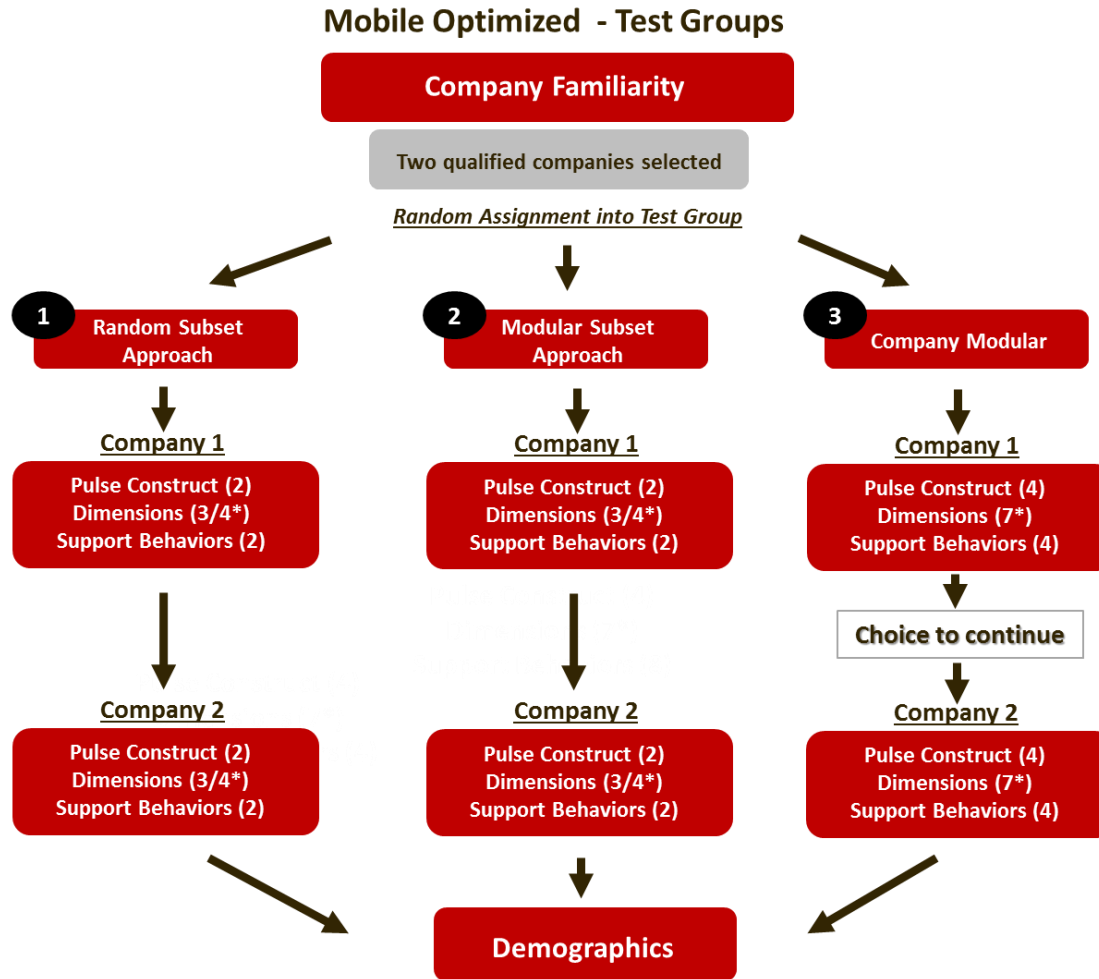


# ■ How to Fill In the Missing Data

- Data Imputation
  - Mean Imputation
  - Hot-Decking
  - Multiple Regression
  - Expectation-Maximization
  - Random Forest
- Respondent Matching
  - Nearest Neighbor
  - Cluster Analysis

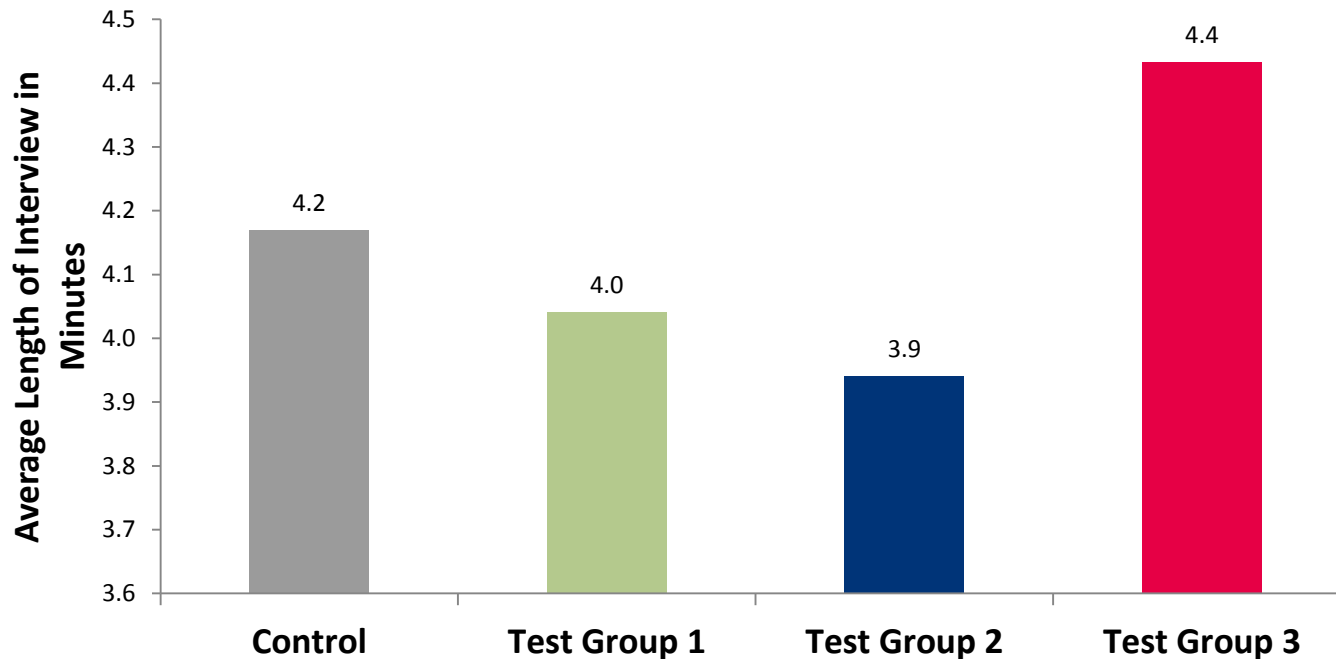


# Study 1 Results

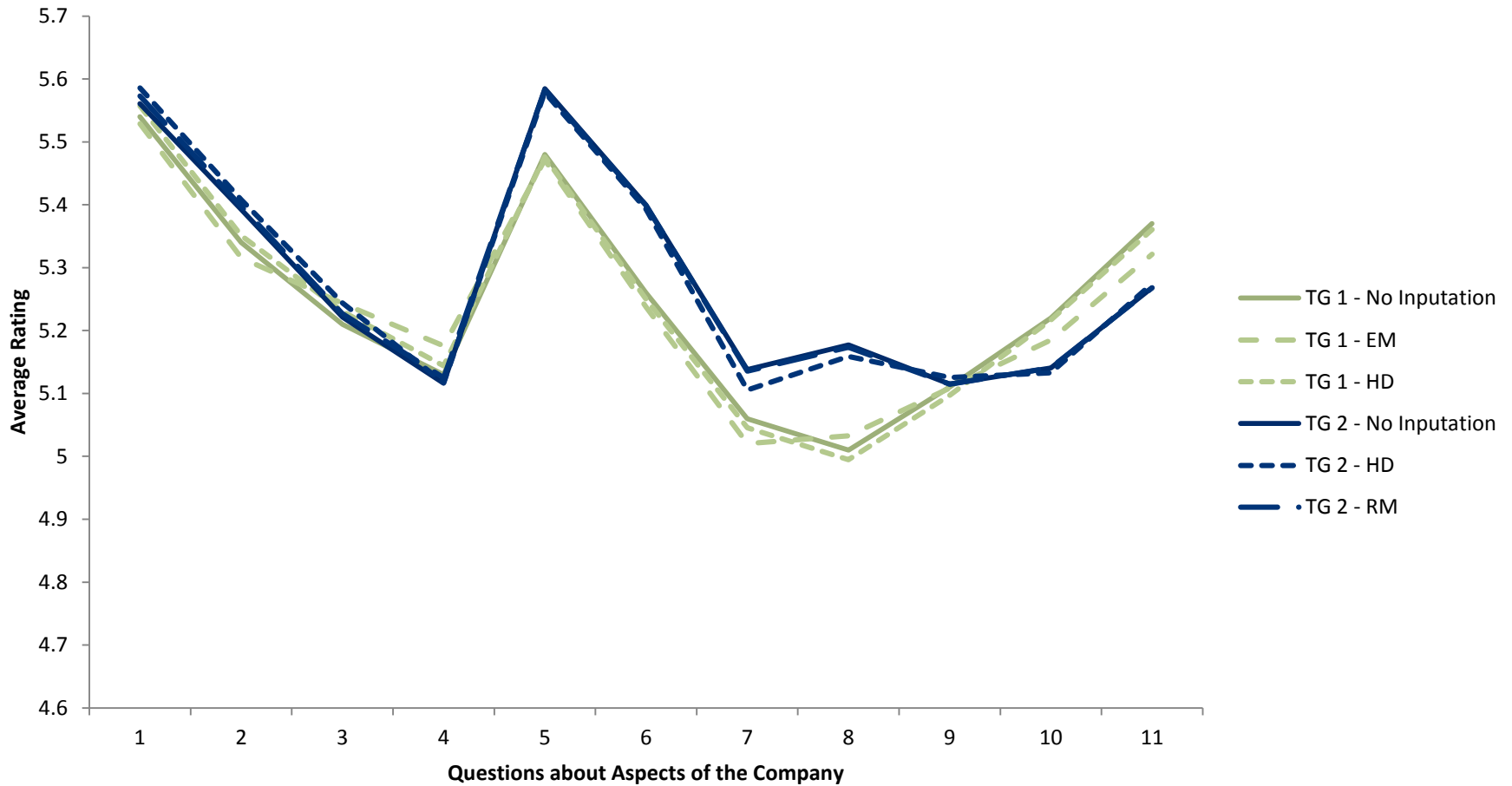


# ■ Efficiencies to be Gained in Modularizing

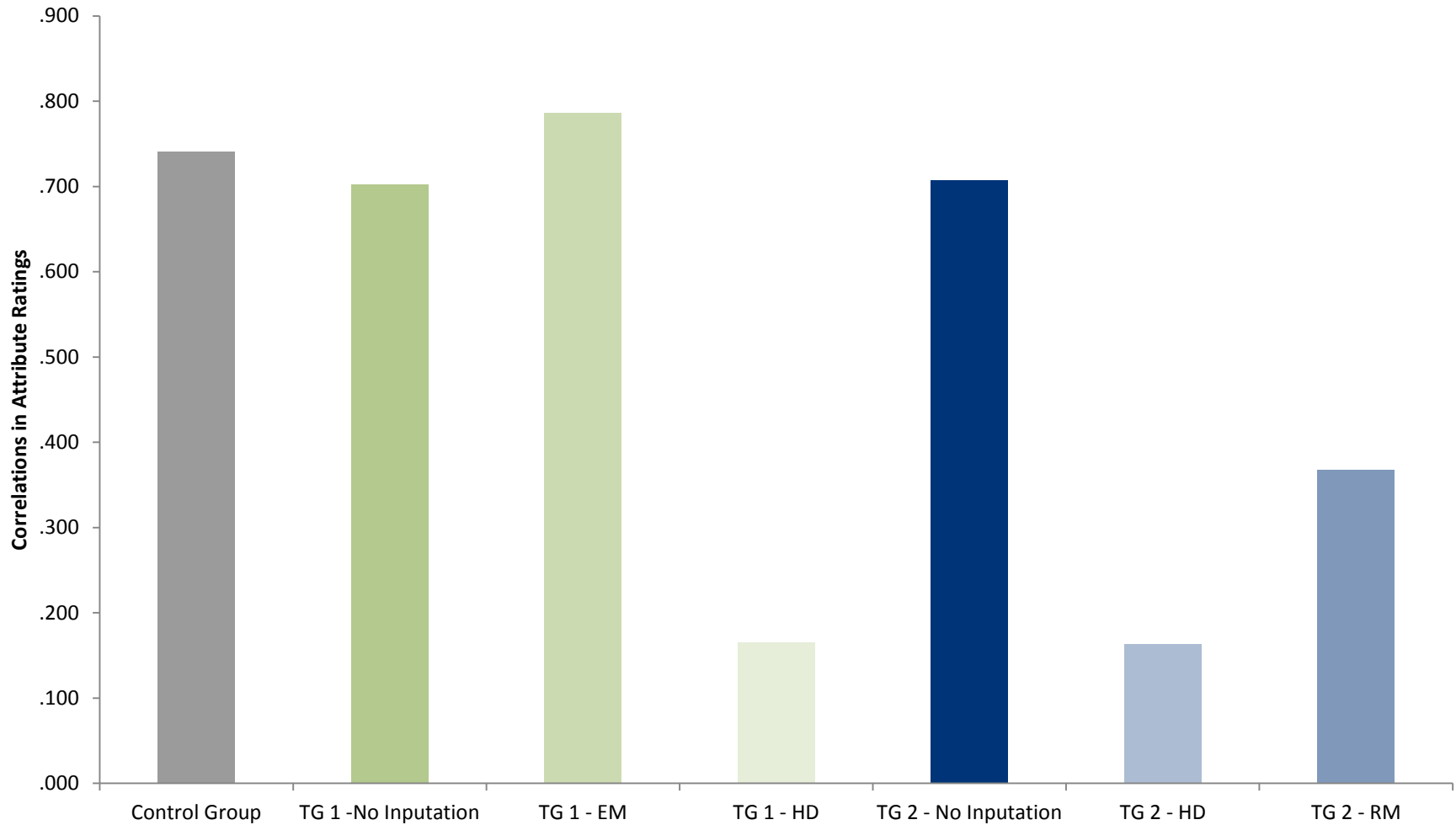
- Mobile format did increase the time it took the respondent
  - Modularizing by question more than made up for it
  - Over 90% of respondents in Test Group 3 volunteered to rate the second company



# ■ Imputation Does a Good Job of Capturing the Mean



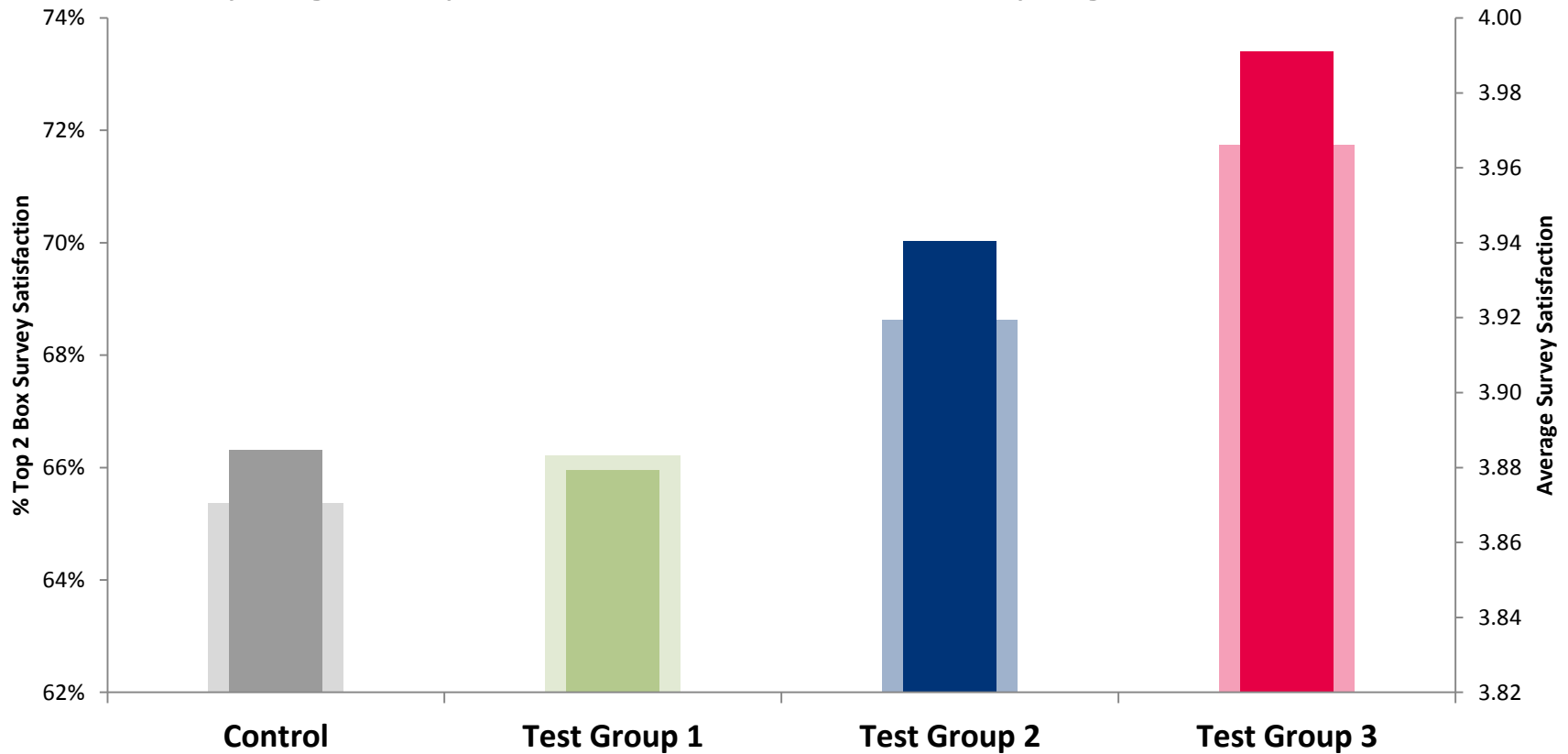
# EM Algorithm the Best at Preserving Correlations





# ■ Modularizing by Company Improves Experience

- Respondents did like the option to leave after one rating
  - Only slight improvement, but statistically significant



# Study 2 Results

## All Groups (Control and Test)



### Screener/Profiler Survey (6-minutes)

n=3,200 market rep smartphone owners  
Willing to participate via smartphone  
Assign online vs. mobile as quotas fill



### Control [Online Complete]

Complete 25-minute  
survey  
n=400



### Test [Online Modular]

Complete one module of  
10-minute survey  
Option to complete  
second and third modules  
n=400 per module



### Test [Mobile Modular]

Complete one module of  
10-minute survey  
Option to complete  
second and third modules  
n=400 per module



### Control [Mobile Complete]

Complete 25-minute  
survey  
n=400

# ■ Modularization Produced Slightly Better Data



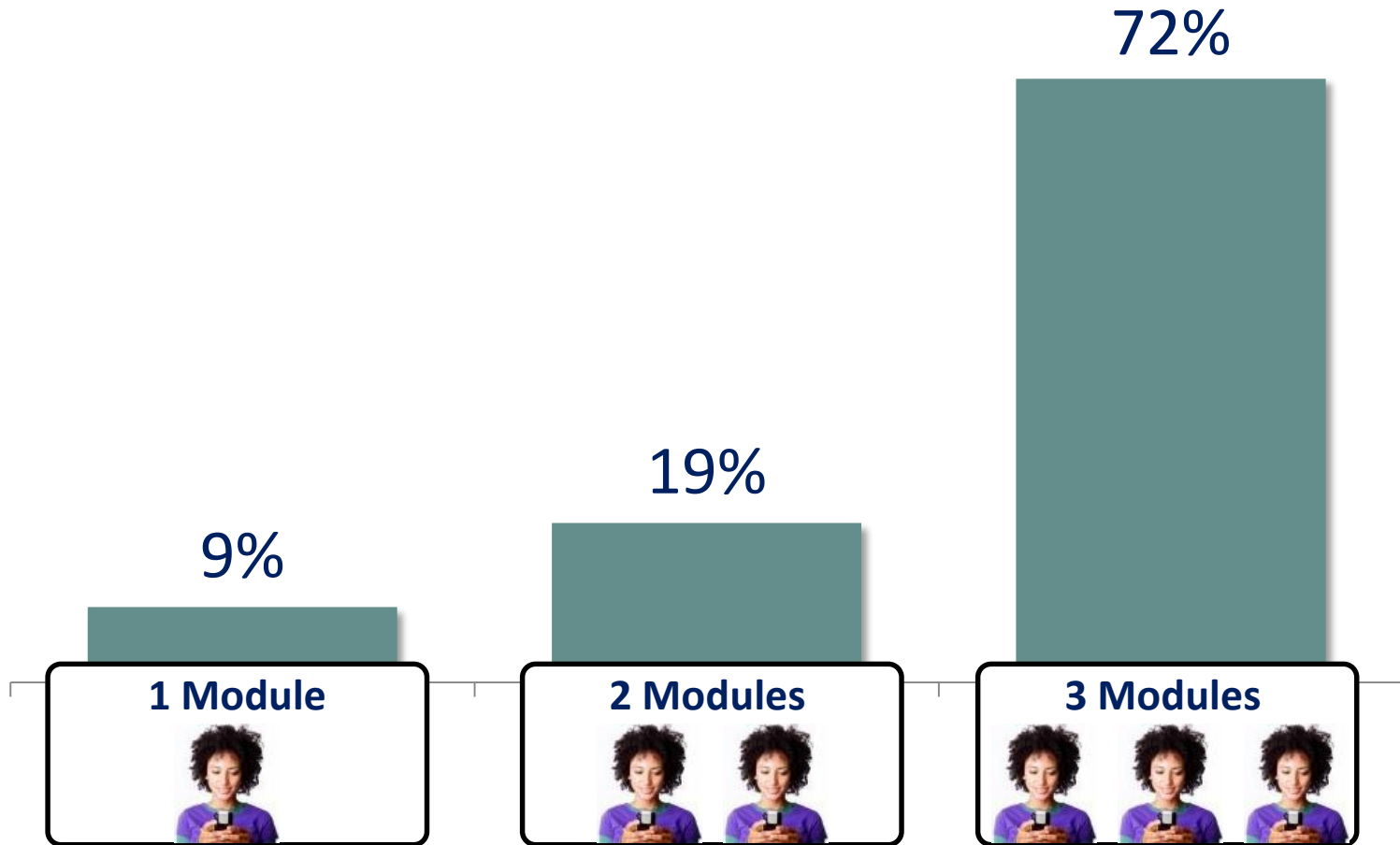
## Average Difference in Satisfaction Ratings

Satisfaction	-0.06	-0.03	-0.02	-0.14
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## Bad Data Checks

No Straightlining	84.0%	81.7%	82.3%	87.0%
Failed Grid 1 Instructions	17.6%	13.9%	12.8%	16.9%
Failed Grid 2 Instructions	17.3%	18.1%	9.7%	12.7%
Failed Zip Code Match	2.2%	1.6%	3.4%	1.4%

# ■ Within-Respondent Modularization Important

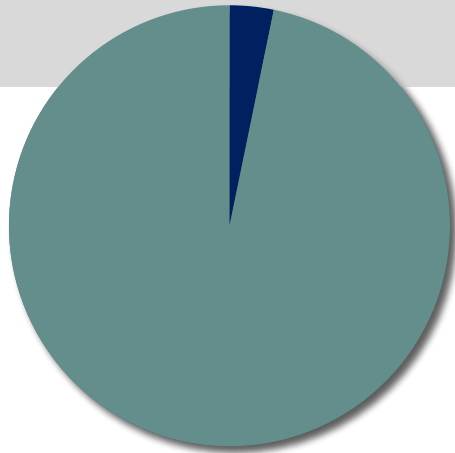


# ■ Modularization Did have Some Data Effects



## Online Modular

**Statistical:**  
No discernible  
differences

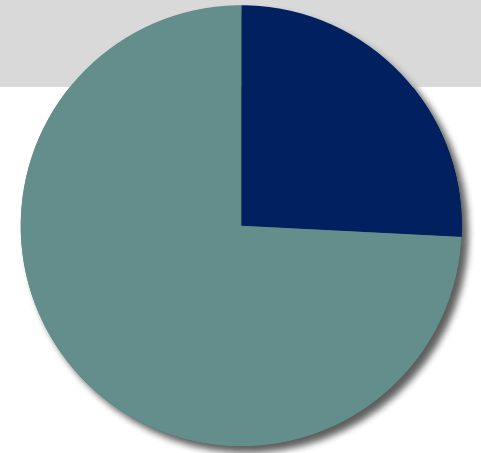


Compared  
to **Online  
Control**



## Mobile Modular

**Statistical:**  
25% of the questions  
showed statistical  
differences



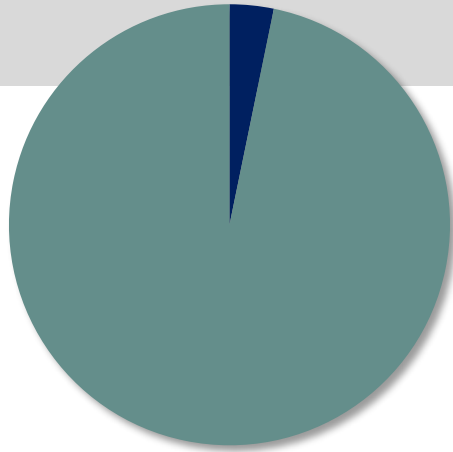
# ■ Practically No Difference Though



## Online Modular

### Practical:

Findings and resulting insights are the same



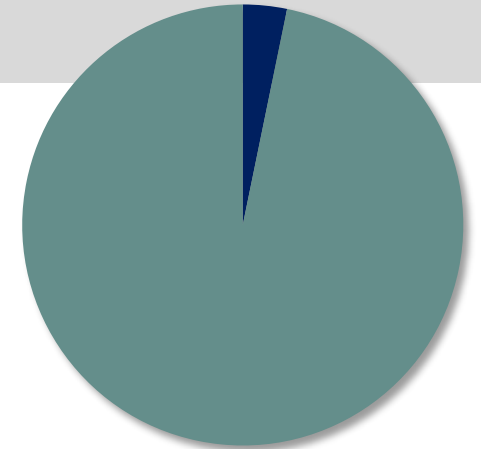
**Compared  
to Online  
Control**



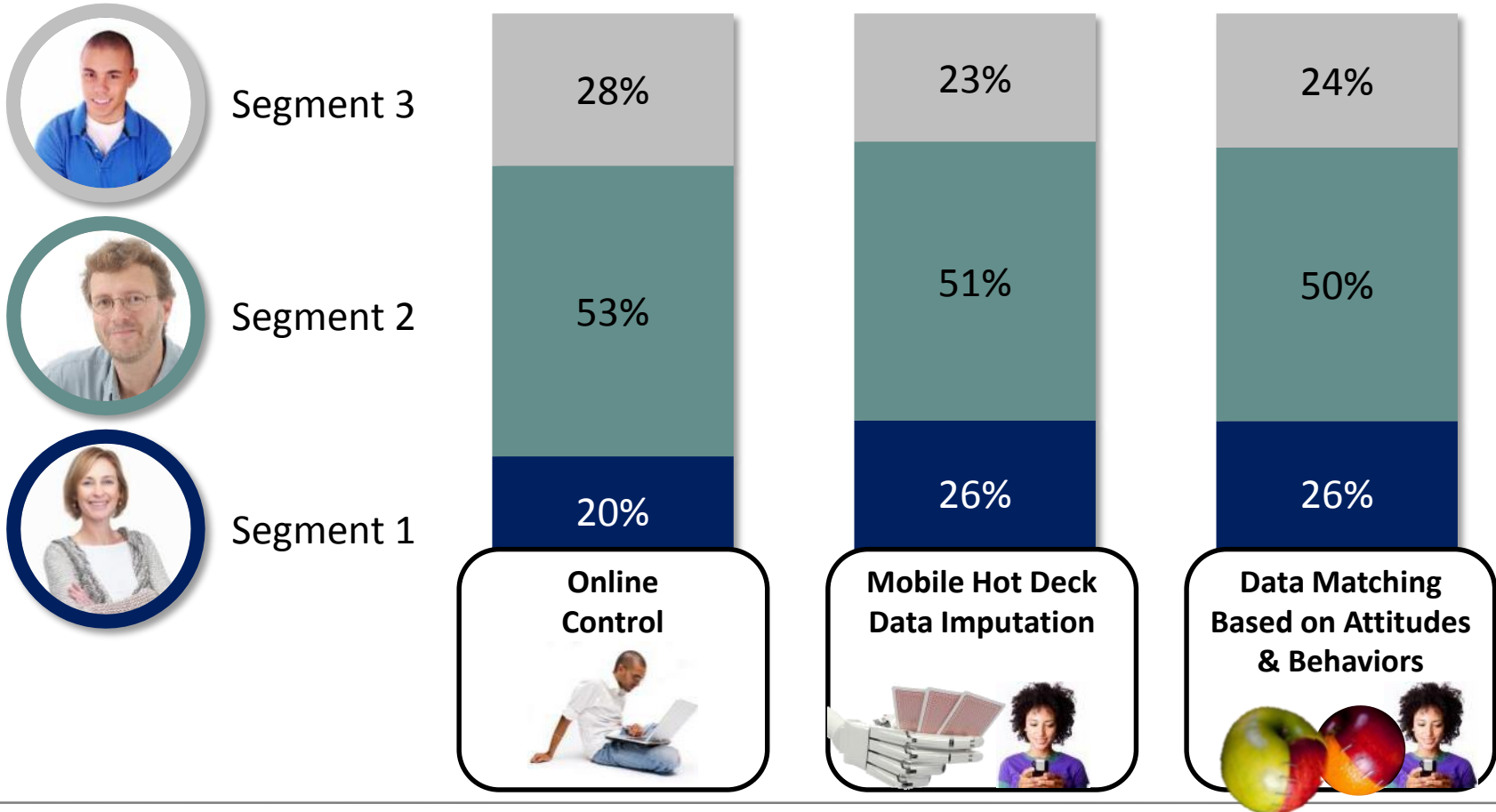
## Mobile Modular

### Practical:

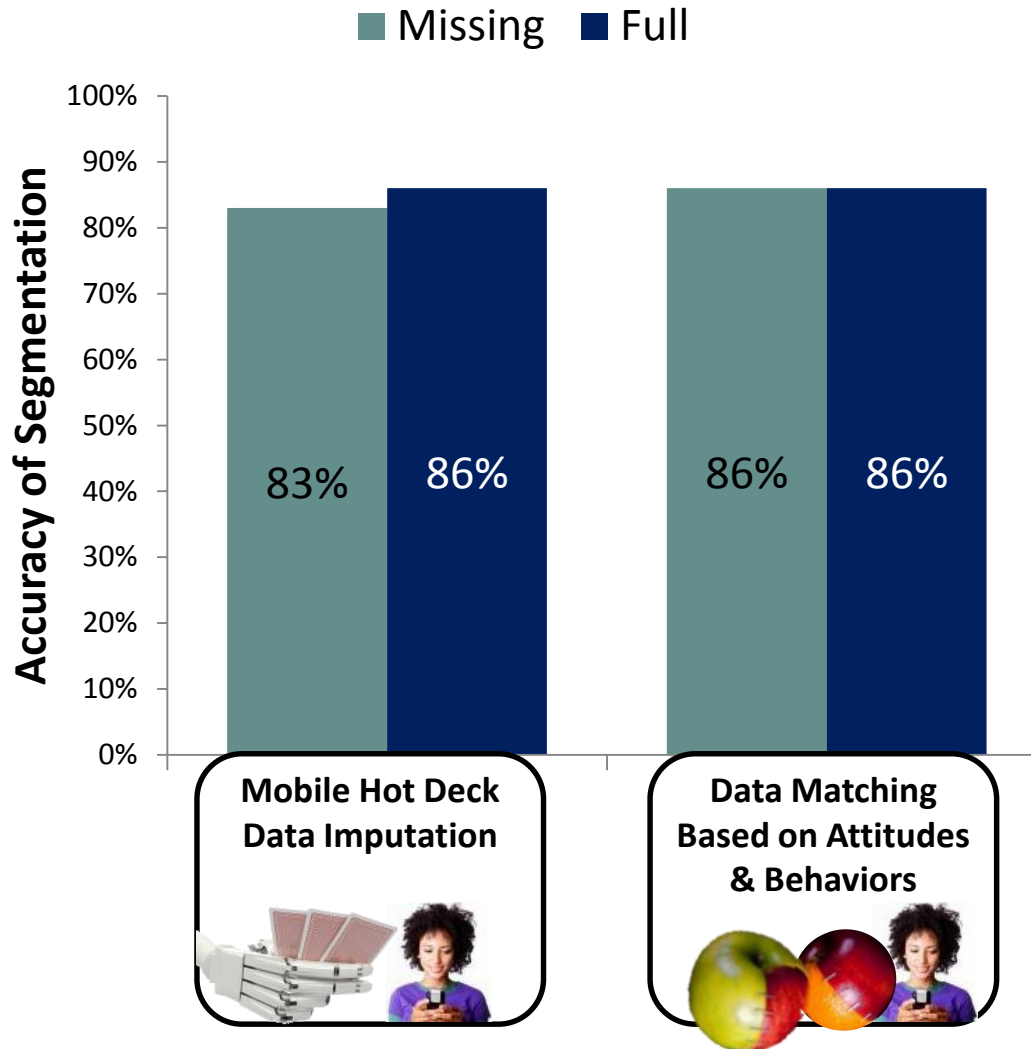
Resulting insights were similar, however, some differences do exist



# Modularization Had Same Segmentation Algorithm, but not Sizes



# ■ Data Imputation Pretty Accurate





# ■ Preserved Correlations Fairly Well

	<b>Control</b>	<b>Modular No Imputation</b>	<b>Hot Deck Imputation</b>	<b>Respondent Matching</b>
Sample Size	333	416*	501	424
% Significant Differences	0.0%	15%	17%	20%
Average Reasons r	0.39	0.31	0.29	0.22
Average Attribute r	0.30	0.24	.24	0.29
Average ReasonxAttribute r	0.22	0.20	.19	0.19

# ■ Compare Methods

- Respondent Matching
  - Have less data
  - Correlations are decreased
  - No Inflated Type 1 Error
- Data Imputation
  - Have extra data
  - Correlations increased or decreased based on algorithm used
  - Inflated Type 1 Error

# IMAGINE<sub>the</sub> POSSIBILITIES

When You Work With SSI

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