

The Market Research Event: 2006

October 23, 2006 – Los Angeles

Catch Me If You Can!

(How to Keep Cheaters Out of Your Next Online Survey)

KURT KNAPTON

Executive Vice President

e-Rewards Market Research

RICK GARLICK, PH.D.

Director of Consulting and Strategic

Implementation, Maritz Research

With contributions from Allen Hogg, Socratic Technologies

Contents

Introduction (Kurt)

Defining the Problem (Kurt)

Setting the Traps (Kurt)

Observing the Behavior (Rick)

What it Means (Rick)

Stopping the Cheaters (Kurt)



Introduction



Some Actual Warning Labels on Consumer Products

- On a leading fireplace firelog brand...
...**“Caution. Risk of fire”**
- On a Batman Halloween costume...
...**“Warning. Cape will not enable user to fly”**
- On a hair coloring gel...
...**“Do not use as an ice-cream topping”**
- On an automobile windshield sun shade...
...**“Do not drive automobile with sun shade in place”**
- On a portable infant stroller,...
...**“Warning. Remove child before folding for storage”**

A Warning Label for Our Industry

For online research studies ...

...**“Beware. Sample may contain survey cheaters”**



Defining the Problem



“A Problem Well-Defined is a Problem Half Solved”

The Problem: There are many different types of errors that are the bane of the researcher. Some of them are listed below:

Research Design Errors:

- bias introduced
- measurement error
- data analysis error
- sampling frame error
- population definition error
- scaling error
- question construction error

Hypothesis Errors:

type I error (alpha error)

type II error (beta error)

Random Sampling Errors:

- sample too small
- sample not representative
- inappropriate sampling method used
- random errors

Interviewer Errors:

- recording errors
- cheating errors
- questioning errors
- respondent selection error

Respondent Errors:

- non-response error
- inability error
- falsification/cheating error

The Researcher Must Eliminate (or Minimize) Errors— Else the Research Integrity is at Risk

It requires a partnership between the research “designers” and the research “fielders” to eliminate as much potential error as possible

Designers

Research Design Errors:

- bias introduced
- measurement error
- data analysis error
- sampling frame error
- population definition error
- scaling error
- question construction error

Hypothesis Errors:

- type I error (alpha error)
- type II error (beta error)

Fielders

Random Sampling Errors:

- sample too small
- sample not representative
- inappropriate sampling method used
- random errors

Interviewer Errors:

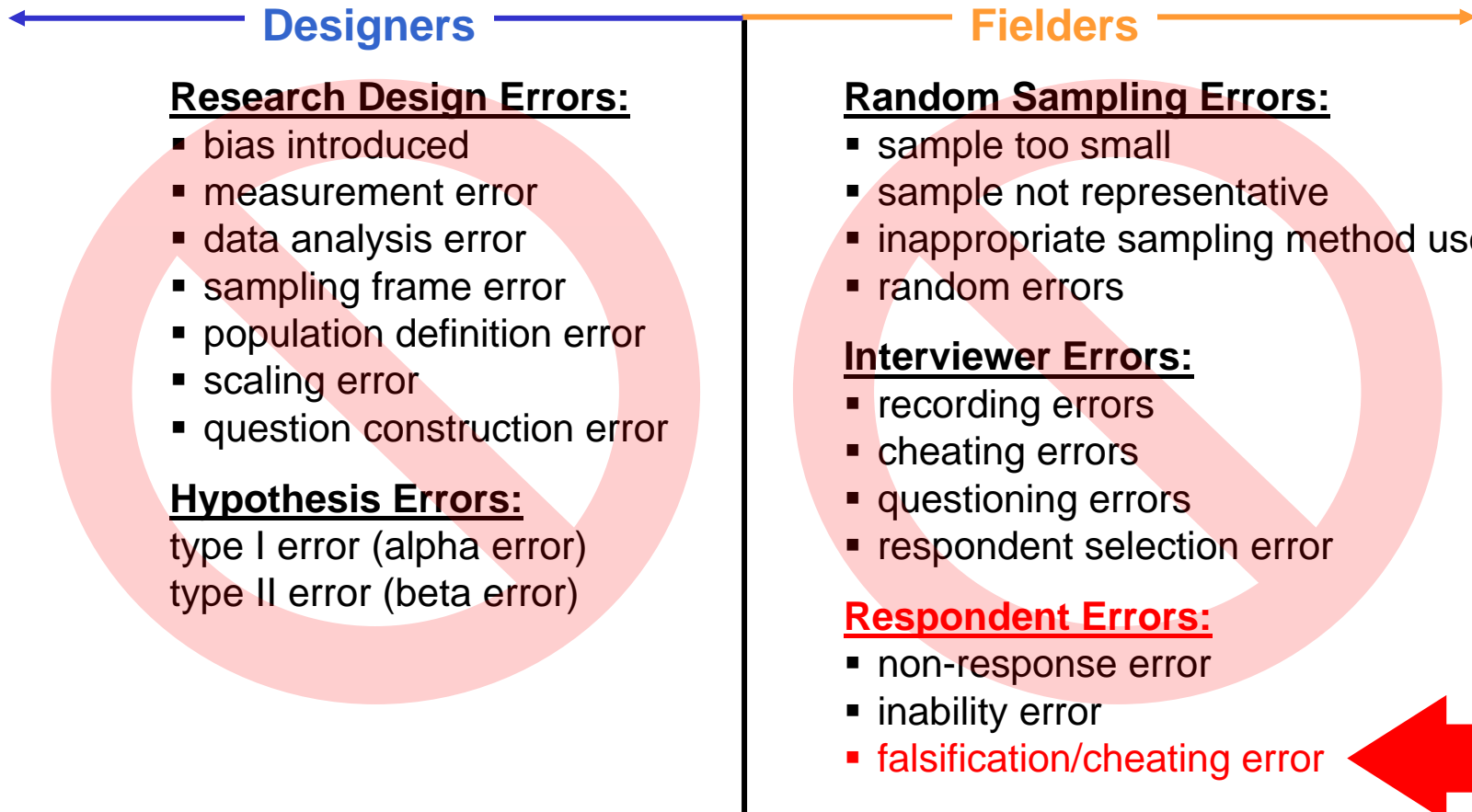
- recording errors
- cheating errors
- questioning errors
- respondent selection error

Respondent Errors:

- non-response error
- inability error
- falsification/cheating error

This Presentation Deals With Respondent Error; Specifically, Respondent Falsification/Cheating

Survey cheaters can jeopardize the results of an otherwise well-designed and well-executed research study.



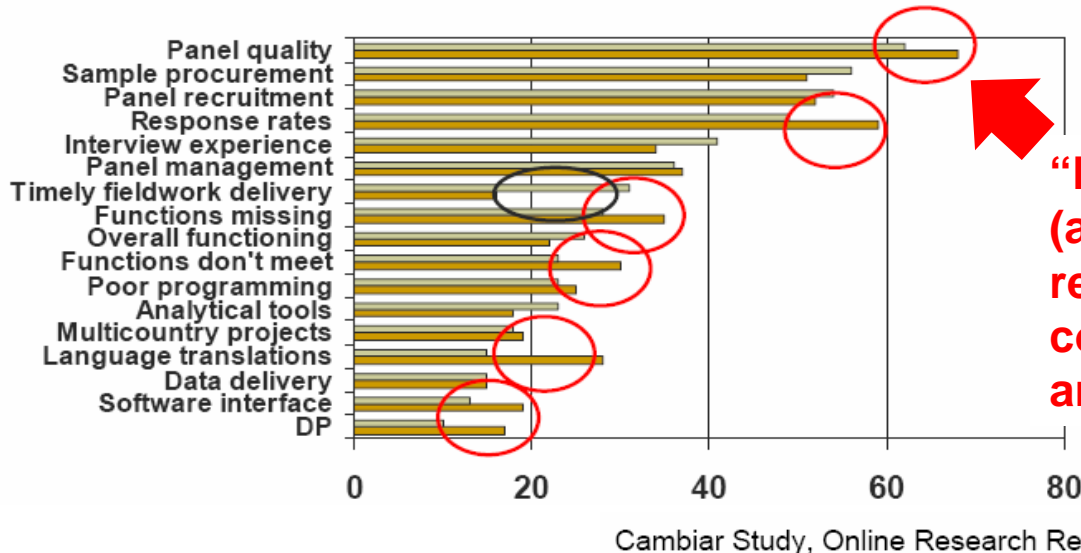
There is a Growing Level of Concern about Respondent Quality, Particularly in Online Research

Heightened concerns about conduct of online research

Perhaps because research companies have opted to put more of their online capabilities into the hands of outsource suppliers, there seems to be a heightened level of anxiety surrounding the overall conduct of online research.

Cambiar Study, Online Research Report ¹

Main concerns about online research as conducted today



“Panel Quality” was the chief (and growing) concern about online research in a March 2006 study conducted by Cambiar among 247 market research firms

¹ “The Online Research Industry – An Update on Current Practices and Trends,” Cambiar (May 2006)

How Does One Define Online Survey Cheating?

Adopting some definitions that Harris Interactive² has used to classify certain types of “professional respondents”:

- **Fraudulent Respondents** – Those who intentionally misrepresent themselves or provide inaccurate information—often to maximize the incentives they earn.
- **Inattentive Respondents** – Those who, because of survey length, time constraints, or other reasons, do not appear to be providing thoughtful answers during the course of a specific study.
- **Hyperactive Respondents** – Those who participate in numerous surveys—especially online surveys—and who often belong to multiple online panels.

These same classifications are useful to describe online “survey cheaters”

² Renee Smith and Holland Hofma Brown, “Assessing the Quality of Data from Online Panels: Moving Forward with Confidence,” *Harris Interactive* (2005)

How Big is the Problem of Online Survey Cheating?

- **Harris Interactive³ reports that across 20 large studies, approximately 3% of respondents provided fraudulent age and gender answers that differed from previously profiled answers...**
- ***...Note: Harris Interactive did not apply other in-survey “fraudulent” respondent traps (beyond age and gender), so the percentage may be underestimated***
- **Harris Interactive also found that an additional 1% of respondents failed to differentiate their responses across a large set of attributes (e.g. responded “randomly”), while another 2.5% of respondents *might* have been responding “randomly” ...**
- ***...Note: Harris Interactive did not apply any specific trapping questions within the survey to identify “inattentive” respondents, so the percentage ranges may be underestimated***

³ Renee Smith and Holland Hofma Brown, “Assessing the Quality of Data from Online Panels: Moving Forward with Confidence,” *Harris Interactive* (2005)

How Big is the Problem of Online Survey Cheating?

- **In the Doxus white-paper “Satisficing Behavior in Online Panelists”⁴, Theo Downes-Le Guin reports that for all commercial, Internet-recruited US Web panels, Doxus (a full-service research firm) specifies an overage between 10% and 15% above sample size targets per quota to compensate for data cleaning**
- **Using a full variety of different screening “traps” (on the front-end) and data cleaning “strikes” (on the back-end), Doxus has observed an incidence of failures among different online panels ranging from 4%- 34%**

³⁴Theo Downes-Le Guin, “Satisficing Behavior in Online Panelists,” *Doxus* (2005)

How Big is the Problem of Online Survey Cheating?

- **e-Rewards Market Research applies a variety of survey cheater and professional survey-taker traps during its panel member enrollment process whereby *Fraudulents*, *Inattentives*, and *Hyperactives* are screened out**
- **e-Rewards uses a “by-invitation-only” approach that permits only pre-identified members to join its panel. This prevention technique—as compared to an “open” recruitment technique where anyone can join—significantly lowers the amount of potential survey cheaters from being able to “self select” and attempt to join the panel in the first place.**
- **Even with the stringent by-invitation-only approach, e-Rewards typically encounters (and screens out on the front end) about 2% - 6% of new panel members who fail EITHER a *Fraudulent*, *Inattentive*, OR *Hyperactive* trap**
- ***Incidentally, we thought about contacting a few of each type and inviting them to come answer your questions today, but we reconsidered that approach—although it would be fascinating in the right venue!***

How Big is the Problem of Online Survey Cheating?

- **Therefore, the answer to “How big is the problem of online survey cheating?” ...**
 - *...likely depends on the sample source that is chosen (and that source’s recruitment methods)...*
 - *...and the level of stringency of the online survey cheating detection methods used by both the sample source and the researcher*
- **With that said, survey cheating by *Fraudulents* and *Inattentives* seems to range between 2% - 34%**
- ***Hyperactives* can add another 2% - 25%**
- **With such a wide range of observations, it is important for the researcher to:**
 - 1) choose sample vendors wisely
 - 2) insist on knowing what survey cheating precautions (or lack thereof) the sample vendor has taken
 - 3) have his/her own survey cheating methodology in place

So What are We Trying to Prove?

Hypothesis: “Survey cheaters detected during an online panel enrollment process are more likely than others to be survey cheaters in subsequent follow-up surveys”

If this is proven to be true, then the following corollary conclusions are logical:

- ***Survey cheating behavior can be predicted***
- ***Online sample providers who identify and eliminate survey cheaters during panel enrollment will introduce a lower level of survey cheating behavior into subsequent online research studies***
- ***Overall respondent error will be reduced***
- ***Online research results will be more accurate and reliable***

BUT, CAN THIS HYPOTHESIS BE PROVEN? We sought to find out



Setting the Traps



Experiment Construct—Panel Enrollment

In July 2006, e-Rewards Market Research enrolled 54,973 individuals into the e-Rewards U.S. panel (a MIX of both consumer and B2B panelists)

Gender:

Male	41%
Female	59%

Age:

Under 45	50%
45 and Over.....	50%

Marital Status:

Single	25%
Married	58%
Living w/ Partner	6%
Divorced/Separated...	11%

Ethnicity:

African American/Black	5%
Asian American	5%
Caucasian/White	81%
Hispanic Origin	7%
Native American	1%
Other	1%

Income:

Under \$25K	6%
\$25K up to \$50K	15%
\$50K up to \$75K	19%
\$75K up to \$100K	19%
\$100K up to \$150K	23%
\$150K up to \$200K	9%
\$200K+	8%

Experiment Construct—Panel Enrollment

- During the member enrollment process, e-Rewards asked a series of questions that were mixed into the other profile questions. In fact, these questions were “traps” designed to detect survey cheaters.
- Of the 54,973 newly enrolling panelists, 2,781 failed at least one of the 8 traps (or 5.1% of all new panelists)
 - 1,977 or 3.6% failed at least one of the 4 separate *Fraudulent Traps*
 - 748 or 1.4% failed at least one of the 2 separate *Inattentive Traps*
 - 487 or 0.9% failed at least one of the 2 separate *Hyperactive Traps*

 - 431 or 0.8% failed *multiple traps*

Experiment Construct—Trapping Methods at Enrollment

A variety of different questions and methods were used during panelist enrollment as “traps”

Fraudulent Traps:

“Red Herring” Traps (e.g. respondents who claim to personally suffer from named diseases that do not exist)

Consistency of Answer Traps (e.g. fact questions asked at beginning and end of survey instrument (e.g. number of children, own/rent home))

Mutually Exclusive Logic Traps (e.g. respondent who provides answers that are logically inconsistent – “Italian food is my favorite food” but “I dislike Italian food”)

Inattentive Traps:

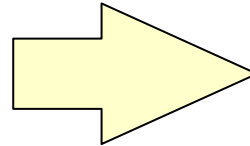
Straight-lining/Attentiveness Traps (e.g. respondents asked to simply “check the third box”, or “identify a simple picture”)

Hyperactive Traps

Panel/Survey Frequency Traps (e.g. respondents questioned about whether they belong to other panels, how many, how frequent, which ones)

Who Did We Trap During Enrollment?

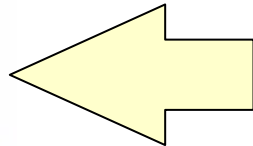
***Inattentives* skewed significantly male**



	Male	Female	Total
All Enrolled Panelists	22,461	32,512	54,973
<i>Inattentive</i>	280	207	487

	Male	Female	Total
All Enrolled Panelists	41%	59%	100%
<i>Inattentive</i>	57%	43%	100%

Who Did We Trap During Enrollment?



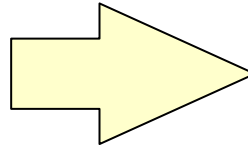
Hyperactives skewed significantly female

	Male	Female	Total
All Enrolled Panelists	22,461	32,512	54,973
<i>Hyperactive</i>	201	547	748

	Male	Female	Total
All Enrolled Panelists	41%	59%	100%
<i>Hyperactive</i>	27%	73%	100%

Who Did We Trap During Enrollment?

Fraudulents skewed slightly male



	Male	Female	Total
All Enrolled Panelists	22,461	32,512	54,973
<i>Fraudulent</i>	939	1,038	1,977

	Male	Female	Total
All Enrolled Panelists	41%	59%	100%
<i>Fraudulent</i>	47%	53%	100%

Experiment Construct—Sample Frames

- **For experimental purposes, instead of the usual response of taking these panelists “out of commission”, e-Rewards invited these known survey cheaters to complete a Maritz Poll study**
- ***Maritz was fully aware of and expecting these survey cheaters for observation and did not use the responses from survey cheaters to support any client work***
- **1,000 survey cheaters (e.g. the “bad” panelists) were invited to take the Maritz Poll survey**
- **1,000 known “good” panelists (who passed all of the enrollment traps) were also invited to take the Maritz Poll survey**
- **1,000 from a control group of “mixed” or “untested” panelists (who were randomly sampled, first, without regard to the enrollment trap results) were invited too**

Experiment Construct—Sample Frames

3,000 total outbound e-Mails were sent to the Maritz Poll survey instrument —1/3 were the pre-identified survey cheaters (labeled as ‘bad’):

Group	Outbound e-Mail Count
Mixed (Random)	1,000
Good	1,000
Bad	1,000
TOTAL	3,000

Sub-Group	Outbound e-Mail Count
<i>Fraudulent</i>	334
<i>Hyperactive</i>	333
<i>Inattentive</i>	333
<i>Total Bad</i>	1,000

Hypothesis: “Survey cheaters detected during an online panel enrollment process are more likely than others to be survey cheaters in subsequent follow-up surveys”

Will the Maritz Poll results bear this out?



Observing the Behavior



Observing the Behavior

Maritz Poll Description

Overall theme: Casual Dining Restaurants

- Recent dining experiences
- Importance of restaurant attributes in the choice process
- Spending patterns
- Healthy dining
- Other ‘fun’ questions

Fielded August 2-August 6, 2006

In addition to 1,003 respondents collected through the e-Rewards sample, an additional ‘unmarked’ sample of 998 respondents was provided by another panel supplier for a total of 2,001 respondents

Observing the Behavior

For the total 1,003 completed surveys from the e-Rewards sample, the following sub-quota cut-offs were enforced:

- 335 labeled ‘good’ by e-Rewards
- 334 labeled ‘untested’ by e-Rewards
- 334 labeled ‘bad’ by e-Rewards

Of the 334 labeled ‘bad’ sample completed surveys:

- 35% (118) were labeled ‘fraudulent’ by e-Rewards
- 38% (128) were labeled ‘hyperactive’ by e-Rewards
- 26% (88) were labeled ‘inattentive’ by e-Rewards

Observing the Behavior

Trap 1: Zip code at beginning and end of survey

- Check for consistency in presenting factual information throughout the survey

23 respondents (1% of total) failed to match zip codes.

- 7 from the 'bad' e-Rewards sample
- 4 from the 'good' sample
- 4 from the 'untested' sample
- 8 from the additional panel sample

Observing the Behavior

Trap 2: 'Red herring' response options

When asked to identify restaurants at which the person dined recently, four non-existent 'red herring' chains were included in the list:

- Burgeriffic
- The Garlick Bulbe
- Just Yesterday's
- Tom's Tenderloins

Five respondents said that they ate in at least one of the fictional restaurants.

–One said that he/she ate at three of the four; another said that he/she ate at all four!

–These two extreme 'fraudulents' were in the 'other' supplied sample.

Observing the Behavior

Trap 3: Responses to oppositely worded items

- *How often do you do each of the following when you dine at casual dining restaurants?*
 - Order the most expensive item on the menu
 - Order the least expensive item on the menu
- If ‘always’ or ‘usually’ to both, respondents were considered ‘trapped’

28 people (1%) responded similarly to oppositely worded items

- 15 were from the identified ‘bad’ sample
- 0 from the ‘good’ sample
- 0 from the ‘untested’ sample
- 13 were from the ‘other’ panel sample.

Observing the Behavior

Trap 4: 'Straightlining'

- The percentages who enter the exact same response to a matrix list of 'importance' attributes
- *Please indicate how important each of the following is when choosing a casual dining restaurant...not an important reason, somewhat important reason, extremely important reason*
 - Location
 - Price
 - Taste of food
 - 10 additional attributes

Observing the Behavior

31 people (1.5%) straightlined their response.

- 8 were from the ‘bad’ sample
- 1 each from the ‘good’ and ‘untested’ samples
- 21 from the ‘other’ supplied sample

Observing the Behavior

Trap 5: Compliance with a simple instruction

- Survey respondents asked to mark ‘somewhat important’ reason as a placeholder in the survey

70 people (3%) failed to comply with this simple instruction.

- 18 were from the ‘bad’ sample
- 4 from the ‘good’, 2 from the ‘untested’
- 46 from the ‘other’ sample...nearly 5%!

Results

- Overall, 5.5% of the total sample failed at least one of the traps.
- 11% of the 'bad' sample provided by e-Rewards failed at least one of the traps.
 - Only 2% of both the 'good' and 'untested' e-Rewards sample failed at least one trap.
- 6% of the 'unmarked' panel provided by the other supplier also failed at least one trap.

Results

The impact of the 'trapped' respondents was most apparent in matrix sets of items.

- Significant differences on 9 out of 13 importance attribute ratings.
- Also claim to spend 32% more on a meal when dining out.

Other 'Identifying' Factors

Also examined were:

Those that completed the survey the quickest.

'Professional' respondents

The Fastest 10%

- 60% of the 'fastest 10%' to complete the survey were from the 'other' sample.
 - 23% was from the 'bad' e-Rewards sample.
 - 6% from the 'good' sample
 - 11% from 'untested' sample
- 'Hyperactives' produced 5x as many 'fast completions' compared to 'Inattentives'.
- 'Fast' completes provided significantly different ratings on 9 out of 13 importance rating attributes.
 - Differed significantly on a number of other items as well

The Fastest 10%

% Rating 'Extremely' Important

Attribute	Fastest 10%	Others
Location	40%	33%
Price	37%	34%
Taste of food	78%	92%
Quality of service	68%	77%
Atmosphere	31%	39%
Variety of menu options	46%	47%
Prior experience	47%	43%
Being brand-named	13%	5%
Offering healthy options	17%	13%
Cleanliness	71%	87%
Being kid-friendly	24%	15%
Serves alcohol	17%	11%
Not part of a chain	12%	5%

'Professional Respondents'

- One-in-ten (10%) completed over 15 surveys within the past month.
 - 3% completed over 30!
 - 14% of the 'other' sample completed more than 15 surveys
- 12% of 'bad' respondents completed >15 surveys
 - 88% of those 'bad' respondents were those previously identified as 'Hyperactives'
 - 28% of all previously identified 'Hyperactives' said that they completed over 15 surveys
- Only 4% of 'goods' completed >15
- 1% of 'untested' e-Rewards respondents completed >15

'Professional Respondents'

- 'Professional' respondents (15+ surveys) responded differently on a number of key questions...
- Examples:
 - *Do you usually, sometimes, or never purchase an alcoholic beverage with dinner?*
 - 'Professionals': 16% 'usually'; 34% 'never'
 - Non-professionals: 23% usually; 21% never
 - *How often do you order the most expensive item on the menu?*
 - 'Professionals': 44% 'never'
 - Non-professionals: 31% 'never'
 - *Including tax and tip, how much do you spend on a meal?*
 - 'Professionals': \$12.10 (significantly lower)
 - 'Non-professionals': \$14.90



What It Means



What it Means

Although the incidence of getting ‘caught’ on any specific trap is relatively small (1%-3%), the cumulative effect of ‘bad’ respondents may influence survey results.

- Approximately one-in-twenty survey on-line respondents show some degree of inattentiveness or fraud at some point in the survey.
- While even ‘good’ respondents slip up occasionally, screening for ‘bad’ respondents up front is useful for improving data validity.

What it Means

- **‘Bad’ survey respondents are most likely to affect results when...**
 - Surveys involve lengthy lists of rating attributes
 - Surveys are long, repetitive, or tedious
 - Surveys are not particularly interesting
- Because ‘professional’ survey respondents are frequently motivated by incentives, it makes sense that they will answer ‘spend’ questions differently.

Recommendations

- There is evidence in the data that ‘professional’ respondents answer differently than those that take surveys less frequently.
 - Eliminating these respondents probably boosts data validity.
- Although even the most well-intentioned respondent occasionally makes an error on a survey, pre-screening panel respondents with ‘traps’ certainly improves the odds of a valid survey.
- Pre-screening panelists is particularly important when surveys ask respondents to rate multiple attributes or give respondents something more than a simple dichotomous (‘yes/no’) option.



Stopping the Cheaters



In Summary

- **Survey cheating does occur in online research, but can be minimized using respondent traps**
- **Researchers are wise to utilize an arsenal of traps to prevent survey cheaters from jeopardizing research results—and insist that their panel providers do too**
- **A partnership between survey designers and fielders (who are most often providing the online respondents) is required to minimize survey cheating**
- **Survey cheaters who are detected during an online panel enrollment process, if not removed from the panel, are more likely than others to be survey cheaters in subsequent follow-up surveys**
- **Studies are most susceptible when respondents are sourced from sample providers who do not prevent, detect, or remove survey cheaters at panel enrollment**
- **Removing bad panelists can make a significant difference in the integrity of study results**



Questions and Answers

THANK YOU! We are happy to take your questions.

KURT KNAPTON
Executive Vice President
e-Rewards Market Research

RICK GARLICK, PH.D.
Director of Consulting and Strategic
Implementation, Maritz Research

With contributions from Allen Hogg, Socratic Technologies