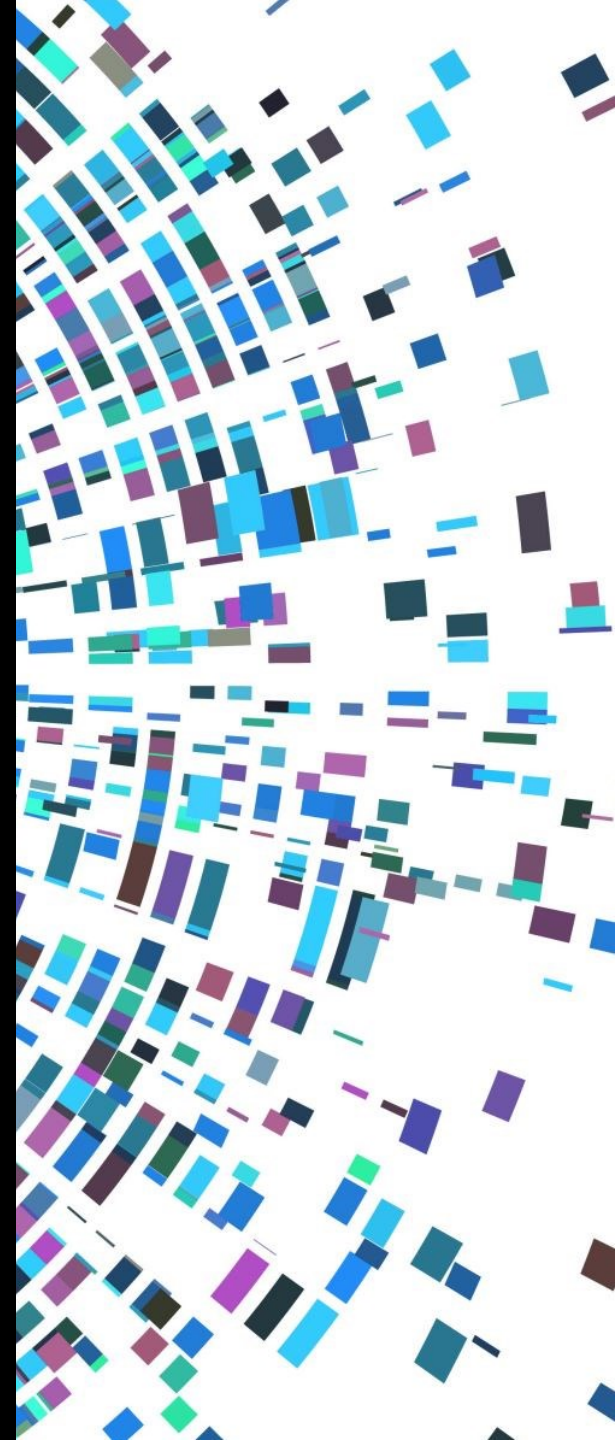




Best Practices in Online Research

Design and Review in a World of
Bots, Hackers, and Evolving
Technology



Presenters



Learning Objectives

- Identify signs of online survey compromise, differentiate fake from real research participants, and modify procedures to protect from further compromise through real-life case study examples
- Discuss how the IRB and principal investigators can work together to address survey compromise in terms of reporting requirements, compensation provision, and maintaining data confidentiality
- Share best practices for design of online research and for cybersecurity monitoring of survey data
- Describe best practices for data interpretation post-compromise

Online Research Methods

- Research methods that utilise the internet as medium for research
- Sometimes referred to as internet mediated research
- Includes research methods designed to investigate both online & offline phenomena
- surveys, experiments, interviews, observation, document analysis, virtual ethnographies, web analytics & content analysis, simulations, GIS



Benefits & Perils of Online Research

Investigators

- Can help achieve adequate participant numbers for data analyses;
- Can allow a national or international scope;
- Can access harder-to-reach populations;
- Can lead to more representative sampling;
- Expedite the data collection process;
- Cost-effective
- Reduced social desirability effects

Potential Participants

- Less burdensome;
- May heighten comfort with provision of sensitive information (decrease personal risk)
- May facilitate participation in research (balanced power relationship)
- DEI consideration

Benefits & Perils of Online Research



Inherent bias in
internet-accesses
samples



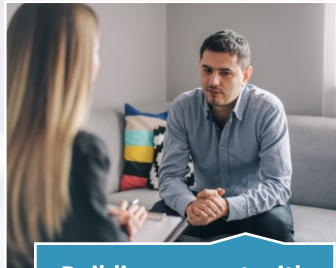
Digital literacy



Reduced levels of
control over procedures



Identity verification



Building rapport with
participants



Technical competence
and institutional
support



Ethical considerations

Study Design Considerations

Conceptualization

- Research question and target population, including key characteristics and type of data
- Benefit vs risks of online research
- Design and layout: organization of questionnaires/measure
- Software: contract, ownership of data, incentive distribution
- IRB submission: Informed consent forms; surveys, scripts for social media, communication with participants, contingency plan, monitoring plan


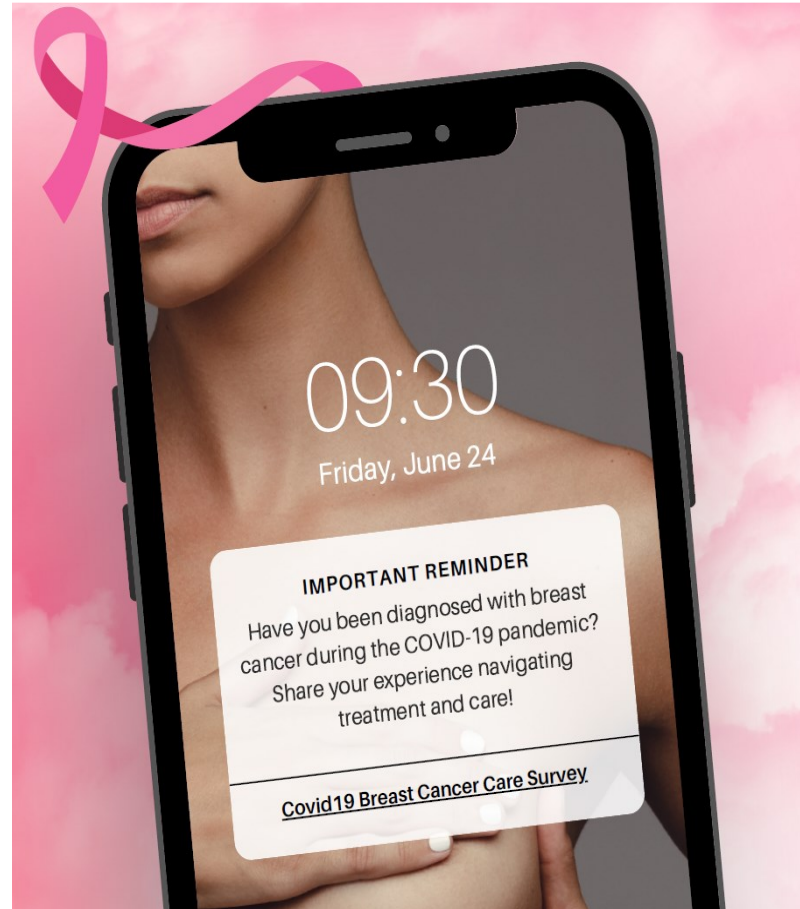
Recruitment

- Community partners and key stakeholders
- FB pages, private groups, events, FB Ads, Creation of Institution level website for online research efforts
- Social Media posting, template, QRC
- Study information survey
- Prevent indexing, multiple submission
- Phone Screening
- Piloting
- Incentives: exercise caution

Data Management

- Distinguish between study information survey and full questionnaire
- Password protected
- Individualized link, created for the participant unique e-mail
- Set expiration date
- Develop standard procedure to distribute survey access/ info
- Limit accessibility: US, State, City level
- Consider HIPAA compliant tools for qualitative research and team sharing in post-COVID19 research

Example 1: Scripts and Images



ARE YOU A WOMAN DIAGNOSED WITH BREAST CANCER DURING THE COVID-19 PANDEMIC?

A STUDY IS SEEKING 120 WOMEN DIAGNOSED WITH EARLY-STAGE BREAST CANCER
TO BETTER UNDERSTAND HOW COVID-19 HAS IMPACTED THEIR DECISIONS AND EXPERIENCES OF CARE

TO BE CONSIDERED FOR THIS STUDY, YOU MUST:

- Self-identify as Black/African American, Hispanic/Latina or White/Caucasian;
- Have received a diagnosis of early-stage breast cancer in January 2020 or later;
- Be receiving care for breast cancer at time of the study;
- Be at least 18 years of age;
- Have access to a computer, smartphone, tablet, or other device to complete an internet-based survey;
- Be able to read and understand English.

THE STUDY INCLUDES:

- 120 women will complete an online survey that will take about 30-40 minutes; survey respondents will receive a \$30 Amazon gift-card
- 30 of the survey participants will be invited to participate in a 60-90 minutes online interview; interview participants will receive a \$60 Amazon gift-card.


Are you Interested?

Please contact us:

Dr. Chiara Acquati
(713) 743-4343
cacquati@uh.edu

or email us
covid19hri@uh.edu

This project has been reviewed by the University of Houston Institutional Review Board, which can be reached at (713) 743-9204



HEALTH
Research Institute

UNIVERSITY OF
HOUSTON

UHD
University of Houston
DOWNTOWN

Example 2: Defensive Survey Tools

How do you want to distribute your survey?

1

Email Web Social Mobile

2

Send with Qualtrics

Compose Email

Use your own email system

Get a single reusable link

Generate a trackable link for each contact

Survey flow Draft

Add Below Move Duplicate Add From Contacts Options Delete

Show Block: Default Question Block (1 Question)

Add Autofill Logic Add Below Move Duplicate Delete

Then Branch If:

1 Embedded Data Day Is Greater Than or Equal to 01

And Embedded Data Day Is Less Than 16

2 And Embedded Data Month Is Equal to 01

3 And Embedded Data Year Is Greater Than or Equal to 2021

OK

Show Block: First Half of Jan (1 Question)

Add Autofill Logic Add Below Move

Example 2: Defensive Survey Tools


Survey

Actions


Distributions

Data & Analysis

Reports




Options




General

Language, title, survey description




Responses

Expiration, incomplete, change responses



Security

Passwords, uploads, bots, indexing



Post-Survey

Thank you email, completed survey message

Advanced

Scoring

Attach point values to specific answers

Quotas

Set conditions you want responses to meet

Translations

Translate this survey into other languages

Saved at 4:23 PM

Draft

Preview

Publish

Prevent multiple submissions

End the survey for respondents and display a custom message, redirect to a different website, or flag the data for respondents trying to take your survey multiple times.

☒

 On

Action

Redirect to URL

Website URL

https://www.qualtrics.com/support/

Bot detection

We'll look for bots that might be taking your survey and flag their responses with an embedded data field (reCAPTCHA). [Learn More](#)

☐

 Off

Security scan monitor

Prevent security scanners from accidentally starting surveys when they test your link (reCAPTCHA). [Learn More](#)

Is this within the IRB's purview?

Risks v. Benefits

- Even minimal risk to participants should be offset by at least minimal potential benefit of the research
- For many studies, particularly minimal risk survey studies, the only benefit is scientific value, which may be lost if the data is compromised
- Data compromise may also introduce risk to participants of not being compensated appropriately, or potential loss of confidentiality if research data is hacked and additional identity verification is needed



Institutional Review Board (IRB)



Impact on IRB review

- The IRB submission should include a detailed **recruitment plan, especially for social media recruitment**
 - Consider targeted advertising rather than public blasts
 - Consider use of closed or moderated specific topic groups or professional accounts
 - Avoid advertising on more public-facing platforms like Twitter or Reddit
- **Describe defensive study designs and data monitoring**
 - Examples: screening to verify identity, attention checks, validity questions
- Consider adding language in advertisements and consent forms warning participants that **compensation may be withheld** if verification checks are not passed, that additional follow-up may be needed to verify identity, etc.



Incentives/ Compensation Information

Compensation may attract bots/scammers

- Consider the risk of data compromise against benefits of compensation
- Ensure minimal focus on compensation in study advertisements
 - Avoid images like dollar signs, money bags, etc.
 - Avoid providing the \$ amount
- Consider if compensation should be reduced or removed
- Consider multi-step screening and compensation procedures
- Include a time-frame for the expected compensation to be distributed

Anonymous v. Identifiable



Collecting IP addresses or contact information may be worth it for identity verification

The threat of compromised data validity may outweigh the risks of collecting identifiers from participants.

IRBs and researchers can work together to ensure appropriate confidentiality and privacy measures are in place to handle identifiable data

Work with Information Security or IT for guidance on preferred secure platforms



If surveys will be anonymous, reviewing for targeted recruitment plans, defensive survey designs, and minimized compensation plans are even more important as there will be no way to go back to verify identity.

How YOUR IRB can HELP!



Train IRB staff and reviewers on what to look for



Educate the research community

Develop and disseminate institutional best practices

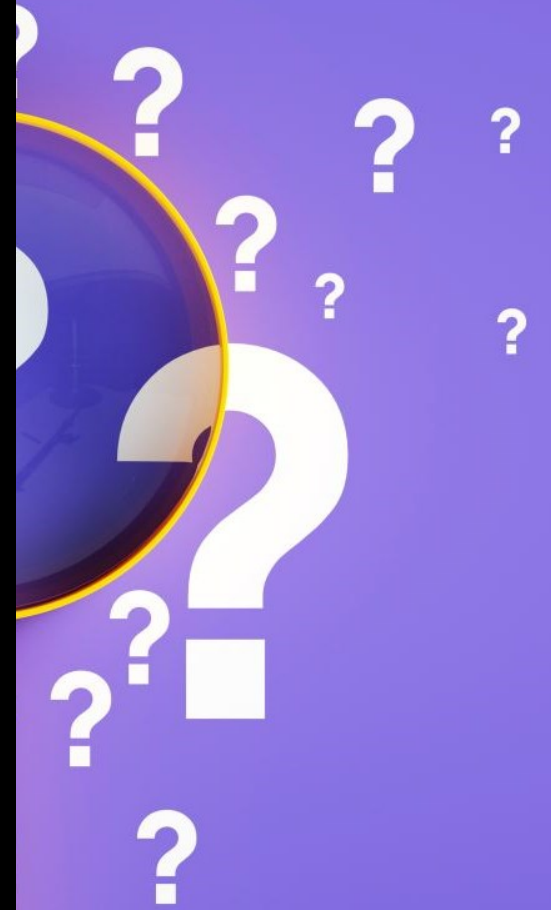
Consider creating Social Media Recruitment Guidance: Work with your institution's stakeholders to develop this; Create template management plans to help researchers develop their strategy



Work proactively with institutional stakeholders to raise awareness and set researchers up for success.

Example: Encourage institutionally supported online accounts that can be used to disseminate research advertisements and survey links via secured and monitored accounts

Things are
going
wrong...
What to do?



Strategies to Identify and Prevent Fraudulent Data

Software-enabled tools

- Software with fraud prevention detection capabilities
- Screening questions, CAPTCHA
- IP address and GIS (cluster)
- Time stamps, compare with estimated completion time
- Track methods for survey completion (Link, QRC)
- Quota

Duplicate or unusual responses, Bots

- Survey completion time (estimate and range)
- Patterns in answers: straight lining
- Exact response provided multiple times
- Content of the response: irrelevant, too general, not applicable to the target population, duplicate from website
- Zip code and GIS do not match, cluster of responses from one area of the country
- Identify a source beyond the list of organizations/contacts
- Hidden items = bots

Experience and IRB collaboration

- Remuneration Letter;
- Request acknowledgement of eligibility/exclusion criteria
- Set a % of the survey with mandated answers

Example 3 – Fraudulent Data Detection

	A	B	C	D	E	F	G	H	I	J	K	L
1	StartDate	EndDate	Status	IPAddress	Progress	Duration (in	Finished	RecordedDat	ResponseId	RecipientLastName	RecipientFirstName	RecipientEmail
2	Start Date	End Date	Response Type	IP Address	Progress	Duration (in	Finished	Recorded Da	Response ID	Recipient Last Name	Recipient First Name	Recipient Email
3	("ImportId": "start	("ImportId": "end	("ImportId": "sta	("ImportId": "IP	("ImportId": "Pro	("ImportId": "Dur	("ImportId": "Fin	("ImportId": "Re	("ImportId": "Res	("ImportId": "recipien	("ImportId": "recipien	("ImportId": "recipienEmail")
4	11/20/19 12:06	11/20/19 12:06	0		100	34	TRUE	#####	R_5u2dulx3C	Peterson	James	petersen@example.com
5	11/20/19 12:06	11/20/19 12:06	0		100	35	TRUE	#####	R_e4JwAog5	Petersen	Tara	petersen@example.com
6	11/20/19 12:06	11/20/19 12:06	0		100	24	TRUE	#####	R_0ulsv6tBF	Culp	Maggie	mculp@example.com
7	11/20/19 12:06	11/20/19 12:06	0		100	36	TRUE	#####	R_8A2wbEZf	Clickinbeard	Bram	clickme@example.com
8	11/20/19 12:06	11/20/19 12:06	0		100	24	TRUE	#####	R_eh9Kh3sK	Perez	Josh	jp@example.com
9	11/20/19 12:06	11/20/19 12:06	0		100	26	TRUE	#####	R_7UU01Xo	Chang	Wendy	wendywanda@example.com
10	11/20/19 12:06	11/20/19 12:06	0		100	35	TRUE	#####	R_0Cib6Xfz	Nyugen	Lauren	laurenn@example.com
11	11/20/19 12:06	11/20/19 12:06	0		100	34	TRUE	#####	R_aVp9v93sl	Smith	Phoenix	phoenix212@example.com
12	11/20/19 12:06	11/20/19 12:06	0		100	23	TRUE	#####	R_9sKyloWB	Witherspoon	Bo	bow@example.com
13	11/20/19 12:06	11/20/19 12:06	0		100	22	TRUE	#####	R_0lYudgLB	Foucault	Andre	andref@example.com
14												

Priority

T-4

Pr

Full Record

Show response for ticket

> Record at: September 21, 2017

Record at: September 21, 2017

Location ID: 33456


Q_RelatedResponseField: Location ID

Q_RelatedResponseFieldValue: 33456

Location Data

Location: (40.296905517578, -111.69460296631)

Source: GeoIP Estimation



Status

Open

Email

Close



Reporting to the IRB

The IRB will need to consider if the event involved any of the following:

- increased risk or harm to participants
 - Ex: risk to data confidentiality, inability to compensate, etc.
- increased risk to scientific integrity of the study
 - Ex. loss of valid data; inability to separate good data from bad, etc.
- noncompliance with the approved protocol
 - Ex. procedures intended to mitigate compromise not followed; compensation not provided as promised in the consent; altering recruitment strategies or data management plan without IRB approval.

Corrective Actions

- Balance the risk of losing data or not compensating valid participants against the risk of stopping the entire study and/or loss of research funds to pay scammers.
 - Can the PI compensate all (including scammers) and still salvage the research?
 - Can the PI reasonably determine who should not be compensated?
- If the survey will be re-posted, what changes are needed to the approved protocol to avoid a repeat incident?
- How will the event and any changes to compensation or screening be communicated to participants, and how will complaints be handled?
- Case study example –
 - Corrective action plan for survey of registered nurses



Takeaway for Investigators

- Enhance Software: contract, ownership of data, incentive distribution, fraud prevention detection capabilities
- Assess recruitment methods that will mitigate the problem
- Establish data collection and management methods that will reduce the opportunity for fraudulent submissions
- Monitor the data for Duplicate or unusual responses, Bots





Takeaways for IRB Review and Institutional Support

- Provide a detailed recruitment plan to help the IRB make an appropriate risk/benefit determination
- Describe how you will implement defensive study designs such as screening to verify identity, attention checks, validity questions
- Consider if collecting identifiers is more effective for deterring bad actors, and explain this in the IRB submission
- Evaluate compensation plans
- Encourage training for IRB members/staff and Research Investigators
- Encourage the development of institutional resources

