

Best Practices in Consent to Capture Geolocation Data in Self-Administered Web Surveys

Scott D. Crawford | SoundRocket
FedCASIC Workshop 2019
April 17, 2019



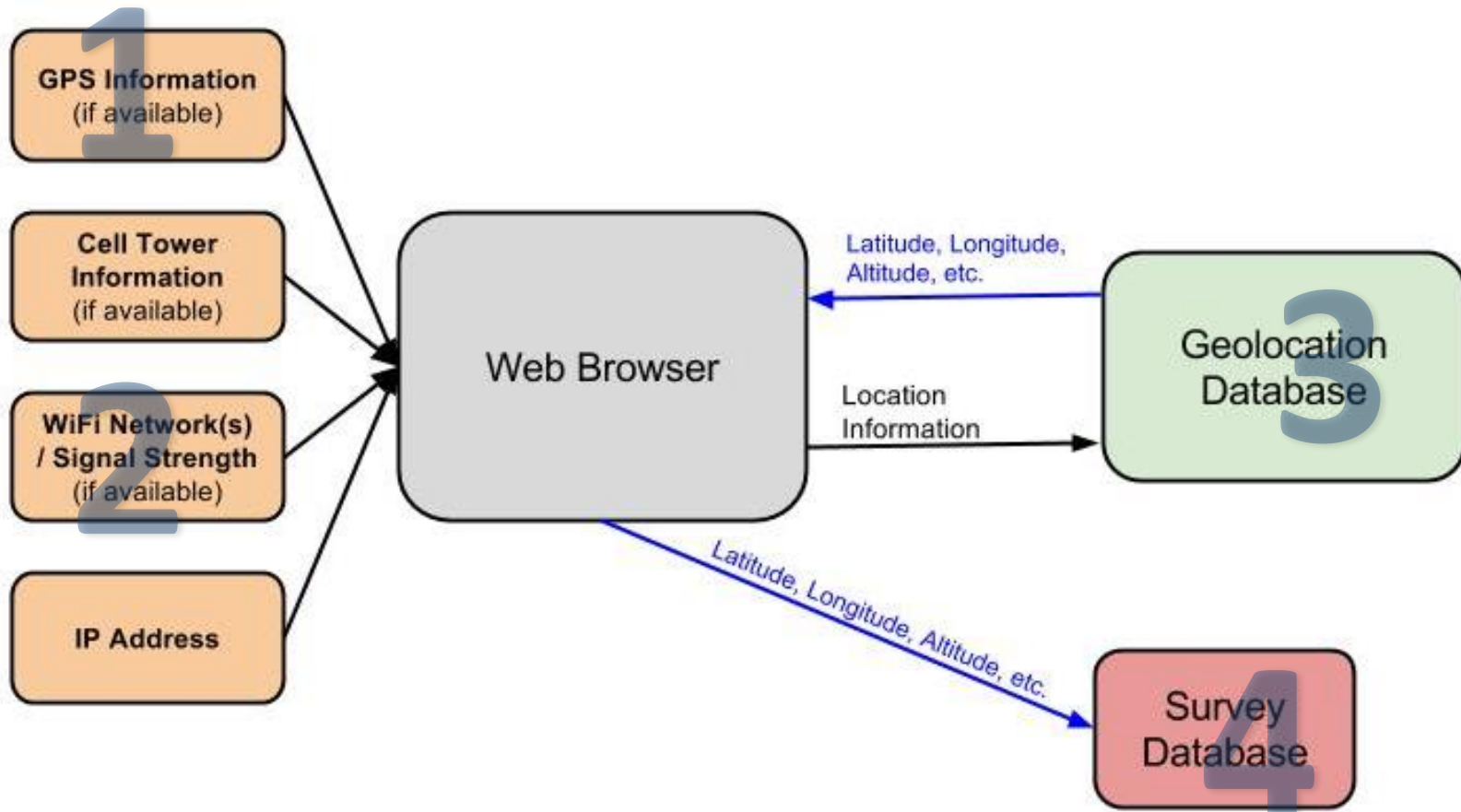
SOUNDROCKET™
ADVANCING YOUR IMPACT

Mobile Devices: A Disruptor Technology in Survey Research

We must adjust – but will be rewarded with new opportunities!

- “In the moment” surveys
- Self-administered biomarker collection
- Sound and image captures
- “Internet of Things” integration (i.e. thermostat readings, electricity use, pedometers, etc.)
- **Geolocation capture**

What is Geolocation? *Is it the same as GPS?*



Geolocation as a Survey Tool

Methodological Uses

- **Speed of travel** (is data quality the same for someone who is *not moving* vs. moving at **3 mph** vs. moving at **60 mph** while taking a survey?)
- **Location/speed to trigger specific questions** (high speed of travel triggers questions about means of transportation)
- **Location/speed to trigger survey events** (geolocation inside football stadium prompts follow-up questionnaire about sports related behaviors)

Geolocation as a Survey Tool

Substantive Uses for Geolocation

- **Density of specific behaviors** (imagine a heat map of binge drinking on/around campus?)
- **Travel distances** (maybe correlated with negative consequences of certain risky behaviors?)
- **Proximity** to other features (alcohol outlets?)



Recent Research in Geolocation & Consent

Consenting Geolocation in a Panel Study (2014)

RDD recruited study of Internet use in the Netherlands

Pilot study to optimize panel surveys to mobile devices – included both mobile and desktop user treatment groups

Consent to Capture GPS Location was asked individually:

- 26% of mobile users agreed
- 24% of desktop users agreed

Toepoel, V., & Lugtig, P. (2014). What happens if you offer a mobile option to your web panel? Evidence from a probability-based panel of Internet users. *Social Science Computer Review*, 32(4), 544-560.



Geolocation in large-scale mobile app study (2017)

Asthma Mobile Health Study

- Research led by team at Icahn School of Medicine at Mount Sinai, NY
- Included an electronic informed consent
- 40,683 app downloads -> 8,524 verified eligibility via email -> 7,593 enrolled in the study -> 6,470 baseline responses
- 2,317 “robust” users (completed ≥ 5 daily or weekly surveys, smoke < 10 packs per year, and no competing lung risks)

Of the Robust users 545 (23.5%) consented to provide geolocation data

Chan, Y. F. Y., Wang, P., Rogers, L., Tignor, N., Zweig, M., Hershman, S. G., ... & Edgar, R. (2017). The Asthma Mobile Health Study, a large-scale clinical observational study using ResearchKit. *Nature biotechnology*, 35(4), 354.



Passive Capture in Mental Health Context (2018)

Study of Passive Mobile Phone Capture in Context of Mental Health Care – including geolocation, activity, communication activities, etc.

- Research led by team in Toronto, Canada
- Clinical recruitment of 82 patients
- Willingness to use “app to assess mental health disorder”
 - 41% completely willing
 - 43% potential willing
- Willingness to grant permission to allow:
 - Monitor screen on/off status – 36% (18% maybe willing)
 - Monitor motion sensors -- 33% (20% maybe willing)
 - GPS location – 28% willing (26% maybe willing)
 - Monitor SMS contents – 16% (21% maybe willing)
 - Monitor audio unrestricted – 15% (25% maybe willing)

Di Matteo, D., Fine, A., Fotinos, K., Rose, J., & Katzman, M. (2018). Patient willingness to consent to mobile phone data collection for mental health apps: structured questionnaire. *JMIR mental health*, 5(3), e56.



Consent to Collection of Paradata (2019)

Part 1

Identify professional guidelines relating to legal, ethical, and practical considerations when capturing paradata (ESOMAR, CASRO, AAPOR, ASA, etc.). Concepts include:

- During explicit data collection through any form of communication
- When behavior observation is done where reasonable expectation of privacy exists
- Where data are collected without perception of such happening
- Extent to which Personally Identifiable Information (PII) is collected matters (i.e. physical addresses/locations)

Summarized studies that asked about GPS collection:

- 20.8% in opt-in panel in Spain agreed (Revilla, et al., 2018)
- 39% of a probability based panel in UK (Wenz, Jäckle, and Couper, 2017)

Kunz, T., & Gummer, T. (2019). Understanding Respondents' Attitudes Toward Web Paradata Use. *Social Science Computer Review*, 0894439319826904.



Consent to Collection of Paradata (2019)

Part 2

German Opt-in online panel survey on “Politics and Work” with 2,247 participants – 33 minute long survey

Looked at perceptions of paradata

- Device Type
- Mouse Click Time Stamps
- Geolocation

Treatment Groups

- Control (the type of paradata was simply stated)
- Short definition only
- Definition + researcher relevant benefit (focus on data quality)
- Definition + respondent relevant benefit (focus on respondent ease)

Findings:

- Adding definition text helped improve positive impression of paradata capture
- Weak evidence of providing respondent relevant benefit helping, but no evidence that researcher relevant benefit had any impact.

Kunz, T., & Gummer, T. (2019). Understanding Respondents’ Attitudes Toward Web Paradata Use. *Social Science Computer Review*, 0894439319826904.



Our Research Building Blocks

A. Is it possible?

- What would respondents think about it?



B. Does it work?

- Can we actually capture the data?
- Do respondents allow it?



C. What are the best practices?

- How do we handle device prompts?
- Is standard consent form appropriate and adequate?
- Should we ask permission explicitly?
- Do we capture more than once?



Quality: How well did it work?

- What does the data look like? Is it complete?
- Can it cause any error? Can it help identify error?



Study: Baseline Questionnaire

Random sample of 8,000 U of Minnesota students

Baseline questionnaire (T12)

- Alcohol, Drugs, Mental Health and related behaviors & experiences
- Web Survey Length
 - Mean=24.3 minutes; Median=22 minutes
- AAPOR RR#2: 28%
- Other
 - Prenote email requested users complete the survey on a desktop or laptop computer
 - All Email (Invite, 3 reminders to NRs)
 - Sweepstakes incentive for \$500 cash

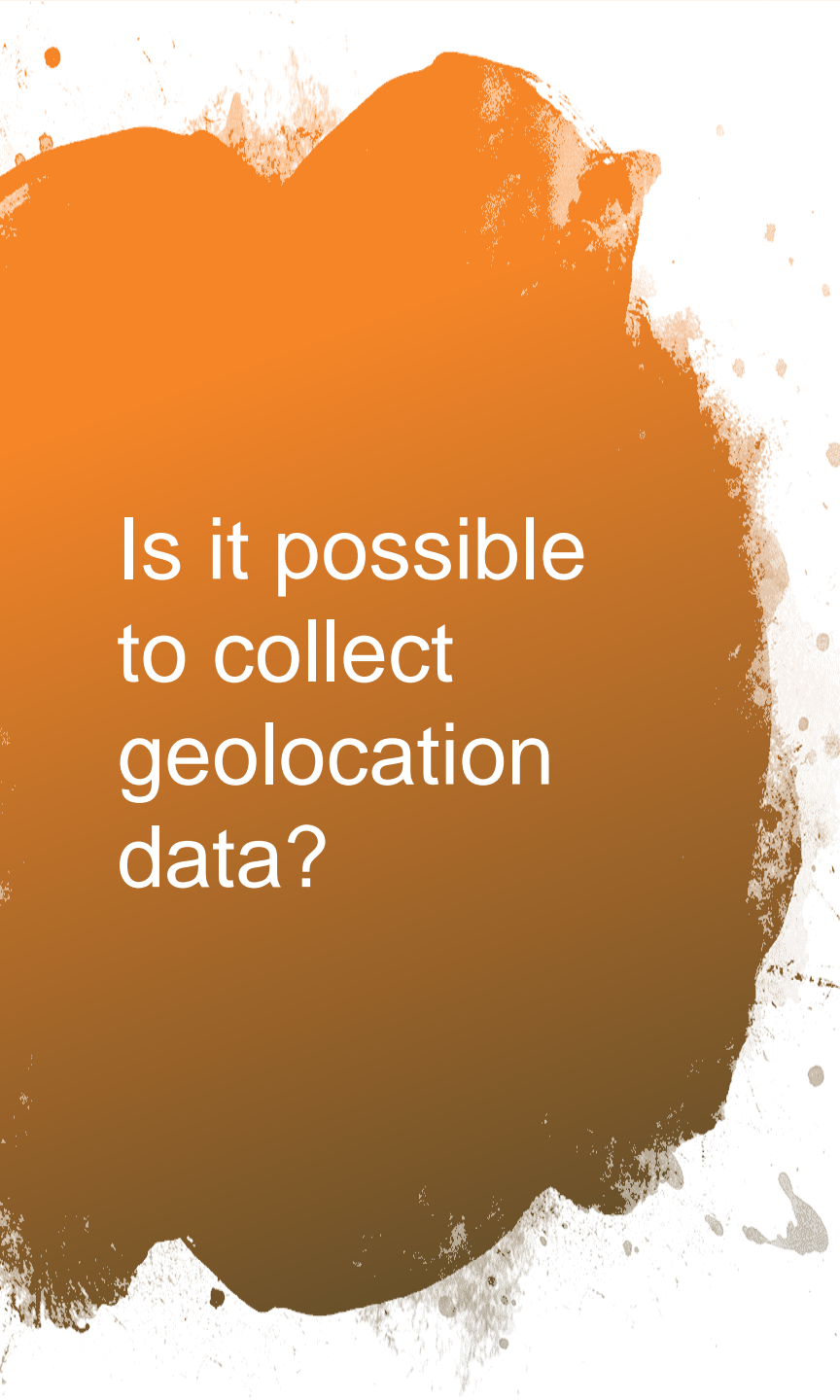


Study: Rapid Response Questionnaires

Follow-up Surveys of Responders to Baseline

- **Short version** of key measures from baseline
- No incentive used, all email communications, references made to survey being designed for a mobile device

Time	Month	Length	AAPOR RR#2
T14	June	Mean= 3.9 min ; Median=3	67%
T16	August	Mean= 3.63 min ; Median=3	66%
T18	October	Mean= 3.83 min ; Median=3	61%



Is it possible
to collect
geolocation
data?

Yes! 58% accepted when
asked the hypothetical
question.

...but, 42% did say NO...

Will respondents cooperate with an **ACTUAL** geolocation request?

Hypothesis 1b: When asked, a majority of those responding will cooperate with a request to collect **actual** geolocation data.

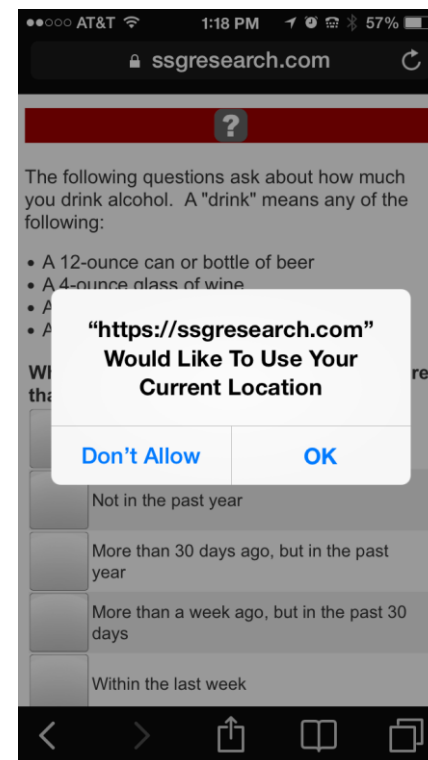
So how do we get permission?

- Geolocation data is above and beyond what a typical survey respondent would expect **or even understand is being collected** when they agree to complete a Web survey, thus, it should be described in the **consenting process** for the survey...

Requesting Geolocation Data: Devices Already Do This – But Beware

W3C Geolocation API Specifications require permission¹

...While the technology currently requests permission prior to capturing this type of data, we do not have control over that and we cannot guarantee that it will be maintained. **We believe that the automated request provided by the technology is not sufficient and it should be supplemented.**



1) <http://www.w3.org/TR/geolocation-API/#security>

The Solutions We Considered...

Expanded Consent

In addition to the questions in this brief survey we would like to collect data on the location where you are completing this survey using features available in desktop computers and mobile devices. You will be asked whether you will allow location data to be collected and you may choose not to allow collection of location data.

Explicit Consent

We would like to understand more about where respondents are when they participate in surveys. We would like to collect information made available by your computer/mobile device on your geographic location. Do you accept or decline our request to collect your location?

- Yes, you may collect geographic data*
- No you may not collect geographic data*

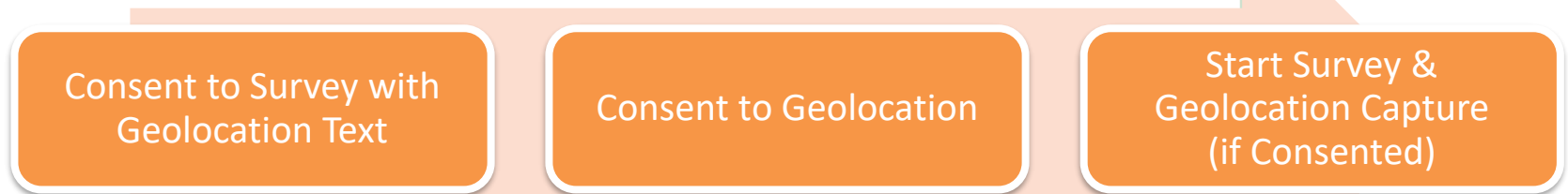


The Consent Experiment Treatments

Treatment A: **Consent Form Only**



Treatment B: **Geolocation Consent Question**

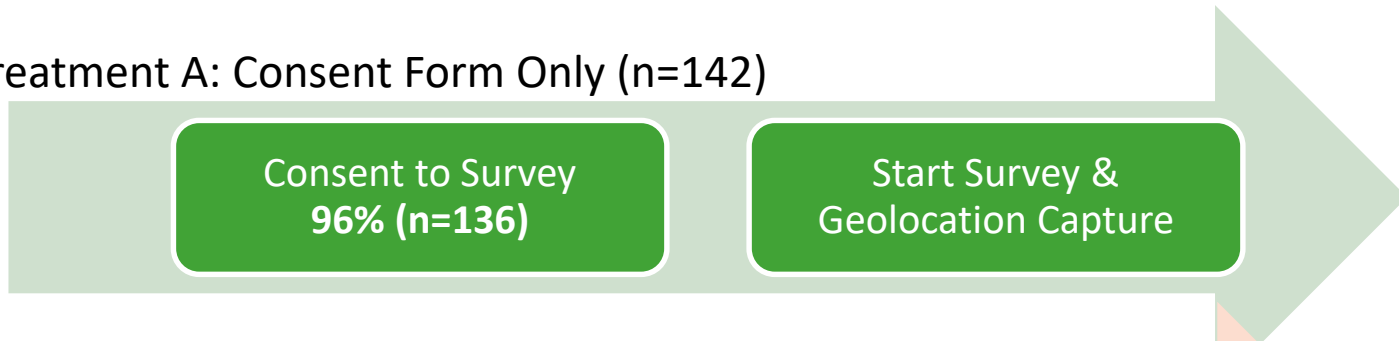


Treatment C: **Control**



Did respondents consent to the survey?

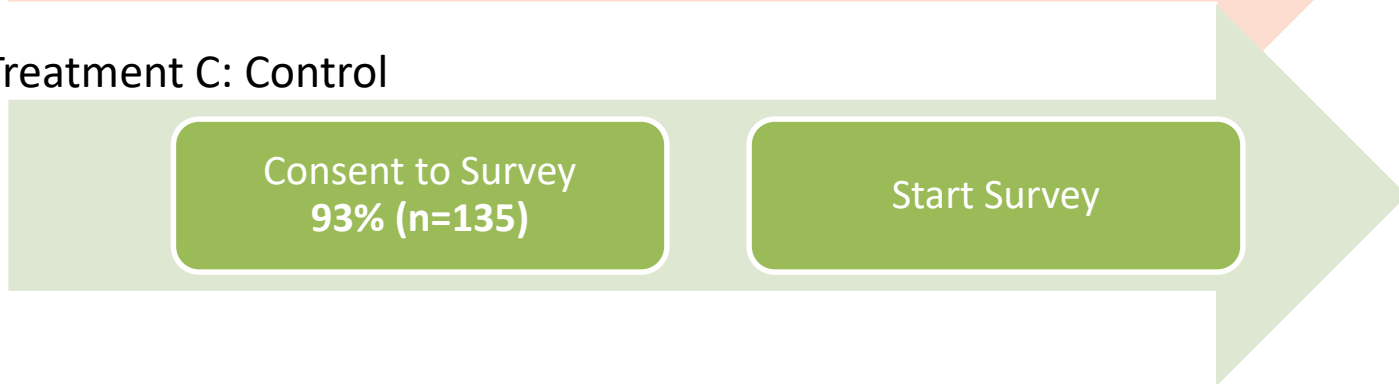
Treatment A: Consent Form Only (n=142)



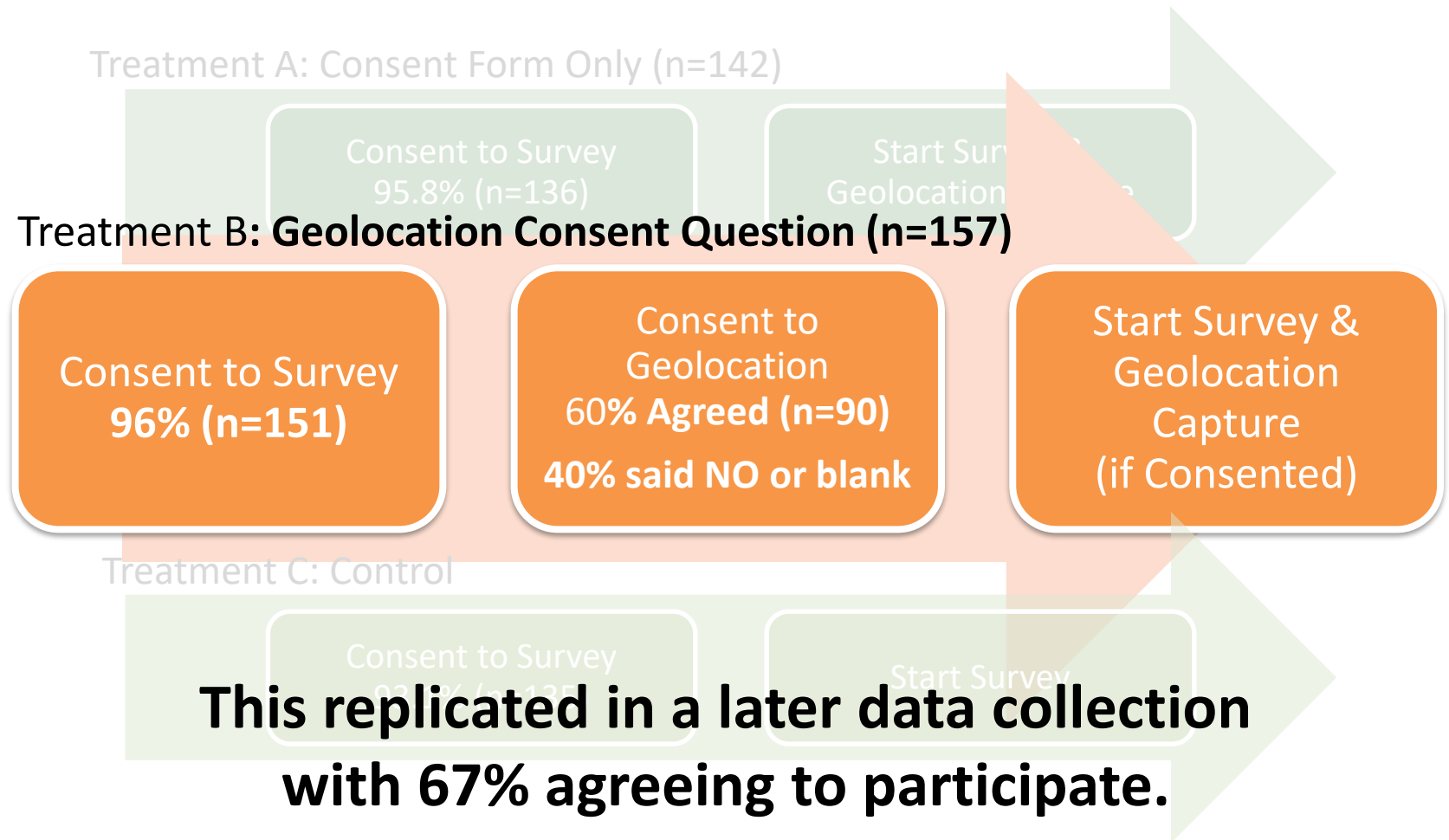
Treatment B: Geolocation Consent Question (n=157)



Treatment C: Control



But what about the extra step with the Consent Question?



Did we capture geolocation data?

Possible outcomes

1. Success: We Capture Data

- Latitude / Longitude data and related data is received

2. Permission Error: Error Code Received

- Permission Denied or Permission Unknown

3. No Data: We Get Nothing

- And no information as to why



We Replicated – Capturing Error Codes

Treatment A: **Consent Form Only** (n=219)

- Consent to Survey (with Geolocation text)
- 97% (n=212)

Geolocation Captured?

- **Success:** 20% (n=43)
- **Permiss Denied:** 29% (n=62)
- **No Data:** 51% (n=107)

Treatment B: **Geolocation Consent Question** (n=195)

- Consent to Survey
- 96.9% (n=189)

- Consent to Geolocation
- 66.7% Agreed (n=130)
- 33.3% said NO or left blank

Geolocation Captured?

- **Success:** 49.2% (n=64)
- **Permiss Denied:** 14.6% (n=19)
- **No Data:** 36.2% (n=47)

Net: More Data With Geolocation Consent Question

Treatment A: **Consent Form Only** (n=219)

Final Usable Geolocation Data

- n=43 cases
- 19.6% of sample

Treatment B: **Geolocation Consent Question** (n=195)

Final Usable Geolocation Data

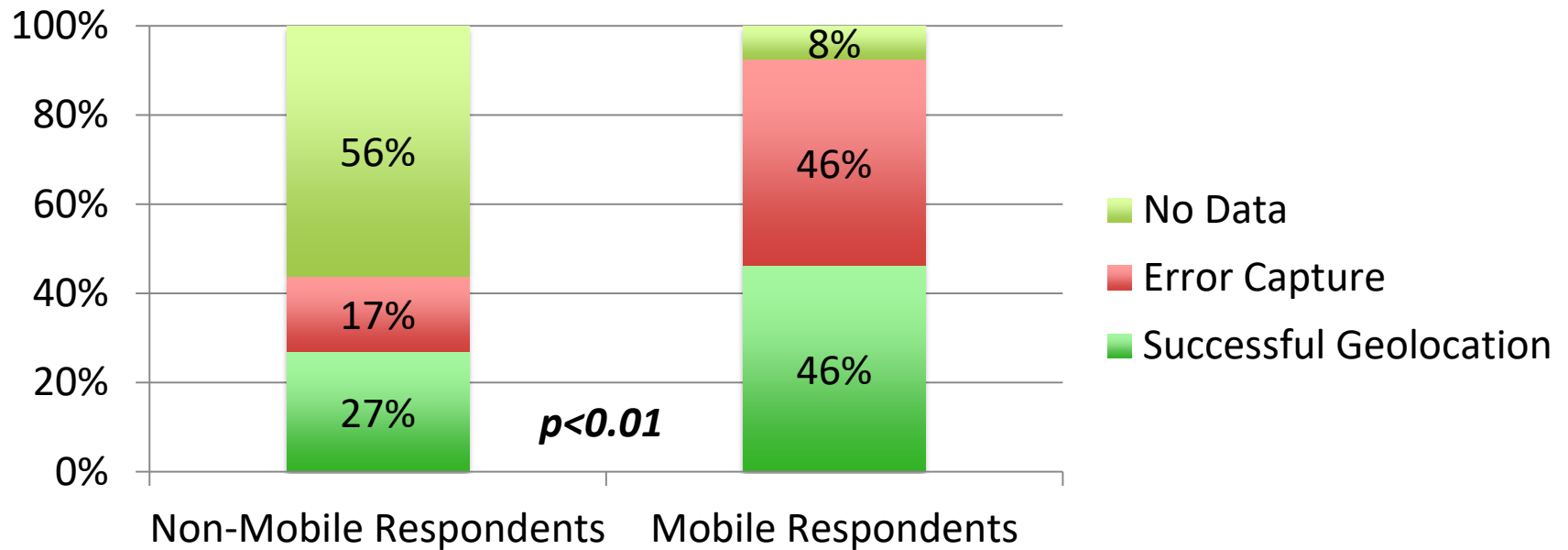
- n=64 cases
- 32.8% of sample

A large, abstract orange watercolor splash graphic on the left side of the slide, with a textured, painterly appearance. The splash is darker at the top and fades into a lighter, more transparent orange towards the bottom and right edges.

Other Findings From Our Research

- No difference in break-off rates given consent treatment.
- No evidence of any difference in substantive measures between those who provided geolocation and those who did not.
- No evidence of any difference in geolocation consent rate between mobile and non-mobile users, however...

Much better geolocation data captured from mobile devices



Summary of Best Practices in Geolocation Capture

- **Explicit geolocation consent** should be done (not just in the standard consent)
- Geolocation should be **defined clearly** and include references to how it will benefit the participant
- If geolocation is important – the study should **emphasize a mobile app or mobile web data collection** to maximize the data obtained.

Thank You! Questions?

Scott D. Crawford

scott@soundrocket.com

734.395.8790

Download this presentation here:

<https://www.soundrocket.com/fedcasinc-2019>

