Data Collection Using Wearables, Sensors, and Apps in the Social, Behavioral, and Health Sciences

Summer Institute in Survey Research Techniques
July 2019

Course Times and Location
SURVMETH 988.400
July 1-2, 2019
9am – 4pm
1070 ISR

Instructors
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Overview and Goals of Course
The recent proliferation of new mobile technology allows researchers to collect objective health and behavioral data at increased intervals, in real time, and may also reduce participant burden. In this course, we will provide examples of the utility of and integration of wearables, sensors, and apps in research settings. Examples will include the use of wearable health devices to measure activity, apps for ecological momentary assessment, and smartphone sensors to measure sound and movement, among others. Additionally, this course will consider the integration of these new technologies into existing surveys and the quality of the data collected from the total survey error perspective. We will discuss considerations for assessing coverage, participation, and measurement error when integrating wearables, sensors, and apps in a research setting as well as the costs and privacy considerations when collecting these types of data. Participants will work in groups to discuss a research study design using new technology and have the opportunity for hands-on practice with an activity tracker dataset.

Course Materials
All course materials will be made available online on the class website at https://canvas.umich.edu/gateway/. Course materials on the website include lecture slides and recommended readings for downloading.

Evaluation
By default, this is a non-credit course. If students want to receive credit for participation in the course, they need to contact the instructor before the start of the course. Students who seek credit will receive a take-home assignment due one week after the end of the course.
Accommodations for Students with Disabilities
If you think you need an accommodation for a disability, please contact Services for Students with Disabilities (SSD) office to help us determine appropriate academic accommodations. SSD (734-763-3000; http://ssd.umich.edu) typically recommends accommodations through a Verified Individualized Services and Accommodations (VISA) form. Any information you provide is private and confidential and will be treated as such.

Academic conduct
Clear definitions of the forms of academic misconduct, including cheating and plagiarism, as well as information about disciplinary sanctions for academic misconduct may be found at the Rackham web site for the University of Michigan http://www.rackham.umich.edu/policies/academic_and_professional_integrity/statement_on_academic_integrity

Knowledge of these rules is the responsibility of the student and ignorance of them does not excuse misconduct. The student is expected to be familiar with these guidelines before submitting any written work or taking any exams in this course. Lack of familiarity with these rules in no way constitutes an excuse for acts of misconduct. Charges of plagiarism and other forms of academic misconduct will be dealt with very seriously and may result in oral or written reprimands, a lower or failing grade on the assignment, a lower or failing grade for the course, suspension, and/or, in some cases, expulsion from the university.

Course Outline and Readings

**Day 1: July 1, 2019**

9am – 10am Introduction; Course overview; Types of Sensors

Recommended readings:

10am – 11am Novel examples of the integration of wearables, apps, & sensors

Recommended readings:

11pm – 12pm Study design considerations from the TSE perspective

Recommended readings:

12pm – 1pm Lunch break

1pm – 2pm Getting started: operational considerations in integrating wearables, apps, and sensors in survey research

Recommended readings:
2pm – 3pm Group activity

3pm – 4pm Group presentations

**Day 2: July 12, 2019**

9am – 10am Data from wearables, apps & sensors

Recommended readings:

10am – 11pm Data cleaning & storage

Recommended readings:

11am – 12pm Data analysis

Recommended readings:

12pm – 1pm Lunch break

1pm – 2pm Group activity

2pm – 3pm Group presentations

3pm – 4pm Looking ahead

Recommended readings: