

CONSENT TO PARTICIPATE IN NON-BIOMEDICAL RESEARCH

Mobile Carbon Footprinting: Daily Emissions Feedback via Smartphone Apps

Pilot App Phase using Smartphones

You are asked to participate in a research study conducted by Christopher Zegras (Associate Professor), J. Cressica Brazier (PhD student), and Nina Mascarenhas (MCP student) from the Department of Urban Studies and Planning at the Massachusetts Institute of Technology (MIT). The results of this study will be included in J. Cressica Brazier's PhD thesis. You were selected as a possible participant in this study because you are a graduate student, staff member, or friend of the MIT community who uses an iPhone or Android phone. You should read the information below, and ask questions about anything you do not understand, before deciding whether or not to participate.

PARTICIPATION AND WITHDRAWAL

Your participation in this study is completely voluntary and you are free to choose whether to be in it or not. If you choose to be in this study, you may subsequently withdraw from it at any time without penalty or consequences of any kind. The investigator may withdraw you from this research if circumstances arise which warrant doing so. If the investigator determines that your smartphone is not collecting data properly or that the application is not compatible with your phone model, the investigator will notify you within the first week of the study. If you cannot acquire a compatible phone within the first week of the study, then the investigator will withdraw you from the study.

PURPOSE OF THE STUDY

Our goal is to understand how smartphone apps can provide participants with tailored feedback about their daily carbon footprints, to support people's understanding and management of emissions in daily activities, such as travel, home, and other commercial and entertainment activities. This study will look at how and why participants prefer to receive different types of information about their energy use and to identify what ways of communicating about daily emissions are most useful and effective.

PROCEDURES

If you volunteer to participate in this study, we would ask you to do the following things. Because we are conducting this study remotely via a smartphone app, we will not need to meet in person nor interact directly with you. You can use the smartphone app when you have time each day, according to the following plan for the study (total time: approximately 90 minutes over 3 weeks):

- Day 1: Download and install a smartphone app from the Google Play or Apple App Store. Create an account in the app, and fill out an entrance questionnaire (20 minutes).
- First phase (11 days): The app will automatically create a daily activity diary, using your smartphone sensors. Confirm basic information about your daily activities in the app, e.g., how many people rode with you on a car trip (less than 5 minutes per day).
- Second phase (11 days): Look at the app to view tailored feedback on your daily carbon footprint, and continue to confirm basic information about your daily activities in the app (less than 5 minutes per day).
- End of Pilot: Fill out a follow-up survey about your experience using the app (20 minutes). If you signed up with an MIT/Harvard e-mail address, or if you have notified us (at cressica@mit.edu) that you are an MIT/Harvard affiliate or alumnus/a, we will send you a \$15 incentive (described below) upon completion of this app-based study. (Please allow at least 1 month for incentive processing.)
- After completing the smartphone app-based study, we will also provide you with the opportunity to participate in an optional 45-minute follow-up interview for an additional \$30 incentive.

POTENTIAL RISKS AND DISCOMFORTS

Participants might be concerned about the privacy of their collected data. To ensure privacy, your information will be accessible only to one investigator (J. Cressica Brazier) and the participant him/herself. During the second phase of the pilot, other participants will only be able to view your emissions summaries (as part of a 'leaderboard') and

basic statements about activities (e.g. 'the emissions that a participant saved due to walking instead of driving yesterday'), both labeled with the user's Display Name. The user's real name and any other personally identifiable information will never be displayed. The trained investigators listed in the Investigators section will use the participant's contact information only for direct communication with the participant. If the study is published, all participants' activity diary information will be appropriately anonymized and aggregated.

POTENTIAL BENEFITS

Participants can learn how to gain a more detailed understanding of their carbon footprints by keeping a daily diary of activities. Thus, they might better understand how to make travel and activity choices that reduce environmental impacts.

By learning from the study participants, the researchers hope to identify specific ways to present and interact with data visualizations using mobile phones, in order to better support people's energy-saving actions. The researchers also hope to use the findings to develop carbon footprinting tools that support community-level emissions mitigation planning and city-level policy recommendations.

PAYMENT FOR PARTICIPATION

Participants who signed up with a MIT/Harvard e-mail address (or who notified cressica@mit.edu of their affiliation with MIT/Harvard) will receive an incentive of \$15 after installing the app, collecting and confirming activity data for a minimum of 22 days, and completing the entrance and exit surveys described in the Procedures. If you are not an MIT/Harvard affiliate, you may still participate in the app study and receive the benefit of learning about your carbon footprint, but we will not provide a monetary incentive.

CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. In addition, your information may be reviewed by authorized MIT representatives to ensure compliance with MIT policies and procedures. The smartphones will automatically collect data on participants' travel activity using the GPS and accelerometer sensors, similar to Google Timeline. Each smartphone will be given a unique ID. Personal information, such as phone numbers and addresses, will be encrypted and coded based on the ID so as to protect privacy. The data will be hosted in a secure server, and only the investigators can access it. The data that are related to personal information will be deleted after the completion of the research.

IDENTIFICATION OF INVESTIGATORS

If you have questions or concerns about the research, please feel free to contact:

Principal Investigator: P. Christopher Zegras, Massachusetts Department of Urban Studies and Planning, 77 Massachusetts Avenue, Room 10-403, Cambridge, MA 02139, 617 452 2333, czegras@mit.edu
Investigators: J. Cressica Brazier, cressica@mit.edu, 510-502-8032; Nina Mascarenhas, ninamasc@mit.edu

EMERGENCY CARE AND COMPENSATION FOR INJURY

If you feel you have suffered an injury, which may include emotional trauma, as a result of participating in this study, please contact the person in charge of the study as soon as possible.

In the event you suffer such an injury, M.I.T. may provide itself, or arrange for the provision of, emergency transport or medical treatment, including emergency treatment and follow-up care, as needed, or reimbursement for such medical services. M.I.T. does not provide any other form of compensation for injury. In any case, neither the offer to provide medical assistance, nor the actual provision of medical services shall be considered an admission of fault or acceptance of liability. Questions regarding this policy may be directed to MIT's Insurance Office, (617) 253-2823. Your insurance carrier may be billed for the cost of emergency transport or medical treatment, if such services are determined not to be directly related to your participation in this study.

RIGHTS OF RESEARCH SUBJECTS

You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you feel you have been treated unfairly, or you have questions regarding your rights as a research subject, you may contact the Chairman of the Committee on the Use of Humans as Experimental Subjects, M.I.T., Room E25-143B, 77 Massachusetts Ave, Cambridge, MA 02139, phone 1-617-253-6787.

SIGNATURE OF RESEARCH SUBJECT OR LEGAL REPRESENTATIVE

I understand the procedures described above. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

Name of Subject

Name of Legal Representative (if applicable)

Signature of Subject or Legal Representative

Date

SIGNATURE OF PERSON OBTAINING INFORMED CONSENT

In my judgment the subject is voluntarily and knowingly giving informed consent and possesses the legal capacity to give informed consent to participate in this research study.

Name of Person Obtaining Informed Consent

Signature of Person Obtaining Informed Consent

Date