

RESEARCH STUDY INFORMATION LETTER

Title: Population-level Physical Activity and Sleep Monitoring Using ecobee data

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Supported by:

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To help you make an informed decision regarding your participation, this letter will explain what the study is about, the possible risks and benefits, and your rights as a research participant. If you do not understand something, please ask one of the investigators prior to consenting to the study. You will be provided with a copy of the information and consent form if you choose to participate in the study.

What is the study about?

You are invited to participate in a research study about public health and monitoring health behaviours. Public health surveillance is an important component of public health; it involves monitoring the health status of the population to determining how best and where resources must be allocated. This study will be looking at activities in the home, in particular sleep, physical activity and sedentary behaviour. The results of this study will help to monitor these behavioral indicators which are essential to prevent some of the chronic diseases in the long run at population level.

I. Your responsibilities as a participant

Who may participate in the study?

In order to participate in the study, you must fit the criteria identified below as we have some limitations related to the technology we are using:

- you must be 18+ years old,
- live by yourself or with one other adult person who must also be willing to participate,
- Maximum 2 adults with kids are eligible for the study
- must be willing to complete a questionnaire with your permission.

What does participation involve?

Participation in the study will consist of the following phases:

- *Phase 1 – Determining your eligibility for the study*
You will be asked to complete an online survey (screening) about the number of individuals at home and the thermostat you are using. This survey will take about 5 minutes to complete. The data will be deleted once the recruitment process is over or immediately if you are not eligible for the study. The survey data will be hosted at the secured system at University of Waterloo. Due to the study target group and technological requirements, based on the outcome of the survey, you will be included or excluded from the next step. The online survey is operated by Qualtrics, but hosted in a Canadian Data Centre. When information is transmitted over the internet privacy cannot be guaranteed. There is always a risk your responses may be intercepted by a third party (e.g., government agencies, hackers).



- *Phase 2 –Data collection*

Once you have been identified as eligible, You will be asked to complete a 15 to 30-minute questionnaire on demographic characteristics, general health, and lifestyle factors as well as your daily physical activity, sleep and sedentary behaviour such as sitting, watching TV, working on laptop or smartphone etc. (Demographic survey). The demographic survey will collect first three digits of your postal code to analyze the data based on area or geolocation only and will not be used for any other purpose.

Within the questionnaire we are also collecting the serial number of the ecobee smart thermostat to link with your dataset and to receive the data for the study.

Regarding the ecobee and smart home sensors, you will not be required to do anything. Simply go about your normal routine. We ask that you keep the sensors free from obstruction to ensure that the data collected is as accurate as possible. The thermostat and motion sensors will record temperature data and detect occupancy in rooms of the house.

Which sensors are you going to be using?

The sensors are all non-invasive, and their corresponding use is described below:

Ecobee smart wi-fi thermostat (ecobee 3/ecobee 4) and remote motion sensors – ecobee is a Canadian company that produces smart Wi-Fi thermostats that regulate the temperature in the home via remote sensors. Remote sensors measure temperature and motion at 5-minute intervals.

Ecobee collects this information as part of their agreements with their clients. While this data is already stored on Ecobee's secure servers, UW researchers will now access this data for data analysis and store it securely at the University of Waterloo. Only data UW researchers will be receiving from Ecobee is data related to "temperature and motion".

II. Your rights as a participant

Is participation in the study voluntary?

Your participation in this study is voluntary. You may decide to leave the study at any time by communicating this to the researchers. We would not use any information you provided up to this point. During the online survey you may decline to answer any question(s) you prefer not to answer. You can request your data be removed from the study no later than one month after the end of the data collection.

If you are an ecobee employee, participation in this study will not affect current/future opportunities with ecobee.



Will I receive anything for participating in the study?

In appreciation of the time, you have given to this study, you can enter your name into a lucky draw. The prizes include CAD 200. Your odds of winning one of the prizes is 1 in 30. We expect that approximately 300 individuals will take part in the study. Information collected to draw for the prizes will not be linked to the study data in any way, and this identifying information will be stored separately, then destroyed after the prizes have been provided. The amount received is taxable. It is your responsibility to report this amount for income tax purposes.

If you wish to withdraw from the study but still enter the draw, simply skip to the end of the survey to submit your name in the draw.

What are the possible benefits of the study?

There are no direct benefits of the study at the individual or household level. The study will benefit society by providing data for the future development of an algorithm for detection of trend and average duration of sleep, physical activity and sedentary behaviour using smart home technologies.

What are the risks associated with the study?

All sensors for this study are non-invasive and wireless to provide minimal disturbance to participants' daily routines. All devices have been tested and are all currently sold on the market.

If participants wish they may also review the privacy policies for ecobee being used during the study. If you feel uncomfortable answering any of the questions in the health survey, you are free to skip them or withdraw at any time. Please inform the researchers if you have questions or concerns.

Will my identity be known?

The research team at the University of Waterloo and ecobee know which data is coming from the sensors installed in your home. Each participant will be assigned a unique identifier at the beginning of the study (ID #) and the only file containing this information will be stored in a locked cabinet inside a secure room on the University of Waterloo campus. This document will be stored at a secured location to assure participant privacy, and will be destroyed after at least 7 years. We will assure confidentiality upon publication of results and storage of the data. No identifiable participant information will be presented; we will use only de-identified data and/or aggregate data.

Will my information be kept confidential?

Individual-level data will not be shared outside of the research group. Only the UbiLab research team will have access to identifiable study data and identifying information will be stored separately from the data. All soft copies from the ecobee thermostat data will be stored securely for at least 7 years without the participant identification. All the de-identified data will be stored for at least 7 years. No identifying participant information will be presented as researchers will use de-identified data in our reports. We will assure confidentiality upon publication of results.



All paper records will be kept inside specific buildings inside the University of Waterloo. Paper records will be stored in a locked cabinet inside a secure room for at least 7 years. The electronic files will all be stored in secure servers, in password protected files.

Who is sponsoring/funding the study?

This study is funded by industry and Ontario Centres of Excellence (OCE) which is part of the bigger ongoing project at the UbiLab.

The UbiLab has a research partnership with ecobee, to develop the use of their technologies for health monitoring purposes.

Has the study received ethics clearance?

This study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Committee - ORE#42132. If you have questions for the Committee contact the Office of Research Ethics, at 1-519-888-4567 ext. 36005 or ore-ceo@uwaterloo.ca.

Who should I contact if I have questions regarding my participation in the study?

If you have any questions regarding this study or would like additional information to assist you in reaching a decision about participation, please contact Kirti Sundar Sahu by email at

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