



OBTAINING VALID AND RELIABLE DATA FROM WEARABLE TECHNOLOGY

RTI International's Wearables Research and Analytics Platform (WRAP) provides an end-to-end solution that enables research teams to collect, manage, and analyze wearables data from large cohort studies in a streamlined, evidence-based, and cost-effective manner. We deploy our WRAP technology stack on the Microsoft Azure cloud and provide a highly robust, scalable, and secure platform for sensitive study data, including personally identifiable information.

The widespread adoption of wearable technology over the past decade has significantly strengthened the ability of individuals, clinicians, and researchers to understand and intervene in many aspects of personal and population health. Wearable sensors are devices that translate physical properties into corresponding electrical signals. When an individual wears such a device, sensors record data that are translated into meaningful clinical endpoints.

Study sponsors, researchers, and clinicians are increasingly interested in collecting data from wearable devices but they are faced with two challenges. They do not have the technology infrastructure or the expertise to incorporate wearable devices into current research programs and, when wearables data are collected, they are not standardized—so there is no way to manage and analyze the information in a meaningful way.

RTI can help you with these challenges. Our experts conduct research into the reliability and validity of wearable products and provide guidance and technical support to plan and implement studies that use wearables for data collection, to manage pilot and demonstration programs, and to monitor and evaluate efforts that ensure wearable devices generate trusted and actionable data.

Let Us Help You

- Identify, evaluate, select, and configure the most appropriate wearable(s) for your study's participants.
- Procure devices and manage shipping logistics for large orders and distribute devices to study participants.
- Obtain informed consent and onboard a distributed sample.
- Create training or technical reference material for individuals or study staff members.



Observation

Observation of health-relevant behaviors and physiological measures over time is the most fundamental research function that sensor-based technologies support. This approach produces objective, passive, and continuous data—which lead to less-biased results.



Intervention

Sensor-based technologies can also be used to create feedback systems that support interventions. Uploading sensor data to external sources can be used to identify areas for improvement, which can then generate personalized feedback in real time or at a later date.



Prediction

Personal sensor data can help to predict behaviors or future disease states through pattern recognition. Sensor-based technologies can capture prospective data leading up to an event of interest, and these data can be used to predict future events.



Visit our website to see how we have applied this framework to help our federal clients:

<https://www.rti.org/focus-area/personal-sensor-technologies>

- + Over 500 consumer wearable devices are available from nearly 300 commercial vendors.
- + Nearly 1,000 registered clinical trials have reported collecting data through wearable devices.
- + Almost 700 papers have been published describing the use of Fitbit devices in research.

Contact **Robert Furberg, PhD, MBA**, Senior Clinical Informaticist at rfurberg@rti.org or **919.316.3726** to learn more.

RTI International is an independent, nonprofit research institute dedicated to improving the human condition. Clients rely on us to answer questions that demand an objective and multidisciplinary approach—one that integrates expertise across the social and laboratory sciences, engineering, and international development. We believe in the promise of science, and we are inspired every day to deliver on that promise for the good of people, communities, and businesses around the world. For more information, visit www.rti.org.

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