Phase 1 Human Use Approval Summary

Buffalo, NY ITS4US Deployment Project

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16. Abstract

The Buffalo NY ITS4US Deployment Project seeks to improve mobility to, from and within the Buffalo Niagara Medical Campus by deploying new and advanced technologies with a focus on addressing existing mobility and accessibility challenges. Examples of the technologies to be deployed are electric and self-driving shuttles, a trip planning app that is customized for accessible travel, intersections that use tactile and mobile technologies to enable travelers with disabilities navigate intersections, and Smart Infrastructure to support outdoor and indoor wayfinding. The deployment geography includes the 120-acre Medical Campus and surrounding neighborhoods with a focus on three nearby neighborhoods (Fruit Belt, Masten Park, and Allentown) with underserved populations (low income, vision impaired, deaf, or hard of hearing, wheeled mobility device users and older adults).

This document describes the Human Use Approval Plan (HUAP) for Phase 1 of the Complete Trip Deployment in Buffalo, NY. It identifies this project's Institutional Review Board (IRB) as the University of Buffalo (UB) IRB, summarizes the content of the initial IRB application, and describes the coordination between this Task 8 activity and other project tasks.

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1 Introduction

Buffalo, New York (NY) is one of five sites selected for U.S. Department of Transportation (USDOT) Complete Trip - ITS4US Deployment Program, which seeks to integrate innovative technologies to improve mobility and accessibility for underserved populations. The Buffalo, NY project plans to deploy an integrated set of travel support services and systems within neighborhoods surrounding Buffalo Niagara Medical Campus (BNMC) to meet these goals.

1.1 Document Purpose

This document reflects the commitment of the Buffalo team to conducting this project and interacting with all participants in an ethical and responsible fashion. As such, this document:

- Identifies this project's Institutional Review Board (IRB) as the University of Buffalo (UB) IRB.

- Summarizes the content of the initial IRB application.

- Describes the coordination between this Task 8 activity and other project tasks.

- Reviews next steps with respect to the UB IRB's review, feedback, and approval process, including the inclusion of documentation of IRB approval status as Appendix A.

Team discussions regarding IRB topics have included open dialogue regarding participants' rights, the team's responsibilities towards participants, the contractual and legal obligations to the human use process, as well as practical constraints and trade-offs. As discussed in Chapter 2, this report also reflects careful coordination across project tasks to ensure: compliance with the IRB review and approval process, consistency between planned activities and human use protections, and uniformity in the representation of IRB-related topics and plans across task reports to the USDOT. Because the deployment is in its concept phase, this document should be considered a preliminary IRB summary. Continued diligence in revising the IRB application and seeking continued IRB reviews will be necessary as the project evolves through the design and deployment phases.

1.2 Project Overview

The Buffalo NY Complete Trip ITS4US project will deploy technologies aimed to enhance the mobility accessibility and inclusion of underserved travelers, as well as individuals who need access to the jobs and health care services at the BNMC. To provide a seamless complete trip, the Buffalo, NY ITS4US technologies include:

- Complete Trip Platform Application (CTP) that is a trip planning app, which is accessible to people with disabilities, including those with vision disabilities and also to people with limited English proficiency. Shuttle Service (both human-operated and self-driving

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shuttles) that is integrated with the CTP and provides circulation in BNMC campus and Fruit Belt/Masten Park/Allentown neighborhoods near the campus.

- Smart Infrastructure improvements to digital features within and around BNMC, such as adding communication, connectivity and traveler information technologies to the sidewalks and their adjacent loading/parking areas for transportation vehicles, bus shelters, intersections, and wayfinding technologies in indoor and outdoor venues.

The research involving human subjects will assess whether the technologies deployed in the Buffalo ITS4US project improve accessibility to the BNMC for persons who are older (age 65+); low-income; limited English proficient; have vision, hearing, or mild cognitive impairments; are wheelchair users or have mobility impairments and those to travel there for employment or health services purposes. It will explore travelers' current travel experiences including challenges and determine the degree to which the deployed technologies mitigate these issues. Caregivers are also considered in this project given their role assisting and/or accompanying the participants of interest in their travel. As such, all matters described in this document would apply to them as well. The ICF/UB team will investigate NY ITS4US technology users' levels of satisfaction with using the deployed technologies and whether trip planning and execution is enhanced.

Researchers will be collecting data at four points in time, using app- and web-based surveys as well as operations data from usage of the CTP and the electric shuttles. The research results will help enable others to understand and build upon the investments made in this project to facilitate incorporating Complete Trip - ITS4US strategies more effectively in other future deployments.

1.3 Definitions, Acronyms, and Abbreviations

Table 1 lists the acronyms used in the document.

Table 1. List of acronyms

Acronym	Description
BNMC	Buffalo Niagara Medical Campus
ConOps	Concept of Operations
CTP	Complete Trip Platform
FHWA	Federal Highway Administration
IRB	Institutional Review Board
NY	New York
PMESP	Performance Measurement and Evaluation Support Plan
U.S.	United States
UB	University at Buffalo
USDOT	U.S. Department of Transportation
WNY	Western NY

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2 Human Subjects Research Plan

This section summarizes the project elements that involve or relate to human subject research, including planned activities later in Phase 1 and through Phase 2 and 3. Content for this section was largely drawn from the UB IRB application.

2.1 Research Questions

The research involving human subjects will evaluate whether the deployed technologies enhance the mobility of underserved persons and others (i.e., workers and visitors) traveling to/from the BNMC and within their neighborhoods. Several hypotheses will be explored:

- The deployed technologies will be perceived as useful in improving mobility by the study participants.

- The deployed technologies will be perceived as enabling affordable mobility.

- The deployed technologies will make traveling to/from the BNMC more efficient.

- The deployed technologies will make traveling to/from the BNMC more reliable.

- The deployed technologies will make traveling to/from the BNMC safer.

- The deployment should be replicable throughout Buffalo and elsewhere in the U.S.

2.2 Interactions with Other Tasks and Consistency

This document reflects careful coordination among the research team across project tasks to ensure compliance with the IRB review and approval process, consistency between planned activities and human use protections, and uniformity in the representation of IRB-related topics and plans across task reports to the USDOT. In particular, much of the material included in the IRB application was produced in other tasks and incorporated (either directly or in some summary form) into the IRB application. Below is a summary of the information related to human use approval gleaned from other tasks within this project.

- Key information obtained from Task 2: Pilot Deployment Concept of Operations (ConOps):

    o General description of the planned research and the scientific objectives of the research.

    o Intended subject population(s) of the study.

    o In general, how human subjects will interact with the pilot deployment.

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- Key information obtained from Task 3: Data Management Plan:

  - Procedures for gathering, handling, and protecting data and personal information.

  - Details regarding data sharing and data transmission.

- Key information obtained from Task 4: Safety Management Plan:

  - Descriptions of potential risks to participants while participating, including any safety risks that are associated with using the deployed technologies.

- Key information obtained from Task 5: Performance Measurement and Evaluation Support Plan (PMESP):

  - Identification of the data sources that will be used to evaluate the impact of the deployed technologies on the mobility of study participants.

  - General design of the research involving human subjects (experimental design) and data collection procedures.

  - Plans for recruiting and consenting participants.

  - Details regarding participant qualification.

  - The designated performance measures and associated targets and the data needed to populate the performance measures.

2.3 Considerations for Vulnerable Populations

The USDOT's Complete Trip ITS4US program aims to mitigate mobility challenges for underserved travelers through the funding of pilot deployment of innovative and emerging mobility technologies, services, and vehicles. As such, this research involving human subjects focuses on underserved travelers, but not exclusively. Underserved travelers are defined as those who are limited English proficient speakers, age 65+, low income (below $25,000 in total annual income), and persons who have a disability (i.e., vision impairment, hearing loss, mobility impairment, mild cognitive impairment). In addition, BNMC workers, BNMC visitors for healthcare services, and caregivers for underserved travelers to/from the BNMC may participate in the study, as well as persons who live in neighborhoods near to the BNMC. All participants must be 18 years of age or older, and they must be able to independently understand the consent form and give consent to participate in the study.

We expect that the caregivers that participate in the study will be caretakers of older persons or persons with impairments who regularly travel with the care recipient to/from the BNMC. The caregiver will answer the evaluation questions based their point of view as to how the system helped them in their travel assistance duties. It may be that both the care recipient and a caregiver participate in the study; however, the priority will be on facilitating the participation of care recipients who represent the underserved groups.

The technologies will only be available to study participants due to potential capacity constraints on the community shuttle and other resource constraints associated with the deployment. This amendment will be among the modifications to the IRB application in Phase 2. CTP registration

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will be incorporated into the recruitment screening process for study participation. The consent form will be embedded in the CTP registration process. Persons that do not give consent to participate in the study will not be allowed to register. Use of the CTP is by registered users only. Use of the community shuttle service will be registered users of the CTP only. The smart infrastructure technology is accessed only through the CTP.

As discussed in the IRB application, this research does not involve prisoners or children. It is possible that a participant may be pregnant during her participation in the research. In such cases, no portions of the protocol pose any risk to the woman or fetus and do not involve interventions/invasive procedures to the participant.

As mentioned above, this research focuses on underserved travelers, but not exclusively. Considerations for these groups include the use of caregivers, plain-language consent forms, and translated materials into Spanish—note that other languages may be considered if deemed necessary by the research team and through engagement with stakeholders.

The research team is offering an incentive to participate in the research that may constitute an inducement to participate in a study in which they otherwise would not participate. The incentives are the same for all recruited participants ($25 for each completed survey; there are four planned survey iterations). In addition, the research team is avoiding payment schemes such as lotteries that encourage overestimation of monetary benefit.

Study participants will include persons other than underserved travelers. These persons include BNMC workers and those who visit the BNMC for healthcare services. It also includes residents of the Fruit Belt and Masden Park neighborhoods near the BNMC and caregivers for underserved travelers. Other study participants will not only provide useful information about the performance of the deployed technologies, but also will serve as a quasi experimental control group for the underserved travelers.

The priority will be on recruiting underserved travelers as study participants. To the extent necessary so that underserved travelers receive proper attention during the research, the number of other study participants may be capped so as not to overwhelm the sample and obscure the findings among underserved travelers.

2.4 Informed Consent

Persons meeting the screening criteria during recruitment will be presented with the consent notice regarding study participation during the CTP registration process. Participants will have as much time as needed to review the consent notice and provide their consent to participate in the study prior to completing the CTP registration process. The consent form will be presented to participants as an app-based or web-survey, using industry standing accessibility functionality, or as a paper document in an in-person interview. The formats of the consent form will be accessible (e.g., Braille, large print, audible, and in other languages as needed). A draft consent form was submitted with the IRB application. We have amended the consent form to include safety risks identified in the Safety Management Plan and the new text is presented in Appendix B.

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2.5 Participant Questionnaires/Evaluation

The research team will develop and administer four app-based, online, or telephone-based surveys. The surveys will take place at four points in time: (1) at the end of Phase 2 and prior to the pilot field deployment of the technologies to serve as a baseline, (2) about 3 months after the start of the pilot field deployment in Phase 3, (3) about 9 months after the start of the pilot field deployment, and (4) about 18 months after the start of the pilot field deployment and prior to the end of the Phase 3 pilot deployment. The baseline questionnaire is different from the subsequent questionnaires. All of the surveys that are subsequent to the baseline will use the same questionnaire so that responses can be tracked and compared across survey waves. The baseline questionnaire for study participants other than caregivers is provided in Appendix C. The post-technology-deployment questionnaire for study participants other than caregivers is provided in Appendix D. Modified versions of these survey questionnaires will be developed for caregivers in Phase 2 to account for the fact that caregivers are reporting on how the technologies assisted them in their duties in providing travel assistance to members of the target population. The IRB application will also be amended in Phase 2 to include the caregiver versions.

2.6 Participant Data

Because this evaluation research will track specific respondents over time, it is necessary to ask participants for their name, zip code, email, and contact number. However, once recruited, individuals will be assigned a unique respondent ID number that will be used throughout the different survey waves. The personally identifiable information that was collected during recruitment will then be stored in a separate secure database and not linked to any survey data and it will remain under the stewardship of the University at Buffalo. Only the respondent ID number will be in the survey database. Access to the raw survey data will be limited to users who must meet IRB requirements. According to the UB IRB guidelines, all personnel with access to the raw data need to complete the required CITI training courses. All courses must be the University at Buffalo prescribed CITI courses. Similar CITI courses from other institutions will not be accepted. However, some of the modules in those courses may be applied automatically by CITI to UB CITI courses. The independent evaluation team (IE) for this pilot deployment could have access to sanitized/non-identified data processed by persons with access to the raw data and forwarded to the IE team

2.7 Recruitment Design

Recruitment will occur during the Agile development in Phase 2 and prior to the point of the full deployment in Phase 3. Three types of non-probability sampling approaches will be used to recruit participants.

- **Convenience sampling:** We will station interviewers at various entrances to or other key locations on the BNMC campus and have them administer the short screening questionnaire in English/Spanish to determine whether they fit a target population and if so, to describe the research opportunity and the incentive structure and then to invite them to participate in the evaluation study by registering to use the CTP. If a person does not fit the target population, information will still be provided to them, in case they are able to refer known ones towards the project. By design, this sampling approach will

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capture BNMC workers, BNMC visitors, and caregivers traveling with a person representing an underserved population group. Appendix C contains a draft recruitment screening questionnaire.

- **Voluntary response sampling:** We will place English/Spanish/Braille (with large print) door hangers on homes in the Fruit Belt, Masden Park, and perhaps other near-by neighborhoods that describe the research opportunity and the incentive structure and invite people to volunteer themselves for the evaluation study. A toll-free phone number and a web link will be offered for people to contact the research team at which time the recruitment screening questionnaire will be administered, consent to participate obtained, and CTP registration completed. This strategy may include some level of "snowball" sampling, in which recruited participants invite eligible friends or colleagues to participate for a "finder's fee." By design, this sampling approach will capture people who live in a nearby neighborhood to the BNMC. Appendix D contains a draft door hanger.

- **Targeted outreach:** Recruitment will also be done via community-based organizations. These include organizations based in the neighborhoods surrounding the BNMC, particularly the Fruit Belt neighborhood, as well as regional organizations such as Aspire of Western NY (WNY), WNY Independent Living Center, Inc., the New York State offices of vocational rehabilitation, or specialized home health care services (to reach caregivers). The project team also expects to sample NFTA paratransit (PAL) subscribers through the service's database. In addition, the IDEA Center's database of participant contact information from past studies may also serve as a recruitment source. Both NFTA and the IDEA Center are team members. Per the IRB application, we will provide NFTA and the IDEA Center with the door hanger text, which will then be passed along to their database subscribers.

2.8 Training of Participants

Users of the system will need to take training to clearly understand how the system works and its capabilities (i.e., what it can and cannot do). The details of the training are available in the Phase 1 Participant Training and Stakeholder Education Plan (first draft dated December 6, 2021, is currently under review by USDOT). The training plan details the different education and training modules available and links them to the several user groups that would need to take them.

Note that users are not the only ones that will need training. People involved with the operation of the system may also need some level of training. For instance, stewards of the SDS will need to be trained on the operation of the SDS and how to act during emergency situations, and call center operators will need to be trained on how to use the system to make and manage reservations. Their training will also be detailed in the training plan.

2.9 Team Human Subjects Research Training

Before relevant members of the ICF-UB research team access participant data for quality assurance, processing, or analysis, they will have completed the University at Buffalo prescribed Collaborative Institutional Training Initiative (CITI Program) courses (https://about.citiprogram.org/). This is required for anyone wo has or wants access to the data, regardless of whether they use that data or not, or the frequency with which they access the data.

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Some members of the research team have taken similar CITI courses from other institutions; however, these will not be accepted. But some of the modules in those courses taken at other institutions may be applied automatically toward UB CITI course completion.

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3 Protocol/Application Summary

This section summarizes the formal Institutional Review Board application process and documentation. Elements already discussed in Section 2 are referenced for brevity.

3.1 Institutional Review Board

The Institutional Review Board (IRB) being used by the project is the University at Buffalo (UB). UB's Human Research Protection Program protects the rights of research volunteers, guided by a 1964 World Medical Organization declaration: "In research on man, the interest of science and society should never take precedence over considerations related to the well-being of the subject." UB researchers are integral members of the project team.

3.1.1 Federal-wide Assurance

The Federal-wide Assurance Number assigned to the UB IRB by the US Department of Health & Human Services is ID#: FWA0000882.

3.2 IRB Review Process

IRB application templates provided by UB (for the protocol and informed consent) were used for the IRB submission. In addition, all recruitment language as well as the baseline and follow up questionnaires were also submitted. The research team is expecting to amend the original application in Phase 2. Collectively, they presented all the necessary information to be provided for the review process. The official review of a completed application takes about two months. Jordana Maisel, a member of the research team and assistant professor in UB's department of urban and regional planning and director of research at UB's IDEA Center, submitted the application for this project to the UB IRB on October 21, 2021. The IRB application was submitted early, allowing for pre-review and updating of the submitted materials.

Submitted applications receive a pre-review to determine the level of IRB review needed (committee review or non-committee review). This project involves non-clinical behavioral research. It may be that this project will need to undergo a committee review because the research involves cognitively impaired persons, which may add time for the IRB review approval. However, since the research will target mildly cognitively impaired persons or their caregivers it may be subject to a non-committee or exemption granting review.

3.3 Ensuring IRB Understanding of Project

The IRB application protocol template provided by UB required very detailed information on project plans, research participants, recruitment and screening, and project procedures covering the deployed technologies. The information submitted in response to these requirements was

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sufficiently detailed such that the IRB reviewers should be able to understand the planned technologies. The IRB text on study design is presented in the following paragraphs.

This evaluation research is conducted as part of the U.S. Department of Transportation's Complete Trip - ITS4US Deployment Program, which aims to solve mobility challenges for all travelers with a specific focus on underserved communities through technology deployment. Buffalo is one of five selected demonstration sites. The Buffalo ITS4US project will be completed in three phases: Phase 1 – Technology Concept Development; Phase 2 – Technology Design and Test; and Phase 3 – Technology Deployment and Evaluation. Human subjects data collection will occur in Phase 2 and Phase 3. This IRB application is being produced in Phase 1.

This research will use an experimental design to assess whether the deployed technologies were effective in improving the mobility of underserved populations. Researchers will be collecting data using app-based, telephone, and web-based surveys as well as operations data drawn from usage of the CTP and the community shuttles to draw conclusions and answer research questions.

The IRB text on the procedures involved is summarized in the following paragraphs. However, the the IRB application will need to be modified in Phase 2 to clarify that non-participants in the study will not be able to use the deployed technologies and that there is some risk to participants as noted in the consent form (appendix B of this document). This research is an evaluation of the deployed technologies. The focus of the Complete Trips technologies is on specific population groups:

- those with visual, mobility, auditory and/or cognitive disabilities

- elderly individuals advancing in age beyond age 65

- people living in low-income households

- people with limited- or non-English-speaking proficiency.

The Complete Trips technologies may also benefit other population groups that do not fall in any of the categories above, including people who are caregivers for persons who fit the categories above, who work or receive healthcare services at the BNMC and other people living in the neighborhoods surrounding the BNMC (Fruit Belt, Masten Park and Allentown, which will offer the CS service).

The research team will screen and recruit individuals to participate in the evaluation using the strategies identified in Section 11.1 [of the IRB application]. Individuals that fit one or more of these groups will be recruited to participate in the evaluation study. All study participants must be 18 years of age or older, must be able to understand and give consent, and must register to use the CTP.

The evaluation of the deployed technologies will be conducted primarily through app- or web-based surveys. Telephone surveys are another option. A baseline survey will be conducted prior to participants using the deployed technologies, and then three post-deployment survey waves, spaced about 6 months apart will be done. The baseline questionnaire will be distinct from the post-deployment questionnaire.

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In Phase 2, survey questions for both the baseline and post-deployment surveys will be reviewed by organizations serving persons with disabilities and older adults to ensure question clarity, appropriate response categories, and the use of appropriate language regarding the disabilities of focus. The National Federation of the Blind's Jernigan Institute (NFBJI), for instance, provides review and consulting services for research involving blind and low vision persons and we will seek similar assistance from organizations serving persons with mobility disabilities, hearing loss, and persons 65 and older.

We will pilot test the survey questions with members of the NFBJI so these are evaluated for accessibility. Such testing typically involves the use of widely used screen reading technology, typically NVDA and JAWS. The survey will also be evaluated for compatibility with screen magnification technologies like Zoom Text. The research team, as necessary, will iteratively modify the deployed survey based on feedback from organizations like the NFBJI until reaching a satisfactory level of accessibility. The actual deployment of the surveys will take place in Phase 3 of the study. The survey link will be distributed via the Complete Trip Planning (CTP) application which participants will be asked to use as one of the deployed technologies so will contain state-of-the-art accessibility features. Surveys will be administered via research team's custom web-based survey platform and also by telephone (if an individual cannot use the CTP).

In addition to the survey data, passive data will also be captured in Phase 3 in the same general time frame in which the surveys are being administered to reduce burden on respondents. Passive data are from the CTP and the community shuttle operations center. Such data will include registration and app usage information such as frequency, time of day, etc., as well as trip information such as trip planning, trip booking, and trip execution (e.g., mode, location). Such data will be tied to the survey data via the respondent ID of study participants to protect personally identifiable information and will be collected and stored only for those persons who have consented to be a part of the study. While possible, specific geolocations will not be captured also to protect personally identifiable information.

Recruitment using the aforementioned strategies (i.e., convenience, targeted, and voluntary) will be done first through in-person screenings on the BNMC. This strategy will be followed by door hangers on residences in nearby neighborhoods, use of the PAL database, outreach to various community-based and community serving organizations to reach the designed numbers of participants. For these latter strategies, participants will use the provided hyperlink to get access to the online screening survey or call a local phone number to conduct it over the phone. They will then read (or be read) the consent notice at the start of the screening survey and will consent by choosing to participate in the survey.

Recruitment will continue until receipt of at least 100 participants in Phase 2, which will be increased up to 500 participants up to the start of full Phase 3 deployment.

The evaluation surveys will take place at four points in time: 1) prior to the pilot field deployment of the technologies to serve as a baseline, 2) about 3 months after the start of the pilot field deployment, 3) about 9 months after the start of the pilot field deployment, and 4) about 18 months after the start of the pilot field deployment and prior to the end of the pilot deployment. Participants will receive $25 for each completed survey. Data from the survey iterations will be linked via a respondent ID number.

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3.4 Relevant IRB Procedures

Submitting information to the IRB initiates a series of activities that may include:

- Review within the submitting department at UB.

- Pre-review by an IRB staff member.

- Review by the IRB committee or a designated reviewer.

- Communication of the IRB decision to the investigator.

At any stage during the review process, the IRB may request clarifications to the study content. Similarly, the official IRB determination may be that the study requires changes before research can begin. Once approved, the project may require continuing review and/or modifications as research designs are updated and/or completed, and/or team members are added to the project.

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4 Human Use Approval

The study team has received IRB approval on its application. The approval letter from the IRB is included in Appendix A. We know that an amendment to the IRB application will need to submitted in Phase 2.

4.1 Type of Review

The project involves non-clinical behavioral research. The type of review conducted by the IRB was a non-committee review, meaning that an IRB was not convened to review the application. The review was conducted by a single individual that has been designated as a qualified IRB reviewer. No other reviews were required by the IRB in its approval letter.

4.2 Approval Status

The study team has received IRB approval on its application submitted in November 2021. The research was deemed exempt according to 45 CFR Part 46.104, meaning that the research qualifies as no risk or minimal risk to subjects and is exempt from most of the requirements of the Federal Policy for the Protection of Human Subjects.

4.3 Feedback from IRB Review

Once IRB feedback is obtained, key feedback received will be documented in this section. The project team expects to revise the application based on feedback. If the evaluation research design changes due to system requirements or constraints that surface in Phase 2, future amendments may be necessary. These items were addressed in the IRB application and approval was received as noted above.

The study team expects to submit a revised IRB application in Phase 2 addressing needed design changes that surface during the Phase 2 development and testing as well as to address the minimal risks associated with using the technologies as now discussed in the consent form (Appendix B) and the inclusion of persons with cognitive impairments as long as they can independently understand and give consent to participate in the study.

4.4 Conditions

This UB IRB determination was given with the understanding that the proposed study design will be followed. If modifications are needed that significantly alter the purpose, design, or data collected, then those changes should be submitted to the IRB to determineif the modifications alter the research such that the criteria for an exempt determination are no longer met.

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5 Future Steps and Schedule

This section presents currently known future steps relating to Human Use Approval and serves as a plan for future supporting activities in later Phases.

IRB approval has been obtained (see Appendix A). The UB IRB determined on 12/8/2021 that the research is Exempt according to 45 CFR Part 46.104. There is no expiration date to this approval. However, if the research design differs significantly, the modifications need to be submitted to the UB IRB. Phase 2 research may commence, but we are expecting to submit modifications to the UB IRB once all research design changes are known.

Table 2 summarizes the future project tasks and activities associated with the IRB.

Table 2. Human Use Approval Confirmation Materials Summary

Planned Timing	Confirmation Material	Description	Dependencies
December 2021	IRB approval received	IRB review of revised protocol and materials	The UB IRB determined that the research is Exempt according to 45 CFR Part 46.104. There is no expiration date.
April 2022	Start Phase 2 human research activities	Human Research activities started after the final IRB approval letter	Receipt of final IRB approval letter
End of Phase 2	PMESP update	PMESP updated with any changes coming from the Agile process, testing and sample data schema, example performance measures, and participant recruitment procedures.	Phase 2 agile design process completed
End of Phase 2	IRB protocol modifications	IRB protocol and associated materials updated with any changes coming from Phase 2 activities and resubmitted for approval.	Phase 2 agile design process completed
End of Phase 2	Revise IRB protocol based on feedback from IRB reviewer	IRB review of revised protocol	IRB protocol submitted at end of Phase 2 is approved.

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Appendix A. IRB Documentation

An application has been submitted to the UB IRB, and a formal approval from the IRB has been obtained (see below).

University at Buffalo   University at Buffalo *The State University of New York*   **Institutional Review Board (UBIRB)**

Office of Research Compliance | Clinical and Translational Research Center Room 5018
875 Ellicott St. | Buffalo, NY 14203
UB Federalwide Assurance ID#: FWA00008824

APPROVAL OF SUBMISSION: EXEMPT RESEARCH DETERMINATION

December 8, 2021

Dear Dr. JORDANA MAISEL,

On 12/8/2021, the University at Buffalo IRB reviewed the following submission:

Type of Review:	Initial Study
Title of Study:	Performance Measurement and Evaluation Research for the Buffalo NY ITS4US Deployment Project
Investigator:	JORDANA MAISEL
IRB ID:	STUDY00005930
Funding:	Funding Source ID: pass through from U.S. DOT
Documents Reviewed:	• Consent, Category: Consent Form; • Door Hanger, Category: Recruitment Materials; • Proposal, Category: Sponsor Attachment; • Protocol, Category: IRB Protocol; • Recruitment screener, Category: Other; • Survey Questions, Category: Surveys/Questionnaires

The study materials for the project referenced above were reviewed and approved by theSUNY University at Buffalo IRB (UBIRB) by Non-Committee Review. The UBIRB hasdetermined on 12/8/2021 that the research is Exempt according to 45 CFR Part 46.104. There is no expiration date.

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In conducting this study, you are required to follow the requirements listed in the Investigator Manual (HRP-103), which can be found by navigating to the IRB Librarywithin the Click system.

This UBIRB determination is given with the understanding that the proposed study design will be followed. If modifications are needed that significantly alter the purpose, design, or data collected, then those changes should be submitted to the IRB to determineif the modifications alter the research such that the criteria for an exempt determination are no longer met. You can create a modification by navigating to the active study in Click IRB and selecting 'Create Modification / CR'. Otherwise, this study no longer needs to be reviewed by the IRB.

For more information on exemption criteria and categories, see the IRB Toolkit Worksheet: Exempt Determination (HRP-312). If you have any questions about thisdetermination, please contact the IRB.

As principal investigator for this study involving human participants, you haveresponsibilities to the SUNY University at Buffalo IRB (UBIRB) as follows:

1. Ensuring that no subjects are enrolled prior to the IRB approval date.
2. Ensuring that the UBIRB is notified of all reportable information in accordancewith the New Information SOP (HRP-024).
3. Ensuring that the protocol is followed as approved by UBIRB including minorchanges which can be made if they do not impact the exempt determination.
4. Ensuring that the study is conducted in compliance with all UBIRB decisions,conditions, and requirements.
5. Bearing responsibility for all actions of the staff and sub-investigators with regardto the protocol.
6. Bearing responsibility for securing any other required approvals before researchbegins.

If you have any questions, please contact the UBIRB at 716-888-4888 or ub-irb@buffalo.edu. Please include the project title and number in all correspondence withthe UBIRB.

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Appendix B. Draft Consent Form

University at Buffalo
The State University of New York

University at Buffalo Institutional Review Board (UBIRB)

Office of Research Compliance | Clinical and Translational Research Center Room 5018

875 Ellicott St. | Buffalo, NY 14203

UB Federalwide Assurance ID#: FWA00008824

Adult Consent to Participate in a Research Study

Title of research study: Performance Measurement and Evaluation Research for the Buffalo NY ITS4US Deployment Project

Version Date: October 20, 2021

Investigator: Jordana Maisel, PhD

Key Information: The following is a short summary of this study to help you decide whether or not to be a part of this study. More detailed information is listed in this form.

Why am I being invited to take part in a research study?

You are being invited to take part in a research study because you travel to the Buffalo Niagara Medical Center (BNMC) for employment or health services purposes, are older (age 65+); low-income; limited English proficient, or have vision, hearing, mobility impairments or mild cognitive impairment. We are also inviting caregivers of persons with impairments to participate as well as persons who live in neighborhoods near the BNMC.

What should I know about a research study?

- Someone will explain this research study to you.
- Whether or not you take part is up to you.
- You can choose not to take part.
- You can agree to take part and later change your mind.
- Your decision will not be held against you.
- You can ask all the questions you want before you decide.

Why is this research being done?

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The purpose of this research is to determine the usefulness of three new technologies for improving people's ability to travel to or from the Buffalo Niagara Medical Center or around their neighborhoods. The three technologies are a trip planning app, a community shuttle service (both human driven and self-driving), and safe intersection crossing technology.

How long will the research last and what will I need to do?

The research will last about 18 months. You will be asked to complete four surveys about your perceptions of the new technologies. More detailed information about the study procedures can be found under **"What happens if I say yes, I want to be in this research?"**

Is there any way being in this study could be bad for me?

There are potential safety risks to using the new technologies that could go beyond what you might face in everyday life. The risks are minimal and there is a safety plan associated with the study that provides ways in which the risks can be avoided or lessened. These risks are associated with use of the self-driving shuttle, the use of the wayfinding function in the trip planning app, and the use of the safe intersection crossing technology. While the potential for these to happen are small, we need to mention them here. With the self-driving shuttle, there could be sudden stops due to the way the technology perceives its surrounding environment as well as the potential for the self-driving shuttle to travel beyond the operating environment for which it is designed. With the trip planning application, the wayfinding function may provide inaccurate directions or inaccurate information about sidewalk hazards. With the safe intersection crossing technology, your mobile device may fail to link with the technology and thus not provide for a safe crossing. The accuracy and performance of the signal timing or direction might fail to provide a safe crossing alert or the alert might be delayed causing an unsafe crossing.

Will being in this study help me in any way?

While the technologies should offer improved travel experiences for you, there may not be a direct benefit to you personally for participating in this study. We cannot promise any benefits to others from your taking part in this research. However, the information you provide will enable further development of these technologies, and others like them, to offer improved travel experiences for people like you.

What happens if I do not want to be in this research?

Participation in research is completely voluntary. You may choose not to enroll in this study. Your refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You can stop the survey at any time by closing your browser.

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Detailed Information: The following is more detailed information about this study in addition to the information listed above.

Who can I talk to if I have questions or concerns?

If you have questions, concerns, or complaints, or think the research has hurt you, talk to the research team (716) 829-5902 or email jlmaisel@buffalo.edu. You may also contact the research participant advocate at 716-888-4845 or researchadvocate@buffalo.edu. This research has been reviewed and approved by an Institutional Review Board ("IRB"). An IRB is a committee that provides ethical and regulatory oversight of research that involves human subjects. You may talk to them at (716) 888-4888 or email ub-irb@buffalo.edu if:

- You have questions about your rights as a participant in this research
- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.

How many people will be studied?

We expect about 500 people will be in this research study.

What happens if I say yes, I want to be in this research?

Each survey will take approximately 20-30 minutes to complete. The surveys will be conducted about every six months. You may complete the survey on your mobile device, laptop, desktop computer, or by telephone. The survey consists of questions about (1) your travel behavior, (2) challenges in traveling to or from the BNMC or your neighborhood, (3) use of the deployed technologies, (4) your perceptions of the technologies, and (5) demographic information. Demographic information includes your zip code, name, and contact information. In addition to completing surveys, when you use the trip planning app or the community shuttle service as a participant in the study, passive data will also be captured. Such data will include registration and app usage (e.g., frequency, time of day) as well as trip (e.g., trip planning, trip booking, trip travel mode, shuttle pick-up/drop-off location). Such data will be tied to the survey data via the respondent ID of study participants to protect personally identifiable information and will be collected and stored only for those persons who have consented to be a part of the study. While possible, specific geolocations will not be captured also to protect personally identifiable information.

What happens if I say yes, but I change my mind later?

You can leave the research at any time it will not be held against you. If you decide to leave the research, already collected data may not be removed from the study database.

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Is there any way being in this study could be bad for me? (Detailed Risks)

There are minimal risks associated with these procedures.

What happens to the information collected for the research?

The data collected will be stored in secured servers, will only be accessible to members of the research team, and will be password protected. Identities of research participants will be kept confidential. This information will be securely stored in password protected files in 309 Hayes on the University of Buffalo Campus.

Efforts will be made to limit the use and disclosure of your personal information to people who have a need to review this information. We cannot promise complete secrecy. Organizations that may inspect and copy your information include the IRB and other representatives of this organization.

The results of this study may be published in scientific journals, professional publications, or educational presentations. Your name will not be connected to your survey responses and will not be used in any report. The de-identified information collected during the study could be used for future research studies or distributed to another investigator for future research studies without additional informed consent from the participants or legally authorized representative

Can I be removed from the research without my OK?

The person in charge of the research study or the sponsor can remove you from the research study without your approval.

Who is paying for this research?

This research is being funded by the U.S. Department of Transportation.

Will I get paid for my participation in this research?

If you agree to take part in this research study, you will be paid $25 each time you complete a survey. You should plan to complete four surveys over a two-year period. You will be asked to complete an IRS Form W-9. This form will be held confidentially by the research team and those responsible for administering research funds. Payments that you receive for your participation in this research are considered taxable income.

PARTICIPANT'S STATEMENT OF INFORMED CONSENT:

"I am at least 18 years of age, have read and understand the explanation provided to me and voluntarily agree to participate in this study." (Clicking "Next" assumes consent.) *This can also be on paper and signed.*

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Appendix C. Draft Recruitment Screener Questionnaire

Buffalo ITS4US Recruitment Screener— Also online, telephone, or in-person administration.

Would you prefer to complete the English or Spanish version of this questionnaire?

Prefereria completar la version en ingles o en Español de este cuestionario?

- ○ English / ingles
- ○ Spanish / Español

You are invited to take part in the Buffalo NY ITS4US Deployment Project. This project looks to improve mobility to, from and within the Buffalo Niagara Medical Campus (BNMC) using new technologies. The US Department of Transportation supplied funding for the project.

Your participation is voluntary and involves agreeing to register to use new technologies to enhance your mobility. These include:

- A complete trip app (CTP)
  - ○ to help you find your way around the BNMC and
  - ○ to plan and book your travel to/from the BNMC or around your neighborhood
- New human-driven and self-driving shuttle bus services to/from the BNMC or around your neighborhood.

Our study will collect information on your travel habits before and after using the new technologies, your level of satisfaction with them, and your opinion of how your travel situation has changed.

You will be asked to answer questions about your experiences in at least four surveys over the next year and a half. You will receive $25 for each survey in which you complete the questions.

You can leave the project at any time, ==and there are minimal risks to== participation as noted in the consent form. Your answers to surveys and other travel information will remain confidential.

For more information about the project, please see the "Consent Form" approved by Institutional Review Board [IRB Number: IRBXXXXXXXX; IRB Approval date: XX/XX/XXXX].

Would you like to take part in the project?

- ○ YES
- ○ NO -Thank and terminate
- ○ Not Sure -Thank and terminate

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I have a few questions to make sure that taking part in this study is right for you.

Q1 Have you traveled or are you a caregiver for someone who has traveled to the Buffalo Niagara Medical Campus in the past year?

- ○ YES – Continue
- ○ YES – Caregiver – [caregiver question wordings in parenthesis]
- ○ NO - Thank and terminate
- ○ Not Sure - Thank and terminate

Q2 What was the purpose of your travel to the BNMC?

- ○ To provide travel assistance to/from the BNMC as a caregiver
- ○ To work at a health care, life sciences research or medical education institution
- ○ To receive medical or healthcare services
- ○ Both to work and receive healthcare services

Q3 In the past year, how often did you [provide travel assistance to someone to] go to the Buffalo Niagara Medical Campus?

- ○ Every day or almost every day
- ○ At least once a week
- ○ At least once a month
- ○ About every two months
- ○ Only once or twice in the past year
- ○ Not sure

Q4 For the next 12 months, how often do you think you will [provide travel assistance to someone to] go to the Buffalo Niagara Medical Campus?

- ○ Every day or almost every day
- ○ At least once a week
- ○ At least once a month
- ○ About every two months
- ○ Only once or twice in the next year
- ○ Never in the next year - Thank and terminate
- ○ Not sure - Thank and terminate

Q4A Caregiver Only: For how many individuals do you think will you provide travel assistance to/from the BNMC in the next 12 months?

Caregiver instructions: Answer the following questions for the person you intend to assist travel most often.

Q5 With what gender do you [does this person] identify?

- ○ Male
- ○ Female
- ○ Non-binary/third gender
- ○ Prefer not to say

Q6 What is your [his/her/their] approximate age?
If less than 18 Thank and terminate

Q7 What is your [his/her/their] approximate total household income?

- ○ Less than $25,000
- ○ $25,000 to $49,999

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- ○ $50,000 to $74,999
- ○ $75,000 to $99,999
- ○ $100,000 to $149,999
- ○ $150,000 or more
- ○ Prefer not to answer

Q8 Do you [does he/she/they] live in the Fruit Belt, Masten Park or another neighborhood close to the BNMC?

- ○ Live in nearby neighborhood
- ○ Do not live in nearby neighborhood

Q9 Are you [does he/she/they] of Hispanic, Latin, or Spanish origin?

- ○ Yes
- ○ No
- ○ Not sure

Q10 What language do you [does he/she/they] speak at home?

- ○ English Only – Skip to Q 13
- ○ English Mostly – Skip to Q 13
- ○ English and another language Equally – Skip to Q 13
- ○ Another language mostly
- ○ Another language only
- ○ Not sure

Display Q11 If Survey is being completed in English

Q11 Is that other language Spanish?

- ○ Yes
- ○ No
- ○ Not sure

Q12 How would you rate your [his/her/their] ability to speak English?

- ○ Excellent
- ○ Good
- ○ Average
- ○ Below average
- ○ Poor
- ○ Not sure

Display Q13 If Q6= age 18 – 65 (to reduce bias towards older persons)

Q13 Which of the following describe(s) you [him/her/they]?

	Yes	No
Deaf or serious difficulty hearing?	○	○
Blind or serious difficulty seeing, even when wearing corrective glasses or contact lenses	○	○
Wheelchair user or serious difficulty walking	○	○

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Q14 Do you [does he/she/they] have a specific learning disability or cognitive impairment that effects…

	Yes	No
Your ability to get a driver's license?	○	○
Your ability to travel alone for transportation, such as going to school, visiting a doctor's office, or shopping?	○	○

Q15 Please provide your contact information so that we can get in touch with you.

- ○ Name: _____
- ○ Email address: _____
- ○ Phone number: _____

Administrative:
Assign respondent ID
Qualification quota group:

- Caregiver
- Vision impairment
- Hearing impairment
- Mobility impairment
- Mild cognitive impairment
- Limited English Proficient (LEP)
- Low income
- Age 65+
- Other BNMC visitor for healthcare services
- BNMC worker
- Neighborhood resident

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Appendix D. Draft Baseline Questionnaire

Buffalo NY ITS4US PMESP Baseline Questionnaire (Pre-Deployment)

Administrative Items:

- Respondents are study participants. All have given consent to participate and have registered to the CTP
- English or Spanish depending on recruitment screener language
- This draft questionnaire is for all study participants except caregivers. A caregiver version will be developed in Phase 2.
- People will be identified by their respondent ID assigned during recruitment.

You have agreed to take part in the Buffalo NY ITS4US Deployment Project. This project looks to improve mobility to, from and within the Buffalo Niagara Medical Campus using new technologies. It is funded by the US Department of Transportation.

Our study, being conducted by the University of Buffalo, will collect information on your travel habits before and after using the new technologies, your level of satisfaction with them, and your opinion of whether your mobility has been improved. There will be four surveys, and you will receive $25 for each one that your complete.

This first survey will take about 20 minutes to complete. Your participation is voluntary. You can leave the survey at any time, and there minimal risks in taking part in the survey. Your answers and information will remain confidential.

If you would like to take part in the survey, please continue by clicking the "Next" button below.

The first questions are about you. These are important for our study so please answer accurately and completely.

Screening questions are repeated to make sure respondents still qualify and to note life changes.

Q1 Have you traveled or are you a caregiver for someone who has traveled to the Buffalo Niagara Medical Campus in the past year?

- YES – Continue with respondent question wordings
- NO - Thank and terminate
- Not Sure -Thank and terminate

Q2 With what gender do you identify?

- Male
- Female
- Non-binary/third gender
- Prefer not to say
- Not sure

Q3 What was the purpose of your travel to the BNMC?

- Work
- Healthcare services - Skip to Q5
- Both to work and receive healthcare services

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Q4 What is your staff category at the Buffalo Niagara Medical Campus?

- Medical doctors
- Other emergency personnel
- Other medical staff
- Other staff (administration, custodial, etc.)

Q5 In the past year, how often did you go to the Buffalo Niagara Medical Campus?

- Every day or almost every day
- At least once a week
- At least once a month
- About every two months
- Only once or twice in the past year
- Not sure

Q6 For the next 12 months, how often do you think you will go to the Buffalo Niagara Medical Campus?

- Every day or almost every day
- At least once a week
- At least once a month
- About every two months
- Only once or twice in the next year
- Never in the next year--End of Survey
- Not sure

Q7 What is your approximate age?

_____

If less than 18 End of Survey

Q8 Including yourself, how people live in your household?
Q9 Are there any children between the ages of 0 and 17 living in your household?

- Yes
- No

Display Q10 If Q9 = Yes
Q10 Please check the approximate age categories of all the children under age 17 in the household. Check all that apply.

- 0-6 years
- 7-12 years
- 13-15 years
- 16-17 years

Q11 Approximately, what is your total household income?

- Less than $25,000
- $25,000 to $49,999
- $50,000 to $74,999
- $75,000 to $99,999
- $100,000 to $149,999
- $150,000 or more
- Prefer not to answer
- Not sure

Q12 Do you live in the Fruit Belt, Masten Park or another neighborhood close to the BNMC?

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- o　Live in nearby neighborhood
- o　Do not live in nearby neighborhood

Q13 Are you of Hispanic, Latin, or Spanish origin?

- o　Yes
- o　No
- o　Not sure

Q14 What language do you speak at home?

- o　English Only – Skip to Q 16
- o　English Mostly – Skip to Q 16
- o　English and another language Equally – Skip to Q 16
- o　Another language mostly
- o　Another language only
- o　Not sure

Q15 How would you rate your ability to speak English? .

- o　Excellent
- o　Good
- o　Average
- o　Below average
- o　Poor
- o　Not sure

Q16 Which statement below best describes you when a new technology becomes available?

- o　Among the first of friends and family to adopt new technology.
- o　Wait awhile and eventually adopt(s) new technology.
- o　Among the last of friends and family to adopt new technology, if at all.
- o　Not sure

Q17 Do you regularly use any of these communication technologies?

	Yes	No	Via caregiver only	Not sure
Smart phone	o	o	o	o
Regular cell phone	o	o	o	o
Laptop/tablet	o	o	o	o
Desktop computer	o	o	o	o

Display Q18 If Q17= Yes or Not Sure (for the corresponding service)

Q18 Do you have reliable high-speed access to internet when using the following communication technologies?

	Yes	No	Via caregiver only	Not sure
Smart phone	o	o	o	o
Regular cell phone	o	o	o	o
Laptop/tablet	o	o	o	o

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Desktop computer   ○   ○   ○   ○

Q19 Which of the following describe(s) you?

	Yes	No
Deaf or serious difficulty hearing (a)	○	○
Blind or serious difficulty seeing, even when wearing corrective glasses or contact lenses (b)	○	○
Wheelchair user or serious difficulty walking (c)	○	○

If NO to All → Skip to Q23

Display Q20 If Q19a= Yes deaf

Q20 Do you use any of the following hearing assistive technologies? Check all that apply.

- ○ Hearing aids
- ○ Lip reading
- ○ Cochlear implants
- ○ Assistive listening devices (ALDs) to amplify sounds (FM, infrared, or induction loop systems)
- ○ Speech to text or speech recognition software
- ○ Closed captioning on media devices
- ○ Specialized computer programs
- ○ Specialized smartphone applications
- ○ Something else, specify: _____
- ○ None
- ○ Not sure

Display Q21 If Q19b= Yes blind

Q21 Do you use any of the following visual assistive technologies? Check all that apply.

- ○ Aira services
- ○ Long white cane
- ○ Service dog
- ○ Text to speech or screen reader software
- ○ Braille printers or translators
- ○ Low vision optical devices
- ○ Smartphone GPS speech navigation
- ○ Specialized computer programs
- ○ Specialized smartphone applications
- ○ Something else, specify: _____
- ○ None
- ○ Not sure

Display Q22 If Q19c= Yes mobility

Q22 Do you use any of the following **mobility** assistive technologies **when traveling outside** of the home? Check all that apply.

- ○ Orthopedic support cane
- ○ Wheelchair
- ○ Crutches
- ○ Walker/Rollator
- ○ Motorized mobility scooter
- ○ Orthotic device (braces)
- ○ Prosthetic device

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- o   Modified motor vehicle
- o   Companion for aid
- o   Something else, specify: _____
- o   None
- o   Not sure

Q23 Do you have a specific learning disability or cognitive impairment that effects…

	Yes	No
Your ability to get a driver's license?	◯	◯
Your ability to travel alone for transportation, such as going to school, visiting a doctor's office, or shopping?	◯	◯

Q24 Do you have a Niagara Frontier Transportation Authority transit pass?

- o   Yes
- o   No
- o   Not sure

Q25 Are you eligible to use the NFTA-Metro paratransit (PAL) service for people with disabilities?

- o   Yes
- o   No --->Skip to Q27
- o   Not sure

Q26 Are you registered to use the NFTA-Metro PAL service for people with disabilities?

- o   Yes
- o   No
- o   Not sure

Q27 Do you own or have access to a personal vehicle?

- o   Yes
- o   No

Q28 How often do you drive?

- o   Every day
- o   Almost every day
- o   Sometimes
- o   Rarely
- o   Never
- o   Not sure

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Q29 How do you travel to the following places? Check all that apply for each place.

	Drive or ride in a personal vehicle	Public transit bus	PAL or special access service	Walk/ Wheel chair	Bicycle	Uber or lyft service	Taxi service	Does not apply
Buffalo Niagara Medical Center (BNMC)								
Work (if not BNMC)								
Healthcare (if not BNMC)								
Grocery Shopping								
Church								
Senior Center								

Note for above trying to identify places they might reach by the new shuttle services.

Q30 How would you rate your current ability to make convenient door-to-door trips, regardless of destination?

- ○ Extremely good
- ○ Good
- ○ Neutral
- ○ Poor
- ○ Extremely poor
- ○ Not sure

Q31 How would you rate your current ability to make convenient door-to-door trips by transit, regardless of destination?

- ○ Extremely good
- ○ Good
- ○ Neutral
- ○ Poor
- ○ Extremely poor
- ○ Not sure

Q32 What is your overall attitude about current door-to-door travel to/from the **BNMC** in terms of:

	Very positive	Somewhat positive	Neutral	Somewhat negative	Very negative	Does not apply
Affordability	○	○	○	○	○	○
Trip time (end-to-end)	○	○	○	○	○	○
Ability to make spontaneous trips	○	○	○	○	○	○

Ability to travel where you need to go	○	○	○	○	○	○
Safety of sidewalk conditions	○	○	○	○	○	○
Safety of traveling on busy streets	○	○	○	○	○	○
Safety of intersection crossings	○	○	○	○	○	○
Safety of travel during bad weather (snow, ice)	○	○	○	○	○	○
Safety of travel at night	○	○	○	○	○	○
Ease of door-to-door trip planning	○	○	○	○	○	○
Ease of traveling with children	○	○	○	○	○	○
Ease of traveling with groceries or other parcels	○	○	○	○	○	○
Ease of traveling with a service animal	○	○	○	○	○	○
Available transport service options	○	○	○	○	○	○
Wait time for transport service pick up	○	○	○	○	○	○

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Wait time for accessible transport service pick up	○	○	○	○	○	○
Help in entering or exiting transport service vehicles	○	○	○	○	○	○
Transport service payment options	○	○	○	○	○	○
Availability of information on transport service options	○	○	○	○	○	○
Ability to access light rail service	○	○	○	○	○	○

Q33 How often do you use PAL paratransit services?

- ○ Every day or almost every day
- ○ At least once a week
- ○ At least once a month
- ○ About every two months
- ○ Only once or twice in the past year
- ○ Not sure

Q34 How often do you use NFTA bus and rail services?

- ○ Every day or almost every day
- ○ At least once a week
- ○ At least once a month
- ○ About every two months
- ○ Only once or twice in the past year
- ○ Not sure

Q35 How often do you need a caregiver to help with travel?

- ○ Every time →can you give us contact info for your caregiver?
- ○ Almost every time →can you give us contact info for your caregiver?
- ○ Sometimes
- ○ Rarely
- ○ Never

Q36 What is your overall attitude about the ability to make complete end-to-trips from your home to another location in terms of:

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	Very positive	Somewhat positive	Neutral	Somewhat negative	Very negative	Does not apply
Affordability	O	O	O	O	O	O
Average trip time (end-to-end)	O	O	O	O	O	O
Ability to travel where you need to go	O	O	O	O	O	O
Safety of sidewalk conditions	O	O	O	O	O	O
Safety of traveling on busy streets	O	O	O	O	O	O
Safety of travel during bad weather (snow, ice)	O	O	O	O	O	O
Safety of travel at night	O	O	O	O	O	O
Safety of intersection crossings	O	O	O	O	O	O
Ease of door-to-door trip planning	O	O	O	O	O	O
Ease of traveling with children	O	O	O	O	O	O
Ease of traveling with groceries or other parcels	O	O	O	O	O	O
Ease of traveling	O	O	O	O	O	O

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with a service animal						
Available transport service options	O	O	O	O	O	O
Wait time for transport service pick up	O	O	O	O	O	O
Wait time for accessible transport service pick up	O	O	O	O	O	O
Help in entering or exiting transport service vehicles	O	O	O	O	O	O
Transport service payment options	O	O	O	O	O	O
Availability of information on transport service options	O	O	O	O	O	O
Ability to access light rail service	O	O	O	O	o	O

Q37 Have you heard of the Buffalo NY Complete Trip ITS4US project? [or whatever name is being used in outreach]

- ○ Yes
- ○ No-->Skip to Q48
- ○ Not sure -->Skip to Q48

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Q38 How familiar are you with the Complete Trip Platform Application (CTP) [or whatever name is being used in outreach]. It is for planning door-to-door trips and is customized for accessible travel to/from the BNMC or other locations?

- ○ Extremely familiar
- ○ Moderately familiar
- ○ Somewhat familiar
- ○ Slightly familiar
- ○ Not familiar at all -->Skip to Q48
- ○ Not sure -->Skip to Q48

Q39 Do you intend to register use the Complete Trip Platform Application (CTP) when it becomes available?

- ○ Yes
- ○ No
- ○ Not sure

Q40 Do you expect that the Complete Trip Platform Application (CTP) would be of use to you in planning travel to/from the BNMC or to other locations?

- ○ Yes
- ○ No
- ○ Not sure

Q41 Do you expect that the Complete Trip Platform Application (CTP) would be of use to you in planning travel to/from the BNMC or to other locations?

- ○ Yes
- ○ No
- ○ Not sure

Q42 Do you expect that The Complete Trip Platform Application (CTP) would be of use to you in booking travel to/from the BNMC or other locations?

- ○ Yes
- ○ No
- ○ Not sure

Q43 The CTP will also supply turn-by-turn wayfinding directions to/from the BNMC campus. These would be haptic, audio or visual directions. Would this be of use to you?

- ○ Yes
- ○ No
- ○ Not sure

Q44The CTP will also supply turn-by-turn indoor wayfinding directions inside of BNMC buildings and facilities. These would be haptic, audio or visual directions. Would this be of use to you?

- ○ Yes
- ○ No
- ○ Not sure

Q45 Another feature of the CTP is that it provides a way to communicate with traffic signals to make crossing intersections safer. Would this be of use to you?

- ○ Yes
- ○ No
- ○ Not sure

Display Q46 If Q17= No for smartphone

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Q46The Complete Trip Platform Application (CTP) is only available via a smartphone. How likely is it that you would get a smartphone in order to use it?

- o Extremely likely
- o Likely
- o Unlikely
- o Extremely unlikely
- o Not sure

The next questions are about **self-driving vehicles**. Self-driving vehicles shift driving from a human to a technology system. As of 2017, New York state allows testing of self-driving vehicle on public roads.

Q47 How familiar are you with **self-driving vehicles**?

- o Extremely familiar
- o Moderately familiar
- o Somewhat familiar
- o Slightly familiar
- o Not familiar at all
- o Not sure

Q48 What is your overall attitude toward self-driving vehicles?

- o Extremely positive
- o Somewhat positive
- o Neutral
- o Somewhat negative
- o Extremely negative
- o Not sure

We have just a few more questions about you.

Q49 What is the highest level of formal education that you have completed?

- o Less that High school, High school graduate or GED
- o Technical or Trade certificate
- o Some college
- o Associate degree
- o Bachelors or more

Q50 Which of the following best describes your current employment situation? Check all that apply. Needed?

- o Employed full time
- o Employed part time
- o Retired
- o Student
- o Unemployed - looking for work
- o Unemployed - not looking for work

Q51 How do you describe your race?

- o Native American Indian or Alaska Native
- o Asian
- o Black or African American
- o Native Hawaiian or Other Pacific Islander
- o White

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      o   Other/prefer to self-describe: _____

      o   Prefer not to answer

Q52 If you have any final remarks or comments that you would like to share with the research team, please add below.

_____

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Appendix E. Draft Post-Deployment Questionnaire

Buffalo NY ITS4US PMESP Post-Deployment Questionnaire (s)

Administrative Items:

- Respondents are study participants. All have given consent to participate and have registered to use the CTP.
- Language (English or Spanish) same as Baseline Questionnaire.
- This draft questionnaire is for all study participants except caregivers. A caregiver version will be developed in Phase 2.
- Same questionnaire used for the three post deployment surveys.
  People will be identified by their respondent ID assigned during recruitment so deleted demographic questions will carry through from Baseline survey.

You have agreed to participate in the Buffalo NY ITS4US Deployment Project. This project seeks to improve mobility to, from and within the Buffalo Niagara Medical Campus using new technologies. It is funded by the US Department of Transportation.

Our study, being conducted by the University of Buffalo, collects information on your travel habits before and after using the new technologies, your level of satisfaction with them, and your opinion of how your travel situation has changed. There will be four surveys, and you will receive $25 for each one that your complete.

This second [third, fourth] survey will take about 20 minutes to complete. Your participation is voluntary. You can leave the survey at any time and there are minimal risks in taking part in the survey. Your answers and information will remain confidential.

If you would like to take part in the survey, please continue by clicking the "Next" button below.

The first questions are about you. These are important for our study so please answer accurately and completely.

[Note: the following travel questions are repeated from baseline because travel to BNMC is significant to the study.]

Q1 Have you traveled or are you a caregiver for someone who has traveled to the Buffalo Niagara Medical Campus in the past year?

- o   YES – Continue with respondent question wordings
- o   NO -Thank and terminate
- o   Not Sure -Thank and terminate

Q2 What was the purpose of your travel to the BNMC?

- o   Work
- o   Healthcare services - Skip to Q4
- o   Both to work and receive healthcare services

Q3 What is your staff category at the Buffalo Niagara Medical Campus?

- o   Medical doctors

- o   Other emergency personnel
- o   Other medical staff
- o   Other staff (administration, custodial, etc.)

Q4 In the past year, how often did you go to the Buffalo Niagara Medical Campus?

- o   Every day or almost every day
- o   At least once a week
- o   At least once a month
- o   About every two months
- o   Only once or twice in the past year
- o   Not sure

Q5 For the next 12 months, how often do you think you will go to the Buffalo Niagara Medical Campus?

- o   Every day or almost every day
- o   At least once a week
- o   At least once a month
- o   About every two months
- o   Only once or twice in the next year
- o   Never in the next year--àEnd of Survey
- o   Not sure

[Note: The following access to communication technologies questions are repeated from baseline because they are significant to the deployed system use and could have changed from the baseline.]

Q6 Do you regularly use any of these communication technologies?

	Yes	No	[Via caregiver only]	Not sure
Smart phone	o	o	o	o
Regular cell phone	o	o	o	o
Laptop/tablet	o	o	o	o
Desktop computer	o	o	o	o

Display Q7 If Q6= Yes or Not Sure (for the corresponding service)

Q7 Do you have reliable high-speed access to internet when using the following communication technologies?

	Yes	No	[Via caregiver only]	Not sure
Smart phone	o	o	o	o
Regular cell phone	o	o	o	o
Laptop/tablet	o	o	o	o
Desktop computer	o	o	o	o

[Note: The following disability questions are repeated from baseline because they are significant to the deployed system use and could have changed from the baseline.]

Q8 Which of the following describe(s) you?

	Yes	No

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Deaf or serious difficulty hearing (a)	○	○
Blind or serious difficulty seeing, even when wearing corrective glasses or contact lenses (b)	○	○
Wheelchair user or serious difficulty walking (c)	○	○
None of the above (d)	○	○

If NO to All - Skip to Q12

Display Q9 If Q8a= Yes deaf

Q9 Do you use any of the following **hearing** assistive technologies? Check all that apply.

- Hearing aids
- Lip reading
- Cochlear implants
- Assistive listening devices (ALDs) to amplify sounds (FM, infrared, or induction loop systems)
- Speech to text or speech recognition software
- Closed captioning on media devices
- Specialized computer programs
- Specialized smartphone applications
- Something else, specify:
- None
- Not sure

Display Q9 If Q8b= Yes blind

Q10 Do you use any of the following **visual** assistive technologies? Check all that apply.

- Aira services
- Long white cane
- Service dog
- Text to speech or screen reader software
- Braille printers or translators
- Low vision optical devices
- Smartphone GPS speech navigation
- Specialized computer programs
- Specialized smartphone applications
- Something else, specify:
- None
- Not sure

Display Q11 If Q8= Yes mobility

Q11 Do you use any of the following **mobility** assistive technologies **when traveling outside** of the home? Check all that apply.

- Orthopedic support cane
- Wheelchair
- Crutches
- Walker/Rollator
- Motorized mobility scooter
- Orthotic device (braces)
- Prosthetic device

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- o Modified motor vehicle
- o Companion for aid
- o Something else, specify:
- o None
- o Not sure

[Note: The following travel behavior related questions are repeated from baseline because they are significant to the deployed system use and could have changed from the baseline.]

Q12 Do you have a specific learning disability or cognitive impairment that effects…

	Yes	No
Your ability to get a driver's license?	○	○
Your ability to travel alone for transportation, such as going to school, visiting a doctor's office, or shopping?	○	○

Q13 Do you have a Niagara Frontier Transportation Authority transit pass?
- o Yes
- o No
- o Not sure

Q14 Are you eligible to use the NFTA-Metro paratransit (PAL) service for people with disabilities?
- o Yes
- o No – Skip to Q16
- o Not sure

Q15 Are you registered to use the NFTA-Metro paratransit (PAL) service for people with disabilities?
- o Yes
- o No
- o Not sure

Q16 How would you rate your current ability to make convenient door-to-door trips, regardless of destination?
- o Extremely good
- o Good
- o Neutral
- o Poor
- o Extremely poor
- o Not sure

Q17 How would you rate your current ability to make convenient door-to-door trips by transit, regardless of destination?
- o Extremely good

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- o   Good
- o   Neutral
- o   Poor
- o   Extremely poor
- o   Not sure

Q18 What is your overall attitude about current door-to-door travel to/from the **BNMC** in terms of:

	Very positive	Somewhat positive	Neutral	Somewhat negative	Very negative	Does not apply
Affordability						
Average trip time (end-to-end)						
Ability to travel where you need to go						
Safety of sidewalk conditions						
Safety of traveling on busy streets						
Safety of intersection crossings						
Safety of travel during bad weather (snow, ice)						
Safety of travel at night						
Ease of door-to-door trip planning						
Ease of traveling with children						
Ease of traveling with groceries or other parcels						
Ease of traveling with a service animal						
Available transport service options						
Wait time for transport service pick up						

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Wait time for accessible transport service pick up	
Help in entering or exiting transport service vehicle s	
Transport service payment options	
Availability of information on transport service options	
Ability to access light rail service	

Q19 How often do you use PAL services?
- o   Every day or almost every day
- o   At least once a week
- o   At least once a month
- o   About every two months
- o   Only once or twice in the past year
- o   Not sure

Q20 How often do you use NFTA bus or rail services?
- o   Every day or almost every day
- o   At least once a week
- o   At least once a month
- o   About every two months
- o   Only once or twice in the past year
- o   Not sure

Q21 How often do you need a caregiver to help with travel?
- o   Every time
- o   Almost every time
- o   Sometimes
- o   Rarely
- o   Never

Q22 What is your overall attitude about the ability to make complete end-to-trips from your home to another location in terms of:

	Very positive	Somewhat positive	Neutral	Somewhat negative	Very negative	Does not apply
Affordability						
Average trip time (end-to-end)						

Ability to travel where you need to go	
Safety of sidewalk conditions	
Safety of traveling on busy streets	
Safety of intersection crossings	
Safety of travel during bad weather (snow, ice)	
Safety of travel at night	
Ease of door-to-door trip planning	
Ease of traveling with children	
Ease of traveling with groceries or other parcels	
Ease of traveling with a service animal	
Available transport service options	
Wait time for transport service pick up	
Wait time for accessible transport service pick up	
Help in entering or exiting transport service vehicles	
Transport service payment options	
Availability of information on transport service options	
Ability to access light rail service	

Q23 How familiar are you with the Complete Trip Platform Application (CTP). It
is for planning door-to-door trips and is customized for accessible travel to/from the BNMC
or other locations?
- o Extremely familiar
- o Moderately familiar
- o Somewhat familiar

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- o   Slightly familiar
- o   Not familiar at all —>Skip to Q53
- o   Not Sure—>Skip to Q53

Q24 Have you used the Buffalo ITS4US Complete Trip Planning Application (CTP)? This is something we would know, but it helps to lead into the next set of questions.
- o   Yes
- o   No—Skip to Q53
- o   Not Sure—Skip to 53

The Complete Trip Planning Applications includes several specialized functions. The next questions are about these functions:

- **User Profiles tool:** Register and customize preferences for trip types based on things like shortest walking distance, fewest transfers, safest crossing zones, preferred mobility options, etc. This function also shares information with other systems such as NFTA PAL.
- **Trip Planning function:** Plan a complete trip from origin to destination, as well to update mobility options and other preferences based on the current trip. Review the turn-by-turn directions of a trip prior to traveling.
- **Trip Booking function**: Reserve and book a trip with a transit service provider requiring pre-booking such as PAL and micro transit.
- **Smart Intersection function:** Triggers a request at a pedestrian signal to cross the street and provides information back to the traveler including time to walk and countdown to cross the street.
- **Navigation function**: Provides messages with turn-by-turn directions for both outdoor and indoor environments to/from the BNMC and within the BNMC facilities and buildings.

Display Q25 If Q24 = Yes

Q25 Did you use any of these CTP functions in the past 3 months?

	Yes	No	Not sure
User profile tool and customizing preferences for trip types (a)	○	○	○
Trip planning (b)	○	○	○
Trip booking (c)	○	○	○
Crossing Intersections using smart signal (d)	○	○	○
Finding your way to/from the BNMC using outdoor navigation (e)	○	○	○
Finding destinations within BNMC facilities and buildings using indoor navigation (f)	○	○	○

Display Q26-28 If Q25 (a) = YES User Profile

The next questions are about registering in the CTP. [provide link to function description]
Q26 How easy or difficult was it to register in the CTP and input preferences for trip types?
- o   Very easy
- o   Easy
- o   Neutral

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- o Difficult
- o Very difficult

Q27 How useful to your travel to/from the BNMC was the process of customizing preferences for trip types in the CTP?
- o Very useful
- o Useful
- o Neutral
- o Not useful
- o Very not useful

Q28 How useful to your **travel to destinations other than the BNMC** was the process of customizing preferences for trip types in the CTP?
- o Very useful
- o Useful
- o Neutral
- o Not useful
- o Very not useful

Display 29-301 If Q25 (b) = Yes Trip Planning

The next questions are about using the CTP trip planning function. [provide link to description]
Q29 How easy or difficult was it to use the trip planning function in the CTP?
- o Very easy
- o Useful
- o Neutral
- o Not useful
- o Very not useful

Q30 In general, how satisfied are you with the route/path options provided by the CTP?
- o Very satisfied
- o Satisfied
- o Neutral
- o Unsatisfied
- o Very unsatisfied

Display Q31-34 If Q25 (c) = Yes Trip Booking

The next questions are about using the CTP **trip booking** function. [provide link to description]
Q31How easy or difficult was it to book on-demand transit trips in the CTP?
- o Very Easy
- o Easy
- o Neutral
- o Difficult
- o Very difficult

Q32 How useful was the ability to book on-demand transit trips directly in the CTP?
- o Very useful
- o Useful
- o Neutral
- o Not useful
- o Very not useful

Q33 How easy or difficult was it to use the CTP to report incidents or conditions encountered during travel?
- o Very Easy

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- ○ Easy
- ○ Neutral
- ○ Difficult
- ○ Very difficult
- ○ Did not try to report incidents or conditions in the CTP

Q34 How useful was the ability to review your personal past trip history in the CTP?
- ○ Very useful
- ○ Useful
- ○ Neutral
- ○ Not useful
- ○ Very not useful
- ○ Did not try to review my personal past trip history

Display Q35-37 If Q25 (e) = Yes Navigation function

The next questions are about using the CTP **outdoor navigation** function. [provide link to description]

Q35 When traveling to/from the BNMC, how frequently have you used the **outdoor navigation** function in the CTP?
- ○ Always
- ○ Very often
- ○ Sometimes
- ○ Rarely
- ○ Never

Q36 How useful to your travel to/from the BNMC **was the outdoor navigation** function in the CTP to reaching destination on-time?
- ○ Very useful
- ○ Useful
- ○ Neutral
- ○ Not useful
- ○ Very not useful

Q37 Please provide your opinions about using the outdoor navigation function in the CTP by indicating agreement or disagreement on the following items. (RAPUUD items)

	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly Agree	Does not apply
The outdoor navigation is easy to set up and prepare to use.						
The outdoor navigation is easy to use.						
For me, using the outdoor navigation poses a personal safety risk.						
I often need assistance to use the outdoor navigation.						

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When using the outdoor navigation, I make mistakes that require me to do over some steps.

I get the information I need to use the outdoor navigation efficiently.

Using the outdoor navigation takes more time than it should.

Using the outdoor navigation requires little physical effort.

Using the outdoor navigation requires minimal mental effort.

Using the outdoor navigation draws unwanted attention to me.

I feel embarrassed when using the outdoor navigation.

Display Q38-39 if Q25 (f) = Yes Navigation function

The next questions are about using the CTP **indoor navigation** function. [provide link to description]

Q38 When traveling on the BNMC, how frequently have you used the **indoor navigation** function in the CTP to find your way inside buildings and other facilities like parking garages?
- ○ Always
- ○ Very often
- ○ Sometimes
- ○ Rarely
- ○ Never

Q39 How useful to your travel on the BNMC was the **indoor navigation** function in the CTP to reaching destination on-time?
- ○ Very useful
- ○ Useful
- ○ Neutral
- ○ Not useful
- ○ Very not useful

Q40 Please provide your [his/her/their] opinions about using the **indoor navigation** function in the CTP by indicating agreement or disagreement on the following items. (RAPUUD items)

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	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly Agree	Does not apply
The indoor navigation is easy to set up and prepare to use.						
The indoor navigation is easy to use.						
For me, using the indoor navigation poses a personal safety risk.						
I often need assistance to use the indoor navigation.						
When using the indoor navigation, I make mistakes that require me to do over some steps.						
I get the information I need to use the indoor navigation efficiently.						
Using the indoor navigation takes more time than it should.						
Using the indoor navigation requires little physical effort.						
Using the indoor navigation requires minimal mental effort.						
Using the indoor navigation draws unwanted attention to me.						
I feel embarrassed when using the indoor navigation.						

Display Q41-42 If Q24 (d) = Smart Intersection Crossing

The next questions are about using the CTP **Smart Intersection Crossing** function. [link to description]

Q41 How easy or difficult was it to use the smart intersection crossing function in the CTP?
- o   Very useful
- o   Very easy
- o   Easy

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- o Neutral
- o Difficult
- o Very difficult

Q42 How satisfied were you with the response time when you activated the CTP smart intersection function?
- o Very satisfied
- o Satisfied
- o Neutral
- o Dissatisfied
- o Very dissatisfied

Q43 How well did using the CTP smart intersection function in the CTP improve your ability to cross intersections safely, if at all?
- o Increased a lot
- o Increased a little
- o Neutral
- o Decreased a little
- o Decreased a lot

The next set of questions are about your use of the Community Shuttle Service.
Q44 Did you use the community shuttle services in the past 3 months?
- o Yes
- o No -Skip to Q53
- o Not sure -Skip to Q53

Q45 How often do you use the community shuttle service?
- o Every day or almost every day
- o At least once a week
- o At least once a month
- o About every two months
- o Only once or twice in the past year
- o Not sure

Q46 In general, how convenient was your travel using the community shuttle service?
- o Very convenient
- o Convenient
- o Neutral
- o Inconvenient
- o Very inconvenient

Q47 In general, how safe did you feel using the community shuttle service?
- o Very safe
- o Safe
- o Neutral
- o Unsafe
- o Very unsafe

Q48 In general, how reliable was the community shuttle service in terms of being able to reach your destination on time?
- o Very reliable
- o Reliable
- o Neutral
- o Unreliable
- o Very unreliable

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Q49 In your opinion, how affordable is the community shuttle service?
- o   Very affordable
- o   Affordable
- o   Neutral
- o   Unaffordable
- o   Not affordable at all

Q50 Which of the following types of community shuttle service did you use?

	Yes	No	Not sure
Human-driven shuttle service (a)			
Self-Driving shuttle service (b)			

Q51 Please provide your opinions on the **Human-Driven Shuttle Service** by indicating your agreement or disagreement on the following items. (RAPUUD items)

	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly Agree	Does not apply
The human-driven shuttle service is easy to use.						
For me, using the human-driven shuttle service poses a personal safety risk.						
I often need assistance to use the human-driven shuttle service.						
When using the human-driven shuttle service, I make mistakes that require me to do over some steps.						
I get the information I need to use the human-driven shuttle service efficiently.						
Using the human-driven shuttle service takes more time than it should.						
Using the human-driven shuttle service requires little physical effort.						

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Using the human-driven shuttle service requires minimal mental effort.

Using the human-driven shuttle service draws unwanted attention to me.

I feel embarrassed when using the human-driven shuttle service.

Q52 Please provide your detailed opinions on the **Self-Driving Community Shuttle Service** by indicating your agreement or disagreement on the following items. (RAPUUD)

	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly Agree	Does not apply
The self-driving shuttle service is easy to use.						
For me, using the self-driving shuttle service poses a personal safety risk.						
I often need assistance to use the self-driving shuttle service.						
When using the self-driving shuttle service, I make mistakes that require me to do over some steps.						
I get the information I need to use the self-driving shuttle service efficiently.	○	○	○	○	○	○
Using the self-driving shuttle service takes more time than it should.	○	○	○	○	○	○
Using the self-driving shuttle service requires little physical effort.	○	○	○	○	○	○

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Using the self-driving shuttle service requires minimal mental effort.	○	○	○	○	○	○
Using the self-driving shuttle service draws unwanted attention to me.	○	○	○	○	○	○
I feel embarrassed when using the self-driving shuttle service.	○	○	○	○	○	○

The next questions are about **self-driving vehicles**. Self-driving vehicles shift driving from a human to a technology system. As of 2017, New York state allows testing of self-driving vehicle on public roads.

Q53 How familiar are you with **self-driving vehicles**?
- o Extremely familiar
- o Moderately familiar
- o Somewhat familiar
- o Slightly familiar
- o Not familiar at all
- o Not sure

Q54 What is your overall attitude toward **self-driving vehicles**?
- o Extremely positive
- o Somewhat positive
- o Neutral
- o Somewhat negative
- o Extremely negative
- o Not sure

Q55 If you have any final remarks or comments that you would like to share with the research team, please add below.

_____

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Appendix F. Draft Door Hanger Text

Buffalo ITS4US Door Hanger Participant Recruitment Text

(Will be large print English on one side and Spanish on the other with Braile translation for both

IRB XXXXXXXXXXXX. Date Approved xx/xx/xxxx   Expiration Date xx/xx/xxxx

Do you travel to the Buffalo Niagara Medical Center(BNMC) for healthcare services or work?

If you are over 18 years of age, this study may be for you.

Buffalo ITS4US Research Study/Mobility-Improvement-Through-Technology-2022 (link to website)

This is a study to help adults with challenges in traveling where they need to go, when they need to get there. We're looking for adults (or caregivers) who live in neighborhoods near the BNMC to evaluate technologies for making travel to/from there easier and safer.

Participants will be asked to use the technologies which include a Complete Trip Planning Application (that works on a smartphone, on a computer or over the telephone), a new community shuttle bus service, and a safe intersection crossing technology over a 2-year period. Participants will need to complete one survey before using the technologies, and 3 surveys during the time they are using the technologies.

Eligible participants will receive $25 for each completed survey. Surveys will take no more than 20 minutes to complete. To be eligible, you must be 18 years of age or older and qualify in one of the following categories:

- 65 years of age or older OR
- Household income of less than $25,000 OR
- Spanish speaker with limited English knowledge OR
- Blind or severe vision disability OR
- Deaf or severe hearing disability OR
- Wheelchair user or severe mobility disability OR
- Mild cognitive disability OR
- A caretaker for a person with one or more of these disabilities.

If you wish to take part or have questions, please email or call a member of the study team: name, email, phone.

You can also enroll online at URL...

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