DEPARTMENT OF TRANSPORTATION

UNIVERSITY STATEMENT OF WORK

Project Title:	Western Minnesota Contactless Payment Project
Total Project Budget:	$150,000.00
Total Project Duration:	20 months
MnDOT Liaison:	Elliott McFadden; MnDOT Greater Minnesota Shared Mobility Program Coordinator
Date Submitted:	

1. PROJECT TEAM

- Principal Investigator:
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2. PROJECT ABSTRACT AND OBJECTIVE(S)

The arrival of the COVID-19 pandemic has greatly enhanced the need for contactless payment options to address rider safety concerns and support transit agency financial sustainability. While many Greater Minnesota agencies implemented protective measures like plexiglass shields between drivers and passengers, the heavy reliance on cash, fare booklet, and token-based fare collection forced the vast majority of agencies to forgo fare collection after the pandemic started. Between March and August 2020, Greater Minnesota transit revenue dropped 76% due to a combination of lower ridership and reduced fare collection. Without some form of contactless payment, these agencies face a challenge to rebound rider revenue while COVID-19 outbreaks remain a risk.

While recent surveys of urban transit riders found strong interest in contactless payment as a technology to boost the likelihood of using transit after COVID-19 lockdowns, there has not been any research published to date that indicates how such technology can influence the willingness of rural communities to return to transit.

This project has five overarching objectives. To enhance rural public transit rider and driver safety and public confidence in these systems during the COVID-19 pandemic, the team will:

a) Compare the operational benefits and drawbacks of contactless payment technologies for transit systems; and

b) Understand the impact of contactless payment systems and trip planning platforms on the safety of rural public transit passengers and riders during the COVID-19 pandemic; and

c) Identify what impact contactless payment technologies will have on boosting public confidence in rural public transit systems.

d) Deploy and test the two leading contactless payment technologies followed by a trip planning application across participating rural public transit systems in Western Minnesota; and

e) Implement a series of surveys to transit riders and the general public to gauge perceptions of public transit agencies and contactless payment solutions before and after deployment of the technology.

[Adapted from Statement of Work: Western Minnesota Contactless Payment Project, July 2022 Plan Update]

3. SUMMARY OF METHODOLOGY (SCOPE)

The research and evaluation will be conducted in 5 tasks:

a) Pre-implementation survey before the technology demonstration begins to establish a baseline of attitudes and behaviors among the community and riders to compare with post-demonstration data.

b) Contactless payment impact survey post deployment of the technology to examine changes compared to the baseline survey and examine perceptions of the technology.

c) MaaS Trip Planner impact survey post implementation of the technology to examine changes compared to the two previous surveys and examine current perceptions of the technology.

d) Financial impact analysis and ridership impact analysis using data supplied by MnDOT and the partner public transit agencies.

e) Transit operator interviews with partner transit agencies to understand what operational impact the demonstration has had on their organization.

4. TASK DESCRIPTIONS, DURATIONS, SCHEDULED DATES, AND KEY MILESTONES

Task 1: Pre-implementation survey

- **Description:** The research team will lead the development and deployment of a remote survey targeting the riders and surrounding community of the 8 partner transit agencies. The survey will be designed to be completed in 2–5 minutes and completed online or on paper aboard transit vehicles. The survey will ask questions regarding current attitudes and behavior regarding public transit, with particular attention to fare payment technology. The goal for the first survey is 1,000 respondents, representative of the project area.
- **Anticipated Start Date:** September 1, 2022
- **Scheduled Date to Submit Draft Deliverable:** December 31, 2022
- **Scheduled Date for Task Final Approval:** January 31, 2023
- **Duration:** 4 months

- **Deliverable:** The deliverable will include the survey instrument, distribution statistics, and simple descriptive statistics of the survey results.

Task 2: Contactless payment impact survey

- **Description:** The research team will lead the development and deployment of a remote survey targeting the riders and surrounding community of the 8 partner transit agencies. The survey will be designed to mirror the pre-implementation survey, with minor changes. The survey can be completed online or aboard transit vehicles. The survey will ask questions regarding current attitudes and behavior regarding public transit, with particular attention to the contactless payment technology. The research team will look at whether the technology reduces contact between drivers and passengers to improve COVID-19 safety protocols and to increase rider boarding efficiency. The research team will explore options to distribute the survey via text to previous participants by collecting cell phone numbers in the first survey. The goal of the second survey is 1,000 respondents, representative of the project area.
- **Anticipated Start Date:** February 1, 2023
- **Scheduled Date to Submit Draft Deliverable:** May 31, 2023
- **Scheduled Date for Task Final Approval:** June 30, 2023
- **Duration:** 4 months
- **Deliverable:** The deliverable will include the survey instrument, distribution statistics, and simple descriptive statistics of the survey results.

Task 3: MaaS trip planner impact survey

- **Description:** The research team will lead the development and deployment of a remote survey targeting the riders and surrounding community of the 8 partner transit agencies. The survey will be designed to mirror the previous surveys, with minor changes. The survey can be completed online or aboard transit vehicles. The survey may also be deployed via the MaaS trip planner. The survey will ask questions regarding current attitudes and behavior regarding public transit, with particular attention to the MaaS trip planner technology. The research team will explore options to distribute the survey via text to previous participants by collecting cell phone numbers in the first survey. The goal of the third survey is 1,000 respondents, representative of the project area.
- **Anticipated Start Date:** May 1, 2023
- **Scheduled Date to Submit Draft Deliverable:** August 31, 2023
- **Scheduled Date for Task Final Approval:** September 30, 2023
- **Duration:** 4 months
- **Deliverable:** The deliverable will include the survey instrument, distribution statistics, and simple descriptive statistics of the survey results.

Task 4: Survey Analysis

- **Description:** The research team will conduct data analysis of the survey data beginning after the first survey is completed. Data analysis will continue as the other survey are subsequently

completed. The research team will provide regular updates on preliminary results from each survey. The final deliverable will not be completed till after the last survey is completed.

- **Anticipated Start Date:** January 1, 2023
- **Scheduled Date to Submit Draft Deliverable:** October 31, 2023
- **Scheduled Date for Task Final Approval:** November 30, 2023
- **Duration:** 10 months
- **Deliverable:** The deliverable will include data analysis tables, charts, and findings.

Task 5: Organizational impact analysis

- **Description:** Using data supplied by MnDOT and the partner public transit agencies, the research team will review what impact the contactless payment and trip planning app technologies had on farebox revenue and ridership. Historical data from partner public transit agencies will be used as a comparison as well data covering the demonstration period from a representative sample of Greater Minnesota public transit agencies without this technology available. The research team will interview management and operational staff and drivers at partner transit agencies to understand what operational impact the demonstration has had on their organization. Analysis will determine the value of the project investment in relation to financial sustainability, operational efficiencies, system ridership, MnDOT policy goals, and COVID-19 safety versus the cost to develop and maintain the technologies.
- **Anticipated Start Date:** September 1, 2023
- **Scheduled Date to Submit Draft Final Report for TAP review:** January 31, 2024
- **Scheduled Date for Final Report Approval**: February 29, 2024
- **Duration**: 5 months
- **Deliverables**: Charts and tables detailing the financial and ridership impact analysis. Qualitative analysis of the interviews with transit agency staff and drivers.

Task 6: Final Report

- **Description:** The research team will compile their survey data, financial and ridership analysis, and transit operator interviews into a single final project research report. The report will summarize their findings on technology impact, how results compare to project goals and target metrics, and recommendations for future implementation. The report will be made publicly available and part or all of the report and its findings may be submitted for publication in academic journals.
- **Scheduled Start Date:** January 1, 2024
- **Scheduled End Date:** February 29, 2024
- **Scheduled Date for Final Report Approval**: April 30, 2024
- **Duration:** two months

  Deliverables: Final Publishable Report that meets MnDOT's editorial guidelines and standards