20th National Conference for Rural Public & Intercity Bus Transportation
October 15, 2012

Del Peterson & Jeremy Mattson
Small Urban & Rural Transit Center
Upper Great Plains Transportation Institute
North Dakota State University
Introduction

- Project selected by the FTA’s Public Transportation Participation Pilot Program
- Problem Statement
  - Barriers to individual participation
  - Limited agency resources
  - A dynamic environment
  - A technology divide
- Main Goal
  - Evaluate benefits of integrated systems of technology to improve public participation in public transportation planning
Introduction

- Activities
  - Onboard surveys with mobile electronic devices (smartphones, tablets)
  - Online surveys
  - Webcasts
  - Social media
- Conducted in Fargo-Moorhead (ND-MN) area
- Study findings will be used as a planning and feasibility tool
- Findings can also be replicated nationwide
Project Partners

- Metro Area Transit (MATBUS)
- Fargo-Moorhead Metropolitan Council of Governments (Metro COG)
- City of Fargo
- City of Moorhead
Fargo-Moorhead Background Information

* Population
  * Fargo – 105,000
  * Moorhead – 38,000
  * West Fargo – 26,000

* MATBUS Ridership Summary (2011)
  * Total Ridership – 2.1 million
  * Rides per day – 6,820
  * 25 fixed routes
Onboard Surveys with Mobile Devices

7. If MATBUS service was not available how would you have made this trip?

- walk
- get dropped off
- drive by myself
- carpool
- bicycle
- taxi
- would not make trip
- other
Onboard Surveys

* Approach
  * Mobile devices
  * Student surveyors
  * Paper surveys and online surveys administered for comparison purposes

* Three surveys
  * NDSU on-campus survey
  * Metro COG transit development plan (TDP) survey
  * Moorhead MATBUS survey
Onboard Surveys

* Technology
  * Ability to collect location and audio information
  * Open Data Kit (ODK) system (University of Washington)
* Mobile Devices
  * Two Motorola Droid 2s (3.7” screen)
  * Two Motorola Droid Xs (4.3” screen)
  * Samsung Galaxy Tablet (7” screen)
First Survey: NDSU on or near campus

- 2 routes surveyed that service NDSU’s main campus
- Survey questions on MATBUS service
- Included opinion questions regarding use of mobile devices
- All but one question multiple choice
- One open-ended question that could be verbally recorded
Onboard Surveys

- Second Survey: Metro COG transit development plan survey
  - Multiple fixed-routes surveyed throughout FM community
  - Used for 5-year transit development plan (TDP)
  - Importance of surveying diverse group
  - Longer than first survey
  - Mostly multiple choice with 4 questions requiring surveyor to type an answer
  - Typed answer questions included destinations difficult to reach by MATBUS or areas that should be served
Onboard Surveys

* Third Survey: Moorhead MATBUS Survey
  * Focused on 4 routes in Moorhead
  * 6 multiple choice questions
  * Simple, focused and easy to administer
Onboard Surveys

- **Administration**
  - Riders invited to participate as they boarded the bus
  - First survey participants offered MATBUS koozie upon completion
  - No incentives provided for other surveys
  - First round of surveys had riders complete surveys themselves
  - Subsequent rounds involved personal interviews
### Onboard Surveys - Results

<table>
<thead>
<tr>
<th>Survey</th>
<th>Responses Collected</th>
<th>Responses per Person-Hour</th>
<th>Response Rate</th>
<th>Labor Cost per Survey&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NDSU Survey</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobile device</td>
<td>57</td>
<td>4.4</td>
<td>86%</td>
<td>2.73</td>
</tr>
<tr>
<td>Paper</td>
<td>63</td>
<td>10.1</td>
<td>95%</td>
<td>2.39</td>
</tr>
<tr>
<td><strong>TDP Survey</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobile device</td>
<td>35</td>
<td>2.0</td>
<td>&lt;sup&gt;b&lt;/sup&gt;</td>
<td>6.00</td>
</tr>
<tr>
<td>Paper</td>
<td>509</td>
<td>&lt;sup&gt;c&lt;/sup&gt;</td>
<td>&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.41&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Moorhead Survey</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobile device</td>
<td>173</td>
<td>13.3</td>
<td>82%</td>
<td>0.90</td>
</tr>
<tr>
<td>Paper</td>
<td>249</td>
<td>&lt;sup&gt;c&lt;/sup&gt;</td>
<td>&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.10&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>a</sup>Includes cost for administering survey and data entry for paper surveys. Does not include survey design. Labor cost is assumed to be $12 per hour.

<sup>b</sup>Not calculated

<sup>c</sup>Surveyors were not used, so responses per person-hour does not apply, and labor cost includes only data entry.
Factors affecting number of responses
- Ridership levels
- Average trip lengths
- Survey length
- Willingness to complete survey
  - 80-86% response rate
- Quality of surveys better for mobile device vs. paper (responses more complete)
- For third survey, surveyors onboard for 5% of route service hours and obtained 41% of the usable responses
Experience with using the technology

- Respondents liked and preferred using the mobile devices, especially younger participants.
- Many, especially older respondents, wanted the questions read to them and did not want to complete it themselves.
- Some were grateful to be able to take the survey this way since they were not able to complete the paper survey themselves.
- Surveyors found it difficult to operate more than one device at a time.
<table>
<thead>
<tr>
<th>Questions</th>
<th>NDSU Survey (Number of responses)</th>
<th>TDP Survey (Number of responses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did the use of a mobile device impact your decision to participate in the survey?</td>
<td>20 27 8</td>
<td>15 8 7</td>
</tr>
<tr>
<td>Did the use of a mobile device impact your answers?</td>
<td>3 49 2</td>
<td>7 18 5</td>
</tr>
<tr>
<td>Were you concerned about your privacy when completing this survey?</td>
<td>5 49 -a</td>
<td>3 27 -a</td>
</tr>
<tr>
<td>Would you have preferred to complete the survey in private?</td>
<td>3 51 -a</td>
<td>2 28 -a</td>
</tr>
<tr>
<td>Would you have preferred to complete the survey in an alternative format (paper)?</td>
<td>0 53 -a</td>
<td>5 24 -a</td>
</tr>
<tr>
<td>Have you previously participated in an on-vehicle rider survey?</td>
<td>4 49 -a</td>
<td>9 21 -a</td>
</tr>
</tbody>
</table>

*Don't know was not an option for these questions.*
Online Surveys

NDSU Student Transit Survey Spring 2011

4. Transportation to Campus

1. What modes of transportation do you use, even occasionally, to travel to campus?
   - Walk
   - Bicycle
   - Automobile
   - Carpool
   - MATBUS
   - Motorcycle
   - Other (please specify)

2. What is the longest acceptable travel time by MATBUS from your residence to campus?
   - 0 to 5 minutes
   - 6 to 10 minutes
   - 11 to 20 minutes
   - 21 to 30 minutes
   - 31 to 40 minutes
   - 41 to 50 minutes
   - 51 to 60 minutes
   - Would not ride

3. What factors influence the mode of transportation used to travel to campus?
   - Travel time
   - Weather
   - Parking availability
   - Cost of parking
   - Vehicle cost
   - Convenience
   - Other (please specify)
Online Surveys

* NDSU student survey – April 2011
  * Link sent to all NDSU students by email via the student listserv.
  * 858 responses received (6% of entire student population), including 485 responses from students who use MATBUS.
* Transit Development Plan (TDP) survey, in conjunction with onboard survey – April 2011
  * Posted on Metro COG’s website, advertised by social media.
  * Received just 28 responses, compared to 577 paper responses collected.
Online Surveys

- Moorhead transfer pattern survey, in conjunction with onboard survey – December 2011
  - Conducted immediately following onboard survey.
  - Link to survey and follow-up reminder was sent via Rider Alert email and through social media.
  - 72 responses received.

- Moorhead service change survey – April 2012
  - Compare response rates via Rider Alert email, social media, links posted onboard bus, student listserv.
  - Compare demographic characteristics of online participants versus paper survey participants.
Online Surveys – Responses for Moorhead Service Change Survey, By Method

<table>
<thead>
<tr>
<th>Method</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper</td>
<td>72</td>
</tr>
<tr>
<td>MSUM email</td>
<td>65</td>
</tr>
<tr>
<td>Concordia email</td>
<td>16</td>
</tr>
<tr>
<td>Rider Alert email</td>
<td>32</td>
</tr>
<tr>
<td>Facebook</td>
<td>1</td>
</tr>
<tr>
<td>Twitter</td>
<td>0</td>
</tr>
<tr>
<td>Blog</td>
<td>0</td>
</tr>
<tr>
<td>MATBUS website</td>
<td>3</td>
</tr>
</tbody>
</table>
# Online Surveys – Demographic Characteristics of Respondents

<table>
<thead>
<tr>
<th></th>
<th>Moorhead Survey – Paper (n=72)</th>
<th>Moorhead Survey - MATBUS Online (n=36)</th>
<th>Student Email (n=81)</th>
<th>TDP Survey (n=137)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-24</td>
<td>15%</td>
<td>29%</td>
<td>83%</td>
<td></td>
</tr>
<tr>
<td>25-39</td>
<td>19%</td>
<td>23%</td>
<td>9%</td>
<td></td>
</tr>
<tr>
<td>40-59</td>
<td>55%</td>
<td>49%</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>60 or older</td>
<td>11%</td>
<td>0%</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than $17,500</td>
<td>64%</td>
<td>44%</td>
<td>69%</td>
<td>68%</td>
</tr>
<tr>
<td>$17,501 - $23,000</td>
<td>10%</td>
<td>16%</td>
<td>9%</td>
<td>16%</td>
</tr>
<tr>
<td>$23,001 - $29,250</td>
<td>6%</td>
<td>9%</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>$29,251 - $39,999</td>
<td>3%</td>
<td>13%</td>
<td>4%</td>
<td>6%</td>
</tr>
<tr>
<td>$40,000 - $59,999</td>
<td>11%</td>
<td>16%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Over $60,000</td>
<td>6%</td>
<td>3%</td>
<td>11%</td>
<td>4%</td>
</tr>
</tbody>
</table>
Online Surveys - Findings

* Advantages
  * Inexpensive
  * Easy to administer
  * Capable of providing quick feedback
  * No surveyors are required
  * No data entry is required
  * Some types of questions are better suited for the online survey
  * Respondents are less constrained by time

* Disadvantages
  * Some questions are better suited to an onboard survey
  * Onboard surveys sometimes provide more accurate results
  * Not as many responses as onboard survey
  * Some demographics may be underrepresented and results may not be representative of entire ridership
Online survey could be an inexpensive and useful complement to an onboard survey but is effective as a primary tool in only some circumstances.

An online survey of students is highly effective because a large percentage of students use transit and they can all be reached by email.
Webcasts

- The Usefulness of Webcasts
  - Great potential for increased public participation
  - Unable to attend in person, view online
  - Recording can be viewed anytime
  - More user-friendly than large documents
  - Can submit comments and questions
Webcasts

* Technology and Cost
  * Adobe Connect software
    * Chat box
    * Video of presenter
    * Two wireless microphones, receiver, and mixer used to record audio
  * Webcasts can be recorded and a unique URL is created
  * Adobe Connect Account: $540/year, $45/month
    * If 12 presentations per year, 6 hours labor per webcast at $35/hour ~ $255 per webcast
### Public Input Meeting Webcasts

<table>
<thead>
<tr>
<th>Meeting</th>
<th>Date Conducted</th>
<th>Live Participants</th>
<th>Views of Recording (as of July 15, 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDP Meeting 1</td>
<td>Sept. 21, 2011</td>
<td>4</td>
<td>229</td>
</tr>
<tr>
<td>Corridor Study 1</td>
<td>Nov. 15, 2011</td>
<td>0</td>
<td>98</td>
</tr>
<tr>
<td>Corridor Study 2</td>
<td>Nov. 16, 2011</td>
<td>0</td>
<td>112</td>
</tr>
<tr>
<td>Corridor Study 3</td>
<td>Nov. 22, 2011</td>
<td>0</td>
<td>56</td>
</tr>
<tr>
<td>TDP Meeting 2</td>
<td>Nov. 30, 2011</td>
<td>0</td>
<td>62</td>
</tr>
<tr>
<td>Corridor Study 4</td>
<td>Mar. 27, 2012</td>
<td>0</td>
<td>173</td>
</tr>
</tbody>
</table>
Webcasts

* Opinions From Users
  * Metro COG planners had very positive comments
  * Seen as valuable tool
  * Not concerned with people connecting in real-time
  * Posted online and accessed on demand
  * Impressed with final product
  * Positive comments from the public as well
  * Good audio quality
  * They will use for future events
Social Media

* Facebook and Twitter
  * Launched August 2009
    * Advertised in city magazine, newsletter, university Transit Guides, marketing material, website, etc.
  * Primary use: Providing rider information, promoting the service.
  * Also used to provide links to online surveys and webcasts and inform the public of public input meetings and opportunities to provide comments.
MATBUS Facebook and Twitter Followers

Number of Followers

Facebook
Twitter

Jul 1, 2010
Oct 1, 2010
Jan 1, 2011
Apr 1, 2011
Jul 1, 2011
Oct 1, 2011
Jan 1, 2012
Apr 1, 2012
Jul 1, 2012
Oct 1, 2012
Social Media

* Blog
  * Posts similar information as Facebook and Twitter
  * Posted on local newspaper website
  * RSS feed available
* YouTube
  * How to ride videos
  * Promotional videos
* Flickr
  * Ad campaign
Social Media - Findings

- A variety of individuals have subscribed to these services – students, parents, older adults, people with disabilities, human service agencies, daycare providers, city policy makers, etc.
- Useful for effectively and quickly pushing out information.
- Easy to manage and does not require a substantial amount of time.
- Facebook has generated a few comments and interaction with the public, but not a lot.
- Has been largely used for disseminating information.
- Useful for improving public participation.
- But not as effective as Rider Alert email in generating participation in surveys and webcasts.
MATBUS views the blog as a useful tool but does not have sufficient staff time to devote for it.

If more staff time were available, MATBUS would use the blog to interact more with the public.

Having the local newspaper pull news releases, public hearing notices, or detour information directly from the blog and post it onto their website helps get the message to the media faster while increasing visibility.
Lessons Learned

* Mobile devices can be used to complement, or in some cases, replace, onboard paper surveys.
* Mobile devices are most effective for shorter, simpler surveys.
* Response rate was high with mobile devices, but we could conduct just one survey per surveyor at a time.
* Data quality improved and data entry costs reduced for both mobile device and online surveys.
Online surveys are an inexpensive and useful complement to onboard surveys.

Webcasts are a fairly easy and relatively inexpensive way to disseminate information and reach a wider audience.

Online recordings that can be accessed on demand are especially useful, though live participation was very low.

Social media was viewed favorably by the transit system as a means to quickly push out information.

Lack of available staff time limited use of the blog.
Thank you!

Del Peterson  
Associate Research Fellow  
Small Urban & Rural Transit Center  
North Dakota State University  
del.peterson@ndsu.edu

Jeremy Mattson  
Associate Research Fellow  
Small Urban & Rural Transit Center  
North Dakota State University  
jeremy.w.mattson@ndsu.edu