TRANSIT, TECHNOLOGY, & PUBLIC PARTICIPATION

CUTR Webcast Online Series

Jeremy Mattson & Del Peterson

Small Urban & Rural Transit Center

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UGPTI
Upper Great Plains Transportation Institute
NORTH DAKOTA STATE UNIVERSITY

Outline

* Introduction
* Previous Research
* Onboard Surveys
* Online Surveys
* Webcasts
* Social Media
* Lessons Learned

Introduction

* Small Urban & Rural Transit Center
  * North Dakota State University (NDSU) in Fargo, ND
  * Created in 2002 to facilitate increased mobility of small urban and rural residents through improved public transportation

  * Study findings will be used as a planning and feasibility tool
  * Findings can also be replicated nationwide

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

Where is Fargo-Moorhead??
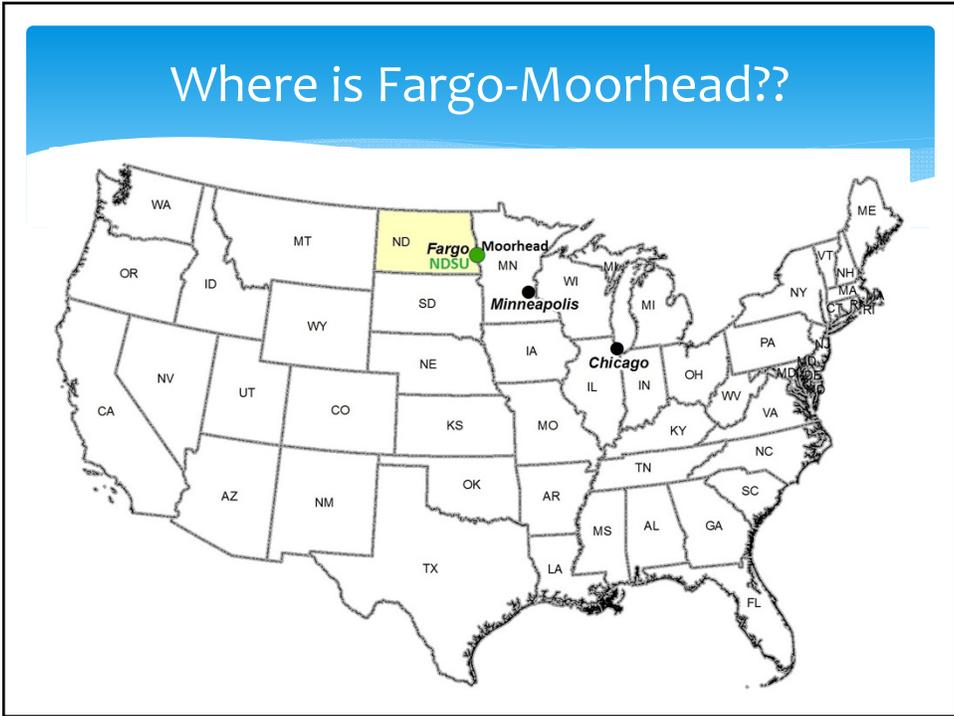
Project Partners

* Metro Area Transit (MATBUS)

* Fargo-Moorhead Metropolitan Council of Governments (Metro COG)

* City of Fargo

* City of Moorhead

Previous Research – Onboard Surveys

* Schaller, B. (2005). On-Board and Intercept Transit Survey Techniques. TCRP Synthesis 63.
  * Cost-effective way to gather information from riders where the incidence of transit users in the general population is low.
  * Often provide higher response rate. Not used for surveys of non-users.
  * Often self-administered, but personal interviews are also undertaken.

Previous Research – Onboard Surveys

* Schaller, B. (2005). On-Board and Intercept Transit Survey Techniques. TCRP Synthesis 63.
  * Response rates reported varied widely and were influenced by:
    * Enthusiasm and diligence of survey workers.
    * Level of rider interest.
    * Self-administered vs. personal interviews.
    * Length and complexity of the questionnaire.
    * Use of incentives.
    * Frequency of surveys being conducted.
  * Costs also were found to vary widely.

Previous Research – Using Tablets

* Reiter et al. (2012) Usability of Tablet Computers in Travel Surveys. TRB 2012 Annual Meeting.
  * Studied possibilities, limits, and advantages of tablets for travel surveys.
    * Could monitor survey progress in real time.
    * Could provide questions tailored specifically to the survey respondent.
    * Participants generally found the tablets very usable and that they positively affected the participant's decision to complete the travel survey.
    * Younger generations were more easily motivated by the tablet than older generations.

Previous Research – Online Surveys

* Spitz et al. (2006). Web-Based Survey Techniques. TCRP Synthesis 69.
  * Documents experiences of web-based survey research as applied to transit.
    * Start simply with web-based surveys to learn the differences.
    * Attempt to collect database of e-mails.
    * Use multi-method survey to improve response rates.
    * Research issue of coverage error and try to minimize sampling bias.
    * Remain cautious but optimistic.

Previous Research – Online Surveys

* Xing and Handy. (2012) On-Line Versus Phone Surveys: Comparison of Results for a Bicycling Survey. TRB 2012 Annual Meeting.
  * Higher percentages of online respondents are younger, students, employed, own a car, have no physical limitation, compared to phone survey respondents.
  * Online and phone survey methods have the potential to produce significantly different results.
* Hart et al. (2012) Analysis of a Method for Bias Reduction in Electronic Travel Surveys. TRB 2012 Annual Meeting.
  * Unemployed may be underrepresented.
  * Other survey methods should accompany online surveys.
* Sperry et al. (2012) Design and Implementation of an Internet-Based Traveler Intercept Survey. TRB 2012 Annual Meeting.
  * Foot-in-the-door technique is effective.

Previous Research – Online Surveys

* Lee and Pino. (2012) Hang Up the Phone and Get Online: Measuring the Effectiveness of Web-Based Surveys in Transportation. TRB 2012 Annual Meeting.
  * Compared results of phone and web-based surveys.
  * Concluded that as technologies progress and use of Internet continues to grow, the web-based survey is just as good as traditional telephone surveys.
* Fricker et al. (2005) An Experimental Comparison of Web and Telephone Surveys. *Public Opinion Quarterly,* 69(3), pp. 370-392.
  * Compared results from web and phone surveys.
  * Fewer completed the online survey.
  * Online survey had less item nonresponse.
  * Web respondents gave more consistent responses to attitude questions.
  * Web respondents took longer to answer certain questions, giving more accurate responses.

Previous Research – Social Media

* Bregman (2012) Summary Findings from TCRP Synthesis SB-20.
  * Survey results from 34 transit operators using social media.
  * Communicating with current riders was the most important goal for nearly every agency.
  * Viewed as good way to communicate with current riders but less effective for reaching potential riders.

Previous Research – Social Media

* Bregman (2012) Summary Findings from TCRP Synthesis SB-20.
  * The following barriers and potential pitfalls were identified: resource requirements, managing employee access, responding to online criticism, security, archiving and records retention, user privacy, changing social media landscape.
  * The most important barriers identified by survey respondents were staff availability to manage social media activities and concerns about people using social media to criticize the agency.
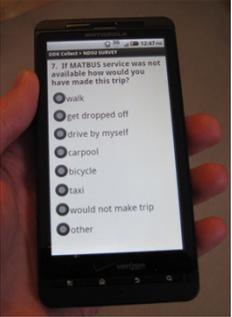
Onboard Surveys

* 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 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)
        * All devices GPS-, audio-, image-, and video capable
        * Android operating system

Onboard Surveys

* First Survey: NDSU on or near campus
  * 2 routes surveyed that service NDSU's main campus
  * Developed by SURTC under direction of MATBUS
  * MNDOT survey starting point
  * Specific NDSU MATBUS questions added
  * 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
  * Developed by Metro COG with SURTC input
  * Used for 5-year transit development plan
  * 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
  * Survey based on recommendation from TDP to eliminate a transfer point and interline routes
  * 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
  * Provided with handout describing project and its protocol as approved by the NDSU Institutional Review Board (IRB)
  * 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: First Survey
  * 57 mobile device surveys completed
  * 13 person-hours: 4.4 responses/hour
  * 63 paper surveys completed
  * 8 individuals declined to take electronic survey
  * 3 individuals declined paper survey
  * One individual asked to take paper survey rather than electronic survey (which was allowed)
  * 86% response rate for electronic survey

Onboard Surveys

* Results: Second Survey
  * 35 mobile device surveys completed
  * 17.5 person-hours: 2.0 responses/hour
  * Lower response rate for this survey
  * Length of survey (32 questions) and average trip lengths for riders influenced response rates
  * Low ridership levels on some routes also influenced number of responses

Onboard Surveys

* Results: Third Survey
  * 173 mobile device surveys completed
  * 13 person-hours: 13.3 responses/hour
  * 249 paper surveys completed
  * Quality of surveys better for mobile device vs. paper
  * 61 paper surveys either not usable or discarded
  * Surveyors onboard for 5% of route service hours and obtained 41% of the usable responses
  * 80-85% response rate

Onboard Surveys

* Results: Third Survey

Response Rate by Route

Route	Responses	Total Ridership*	Response Rate
1	81	1160	7.0%
2	192	1956	9.8%
3	80	813	9.8%
5	69	904	7.6%
Total	422	4833	8.7%

*Total unlinked passenger trips.

Onboard Surveys

* Factors affecting number of responses
  * Ridership levels
  * Average trip lengths
  * Survey length
  * Willingness to complete survey
    * 80-86% response rate

Onboard Surveys

* 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.

Onboard Surveys

* Technology Experience

Questions	NDSU Survey			TDP Survey		
	Yes	No	Don't know	Yes	No	Don't know
	Number of responses			Number of responses		
Did the use of a mobile device impact your decision to participate in the survey?	20	27	8	15	8	7
Did the use of a mobile device impact you answers?	3	49	2	7	18	5
Were you concerned about your privacy when completing this survey?	5	49	-[a]	3	27	-[a]
Would you have preferred to complete the survey in private?	3	51	-[a]	2	28	-[a]
Would you have preferred to complete the survey in an alternative format (paper)?	0	53	-[a]	5	24	-[a]
Have you previously participated in an on-vehicle rider survey?	4	49	-[a]	9	21	-[a]

[a]Don't know was not an option for these questions.

Onboard Surveys

* Cost

Company Name	Type of Device	Price of Device with Two-Year Contract	Price of Device without Contract	Mobile Broadband Usage	Monthly Service Fee
Verizon Wireless	Samsung Tablet	$229.99	$499.99	2GB	$30.00
AT&T	Samsung Tablet	$479.99	$629.99	3GB	$35.00
Sprint	HTC EVO Tablet	$349.99	Not Available	1GB	$19.99
T-Mobile	Samsung Tablet	$249.99	$499.99	2GB	$40.00
Verizon Wireless	Motorola Droid 2	$99.99		2GB	$69.99
AT&T	Apple iPhone 4	$99.99		3GB	$69.99
Sprint	HTC EVO Shift	$99.99		Unlimited	$69.99
T-Mobile	Samsung Dart	Free		2GB	$79.99
Boost Mobile	Smartphone	$149.99		Unlimited	$55.00

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 and responses of online participants versus paper survey participants.

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

Online Surveys - Findings

* 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

Webcasts

* Public Input Meeting Webcasts

Meeting	Date Conducted	Live Participants	Views of Recording (as of Mar. 28, 2012)
TDP Meeting 1	Sept. 21, 2011	4	223
Corridor Study 1	Nov. 15, 2011	0	79
Corridor Study 2	Nov. 16, 2011	0	91
Corridor Study 3	Nov. 22, 2011	0	45
TDP Meeting 2	Nov. 30, 2011	0	61

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
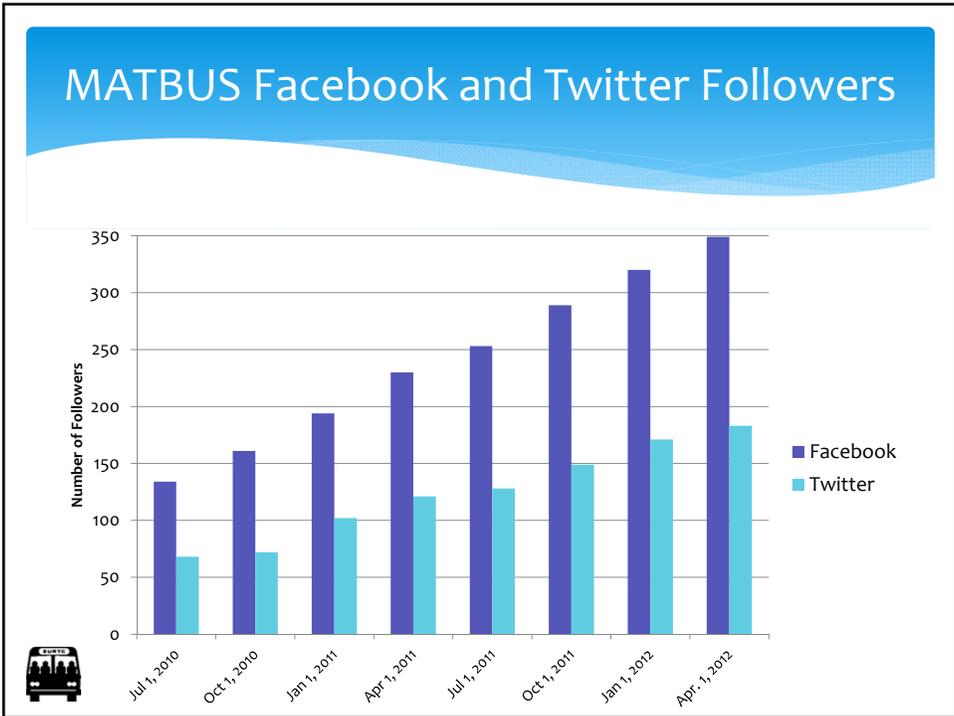
Social Media

* 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.

Social Media - Findings

* 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.

Lessons Learned

* 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!

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