Conducting On-Board Transit Rider Surveys with Electronic Handheld Tablets: An Agencywide Consolidated Approach

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**Presentation Focus**

HISTORY
CENTRALIZED APPROACH
TECHNICAL FRAMEWORK
MANAGEMENT
SURVEY TEAM
CONCLUSIONS

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**Fall 2016 On-Board Survey**

This fall, you may see TriMet staff surveying riders on board buses and trains. We're asking a series of questions about trip origin/destination, trip purpose, frequency of transit use, and your transit experience, as part of an ongoing research study that helpsinform our programs and policies.

Starting in late October, TriMet survey teams will be hopping on buses, MAX and WES — even early in the morning and late at night — to get feedback from a wide cross-section of riders.

Surveyors will be working in groups of two to four, wearing blue vests labeled “TriMet Survey Team” on the front and back. They’ll have TriMet badges with photos, and they’ll be carrying a handheld tablet and shoulder bag.

If you can spare a few minutes to help us out, we’d appreciate your feedback! The survey is completely anonymous, and your responses will help us learn more about how riders use the transit system, and help ensure that our services are fair and equitable.

What’s in the survey?
Transit surveys are required for Title VI, FTA reporting, etc. Research findings prompted pilot to test feasibility of tablets. First on-board survey using tablets: 2014-15 O&D Study. Significant savings resulted in dedicated FTE and new program. All on-board surveys now conducted with tablets and managed centrally in IT-GIS.

HISTORY
Origin and Destination (O&D) Study

Short Survey Method
- Identifies on/off ridership patterns for sampling goals of long survey
- Surveyors scan QR codes with tablets at front & back doors

Long Survey Method
- Identifies detailed ridership behavior, including origin and destination geography, transfer rates, mode of access, and demographic information
- Surveyors capture data using tablets with pre-populated answers reducing completion time and increasing accuracy
Long Survey Questions

Section 1: To be filled out by surveyor
- Current Route Information
- Origin, Destination, and Transfer Information

Section 2: To be filled out by respondent
- Fare Type
- Prior trip history
- Major reason for using TriMet
- Driver’s license
- Household: size, employment, vehicles, ethnicity, income
Paper Survey Challenges
Address Geocoding

TRIMET
RIDERSHIP SURVEY
To help us plan better service, please tell us about your trip.
Fill out this form even if you have already received one before, or rarely use TriMet.
When finished, place the form in the envelope near the door, or you may return it by postage-paid mail.

Example: One-way Trip
(Start) Home → Bus → MAX → Work (End)

ORIGIN – Where you started this one-way trip
1. Where did you first START this one-way trip? (Check one best answer.)
   □ Home □ Recreation □ Medical appointment/hospital visit
   □ Work □ Shopping □ Visit family/friends
   □ School □ Personal business □ Other (specify):

2. Where was that located? (Complete address & city OR street/cross street & city OR landmark.)
   Street: (circle one) NE SE NW SW N S E W  ???
   Nearest Cross Street: 1741 SE
   City: Gresham Zip Code: 97030

3. How did you get to the stop where you boarded the first bus, MAX, WES or streetcar on this one-way trip?
   (Check one best answer.)
   □ Walked # blocks: 1 □ Drove & parked (parking location):
   □ Dropped off □ Carpoole & parked (parking location):
   □ Bicycled □ Other (specify):
Starting location
Where did you first START this one-way trip?

- Your usual WORKPLACE
- Other business related
- Your HOME
- College / University (students only)
- Airport (as an air passenger)
- Recreation / sightseeing
- Medical appointment / doctor’s visit
- Social visits (friends/relatives)
- Personal business (bank, post office)
- Pick up/drop off someone (daycare, school)
- Shopping
- Eating/Dining Out
- School (K-12)
- Hotel
- Sporting event
- Other

Submit
Cancel

LocationSurvey

nw 5th and dav

NW Davis St & NW 5th Ave, Portland
NW 5th Ave & NW Davis St, Portland
N Davis St & N 5th Ave, Cornelius
N 5th Ave & N Davis St, Cornelius
NW 5th & Davis, Portland
Click to choose the ON and OFF stops

ON Stop

OFF Stop

Stop Sequence

<table>
<thead>
<tr>
<th>On Stop</th>
<th>Off Stop</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE Powell &amp; 40th</td>
<td>SE Powell &amp; 40th</td>
</tr>
<tr>
<td>SE Powell &amp; Cesar Chavez Blvd</td>
<td>SE Powell &amp; Cesar Chavez Blvd</td>
</tr>
<tr>
<td>SE Powell &amp; 36th</td>
<td>SE Powell &amp; 36th</td>
</tr>
<tr>
<td>SE Powell &amp; 34th</td>
<td>SE Powell &amp; 34th</td>
</tr>
<tr>
<td>SE Powell &amp; 33rd</td>
<td>SE Powell &amp; 33rd</td>
</tr>
<tr>
<td>SE Powell &amp; 28th</td>
<td>SE Powell &amp; 28th</td>
</tr>
<tr>
<td>SE Powell &amp; 26th</td>
<td>SE Powell &amp; 26th</td>
</tr>
<tr>
<td>SE Powell &amp; 24th</td>
<td>SE Powell &amp; 24th</td>
</tr>
<tr>
<td>SE Powell &amp; 21st</td>
<td>SE Powell &amp; 21st</td>
</tr>
<tr>
<td>SE Powell &amp; Milwaukie</td>
<td>SE Powell &amp; Milwaukie</td>
</tr>
<tr>
<td>SE Powell &amp; 9th</td>
<td>SE Powell &amp; 9th</td>
</tr>
<tr>
<td>SW Kelly &amp; Corbett</td>
<td>SW Kelly &amp; Corbett</td>
</tr>
<tr>
<td>SW Arthur &amp; 1st</td>
<td>SW Arthur &amp; 1st</td>
</tr>
<tr>
<td>SW Broadway &amp; 5th</td>
<td>SW Broadway &amp; 5th</td>
</tr>
<tr>
<td>SW 6th &amp; Mill</td>
<td>SW 6th &amp; Mill</td>
</tr>
<tr>
<td>SW 6th &amp; Clay</td>
<td>SW 6th &amp; Clay</td>
</tr>
<tr>
<td>SW 6th &amp; Main</td>
<td>SW 6th &amp; Main</td>
</tr>
<tr>
<td>SW 6th &amp; Alder</td>
<td>SW 6th &amp; Alder</td>
</tr>
<tr>
<td>SW 6th &amp; W Burnside</td>
<td>SW 6th &amp; W Burnside</td>
</tr>
<tr>
<td>NW 6th &amp; Flanders</td>
<td>NW 6th &amp; Flanders</td>
</tr>
</tbody>
</table>

Submit
Tablet Survey Challenges
Avoiding Bias

To avoid research bias with tablets, fielding practices need to be revised, as paper surveys are handed out to everyone.

For the O&D study, which was route-based, a random number generator on tablet was used to determine which rider to approach.

However, for the 2016 Spring Fare Survey project, as many people as possible were surveyed on each trip, with the data weighted against passenger counts from APCs.
AGENCY-WIDE SURVEY PROGRAM
Survey Program Managed by IT-GIS “Electronic Survey Developer and Analyst”

Responsibilities include:

- Collaboration with business units to identify survey requirements and formation of questionnaires
- Overarching oversight to ensure consolidation of surveys in support of agency-wide initiatives
- Technical and programming aspects involving mobile applications and devices
- Staffing, managing and scheduling aspects
- Post-data analysis and reporting functions
- GIS spatial database management, generation, and data distribution
Advantages of Centralized Approach

- Centralized budget consolidates resources and simplifies billing across multiple departments
- Eliminates redundancy and overlap between surveys
- Lowers overall costs and enables more ad-hoc surveys
- Internal business knowledge retained:
  - Capital Projects and Construction
  - Finance
  - Service Planning
  - Public Affairs
  - Operations
  - Information Technology
  - GIS
Agency Surveys

2016-17 Winter
- Customer travel pattern change (churn rate)
- Customer satisfaction and experience
- O&D
- Demographics
- Used for equity analysis, and planning and analysis purposes

Fare Evasion

Fare

O&D Before and After Studies

Operator Intercept

Sporting event surveys

APC validation

Ad-hoc surveys for planning and analysis
Powell-Division Project
Potential Station Locations
and Aggregated Ridership Counts

Legend
- Additional Stations (1/2 Spacing)
- Potential Station Locations
- Total Weekly Average On's
- Total Weekly Average Off's
- COGHalfmile_Poly
- Corridor_Boundary
Materials and Services
Software
Database Design and Management (Postgres)

TECHNICAL FRAMEWORK
Materials & Services

Equipment and Peripherals
- Samsung Galaxy 8” tablet - $250
- Samsung Galaxy tablet case - $17
- Safety Vest - $25
- Reading Light with Clip - $8
- Tech Gear Bag – $8
- iRoller (liquid free, reusable touch screen cleaner for dirt and bacteria) - $20
- Extra batteries were not necessary due to battery life of devices and shift hours

Cellular Service
- Android Tablets - $40/month
- Phone fees for supervisors $37/month
Open Data Kit (ODK) was selected based on requirements, costs and the ability to easily customize for various surveys. It is a collection of open source tools for survey design, collection, and data aggregation and is recommended by industry experts.

*Code, etc. available on GitHub at:*  
https://github.com/gis-survey

In-house developed Android apps integrated with ODK to capture the on-off stop information.

Communication & Management Tools:
- Trello - track materials; meetings; milestones; stakeholders; staffing; and tasks
- Google Docs - shift scheduling and shared project documentation.
- Google Groups - communication between surveyors and management
Sampling
Dashboard Monitoring
Pilot Testing

MANAGEMENT
Management of Sampling

• Extensive training
• Scheduled group meetings with surveyors
• Field supervision
• On-board monitoring of interviewer performance
• Dashboards: real-time report monitoring
## Dashboard – Surveyors

### On-Off Dashboard

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>User</th>
<th>Route</th>
<th>Direction</th>
<th>On Stop</th>
<th>Off Stop</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-12-04</td>
<td>18:17:45/18:12:42</td>
<td>richardm/richardm</td>
<td>4-Division/Fessenden</td>
<td>To St Johns</td>
<td>SW 6th &amp; W Burnside</td>
<td>NW Everett &amp; 5th</td>
</tr>
<tr>
<td>2015-12-04</td>
<td>18:17:43/18:07:56</td>
<td>richardm/richardm</td>
<td>4-Division/Fessenden</td>
<td>To St Johns</td>
<td>SW 6th &amp; Taylor</td>
<td>NW Everett &amp; 5th</td>
</tr>
<tr>
<td>2015-12-04</td>
<td>18:17:35/18:12:47</td>
<td>richardm/richardm</td>
<td>4-Division/Fessenden</td>
<td>To St Johns</td>
<td>SW 6th &amp; W Burnside</td>
<td>NW Everett &amp; 5th</td>
</tr>
<tr>
<td>2015-12-04</td>
<td>18:17:23/18:12:56</td>
<td>richardm/richardm</td>
<td>4-Division/Fessenden</td>
<td>To St Johns</td>
<td>SW 6th &amp; W Burnside</td>
<td>NW Everett &amp; 5th</td>
</tr>
<tr>
<td>2015-12-04</td>
<td>18:17:23/18:13:01</td>
<td>richardm/richardm</td>
<td>4-Division/Fessenden</td>
<td>To St Johns</td>
<td>SW 6th &amp; W Burnside</td>
<td>NW Everett &amp; 5th</td>
</tr>
<tr>
<td>2015-12-04</td>
<td>18:17:13/18:13:05</td>
<td>richardm/richardm</td>
<td>4-Division/Fessenden</td>
<td>To St Johns</td>
<td>SW 6th &amp; W Burnside</td>
<td>NW Everett &amp; 5th</td>
</tr>
<tr>
<td>2015-12-04</td>
<td>18:17:06/17:48:01</td>
<td>richardm/richardm</td>
<td>4-</td>
<td>To St Johns</td>
<td>SE Division &amp; Cesar Chavez</td>
<td>NW Everett &amp; 5th</td>
</tr>
</tbody>
</table>
## Dashboard – Project Status

### On-Off Dashboard

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Inbound</th>
<th>Outbound</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AM</td>
<td>Mid</td>
<td>PM</td>
</tr>
<tr>
<td>4-Division/Fessenden</td>
<td>117%</td>
<td>53%</td>
<td>118%</td>
</tr>
<tr>
<td>9-Powell Blvd</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>17-Holgate/Broadway</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>19-Woodstock/Glisan</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>29-Lake/Webster Rd</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>30-Estacada</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>32-Oatfield</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>33-McLoughlin/King Rd</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>34-Limwood/River Rd</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>35-Macadam/Greeley</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>70-12th/NE 33rd Ave</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>75-Cesar Chavez/Lombard</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>182-Milwaukie</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>
Dashboard – Quotas by Time of Day

On-Off Dashboard

Time of Day - Quotas

<table>
<thead>
<tr>
<th>Time of Day</th>
<th>6a-9a</th>
<th>9a-12p</th>
<th>12p-3p</th>
<th>3p-6p</th>
<th>6p-9p</th>
<th>9p-12a</th>
</tr>
</thead>
<tbody>
<tr>
<td>55%</td>
<td>155%</td>
<td>111%</td>
<td>150%</td>
<td>100%</td>
<td>233%</td>
<td></td>
</tr>
<tr>
<td>6/11</td>
<td>17/11</td>
<td>10/9</td>
<td>12/8</td>
<td>2/2</td>
<td>7/3</td>
<td></td>
</tr>
</tbody>
</table>

Summary: 123% 54:44
Dashboard – Analytics (un-processed data)

On-Off Dashboard

4-Division/Fessenden

To St Johns

To Gresham Transit Center

Both Directions

Leaflet | Map data © 2015 Oregon Metro and OpenStreetMap contributors
Reiterative Pilot Testing

Refinement of

- Questionnaire (order, wording...)
- Sampling procedures
- Completion time
- Device and carrier testing
- Software testing

Data Review and QC Process Development

Refinement budget, resource requirements, and timeline
Hiring & Training
Schedule Creation & Signup
Communication

SURVEY TEAM
Recruitment and Training

Recruitment

- Tech savvy
- Familiarity of TriMet system
- Customer Service skills
- Racial/ethnic diversity and Spanish-speakers
- Professional attitude and appearance
- Solid work history (background check required)

Training

- Safety and Customer Service Training
- Project introduction, overview, objectives, scope
- Methodology and sampling procedures
- Use of tablets
- Shift sign-up and communication methods
## GIS ELECTRONIC SURVEY TRAINING SCHEDULE

### Day 1
Wednesday Feb. 17, 2016

<table>
<thead>
<tr>
<th>Time</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 1</th>
<th>Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00am</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:30am</td>
<td>Tablet Assignment &amp; Setup&lt;br&gt;Conf CTR (1) - Mt. McLoughlin</td>
<td>Customer Service/Security&lt;br&gt;Conf CTR (2E) – Mt. Wash.</td>
<td>Survey Review/Trip Signups&lt;br&gt;Conf CTR (2E) – Mt. Wash.</td>
<td>Supplemental App Review&lt;br&gt;Conf CTR (1) - Mt. McLoughlin</td>
</tr>
<tr>
<td>Noon</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:45pm</td>
<td>1A Badges</td>
<td>1B Lunch</td>
<td>2A Tablet Practice</td>
<td>2B Lunch</td>
</tr>
<tr>
<td>1:30pm</td>
<td>1A Lunch</td>
<td>1B Badges</td>
<td>2A Lunch</td>
<td>2B Tablet Practice</td>
</tr>
<tr>
<td>5:00pm</td>
<td>Technical Training/Field&lt;br&gt;Conf CTR (1) - Mt. McLoughlin</td>
<td>Methodology&lt;br&gt;Conf CTR (2E) – Mt. Wash.</td>
<td>Methodology&lt;br&gt;Conf CTR (2E) – Mt. Wash.</td>
<td>Technical Training/Field&lt;br&gt;Conf CTR (1) - Mt. McLoughlin</td>
</tr>
</tbody>
</table>

### Day 2
Thursday Feb. 18, 2016

<table>
<thead>
<tr>
<th>Time</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 1</th>
<th>Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noon</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:45pm</td>
<td>1A Badges</td>
<td>1B Lunch</td>
<td>2A Tablet Practice</td>
<td>2B Lunch</td>
</tr>
<tr>
<td>1:30pm</td>
<td>1A Lunch</td>
<td>1B Badges</td>
<td>2A Lunch</td>
<td>2B Tablet Practice</td>
</tr>
</tbody>
</table>

### Day 3
Friday Feb. 19, 2016

- Small group training with supervisors in field

### Day 4
Saturday Feb. 20, 2016

- Survey Begins

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**All Training at:**

TriMet Center Street Office  
4012 SE 17th Ave.  
Portland, OR 97202  
2/12/2016
Fielding Rules

Scripts:
- Someone asks me for directions or information about TriMet while I am surveying:
- The rider wants to file a complaint with me about TriMet
- The passenger has previously taken the survey on a different trip (we are interviewing riders more than once as you are surveying the trip not the people)

Contacts:
- Brett if tablet is lost/stolen/damaged/left behind/issues with it.
- Contact your assigned supervisor for all other issues, such as:
  - I lost my badge
  - The bus driver says I cannot survey on the bus
  - I am late for my shift and miss my scheduled bus/train
  - I have technical issues while surveying
  - I am sick and cannot make my shift
  - I am injured or become sick while I am working

Keep surveying even if:
- I am scheduled to work with a partner and they do not show up
- The vehicle breaks down – get on next bus
- Your shift includes multiple trips and one trip is late, causing me to miss a connection
- Survey Blazer and Timber Games
- Buses with Field Trips and Students

What if:
- The vehicle is packed and I cannot move around and follow the survey procedures
- I have surveyed all the riders on the vehicle and we have not reached the end of the trip
- Someone wants me enter in the survey questions for them (they are visually impaired, don’t want to touch the tablet, are not comfortable with the technology, etc.)
- The passenger is young? Only survey passengers 12 years old and above (don’t require parental permission).

Travel Time
You will be paid for your travel time to your start location.
Use Uber/Lyft only during none-TriMet service hours and give receipts to OLSA.

Remember to:
1. Charge your tablet after every shift and make sure that it is charged before leaving for a shift.
2. Be at the beginning location 10 minutes before the bus/train is due.
3. Wear your badge and vest while administering surveys.
4. Identify yourself as a TriMet Surveyor to the bus driver (not necessary on the train), stating that you will be conducting surveys on this trip. If requested, show him/her your TriMet badge.
5. Remember to dress neatly and be well groomed. Jeans and T-shirt are okay, but make sure your clothing is clean.
Equipment Assignments

TriMet Mobile Surveyor Equipment Checkout Form

Name: __________________________ Phone #: __________________________
Department: GS-IT Email Address: __________________________

<table>
<thead>
<tr>
<th>Equipment Being Checked Out</th>
<th>ID Number</th>
<th>User’s Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Samsung Galaxy Tablet</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>1 Samsung Wall Charger</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>1 Poetic Table Case</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>1 Shoulder Bag</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>1 Blue TriMet Vest</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>1 TriMet Badge Authorization Form</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

Equipment Check Out and Return Date
Date Equipment Picked Up: 02/17/2017 Date Equipment will be Returned: 02/17/2017

I understand that it is my responsibility to:
(Please initial besides each item)

___ Accept accountability for the care and use of the above equipment
___ Report any loss or damage of the equipment immediately to your supervisor
___ Return the equipment on time
___ Return the equipment cleaned and in the same condition it was received

______________________________ ________________________________
Signature Date

Acceptable Use and Smart Device Security Policies

Security - In the Office
- Device should be secured when not in use and overnight.
- The device must be password protected

Security - Out of Office
- Devices must not be left unsecured when traveling (e.g., hotel rooms, during meals, etc.)
- Preferably, devices must not be left unattended in automobiles. If it is necessary to leave the device in an unattended car for a short period of time, the device should be placed in a trunk.
- Put it through the x-ray machine when going through airport security. Keep all equipment in view at all times.

Safeguarding Sensitive Information
- A password will be set up that must be entered before any user can access contents.
- Additional passwords will be set up on files containing sensitive agency information.
- Passwords should not be shared or revealed to anyone.

What to do if there is a theft
- If a theft does occur, notify the Helpdesk at (503)-962-5818, immediately.
- Inform your manager of situation.

I have read and agree to the Acceptable Use and Smart Device Security Policies.
Quality Assurance

One Supervisor per 6-7 Surveyors

Fielding Rules Reviewed and Additional Training as Needed

Monitored and Mystery Shopped (documenting when/where)

Monitoring of backend data

Timesheet verifications against scheduled work shifts and data collection.

Supervisors have prior survey experience: Cassadi Willey, Brett Hamilton, Meredith Rider
Field Supervision Form
Individual and Total Summary Results
Average Shift Supervision Rate %16

Yourname: __________________ Date: ___________ Time: ___________
Line/train: ______ Busstop where you boarded: _______________________

Approximate number of occupied seats when boarding:
☐ <25%  ☐ 25%  ☐ 50%  ☐ 75%  ☐ 100%  ☐ >100% (people standing)

DIRECTIONS: Try to sit close to the surveyor so you can observe their actions and behaviors. Ride the bus for about 15 to 30 minutes. The answers in bold are the actions/behaviors we want. Check only one box for each question.

APPROACH
1. Which of the following?
   ☐ Please fill out
   ☐ Would you like to fill this out
   ☐ Tri-Metsurvey
   ☐ Fill this out
   ☐ Here, take this
   ☐ Other: ______
2. Did he/she speak clearly?
   ☐ Yes  ☐ No
3. Did they smile when asking for instructions or clarification?
   ☐ Yes  ☐ No
4. Did they make eye contact?
   ☐ Yes  ☐ No
5. Were you given instructions?
   ☐ Yes  ☐ No
6. Did the surveyor appear friendly?
   ☐ Yes  ☐ No
7. How would you rate their approach? (47 responses)
   ☐ Excellent  ☐ Fair  ☐ Poor
8. Any comments about their approach? (22 responses)

DRESS/APPEARANCE
9. Was the surveyor wearing an identification badge?
   ☐ Yes  ☐ No
10. Were their clothes clean?
    ☐ Yes  ☐ No
11. Were their clothes respectable (not torn, no objectionable words on t-shirts, etc.)?
    ☐ Yes  ☐ No
12. Did they have good personal hygiene?
    ☐ Yes  ☐ No

21a. Was the interaction of a positive nature?
   ☐ Yes  ☐ No → explain:

22. Did you witness the surveyor using their personal cell phone while surveying on the bus/MAXWES?
    ☐ Yes  ☐ No
23. Does this person contribute to the overall image Tri-Met would like to portray?
    ☐ Yes  ☐ No

COMMENTS (optional)
On-Line Shift Scheduling
(WhenIWork.com)
Travel Alternatives (6pm-6am shifts as needed)
<table>
<thead>
<tr>
<th>Fare Survey Comparisons</th>
<th>2012</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Distribution</strong></td>
<td>Paper and pencil – handed to all passengers</td>
<td>Tablets – survey as many as possible</td>
</tr>
<tr>
<td><strong>Languages</strong></td>
<td>Full survey: English/Spanish LEP questions: 4 languages</td>
<td>Full survey: English/Spanish LEP questions: 11 languages</td>
</tr>
<tr>
<td><strong>Questions asked (full survey)</strong></td>
<td>19</td>
<td>24</td>
</tr>
<tr>
<td><strong>Sample Trips: representative of service day</strong></td>
<td>Bus – 8% weekday, 5% Sunday MAX – 15% weekday, 5% Sunday WES – 50% weekday, 5% Saturday, 5% Sunday</td>
<td>Surveyor hours (includes training/travel) 1,735 2,309</td>
</tr>
<tr>
<td><strong>Completed surveys (includes all languages)</strong></td>
<td>Surveyor training hours</td>
<td>15 276</td>
</tr>
<tr>
<td></td>
<td>Supervisor/scheduler hours</td>
<td>711 1,082</td>
</tr>
<tr>
<td></td>
<td>Completed surveys (includes all languages)</td>
<td>16,982 17,719</td>
</tr>
<tr>
<td><strong>Sample hours pulled (includes 2 surveyors on MAX)</strong></td>
<td>Response rate</td>
<td>44% 65%</td>
</tr>
<tr>
<td></td>
<td>Results available after fielding</td>
<td>&gt;6 months 1 month</td>
</tr>
<tr>
<td></td>
<td>Shift length – average surveying hours (not including travel time)</td>
<td>8 hours 4 to 5 hours to accommodate student schedules</td>
</tr>
<tr>
<td></td>
<td>Cost</td>
<td>$107,502 (fielding, translations, printing, postage, data entry) $73,313 (fielding, translations, programming, cell phone and incidental fees)</td>
</tr>
<tr>
<td></td>
<td>Cost per sample hour</td>
<td>$71.40 $48.40</td>
</tr>
<tr>
<td></td>
<td>Cost per completed survey</td>
<td>$6.30 $4.10</td>
</tr>
<tr>
<td></td>
<td>Completes per sample hour</td>
<td>11.3 11.7</td>
</tr>
<tr>
<td></td>
<td>Supervisor/scheduler hours as % of sample hours</td>
<td>47% 71%</td>
</tr>
</tbody>
</table>

CONCLUSIONS
Comparisons between 2012 and 2016 Fare Surveys

Cost decrease by 32%, response rate increase by 48%

Obtained more information, more timely, with better quality assurance

Introduced dashboards and real-time data monitoring

Training and supervision more rigorous

Fewer errors and higher % of completes

Allowed for shorter shifts to accommodate student schedules (produced more travel time, however, the surveyors experienced less burnout)

More environmentally friendly than paper

Enabled TriMet “ambassadors” (students) to interact directly with 27,118 riders and 203 bus drivers/WES conductors.
Tablet vs. Paper

Significant time and cost savings: eliminates paper, printing, postage, data entry, GIS post-processing.

No oversampling required to meet quota, as real-time data capture is monitored.

Data entry errors are decreased and can be auto-validated

Data accuracy is vastly improved and location information for stops on/off is auto-captured. Survey throw-out rate is almost non-existent.

Demonstrates the use of innovation in technology and being environmentally conscientious.
College Students

Hourly cost of college students are 40% less than consultant and provides opportunities for local area students.

Positive customer interaction and engagement

Have extensive knowledge of the transit system and local area.

Bi-lingual recruitment

Staff on hand for customer service projects in addition to surveys