

## **Fleet of the Future: Summary of Customer Research and Public Outreach July – November 2013**

---

### **TRAIN CAR MODEL**

#### ***Background***

In July, BART conducted customer research and public outreach onboard a wooden model representing about two-thirds of a new BART train car. The broad objective was to ensure that the proposed design of the new train cars meets the needs of the Bay Area. Specific items to be explored included:

- Overall layout of train car
  - Placement of seats, open areas, handholds
  - Ease of movement through train (specifically when crowded)
- Center armrests
- Handholds
- Seat dimensions (re-validation)

The train car model was assembled on the concourse level at MacArthur Station.

#### ***Customer research***

BART conducted two different research studies onboard the train car model. Both studies were conducted for BART by Quantum Market Research. The first study involved testing the model with a representative sample of BART riders under crowded conditions (referred to as “Pack the Train” exercises). Riders brought items that they would typically bring onboard with them (e.g., backpacks, luggage, bikes). The movement of a wheelchair under these conditions was also assessed as part of these exercises. The purpose of this research was to obtain feedback from a representative group of BART riders on key aspects of the design in a semi-realistic situation.

The second study involved testing the model with BART riders with disabilities (referred to as In-Depth Interviews). The primary purpose of this research was to evaluate a new feature of the proposed design – a floor-to-ceiling pole in the vestibule – among passengers more likely to be helped or hindered by the new pole. Participants included passengers using wheelchairs/scooters, passengers with mobility impairments, and passengers who were blind or had low vision. Participants in this research also evaluated other handholds onboard the model, as well as the overall interior design.

The following caveats should be noted for this research:

- Materials were not final production quality.
- As the model was stationary, the impacts of acceleration, ride quality, and other such factors could not be tested.

### Pack the Train

The Pack the Train exercises were conducted on Saturday, July 27 at the MacArthur BART station. Riders were recruited to ensure a representative mix of demographics (e.g., ages, genders, heights, races, and counties of residence). Riders were asked to bring any items with them that they would bring on a typical BART trip (e.g., reading material, cell phone, tablet, bike, backpack, etc.). A total of 116 riders participated – 46 in the first exercise (moderately occupied train), and 70 in the second exercise (very crowded train).

Both exercises involved a simulated BART trip from 24<sup>th</sup> St. Mission station to El Cerrito del Norte. (Note that the model was stationary.) Participants were given index cards instructing them when to board and exit the model. Each participant boarded and exited two times during the trip. This provided them with an opportunity to experience different aspects of the model, e.g., different seats, different standing areas, different handholds.

After completing the BART trip, riders completed a self-administered questionnaire about their experience. Following this, a total of 56 riders (28 from each session) were randomly selected to participate in a debriefing session.

The questionnaire used for the Pack the Train exercises is included in **Appendix A**, along with the results (frequencies and verbatim comments).

### In-Depth Interviews

A total of 27 interviews with passengers with disabilities were conducted onboard the train car model on July 30<sup>th</sup> and 31<sup>st</sup>. Most participants were recruited via intercept while riding BART in the prior week. Participants included 12 riders who used a wheelchair or scooter, eight who were blind or had low vision, and seven who had mobility impairments but did not use a wheelchair or scooter.

Results of this research are presented in a memo from Quantum Market Research in **Appendix B**.

### ***Public outreach***

The train car model was open to the public at the MacArthur Station from 2 p.m. – 7 p.m. on six days: Tuesday – Friday, July 23 – 26, and the following Thursday and Friday, August 1<sup>st</sup> and 2<sup>nd</sup>. BART staff guided attendees through the model as needed, answered questions, and distributed questionnaires. Over the course of six days, approximately 4,500 people toured the model. A total of 1,810 questionnaires were completed.

The questionnaire used for this outreach is included in **Appendix C**, along with the results (frequencies and verbatim comments).

## SEAT PROTOTYPES

### **Background**

In October and November, BART conducted customer research and public outreach on seat prototype options for BART's new train cars. The primary objective was to ensure that the planned new seats would be acceptable to BART riders in terms of comfort. Three seat options were tested – Seats "A," "B," and "C." The bottom cushion on each of these seats differed in terms of its density. (Seat A was low density, Seat B was high density, and Seat C was medium density).

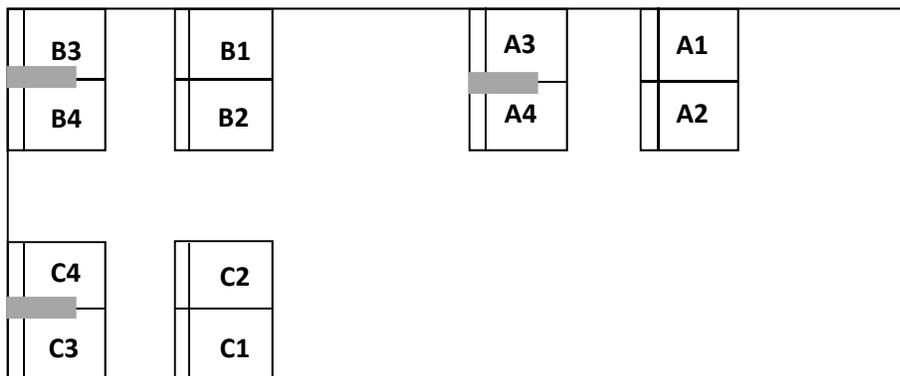
The research and outreach were designed to show which, if any, of the seat cushion options were preferred and to identify specific reasons why the seats were seen as comfortable or uncomfortable. Other items explored included whether or not some or all of the seats should include a center armrest, and whether or not the seat back handle required any design modifications.

### **Customer research**

A representative sample of BART riders was recruited to participate in a one-hour seat evaluation at Lake Merritt Station Plaza (street level) on Friday, October 4 and Saturday, October 5.

Riders were recruited to ensure a representative mix of demographics (e.g., ages, heights/weights, genders, races, and counties of residence). A total of 187 BART riders took part in the research (16 groups of 11 or 12 participants each). This project was conducted for BART by Quantum Market Research.

An illustration of the seat set-up is shown below. The grey bar represents the center armrest, which was only included in the back rows of seats.



The research was divided into five parts:

Part 1: Riders sat in each of the three types of seats for two minutes before being asked to rate the seat. After sitting in all three seats, riders were asked to indicate which seat, if any, they preferred. Seat assignments were given to ensure riders sat in the same seat placement within each section (e.g., back row aisle for Seat A, B and C) during this exercise. This was done to

ensure that riders were comparing similar seats to the greatest extent possible prior to indicating a preference.

Part 2: Riders seated in back rows were instructed to stand up and exit into the aisle using the center armrest, then answer a question about the armrests. Next they were instructed to stand up using the seat back handle, and answer a couple of questions. (Riders seated in front rows completed this part after moving to their fourth seat, which was in the back row.)

Part 3: Riders moved to the seat diagonal from their current location for an extended “ride” of 18 minutes. The diagonal seat was used to ensure that everyone had the opportunity to sit in a front row seat (without a center armrest), back row seat (with a center armrest), aisle seat, and window seat during the research exercise. At the end of the 18 minutes, riders answered questions about their final seat.

Part 4: Riders compared the prototype seats to the current BART vinyl seats in terms of space, comfort of bottom cushion, and comfort of back rest.

Part 5: Riders participated in a brief, small group discussion about the seats, which was facilitated by a moderator.

The following caveats should be noted for this research:

- Materials were not final production quality.
- The seats were not tested on a moving BART train. Acceleration, ride quality, and other factors that could not be modeled in the research could influence customer acceptance.
- The new seats were not tested alongside current seats. During the mixed fleet time period, customer acceptance of the new seats may be influenced by repeated comparison to the old seats.

The questionnaire used for this research is included in **Appendix D**, along with the results (frequencies and verbatim comments).

**Public outreach**

BART transported the seat display used for the research to nine different locations in the BART District to provide the public with an opportunity to evaluate the seats. At each location, BART staff distributed questionnaires to attendees and invited them to try out the seats. Locations, dates, times, and the number of questionnaires received from each location are shown below.

Location	Date	Time	Questionnaires Collected
Union City BART Station	10/7/13	3 pm – 7 pm	150
Pittsburg Bay Point BART Station	10/8/13	3 pm – 7 pm	279
Downtown Berkeley (street level)	10/9/13	10 am – 6 pm	329
West Dublin/Pleasanton BART Station	10/29/13	3 pm – 7 pm	165
Pleasant Hill/Contra Costa Centre BART Station	10/30/13	1 pm – 7 pm	317
Lake Merritt Plaza (street level)	11/1/13	3 pm – 7 pm	149
El Cerrito del Norte BART Station	11/4/13	3 pm – 7 pm	228
Balboa Park BART Station	11/5/13	3 pm – 7 pm	301
Powell St. (street level - 700 block of Market St.)	11/6/13	11 am – 7 pm	398
Total questionnaires collected			2,316

The questionnaire used for this outreach is included in **Appendix E**, along with the results (frequencies and verbatim comments).

**PASSENGER INFORMATION SCREENS****Customer research**

BART invited a random sample of BART riders to participate in an online survey about content for the new passenger information screens in September 2013. A total of 300 riders completed the survey, which entailed watching a sample loop online and providing feedback. The questionnaire used for this research is included in **Appendix F**, along with a summary of the results.