Fleet of the Future

Survey Results

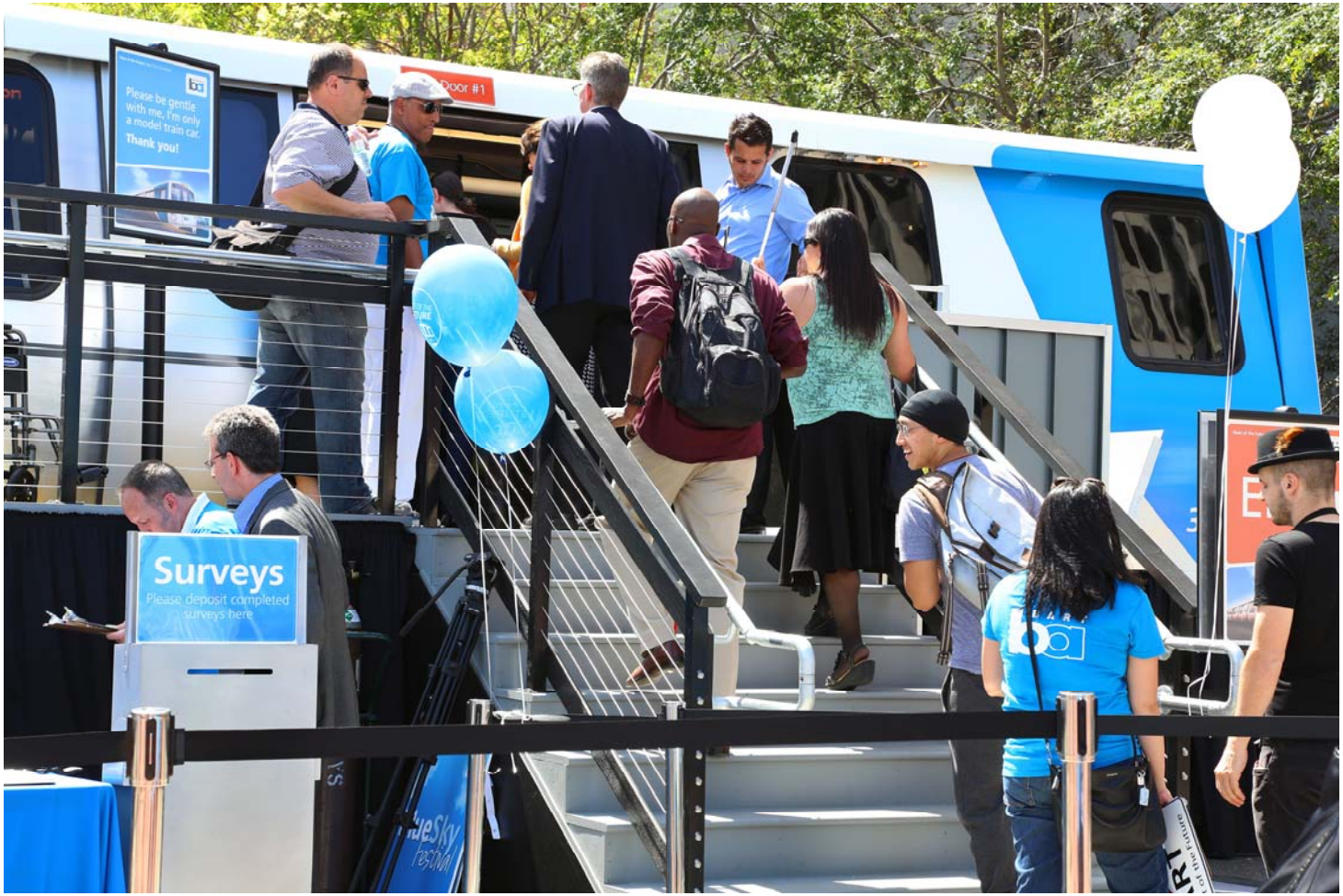
May 23, 2019

Public Outreach

> "In an inspired, yet practical move, BART's Board of Directors has decided that the design should be informed by the riding public. Those who use the BART train system can give their input on their needs by visiting **BART.gov**."

—Reuters

Engaged 40,000 Customers



Survey Background

- Objectives
  1. Final confirmation that train car design meets customers' needs.
  2. Provide information to inform two final design decisions:
     a) Type of bike space provided
     b) Amount of bike space / open space provided (one versus two areas per car)
- Methodology
  A. Onboard survey conducted between January 2018 and January 2019 on board Fleet of the Future trains based on their availability.
     - Results cover four BART lines (orange, green, red, yellow). Most orange and green line surveying was done off-peak; most red and yellow line surveying was done during peak. Results are presented by peak and off-peak.
     - n = 3,050
  B. Supplemental online survey of bicyclists conducted beginning 12/9/18
     - Decals posted near bike areas on 33 Fleet of the Future cars, directing cyclists to an online survey.
     - n = 214 respondents who have brought bikes onboard the new cars

Ratings by Time Period

- All attributes were rated quite favorably. On some attributes, off-peak riders provided higher ratings than peak riders.

Q: How do you rate this train car on each of the following items? Please check "Excellent," "Good," "Only Fair," or "Poor" for each one.*

Attribute	PEAK *(n: 1,088 – 1,108)* Excellent or Good	OFF-PEAK^ *(n: 1,780 – 1,832)* Excellent or Good
Ease of getting on and off the train	97%	97%
Lighting	96%	97%
Audio announcements	92%	93%
Floor-to-ceiling poles	92%	95%
Digital screens / displays	92%	89%
Comfortable temperature on board	90%	93%
Color scheme	89%	91%
Other handholds (other poles, hanging straps, etc.)	88%	93%

** Continuation of question text: "If you are unable to evaluate a particular item, check "Don't Know."*

^ Note: off-peak riders were much more likely to be first-time Fleet of the Future riders due to the first Fleet of the Future consist being run primarily off-peak.

Ratings by Time Period

Attribute	PEAK (n: 1,088 – 1,108) Excellent or Good	OFF-PEAK^ (n: 1,780 – 1,832) Excellent or Good
Overall interior layout	87%	92%
Ride quality / smoothness	86%	92%
Ease of finding priority seats (for seniors, people with disabilities)	85%	91%
Noise level on board	77%	84%
Comfort of seats	73%	88%
Access for people with disabilities	72%	83%
Ease of finding wheelchair area	70%	80%
Ease of finding bicycle area	66%	73%
Space for luggage and strollers	64%	76%
Space for bicycles	61%	72%

^ Note: off-peak riders were much more likely to be first-time Fleet of the Future riders due to the first Fleet of the Future consist being run primarily off-peak.

Rating Comparisons: Legacy Cars vs. Fleet of the Future Cars

- Based on surveys on comparable off-peak orange line runs, the Fleet of the Future cars were rated much more favorably than Legacy cars.

Attribute	LEGACY Orange line, off-peak *(n: 287 - 296)* Excellent or Good	FLEET of the FUTURE Orange line, off-peak *(n: 608 - 624)* Excellent or Good	
Ease of getting on and off the train	89%	97%	+8 pts
Lighting	76%	96%	+20 pts
Ride quality / smoothness	61%	94%	+33 pts
Ease of finding priority seats (for seniors, people with disabilities)	73%	94%	+21 pts
Overall interior layout	63%	94%	+31 pts
Comfortable temperature on board	71%	93%	+22 pts
Other handholds (other poles, hanging straps, etc.)	73%	93%	+20 pts
Color scheme	45%	93%	+48 pts

Rating Comparisons:
Legacy Cars vs. Fleet of the Future Cars

Attribute	LEGACY Orange line, off-peak *(n: 287 - 296)* Excellent or Good	FLEET of the FUTURE Orange line, off-peak *(n: 608 - 624)* Excellent or Good	
Audio announcements	54%	92%	+38 pts
Comfort of seats	70%	92%	+22 pts
Noise level on board	41%	87%	+46 pts
Access for people with disabilities	63%	86%	+23 pts
Ease of finding wheelchair area	67%	82%	+15 pts
Space for luggage and strollers	57%	79%	+22 pts
Ease of finding bicycle area	72%	74%	+2 pts
Space for bicycles	62%	74%	+12 pts

Design Decision #1

- Type of bike space provided

Bike Rack

Open Area

Items Brought On Board

- Among those surveyed on board, 11% reported having luggage with them, and 3% had brought a bike on board.

Q: Did you bring any of the following on board this train today? (Check all that apply.)

Items brought onboard *(n: 2,996)*	%
Luggage (carry-on or larger)	11%
Bicycle	3%
Stroller	1%
None of the above	85%

Multiple responses accepted.

Online Survey Invitation

Responses from Cyclists (online survey) Onboard Bike Rack

- While cyclists liked having a dedicated space for bikes, the onboard rack was rated poorly on most attributes.

Used onboard bike rack *(n: 194 - 197)*	**Excellent or Good**
Providing a dedicated space for bikes	76%
Ease of finding bike rack on the train car	63%
Stability of your bike while in rack	51%
Ease of getting your bike in and out of rack	36%
Number of bikes that can fit comfortably in this space	28%

- Love the dedicated space (we bicycle commuters need it!), but the design fell a little short.
- The bike holder itself was very difficult to get my bike tire into and felt very unstable once it was in there.
- I love the idea and appreciate you thinking of us, but execution doesn't work with many bikes in the real world. I have 2" tires on my commuter bike (not as wide as most mountain bikes), and they don't fit well…I have mountain handlebars and they don't fit - too wide.
- Angles and maneuvering required to get bikes in and out of the racks when other bikes are present is incredibly difficult, especially when cars are full.

Responses from Cyclists (online survey) Open Space

- Although fewer cyclists had used the open area, they gave it high ratings on providing a dedicated space for bikes, number of bikes accommodated, ease of getting bike in/out, and stability.
- It received less favorable ratings on straps for securing bikes and ease of finding it.

Used open area with metal bar *(n: 40)*	**Excellent or Good**
Providing a dedicated space for bikes	83%
Number of bikes that can fit comfortably in this open area	78%
Ease of getting your bike in and out of this open area	75%
Stability of your bike while in this open area	73%
Straps for securing bikes in this area	65%
Ease of finding this open area on the train car	60%

- *It's not terribly stable with the strap, but it's better than nothing.*
- *The straps aren't stable, and it's not as obviously a bike space.*
- *I prefer the bar that sticks out a little on the old cars as it allows me to hook bike's handlebars in and stabilize it without straps, which are time-consuming to attach and detach.*

Responses from Cyclists
Bike Rack vs. Open Space

Online survey

- Among the small number of cyclists (32) who had used both the onboard rack and the open space, about 2/3 preferred the open area.

Q. You indicated you've parked your bike in both the onboard bike rack and the open area with metal bar on the new train cars. Which one do you prefer for your bike?

Bike Space Preference *(n: 32)*	%
The open area with metal bar on the new train cars	66%
The onboard bike rack on the new train cars	19%
Either is fine	9%
Neither works for my bike	3%
Don't know	3%
Total	100%

- *To reiterate, the wheel catcher is terrible and the open area with the bar and straps are far more useful.*
- *The onboard bike rack is a great idea, but fails in practice. The standard open area with metal bar on existing BART cars is much better.*

BART Bike Advisory Task Force

- Note that the task force also prefers an open area with bar, rather than the bike rack.

Design Decision #1:
Staff Recommended Next Steps

- Adopt open area design instead of bike racks
- For consistency, use the same “Priority Area” designation as used in the legacy cars.
- Explore refinements to more closely replicate the bike bar in legacy cars

Design Decision #2

- Amount of bike space / open space provided (one vs. two areas per car)

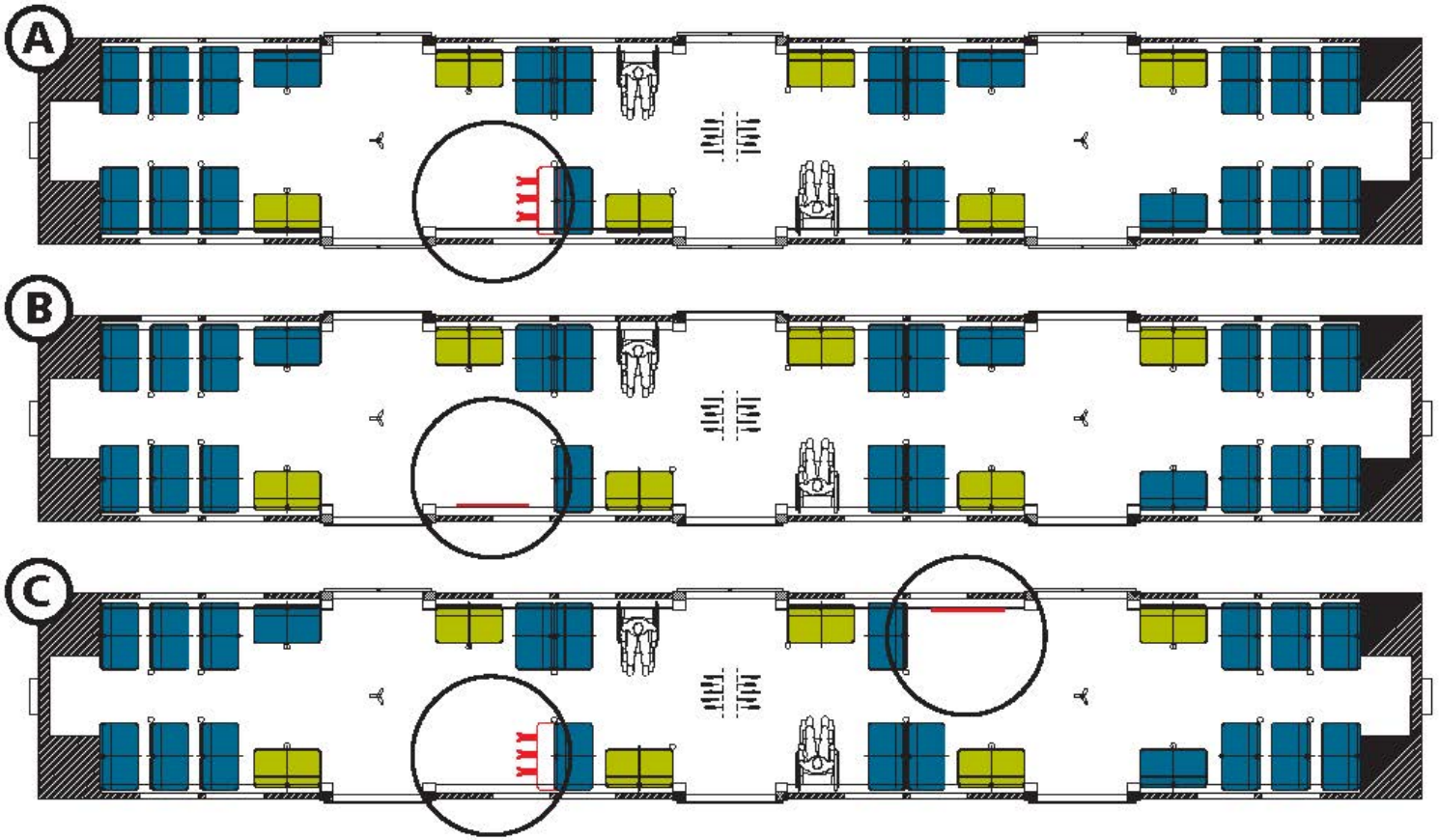
Three Different Layouts

Q. Please compare these three train car layouts that BART is testing; then rate each one in the table below.

Bike rack with slots for 3 bikes. Area could also be used for luggage, strollers, passengers.

Open area with horizontal bar on wall. Area could be used for bikes, luggage, strollers, passengers. Has slightly more space than bike rack area in Layout A.

Bike rack and open area. Has 4 fewer seats than Layouts A and B, but more open space.



Exterior Decals

Layout Ratings – All Riders

- Peak riders gave higher ratings to Layouts A and B (more seats), while off-peak riders gave similar ratings to all three layouts.
  - Among those who had a bike on board, Layout C received the highest ratings (84% Excellent or Good).

	PEAK *(n: 962-972)*	**OFF-PEAK** *(n: 1,458 - 1,477)*
Layout comparison	**Excellent or Good**	**Excellent or Good**
Layout A (bike rack)	74%	79%
Layout B (open area)	74%	78%
Layout C (bike rack + open area/loss of 4 seats)	61%	76%

- *You've already removed enough seats; stop trying to remove more. It's 40 min. from Walnut Creek to Montgomery with little chance of a seat.*
- *Very hard to sacrifice space for sitting. Three bikes are usual number of bikes.*
- *These new cars feel much more packed than the old ones during the morning commute, so the more standing space in B & C may help!*
- *Only one space that fits three bikes per entire car is not enough, nor is it apparent where on the train the bike spot is. Especially when the trains are more crowded, it is not possible to move through the train to the one dedicated location.*
- *(From online survey): Please be sure to have two of these open areas with bar and straps in each car...and this is crucial: one on each side of the car so we may choose to park on the side from which we will exit.*

One vs. Two Bike Areas

Comparison

Option 1: One bike area	Option 2: Two bike areas*
▪ Retains 4 more seats per car	▪ Predictable location of bike areas (one at each end of car)
▪ Rated higher by peak riders, for whom crowding is more of an issue. Also, based on comments, adequate seating is especially important to those with longer commutes.	▪ Accommodates more standees, luggage, strollers, etc.
▪ May offer enough bike capacity for current level of bikes on board (3-4% of riders)	▪ Accommodates more cyclists

*Note that the BART Bike Advisory Task Force supports Option 2.

Seat Counts by Car Type

Seats per car

Car Type	Legacy Fleet: Original	Legacy Fleet: Current	Fleet of the Future: Production Cars	Fleet of the Future: If 2 Bike Spaces
A	72	60*		
B	72	53		
C1	64	56		
C2	68	56		
D			51	47
E			56	52

** One A car has 53 seats.*

Design Decision #2: Staff Recommended Next Steps

- Continue Production with one bike area per car.
- New car modular construction allows future seat count flexibility if percent of trips with bikes onboard increases substantially above the current 3 – 4%.
- District will continue efforts to increase secure bike storage at stations, which includes:
  - Approximately 1,700 electronic lockers (39 stations)
  - 8 bike stations
  - 960 spaces in paid-area racks
  - High security bike rack (Bikeep) pilot at three stations, with two more planned
  - Additional bike stations planned or under consideration for 7 stations

Discussion