SFMTA
Municipal
Transportation
Agency

# Next Generation Customer Information System

SFMTA Board of Directors
Policy and Governance Committee
March 23, 2018

# WHY NOW? – THE SAN FRANCISCO CONTEXT

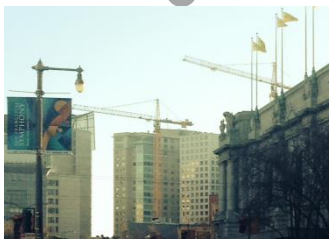
- In 1999, San Francisco launched the first U.S. real-time information system
- Since then, technology and transportation choices have changed rapidly
- For the first time in 15+ years, we have a chance to do a refresh

2000

2018

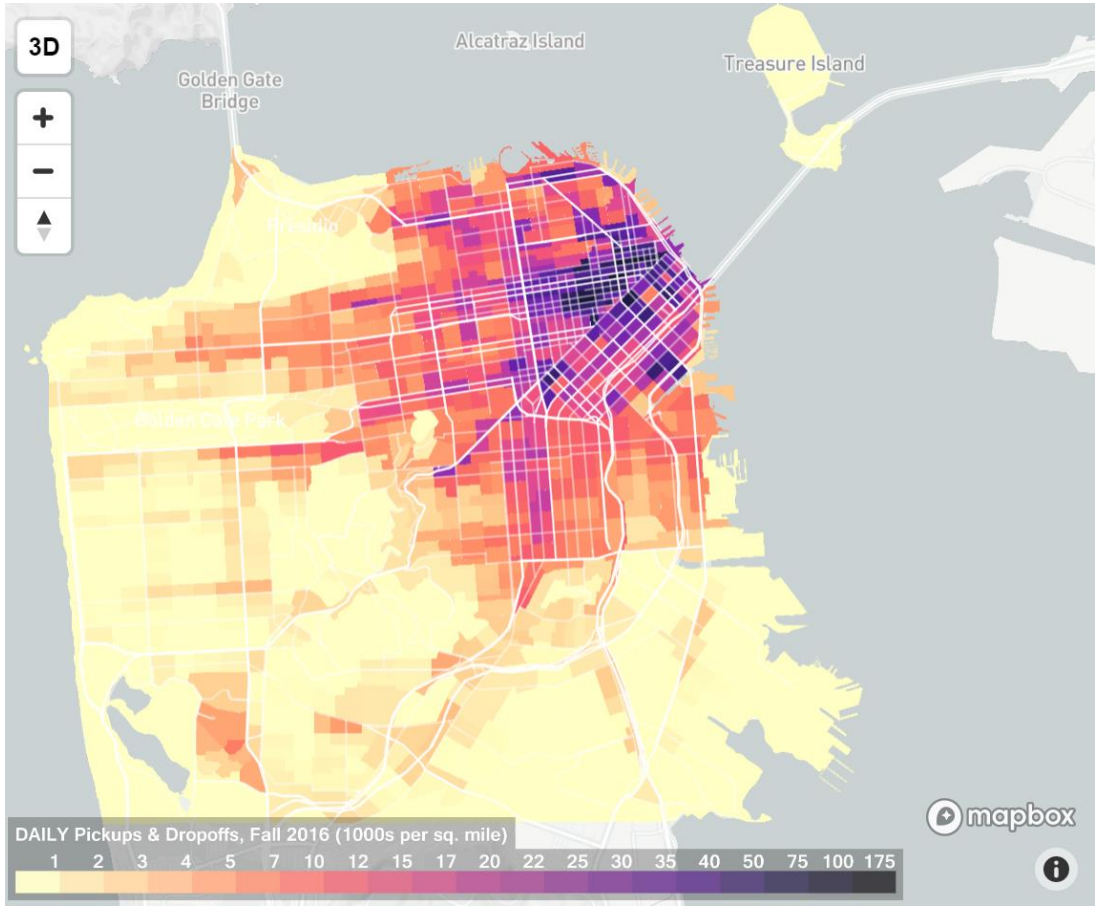
NEXTbus

citycarshare




# A NEW TRANSPORTATION LANDSCAPE

## Transportation Network Company (TNC) Activity




Source: *TNCs Today: A Profile of San Francisco Transportation Network Company Activity* (San Francisco County Transportation Authority)

- TNCs now generate 170,000 vehicle trips per day, typically with only 1 to 2 passengers
- 20-26% of peak period traffic in Downtown/SOMA, which delays Muni
- Concentrated in areas with extensive Muni service

# PUBLIC OUTREACH – WHAT DO OUR CUSTOMERS WANT?

## Methods

**Quantitative**

Comprehensive Survey
(Available in English, Chinese and Spanish; online and paper upon request)
5,852 complete responses; ±1.3% margin of error at a 95% confidence level

+

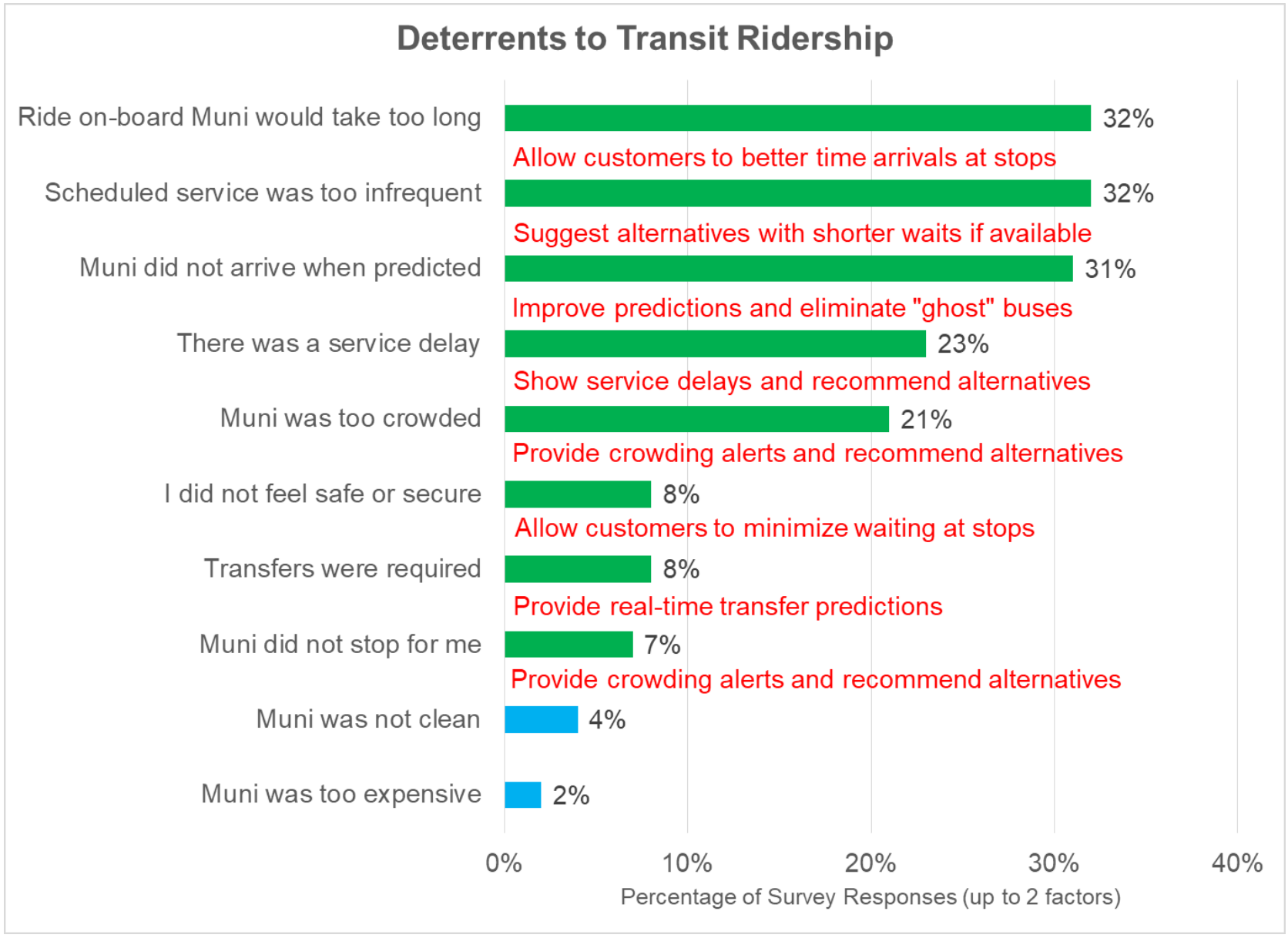
**Qualitative**
**(including outreach to underrepresented groups)**

- Concept Testing
- Stakeholder Interviews
- Ride-alongs

## External Stakeholder Examples

| | |
|---|---|
| 311 | SF Board of Supervisors |
| BART, Caltrain and other transit agencies | SF Travel |
| Chamber of Commerce | SFMTA Citizens' Advisory Council (CAC) |
| Chinatown Community Development Center (CCDC) | SFMTA Multimodal Accessibility Advisory Committee (MAAC) |
| Chinatown Tenants Association | SFMTA Policy and Governance |
| Hotel Council | SFUSD-Access |
| Independent Living Resource Center | Senior Action and Disability Network |
| Lighthouse for the Blind | SF Transit Riders |
| Mercy Housing | Youth Commission |
| Rebuild Potrero | The Village |
| Save Muni | |

# HOW THE NEW SYSTEM WILL ADDRESS DETERRENTS TO RIDERSHIP



# WILLINGNESS TO WAIT FOR TRANSIT

| Waiting Time Until Next Muni Vehicle | During the Day | During the Evening or At Night | When Transferring |
|---|---|---|---|
| 5 min | 97% | 94% | 93% |
| 10 min | 73% | 67% | 59% |
| 15 min | 35% | 34% | 22% |
| 20 min | 14% | 15% | 8% |
| 30 min | 5% | 5% | 3% |

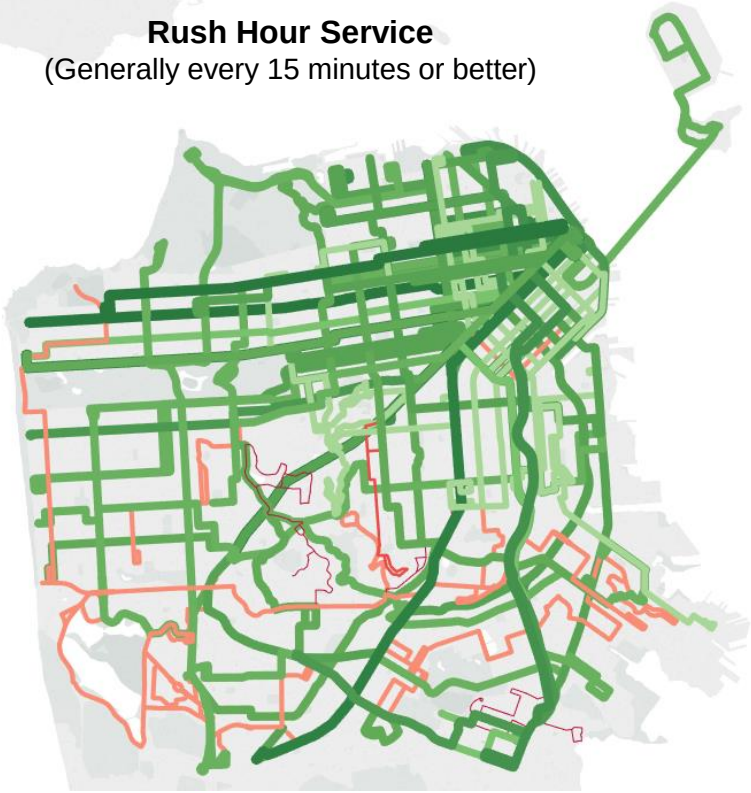
**Finding #1**
When arriving randomly at a stop without any real-time information, customers are generally willing to wait 10 – 15 minutes.

**Finding #2**
Wait tolerance declines significantly during the evening or at night

**Finding #3**
Wait tolerance is significantly less for transfers

# MUNI SERVICE FREQUENCY

**Rush Hour Service**
(Generally every 15 minutes or better)



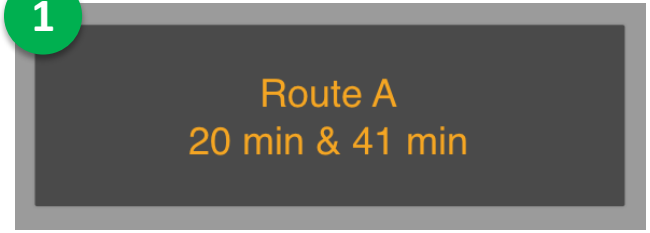
**Late Evening Service**
(Generally every 20 to 30 minutes)

Service frequency often meets customer expectations during the day, but not during the evening and other off-peak times

# A 20-MINUTE WAIT: FOUR TEST SCENARIOS

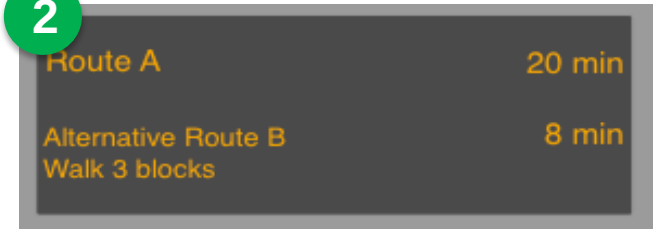
- Survey presented customers with a hypothetical 20-minute Muni wait
- Respondents answered four situational questions testing how different types of information could influence mode choice

1




Customer arrives at shelter sign predicts a 20-minute wait

2

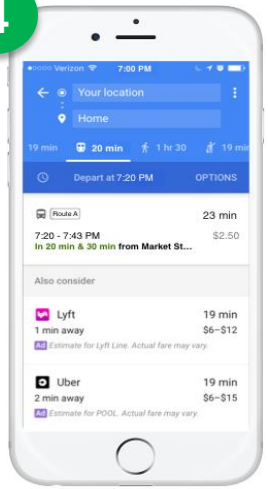



Countdown sign displays an earlier-arriving alternative

3

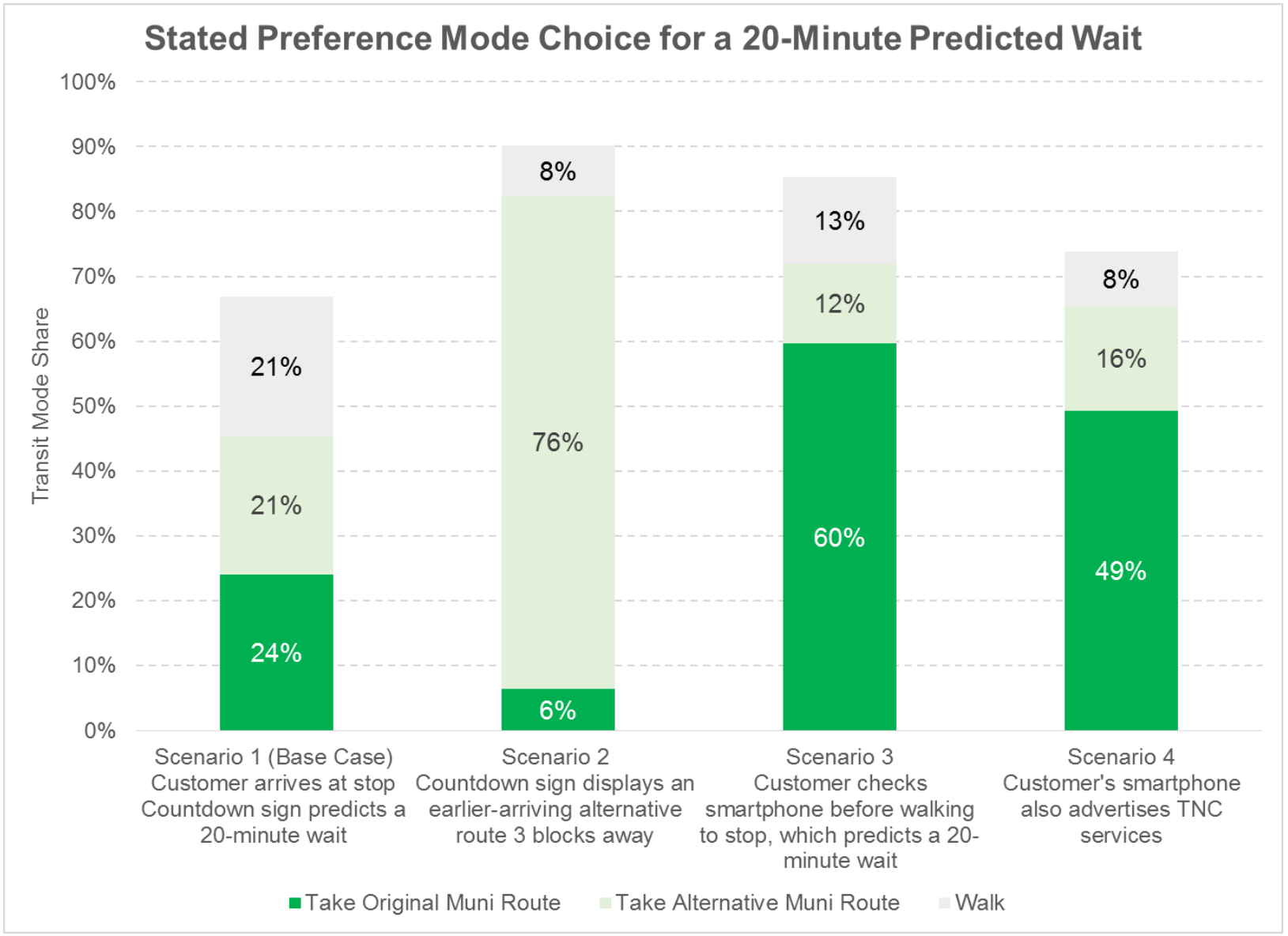

Checks smartphone before walking to stop, showing a 20-minute wait

4

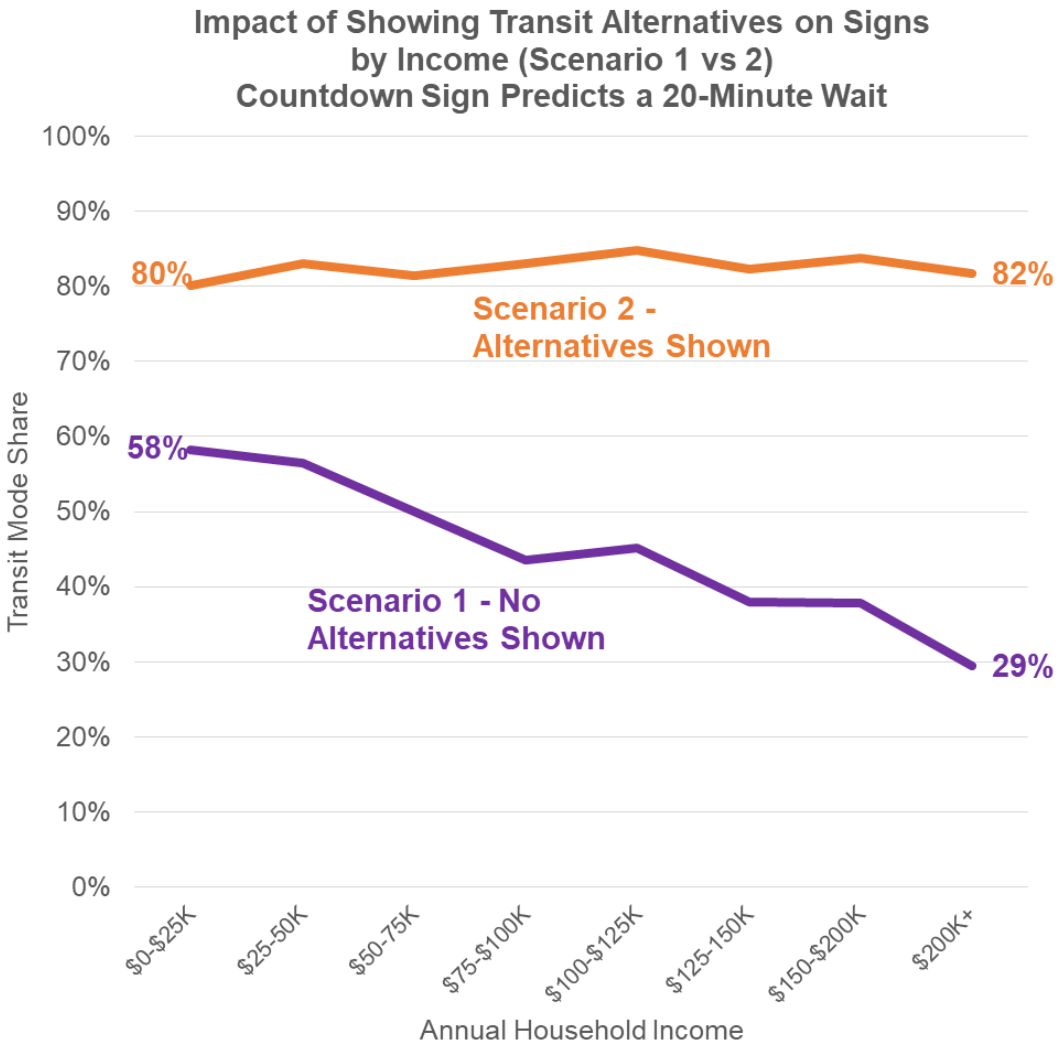



Customer's smartphone app also advertises Uber and Lyft

# A 20-MINUTE WAIT: TOP LEVEL RESULTS



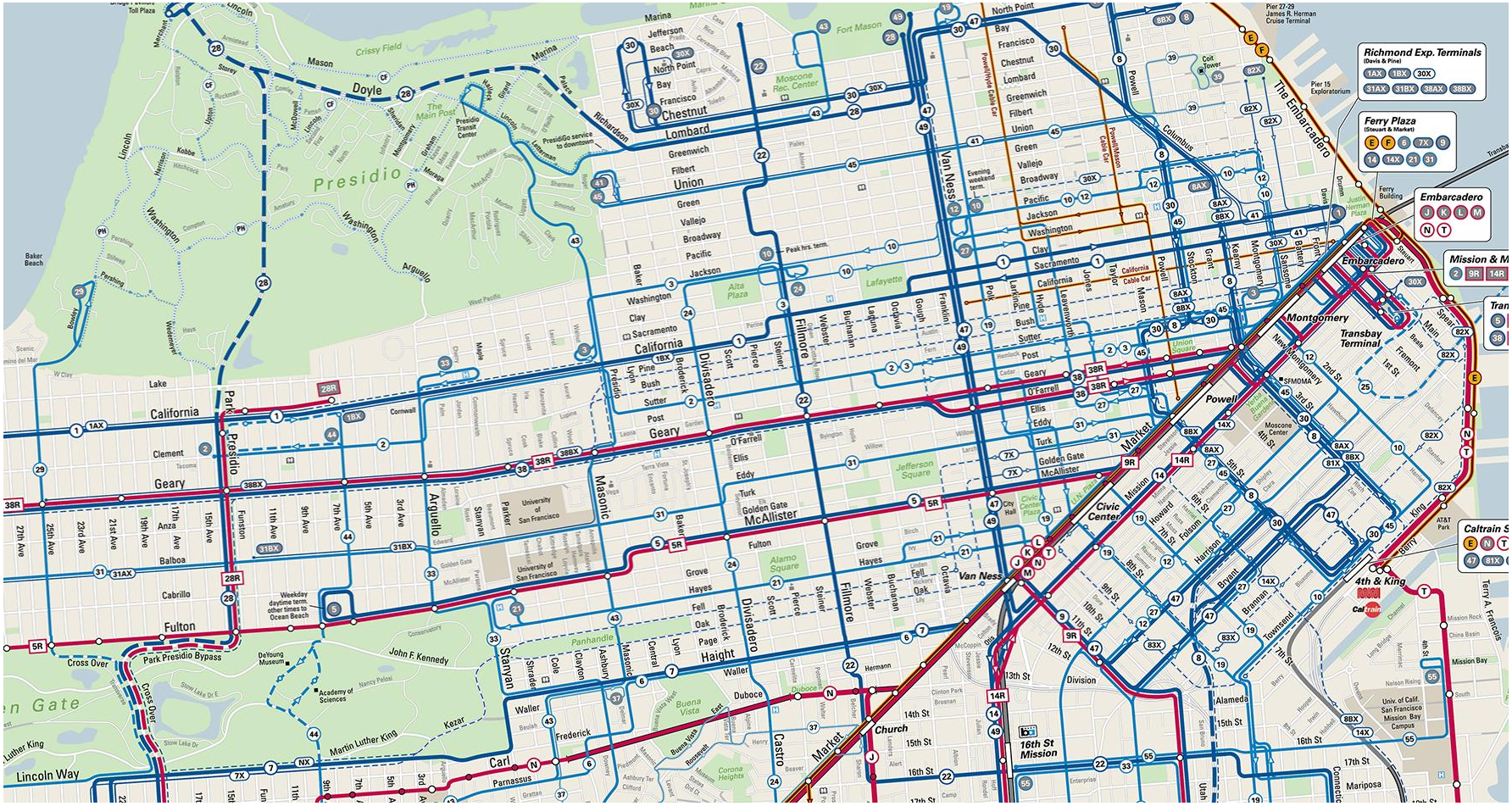
# BETTER TRANSIT INFORMATION REDUCES INCOME DISPARITIES




- Survey confirms disparities in median household income by gender, ethnicity and other demographic variables
- As income rises people are less willing to wait for Muni
- The status quo can further a two-tiered transportation system based on income
- With better transit information, respondents are much more likely to ride Muni across all income brackets, regardless of demographic background

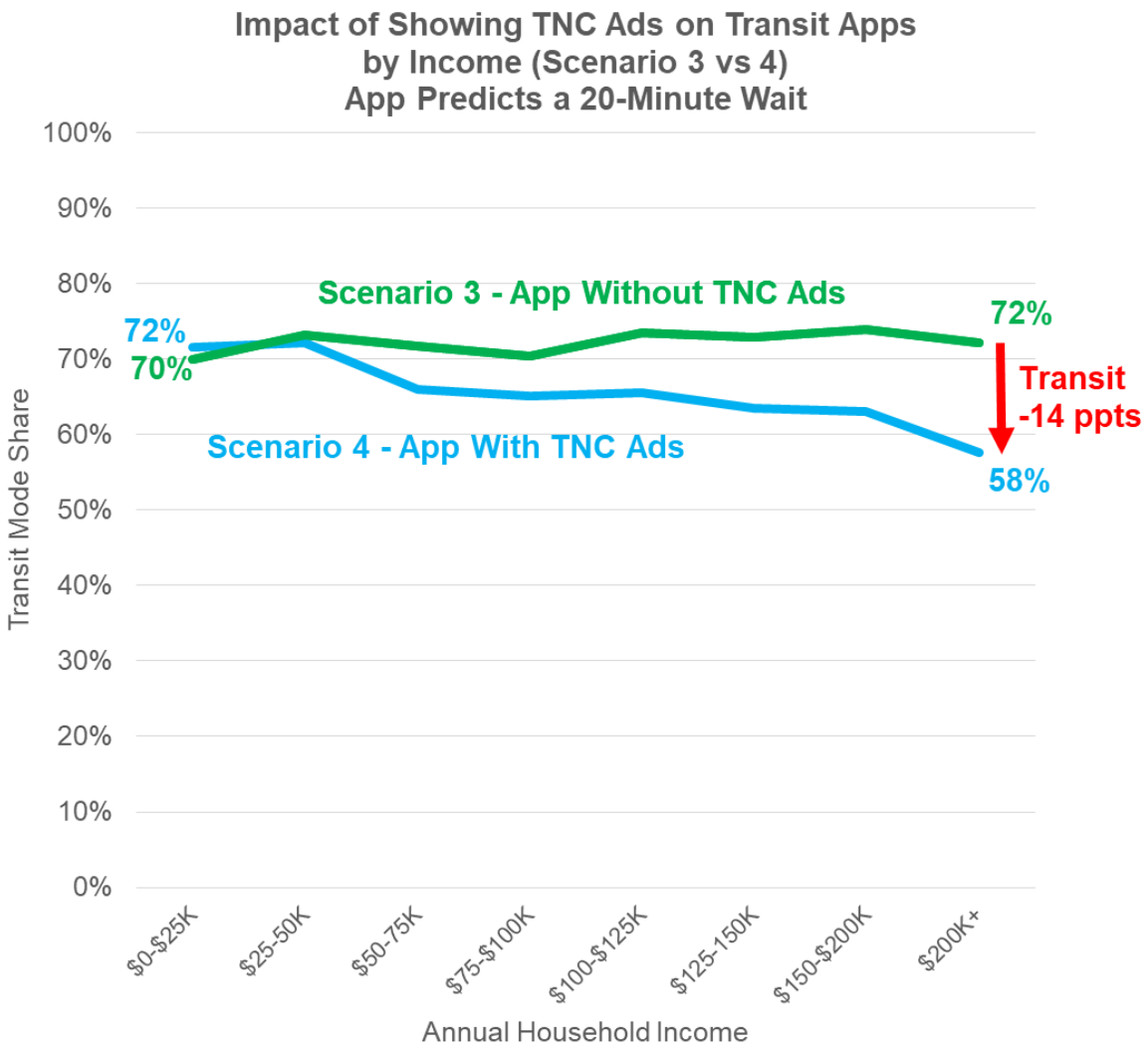
Median Household Income: Female $75-100K, Male $100-125K
People of Color: $50-75K, White: $100-125K

# SAN FRANCISCO HAS MANY TRANSIT ALTERNATIVES




With many parallel lines, taking an alternative Muni route is viable throughout much of San Francisco

# IMPACTS OF TNC ADS ON MOBILE APPS

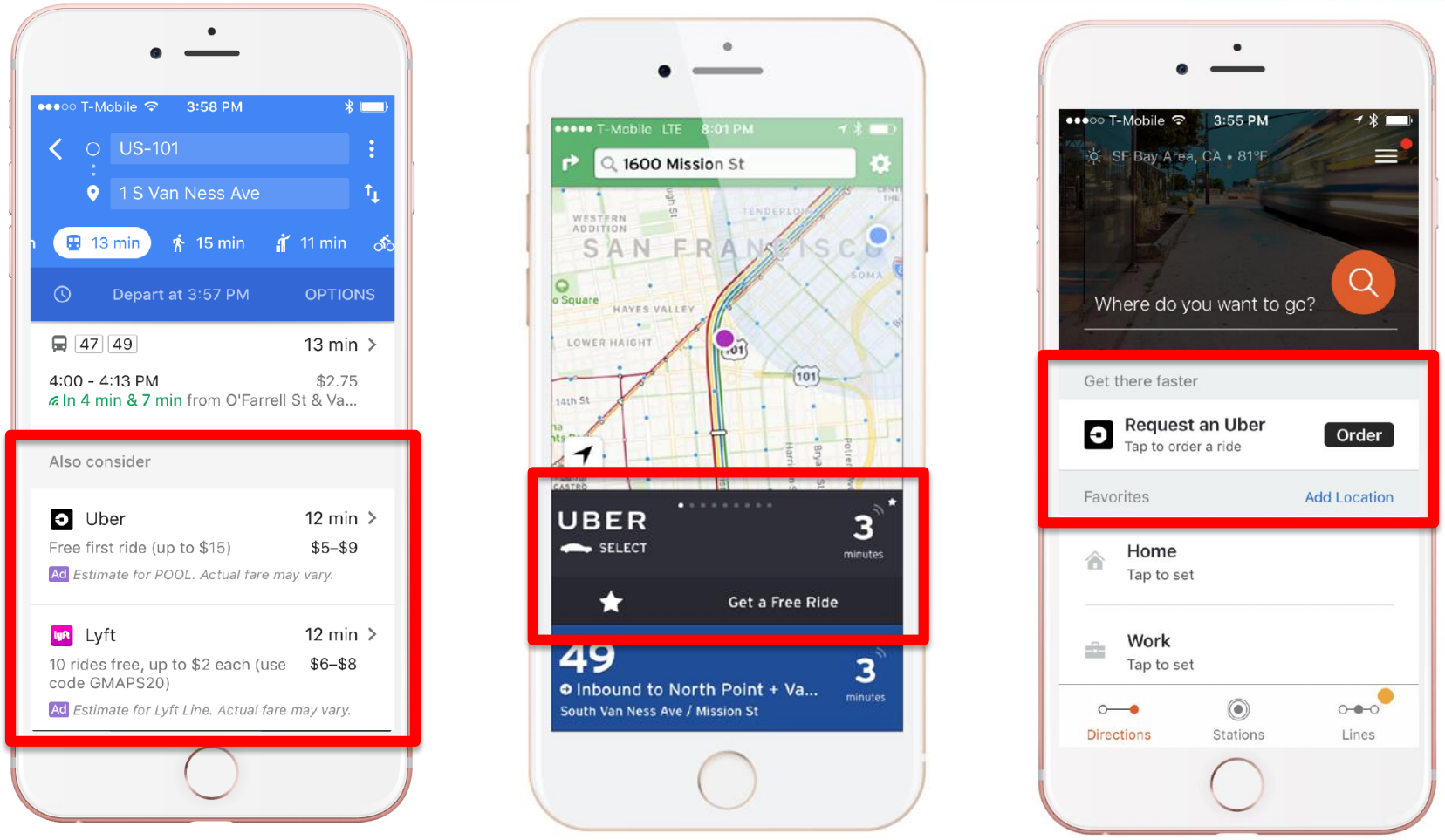



Median Household Income: Female $75-100K, Male $100-125K
People of Color: $50-75K, White: $100-125K

Comparing the two scenarios with and without TNC ads on a transit app:

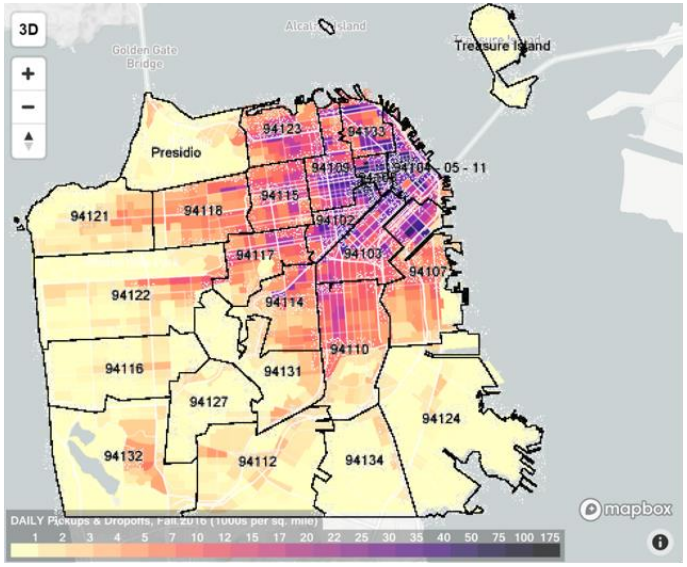
- The income gap reappears with TNC ads
- TNC ads decreased transit mode share by up to 14 percentage points depending on income bracket

# MANY APPS PRIORITIZE TNC ADS OVER TRANSIT INFO

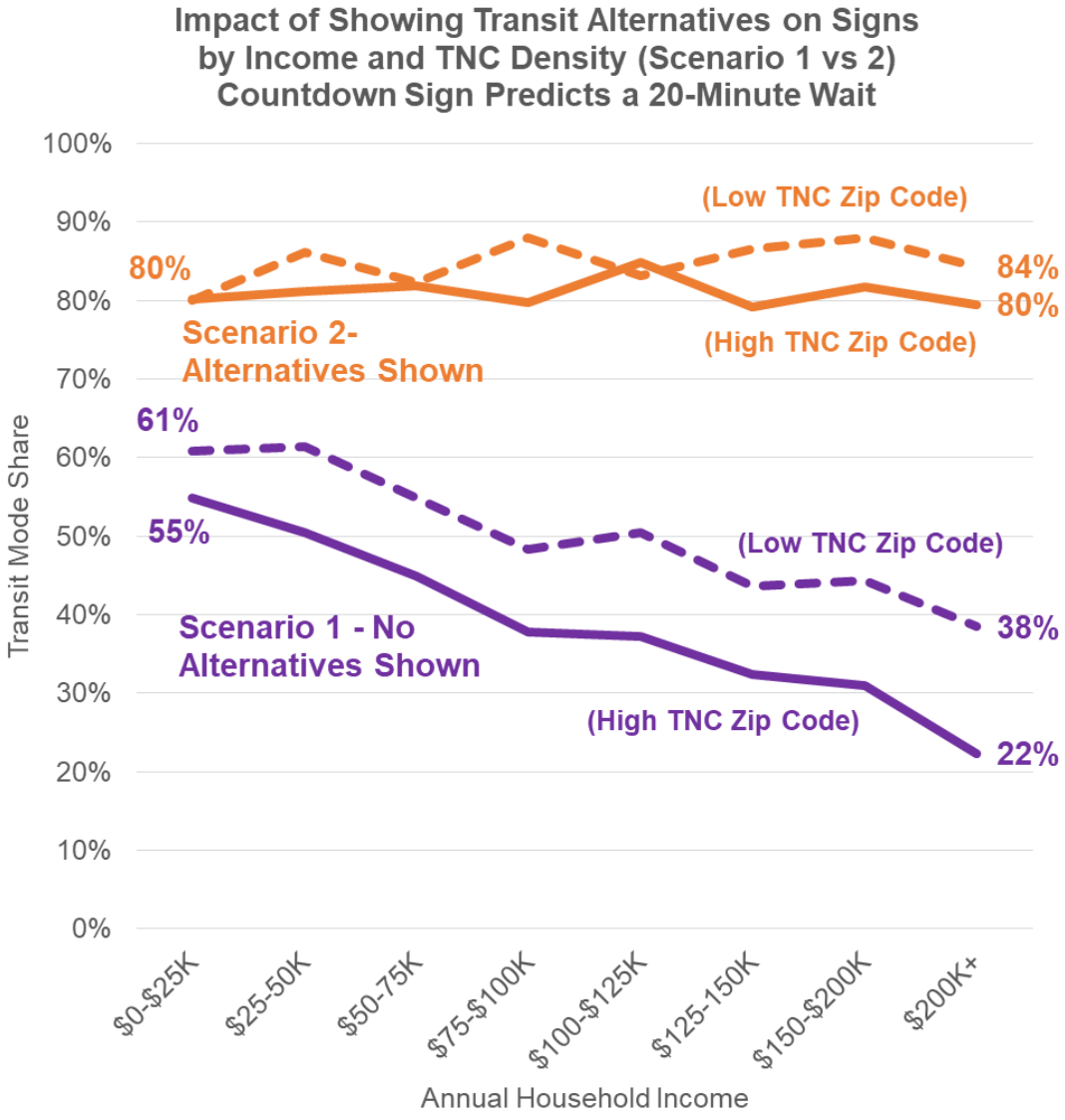



Many third-party apps (63% market share) prominently advertise TNCs when displaying transit predictions obtained through open data

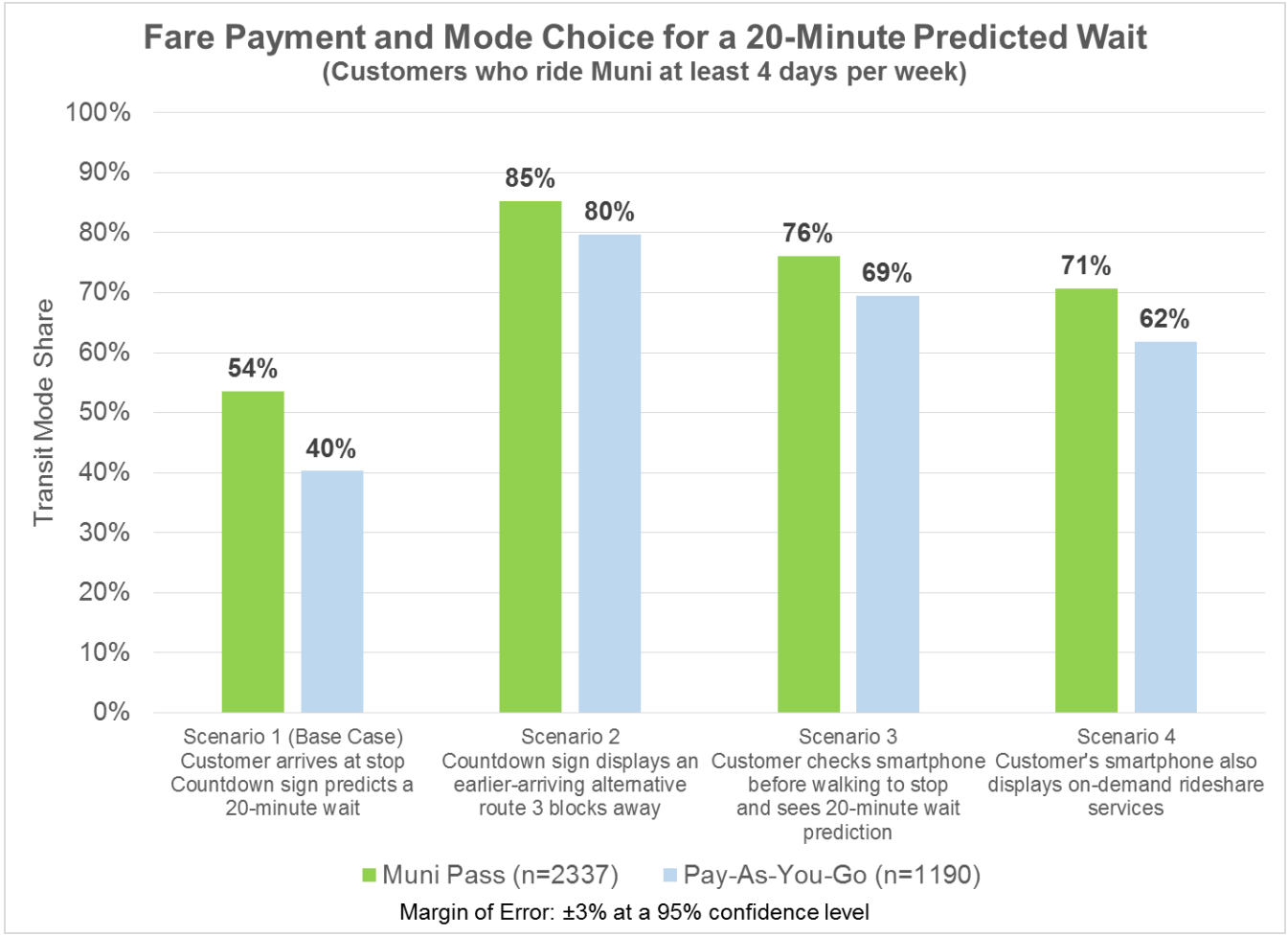
# HIGHER TNC AVAILABILITY REDUCES TRANSIT MODE SHARE




- Higher TNC availability also reduces transit mode share across all income levels
- In TNC-dense areas, there is high potential to attract people to Muni with alternatives and other info



# TRANSIT PASSES ENCOURAGE MUNI RIDERSHIP




**Finding #1**
Of respondents riding at least four days per week where a pass could make financial sense, 34% pay-as-they-go.

**Finding #2**
Compared to pass users, pay-as-you-go customers are more likely to consider other transportation modes for each trip

**Finding #3**
Passes currently break even at 30 single rides compared to 27.5 in 2009

# CUSTOMERS WANT A BETTER ENROUTE INFO EXPERIENCE


On-Board Digital Signage


Solar-Powered Signage

"Have signs that work at every stop, update outages and line delays, and provide visual information on board vehicles to show transfers available at each stop...bring this very dated system into the 21st century. We live in a city of innovation...utilize it!"

"I do not own a smartphone. Please do not make the system so dependent on owning one"

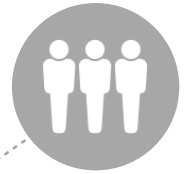
"On board screens that show arrival times of connecting bus, MuniMetro, BART and Caltrain lines would be helpful. Sometimes it's not always convenient to check times on a phone when standing on a crowded bus or holding bags/handrails/kids, etc. "

"Announce expected arrival times of intersecting routes at each stop."

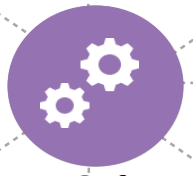
# SYSTEM ELEMENTS

**Surface Vehicle Locations**
Gathers vehicle locations from CAD/AVL System

**Underground Locations**
Gathers vehicle locations from Automatic Train Control System



**Automatic Passenger Counters**
Gathers real-time ridership loads



**System Software**
Generates real-time vehicle predictions, monitors system status through a System Administration Tool, and displays information on customer interfaces through a Content Management System

**Analytics Platform**
Processes data from the System Software and Mobile Platform & Website to assist in operational and usage analysis

**Stationary Digital Signage**
Displays real-time arrivals, alternatives and other valuable info at rail stations, transit shelters and selected transit stops without power

**On-Board Digital Signage**
Provides back-end capability to display service updates, transfer connection times and other information on separately-procured on-board vehicle signs

**Mobile Platform & Website**
Delivers travel information in mobile and online formats; Mobile App features an enhanced Trip Planner and collects customer behavior insights to inform planning decisions

# POTENTIAL SYSTEM FEATURES

| System Features | Current | Future |
|---|---|---|
| **System Software** | | |
| Predictions Engine | ✓ | ✓ (improved) |
| Crowding Level Alerts | x | ✓ |
| Alternative Route Suggestions | x | ✓ |
| Real-Time Temporary Service Changes | ✓ (limited) | ✓ |
| Connections with other systems | x | ✓ (depends on API availability) |
| **Stationary Digital Signage** | | |
| Powered Shelters | ✓ | ✓ |
| Unpowered Shelters & Stops | x | ✓ |
| **On-Board Digital Signage (back-end)** | | |
| Stop Announcements | ✓ | ✓ |
| Connection Times | x | ✓ |
| Service Delay & Reroute Alerts | x | ✓ |
| **Mobile Platform & Website** | | |
| Mobile App | ✓ (primarily mobile ticketing) | ✓ (enhanced capabilities) |
| Accessible Itineraries | x | ✓ |
| **Analytics Platform** | | |
| Usage Trends & Analytics | ✓ (limited) | ✓ (enhanced capabilities) |

- Incorporates input from customers and an internal multi-disciplinary team

# CONCLUSIONS

## Technology and Transportation

- Technology has radically altered the transportation landscape
- Our system is adapting to the “sharing economy”

## Challenges and Opportunities

- The status quo could intensify inequities by creating income-based transportation systems
- Better real-time information has the potential to alter the psychology of mode choice and bring riders back to transit
- Real-time info can promote a more equitable and sustainable transportation system
- Lessons learned will help other transit systems prepare for the future



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# NEXT STEPS

| Phase | Functionality | Tentative Date |
|---|---|---|
| Planning | • Request for Proposals<br>• Vendor Selection<br>• Contract Negotiations | Spring 2018 - Fall 2018 |
| 1 | • 1-for-1 replacement of existing shelter signs<br>• Real-time arrival predictions generated for each stop<br>• Mobile Platform & Website<br>• Analytics Platform (basic) | Summer 2019 |
| 2 | • Additional signs at unpowered and non-shelter locations<br>• Transfer connection, service delay and travel alternatives functionality<br>• On-board signage (separate procurement)<br>• Analytics Platform (enhanced) | Summer 2020 - Fall 2021 |



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