Bicycling Toward Equity: Opportunities, Barriers, and Policies for Vulnerable Groups

Jennifer Dill  
*Portland State University, jdill@pdx.edu*

John MacArthur  
*Portland State University, macarthur@pdx.edu*

Nathan McNeil  
*Portland State University, nmcneil@pdx.edu*

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Women of Color on Two Wheels
Jennifer Dill, Ph.D | @JenniferDillPSU
Nathan McNeil, John MacArthur, Joseph Broach, Ph.D.
### Survey Data

<table>
<thead>
<tr>
<th></th>
<th>Women of color</th>
<th>White women</th>
<th>Men of color</th>
<th>White men</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (mean)</strong></td>
<td>49.8</td>
<td>36.7</td>
<td>52.4</td>
<td>38.2</td>
</tr>
<tr>
<td><strong>Children in HH</strong></td>
<td>36%</td>
<td>21%</td>
<td>26%</td>
<td>18%</td>
</tr>
<tr>
<td><strong>Employed</strong></td>
<td>61%</td>
<td>87%</td>
<td>50%</td>
<td>90%</td>
</tr>
<tr>
<td><strong>Black or African American</strong></td>
<td>85%</td>
<td>78%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>HH income below 300% of poverty</strong></td>
<td>67%</td>
<td>21%</td>
<td>63%</td>
<td>13%</td>
</tr>
<tr>
<td><strong>n</strong></td>
<td>619-696</td>
<td>167-172</td>
<td>265-280</td>
<td>129-136</td>
</tr>
</tbody>
</table>

Analysis limited to respondents who said they were physically able to ride a bike.
Rode a bike in the past 12 months

<table>
<thead>
<tr>
<th></th>
<th>18-39</th>
<th>40+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women of color</td>
<td>35%</td>
<td>21%</td>
</tr>
<tr>
<td>White women</td>
<td>64%</td>
<td>57%</td>
</tr>
<tr>
<td>Men of color</td>
<td>55%</td>
<td>40%</td>
</tr>
<tr>
<td>White men</td>
<td>80%</td>
<td>64%</td>
</tr>
</tbody>
</table>

Has ridden a bikeshare bike

<table>
<thead>
<tr>
<th></th>
<th>18-39</th>
<th>40+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women of color</td>
<td>16%</td>
<td>5%</td>
</tr>
<tr>
<td>White women</td>
<td>24%</td>
<td>20%</td>
</tr>
<tr>
<td>Men of color</td>
<td>33%</td>
<td>8%</td>
</tr>
<tr>
<td>White men</td>
<td>32%</td>
<td>13%</td>
</tr>
</tbody>
</table>

Knows how to ride a bike well

<table>
<thead>
<tr>
<th></th>
<th>18-39</th>
<th>40+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women of color</td>
<td>78%</td>
<td>82%</td>
</tr>
<tr>
<td>White women</td>
<td>97%</td>
<td>90%</td>
</tr>
<tr>
<td>Men of color</td>
<td>92%</td>
<td>93%</td>
</tr>
<tr>
<td>White men</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Would like to ride more for transportation

<table>
<thead>
<tr>
<th></th>
<th>18-39</th>
<th>40+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women of color</td>
<td>56%</td>
<td>49%</td>
</tr>
<tr>
<td>White women</td>
<td>77%</td>
<td>67%</td>
</tr>
<tr>
<td>Men of color</td>
<td>71%</td>
<td>60%</td>
</tr>
<tr>
<td>White men</td>
<td>80%</td>
<td>80%</td>
</tr>
</tbody>
</table>
Compared to white men...  
<table>
<thead>
<tr>
<th></th>
<th>Women of color are</th>
<th>41% as likely to want to ride more for transportation</th>
<th>28% as likely to have ridden a bike in the past 12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>White women are</td>
<td>just as likely</td>
<td>52% as likely</td>
</tr>
<tr>
<td></td>
<td>Men of color are</td>
<td>just as likely</td>
<td>50% as likely</td>
</tr>
</tbody>
</table>

Controlling for income, education, age, having a bicycle, knowing how to ride a bike well
Differences …

- < positive than all
  - Related to both race and gender

- < positive than all whites = men of color
  - Related more to race than gender

- < positive than all men = white women
  - Related more to gender than race

For brevity, only presenting items where 20% or more of the WoC agree
### Differences in attitudes

<table>
<thead>
<tr>
<th>&lt; positive than all</th>
<th>&lt; positive than all whites = men of color</th>
<th>&lt; positive than all men = white women</th>
</tr>
</thead>
<tbody>
<tr>
<td>I often see people like me riding bikes in my neighborhood (69%)</td>
<td>City should invest in projects that make riding bike safer &amp; easier (84%)</td>
<td>Riding a bike would be a good way for me to get exercise (91%)</td>
</tr>
<tr>
<td>There are better ways for me to get around than by bicycling (88%)</td>
<td>People on bikes make roads less safe for others (48%)</td>
<td>Riding a bike would be a good way for me to spend time with friends or family (47%)</td>
</tr>
<tr>
<td>Riding a bike would make me more independent in getting around (39%)</td>
<td>Bike lanes make it harder to get around my neighborhood (28%)</td>
<td></td>
</tr>
<tr>
<td>Bikeshare is useful for people like me (64%)</td>
<td>Bikeshare stations take up space that would be better used for other things (26%)</td>
<td></td>
</tr>
<tr>
<td>Getting more people to bike is good for the env’t (87%); will help make comm. healthier (85%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall, bikeshare is good for the city/neighborhood (87%/83%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Differences in Barriers to biking

> barrier than all

- The places I need to go are **too far** away to reach on a bike (53%)
- **Carrying things** on a bike is too difficult (41%)
- **Too expensive** to buy a bike/gear (35%)
- I don’t have a **safe place to store** a bike at home (33%)
- Something could go wrong w/ bike (25%)

> barrier than all whites = men of color

- There might not be a **safe place** to leave a bike at the places I go (42%)
- Riding a bike could cause me to be **harassed/victim of crime** (26%)
- I don’t know a good place to **get a bike fixed** (20%)

> barrier than all men = white women

- **Traffic** makes riding a bike in my neighborhood feel dangerous (55%)
- I don’t have a **bike** or related gear (41%)

No differences:
- Riding a bike would make me sweaty (20%)
- The clothes I wear are not appropriate for biking (17%)
Differences in Barriers to bikeshare

<table>
<thead>
<tr>
<th>&gt; barrier than all</th>
<th>&gt; barrier than all whites = men of color</th>
<th>&gt; barrier than all men = white women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• I worry that I’ll have to pay for the bike if anything happens (45%)</td>
<td>• I can’t use bikeshare with my children (27%)</td>
</tr>
<tr>
<td></td>
<td>• Costs are too high (43%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• I don’t want to use a credit card (35%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• I don’t have a smart phone (22%)</td>
<td></td>
</tr>
</tbody>
</table>
55% of younger women of color and 43% of older women of color (40+) would like to use bikeshare more.

### Interest in bikeshare

#### Reasons for using bikeshare in future

<table>
<thead>
<tr>
<th>Reason</th>
<th>Women of color</th>
<th>White women</th>
<th>Men of color</th>
<th>White men</th>
</tr>
</thead>
<tbody>
<tr>
<td>To get exercise</td>
<td>67%</td>
<td>52%</td>
<td>61%</td>
<td>50%</td>
</tr>
<tr>
<td>For fun</td>
<td>56%</td>
<td>44%</td>
<td>47%</td>
<td>49%</td>
</tr>
<tr>
<td>To ride with friends/family</td>
<td>40%</td>
<td>30%</td>
<td>42%</td>
<td>33%</td>
</tr>
<tr>
<td>To help the environment</td>
<td>34%</td>
<td>41%</td>
<td>39%</td>
<td>35%</td>
</tr>
<tr>
<td>Stations are near my home/work/school</td>
<td>31%</td>
<td>52%</td>
<td>35%</td>
<td>55%</td>
</tr>
<tr>
<td>Want to try biking</td>
<td>31%</td>
<td>24%</td>
<td>28%</td>
<td>15%</td>
</tr>
<tr>
<td>It's an easy way to get around</td>
<td>29%</td>
<td>45%</td>
<td>37%</td>
<td>48%</td>
</tr>
<tr>
<td>Saves me time vs. other modes</td>
<td>15%</td>
<td>40%</td>
<td>23%</td>
<td>39%</td>
</tr>
</tbody>
</table>
What would make respondents much more likely to use bikeshare

<table>
<thead>
<tr>
<th>Reasons for using bikeshare in future</th>
<th>Women of color</th>
<th>White women</th>
<th>Men of color</th>
<th>White men</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free transfers between public transportation and bikeshare</td>
<td>32%</td>
<td>44%</td>
<td>33%</td>
<td>45%</td>
</tr>
<tr>
<td>More short-term membership or pass options</td>
<td>30%</td>
<td>31%</td>
<td>28%</td>
<td>30%</td>
</tr>
<tr>
<td>Discounted membership or use options</td>
<td>29%</td>
<td>33%</td>
<td>31%</td>
<td>34%</td>
</tr>
<tr>
<td>Access to free or low cost helmets and other gear</td>
<td>27%</td>
<td>21%</td>
<td>24%</td>
<td>16%</td>
</tr>
<tr>
<td>Help finding safe ways to get where I need to go</td>
<td>26%</td>
<td>27%</td>
<td>23%</td>
<td>17%</td>
</tr>
<tr>
<td>Option to sign up/buy passes at a store instead of online</td>
<td>23%</td>
<td>9%</td>
<td>24%</td>
<td>8%</td>
</tr>
<tr>
<td>If more of my friends/family could use bikeshare with me</td>
<td>23%</td>
<td>7%</td>
<td>21%</td>
<td>10%</td>
</tr>
<tr>
<td>More bikeshare stations where I want to go</td>
<td>23%</td>
<td>35%</td>
<td>26%</td>
<td>37%</td>
</tr>
<tr>
<td>Organized rides for people like me</td>
<td>21%</td>
<td>7%</td>
<td>16%</td>
<td>6%</td>
</tr>
<tr>
<td>Easier way to pay with cash</td>
<td>20%</td>
<td>9%</td>
<td>19%</td>
<td>11%</td>
</tr>
<tr>
<td>More bikeshare stations close together</td>
<td>19%</td>
<td>23%</td>
<td>22%</td>
<td>25%</td>
</tr>
</tbody>
</table>
Conclusions

• Women of color bike less, but many are interested in biking more
• Most do not see the utility of bicycling for transport, but are possibly motivated for exercise, fun, and social reasons
• Traffic safety is the biggest barrier, which is related to gender, not race
• Many other differences are correlated more with race than gender, particularly social and economic factors
• Need for qualitative research and evaluation of policy/program changes
Adaptive Bike Share: Expanding Bike Share to People with Disabilities and Older Adults

TREC Friday Seminar January 17, 2020
Presented at 1394 – Bicycling Toward Equity: Opportunities, Barriers, and Policies for Vulnerable Groups
TRB Annual Meeting - January 2020

John MacArthur
Research Associate
Portland State University

Co-authors:
Nathan McNeil
Austin Cummings
Joseph Broach
BREAKING BARRIERS TO BIKE SHARE

RESULTS FROM A RESIDENT SURVEYS
Market / Need
insights from a survey in low-income communities of color

Ability to ride, by age

- 65+ (n=332)
  - Temporarily unable to ride: 10%
  - Not able to ride: 90%
- 55-64 (n=344)
  - Temporarily unable to ride: 15%
  - Not able to ride: 85%
- 45-54 (n=308)
  - Temporarily unable to ride: 20%
  - Not able to ride: 80%
- 35-44 (n=234)
  - Temporarily unable to ride: 25%
  - Not able to ride: 75%
- 25-34 (n=341)
  - Temporarily unable to ride: 30%
  - Not able to ride: 70%
- 18-24 (n=47)
  - Temporarily unable to ride: 35%
  - Not able to ride: 65%
Market / Need

insights from a survey in low-income communities of color

Ability to ride, by income

- $75,000+ (n=325)
- $35,000-74,999 (n=403)
- $0-34,999 (n=820)

- Temporarily unable to ride
- Not able to ride
Market / Need
insights from a survey in low-income communities of color

Ability to ride, by race and ethnicity

Black or African American (n=1060)
- Temporarily unable to ride: 5%
- Not able to ride: 25%

Asian (n=68)
- Temporarily unable to ride: 5%
- Not able to ride: 15%

White (n=357)
- Temporarily unable to ride: 5%
- Not able to ride: 10%

Latinx (n=138)
- Temporarily unable to ride: 10%
- Not able to ride: 20%
Market / Need
insights from a survey in low-income communities of color

Ability to Ride, by gender

All respondents (n=1768)

Women (n=1158)

Men (n=502)

- Green: Temporarily unable to ride
- Dark blue: Not able to ride

0% 5% 10% 15% 20% 25% 30% 35% 40%
Market / Need
insights from a survey in low-income communities of color

Do you know how to ride a bike?

- Physically able to ride
- Not physically able to ride
- Temporarily Unable

[Bar chart showing percentages of respondents in each category]
Market / Need
insights from a survey in low-income communities of color

When did you last ride a bicycle?

- Physically able to ride
- Not physically able to ride
- Temporarily Unable

- In the past 12 months
- 1-5 years ago
- More than 5 years ago
- Never
Market / Need
insights from a survey in low-income communities of color

Interest / Use for biking, Percent Agree

<table>
<thead>
<tr>
<th>Interest / Use for biking</th>
<th>Physically able to ride</th>
<th>Not physically able to ride</th>
<th>Temporarily Unable</th>
</tr>
</thead>
<tbody>
<tr>
<td>I would like to ride a bicycle (for transportation) more than I currently do</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would like to use bike share more than I currently do</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riding a bike would make me more independent in getting around</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riding a bike would be a good way for me to get exercise</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I see people like me using bike share in my neighborhood</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Physically able to ride
- Not physically able to ride
- Temporarily Unable
Barriers to bicycling

Bicycling Barriers, Percentage stating each is a “big barrier”

Traffic makes riding a bike in my neighborhood feel dangerous
The places that I need to go are too far away to reach on a bike
I don't have a bike or related gear (such as helmet / lock / lights)
Carrying things on a bike is too difficult
Biking might aggravate my personal health issues
I am too old to ride a bike
I am too out of shape to ride a bike

Temporarily Unable
Not physically able to ride
Physically able to ride
Barriers to bike share, Percentage stating each is a “big barrier”

- I don't know enough about how to use it
- I worry that the bike share bikes wouldn't adjust to fit me
- Signing up for bike share is too complicated
- Checking out and returning bike share bikes is too complicated
ADAPTIVE CYCLING

Results from National Scan of Bike Share Equity Programs
Equality vs. Equity

Equality

Equity
Adaptive Bicycles

Trikes/quadricycles

Tandems

Hand cycles

Electric bikes/scooters
Emerging Programs

• Of the **70 systems** that responded to the survey, **10** indicated that they had adaptive bikes in their systems: BIKETOWN, in Portland, OR, Bublr in Milwaukee, WI, Blue Bikes in New Orleans, LA, CoGo Bike Share in Columbus, OH, LimeBike Ithaca in Ithaca, NY, mBike in College Park, MD, MoGo in Detroit, MI, PeaceHealthRides in Eugene, OR, and Pedal Corvalis in Corvallis, OR.
Bike Library Model

- Pick-up location, rental store usually near recreational access
- Specific hours of operations, reservations
- Staff to assist sizing and questions
- Parking or storage for personal equipment
- Various types of equipment available
- Cost per hour/day, discount programs
Partnerships

Adaptive BIKETOWN:
Increase access to biking for people with disabilities

MADE POSSIBLE BY...

PEAC  MoGo  WHEEL HOUSE DETROIT

Ralph C. Wilson Jr. Legacy Funds OF THE Community Foundation FOR SOUTHEAST MICHIGAN

DALMAC®
High value for individual users

Adaptive Biketown offers folks the ability to choose within their abilities a recreational vehicle of sorts to experience our beautiful city in a new way which is not only fun, but also good for the body, for the mind, and for the soul. - Deidre Hall
Integrated Model

- Integrated into existing bike share system, same pricing
- Limited model types
- Limited access for some, parking
- Various pricing models
- No storage
Challenges facing the programs and operators

- Who to serve and how?
- Integration
- Cost
- Logistics and density
- Personalized assistance/fitting
- Maintenance
- Types of bikes
Further work is needed

• Develop a better understanding of the needs and experiences of people with disabilities with regard to cycling/bike share.
• Explore how to design and scale the bike share systems to be more inclusive to all users.
• Develop new technologies and vehicles that can expand current bike share systems
• Understand how to structure, fund, and manage adaptive bike share programs to maximize their ongoing viability.
Contact Information

John MacArthur
Portland State University
macarthur@pdx.edu

National Scan of Bike Share Equity Programs

https://trec.pdx.edu/research/project/1278

Thanks to all individuals that share information on their programs.