Job Accessibility by BART and BRT for Fruitvale Residents
Sarah Doggett

INTRODUCTION

Fruitvale is a largely Hispanic neighborhood in Oakland, California (shown in Figure 1). The neighborhood is home to Fruitvale Transit Village, a mixed-use transit-oriented development located next to the Fruitvale BART station. According to the Unity Council, the community’s social equity development organization, the Fruitvale BART station is the fourth busiest station in the East Bay.¹ However, many users of the BART station live outside of Fruitvale and do not contribute significantly to the economic development of the community.

Figure 1: Case Study Location. For the purposes of this study, Fruitvale consists of these census tracts: 4062.01, 4062.02, 4063, 4065, 4071.01, 4071.02, and 4072.

Fruitvale is also the site of one on the new stations on the bus rapid transit (BRT) route that is currently being constructed by AC Transit. The route of the BRT runs from downtown Oakland to San

Leandro (shown in Figure 2). The BRT will run through Fruitvale’s main commercial street, International Boulevard. The BRT system will utilize dedicated lanes to keep buses out of traffic and on schedule.²

According to TransForm, the leading transportation advocate organization in California, the new BRT system will help neighboring communities, such as Fruitvale, by offering “a competitive, reliable alternative to a private vehicle” which will allow people to spend less on transportation and more on other necessities.³

Figure 2: Planned BRT Stops. Fruitvale will be part of a 9.5-mile, 33 stop BRT system. Source: EastBayBRT⁴

---

³ “Benefits of Bus Rapid Transit.”
PLANNING QUESTION: WILL BRT SERVE FRUIVALE RESIDENTS BETTER THAN BART DOES?

While the new BRT route largely parallels the existing BART route, it makes more frequent stops and therefore provides better access to local destinations. This may increase transit ridership among Fruitvale residents, which may improve the environment through reduced vehicle miles traveled (VMT) and may strengthen the local economy. However, this will only happen if the BRT is providing access to the destinations that Fruitvale residents want to travel to.

Although people travel for many reasons, including for shopping and recreation, trip data is typically only available on for the commute trip. Both the American Community Survey (ACS) and the National Household Travel Survey provide insight into the mode, distance, and time taken for people to get to their places of work. While commute trips only constitute about 16% of all person trips made in the United States, such trips constitute about 30% of the trips taken using public transit.  

The reason that the commute share is higher on public transit can be traced back to the design of most modern transit systems. According to the Center for Transit-Oriented Development, most regional transit systems, including BART, are designed as a “hub and spoke” system and focus “on moving residents from relatively low-density residential communities to a single high-density employment center.” Unfortunately, as American cities have decentralized over the past decades, many job centers “centers have shifted from urban downtowns to suburban communities.” Hub-and-spoke transit systems do not provide adequate access to these decentralized job centers. The Center for Transit-Oriented Development claims that low-income workers are “cut off” from these jobs as they tend lack the cars needed to access them and “even middle income workers...are affected by the high cost of driving to work every day.” This is the phenomenon of “spatial mismatch,” where “new entry-level and low-skill jobs are located on the fringes of urban areas that are inaccessible to central-city residents who need those jobs.”

Using public transit, a “typical metropolitan resident” can only reach 30 percent of their region’s jobs with a 90 minute commute. Additionally, the distribution of these transit-accessible jobs is inequitable. Only 25 percent of “jobs in low- and middle-skill industries” are accessible by a 90 minute transit commute, in comparison to 33 percent of high-skill jobs. This national trend is evident within the Bay Area. According to Golub et al, BART was designed “to connect suburban professionals to downtown office jobs” while “the suburbanization of the region’s jobs caused a growing share,

---


7 Center for Transit-Oriented Development.


9 Center for Transit-Oriented Development, “Transit-Oriented Development (TOD) and Employment.”

10 Sanchez, Stolz, and Ma, “Moving to Equity.”

11 Adie Tomer et al., “Missed Opportunity,” n.d.

12 Tomer et al.
especially low-wage and blue-collar jobs, to move outside the AC Transit service area.”\footnote{13} The low-density suburbs that surround BART’s outer stations lack sufficient connecting bus service to the suburban job centers, isolating transit dependent users from these high opportunity areas.\footnote{14} Additionally, Golub found that even when job centers are accessible by BART, low-income workers could not afford to use it.\footnote{15}

For these reasons, it makes sense to evaluate the BRT based on the number of Fruitvale residents who could use it for their commute trip. Therefore, the question this report will answer is: Does the new BRT provide Fruitvale residents with better access to their jobs than the existing BART does?

**CONTEXT: EXISTING CONDITIONS IN FRUITVALE**

Before evaluating the impact of the new BRT system on Fruitvale, it is important to understand the characteristics of the existing community.

![Figure 3: Commute Mode](image)

*Figure 3: Commute Mode. Source: 2015 ACS 5 Year Estimate Table B08301. Data Universe: Workers 16 years and Over. Note: BART consists of the subway mode in the ACS data as it is the only subway in the region.*

Figure 3 shows the commute mode split in Fruitvale and Alameda county in 2015. In both geographies, the predominant commute mode involved a private vehicle (car, truck, or van) However, only 64 percent of Fruitvale residents commute by private vehicle while 74 percent of Alameda County residents do. This 10 percent difference could be attributed to the success of the Fruitvale Transit Village, but it could also reflect the lower car ownership rates for low-income households. Twice as
many Fruitvale residents than Alameda County residents commute by bus. The difference in commute mode split is smaller for BART – 12% in Fruitvale compared to 8% in Alameda County.

Figure 4: Annual Income Distribution. Source: 2015 ACS 5 Year Estimate Table B08119. Data Universe: Workers 16 years and over with earnings

Figure 4 shows the annual income distribution in Fruitvale and Alameda County in 2015. Fruitvale has a substantially higher percentage of residents in the three lowest income categories than Alameda County does. Fruitvale also has a substantially lower percentage of residents in the three highest income categories than Alameda County does.
Figure 5 shows the annual income distribution of those commuting using public transit in Fruitvale and Alameda County in 2015. In Fruitvale, most of those commuting by public transit belong to the lowest three income categories (approximately 68% of riders in Fruitvale, compared to 31% of riders in Alameda County). Notably, the largest proportion of transit commuters in Alameda County is in the highest income category while the largest proportion of transit commuters in Fruitvale are in the three lowest income categories. This indicates that transit commuters from Fruitvale are likely to be low-income while transit commuters from Alameda County are likely to be high income.
Figure 6: P Commute Time Distribution of those Commuting by Public Transportation. Source: 2015 ACS 5 Year Estimate Table B08134. Data Universe: Workers 16 years and over who did not work at home

Figure 6 shows the distribution of commute time for those commuting by public transit in Fruitvale and Alameda County in 2015. Notably, twice as many Fruitvale residents have a commute between 15 and 19 minutes than those in Alameda County. About 5 percent more Fruitvale residents have a commute of 30 to 34 minutes than Alameda County residents do. A larger proportion of Alameda County residents have commute trips of more than an hour than Fruitvale residents do. This suggests that Fruitvale residents are not commuting as far as Alameda County residents are via public transportation.
Table 1: Occupation Type of Jobs, Fruitvale vs Alameda County

<table>
<thead>
<tr>
<th>Occupation Type</th>
<th>Fruitvale</th>
<th>Alameda County</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percent of Workforce</td>
<td>Margin of Error</td>
</tr>
<tr>
<td>Management, business, science, and arts*</td>
<td>22.3%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Service*</td>
<td>41.2%</td>
<td>6.5%</td>
</tr>
<tr>
<td>Sales and office</td>
<td>22.2%</td>
<td>4.6%</td>
</tr>
<tr>
<td>Natural resources, construction, and maintenance*</td>
<td>9.7%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Production, transportation, and material moving</td>
<td>4.6%</td>
<td>2.1%</td>
</tr>
<tr>
<td>Military</td>
<td>0.0%</td>
<td>1.1%</td>
</tr>
</tbody>
</table>

Source: 2015 ACS 5 Year Estimate Table B08124. Data Universe: Workers 16 years and Over. Note: *Statistically significant at 99% confidence level

Table 1 shows the occupation types of those living in Fruitvale and Alameda County in 2015. In Alameda County, more than half of the workforce is in the management, business, science, and arts category; in Fruitvale, less than a quarter of the workforce is employed in that occupation category. Service workers constitute about 41 percent of the workforce in Fruitvale but only 16 percent of the workforce in Alameda County.

Figure 7: Percent of Workers in Service Occupations by Census Tract
Figure 7 shows the percent of workers in service occupations by the census tract they reside in. In Fruitvale’s tracts, outlined in bold black, over 20 percent of workers are employed in service occupations. The surrounding census tracts also have high concentrations of service workers.

![Figure 7: Percent of Service Workers Using Public Transportation to Commute to Work, By Census Tract](source)

**Figure 8: Percent of Service Workers using Public Transportation to Commute to Work by Census Tract**

Figure 8 shows census tracts according to the percentage of service workers who use public transportation to commute to work. In Fruitvale, over 20 percent of service workers commute by public transportation. This is slightly more than most of the surrounding tracts, possibly because of the BART station.

**METHODOLOGY**

To determine if Fruitvale residents would be able to access their jobs by BART and/or BRT, I used LODES data from 2015 to analyze the origin and destination of commute trips made by Fruitvale residents. I began with the origin destination dataset for all of California, then limited my analysis to rows where the home census block was in Fruitvale. Then I plotted the locations of the BART and BRT stations. Because transit riders will generally walk up to a half-mile to/from a rapid transit station, I generated a half-mile...
buffer around each station as a proxy for transit access to commute destination.\textsuperscript{16} I then determined which of the census blocks where Fruitvale residents work were accessible by BART and BRT.

\section*{ANALYSIS}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure9.png}
\caption{Accessibility to Work from Fruitvale using BART and BRT. A census block is considered accessible by BART and/or BRT if any part of it is within a half-mile of a BART/BRT station. Source: LEHD Origin-Destination data for All Jobs, 2015}
\end{figure}

Figure 9 shows the census blocks where Fruitvale residents work according to their accessibility by BART and/or BRT. Interestingly, the map shows that Fruitvale residents work throughout the Bay Area, rather than in dense clusters. Most of the census blocks are red, indicating that they cannot be accessed by BART or by BRT.

Table 2: Accessibility to Jobs Worked by Fruitvale Residents by BART and/or BRT

<table>
<thead>
<tr>
<th>Accessible by...</th>
<th>Number of Jobs of Fruitvale Residents</th>
<th>Percent of Jobs of Fruitvale Residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>BART and BRT</td>
<td>1,439</td>
<td>6%</td>
</tr>
<tr>
<td>Just BART</td>
<td>2,213</td>
<td>9%</td>
</tr>
<tr>
<td>Just BRT</td>
<td>656</td>
<td>3%</td>
</tr>
<tr>
<td>Neither</td>
<td>20,920</td>
<td>83%</td>
</tr>
<tr>
<td><strong>Total Number of Jobs of Fruitvale Residents</strong></td>
<td><strong>25,228</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Source: LEHD Origin-Destination data for All Jobs, 2015

Table 2 shows the number of jobs of Fruitvale residents that are accessible by BART and/or BRT. Unfortunately, 83% of the jobs worked by Fruitvale residents are in census blocks that are more than half a mile away from a BART or BRT station. Because the BART and BRT service areas overlap, 6% of Fruitvale residents will be able to reach their jobs using either mode. The BRT system will provide access to 656, or 3%, of jobs worked by Fruitvale residents that were not previously accessible by BART.

---

**Figure 10: Monthly Income Distribution of Jobs Worked by Fruitvale Residents by Accessibility by BART and/or BRT.** Source: LEHD Origin-Destination data for All Jobs, 2015
Figure 10 shows the monthly income distribution of jobs worked by Fruitvale residents according their accessibility by BART and/or BRT. The income distribution of the jobs that are accessible just by BRT is different from the distribution of jobs accessibly by both system or just by BART. Of the jobs that are just accessible by BRT, 37 percent have a monthly income below $1,250. Of the jobs accessible by both modes and only by BART, approximately 25 percent and 26 percent, respectively, have a monthly income below $1,250. This indicates that BRT provides Fruitvale residents with more access to low income jobs than BART does.

CONCLUSION

This report attempted to answer the following question: Does the new BRT provide Fruitvale residents with better access to their jobs than the existing BART does? Analysis revealed that the new BRT system will only provide access to 656 jobs worked by Fruitvale residents that previously were not covered by BART (3% of jobs worked by Fruitvale residents). Most Fruitvale residents cannot use either mode to access their job. Therefore, the BRT system does not provide Fruitvale residents with significantly better access to their jobs than the existing BART system does. However, the BRT provides access to different jobs than the BART does. Unfortunately, these jobs are more likely to be low income than the jobs accessible by BART.

Limitations

There are several limitations to this study. First, the LODES dataset may not capture all jobs, especially those that are informal or are held by undocumented individuals. Additionally, the methodology does not account for the possibility that Fruitvale residents have multiple jobs. Finally, the measure of accessibility used in this study does not account for travel time or cost. These factors may significantly affect the utility of BART and BRT for commuting.

Further research

To explore the question of job accessibility for Fruitvale residents better, the accessibility measure must be refined to account for factors such as commute time and cost. Also, future research should examine the types of jobs that Fruitvale residents will have access to using the new BRT system instead of just looking at the accessibility to their current jobs.