SOCIAL JUSTICE IN URBAN PUBLIC TRANSPORTATION: A USER-CENTRIC ANALYSIS OF FARES IN PORTOVIEJO, ECUADOR

a Ignacio Loor Colamarco, b Lucía Rivadeneira Barreiro

ABSTRACT

Objective: To examine the perceptions of socially just fares among urban public bus users in Portoviejo and to assess the potential impacts of fare increases on the most vulnerable populations and the subsequent changes in their mobility behavior.

Method: To unpack the multiple facets that shape the notion of justice, we conducted a two-stage clustered observational study using a survey administered to a sample of urban bus users. The data collected were scrutinized using three analytical methods: exploratory description, hypothesis testing, and binary logistic regression.

Results: Our findings revealed that most bus users are women, under 35 years of age, and earn at most the minimum wage. These younger, lower-income users who utilize the bus less frequently, tend to view lower fares as just compared to their counterparts in different user profiles. When fares exceed what they perceive as just, these users tend to mitigate their bus usage, opting to walk more or invest in a bicycle or motorcycle for their daily transport needs.

Conclusion: The intersection of public transport fares and social justice is not an extensively researched area, and one key theoretical challenge is balancing the principle of universal provision with users’ varying payment abilities under the framework of social justice. Future research on this intersection should explore factors beyond fares, such as safety, accessibility, territorial coverage, and travel time, and consider alternative fare models to address socioeconomic disparities and improve overall well-being.

Keywords: bus fares, inequality, public transport, social justice, social exclusion, urban buses.

Received: 28/08/2023
Accepted: 27/11/2023
DOI: https://doi.org/10.55908/sdgs.v11i12.1542
RESUMO

Objetivo: Examinar as percepções sobre tarifas socialmente justas entre os usuários de ônibus públicos urbanos em Portoviejo e avaliar os possíveis impactos dos aumentos de tarifas nas populações mais vulneráveis e as mudanças subsequentes em seu comportamento de mobilidade.

Método: Realizamos um estudo observacional em dois estágios usando uma pesquisa administrada a uma amostra de usuários de ônibus urbanos. Os dados coletados foram analisados usando três métodos analíticos: descrição exploratória, teste de hipóteses e regressão logística binária.

Resultados: A maioria dos usuários de ônibus são mulheres, com menos de 35 anos de idade, e ganham no máximo o salário-mínimo. Esses usuários mais jovens e de menor renda, que utilizam o ônibus com menos frequência, tendem a ver tarifas mais baixas como justas em comparação com seus homólogos de diferentes perfis de usuário. Quando as tarifas excedem o que percebem como justo, esses usuários tendem a reduzir o uso do ônibus, optando por caminhar mais ou investir em uma bicicleta ou motocicleta para suas necessidades diárias de transporte.

Conclusões: A intersecção entre tarifas de transporte público e justiça social não é uma área amplamente pesquisada, e um dos principais desafios teóricos é equilibrar o princípio da provisão universal com as diferentes capacidades de pagamento dos usuários no âmbito da justiça social. Pesquisas futuras sobre justiça social e transporte público urbano devem explorar fatores além das tarifas, como segurança, acessibilidade, cobertura territorial e tempo de viagem, e considerar modelos alternativos de tarifas para abordar disparidades socioeconômicas e melhorar o bem-estar geral.

Palavras-chave: tarifas de ônibus, desigualdade, transporte público, justiça social, exclusão social, ônibus urbanos.

1 INTRODUCTION

The concept of a Socially Just Fare (SJF) for public transport is understated in academic literature. In Ecuador, the term SJF was first introduced in the Organic Law of Land Transport, Traffic and Road Safety (LOTTTSV) in 2014, appearing in its third article. It was not until the end of 2021, however, that the National Transit Agency (ANT) provided a conceptual understanding of SJF as an indicative measure of socioeconomic reality, suggesting a framework for its estimation. In the endeavor to apply the adjective of social justice to urban public transport, ANT have overlooked the principle of equal opportunities, a fundamental lapse in judgement.

The term social justice emerged in the 1840s as a response to the asymmetrical relations, particularly between employers and employees, and the role that both governmental and private institutions play in perpetuating these inequities (Barry, 2005).
Over time, social justice has been adopted as a guiding principle for shaping collective future vision, with a particular emphasis in the field of Educational Sciences (Marshall et al., 2020). Yet, what seems to be a recurring theme in literature is the conceptualization of social justice as a potentially utopian end goal, a destination one hopes to reach from a point where injustice is the prevailing norm.

Scholarly work dissecting the intersection of social justice, urban mobility, and public transport fares is sparse (Tuyakova et al., 2021). Existing studies on tariff policies for public goods and services, within the framework of social justice, have primarily focused on water (Bakker, 2001) and energy provisions (Dufty, 2007), or examined cases from developed nations.

The present investigation ventures into the application of social justice to public transport fares in Portoviejo City, Ecuador. However, a comprehensive examination of the relationship between public transport and social justice demands the inclusion of both, users of public transport and those who, despite needing it, cannot afford to use it (Andrade et al., 2023). This research should thus be considered an exploratory stepping-stone towards future in-depth analyses. In the scope of this article, SJF is conceived as a fare that aids in curtailing inequalities in access to urban mobility systems. Developing a SJF policy necessitates an understanding of how disparity in access to public transport contributes to the perpetuation of socioeconomic divisions.

Specifically, this inquiry seeks to achieve two aims: 1) to pinpoint what constitutes a just, maximum fare for urban public transport in Portoviejo, Ecuador, from the perspective of its users; and 2) to discern the profiles of the most susceptible users and fathom the potential influence on their mobility tendencies should urban bus fares escalate. This study takes root from the political contention revolving around the fare structure for urban public transport in Ecuador, a fare that is legally bound to adhere to principles of social justice.

The methodological design of the study capitalizes on the period of fare increase negotiation in Portoviejo City, Ecuador, as an opportunity to identify patterns of inequality among urban public transport users. The case of Portoviejo is intriguing as it provides a temporal context wherein daily users of public transport are cognizant of, and reflective about, the forthcoming fare increase. This temporal context adds to the study's value as it embodies the complexity of reality. Furthermore, an inquiry into the maximum
rate perceived as just illuminates the divergent realities between users and the mobility options accessible to them.

The ensuing sections of this article unfold thusly: A literature review contextualizes the study within social justice and utility rates discourse. We then detail the methodological approach and data collection techniques. Subsequent sections present the study results through case presentation, descriptive analysis, hypothesis testing, and regression analysis. Finally, we conclude and highlight areas warranting future research exploration.

2 THEORETICAL REFERENCE FRAMEWORK

In the scholarly domain, a gap in research seems to remain on the relationship between social justice and urban public transport fares. Some studies, such as Gössling (2016) delve into public transport and social justice, highlighting the environmental and societal challenges related to increased reliance on private vehicles. In another avenue of research, Loor and Evans (2021), Oviedo (2021) and Preston and Rajé (2007), examine fare structures, emphasizing their impact on people's access to key services like health, education, and employment. Meanwhile, studies by Brown (2018) and Tiznado-Aitken et al. (2021), are more inclined towards the policy-making aspects of fares, showing a trend towards understanding policy design.

To compensate for this dearth of specific literature and to situate this study within a wider debate, this investigation takes inspiration from Bakker's (2001) examination of social justice in relation to water tariff policy in the UK. This highlights the conflict in viewing urban public transport as either a public good or a commodity. In the former, the end goal is social equity; in the latter, the focus shifts to the economic equity of the system. In a social equity context, tariffs are premised on universal provision and the differential ability of users to pay, while under economic equity, users are charged according to the costs they individually impose on the system. This economic perspective suggests a tariff policy for social justice would necessitate cross-subsidization practices between different types of users - those profitable to serve and those where service provision might incur losses (Graham & Marvin, 1994).

Academic literature often posits social equity and economic equity as opposing constructs, each with their own critiques. Lin & Wang (2020) argue that a tariff system rooted in social equity might encourage overuse of the public good among cross-
subsidized users, thereby compromising system efficiency. Conversely, a tariff scheme based on principles of economic equity, typically devoid of cross-subsidies, could result in worsening income distribution patterns and restricted access to everyday goods and services for groups not deemed profitable by suppliers (Botton & Gouvello, 2008). Bakker (2001) approaches the relationship between social and economic equity not as a dichotomy, but rather as a continuum in persistent tension. This spectrum is reflected in fare adjustment negotiations in urban public transport, which are often conditioned to service coverage expansion and the inclusion of users who may not generate profits (Ribeiro de Carvalho, 2016).

There is a consensus in the literature that actual increases in urban public transport fares contribute to the deepening of "transport poverty" (Lucas et al., 2016) or what Layard (2022) terms "bus immobility." This concept captures the limited capacity to utilize the public transport system for urban mobility. More and more, transport poverty is being addressed as a challenge to equity and human rights protection (Norrbom & Ståhl, 2022; Varney & Pearson, 2020), because it constrains the right to education, employment, healthcare, and social assistance. Moreover, it is linked to the prevalence of loneliness and social isolation in extremely inequitable societies (Pickett & Wilkinson, 2015).

The increasing cost of urban public transport fares can profoundly impact the long-term viability of specific routes and overall service demand. Bandegani & Akbarzadeh (2016) noted a decline in service demand for various essential routes - encompassing educational, health, market, residential, and entertainment destinations - following fare increases in Iran. Supporting this, a longitudinal study conducted in the UK further underscores the lasting impact of such fare augmentations. Specifically, Thomas (2004) found that fare hikes were linked with a persistent decrease in passenger numbers on certain routes over an entire decade. This consistent long-term drop in demand, as evidenced by the UK study, suggests that prolonged higher fares could potentially render some routes unsustainable. Consequently, this might lead to reduced service frequencies or, in severe cases, the outright discontinuation of certain bus routes, ultimately compromising the mobility of users, especially those who do not generate significant profit for service providers.

Moreover, evidence shows that mobility deterioration due to fare increases disproportionately affects women, who constitute the majority of public transport users (Babinard & Scott, 2011; Nosal Hoy & Puławska-Obiedowska, 2021); children and
students (Asplund & Pyddoke, 2022; Nguyen & Pojani, 2022); and peripheral urban communities (Valdes et al., 2022), due to longer travel distances and heightened sensitivity to potential frequency reductions or route disappearances (Parks, 2006). Age, bus travel frequency, and attitudes towards environmental degradation are factors that shape willingness to accept higher fares (Clarfield, 2016; Stradling et al., 2007).

Lastly, some studies have focused on behavioral changes in users following bus fare increases. For instance, in Cairo, Egypt, a 50% increase in bus fares led to a 2.63% increase in shared taxi use (El Esawey & Ghareib, 2009). Similar behavior was identified in Palestine (Hamuda-Sadeq, 2001). In Chile, Porath & Galilea (2020) identified a greater propensity among users to evade paying the fare after a mass public transport fare increase. Finally, in developed countries, fare increases have resulted in increased, albeit sometimes involuntary, adoption of walking and bicycling for daily mobility (De Borger & Proost, 2022).

2.1 EMERGING GAPS ABOUT SOCIODEMOGRAPHIC IMPLICATIONS OF FARE HIKES

Public transportation dynamics, especially fare structures, have historically generated interest due to their economic and social ramifications. These fare structures prompt several questions about how they impact different demographics in terms of frequency of use, perception of fairness, and potential behavior changes in response to fare adjustments.

One pivotal question is whether there is a gender disparity in travel frequency. Research indicates that travel patterns, particularly among younger demographics, are gendered. Collia et al. (2003) and Al-Amin et al. (2021) have documented that younger women tend to undertake more trips per day than their male counterparts. This raises the question: Is the frequency of bus travel the same between women and men?

Another pertinent area of investigation revolves around the implications of fare increments on both genders. With schemes intended to bolster women's participation in the workforce and their inclination towards public transport, it is crucial to ask: Does a fare increase impact women and men in the same manner? Open-ended subsidies for women's travel, as mentioned by Raja (2021) and Plambeck & Ramdas (2020), have been proposed as tools to encourage female labor force participation.
Considering the economic aspect, the relationship between income levels and fare structures becomes central. Gómez Lobo and Serebrisky (2023) highlight the tension between efficient resource allocation and the distribution impacts of transport pricing, especially in regions with extreme income inequalities, like Latin America. This leads to the pertinent question if fare hikes affect more those earning minimal wages.

The willingness to accept fare increments also varies. While some concerns suggest that higher fares could disadvantage low-income groups (Parikesit & Susantono, 2012), there is a counterargument that users might be open to higher fares if they correlate with better service. These prompts: Are the more frequent bus users more willing to accepting an increased fare?

Perceptions about fare fairness also come into play, especially among younger individuals. Considering Baker's (2021) observations about younger demographics being exposed to global, profit-driven markets, it becomes essential to question if younger individuals perceive fare hikes differently than older ones.

Lastly, given fare adjustments' potential to modify mobility patterns, the question arises, as indicated by insights from Manzi and Saibene (2018), what bus users demographics are more inclined to modify their mobility behavior in response to fare hikes.

In essence, public transport fares intersect with various socio-demographic factors, raising pivotal questions that need empirical answers. These questions subsequently guide the formulation of hypotheses for further investigation in the field. In sum, the literature has not outlined mechanisms for determining socially just urban public transport fares, particularly in regions of extreme income inequalities. Moreover, in the context of Latin American cities, the impact on travel behavior following urban public transport fare increases has not been systematically reported. This study aims to address these knowledge gaps and contribute to debates focused on determining bus fares in Latin American cities.

3 METHODOLOGY

In alignment with the research objectives, which are: 1) determining the maximum urban public transport fare in Portoviejo, which users perceive as just, and 2) identifying more vulnerable user profiles and the potential impact on their mobility behavior due to a fare increase, an analytical cross-sectional, quantitative observational study was
conceived (Lang, 2013; Wadsworth et al., 2022). Guided by the insights derived from the preceding literature review, an initial exploratory descriptive analysis was undertaken. This informed the formulation of six hypotheses, which critically highlight the existing inequalities among public transport users. Subsequently, a binary logistic regression model was applied to ascertain the variables most closely associated with users' perceptions of SJF and their subsequent mobility patterns.

Data was collected through a 20-question survey: 7 for sociodemographic classification and 13 dedicated to pinpointing the variables constituting the perception of SJF. A two-stage cluster was used for sample selection, leading to a representative sample of 600 participants aged 18 and above. The surveys were conducted over a span of ten days in February 2022. Paper surveys were employed face-to-face at the busiest bus stops, between the hours of 08:00 and 17:00.

The survey's content was calibrated to fit the local context through a pilot study involving 30 participants. This calibration process facilitated the rephrasing of specific terms to enhance respondents' comprehension. Notably, post-pilot study adjustments included substituting terms like "home worker women" (trabajadoras del hogar) with "housewives" (amas de casa). Furthermore, the use of inclusive language, especially gender-neutral phrasing, induced confusion among the bus users surveyed and inadvertently extend the interaction duration between the respondent and interviewer.

The sampling involved 600 participants aged over 18 years. Although, for a population of an estimated 104,000 bus users (as approximated by the municipal company Portovial), a 95% confidence level suggests a sample size of 383 participants, additional data was garnered. This was aimed at balancing the sample in terms of gender and achieving a broader representation of users from underrepresented rural parishes in the initial sample. Fifty-eight respondents, who indicated they were not regular users of the urban public transport service, were subsequently excluded, bringing the final sample size to 542. Intriguingly, within the initial 383 participants—despite maintaining random selection principles—female respondents significantly outnumbered males. This observed imbalance might indicate that more women than men use urban buses in Portoviejo. However, this interpretation is preliminary and requires more in-depth investigation in future studies.

The survey sought insights into respondents' demographics and their perspectives on the urban bus fare structure in Portoviejo. Respondents were asked about their age.
range, gender, highest educational attainment, current occupation, approximate monthly household income, household size, and parish of residence. The survey delved into their use of urban buses, both personally and within their household. The core section revolved around the current bus fare of $0.30, with respondents evaluating its appropriateness and indicating their perceptions on potential fare increases to $0.35 and $0.40. They were further prompted to express the extent to which various fare hikes could affect their financial stability. Subsequent queries addressed the maximum fare they would be willing to pay, their potential mobility decisions if fares exceeded their stated maximum, and expectations of service improvements in the event of a fare hike. The questionnaire culminated with questions about suitable fare increase intervals and an overall service quality rating.

For data handling and analysis, responses were input into a spreadsheet. Initial steps involved examining the sample's descriptive measures, aiming to profile users concerning age, gender, education, occupation, income, and residential parish. Subsequent analyses revolved around user perceptions of the current fare and potential fare increases. This assessment comprised a mix of closed-ended queries, focusing on the implications of increments to $0.35 and $0.40, and open-ended questions, where the maximum "just" fare emerged directly from user feedback.

Six hypotheses were next formulated and analyzed using the z-test of mean differences. Finally, a logistic regression analysis was employed to identify patterns among users who deemed a fee of $0.35 or more as just. For the binary logistic regression, dummy variables were created (Bursac et al., 2008) relating to age, gender, occupation, income, number of household members, frequency of bus usage, and potential impacts on mobility behavior. It should be noted that no users with mobility-affecting disabilities were identified among the survey participants, hence future studies are recommended to include individuals prevented from being bus users for reasons other than the fare.

4 RESULTS AND DISCUSSION
4.1 THE CASE OF PORTOVIEJO

Portoviejo, the provincial capital of Manabí, Ecuador, contributes 1.36% to the national GDP with commerce being the primary employment sector (GAD Portoviejo, 2021). Two major disruptions, a 7.8 magnitude earthquake in 2016 and the Covid-19 pandemic, had a significant impact on the canton's socioeconomic structure, causing a
decline in formal employment and an increase in informal work, which accounted for 56% of adult employment by July 2021 (Observatorio Ciudadano Manabí, 2020).

These events not only affected the economy but also the mobility dynamics in Portoviejo. The Portoviejo municipal government estimates that Covid-19 mitigating measures caused a drop in mobility by 58% in April 2020, but by December 2021, mobility had rebounded to 64% of pre-pandemic levels, indicating a potential recovery in urban bus service demand (Zambrano et al., 2022).

Public transport in Portoviejo is managed by cooperatives, overlooked by the municipal organization Portovial EP, with services offered across 19 routes. The earthquake and subsequent reshuffling of commercial and bureaucratic infrastructures, led to a reconfiguration of bus routes impacting central zone communities. The existing fare has remained at $0.30 for the past three years, but transport providers advocate for an increase to $0.45, signifying a clash with users and the municipality resisting such increases (Suárez, 2020). This issue forms a basis for further exploration of the challenges of social justice.

4.2 DESCRIPTIVE EXPLORATORY ANALYSIS

Bus users in Portoviejo present a diverse demographic, with the majority falling in the 18-35 age group, being women, and having completed secondary school. Students and self-employed individuals make up the largest share of occupations. Most earn the minimum wage (MW) or less, live in households with four or more members, and reside in urban parishes.

The current bus fare of $0.30 is considered just by 90% of users. However, if increased to $0.35, only 33% find it just, and a significant 64% deem it expensive, albeit 72% state this wouldn't impact their personal economy. A further increase to $0.40 is viewed as very expensive by 79%, and 88% reveal it would affect their economy. Given such fare increase, 80% of the users would modify their travel behavior, with many contemplating buying a motorcycle or bicycle, or resorting to walking or shared taxis. A fare hike would be justified if improvements were made in safety, surveillance, service frequency, and driver conduct.
4.3 RESULTS OF HYPOTHESIS TESTING

In this section, the formulation and subsequent testing of the hypotheses that surfaced from the exploratory descriptive analysis will be outlined. Six hypotheses were posited:

Hypothesis 1: The frequency of bus travel is equal between women and men. In the sample, 77% of surveyed men and 82% of women use the bus no more than twice a day. At a confidence level of 95%, there is no statistical difference in the daily travel frequency between genders.

Hypothesis 2: A fare increase impacts women and men equivalently. Two scenarios were used to test this hypothesis: (a) a fare increase to $0.35, and (b) a fare increase to $0.40. Among the bus users surveyed, 95% of men and 94% of women stated that a fare of $0.35 wouldn't impact their personal economies. Moreover, when asked about a potential increase to $0.40, 56% of men and 51% of women felt they would remain unaffected. For both scenarios, there's no discernable economic impact difference between genders.

Hypothesis 3: A fare hike most significantly affects those earning the MW or less. This hypothesis was tested against the $0.35 and $0.40 fare scenarios. Out of the surveyed users, 30% earn more than the MW, while 70% earn the MW or less. Among these two groups, 97% and 81% users respectively reported that a fare increase to $0.35 would not impact them. When the fare was suggested to increase to $0.40, 47% of those earning more than MW and 37% of those earning MW or less felt unaffected by the hike. Under both scenarios, a fare increase impacts more those earning MW or less (who constitute most users) to a greater extent.

Hypothesis 4: Those who frequent the bus more are more likely to accept a fare of $0.35 or more as just compared to less frequent travelers. This hypothesis was assessed using the $0.35 and $0.40 fare scenarios. The 80% of the sample users travel twice a day or less while the 20% travel more than twice daily. For both groups, 94% of users equally viewed $0.35 as a just fare. This suggests that the perception of $0.35 as a just fare is uniform, regardless of travel frequency. On the other hand, for the fare of $0.40, 44% of the less frequent travelers and 61% of the more frequent travelers deemed it as just. Therefore, the $0.40 fare is more commonly perceived as just among users who use the bus more frequently. This notion is further amplified by Figure 1, which indicates that
frequent bus users were more inclined to propose a fare increase beyond $0.35 as just, whereas less frequent travelers proposed a fair fare of $0.35 or less.

Figure 1: Travel frequency versus willingness to accept as just, a fair of 0.35 or more.

<table>
<thead>
<tr>
<th></th>
<th>More than two rides daily</th>
<th>Two or less rides daily</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than $0.35</td>
<td>40.91%</td>
<td>29.17%</td>
</tr>
<tr>
<td>Equal or less $0.35</td>
<td>59.09%</td>
<td>70.83%</td>
</tr>
</tbody>
</table>

Source: Authors’ survey.

The findings may initially seem counterintuitive, given that those who travel more would inherently be paying more. This uncovers two plausible scenarios: 1) frequent travelers may value the service to a greater extent and therefore be more willing to accept a higher fare to maintain the service at its current quality; and 2) infrequent travelers might aspire to use the bus more regularly but are deterred by the fare costs. Future studies might probe into variables other than fare that may be hampering bus use and its frequency.

Hypothesis 5: Individuals under the age of 25 are less likely to perceive a fare of $0.35 or higher as just. Of the users aged under 25, 24% consider a fare of $0.35 or more as just. Comparatively, among the remaining users aged 25 or above, 35% deem a fare of $0.35 or more as just. At a 95% confidence interval, younger users, i.e., those under 25, are less likely to accept a fare of $0.35 or more as just. Age proves to be an interesting element for further exploration. As suggested in Figure 2, with increasing age, the likelihood of utilizing bus services diminishes.
Hypothesis 6: Individuals under 25 are more prone to alter their mobility behavior given a fare increase above what they perceive as just. In the sample, among the users under the age of 25, only 14% indicated that an increase in fare would not impact their mobility habits or frequency of bus usage. Similarly, among the remaining users aged 25 or above, 23% reported no anticipated change in their mobility behaviors due to a fare increase. With a 95% confidence interval, we can infer that bus users under the age of 25 are more inclined to adjust their mobility patterns compared to those over the age of 25.

4.4 REGRESSION ANALYSIS

A binary logistic regression model was deployed to pinpoint patterns amongst those who deem a fare of $0.35 or more as just. The analysis produced the ensuing model and findings:

Model: \( P = \frac{1}{1 + e^{-(0.6724 + 0.4533x1 + 1.2617x2 - 0.6438x3)}} \) \hspace{1cm} (1)

In general terms, the model accurately predicted outcomes 70% of the time. With a Chi-square value of 24.2866 and degrees of freedom equal to 3, the p-value was calculated to be 0.0000, indicating statistical significance.

<table>
<thead>
<tr>
<th>Reason for opportunity</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5735</td>
<td>(1.0163, 2.4360)</td>
</tr>
<tr>
<td>3.5315</td>
<td>(1.7209, 7.2468)</td>
</tr>
<tr>
<td>0.5253</td>
<td>(0.3341, 0.8258)</td>
</tr>
</tbody>
</table>

Source: Authors’ survey.
Upon applying the logistic regression model with dummy variables, delineated in Table 2, the condition of p-value < 0.05 held true for three variables, which also best suited the model: namely age, occupation, and frequency of travel.

<table>
<thead>
<tr>
<th>Table 2: Dummy variables and categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
</tr>
<tr>
<td>18 to 25</td>
</tr>
<tr>
<td>26 to 45</td>
</tr>
<tr>
<td>more than 45</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Male or female user</td>
</tr>
<tr>
<td>Occupation</td>
</tr>
<tr>
<td>Government employee</td>
</tr>
<tr>
<td>Private organization employee</td>
</tr>
<tr>
<td>Informal</td>
</tr>
<tr>
<td>Student</td>
</tr>
<tr>
<td>Retiree</td>
</tr>
<tr>
<td>Unemployed</td>
</tr>
<tr>
<td>Income (Unified Basic Remuneration)</td>
</tr>
<tr>
<td>&lt; MW</td>
</tr>
<tr>
<td>&gt; MW &lt; 800</td>
</tr>
<tr>
<td>&gt; 800</td>
</tr>
<tr>
<td>People with whom you share housing</td>
</tr>
<tr>
<td>&lt; 4; &gt;=4</td>
</tr>
<tr>
<td>Times you ride the bus per day</td>
</tr>
<tr>
<td>&lt;= 2; &gt; 2</td>
</tr>
<tr>
<td>Change in travel behavior if the new fare is not fair</td>
</tr>
<tr>
<td>Does not change travel behavior</td>
</tr>
<tr>
<td>Buy a motorcycle or bicycle</td>
</tr>
<tr>
<td>Will reduce bus and walk more</td>
</tr>
<tr>
<td>Alternatives or share taxi</td>
</tr>
<tr>
<td>Dependent variable: fair rate</td>
</tr>
<tr>
<td>&lt; $0.35; &gt;= $0.35</td>
</tr>
</tbody>
</table>

Source: Authors’ survey.

The variables that most competently elucidate the predictive model are, in descending order of weightiness, occupation (grouped into six categories: government employee, private employee, informal worker, student, retiree, unemployed); age (divided into three categories: 18-25 years; 26-45 years; over 45 years); and the frequency of daily bus travel (segmented into two categories: more than 2 times a day and up to 2 times a day). The resultant variable is bifurcated into two categories: whether the user proposed a fare that's equal to or less than $0.35 as just; and if the user proposed a fare exceeding $0.35 as just.

The model predicts whether a bus user in Portoviejo regards a fare of $0.35 or less as just. For instance, if in an observation, the bus user is a government employee, aged between 18 to 25 years, and commutes by bus an average of 4 times daily, the model predicts that this user deems a fare of $0.35 or less to be just. In fact, every observation from the sample with these characteristics proposed a fare of $0.35 or less as just.

It's crucial to underscore that the daily frequency of bus travel has a negative beta coefficient. The model interprets this as an indication that those who travel more frequently tend to regard a fare exceeding $0.35 as just. Based on the data scrutinized, it
can be proposed that the profile of users who consider a fare of more than $0.35 as just typically includes individuals aged over 25, employed, and who utilize the bus three or more times a day.

5 CONCLUSION

This investigation proposes that a fare increase from $0.30 to $0.35 is broadly perceived as just among Portoviejo's bus users. Conversely, a fare of $0.40 is deemed impactful to the economy and travel behavior of users earning income equivalent to or lesser than the MW, those journeying no more than twice daily, and individuals aged under 25. Users who would modify their travel behaviors due to perceiving fares as unfairly high would principally do so by reducing bus journey frequency and swapping their mode of transport with foot mobility or utilizing motorcycles and bicycles.

Nevertheless, deeming $0.35 as a socially just rate is conceptually fraught, as even though it doesn't alter users' mobility behavior or the service provision by cooperatives in terms of routes, frequency, and quality, it still overlooks the number and traits of inhabitants without access to mobility facilitating alternatives.

To delve more into the nexus between social justice and urban public transportation, subsequent research should pivot towards variables other than fares. To state some instances, safety perception, accessibility for people with limited mobility, territorial availability, and travel time. These are variables that may disproportionately impact various users and thus, sculpt socioeconomic inequalities. Lastly, it is suggested to probe into alternative models to the flat rate such as fares for multiple daily, weekly, or longer trips, thereby enabling those in need to travel more to enhance access to goods and services that shape the perception of well-being.

The success or failure of the Portoviejo bus fare case hinged on several context variables. Key among these were demographic factors such as age and occupation, along with frequency of bus usage and income level. These factors served as critical determinants in the perceived fairness of proposed fare increases. Learning from this case, the imperative of acknowledging demographic nuances and socioeconomic realities becomes evident. Transferring lessons from this instance elsewhere involves tailoring public transport policies in harmony with the user base's diverse profiles. Additionally, the consideration of more holistic fare models accommodating the needs of various user groups, alongside focusing on non-fare related variables like safety, accessibility, and
service quality, stands crucial. Ultimately, this case reasserts public transportation as more than a commodity – it is a public good, intrinsic to social justice.

Finally, we must not see public transportation in isolation. To do so would be to overlook the broader societal milieu within which it operates. The interplay between public transportation and social justice is intrinsically linked to various sociopolitical factors – socio-economic disparities, housing affordability, urban development patterns, and employment opportunities. When viewed through the lens of social justice, public transportation is not just a logistical function, but a democratic enterprise.
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