SCHOOL OF PLANNING AND PUBLIC AFFAIRS

UNIVERSITY OF IOWA

TRANSPORTATION POLICY AND PLANNING

CASE STUDY

TOPIC: THE ROLE OF FARE-FREE TRANSIT IN SUSTAINABLE TRANSPORTATION; THE CASE OF IOWA CITY

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1.0 Introduction

Urban transportation planners since the official adoption of the sustainability agenda in 2015 have dealt with an increasingly complex policy landscape. Global support for sustainability has created calls for transportation infrastructure, and planners are challenged with formulating policies that accomplish simultaneously environmental protection, economic efficiency, and equity. These three basic pillars of sustainability, which are theoretically harmonious, often stand at odds with each other, hence posing what Campbell, (1996) rightly referred to as the "planner's triangle." This challenge is particularly salient within transportation planning, wherein public authorities strive to find approaches that increase accessibility and minimize environmental impact, while at the same time respecting economic constraints and preserving operational efficiency.

Regarding the particular policy topic of removing fares from public transport, particularly buses and subways, this proposition has caused substantial controversy and polarization. Those who support the proposal cite that this would dramatically increase ridership, reduce the use of personal vehicles, lower greenhouse gas emissions, and remove economic barriers for economically disadvantaged groups (Farzana Khatun, 2020; Štraub & Jaroš, 2019; Webster, 2024). Opponents, however, are concerned about the funding implications of such programs and issues with being able to deliver with a surge in demand without compromising service quality. The above trade-offs are especially urgent for smaller cities faced with budget constraints as they attempt to reach their ambitious goals in both climate action and social equity (Kębłowski, 2020; Yun, 2023).

As a relatively small college town, Iowa City is an important location for exploring such dynamics. In July 2023, Iowa City started a fares-free transit program, funded largely by revenue collected from downtown parking, as a portion of its overall climate action and equity plans. The purpose of this study is to examine the role of Iowa City's free public transit system in pursuing the integrated goals of sustainability, efficiency, and equity. The central objective of this research is: what has Iowa City's zero-fare transit project achieved so far toward promoting sustainability, efficiency, and equity in the provision of transit services? By analyzing initial findings and placing them within a national and global context of fare-free transit schemes, this research makes a contribution within the current discussion on overcoming the planner's dilemma in the face of sustainable development.

2.0 Literature review

2.1 The stake of fare-free transit in promoting sustainable transportation

Scholars have identified that the notion of sustainable transport intrinsically involves the creation of transport infrastructure that reduces its effects on the environment, improves

economic efficiency, and provides equal accessibility to transport (Grimes et al., 2024; Nasrin & Bunker, 2024). As of 2022, the total emissions of the US were 5,489 metric tons of carbon dioxide equivalent, which is 17% lower than the 2005 baseline (*FY 2022-2026 EPA Strategic Plan*, 2022). Meanwhile, transportation contributes about 28% to the country's emissions (US EPA, 2017). Fare-free public transit, however, promises to be an effective policy tool for promoting this triad (Brough et al.,2023; Da Mata et al., 2024; Gabaldón-Estevan et al., 2019; Farzana Khatun et al., 2020; Štraub & Jaroš, 2019; Webster, 2024). Scholars argue that eliminating fares can help achieve a transformation away from car dependency, reduce congestion, and emissions (Cats et al., 2017; Grimes et al., 2024). In Boston, US, the fare-free route 28 increased ridership by 113% between 2021 and 2023 (*Wayback Machine*, 2022).However, some studies have shown that free public transport does not bring desirable consequences to the environment (*RTD's Free Fare Program Failed to Make a Meaningful Climate Impact, New Research Finds | Rocky Mountain PBS*, 2022). This calls for additional research in different geographic locations to evaluate the policy holistically. (*RTD's Free Fare Program Failed to Make a Meaningful Climate Impact, New Research Finds | Rocky Mountain PBS*,2022).

2.2 The stake of fare-free transit in promoting equitable transport systems

Studies have argued that fare-free transit proportionately benefits historically underserved groups. Brough et al., (2023) found that free transit passes for low-income residents increased trip frequency, reduced delays in accessing work and services, and decreased reliance on social safety nets. In Boston, a 2022 fare-free pilot saved riders an average of $35/month—money that can significantly help low-income riders, many of whom are from communities of color (*Wayback Machine*, 2022). A. E. Brown, (2018) found that, when compared to higher-income users, low-income riders travel shorter distances, depend more on local than longer-distance modes, and take a larger proportion of transit trips during off-peak hours. concludes that low-income riders pay significantly higher per-mile transit fares than more affluent riders. Women, especially caregivers, benefit from fare-free policies due to complex trip chaining, which otherwise incurs repeated fares (International Transport Forum, 2024). Fare-free has also been proven to increase transit use among older adults and youth, and increase job accessibility (Da Silva et al.,2022).

2.3 The stake of fare-free transit in promoting efficient transportation systems

Even though fare-free aid in increasing ridership and reducing car dependency, it comes at a significant cost. For example, Metro Transit's pilot in Minneapolis–St. Paul increased Route 32 weekday ridership by 38%. However, this came with a projected annual fare revenue loss nearing $1 million (Halter, 2024). Nevertheless. Some jurisdictions have resorted to taxation to fund the policy implementation. In Aubagne, a transport tax on businesses brought in €5.7

million per year, covering 100% of operating costs(NCHRP, 2008). Boston's free routes (23, 28, and 29) lost about $3 million annually in fare revenue but showed measurable service and access improvements (*Wayback Machine*, 2022). These examples underscore that while fare-free improves access and ridership, maintaining quality depends on sustainable financial models—often through parking fees, transit taxes, or climate funds. There is, therefore, a concern over the sustainability of these programs over a longer period, especially for municipalities with limited tax revenues that continue to persist.

3.0 Materials and Methods

The city of Iowa City is the geographic location for the study. It is a small college town with a population of about 75,671. In terms of the primary modes of transportation used, about 54% drive alone, 16% walk, 10% use public transit, and 8% carpool, 8% work from home, 3%bicycle, and 1% use other modes (*Census Profile*, 2025). Within the limits of University Heights and Iowa City, there are thirteen routes that are used for transit services. The fleet of 27 buses that make up the fixed route bus service run from 7:00 am to 7:30 pm on Saturdays and from 6:00 am to 11:00 pm on Mondays through Fridays. While hourly service is available on Saturdays and in the nights, all routes maintain 30-minute intervals or better during peak hours. Five lines provide hourly service on weekdays, while seven operate at 30-minute intervals or better. Mixed method research design was used for this study, with mainly secondary data. The secondary data was primarily sourced from census reports (*Census Profile*, 2025) and the city's reports and official website (Koch et al.,2022; *Transit | Iowa City, IA*,2025). Due to time and resource constraints, the only primary data used was field observations and pictures taken by the author.

4.0 Discussion

4.1 Contribution of Iowa City's fare-free to carbon emission reduction

The primary goal of sustainable transportation is to reduce greenhouse gas emissions, especially carbon emissions (Calvin et al., 2023). The EPA targets cutting down emissions level by 50% by 2030 (*FY 2022-2026 EPA Strategic Plan*, 2022) in efforts towards attaining the UN net-zero emission (Ipcc, 2022). In 2023, Iowa City started its free fare transit towards this ultimate goal by setting a target of reducing the city's emissions by 45% by 2030. This policy promises to be a feasible mechanism in reaching this goal by mode shifting to public transport instead of using private automobiles (*Transit | Iowa City, IA*,2025). The Iowa City Climate Action Plan has a goal to transition 55% of car trips to sustainable modes by 2050 (Koch et al.,2022).

Greater frequency and elimination of fares in Iowa City make mass transportation more user-friendly for students, low-income individuals, and the elderly, and groups are less likely to

own a car. This more rider-oriented mode reduces single-vehicle trips and decreases vehicle miles traveled (VMT) directly, a main source of greenhouse gases. Evidence demonstrates that the city's fare-free policy results in an increase in ridership by 450,000 (see figure 1), representing 43% as shown in Figure 2 (Boller, 2025). In essence, this reduction is equivalent to 31,251 metric tons of carbon emissions. By far, this is tantamount to taking off 6,800 cars, with the energy equivalent of 3,800 homes' annual use. This climatic impact is equivalent to planting 514,00 seedlings and grooming them for 10 years. Meanwhile, the target is to take 13,900 cars off the road by 2030. This shows that, with this policy, the city can achieve its target by 2026, all things being equal. The fareless system makes cleaner air and climate resilience a reality by making low-carbon transport available and more common as part of global ambitions to limit warming to 1.5°C.

Figure 1

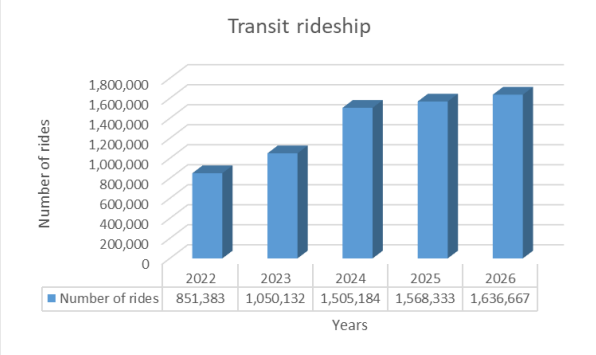
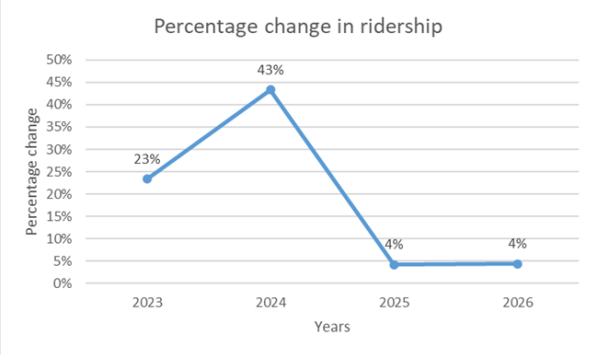


Figure 2



Source: Author's construct; from city budget FY2023, 2024, and 2025

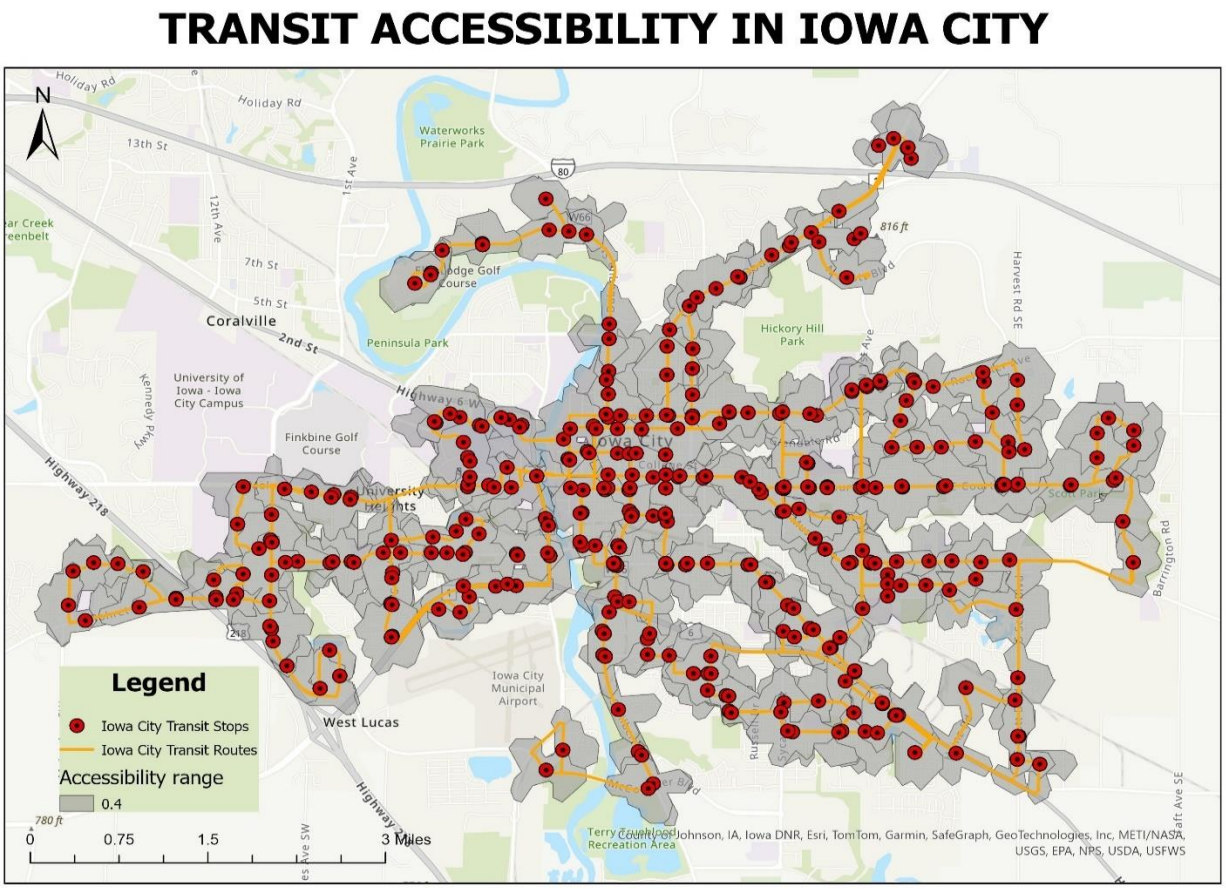
4.2 Contribution of Iowa City's fare-free system in promoting equitable transportation

Iowa City's elimination of fares is a vital step toward transportation equity so all residents of Iowa City—regardless of income, age, race, or ability—can enjoy mobility unencumbered by the burden of expense. Eliminating fares removes a huge budget burden from low-income individuals traveling to make simple trips to and from work, school, or the hospital. As the Iowa City Area Transit Study, concentrated areas of zero-vehicle households, low-income residents traveling to work, residents of color, and students are all located in the city's transit-dependent communities (*Transit | Iowa City, IA*,2025). Free service gives these groups the same access to public transportation, lowering social and economic marginalization that they would otherwise face. Seniors (65+), riders with disabilities, and students are particularly well served without needing to rely on subsidized or low-fare programs, and concerning physical accessibility, Figure 4 shows how the buses are designed to accommodate seniors and those with physical disabilities. However, one key issue is that

most of the transit stops in the neighborhoods do not have shelters and are not well protected from all weather conditions, as shown in Figure 5.

Supplementing past shortages of service in low-income communities with increased frequency and broader service coverage also serves to address issues of affordability as much as issues of reliability and dignity of access. The fare-free system of Iowa City envisions all of this by eliminating stigmatized fare systems and encouraging inclusive regional mobility and advancing racial, economic, and generational justice. Notwithstanding, financial equity and spatial equity are different issues, though complementary. Iowa City has a relatively high spatially equitable distribution of transit stops and routes across the city, which improves accessibility. There are 13 main routes with 352 stops. The stops are evenly distributed so that they are within 0.4 miles' walk by the furthest person, and there is a wait time of 15 minutes. Concerning wait time, the service as of 2023 was 69% time efficient, and 72% in 2024, with a projection of 80% and 85% in 2025 and 2026. Figure 3 shows the distribution of transit routes and stops in Iowa City.

Figure 3



Source: Author's construct

Figure 4

Figure 5

Source: Author

4.3 Efficiency of Iowa City's fare-free system

Efficiency is the most critical pillar of the sustainability challenge posed to transportation planners. Efficiency comes in two perspectives, operational efficacy and financial efficiency. While fare-free systems are costly with a loss in revenue and more expenditure, Iowa City policy benefits long-term system and economic efficiency. The zero-fare system reduces boarding times, and its increase in ridership helps maximize the use of the transit infrastructure. Also, since there is no fare collection, no hardware and enforcement are required; associated maintenance and labor are also minimized. Meanwhile, the city's expenditure on transit is on the rise. According to the budget reports, as shown in Figure 6, the expenditure on transit services increased from $8,490,957 in 2023 to 10,144,009 in 2024, with a projection of $15,907,600 in 2025. These represent 64%, 67%, and 64% in 2023, 2023, and 2025, respectively, for the city's transportation-related expenditure (see figure 7). Also, the economically beneficial aspects of a free transit system are expected to have a positive effect on city businesses through the provision of greater access to the labor market and the reduction of the transportation costs employees have to bear. However, due to time and data limitations, the study could not provide empirical data to support this claim.

In addition, the economic framework established under the policy, through the charging of parking fees, makes the project economically feasible while consistent with the long-term aims of the city's climate action strategy (Koch et al.,2022). The policy also tackles two pressing issues at the same time, since it manages traffic flow while encouraging the usage of more environmentally friendly transport options. The overall economic gains linked to the policy include less traffic congestion, less emissions, and greater accessibility to work opportunities and educational possibilities, thus making free public transport a feasible public investment, most so in the case of Iowa City. From the perspective of improved

productivity, public health, and improved social networks, the free-fare project in Iowa City has a multiplicity of gains that add to the continuation of a strong and inclusive city economy.

Figure 6

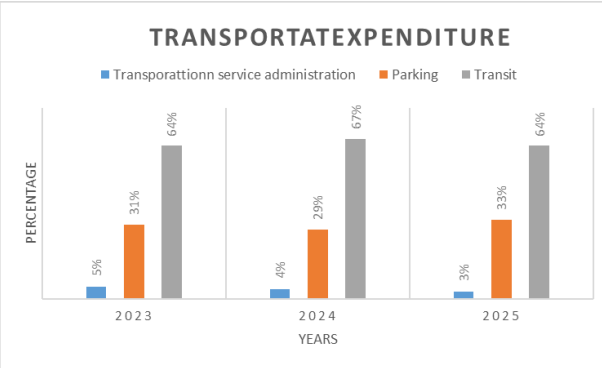
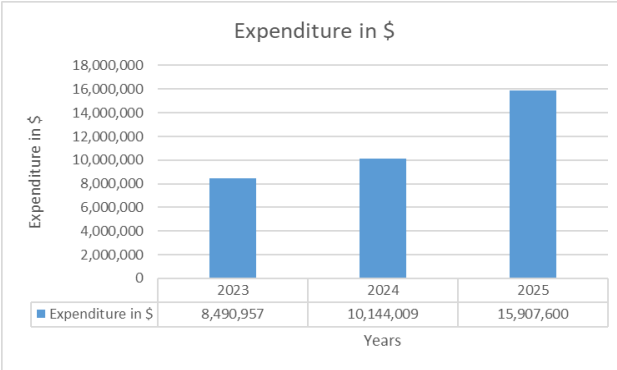


Figure 7



Source: Author's construct; from city budget FY2023, 2024, and 2025

5.0 Conclusion and recommendations

The research sought to assess the implications of the Iowa City fare-free transit measure vis-a-vis the convergent aims of sustainability, efficiency, and equity. From the research, there was a positive trend along these three axes. From a sustainability perspective, the introduction of the free-fare policy led to a significant rise of 43% in the use of public transport, which is quantitatively linked to a reduction in emissions, in line with the city's goal to mitigate the effects of climate change. Equally, the abolition of fares has greatly enhanced mobility for the historically disadvantaged groups of low-income families, the elderly, and students through the removal of economic impediments in addition to spatial and temporal constraints. As for efficiency, while the policy does require more public spending, it has also minimized boarding time, eliminated fares collection costs, and potentially has supported economic productivity through the provision of inexpensive and reliable access to opportunities.

The research has two main sets of recommendations. At the policy level, municipal governments, including medium-sized urban places like Iowa City, should adopt sustainable models of finance—e.g., climate levies or congestion charges—that can support the sustainability of free-fare systems. It is important to complement free-fare initiatives with investment in transit infrastructure, including upgraded bus shelters and more frequent service, to maximally achieve the related equity and operations benefits. At the research level, future studies should pursue longitudinal and mixed-methods measures to measure behavioral changes, local economic impacts, and the long-term effectiveness of transit systems. Comparative tests across cities with varying systems of governance and finance strategies also add depth to the conversation about the replicability and scalability of free-

fare systems. Overall, the case of Iowa City is a representative example of how sustainability, efficiency, and equity goals can be entwined in sustainable transportation policy.

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