

A Washington that Works for Everyone: Transportation Reformed

The Importance of Equitable Transportation in Washington State

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Introduction

Widely recognized as a basic human right, transportation is the key to unlocking the potential in Washington's communities. However, after a closer examination of Washington's transit network, distinct disparities can be observed. Through this analysis of inequalities fostered by our transportation system, the need for systemic changes to how we view public transit will become evident, as will the practicality of our proposed solution plan. While we cannot change the past, we can go forward with a future of equity and inclusion in mind, and a central part of this ambition is guided by how our transportation system is structured.

Problem

Based on data collected from the Washington Tracking Network (WTN), a distinct correlation can be observed between race and access to a private vehicle. Overall, minority populations compose a greater percentage of households without access to a private vehicle than the percentage of the population they account for. For example, in Washington state Black Americans compose 3.8% of the overall population, but 6.46% of the population without access to a private vehicle. This trend is not only apparent among Black Americans, but all minority populations. On the other hand, white Americans constitute 75% of Washington's populations, but only 60% of the population without access to a private vehicle (see figure two). There are several reasons for this disparity, a history of redlining and discriminatory housing is mostly responsible. Regardless of the unjust cause of this disparity, communities of color feel its effects every day in every single aspect of their daily lives.

Figure 1
Population Distribution Across Washington State by Race

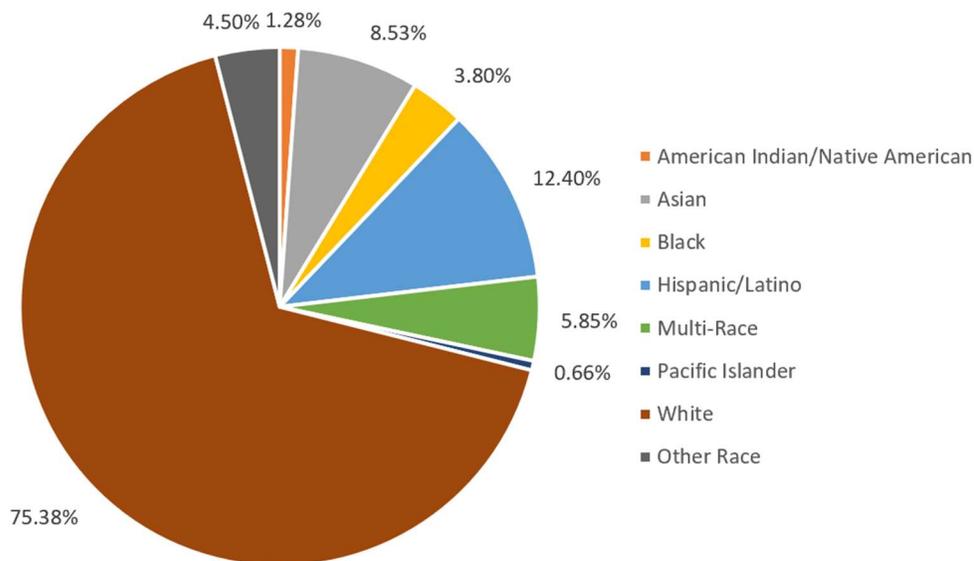


Figure 1 displays overall population distribution by race in Washington state. Data derived from the Washington Tracking Network.

Figure 2

Lack of Access to a Private Vehicle by Race

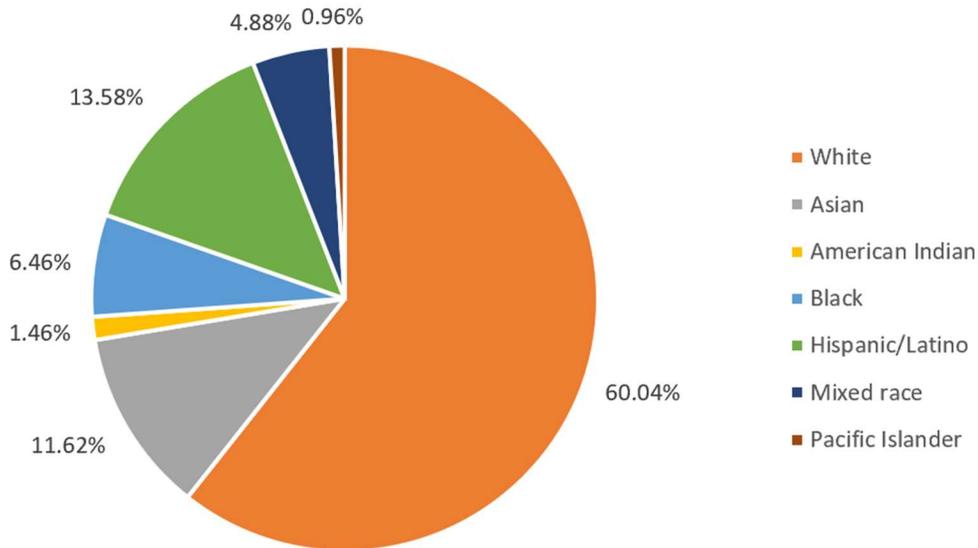


Figure 2 displays racial distribution of those without access to a private vehicle in Washington State areas ranked 9 or 10 by the Washington Tracking Network. Data derived from the Washington Tracking Network.

Without access to reliable transportation, educational opportunities are extremely limited, as are job options. Reliable transportation provides economic stability and unlocks opportunities that, for many, would be previously unattainable. (Oats Transit, 2021). It is especially important regarding healthcare. Often accessibility and proximity to different healthcare providers are the biggest factors in deciding where to get treatment, especially for long term illnesses. This may mean that someone receives subpar care because they do not have access to a hospital equipped to manage their ailment. Unreliable transportation also makes it harder to shop for groceries and make healthy choices. Many of the communities that have incredibly low rates of private vehicle ownership are also food deserts meaning residents of these communities are left with no nutritional options, and no way to access grocery stores and communities that would provide them with such. Transportation is important for the health of individuals, but it is equally invaluable to maintaining the health of our democracy and government.

Transportation is directly linked to civic engagement. Older populations and those with disabilities often do not have the means to travel to voting sites, and thus are less represented as a population. Integrated and far-reaching transportation would equip these communities with the ability to vote and be more involved with other civic duties in addition to voting such as caucusing and town halls (Oats Transit, 2021).

Without reliable methods to get to work on time, employees without access to transportation are often fired or not hired in the first place. A common question employers ask is how potential employees could get to work (Eagen, 2016). Answering this question honestly, those without access to a car or reliable public transit system often are not chosen for the job. This creates a vicious cycle, one where those

without access to a car are often unable to buy a car due to limited job opportunities because of a lack of reliable transport (Eagan, 2016).

By creating accessible public transportation, the impact of not having a private vehicle will be extremely lessened. Going forward, Washington state can create more equitable communities by instituting a robust and well-integrated *green* public transport system that will allow for increased connectedness between communities and stop the cycle of racial segregation that is still present today.

Diving further into a lack of car access for minority groups, another problem is presented. Non-access to a private vehicle requires the use of public transportation. While less one-passenger car use and more publicly operated transportation is encouraged, the reduction of carbon emissions produced only makes a small cut in society's carbon footprint.

Particulate matter 2.5, or $PM_{2.5}$ is a tailpipe emission-produced air pollutant that is dangerous for constant inhalation when levels are high in the air. $PM_{2.5}$ is produced from three general sources: the tailpipes of cars, trucks, and other motor vehicles. According to Environment Washington, "our transportation system is not only America's biggest source of carbon pollution, but also one of the biggest sources in the world," ("Destination: Zero Carbon", Environment Washington). Further studies have found that tailpipe emissions are the leading producer of $PM_{2.5}$. Increased levels of $PM_{2.5}$ in the atmosphere have been linked to heart and lung diseases as well as certain types of cancers, cognitive disorders, and low birthweights. It is estimated to be the cause of 95% of health impacts caused by air pollution (Reichmuth, 2019).

Such detrimental health impacts must be addressed by transitioning to modes of electric-powered public transport. By transitioning to 100% clean energy powered public transportation, and promoting the use of it, we could severely decrease the levels of $PM_{2.5}$ in Washington's cities. Based on data gathered from the Washington Tracking Network (*Figure 1*), the disproportionate impact of $PM_{2.5}$ concentration is unsettlingly clear.

Logistically, percentages from population distribution by race should be parallel to that of environmental exposure to $PM_{2.5}$ concentration. A similar trend to the disparity regarding access to a private vehicle can be observed: minorities represent far more of the people that are impacted by $PM_{2.5}$ concentration than they account for in population distribution across Washington.

The Native American population that represents 1.28% of the population in Washington makes up for 4.62% of those affected by this air pollutant. The African American minority group that accounts for 3.80% of Washington's population also accounts for 8.86% of those exposed to higher levels $PM_{2.5}$ concentration. Shockingly, only 12.4% of Washington's population--Hispanic and Latinx groups, account for 20.05% of people in Washington affected by environmental exposure to $PM_{2.5}$ concentration. With a minority group accounting for over 1/5 of people subjected to high concentrations of $PM_{2.5}$, the disparity is apparent. Looking at our majority group, the white population distribution across Washington state is at a high 75.38%, while only 47.95% account for those affected by $PM_{2.5}$. This form of environmental racism needs to be addressed and abolished.

Figure 3
Impacts of Particulate Matter (PM_{2.5}) by Race

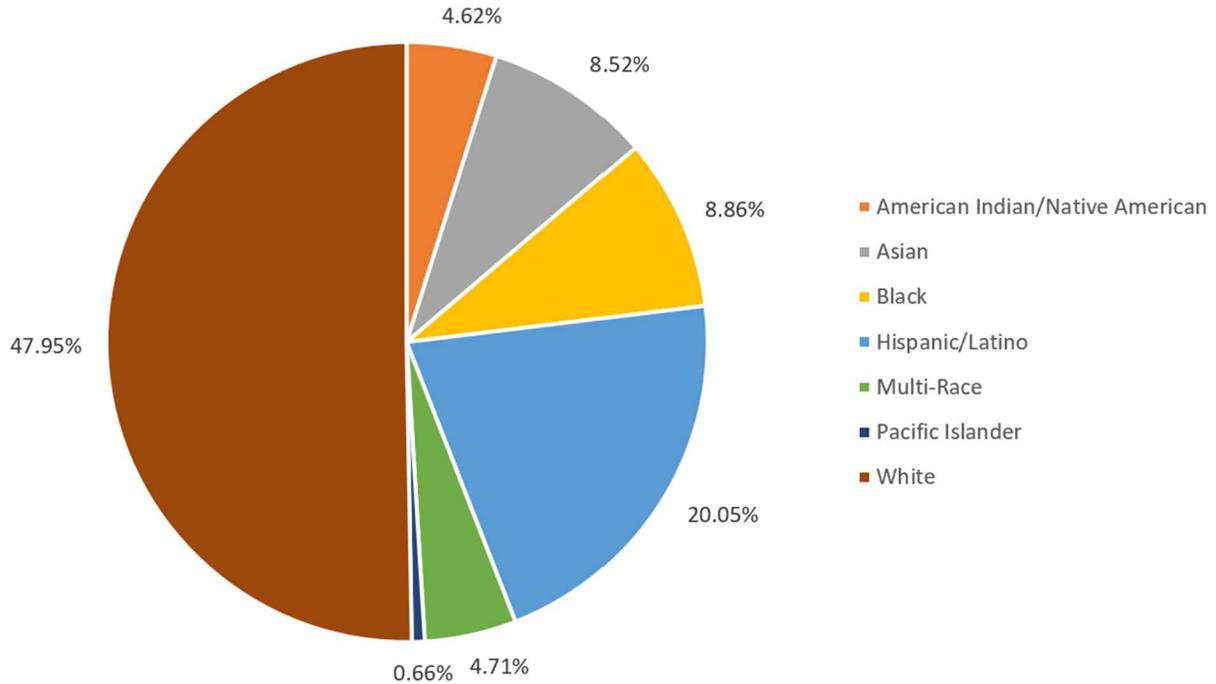


Figure 3 displays racial distribution of those impacted by PM_{2.5} concentration in Washington State areas with an affected rank of 9 or 10. Data collected from the Washington Tracking Network.

These disparities result from the combination of the lower socioeconomic status (SES) representing a large group of those without access to a private vehicle. By converting public transit to electric and promoting the use of it, we can reduce PM_{2.5} concentration. With climate change being such a relevant issue in our world today, efforts must be made to reduce this disparity on a larger scale. The solution to this inequality needs to supply public transportation that is accessible, safe, and zero-emission producing. Electric vehicles, such as the Battery-powered Electric Buses, produce no tailpipe emission, which is why the transition to electric modes of public transport is vital to decreasing PM_{2.5} concentration in air. By redesigning and updating our public transportation system to accommodate for the health of all Washingtonians, including those of lower SES, this possibility can become a reality.

Transportation Reformed—A Solution Plan

Based on the data presented in the previous section, the need for accessible and health oriented public transportation must be made a priority. Below we have created a series of reforms to modernize Washington's current public transit system to fulfill the needs of all communities.

Currently, Washington state public transportation relies on hybrid, battery electric, and the traditional gas-powered buses. To significantly reduce the emission of PM_{2.5} and other toxic air pollutants, Washington

must immediately transition to battery powered electric buses (BEBs). Battery powered electric buses provide environmentally sustainable modes of transport that are powered by battery packs to operate an electric motor.

The first step begins with phasing out diesel and hybrid buses and repurposing the funds they require for purchase and maintenance towards the purchase and deployment of BEBs. Battery electric buses have proved successful and have been easily implemented in Washington's cities. Additionally, though the capital costs of BEBs are more expensive than diesel, they are 2.5 times cheaper to power, and come with the added benefit of electric prices being much more stable than gas and oil prices. Furthermore, as technology continues to advance, the prices of BEBs have dropped significantly (Nunno, 2018).

Many of the concerns raised by the transition to BEBs are related to logistics surrounding methods of charging. There are two main ways to charge BEBs, both of them providing very minimal disruptions to the bus's schedule and route. The first option is on-route charging. On-route charging requires the installation of several charging ports with consideration to the feasibility of charging times. The fast chargers would operate while passengers are loading and unloading to maintain battery life. The second type of charging method is depot charging. Depot charging would occur at off-peak demand times, and has lower capital costs (Wendel, 2019). Overall, both these methods of charging are both effective and adaptable to the community they are serving. It would be up to the state of Washington to determine which charging method is most suited towards the communities the BEBs would serve.

As we were conducting our research, we realized that it does not matter if our buses are clean and electric if no one is using them. We must change the way society thinks about public transit in order to incentivize the use of it. Currently one of the biggest barriers to widespread use of public transit is the safety of passengers. In 2019 alone, King County transit workers filed 44 reports regarding drug use on public transportation, with these numbers rising to 398 in 2021 (Lindblom, 2022). Many incidents involve those that are battling mental health crises. To this, we propose a non-violent conflict resolution plan with the health and safety of all Washingtonians at mind. First and foremost, certain situations must be handled by those with the correct training, such as community, mental health, and substance abuse-based alternatives as opposed to law enforcement. We propose that bus drivers be trained in recognizing the signs of mental instability and drug abuse. If faced with a situation that requires outside expertise, bus drivers could contact experts trained in diffusing situations nonviolently. The bus stops would serve as a helpline system where professionals would take charge of the situation, ensuring the safety of everyone involved. We are upholding this new system to adhere to the ethics of community, both socially and environmentally. Another concern brought to light by the COVID-19 pandemic regards health in public spaces.

We propose the institution of mask mandates on all forms of public transportation. This is to ensure transportation remains accessible to the general public. Not only is this institution precautionary but is adaptable to future illness-prone seasons or states, with the ultimate goal of reducing outbreaks in public interaction. Additionally, with the upgrade to BEBs we propose that HEPA ventilation systems are mandated and implemented into each and every BEB. To incentivize the use of public transportation, we have devised a plan to promote this new integrated system.

To encourage the use of public transit while spurring the local economy, we propose a partnership with local businesses. Participating businesses would provide discounted rates for those that provide proof of riding some form of public transportation within the day of their purchase. With this beneficiary connection businesses receive increased recognition within the community and the local economy would be boosted by an uptick in local consumerism. Much like people who are devoted to their local bakery, we have a loyalty program to people that are devoted to their local BEBs.

To promote the continued use of public transportation, we believe a loyalty program should be instituted that rewards those that consistently use public transit. This would also ease the financial burden of transportation for those that are heavily reliant on it, whose usage can range from 10 to 50 rides a month. Our loyalty program would offer tiered discounts. Those that ride the bus 150 times or more in a year would receive 10% off on all fares the subsequent year. Those with more than 300 rides would get a 20% discount, and more than 500 rides would earn them a 50% discount for the remainder of the year. Each year, a person's status is reset, and they must earn the discount for the following year.

Overall, through these systemic changes, we could significantly reduce the racial disparities fostered by our current transportation system.

Impact

If implemented into Washington's cities, our transportation reform package would help Washington realize the potential vested within all communities, most prominently communities of color. As presented from research conducted through the Washington Tracking Network, rates of access to a private vehicle are lowest amongst communities where minority populations compose a greater percentage than that of which they represent in Washington as a whole. Due to this, these communities are more heavily reliant on public transport--for school and educational opportunities, access to healthcare, civic engagement, professional opportunities and much more. The reforms listed in our solution plan would ensure public transport is cleaner, greener, and bridges the gap of transportation between people of color and predominantly white communities.

A transition to an electric-powered public transit system not only allows for widespread access, but also minimizes and stabilizes the effects of $PM_{2.5}$ concentration. This tailpipe emission poses a major threat to our heart, lung, reproductive and overall health. Washingtonians have a right to breathe clean air, and the fact that minorities are disproportionately affected by this risk is simply inexcusable. The implementation of battery electric powered buses is the key to significantly reducing, and even eliminating the disparaged effects of $PM_{2.5}$ concentration that we see in minority groups compared to the population they account for.

Furthermore, the execution of revisioning the current transit system introduces even more benefits to society. Not only this, but it incentivizes the use of public transit, further lowering the transmission of toxic chemicals like $PM_{2.5}$. Our proposal to reduce crime with non-violent professional alternatives would make public transit safer, especially for children and the elderly. Our proposed continuation of a mask mandate and upgraded HEPA filters would ensure everyone can ride the bus, including the immunocompromised and those at risk of becoming gravely ill due to infectious diseases. Finally, our proposed loyalty program and incentive program through partnerships with local businesses would ease the burden of transportation expenses on families of lower income and incentivize the use among Washingtonians. Overall, our comprehensive transit reform package would directly address the racial disparities currently cultivated by our transit system and work to create a Washington that works for everyone.

Conclusion

"A Washington that Works for Everyone: Transportation Reformed" pushes for the future--our future. We are proposing an innovative, adaptable, and dependable reform to propel the safe, equitable, and secure potential of public transportation in Washington State.

Washington's current transit system has underlying disparities that are driven by racial and economic inequality. Our findings from the Washington Tracking Network have discovered correlated disparities

between race and transportation. People of color are without access to private transportation and significantly more affected by dangerous air pollution—PM_{2.5} concentration, than they are accounted for in Washington's population distribution. Our solution is the fast-charged, zero-emission producing, lithium-ion battery powered electric bus. By supplying reliable, and efficient mode of transit, we are able to provide minority groups that are no longer affected by dangerous tailpipe emissions, with an accessible, inclusively minded, incentivized, adaptable bus strategy.

Transportation is a human right, and "A Washington that Works for Everyone: Transportation Reformed" is people oriented; we seek to solve the crisis of respiratory health and racial disparities through equitable and supported means of transport in one, for all Washingtonians.

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