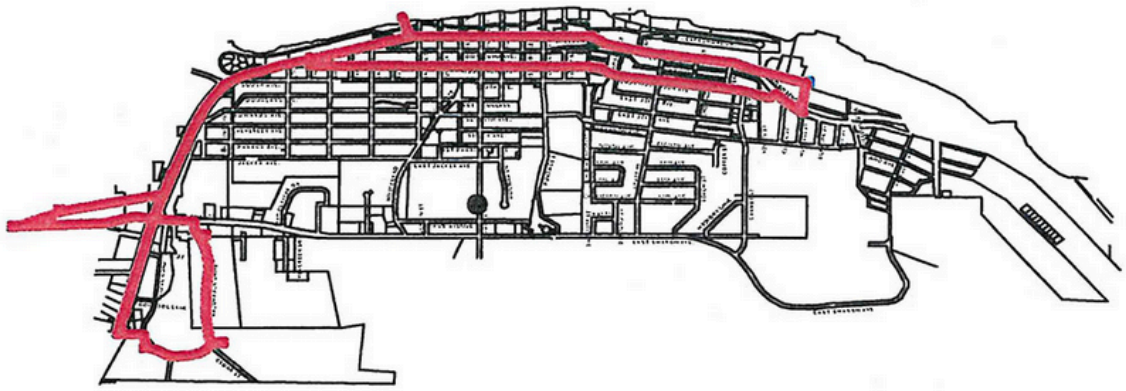
New Bus Route Project Proposal

Michigan Technological University

By: Spencer Phillips

Introduction

Public transportation is an important way for students to get around, whether it's for school, work, or personal activities. At Michigan Technological University, many students rely on public transportation to travel to campus, attend events, and access important services. However, there is a major issue in southern Houghton: the limited public transportation options available for students who live off-campus. As you can see in figure 1, any student or faculty who lives further south than 7th Ave/W Edwards Ave, including as far as Hurontown, has little to no easy access to transportation. (Mdi)



(Figure 1)

Southern Houghton has few transportation routes that connect students to campus and other essential locations. The only current locations are the Mineral Museum, near Taco Bell, and Walmart. This lack of reliable transportation affects students who live off-campus and makes it harder for those who depend on public transportation to get to school or other places they need to be. As a result, many students face difficulties with commuting, which can impact their academic life, social activities, and overall experience at Michigan Tech.

This proposal aims to address the need for better public transportation services to and from southern Houghton, with a focus on the needs of Michigan Tech students. By expanding and improving transportation options, we can make it easier for students to get around, reduce stress, and create a more

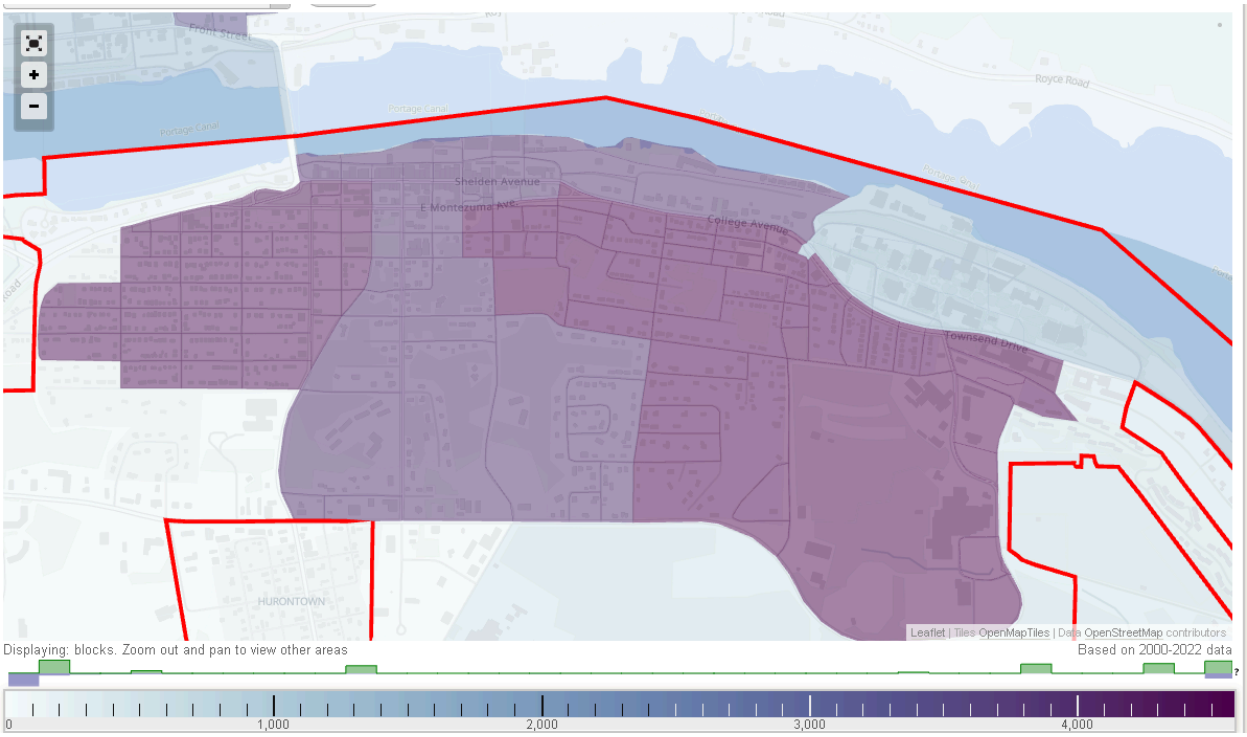
sustainable and efficient campus community. Improving transportation will not only help students but also support the university’s goals of sustainability and accessibility. It has been found that public transportation helps reduce air and noise pollution (ucla).

Benefits

The issue of limited public transportation in southern Houghton is worth solving because it directly impacts students' ability to access campus resources and participate fully in university life. Many Michigan Tech students who live in southern Houghton face challenges getting to campus, whether it’s for attending classes, social events, or work. Without reliable and convenient public transportation, these students are often forced to rely on personal vehicles, which can be costly and inconvenient. For those who don’t own a car or prefer not to drive, the current options are insufficient. Improving public transportation would make it easier for these students to get to campus, reducing stress and making their overall university experience more positive.

Addressing this issue would also make the university more inclusive. Many students, especially those who cannot afford a car or who choose not to drive, are left with limited options for getting to and from campus. Expanding public transportation services would ensure that all students have equal access to their education and campus life, regardless of their financial situation or transportation preferences. This would also benefit students who have disabilities or other challenges that make relying on personal vehicles difficult, promoting a more accessible and equitable campus environment for everyone.

Adding a bus route to service the highest number of people as possible would be highly beneficial.



(Figure 2)

As you can see in figure 2, this is a heatmap of population density, we can see that the dark purple is where most people live, yet there is no bus route that primarily services the neighborhoods in this area.

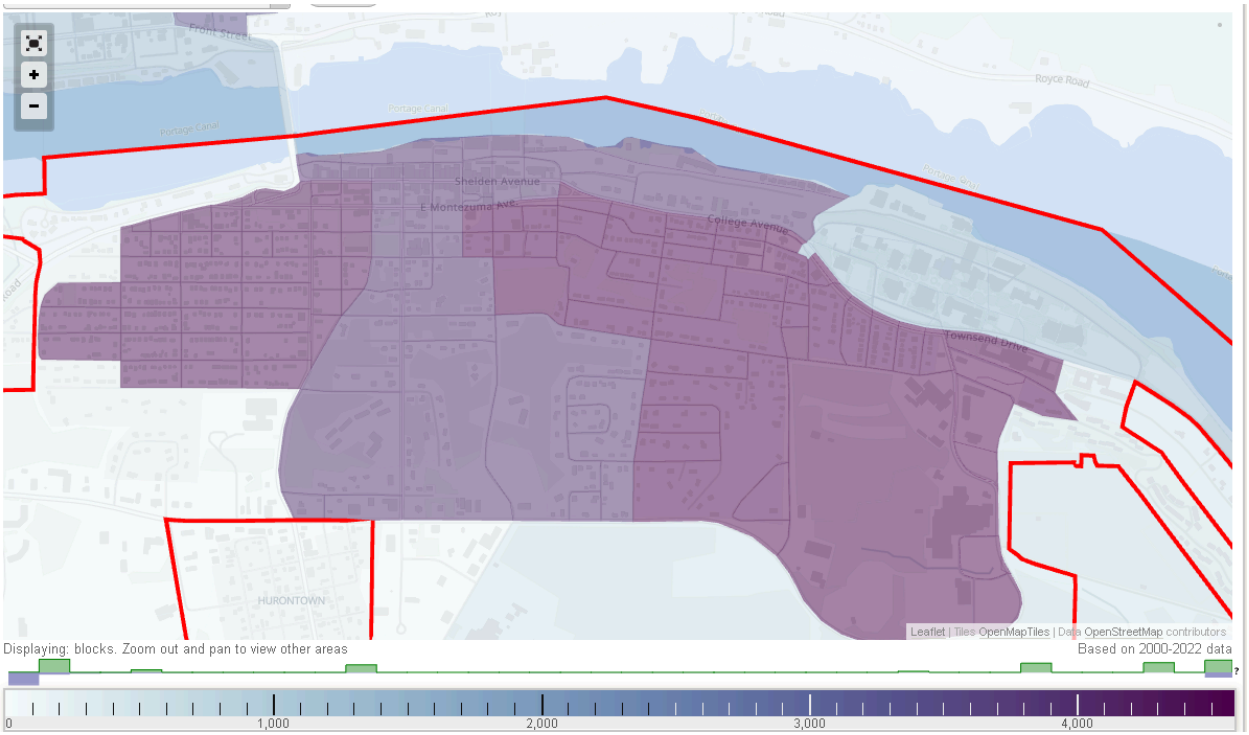
Solving the issue of limited public transportation in southern Houghton could significantly improve public perception of Michigan Technological University. As a leading institution known for its commitment to innovation and sustainability, Michigan Tech has the opportunity to set an example by addressing this transportation challenge. By expanding and improving public transportation, the university would demonstrate that it is responsive to the needs of its students and the surrounding community. This commitment to enhancing student life and accessibility would position Michigan Tech as a forward-thinking institution that prioritizes the well-being of its students and the environment.

Lastly, enhancing public transportation services would highlight Michigan Tech's dedication to sustainability, which is an increasingly important factor for prospective students, faculty, and community members. Many universities are placing a greater emphasis on reducing their environmental impact, and providing more sustainable transportation options aligns with this growing trend. With many universities cutting departments and funding that help sustainability for political reasons, this gives Michigan Tech a unique opportunity to stand out and expand its sustainability practices.

SOLUTION

This proposal will strictly focus on the addition of one new bus route to provide access to southern Houghton and Hurontown. As seen in figure 3, the new route would connect southern Houghton to Michigan Technological University's main campus, offering a reliable and efficient transportation option for students, faculty, and staff who currently have trouble commuting. This route was chosen based on the current routes shown in figure 1, and to accommodate the highest density of population, which is shown again for your convenience in figure 4. The goal is to make getting to campus easier, reduce the need for personal vehicles, and improve access for people living in southern Houghton and Hurontown.

(Figure 3)



(Figure 4)

Possible cost for the new route

Initial investment costs, the two options that exist that drive cost are acquiring a new bus for the new route, or retrofitting a previous route with the new stops. Retrofitting is the cheap option by far, but has the largest impact on arrival and departure times for all stops. Meaning it may not be feasible to retrofit a previous bus route with the new stops.

To start with, a comparison of the cost of a new bus to run the route. Assuming the purchase of a type A bus, which is a shorter frame vehicle for shorter trips with a cutaway front section (www.spiraldesign.com). The cost averages around 50k-80k new or 8-20k for a used 36 seater with about 100,000 miles(Brown). A Type A is chosen because they can carry between 14 and 33 students at a time. The recommendation is for a type A bus that can carry closer to 33 to minimize the chance of overcrowding and provide ample average capacity throughout the runtime of the route (Garrison). An average driver's cost for employment is around $17 per hour, equaling around $35,360 a year to employ the driver (ziprecruiter).

For gas, 3 times running the route per hour, for 6 hours, gives us 18 runs of the route. Then Account for mileage, 18 runs * 7 miles = 126 total miles per day, you can see the new proposed route and how the milage is determined in figure 3. Now back to calculating, once you account for it running 300 days a year, 126*300 = 37,800 miles per year. Then accounting for gas mileage, this will vary for new vs used buses, new buses averaging 12 mpg, and used likely averaging 8 mpg. Meaning 37,800/12 = 3150 gallons of fuel, at a cost of $3.105 per gallon average, equaling $9,780 in gas per year (*AAA Fuel Prices).*

Now to do this for the used bus, averaging 8 mpg, 37,800/8 = 4,725 gallons of fuel, at a cost of $3.105 per gallon, average equaling $14,671.125 (*AAA Fuel Prices).*

	New Bus	**Used Bus**
One time costs	$55k	$12.5k
Gas costs	$9,780	$14,671
Driver	$35,360	$35,360
Total first year	$100,140	$62,531
Total per following year	$45,140	50,031

Possible objections

One of the main concerns might be the cost of implementing and maintaining a new bus route. The board may argue that the funds required could be better spent on other campus priorities or that the university or local government may not have the budget to support a new route without raising taxes or fees. Currently, it is hard to quantify the cost savings from students themselves on taking public transit instead of commuting or walking. However, with the lack of hard evidence, there can be a survey and a study done to quantify this data. MTU is now an R1 research school thus, it could be in the city's best interest to create a study to find and quantify information on the positives of adding the bus route.

Some might argue that the demand for the new bus route may not be high enough to justify the investment. If the route does

not attract enough riders, it could be seen as an inefficient use of resources, and critics may question whether the route would be sustainable in the long term. However, if one looks at the heatmap of the population and compares it to the current implemented routes map, there is a clear divide between population density and serviced routes.

Some may argue that there are already other transportation options available, such as personal cars, carpooling, or existing public transit routes. They might suggest that improving the efficiency or availability of current services would be a better solution than creating a new route.

Adding a new bus route could raise concerns about increased traffic, especially in areas that are already congested. Some people may worry that the bus route could contribute to traffic jams or parking issues, even if public transit is meant to reduce the number of cars on the road. To this, I propose that Houghton luckily does not have a large population in total, thus traffic even during peak times, if not much, and adding 1 bus to the street will not have a major impact on local traffic.

There could be concerns about the safety of students and passengers using the new route, especially if the existing infrastructure isn't built to accommodate an increase in bus traffic. Issues like poorly maintained roads, lack of bus stops, or insufficient lighting could raise questions about the practicality of adding a new route.

Some might worry that adding a new bus route could affect the efficiency of existing routes, particularly if the new route takes away from resources that currently support other areas. This is solved by proper time management when creating the route schedule. Ensuring minimal overlap with the other routes so that there is no waiting for another bus to clear a shared stop on the route, especially speaking towards the stops on campus.

Residents, especially those who live in areas that the new bus route might pass through, could object to the change. They might be concerned about increased noise, pollution, or changes in their neighborhood's character due to more frequent bus

traffic. This is a valid concern, especially for the locals living on the route that had never had a bus route near them before, such as Hurontown. However, the positives, as mentioned in this proposal, should outweigh the elevated ambient noise from the bus route.

Why The Route Should Be Implemented

Improving student access and engagement is essential. Public transportation is highly integrated into student lives who are living off-campus, particularly those who rely on it to get to class, work, and other activities. Many students, especially those who can't afford a car or prefer not to drive, face significant barriers to accessing campus. By creating the new route, the university would make it easier for students to engage in their academic and social lives, positively impacting their overall experience and success at Michigan Tech.

Another important reason is Michigan Tech's commitment to sustainability and environmental responsibility. Providing a more efficient and reliable public transportation system aligns with the university's values of promoting sustainability. Reducing the number of cars on the road, encouraging the use of public transit, and lowering carbon emissions are all vital steps the university can take to support environmental sustainability. By taking action, Michigan Tech would show its dedication to creating a greener and more sustainable future for both the campus and the surrounding community. It can also add it to the list of sustainability initiatives the university takes part in on its website. Found here https://www.mtu.edu/residential-living/education/living-guide/sustainability-initiatives/.

Addressing the transportation issue would also enhance the university's reputation. Taking steps to improve accessibility demonstrates that Michigan Tech listens to student needs and is committed to making campus life more convenient and inclusive. This could be an attractive factor for prospective students and families who prioritize convenience, affordability, and environmental responsibility when choosing a university. It also reinforces Michigan Tech's image as a forward-thinking institution that prioritizes student well-being.

Solving this issue supports equity and inclusivity on campus. Access to reliable transportation ensures that all students, regardless of their financial situation, have equal opportunities to succeed and fully participate in campus life. By offering better transportation options, the university can foster a more inclusive environment and ensure that students from diverse backgrounds have the support they need to thrive. This commitment to equity will help Michigan Tech be seen as a more welcoming and supportive institution for all students.

Improving transportation also strengthens Michigan Tech's relationship with the local community. A more connected transportation system benefits both students and residents of Houghton, enhancing the overall quality of life for everyone. By working to improve transportation options, Michigan Tech demonstrates its role as an active and responsible member of the local community, fostering positive relationships and collaboration with residents and local businesses.

Lastly, addressing transportation now will allow the university to meet growing demand. As both the student body and the surrounding community continue to grow, the need for accessible transportation will only increase. By taking action today, Michigan Tech can address current challenges and anticipate future needs, ensuring the university remains a place that supports students' mobility and overall success for years to come.

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