

Pete Buttigieg
Secretary of US Department of Transportation
U.S. Department of Transportation
1200 New Jersey Ave., SE
Washington, DC 20590]

Dear Pete Buttigieg

We Future Environmental Engineers would like to submit our proposal in response to the growing number of motorized vehicles. As you may already be aware, our planet is dying from the constant pollution of the waste that we produce that are now affecting not just the land we walk on, but the air we breathe.

Our proposal is to incentivize the public to commute more through biking rather than motorized vehicles like cars, trucks, etc, to reduce the number of greenhouse gas emissions and as an extra bonus regulates the health of our populace.

We strongly believe our proposal will make great changes to not just our society but for the environment as well, if you were to hear us out. We await your response. Here is the contact information, if needed, for further discussion: +1 929-434-7556, wenziz9049@gmail.com. Thank you for your consideration.

Sincerely,

Wen Qi Zhang, Abkariyyah Ahmed, Mohammed Mohammed

Public Bike Points System

Technical Project Phase 3

By

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Abstract Summary:

The promotion of active and sustainable transportation modes is the key to reducing air pollution, road congestion, and adverse health outcomes of sedentary lifestyles. Our group proposes a public bike system to incentivize people within the US roughly 12-35 years old to commute more through biking rather than driving on cars or motorized vehicles. The system we propose works under a gamification approach, in which people could earn points through riding bicycles for a certain distance and exchange them for rewards or money. In fact similar approaches had already appeared in our modern time and had shown positive results, for example the Cycling May policies that were proposed in Poland. The results have shown that there has been an average increase of 18% to the daily bicycle traffic.

To test our proposal effectiveness, we will first apply a quasi-experimental design in New York City based on observing bicycle counts in targeted boroughs such as Manhattan and Staten Island, and compare them to the other boroughs. We anticipate that our proposal will result in a significant increase in the number of bike users in the targeted borough where we implement our proposal. If such results were to be found positive then we would like to implement our proposal on a larger scale. Promoting biking will not only benefit the environment but also regulate our everyday health.

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Literature Review:

Greenhouse gas emissions remain a significant problem worldwide largely due to the growing numbers of people using motorized vehicles, like cars, motorcycles, etc. According to the US Environmental Protection Agency, the transportation sector, within the United States, accounts for the largest emission rates of the greenhouse gas by about 28%, largely because of burning fossil fuels to power motorized vehicles. This goes to show how deeply rooted we are in using cars and other fossil-fuel vehicles. Rather than promoting vehicles that cause environmental harm, promoting active transportation, like bicycles, will not only benefit the environment but also ourselves, however, the problem is that not many people will want to do so.

In the world of economics and in real-life, people respond to incentive, in other words temptation, intervention, events, or policy that causes behavioral changes. Incentives like rewards or competition are generally what drives people to do certain actions. According to a research conducted by Beatrice Biondi, Aleksandra Romanowka, and Krystian Birr, gamification policy approach, based on competition, and relative rewards has proven to be the most effective in promoting cycling behavior. Throughout their observation between countries like Gdansk, where this policy was implemented, and Lodz, where it's not, it has shown a 14% increase in cycling activity in countries where the policy was implemented, then it is not. This was further verified by another study, from the University of Sheffield. The University of Sheffield implemented the "Cycling Challenge," to examine commuting behavior and possible long-term behavioral shifts toward cycling amongst the staff members and students. The result was observed that there was an increase of 26% in the cycling frequency that sustained for 2 years after the original Cycling Challenges. Although the increase in the cycling frequency did not last long in the long term, the results still show that incentives like rewards and competition can

produce a positive effect in getting people to ride on the bicycle. This is particularly important because depending on the incentives it can highly influence the public's opinion and choice of action, in this case riding a bicycle.

Methods:

1. We are proposing an improvised public bike points system, in which people could earn points to exchange for rewards by the amount of time and distance they ride on the public bike. The original points system is based on membership and the amount of time that they check in for a public bike. Our proposal of a point system is an improvised version.
2. Our improvised proposal system includes financial rewards in addition to material rewards. Users can exchange them through the points they earned from the original membership points and the amount of time. People who signed up to ride public bicycles each day will be rewarded with 5 points for the number of hours they spend riding public bicycles weekly. Points will also be provided according to the distance they ride the bike in one hour. This will be tracked by the GPS tracker installed on the public bicycles, that will transmit the distance and time that was traveled into our public bike app, which works similar to google map. The greater the distance in one hour, the greater the reward provided to the bike rider. If the distance traveled per hour is 10 miles to 15 miles, the financial reward will be approximately 15 points to 20 points.

$$\text{Points} = [\text{Distance(miles)} / \text{Time(hour)}] + (5)$$

There will be promotions for all people who return bikes to their designated places where they should be. The promotion means an increase in the reward, and it will be 40 points for every 10 miles per hour. The user could then exchange the points they earn for products like water bottles, and T-shirts, or convert the points into cash which is set by a ratio of 10,000 points to \$1.

3. Our goal is to incentivize young people (18-30) to ride bicycles more and decrease the number of car users in the hope of lowering greenhouse gas emissions.
4. We will first conduct an experimental phase in which we will observe for 6 months how our points system will affect the public's means of transportation within New York City. Each borough of New York City will be divided into two factions, one with our bike point system, and one without. We will compare the number of bike users in the borough with and without the point system. If the results are proven to be positive and our point system ends up promoting more bike users, we would like to expand our proposal throughout the US.

Conclusion

In conclusion, users who ride bicycles can obtain points that can be converted into financial and material prizes and promotions. Moreover, they also protect their health from

diseases such as cancer, diabetes, etc. It also reduces the use of cars, which leads to improving the environment around us.