The Power to Change... Climate Change

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Abstract

Climate change is plaguing humanity affecting the atmosphere, biosphere, hydrosphere, and lithosphere in a potentially irreversible manner. This social action project examines student willingness to reduce carbon emissions at large but mainly by way of transportation. A survey was conducted to assess the current modes of transportation students take to school and their familiarity with matters of climate change. A letter was written to the Minister of Transportation regarding the utilization of electric buses seeing as it is the main mode of transport used by students.

Introduction

Talk of climate change and global warming is rising in tandem with the Earth's temperature. Sea ice is melting, water levels are rising, and the prevalence of freak storms are just some of the afflictions that are becoming commonplace. This is due to humans meddling with the carbon cycle by expelling large amounts of greenhouse gases into the atmosphere. By the end of 2010, global carbon emissions from fossil fuels were upwards of ten million metric tons (Global Greenhouse Gas Emissions Data, 2017). In 2016 the US transportation sector contributed 28% to overall greenhouse gas emissions (Fast Facts on Transportation Greenhouse Gas Emissions, 2018). Sixty percent of that was produced by light-duty vehicles (Fast Facts on Transportation Greenhouse Gas Emissions, 2018). As of 2010 Canada has created 20 tons of CO₂ equivalent per capita with one of the largest contributions coming from the energy sector, where transportation is the second highest polluter (Greenhouse Gas (GHG) Emissions, 2008).

I'm passionate about climate change because I realize that we live on one planet. We're all in this together and I believe you're never too young to make a difference or raise awareness. I don't see many role models in mainstream media that demonstrate better ways to live with a smaller carbon footprint.

This is relevant because climate change is exacerbated by anthropogenic causes. We got ourselves into this 'mess' and we can try our best to get ourselves out of it. I find that some people bear the burden of humanity more than others and climate change is one of those burdens.

Collecting the data was a new experience for me, one that I enjoyed and found very fulfilling. Using Google sheets to organize survey responses was quite handy. I've always loved asking people questions to get their opinions on controversial topics and this felt like the same thing but on a larger scale.

It has been said time and time again, but it does not hurt to repeat it, the environment is suffering. Marine life such as corals, shellfish, and fish are dying because of ocean acidification. Particulate matter along with other car pollutants can cause respiratory problems which is particularly dangerous for infants and those who suffer from heart disease. Deforestation for the purpose of creating roads removes valuable carbon sinks. Noise pollution in urban areas increases adverse health conditions such as hearing loss, cognitive impairment, and tinnitus. With all the negative side effects, it is clear to see something must be done.

Study

A two-part survey was conducted asking 39 high school students about which methods of reducing carbon emissions are most appealing to them and which modes of transportation they currently use to get to school. Students' awareness of renewable energy sources and electric alternatives indicates that there is no lack of knowledge about ways to reduce carbon emissions, however, there seems to be a gap between the knowledge and the implementation of those methods.

The methods of transport that were used the most produce the highest emissions - buses and gas-powered vehicles. Walking, biking, rollerblading, skateboarding, and electric vehicles were not popular modes of transportation. This confirms the gap between knowing better and doing better.

Figure #1: Carbon emission reduction methods found to be most appealing to student respondents

Figure #2: Methods of transportation currently used to get to school

Result Summary

Of the 39 participants, 59% support electric alternatives to transportation. Students who were interested in electric alternatives also felt responsible for reducing carbon emissions. Of the 27 students who felt responsible for reducing their carbon emissions, 63% of them were interested in electric alternatives. Of the 39 surveyed, 51% had not measured their carbon footprint. Of the 19 students who take the bus to school, 68% of them have a commute of 45 mins or longer and 58% of them travel approximately 15 km. Of the 12 students who take gas powered vehicles, 50% have a commute of 30 mins or less and 42% have a commute of 10 mins or less and only one of them travels approximately 15 km.

My favorite question was 'what methods appeal to you to reduce carbon emissions?' because the response to this question can lead to change. If people are more willing to change one behaviour over the other, becoming more carbon neutral won't be such a difficult task.

Discussion

Most students who live further away from the school take the bus resulting in a longer commute. Students who used gas powered vehicles lived closer to the school and had shorter commute times. Parents of students who lived further away probably do not want to travel out of their way to take their kids to school. Conversely, parents of students who live closer to the school probably do not mind driving their kids to school because it is not out of their way. It's less environmentally friendly to use gas powered vehicles because "the combination of the pollution burst that is being created as cars warm up in the first five minutes of journeys, together with the large proportion of journeys being short" ("Drivers urged to ditch cars for short journeys", 2018) creates excess air pollution.

I would love to hear students' opinions about long commute times because they are a demographic who use public transit a lot and who suffer the most if there are inconveniences that end up making them late for school. People who can't afford a vehicle also experience inconveniences, neither group have a say.

Taking Action

The majority of students take the bus therefore the biggest impact might be made by phasing out gas powered buses and replacing them with electric ones. Sometimes students do not have much of a say in the type of car their parents choose to buy. This often leaves green transportation in the hands of parents and the government. A letter addressed to the Minister of Transportation, Jeff Yurek, outlined the environmental issues that current gas-powered buses help to propagate. An informational pamphlet was also attached that cautioned against the use of electric alternatives without changing over to renewable energy sources. If the demand for electricity goes up so does the burning of coal, extraction of oil, and drilling for natural gas. Use of renewable energy sources must increase with the rise of electric motor vehicles in order to eliminate carbon emissions.

I chose this action because the government is the barrier between public concern and real change. I hope for a positive cascade effect wherein policy changes so that green transportation is a priority, then companies make it a priority, then citizens.

Student Reflections:

If I had unlimited time, I would like to educate others by giving speeches about sustainable alternatives in all areas of life. I think people associate the word 'sustainable' to various different meanings that can be misconstrued which results in lots of opinions and not many cold hard facts. I want to cut through the hype and politicality of climate change.

An Instagram page - a social media platform that is used often by the average student - with the handle *@cawthragreentransportaion* was created to inform Cawthra students and their parents about easy, affordable, and eco-friendly transportation alternatives available to them. In order to attract followers and therefore spread awareness, the green transportation page is following the Cawthra student council as well as using hashtags such as #transportation, #ecofriendly, #tesla, and #electricvehicles.

Conclusion

Students have knowledge about ways to reduce carbon emissions but seem to be in a position of less power when it comes to implementing change in regard to transportation. The growth of the green transportation movement may be up to parents and governments now, however, the future is left to the youth who can be empowered to act now and in the future.

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