Carbon Footprint Calculators:

Drawbacks and Benefits

Lauren Correa

Carrollton School of the Scared Heart

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In the modern era, understanding the significance of the carbon footprint is paramount to helping the environment and reducing one's negative effect on it. A carbon footprint is defined as "the total amount of greenhouse gases produced to directly and indirectly support human activities, usually expressed in equivalent tons of carbon dioxide" (Time For Change). Carbon footprints are usually calculated for a period of a year though it can be calculated for shorter lengths of time and can also be calculated in numerous ways. One way is by using a Life Cycle Assessment which takes into account the emissions required to produce, use, and dispose the object. The other method is by analyzing the emissions resulting from the use of the fossil fuels. The former is more specific than the latter. "Many factors influence the carbon footprint of a product: water use, cultivation and harvesting methods, quantity and type of fertilizer, even the type of fuel used to make the package" (Specter). It is important for people to understand the carbon footprint because "increasing the efficiency of our energy use, reducing our energy use and changing a few habits are some of the quick, easy ways to cut back on the size of our individual carbon footprints" (Dunn).

Carbon dioxide is the main greenhouse gas that is believed to cause global warming though others, such as methane and ozone, are also taken into account for the carbon footprint (Time For Change). The greenhouse effect is believed to maintain the temperature of the Earth constant though any interference with it could potentially increase or decrease the Earth's temperature. From space, the Earth's atmosphere would measure roughly zero degrees Fahrenheit. This is the temperature at which the heat the Earth radiates into space equals the amount of heat received from the sunlight. The Earth contains a radiation zone at which this transfer of energy occurs. This is located about 17,000 feet above Earth's surface. "If the temperature of the heat radiation surface is too low and Earth radiates to little heat to keep the

balance, Earth will warm up and then radiate more heat into space" (Berger). Two important factors which influence this cycle are water vapor and the air temperature. The abundance of water vapor in the air depends on the temperature of the air. The air contains more water vapor when it is warmer. Carbon dioxide in the atmosphere creates higher temperatures because the molecules "intercept infrared radiation, warming the air, which increases water vapor through evaporation" (Berger). The water vapor then goes on to increase the temperature of the Earth. The carbon footprint is a way to quantize how much each person contributes to this cycle of warming the earth.

Several carbon footprint calculators are available through a variety of resources. One calculator found on the web is the Environmental Protection Agency Personal Emissions Calculator. This calculator has many benefits. The EPA carbon footprint calculator allows individuals to estimate their own carbon footprint or that of their family. It does so by asking the person to fill in various fields relating to transportation, home energy, and waste. Compared to several other carbon footprint calculators, EPA's calculator is much more detailed in the questions it asks. Therefore, it seems to be a more accurate representation of the individual or family's carbon footprint. Another notable feature of this calculator is that with each question, the calculator shows how many pounds of carbon dioxide are formed per year. Underneath this figure, it also shows the average amount of carbon dioxide per year released by the product in question. This allows the person to compare their carbon footprint to that of the average person. Further on, the calculator also shows options to reduce the footprint on the road, at home, and with waste. It also explains how each suggestion would reduce the carbon footprint. Alongside the explanation is the amount of carbon dioxide that could be saved per year in each category and at the end, the EPA Personal Emissions Calculator shows the new emissions, how much

would be saved, and what percent the emissions make of the actual carbon footprint prior to taking any actions to reduce it.

Safe Climate is another carbon footprint calculator that can be found online. This calculator also has many benefits though it varies from the EPA Personal Emissions Calculator. One such benefit is that it has the option to choose between calculating for the United States/Canada or other countries. This calculator also has the carbon footprint calculator for automobiles, airplanes, and the home. It allows the individual to input up to three automobiles, unlike the EPA calculator. For the portion on home energy, the person can choose which state to view the statistics for or just use the national statistics to compare their own carbon footprint to. The Safe Climate calculator can also have its benefits depending on the people using it and the information available to them. To determine the carbon footprint, the Safe Climate calculator requires information regarding the home energy. This information is input, not in dollars, but in gallons, liters, therms, thousand cubic feet, and kilo-watt hours per month or year. This can be advantageous to many people who do not have the amount they pay for their energy bill readily available to them. This is just an alternate way to determine the carbon footprint rather than using the amount paid in the energy bill.

The EPA Personal Emissions Calculator is a very effective calculator and has very few drawbacks. One drawback is that in entering the data in the fields, there is only one option for the units. For example, to calculate the home energy carbon footprint, it requires the monthly gas bill, monthly electrical bill, and monthly fuel oil bill. Therefore, the input must be in dollars. This can be considered a drawback because some individuals might not know the monthly bill but instead might know how many gallons/liters per month/year they use of fuel oil or therms/thousand cubic feet per month/year for the gas amount. For the electrical bill, the

individual might only know how many kilowatt-hours per month/year he/she uses. Therefore, it would present problems for some people to use this calculator.

Though it is a good carbon footprint calculator, the Safe Climate calculator has its drawbacks. In comparison to the EPA Personal Emissions Calculator, the Safe Climate carbon footprint calculator does not require as much information to come to the conclusion about carbon dioxide emissions and the footprint. Therefore, it does not seem to be as accurate as the other calculators which require more information. Also, the Safe Climate calculator is not as user-friendly as the EPA calculator. The Safe Climate one sponsored by the World Resources Institute does not allow the user to view all the information they are inputting in one screen. Also, the fields are not very detailed and do not provide further information, such as averages, to base the results on.

The EPA Personal Emissions Calculator seems to be more effective for several reasons, even though it has its drawbacks. The layout of this calculator is professional and simple to use. It has all the questions categorized according to the basics, transportation, home energy, waste, and total emissions. This calculator also contains a section towards the end with ways to reduce the carbon footprint and actually demonstrates how much fewer carbon would be emitted if the measures suggested were taken. This is a very important feature to contain because, not only does this calculator tell the carbon footprint, but it helps the individuals to form a plan to reduce it and to take action. It also provides relevant information about averages per household or per vehicle so the person can compare the carbon footprint. In each section, this EPA calculator very wisely details what statistics the calculations are based on. This is important for the person using it to better understand the accuracy of the results. By providing the averages and this information

for each question, it is easier to determine the difference in carbon footprints rather than obtaining the information at the end without it being divided into categories.

The EPA model seems to be the best to inspire change in consumer behavior though some modifications could be made to make it even better. Additional features could be added such as the ability to incorporate different methods of attaining the carbon footprint and then in the last step, being able to compare the two, and possibly get an average. For example, the home energy carbon footprint could also be calculated using gallons/liters per month/year for fuel oil or therms/thousand cubic feet per month/year for the gas, or for the electrical bill, the individual might only know how many kilowatt-hours per month/year he/she uses. These could be added in addition to using the amount paid per month or year. Perhaps another addition which might increase interest in reducing the carbon footprint would be visual representation of the amount of carbon footprint in the household in comparison to the average person or even comparisons between current and future carbon footprints. This might inspire the people to reduce their negative impact on the environment.

Works Cited

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