

# Calculating Carbon Emissions from Academic Travel and Identifying Offset Strategies

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Cars traveling on a highway surrounded by smog.  
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## Overview

In the past decades, scientists have proven the planet is rapidly warming because of human actions.<sup>1</sup> In Canada, transportation accounts for 27% of carbon emissions, with 86% attributed to road vehicles and aviation.<sup>2</sup> Hamilton is no stranger to this, with 1.3 million tonnes of CO<sub>2</sub> being released from transportation.<sup>3</sup> In 2016, gasoline and aviation fuel heavily dominated Hamilton's transportation sector, accounting for 75% of total emissions.<sup>4</sup> As such, the Hamilton City Council has set a goal to achieve net zero greenhouse gas emissions by 2050.<sup>5</sup>

The staff of McMaster's Department of Family Medicine travel by car and plane to attend academic events, not only releasing emissions, but also causing adverse respiratory health impacts. Our project aims to support the department in their goal to reduce their transportation-related emissions associated with academic travel through education and offsetting.

## Objectives

1. Identify applicable carbon emissions calculators
2. Present options to offset carbon emissions from academic travel
3. Inform staff members about emissions produced from their academic travel

## Reporting

To achieve the first objective, we have provided instructions for carbon emissions calculators to quantify the CO<sub>2</sub> production (kg) of a journey via car or airplane. We have also created a spreadsheet that staff can use to track their travel emissions. We produced an instructional video<sup>6</sup> on how to use these tools, allowing staff to understand and be accountable for the environmental cost of their travel.

To achieve the second objective, we identified that planting trees is one of the most effective and accessible ways for communities to offset CO<sub>2</sub> emissions.<sup>7</sup> A single tree can offset an astounding amount of CO<sub>2</sub> (approximately 20 kg) at a comparatively low cost of \$5 per tree.<sup>8</sup> We also proposed that the department partner with NGOs, such as Cycle Hamilton, that promote low-emission methods of transportation, indirectly preventing future emissions from local travel.

For our third objective, we created and shared an infographic<sup>9</sup> depicting the planetary impacts of travel emissions. The infographic presents easy-to access information about the adverse effects that transportation has on climate change, a link to carbon emissions calculators, and opportunities to effectively offset emissions. Our infographic is supported by a report detailing our background research and sources for more information to support the department of Family Medicine in making sustainable choices for their academic travel.

## Collaborators

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See a full list of references [here](#).