



Flying vs. driving

Posted by [Yankee](#) on October 2, 2005 - 11:25am

Topic: [Demand/Consumption](#)

Tags: [airplanes](#), [automobile](#), [fuel efficiency](#), [greenhouse gas](#) [[list all tags](#)]

When I was in North Carolina a couple of weeks ago, people asked me if we had driven or flown. Well, we flew. Coming from New York, the maximum driving distance for a weekend trip for me is about 4 hours. I'll go to Boston or Washington, but that's it. I think we all know that planes are less efficient than cars, but I wasn't sure how much, so I crunched the numbers for two factors: CO₂ emissions, and fuel consumption.

Disclaimer: I warn from the start that these are the proverbial back of the envelope calculations.

I found a neat, if user-unfriendly, [calculator](#) on the web that tells you the greenhouse gas emissions that are produced per passenger on a 747 flight. I put in the coordinates for New York to Raleigh, NC, and it reported that for a round-trip flight, 713kg of carbon dioxide is emitted. There were 2 of us, for a total of 1426kg of CO₂. (Although greenhouse gas emissions are more than CO₂, it appears that both websites are basically reporting only CO₂.)

(And in especially tangentially-related news, British Airways has implemented a [carbon offset program](#) for their especially green-minded consumers.)

Then, I went to [fueleconomy.gov](#) and looked up the specs of our car, a 1994 Honda Civic Hatchback. I customized the settings to better reflect our habits: 6000 miles a year (actually, this is overkill), 70% highway driving, 30% city driving. This car gets about 35mpg on the highway, and has an annual greenhouse gas emission of 2.5 tons. For a trip of 1000 miles (NY to Raleigh, round trip), our car would emit roughly 336kg of CO₂.

As for fuel consumption, [this google answers](#) article provides some numbers.

According to British Airways, a 747-400 plane cruises at 576 mph (927 km/h), burns 12,788 liters (3378 US gallons) of fuel per hour, and carries 409 passengers when full. If the plane is 75% full, one passenger is carried 22.2 km for each liter of fuel burned (52.2 miles for each US gallon of fuel burned). This fuel efficiency exceeds that of almost all cars, when the driver is travelling alone.*

So my roundtrip travel from NYC to Raleigh (if we were flying a 747, which is not usually true)** would require 19 gallons of fuel per passenger (38 gallons for the two of us), as compared to 28 gallons for the two of us to go from NYC to Raleigh in the car (1000 miles / 35mpg = ~28 gallons). So once you have 2 people in the car, it's worth it to drive from New York to Raleigh on the basis of fuel consumption and CO₂ emissions. (And not to mention cost, except that we had gotten frequent flier tickets.)

Which brings us inexorably back to the question: how does the fuel consumption and CO₂ emissions of the flight compare to the time (about 10 hours) and heartache required to drive from New York to Raleigh?

*It's not clear to me that the amount of oil used in jet fuel and gasoline are really equivalent. Is there as much crude oil per gallon of gasoline as there is per gallon of [Jet A-1](#) jet fuel?

**I can't find the fuel consumption statistics for our Embraer 145. How would a 50-person plane compare to a large 747 on these specifications?



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