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Title: Adding carbon to the equation in online flight searches to promote lower-emissions air travel

Abstract: Air travel is a significant source of carbon emissions. For those of us who fly, it is likely the single greatest contributor to our carbon footprint. However, emissions for different flight itineraries with the same origin and destination can vary greatly, e.g., depending on number of connections and aircraft type. We developed GreenFLY (greenfly.ucdavis.edu), a flight-search website that prominently displays CO2 emissions estimates and highlights the lowest emissions itinerary alternative(s) to enable consumers to lower their carbon footprint by taking advantage of this variability. Our preliminary research presented at BECC 2017 indicated that a flight-search interface like GreenFLY can very strongly promote consumer purchase of lower-emissions flights.

This presentation covers a replication and extension of our prior work to the context of business travel. Business travel is responsible for a large fraction of airline emissions and accounts for most frequent flyers. We modelled the potential for a GreenFLY-like flight-search interface to lower the carbon impact of university employee air travel at University of California, Davis, if integrated in the institution's employee travel-planning tool. Specifically, we surveyed university employees to model their willingness to choose less carbon-intensive flights for business travel when using an interface like GreenFLY, then triangulated the model with archived travel data to estimate the total potential carbon savings and difference in costs if GreenFLY was used as a flight-search tool for employee travel.   Results are important to the UC system at large, which has the ambitious goal of carbon neutrality by 2025, and beyond to other large institutions. By requiring or encouraging the use of a flight-search tool such as GreenFLY among their business travelers, large organizations could dramatically reduce their carbon footprint. Institutionalizing this "nudge" within organizations with large travel budgets could have an industry-wide impact in aviation. Many consumers making lower-carbon flight choices would encourage airlines to invest in newer, more efficient aircraft. Our results can also be used to encourage commercial flight-search engines to incorporate and highlight emissions information. Increasing public awareness of the environmental costs of air travel would help inform government regulation and public investment in transportation, for example better public transportation to regional hub airports to encourage the use of non-stop flights.