

OPINION: Why Heavier People Should Pay More To Fly

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AsianScientist (Jan. 16, 2012) - If you've put on a few kilos over the festive season then reading this article may not be to your taste - particularly if you're about to join the throng of Aussies heading overseas for a holiday.

To cut to the chase: people who weigh more should pay more to fly on planes - in the same way that people who exceed their baggage allowance must fork out extra.

The rationale is simple. The fuel burnt by planes depends on many things but the most important is the weight of the aircraft. The more a plane weighs, the more fuel it must burn.

If the passengers on the aircraft weigh more, the aircraft consumes more fuel and the airline's costs go up.

In turn, the airline will need to lift airfares to recover these additional costs. And when they do, the burden of these higher fees should not be lumbered on those who are shedding a few kilos or keeping their weight stable.

In fact, airline fuel costs have increased since 2000 not just because of higher oil and jet fuel prices - although these are by far the most important drivers of higher costs - but also because the average adult passenger is carrying a bit more heft.

Between 1926 and 2008, the average weight of an Aussie female adult increased from 59 kilograms to 71 kilos and the average weight of an Aussie male adult increased from 72 to 85 kilos.

These increases represent weight gains of around 0.23 percent and 0.20 per year for woman and men, respectively. Since 2000, the extra loading that an average adult passenger carries is about 2 kilos.

All adds up

So what does this increase mean for additional fuel consumption on a big, modern aircraft like the A380?

On a route like Sydney to London via Singapore, it means around 3.72 extra barrels of jetfuel per flight is burnt, which at current prices cost about AU\$472.

This tally may not seem like a lot of money but when you add it up over all flights for a year the extra cost can all but wipe out an airline's profits, such is the thinness of margins these days particularly on international routes.

For example, if the airline flies three times a day to London the cost of carrying two extra kilograms per person is about \$1 million per year. This cost represents around 13 percent of profit if the airline only clears \$10 per passenger from the route.

Assuming that a "weight surcharge" would be applied on a per-excess-kilo basis for both men or women who weigh above a certain limit, the fee that would recover costs at current jet fuel prices is about 58 cents per kilogram on the Sydney to London via Singapore route.

This calculation means that if the critical weight limit is 75 kilograms and a man weighed 100 kilograms, then the surcharge would be \$14.50 one-way or double this for return. Conversely, a female weighing just 50 kilos would get a "petite" discount of \$14.50 each way.

Price discrimination

This debate may sound discriminatory, but in fact what economists term price discrimination - charging consumers who buy essentially the same product a different price - is a common feature in the modern market.

Movie theatres practise price discriminate on the basis of age and employment status. Trains price discriminate on the basis of time of travel. Taxis price discriminate on the basis of the payment method customers use.

Retailers price discriminate on the basis of whether a sale is in-store or over the internet. Insurance companies price discriminate on the basis of where a car is usually parked, or the suburb in which a house is located.

In short, companies usually practice price discrimination because they think they can make more money by doing so.

There are usually two general rationales for such discrimination. The first is that one segment of the market costs more than another and so should pay a higher price to recover those costs. The weight surcharge is an example of this.

The other rationale is that one segment of the market is less sensitive to price than others and so they can profitably raise the price paid by that segment relative to others.

Airlines practise this price discrimination today by charging passengers that book a long way out from departure less than those who are booking a short time out from departure.

The people who book a long way ahead are usually more sensitive to price than the desperadoes who are booking today for a flight tomorrow.

Of course, while a weight surcharge may be a good idea in theory, it won't be easy to implement. Quite apart from the public uproar that would accompany its introduction, such a fee would be difficult to implement. Passengers would have to be weighed at check-in, which is not great for the speed of the

airport experience (although some Indonesian airports require passengers to stand on scales with their bags).

As the obesity crisis worsens, however, and the price of jet fuel continues to spiral upward, such user-pay charge may be something the airlines can't ignore for too much longer.

Former Qantas chief economist Tony Webber caused a stir when he suggested airlines should charge heavier passengers more for their ticket. In this follow-up piece in the Sydney Morning Herald, he looks at the reasons why it's not happening.

There are numerous forces that drive fuel consumption aside from the weight of the empty aircraft and its payload (the people and the freight on the plane).

They include, but are not limited to, the distance travelled, the weight of the fuel itself, the flight path taken, the speed at which the aircraft travels, the descent trajectory, the age of the aircraft, congestion in the air and on the ground at the airport, weather conditions and pilot discretion.

I considered all of these factors when I spent months modeling fuel consumption, unlike other commentators in the media who have probably never worked for an airline and just write about them from time to time.

To determine the change in historical fuel consumption attributable to passengers carrying more weight onto the aircraft is difficult because all of these other forces driving fuel consumption must be isolated.

To isolate these forces requires reasonably sophisticated statistical modeling – part of my job at Qantas. Some airline people trust this approach others don't – I happen to. Some airlines can do it; others can't. Some airlines try to do it; others don't.

The difficulties in estimating the extra fuel consumption generated by carrying extra passenger weight means that it is difficult to determine what prices these passengers should pay.

This is likely to be one reason, among many, why all of the Aussie airlines rejected the notion of price discrimination by total passenger weight.

Worried about backlash

There are five bigger reasons though. The first is that they are worried about a backlash, quite understandably, although the polls suggest more people think it would be a good idea (but you'd have to believe the sample bias in the poll is small to believe this – a question for another day).

The second is that price discrimination may be fairer from the perspective of user-pays principles but it may not generate more revenue for the airline because it is difficult to know how the high-weight

travelers will respond to price increases compared to how the low-weight travelers will respond to price decreases.

It is conceivable that revenue may not change or indeed fall. That is clearly a major risk.

The third is that there is a capital cost to generating the infrastructure needed to weigh people and their baggage. That cost would have to be weighed against the present discounted value of the revenue benefits of price discrimination – but as indicated above the revenue benefits may be zilch.

The fourth is that they may be worried about legal consequences.

The fifth is that they've got bigger problems on their plate – such as a global economy that could be headed for GFC mark II at any stage, the elevated price of jet fuel and its volatility, and the partial breakdown of the connectivity between the oil price and the Australian dollar.

More fuel efficiency

Behind closed doors, the airlines may look at the issue of higher average passenger weights and the impact on fuel consumption more closely because they are extremely vigilant on fuel consumption.

Here are a few examples of the little things that airlines do to get their fuel consumption down – the meal trollies are made of lighter material; there is less paper in the front pocket; airplanes are washed more often to reduce friction; when planes come into the gate they are plugged into the airport's electricity supply to run air conditioning rather than burning jet fuel; the descent trajectory into airports is slow and continuous rather than in steps.

Space versus weight

Let me also address another issue that's been a source of confusion in the debate.

Bigger people who take up more room on a plane and impact the travel experience of the people sitting beside them is a different issue to people bringing more weight onto the plane.

The first has a potential revenue and brand impact (although I can't imagine that this is large) while the second has a cost impact because of the extra fuel burn issue.

Route performance

Airlines use average passenger weight assumptions to determine a measure called revenue ton kilometers – basically the weight of the people and the goods actually carried by the plane multiplied by the distance that this weight is transport by air.

They divide this by the maximum capacity of the aircraft to carrier people and goods – a measure called

available ton kilometers – to get what they call the load factor.

If the averaged passenger weight assumptions are incorrect by a few kilograms then a misguided view is generated about the load factor.

This can have an impact on the assessment of how the load on the plane affects actual fuel consumption.

Information about actual fuel consumption is an important driver of how much fuel should go on the plane for future flights (which is ultimately at the discretion of the aircraft captain).

It is for this reason that incorrect assumptions about average passenger weight may (or may not) influence the fuel that goes on the plane.

I never said pricing by passenger weight was going to be easy. Controversial – yes. Provocative – yes. Complicated – yes. And interesting – most definitely.

*[The two articles were first published in BusinessDay and the Sydney Morning Herald.
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Source: [University of Sydney](#).

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