



The Tokyo 2020 Olympic Games have been rescheduled to take place in July and August this year. **Christian Krekel** uses tools from the new science of wellbeing to assess whether the event should still go ahead and how likely it is to have been a worthwhile investment.

# Is Tokyo 2020 worth it?

The 2020 Olympic Games had to be postponed because of the pandemic. Now, about 5,100 athletes from 140 countries are expected to participate in Tokyo this summer. More than ever, the Games are seen as a sign of hope, after a long period in which Covid-19 has held the world in its grip.

As is often the case with ‘mega events’, even before the pandemic unfolded, there was a heated debate about the costs of the Tokyo Olympics. Officials estimated the costs to be around £9.2 billion, a figure that had already been contested in 2019 by Japan’s national audit office for not including a further £7.1 billion in indirect, Olympics-related costs (such as making public transport barrier-free).

Other sources have estimated the total costs to be much higher, at around £21 billion. But there is consensus that the postponement has increased costs, officially by £1.9 billion, making £11.3 billion the official costs of Tokyo 2020 – a figure only slightly larger than the official costs of London 2012, which cost £9.3 billion.

Whichever estimate one takes, the costs of hosting the Olympics are large. It is thus only natural to ask: is Tokyo 2020 worth it? This is an important question, not only because of the huge opportunity costs of staging a mega event like the Olympics (which for Tokyo 2020 are now largely sunk) but also because most research finds few to no tangible effects of hosting the Olympics on the economy.

One review concludes that ‘in most

cases the Olympics are a money-losing proposition for host cities’ (Baade and Matheson, 2016). So long before the pandemic, many potential host cities have made their case by highlighting intangible effects, especially on the wellbeing of residents in the host city and country.

While the tangible effects of hosting are indeed likely to be low in the current climate, where investment or tourism are unlikely to pick up substantially in the summer, it is likely that such intangible impacts – the ‘cheer-up’ factor after a year and a half of Covid-19 misery – may gain in relevance.

While we cannot conclusively say whether Tokyo 2020 is worth hosting, we can make some cautious back-of-the-envelope calculations to look at whether

the likely wellbeing benefits for residents in the host city and country justify its costs. We do this in two ways:

■ First, we take the perspective of the organisers for whom the original costs are largely sunk and only the costs of postponing still accrue. We ask: should Tokyo 2020 still go ahead?

■ Then, we look at the total costs, including the original costs of hosting plus the costs of postponing. We ask: on the whole, is it likely that Tokyo 2020 will have been a worthwhile investment?

### Estimating the wellbeing effects of hosting the Olympics

For our calculations, we draw on a recent study of ours in which we estimate the causal effect of hosting the Olympics on the wellbeing of residents in the host city, using the example of London 2012 (Dolan et al, 2019).

To estimate the causal effect of hosting, we collected data on the life satisfaction of the same residents in London, Paris and Berlin during the summers of 2011 (one year before the Games), 2012 (the year in which the event took place) and 2013 (the year after).

We then employed what's called a 'difference-in-differences' research design, comparing the life satisfaction of Londoners (our 'treatment' group) with that of Parisians and Berliners (our 'control' group, which exhibited a similar time trend before the event) over time.

We found that relative to Parisians and Berliners, Londoners experienced a significant and substantial rise in wellbeing during the time in which the Olympics took place: their life satisfaction increased, on average, by 0.2 points on a 0-10 scale – a large effect.

### Monetising the wellbeing effects of hosting

One of the huge advantages of the new science of wellbeing is that we can now monetise this impact using a simple formula. It has three steps:

■ We note that log household income has been shown to increase life satisfaction by about 0.7 points (Sacks et al, 2010).

■ We note that the average household income in Japan is £36,800, the average household size in Tokyo is about 2.9

people, and the population of Tokyo is about 14 million.

■ We obtain the 'value' of hosting the Olympics as  $(0.2 \times 14,000,000 \times 17) /$  (marginal utility of daily income per person)  $= 0.2 \times 14,000,000 \times 17 \times (£36,800 / (0.7 \times 365 \times 2.9)) = £2.4$  billion. The individual willingness-to-pay to host is  $£2,400,000,000 / 14,000,000 = £171$ .

In other words, if we expect the wellbeing benefit of Tokyo 2020 to the residents of Tokyo to be anywhere near that of London 2012 to the residents of London, the expected total monetised wellbeing benefit of Tokyo 2020 will be around £2.4 billion.

### A wellbeing cost-benefit analysis of Tokyo 2020

#### Should Tokyo 2020 still go ahead?

Comparing the costs of postponing of £2.9 billion with the expected total monetised wellbeing benefit of around £2.4 billion, the answer seems 'probably yes'.

But this may be a naive comparison, for several reasons: first, the expected total monetised wellbeing benefit is likely to be an underestimate of the true benefit, considering that not only the people of Tokyo but also people in Japan as a whole will benefit from the event. Moreover, we restricted our calculations to the core city. The greater Tokyo metropolitan area, however, counts more than 37 million inhabitants. We will turn to this point in more detail below.

Second, it is likely that by now, some of the costs of postponing have already accrued and are thus sunk. In fact, if by now more than £0.5 billion have accrued (which is likely), it would tilt the odds in favour of hosting.

Finally, not hosting may generate substantial wellbeing 'disbenefits', at least among those who were looking forward to

the event. Such wellbeing disbenefits count as opportunity costs (of not hosting), and if they are large enough (at least larger than £0.5 billion when monetised), they would again tilt the odds in favour of hosting. By the same token, the logistical and political costs of not hosting, which are difficult to quantify, would make hosting more favourable.

From the perspective of the organisers, therefore, the case seems to be clearer: Tokyo 2020 should go ahead.

### Is it likely that Tokyo 2020 will have been a worthwhile investment?

Comparing the total costs of £11.3 billion with the expected total monetised wellbeing benefit of around £2.4 billion, the answer seems 'no'. The costs of staging the event are almost five times larger than its expected benefits, at least in terms of wellbeing.

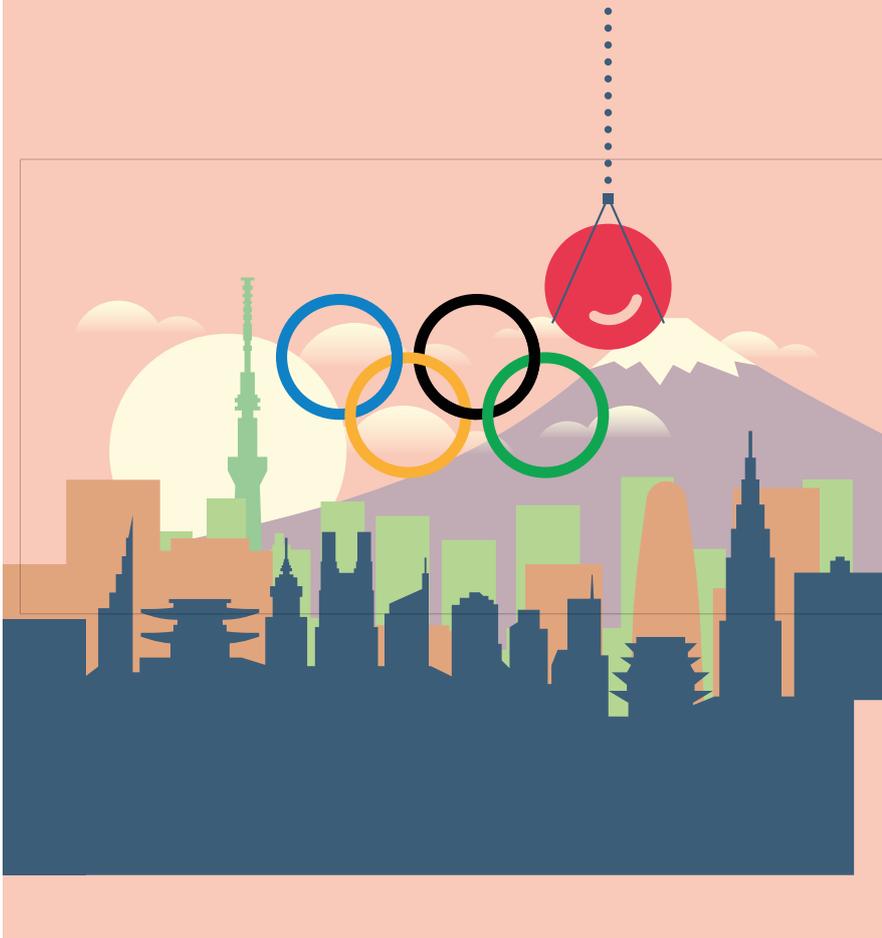
But again, this may be a naive comparison. After all, not only the people of Tokyo will be following the event but also people in Japan as a whole (about 126 million). They too may generate wellbeing benefits, not to speak of the many people around the world who will be watching from a distance (although since people outside Japan do not pay for the Olympics, they should be left out of our calculations).

The question then becomes: how much of the expected wellbeing benefit to the people of Tokyo would have to spill over to people in the rest of Japan to make it likely that Tokyo 2020 will have been a worthwhile investment? The answer is about 47%, a figure that is similar to the spillover required to make London 2012 a worthwhile investment.

In other words, if about half of the expected wellbeing benefit to the people of Tokyo would spill over to people in the rest of Japan, it is likely that Tokyo 2020 will have been a worthwhile investment. Such a spillover is not unrealistic: in the case of London 2012, Atkinson et al (2008) found that people outside London were willing to pay about half the amount that Londoners were willing to pay to host the event.

Conditional on achieving wellbeing benefits in the ballpark of London 2012 and a sufficient spillover from Tokyo to the rest of Japan, it is therefore not unrealistic to think that Tokyo 2020 will have been a worthwhile investment.

From the perspective of the organisers, Tokyo 2020 should go ahead



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## Further reading

Giles Atkinson, Susana Mourato, Stefan Szymanski and Ece Ozdemiroglu (2008) 'Are We Willing to Pay Enough to 'Back the Bid'? Valuing the Intangible Impacts of London's Bid to Host the 2012 Summer Olympic Games', *Urban Studies* 45(2): 419-44.

Robert Baade and Victor Matheson (2016) 'Going for the Gold: The Economics of the Olympics', *Journal of Economic Perspectives* 30(2): 201-18.

Andrew Clark, Sarah Flèche, Richard Layard, Nattavudh Powdthavee and George Ward (2018) *The Origins of Happiness: The Science of Well-Being Over the Life Course*, Princeton University Press.

Paul Dolan, Georgios Kavetsos, Christian Krekel, Dimitris Mavridis, Robert Metcalfe, Claudia Senik, Stefan Szymanski and Nicolas Ziebarth (2019) 'Quantifying the Intangible Impact of the Olympics using Subjective Well-being Data', *Journal of Public Economics* 177.

Paul Frijters and Christian Krekel (2021) *A Handbook for Wellbeing Policy-Making*, Oxford University Press.

Daniel Sacks, Betsey Stevenson and Justin Wolfers (2010) 'Subjective Well-Being, Income, Economic Development and Growth', National Bureau of Economic Research Working Paper No. 16441.

## Outlook

Hosting the Olympics costs the taxpayer billions of pounds. But the Games can also generate substantial wellbeing benefits in the host city and country, which, when large enough, may justify its cost. This may be especially the case in difficult times, where the Olympics as a festive and communal event may have a substantial 'cheer-up' factor, not only in the host city and country but also for people around the world.

We conducted a simple wellbeing cost-benefit analysis showing that, under several simplifying yet realistic assumptions, Tokyo 2020 will have likely been a worthwhile investment, as a whole and in its postponed format. (See Frijters and Krekel, 2021, for an extensive discussion of using wellbeing for policy analysis and evaluation.)

It should be clear that there is a high degree of uncertainty around some of our assumptions and that, for a complete account of the costs and benefits, various other factors could be considered. For

example, our wellbeing cost-benefit analysis could easily be extended to the hypothetical case of postponing Tokyo 2020 once more, to 2022.

A final word is needed to put the Olympics into perspective: in Dolan et al (2019), we do not find legacy effects on wellbeing in the host city. While the Games can generate substantial wellbeing benefits in the *short run*, from a policy perspective, it remains questionable whether there are no alternative investments in other public goods that generate wellbeing benefits that may be initially lower but that may accrue over longer time horizons, making these investments relatively more worthwhile. The Olympics generate strong but only very short-lived wellbeing benefits.

Whatever uncertainty around their costs and benefits exists, the Tokyo 2020 Olympic Games are, with certainty, a positive outlook after a long year and a half in which Covid-19 has dominated the world and many sports events have had to be cancelled.

The substantial wellbeing benefits of the Olympics in the host city and country may justify the costs