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Gössling et al. (2023) claim to calculate the welfare effect of a 130 kph speed limit in Germany. By ignoring tax revenues from gasoline and diesel, they overestimate the welfare gain by about 378 million Euros. A speed limit raises travel times. Gössling et al. (2023) calculate travel time increases with a simplistic approach that underestimates the costs with a magnitude of their complete (tax adjusted) welfare effect. A speed limit induces some traffic to switch mode or not to travel at all. The reduced costs of less car travel are decisive for their calculation, but the losses of consumer rent associated with reduced travel are ignored. Gössling et al. (2023) do not calculate a value that is related to the welfare changes of a highway speed limit of 130 kph for Germany.

Gössling et al. (2023) calculate that a 130 kph speed limit in Germany will generate welfare gains in the order of at least 950 million Euros per year.

Gasoline in Germany is taxed at 65.45 Cent/l and diesel at 47.04 Cent/l. The tax internalizes (part) of the negative external effects of driving (fast) (Tscharaktschiew, 2014). Taxes are transfer payments and should not be included as real economic costs (European Commission, 2014). However, Gössling et al. (2023) include the tax savings as reduced costs. Assume a reduction in consumption of 436.66 million liters of gasoline (E10) and 196.14 million liters of diesel the tax savings are 378 million Euros, about 40% of their calculated sum of 951.5 million Euros, which should be reduced to a tax corrected value of 573,1 million Euros.

Gössling et al. (2023) claim that "All calculations use conservative assumptions, i.e. where there is uncertainty in regard to unit costs, lower values are used." What they presumedly want to do is not use lower values all the time, but rather values (and assumptions) that decrease the benefits or increase the cost of the speed limit so as to obtain an estimate at "the low end", guaranteeing that the true value is higher. This is not the best approach for calculating costs and benefits. Usually, in CBA, parameters are not lower bounds, but best estimates, and to deal with uncertainty, a sensitivity analysis is presented. However, Gössling et al. (2023) do not do what they claim, and also use non-conservative assumptions. In part 4.1.1, Gössling et al. (2023) calculate time losses by comparing the average speed with and without a speed limit. They use an equal split in work and leisure transport motivations, and use the German gross average wage of 28.77 Euros for work and 70% of this value as leisure time value. In the CBA for infrastructure planning in Germany, the highest value used is 75 Euros (for long distances) (in 2015 Euros) (BMVI, 2016). The assumption of 28.77 Euros for work-related travel underestimates the travel time costs for most work-related travel and contradicts the claim of using conservative assumptions.

The use of average speeds to calculate time costs is a misleading oversimplification. Because cars driving faster use more petrol and therefore driving becomes

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more expensive, drivers choose their optimal driving speed depending on these additional costs and their individual value of reduced travel time. A person with high opportunity costs of time may be willing to pay the extra money and one person with lower opportunity costs may not.

Driver heterogeneity therefore changes the welfare effects. A simple example with two types of drivers clarifies the argument: Assume two types of drivers, a low time-value type who aims at a speed of 115.127 kph and a high time-value type who aims at a speed of 160 kph (without a speed limit) and 130 kph with a speed limit. If the low type drives 78.7% of the distance, and the high type 21.3%, the average speed reduction occurs as assumed in Gössling et al. (2023). The low time-value type is unaffected by the speed limit, but the high time-value type suffers time losses. 24.410 million vehicle km (vkm) are driven by the high type of person, and the time lost is 35.2 million hours. To obtain the same average value of travel time as Gössling et al. (2023), I assume that the low type's value of travel time is the leisure time value used by Gössling et al. (2023) and that the value of travel time for the high type is 49.17 Euro, which is a reasonable value for professions like economists, managers, politicians. Higher values are used in Germany for CBA of transport infrastructure if driving distance is above 272 km (BMVI, 2016). The resulting value of time lost is 1.731 millionen Euros, 678 million Euros more than the value calculated by Gössling et al. (2023) by using simple averages. The tax-adjusted welfare gain vanishes when heterogeneity is included.

Gössling et al. (2023) state that higher speeds increase transport demand, and therefore, a speed limit decreases this demand. The decrease in transport demand caused by a speed limit is calculated on a completely ad hoc basis. Demand decreases by the vehicle kilometers that can be travelled with the same amount of CO2 emissions that the Umweltbundesamt (UBA) calculates as avoidable with a speed limit of 130 kph. This reduction in traffic of 4.17% is the source of more than half of their calculated welfare gains. However, reduced traffic means that some car traffic now shifts to train or airplane, or does not occur at all. The resulting losses in consumer rent are completely missing in Gössling et al. (2023). Moreover, the ad hoc assumption of 4.17% is more than twice as high as the model-based estimate of 1.8% (Umweltbundesamt, 2023, p. 210), which was calculated for an even stricter speed limit of 120 kph. Selling this as a "conservative assumption" is misleading.

To summarize, by not presenting a proper CBA, but combining parameter values "at the low end" as well as at the high end with ad hoc simplifications and omissions of key effects, 950 million Euros can not be seen as an (even rough) approximation of welfare changes induced by a 130 kph speed limit in Germany.

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