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16. Abstract <p>Fuel consumption rates were studied from a naturalistic driving data set employing a fleet of identical passenger vehicles with gasoline engines and automatic transmissions. One hundred and seventeen drivers traveled a total of over 342,000 kilometers (213,000 miles), unsupervised, using one of the experiment's instrumented test vehicles as their own. Continuous monitoring of hundreds of data signals, including fuel flow rate, provides a unique data set of driving behavior with a common vehicle. The results are presented for both the overall fuel consumption as well as fuel consumption for speed-keeping and accelerating-from-rest events.</p> <p>A substantial variation in the overall fuel consumption rate was observed. The differences between the mean consumption rate and the fuel consumption rates for the 10th and 90th percentile drivers were 13 and 16 percent, respectively, of the mean value. The corresponding differences between the 10th and 90th percentiles and the mean for both speed-keeping events and accelerating-from-rest events were up to 10 percent.</p> <p>While some of the obtained variation in fuel economy is likely due to uncontrolled or unmeasured factors, such as passenger and fuel weight, and wind, the data imply that the behavior of real-world drivers adds significant variation to fuel consumption rates. The present findings suggest the possibility of substantial potential gains in real-world efficiencies through modification of driver behavior itself (e.g., through training), or for electronic modulation technology between the driver's foot and the throttle to modify a relatively wasteful driver into a more efficient one.</p>					
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