

Mean speed and speed compliance in Sweden 2015-2022

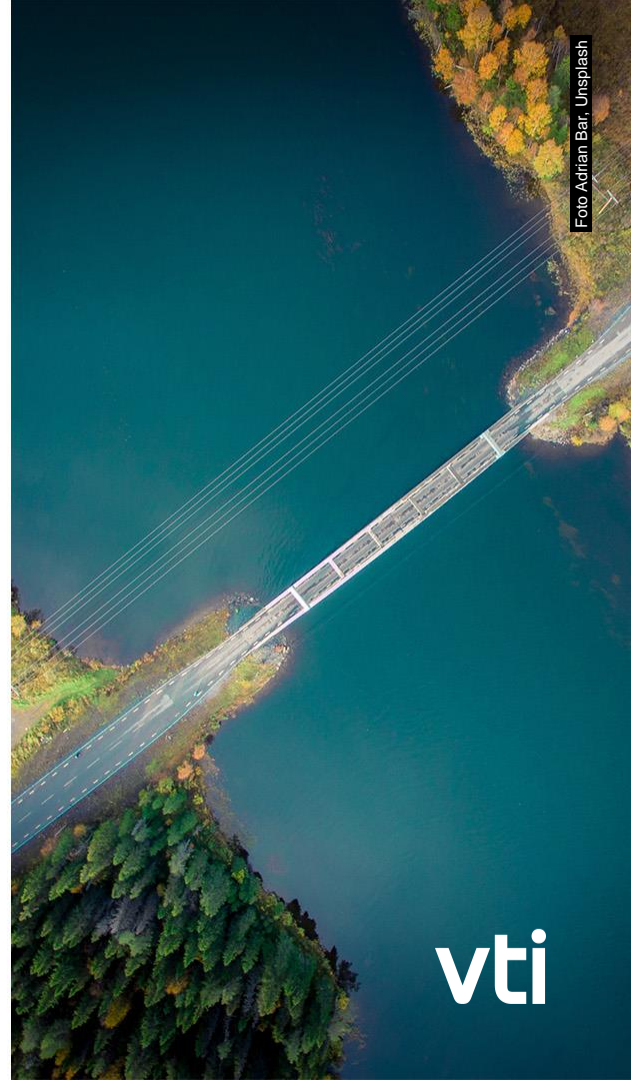
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Background and aim

- In recent years, the Swedish speed index shows that both the average speed and the proportion of speed violations have decreased.
- The aim is to
 - Investigate the change in speed in more detail, for example per region and per speed limit
 - Examine which factors may have influenced drivers' speed compliance

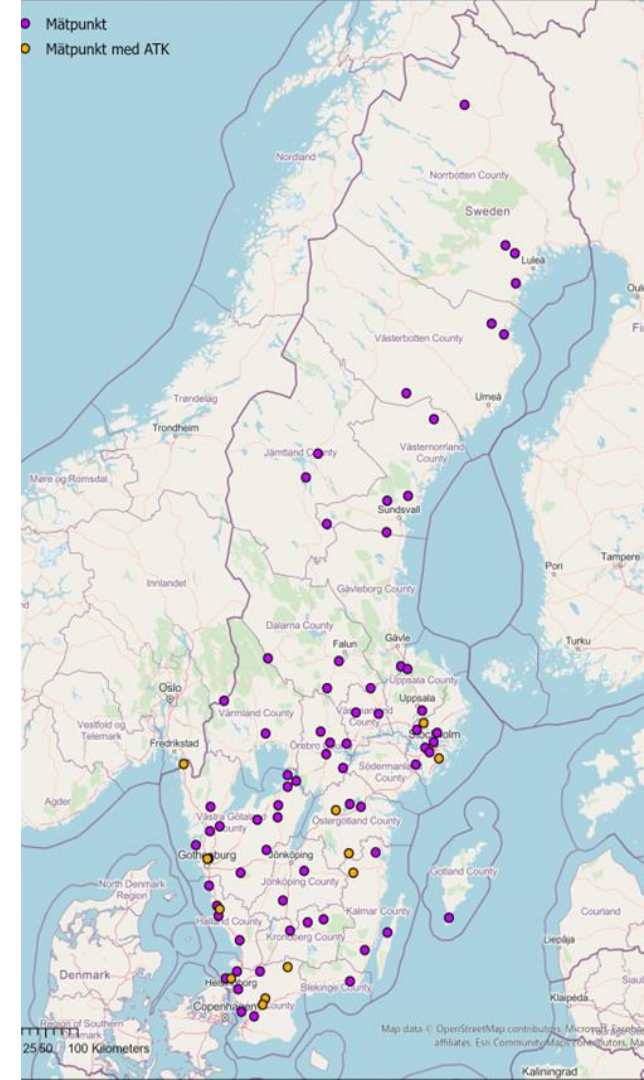


Which factors may affect speed choice?

- Police enforcement: previous research shows that increased enforcement leads to lower speeds (both manual surveillance and speed cameras)
- Fuel prices: the hypothesis is that higher prices lead to lower speed to reduce fuel consumption
- The number of slow-moving vehicles on the roads (moped cars and A-tractors)
- The number of electric cars on the roads: drivers of electric vehicles may choose lower speeds because of range anxiety or high electricity prices. On the other hand, electric cars are comfortable to drive in high speeds.
- In-vehicle systems: systems that supports the driver (ISA, adaptive cruise control) may lead to lower speeds.

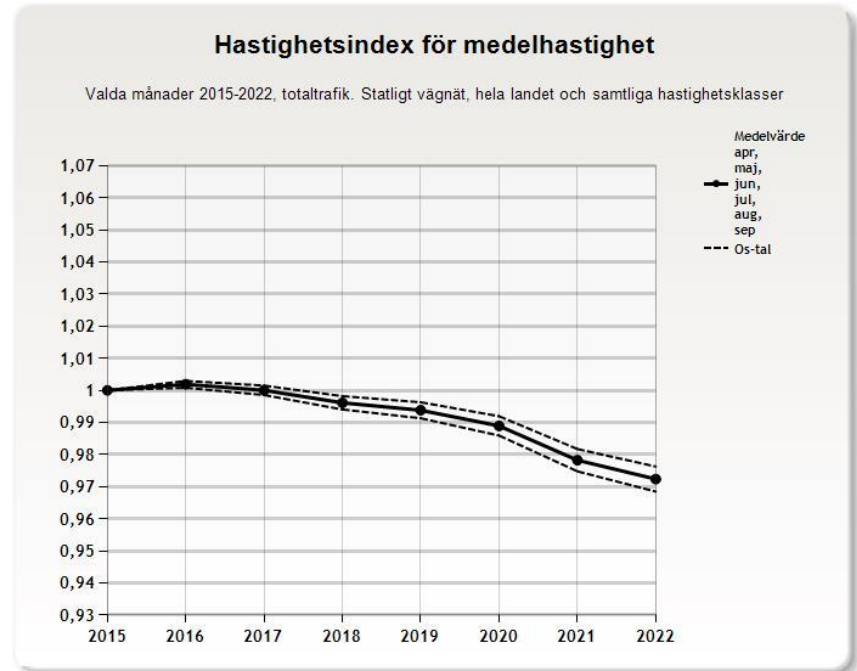
The Swedish speed index

- 83 measurement sites on state roads
- Cover all speed limits
- Fixed measuring stations that measure all year round
- Effects of local measures such as changing speed limits or installation of speed cameras are excluded from the index
- In this study we focus on the period April-September to avoid winter road conditions
- We also conducted our own analyses based on these sites.



Speed index for mean speed

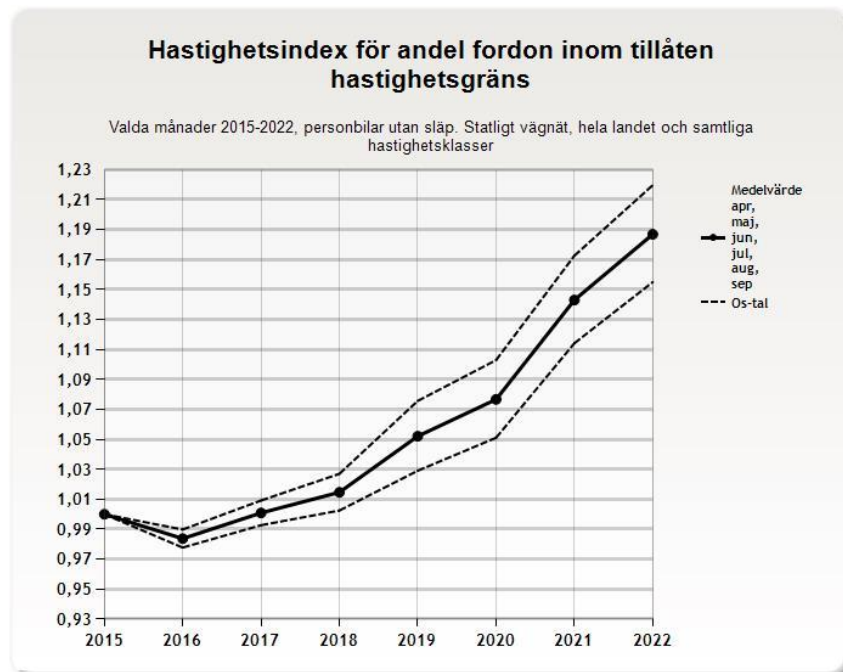
- All type of vehicles
- April-September 2015-2022
- Mean speed has decreased by 3 %, which corresponds to about 2 km/h
- The decrease started around 2018



Source: <https://bransch.trafikverket.se/tjanster/trafiktjanster/vagtrafik--och-hastighetsdata/Hastighetsindex/>

Proportion of vehicles within the speed limit

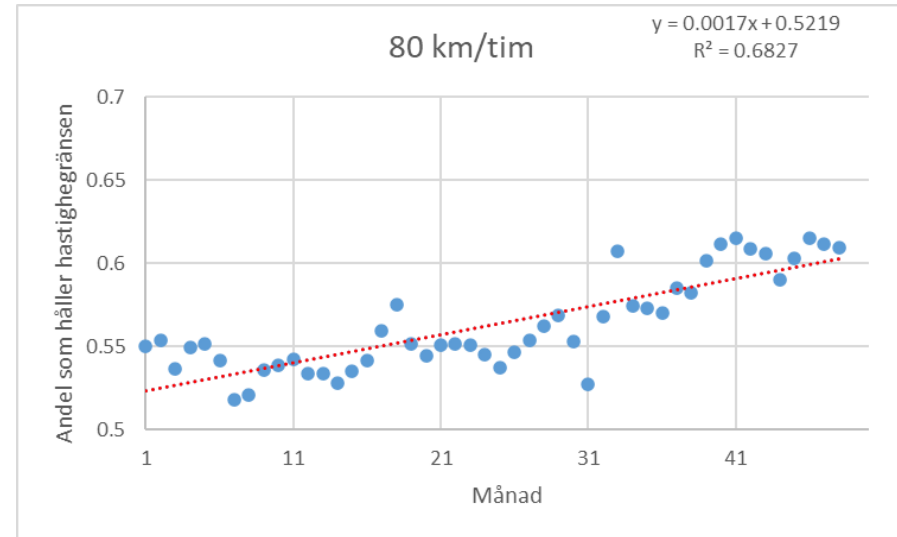
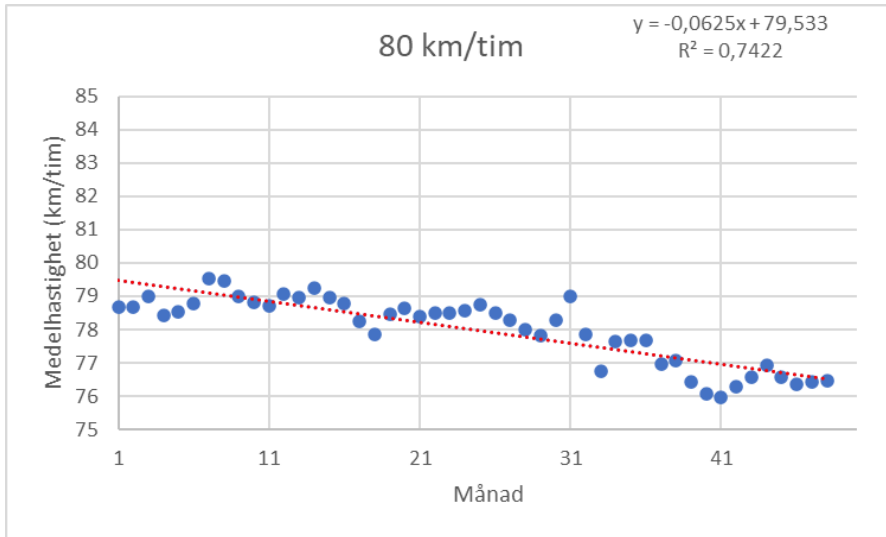
- Passenger cars without trailer
- April-September 2015-2022
- Speed compliance has increased by almost 20 %, biggest change between 2020 and 2021



Source: <https://bransch.trafikverket.se/tjanster/trafiktjanster/vagtrafik--och-hastighetsdata/Hastighetsindex/>

Mean speed and speed compliance on roads with 80 km/h

- Passenger cars without trailers
- April-September
- Monthly values: month 1 = April 2015, month 48 = September 2022



Mean speed changes

- Passenger cars without trailer

Speed limit	Number of points*	Estimated** mean speed April 2015 (km/h)	Estimated** mean speed September 2022 (km/h)	Difference (km/h)	Relative change (%)
50	8	57,0	54,9	-2,1	-3,8%
60	4	65,0	63,1	-2,0	-3,0%
70	21	72,6	70,2	-2,4	-3,3%
80	8	79,5	76,5	-2,9	-3,7%
90	11	90,0	86,0	-4,0	-4,4%
100	12	102,3	100,7	-1,6	-1,5%
110	12	113,7	110,8	-3,0	-2,6%
120	4	121,2	120,9	-0,2	-0,2%

- *2 points per site, both directions
- **estimated from the regression line

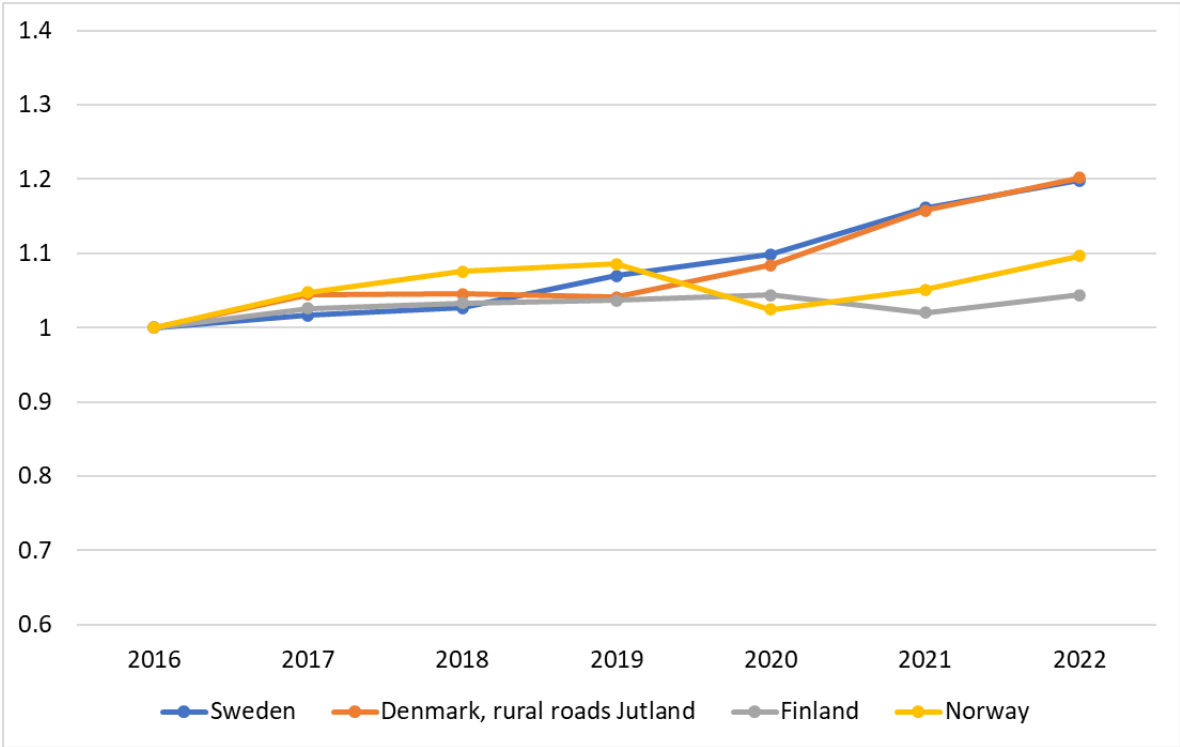
Changes of proportions within the speed limit

- Passenger cars without trailer

Speed limit	Number of points*	Estimated** proportion within the speed limit April 2015	Estimated** proportion within the speed limit September 2022	Difference (percentage points)	Relative change (%)
50	8	28,0%	34,6%	6,6	23,5%
60	4	33,1%	39,3%	6,1	18,4%
70	21	42,1%	49,8%	7,7	18,2%
80	8	52,4%	60,4%	8,0	15,3%
90	11	47,7%	62,2%	14,6	30,6%
100	12	47,5%	47,0%	-0,4	-0,9%
110	12	38,4%	45,9%	7,5	19,6%
120	4	42,6%	40,2%	-2,4	-5,5%

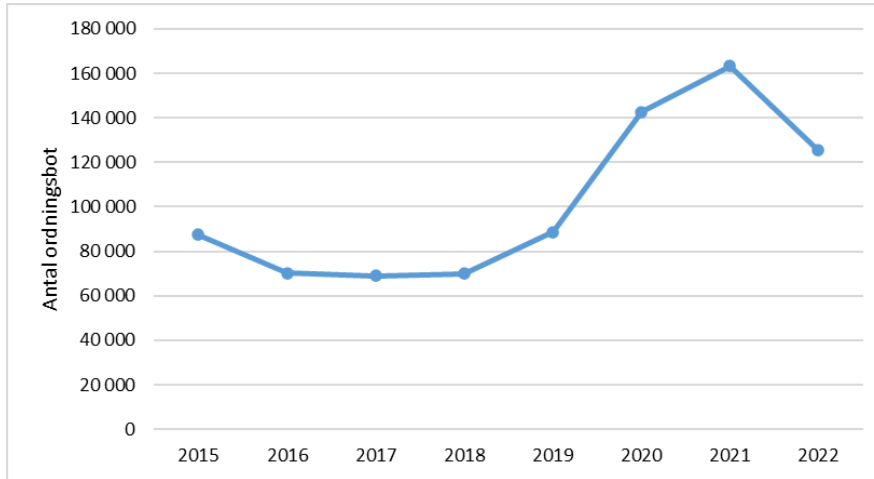
- *2 points per site, both directions
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Comparison with other Nordic countries, proportion of drivers that complies with the speed limit

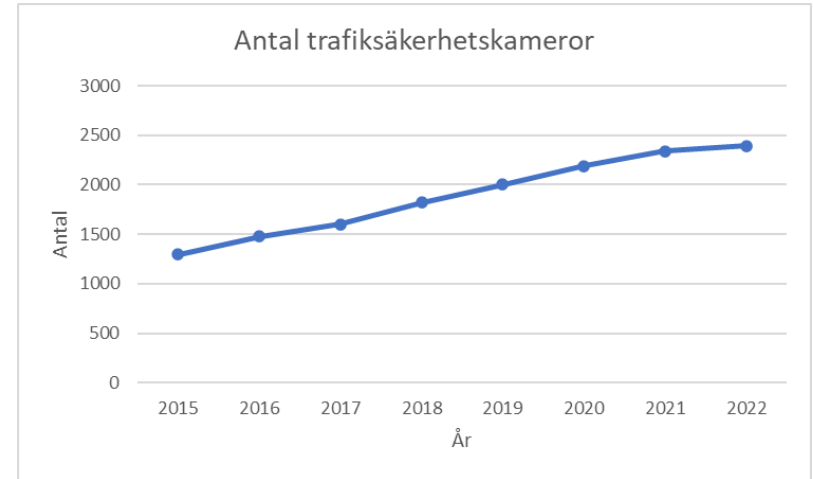


Enforcement

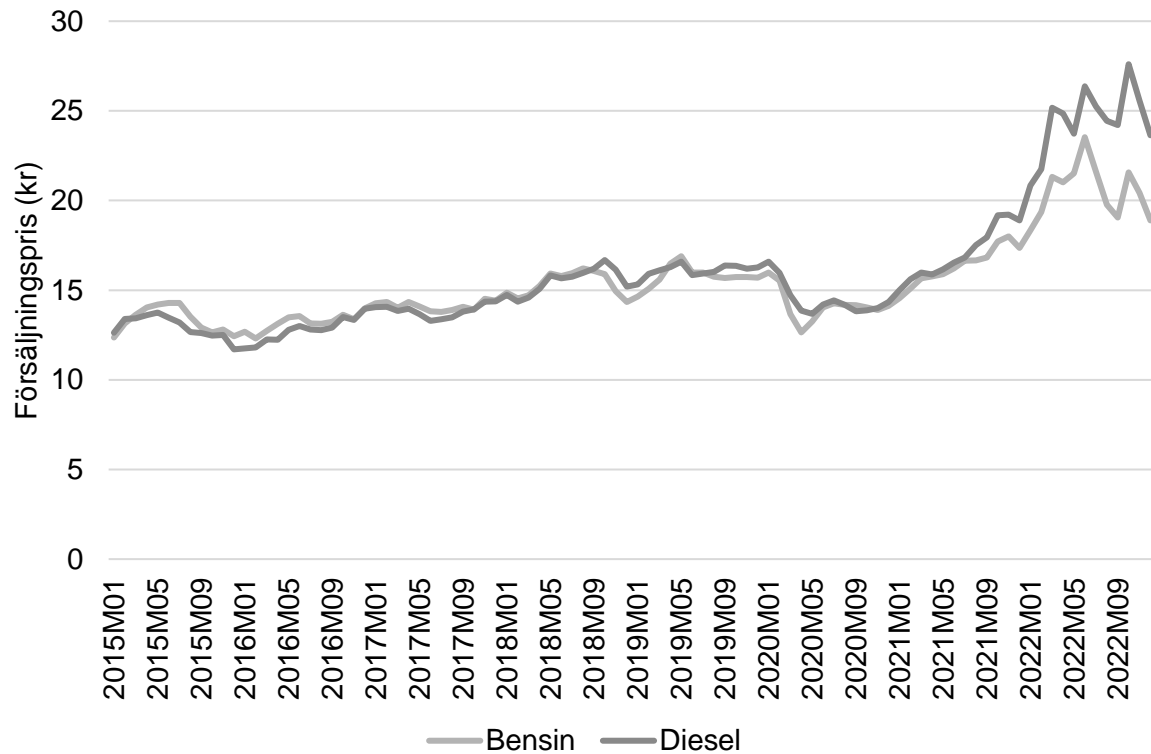
- Number of tickets, manual surveillance



- Number of speed cameras

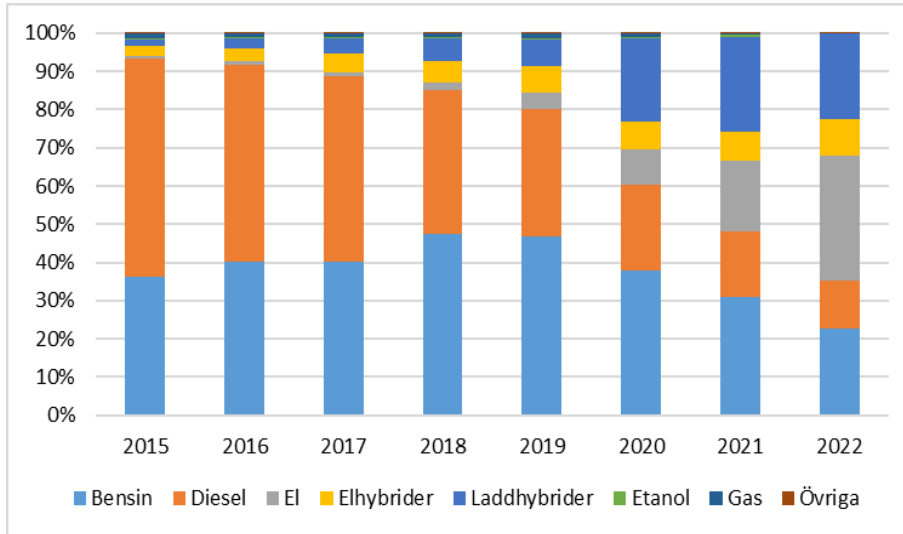


Fuel prices

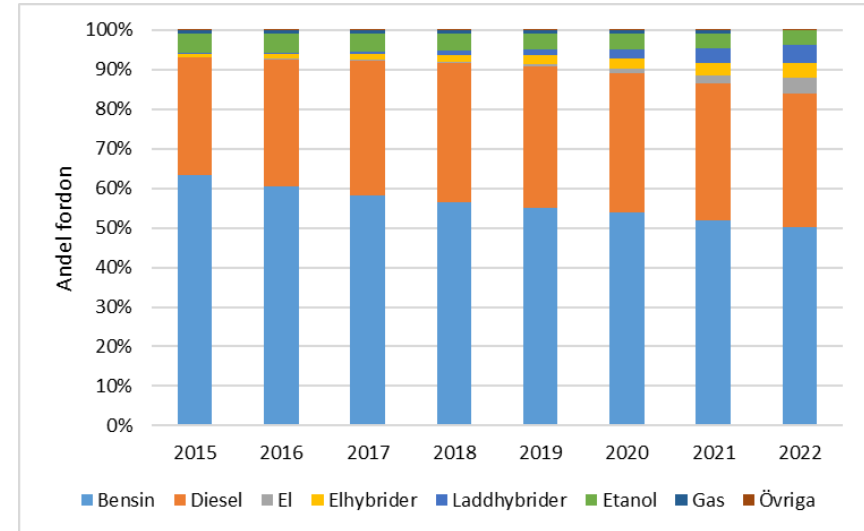


Composition of the vehicle fleet – passenger cars

- New registrations

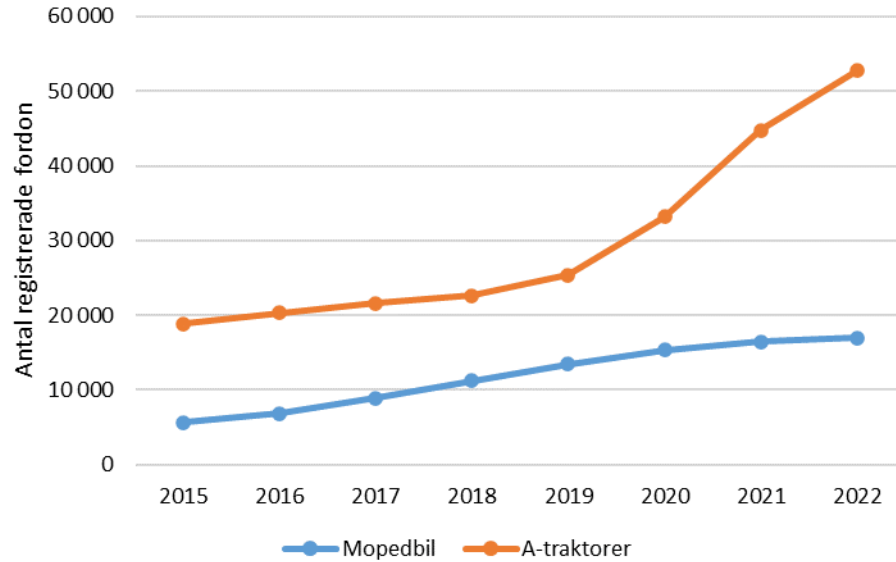


- All vehicles



Slow-moving vehicles

- Number of registered moped cars and A-tractors



Slow-moving vehicles and passenger cars

Type of vehicle	Total number of vehicles	Proportion
Moped cars	16 948	0.3 %
A-tractors	52 711	1.0 %
Electric cars (electricity+plug-in hybrids)	437 240	8.7 %
Other passenger cars	4 543 303	90.0 %
Total	5 050 202	

Conclusions 1(3)

- Police enforcement
 - The number of tickets increased during 2020 and 2021, which may have contributed to lower speeds during this period.
 - The number of speed cameras have increased steadily over the period which may have had a calming effect on speeds in general. But this is difficult to verify and quantify.
- Fuel prices
 - The prices increased sharply at the end of 2021 och 2022, which may have contributed to lower speeds. However, we do not know if higher prices leads to lower speed – research is needed in this area. Also, the speeds were not affected in Finland and Norway during this period.

Conclusions 2(3)

- Slow-moving vehicles
 - The number of moped cars and especially A-tractors increased during the period, but still, they only stands for a small part of all vehicles. They might therefore affect the speed locally, but probably not on the national level. The speeds also decreased on motorways (110 km/h) where these vehicles are not allowed.
- Electric cars
 - The number of electric cars increased during the period. If drivers of electric cars complies with the speed limit to a greater extent than other drivers, this may have contributed to lower speeds. However, we did not find any studies about this hypothesis, so we do not know how electric cars drivers behave.

Conclusions 3(3)

- In-vehicle systems that supports the driver to chose correct speed:
 - We do not (yet) have data on how commons these systems are.

An aerial photograph of a city street intersection. A large white rectangular box is centered over the image, containing text. The street below shows a crosswalk, a bicycle lane with a bicycle symbol, and a building on the right side. The text 'Thank you for listening!' is written in a bold, black, sans-serif font.

Thank you for listening!

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