

# Potential and realized shift to rail

- freight and passenger transport

Krister Sandberg 2022-05-18

[krister.sandberg@trafa.se](mailto:krister.sandberg@trafa.se)



## Freight transport

Ton and ton km  
Economics



## Passenger transport

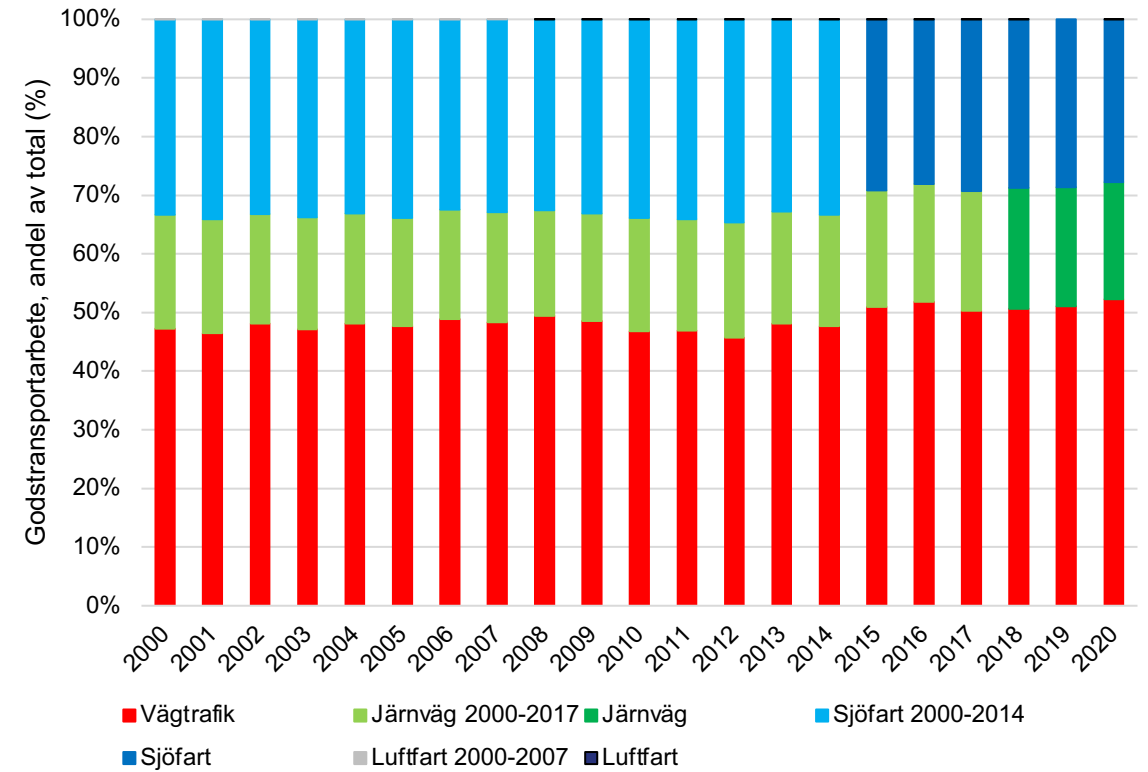
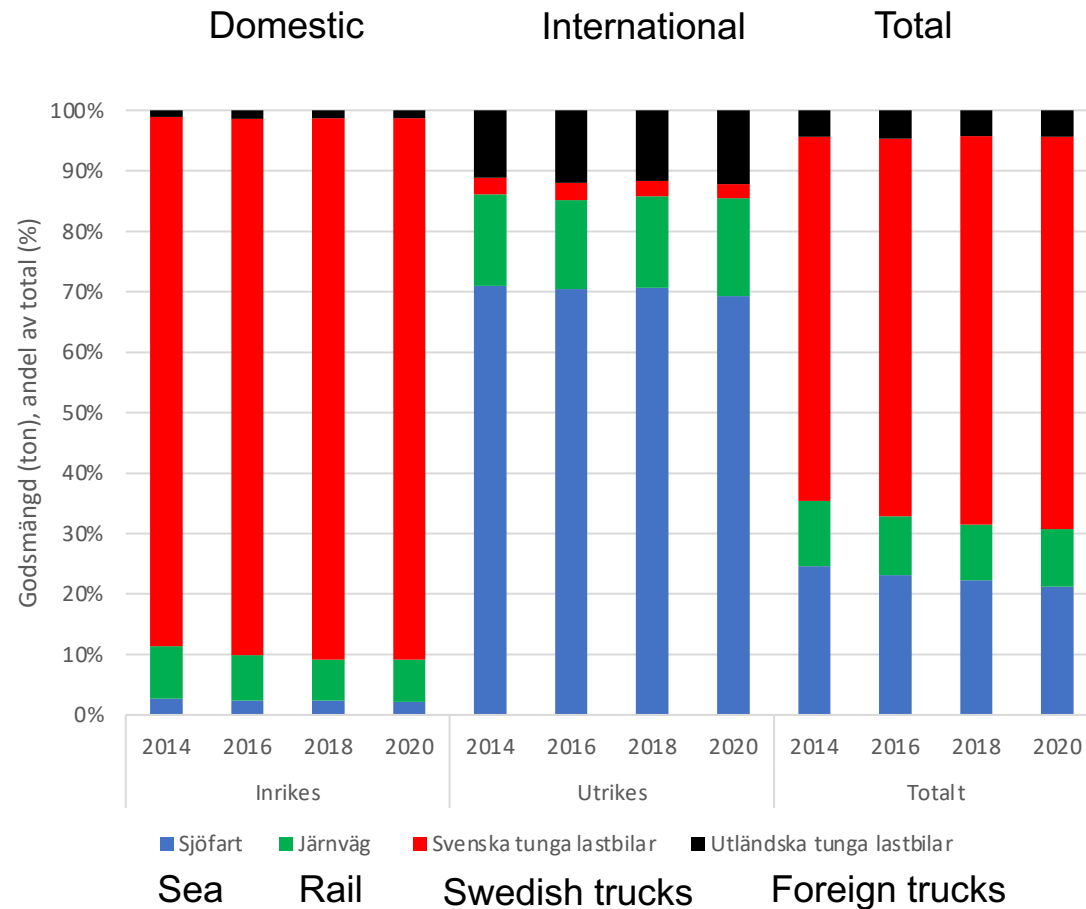
Pkm  
Social factors



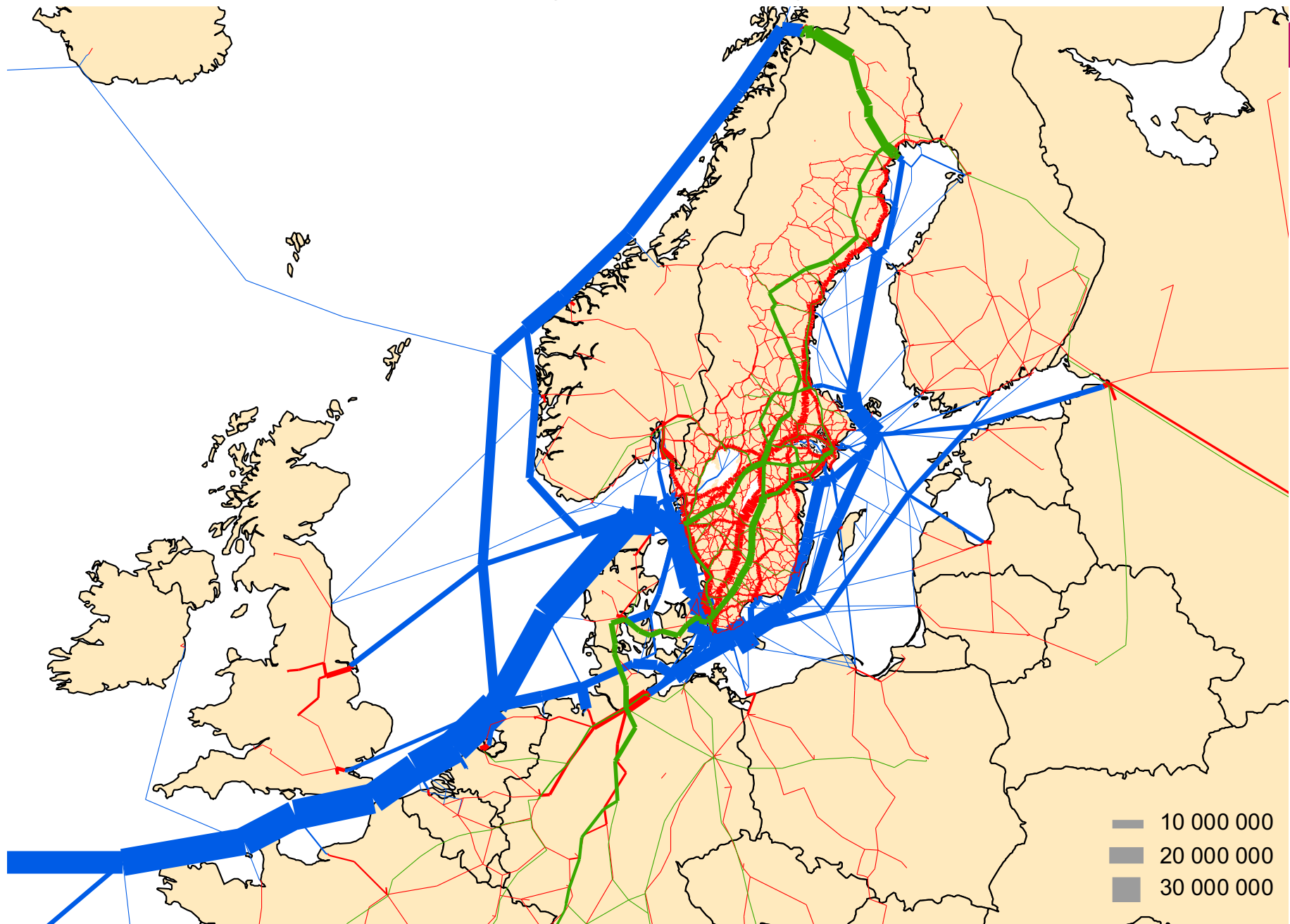
## Conclusions

# Tons

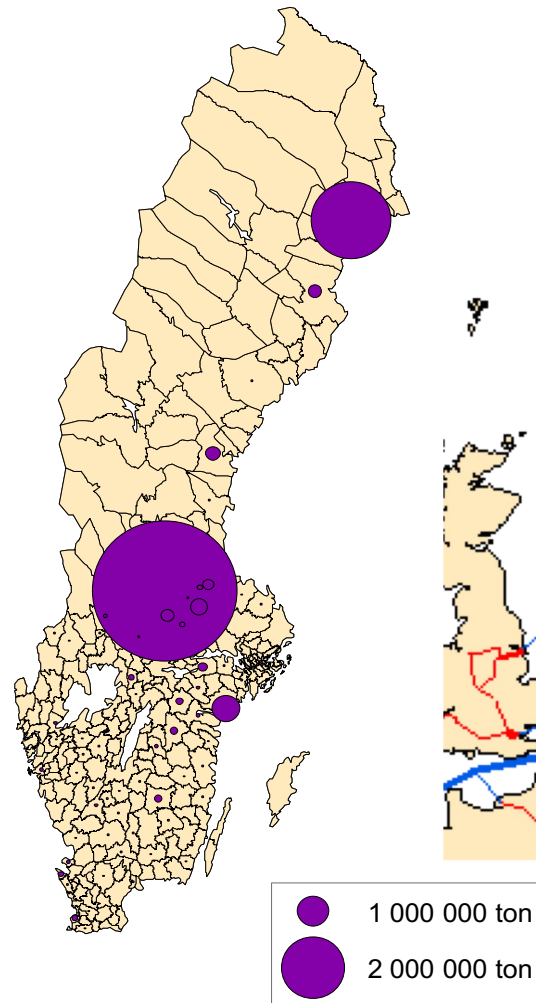
# and ton-km



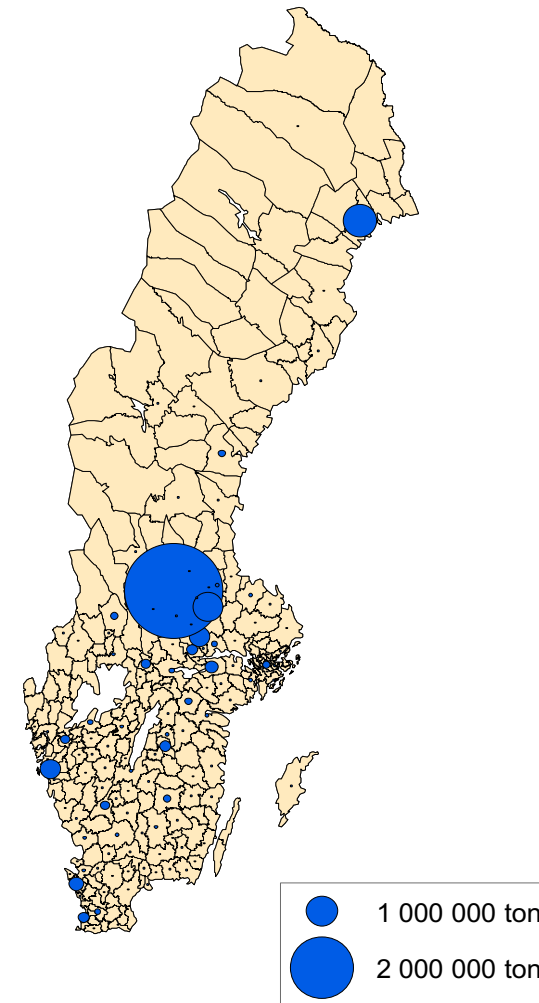
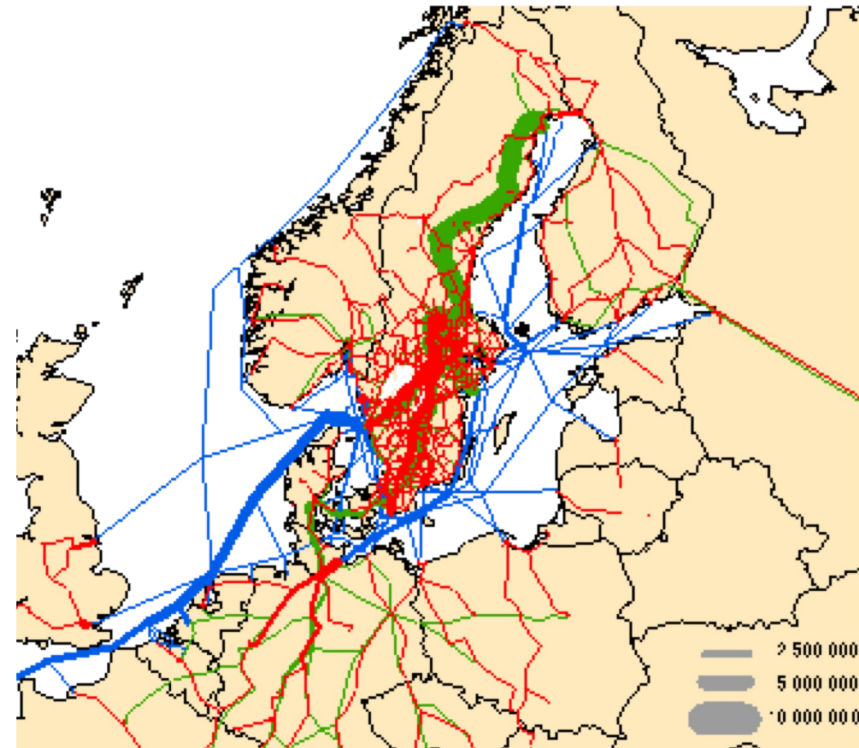
# Total tonnage and main freight corridors



# Steel, metal and metal goods

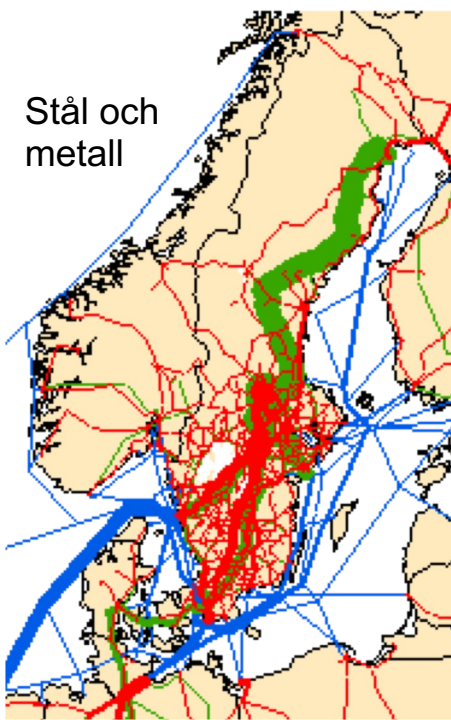


Production

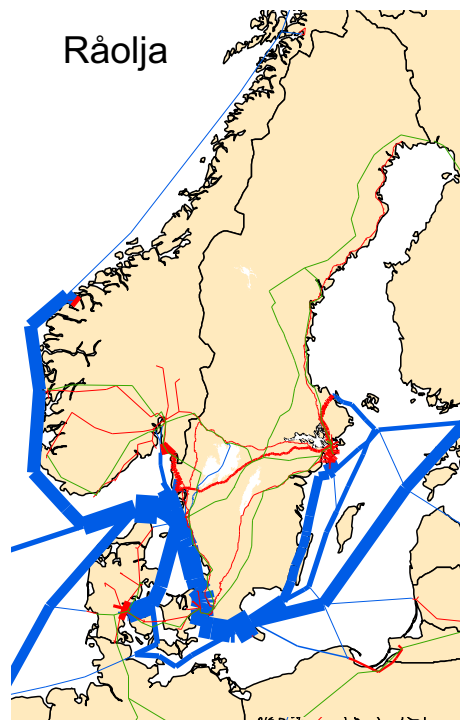


Consumption

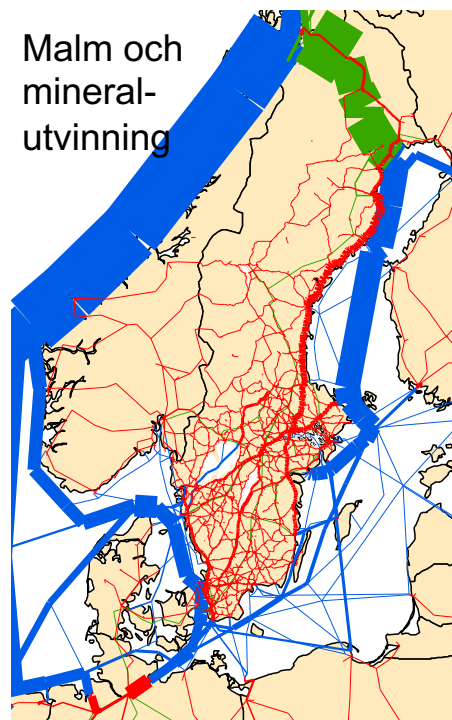
Stål och metall



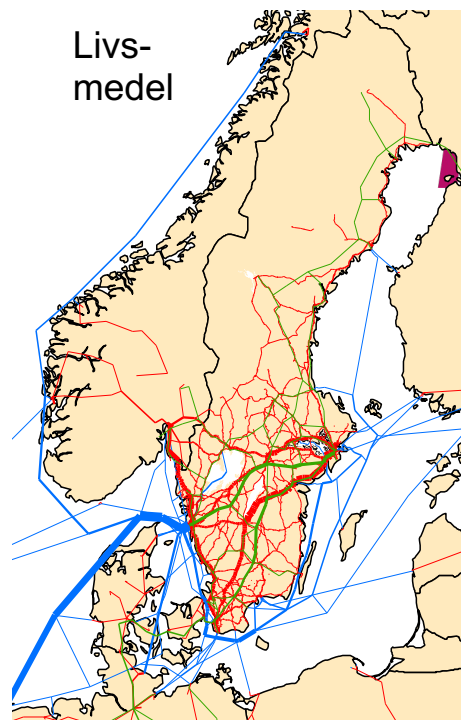
Råolja



Malm och mineral-utvinning

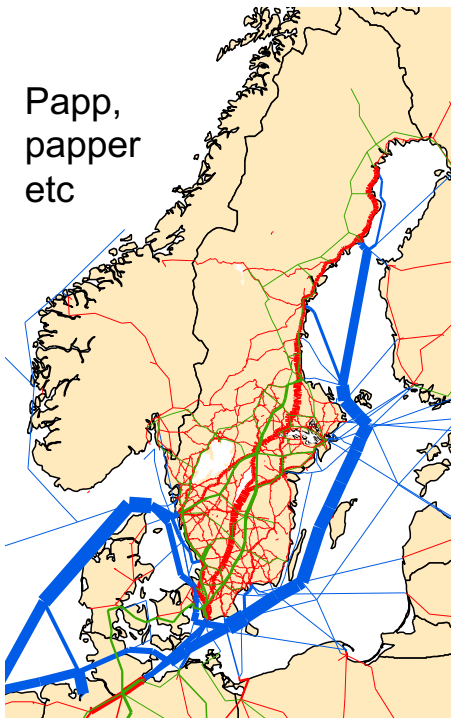


Livs-medel

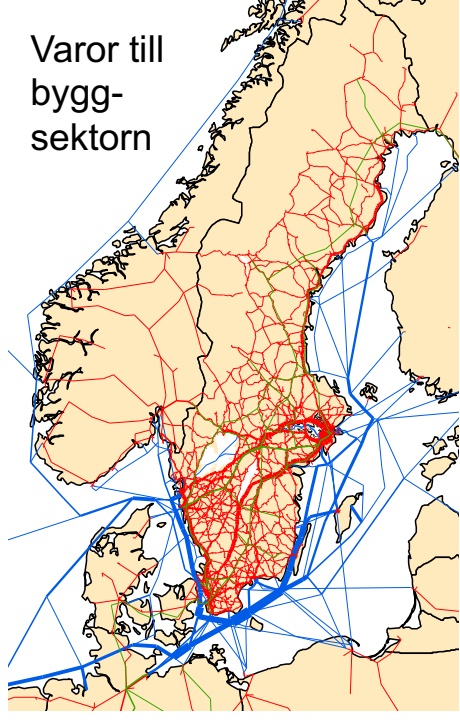


TRAFIK ANALYS

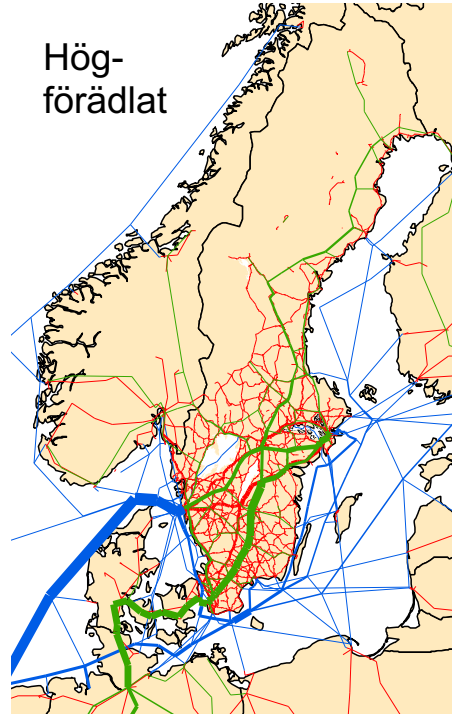
Papp, papper etc



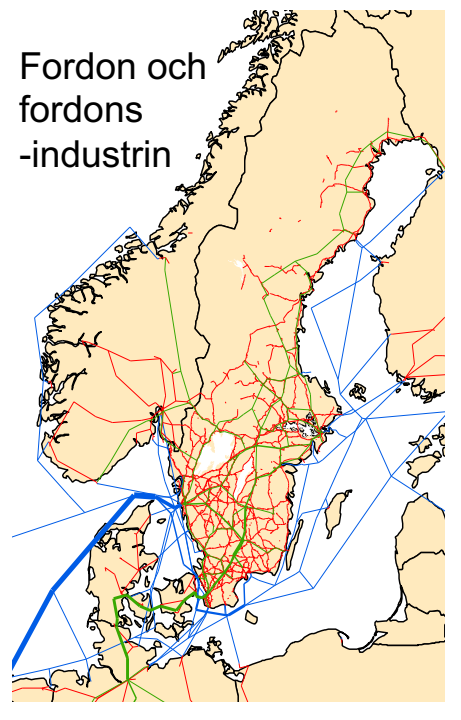
Varor till bygg-sektorn



Hög-förädlad

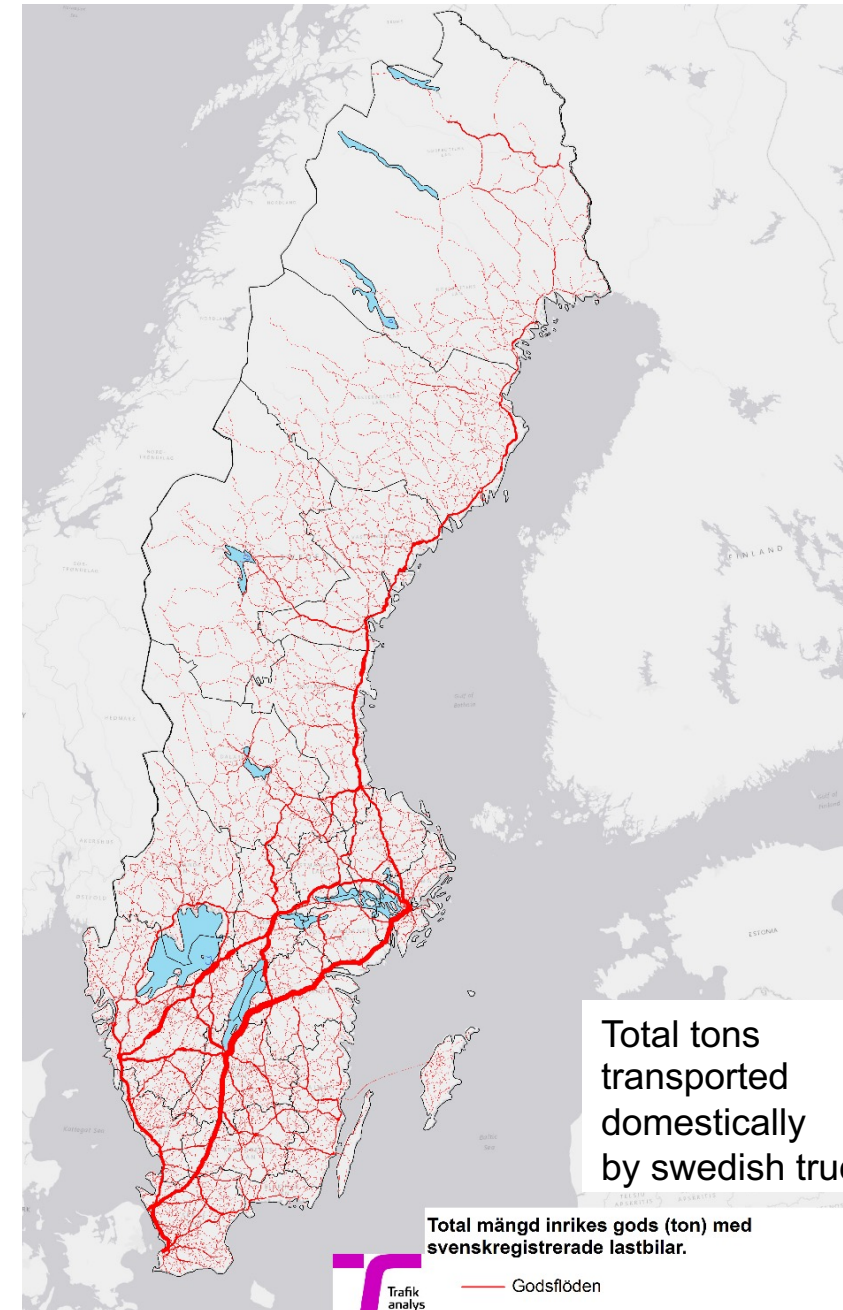


Fordon och fordons-industrin



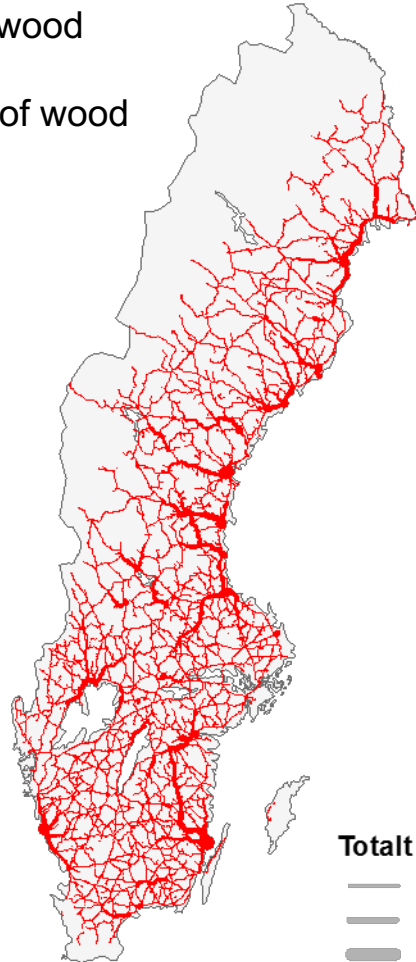
# Domestic freight by trucks - mostly local

- 375 miljon tons
  - 43 % within same municipality
  - 71 % within same county
- 28 miljon transports
  - 58 % within same municipality
  - 81 % within same county



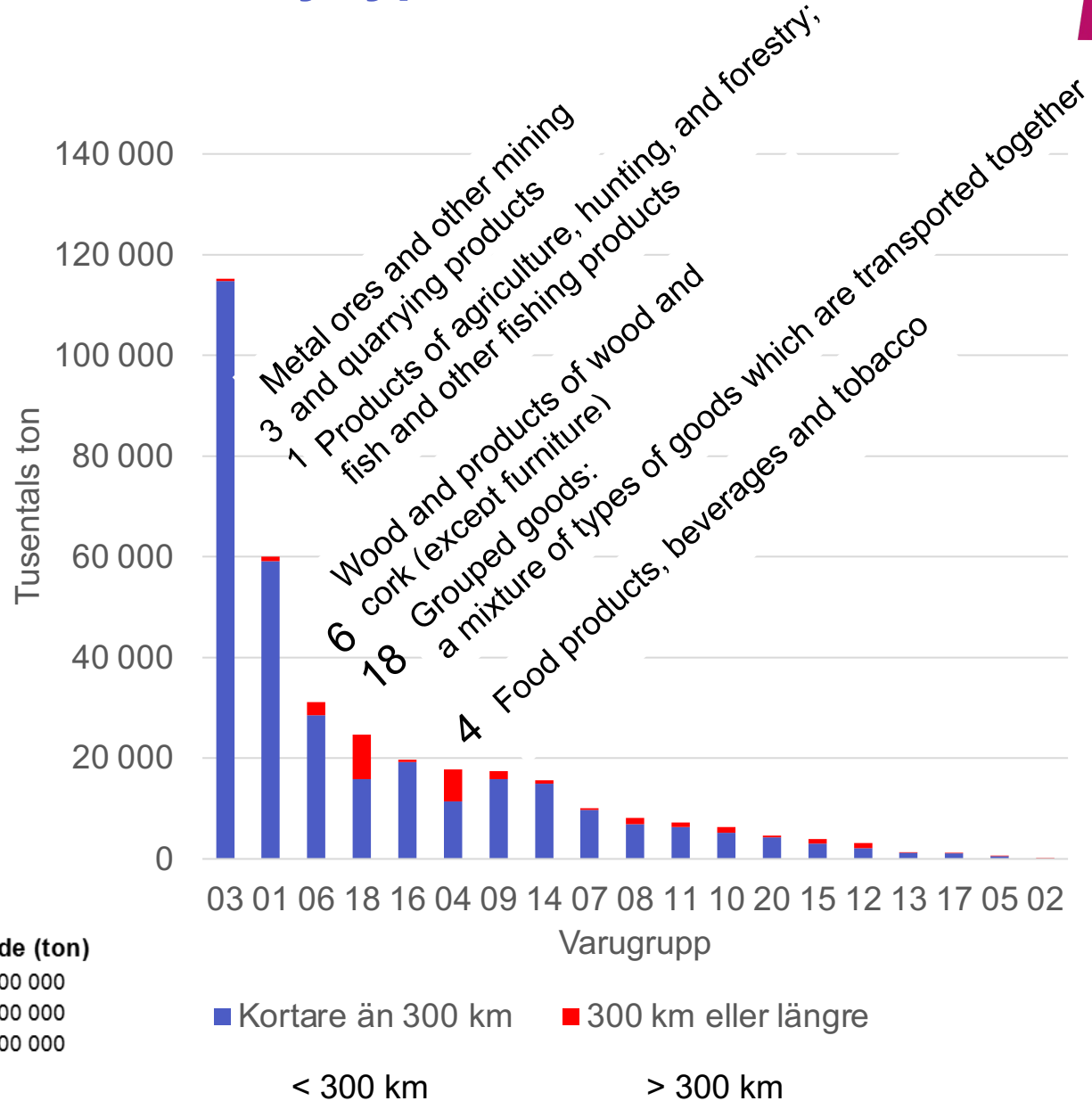
# Potential to shift per commodity type

Flows of wood and products of wood



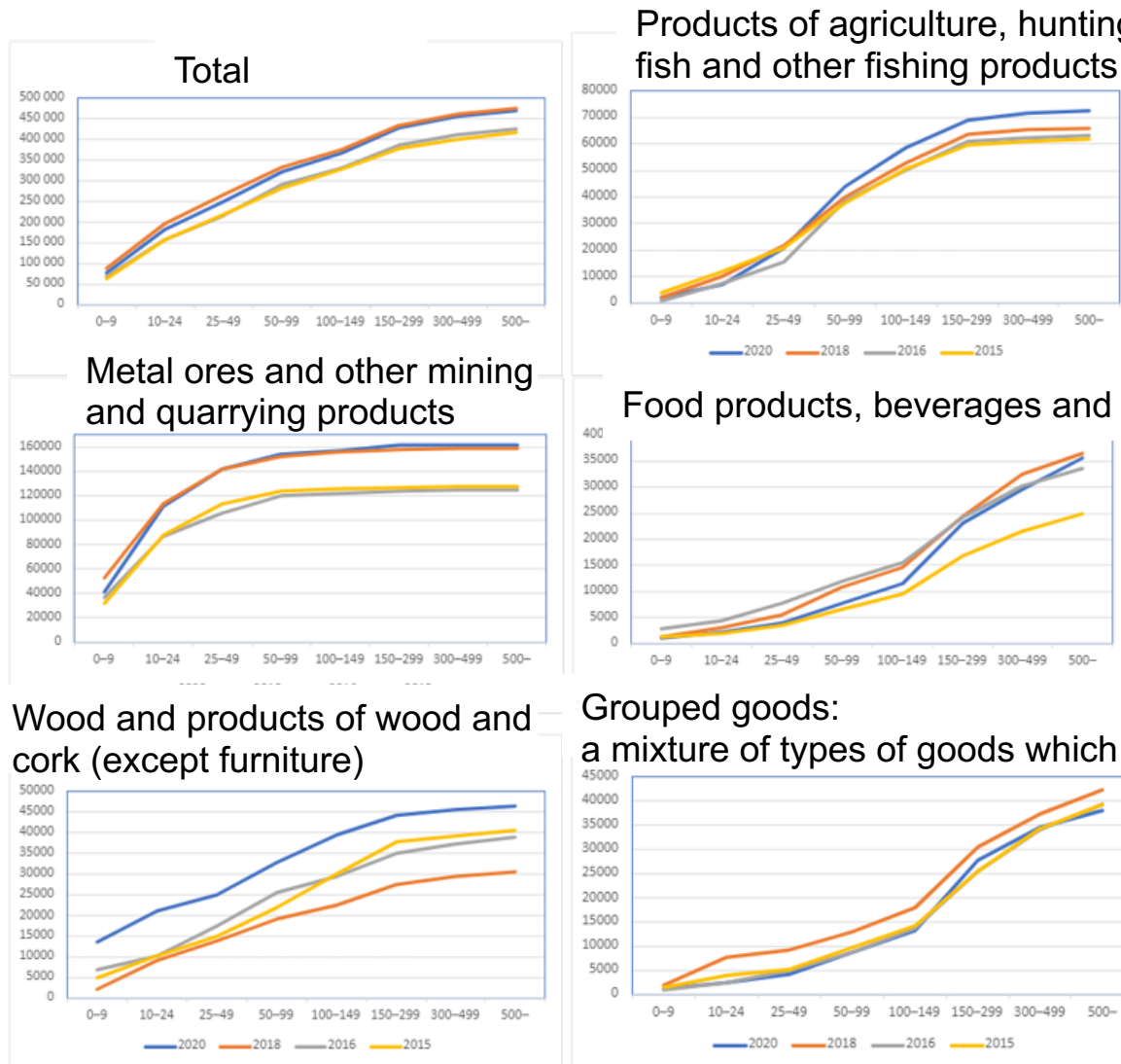
**Totalt flöde (ton)**

- 500 000
- 1 000 000
- 2 000 000





# Cumulative distribution of transported tons, domestic) by truck



- Various curvatures
- Some deviations over the years, but mostly in volumes

Figur 10.3 Kumulativ fördelning av antalet transporterade ton 2014–2020 inrikes med svenskregistrerade lastbilar, totalt samt särredovisat för de varugrupper där lastbilstrafiken har en hög andel av totalt antal transporterade ton och transportarbetet, per transportavstånd.

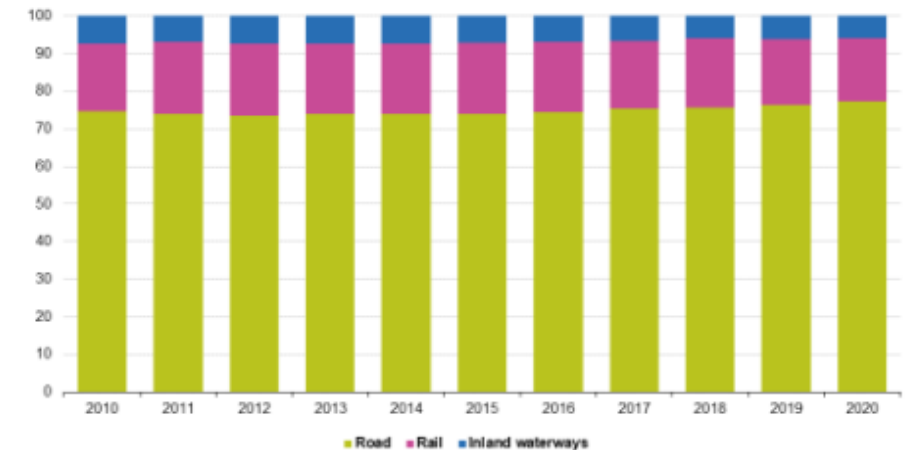
# Potential to shift from road?

- What commodity types are transported by what mode?
  - Different commodities dominate different modes. Low degree of overlap
- Long transports between which regions?
  - Between major cities and along the east coast, north of Stockholm
- Locations of harbours and terminals?
  - Terminals are located in southern Sweden close to urban areas.
- Congestion on rail on possible routes?
  - V. & S. Stambanan high usage. Hard to add more freight
- Capacity allotment for rail transports?
  - Freight is less prioritized in the allotment process
- Road (dom.) 1% = 3,75 milj. ton = 10% rail = 33% inland sea

# International comparison

- ITF – Mode Choice in Freight Transport (2022)
- 40 years
- 3 countries reported a modal split from road to other modes
  - Slovenia and Austria - to rail
  - Italy - to coastal shipping
- Other shifts from non-road to other non-road
- In 44 of 51 countries road has increased its share (tonkm)

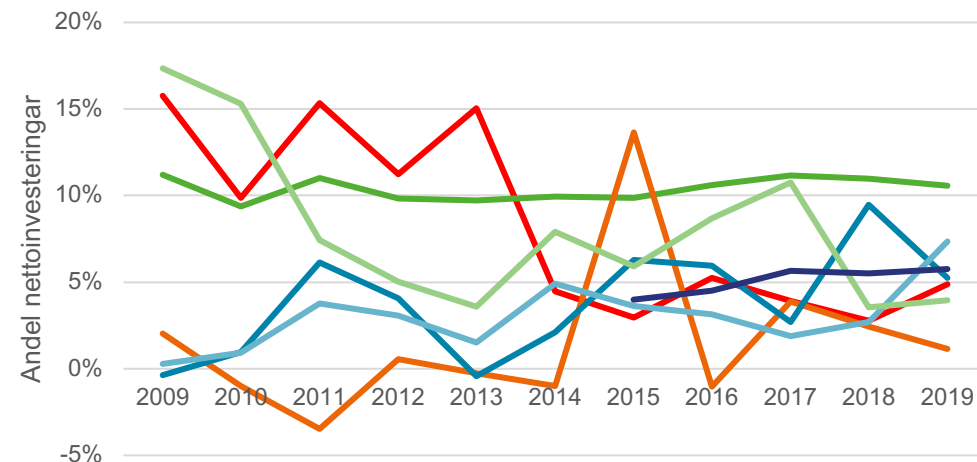
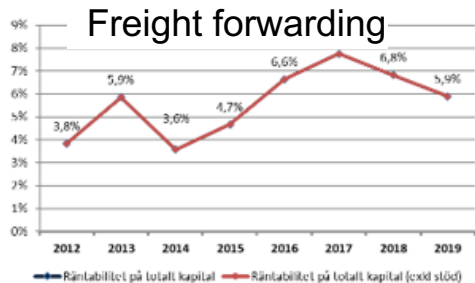
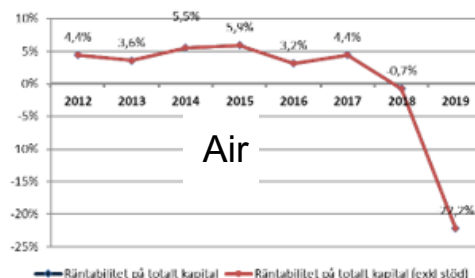
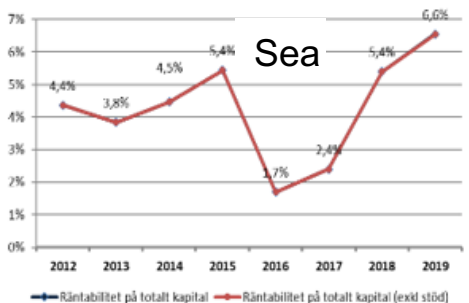
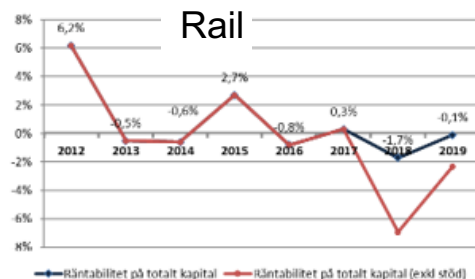
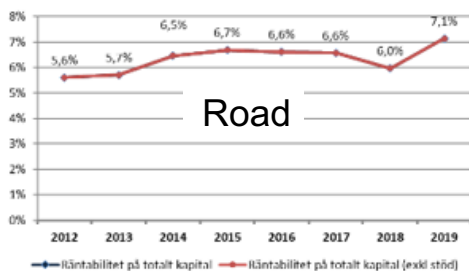
**Modal split of inland freight transport, EU, 2010-2020**  
(%, based on tonne-kilometres)



Note: Includes Eurostat estimates for rail transport for Belgium (2012-2019) and inland waterways transport for Finland (2017-2018), but does not include road transport for Malta, international transport of Cyprus (negligible) and inland waterways transport for Sweden (2008-2015: negligible). Figures may not add up to 100% due to rounding.  
Source: Eurostat (online data code: tran\_hv\_fmmod)

# Rentability on total capital

(Net investments as share of total assets for 7 freight industries)



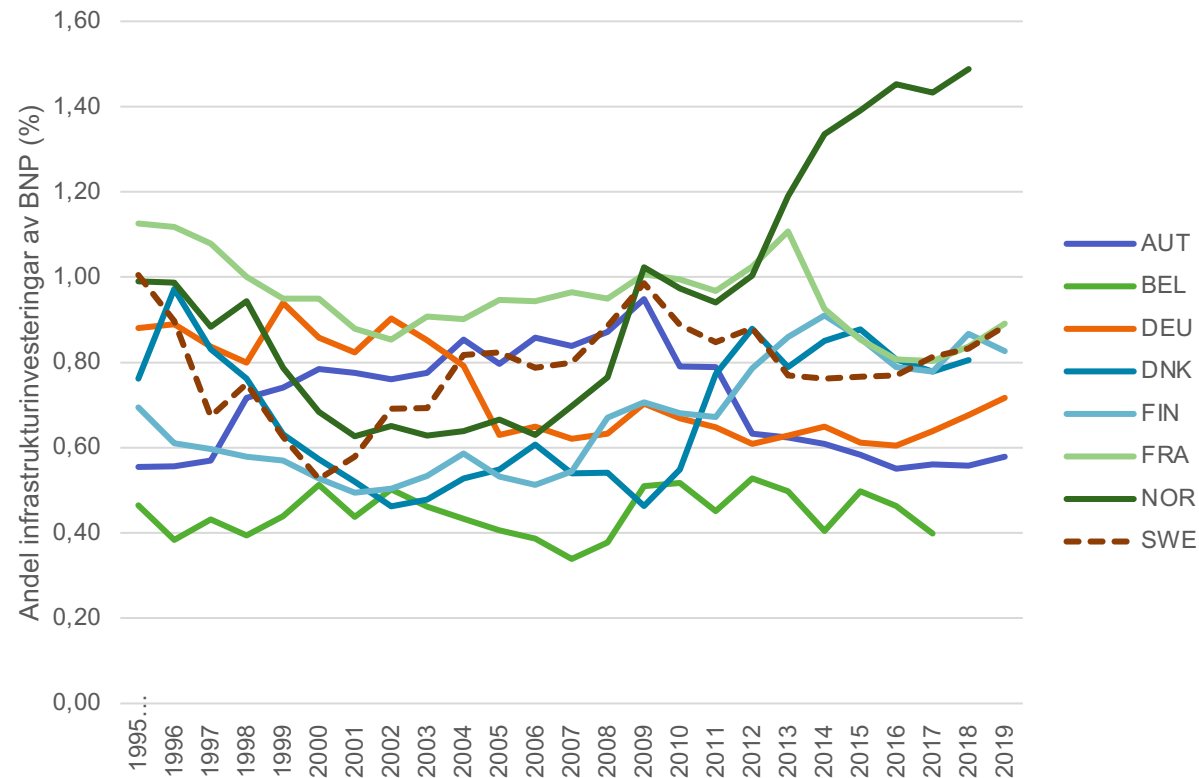
Freight forwarding etc.

- jernvägsbolag, godstrafik
- åkerier och flyttfirmor
- havs- och kustsjöfartsrederier, godstrafik
- rederier för sjöfart på inre vattenvägar, godstrafik
- flygbolag, godstrafik och rymdfartsbolag
- centrallager och magasin
- serviceföretag till transport

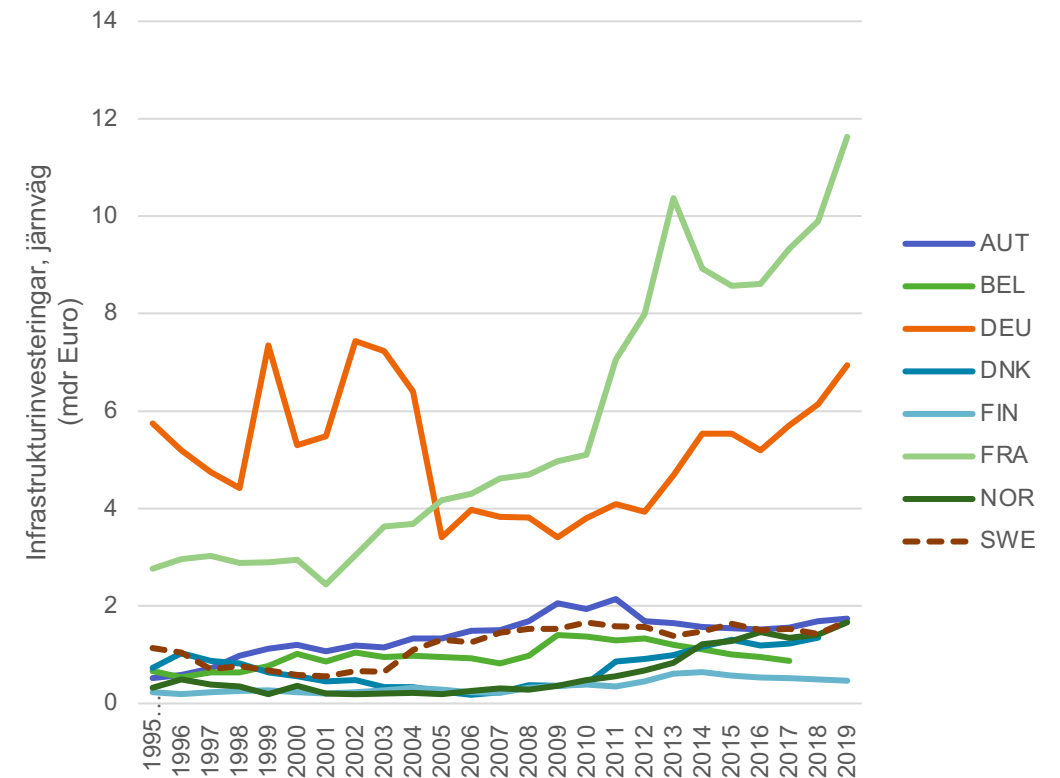
Figur 5.7. Utvecklingen av räntabilitet på totalt kapital i respektive godstransportbransch, 2012–2019. För järnväg redovisas värden med och utan miljökompensation, och för sjöfart med och utan ekobonus (utbetalades 2020, men är inlagd som om den gällde 2019 – den går dock inte att urskilja i diagrammet). Källa: Bolagsverket/Dun & Bradstreet/Bisnode, Tyréns (2021)

# Public infrastructure investments

## Investments (rail and road), share of GDP

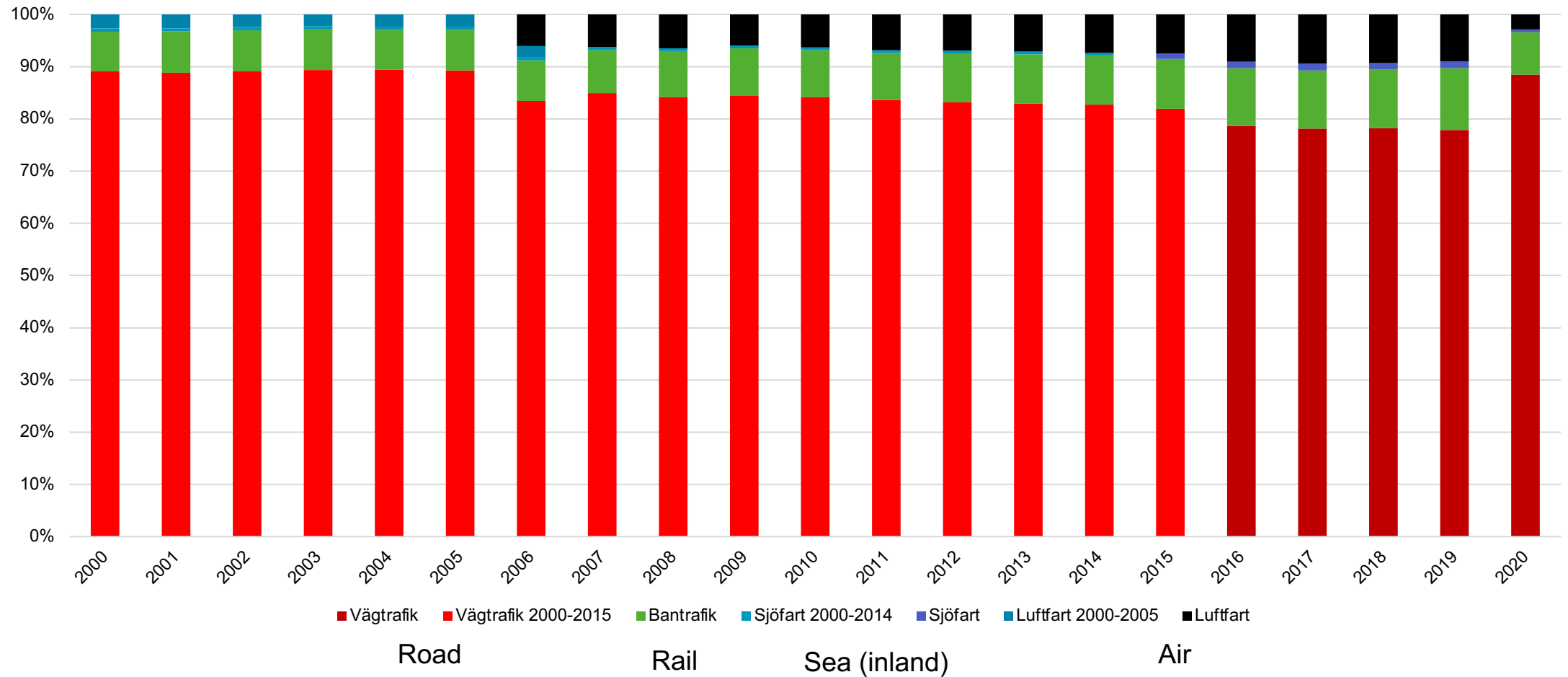


## Investments, rail mdr Euro

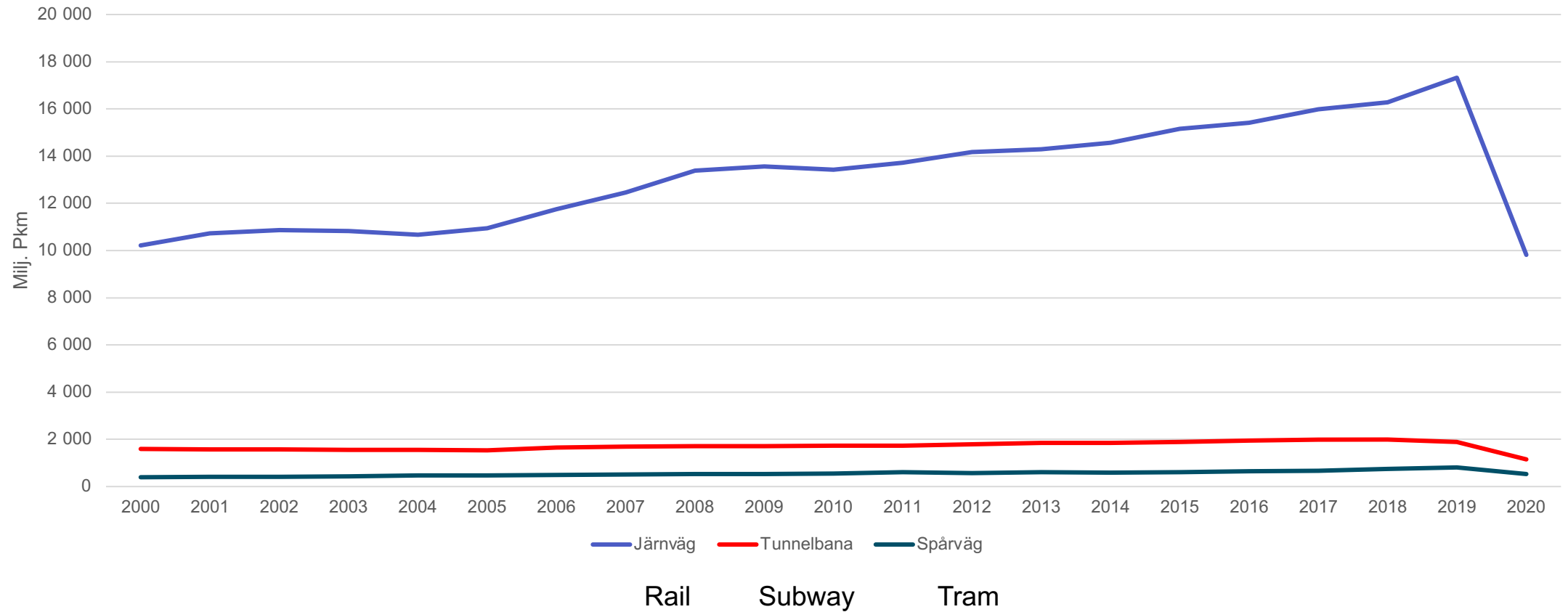


# Person km

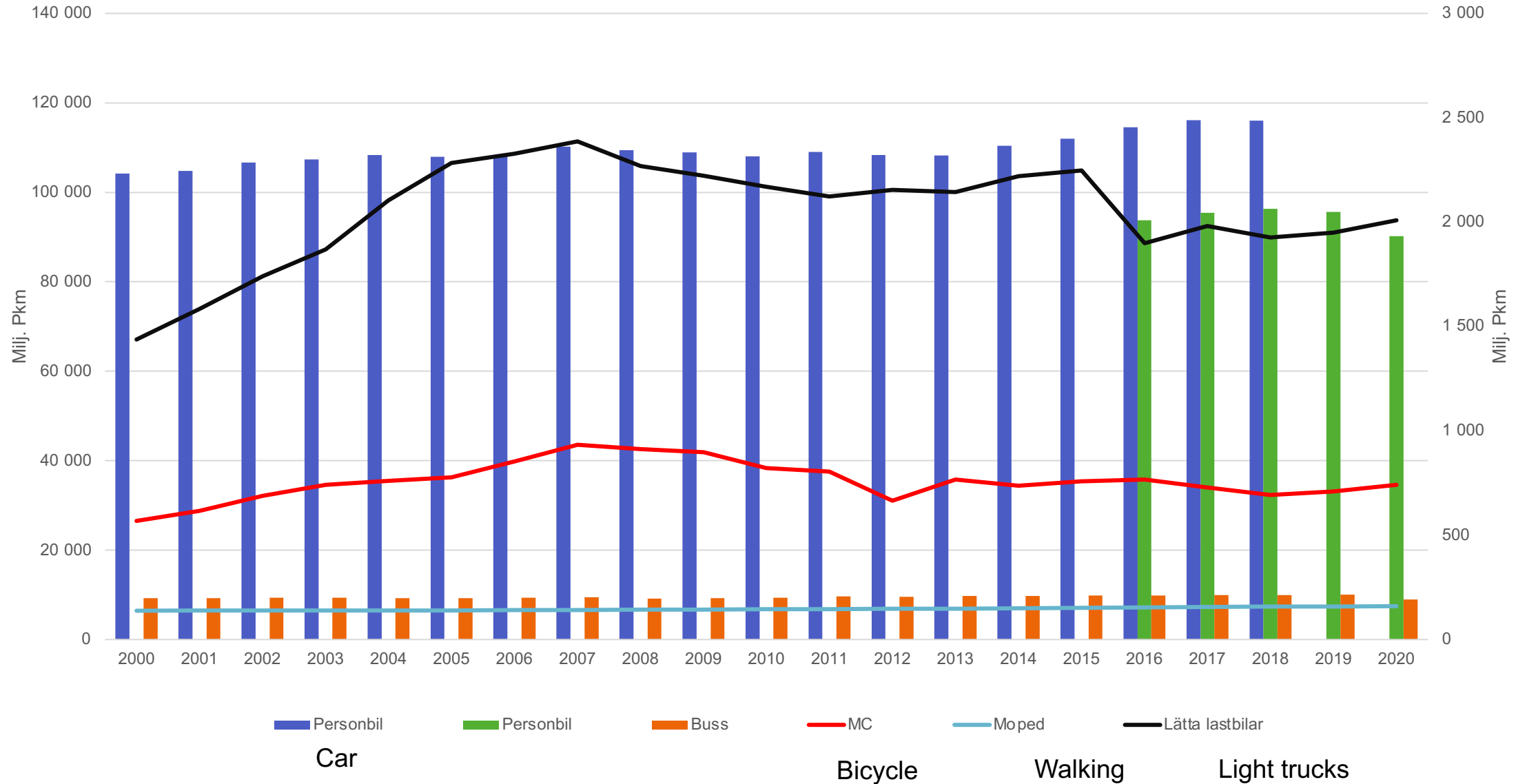
Person km – share per mode



# Person km (rail)

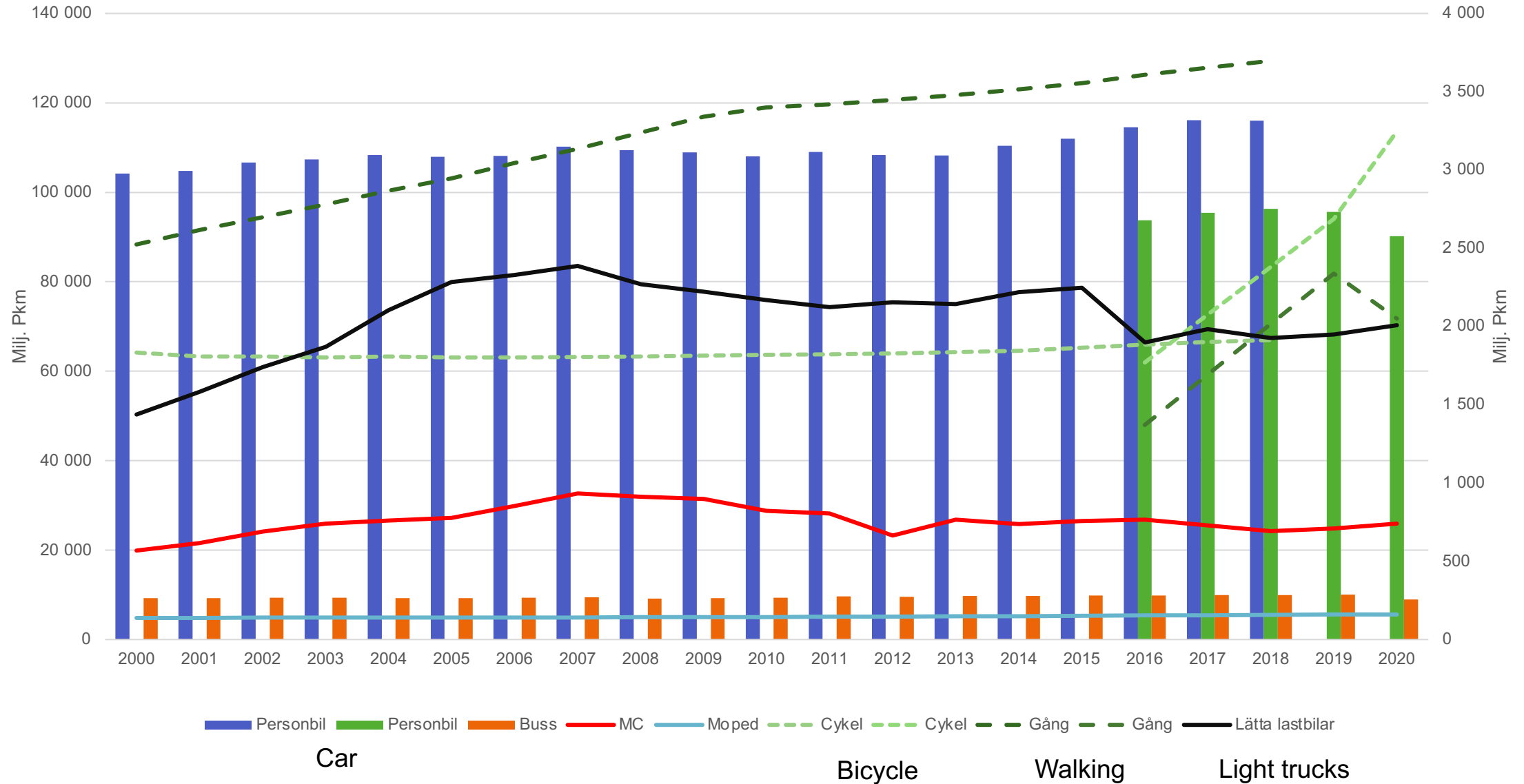


# Person km (road)

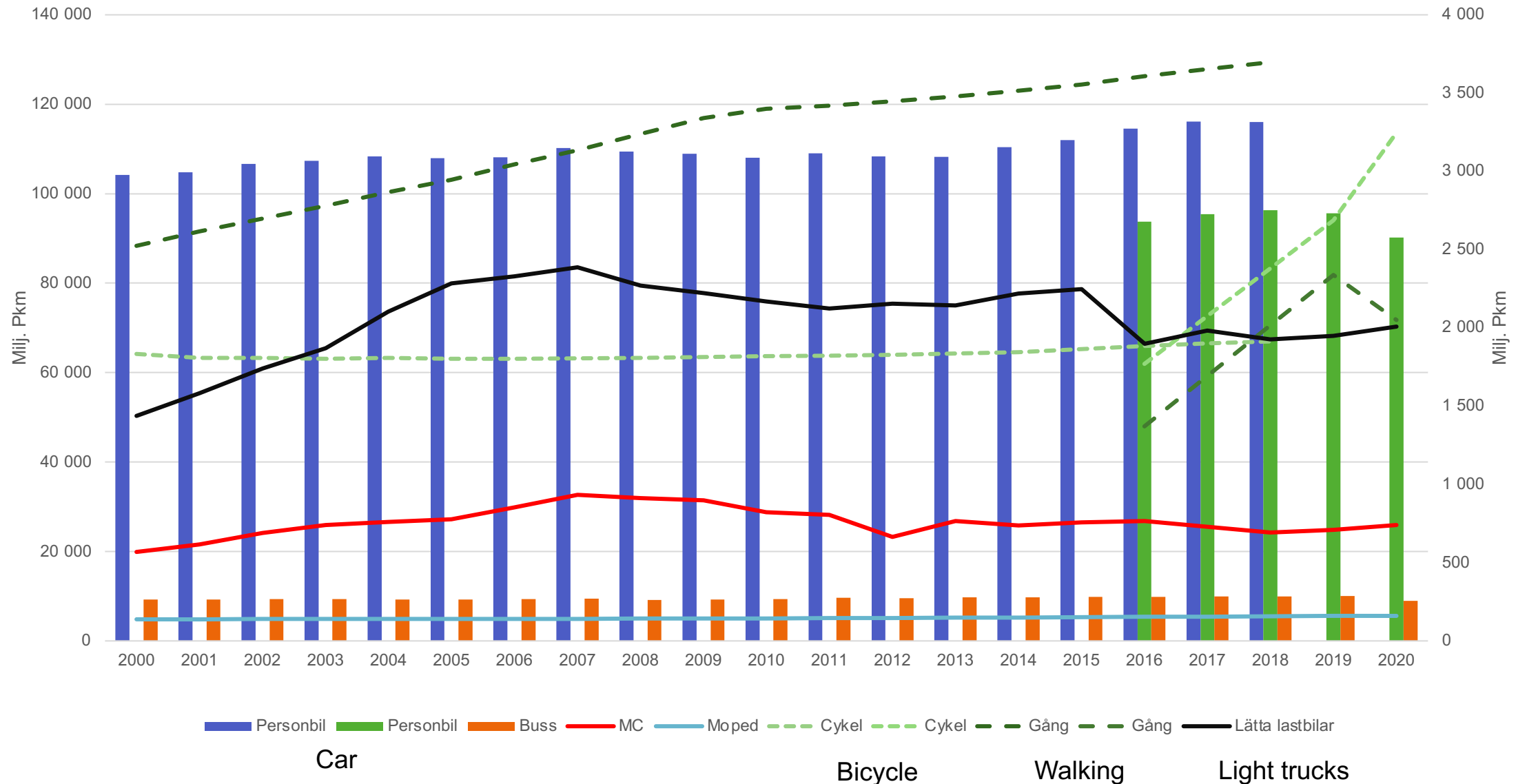




# Person km (road)



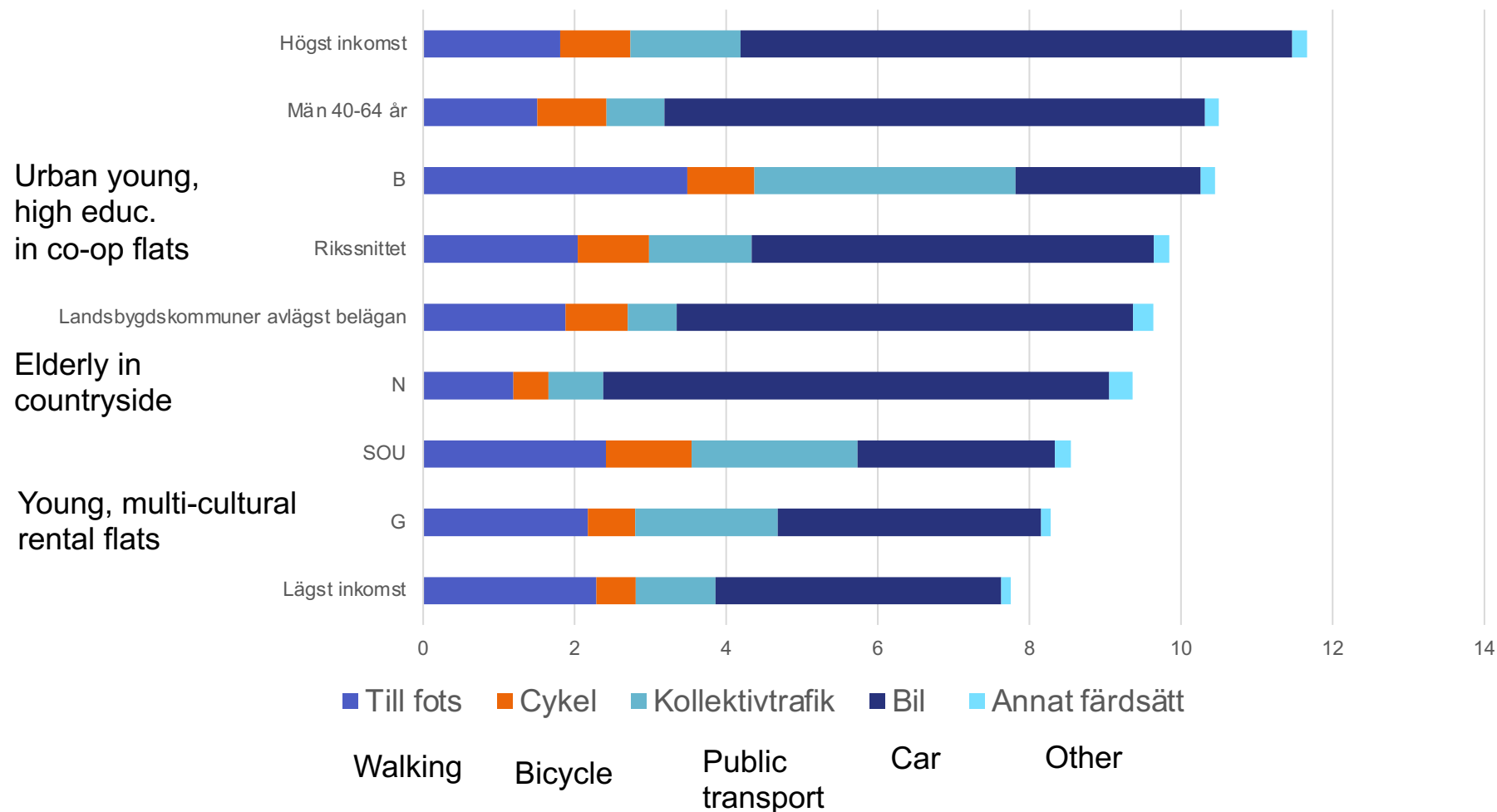
# Person km (road)



# Do people travel differently based on socio-economics?

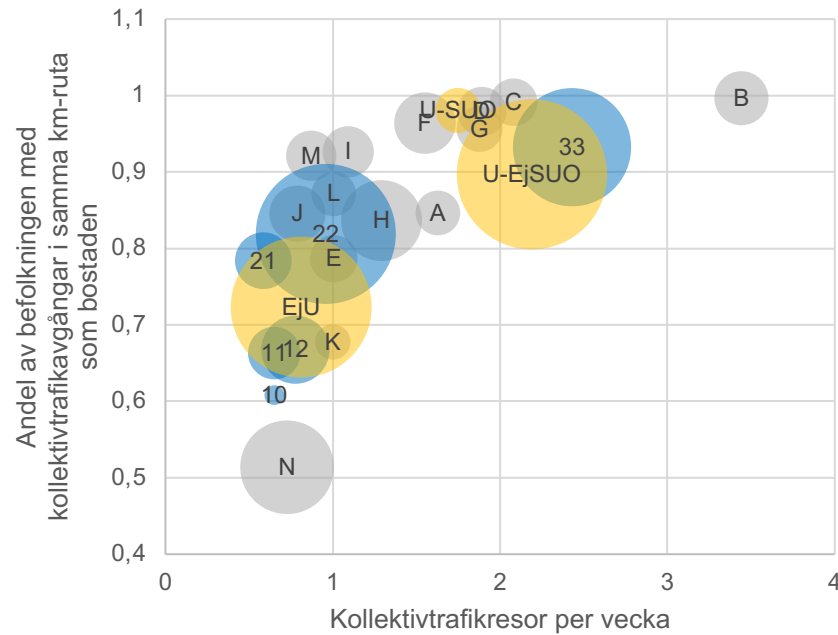
- Based on Socio-economic factors we divided all SAMS into:
  - 14 groups. For example:
    - B: Urban young, high educ. in co-op flats
    - N: Elderly and retired in countryside
- Additionally we used
  - 6 groups (The Swedish Agency for Economic and Regional Growth - Tillväxtverket)
  - 3 groups (Brå)

# Number of trips per week and mode for selected groups

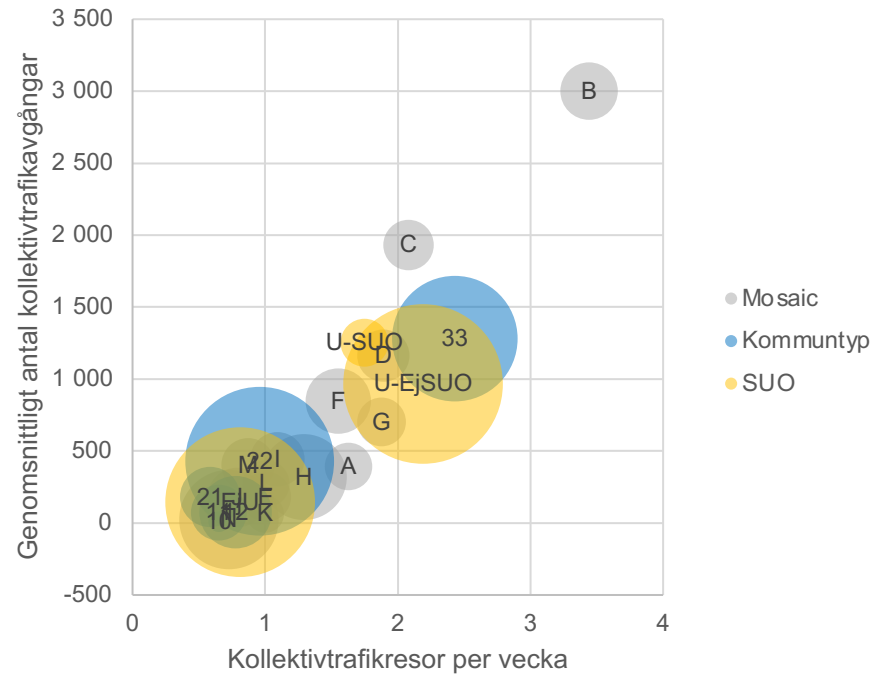


# Correlation between possibilities and trips by public transport

Bus stop in vicinity of home



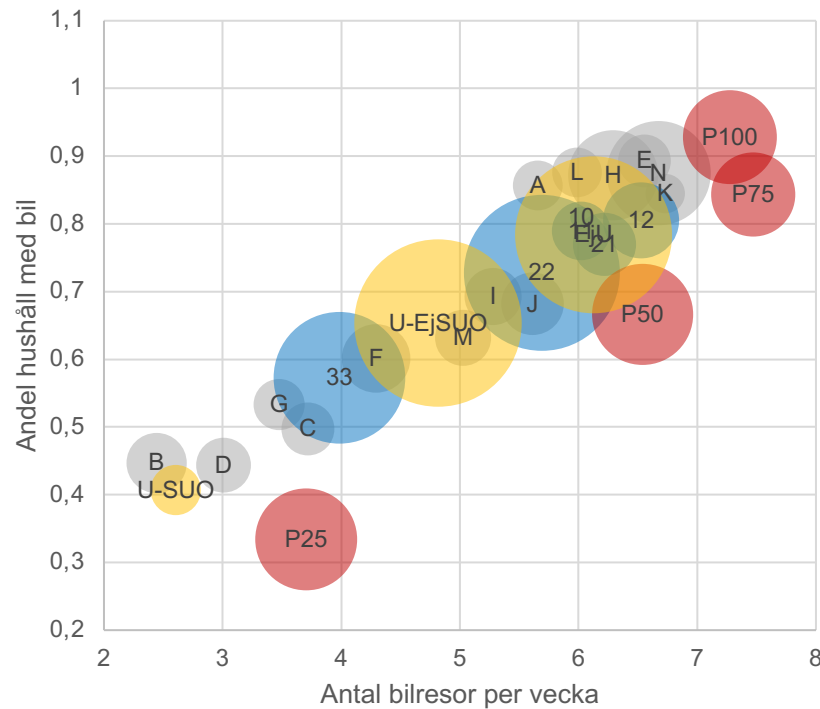
Trips by public transport



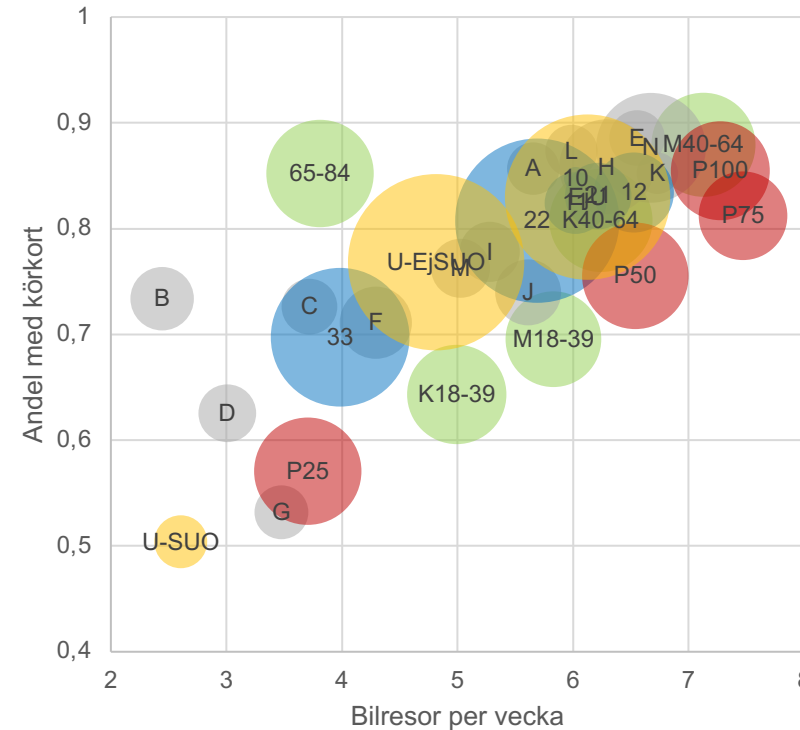
Number of Bus stops in vicinity of home

# Correlation – car ownership & drivers license and trips by car

Share of households with access to car



Number of trips by car

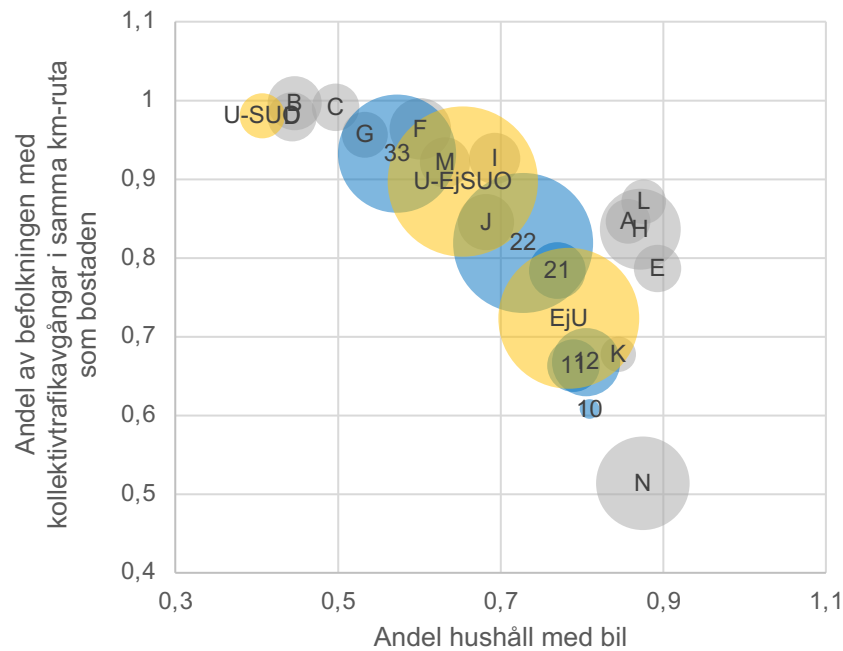


Share with drivers license

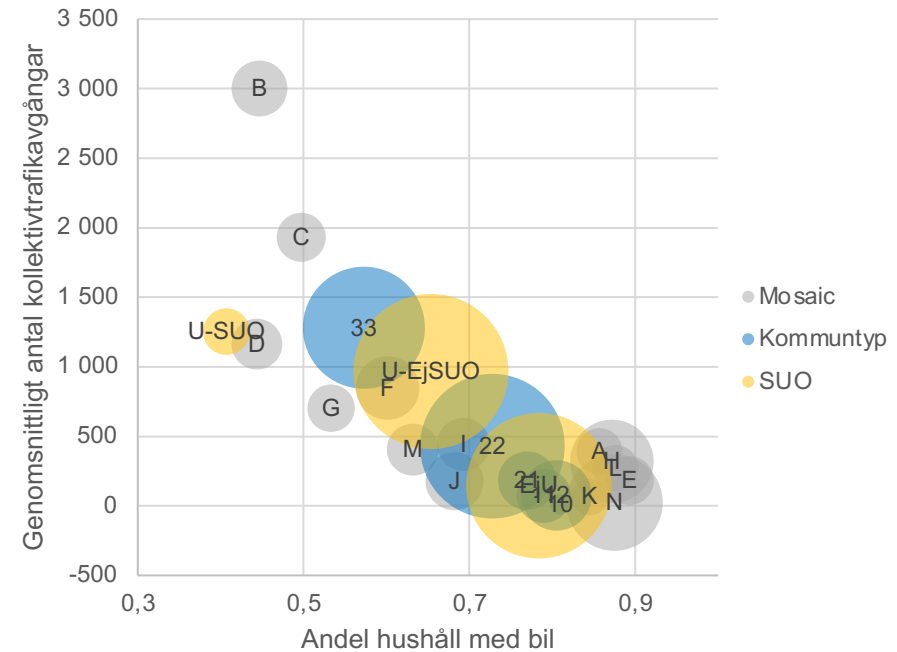
- Ålder och kön
- Mosaic
- Kommuntyp
- Inkomst
- SUO

# Correlation public transport and car ownership

Bus stop in vicinity of home

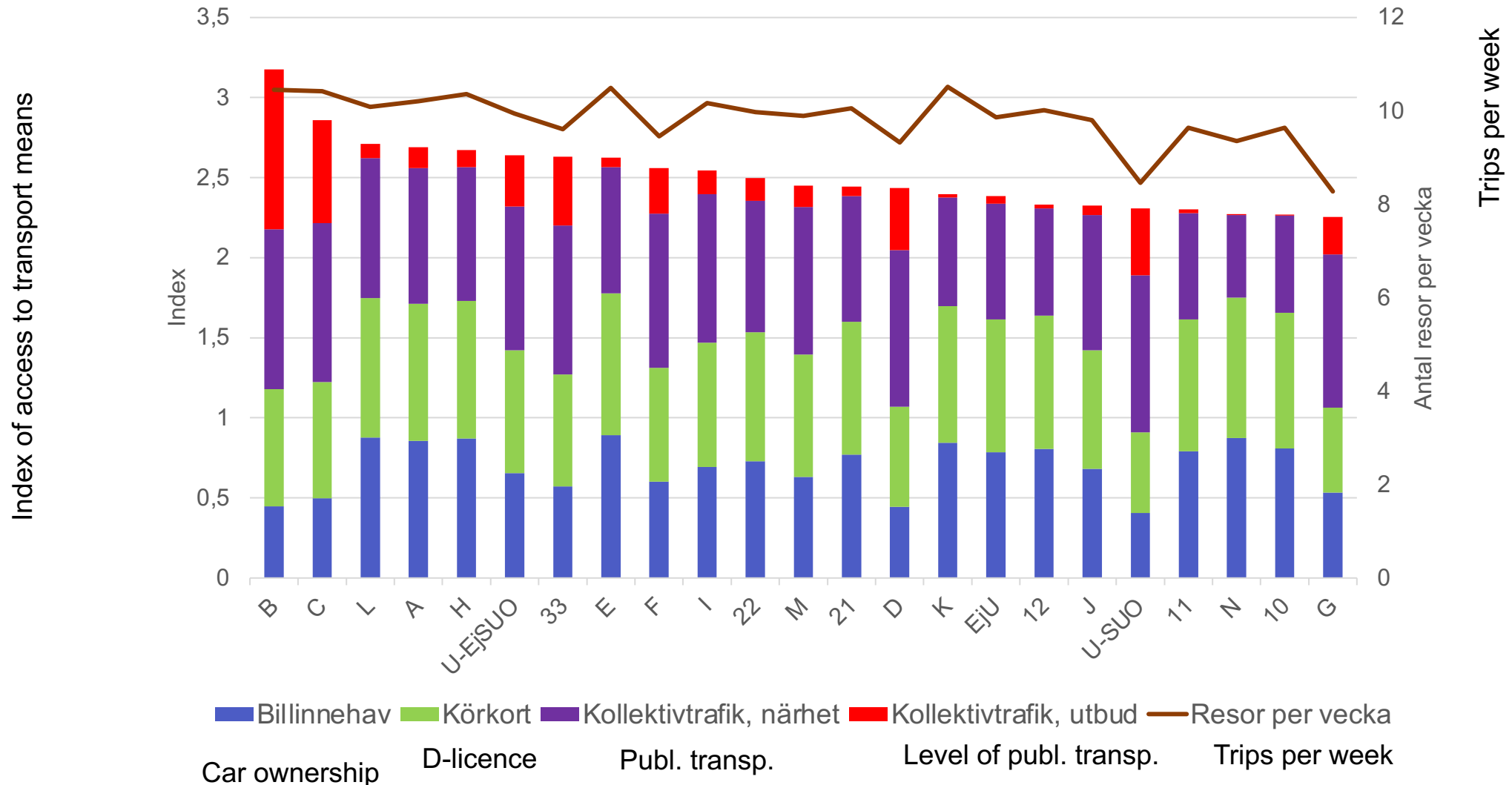


Share of households with car



Number of Bus stops in vicinity of home

# Travel possibilities per group and travels per week.





- A Swedish transport system is a stable system
- It will take much dedication and long term initiatives to realise a shift to rail (freight)
  - Examples of case studies on shift to rail/sea are most welcomed.
- Passenger transport: Social factors + the transport system can change travel patterns
- Is there too much focus on a shift to rail? Electricity on the move. Why not focus on efficiency?

# Thank you!

- [https://www.trafa.se/globalassets/rapporter/2016/rapport-2016\\_7\\_godstransporter-i-sverige---en-nulagesanalys.pdf](https://www.trafa.se/globalassets/rapporter/2016/rapport-2016_7_godstransporter-i-sverige---en-nulagesanalys.pdf)
- [https://www.trafa.se/globalassets/rapporter/2018/rapport-2018\\_17-perspektiv-pa-resor-och-mojligheter-att-resa.pdf](https://www.trafa.se/globalassets/rapporter/2018/rapport-2018_17-perspektiv-pa-resor-och-mojligheter-att-resa.pdf)
- [https://www.trafa.se/globalassets/rapporter/2022/rapport-2022\\_2-godstransporter-och-konkurrenskraftens-utveckling.pdf](https://www.trafa.se/globalassets/rapporter/2022/rapport-2022_2-godstransporter-och-konkurrenskraftens-utveckling.pdf)