



A critical perspective on ambulance serviceability in Sweden

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Blue light in Green Surroundings

Challenges and opportunities for emergency and rescue services in rural Sweden

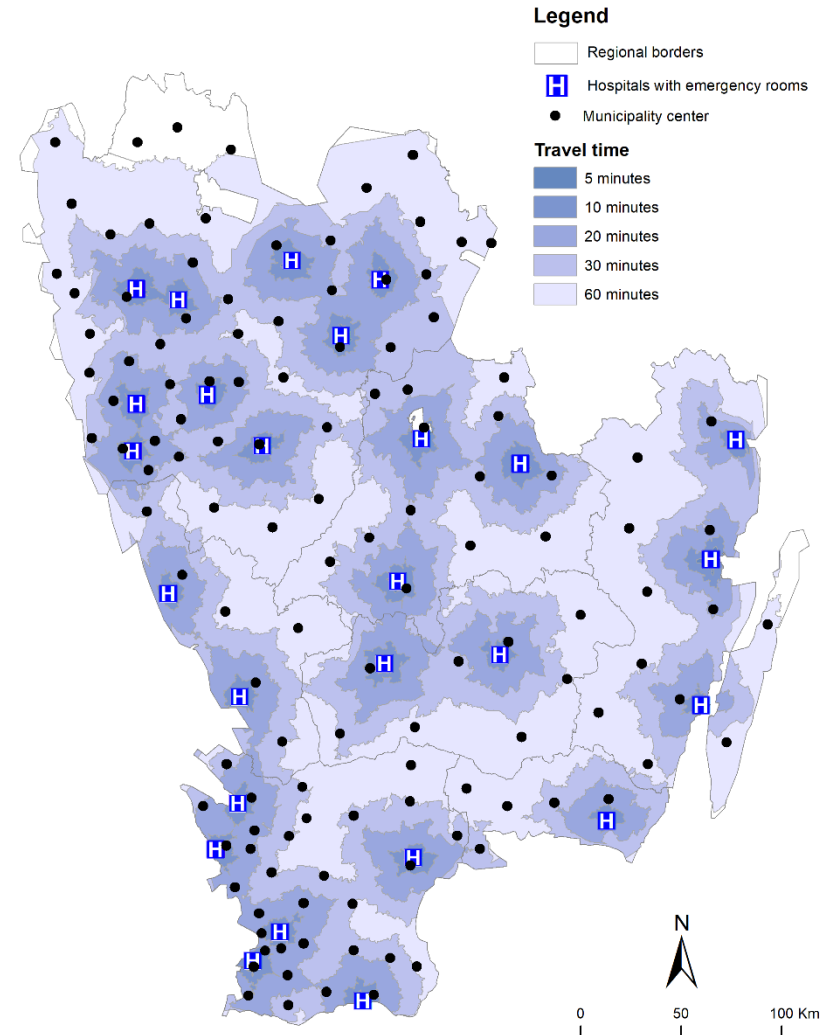
FORMAS

Introduction

- Swedish emergency health care planning.
- Geographic serviceability and accessibility.
- Measuring performance

Inspirational literature:
Hsia & Shen (2010)
Schuurman et al. (2006)
SOU (2020:19)

Travel time to hospitals in southern Sweden.

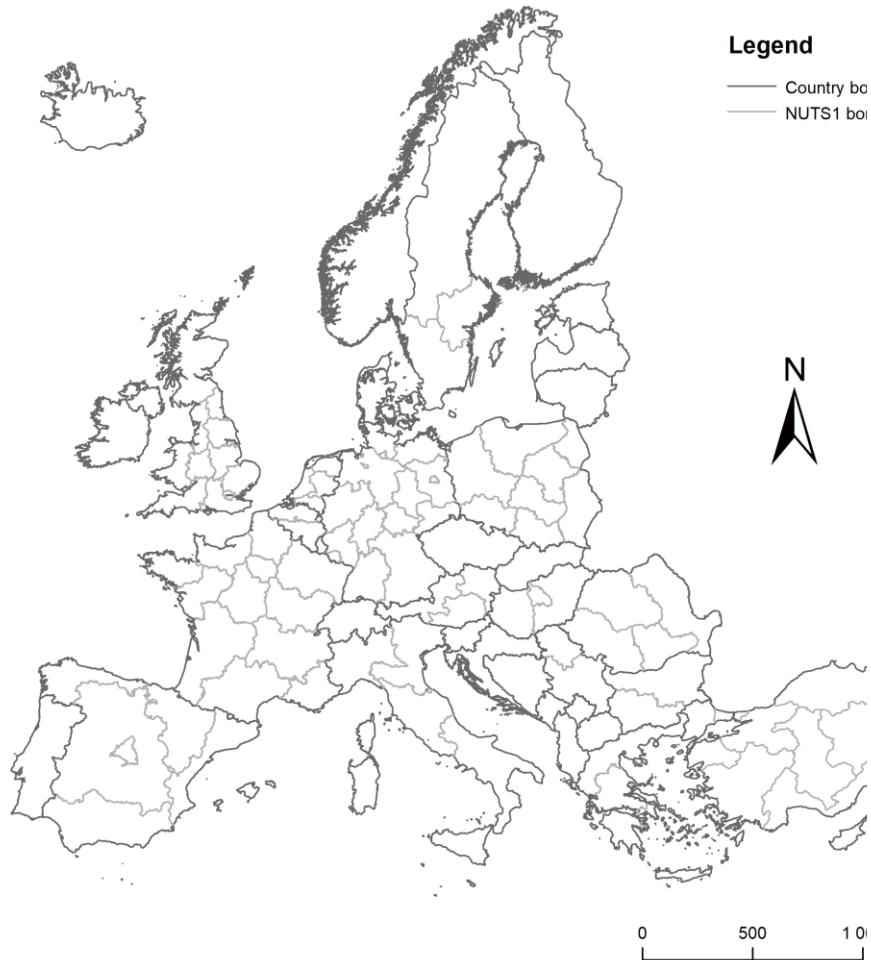


Aim

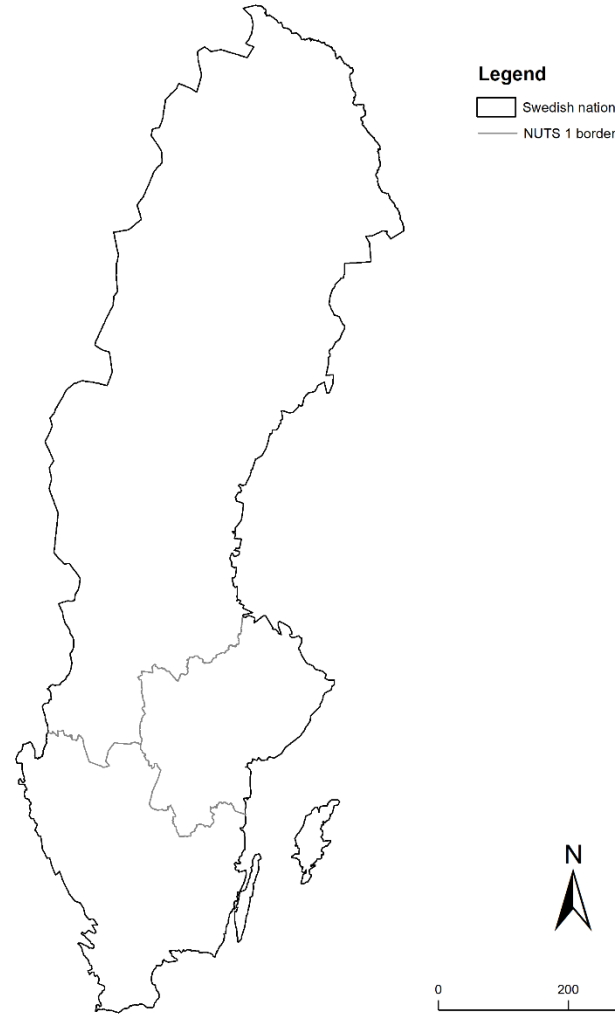
- What is the geographic serviceability of the ambulance system in southern Sweden?
- What is the geographic accessibility to the ambulance system in southern Sweden?
- What are the differences between urban and rural areas?

Study area

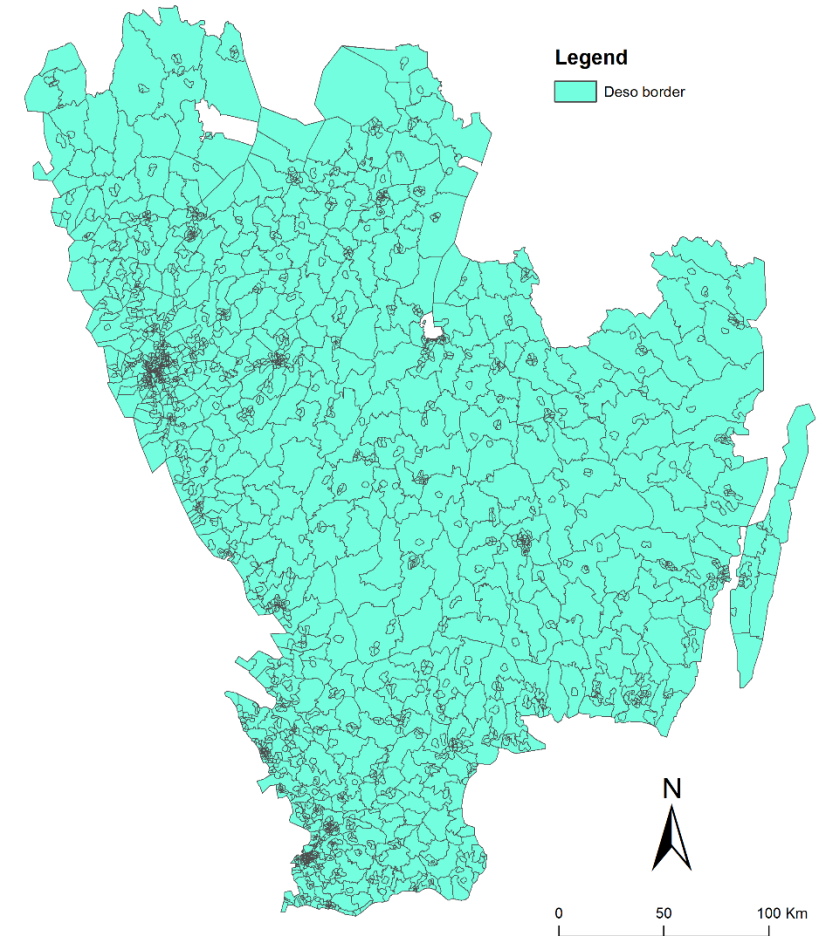
Europe - Administrative borders



Sweden - administrative borders



Sweden - administrative borders



Data and method

Data:

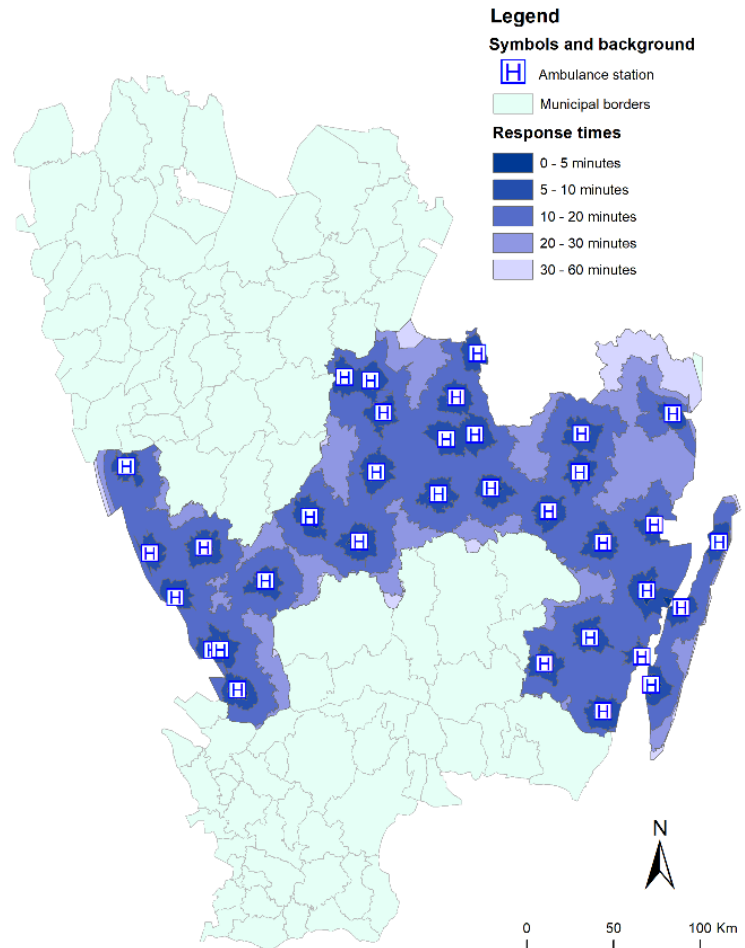
- Multiple data types on multiple scales.
- Multiple types of data

Programs used:

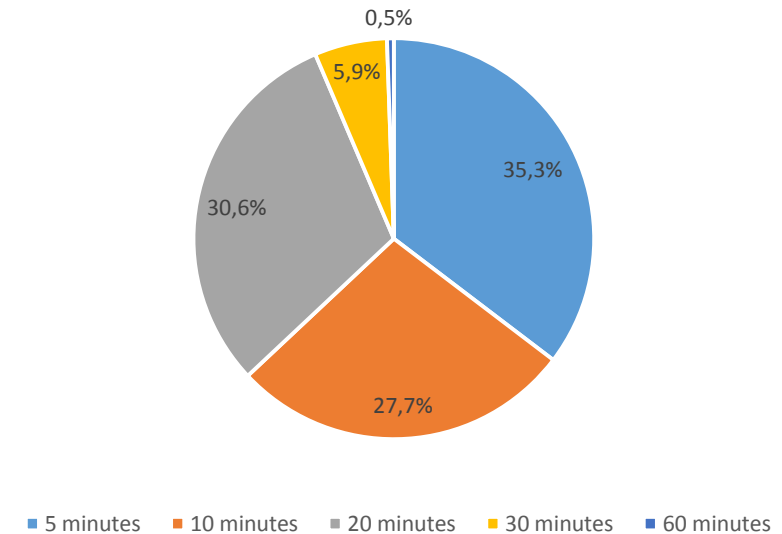
- Geographical Information System (GIS)
ESRI ArcMap
- Excel

Preliminary results – Response time

Response times for ambulances

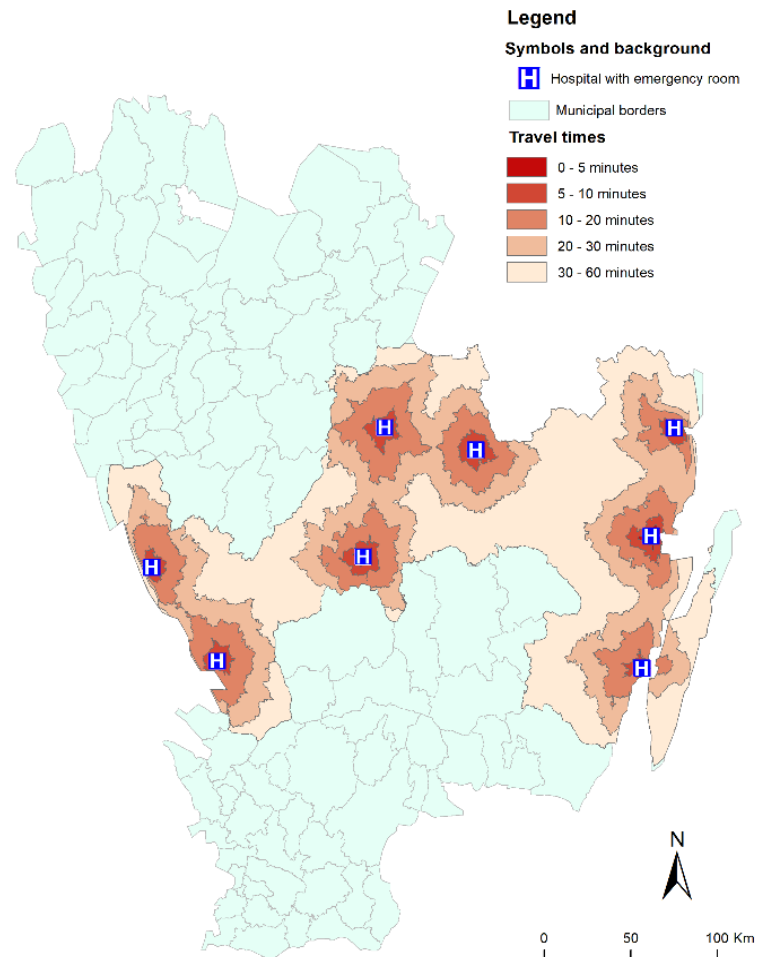


Response time - areas located within time thresholds

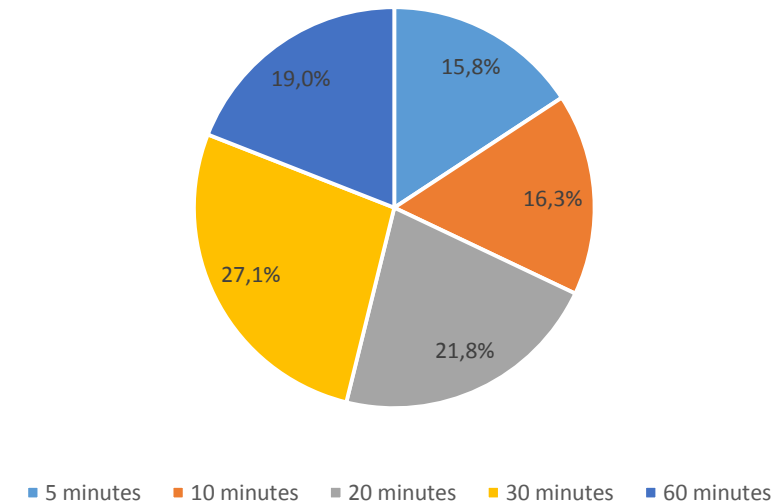


Preliminary results – Travel time

Travel times to hospitals

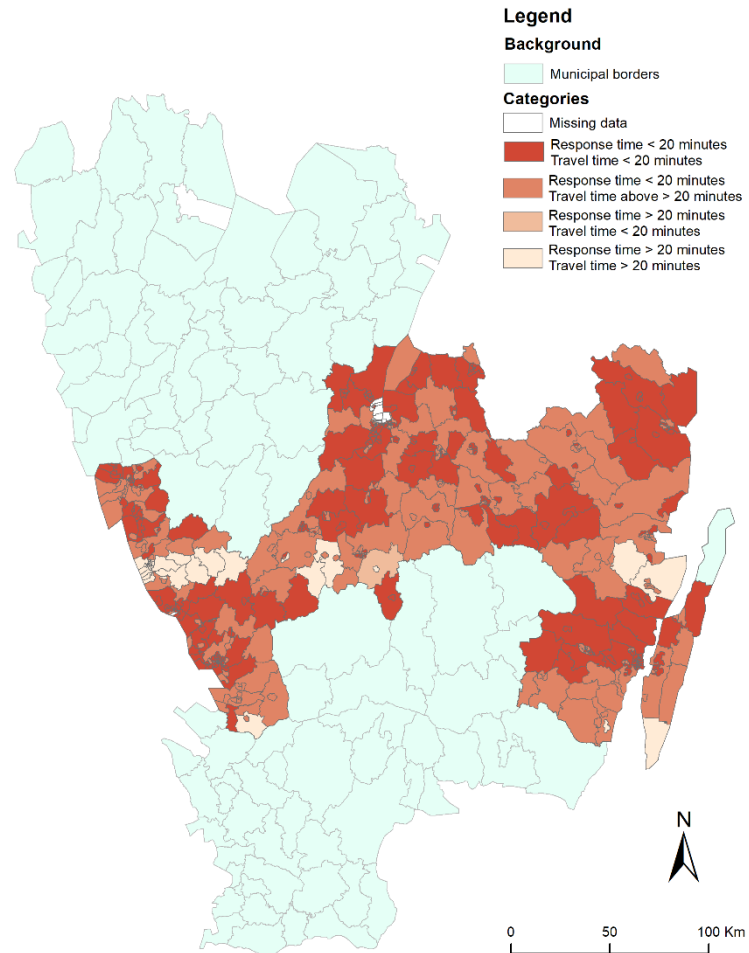


Travel times - areas located within time thresholds

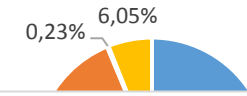


Preliminary results – Combined

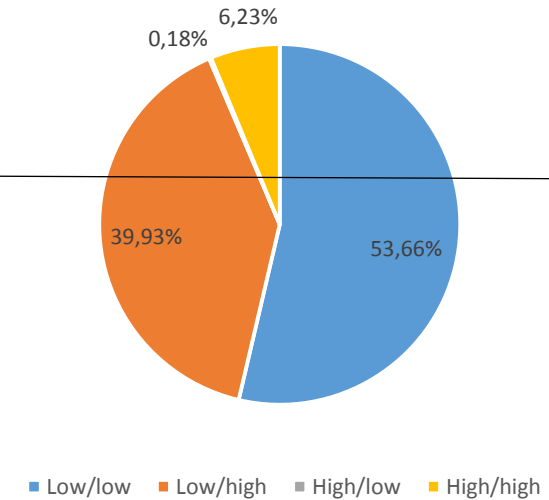
Areas in categories based on geographical serviceability and accessibility



Travel time and response times for urban areas (n=430)



Travel time and response time categories for all areas (n=546)



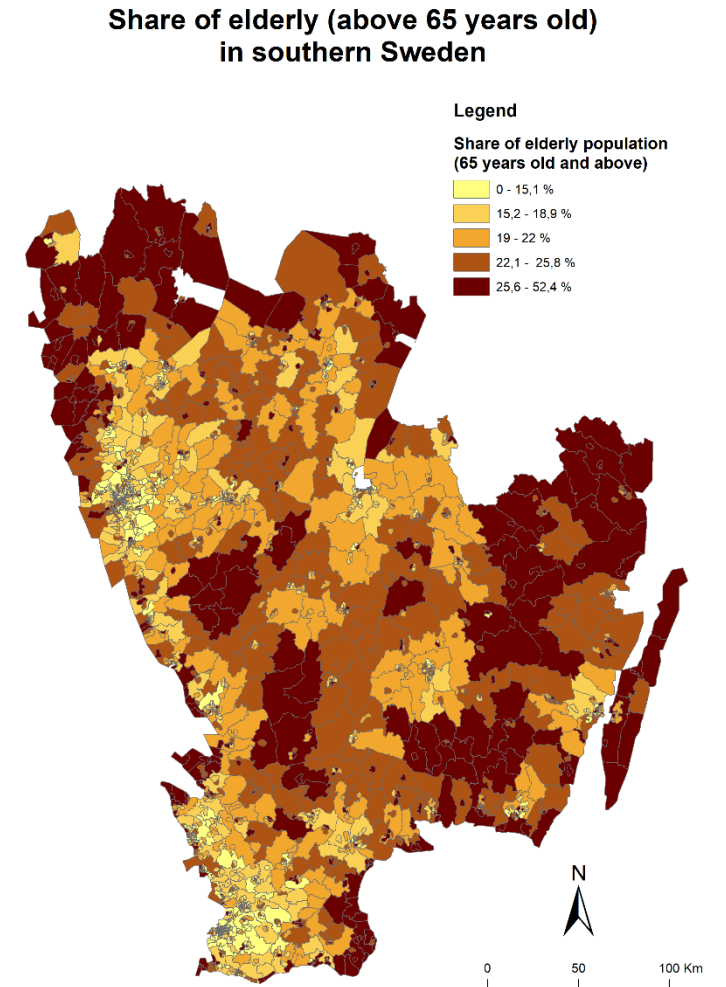
■ Low/low ■ Low/high ■ High/low ■ High/high

Conclusions

- Measures of geographical serviceability and accessibility varies for urban and rural areas.
- Current methods of evaluating the performance of the ambulance system may obscure spatial patterns of poor serviceability and accessibility.
- More analysis is needed on varying geographical scales

Moving forward

- Including socioeconomic and demographic characteristics of areas.
- Measuring geographic serviceability, accessibility and demand on different administrative levels.
- Incorporating temporal dimension.



Sources & references

- Alanazy ARM, Wark S, Fraser J, Nagle A. (2019). Factors Impacting Patient Outcomes Associated with Use of Emergency Medical Services Operating in Urban Versus Rural Areas: A Systematic Review. *Int J Environ Res Public Health*. 16(10):1728. Published 2019 May 16. doi:10.3390/ijerph16101728
- Hsia R, Shen Y. (2010). Possible Geographical Barriers to Trauma Center Access for Vulnerable Patients in the United States: An Analysis of Urban and Rural Communities. *Arch Surg*. 146(1), 46–52. doi:10.1001/archsurg.2010.299
- Lindskou, T.A., Mikkelsen, S., Christensen, E.F. (2019). The Danish prehospital emergency healthcare system and research possibilities. *Scand J Trauma Resusc Emerg Med* 27, 100. doi.org/10.1186/s13049-019-0676-5
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- SOU (2020). God och nära vård – en reform för ett hållbart hälso- och sjukvårdssystem. Available at: https://www.regeringen.se/495be8/contentassets/320f37078d854712ab89e8185466817b/god-och-nara-vard-en-reform-for-ett-hallbart-halso--och-sjukvardssystem-sou_2020_19_webb.pdf

Sources & references

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Available at: https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/halso--och-sjukvardslag-201730_sfs-2017-30
- European Union (Eurostat)
 - Administrative borders.
- Statistics Sweden (Statistiska centralbyrån)
 - Socioeconomic and demographic data
 - DeSO-borders
- The Swedish Transport Administration (Trafikverket)
 - Road network.
- Swedish Agency for Economic and Regional Growth (Tillväxtverket)
 - Definitions of urban, rural and densely populated areas.
- Swedish Association of Local Authorities and Regions (Sveriges kommuner och regioner).
 - Administrative borders.