INITIAL FINDINGS OF THE COST OF INSULARITY REPORT

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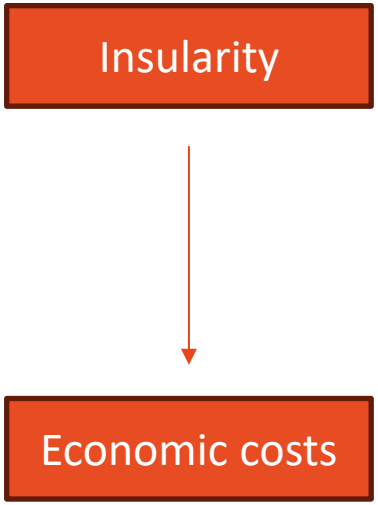
Presentation outline

1. Conceptual framework
2. Methodological framework and data
3. CoI in Croatia
4. CoI in Greece
5. CoI in Sweden
6. Main take-aways and next steps

Defining insularity and economic costs

- Insularity, for the purpose of this report, is defined as the geographic characteristic of being an island territory
- Insularity can also refer to social, political and economic arrangements that are disconnected from other territories
- The cost of insularity refers to the additional economic costs faced by island communities compared to mainland equivalents, all else being equal



Geography and economic costs

Geographic factors that influence economic costs

How geography affects economic costs

Costs are unevenly distributed across different groups

Island specific factor

General factors

- Insularity
- Remoteness
- Smallness
- Topography

Direct effect of all 4 factors

Indirect effect through…

- Infrastructure
- Demography
- Seasonality
- Transport
- Culture

Economic costs

Conceptual framework

Insularity costs can be direct (geography) or indirect (via institutions)

	Island geography alone		Geography and institutions		Island institutions alone	
Primary impact	Distance, terrain, disconnection		Shortages and inequities in the factors of production		Norms, approach, behaviours	
Secondary impact	Transport	Limits to development	Limited infrastructure	Shallow markets	Low capacity	Low productivity
Examples of costs for affected groups						
Households	Travel	Housing	Commuting	Petty services	Expert advice	Renovations
Businesses	Freight	Manu-facturing	Exports	Skilled labour	Permits	Construction
Governments	Subsidies	Roads	Service delivery	Procurement	Planning	Health services

Island typology

Island characteristics are expected to greatly influence the severity of insularity costs

- Size, shape, climate, distance from the mainland and population could all be influential
- Double insularity, when the residents of an individual island are unable to access the mainland without transiting through another island, expected to increase costs

Analytical approaches

The report uses different analytical approaches to estimate the costs of insularity

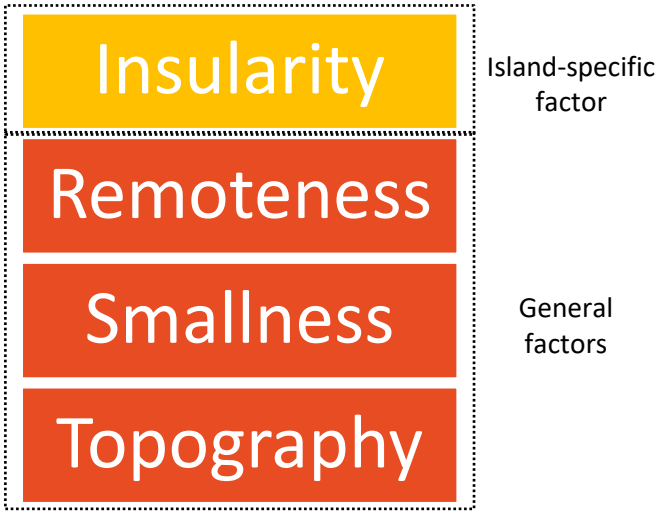
1. **Descriptive statistics:** Comparison of mean costs for island territories with mainland equivalents
2. **Transport cost calculation:** Calculation of the average additional economic travel costs imposed on island residents and businesses
3. **Econometric analysis:** Estimation of insularity cost using regression analysis

Econometric framework

How can regression analysis help to identify insularity costs?

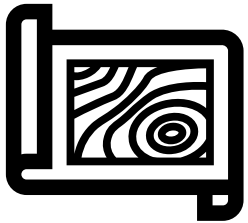
- Econometric analysis can help to disentangle the effects of insularity from similar conditions such as remoteness, smallness and challenging topography
- If other geographic conditions are held constant, we are able to measure the association of insularity with economic costs

Geographic factors that influence economic costs



Where to begin econometric analysis?

- The first step was to review territorial divisions in each country and assess their suitability
- Island-level analysis was preferred, but groups of islands and island regions (without mainland) also suitable
- Consistency across territorial levels needed to enable fair comparison with mainland localities



What indicators are available for econometric analysis?

- The second step was to review territorial indicators available in each country and assess their suitability

- Some promising approaches to measure insularity costs, such as regional consumer price indices, were not available

- The report is therefore based on publicly-available data, for example:
  - Ferry ticket prices and service frequency (transport costs)
  - Rents and house prices
  - Municipal government finances
  - Regional GDP

Summary of econometric approach for each country

	Croatia	Greece	Sweden
Level of analysis (n)	Cities and municipalities (555)	TL3 regions (52)	Municipalities (290)
Number incl. islands	59 (of which 13 have mixed territory)	13	2
Main cost dimension	Government services	Economic activity/ productivity	Transport, land and housing

CoI in Croatia – Territorial considerations

- The 130 island indicators are helpful for cross-Island comparison but are on a different territorial scale to the mainland
- No exclusively island territories at county level
- The municipal level allows for meaningful comparisons and large sample sizes, but island and municipal boundaries do not always align

CoI in Croatia – Data considerations

- No suitable dependent variables at island level (e.g. land prices)
- Limited data on transport costs and highly complex ferry services
- Limited economic and social data available at municipal level
- Complete municipal expenditure data available allowing estimate of local government costs

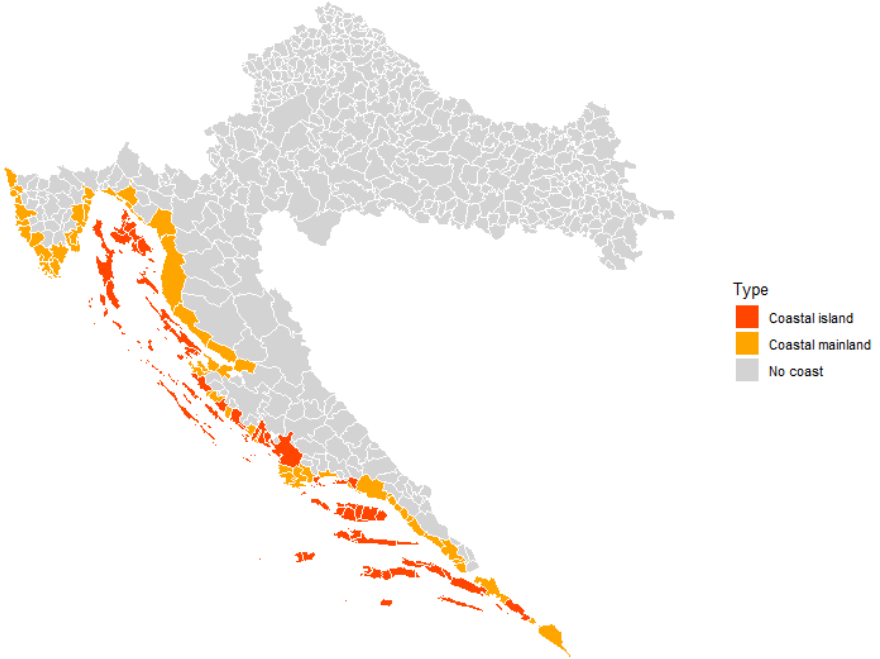
CoI in Croatia – Most suitable level of analysis

Level of analysis:

- 555 municipalities and cities (excl. Zagreb)

Main units of interest:

- 59 municipalities with island territory (of which 13 have mixed territory)



CoI in Croatia – Econometric approach

Dependent variable

- Total municipal government expenditure (from OECD municipal government finance database)

Main variable of interest

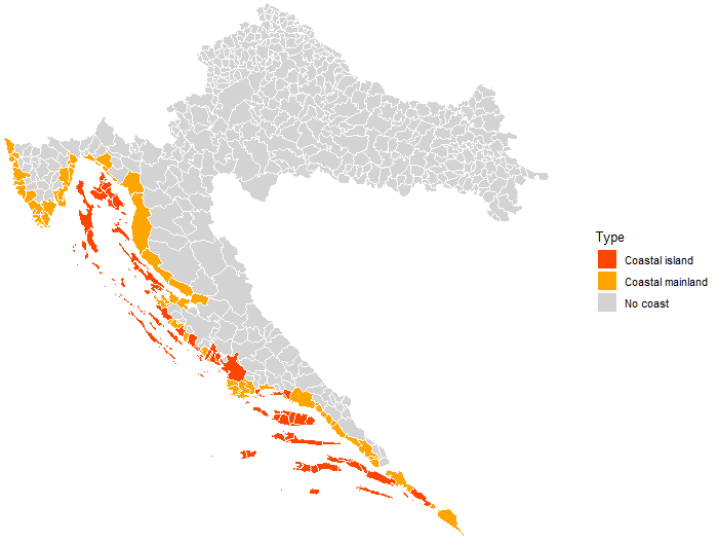
- Island dummy - measures the association of insularity with expenditure while holding all other variables constant

Main control variables

- Remoteness: Straight-line distance to Zagreb
- Topography: Share of forest cover, coastal dummy
- Smallness: Land area

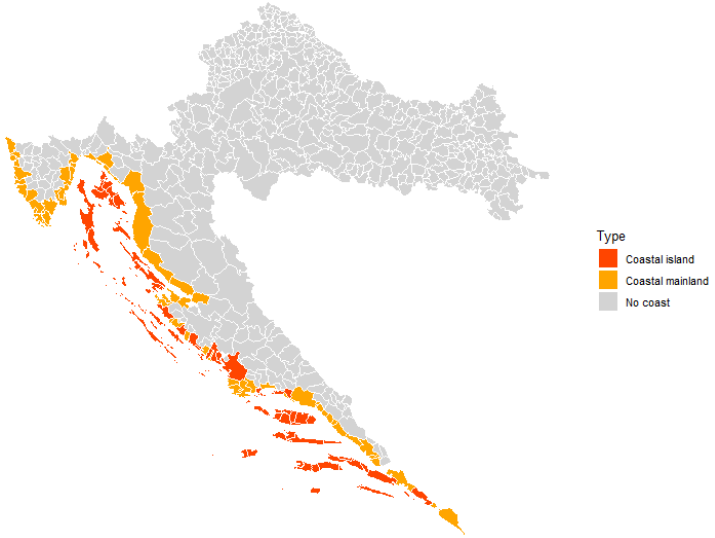
CoI in Croatia – Findings I (descriptive)

1. On average, total government expenditure per capita is USD 824 (49%) higher in island municipalities than in mainland municipalities
2. Differences are most pronounced in government expenditure on health, housing, and public order



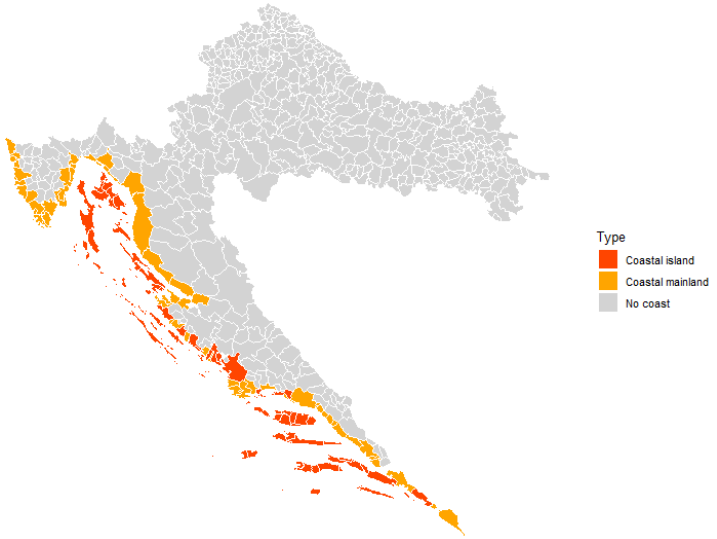
CoI in Croatia – Findings II (descriptive)

3. The average tourism intensity (tourist nights per inhabitant) on islands is 222% higher than the mainland average
4. Municipalities with island territory have a 28 percentage points higher share of protected areas



CoI in Croatia – Findings III (econometrics)

5. On average, total government expenditure per capita is USD 423 (~25%) higher in island municipalities than in mainland municipalities with similar geographic conditions
6. However, there is no statistically significant difference compared to geographically similar *coastal* mainland municipalities



CoI in Greece – Territorial considerations

The section of the report on Greece is not yet complete due to data limitations

- Large number of island regions and municipalities unlikely to constrain econometric analysis

CoI in Greece – Data considerations

- Limited availability of cost-related data at all levels
- GDP per capita is available to analyse differences in productivity between island and mainland TL3 regions but does not directly reflect economic costs
- Data on tourism intensity can provide initial insights regarding cost challenges for islands
- The limited availability of geographic controls restricts the options for meaningful econometric analysis

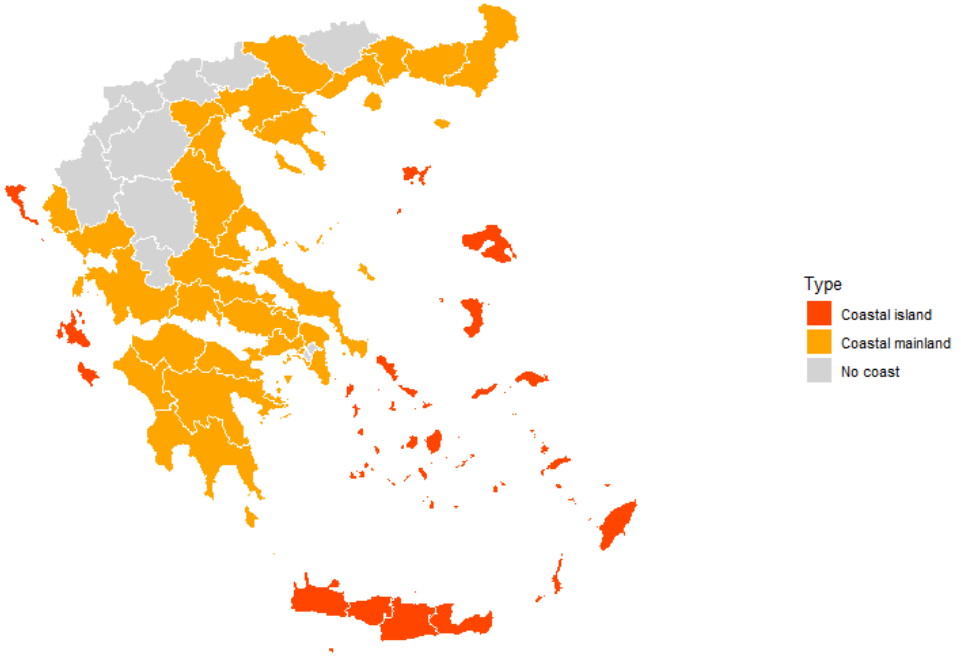
CoI in Greece – Most suitable level of analysis

Level of analysis:

- 52 TL3 regions

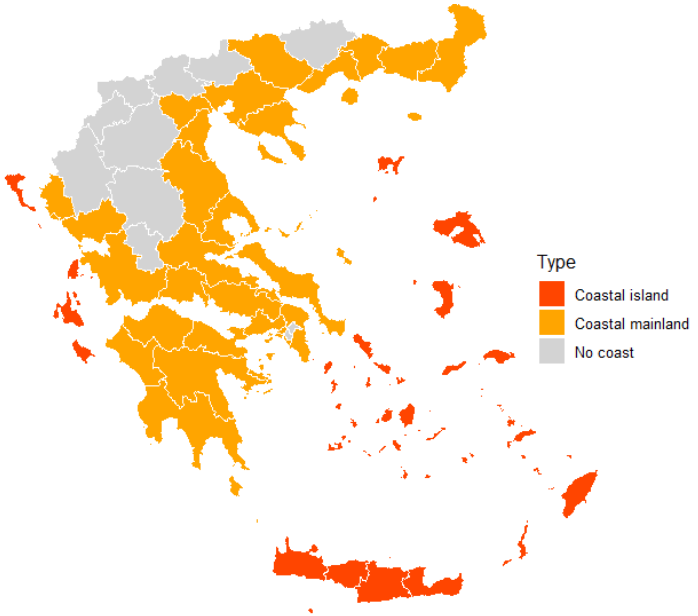
Main units of interest:

- 13 island regions



CoI in Greece – Preliminary findings

1. On average, GDP per capita is slightly lower (-EUR 556) on islands compared to all regions on the mainland
2. Tourism intensity is significantly higher in island regions (69 tourist nights per inhabitant per year) compared to mainland regions (8)



CoI in Greece – Potential econometric approach

Econometric analysis could be used to disentangle the effects of insularity at the TL3 level

- Seeking additional cost indicators, such as land values, house prices and transport costs, if available
- Alternatively, GDP could be used as a dependent variable but additional control variables such as forest cover and coastline length are needed

CoI in Sweden – Territorial considerations

- Most inhabited islands form part of larger, mainland territorial units
- County-level data would result in a small sample size and only one exclusively island county (Gotland)
- The municipal level offers a large sample size of diverse territories, but only two (Gotland and Öckerö) are island municipalities, limiting the potential for robust econometric analysis

CoI in Sweden – Data considerations

- Data on ferry schedules, journey times, and ticket prices publicly available
- OECD data on average mainland travel times between municipalities by road available for use
- Sweden's Kolada portal includes rich municipal-level demographic and economic data including indicators on land and house prices

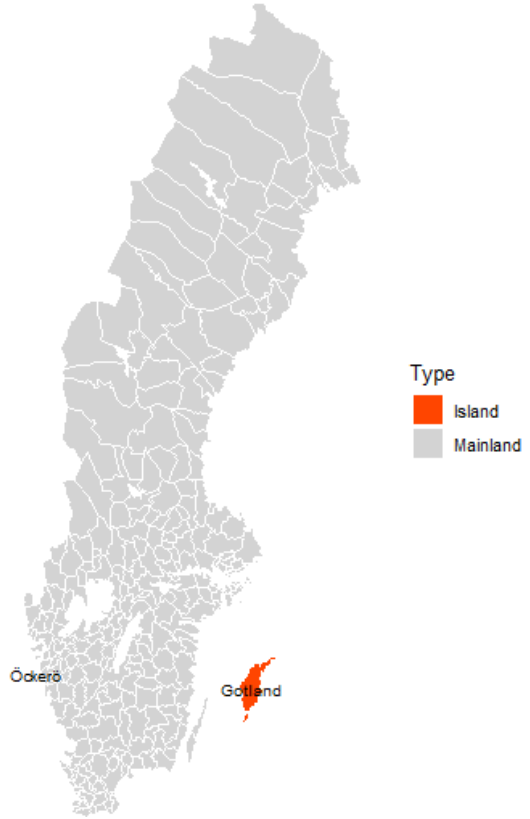
CoI in Sweden – Most suitable level of analysis

Level of analysis:

- 290 Municipalities

Main units of interest:

- 2 island municipalities (Gotland and Öckerö)
- Other municipalities with islands could not be treated as island municipalities due to their small share of island area and population



CoI in Sweden – Econometric approach

Dependent variable

- Transport costs for a trip to Stockholm (own calculation)
- Property price and rent (from Kolada)

Main variable of interest

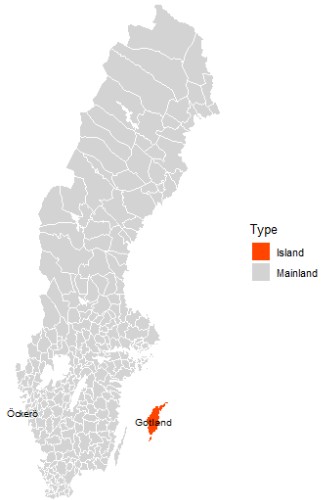
- Island dummy - measures the association of insularity with economic costs while all other variables are held constant

Main control variables

- Remoteness: Straight-line distance to Stockholm
- Topography: Share of arable land, share of forest cover, length of shoreline
- Smallness: Land area

CoI in Sweden – Findings on land and property prices

1. On average, property prices, rents and building values are higher on islands than on the mainland
2. Öckerö is much more affected across all indicators: For example, average property prices for apartments and houses in Öckerö are around 30% higher than in Gotland
3. After controlling for geographic characteristics, no significant differences were found between islands and comparable mainland municipalities across all housing and land indicators



CoI in Sweden – Transport indicator

An indicator reflecting the costs for inhabitants and businesses of each municipality for a standard trip to Stockholm by car

Mainland component

- **Financial costs** (fuel and electricity costs, maintenance costs)
- **Time costs** (economic costs of travel time)

+

Island component

- **Financial costs** (ticket prices)
- **Time costs** (economic costs of travel time)
- **Inconvenience costs** (delays and cancellation)

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Overall costs per trip

CoI in Sweden – Sources and assumptions of transport indicator

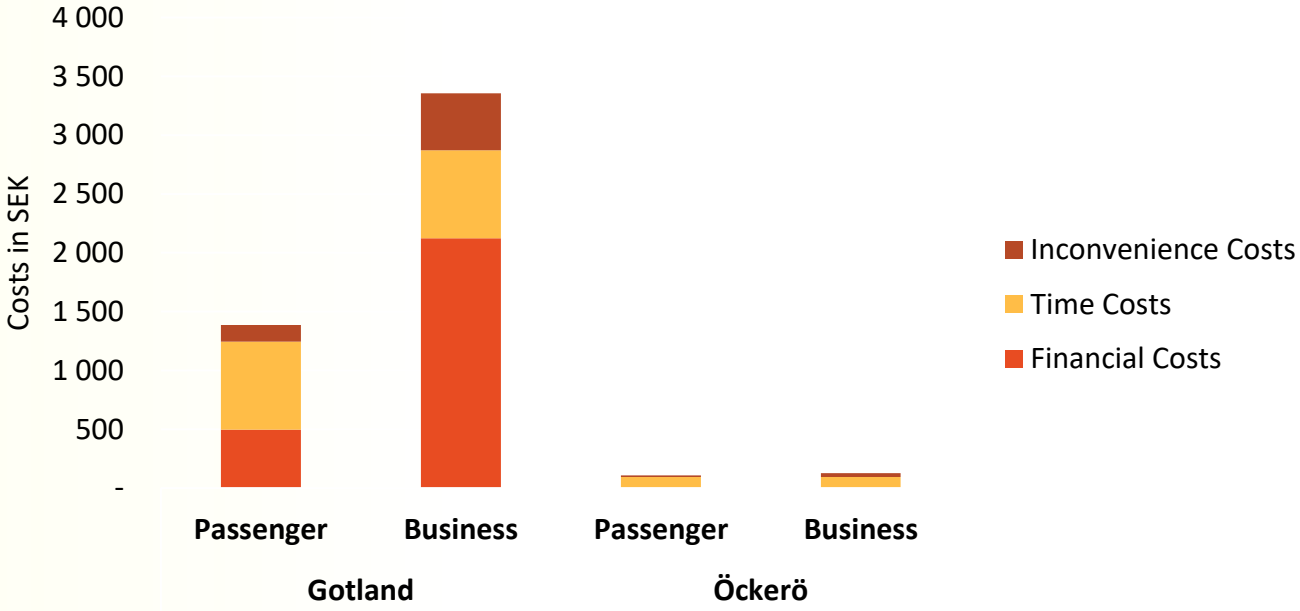
Based on publicly available data on travel times, ticket prices and ferry schedules the island component reflects the costs per ferry trip for passengers and businesses

Island component

Type of cost	Assumptions and calculations
Financial	• Ticket price per trip assuming that businesses and passengers travel by car and use the commuter card
Time	• Travel time to mainland destination by ferry • Average hourly wage (reflecting economic costs)
Inconvenience	• Assumptions on average ferry frequencies, delays, cancellations • Average hourly wage

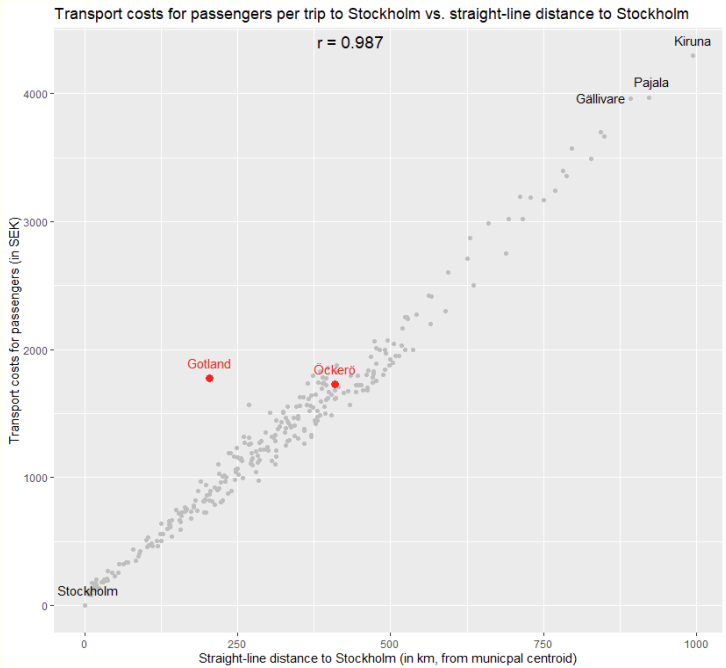
CoI in Sweden – Decomposition of island component

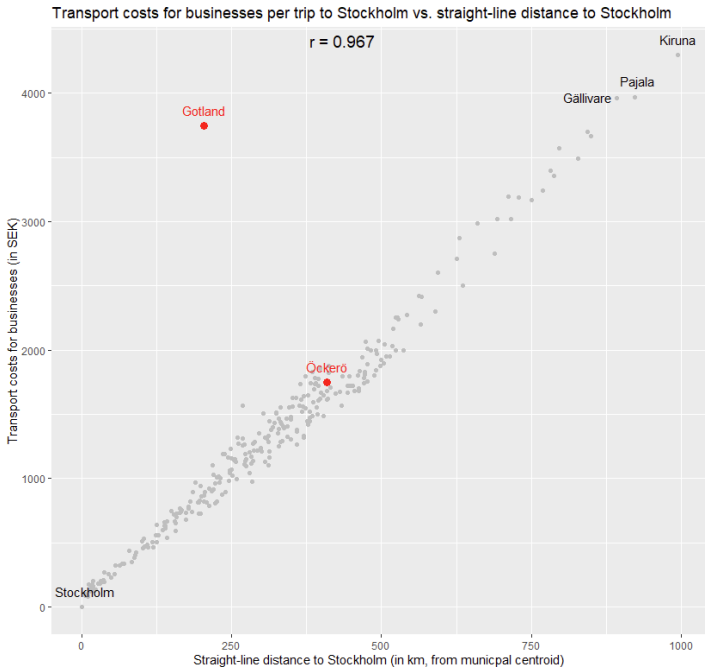
Financial and time costs are the main drivers of ferry-related transport costs



CoI in Sweden – Transport cost comparison

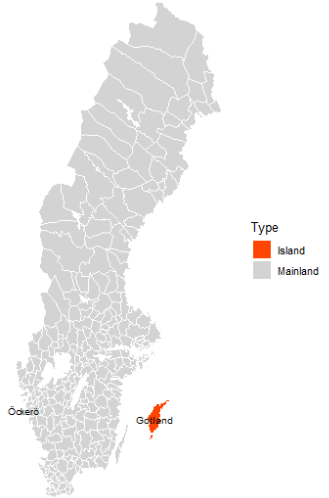
Transport costs are dependent on distance from Stockholm, but ferry-related costs have a significant impact on overall transport costs.





CoI in Sweden – Findings on transport

1. On average, transport costs for businesses and passengers are higher on islands than on the mainland
2. Transport prices for businesses and passengers in Gotland are higher than for those from Öckerö
3. Across all econometric specifications, Swedish islands are consistently associated with higher transport costs than mainland municipalities with similar geographic characteristics



Main take-aways

1. In **Croatia**, **municipal expenditure is significantly higher** among island municipalities. But Croatian islands face comparable cost challenges to coastal mainland municipalities.
2. In **Sweden**, **transport costs are significantly higher** for island businesses and residents than for comparable mainland territories due to ferry-related costs and additional travel time.
3. In addition to econometric evidence, other evidence from Croatia, Greece and Sweden **consistently suggests higher costs for islands**. These costs are sometimes similar to those faced by other remote regions (e.g. transport) and in other cases are more specific island challenges (e.g. tourism).

To be included in the second draft

- Econometric analysis of insularity costs in Greece
- Testing of island typology options based on island-level data
- Refinement of methodological approach based on new data and feedback, e.g. additional control variables

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