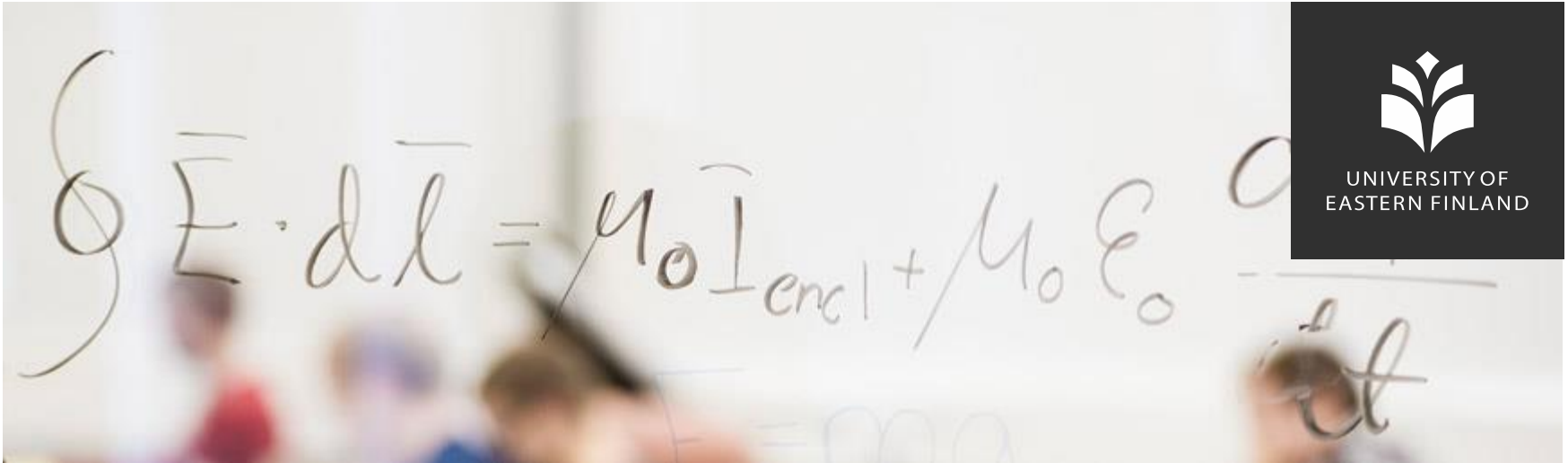


# Assessing shrinkage trends through statistics

*Teemu Makkonen*

# Outline

- Why do we need to assess (measure) shrinkage trends through statistics?
- How do we (assess) measure shrinkage trends through statistics?
  - The most commonly utilized indicators?
  - Temporal scale?
  - Geographical scale?

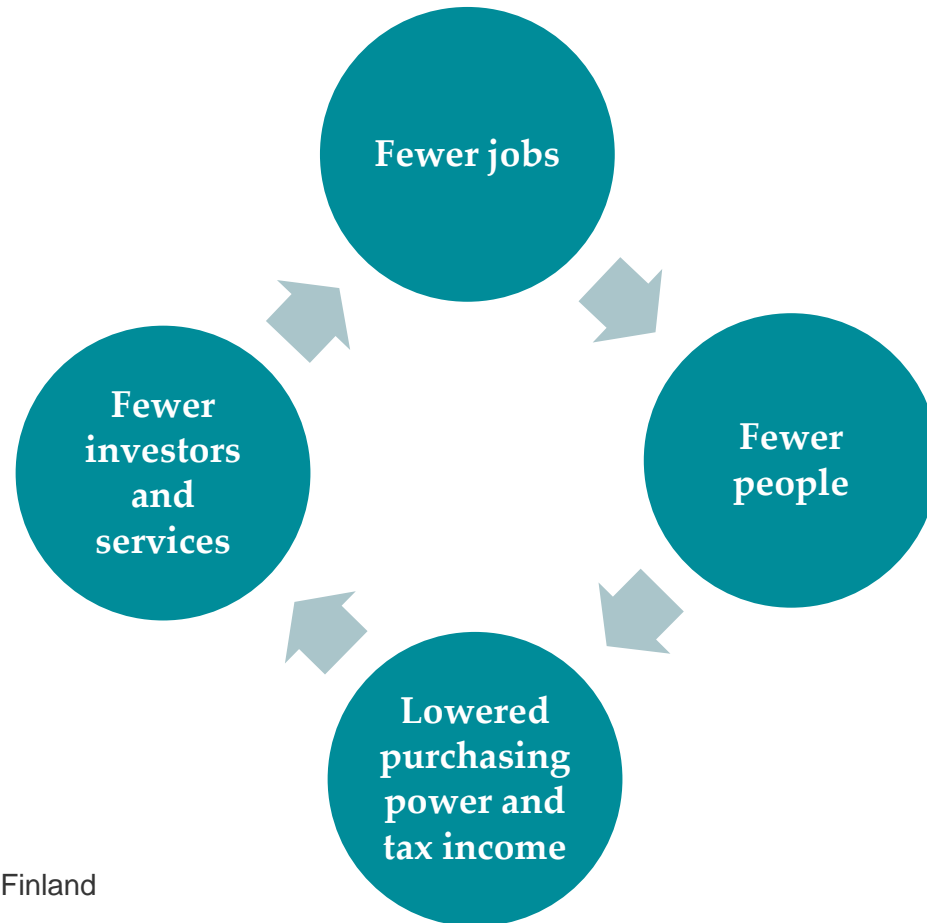


## The need for measuring shrinkage

# Shrinkage from the quantitative perspective

- Shrinkage is a complex process involving such measurable items as
  - Dwindling economic development potential
    - Loss of jobs
    - Loss of services
      - Abandoned commercial buildings and space
  - Depopulation
    - Population loss
      - Abandoned residential buildings and space

# Shrinkage is a vicious cycle



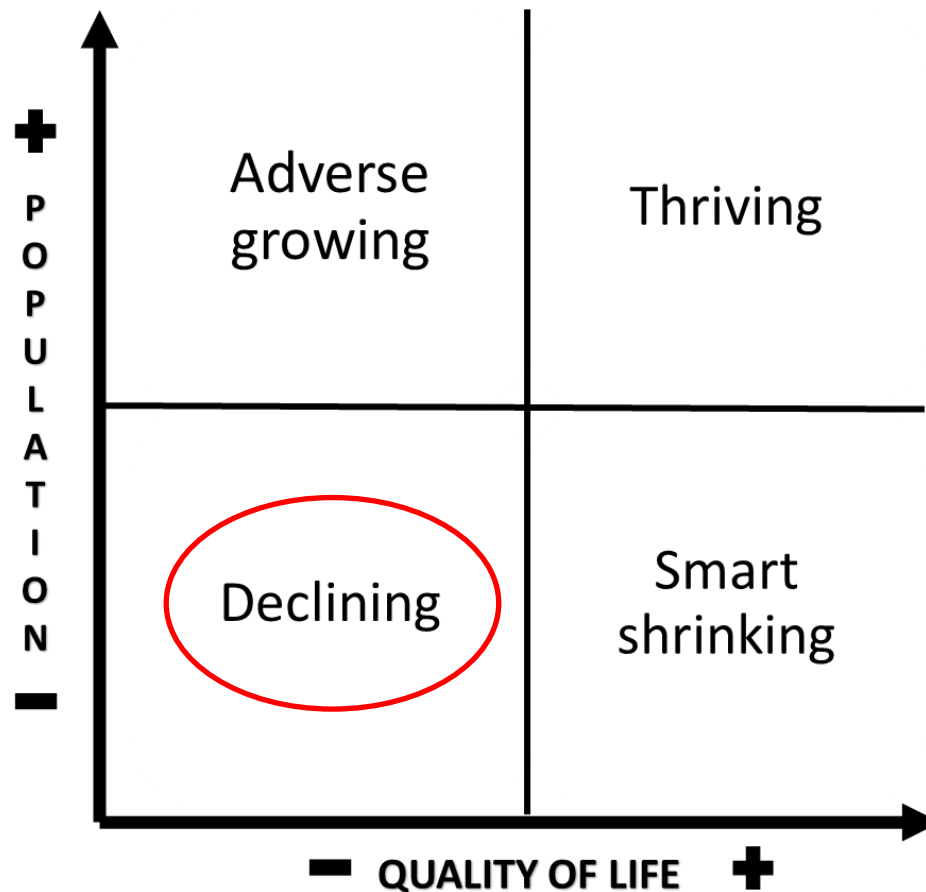
# Shrinkage – dictionary definition

- Shrinkage =
  - a reduction in **the size of something**, or the process of becoming smaller
- Depopulation =
  - the action of causing a country or area to have **fewer people** living in it
- Decline =
  - to gradually become **less, worse, or lower**

# Shrinkage from the quality of life perspective

- Depopulation/Shrinkage do not automatically lead to decline
- Growth is no synonym for bliss
  - Growing regions have their own problems
- Some regions have retained their vitality as good living environments with high quality of life despite depopulation and shrinkage (termed as “smart shrinking”)
  - Only regions that are both shrinking in terms of economy and population as well as quality of life should be considered as declining

# Shrinkage ≠ Decline



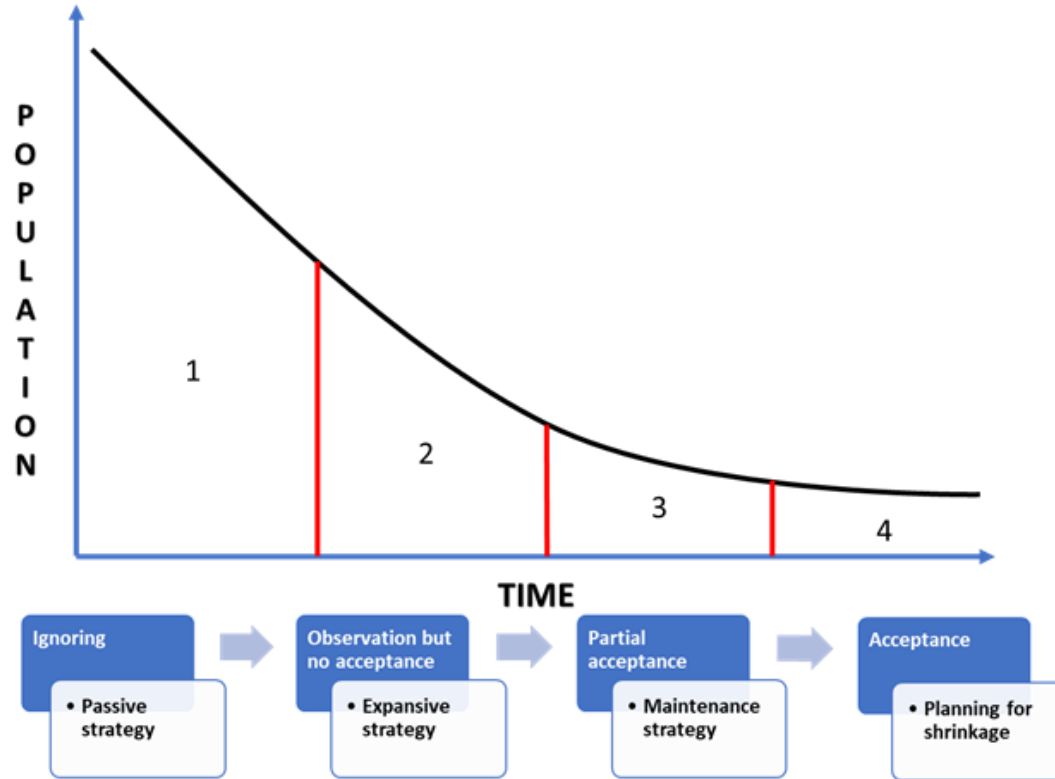
Peters et al. 2018



# The negative connotation of shrinkage

- Shrinkage (still) has a negative connotation
  - Perceived as something undesirable that should be avoided (at all cost)
  - Policymakers have hard time in accepting shrinkage before it is “too late”
- For social scientists it is often a contextual fact
  - A challenging trend that needs to be addressed accordingly, rather than a problem that has to be reversed

# Accepting shrinkage



# Why does shrinkage matter for planning?

- Ignoring shrinkage leads to wasted resources and bad planning
  - Unrealistic expectations may lead to expensive growth investments that fail
- Planning for smaller populations starts too late
  - Focus on luring new inhabitants on the expense of the quality of life of the existing population
- Regions need facts (**numbers**) to support their planning

# Planning for shrinkage = Smart shrinkage

- Smart shrinkage = Planning for less – fewer people, fewer buildings and fewer land uses (Popper & Popper 2002)
- Smart shrinkage = Facilitating a high quality of life for the (remaining) population in places that are depopulating (Hollander 2011)



$$\oint \vec{E} \cdot d\vec{l} = \mu_0 I_{enc} + \mu_0 \epsilon_0 \frac{d\phi}{dt}$$

## Measuring shrinkage

# How to measure shrinkage?

## 1) Indicators

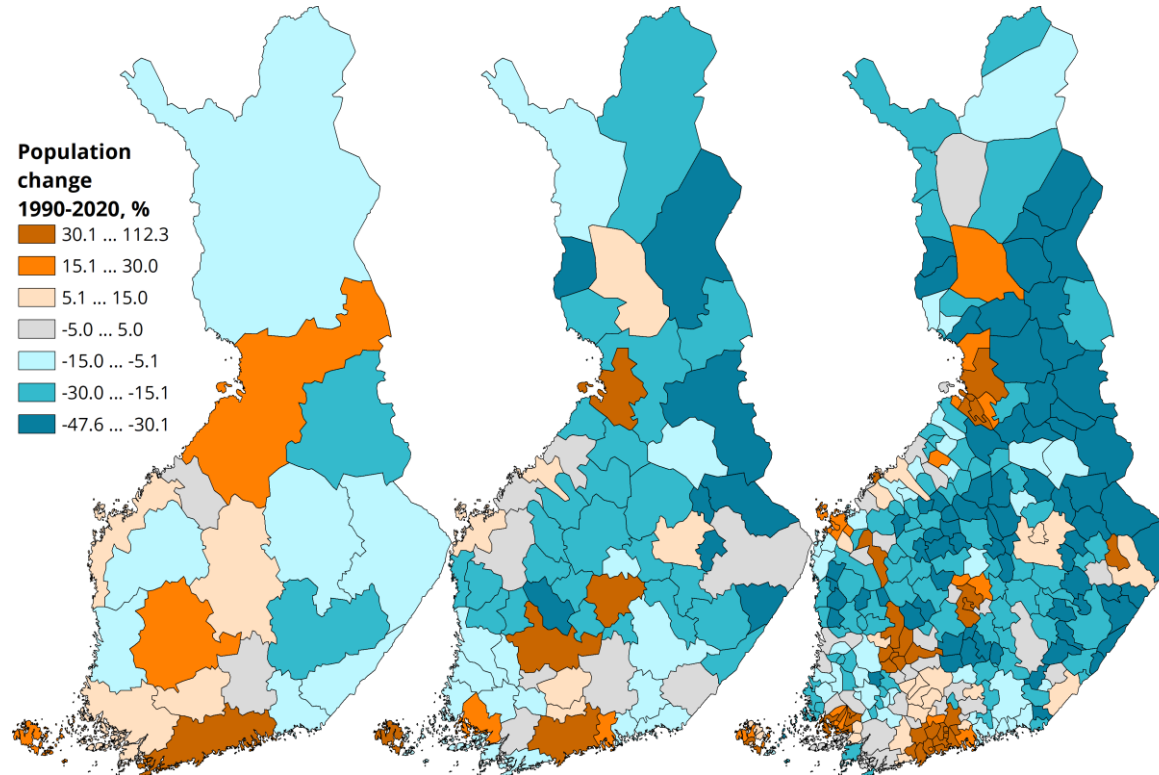
- There are several ways to measure shrinkage
- No consensus on which indicator is the “best”
  - Selection depends on the research question and data availability
- The most commonly used indicators are
  - Population (depopulation)
  - Employment (loss of jobs)
  - Vacant housing / Vacant commercial space (increased vacancy)

# How to measure shrinkage?

## 1) Indicators

- Either in absolute or relative terms
  - Absolute figures give a picture of the volume of change
  - Relative figures are comparable between regions of different sizes
- “Faster” than average shrinkage
  - The regions that are shrinking the most
    - To avoid “labelling” regions as shrinking, when they in fact swing back and forth (small growth this year, small shrinkage the next)
    - To avoid “labelling” regions as shrinking based on (very) small negative trends

# Population



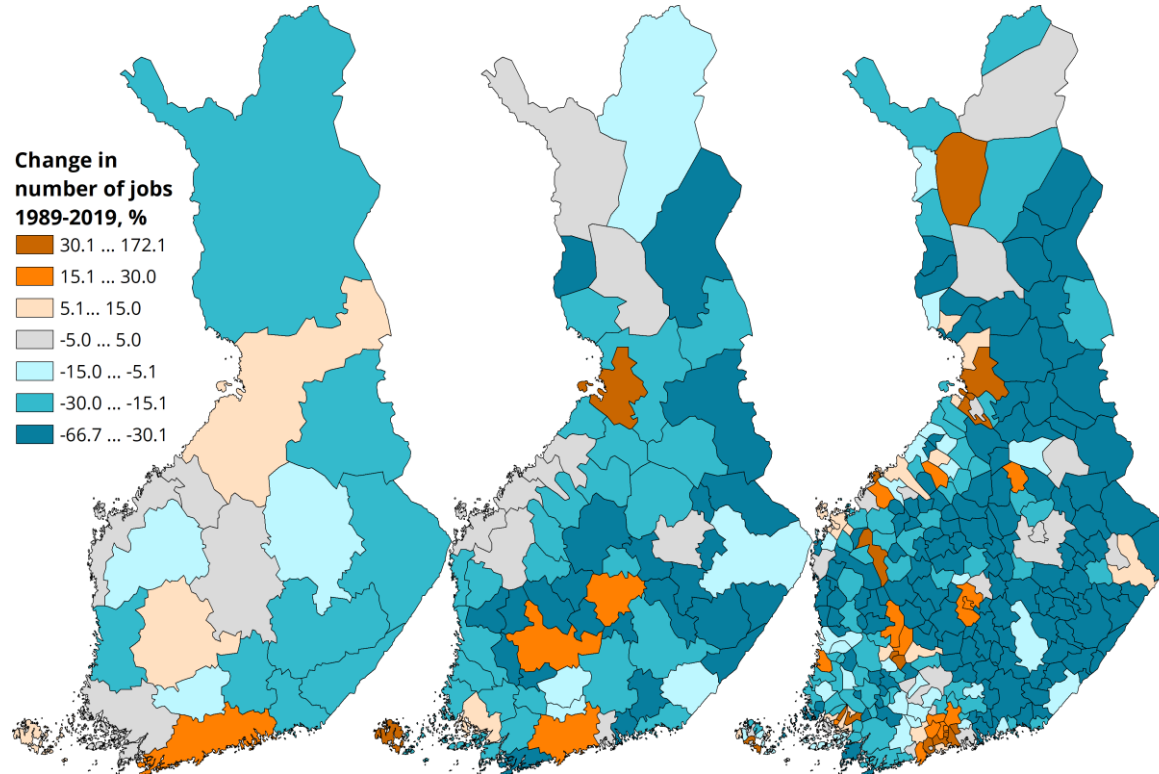
Share of shrinking regions: 52,6 %

71,0%

70,6 %



# Employment

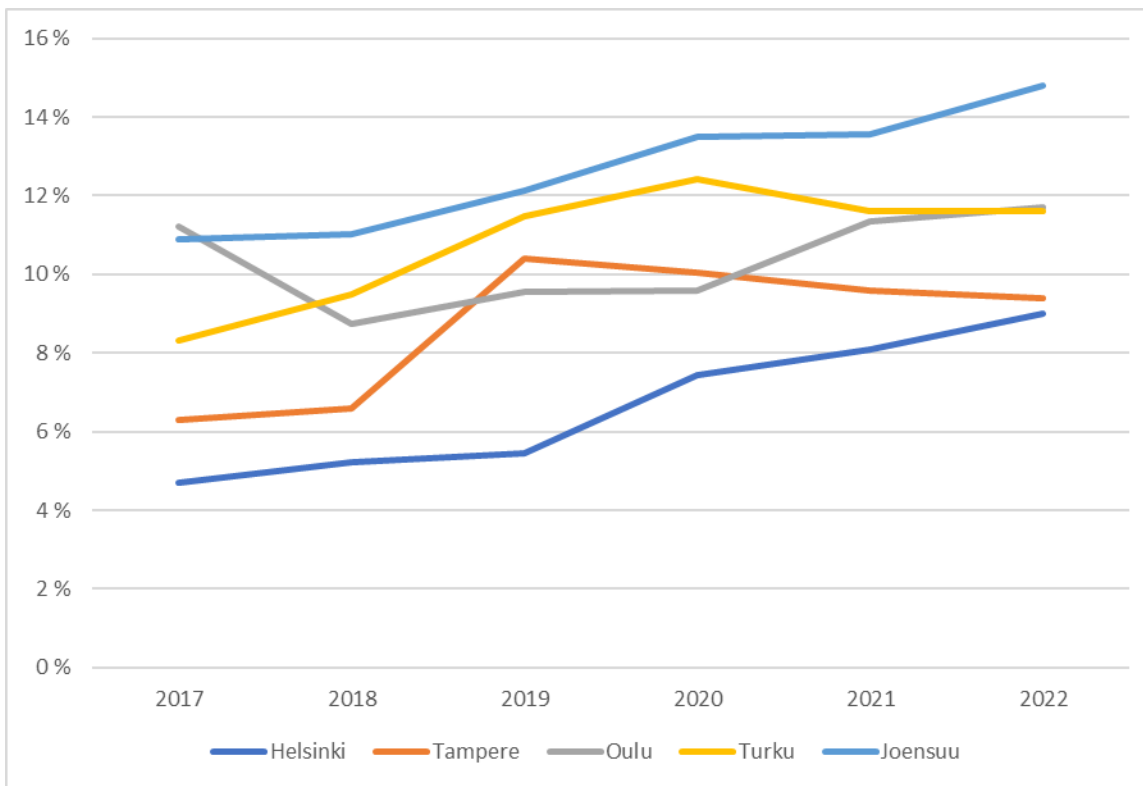


Share of shrinking regions: 78,9 %

81,2 %

81,9 %

# Vacant commercial space



<https://www.kaupunkikeskustat.fi/wp-content/uploads/2022/05/Elinvoimajulkistus-2022-liite.pdf>

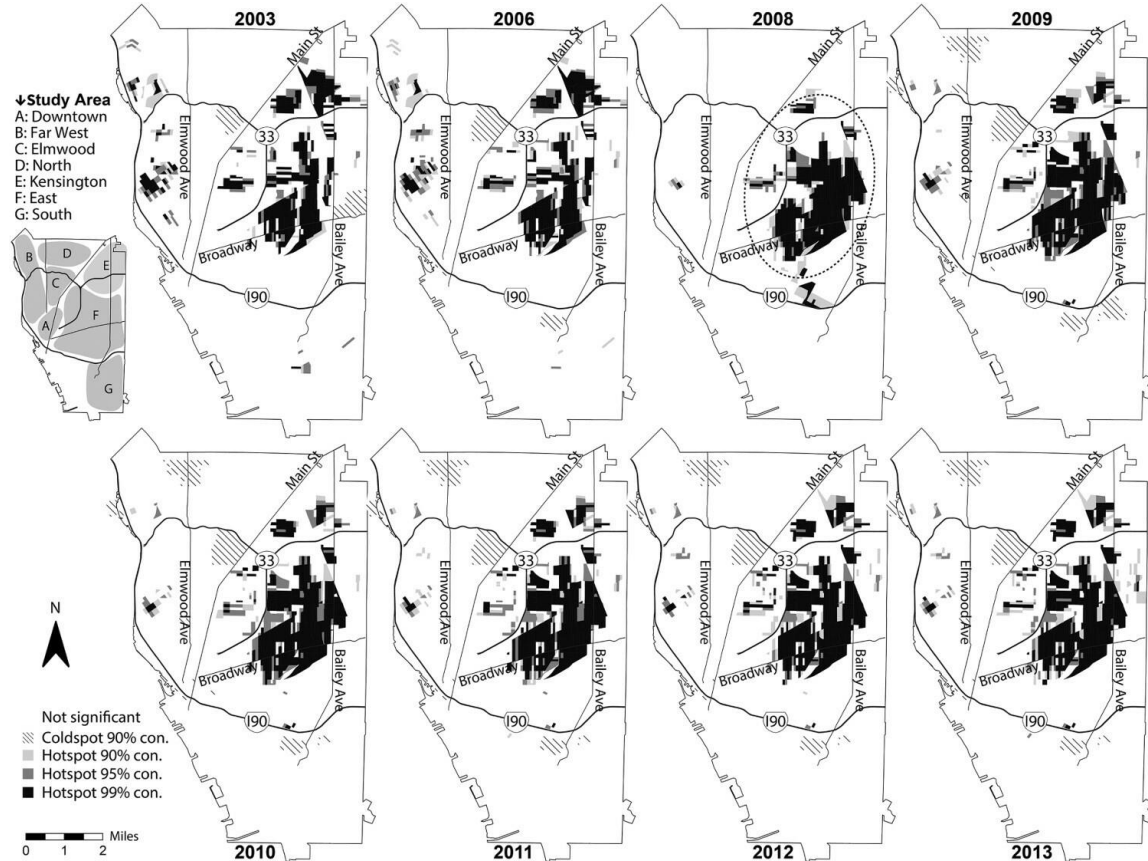
# Housing vacancy

## Shares of shrinking Finnish regions

<b>Indicator</b>	<b>Analysis period</b>	<b>Regions</b>	<b>Sub-regions</b>	<b>Municipalities</b>
Housing vacancy	Long	100 %	100 %	99.0%
	Medium	100 %	100 %	98.4%
	Short	78.9%	78.3%	49.2%

For example, in Helsinki the number of new housing units has increased eight times faster than the number of vacant housing

# Long-term vacant housing (abandonment in Buffalo)



Yin et al. 2022

# How to measure shrinkage?

## 2) Temporal scale

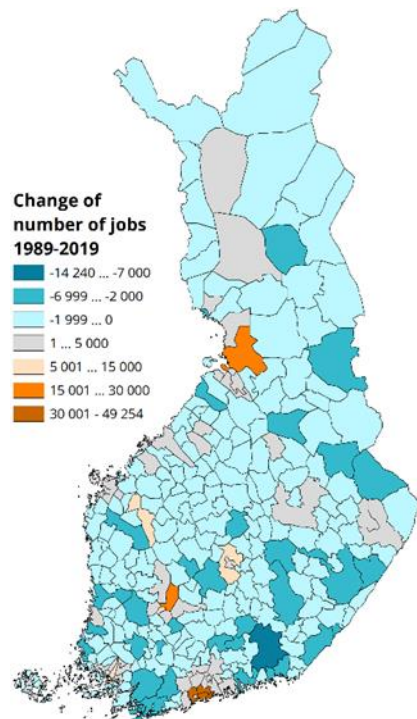
- Shrinking Cities International Research Network
  - A shrinking city can be defined as an urban area that has faced population loss for **more than two years** and is undergoing economic transformations with some symptoms of a structural crisis
- Grasland et al. (2008)
  - A region that is shrinking is a region that is losing a significant proportion of its population over a period greater than or equal to **one generation**

# How to measure shrinkage?

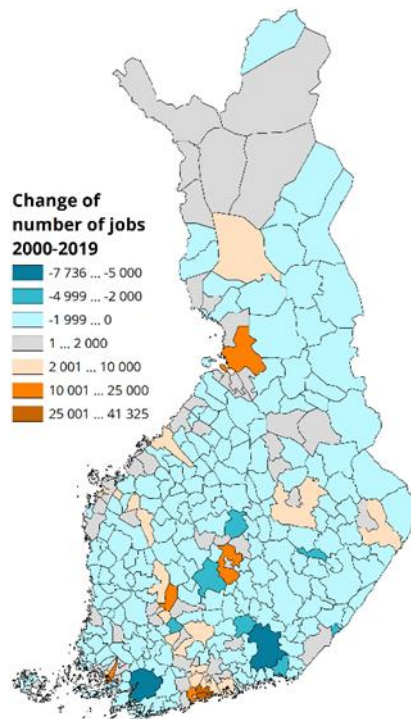
## 2) Temporal scale

- Short: At least three consecutive years
- Medium: A period of 20 years is often used (because data availability does not cater for a “long” analysis)
- Long: For example, the average age of mothers at the birth of their children (in Finland ca. 31 years)

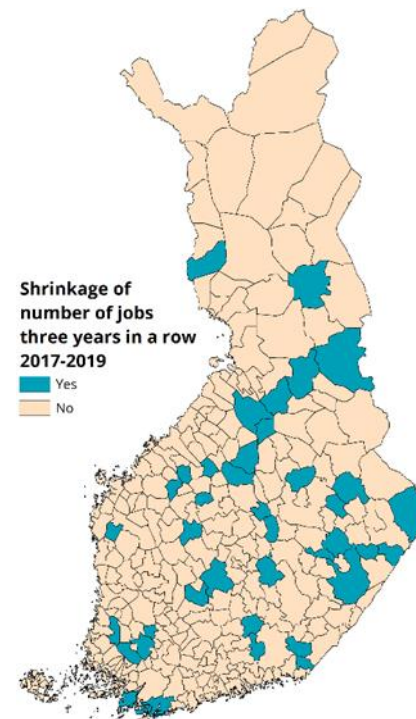
# Shrinkage at different time periods



Share of shrinking regions: 81,9 %



Share of shrinking regions: 70,6 %



Share of shrinking regions: 12,6 %

# How to measure shrinkage?

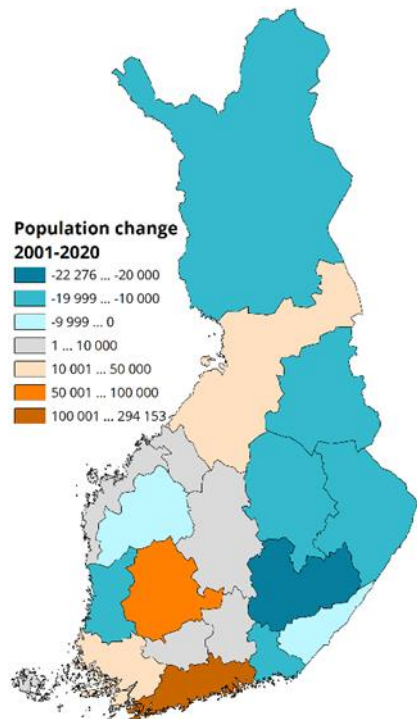
## 3) Geographical scale

- Using larger regional scales disregards within regional heterogeneity
- Using administrative regions disregards functional linkages
  - How to define the contours of functional regions?
- Data availability and research interests play a role in the selection
  - Regions; Sub-regions; Cities and municipalities; Postal code areas; Grid-level data (e.g. 1km \* 1km)



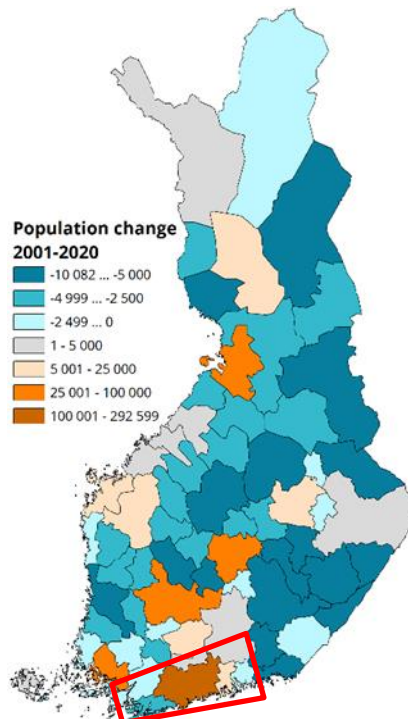
# “Shrinkage pockets”

## Regions



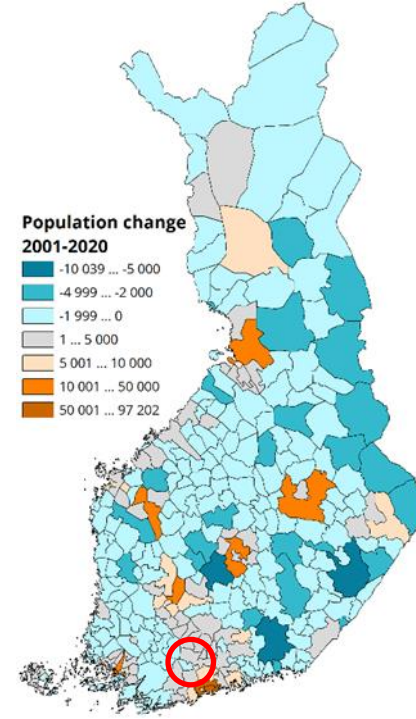
Share of shrinking regions: 47,4 %

## Sub-regions



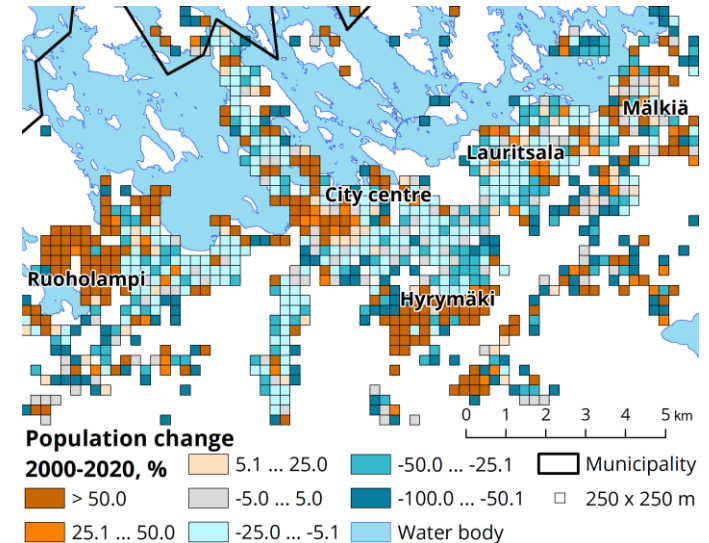
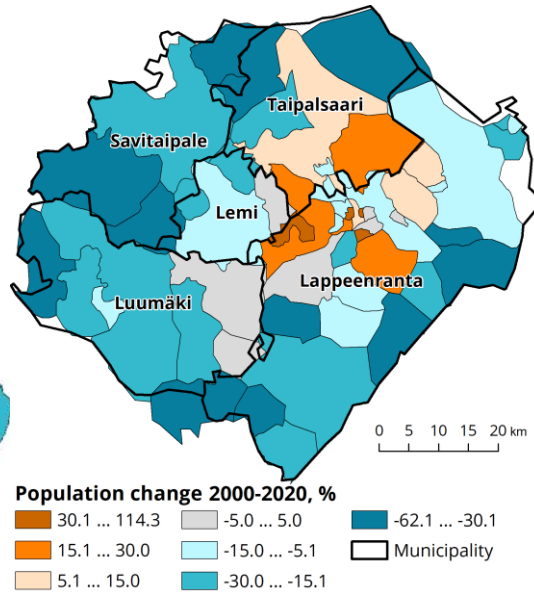
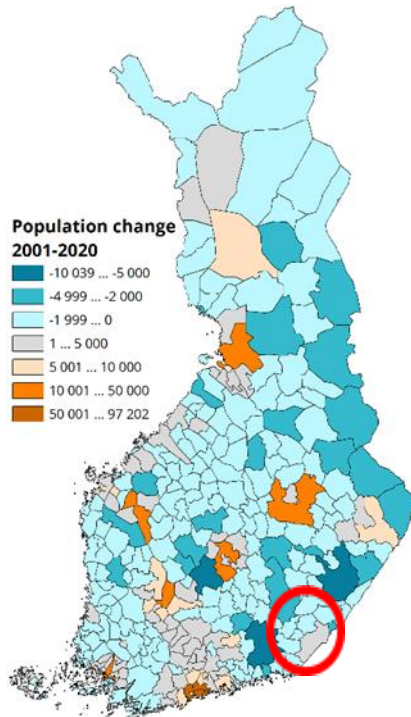
Share of shrinking regions: 71,0 %

## Municipalities



Share of shrinking regions: 69,3 %

# Case Lappeenranta



# Summary

- Population
  - A consistent and most often used indicator; Using larger aggregate regional scales still hides “shrinkage pockets”
- Employment statistics
  - Subject to economic cycles (importance of the temporal scale)
- Vacant commercial space
  - Out of town malls, e-commerce, etc.
- Vacant housing
  - Rise in housing supply (focus on long-term vacancy); Better suited to urban than rural areas



$$\oint \vec{E} \cdot d\vec{l} = \mu_0 I_{enc} + \mu_0 \epsilon_0 \frac{d\phi}{dt}$$

## Lessons learned (hopefully)

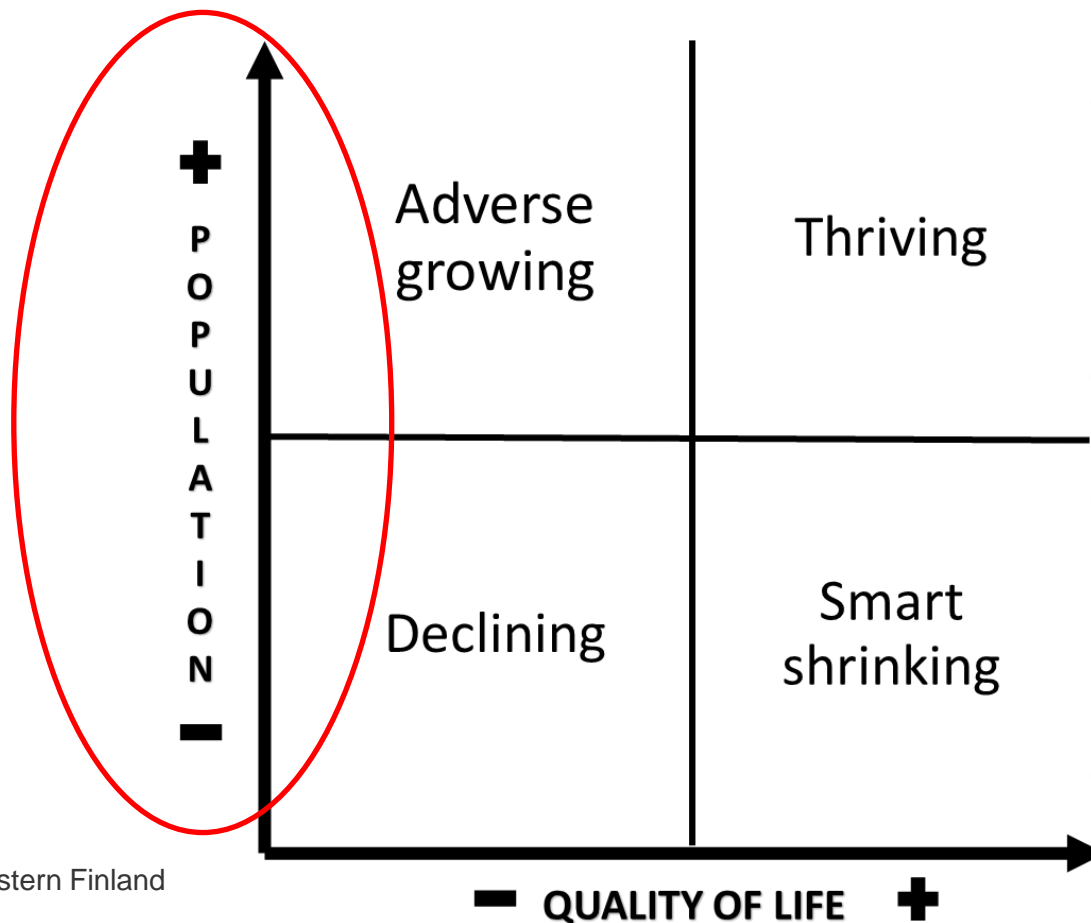
# So, what was the point?

- Statistics and maps help us to understand the world
  - Raise the awareness of policymakers to accept shrinkage and start planning accordingly
- Statistics and maps help us to predict the future
  - Facilitate the planning of shrinking regions

# So, what was the point?

- “Labelling” regions as shrinking depends on
  - The selected indicator(s)
  - The time period investigated
  - The geographical scale investigated
- Results are volatile depending on these decisions
  - They shouldn’t be arbitrary
  - Decisions shouldn’t be taken "too lightly"

# Shrinkage ≠ Decline



Peters et al. 2018

# So, what was the point?

- Shrinkage does not automatically lead to decline if the quality of life of the remaining population does not worsen (smart shrinking)
- The measurement of quality of life of shrinking regions should be a key interest for both academics and policymakers



*Thank you!*



UNIVERSITY OF  
EASTERN FINLAND

*teemu.makkonen@uef.fi*

# Reading

- Grasland et al. (2008) *Shrinking Regions: A Paradigm Shift in Demography and Territorial Development*. European Parliament.
- Hollander, J. (2011) Can a city successfully shrink? *Urban Affairs Review* 47, 129–141.
- Makkonen & Inkinen (2023) Benchmarking the vitality of shrinking rural regions in Finland. *Journal of Rural Studies* 97, 334–344.
- Makkonen et al. (2022) Mapping spatio-temporal variations of shrinkage in Finland. *Fennia* 200, 137–156.
- Peters et al. (2018) Using entrepreneurial social infrastructure to understand smart shrinkage in small towns. *Journal of Rural Studies* 64, 39–49.
- Popper & Popper (2002) Small can be beautiful: Coming to terms with decline. *Planning* 68(7), 20–23.
- Yin et al. (2022). Spatial clustering of property abandonment in shrinking cities. *Urban Geography* (in print).
- Zarecor et al. (2021) Rural smart shrinkage and perceptions of quality of life in the American Midwest. In: *Handbook of Quality of Life and Sustainability*, 395–415. Springer.