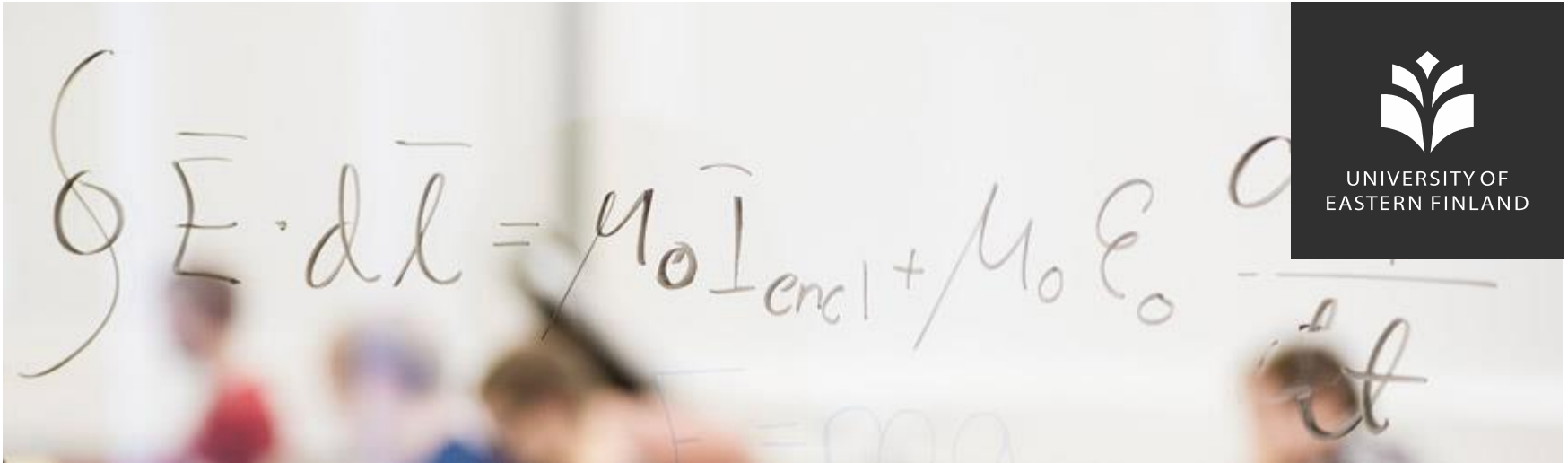# Assessing shrinkage trends through statistics

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?
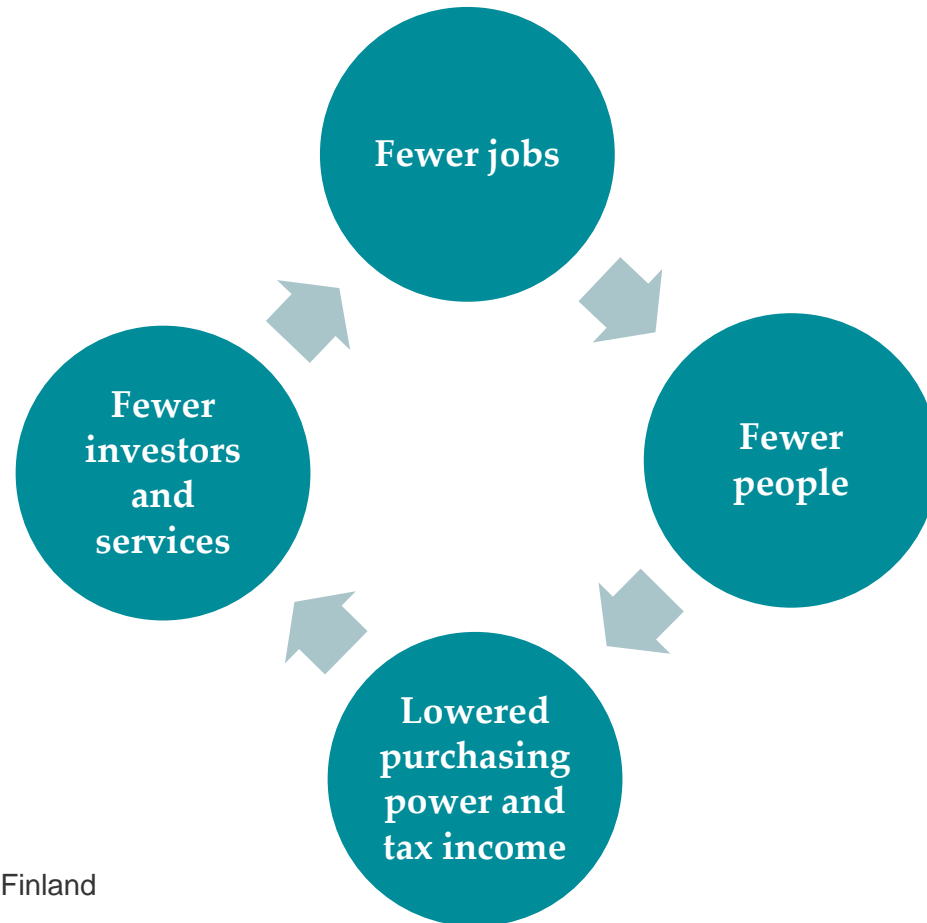   - Temporal scale?
    - Geographical scale?

The need for measuring shrinkage

Shrinkage from the quantitative -perspective

- Shrinkage is a complex process involving such measurable phenomena (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

Fewer jobs → Fewer people → Lowered purchasing power and tax income → Fewer investors and services → (back to Fewer jobs)

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 and shrinkage do not automatically lead to decline

- Some regions have retained their vitality as good living environments with high quality of life despite depopulation and shrinkage (termed as "smart shrinking")

  – Our US colleagues argue that only regions that are both <u>shrinking</u> in terms of economy and population as well as quality of life should be considered as <u>declining</u> (Peters et al. 2018 *Journal of Rural Studies* 64, 39–49)

Shrinkage ≠ Decline
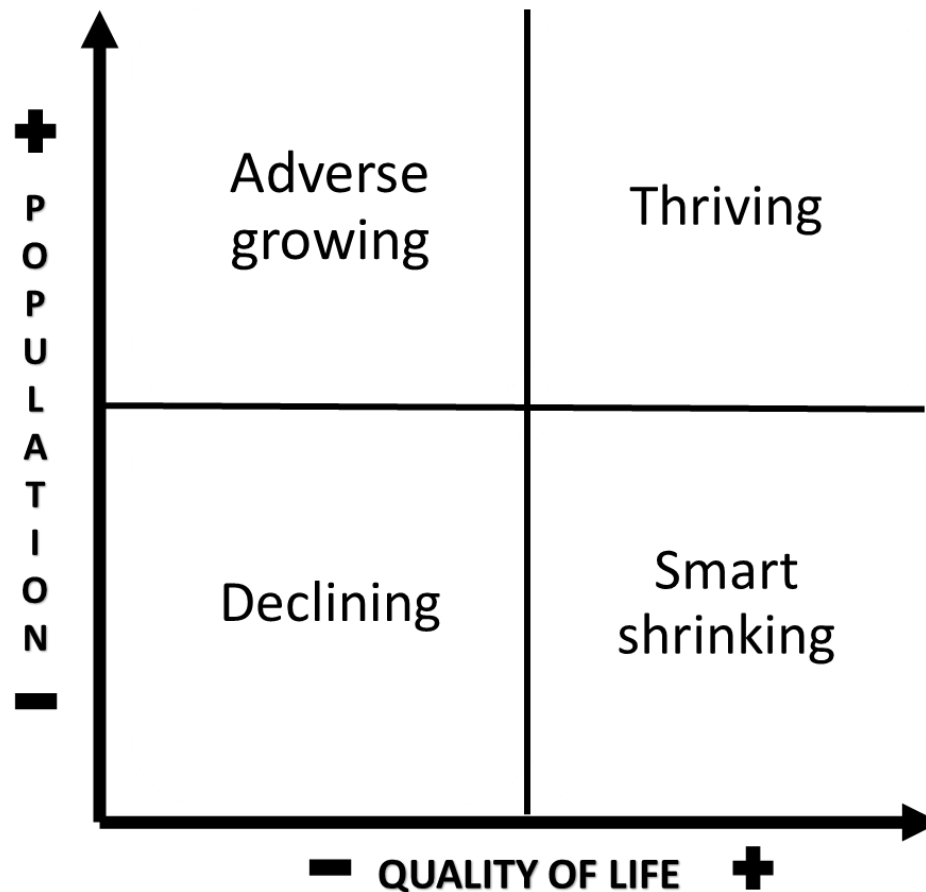
The negative connotation of shrinkage

- 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
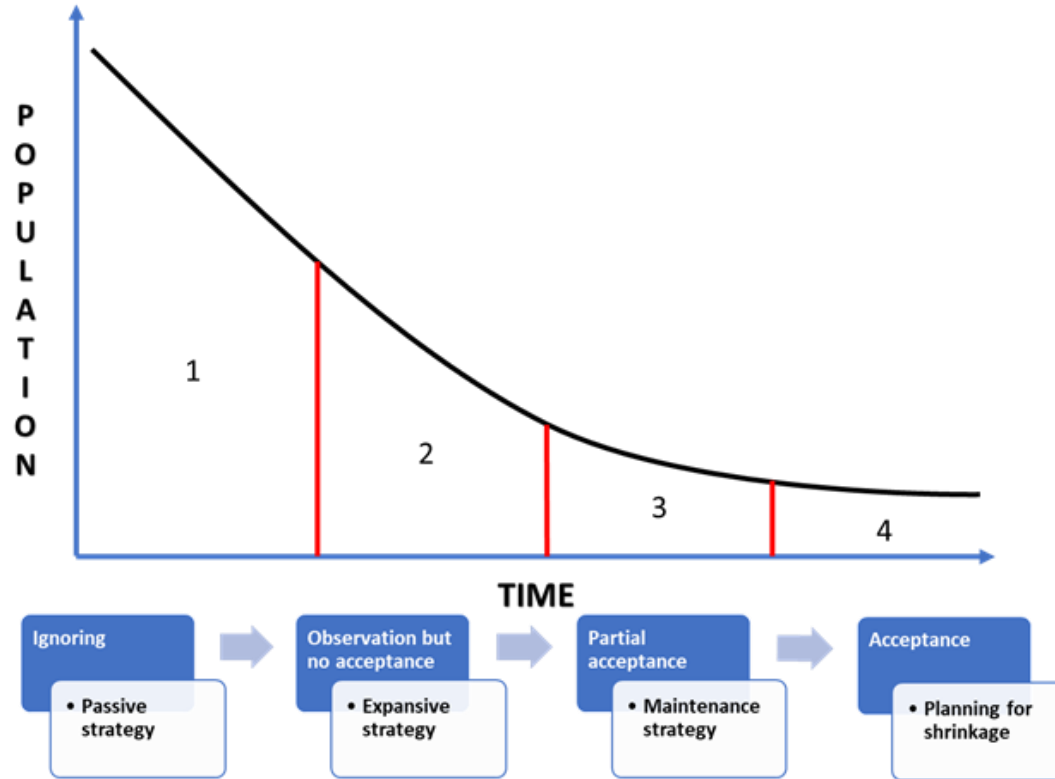
Why does shrinkage matter for planning

- 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 at the expense of the quality of life of the existing population
- Regions need facts (**numbers**) to realize their likely development trends and to support their planning
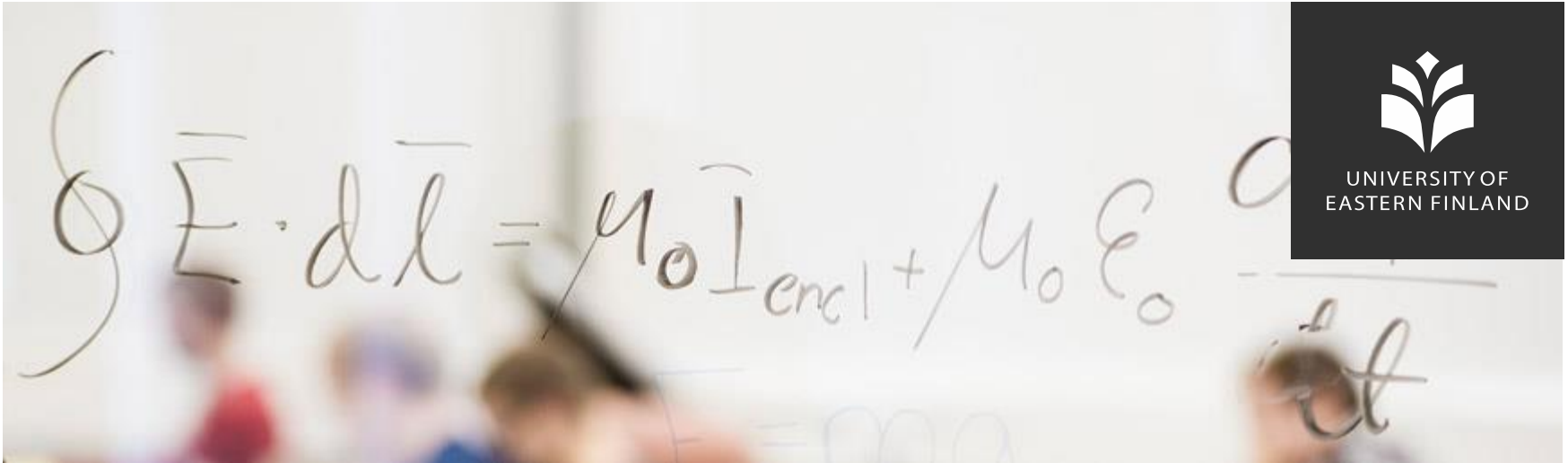
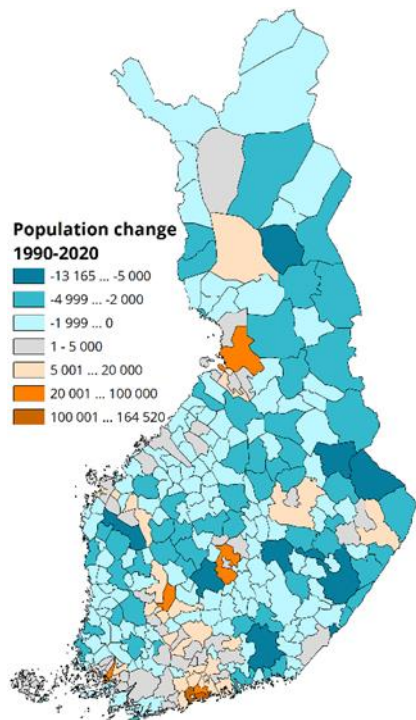# Measuring shrinkage

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)
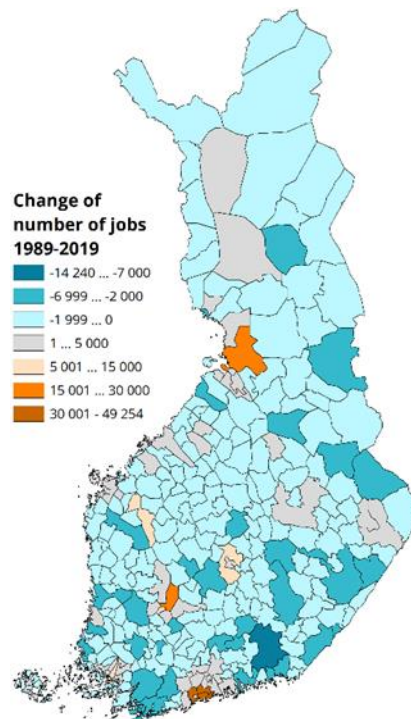
How to measure shrinkage?
1) Indicators

- 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

  – Only pick those 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
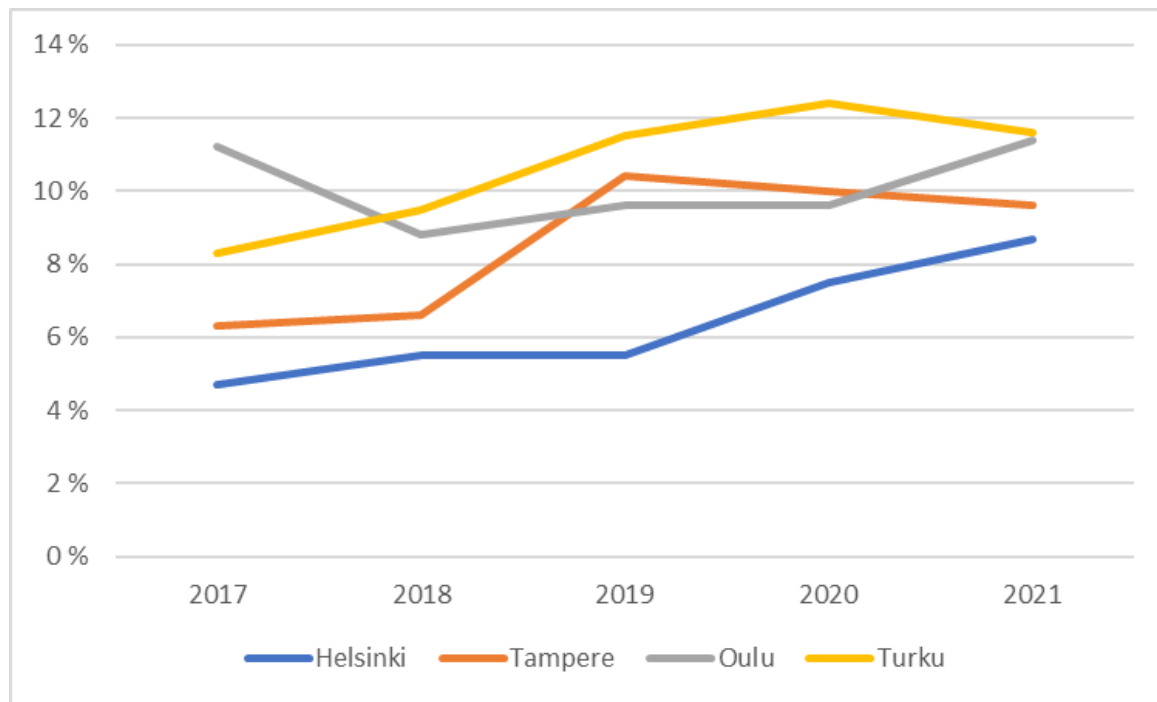
Population and employment

Population change 1990-2020
- -13 165 ... -5 000
- -4 999 ... -2 000
- -1 999 ... 0
- 1 - 5 000
- 5 001 ... 20 000
- 20 001 ... 100 000
- 100 001 ... 164 520

Share of shrinking regions: 70,6 %

Change of number of jobs 1989-2019
- -14 240 ... -7 000
- -6 999 ... -2 000
- -1 999 ... 0
- 1 ... 5 000
- 5 001 ... 15 000
- 15 001 ... 30 000
- 30 001 - 49 254

Share of shrinking regions: 81,9 %

Vacant commercial space

Source: Salokorpi-yhtiöt (2021) Keskustojen elinvoimalaskenta.

Vacant housing

Vacant Residential Properties

2003 — 2006 — 2009

Legend
- Vacant Residential Properties
- City of Buffalo
- Vacancy: Low to High
- Hospitals

17
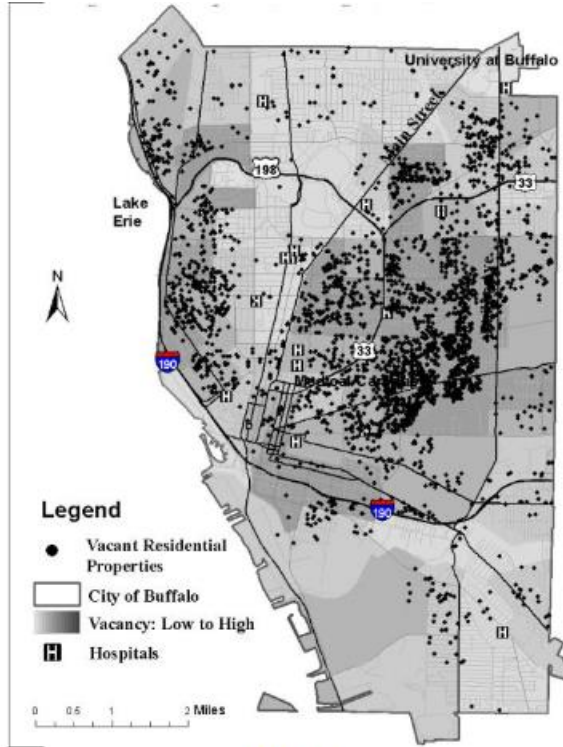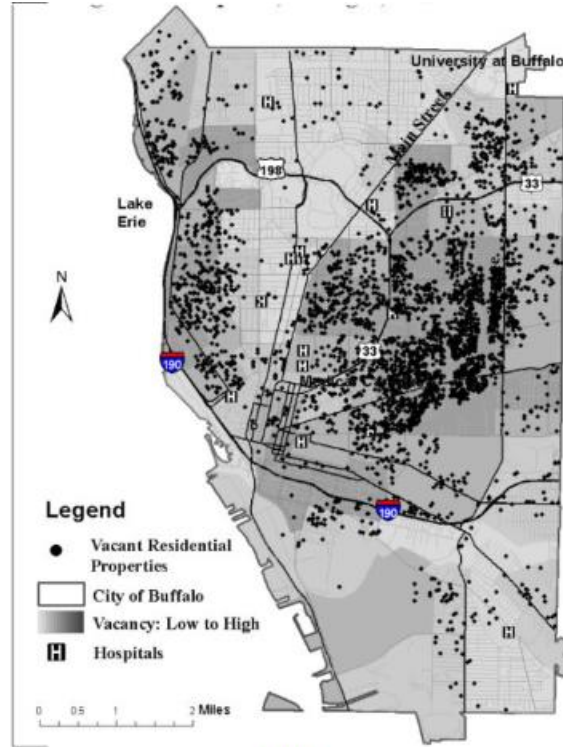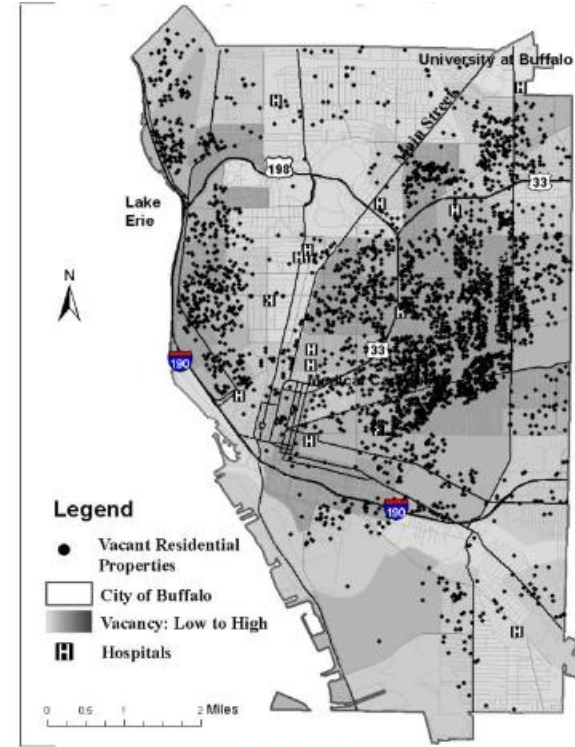
How to measure shrinkage?
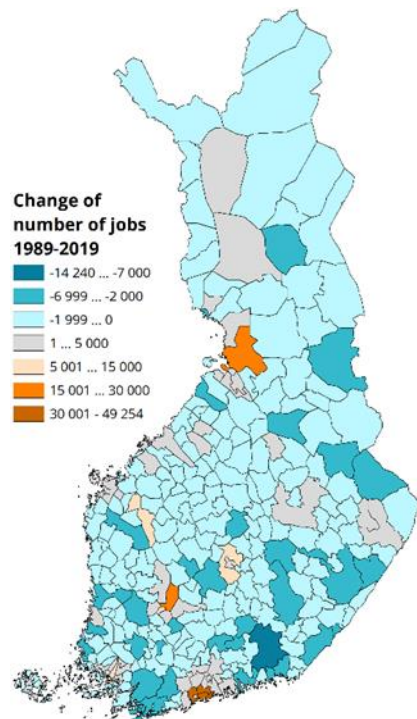# 2) Temporal scale

- 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) *Shrinking regions.*
  - 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?
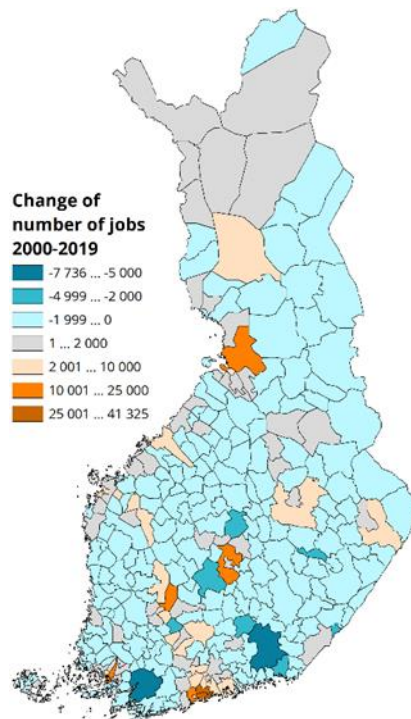# 2) Temporal scale

- Generation?
  - E.g., the average age of mothers at the birth of their children
    - In Finland ca. 31 years

- Constrained by data availability
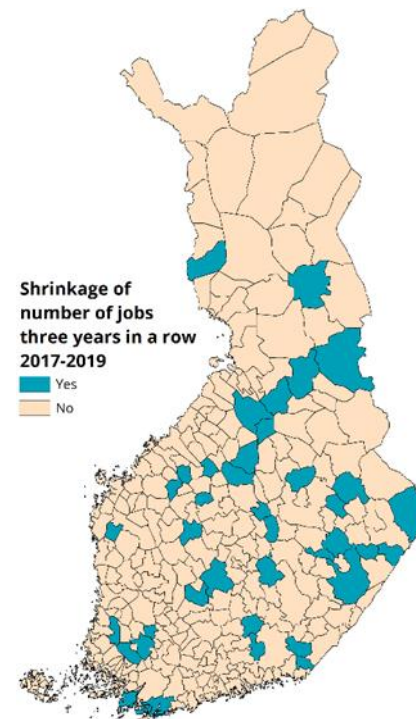 - Intermediate temporal scales are often used (e.g., 20 years)

Shrinkage at different time periods

Change of
number of jobs
1989-2019
- -14 240 ... -7 000
- -6 999 ... -2 000
- -1 999 ... 0
- 1 ... 5 000
- 5 001 ... 15 000
- 15 001 ... 30 000
- 30 001 - 49 254

Share of shrinking regions: 81,9 %

Change of
number of jobs
2000-2019
- -7 736 ... -5 000
- -4 999 ... -2 000
- -1 999 ... 0
- 1 ... 2 000
- 2 001 ... 10 000
- 10 001 ... 25 000
- 25 001 ... 41 325

Share of shrinking regions: 70,6 %

Shrinkage of
number of jobs
three years in a row
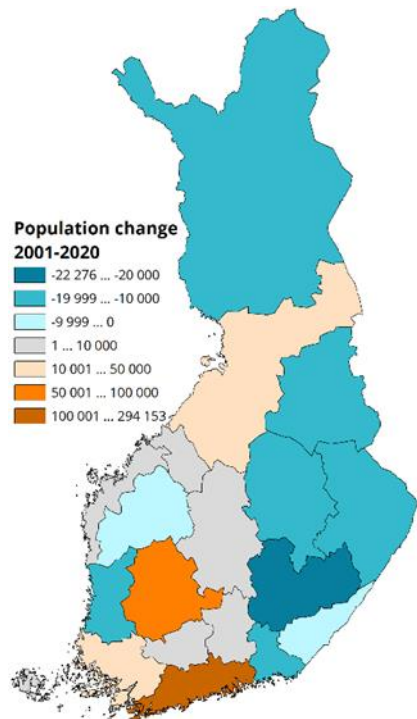2017-2019
- Yes
- No

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

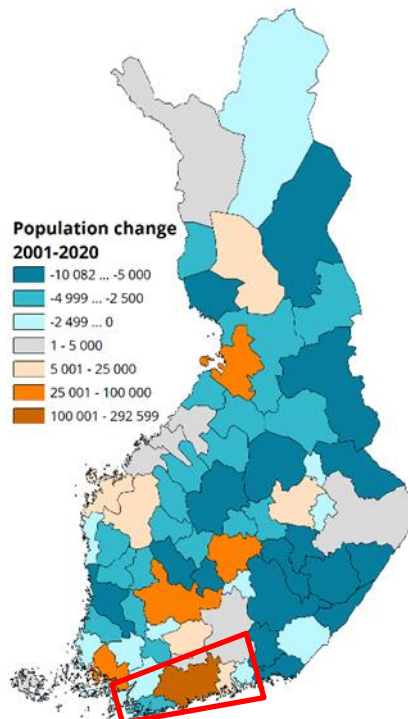 – Regions; Sub-regions; Cities or municipalities; Postal code areas; Grid-level data (e.g. 1km * 1km)
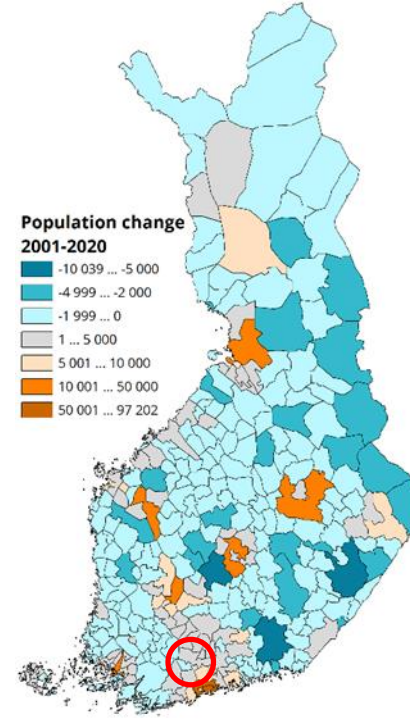
"Shrinkage pockets"

Regions

Population change 2001-2020
- -22 276 ... -20 000
- -19 999 ... -10 000
- -9 999 ... 0
- 1 ... 10 000
- 10 001 ... 50 000
- 50 001 ... 100 000
- 100 001 ... 294 153

Share of shrinking regions: 47,4 %

Sub-regions

Population change 2001-2020
- -10 082 ... -5 000
- -4 999 ... -2 500
- -2 499 ... 0
- 1 - 5 000
- 5 001 ... 25 000
- 25 001 - 100 000
- 100 001 - 292 599

Share of shrinking regions: 71,0 %

Municipalities

Population change 2001-2020
- -10 039 ... -5 000
- -4 999 ... -2 000
- -1 999 ... 0
- 1 ... 5 000
- 5 001 ... 10 000
- 10 001 ... 50 000
- 50 001 ... 97 202

Share of shrinking regions: 69,3 %

Case Ilomantsi

Population change

2000-2020
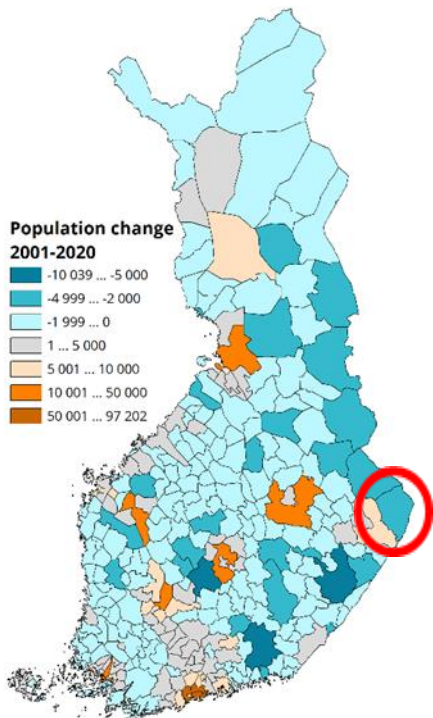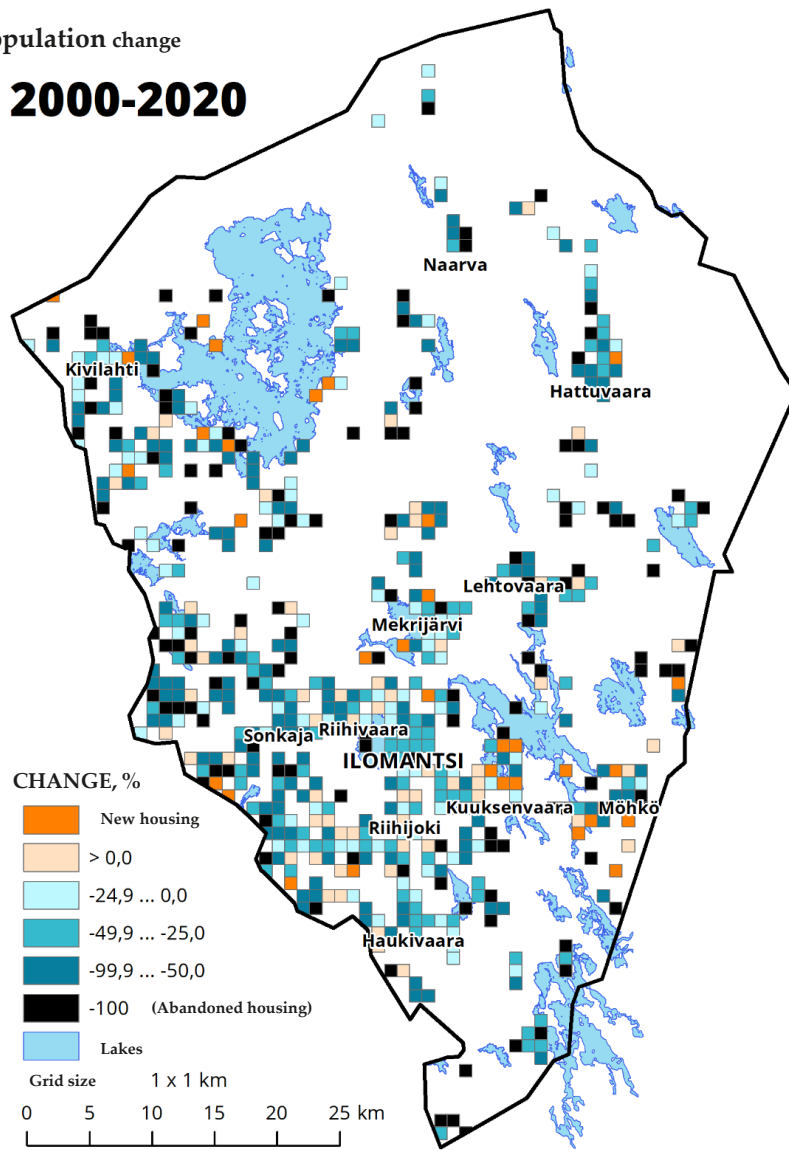
Population change 2001-2020
- -10 039 ... -5 000
- -4 999 ... -2 000
- -1 999 ... 0
- 1 ... 5 000
- 5 001 ... 10 000
- 10 001 ... 50 000
- 50 001 ... 97 202

CHANGE, %
- New housing
- > 0,0
- -24,9 ... 0,0
- -49,9 ... -25,0
- -99,9 ... -50,0
- -100 (Abandoned housing)
- Lakes

Grid size 1 x 1 km

0 5 10 15 20 25 km

Naarva
Kivilahti
Hattuvaara
Lehtovaara
Mekrijärvi
Sonkaja Riihivaara
ILOMANTSI
Kuuksenvaara Möhkö
Riihijoki
Haukivaara

Lessons learned (hopefully)

So, what was the point?

- Statistics and maps help us to understand the world
  - Raise the awareness of policy-makers to accept shrinkage

- 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" (e.g., when statistics are used in designing regional development policies)

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)

- How do we measure quality of life?
  – ESPON (2020) *Quality of life measurement and methodology.* https://www.espon.eu/programme/projects/espon-2020/applied-research/quality-of-life

Thank you!

UNIVERSITY OF
EASTERN FINLAND

teemu.makkonen@uef.fi