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The effectiveness of integrated care reforms in health care

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Background ('Context')

Assess the previous regional social and health care 'reforms' (-> 2020)

68/297 municipalities joined into integrated social and health care regions

Expected to save costs, improve access and equity

The previous regional reforms shared similar characteristics and objectives with the present national SOTE reform

Analysis of previous reforms may give some indication on the impact of the present reform - may also help to consider new alternative provision models

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The intervention and mechanisms

The intervention in the reforms = integration of primary, secondary and social care

Integration -> administrative measure to move into shared management in primary, secondary and social care

Common budget and decision making (e.g. resource allocation)

Integration (functional) -> design optimal patient pathways to improve better collaboration between primary care and hospital services (lean, less redundant services) – focus on prevention and better use of primary care services

Outcomes -> incentives to invest in primary care and prevention, avoid costly hospital care by enhanced gate-keeping and providing appropriate basic-level secondary care

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Expected behavior – tested hypotheses and measures

- **Regions with integrated care model can utilize co-ordinated patient pathways and treatment processes across primary, secondary and social care which may give**
  - a) more control over the ***net health costs in secondary care*** compared to the standard model
  - b) possibility to design more ***balanced use of services across primary and secondary care***

- **The explored 'effectiveness' measures include the use and cost of secondary care (per population, per patient)**
- **Integration measures such as ACSC (acute care sensitive conditions per population) and continuity of care measure**
- **Quality measures, e.g. readmissions, DALY-type disease stage transitions**

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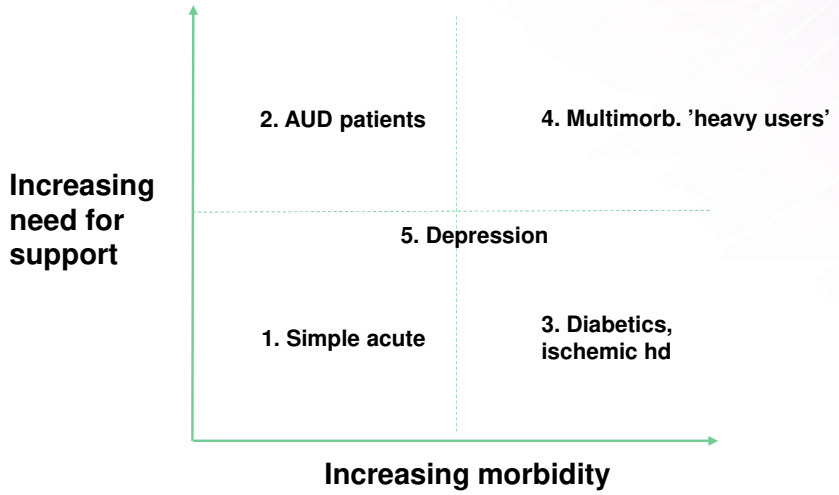
Patient groups probably affected in different ways in the reform – need for adjustments



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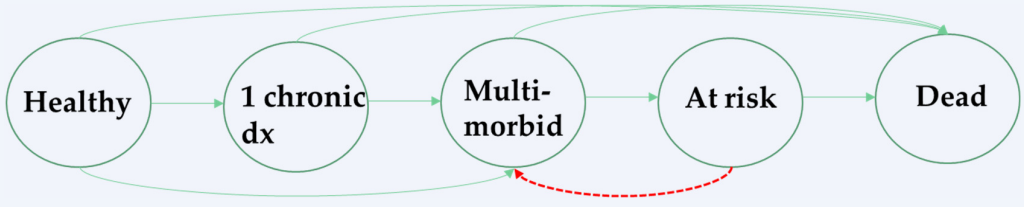
Handling heterogeneity/casemix with segmentation in the patient population

1) Disease staging: states associated with resource use and other outcomes



2) Patient grouping (DRGs): grouping associated with resource use and other outcomes
NordDRG using ~ 1000 groups, including outpatient care

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The data (municipality & individual level)

- **National health care registers from 2015 to 2020**
  - Complete coverage of primary and secondary care use ~ 0,5 billion contacts
  - All public providers and inpatient care by private providers
  - A 'minimum data set' containing a selection of the most relevant fields in the records (e.g. dx, procedures, patient history)

- **Accounting based net cost data and mortality data by Statistics Finland**
  - Includes primary and secondary care costs at the municipality level
  - Individual level mortality data
- **Supplemented information include standard costs and individual–level multimorbidity status and patient's postal code**
  - Standard cost calculation based on DRG groupings for each row item (contact, visit or inpatient admission)
  - Multimorbidity status and onset date based on THL's multimorbidity specification and grouping

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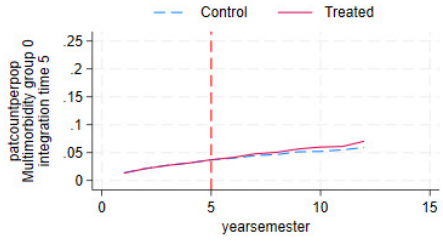
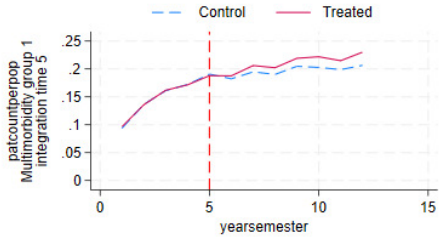
Effect in the use of hospital care/population in 4 multimorbidity groups, synthetic controls. (the 'why?')

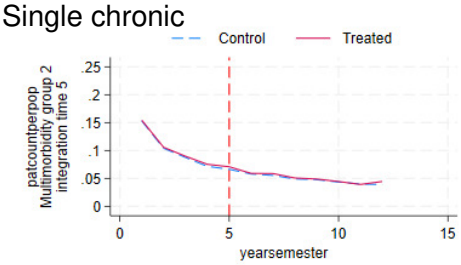
Multimorbid at risk



Multimorbid



Single chronic



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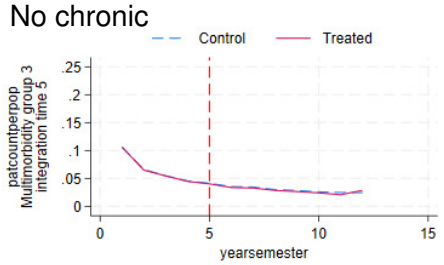

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Methods used in the evaluation of reform effect

- Several methods tested using generalised difference-in-difference approach
  - Estimate the system level (treatment) effect of regional integration reforms
- Fixed effects regression, e.g. Callaway – St Anna – estimator
- Boryasek et. al imputation estimator
- Synthetic control for DID
- Explore the treatment effect with and without DRG –grouping
  - Reducing the unexplained variation

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The use of DRG –grouping when addressing patient heterogeneity using fixed effect models. (The 'how?')

- Fixed-effects specification allows outcomes for each region-DRG pair to vary, and therefore captures any time-invariant unobserved differences in casemix or other factors for each region and DRG.
  - in addition to patient casemix the hospital and DRG fixed effects control for time-invariant factors such as hospital type (local, regional, university), ownership, population size, health status, morbidity, etc.
- In addition to controlling for time-invariant casemix through the region and DRG fixed effects, use control for differences in time-varying casemix through a vector of patient characteristics
- $y_{iht} = \alpha_{ih} + \delta_t + \beta_2 \cdot I_{treated\ h} \cdot I_{post\ t} + X'_{it}\gamma + \varepsilon_{iht}$, where *i* denotes the DRG-group and *h* region

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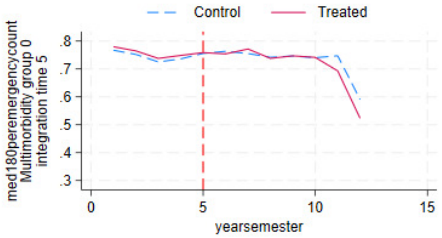
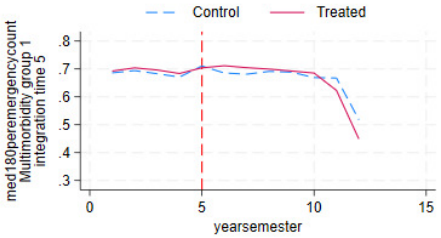
Continuity: the share of patients with fwup in primary care within 180d after emergency admission

Multimorbid at risk



Multimorbid



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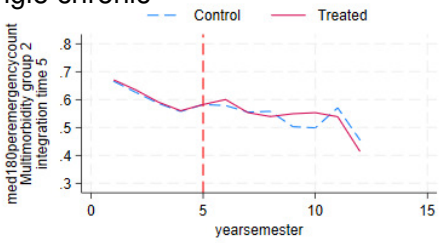

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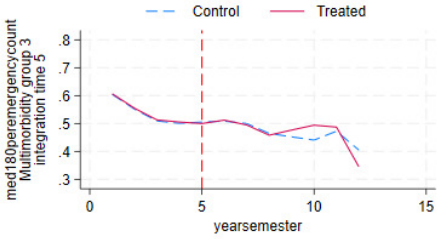

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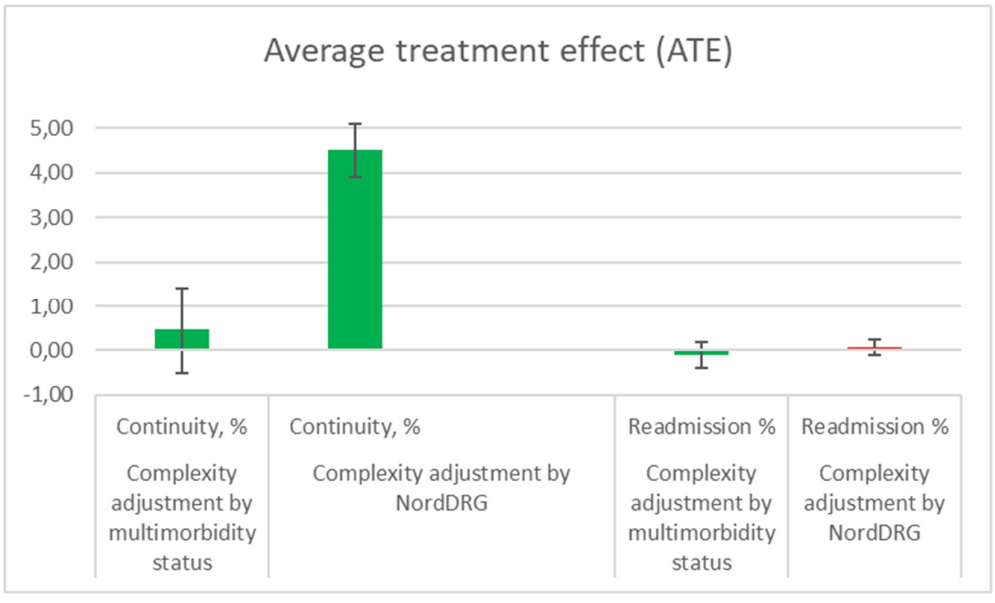
The (causal) effect of regional reforms



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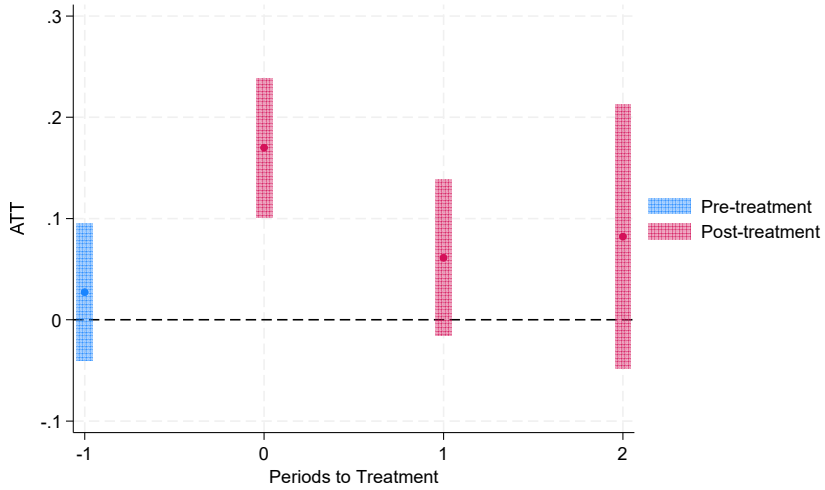
The pre and post trends for the effect on secondary care cost /capita



Summary

- Proper complexity/casemix control seem to be important in system-level effectiveness analyses
- In the present case, the interpretation of the effect on continuity of care changed when using more detailed grouping
  - DRG group variables reduced unexplained variation and possibly corrected some of the omitted variable bias
- DRGs can be easily included in the quasi-experimental models e.g DID regressions
  - Synthetic control estimates need markedly more computing power

Conclusions and health policy relevance (I)

- Both types of provision models (integrated, outsourced) seem to have achieved moderate gains in health care costs without compromising quality/effectiveness

- However, the estimated effect was rather small which casts some doubt over the expected capability of the new reform (using previously implemented integration models) to solve sustainability issues

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