Using electricity data to identify construction activity

Simon B. Halifax

Statistics Denmark

August 23rd 2022

Short-term statistics - construction

- What is the current state of the economy?
  - Anticipating recession
  - Policymakers
  - Interest groups
- Indicators
  - Business tendency surveys
    - Development in the recent past and near future
  - Retail turnover
    - Consumer spending

- Industry production
- Tourism
- Transportation
- Bankruptcies
- Construction activity
  - Permitted projects
  - Commenced projects
  - Completed projects

Assessing possibilities

- What we have
  - Database registry of construction projects
  - Access to smart-meter electricity data on address level
  - Machine learning estimation model correcting delay
  - Quarterly statistic
- Issues
  - Late and incomplete registry regarding projects
- New approach
  - Combining electricity data with data about known construction projects
  - Exploring patterns of interest e.g. identifying construction phases
- Pilot project
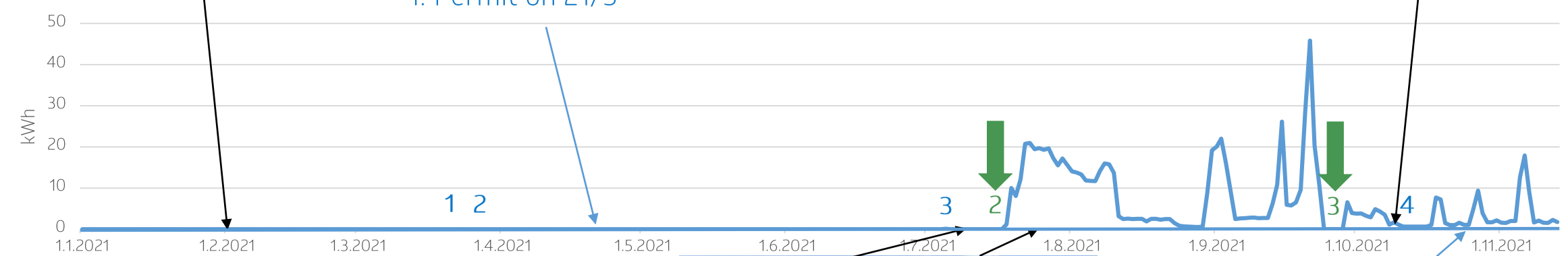 - Find a sample project and follow the path through the registry

Smart-meter data: available with 8 days delay

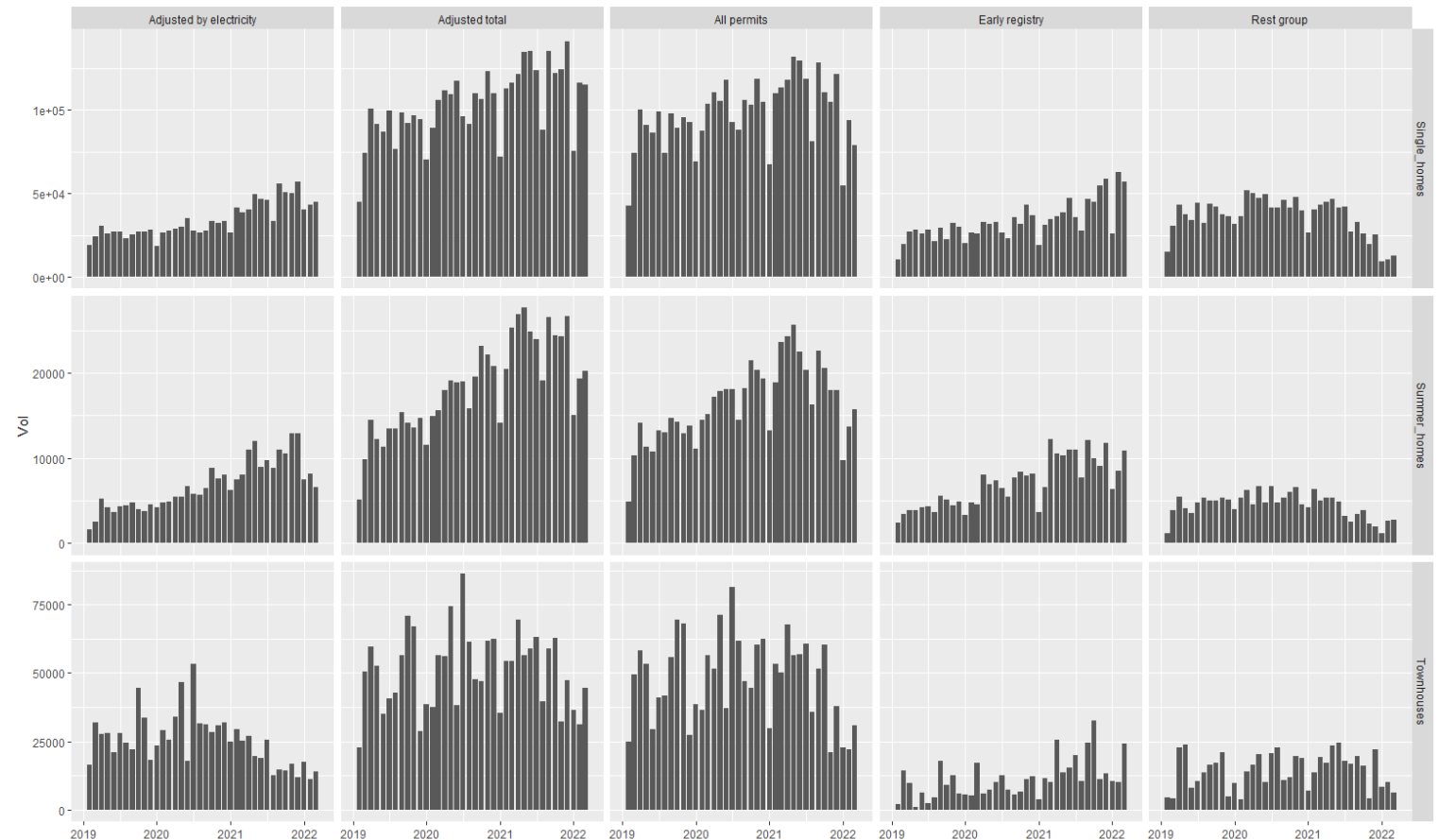New agreement from 15/06 appears in July

Use of electricity begins on 18/7

Purchase

Hand-over

Daily electricity consumption

Registry updated 24/4
1: Permit on 21/3

kWh

50
40
30
20
10
0

1.1.2021   1.2.2021   1.3.2021   1.4.2021   1.5.2021   1.6.2021   1.7.2021   1.8.2021   1.9.2021   1.10.2021   1.11.2021

1 2   3 2   3   4

Registry updated 24/10
2: Commencing on 31/3,
3: Completion on 4/7 and
4: Use permit on 10/10
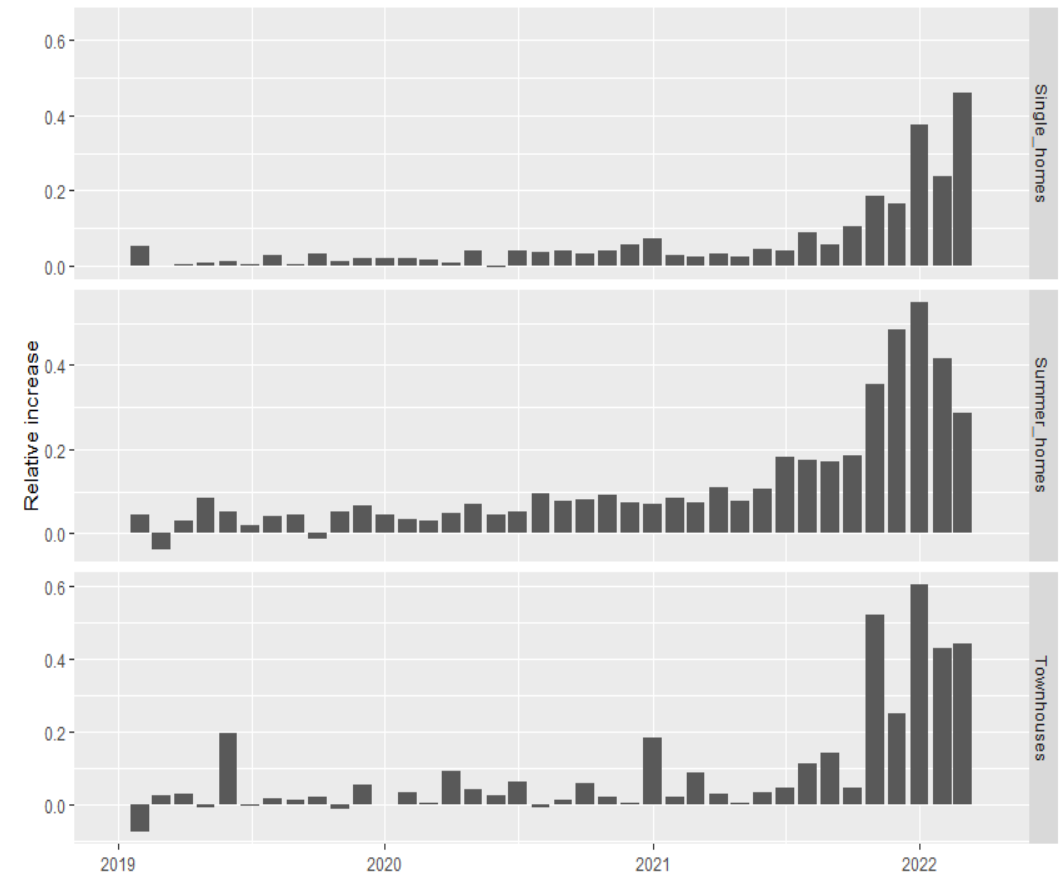
NSM 2022

Results of generalization

- Subset:
  - Single homes
  - Townhouses
  - Summer homes
    - ~20-30% of total m² volume

- Patterns for late registry

- Unique identification of electricity consumption

Future work and implementation

- Immediate potential
  - Using electricity data as proxy
  - Development of new indicator
  - Now-casting statistic
  - Pattern recognition for identifying more projects – data science lab
- Other uses of smart-meter data
  - Charging of electric cars
  - Identifying empty dwelling
    - Assessing use of summer homes
  - Forecasting bankruptcies

Questions?