

# Regional telework

Regional perspective of labour market change during and after COVID-19

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Present exploratory and descriptive analysis of EU Labour Force Survey (EU LFS) micro-data by:

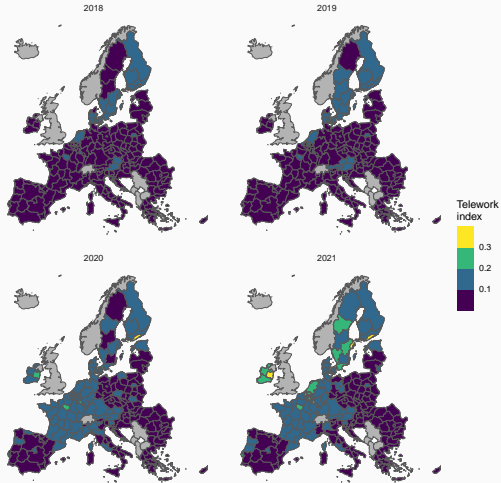
- country, regions (NUTS 1-2)
- degree of urbanisation of respondent's residence (degurba): *Cities, Towns and suburbs, Rural areas*
- type of region (urbrur): *Capital region, Mainly urban, Intermediate, Mainly rural, Undifferentiated*
- regional connectivity statistics
- occupation (ISCO 1, 2, or 3 digits)
- housekeeping/harmonisation

## **Change in telework by countries and regions**

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# Telework index by region

Telework has increased, in most countries, especially in urban and capital regions  
Average values of the telework index by NUTS region

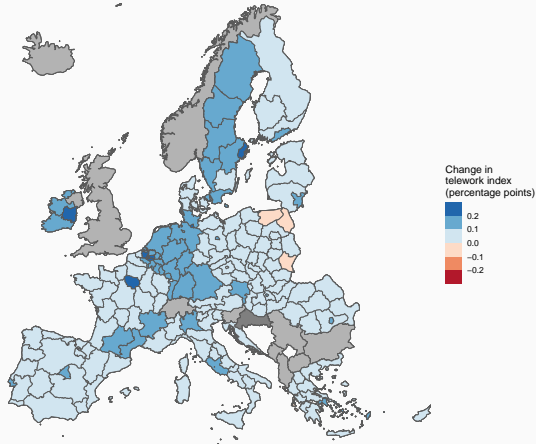


Telework index constructed from LFS:  
Regions are NUTS-2 where available, NUTS-1 (AT and DE), or country (NL)

Interactive: <https://rpubs.com/m-sostero/hwi>

# Change in telework index by countries and regions

Telework increased faster in capital and urban regions  
Change in telework index 2019...2021 by region



Telework index constructed from LFS;  
Regions are NUTS-2 where available, NUTS-1 (AT and DE), or country (NL)

# Change in telework index by countries and regions

## Interpretation:

- Marked changes in overall telework frequency (as measured from LFS) relative to before COVID
- Significant variation *across* countries (country fixed-effect).
- Variation *within* countries, in terms of capitals/urban regions vs the rest?

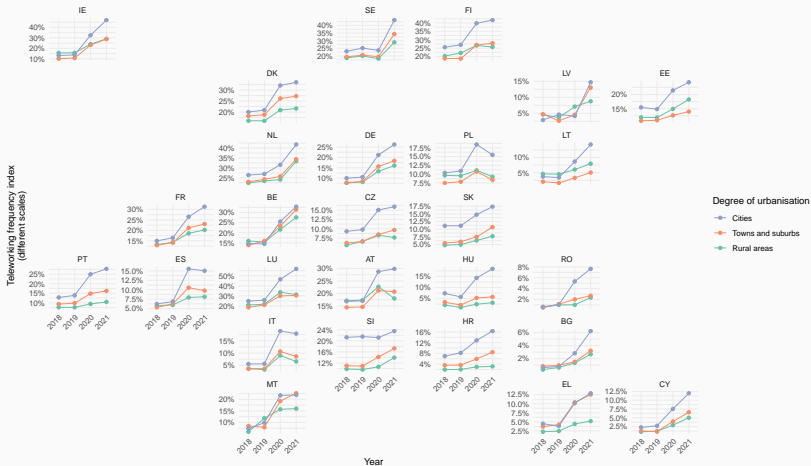
# Degree of urbanisation

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## Telework index by degurba

Telework has become more common, especially in cities, since 2020

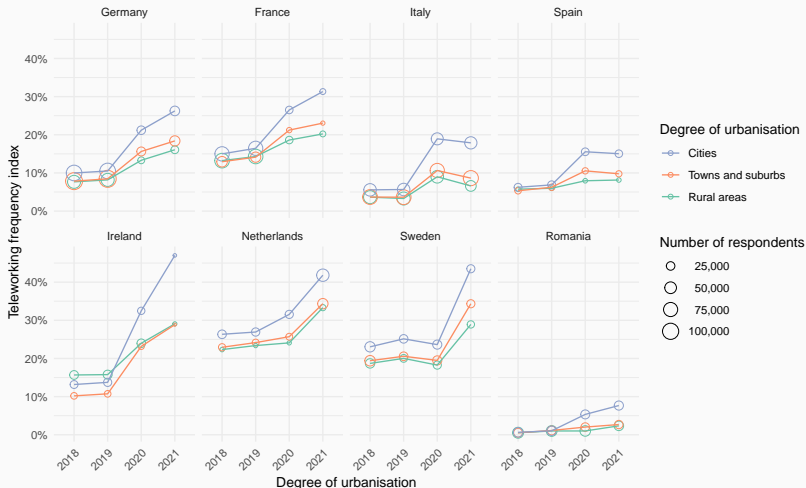
Teleworking frequency by degree of urbanisation of respondents' place of residence, over the years





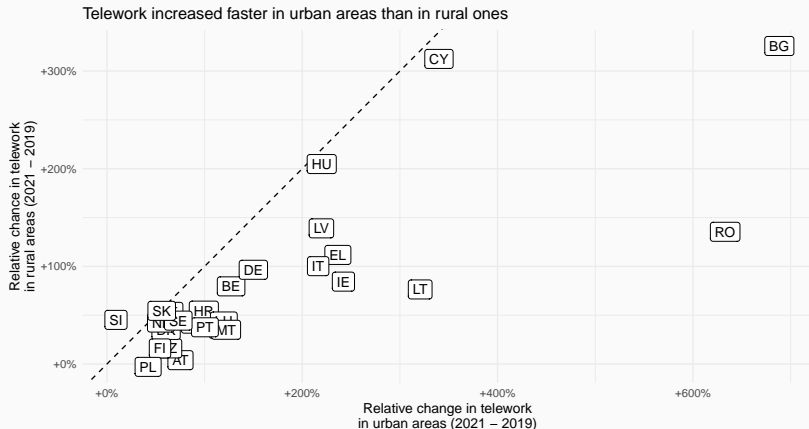
# Telework index by degurba, selected countries

Telework increased, particularly in cities, but country differences remain  
Selected countries



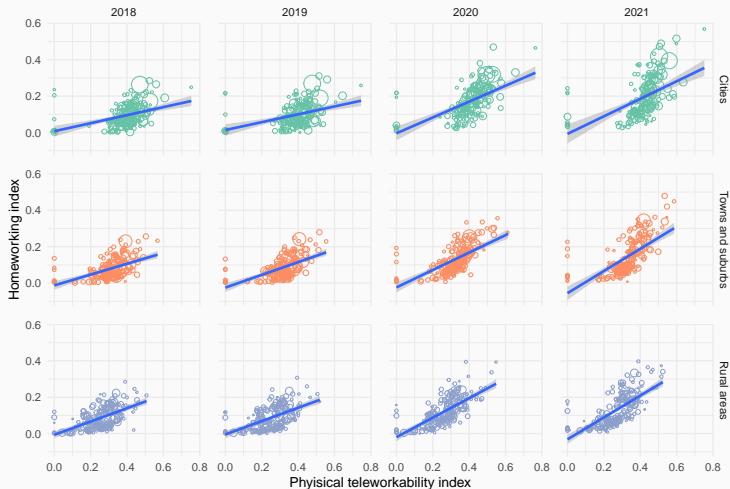
Interactive: [https://rpubs.com/m-sostero/hw\\_degurba](https://rpubs.com/m-sostero/hw_degurba)

# Changes in telework: cities vs rural areas



# Changes in telework: cities vs rural areas

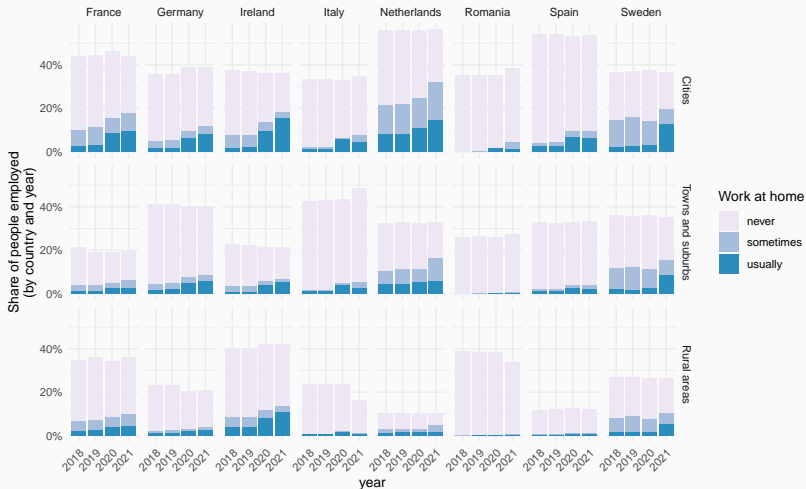
Increasing correlation between teleworkability and homeworking, similar across location types  
Correlation between physical teleworkability and actual telework for NUTS-2 regions



# Changes in telework *intensity*: cities vs rural areas

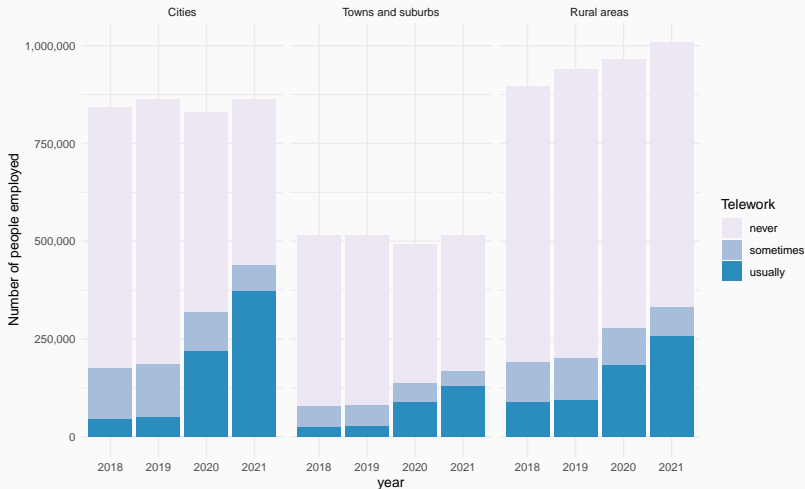
Rise in telework comes mostly from those doing so 'usually', rather than 'sometimes'

Number of employed people by degree of urbanisation and frequency of work from home



# Changes in telework *intensity* in Ireland: cities vs rural areas

Ireland: Telework has increased much more than the fall of residents in cities  
Number of employed people by degree of urbanisation and frequency of work from home



# Change in telework index by degree of urbanisation

## Interpretation:

- Telework increased everywhere in 2020 (except Sweden, 2021)
- De-coupling of cities from towns/suburbs and rural areas in 2020: how about capital cities?
- Limited evidence of a trend before 2020
- Similar trends over time across countries, but different absolute levels.
- Surprising change in the *extensive* margin in the aggregate ('never'  $\Rightarrow$  'usually') rather than intensive margin ('never'  $\Rightarrow$  'sometimes', or 'sometimes'  $\Rightarrow$  'usually')

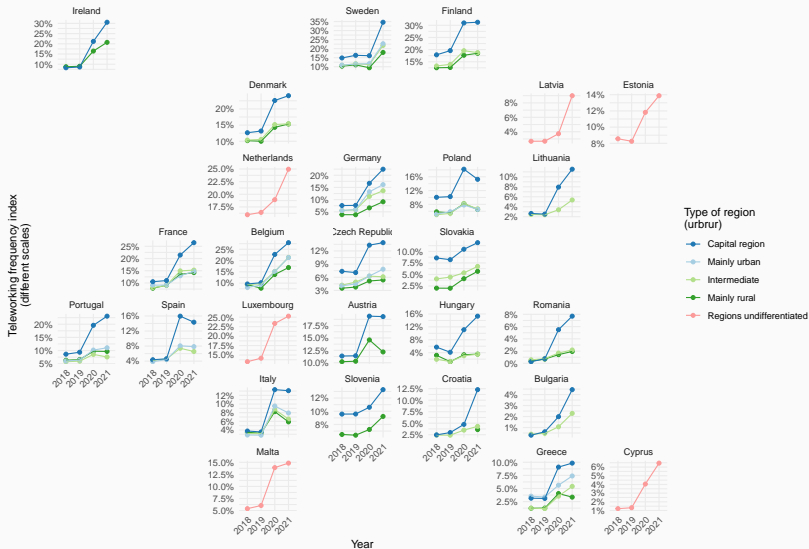
## Urban-rural region

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# Telework index by urbrur

Capital regions have increasingly the highest rates of telework

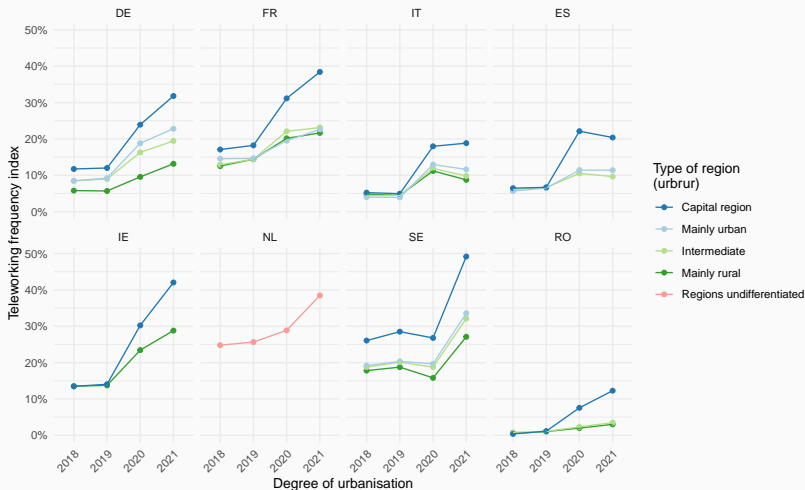
Teleworking frequency by respondent's region type, over the years





# Changes in telework: cities vs rural areas

Significant cross-country differences remain in rates of telework  
Selected countries



# Change in telework index by urban-rural region

## Interpretation:

- Because urbrur is defined at the NUTS regional level, limited geographical granularity and coverage.
- However, it shows a 'capital city' premium (possibly in excess of over urban areas)

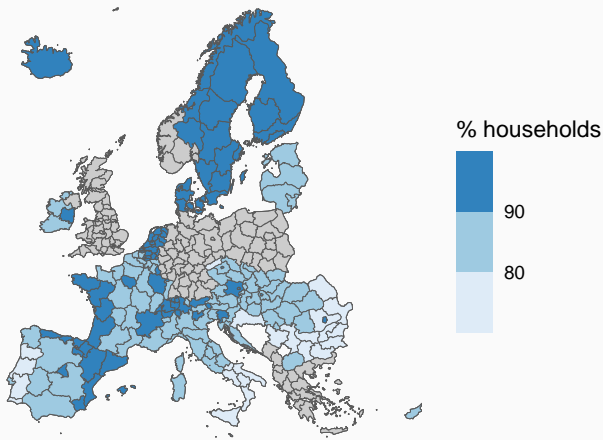
# **Regional internet connectivity statistics**

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# Access to internet by NUTS regions

Share of households with internet access

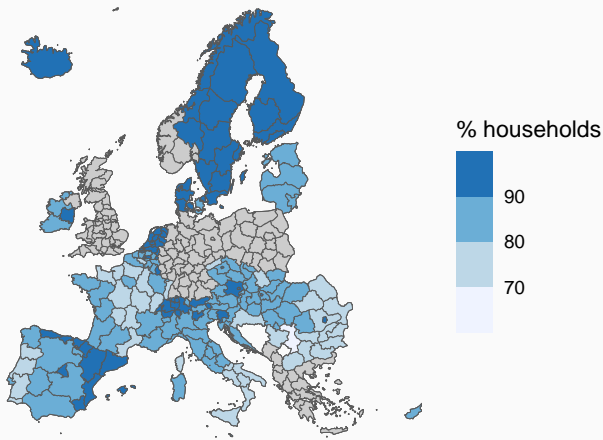
By NUTS-2 region, in 2019



QoG EU Regional dataset, variable eu\_is\_iacc\_nuts2

# Access to internet by NUTS regions

Share of households with broadband internet access  
By NUTS-2 region, in 2019



QoG EU Regional dataset, variable eu\_is\_bacc\_nuts2

## Interpretation:

- Low coverage and geographical granularity from EU ICT survey.
- However, JRC is working on regional statistics.

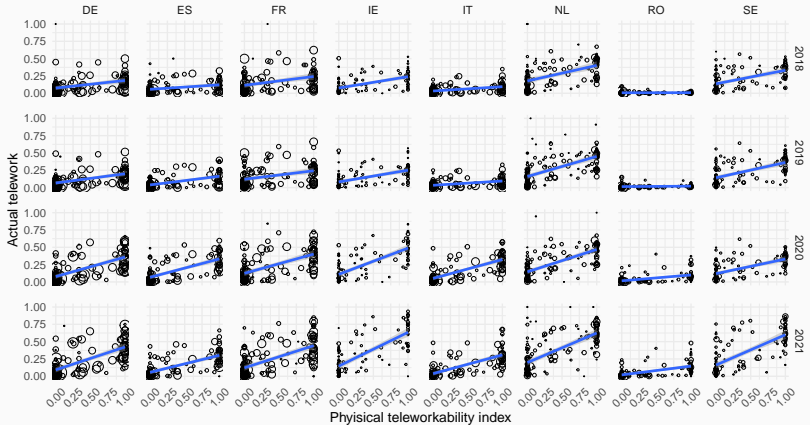
## **Occupational determinants of telework**

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# Teleworkability (ie, *occupation*) is an increasingly good predictor of telework

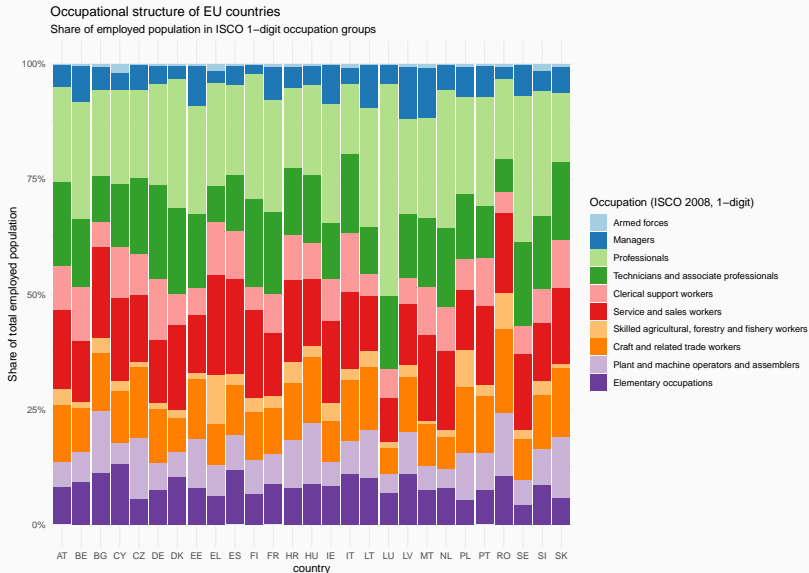
Telework is reaching its potential

Correlation between physical teleworkability and actual telework for ISCO 3-digit occupations





# Could telework ultimately be down to (national/regional) employment structure?

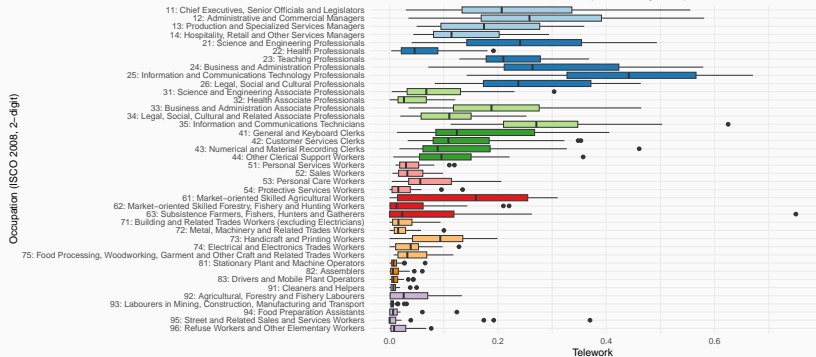


Source: EU-LFS

# Variation in occupational rates of telework across countries

Does the rate of telework vary for the same occupation, across EU countries?

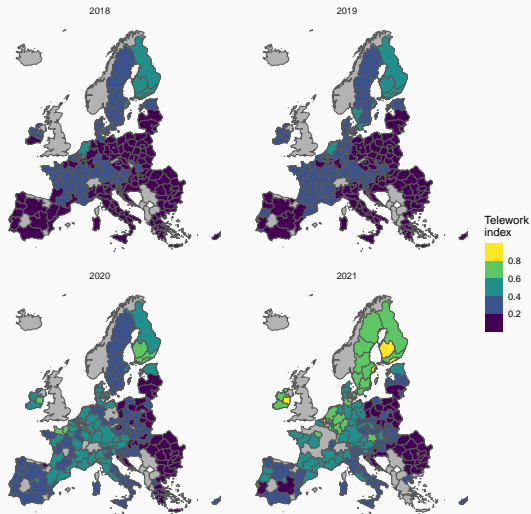
Distribution of telework index across countries, by ISCO 2-digit occupation



# Variation rates of telework for specific occupation

Telework index for ISCO 24: Business and Administration Professionals

Average values of the homeworking index by region



Telework index constructed from LFS;  
Regions are NUTS-2 where available, NUTS-1 (AT and DE), or country (NL)

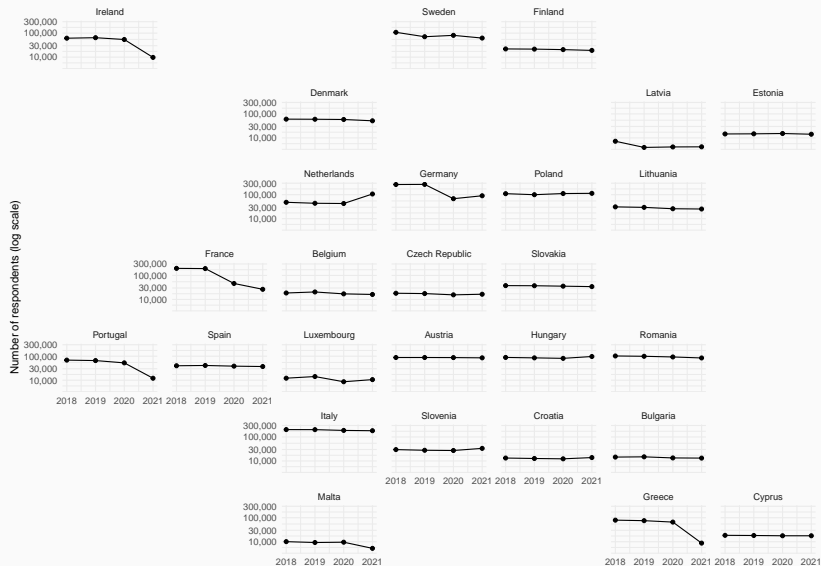
# Housekeeping

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- LFS sample size over time, timing of survey in 2020.
- Sampling weight missing.
- Nomenclature:
  - *Telework, Homeworking, Working from home?*
  - Degurba, urbrur?

# LFS response rates

Number of respondents to the LFS by country, over the years



## Share of observations with missing sampling weights (coeffy)

country	2018	2019	2020	2021
DK	13.64	14.03	14.41	13.58
ES	5.97	7.19	2.56	0.00
FI	48.20	48.01	47.27	45.69
LU	0.00	0.00	0.00	49.69
LV	43.47	0.00	0.00	0.00
NL	0.00	0.00	0.00	55.61
SE	2.53	3.39	3.63	4.74

# Takeaways

1. Marked changes in overall telework frequency (as measured from LFS) relative to before COVID
2. Significant variation *across* countries (country fixed-effect).
3. Variation *within* countries, in terms of urban areas vs the rest.
4. Capital city premium, worth adding as additional control on top of degurba.
5. Changing telework intensity: surprising change in the *extensive* margin in the aggregate ('never'  $\Rightarrow$  'usually') rather than intensive margin ('never'  $\Rightarrow$  'sometimes', or 'sometimes'  $\Rightarrow$  'usually')
6. Ireland as an extreme case.
7. Circumstantial evidence of limited relocation for telework.



Explanations:

- Occupational structure (across and within countries);
- National-level institutions, corporate culture, industrial structure;
- Regional connectivity?
- Cost of housing?