



ADVANCING METHODS FOR SUBNATIONAL PURCHASING POWER PARITIES IN OECD REGIONS

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Project overview



Extending purchasing power parities to the subnational level



Part of wider OECD workstream on prices, subnational economic inequalities and differences in regions



Why are subnational PPPs (sPPPs) important?

- **Reveal differences** in regional economic conditions and the cost of living
- **Improve assessment** of real income and living standards
- **Informs policy** such as fiscal equalisation across regions
- **Enhance accuracy** in economic analysis & policy decisions
- **Address gaps** in subnational indicators missing in many OECD countries



Progress on proxies for subnational PPPs



Desk-based research

- Methodological chapter for final report ➡ [CFE/RDPC/TI\(2025\)4](#)
- Database of existing, **non-harmonised sPPP**s for OECD countries



Expert engagement

- So far, four **informal Expert Group** meetings ➡ [Resources](#)
- Attended by NSOs, academia, research, policy and international organisations



Bilateral outreach

- Over 40 meetings with NSOs and other stakeholders across OECD countries



Implementation

- **2025** - initial implementation in 4 OECD countries: **CZE, DEU, GBR, SVK**
- **2026** - second-round implementation with an **additional 7 OECD countries**



**How do we implement
the project?**



Implementation of experimental work: operationality and prioritisation



Scope

- **Consumer-side PPPs** at **TL2 level** complemented where possible by **TL3 level**
- **Pre-COVID** and **post-COVID** periods (i.e. 2018 and 2023)



Data Sources

- Building on **existing official data** (e.g. CPI) and **household consumption weights** complemented with **alternative data sources** when necessary



Prioritisation

- **Largest variance** in **housing**, then **services**; smaller variation for **goods**
- Some domains are **difficult to measure** at the regional level (e.g. investment), or **non-identifiable** (e.g. “used car”)



The cornerstones: *OECDsPPPs* (R package)

OECDsPPPs provides **methodological and practical guidance and code**



Co-development in an open environment

- Open-source (R), with ongoing development
- Enables feedback and validation from experts



Adaptability and flexibility

- Accommodates diverse national data configurations



Harmonised methods and documentation

- Describes the **complete pipeline** from initial price quotes to aggregated subnational indices through an **online vignette** (webpage)
- Ensures **consistency** and cross-country comparability

OECDsppps



OECDsppps provides functionalities for calculating subnational Purchasing Power Parities (SPPPs) in OECD regions.

It describes the processing, validation, aggregation and estimation of the multiple data sources for the purpose of constructing subnational PPPs.

Documentation

See tab **Articles** for detailed package documentation:

- **Validation** - validate price statistics at various levels of aggregation, from the initial item-level price quotes to the basic heading level and upwards, as well as comparing household expenditure weights across regions
- **Estimation** - estimating subnational purchasing power parities from item-level prices at basic heading level and beyond

Developed by OECD.



Estimating sPPPs in OECD regions with *OECDsPPPs*



Prepare raw data

- Price quotes, household expenditure and alternative data



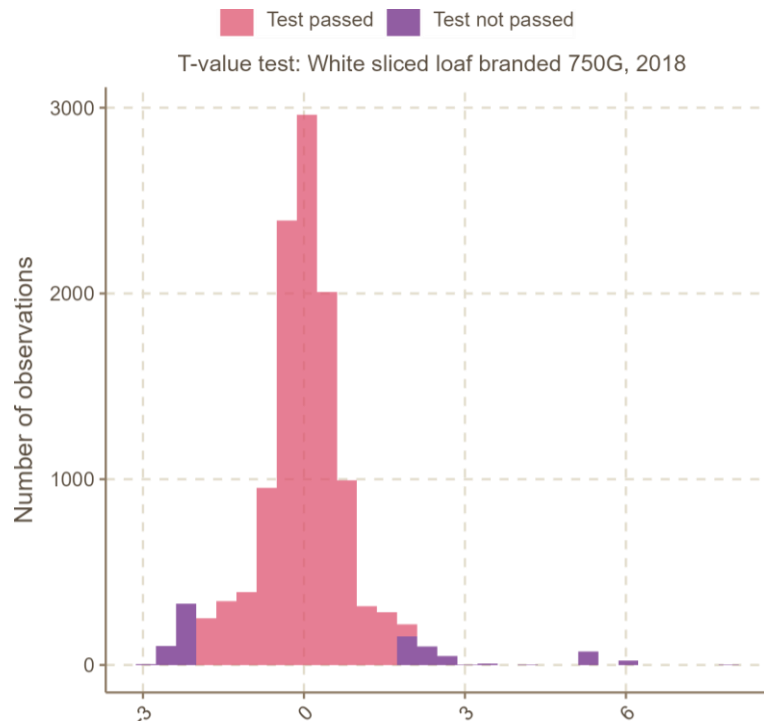
Estimate price statistics

- At different aggregation levels



Validate price statistics

- Benchmarking with existing estimates
- Comparing estimates across countries





Preliminary Results



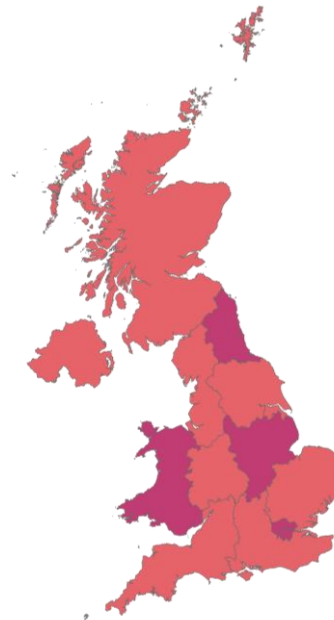
Stylised fact 1- Product and spatial variation



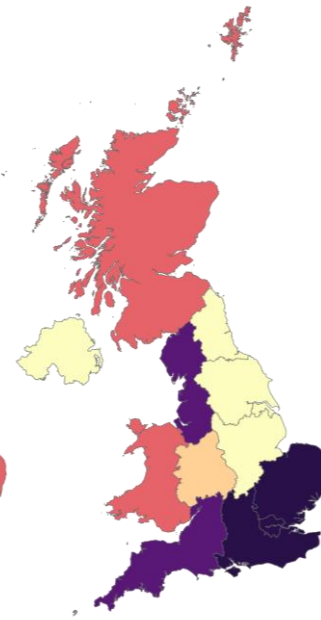
Product variation: Higher variation in services, lower in goods



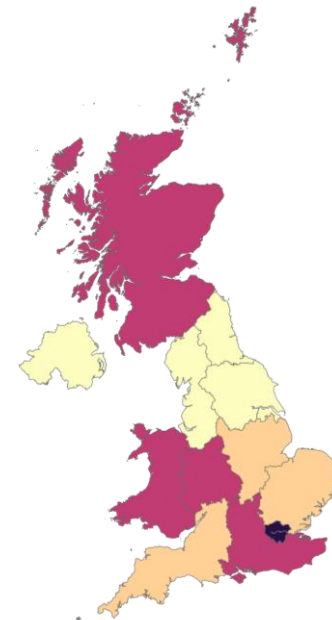
Spatial variation: On average, higher price levels in London (around +14% relative to the cross-regional average), lower in the *North** and Northern Ireland and Wales (around -5%)



Oils and fats



Domestic and household services



Cultural services

Note: *North: North East and North West. 100 = cross-regional average. Figure based on the pooled 2018 and 2023 data; categories: COICOP classes. Unweighted results, not including household expenditure weights. **Preliminary and partial results; do not cite or distribute.**



Stylised fact 2- Cross-country patterns



Cross-country patterns show higher variation in services and lower ones in goods



Capital-city region prices* are on average higher (15%) and driven by housing and services



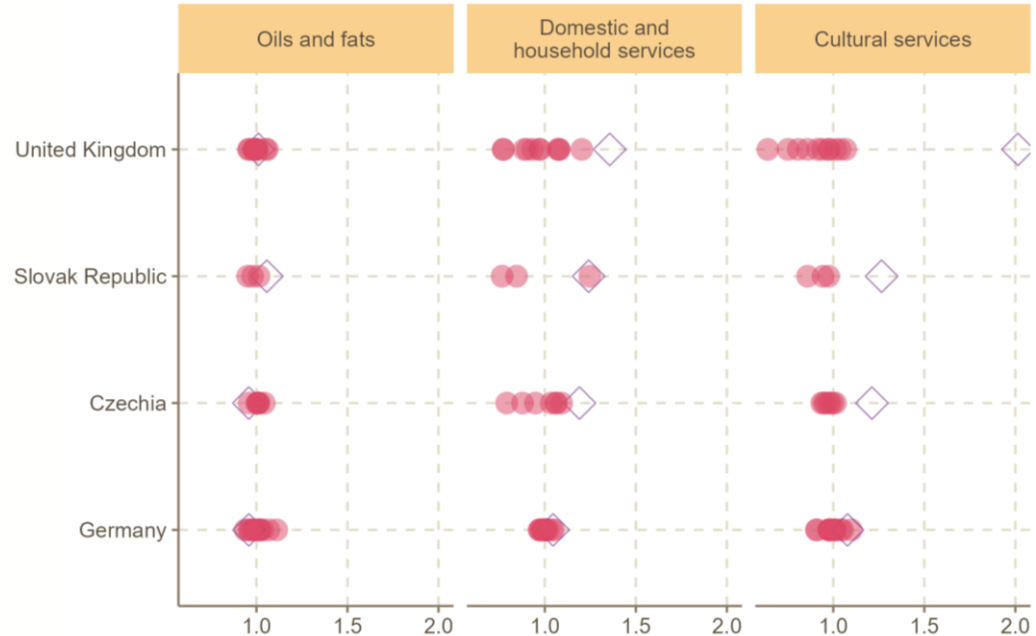
Capital-city region



Other regions

Subnational purchasing power parities, 2018/19

1 = cross-regional average by country



Note: Statistics based on TL2 regions. *: Total COICOP aggregates, including household expenditure weights and cross-country average for DEU, CZE, SVK, GBR in 2023 (2020 for CZE). Figure: Selected COICOP classes, unweighted results, not including household expenditure weights, DEU results for 2019, all other countries 2018. **Preliminary and partial results; do not cite or distribute.**



Stylised fact 3 – Subnational household consumption baskets



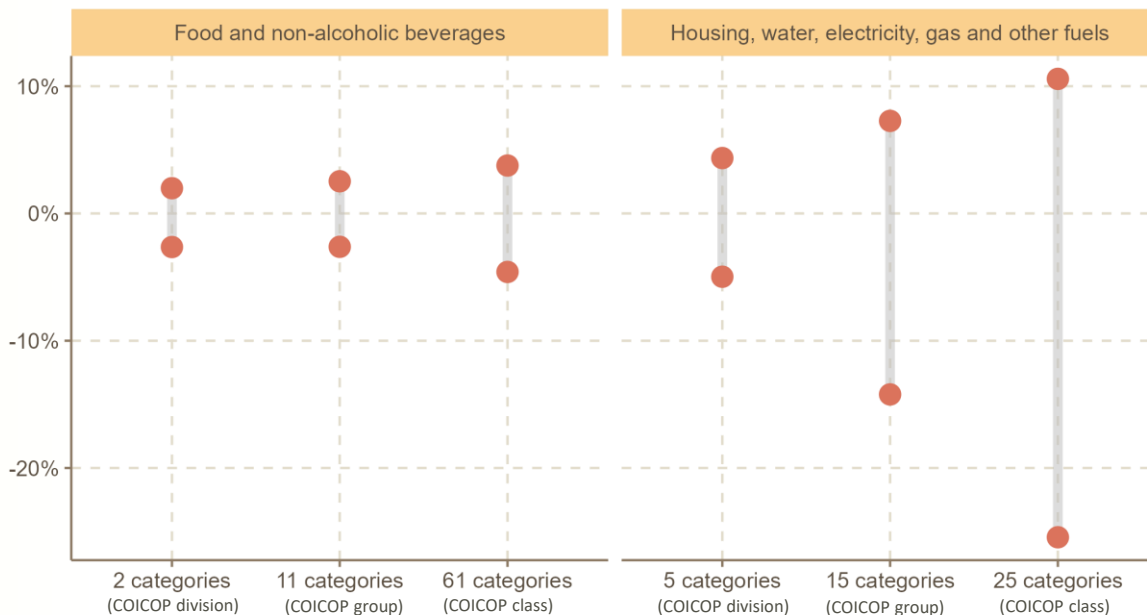
Household consumption baskets vary more when considering more detailed categories



Subnational household consumption baskets reduce subnational price deviations by an average of 6%*

Subnational household expenditure deviations in Czechia, 2018

Subnational deviations from cross-regional average; interquartile range by number of categories



Note: Statistics based on TL2 regions. * Deviations from the cross-regional mean of total COICOP aggregates, cross-country average for DEU, CZE, SVK, GBR. Figure: Selected COICOP divisions in Czechia with their respective breakdowns. **Preliminary and partial results; do not cite or distribute.**

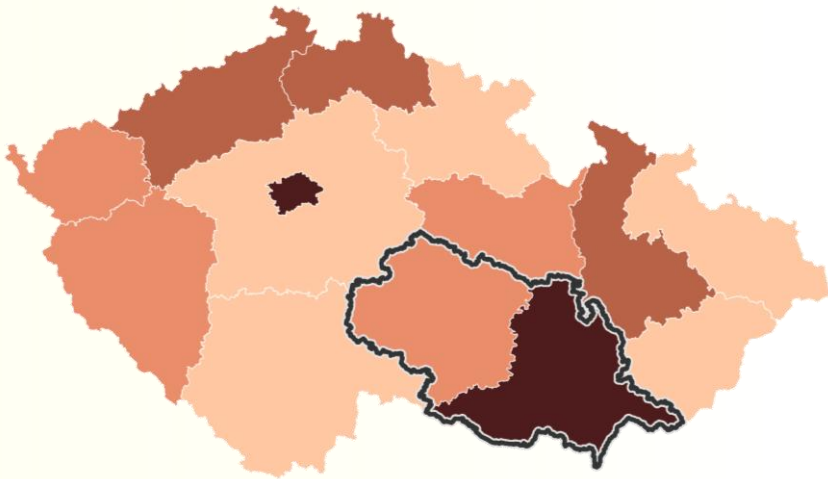


Stylised fact 4 – Prices below the TL2 level



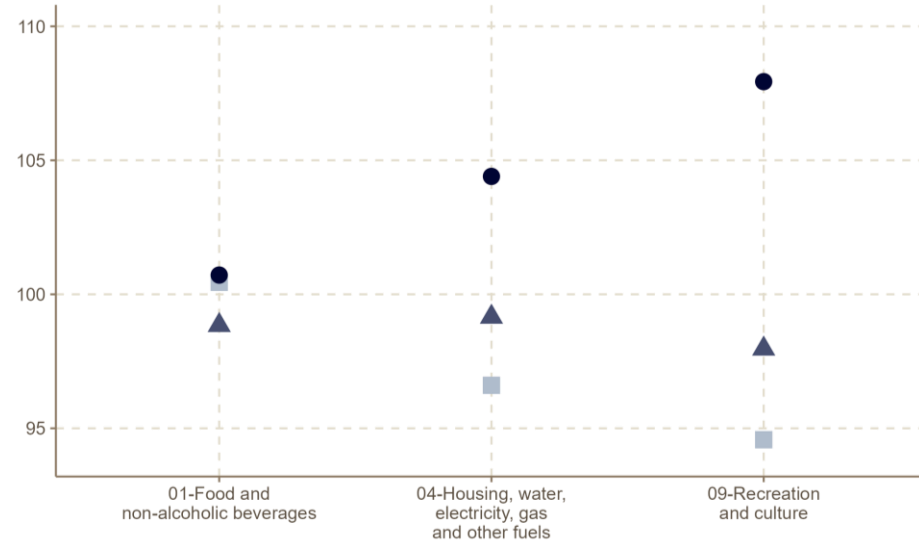
TL3 housing costs in Czechia, 2018

COICOP division 04-Housing, water, electricity, gas and other fuels; 100 = cross-regional average



Subnational purchasing power parities Czechia, 2018

Urban/rural regional typology; 100 = cross-regional average



Note: Weighted results including household expenditure weights. Predominantly urban Czech TL3 regions: Prague, Central Bohemia. Intermediate Czech TL3 region: Karlovy Vary, Usti, Liberec, Hradec Králové, South Moravia, Olomouc, Zlín, Moravian-Silesia. Predominantly rural Czech TL3 region close to a city: South Bohemia, Plzen, Pardubice, Vysocina. Classification based on OECD [Urban/rural regional typology](#). Preliminary and partial results; do not cite or distribute.



Next steps in 2026



Cross-country analysis of subnational PPPs and analytical report



Completion of the *OECDsPPPs* package

– Complete documentation, code base and methodological report



Applying proxies for subnational PPPs **in seven more countries** using *OECDsPPPs*



Towards measuring purchasing power parity across OECD regions

✉ For more information, use the QR code or visit: oe.cd/sPPPs

Twitter: @OECD_local

LinkedIn: www.linkedin.com/company/oecd-local

Website: www.oecd.org/cfe



Appendix

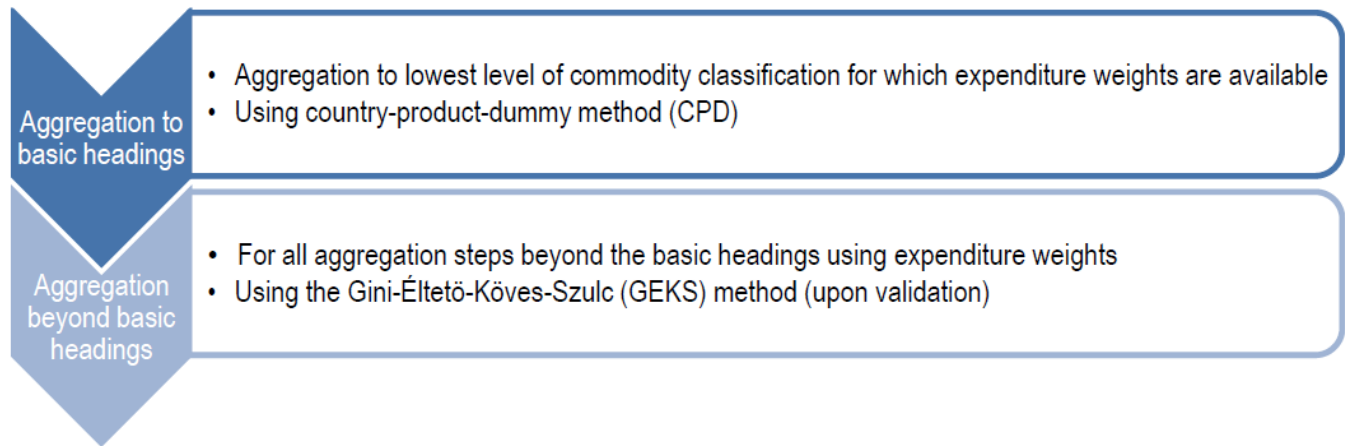


Methods for implementation

- Two approaches used in applied work:
 - CPD-GEKS (ICP 2021)
 - Jevons-GEKS (European Union/OECD, 2024)
- With complete price data, the two methods yield the same results
- With incomplete price data (gaps, representativeness issues), as typically observed in subnational databases, the use of CPD-GEKS is recommended



Estimation approach





An sPPPs primer

- **Alignment with national PPPs**
 - Consistent with national PPP framework where feasible
 - Coverage of 14 COICOP* divisions
- **International guidance**
 - ICP (2021) provides guidelines for using CPI microdata
 - Coverage: methodologies and data sources for categories
 - Aggregation: approaches for compiling basic headings
- **Estimation of SPPPs**
 - Possible at different levels: divisions, groups, etc.
 - Example: Housing is composed of 5 groups (Table 1)
 - Addressing all groups often requires integrating multiple data sources

Table 1 | COICOP* Division

01 - Food and non-alcoholic beverages

02 - Alcoholic beverages, tobacco and narcotics

03 - Clothing and footwear

04 – Housing



Housing – COICOP* Group

05 - Furnishings, household equipment and maintenance

Actual rentals

Imputed rentals

06 – Health

Maintenance, repair

07 – Transport

Water and misc. services

08 - Information and communication

Electricity, gas, other fuels

09 - Recreation, sport and culture

10 - Education services

11 - Restaurants and accommodation service

12 - Insurance and financial services

13 - Personal care, social protection and miscellaneous goods and service

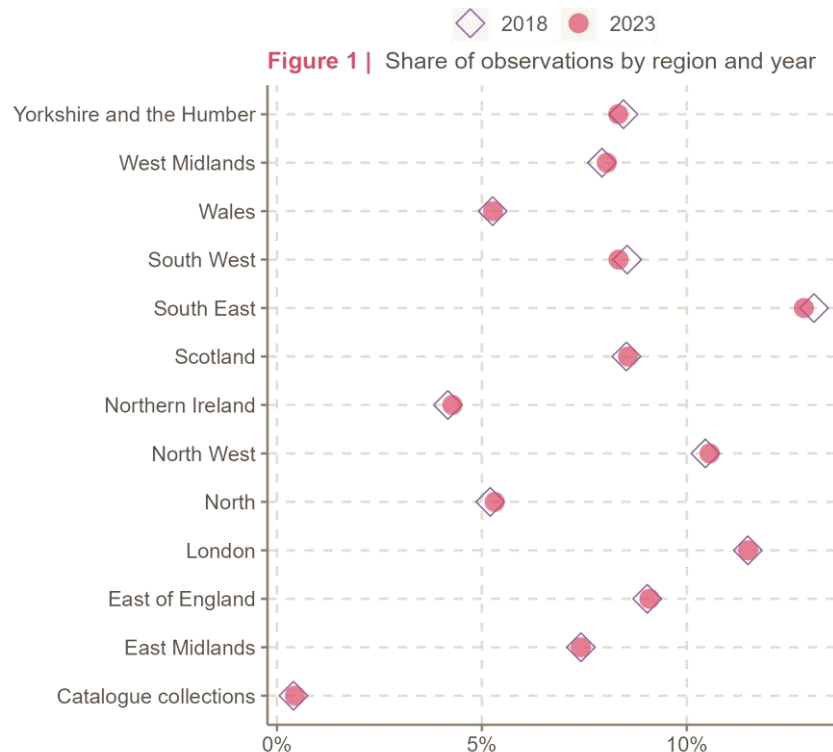
14 - Individual consumption expenditure of NPISHS

*Note: *COICOP = Classification of Individual Consumption According to Purpose, 1999.*



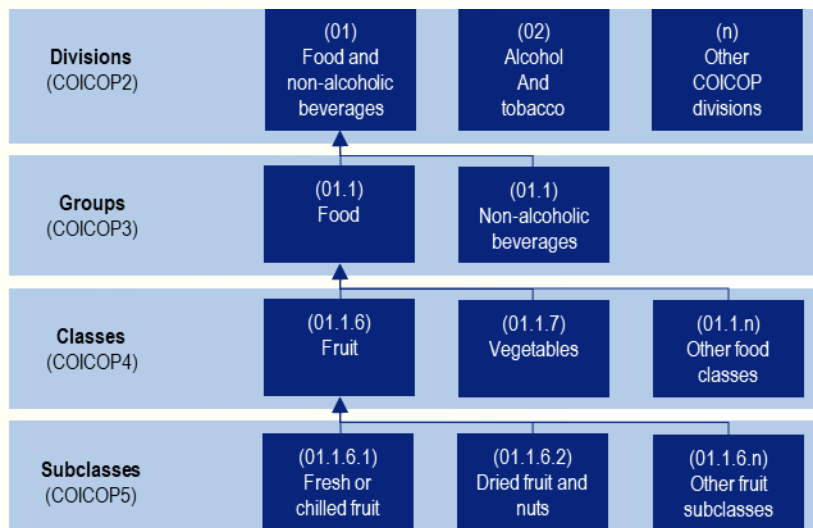
Coverage (1/3)

- Number of items and data points
- Spatial breakdown and sampling
 - TL2/3;
- Coverage of basket (hierarchical)
 - Expenditure-weighted contribution of price quotes (next slide)
 - Unweighted subclass contributions (slide after next)





Example: COICOP and consumption expenditure weights structure for the United Kingdom



“Basic headings”

Regional weights
(60 “areas of expenditure”)

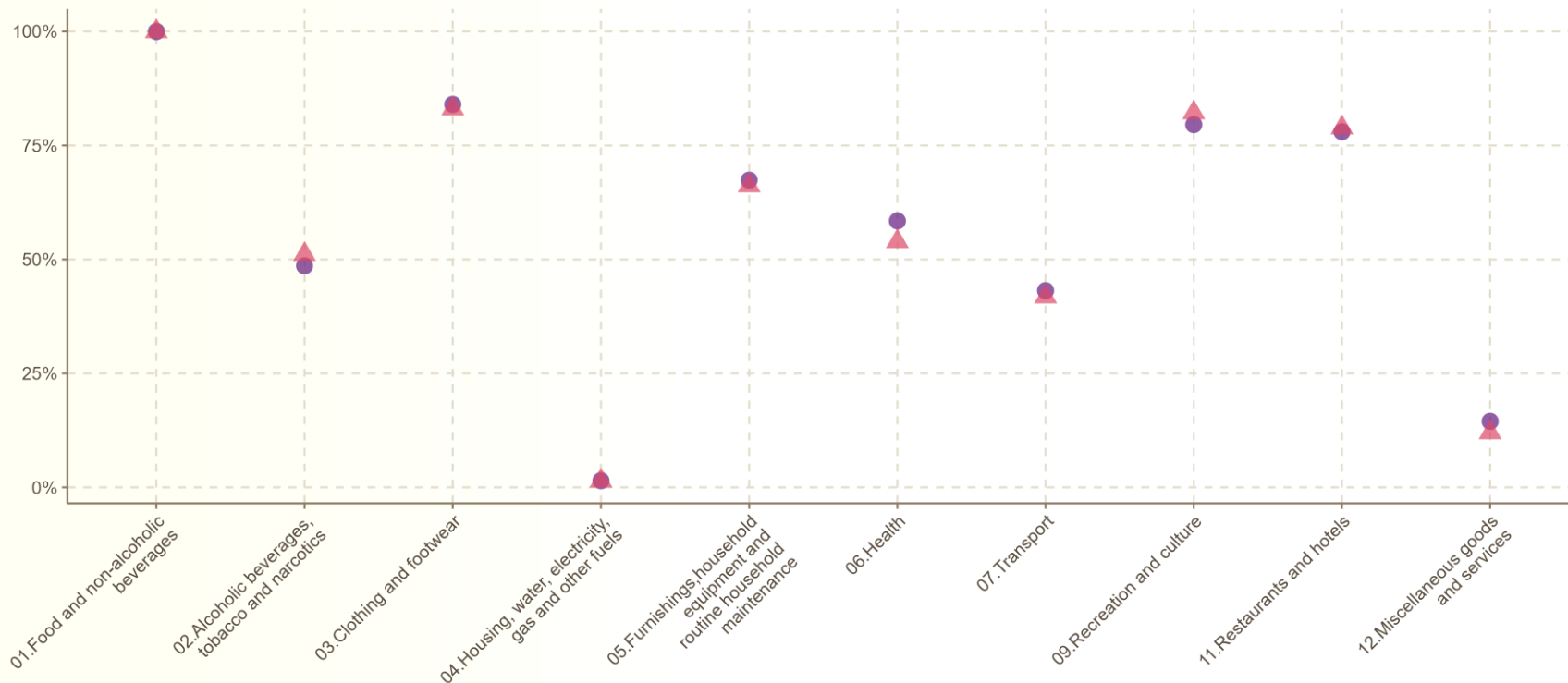
National weights, except for
divisions 8 (communication)
and 10 (education).



Coverage (2/3)

● 2018 ▲ 2023

Figure A.1 | CPI microdata coverage of consumption basket by year, weighted

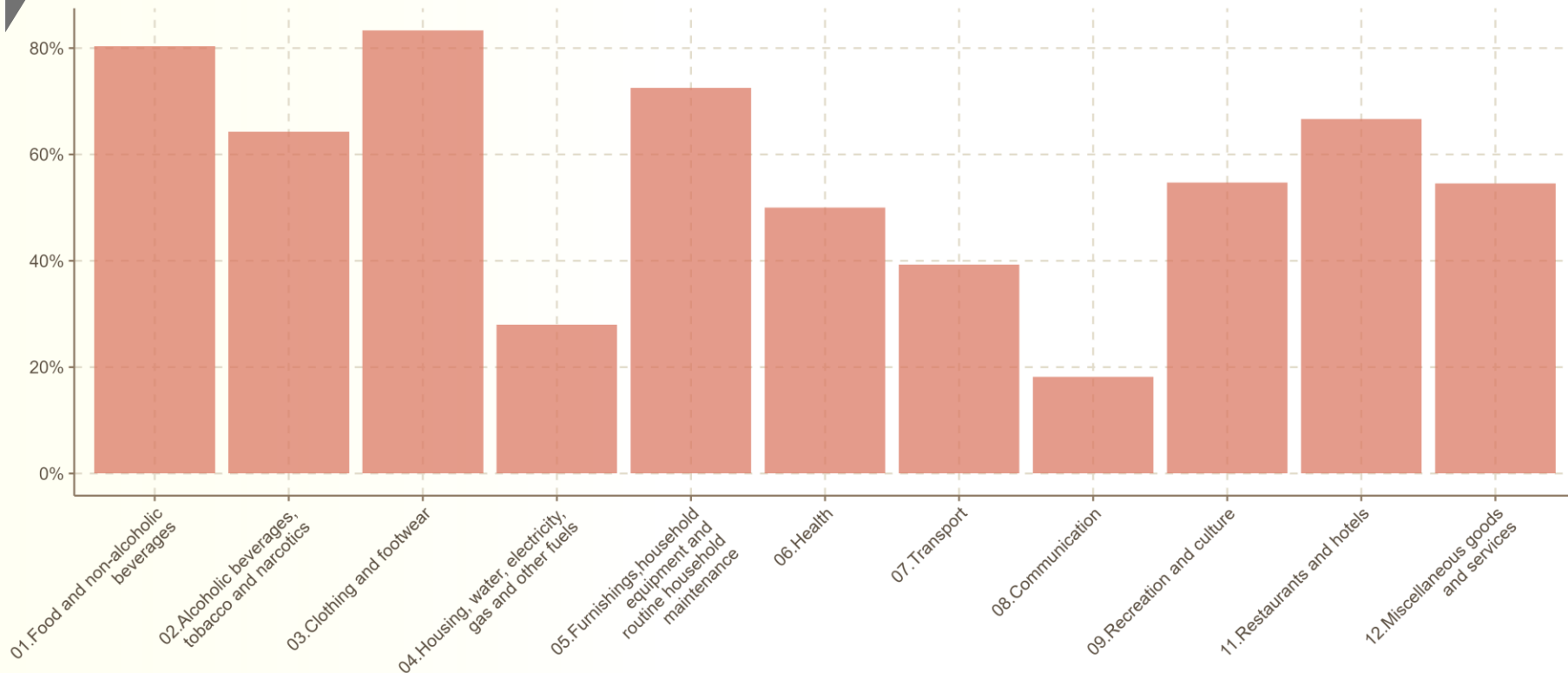


Note: Mapping between COICOP4 codes in CPI microdata and national consumption basket weights. Divisions 8 (communication) and 10 (education) weights are only available at COICOP3 and COICOP2 level, respectively, and are therefore excluded. **Preliminary and partial results; do not cite or distribute.**



Coverage (3/3)

Figure A.2 | Share of COICOP subclasses within each COICOP class by division, unweighted pooled counts for 2018 and 2023



Note: Figure based on the pooled 2018 and 2023 data; categories: COICOP divisions; 'education services' not included. **Preliminary and partial results; do not cite or distribute.**



References

European Union/OECD (2024) *Eurostat-OECD Methodological Manual on Purchasing Power Parities (2023 edition)*, OECD Publishing, Paris, <https://doi.org/10.1787/c9829192-en>.

Hearne, D. and Bailey, D. (2025) *Regional prices reconsidered*, *Regional Studies, Regional Science*, 12(1), pp. 338–356. <https://doi.org/10.1080/21681376.2025.2475115>.

ICP (2021) *A Guide to the Compilation of Subnational Purchasing Power Parities (PPPs)*. <https://thedocs.worldbank.org/en/doc/5064f2288436664bc8f9811c8a5b8c55-0050022021/original/Guide-Subnational-PPPs.pdf>.

World Bank (2013) *Measuring the Real Size of the World Economy: The Framework, Methodology, and Results of the International Comparison Program — ICP*. Washington DC: World Bank. <https://doi.org/10.1596/978-0-8213-9728-2>.