Cross cutting topic

Croatian Experience in How admin data are used to derive the output measurement for short term accommodation

The 39th Voorburg Group Meeting on Services Statistics

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Introduction

Significant Tourism's Economic Contribution

- accounts for over 22% of Croatia's GDP in 2024, expected to grow to nearly 26% by 2028

Survey Frequency Increase

- CBS increased survey frequency from quarterly to monthly in 2017

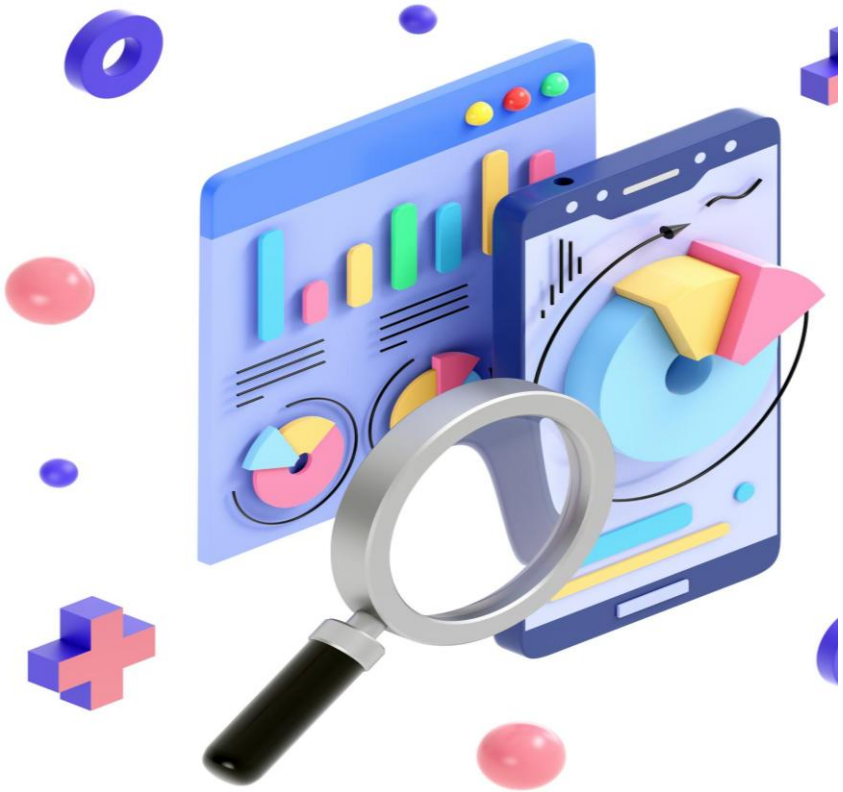
Introduction of Web Questionnaires

- In 2018 - web-based questionnaires to streamline data collection and reduce respondent burden

Integration of Administrative Data

CBS enhanced data quality by combining survey data with VAT administrative records for comprehensive coverage.

The new classification NACE Rev 2.1



- From 1 January 2025 - NACE Rev. 2.1 applies in the EU and National Classification of Activities, 2025 version - NKD 2025 in Croatia

NACE Rev. 2.1 = NKD 2025 (up to the fourth level)

- The Decision on the National Classification of Activities, 2007 version – NKD 2007-until 31 December 2027
- In line with the transitional provision from Article 6 of the Decision on the National Classification of Activities, 2025 version – NKD 2025 (NN, No. 47/24), the Regulation (EU) 2019/2152 of the European Parliament and of the Council of 27 November 2019 on European business statistics

NACE Rev. 2.1 I 55 Accommodation

55.10.Hotels and similar accommodation

- hotels, resort hotels, suite/apartment hotels, etc.

55.20 Holiday and other short-stay accommodation

- holiday homes and apartments, visitor flats and bungalows, cottages and cabins without housekeeping services, hostels, bed and breakfast units, guest rooms provided by private households, mountain huts and lodges, etc.

55.30 Camping grounds and recreational vehicle parks

– provision of short-term accommodation in camping grounds, provision of space and facilities for recreational vehicles, glamping accommodation, accommodation provided by protective shelters or plain bivouac facilities

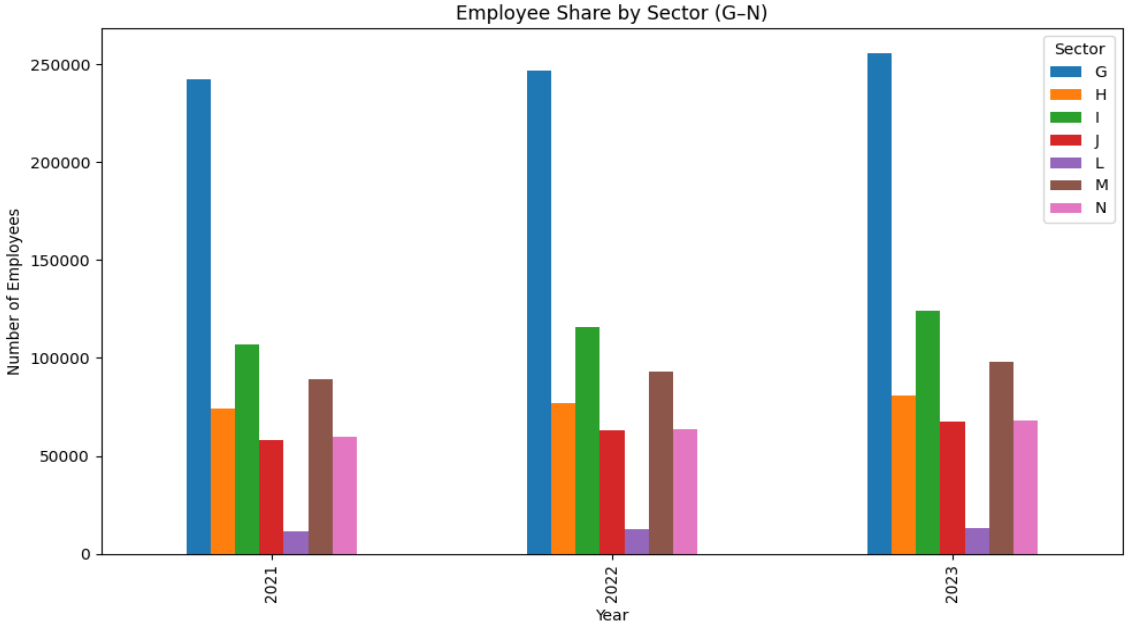
55.40 Intermediation service activities for accommodation

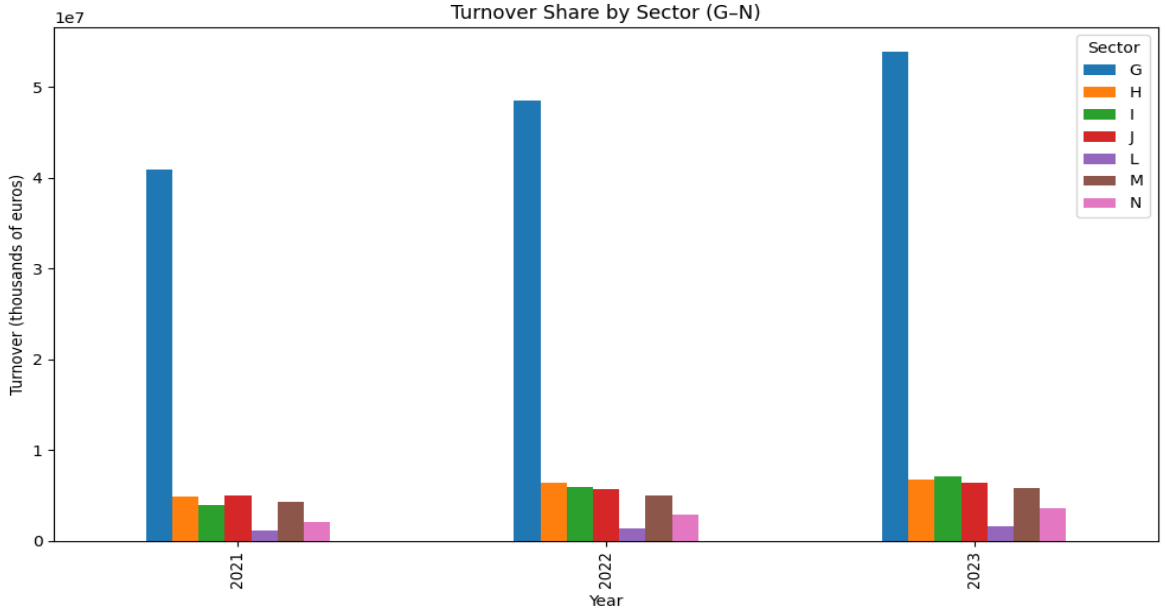
-includes the intermediation of all types of accommodation by bringing clients and service providers together for a fee or commission

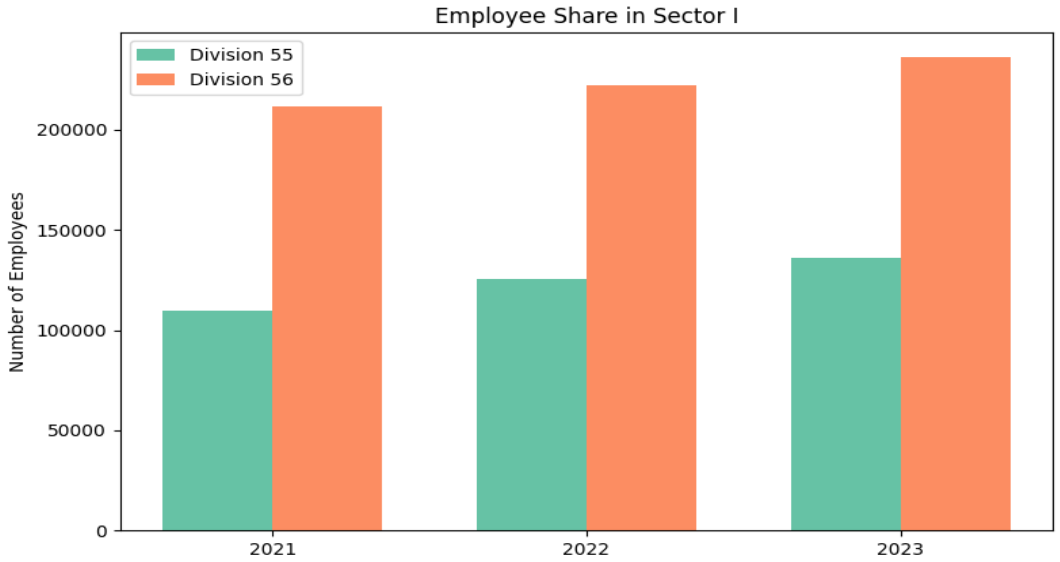
55.90 Other accommodation

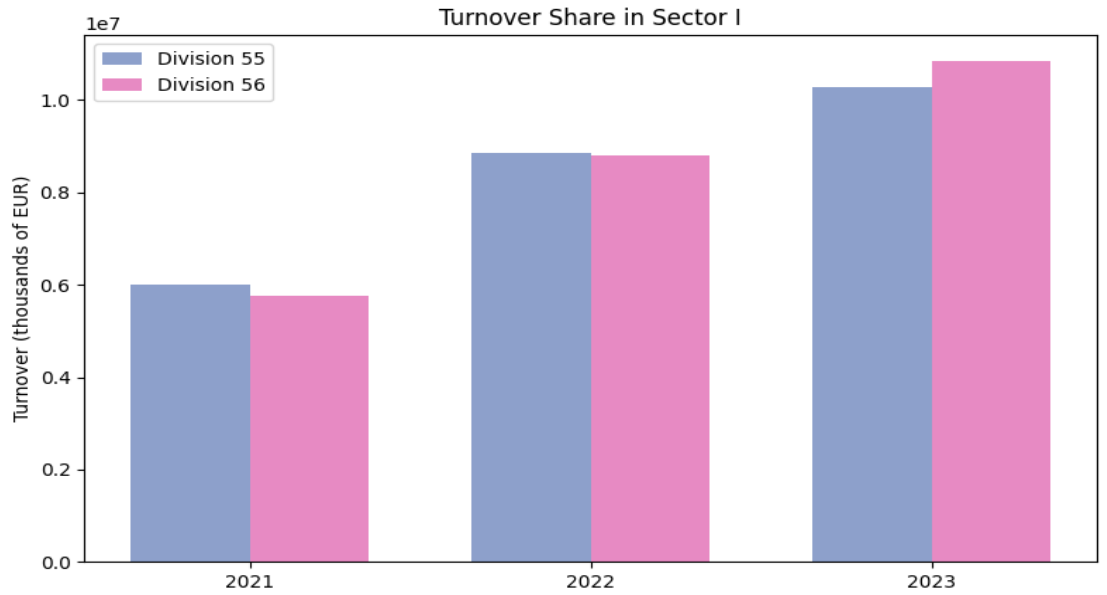
– homes and furnished or unfurnished flats or apartments, for a period shorter than a year, dormitories for workers, boarding houses, student accommodation provided for less than one year at a time,railway sleeping cars when not operated by railway companies

Market conditions









Market conditions cont.

Table 1. Share of Classes 5510–5590 within Division I55 (2021–2023)

Class	2021			2022			2023		
	Number of Employees	Turnover	Value Added	Number of Employees	Turnover	Value Added	Number of Employees	Turnover	Value Added
5510	80.2	81.9	86.5	81.5	82.4	86.5	82.0	83.6	87.1
5520	10.0	7.7	5.3	8.7	7.2	5.0	8.2	6.3	4.4
5530	3.9	6.8	6.1	4.4	7.1	6.6	4.6	6.7	6.4
5590	5.9	3.6	2.0	5.4	3.3	1.9	5.2	3.4	2.2
I55	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sampling method

- The sample is selected once a year - based on the size and on the annual turnover of business entities (registered in the SBR)
- The statistical unit of the services turnover index – KAU
- All large and medium-sized enterprises and a random sample of small enterprises
- A subset of units included into the regular survey (USL-M form) is selected from all units selected in the sample according to a particular turnover threshold
- Administrative data from the Tax Administration (VAT forms) are used for units not included into the regular survey, primarily covering smaller units to reduce response burden.

VAT data

- The closest approximation of turnover in VAT declarations - the value of goods and services
- The Croatian Law on Official Statistics - CBS has the right to use all administrative data sources
- The Agreement on mutual cooperation with Tax Authorities

- VAT data may include prepayments and sales of own assets
- It is not aligned with the methodological requirement of capturing only business revenue
- Therefore, the subset of units included in the regular survey for Accommodation is slightly larger than for other service activities

Combining Survey and Administrative Sources in MTOS system

- The MTOS (Monthly Turnover of Services) system - a comprehensive application developed by the CBS to integrate survey and administrative data for the calculation of monthly turnover indices

MTOS system process

Once a year

Sample Selection
- Filter by NKD codes and annual turnover
- Select active business units from SPR

Every month

Data Loading
- Monthly VAT CSV files
- Monthly survey data
- Format and clean data
- Link legal entities with SBR

Outlier Detection
- Hidiroglou -Berthelot method
- Compare current vs same month last year
- Flag extreme values

Imputation
- For missing or invalid turnover values
- Use employment size or donor-based method
- Store imputed values separately

Final Dataset Preparation
- Priority: Survey > Imputed > VAT
- Mark data source for each value
- Manual corrections possible via MTOS app

Index Calculation
- Monthly turnover indices
- Grouped by NKD codes
- Archive finalized indices

Using Tourism Microdata to Enhance Turnover Index Accuracy in Accommodation Services

- To improve data quality and validation, CBS utilizes micro-level data from the Tourism Statistics Department - **the number of tourist nights per enterprise**
- Serve for multiple purposes:
  - cross-checking turnover indices derived from VAT data
  - imputation
  - detecting inconsistencies in reported figures
- **The primary data source for tourism activity statistics, including tourist arrivals and nights, is the eVisitor system**

eVisitor system

The primary data source for tourism activity statistics, including tourist arrivals and night

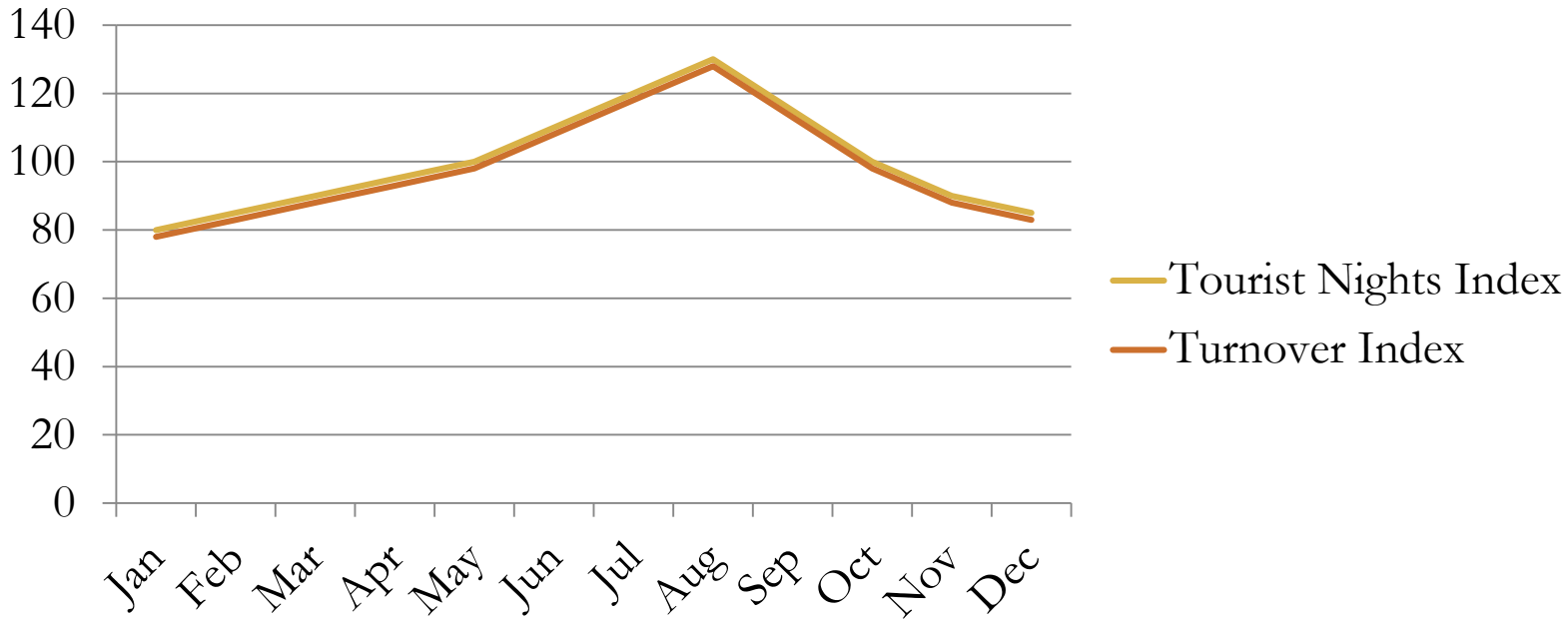
Managed by the Croatian National Tourist Board

The central electronic platform for checking in and checking out tourists in Croatia

All legal entities and natural persons providing overnight accommodation services, including those operating in households and on private family farms- required to register tourist stays via eVisitor

- **CBS receives monthly data**

Comparisons between indices of tourist nights and turnover indices



- Comparisons between indices of tourist nights and turnover indices -a high degree of similarity
- Can not be fully replaced by the tourist nights index:

1. The tourist nights index does not cover the 'Other Accommodation' class
2. Occasional timing discrepancies between the recording of tourist nights and the actual business revenue

Challenges and Solutions

Challenges

- using VAT data for output measurement in the accommodation sector (NKD I 55) - prepayments and sales of own assets can distort the measurement of actual business turnover, leading to inconsistencies in statistical outputs
- timing discrepancies between VAT declarations and actual economic activity further complicate the use of administrative data
- Survey sample size limitations

CBS has implemented several solutions:

- Expanded survey sample for NACE Rev. 2.1 I 55
- CBS integrates micro-level data from the eVisitor system, which includes the number of tourist nights per enterprise. Despite the usefulness of eVisitor data, it cannot fully replace turnover indices
- Statistical techniques are applied for outlier detection, and imputation algorithms based on employment and donor matching are used to fill gaps in data
- CBS continues to rely on a combination of survey and administrative data to ensure comprehensive and accurate output measurement in the short-term accommodation sector

Thank you for your attention!

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