Calibration as a tool to enhance coherence at regional level in tourism statistics

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What is this presentation about?

➢ It is about trying to answer a question…

How many tourists come to my REGION every month? (17 questions indeed!)

AnswerS coming from:

• Surveys to accommodation establishments (supply side): arrivals/nights spent at market accommodation

• Demand surveys:
  ✓ Inbound tourists: FRONTUR-EGATUR
  ✓ Domestic tourists: Residents Travel Survey (RTS)
How many tourists come to my REGION every month?

- Supply side surveys had a good geographical detail but only tell one part of the story.

Figure 1. Share of nights spent at market accommodation establishments by region. Domestic tourism. Residents Travel Survey. 2017

Figure 2. Share of nights spent at market accommodation establishments by region. Inbound tourism. EGATUR. 2017
How many tourists come to my REGION every month?

- Demand surveys can tell the whole story… but not always the same as supply side!
What is this presentation about?

- It is about solving problems...
  - Lack of coherence
  - Bias
  - High sampling errors

- ...with statistical techniques: calibration – a method to adjust sampling weights using external information
Residents Travel Survey: description

- Household survey: CAPI, CATI, CAWI
- Trips (and same-day visits), overnights stays and expenditure made by residents in Spain
- Characteristics: origin, destination, length, purpose, accommodation, means of transport,…
- Monthly and quarterly estimates published on a quarterly basis
- Monthly estimates based on 16,400 questionnaires per month meaning 6,000 trips
Residents Travel Survey: design measures

Increasing sample efficiency:
- Small percentage of travellers (24% in 2017)
- Small samples sizes for trips and same-day visits
- High sample errors

Solution:
- Regression model on sampling frame to assign a propensity score to travel
- More prone to travel households oversampled
- Weighting factors correction to avoid estimation biases
Residents Travel Survey: post-measures

- Adjustment of design weights to improve estimates accuracy using socio-demographic information from official sources

- Variables used to calibrate at regional (NUTS-2) level:
  - Population by nationality (Spanish or foreign)
  - Population by gender and age (five-year groups)
  - Population by educational level (primary, secondary and higher education)
  - Population by provinces (NUTS-3 level)
Residents Travel Survey

- But still…
Residents Travel Survey: HOS calibration

- Monthly calibration to HOS hotel overnight stays
- Pre-adjustment to overcome methodological differences:
  - coverage: hotel nights within usual environment
  - reference periods: RTS assigns all nights to the date of end of the trip
  - real destination vs. main destination (questionnaire)

Adjustment was made for a base year (2015) and updated with HOS variation rates.

- Five regions (NUTS-2) calibrated individually: Madrid, Canary Islands, Andalusia, Catalonia and Valencian Community
- One group for regions with smaller sample sizes
Residents Travel Survey: HOS calibration

- Much better adjustment of the two sources
  (RTS results for main destination vs HOS results for real destination)
Residents Travel Survey: HOS calibration

➢ More similar signals

(RTS results for main destination vs HOS results for real destination)
Residents Travel Survey: next steps

- Not enough for less popular destinations (calibrated together under ‘others’)

Balearic Islands hotel overnight stays

- RTS calibrated to SD and HOS
- HOS
- RTS calibrated to SD
Residents Travel Survey: next steps

- Combining reference periods: **month** for bigger destinations + **quarter** for smaller ones

**Balearic Islands hotel overnight stays**

- RTS monthly calibrated
- HOS
- RTS quarterly calibrated
FRONTUR: monthly border survey measuring visitors
EGATUR: monthly border subsample measuring expenditure

Consistency among FR, EG, Accommodation Surveys: region of destination *country of residence

Three steps process:
1. FR adjustment to AS (tourists)
2. EG adjustment to AS (nights) and FR (tourists)
3. FR adjustment to EG (tourists)
What has been this presentation about?

- It has been about making the most with:
  - available information and
  - statistical tools
- To provide coherent figures at regional level and
- Enabling a more meaningful regional analysis

Thank you for your attention!

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