# Topics

1. Introduction to basic analysis and reporting features
    1. Measuring and benchmarking arrivals and bednights
    2. Trends
    3. Average length of stay
    4. Occupancy rate
    5. Analysis of tourism intensity
    6. Market volume and growth analysis (‚Portfolio A.‘)
2. Measuring and benchmarking seasonality
3. Comparing the guest mix of destinations
4. Market volume and growth analysis (‚Portfolio A.‘)

# Market volume and market growth analysis

# & Portfolio visualization

# A common problem in marketing …

**To find the right (optimal) mix of target markets**

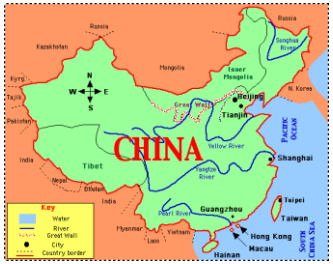
Implications for strategic (long-term) decisions and for the budget allocation process (e.g. where should we invest?)

2 basic questions:

- What makes a market attractive?
- What are our chances in attracting visitors from a particular market?

## What makes a market attractive?

1. **Size/volume**


2. **Growth/Prospects**



- **Market volume and market growth indicators**
  - # of travellers/arrivals/bednights or spendings
  - either measured at the country of origin (source market) or in all destinations (e.g. total bednights in all destinations)

# Portfolio analysis

## What are our chances in attracting visitors from a particular market?

## „Market chance indicators“

- **Destination awareness**
  - Knowledge, preference and sympathy towards a destination
- **Relative price level**
  - Comparison between prices of tourism goods and travel budget of travellers
- **Level of distribution**
  - Availability of a destination within the generating country‘s distributional system of tour operators and travel agents and online reservation systems
- **Competitive pressure**
  - Advertising budget invested by all competitors in a market
- **Travel distance**
  - Average financial input to cover travel distance

## Strategic Key Performance Indicators

- **Market volume** is an absolute number describing the volume of tourism generated by a particular market
- **Market growth rate** is the percentage change of the market volume (in %)
- **Absolute market share** is the ratio when comparing the performance of a particular destination with the overall market volume (in %)
- **Relative market share** is the ratio of the market share of a particular destination compared to the market share of the leading destination (or the second best destination if the destination of evaluation is the market leader)
- **Guest mix share (= importance value)** is the proportion of bednights sold of a particular market compared to the overall number of bednights recorded in a tourism destination (in %)

# Market growth-share matrix

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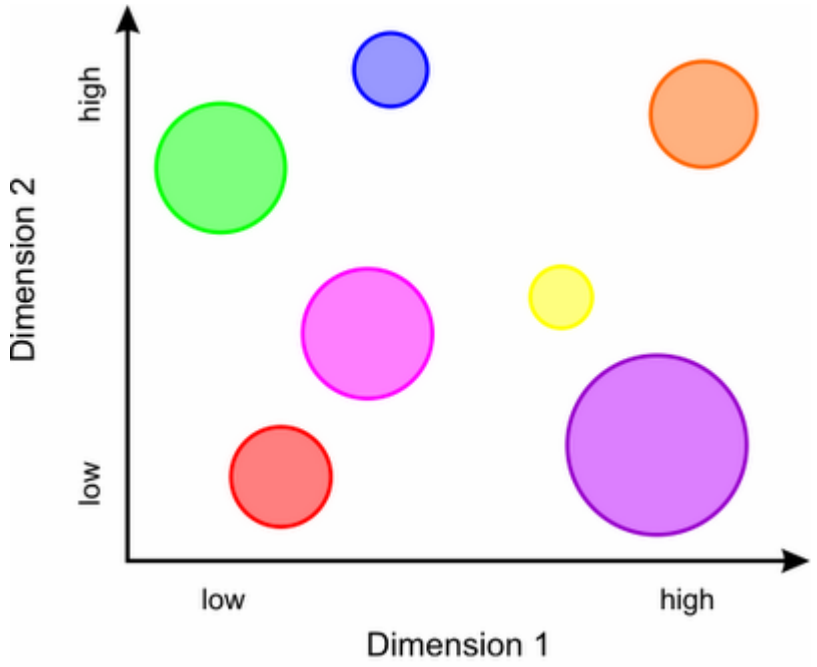
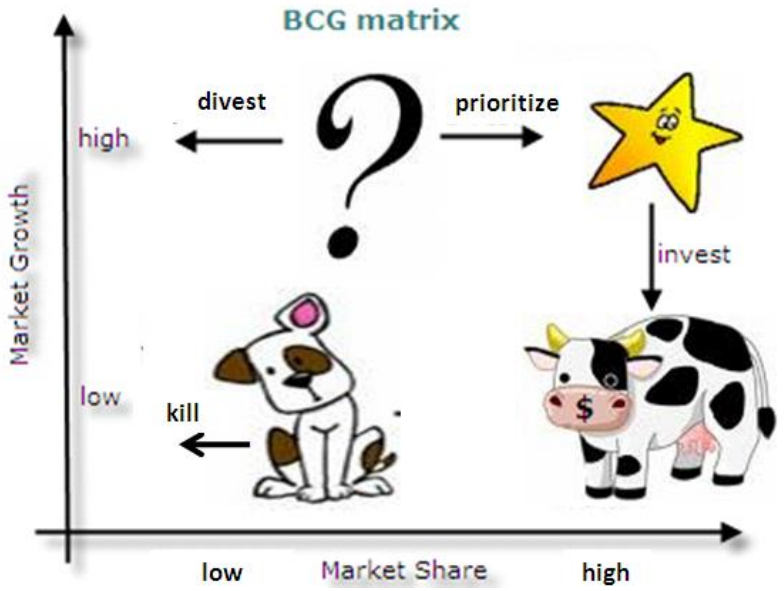
## Visualization



# Measuring and comparing seasonality in European destinations

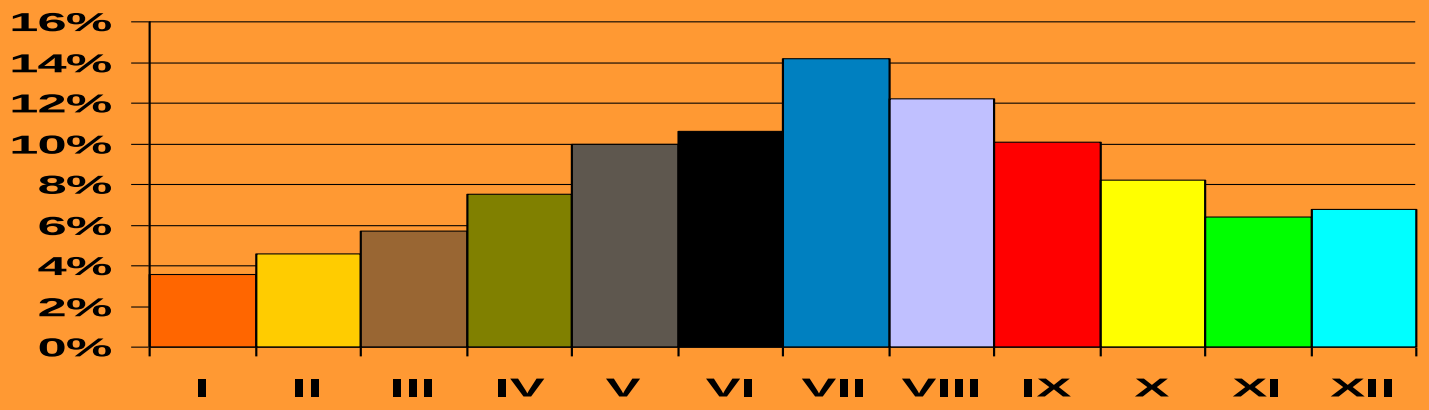
# Causes of seasonality in tourism

- **Seasonality: The systematic intra-year variation in visitation caused by exogenous factors:**
  - Natural (e.g. climate)
  - Institutional
    - caused by the markets of origin (e.g. timing of school holidays)
    - caused by the destination (e.g. regular mega-events)
  - Calendar effects (e.g. Easter)
- **Problems:**
  - The need to optimize the use of tourism infrastructure such as roads to accommodate high flows during certain periods
  - Seasonality increases the risk of high unemployment during the low seasons
  - In dryer regions the issue of water scarcity is of particular concern

# Actions to overcome seasonality

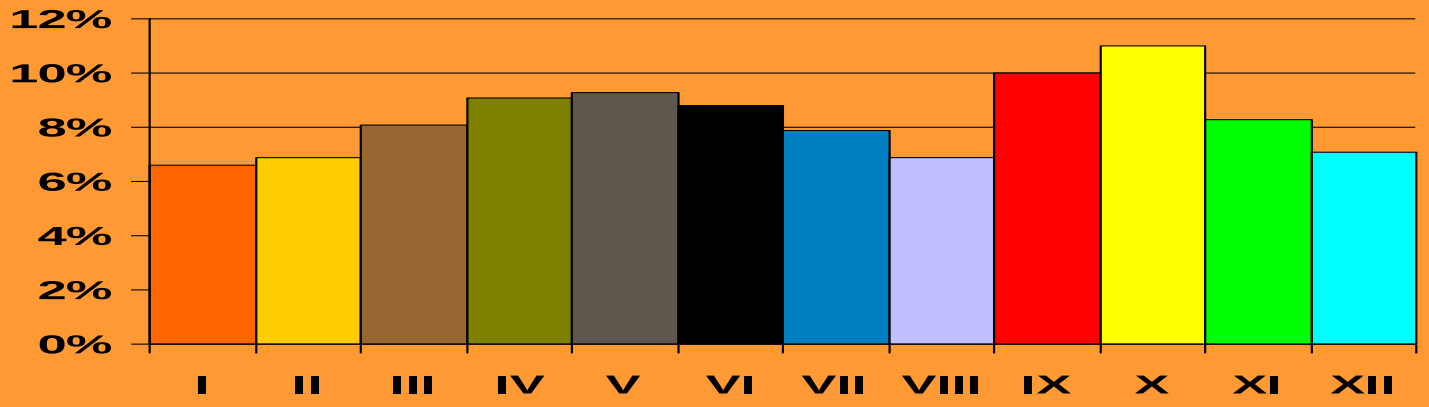
- Product
  - Development of new offers, events, packages, ...
- Pricing
  - Providing discounts for periods with less demand
- Promotion
  - When and how intensively we will promote the tourism products
- Placement
  - Which geographic region/market should be promoted
  - Which segments (e.g. young adults, families, business people)

# Gini coefficient




**LÜBECK**

**Gini=0.207**

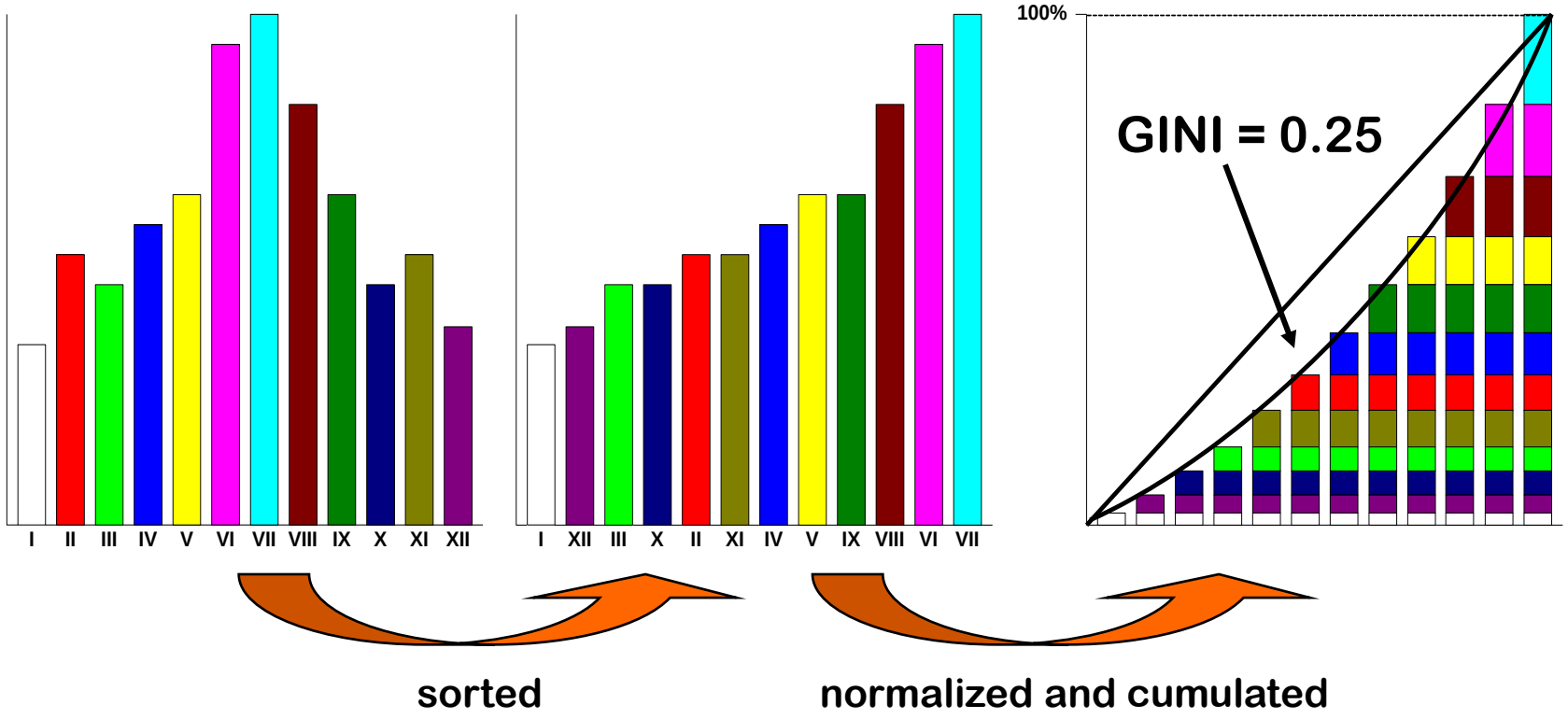



**MADRID**

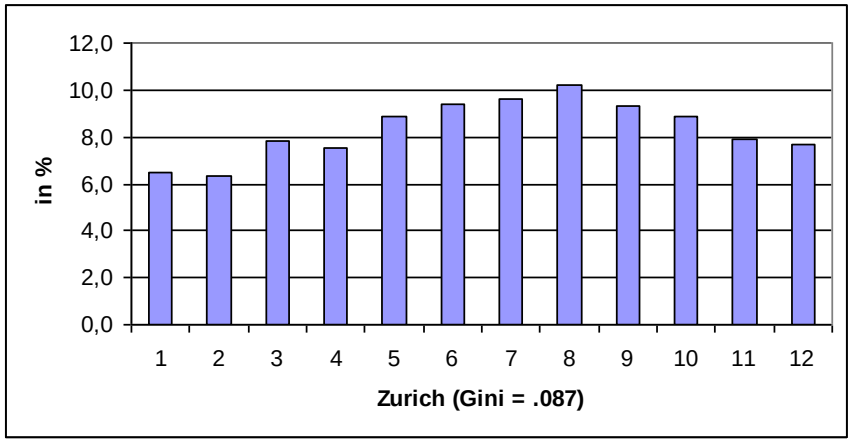
**Gini=0.088**

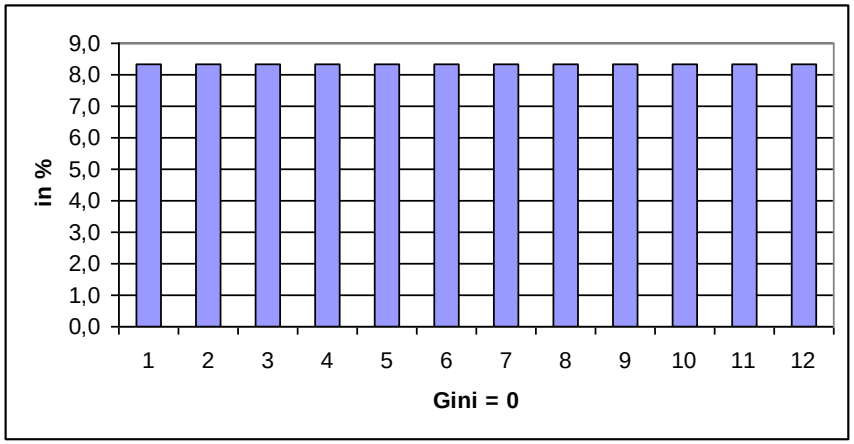
# The Gini coefficient

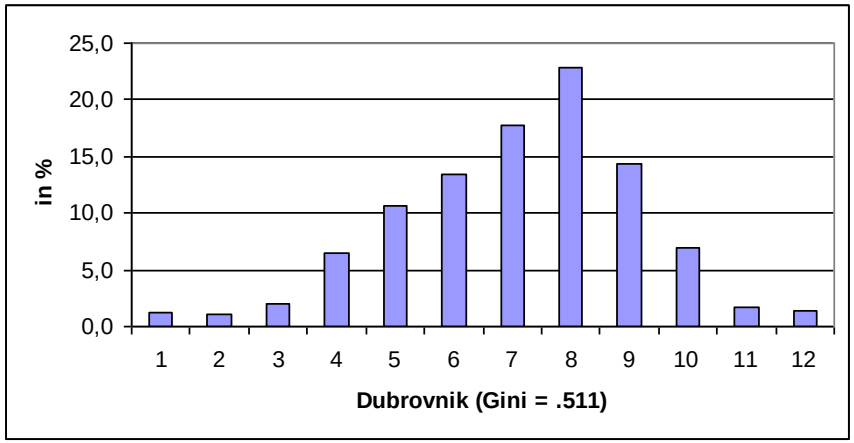
**Measure of statistical dispersion. The Gini can be approximated with trapezoids:** $G^* = 1 - \sum_{i=1}^{12} (X_i - X_{i-1}) \times (Y_i + Y_{i-1})$

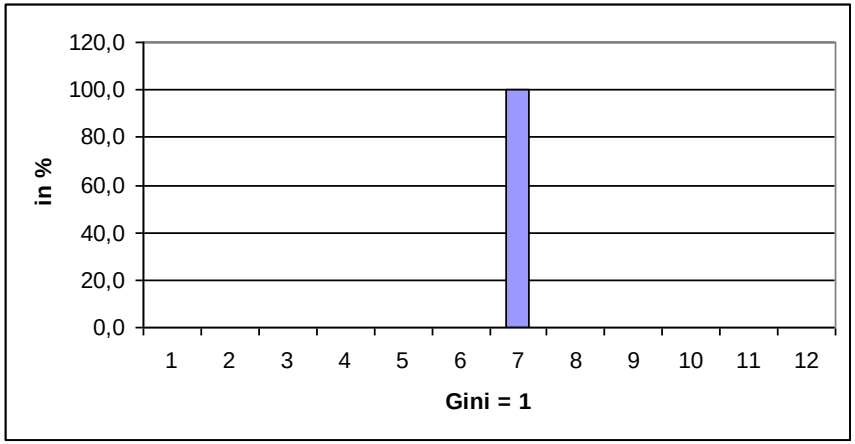


# Measuring seasonality (Gini coefficient)

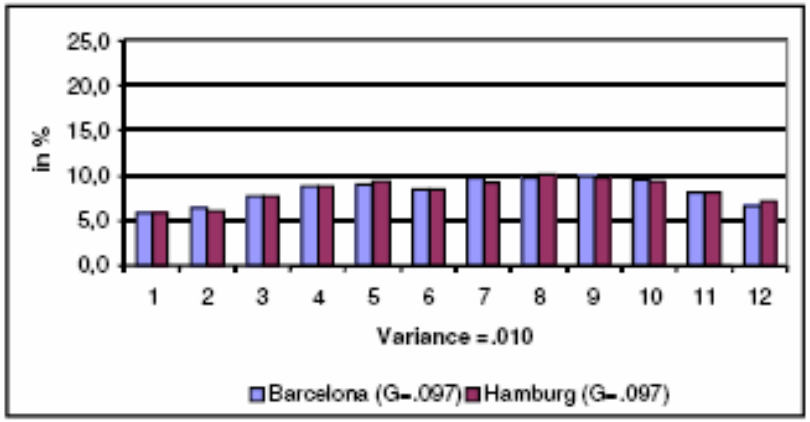


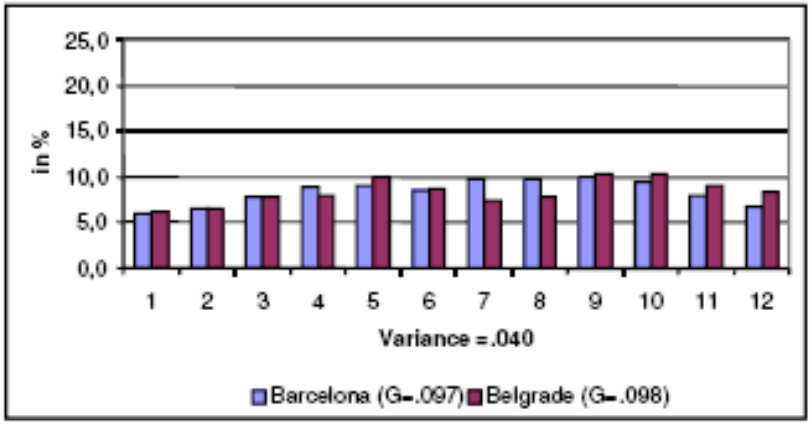



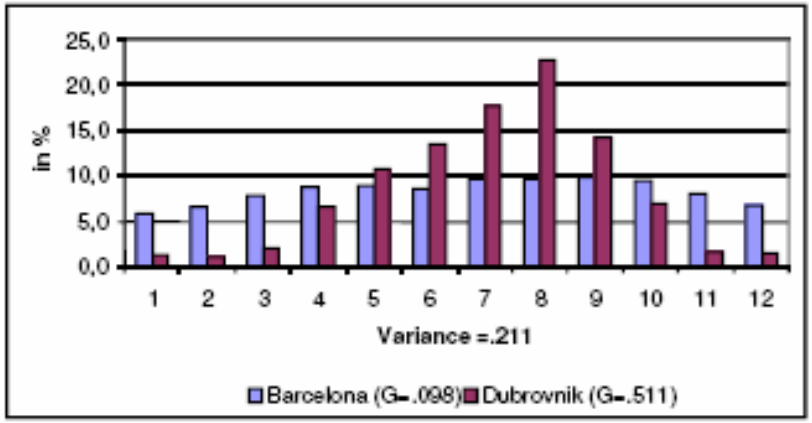
# Similarity of seasonal patterns




$$d = \sqrt{\sum_{i=1}^{12} (x_i - y_i)^2}$$

Similarity of seasonal patterns of two destinations. Multiple destinations?

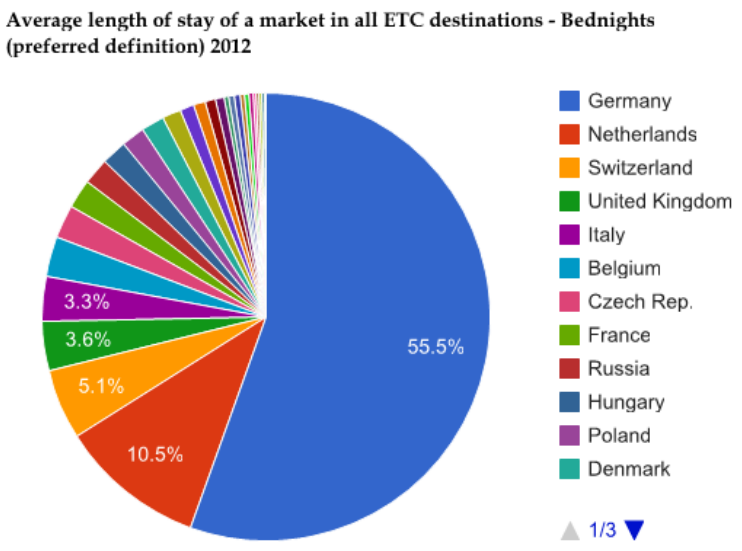


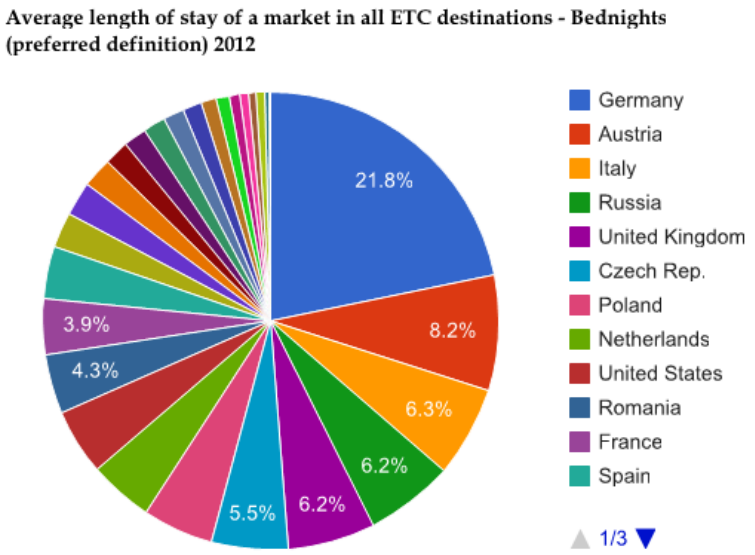
# Comparing the guest mix of destinations

# Diversity of guest mix

Assumption: A high diversity of guest mix spreads the risk of negative economic developments in single markets



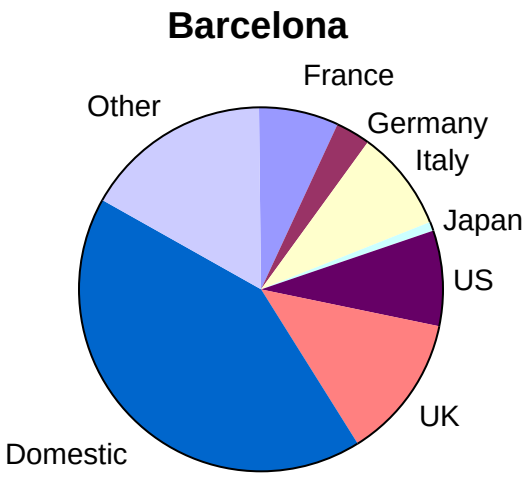

Austria (Gini = 0.792)



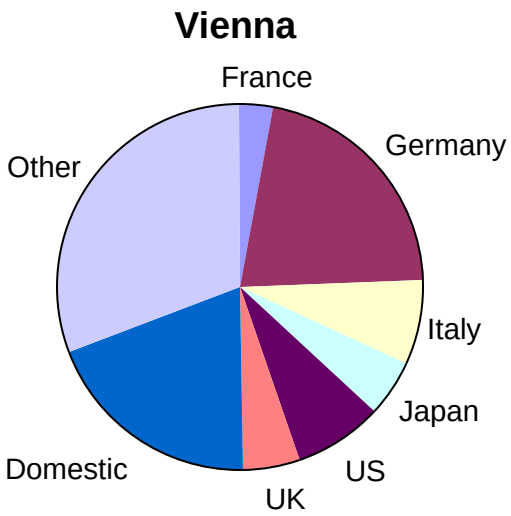

Hungary (Gini = 0.525)

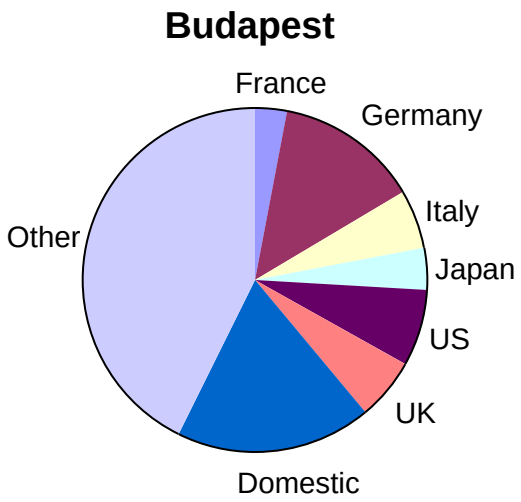
# Analyzing the similarity of guest mix

Assumption: The comparison (variance) of guest mix shares defines a destination's exposure to interregional competition




V = 0.364



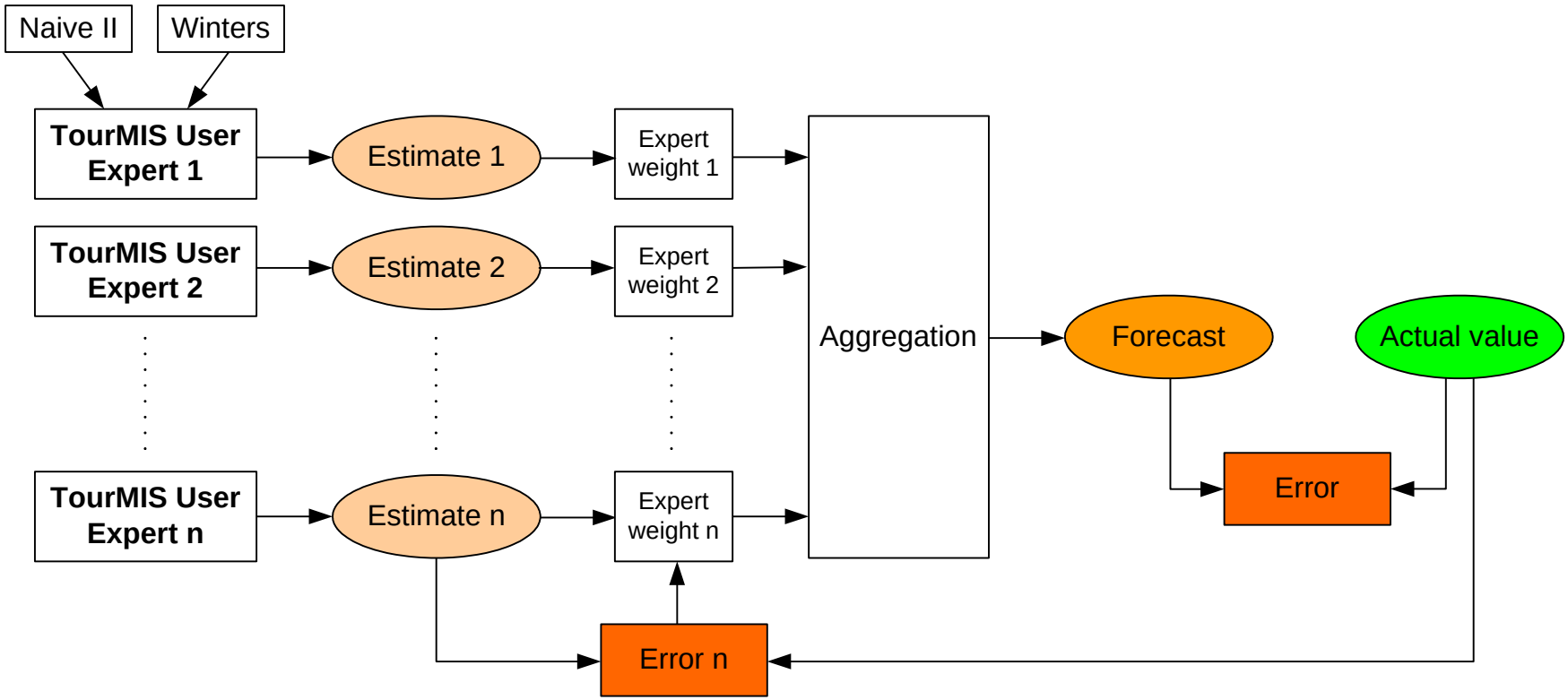

V = 0.193

# Forecasting tourism demand

# Tourism Forecasting Methodologies

- Quantitative (statistical) forecasting
  - Econometric approaches
  - Time-series techniques (e.g. **decomposition and linear regression** in www.citytourismbenchmark.com)
- Qualitative (judgmental) forecasting
- Both (hybrid) forecasting
  - builds on the complementary strengths and weaknesses of quantitative and qualitative forecasting methods
  - "**My best estimate**" on TourMIS

# Adaptive Qualitative Forecasting



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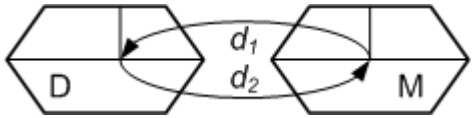
# Estimating CO2 emissions of European city tourism

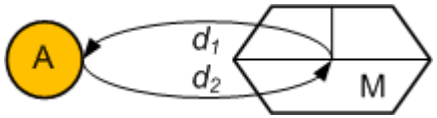
Ulrich Gunter and Karl Wöber

# Objectives and motivation

- **Stefan Gössling, Daniel Scott, Michael Hall 2015**: *Inter-market variability in CO2 emission-intensities in tourism: Implications for destination marketing and carbon management*, Tourism Management, 46, pp. 203-212
- CO2 emissions in tourism calculated based on the distances flown of all tourists from a specific **source market** to a specific **destination** times CO2 emission factors per flight distance




- The primary objective of the TourMIS project is to create **more precise estimates** of CO2 emissions of European **city tourism**

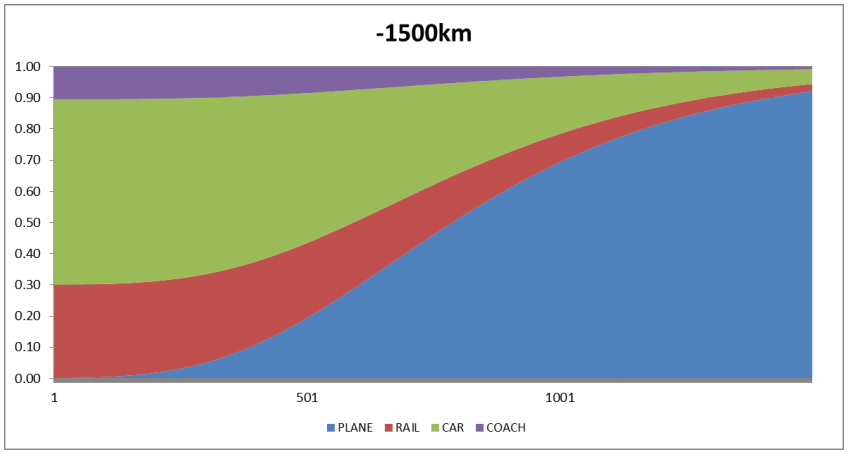


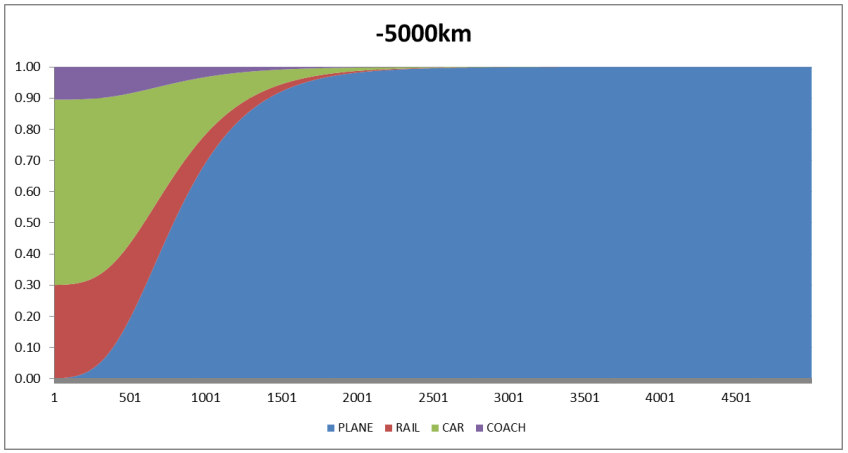

- In order to achieve this objective, **not only the travel distance** (as typically done) but also the **chosen transportation mode(s)** and the particularities of the different cities' **source markets** are taken into account

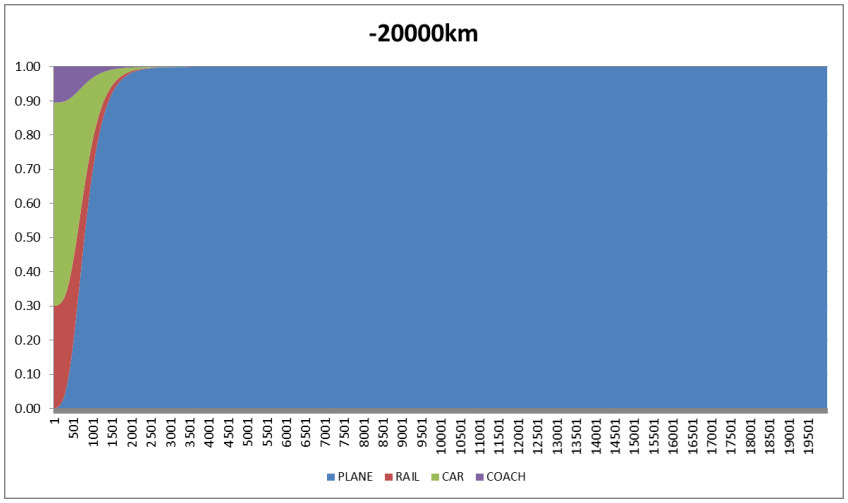
# 4 Steps

1. Calculation of travel distances in km between European cities and their source markets based on their geographical coordinates (population centers) as reported by the Socioeconomic Data and Applications Center (SEDAC) by NASA
2. Estimation of travel mode (… Brussels, Simon Detemmerman)
3. Calculation of CO2 emissions by multiplying distance by travel mode with average CO2 emissions by travel mode
4. Incorporating multiple trips and average length of stay

# Estimating travel distance by travel mode




The probability of choosing a certain transportation mode is approximated by a Gompertz function in travel distance (PLANE) and a growth function in travel distance (RAIL), with the remaining probability (i.e., 100% – Pr(PLANE) – Pr(RAIL)) being distributed on CAR (85%) and COACH (15%), respectively

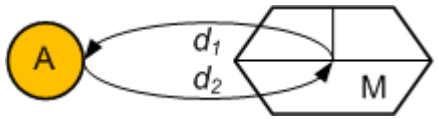
# Estimating CO2 emissions

- Travel distances per transportation mode are calculated by multiplying the travel distance in km per destination and source market by Pr(PLANE), Pr(RAIL), Pr(CAR), and Pr(COACH), respectively
- CO2 emissions per tourist arrival are calculated by multiplying the travel distances per transportation mode by the average CO2 emissions per transportation mode according to Peeters et al. (2007):

**Table 11.2 Emission factors for tourism transport modes in the EU context**

| Mode | $CO_2$ factor (kg/pkm) | Occupancy rate/load factor (%) |
|---|---|---|
| Air < 500 km | 0.206 | – |
| 500-1,000 km | 0.154 | – |
| 1,000-1,500 km | 0.130 | – |
| 1,500-2,000 km | 0.121 | – |
| > 2,000 km | 0.111 | – |
| Air world average [a] | 0.129 | 75 |
| Rail | 0.027 | 60 |
| Car | 0.133 | 50 |
| Coach | 0.022 | 90 |

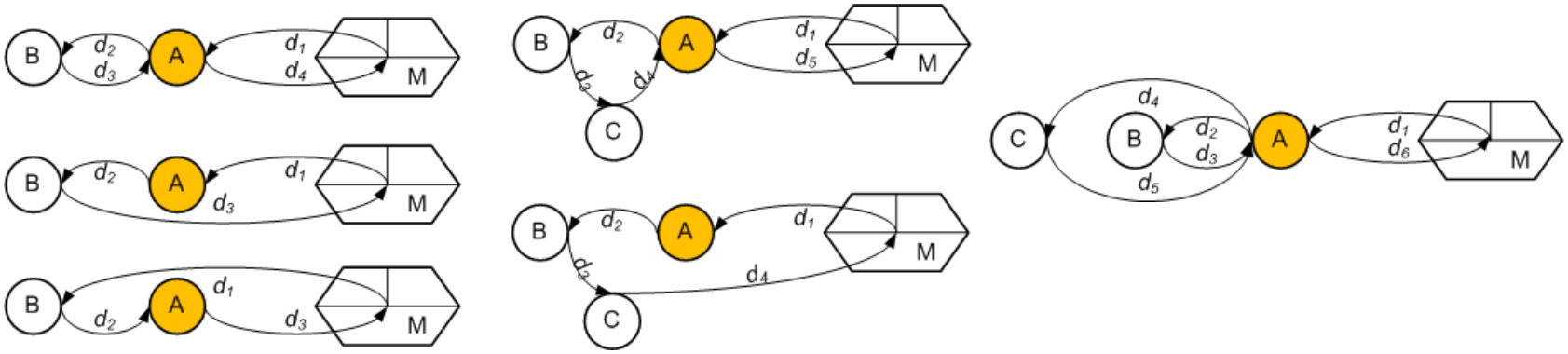
(a) This value is calculated in Section 11.1.2.1.
Source: Peeters, P. et al. (2007b)




$$CO_2 = \sum f^T(d_1) * kg/pkm^T + \sum f^T(d_2) * kg/pkm^T$$

# Limitations and future research

- Differences in transportation mode preferences across European countries have not been considered
  - Eurostat data on the terrestrial modal split of passenger transport as well on passenger flights could be incorporated in the future
- Only (direct) CO2 emissions from transportation from the source markets to the destinations are considered
  - More information is needed on the other (indirect and induced) CO2 emissions of tourists to and within European cities
  - More information on travel between cities (‘round trips’) is needed



# Proposing new tables

## Drafting a new table
## Example: Average length of stay

**Suggested label of table: Average length of stay in one ETC destination**

Destination=<to be selected>

Type of Accommodation=<to be selected>

Period=mm1/yy1 - mm2/yy2 <to be selected>

| | Arrivals | | | Bednights | | | Avg Length of Stay | |
|---|---|---|---|---|---|---|---|---|
| | mm1/yy1 – mm2/yy2 (absolute) | mm1/(yy1-1) – mm2/(yy2-1) (absolute) | %-p.y. | mm1/yy1 – mm2/yy2 (absolute) | mm1/(yy1-1) – mm2/(yy2-1) (absolute) | %-p.y. | mm1/yy1 – mm2/yy2 (days) | mm1/(yy1-1) – mm2/(yy2-1) (days) |
| Market A | | | | | | | | |
| ... | | | | | | | | |
| Market Z | | | | | | | | |

## Submit to tourmis@modul.ac.at

# Outlook

- MICE: Additional tables and graphs
- Improving the travel distance estimator

- Sharing data on tourism expenditures
- Forecasting

- Updating TourMIS Manual
- Additional languages (French, Spanish, Chinese?)
- „How-to-use“ - TourMIS videos
- Additional external databases import opportunities
- APIs (e.g. TO‘s dashboards)

# Collecting data on daily expenditures

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## Objectives:

1. Monitoring and comparing the daily expenditures of all and individual markets (domestic plus 59 foreign markets) for destinations who perform visitor surveys

   Focus: Average daily expenditures of tourists (excluding transportation to the destination) broken down by
   - accommodation
   - food and beverages
   - entertainment
   - shopping
   - local transportation
   - other
2. Developing an econometric model which allows to estimate the direct economic contribution of tourism even if there is no or only incomplete data available for a particular destination

# Summary and Feedback

# Thank you!