DATASET2050
DATA driven Approach for a Seamless Efficient Travelling in 2050

Current Passenger Demand Profile
Annika Paul
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>> Mobility behaviour

>> Passenger profiles

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Objectives „Current Demand Profile“

**Analysis of demand side of European (air) transport system**

**Passenger centric approach**
- Development of passenger profiles and respective archetype journeys

**Data-driven approach**
- Analysis of existing data on passenger demand and travel behaviour
- Consideration of future demand changes using both qualitative and quantitative data
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Objectives of the project

Passenger characteristics
  > Demographical aspects
  > Geographical aspects
  > Socio-economic aspects
  > Behavioural aspects

Mobility behaviour

Passenger profiles

Summary and next steps
Passenger characteristics

**Passengers' travel behaviour**

- Depiction of demand for mobility in general and for air transport in particular

- Influenced by various factors:
  1. demographical aspects
  2. geographical aspects
  3. socio-economic aspects
  4. behavioural aspects

- Interdependencies between the different factors
**Demographical aspects**

**Population size**
- Correlation with absolute number of (air) transport activity

**Age group**
- Varying trip activity
- Travelling as learned behaviour, continues throughout life

**Gender**
- Women play a decisive role in determining holiday locations
- Women make up increasing share of business travellers
Geographical aspects

**Urbanisation**
- High population density within areas surrounding European capitals, large cities or large urban agglomerations
- High share of (air) transport between urban centres

**Distribution of population**
- Depiction of passenger origin and destination helps to identify potential traffic flows
- Urban area vs. rural regions

Population density by NUTS 2 region (data: Eurostat, 2014)
Socio-economic aspects

>> Household structure
  > Differences in disposable income, positive correlation with the demand for (air) travel
  > Number of persons travelling together

>> Level of education
  > Type of employment and income level
  > Indirect impact on the level of air transport

>> Industry structure
  > Type of industries and ease of doing business facilitate mobility demand

Distribution of income across different household types (normalized values) (data: Eurostat, 2014)
Behavioural aspects

Information and communication technologies
> Booking, journey planning, information

Environmental awareness
> No correlation between awareness and travel behaviour
> Change in personal choice of transportation and carbon-offsetting

Perceived safety
> Top priority for passengers
> Most private data: financial, family, healthcare

Passengers’ usage of self-technology during travel (data: SITA, 2016)
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**Objectives**

**Passenger characteristics**

**Mobility behaviour**
- Overall mobility behaviour
- Air travel behaviour
- European air traffic patterns
- Intra-European destinations

**Passenger profiles**

**Summary and next steps**
Overall mobility behaviour

**Distribution of trip type**
- Geographical size (country)
- Income level
- Degree of urbanization

**Travel expenditure**
- Strong correlation between GDP per capita and absolute amount of transport costs by country
- Around 30% of travel expenses spent on transport

Distribution of domestic and outbound trips for personal or business reasons (data: Eurostat, 2014)

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<th>Share domestic business</th>
<th>Share outbound personal</th>
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Air travel behaviour

Prevalence of air travel

- Influenced by geographical size and island location
- High share of outbound traffic indicates high prevalence of air travel and vice versa
- Air trips per capita and GDP per capita
  - Increase in income as one explanation for air traffic growth
  - Identification of growth potential, e.g. Eastern Europe

Prevalence of air travel in different European countries (data: Eurostat, 2014)
European air traffic patterns

**Stage length distribution**

- Up to a distance of 1000 kilometres
- More than 60% of trips
- More than 50% of airline seat capacity

**Supplied airline seats**

- Correlation with population size
- High share of domestic seats
- Geographical size and location
- Sparse population density (example: Norway)

*reference: Airbus 320 at a speed of Mach 0.76*
Intra-European destinations

1 millions seats
500,000 seats
- country with most seats
- country with 2nd most seats
- country with 3rd most seats

EU Door-to-Door Mobility Workshop | Current Demand Profile | 12.07.2016
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  > Passenger demand profiles
  > Archetype journeys

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Approach

**Passenger profiles**
- Identification of six profiles
  1. Using existing studies on passenger profiles
  2. Analysis of European data
  3. Characterization according to
     - Main travel purpose
     - Age group and income level
     - Usage of ICT
     - Length of stay
     - Travel activity and travel party size
     - Luggage requirements
     - Value of time
     - Access mode choice

**Archetype journeys**
- Depiction of five generalized journeys
  1. Distribution of air traffic and selection of relevant European countries
  2. Distinction of business and leisure journeys by
     - Origin and destination regions according to distribution of traveller types
     - Stage length for different journeys

**Journey types**
- Domestic and intra-EU business trip
- City trips, coastal and island holiday trips
Passenger profiles

**Travel purpose**

- **Business**
  - Price-conscious Business Traveller
    - Age group 25-44 (+ children)
    - ≥ 3 travellers
    - Check-in luggage (several bags)
    - Airport access by public transport or private car
  - Youngsters
    - 15-24

- **Private**
  - Exclusive Experience Traveller
    - Age group 65+
    - Low technological affinity
    - 1-2 travellers
    - Low value of time
    - Airport drop off by friends and relatives
  - Family and Holiday Traveller
    - 25-44
  - Best Agers
    - 45-64
  - 65+

**Income levels**

- high income
- medium income
- medium / high income
- low income
Archetype journeys

- 5 archetype (generalized) journeys within Europe
- Based on passenger mobility data
- Passenger groups are
  - very likely
  - likely
  - not likely to conduct the journey type

- Times assigned to different process steps vary by passenger and journey type
- Initial assessment of 4hD2D goal

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<th>Passenger profile</th>
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<td>EU-bound business trip</td>
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<td>City trips</td>
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<td>Coastal holiday trips</td>
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<td>Islands trips</td>
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</tbody>
</table>

Matching passenger profiles with journey archetypes (own depiction)
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Objective of the project

Passenger characteristics

Mobility behaviour

PAX profile

Summary and next steps
Summary and next steps

>> Analysis of current demand for (air) transport

> Development of 6 different passenger profiles and 5 different archetype journeys
> Selection of high density routes for the assessment within the DATASET2050 model
> High level of dispersion across the considered country sample in regard to income level, share of domestic and outbound travel, household size or air travel

>> Next steps

> Development of metrics which deliver specific input for model
> Matching passenger demand profiles and archetype journeys with supplied transport system
> Identification of (current) bottlenecks and resulting potential for improvement, recommendations for future research
> Analysis and assessment of future developments and respective implications for passenger demand profiles
Contact

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