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EUROPEAN TRAVEL COMMISSION

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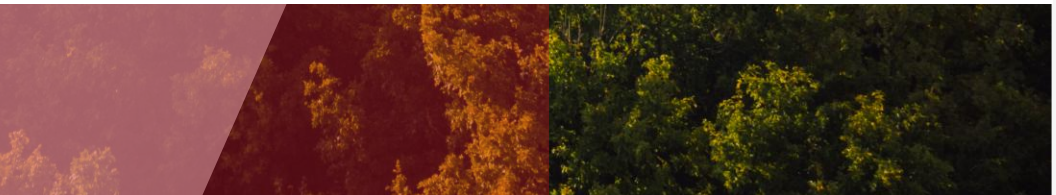
CITY DESTINATIONS ALLIANCE

TOURMIS WORKSHOP



Part III
APIs
The Future of TourMIS

Austrian National Tourist Office
www.tourmis.info

19th TourMIS Workshop

September 12-13, 2024

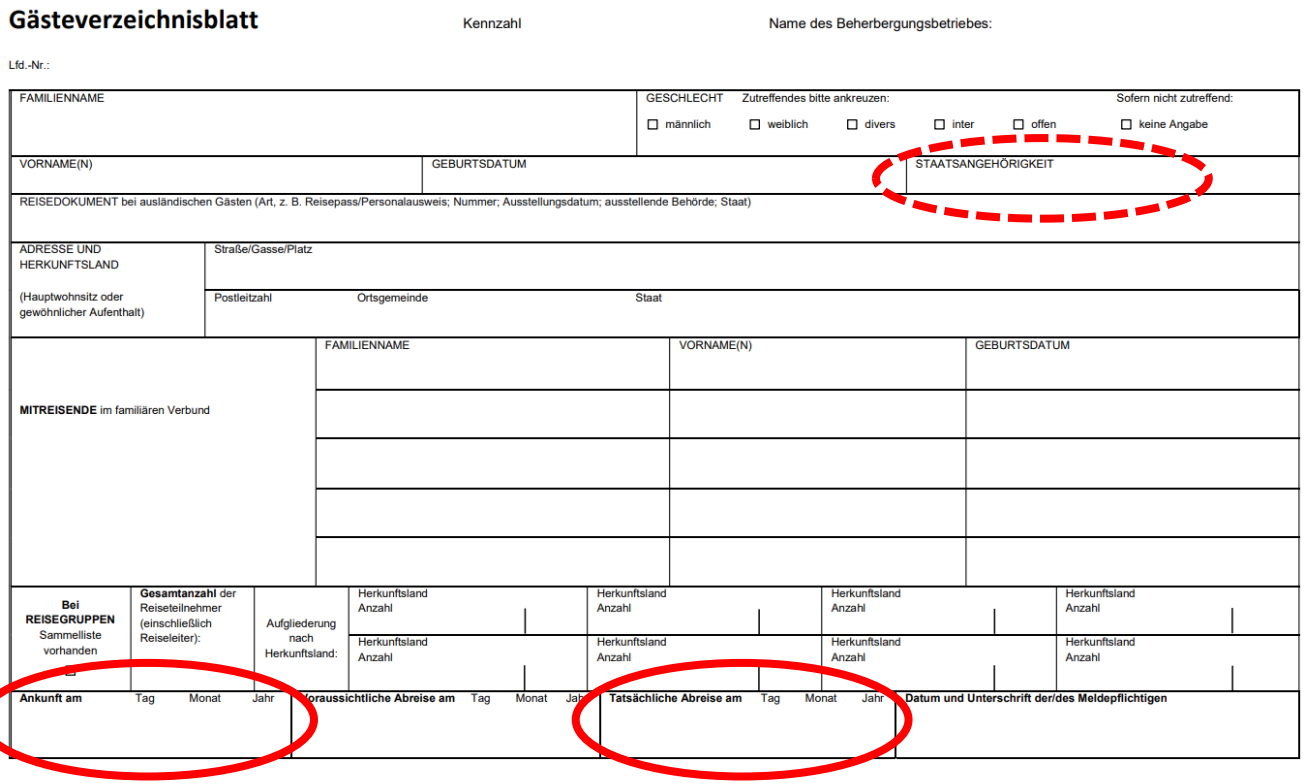
The Distribution of the Average Length of Stay

ALS: Important KPI in Destination Management

Assumption: Increasing the LoS has a positive impact on destinations

- Economic benefits
  - Higher total spending per trip
  - Better revenue distribution
- Environmental benefits
  - Reduced carbon footprint per tourist
  - Less strain on infrastructure
- Social and cultural benefits
  - Deeper cultural engagement
  - Better local-tourist relationships
  - More job stability

Guest directory sheets in Austria as of 1/2023



Gästeverzeichnisblatt

Kennzahl

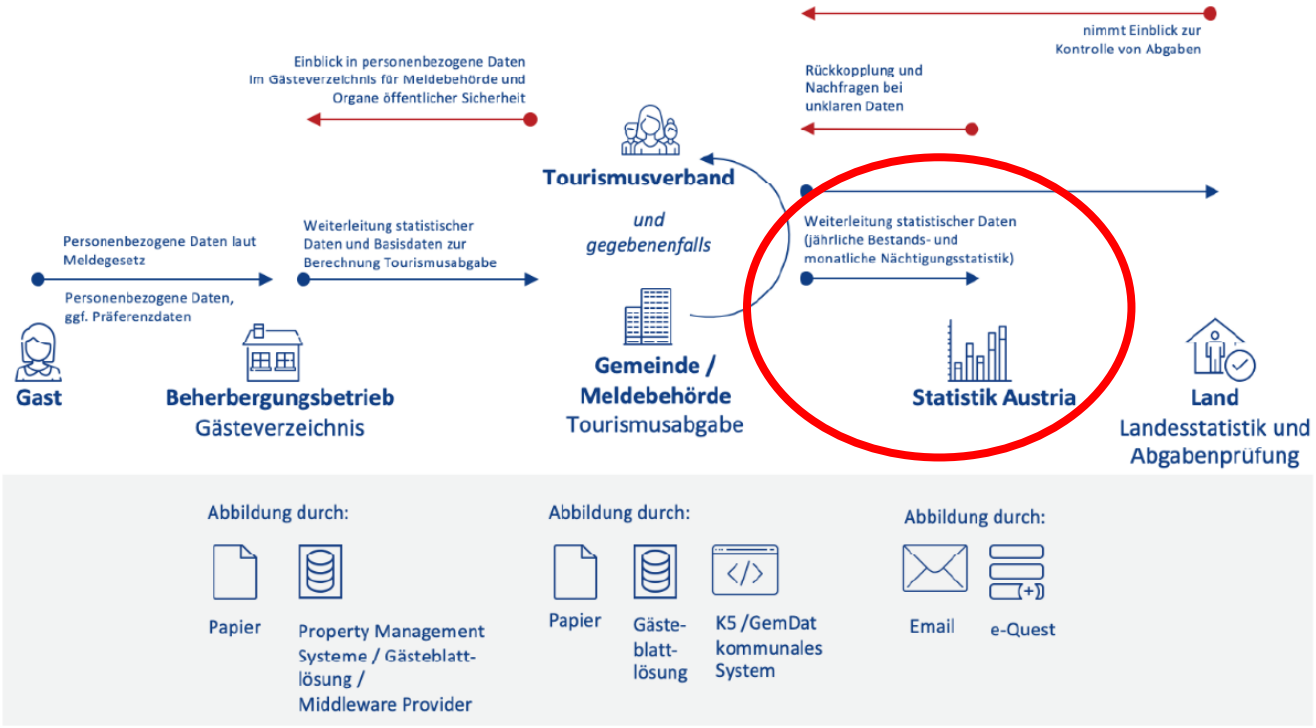
Name des Beherbergungsbetriebes:

Lfd.-Nr.:

FAMILIENNAME		GESCHLECHT Zutreffendes bitte ankreuzen: ☐ männlich ☐ weiblich ☐ divers ☐ inter ☐ offen			Sofern nicht zutreffend: ☐ keine Angabe
VORNAME(N)	GEBURTSDATUM	STAATSANGEHÖRIGKEIT			
REISEDOKUMENT bei ausländischen Gästen (Art, z. B. Reisepass/Personalausweis; Nummer; Ausstellungsdatum; ausstellende Behörde; Staat)					
ADRESSE UND HERKUNFTSLAND (Hauptwohnsitz oder gewöhnlicher Aufenthalt)	Straße/Gasse/Platz				
	Postleitzahl	Ortsgemeinde	Staat		
MITREISENDE im familiären Verbund	FAMILIENNAME	VORNAME(N)	GEBURTSDATUM		
Bei REISEGRUPPEN Sammelliste vorhanden ☐	**Gesamtanzahl** der Reiseteilnehmer (einschließlich Reiseleiter):	Aufgliederung nach Herkunftsland:	Herkunftsland Anzahl	Herkunftsland Anzahl	Herkunftsland Anzahl / Herkunftsland Anzahl
			Herkunftsland Anzahl	Herkunftsland Anzahl	Herkunftsland Anzahl / Herkunftsland Anzahl
Ankunft am Tag Monat Jahr	**Voraussichtliche Abreise am** Tag Monat Jahr		**Tatsächliche Abreise am** Tag Monat Jahr		**Datum und Unterschrift der/des Meldepflichtigen**

Source: Meldegesetz-Durchführungsverordnung (MeldeV)
StF: BGBl. II Nr. 66/2002

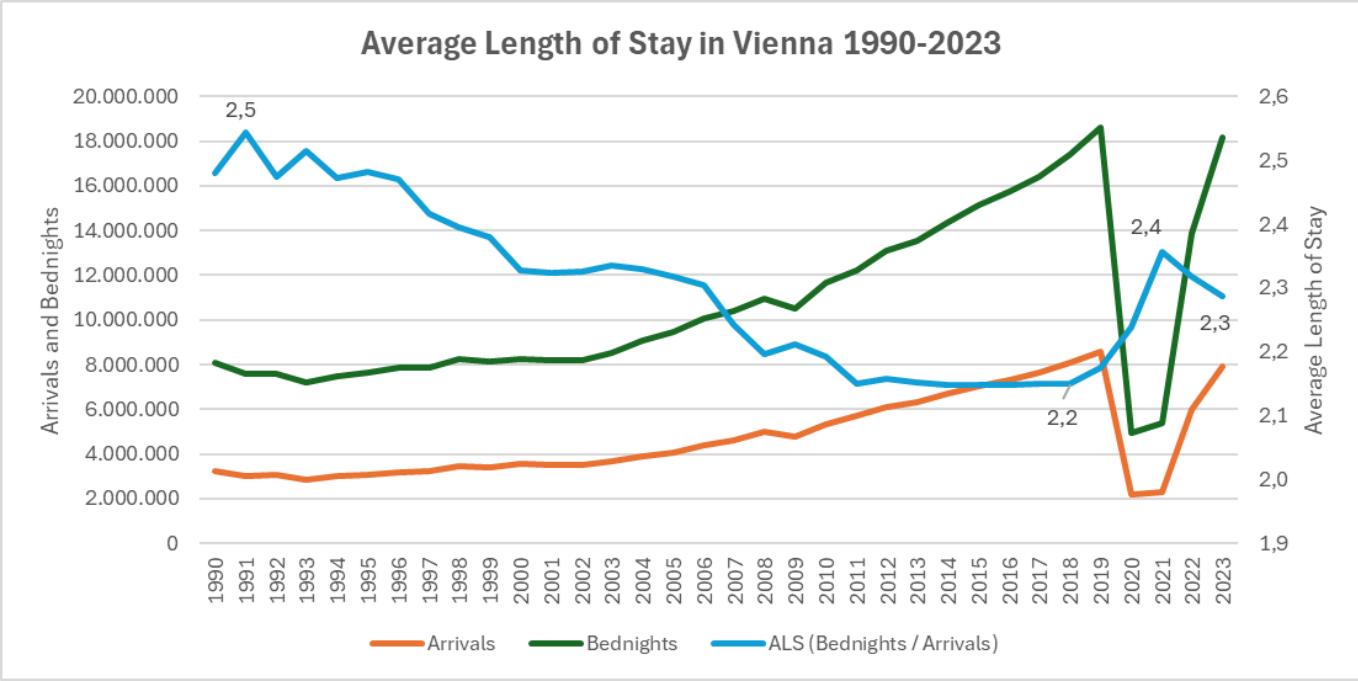
Guest Data Processing in Austria



Information on the **distribution** of overnights per length of stay gets lost during the data collection, analysis, and reporting process!

Source: Feasibility Study: Digitales Gästeblatt, BMAW, 27. Dez 2022

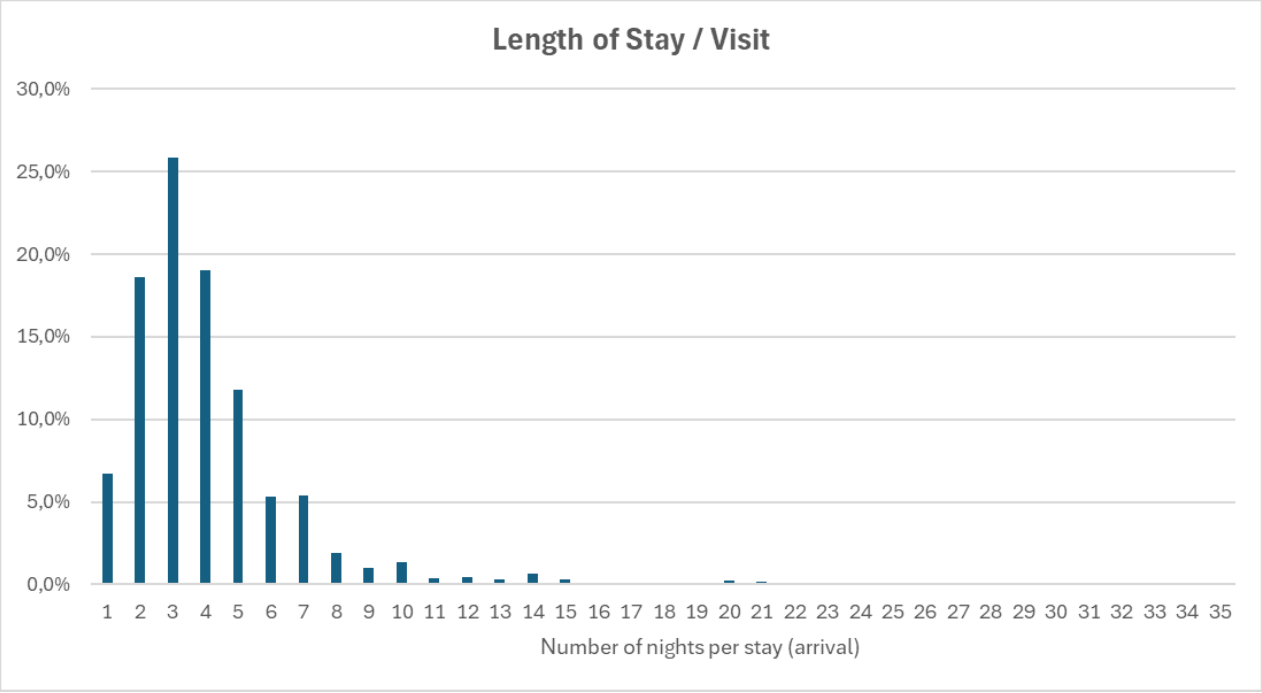
Vienna



Source: Statistik Austria
Sample: All commercial accommodation providers (compulsory)
Definition: All forms of paid accommodation incl. neighbouring areas
Market: Total foreign and domestic

Average Length of Stay (ALS) 2023: **2.287 nights**

Vienna



Source: T-MONA
Sample: n = 14.466 (weighted)
Period: 01.11.2017 - 30.04.2024

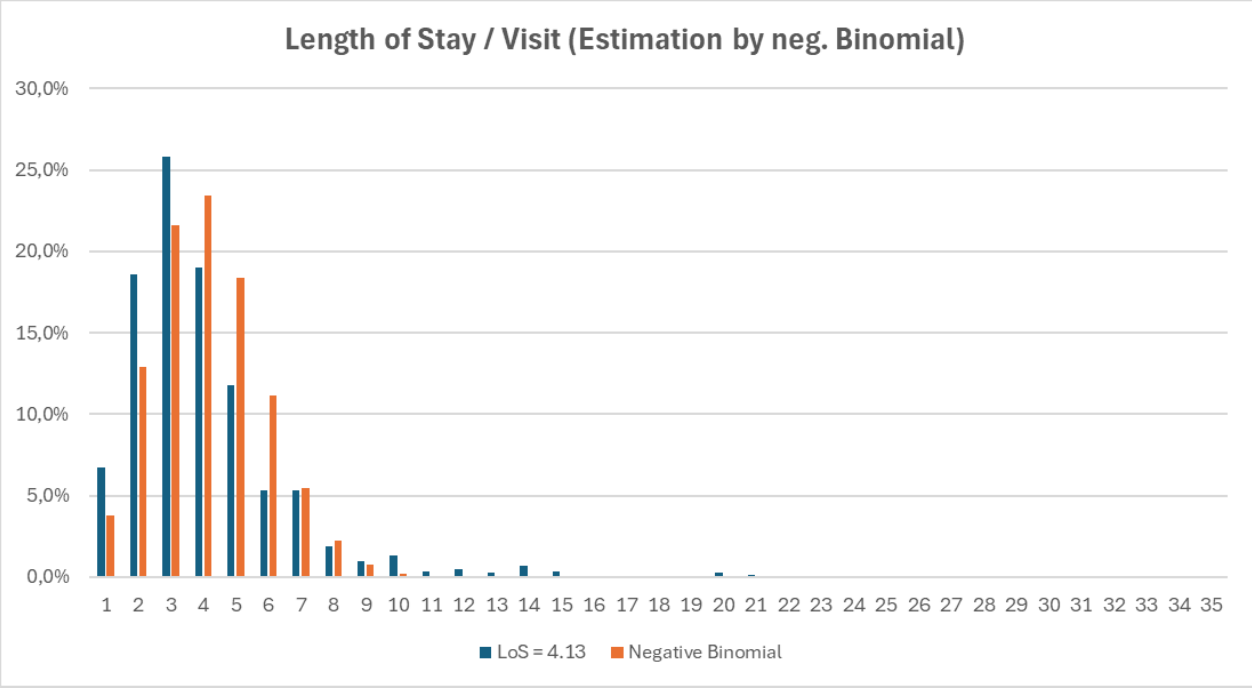
Average Length of Stay (ALS) 2017-2024: 4.129 nights

4.1 vs 2.3 nights!

Survey data only includes leisure guests!

Data collected from accommodation providers by the national statistical office includes all guests!

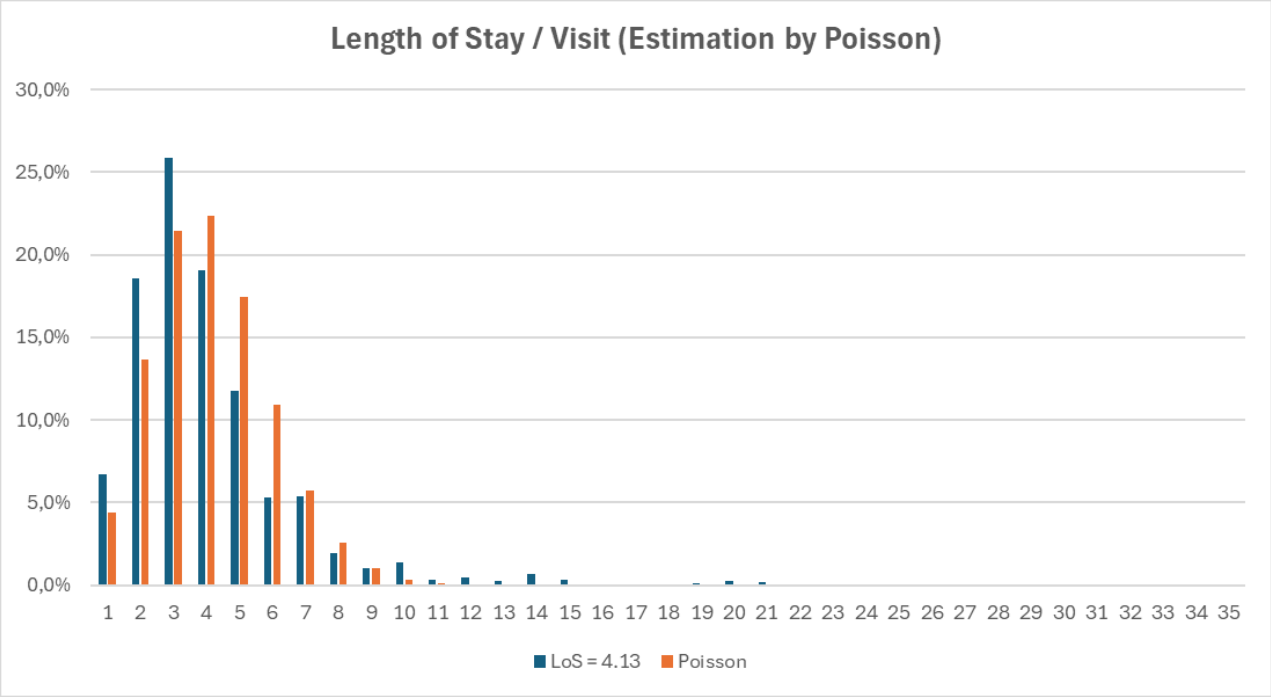
Vienna



Negative Binomial
N=35; p=0.092
Fit: MAPE < 1%

Average Length of Stay (ALS)
2023: 4.129 nights

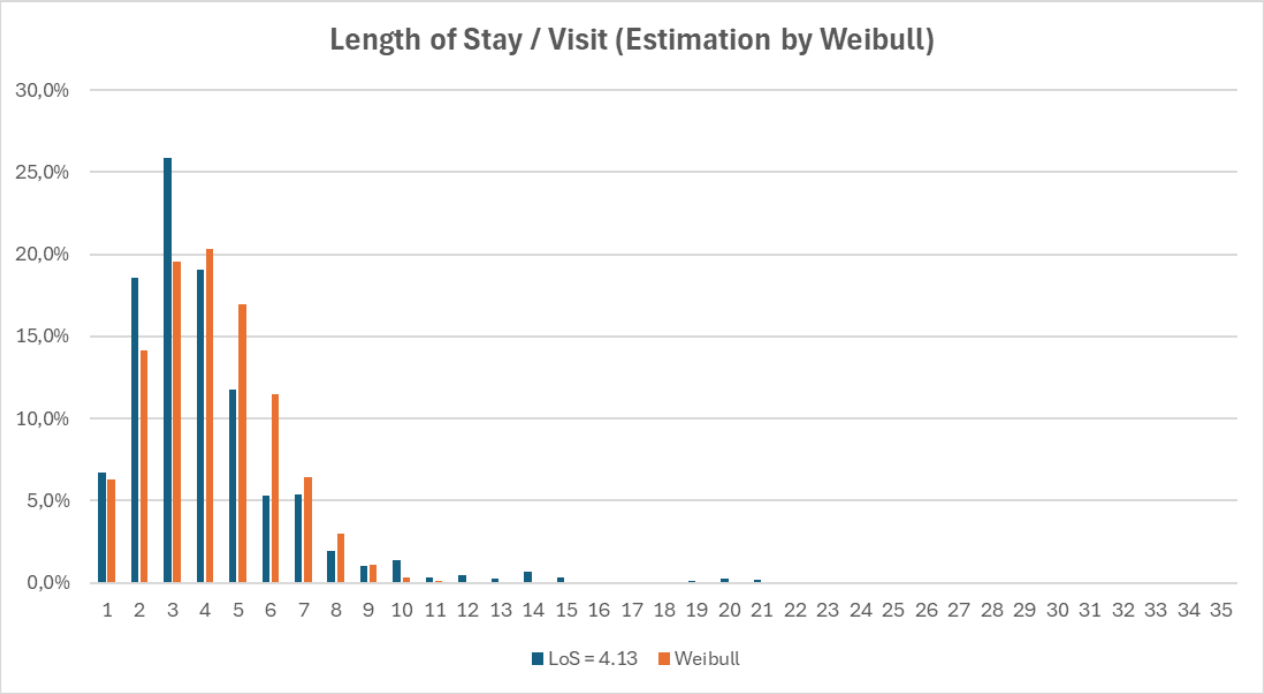
Vienna



Poisson
$\lambda = 4.129$
Fit: MAPE < 0.9%

Average Length of Stay (ALS)
2023: 4.129 nights

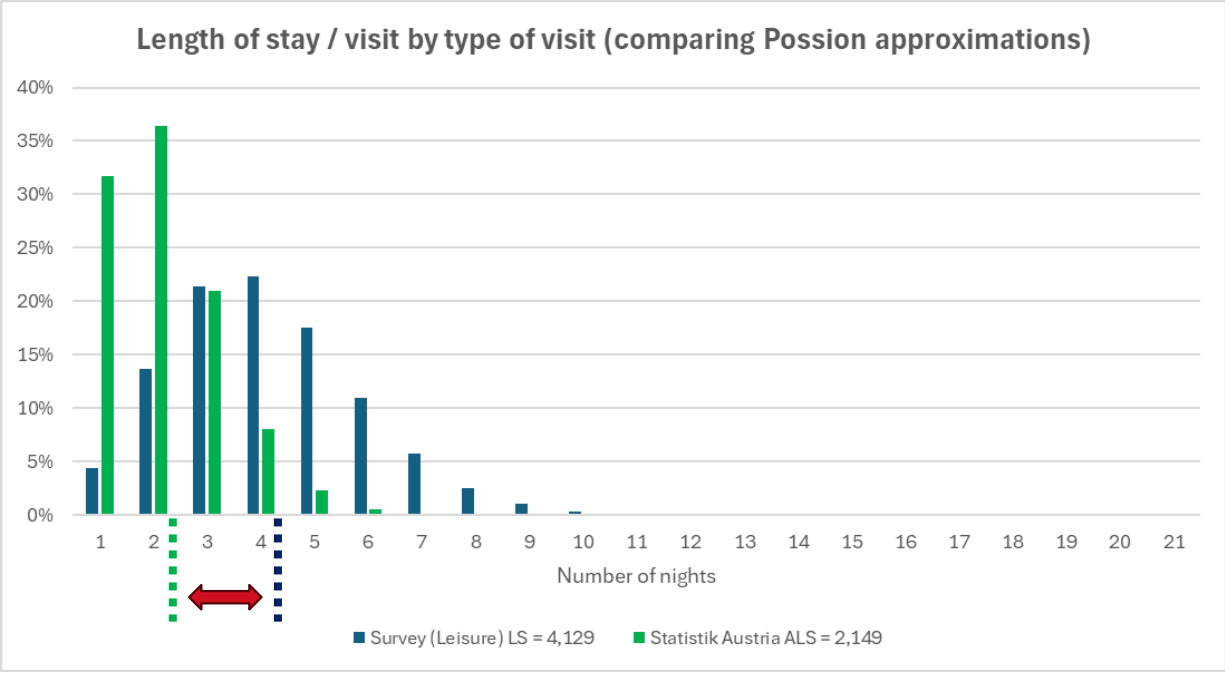
Vienna



Weibull
$\lambda = 2.34, \propto = 4.65$
Fit: MAPE < 0.87%

Average Length of Stay (ALS)
2023: 4.129 nights

Estimating the Number of Business Travellers in Vienna



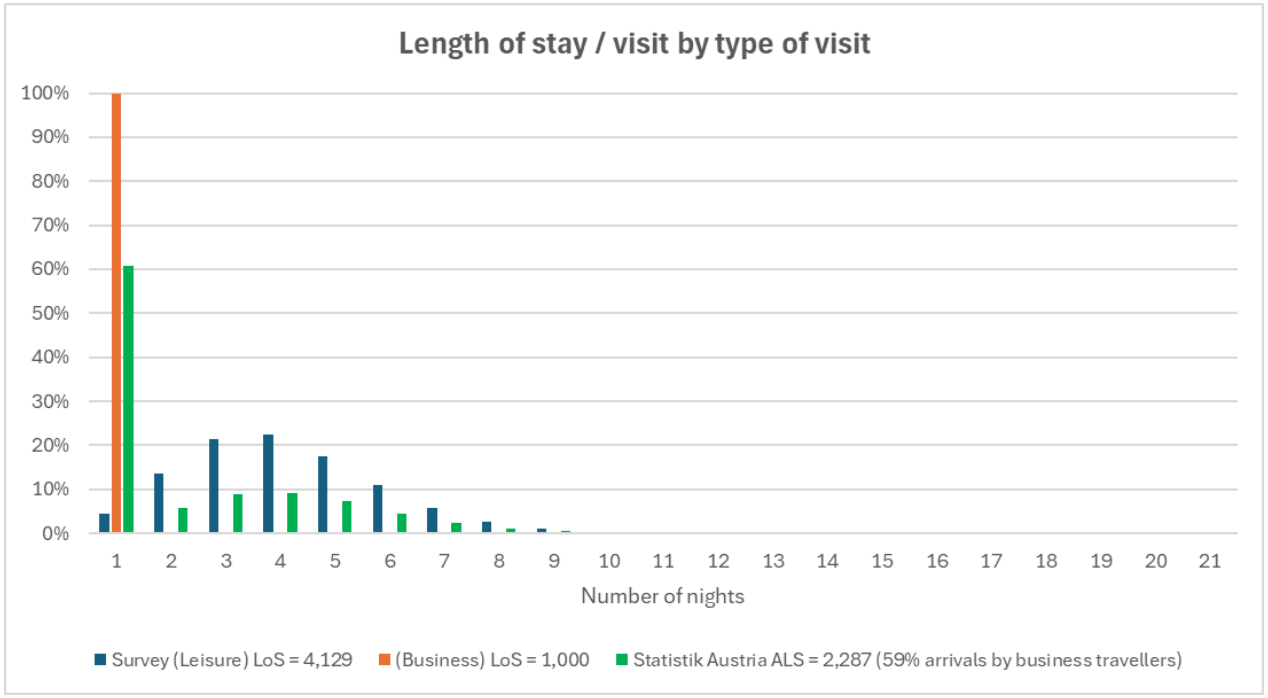
Survey data = leisure guests

Data from statistical office covers all guests

Other guests (business travellers) have clearly a lower ALS

Difference in ALS (1.842 nights) can help us to estimate the proportion of business travellers!

Assumption 1: All Business travellers in Vienna stay only 1 night



ALS of other guests (**business travellers**, orange): **1** night

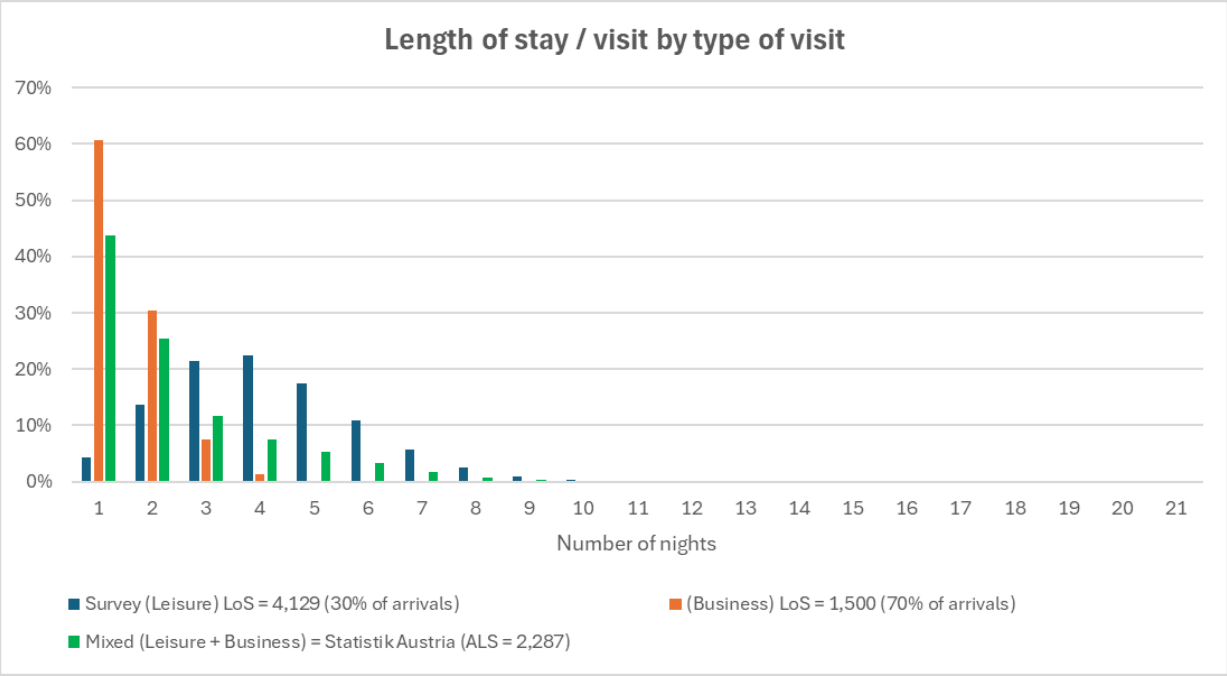
ALS of **leisure guests** (blue): **4.129** nights (reported by T-MONA)

ALS of **all** guests (green): **2.287** (reported by the Austrian statistical office)

This holds true when **59%** of all arrivals stem from business travellers and **41%** from leisure travellers

=> 59% is the minimum of travellers with a lower length of stay!

Assumption 2: All Business travellers in Vienna stay on average 1.5 nights (Poisson distributed)



The ALS of business travellers staying over night in Vienna must be between 1 and 2.287 nights

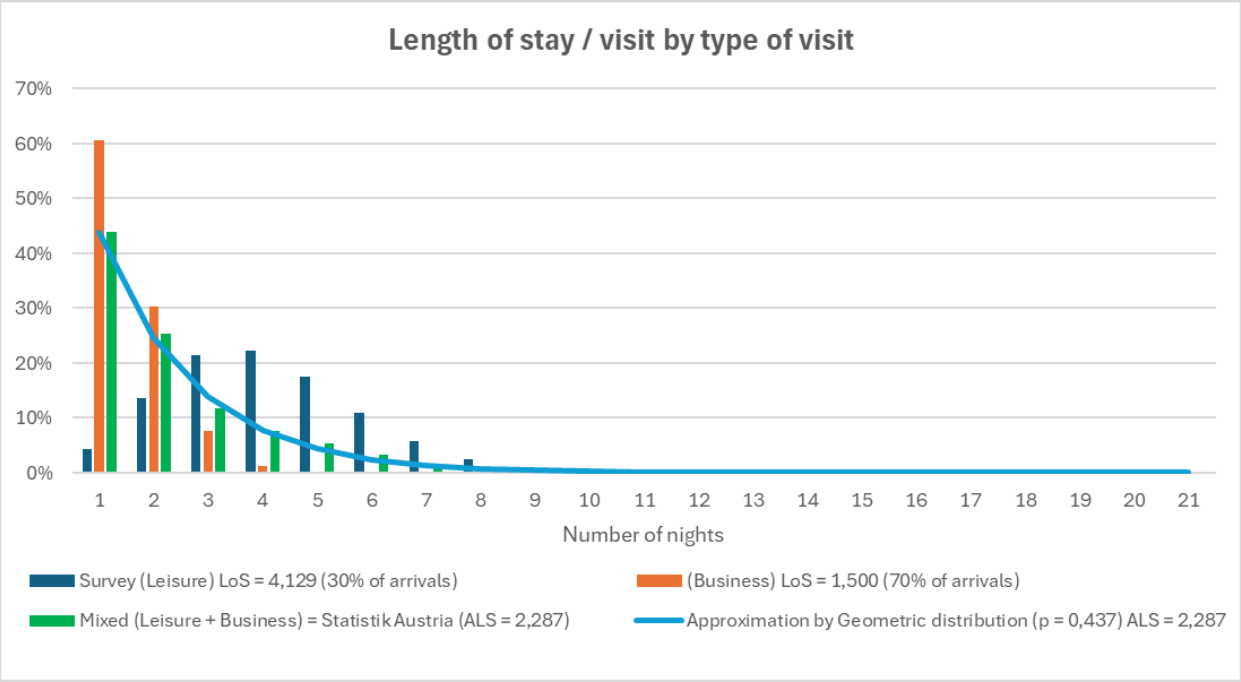
If the ALS is 2.287 nights then 100% are business travellers (unrealistic)

Realistic assumption: 1.5; Poisson distributed

ALS other/business: **1.5** night
ALS leisure: **4.129** nights
ALS all tourists: **2.287**

This holds true when **70%** of all arrivals are business travellers and **30%** are leisure travellers

Assumption 2: All Business travellers in Vienna stay on average 1.5 nights (Poisson distributed)



Mixed distribution of ALS is not following a bell shaped distribution

Geometric distribution (discrete negative exponential function) appears to provide a good fit and should be used for estimating the ALS for Vienna

-> TourMIS (www.tourmis.info)

Summary

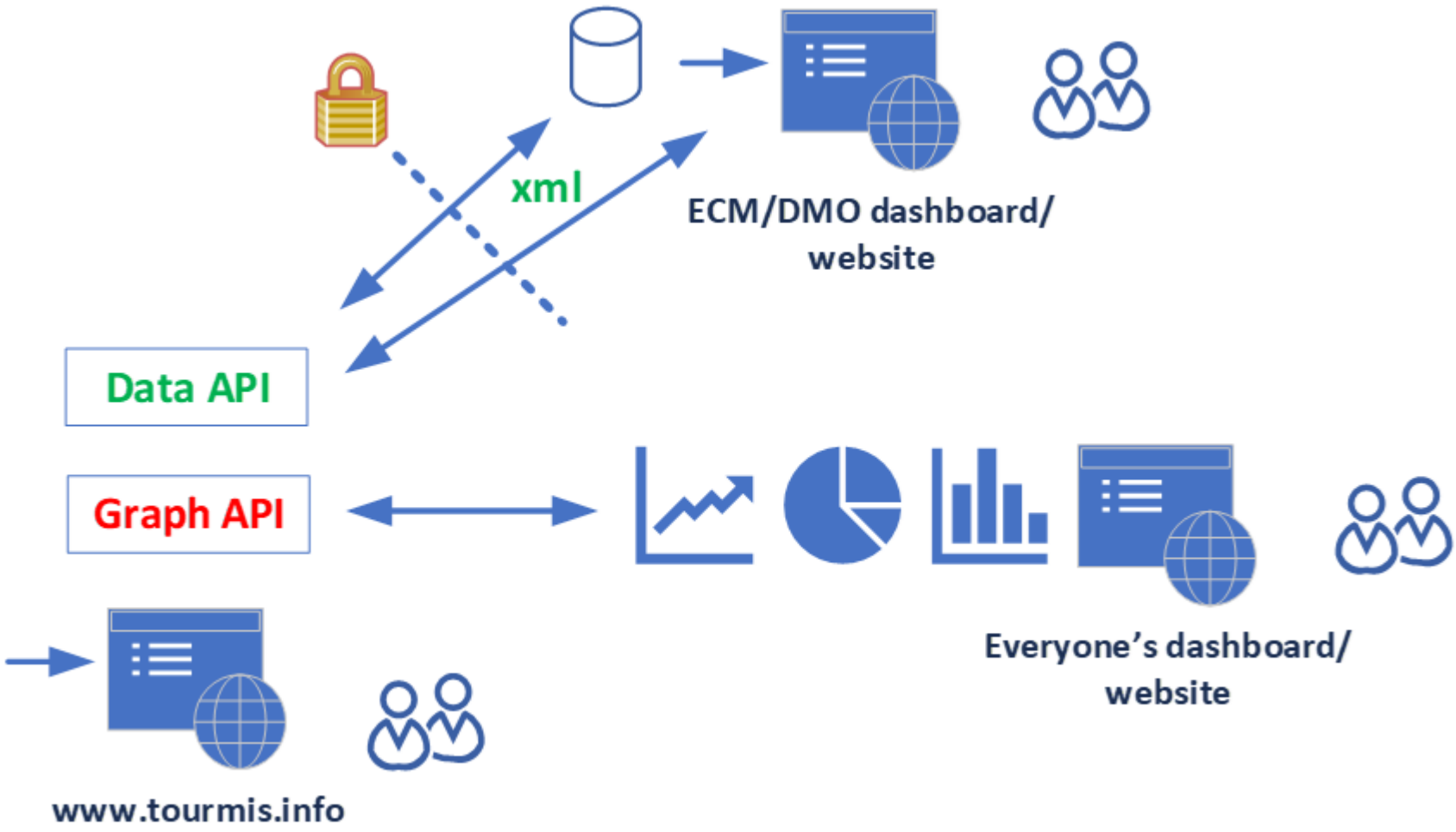
- More sustainable, time-dependent, tourism tax models will require a better understanding of the distribution of the length of stay of tourists
- The length of stay is heavily dependent on the sample selection. Research that does not take sample selection into account is inadequate
- Geometric distribution appears to provide a good fit for estimating the length of stay per number of days (for Vienna)
- Comparing data from different samples can provide valuable additional insights in the differences between sample populations

The Future Development of TourMIS

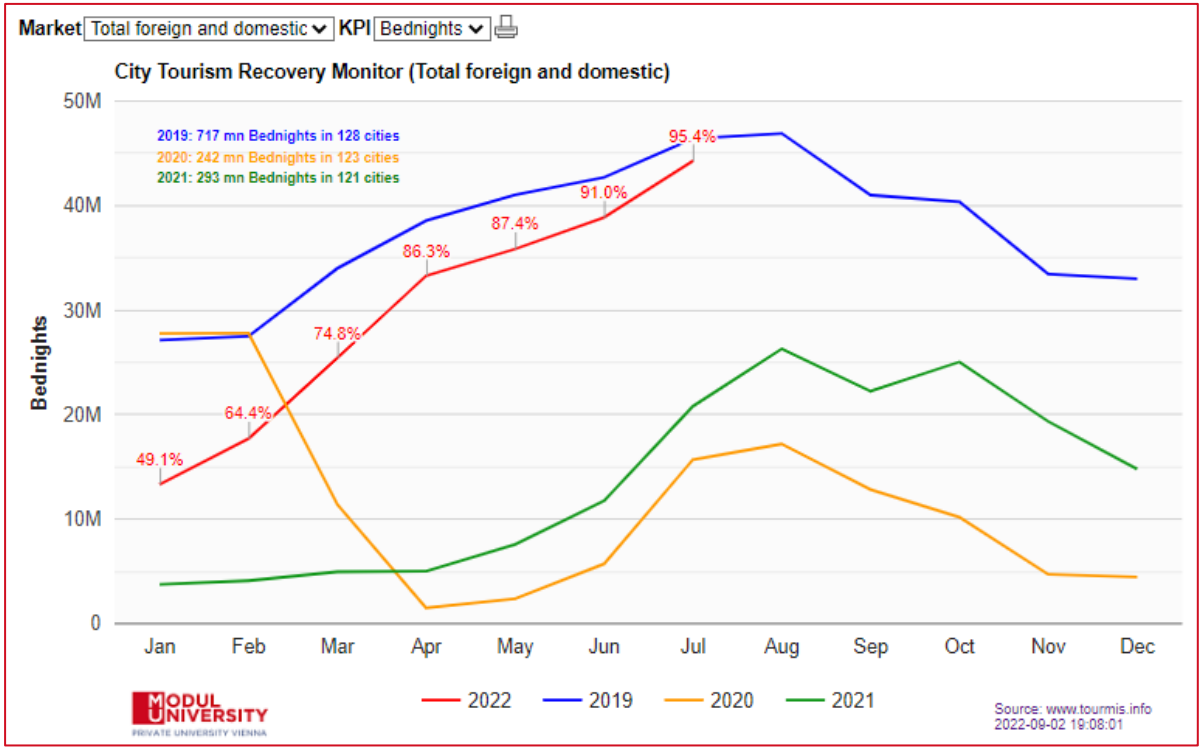
AI – Natural Language to Query and Analyse Data from TourMIS

Holger Sicking

APIs offered by TourMIS



Graph API: Embedded graphs (iframe)



Example: City Destinations Alliance Website

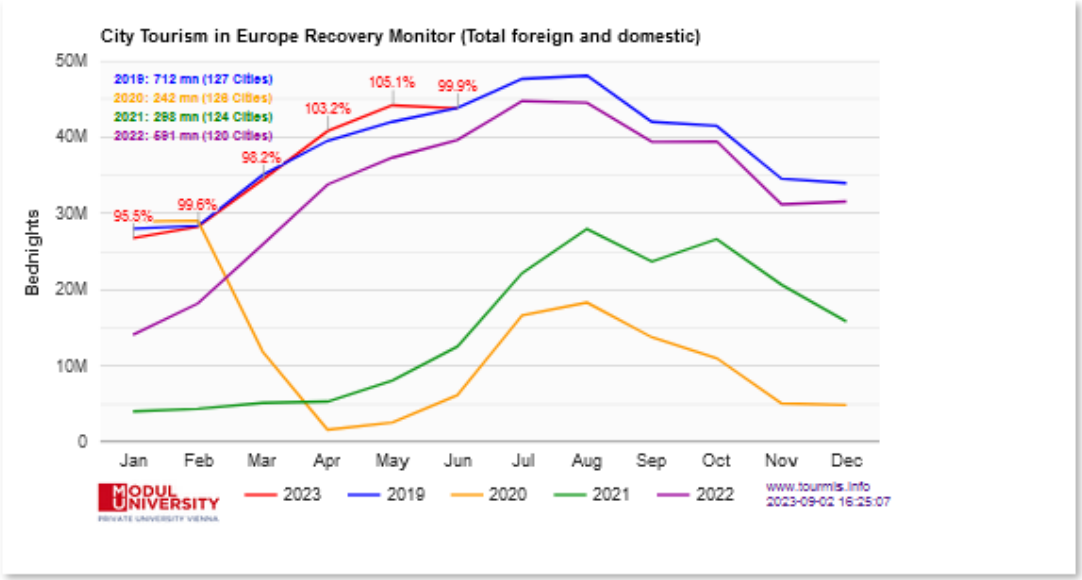
Research

https://citydestinationsalliance.eu/research/

Insights, research, analysis and benchmarking form a critical part of the capability and the potential of the City Destinations Alliance.

By providing data, cities can benchmark themselves in terms of their economic, environmental, and social performance in tourism. In CityDNA's Research & Insights Knowledge Group, we collect information on important key performance indicators which we analyze and share in forms of regular reports and electronically via the tourism management information system TourMIS.

For the 50% of our members who do not have their own research departments, City Destinations Alliance can provide a unique and essential source of information.



City Tourism Recovery Monitor (**www.tourmis.info**)

Market Total foreign and domestic **KPI** Bednights

Period by 2023 January for max 12 months

City Tourism in Europe

	Total foreign and domestic	Bednights	Recovery 2019
1	Utrecht	Jan-Jun 23	159.7%
2	The Hague	Jan-Jun 23	142.1%
3	San Sebastian	Jan-May 23	128.9%
4	Malaga	Jan-Jun 23	121.0%
5	Klagenfurt	Jan-Jun 23	120.6%
6	Copenhagen	Jan-Apr 23	119.0%
7	Bilbao	Jan-Jul 23	117.4%
8	Warsaw	Jan-May 23	116.4%
9	Turku	Jan-Jun 23	115.8%
10	Rotterdam	Jan-Jun 23	114.5%
11	Lloret de Mar	Jan-Jul 23	114.2%
12	Split	Jan-May 23	114.1%
13	Linz	Jan-Jun 23	114.0%
14	Maribor	Jan-Jun 23	112.7%
15	Maastricht	Jan-Jun 23	112.4%
16	Lisbon	Jan-May 23	111.8%
17	Seville	Jan-Jul 23	110.4%
18	Haarlemmermeer	Jan-Jun 23	107.9%
19	Trondheim	Jan-Jun 23	107.5%
20	Barcelona	Jan-May 23	107.1%

◄ ► 1 2 3

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Source: www.tourmis.info
2023-09-02 16:39:21

TourMIS data API

- Digital bulk download service for TourMIS
- Communicates in Extensible Markup Language (XML)
- Restricted Access: Access to the TourMIS database via the API https://www.tourmis.info/api.pl requires a previous login with specific access rights.
- Access for TourMIS data inputters only
- Inform support@tourmis.info about your user-id and request access to the TourMIS API

TourMIS data API

- After you have received a confirmation mail that you have been granted access, you can start using the API. To start the API, use following URL:

  https://www.tourmis.info/api.pl?id=xxxxxxx&pw=xxxxxxx

- replace the yellow part with your TourMIS ID and password. If the ID and the password is correct AND you have been granted access to the API, you will receive a **token**, random string of characters.

```
▼<TourMIS-API version="1.0" timestamp="2022-01-07 17:06:28 +0200">
  ▼<results>
     <token>820EA3A7-6981-41CD-A99C-C75033DC17A3</token>
   </results>
 </TourMIS-API>
```

- For **three minutes**, the token will allow you to send queries to the TourMIS database

TourMIS data API

- A simple query looks like this:

  https://www.tourmis.info/api.pl?d=CPH&c=NG&m=AT&y=2019&token=xxxx

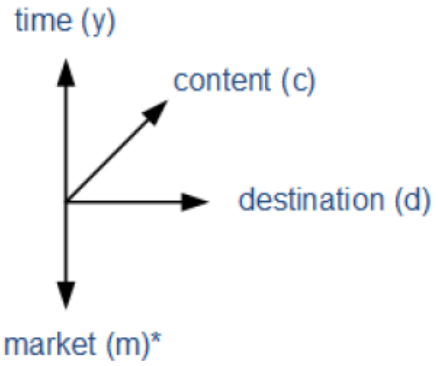
- Each API query consists of the basic URL, parameters, and the token:
  - Basic URL: https://www.tourmis.info/api.pl?
  - Parameters: d=CPH&c=NG&m=AT&y=2019
  - Token = special parameter: token=BE1AD8C4-AFF5-404F-ABD4-16172E186819
- A valid token must be included in each query, otherwise you receive a message that the token is missing:

```
▼<TourMIS-API version="1.0" timestamp="2022-01-07 17:43:06 +0200">
  ▼<results>
     <error>Token missing</error>
   </results>
 </TourMIS-API>
```

- If the token has expired, you will receive the message “Token invalid”:

```
▼<TourMIS-API version="1.0" timestamp="2022-01-07 17:55:57 +0200">
  ▼<results>
     <error>Token invalid</error>
   </results>
 </TourMIS-API>
```

TourMIS data API



- Parameters are all separated with the & symbol, for example:

  d=CPH&c=NG&m=AT&y=2019

- For the above query, the API delivers a result of following structure:

```
▼<TourMIS-API version="1.0" timestamp="2022-01-08 14:01:54 +0200">
  ▼<results>
    ▶<query>
      ...
      </query>
    ▶<notes>
      ...
      </notes>
    ▶<alldata>
      ...
      </alldata>
    </results>
  </TourMIS-API>
```

Query: Returns all parameters entered by the user, resolves array parameters and removes duplicates, if necessary.

Notes: Returns all notes, meta information entered by users (data inputters) into the TourMIS database, associated with the query.

Data

TourMIS data API

```
▼<TourMIS-API version="1.0" timestamp="2022-01-08 14:01:54 +0200">
  ▼<results>
    ▶<query>
      ...
     </query>
    ▶<notes>
      ...
     </notes>
    ▼<alldata>
      ▼<data>
          <destination>CPH</destination>
          <content>NG</content>
          <market>AT</market>
          <year>2019</year>
          <value>58724</value>
          <value month="1">2514</value>
          <value month="2">3150</value>
          <value month="3">3065</value>
          <value month="4">6252</value>
          <value month="5">5741</value>
          <value month="6">6117</value>
          <value month="7">7598</value>
          <value month="8">8371</value>
          <value month="9">5180</value>
          <value month="10">4009</value>
          <value month="11">3514</value>
          <value month="12">3213</value>
       </data>
     </alldata>
   </results>
 </TourMIS-API>
```

- The format of the section <data> depends on the value of the parameter periodicity (p).
- If data does not exist, the field <value> is empty.
- The <destination>, <content>, <market>, and <year> fields defines the time series.

TourMIS data API

- The API can handle multiple expressions per parameter, which means that large amounts of data can be processed with one query.
- To retrieve data from several destinations at the same time, you concatenate the codes by means of a colon character, e.g.

d=CPH:VIE:AMS

- This is also possible for content, markets, or years. In the latter case, periods can also be defined in the format start – end year, e.g. 2011-2020, which automatically selects 10 years of data, or 2015:2018-2020, which selects the years 2015, 2018, 2019, and 2020.
- For markets, special codes can be used for retrieving all markets available in the TourMIS database, e.g.

m=*ETC

returns data for all markets and is equivalent to:

m=AFR:AME:AR:ASI:AT:AU:BE:BG:BH:BR:BY:CA:CH:CHINA:CY:CZ:DE:DK:EE:EG:ES:ETCUAFR:ETCUAME:ETCUASI:ETCUEUR:ETCUOZE:EUR:FI:FR:GE:GR:HR:HU:IE:IL:IN:IS:IT:JP:KR:LI:LT:LU:LV:MA:MC:ME:MT:MX:NL:NO:NZ:OZE:PL:PT:RO:RS:RU:SAFR:SAR:SE:SI:SK:SM:TH:TR:TW:UA:UAE:UK:US:ZA:ZI:ZZ

TourMIS data API

A complete list of all codes of parameters, more information and examples for data queries are included in the

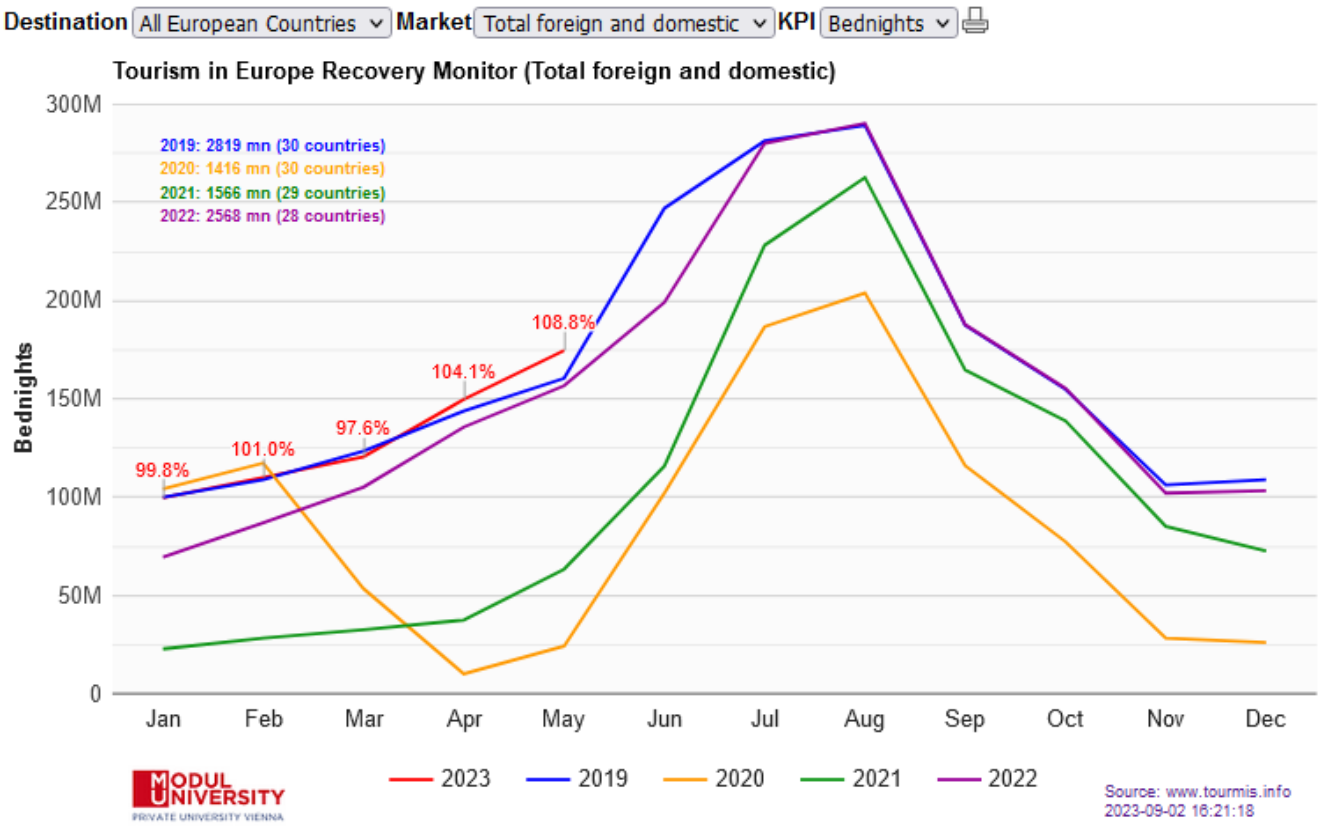
TourMIS API Manual

VVV Amsterdam
Wonderful Copenhagen
Visit Portugal

Do we still need the Recovery Charts?

Recovery Monitors for **European countries, cities, and Austria**

They show the current development of tourism compared to the year before the Covid pandemic (2019). The Recovery Monitors are located in respective TourMIS sections and can also be embedded as an interactive graphic (via iframe) on any website.



The Future Development of TourMIS

- APIs for data import from statistical offices
- Further expansion and fitting to the needs of the regions database
- Modelling taxation
- APIs for data export (single destination & benchmarking graphs)
- Trend analysis of seasonality
- Sharing data from visitor surveys (tourism expenditures)
- Estimation of disabled data by statistical offices & visualization of estimated vs actual data
- Forecasting
- AI

- Suggestions for additional tables or visualizations are welcome!

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 or karl.woeber@modul.ac.at

Sharing data from visitor surveys

1. For instance: Monitoring and comparing the **daily expenditures** of all and individual markets
2. Focus: Average daily expenditures of tourists (excluding transportation to the destination) broken down by
    - accommodation
    - food and beverages
    - entertainment
    - shopping
    - local transportation
    - other
3. Estimate missing values using data from visitor surveys in similar destinations
4. Developing an econometric model which allows to estimate the direct economic contribution of tourism

Enough work to be done
for the next 20 years!

Thank you very much!