



# Shifting EU Passenger Transport from Air to Rail

# Transportation Figures

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## Air facts:

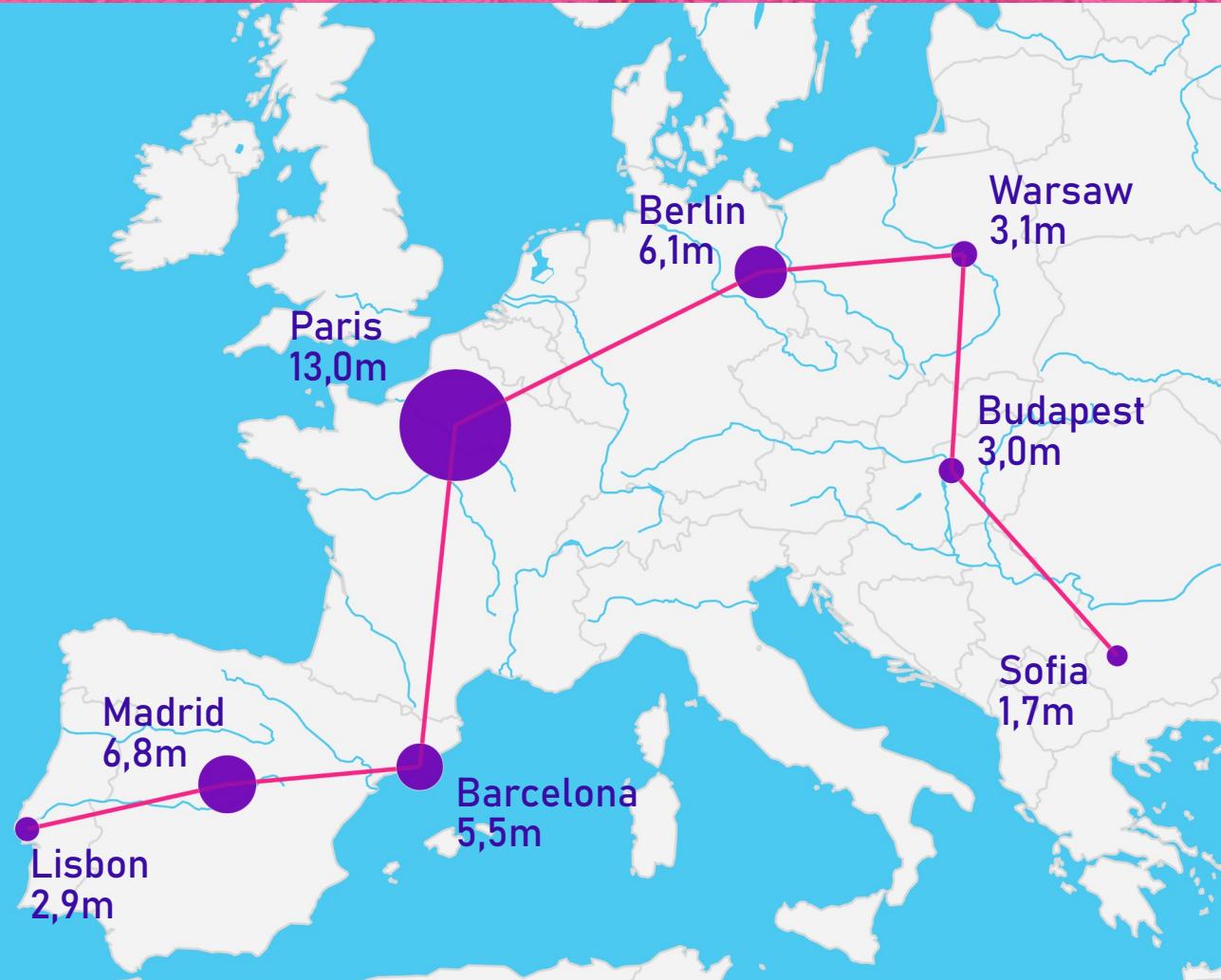
752.764.694 Passengers  
in 2019

## Rail facts:

211.430 Km rail  
413.924 Billion  
Passenger/km in 2019

# Selected Itinerary

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## Train Distance

- Lisbon-Madrid 1042.4 Km
- Madrid-Barcelona 630.5 Km
- Barcelona-Paris 1123.4 Km
- Paris-Berlin 1147.3 Km
- Berlin-Warsaw 568.8 Km
- Warsaw-Budapest 805.2 Km
- Budapest-Sofia 838.3 Km

# Air Transport



## Lisbon

Continental passengers  
12.071.234

Busiest route  
Madrid 1.539.048

# Air Transport



Madrid

Continental passengers  
19.997.134

Barcelona

Continental passengers  
18.591.924

Busiest route  
MAD - BCN 1.765.753

# Air Transport



Paris

Continental passengers  
15.373.712

Busiest route  
Barcelona 1.099.903

# Air Transport

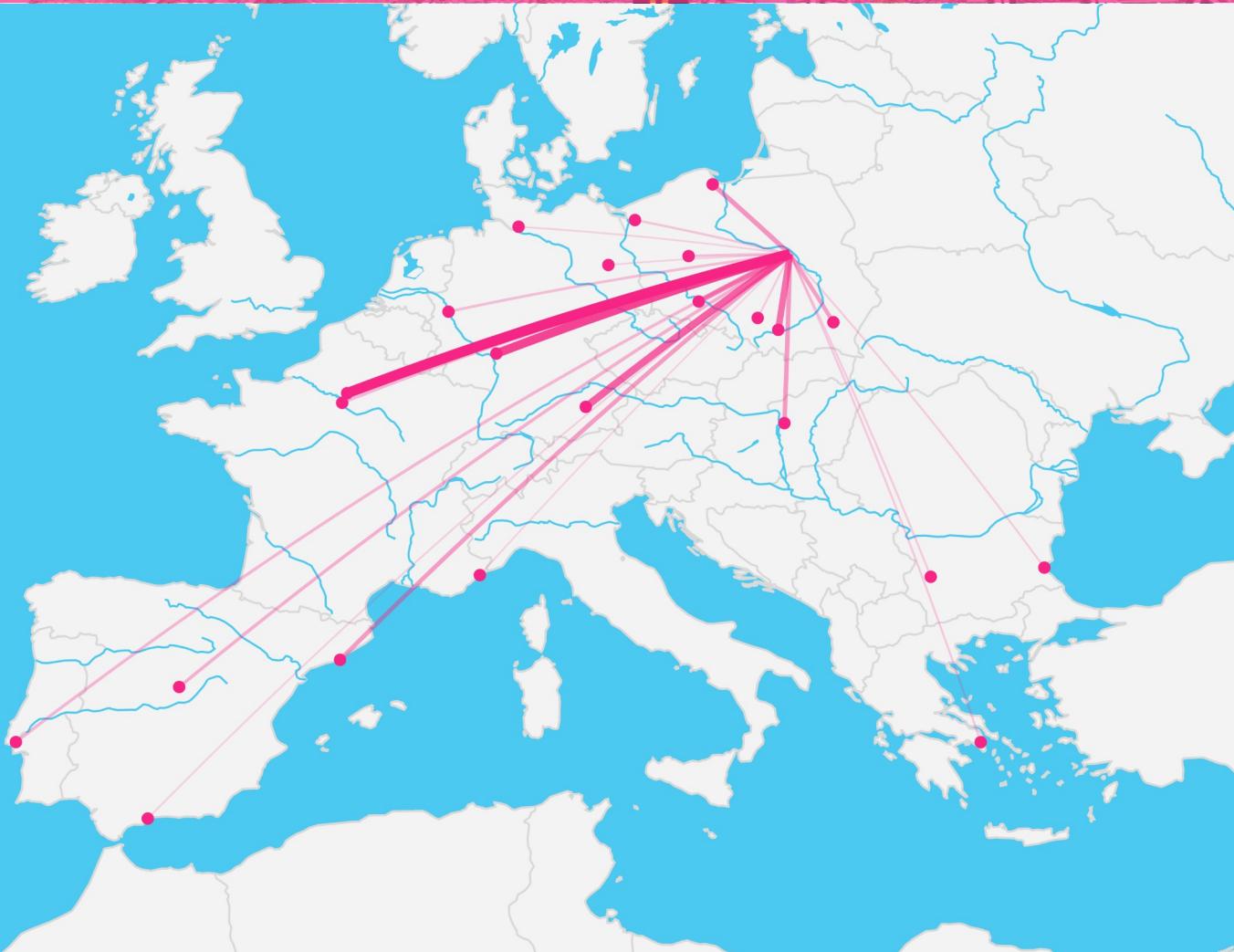


Berlin

Continental passengers  
6.152.489

Busiest route  
Frankfurt 1.018.072

# Air Transport

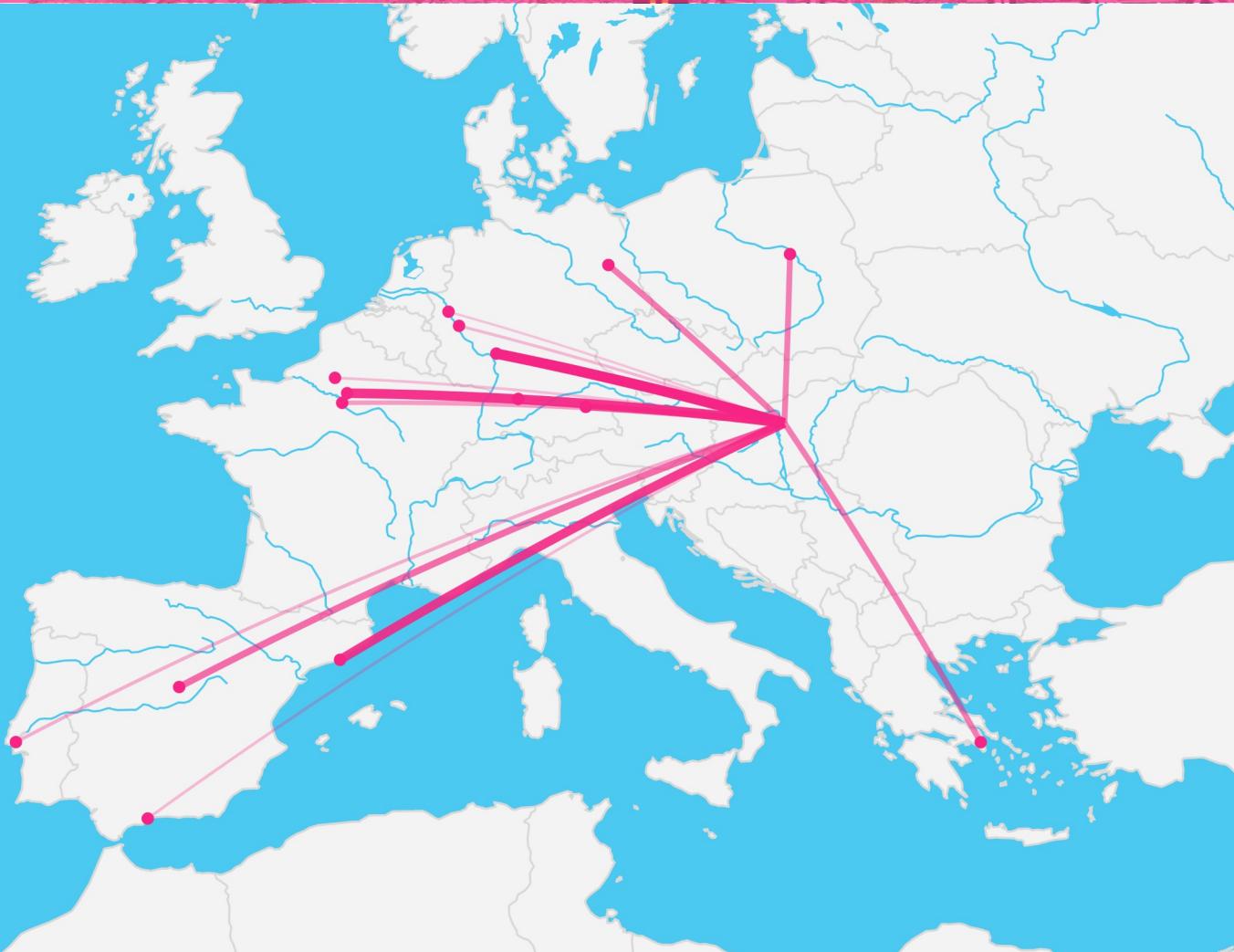


Warsaw

Continental passengers  
3.876.257

Busiest route  
Paris 452.323

# Air Transport



## Budapest

Continental passengers  
2.792.722

Busiest route  
Frankfurt 352.572

# Air Transport



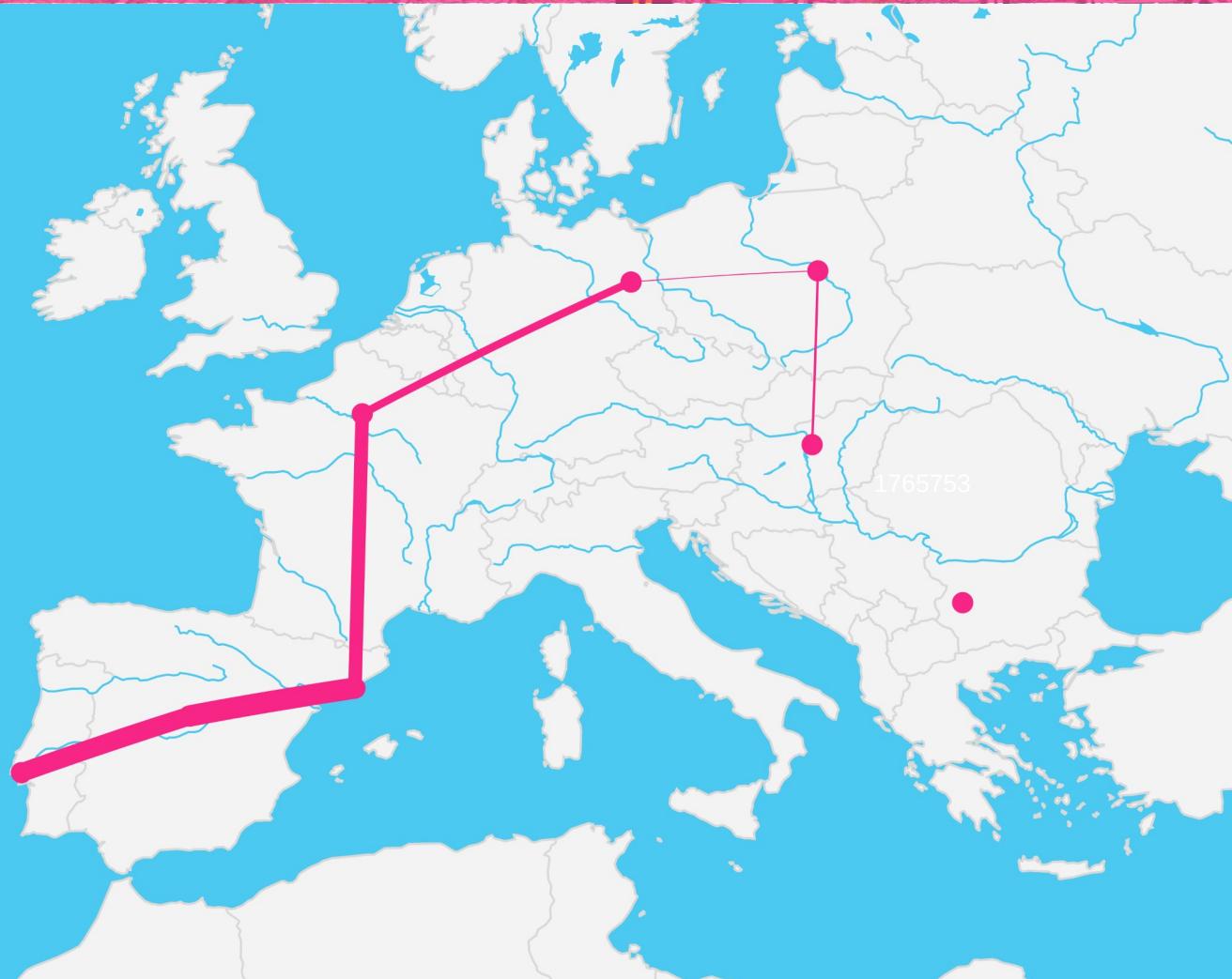
Sofia

Continental passengers  
1.887.934

Busiest route  
Frankfurt 277.286

# Rail Capacity vs Air Traffic

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## Air Connections

LPPT-LEMD 1.556.417

LEMD-LEBL 1.765.753

LEBL-LFPG 1.123.664

LFPG-EDDB 643.348

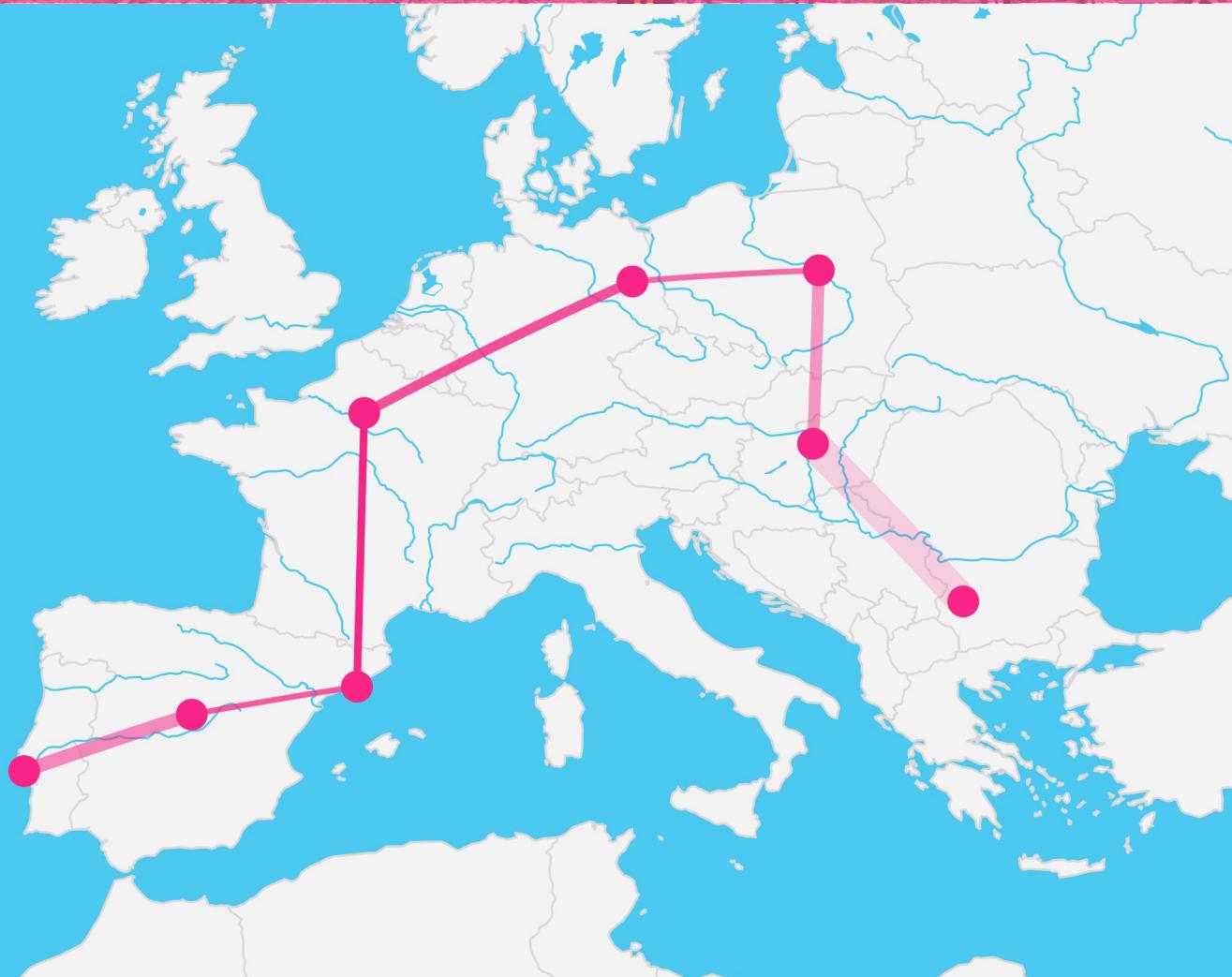
EDDB-EPWA 77.342

EPWA-LHBP 198.325

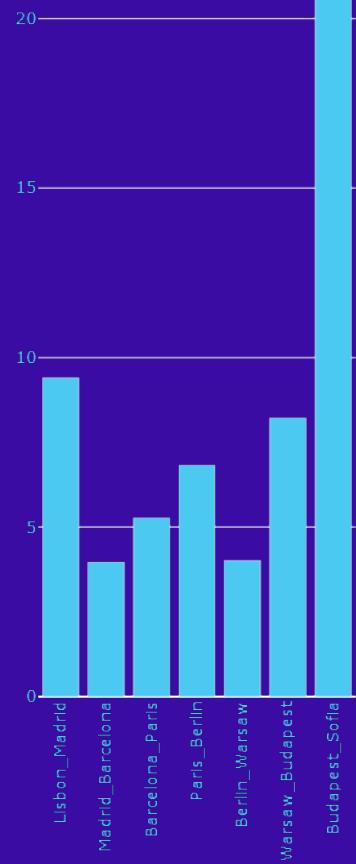
LHBP-LBSF 0

# Rail Capacity vs Air Traffic

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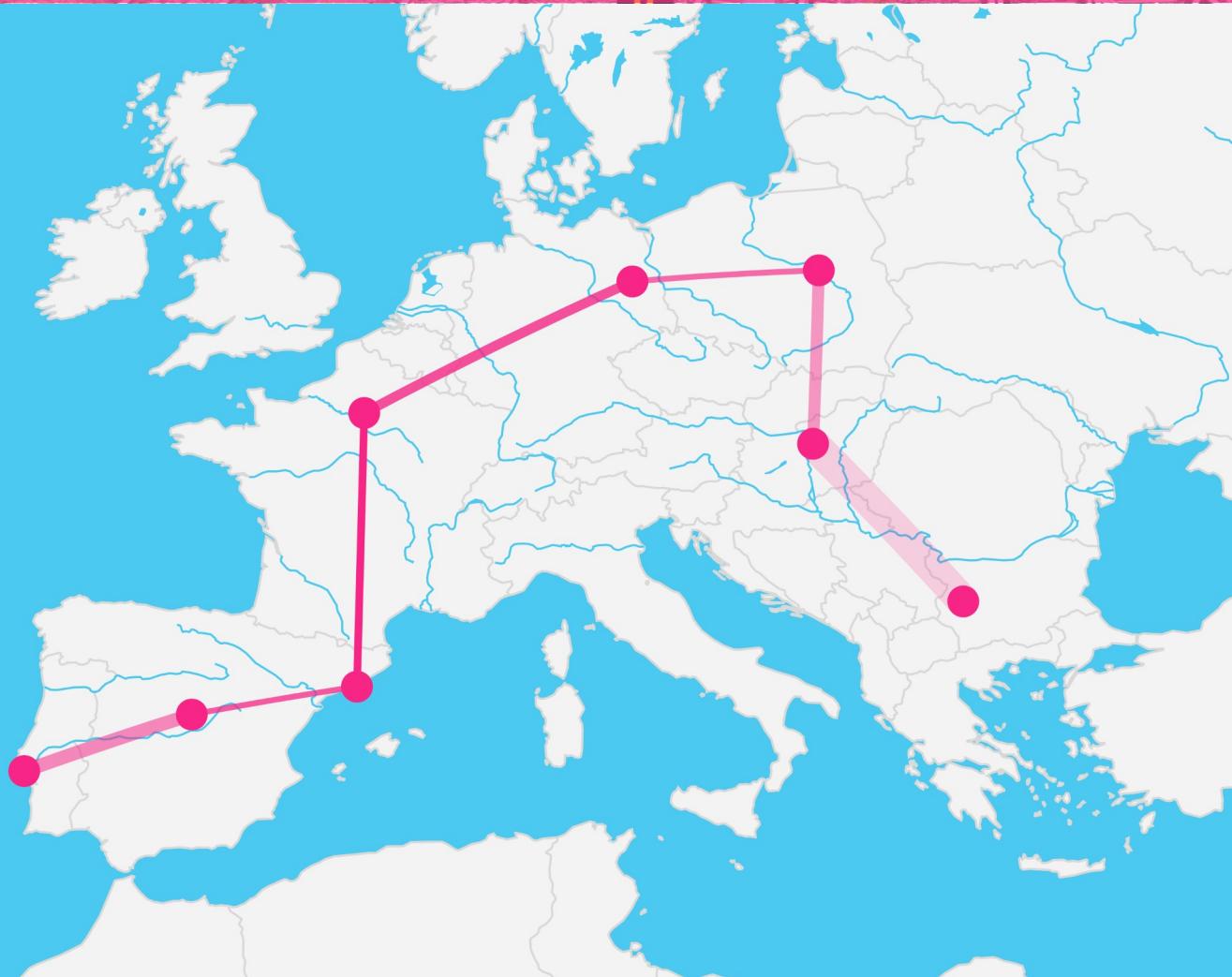


## Rail Travel



# Rail Capacity vs Air Traffic

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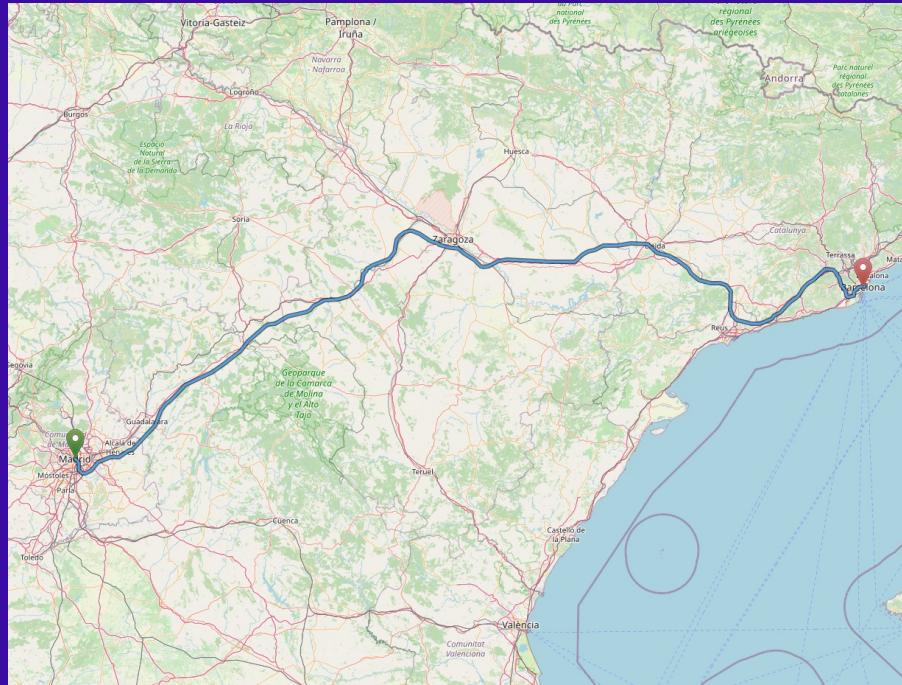


## Daily Rail Service

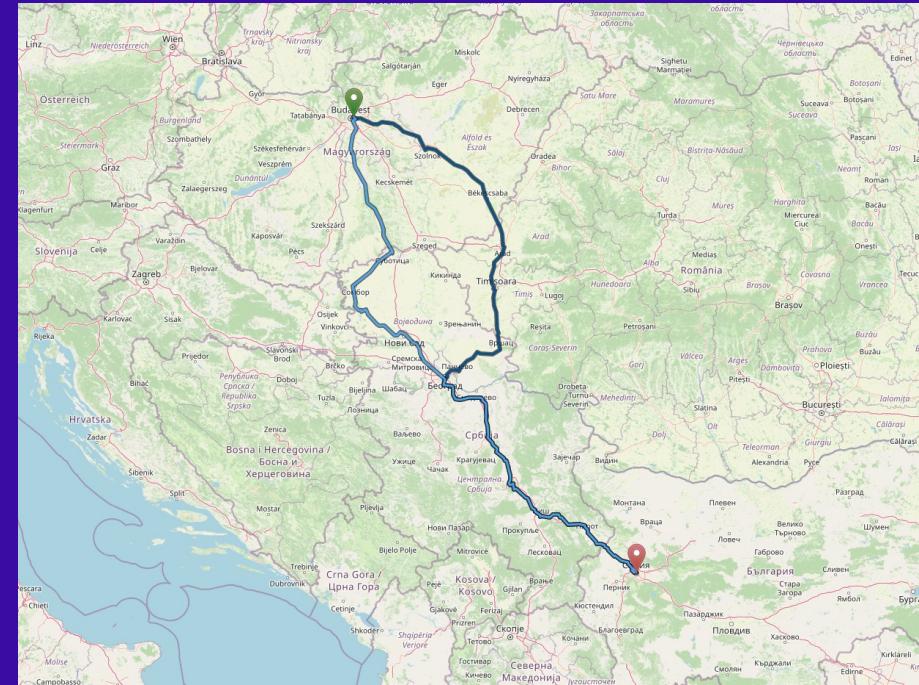
Madrid-Barcelona 35  
Barcelona-Paris 13  
Berlin-Warsaw 22  
Warsaw-Budapest 7

# Rail Capacity vs. Air Traffic

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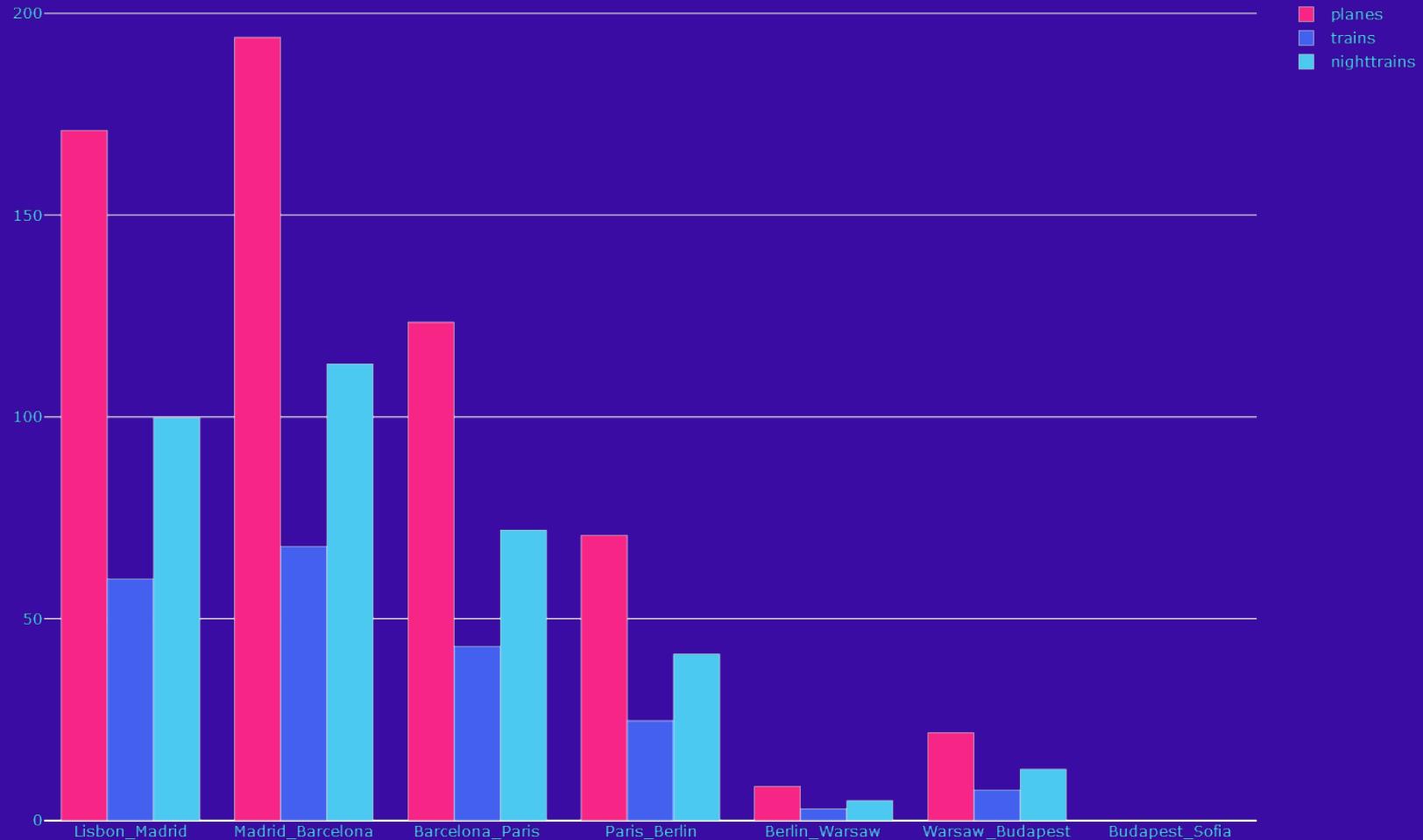
**Madrid-Barcelona**  
Length: 630 Km  
Duration: 3:58h (2:45h actual)



**Budapest-Sofia**  
Length: 838 Km  
Duration: 21:54h

# Rail Capacity vs. Air Traffic

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# Conclusions

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- There's a lot of railway capacity to increase service on certain routes and regions
- Infrastructure needs to be improved to increase capacity accross borders as well as in the east
- Increasing production of rolling stock will help improve already serviced routes

# Tools and Sources

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## Tools

Python featuring:  
Pandas  
GeoPy  
Plotly

## Sources

Eurostat  
Open Railway Map  
Railway Routing