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***The Economic Benefits of Night Flights:
The Case of Germany***

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Key issue

- ✈ **How important are night flights for the German economy?**
- ✈ Study is limited to the economic benefits of night flights at the largest 22 airports in Germany
- ✈ No consideration of environmental costs
- ✈ Two-step methodological approach:
 1. Traffic analysis (composition of night flights)
 2. Economic impact analysis:
 - Direct economic effects (using workplace surveys)
 - Indirect and induced effects (using input/output analysis)
 - Catalytic effects (via consumer surplus estimates)

Literature

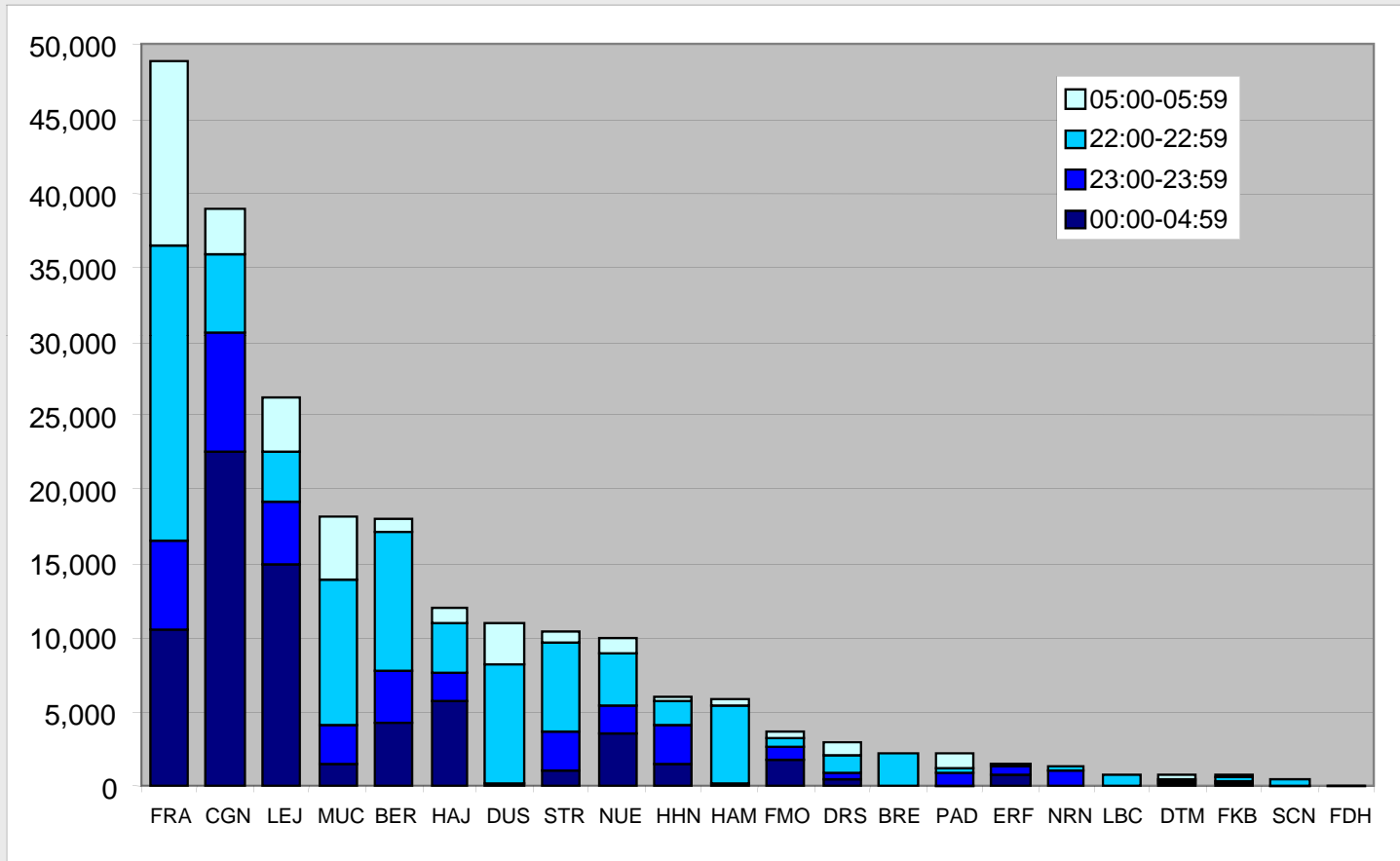
Wealth of literature on measurement of economic impacts of air transport, eg

- ACI Europe (2004), The Social and Economic Impact of Airports in Europe
- MPD Group (2005), Assessing the Economic Costs of Night Flight Restrictions
- Oxford Economic Forecasting (2005), The Economic Catalytic Effects of Air Transport in Europe
- Klophaus (2010), Economic Importance of Night Flying in Germany, joint study with Intraplan Consult commissioned by ADV (Association of German Airports) and BDF (German Airline Association)

Flights during night hours (22:00 – 06:00) at German airports 2008

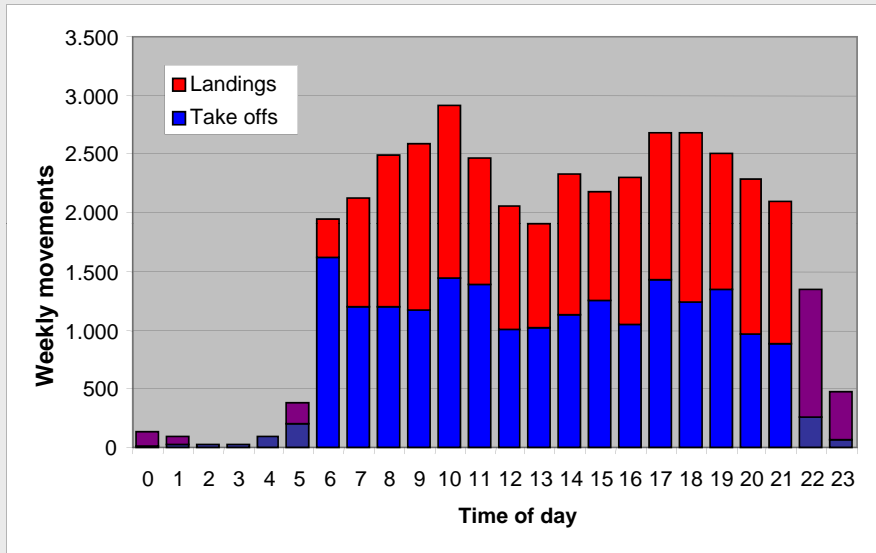
	Night flights	Night share in total traffic (%)	Share in total night flights (%)
Scheduled passenger traffic	141,300	7.1	63.2
Cargo traffic	65,100	66.1	29.1
Other traffic	17,100	4.2	7.7
Total	223,500	8.9	100.0

Night flying at German airports 2008



International comparison of temporal distribution of passenger flights

Germany

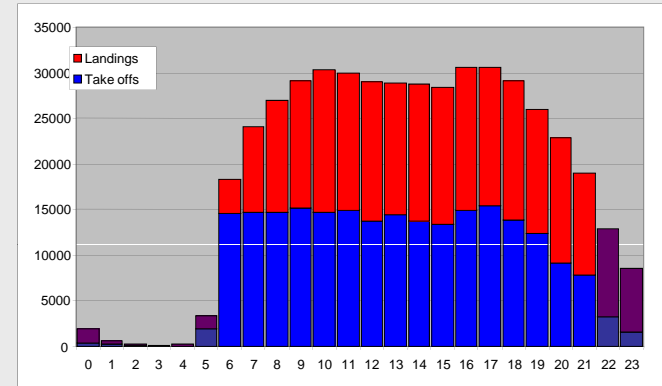


Night share: 6.4%
(thereof 0:00 – 5:00: 0.9%)

Source: OAG, week 24, 2008

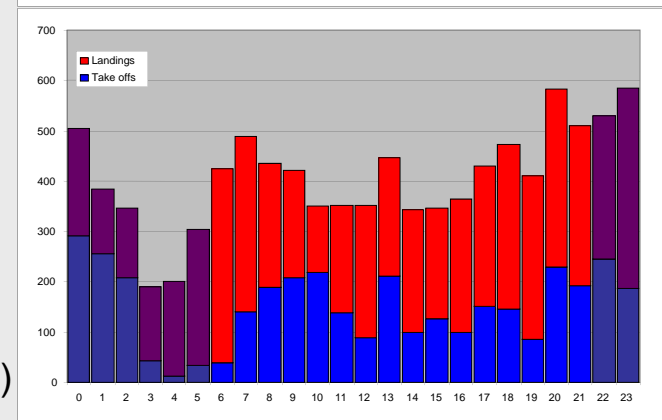
US + CAN

Night share: 6.3%
(thereof 0:00 – 5:00: 0.9%)



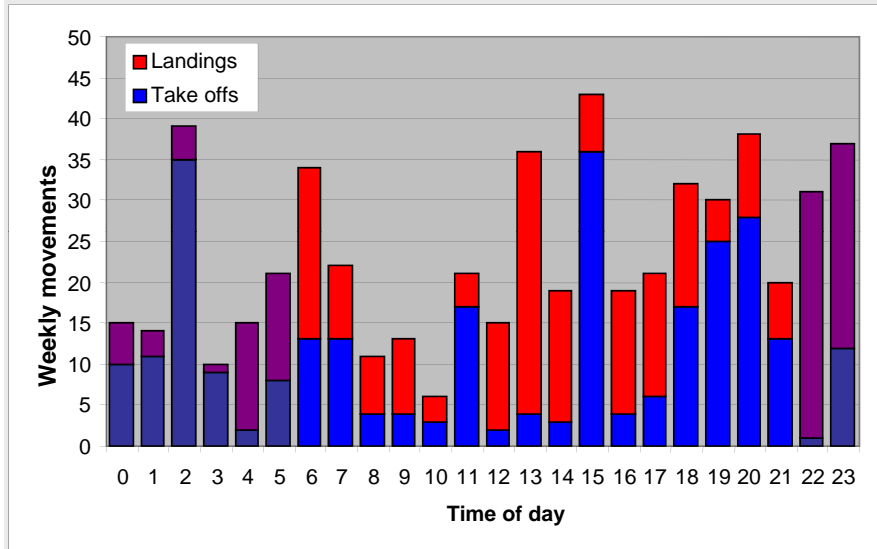
Gulf region

Night share: 45.2%
(thereof 0:00 – 5:00: 28.7%)



International comparison of temporal distribution of scheduled cargo flights (as published in OAG)

Germany

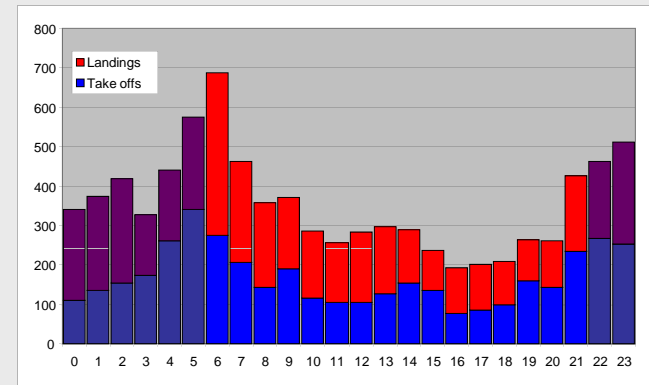


Night share: 32.4%
(thereof 0:00 – 5:00: 16.5%)

Source: OAG, week 24, 2008

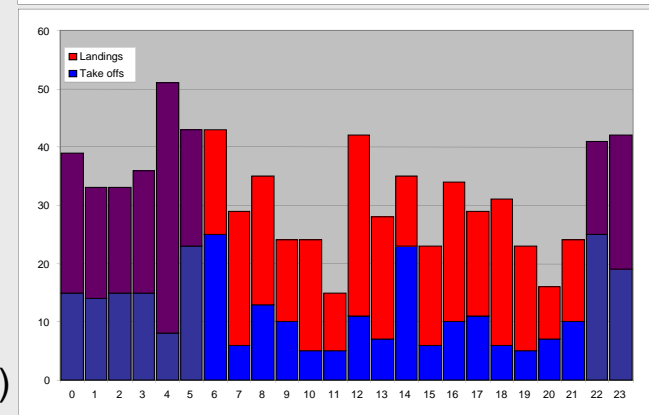
US + CAN

Night share: 67.9%
(thereof 0:00 – 5:00: 48.8%)

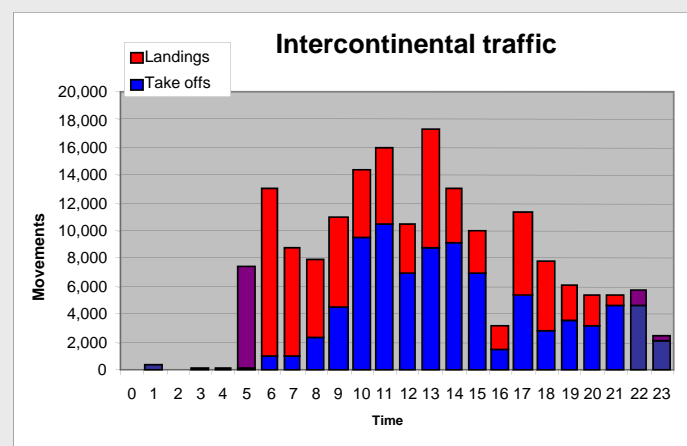
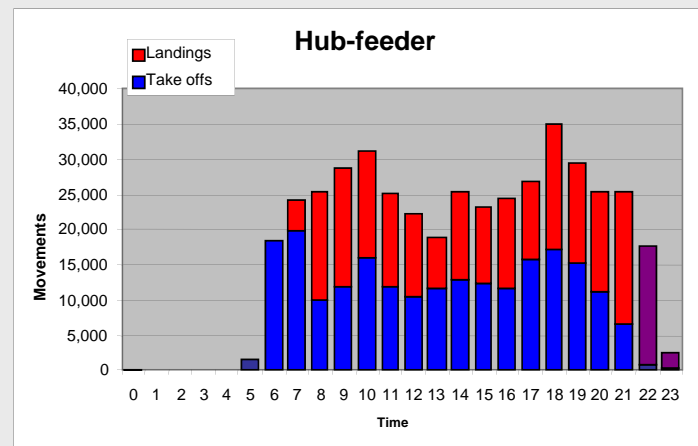
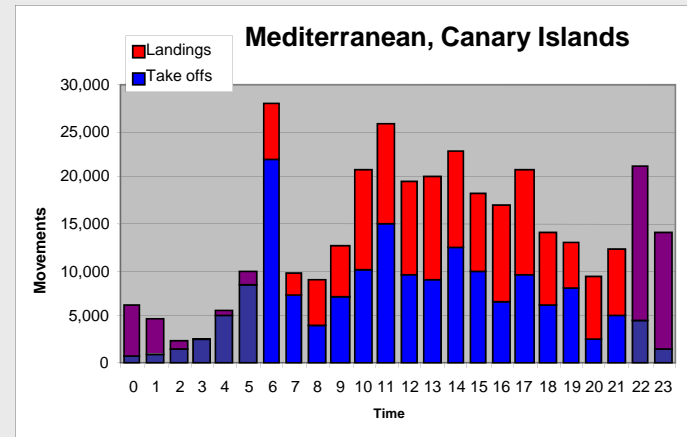
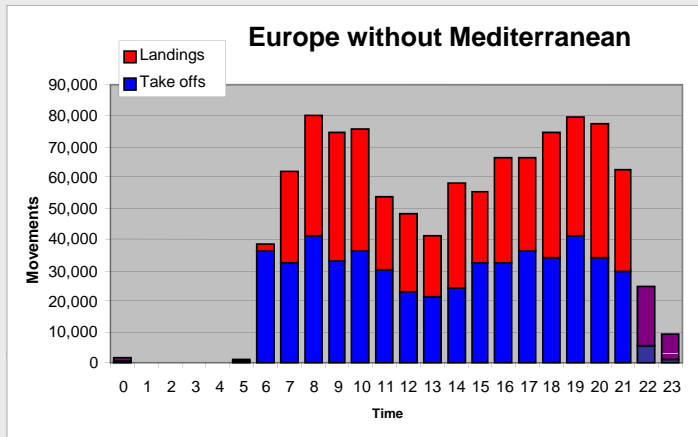


Gulf region

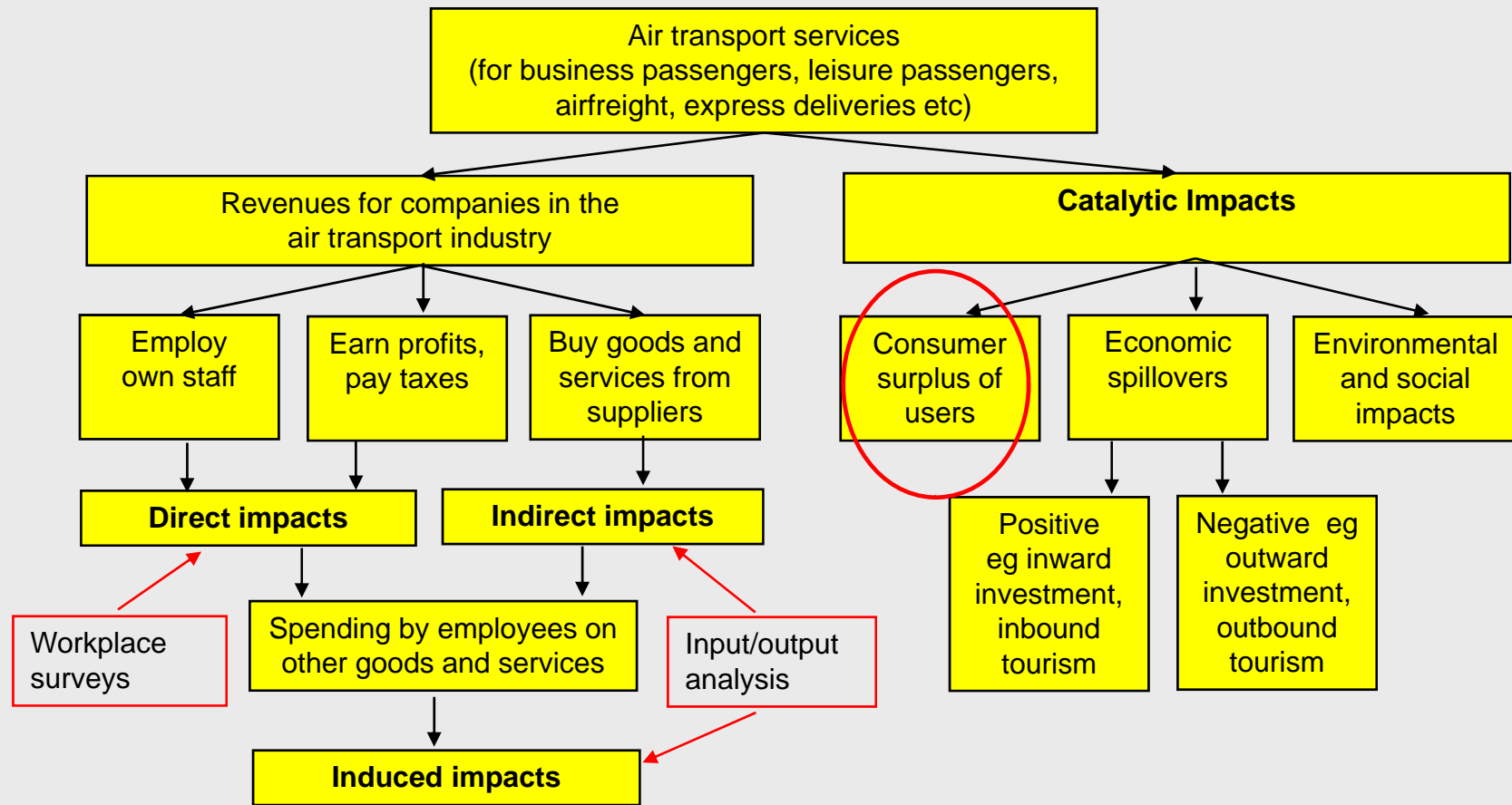
Night share: 69.9%
(thereof 0:00 – 5:00: 51.7%)



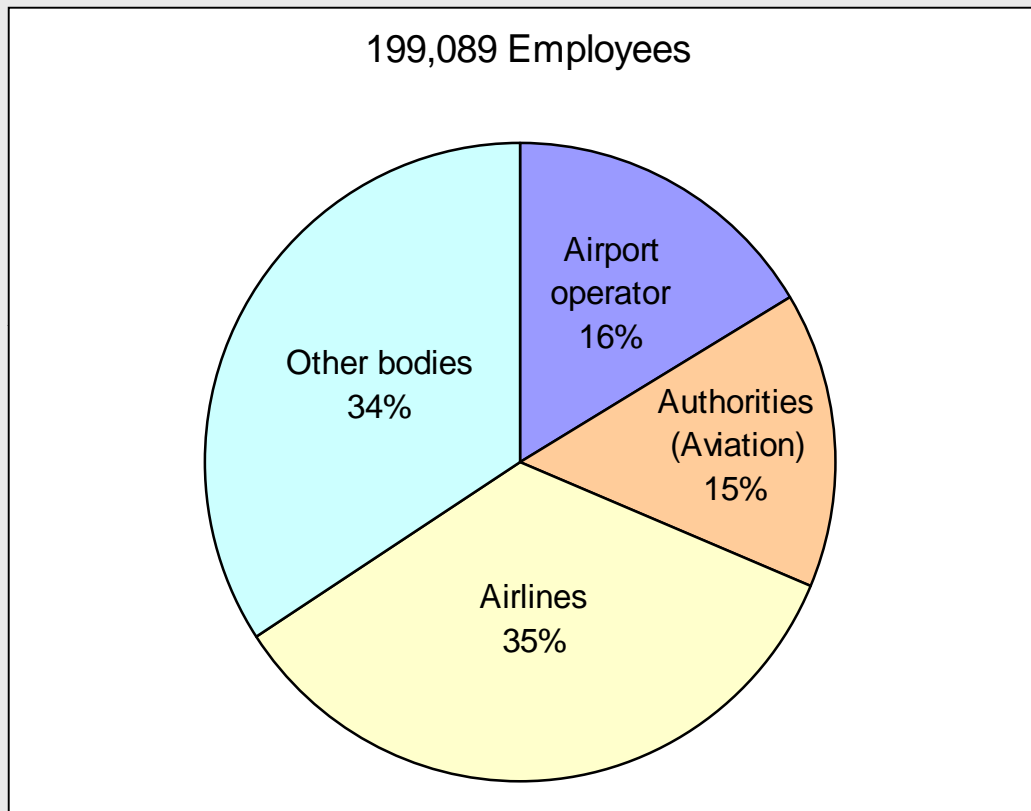
Temporal distribution of passenger flight movements at German airports 2008 by segments



Benefits (and costs) of air transport



Total direct employment at the largest 22 German airports in 2008



Source: own data based on workplace surveys provided by airports

Total of 3,893 businesses

15.2% share of night-flight dependant jobs, ie 30,300 employees

Direct, indirect and induced employment and income effects of night flights at German airports in 2008

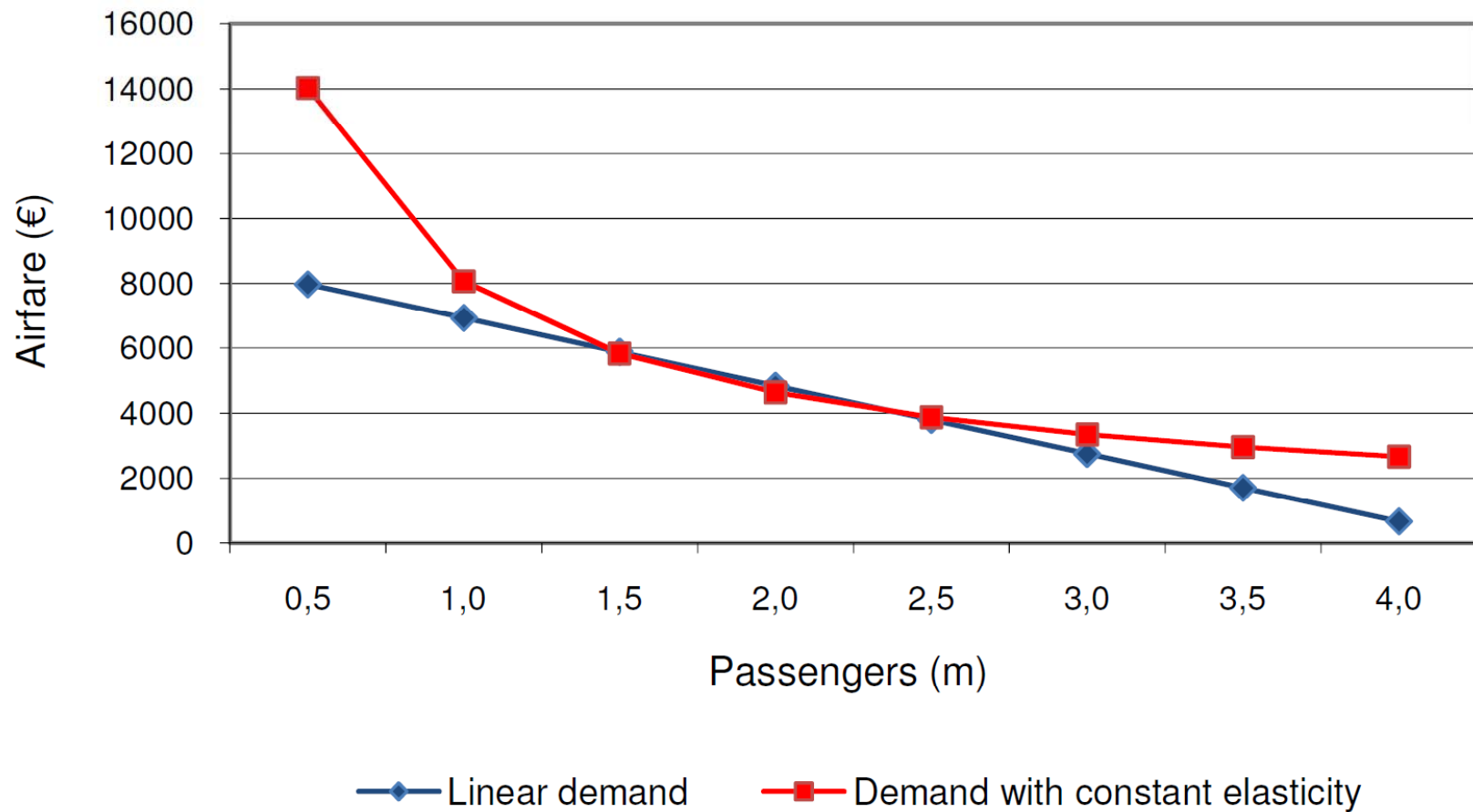
	Direct	Indirect/Induced	Total
Employment (Jobs)	30,300	54,500	84.800
Production value	3,881.6m €	6,986.9m €	10,868.5m €
Gross value added	1,659.5m €	2,987.1m €	4,646.6m €
Wages and salaries	739.3m €	1,330.7m €	2,070.0m €

Source: own calculation based on I/O table and monetary values per employee per industry sector from the German Federal Statistical Office

Catalytic impacts of night flights in Germany 2008

- ✈ The catalytic impacts – ie wider economic impacts of aviation – may exceed the direct, indirect and induced impacts
- ✈ Measuring catalytic impacts is difficult. Key economic value from air transport is the benefit received by airline passengers and shippers → consumer surplus
- ✈ Estimation of consumer surplus requires the specification of average price and sales volume plus average price elasticities in the air transport market under consideration → Knowledge of price elasticities is essential
- ✈ Use of linear demand functions results in lower limit of catalytic impact
→ Other types of demand functions more adequate?

Linear and non-linear air travel demand (eg intercontinental business traffic to/from Germany)



Inverse demand functions for air transport markets to and from Germany 2008

		Quantity	Price	Own-price elasticity	Inverse demand function
63.9m trips			Ø airfare (RT)		
12.1m Intercont trips	Biz 20 %	2.4m	4,000 €	-0.8	$p = 9,000 - 0.0020833 \cdot x$
	Eco 80 %	9.7m	750 €	-1.0	$p = 1,500 - 0.0000773 \cdot x$
51.8m Intra-Europe trips	Biz 10 %	5.2m	750 €	-0.8	$p = 1,688 - 0.0001803 \cdot x$
	Eco 90 %	46.6m	200 €	-1.5	$p = 333 - 0.0000029 \cdot x$
3.7m t cargo			Ø freightrate (OW)		
Standard 67.3 %		2.49m t	1,800 €/t	-1.6	$p = 2,925 - 0.0004518 \cdot x$
Express 32.7 %		1.21m t	2,900 €/t	-0.8	$p = 6,525 - 0.0029959 \cdot x$

Catalytic impacts – Consumer surplus for users of night flying to and from Germany 2008

		Revenues	Consumer surplus
Passenger traffic			
Intercont (Long haul)	Biz	1.4b €	0.9b €
	Eco	1.0b €	0.5b €
Intra-Europe (Short haul)	Biz	0.3b €	0.2b €
	Eco	0.8b €	0.3b €
Cargo traffic			
Standard		1.1b €	0.3b €
Express		2.7b €	1.7b €
Total		7.3b €	3.9b €

Conclusions

223,500 night flights (22:00 – 06:00) at German airports in 2008 (8.9% of total traffic)

Economic benefits of night flying in Germany 2008:

- direct, indirect and induced employment: 84,800 jobs
- direct, indirect and induced gross value added: 4.6b €
- catalytic gross value added (only consumer surplus): 3.9b €

Results are relevant for policy issues such as

- **(further) restrictions on night flights (eg curfews)**
- policy decisions to raise the cost of air transport (eg increase of airport charges, inclusion in emissions trading schemes)
- investment in infrastructure (airports etc)

Thank You!

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