







Quick Intro to JRC

Our Vision:

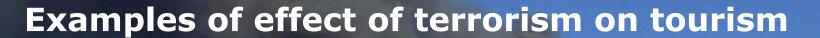
"To play a central role in creating, managing and making sense of collective scientific knowledge for better EU policies."

Our Mission:

"As the science and knowledge service of the Commission our mission is to support EU policies with independent evidence throughout the whole policy cycle."







- Egypt attacks in the '90s
- 9/11: immediate drop in international tourist arrivals, global recession in tourism due to air traffic security concern
- Libya 2015, Turkey 2016

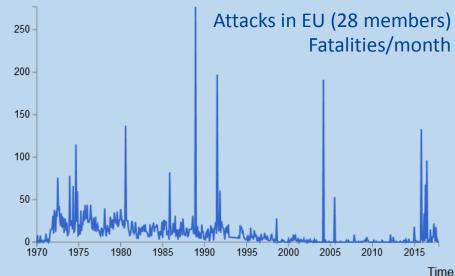


Terrorist attacks in Europe



376 total fatalities

due to terrorism in Europe 2015-2017



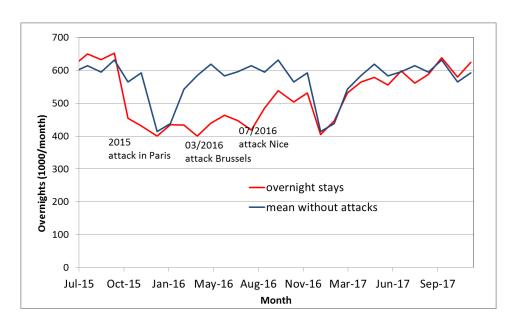
Jihadist terrorism targets our society, our way of life, our happiness

High societal and economic impact



Case study Brussels

- Overnight stays 25% less during 12 months
- Economic loss in hotels between 100 and 250 million





Itv.com

Paris: 15% less 12 months after attack

Barcelona: 15% less for 8 months

Nice: 10% less for 3 months

London, Berlin, Stockholm not significant

Numbers from https://visit.Brussels





Protection public spaces

100% protection not possible, public spaces are too many

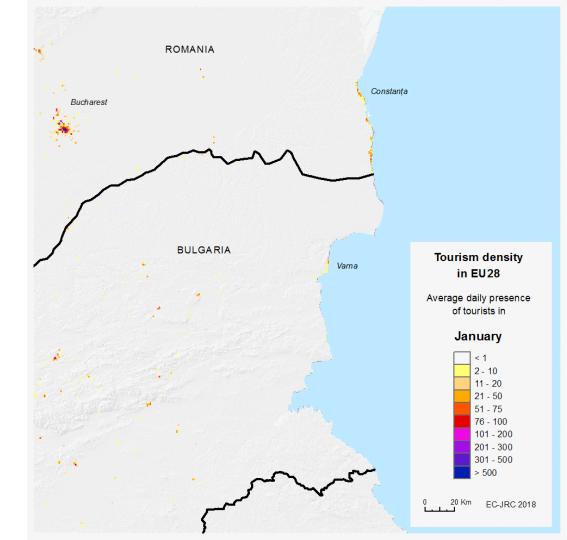
- → Threat assessment
- → Building protection
- → Barriers
- → Detection
- → Police / military presence
- → Video surveillance





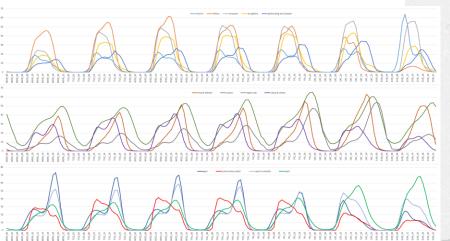
Tourism density

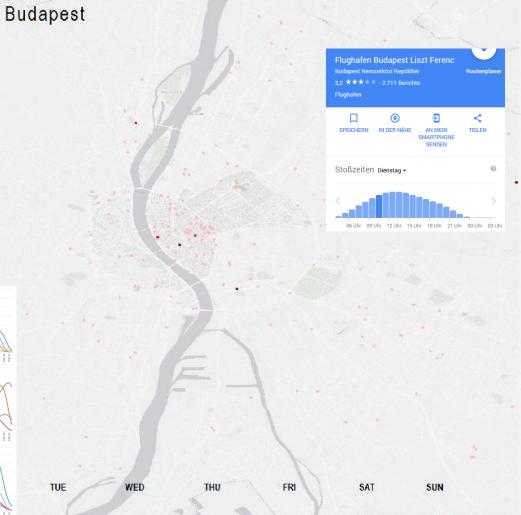
- European coverage at high spatial resolution and monthly breakdown (seasonality)
- Produced by combining official statistics on nights-spent by tourists and location and capacity of hotels from online booking services



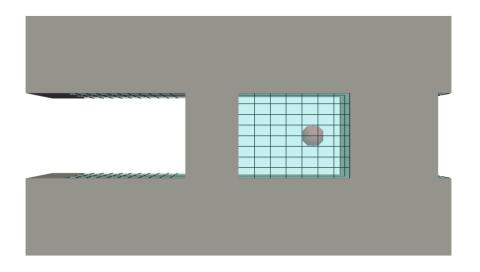
Pulse of cities

- Fine spatial resolution and 24/7 temporal detail
- Multiple activity types
- Based on data from Google maps





Explosions and buildings – protection



Progressive collapse

- Low probability but high consequences
- Need for robustness
- Multi-hazard approach

Façades

- Glazing most fragile parts
- Splinters
- Laminated glass
- Anti-shatter films

Entrances Access, perimeter





Hostile vehicle mitigation

- Low cost attack type
- Protection, for example, by landscaping, barriers, water basins, fitting to urban environment
- Complete stop not needed, enough obstacles can also reduce impact
- But not-connected barriers, they could fly upon impact, distance needed













Future work



Public spaces
Mapping report



Standardisation



Vehicle barriers Mapping report



Urban partnership



Visitor entrances Scientific paper



Building protection Guideline



Vehicle barriers Guideline



Vehicle barriers
Training







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