

Night flights in Europe:

Trends, impacts and policy responses

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Executive Summary

Night flights typically refer to arrivals and departures in the 8-hour period between 23:00 and 07:00. The impact of these overnight operations on residents living near airports has been well researched, with the most recent guidance from the WHO recommending that noise levels produced by aircraft at night be kept **below 40 dB L_{night}**. Aircraft noise above this level is associated with adverse effects on sleep. Recent health studies have indicated that exposure to nighttime aircraft noise can be linked with worse heart structure and function, cardiovascular hospitalisations, hypertension and higher levels of sleep disruption than previously thought.

Passenger growth, largely driven by leisure and tourism, alongside airport expansion is increasing commercial pressure to fit flights into the night period. **There were approximately 210,000 more night arrivals and 140,000 more night departures** at EU27+EFTA airports in 2023 than 2005. This rise in flight numbers is crucial for policy making as people can experience higher levels of annoyance around airports undergoing major operational changes. Support for night flights focuses on claims around economic growth and practicalities for airlines that ignore the significant costs to health and quality of life imposed by noise disruption.

This report provides an analysis of night operations around Europe, looking at the implications of restrictions on the number of night flights at 31 key airports. Despite large variations in the types of restrictions and hours of implementation, **all 31 airports were found to be operating large numbers of night flights**. For the 8-hour period between 23:00 and 07:00, the number of flights per airport in 2025 ranged from 7,578 to 44,148, with **an average of 24,422 night flights per year**.

While attainment of WHO recommended levels will require a steady reduction in the number of night flights, the trend is going in the opposite direction. The volumes of night flights in Europe have led impacted communities to feel that policy makers are not providing adequate protection, and that existing policies are under threat of being further weakened. As health research continues to develop, it is essential that the approach to noise management is adaptive and policies in place to manage aircraft noise are regularly updated.

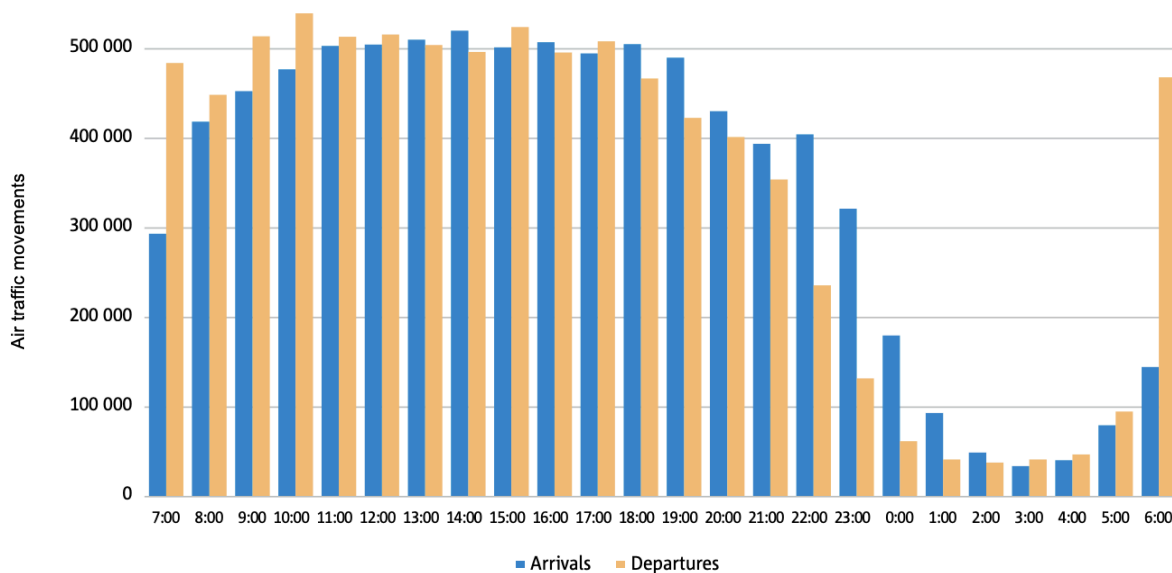


1. Introduction

Night flights commonly describe landings and take-offs that take place between 23:00 and 07:00. These flights are particularly problematic for local residents in terms of noise, causing significant sleep disruption and knock-on effects on wider health.

The number of night flights has increased with the growth of aviation, with approximately 210,000 more night arrivals and 140,000 more night departures at EU27+EFTA airports in 2023 than 2005. The proportion of flights that are classed as night flights at these airports has also increased to make up 5.5% of total traffic in 2023.¹ A large proportion of these take place in the periods close to the start of, and end of, the night, known as ‘shoulder periods’, with major peaks in arrivals late at night and departures in the early morning. The growth in night flights has mainly come from increases in shoulder period activity.²

Figure 1: Airport traffic at EU27+EFTA airports in 2023 by hour



Source: EASA (2025) [European Aviation Environmental Report¹](#)

The 8-hour period between 23:00 and 07:00 is used to define the nighttime throughout this report. This window is used by EASA, the WHO (via ISO guidelines for the definition of L_{night}) and is the default period in the EU Environmental Noise Directive, as well as being common within scientific research relating to aviation night noise. The Environmental Noise Directive permits EU states to deviate from the default night definition and determine their own hours: e.g. 22:00 to 06:00 is often used in Germany, France, Switzerland, Belgium, Austria and Poland. Additional data using the 22:00 - 06:00 period is provided in Annex B.

This report provides an update on the operation of night flights in Europe, covering the variation in operations across selected airports, justifications for night activity, health impacts and emerging trends. This includes looking at flight numbers and restrictions of 31 key airports across Europe covering those with the highest passenger throughput and major cargo hubs.

Figure 2: Map of 31 focus airports around Europe



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2. Approaches to noise management

The International Civil Aviation Organization's (ICAO) balanced approach to aircraft noise management is the industry's preferred method for addressing noise issues, including night noise.³

The balanced approach contains four pillars of action:

- 1. reduction of noise at source**
- 2. land-use planning and management**
- 3. noise abatement operational procedures**
- 4. operating restrictions**

Under this approach, states and airports are encouraged to assess the contribution and associated cost of each pillar, and to select the most cost-effective combination of measures to reduce noise at a given airport. Pillars 1 and 2 are largely beyond the scope of this report.

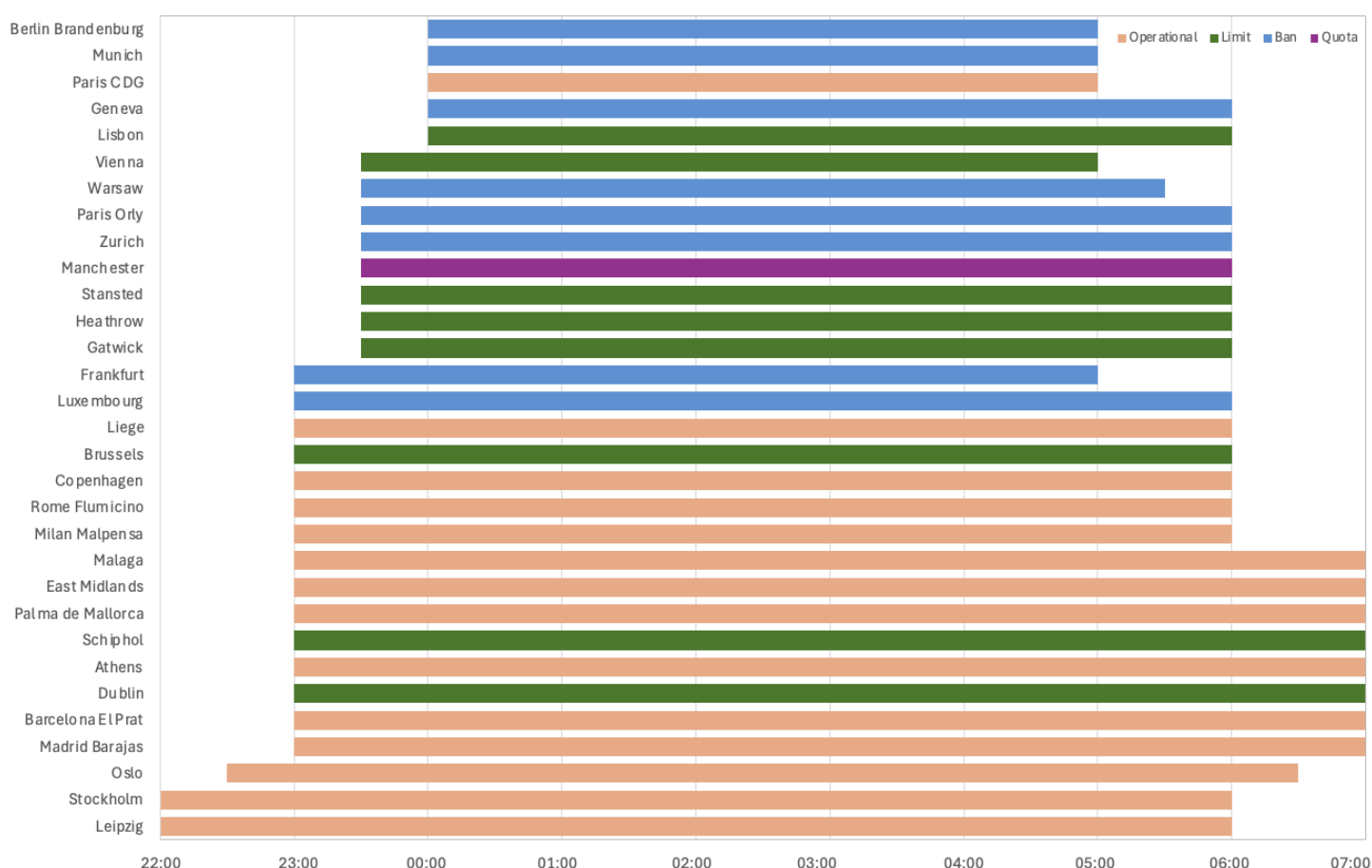
The selected airports across Europe define the period of night differently, with actions under pillars 3 and 4 implemented within varying windows between the hours of 22:00 and 07:00. Airports typically, as a minimum, have some form of rules on aircraft types (limiting the noisiest classes of plane) or how they operate. These are designed to limit the number of people affected by the noise of each individual aircraft. Operational procedures include specified runway usage and closures, altered approach paths and restrictions on the use of reverse thrust. Some airports also implement higher noise charges at night to disincentivise noisy operation.



Airports can go beyond procedural changes by implementing operating restrictions on the number of flights allowed within some or all of the night period. Similarly, airports can operate quotas which allocate each type of aircraft a set number of points based on how noisy it is; these then count towards a total points limit (e.g. see Manchester Airport: [Noise Action Plan](#), p55). The most stringent limitation is a full curfew, banning flights between certain hours.

None of the chosen airports operate a full 8 hour nighttime ban. A full list of the 31 airports, how they define night and the type of noise management they currently implement are available in **Figure 3** (below) and **Table 1** (in the next section).

Figure 3: Night noise restrictions at selected European airports



Colours illustrate different types of restrictions - see Table 1 for more information.

Heathrow, Gatwick and Stansted implement both a quota and a flight limit.

Information accurate to the best of the author's knowledge, publication of night noise restrictions is inconsistent.

In total, 14 airports only implement operational procedures, one uses a quota system, eight set limits on flight numbers and eight have a curfew period. All airports listed with bans, quotas and limits also have operational measures in place.

3. Night flight operations in Europe

This section describes the different levels of night movements at European airports. The number of flights within specific nighttime periods has been estimated using data from the Open Performance Data Initiative (OPDI), within the [Eurocontrol Aviation Intelligence Portal](#). The OPDI uses Automatic dependent surveillance – broadcast (ADS- B) data from the OpenSky Network. ADS-B is an aircraft surveillance technique via which aircraft broadcast their identity and position to receivers on the ground and to other aircraft. The full methodology is described in [Annex A](#) and additional data, including a breakdown of departures and arrivals, is provided in [Annex B](#). Please also refer to [Table 6 for an analysis of flights during the 22:00 - 06:00 window](#) as this will be more relevant to certain airports.

Table 1: Night restrictions and total night flights at selected European airports in 2025

Airport	Country	Total passengers per year (millions)	Core night period	Restrictions	Night flights (23:00-07:00)
Paris CDG	France	72.0	00:00 - 05:00	Operational*	48,563**
Madrid Barajas	Spain	68.2	23:00 - 07:00	Operational	43,380
Barcelona El Prat	Spain	57.5	23:00 - 07:00	Operational	40,346
Leipzig	Germany	2.2	22:00 - 06:00†	Operational	37,616
Milan Malpensa	Italy	31.4	23:00 - 06:00	Operational	36,741
Rome Fiumicino	Italy	51.3	23:00 - 06:00	Operational	34,652
Dublin	Ireland	36.4	23:00 - 07:00	Limit (35,672)††	30,970
Gatwick	UK	42.8	23:30 - 06:00	Quota and limit (14,450)	29,901
Heathrow	UK	84.5	23:30 - 06:00	Quota and limit (5,800)	29,375
Stansted	UK	30.0	23:30 - 06:00	Quota and limit (13,700)	28,719
Athens	Greece	34.0	23:00 - 07:00	Operational	28,359‡
Manchester	UK	32.1	23:30 - 06:00	Quota	27,922
Copenhagen	Denmark	32.4	23:00 - 06:00	Operational	26,545
Amsterdam Schiphol	Netherlands	68.8	23:00 - 07:00	Limit (27,000)	25,456
Brussels	Belgium	24.4	23:00 - 06:00	Limit (16,000)	25,422
Frankfurt	Germany	63.2	23:00 - 05:00	Ban	25,149
Lisbon	Portugal	36.1	00:00 - 06:00	Limit (4,732)‡‡	23,546**
Palma de Mallorca	Spain	33.8	23:00 - 07:00	Operational	22,941§
Stockholm	Sweden	24.3	22:00 - 06:00	Operational	20,847
Vienna	Austria	32.6	23:30 - 05:00	Limit (4,700)§§	20,421
Warsaw	Poland	24.1	23:30 - 05:30	Ban	19,891
East Midlands	UK	4.7	23:00 - 07:00	Operational	19,302
Munich	Germany	43.4	00:00 - 05:00	Ban	18,409
Malaga	Spain	26.8	23:00 - 07:00	Operational	18,076
Zurich	Switzerland	32.6	23:30 - 06:00	Ban	14,035
Oslo	Norway	27.1	22:30 - 06:30	Operational	13,852
Berlin Brandenburg	Germany	26.1	00:00 - 05:00	Ban	12,932
Liège	Belgium	0.14	23:00 - 06:00	Operational	12,301
Paris Orly	France	34.9	23:30 - 06:00	Ban	10,557
Geneva	Switzerland	17.8	00:30 - 06:00	Ban	9,841
Luxembourg	Luxembourg	5.5	23:00 - 06:00	Ban	7,578

Some airports define the night outside of the limit, ban or quota period - in these cases the table shows core night period as the hours of the limit, ban or quota rather than wider operational restrictions.

**At Paris CGD, unused slots within the airport's night period are permanently lost. This reduced available slots from 22,500 in 2003 to 17,877 in 2017.*

***Figures for Paris and Lisbon have been adjusted upwards by 10%, see Annex A for further details.*

†Leipzig operates a ban on passenger aircraft from 23:30 to 05:30 but largely operates as a cargo airport so the wider night window has been used.

††In February 2026, the EU commission ruled that the process to bring in the new limit at Dublin Airport did not follow EU regulations.⁴

‡The total for Athens has been adjusted up from 16,051 due to missing data as outlined in Annex A

‡‡A ban on flights between 01:00 and 05:00 at Lisbon Airport was announced in November 2024, with the implementation date yet to be confirmed.⁵

§The total for Palma de Mallorca is the number reported by the airport instead of the OPDI data as explained in Annex A

§§Vienna was scheduled to reduce to 3,000 night movements if a 3rd runway was built but this project has been cancelled.

Table 1 shows some key metrics for airport operations at 31 airports across Europe that represent the largest airports by passenger numbers and four key freight hubs (East Midlands, Leipzig, Liège and Luxembourg). Restrictions vary from minor operational rules to full curfews with the 23:00 to 06:00 ban at Luxembourg the closest regulation to providing full night respite.

There are a significant number of night flights across airports in Europe, with **an average of 24,422 per airport in the 23:00 - 07:00 window in 2025** (total of 757,090). Large airports only implementing operational restrictions make up the six highest night flight totals. Airports typically implement limits and bans that do not cover the full night period, resulting in totals well above the stated limits. At passenger airports, ~10% of recorded flights were night flights vs ~30% at the four freight hubs.

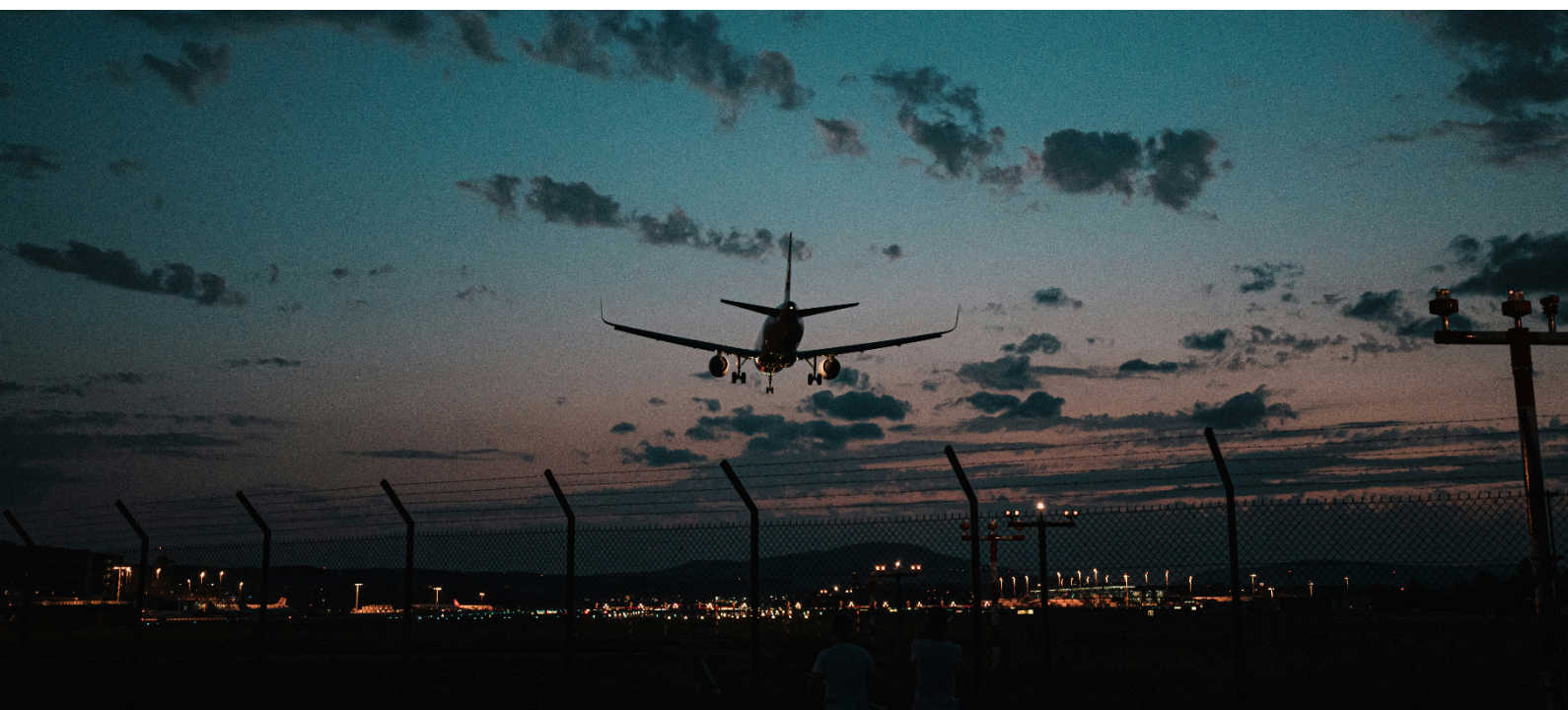
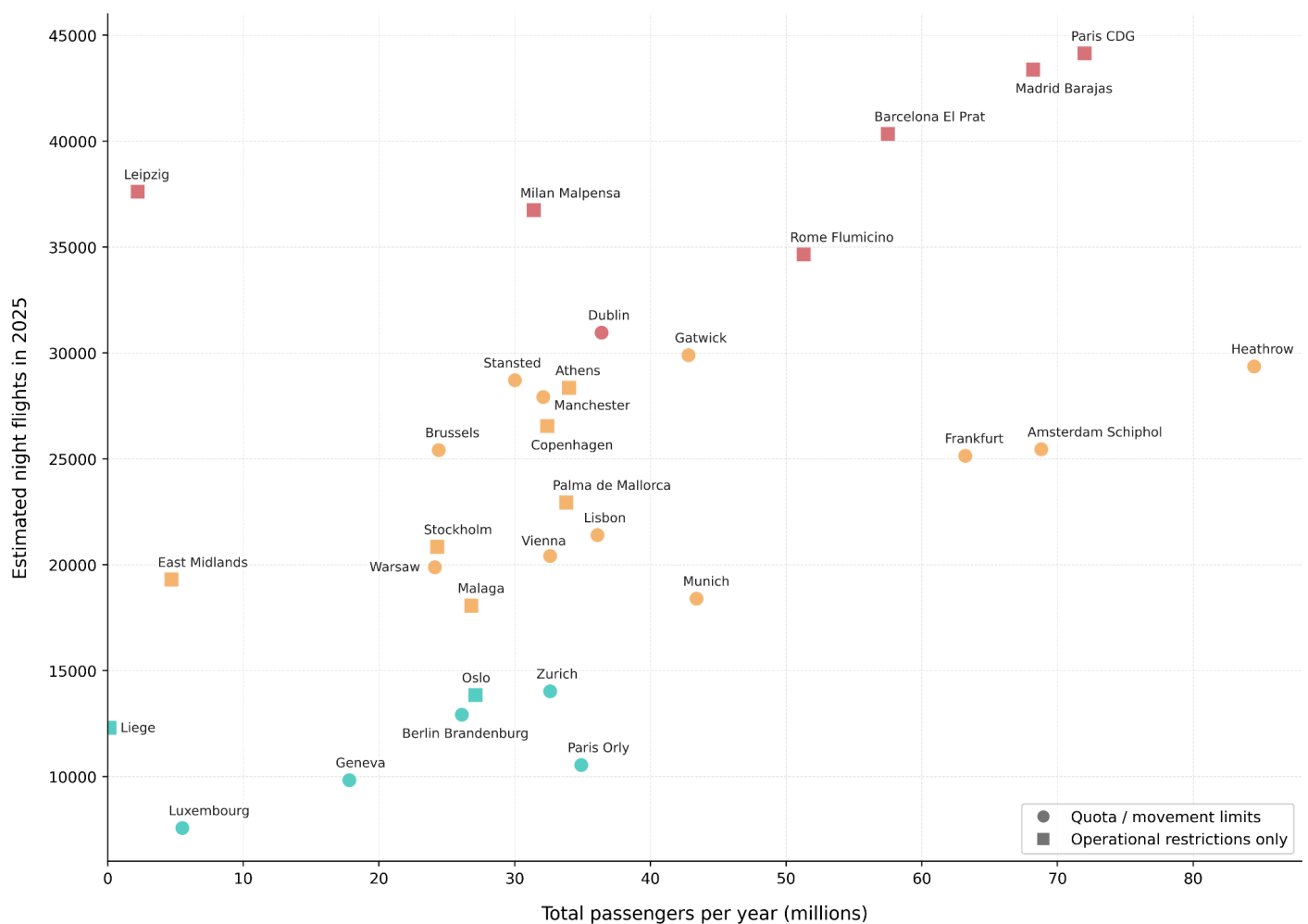


Figure 4 shows moderate correlation between total passengers and number of night flights. The collection of airports with operational restrictions (depicted with squares on the figure) tend to have a higher ratio of night flights to total passengers. Cargo hubs demonstrate more variability, with passenger numbers a less relevant metric.

Restrictions at three larger airports (Amsterdam Schiphol, Frankfurt and Heathrow) appear to be limiting night flight numbers to a lower level than other large airports only implementing operational procedure restrictions. There is also a notable geographical grouping towards the Northwest of Europe of the airports with a lower ratio of night flights to total passengers (Luxembourg, Geneva, Berlin Brandenburg, Oslo, Zurich, Paris Orly, Munich, Frankfurt, Amsterdam Schiphol and Heathrow).

Figure 4: Night flights vs total passengers at European airports



Colours illustrate level of night flight intensity

The comparison of the number of night flights in **Table 2** has been limited to specified night windows during which flight limits or bans are applicable. The table shows that airports with nighttime limits typically adhere to these, whereas full bans on night flights see varying degrees of air traffic when the curfew is supposed to be in place. This is likely to be due to a combination of exemptions, dispensations, emergencies and other flights being allowed within the ban.

Table 2: Total flights within operational restriction hours at European airports in 2025

Airport	Night window	Restriction	Flights (within night window)
Dublin	23:00 - 07:00	Limit (35,672)	30,970
Amsterdam Schiphol	23:00 - 07:00	Limit (27,000)	25,456
Brussels	23:00 - 06:00	Limit (16,000)	15,732
Gatwick	23:30 - 06:00	Limit (14,450)	14,140
Stansted	23:30 - 06:00	Limit (13,700)	13,782
Heathrow	23:30 - 06:00	Limit (5,800)	5,609
Lisbon	00:00 - 06:00	Limit (4,732)	5,403*
Vienna	23:30 - 05:00	Limit (4,700)	3,239
Warsaw	23:30 - 05:30	Ban	3,007
Luxembourg	23:00 - 06:00	Ban	2,861
Zurich	23:30 - 06:00	Ban	1,464
Frankfurt	23:00 - 05:00	Ban	1,313
Berlin Brandenburg	00:00 - 05:00	Ban	845
Paris Orly	23:30 - 06:00	Ban	418
Munich	00:00 - 05:00	Ban	413
Geneva	00:30 - 06:00	Ban	107

**The total for Lisbon is unadjusted in this table. Based on data validation in Annex A, this figure may be an underestimate of ~10%*

The airlines with the highest number of night flights in Europe are described in **Table 3**. This top 20 list makes up 67% of the total number of night flights for 2025 (496,320 out of 737,390). The list is dominated by high traffic passenger carriers, with 16 of the top 20 for night flights also in the top 20 for total flights. The exceptions to this are the two cargo operators, DHL and ASL, and the two tour operators, TUI and Jet2. The cargo airlines had significantly higher proportions of night flights, with 66% and 57% of DHL and ASL's recorded flights taking place during the night. All other airlines listed had a combined night flight average of 9%.

Table 3: Top 20 airlines in Europe for night flights in 2025

Airline	Night Flights (23:00 - 07:00)	Total Flights (all hours)
Ryanair	90,300	638,260
DHL	54,716	82,580
EasyJet	50,640	477,335
Lufthansa	29,880	510,425
Vueling Airlines	27,748	269,823
Wizz Air	23,818	139,652
ASL Airlines	22,574	39,381
British Airways	21,111	345,212
Scandinavian Airlines	18,768	278,287
Air France	18,542	281,552
Transavia	18,337	145,599
TAP Portugal	17,764	142,668
TUI	16,954	70,947
Iberia Airlines	14,794	180,898
KLM	13,990	313,049
Swiss	12,886	179,347
Norwegian Air	12,455	166,949
Jet2	10,809	58,855
Austrian Airlines	10,502	167,900
LOT Polish Airlines	9,732	134,552

Airline data for night flights and total flights is only for flights departing or arriving at the 31 selected airports, not the whole of Europe.

The total number of night flights is lower for airlines than for airports due to upwards adjustments to the totals of Athens and Palma de Mallorca in Table 1.

2,312 night flights could not be allocated to an airline due to missing data (0.31%).

4. Health impacts of night noise

The impact of environmental noise on health in Europe is significant, with aircraft noise a key contributor. Environmental noise guidelines published by the WHO in 2018 outlined the health risks from aircraft noise exposure, noting links to ischaemic heart disease, hypertension, annoyance and sleep disturbance. In this guidance document, the WHO strongly recommend:⁶

- Reducing noise levels produced by aircraft below 45 dB L_{den}^a , as aircraft noise above this level is associated with adverse health effects.
- Reducing noise levels produced by aircraft **during nighttime below 40 dB L_{night}^a** as aircraft noise above this level is associated with adverse effects on sleep.^b
- To reduce health effects, the GDG strongly recommends that policymakers implement suitable measures to reduce noise exposure from aircraft in the population exposed to levels above the guideline values for average and night noise exposure. For specific interventions the GDG recommends implementing suitable changes in infrastructure.

For context, using the EU's Environmental Noise Directive threshold (55 dB for the day-evening-night period), which is substantially more lenient than the WHO's guidance, 2.6 million people in Europe are impacted by aircraft noise—Under the WHO's guidance levels, this number jumps to an estimated 14.6 million people (day-evening-night), with 5.6 million affected by harmful levels of night noise.⁷ The WHO recommended noise levels for aircraft are lower than for road or rail noise as people tend to experience greater annoyance and sleep disturbance from aircraft noise at equivalent levels.^{7,8}

Aircraft noise as a whole has been linked with a wide range of health impacts, including effects on cardiovascular health, sleep, annoyance, psychological health and cognitive development.^{9,10,11} The exact mechanisms responsible for these impacts are complex, which can make separating the influence of night noise from daytime aircraft noise challenging.¹² The knock-on effects of sleep disruption and stress during the night can be wide ranging, leading to both types of noise often being studied together. The presence of unwanted noise is thought to trigger stress responses that lead to inflammation and other associated physiological effects—an effect that is exaggerated in response to night-time aircraft noise.¹³

^a L_{den} : Day-evening-night-weighted sound pressure level. L_{night} : Equivalent continuous sound pressure level when the reference time interval is the night

^bThis recommendation for average aircraft noise levels at night far exceeds the benchmark of 3% highly sleep-disturbed defined as relevant risk increase, but since no reliable acoustic data below this level were available, the guideline development group decided not to lower the guideline exposure level further, as an extrapolation of the exposure–response relationship to achieve these values would have been unavoidable.⁶

There has been an increasing trend in the number of published studies describing the relationship between aircraft noise and public health.¹⁴ Earlier work focused more on annoyance, typically studied via survey results, while newer research has explored a wider range of physiological effects and benefitted from access to population level sample sizes and better measurement tools, including the use of wearable devices (actimetry/actigraphy) to assess sleep patterns.^{15,16}

The following are examples of recent research articles that have specifically discussed aircraft night noise and health:

- **Saucy *et al.*** 2021. Results indicated that exposure to nighttime aircraft noise can be a trigger for acute cardiovascular mortality within two hours.¹⁷
- **Itzkowitz *et al.*** 2023. Found that there may be a short-term association between previous day aircraft noise in the night and late evening and cardiovascular hospitalisations and deaths. High noise variability at night may also be associated with higher risk.¹⁸
- **Schubert *et al.*** 2023. Suggested lowering the threshold value for nightly aircraft noise exposure levels to 35 dB based on levels of sleep disturbance around Leipzig Airport.⁸ In updating the evidence that supported the WHO guidelines, **Smith *et al.*** (2022) also suggest that people exposed to high levels of aircraft noise may be at a greater risk of sleep disturbance than determined previously.¹⁹
- **Gong *et al.*** 2024. Exposure to higher levels of nighttime aircraft noise led to higher levels of sleep disturbance, including higher levels of movement during rest and disruption to sleep-wake cycles.¹⁵
- **Peters *et al.*** 2025. Found that higher nighttime aircraft noise exposure is associated with higher risk of hypertension.¹²
- **Topriceanu *et al.*** 2025. Findings suggested that higher aircraft noise exposure, especially at night, is associated with worse heart structure and function.²⁰

Noise measurement studies help to demonstrate the importance of operations at airports. Typically, nighttime noise from airports peaks around the shoulder periods at the start and end of the night.¹⁹ For example, in a study around Heathrow airport, the morning shoulder period from 06:00-07:00 had the highest mean noise (50.92 dB Leq 1 hour) and the most noisy events per hour.²¹ These shoulder period noise peaks can have an increased effect on sleep disturbance as people are often trying to get to sleep in the early night and are likely to be woken more easily and struggle to return to sleep at the end of the night.^{19,21} Early morning noise peaks also strongly contrast with quieter periods resulting from any noise quota or flight restrictions.

Repetitive noisy events during the night is thought to be a key characteristic of aircraft noise exposure and a risk factor for sleep disruption.²² However, the measurement of the number of noisy events has shown a low correlation with standard noise metrics.²¹ Ensuring that noise measurements and metrics are accurately capturing sleep disruption is needed for understanding the full impact of night noise. This is important given the anticipated growth of the flight numbers—EASA projects a 41% increase in the number of flights arriving and departing at EU27+EFTA airports from 2023 to 2050.¹

Levels of noise do not always predict public response, with personal and contextual factors influencing noise perception.^{23,24} For example, people may experience higher levels of annoyance around airports undergoing major changes to flight numbers or operations.⁸ The effects of night noise have also been shown to be more pronounced on people living in areas with low background road and rail noise and in buildings built before 1970.¹⁷

Public perception of noise may be getting more sensitive, with the recently published ANAS study finding that the daytime noise level corresponding to 10% of the population being highly annoyed in the UK has fallen from 54 dB LA_{eq,16h} to 43 dB LA_{eq,16h}.²⁵ Effective noise management should properly consider these contextual factors, especially in the context of widespread aviation growth.

Case study: Population exposure at Heathrow Airport

A lack of consistent data prevents full assessment of how many people are exposed at each airport in this study. It should be noted that populations exposed will not necessarily be proportional to the number of night flights for a number of reasons.

At Heathrow Airport across winter 2018/19 and Summer 2019, 5,800 movements between 23:30 and 06:00 were permitted.²⁶ The 48 dBA L_{Aeq,6.5h} contour area for the same period was 30km², exposing ~95,700 people/33,000 households.²⁷ The corresponding night-time L_{Aeq,8h} noise contours (covering 23:00 - 07:00) covered 97.6km², with 365,500 people and 144,500 households exposed to noise above 48dBA.²⁷



5. Night flights vs curfews

a) Industry justifications for night flights

Despite the growing body of research linking night flights with adverse health outcomes, the aviation industry is keen to maintain or increase night operations, with the following often highlighted as reasons why.

- **Economic benefits and time practicalities**

Claimed economic benefits are often used as the key justification for night flights. Time practicalities sit within this umbrella of economics as enabling reasons for why night flights are suggested to offer financial advantages.^{28,29}

- **Freight transport:** the proportion of cargo flights vs passenger aircraft significantly rises overnight, with night flights often cited as key for next day delivery services.^{29,30,31}
- **Time zone differences:** Due to time zones, it may be harder to avoid a nighttime take-off or landing on some routes.^{28,29,32}
- **Displacement:** Flights currently operating at night would be squeezed into daytime slots if curfews were introduced, increasing congestion and noise in shoulder periods.^{29,30,32}
- **Maximising aircraft usage:** night flights allow greater usage of aircraft and positioning for the next day.²⁹
- **Business and connecting passengers:** May prefer to arrive in the early morning so that they have a full work day available or can connect to a short-haul flight with an early destination arrival time.^{29,33}

- **Capacity**

One suggested usage of night flights is to expand capacity at airports that operate close to their limits in the day. Similarly, industry has argued that overnight curfews could push freight flights into the daytime and take up valuable space at busier times.²⁹

- **Current policies are sufficient**

Within ICAO's balanced approach, the first three options are encouraged to be considered first before operating restrictions are implemented. This effectively outlines the sector's preference for not restricting flights by implementing measures under the first three categories.^{31,32,34}

- **Delays and emergencies**

The early night can be used as a buffer period for flight delays that build up during the day to prevent disruption from running into the next day. Airlines are often allowed to claim dispensations or exemptions for flights that need to operate at night for unavoidable reasons. This can include flights for medical relief and humanitarian aid, military operations or VIP transport. These make up a very small proportion of night flights and are generally permitted even at airports with nighttime operating restrictions.²⁹

- **Questioning the health research**

In response to the WHO noise guidelines, Airports Council International (ACI) Europe, a key industry trade association, published a report in 2018 outlining the sector's position on aviation noise.³⁵ Within this report ACI suggests uncertainties regarding the health impacts of aircraft noise necessitate further research before recommending infrastructure changes.

b) Evidence against night flight benefits

The following provide brief counterpoints to the claims listed above.

- **Economics:** Discussions over economic benefits are largely questions of profitability and growth instead of operational necessity, as demonstrated by the continuing successful operation of airports with restrictions, such as the night curfew at Frankfurt airport (see Section 6). Small benefits to airlines and passengers largely travelling for leisure offer little justification for the level of disturbance and health impacts experienced by residents. The extent of the economic benefits created by night flights has also been questioned.^{36,37,38} Any issues with time practicality have also been demonstrated to have been overcome at major airports with night restrictions.
- **Capacity:** Like economics, using night flights to support increased capacity supports airport expansion rather than more successful and efficient operations.
- **Other policies:** Local context is key for determining noise mitigation plans and there may be circumstances where curfews or operational restrictions are required. The implementation of restrictions on flight numbers is likely to be the only mechanism capable of reducing night noise below WHO guidelines. Research continues to outline examples of night noise policy not sufficiently preventing the health impacts of night flights.
- **Exemptions:** While it is claimed that these make up a very small proportion of night flights and are generally permitted even at airports with nighttime operating restrictions, the system is open to abuse. Dispensations from night rules often go beyond emergencies or delays to include unscheduled departures for football fans attending or returning from matches. At Stansted Airport in summer 2024, the number of recorded dispensations at night was nearly 1,600 of which only 41 were listed as emergencies.³⁹
- **Health research:** There has been a steady development of the evidence linking night noise and negative health outcomes (see above) which has added support to the WHO guidelines since their publication nine years ago. The evidence base is large and continues to grow and in situations where there is uncertainty, precautionary health measures are advisable.

Case study: The Economic Case for a Curfew at Brisbane Airport³⁸

A recent paper evaluated night flights from an alternative perspective, looking at the costs and benefits of bringing in a curfew at Brisbane Airport. The economic assessment estimated the benefits of a curfew at up to \$100 million per year due to sleep disruption, health risks, reduced quality of life and reduced land values. These benefits greatly exceed the projected cost of a curfew at \$5-10 million per year (from reduced airline and freight activity). The paper also suggests the following:

“The persistent suggestion that aviation should be exempt from regulatory constraint because it is an “essential service” is analytically unsound. Industries that generate externalities are commonly subject to operating limits, particularly during sensitive night hours.”

This is in reference to nighttime noise restrictions on other industries that provide essential services, e.g. construction, and more directly comparable, curfews placed on the delivery of groceries and other goods via road transport e.g. [London Lorry Control](#).



6. The impact of operational night flight restrictions

Airports across Europe operate varying degrees of nighttime flight restrictions. This section describes how some airports have adapted to operate with restrictions to address concerns that operational restrictions lead to major consequences for airports and to provide further detail on why industry justifications for night flights may be unfounded.

Frankfurt Airport (FRA)

FRA has implemented a full nighttime curfew since 2011 between the hours of 23:00 and 05:00. FRA is the 6th largest airport in Europe by passenger numbers, growing from 53.0m in 2010 to 70.6m in 2019.⁴⁰ Passenger traffic is still at 63.2m as the numbers rebound following the impact of COVID-19. Total freight figures have remained fairly constant over the same period at 2.32 Mt, 2.13 Mt and 2.07 Mt for 2010, 2019 and 2025. The airport has a new 19 million capacity terminal opening this year.⁴¹

London City (LCY)

LCY has a curfew from 22:30pm to 6:30am every day and for the full period from 1pm on Saturday to 12:30pm on Sunday to provide weekend noise respite for residents. These restrictions have been in place since the airport opened in 1987. Like FRA, passenger numbers rose significantly from 2010 to 2019, almost doubling from 2.8 to 5.1m. Passenger numbers are now recovering, increasing yearly to 3.7m in 2025. In 2024, the airport was granted approval to increase its passenger cap from 6.5m to 9m passengers per year.⁴²

Paris Orly (ORY)

A curfew has been in place at ORY since 1968, as the airport is situated in an urban area that has continued to become more densely populated.⁴³ The curfew is in place from 23:30 to 06:00 with some restrictions on aircraft types from 22:00. ORY is the second largest airport in France (34.9m passengers) and launched a 2035 development project in 2024.⁴⁴

Vienna (VIE)

During the planning process for a 3rd runway, VIE set out noise restrictions from 23:30 to 05:30 that have frozen the night cap at 4,700 flights since 2010. The airport states that they are proud of undertaking the 'most extensive mediation process in Europe'.⁴⁵ Although the long-pursued additional runway has recently been abandoned, VIE still plans on increasing passenger numbers to 52m and has expansion plans for its 3rd terminal in 2027.⁴⁶

Sydney (SYD)

SYD has implemented a curfew from 23:00-06:00 since 1995, with some small exceptions including for flights in shoulder periods and for freight flights.⁴⁷ Passenger numbers have increased since 1995 from 19.1m to 42.5m in 2025, close to the all-time high of 44.4m. 2025 was the airport's busiest year on record for international travel, reinforcing the position of SYD as 'Australia's primary international gateway'.⁴⁸ The preliminary masterplan for 2045 outlines plans to reach 72m passengers by 2045 alongside more than doubling freight volumes to 1.4 Mt and terminal expansion.⁴⁹

7. Trends

The growth of night flight numbers fits within the wider increase in total passenger volumes in Europe and globally. Passenger growth, largely driven by leisure and tourism, alongside widespread airport expansion adds commercial pressure to fit more flights into shoulder and night periods. As the relationship between noise and annoyance is not always linear, new flight paths and runways can increase disruption for residents near airports. The [‘International Day for the Ban on Night Flights’](#) proposed by Stay Grounded gives an indication of the current public view of night flights, with 223 community groups and NGOs currently signed onto the declaration.

Another recent trend is a shift in cargo patterns, with the continued rise of online retail and expectations of rapid delivery adding pressure to air freight goods overnight.⁵⁰ This has implications for both night noise and emissions, as items that would previously have been moved via slower, less intensive methods are shifted onto cargo flights.⁵¹ Global air cargo demand grew 11.2% in February 2026 compared to February 2025.⁵²

There have been several cases of airports being accused of breaking their own rules and restrictions being ineffective. Residents near Lisbon airport have recorded up to 160 flights arriving or departing weekly in the night period, well above the 92 permitted.⁵³ Luxembourg airport has also been reported to consistently operate thousands of flights during the curfew from 23:00 - 06:00, with no sanctions for airlines ignoring the ban.^{54,55} Leeds Bradford airport in the UK has had an application to increase night flight limits partially approved on the basis that as night flight rules have been consistently broken over the last ten years, this should be allowed to continue.^{56,57}

The war in Iran and possible subsequent jet fuel shortages is an ongoing development that could impact night flight rules. Airlines in the UK have recently requested a temporary relaxation in night flight restrictions to help with disrupted schedules.⁵⁸



8. Conclusions and recommendations

While this report has identified a range of operational curfews and restrictions in place at European airports, very few apply the standard 8-hour definition of night. Once the actual number of movements over 8 hours is considered, communities have far less protection from the harmful effects of night flights. Despite widespread implementation of the balanced approach, rules on night flights across Europe are varied, and often subject to exemptions. This makes it difficult to observe any general trend, although the number of recorded flights at night is increasing contrary to public expectation.

Future actions to provide clarity to residents, airports and policymakers include:

- **Standardised publication of night flight rules by airports in Europe**

There is currently a large inconsistency in the format and public display of night flight rules by European airports. In collecting the data for this report, information on regulations was found on dedicated website sections, airport annual reports, government and regulator websites and news platforms. [Boeing](#) has tracked airport noise and emissions restrictions, although it is unclear how recently this information has been updated.

- **Standardised publication of night flight statistics**

Similarly to the above bullet, information provision on night flight numbers by airports is highly inconsistent. Providing these statistics in a simple annual report would improve transparency for residents. This report provides an alternative methodology that can assist with filling the gap in data until airport reporting improves. Airports should publish information annually on flight numbers at night, and the population exposed using a standardised set of noise metrics.

- **A regular review of aviation night noise health research**

Research into the health impacts of noise, from the wider impact of environmental noise through to the specific effects of aviation night noise, continues to develop at speed. Reviewing new research across this spectrum of noise studies would provide clarity to all stakeholders involved. Any review should closely investigate how new research relates to specific noise policies currently implemented at airports.

- **Policy to protect exposed residents**

Policy makers should recognise that, at many airports, the current night noise climate is adversely impacting the health of residents and tougher restrictions on night flights, including bans, are required. At a minimum policy makers should act to prevent any further deterioration in the population exposed to night-noise and make a binding commitment to make continuous improvements, with periodic reviews, towards WHO's recommended exposure levels to protect public health.

As health research continues to develop, it is crucial that the approach to managing noise is adaptive and policies in place to address aircraft noise are regularly updated.

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Author

Bertie Lloyd, AEF. bertie@aef.org.uk

Annex A: Methodology notes

Data for Tables 1-7 was extracted from flight list data from the [Eurocontrol Aviation Intelligence Portal](#). The Flight List tables are published under the Open Performance Data Initiative (OPDI) in collaboration with the OpenSky Network (OSN). The full methodology is available on the OPDI [website](#). The dataset uses information from Automatic Dependent Surveillance–Broadcast (ADS-B) receivers that record various measurements of flight identity, aircraft identity, route and timing. The key metrics for this analysis are the ICAO codes of the departure and arrival airports and the first seen and last seen times.

First seen is usually the off-block time and last seen is shortly before in-block time. There is some variability in these times as aircraft start and stop transmitting whilst taxiing rather than at take-off and landing times (around which night flight limits are set). Gaps in receiver coverage and losses of signal as aircraft are near or on the ground can also influence first and last seen times. [Coverage](#) of ADS-B receivers within the OpenSky network in Europe is very good and was found to be strong around the list of airports studied. ADS-B receivers record in Coordinated Universal Time—these times were converted into local time zones during data processing. This includes accounting for daylight savings time.

The recorded data was validated below against published figures for flights at all airports. Data for flights within a specified night period was reported by 13 of the selected airports.

Table 4: Comparison of airport reported data for night flights vs OPDI data

Airport	Time	Year	Total reported flights	Total OPDI flights	% difference
Madrid	23:00 - 07:00	2025	46089	43380	6.1
Palma	23:00 - 07:00	2025	22941	15549	38.4
Malaga	23:00 - 07:00	2025	19016	18076	5.1
Brussels	23:00 - 06:00	2025	15938	15732	1.3
Dublin	23:00 - 07:00	2024	32,193	30580	5.1
Copenhagen	23:00 - 06:00	2024	16033	15395	4.1
Berlin	22:00 - 06:00	2024	14796	14910	0.8
Liège	23:00 - 06:00	2024	11084	10406	6.3
Gatwick	23:30 - 06:00	2024	10560	11718	10.4
Heathrow	23:30 - 06:00	2024	5815	5641	3.0
Luxembourg	23:00 - 06:00	2024	3043	2965	2.6
Milan	23:00 - 06:00	2023	26056	24030	8.1
Zurich	22:00 - 06:00	2023	13564	13910	2.5

Gatwick data is a comparison of the Summer 2024 period only (31st Mar - 27th Oct)

Airport reported data was collected from websites and annual reports. Both data sources reported similar movement numbers overall (237,128 reported vs 222,292 OPDI), with Palma airport the major outlier. This discrepancy is likely to be due to a thinner coverage of ADS-B receivers around Palma's island location.

Following these results, all other airports were risk tested by validating OPDI results against data for 2024 or 2025 depending on reported data availability. Airports located nearer the outskirts of Europe (e.g. Lisbon, Athens and Dublin) were identified as being at risk of lower coverage and underestimation. Airports with a high proportion of cargo traffic (e.g. Liège, East Midlands and Leipzig) were also flagged as cargo aircraft are typically older and can have a higher rate of transponder issues.

Table 5: Comparison of full year reported data vs OPDI data

Airport	Year	Total reported flights	Total OPDI flights	% difference
Amsterdam Schiphol	2025	477,552	487,291	2.0
Paris CDG	2025	473,798	396,372	17.8
Frankfurt	2025	460,272	429,175	7.0
Barcelona El Prat	2025	359,974	367,140	2.0
Munich	2025	337,000	337,955	0.3
Rome Fiumicino	2025	322,744	313,294	3.0
Athens	2025	283,590	112,833	86.1
Vienna	2025	240,400	252,157	4.8
Oslo	2025	224,416	211,031	6.1
Paris Orly	2025	216,101	214,234	0.9
Manchester	2025	203,256	208,217	2.4
Warsaw	2025	200,958	200,436	0.3
Stansted	2025	194,881	204,101	4.6
Geneva	2025	177,288	161,045	9.6
Stockholm	2025	98,665	94,467	4.3
Lisbon	2024	225,268	194,197	14.8
Leipzig	2024	76,827	79,862	3.9
East Midlands	2024	63,648	64,965	2.0

Table 5 includes all airports not covered in Table 3, using data for the most recent reported year for each airport.

Table 5 shows a significant underestimate of flights for 2025 at Athens airport. Following this risk testing, the final totals for Palma and Athens were adjusted—Palma airport reported the total number of night flights (23:00-07:00) per year in annual acoustic reports so this figure was used. For Athens, night flights were conservatively estimated to make up 10% of the total reported flights for the year (283,590). This is below the 14% proportion that night flights made up using the OPDI data as data capture via ADS-B receivers is expected to be better over night than in the day due to lower night traffic, making each movement more likely to be picked up. Moderate underestimates at Paris and Lisbon have been adjusted for by increasing the number of night flights at each airport in **Table 1** by 10%.

The results in this annex outline the limitations with the OPDI data source and demonstrate that this dataset provides a strong assessment of night flight numbers, although figures reported by airports remain a preferable data source.

Annex B: Additional data

Table 6 looks at a slightly different night period of **22:00 - 06:00**, as this is the window for night noise regulations in some European countries. There were 27,704 more flights in this window than from 23:00 - 07:00. The results are similar to **Table 1**, with the same airports making up the top six and bottom seven in both tables (in different orders).

Table 6: Night flights at each airport in 2025, 22:00 - 06:00 window

Airport	Night arrivals	Night departures	Total	Difference vs 23:00 - 07:00
Paris CDG*	23,144	28,063	56,672	+8,109
Madrid Barajas	36,097	18,634	54,731	+11,351
Barcelona El Prat	30,088	14,279	44,367	+4,021
Leipzig	19,526	18,732	38,258	+642
Rome Fiumicino	18,027	18,879	36,906	+2,254
Milan Malpensa	21,798	14,561	36,359	-382
Amsterdam Schiphol	20,292	12,954	33,246	+7,790
Frankfurt	13,380	16,705	30,085	+4,936
Dublin	22,202	5,886	28,088	-2,882
Gatwick	23,076	3,500	26,576	-3,325
Copenhagen	17,019	9,502	26,521	-24
Heathrow	12,715	12,368	25,083	-4,292
Stansted	19,313	5,770	25,083	-3,636
Manchester	20,414	2,580	22,994	-4,928
Brussels	14,915	7,115	22,030	-3,392
Munich	9,166	11,645	20,811	+2,402
Lisbon	12,325	8,447	20,772	-634
Vienna	12,874	7,835	20,709	+288
East Midlands	10,118	9,471	19,589	+287
Palma de Mallorca**	10,980	7,966	18,946	+3,397
Malaga	12,567	6,372	18,939	+863
Athens**	16,546	1,647	18,193	+2,142
Stockholm	13,626	4,460	18,086	-2,761
Warsaw	10,562	7,318	17,880	-2,011
Oslo	11,715	3,694	15,409	+1,557
Paris Orly	12,016	3,232	15,248	+4,691
Berlin Brandenburg	10,463	4,764	15,227	+2,295
Zurich	9,571	5,636	15,207	+1,172
Liege	6,365	5,911	12,276	-25
Geneva	8,305	854	9,159	-682
Luxembourg	5,582	1,527	7,109	-469

*The total figure for Paris CDG in the 22:00 - 06:00 window has been sourced from the French Civil Aviation Authority (DGAC). The arrivals and departures figures for Paris CDG are from the OPDI data and therefore do not add up to the total but are provided for context.

**The figures for Palma and Athens represent the unadjusted totals from the OPDI data and the difference column is also vs the unadjusted OPDI data for 23:00 - 07:00. The figures for these two airports are for comparison purposes and should not be interpreted as the actual number of flights in the 22:00 - 06:00 window.

Table 7 breaks down the totals from **Table 1** into arrivals and departures. Night flights were split into 416,673 arrivals and 328,109 departures. 22 of the 31 airports had more night arrivals than departures in 2025, with 5 airports (Heathrow, Amsterdam Schiphol, Frankfurt, Athens and Oslo) having more than double the number of arrivals than departures. Typically smaller airports and freight airports showed more weighting towards departures.

Table 7: Night flights split by arrivals and departures at each airport in 2025, 23:00 - 07:00 window

Airport	Night arrivals	Night departures	Total
Paris CDG	22,900	21,248	44,148*
Madrid Barajas	24,714	18,666	43,380
Barcelona El Prat	24,071	16,275	40,346
Leipzig	16,055	21,561	37,616
Milan Malpensa	19,213	17,528	36,741
Rome Fiumicino	19,503	15,149	34,652
Dublin	17,299	13,671	30,970
Gatwick	18,997	10,904	29,901
Heathrow	20,865	8,510	29,375
Stansted	16,239	12,480	28,719
Manchester	17,557	10,365	27,922
Copenhagen	13,455	13,090	26,545
Amsterdam Schiphol	17,220	8,236	25,456
Brussels	13,521	11,901	25,422
Frankfurt	17,584	7,565	25,149
Palma de Mallorca	11,890	11,051	22,941**
Lisbon	11,956	9,450	21,406*
Stockholm	12,573	8,274	20,847
Vienna	9,949	10,472	20,421
Warsaw	8,667	11,224	19,891
East Midlands	9,031	10,271	19,302
Munich	11,234	7,175	18,409
Malaga	9,518	8,558	18,076
Athens	13,808	2,243	16,051*
Zurich	6,666	7,369	14,035
Oslo	9,412	4,440	13,852
Berlin Brandenburg	4,911	8,021	12,932
Liège	6,374	5,927	12,301
Paris Orly	3,852	6,705	10,557
Geneva	4,779	5,062	9,841
Luxembourg	2,860	4,718	7,578

*The figures for Paris CDG, Lisbon and Athens are the unadjusted total as reported in the OPDI data provided for the purpose of comparing the proportions of arrivals and departures rather than accurate total figures.

**The figures for Palma are as reported by the airport as this includes a breakdown of arrivals and departures