Air Connectivity

Technical report

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1 Executive summary

This technical report has been requested by a group of eight EUROCONTROL Member States willing to better understand the impact to air connectivity of the COVID-19 pandemic and of Russia's War on Ukraine . The request is also linked to the end of the State Aid Temporary Framework (expired on 30^{th} June 2022) as set up by the European Commission in support of European Union Member States' economies and to a request for information by DG Competition on potential loss of air connectivity.

The indicators defined in this report provide a view over air connectivity and its evolution over time; they have been brainstormed together with the respective eight Member States' Liaison Officers and their colleagues to better capture local nuances and specific needs.

One of the central insights of this study is that **air connectivity has not simply "recovered" in line with traffic volume**. Instead, the structure, composition, and frequency of connections have subtly changed in a post-COVID world. Some previously served routes have disappeared entirely; others are now operated with reduced frequency or by different air transport operators. This clearly shows that **air connectivity is a pre-dominantly economic viability consideration of services providers** (aircraft operators) in a liberalised market. The latter has an impact on the observed scaling effect, i.e., the increase or decrease (and ultimate cessation) of services to a destination.

Geo-political impacts can be observed as a modulation. Once pre-incident/crisis conditions are restored, services are re-initiated. This evidences the balance between risk management and economic viability between short-term and long-term organisational decision-making. This reflects a fundamental reality of the air transport market: **airspace users (airlines) act as economic agents**. Accordingly, air connectivity in a liberalised market is pre-dominantly driven by market entry or expansion options. Airspace users base their service decisions on demand signals, cost structures, and expected profitability. If a route or frequency no longer meets commercial viability thresholds, it is likely to be reduced or withdrawn—unless sustained by subsidies, incentives, or specific policy measures.

Underlying the overall variability across the European network is pre-dominantly summer-time vacation traffic. The summer season peak is showing another dimension of the variances in terms of frequencies and traffic levels.

In this sense, **air connectivity is not merely a question of passenger volume**. Air connectivity is about how markets and airline strategies evolve post-crisis. Strategic planners and policy-makers should thus be cautious in interpreting air traffic recovery as synonymous with connectivity restoration.

Connectivity is a local problem with potentially systemic implications. While the European network operates as an integrated whole, the loss of services from a single airport can have cascading effects on regional accessibility, economic development, and intermodality. As a result, **responses must be tailored to the local context** but understood within a broader European framework.

The report shows that the **sweet spot** of connectivity can be found in the destination serviced with connecting flights. We observe that onward connectivity is strongly dependent on the services provided at European hubs allowing for a higher level of onward journeys. Regional nuances exists with the role of regional hubs that serve as spring boards. A potential strategy could be to encourage services to onward connections or support the introduction of services that would reduce the number of interim stops from markets only served with 3 connections to either direct or 2-hop connections.

A follow-up of this work is the development of a dashboard specifically dedicated to air connectivity with data close to day-of-operation; it will be available in the first semester of 2026.

2 Introduction

2.1 Overview

Air transport enables the flow of goods and people and is therefore an important catalyst for economic growth, tourism and prosperity of a country or region. Air connectivity provides the foundation for international mobility of people and goods and is therefore a vital engine of economic growth worldwide.

The deregulation of aviation in Europe 35 years ago created a single market removing commercial restrictions for European airlines operating within the European Union (EU), effectively allowing them to freely set fares and to operate freely on intra-EU routes. This also triggered the continuous growth of Low-Cost Carriers (LCC) which, together with the availability of internet booking, made air travel in Europe more affordable and accessible over the past decades. As a result, not only the number of flights in Europe increased substantially but also the level of connectivity offering passengers more choices.

Despite the effects of various shocks in the past (terrorist attacks, financial crisis, etc.), European air traffic experienced a sustained growth over the past decades. Comparing traffic in 2020 before the unprecedented drop of air traffic due to the pandemic to the level of 1989, flights in the European Civil Aviation Conference (ECAC) area had more than doubled compared to 1990 (c.f. Figure 1).

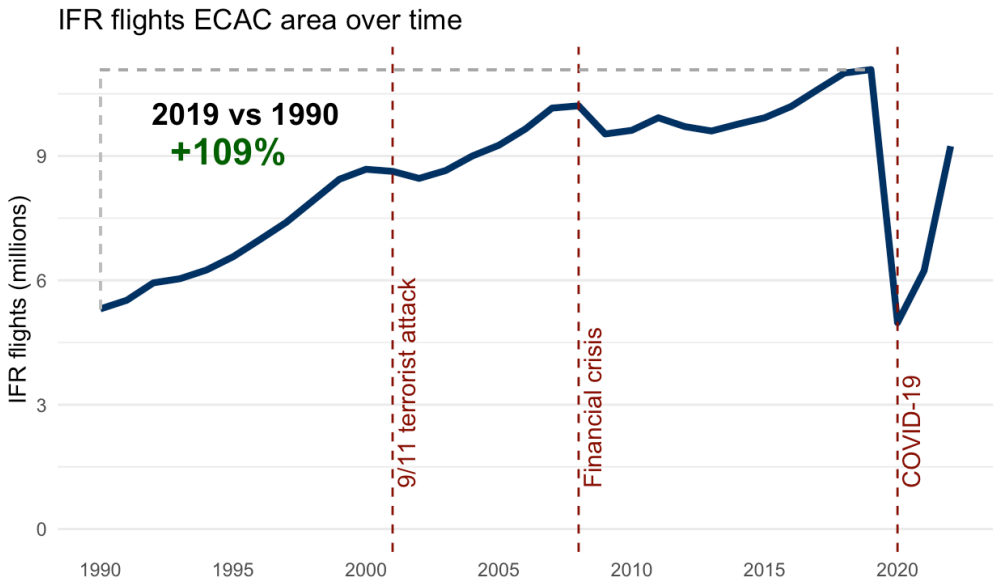
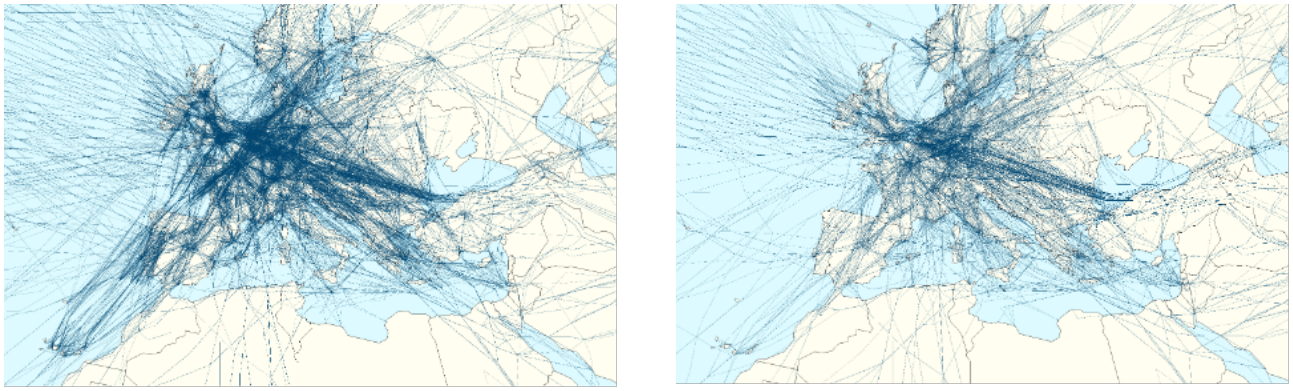


Figure 1: Growth of IFR flights in Europe since 1990

With the outbreak of the COVID-19 pandemic in March 2020, air traffic dropped dramatically because of governments implementing travel restrictions in an attempt to contain or reduce the spread of the virus.



(a) 20. March 2020

(b) 20. April 2020

Figure 2: Sample movements in 2020

Traffic in the Network Manager (NM) Area for 2020 closed out at −55% of 2019 levels which corresponds to a loss of 6.1 million fights in 2020.
After the lowest point in April 2020, the number of flights and the level of connectivity started to increase again in line with vaccination levels and a relaxation of the COVID-19 restrictions. Traffic markedly recovered in 2022, 2023, and 2024 with traffic levels closing at 93-96% of the 2019 levels [1].

Geo-political developments also influenced the overall pan-European traffic recovery. Thus, the ongoing hostilities contribute to the reduction of connections and services. The Russian war on Ukraine commenced in early 2022. Associated measures (i.e., airspace blocks and airspace user bans) resulted in a stop of flights to and from Russia and Belarus. While a majority of European states are not or only limitedly affected by these measures, some Eastern European states (e.g. Cyprus, Türkiye, Poland, and Bulgaria) observed a strong impact on the overall share of flights and passengers.

The ripple effects of the military exchanges between Israel and Hezbollah also have impacts on the safety of air transport over Israel and adjacent airspaces. For example the European Commission and EASA recommended not to operate within the airspaces of Lebanon and Israel under recent conflict zone information bulletins (c.f. https://www.easa.europa.eu/en/domains/air-operations/czibs). Various airspace users reduced or cancelled their services to / from Israel.

2.2 Purpose

This study has been triggered by a request from 8 EUROCONTROL (ECTL) Member States [2,3] willing to better understand the consequences of the COVID-19 pandemic and Russia's War on Ukraine to air connectivity. The request is also linked to the end of the State Aid Temporary Framework[1] [4] set up by the European Commission (EC) in support of EU Member States' economies and to a request for information by DG Competition on potential loss of *Air Connectivity* [5].

This study focusses on *Air Connectivity* observed as services operated by airspace users (air transport operators) from the airports of the requesting Member States. From that perspective, the work addresses the *network flow* and not the (passenger) volume and size of a market (i.e., passenger demand), related pricing strategies, or policy action targeting competition.

2.3 Structure of Report

This report is organised as follows:

- Introduction – overview, purpose and scope of the report;
- *Country-level Assessments* - analyses of the connectivity level of the different requesting Member States; and
- *Conclusions* - summary of the findings of this report.

[1]The Temporary Framework expired on 30. June 2022.

3 Conceptual Model and Methodology

As mentioned in the introduction, air transport has undergone a fundamental transformation since the start of the deregulation. In particular, the level of connections between different airports was reshaped within the European context. The Single-European-Sky initiative facilitated a continual growth of aviation through a wider flexibility of air service arrangements.

3.1 What are the factors impacting air transport connectivity?

The level of air transport connectivity—particularly the number and frequency of flights connecting specific airport pairs—is shaped by a complex interplay of structural, strategic, and external factors. These factors operate across different time scales and vary in importance depending on geographical location, economic profile, and the role of individual airports within the global air transport system.

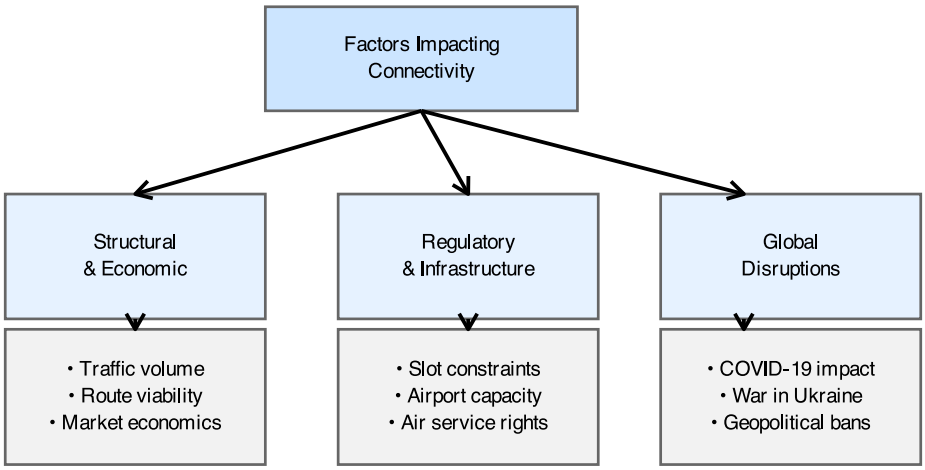


Figure 3: General factors influencing air connectivity

With Figure 3 a series of main drivers/factors can be identified:

- **Structural and economic fundamentals** One of the foundational drivers of connectivity is the ***overall traffic context***. As air traffic grows due to increasing demand for passenger and cargo services, airports tend to see a rise in the number of destinations served and in the frequency of existing services. However, growth is not uniform across all regions or airports. Hub airports and those located in economically dynamic regions typically see stronger connectivity growth than smaller or peripheral airports.
  Economic viability is another core factor. Airlines operate under strict commercial logic: they open, reduce, or close routes based on profitability, projected demand, and the competitive landscape. Connectivity is therefore sensitive to macroeconomic conditions such as GDP growth, fuel prices, and consumer spending. Airports in wealthier or rapidly developing regions typically enjoy greater connectivity, especially if they are served by airlines able to consolidate traffic through hub-and-spoke operations.
- **Airline strategies and market structures** ***Airline business models*** exert a major influence on how connectivity develops. Network carriers tend to maintain stable core connections while adapting peripheral services based on seasonal demand or strategic partnerships. In contrast, low-cost carriers (LCCs) typically adopt a more flexible, demand-driven approach, entering or exiting markets rapidly. They often open routes to secondary airports or less-connected destinations, contributing to the expansion of connectivity—but these connections may be ***highly seasonal*** or subject to quick withdrawal if underperforming.
  This dynamic has important implications: connectivity at some airports may depend heavily on a subset of air transport operators, leading to a ***variable route network*** where the removal of service by a single operator can sharply reduce accessibility.

- **Regulatory, geographic, and infrastructural context** ***Geography*** naturally influences connectivity levels. Airports located at crossroads of continents or near major population centers are more likely to attract long-haul connections or serve as transfer hubs. Landlocked or remote regions may require specific policy or commercial incentives to achieve even minimal levels of connectivity.
  The ***regulatory and institutional environment*** also plays a critical role. Bilateral air service agreements, visa policies, airport slot regulations, and state support mechanisms all shape how easily new routes can be launched or sustained.
  Airport infrastructure can be both a constraint and an enabler. Limited runway capacity, terminal saturation, or inadequate air traffic management may prevent airports from expanding services, even if demand is strong. Conversely, investments in terminal upgrades or intermodal integration can significantly enhance an airport's attractiveness.
- **Global disruptions and geopolitical influences**
  The COVID-19 ***pandemic*** represented an unprecedented shock to global connectivity. Beyond the temporary collapse of demand, the pandemic forced a reassessment of route economics and long-term viability. There exists a mix of recovery levels across Europe. While some connections have returned, other routes remain suspended or have only partially recovered.
  More recently, ***geo-political conflicts*** - such as Russia's invasion of Ukraine or hostilities in Gaza - triggered widespread airspace closures, flight bans, and network reconfigurations. The removal of Russian, Ukrainian, and Belarusian markets, and the need for longer detour routes, has reduced the viability of some international services.
  Other ***geo-political issues*** — such as trade disputes, sanctions, or security concerns — can also materially affect how airlines plan routes and which markets remain accessible.

3.2 How to measure air transport connectivity

Air connectivity can be measured at different levels of granularity ranging from passenger-oriented measures, flight movements to combined measures addressing the wider air transport market. Morphet and Bottini Morphet, H., and Bottini, C. [6] provide a traveller oriented view (c.f. Figure 4). Operationalising this perspective, connectivity will result in responses to market changes and can typically be observed as:

- change of direct service between two aerodromes
- change of frequency of service between two aerodromes
- change in number of operators (and services) offered on the connection

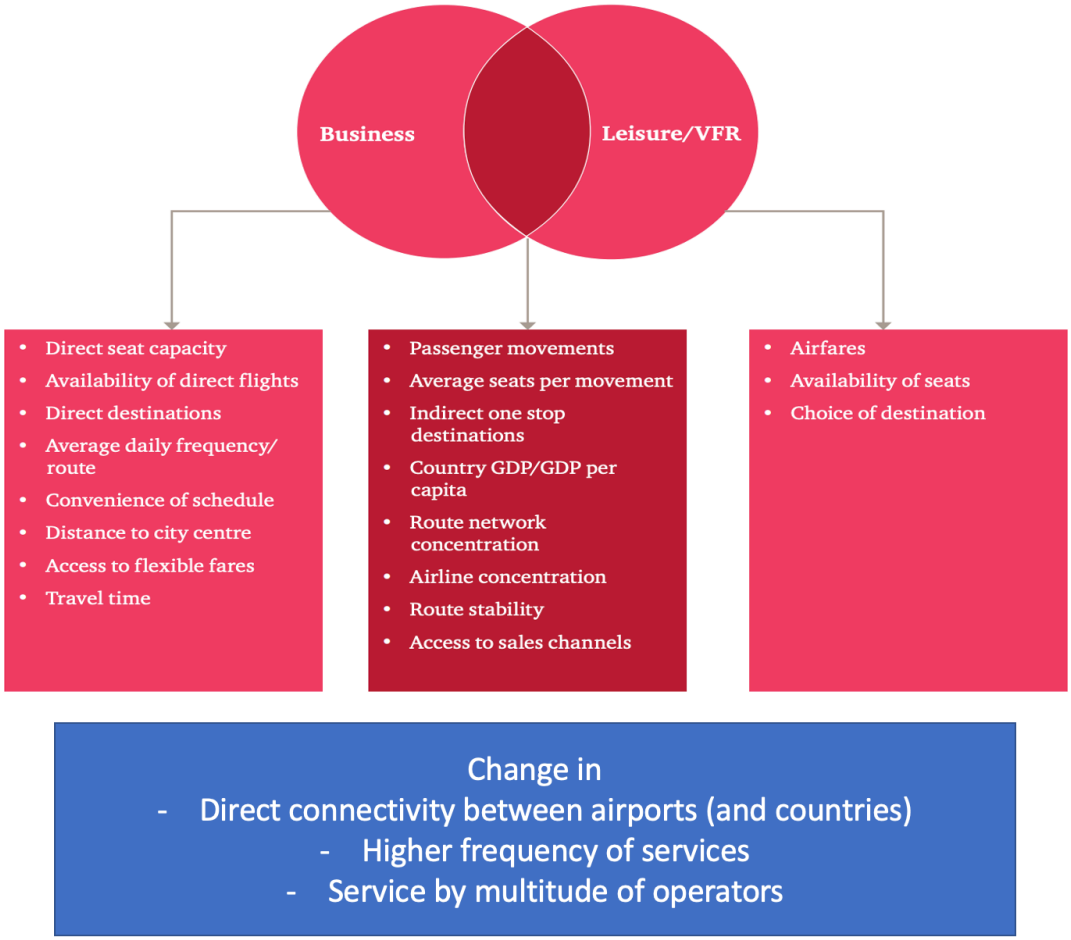


Figure 4: Factors impacting connectivity

The air transport network usually consists of aerodromes (i.e., network nodes) connected by services (i.e., flight operations). The level of connectivity can be measured at various levels (region, country, airport) addressing different perspectives and purposes.

Air connectivity reflects how well a country, and in particular its airports, is connected to other cities within the region and around the world.

Furthermore, more than one mode of transport can be considered:

- From a passenger's perspective, air connectivity represents the ability to seamlessly travel by air from origin to destination in the shortest possible time.
- Similarly, cargo shippers have a vested interest in finding the most efficient routings in order to get freight delivered quickly and efficiently from origin to destination.
- From an airport's perspective, measuring air connectivity is useful in assessing the value of individual air linkages.

The International Civil Aviation Organization (ICAO) defines air transport connectivity as a key performance indicator of a network's concentration and its ability to move passengers, mail, and cargo between origin and destination points with a minimum of transit stops, optimal user experience, and competitive pricing [7]. This emphasizes that connectivity is not solely about direct flights, but also about the smoothness of transfers and the structure of the network.

At a basic level, connectivity can be quantified by either the total number of flights or the count of unique airport-to-airport pairs operating within a given region or period [8]. These simpler metrics, while useful, are increasingly complemented by more sophisticated indices that account for flight frequency, destination importance, and transfer options.

Major stakeholders in aviation have developed composite air connectivity indices:

- The International Air Transport Association (IATA) Air Connectivity Index evaluates connectivity based on seat capacity on all direct routes, weighted by the economic size and demand potential of the destination [9]. It aims to inform governments and policy-makers about how air transport underpins economic growth and external trade exposure.
- The World Bank's Air Connectivity Index extends this perspective at the country level by examining not only capacity and route networks, but also their correlation with trade volumes, export performance, and integration into global supply chains [10].
- On the airport level, composite indices such as the Airport Connectivity Quality Index (ACQI) and Airport (Aviation) Connectivity Index (ACI) offer more nuanced insights:
  - The ACQI, developed by MIT researchers, incorporates both quantity and quality dimensions—assessing the number of nonstop and connecting flights, frequency, and destination importance via hub status or enplanement figures [11]. Its construction uses a weighted scoring model where flights to larger or better-connected airports count for more. The ACQI can sensitively detect changes in network structure, especially for smaller communities.
  - The ACI, as published by Airports Council International Europe, measures direct, indirect, and hub connectivity. It uses the SEO NetScan model, which weights flight frequency, connection ease (e.g., layover times and detours), and hub transfer capabilities [12]. ACI values not only reflect service volume but also service quality from the passenger's perspective.

These indices demonstrate a progression from simple flight count metrics to composite measures that better capture network quality, destination importance, and passenger experience.

Additional composite indices further enrich the scholarly landscape:

- The Global Airport Connectivity Index (GACI) combines topological measures (degree, closeness, eigenvector centrality) with volumetric indicators to assess airports' global influence within the air transport network [8].
- The Global Connectivity Index (GCI) developed at MIT (as an extension of ACQI), integrates transfer frequency, waiting time, and the economic potential of destinations—offering a policy-relevant tool to predict impacts on regional development [13].
- The Business Connectivity Index (BCI) from York Aviation adds an economic overlay to network measures, weighting each airport connection by the GDP or world-city status of the destination, aligning connectivity with expected business relevance [14].

In summary, the field of air connectivity measurement has evolved from simplistic metrics to multi-dimensional frameworks that reflect not just how many flights an airport or country offers, but how well these flights serve economic, operational, and user-centric objectives.

> **Note**
>
> A sound methodology for this report therefore draws on the underlying premiss of these metrics and indices—based measures.
>
> As the focus is on air transport movements, this study does not link to quality dimensions utilising weights to transform the operated services.
> The work is based on services operated from airports at the country level to present a comprehensive view of air connectivity from a local/national perspective, focussing on the main involved parties, i.e., main aerodromes and their top destinations served, and main air transport operators providing these services.

3.3 Stakeholder Consultation

This report updates an initial version of analysing air connectivity for the requesting Member States.
To address stakeholder comments, this updated version was established through a series of working sessions revolving around the discussion, definition, and reflection on a preparatory data analysis. The latter supported the discussion and development or refinements of the identified parameters across all participants.

The outcome of the discussions and joint understanding of concepts and associated thresholds are reported in the following section and reflect the chosen terms and parameter values.

3.4 Data-Analytical Approach

3.4.1 Flight Movement - Direct Connectivity - Multi-Hop Connections

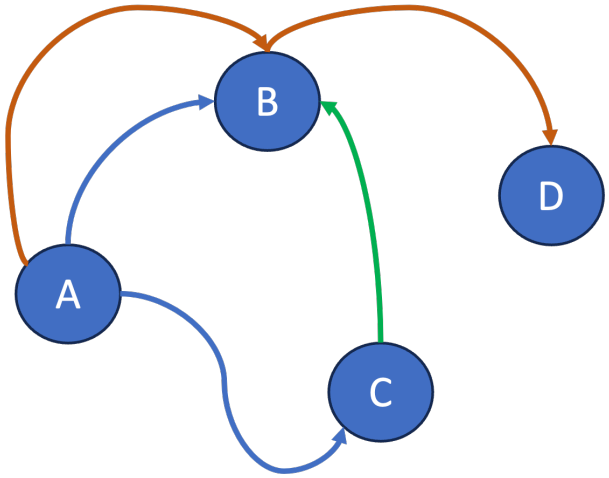


Figure 5: Connectivity - conceptual model

Figure 5 shows connections between four airports. We define two airports interconnected, if there is a ***direct*** connection from the departure aerodrome to the destination aerodrome. In the given example, $A \rightarrow B$, $A \rightarrow C$ (blue arrows), and $C \rightarrow B$ (green arrow). This report considers onward connections dependent on a set of transfer criteria. For example, the chain of services $A \rightarrow B \rightarrow D$ meets the transfer criteria and is labelled a ***2-hop*** connections. Ditto for potential onward connections from D within the specified minimum transfer times. In the latter case, we speak about ***3-hop*** connections. Applying this concept, a departing flight from A to B represents a connection, i.e., the operator provides an air traffic service between the two airports. Equally, 2-hop and 3-hop connections can be considered a chain of services/interconnected flights operated by the same or different operators offering alternative connections to destination airports.

Considering departure flights only, we are able to associate the airport pair and flight identification for the leg as the uniquely identifiable combination of a direct connection, i.e., the tuple $ADEP - ADES - FLTID$ on a given day represents an air transport service movement. Complementing, this initial leg with onward services, we can construct a complete set of direct services and onward 2-hop or 3-hop connections given by the augmented tupel.

	TRIP	ADEP	ADES	OPR	TYPE	YEAR	MONTH	IATA_SEASON	N	MON	TUE	WED	THU	FRI	SAT	SUN
	<chr>	<chr>	<chr>	<chr>	<chr>	<dbl>	<dbl>	<chr>	<int>	<int>	<int>	<int>	<int>	<int>	<int>	<int>
1	LPPT-LIPZ-TAP860	LPPT	LIPZ	TAP	A320	2024	10	WS-2024	1	1	0	0	0	0	0	0
2	LPPT-LIPE-TAP868	LPPT	LIPE	TAP	A20N	2024	8	SS-2024	4	1	2	0	0	1	0	0
3	EYVI-EHEH-RYR8CH	EYVI	EHEH	RYR	B738	2024	12	WS-2024	14	0	5	0	0	0	4	5
4	LCLK-EGBB-EXS1LU	LCLK	EGBB	EXS	A21N	2024	8	SS-2024	13	4	0	4	0	0	5	0
5	LPPT-EDDM-TAP5STG	LPPT	EDDM	TAP	A320	2024	8	SS-2024	4	0	0	0	0	2	1	1
6	LPPT-SBGR-TAM945S	LPPT	SBGR	TAM	B77W	2024	10	SS-2024	1	0	0	0	1	0	0	0
7	EYVI-LOWS-JAR32	EYVI	LOWS	JAR	C525	2024	6	SS-2024	1	0	0	0	1	0	0	0
8	LPPT-LEIB-TAP1142	LPPT	LEIB	TAP	A319	2024	10	SS-2024	3	1	0	0	0	2	0	0
9	LPPT-LBSF-LZB564	LPPT	LBSF	LZB	BCS3	2024	10	SS-2024	4	0	0	0	1	0	0	3
10	LCLK-EGKK-TOM64Y	LCLK	EGKK	TOM	B38M	2024	6	SS-2024	5	5	0	0	0	0	0	0
11	LCLK-LOWW-AXY631P	LCLK	LOWW	AXY	E190	2024	9	SS-2024	1	0	0	0	1	0	0	0
12	LPPT-EDDB-RYR37TH	LPPT	EDDB	RYR	B38M	2024	10	SS-2024	14	3	4	0	0	4	0	3
13	LPPT-GMMX-RYR6QJ	LPPT	GMMX	RYR	B738	2024	2	WS-2023	6	3	0	0	0	3	0	0
14	LCLK-LLBG-CYF108	LCLK	LLBG	CYF	A320	2024	3	SS-2024	1	0	0	0	0	0	0	1
15	LPPT-LKPR-EJU92NK	LPPT	LKPR	EJU	A20N	2024	6	SS-2024	4	0	0	0	0	4	0	0
16	LCLK-LOWW-RYR707	LCLK	LOWW	RYR	B38M	2024	8	SS-2024	3	0	0	0	0	0	0	3
17	EYVI-ESSA-NSZ4556	EYVI	ESSA	NSZ	B38M	2024	11	WS-2024	1	1	0	0	0	0	0	0
18	LCLK-LGAV-SEH4TC	LCLK	LGAV	SEH	A20N	2024	11	WS-2024	28	4	3	4	4	4	5	4
19	LCLK-EKCH-WZZ75SC	LCLK	EKCH	WZZ	A21N	2024	1	WS-2023	6	0	0	0	3	0	0	3
20	LCLK-LGAV-AEE909A	LCLK	LGAV	AEE	A21N	2024	6	SS-2024	1	1	0	0	0	0	0	0

Figure 6: Example connection overview

Figure 6 shows a sample of services provided from airports of this study to other European destinations. Services can be identified by their scheduled aerodrome pair and flight identification, the operator and other operational and seasonal information. The data is aggregated on a monthly basis, i.e., can comprise multiple weekdays and services. The figure also shows that such services are not provided on a daily level. Thus, the level of frequency also includes the day of operations with some services only provided on a subset of days of the week.

This principle **service schedule** allows to identify temporary services or the reduction in frequency/cessation of a service. Please note that this report does not depend on the actual flight identification - as this may change throughout the season or year. However, it allows to identify to what extent airspace users alter their direct connection schedules.

During the stakeholder consultation, the transfer criteria for this report were elaborated. The driving principle is the ***attractiveness*** of selecting a feasible onward connection given the associated transfer time.
For this report, onward connections are ***feasible***, if the connection time ranges

- for intra-European flights: between 15/30 minutes[2] and maximum 6 hours (300 minutes);
- for international onward flights: between 60 minutes and maximum 6 hours (300 minutes); and
- the total travel time from origin to final destination does not exceed 24 hours.

3.4.2 Same Day Return

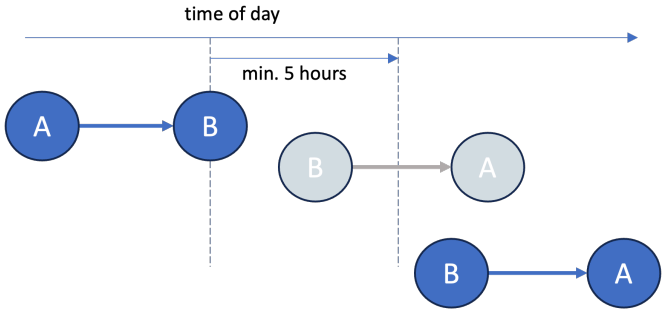


Figure 7: Same-day return options

We use the derived schedule in Figure 6 to also determine **same-day** return options. As depicted in Figure 7, we determine valid same day return options for a return flight from the outbound destination that does not depart earlier than 5-hours after the scheduled arrival of the originating flight.

3.4.3 Schedule & Service Frequencies

With the aforementioned concept of direct and multi-hop connections a challenge is to characterise the ***service quality*** or ***service frequency***, as operators may establish their schedule based on (historic) demand or adapt their services based on economic considerations throughout a season.

This report builds schedules based on established operations and characterises them on a weekly level (c.f. Figure 6).
To allow for a proper mapping of weekly schedules to IATA seasons, this report uses the US-convention of

[2]The lower bound of 15 minutes was chosen to support discussion at local level on short connection arrangements. For example, short connections were analysed (15-30 minutes) for the onward connections during the early morning. For the majority of this report, the 30 minute connection time is considered as a feasible lower bound.

weeks starting on Sundays and ending on Saturdays.
With the IATA seasons starting on Sundays, each week can be completely associated to the respective season (either summer or winter season).

During the stakeholder discussions and preliminary data analysis, it became evident that airspace user do not necessarily operate the same weekly schedule throughout the full season (i.e., during all weeks of a season). It will be subject to future research to study the underlying drivers for this behaviour. To account for this behaviour, the following ***schedule quality criteria*** were established:

- services operated more than 70% of a season are considered as **regular services**;
- services operated more than 30% but less than 70% of a season are considered as **partial services**; and
- services with a frequency of less than 30% but 6 flights or more per season are considered **infrequent**; and
- remaining services with less than 6 flights per season are considered **adhoc operations**.

This allows to account for variations in terms of service delivery (e.g. public holidays) or cancelled due to operational reasons (e.g. strike, weather) or economic considerations (e.g. low pax uptake).

The associated data is used for describing the

- **service continuity** (i.e., duration of provision of regular services) and associated schedule changes at key airports.
- assessing the **level of interconnectivity** at interim connecting airports. For these airports, we differ between ***major hubs*** (airports with an average of more than 1000 daily flights), **small hubs** (airports with an average daily flights between 700 and 1000), and **regional hubs** (airports that serve as key connecting airports for a specific origin airport).

3.4.4 Onward Connectivity - Early Morning Wave

Stakeholders showed an interest in understanding the level of onward connections from the first connecting airport.
As ***favourable*** onward connection times three transfer levels were defined:

- 15-30 minutes: ***super short***;
- 30-60 minutes: ***short***; and
- 60-90 minutes: ***moderate***.

The share of onward connections is defined as the share of onward connections with a scheduled outbound time within the given bracket vs all feasible connections (i.e., aforementioned transfer time criteria) at the interim airport.

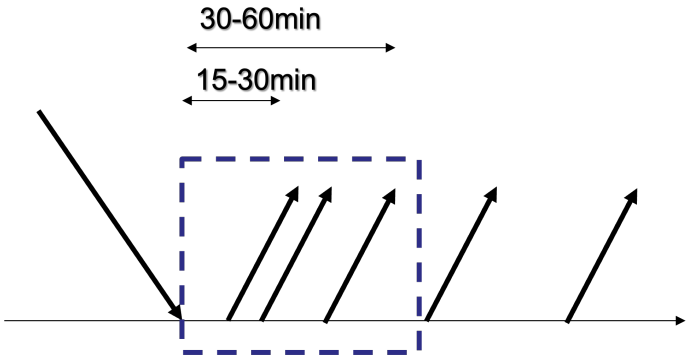


Figure 8: Early wave - sliding window

There exists no harmonised definition for "first wave" and a preparatory data analysis showed that this varies for different airports.
Based on stakeholder feedback, this report uses a ***sliding window approach*** assessing the **early morning wave** onwards connections dependent on the sum of feasible onward connections (labelled in accordance with the aforementioned favourable connection times) during the early morning hours.
This allows for varying start/end times of early morning outbound peaks at the interconnecting airports.

Note: in several instances throughout this report, the absence of early wave onward connections is presented as an empty panel.
This reflects the absence of an/multiple outbound services that would arrive before the peak morning outbounds at the connecting airport. Later day onward connections are accounted for in the aforementioned share of onward connections.

3.4.5 Interconnectivity - Reachability - Competition & Alternatives

The report shows that a key driver for airspace user services is the economic viability of schedules. To better understand the level of choice/alternatives, this report analyses the level of competition between direct connections and potential 2-hop or 3-hop connections.

It can be argued that connecting flights are only attractive for travellers, if a destination can be reached with a direct flight or the services on connecting onward flights would offer a time or price benefit.
Since this data was not available for the analysis, the focus is on the reachability of destination airports either through a direct connection or the respective 2-hop or 3-hop chain of services.

Strong ***competing markets*** offering ***alternatives*** comprise services offered via direct, 2-hop, and 3-hop connections, or equally for destinations only reachable via 2- or 3-hops with no direct connection.
These connections can be contrasted against ***single option*** connections, i.e., connections for which no other mechanism - either a direct, 2-hop, or 3-hop connection - exists.

While the general understanding of the level of reachability is useful, it is necesarry to understand the gain in reachability per hop. This report analyses the level of feasible connections per season for each hop on a seasonal level.
This analysis is complemented by the identification of the incremental gain of services per additional onward connection.

3.5 Temporal Scope

This report focusses on connectivity in form of air services provided from the airports of the requesting Member States between 2019 and March 2025. The latter cut off was chosen to include data for the most recent IATA winter season of 2024.

Throughout this report reference is made to annual aggregations of connectivity counts or the respective counts throughout some of the IATA seasons. The breakout into seasons was made to allow for an analysis of changes between the summer and winter schedules.

Future updates, i.e., the continual analysis of changes will be performed as part of summary factsheets.

4 Country-level Assessment

4.1 Bulgaria

4.1.1 Traffic Characterisation

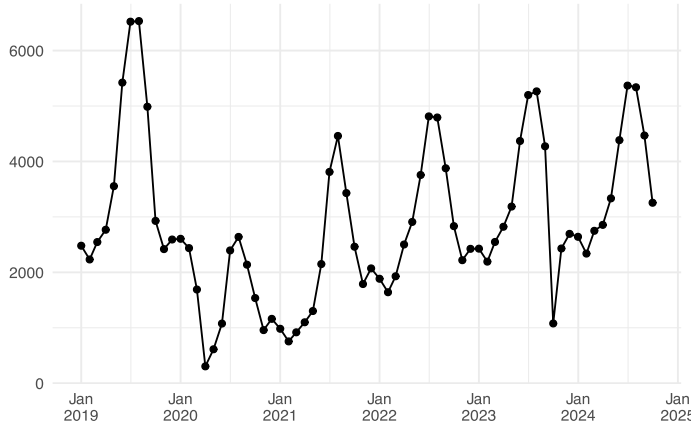


Figure 9: Monthly movements 2019 - 2024, Bulgaria

On a national level, Bulgaria shows a continual growth of the monthly traffic levels post-COVID with traffic spiking during the summer months. However, Bulgaria has not yet reached the pre-pandemic levels of 2019. In particular the overall traffic peak for the summer season, i.e., summer 2019 is not yet reached, while the winter season traffic in winter/spring 2023/2024 and for the winter/spring 2023/2024 ranges at the level of 2019 (c.f. Figure 9).

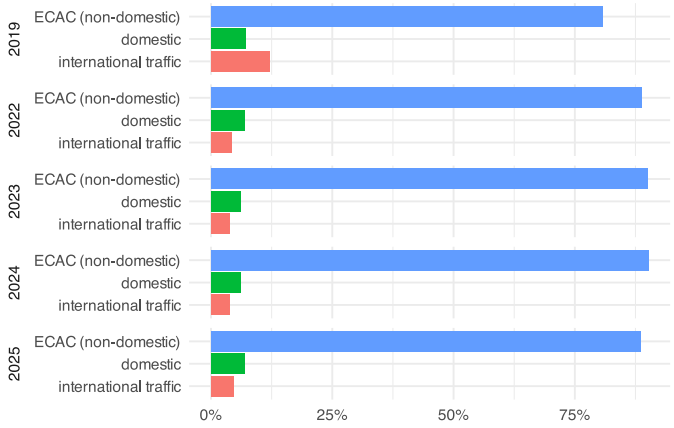


Figure 10: Bulgaria- annual traffic share

Comparing the overall distribution of destinations on a national level for Bulgaria (c.f. Figure 10) highlights that the predominant connectivity is with other ECAC member states / EUROCONTROL area. Based on the annual traffic, the share of connections to other EUROCONTROL member states increased from about 75% to 80% in the post-pandemic years. Domestic travel ranged in 2024 around 6%. International traffic destinations remained fairly constant across all post-pandemic years (~12%).

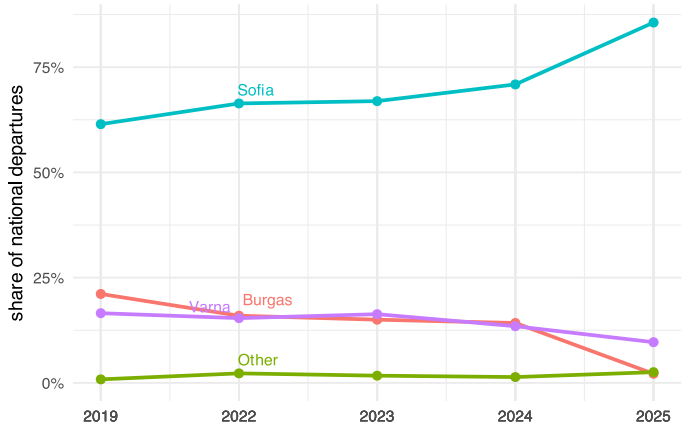


Figure 11: Bulgaria- annual traffic share at top airports

In Bulgaria, we see in 2019 the following annual traffic in terms of departures: LBBG (21.1%), LBSF (61.5%), LBWN (16.6%), and Other (0.8%). Figure 11 depicts the overall connections from the top airports. The trend follows broadly the overall increase in pan-European traffic, with Sofia (LBSF) gaining a higher share of connections as the predominant airport. The other two airports, Varna (LBWN) and Burgas (LBBG), contribute a similar share of under 20% trading their pre-pandemic share off vis-a-vis the increase observed at Sofia (LBSF).

4.1.2 Traffic evolution with IATA Seasons

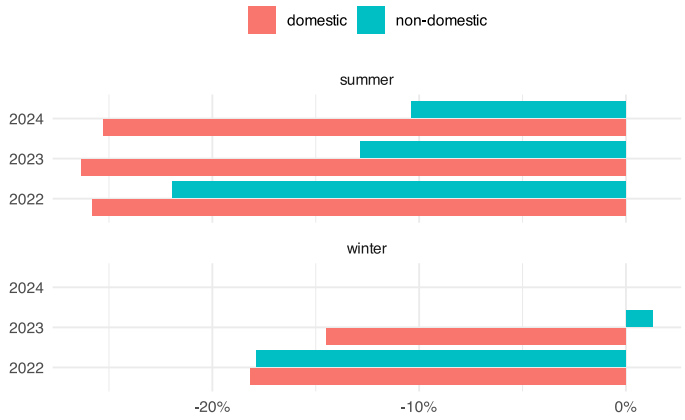


Figure 12: Bulgaria - seasonal variation vs pre-pandemic

Figure 12 shows the seasonal change of the traffic for Bulgaria. Domestic connections reduced post-pandemic by about 25% during the summer seasons 2023/2023/2024. This suggests a reduction of the domestic market and possible replacement by other means of transport. With the increase in overall traffic, we observe a continual reduction of winter season offset. The winter season 2024 showed a small increase of non-domestic traffic when compared to 2019.

4.1.3 Connectivity Change on City-Pair Level

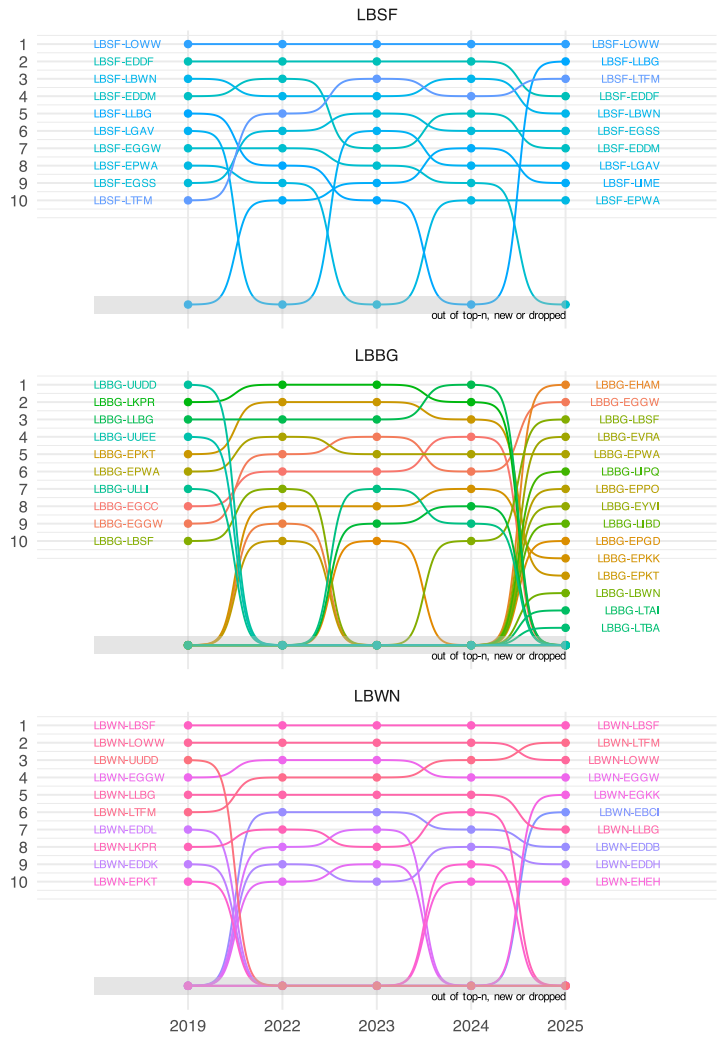


Figure 13: Bulgaria - top annual connections

This study analyses connectivity of the major national airports, i.e., Sofia (LBSF), Burgas (LBBG), and Varna (LBWN). The following identifies the top connections for the main airports and then assesses the daily average connectivity per IATA season for examples of the top 10 city connections. Figure 13 shows the top-10 airport connections for the major aerodromes in Bulgaria. There is a change over time for the airports in terms of the top-10 connections. For example, Vienna (LOWW) and Frankfurt (EDDF) remain the main connections in Sofia. Burgas (LBBG) observes several connections being dropped related to the invasion of Russia in Ukraine. Varna (LBWN) sees a connection dropped to Russia. This is related to the international (and European) ban on air transport operations following the start of the invasion.

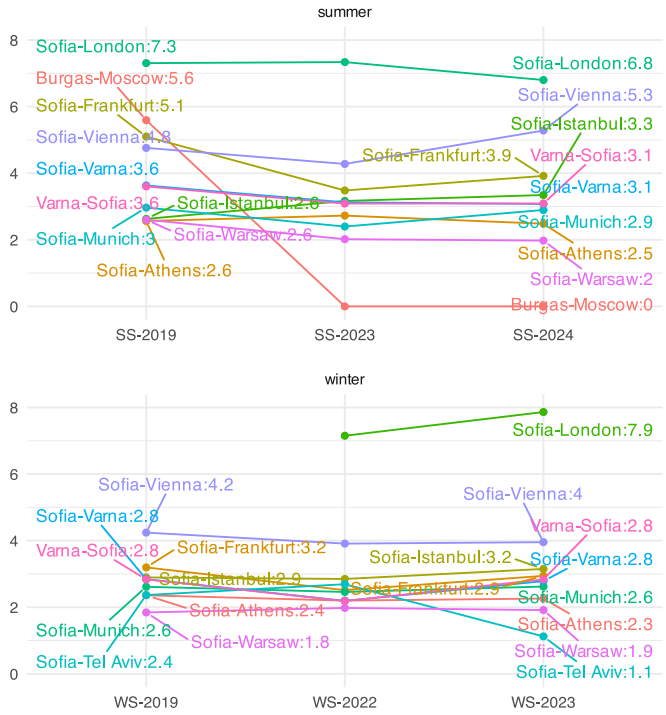


Figure 14: Bulgaria - average daily connections

Figure 14 depicts the daily average outbound connections per top 10 city pair connections for Bulgaria. It must be noted that this analysis focusses on "cities", i.e. connectivity to London comprises flights to the different London airports. Accordingly, Sofia (LBSF) offers about 8 (7.8) flights to London during the summer season of 2019. For Burgas, there is a drop of connectivity to Moscow with the start of the Russian invasion. The winter season shows a strong increase of the London market with the average daily connections doubling when comparing winter 2019 to 2023/2024 levels.

4.1.4 Airlines and City Pairs

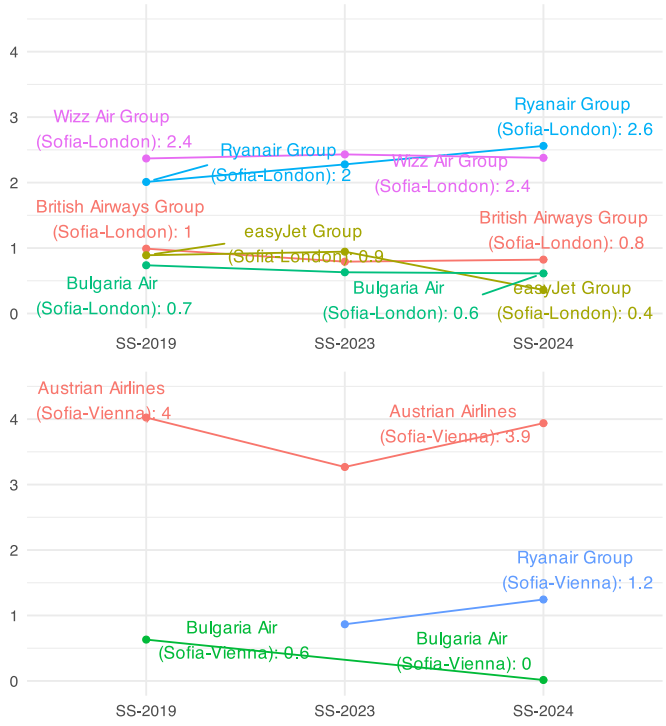


Figure 15: Bulgaria - average daily connections per operator

Extending the analysis to the main air transport operators, Figure 15 shows example services provided for the major connections in Bulgaria. The structural nature of the schedule is clearly visible. On an air transport operator basis, connectivity relates to the number of services operated on a daily or weekly basis. In that respect there is - broad - consistency across the different seasons, i.e. the depicted operator did not change their schedule significantly in terms of average frequency. The launch of operations of Ryanair between Sofia and Vienna can be observed.

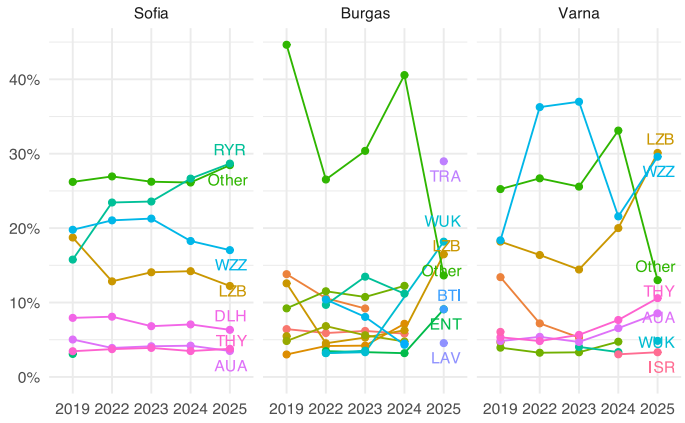


Figure 16: Bulgaria - average daily connections per operator

Figure 16 shows the predominant operators at the main airports in Bulgaria. The share of operator comprises a significant number of various operators across all Bulgarian airports. This suggests smaller operations from a diverse group of operators. The predominant operators include WizzAir (WZZ), Lufthansa (DLH), Ryanair (RYR), etc. While the share of operators varies operations at Varna appear to have a stronger revision of the offered schedules/ flight connections.

4.1.5 Same Day Return

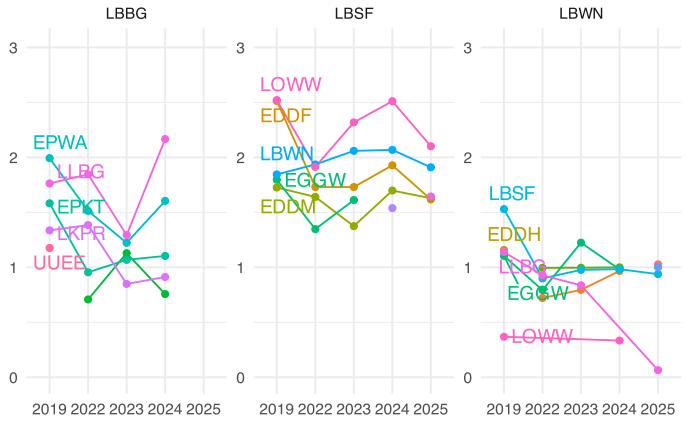


Figure 17: Bulgaria - top 5 - same day returns

The same-day-return assesses options a passenger has to stay at a destination for a minimum of 5 hours. This accounts for flights departing 5 hours after the arrival at the out-station. The number of options to return on the same day entails the daily (average) ratio of options selecting between different return flights allowing a longer than 5 hour visit is presented in Figure 17. We observe a variety of options to spend more than 5 hours at the outstation for Sofia (LBSF) and Burgas (LBBG). For example, Vienna (LOWW), Frankfurt (EDDF), and domestically Varna (LBWN) provide - on average - for more than 2 combinations a day for a same day return. Burgas (LBBG) provides for this option to Ben Gurion (LLBG) and occasionally for Warsaw (EPWA). Varna (LBWN) offers a single option for a same day return to Sofia (LBSF) and London Luton (EGGW). This suggests that the operated schedule in 2024 did not yet include such options.

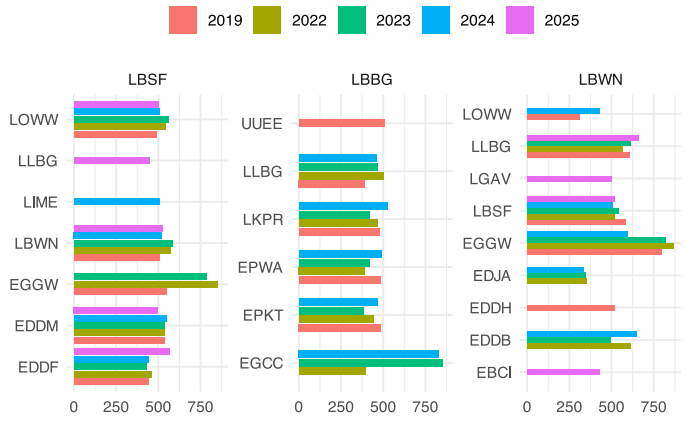


Figure 18: Bulgaria - top 5 - same day returns

Figure 18 provides the annual variation for the average (median) duration of a one-day visit and return of more than 5 hours (300 minutes). While on average the same day return duration remains fairly stable for the majority of connections, we observe the drop of connections from Sofia (LBSF) to London Luton (EGGW). New services allowing for a same day return were introduced for Bergamo (LIME). It is noteworthy, that a potentially additional service or higher frequency for the connection from Burgas (LBBG) to Manchester (EGCC) allows for stay of more than 11 hours since 2023. Connections at Varna (LBWN) show a higher variability suggesting a regular change of services/schedules.

4.1.6 Service Continuity

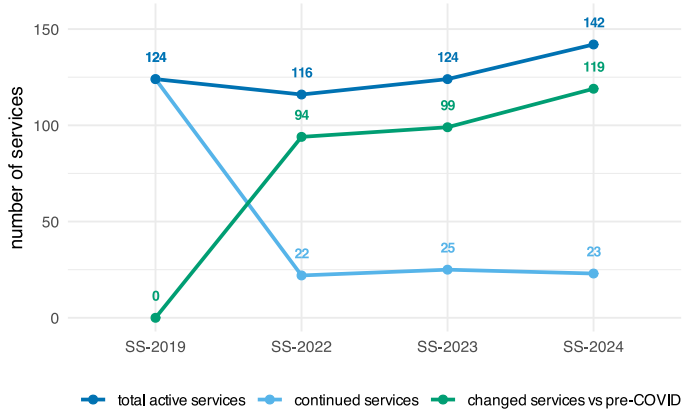


Figure 19: Bulgaria - service continuity

Comparing the seasonal services pre-COVID with the services operated over the last summer seasons, Figure 19 depicts the overall evolution. Services operating from LBSF fully recovered with the summer season 2023 to pre-pandemic levels and further increased during summer season 2024. The overall regular schedules operating from LBSF during the summer seasons changed substantially with just under a fifth of pre-pandemic services still in operation. It must be noted that this schedule change comprises - inter alia - changes by the operators servicing LBSF pre- and post-pandemic, but also new services (new destinations).

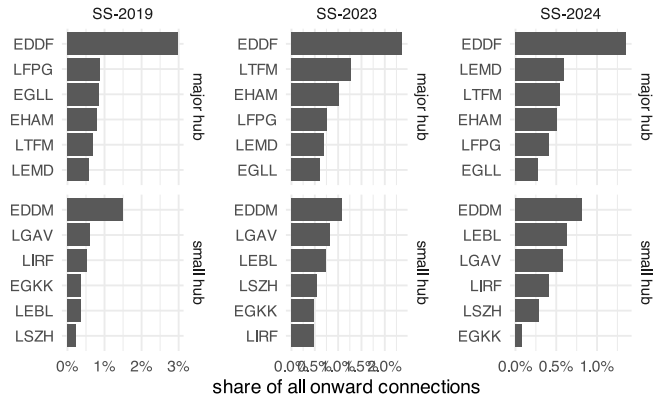


Figure 20: Bulgaria - interconnectivity nodes

Figure 20 depicts the development of the interconnectivity level for flights departing from Sofia/LBSF focussing on the summer seasons. Overall, the level of connections through major and small hubs remained unchanged (which some smaller ranking change for the small hubs). This suggests that the overall schedule and services by the main operators are still recovering, however not yet at pre-pandemic levels. This is also witnessed by the rank change of the interconnecting airports. Frankfurt/EDDF represents the main major connecting hub. For the small hubs, Munich/EDDM, Athens/LGAV, and post-COVID, Barcelona/LEBL account for similar shares than other major hubs.

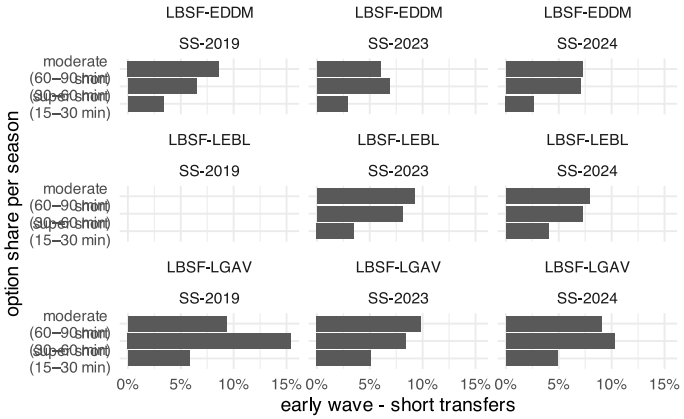


Figure 21: Bulgaria - interconnectivity level from top airport

A particular interest is the level of onward connections during the *first wave* at the interim airport. Figure 21 highlights the connection options during the summer seasons for the three major small hubs. We observe changes in the onward connections at Munich/EDDM and Athens/LGAV during the first wave. A schedule change introduced onward connectivity for Barcelona/LEBL during the first wave which was not available pre-COVID (e.g. a new direct connection from LBSF). This level on onward connections with a transfer time of 30-60 minutes reduced at LGAV by about 5% in the early wave. The changes suggest a lower number of outbound flights or a shift in the schedule for the onward connections.

4.1.7 Bulgaria - Interconnectivity

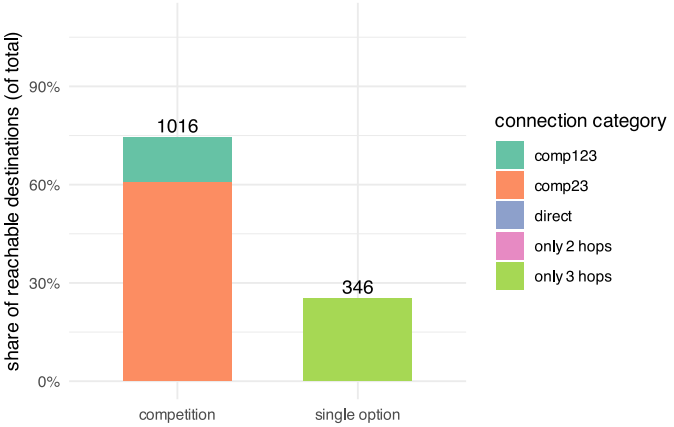


Figure 22: Bulgaria - onward competition options

Figure 22 shows the level of possible competition between onward connections. For the case of Sofia/LBSF, we observe a high level of competition and options for onward connections and operators servicing from LBSF. There exists a share of 13% of connections that can be reached with direct flights, but also 2 or 3 hops (comp123) complemented by 60% of services that allow to choose between 2 or 3 interconnecting flights. About 25% of destinations are only reachable via 3 connecting flights for which passengers have no option to choose.

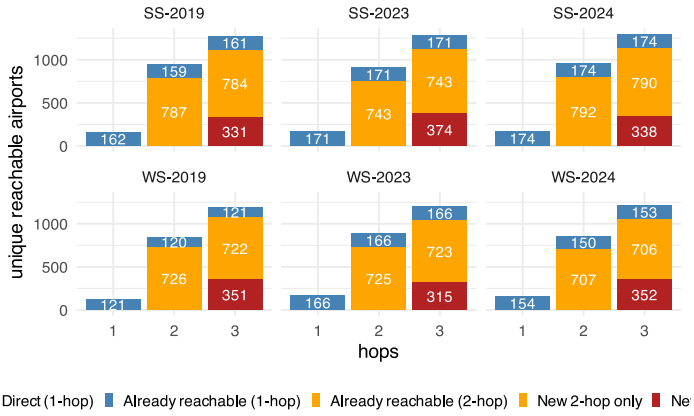


Figure 23: Bulgaria - onward competition options

Figure 23 shows the level of competition regarding direct and multi-hop connections. Overall the level of competition between multi-hop destinations increased post-COVID across all summer seasons suggesting more favourable onward schedules. The winter schedules show a small decrease. With Figure 23 we observe an increase of direct connections/services also accessible via 2 or 3 hops. The 2nd hop adds more than 5 times to the number of direct connections showing a high level of interconnectivity with strategic connecting airports (c.f. Figure 20). Exclusive 3rd hop destinations range about 35-40% across all seasons.

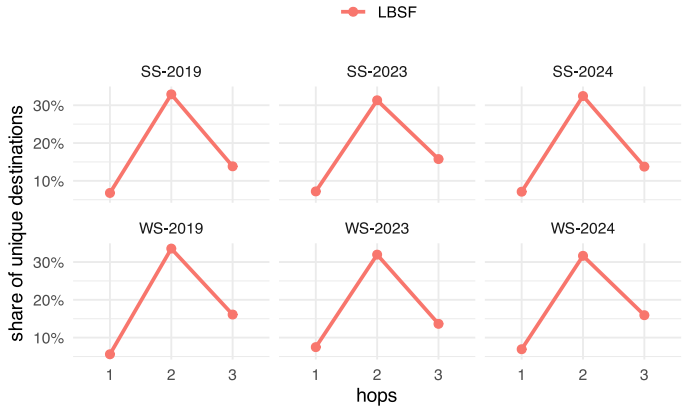


Figure 24: Bulgaria - incremental gain per hop

Focussing on the incremental gain in reachable destinations on the basis of regular schedules, we observe a slightly higher level of gain for 2nd hop connection pre-COVID during the summer and winter seasons with Figure 24. The gain for unique destination reachable via the 3rd hop ranges about 15%. during the summer seasons. The sharp decline of the incremental gain for the 3rd hop signals well connected interim airports for the 2nd hop as connecting nodes (c.f. Figure 20).

4.1.8 Bulgaria - summary

This section addresses the observed changes in connectivity for Bulgaria. The study covers the changes over time between 2019 and 2025. Overall traffic levels in Bulgaria broadly follow the pan-European post-pandemic recovery trend. While the summer peak traffic levels in 2024 still ranged below the pre-pandemic peak level, the off-season traffic reached already in 2022 pre-pandemic levels and continuously increased in 2023 and 2024.

Sofia (LBSF) as the major hub accounts for about 2/3 of all departures and strong connections to other European (and international) destinations. Accordingly, the geo-political impacts of the Russian war on Ukraine and the conflict in Gaza show a stronger impact on Burgas (LBBG) and Varna(LBWN). For both airports there is a change of the top-10 destinations due to the traffic bans for services to a Russia, Belarus, or Ukraine. The latter two airports also observed changes in the offered destinations. For example connections to Germany's Düsseldorf (EDDL) and Cologne (EDDK) from Varna (LBWN) were retired and no longer range under the top-10. Burgas (LBBG) observed a change in terms of frequency rotating several of the top-10 contenders and compensating for the dropped connections due to Russia, Belarus, and Ukraine.

The specifics of the operating environment can be summarised as

- operating airlines
  - A smaller domestic market exists that includes services by Bulgaria Air (LZB) and a series of charter service providers.

- There is a strong low-cost market with Ryanair (RYR) accounting for about 21% of all services in 2024, followed by Wizz with 16%. Air Bulgaria services about 14% of the flights departing from Bulgaria. Other major European airlines account for less than 5% of all services signalling a wide-spread network across Europe.

- market environment
  - The major domestic connections are operated between Sofia (LBSF) and Varna (LBWN) with about 41% of all domestic flights in 2024. Sofia-Burgas (LBBG) accounts for less than 6%. Such flights may serve to accommodate domestic demand in replacement for other means of transport.
  - intra-European traffic accounts for the majority of traffic ranging consistently above 80% over the past years.
  - international traffic (non-ECAC) range around 7-8%.
- service type variation
  - the average daily outbound analysis showed that the recovery of services and their frequencies were stronger during the winter seasons. Traffic levels in 2024 appear to show that a consistent schedule is operated across the year for the top-10 destinations predominantly serviced from Sofia.
  - the high frequency of flights between Burgas and Moscow pre-COVID was dropped as a consequence of the air traffic restrictions in response to the Russian invasion of Ukraine.
- growth and connectivity
  - on a network-level, Bulgaria showed an overall recovery from the pandemic related reduction in destinations and service frequencies. In that respect, the air transport markets are stabilising.
  - as mentioned throughout this chapter, the main airport is Sofia (LBSF) with Burgas (LBBG) and Varna (LBWN) playing a role as secondary hubs.
  - looking on the level of same day return options (services allowing for more than 5 hours at the destination), Vienna and London Luton are serviced from Sofia and Varna signalling a strong link. The British market shows connection options ranging even at above 10-11 hours.
- service stability
  - on average, LBSF services an increasing number of schedules post-COVID with a changing overall schedule.
  - LBSF is well connected to a number of major and smaller hubs benefiting from the respective onward connection options.
- competition
  - based on the overall connection levels, there exists a high level of options for travellers and competition direct and interconnecting flights and for onward destinations with 2 or 3 hops; and
  - for the identification of new markets, the number of exclusive 3-hop destination could offer an entry point.

4.2 Cyprus

4.2.1 National Traffic Overview

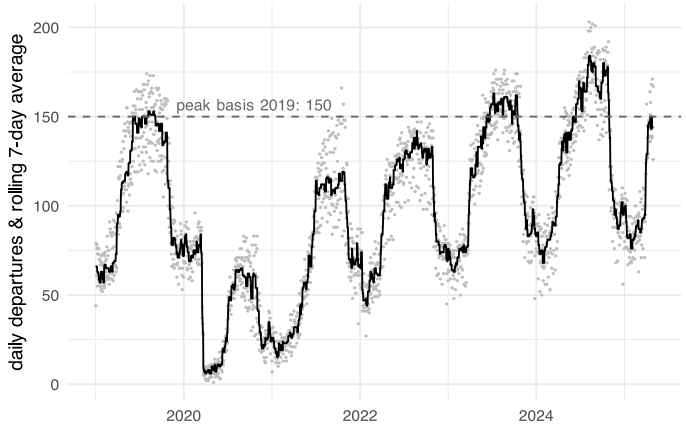


Figure 25: Daily departures - , Cyprus

On a national level, Cyprus shows a continual growth of the daily traffic levels post-COVID with traffic spiking during the summer months. As of summer 2023, Cyprus reached and exceeded the pre-pandemic levels of 2019. The winter/spring traffic levels in 2023 and 2024 are comparable to the pre-pandemic years. The monthly summer traffic in 2023 and 2024 ranged above the 2019 peak levels. (c.f. Figure 25).

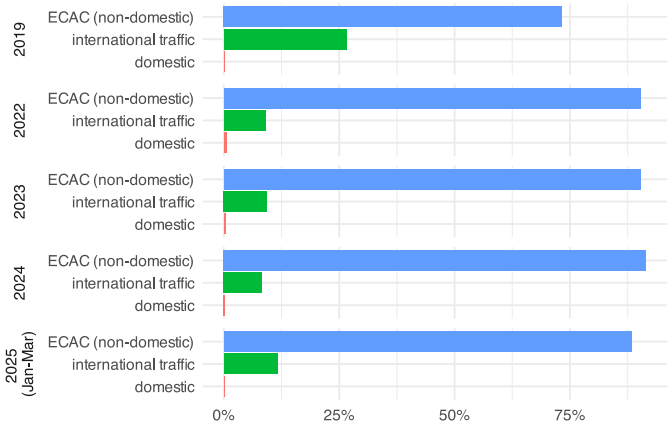


Figure 26: Cyprus - annual traffic share

The overall distribution of destinations on a national level for Cyprus is shown in Figure 26. Given the overall dimension of Cyprus, and with Larnaca (LCLK) being the predominant airport and a lower level of traffic operating from Paphos (LCPH), only a negligible share of flights operate locally. Traffic to other EUROCONTROL member states ranges above 80% for the post-pandemic years, increased from the pre-pandemic level. However, traffic to other international destinations decreased post pandemic and ranges now at or below 10% of the overall traffic.

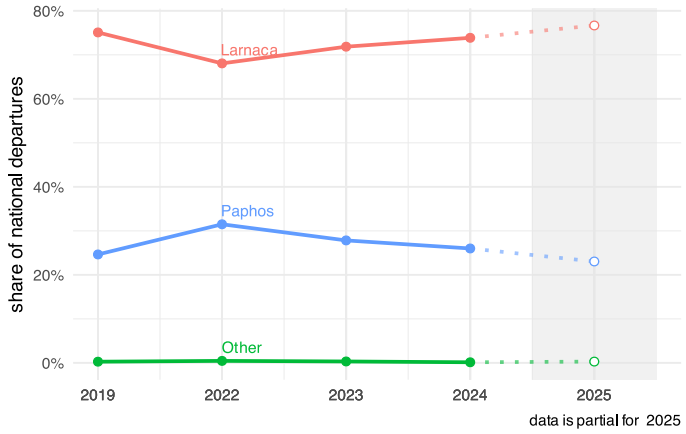


Figure 27: Cyprus- annual traffic share at top airports

In Cyprus, we see in 2019 the following annual traffic in terms of departures: LCLK (75.1%), LCPH (24.6%), and Other (0.3%). Figure 27 depicts the overall connections from the top airports. Larnaca (LCLK) is the dominant national airport and accounts for about 2/3 of the national air traffic, while Paphos (LCPH) services the other third. Flights from the other military airbase account for only a marginal share of the traffic.

4.2.2 Traffic evolution with IATA Seasons

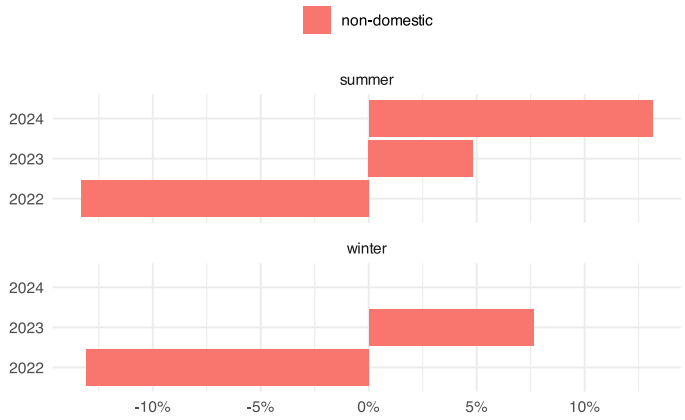


Figure 28: Cyprus - seasonal variation vs pre-pandemic

Figure 28 shows the seasonal change of the traffic for Cyprus vs 2019. In the case of Cyprus we focus on international traffic only. It shows an increasing variability with the respective seasons over the observed traffic in the corresponding pre-pandemic seasons. This suggests a continual seasonal growth with a focus on the summer season, i.e. increasing trend in summer 2023 and 2024. A similar pattern is observed with the IATA winter season traffic in 2024.

4.2.3 Connectivity Change on City-Pair Level

This study analyses connectivity of the major national airports, i.e., Larnaca (LCLK) and Paphos (LCPH). The following identifies the top connections for the main airports and then assesses the daily average connectivity for examples of the top 10 city connections.

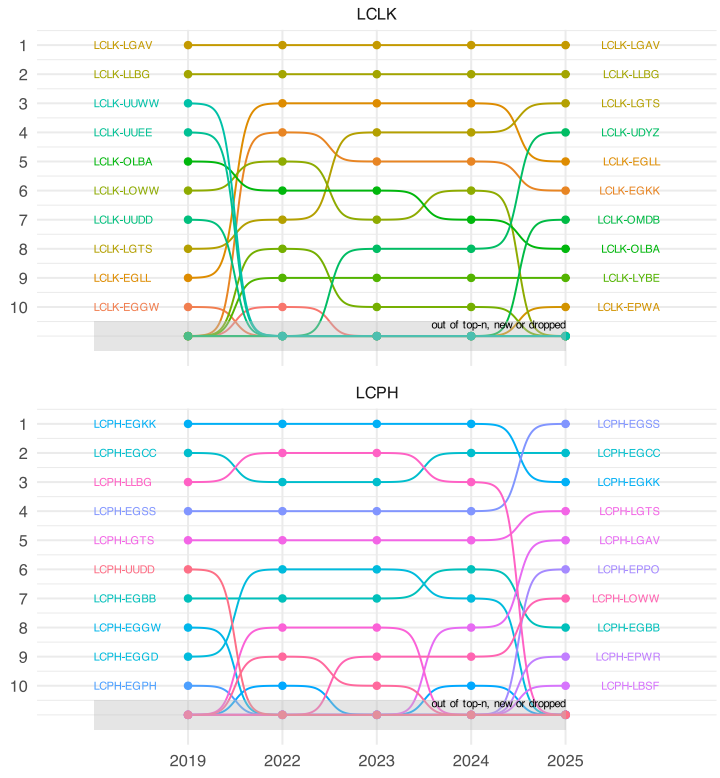


Figure 29: Cyprus - top annual connections

Figure 29 shows the top-10 airport connections for the major aerodromes in Cyprus. Note that data shown for 2025 covers the first quarter, i.e., January through March 2025 only. Operations at Larnaka (LCLK) observe a change due to the Russian war on Ukraine. In 2022, a series of connection were subject to the restrictions as an international response to the invasion. We also observe the launch of services. For example, new entrants for the top-10 mark the situation at both airports substituting for the dropped connections to other destinations. Considering the changes to the top-10 connections, the on-going hostilities in Gaza impact operations from Paphos (LPCH) at which the number/ frequencies of services declined and is distorted. At Larnaca (LCLK), the services to Vienna (LOWW) fell out of the top-10 for the first quarter in 2025.

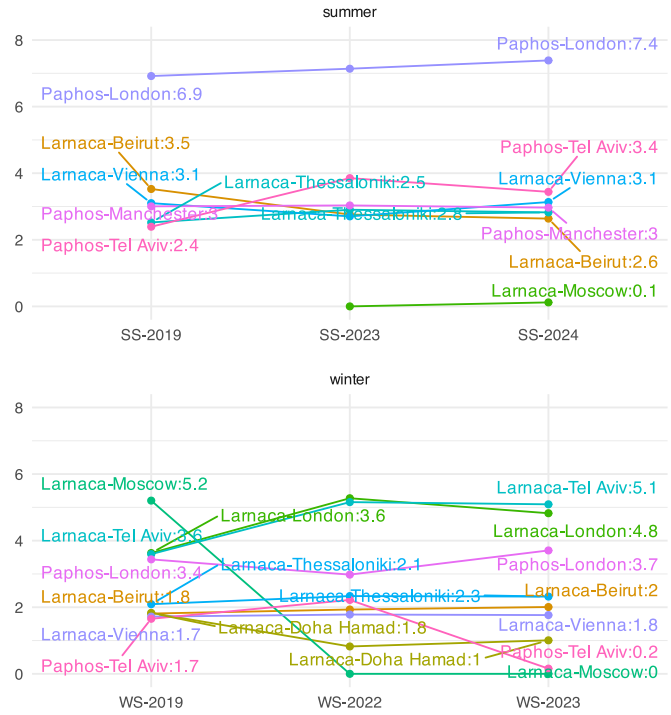


Figure 30: Cyprus - average daily connections

Figure 30 depicts the daily average outbound connections per top 10 city pair connections for Cyprus. A fairly constant picture forms for the connections at Paphos, as operators appear to provide the same number of services within the group of top 10 connections during the summer months. The winter season shows a higher level of variability as multiple connections observe an increase in terms of average daily connections.

4.2.4 Airlines and City Pairs

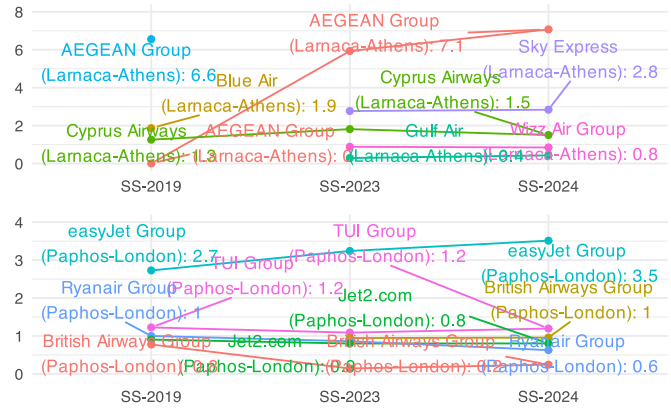


Figure 31: Cyprus - average daily connections per operator

Figure 31 shows example connections for Larnaca-Athens and Paphos-London. The Larnaca-Athens service observed a change in terms of the operator mix during the post-pandemic peak summer seasons. While Cyprus Airways continued to operate the same schedule frequency prior and post the pandemic, Sky Express and Wizz started connecting Larnaca to the wider London multi-airport system. Air Paphos-London shows a strong share of low-cost carrier services across all seasons.

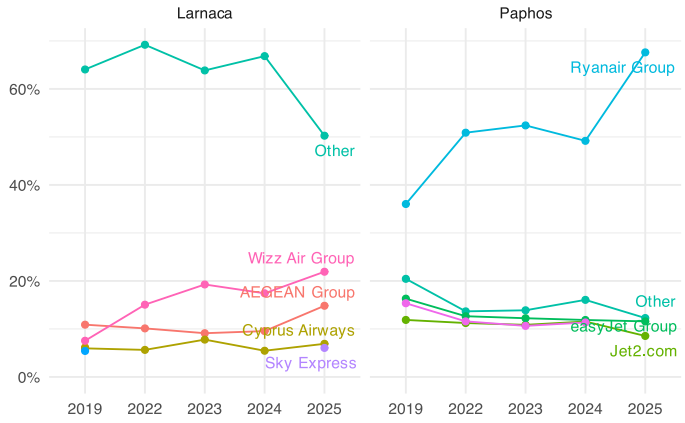


Figure 32: Cyprus - average daily connections per operator

Figure 32 shows the predominant operators at the main airports in Cyprus. Note that the data shown for 2025 only cover the period January through March. Larnaca observed a high share of a variety of operators (i.e., labelled as *Other*) accounting for about 2/3 of the services. This suggests a high level of dedicated point-to-point or seasonal connections.
Paphos sees a more regular service footprint. Major European low-cost carriers (e.g. Ryanair, EasyJet, and Jet2) account for a substantial share of the offered services at Paphos (LCPH). In particular, Ryanair is the predominant carrier with about three times the share of the other providers.

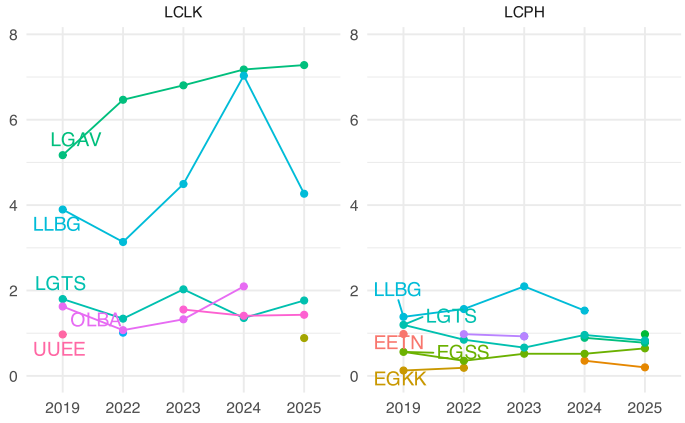


Figure 33: Cyprus - top 5 - same day returns

Please note that the data shown for 2025 only cover the period January through March. Based on the options a passenger has to return on the same day, Figure 33 shows average of flight combinations that would allow for a visit of 5 hours or longer. Larnaca (LCLK) shows a high frequency of flights operating to Athens (LGAV) and Tel Aviv (LLBG), and a moderate choice for Thessaloniki (LGTS) and Beirut (OLBA). Paphos offered regular connections throughout the post-pandemic period to Ben Gurion/Tel Aviv (LLBG). The ongoing hostilities in Gaza and associated impact on air traffic may impact the results for the recent months of this study.

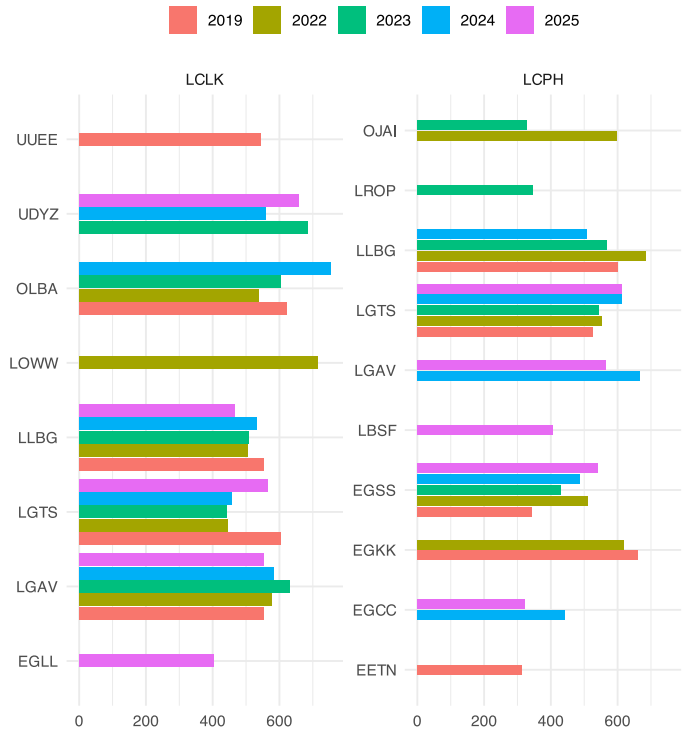


Figure 34: Cyprus - top 5 - same day returns

Figure 34 provides the annual variation for the average (median) duration of a one-day visit and return of more than 5 hours (300 minutes). Note that the data shown for 2025 only cover the period January through March. For Larnaca (LCLK), the aforementioned high frequency destinations Athens (LGAV), Tel Aviv (LLBG), and Thessaloniki (LGTS) show a strong stability over the post-pandemic period. Noteworthy is the recent emergence of a service offering a same day return to Heathrow (EGLL). Paphos (LCPH) shows a more varied pattern in terms of the level of connections, frequency, and availability over the past years. Same-day return were available for connections to Tel Aviv (LLBG), Thessaloniki (LGTS) and London Standsted (EGSS).

4.2.5 Service Continuity

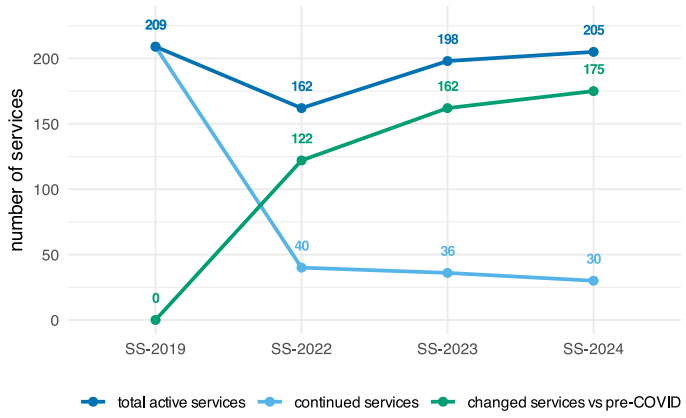


Figure 35: Cyprus - service continuity

Comparing the seasonal services pre-COVID with the services operated over the last summer seasons, Figure 35 depicts the overall evolution. On average, the level of services operating from LCLK recovered to the pre-pandemic level. We observe a substantial change of the schedules operated in the summer seasons. It must be noted that this schedule change comprises - inter alia - changes by the operators servicing LCLK pre- and post-pandemic, but also new services (new destinations)

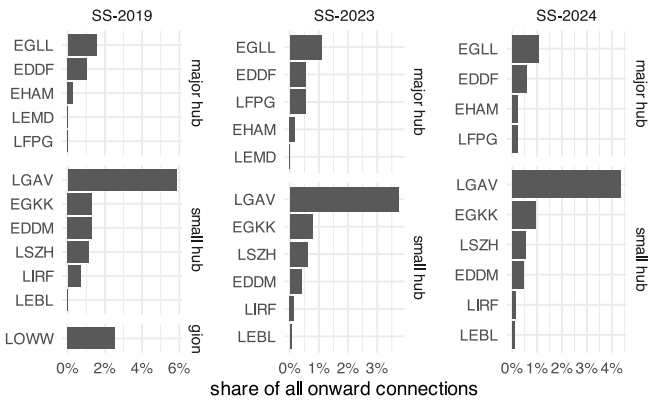


Figure 36: Cyprus - interconnectivity nodes

Figure 36 depicts the development of the interconnectivity level for flights departing from Larnaca/LCLK focussing on the summer seasons. Overall, the post-pandemic pattern shows changes in terms of the connectivity to major European hubs. There is a stronger concentration on these hubs pre-COVID. Pre-COVID, Vienna/LOWW enables a share of more than 2% of onward connections. With the shift in pattern, the share of onward connections through Vienna dropped below the cut-off for Figure 36.

It is noteworthy that Athens/LGAV plays a major role in terms of onwards connections and represents a connecting hub for Cyprus. Connections via Athens account also for the highest share of onward connections observed in the different seasons.

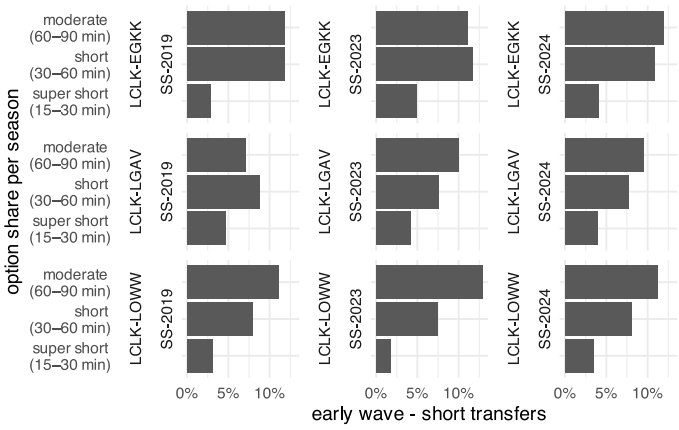


Figure 37: Cyprus - interconnectivity level from top airport

A particular interest is the level of onward connections during the *first wave* at the interim airport. Figure 37 focusses on onward connections for Athens/LGAV, Vienna/LOWW, and London-Gatwick/EGKK and highlights the connection options during the summer seasons. We can observe a shift for Athens/LGAV, with fewer onward connections in the early morning resulting in longer transfer times. This suggests a lower number of outbound flights or a shift in the schedule for the onward connections. A small modulation took place at EGKK showing a stable onward schedule. The share of onward connections during the early morning wave with a transfer time of 30-60 minutes remained constant at Vienna/LOWW.

4.2.6 Cyprus - Interconnectivity

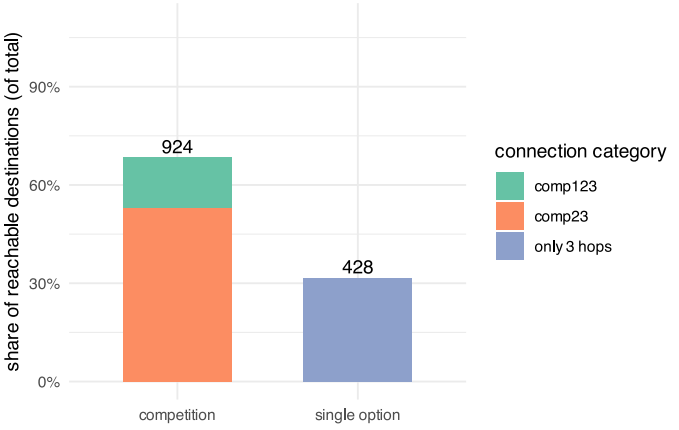


Figure 38: Cyprus - onward competition options

Figure 38 shows the level of possible competition between onward connections. For the case of Larnaca/LCLK we observe a clear distinction of onward connections and operators servicing from LCLK. This shows a highly distinct point-to-point behaviour for the first leg. Ultimately, passengers have no option to choose a possible connecting flight to reach a separate destination.

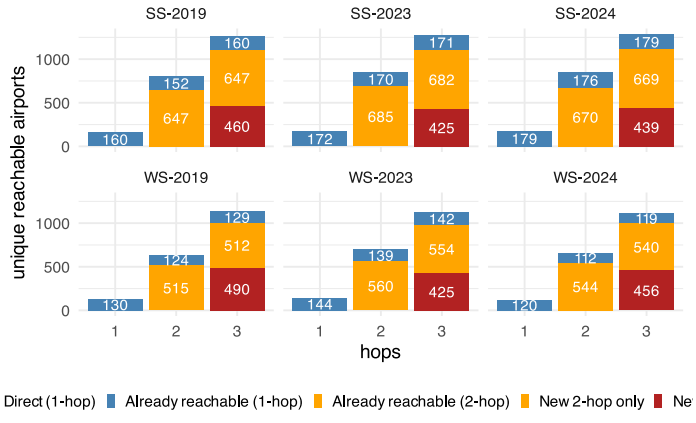


Figure 39: Cyprus - onward competition options

Overall the level of competition between multi-hop destinations remained fairly constant. Figure 39 shows the level of competition regarding direct and multi-hop connections. In terms of direct connections, 2- or 3-hop connections range at a similar level offering options to passengers.
The number of additional destinations increases significantly with an interim stop ranging about 4 times higher than the direct destinations across all seasons. This numbers grows significantly with the 3rd hop.

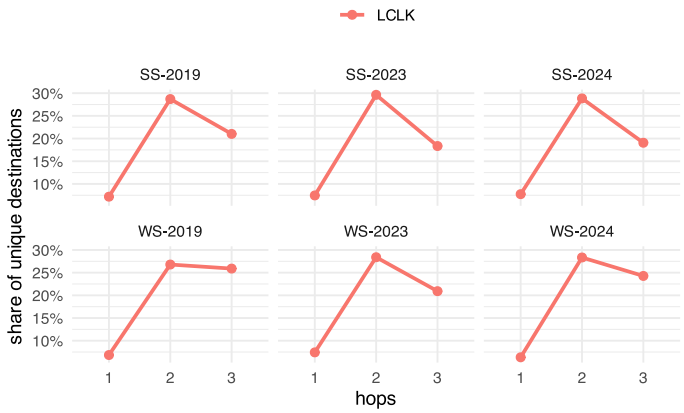


Figure 40: Cyprus - incremental gain per hop

Focussing on the incremental gain in reachable destinations on the basis of regular schedules, we observe a slightly higher level of gain for 2nd hop connections during the summer seasons with Figure 40. While with Figure 39 a higher number of destinations can be reached, the service quality in terms of frequencies for unique destinations shows a smaller incremental increase. There is growth potential to establish direct services for 2nd hop destinations.

4.2.7 Cyprus - summary

This section addresses the observed changes in connectivity for Cyprus. The study covers the changes over time between 2019 and 2025. Overall traffic levels in Cyprus broadly follow the pan-European post-pandemic recovery trend. As of 2023, traffic levels reached and exceeded the pre-pandemic traffic. Geo-political impacts of the Russian war on Ukraine and the conflict in Gaza are covered and highlighted throughout this chapter. Cyprus observed associated connections being dropped to Russia and Ukraine. The impact of the Gaza conflict is relatively mild at the time of writing.

Larnaca (LCLK) as the major hub services about three times the number of departures than Paphos (LCPH). About 85% of all connections are to European destinations. Other international destinations account for about 10%. The geo-political impact of the Russian war on Ukraine is visible in form of dropped connections. For both airports there is a change of the top-10 destinations due to the traffic bans for services to a Russia, Belarus, or Ukraine. Larnaca (LCLK) saw a stronger reduction (due to its role/connections to all affected regions) than Paphos that basically saw Moscow dropping from its destinations.

The specifics of the operating environment can be summarised as

- operating airlines
  - Given its size, the domestic market is negligible and restricted to training or state flight operations.
  - There is a strong low-cost market operating from Paphos (LCLK) with Ryanair (RYR) as the predominant operator. Larnaca (LCLK) observes a wider share of European air transport operators with many accounting for less than 5% of all services signalling a wide-spread network across Europe.
  - Air Cyprus is a competitor at LCLK.
- market environment
  - intra-European traffic accounts for the majority of traffic ranging consistently above 80% over the past years.
  - international traffic (non-ECAC) range around 10-12%.
- service type variation
  - the average daily outbound analysis showed that the recovery of services and their frequencies were stronger during the winter seasons. Traffic levels in 2024 appear to show that a consistent schedule is operated across the year for the top-10 destinations predominantly serviced from Larnaca.
  - seasonal variability is observable when comparing the average daily level of connections. High level of connections are offered throughout the summer seasons to the main destinations (i.e., several destinations in the United Kingdom, Athens, and Tel Aviv). This signals a strong summer vacation market. During the winter seasons, the recovery was more prominent and stabilised with the winter season 2023.
- growth and connectivity
  - on a network-level, Cyprus showed an overall recovery from the pandemic related reduction in destinations and service frequencies. In that respect, the air transport markets are stabilising.

  - as mentioned throughout this chapter, the main airport is Larnaca (LCLK) with Paphos (LCPH) serving as a secondary hub and predominant low-cost carrier airport.
  - looking on the level of same day return options (services allowing for more than 5 hours at the destination), Athens (LGAV), Thessaloniki (LGTS) and Tel Aviv (LLBG) are serviced from Larnaca and Paphos signalling a strong link and market over the past years.
- service stability
  - on average, LCLK services a similar level of schedules
  - across the summer seasons, we observe a change in the connection patterns between the major and smaller hubs, including the role of Vienna as a contributor reducing over time.
- competition
  - for most of the direct connections there exists options via one or two interim stops across all seasons; and
  - in terms of incremental gain for regular schedules, the 2nd hop contributes substantially to the overall number of destinations - this can help to identify new markets.

4.3 Estonia

4.3.1 National Traffic Characterisation

Figure 41: Daily movements, Estonia

On a national level, daily traffic levels in Estonia have not yet reached levels comparable to the pre-COVID phase. There is an overall recovery trend with a smaller setback in 2023. The traffic in 2022, 2023, and 2024 showed a seasonal pattern with higher levels of traffic during the summer months.. The peak daily traffic in 2024 ranged about 10-15 flights below the respective 2019 traffic (c.f. Figure 41).

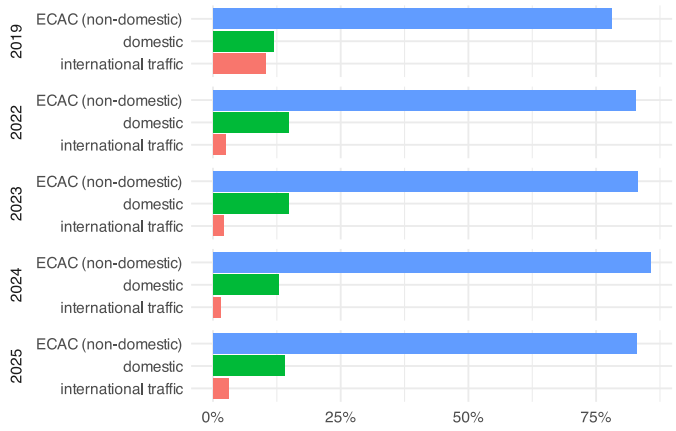


Figure 42: Estonia- annual traffic share

Comparing the overall distribution of destinations on a national level for Estonia (c.f. Figure 42) highlights that the predominant connectivity is with other ECAC member states / EUROCONTROL area. Based on the annual traffic, the share of connections to other EUROCONTROL member states increased from about 72% in 2019 to just under 80% in the post-pandemic years. Domestic travel ranged during the post-pandemic years at around 15%. The share of international traffic destinations reduced by about 5% compared to 2019 and remained fairly constant across all post-pandemic years (~10%).

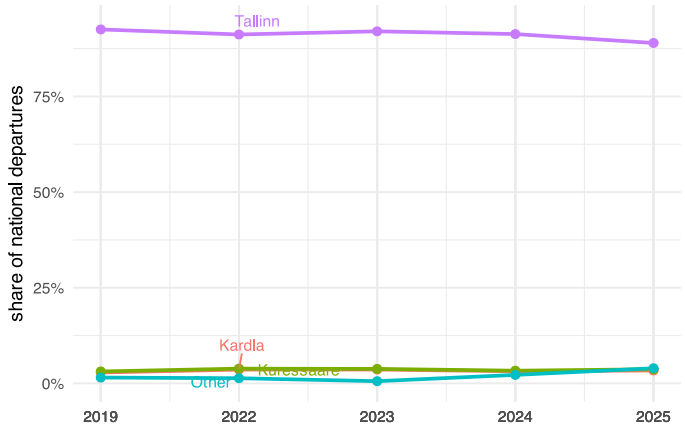


Figure 43: Estonia- annual traffic share at top airports

In Estonia, Tallinn is the major hub accounting for just under 80% of all departures: EEKA (2.8%), EEKE (3.1%), EETN (92.5%), and Other (1.5%). Figure 43 depicts the share of overall connections. It is interesting to note that the despite the changes in the overall traffic numbers as presented above, the distribution of activities appeared to remain constant in Estonia.

4.3.2 Traffic evolution with IATA Seasons

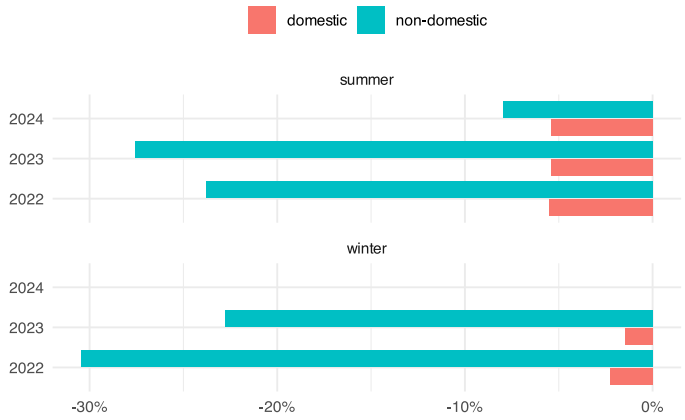


Figure 44: Estonia - seasonal variation vs pre-pandemic

Figure 44 shows the seasonal change of the traffic for Estonia. With Tallinn being the major hub in Estonia, these changes can be directly attributed to the level of change at this airport. A significant change in non-domestic connections is prevalent for both seasons in 2022, 2023, and 2023 ranging around 25%. This suggests a significant reduction in travel or change of destinations for Estonia. With traffic levels lagging behind the pre-pandemic level, there is further scope for recovery.

4.3.3 Connectivity Change on City-Pair Level

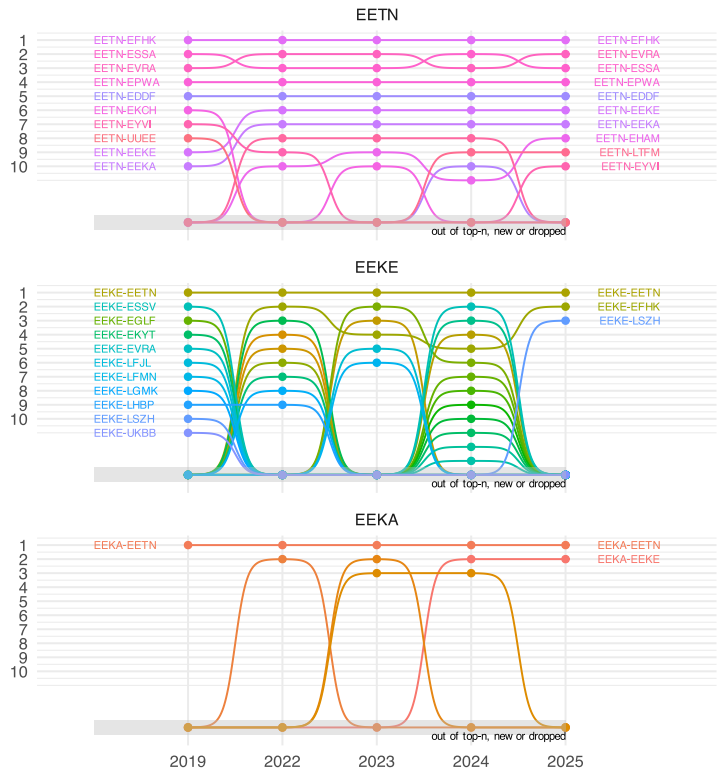


Figure 45: Estonia - top annual connections

This study analysis connectivity of the major national airport, i.e., Tallinn (EETN), Kuressaare (EEKE), and Kardla (EEKA). Please note that the data shown for 2025 only cover the period January through March. The following identifies the top connections for the main airport and then assesses the daily average connectivity for examples of the top 10 city connections. Figure 45 shows the top-10 airport connections in Estonia. There is a change over time for the airports in terms of the top-10 connections. For example, the pre-COVID connections to Copenhagen (EKCH) and neighbouring Vilnius (EYVI) were dropped and were not re-established to range under the top-10.

This suggests changes to close-by destinations. A connection to Amsterdam (EHAM) appears to be a new entry during the post-pandemic phase. Based on the ban of travel and operations related to the Russian war on Ukraine, the connection to Moscow was shut down following the start of the invasion in 2022.

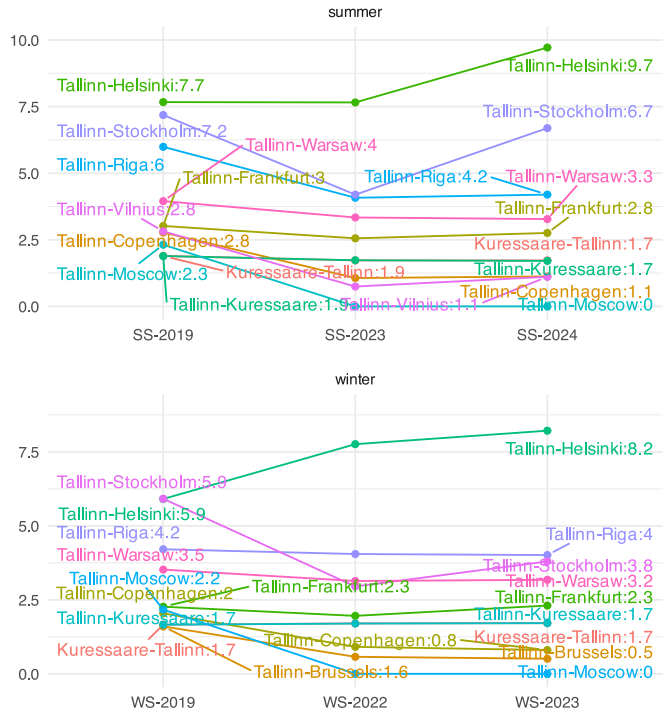


Figure 46: Estonia - average daily connections

Figure 46 depicts the daily average outbound connections per top 10 city pair connections for Estonia. In both seasons, Stockholm (ESSA) and Helsinki (EFHK) are the top markets. With an average of almost 10 connections a day during the summer period Helsinki ranges as the top destination. During the winter season (following the traffic recovery), only a marginal lower average number of flights a day are observed. On the other side, the frequency of flights to Stockholm halved during the winter seasons. The aforementioned drop of the connection to Moscow in light of the Russian aggression and geo-political reaction can be observed as of 2022.

4.3.4 Airlines and City Pairs

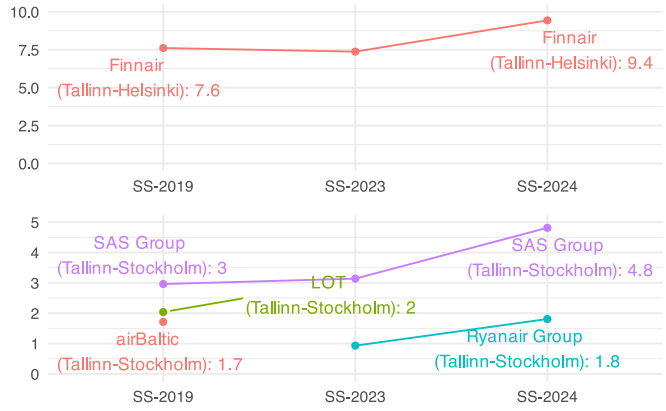


Figure 47: Estonia - average daily connections per operator

Extending the analysis to the main air transport operators, Figure 47 shows example services provided for the major connections in Estonia. On an air transport operator basis, connectivity relates to the number of services operated on a daily or weekly basis. The exclusive operator for connections between Tallinn and Helsinki is Finnair. With the on-going traffic recovery, the average daily connection frequency include by about 2 flights in comparison to the pre-COVID phase. For the Stockholm leg, there is a notable entry by Ryanair offering now about 2 daily flights on a daily basis during the summer season.

The predominant provider is SAS Group which increased the frequency during the summer to about 5 flights and increasing by 2 flights in comparison to 2019. The launch of operations of Ryanair between Sofia and Vienna can be observed.

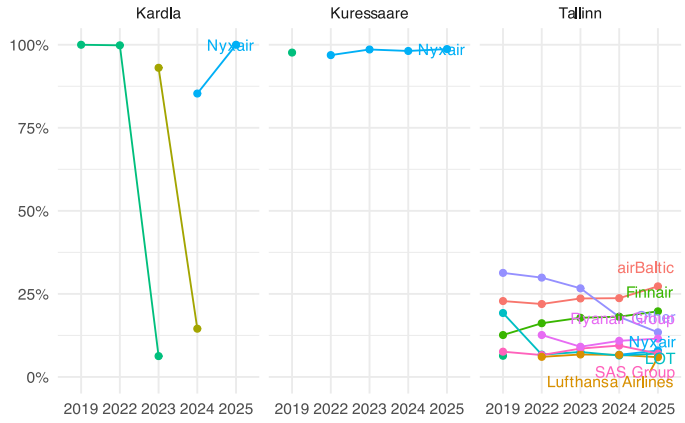


Figure 48: Estonia - average daily connections per operator

Figure 48 shows the major operators at the main airports in Estonia. Please note that the data shown for 2025 only cover the period January through March. There is a clear trend reflecting the overall traffic recovery. On average, all major operaters increased their share by providing additional services. This results in a smaller market share of other operators that service dedicated and infrequent services. The predominant operators include airBaltic accounting for about 25% of all departures followed by Finnair with a market share of about 20%.

4.3.5 Same Day Return

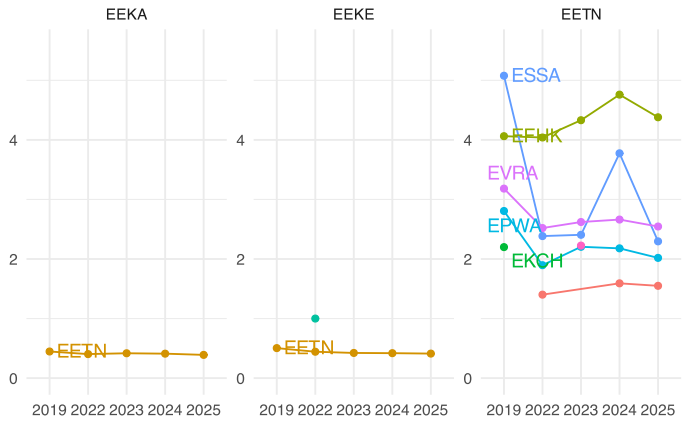


Figure 49: Estonia - top 5 - same day returns

Based on the options a passenger has to return on the same day, the ratio of options selecting between different return flights allowing a longer than 5 hour vist is presented in Figure 49.

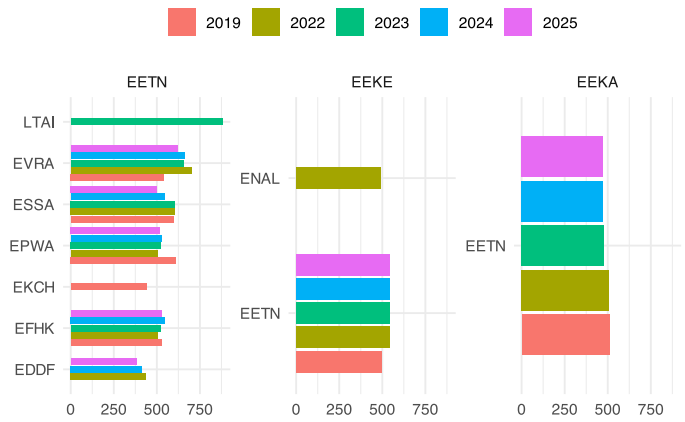


Figure 50: Estonia - top 5 - same day returns

Figure 50 provides the annual variation for the average (median) duration of a one-day visit and return of more than 5 hours (300 minutes).

4.3.6 Service Continuity

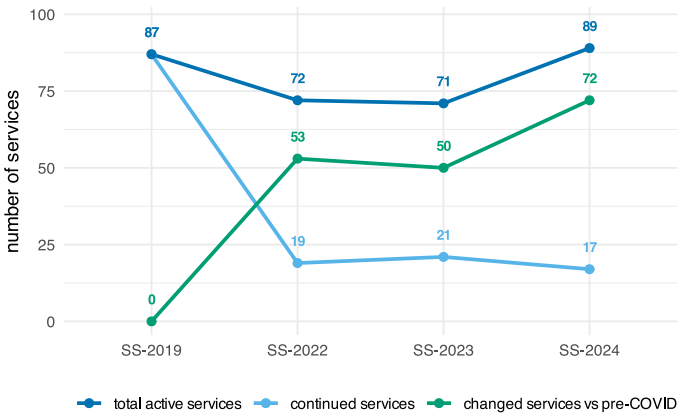


Figure 51: Estonia - service continuity

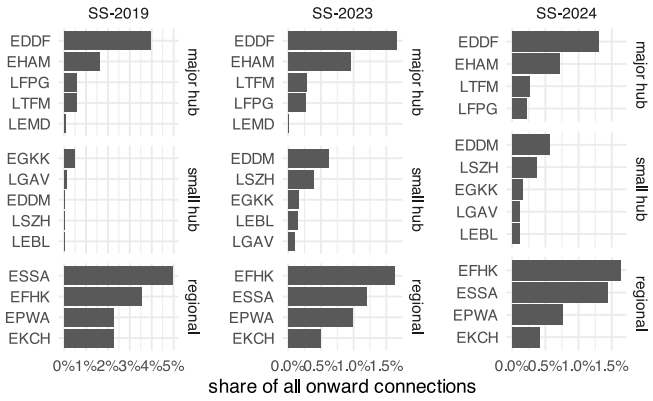


Figure 52: Estonia - interconnectivity level from top airport

Comparing the seasonal services pre-COVID with the services operated over the last summer seasons, Figure 51 depicts the overall evolution. The pattern is characterised by a stagnant plateau for the years 2022 and 2023. On average, the level of services operating from EETN recovered to the pre-pandemic level with the summer season 2024. The original schedules operated pre-pandemic changed to about a forth. It must be noted that this schedule change comprises - inter alia - changes by the operators servicing EETN pre- and post-pandemic, but also new services (new destinations)

Figure 52 shows the interconnectivity level for flights departing from Talinn/EETN focussing on the summer seasons. Pre-pandemic there a reasonable share of onward connections were available from regional hubs, e.g. Sweden's Arlanda/ESSA, Finland's Helsinki/EFHK, and Warsaw/EPWA or Copenhagen/EKCH. The level of onward connections through these regional hubs reduced significantly. Post-pandemic more onward connections via the European hubs Munich/EDDM, Zurich/LSZH, Gatwick/EGKK, Barcelona/LEBL, and Athens/LGAV emerged. Overall, the onward connections are wider spread as can be seen in the declining share for all connecting airport. As identified above, the pandemic traffic and service recovery is still on-going.

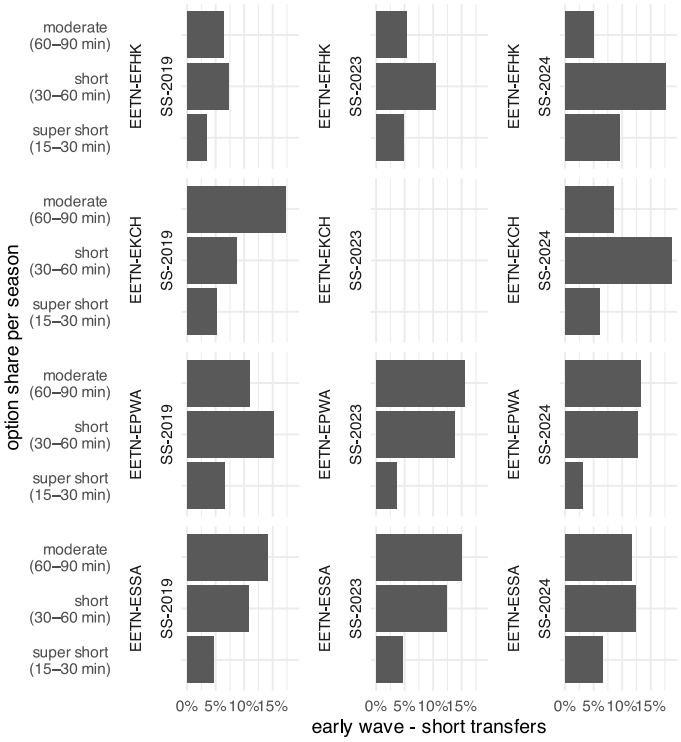


Figure 53: Estonia - interconnectivity level from top airport

A particular interest is the level of onward connections during the early *first wave* at the interim airport. Figure 53 focusses on the role of the regional hubs for EETN and highlights the connection options during the summer seasons. During the summer seasons 2023 and 2024, a higher share of favourable onward connections (30-60 minutes) in the morning developed for services through Helsinki/EFHK and Copenhagen/EKCH. The latter also observed an outbound service change overcoming the gap in summer 2023. Outbound services and onward connections observed a smaller modulation for connections at EPWA and ESSA. These changes need to be seen in light of the on-going service recovery at EETN and will benefit from increased outbound services.

4.3.7 Estonia - Interconnectivity

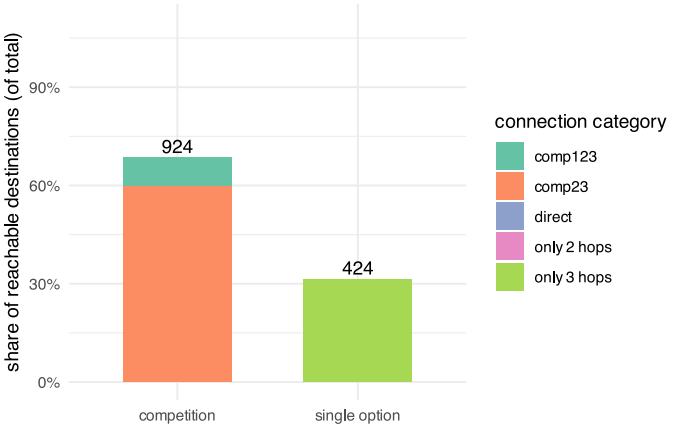


Figure 54: Estonia - onward competition options

Figure 54 shows the level of possible competition between onward connections. For the case of Tallinn/EETN, there is a strong competition/overlap between 2- and 3-hop connections. The number of dedicated 2-hop destination not reachable via other markets is negligible. However, a pool of dedicated 3-hop destinations offers a potential growth market. This shows a highly distinct point-to-point behaviour for the first leg. Ultimately, passengers have no option to choose a possible connecting flight to reach a separate destination.

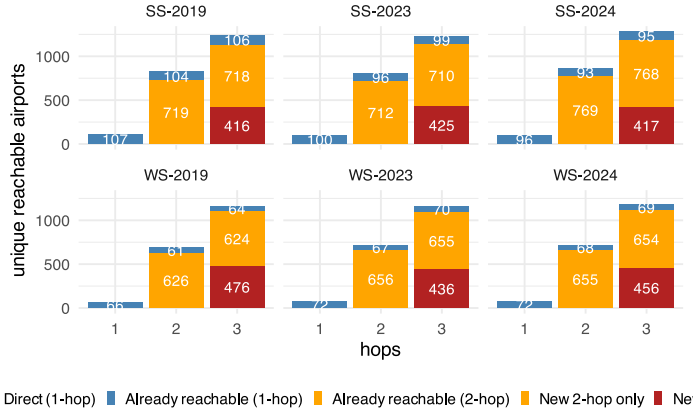


Figure 55: Estonia - onward competition options

As highlighted above, the level of competition between multi-hop destinations is a strong characteristic for EETN and remained fairly constant over the seasons. Figure 55 shows the level of competition regarding direct and multi-hop connections. In terms of direct connections, 2- or 3-hop connections range at a similar level offering options to passengers.
The number of additional destinations increases significantly with an interim stop, during the summer seasons by a factor of 7 and just under 10 during the winter seasons. Potential additional markets are reachable with a 3rd hop.

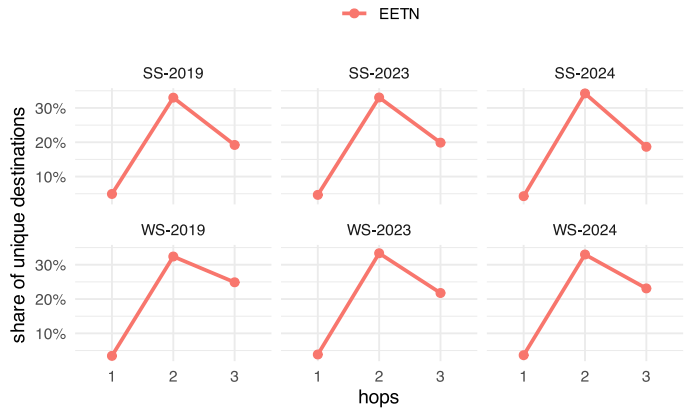


Figure 56: Estonia - incremental gain per hop

Focussing on the incremental gain in reachable destinations on the basis of regular schedules, we observe a fairly constant level of gain for 2nd hop connections across all seasons with Figure 56 ranging around 33%. This suggests a regular schedule to the interim connections across the full year (winter and summer season). While with @Figure 55 a higher number of destinations can be reached, the service quality in terms of frequencies for unique destinations shows a smaller incremental increase. For unique destinations, the winter season 2019 showed a higher incremental gain of services than the respective winter seasons in 2023 and 2024. There is growth potential to establish direct services for 2nd hop destinations.

4.3.8 Estonia - summary

This section addresses the observed changes in connectivity for Estonia. The study covers the changes over time between 2019 and 2025. The overall traffic recovery at Estonia is on-going and slightly lagging behind the pan-European post-pandemic recovery trend. Departure momvements range still below the pre-pandemic traffic. Geo-political impacts of the Russian war on Ukraine and the conflict in Gaza are covered and highlighted throughout this chapter. Estonia observed associated connections being dropped to Russia, i.e. Moscow (UUEE).

Tallin (EETN) serves as the major hub and handled consistently about 90% of all connections from `r country_name. Other European destinations represent just under 80% of all departures. Domestic traffic is primarily related to shuttle services between Kuressaare (EEKE), Kardla (EEKA), and Tallinn by a set of smaller operators, i.e., Diamond Sky, Transaviabaltika, and Nyxair. The domestic and other international segment accounts for about 10% of all destinations, with the other international destinations ranging at 2-3%. The geo-political impact of the Russion war on Ukraine is visible in form of a dropped connection for Tallinn to Moscow. The top connections for EETN stay widely unchanged for the studied time horizon, seeing Helsinki (EFHK), Stockholm (ESSA), Warsaw (WPWA) and Frankfurt (EDDF) as the strongetst markets, followed by the aforementioned Kuressaare (EEKE) and Kardla (EEKA). Next to Moscow as a dropped

connections, the services to Copenhagen (EKCH) no longer range within the top-10 when comparing pre-COVID with the post-pandemic schedule

The specifics of the operating environment can be summarised as

- operating airlines
  - given its size, a small domestic market exists offering some turpoprop based services between Kuressaare (EEKE), Kardla (EEKA), and the capital Tallinn (EETN).
  - Airbaltic and Finnair account for about 40% of all traffic in Tallinn in 2024, with Finnair observing a continual growth in their level of services. Ryanair (RYR) serves about 10% of the traffic as a post-pandemic operator entry.
- market environment
  - intra-European traffic accounts for the majority of traffic ranging consistently above 75% and now closing in on 80% over the past years.
  - international traffic (non-ECAC) ranges around 5-7%. Pre-COVID, the Russian Federation market represented a major market. during/post-COVID, Middle East's Egypt sees about 250-270 flights per year.
- service type variation
  - with the overall traffic levels still ranging below the pre-pandemic number of services, 2024 marked a significant year of recovery, in particular during the summer season.
  - the average daily outbound analysis showed that the recovery of services and their frequencies were stronger during the summer seasons. This is witnessed by the increasing frequencies for services to the 2 top destinations, i.e., Helsinki and Stockholm.
  - seasonal variability is observable when comparing the average daily level of connections. High level of connections are offered throughout the summer seasons to the main destinations. This signals a strong summer vacation market. The recovery for the winter season - despite the differences in total departures - shows the similar trend.
- growth and connectivity
  - on a network-level, Estonia showed an overall recovery from the pandemic related reduction in destinations and service frequencies. In that respect, the air transport markets - while still lagging behind the pre-pandemic levels - are stabilising.
  - as mentioned throughout this chapter, the main airport is Tallinn (EETM), with Kuressaare (EEKE) and Kardla (EEKA) only servicing air traffic in a complementary role.
  - looking on the level of same day return options (services allowing for more than 5 hours at the destination), we see a consistent high level of same-day return options for Helsinki across the years ranging about 4 flights a day on average, Stockholm observed a higher same-day average return frequency of just under 4 flights per day. This is consistent with both destinations being the top-ranked services, the overall recovery of connections/service frequencies.
- service stability
  - on average, EETN services a similar level of schedules in comparison to the pre-pandemic levels.
  - the main increase occurred for the 2024 schedules showing a delayed recovery of traffic.
- competition
  - for most of the direct connections there exists options via one or two interim stops across all seasons;
  - a slightly higher level of services to unique destinations is available for the summer seasons which may depend on the seasonal onward services from the interim airports; and
  - in terms of incremental gain for regular schedules, the 2nd hop contributes substantially to the overall number of destinations - this can help to identify new markets.

4.4 Lithuania

4.4.1 Traffic Characterisation

Figure 57: Dayly departure movements, Lithuania

On a national level, Lithuania observed a continual growth of the traffic levels post-COVID. The annual pattern is characterised by a strong summer peak. Traffic levels in 2024 ranged at the observed pre-pandemic traffic levels of 2019 (c.f. Figure 57) during the summer-early autumn period. The winter season 2024 observed still a 10-15% lower number of services from Lithuania.

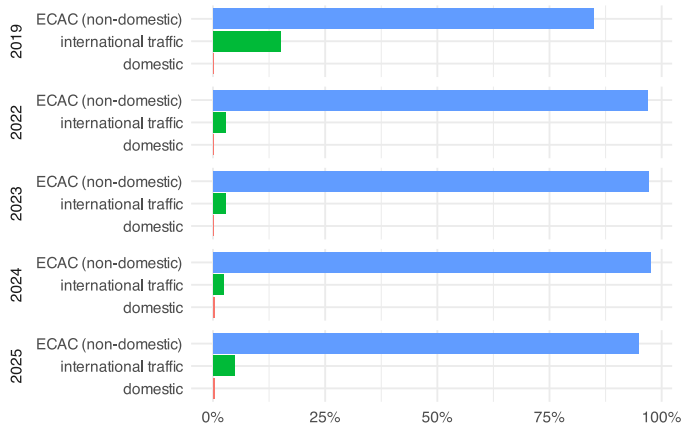


Figure 58: Lithuania- annual traffic share

On a national level connectivity to ECAC member states / EUROCONTROL area represents the major share for services originating from Lithuania (c.f. Figure 58). Given the local conditions, intra-European air traffic is the major air transport market segment in Lithuania ranging in the post-pandemic years around 90-95%. This exceeds the pre-pandemic share by about 10 percent points or more. Given the nature of air transport in Lithuania, the domestic operations are negligible. International traffic to non-ECAC states ranged in 2019 around 13%.

There has been a shift. With international destinations in 2019 being focussed on the Russian Federation and Belarus, a shift is observed post-COVID. During the past years, the international connections comprise now several destinations with Egypt being a strong market.
Considering the overall traffic increase depicted in Figure 57, Lithuania enjoys an intra-European summer travel period extending into October.

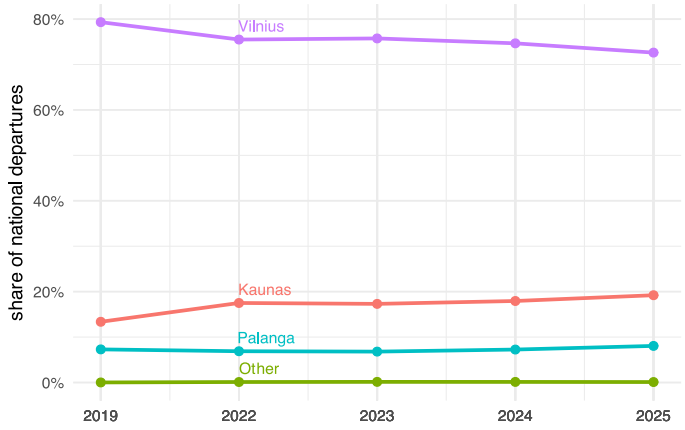


Figure 59: Lithuania- annual traffic share at top airports

The predominant national airport is Vilnius (EYVI) accounting for the majority of flight operations. The traffic share serviced at the Lithuanian airports is fairly constant over the period considered in this study showing only a small modulation between the pre- and post-pandemic period. In Lithuania, we see in 2019 the following annual traffic in terms of departures: EYKA (13.4%), EYPA (7.3%), EYVI (79.3%), and Other (0.0%). Figure 59 depicts the overall share of departures from these top airports. The shares remained constant over time, with the share of departures virtually unchanged in 2024 (EYKA (17.9%), EYPA (7.3%), EYVI (74.7%), and Other (0.1%)) virtually unchanged in comparison to 2019.

4.4.2 Traffic evolution with IATA Seasons

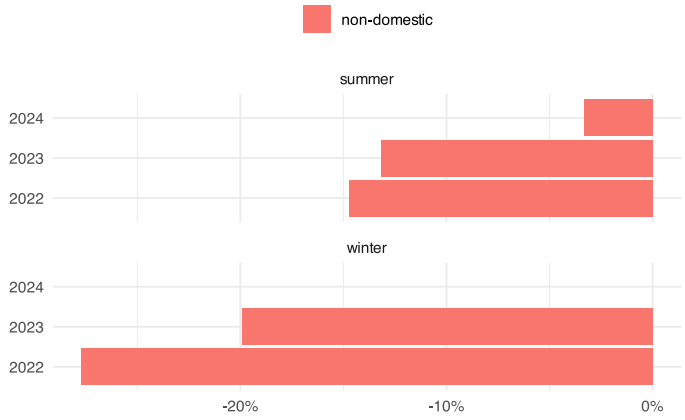


Figure 60: Lithuania - seasonal variation vs pre-pandemic

With a very small number of domestic operations, the following addresses the non-domestic connection development. Figure 60 shows the seasonal change of the outbound traffic for Lithuania. The recovery trend is clearly visible for non-domestic number of connections. Looking at the different seasons, the reduced number of outbound flights in 2022 compared to 2019 is continuously overcome in the following years. As mentioned above, the IATA summer 2024 observed an overall recovery with outbound connections ranging only about 3% below the pre-pandemic level. Connections during the winter season are still lagging behind the 2019 level.

4.4.3 Connectivity Change on City-Pair Level

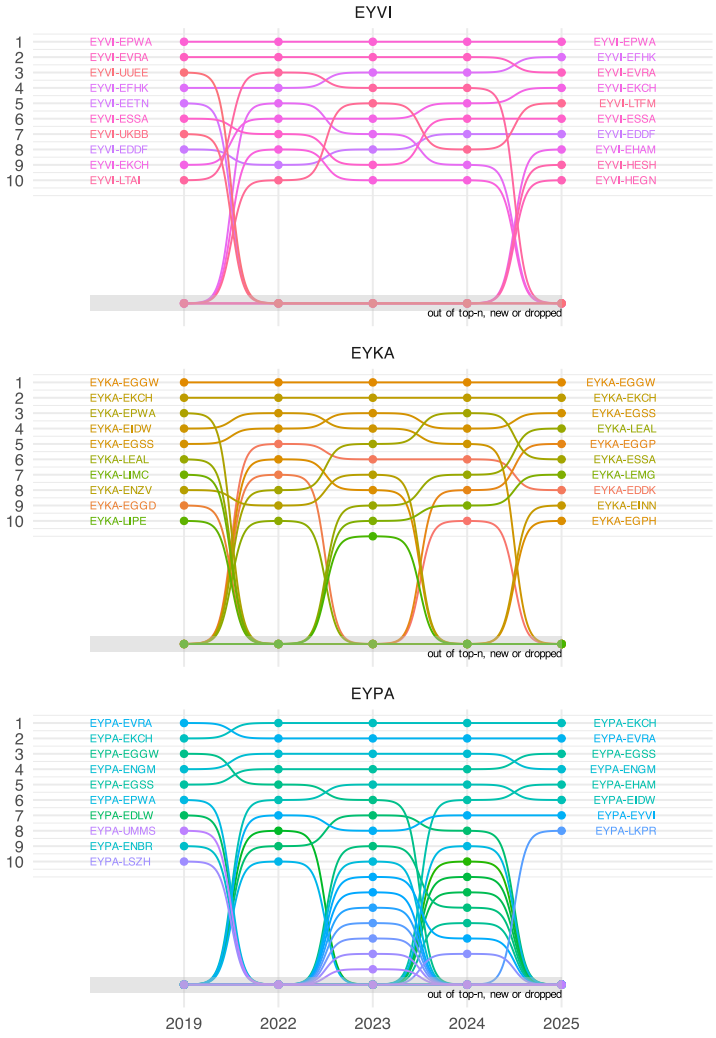


Figure 61: Lithuania - top annual connections

This study analysis connectivity of the major national airport, i.e., Vilnius (EYVI), Kaunas (EYKA), and Palanga (EYPA). Figure 61 shows an interesting pattern for all three airports. Each observes a series of connection changes between 2019 and 2022. The change at Vilnius (EYVI) entails a drop of 3 of the major connections. While the drop of the connection to Tallinn can be attributed to changes in travel policy during COVID, the 2 lost connections to Moscow Sheremetyevo/UUEE and Kyiv Bykovo/UKBB are attributable to the Russian invasion of Ukraine and the ensuing European sanctions. With the entry of Istanbul airport (LTFM), the top-10 connection of EYVI comprise 2 Turkish destinations (Istanbul/LTFM and Antalya/LTAI). Traffic at Kaunas (EYKA) and Palanga (EYPA) observed fluctuations in their top-10 connections. For example, the connection to Alicante (LEAL) observed a cut with the start of COVID and saw a successive return, and launch of services from Malaga (LEMG) suggesting a strong summer destination market in Spain.

Further changes in operations can be observed. For example:

- Kaunas (EYKA) observed the
  - entry of Stockholm/ESSA in 2022 and now ranking as the 3rd top-most flown to connection in 2024
  - entry of Bratislava/LZIB in 2023
  - drop of connection to Warsaw/EPWA
- Palanga (EYPA) observed the
  - entry of Amsterdam/EHAM in 2024
  - variation in its connectivity to Warsaw/EPWA as the number of connections changed post-COVID
  - drop of connection to Minsk/UUMS linked to the ban of air travel in 2022

Please note that the data shown for 2025 only cover the period January through March. Accordingly, changes for the first quarter of 2025 reflect the IATA Winter 2024 schedule and should not be considered as full annual connection levels.

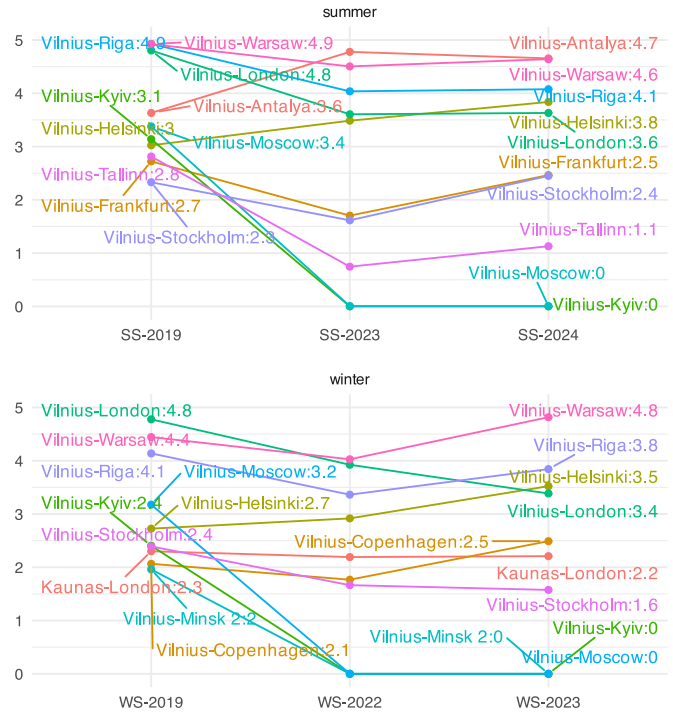


Figure 62: Lithuania - average daily connections

Figure 62 depicts the daily average outbound connections per top-10 city pair connections for Lithuania during the different IATA seasons. It must be noted that this analysis focusses on "cities", i.e. connectivity to London can comprise flights to the different London airports. We observe the aforementioned drops in connectivity due to the geo-political consequences of the Russian invasion of Ukraine with dropped connections to Moscow, Minsk, and Kyiv as of 2022. The summer seasons observed a varying pattern. For example (c.f. above) there is a lower level of daily connections to the neighbouring Estonia/Tallinn suggesting that the frequency was cut in half during the summer season. The summer season connections Vilnius/Helsinki and Vilnius/Antalya observed an increase by another daily flight. Other connections remained stable, in some cases showing a slightly lower frequence during the summer 2023 season.

Figure 60 showed a stronger change during the winter seasons in terms of traffic recovery. This is reflected in the average frequency of daily flight connections. The top connections broadly doubled (e.g. Vilnius/Warsaw, Vilnius/Riga, Kaunas/London). In terms of top-10 connections, the central role of Vilnius/EYVI is clearly identifiable, as higher frequencies and annual totals prevail over the operations at Kaunas (EYKA) and Palanga (EYPA).

4.4.4 Airlines and City Pairs

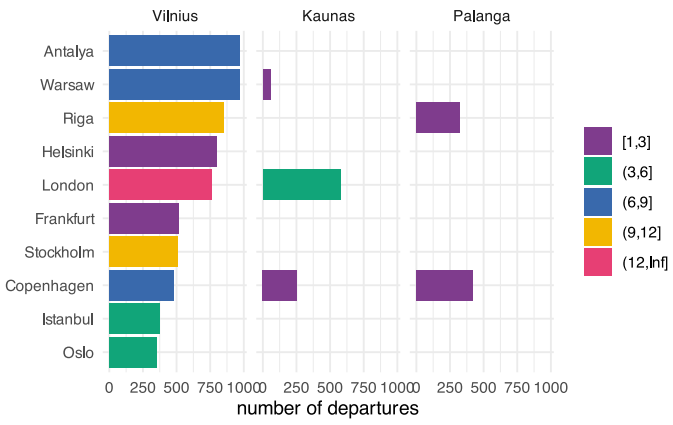


Figure 63: Airlines on city pairs

Figure 63 shows the top city pairs operated from Vilnius (EYVI), Kaunas (EYKA), and Palanga (EYPA) during the summer season 2024. We observe a high number of different operators connecting Vilnus/Antalya, Vilnius/Warsaw. Next to Vilnius, Kaunas connected to London (multi-airport system), with a share of more than 12 operators out of Vilnius and a smaller group of operators out of Kaunas. Limited markets existed for the connections between Palanga/Riga and Palanga/Copenhagen, and Kaunas/Warsaw and Kaunas/Copenhagen.

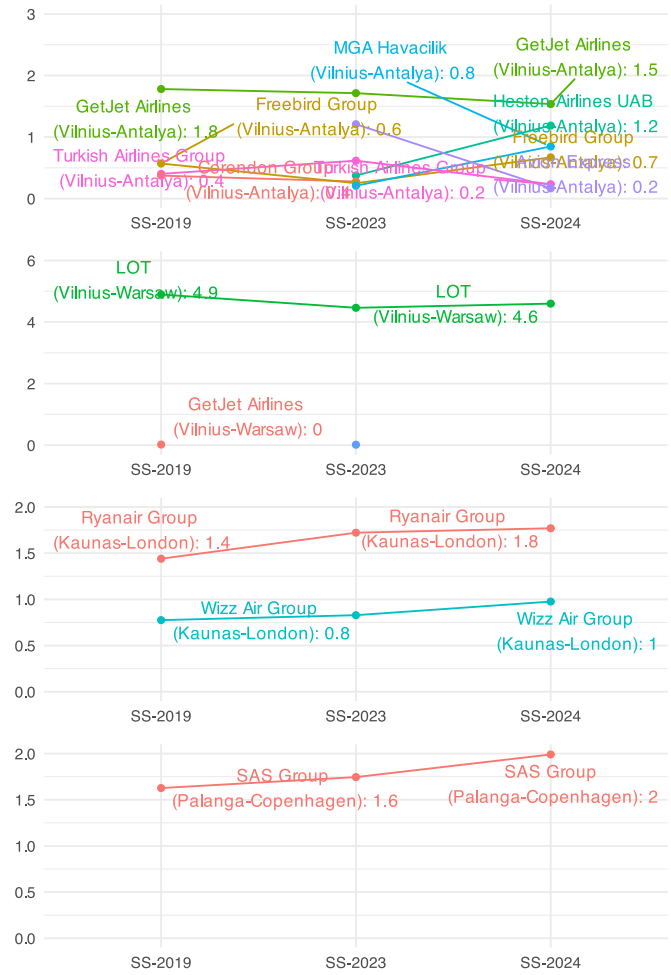


Figure 64: Lithuania - average daily connections per operator

Extending the analysis to the main air transport operators, Figure 64 shows example services provided for a selected set of the major connections in Lithuania. On an air transport operator basis, connectivity relates to the number of services operated on a daily or weekly basis. The average daily level of connections is depicted for the peak IATA summer seasons. We see a set of operators servicing Vilnius - Antalya. More than 1 daily flight were operated by GetJet (1.5) and Heston Airlines (1.2) in summer 2024. MGA Havacilik started to provide operations in summer 2024. At the same time, Turkish Airlines reduced their frequency of flights. The segment Vilnius-Warsaw is dominated by mainline operator LOT offering consistently an average of at least 4 daily flights. The segment Kaunas-London is serviced by low-cost carriers Ryanair and Wizz Air. Over time, Ryanair increased its servie frequency to about 2 daily flights on average during the summmer season, whereas Wizz Air operated consistently 1 service. The top connection Palanga-Copenhagen is operated by SAS Group during the summer seasons. The frequency was increased with the summer season 2024 to on average 2 daily flights.

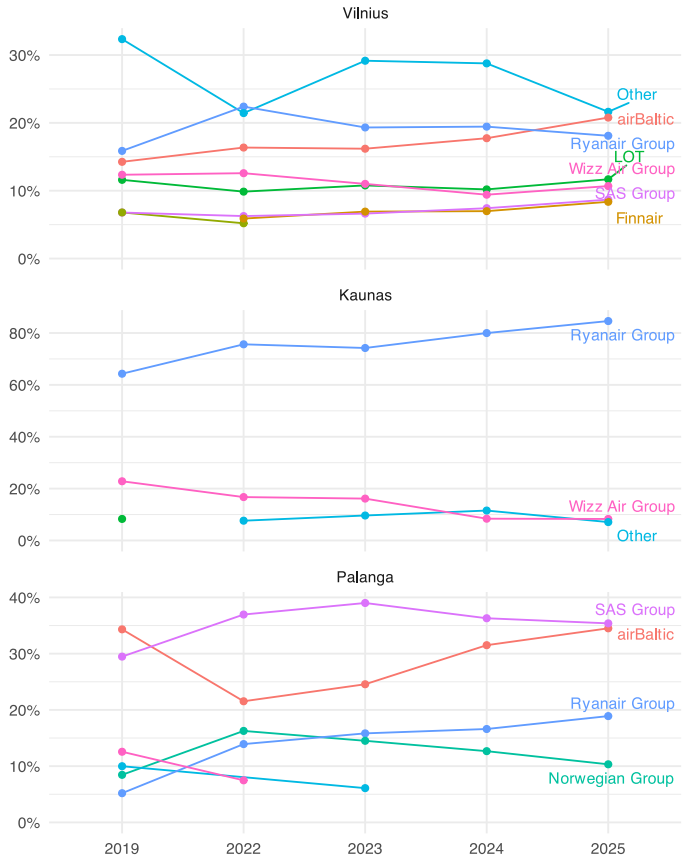


Figure 65: Lithuania - average daily connections per operator

Figure 65 shows the predominant operators at the main airports in Lithuania with a minimum share of 4%. At Vilnius (EYVI) we observe airBaltic (BTI) and Ryanair (RYR) as the main operators servicing about 20% of the connections each. A mix of other operators account for about half of that share (~ 10%), i.e., Wizz Air, SAS Group, and Finnair, showing a diverse market (operators and destinations). Services at Kaunas are provided by Ryanair (RYR) as the predominant operator that expanded its market share during the years 2022, 2023, and 2024 to over 80% of all services. This increase sees a decrease of a group of operators providing lower frequency services. At Palanga, SAS Group and airBaltic (BTI) accounted for more than 60% of all connections serviced with each operator providing about 30% of services. While SAS Group ranged at that level over the study horizon, airBaltic observed a continual rebound to its pre-COVID market share and service frequency from Palanga. The increase in services reduces the impact of other operators.

4.4.5 Same Day Return

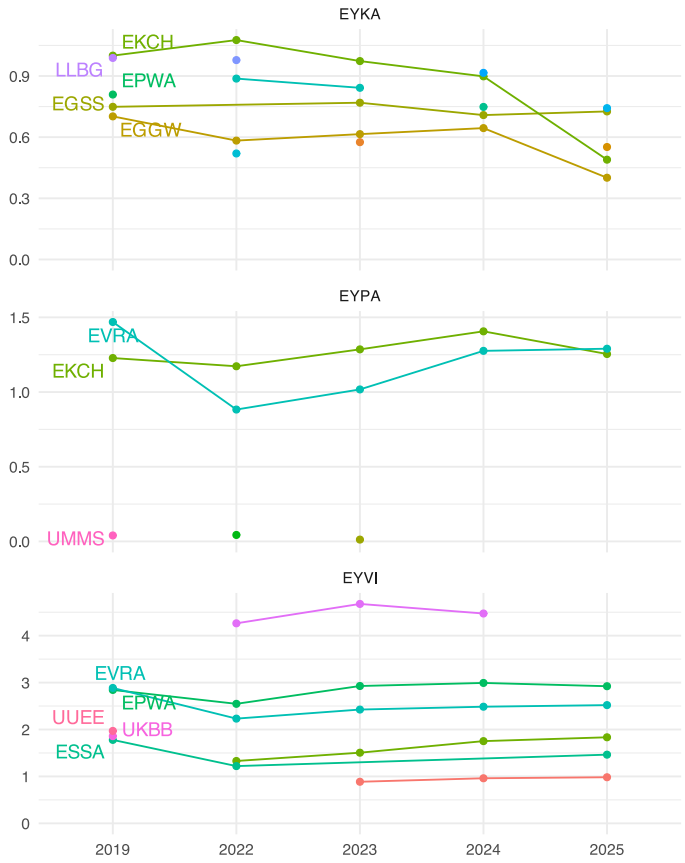


Figure 66: Lithuania - top 5 - same day returns

Based on the options a passenger has to return on the same day, the ratio of options selecting between different return flights allowing a longer than 5-hour visit is presented in Figure 66. Please note that the data shown for 2025 only cover the period January through March. Vilnius represents the major airport in Lithuania. Accordingly, a higher average number of same-day-return options. As shown above on average there just under 5 same-day return options to Antalya (LTAI), followed by Warsaw (EPWA) and Riga (EVRA) with about 2.5-3 daily same-day return options. Services at Kaunas allowed pre- and post-pandemic to return daily about once on a daily level to Copenhagen (EKCH) and Ben Gurion (LLBG). A lower frequency is observed for the other top destination. This suggests that the schedule did not include flighs on a daily basis that would allow for a same-day-return. This suggest sub-weekly schedules or seasonal traffic.

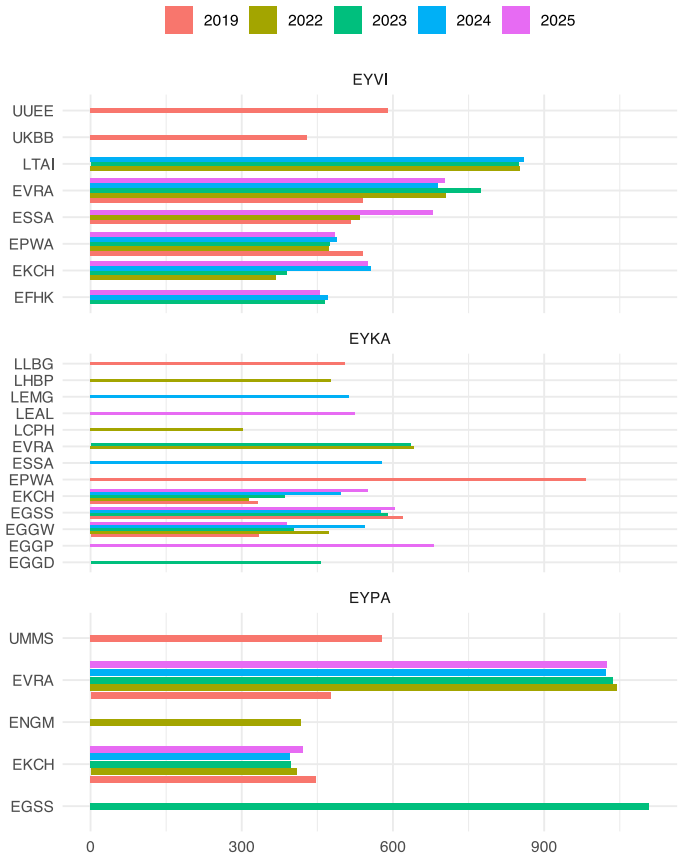


Figure 67: Lithuania - top 5 - same day returns

Figure 67 provides the annual variation for the average (median) duration of a one-day visit and return of more than 5 hours (300 minutes). The comparison shows a diverse view across the the airports. Flights from Vilnius to Moscow Sheremetyevo/UUEE and Kyiv Bykovo/UKBB are subject to the restrictions following the Russina invasion of Ukraine. A good level of same-day-returns is available during the post-COVID phase for the major destination, i.e. Antalya (LTAI) and Riga (EVRA). Both offer combination that allow for more than 10 hours. Other destinations offering same-day return options of about 7.5hrs (450 minutes) for all post-pandemic years included Warsaw (EPWA) and Copenhagen (EKCH). Services to Helsinki (EFHK) increased in 2023 and 2024 allowing for a same day return. Services at Kaunas changed over the years. A good share of the destination allowed for same-day returns in individual years. This suggest the closure of connections, or the change of frequency or migration of an operator.

Noteworthy is the launch of same-day return options for Stockhold (ESSA) as evidenced throughout this chapter in 2024. Well serviced connections from Kaunas include Copenhagen (EKCH), London Stansted (EGSS), and London Gatwick. Palanga shows mature markets with same-day return options between the major destinations Riga (EVRA) and Copenhagen (EKCH) throughout the pre- and post-pandemic years.

4.4.6 Service Continuity

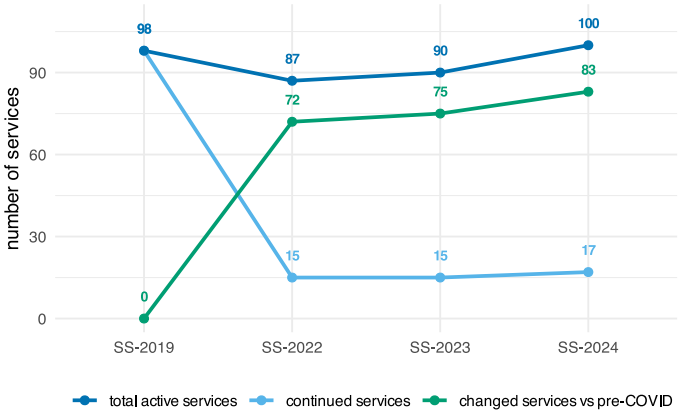


Figure 68: Lithuania - service continuity

Comparing the seasonal services pre-COVID with the services operated over the last summer seasons, Figure 68 depicts the overall evolution for Vilnius/EYVI. EYVI shows an overall robust level of services compared to the pre-COVID service levels in the summer season 2024. While levels in summer season 2022 and 2023 were reduced, the main recovery took place before. A substantial revision of the schedules has taken place with most pre-COVID services replaced by alternatives. During the summer season 2024 about 17% of the original services were still provided.

It must be noted that this schedule change comprises - inter alia - changes by the operators servicing LJLJ pre- and post-pandemic, but also new services (new destinations)

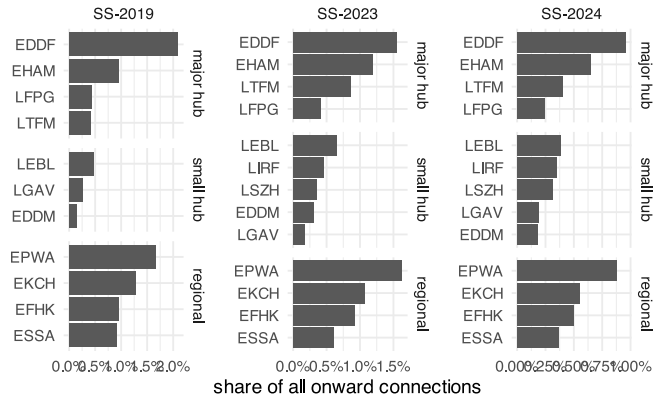


Figure 69: Lithuania - interconnectivity level from top airport

Figure 69 shows the interconnectivity level for flights departing from Vilnius/EYVI focussing on the summer seasons. With traffic levels still below pre-pandemic levels, the share of onward services shrinked for all connecting airports. EYVI shows a constant level of onward connections through the major hubs and a more diversified onward connections share for the small European hubs post-pandemic. This suggests additional services during the summer seasons in 2023 and 2024. There exists a strong regional link to Warsaw/EPWA, Copenhagen/EKCH, Helsinki/EFHK, and Stockholm/ESSA as interconnecting nodes for services from EYVI.

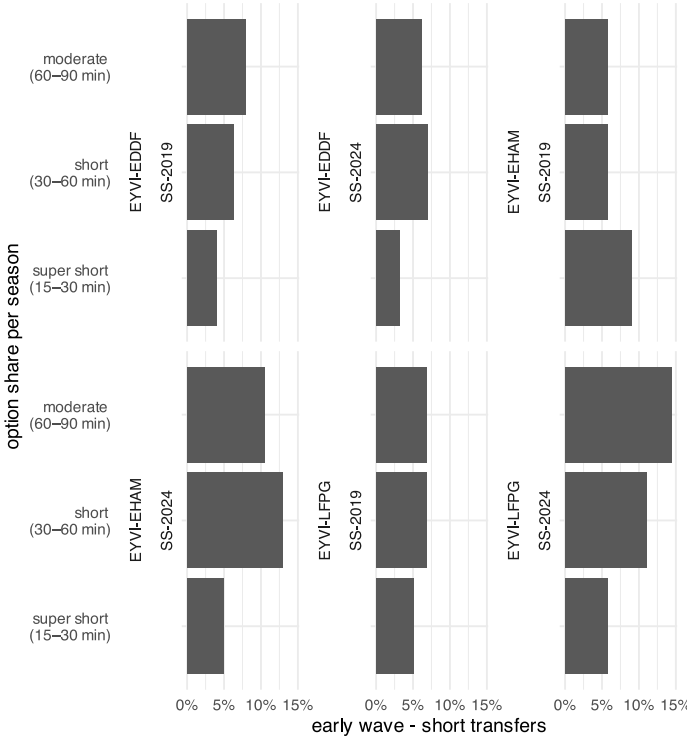


Figure 70: Lithuania - interconnectivity level from top airport

A particular interest is the level of onward connections during the *first wave* at the interim airport. Figure 70 highlights the change of connection options between the summer season 2019 and 2024. There appears a constant level of short interconnection at Frankfurt/EDDF with options within 30-60 and 60-90 minutes remaining constant. Onward connectivity for Amsterdam/EHAM and Paris/LFPG changed. For Amsterdam favourable connecting options decreased while the data suggests more connecting options at LFPG during the early hours of the day. Focussing on early morning connection options at the major hubs, connections from EYVI do not allow to connect within a favourable change time at Istanbul/LTFM.

4.4.7 Lithuania - Interconnectivity

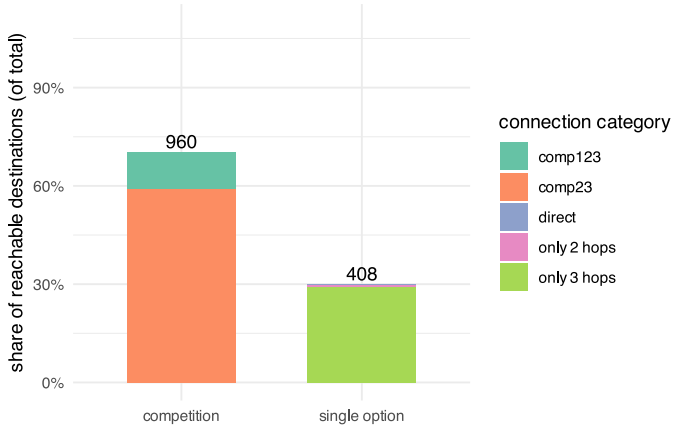


Figure 71: Lithuania - onward competition options

The possible competition between onward connections is depicted in Figure 71. at Vilnius/EYVI. There exists competition between direct connections and 2- and 3-hop connections offering passengers a choice (comp123). For a high share of destinations (~ 60%), travellers can choose between 2-hop or 3-hop services (comp23). Just under 30% of all destinations are reachable via 3-hops (only 3 hops) while the options for only 2 hops are negligible. This signals a growth potential.

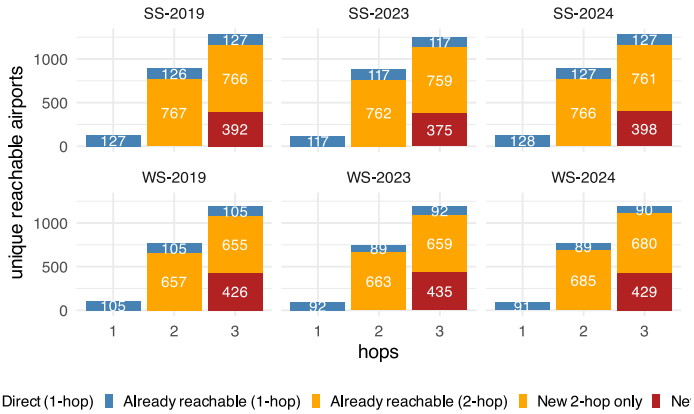


Figure 72: Lithuania - onward competition options

Figure 72 shows the aforementioned recovered service levels at EYVI for the summer seasons in terms of direct connectivity. The level of 2- and 3- hop connections ranges in summer 2024 as well at the pre-COVID levels. During the winter seasons, there is a lower level of direct connections in the winter seasons 2023 and 2024. This signals a more seasonal schedule. On average, the reachability for 2-hop and 3-hop services remained fairly constant over the seasons. This suggests that EYVI connects via interim destinations supporting stable schedules for further onward destination/ services. As mentioned above, there is a potential for additional markets are reachable with a second or third hop.

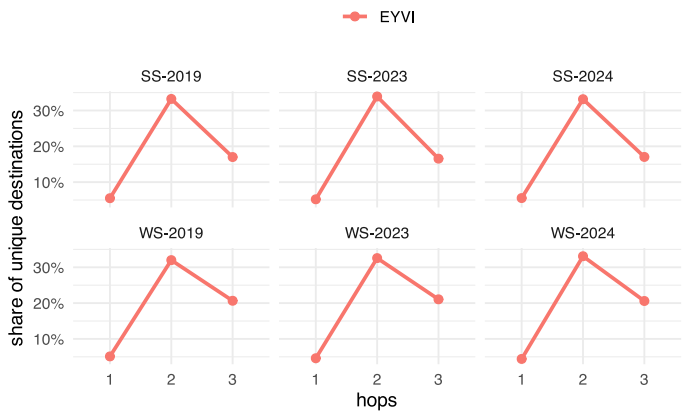


Figure 73: Lithuania - incremental gain per hop

Focussing on the incremental gain in reachable destinations on the basis of regular schedules, We observe a fairly constant level of gain for 2nd hop connections across all seasons with Figure 73 ranging well above 30% during the summer and winter seasons. This suggests a regular schedule to the interim connections across the full year (winter and summer season). While with @Figure 72 a higher number of destinations can be reached, the service quality in terms of frequencies for unique destinations shows a smaller incremental increase. There is growth potential to establish direct services for 2nd hop and possible unique 3rd hop destinations.

4.4.8 Lithuania - summary

This section addresses the observed changes in connectivity for Lithuania. The study covers the changes over time between 2019 and 2025. The overall traffic recovery at Lithuania followed the overall pan-European post-pandemic recovery trend. During the summer season 2024, peak traffic levels reached the pre-pandemic levels. The departure momvements during the winter seasons range still below the pre-pandemic seasonal traffic. Geo-political impacts of the Russian war on Ukraine and the conflict in Gaza are covered and highlighted throughout this chapter.

Vilnius (EYVI) serves as the major hub and serving above 75% of all connections from Lithuania. Kaunas (EYKA) ranged around 18%, and Palanga serviced about 8%. A negligible number of flights were observed at Siauliai (EYSA). Connections to other European/ECAC destinations account for about 95% of all traffic from Lithuania. The other international segment accounts for about 3-4%% of all departing traffic, with the majority servicing Egypt with about 2 flights during the peak season per day. The geo-political impact of the Russion war on Ukraine is visible in form of dropped connection to the Russian Federationa dnd Belarus with the start of the Russian invasion. The top connections for Vilnius, i.e. Warsaw (EPWA), Riga (EVRA), and Helsinki (EFHK), stay widely unchanged for the studied time horizon. These connnections observed also on average about 4 or more flights per day during the summer seasons, and observed the frequency recovering to the same level over the past 2 winter seasons.

The specifics of the operating environment can be summarised as

- operating airlines
  - given its size, Lithuania serviced predominantly traffic to other European/ECAC states accounting for about 95% of all traffic.
  - the main operators comprise airBaltic (BTI), Ryanair (RYR), Wizz Air, SAS Group, LOT and Finnair. At Vilnius, airBaltic and Ryanair service about 20% of the flights each, with the other operators operating a share of half that size.
- market environment
  - as mentioned above, intra-European traffic accounts for the majority of traffic.
  - other international traffic (non-ECAC) ranges around has a small market share (about 3%) with Egypt being the main destination in 2023 and 2024.
  - the pre-COVID destinations in the Russian Federation and Belarus are no longer served in light of the sanctions related to the Russion war on Ukraine.
- service type variation
  - with the overall traffic levels having reached the pre-pandemic number of services during the summer season of 2024, a recovery of the service levels to the top destinations can be observed for the winter seasons.
  - the average daily outbound analysis showed that the recovery of services and their frequencies were stronger during the summer seasons. For example, increasing frequencies for services to Antalya are unmatched during the winter season.
  - seasonal variability is observable when comparing the average daily level of connections. High level of connections are offered throughout the summer seasons to the main destinations. This signals a strong summer vacation market. The recovery for the winter season - despite the differences in total departures - shows the similar trend. However, it also shows that the winter schedule is still lagging behind in terms of demand/services.
- growth and connectivity
  - on a network-level, Lithuania showed an overall recovery from the pandemic related reduction in destinations and service frequencies. The year 2024 observed the summer traffic levels reaching the pre-pandemic number of services.
  - Vilnius (EYVI) serves as the major hub in Lithuania, followed with a significant lower share of movements by Kaunas (EYKA) and Palanga (EYPA).
  - looking on the level of same day return options (services allowing for more than 5 hours at the destination), we see a consistent high level of same-day return options for the top connections serviced from

Vilnius, i.e., Riga (EVRA), Helsinki (EFHK), Stockholm (ESSA), and Warsaw (EPWA) across the years ranging about 4 or 2 flights a day on average. Palanga (EYPA) also shows a high frequency of same-day return services to Riga (EVRA).

- service stability
  - on average, EYVI shows a fully recovered schedule and a consitent level of onward connections in comparison to the pre-pandemic levels for the summer seasons; and
  - the winter season recovery shows a small lag.
- competition
  - based on the level of services from EYVI onward connections are dependent on the interim stops across all seasons;
  - there is a good share of options for direct, 2-hop, and 3-hop destination (about 60% of all reachable destinations); and
  - potential growth options exists considering the number of unique 3-hop destinations (about 30% of all current destinations.

4.5 Malta

4.5.1 National Traffic Overview

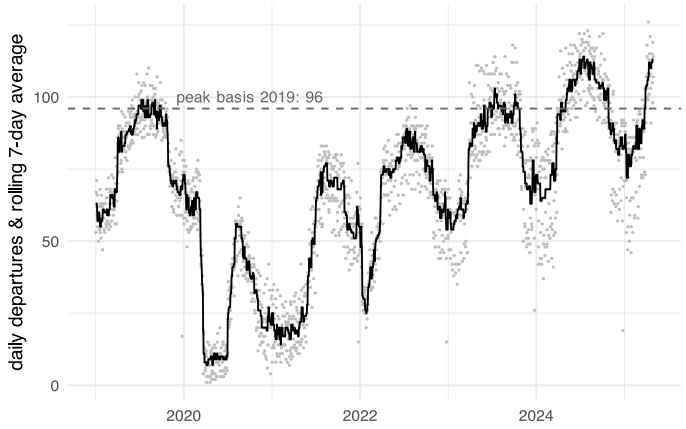


Figure 74: Monthly departures - , Malta

Malta is characterised as a single-airport state. Thus, connectivity and traffic levels are linked to operations from Malta airport (LMML). Malta observed a continual growth of the traffic levels post-COVID showing a characteristic summer season peak. The latter is linked to a high share of summer tourism. With 2023, traffic levels at Malta airport reached the pre-COVID peak levels of 2019. The year 2024 saw a further growth of air traffic (c.f. Figure 74) exceeding the pre-COVID seasons, both during winter and summer seasons.

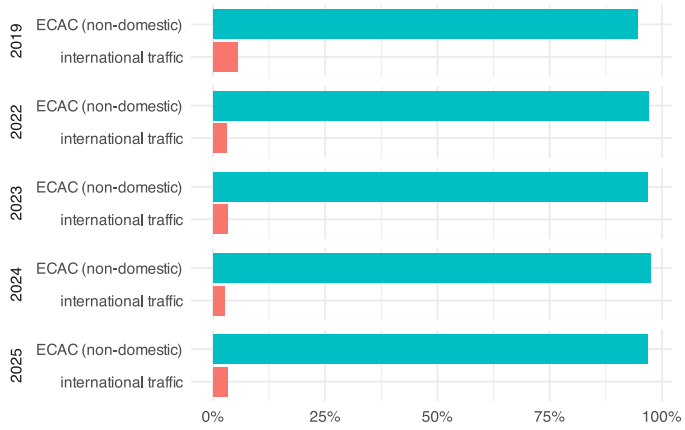


Figure 75: Malta- annual traffic share

Malta (c.f. Figure 75) has a consistent share of pan-European traffic ranging above 95%. The shallow increase of the intra-European share is balanced by a respective reduction of service to other international destinations. The international connections comprise several destinations in Lybia, Tunisia and - to a lower share - Qatar. Pre-COVID and the invasion of Russia to Ukraine, also Russia was serviced from Malta. International connections to Lybia and Tunesia are operated on a sub-weekly schedule and seasonal basis.

Considering the overall traffic increase depicted in Figure 74, the shallow increase in intra-European services suggests a higher number frequencies or destinations within the ECAC region, explicitly during the summer months.

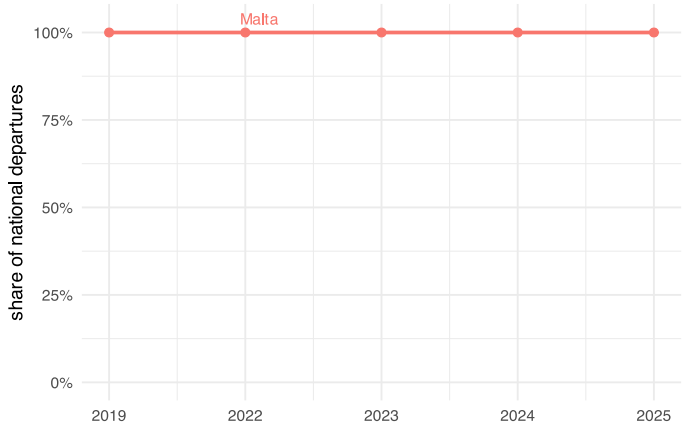


Figure 76: Malta- annual traffic share at top airports

With Malta being the only airport, all air traffic movements are operated from Malta airport (c.f. Figure 76). The actual development of the daily services can be derived from Figure 74 showing an impressive recovery trend.

4.5.2 Traffic evolution with IATA Seasons

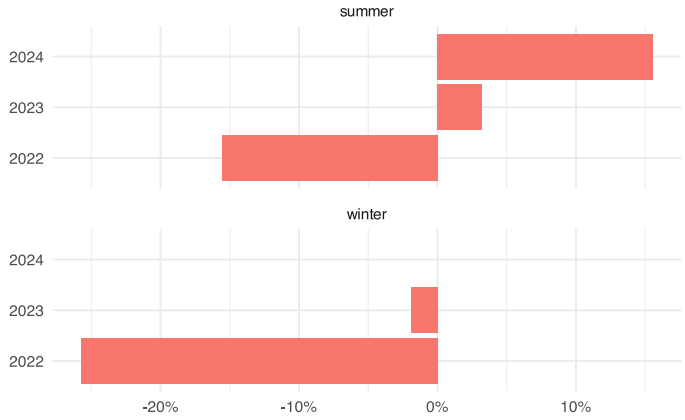


Figure 77: Malta - seasonal variation vs pre-pandemic

Figure 77 shows the seasonal change of the outbound traffic for Malta. As reported above, the recovery trend is clearly visible from the change in shares of connections in comparison to 2019. The year 2022 marked the only year being severely impacted by the COVID traffic constraints. While the winter season of 2023 ranged just under the pre-COVID traffic levels, the respective summer season already represented the break-even point in terms of traffic recovery. Daily traffic levels during the IATA summer 2024 demonstrated an overall recovery with outbound connections exceeding the 2019 level. This growth extended into the winter season 2024.

4.5.3 Connectivity Change on City-Pair Level

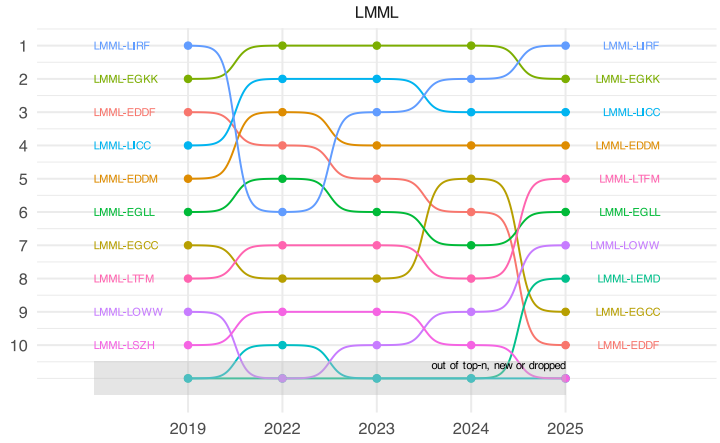


Figure 78: Malta - top annual connections

Figure 78 shows the top-10 connections from Malta (LMML). Please note that the data shown for 2025 only cover the period January through March. In a nutshell the top-10 destinations remained constant when comparing the traffic share pre-pandemic in 2019 with the post-COVID years 2022, 2023, and 2024. However, the level of traffic and associated frequency changed across the years. This can be observed in the change of the ranking for some of the connections. The main connection is London Gatwick (EGKK) ultimately replacing Italy's Rome Fiumincino (LIRF).

The latter connection dropped in terms of rank in 2022 and recovered ground to range at rank 2 in 2024. LMML observed also an increasing frequency with traffic to Manchester (EGCC) and Vienna (LOWW). With other services increasing, the connectivity to Frankfurt (EDDF) and Istanbul (LTFM) appeared to be loosing in rank. That suggests that potentially other carriers increased their services or the main operators from both EDDF and LTFM reduced their portfolio.

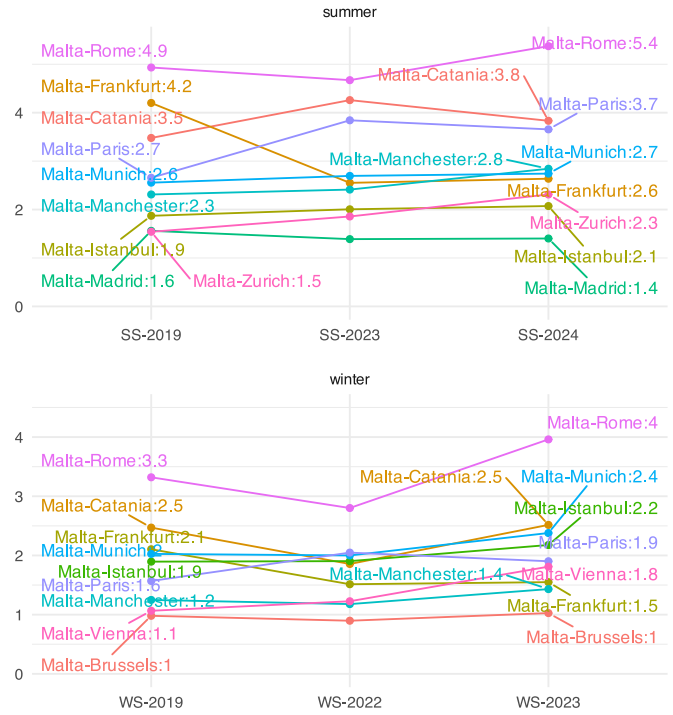


Figure 79: Malta - average daily connections

Figure 79 depicts the daily average outbound connections per the top-10 connections during the different IATA seasons. In general, we observe a saturation during the summer seasons in line with the pre-COVID connectivity. The summer season 2023 accounts for the observed increase in overall traffic at LMML (c.f. Figure 77). In broad brushes, the level of connectivity in terms of average daily connections remained fairly stable comparing summer 2023 to summer 2024. Increases observed between summer 2019 and summer 2023 are related to the overall traffic increase. Noteworthy, are the aforementioned reduction in services to Frankfurt (EDDF, i.e., lower frequence). This suggests that an operator had reduced its frequency to this destination. At the same time, we observe an additional flight on average during the summer period for the connection to Paris.

The connection to Switzerland (Zurich, LSZH) has seen an increase of just under 1 additional daily flights. This suggests that an additional sub-week connection had been introduced. The traffic in the winter seasons showed a continual increase over the years and resulting in a doubling of the average daily frequency to these destinations.

4.5.4 Airlines and City Pairs

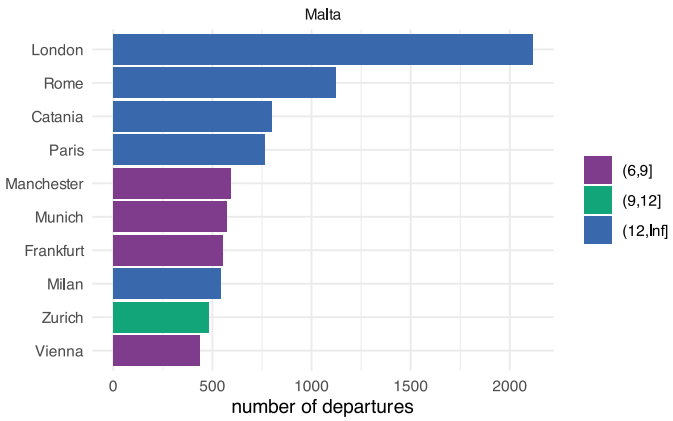


Figure 80: Airlines on city pairs

Figure 80 shows the top city pairs operated from Malta (LMML) during the summer season 2024. We observe a high number of different operators connecting all cities from Malta. Please note that London, Rome, and Paris represent multi-airport systems. Thus, the number of operators is also influenced by the respective connecting aerodrome. However, it appears that city connections with a high share of operators represent a competitive market. Considering the annual number of departures to these cities, showed London ranging well above the other markets seeing almost twice as many flights than the 2nd ranked Rome.

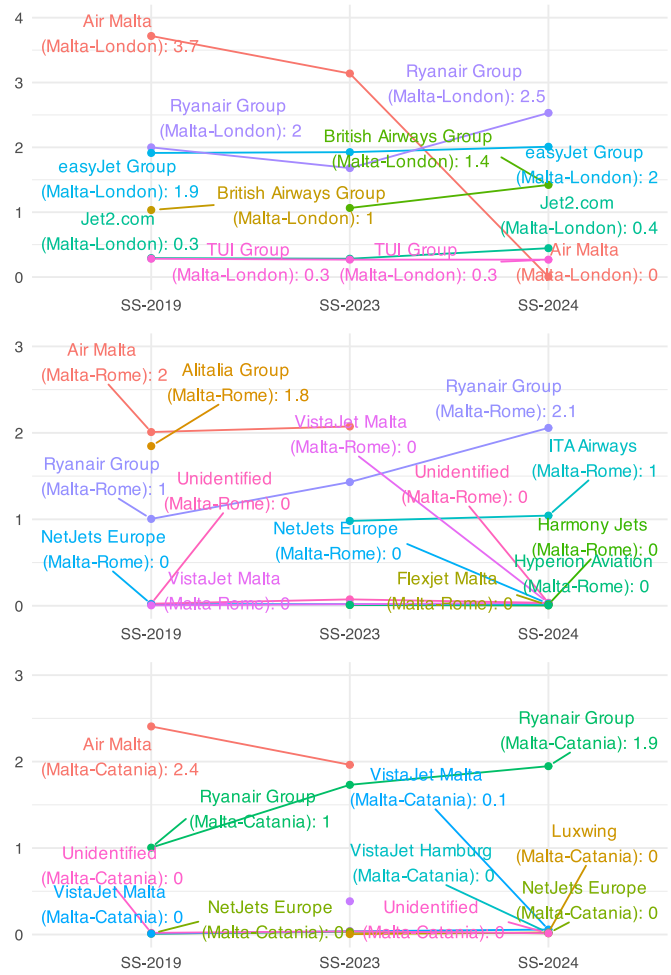


Figure 81: Malta - average daily connections per operator

Extending the analysis to the main air transport operators, Figure 81 shows example services provided for a selected set of the major connections in Malta during the peak summer season. On an air transport operator basis, connectivity relates to the number of services operated on a daily or weekly basis. For the London market, Figure 81 showed a cancellation of the services provided by Air Malta in summer 2024. At the same time Ryanair increased the frequency of its operations, and easyJet keeping a stead schedule with 2 daily flights across all summer seasons. TUI and Jet2 operate sub-week schedules only operating on selected days during the week. The connectivity to Rome is characterised by a number of smaller business jet / charter operators. The low daily share signals that these operator only provided selective services. Connections to Catania show a similar pattern regarding occasional charter services. The dominant transport service provider on this leg is Ryanair.

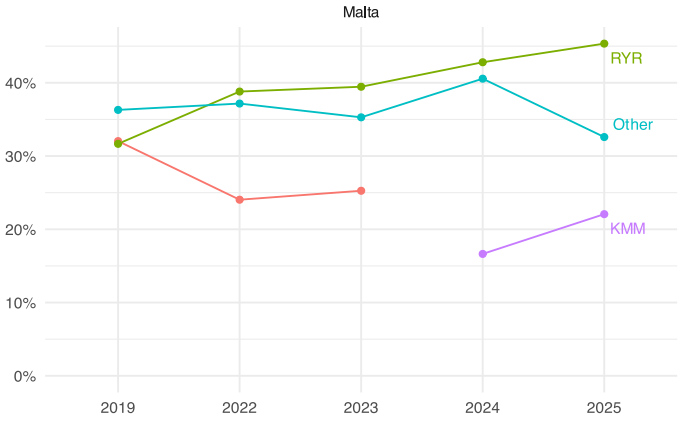


Figure 82: Malta - average daily connections per operator

Figure 82 shows the predominant operators at Malta with a minimum share of 5%. Note that the data shown for 2025 only cover the period January through March. Comparing pre-COVID with the post-pandemic years, Ryanair increased its market share operating from LMML. Smaller operators account for a substantial share of traffic lumped into the *Other* group and a more tourism-driven seasonal traffic demand. This suggests that the daily schedule is complemented with charter and lease operators. We observe a significant loss of the market share by Air Malta (AMC).

On the other side, the share of connections serviced by KMM increased. After its market entry, KMM is accounting for more than 15% of the services.

4.5.5 Same Day Return

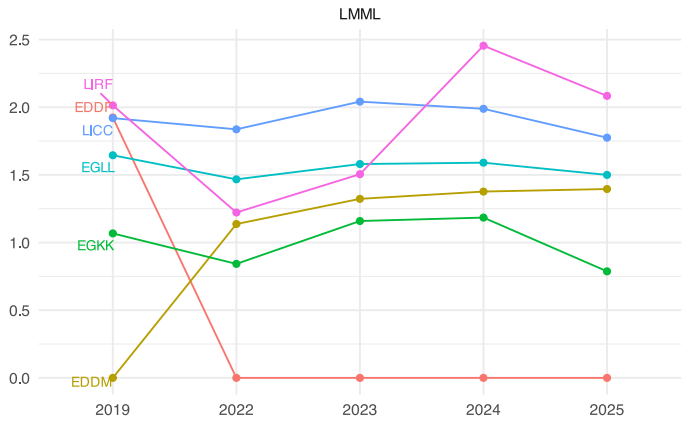


Figure 83: Malta - top 5 - same day returns

Based on the options a passenger has to return on the same day, the ratio of options selecting between different return flights allowing a longer than 5-hour visit is presented in Figure 83. Comparing the pre-COVID period with the years 2022, 2023, and 2024, there exists 2 services that remained fairly stable, i.e., with Catania (LICC) offering two same-day options, and London Heathrow (EGLL) offering around 1.6 daily options. The market to London Gatwick (EGKK) grew during the post-COVID years and reached in 2024 about 1.25 daily options.

This suggests that sub-week and seasonal schedules are operated to these airports. For the connectivity to Germany a change took place in the top-5 same-day options. Services to Frankfurt (EDDF) dropped out of the top-5 and Munich (EDDM) entered with an average of 1.3 flights offering a same day trip to Munich across the year 2024. The Rome market has significantly increased after the COVID related reduction and offers the most same-day options in 2024 of about 2.5 connections per day.

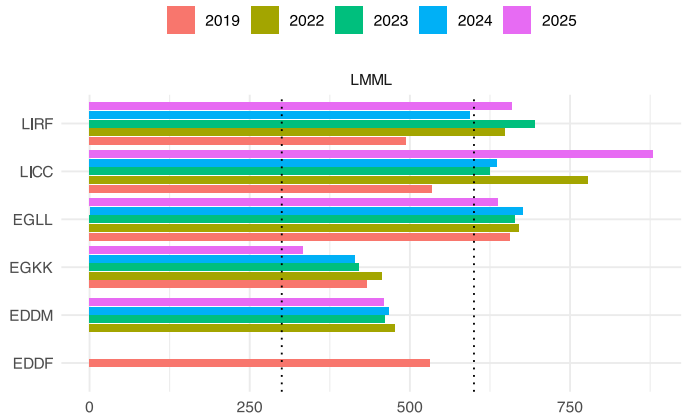


Figure 84: Malta - top 5 - same day returns

Figure 84 provides the annual variation for the average (median) duration of a one-day visit and return of more than 5 hours (300 minutes). The comparison confirms the previous observations. The frequency of services allows to combine flights in such a manner to enable a one-day return with a minimum 5-hour visit to the destination across all study years. The London market showed a fairly stable schedule across the years suggesting a mature market and predominant operator. Post-COVID, connections to Catania (LICC) and Rome (LIRF) offered additional options.

The exit of EDDF from the top-5 with the COVID start and the entry of Munich (EDDM) during the post COVID years can be derived also in terms of availability of same-day return options.

4.5.6 Service Continuity

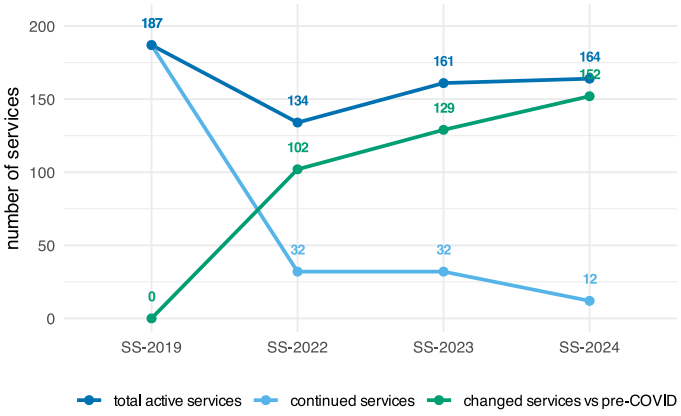


Figure 85: Malta - service continuity

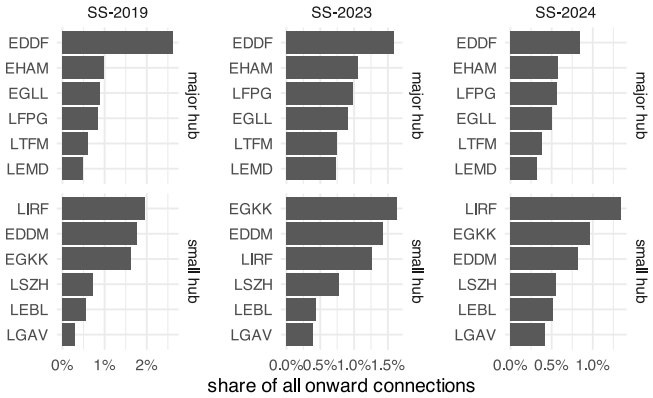


Figure 86: Malta - interconnectivity nodes

Figure 85 shows the evolution of seasonal services operated pre-COVID with the services operated over the last summer seasons. On average, the level of services operating from LMML recovered, however ranges still below (about 12%) the pre-pandemic level. We observe a substantial change of the schedules operated during the summer seasons. It must be noted that this schedule change comprises - inter alia - changes by the operators originally servicing LMML pre- and post-pandemic, but also new services (new destinations).

Figure 86 depicts the development of the interconnectivity level for flights departing from Malta/LMML focussing on the summer seasons. The overall ranking of schedules/services interconnecting through major hubs remained fairly constant. The observed shrinking in onward connection share needs to be considered in light of the overall increasing traffic levels. This suggests a wider and increased diversification of services and onward connections with origin LMML. The ranking of onward connections through small hubs changed suggesting a stronger change in the local schedule or for onward connections during the post-COVID recovery. Overall a reduction in onward options is also seen for the small hub connections.

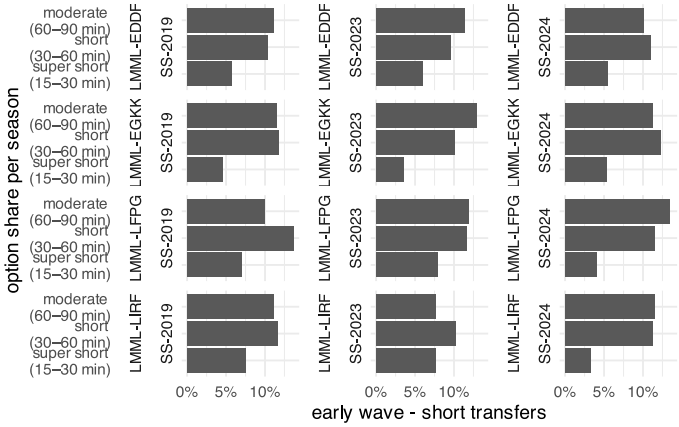


Figure 87: Malta - interconnectivity level from top airport

A particular interest is the level of onward connections during the *first wave* at the interim airport. Figure 87 highlights the connection options during the summer seasons via Frankfurt/EDDF, Gatwick/EGKK, and Rome/LIRF. We can observe a shifts for all interim airports with Frankfurt showing a stable 10% interconnection rate for short connections with 30-60 min transfer times. This also applies to the share of early onward connections at EGKK and LIRF. Additional onward connections via Rome in the early hours can be mapped to the increasing schedules at Rome post pandemic. Schedules with Paris/LFPG show a lower attractiveness as the 30-60 min transfer slot decreased in the early morning hours. This suggests a lower number of outbound flights or a shift in the schedule for the onward connections.

4.5.7 Malta - Interconnectivity

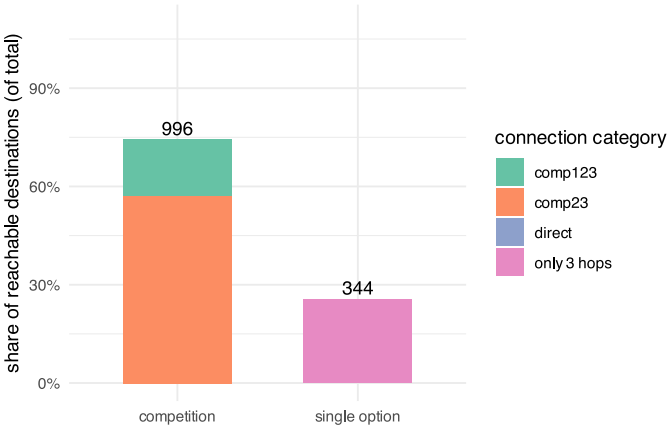


Figure 88: Malta - onward competition options

Figure 88 shows the level of possible competition between onward connections. For the case of Malta/LMML we observe a high level of competition between 2- and 3-hop connections (just under 60%, comp23). Further competition between direct destinations and 2-hop or 3-hops services offers alternatives for travellers. There exists strong competition between 2- and 3-hop destinations suggesting that services from LMML are linked with key nodes of the network (c.f. Figure 86). About a third of all reachable destinations is only reachable with 3-hops (i.e. 344).

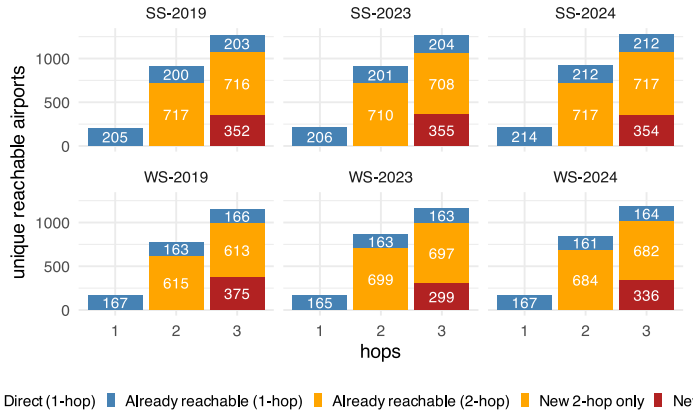


Figure 89: Malta - onward competition options

Overall the level of competition between multi-hop destinations remained fairly constant. Figure 89 shows the level of competition regarding direct and multi-hop connections per destinations reachable during the summer seasons. Across the seasons, there exists a fairly stable direct connection schedule with a slight reduction during the winter seasons. With the good level of interconnectivity, the onward reachability for 2-hop destinations is also constant across all compared seasons. The number of additional destinations increases significantly with the interim stops showing a high level of connections to key nodes in the network. The aforementioned pattern for the 3rd hop connections complements the alternatives for travellers.

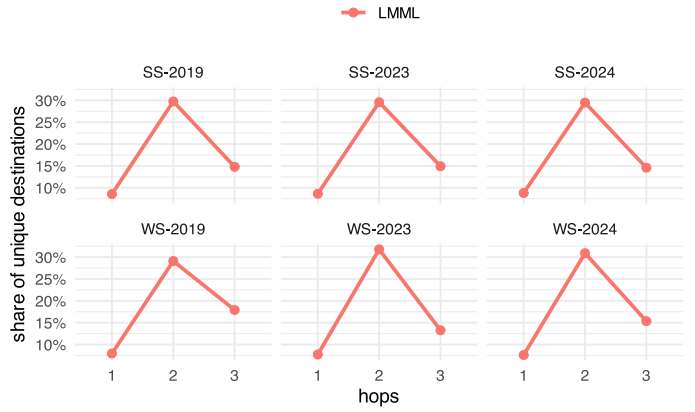


Figure 90: Malta - incremental gain per hop

Focussing on the incremental gain in reachable destinations during the summer seasons, Figure 90 confirms the aforementioned strong onward connection role of the 2-hop for regular services from LMML. The additional gain from the 3-rd hop is relatively shallow (about 15%). The pattern remained constant when comparing post-pandemic schedules with pre-COVID services. There is a slightly higher level of gain for 2nd hop connections during the winter seasons in 2023 and 2023 compared to 2019 combined with a lower level for the 3rd hop. This suggests that available onward connections during the winter season depend strongly on the winter schedules operated at the interim airpaorts. There is growth potential to establish direct services for 2nd hop destinations.

4.5.8 Malta - summary

This section addresses the observed changes in connectivity for Malta. The study covers the changes over the time between 2019 and 2025. Malta is a single airport country and thus overall traffic levels represent traffic developments at Malta airport. Traffic at LMML reached pre-pandemic levels already with 2023. In 2024, the continual growth resulted in traffic levels in all seasons exceeding the pre-pandemic traffic.

Based on the network serviced from Malta, geo-political impacts of the Russian war on Ukraine and the conflict in Gaza do not impact connectivity in general. Associated connections to Russia and Ukraine were historically limited to a negligible share of flights.

European/ECAC area destinations account for about 95% of all connections serviced from Malta airport (LMML). Lybia and Tunesia represent the major other international destinations.

The specifics of the operating environment can be summarised as

- operating airlines
  - There is a strong low-cost market with Ryanair (RYR) as the predominant operator accounting for more than 40% of all traffic in 2024. KM Malta Airlines (KMM) as the 2nd strongest operator serviced about 40% (i.e., 5119) of the flights of Ryanair (i.e., 13169 flights). Air Malta (AMC), EasyJet (EZY), Lufthansa (DLH), and Wizz Air (WZZ) range as the top competitors within the group of others operating between 1000-1500 flights in 2024.
- market environment
  - intra-European traffic accounts for the majority of traffic ranging consistently above 95% over the past years.
  - international traffic (non-ECAC) acounts for a small share of 5% or less with Lybia and Tunesia being the main destination over the past years.
- service type variation
  - the average daily outbound analysis showed that the recovery of services and their frequencies were stronger during the winter seasons. However, as of 2023, pre-pandemic travels levels were matched in all seasons, and with 2024 the growth exceeded the pre-COVID level of services and connections. With the winter season traffic stabilising, a consistent schedule is operated with a higher level of services in terms of frequencies during the summer peak.
  - seasonal variability is observable when comparing the average daily level of connections. High level of connections are offered throughout the summer seasons to the main destinations (i.e., Rome, Catania, and several destinaitons in the United Kingdom). This signals a strong summer vacation market. During the winter seasons, the recovery was more prominent and stabilised with the winter season 2023, and frequencies doubling with 2024.
- growth and connectivity
  - on a network-level, Malta recovered to pre-pandemic levels rapidly. As of 2023 the break-even point was reached and today's schedule exceeds pre-pandemic service levels.
  - a strong low-cost market exists seeing larger providers only servicing a share well below 4% of all traffic. This suggests that future growth will be linked to the expansion of the network of the low-cost carriers and could be strongly linked to tourism/vacation markets.
  - same-day return options (services allowing for more than 5 hours at the destination) are observed for the major connections to the United Kingdom, e.g. Rome (LIRF), Catania (LICC), London (Heathrow EGLL, Gatwick EGKK), and Munich (EDDM).
- service stability
  - on average, services and schedules from LMML rebound post COVID, however have not fully reached pre-COVID levels. This impacts the number of services/schedules.
  - the connection patterns have not significantly changed across the summer seasons. This suggests a high level of services operated to and from LMML to key network destinations by different operators. While nuances exists, the ranking of services through connecting major and smaller hubs is fairly constant.
- competition
  - LMML services a consistent number of direct connections with competition via one or two interim stops.
  - there is a high level of competition between 2-hop and 3-hop services showing a strong role of the 2nd hop onward connections. This is also confirmed in terms of incremental gain for regular schedules for the 2nd hop with a lower contribution by the 3-hop connections. This offers room for potential new markets.

4.6 Montenegro

4.6.1 Traffic Characterisation

Figure 91: Monthly movements 2019 - 2024, Montenegro

Figure 91 depicts the evolution of the daily traffic levels in Montenegro. Traffic levels in 2023 reached the pre-pandemic 2019 levels. The combined traffic at Pdgorica (LYPG) and Tivat (LYTV) observed a further growth in 2024, with the winter season being comparable to pre-COVID and the summer peak exceeding 2019 levels. It is noteworthy that peak days during the summer peak exceed a total of 35 departures, representing about twice as much traffic as during the winter season. This suggests a strong summer vacation market.

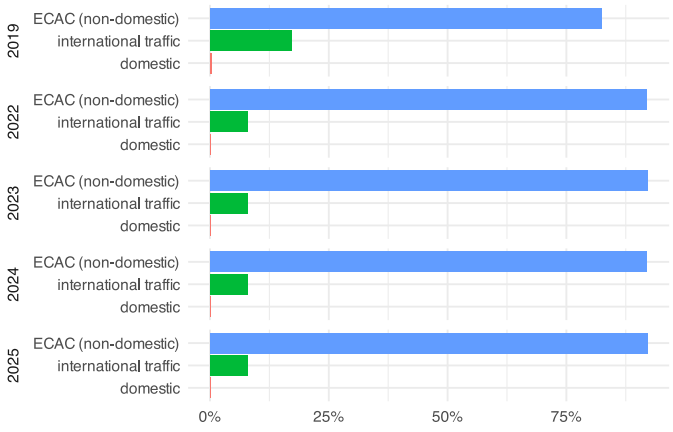


Figure 92: Montenegro- annual traffic share

Montenegro (c.f. Figure 92) has a consistent share of pan-European traffic ranging at just under 90% of the traffic serviced at Podgorica (LYPG) and Tivat (LYTV). Non-ECAC traffic ranges around 10% throughout the past years. When comparing the 2019 outbound traffic with later years, the decrease of the international traffic share is linked to a significant reduction of connections to the Russian Federation (about a third in 2024 of the services in 2019). Slovenia and United Arab Emirates are the other 2 major markets over the past years. Given the size of Montenegro domestic operations are negligible.

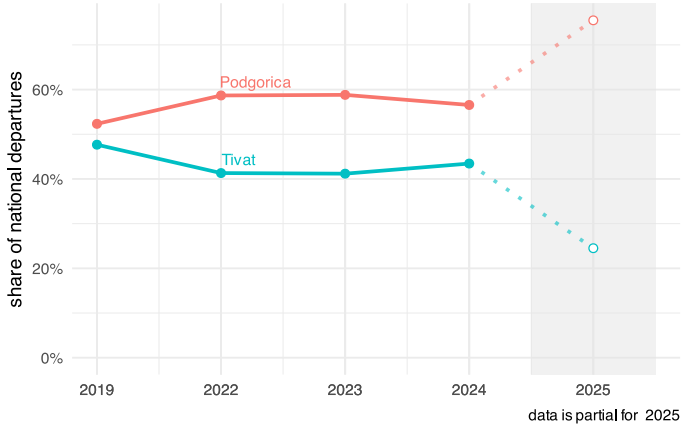


Figure 93: Montenegro- annual traffic share at top airports

Traffic in Montenegro is split between both airports, i.e., Podgorica (LYPG) and Tivat (LYTV). Note that the data shown for 2025 only cover the period January through March. In terms of absolute numbers, the traffic growth appeared to kick-in earlier in Podgorica (LYPG), as the share of Tivat reduced slightly in 2022 and 2023. With 2024 the share of flights between both airports appear to reflect the pre-COVID share, probably driven by the main operators and serviced destinations at both bases.

From a national perspective these changes are related to the rebounding of operations and schedule frequencies (c.f. Figure 93). Seeing the overall traffic recovery in Montenegro, the air transport market has recovered since 2023.

4.6.2 Traffic evolution with IATA Seasons

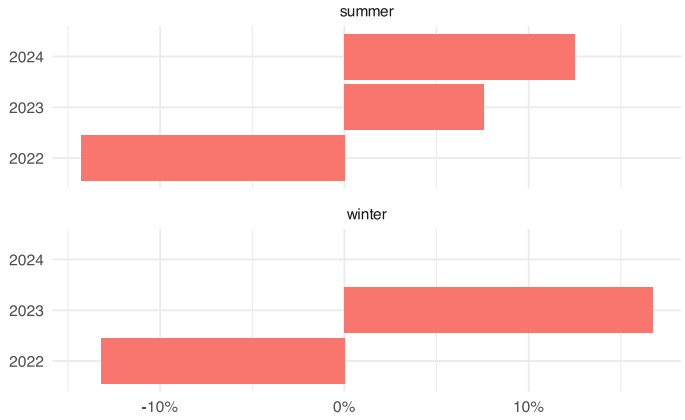


Figure 94: Montenegro - seasonal variation vs pre-pandemic

Figure 94 shows the seasonal change of the outbound traffic for Montenegro. As reported above, the recovery trend is clearly visible from the change in shares of connections in comparison to 2019. The year 2022 marked the only year being severly impacted by the COVID traffic constraints, with traffic levels in 2023 and 2024 exceeding the pre-COVID services. There appears to be a slightly higher growth for the winter seasons in comparison to 2019 than for the summer seasons.

4.6.3 Connectivity Change on City-Pair Level

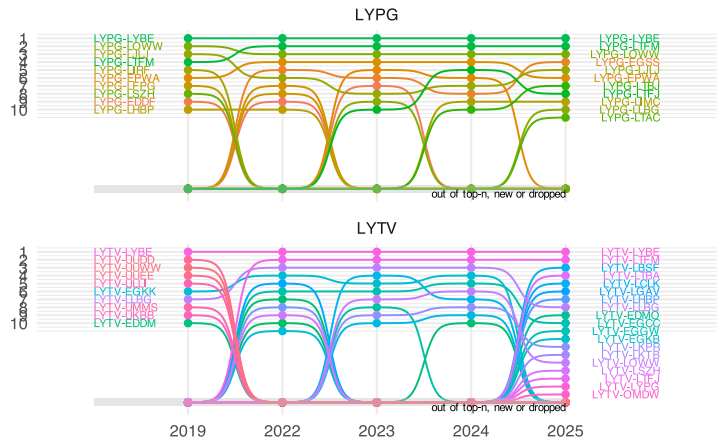


Figure 95: Montenegro - top annual connections

Figure 95 shows the top-10 connections from Podgorica (LYPG) and Tivat (LYTV). Both airports operate a high number of connections to Belgrade (LYBE) and show the strong link to the adjacent Serbia. From the group of top-10 connections, Podgorica (LYPG) observed changes during the COVID-period. For example, connections to Rome (LIRF), Paris Charles de Gaulle (LFPG), Zurich (LSZH), Frankfurt (EDDF), and Budapest (LHBP) dropped and were replaced by connections to Krakow (EPKK), Istanbul Sabiha Gökçen (LTFJ), Mailand (LIMC), and Gatwick (EGKK).

Operations from Tivat (LYTV) were impacted by the Russion invasion of Ukraine and the subsequent bans. With a strong market to the Russian Federation before the start of the invasion (and pre-COVID), LYTV observed a stop of operations to Moscow (UUEE and UUWW) and Saint Petersburg (ULLI), Belarus' Minsk (UMBB), and Kyiv's UKBB. New entries amongst the top-10 connections include Ben Gurion (LLBG), Manchester (EGCC), Vienna (LOWW), Vilnius (EYVI), Prague (LKPR), Riga (EVRA), and Berlin (EDDB) as of 2023.

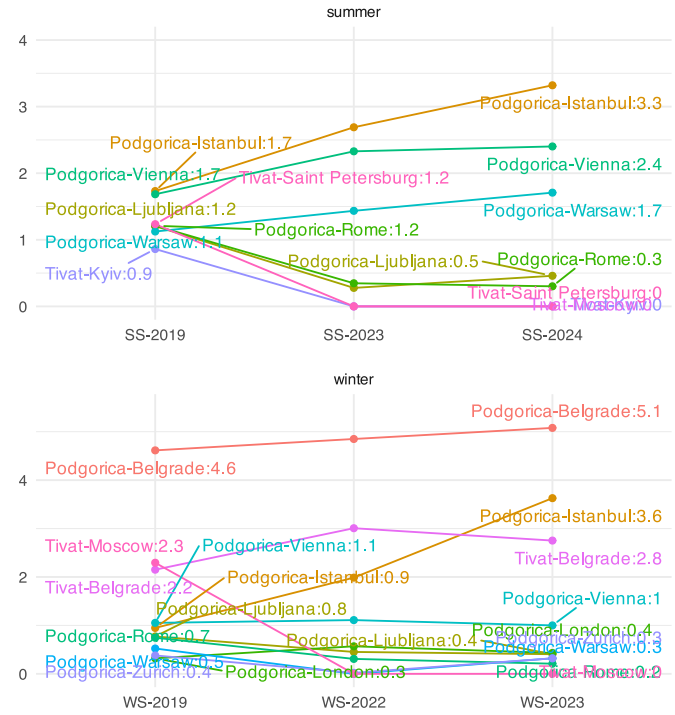


Figure 96: Montenegro - average daily connections

Figure 96 depicts the daily average outbound connections per the top-10 connections during the different IATA seasons. A diverse picture emerges with certain connections increasing the capacity while other service frequencies decreased in terms of daily connections. Services from Podgorica (LYPG) strongly increased to Istanbul and a moderate growth for Vienna during the summer seasons. This suggests a higher frequency or additional operators. The impact of the flight restrictions due to the Russian invasion in Ukraine lead to a reduction in average daily flights to the respective destination. However, the summer season 2023 and 2024 also observed a decrease of services to Rome and Ljubljana to flights only operating on a subset of the week days. A strong growth of average daily connections during the winter season is observed for operations between Podogorica/Belgrade and Podogorica/Istanbul.

For these markets the average daily offer increased by about 3 flights per day. A similar growth rate is seen for the leg Tivat/Belgrade. The other operations are characterised by services on a subweek level, in some instances accounting for 1 movement per week.

4.6.4 Airlines and City Pairs

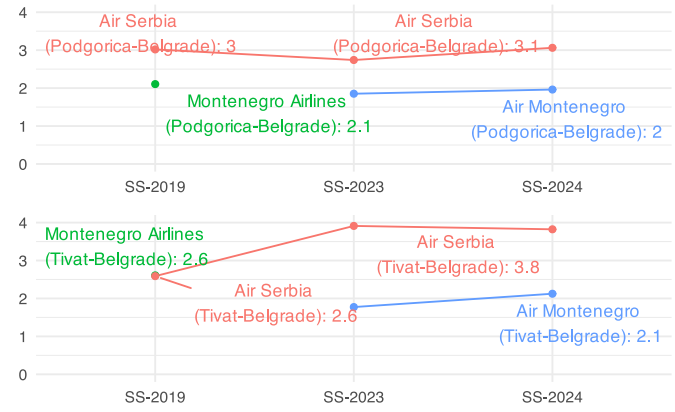


Figure 97: Montenegro - average daily connections per operator

Figure 96 depicts the daily average outbound connections for the top connections for Podgorica and Tivat to Belgrade and the peak summer season. Air Serbia emerges as the predominant operator at both airports, offering on average three daily flights from Podgorica (LYPG) and a higher average daily frequency from Tivat (LYTV). In light with the earlier discussion, a fairly constant schedule can be seen on these connections for the summer 2023 and 2024. With the launch of services by Air Montenegro in June 2021, we observe the change of the national carrier from Montenegro Airlines to Air Montenegro offering a similar level/ frequency of services to Belgrade.

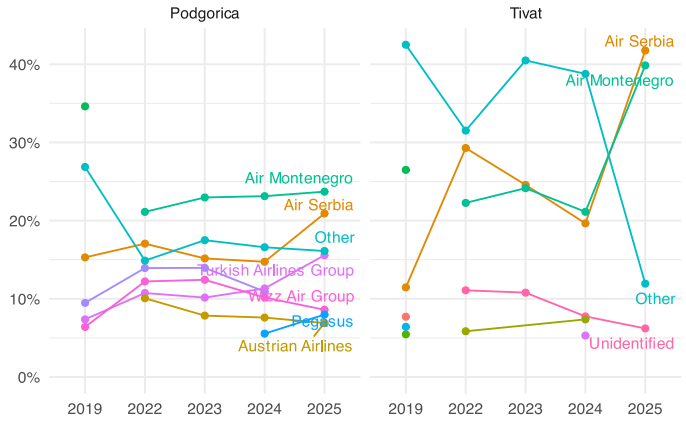


Figure 98: Montenegro - average daily connections per operator

Figure 98 shows the main operators from Podgorica (LYPG) and Tivat (LYTV). Please note that the data shown for 2025 only cover the period January through March. We observe a high number of different operators connecting to the predominant destination Belgrade served by both airports. The market share at Podgorica (LYPG) appear more mature with marginal changes across the years. The picture is more varied at Tivat (LYTV). Air Montenegro and Air Serbia represent the main operators. Third party operators, charter, or point-to-point transport operations form a smaller share of the operations at Tivat.

4.6.5 Same Day Return

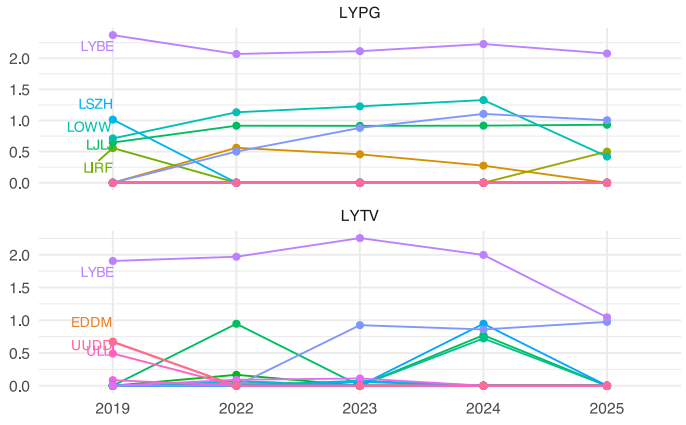


Figure 99: Montenegro - top 5 - same day returns

Based on the options a passenger has to return on the same day, the ratio of options selecting between different return flights allowing a longer than 5-hour visit is presented in Figure 99. With the high level of connectivity and service frequency, both airports connect well with Belgrade (LYBE) and provide about 2 flights per day that enable a same-day return. At Podgorica (LYPG) we see the aforementioned change and drop of connections with services to LIRF and LSZH subsiding during the COVID phase.

The availability increases for same day returns to LOWW and LJLJ. Tivat (LYTV) shows a varied pitcure reflecting major schedule changes across the years. This includes the loss of connectivity to the Russion Federation in light of the Russian invasion to Ukraine, and the entry of new service providers.

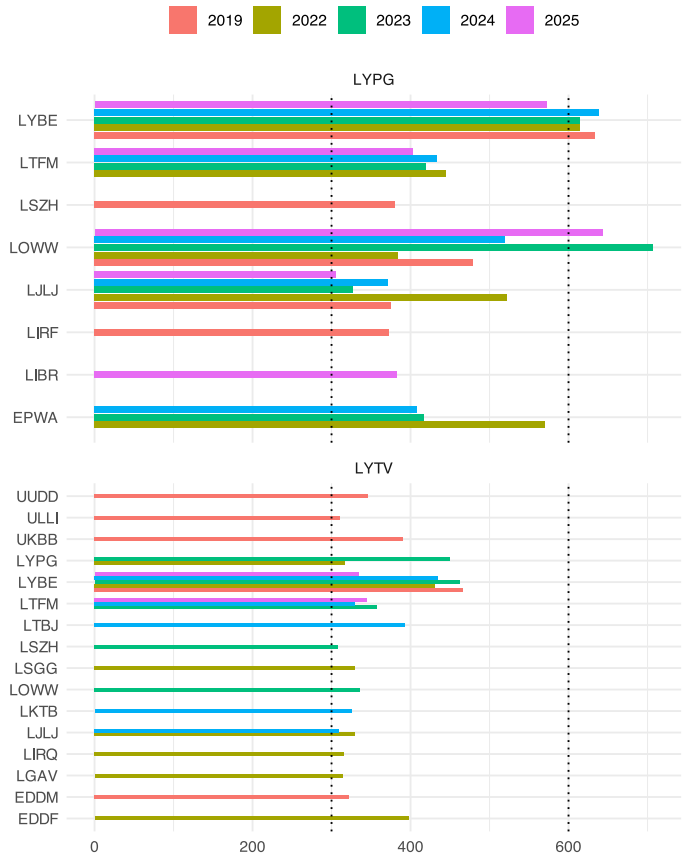


Figure 100: Montenegro - top 5 - same day returns

Figure 100 provides the annual variation for the average (median) duration of a one-day visit and return of more than 5 hours (300 minutes). Both airports offer same-day return options for connections to Belgrade. Further same-day return opportunities at Podgorica (LYPG) are available post-pandemic for connections to Istanbul (LFTM), Vienna (LOWW), Ljubljana (LJLJ), and Warsaw (EPWA). Tivat (LYTV) observed the availability of one-day return options in diffrent years. This suggest an attempt to provide multiple connections on a daily level, but then changing the schedule in the following years. We observe new entrants with the Turkish market to LTFM and LTBJ providing the option for a one-day return in 2024.

4.6.6 Service Continuity

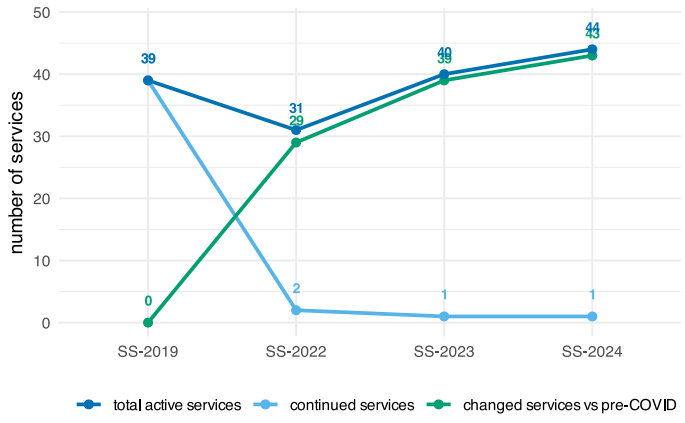


Figure 101: Montenegro - service continuity

Comparing the seasonal services pre-COVID with the services operated over the last summer seasons, Figure 101 depicts the overall evolution. On average, the level of services operating from LYPG recovered fully during the summer season 2023 and increased by about 12% (5 services) in 2024. At LYPG, there is a substantial change of the schedules operated during the summer seasons with virtually all regular services refined. It must be noted that this schedule change comprises - inter alia - changes by the operators servicing LYPG pre- and post-pandemic, but also new services (new destinations)

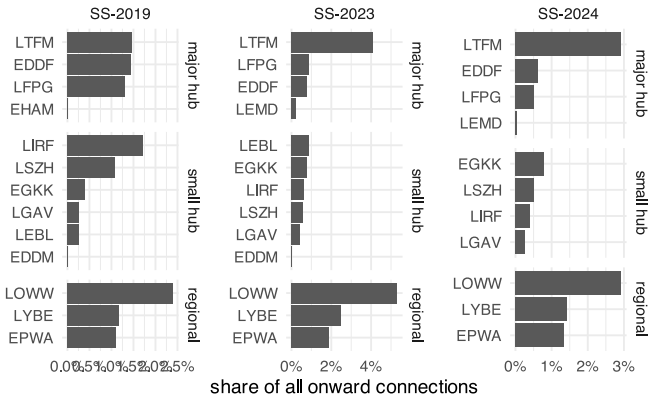


Figure 102: Montenegro - interconnectivity nodes

Figure 102 depicts the development of the interconnectivity level for flights departing from Podgorica/LYPG focussing on the summer seasons. The aforementioned schedule changes are also reflected in terms of interconnecting airports. During the post-COVID period, we observe a reduction with connections to Amsterdam/EHAM and an increase for Madrid/LEMD for onward connections. The ranking and pool of connections through small hubs changed across the presented seasons. Istanbul/LTFM is a key major hub in terms of onward connections. Vienna/LOWW, Belgrade/LYBE, and Warsaw/EPWA serve as regional connecting hubs for LYPG.

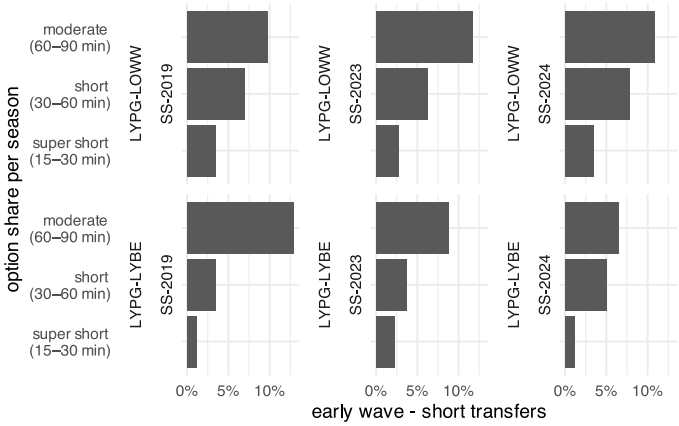


Figure 103: Montenegro - interconnectivity level from top airport

A particular interest is the level of onward connections during the *first wave* at the interim airport. Figure 103 highlights the connection options during the past summer seasons for LYPG and the 2 regional connecting hubs LOWW and LYBE. We observe the change for Belgrade/LYBE, with an overall reduction of services fewer onward connections in the early morning. This suggests a lower number of outbound flights or a shift in the schedule for the onward connections. The picture at LOWW remained fairly stable in terms on onward attractiveness.

4.6.7 Montenegro - Interconnectivity

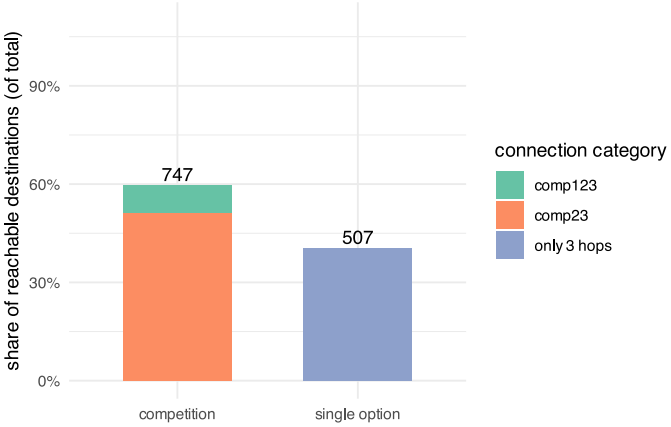


Figure 104: Montenegro - onward competition options

Figure 104 shows the level of possible competition between onward connections for LYPG. At Podgorica/LYPG, we observe a small share of competition for multi-hop connections versus direct connections (comp123). Based on the interconnectivity pattern presented above, many destinations can be reached with either 2 or 3 hops offering options for travellers. The strong dependency on interconnecting airports can also be derived from the fact that about 40% of destinct destinations can be only reached via 3 interconnecting flights. There exists a growth potential for replacing 2-hop connections with direct services and seek options for 3-hop destinations (either direct or via interconnecting hubs).

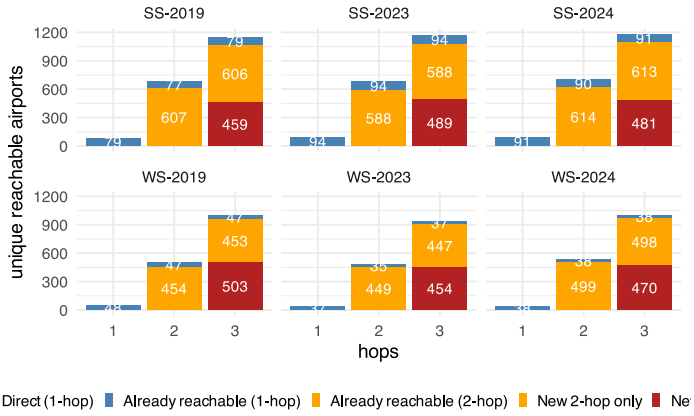


Figure 105: Montenegro - onward competition options

Overall the level of competition between multi-hop destinations remained fairly constant over the past years. Figure 105 shows the level of competition regarding direct and multi-hop connections. In terms of direct connections, 2- or 3-hop connections range at a similar level offering options to passengers.
The number of additional destinations increases significantly with a single or further interim stop. Dependency on the 2nd hop offers about 6 times more destinations than the direct services during the summer seasons and about 4 times higher during the winter seasons. This 3rd hop options show a quasi constant interconnection schedule from the interim airports.

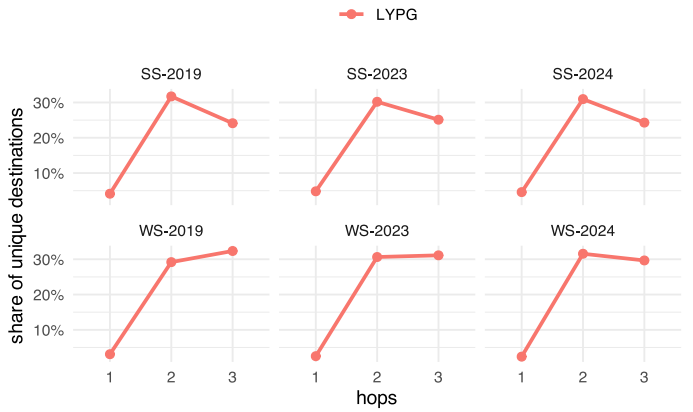


Figure 106: Montenegro - incremental gain per hop

Focussing on the incremental gain in reachable destinations on the basis of regular schedules, we observe a continual pattern for the summer seasons with Figure 106. During the winter seasons, the schedule impact of options from the connecting airports play a stronger role. Based on the strong connections through interconnecting airports, a fairly high level of further onward connections are available to travellors from LYPG. With Figure 105 there exists an increasing number of 2nd and 3rd hop destinations during the winter seasons. Thus, the service quality in terms of frequencies for unique destinations shows a similar level of incremental increase during the winter seasons. Schedule variations during the summer seasons for onward connection could help to identify potential growth markets.

4.6.8 Montenegro - summary

This section addresses the observed changes in connectivity for Montenegro. The study covers the changes over time between 2019 and early 2025. Overall traffic levels in Montenegro broadly follow the pan-European post-pandemic recovery trend. As of 2023, traffic levels reached and exceeded the pre-pandemic traffic. Geo-political impacts of the Russian war on Ukraine and the conflict in Gaza are covered and highlighted throughout this chapter. Montenegro observed associated connections being dropped to Russia and Ukraine. The impact of the Gaza conflict is relatively mild at the time of writing.

Air transport services a broadly shared amongst Podgorica (LYPG) and Tivat (LYTV), with the former servicing about 10-12% more of traffic. Just under 90% of all connections are to European destinations. Other international destinations account for about 10%, with the United Arab Emirates a major non-European market. The geo-political impact of the Russion war on Ukraine is visible in form of dropped connections.

On a national level, traffic to the Russian Federation accounts for about a third of the connections operated in 2019 due to the sanctions on Russia.

The specifics of the operating environment can be summarised as

- operating airlines
  - Given its size, the domestic market is negligible.
  - Air Serbia and Air Montenegro are the dominant operator at both airports.
  - Podgorica (LYPG) serviced connections from a wider mix of air transport operators.
- market environment
  - intra-European traffic accounts for the majority of traffic.
  - international traffic (non-ECAC) accounts for about 10%.
- service type variation
  - the average daily outbound analysis showed that the recovery of services and their frequencies was established with winter 2022. The growth over the summer seasons appeared stronger and in line with the increasing summer peak traffic.
  - with the continuously growing segment to Istanbul, the seasonal variability is moderate when comparing the average daily level of connections over the past years. This signals a robust market.
- growth and connectivity
  - on a network-level, Montenegro reached its pre-pandemic traffic levels with the summer season 2023 and observed growth in 2024.
  - the schedule and connectivity at Podgorica (LYPG) suggests a more mature market. Changes in the ranking are more pronounced at Tivat (LYTV) showing a more diverse change to operators and scheduled frequencies.
  - looking on the level of same day return options (services allowing for more than 5 hours at the destination), services to the major connections, i.e., Belgrade (LYBE), Istanbul (LTFM), Vienna (LOWW), and Ljubljana (LJLJ) evidence a high frequency of scheduled services.
- service stability
  - on average, services at LYPG increased continuously post-COVID and exceed pre-pandemic levels of schedules.
  - the level of connectivity at large hubs and regional hubs remained fairly constant, schedule changes resulted in a ranking change for small hub connections.
  - Vienna/LOWW, Belgrade/LYBE, and Warsaw/EPWA play an essential role in terms of access to onward connections.
- competition
  - there is a small share of competition for direct connections, with the aforementioned role of onward connections offering a large share of options for travellers at interim airports; and
  - a high share of network connections are only accessible via a 3rd hop showing the high dependency on the 2nd hop destinations (and the respective onward schedules).

4.7 Portugal

4.7.1 National Traffic Overview

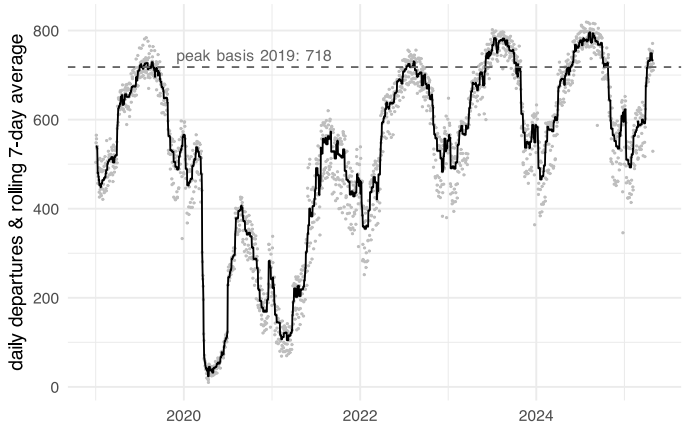


Figure 107: Daily departures - , Portugal

On a national level, Portugal observed a continual growth of the traffic levels post-COVID. As of 2022 national traffic levels reached the pre-COVID levels during the summer season and with the winter season 2022 pre-COVID levels were exceeded. This trend continued in 2023 and 2024. Both years observed a growth in both the summer and winter season. The annual pattern is characterised by a strong summer peak (c.f. Figure 107).

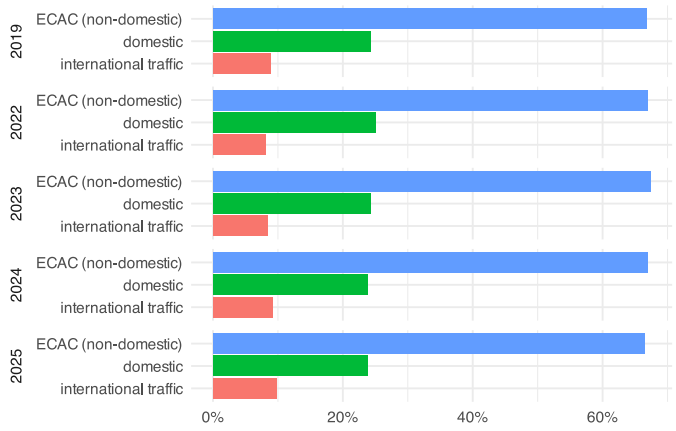


Figure 108: Portugal- annual traffic share

On a national level connectivity to ECAC member states / EUROCONTROL area represents the major share for Portugal (c.f. Figure 108). Intra-European air traffic is the major air transport market segment and accounted constantly for about 65-67%% of the annual traffic throughout all study years. This suggests that traffic reduction during COVID resembled a scale-back of operations and the recovery saw the successive reestablishment of schedules and connections. This is in line with Portugal being a key tourism destination in Europe.

The same scaling effect applies to the domestic travel segment representing about a quarter of all operations between airports in Portugal. This constant scaling effect can also be observed with the international air traffic segment ranging consistently at about 10% in the years 2023 and 2024. The major international markets comprise the United States and Brazil. Considering the overall traffic increase depicted in Figure 107, it is interesting to see that connections for all market segments saw similar growth rates in Portugal.

Figure 109 depicts the overall share of departures from these top airports. Please note that the data shown for 2025 only cover the period January through March. The shares remained constant over time, with the share of departures virtually unchanged in 2024 (LPPT (46.3%), LPPR (21.1%), LPFR (13.5%), Other (7.2%), LPMA (6.6%), and LPPD (5.3%)) virtually unchanged. The predominant national airport is Lisbon (LPPT) accounting for the majority of flight operations and servicing consistently about half of the movements in Portugal.

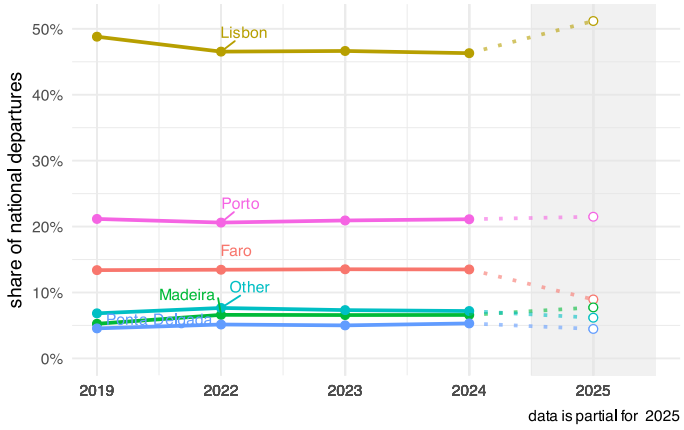


Figure 109: Portugal- annual traffic share at top airports

Comparing the share of services in 2019, i.e., LPPT (48.8%), LPPR (21.2%), LPFR (13.4%), Other (6.8%), LPMA (5.3%), and LPPD (4.6%), with the achieved results in 2024, i.e., LPPT (46.3%), LPPR (21.1%), LPFR (13.5%), Other (7.2%), LPMA (6.6%), and LPPD (5.3%), the market shares remained fairly stable. The marginal increases observed at smaller airports in light of the overall traffic growth result in the 3% point reduction observed at LPPT. Operations at *other* smaller airfields accounted for about 7% and ranged above the level of operations observed at Madeira (LPMA) and Ponta Delgada (LPPD).

4.7.2 Traffic evolution with IATA Seasons

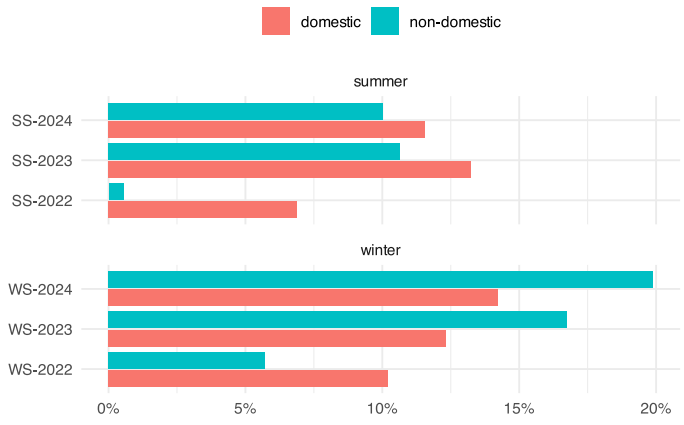


Figure 110: Portugal - seasonal variation vs pre-pandemic

Figure 110 shows the seasonal change of the outbound traffic for Portugal. The recovery trend is clearly visible across the seasons with the year 2022 marking the year of service levels starting to exceed 2019 levels. The general traffic development reported above showed already a strong growth and recovery during the summer periods. While the summer 2022 levels for non-domestic operations fell still short, there existed a continual growth of traffic in sync across the different market segments. On average the relative growth during the winter seasons is higher than the growth rates during the summer seasons.. The seasonal change is in line with the aforementioned growth of all market segments reported in Figure 108.

4.7.3 Connectivity Change on City-Pair Level

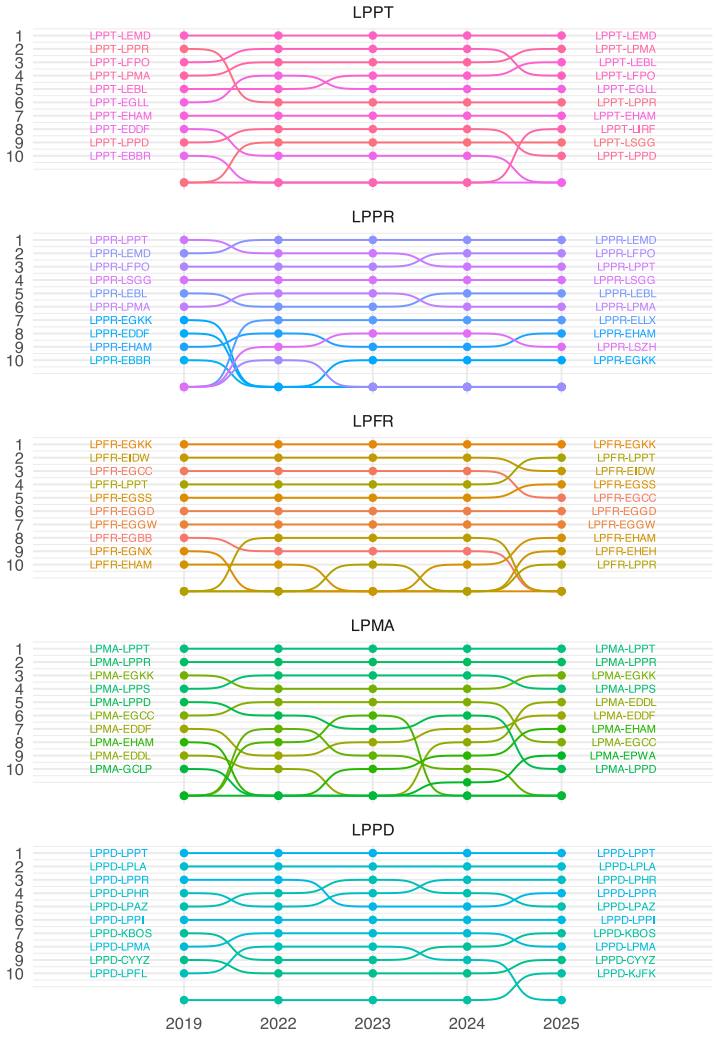


Figure 111: Portugal - top annual connections

This study analysis connectivity of the major national airport, i.e., Lisbon (LPPT), Porto (LPPR), Faro (LPFR), Madeira (LPMA), and Ponta Delgada (LPPD). Figure 111 shows an interesting pattern for top-5 airports. Please note that the data shown for 2025 only cover the period January through March. Each observed a series of connection changes during the study period. However, for each airport the top-5 or top-6 major destinations did not change or only observed a change in the ranking. Notably at Porto (LPPR), two entries were observed during the COVID period with Luxembourg (ELLX) and Zurich (LSZH). Madeira (LPMA) increased services to Dusseldorf (EDDL) and Warsaw (EPWA) during the pandemic that are now ranging in the top-10. The top-10 service destinations operated from Ponta Delgada (LPPD) remained stable during the study period signalling a robust market.

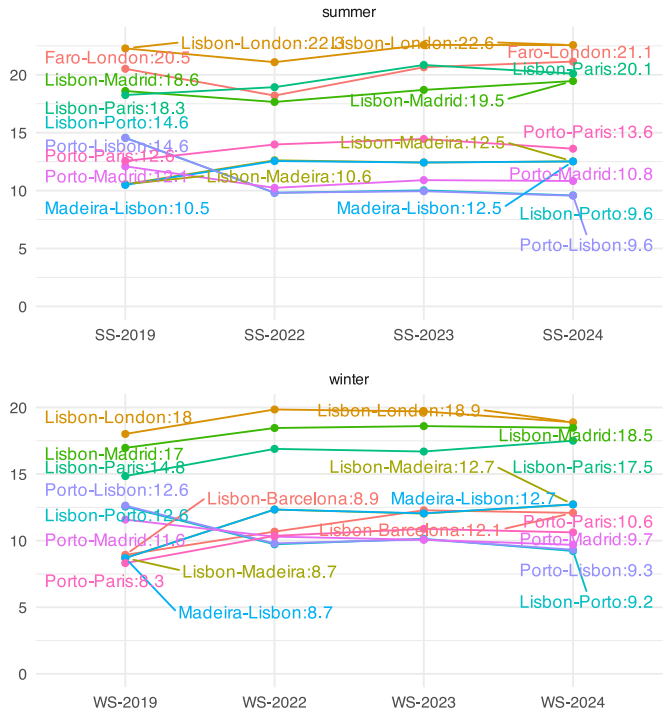


Figure 112: Portugal - average daily connections

Figure 112 depicts the daily average outbound connections for the top city pair connections for Portugal during the different IATA seasons. It must be noted that this analysis focusses on “cities”, i.e. connectivity to London or Paris comprises flights to the different airports and associated to service the city encroachment area. Consistent with the overall traffic development observed above, the top city connections showed a constant service pattern for the seasons covered. Minor corrects can be observed when comparing summer / winter 20119 with the threshold year (and sessions summer / winter) 2022. The multi-airport system of London is the biggest market in both seasons with flights from Lisbon (LPPT) and Faro (LPFR) of on average more than 20 flights a day during the summer season. Madrid and Paris reach similar levels during the summer months, and a slightly reduced market during the winter seasons.

The London services from Lisbon remain the top connection in both seasons, with also a slightly lower service frequency during the winter season (about an average of 3 flights less per day). There is a consistent domestic market between Lisbon and Porto. While the level of connectivity declined compared to pre-pandemic levels, there exists about 10 flights daily between both cities across the different seasons / full year.

4.7.4 Airlines and City Pairs

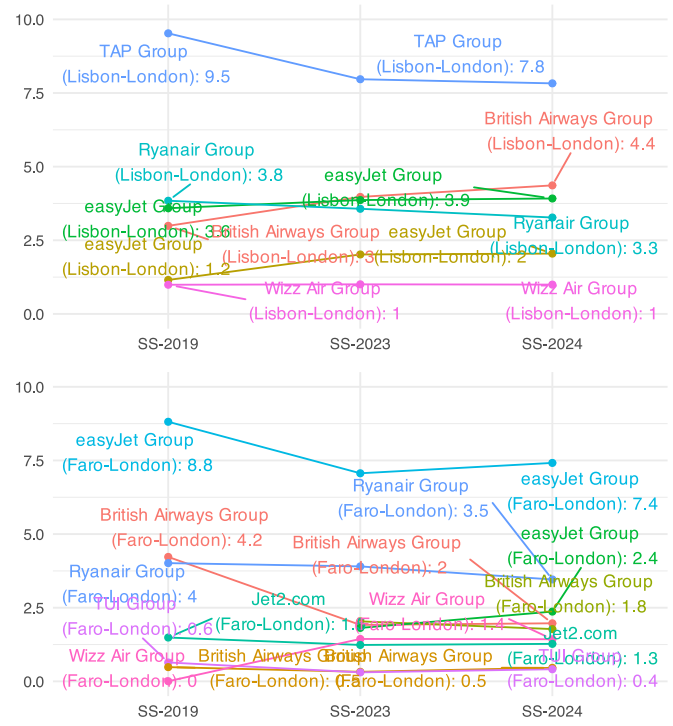


Figure 113: Portugal - average daily connections per operator

Figure 113 shows the top city connection, i.e., London, operated from Lisbon and Faro during the peak summer seasons. There is a high number of operators servicing the connections to the multi-airport system London. This demonstrates a highly competitive market operated by a mix of mainline and low-cost operators. In this particular case, we observed mainline operators servicing London Heathrow, with the low-cost segment offering connections to the secondary airports, e.g. London Gatwick (EGKK), London Stansted (EGSS). Interestingly, the aforementioned correction of the frequency of average daily services comparing the pre-COVID summer season 2019 and post-COVID seasons in 2023 and 2024 can be observed for the top air transport operator, i.e., Lisbon-London: Air Portugal reducing services by about 2 flights per day, Faro-London: easyJet reducing by more than a daily flight on average

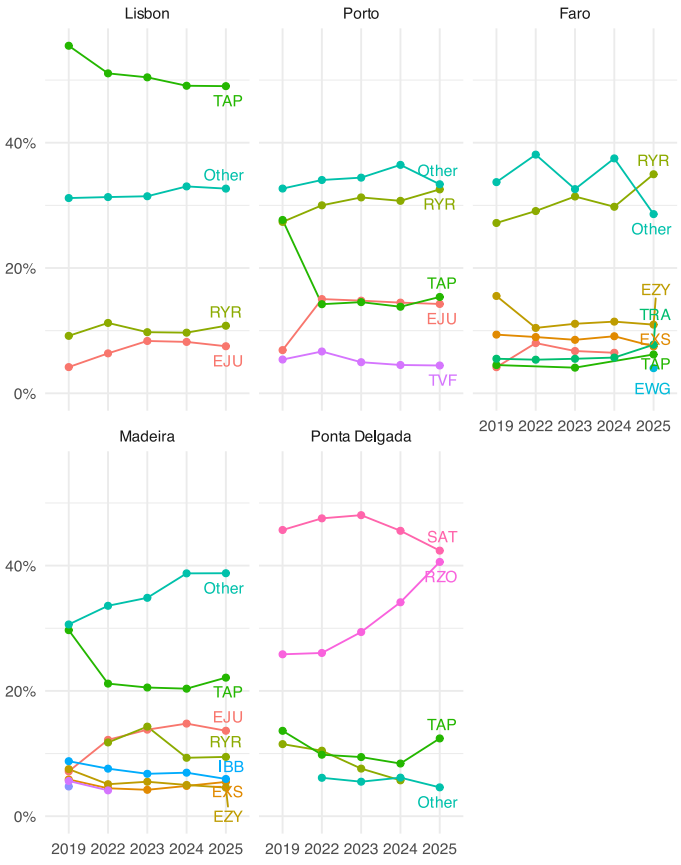


Figure 114: Portugal - average daily connections per operator

Figure 114 shows the predominant operators at the main airports in Portugal with a minimum share of 4%. We observe Air Portugal (TAP) as the major operator in Lisbon servicing about 50% of all flights, and having a solid share at all other top airports in Portugal. Noteworthy, is that TAP operated about a fifth of services in Porto and Madeira following the aforementioned correction between the pre- and post-COVID phase. With the exemption of Ponta Delgada (LPPD), there existed a considerable mix of operators at all other airports, typically ranging at about a third of the services operated and Madeira (LPMA) even observing an increasing trend. This suggest a significant share of individual point-to-point or (seasonal) charter services complementing the main opertors and services at these airports. The mix of operators also include major low-cost carriers.

4.7.5 Same Day Return

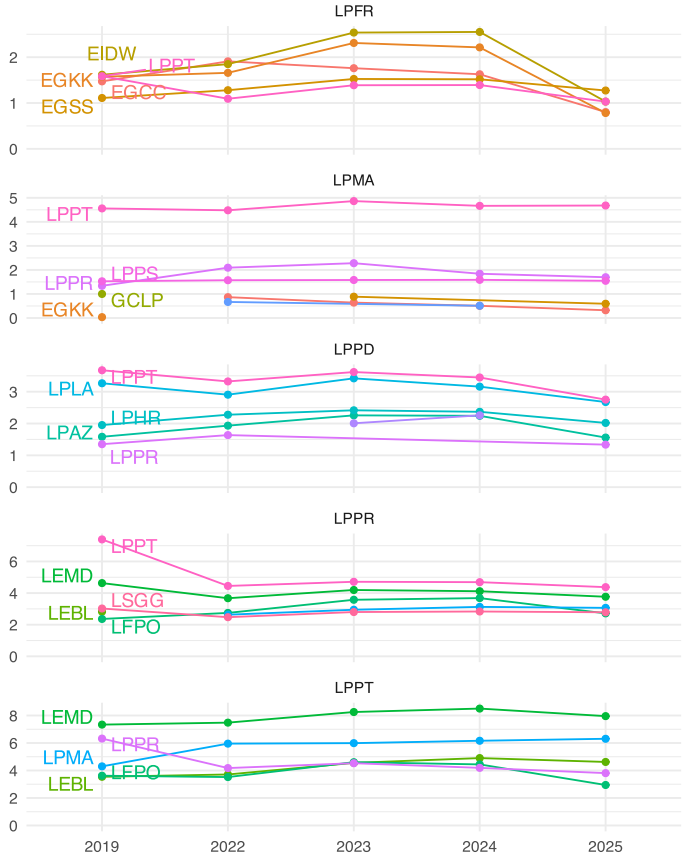


Figure 115: Portugal - top 5 - same day returns

Based on the options a passenger has to return on the same day, the ratio of options selecting between different return flights allowing a longer than 5-hour visit is presented in Figure 115. Note that the data shown for 2025 only cover the period January through March. All airports show a relatively constant share of same-day return flights over the years, with a level of higher variability at Faro (LPFR). Ponta Delgada (LPPD) serviced predominantly domestic routes ranging from about 3 to minimum 1 flight on a daily level. All airports are well connected to the capital Lisbon (LPPT) offering a consistent high frequency of services supporting same-day return options. Lisbon (LPPT) itself operated a high frequency of connections to Madrid (LEMD) supporting consistently 7 or more flight connections on a daily basis for returning on the same day and the aforementioned connections with other airports in Portugal. For Faro (LPFR) the English and Irish market is well developed with on average one to two combinations for same-day returns on a daily basis.

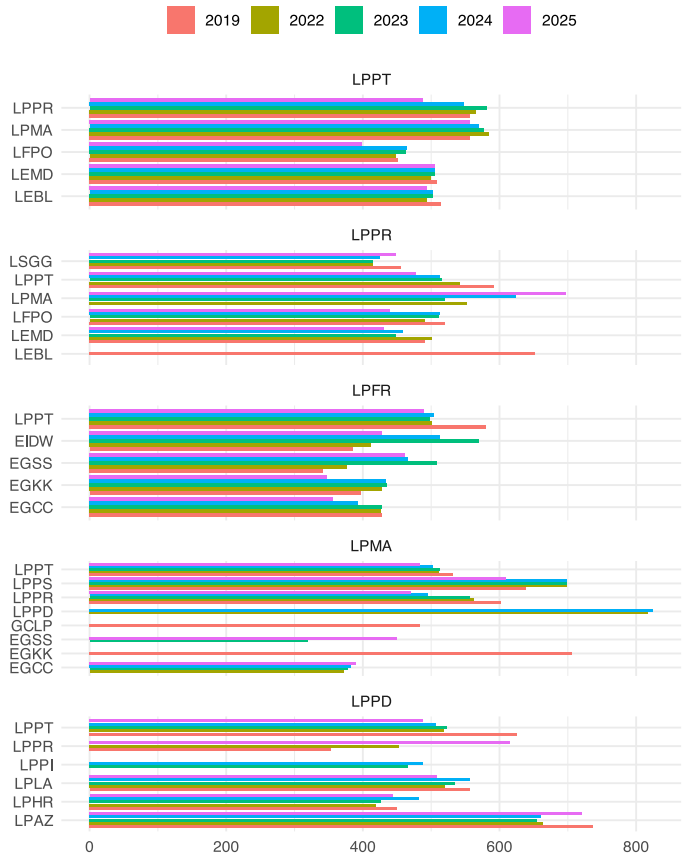


Figure 116: Portugal - top 5 - same day returns

Figure 116 provides the annual variation for the average (median) duration of a one-day visit and return of more than 5 hours (300 minutes). The comparison confirms the level of same-day return options highlighted above. It reflects broadly, the traffic levels on the different top airports, i.e., in 2024 the airports handled the following share of traffic: LPPT (46.3%), LPPR (21.1%), LPFR (13.5%), LPMA (6.6%), LPPD (5.3%), and Other (7.2%). On average, the dominant top-3 of the national airports show robust markets with high frequency of services supporting same-day return options from their major destinations. For Madeira (LPMA) and Ponta Delgada (LPPD), the picture is more diverse with a limited number of connections being continuously served on this level over the past years.

4.7.6 Service Continuity

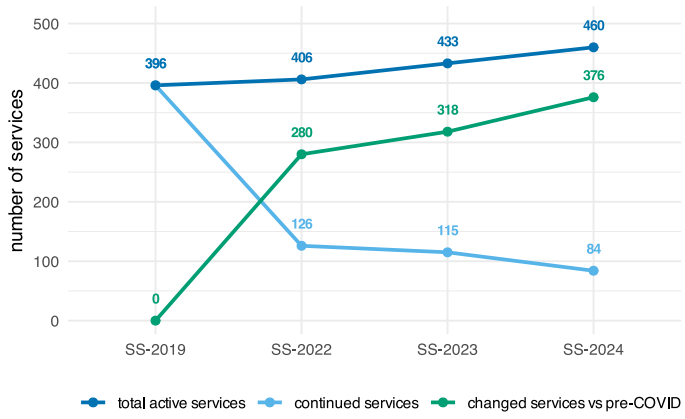


Figure 117: Portugal - service continuity

Comparing the seasonal services pre-COVID with the services operated over the last summer seasons, Figure 117 depicts the overall evolution. Lisbon/LPPT shows a constantly increasing the level of services during the post-pandemic. During the summer season 2024, this increase accounted for about 16% of regular services. There is a substantial change of the schedules operated in the summer seasons post-pandemic with about 21% of services operated as in 2019. This suggests a continual change of the schedule by operators offering services from LPPT, including the launch of new services resulting in higher service frequencies or new connections.

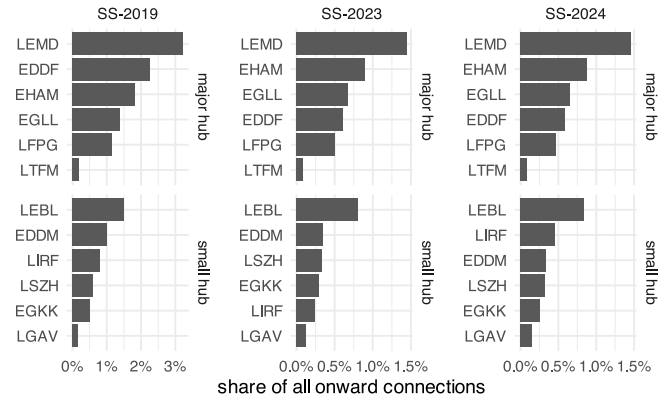


Figure 118: Portugal - interconnectivity nodes

Figure 118 depicts the development of the interconnectivity level for flights departing from Lisbon/LPPT focussing on the summer seasons. Overall, the ranking and level of connecting hubs remained stable demonstrating a high level of robustness of the market. The Spanish market represents a key role also in terms of onward connections, with Madrid/LEMD and Barcelona/LEBL being the primary major and small connecting hubs. The ranking of the major hubs changed slightly during the post-COVID period, but remained stable in terms of onward connection options.

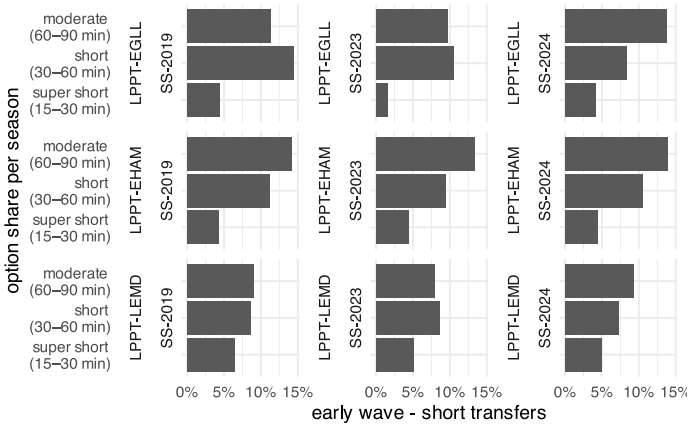


Figure 119: Portugal - interconnectivity level from top airport

A particular interest is the level of onward connections during the *first wave* at the interim airport. Figure 119 highlights the connection options during the summer seasons for three of the major connecting hubs. We can observe schedule changes affecting the interconnectivity at London/EGLL with a reduced number of short connections during the first wave. A similar shift took place with connection levels at Madrid/LEMD with a decrease in short connections and associated increase in moderate onward connections. The level of onward connections during the morning wave remained constant at Amsterdam/EHAM. This suggests a lower number of outbound flights or a shift in the schedule for the onward connections.

4.7.7 Portugal - Interconnectivity

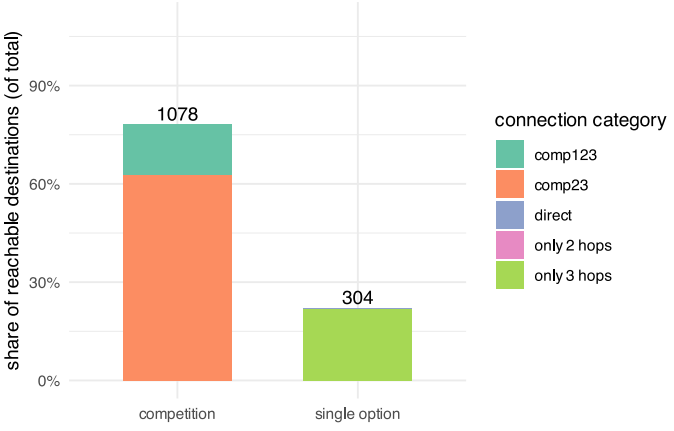


Figure 120: Portugal - onward competition options

Figure 120 shows the level of possible competition between onward connections for Lisbon/LPPT. There is a strong level of competition offering alternatives for 78% of all destinations to be reached. Direct connections face competition from 2 and 3 hop connections accounting for about 15% (comp123). About 62% of all destinations can be reached with 2 or 3 hops (comp23) with connections served from LPPT. For about 22% of all destinations, travellers have no other option than 3 connections to reach a specific destination (with a negligible share of direct or 2 hop services).

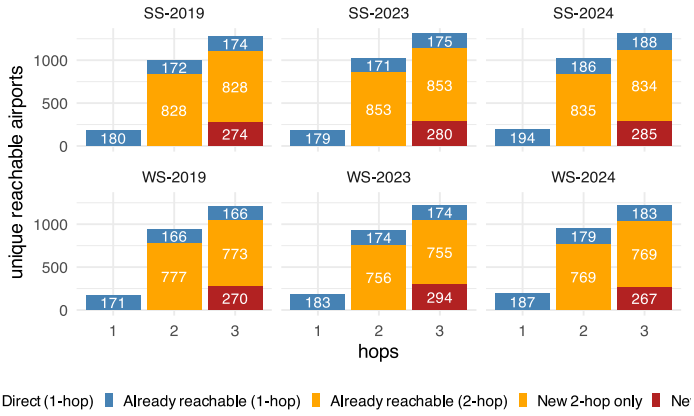


Figure 121: Portugal - onward competition options

Figure 121 shows the level of competition regarding direct and multi-hop connections. Overall the level of competition between multi-hop destinations remained fairly constant across all seasons with a light increase in terms of direct connections for the summer and winter season 2024. The aforementioned high level of competition provides a high share of options to passengers and reflects the role of LPPT within the European network.
The number of additional destinations increases significantly with an interim stop.

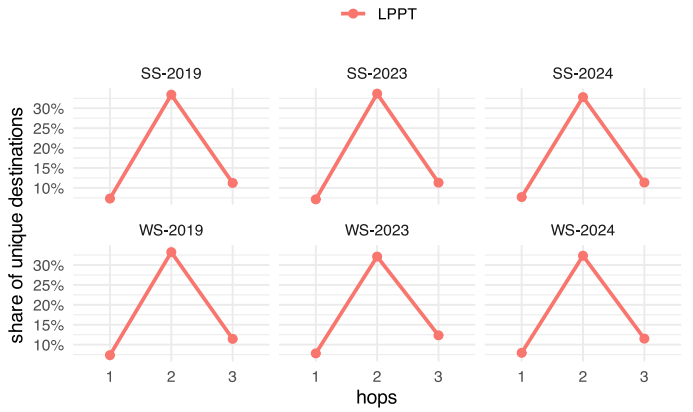


Figure 122: Portugal - incremental gain per hop

Focussing on the incremental gain in reachable destinations on the basis of regular schedules, we observe a robust and stable pattern across all seasons with services originating from LPPT. Figure 122 evidences the role of the interim airport in terms of gaining access to further onward connections. Based on the high level of competition, the incremental gain for additional regular reachable destinations is relatively shallow. Potential growth opportunities in comparison with the aforementioned competition levels, could focus on stimulating services tapping into additional onward connections at the interim hubs or identifying additional regional connecting hubs to address the 3-hop destinations.

4.7.8 Portugal - summary

This section addresses the observed changes in connectivity for Portugal. The study covers the changes over time between 2019 and 2025. Overall traffic levels in Portugal recovered to and above pre-COVID levels with the year 2022. Given the network and connections to/from Portugal, the geo-political impacts of the Russian war on Ukraine and the conflict in Gaza had no major impact on the services/connections.

Lisbon (LPPT) is the major hub servicing about more than twice the traffic at Porto (LPPR) and about three times the number of departures than Faro (LPFR). About 65% of all connections are to other European destinations and about a fourth of the traffic served domestic routes. Other international destinations account for just under 10% of all traffic.

The specifics of the operating environment can be summarised as

- operating airlines
  - Portugal observed a vibrant market with a series of operators across all airports.
  - the national carrier Air Portugal (TAP) is a major player at all the major airports.
  - there is a strong low-cost market segment operating from most of the airports.
  - a strong indication of the vivid tourism segment is the fact that a wide mix of dedicated point-to-point and charter operators complement the spectrum operators across all airports.
- market environment
  - intra-European traffic accounts for the majority of traffic ranging consistently at 65% over the past years.

- there is a strong domestic market accounting for about 25% of all services.
- international traffic (non-ECAC) ranged consistently around 10%, with the United States and Brazil as the dominant international destination.

- service type variation
  - the average daily outbound analysis showed that Portugal recovered most services and their frequencies with the year 2022.
  - seasonal variability is observable, with pan-European and domestic frequencies shrinking during the winter seasons.
  - however, there is little variability when comparing the average daily level of connections over time. This suggest a well matured market and robust schedules / services.
- growth and connectivity
  - on a network-level, Portugal showed an overall recovery from the pandemic related reduction in destinations and service frequencies with the year 2022, and observed already an increase in their seasonal traffic exceeding the pre-pandemic levels.
  - the market environment shows a consistent mix of destinations and operators to the top connections from all airports. On that basis a high frequency of services can be observed.
  - there is a mix of operators seeing mainline and low-cost carier services spread across the different airports signalling a healthy competition and demand.
  - looking on the level of same day return options (services allowing for more than 5 hours at the destination), the major top-3 airports show a robust and long-term consistency in their markets. For Madeira (LPMA) and Ponta Delgada (LPPD) a wider variability of connections over time were observed.
- service stability
  - LPPT increased its level of regular services during the post-pandemic phase and represents a well connected hub in Europe.
  - there exists a robust connection pattern with the major and smaller hubs that enables a highly interconnected schedule and favourable onward connections.
- competition
  - based on the level of interconnectivity, there exists a high level of competition for most connections; and
  - LPPT enjoys a strong competitive position and recovered well during the post-pandemic phase. Potential growth markets could entail attracting service to regonal connecting hubs servicing airports that can only be reached with a 3rd hop.

4.8 Slovenia

4.8.1 National Traffic Overview

Figure 123: Daily departures - , Slovenia

Ljubljana (LJLJ) is the main airport in Slovenia with a neglible number of operations at some other airfields (often point-to-point, small operators). Thus, traffic on the national level is directly linked to demand development at LJLJ. Overall, traffic recovery in Slovenia only observed a slow continual growth in terms of daily movements. Pre-COVID levels are not yet met, and the daily average ranges about 15 flights under the pre-pandemic peak level. The annual pattern is characterised by a strong summer peak (c.f. Figure 123).

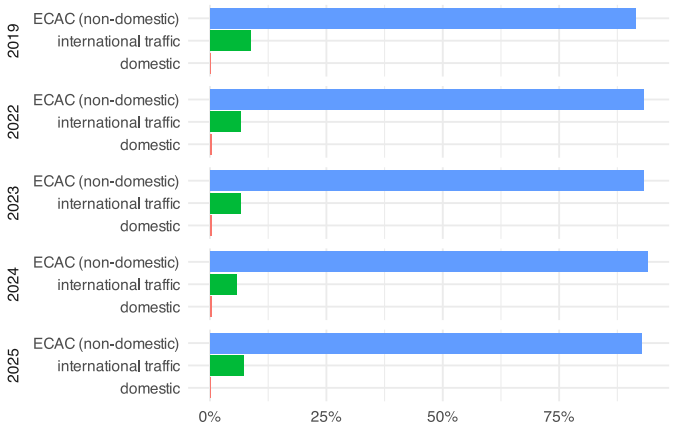


Figure 124: Slovenia- annual traffic share

On a national level connectivity to ECAC member states / EUROCONTROL area represents the major share for Slovenia (c.f. Figure 124). Intra-European air traffic is the major air transport market segment in Slovenia. Despite the changes in annual traffic, the share of the intra-European market ranged consistently around 92%. Given the nature of air transport in Slovenia, the domestic operations are negligible. This makes non-ECAC traffic (i.e., international traffic) the other market segment ranging consistently around 6-8% throughout all years considered.

Pre-pandemic, international connections included primarily the Russian Federation and Egypt to a smaller extent. The post-pandemic years see the United Arab Emirates and Egypt as the major non-European destinations.

Figure 125 depicts the overall share of departures from Slovenia. The main national airport is Lubljana (LJLJ) accounting for the majority of flight operations (e.g. 2019: 98.6% 2024: 97.3%).

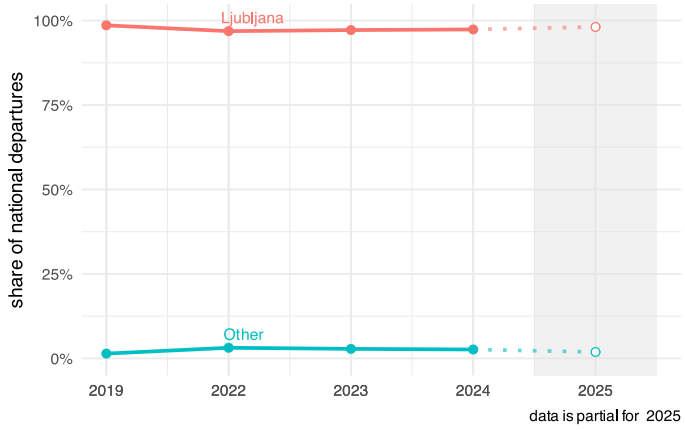


Figure 125: Slovenia- annual traffic share at top airports

Other airports comprise movements at Maribor (LJMB) and Portoroz (LJPZ). With the negligible number of operations at the other airports, the traffic share serviced in Slovenia is fairly constant over the period considered in this study showing only a small modulation between the pre- and post-pandemic period. In Slovenia, based on above, we see in 2024 the following annual traffic in terms of departures: LJLJ (97.4%) and Other (2.6%). Thus, over the past years, changes to the national total traffic are linked to the shallow recovery at LJLJ. these top airports.

4.8.2 Traffic evolution with IATA Seasons

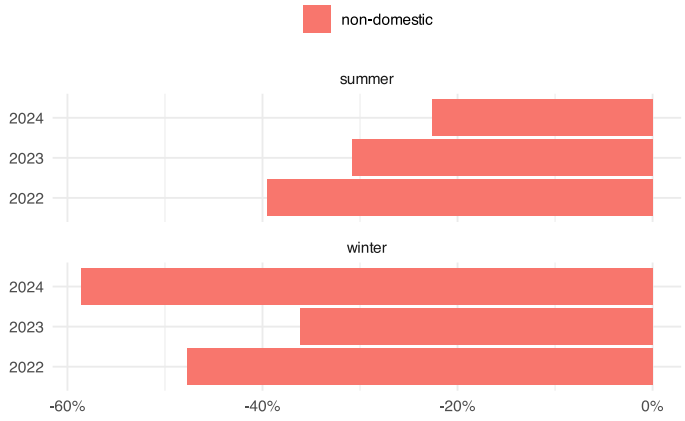


Figure 126: Slovenia - seasonal variation vs pre-pandemic

Based on the air transport patterns, the following addresses the development of non-domestic connections only. Figure 126 shows the seasonal change of the outbound traffic for Slovenia and in particular services served from Ljubljana (LJLJ). The recovery trend is clearly visible for the non-domestic number of connections. While it is evident that traffic levels in Slovenia are steadily slowly recovering on an annual basis, pre-COVID traffic levels are not yet met. Traffic growth in the summer seasons is following the overall annual trend.

During the IATA summer 2024, traffic in Slovenia ranged still a quarter below the pre-pandemic level. The growth rate durin the winter seasons is lagging behind. In particular, winter seasons 2024 observed a further significant drop in the total number of services provided.

4.8.3 Connectivity Change on City-Pair Level

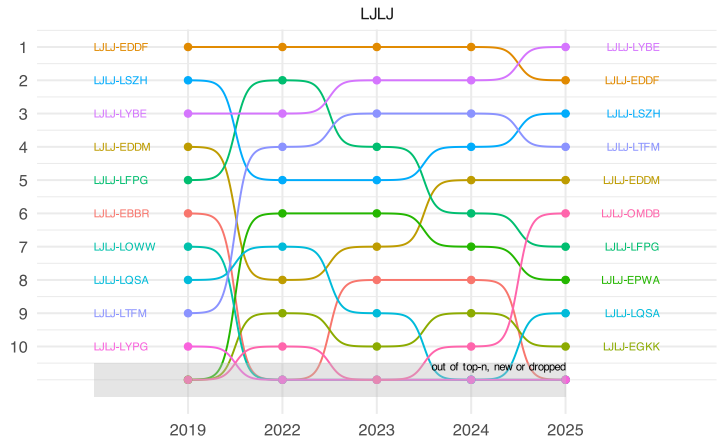


Figure 127: Slovenia - top annual connections

This study analyses connectivity of the major national airport, i.e., Ljubljana (LJLJ). Please note that the data shown for 2025 only cover the period January through March. Figure 127 shows an interesting pattern for the airport. Ljubljana observed a series of changes regarding the ranking of connections (i.e., frequency, total number of flights) between 2019 and 2022. The #1 destination served throughout all years is Frankfurt (EDDF) and Belgrade (LYBE) ranging at spot 2 in 2023 and 2024. Istanbul airport (LTFM) gained a stronger role with the post-pandemic phase.

In comparison to the serviced destinations in 2019, Warsaw (EPWA) entered post-pandemic in the top-10. This also applies to Gatwick (EGKK). Services to Paris Charles de Gaulle reduced over time. With about on average 2 daily flights to LFPG in summer 2019 and partially in 2022, this halfed in 2023 and was futher reduced in 2024.

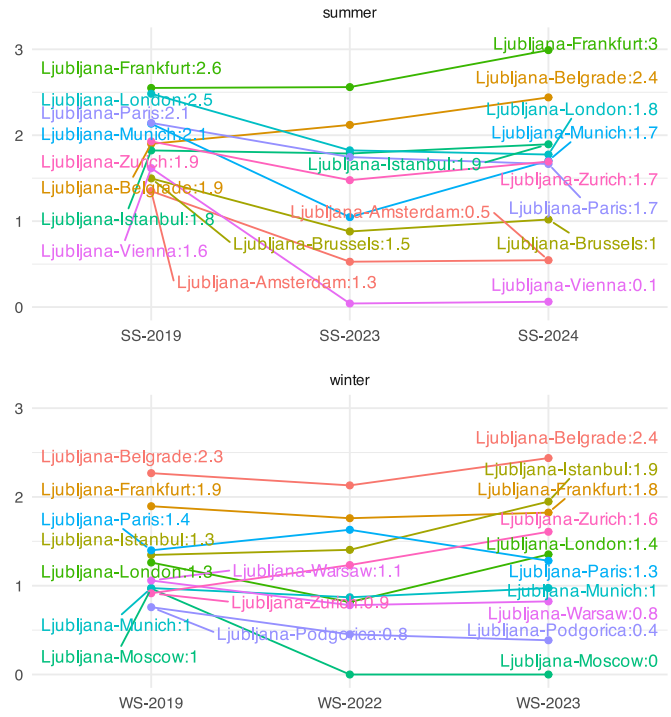


Figure 128: Slovenia - average daily connections

Figure 128 depicts the daily average outbound connections per top-10 city pair connections for Slovenia during the different IATA seasons. It must be noted that this analysis focusses on “cities”, i.e. connectivity to London can comprise flights to the different London airports. In terms of average daily outbound traffic, we observe the strong market position of Frankfurt (EDDF) and Belgrade (LYBE) as reported above. For both connections a higher frequency suggests the expansion of services, e.g. summer 2024 saw about 3 daily flights to Frankfurt. Other connections stabilised over the post-COVID phase. For example, an average of just under 2 connections per day is observed for Istanbul highlighting the fact that there is not the same daily offer across the weeks. There is a loss of connectivity to Amsterdam and Vienna during the summer seasons. Considering the top connections during the winter season, Figure 128 shows the impact of due to the geo-political consequences of the Russian invasion of Ukraine with dropped connections to Moscow as of winter 2022.

On average, the connectivity in terms of average daily flights to the top-10 winter destinations increased post-pandemic. This is in line with the overall slower recovery of traffic during the winter season. An increase of the average daily number of flights by 1 or more suggests that the schedules observed a higher frequency or additional service entries (e.g. Belgrade, Frankfurt, Zurich). The flight restrictions for traffic to the Russian federation can be obserrved in the winter seasons. As the primary international connection pre-COVID with a daily flight to Moscow, this service is no longer operated from LJLJ.

4.8.4 Airlines and City Pairs

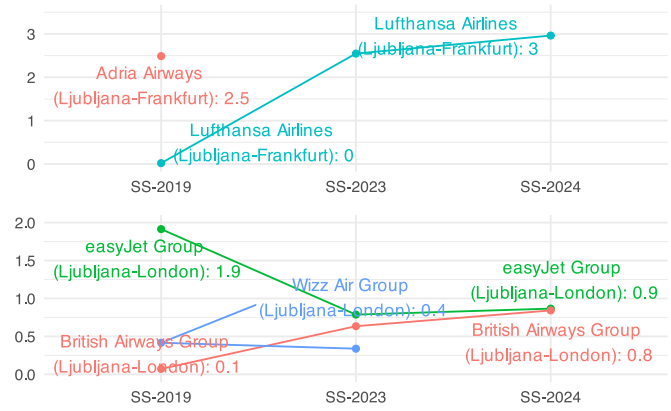


Figure 129: Slovenia - average daily connections per operator

In terms of city-pairs and main operators, Figure 129 focusses on the top 2 destinations during the summer season (peak operations). Adria Airways served as the flag carrier for Slovenia and went out of service in autumn 2019. At that moment Adira Airways serviced on average more than two flights per day to Frankfurt. Lufthansa started servicing the leg with the post-pandemic years offering during the summer 2024 season an average of 3 daily flights. A similar replacement can be oberved for the London market.

EasyJet reduced its service frequency post-COVID, and British Airways entered the market. This established now the pre-COVID connection level of about 2 flights per day during the summer season.

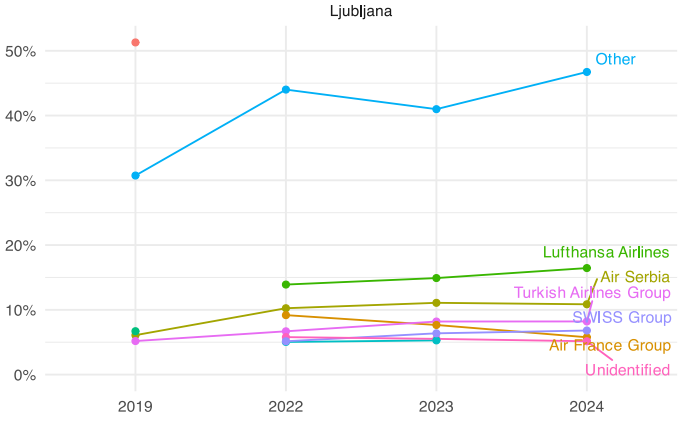


Figure 130: Slovenia - average daily connections per operator

Figure 130 shows the predominant operators at the main airports in Slovenia with a minimum share of 4%. At Ljubljana (LJLJ)) Lufthansa (DLH) represents the main operator following its increase in frequency during the COVID-phase as of 2022 accounting for about 16-17% of all movements. Air Serbia (ASL) follows with just above 11%. Other mainline operator like Turkish Airlines, Swiss Air, or Air France range between 5-8% of annual connections. A significant mix of other operators accounted for the major share of operations across all years. These ranged consistently above 40%. This evidences a highly diverse market with smaller operators or temporary services complementing the main schedule.

4.8.5 Same Day Return

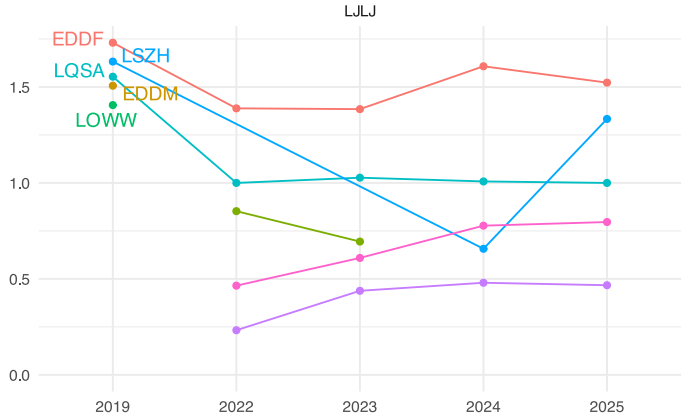


Figure 131: Slovenia - top 5 - same day returns

Based on the options a passenger has to return on the same day, the ratio of options selecting between different return flights allowing a longer than 5-hour visit is presented in Figure 131. Please note that the data shown for 2025 only cover the period January through March. As reported above, Lubljana (LJLJ) observed changes in the ranking of top-10 connections. However, there is a strong level of connectivity to Frankfurt and Zurich. This is also reflected in Figure 131, with Frankfurt continously providing for an average of same-day return flights of about 1.5 across the years slightly decreased from the higher share before COVID.

Connections to Zurich observed a significant decrease over time with the frequency and possibly seasonal reduction of connections only enabling. At the same time we observe connectivity to Belgrade (LBYE) and Istanbul (LTFM) increasing - though seasonally - with a daily average of 0.8/LBYE or 0.5/LTFM. That reflects an additional flight during the peak operating months for these connections. Figure 131 showed an average same-day return option to Sarajevo (LQSA) across all years. The main operator is Lipican AER (LIP) providing for about 4 daily operations on weekday with a medium-sized turboprop (SF34). This high frequency of services supports same-day return options from LQSA. With the strong seasonal pattern reported above, the changes in average daily connections throughout the different seasons and the variation of average same-day return flights, signal a strong seasonal dependency of services from Ljubljana.

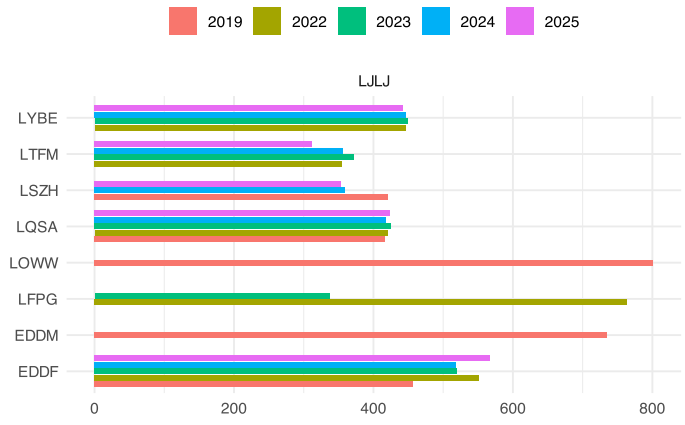


Figure 132: Slovenia - top 5 - same day returns

Figure 132 provides the annual variation for the average (median) duration of a one-day visit and return of more than 5 hours (300 minutes). The comparison shows a diverse view across the the airports. The main connections to Belgrade (LYBE) and Sarajevo (LQSA) remained fairly constant in terms of frequency and average duration of a stay at the outbound destination. A decrease of the outbound duration is observed for Istanbul in early 2025 (which might be an artefact of the seasonal schedule/partial data). A slight shift is also observed with connections to Frankfurt (EDDF) that could signal a shift in the service schedule by Lufthansa.

4.8.6 Service Continuity

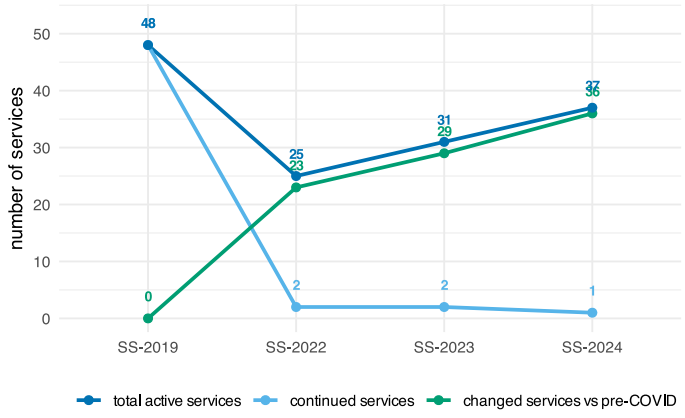


Figure 133: Slovenia - service continuity

Comparing the seasonal services pre-COVID with the services operated over the last summer seasons, Figure 133 depicts the overall evolution. For Ljubljana/LJLJ we observe the ongoing overall recovery with service levels in the summer season 2024 still ranging just below 80% of the pre-pandemic levels. A substantial revision of the schedules has taken place with most pre-COVID services replaced by alternatives. It must be noted that this schedule change comprises - inter alia - changes by the operators servicing LJLJ pre- and post-pandemic, but also new services (new destinations)

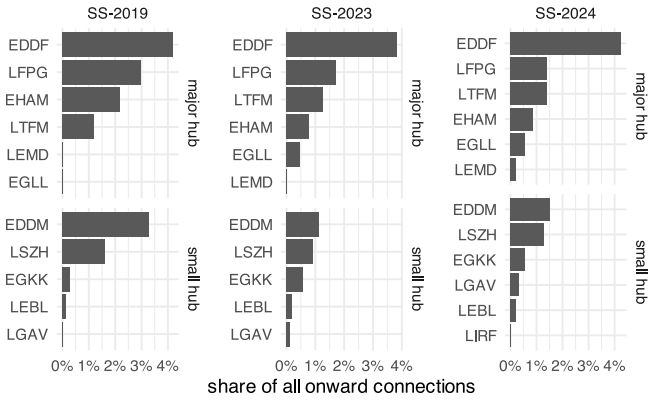


Figure 134: Slovenia - interconnectivity level from top airport

Figure 134 shows the interconnectivity level for flights departing from Ljubljana/ LJLJ focussing on the summer seasons. Overall, there is no substantial change in the level of onward connections across different airports with a good share of flights connecting through the major and small hubs.
Frankfurt is a major connectivity node. The lower share of major hub connections is linked to the on-going recovery. The latter impacts also the level of onward connections from the small hubs. For this category, the market share for Munich/ EDDM roughly halved while for others the share remained about constant. Given the still recovering traffic, the role/ranking of connecting small hubs changed slighly (e.g. Athens/LGAV ranks higher, Rome/LIRF enters ranking/ranges above the threshold for Figure 134).

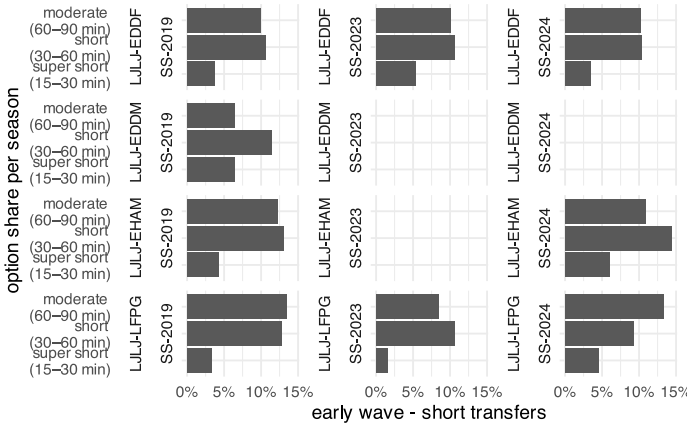


Figure 135: Slovenia - interconnectivity level from top airport

A particular interest is the level of onward connections during the *first wave* at the interim airport. Figure 135 highlights the connection options during the summer seasons. There appears a good level of short interconnection options within 30-60 minutes at Frankfurt/EDDF (ranging around 10% for all onward connections) during the early hours of the day across the seasons. Onward connections via Paris/LFPG observed a modulation with a shift to less favourable onward transfer times post-pandemic. Focussing on early morning connection options at the major hubs, connections from LJLJ do not allow to connect at London Heathrow/EGLL and Istanbul/LTFM. While an early morning connection loss occured for Munich/EDDM, services with Amsterdam allow with the summer season 2024 for connections in the early wave at EHAM.

4.8.7 Slovenia - Interconnectivity

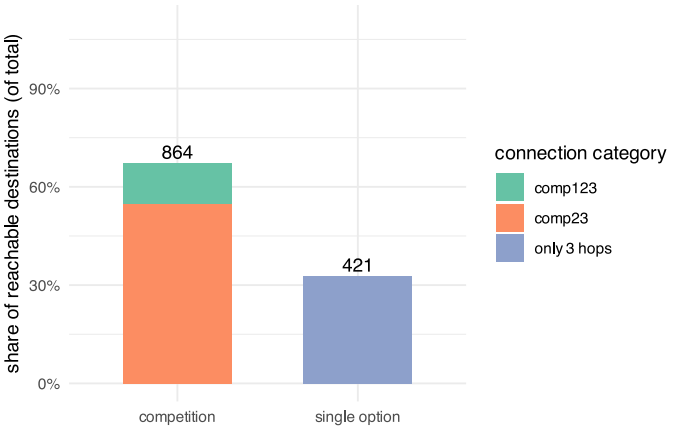


Figure 136: Slovenia - onward competition options

Figure 136 shows the level of possible competition between onward connections. Ljubljana/LJLJ shows a smaller competition between direct/2-hop/3-hop connections (comp123) that provides options for travellers. About 50% of all destinations are either reachable via 2- or 3-hops. A third of all feasible network connections can only be reached with a 3rd connection (only 3 hops). With a small share of direct connections, there is a growth potential. This could be addressed as part of the continuing recovery at LJLJ.

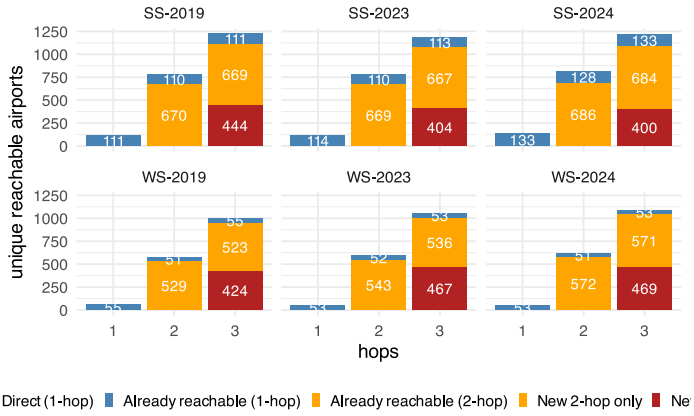


Figure 137: Slovenia - onward competition options

As highlighted above, there is a smaller market for direct connections based on the overall services from LJLJ. Figure 137 shows the direct connectivity increased slightly in the summer season of 2024 compared to previous years. Separate 3-hop destinations decreased by about 10% between summer season 2024 and 2019. During the winter seasons, the direct connections reduces to 50% signalling a strong seasonal schedule. The reachability for 2-hop services remained fairly constant over the seasons. Connectivity is highly dependent on the interim destinations supporting further onward destination/services. Potential additional markets are reachable with a 3rd hop.

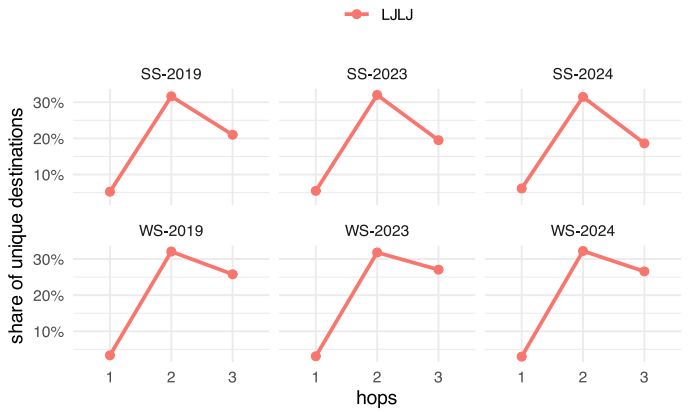


Figure 138: Slovenia - incremental gain per hop

Focussing on the incremental gain in reachable destinations on the basis of regular schedules, we observe a fairly constant level of gain for 2nd hop connections across all seasons with Figure 138 ranging just above 30%. This suggests a regular schedule to the interim connections across the full year (winter and summer season). While with @Figure 137 a higher number of destinations can be reached, the service quality in terms of frequencies for unique destinations shows a smaller incremental increase. While the overall number of reachable destination reduces during the winter seasons, existing onward connections with the 3rd hop result in higher gains during the winter seasons. There is growth potential to establish direct services for 2nd hop and possible unique 3rd hop destinations.

4.8.8 Slovenia - summary

This section addresses the observed changes in connectivity for Slovenia. The study covers the changes over time between 2019 and 2025. Overall traffic levels in Slovenia lag behind the pan-European post-pandemic recovery trend. As a single airport country, observed traffic levels reflect the traffic developments at Ljubljana (LJLJ) airport. Traffic levels followed a shallow recovery trend over the past years, i.e., 2022 through 2024, and still range about 15 daily departure less than pre-COVID. The major market for services from Ljubljana are other European destinations. Geo-political impacts of the Russian war on Ukraine and the conflict in Gaza are covered and highlighted throughout this chapter. Slovenia observed an associated drop of connections to the Russian Federation which used to be a main international market before the COVID phase. In the recent years, the predominant international markets are the United Arab Emirates and Egypt.

The specifics of the operating environment can be summarised as

- operating airlines

- the dominant national operator Adria Airways (ADR) stopped operating in September 2019. Lipican AER (LIP) represents a specialised local service provider focussing on daily shuttles to Sarajevo (LQSA).
- given its size and operator structure, services from Slovenia/Ljubljana are mainly provided by a mix of European providers (.e.g. Lufthansa and Air Serbia servicing more than 10% of all movements, followed by Turkish, Swiss and Air France).
- This is complemented by a significant share of smaller operators (.e.g. point-to-point or seasonal charter) complementing the strongly seasonal schedule.

- market environment
  - intra-European traffic accounts for the majority of traffic ranging consistently above 92% over the past years.
  - international traffic (non-ECAC) ranged around 6-8%.
  - with virtually no scheduled operations from the other airports (Maribor (LJMB), Portoroz (LJPZ)) air transporation developments are focussed on Ljubljana.
- service type variation
  - the average daily outbound analysis showed that the shallow recovery of services and their frequencies broadly comprised a consolidation of the markets. The main operators slightly increased their services in line with the overall recovery, while other operators focussed on consolidating their schedules.
  - seasonal variability is observable when comparing the average daily traffic levels. These suggests also a change of connections. This is also evidenced by the reasonably high share of *other* operators accounting consistently for more than 40% of all movements and may represent dedicated single or short-term operations rather than regular flight connections.
- growth and connectivity
  - on a network-level, Slovenia lags behind the overall pandemic recovery observing an average of about 15 daily flights less than pre-pandemic during the summer season. There is an overall reduction in destinations and service frequencies.
  - the major destinations are operated with a stable level of services and frequencies allowing also for a considerable numner of same-day return options. This signals well established markets and demand on these connections.
- service stability
  - on average, LJLJ is still in the recovery that also affects the associated schedules and onward connections in comparison to the pre-pandemic levels.
  - the continual recovery ranges about 15% below pre-pandemic levels.
- competition
  - based on the level of services from LJLJ onward connections are dependent on the interim stops across all seasons;
  - the schedule shows a strong seasonal behaviour with direct connections dropping to about 50% of the summer services; and
  - in terms of incremental gain for regular schedules, the 2nd hop contributes substantially (~ 30%) to the overall number of destinations - this can help to identify new markets. There is also scope to address unique 3-hop destinations.

5 Conclusions and Outlook

5.1 General Overview

This report addresses the variation of connectivity within the European airspace. It investigates the patterns observed within the national context of a subset of European States. Different from other work, the analysis focuses on air transport movements between airports and does not reflect directly on passenger demand and its potential fluctuations. Focussing on direct connections between airports provides a characteristic footprint in terms of the degree of connections. It answers "whether" and "how frequent" (i.e., are services provided between two airports and how often is the service operated) rather than "what volume" (i.e., how many passengers are transported, which aircraft types/seat capacity are operated). This allows to study the resulting network effect in terms of (non-stop or direct) connections.

The report shows that air connectivity is predominantly influenced by economic viability of services and – in some cases to a lower extent – by the impact of geo-political developments that influence air transport services between airports. Accordingly, findings within a national context may not be generalised to other EUROCONTROL Member States. Equally, trends observed on the pan-European network level may mask local or national effects.

On a macroscopic level, air traffic grew in Europe continuously over the past decades despite several setbacks. This growth was facilitated by the general restructuring of the aviation industry (e.g. liberalisation), geo-political changes, and a continual increase of point-to-point connections between previously non-connected aerodromes.

The COVID-19 pandemic impacted demand for air travel significantly in the period of 2020 through 2023. While the overall European network numbers rebound to almost pre-pandemic levels in 2024, there are distinct local/national differences in terms of traffic recovery. As can be seen in this report, the level of services has not yet reached the pre-pandemic levels in some states, and there were changes to the level (i.e., frequency) of services.

This report shows that air transport operators ('airlines') demonstrate **economic agency** MacDonald, G. M. [15]. Accordingly, these operators orient themselves within the - wider - European air transport market balancing opportunities with commercial risks. In terms of air connectivity, this can result in

- **market exit / loss of connectivity** - this ranges from failure (i.e., bankruptcy) to regular revision of the operated schedule due to decreasing revenue (e.g. lack of travel demand, high competition).
- **market entry / increase in connectivity** - typically, related to operators expanding their network based on internal network restructuring or driven by external incentives (e.g. subvention, air-service agreements, dedicated connections based on national priorities).

This report was initiated by the interest of several Member States to understand the drivers behind air connectivity – observed within their national/local context. The analysis confirms that patterns differ across those Member States, and – in principle – conclusions must be drawn on a national level. Air connectivity is also a question of the attractiveness of services between two destinations. Across Europe a small set of multi-airport systems exists servicing major hubs like London or Paris. However, the practical likelihood of air transport (e.g. air travel) making use of different airports in such larger encroachment areas suffers – today – from the cumbersome on-site connectivity allowing passengers to arrive and depart from different airports back to the original destination.
While instruments may exist to stimulate services to/from aerodromes, it is important to understand that the incentive mechanism may support the opening (and subsequent increase in connectivity), however, long-term sustainability in a liberal and privatised market will ultimately fall back to the economic viability post the expiration of the tool.

5.2 Approach of the Report

This report responds to the interest of a group of EUROCONTROL Member States to better understand and characterise **air transport connectivity** in the post-COVID recovery period. Uniquely, the report

avoids reliance on passenger numbers or demand-based proxies. Instead, it focuses solely on **air transport movements**, using **aircraft departures** from the top airports in each country as the primary analytical lens. This approach ensures consistency across very different national contexts and preserves analytical neutrality in politically sensitive environments. It provides the entry point to understand the local and national drivers. This may help to support decision-makers to identify appropriate instruments.

Given the heterogeneity of Member States, some operating large international hubs and others depending on a single national airport, the methodology was tailored to account for such structural differences. Airports included in the study were selected based on their contribution to total national movements, ensuring that the analysis remained both representative and operationally relevant. Unless, on the basis of a specific request, the study addressed the top airports in terms of annual departures, the main serviced destinations, and the main air transport operators providing services on the identified connections.

The key thematic areas covered for each Member State include:

- **traffic characterisation** (e.g., intra-European vs intercontinental flows)
- **seasonal changes** in service levels (based on IATA seasons)
- **top service connections**, measured by average daily frequencies
- **leading air transport operators**, reflecting airline market presence
- **same-day return potential**, indicating the level of options for same-day return destination in support of business and short-trip feasibility

The study also considers the ongoing impact of **external shocks** such as the **COVID-19 pandemic** and **Russia's invasion of Ukraine** (and to a lower extent the impact of the **hostilities in/around Gaza**), and how these have influenced connectivity patterns across the studied countries.

Following up on stakeholder requests, this report addresses the level of interconnectivity for onward connections from the major airports in each country.

As mentioned above, it is difficult to analyse air connectivity without taking into account the national context and specifics. Each chapter concludes with an individual summary addressing the thematic areas and highlighting national traffic structures, operator strategies, and the broader context shaping air services in and out of that country.

5.3 Similarities and Differences Across Countries

While the countries studied vary significantly in population size, economic structure, and air transport dependency, several **common themes** and **distinctive patterns** emerge from the analysis:

- **Structural dependence on main airports** is widespread. In smaller countries such as Malta, Cyprus, or Slovenia, virtually all air connectivity is channelled through a single gateway. Conversely, larger states such as Greece, Portugal or Bulgaria exhibit a more distributed pattern of traffic, with multiple airports contributing significantly to national movement totals.
- **Intra-European markets dominate** connectivity profiles in all countries. The share of departures to destinations within the EUROCONTROL area often exceeds 85%, underscoring the importance of regional integration and short-haul operations for network sustainability. Interestingly, the pandemic has reinforced this pattern, as long-haul services have proven slower to recover and less stable.
- **Same-day return travel options** are concentrated on routes to key hubs such as London, Brussels, Frankfurt, or Vienna. These routes typically exhibit high frequencies and cater to business and public-sector travellers. In smaller markets or thinner routes, same-day return options are rare or seasonally dependent.
- **Low-cost carriers (LCCs)** play an increasingly prominent role in shaping national connectivity. Their flexible business models allow rapid entry into new markets. In many cases, low-cost carriers operate to secondary airports in more mature markets. This signals the ambivalence of the slot-mechanism in Europe as slots at heavily used airports are subject to a fixed regime benefitting grandfather-rights. The use of alternative destinations is often considered enhancing access for underserved regions. However, this report

evidences that economic viability is also dependent on the serviceability of destinations. Another side-effect of the higher business flexibility of low-cost carriers introduces volatility: routes may be discontinued with little notice, and seasonal service adjustments are common. Malta and Bulgaria, for instance, exhibit a very high share of LCC-operated flights, while Portugal still shows a more mixed carrier profile.

- **Geopolitical sensitivity** varies. Some countries have experienced a tangible loss of destinations due to the airspace closures over Russia, Ukraine, and Belarus, notably Bulgaria and Cyprus. For other countries, the effect has been marginal, as affected destinations played a limited role in their pre-crisis network. In light of the overall air traffic rebound across Europe post-COVID, many of the analysed Member States have or are about to reach their pre-pandemic levels. However, the overall traffic trend masks that the level of recovery differs on an airport-by-airport basis, and the overall recovery at the local level may lag behind the pan-European trend.
- **seasonal variation** signals a strong summer vacation market. Despite the overall level of air traffic on a national or airport level, the study shows that for the studied countries, summer traffic dominates in terms of the overall number and frequency of connections. There appears to be a small increasing trend for higher level of frequencies (either by expanding the number of services of the predominant operator) or the - sometimes seasonal - entry of other operators. This underscores that private vacation travel is the backbone of European air traffic demand.
- **interconnectivity** shows similar principles for all major aerodromes / countries. The nature of the European network enables a higher share of connections when connecting through the larger hubs in Europe. This is also reflected in the analyses for the main airport of each country. However, nuances exist with respect to the role of onward connections from regional hubs. With the overall recovery post-COVID, the level of onward connects varies as across the interconnecting hubs which observed changes in their operated services.

The following table summarises these and similarities and differences across the studies Member States in this report.

Dimension	Common Trend Across States	Observed Variations
Top Airport Dependency	One major hub dominant in most countries	Portugal, Bulgaria have multiple key airports
Main Market Share	Intra-European traffic > 75% in all cases	Higher shares (>90%) in Baltic states
Post-COVID Recovery Pace	Traffic levels near or at pre-2020 levels in 2024	Lower recovery in Slovenia, Lithuania
LCC Involvement	LCCs key to connectivity, especially in small states	Varies from dominant (Malta) to mixed (Portugal)
Geopolitical Sensitivity	Limited overall but country-specific	Stronger impact in Bulgaria, Cyprus
Same-Day Return Options	Present on main business routes	Sparse or absent on thinner, seasonal routes
Interconnectivity	European hubs represent key onward nodes	Strong link with regional connecting hub (e.g. Cyprus - Athens)

5.4 Key Takeaways

One of the central insights of this study is that **air connectivity has not simply "recovered" in line with traffic volume**. Instead, the structure, composition, and frequency of connections have subtly changed in a post-COVID world. Some previously served routes have disappeared entirely; others are now operated with reduced frequency or by different air transport operators. This clearly shows that **air connectivity is a predominantly economic viability consideration of services providers** in a liberalised market. The latter

has an impact on the observed scaling effect, i.e., the increase or decrease (and ultimate cessation) of services to a destination.

Geo-political impacts can be observed as a modulation. For example, the constraints on air travel during COVID or in light of the on-going aggression of Russia, will directly impact connections locally and may result in a network effect with flows reducing (or stopping) to certain destinations/countries. This may ultimately have an impact on the service provider resulting in a re-orientation of services. Short-term geo-political events, appear to have a lesser effect on the overall service provision. Such cases (e.g. hostilities between Gaza/Israel, Middle-East) affect the schedule temporarily. Once pre-incident/crisis conditions are restored, services are re-initiated. This evidences the balance between risk management and economic viability between short-term and long-term organisational decision-making.

This reflects a fundamental reality of the air transport market: **airspace users (airlines) act as economic agents**. Accordingly, air connectivity in a liberalised market is pre-dominantly driven by market entry or expansion options. Airspace users base their service decisions on demand signals, cost structures, and expected profitability. If a route or frequency no longer meets commercial viability thresholds, it is likely to be reduced or withdrawn—unless sustained by subsidies, incentives, or specific policy measures.

The latter measures may comprise national requirements to operate flights to underserved regions or specific destinations. Appropriate incentive instruments may help to establish (or ensure) such services, however, long-term sustainability will determine the overall level of service provision in the long-term.

Several types of loss of air connectivity have been observed:

- **Economic-based withdrawal**, where routes are dropped or their frequencies reduced due to weak or seasonal demand.
- **Strategic realignment**, where airlines refocus networks on more profitable markets or align the overall group network within alliance.
- **Operational restructuring**, including bankruptcies or fleet changes that make previous route patterns infeasible.

Underlying the overall variability across the European network is pre-dominantly summer-time vacation traffic. The summer season peak is showing another dimension of the variances in terms of frequencies and traffic levels.

In this sense, **air connectivity is not merely a question of passenger volume**. Air connectivity is about how markets and airline strategies evolve post-crisis. Strategic planners and policy-makers should thus be cautious in interpreting air traffic recovery as synonymous with connectivity restoration.

Another key message is that **connectivity is a local problem with potentially systemic implications**. While the European network operates as an integrated whole, the loss of services from a single airport can have cascading effects on regional accessibility, economic development, and intermodality. As a result, **responses must be tailored to the local context** but understood within a broader European framework.

The report shows that the **sweet spot** of connectivity can be found in the destination serviced with connecting flights. In particular for the European context, we observe that onward connectivity is strongly dependent on the services provided at European hubs allowing for a higher level of onward journeys. Regional nuances exists with the role of regional hubs that serve as spring boards. A potential strategy could be to encourage services to onward connections or support the introduction of services that would reduce the number of interim stops from markets only served with 3 connections to either direct or 2-hop connections.

5.5 Next Steps

This report was drafted on request of a subset of EUROCONTROL Member States. The report shows that the level of air connectivity differs strongly dependent on the local context and cannot be readily generalised to other countries or the pan-European level.

The report refrains from prescribing specific policy recommendations, its findings point to a number of possible **drivers** in support of local and national stakeholders. The main success criterion is to balance market

expansion and entry between different air service providers and the available national/local capacity. There is **no one-size-fits-all instrument** and such tools should be used judiciously, as they operate in a liberalised environment where air transport operators and airport operators must retain autonomy over commercial decisions.

Ultimately, this report **supports evidence-based dialogue**. It provides a data-rich foundation for national authorities to engage with service providers and airport operators, evaluate the strategic value of lost or emerging routes, and identify where policy tools may play a legitimate role in restoring or enhancing connectivity.

As the textual information in this document is rich, it is planned to provide a factsheet based version of key insights on a regular basis to the stakeholders in support of the dialogue. A potential workshop in 2026 may help to further shape the material in support of such a dialogue.

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