Airport Recovery 2020 for EU Regional Airports

What is the impact of Covid-19

on resource requirements?

How has the industry responded to the challenges caused by COVID-19?

Airport recovery post COVID-19 is enveloped in uncertainty. As highlighted by The International Civil Aviation Organisation (ICAO) in figure 1, the trajectory of recovery is unpredictable and can take any course. In response to the unstable nature of recovery, airlines are employing over-optimistic scheduling and then withdrawals, leading to multiple revised 'Actual Schedules'. For airports, amongst other factors, this high degree of uncertainty can especially have a significant impact on operational resource planning, such as infrastructure and staff, which in turn can impact capital planning.
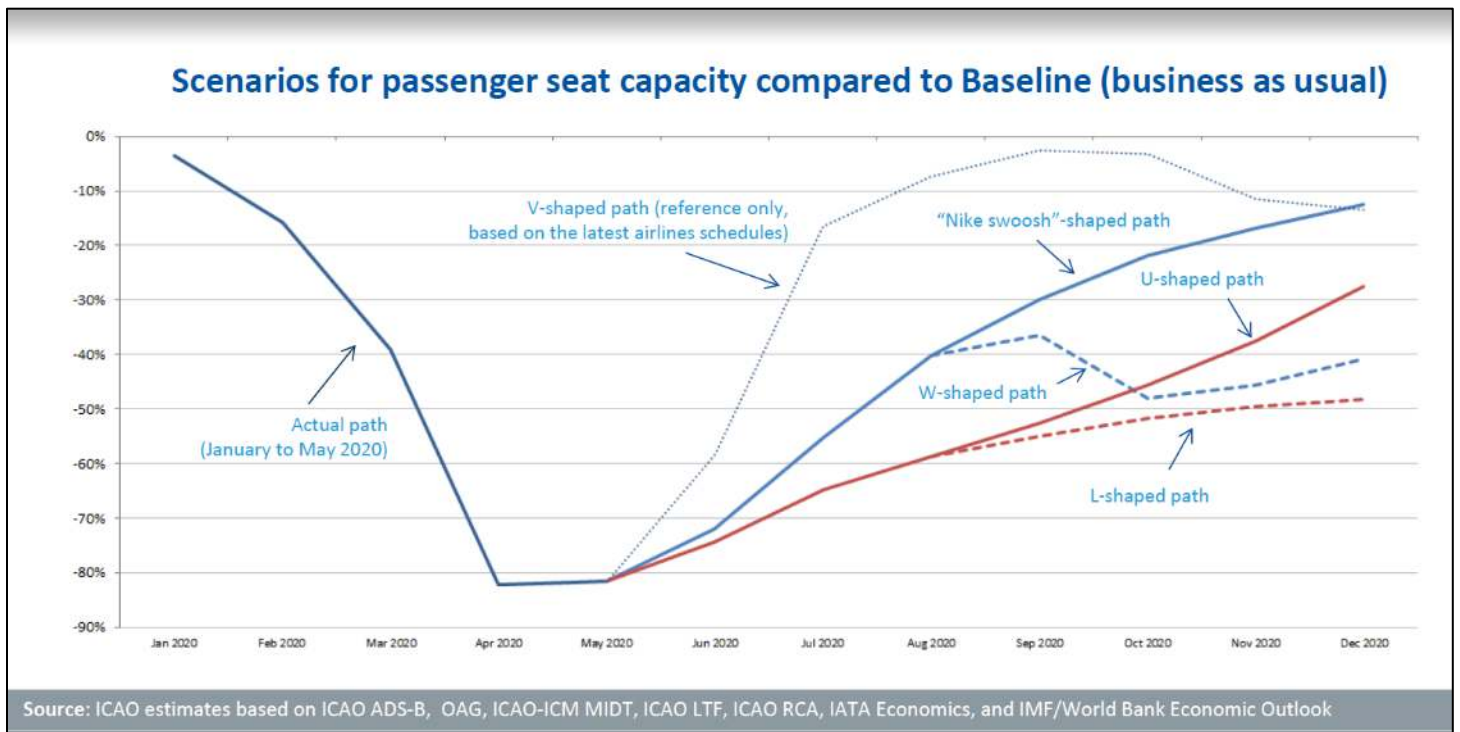

Figure 1: ICAO Passenger seat capacity recovery

What Does this Mean for European Regional Airports?

Regional airports play a vital role, not only feeding the hubs but providing important connectivity across Europe and contributing to local, regional, and European economies. It is essential that these airports operate efficiently and plan for the uncertainty to recover from the loss of traffic caused by the COVID-19 pandemic. As Angela Gittens, Retiring Director General from ACI states:

> *'Effective decision-making will depend on a good understanding of what the path to recovery will be. Traffic forecasts will be essential for defining staffing and operational levels, capital investment requirements, and core business decisions on airport charges.*
>
> *Predicting recovery with high levels of uncertainty and ambiguity may require airports to create entirely new forecasting frameworks that will be flexible enough to incorporate new inputs as better information becomes available.'*
>
> *Angela Gittens, Retiring ACI Director General: July 2020*

Case Study Impact Analysis on Resource Requirements

AiQ Consulting has conducted a case study analysis of a typical regional airport in the EU to determine the impact of variable schedules and load factors on resource requirements.

For the sake of simplicity in this case study we have focused on ATMs and passengers leaving aside the analysis and findings on baggage, cargo and ground handling.

In this case study analysis, you will find three key findings focussing on:

1. Rapid approach to capacity limits
2. Elasticity of schedule – small change in schedule, significant impact on resources
3. Impact on varying load factors

Our Approach: ART, Schedules & Load Factors

Airport Recovery Tool

Using AiQ's new Airport Recovery Tool ART$^\Delta$, three potential post-COVID-19 busy day schedules for a typical regional airport in the EU have been created and analysed.

The Airport Recovery Tool ART$^\Delta$ is a FAST and SIMPLE to use software which provides Airport Managers at all levels with strategic decision support for airport operations, for short term (daily operations) as well as medium and long-term planning, and from recovery to growth.

ART$^\Delta$ assists with the management of new norms including health screening and social distancing and provides insight into, amongst other things:

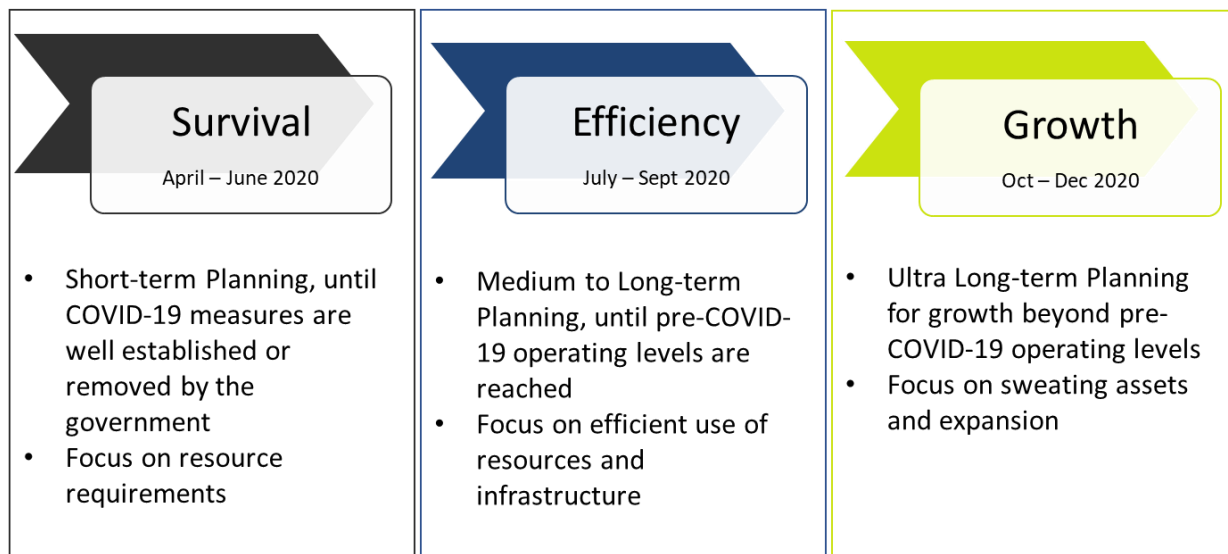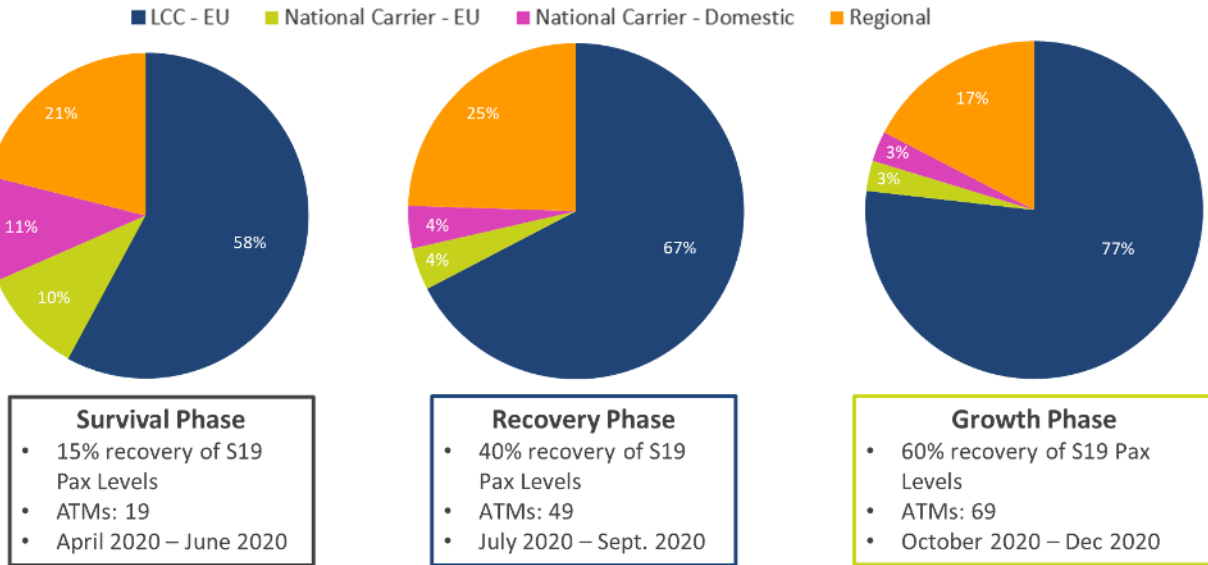| Holistic Assessments of **13 Airport Processors**	Determines **Resource & Equipment Needs**	New **health screening** processes	Level of Service inc. **Social Distancing**	Predicts **queue length & waiting times**

Schedule Development

Each schedule corresponds to a phase of recovery that airports are expected to go through:

| Survival	Efficiency	Growth
April – June 2020	July – Sept 2020	Oct – Dec 2020
• Short-term Planning, until COVID-19 measures are well established or removed by the government • Focus on resource requirements	• Medium to Long-term Planning, until pre-COVID-19 operating levels are reached • Focus on efficient use of resources and infrastructure	• Ultra Long-term Planning for growth beyond pre-COVID-19 operating levels • Focus on sweating assets and expansion

Using a typical S19 plan as a baseline, the hypothetical schedules have been developed following recent reports by ICAO and Airports Council International (ACI), which highlight the dominance of intra-EU Low Cost Carrier (LCC) routes and regional routes for the foreseeable recovery future. The schedule composition is as follows:

Legend: ■ LCC - EU   ■ National Carrier - EU   ■ National Carrier - Domestic   ■ Regional

Survival Phase
- 15% recovery of S19 Pax Levels
- ATMs: 19
- April 2020 – June 2020

Recovery Phase
- 40% recovery of S19 Pax Levels
- ATMs: 49
- July 2020 – Sept. 2020

Growth Phase
- 60% recovery of S19 Pax Levels
- ATMs: 69
- October 2020 – Dec 2020

The expected timescales for the recovery phases are based on the on recent Eurocontrol Traffic data – Didfly and estimates:

EUROCONTROL Draft Traffic Scenarios - 24 April 2020 (base year 2019)
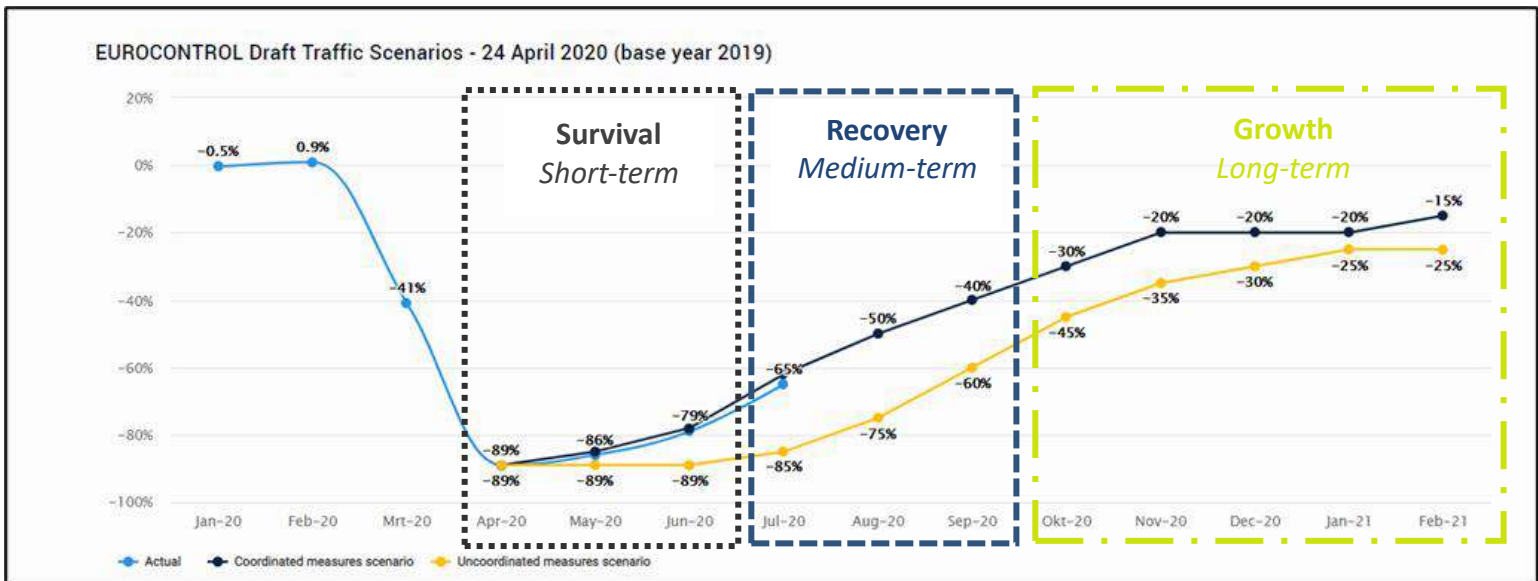
Load Factors

All three schedules have then been analysed using three different load factors to reflect different levels of passenger demand - 65%, 80%, 95%.

Key Findings

The analysis and comparison of all three schedules and load factors have resulted in three key findings, discussed below.

Note: all resource requirements discussed below refer to the maximum requirement in the peak hour of the schedules.
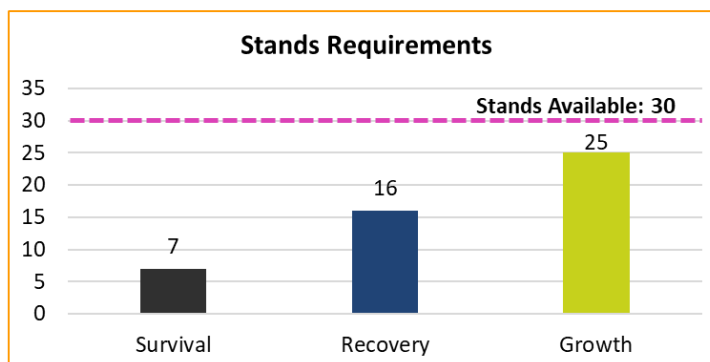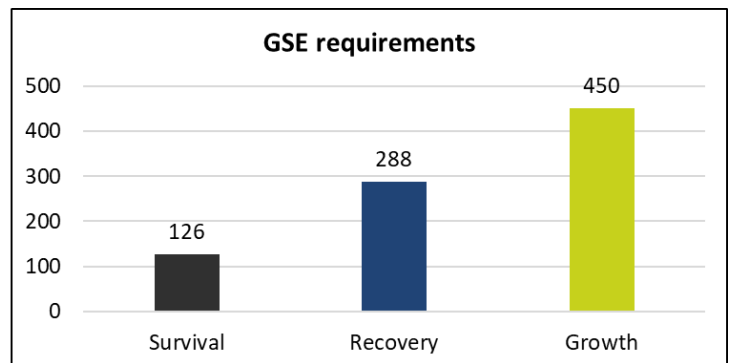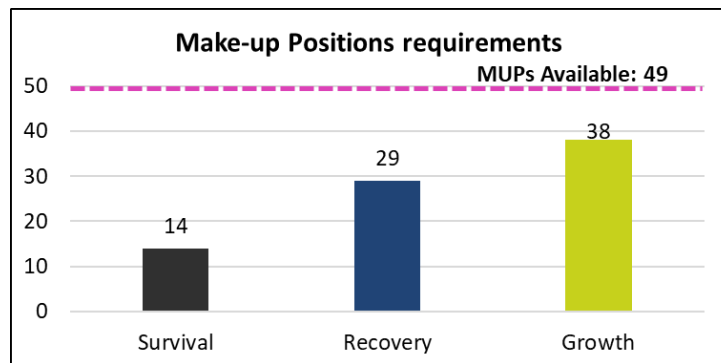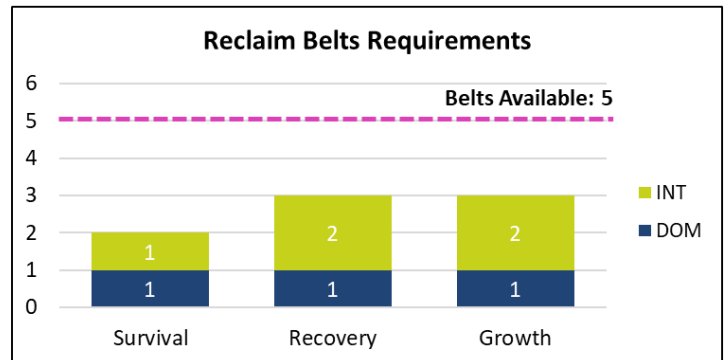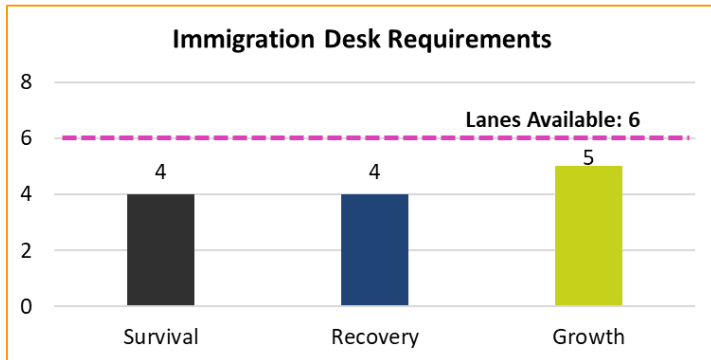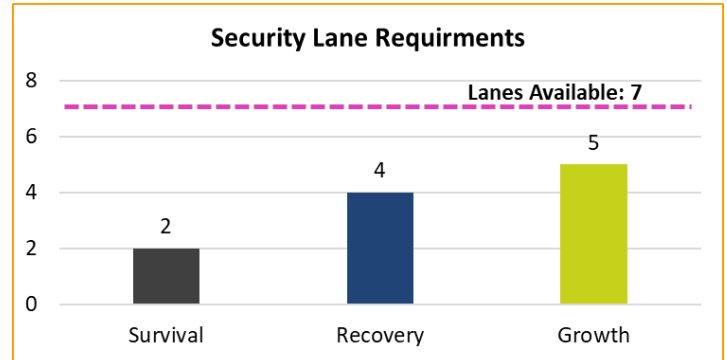
1. Rapid approach to capacity limits
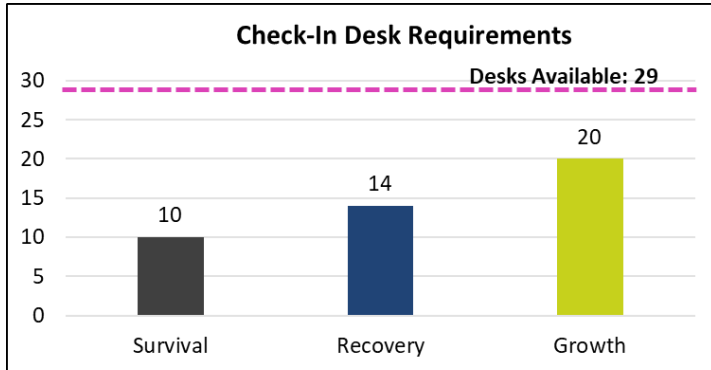
An overall comparison of resource requirements across all three recovery phases was undertaken. Details of the analysis are:

	Survival (Apr'20 – Jun'20)	Recovery (Jul'20 – Sept'20)	Growth (Oct'20 – Dec'20)
% Recovery of S19 Pax levels	15%	40%	60%
Expected ATMs on busy day	19	49	69
Expected Load Factors	95%	80%	80%

The analysis showed that as the airport approached the growth phase, i.e. 60% of S19 passenger levels, key airport processors such as Security, Immigration and Stands nearly reach their capacity limits:

Check-In Desk Requirements

Desks Available: 29

Survival	Recovery	Growth
10	14	20

Security Lane Requirments

Lanes Available: 7

Survival	Recovery	Growth
2	4	5

Immigration Desk Requirements

Lanes Available: 6

Survival	Recovery	Growth
4	4	5

Reclaim Belts Requirements

Belts Available: 5

INT
DOM

	Survival	Recovery	Growth
INT	1	2	2
DOM	1	1	1

Make-up Positions requirements

MUPs Available: 49

Survival	Recovery	Growth
14	29	38

GSE requirements

Survival	Recovery	Growth
126	288	450

Stands Requirements

Stands Available: 30

Survival	Recovery	Growth
7	16	25

Inevitably moving from recovery to growth, the popular routes and times recover the quickest, which normally means these are during the peak and therefore the peak recovers quicker than the rest of the schedule.

Growth of schedules beyond 60% will require strategic planning to ensure that resources are used efficiently. This would require maximising use of current infrastructure in times when airports are operating with reduced capital.

2. Elasticity of Schedule – small change in schedule, significant impact on resources

A typical regional airport in the EU usually operates a peaky schedule, which includes a morning peak and an afternoon peak. However, in the current volatile climate, schedules are developing in an erratic manner which can be different to the typical profile of the schedule of an airport. Past AiQ projects have highlighted that the profile of the schedule can have a significant impact on an airport's resource and infrastructure requirement. Hence, schedules of phases recovery and growth have been analysed using two different profiles to identify the impact of a change/shift in the schedule on resource requirements.

Profiles

Profile 1: Typical peaky schedule

Profile 2: Arrivals and Departure moved ±1 hour – in the current climate of recovery, it can be expected that regional airports shift from a typical peaky profile to a more evenly distributed profile as airlines may choose to spread out their limited operations across the day.
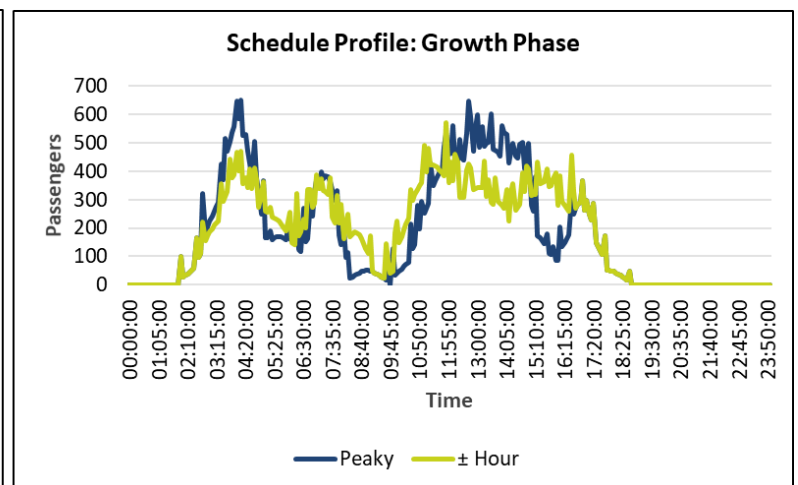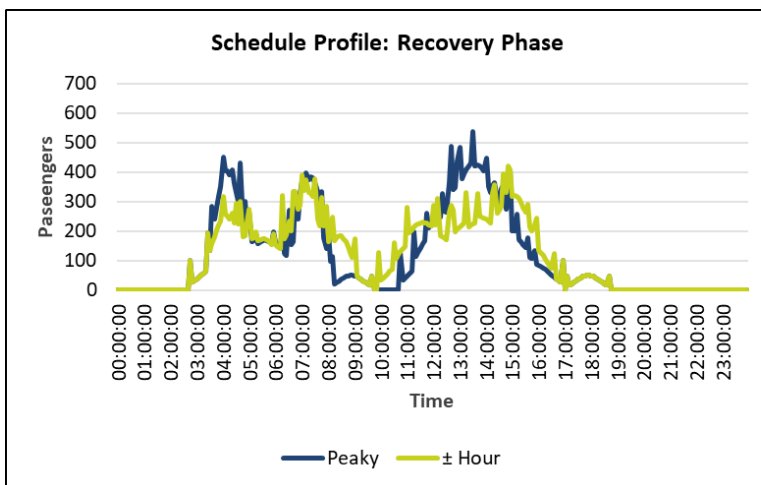
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Expected ATMs on busy day	49	69
Expected Load Factors	80%	80%

Results

Analysis of the profiles (tables below) show that, in the case of a typical EU regional airport, shift in arrivals and departures by ±1 hour from the peak hours positively impacts resource requirements with a significant reduction the resource demand, in both phases. However, whilst change in profile reduces the resource requirement, the operational period of the resources is increased, as shown in the profile graphs in figure 2. As a result, staff rota planning is also impacted by a shift in the profile of the schedule.

Recovery			
	Profile 1 Peaky	Profile 2 ± Hour	% reduction
Check-In	14	13	-7%
Security	4	3	-25%
Immigration	4	2	-50%
Reclaims – DOM	1	1	0%
Reclaims – INT	2	1	-50%
MUPs	29	20	-31%

| Growth			
	Profile 1 Peaky	Profile 2 ± Hour	% reduction
Check-In	20	16	-25%
Security	5	4	-25%
Immigration	5	4	-25%
Reclaims – DOM	1	1	0%
Reclaims – INT	2	2	0%
MUPs	38	28	-36%

3. Impact on varying load factors

As lockdown restrictions begin to ease and airports begin to operate increased schedules, the uncertainty in travel restrictions and requirements across different countries may cause a high degree of variability in passenger volume. This can affect resource planning, especially at Check-In, Security, and Immigration. To understand the impact, the survival phase schedule was analysed and compared across the different load factors:

	Survival (Apr'20 – Jun'20)
% Recovery of S19 Pax levels	15%
Expected ATMs on busy day	19
Expected Load Factors	a. 65% b. 80% c. 95%

Analysis showed that Check-In and Immigration desk requirements are sensitive to variance in load factors. For every 15-percentage point increase in the load factor, the resource requirement for both Check-in and Immigration increased by 1. However, the demand for Security lanes is unaffected by the increase in load factor. This can be attributed to the high processing rate of the security which is greater than the expected passenger flow.
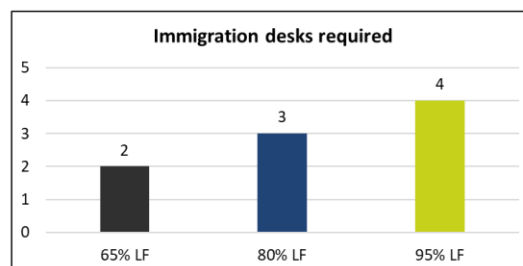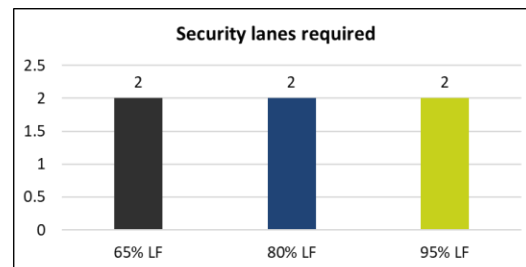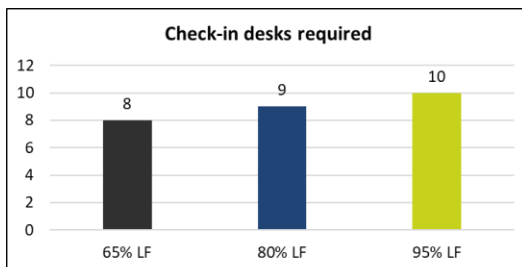
Conclusion – Tools for effective Dynamic Planning

The development of schedules is expected to remain highly uncertain and unpredictable, through the survival phase and into recovery. As stated in the introduction, airlines are over-subscribing to schedules and only operating a marginal percentage. For airport operations, such volatile pattern limits the planning ability to only daily operations. Whilst such volatility can be accommodated in the survival phase – where airports are servicing at most 20 ATMs – as airports begin to enter the recovery phase and then growth, the need for dynamic strategic planning will increase, as demonstrated in the analysis above. Airports require fast and effective planning tools, like the Airport Recovery Tool, to support decision-making efficiently in an uncertain environment.

About AiQ Consulting

AiQ Consulting provides fast, scalable and flexible kerbside to airspace consulting, modelling, and forecasting services to solve complex challenges and support airports adapt to our new world post COVID-19.

Our AOA award winning experienced team supports owners, operators, stakeholders and investors across the world's airports to assess the entire system. Unlike many airport solutions who focus just on passengers and terminal space, AiQ analyse passengers, baggage, aircraft, transfer systems and GSE – giving the big picture and detailed analysis.

We address typical questions - How do you control your cost base? Do you adjust service levels to balance your costs? Do you open sections of the airport or keep them closed? What shift rosters are you going to bring in? How do you have the facts to negotiate with your stakeholders and Trade Unions? How do you survive and recover? When do you start to think about growth?

Our bespoke modelling and simulation software TransvisionAiR® is at the heart of our business including our new demand modelling tool, Airport Recovery Tool ART$^\Delta$. We bring your data to life, enabling smart decision-making through graphs, 2D and 3D animation to VR, allowing airports to efficiently manage for changeable demand during these uncertain times.

Outsource your strategic and operational needs working with cost-effective, award-winning airport planning experts to assist your airport recovery.

To find out more about our services and unique approach to supporting airport their recovery, call us on +44 (0) 203 5989124 or email hello@aiqconsulting.com