

# COVID-19 Impacts on General Aviation – Comparative Experiences, Governmental Responses and Policy Imperatives

## **Abstract**

This article catalogues experiences of the general aviation sector as it progressively encountered the challenges of COVID-19 in the early part of 2020. The article focuses primarily on the Australian marketplace as a contribution to the body of knowledge in an under-researched industry sector. The article draws on literature pertaining to prior pandemic experience to enquire about the level of precursory preparedness in the sector, and then utilises data from 12 semi-structured interviews with experienced industry participants locally and internationally. The key findings suggest that there has been a lack of applied learning by policy makers in the past, and that generic support on offer now does not address the long term resilience of the sector nor does it address a pathway for future sudden moments of dislocation. Policies which purport to support aviation should be crafted in a way that engages all levels of industry rather than be airline centric.

**Keywords:** COVID-19, general aviation, Australia, MRO, charter, fuel supplier

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## 1. Introduction

COVID-19 has been an unprecedented calamity for the global aviation industry. Many countries have imposed travel bans that immediately resulted in the sharp drop in airline services and air passenger volumes. It is no exception for Australia. This country took an elimination strategy in the fight against Covid-19. It shut its international border to other countries in late March 2020. Subsequently, Australia's two major carriers, Qantas and Virgin Australia, cancelled almost all of their international flights. Australian States quickly followed the federal government's move and closed their borders to non-essential travellers. Throughout 2020, an Australian state could reopen its border to another state if no Covid-19 cases were reported in that state for a certain period of time. However, once a new case was identified in a state, other states would quickly close their borders to the people who stayed in or travelled to that state in the last 14 days, which caused great disruption for air travel between states within Australia. As a result, the number of passengers carried in the domestic market in December 2020 was 54.9% lower than that of the same period in 2019. Such 'open and close' dramas continued in early 2021.

The Australian civil aviation experience during the pandemic has been well documented (e.g., Zhang and Zhang, 2020). Tiger Airways redundancies, Qantas and Virgin stand-downs and the subsequent need to find parking locations for fleets of aircraft with no defined timeline have been reported on in almost every news cycle. What is less well documented to date is the impact of COVID19 on the general aviation (GA) sector either nationally or internationally.

Following a brief review of historical health related disruptions as a window into past responses, this paper seeks to address this gap with a preliminary analysis of responses experienced in Australia, along with the experience of the industry counterparts in the US. In doing so, insight is sought on the following research question:

*RQ1: Given past pandemic experiences, what evidence of applied learning has been evident in the GA sector?*

Addressing this question is of value because aviation is underpinned by a safety culture that espouses learning as a way to avoid recurrent underperformance. *RQ1* is further explored by two subordinate investigations aimed at illuminating potential key areas of focus for policy makers and industry players to build industry resilience in a post-COVID-19 world.

*RQ1a: What were the immediate challenges to continued operation confronted by the GA sector?*

*RQ1b: With the current framework of industry oversight, what mechanisms might be deployed to enhance sector resilience?*

Utilising a survey of available literature and the response data derived from semi-structured interviews, this paper explores a range of experiences within the GA sector to gain a perspective on a largely unmapped but important contributor to Australia's economy. With a particular focus on governmental response relative to business activity drivers, the paper seeks to highlight policy measures that can be leveraged to assist in making the sector more robust in the future.

## **2. Literature Review**

### *2.1 Past pandemic experience and current depth of policymaker understanding*

Aviation is a multifaceted industry, with manifestations across countless areas of human endeavour. ICAO (2009) classifies general aviation as including non-commercial business aviation, instructional flying, and aerial work such as survey, agriculture and search and rescue. Because many training operators utilise aircraft for ad-hoc charter to enhance return on assets, and provide some career progression as a staff retention aid, there is often a close correlation between those participants and providers of low capacity non-scheduled passenger transit. A study by Kearns (2018) revealed that the response to any given stimulus was not homogenous across all aviation businesses, meaning that impacts on GA must be considered for their own dimensionality rather than a simple subset of the consolidated civil aviation experience.

The aviation industry has experienced significant pandemic-styled disruptions in the past. Such events included the arrival of the Severe Acute Respiratory Syndrome (SARS) coronavirus-initiated disease emerging from Asia in early 2003 (Breugelmans, Zucs, Porte, Broll, Niedrig, Ammon, & Krause, 2004). At the time, the World Health Organisation (2004) suggested that the roles of health authorities and aviation industry participants should be to protect the public's health without unnecessary disruption of travel and commerce. Significant research was undertaken suggesting that transmission of SARS was actually a low

risk for the travelling public (Wilder-Smith, Paton & Goh, 2003) and was more closely aligned to the transmission dynamics at the place of embarkations rather than to the activity of travel in isolation (Goubar, Bitar, Cao, Feng, Fang & Desenclos, 2009). This mirrored prior investigations around other respiratory ailments like tuberculosis (Kenyon, Valway, Ihle, Onorato & Castro, 1996).

The subsequent H1N1 influenza pandemic of 2009 and a novel coronavirus emergence in 2013, impacting primarily the Middle East (MERS-Cov), had significant repercussions for the travelling public (Brown, 2013). Contradictory research argued that the act of air travel was in and of itself a transmission point for communicable disease (Clegg, 2010). Naturally, when considering recent movement statistics of three and a third billion souls across almost 33 million flights utilising 52 000 air routes (ATAG, 2016), containment of pandemic spread is of serious concern and warranted academic interest.

Despite the significant fiscal implications and health or industrial policy learning outcomes, little has been written about the impact of these pandemics on the general aviation and non-regular public transport (RPT) aviation sectors in each of the economies impacted by this series of maladies (Tisdall & Zhang, 2020). In the Australian context, this is perhaps not surprising given that, as at 2017, the responsible federal department stated that “there are currently no robust economic datasets compiled for the GA sector, restricting analysis of the impact of the various cost pressures facing GA or the contribution GA makes to the economy” (BITRE, 2017).

In December 2016, the Aviation Maintenance Repair and Overhaul Business Association Inc., an advocate for general aviation in Australia, wrote the following:

The real reason general aviation, i.e. aviation sectors other than the major airlines, cannot achieve its growth potential and add to the Australian economy is the lack of political support in this country for an industry that could create many jobs and careers, especially for rural Australia (AMROBA, 2016 p.1).

Such statements stand in contrast with the Federal Aviation Administration (FAA) and European Union Aviation Safety Agency (EASA) jurisdictions where a more granular understanding of GA economics is in evidence. Sobeieralski’s (2013) study of optimal tax rates for aviation gasoline in the US and Nja and Solbergs’ (2010) review of policy processes in a European context are illustrative of this position. Despite having little historical commentary around the specific responses to pandemic disruption, these jurisdictions with a

broader history of engagement with GA appear likely to have some early-mover advantages in crafting policy responses for their respective GA communities if only from the point of view of ‘knowing your constituency’.

## *2.2 Background of the Australian GA sector*

As previously noted, the Australian Bureau of Infrastructure, Transport and Regional Development has specifically documented the absence of comprehensive economic data on the contribution of GA to the national accounts (BITRE, 2017). This observation goes to the heart of concerns held by many GA participants about the level of support to build credible industry growth strategies (Australian Aviation, 2018). However, despite the lack of available financial measurables, some vital statistics help frame the industry. The total number of Australian (VH-registered) GA aircraft now stands at a little under 14 000 machines with an average age approaching 40 years (CASA, 2020b). In 2018, this collective flew 3.41 million hours, with almost half of this attributable to non-RPT aircraft activity (BITRE, 2019b). The sector employs approximately 11 000 persons, as at Census night 2016 (ABS, 2017). In just the month of November 2019, this relatively small sector, inclusive of charter operations, carried 233 172 passengers on fixed wing operations (BITRE, 2019a). For a relatively small group, GA ‘punches above its weight’ and its functioning is of genuine importance in the domestic economy given the size of Australia and its modest population (Tisdall, 2018).

In the latter part of 2016, the Commonwealth initiated a review of the general aviation sector under the stewardship of BITRE. Then-Minister for Infrastructure and Transport, Darren Chester, also established the General Aviation Advisory Group to support consultation with stakeholders and inform the direction of the BITRE enquiry.

The Group’s Chairperson identified to the Minister three initial areas of focus for the Group. Two of these are of interest in determining Australia’s readiness to deal with industry dislocation in the GA sector:

- 1) “Identify levers to better promote General Aviation in Australia as a contributor to social and economic development [and]
- 2) Develop a broad long-term strategic perspective for General Aviation (Infrastructure 2019),” partly in response to the completion of the department’s General Aviation Study.

These reviews are yet to deliver meaningful findings to influence policy for GA. The vacuum in direction has typically been filled by the often reactionary and emotive nature of disparate decision makers in the sector which has left it little prepared for the complexities arising from the COVID-19 crisis (Australian Flying, 2020).

In sum, our survey of extant literature relating to specific policy initiatives by the Australian government suggests a lack of focus for the GA community. Specifically, there are gaps in the following areas:

- Aviation specific Covid-safe operating protocols for GA businesses (most notably flight training organizations)
- Education and support for employers in connection with their circumstantial stand down of staff
- Opportunities to access government funding initiatives for repositioning / adapting GA business models reliant on other heavily impacted sectors (like tourism)
- Intentions of government to provide input into the regulatory framework required to reactivate staff after stand downs
- Promotion of availability and access to low cost non-government funding as a fiscal stimulus
- Specific ministerial expectations for the conduct of the much-vaunted regulator, CASA, during the pandemic disruption

In an effort to determine how the GA community has operated in this nominal vacuum, the authors have sought to engage directly with stakeholders to explore their primary concerns and decision-making tendencies.

### **3. Methodology**

The impact of COVID-19 has been sudden and is resulting in discontinuity in unanticipated forms. Having surveyed the minimal extant literature involving past pandemic experiences as an indicator of potential impact areas and likely regulatory responses across three specific general aviation arenas, it is clear this is an under-researched area of enquiry.<sup>1</sup> Thus, the

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<sup>1</sup> A number of studies have investigated the role of air transport in the spread of the COVID-19 pandemic (e.g., Zhang, Zhang, & Wang, 2020; Christidis & Christodoulou, 2020). Researchers have also examined the impact of COVID-19 on air transport, or the two-way interaction between air transport and COVID-19 (e.g., Sun, Wandelt, & Zhang, 2020). All these studies focus on the commercial aviation rather than GA.

observations drawn from semi-structured ethnographic interviews conducted during the real-time response to COVID-19 are captured to reveal the issues being faced by contemporary operators in the general aviation community and inform findings for *RQ1a* and *b*.<sup>2</sup>

Qualitative methods tend to rapidly identify issues stimulating behavioural responses at times of uncertainty (Grosvenor, 2000; Tisdall, Zhang and Zhang, 2020). Seeking input from industry participants by way of ‘coalface’ interviews provides valuable insights into what is of paramount or immediate concern to them at this critical moment of industry dislocation (Qu & Dumay, 2011). The sample of respondents was drawn from a cross section of business forms typically represented at secondary /general aviation airports.

A total of twelve semi-structured interviews usually lasting between 30 and 45 minutes were conducted during social distancing and essential-travel restrictions with senior members of the general aviation community who had at least 10 years of experience in the sector. Table 1 provides a summary of participation. Ten of these were Australian, and two from the US to seek examples of broader industrial themes across jurisdictions. Of those interviewed, four were enterprise owners, four were chief executives or equivalent employed officeholders and four were senior managers with client service responsibility. Three maintenance organisations were included, holding either Part 145 or CAR 30 CASA approvals. Three flight training organisations were represented, with a mix of domestic and international students on the Commonwealth Register of Institutions and Courses for Overseas Students (CRICOS). Four charter operators (including two in the US) were addressed, and two major refuelling groups representing international brands. The reasons for this sample of industry participants was not only their professional experience, but also the breadth of their geographic and customer operating bases.

Based on an evident concentration of capital investment and employment carriage, four enterprise groups were defined as the targets for investigation in the interviews:

- (1) Maintenance organisations who rely on general aviation activities as their key source of revenue

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<sup>2</sup> The survey method has also been used in the impact of COVID-19 on commercial aviation. For example, Suau-Sanchez, Voltes-Dorta, & Cuguero'-Escofet (2020) estimated the medium- and long-term impacts of COVID-19 on commercial aviation. Their sample consists of 16 senior airline industry executives from European organisations.

- (2) Flight training and aligned organisations who rely on international and domestic students freely
- (3) Charter operators who are likely to experience a surge in demand due to the rapid demise of airline options
- (4) Refuellers whose businesses rely on volume sales and an intricate pricing model

**Table 1**

Summary of interviewees

ID	Type	Role	Typical Clients	Country (State)
1	Charter	Owner	Fly-in-fly-out mine services	Australia (SA)
2	Charter	CEO	On demand charter	Australia (QLD)
3	Charter	CEO	Inter-city business travellers	US (CA)
		Senior		
4	Charter	Manager	On-demand charter	US (CA)
			Domestic and international	
			students	
5	Training	Owner		Australia (QLD)
6	Training	CEO	Domestic students only	Australia (NSW)
		Senior		
7	Training	Manager	GA and airline check and training	Australia (VIC)
8	Maintenance	Owner	Turbine, regional charter	Australia (SA)
9	Maintenance	Owner	GA piston private ownership	Australia (QLD)
10	Maintenance	CEO	GA flight training schools	Australia (NSW)
		Senior		
11	Refuelling	Manager	Airline & GA, national presence	Australia (QLD)
		Senior	Regional RPT and GA, non-	
12	Refuelling	Manager	metro	Australia (NSW)

It is acknowledged that the sample size is relatively small considering the size of the aggregated sector and thus the results should not be overgeneralised. The investigation did not seek to reflect particular individual experiences, but rather emergent common themes. However, the preliminary findings presented herein do reveal several issues that warrant

further investigation and may serve to inform future policy direction for the post-COVID-19 era in support of recovery and future resilience.

#### **4. Emergent Themes**

The Australian Airline Financial Relief Measures in tandem with the AUD \$198m Regional Airlines Network Support and Funding Assistance Programmes have provided a small measure of trickle down support to regional and remote area operators who are deemed to be carrying out essential support services for the federal COVID19 response (McCormack, 2020). Total aviation sector support has been promulgated at AUD\$1b (Sullivan, 2020). At face value, this support is impressive. Industry observers have been quick to point out that much of the assistance, like the waiving of airways fees and charges, can only be realised when flights are actually taking place (Thorn, 2020b). Furthermore, its value to the general aviation sector is nominal (Nadge, 2020).

##### *4.1 Maintenance Repair and Overhaul*

The Regional Aviation Association of Australia (2020), in its letter of 9 April to Deputy Prime Minister McCormack, coherently outlined the need for federal assistance to downstream industry including maintenance and repair organisations (MROs), independent simulator training centres and privately owned flying schools. The Association noted the difficulties MROs and their upstream suppliers have experienced as operators deferred or cancelled scheduled maintenance and cashflows dried up. One MRO CEO in our interview noted that *“in several instances along the eastern seaboard, component suppliers have cancelled credit terms to their clients, disturbing the typical spontaneous financing patterns of MROs.”* Reliance on the national Job Keeper program (underpinning AUD\$1500 per fortnight for staff) is expected to be widespread. However, one MRO owner stated that *“simply to keep staff in a period where meeting payroll commitments is uncertain will prove very difficult.”*

Unexpected deficiencies in import capabilities have exacerbated issues with MRO workforce planning. A US supplier of new aircraft seeking to have a machine delivered by vessel to Brisbane for an Archerfield based flight school after first docking in Sydney has been required to route the aircraft to Melbourne for reassembly. The company’s Oceania director has advised that temporary Customs clearing courtesies formerly available were now not on

offer by the responsible department due to COVID-19 management protocols, meaning that the Gold Coast based MRO who would normally attend to the reassembly has missed out on an engagement which would have supported five workers for two weeks. Two imports behind the initial airframe will be similarly redirected. Skills applicable to the task cannot easily be transferred interstate because of border closures or untenable quarantine restrictions.

#### *4.2 Flight Training Organisations*

Simulator training centre revenues have rapidly waned as operators have stood down crews or have been able to take advantage of exemptions to recurrent training requirements offered by CASA. A senior manager of one of Australia's pre-eminent centres which operates industry critical training equipment not readily available elsewhere in the country reported that *"they had lost 90% of its revenues."* Non-Australian pilots, notably from the Pacific region, who do not benefit from the CASA exemptions will be doubly disaffected by a lack of ability to access onshore training facilities and the lapsing of their licence privileges (Morgan, 2020). Similarly, private flight training organisations who often rely on international student revenues are being considered vulnerable to collapse, leaving large investments devoid of earning potential and a gap in the market not easily filled upon a return to normal operating conditions (Marshall, 2020).

To date, CASA has not promulgated specific regulations with respect to managing flight training interactions. The CEO of a medium sized Queensland flight training organisation stated that *"industry players have been left to determine their own risk mitigation strategies which has led some to shut down prematurely, others to curtail training engagements and yet others to proceed without change."* An owner also working in the training space noted that *"the fiscal implications relative to leased asset payments, the uncertainty of staff payment protocols and the lack of consistency in COVID-19 exposure management are of immediate concern to flight training operators."* The capacity to access low-cost state government cashflow funding (QRIDA, 2020) and generic federal payroll support programs (ATO, 2020) will likely assist many to continue baseline operations, but will have the longer term effect of leveraging up already thinly capitalised balance sheets for the majority of small operating margin GA businesses. A natural progression for this sub-sector is a period of aggregation

where marginal operations are subsumed by more stable enterprises who have previously diversified and will thus be better placed to weather the pandemic.

#### *4.3 Charter Operations*

Insofar as charter operators are concerned, there has long existed a limitation on their capacity to sell 'by the seat'. This is even though their Carriers Liability Insurance (a mandatory policy) provisions for the same strict liability payment coverage as a major airline. An enterprise owner with a large exposure to the fly-in fly-out market expressed that "*CASA appears amenable to a relaxation of this position to support the re-ignition of low-capacity regional flying, and long as such flying does not operate on a fixed schedule.*" This relaxation essentially makes the cost of mobility far more manageable for isolated families and groups to access regional centres and is sure to be welcomed by operators.

The COVID-19 reductions in interpersonal services has had one observable positive effect for charter operators. The carriage of freight, normally the domain of for-purpose carriers like Toll and FedEx, has escalated with the dilution of RPT services. One charter company CEO expressed that "*Operators have had increasing levels of quote activity for the transports of goods as diverse as medical equipment and blood products to kittens and live corals.*" However, the current dysfunction in evidence (AIPA, 2020) around the stalled introduction of fatigue management rules into industry (CASA, 2019) "*has left a number of operators without the necessary flexibility to redeploy assets speedily enough to take advantage of revenue flight opportunities,*" according to one senior charter manager.

The experiences of the US participants present an interesting counterpoint. In that jurisdiction, significant effort has been directed at continuing 'business as usual.' Prima face evidence of this includes the continuance of aircraft movements within the continental United States. Whilst acknowledging differences in population and industry scale, Figures 1 and 2 (Flight Radar 24, 2020) indicate the volume of activity in the continental US on 1 April as standing in stark contrast with the much-reduced level of activity in Australia at the same time. Of note in the US response is the range of classified essential travel which includes persons engaged in lawful cross-border trade, individuals traveling to work in the US and those traveling to attend an educational institution (Universal Weather & Aviation Inc, 2020). In Australia, these classifications have been curtailed by inter-state border closures, enforced self-isolation protocols and other restraints on free movement.

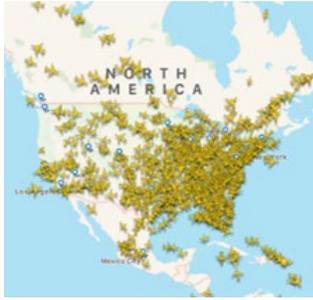


Figure 2 - Aircraft Activity USA, 1 April 2020 (Flight Radar 24, 2020)



Figure 3 - Aircraft Activity Australia, 1 April 2020 (Flight Radar 24, 2020)

The 14 April announcement by the US Transportation Secretary of a USD \$10 billion relief package for airports, including GA airports, gives credence to an ongoing commitment to keep aviation moving in the US. Unlike Australian initiatives which are pitched at operating cashflow support alone, the US funds are available for “for airport capital expenditures, airport operating expenses including payroll and utilities, and airport debt payments (USDOT, 2020).” Such a broad permission of allowable uses for funding helps to maintain focus on the operability of both people and infrastructure necessary to revert to full scale operations in the post COVID-19 period.

This support has been appreciated by industry. A moderately sized jet charter operator in California responded:

*“As I am sure you know, the government has earmarked a tremendous amount of money for airlines big and small. Full disclosure: we are a very small “airline” and have yet to receive any funds. That said, I am fully expecting government aid in the form of grants and low interest loans which will provide tremendous relief for us. Aviation is a business with notoriously high fixed costs and in a near-zero revenue environment, this aid will be life-or-death for some. I commend our government for taking quick action here and I'm hopeful that cash will be in the bank soon.”*

In an experience similar to Australia, the FAA has sought to reduce the level of regulatory impost for operators. One charter operator from Van Nuys, California commented:

*“On a regulatory level, they've released guidance for pilots who have training requirements coming up in the next 90 days. Pilots can overfly previous limitations on*

*their training since recurrent training is not viable in the near future. This is a very practical move and I applaud the FAA for taking quick action. They are not known for moving fast on really anything in their history. Who doesn't like pleasant surprises though?"*

Responses like the above speak to a level of cynicism about why support is in evidence only at a critical juncture when some pragmatic, outcomes-based decision making would be of value to industry under normal conditions. However, the fact that an unheralded baseline level of support is available to supply at least a living wage is duly acknowledged by the constituency. Like those being metered out “until funding is exhausted (QRIDA, 2020)”, they do little to address the structural operating conditions being specifically experienced during the pandemic. Such funding might, in the observation of one MRO operator, be structured to “cover the cost of reconfiguring aircraft to carry freight or provide for PPE requirements that are at least useful to diversify missions and future-proof operators.”

#### *4.4 Fuel Suppliers*

As of 17 April, one major fuel supplier’s stocks of Jet A1 stood at 95% of storage capacity. This has significant implications for GA in that it still has a heavy aviation gasoline (AvGas) reliance which is a downstream product of the refinery. With the demand for Jet A1, which equates to 33% of refining stock offtake, reducing due to the grounding of vast fleets of Regular Passenger Transport (RPT) aircraft (Morrison, 2020), the refining equilibrium is upset. The margins produced at this level which subsidise the production of lower grade offtakes (including AvGas required by piston powered aircraft) are reduced, leading to decisions to place refineries in care and maintenance mode rather than operate them at a loss. This places further stress on an already short supply line with Australia only holding 23 days of jet fuel on a normal operating footing against a target of 90 days self-sufficiency (Hepburn, 2020).

Lower stock turnover in the GA space as a result of restrictions in non-essential travel, including recreational aviation, have knock on effects for fuel retailers. A senior manager with a regional distribution focus noted that “*reduced capacity to hold stock and the added cost of maintaining compliance with storage and use-by requirements mandated under the JIG (Joint Inspection Group) global aviation fuel standards rank among these effects.*”

## 5. Interim Policy Considerations

Notwithstanding the discussion items to follow on a more macro perspective, several issues of note to policy makers emerged for the GA sector that represent opportunities to enhance industry responsiveness and compliance with health directions.

Firstly, a major selling point of on-demand charter is that the rigour of major airport and airline process can be dispensed with, avoiding wait times that are a significant factor in user preference when travelling (Forsyth & Dwyer, 2010). Yet, there was no published direction for intra-state GA travellers, many of whom were deemed ‘essential workers’ having to travel to such national economic infrastructure generators as fly-in fly-out (FIFO) resources camps. Individual operators were left to determine protocols that saw them superficially compliant with health directions but without the benefit of professional guidance. Given that studies like that of Budd, Bell and Brown (2009, p.426) have already documented the “epidemiological vulnerability of a closely inter-connected and highly aeromobile twenty-first century world”, it would seem appropriate that a set of readily implementable health screening protocols be generated that can be facilitated as easily by GA operators as airline entities.

Secondly, a matter of liability arises. Naboush and Alnimer (2020) have presented a number of dimensions to potential airline liability in the event that their activities contributed to passenger acquisition of COVID-19. Depending on the interpretation of prevailing Conventions, vicarious liability is a serious issue for airline participants. Should such an issue be proven at law, the typical GA operator is unlikely to have the resources to weather a claim or the insurance arrangements in place to underpin the ability to pay damages. Policymakers would do well to consider an equitable sharing of responsibility and some legislative safeguards for providers when deeming some travel essential, especially where such can only be reasonable facilitated by a non-airline smaller player.

A third area which may warrant a stated national policy in the interests of clarity and pathogen management is aircraft boarding. Sun, Wandelt, Zheng and Zhang (2021) have highlighted a range of extant studies at airline level around the simple matter of boarding passengers during a pandemic. A multitude of options are trialled, with varying impacts on either transmissibility or efficiency. Yet for charter operators, likely due to the smaller nature of both aircraft and travelling cohort, no direction has been mandated. Out of the abundance of caution, our survey participants reported that some FIFO employers mandated that their travelling groups be reduced by half in an effort to obtain onboard social distancing. The

veracity of this strategy has not been measured, but the issue remains on without firm guidance to work-hungry operators.

Fourthly, an unanticipated side effect of such efforts to reduce onboard crowding was the increase in flight requirements for some contracted charter providers. Half capacity flights departing twice as often results in an essential workforce being delivered to rural and remote resource communities and welcome cashflows to operators who sell ‘by the plane’ rather than ‘by the seat’, but also escalates the matter of carbon emissions from an already significant contributor. The aged nature of a fuel inefficient fleet remains an issue for industry engagement (Akça, 2018), even outside of a pandemic inspired escalation of movement in various sub-sectors of the economy. Compromising hard-earned national policy progress at building sustainability into the non-airline sector is not an ideal outcome of the pandemic.

Finally, an observed area of coalface policy coordination that bears review is the cooperation between overseeing agencies in the movement of GA traffic. Typically, state authorities within Australia have been tasked with policing their borders, and intercepting cross-border chartered and private flights. During the height of the border closures, highly proactive states like Queensland and South Australia deployed officers to GA airports, with such frontline pandemic control personnel from suburban stations observed to be totally reliant on using such commercial mobile apps as Flight Radar 24 and Flight Aware to look out for inbound aircraft with no formal alerts from Air Services Australia or other federal surveillance capability. Whether or not such disconnects have implications for national security or law enforcement at other times merits consideration in the broader context of the federalism debate (Productivity Commission, 2017).

## **6. International GA experiences**

To contextualise the Australian experience, it is perhaps of value to briefly consider GA’s journey relative to that of some international jurisdictions where policymakers and regulators have been visible in their constituencies. The United Kingdom’s Department of Transport has regularly updated its COVID-19 guidance for the GA community. Plain English directions about what GA participants can do have taken the guesswork out of what is a permitted activity (UK Department of Transport, 2020). EASA has proactively sought to educate and inform its GA constituency, and appears to have garnered enthusiastic cross-border support

for its recommendations on matters even as simple as how to disinfect an aircraft effectively (EASA, 2020c). New Zealand's CAA proactively considered the issue of mental health for its aircrews while regularly updating guidance information for transport operators and non-reward GA participants alike (CAA, 2020). In the US, the world's largest economy, COVID-19 perpetuated low interest rates have actually stimulated demand for GA aircraft upgrades in the second half of 2020 (Bertorelli, 2020), but little market direction has allowed insurance costs to markedly increase during the same period (Anglisano, 2020). Interestingly, thoughts in the US market have turned to the impact on airport facilities and the cost of FAA design standards to accommodate an increased level of aircraft ownership post-pandemic (Keidel-Adams, 2021).

By contrast, China has been actively engaged in policy initiatives for its GA constituency, going so far as setting up subsidiaries and special funds for GA companies that actively look to engage in the national response to COVID-19 (Asianskymedia, 2020). Some African policymakers have sought to address travel inducing sectors like tourism in a triage effort to stave of total collapse of general aviation operators reliant on guest movement to supplement the operating cost of connecting remote area communities with essential services like healthcare (Muragu, Nyadera & Mbugua, 2021). Certainly, there has not been a 'one size' fits all response around the globe, and the lapsation of time will likely reveal varied stories in under-reported GA markets like South America and Oceania.

## **7. Discussion and Conclusion**

In Australia, the federal response to issues confronting general aviation has initially been overshadowed by the direction of resources to the national and regional passenger carriers, including Qantas, Virgin Australia and REX. These major enterprises have been dramatically impacted by the almost overnight suspension of first international and then domestic routes as first the nation shut its borders and then states shut theirs (Young, 2020; Thorn, 2020a; Zhang & Zhang, 2020).

The qualitative survey, conducted in the early weeks of the COVID-19 pandemic, has illuminated several shared conditions and experiences amongst general aviation participants in four sector subsets; notably concern around the nature of structural fiscal support, a desire for clear policy direction and considerable exposure to community dislocation. While the sample size was small, the fact that these conditions appear to be generally held across the

geographies and activity areas surveyed lends weight to the validity of focus on these areas for future policy making by the authorities.

Given the evolving nature of the pandemic, and the indication of a closed national border into 2022, a future study would do well to explore what policies ultimately develop in Australia and how they compare with the priorities expressed in the interview findings nearer the outset of the outbreak where unaccounted-for emotional influencers were likely in play. To that end, the authors are working towards a longitudinal study of the sector participants; the results of which will be progressively released to peer review.

In responding to RQ1 around the adoption of behaviours as a result of prior industrial and policy experience, the key findings of the current study include the understanding that a nationally structured industrial response that specifically addresses the needs of general aviation has not been in evidence during past pandemics and is not being enacted now in the surveyed environments. Clegg (2010, p.467) noted in evaluating the impacts of the H1N1 virus on international travel and trade that “after this pandemic is over, both international and national bodies will most definitely need to meet to determine what they can do to prevent and contain future pandemics.” A decade on, such planning has not been immediately evident which has left even peak representative bodies at a loss for direction, stating “somehow or other, we need to cooperate to find a way out of this (AMBROBA, 2020).”

Industry participants across the two of the four sector sub-sets have expressed appreciation for the rapid relaxation of currency requirements for pilots. To date, little commentary has been expressed about how such currency will be rapidly reattained, the cost pressures on providers with scarce resources under peak demand after such low trade or whether federal regulators will demonstrate such quickness of will on cooperating with industry after the COVID-19 crisis abates. Such cooperation should include genuine dialogue about the capacity for operators and organisations to self-assess risk and replace prescriptive regulations with performance-based alternatives if they have been entrusted to do so under period of high duress and remote / socially distant oversight with safe outcomes.

In addressing RQ1a, the interview data suggests that the business fiscal support packages provided by national authorities have not, for the most part, addressed the specific structural nature of the general aviation sector. Research suggests that policy benefits are best realised when they are targeted (Anable, 2005). Formulating support that aids in the diversification of operations, reduces compliance costs or reduces taxes and excises on an ongoing basis

appears to have more long-term merit than short term cashflow support that simply leverages already stressed balance sheets.

Freestone, Williams and Bowden (2006, p.491) identified that “in the global ‘space of flows’, airports are critical nodes and have latterly assumed major economic significance extending beyond core aviation functions.” In a modified domestic form, the concept of developing airport cities (Chandu, 2017) as special economic zones bears investigation. Modified taxation, scaled excises, accelerated depreciation, innovation sponsorship and international investment incentivisation are among the policy levers available under the ‘dual legal order’ regime (Likosky, 2005). To date, these have never been fully explored in a general aviation context (Walker & Stevens, 2008) and may do much to encourage the progressive replacement of ageing infrastructure evident in many general aviation airports and developing capacity for diversified activity within individual enterprises.

Finally, it is evident that the GA sector across the surveyed sub-sectors is exposed to many of the same vagaries as the broader RPT / civil aviation sector. Among these exposures is a quality and stable fuel supply, a low margin operating environment, dependency on key infrastructures where tenancy costs are a significant portion of revenue and a significantly skilled workforce that takes time and resources to develop. Feedback received through the interview sample in pursuit of an answer to *RQ1b* suggests that one strategy policy makers could adopt is to more fully integrate the entire aviation sector in a scaffolded manner than insulates the economy from the ‘sudden death’ of an airline player and harmonises the competitive framework in which scale of operations can be recognized and leveraged. This includes the equalizing rules for passenger carrying operations, the maintenance regimes applicable to such operations, and the more aggressive management of anti-competitive practice by national corporate regulators.

Clearly, COVID-19 has been a game-changer globally. Aviation practitioners must now address the robustness of their risk management protocols, supply chains, gearing, workplace health and safety policies and staffing relations. If public policy is to assist in rebuilding the deeply bruised aviation sector, it must address all of its constituent parts and reflect an ethic of adaption rather than simply rely on survival of the fittest.

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