

VANCOUVER INTERNATIONAL AIRPORT

2021 Aeronautical Noise Management Report



2021 ANNUAL NOISE REPORT

INTRODUCTION

Vancouver Airport Authority (“Airport Authority”) is a non-share capital private corporation that operates Vancouver International Airport (“YVR”) in service of our community and economy that supports it. The Airport Authority is committed to operating YVR in a manner that minimizes negative impacts on the environment, while providing 24-hour airport services to support the business and travel demands of the region.

To manage noise from aircraft and airport operations, the Airport Authority has a comprehensive noise management program and uses a sustainability framework in its approach. This framework integrates the economic, environmental, social, and governance aspects of our business and provides a balanced approach for our corporate objectives and our commitment to the local community. Annual work plans for the noise management program are guided by a broad set of initiatives contained in the YVR Noise Management Plan, developed with input from the community and support from the YVR Aeronautical Noise Management Committee. The current Plan covers the years 2019-2023.

2021 YVR NOISE MANAGEMENT HIGHLIGHTS

In 2021, the aviation industry continued to be affected by the COVID-19 pandemic. At YVR, while the air traffic level started to gradually increase in the summer as some travel restrictions were relaxed and Canadian vaccination rates increased, it remained substantially reduced compared to pre-pandemic levels.

Despite the reduced traffic and a slow recovery, the Airport Authority remains committed to managing noise from aircraft and airport operations. Highlights of noise management activities in 2021 are summarized below:

Noise Monitoring Terminal Upgrade and Network Expansion Project

In 2021, the Airport Authority began a project to upgrade the hardware at the existing noise monitoring terminals (“NMTs”), as well as to expand the network by adding new NMTs. As part of the project, the old hardware at the 20 existing NMT locations were replaced, and three new sites, one in Musqueam¹ and two in the City of Delta, were added.

¹ The new NMT installed in Musqueam replaced a portable NMT that was deployed in the area in 2018 for temporary monitoring.

Vancouver Airspace Modernization Project

The Vancouver Airport Authority continues to support NAV CANADA on their Vancouver Airspace Modernization Project. As part of the work, NAV CANADA is committed to minimizing community noise impacts wherever possible during the design of new flight paths. NAV CANADA will undertake public consultation to solicit input into proposed designs, once their airspace design concepts are developed. Further information on the project can be found on the NAV CANADA's website (www.navcanada.ca).

Noise Web Update

In an effort to optimize and streamline the noise management information material shared on the YVR website (www.yvr.ca/noise), the content and structure of materials posted on the website were reviewed and updated. The updated content was also translated and made available in French in accordance with requirements in the *Official Languages Act*.

Aeronautical Noise Management Committee Meetings

The Aeronautical Noise Management Committee, a key component of the YVR Noise Management Program, provides a forum for discussion and consideration of all aeronautical noise management issues at the airport. The membership includes a wide variety of stakeholders representing municipal staff, community members, Musqueam, and industry partners. In 2021, three meetings were hosted virtually. Meeting minutes are posted on www.yvr.ca/en/about-yvr/noise-management/anmc.

Discussions with Canadian Airports

The Airport Authority continues to participate in national discussions on noise issues through the Canadian Airports Council Noise Working Group, which includes members from many airports in Canada. This group provides a forum to exchange information and discuss local noise issues as well as engage with Transport Canada on national issues.

YVR Fly Quiet Awards

The 2020 YVR Fly Quiet Awards were presented at the annual YVR Chief Pilots Meeting. The goal of these awards is to support best behaviors and raise awareness of noise issues within the aviation community. The winners included: WestJet Encore (propeller aircraft category); Jazz Aviation (narrow-body jet aircraft category); and All Nippon Airways (wide-body jet aircraft category).

Noise Concerns

The Airport Authority engages with the community on aircraft noise issues and responds to questions and concerns from residents. In 2021, a total of 2,044 noise concerns were registered by 115 individuals. This represents a 27% decrease in the number of concerns but a 7% increase in the number of individuals compared to 2020. 94% of the total concerns were received from three individuals, with one individual submitting 84% of the total concerns. The Airport Authority's practice is to reach out to discuss issues with those who submit concerns, but some choose not to pursue the offer.

Further information on operational statistics, noise concerns, and noise monitoring data can be found in the following appendices:

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APPENDIX A - YVR OPERATIONS IN REVIEW

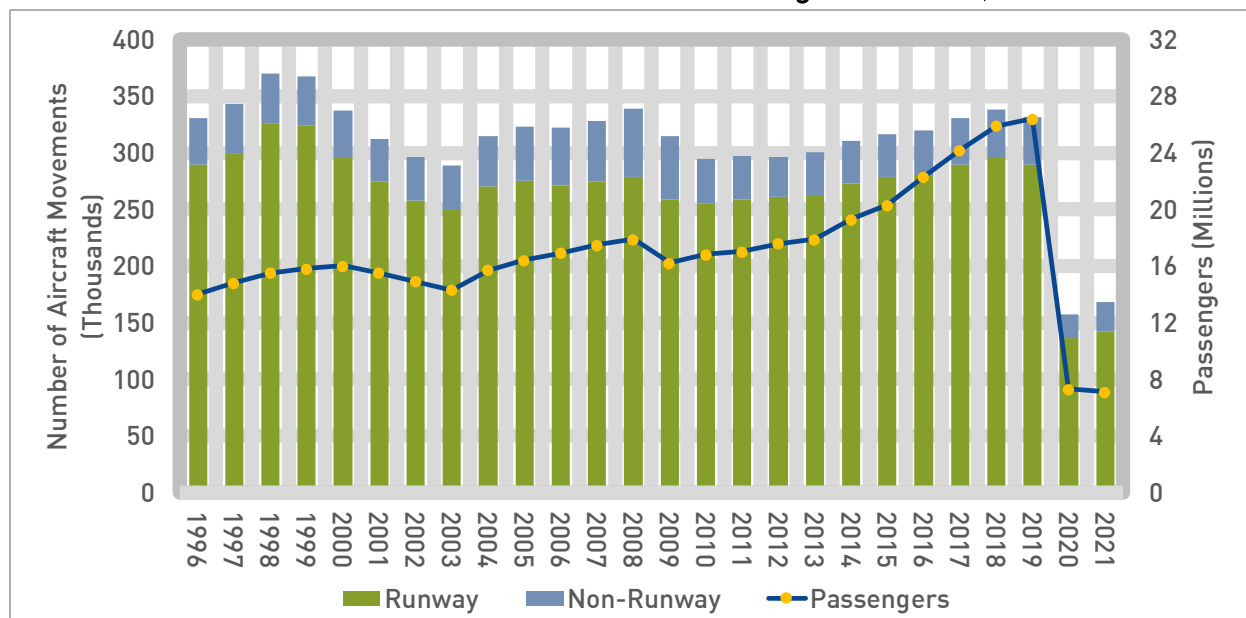
In 2021, operations at YVR continued to be impacted by the ongoing global pandemic and travel restrictions. While the aircraft movement was up by 6.8% from 2020, there was a 3% decrease in passengers over the previous year.

TABLE 1: Operational Statistics for YVR, 2019-2021

	2019	2020	2021
Total Aircraft Movements	331,441	157,563	168,323
Runway Movements	289,533	136,277	141,699
Non-Runway Movements	41,908	21,286	26,624
Total Cargo (Tonnes)	304,078	241,895	279,212
Total Passengers	26,379,870	7,300,287	7,086,602

Figure 1 illustrates the historical trend of annual aircraft movements and passengers at YVR for the period of 1996-2021. The aircraft movements and passenger totals continued to be significantly reduced in 2021. The passenger number observed in 2021 was the lowest over 25-years.

FIGURE 1: Annual Aircraft Movements & Passenger Statistics, 1996-2021²



² This chart includes both runway and non-runway movements. Non-runway movements include helicopter and float plane operations.

Figure 2 illustrates the monthly number of aircraft movements in 2021. The monthly aircraft movements were observed to trend upwards in the summer months and peaked in August as some pandemic restrictions were relaxed and vaccination rates increased in Canada. The traffic level remained steady through September to December.

FIGURE 2: Monthly Aircraft Movements, 2021

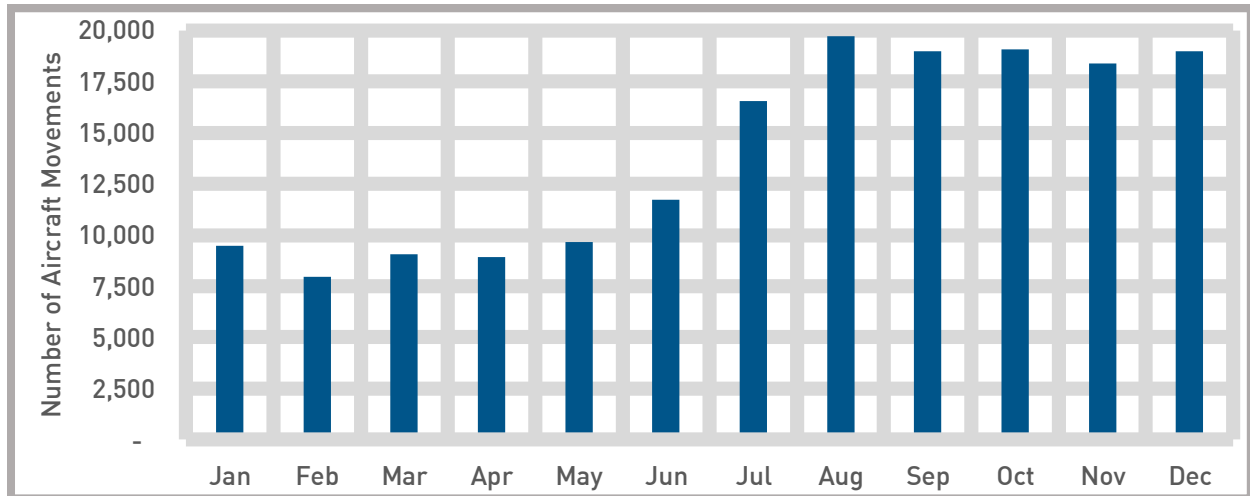
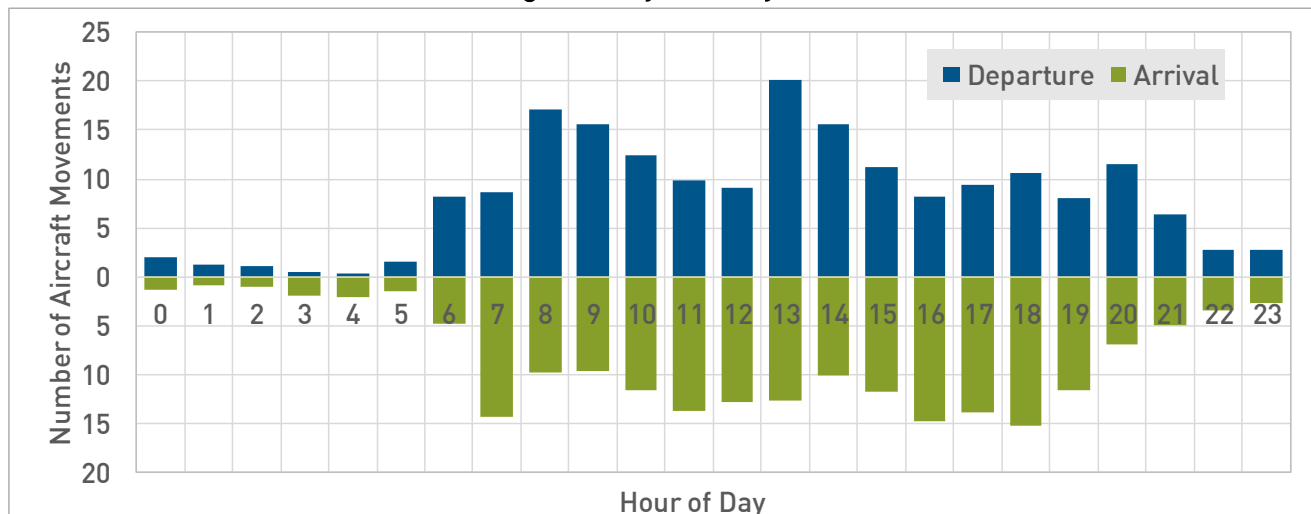


Figure 3 illustrates the annual average hourly runway movements by arrival and departure in 2021. Runway movements increase at 6 AM and peaks are experienced throughout the day. While the traffic volume in 2021 was much lower than pre-pandemic levels, the general trend of having the majority of aircraft movements occur during the day-time rather than the night-time and peaking during certain hours has not changed.

FIGURE 3: Average Hourly Runway Movements, 2021



NIGHT OPERATIONS

Like most international airports around the world and all international airports in Canada, YVR is open 24-hours a day to serve travel and business demands of the region. While movements at night are typically associated with cargo and courier services, there are also several long-haul international passenger flights using large wide body aircraft.

In 2021, there were 5,549 runway movements during the night-time period³, representing a 6% increase compared to 2020, and a 41 % decrease from 2019. This accounts for 4% of the total annual runway movements and equates to an average of 15 movements per night. Of these movements, 57% were arrivals, which are generally quieter than departures. Pre-pandemic, the average number of movements at night were between 25 and 30.

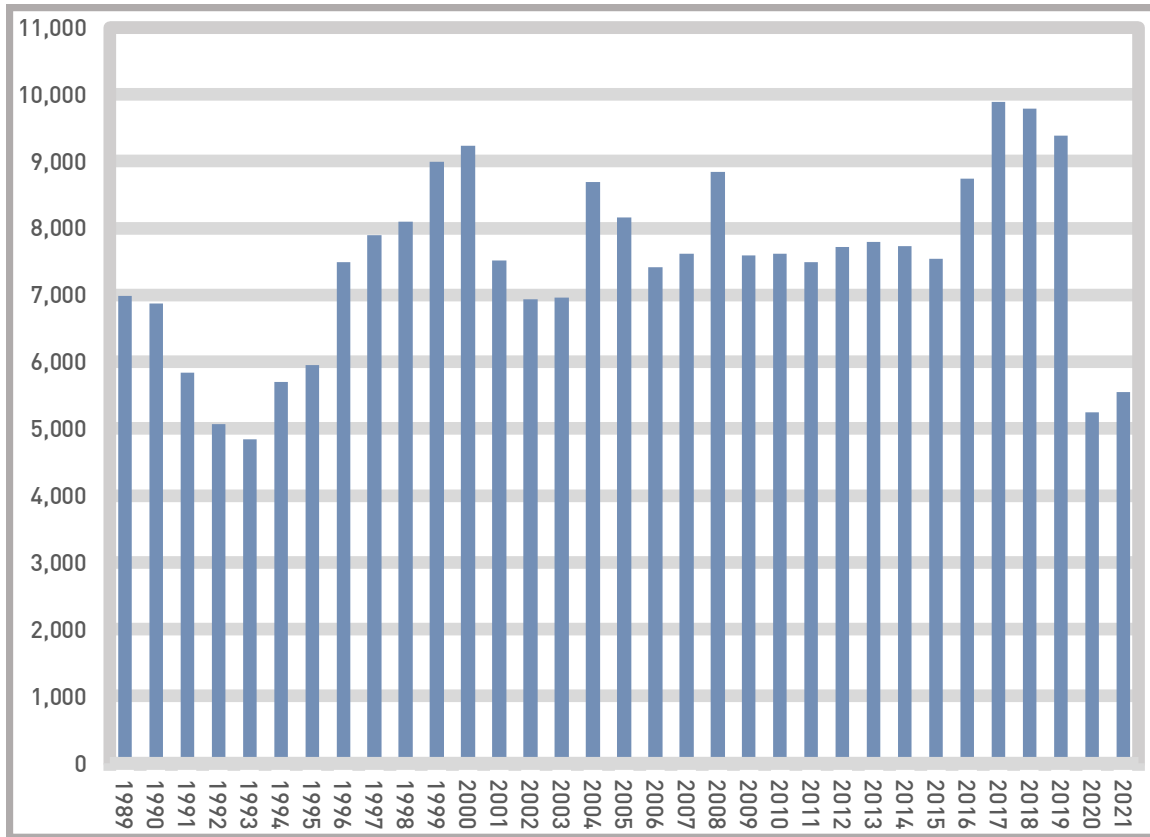
YVR has always been open 24-hours a day, including when the airport was managed by Transport Canada prior to the transfer to the Airport Authority in 1992. For comparative purposes, **Figure 4** illustrates the annual night-time runway movements at YVR for the years 1989 to 2021. The number of night-time runway movements in 2021 remained much lower than the pre-pandemic level and is comparable with movements observed in the early 1990s.

To minimize noise at night, YVR has the following published Noise Abatement Procedures and practices:

- A prior approval requirement for departures of jet aircraft rated over 34,000 kg (maximum take-off weight) between midnight and 6 AM.
- Use of preferential runways to keep arriving and departing aircraft over the Strait of Georgia (weather permitting).
- Early turn and vectoring procedures for aircraft on certain routes to minimize over-flights of populated areas.
- Closure of the north runway between the hours of 10 PM and 7 AM (except in the event of an emergency or maintenance).

³ For this report, the night-time period are the hours between midnight and 6:00AM local time.

FIGURE 4: Annual Night-time Runway Movements, 1989-2021



JET FLEET MIX BY NOISE CERTIFICATION

The International Civil Aviation Organization (“ICAO”) is an agency of the United Nations and establishes principles and techniques for the planning and development of international air transportation to ensure safe and orderly growth. The ICAO Committee on Aviation Environmental Protection (“CAEP”) prescribes standards for noise with the goal of promoting reduction at the source. These standards are contained in *Annex 16: Volume I Environmental Protection - Aircraft Noise* and categorize jet aircraft as either Chapter 2, Chapter 3 or Chapter 4 depending on three measured noise levels (take-off, landing, and sideline) obtained during prototype development⁴.

The Chapter 14 noise standard was confirmed at the 9th meeting of CAEP in February 2013. This standard applies to new aircraft types over 55 tonnes (55,000kg) certified after 2017 and to new aircraft types less than 55 tonnes after 2020. To meet the Chapter 14 standard, aircraft must be at least 7 EPNdB (Effective Perceived Noise in Decibels) quieter than the current Chapter 4 standard. This reduction is cumulative over the three measurement points: take-off, landing, and sideline.

In 2021, approximately 90% of the movements by jet aircraft with a Gross Take-off Weight over 34,000kg were with an aircraft type that met Chapter 4 or Chapter 14 noise certification standards. In addition, approximately 81% of movements by jet aircraft with a Gross Take-off Weight over 34,000 kg operating between the hours of midnight and 6:00 AM were with an aircraft type that met Chapter 4 or Chapter 14 noise certification standards.

Airlines worldwide continue to invest billions of dollars to upgrade their aircraft fleets. These new aircraft types have improved noise and emissions benefits compared to the older aircraft types they replace.

⁴ The Government of Canada legislated the phase-out of older noisier Chapter 2 jet aircraft over 34,000kg from operation in Canada by 2002. These aircraft are no longer permitted to operate in Canada and were either retired from operation or modified to meet Chapter 3 standards. A few exemptions were granted for aircraft operating from airfields in northern Canada.

AIR TRAFFIC FLOW

YVR has two parallel runways and a crosswind runway. The parallel runways, which include the south runway (08R/26L) and the north runway (08L/26R), are aligned in an east-west direction with magnetic headings of 083° and 263°. The crosswind runway (13/31) is oriented in a northwest and southeast direction with magnetic headings of 125° and 305°.

Active runways are determined by wind conditions at the airport as aircraft must take-off and land into the wind for safety reasons. The predominant winds at YVR are typically in an easterly or westerly direction; therefore, the parallel runways are the primary runways in use. Based on historical observations, traffic flow in an easterly direction (Runway 08L and 08R) is more common during the fall and winter months, and traffic flow in a westerly direction (Runway 26L and 26R) is more common during the spring and summer months. The crosswind runway is generally only active during periods of high crosswind conditions, which are very infrequent throughout the year and generally occur during the fall and winter months.

Published YVR Noise Abatement Procedures prescribe westerly flow of traffic as the preferred mode of operation whenever possible to reduce noise exposure on the community, as this places departures, the noisiest type of operation, over the Strait of Georgia. In addition, NAV CANADA will attempt to accommodate two-way flow between the hours of 11:00 PM and 6:00 AM to keep both arriving and departing aircraft over the Strait of Georgia to minimize over-flights and noise on the community. However, the use of two-way flow is dependent on traffic volume, airfield activities, and weather conditions and cannot be used all the time.

RUNWAY USE

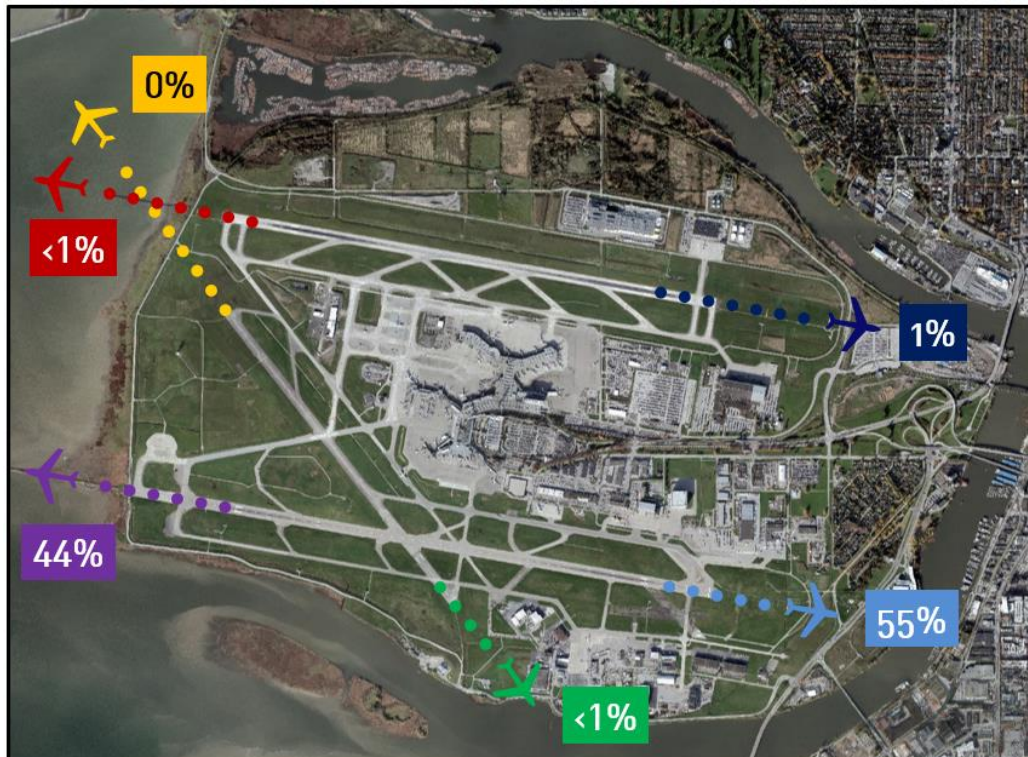
At YVR, the south runway is the main 24-hour runway. For the purpose of noise abatement, the north runway is normally closed every night between the hours of 10:00 PM and 7:00 AM (except during emergencies and airfield maintenance). Between the hours of 7:00 AM and 10:00 PM, the north runway is used primarily for landings; however, it can be used during the day for departures when the airport approaches capacity limits to reduce delay, such as during peak times.

As mentioned in the previous section, the crosswind runway is used very infrequently throughout the year and is generally reserved for periods of high crosswind conditions. **Figure 5** and **Figure 6** illustrate the distribution of arrivals and departures on all runways in 2021.

FIGURE 5: Runway Arrival Distribution, 2021



FIGURE 6: Runway Departure Distribution, 2021



ENGINE RUN-UPS

Transport Canada standards require that aircraft undergo regular maintenance to ensure safe operations. Engine run-ups are a critical part of maintenance work and involve running the engines at various power settings to stress components and to simulate flight conditions. This ensures work has been done properly and that the aircraft is safe to return to service.

To ensure a high level of safety on the airfield and to reduce community noise exposure from run-ups, the Airport Authority maintains directives and procedures that prescribe how, when, and where run-ups can be performed. All approved run-ups are routinely analyzed to track run-up activities and identify trends. **Table 2** provides the number of run-ups performed each year at YVR between 2017-2021.

TABLE 2: Number of Run-ups Performed at YVR, 2017-2021

Year	Number of Approved Run-ups
2017	4,939
2018	4,739
2019	4,094
2020	3,318
2021	3,465

In 2021, there were 3,465 run-ups performed at YVR, an average of nine run-ups per day. This is a 4% increase from 2020, likely due to the increasing number of aircraft movements at the airport. With more aircraft returning into service, associated maintenance work will also return. Further analysis of run-ups in 2021 shows:

- 50% of the run-ups were performed at idle, 29% at above idle, and 21% at full power.
- 24% of the total run-ups were performed during the night-time hours between midnight and 6:00 AM. While run-ups are performed at all times of the day, some run-ups do occur at night since maintenance work on aircraft is often performed during night hours in the evening and at night as most aircraft are flying during the day.

APPENDIX B - NOISE CONCERNS

One of the goals of the YVR Aeronautical Noise Management Program is to respond to questions and concerns from the community and provide individuals with up-to-date information on airport operations and noise management initiatives. The community can contact the Airport Authority with their questions and concerns through a variety of means, including:

- Dedicated e-mail (noise@yvr.ca)
- YVR Website (www.yvr.ca)
- Real-time flight and noise tracking system ([WebTrak](#))
- 24-hour YVR Noise Information Line - (604) 207-7097

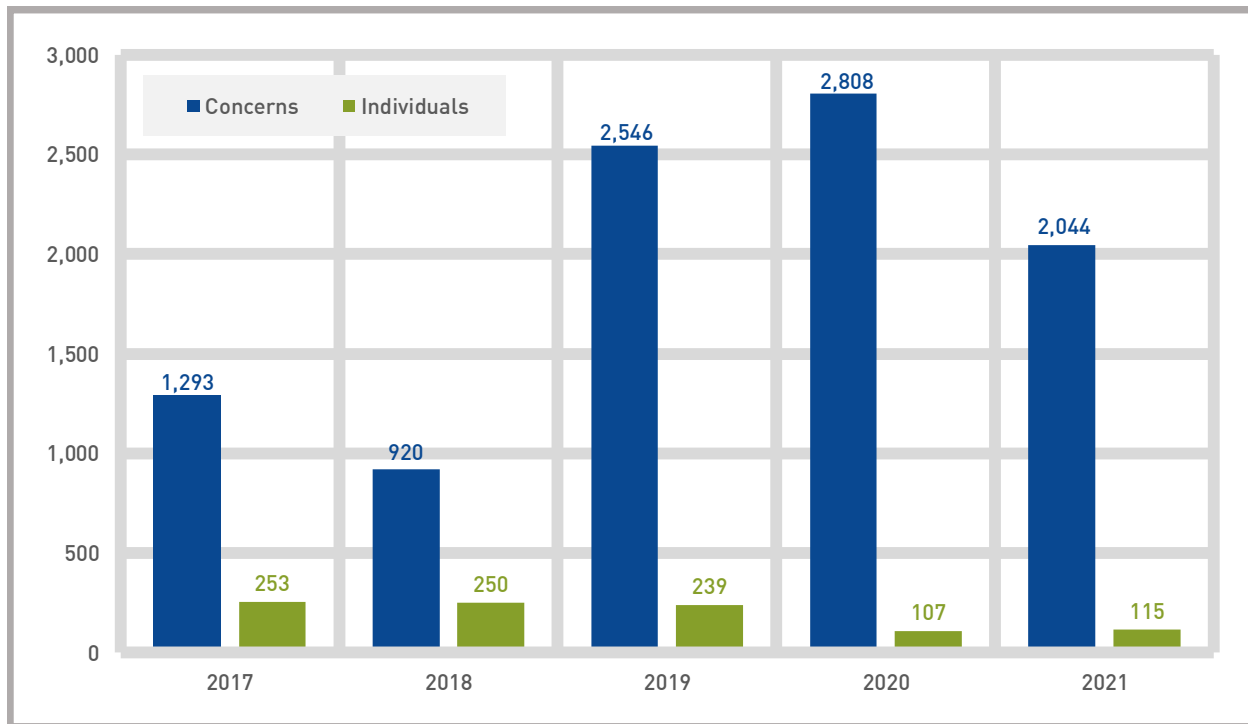
When a concern is received, Noise Management staff will investigate the concern using the Aircraft Noise and Flight Tracking System as well as other data sources to determine the source of the concern. A response is then provided with information to help the individual better understand the source of their concern. If through the investigation process the aircraft operator is suspected of non-compliance with published Noise Abatement Procedures or applicable regulations, Noise Management staff will forward the incident to Transport Canada Civil Aviation Enforcement for further investigation.

Information provided by residents and results of investigations is used to analyze and identify trends. A summary of concerns is provided to the YVR Aeronautical Noise Management Committee at each meeting for review and discussion. In addition, customized semi-annual reports are created for City representatives to ensure they understand the current issues of concern from their community.

NUMBER OF CONCERNS

In 2021, the Airport Authority received 2,044 noise concerns from 115 individuals across the Greater Vancouver area, which has a population of 2.6 million⁵. This represents a 27% decrease in the number of concerns but a 7% increase in the number of individuals compared to 2020. **Figure 7** represents a breakdown on the number of concerns and individuals for the past five years.

FIGURE 7: Number of Noise Concerns and Individuals, 2017-2021

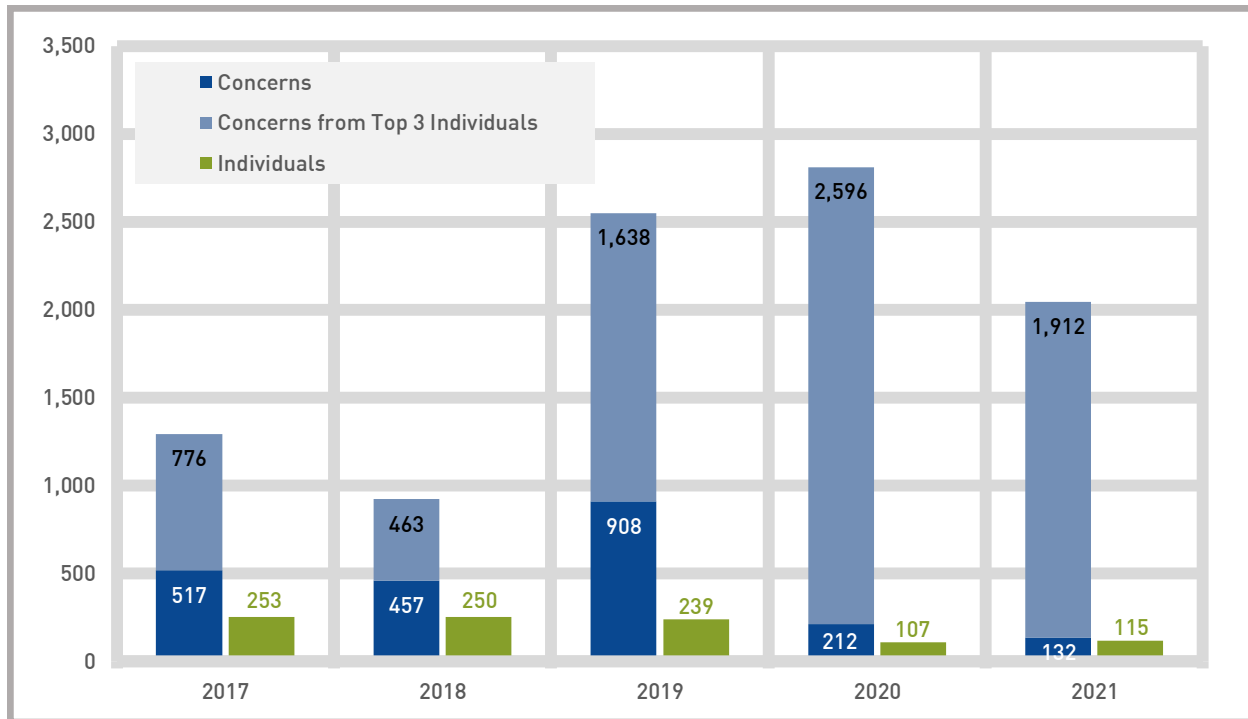


There are several individuals who register multiple concerns throughout the year. In 2021, approximately 94% (1,912) of the total concerns were received from three individuals. **Figure 8** provides a further breakdown of the number of concerns and individuals between 2017 and 2021, identifying the number of concerns associated with the three individuals registering the most concerns each year.

⁵ 2021 Statistics Canada's Census (<https://www12.statcan.gc.ca>)

One individual registered 84% (1,727) of the total concerns received in 2021. The Airport Authority has offered to meet with them to discuss their concerns, but the offers were declined.

FIGURE 8: Number of Concerns and Individuals (Top 3 Separated), 2017 – 2021



NOISE CONCERNS BY LOCATION

Whenever possible, individuals are asked to provide information on the location of their residence to better understand the distribution of concerns across the region. **Figure 9** illustrates the number of concerns and individuals in 2021 by various communities.

FIGURE 9: Number of Concerns and Individuals by Location

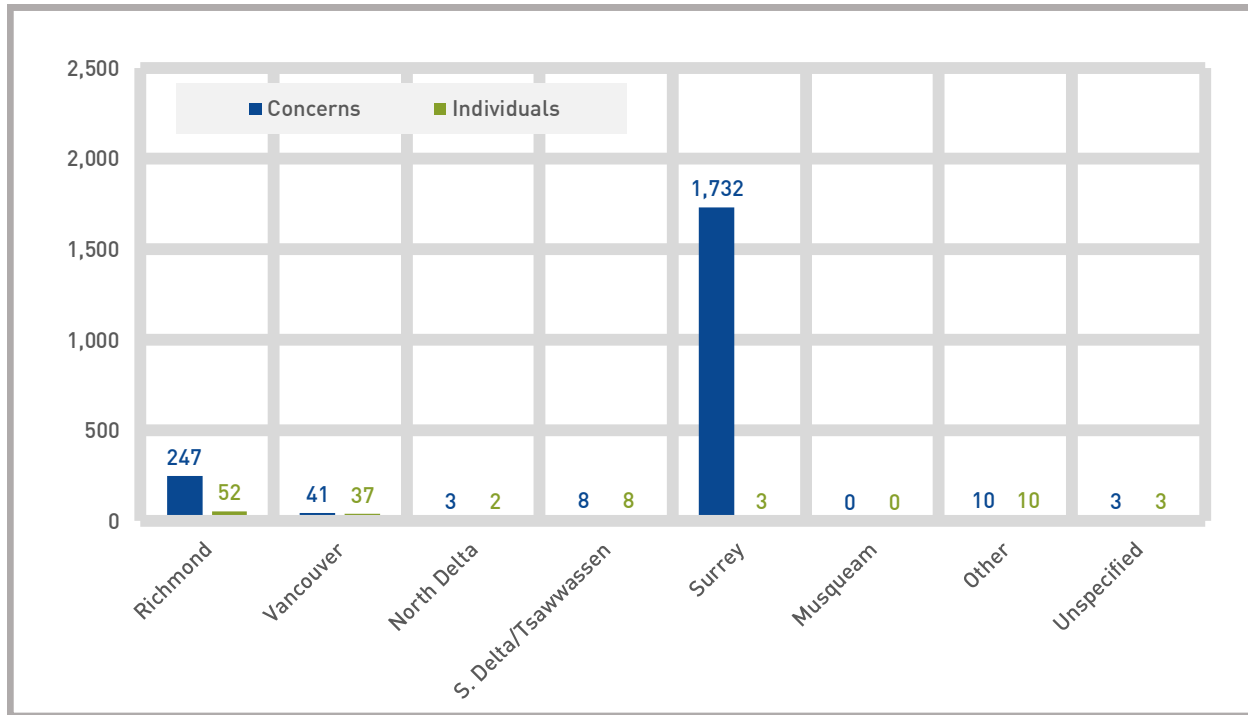


Figure 10 illustrates the geo-distribution of noise concerns across the Greater Vancouver area in 2021. Locations closer to the airport generally exhibit a greater density of noise concerns due to the lower altitude of aircraft and higher frequency of aircraft activity.

Figure 11 illustrates the geo-distribution and the frequency of concerns in the Greater Vancouver area in 2021. The size and colour of each dot represent the volume of concerns originating from that specific location.

FIGURE 10: Geo-distribution of Noise Concerns, 2021

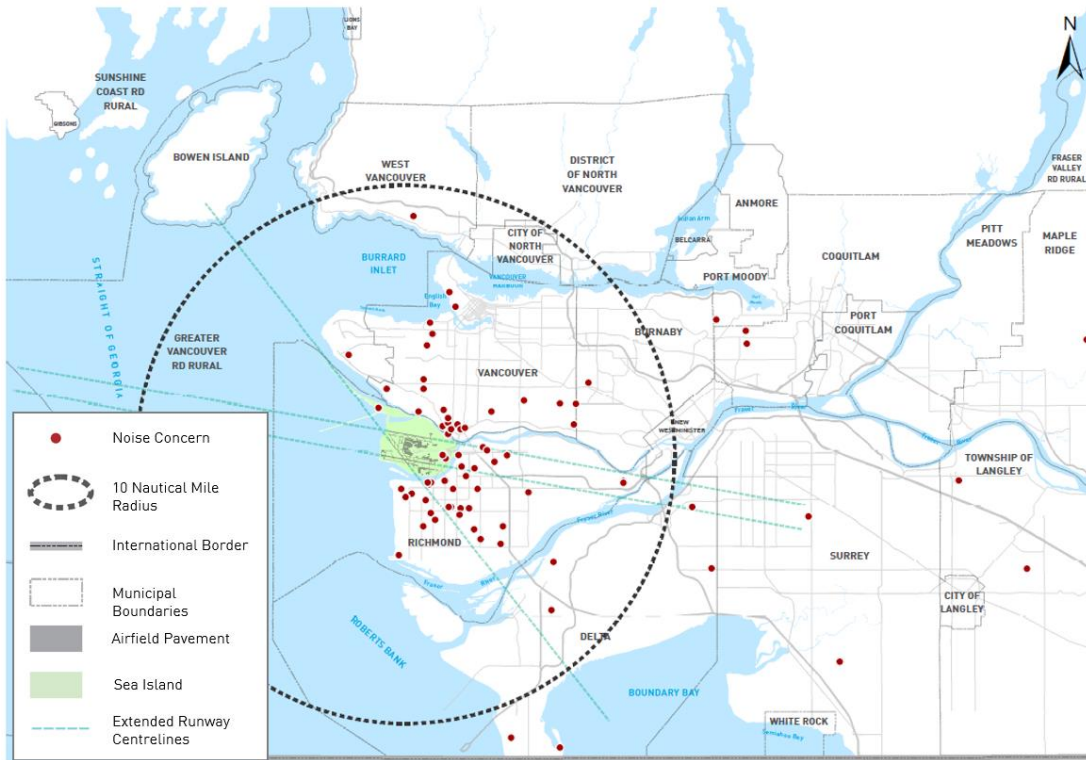
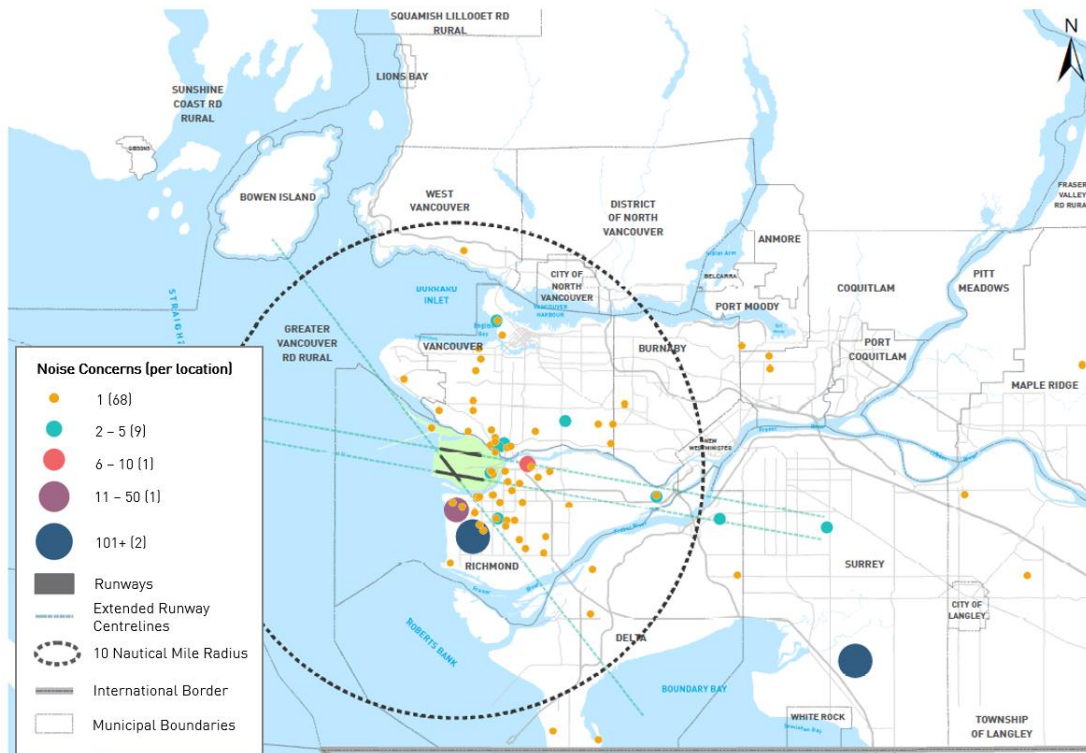


FIGURE 11: Frequency and Geo-distribution of Noise Concerns, 2021



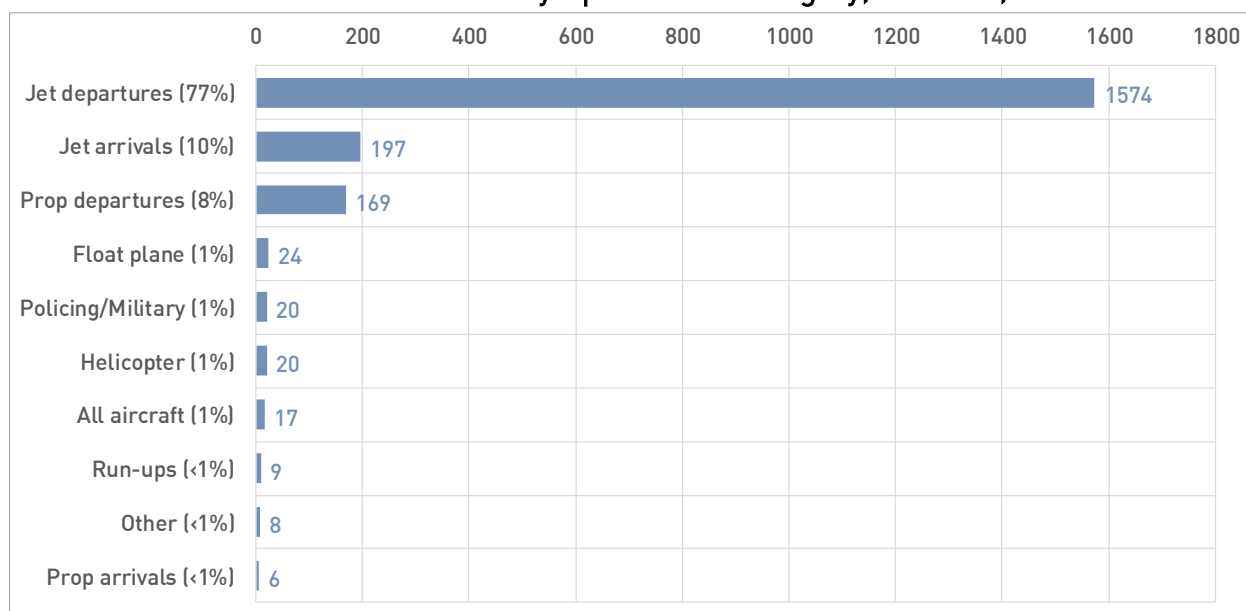
NOISE CONCERN BY OPERATION TYPE

When reporting a noise concern, individuals will generally provide details of date, time, and their location as well as the information related to a specific operation. Based on the information provided and investigations using the Aircraft Noise Monitoring & Flight Tracking System, each concern is matched and categorized into an operation type such as jet departure, jet arrival, helicopter and run-ups. In some cases, concerns are very general in nature and do not reference specific operations. These concerns are categorized as “All aircraft”. Concerns that cannot be matched against any specific operation for the time and location provided by the individual are categorized as “Other/Unspecified”.

While all areas of the region are exposed to some level of aircraft activity, the level of exposure will vary depending on the location of the area in relation to the airport and its proximity to flight paths. As such, depending on the location of each individual, the nature and category of concerns will differ. **Figure 12** illustrates the breakdown of all noise concerns received in 2021 by operational category.

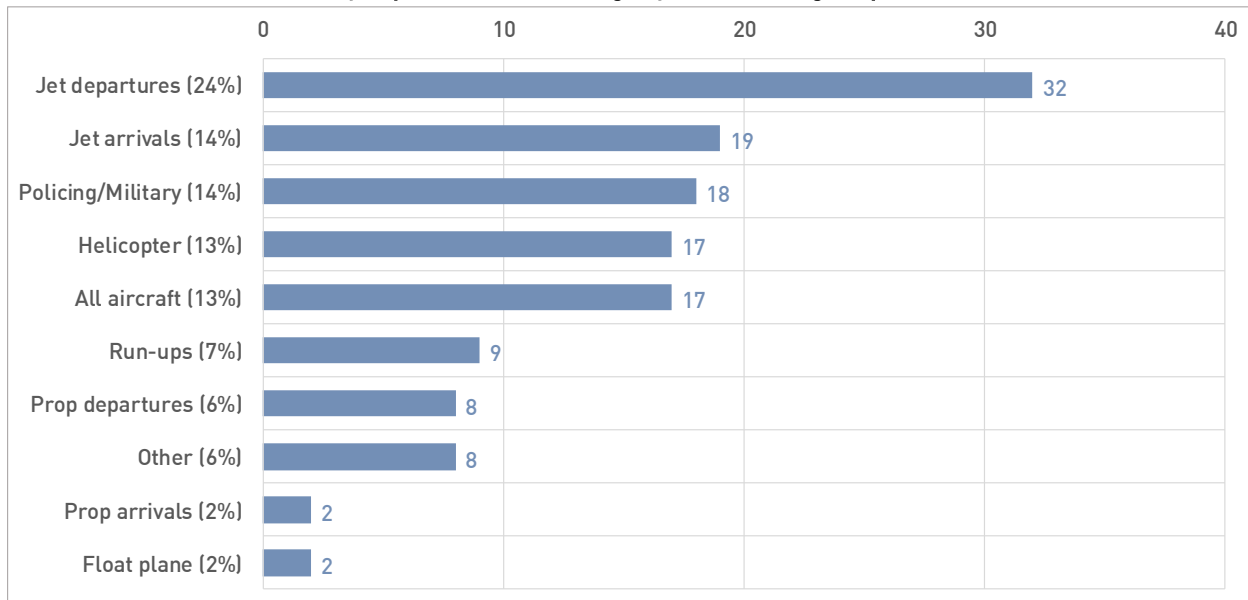
As illustrated, the three operational categories associated with the most concerns in 2021 were jet departures, jet arrivals, and prop departures, accounting for 77% (1,940) of the total concerns. 97% of these concerns were registered by two of the three individuals who submitted the most concerns in 2021.

FIGURE 12: Concerns by Operational Category, Total = 2,044



With a small number of individuals registering a large number of concerns, further analysis was performed by excluding the 1,912 concerns received from the three individuals registering the most concerns. **Figure 13** illustrates the remaining 132 concerns received from 112 individuals by operation type.

FIGURE 13: Concerns by Operational Category, Excluding Top 3 Individuals, Total = 132



Analysis of the 132 concerns indicates that jet departures and arrivals remain the top operational categories, accounting for 39% (51) of 132 concerns. Further analysis of these 132 concerns showed that:

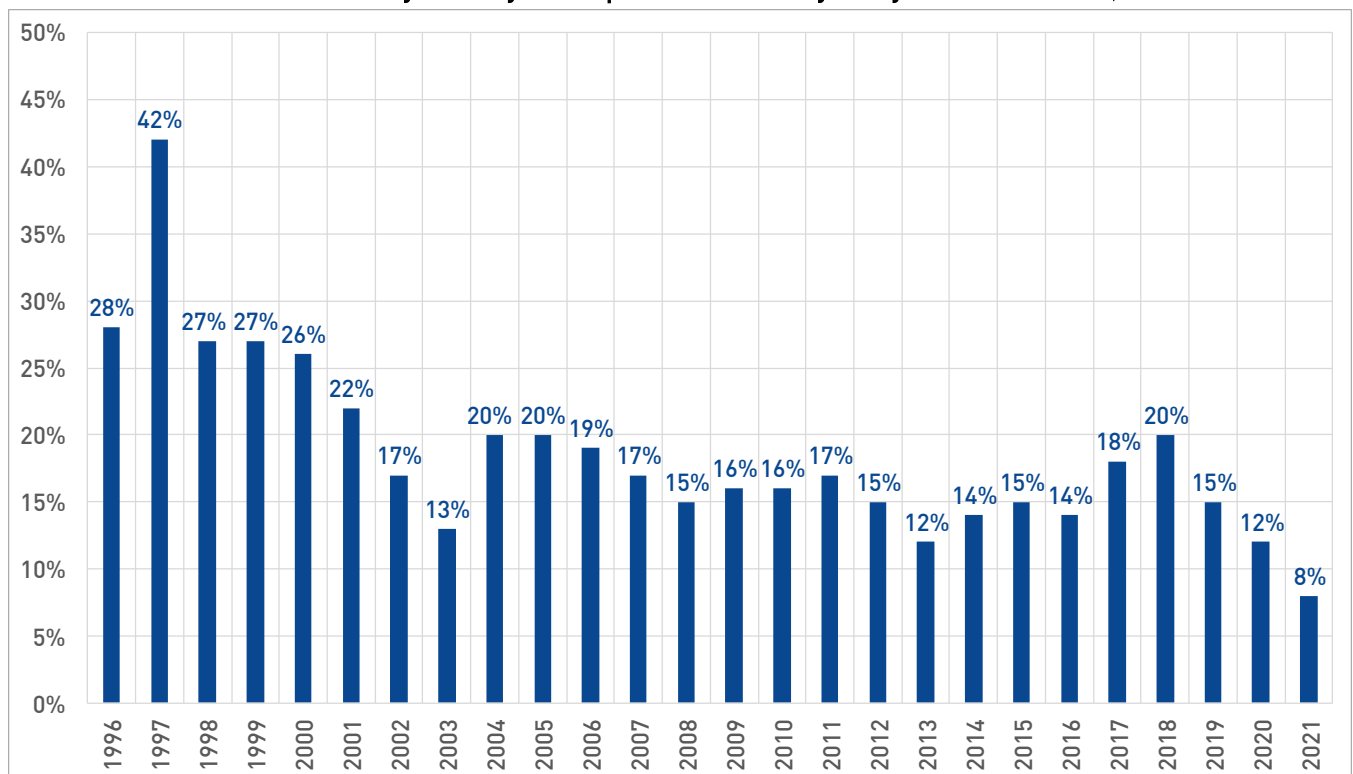
- 56% of the concerns related to jet departures were received from residents in Richmond, where areas are exposed to jet aircraft take-offs at low altitudes during Runway 08 operations.
- 22% of the concerns related to jet departures were received from residents in Vancouver. Majority of these concerns were received when the north runway was open during the night-time hours to accommodate the south runway maintenance.
- 18 concerns were related to policing/military aircraft operations. Nine of these concerns were received during the Royal Canadian Air Force Snowbirds and CF-18 flyby over the Lower Mainland as part of Operation Inspiration.
- There were nine concerns regarding engine run-ups, eight from Richmond and one from Vancouver. All associated run-ups were approved and performed at their assigned location and heading.

COMMUNITY SURVEY

Since the mid-1990s, the Airport Authority has commissioned a third-party survey to track public attitudes and opinions about YVR on several topics including aircraft noise. The community survey represents the opinions of approximately 1,000 residents selected at random from across communities in the Greater Vancouver area provides one gauge of the broader population's perception of aircraft noise annoyance.

When asked, “*While you have been at home during the past year, have you been annoyed by aircraft noise in your neighbourhood?*” approximately 8% of the survey respondents in 2021 stated that they were annoyed by aircraft noise, a decrease from 12% cited in 2020. **Figure 14** illustrates the trend since 1996.

FIGURE 14: Community Survey - Respondents Annoyed by Aircraft Noise, 1996-2021



APPENDIX C - NOISE MONITORING DATA

The Airport Authority uses the Aircraft Noise & Operations Monitoring System (“ANOMS”) to monitor noise levels and assess the contribution of aircraft noise in communities around the airport.

ANOMS combines noise data collected at NMTs with radar flight tracking data provided by NAV CANADA, which allows an understanding of the contribution of aircraft noise at each NMT location. **Figure 15** illustrates the NMT network and their relationship to runways at YVR. The current network of NMT consists of 23 fixed NMTs. Sites 21, 22, and 23 were added to the network in 2021 as part of the NMT upgrade and network expansion project.

FIGURE 15: NMT Locations in the Greater Vancouver Area



ANNUAL AVERAGE NOISE LEVELS (LEQ)

One common metric for community noise assessment is the equivalent sound level, or average noise level (“Leq”), measured over a given period of time. **Table 4** presents the annual average Leq, measured in units of A-weighted decibel or dBA, at each NMT location for the last five years. It is important to note that the average noise levels, presented below, include contributions from all sources in the community, including aircraft, motor vehicles, people, lawn mowers, barking dogs, etc.

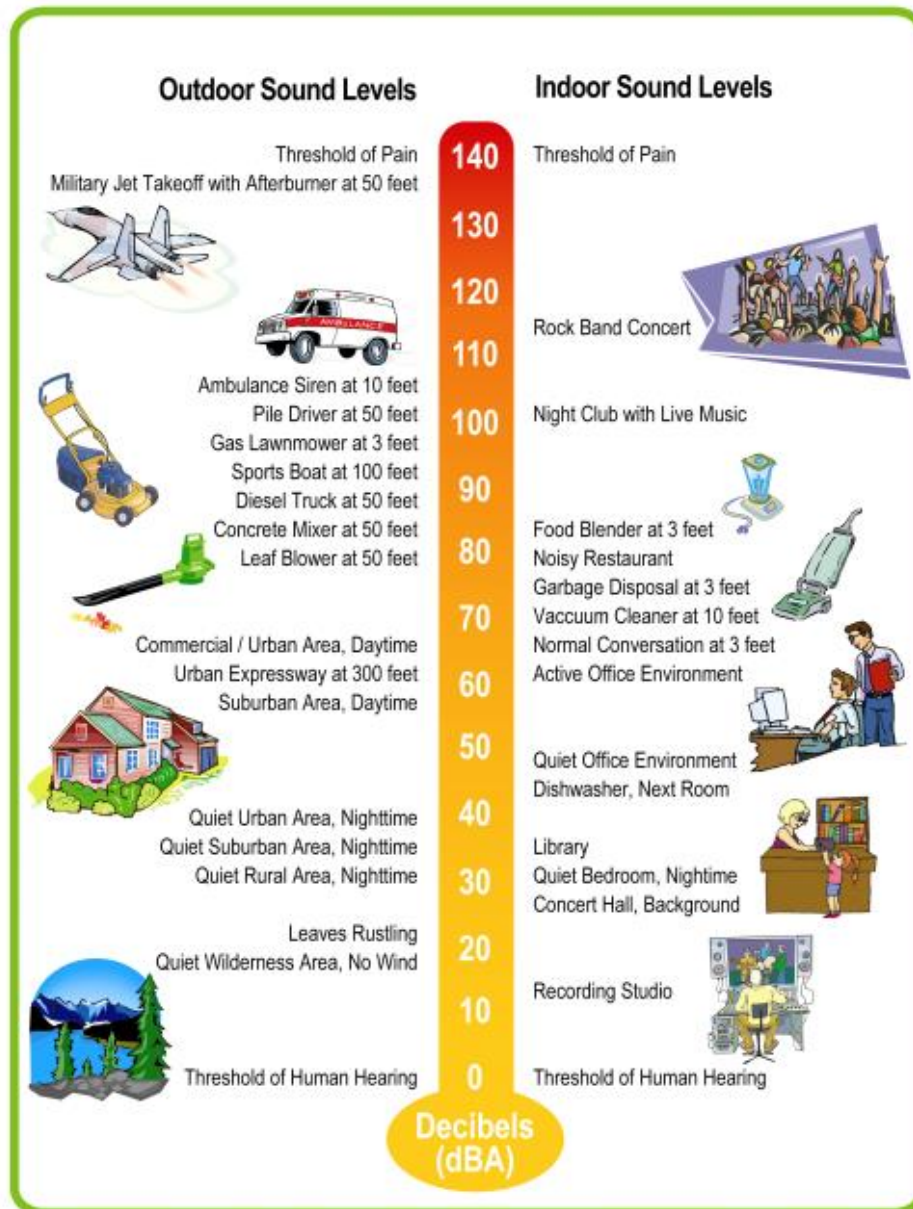
To provide context on sound exposure, **Figure 17** illustrates example sounds levels ranging from 0 to 130 dBA associated with typical sources. As a note, a 3 dBA increase in noise level is achieved by doubling equal noise sources and is the smallest difference in noise level that is perceptible by a receiver. A 6 dBA increase in noise level is clearly perceived, and a 10 dBA increase is perceived as being twice as loud.

TABLE 3: Annual Average Noise Level (in dBA), 2017-2021

YEAR	NOISE MONITORING TERMINAL										
	1	2	3	4	5	6	7	8	9	10	11
2017	61.0	64.9	54.1	59.9	58.5	57.1	57.5	51.4	50.1	55.1	61.1
2018	61.3	66.3	52.8	60.5	58.5	57.4	58.4	54.2	50.4	56.3	60.9
2019	66.2	66.7	53.6	60.6	58.3	57.6	58.7	59.9	50.5	56.7	61.3
2020	74.4	62.8	51.7	59.6	56.3	56.0	57.6	51.4	49.3	60.6	58.3
2021	72.4	62.2	53.5	60.1	55.6	56.4	58.0	50.2	49.7	57.2	57.0

YEAR	12	13	14	15	16	17	18	19	20	21	22	23
2017	73.3	61.8	58.9	53.3	54.3	54.2	53.7	55.3	61.1	-	-	-
2018	72.8	62.1	56.4	55	54.3	53	54.3	56.5	60.9	-	-	-
2019	71.9	62.3	60.2	53.9	54.4	53.9	53.9	60.5	53.2	52.5	-	-
2020	68.7	59.8	55.4	55.4	58.5	53.9	53.5	55.1	52.6	51.0	-	-
2021	65.8	59.5	55.3	59.8	54.5	57.1	53.8	54.8	56.9	51.0	51.0	49.7

FIGURE 16: Example Sound Level and Associated Sources



Source: URS Corporation, 2008

NUMBER OF EVENTS - SINGLE EVENT NOISE LEVEL

Another metric used to assess noise is the single event noise level ("SEL"), measured in dBA. For an aircraft fly-over, either a landing or take-off, the SEL represents the total acoustic energy above a prescribed reference threshold and is typically 10 dBA greater than the maximum noise level experienced during the aircraft fly-over. The primary use of the SEL is to provide a comparison of noise events with different noise levels and durations.

At each NMT, a sound level reference threshold is set according to the ambient background noise level in the area. Reference thresholds are typically set between 65 and 70 dBA during the day (7:00 AM to 10:00 PM) and between 55 and 60 dBA during the night (10:00 PM to 7:00 AM). When the sound level measured by the NMT exceeds the reference threshold, a noise event is captured.

Noise events are then analyzed together with radar flight tracks by ANOMS and are categorized as either correlated or uncorrelated. Correlated noise events are those associated with aircraft activities and uncorrelated noise events are those associated with other sound sources in the community. For those NMT sites located under flight paths and where aircraft operate at lower altitudes, the captured noise events tend to be more associated with aircraft than community sources. Conversely, for those NMT sites located farther away from the airport or where aircraft tend to operate at higher altitudes, the captured noise events tend to be more associated with community sources.

Figure 18 illustrates the daily average number of aircraft versus community noise events⁶ captured at the NMTs in 2021.

Figure 19 illustrates the average daily number of aircraft related noise events observed in 2019, 2020, and in 2021⁷. In 2020, there were fewer aircraft related noise events observed at most NMTs compared to 2019 due to the significant reduction in air traffic caused by the impacts of COVID-19. While the aircraft movements at YVR increased slightly in 2021 compared to 2020, there were no substantial changes to the number of aircraft related noise events observed at the NMTs.

FIGURE 17: Average Daily Number of Noise Events at NMTs, 2021

⁶ Noise events with durations less than 60 seconds and a SEL greater than 70dBA are included in this count.

⁷ 2019 and 2020 data is not available for NMTs #22 and #23 as these sites were added to the network in 2021.

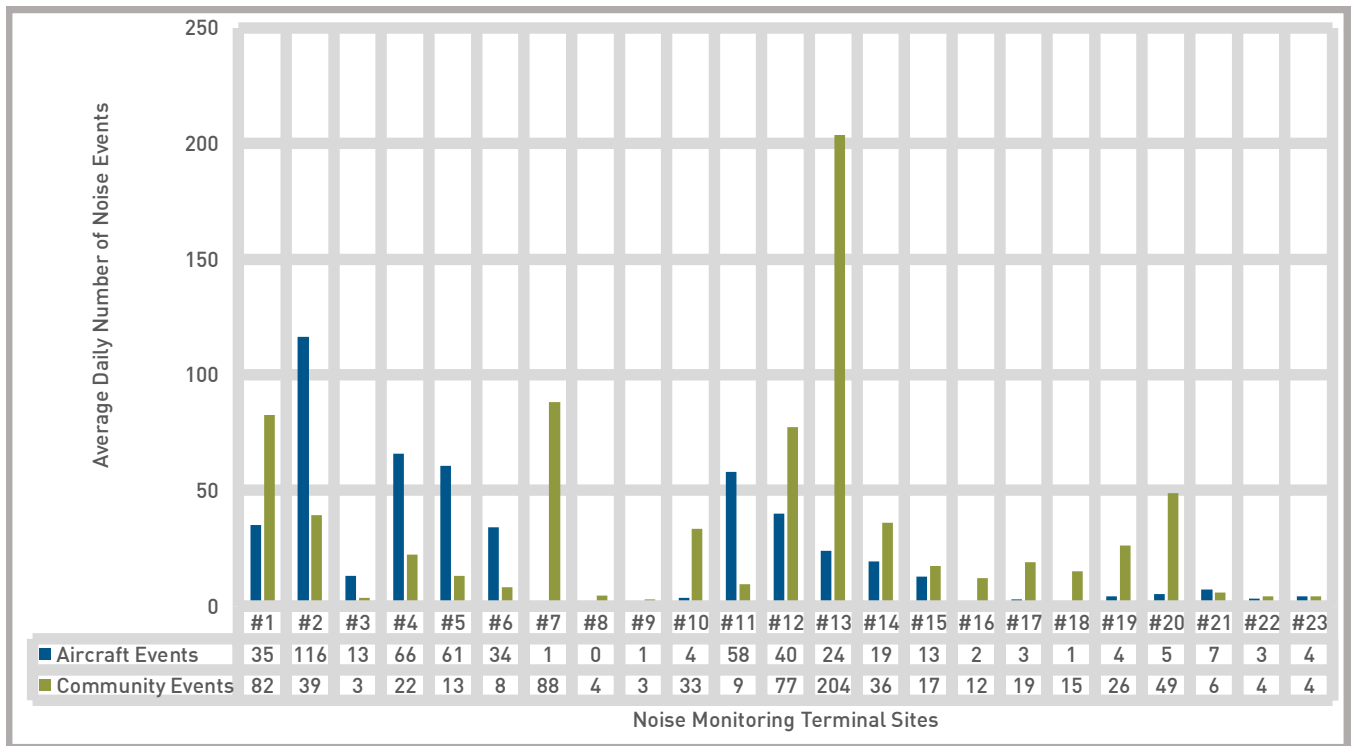
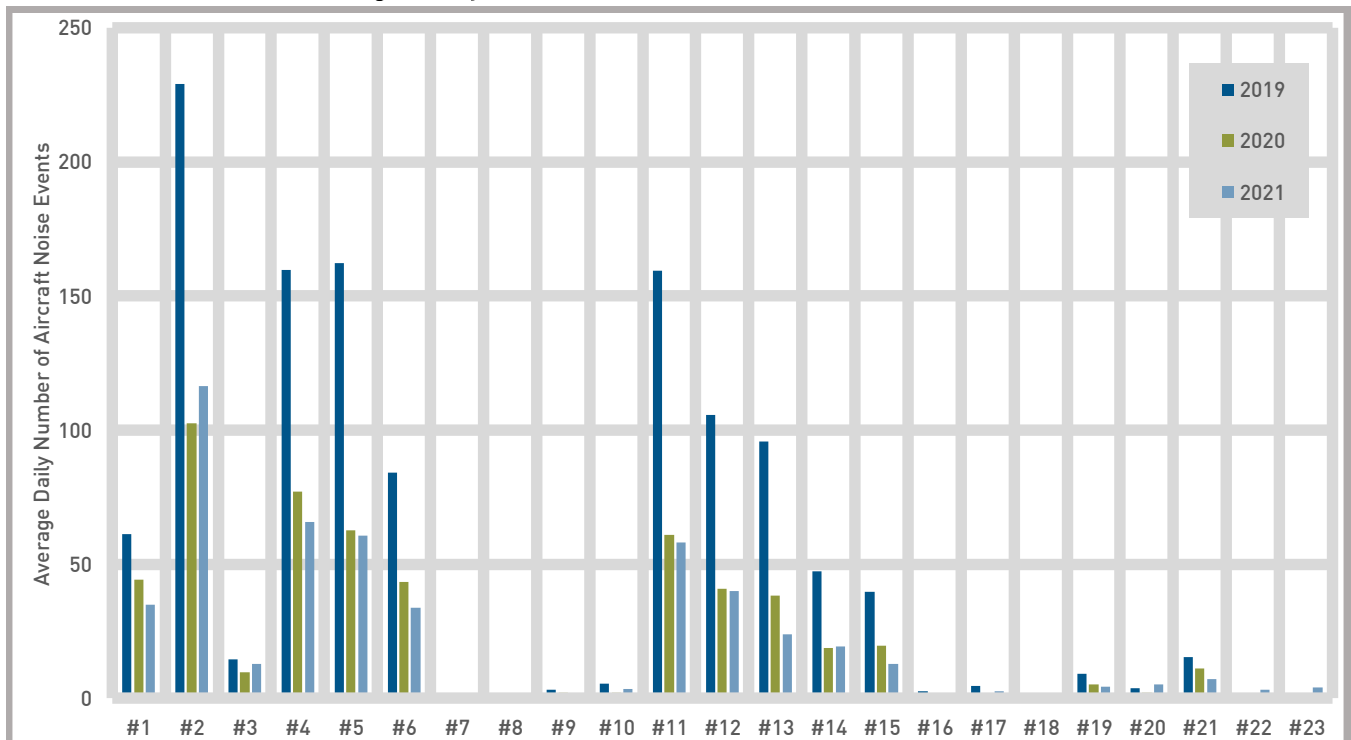


FIGURE 18: Average Daily Number of Aircraft Related Noise Events, 2019-2021



ENVIRONMENT – YVR Noise Management
Vancouver Airport Authority
PO Box 44638
YVR Domestic Terminal Building RPO
Richmond, BC V7B 1W2 Canada
www.yvr.ca

For questions regarding this report, please contact us at the following:

E-mail: noise@yvr.ca
[WebTrak](#)

YVR Noise Information Line: 604- 207-7097

AUTHOR:
Rachel Min-Brown – Environmental Analyst

Note on Reported Figures and Data:

The Airport Authority receives aircraft operations data from NAV CANADA. This data includes daily aircraft arrivals and departures at YVR as well as aircraft transiting through the Vancouver Control Zone. Every effort is made to verify and correct anomalies in the dataset, and numbers stated in this report may vary slightly from those reported by others.

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