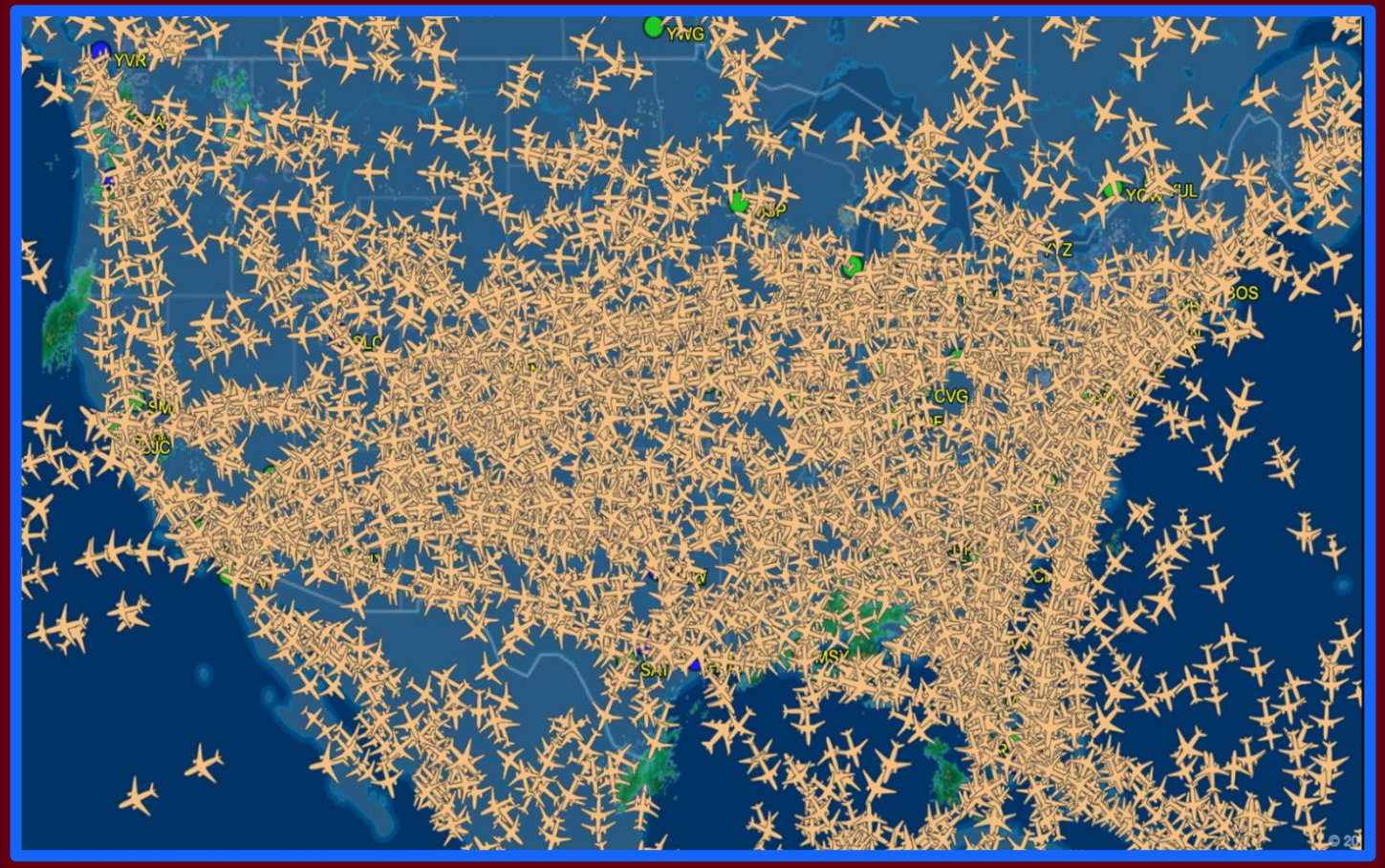
65 DNL

The Great Deception

Elaine Miller

Plane Sense 4 Long Island

There are over 45,000 flights per day in the United States. Every day, 2.9 million people fly over American airspace. The U.S has 19,633 airports : 5,082 public airports and 14,551 private airports.

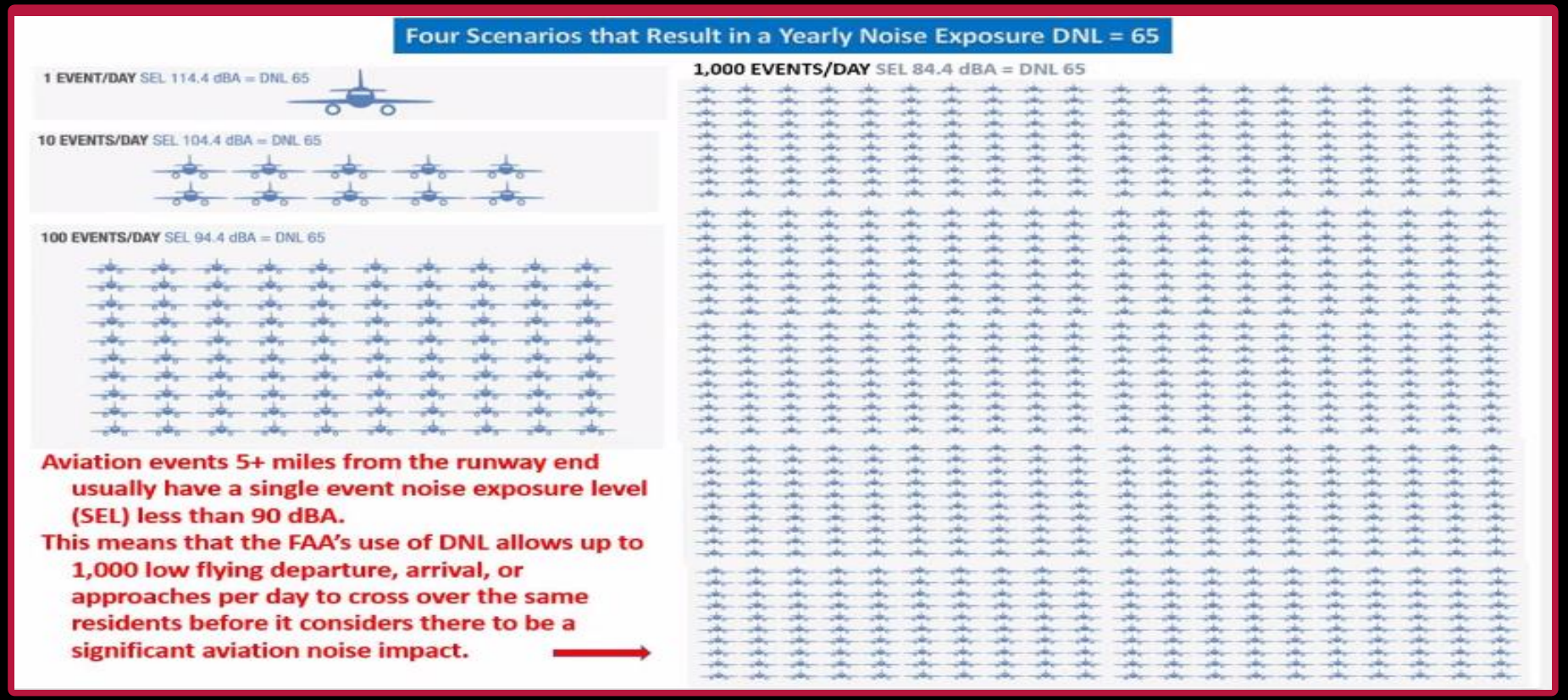


AIRCRAFT NOISE/AIRCRAFT NOISE DESCRIPTORS 65 DNL

The measurement and human perception of sound involve two basic physical characteristics: intensity(decibels) and frequency(Hertz)
Aircraft noise originates from both the engines and airframe of an aircraft, but the engines are the most significant source of noise.

Noise metrics can be categorized as a single-event metrics and cumulative metrics

* A-WEIGHTED SOUND PRESSURE LEVEL (dBA)
The sound has been filtered to reduce the effects of very low and very high frequency sounds. The perceived loudness of a sound doubles for each increase of 10 dBA.
* MAXIMUM A-WEIGTHED SOUND LEVEL (Lmax)
L-max is the maximum, or peak, sound level during a noise event
* SOUND EXPOSURE LEVEL (SEL)
SEL is a time integrated measure, expressed in decibels, of a single noise event at a reference of one second. The SEL of an aircraft noise is typically 7 to 12 dBA greater of the LMAX of the event
* EQUIVALENT NOISE LEVEL (Leq)
Leq is the sound level corresponding to a steady state, A-weighted sound level over a given sample period. It is the "energy average noise level during the time period of a sample.
*DAY_NIGHT AVERAGE SOUND LEVEL (DNL)
DNL is expressed in dBA and represent the noise level over a 24 hour period. DNL includes the cumulative effects of a number of sound events rather than a single event. *DNL is expressed an average noise level on the basis of annual aircraft operations for a calendar year



PROBLEM:

65 DNL is an invalid metric for communities away from the airport

Locations away from airports need 1,000 noise events per day to reach significant noise. This flawed metric and threshold results in no one "away from airports" has significant noise.

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PROBLEM: Neighborhood Environmental Study (NES) Shows 65DNL Threshold Is Invalid

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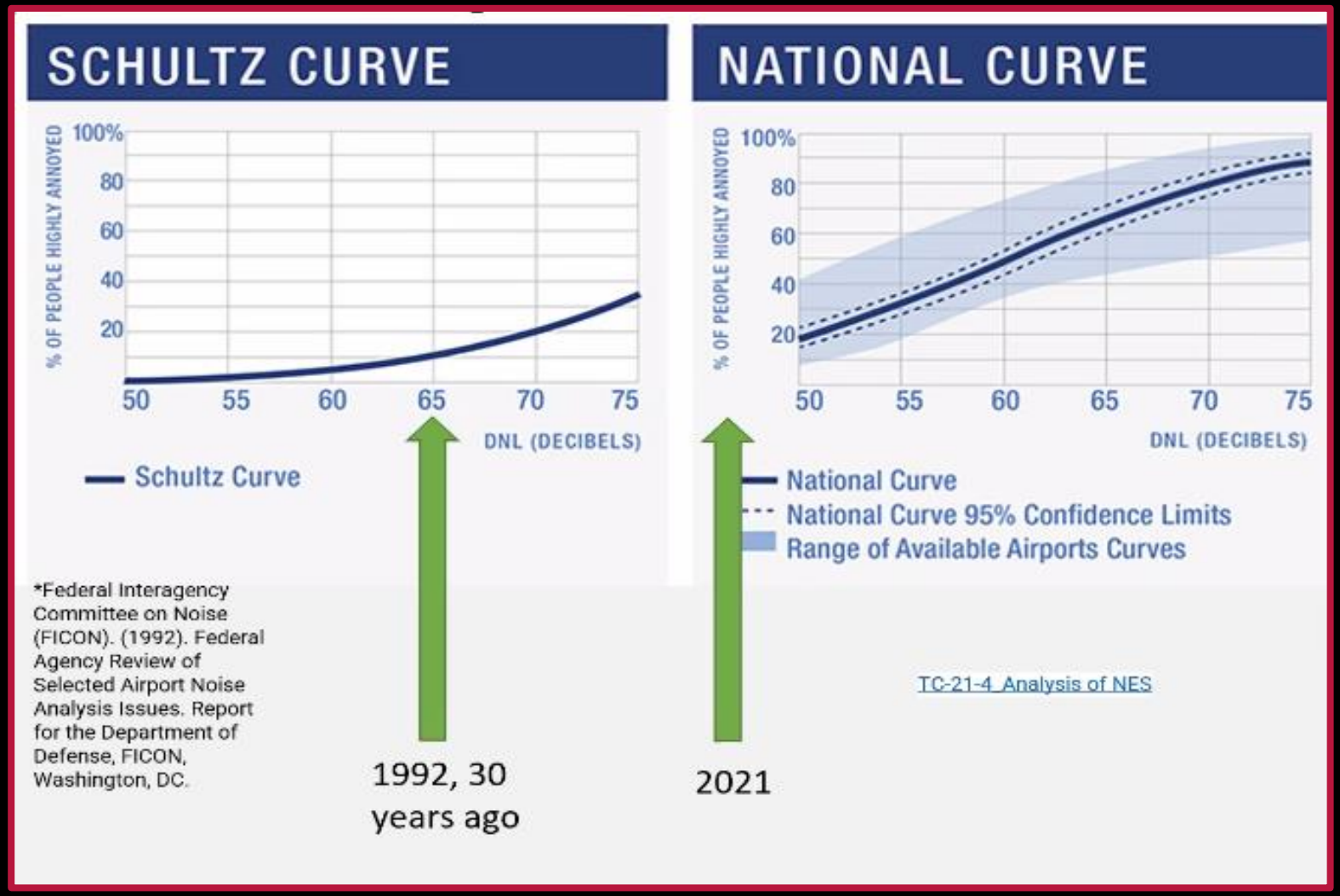
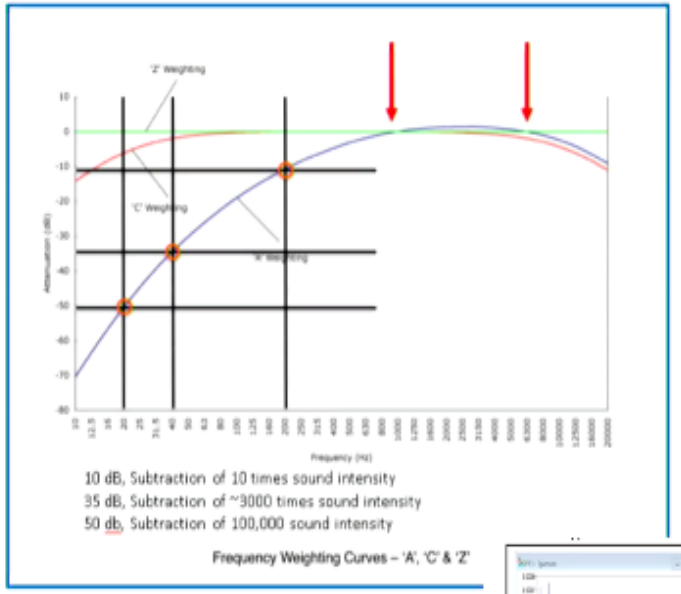


Schultz Curve	NES Curve
All transportation noise	Aviation noise
Combination of multiple surveys and questions	Specific study designed to capture annoyance to aviation noise
Used data from multiple countries	US data from residents living around 20 US airports
Inappropriate statistical model (best they had)	State of the art statistical model
Inconsistent with what communities report as significant noise	Closer to what communities report as significant noise

Problem: The Flaw in using dB(A) Weighted Sound. Much of the sound energy below 200hz is subtracted.

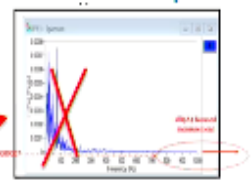
Bryan Johnson ANE Symposium 2024

The Flaw in using dB(A) Weighted Sound



10 dB, Subtraction of 10 times sound intensity
35 dB, Subtraction of ~3000 times sound intensity
50 dB, Subtraction of 100,000 sound intensity

Frequency Weighting Curves – 'A', 'C' & 'Z'



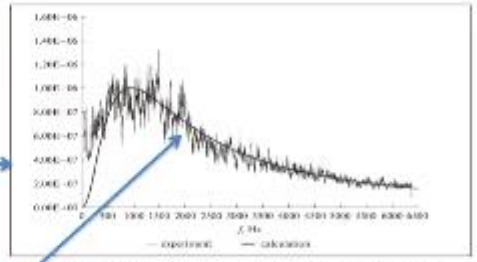
Subtracted Out by dB(A)

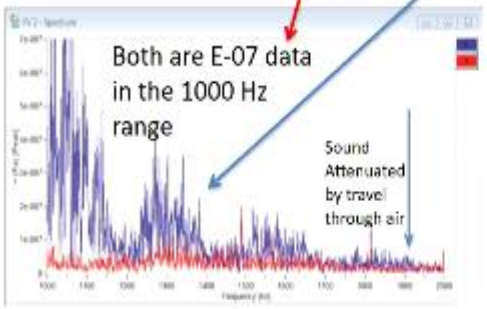
- dB(A) weighted sound is a manipulation of the sound energy being produced. It severely subtracts out much of the sound energy below 200 hz. It then sums the remaining energy of the sound to produce the decibel measurement we are familiar with

The vast percentage of aircraft noise produced is less than 40 hz

While the use of A weighted sound is targeted to the sounds people hear, it is clearly not measuring the sounds that aircraft make

Note the amount of sound removed by A weighting



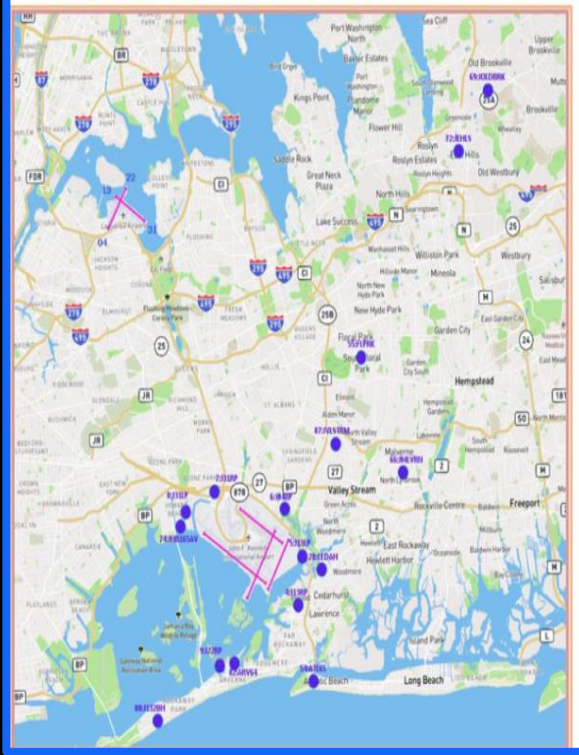


"A" sound weighting subtracts out the vast majority of the sound made by the airplane.

- Upper plots shows loss of data from the "A" weighting manipulation
  - Note difference of maximum measurement of 0.0025 on the left and 0.0000012 on the right
- Red oval region is magnified in the lower plot. It should be noted that the lower left and upper right data are showing data in a similar scale
- Plots on the left are a continuation of the same flyover from 5 to 2000 Hz
- Above figure aircraft velocity at ~ 270 mph with data to left at DNL 65 boundary. The aircraft would be at similar elevations

JFK NOISE MONITORING SYSTEM MONTHLY AVERAGE DNL

JFK Noise Monitors Location Map



Airport	Site ID	Site Name	Location
PERMANENT SITES (Mounted on Utility Poles)			
JFK	4	J13RP	Peppe Rd, Inwood, NY 11096
JFK	5	J13LP	Broad St, Queens, NY 11422
JFK	6	J04BP	147th Street, Springfield Gardens, NY 11413
JFK	7	J31RP	150th Ave, South Ozone Park, NY 11420
JFK	8	J31LP	Russell St, Howard Beach, NY 11414
JFK	9	J22RP	Almeda Ave, Arverne, NY 11692
Airport	**Site ID**	**Site Name**	**Location**
PORTABLE SITES (Installed on the Ground)			
JFK	28	CEDAH	Hanlon Dr, Cedarhurst, NY
JFK	54	ATL65	The Plaza, Atlantic Beach, NY 11509
JFK	55	FLPRK	Floral Parkway, Floral Park, NY 11001
JFK	82	ARV64	Beach 65th Street, Arverne, NY 11692
JFK	66	JMLVRN	Hempstead Ave, Malverne, NY 11656
JFK	69	JOLDBRK	Valentines Lane, Old Brookville, NY 11545
JFK	72	JEHLS	Harbor Hill Road, East Hills, NY 11576
JFK	74	JHB165AV	165th Avenue, Howard Beach, NY 11414
JFK	80	J132BH	Beach 132 Street, Belle Harbor, NY, 11694
JFK	87	JVLSTRM	Nottingham Avenue, Valley Stream, NY 11580

JFK Noise Monitoring Data

Monthly Average – Aircraft Day-Night Average Sound Level (ADNL)

Noise Monitoring Data is for information purposes only

Month	J13RP	J13LP	J22RP	J04BP	J31RP	J31LP	CEDAH	ATL65	FLPRK	ARV64	JMLVRN	JOLDBRK	JEHLS	JHB165AV	J132BH	JVLSTRM
Mar-23	64.6	71.5	65.3	69.9	61.8	62.6	68.9	54.2	59.4	68.0	NA	48.6	51.4	67.0	50.8	63.1
Apr-23	64.3	69.3	67.4	68.5	63.9	62.9	66.5	57.1	62.6	67.8	NA	52.5	55.2	66.1	51.6	62.9
May-23	65.4	67.6	67.4	68.1	65.4	63.9	64.8	59.6	62.3	66.8	55.3	50.7	54.3	66.0	50.1	61.6
Jun-23	63.9	70.0	68.3	71.2	62.2	66.0	67.0	56.2	61.0	67.7	58.7	52.1	54.1	67.9	51.3	63.0
Jul-23	62.3	69.2	70.2	65.2	53.0	66.4	66.3	56.1	61.1	66.7	51.9	53.9	56.3	67.9	52.1	62.8
Aug-23	62.7	69.2	69.1	69.8	62.4	NA	66.3	55.8	NA	68.4	58.0	53.7	55.8	67.6	52.0	63.2
Sep-23	62.6	69.4	68.0	72.1	59.8	64.3	65.4	55.1	62.2	68.6	59.6	53.6	53.5	66.5	50.3	62.9
Oct-23	65.0	72.9	66.3	70.0	63.5	68.9	69.8	56.8	60.0	67.0	58.1	50.8	52.7	69.8	53.5	63.1
Nov-23	64.9	72.3	65.1	68.2	62.2	66.3	69.7	54.2	61.0	65.9	56.2	52.5	54.3	68.8	53.2	62.4
Dec-23	63.4	70.7	66.2	71.1	63.1	64.9	68.2	54.6	61.6	67.9	58.9	53.2	NA	67.8	52.9	63.3
Jan-24	62.7	71.5	63.9	69.9	61.4	64.5	69.1	50.8	59.6	67.1	58.4	48.0	51.4	67.5	51.3	61
Feb-24	62.9	70.4	65.4	67.3	59.8	64.2	67.5	53.4	61.5	65.5	54.5	51.1	53.6	67.2	50.3	61.8
Mar-24	65.0	71.5	66.4	68.5	63.6	64.5	68.7	56.1	61.7	66.8	56.3	49.7	54.2	67.7	53.1	62.2

Note:
NA: Equipment malfunction
RM: Unit removed as requested by the homeowner

Color Scales:
- 70 or above
- 65 - 69.9
- 60.0 - 64.9
- 55.0 - 59.9
- below 55

Data Source: PANYNJ Airport Noise and Operations Management System (ANOMS)

The American Public Health Association states, "Noise is unwanted and/or harmful sound." Noise not loud enough to damage hearing causes high blood pressure, heart attacks, and strokes. The Federal Aviation Administration (FAA) considers noise an annoyance but does not acknowledge the adverse health effects of aircraft noise.

Dr. Daniel Fink Quiet Coalition

Thankyou!