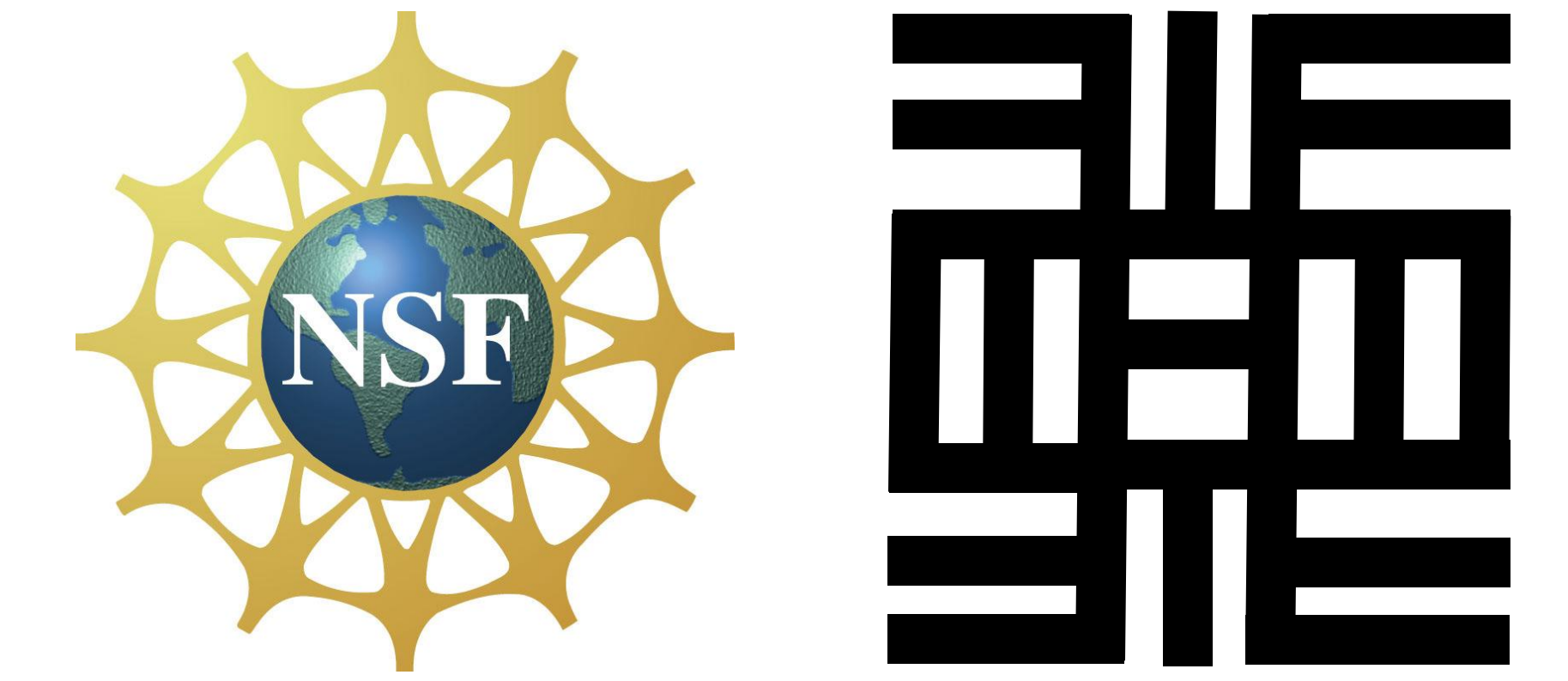


TRACKING NOISE POLLUTION LEVELS IN THE NEW YORK CITY SUBWAY SYSTEM



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ABSTRACT

Many New Yorkers ride the subways daily sometimes for many hours at a time, and expose themselves to high amounts of excess noise. This much exposure to loud sounds can lead to permanent hearing loss. This project focuses on trying to find out if the noise levels experienced in the subway system are at healthy levels, and to figure out which stations may pose the greatest risk. The selected subway lines were the D, N, Q, and B, 2, 3, 4 and 5. A decibel noise level meter was used to collect the data. Three groups of students were formed, each riding a different train line to the last stop and back, starting at Atlantic Avenue. The measurements were taken on each subway line between each stop, every 30 seconds, in order to be able to calculate the amount of time that passes. The highest and the lowest values were recorded, and the average was calculated. Measurements were also taken at major stops. With the data, a map was created in order to display which areas are hazardous and which are not, in order for commuters to make healthier decisions on their choice of train. The collected data revealed that for the most part, the noise is at a healthy level. However, at certain stops, the noise level was significantly higher, and can reach unhealthy levels. Using the results of this study, areas of potential health risk are exposed, and precautionary measures can be taken to prevent permanent hearing loss



SUBWAY MAP



RESULTS

Q

Train Stop	Time (s)	Lowest	Highest	Average
		Value (dB)	Value (dB)	(dB)
Coney Island Platform	34	70	87	79
Coney Island	60	67	78	72
West 8th St	60	65	76	71
Ocean Pkwy	55	67	76	72
Brighton Beach Platform	394	57	86	70
Brighton Beach	90	66	73	71
Sheepsheadbay	76	62	80	72
Neck Rd	45	61	81	72
Avenue U	79	67	79	72
King's Highway Platform	480	44	81	62
King's Highway	60	67	78	71
Avenue M	136	62	76	70
Avenue H	70	63	78	71
Newkirk Plaza	65	66	79	72
Cortelyou Rd	30	65	76	71
Beverly Rd	72	60	76	69
Church Ave	72	59	74	68
Parkside	71	62	78	70
Prospect Park Platform	540	40	98	67
Prospect Park	109	48	85	70
7th Ave	103	62	78	71
Atlantic Ave Platform	180	67	84	74

B

Train Stop	Time (s)	Lowest	Highest	Average
		Value (dB)	Value (dB)	(dB)
Atlantic Ave Platform	180	46	75	64
7th Ave	150	60	83	70
Prospect Park Platform	240	60	87	72
Church Ave	120	62	83	72
Newkirk Plaza	118	63	90	73
King's Highway Platform	189	61	83	72
Sheepsheadbay	510	46	85	67
Brighton Beach Platform	360	54	90	68
Brighton Beach Platform	140	63	90	72
Brighton Beach Platform	240	51	75	62

D

Train Stop	Time (s)	Lowest	Highest	Average
		Value (dB)	Value (dB)	(dB)
Atlantic Ave Platform	100	64	85	74
36th St Platform	300	67	96	74
36th St Platform	110	64	97	78
9th St	210	67	84	73
62 St	180	69	81	75
Bay Parkway Platform	300	65	94	74
Bay Parkway Platform	160	65	79	72
25th Ave	105	65	78	71
Bay 50th St	110	62	82	73
Bay 50th St	375	62	87	72
Coney Island Platform	540	60	101	78

N

Train Stop	Time (s)	Lowest	Highest	Average
		Value (dB)	Value (dB)	(dB)
Coney Island Platform	150	68	98	78
86th St	180	68	80	73
86th St	45	70	81	75
Ave U	60	69	79	74
King's Highway Platform	255	55	81	69
Bay Parkway	60	71	81	76
Bay Parkway	70	69	81	74
20th Ave	70	68	81	74
18th Ave	70	68	80	74
New Utrecht Ave	90	67	78	72
FL Hamilton Parkway	65	68	78	73
8th Ave	130	69	84	75
59th St Platform	650	62	93	75
36th St Platform	270	69	81	74
36th St Platform	170	53	92	74
Pacific St Platform	335	64	83	72
Pacific St Platform	70	69	82	75

2

Train Stop	Time (s)	Lowest	Highest	Average
		Value (dB)	Value (dB)	(dB)
Beverly Rd	56	64	85	74
Church Ave	94	64	82	72
Winthrop St	55	64	82	73
Sterling St	30	65	81	73
President St	30	65	82	74
Franklin Ave	210	60	86	70

3

Train Stop	Time (s)	Lowest	Highest	Average
		Value (dB)	Value (dB)	(dB)
Bergen	30	70	80	75
Grand Army Plaza	51	64	81	73
Eastern Pkwy	60	65	83	74
Nostrand Ave	60	62	79	72
Kingston Ave	30	60	82	72
Crown Hights	30	67	81	74
Sutter Ave	78	56	83	72
Saratoga Ave	48	58	81	70
Rockway Ave	60	60	78	71
Junius St	30	67	81	74
Pennsylvania Ave	30	67	77	72
Van Siclen Ave	30	60	81	71
New Lots Ave	30	61	72	67

4

Train Stop	Time (s)	Lowest	Highest	Average
		Value (dB)	Value (dB)	(dB)
Utica Ave	60	68	87	79
Franklin Ave	54	67	89	79
Atlantic Ave	60	65	80	73

5

Train Stop	Time (s)	Lowest	Highest	Average
		Value (dB)	Value (dB)	(dB)
Atlantic Ave	140	71	91	82
Franklin Ave	90	72	87	79
Franklin Ave	390	57	91	76
Prospect Park	90	67	85	75
Prospect Park	30	66	85	76
Sterling St	30	68	84	76
Winthrop St	28	67	81	74
Church Ave	60	62	79	71
Church Ave	60	80	84	82
Beverly Rd	30	67	81	74
Newkirk Ave	90	54	77	72
Flatbush Ave	242			80

The noise levels were taken on each subway line between each stop, every 30 seconds. The highest and the lowest values were recorded, and the average and total time between stops were calculated. Measurements were also taken at major stops.

HOW LOUD IS LOUD

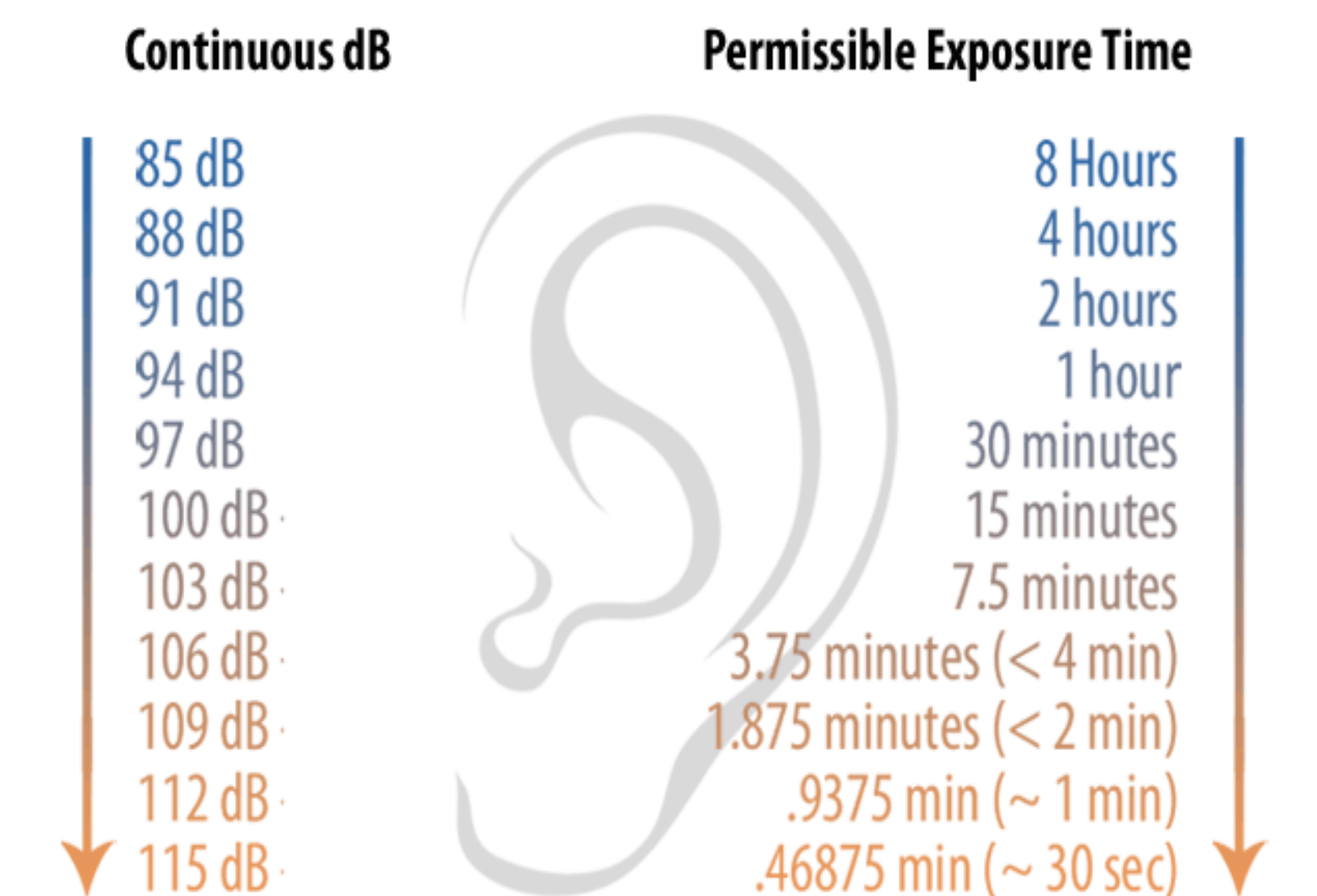


Figure 1. Daily Permissible Noise Level Exposure

CONCLUSION

The overall noise level in the studied subway lines does not appear to be dangerous to human hearing. Most of the recorded values were around 70dB, however some of the measured values were above 90s and in some cases even reached 100 dB. The higher level of noise does not seem to be unhealthy to humans since the length of time anyone is exposed to it is very short. At the same time, most of the studied subway trains were above the ground where the noise level is considerably lower. Another thing to consider is the fact that many people tend to listen to music in the subway, and will raise the volume of their headphones to cover the noise of the trains. In this case, many people may be exposing themselves to unhealthy noise levels. Further studies should be conducted in different areas of the city, especially Manhattan, where most of the trains are below ground, and many of the stations are bigger hubs, where there is more noise, and where more people commute.

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