

March 9, 2022

The Honorable Delores Kelley
Chair
Senate Finance Committee
3 East
Miller Senate Office Building
Annapolis, Maryland 21401

Re: Bill SB0658-Transportation–Maryland Aviation Infrastructure Impacts Commission

Dear Chairman Delores Kelley and Members of the Senate Finance Committee:

In my current role, I serve as an Assistant Professor of the Pharmaceutical Health Services Research Department at the University of Maryland School of Pharmacy. My main research activity is developing decision-analytic models for risk-benefit quantification of healthcare decisions, economic evaluation of healthcare technologies and policies, and projection of health and economic burden of social and healthcare policies. I herein provide my strong support of the merits of ***SB0658-Transportation–Maryland Aviation Infrastructure Impacts Commission***. This bill aims to establish the Maryland Aviation Infrastructure Impacts Commission for studying the health and environmental effects of commercial aviation in impacted communities of Maryland.

Establishment of a commission to study the public health impacts of aviation noise and air pollution is a priority for health and well-being of Maryland residents, especially those communities that are directly impacted by commercial aviation. On one hand, expansions of the aviation infrastructures and airport runways can help with economic prosperity and create jobs. On the other hand, such expansions create noise and air pollution which will have detrimental public health repercussions and threaten the well-being of the impacted communities. There have been ample studies in recent years that demonstrate the negative impacts of aviation noise and air pollution on physical and mental health.

For aircraft noise, many studies suggest a negative impact on health (1–5), particularly cardiovascular diseases (6–9), including coronary heart disease and hypertensive heart disease. In addition, the sleep disturbance caused by noise is linked with changes in metabolic system and markers of inflammation, further contributing to developments of cardiovascular outcomes (6,10). Such adverse associations between aircraft noise and cardiovascular conditions have been reported consistently in multiple countries and

settings, which can further strengthen the hypothesis of a causal effect of noise on cardiovascular diseases (11).

A recent study in the USA showed that the economic burden associated with 5 dB in environmental noise levels (all-cause noise, including road, rail, and aircraft noise) is \$3.9 billion annually—\$2.4 billion in direct medical costs and \$1.5 billion in indirect costs or productivity losses—that can be attributed to adverse effects of noise on hypertension and coronary heart disease (12).

In addition to cardiovascular diseases, there are other health endpoints that have been linked to aircraft noise, including annoyance (10), sleep disturbance (10), cognitive function development issues in children (10), increases in waist circumference (9), and low birth weight in newborn babies (13,14). In addition, exposure to high levels of aircraft noise has been linked to poorer health-related quality of life, particularly among people that are noise sensitive (15) or are annoyed by noise (16).

In our previous study in New York City, we built a decision-analytic model and evaluated the cost-effectiveness of limiting the year-round use of ‘TNNIS Climb’ that affects Community Boards 7 and 11 of Queens, NY, compared with *status quo* (17). We quantified the effects of noise caused by the year-round use of TNNIS on increased risks of cardiovascular disease and general anxiety disorder. We modeled direct medical costs, indirect costs (i.e., productivity losses) and losses of quality-adjusted life years (QALYs)—QALY captures both longevity and health-related quality of life during life years—associated with aircraft noise. Our findings showed that limiting the use of TNNIS Climb would be cost-effective with an incremental cost-effectiveness ratio (ICER) of \$10,006/QALY, which is below the recommended willingness-to-pay thresholds by US cost-effectiveness guidelines (18,19). Our study published in the *International Journal of Environmental Research and Public Health* has gained significant media attention and appeared on major print media sources such as the **Wall Street Journal**, the **Queens Tribune**, and multiple other media outlets.

Our team is currently working on a project that was originally discussed in the Bill SB184/HB310 from 2020 Legislative Session but later funded by the Maryland Department of Transportation to project the potential health and medical economic burden of the increased aircraft noise after the implementation of the NextGen system at the BWI Thurgood Marshall Airport. In this modeling study, we are using data from multiple earlier published studies reporting on health effects of aircraft noise (2,7–9,20–25) and developing a decision-analytic model to project the long-term potential direct medical costs, indirect costs, losses of QALYs, and likelihood of annoyance associated with increased noise levels for the communities impacted by aircraft noise.

If effectuated, **SB0658** will provide budget and support for assessing the public health and environmental impacts of commercial aviation in Maryland. This will provide an unprecedented opportunity to analyze the trade-offs between economic benefits and

public health and environmental threats of aviation pollution such as aircraft noise and air pollution. While economic growth is a priority for financial well-being of Maryland residents, prior to any economic investment, the public health consequences of such investment should be carefully analyzed. All in all, I as a public health researcher am in strong support and favor of the merits of **SB0658** for its great impacts on improving the health and well-being of Maryland residents.

Sincerely,



Zafar Zafari, M.Sc., PhD

Assistant Professor at University of Maryland School of Pharmacy

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