



LAX Community Noise Roundtable

Review of Two Recent Health Studies Related to Aircraft Noise

November 13, 2013



- **On October 8, 2013, two independent studies examining potential health effects related to aircraft noise exposure were published in the British Medical Journal**
- **One study was conducted by researchers in the United States (US Study)**
- **The other study was conducted by researchers in Great Britain (British Study)**
- **Both studies associated certain health conditions or outcomes with a range of aircraft noise exposure levels**



- The studies' claims were picked up by US and international media outlets, making headlines in print and video media

“Airport Noise Linked to Heart Risk” – New York Times

“How living near an airport could shorten your life . . .”
- Daily Mail

- After the initial media “buzz”, it is important to take time to understand the strengths and weaknesses of the studies
- Purpose of tonight’s presentation is to introduce the studies, review the results, and examine the strengths/weaknesses of the studies



US Study

- **Objective:** “To investigate whether exposure to aircraft noise increases the risk of hospitalization for cardiovascular diseases in older people (≥ 65 years) residing near airports.”
- **Examined the year 2000 Medicare records of 6 million residents age 65 or older living near 89 airports**
- **Associated the year 2009 aircraft noise exposure ≥ 45 DNL (distributed over zip code zones) with hospital admissions for cardiovascular related diseases**
- **Conclusion:** “Long term exposure to aircraft noise is positively associated with hospitalization for cardiovascular disease.”



Strengths

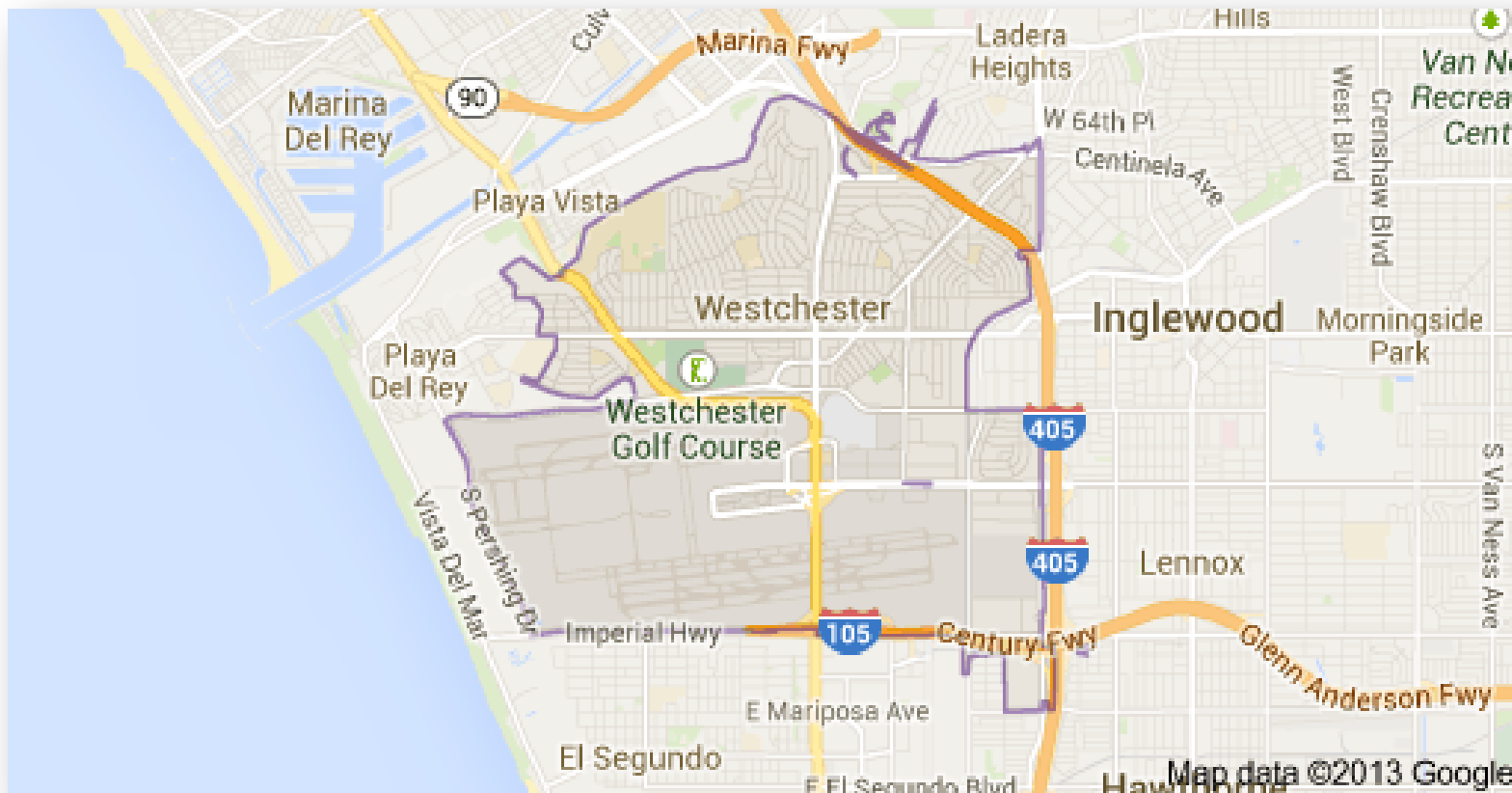
- **The study used a very large population sample in areas known to be exposed to aircraft noise at 89 airports**
- **The researchers made an effort to account for some of the “confounding” factors (e.g., air quality, traffic noise, ethnicity)**
- **The aircraft noise data was provided by FAA**
- **The funding body, FAA, was not involved in conducting the research or the conclusions reached**



Weaknesses

- **The population was composed of people older than 65**
- **The study did not account for smoking, poor diet, genetic predisposition to heart disease, or lack of exercise**
- **The study did not associate the length of time of individuals were exposed to specific aircraft noise levels**
- **The results for approximately one-third of the airports indicates no risk or reduced for cardiovascular disease**
- **Zip code zones were the smallest geographic divisions for defining the noise exposure of a set of residents**

Using a Zip Code Zone to Represent a Single Noise Level Introduces Errors



Example for Presentation Purposes Only



Weaknesses (cont.)

- **The study utilized aircraft noise exposure levels below 55 DNL where noise model results are generally less accurate than close in to the airport**
- **The aircraft noise exposure data could not be associated with health effects on an individual level**
- **The medical records were for a different period of time than the aircraft noise exposure data**



From the Researchers:

- **“Further research should refine these associations (between aircraft noise and risk of CVD hospitalizations) and strengthen causal interpretation by investigating modifying factors at the airport or individual level.”**

Translation:

- **More research is needed**



Policy Implications of the US Study Results

- **The results of the US Study do not provide a solid foundation upon which FAA can make policy changes related to human exposure to aircraft noise**



British Study

- **Objective:** “To investigate the association of aircraft noise with risk of stroke, coronary heart disease, and cardiovascular disease in the general population.”
- **Focused on hospital admission records for 3.6 million residents living in the vicinity of London’s Heathrow Airport**
- **Examined the effects of daytime and nighttime aircraft noise separately**
- **Conclusion:** “Areas with high levels of aircraft noise related to Heathrow airport in London had increased risks of stroke, coronary heart disease, and cardiovascular disease.”

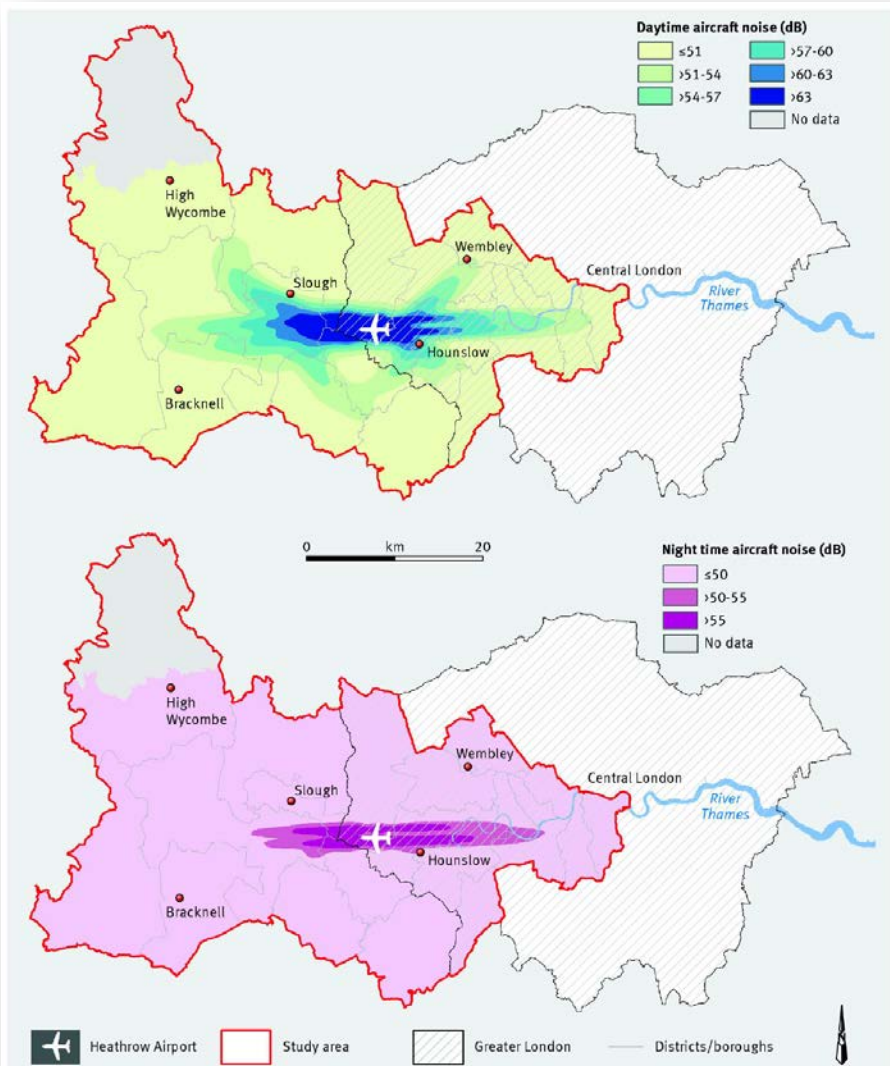
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British Study

Daytime Aircraft Noise Exposure (Leq)

Nighttime Aircraft Noise Exposure (Leq)



2001 Average Daytime (top) and Nighttime (bottom) Aircraft Noise Exposure (Leq) at Heathrow Airport



Strengths:

- **Study used a large population in areas around Heathrow Airport known to be exposed to aircraft noise**
- **The researchers made an effort to account for some of the “confounding” factors conditions (e.g., air quality, traffic noise, ethnicity)**
- **The aircraft noise data was provided by the Civil Aviation Authority**
- **The funding bodies were not involved in conducting the research or the conclusions reached**



Weaknesses:

- **The study was for a single airport; London Heathrow**
- **Not all confounding factors could be eliminated (e.g., smoking on an individual basis)**
- **The study did not associate the length of time of individuals were exposed to specific aircraft noise levels**
- **The accuracy of the noise model at low noise levels**
- **The medical records were for a different period of time (2001-2005) than the aircraft noise exposure data (2001)**



From the Researchers:

- “. . . further studies are needed to test whether aircraft noise causes these increases in risk or if these results can be explained by some other unmeasured (confounding) factors.”

Translation:

- More research is needed



Full Study Titles and URLs:

- **Aircraft noise and cardiovascular disease near Heathrow airport in London: small area study**
 - <http://www.bmj.com/content/347/bmj.f5432>
- **Residential exposure to aircraft noise and hospital admissions for cardiovascular diseases: multi-airport retrospective study**
 - <http://www.bmj.com/content/347/bmj.f5561>



Questions?

