

# Proposed Changes to Airport Noise Boundary and Health Impacts

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# Environmental Noise

- Noise = normal sounds that are harmful or unwanted
  - Increased risk of negative physiological or psychological health outcomes
- Sources
  - Transportation; recreational activities; industry (occupational health regulation)
- Adverse health outcomes
  - Auditory – hearing impairment ; tinnitus
  - Non auditory – cardiovascular; annoyance; poor sleep; cognition and learning; adverse birth outcomes; quality of life; mental health and wellbeing;

# Environmental Noise

- Research evidence since 1960s; quality of research is moderate
  - Few studies look at health outcomes; few longitudinal studies; mainly in Europe and North America
- EU citizens in major urban areas
  - 65% of population is exposed to day time noise levels > 55 dB;
  - 20% are exposed to night noise levels of 50 dB
- Increasing global issue
  - related to population growth, urbanisation, expanding transportation infrastructure;
- Degrades residential, social and learning environments

# Cardiovascular health

- Stress from noise exposure
  - Directly via sleep disturbance; Indirectly via annoyance
- May cause physiological stress to individuals
  - increases risk factors such as blood pressure, blood glucose, blood fats
  - May leads to hypertension, arteriosclerosis; May lead to heart attacks
- Air Pollution from Particulate Matter (PM 2.5) may affect cardiovascular health

# Annoyance

- Most prevalent community response
- Negative reactions
  - disturbance, irritation, dissatisfaction, nuisance
  - May experience stress related symptoms
- Personal and situational factors
  - Fear, interference, ability to cope, noise sensitivity, expectations, anger

# Sleep disturbance

- Undisturbed sleep - essential for alertness, performance during the day, quality of life, general health
- Aircraft noise disturbs sleep and impairs sleep recuperation
  - Physiological reactions to noise include changes in breathing, body movements , heart rate which do not adapt over time
  - Elderly, shift workers, children those with poor health considered more at risk
  - Child sleeping patterns may differ from curfew hours (10pm- 6am)

# Effects on cognition and learning

- Exposure to aircraft noise at home / school shown to
  - impair reading and memory skills; poorer performance on standardised achievement tests
  - Reversible if noise stops (eg acoustic insulation)
- Studies on children 8 – 12 years;
- No longitudinal studies or other population groups eg adolescents

# Lakes District Hospital

- Patients have less ability to cope with stress
  - Sleep disturbance
  - Annoyance
  - Communication interference
- Staff – interference with tasks; meetings
- Potential impacts on future development of the site



# Consequences of a busier airport

Consider other public health issues

- Air pollution from aircraft emissions; Soil and water contamination from aircraft and runway operations; Safety and emergency planning; International Health Regulation responsibilities; Occupational health issues; Amenity of airport environment
- More people arriving means more infrastructure will be needed
  - Public toilets, freedom camping, capacity of water supply and wastewater, traffic congestion, parking, public amenity, waste minimisation .....

# Moving forward

- Opportunity to consider the future and contribute to shaping it
- How do we balance community well-being with economic development?
- Health impact assessment
  - Systematic consideration of the positive and negative effects of this proposal from health, environmental, social and economic impacts.

# What's the long game?

- Inland City – with a diverse economy
- Tourism .....quality and value vs quantity
- Sustainable development
  - Environmental; economic ; social
- Liveable city

# Summary

- Complex problem – requires systematic approach to finding workable solutions
- High prevalence of noise impacts on health because of widespread exposure
- Need to balance community wellbeing with economic development

# References

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