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Noise Impact of the COVID 19 Lockdown in Melbourne

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ABSTRACT

In response to the COVID 19 pandemic in 2020, the government of the Australian state of Victoria implemented short term travel restrictions in the city of Melbourne that resulted in an approximate halving of road traffic volume. The Victoria Division of the Australian Acoustical Society took the opportunity to monitor outdoor noise at twenty-six sites during this time. Due to a prohibition on non-essential travel, the sites were mainly at individuals' home addresses. Monitoring was repeated at two of the sites following a return to near-normal traffic volumes. This paper presents the results of this monitoring work and compares the noise levels during "lockdown" versus "normal".

1 INTRODUCTION

In response to the COVID-19 pandemic, the State Government of Victoria declared series of “lockdowns” in the Melbourne region over the course of 2020 and 2021. During the course of the second lockdown, the Victoria Division of the Australian Acoustical Society invited volunteers among its membership (generally employees of acoustical consulting businesses) to monitor environmental noise during the lockdown, in anticipation of repeating the monitoring after the conclusion of the lockdown.

2 THE MEASUREMENT PROGRAM

On 7 July 2020, the Premier of Victoria announced “stay at home” restrictions to commence the following night. The lockdown restricted travel in the Melbourne metropolitan area and some nearby parts of rural Victoria (Andrews, 2020). There was also a curfew strictly prohibiting people from leaving their homes other than for essential purposes between the hours of 9 pm and 5 am. The lockdown lasted from 9 July to 27 October 2020 inclusive. It did not affect the operation of trams and other public transport.

The short notice of the announcement of the lockdown and the prohibition on non-essential travel limited the selection of monitoring sites. Measurements were essentially conducted at the home addresses of participants.

Hourly measurements of outdoor sound pressure levels were made at a total of twenty-six sites around Melbourne during the second lockdown. At the time of writing this paper, measurements have been repeated at two of those sites. This second tranche of measurements was affected by two more brief lockdowns. Measurements may be repeated at more sites in the future subject to the availability of resources.

In addition to acoustical data, aggregate arterial road traffic volume for Melbourne was obtained from the Department of Transport. This data is expressed as a percentage of the February 2020 baseline (VicRoadsDataConcierge, 2021). The data provides an indication of the extent to which traffic volume reduced as a result of the lockdown.

3 RESULTS

Only the results from the two sites where measurements were repeated are presented below. The locations of these sites were:

- Balwyn, eighty metres north of Whitehorse Road, behind shops
- Kew, fifty metres southeast of High Street, behind shops

Whilst both locations are close to arterial roads which carry trams, the fact that they are behind shops means they have a high degree of screening from traffic noise.

Meteorological conditions were collected from the nearest Australian Bureau of Meteorology weather station at Viewbank. Noise measurements were excluded for periods when wind speed exceeded 4 m/s or rainfall exceeded 2 mm per hour. (Windy weather occurred for much of the lockdown period so a lower threshold for wind would have resulted in losing much data.) Incident L_{Aeq} levels (calculated from façade levels using a 2.5 dB correction) are presented in Figures 1 and 2.

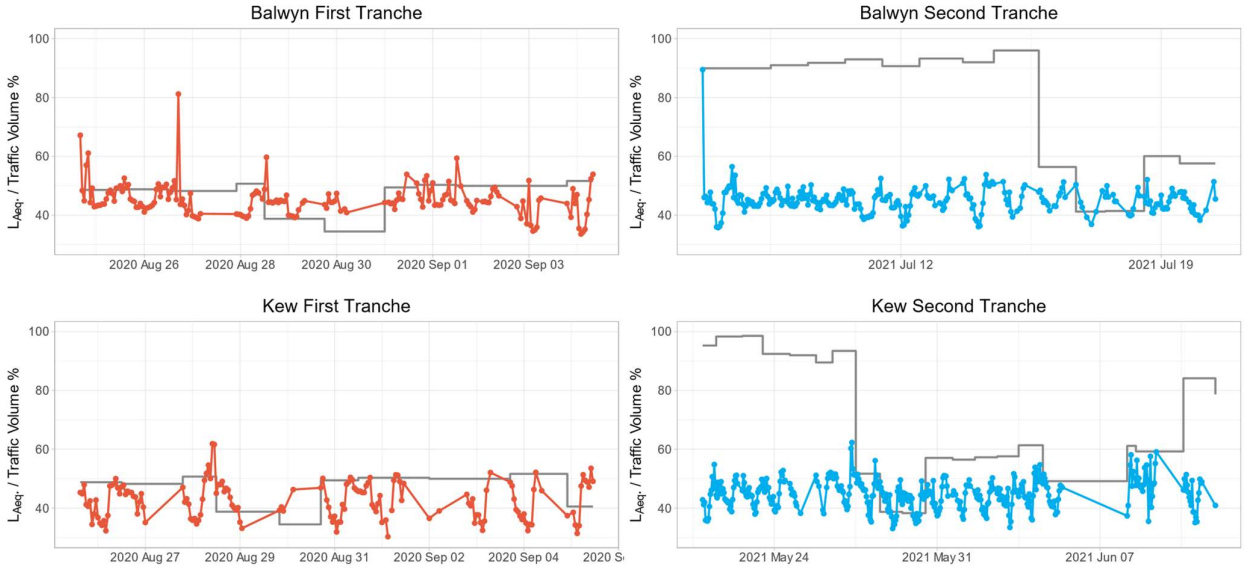

Figure 1: Time history of measurements

Figure 1 shows L_{Aeq} incident sound pressure levels (colour) and relative traffic volume (grey) for two tranches of measurement. Figure 2 shows box plots comparing the two tranches of monitoring, differentiating weekdays (Monday to Friday) and weekend. Note that the second tranche measurements exclude the periods of subsequent lockdowns, 28 May to 10 June and 16 July to 27 July 2021. It appears that for the Kew site, sound levels were slightly lower during the lockdown, particularly during the night-time curfew period.

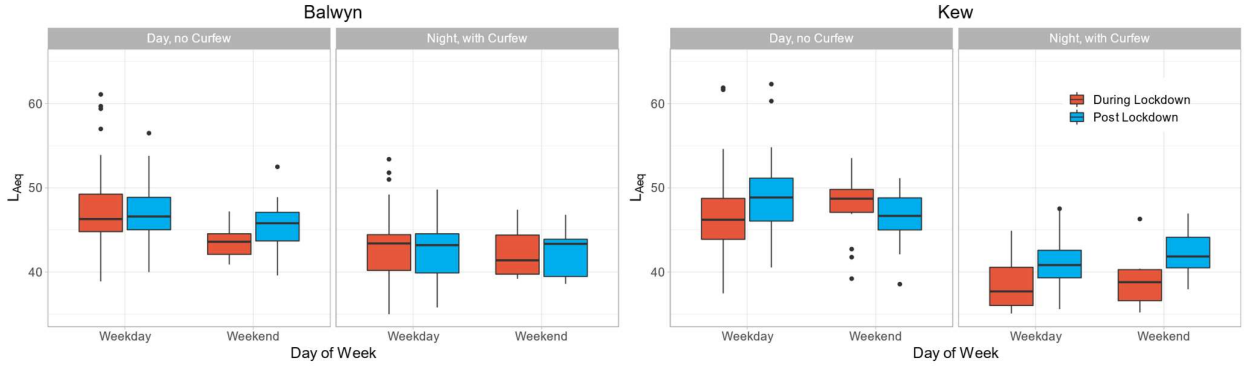

Figure 2: Comparison of noise levels measured during and after lockdown

The only clear change in noise levels observed during the lockdown period was reduced night-time noise levels at Kew during the strict curfew. It is not clear that this is due to traffic volume changes. Rather, it is noted that the measurements were made in quiet “back streets” which would appear to be shielded from noise impacts due to major roads.

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