(*) Copy/paste from original version of the summary of the study with automatic translation from French to English

Informal General overview(*)

EVALUATION OF VEHICLE NOISE EMISSIONS INDIVIDUALLY POWERED VEHICLES CIRCULATING IN BRUSSELS-CAPITAL REGION

Report 12/2021 – Publication 03/2022

Links at the end of this ppt presentation

environnement.brussels

Evaluation of the noise emission of individual motor vehicles circulating in the Brussels-Capital Region

- In autumn 2020, The Real Urban Emissions (TRUE) assessed the air pollutant emissions of several thousand vehicles circulating in the Brussels-Capital Region.
- At the same time, **Brussels Environment carried out noise level measurements at the crossings of some of these vehicles, in a situation of acceleration and moderate speed**.

CONTEXT

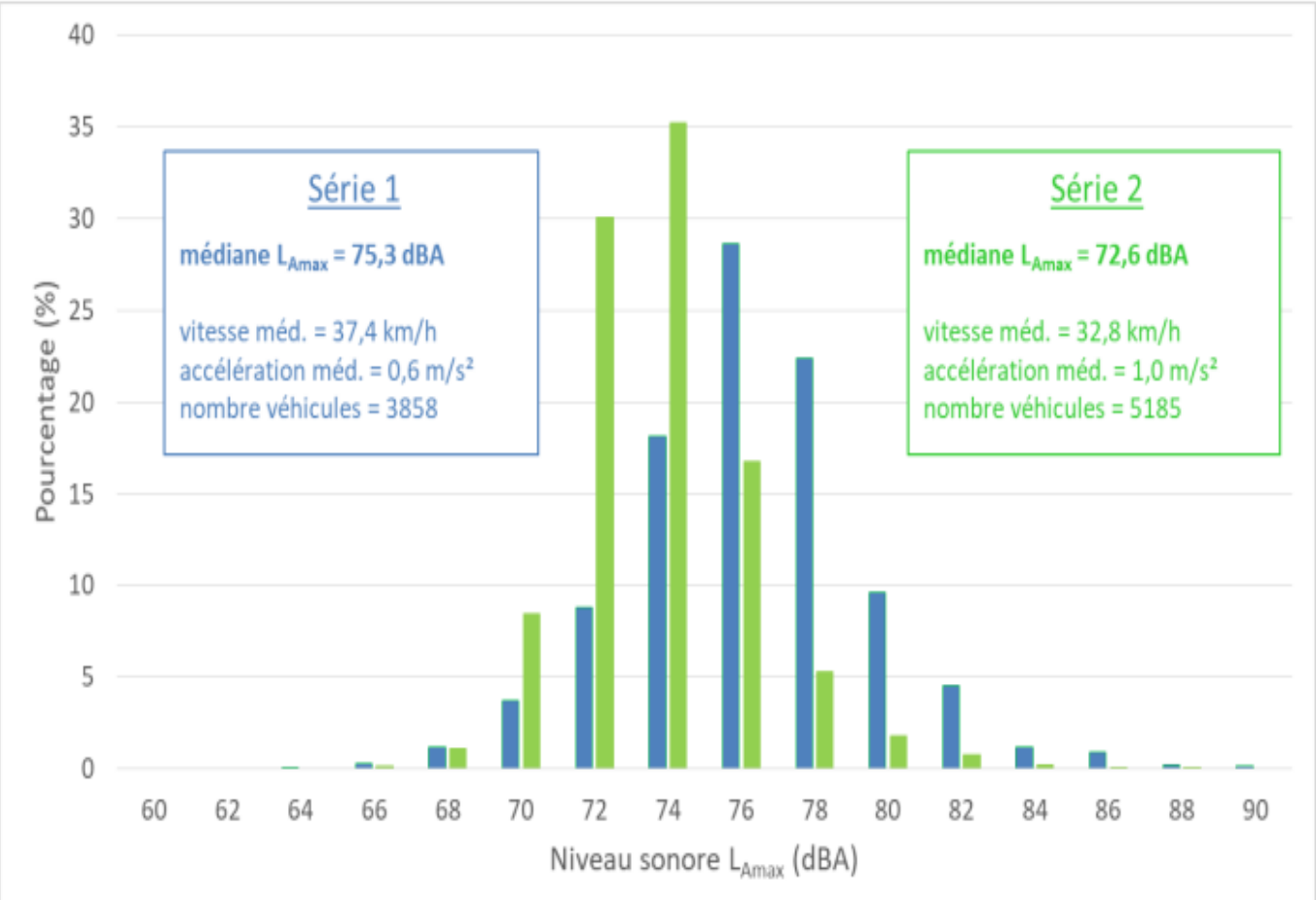
- Noise emitted by road traffic is the main source of noise pollution in the Brussels-Capital Region, **exposing nearly 64% of the population to an average noise level for 24h00 (Lden) above 55 dBA**, a level likely to cause significant discomfort.

Reminder: Since 2018, WHO has strongly recommended reducing the noise levels produced by road traffic to less than 53 dBA Lden, as a noise level above this value is associated with adverse health effects.

- **The interest of this campaign lies in the access to data of each vehicle measured, speed and acceleration, but also model, type of vehicle, year of entry into service, etc.** which makes these noise measurements unprecedented.

They were carried out at the exit of the roundabout (2 series), in acceleration and with a moderate speed, at a distance of 5 m from the passage of vehicles. The analyses were carried out on the maximum measured sound level of each passage (LAmax).

KEY RESULTS



Percentage distributions of maximum sound levels of vehicle passages by class of 2 dBA. The measurements were carried out in the autumn of 2020 at two different roundabout exits.

- The median **L_{Amax} for Series 1** is 75.3 dBA and 90% of passages are between 70 and 81 dBA.

It is 72.6 dBA **for series 2** and 90% of passages are between 69 and 77 dBA.

On the scale of sound levels, 70 dBA is considered noisy, 80 dBA is very noisy.

- The 1 Series is characterized by higher speeds and lower accelerations than the 2 Series.

The **L_{Amax} level of this series 1** is correlated mainly with the speed of the vehicles and is characteristic of rolling noise (noise produced by the tire-road contact).

The 2 Series features lower speeds and greater acceleration than the 1 Series.

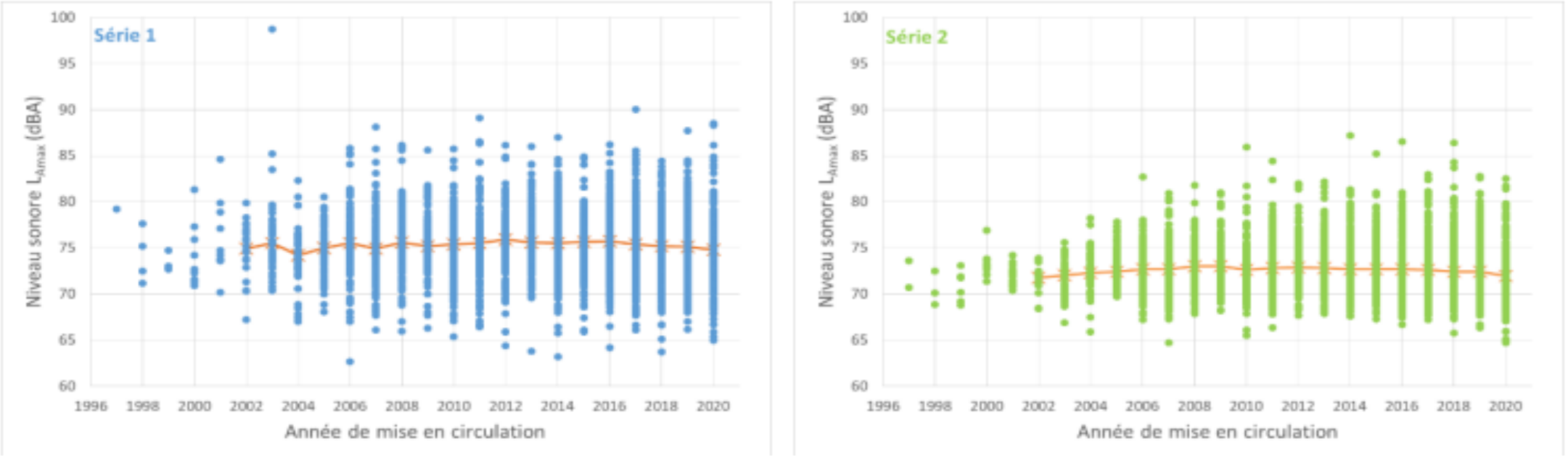
The **L_{Amax} level of this series 2** is correlated mainly with acceleration, the main noise is therefore the noise from the engine.

KEY RESULTS

- As a result, **the speed reduction is therefore effective** in reducing vehicle noise unless it is below 30 km/h, the speed at which acceleration, and therefore **driving behaviour,** mainly influences the noise produced.

The generalised transition to zone 30 in the Brussels-Capital Region is therefore justified from the point of view of noise emissions.

KEY RESULTS



LAmax sound levels depending on the year of entry into service of the vehicles for both sets of measurements. The interconnected orange crosses represent the median of the L_{Amax} for each year.

- The **year of entry into service** or the Euro standard of vehicles travelling in Brussels **has no influence on the noise emitted**, both in relation to rolling noise (series 1) and noise from the engine (series 2).

The difference between the different median levels per year of release is a maximum of 1 dBA (imperceptible to an auditor). The evolution of vehicles over the years, which is certain with regard to the reduction of air pollutant emissions, does not go hand in hand with a reduction in noise levels.

KEY RESULTS

- An analysis by vehicle category shows that **commercial vehicles and vans (N1)** have similar or higher emissions of 1 dBA compared to **passenger cars (category M1)**.

Motorcycles (L3e) have a level of 3 to 4 dBA higher than cars, **trucks** over 3.5 tons (N2 and N3) a level of 7 to 8 dBA higher.

At the same time, the evolution of noise levels with the power of vehicles or with their unladen mass shows an increase.

- Petrol vehicles have slightly lower levels than diesel vehicles (around 1 dBA).

Additional measures are needed to highlight differences in the levels emitted for **electric vehicles**, which are under-represented during this measurement campaign. However, the first analyses highlight sports electric vehicles that are noisier than the average diesel or petrol vehicle.

INTEREST FOR A PRESENTATION BY THE AUTHORS?

REFERENCE

- Details of the publication Title: Evaluation of the noise emission of individual motor vehicles circulating in the Brussels-Capital Region [fr]
- Auteurs : B. Fauville, C. Lecointre (Département Bruit de Bruxelles Environnement)
- Contacts : bruit.autorisations@environnement.brussel
- *Available only in French and NL languages:*
    - Bruxelles teste et met en œuvre de nouvelles technologies pour lutter contre le bruit du trafic routier… | Bruxelles Environnement

        Brussels is testing and implementing new technologies to combat road traffic noise… | Brussels Environment
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