Evaluation of Four Background Noise Level Standards in GTA Restaurants

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Appetizer   **Main Course**   **Dessert**

Background:

- Restaurant noise levels have been measured in multiple places across the world but there is a lack of information for the restaurant noise levels specifically in the GTA.
- High levels of restaurant background noise levels cause distraction, inefficiencies, incorrect orders etc playing a role in increase mental stress for workers and decrease customer satisfaction

Objectives:

- To examine the best standard that shows the level of noise in the restaurants among the four standards which are prefered speech interference level (PSIL), preferred noise criteria (PNC), noise criteria (NC) and decibel A-weighing scale (dBA).
- The best standard means the least restrictive with low interferences and more freedom within the standard to be able to assess the noise exposure in the restaurants.

Hypothesis:

- Background noise levels in restaurants show different results and would not meet the PNC, NC and PSIL recommendations outlines in OHSA

Methodology:

The restaurants ranged from casual dining, fine dining and family style and samples were collected during lunch and dinner times throughout all days of the week and with a minimum of 50% occupancy. The instruments used were LxT2, Larson Davis SoundTrack SLM and Bruel & Jjaer dosimeter. SLM assess noise/sound levels and evaluated through SLM which then displays acoustic measurements on the sound level meter in dB and Leq. (Sound Level Meter/Noise Meter, 2020). When collecting the noise samples from both the sound level meter and the dosimeter, the data used when comparing to the standards were both the Z and A filters.Samples were taken near the kitchen, restrooms, customer waiting area, dining area near the windows and dining area near the bar.
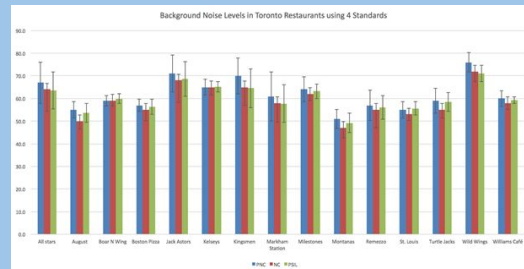
Results:

Figure 1: Overview of 3 standards of PSIL, PNC, NC used for all restaurants.

- The figure above shows the visual of the number values for all the restaurants per 3 standards of PNC, NC and PSIL and an error bar above to express the standard deviation per standard.
- August 8 and Kelseys have a higher preferred speech interference level than the preferred noise criterion.
- Majority of the restaurants (10/12) have a higher PNC than PSIL
- Need to speak loudly would be applicable in the Wild Wings restaurant and need to speak loudly in Montana's restaurant is not needed.
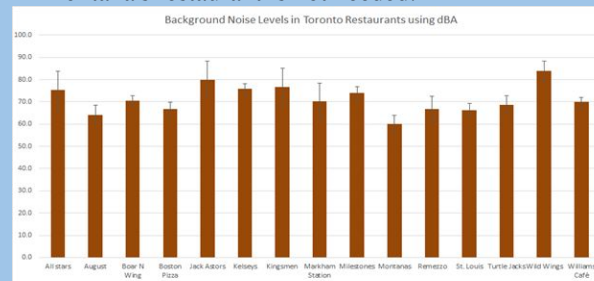

Figure 2: Overview of 3 standards of PSIL, PNC, NC used for all restaurants.

- The figure above looks at the background noise levels using 'A weighing scale' and the SD using error bars.
- Both graphs show a similar pattern by having the same highest and lowest background noise levels.
- Highest background noise level among was Wild Wings restaurant and the lowest background noise level was the Montana's restaurant.

Discussion:

- PSIL standard shows to be the least restrictive because it encompasses the three frequency ranges of 500, 1000 and 2000 Hz for each of the 5 samples taken in each restaurant.
- A-weighing scale standard encompasses just the average noise level per five samples.
- PSIL has a better overview on the background noise level in comparison to A-weighing scale meaning
- PSIL standard is less restrictive than the decibel with the A-weighing scale.
- The standard of the decibel with A weighing scale is crucial to be used in this study as it evaluates the background noise level to accommodate for the human ear

Conclusions

- Multiple studies investigate the noise impact to workers specifically in hospitals and general noise sources of the noise come from ventilation, communication, telephones, smoke detector alarms etc.
- The studies were consistent as they concluded reported noise is a primary cause of sleep deprivation and
- disturbance among patients and it increases their anxiety and decreases their employee job performance (Cmiel, Karr, Gasser, Oliphant and Neveau, 2004).
- To conclude, more research should be done in evaluating the subjective view on background noise levels while using the numerical values from the four standards.

References

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