

Malta and Gozo Road Quality Comparison

Delivery Van Driver Whole-Body Vibration Exposure

An import, wholesale and retail company kindly accepted our request to measure the whole-body vibration exposure that their van drivers would typically be exposed to during their typical weekly delivery routes.

The company has a number of vans, with daily deliveries in Malta and a once a week delivery in Gozo which is almost always performed with one particular van that has a limited height and can travel on any Gozo ferry.

Thus, for the purposes of having a fair road quality comparison, a delivery route in Malta with the same van was measured so that all vehicle related aspects remain the same.

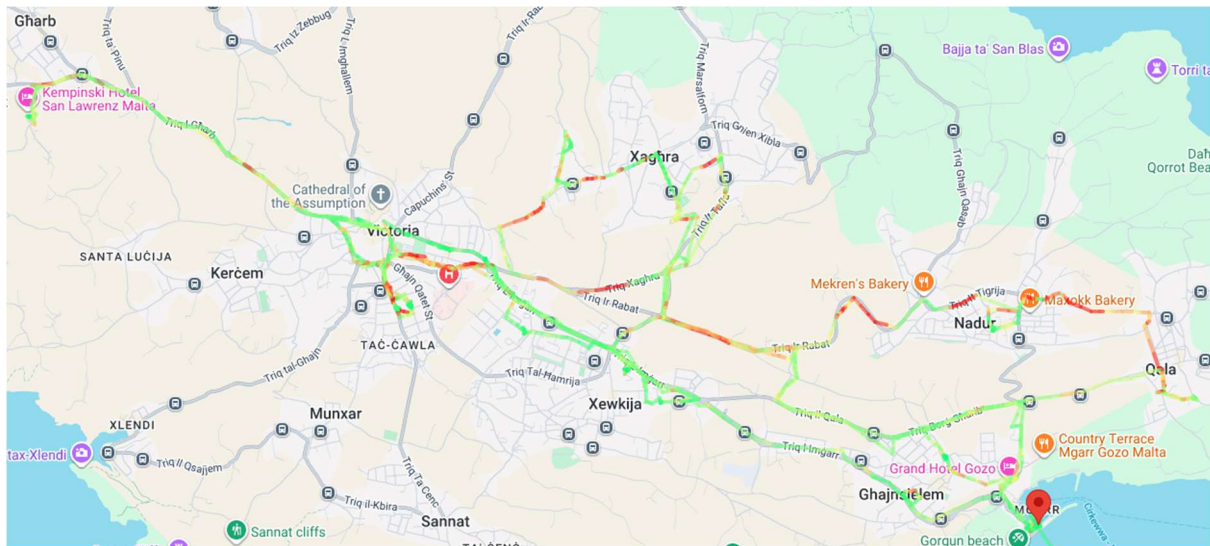
Gozo delivery route

Mgarr Harbour round trip on 28 August 2025

Start time of route drive 6:05 and end time 9.33

Total route duration: 3:28 hours

Total seated time for the purposes of vibration exposure calculations: 2:39 hours



Route driven is highlighted in Green. Yellow and Red indicate higher vibration road quality segments.

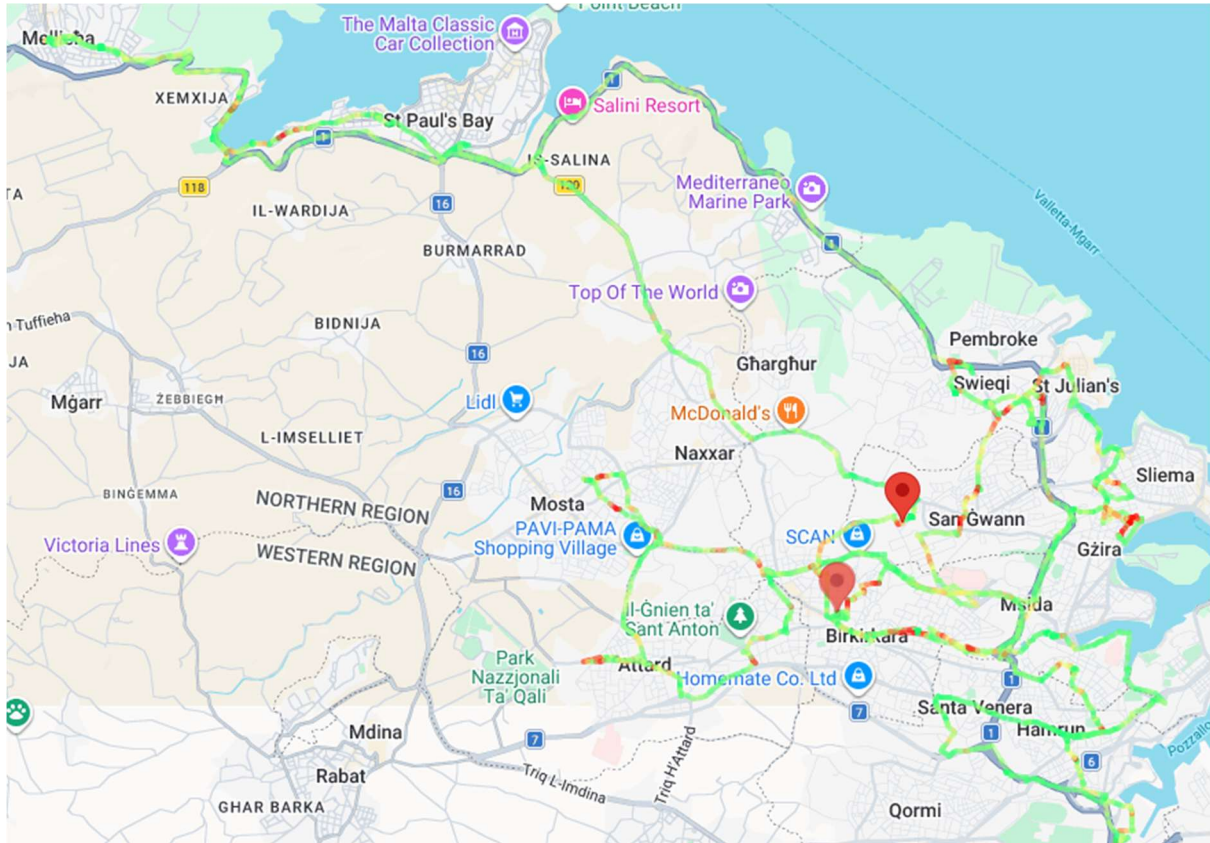
Malta delivery route

Birkirkara round trip on 10 September 2025

Start time of route drive 9:32 and end time 14:36

Total route duration: 5:04 hours

Total seated time for the purposes of vibration exposure calculations: 3:59 hours



Route driven is highlighted in Green. Yellow and Red indicate higher vibration road quality segments.

Measurements

All made in accordance with ISO 2631-1:1997

Crest factor was higher than 9 for all axis both in Gozo and Malta. (This calculation is required by ISO 2631-1 to determine which method of calculation is suitable.)

Exposure Limit Values were not reached within the working day for any measurements. These are extreme hazardous levels of exposure.

All work times calculated are per day for a five day work week.

Road Quality Measurements Comparison

For the purposes of road quality comparison, the Z axis (upward spinal direction) readings are compared given that this is the upward/downward direction of acceleration typically caused by potholes.

	Peak Axis	VDV	ISO Standard 2631-1:1997 Time to Reach ALV 8.5 Hours : Minutes
Gozo	Z	11	02:57
Malta	Z	8	10:11
Gozo ALV converted to minutes			177
Malta ALV converted to minutes			611
Malta roads better than Gozo as a percentage			345.2

VDV – Vibration Dose Value estimated for an 8 hour work exposure.

ALV – Action Limit Value, when measurements are converted to time, it signifies the duration below which is considered as safe. Exceeding this limit requires actions to be taken to reduce exposure due to increased health risks over time.

Health & Safety at Work Comparison

For the purposes of health and safety at work, ISO 2631-1:1997 guides for the use of the highest axis from X (forward or backward), Y (sideways) or Z (upward spinal direction) measurements.

In the case of measurements on the Malta route, the highest axis was the X, which is the forward axis. This is typically the result of regular braking and acceleration due to traffic flows.

Measurements for Malta are typically considered within acceptable safe working times as long as driving occurs only for 5 days per week.

	Peak Axis	VDV	ISO Standard 2631-1:1997 Time to Reach ALV 8.5	EU Directive 2002/44/EC Time to Reach ALV 9.1
Gozo	Z	11	02:57	03:49
Malta	X	8.9	06:48	08:46

The ALV of less than 3 hours for Gozo, clearly indicates that for daily lengthy delivery routes with this vehicle, will entail actions to reduce vibration exposure for the driver.

Such actions should / may include:

- a) Informing drivers of findings / advise to avoid pot holes as much as possible, also advise on regular rest times non seated.
- b) Use a different van that has better seating or suspension.
- c) Alternate morning and afternoon deliveries between drivers.
- d) Communicate with authorities on worst road patches for repair ASAP.

This is not an exhaustive list of options or obligations which the employer must address. Other options may be available upon discussion.

At this level of daily vibration exposure, attention also needs to be given to the weight of goods being hand lifted or the physical nature of work being performed during the route or at the warehouse post vibration exposure. In essence, the body needs recovery time from vibration exposure to avoid long term health issues.

Repeat measurements may be required to ensure that actions taken are effective.

Different vehicles will give different results.

The purpose of these measurements and document is exclusively for education. Whole-Body Vibration exposure assessments are highly specialised due to the overwhelming misinterpretation of standards and laws.

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