Cars queued behind a cyclist in a shared winter lane

Rue de Terrebonne, winter morning peak

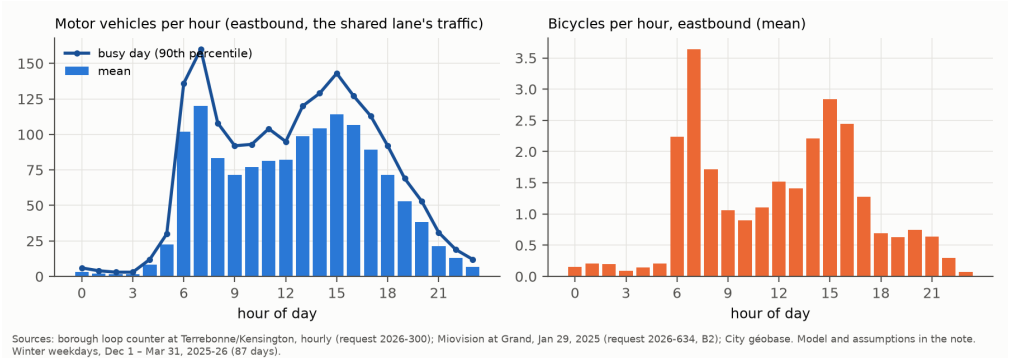
Terrebonne-open-sources (a resident of Côte-des-Neiges–Notre-Dame-de-Grâce)

2026-11-08

The question

- Winter layout of November 2, 2026: cyclists going with traffic « appelés à partager la voie de circulation avec les véhicules motorisés » (file 1266880005, p. 3).
- EXP 2023, Figure 6-6: a 3.5 m lane between two parking lanes.
- Passing a cyclist needs 1 m of clearance (art. 341); that lane does not leave it. A driver who catches up stays behind.
- How many cars build up behind one cyclist at the morning peak?

The traffic



Kensington loop, 87 winter weekdays: 120 motor vehicles at 07:00–08:00 (busy day 160), 3.6 eastbound bicycles

The model

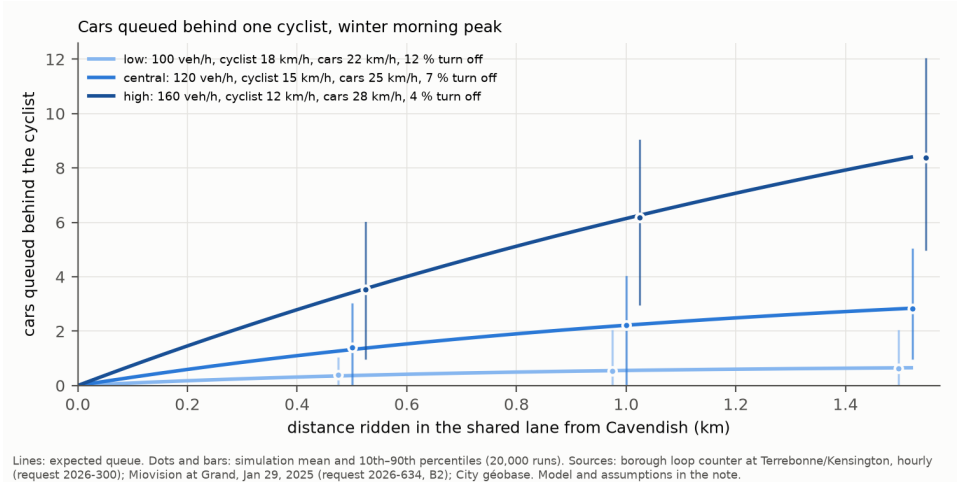
- Cars catch up at $\lambda = q\,(1/v_b - 1/v_c)$ per km ridden; no passing, so they queue.
- A queued car leaves when it turns off: share s at each of 17 cross streets in 1.5 km (Cavendish $\rightarrow$ Girouard).
- Expected queue $N(x) = (\lambda/\mu)(1 - e^{-\mu x})$, $\mu = s\times$ cross streets per km; simulation for the spread.
- Turning off measured at Grand (Jan 29, 2025): 18 % at 07:00–09:00; local streets assumed lower (4–12 %).

Three cases

case	q	v_b	v_c	s	caught/km	0.5 km	1 km	1.5 km
low	100	18	22	12 %	1.0	0.4	0.6	0.7
central	120	15	25	7 %	3.2	1.3	2.2	2.8
high	160	12	28	4 %	7.6	3.4	6.1	8.4

speeds in km/h, stops included; queue = expected cars behind the cyclist

Cars queued behind one cyclist

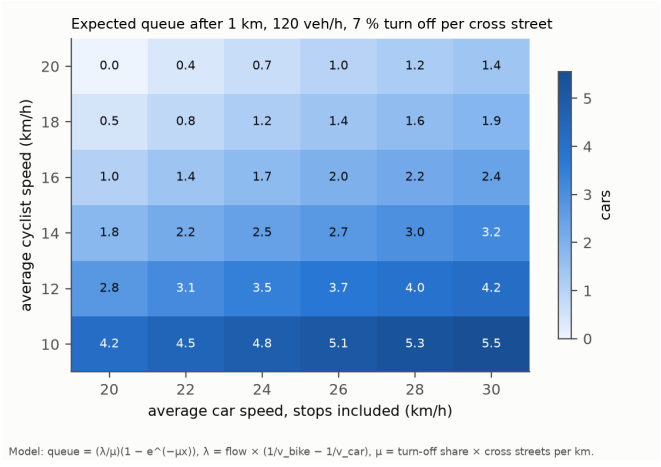


Lines: expected queue. Dots and bars: simulation mean and 10th–90th percentiles (20,000 runs). Sources: borough loop counter at Terrebonne/Kensington, hourly (request 2026-300); Miovision at Grand, Jan 29, 2025 (request 2026-634, B2); City géobase. Model and assumptions in the note.

The result

- Central case: 2.2 cars after 1 km, 2.8 at Girouard (simulation median 3, 10th–90th 1–5).
- Busy morning, slow cyclist: 8.4 at Girouard; quiet morning, fast cyclist: under one.
- Drivers' side: about 12 of 120 peak-hour cars (10 %) follow a cyclist, each losing at most 1.6 min/km.

What drives it



the gap between the two speeds matters most

Limits

- Speeds assumed, not measured; turning off measured at one intersection.
- No passing assumed; on a vélorue art. 496.3 lets a driver pass where judged safe (shorter queue, closer passes).
- One cyclist at a time; snowbanks narrow the lane further; west of Cavendish not covered (no comparable count).
- Code, data and tables: `https://github.com/OpenMobilityData/Terrebonne-open-sources/tree/main/2026-shared-lane-queue`