In order for a car traveling at $v\mathrm{ms}^{-1}$ to come to complete rest at a maximal rate of deceleration $a_{\max}$, we require:

$$\frac{0-v}{\Delta t} = -a_{\max} \implies \Delta t = \frac{v}{a_{\max}}$$

The car will take Δt time to stop, given as above. To find the distance the car travels in this time, observe:

$$\ddot{x} = -a_{\max} \implies \dot{x} = -a_{\max}t + v \implies x = \int_{t_0}^{t_1} -a_{\max}t + v\, dt$$

Now we are interested in the distance travelled between $t_0 = 0$ and $t_1 = \Delta t$:

$$\begin{aligned}
\Delta x &= \int_0^{\Delta t} -a_{\max}t + v\, dt \\
&= \left[-\frac{1}{2}a_{\max}t^2 + vt\right]_0^{\Delta t} \\
&= -\frac{1}{2}a_{\max}(\Delta t)^2 + v\Delta t \\
&= -\frac{1}{2}a_{\max}\frac{v^2}{a_{\max}^2} + \frac{v^2}{a_{\max}} \\
&= \frac{v^2}{2a_{\max}}
\end{aligned}$$

Assuming the cars are spaced Δx apart, we can compute the flow past a fixed point on the road:

$$\begin{aligned}
q = \frac{v_0}{\Delta L} &= \frac{v_0}{\Delta x + l_c} \\
&= \frac{v_0}{\frac{v_0^2}{2a_{\max}} + l_c} \\
&= \frac{2v_0 a_{\max}}{v_0^2 + 2l_c a_{\max}}
\end{aligned}$$

Setting $a_{\max} = 5\mathrm{ms}^{-2}$ and $l_c = 5\mathrm{m}$ we can plot q as a function of v_0: