

Traffic Flow

Civil Engineering

Flow, density and speed, locked together.

Flow, density and speed are locked together: flow equals density multiplied by space mean speed.

$$q = k \times v \cdot q \text{ veh/h} \cdot k \text{ veh/km} \cdot v \text{ km/h}$$

k 25 veh/km, v 80

One lane.

q = 2000 veh/h

Density near zero

Empty road.

Flow near zero

At jam density

Nothing moving.

Flow is zero again

THE COMMON MISTAKE

✗ **Reading a high flow as free-flowing**

✓ **The same flow happens twice**

One flow value occurs fast and sparse, and again slow and packed. Flow alone cannot separate free-flow from congestion; you need speed or density.

Educational reference. The fundamental diagram describes steady conditions on a section, not an incident or a queue front.