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Performance-based approach to improving pedestrian connectivity

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Policy

Design outcome

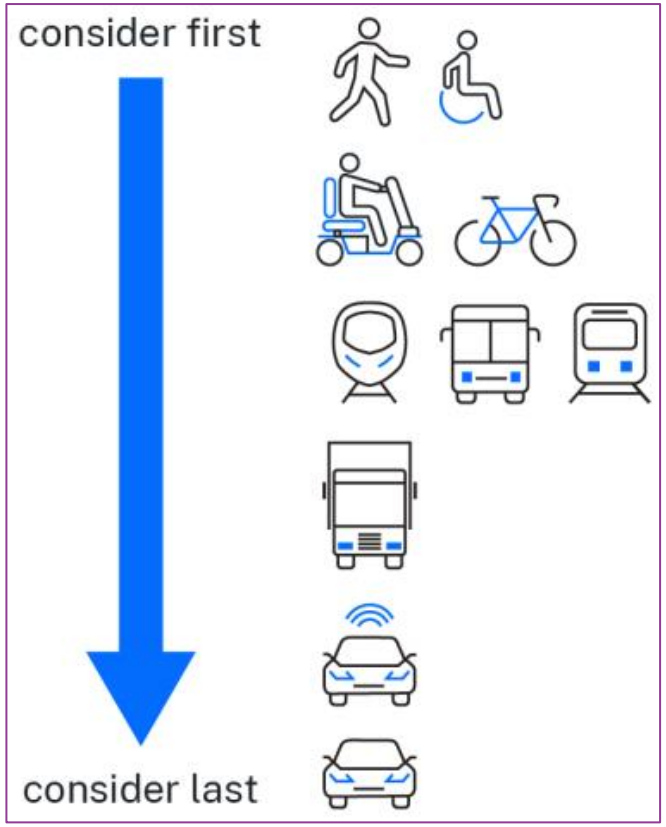
- When allocating road user space based on the network vision and road functions, consider all road users in order of: walking (including equitable access for people of all abilities); cycling (including larger legal micro-mobility devices); public transport; freight and deliveries; and point to point transport ahead of general traffic and on-street parking for private motorised vehicles

Source: TfNSW Road User Space Allocation Policy (2021)

Every transport project funded by Transport for NSW must include provision for walking and cycling within the core scope of the project.

Walking and cycling have unique customer needs and require different infrastructure solutions. Pedestrians and bike riders should be allocated dedicated space wherever possible.

Source: TfNSW Providing for Walking and Cycling in Transport Projects Policy (2021)



Source: NSW Government Network Planning in Precincts Guide (2022)

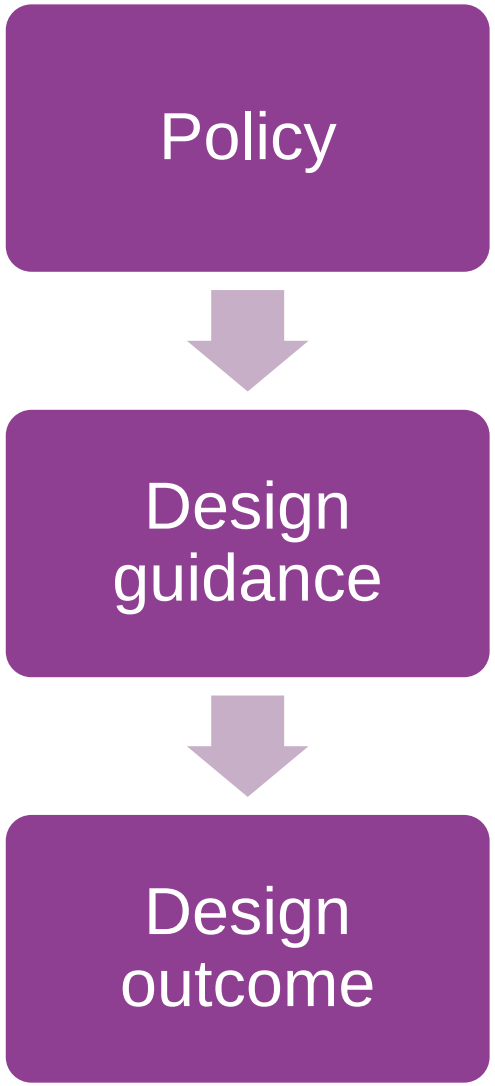
Policy

Design outcome

"Pedestrian" infrastructure that is actually vehicle infrastructure in disguise (i.e. what is supposedly for pedestrians is actually for facilitating vehicle movements)

For example:

- Pedestrian crossing waiting areas
- Barrier fences
- Pedestrian over or under-passes



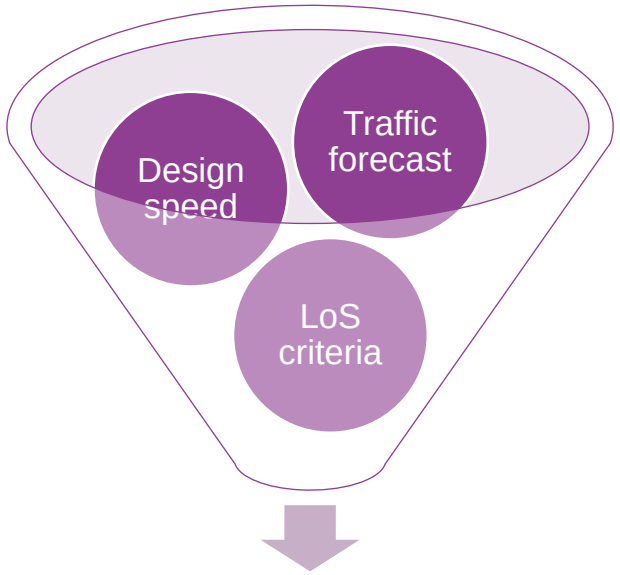
Prescriptive

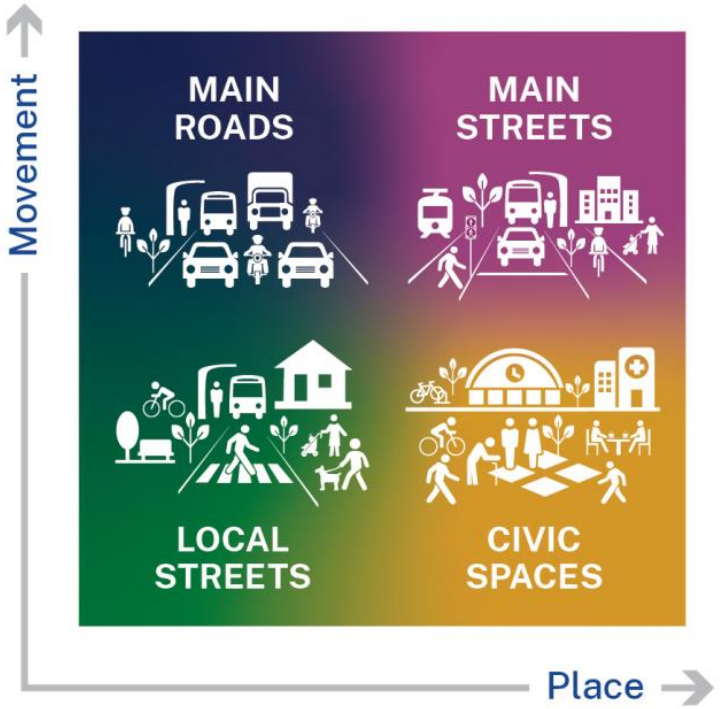
Performance-based

	Vehicles	Pedestrians
Prescriptive	Treated like gospel	No consensus
Performance-based	Drives design outcome (pun intended)	**Undeveloped**

Vehicle Performance Metrics

Level of Service (LoS) – essentially a measure of **vehicle throughput**





Source: TfNSW

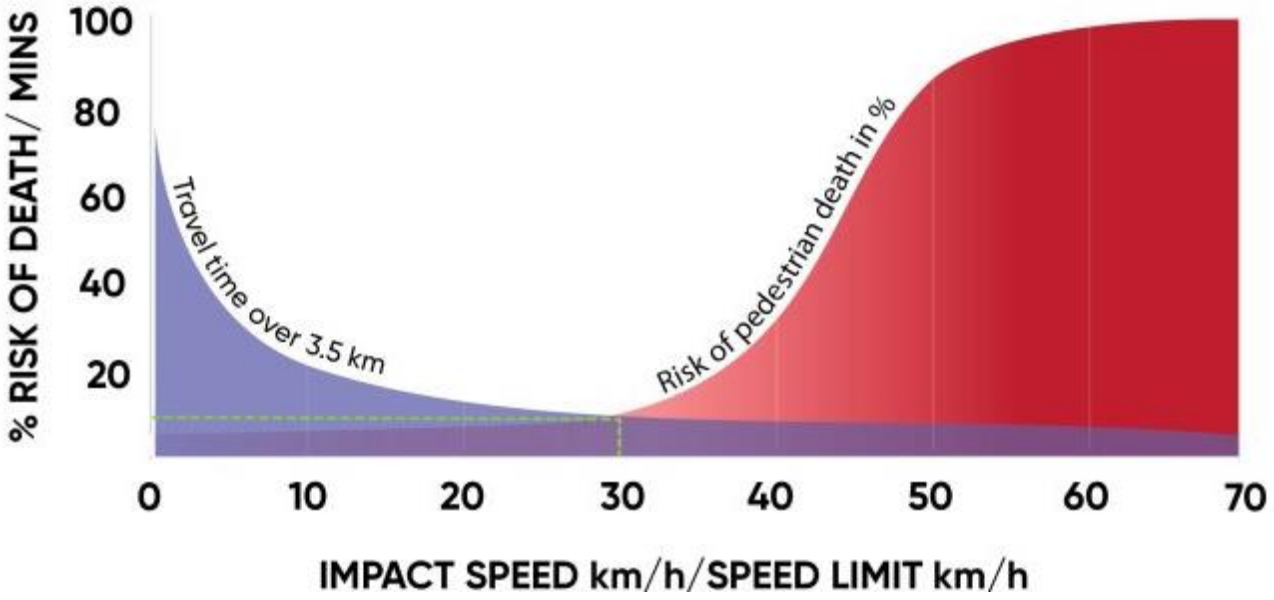
A couple problems with this:

- Traffic forecasts based on historical trends that reflect car-oriented travel behaviour – this suggests a **predict-and-provide** approach when we should be moving towards **vision-and-validate**
- Results in design outcomes that maximise vehicle throughput to the detriment of people and place – appropriate for **movement** corridors but not for **place** corridors

Vehicle Speed

The root of all (street design) evil

Vehicle speed/volume has the single greatest impact on pedestrian experience



Source: 30please.org

How pedestrians feel in a 50+kph environment

Specifying a design speed no greater than 30 kph is the easiest and most effective way to improve pedestrian experience

- Optimal safety and travel time outcome
- Design speed should be self-reinforcing (i.e. streets should be designed to make driving above the speed limit difficult)

Pedestrian Performance Metrics

Currently used metrics do not sufficiently capture the pedestrian experience

- Waiting LoS for crossing waiting area
- Walking LoS for footpath width

Primary aim of pedestrian design should be to make walking **safe, comfortable, and convenient** – not “maximise throughput”!

Place context
Safe, comfortable, and convenient

Movement context
Maximise throughput!

So what metrics do better capture the pedestrian experience?

- **Delay**, including waiting time at crossings
- **Route directness**, including placement of footpaths, crossings, and links to align with desire lines

Pedestrian Performance Metrics – Example

Fruin LoS Criteria for Walkways

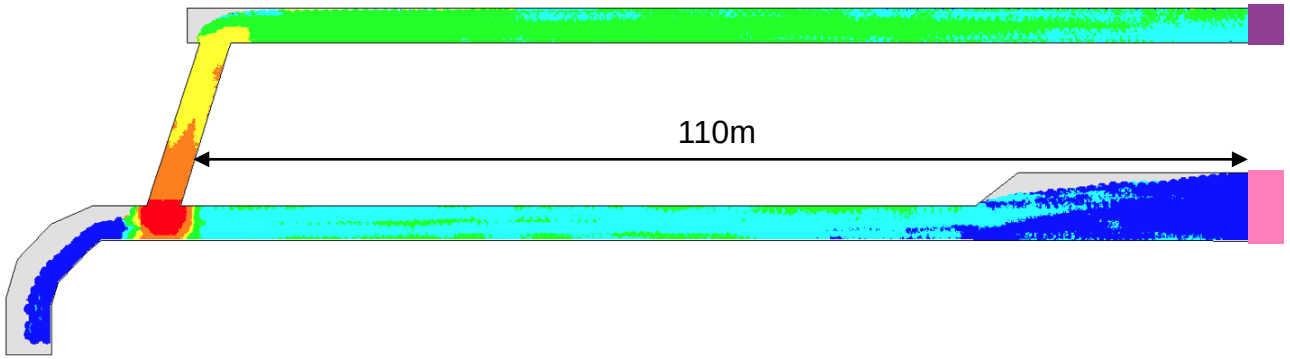
	A	B	C	D	E	F	
Density	0	0.31	0.43	0.72	1.08	2.15	pax/m^2
Space	∞	3.25	2.32	1.39	0.93	0.46	m^2/pax

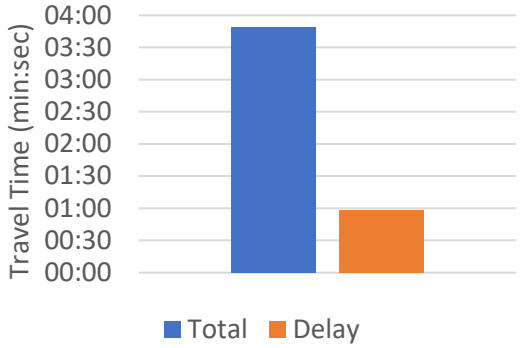
Origin

Destination

‘Base Case’

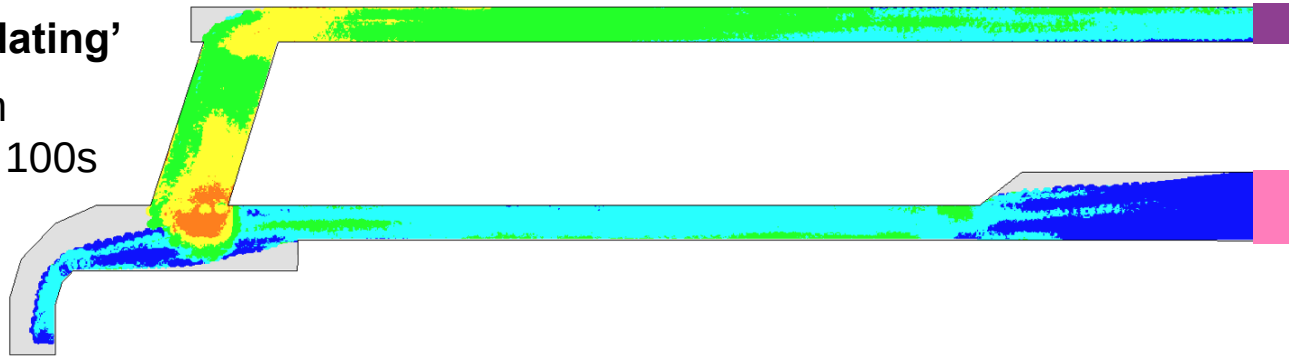
- Signalised crossing
- 3m wide crossing
- 120s cycle time

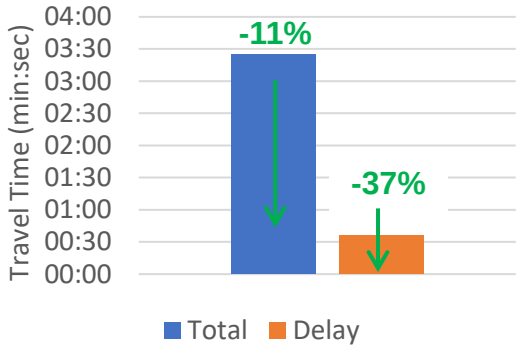




‘Pedestrian Accommodating’

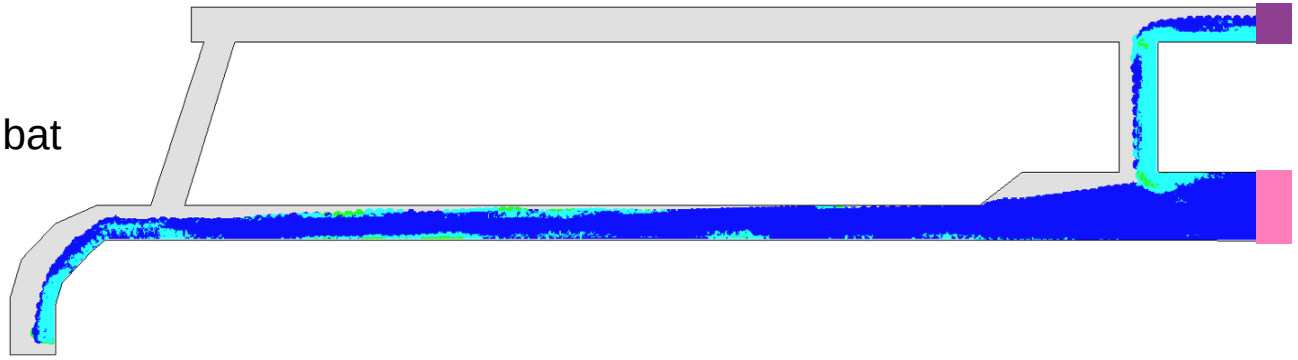
- Widen crossing to 8m
- Reduce cycle time to 100s
- Widen footpath

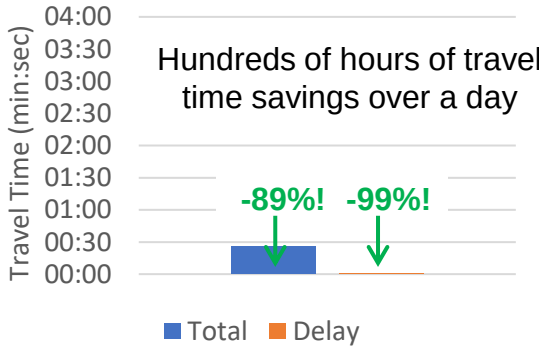




‘Pedestrian Priority’

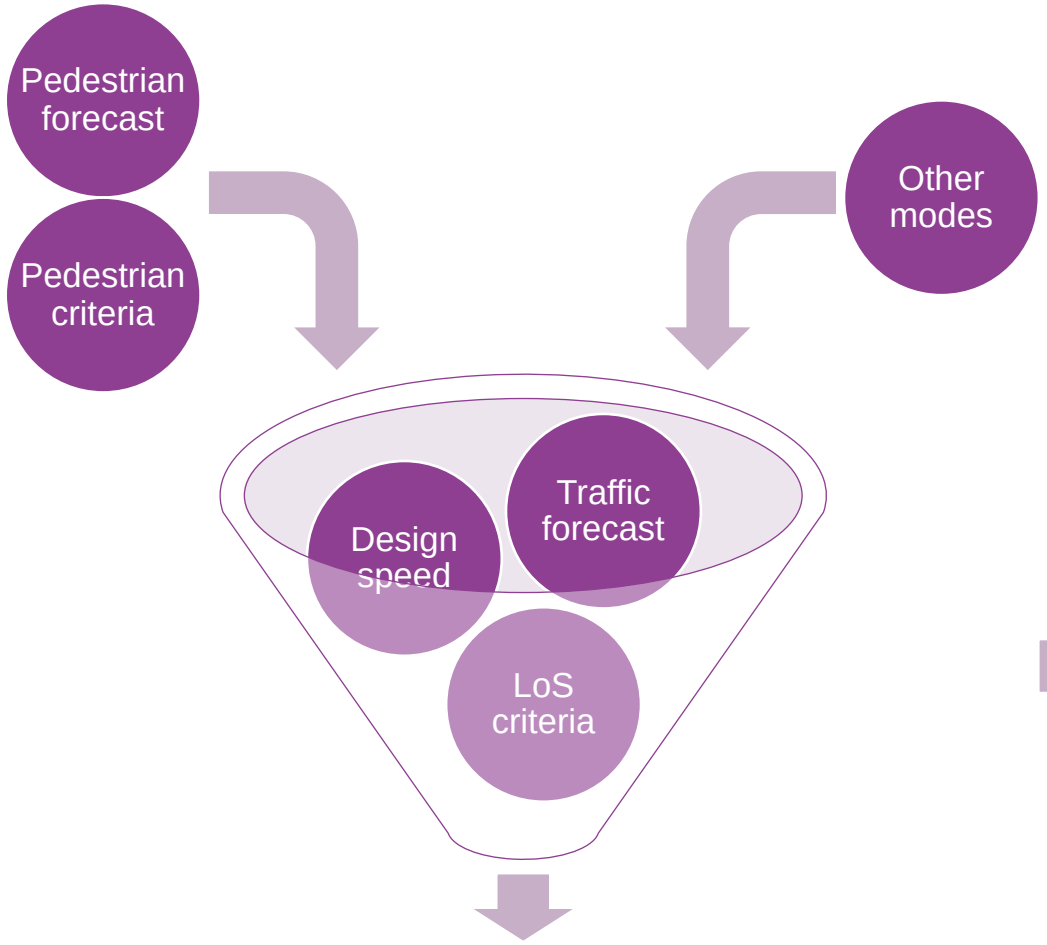
- Mid-block zebra/wombat crossing





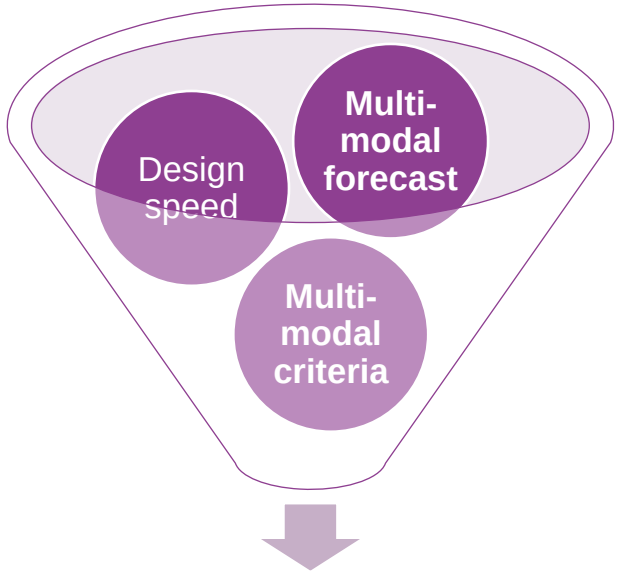
Pedestrian Performance Metrics – Why?

“What gets measured gets managed”

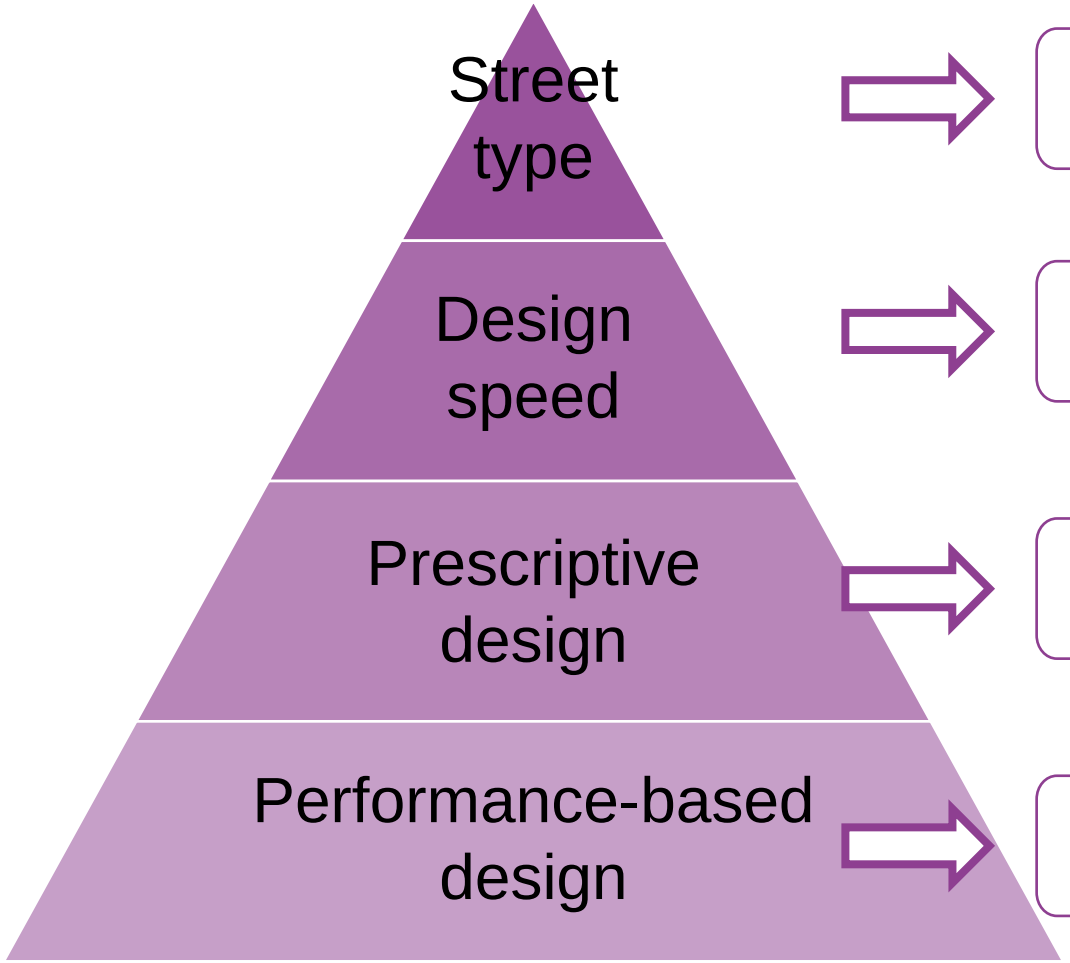


Whenever traffic performance is considered in street design, it should be required to consider performance of walking and other modes as well

Multi-modal performance assessment



Pedestrian Performance Metrics – Implementation



Define primarily Movement or Place function → Apply the Movement & Place framework!

Set the appropriate design speed → Ideally <=30kph for a Place corridor!

Space allocation for footpath, carriageway etc → Must reflect the design speed! (e.g. max instead of min traffic lane widths for Place corridors)

If there are conflicts or space constraints…

Multi-modal performance assessment → Consider the performance impact on walking and other modes, not just motor vehicles

Design outcome: One that reflects the desired modal hierarchy and Movement & Place function!

Key Takeaways

1. Set a design speed that reflects the desired Movement & Place function – vehicle speeds no greater than 30kph have a massive benefit to pedestrian experience!

2. Consider performance metrics that actually reflect pedestrian connectivity (**delay** and **route directness**) – remember, “what gets measured gets managed”

3. State and local governments can take the lead on **multi-modal** performance assessment – e.g. by requiring performance impact of walking and other modes be considered whenever traffic performance is considered

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Thank you

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