



MANAGING SPEED

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The Speed Management Manual:

For practitioners, road designers/engineers, police, policy-makers, decision-makers, and legislator/politicians, at all levels of government.

- Explains and provides **the evidence on what works**
- Provides the **Psychology behind** why some actions works and others do not
- Provides the **evidence for the real economic benefits** of stronger management of speed
- Encourages CAREC road authorities to **devote more resources** to Speed Management
- **Shows how to address common areas of mistaken resistance** to stronger speed management



Module I. Introduction to Road Safety in CAREC Countries and the Role of Speed



First step: Speed is fundamental to road safety

So, for now, just three facts from the manual:

- 1. Speed is a major contributor to both the occurrence of crashes and to severity.**
- 2. Each 1% reduction in speed will deliver a 4% reduction in deaths.**
- 3. Lower speeds generally IMPROVE the economy. Speeding-related crashes are on average costing CAREC countries over 2.3% of GDP each year. This is an avoidable economic drain.**
- 4. In CAREC countries, a 10 km/h reduction in average speeds in each of the most common speed limits would deliver a reduction in deaths by approximately 53%. No other direct change can achieve such an impressive saving of lives (and injuries).**



Speed has the same effects everywhere: BUT More extreme consequences in CAREC with higher risk roadsides & more vulnerable road users (pedestrians, motorcycles, bicycles)
[Examples photos - 4 CAREC countries]



Safe system is the key to success in HICs and LMICs

Unsafe System



Safe System



Problem of crashes



Problem of injury

System user



System designer

Module II. Road Design and Engineering



Safe system evolution

Examples from CAREC

Unsafe System



Safe System



Problem of crashes



Problem of injury

System user



System designer

Safe system evolution

Examples from CAREC

Unsafe System



Safe System



Problem of crashes



Problem of injury

System user



System designer

What matters: Road classification or road usage?

Actual road usage and roadside functions matter for road safety:

Examples from CAREC

Mountain highway or village meeting place?



Highway or shopping centre/market?





Good practices exist in CAREC Countries, but are not used enough



Module III. Vehicle Technology



Module IV. Changing Road-user Behaviour



How to achieve Behaviour Change: Psychology

Road Safety is:

- **First – A road System problem**
 - Solved by Safe System
- **Second - Motivation problem**
 - Main behaviours in crash deaths in CAREC (country data)

SPEEDING, DRINK-DRIVING, DISTRACTION (???), FAIL TO GIVE WAY (probably due to speeding or fatigue or), SEATBELT NON-USE, MOTORCYCLE HELMET NON-USE

Example 1: **Drink-driving** - People know it's illegal; its not a skill to avoid driving after drinking.

Drink-driving is a choice- a motivation problem

Example 2: **Speeding** – people (almost always) know the speed limit; its not a skill to drive below 60 km/h in a 60 zone. **Speeding is a choice- a motivation problem**

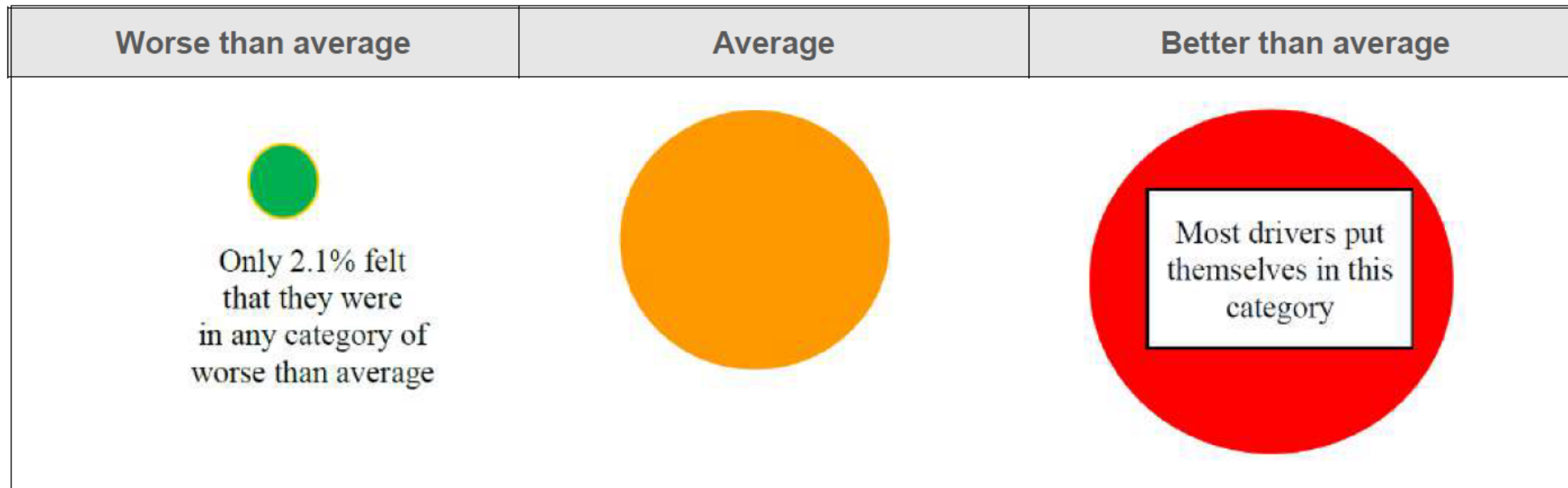
Same for using a phone while driving, same for putting on a helmet or a seatbelt



a. Misjudgment of risk (evidence)

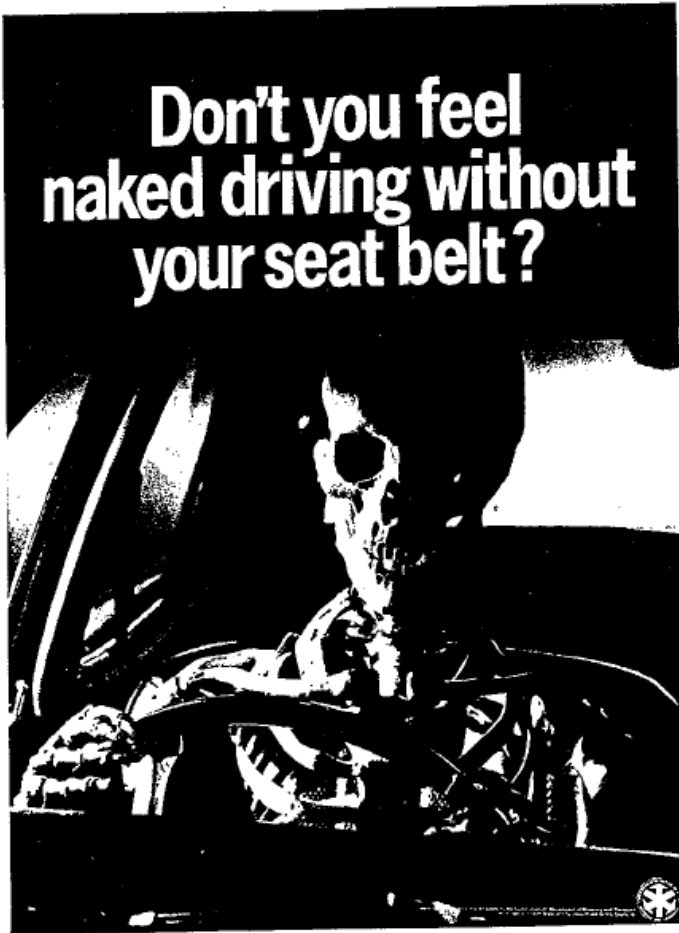
Examples:

1. Personal experience
2. Optimism bias/ driver over-confidence



Source: Adapted from Job (1990)

EVIDENCE: High Fear Education/Campaigns versus Enforcement



“Click-clack front and back

Or a \$50 fine”

Speeding: Hundreds of studies show speed cameras save lives and injuries – including in CAREC (many are noted in the Manual)

**Many high fear campaigns:
Seatbelt wearing went to 25%**

**New law and one enforcement campaign:
Seatbelt wearing went to over 90%, now 99%**

Question: Why not just train better drivers instead of enforcement?

Answer: More car handling skill leads to more crashes

- **Evidence shows:**
 - more skills = more crashes
 - More skills training = more crashes

More skill

more confidence

more risk taking

more crashes



Module V. Reducing Speed through Modal Shift and City Planning



Modal Shift

Road diets

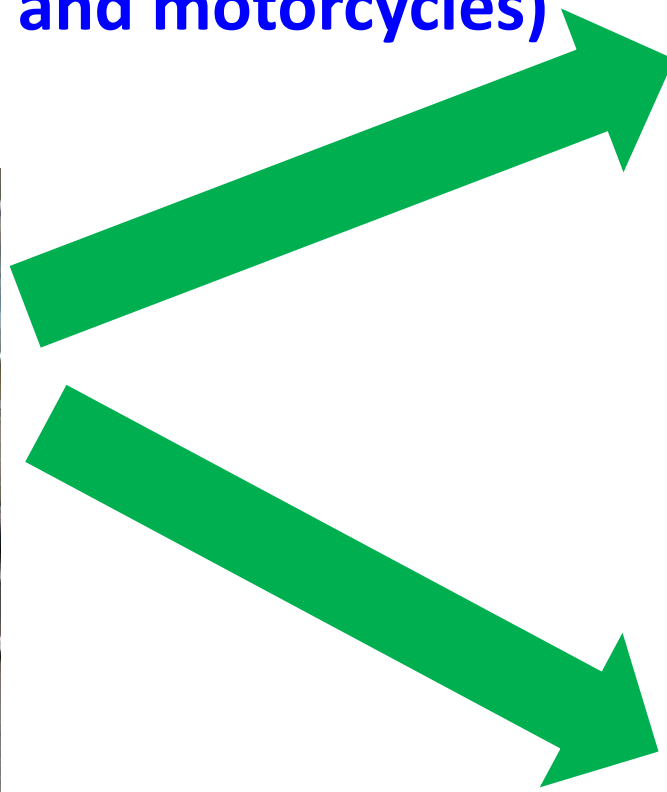
- Building/expanding/improving **effective alternative options to road transport**: metro, rail, water transport such as ferries, air, BRT systems, and safe active transport.
- Ensure alternative transport is highly **cost competitive** through: Shift costs through levies on private vehicle road use, subsidising mass transit.
- Ensure alternative transport systems is **faster** (and comfortable): Take available road space for alternative transport, give priority at intersections, lower road speed limits...



Examples in CAREC

Modal Shift in CAREC

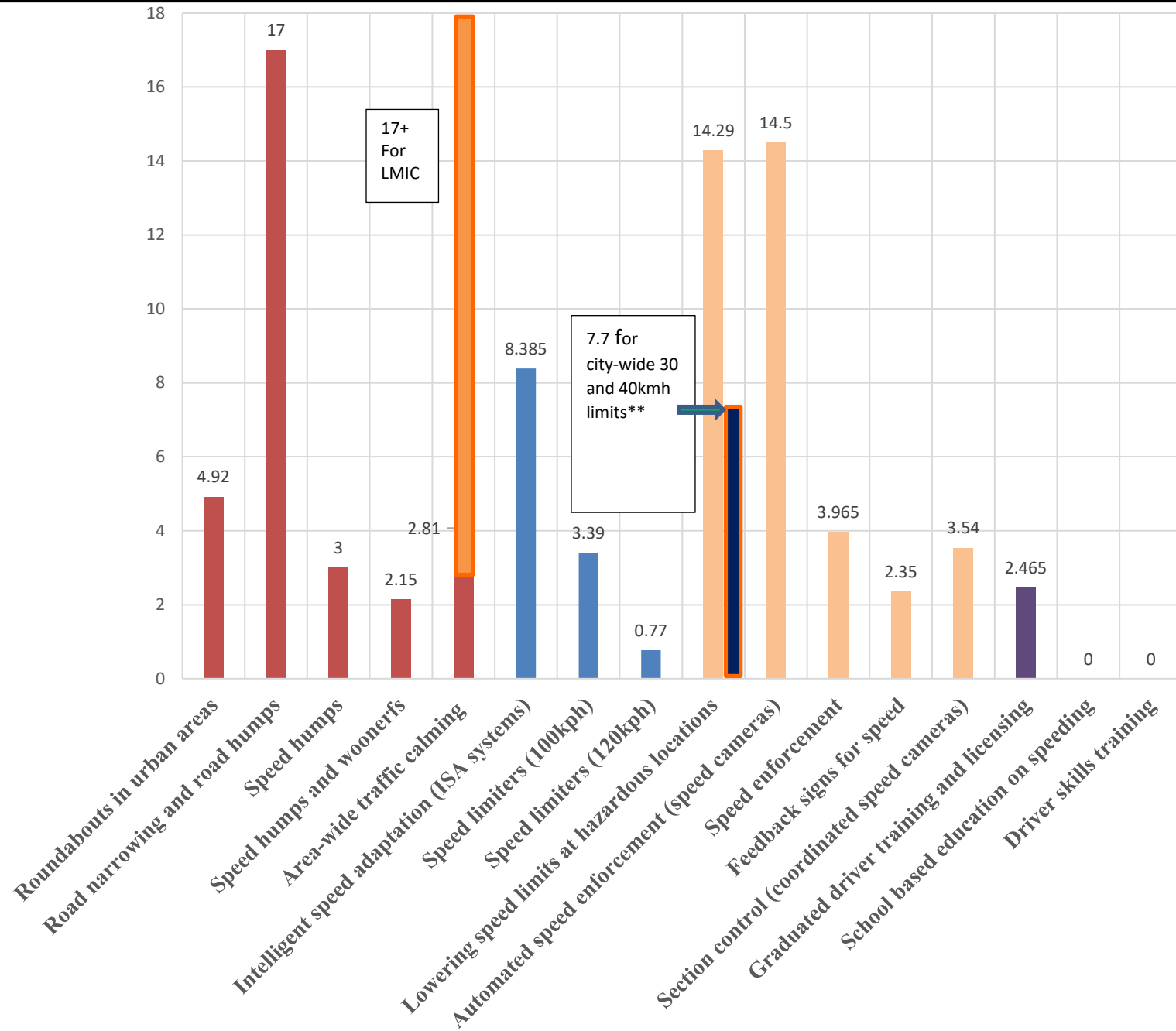
Separate MC or BC lanes- Road diet as well as improved safety for cyclists and motorcycles)



Module VI. Delivering improved Speed Management



Benefit-Cost Ratio



17+
For
LMIC

7.7 for
city-wide 30
and 40kmh
limits**

**Decision
Process 2:
Which are the
best (& best
value)
interventions?**

Module VII. The Evidence for the Role of Speed in Crashes: Dispelling the Myths and Misinformation



Evidence for the Role of Speed in Crashes & its Uses

Purposes

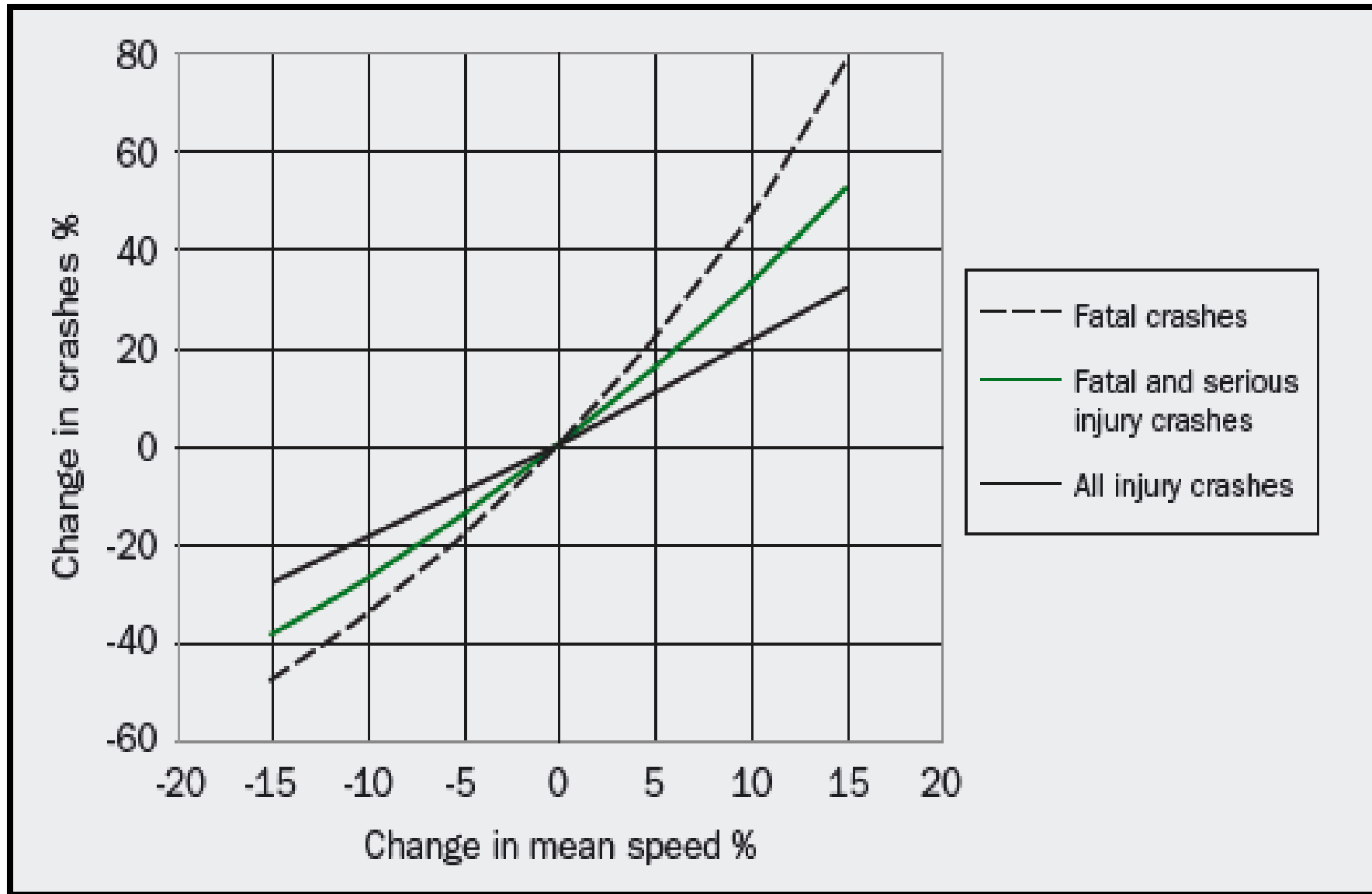
- ✓ To understand why speed management is critical
- ✓ For persuading those we need to support it (noting that local evaluations will help more)
- ✓ To dispel many mistaken beliefs on speed management

Types of Evidence

1. The effects of changes in travel speed on serious crash risk
2. Case-control studies of speed and serious crash risk
3. The effects of impact speed on the chances of surviving the crash
4. The scientific evidence for life and injury saving effects from many interventions which reduce speeds

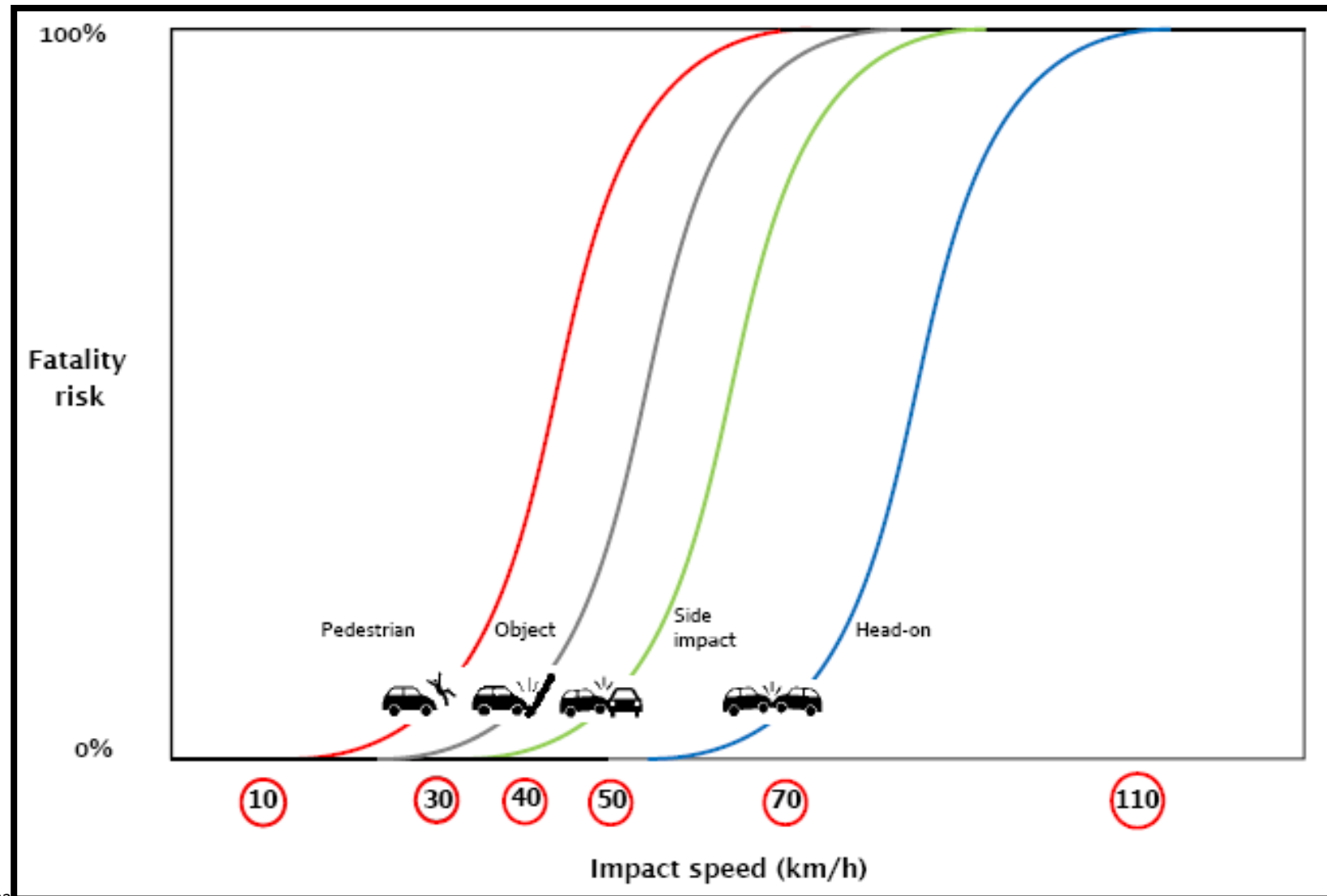


Effect of changes in travel speed (Source: Nilsson, 2004)



Small changes in speed have large impacts on road crash deaths and injuries: Each 1% decrease in speed results in approximately a 4% decrease in deaths and a 3% decrease in serious trauma (death or serious injury)

Risk of death by speed of impact for different crash types (Source: GRSP- and originally Wramborg, 2005)



A. The Contribution of Speed to crashes and their severity

Misjudgment of the importance of differences in speed

Common MISTAKEN belief:

10kmh difference at the start = 10kmh difference at the of
stopping or in a crash

(so....not very important)

EVIDENCE

10kmh difference at the start (100kmh versus 110kmh)

Considering

judgement time

reaction time

braking deceleration

= ? kmh difference at the end

Reality of Physics

Small differences at start = **LARGE** difference at end



Difference caused by 10 km/h at the start = NO Crash to a FATAL crash

MYTHS: WRONG BELIEFS ABOUT SPEED

We have been deliberately misled on the costs and benefits of speed

Myth 1: Higher speed is better for the economy

Myth 2:

Myth 3: Higher speed limits solve congestion

Myth 4:

Myth 5:

Myth 6:

Myth 7:

Myth 8:

Myth 9:

Myth 10: Mostly it is the extreme speeders who have serious crashes

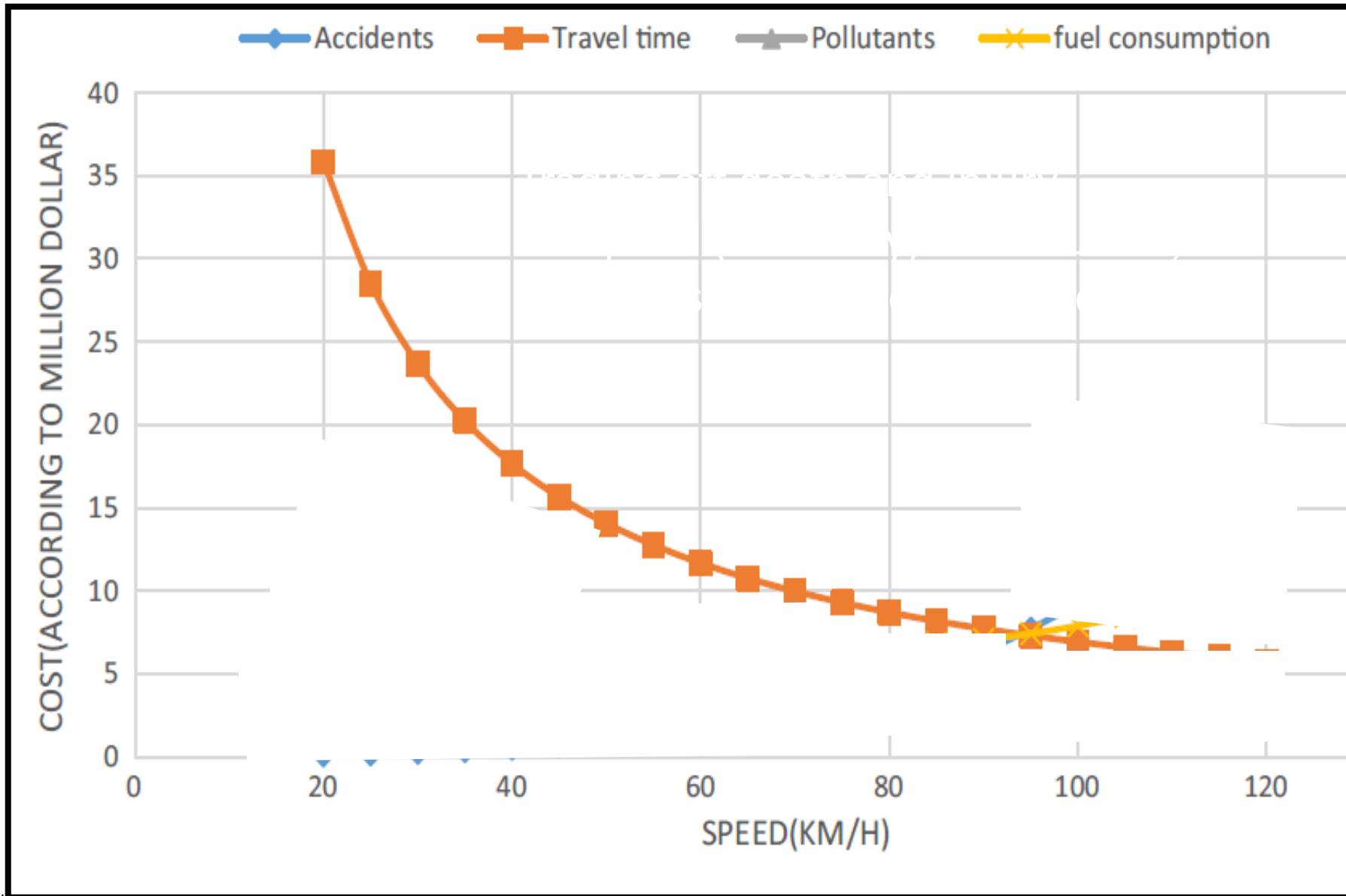
Myth 11:

Myth 12: Lower speed limits will create much slower journeys

Myth 13:

Myth 14:

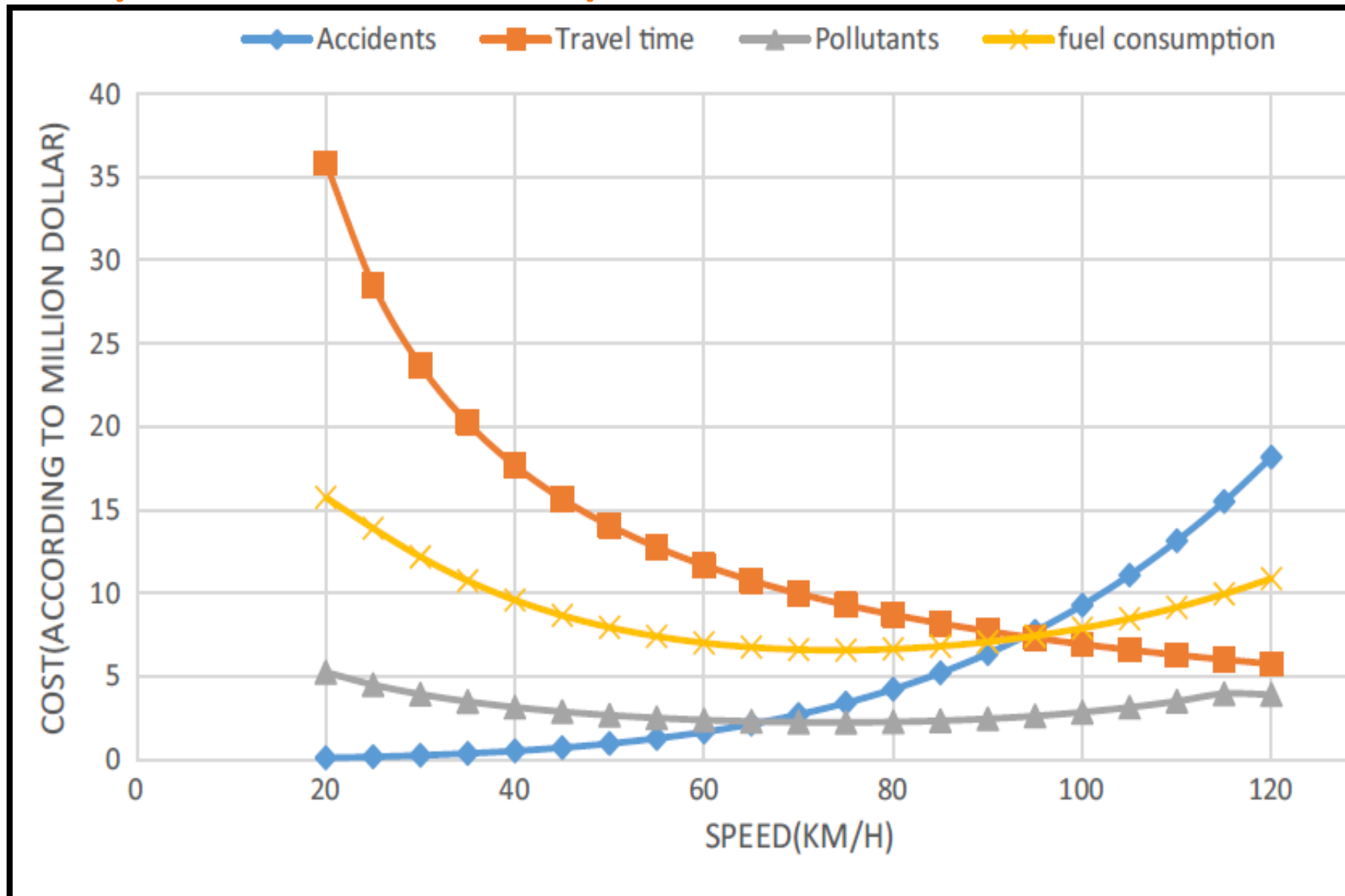
Myth 1: Higher speed is better for the economy (study from Iran, many others show similar results)



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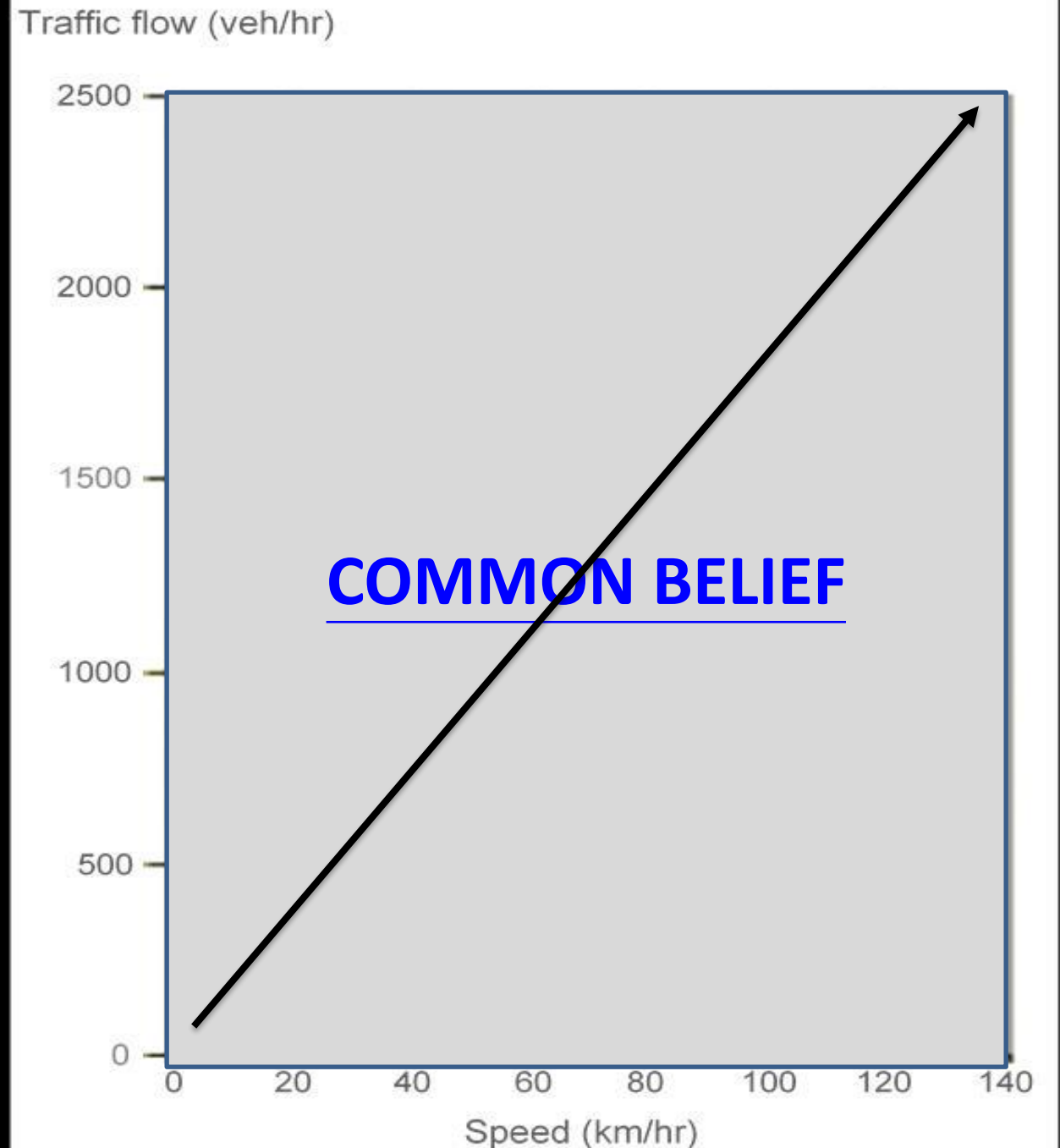
Economically ideal speed for a Motorway is 76 km/h, not the 100 or 110 km/h typical limits.

Ideal speeds are much lower for urban roads.



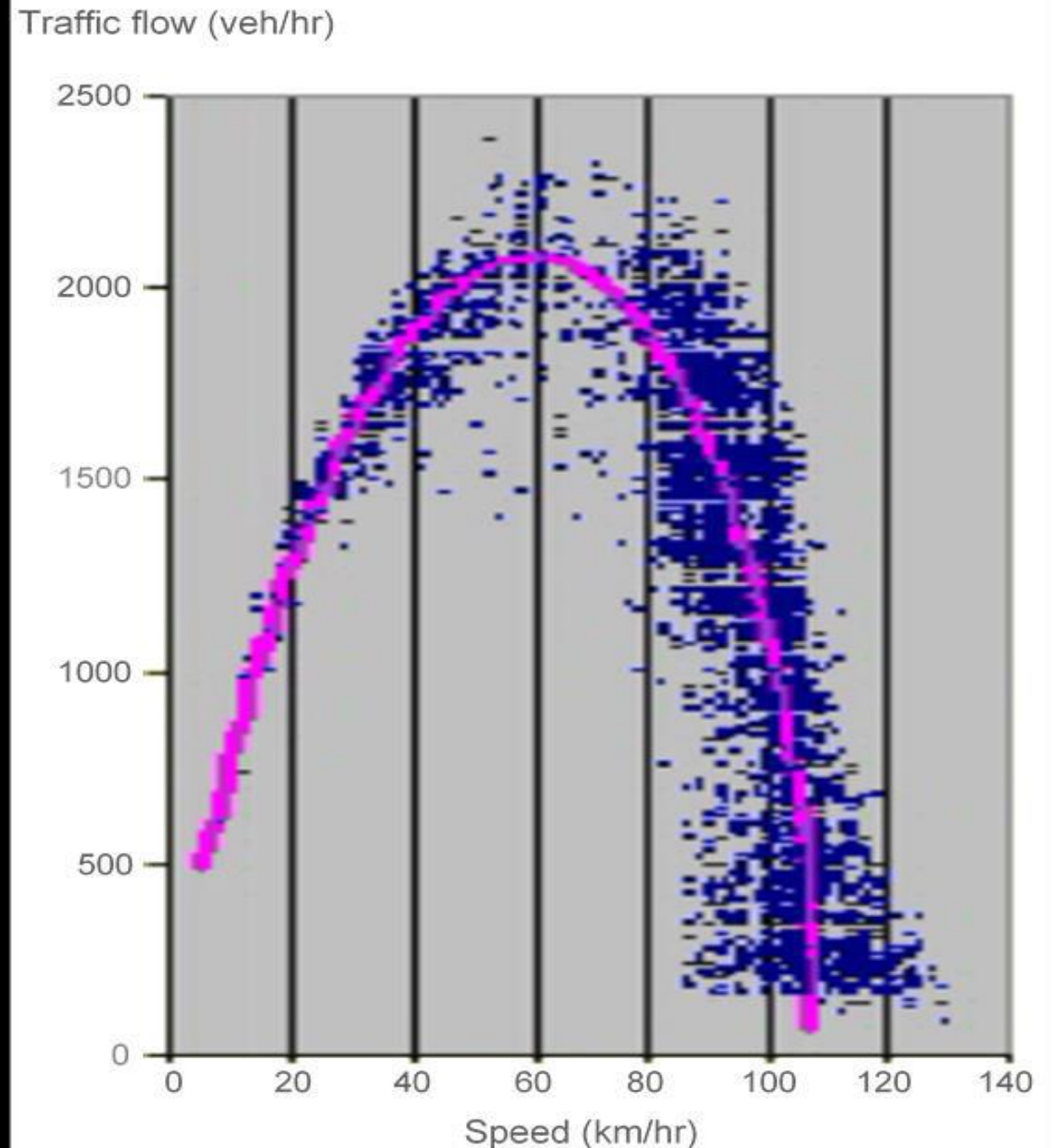
Myth 3: Higher speed limits solve congestion

The relationship between speed and traffic flow: Showing that decreasing speeds does not necessarily increase congestion, and can improve congestion



EVIDENCE

The relationship between speed and traffic flow: Showing that decreasing speeds does not necessarily increase congestion, and can improve congestion (Source: Job & Mbugua, 2020)



Close and summary of the morning and key take-away dot points

The **Speed Management Manual** shows that:

- Lowering speeds is a powerful way to reduce crash deaths and injuries, saving huge economic costs
- Lower travel speeds are generally better for the overall economy
- Better speed management is often resisted due to mistaken beliefs
- We must adopt actions which the evidence shows to be effective

The **Speed Management Manual** provides:

- Many proven highly cost-effective interventions for use in CAREC Countries, across roads, vehicles, and modal shift, not just behaviour change
- Guidance on processes for intervention selection & implementation

Summary

- What does NOT work to save lives and injuries:
 - Education
 - High fear (crash based) messages
 - Driver skills training
- What does work to save lives and injuries:
 - Enforcement to create general deterrence
 - Road engineering (traffic calming)
 - Vehicle technologies that stop the vehicle from speeding

Questions & Discussion are most welcome



Some good Speed Enforcement practices in CAREC

- ✓ Fixed and mobile speed cameras



Proves speed is deliberate

- ✓ Mix of signposted and covert (no signs) speed cameras, or no signs on any cameras
(Better than some HICs)

EXAMPLE OF SPEED PROFILE AROUND A FIXED SPEED CAMERA IN AN 80 KM/H ZONE

