Low-carbon Transport:
RECLAIMING THE STREETS

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PAM Centre, Kuala Lumpur *21 September 2019*

Kuala Lumpur quite different from my ‘kampung Copenhagen’

Copenhagen

Princess Mary cycling with her kids

Kuala Lumpur

Videos of me cycling through the city (link)

SADLY

I could not bicycle to this event today because of this

ON A POSITIVE NOTE

Global climate strikes and marches taking place this week

HOME / MALAYSIA

Malaysians to join Global Climate Strike on Sept 21

Published 1 week ago on 13 September 2019
BY SOO WERN JUN

Including in Malaysia (TODAY)

Reducing Green House Gas emission is part of the SDGs

Aspiration

3D rendering of vibrant car-free street by KL architect

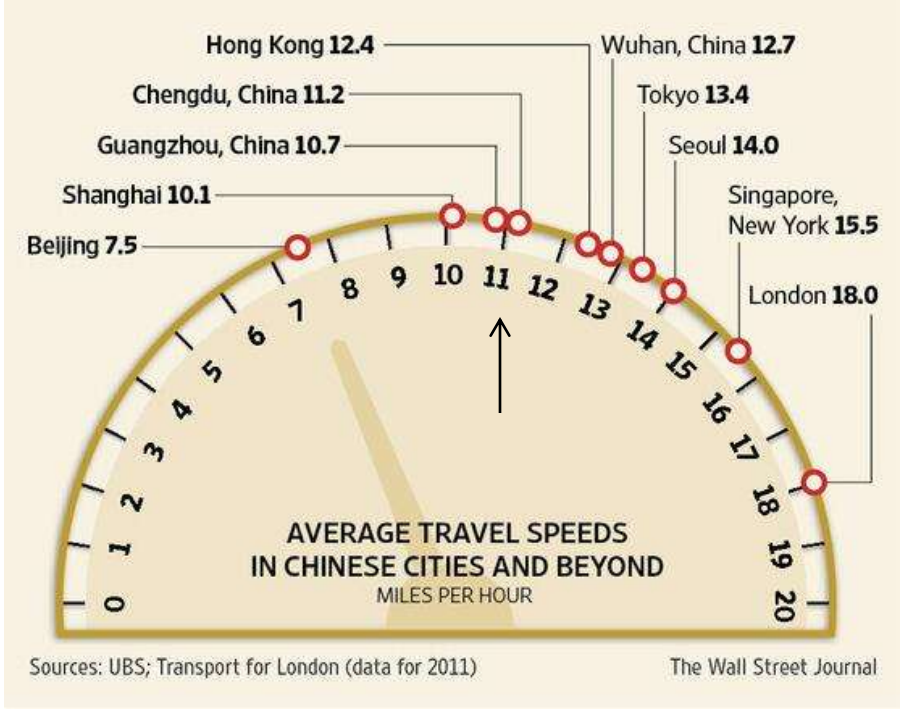
Streets BEFORE cars

Roads were seen as a **public space**, **which all citizens had an equal right to**, even children at play.

“Common law tended to pin responsibility on the person operating the heavier or more dangerous vehicle, so there was a bias in favor of the pedestrian.” Since people on foot ruled the road, collisions weren’t a major issue: Streetcars and horse-drawn carriages yielded right of way to pedestrians and slowed to a human pace.

The fastest traffic was around 15-20 km/hour

Streets AFTER cars



National Conference on Street and Highway Safety conference (1924), with it's biggest players all represented the auto industry, recommended to **prioritized private motor vehicles over all other transit modes.**

A whole generation of kids grew up being trained that the streets were for cars only." The public was educated on the dangers of cars, but mostly focused on changing pedestrian habits or extreme driver behaviors, like drunk driving.

The average traffic is around 15-20 km/hour = bicycle speed

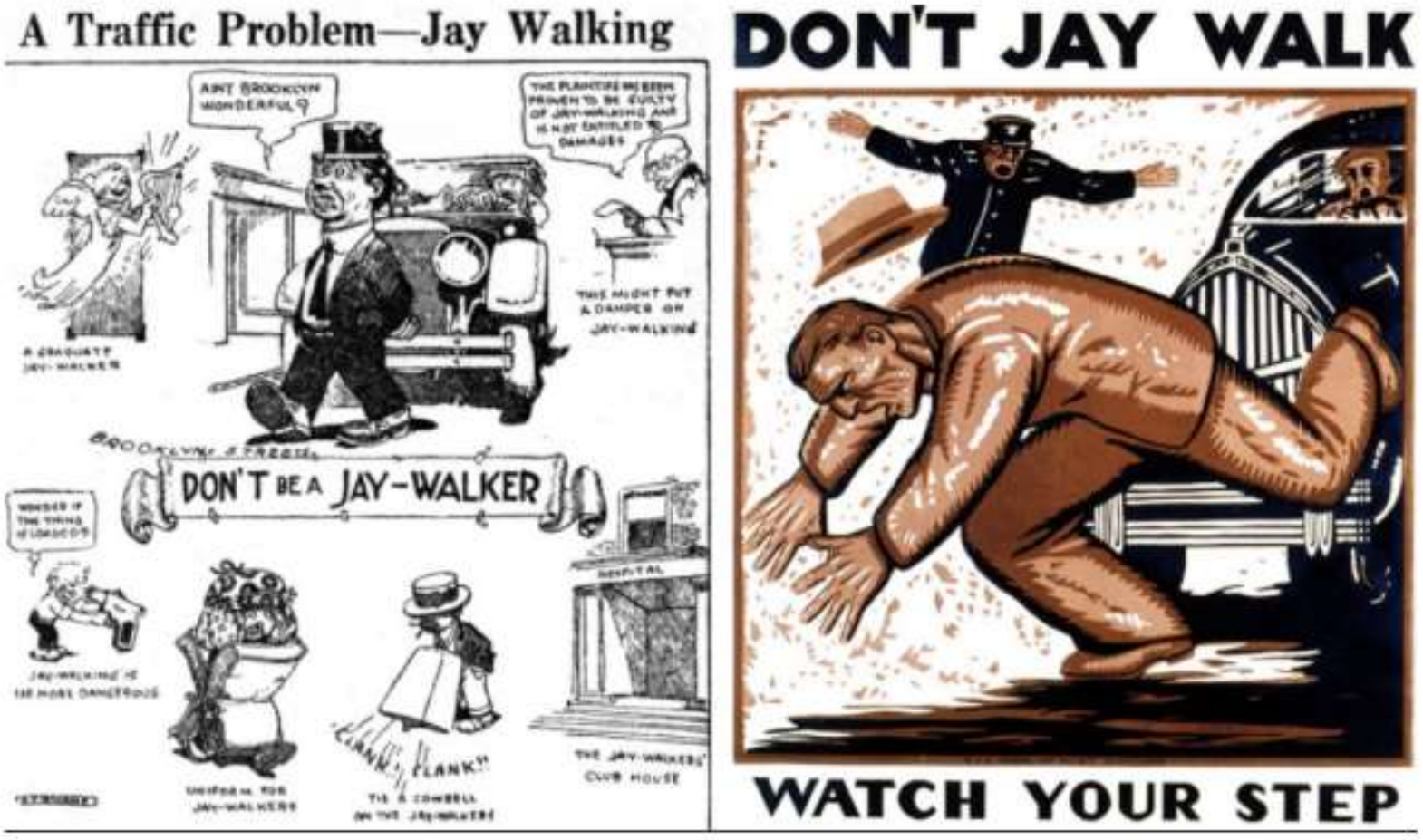
Semantics BEFORE cars became common

This cartoon from 1909 shows the outrage felt by many Americans that wealthy motorists could hurt others without consequence. Via the Library of Congress.

Derogatory names for car drivers:

- Joyrider
- Death driver
- Speed demons
- Vampire driver
- Motor madness
- Motor rabies

Semantics AFTER cars became common

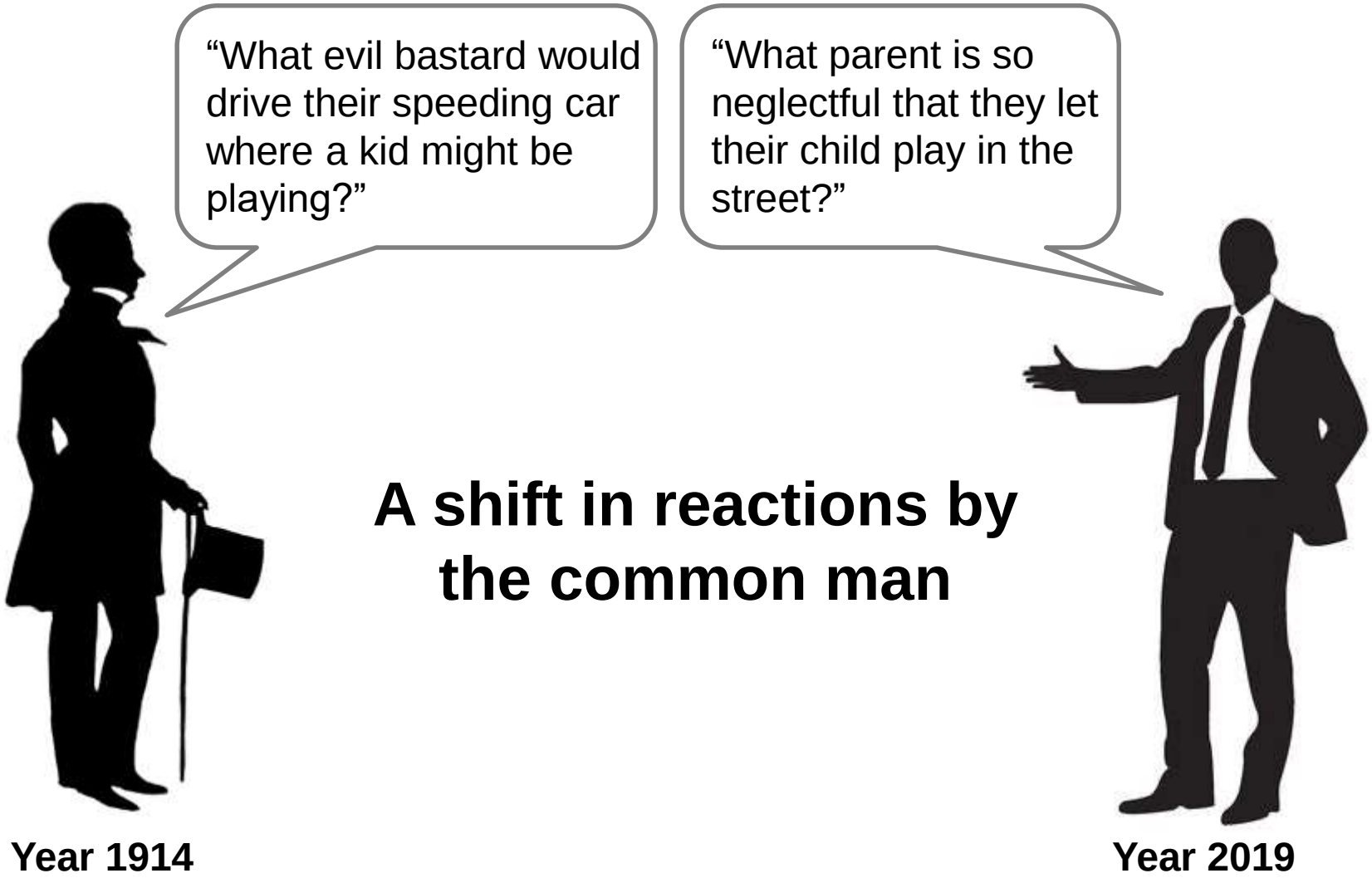


Left, a cartoon from 1923 mocks jaywalking behavior. Via the National Safety Council. Right, a 1937 WPA poster emphasizes jaywalking dangers.

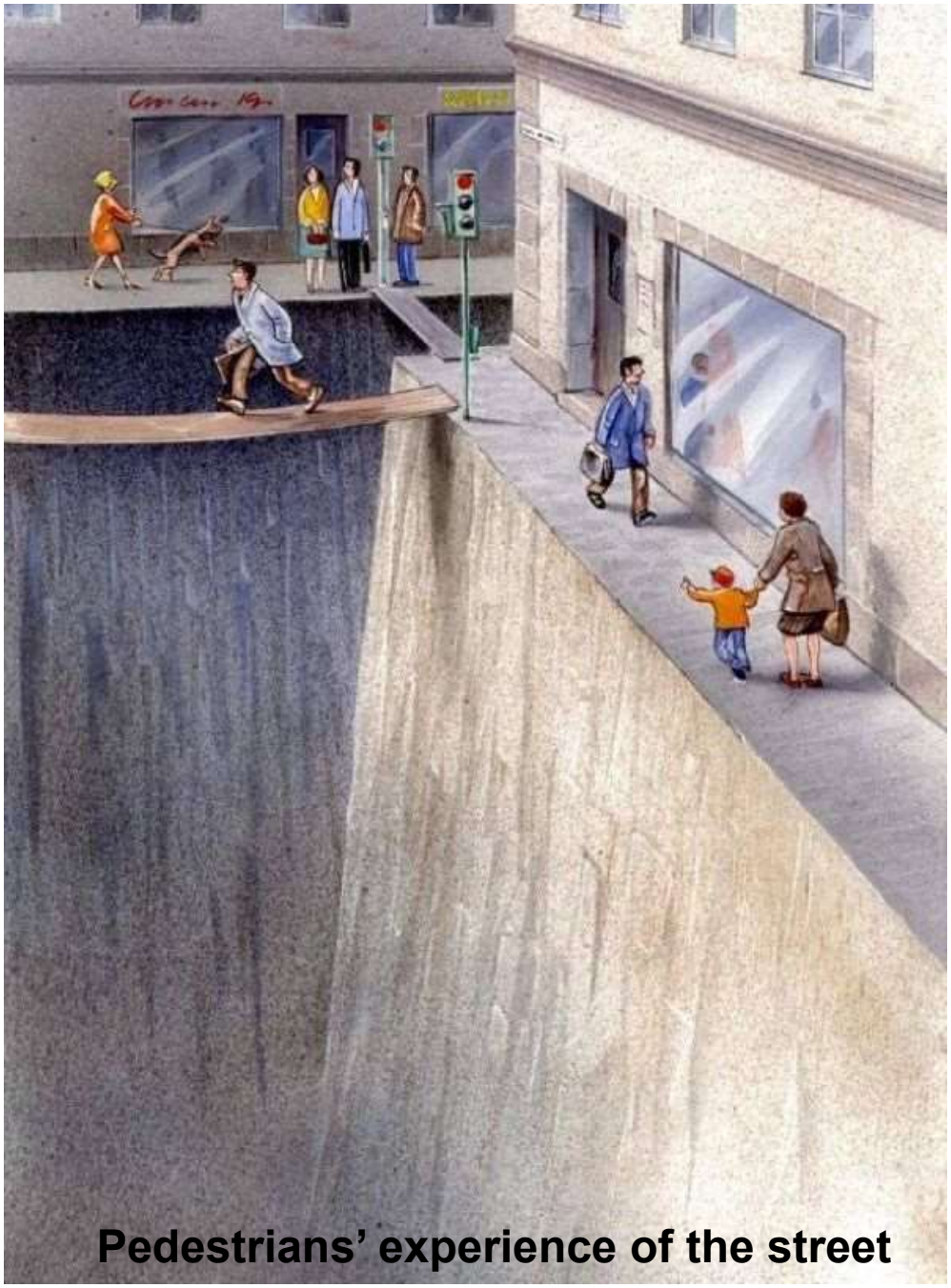
Derogatory name for pedestrian: **Jaywalker**

Originally referred to a clueless person unaccustomed to busy city life (“jay” was slang for a hayseed or country bumpkin)

If a kid is hit by a car in the street



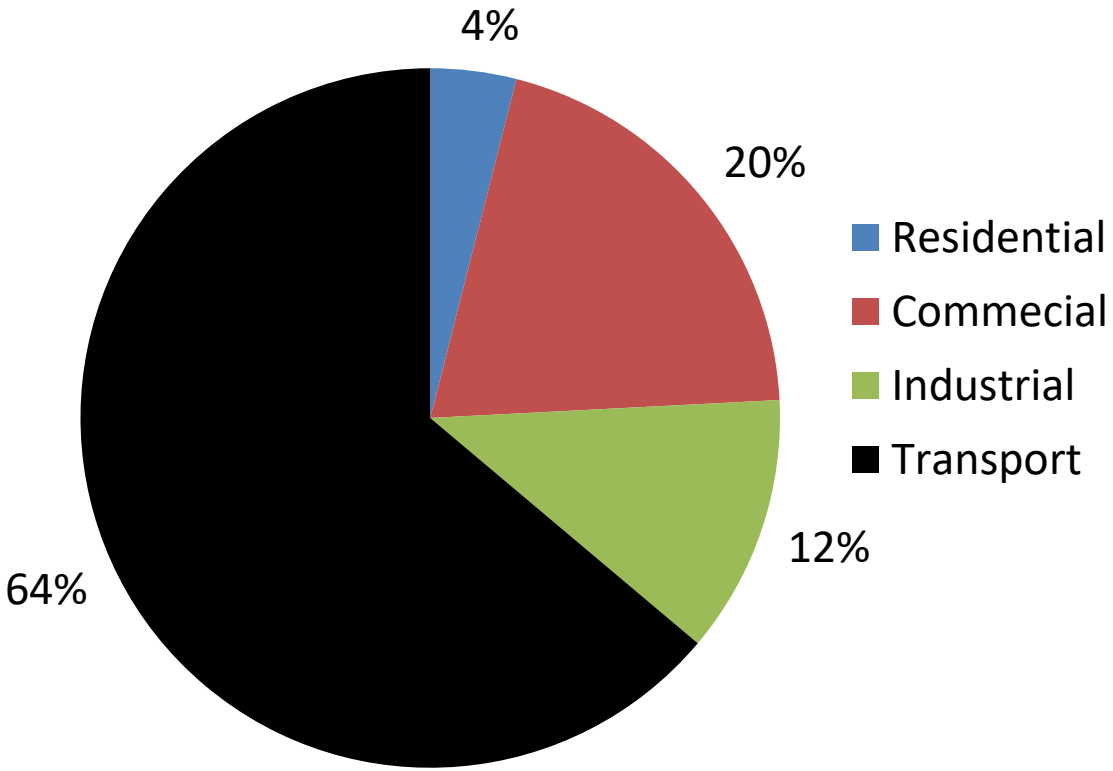
“The real battle is for people’s minds, and this mental model of what a street is for”



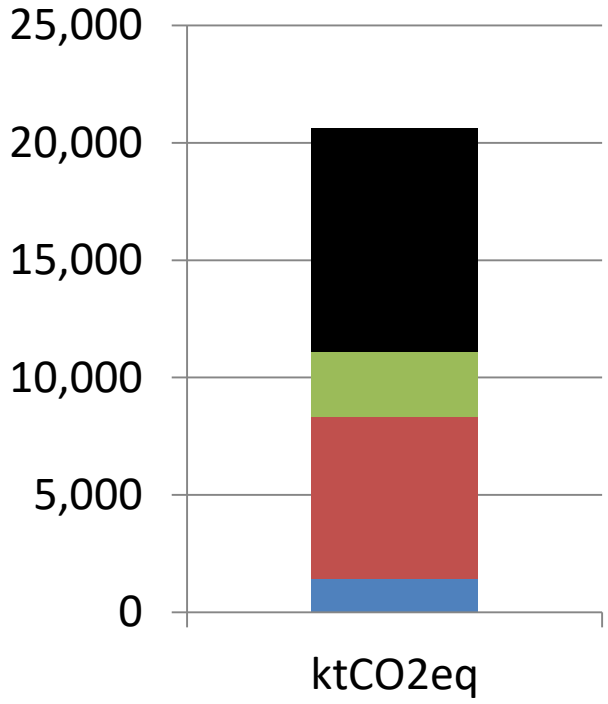
Pedestrians’ experience of the street

High Transport Energy in Kuala Lumpur

Final Energy Demand (year 2010)



Greenhouse Gas Emissions (year 2010)



Total energy: 5,194 ktoe

from Petrol Products (3,627 ktoe), Coal (31 ktoe), Natural Gas (320) and Electricity (1,215 ktoe)

Source: Kuala Lumpur Low Carbon Society Footprint 2030

Energy Efficiency of different modes of transport vs. their speed

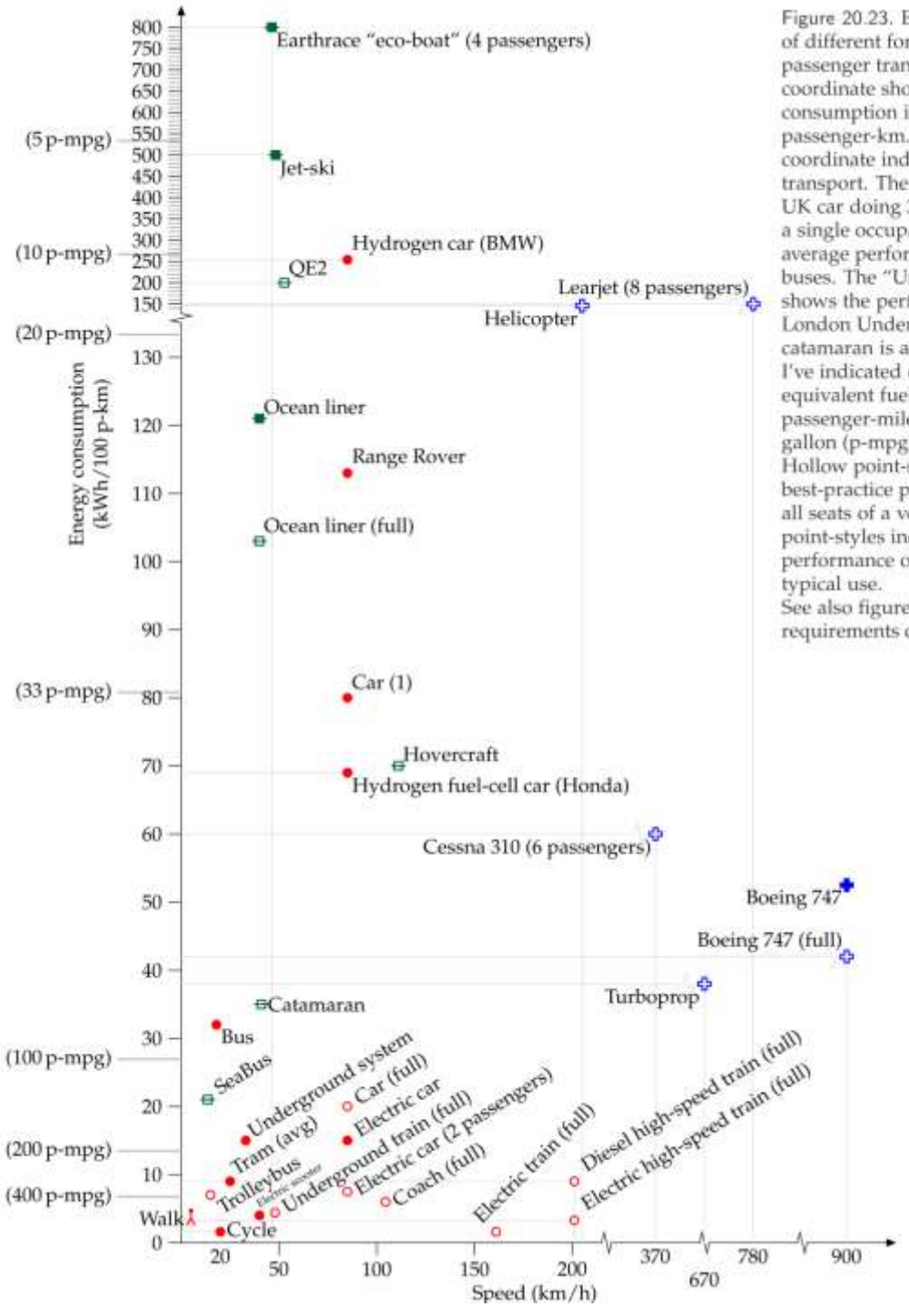
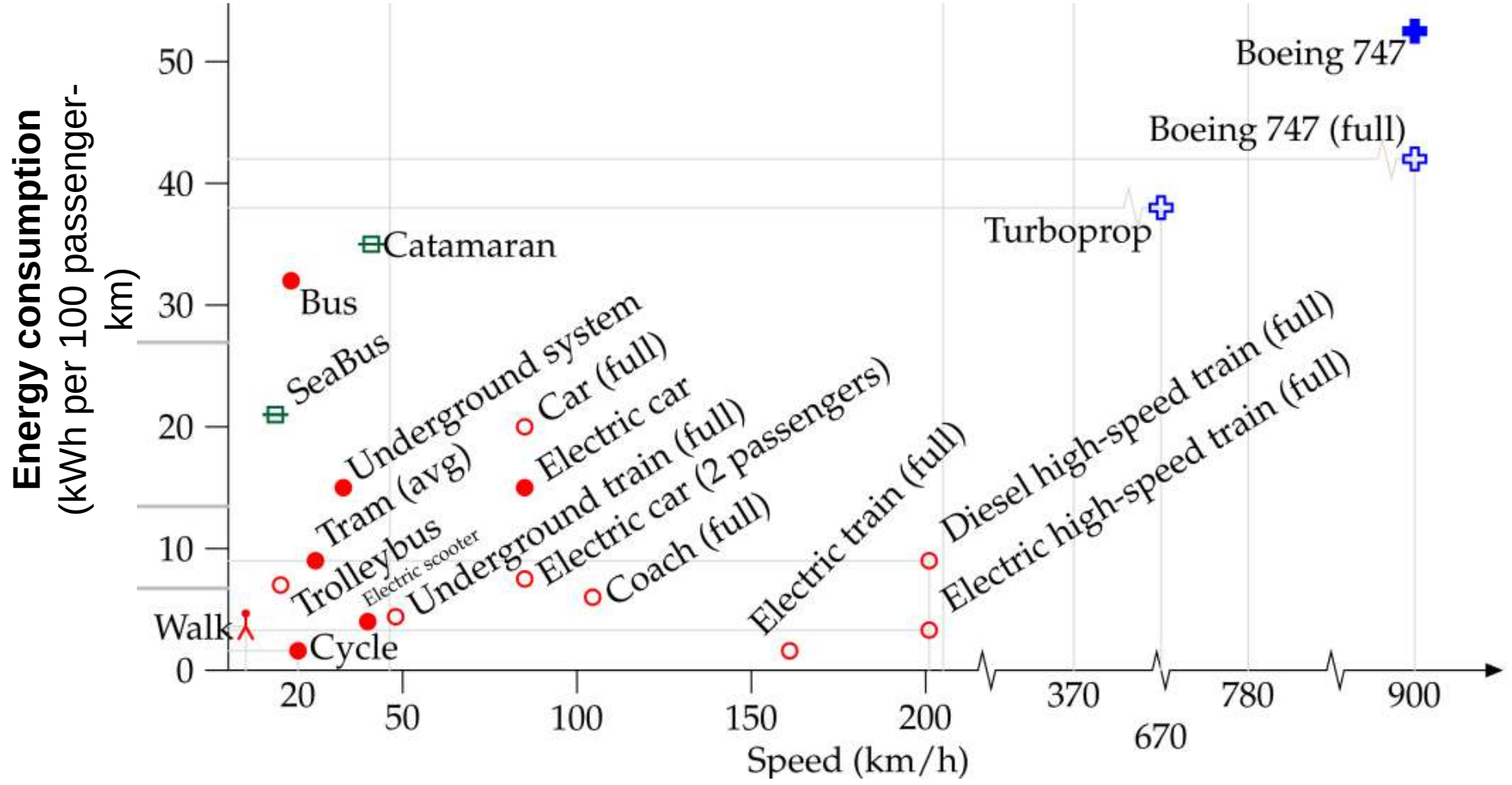


Figure 20.23. Energy requirements of different forms of passenger transport. The vertical coordinate shows the energy consumption in kWh per 100 passenger-km. The horizontal coordinate indicates the speed of the transport. The "Car (1)" is an average UK car doing 33 miles per gallon with a single occupant. The "Bus" is the average performance of all London buses. The "Underground system" shows the performance of the whole London Underground system. The catamaran is a diesel-powered vessel. I've indicated on the left-hand side equivalent fuel efficiencies in passenger-miles per imperial gallon (p-mpg). Hollow point-styles show best-practice performance, assuming all seats of a vehicle are in use. Filled point-styles indicate actual performance of a vehicle in typical use. See also figure 15.8 (energy requirements of freight transport).

Energy Efficiency of different modes of transport vs. their speed (zoom in)



Car vs. Train

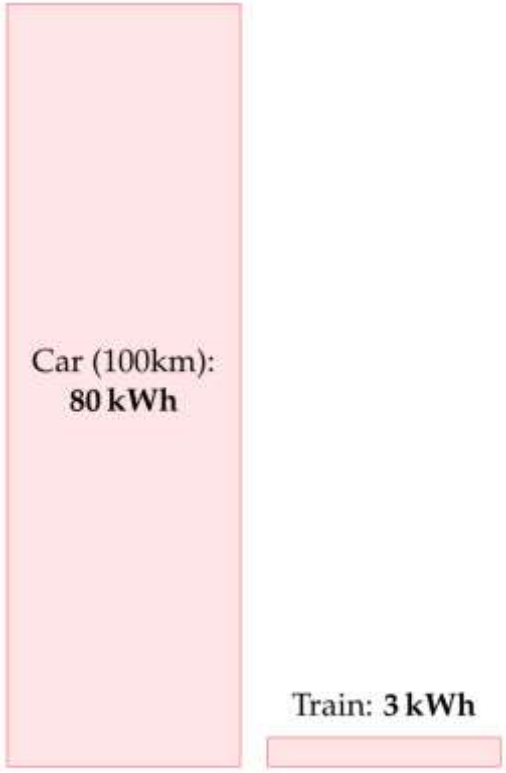


Figure 20.35. 100 km in a single-person car, compared with 100 km on a fully-occupied electric high-speed train.

Electric vehicles are getting very efficient

Figure 20.39. Lightning: 11 kWh per 100 km. Photo from www.lightningcarcompany.co.uk.

Figure 20.40. The Aptera. 6 kWh per 100 km. Photo from www.aptera.com.

Figure 20.41. The Loremo. 6 kWh per 100 km. Photo from evolution.loremo.com.

Figure 20.42. The TREV. 6 kWh per 100 km. Photo from www.unisa.edu.au.

Figure 20.44. Vectrix: 2.75 kWh per 100 km. Photo from www.vectrix.com.

Energy Consumption vs. Speed

CAR

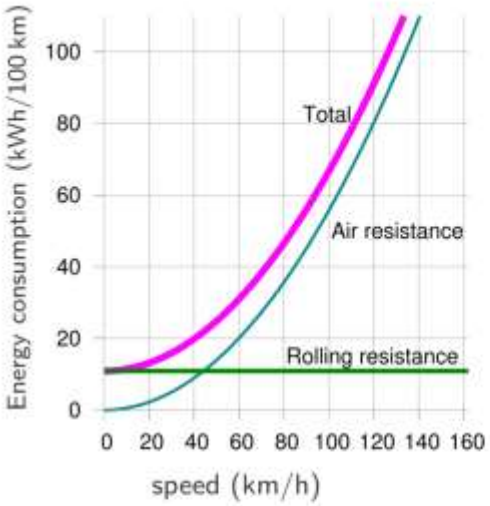


Figure A.9. Simple theory of car fuel consumption (energy per distance) when driving at steady speed. Assumptions: the car's engine uses energy with an efficiency of 0.25, whatever the speed; $c_d A_{car} = 1\,m^2$; $m_{car} = 1000\,kg$; and $C_{rr} = 0.01$.

BICYCLE

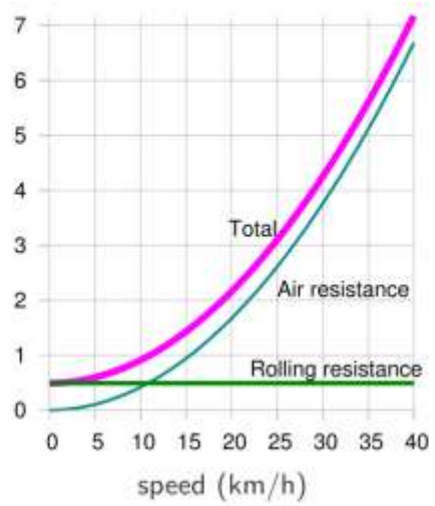


Figure A.10. Simple theory of bike fuel consumption (energy per distance). Vertical axis is energy consumption in kWh per 100 km. Assumptions: the bike's engine (that's you!) uses energy with an efficiency of 0.25,; the drag-area of the cyclist is $0.75\,m^2$; the cyclist+bike's mass is 90 kg; and $C_{rr} = 0.005$.

TRAIN

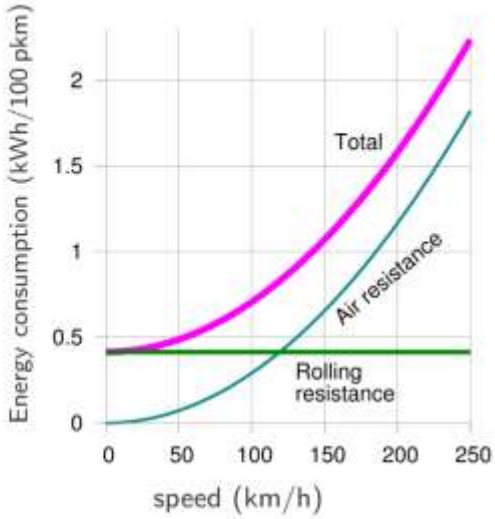
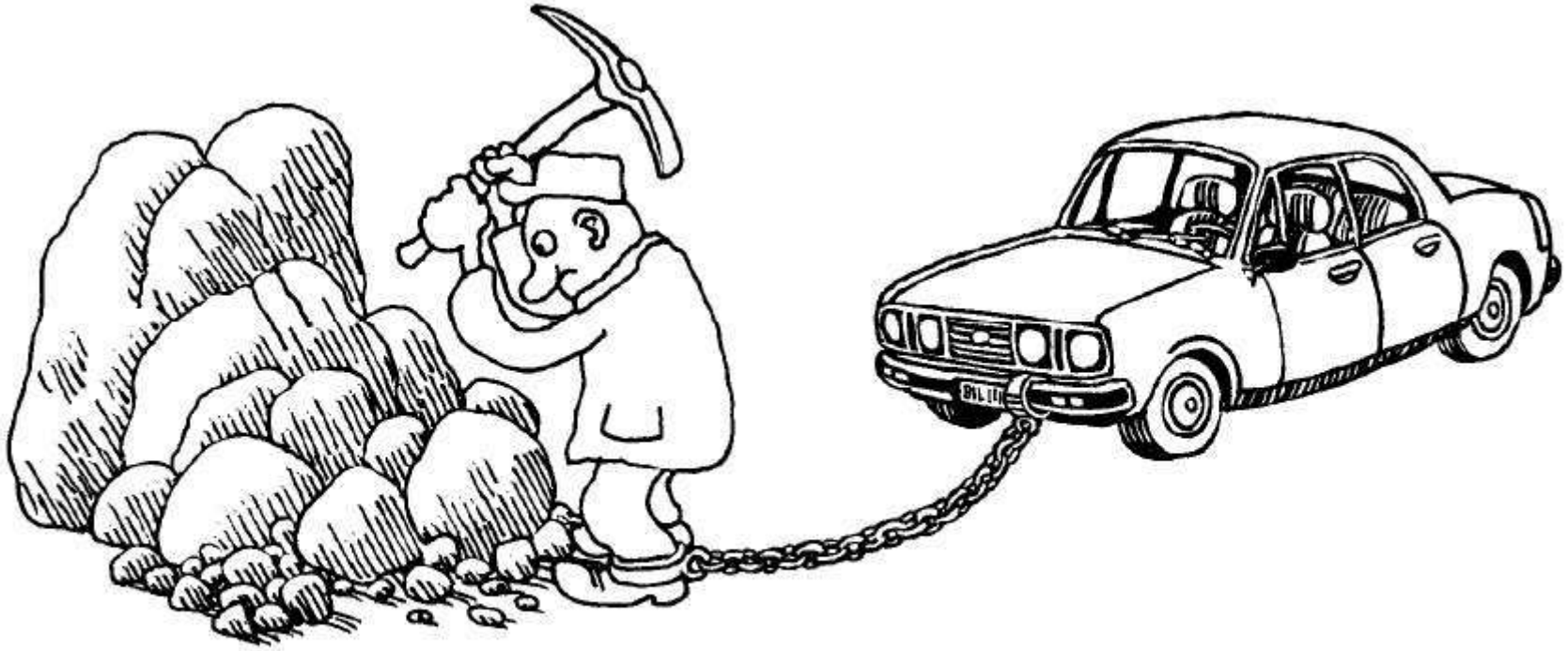


Figure A.11. Simple theory of train energy consumption, *per passenger*, for an eight-carriage train carrying 584 passengers. Vertical axis is energy consumption in kWh per 100 p-km. Assumptions: the train's engine uses energy with an efficiency of 0.90; $c_d A_{train} = 11\,m^2$; $m_{train} = 400\,000\,kg$; and $C_{rr} = 0.002$.

“Freedom” of the Car



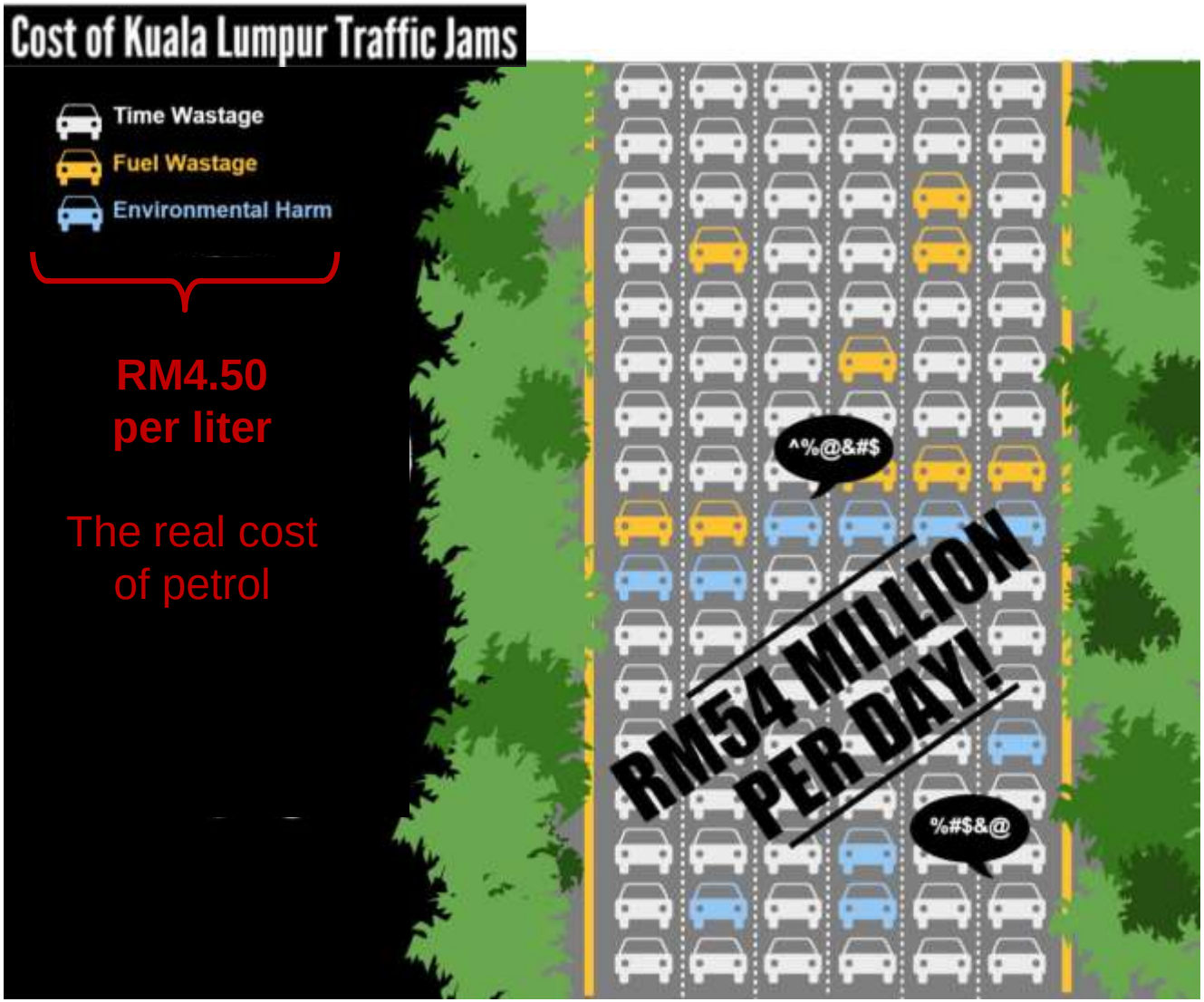
The average Danish car owner works more than one week per month in order to achieve the freedom a car provides.

Danish cartoon (1984) still relevant today

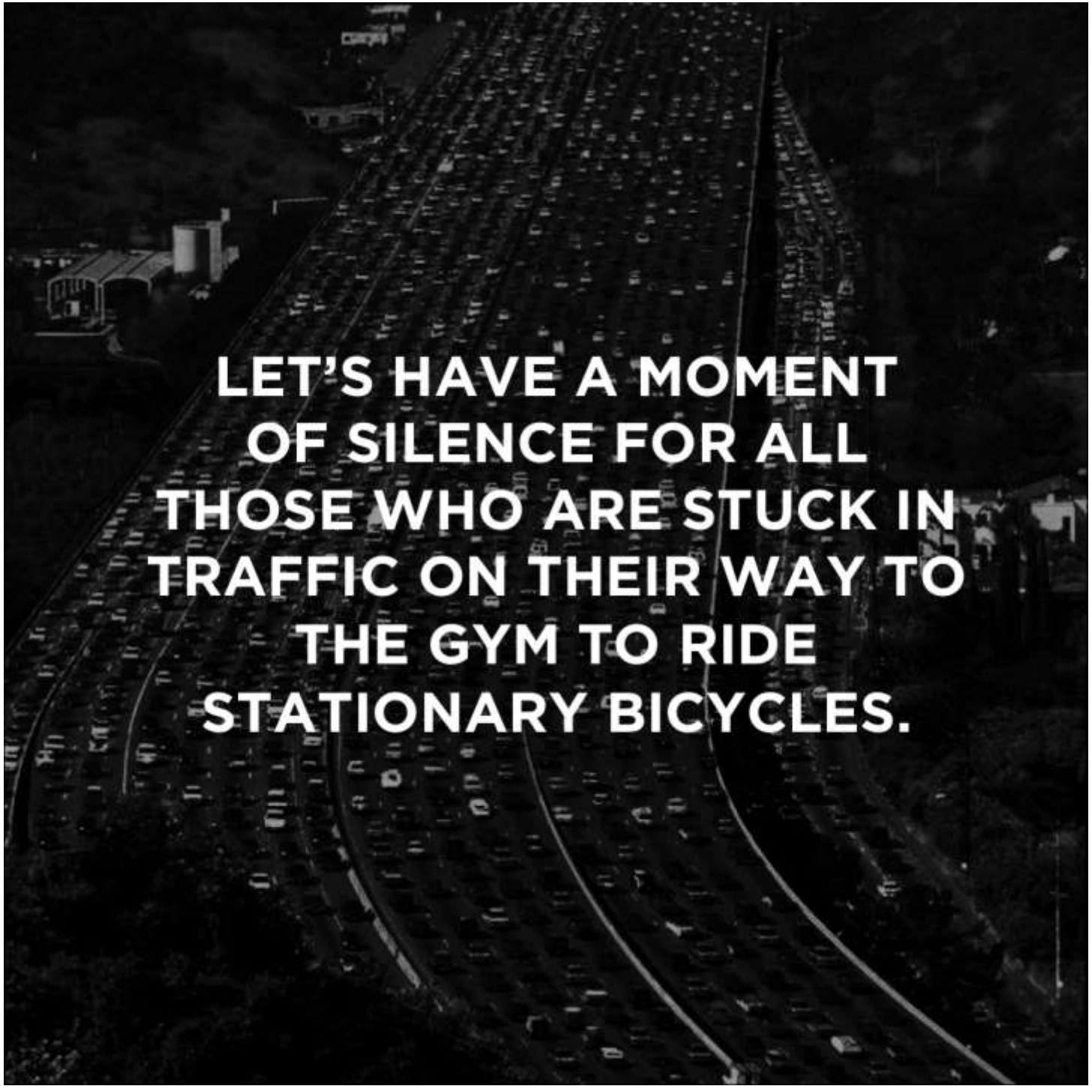
For example, 80% of bicyclists in Manila quote cost savings for choice of transport

1 million hours wasted per day

in the traffic congestions of greater Kuala Lumpur



Infographic by IEN Consultants


LET'S HAVE A MOMENT
OF SILENCE FOR ALL
THOSE WHO ARE STUCK IN
TRAFFIC ON THEIR WAY TO
THE GYM TO RIDE
STATIONARY BICYCLES.

Car vs. Bicycle: Socio-Economic study

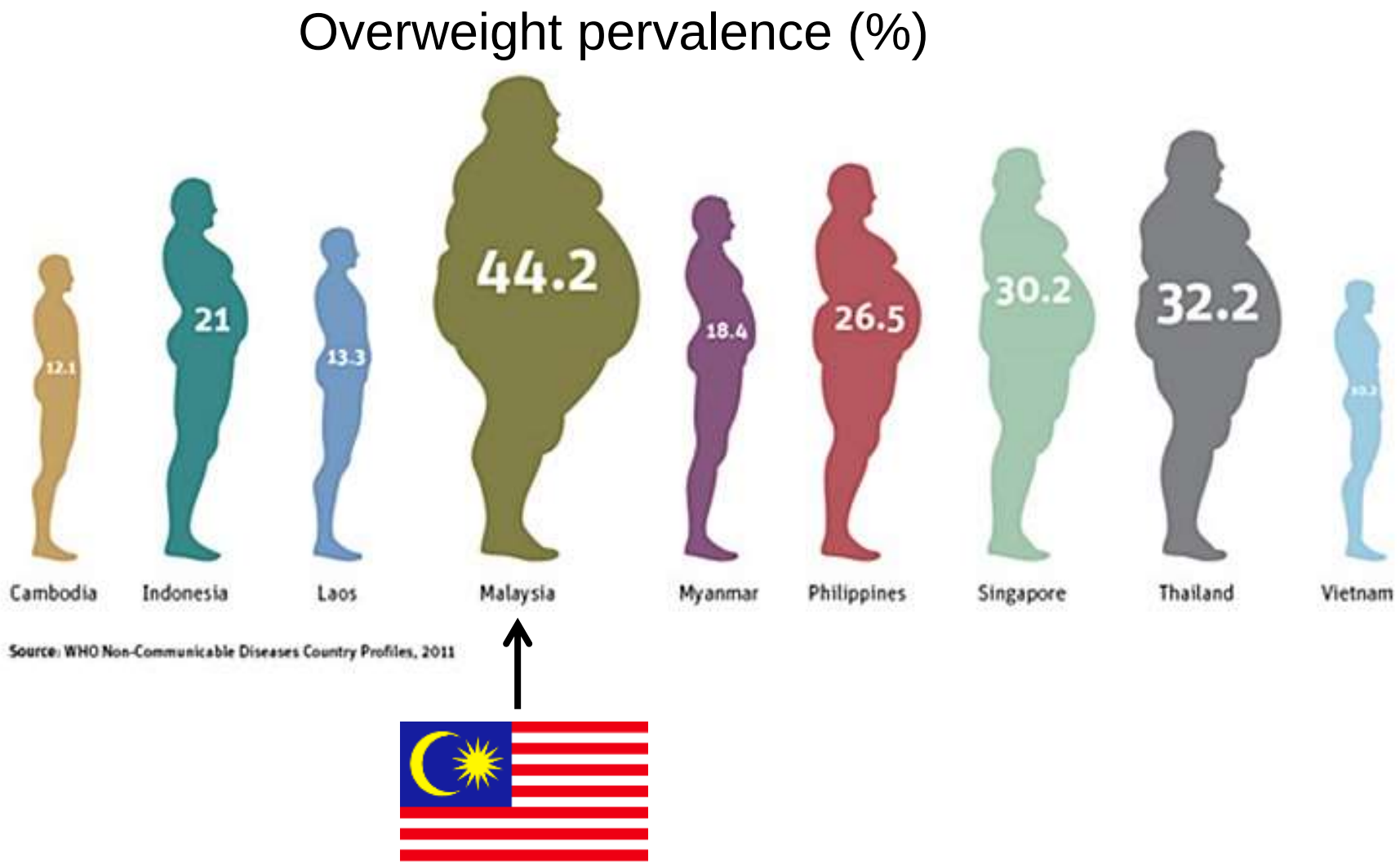
(Danish study from 2005)

- Savings to society from bicycling = **2.82 RM/km**

- The savings are from
  a) Reduced strain on the national health service
  b) More productive employees
  c) Less sick leave
  d) Longer life expectancy

Malaysia, the fattest nation in Asia

according to The Lancet Medical journal, that also found 14% of the Malaysian population to be obese



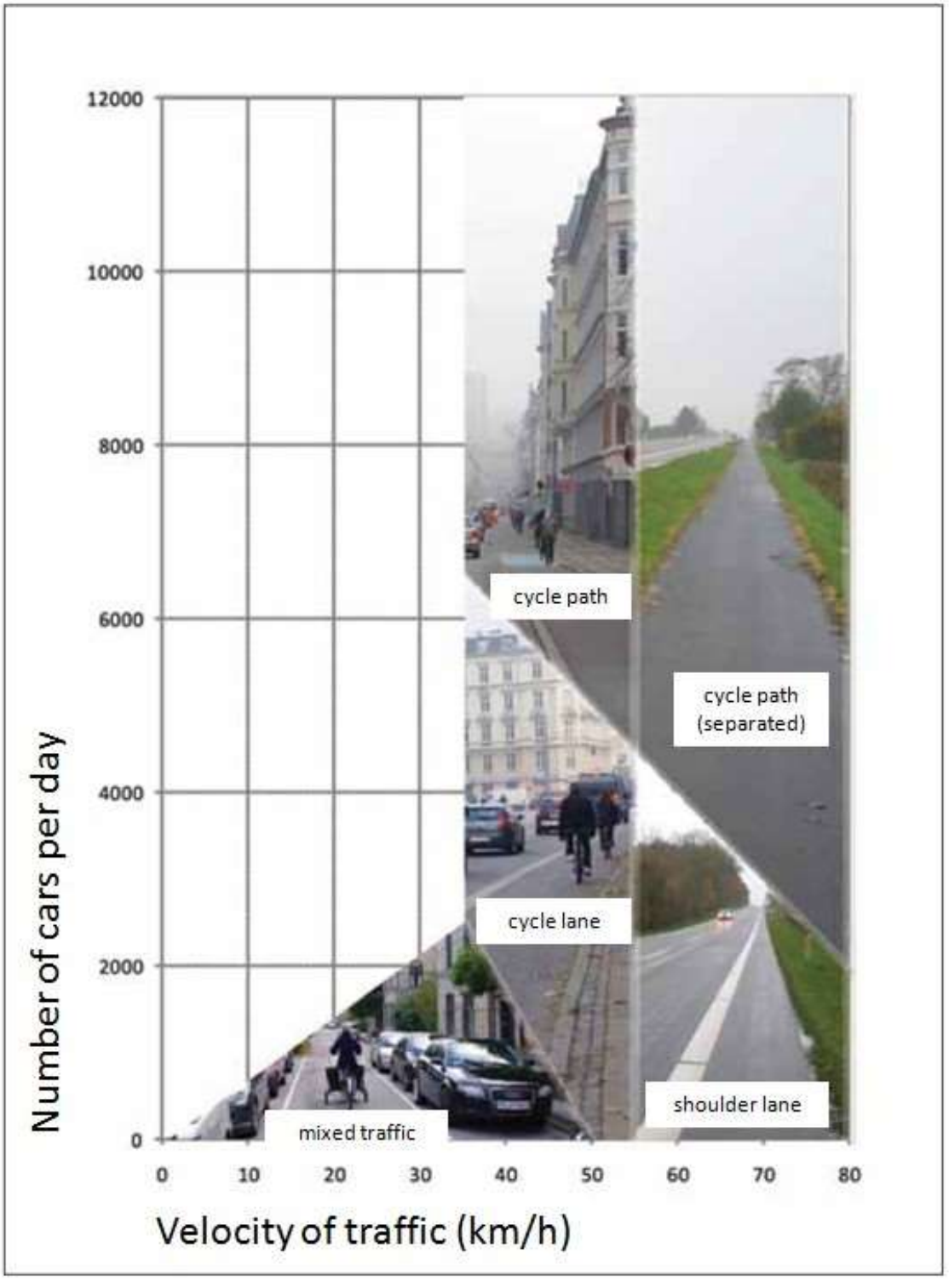
Bicycle

(shower retrofit)

Cost: RM 50 (anybody can install at the bib tap)

Bicycle Infrastructure Design Guideline

Used in Denmark



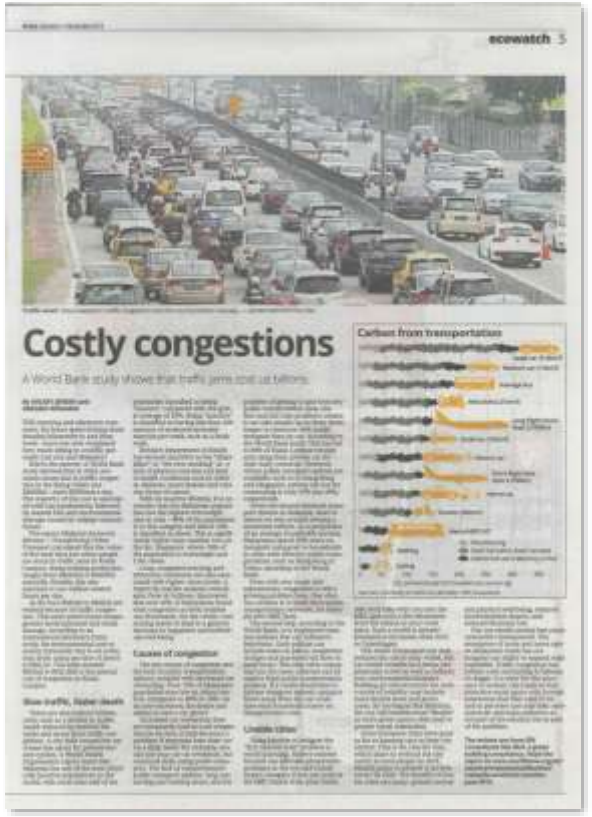
Why is Malaysia the fattest nation in Asia?

Some answers in this article (link)

1. **Physically inactive lifestyles (less than 150 minutes of exercise per week)**
   More than half of Malaysian are physically inactive, whereas the global average is only 20%

2. **High car ownership**
   80% of KL inhabitants use car for daily commute, hence, reducing walking

Malaysian's don't even like to drive
40% of Malaysians say that stress from traffic congestion is their primary frustration (Source: Frost & Sullivan)



By IEN Consultants, The Star, Dec 2016

Bicycle vs. Car: My bumper sticker sums it up

Malaysia, the fattest nation in Asia

Local press coverage in The Star newspaper

www.thestar.com.my/lifestyle/health/2014/11/28/are-we-concerned-about-expanding-waistlines-in-malaysia/

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BY M. JEGATHESAN

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Our love of fat and carb-heavy dishes, coupled with a preference for a sedentary lifestyle, has earned Malaysia the nickname 'The Fattest Country in South-East Asia'.

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Dodgy parlours raided

Bright future for Malaysian furniture

Taking a stand on Hong Kong

Rising popularity of Georgian wines

12 diners win nine-course meal in resta lucky draw

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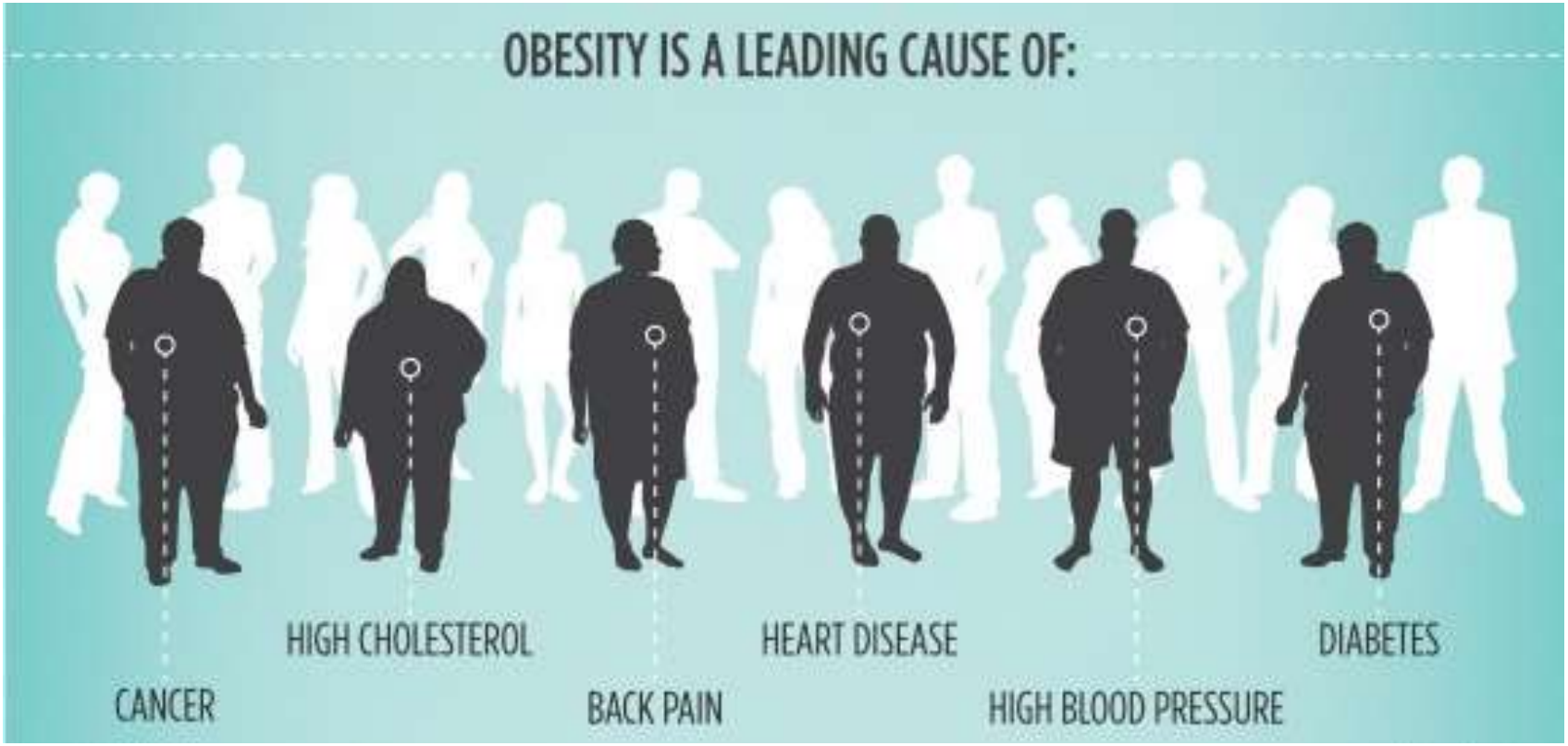
Malaysia, the fattest nation in Asia

International press coverage (February 2016)

Obesity statistics ring alarm bells because….



The Malaysian Health Ministry of Health says there is an **epidemic** of non-communicable diseases (NCD), including diabetes.

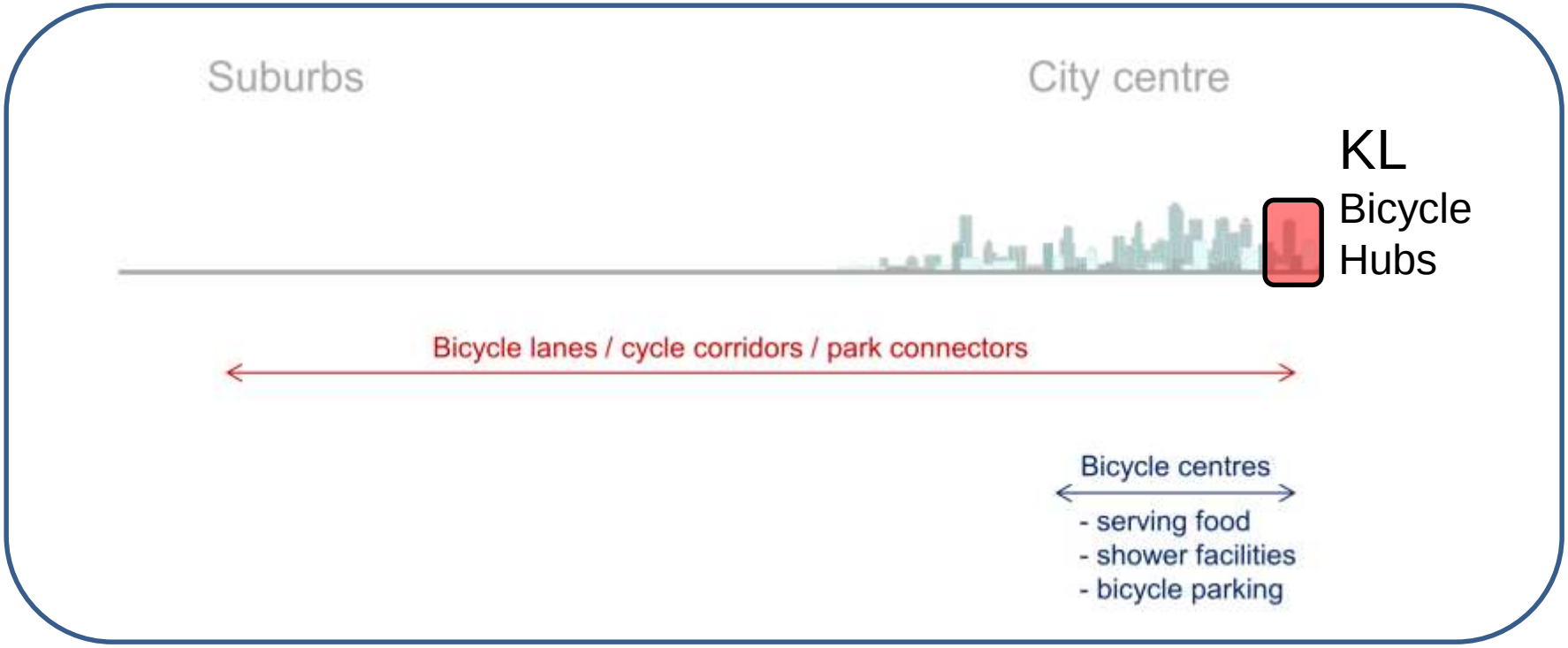
(medical condition or disease that is non-infectious or non-transmissible)

Slow Traffic, Faster Death

Kuala Lumpur traffic. Cartoon by IEN Consultants, 2016

Bicycle & Makan

Making BICYCLE HUBs in Kuala Lumpur



What?

- Free meal for bicycle commuters
- Eat → Cool down → Shower → Go to work

Where?

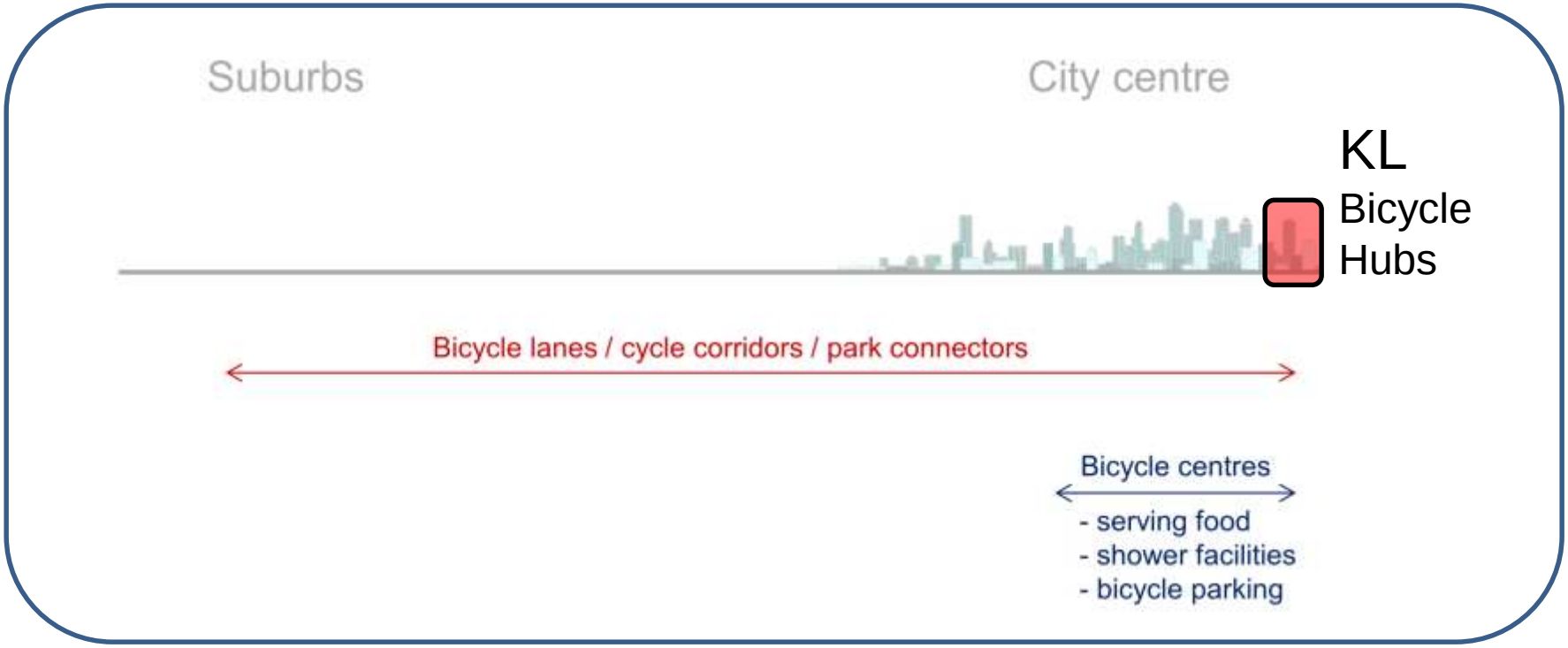
Near Transit Hub (street level)

Why?

- Good for the city & good for people
- Reduce traffic congestion (big cost)
- Improve public health (big saving)
- Green publicity for DBKL/Malaysia

Bicycle & Makan

Making BICYCLE HUBs of Kuala Lumpur



Benefits:

- Healthier and longer life: Commuting by bicycling extends your life by 3-4 years
- Savings to society: Bicycling saves RM2.82 pr km compared to driving
- Savings to society: Traffic congestion costs Malaysia RM5.5 billion per year (so, serving a free meal to bicycle commuters is a good investment)

Ongoing initiative

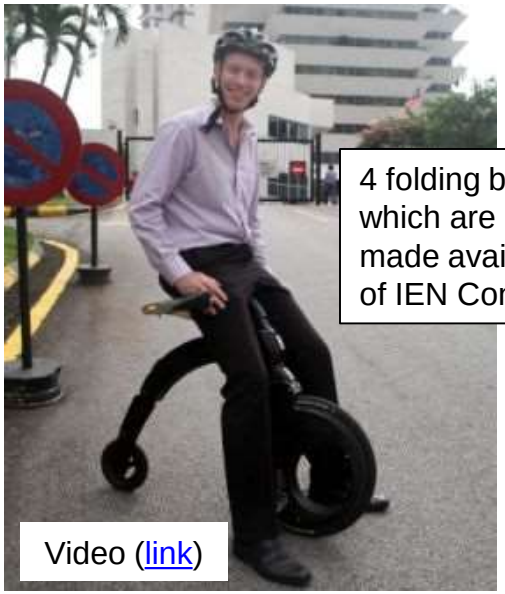
Kuala Lumpur Pedestrian and Bicycling Masterplan

What can be done?

1. **Make it easy and/or cheaper to run/bicycle/walk to work**
   - Implement shower/changing/locker facilities
   - Implement bicycle parking
   - Give incentives, e.g. ”Bicycle & Makan”

2. **Urban planning to improve alternative transport options**

3. **New technology**
   - electric bicycles
   - travel apps (real-time schedules)
   - self-driving cars?



4 folding bicycles (2 of which are electric) made available to staff of IEN Consultants

Video (link)

Concluding remarks

Reclaiming the Streets would:

1. Make cities more livable
2. Reduce energy consumption
3. Reduce noise pollution
4. Improve public health

People always tell me:
"You are going to die young from cycling in Kuala Lumpur!"

And I always answer:
"Wrong. Quite on the contrary, I'm adding 3-4 years to my life by getting exercise from bicycling"

"Make bicycle commuting convenient and safe, and people will use it"

Cycling with colleagues through KL (2015)

Thank you

Commuting in Kuala Lumpur
(video link)

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Appendix slides

Video uploads of my bicycle commutes in KL

Brompton bicycle in Kuala Lumpur - very useful and fast

74,355 views 412 18 SHARE SAVE ...

https://youtu.be/qgS0SW67kdE

Yike Bike through Kuala Lumpur - fast, convenient, fun!

20,172 views 225 5 SHARE SAVE ...

https://youtu.be/7tzvEC73ovo

Video uploads of my bicycle commutes in KL

Cargo Bike in traffic filmed from Brompton

1,143 views 43 0 SHARE SAVE

https://youtu.be/tFt_p89Tbjk

Brompton bicycle commute 3-4 times faster than by car!

15,002 views 209 5 SHARE SAVE

https://youtu.be/GfCr71eT9TY