The Market Opportunity

The (Demand Responsive) Transit Exchange

Empty Seats Travelling - Linking Supply & Demand

A Transit Exchange system is designed to complement existing travel systems

To promote the "New Mobility Agenda"

We do not aim to tell people not to use their private cars or not to take a taxi trip singly, just that the true costs of their decisions be reflected in the price

The only loser in the application of such a scheme is the single occupancy vehicle which currently comprises over 3/4 of all trips annually

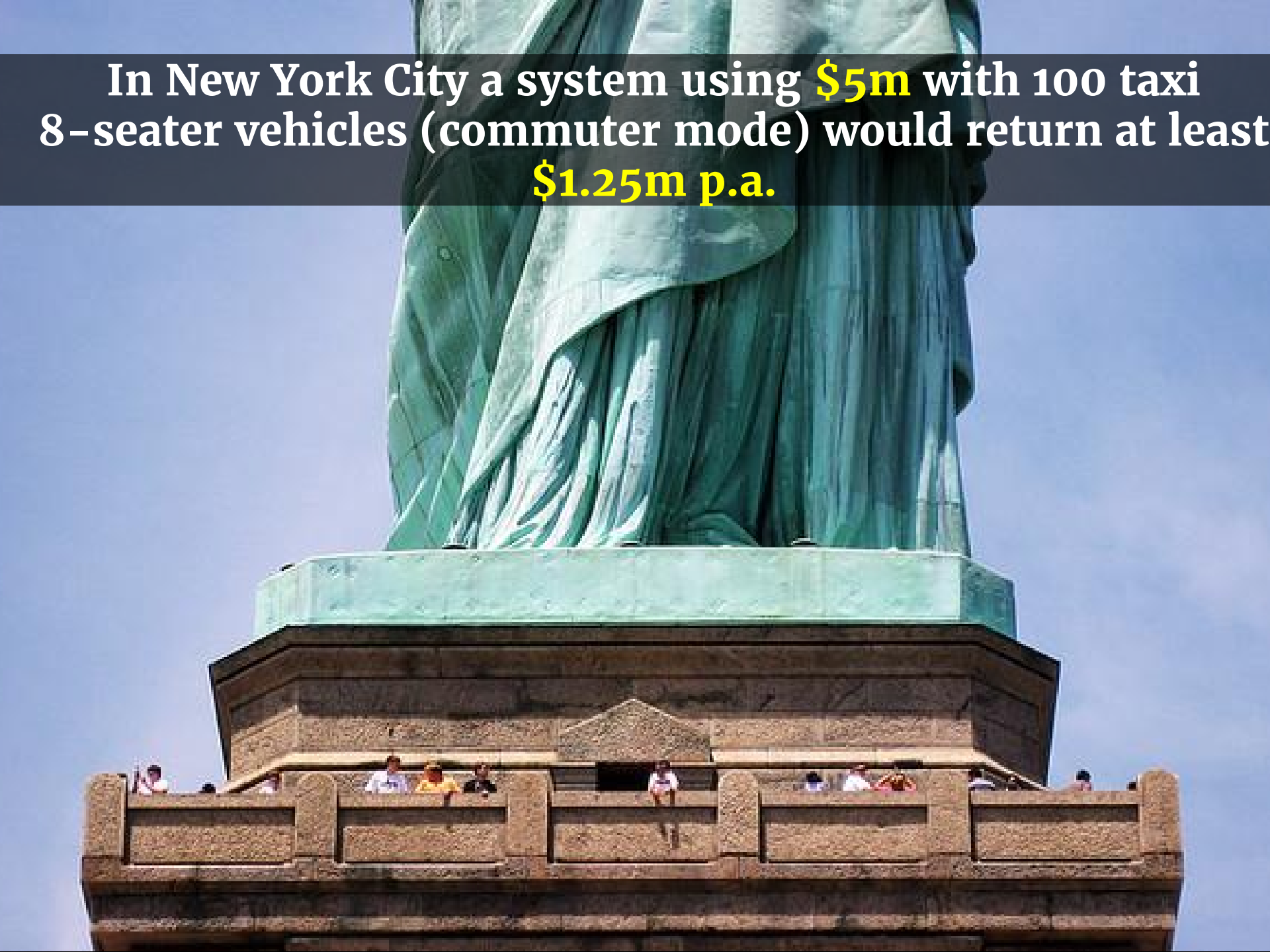
So just how ripe is this opportunity? What do the numbers say ?


$500 billion p.a.

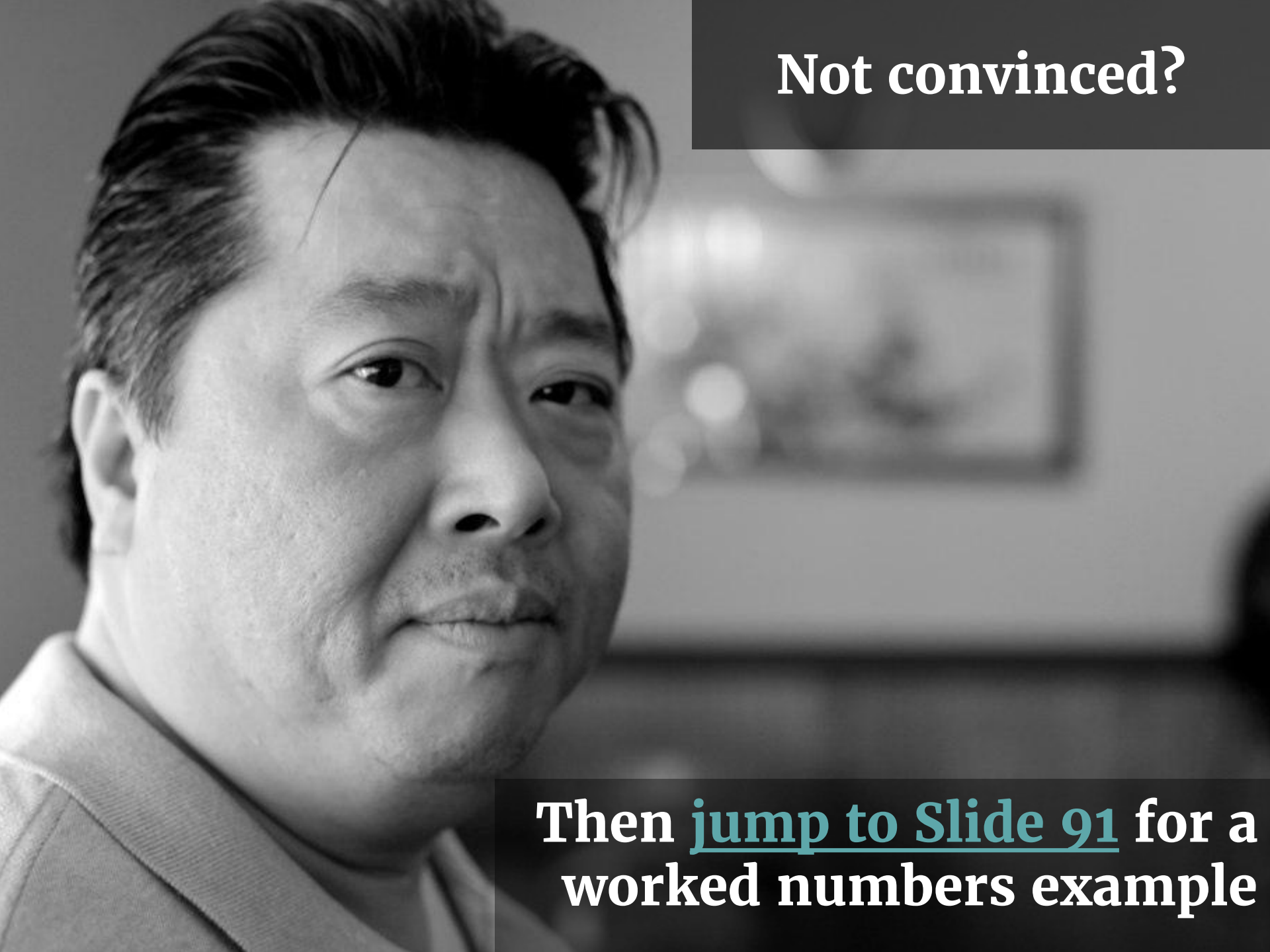

In the USA alone


€223 billion p.a.
in the EU5


A full size system would yield
€0.30 - €1.0 billion
per year for the licence buyers of
such a scheme in the USA + EU5



In New York City a system using $5m with 100 taxi 8-seater vehicles (commuter mode) would return at least $1.25m p.a.



Not convinced?

Then jump to Slide 91 for a worked numbers example

A Transit Exchange exists to links **all** forms of vehicular travel into a **free market auction mechanism** so that transport can be executed with respect to its true costs

A transit exchange does for vehicle operators and passengers what an agricultural exchange did for farmers and produce buyers

In the market for dynamic transport it serves, it links supply and demand


The true costs of congestion are rarely factored into the prices of various modes of transport

Subsidies for certain other travel modes further distort the picture


Why Now?

People + Cars + Resources

Transport accounts for about one quarter of global energy use and energy-related CO2 emissions.

International Energy Agency
http://www.iea.org/journalists/fastfacts.asp

In the car crazed USA, the proportion is even higher 75% of oil use and 50% of CO2 emissions.

In the absence of new policies, transport energy use and related CO2 emissions are projected to increase by nearly 50% by 2030 and by more than 80% by 2050.

76% of commuters in America go to work alone in a private car.

The world’s car fleet is expected to triple by 2050 with 80% of this growth occurring in developing economies.

See "50by50" report from the Global Fuel Economy Initiative (GFEI) for more details. See also the IEA press release.

Figure 12. Total Vehicles, 1960-2030

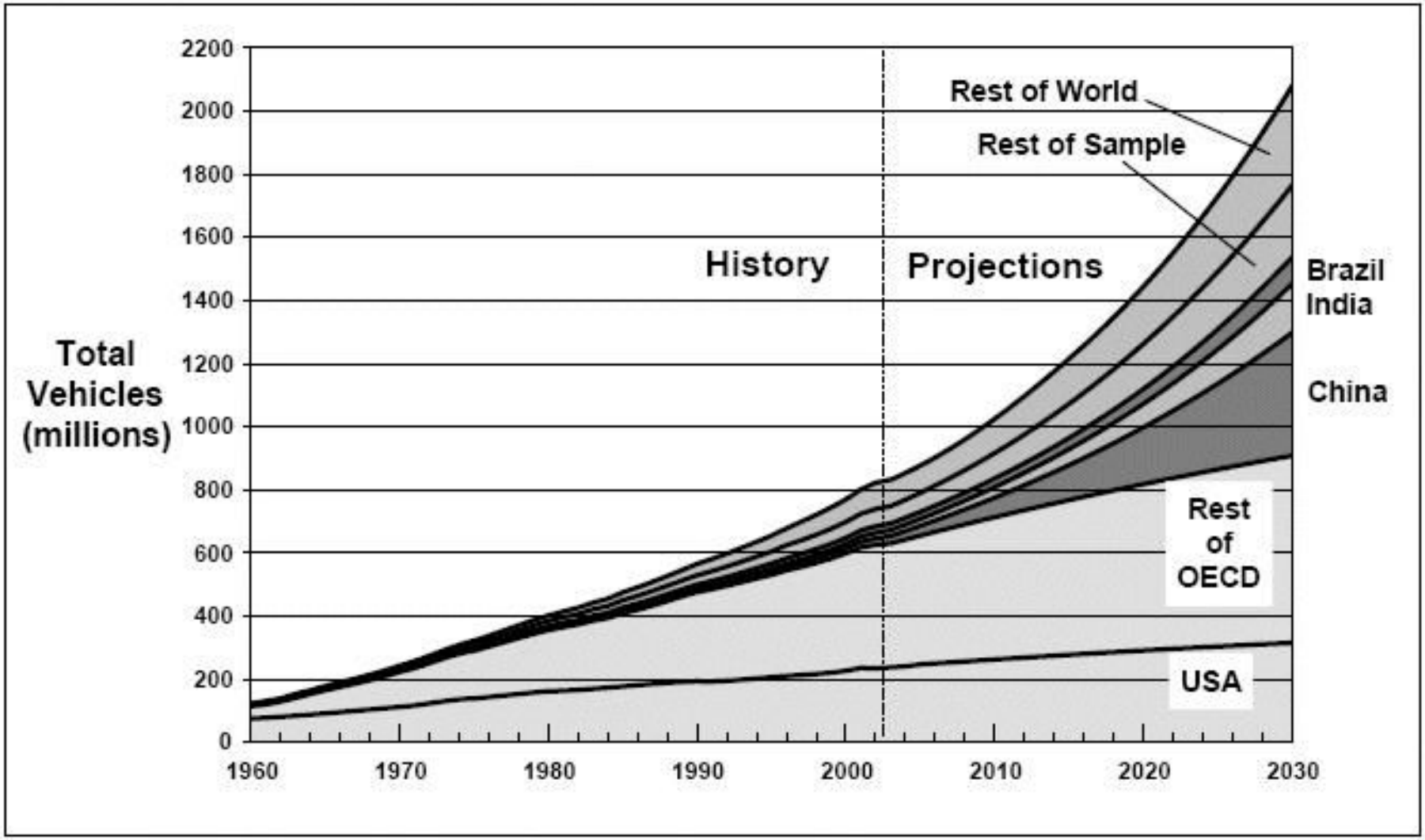


Figure 12 summarizes historical and projected regional values for total vehicles. The world stock of vehicles grew from 122 million in 1960 to 812 million in 2002 (4.6% annually), and is projected to increase further to 2.08 billion by 2030 (3.4% annually). The implications for highway fuel use are discussed in the following section.

See "50by50" report from the Global Fuel Economy Initiative (GFEI) for more details. See also the IEA press release.


Increasing urbanisation is rapidly presenting a new and diverse set of challenges for many cities across the world, most notably the BRICS economies

[UN DESA Report, March 2012 - World Urbanization Prospects The 2011 Revision]
Source: http://esa.un.org/unup/pdf/WUP2011_Highlights.pdf

That is 2 people every second

[UN DESA Report, March 2012 - World Urbanization Prospects The 2011 Revision]
Source: http://esa.un.org/unup/pdf/WUP2011_Highlights.pdf


[UN DESA Report, March 2012 - World Urbanization Prospects The 2011 Revision]
Source: http://esa.un.org/unup/pdf/WUP2011_Highlights.pdf
There are predicted to be an extra 2.1 billion people living in cities by
2040

There are currently **23** megacities in the world with populations over 10 million

[UN DESA Report, March 2012 - World Urbanization Prospects The 2011 Revision]
Source: http://esa.un.org/unup/pdf/WUP2011_Highlights.pdf


By
2025
[UN DESA Report, March 2012 - World Urbanization Prospects The 2011 Revision]
Preparing for China's Urban Billion | McKinsey 2009
There will be 36
http://www.flickr.com/photos/makalux/4960210708/

Source: [McKinsey & Co. report, "Preparing for China's urban billion" March 2009]

2025

China will have an estimated 8 “mega-cities” (populations of > 10 million) by 2025.

Two of those will have populations of over

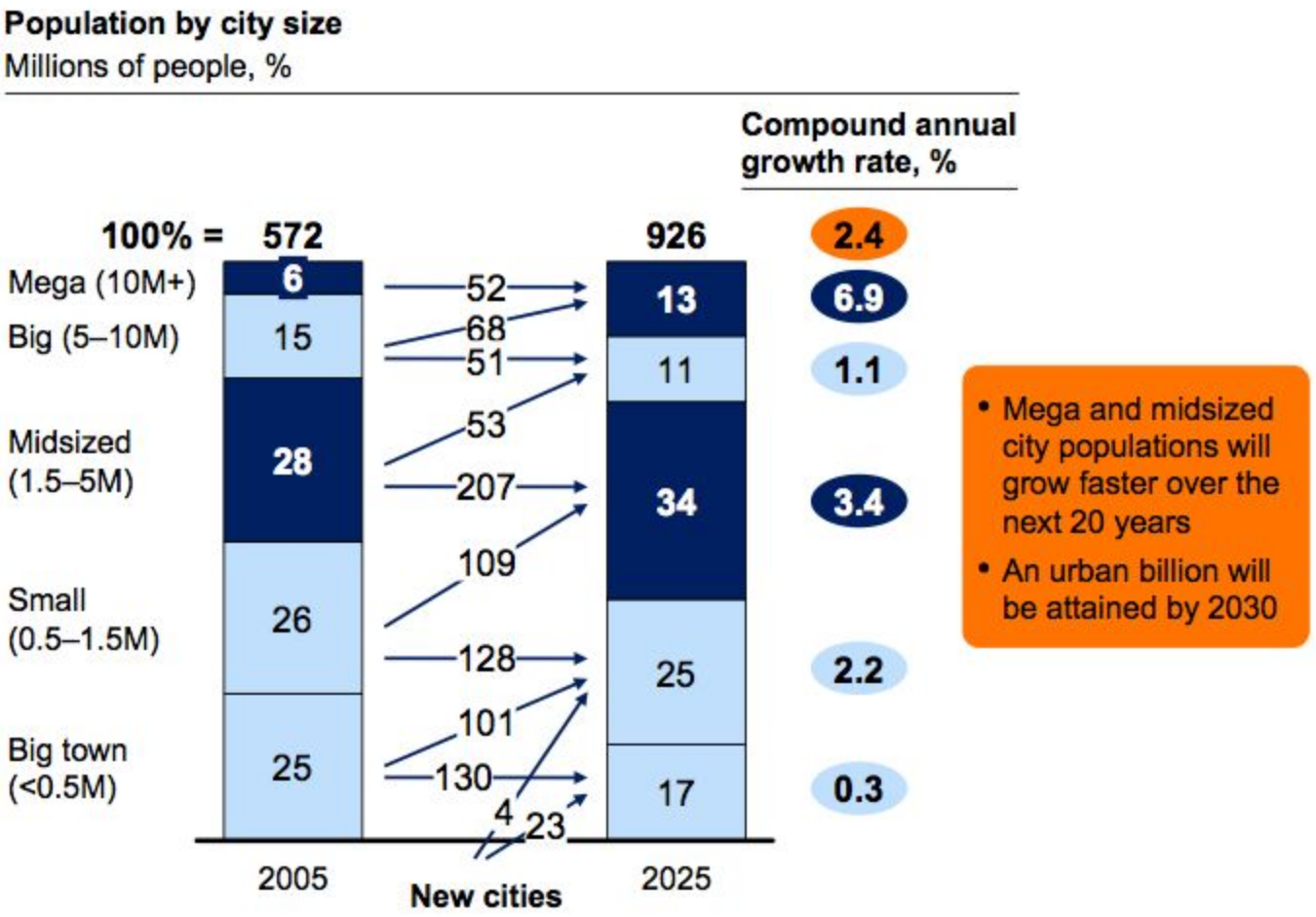
20 million.

Source: [McKinsey & Co. report, "Preparing for China's urban billion" March 2009]

China 2025

CHINA IS MOVING TOWARD AN URBAN BILLION BY 2030

TRENDLINE FORECASTS



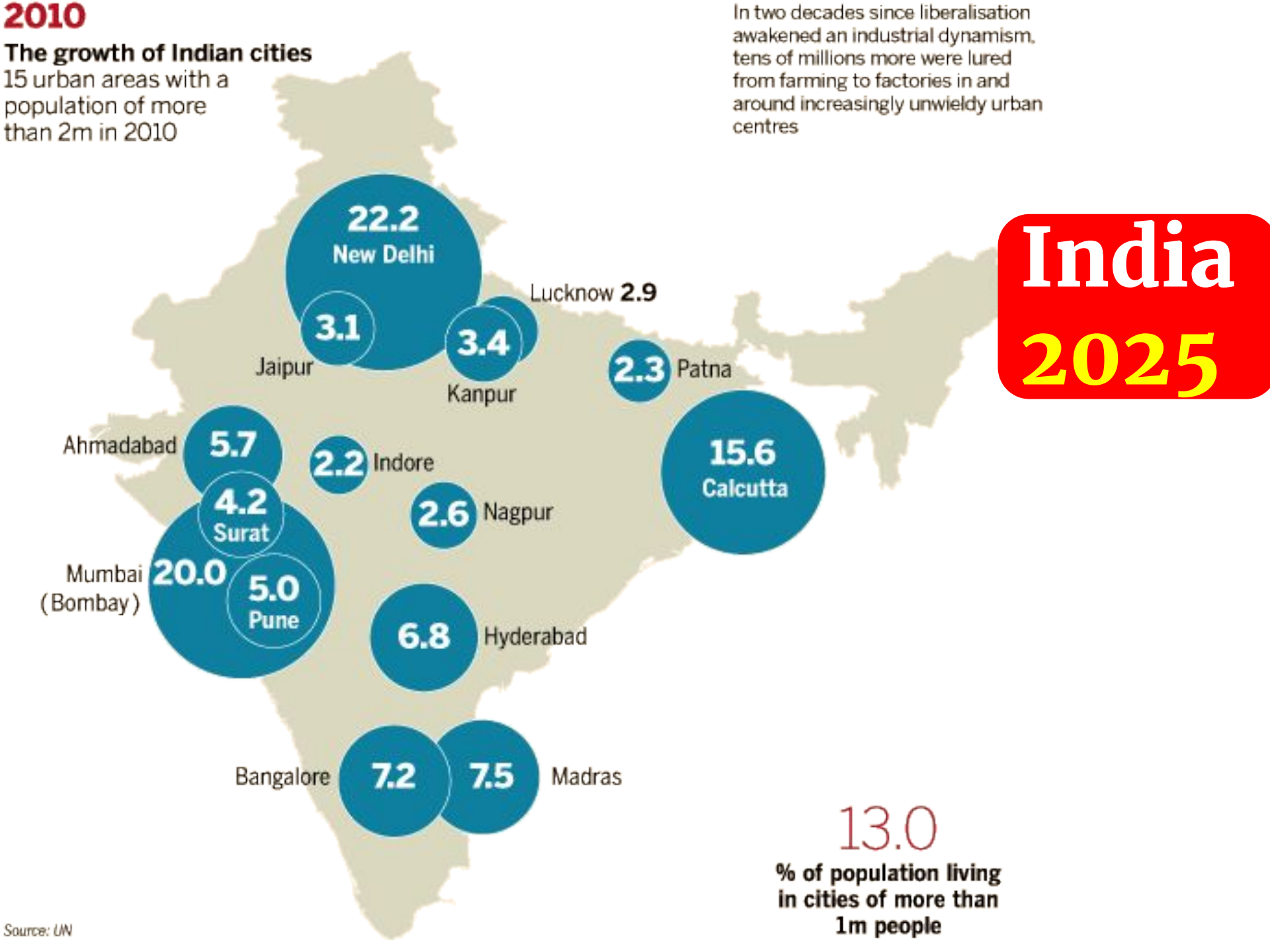
Source:McKinsey Global Institute China All City Model; McKinsey Global Institute analysis

2010

The growth of Indian cities

15 urban areas with a population of more than 2m in 2010

In two decades since liberalisation awakened an industrial dynamism, tens of millions more were lured from farming to factories in and around increasingly unwieldy urban centres



India 2025

13.0

% of population living in cities of more than 1m people

Source: UN


2010
In two decades since liberalisation awakened an industrial dynamism, tens of millions more were lured from farming to factories in and around increasingly unwieldy urban centres
22.2
3.1
3.4
2.9
2.3
5.7
2.2
15.6
4.2
2.6
20.0
5.0
6.8
7.2
7.5
13.0


2025 forecast
More metro rail systems will have been built and municipal governments may finally assert their financial autonomy, but urban population growth is likely to be unremitting
28.6
New Delhi
Lucknow 3.9
4.2
4.5
Patna
3.1
Jaipur
Kanpur
Ahmadabad
7.6
Indore
2.9
20.1
Calcutta
5.6
Surat
3.5
Nagpur
Mumbai (Bombay)
25.8
6.6
Pune
8.9
Hyderabad
15.6
9.5
Bangalore
9.9
Madras


India will have
68
cities with a
population of at least
1
million

India will have

6

10 million

cities with a population of at least

Sources:

1. Ward's Auto Report 2009 | World Vehicle Population Tops 1 Billion Units
2. International Transportation Forum Transport Outlook 2011
3. UCDavies ITS | 2 Billion Cars - Transforming Transportation

Taking the total to over 2 billion

(but 4bn cars, buses and trucks by 2050)

Average vehicle occupancy in the United States in 1977 - 2001 was

1.3*

Source: FHWA & FTA 2009


And as much as 30% of all the
fuel used by cars in the urban USA


is burned by people looking for
places to park in cities

Perhaps we can do better

Even while the average vehicle occupancy is currently higher in emerging economy countries

this trend is in reverse as both incomes and car ownership increases

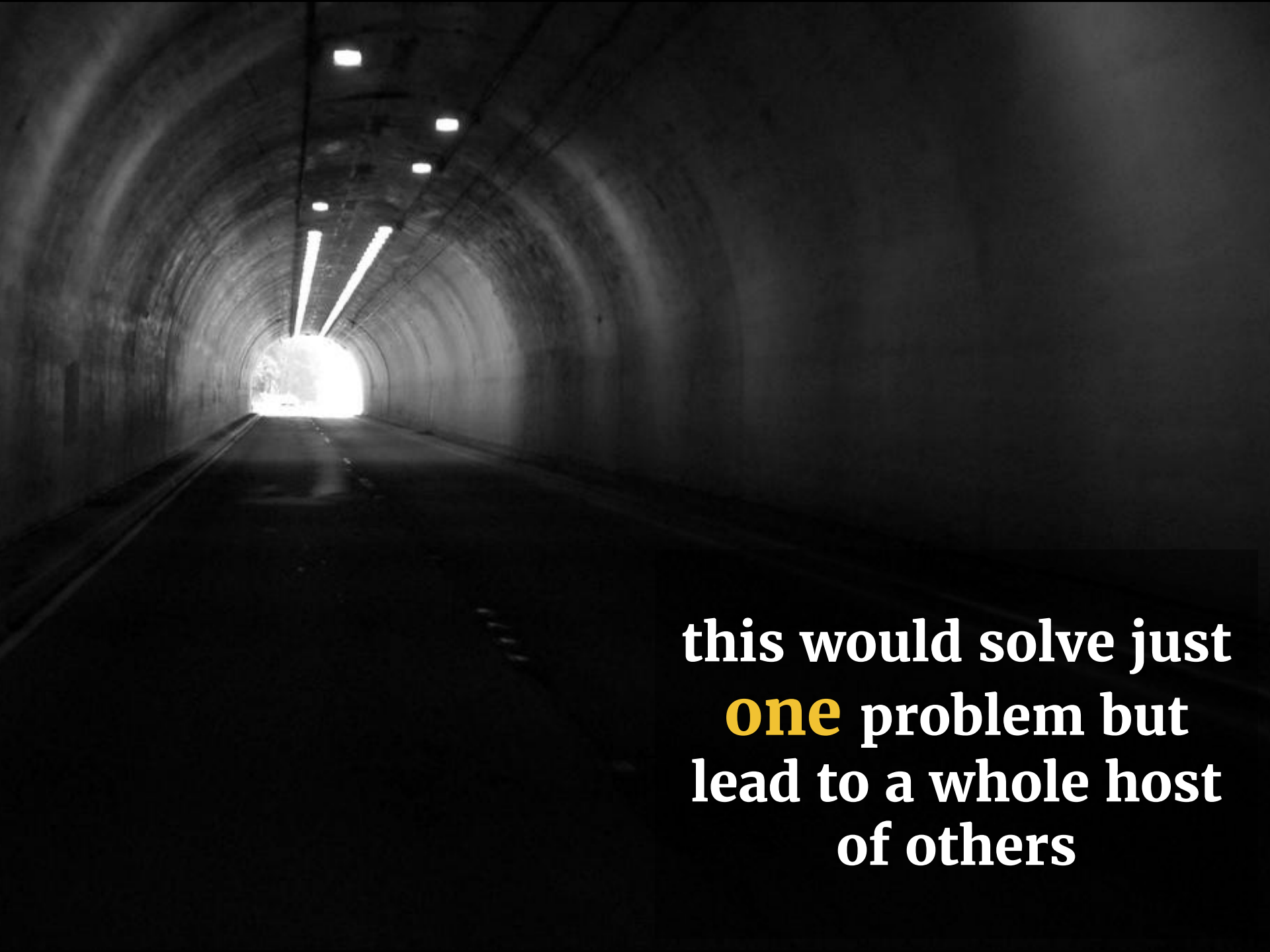

The net effect of all these trends will be
global gridlock on an unimaginable scale


With the attendant deterioration in quality of life for all citizens on the planet

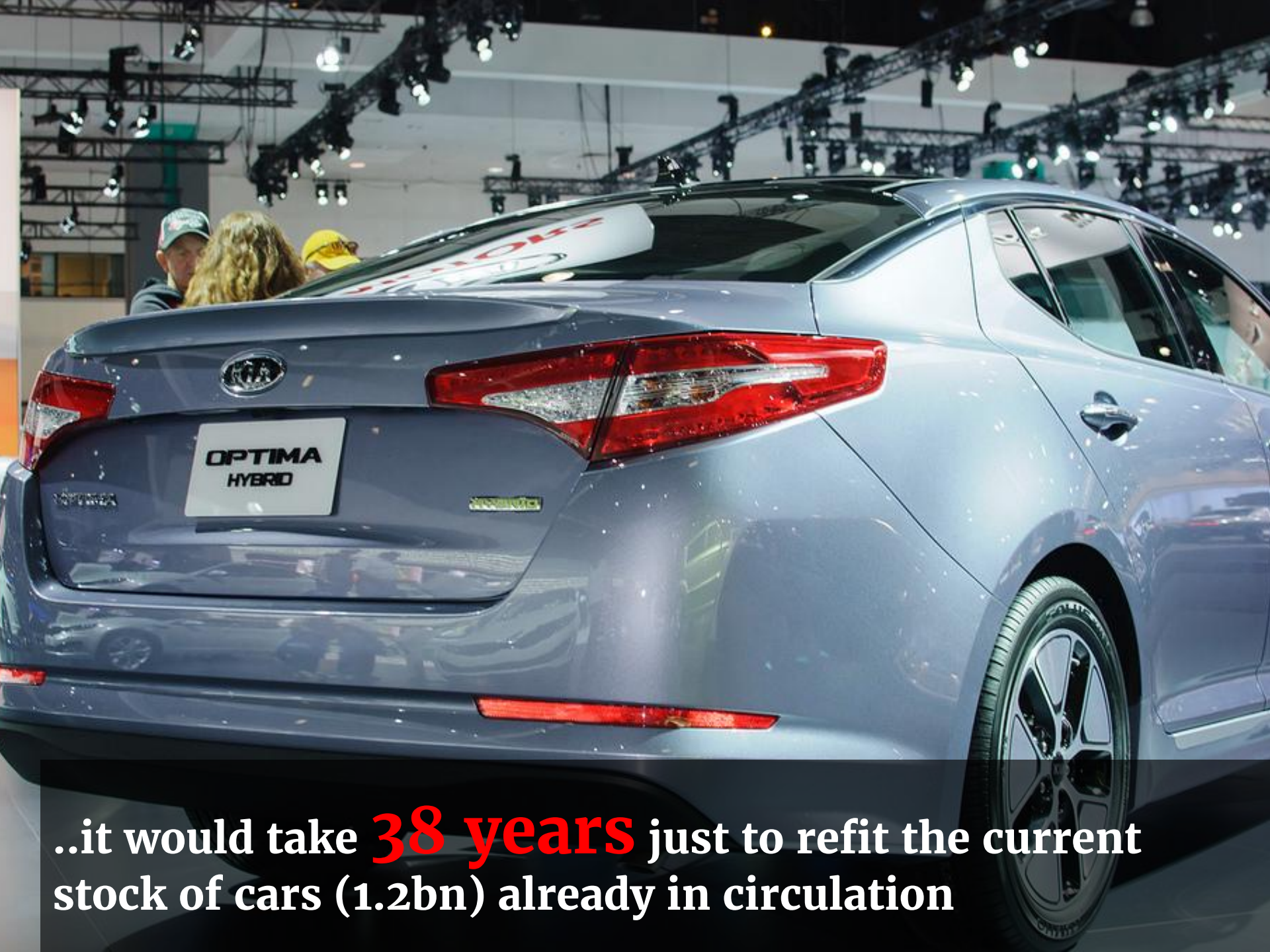

And not only in the form of poor air quality,
large numbers of road deaths and social
marginalisation of the poor


but also in overall "livability" as defined b
the ability to breathe clean air, drink clean
water, travel freely and easily while affordin
both the necessities and small luxuries of li

Even if we could find really cheap or even **free** energy to power all of our vehicles


this would solve just
one problem but
lead to a whole host
of others

For instance, if we started right now converting every vehicle to electric or hybrid drive at the rate of 1 a second

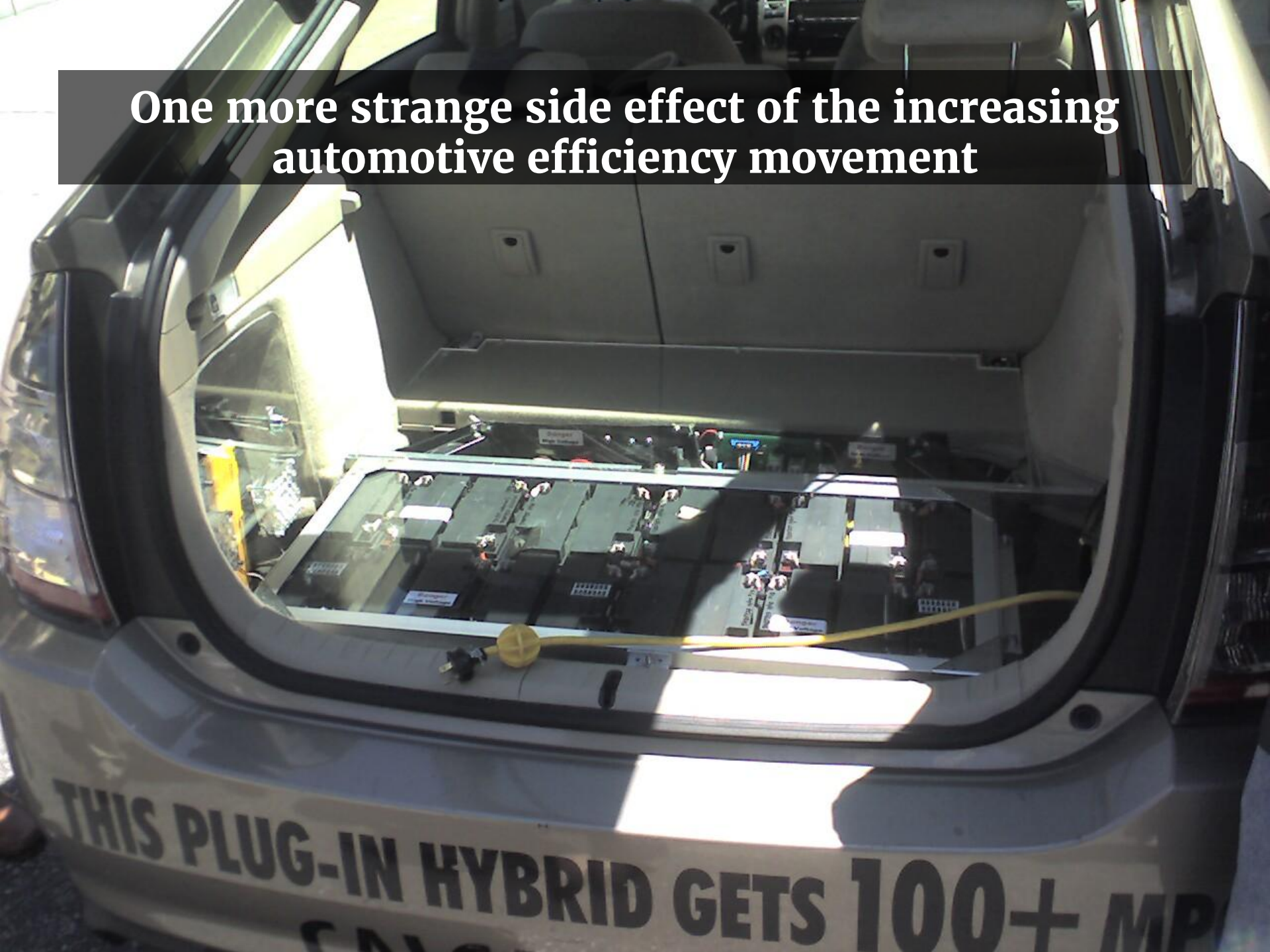


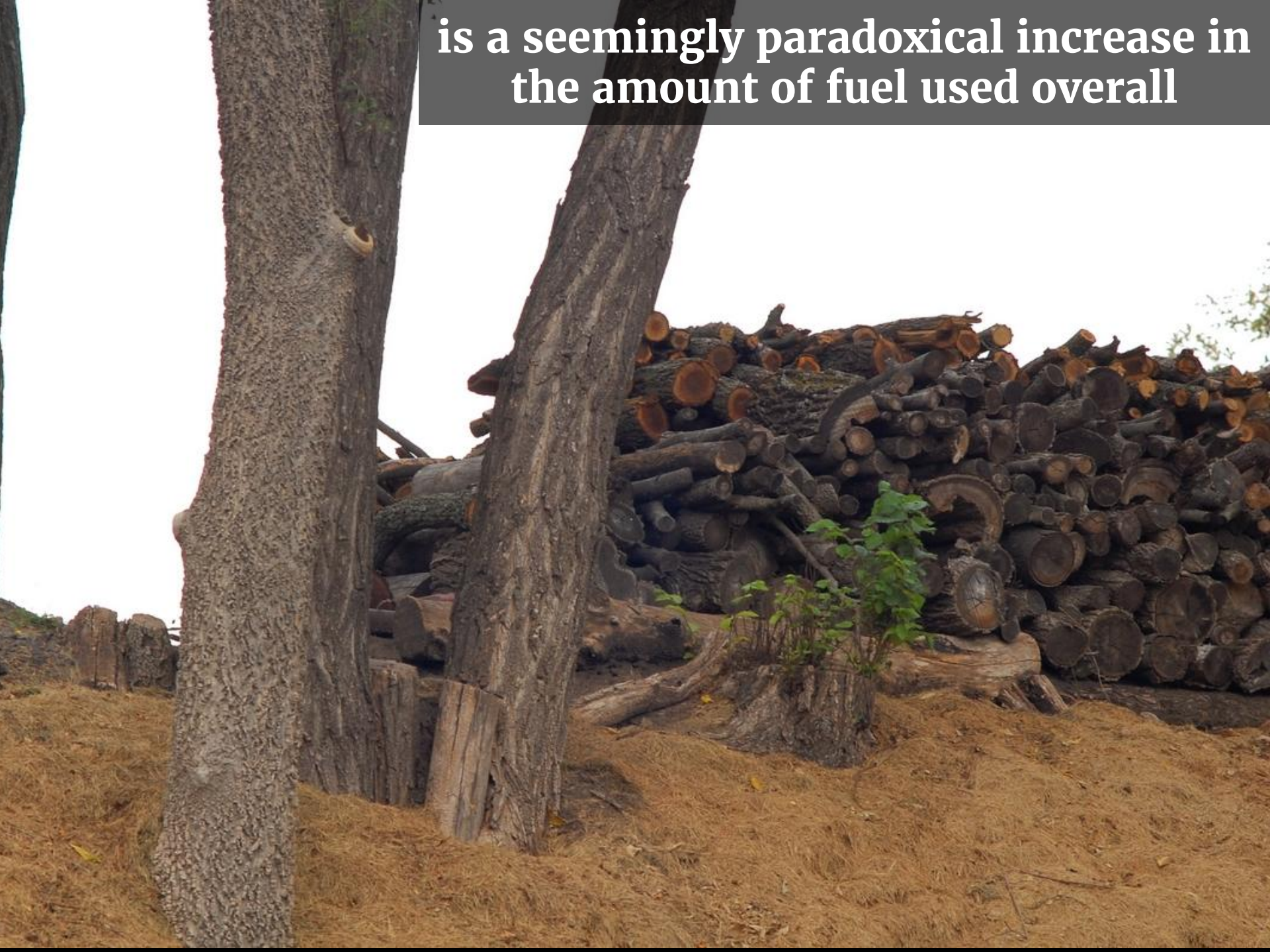
..it would take **38 years** just to refit the current stock of cars (1.2bn) already in circulation


And that is assuming that vehicle growth rates would be zero

And that older vehicles do not need replacing outright


and further presuming that
we get what we need for
free

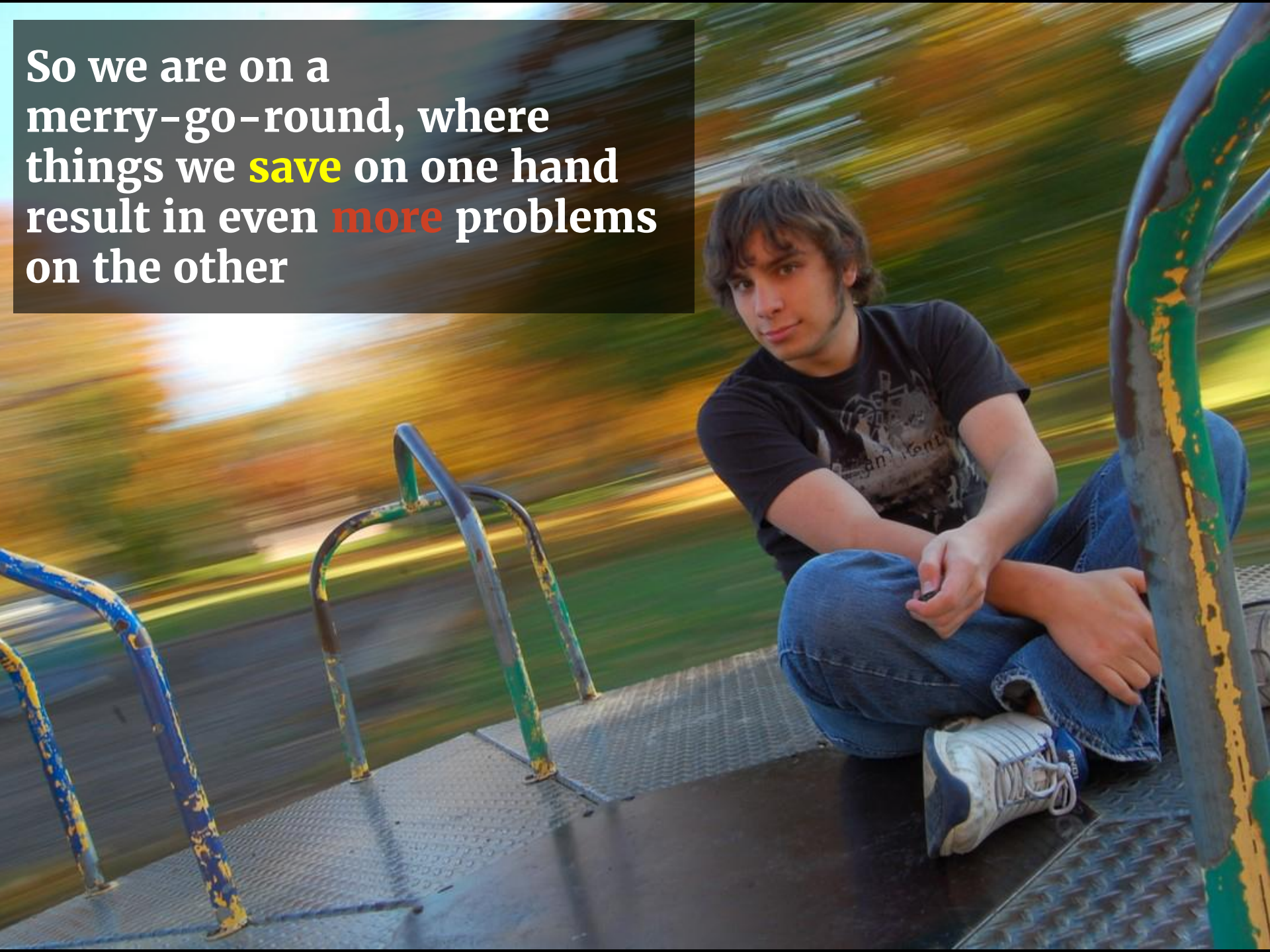

One more strange side effect of the increasing automotive efficiency movement
THIS PLUG-IN HYBRID GETS 100+ MP



is a seemingly paradoxical increase in the amount of fuel used overall

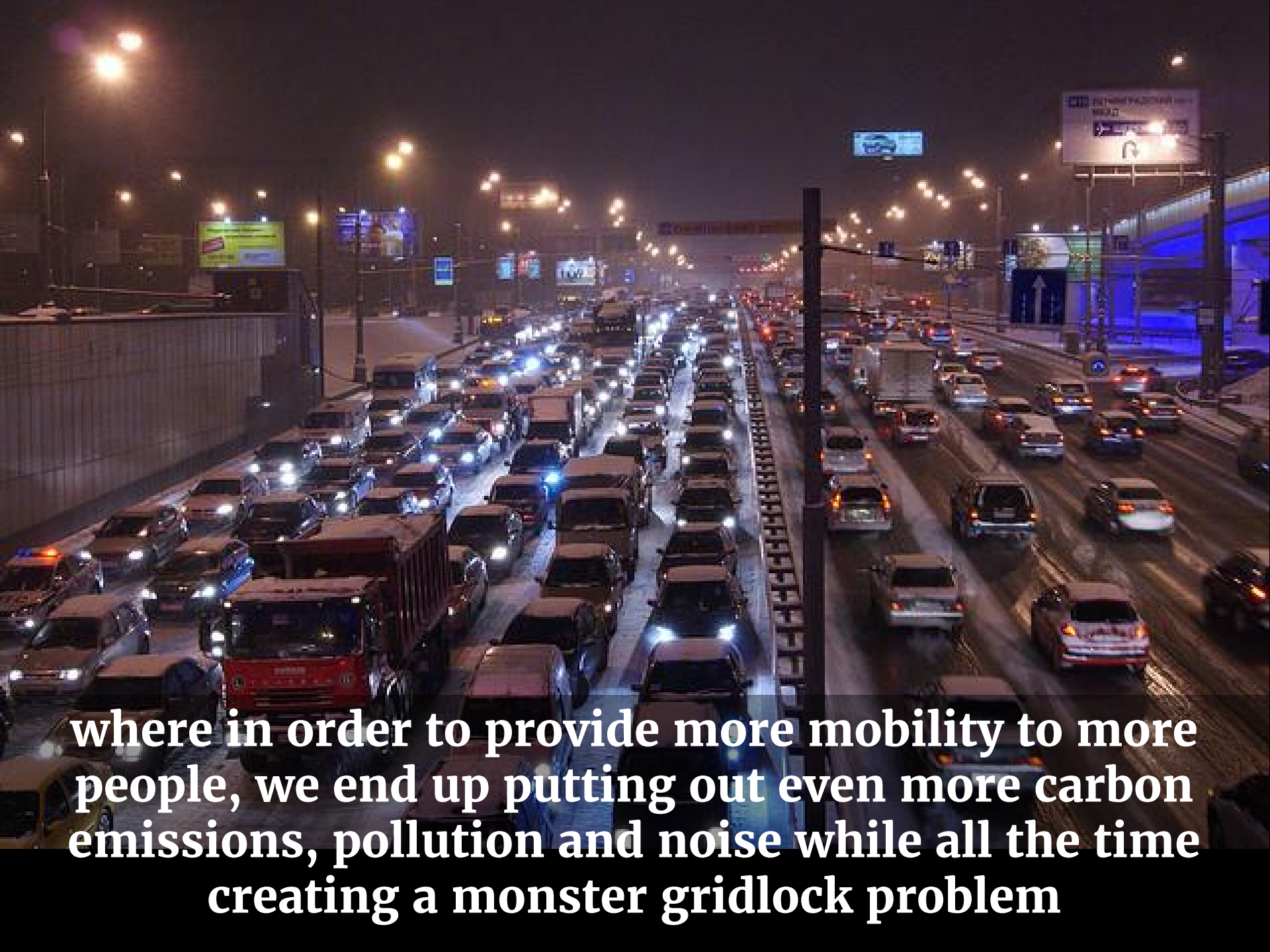
An effect known as Boomerang

(actually Jevons' Paradox or the Khazzoom-Brookes postulate)


So we are on a merry-go-round, where things we save on one hand result in even more problems on the other


we in fact reduce mobility by
adding more cars

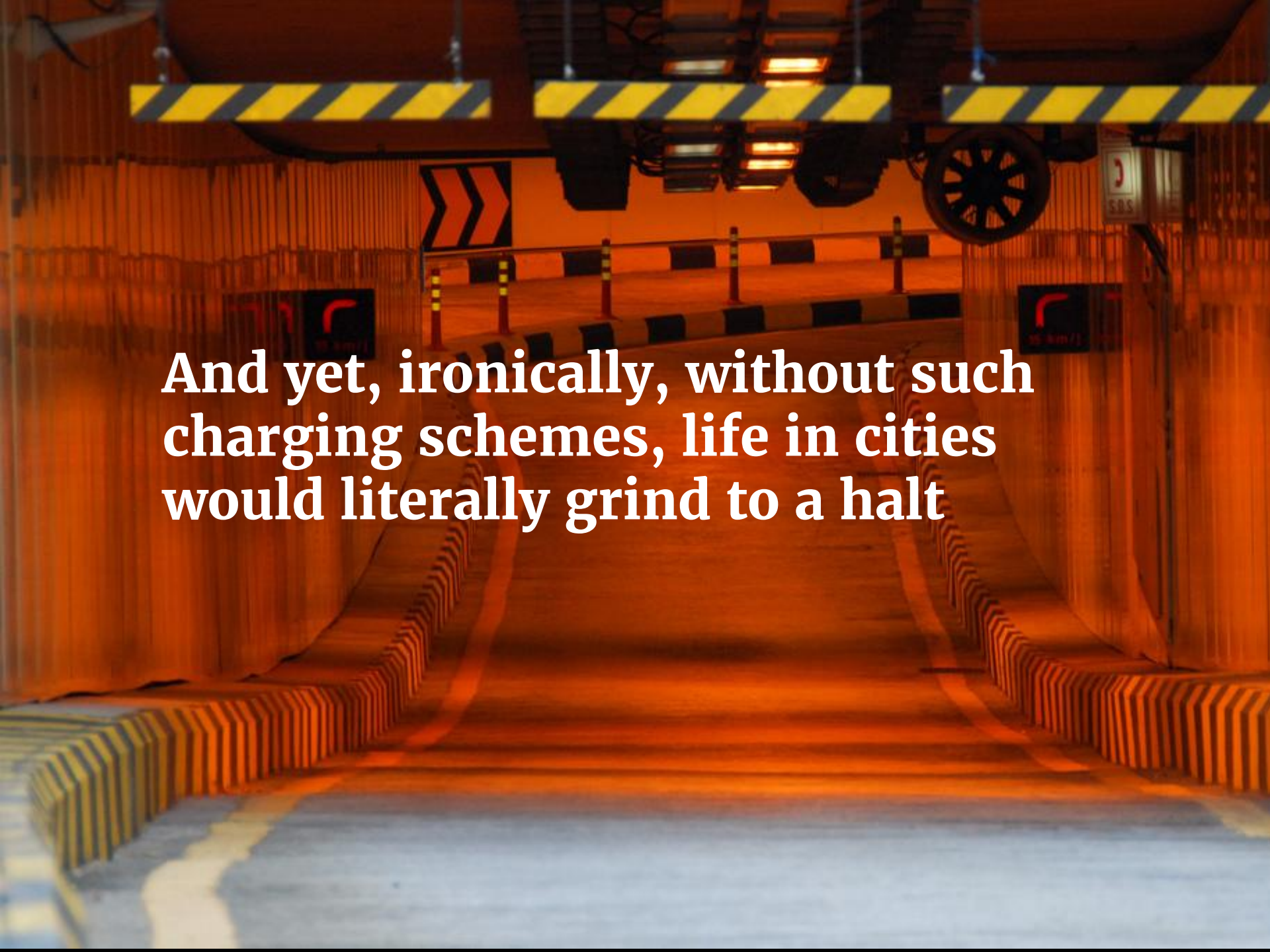

No matter what MPG figure such vehicles apparently get



where in order to provide more mobility to more people, we end up putting out even more carbon emissions, pollution and noise while all the time creating a monster gridlock problem

with average vehicle speeds regressing even further back than they did from 1901 - 2001 in cities such as London

So we find ourselves at a crossroads, where we may gain in energy efficiency only to use more fuel overall and require mandatory congestion pricing schemes


And yet, ironically, without such charging schemes, life in cities would literally grind to a halt

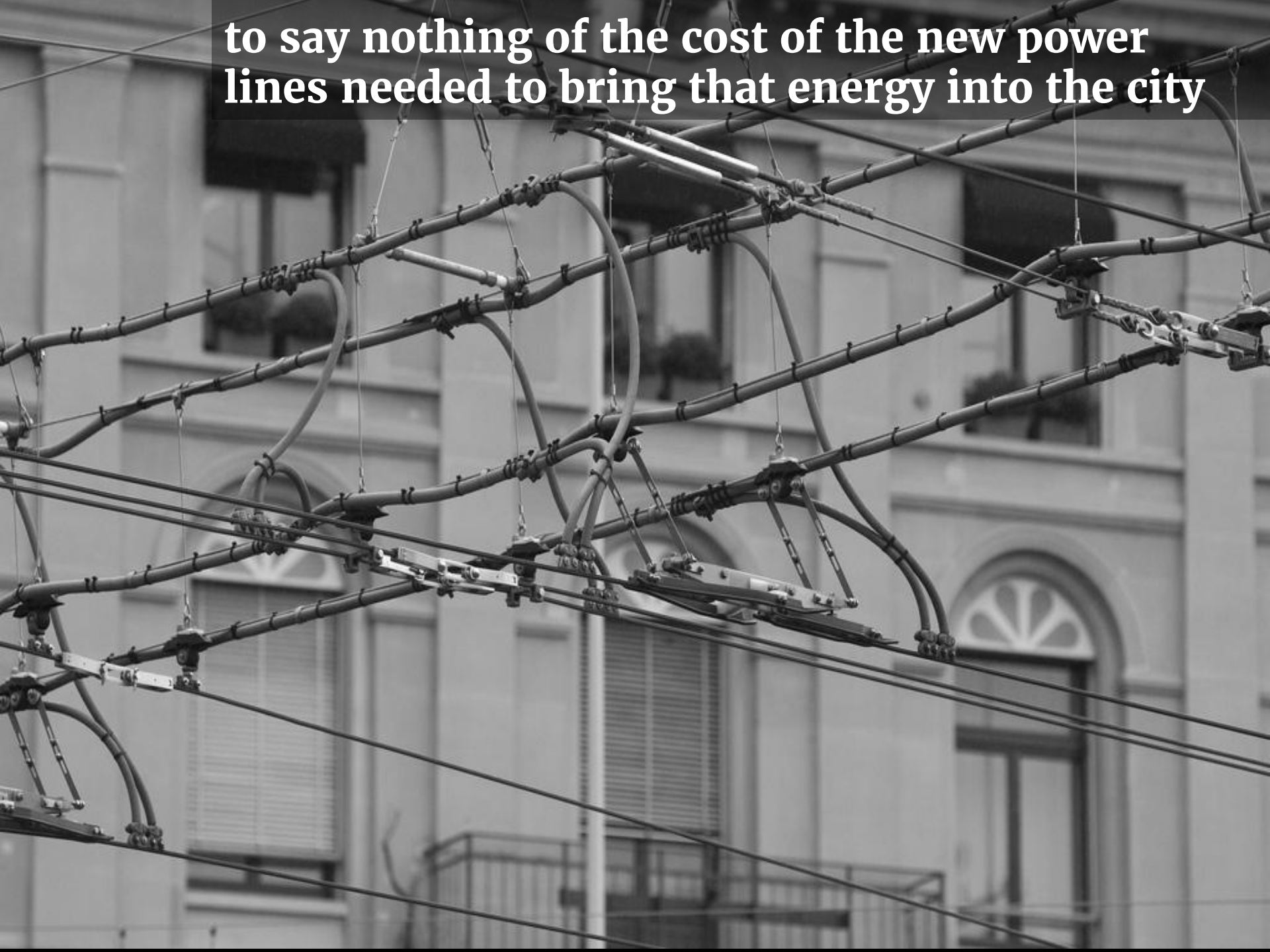
Congestion charges would
(in fact *do*)
become the new "high oil prices"

Electric vehicles simply move the point of energy generation to an area outside a city


To yet more power stations
situated remote from the city

and while clearly beneficial
for the air quality within a city
(an important outcome)

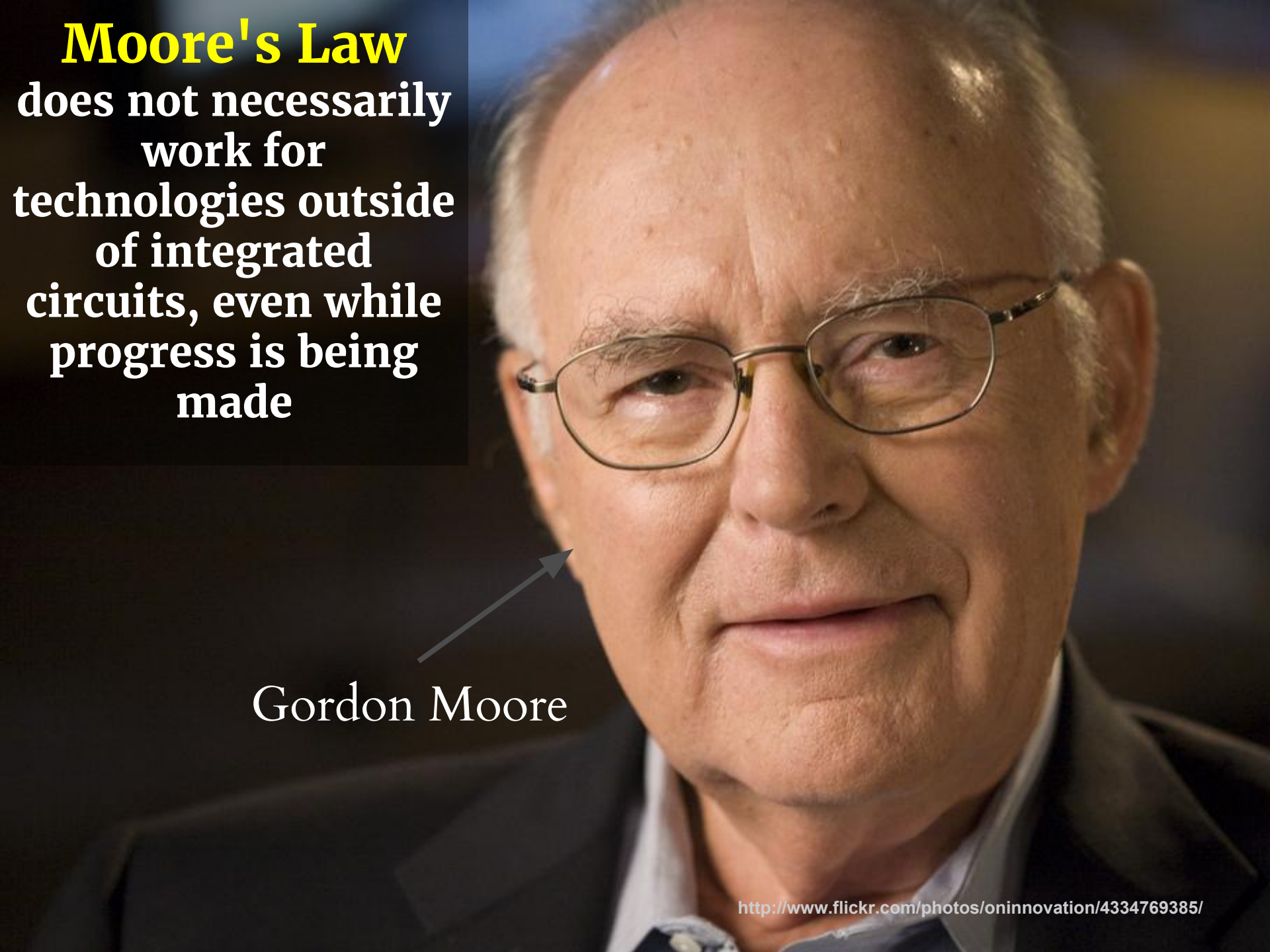
the batteries in such vehicles are still a way off from having the same energy density as petroleum


to say nothing of the cost of the new power lines needed to bring that energy into the city


or the sourcing, mining, transportation and fabricating of the rare earth metals used in such battery technology

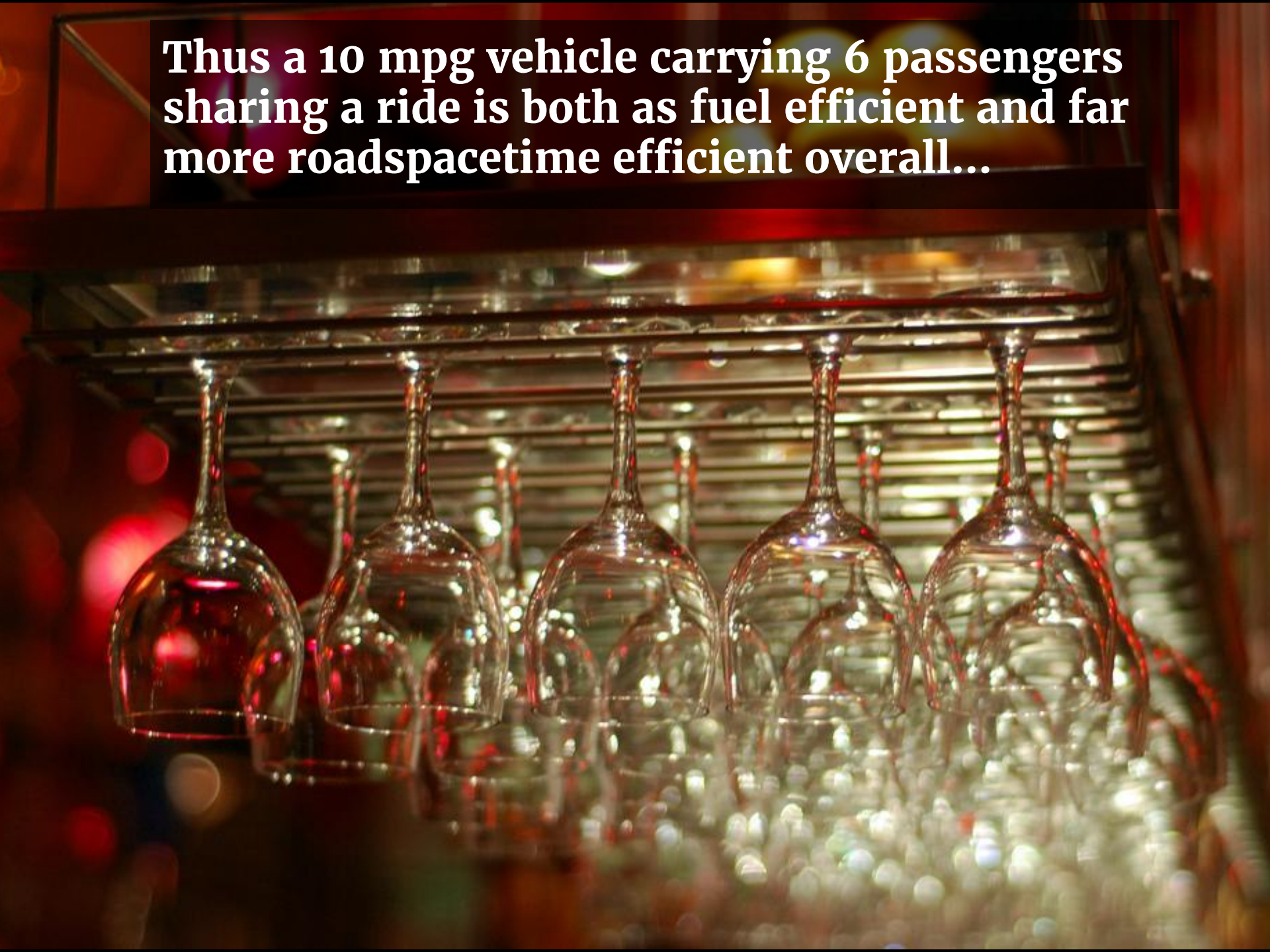
Moore's Law

does not necessarily work for technologies outside of integrated circuits, even while progress is being made



http://www.flickr.com/photos/oninnovation/4334769385/

Thus a 10 mpg vehicle carrying 6 passengers sharing a ride is both as fuel efficient and far more roadspacetime efficient overall...




than 6 electric hybrid cars
carrying only one person each
876·TJD

Is the answer more mass transit?

Not necessarily


Mass transit systems are already overstretched in many large global cities


And require
enormous
subsidy to remain
operational

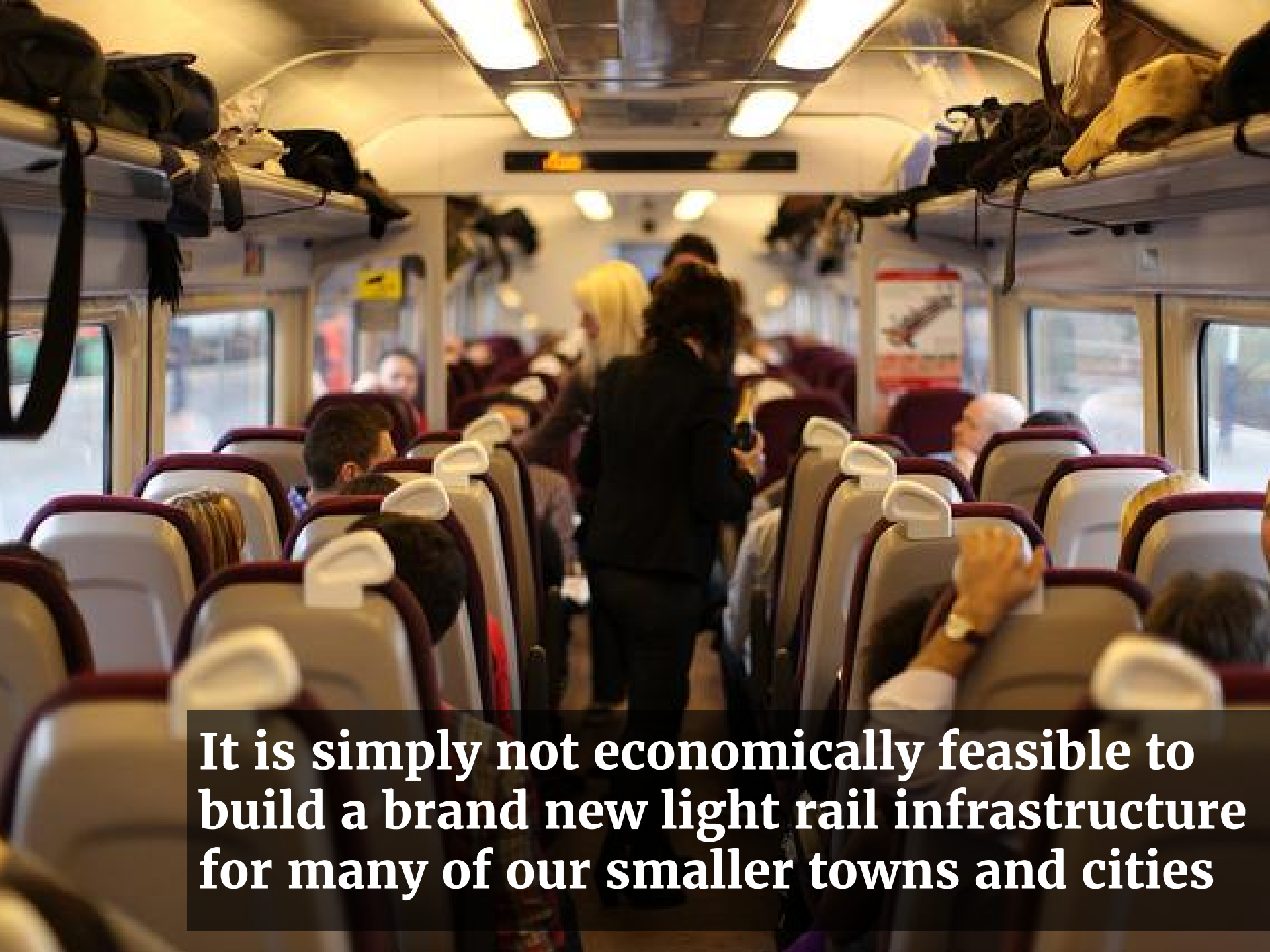

While not being particularly
green or energy efficient most
of the time (unless 100% full)


serving necessarily only the
most popular locations while
remaining highly inflexible

not catering to "niche" or "special needs" customers particularly well

unless privately operated and managed

So there is little economic reason to think about building new mass transit systems from scratch


It is simply not economically feasible to build a brand new light rail infrastructure for many of our smaller towns and cities


But the good news is

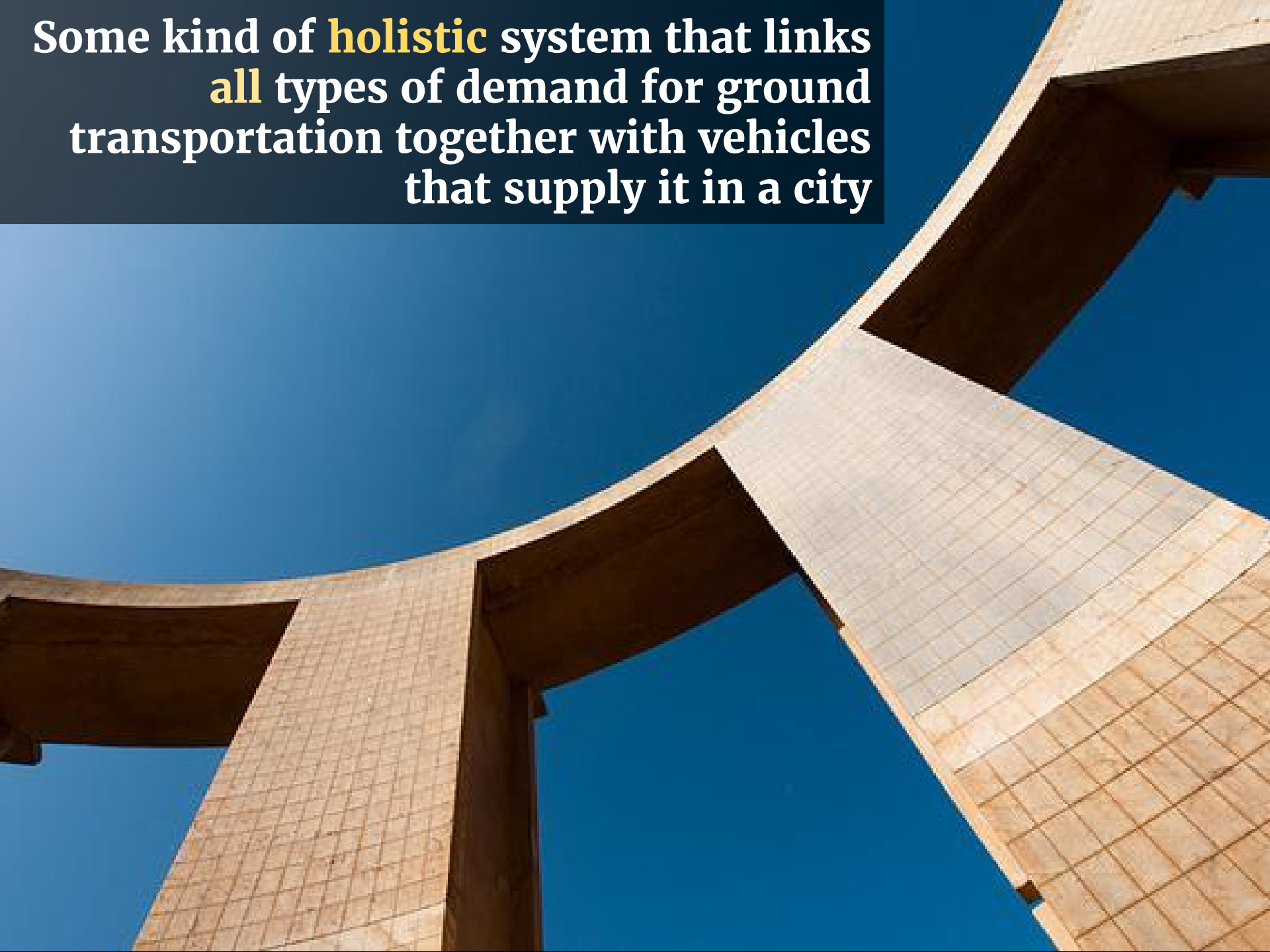
We do not always have to!

Where such systems already exist


There is every reason to make the best use of them and scope to marry them into an
overall holistic urban transport paradigm


HUH?

Some kind of holistic system that links all types of demand for ground transportation together with vehicles that supply it in a city



Including water borne transport if necessary

So what do the numbers say ?

That the per annum market for largescale ridesharing in the EU5 alone is worth at least €223 billion and $500bn in the USA alone*

*Assuming $0.05 per mile cost of a seat, that each car travels 16,550 miles p.a. and that each car has 2 seats free. Taxis cost $3.00 / mile.


That a shift to to an occupancy rate of 3.6 or more could take as many as 75% of vehicles off the road at times of peak congestion
CARPOOLS
ONLY
BEFORE
8:30 AM

Let's do the math for a fictional cab fleet serving the commuter railway stations north of New York City with 300 vehicles

Assume we use **100** 8-seater taxis, an average of carrying **5** people per day to and from just ONE railway station

Paying $20 each trip

(By the way, the current price for White Plains station to Downtown is $30)

Let's say each cab does 8 trips per day

(4 trips in the morning rush hour and 4 in the evening)

100 * 5 * 20 * 8= $80,000

taxis	people	$ cost per trip	trips / day	Total

100 * 5 * 20 * 8= $80,000

taxis	people	$ cost per trip	trips / day	Total

per day, gross revenue

the broker takes

25%

That makes $20,000 per day

shared between the local Texxi company and the licence buyer

Is $20 per trip too high ?

Let us call it $5 per trip then

$$100 * 5 * 5 * 8 = \$20{,}000$$

taxis	people	$ cost per trip	trips / day	Total

per day, gross revenue

the broker takes

25%

That makes $5,000 per day

shared between the local Texxi company and the licence buyer

$5,000 per day

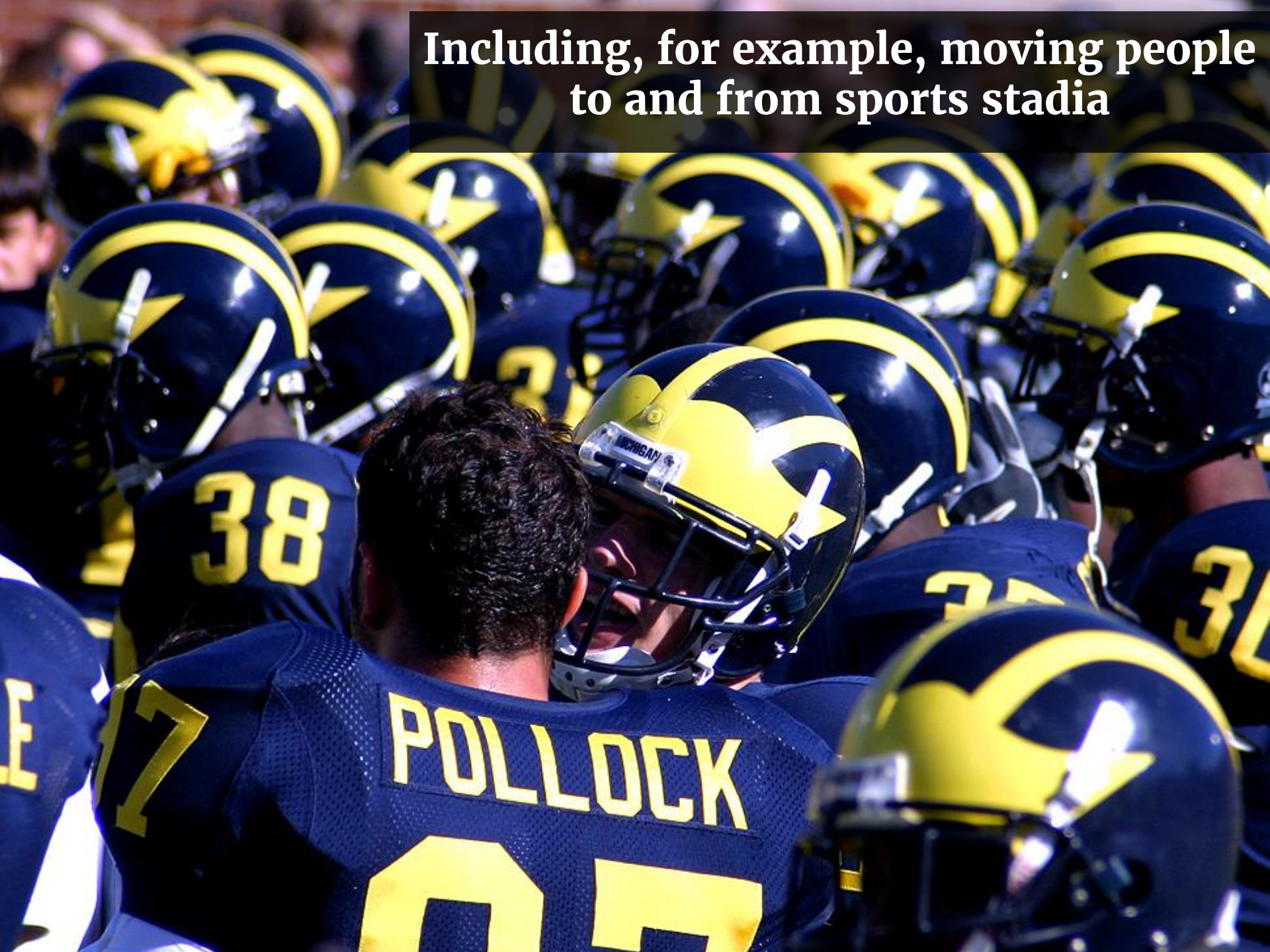
$25,000 per week

$1,250,000 per year

Or we can use the average **trip distance** and average **number of seats** to calculate a seat **cost per mile** on this model


And that is just Commuter mode


There are 6 other modes that
can be applied for different purposes


Including, for example, moving people to and from sports stadia
POLLOCK

or taking people to shopping malls


making it easier, safer and cheaper for students without cars to get around
lollipop
marimba


shore excursions for
tourists from cruise ships
CUNARD

And how many taxi vehicles are there in and around

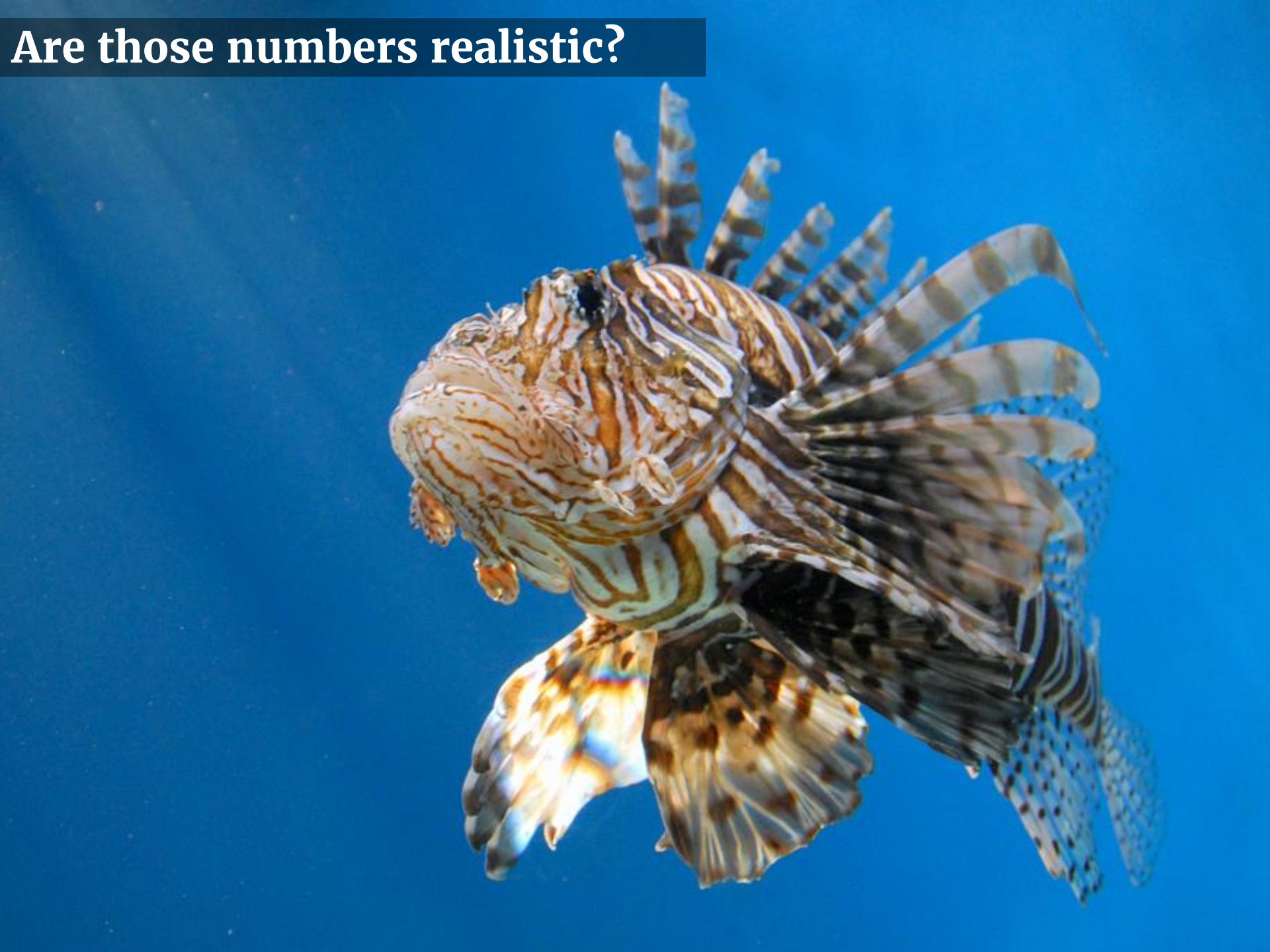
New York City ?

65,000

cabs, livery cars and "dollar vans"

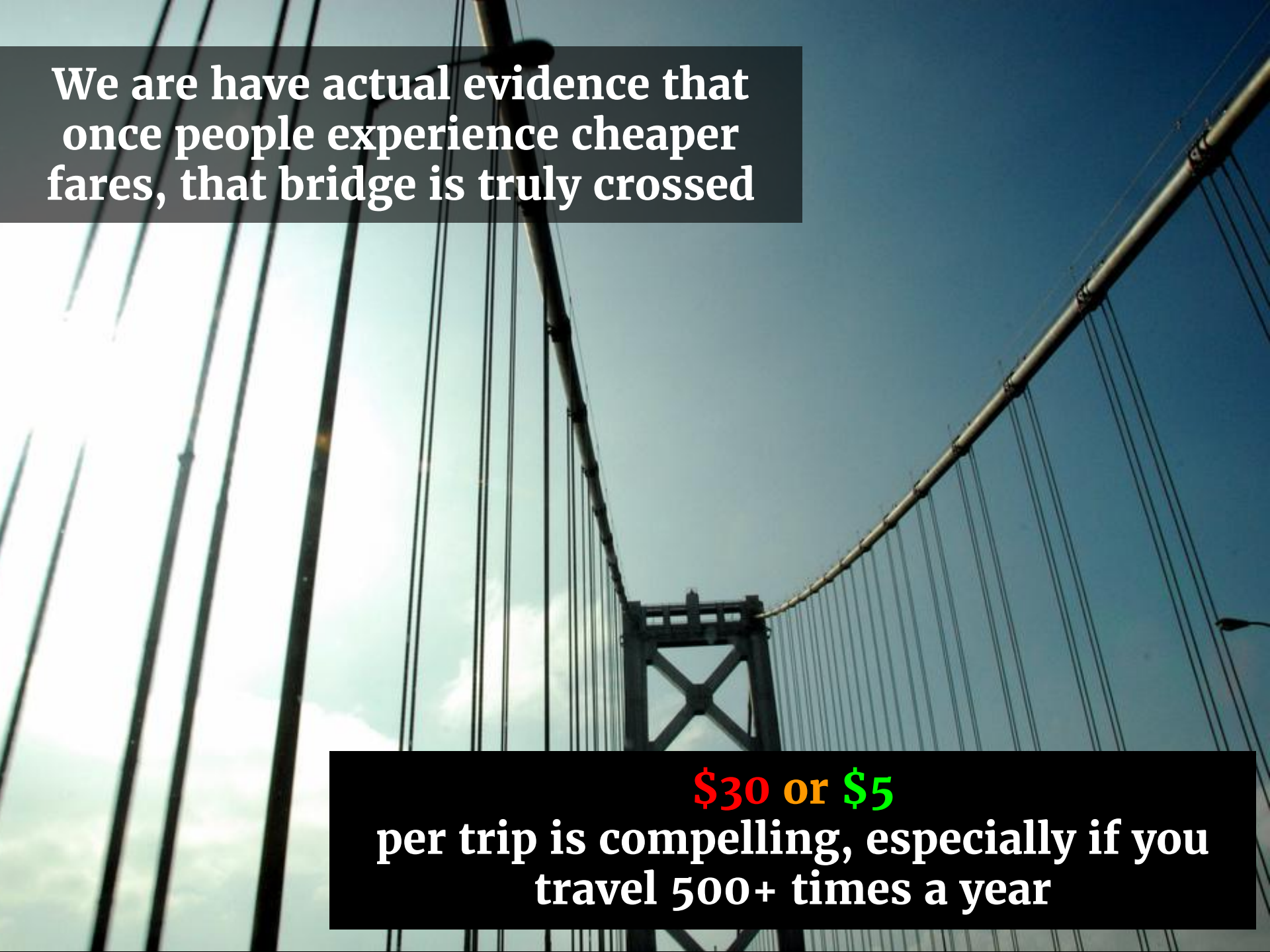

But this sounds like
"Blue Sky" thinking

Are those numbers realistic?




White Plains
2.383m per year
9,166 per day
North White Plains
660,400 per year
2,540 per day
Stamford
1.928m per year
7,415 per day
Greenwich
729,400 per year
2,800 per day


Would people really be attracted to such a scheme ?


We are have actual evidence that once people experience cheaper fares, that bridge is truly crossed
$30 or $5
per trip is compelling, especially if you travel 500+ times a year

And how much investment is needed to make this example a reality ?

$5m

to be paid to the licensing company for the franchise rights


What would all that
money to be used for ?

Advertising and promoting the service and its capabilities


Building demand in the "ramp up" period


It takes a certain amount of time to go
from "the ground floor"
to a well patronised system


This is the dawn of a new transport paradigm

We are ready to take the plunge in a number of cities

For more details

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