



What do we have?
What do we need?

Pierpaolo Cazzola, IEA

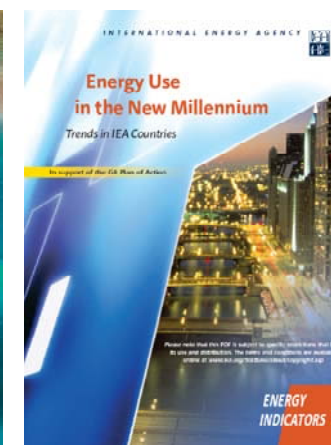
New Energy Indicators for Transport: The
Way Forward

Paris, 28-29 January 2008

What do we have?

Published transport data

- Two books on energy indicators, including transport
 - Relatively aggregated data on travel, stocks, sales, fuel economies
 - IEA countries
- Information from the IEA statistical DBs and publications
 - Energy prices and energy consumption
 - Prices for IEA countries and a few other, energy consumption in road, rail, aviation, maritime for most countries in the world, by fuel (gasoline, diesel, heavy fuel oil, increasingly better information on biofuels)



<http://www.iea.org/Textbase/stats/index.asp>

<http://data.iea.org/ieastore/statslisting.asp>

What do we have?

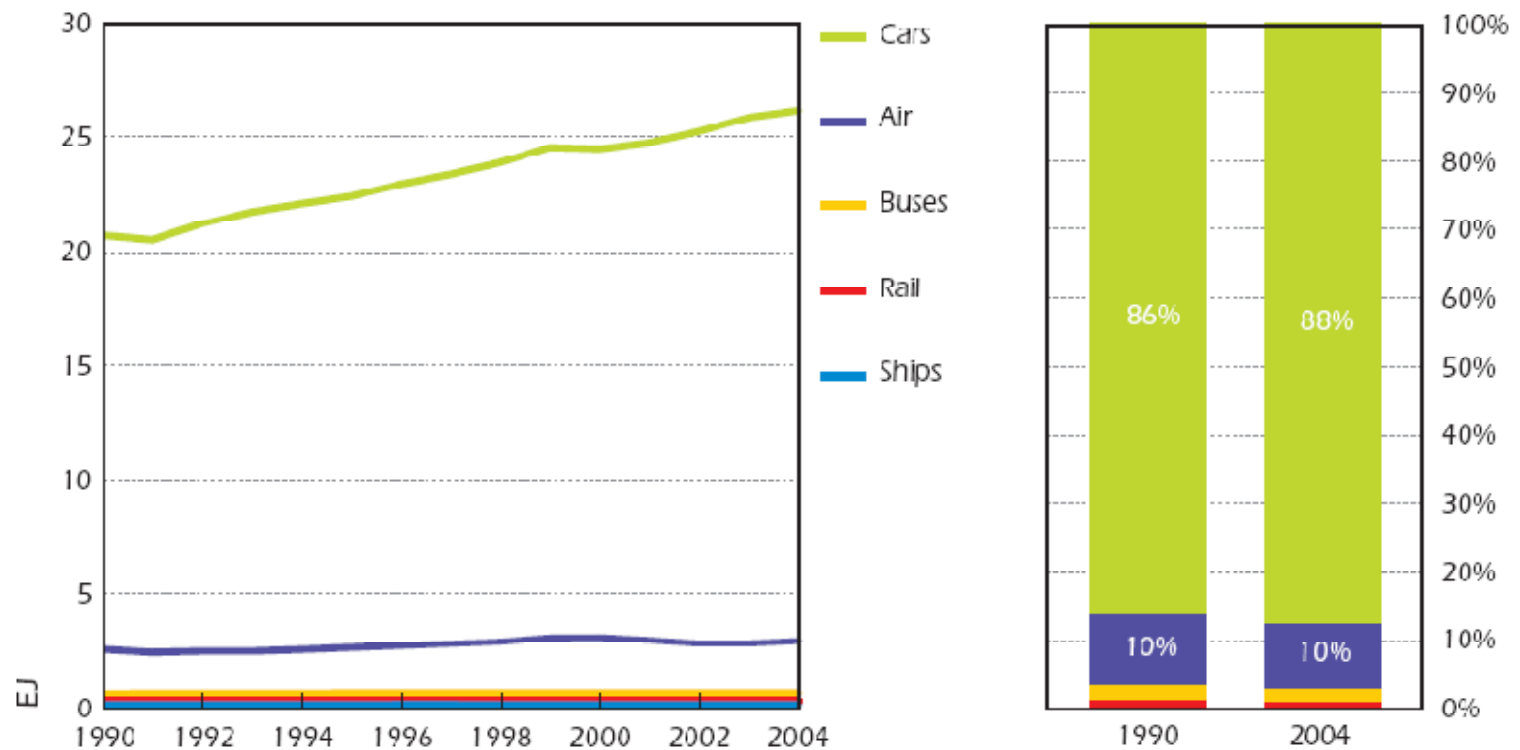
Mobility Modelling (MoMo) DB

- Detailed database containing information collected from a large number of public sources
 - Data on stocks, new vehicle sales, when possible used imported vehicles (improvements needed)
 - Gasoline, diesel, LPG and CNG vehicles considered
Several modes covered: passenger cars, light trucks, LCVs below 3.5 t GVW, trucks (<15t GVW), heavy trucks (>15t GVW), buses, minibuses
Fuel economies (average new vehicles)
 - Country-based data, several world regions covered (not all, yet: work ongoing)
 - The DB will include travel data, and this workshop is an effort to move on in this direction
 - Limited data availability, different classifications across the globe: estimations needed to some degree
- IEA ready to exchange information



Published transport data

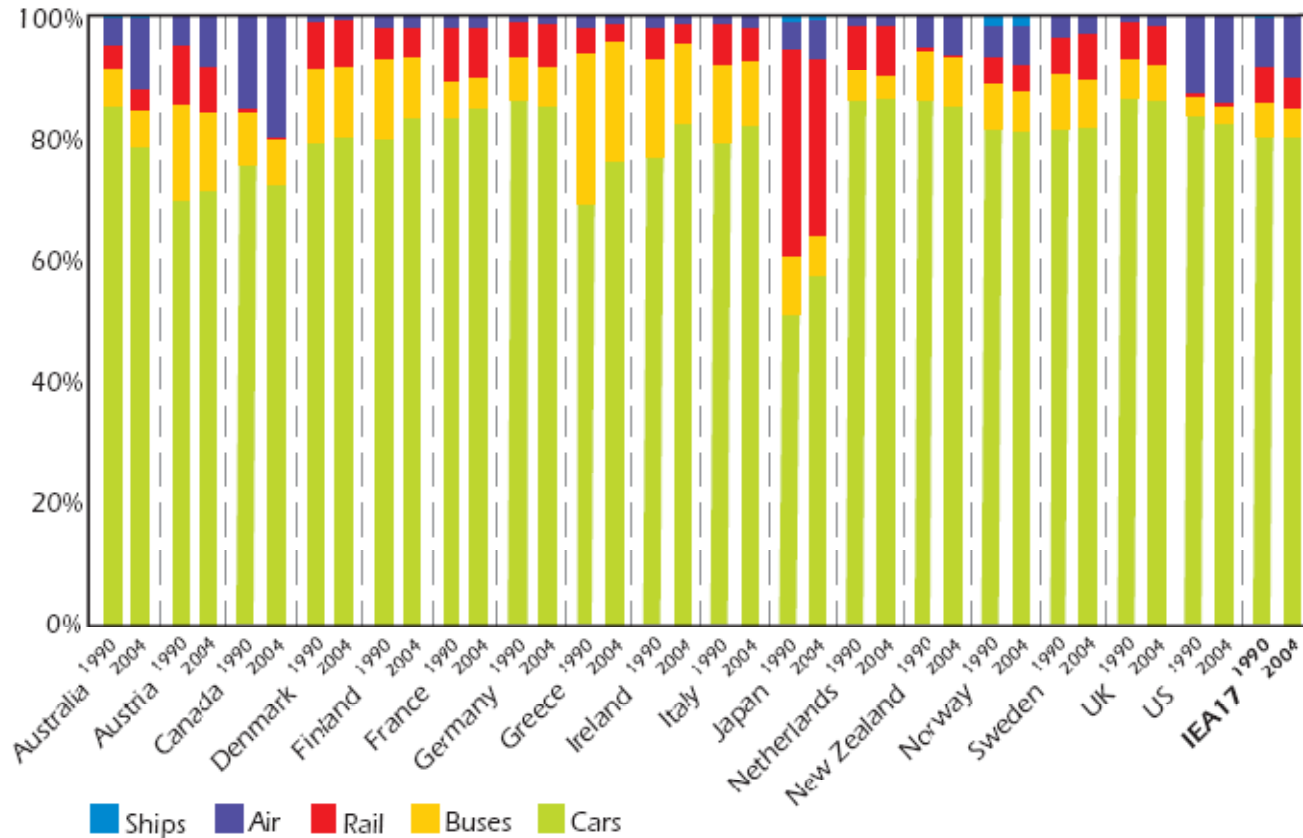
Indicators books, examples



Passenger Transport Energy Use by Mode, IEA17

Published transport data

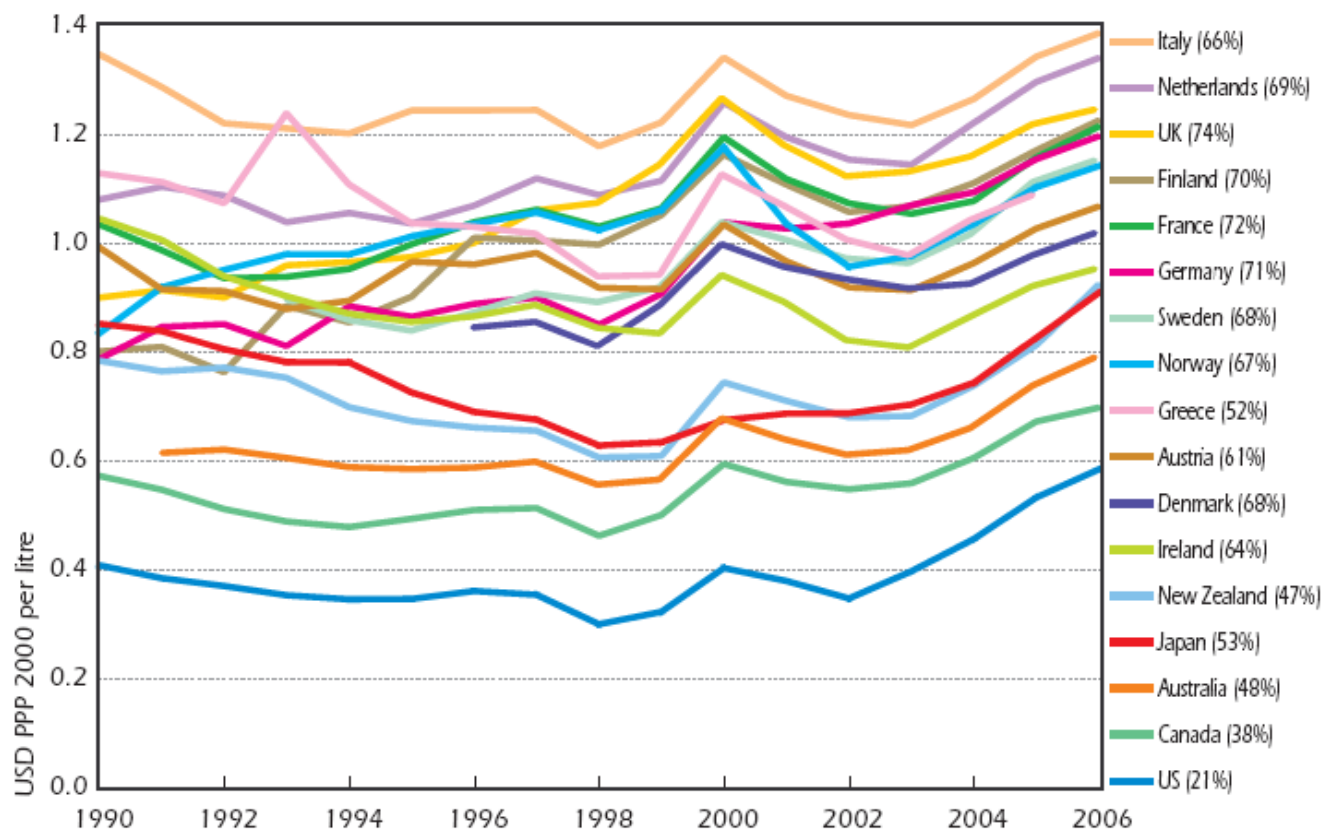
Indicators books, examples



Share of Total Passenger Travel by Mode

Published transport data

IEA statistics, examples (prices)



Note: Figures in parentheses refer to the percentage of taxes in the total retail gasoline price for non-commercial use in 2004.

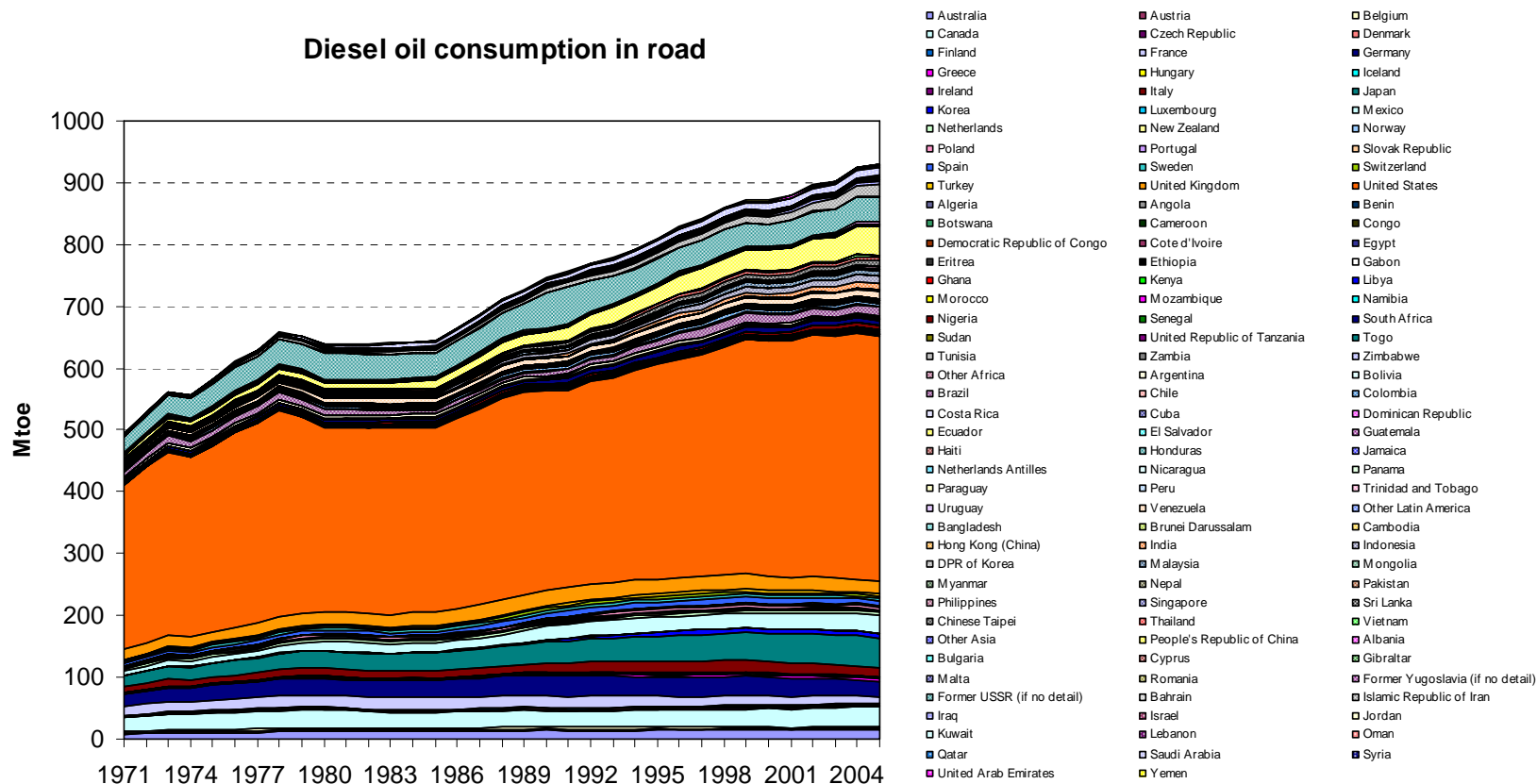
Trends in Retail Gasoline Prices in Real Terms

Published transport data

IEA statistics, examples (energy)



Diesel oil consumption in road



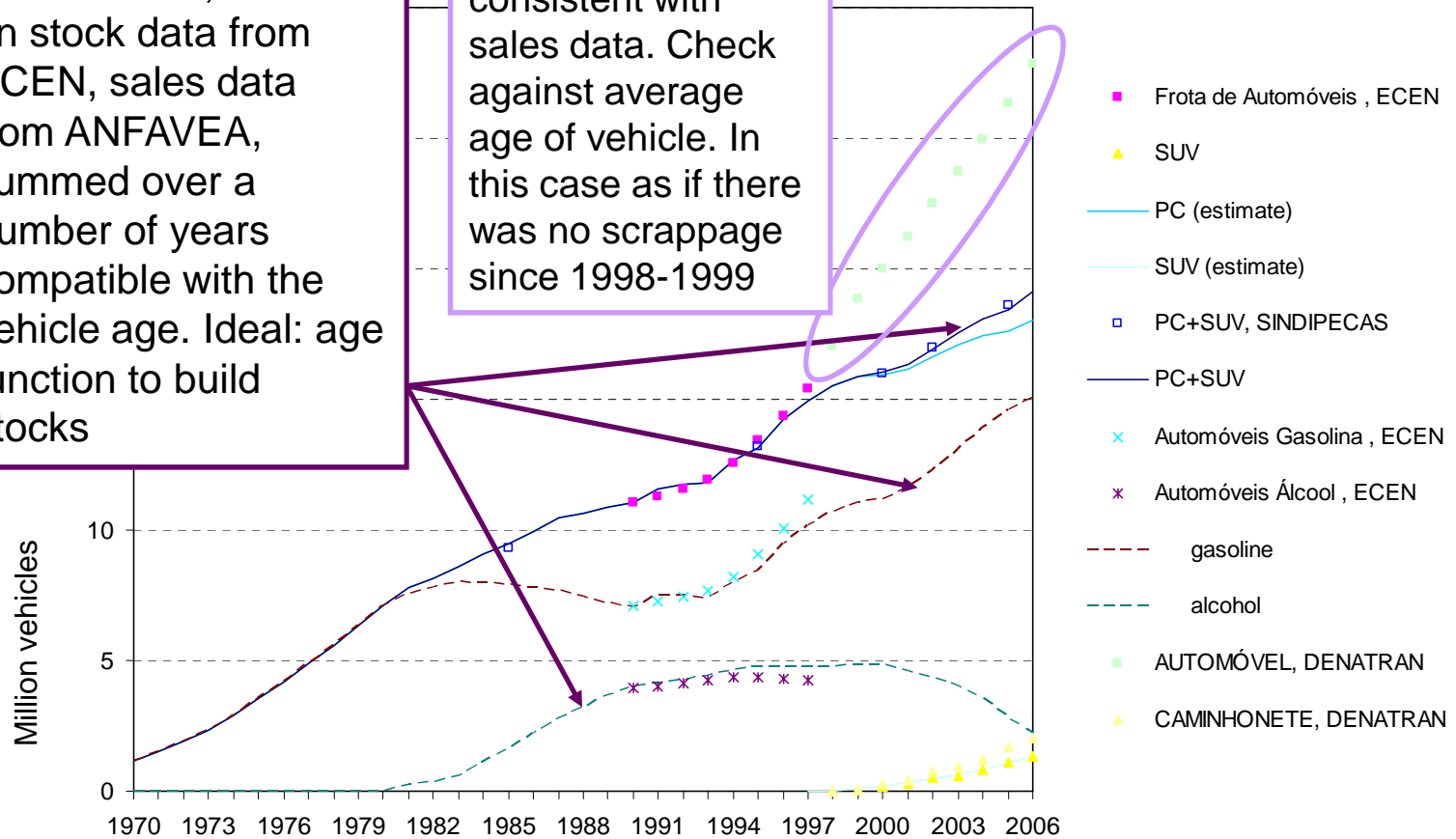
Fuels: all petroleum products, natural gas
Flows: road, rail, shipping, aviation

Mobility Modelling (MoMo) DB Examples



IEA estimate, based on stock data from ECEN, sales data from ANFAVEA, summed over a number of years compatible with the vehicle age. Ideal: age function to build stocks

Sources not always consistent with sales data. Check against average age of vehicle. In this case as if there was no scrappage since 1998-1999

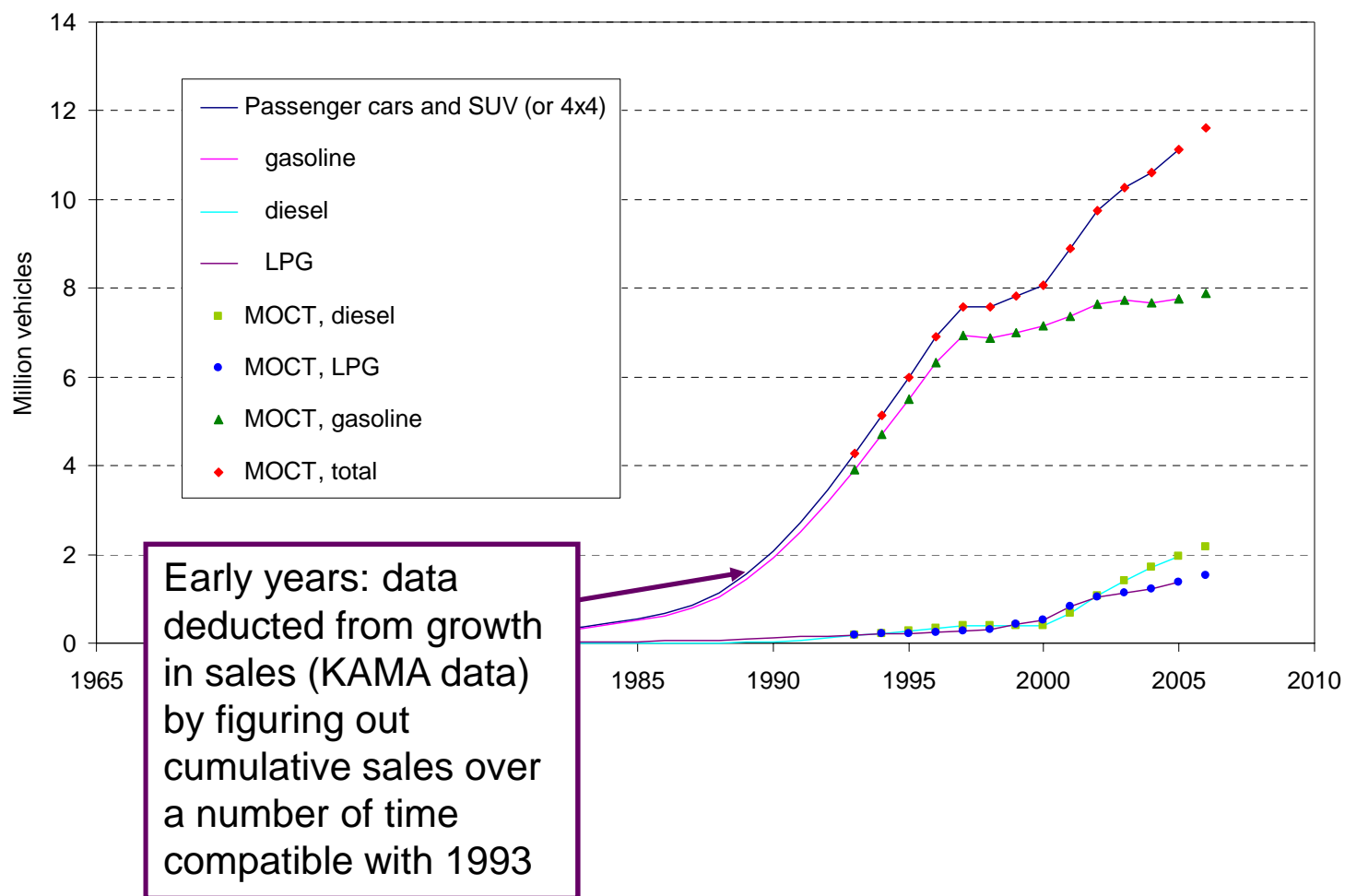


Brazilian light duty vehicles stock (by fuel and by category)

Mobility Modelling (MoMo) DB Examples



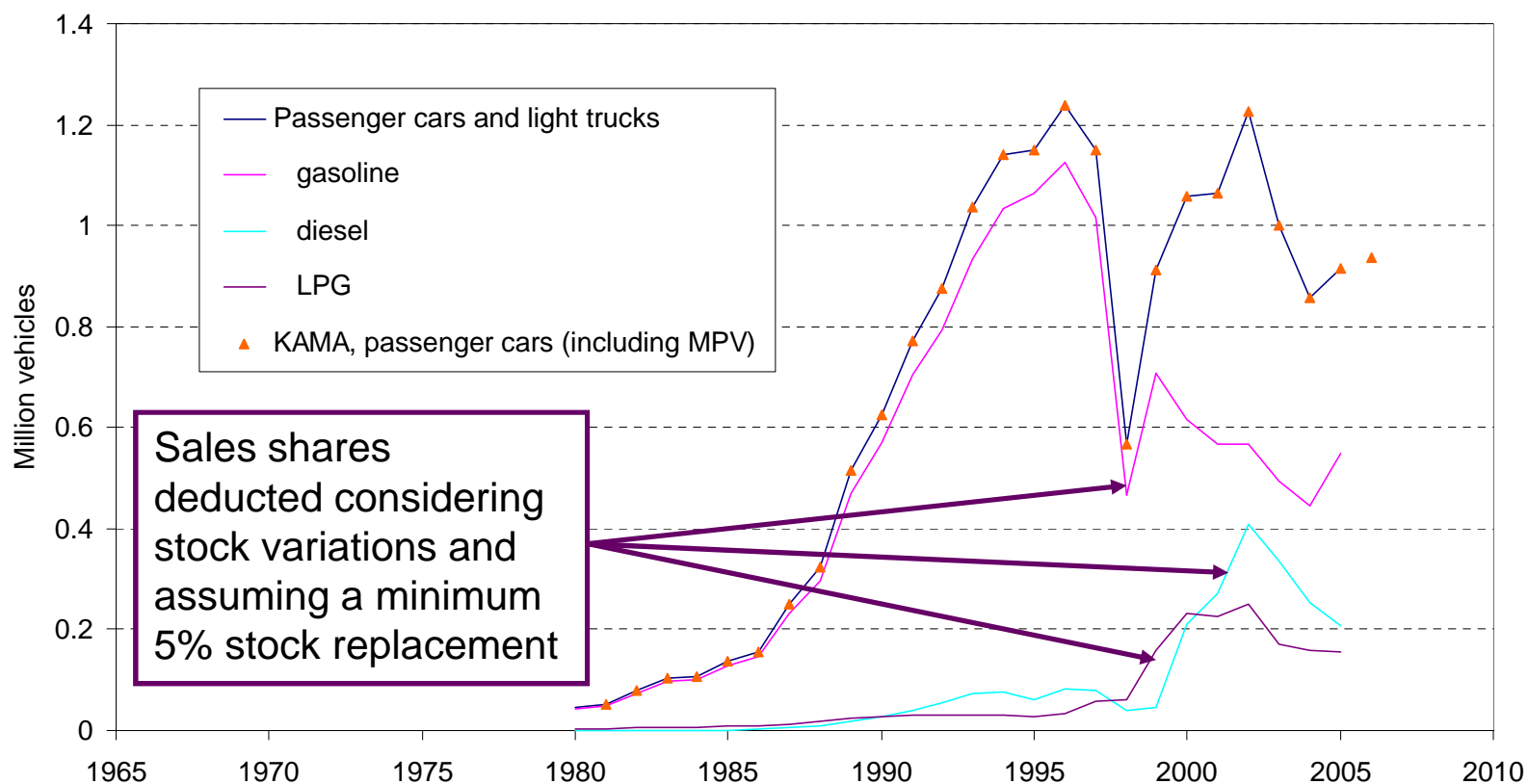
Korean Passenger cars and light trucks (stock)



Mobility Modelling (MoMo) DB Examples



Korean Passenger cars and light trucks (sales)



What do we need?

Everything!

- IEA MoMo model: ASIF approach

Activity · Structure · Energy Intensity = Fuel use

- CO₂ emissions directly related to fuel use, but also Fuel characteristics

Information needed

- Activity → Passenger (or freight) travel
 - Vehicle travel
 - Changes amongst different vehicles and vehicle classes
 - Changes in travel as vehicles get old (notable for personal transport)
 - Relationship with density of population, urban or rural environment
 - Load factors (passenger or tonnes per vehicle)
 - Changes with income levels
 - Changes due to local parameters (alternative modes, geography)
 - Relationship with density of population, urban or rural environment
 - Freight: changes can be associated to time, shipping patterns, vehicles, type of goods...



What do we need?

Everything!

- Energy Intensity
 - Fuel economies for passenger travel
 - Tested for new vehicles
 - On road for new vehicles
 - Vehicle age and variation of vehicle travel to estimate stock average fuel efficiency
 - Effect of congestion and consumption not captured in tests (“gap factor”), like A/C
 - Physical parameters (weight) and correlation to fuel economy
 - Technologies, technological potential and link to efficiency
 - Freight travel: intensity rather related to “Fuel Used” and “Work Done”
 - Interest in understanding how much energy is required to deliver goods consumed (e.g. supply chain)
 - Other methods, other relevant parameters
 - Data on fleets, average consumption, travel: minimum requirement to explain energy consumption and CO₂ emissions from transportation



What do we need?

Everything!

- Structure
 - Vehicle shares
 - All vehicles are characterised by different parameters (travel, energy intensity, capacity, load factors, fuel used)
 - Structural changes can be key factors to reduce fuel demand (e.g. public transport, shipping and rail vs. road)
- Fuel characteristics
 - Indispensable for WTW estimates of GHG emissions
 - Very relevant for carbon intensive pathways and biofuels
 - Helpful to understand technological introduction
 - Instrumental for other parameters (e.g. basic evaluation of pollutant emissions)
- Fuel prices
 - Differentiation amongst fuels and taxation
 - Correlations with fuel economies

