

COPERT 4 Training

3. Activity Data – Beginner's Guide

Guide to a national inventory compilation - 1

A feasible approach...

Obtain fuel consumption from national statistics (fuel sold)

If derogation is in place: Estimate effects of tank tourism, black market, otherwise these are kept zero

From 1 and 2 estimate true consumption of road transport

Collect data on total fleet in operation per category

National registers (cars, light trucks, heavy trucks, busses, motorcycles)

Police (mopeds)

Collect data on vehicle distribution per fuel and sub-category

National registers

Data from countries with similar structure (data from the *Fleets* project)



Guide to a national inventory compilation - 2

  If no statistical data exist, use age distributions to allocate vehicles to emission standards

pre ECE vehicles	up to 1971
ECE 15 00 & 01	1972 to 1977
ECE 15 02	1978 to 1980
ECE 15 03	1981 to 1985
ECE 15 04	1985 to 1992
Euro 1	1992 to 1996
Euro 2	1996 to 2000
Euro 3	2000 to 2004
Euro 4	2005 to 2010

 Use information on sales/new registrations

 Watch out for second-hand registrations

  Obtain average min and max monthly temperatures for major cities and produce average. Data can be found on websites (e.g. www.weatherbase.com) as well.

  Estimate travelling speeds for urban areas (e.g. 25 km/h), rural areas (e.g. 60 km/h) and highways (e.g. 90 km/h). Estimation needs to be reasonable but not exact.

Guide to a national inventory compilation - 3

Estimate mileage shares in the three modes. The sum should make up 100%. Reasonable but not exact estimation is required.

Assume mileage values in the order of

PCs: 11 – 15 Mm/year

LDVs: 15 – 25 Mm/year

HDVs: 50 – 80 Mm/year (national km only!)

Busses: 50 – 70 Mm/year

Mopeds: 2 – 5 Mm/year

Motorycles: 4 – 8 Mm/year

One could adjust mileage per age based on the 'Fleets' data

Perform COPERT run

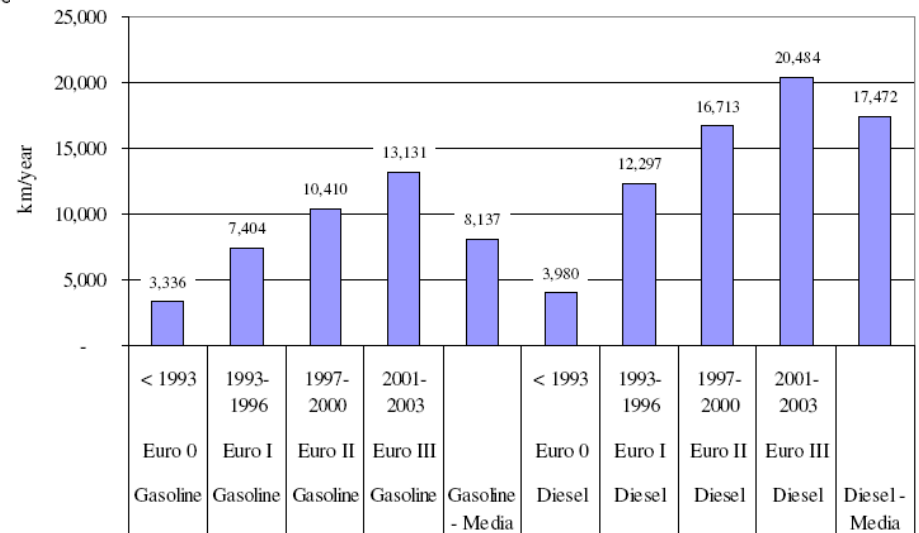
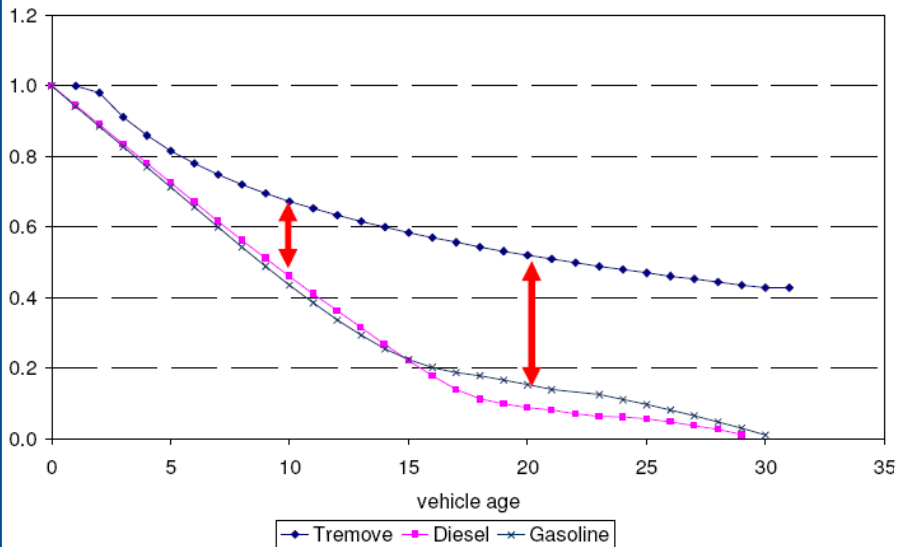
Compare statistical with calculated fuel consumption per year

Total fuel consumption

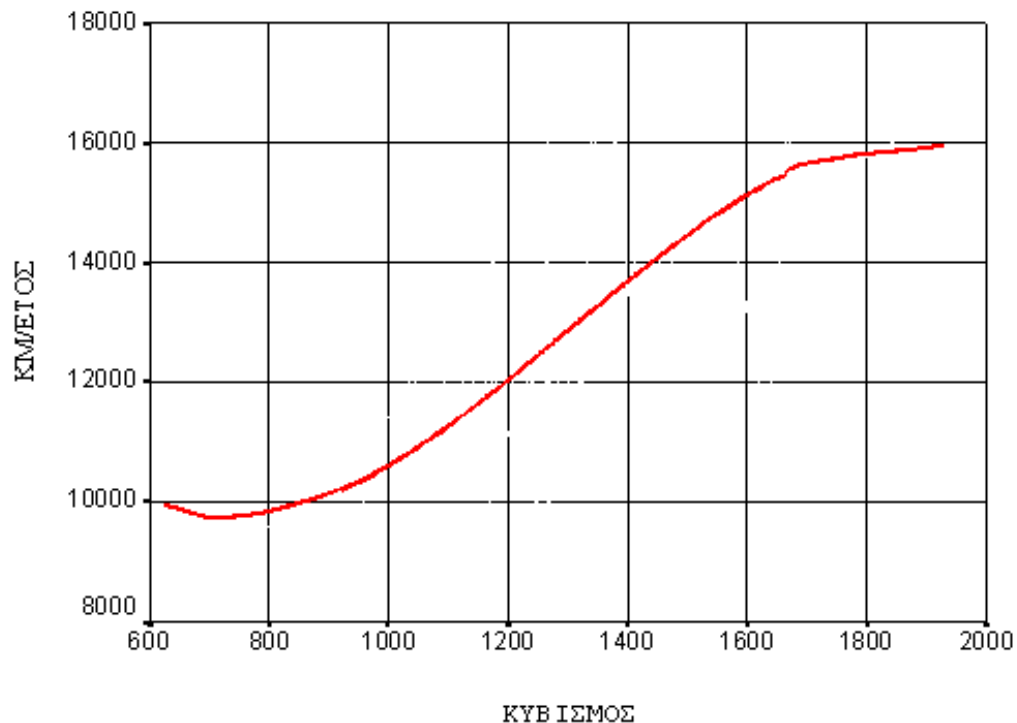
Fuel consumption per fuel

Adjust mileage to equalize calculated with statistical values

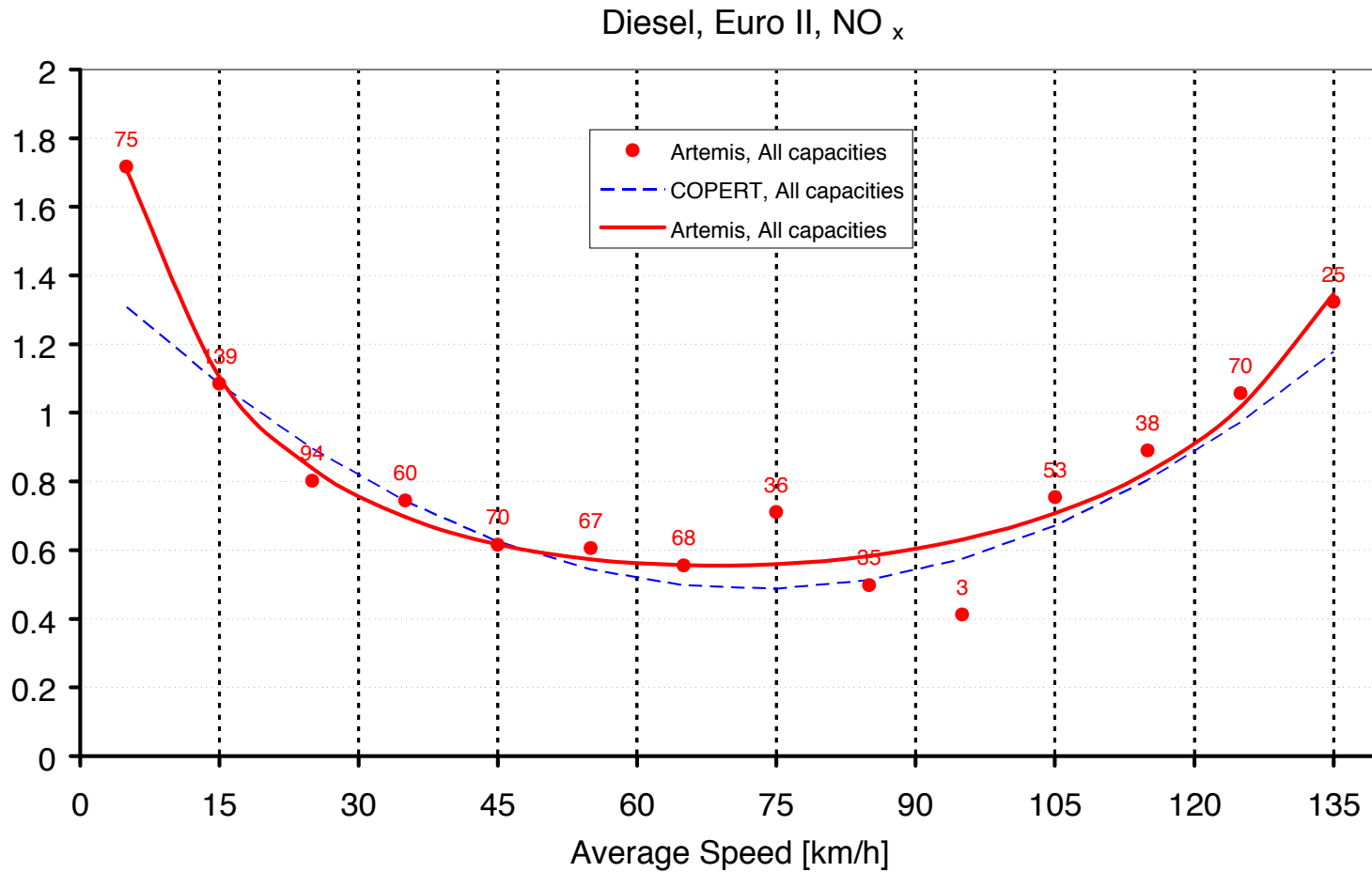
Mileage as a function of age



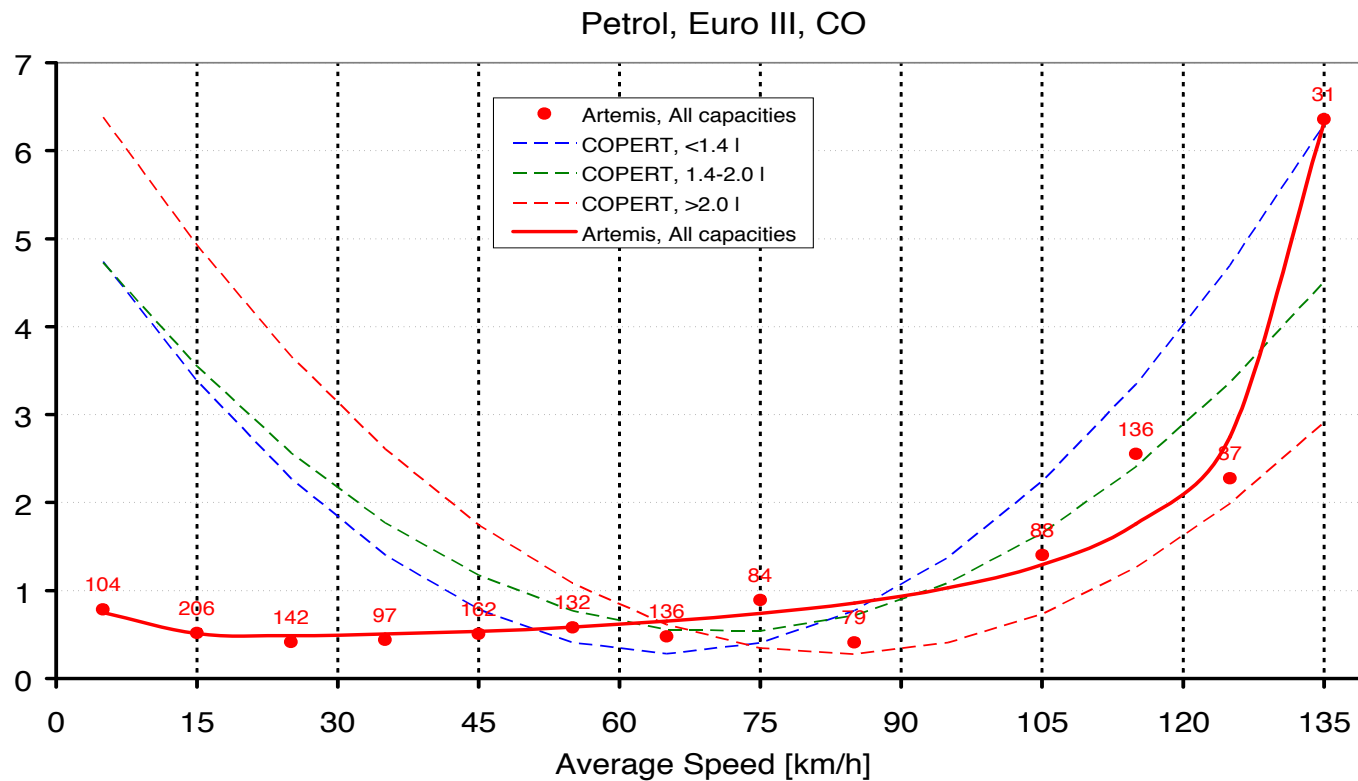
Mileage as a function of vehicle size (engine capacity)



How accurate should speed estimate be? - 1



How accurate should speed estimate be? - 2



Trip distance

- Required to calculate cold-start
 - Short frequent trips increase over-emission due to cold start
- What is a journey
 - A driving sequence
- What is a **trip**
 - A driving sequence between a switch-on and switch-off event
 - Work – grocery store – home: Two trips (one journey)
 - Home – children drop-off – work: One trip



Typical trip distributions

Distance classes	Percentage of trips
0-1	5.67%
1-5	39.17%
5-20	39.17%
20-50	11.84%
50-80	2.15%
80-100	0.50%
100-200	0.93%
200-500	0.43%
>500	0.14%
<u>sum</u>	100.00%

France

Distance classes	Percentage of trips
0-1	6.19%
1-5	31.71%
5-20	37.23%
20-50	19.80%
50-80	3.31%
80-100	1.38%
100-200	0.22%
200-500	0.01%
>500	0.16%
<u>sum</u>	100.00%

Sweden

Importance of Input Variables

Parameter	Importance	Availability of statistics	Notes /Particular Issues
Total number of vehicles per class	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	Question is the scooter and mopeds registration availability
Distinction of vehicles to fuel used	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	Question is the availability of records for vehicles retrofitted for alternative fuel use
Distribution of cars/motorcycles to engine classes	<input type="checkbox"/>	<input type="checkbox"/>	Not important for conventional pollutants, more important for CO2 emission estimates
Distribution of heavy duty vehicles to weight classes	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	Vehicle size important both for conventional pollutant and CO2 emissions
Distinction of vehicles to technology level	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	Imported, second-hand cars and scrappage rates are an issue
Annual mileage driven	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	Can be estimated from total fuel consumption. The effect of mileage with age requires attention.
Urban driving speed	<input type="checkbox"/>	<input type="checkbox"/>	Affects the emission factors
Rural, highway driving speeds	<input type="checkbox"/>	<input type="checkbox"/>	Little affect the emission factors, within their expected range of variation
Mileage share in different driving modes	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	Little affect emissions, within their expected range of variation



Detailed activity data – EU27

- May be found at EMISIA website
- Have been collected in the framework of the DG ENV 'Fleets' project
- Up to 2005 in five year intervals

... a good starting point!

