The French traffic and fuel balance of road vehicles

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Road traffic and fuel balance: a coherent set of estimates

Principle: an iterative process
I From fleet to traffic
II From traffic to fuel consumption
III The balance (deliveries, consumptions)
A multiple partners agreement, based on various data sources

Outlook: use of additional administrative data?
(the technical inspections files, the new registration system, decentralization issue….)
An iterative process

I Estimation of road traffic from direct (partial) or indirect sources

II Estimation of total consumptions

II Confrontation of fuel consumptions and deliveries (estimation of statistical adjustment)

=> return on initial hypothesis, if the gap is not explained

=> traffics of light and heavy vehicles are jointly estimated
A double formula

I – From fleet to traffic
(for vehicles registered in France only):

Traffic (vehicles-kilometres) = Fleet x annual average mileage

II – From traffic to fuel consumption
(for all vehicles, foreign vehicles included):

Total consumption in France (m3) = Traffic x unit consumption (litres/100 km)
Fleet: 7/10 new private cars in 2004 have a Diesel motorisation (*)

Source: CCFA

* About 2 millions new cars were registered:
  Diesel = 1.4 million; gasoline = 0.6 million
I-A Data sources to estimate the fleet in use

- A national registry of vehicles (FCA): all types of vehicles (passenger cars, light duty vehicles, lorries, coaches, buses, motorcycles, trailers, …) except for special vehicles (agricultural tractors, special purpose…)

- Traditionally combined with administrative data sources (from taxes)

- But in 2000: the main tax on private cars (‘vignette automobile’) is suppressed

- Hypothesis are made on the vehicle lifetimes to correct the (positive) bias of FCA dataset
I-B Average annual mileages for passenger cars in France (km)

Two main household surveys:
‘SECODIP’: continuous, reporting sheets every two weeks (3300 cars)
‘SOFRES’: annual survey (10 000 households, postal)
I-C Estimating total traffic

Total traffic: centralised counts on the national network only (SIREDO stations cover 40% of total road traffic)

Large surveys for base years (1994, 2007)

Evolutions for French registered vehicles:
- for passenger cars: surveys (mainly SOFRES)
- heavy goods vehicles = European survey (permanent)
- coaches: annual survey and direct sources (until 2005)
- light commercial vehicles, special purpose road vehicles: survey every 4 or 5 years
- motorcycles???

Foreign vehicles: indirect estimations
(data on tourism, EMCT databases, customs…)

11 octobre 2005
SIREDO count stations: a traffic index automatically computed

2000 stations (of all types) are installed on the national road network (35 000 km), of which:

- **1700 « longueurs » (length) stations**: Traffic flows are recorded into 3 categories, depending on the length of the vehicles

- **510 « silhouettes » (shape) stations**: Traffic flows are recorded into 14 categories, depending on the shape of the vehicles

- **170 « charges » (load) stations**: Traffic flows are recorded into 12 categories, depending on the gross vehicle weights (computed from axles load and shapes)
<table>
<thead>
<tr>
<th>Type of network</th>
<th>Traffic (G v-km)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conceded motorways (toll)</td>
<td>76,1</td>
<td>14</td>
</tr>
<tr>
<td>Other motorways (free)</td>
<td>45,3</td>
<td>8</td>
</tr>
<tr>
<td>National roads</td>
<td>96,2</td>
<td>17</td>
</tr>
<tr>
<td><strong>Total national network</strong></td>
<td><strong>217,6</strong></td>
<td><strong>39</strong></td>
</tr>
<tr>
<td>Regional, local and urban roads *</td>
<td>342,2</td>
<td>61</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>559,9</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Evolution of traffic on national roads is measured (traffic index)

*Traffic on local road network is computed (= total – national)
II. From traffic to fuel consumption

Data sources to estimate unit fuel consumptions (litres /100 km, French registered vehicles):

- Gasoline or diesel passenger cars: mainly SECODIP panel (control: SOFRES panel)
- Motorcycles (gasoline): ??
- Heavy vehicles (diesel):
  - Trucks: consumption from permanent (European) survey
  - Coaches: annual panel survey (until 2005)
  - Light commercial vehicles: survey every 4 or 5 years;
  - Special purpose road vehicles: survey, not on a regular basis
II-A  Passenger cars unit fuel consumptions (l/100km)
II-B Total fuel consumptions

- Light or heavy French vehicles: formula (II)
- Foreign vehicles:
  no direct information; evolutions of unit consumptions are assumed to be similar to French vehicles, by type of vehicles; “transit” surveys for heavy vehicles in 1999, 2004 (next results for 2004 in 2005-2006)
- Statistical adjustment: estimations (evolution of fuel prices in France and in foreign countries, data on tourism, short term data for heavy good vehicles from ECMT…)
Total fuel consumption, by type of vehicles (on French territory)

<table>
<thead>
<tr>
<th>in 2004</th>
<th>Veh. (1000)</th>
<th>km. per veh.</th>
<th>Traffic (G v-km)</th>
<th>U.Cons. (L / 100 km)</th>
<th>Cons. (1000 m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>French standard vehicles, of which</td>
<td>35 834</td>
<td>14 593</td>
<td>522,9</td>
<td>9,1</td>
<td>47 520</td>
</tr>
<tr>
<td>- PC (gasoline)</td>
<td>16 571</td>
<td>10 488</td>
<td>173,7</td>
<td>7,7</td>
<td>14 302</td>
</tr>
<tr>
<td>- PC (Diesel)</td>
<td>13 160</td>
<td>17 442</td>
<td>229,5</td>
<td>6,5</td>
<td>14 460</td>
</tr>
<tr>
<td>- LCV (Diesel)</td>
<td>4 408</td>
<td>18 338</td>
<td>80,8</td>
<td>9,5</td>
<td>7 529</td>
</tr>
<tr>
<td>- HCV (Diesel)</td>
<td>557</td>
<td>49 261</td>
<td>27,4</td>
<td>36,5</td>
<td>9 683</td>
</tr>
<tr>
<td>Total</td>
<td>-</td>
<td>-</td>
<td>559,8</td>
<td>-</td>
<td>54 180(*)</td>
</tr>
</tbody>
</table>

(*) total consumption include: foreign vehicles = 4 479 (8 %); statistical adjustment, sales at frontiers and miscellaneous: 2 181 (4 %)
III The fuel balance

Total Consumption (on territory)
– fuel deliveries
=
frontier balance (1)
+ statistical adjustment

(1) Fuel bought abroad (for traffic in France)
– fuel bought in France (for traffic abroad)
Main results for passenger cars (PC) in 2004

French PC = 72% of vehicle-kilometres, and 53% of all total consumption in m³ (all vehicles)

Total traffic: globally stable (- 0.2%) (+0.5% overall)

Unit consumption: 7.0 l /100 km (- 1,6%)

Total fuel consumption: 28.8 M m³ (- 1,8 %) :

- gasoline 14.3 M m³ (- 6,5%)
- diesel 14.5 M m³ (+ 2,8%)
Outlook

- New base year needed (last detailed data on traffics = 1994; next survey in 2007)
- The new registration system: a unique ID number for each vehicle
  ... but not before 2007 (2008?)
- Testing the inspection visits files (‘UTAC’)
Inspection visits: before the 4th anniversary, and every 2 years thereafter

Technical controls in 2003, by age of vehicles

Average fail rate at first visit: 20%

Under 4 years: 6.7%

Over 10 years: 27.4%

Quality of km variable not tested yet
Results on the internet:

http://www.statistiques.equipement.gouv.fr/
/Transport
/Données d’ensemble (rapport 2004)