Use of Big Data for Vehicle Kilometres

Noreen Dorgan

CSO Ireland

April 2018

CSO Vehicle Kilometres

Using Administrative Data to estimate Vehicle kms for the national vehicle fleet

- **Voluntary Data Collection agreed at 2007 EU Transport Co-ordination meeting**

- **Drivers - Why data on Vehicle kilometres travelled is needed?**

  - Transport Policy and Planning

  - Fuel Consumption

  - Emissions from Road Transport

  - Road Safety Policy

  - Eurostat objective – harmonised data collection across the EU

CSO Vehicle Kilometres

Methods used for calculation of VKms described in UNECE Handbook

- **Main Methods used internationally for calculation of VKms**

  - Traffic Counts – automatic and manual

  - Household Surveys

  - Fuel Consumption

  - Odometer Readings (Method adopted by Ireland)

  Method adopted by Ireland - Odometer Readings – Reading taken at vehicle inspection

  These readings provide the distance travelled by a tested vehicle in a specific period which is converted into kilometres travelled

CSO Vehicle Kilometres

Estimation methodology based on

- Vehicle monthly population totals - NVDF

- Odometer data – NCT, HGV, LGV

- Traffic counter data - TII

Assumptions

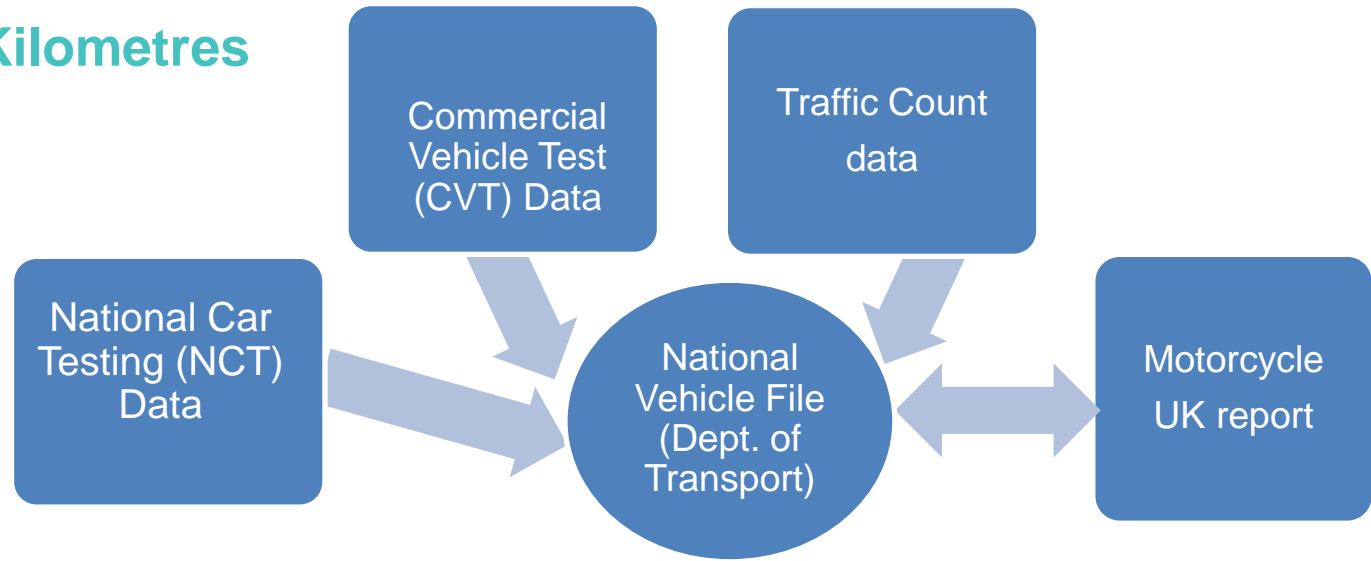- New private cars

- Motorcycles

- Machines and contrivances

Average Car Kilometers Travelled Per Year

1 8 0 0 0 Km

Up 3.6%

CSO Vehicle Kilometres

Commercial Vehicle Test (CVT) Data

Traffic Count data

National Car Testing (NCT) Data

National Vehicle File (Dept. of Transport)

Motorcycle UK report

Average Vehicle Kilometres by:

* Vehicle type

* Vehicle size

* County of owner

* Engine size

* Fuel type

* Gender of owner

* Age of vehicle

CSO Vehicle kilometres

Calcluation of VKM

- Number of vehicles from NVDF for reference year.

- Odometer readings from NCT and CVRT (National Car Test and Commercial Vehicle Roadworthiness Testing Services). Distance travelled easily seen in odometer readings.

- Private cars over 4 years old NCT every 2 years. Goods vehicles and public service vehicle annual data available.

- Distance is distributed across intervening months – weighted according to traffic index (traffic counter data collected by TII)

- Once kilometres of sample vehicles available, then apply to fleet which is divided into motor taxation classes, fuel types, engine sizes etc. The VK travelled by the sample is taken as a representative of the whole.

- No. of vehicles in the estimate are based on continuous activity throughout the reference year. If a vehicle only active for 6 months, then it gets a population weight of 0.5 etc.

CSO Vehicle kilometres

Issues with calcluation of VKM

- Kilometres by Irish vehicles in other countries are included

- Kilometres by Foreign vehicles on Irish roads are outside the scope of the survey

- Vehicle kilometre estimates and average kilometre estimates for motor cycles, tractors and machinery are unreliable (minimal odometer data is available for these categories of vehicles)

- Vehicle kilometre estimates and average kilometre estimates for private cars less than four years old are based on the extrapolated trends of older private cars

- Eurostat want data by age by fuel and by type. For 0-2 and 2-4 year old cars (assumptions made)

- Fuel types electric/hybrid are insignificant at present. Data by vehicle by age by these fuel types – insignificant at the moment.

CSO Vehicle Kilometres

Eurostat Questionnaire: Vehicle Type

- Passenger cars

- Mini buses, Buses and coaches

- Goods vehicles (<=3.5t, 3.5-12t, 12+t)

- Mopeds, motorcycles etc.

- Tractors, special purpose vehicles

Age Groups

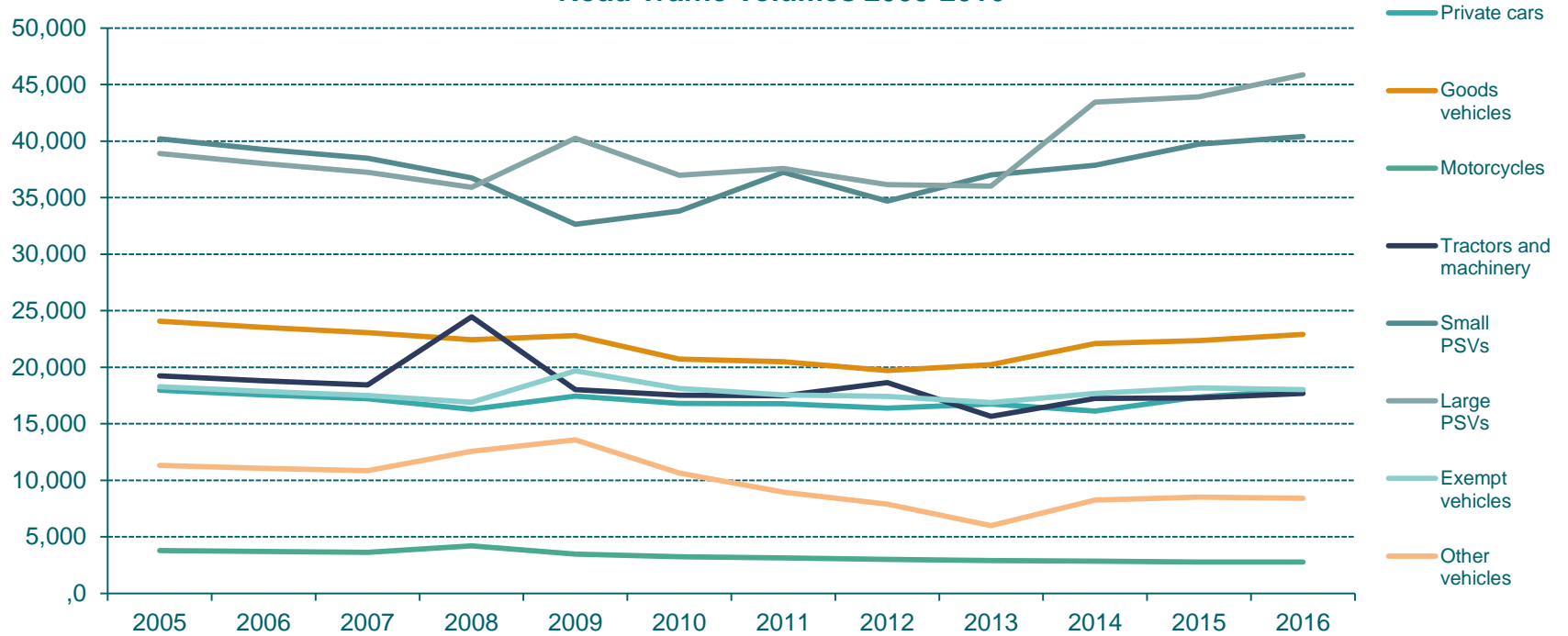- 0-2yrs, 2-4yrs, 4-6yrs, 6-8yrs, 8-10yrs, 10-15yrs, 15-20yrs, 20+yrs

Fuel Type

- Petrol, Diesel, Bi-Fuel Petrol/LPG or CNG, Electric

CSO Vehicle Kilometres

Road Traffic Volumes 2005-2016

CSO Vehicle Kilometres

Year	Private cars	Goods vehicles	Motorcycles	Tractors and machinery	Small PSVs	Large PSVs	Exempt vehicles	Other vehicles	Total
Vehicle population[1]									
2014	1,950,080	316,687	36,429	95,593	22,890	8,637	26,211	64,906	2,521,433
2015	1,992,819	326,277	36,755	92,367	22,428	9,019	27,019	67,278	2,573,961
2016	2,038,268	338,431	37,461	89,237	21,935	9,539	27,742	68,479	2,631,093
Vehicle kilometres (million)									
2014	31,457	6,999	103	1,647	867	375	463	536	42,447
2015	34,609	7,290	102	1,598	891	396	491	573	45,950
2016	36,689	7,750	104	1,577	886	437	500	576	48,519
Average vehicle kilometres									
2014	16,131	22,100	2,835	17,228	37,874	43,446	17,677	8,254	16,834
2015	17,367	22,344	2,774	17,298	39,740	43,921	18,165	8,518	17,852
2016	**18,000**	**22,899**	**2,769**	**17,677**	**40,409**	**45,864**	**18,009**	**8,407**	**18,441**

Source: CSO

[1] Vehicle population represents annual average for each year

CSO Vehicle Kilometres

Eurostat project on VKMs

- To obtain reliable statistics on vehicle-kilometres for the monitoring of EU transport policies.

- The data available now is from Pilot Questionnaire attached to Common Questionnaire.

- Future data source- odometer reading data (data recorded during compulsory roadworthiness tests, Roadworthiness Package,- Directive 2014/45/EU)

- Eurostat will continue to publish road traffic data collected through the Pilot questionnaire but not yet the data based on odometer readings collected on a voluntary basis (the MSs which responded to the questionnaire in 2015 and MSs that obtained grants in 2016 and 2017)

CSO Vehicle Kilometres

Current tables on the CSO StatBank

THA10 Road Traffic Volumes by Type of Vehicle, Year and Statistic gives annual figures on number of vehicles, kilometres travelled, average kilometre travelled by all types of vehicles from 2000 to date -
http://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=THA10&PLanguage=0

THA17 Road Traffic Volumes by County of Ownership, Year of Registration, Type of Vehicle, Year, Statistic and Fuel Type previously THA12
http://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=THA17&PLanguage=0

THA18 Road Traffic Volumes of Private Cars by Type of Ownership, Engine Capacity cc, County of Ownership, Year of Registration, Year, Statistic and Fuel Type previously THA13
http://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=THA18&PLanguage=0

THA19 Road Traffic Volumes of Goods Vehicles by County of Ownership, Unladen Weight, Year of Registration, Year and Statistic previously THA14
http://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=THA19&PLanguage=0

THA20 Road Traffic Volumes of Small Public Service Vehicles by Type of Public Service Vehicles, Engine Capacity cc, Year of Registration, Type of Ownership, Year, Statistic and Fuel Type previously THA15
http://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=THA20&PLanguage=0

CSO Vehicle Kilometres

Current tables in Eurobase

- 📂 Road traffic (road_tf)
  - 🔍 ZIP Motor vehicle movements on national territory, by vehicles registration (road_tf_vehmov) ⓘ
  - 🔍 ZIP Road traffic by type of vehicle (million Vkm) (road_tf_veh) ⓘ
  - 🔍 ZIP Road traffic on national territory by type of vehicle and type of road (million Vkm) (road_tf_road) ⓘ
  - 🔍 ZIP Road traffic on national territory by type and age of vehicle (million Vkm) (road_tf_vehage) ⓘ
  - 🔍 ZIP Road traffic for buses and coaches by type of transport - vehicles registered in the reporting country (road_tf_buscoa) ⓘ
- 📂 Road traffic - historical data (until 2012) (road_tf_h)
  - 🔍 ZIP Road traffic by type of vehicle until 2012 (road_tf_veh_h) ⓘ
  - 🔍 ZIP Road traffic on national territory by type of vehicle and type of road until 2012 (road_tf_road_h) ⓘ

CSO Vehicle Kilometres

Thank you for your attention