Data analysis on historic vehicles (HVs) and characteristics of HV owners: A survey across 15 EU countries







- The survey commissioned by FIVA
- GfK performed the survey in 15 EU countries
- The questionnaires distributed online + offline by HV clubs March-May 2014
- Different type of vehicles involved in the survey
 - 31.000 Passengers cars
 - 5600 Motorbikes, Mopeds and Scooters
 - 6700 vans, trucks, busses, tractors etc.
- 19431 respondents (completed questionnaires!)









Some overall findings





Some overall findings (continued)

Most used vehicle as regular transport



Expenses historical vehicles on average in Euro





Deeper data analysis on data

Statistical methods applied:

- Multivariate analysis \rightarrow to compare parameters and find trends and patterns
- Latent Class Analysis (LCA) \rightarrow to find latent classes among HV owners
- Structural equation modelling (SEM)→to find underlying factors affecting behaviour of people
- Items considered for the analysis (among others):
 - HV ownership
 - HV usage
 - HV Expenditure
 - Safety considerations
 - Congestion in urban/suburban areas caused by HV
 - Most important aspect of HV ownership
 - Classes of owners and their characteristics
 - Latent structures of factors explaining ownership and use of HVs



Overall counts of old timers(HV) and Young timers(YT) in the year of production



Year of production or first registration



Overall mileage of old timers(HV) and Young timers(YT)





Expenses of HVs compared by countries/region





Usage of HVs compared by countries/region





Number of HVs owned and income



HV Ownership and Usage



- The blue charts show the aggregate Kms driven
- The red charts show the Kms driven per vehicle





Living area & No. HV owned & Expenses on HVs



Distribution of Expenses among ages of owners



Age of owner



Income and Kilometres driven by all HVs





Club membership and HV usage





Accident rates reported by HV owners

- From Overall sample (19432 respondents) only 223 cases (1.1%) of accidents have occurred in 2013
- 20 cases involved injuries
 - 17 cases damage suffered by driver or passenger(s) (0.08%)
 - 3 cases of personal damage to third persons (0.01%)
- In 2013 in UK 183,670 cases of casualties due to road accidents reported an average of 41.5 injuries per 100 million vehicle kilometers in a year
- For our sample of HV owners, 34 injuries per 100 million vehicle kilometers → (~20%) less than UK rates which is one of the safest in EU



		N	Mean
Usage and	Petrol	29615	2091
Fuel type (cars)	Diesel	583	3847
	Liquefied Petroleum Gas (LPG)	531	3604
	Other	50	1990
	Total	30779	2150

 96% of cars registered use Petrol as fuel. This fleet On average drive 2100 Km per year.

- Overwhelming majority of cars use conventional fuels such as diesel and petrol
- Given average distance travelled per car and large numbers use conventional fuels at the market → fuels available today do not hinder HV enthusiasts



LCA to find classes among HV owners

- We gave variables such as: age; expenses; ownership and Km driven, to LCA and 5 classes of HV owners appeared with following features:
- Class 1 *Typical Enthusiast*: mainstream HV owner; few young timers; high income
- Class 2 Old-School Enthusiasts: lowest number of young timers; oldest age; lowest incomes among 50+ year old owners; many live in places less than 10,000 inhabitants
- Class 3 Antiquarian: high number of old-timers; drive lowest kilometres; 35% live in rural places (outside built-up area)
- Class 4 *Regular Transport Users*: highest mileage; own lowest number of cars; youngest age group; lowest incomes; mostly live in cities and large towns
- Class 5 *Collector* : low kilometres per car; own highest number of old timers and young

Parameters considered for LCA	Class 1 Typical	Class 2 Old-	Class 3 Antiquarian	Class 4 Regular	Class 5 Collector
	Enthusiast	School		Transport	
Class Size (%) of total sample	13427	2545	1962	1263	233
19432 respondents	(69.1%)	(13.1%)	(10.1%)	<mark>(6.4%)</mark>	(1.3%)
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LCA (continued) Popular brands among classes:

Cluster 1	
Typical	
Enthusiast	Valid Percentage
Citroën	8.2
Mercedes-Benz	7.0
Volkswagen (VW)	7.0
Volvo	6.3
Ford	5.9
Triumph	5.1
MG	4.8
Jaguar	4.6
Porsche	3.9
Fiat	3.7

Cluster 2		
Old-School	Valid Percentage	
MG	9.4	
Citroën	8.3	
Jaguar	6.9	
Triumph	6.5	
Mercedes-Benz	6.3	
Volvo	6.0	
Ford	4.6	
Volkswagen (VW)	3.5	
Fiat	3.4	
Porsche	3.3	

Cluster 3 Antiquarian	Valid Percentage
Citroën	11.3
Volvo	6.9
Volkswagen (VW)	5.8
Mercedes-Benz	5.7
Ford	5.0
Fiat	4.0
Renault	3.9
Jaguar	3.3
MG	3.2
Peugeot	3.2

Cluster 4		
Regular		
Transport	Valid Percentage	
Volkswagen (VW)	14.5	
Citroën	8.3	
Mercedes-Benz	7.7	
Ford	6.6	
Fiat	6.2	
Volvo	5.8	
Renault	4.7	
BMW	4.5	
Opel	4.2	
FSO	2.9	

Cluster 5		
Collector	Valid Percentage	
Citroën	11.2	
Renault	6.6	
Volkswagen (VW)	5.9	
Mercedes-Benz	5.8	
Ford	4.2	
Volvo	3.8	
Opel	3.4	
Fiat	3.2	
BMW	3.0	
Porsche	3.0	



LCA (continued) Most important aspect of owning your HV among classes:

- 'Recreation' as the most important aspect for Class 2 (old-school)
- Maintenance and repairing the HVs' highest for Class 3 (antiquarian)
- 'Daily use' highest in class 4 (Regular transport users)
- `Building-up a collection' mentioned most by class 5 (collectors)



SEM to find underlying factors affecting behaviour of people



SEM to find underlying factors affecting behaviour of people (continued)



The complete SEM model



Conclusions (main highlights)

- This is a first study of its kind on HVs using statistical tools and models
- Did 5 important indicators matter when it comes to ownership, expenditure and use of HVs?

Criterions	Ownership	Expenditure	Use
Indicators			
Country of origin	No	Yes	Yes
Level of income	No	Yes	Yes
Living area	Yes	No	No
Membership to clubs	Yes	Yes	Yes
Age of HV owner	No	Yes	No



Conclusions (main highlights)

- HV ownership in congested areas significantly lower than in uncongested rural areas (almost 30% lower).
- However use of HVs and expenditure on HVs do not significantly differ between various spatial living areas
- Expenditure on non-fuel costs (i.e. restoration, maintenance and car accessories) for cars pre 40s was 35% higher than the overall average of 4020 euros per car per year.
- Expenditure on cars after 70s were 17% lower than average.



Q&A Discussions!

Thank you for your attention!



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