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

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## The HV Survey

- 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.



## Some overall findings



Reason ownership top 3

42 \%
27 \%

Recreational touring, taking part in events and shows

## $20 \%$

Doing maintenance, repairs, restoration jobs

96 \%
Average number of km a person drove in 2013 with all historic vehicles


Average days a person used their historic vehicles in 2013

13years



## Some overall findings (continued)

Most used vehicle as regular transport


Garage/parking

Insurance costs


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) $\rightarrow$ 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 $(\mathrm{YT})$ in the year of production




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## 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


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## 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



## 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 $\rightarrow$ ( $\sim 20 \%$ ) less than UK rates which is one of the safest in EU


## Usage and

## Fuel type (cars)

|  |  |  |
| :--- | ---: | ---: |
| Petrol | N | Mean |
| Diesel | 29615 | 2091 |
| Liquefied Petroleum Gas | 533 | 3847 |
| (LPG) | 50 | 3604 |
| Other | 30779 | 1990 |
| Total | 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 $\rightarrow$ 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 <br> Typical <br> Enthusiast | Class 2 <br> Old- <br> School | Class 3 <br> Antiquarian | Class 4 <br> Regular <br> Transport | Class 5 <br> Collector |
| :--- | :--- | :--- | :--- | :--- | :---: |
| Class Size (\%) of total sample | 13427 | 2545 | 1962 | 1263 | 233 |
| 19432 respondents | $(69.1 \%)$ | $(13.1 \%)$ | $(10.1 \%)$ | $(6.4 \%)$ | $(1.3 \%)$ |

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## LCA (continued) Popular brands among classes:

| Cluster 1 <br> Typical <br> Enthusiast |  |
| :--- | :---: |
| Citroën | Valid Percentage |
| Mercedes-Benz | 8.2 |
| Volkswagen (VW) | 7.0 |
| Volvo | 7.0 |
| Ford | 6.3 |
| Triumph | 5.9 |
| MG | 5.1 |
| Jaguar | 4.8 |
| Porsche | 3.6 |
| Fiat | 3.9 |


| Cluster 2 <br> 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 <br> 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 |



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

- 'Recreation' as the most important aspect for Class 2 (oldschool)
- '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 | No | Yes | Yes |
| Country of origin | No | Yes | Yes |
| Level of income | Yes | No | No |
| Living area | Yes | Yes | Yes |
| Membership to <br> clubs | No | Yes | No |
| Age of HV owner |  |  |  |

## 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 40 s 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 <br> Discussions! 

## Thank you for your attention!

