Intelligent Data Analysis

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# Introduction

As all chose the Mileage dataset, it contains data about the fuel consumption of different car manufacturers which had a new release every year between 1999 and 2008. The dataset contains 234 records of 11 different variables, which are:

manufacturer: car manufacturer, categorical variable.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Manufacter | Audi | Chevrolet | Dodge | Ford | Honda | Hyundai | Jeep | Land Rover |
| nº records | 18 | 19 | 37 | 25 | 9 | 14 | 8 | 4 |
| Manufacter | Lincoln | Mercury | Nissan | Pontiac | Subaru | Toyota | Volkswagen |  |
| nº records | 3 | 4 | 13 | 5 | 14 | 34 | 27 |  |

model: car model name (38 different models), categorical variable.

displ: engine displacement or cylinder admission volume in litres, quantitative variable.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Min. | 1st Qu. | Median | Mean | 3rd Qu. | Max. |
| 1,6 | 2,4 | 3,3 | 3,472 | 4,6 | 7 |

year: year of manufacturing (1999 or 2008), categorical variable.

|  |  |  |
| --- | --- | --- |
| nº years | 1999 | 2008 |
| nº entries | 117 | 117 |

cyl: number of cylinders, categorical variable.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| nº gears | 4 | 5 | 6 | 8 |
| nº entries | 81 | 4 | 79 | 70 |

trans: type of transmission (automatic or manual), categorical variable.

|  |  |  |
| --- | --- | --- |
| Transm | Auto | Manual |
| nº entries | 156 | 77 |

dvr: drive type (front wheel, rear wheel, 4 wheel), categorical variable.

|  |  |  |  |
| --- | --- | --- | --- |
| Drive type | 4-wheel | front-wheel | rear-wheel |
| nº entries | 103 | 105 | 25 |

cty: city mileage in milles per gallon, quantitative variable.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Min. | 1st Qu. | Median | Mean | 3rd Qu. | Max. |
| 9 | 14 | 17 | 16,83 | 19 | 35 |

hwy: highway mileage in miles per gallon, quantitative variable.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Min. | 1st Qu. | Median | Mean | 3rd Qu. | Max. |
| 12 | 18 | 24 | 23,39 | 27 | 44 |

fl: fuel type (petrol, diesel electric, etanol, regular), categorical variable.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Fuel type | Diesel-elect | Ethanol | Petrol | Regular | "c" |
| nº entries | 5 | 8 | 52 | 168 | 1 |

class: vehicle class, categorical variable

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Class | 2seater | Compact | Midsize | Minivan | Pickup | Subcompact | Suv |
| nº entries | 5 | 47 | 41 | 11 | 33 | 35 | 62 |

# Q1: Is there a significant difference in city and highway mileage between automatic and manual transmission cars?

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# Q2: Has fuel type (or cylinders) any influence on highway mpg or city mpg?

# Q3: Is there any difference in car requests between the years 1999 and 2008?

# Q4: Is there any difference in city and highway mpg between manufacturers?