

[Automotive Fuel Economy]

*** Step back in time and witness the fuel economy evolution of 398 American cars from the dynamic decades of the 1970s and 1980s. Our dataset unveils the Miles Per Gallon (MPG) records, providing a fascinating glimpse into the efficiency landscape of these iconic vehicles. ***

```
select * from mpg;
```

--year--

year column is not much understandable .

```
18  8   307 130 3504   12    70  1  chevrolet chevelle malibu
15  8   350 165 3693   11.5  70  1  buick skylark 320
18  8   318 150 3436   11    70  1  plymouth satellite
```

for creating a meaningful column of year, from model_year table we can not understand the real year contains .

```
SELECT *, CONCAT('19', model_year) AS launch_year
FROM mpg;
```

--year--

--launch_year--

```
18  8   307 130 3504   12    70  1  chevrolet chevelle malibu  1970  -- now it's quit beautiful.
15  8   350 165 3693   11.5  70  1  buick skylark 320        1970
18  8   318 150 3436   11    70  1  plymouth satellite      1970
```

-- Under 1970's and 1980's what is the average MPG (Miles Per Gallon) {car millage}

```
select
  round(avg(mpg),2) as average_mpg
from mpg;
```

-- Result :

23.49

--Period of significant change for the automotive industry in the America, particularly in terms of Horsepower ratings.

--What was the Maximum Horsepower at that time's car

```
select
  max(horsepower) as maximum_horsepower
from mpg;
```

-- Result :

230

-- What is the average Acceleration on those car's

```
select
  round(avg(acceleration),2) as average_acceleration
from mpg;
```

-- Result :

15.54

[Automotive Fuel Economy]

-- Top 5 car by their average mileage

```
SELECT
    car_name,
    round(avg(mpg),2) AS total_mpg
FROM
    mpg
GROUP BY
    car_name
ORDER BY
    total_mpg DESC
limit 5;
```

-- Result :

| | |
|----------------------|-------|
| mazda glc | 47.00 |
| honda civic 1500 gl | 45.00 |
| vw pickup | 44.00 |
| vw rabbit c (diesel) | 44.00 |
| vw dasher (diesel) | 43.00 |

-- What is the impact of car's weight on mileage, analysis by every year

```
select
    model_year,
    round(avg(mpg),2) as average_mpg,
    round(avg(weight),2) as average_weight
from
    mpg
group by
    model_year
order by
    model_year, average_mpg;
```

-- Result :

| | | |
|----|-------|---------|
| 70 | 17.69 | 3372.79 |
| 71 | 21.11 | 3030.59 |
| 72 | 18.71 | 3237.71 |
| 73 | 17.10 | 3419.03 |
| 74 | 22.77 | 2878.04 |
| 75 | 20.27 | 3176.80 |
| 76 | 21.74 | 3078.74 |
| 77 | 23.68 | 2997.36 |
| 78 | 24.11 | 2861.81 |
| 79 | 25.17 | 3055.34 |
| 80 | 33.78 | 2441.59 |
| 81 | 30.21 | 2530.18 |
| 82 | 32.00 | 2434.17 |

-- Top 5 cars who have top mileage with highest weight (greater than average weight)

```
SELECT
    car_name,
    MAX(mpg) AS max_mpg,
    weight
FROM
    mpg
WHERE
    weight > (SELECT AVG(weight) FROM mpg)
GROUP BY
    car_name, weight
order by
    max_mpg desc
limit 5;
```

-- Result :

| | | |
|-----------------------------------|-------|----------|
| oldsmobile cutlass ciera (diesel) | -mpg- | -weight- |
| | 38 | 3015 |
| volvo diesel | 31 | 3160 |
| mercedes-benz 240d | 30 | 3250 |
| peugeot 505s turbo diesel | 28 | 3230 |
| oldsmobile cutlass ls | 27 | 3725 |

[Automotive Fuel Economy]

-- Origin wise average Horsepower fluctuation in every year

```
SELECT
    model_year,
    AVG(horsepower) AS avg_hpower,
    origin
FROM
    mpg
GROUP BY
    model_year, origin
ORDER BY
    model_year, avg_hpower;
```

-- Result :

| | | |
|----|----------|---|
| 70 | 86.2000 | 2 |
| 70 | 91.5000 | 3 |
| 70 | 166.9545 | 1 |
| 71 | 74.0000 | 2 |
| 71 | 79.2500 | 3 |
| 71 | 119.8421 | 1 |
| 72 | 79.6000 | 2 |
| 72 | 93.8000 | 3 |
| 72 | 138.7778 | 1 |
| 73 | 81.8571 | 2 |
| 73 | 98.5000 | 3 |
| 73 | 146.6207 | 1 |
| 74 | 72.5000 | 3 |
| 74 | 74.1667 | 2 |
| 74 | 112.1429 | 1 |
| 75 | 80.2500 | 3 |
| 75 | 89.5000 | 2 |
| 75 | 108.7000 | 1 |
| 76 | 76.5000 | 3 |
| 76 | 87.6250 | 2 |
| 76 | 110.5000 | 1 |
| 77 | 81.0000 | 2 |
| 77 | 81.1667 | 3 |
| 77 | 118.3889 | 1 |
| 78 | 79.2500 | 3 |
| 78 | 99.1667 | 2 |
| 78 | 107.2727 | 1 |
| 79 | 65.0000 | 3 |
| 79 | 72.0000 | 2 |
| 79 | 109.4348 | 1 |
| 80 | 66.7500 | 2 |
| 80 | 78.8462 | 3 |
| 80 | 88.8333 | 1 |
| 81 | 76.6667 | 2 |
| 81 | 78.3333 | 3 |
| 81 | 84.5385 | 1 |
| 82 | 63.0000 | 2 |
| 82 | 74.0000 | 3 |
| 82 | 86.9474 | 1 |

-- Top displacement on cars

```
SELECT
    car_name,
    AVG(displacement) AS avg_dsp
FROM
    mpg
GROUP BY
    car_name
ORDER BY
    avg_dsp DESC
LIMIT 5;
```

--Result :

| | |
|------------------------------|----------|
| buick electra 225 custom | 455.0000 |
| chrysler new yorker brougham | 440.0000 |
| mercury marquis | 429.0000 |
| mercury marquis brougham | 429.0000 |
| pontiac catalina | 418.3333 |

[Automotive Fuel Economy]

-- Cars with highest displacement percentage {only cover those cars who have more than average displacement}

```
SELECT
    car_name,
    displacement,
    ((displacement - AVG(displacement) OVER ()) / AVG(displacement) OVER ()) * 100 AS
    displacement_percentage
FROM
    mpg
WHERE
    displacement > (SELECT AVG(displacement) FROM mpg)
ORDER BY
    displacement_percentage DESC
LIMIT 10;
```

```
-- Result :                                --DSP percentage--
    pontiac catalina                455    51.50329561
    buick estate wagon (sw)         455    51.50329561
    buick electra 225 custom        455    51.50329561
    chevrolet impala                454    51.17032134
    plymouth fury iii              440    46.50868147
    chrysler new yorker brougham    440    46.50868147
    ford galaxie 500                429    42.84596444
    mercury marquis                 429    42.84596444
    mercury marquis brougham        429    42.84596444
    chevrolet monte carlo           400    33.18971043
```

-- Top acceleration cars compare with their horsepower ,and who have more than average mpg

```
SELECT
    car_name,
    horsepower,
    acceleration,
    mpg
FROM
    mpg
WHERE
    mpg > (SELECT AVG(mpg) FROM mpg)
ORDER BY
    acceleration DESC, horsepower DESC
LIMIT 10;
```

```
-- Result :                                -horsepower-  -acceleration-
    peugeot 504                      71          24.8        27
    vw pickup                        52          24.6        44
    vw dasher (diesel)               48          23.7        43
    oldsmobile cutlass salon brougham 90          22.2        24
    chevrolet chevette               52          22.2        29
    chevrolet woody                  60          22.1        25
    mercedes-benz 240d                67          21.8        30
    vw rabbit c (diesel)              48          21.7        44
    volkswagen rabbit custom diesel   48          21.5        43
    toyota corolla 1200               65          21          32
```

-- Here we told that , those cars have more horsepower, they have more acceleration in terms of maximum time .There are no constant numbers but the tally data told that , less accelerations have more mileage.