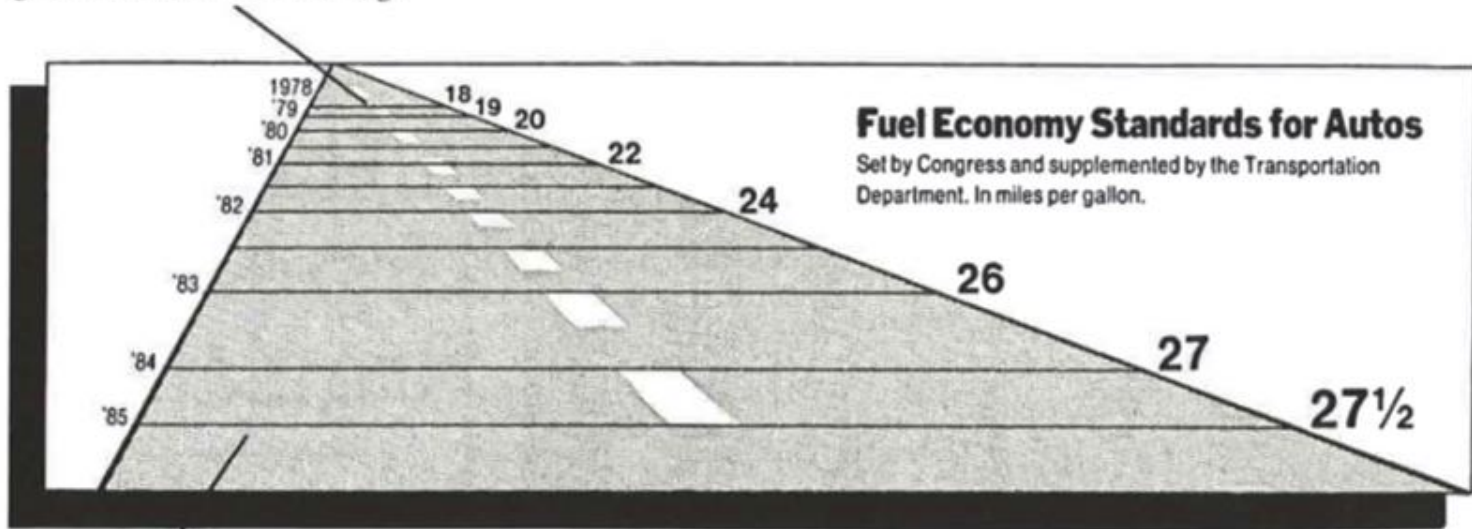


16-Exercise-Calculate-the-Lie-Fa

Your turn: calculate the lie factor

$$\text{Lie Factor} = \frac{\text{size of effect shown in the graphic}}{\text{real size of effect in the data}}$$

This line, representing 18 miles per gallon in 1978, is 0.6 inches long.

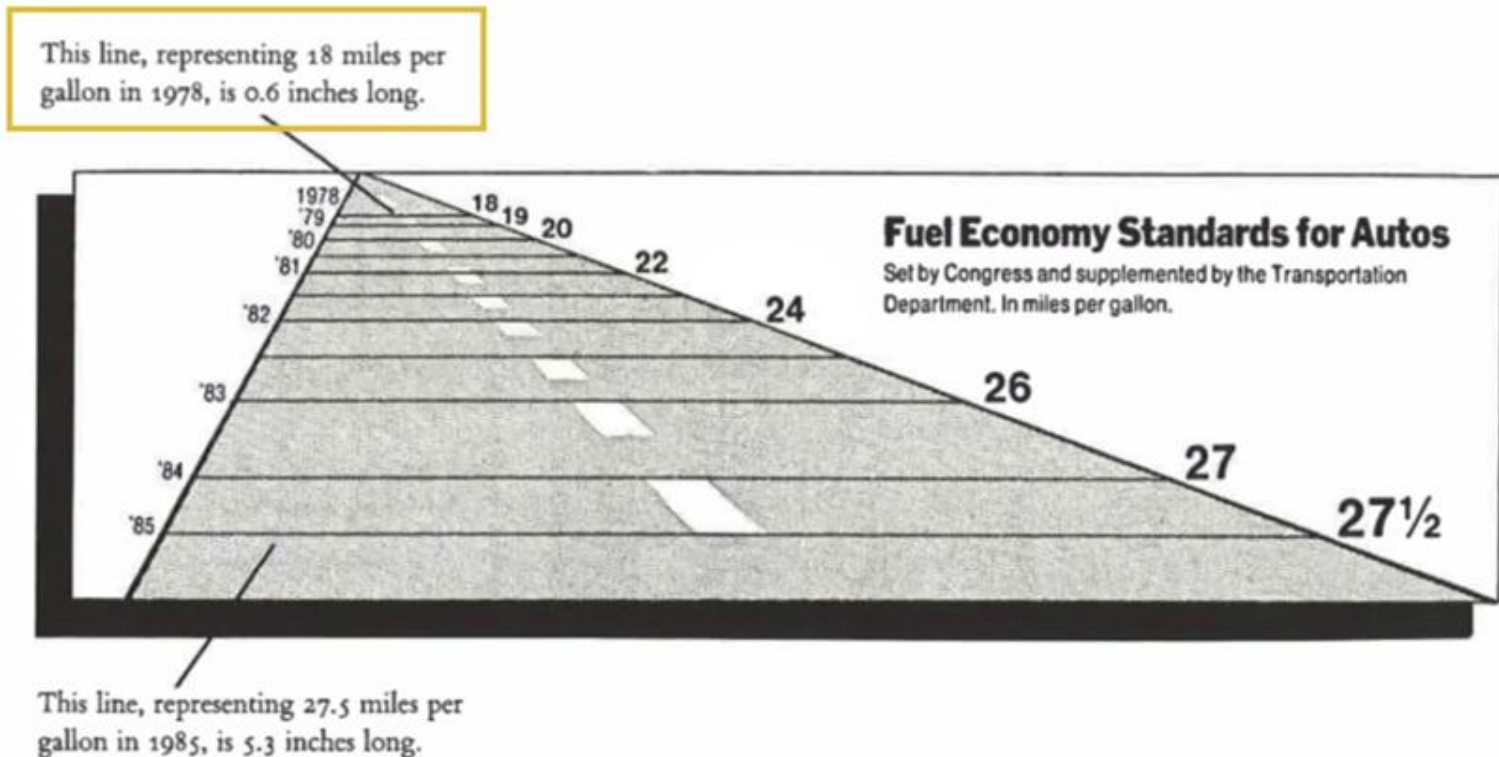


This line, representing 27.5 miles per gallon in 1985, is 5.3 inches long.

SOURCE: NEW YORK TIMES, EXTRACTED FROM
"THE VISUAL DISPLAY OF QUANTITATIVE INFORMATION", E. TUFT
©Glenay

Your turn: calculate the lie factor

$$\text{Lie Factor} = \frac{\text{size of effect shown in the graphic}}{\text{real size of effect in the data}}$$

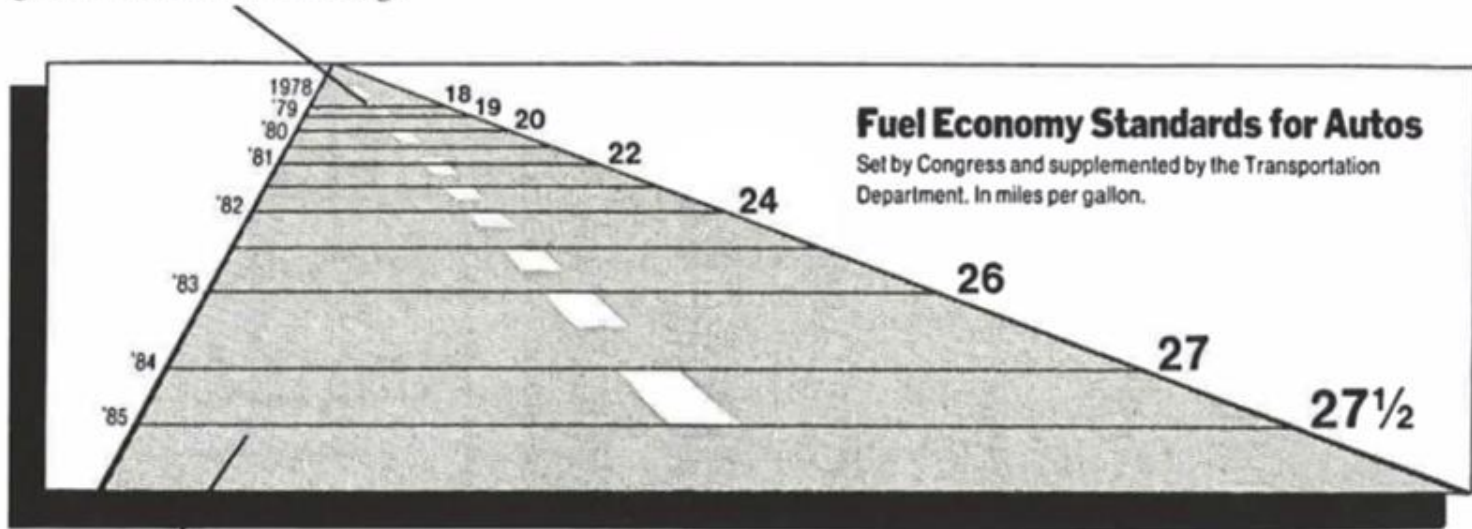


SOURCE: NEW YORK TIMES, EXTRACTED FROM
"THE VISUAL DISPLAY OF QUANTITATIVE INFORMATION", E. TUFT
©2004

Your turn: calculate the lie factor

$$\text{Lie Factor} = \frac{\text{size of effect shown in the graphic}}{\text{real size of effect in the data}}$$

This line, representing 18 miles per gallon in 1978, is 0.6 inches long.



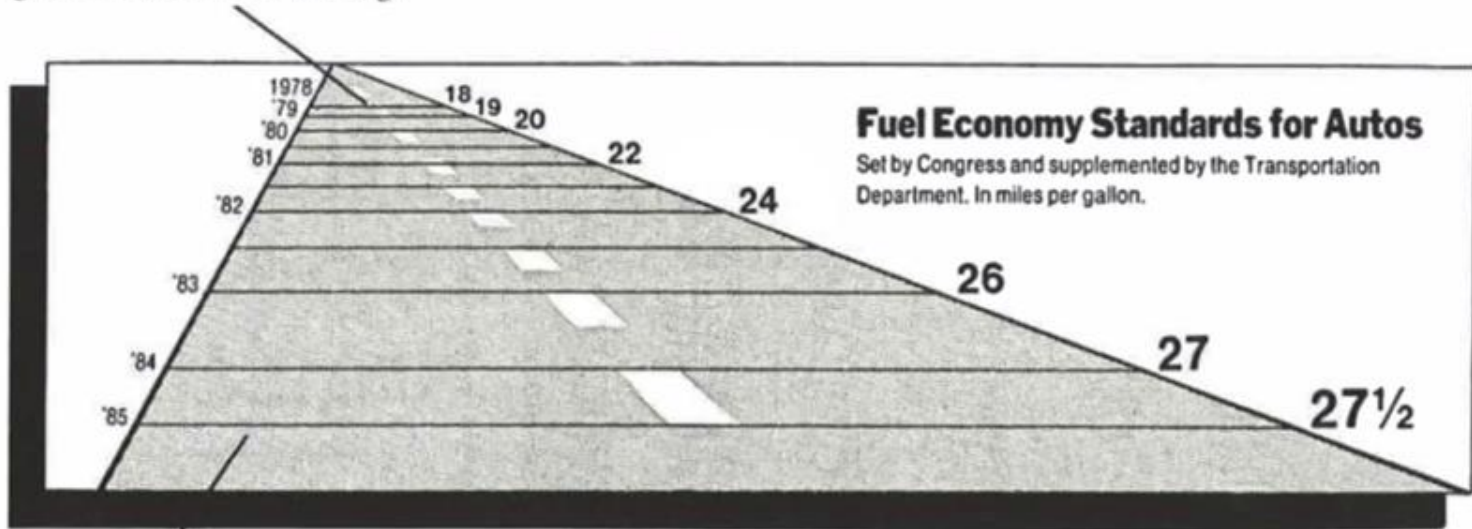
This line, representing 27.5 miles per gallon in 1985, is 5.3 inches long.

SOURCE: NEW YORK TIMES, EXTRACTED FROM
"THE VISUAL DISPLAY OF QUANTITATIVE INFORMATION", E. TUFT

Your turn: calculate the lie factor

$$\text{Lie Factor} = \frac{\text{size of effect shown in the graphic}}{\text{real size of effect in the data}}$$

This line, representing 18 miles per gallon in 1978, is 0.6 inches long.



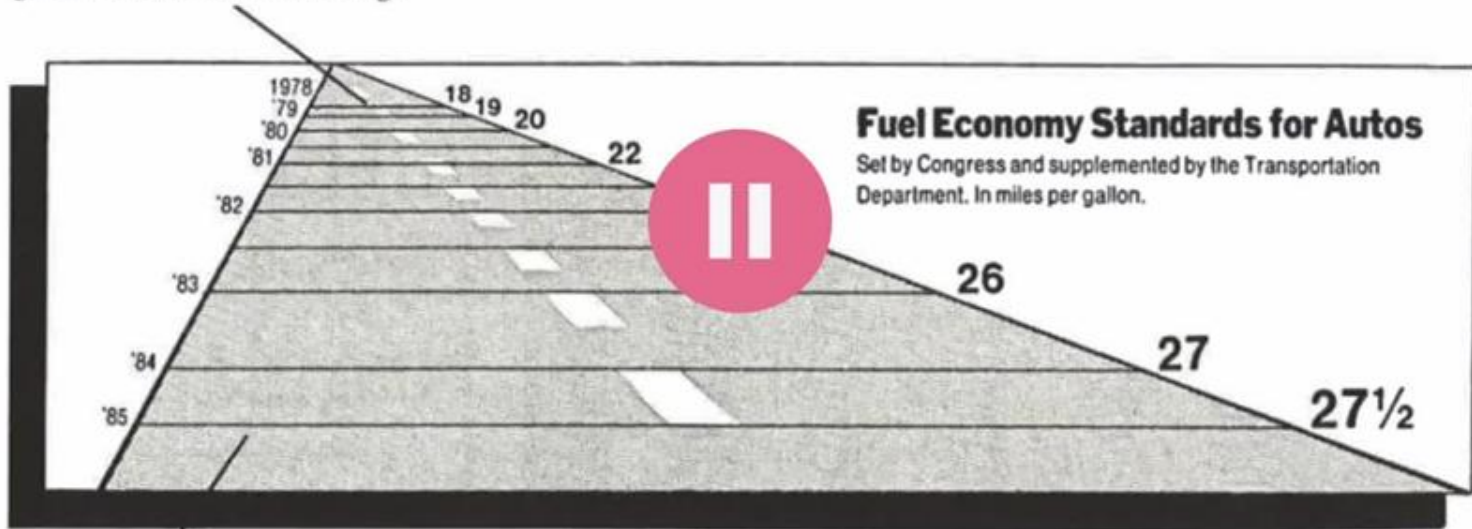
This line, representing 27.5 miles per gallon in 1985, is 5.3 inches long.

SOURCE: NEW YORK TIMES, EXTRACTED FROM
"THE VISUAL DISPLAY OF QUANTITATIVE INFORMATION", E. TUFT

Your turn: calculate the lie factor

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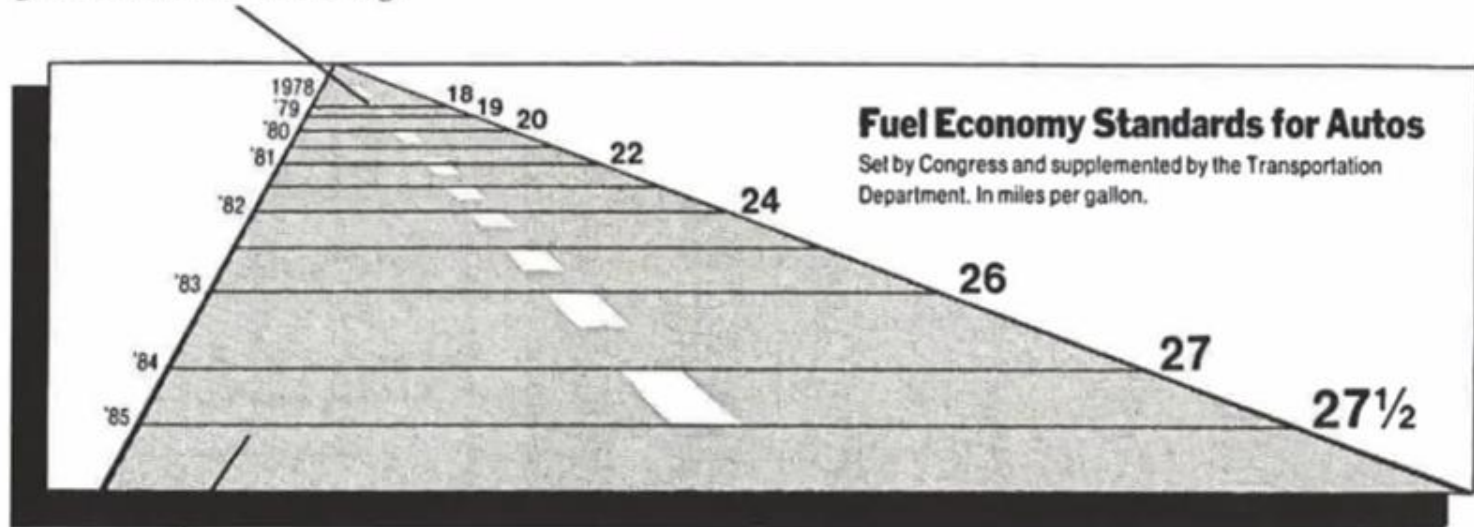
This line, representing 27.5 miles per gallon in 1985, is 5.3 inches long.

SOURCE: NEW YORK TIMES, EXTRACTED FROM
"THE VISUAL DISPLAY OF QUANTITATIVE INFORMATION", E. TUFT
©Glenn

Your turn: calculate the lie factor

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SOURCE: NEW YORK TIMES, EXTRACTED FROM
"THE VISUAL DISPLAY OF QUANTITATIVE INFORMATION", E. TUFTE

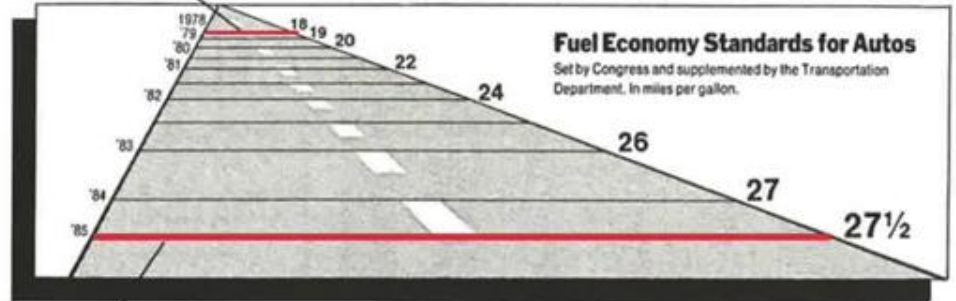
Effect in the graphic

Short line length = 0.6 inch

Long line length = 5.3 inch

$$\text{Relative change} = \frac{5.3 - 0.6}{0.6} = 7.833$$

This line, representing 18 miles per gallon in 1978, is 0.6 inches long.



This line, representing 27.5 miles per gallon in 1985, is 5.3 inches long.

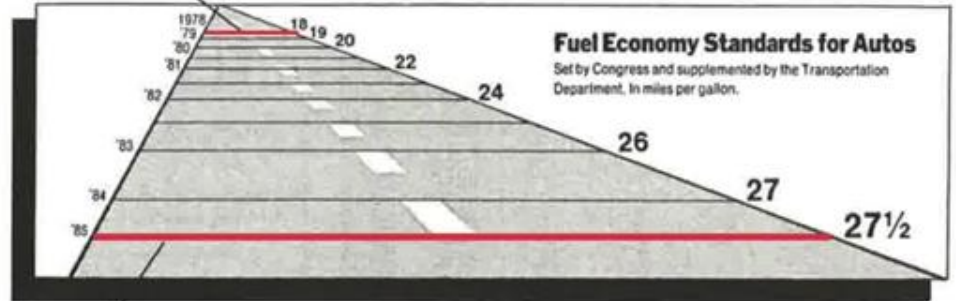
Effect in the graphic

Short line length = 0.6 inch

Long line length = 5.3 inch

$$\text{Relative change} = \frac{5.3 - 0.6}{0.6} = 7.833$$

This line, representing 18 miles per gallon in 1978, is 0.6 inches long.



This line, representing 27.5 miles per gallon in 1985, is 5.3 inches long.

Effect in the graphic

Short line length = 0.6 inch

Long line length = 5.3 inch

$$\text{Relative change} = \frac{5.3 - 0.6}{0.6} = 7.833$$

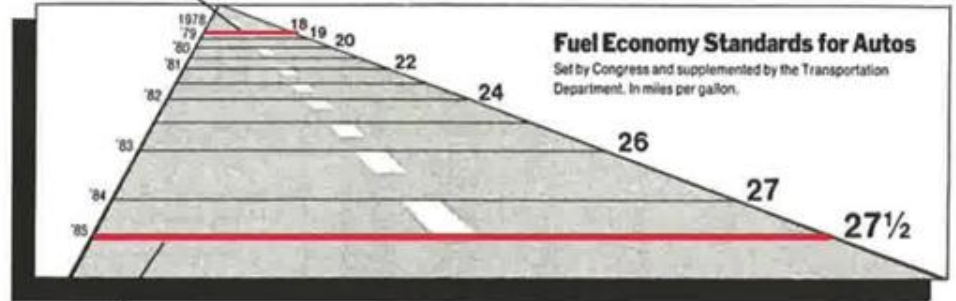
Effect in the data

Short line real value = 18 mpg

Long line real value = 27.5 mpg

$$\text{Relative change} = \frac{27.5 - 18}{18} = 0.527$$

This line, representing 18 miles per gallon in 1978, is 0.6 inches long.



This line, representing 27.5 miles per gallon in 1985, is 5.3 inches long.

Effect in the graphic

Short line length = 0.6 inch

Long line length = 5.3 inch

$$\text{Relative change} = \frac{5.3 - 0.6}{0.6} = 7.833$$

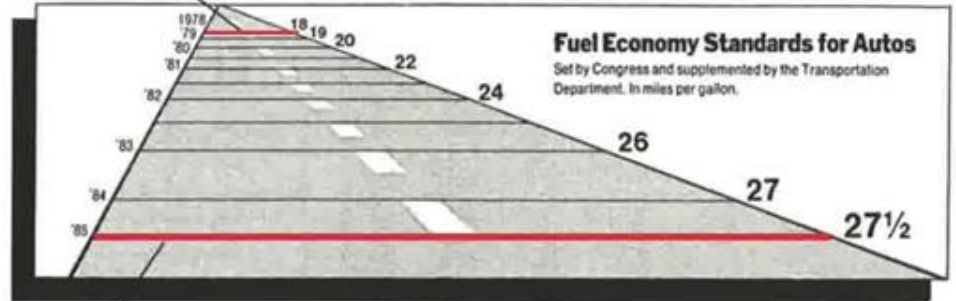
Effect in the data

Short line real value = 18 mpg

Long line real value = 27.5 mpg

$$\text{Relative change} = \frac{27.5 - 18}{18} = 0.527$$

This line, representing 18 miles per gallon in 1978, is 0.6 inches long.



This line, representing 27.5 miles per gallon in 1985, is 5.3 inches long.

$$\text{Lie Factor} = \frac{\text{graphic effect}}{\text{data effect}} = \frac{7.833}{0.527} = 14.86$$

Effect in the graphic

Short line length = 0.6 inch

Long line length = 5.3 inch

$$\text{Relative change} = \frac{5.3 - 0.6}{0.6} = 7.833$$

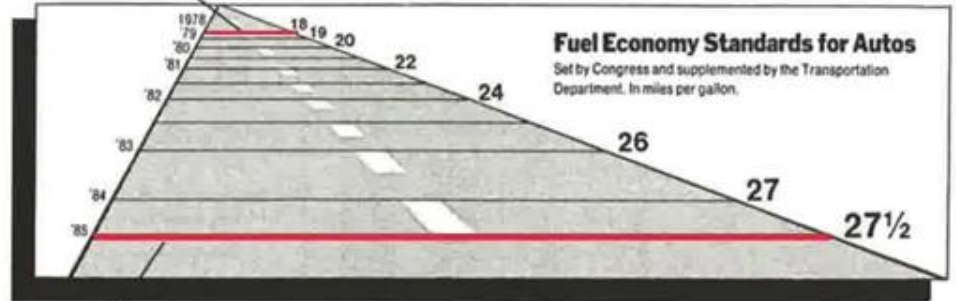
Effect in the data

Short line real value = 18 mpg

Long line real value = 27.5 mpg

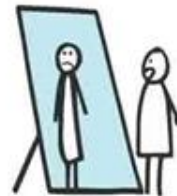
$$\text{Relative change} = \frac{27.5 - 18}{18} = 0.527$$

This line, representing 18 miles per gallon in 1978, is 0.6 inches long.



This line, representing 27.5 miles per gallon in 1985, is 5.3 inches long.

$$\text{Lie Factor} = \frac{\text{graphic effect}}{\text{data effect}} = \frac{7.833}{0.527} = 14.86$$



Lie Factor < 1

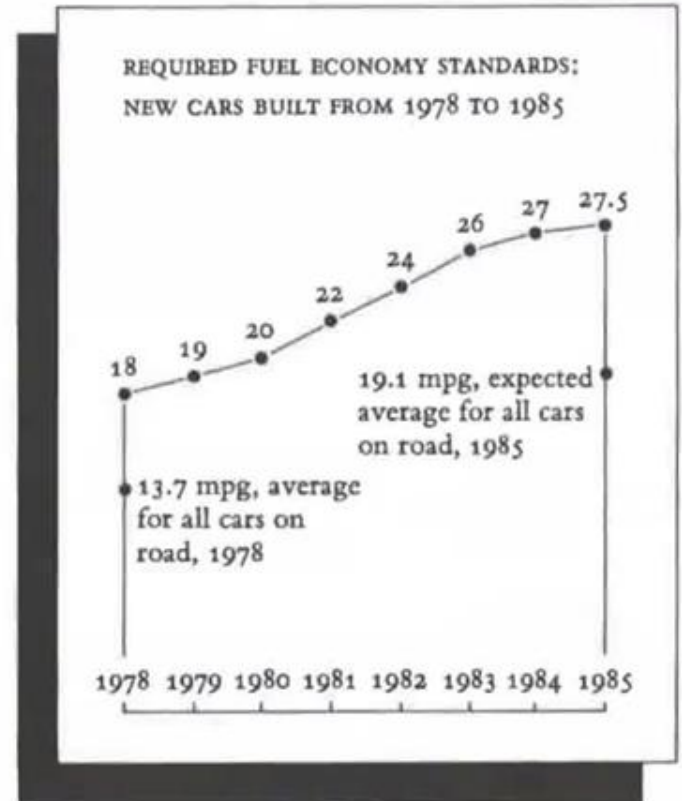
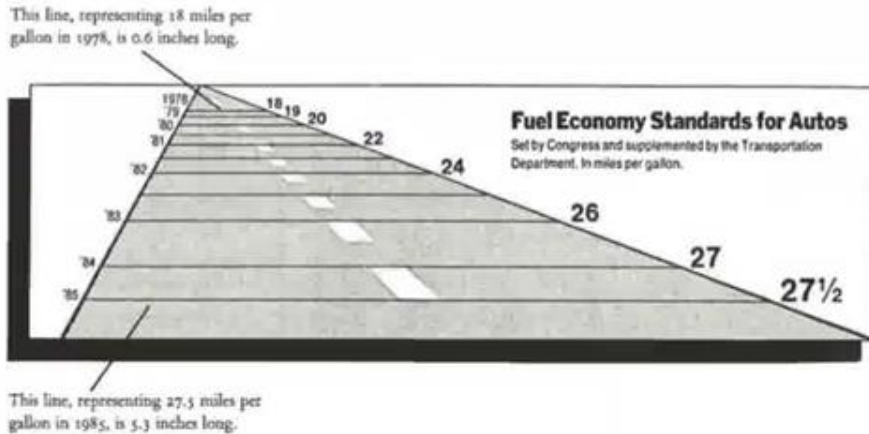


Lie Factor = 1



Lie Factor > 1

Same data, no lie factor



SOURCE: "THE VISUAL DISPLAY OF QUANTITATIVE INFORMATION", E. TUFTS