Saving energy part

~"Top runner approach" must be useful~

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2. Analysis of saving energy in Japan
3. Analysis of saving energy in China and our proposal for it
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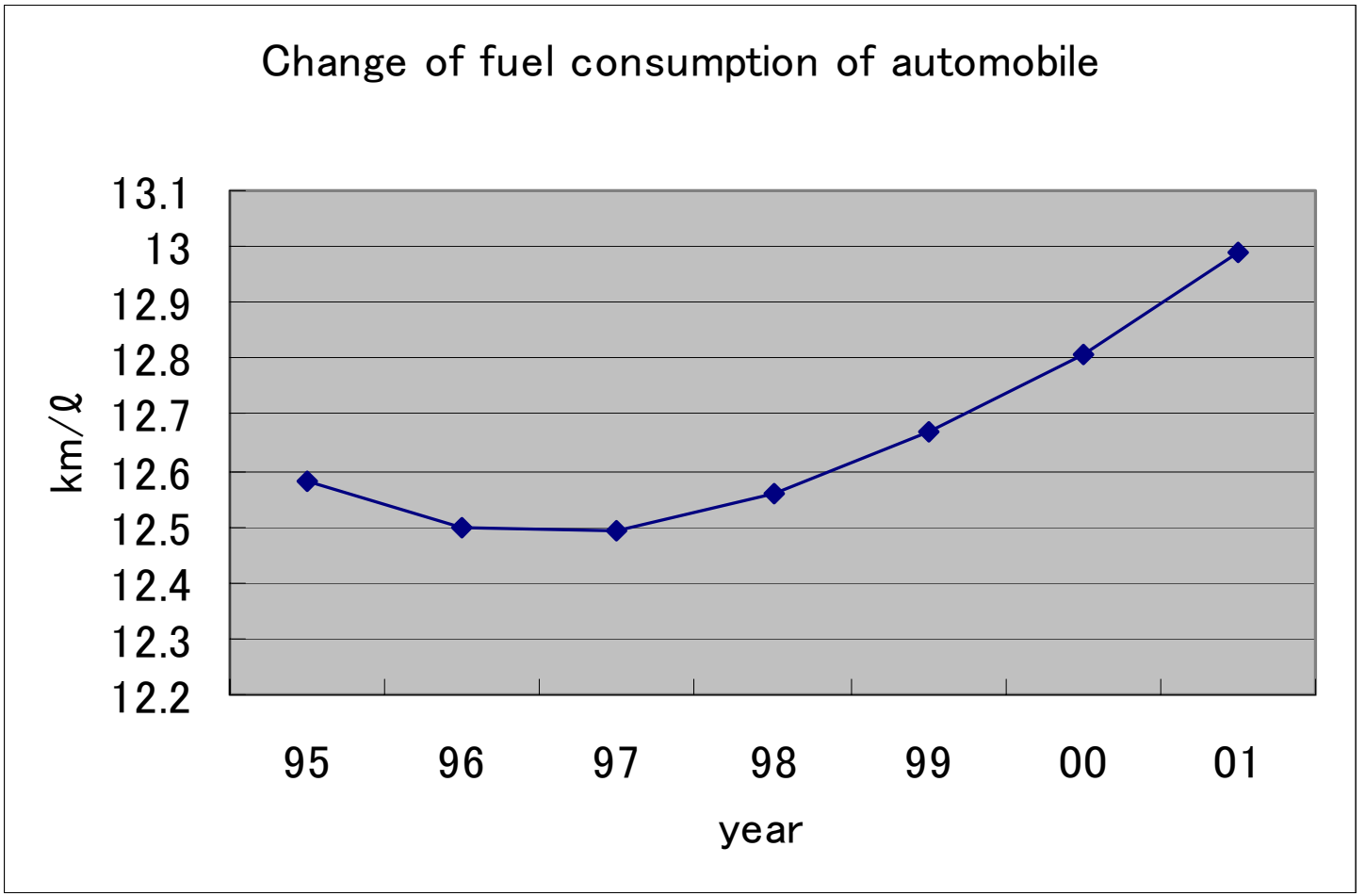
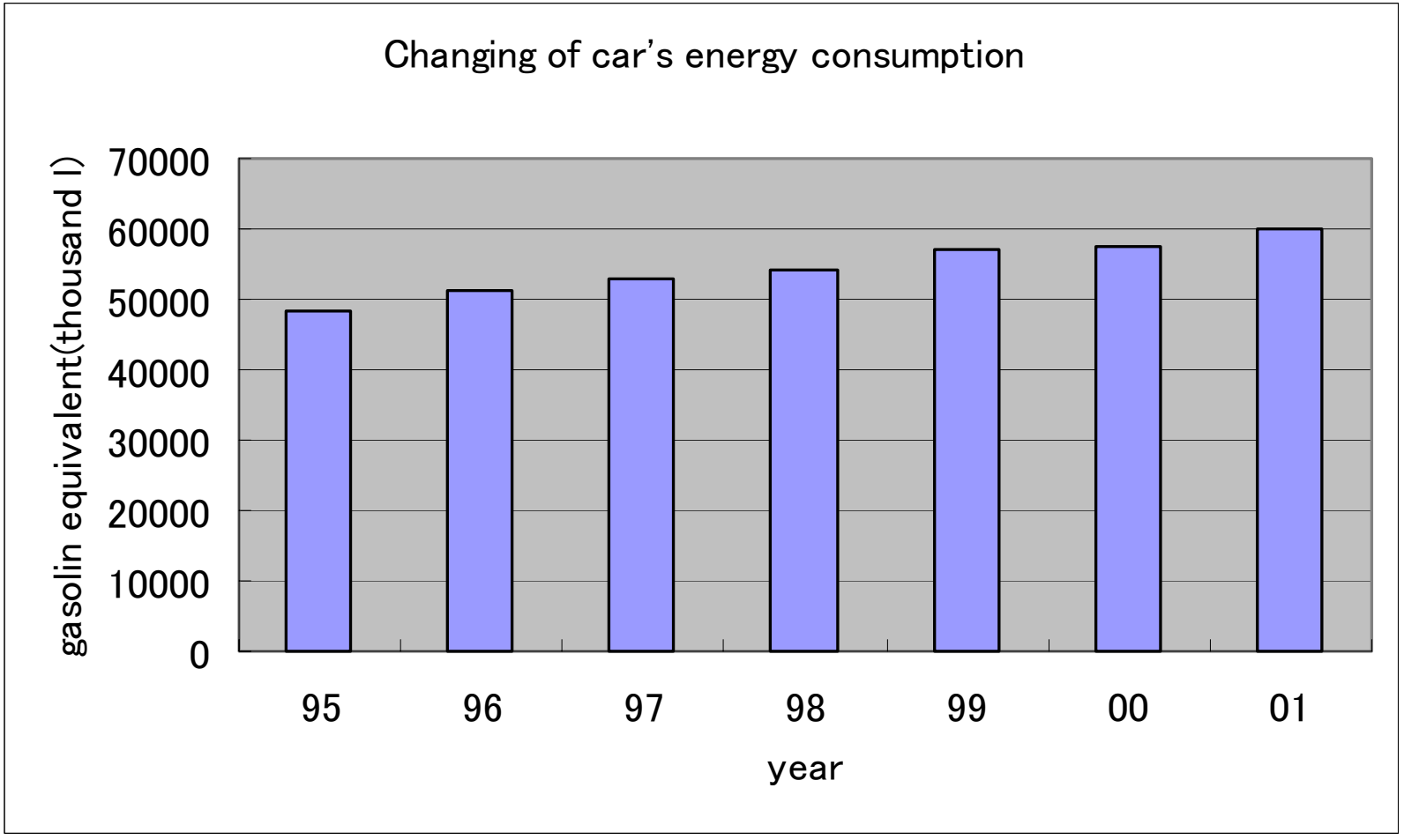
5. Analysis of “Top runner” as an energy saving measure in China

Change of fuel consumption



Source: Relationship between traffic and energy catalogue

Changing of car's energy consumption



Source: Relationship between traffic and energy catalogue

Therefore・・・

fuel consumption efficiency ↑ improved

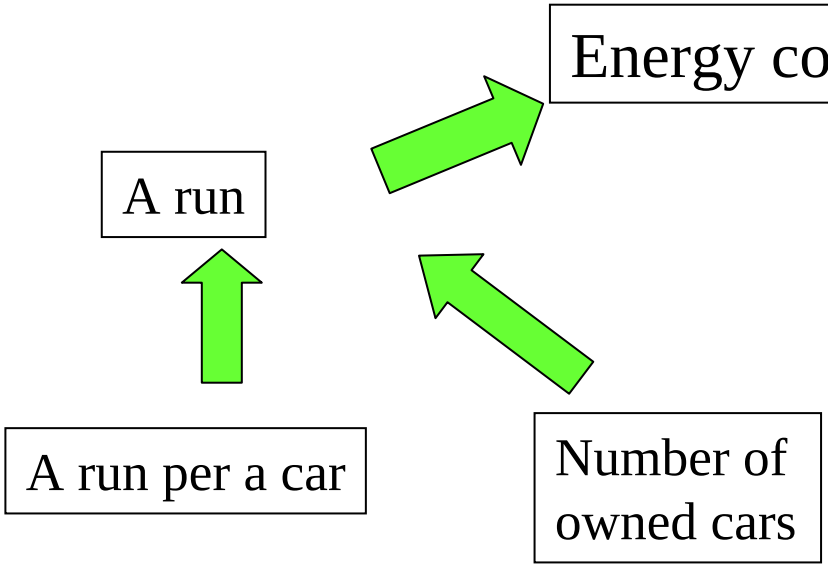
↓ But・・・

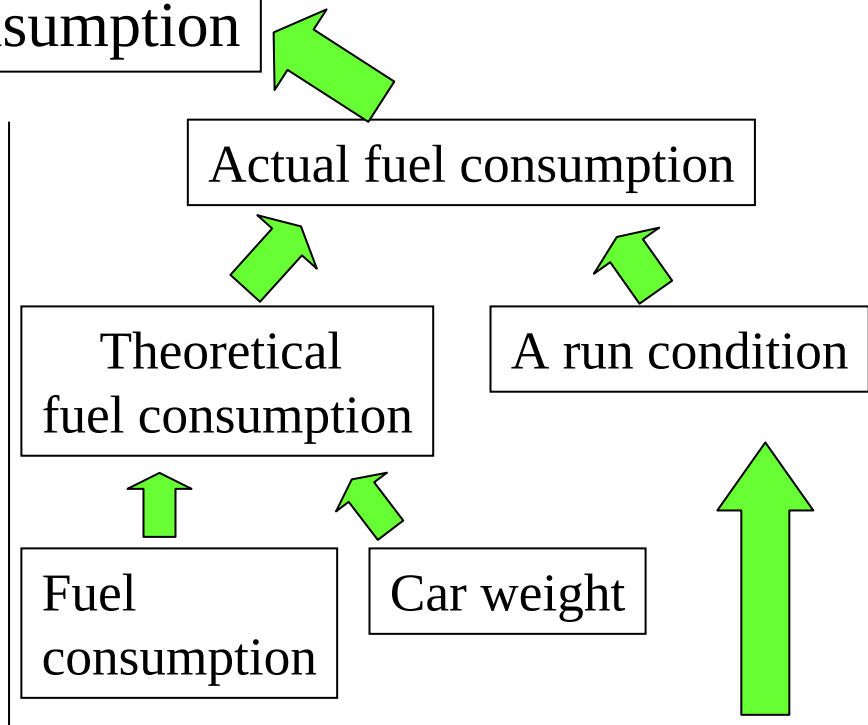
energy consumption by cars ↑ increased

↓

How much does fuel consumption efficiency contribute to energy consumption?

Flowchart of energy consumption





Road condition
Drive condition
Carry condition
Maintenance condition
Car’s equipment

Way of calculation

energy consumption [l]

= A run [km] × Actual fuel consumption [l/km]

= A run per a car [km/car] × Number of owned cars [car]

× Actual run condition × Theoretical fuel consumption [l/km]

Way of calculation

△Energy consumption [l]

＝ △A run × Actual fuel consumption
+1/2(△A run × △Actual fuel consumption)

Change of a run factor

+

△Actual fuel consumption × A run
+1/2 (△A run ×△Actual fuel consumption)

Change of actual fuel consumption factor

Way of calculation

△A run

=

△A run per a car × Number of owned cars
+1/2(△A run per a car × △Number of owned cars)

Change of a run per a car factor

+

△Number of owned cars × A run per a car
+1/2 (△A run per a car × △Number of owned cars)

Change of Number owned cars factor

Way of calculation

△Actual fuel consumption

=

△Actual run condition × Theoretical fuel consumption
+1/2(△Actual run condition × △Theoretical fuel consumption)

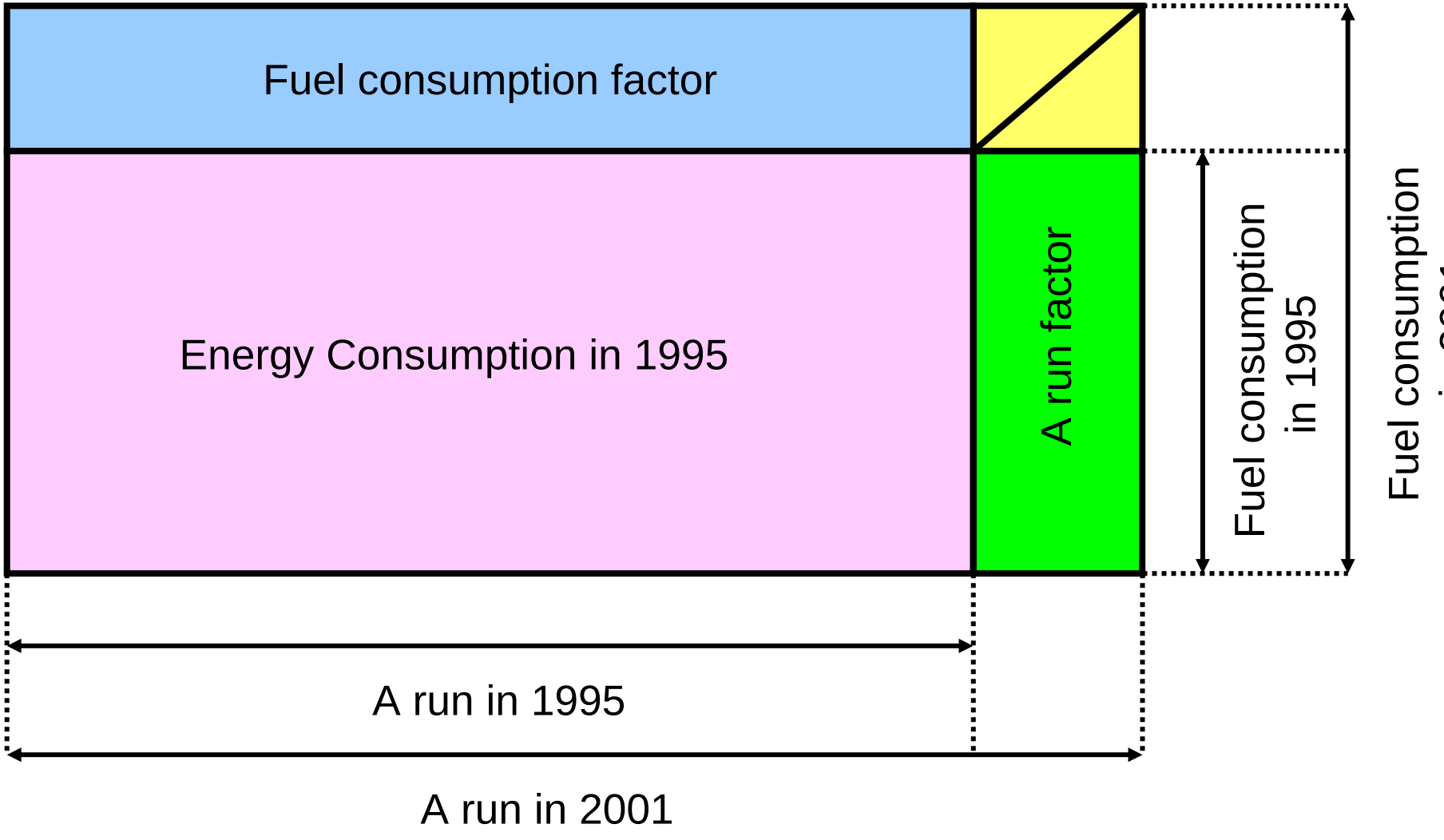
Change of actual run condition factor

+

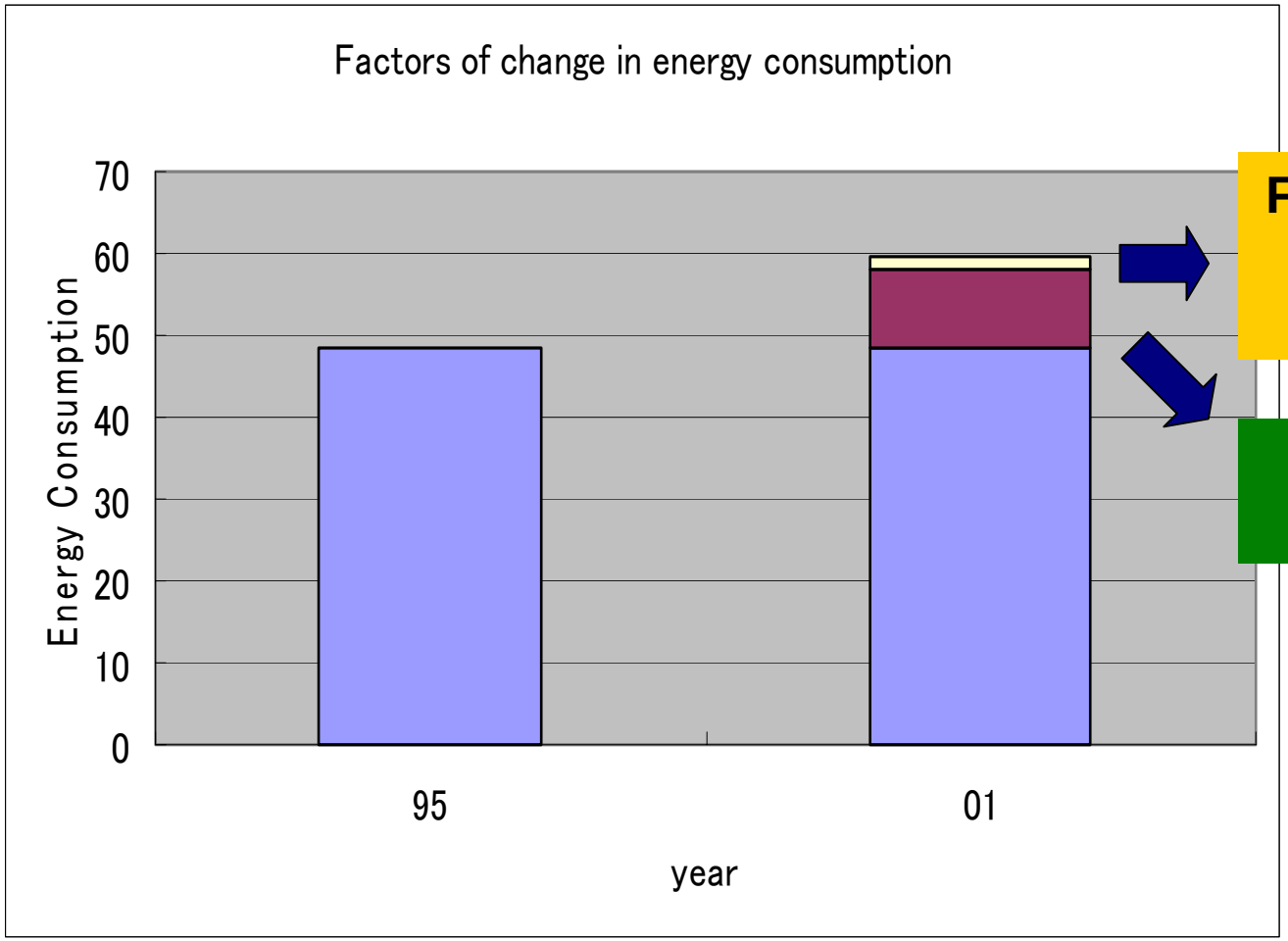
△Theoretical fuel consumption × Actual run condition
+1/2(△Actual run condition × △Theoretical fuel consumption)

Change of theoretical fuel cinsumption factor

Way of calculation



Factors of change in energy consumption by private cars



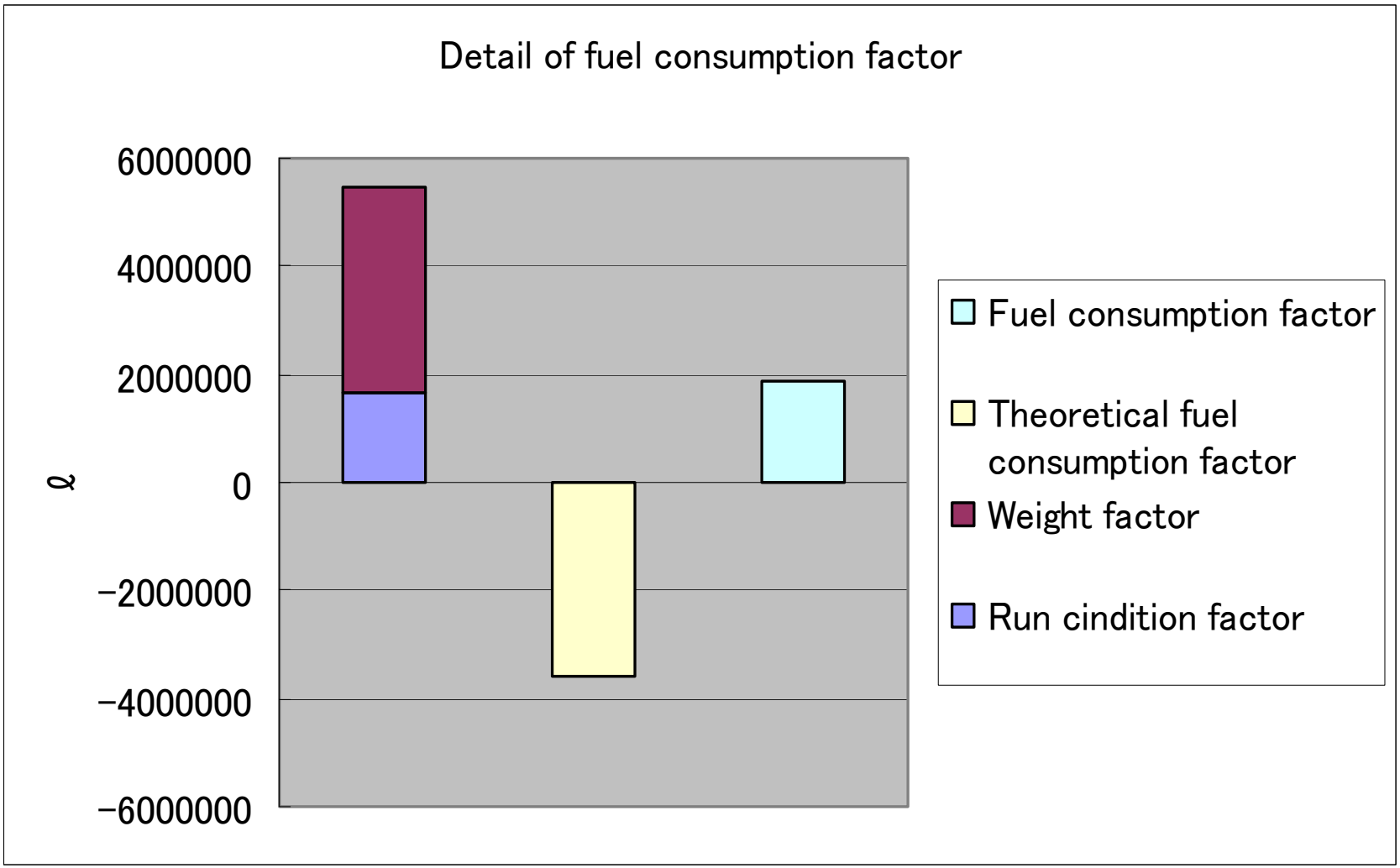
Fuel consumption factor 1.9 Mkl

A run factor 9.4 Mkl

Source: Made by presenter

based on the date of Relationship traffic and energy catalogue and Road statistics

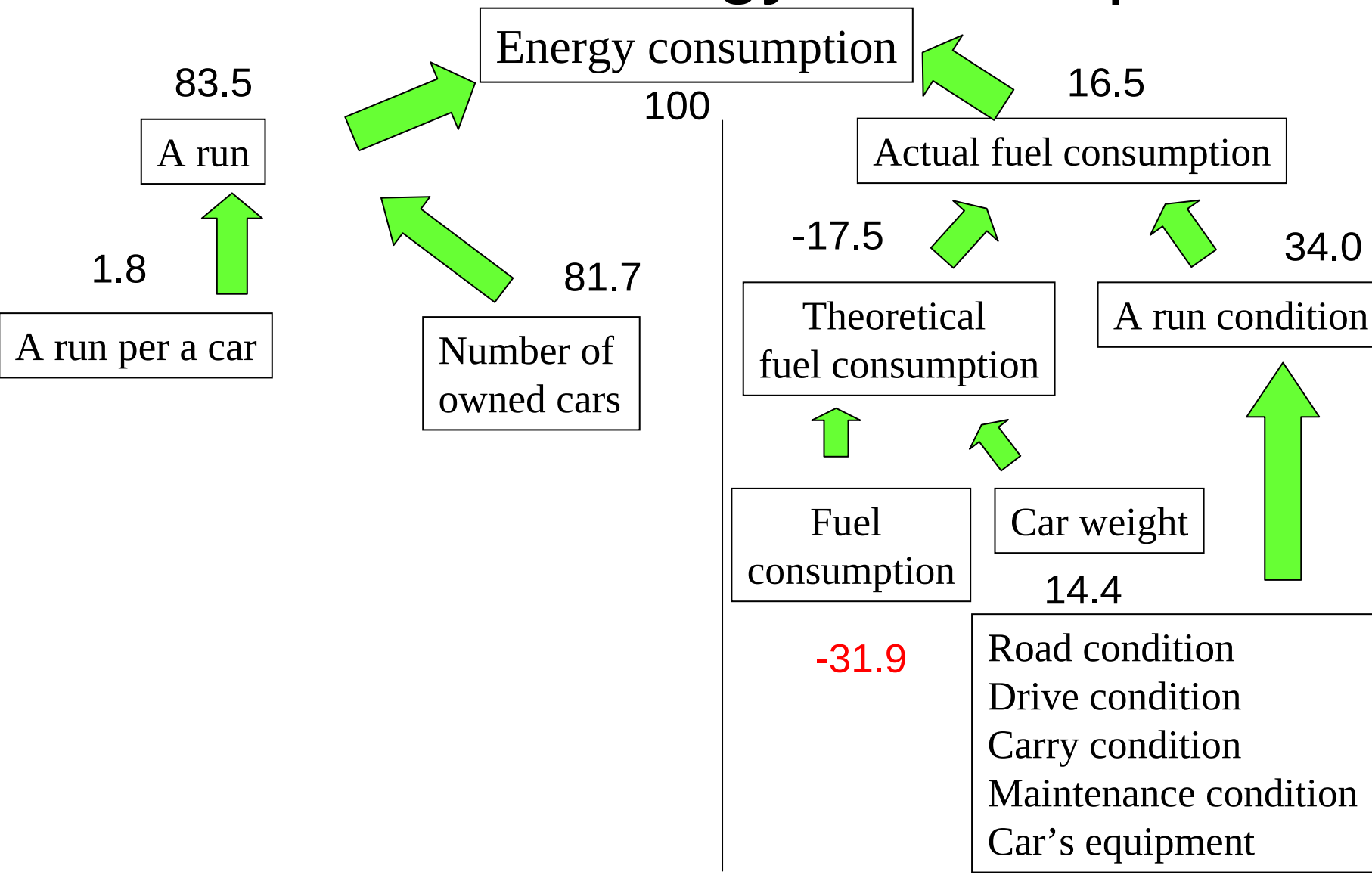
Detail of fuel consumption factors



Source: Made by presenter

based on the date of Relationship traffic and energy catalogue and Road statistics

Flowchart of energy consumption



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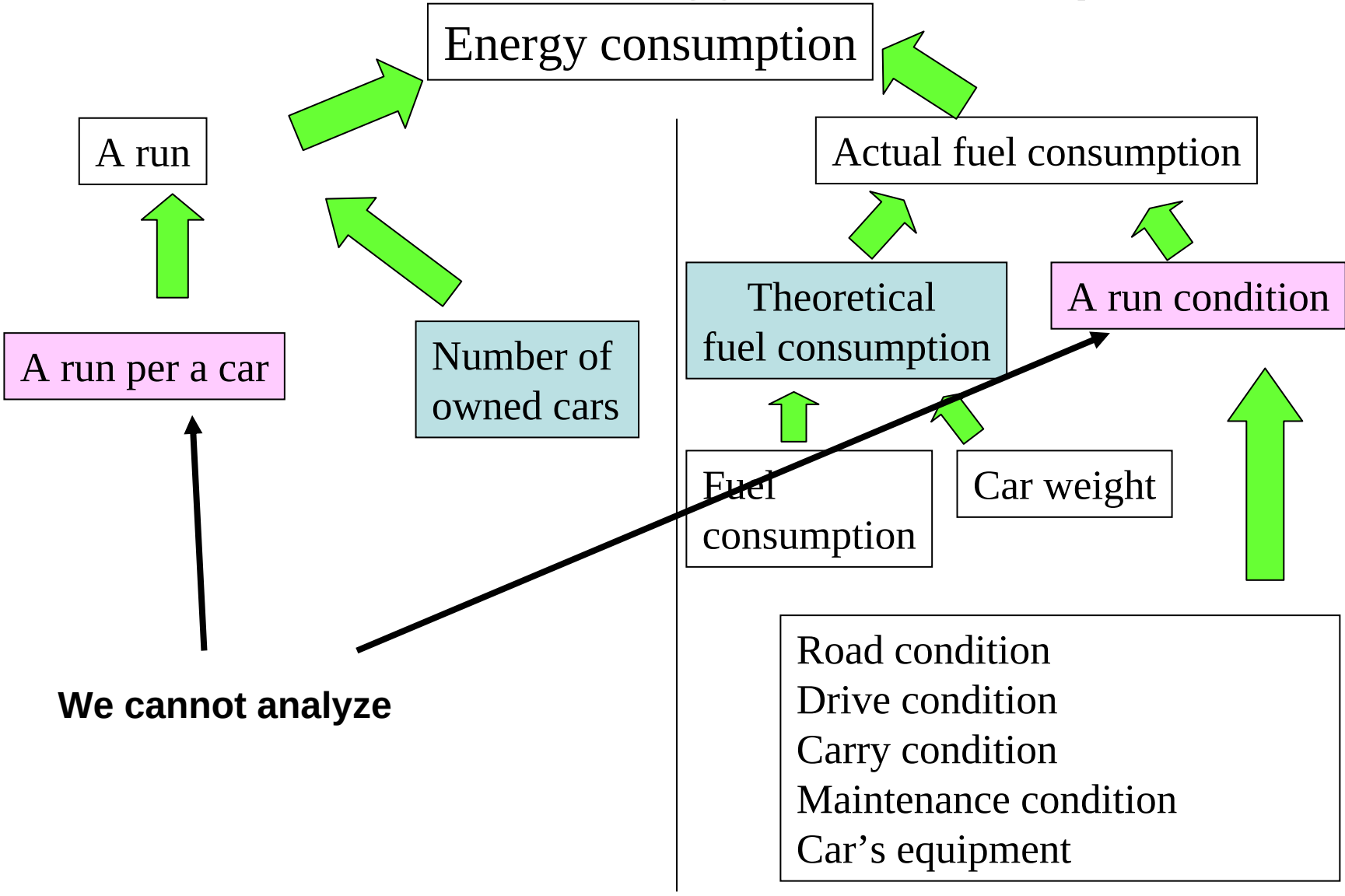
Flowchart of energy consumption



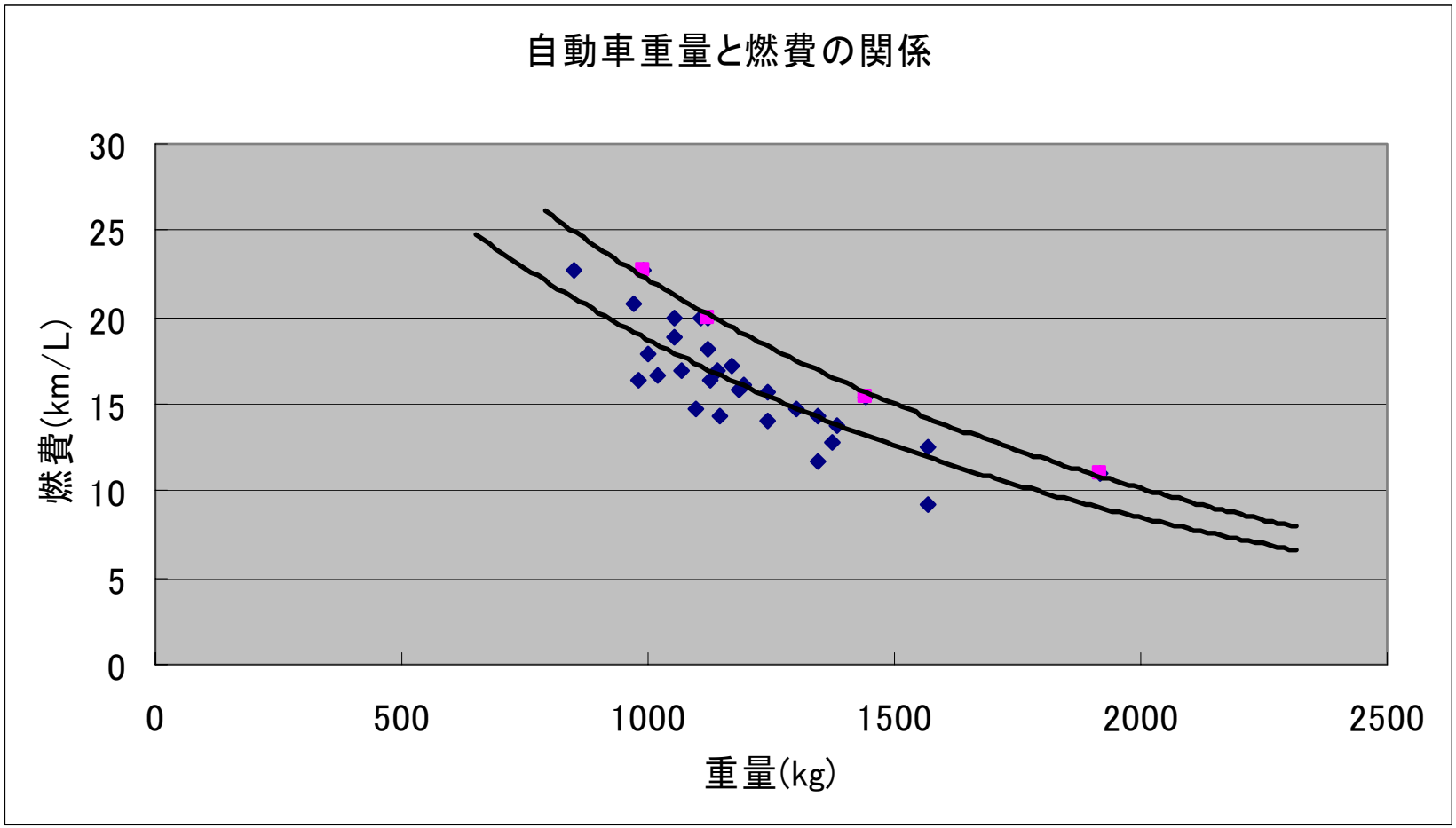
Assumption

- Number of owned cars
- Theoretical fuel consumption

} **Our analysis**

- Run per a car must be effected by trend (not our analysis)
- Run condition must be effected by trend (not our analysis)
- 12 years brings cars top runner

Weight and Fuel Consumption



出所：中国自動車年鑑（2004）より独自作

Fuel consumption

Center curve is 14.02(average)

Top curve is 16.42 (average)

} **Actual fuel consumption**

Gap of these actual fuel consumption

×

Run factor ← Number of cars

||

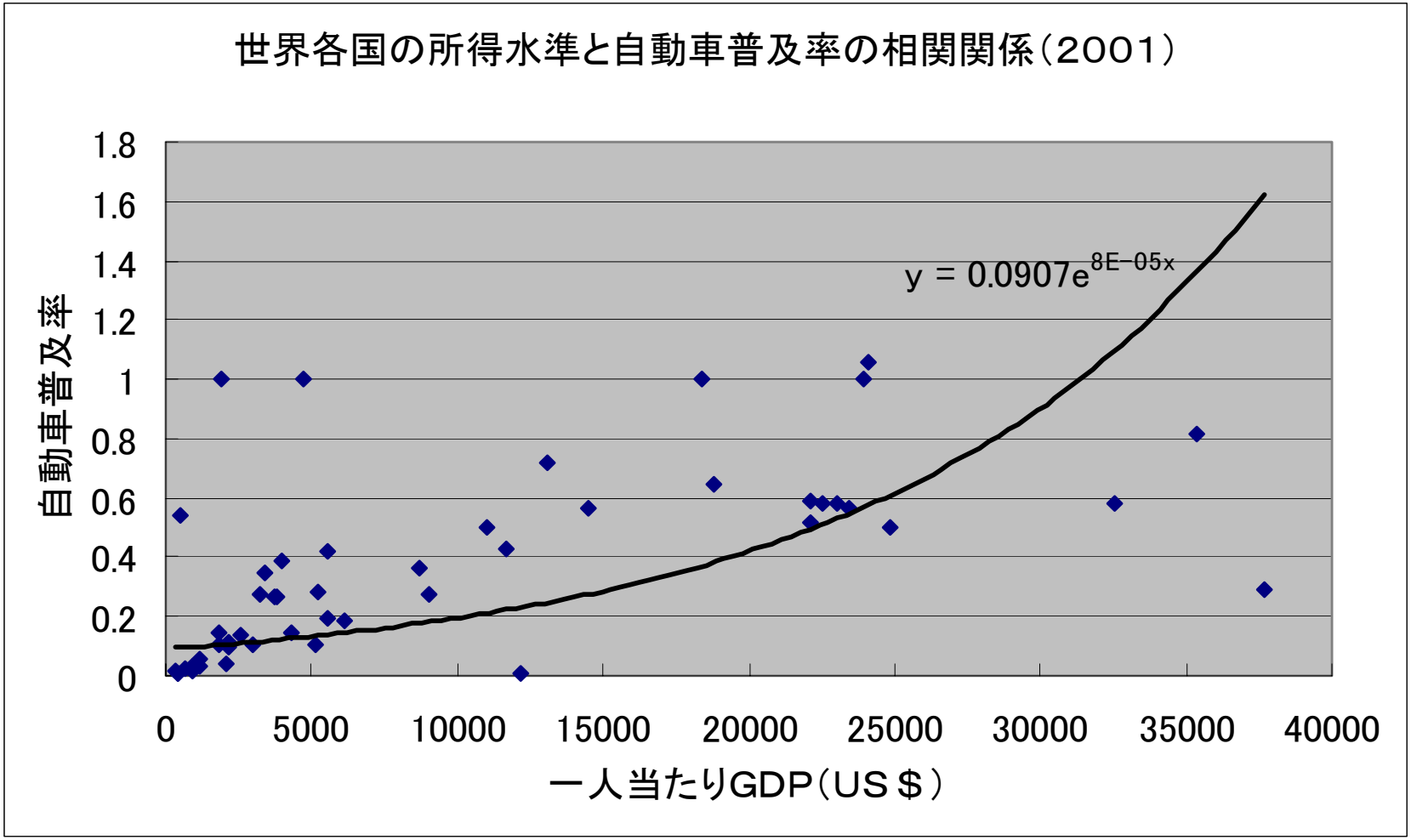
Energy consumption

→ Calculation from 2003 to 2015

Number of cars

- Analyze relationship between GDP and number of cars
- Leading to number of cars in China in the future by this analysis.

GDP and Car



出所：世界自動車統計(2003)より独自作成

How many cars do Chinese have in 2015?

Our misunderstanding

- Slide number 20 cannot be apply for our analysis.

- All cars included (truck, bus ･･･etc)