

Japanese Facts on Car Demand & others

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Household (HH)

Population more

Size of HH more # of HH

Aging more more

Child reduction

Marriage Age

Driver attribution more

Infrastructure

Total distance of expressway

Trend of all modes more

Car demand

Trip length

more

of trips

Vehicle Kilometer Traveled (VKT)

Economic

GDP

Income distribution

Gas price Fare

Car ownership

of cars

of license holders

Size of car more

Tentative working hypothesis

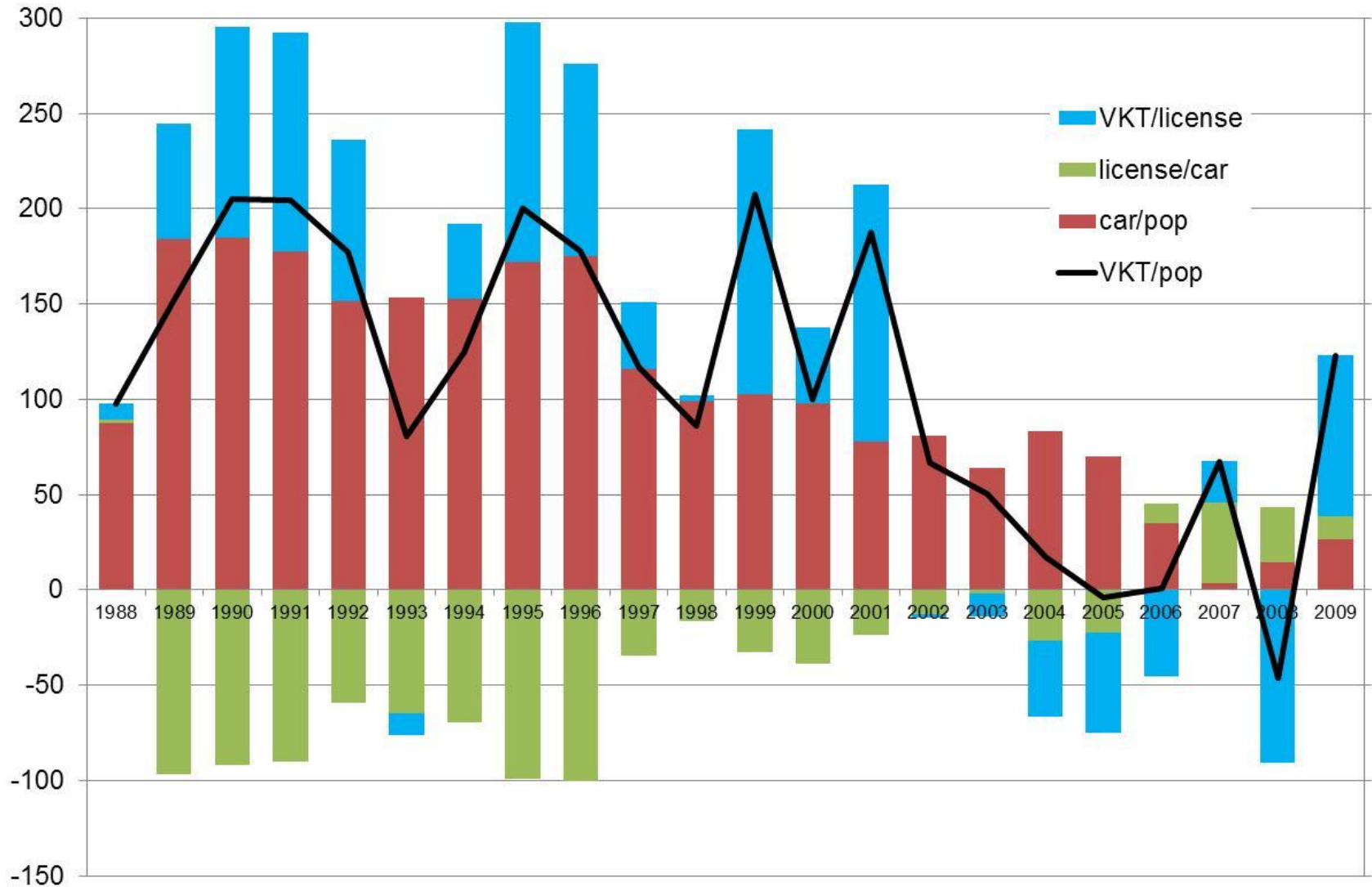
Clickable, move to figure

Decomposition Approach for Time Series Data during 1987 to 2009

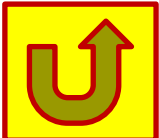
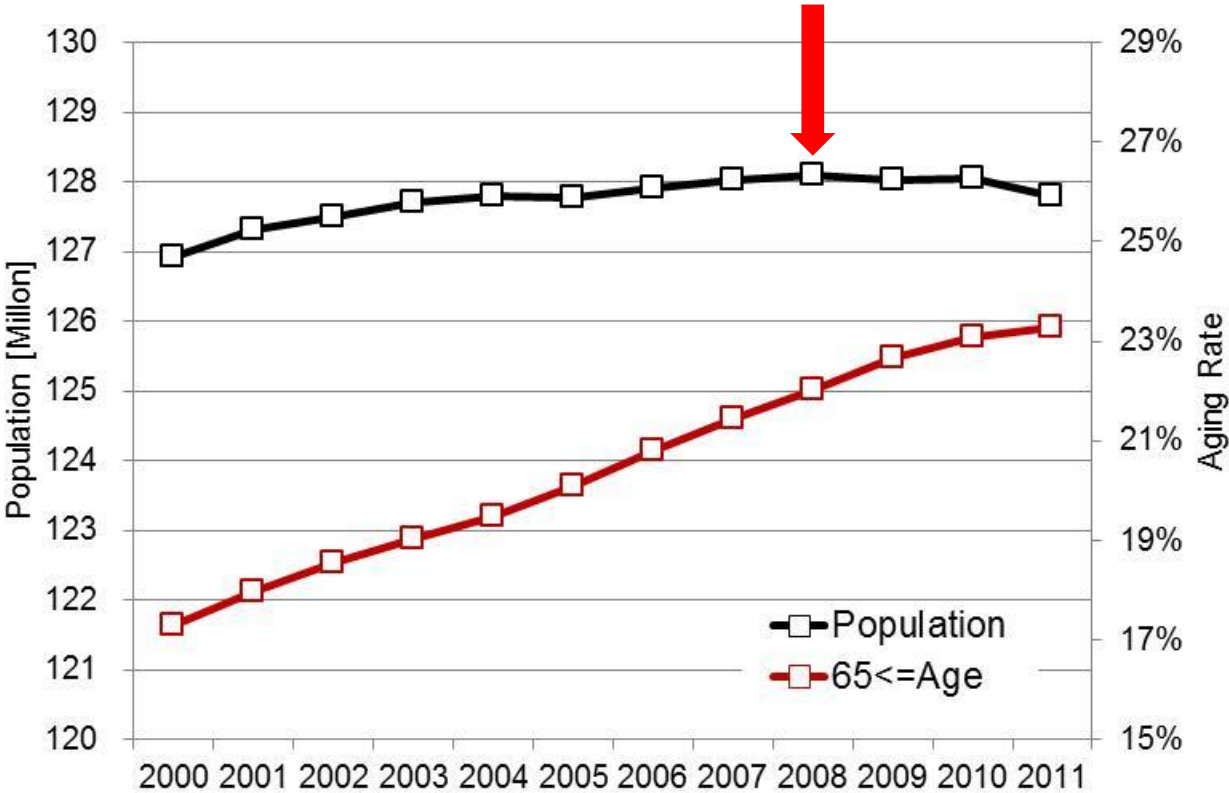
$$\frac{\text{VKT}}{\text{population}} = \frac{\# \text{ of cars}}{\text{population}} \times \frac{\# \text{ of licenses}}{\# \text{ of cars}} \times \frac{\text{VKT}}{\# \text{ of licenses}}$$

$$\begin{aligned} \Delta \frac{\text{VKT}}{\text{population}} &= \left(\Delta \frac{\# \text{ of cars}}{\text{population}} \right) \times \frac{\# \text{ of licenses}}{\# \text{ of cars}} \times \frac{\text{VKT}}{\# \text{ of licenses}} + \\ &\frac{\# \text{ of cars}}{\text{population}} \times \left(\Delta \frac{\# \text{ of licenses}}{\# \text{ of cars}} \right) \times \frac{\text{VKT}}{\# \text{ of licenses}} + \\ &\frac{\# \text{ of cars}}{\text{population}} \times \frac{\# \text{ of licenses}}{\# \text{ of cars}} \times \left(\Delta \frac{\text{VKT}}{\# \text{ of licenses}} \right) \end{aligned}$$

$$\frac{\text{VKT}}{\text{population}} = \frac{\# \text{ of cars}}{\text{population}} \times \frac{\# \text{ of licenses}}{\# \text{ of cars}} \times \frac{\text{VKT}}{\# \text{ of licenses}}$$

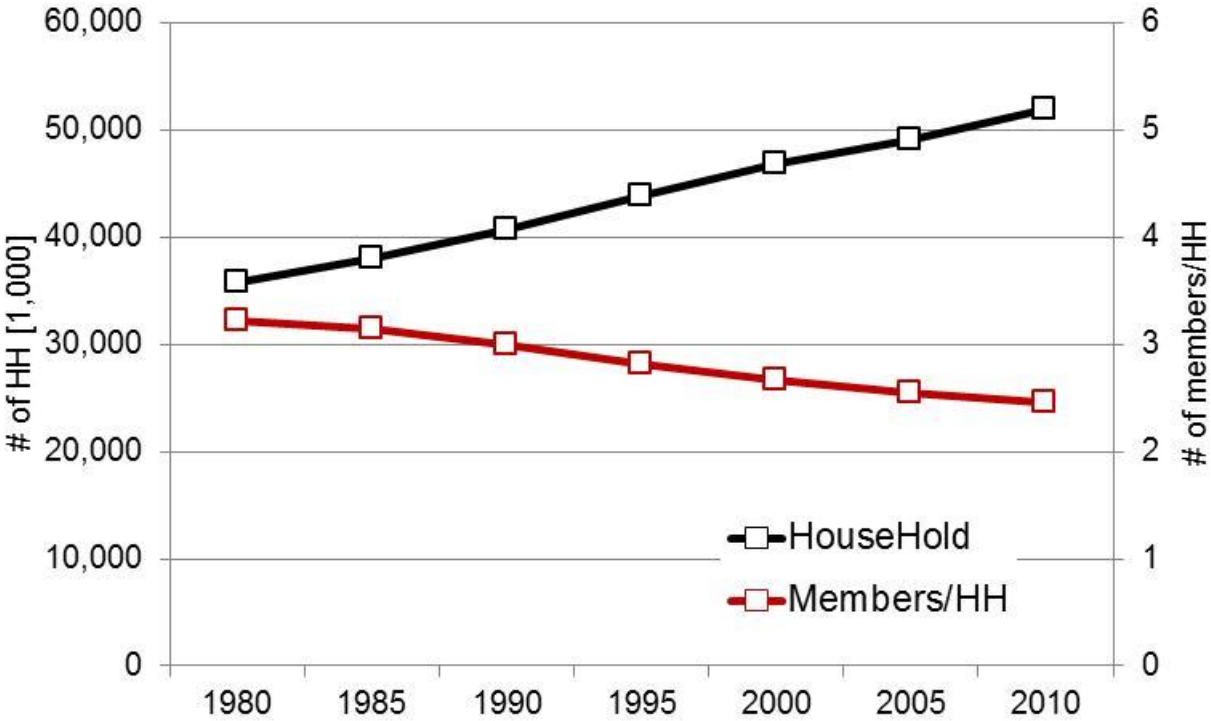


Population size has been decreasing from 2009,
“Aging Rate” increasing constantly.

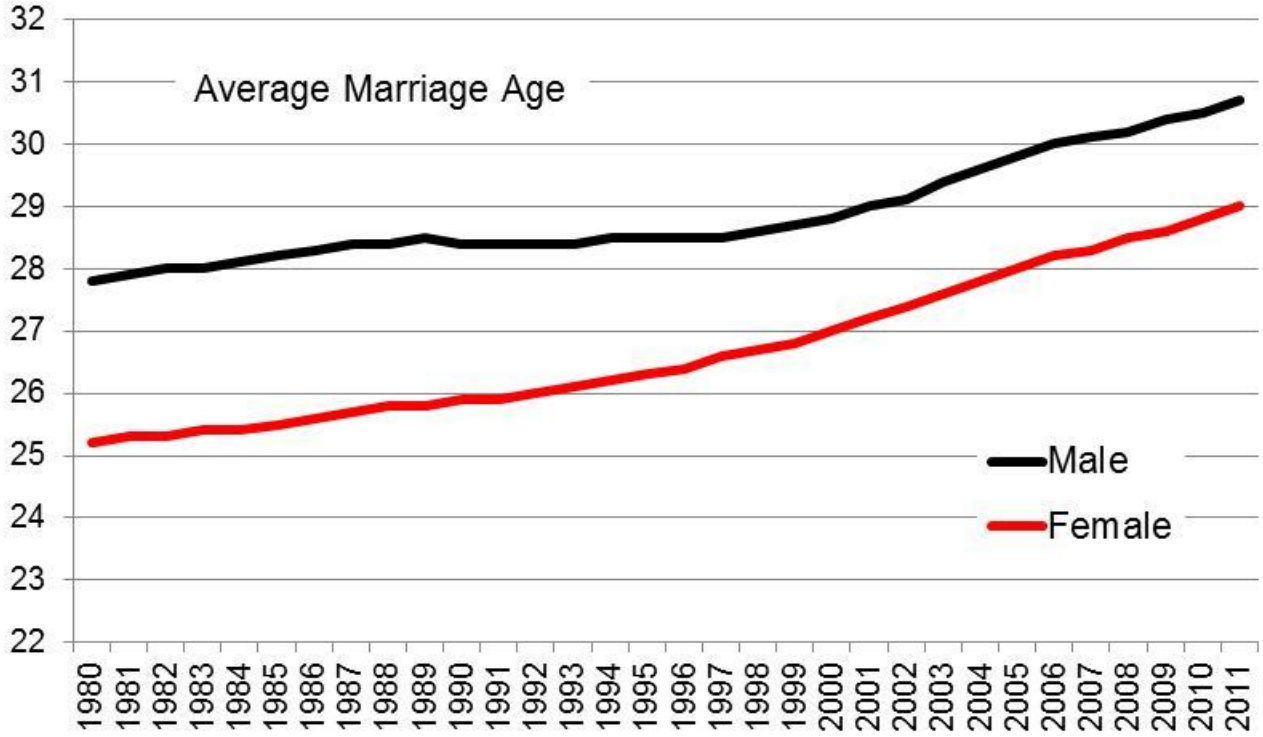


Number of households is increasing because of the household size (number of household members) is decreasing.

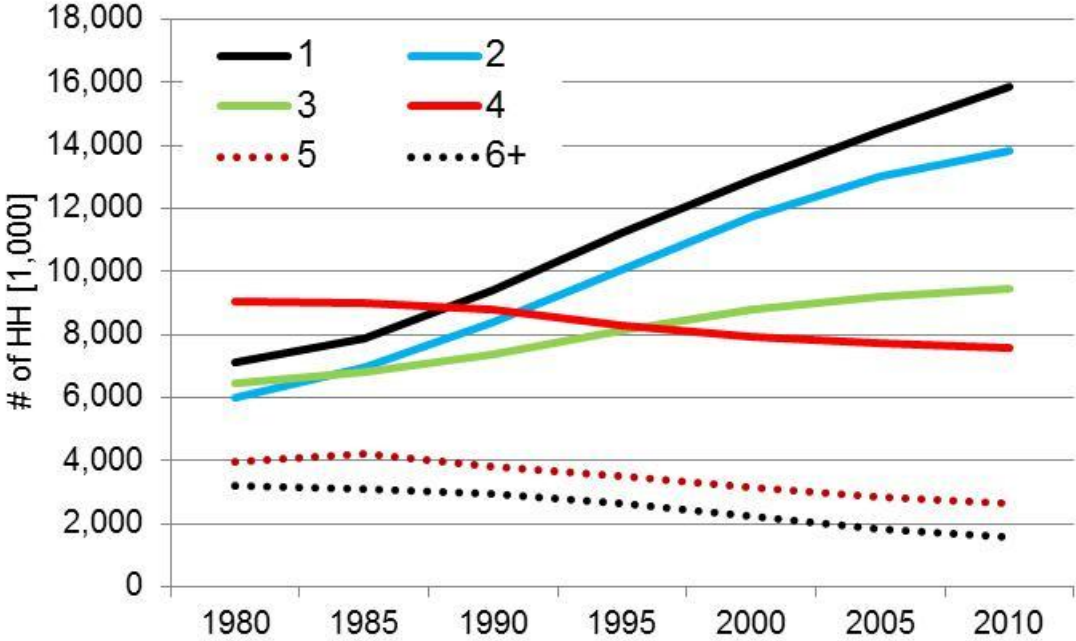
Does this decrease car activities ?

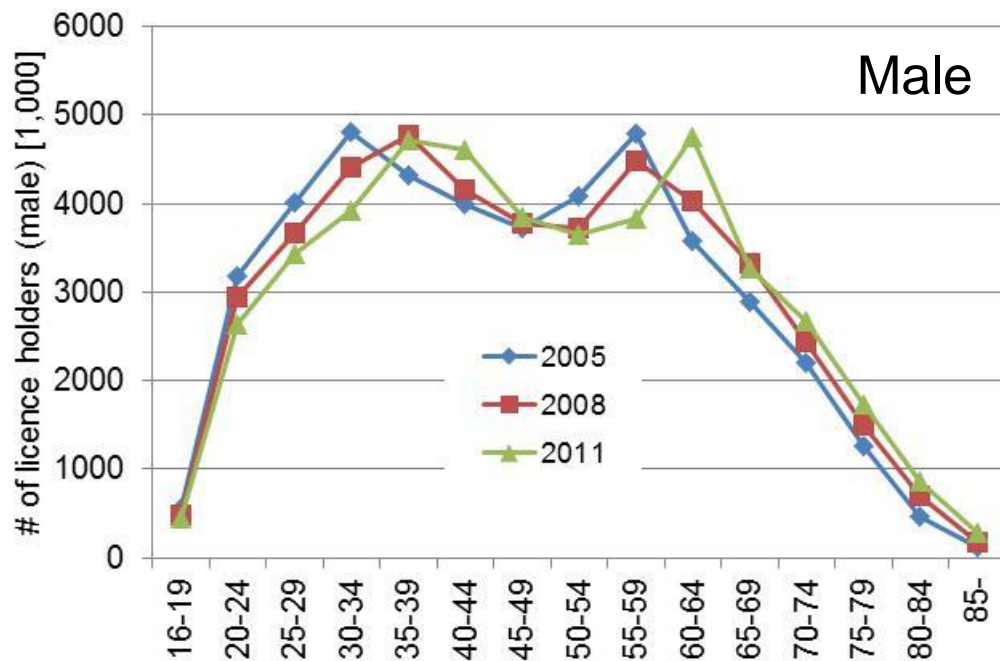


Increase of average marriage age causes reduction of number of child, car activities, reduction of car sales market...

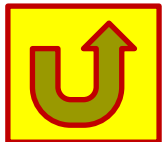
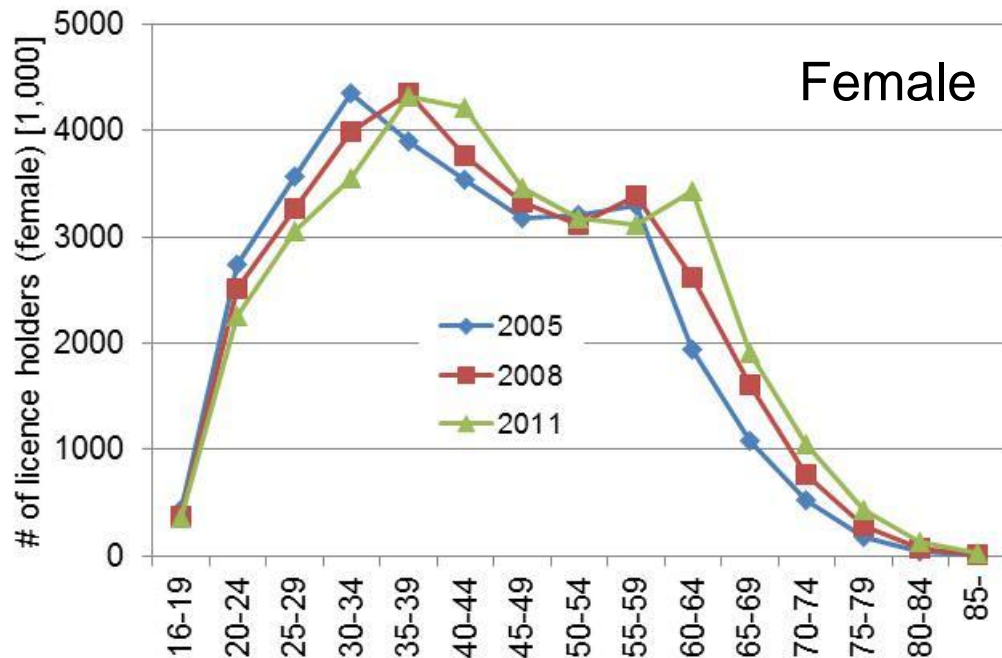


From 1990, one or two members household became major, now under 4 household covers 75%.



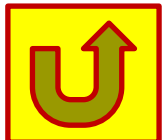
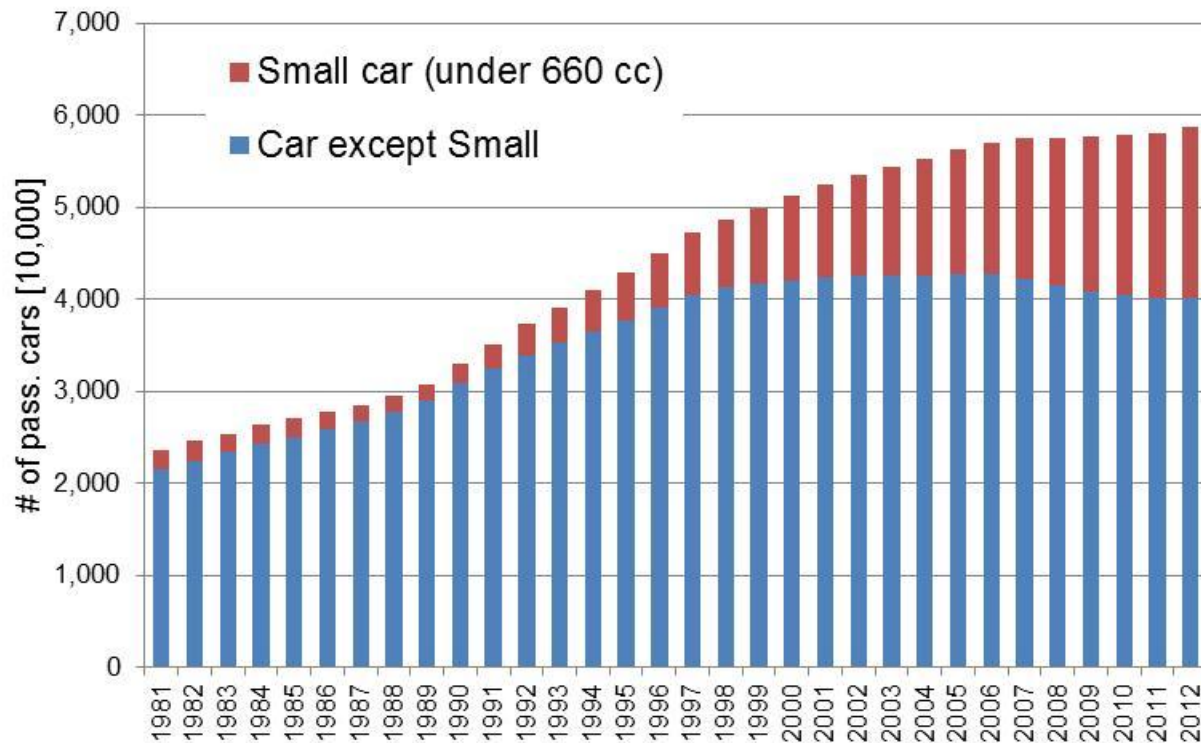


Because of aging, the share of license holders of younger generation is decreasing.



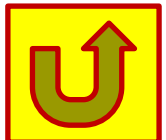
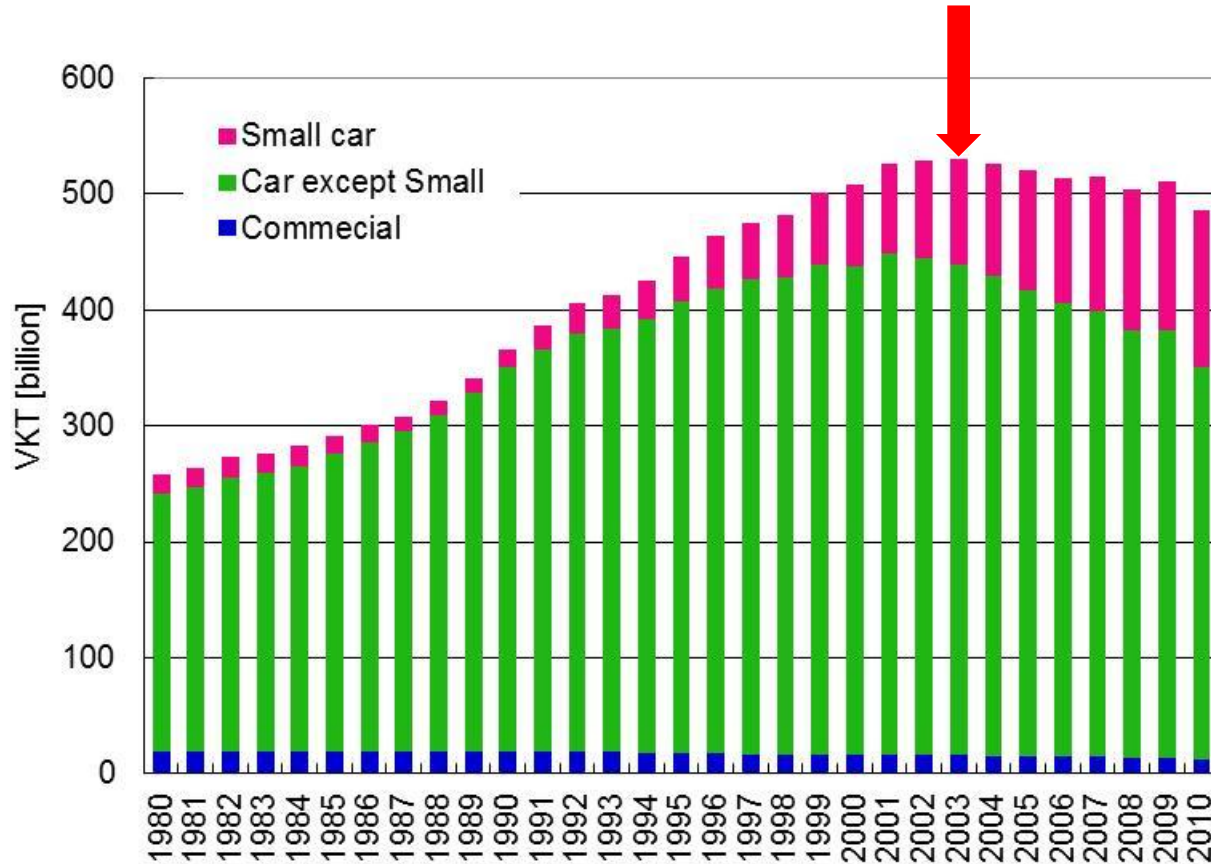
Number of cars has already saturated, however,
small size vehicle share is increasing because of
efficient & low price, and increase of female drivers
→ “Downsizing”

(“Small car”: engine displacement is under 660 cc)



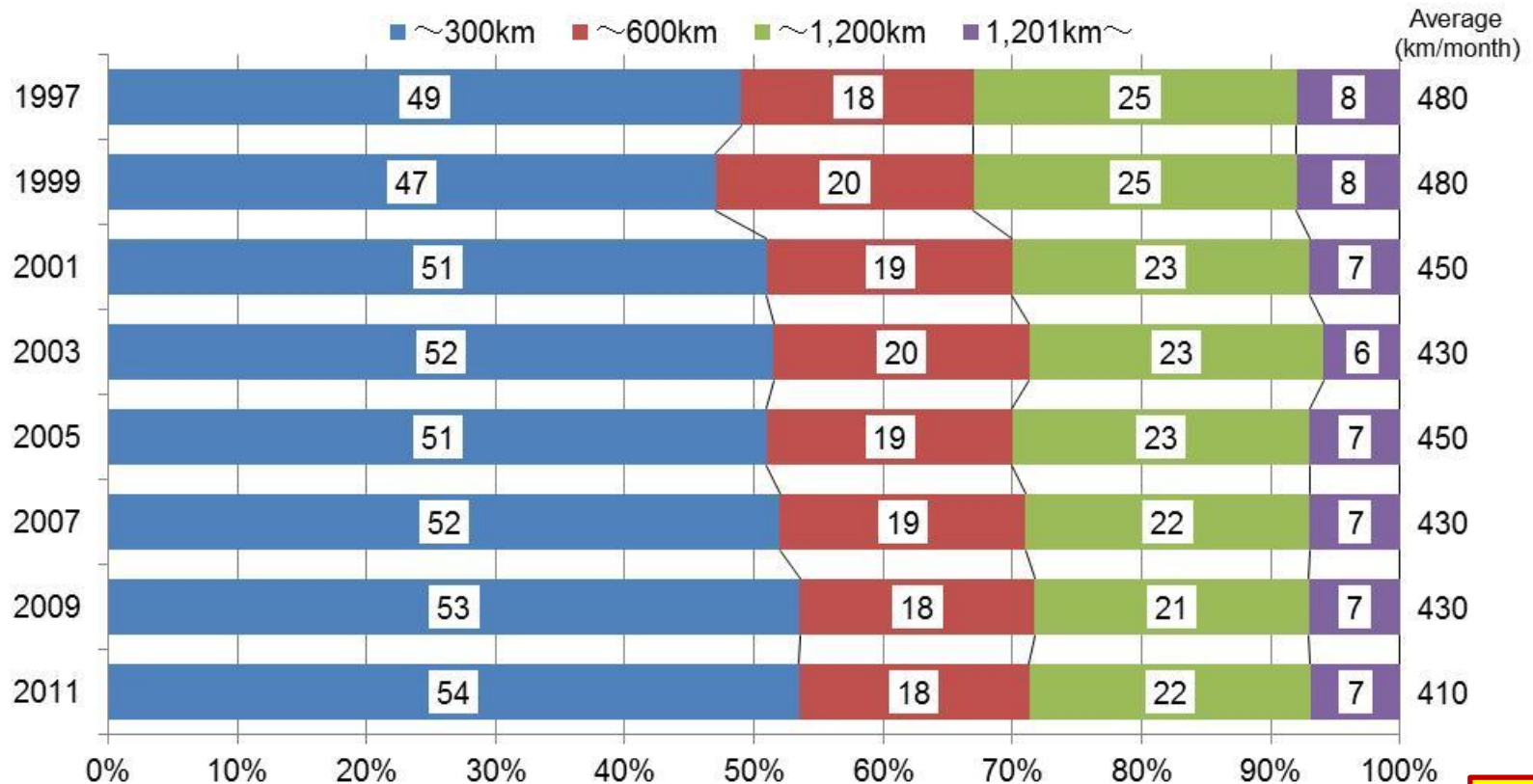
Vehicle Kilometers Traveled (VKT) has been apparently decreasing from 2004, simultaneously downsizing occurred.

(“Small car”: engine displacement is under 660 cc)



Monthly Traveled Trip Distance Distribution

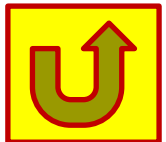
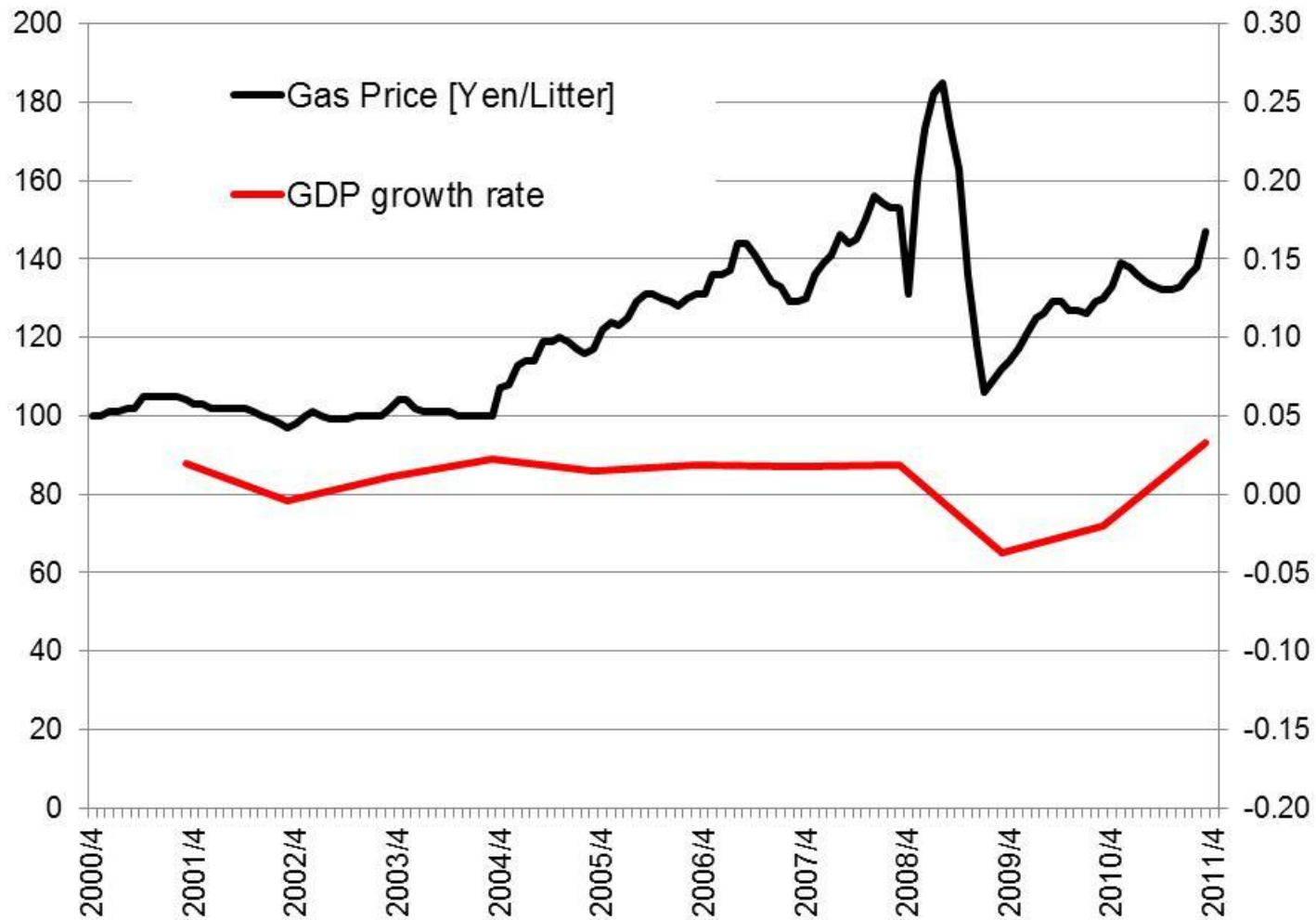
The share of short trips has been increasing gradually.



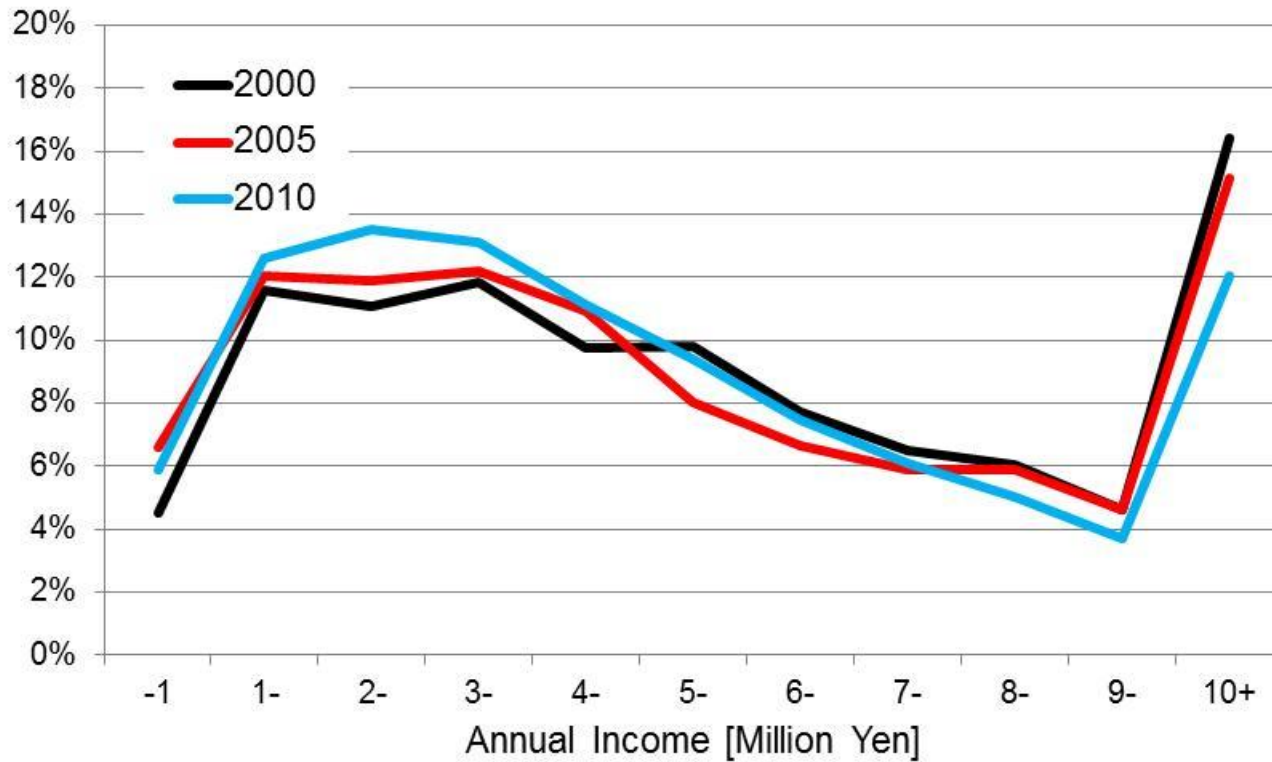
Data: "Motor vehicle transport statistics" (sample size is about 15,000)



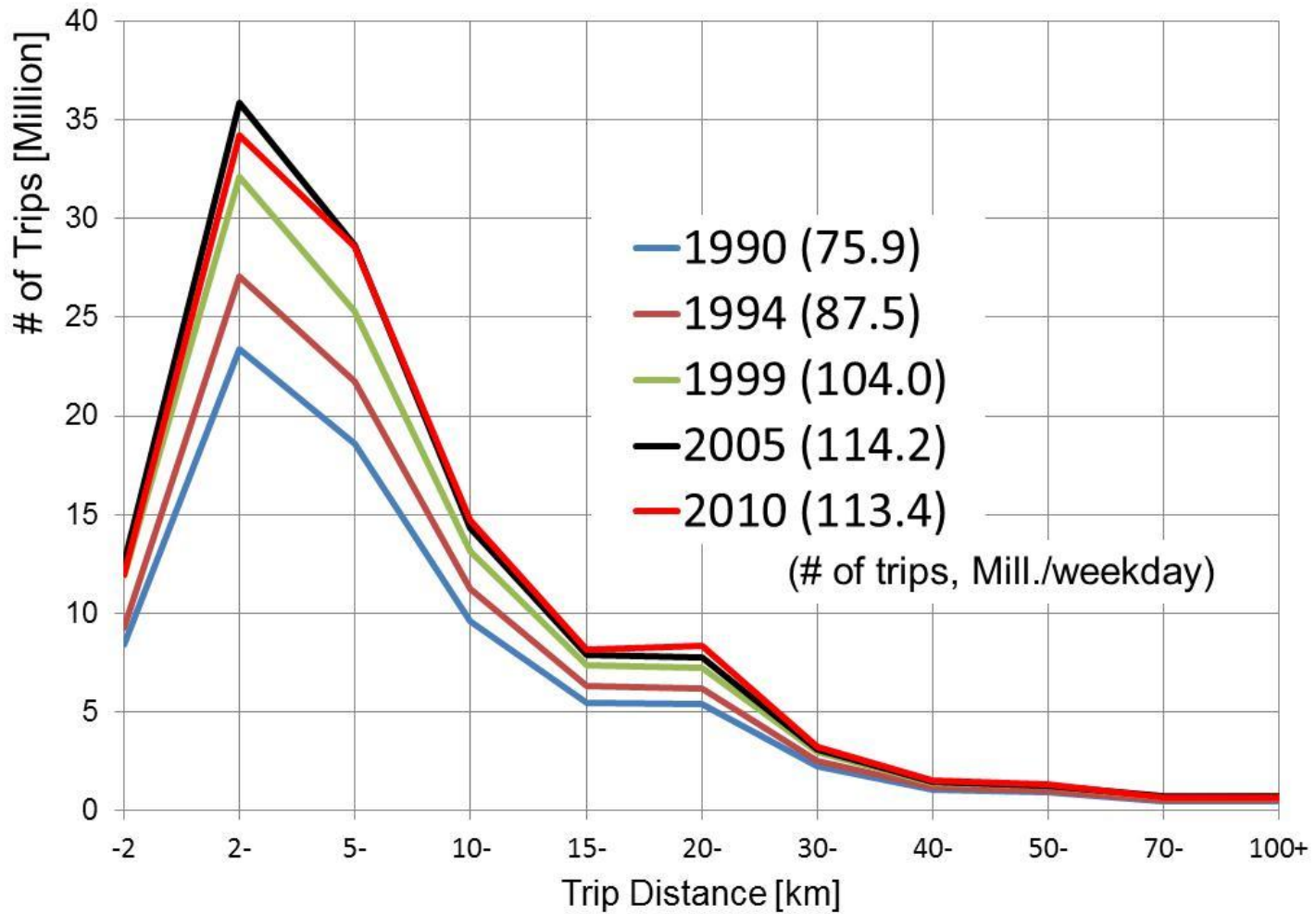
Low economic growth rate and high level of gas price were one of the major reasons for shrinking car activities.



Low income, especially increasing low income people causes car demand reduction

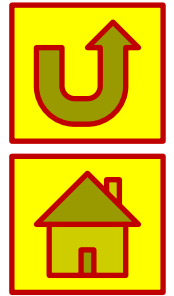


The share of short trip had been increasing, however, it was decreased in 2010.

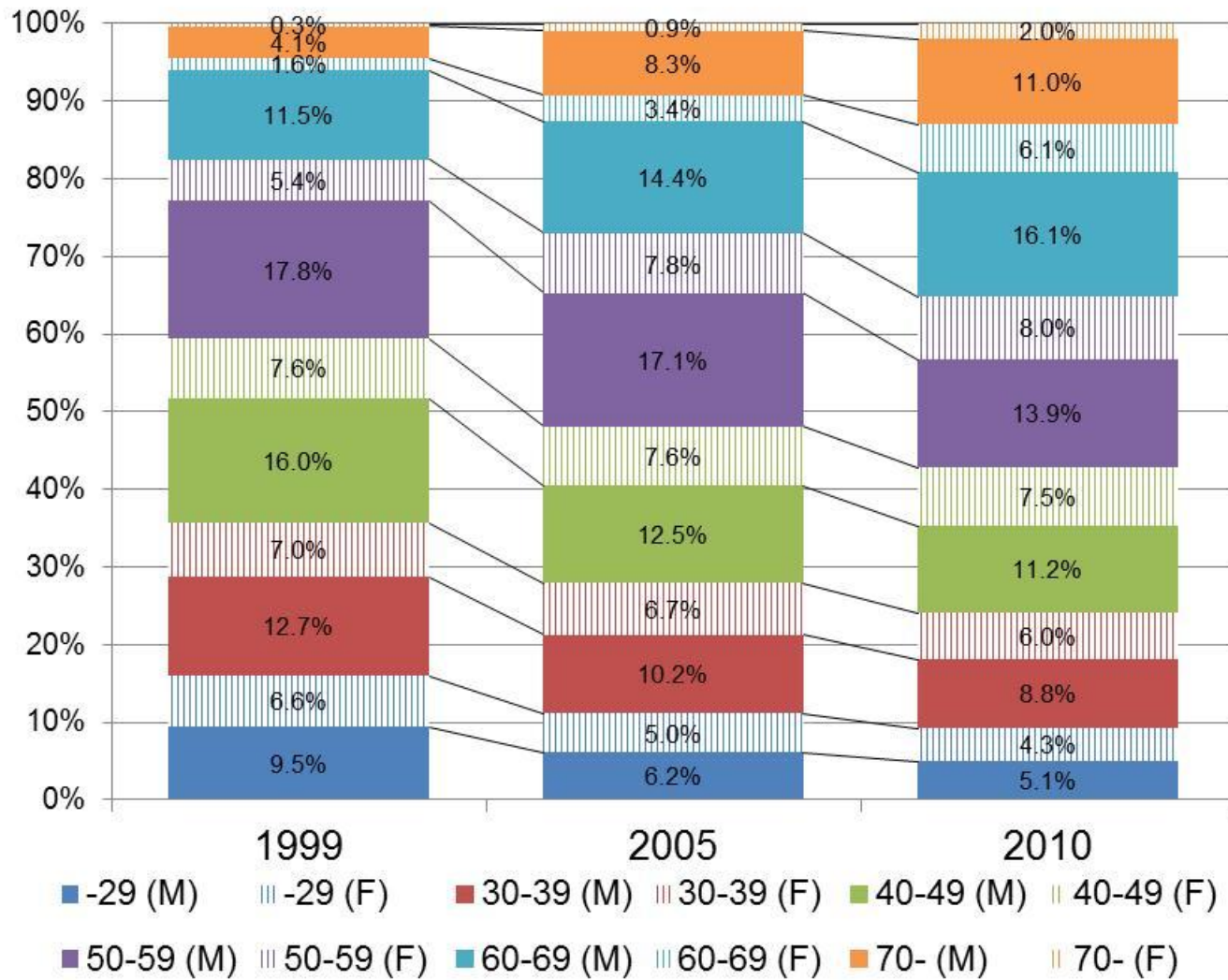


Trip distance distribution on a weekday

Data: "Road Traffic Census" (sampling rate is about 3% of car owners)



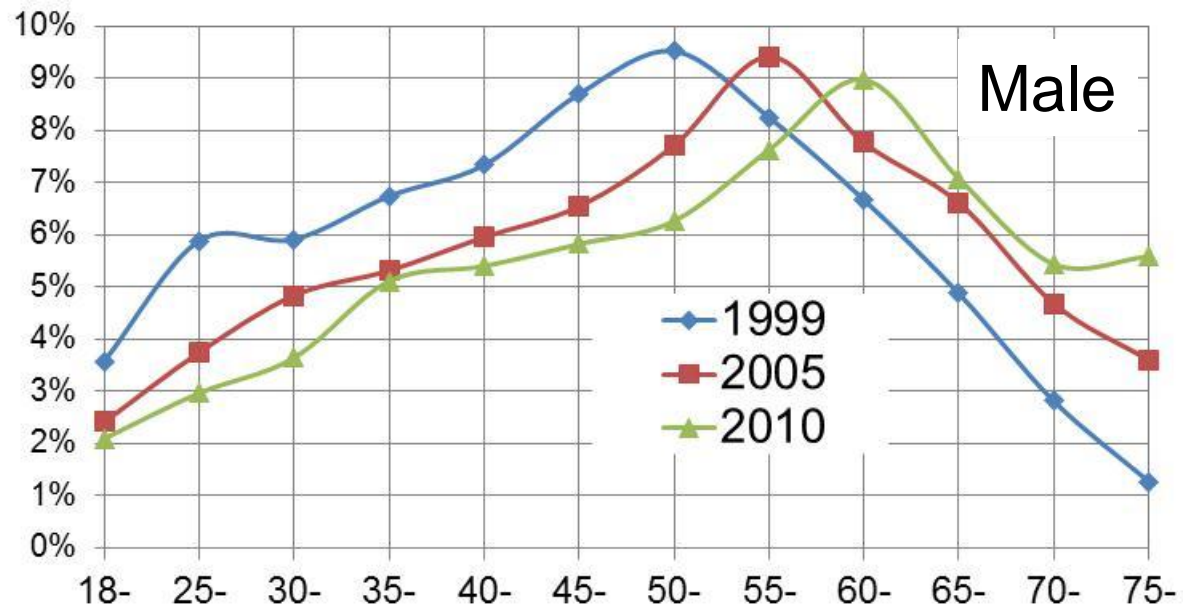
The share of elder drivers is dramatically increasing, young drivers (20 or 30 years old male drivers) decreasing



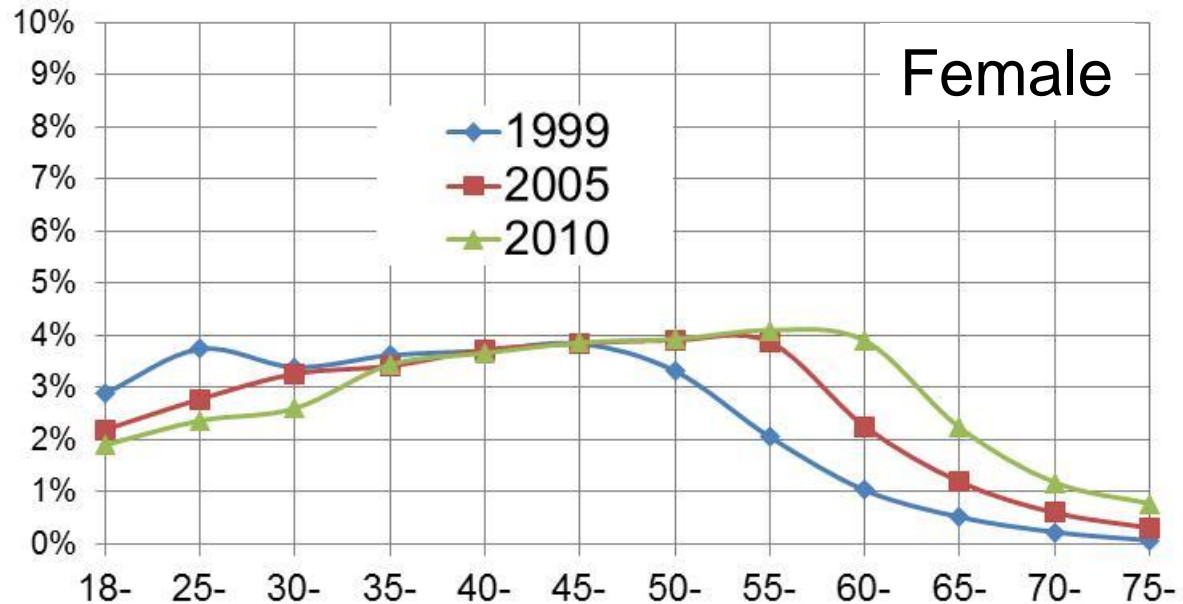
Share of characteristics of each car's driver

Data: "Road Traffic Census" (sampling rate is about 3% of car owners)



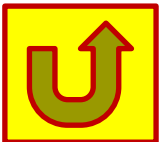


Characteristics of each car's driver

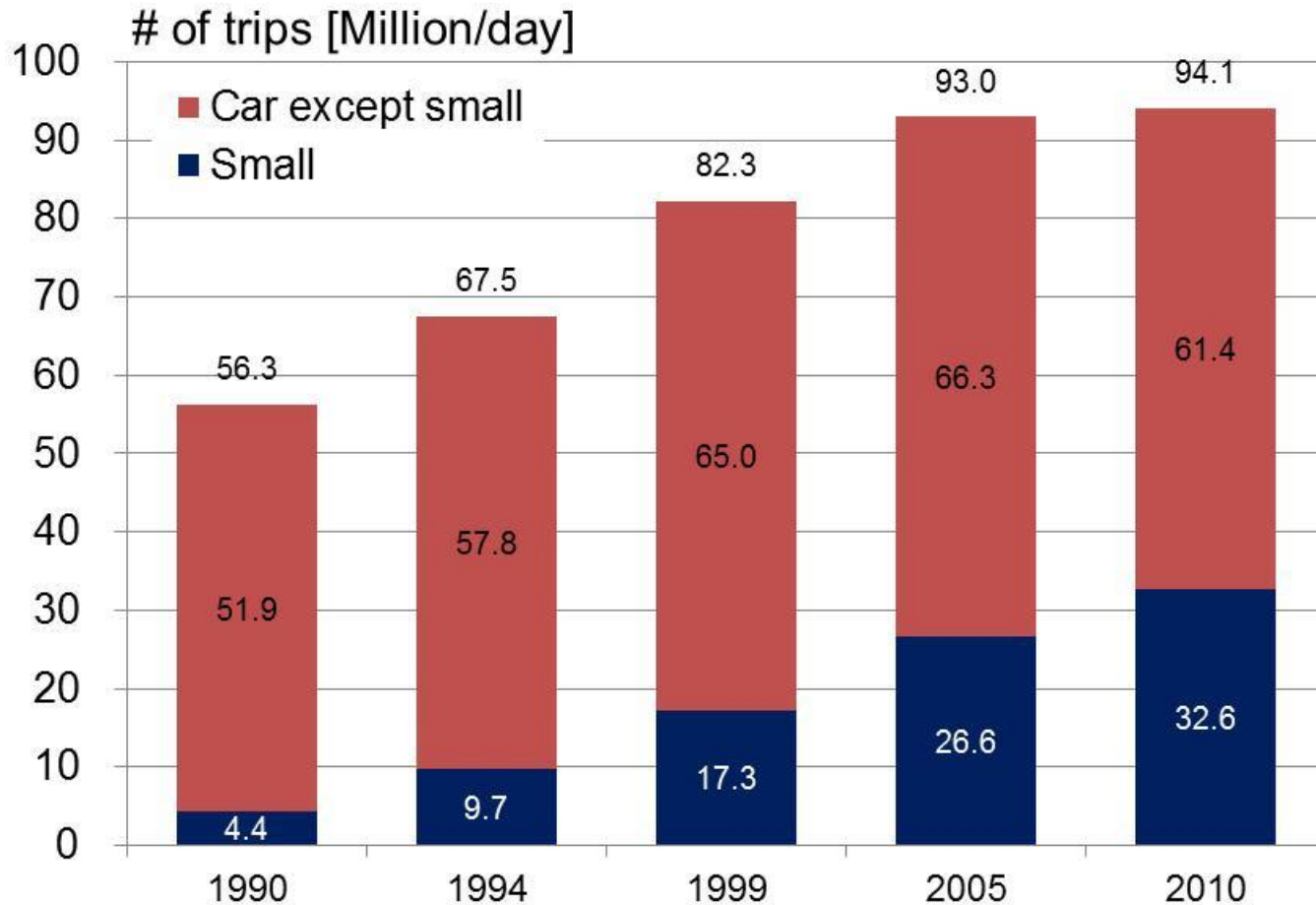


Female young drivers is decreasing dramatically.

Data: "Road Traffic Census" (sampling rate is about 3% of car owners)



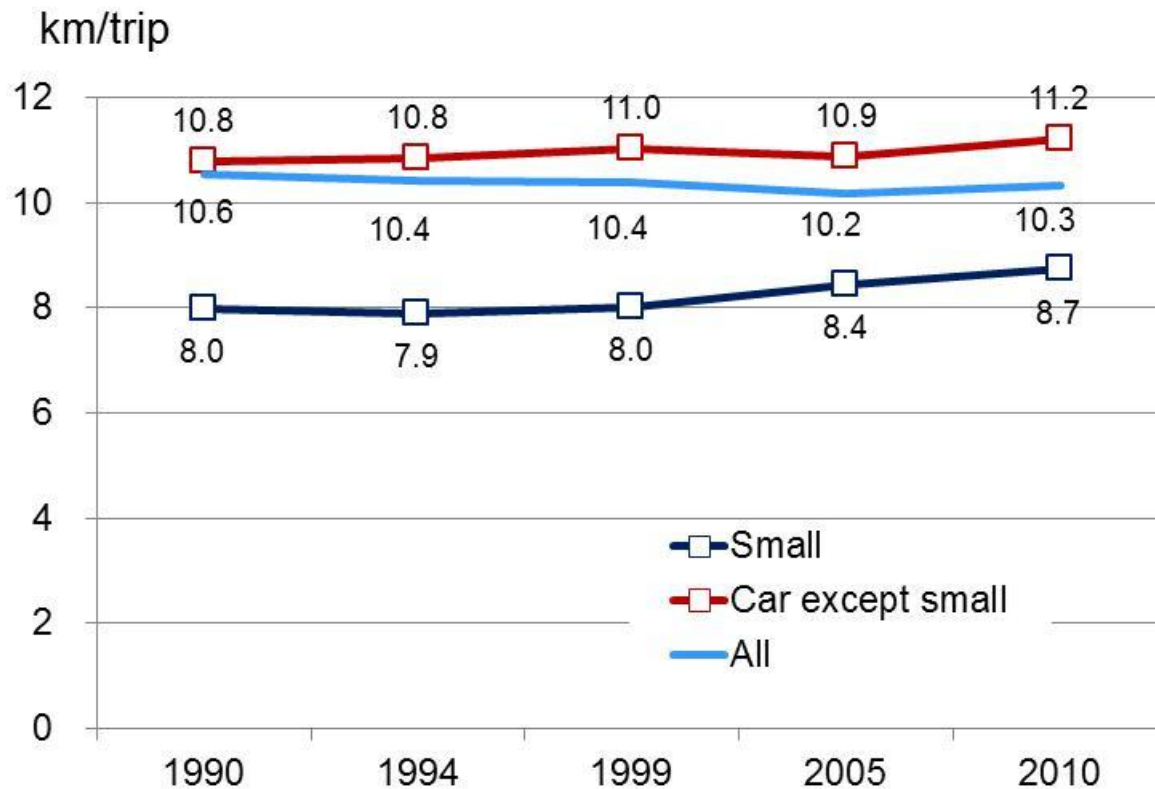
Now, 1/3 trips is covered by small size cars,
number of total trips has saturated.



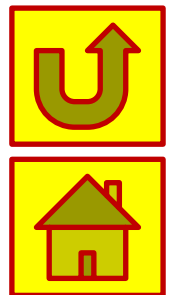
Data: "Road Traffic Census" (sampling rate is about 3% of car owners)



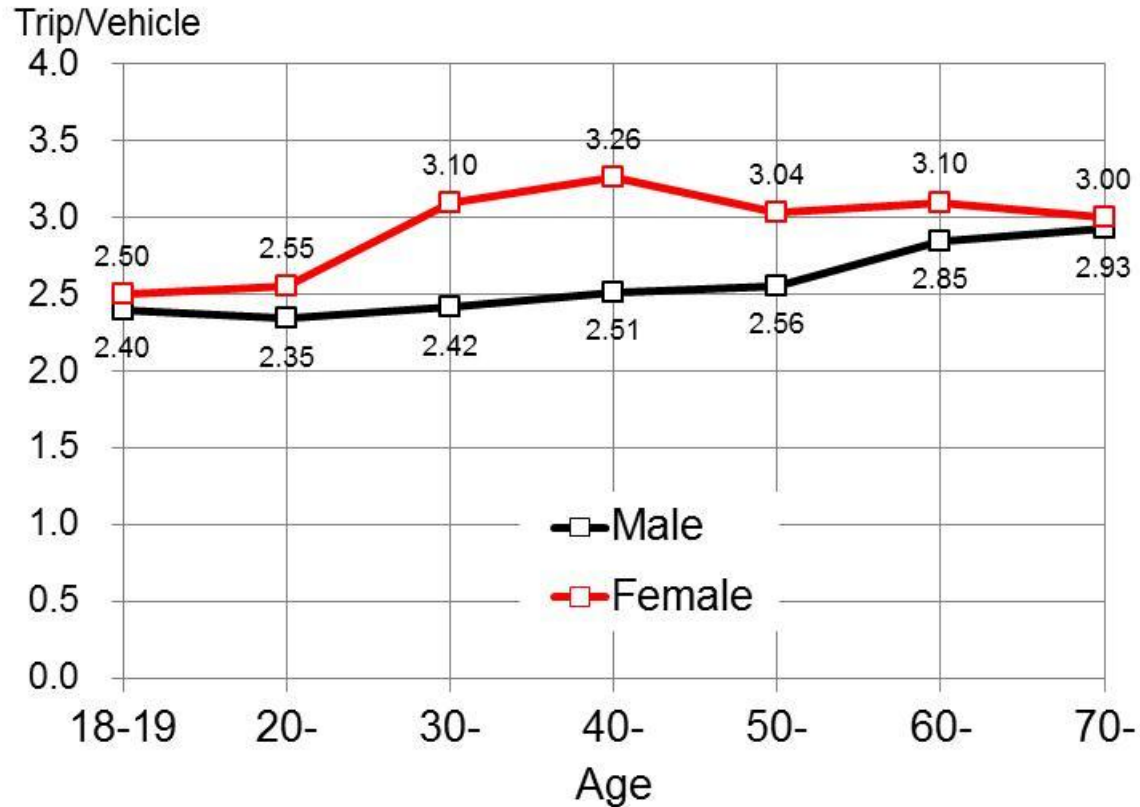
Average trip distance of small cars is shorter than others, however, it has been increasing. Small car is not “additive car”, alternates medium or large size car ?



Data: “Road Traffic Census” (sampling rate is about 3% of car owners)



Because of difference of main purpose of car usage, female's number of trips is greater than male.

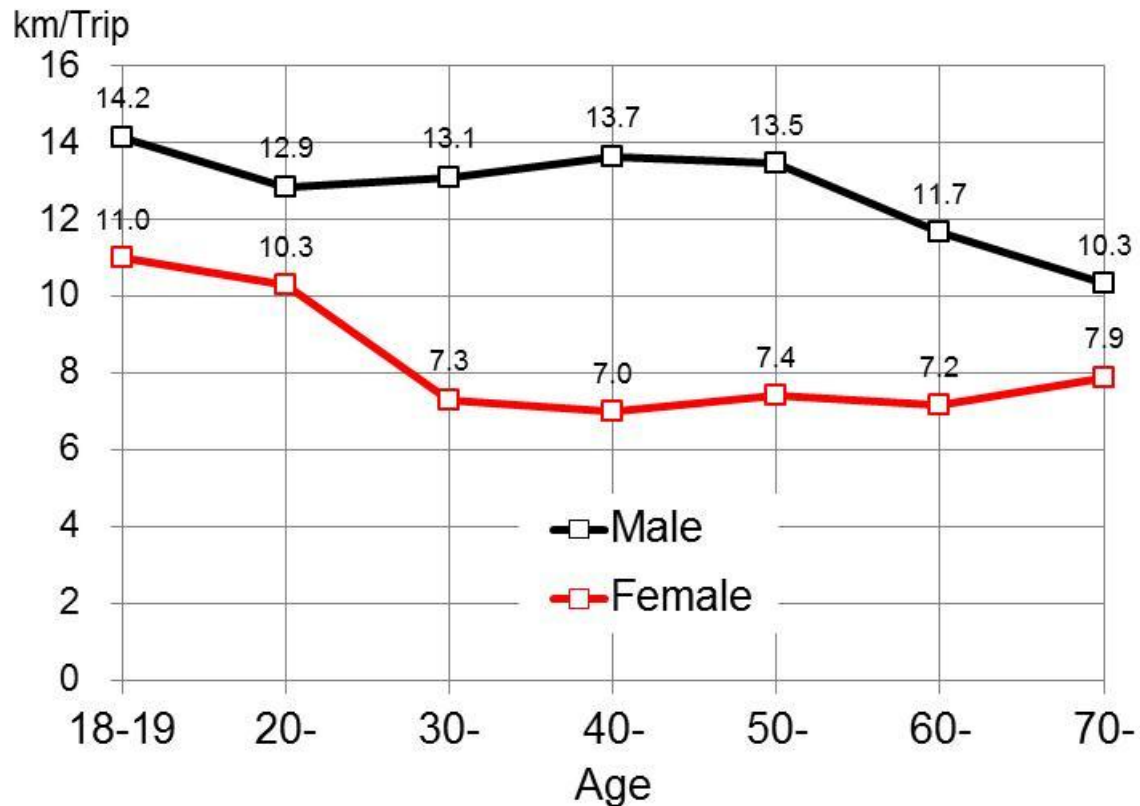


Result in 2010 survey

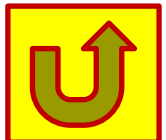


Data: "Road Traffic Census" (sampling rate is about 3% of car owners)

Because of difference of main purpose of car usage, male's average trip length is greater than male.

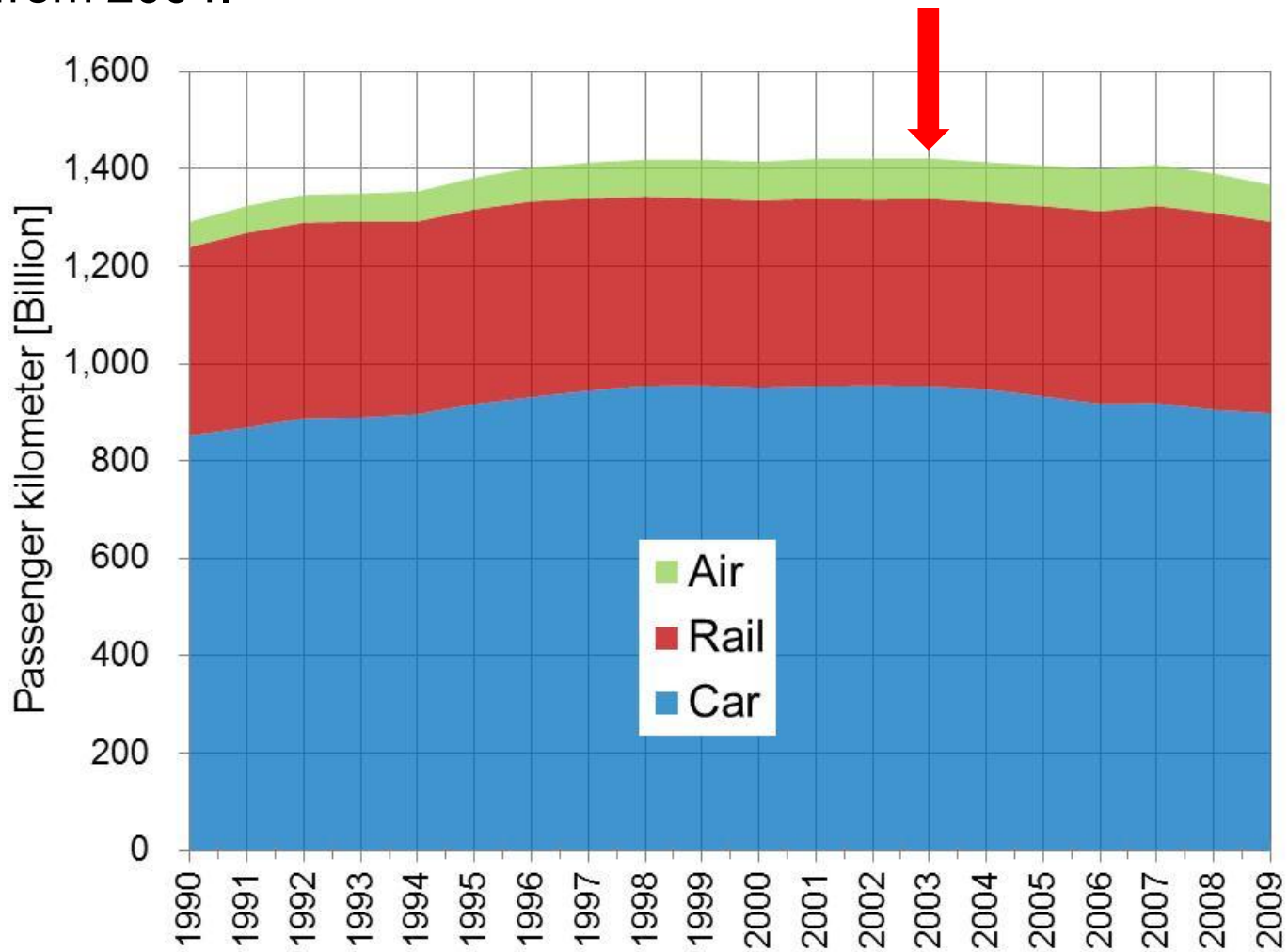


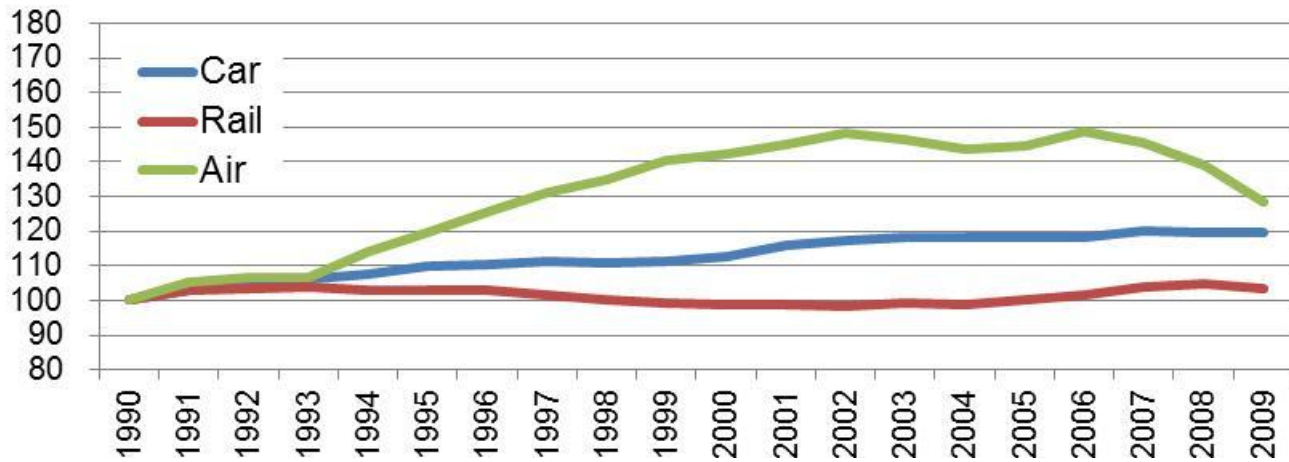
Result in 2010 survey



Data: "Road Traffic Census" (sampling rate is about 3% of car owners)

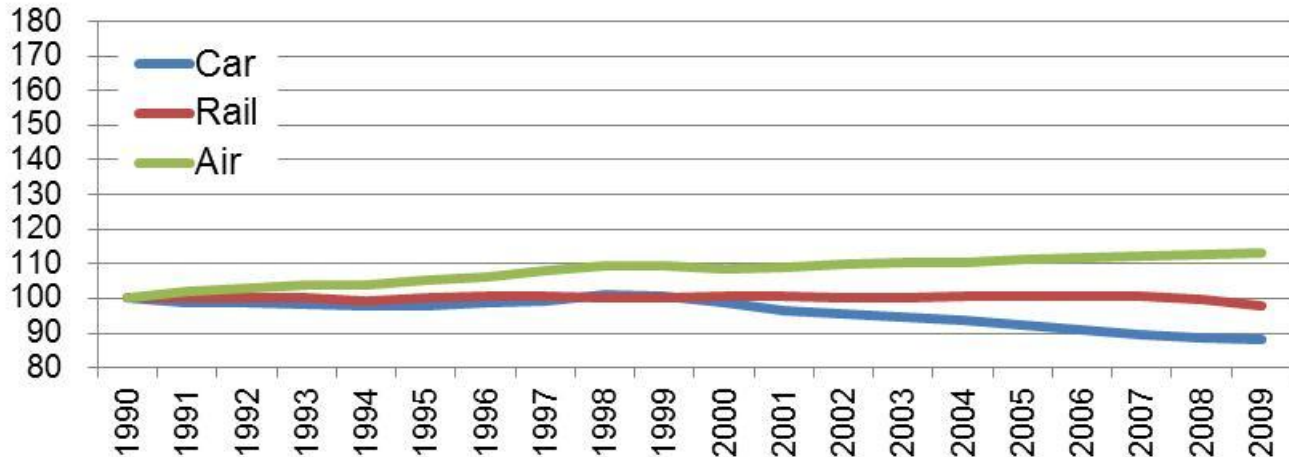
Amount of passenger kilometers of all modes peaked out from 2004.





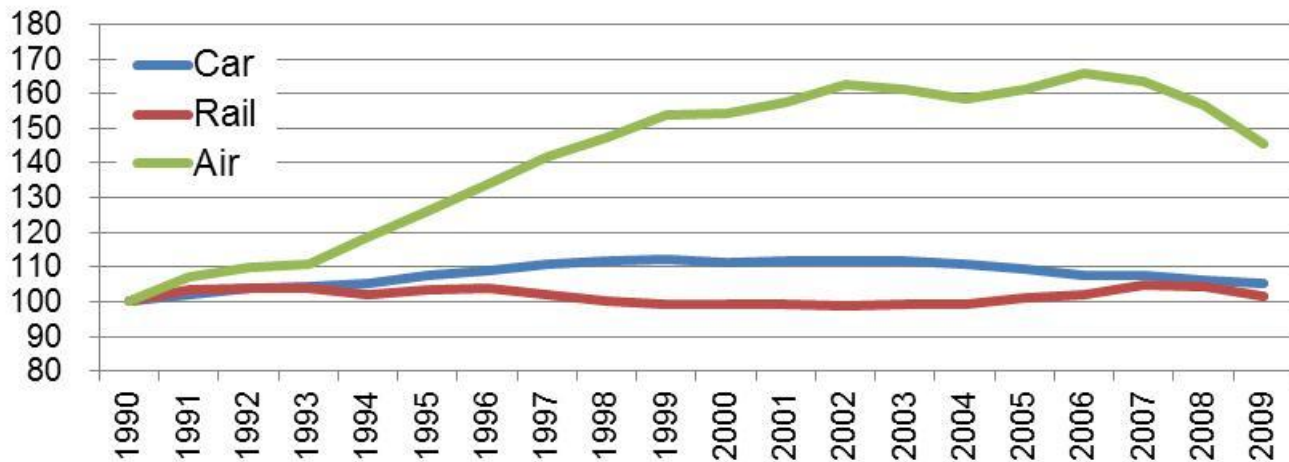
Number of passengers

*



Average trip length

=

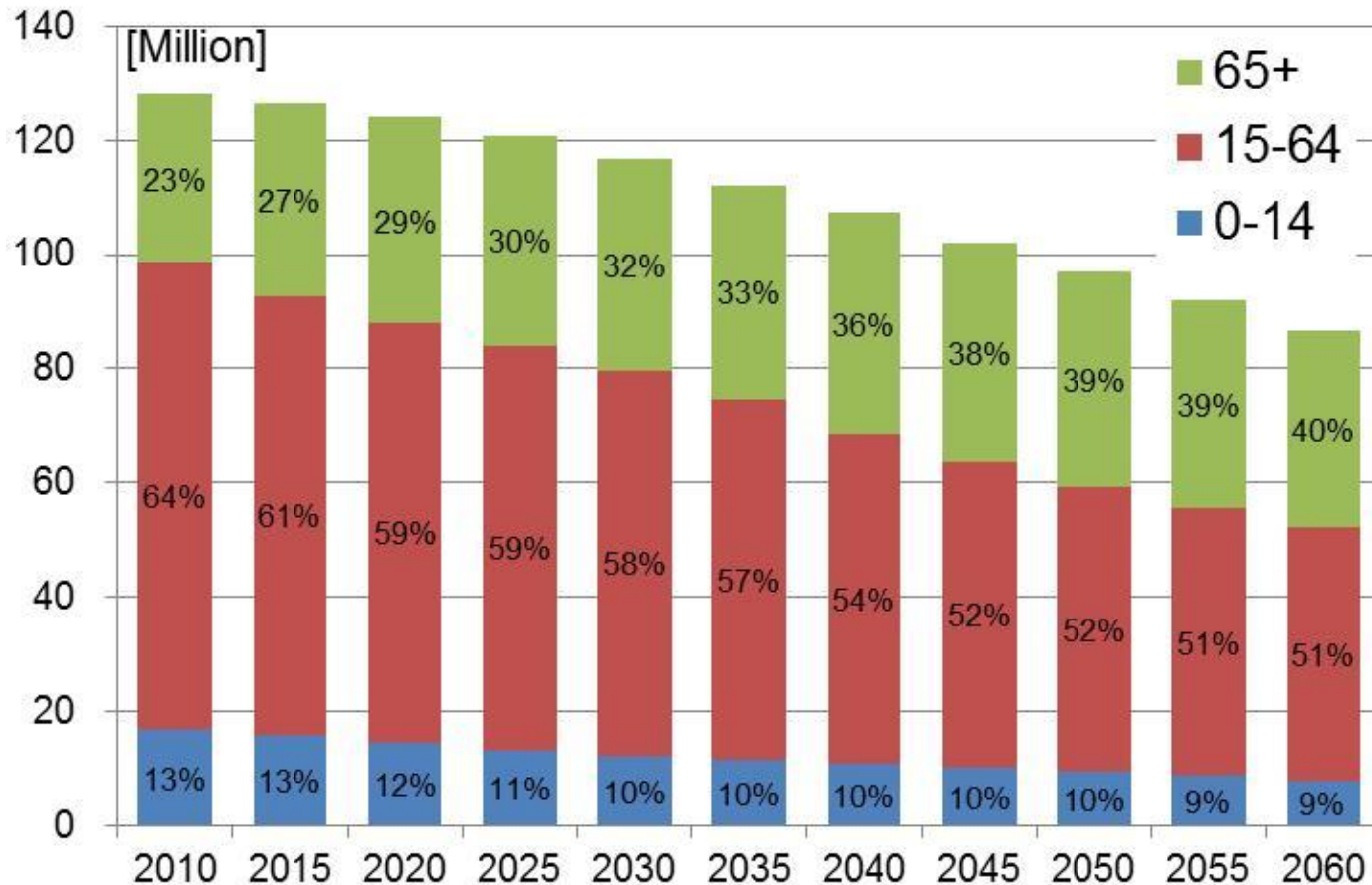


Amount of passenger kilometers

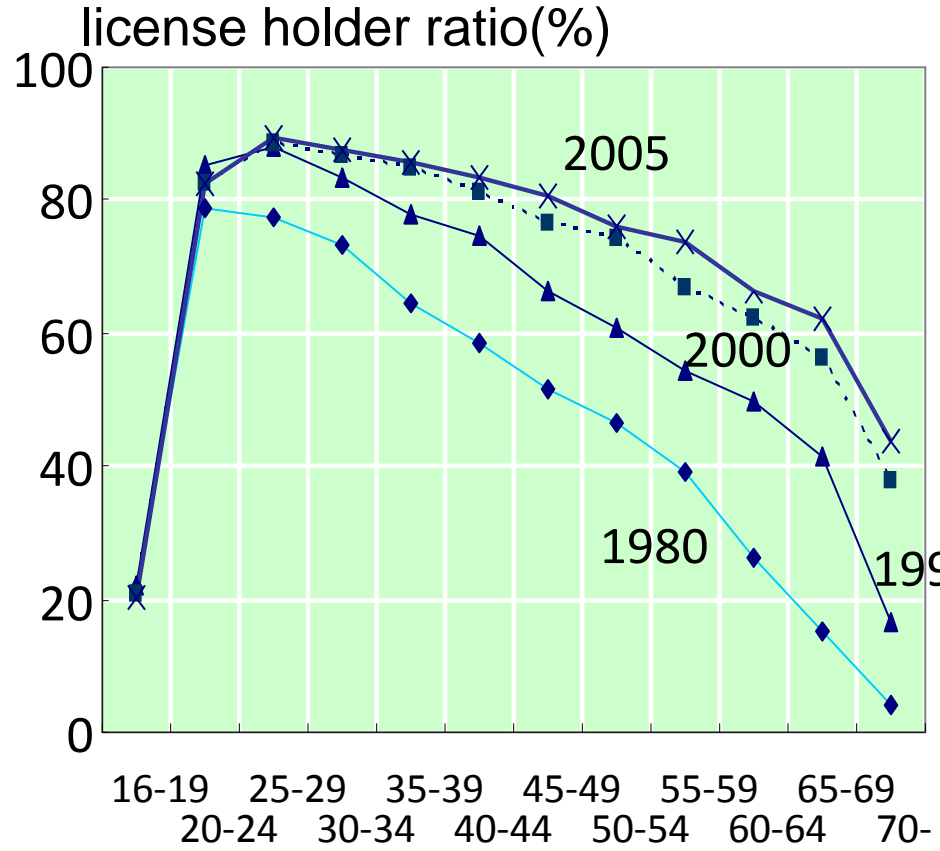


Projection of future population in Japan.

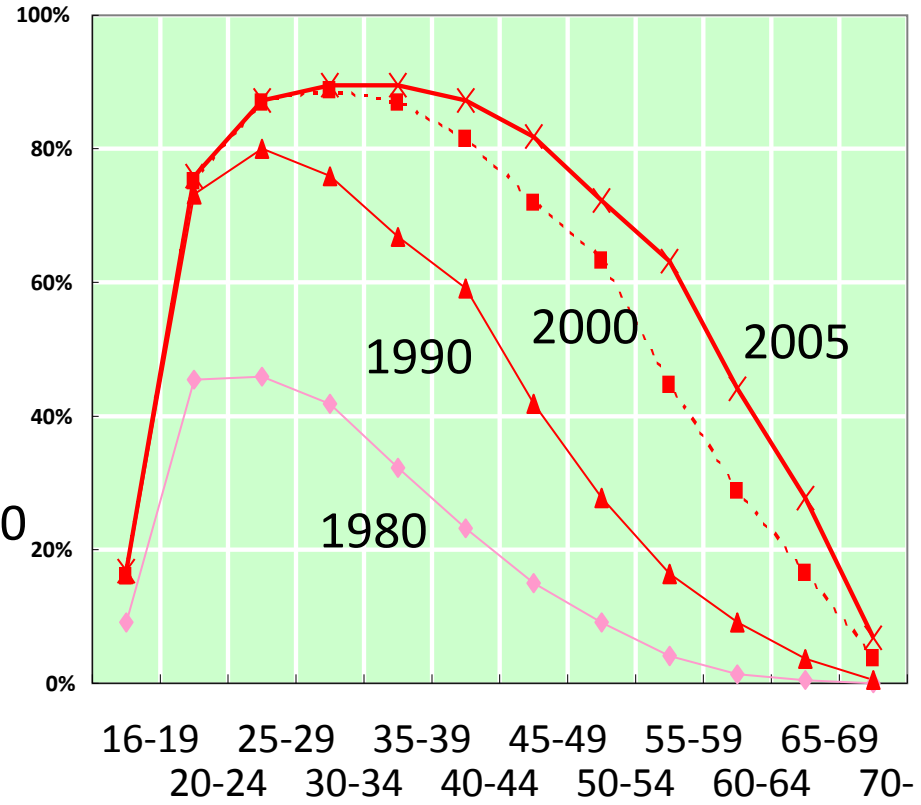
How to keep our activities under the hyper-aging society...



Transition of License Holders by age



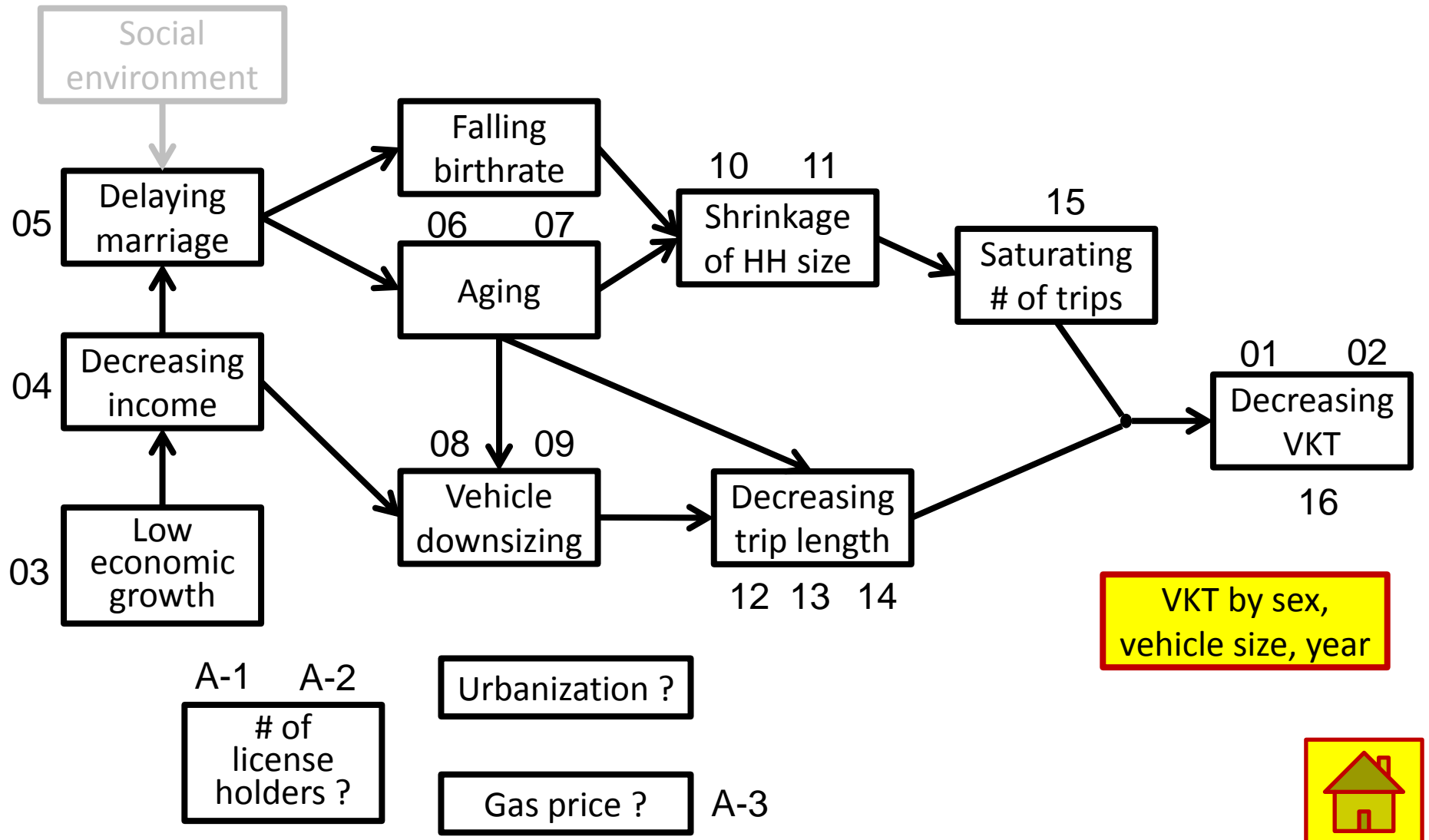
(male)

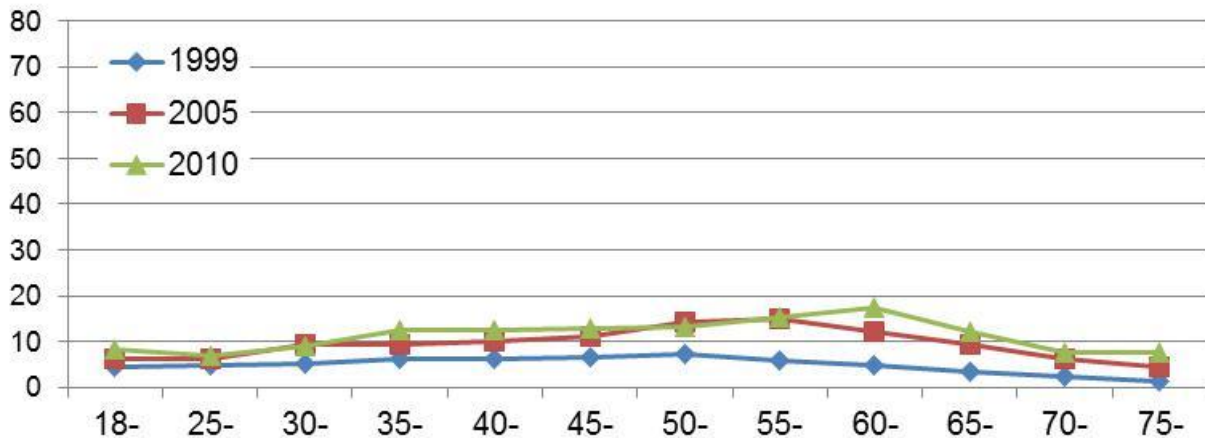
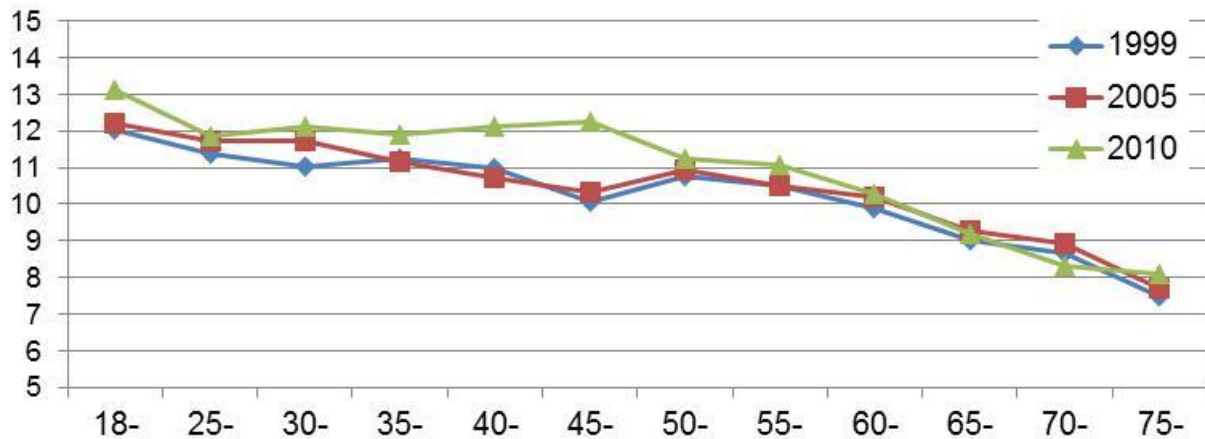
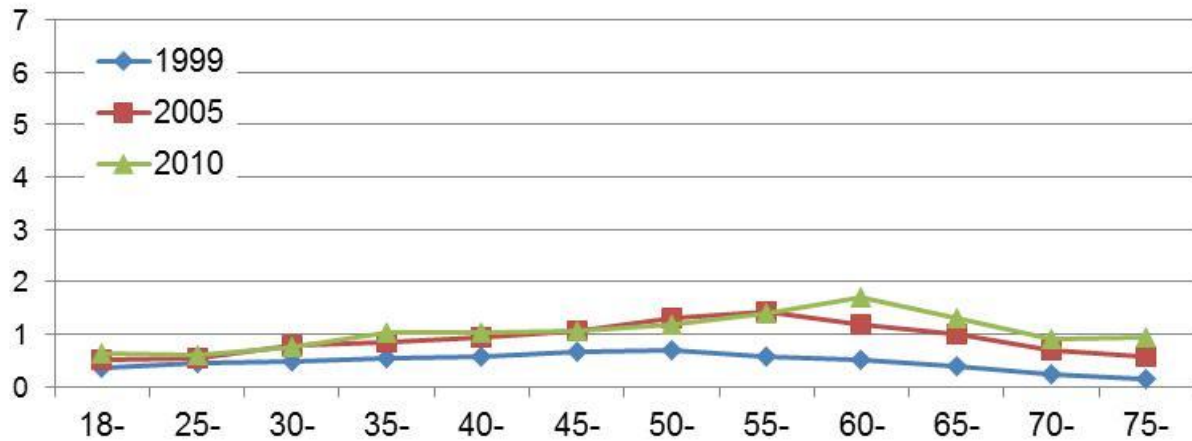


(female)



Tentative working hypothesis for discussion










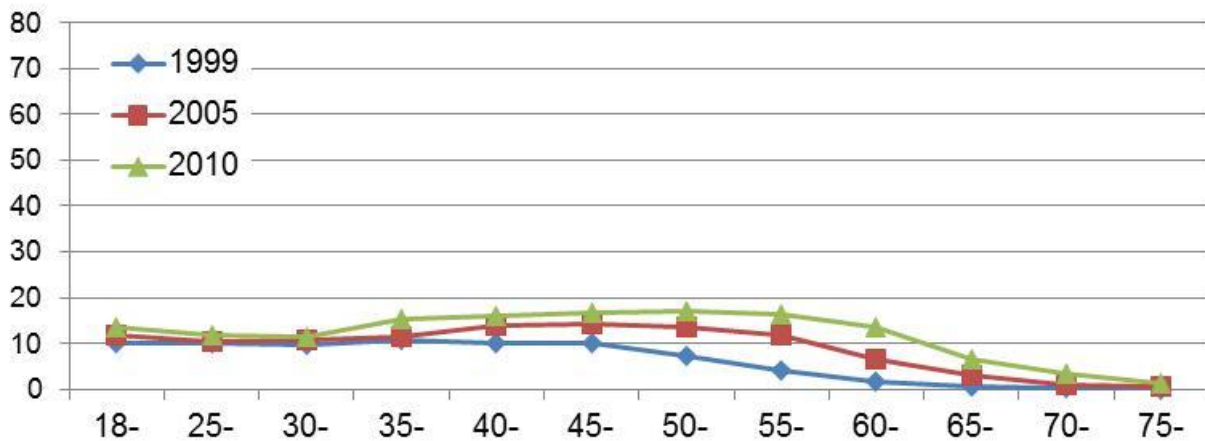
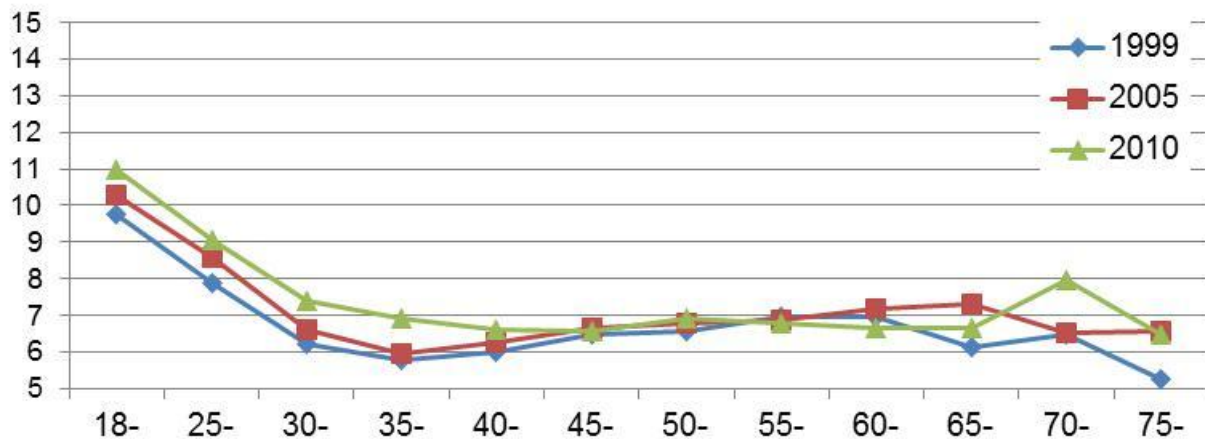
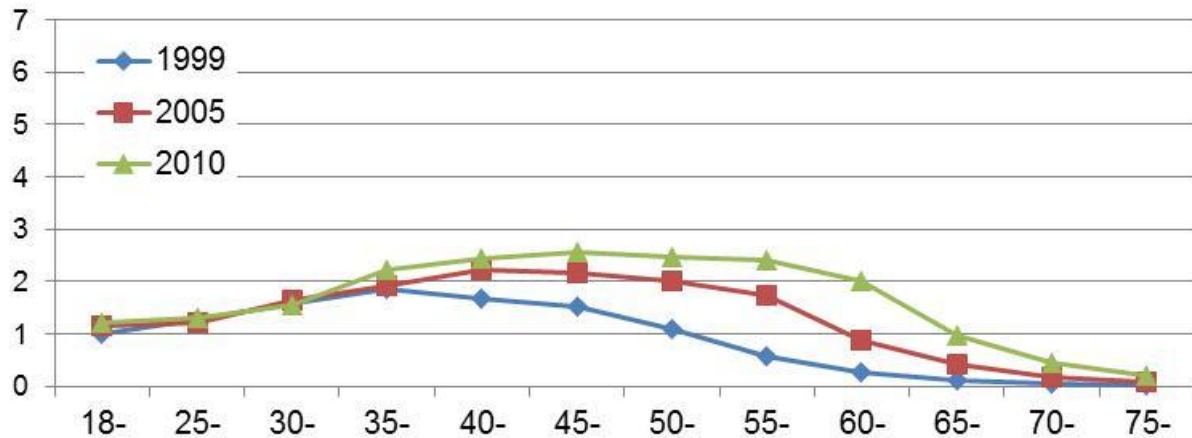


of trips [million]

trip length [km]

VKT [million km*trips]

 **Small**  **Male**  **Female**
except Small  
Total  



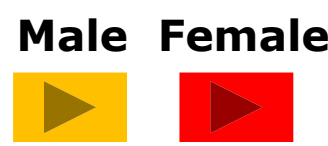
of trips [million]

trip length [km]

VKT [million km*trips]



Small

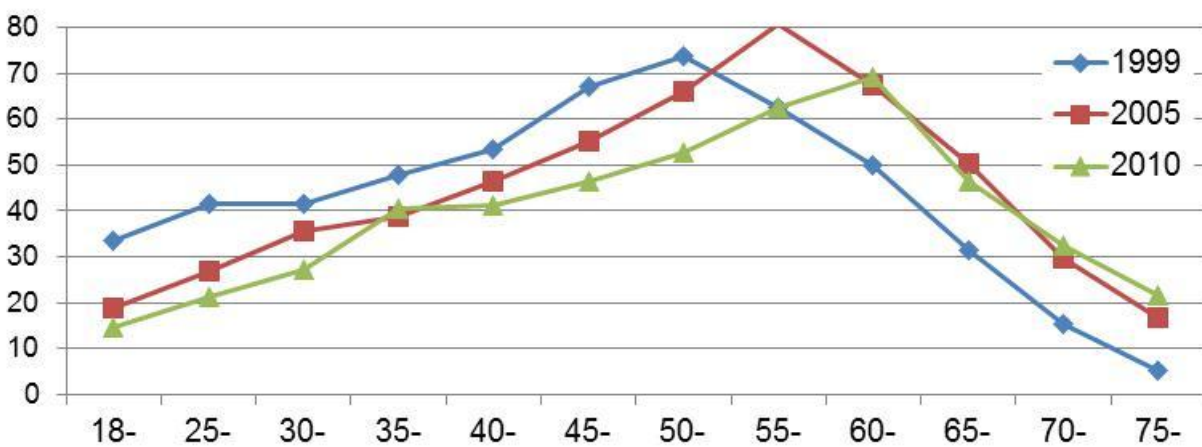
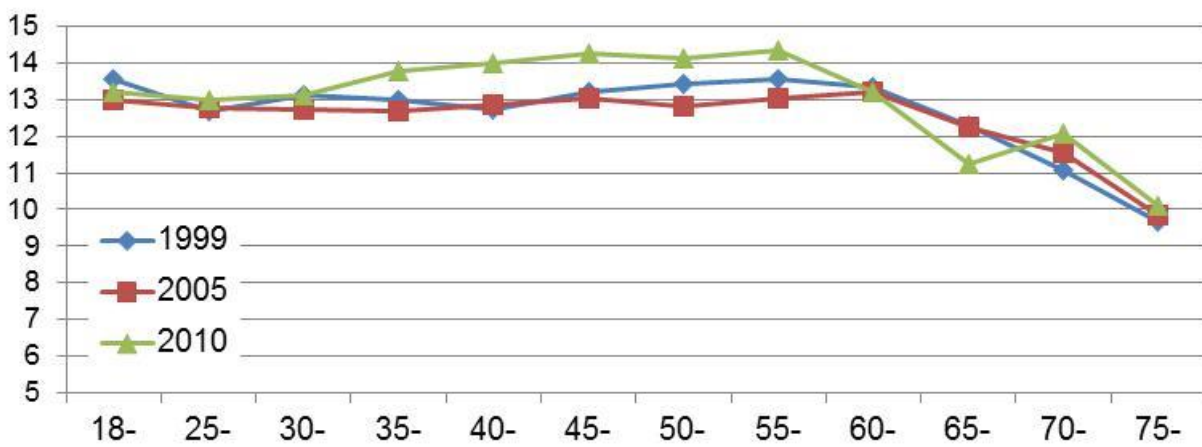
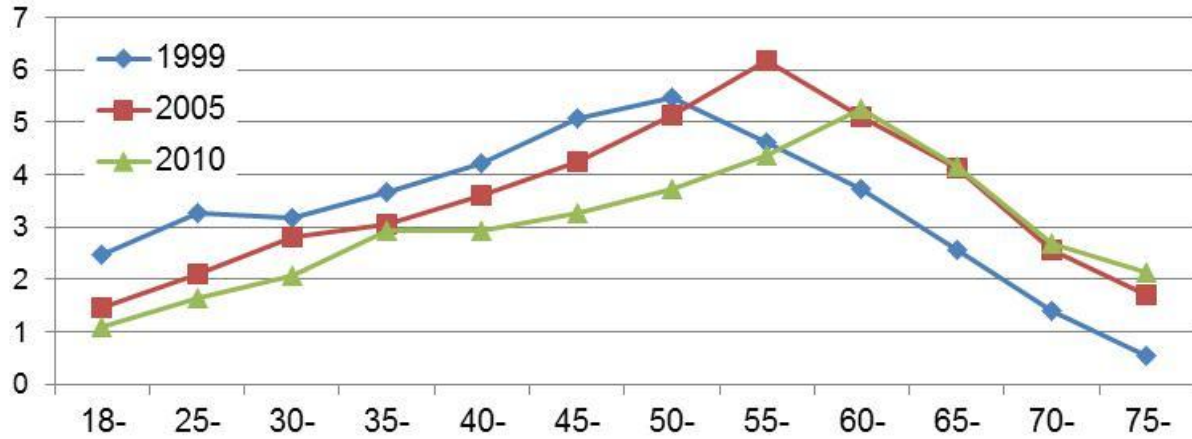


except Small



Total










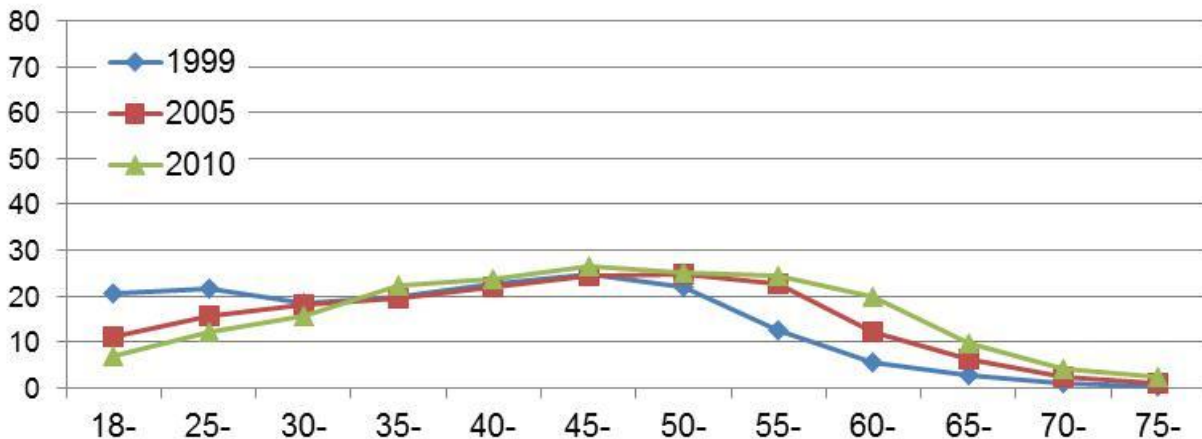
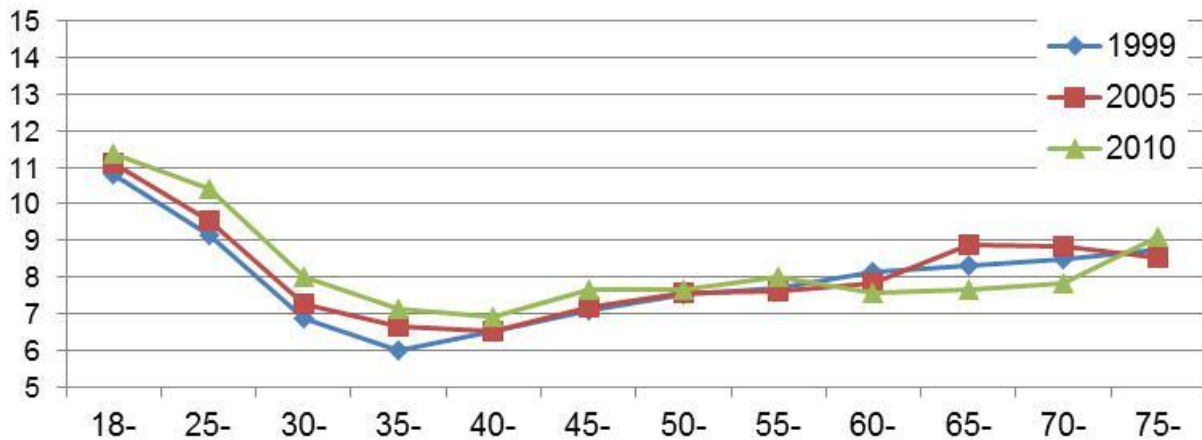
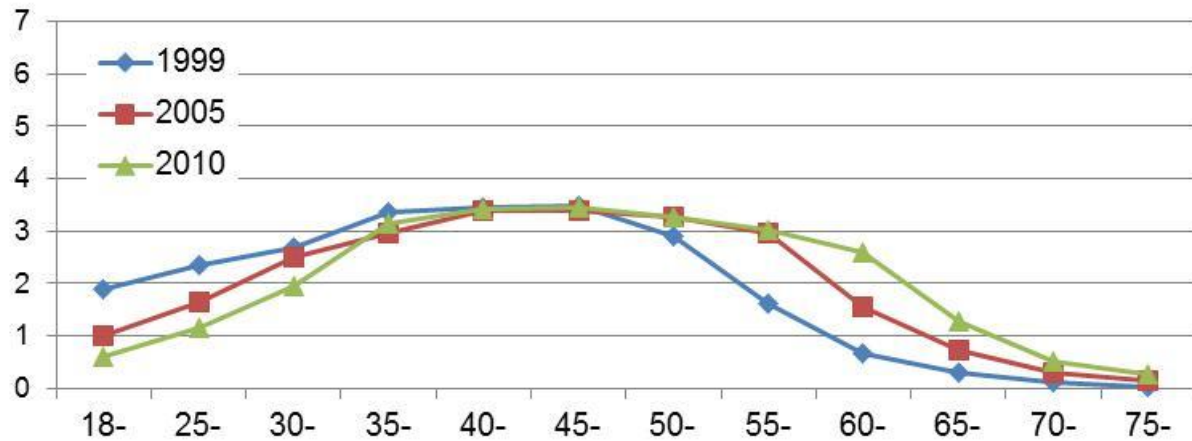


of trips [million]

trip length [km]

VKT [million km*trips]


Male  **Female** 
Small
except Small  
Total  

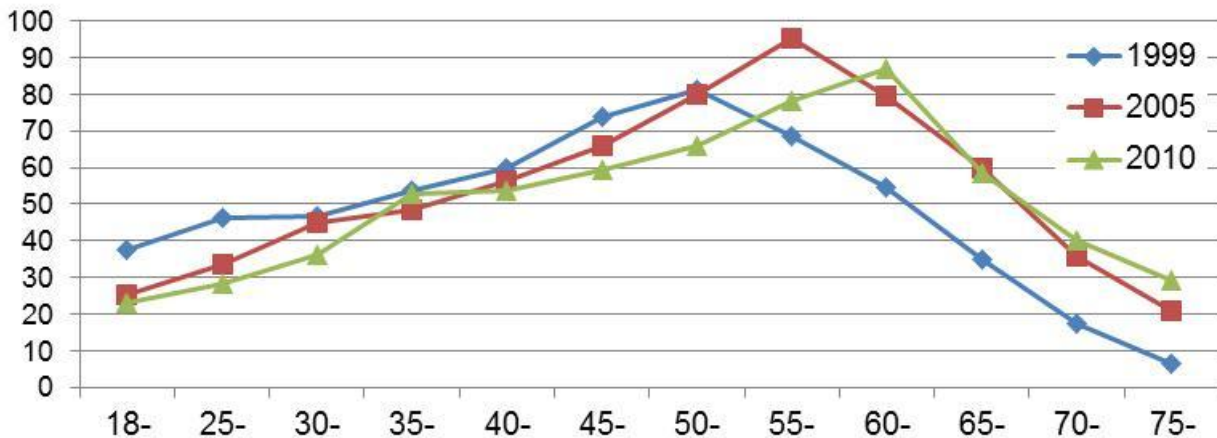
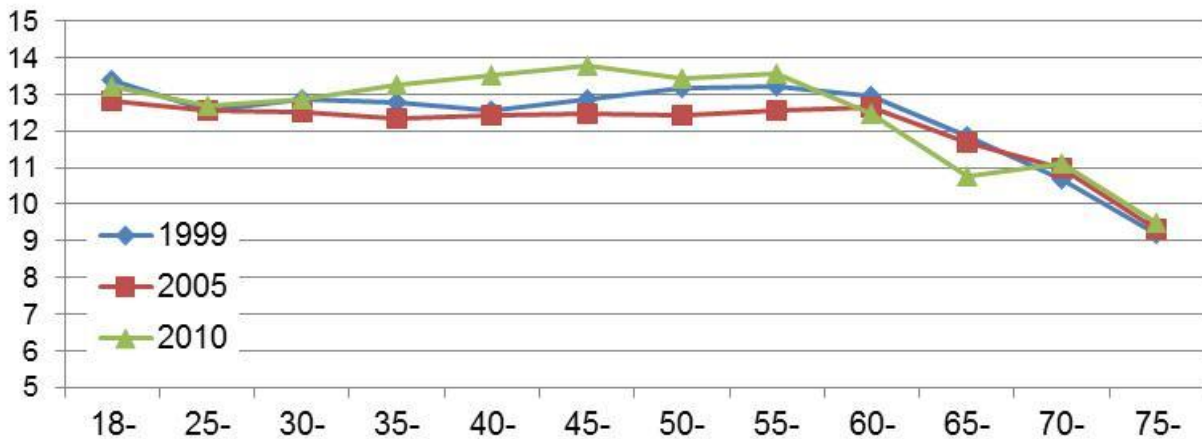
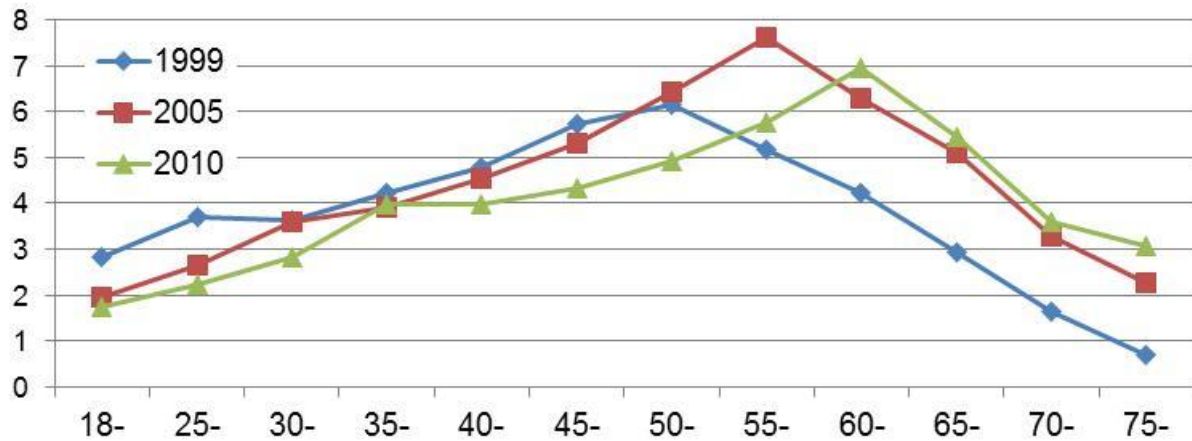


of trips [million]

trip length [km]

VKT [million km*trips]

	Male	Female
Small		
except Small		
Total		



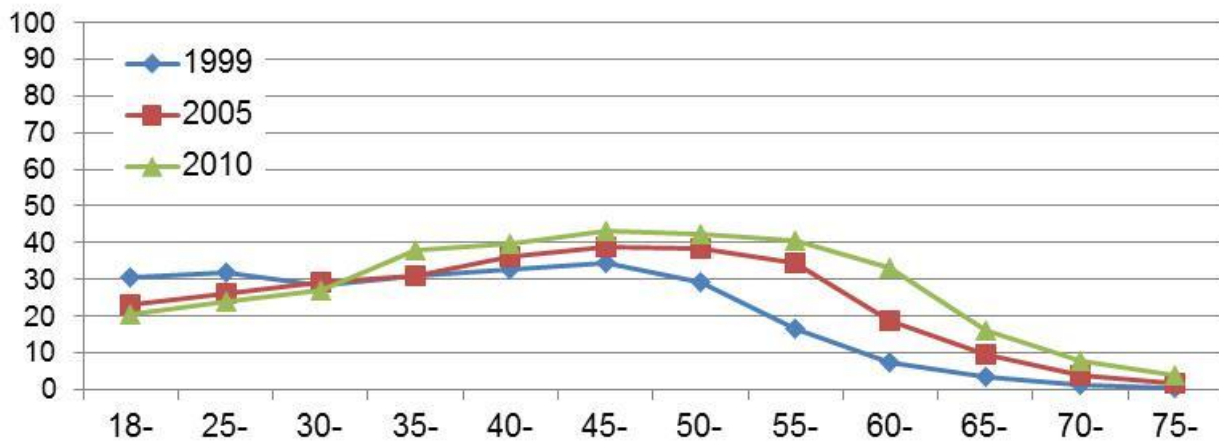
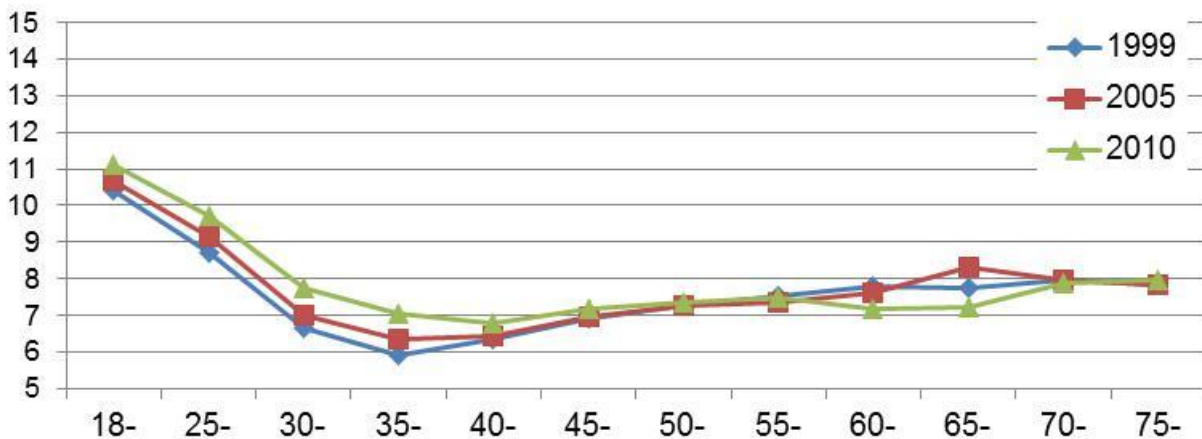
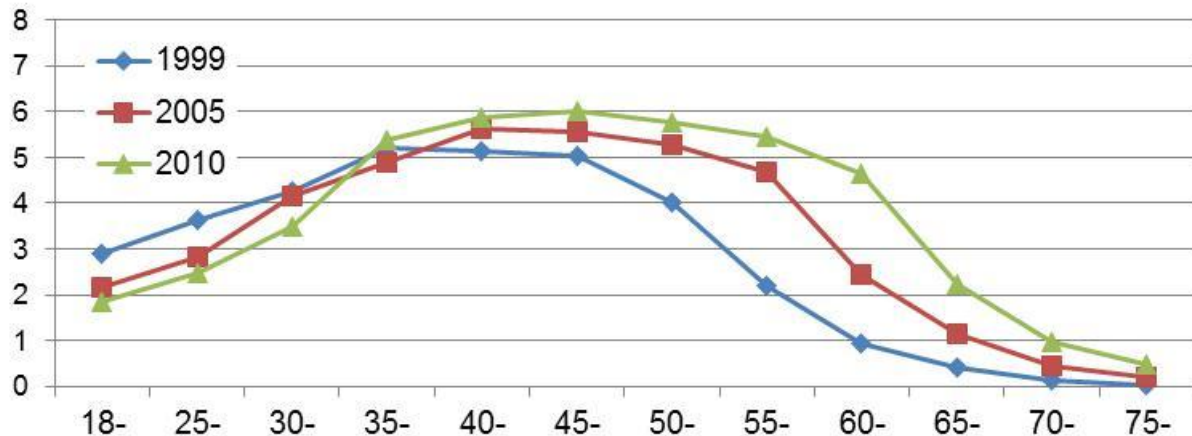
of trips [million]

trip length [km]

VKT [million km*trips]



	Male	Female
Small		
except Small		
Total		



of trips [million]

trip length [km]

VKT [million km*trips]



Small



Female



except Small

Total



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