

THE DEVELOPMENT OF THE TRANSIT FARE SYSTEM

Kyoto University Civil Engineering Department
Kensuke Hishida

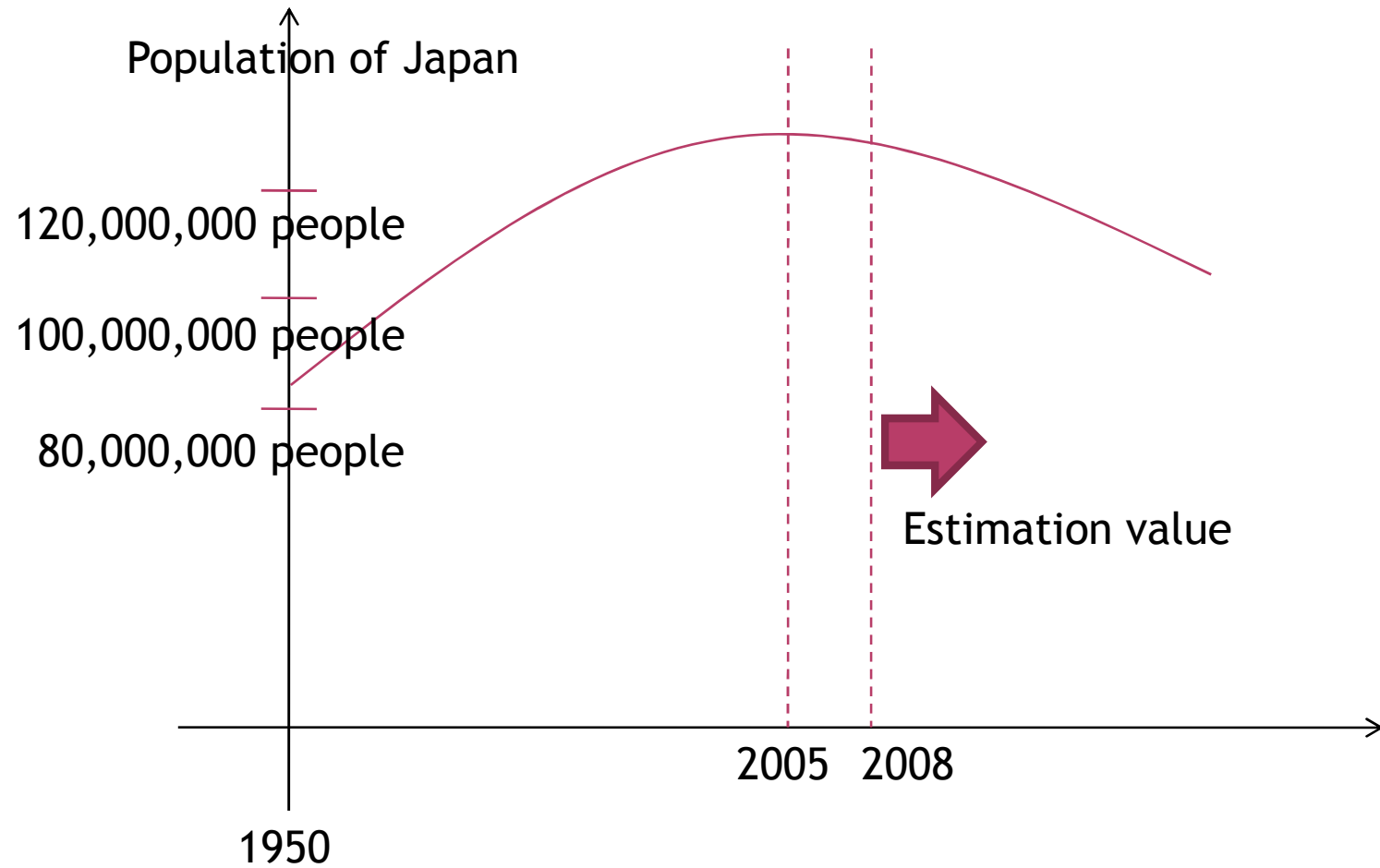


THE BACKGROUND OF THE TIMES

A population decline + motorization



POPULATION DECLINE



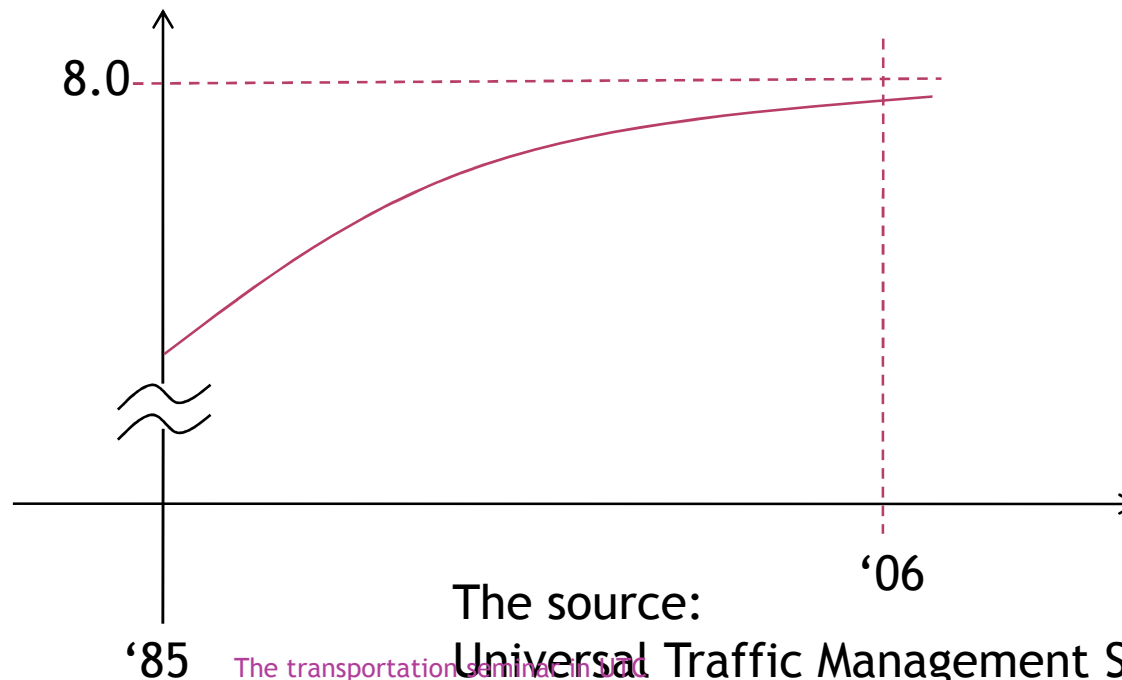
The source:
National institute of population and social security research

Free transportation seminar on UIC

MOTORIZATION

◎ Car ownership number in Japan (×million)

	'80	'85	'90	'95	'00	'01	'02	'03	'04	'05	'06
	4.01	4.86	6.02	6.93	7.5	7.59	7.65	7.66	7.71	7.81	7.83



The source:

The transportation seminar in Saitama
Universal Traffic Management Society of Japan

THE BACKGROUND OF THE TIMES

A population decline + motorization

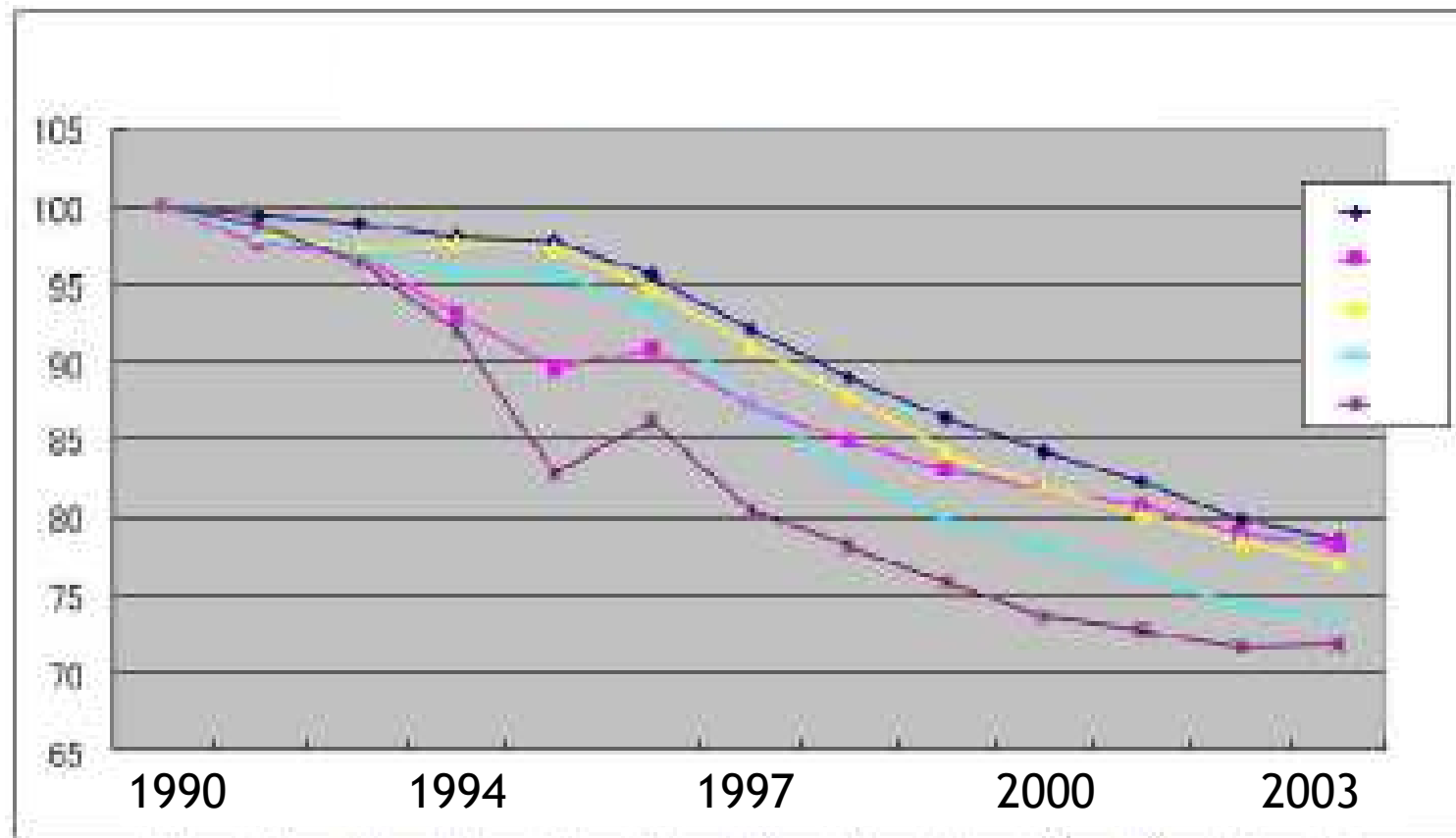


We entered in the times when railroad users decrease



RAILROAD USERS DECREASE

- ◎ The number of railway users (private railway company in Japan)



The source:
Development Bank of Japan

THE BACKGROUND OF THE TIMES

A population decline + motorization



We entered in the times when railroad users decrease



Improvement of the profit became the urgent business



The traffic company be made to
Reduce expenditure + increase incomes

ACTIONS FOR THE PROFIT IMPROVEMENT

◉ To increase incomes

- 1, improvement of stations
- 2, The expansion of the allied enterprise
- 3, Improvement of the service

◉ To decrease expenditures

- 1, Promotion of the automation
- 2, The reduction of operational expenses



THE USE OF IC TECHNOLOGY

We can make full use of **IC technology**
in order to realize these remedies.



THE COMPUTERIZATION OF THE TICKET (IC CARD)

- ◉ By computerizing tickets

- 1, The traffic company can abolish commuter pass counters and ticket vendors.

so they can reduce operational cost.

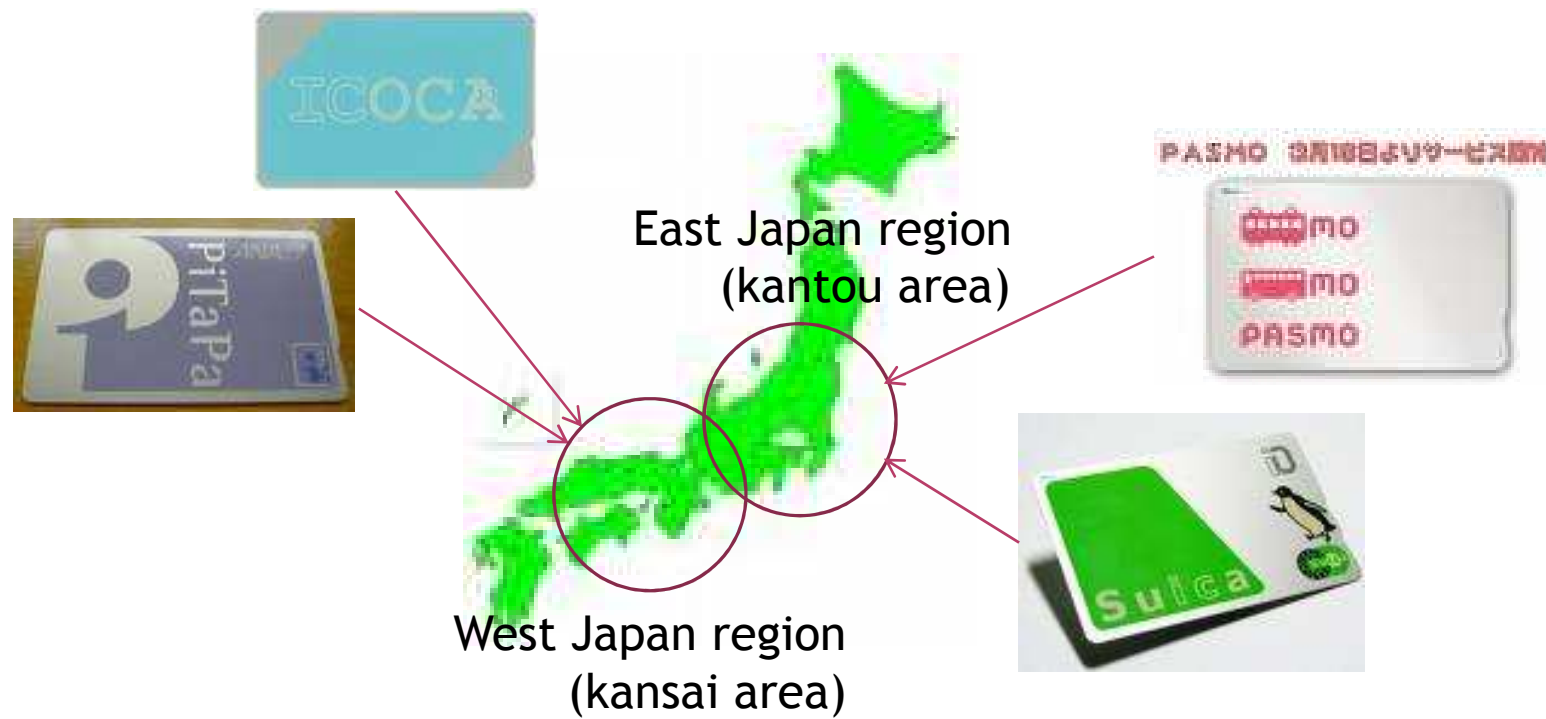
- 2, the trouble risk of the automatic ticket gate can be reduced because of Non-contact between tickets and the traffic gates.

- 3, Practical use of the open space which is made by abolishing them.

- 4, Various fare setting is enabled



CONTACTLESS IC CARDS



CONTACTLESS IC CARDS



Suica(20million pieces)



ICOCA(3.78million pieces)



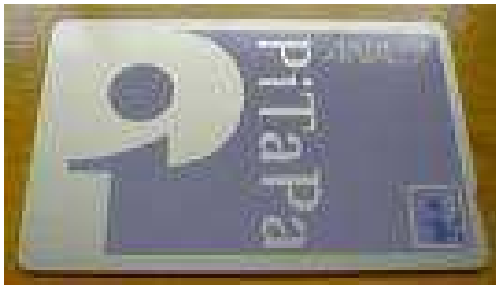
PASMO(10million pieces)



PITAPA(1million pieces)

POST PAY ⇔ PRE PAID

- ◉ Post pay settlement system

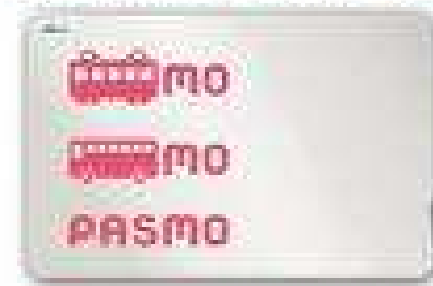


PITAPA(1million pieces)

- ◉ Pre paid settlement system



Suica(20million pieces)



PASMO(10million pieces)

THE SPREAD OF PASMO CARD

The publication number of sheets

2007.3.21	1 million pieces
2007.3.31	2 million pieces
2007.4.9	3 million pieces
2007.5.30	4 million pieces
2007.9.23	5 million pieces
2007.11.26	6 million pieces
2008.2.1	7 million pieces
2008.4.1	8 million pieces
2008.5.24	9 million pieces
2009.8.30	10 million pieces



WHAT KIND OF FARE SYSTEM IS THE MOST DESIRABLE?

Pre paid fare system?
or
Post paid fare system?

PRE PAID SETTLEMENT SYSTEM

The passenger purchases a right of a future service use beforehand like a commuter pass or a coupon. And, they can take rate discount in advance instead of abandoning their right not to use a service.

Because the Settlement is completed earlier and total fare doesn't depend on the purchase history, they will bear 100% of the demand risk.

POST PAY SETTLEMENT SYSTEM

The passengers pay a rate after a thing based on the consumption history of the fixed period of time. For example, it considers a credit card. In this fare system, they can take rate discount in the next use if they use a service once (a right to take discount=discount option). But, if they don't use a service in the next, the discount option doesn't make sense. So, In this system, **a consumers and a company share the demand risk.**

THE STRUCTURE OF THE RISK SHARING

- ◎ Pre paid settlement system

A consumer take 100% of a demand risk.

- ◎ Post pay settlement system

A traffic company and a consumer share a demand risk.

PRE PAID SYSTEM

Advantages to the passengers

:They do not need to purchase a ticket whenever they use traffic. Therefore, they can reduce business expense.

Disadvantages to the passengers

:When there were few opportunities to use it, they will suffer a loss. Then passengers undertake all of demand risk.

PRE PAID SYSTEM

Advantages to the company

- :The company can obtain large amount of money beforehand.
- :they don't need to undertake the demand risk.

Disadvantage to the company

- :They can't obtain information about the purchase history of the passenger.

POST PAY SYSTEM

Advantages to the passengers

:Even if there are few opportunities using it, they will pay the rate that balanced with it. Therefore, they do not suffer a loss.

Disadvantages to the passengers

- :Use examination takes much time.
- :The person without the trust cannot use it.

POST PAY SYSTEM

- ◉ Advantages to the company

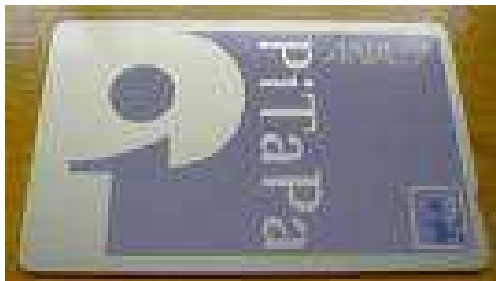
:They can get some information about the purchase history of the passengers, so they can set more optimal fare setting.

- ◉ Disadvantage to the company

:Because a fare is paid after using a service, a risk about the return occurs.

AS A RESULT OF STUDY

- ◉ As a result of study,
I understood that POST PAY SETTLEMENT
SYSTEM was superior to PRE PAID in terms of
the risk sharing.
Therefore, I want to lay emphasis on the
spread of POST PAY SETTLEMENT SYSTEM
like PiTaPa which does not advance of the spread.



I omit the detailed explanation of the numerical formula model.

THE LATEST DEVELOPMENT OF POST PAY SETTLEMENT SYSTEM

- ◎ It was decided that PITAPA was published in Korea from October, 2008. (PITAPA is POST PAY SETTLEMENT SYSTEM)



Thank you for your attention!!!