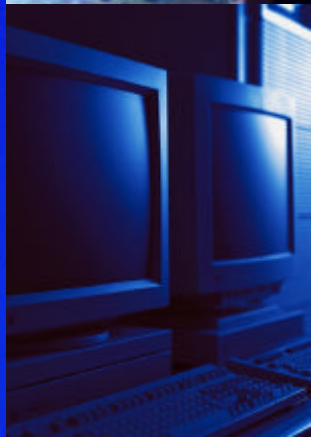
for 10th World Congress on ITS
Madrid, 2003

ITS

Post-payment Smart Card System in Japan



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II Post-payment Smart Card System

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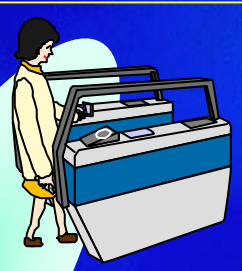
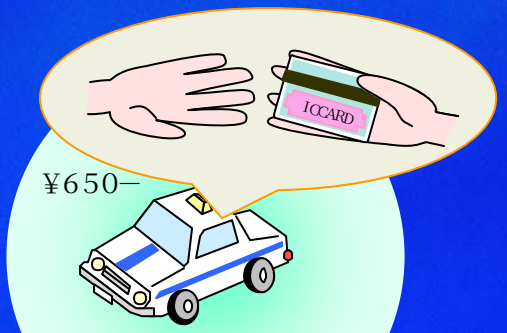
Ⅰ Introduction of Smart Card System to Public transport

Advantage of Smart Card with IC Chip

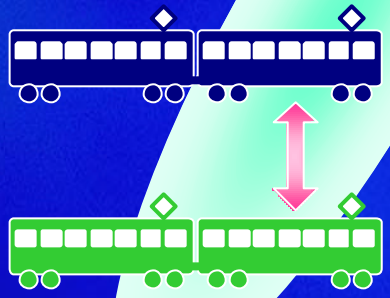


No need to take the card out of your purse

Contactless transaction through IC chip



Taxi



Railway

No need to refer to fare table

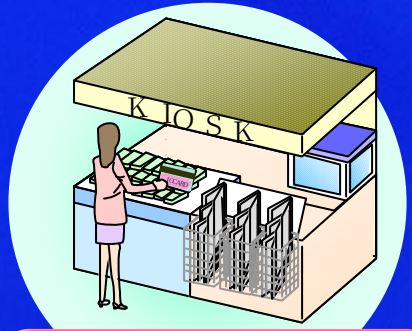
Card Loader

To be used to multi-transport system

No need to purchase a ticket

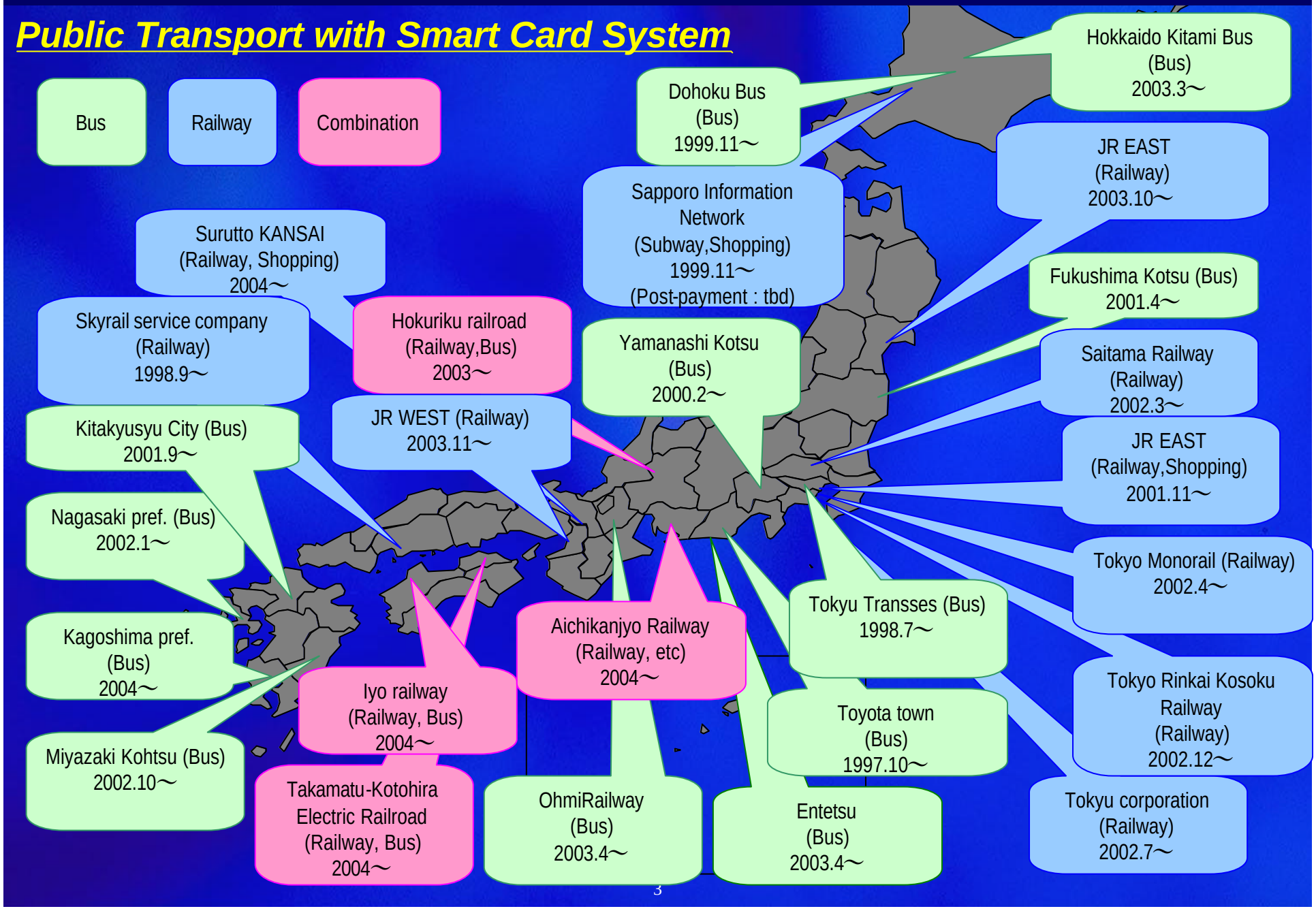
To be used to other transactions

Bus



Shopping

Ⅰ Introduction of Smart Card System to Public transport



Ⅰ Introduction of Smart Card System to Public transport

As of November 2003

Smart Card Type	Bus	Railway	Combi-nation	Total
Pre-paid	11 (1)	9 (0)	0 (4)	20 (5)
Post-payment	0 (0)	0 (2)	0 (0)	0 (2)

( ) : planned

II Post-payment Smart Card System

Post-payment System

Transport fare to be paid by the user is accumulated in the system and charged monthly to the user's bank account/credit card.

Charged to Credit Card	Monthly balance charged to designated credit card

choice

Charged to Bank Account	Monthly balance charged to designated bank account

Electronic value is automatically loaded to the card when the value on the card comes bellow a certain level. The additional value loaded is charged to the user's bank account/credit card.

II Post-payment Smart Card System

Advantages of Post-Payment Smart Card
- To the User -

"Convenience"

- **No need to prepare cash to charge electronic value onto the card**
- **No need to care how much value is remaining**

"Economic Benefit"

- **Obtaining discounted fare based on the actual trips**

II Post-payment Smart Card System

Advantages of Post-Payment Smart Card
- To the Transport Industry -

"Efficiency"

- **No need to install value-loading machines**
- **No need to handle cash**

"Flexible Marketing"

- **Introduction of multi-fare system based on the actual trips**
- **Provision of various enhanced customer services**

Ⅲ Pilot Project on Post-payment Smart Card System

Purpose:

To evaluate post-payment smart card system under which discounted fare is applied through :

ⅰ. transport record

ⅱ. interviews to the users

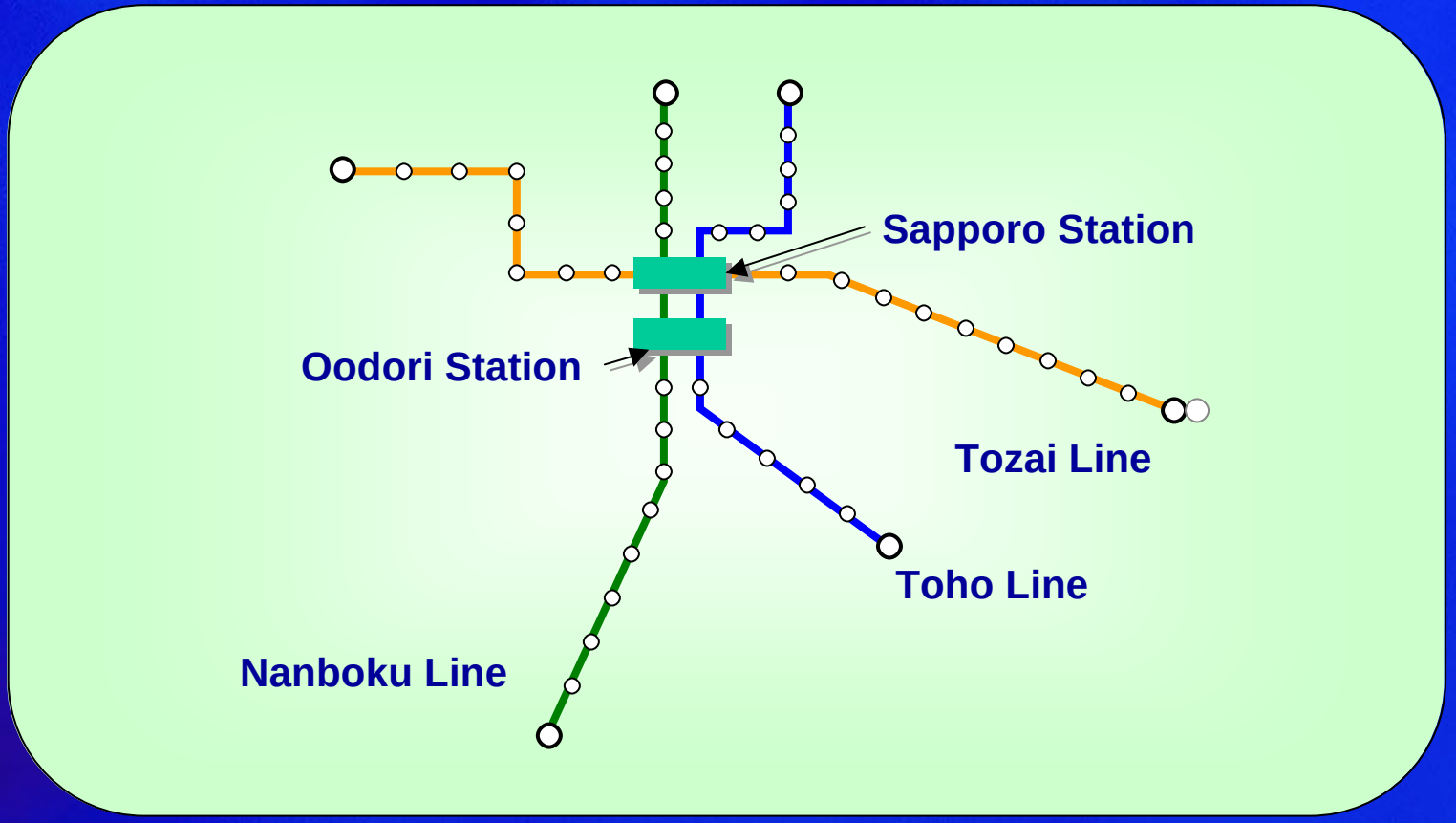
Ⅲ Pilot Project on Post-payment Smart Card System

Period & Field :

Period: 1 January 2003 – 31 March 2003 (3 months)

Field: Sapporo City Subways (3 Lines, 49 Stations)

(Pre-paid Smart Card system is already installed.)



Ⅲ Pilot Project on Post-payment Smart Card System

Preparation:

Smart Cards

- Issued 700 post-payment smart cards

（The surface）

（The back）

Ⅲ Pilot Project on Post-payment Smart Card System

Preparation:

Ticket/Smart Card Examination Machine

- Improved existing ticket/smart card examination machines at all stations to activate post-payment smart cards

Ⅲ Pilot Project on Post-payment Smart Card System

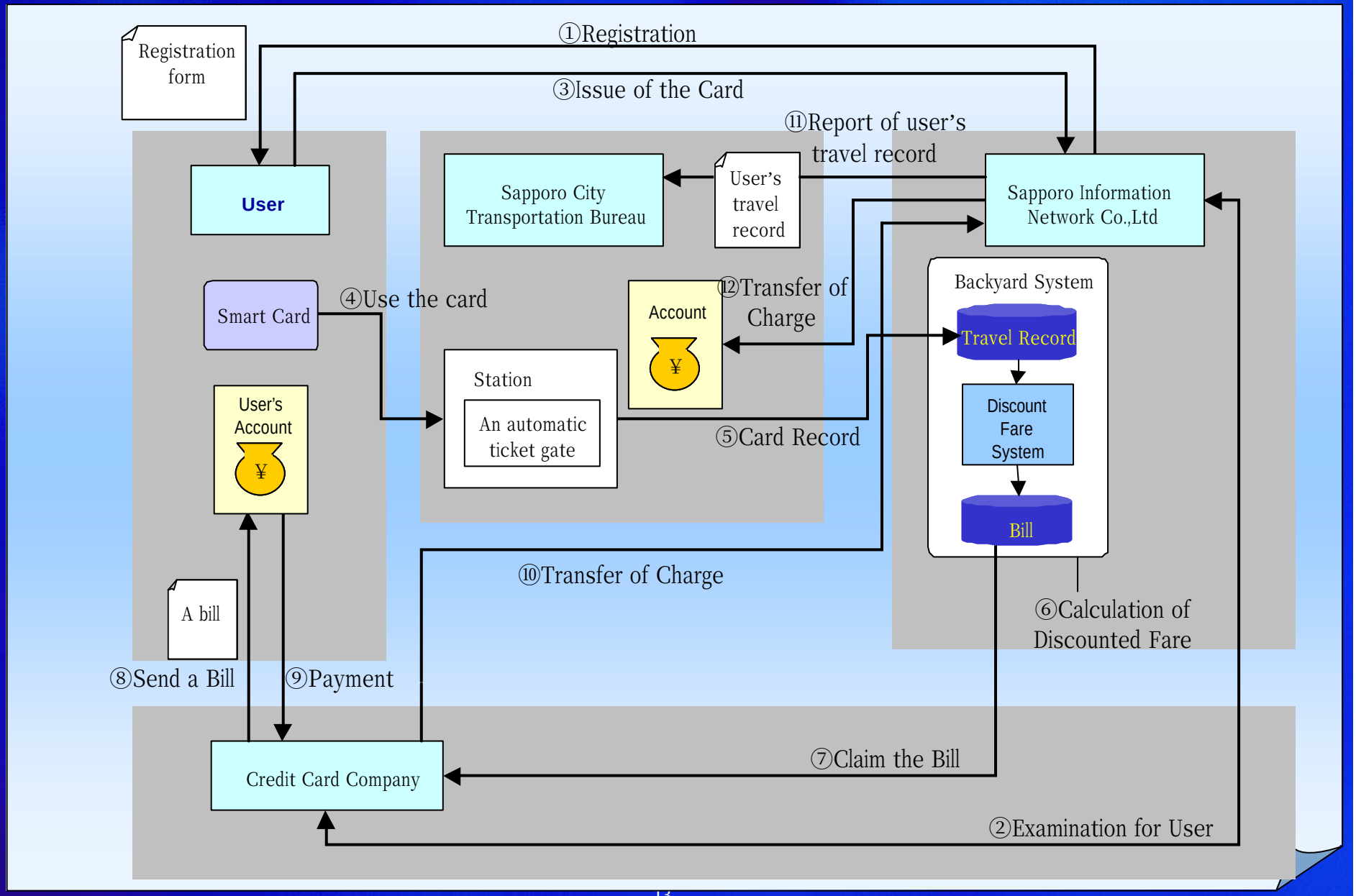
Preparation:

Backyard System

- Installed Discount Fare System in which discounted fare is calculated monthly from the travel record and applied to each user.
- Installed Information Box in the Sapporo Subway HP which provides to each user information on trips and the bill.

Ⅲ Pilot Project on Post-payment Smart Card System

Flow of Pilot Project:



Ⅲ Pilot Project on Post-payment Smart Card System

Discount Fare Menu:

Menu	Contents
1. One Day Discount	*Maximum one day fare is ¥800.*
2. Specific Section Discount	*Maximum one month fare is equivalent to the fare for 42 times ride to the designated specific section.*
3. Daytime Ride Discount	*20% discount to the daytime(10:00-16:00) use.*
4. Frequent Ride Discount	*9.1% discount for over 3 times ride, and 13% discount for over 39 times ride.*

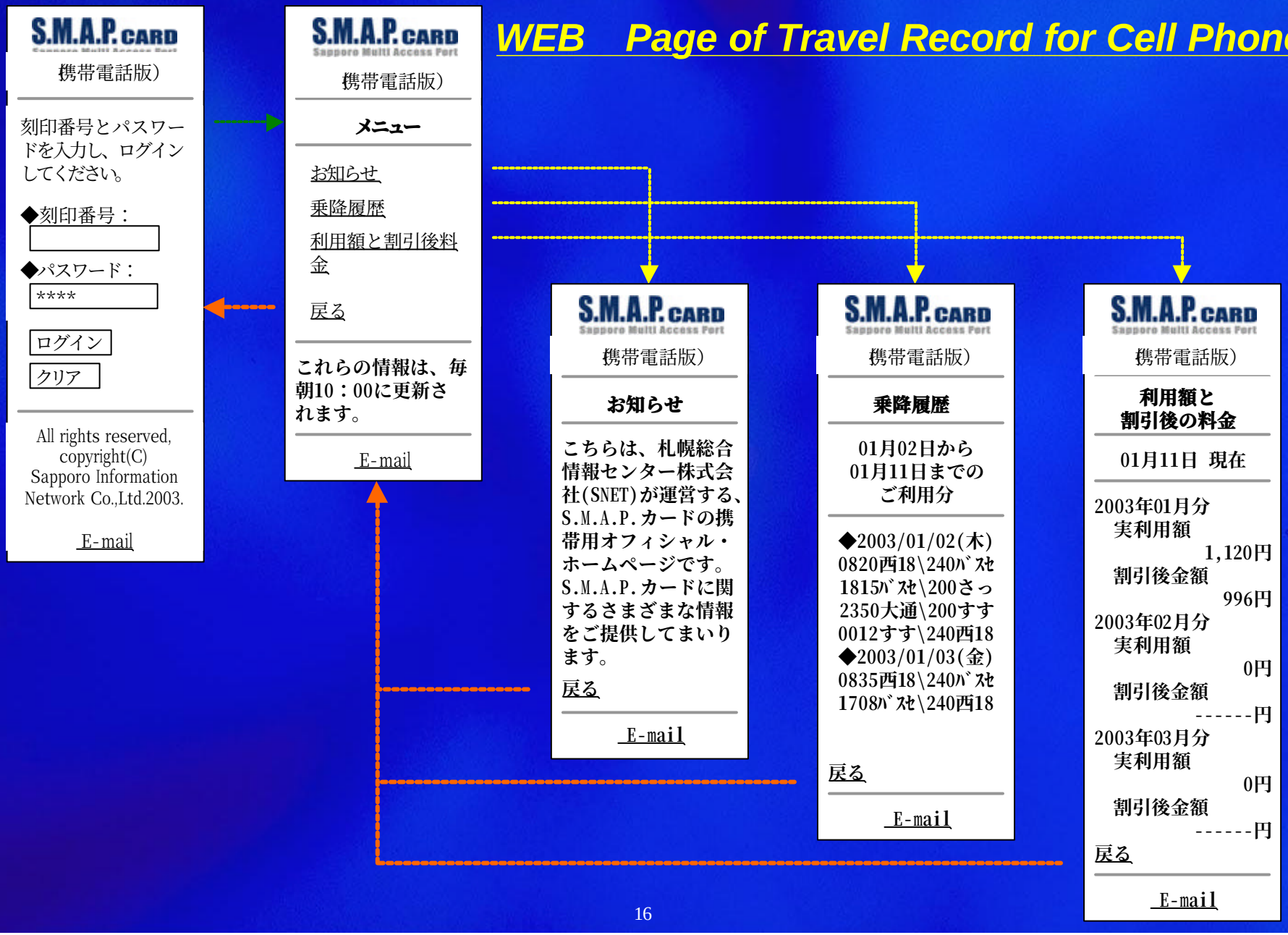
Most discounted monthly fare is calculated and charged to each user based on his/her travel record.

III Pilot Project on Post-payment Smart Card System

WEB Access to Travel Record:

III Pilot Project on Post-payment Smart Card System

WEB Page of Travel Record for Cell Phones

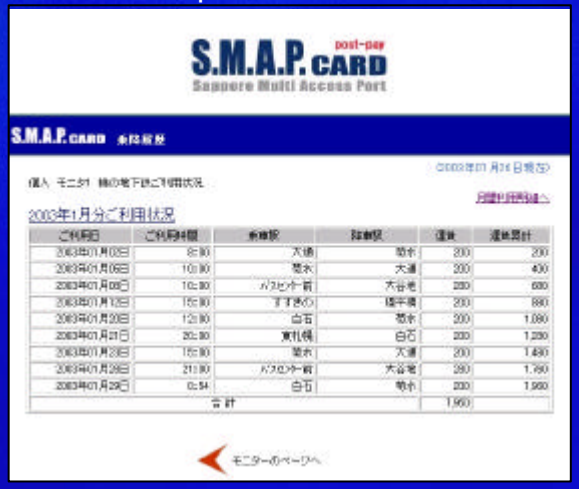


III Pilot Project on Post-payment Smart Card System

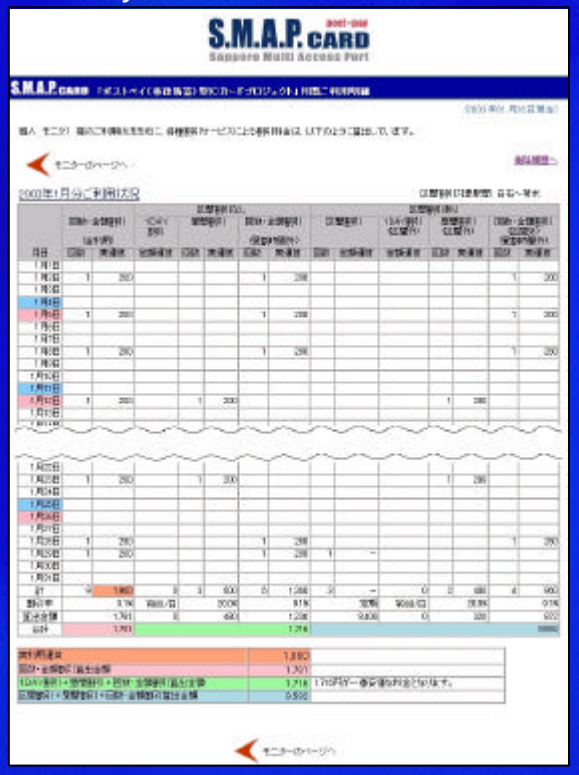
Menu

WEB Page of Travel Record for PCs :

Record of Trips



Monthly Record



Monthly Statement

Ⅳ Evaluation for the Pilot Project

Monitors for the Pilot Project :

Type of Monitor	Number of Monitor
Individual Monitor	542 persons
Family Monitor	142 persons (113 families)
Total	***684 persons***

Monitors were provided:

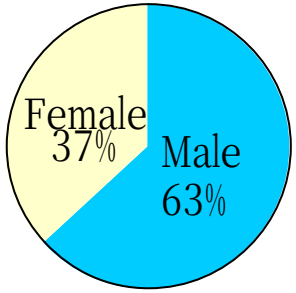
ⅰ.Post-payment Smart Cards during the Pilot Project.

ⅱ.Pre-paid Smart Cards before and after the Pilot Project.

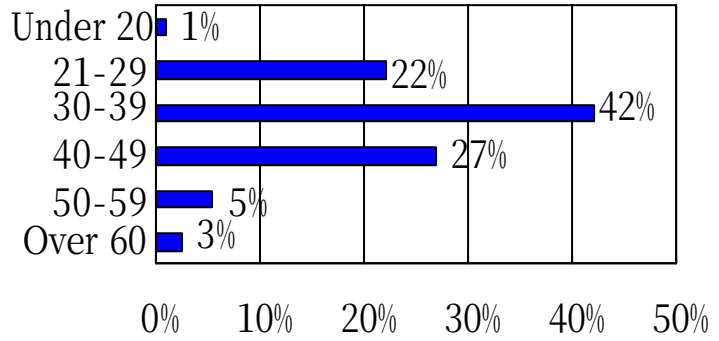
IV Evaluation for the Pilot Project

Attribute of Monitors :

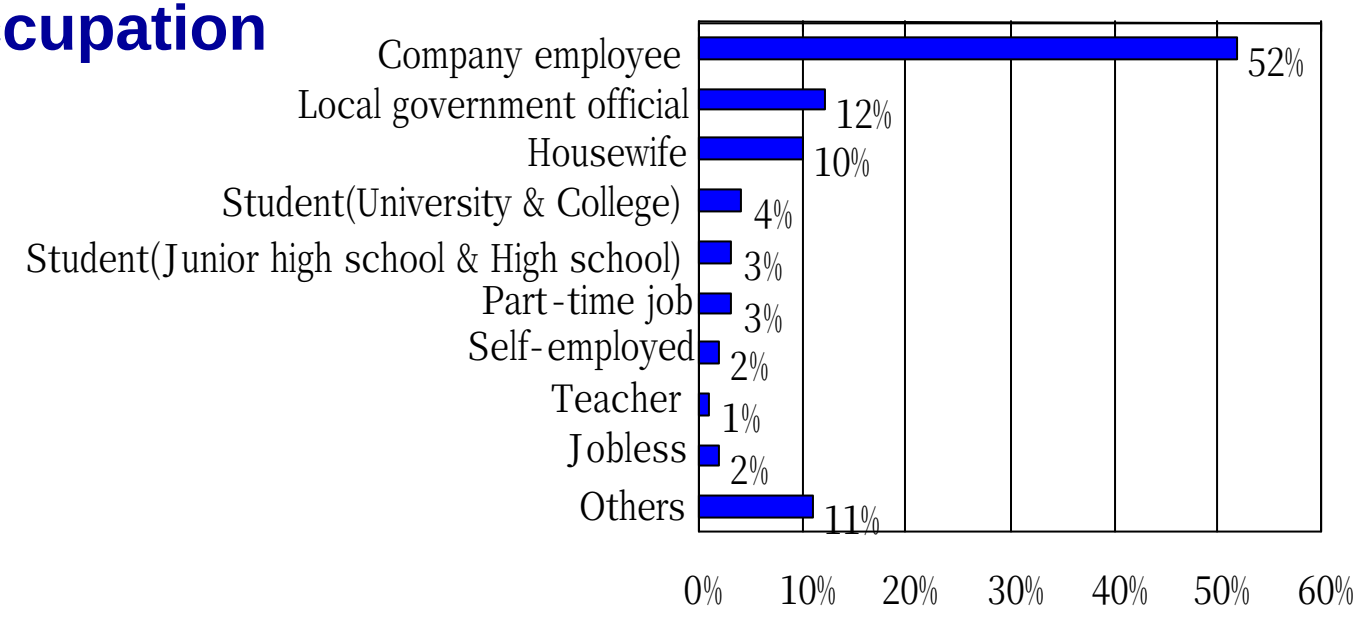
(1)Sex



(2)Age

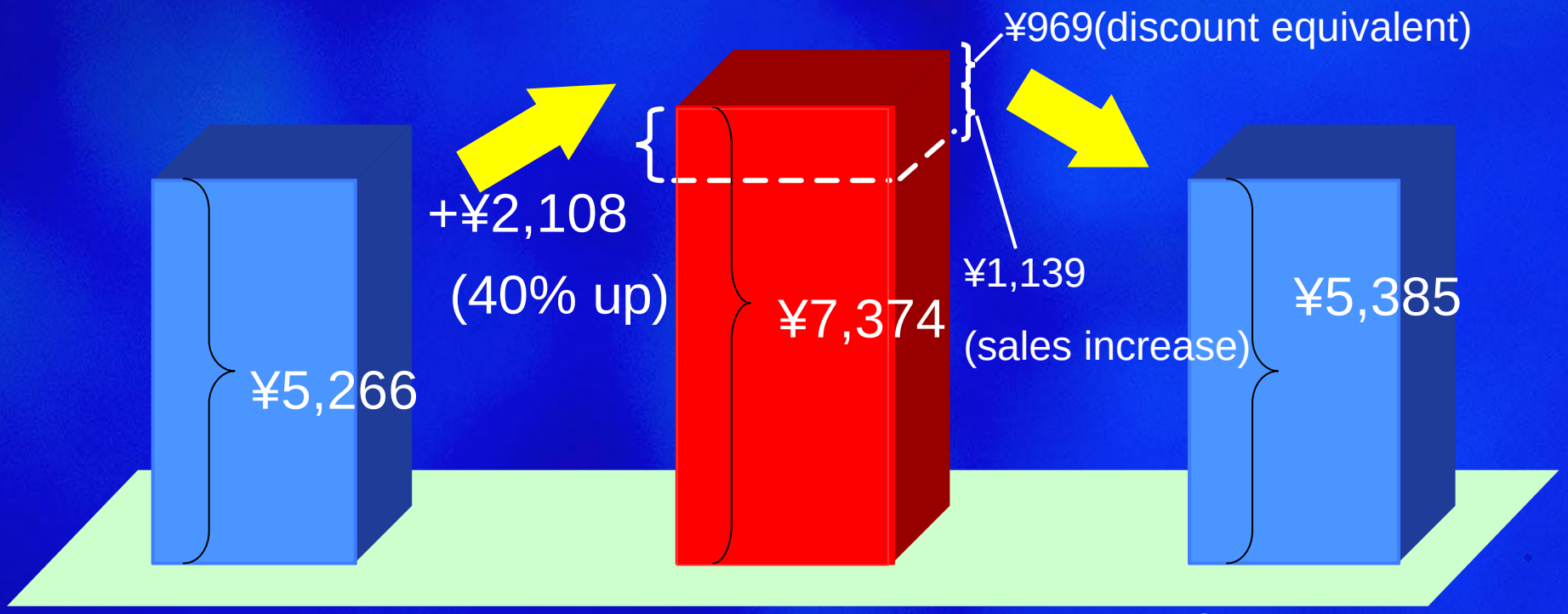


(3)Occupation



Ⅳ Evaluation for the Pilot Project

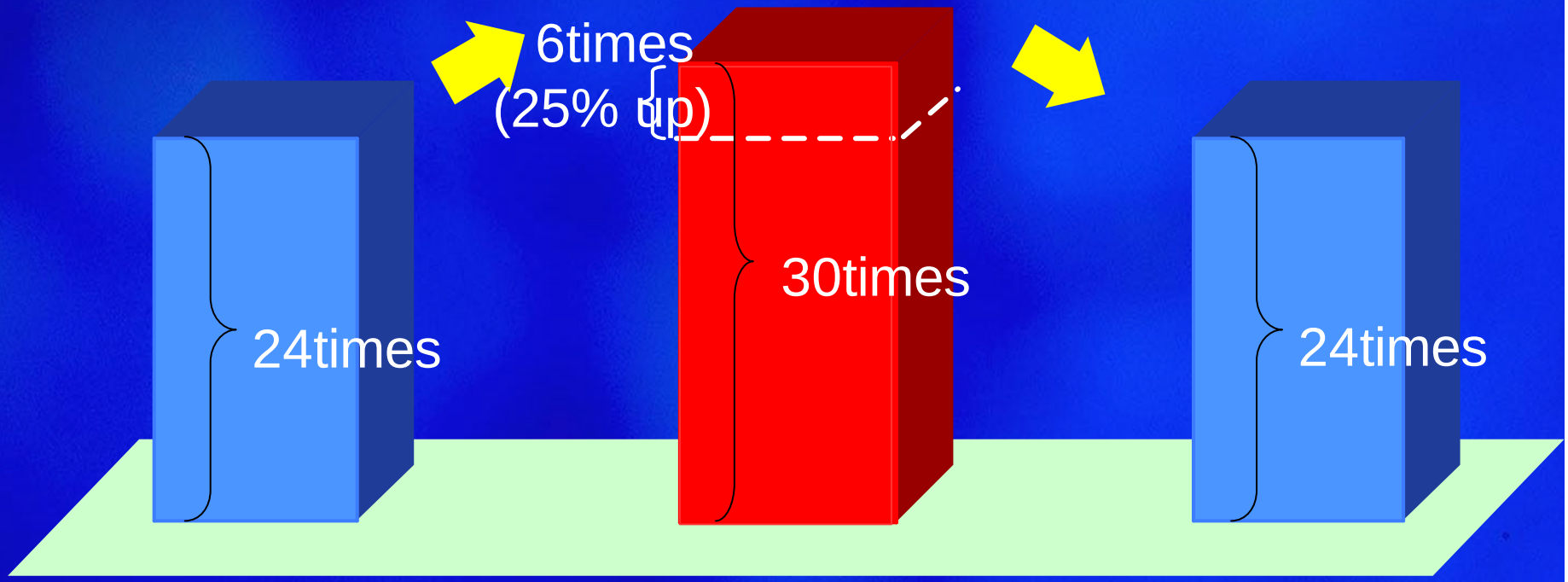
Average Travel Record (per month, per person):



During the Pilot Project, the use of the subway per person increased 40% in monetary terms (¥5,266/month → ¥7,374/month). It returned to the former level after the Pilot Project.

Ⅳ Evaluation for the Pilot Project

Average Travel Record (per month, per person):



①Before Pilot Project :

Pre- paid Card

②Pilot Project :

Post- payment Card

③After Pilot Project :

Pre- paid Card

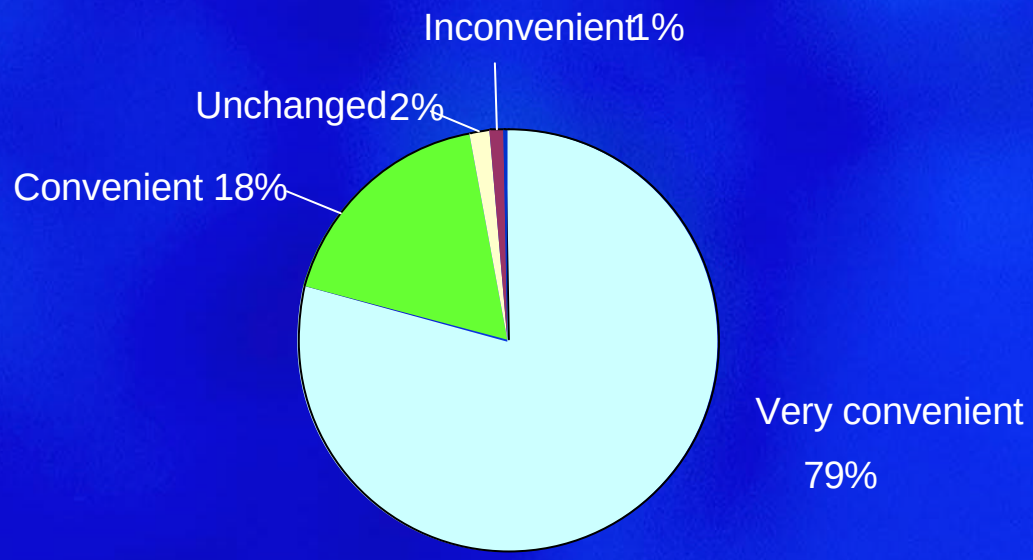
During the Pilot Project, the frequency of use of the subway per person increased 25%(24times/month → 30times/month). It returned to the former level after the Pilot Project.

IV Evaluation for the Pilot Project

Monitors' Evaluation:

Q: How convenient is the Post-payment Smart Card compared with Pre-paid Smart Card?

A:



97% of monitors answered that Post-Payment Smart Card System was more convenient.

Ⅳ Evaluation for the Pilot Project

Monitors' Evaluation:

Q: Why is the Post-payment Smart Card more convenient?

A:Because

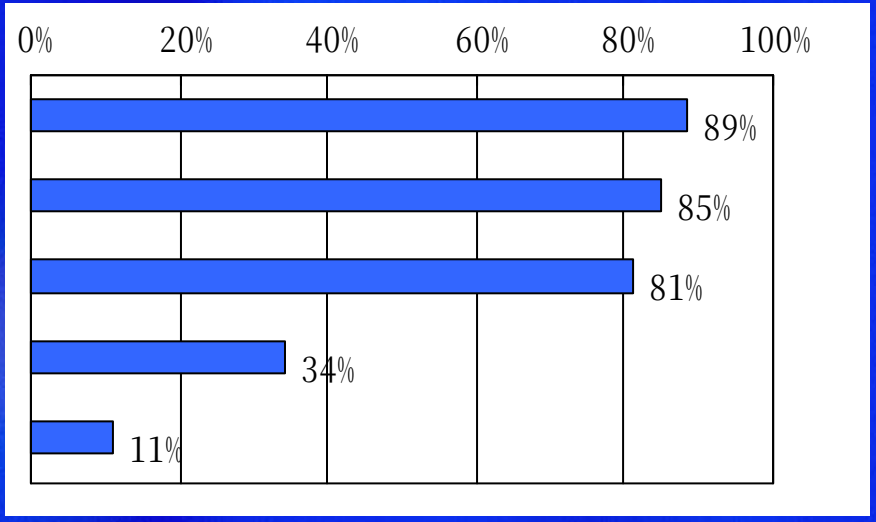
I do not need to prepare cash.

I do not need to charge electronic values onto my card.

I do not need to care how much value is remaining.

I can easily obtain my monthly travel record and debt to be charged to my bank account.

Others



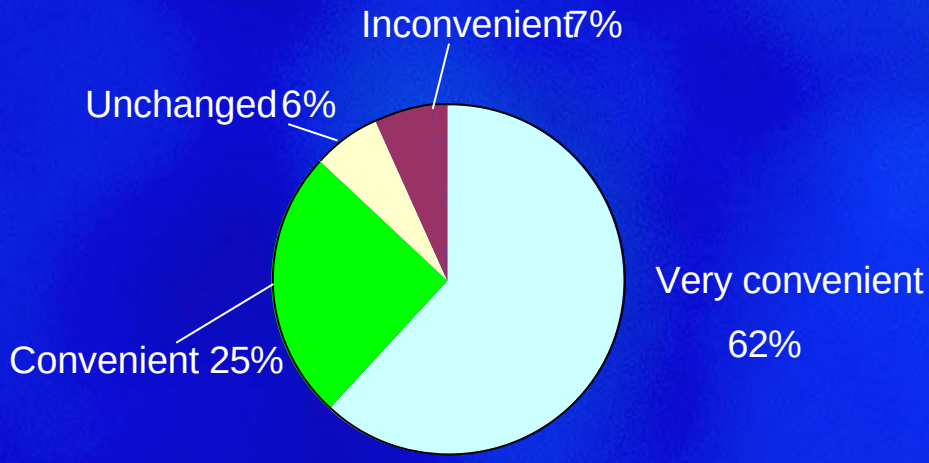
80 % or more of monitors appreciated on ①no need to prepare cash, ② no need to charge electronic values onto the card, and ③ no need to care how much value is remaining.

Ⅳ Evaluation for the Pilot Project

Monitors' Evaluation

Q:How convenient is the fare discount system combined with the Post-payment system, compared with fixed discount system?

A:



87% of monitors answered that discount fares system combined with the Post-payment system was more convenient.

Ⅳ Evaluation for the Pilot Project

Monitors' Evaluation:

Q:Why is the combined fare discount system more convenient?

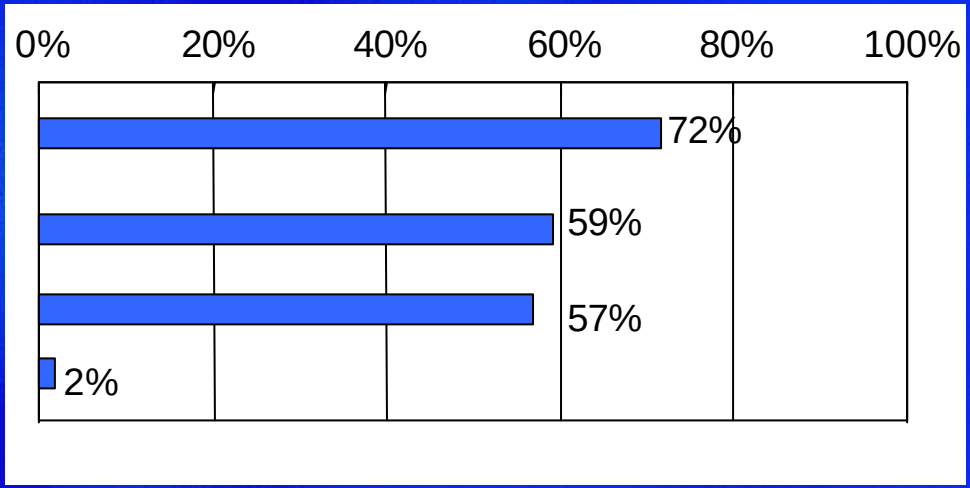
A:Because

I do not need to choose a discount fare from the discount menu.

The biggest discount can be received based on the travel record.

Even if I do not purchase a commuter pass, I can receive biggest discounted fare.

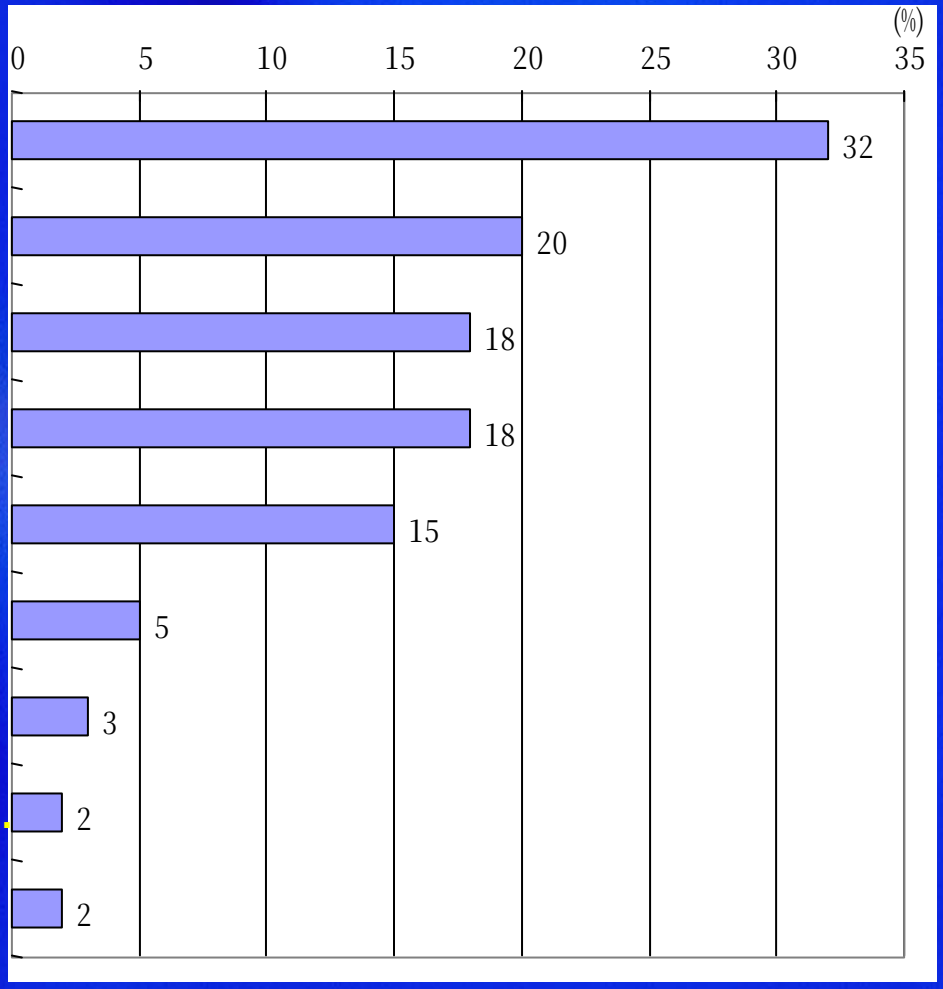
Others



More than half monitors appreciated on no need to choose a discount fare by himself / herself.

Ⅳ Evaluation for the Pilot Project

Other suggestions from Monitors:

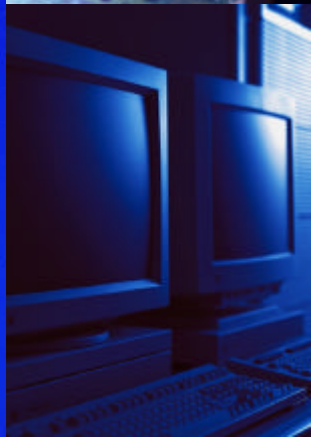


Ⅴ Lessons Learned

1. The Post-payment Smart Card was welcomed by the monitors.
2. Fare discount system combined with the Post-payment Smart Card was highly appreciated.
3. Transport demand would eventually increase through introducing Post-payment Smart Card System.
4. The simplification of various transactions and discount fare menu were required to improve the convenience of users.
5. The card system and combined discount fare system may be expanded to other transport system.

Thank You for Your Attention

ITS



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