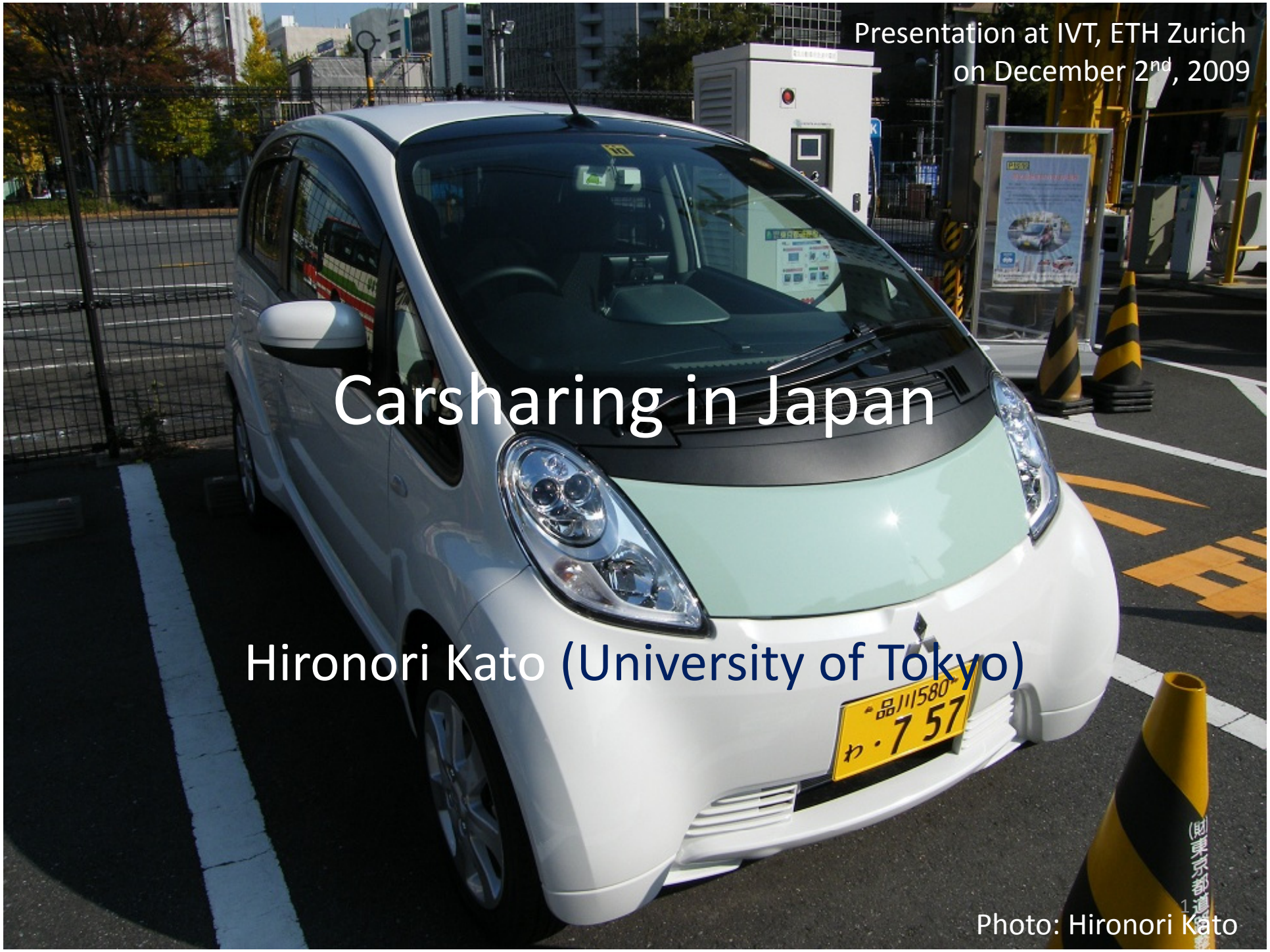


Presentation at IVT, ETH Zurich
on December 2nd, 2009

Carsharing in Japan

Hironori Kato (University of Tokyo)

Photo: Hironori Kato

Contents

- Introduction
- Historical Context of Carsharing in Japan
- Statutory System of Carsharing in Japan
- Current Carsharing in Japan
- Our Research Project

INTRODUCTION

Photo: Hironori Kato

Carsharing (Morency et al., 2008)

- Carsharing is a model of car rental where people rent cars for short periods of time, often by the hour.
  - Carsharing organizations usually manage a fleet of vehicles dispatched in several predetermined parking lots (stations).
  - Members have access to any vehicle at any time, given that they have made a reservation in advance.

Balance between private and public transportation modes

- Carsharing systems create a balance between private and public modes of transportation.
- They allow individuals to use a car when needed without having to buy one for their exclusive purpose.

Photos: Hironori Kato

Benefits of carsharing (Fan, et al. 2008)

- Reduced personal transportation costs.
- Reduced traffic congestion.
- Lowered fuel consumption through use of clean fuel vehicles.
- Reduced vehicle emissions by lowering overall vehicle miles traveled or by using high-efficiency vehicles
- Increased traffic safety and fewer motor vehicle crashes.
- Rationalized urban development patterns and more efficient land use.
- Increased connectivity among different transportation modes and improved mobility options for low-income households and those who do not own a car.

Carsharing systems are increasingly popular

- Carsharing, launched in 1987 in Switzerland and in 1988 in Germany, spread into North America via Quebec City, Quebec, Canada, in 1993.

Photo: Hironori Kato

Source: http://www.zipcar.com

HISTORICAL CONTEXT OF CARSHARING IN JAPAN

Photo:
Hironori Kato

Historical context in Japan

- The general concept of having multiple users share a fleet of vehicles first emerged in Japan in the late 1990s.
- Honda (ICVS) and Toyota (Crayon) were the pioneering projects. However, they were the demonstration projects.
- In 2003, the first carsharing private company was established in Japan.

Pioneering Stage (- 2002)

- Characteristics of initial stage of carsharing in Japan (Barth et al., 2006)
  - Many of Japan's initial shared-use vehicle systems used electric vehicles exclusively rather than conventionally powered vehicles.
  - Rather than focusing on the traditional neighborhood carsharing models of Europe and North America, many alternative approaches were investigated and implemented.

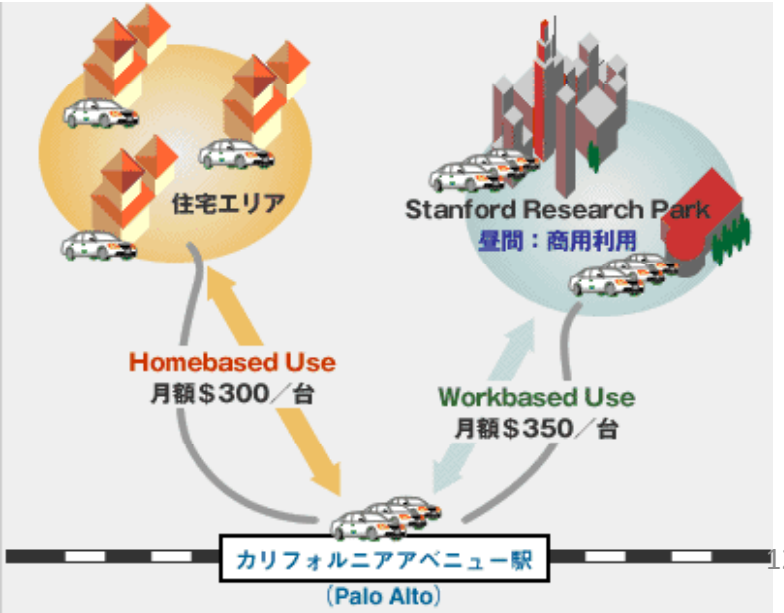
Honda’s project

- One of the first shareduse vehicle concepts to materialize in Japan was Honda Motor Company’s Intelligent Community Vehicle System (ICVS).
- Honda created a major demonstration of ICVS at its Motegi Twin Ring race facility in Japan in 1998.
- Honda also promoted its ICVS concept at other locations, including the U.S. CarLink I and Carlink II projects *the UCR IntelliShare system, the Keihanna* system*, and, its latest project, Honda Diracc in Singapore.*

Car-Link program in San Francisco Bay Area in 1998-2003

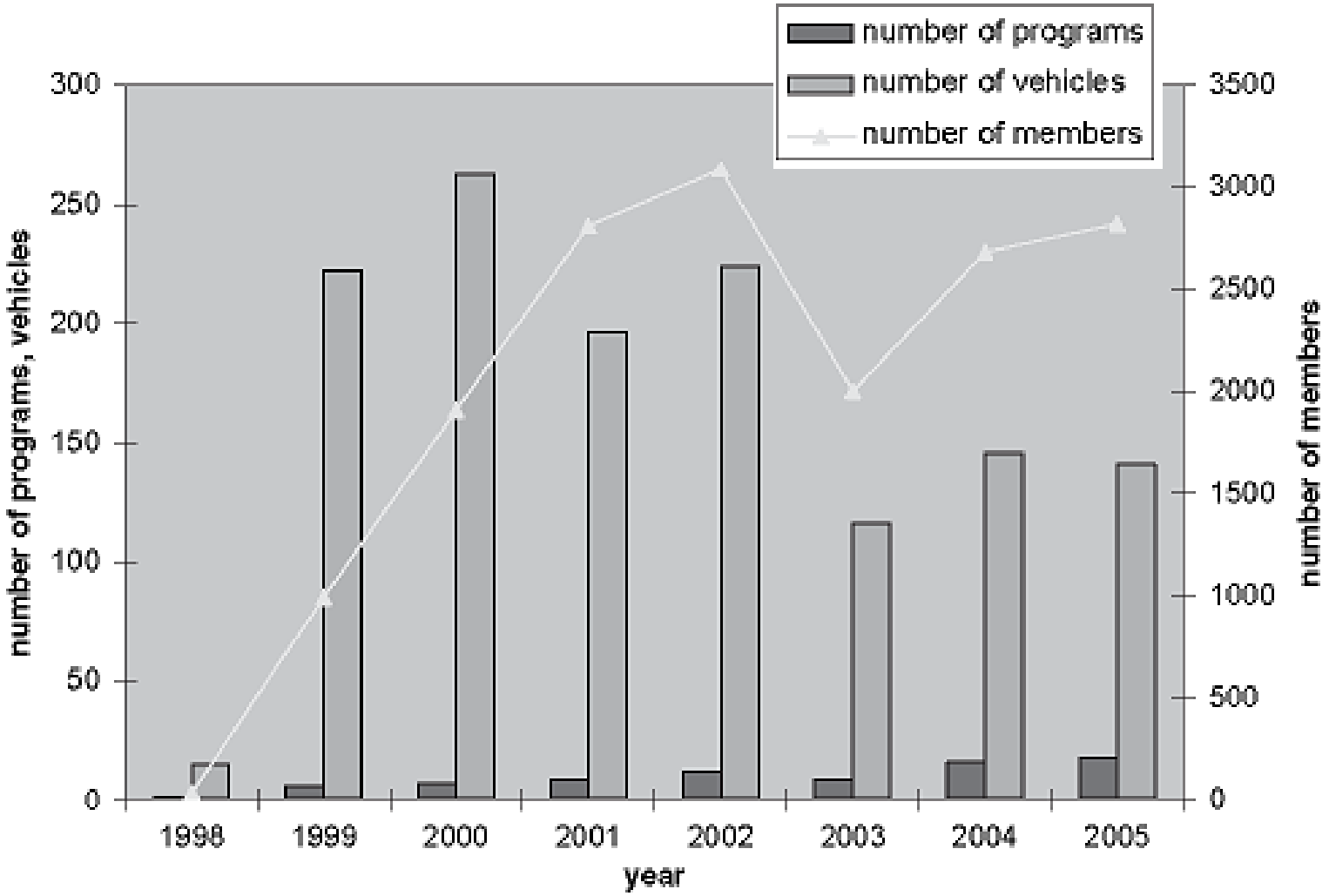
- Car-Link program in conjunction with the California Department of Transportation (Caltrans), American Honda Motor Company, the Bay Area Rapid Transit (BART) District, Caltrain, and Lawrence Livermore National Laboratory (LLNL).

  (Shaheen and Novick, 2005)



Source: http://www.honda.co.jp/ICVS/about/carlink/carlink2.html

Time line of shared-use vehicle system programs in Japan (Barth et al., 2006)



Source: Barth et al. (2006)

Second Stage (2003 - 2006)

- The first joint-venture carsharing system was established in February, 2002.
- After this, many new companies have entered the CS market in Japan.

Source: www.eic.or.jp/library/pickup/pu020606.html

ITS-CEV City Car system

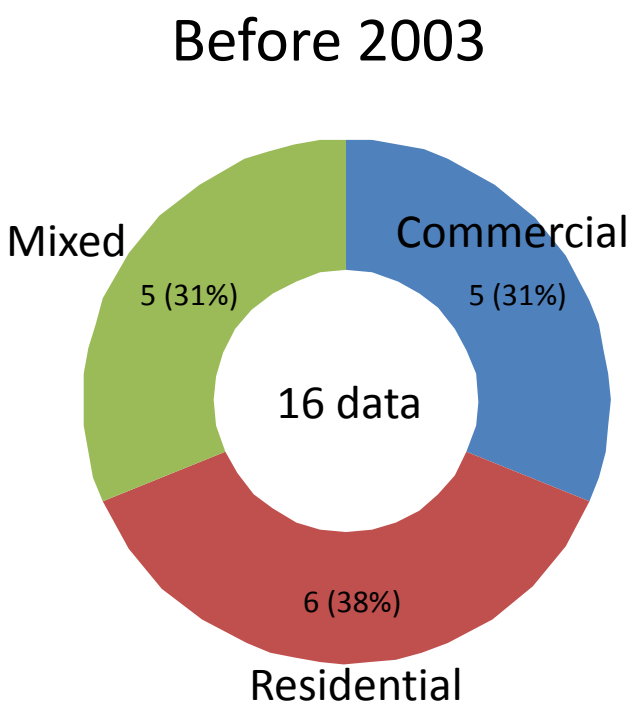
- ITS-CEV City Car system began as the government-sponsored MM21 demonstration project and has since been spun off as a separate company.
- The key shareholders for this company (CEV Co.) are Orix Rent-a-Car Corporation, Suzuki Motor Corporation, and NEC Corporation.
- Yokohama and Tokyo are the business areas.
- There were a total of 12 stations with 27 vehicles and approximately 550 members at the beginning.
- The primary target for this system was business use.
- Until 2007, CEV Co. expanded the business into 44 stations with 60 vehicles and about 1,000 members.

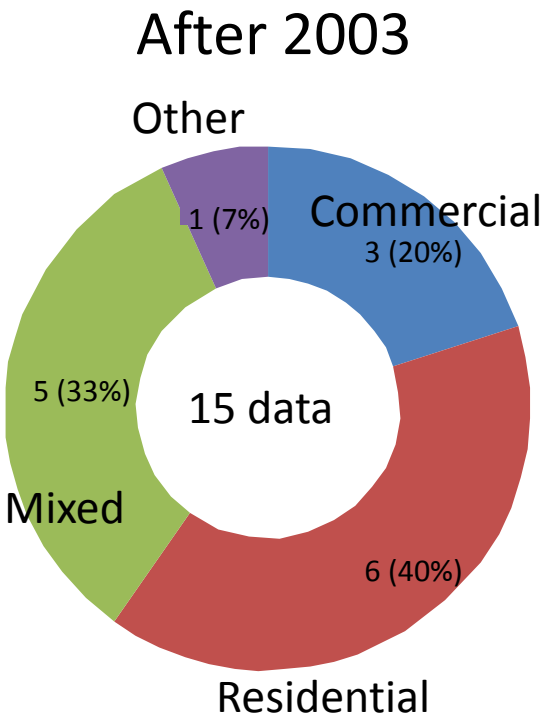
Source: www.eic.or.jp/library/pickup/pu020606.html

Before 2003 vs. After 2003

- Mitsui and Toi (2007) carried out the paper-based questionnaire survey to collect the data from CSOs in Japan in December 2005.
- They requested 31 CSOs to answer the survey sheet and collected 18 responses.
- They also interviewed them by phone and conducted web-search to complement the information.
- They compared the 31 CSOs by using the collected data between CSOs established before 2003 and established after 2003.

Location of CS stations by CSO

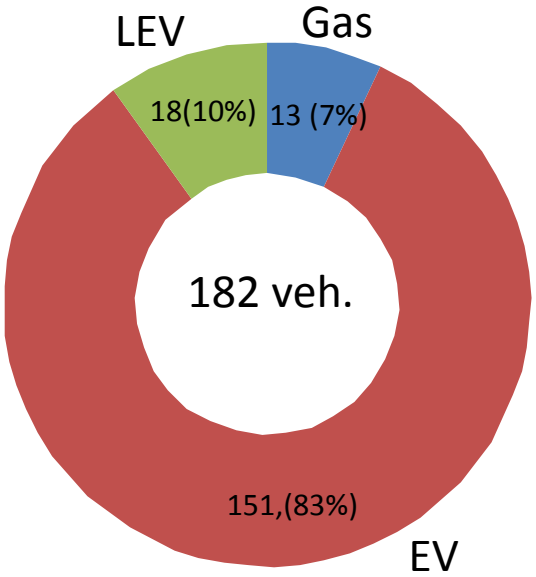




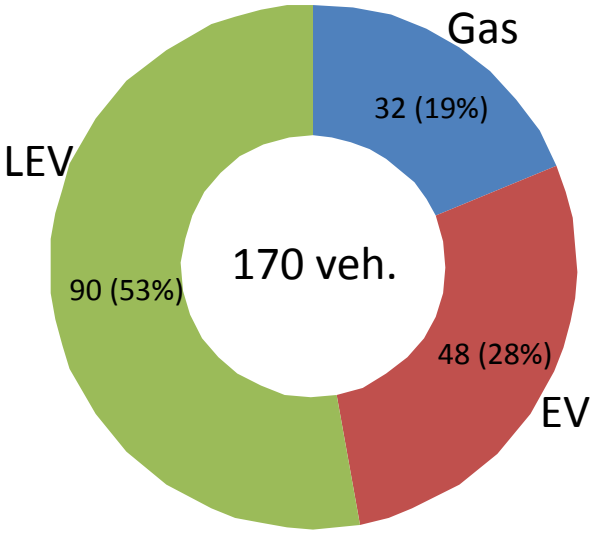
Source: Mitsui and Toi (2007)

Types of Vehicles

Before 2003



After 2003

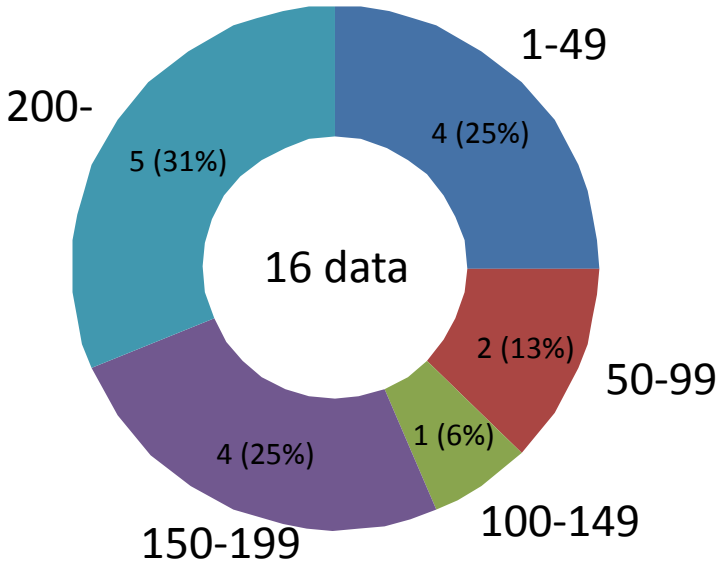


Note: EV: Electric Vehicle; LEV: Low Emission Vehicle

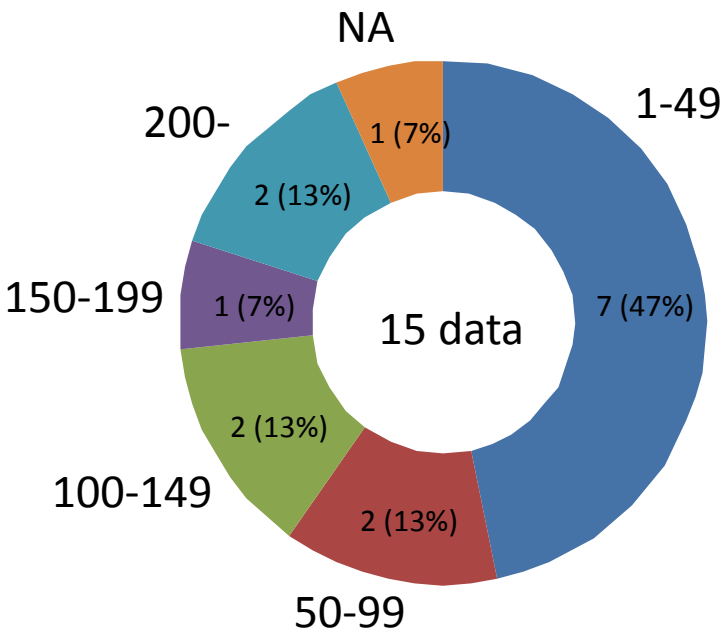
Source: Mitsui and Toi (2007)

Number of Vehicles by CSO

Before 2003



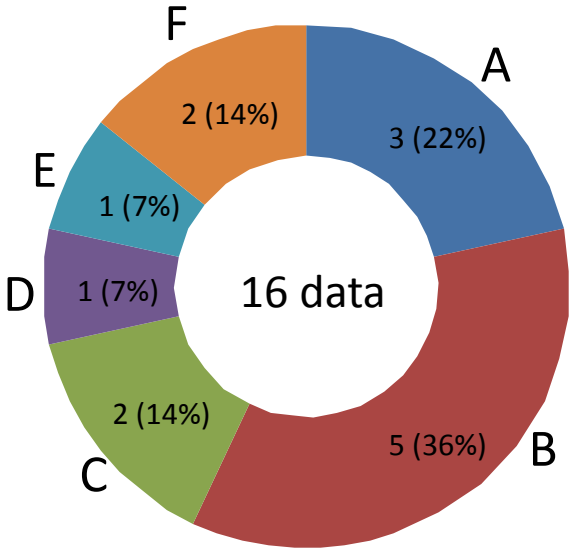
After 2003



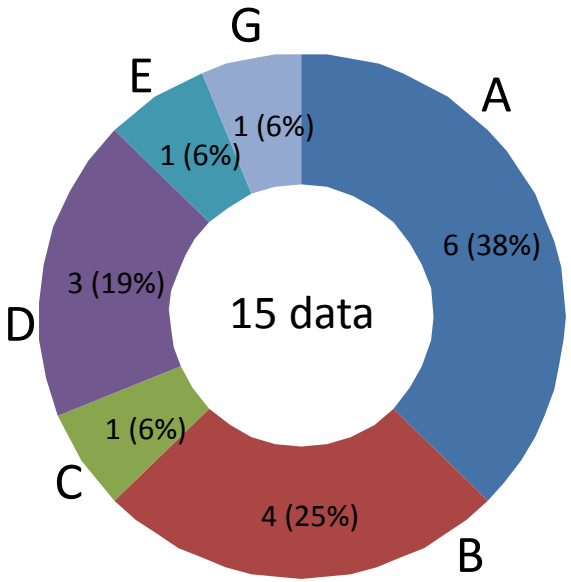
Source: Mitsui and Toi (2007)

Types of charging system

Before 2003



After 2003



	A	B	C	D	E	F	G
Member	X	X	X				*
Time	X	X		X	X		*
Distance	X			X			*

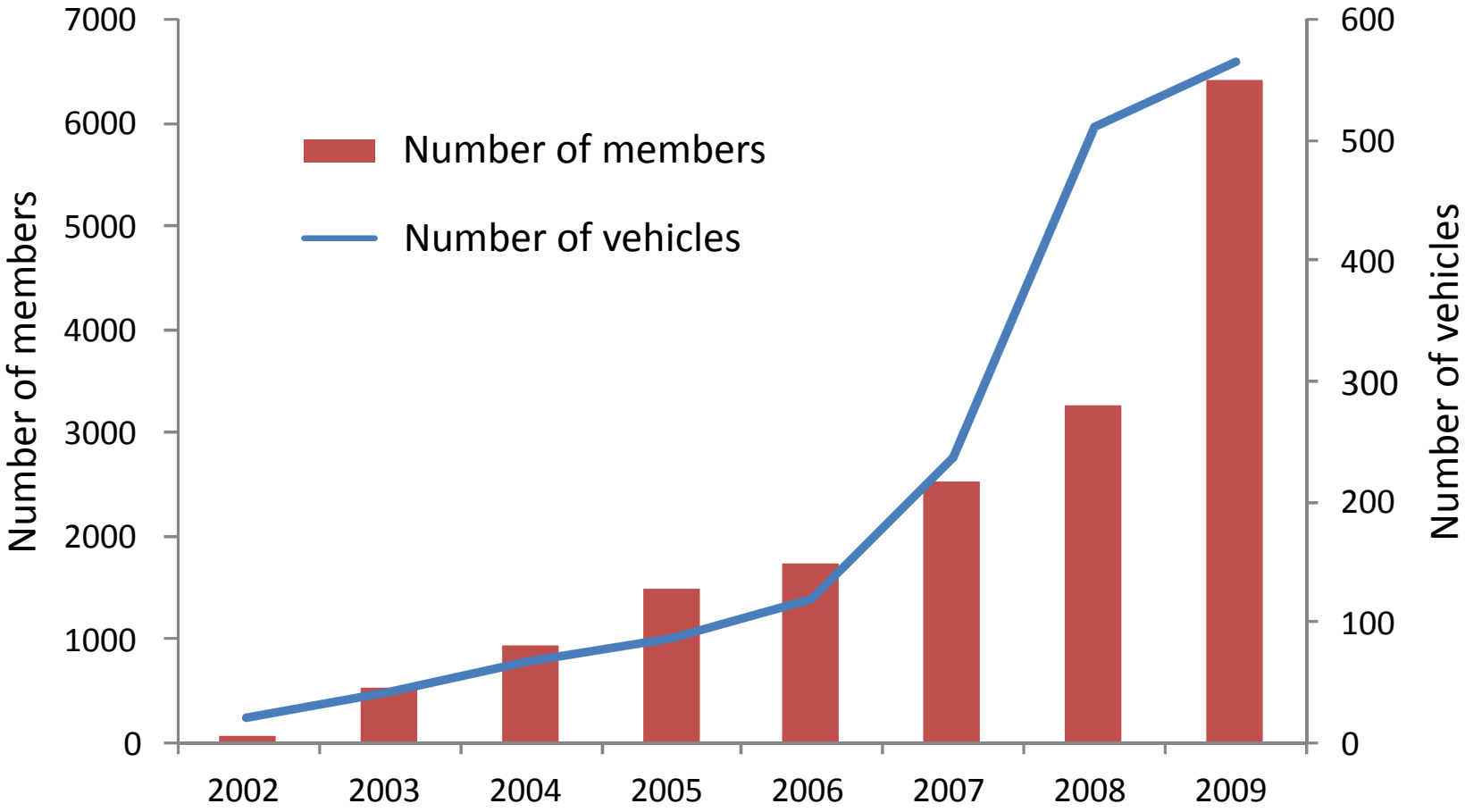
Note: G is free of charge

Source: Mitsui and Toi (2007)

The third stage ? (2007?-)

- CS market has been growing in Japan.
  - In April 2007, CEV Co. was merged into Orix-Carsharing Co.
  - Toyota started the CS business in November 2007.
  - Apartment operating companies started the CS business (Leo Palace Co. in 2009)

Time line of carsharing in Japan (2002-2009)



Note: The data in 2009 does not cover a whole year

Source: Foundation for Promoting Personal Mobility and Ecological Transportation, Japan

STATUTORY SYSTEM OF CARSHARING IN JAPAN

Photo: Hironori Kato

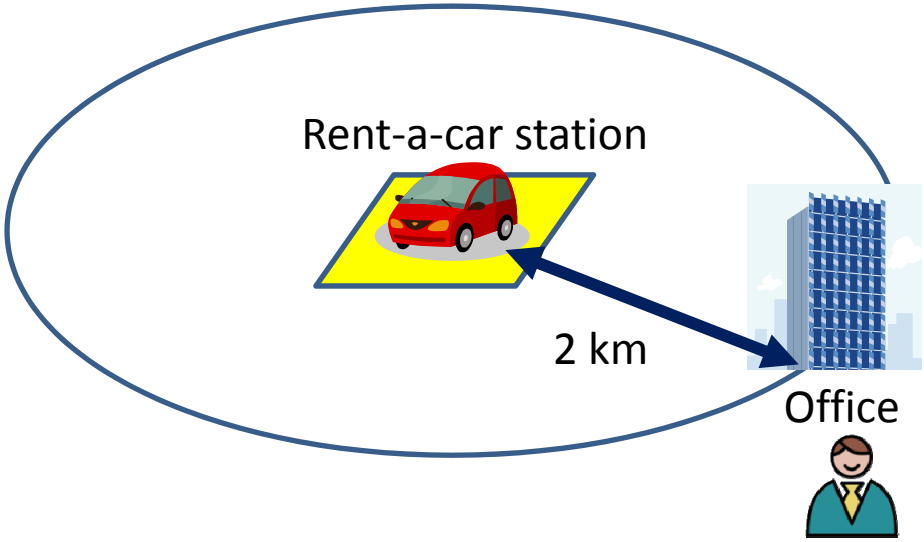
Statutory system of carsharing/rent-a-car in Japan

- There is no law/act directly regulating the carsharing in Japan
- Carsharing business is regarded legally as one of the rent-a-car businesses in Japan.
- Rent-a-car business is regulated by Road Transport Act and by Garage Act under a supervision of Ministry of Land, Infrastructure, Transport and Tourism (MLIT).

Regulations for rent-a-car

- Section 79 of Road Transport Act regulates that rent-a-car operators must apply for the permission from Local Transport Bureau of MLIT to start the new business.
- Section 1 of Government Ordinance of Garage Act also regulates that a rent-a-car station must be located within 2 km from the office with staffs.

"2-km parking regulation"



Regulations for rent-a-car (cont.)

- “Official Notice on Rent-a-car” regulates that a car borrowers are required to present or to submit a copy of driving license to the car leasing organization when leasing a car.
- This means that staff(s) must always stay at the rent-a-car depots/stations.

Photo: Hironori Kato

Regulation of carsharing

Ex-PM Junichiro KOIZUMI

Source: Wikipedia

- Restructuring Special Zone (RSZ) was introduced in April, 2003.
- Carsharing was also introduced as one of the policies in the framework of RSZ in 2004.

Deregulation of carsharing in 2004

- "Note on interpretation of Section 80 (2) of Road Transport Act in applying for the rent-a-car-based environment-friendly carsharing program under RSZ law" was issued by MLIT in 2004.
- This allows the car leasing service without face-to-face contact of customers and staffs.
- *Rent-a-car-based carsharing* is defined as "a business to lease a car to an individual belonging to a specific carsharing organization."
- However, the one-way CS service is not allowed due to Garage Act.

Current regulation system of CS in Japan

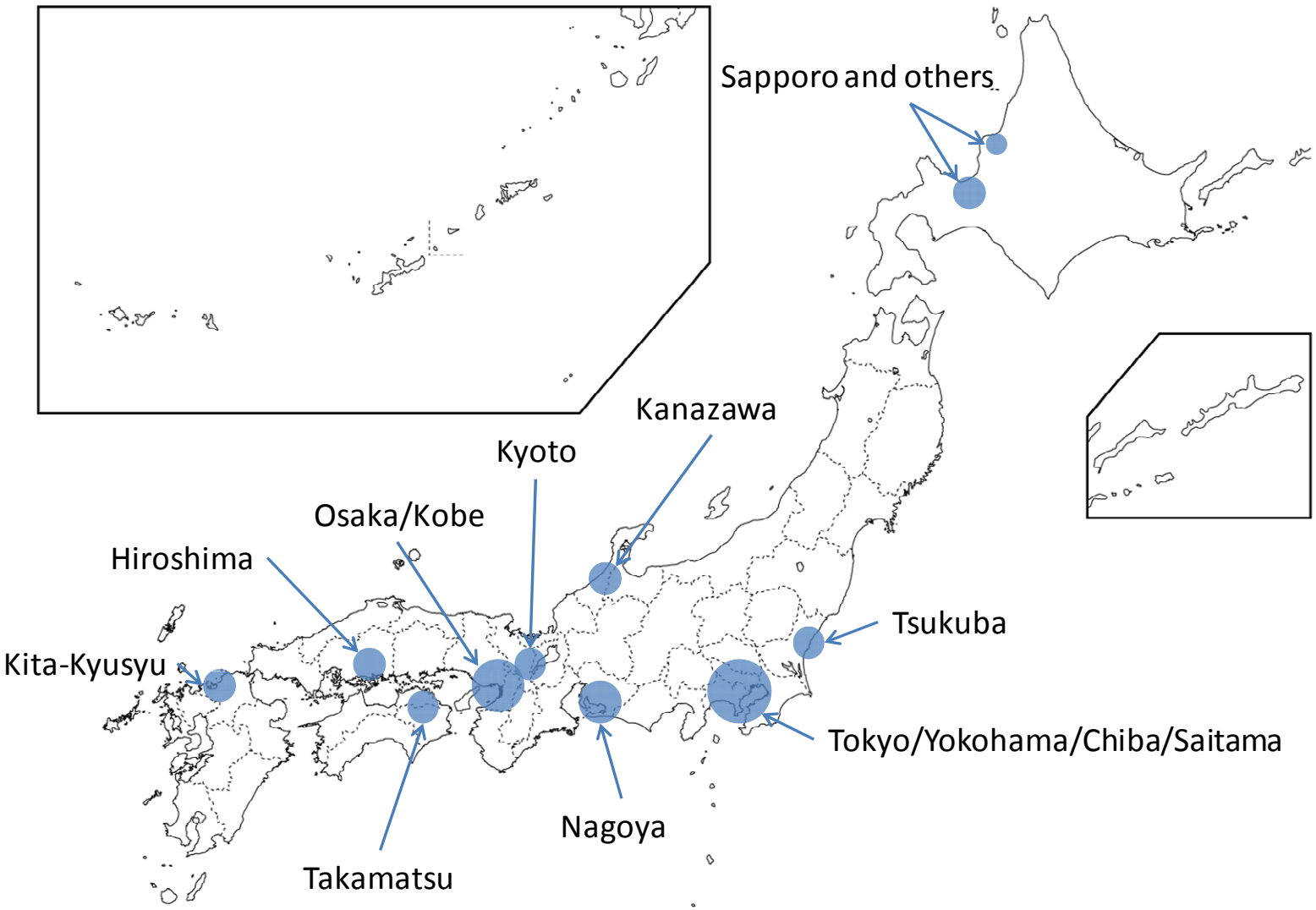
- In 2006, the carsharing business was deregulated furthermore.
- After 2006, a new CS business can be started if the following conditions are satisfied:
  - Use of environment-friendly automobiles;
  - Capability of collecting the real-time data of CS use by using ICT devices.

  Note: the key-box system has not been allowed.
- "2-km parking regulation" is still active.
  - However, in practice, when the ICT-based facilities at CS stations and in a CS vehicle are installed, the CS service is regarded as if the CS stations were the offices with staffs.
  - The above is judged by a local police agency.
- One-way CS service is still not allowed.

CURRENT CARSHARING IN JAPAN

Photo: Hironori Kato

Current carsharing programs in Japan



Characteristics of locations where CS is operated in Japan

- Most of CSOs operate in large-cities including Tokyo, Osaka, and Nagoya.
  - Orix Auto Co. and Park 24 operate mainly in Tokyo and Osaka whereas Toyota-carsharing in Nagoya.
- Few programs are operated in rural areas.

Major CSOs in Japan

CSOs	Orix Auto Co.	Park 24 Co.	Mitsui Co.	ASQ Co.	Total
Brands	Putit Renta	Carshare 24	Careco	Catera	
Start Years	1999	2005	2005	2009	
Main Areas	Tokyo, Nagoya, Osaka, Sapporo	Tokyo, Osaka, Fukuoka	Tokyo	Tokyo	
Types	CS + Rent-a-car	CS + Parking	CS + condominium	CS + condominium	
Users	3700	823	n/a	406	4929
Stations	240	117	54	22	433
Cars	310	249	56	32	647

Source: Foundation for Promoting Personal Mobility and Ecological Transportation, Japan

Examples of Charging System

Plans	Orix Auto	Carshare 24	ASQ
Registation charge	5250 yen (1480 yen*)	0 yen (1500 yen*)	4980 yen
Monthly charge	2980 yen	4000 yen	1980 yen
Time-based charge	190/230 yen per 15 mins	200/400 yen per 15 mins	590/750 yen per 30 mins
Distance-based charge	14/15 yen per km	0 yen per km	13/15 yen per km

* means the charge in using smart card

Note: 1 CHF = 88.1 yen (Nov. 2009)

Examples of carsharing in Japan (1) : Orix Auto Co.

- Orix Auto Co. is the largest CSO in Japan.
  - Orix Auto is one of the umbrella companies under Orix, which is one of the largest leasing companies in Japan.
- It started CS business in September 1999 and has expanded its business through M&A.
- Tokyo, Kanagawa, Chiba, Aichi, Osaka, and Kyoto are the business areas.

Photos: Hironori Kato

Orix Auto Co.: Petit-renta

- In October 2007, ORIX Auto introduced a car-sharing system called "Petit Renta" in Kyoto City, having already launched in Tokyo.
- Electric vehicles (EV) have been introduced into some stations since 2009.
- Some of the EV charging devices are installed with the financial support from Tokyo Metropolitan Public Corporation for Road Improvement and Management.

Photos: Hironori Kato

Examples of carsharing in Japan (2) : Park 24 Co.: Carshare 24

- Park 24 originally runs parking business.
- Park 24 Co. integrated Matsuda Rent-a-car Co. in 2009.
- Matsuda Rent-a-car Co. started CS service at Hiroshima in 2005.

Photos: Hironori Kato

Park 24 Co.: Carshare 24

- Park 24 has been expanding their CS stations in the Tokyo Metropolitan Area.
- They are planning to introduce over 4,000 CS vehicles all over Japan by 2014.

Photos: Hironori Kato

Examples of carsharing in Japan (3) : Carsharing in rural city

- Kanazawa
  - Prefectural capital of Ishikawa Pref.
  - Population: 460,000

Photo: Hironori Kato

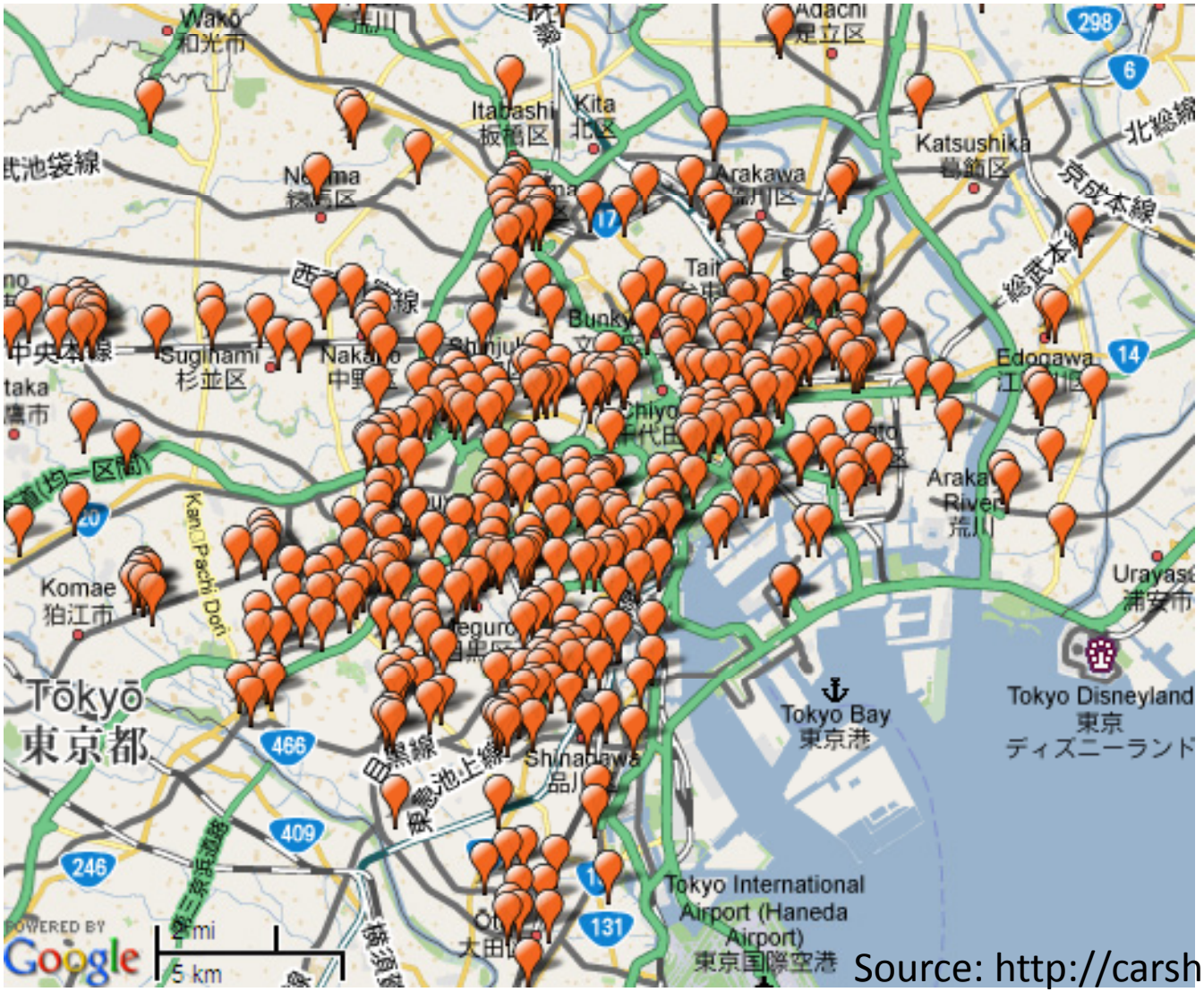
Carshare Kanazawa Co.

- Started in November 2006
- Seven stations in the city area
- Registration fee: 9,800 yen
- Monthly charge: 980/2,800 yen
- Time-based charge: 280/180 yen per 15 mins
- Distance-based charge: 14 yen per km

Source: http://www.car-share.biz/

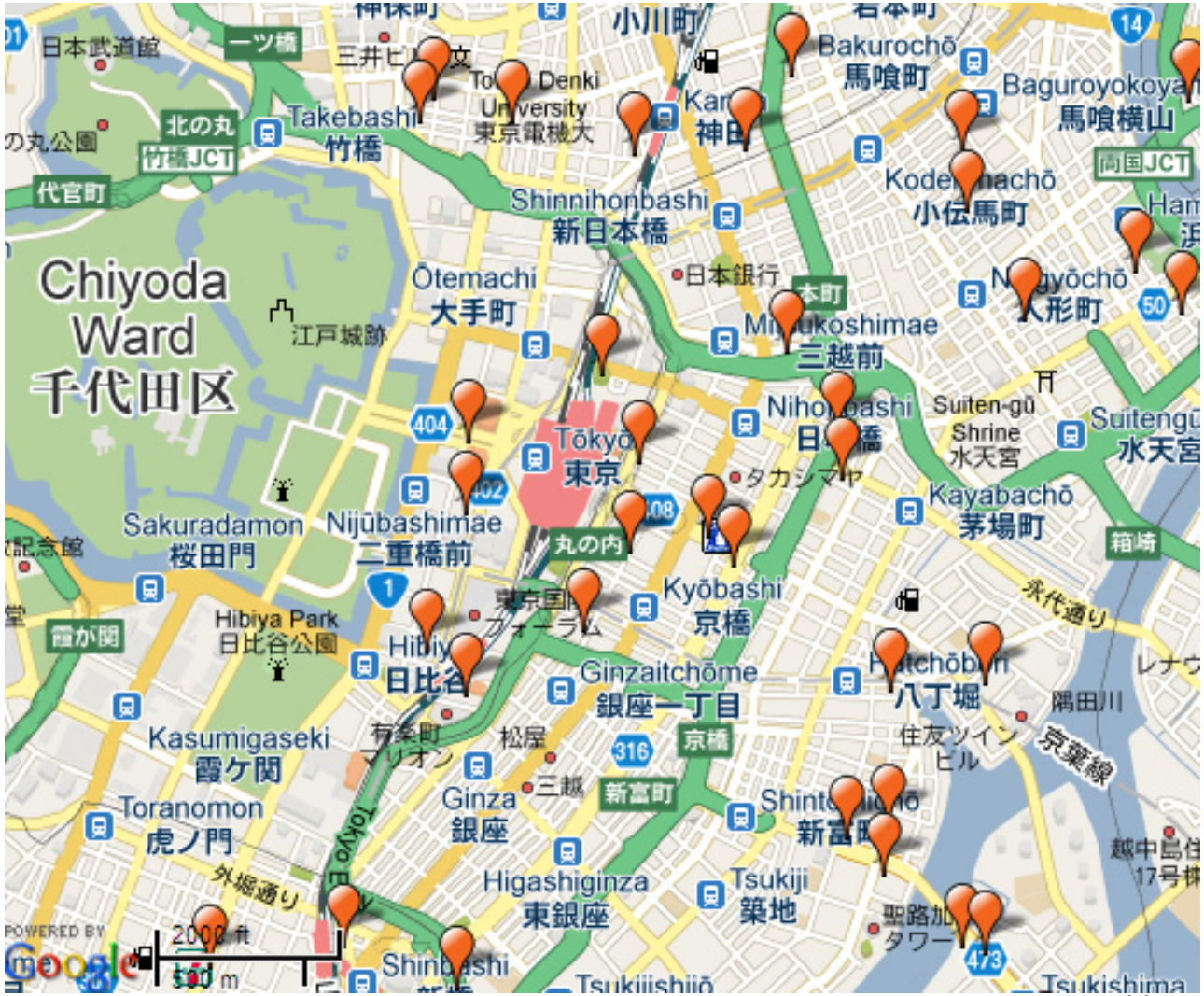
Photos: Hironori Kato

Locations of CS stations operated by eleven CSOs in Tokyo



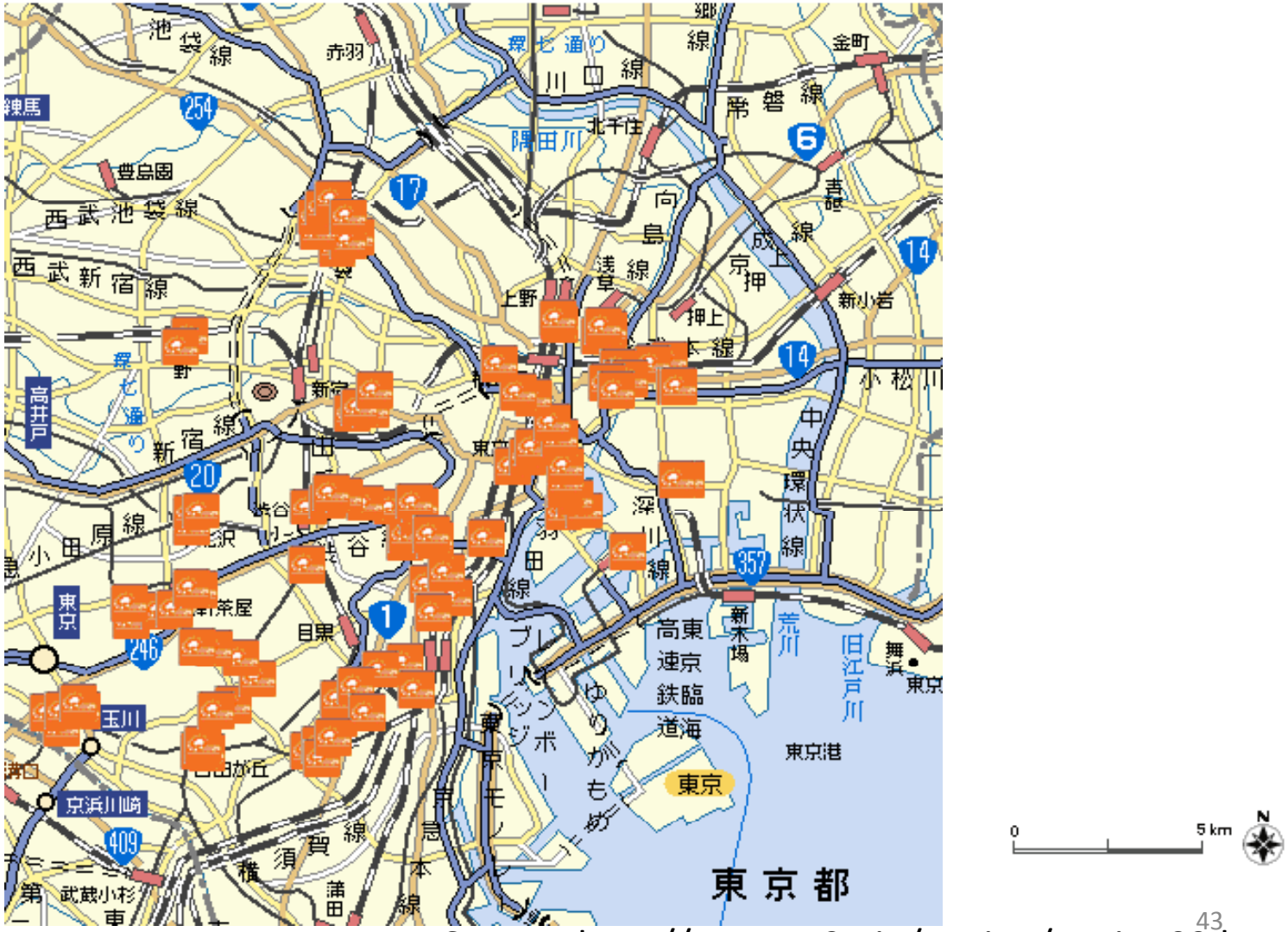
Source: http://carsharemap.jp/

Locations of CS stations around Tokyo Central Station



Source: http://carsharemap.jp/

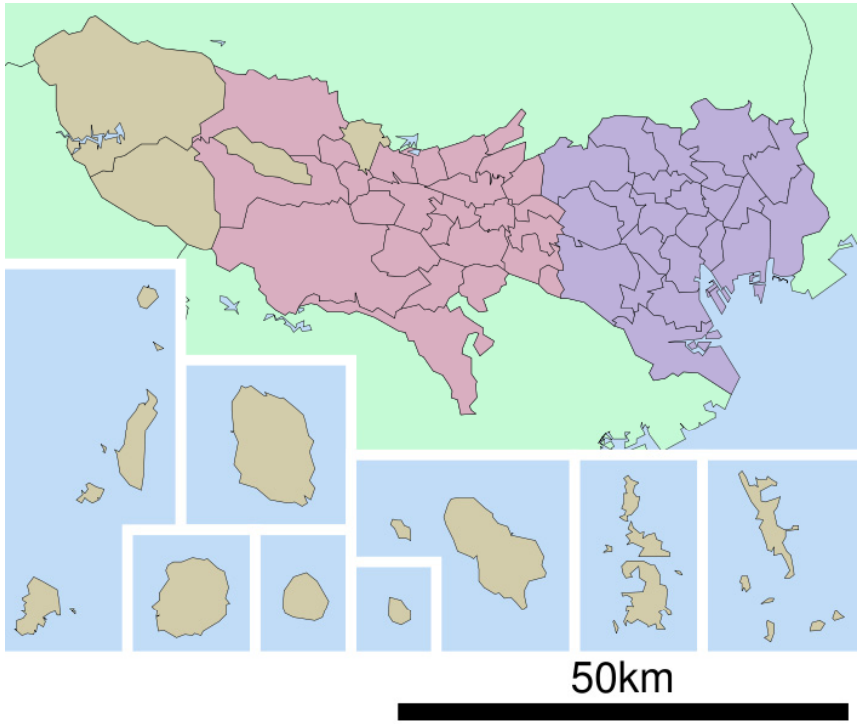
Locations of CS stations
: Carshare 24 in central Tokyo



Source: http://www.cs24.jp/station/station02.html

Appendix: Socio-demographic statistics in Tokyo

- Area (2007): 2,187.65km² (621.81km²)
- Population (2009): 12,988,797 (8,802,067)
- Average monthly income per household: 550,000 yen (2007)
- Average car ownership per household (2007): 0.529



Source: Wikipedia

OUR RESEARCH PROJECT

Photo: Hironori Kato

Outline of our project

- A joint research project of Showa Shell Sekiyuu K. K. and University of Tokyo during 2009-2010.
- Our project aims to examine the feasibility of introducing the car-sharing system into the Japanese market by utilizing electric vehicles.
- The client of our project is the Ministry of Economy, Trade and Industry of Japan.
- The project includes the market analysis of car users and the surveys of existing car sharing schemes or systems in other countries.

Research Plan

- Surveys on statutory framework and business of CS:
  - Literature review of Japan and other countries
  - Interview with CS operators including Mobility AG
- Feasibility survey of introducing CS:
  - Interview with existing operators of gas station in Japan
  - Pilot project using electric vehicles in CS service

Research plan (cont.)

- Market surveys:
  - RP/SP surveys with CS pilot projects at three cities in Tokyo
  - SP survey without pilot project at a local city in Japan
- RP survey
  - Daily travel pattern both on a weekday and a weekend day including origins, destinations, travel modes, trip purposes
  - Socio-demographic including age, gender, job
  - Characteristics regarding automobile ownership
  - Preference on travel
- SP survey
  - Stated choice of carsharing service under hypothetical cases

Schedule

- December 2009
  - Preparation for surveys
  - Interviews in Switzerland
  - Interviews with local stakeholders in Japan
- January – March 2010
  - Market surveys
- April – May 2010
  - Analysis

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