

Analysis of trends in tourist behavior and a case study of tourism flows using mobile positioning data in Okinawa

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Presentations

1. System of Tourism Statistics in Okinawa
2. Analysis of Data from Questionnaire Survey on Domestic Tourists Conducted at an Airport
3. Pilot Implementation of Mobile Spatial Statistical Survey to Complement Existing Surveys

1. SYSTEM OF TOURISM STATISTICS IN OKINAWA

1. System of Tourism Statistics in Okinawa

Quantitative data survey

Estimate of the number of tourists to Okinawa

Domestic tourists \Rightarrow Air transportation \times Mixture ratio (ratio of passengers who do not live in Okinawa Prefecture)

International tourists \Rightarrow Data about immigration checks (the number of tourists who directly come to Okinawa Prefecture)

Problem

Okinawa Prefecture's immigration checks unable to investigate the number of international transit tourists

The number of accommodation facilities

All hotels, dormitories, etc. in Okinawa Prefecture

\Rightarrow The number of rooms they have and their capacity surveyed

Problem

Individually-owned vacation homes and vacant homes for rent not subject to the survey

1. System of Tourism Statistics in Okinawa

Qualitative data survey

On domestic tourists

Survey method: Distributes survey slips to tourists waiting for their flight at a boarding area of the airport and asks them to return the answer sheets by mail at a later date

Problem

Distribution of survey slips requires certain personnel costs.

On international tourists

Survey method: Interviews tourists while they are waiting for their flight at a boarding area of the airport or before they board a boat for a cruise

Problem

Conducting interviews requires certain personnel costs.

Daily rate, etc. of accommodation facilities

Survey method: A government-affiliated financial institution conducts a questionnaire survey to investigate hotels and others.

Problem

Only hotels and country inns are subject to the survey, while dormitories and others are not.

1. System of Tourism Statistics in Okinawa

Qualitative data survey

Tourism industry

Survey method: Fixed point investigation (questionnaire) and hearing investigation (sampling)

Problem

The survey started in 2014 and therefore sufficient data have yet to be accumulated

Data on evaluation indicators

Okinawa tourism performance indicators

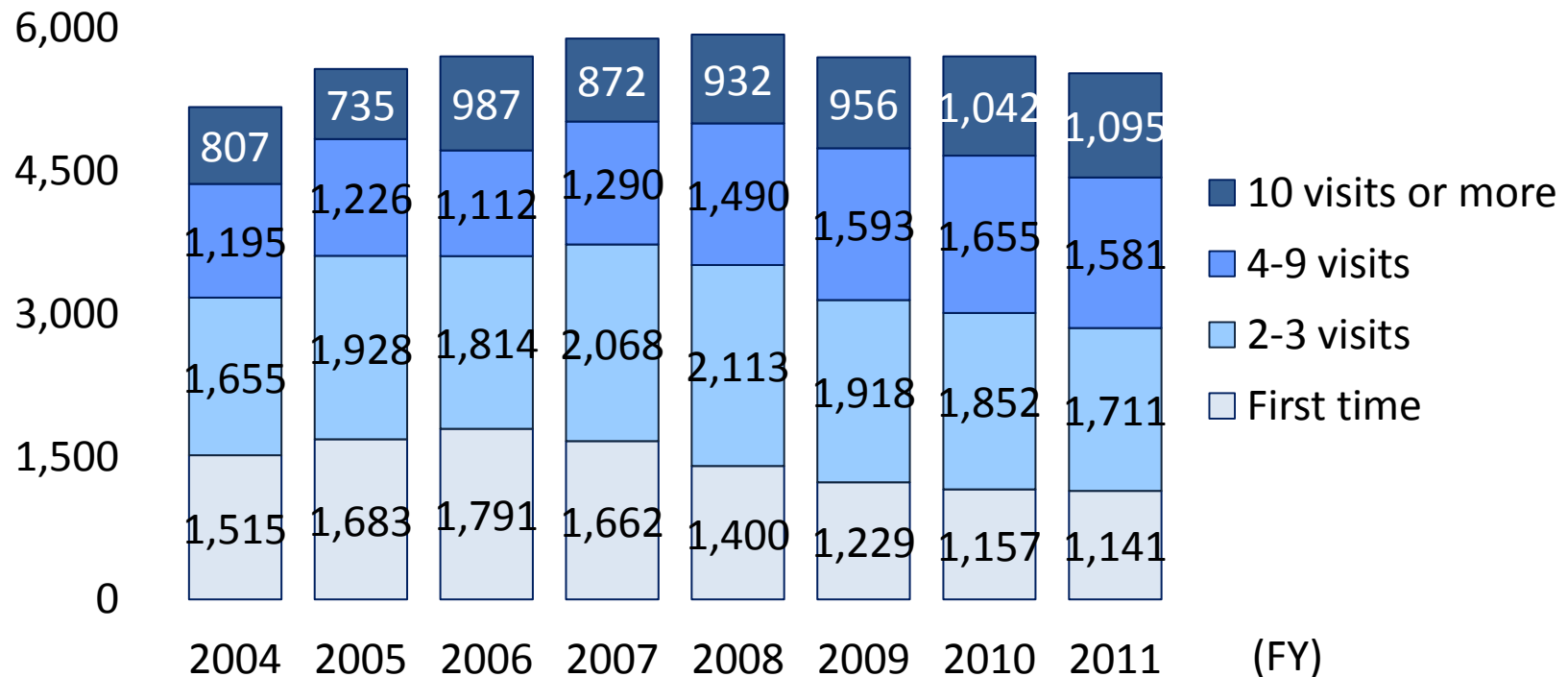
Sets up 40 tourism performance indicators centering on the five axes: the economy, tourists, residents of the prefecture, environment, and management, thereby assessing the current status of tourism in Okinawa and achievement status towards its goal

2. ANALYSIS OF DATA FROM QUESTIONNAIRE SURVEY ON DOMESTIC TOURISTS CONDUCTED AT AN AIRPORT

Trend in Number of Tourists According to Number of Visits to Okinawa Ever Made

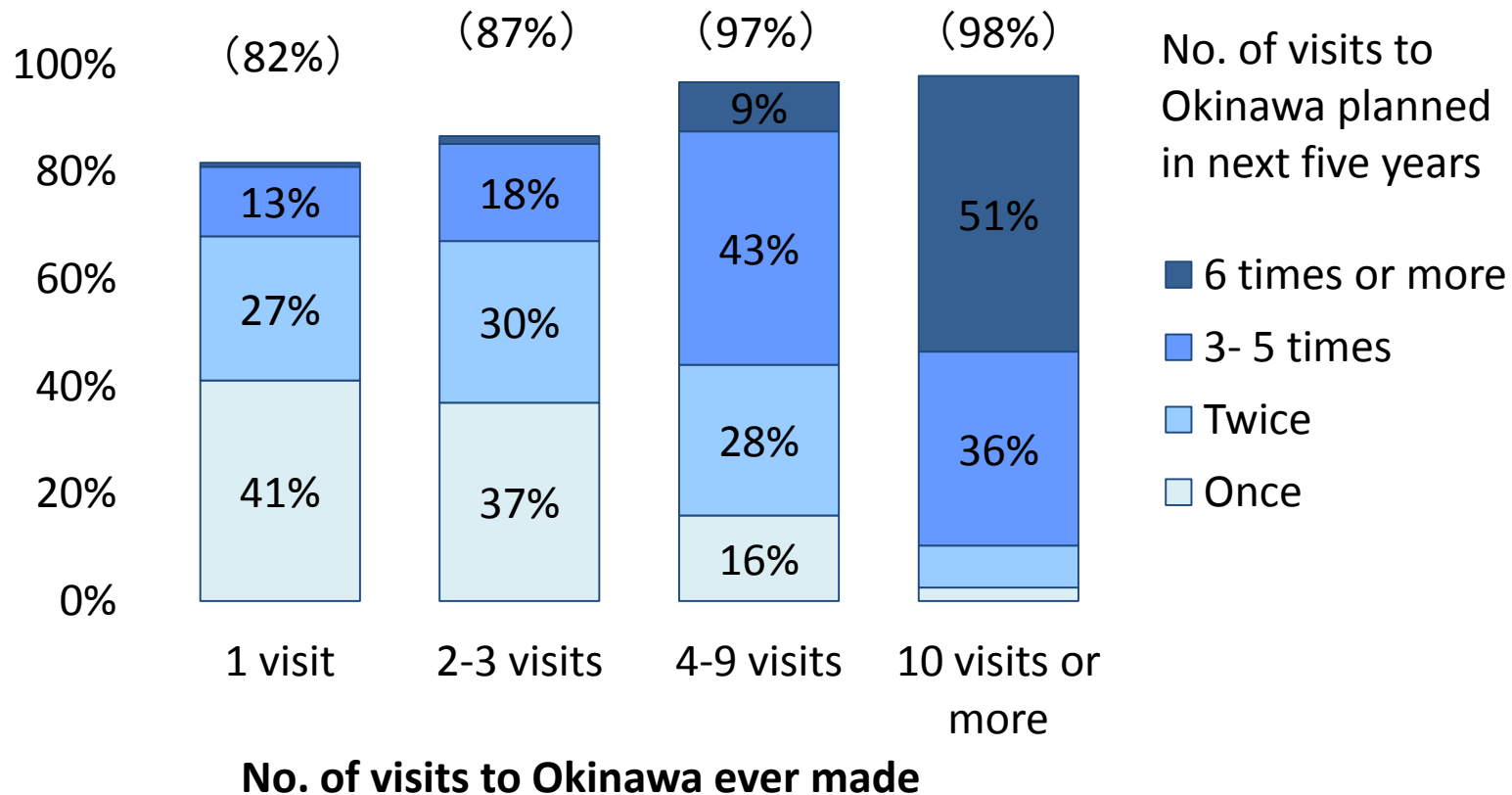
- The number of tourists who have visited Okinawa three times or less has continued to decline in recent years.
- By contrast, the number of tourists who have visited Okinawa four times or more has followed a steady upward path.

(Thousand people)



Intention to Revisit Okinawa by Number of Visits to Okinawa Ever Made

- Nearly 100% of repeaters who have visited Okinawa four times or more have the intention to revisit it in the next five years.
- Around 40% of repeaters who have visited Okinawa three times or less have the intention to revisit it “once in next five years.”

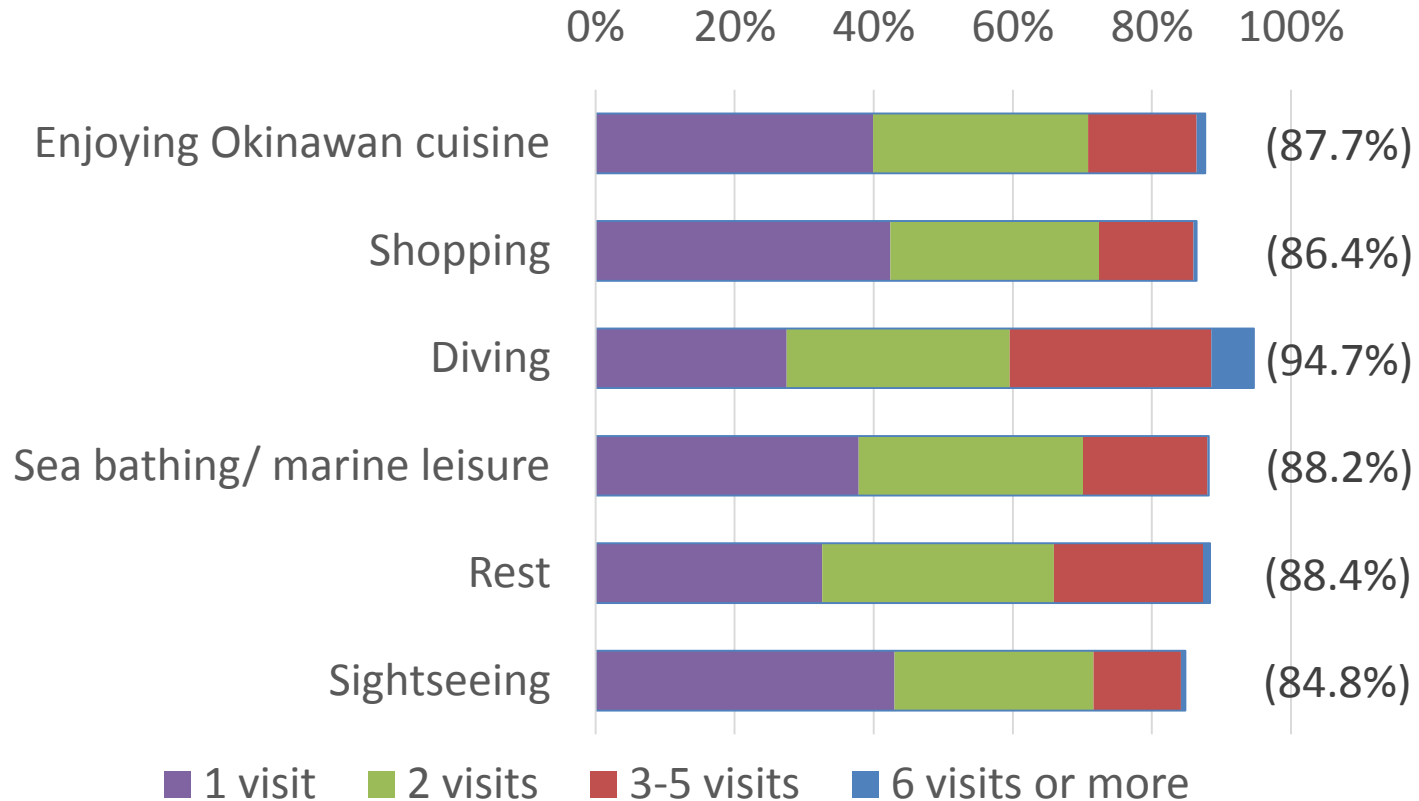


*The parenthesized figure in the chart indicates the percentage of repeaters who responded that they wanted to revisit Okinawa at least once in the next five years.

Light Repeaters Engaged in Sightseeing or Shopping Less Motivated to Revisit Okinawa

- Light repeaters engaged in sightseeing or shopping are less motivated to revisit Okinawa in next five years than those engaged in other activities. In addition, many of the former responded that they wanted to revisit it once in the next five years.
- Sightseeing and shopping are activities particularly popular among light repeaters.

Intention to Revisit Okinawa in the Next Five Years (Only Tourists Having Visited Okinawa Three Times or Less Surveyed; by Activity Conducted during Recent Visit)



*Excluding visits to participate in conference and training sessions, visits on business, homecoming visits to see relatives and others.

Source: Report on FY2011 factual survey of tourism statistics.

Tours Encouraging Participants to Visit Many Areas over Short Term Reducing Tourists' Satisfaction and Making Them Less Motivated to Revisit Okinawa

- Tourists doing some sightseeing or shopping or enjoying Okinawan cuisine visit a larger number of areas; they also tend to be short stayers.
- Tours encouraging participants to visit many areas over the short term reduce tourists' satisfaction and make them less motivated to revisit Okinawa.

Areas Visited and Average Number of Nights Stayed by Activity (Only Light Repeaters Surveyed)

Areas visited (multiple answers)	Activity conducted during recent visit (multiple answers)					
	Sightseeing	Rest	Sea bathing/ marine leisure	Diving	Shopping	Enjoying Okinawan cuisine
Yanbaru (northernmost part)	8.1%	7.8%	5.1%	6.8%	7.5%	8.0%
Motobu Peninsula	64.0%	55.4%	56.9%	45.5%	66.3%	63.1%
Northern west coast	48.7%	41.1%	49.0%	36.4%	52.4%	48.2%
Northern east coast	8.8%	6.8%	6.9%	3.8%	9.4%	8.8%
Central west coast	37.7%	36.6%	36.7%	34.1%	41.0%	38.8%
Central east coast	17.6%	12.0%	11.2%	8.3%	18.7%	17.7%
Naha City	77.0%	66.2%	66.0%	70.5%	84.4%	78.8%
South part	45.9%	34.3%	32.0%	33.3%	45.7%	44.6%
Kume Island	0.7%	1.3%	1.5%	3.0%	0.4%	0.6%
Small islands around Okinawa Island other than Kume Island	1.4%	1.5%	5.1%	11.4%	1.8%	2.3%
Miyako Island and nearby islands	3.6%	5.5%	5.5%	6.8%	2.4%	3.9%
Ishigaki Island and nearby islands	15.5%	19.8%	17.9%	18.9%	12.6%	14.6%
Average number of areas visited	3.29	2.88	2.94	2.79	3.43	3.29
Average number of nights stayed	2.61	2.98	3.12	3.27	2.59	2.72
Average number of areas visited per night stayed	1.26	0.97	0.94	0.85	1.32	1.21

*Excluding visits to participate in conference and training sessions, visits on business, homecoming visits to see relatives and others.

Source: Report on FY2011 factual survey of tourism statistics.

In Order to Expand Repeater Base

- Although sightseeing and shopping are popular activities among light repeaters who have visited Okinawa three times or less, those engaged in such activities are less satisfied and less motivated to revisit Okinawa.
- Tourists engaged in sightseeing or shopping tend to make a whirlwind trip, visiting many areas over the short term.
- To encourage light repeaters to revisit Okinawa, we need to create an enjoyable easy-going tour that makes them motivated to visit Okinawa again, instead of tours that make participants hop from one tourist site to another on a tight schedule.

3. PILOT IMPLEMENTATION OF MOBILE SPATIAL STATISTICAL SURVEY TO COMPLEMENT EXISTING SURVEYS

Contents

- Introduction
- Mobile Spatial Statistics is...
- Results of Survey on Number of Tourists
 - Whole Area of Okinawa Prefecture
 - Tourists by Municipality
- Results of Survey on Number of Visitors to Events
 - Professional Baseball Training Camp
- Sub-conclusion


Introduction

Problems with existing surveys (Questionnaires)

Effective in understanding details of travels such as objectives, but not in understanding the movement of people at different times, on different days of the week, and in different seasons on a continuous basis.

Mobile Spatial Statistics (MSS)

Population statistics generated from mobile terminal network operational data and thus quickly enable understanding of demographic changes on a continuous basis.



It is considered that the combined use of existing surveys and MSS will enable the implementation of more strategic and effective measures.

Mobile Spatial Statistics (MSS) is..

to estimate the size of population by time variation or locations based on compiled data from Mobile base stations

disaster prevention



Transportation planning



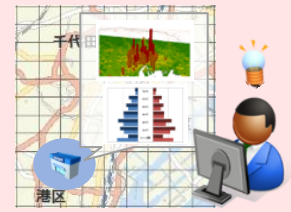
City Planning



Tourism Promotion



Retail Support



Understand Population Distribution of Japan

Estimate population by the number of Mobile devices

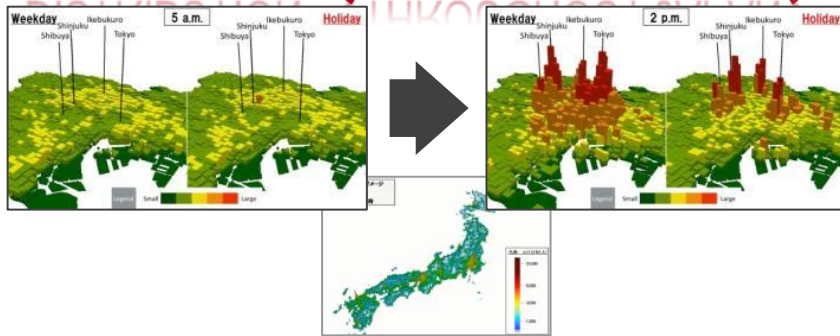
60 million Subscribers



* excluding the number of subscribers contracted by Corporations

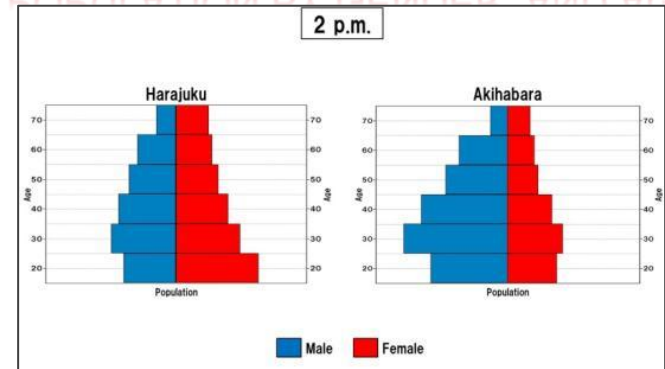
Population Distribution From the Mobile Spatial Statistics

TIME VARIATION OF POPULATION DISTRIBUTION (THROUGHOUT JAPAN)



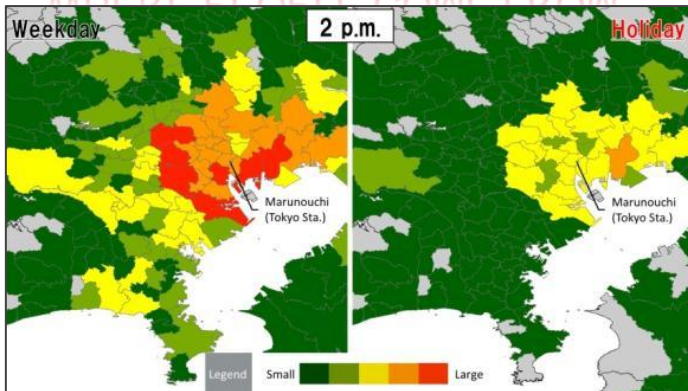
Population of 23 Special Wards of Tokyo

POPULATION BY GENDER AND AGE



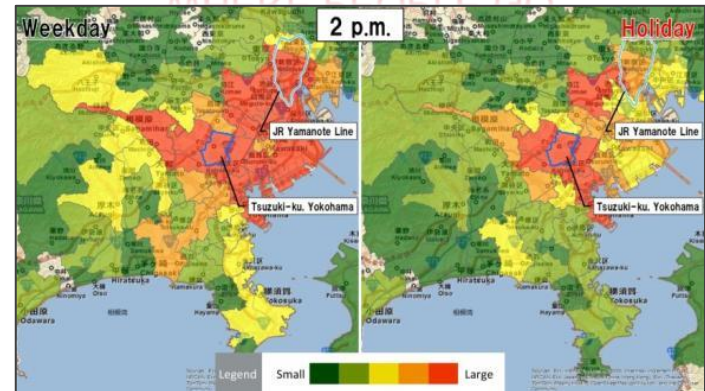
Akihabara and Harajuku

WHERE PEOPLE COME FROM



The number of people who are staying at Chiyoda-ku at 14 PM

WHERE PEOPLE GO



Where people living in Tsuzuki-ku are at 14 PM

Survey on Number of Tourists: Outlines

Survey Outlines

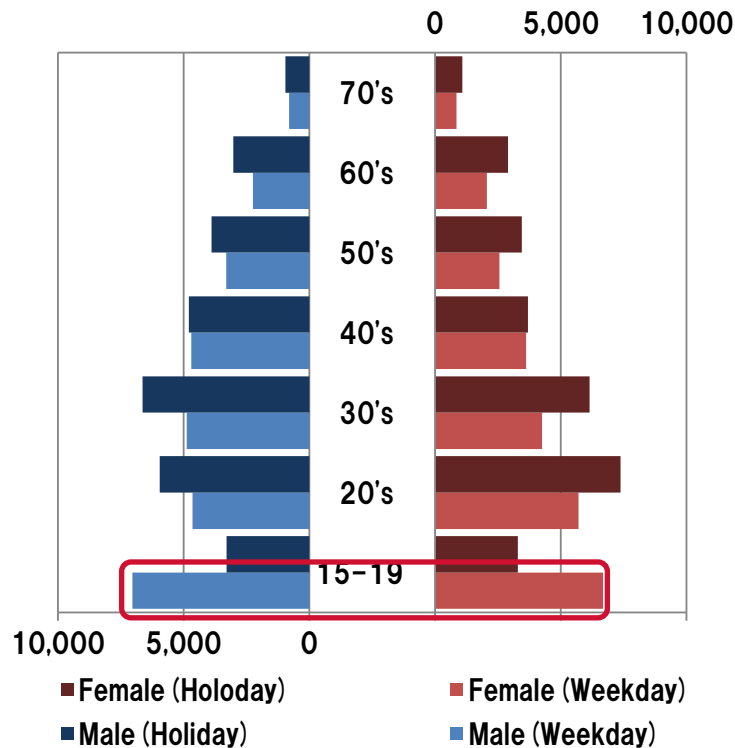
Areas	(1) Whole area of Okinawa Prefecture (2) Wide-area blocs (3) Municipalities
Periods	October 2012 and January 2013
Those surveyed	Tourists* * People living outside Okinawa Prefecture defined as “tourists”

Survey on Number of Tourists: Okinawa Prefecture-Wide Tourists by Gender and Age

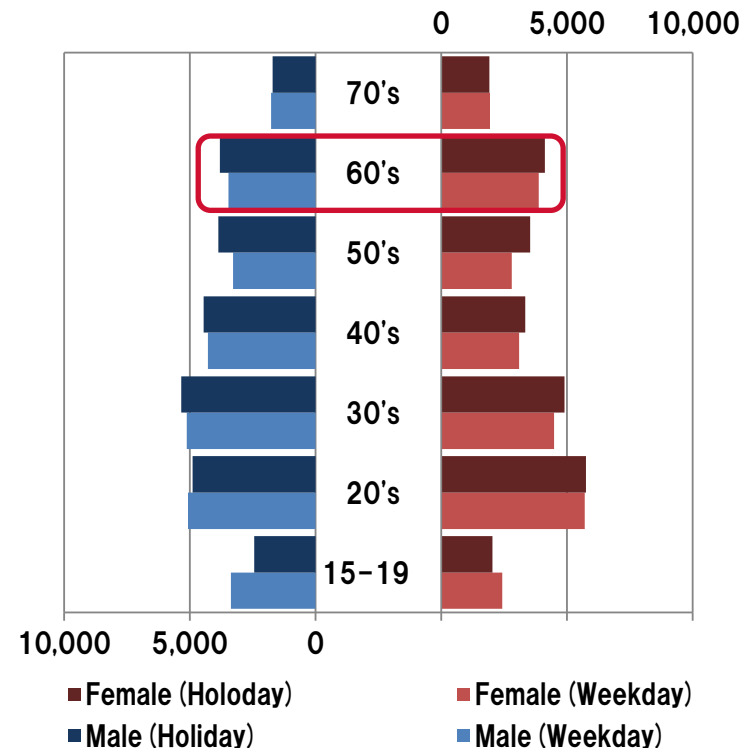
October: The significantly larger number of tourists aged 15-19 years on weekday than on holidays is due presumably to the impact of school trips.

January: The number of tourists in their 60s increased from October. In addition, the gap between weekdays and holidays is narrower in January than in October.

No. of Tourists (13:00, October 2012)



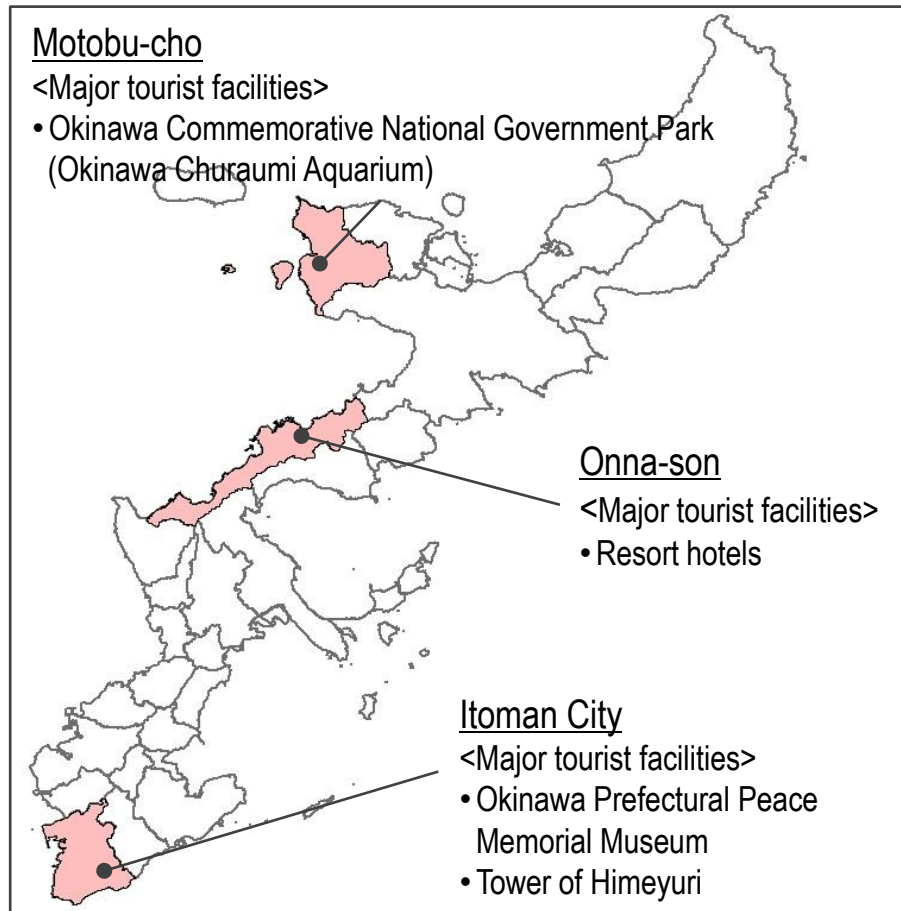
No. of Tourists (13:00, January 2013)



Weekday: Wednesday, Holiday: Saturday

Survey on Number of Tourists: Municipalities

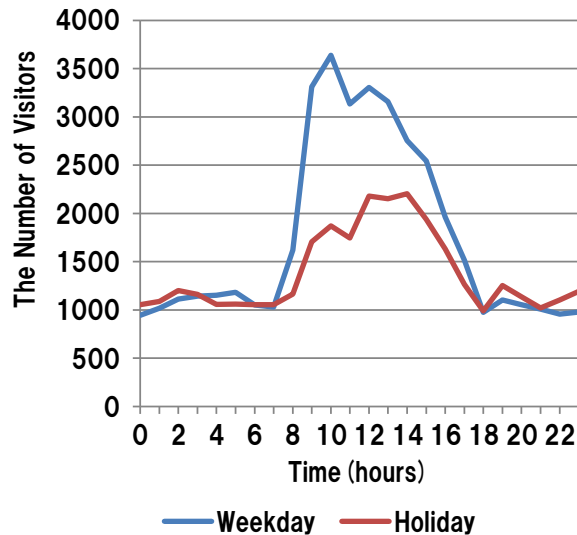
All municipalities in Okinawa Prefecture, were surveyed, and three municipalities, Itoman City, Motobu-cho, and Onna-son, revealing a unique feature, are explored below.



Survey on Number of Tourists: Municipalities, Temporal Change

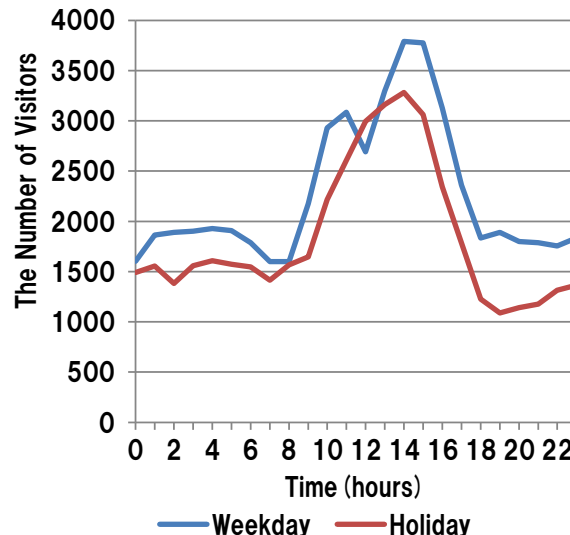
Itoman City and Motobu-cho: The population increases in the daytime due to the fact that they are rich in tourist facilities.
 Onna-son: The population increases in the night-time due to many resort hotels located there.

No. of Tourists (Itoman City)



- <Major tourist facilities>
- Okinawa Prefectural Peace Memorial Museum
 - Tower of Himeyuri

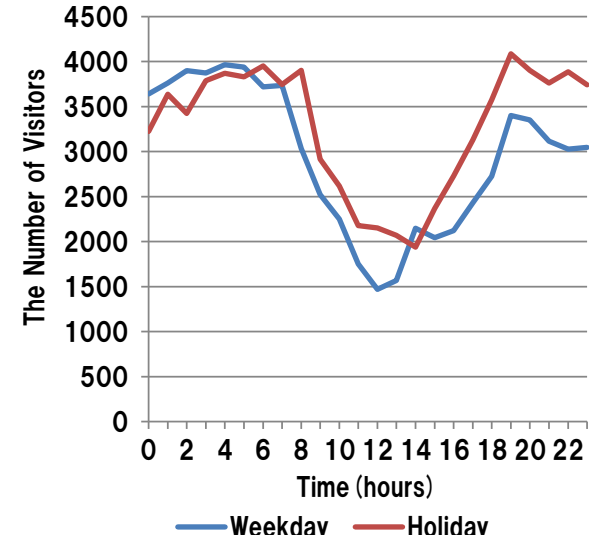
No. of Tourists (Motobu-cho)



- <Major tourist facilities>
- Okinawa Commemorative National Government Park (Okinawa Churaumi Aquarium)

Weekday: Wednesday, Holiday: Saturday
 All data as of October 2012

No. of Tourists (Onna-son)



- <Major tourist facilities>
- Resort hotels

Survey on Number of Visitors to Events: Professional Baseball Training Camp, Event Outlines

Survey Area (Event Venue)



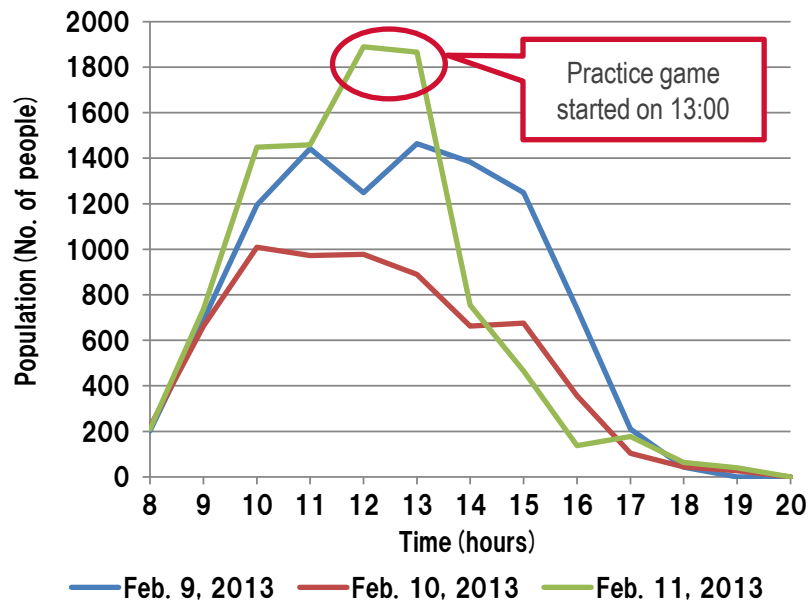
Survey Outlines

Baseball teams covered	Five baseball teams that migrated to Okinawa for training camp were surveyed. (This presentation examines the Hanshin Tigers' camp)
Area	The baseball teams' stadiums (Ginoza Municipal Baseball Stadium in this presentation)
Period	February 9-11, 2013 * The three consecutive holidays, on which the number of tourists were expected to increase
Those surveyed	Visitors* * Usual resident population subtracted

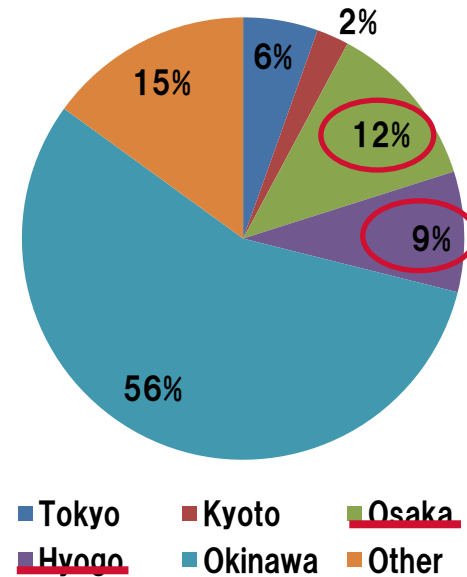
Survey on Number of Visitors to Events: Professional Baseball Training Camp, Survey Results

No. of visitors: It peaked at around 12:00-13:00 due presumably to the impact of the practice game which took place from 13:00.
 Habitation area: Osaka and Hyogo occupy the second and third places in the ranking, respectively, presumably reflecting the location of the Hanshin Tigers' home field.

Trend in No. of Visitors



Breakdown by Habitation Area (Prefecture)



Sub-conclusion

Survey on
number of
tourists

Able to understand the difference between weekdays and holidays as well as the seasonal difference

Able to understand the regional difference

Survey on
number of
visitors to
events

Able to understand the peak time of the events as well as the daily difference

Able to understand the visitors' attribution

MSS enabled us to understand changes in the numbers of tourists and visitors by time of the day, day of the week and season, which was difficult for us to do through the implementation of existing surveys.

It is believed that the use of MSS will enable the implementation of more strategic and effective measures.