



35<sup>th</sup> SITEMSH congress 2016  
Inawashiro – Fukushima, JAPAN  
2016/3/13-17

# Snow Sport Injuries Epidemiology in a Japanese Ski Area

Yuiko Matsuura<sup>1</sup>, Yukio Urabe<sup>2</sup>, Noriaki Maeda<sup>2</sup>, Nobuaki Moriyama<sup>2</sup>

*<sup>1</sup> Machida Orthopedic Clinic, Japan*

*<sup>2</sup> Graduate School of Biomedical and Health Sciences, Hiroshima University, Japan*

# Introduction

The report from Japan decreased in recent years  
("Japanese Ski Safety Association (JSSA)" 2015 injury incidence reports)

- Decrease in the Ski and Snowboarding population
- The weather change : Warming effect
- The decline of the Ski boom
- The change of business climate

But...

Serious injuries from winter sports remain  
a problem

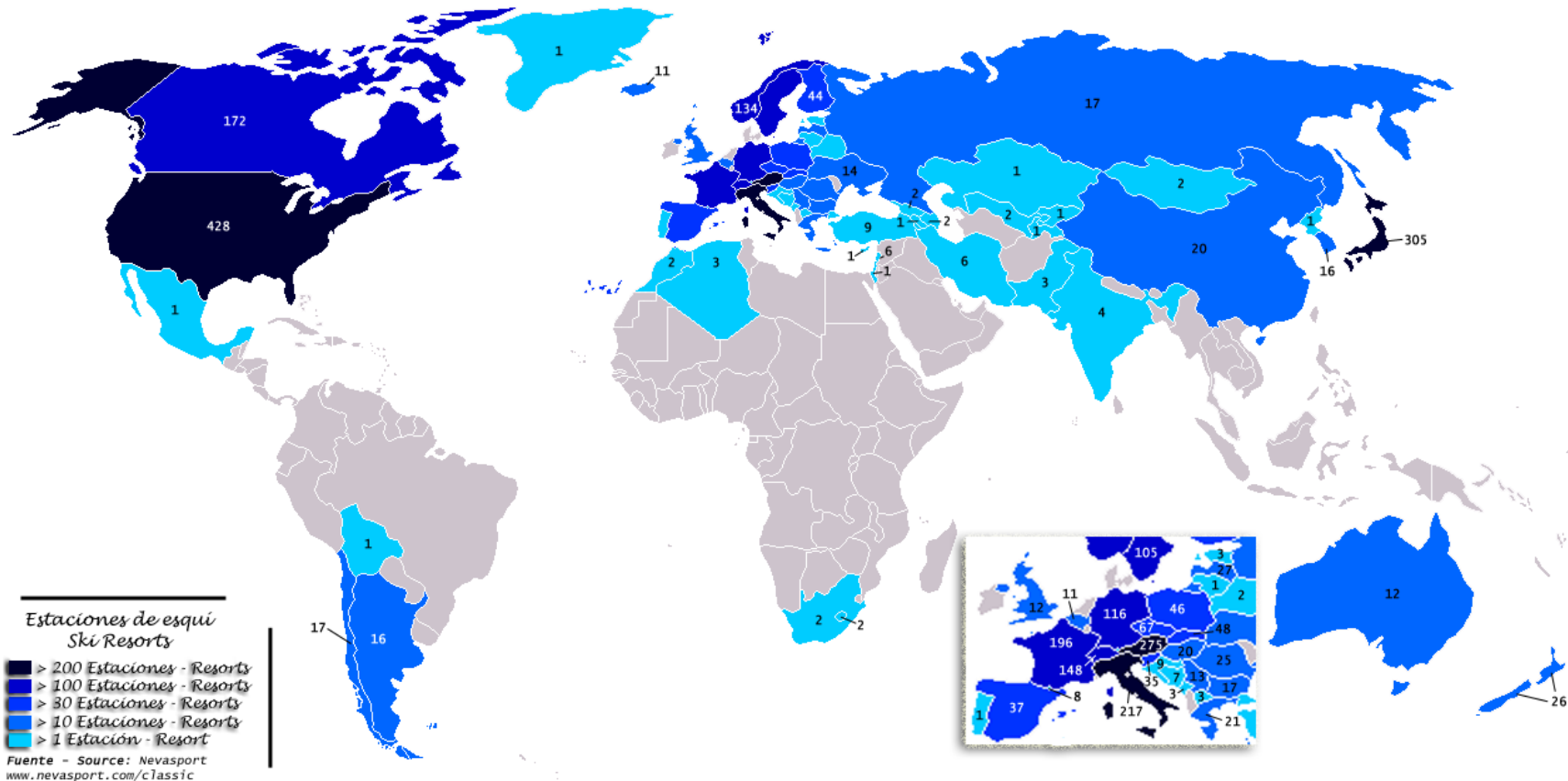
For prevention...

➡ We should clarify the details of the injuries  
which happened in each of the ski resorts



# The number of world ski areas in 2014

USA:428, Japan 305, Austria 275, Italy 217



**Top 10 Nations With The Most Ski Resorts**  
**Source:** nevasport.com



# Aims

✓ To analyze the previous 7 season's injury incident reports at one of the ski areas in southwest Japan nearby Hiroshima (M ski resort)

➔ consider the trend of incidence tendency to compare with other ski areas



Safe participation and prevention for winter sports injuries

# Method

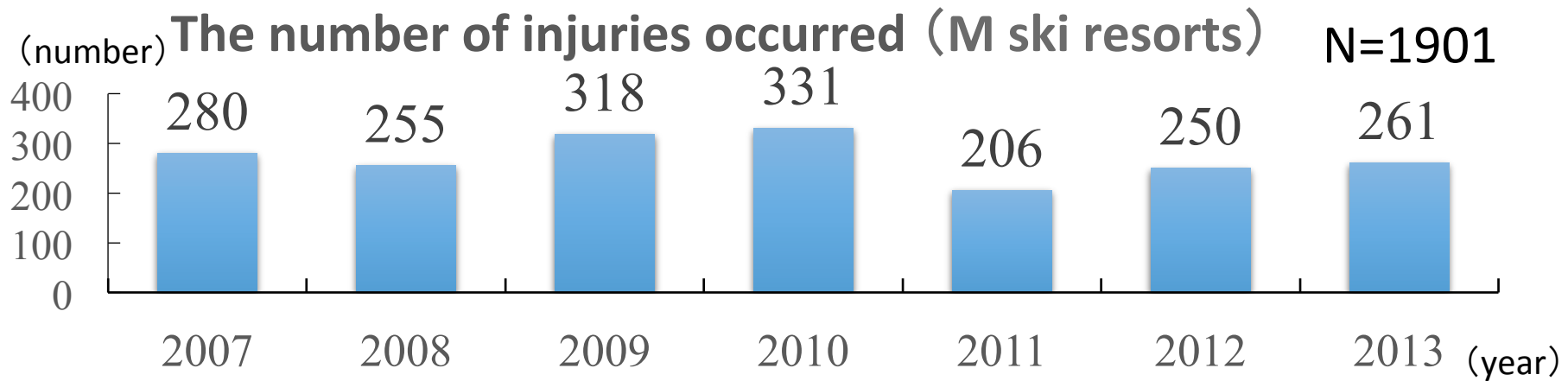
- Collecting term :2007-2013 seasons (7 seasons)
- Place of data collection: One ski resort in Hiroshima (M ski resort)
- Analyze all the injuries treated by ski rescue team

## Question items

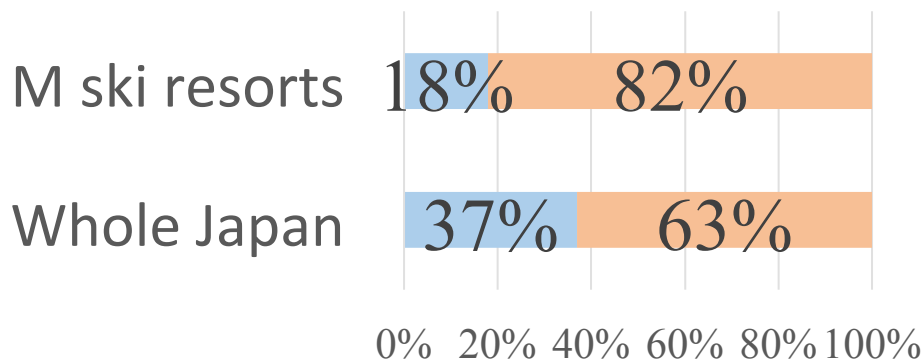
- ✓ total number of incidents in each season
- ✓ equipment (ski or snowboard)
- ✓ severity of injury suffered
- ✓ use of a helmet
- ✓ body part affected

© Incidence rate from the total number of snowboarders/skiers that sustained injuries in 7 years

# Results

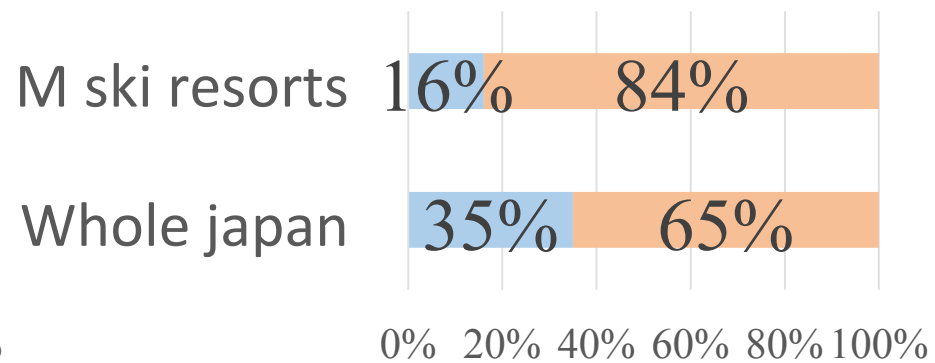


Injuries rate (2007-2011)



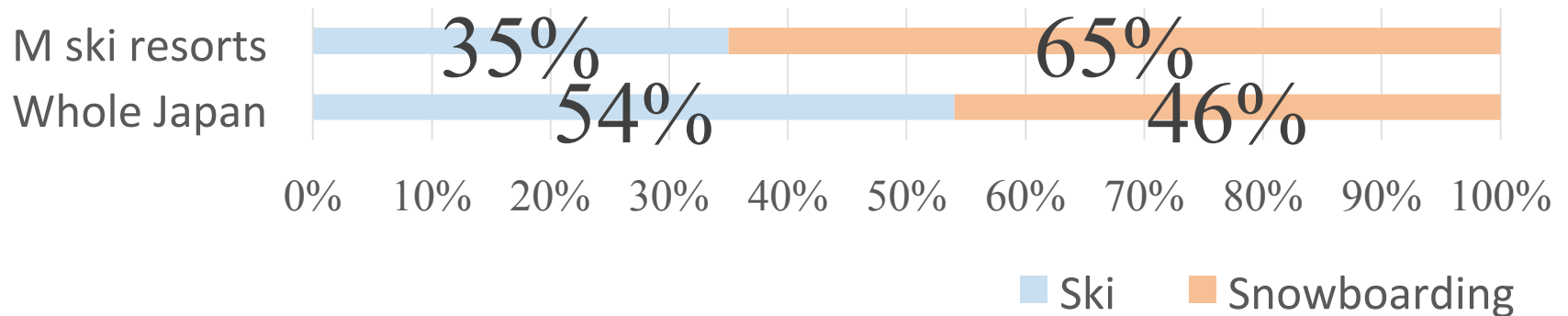
■ Ski ■ Snowboarding

Injuries rate (2012-2013)



■ Ski ■ Snowboarding

## Guests



### M Ski resorts

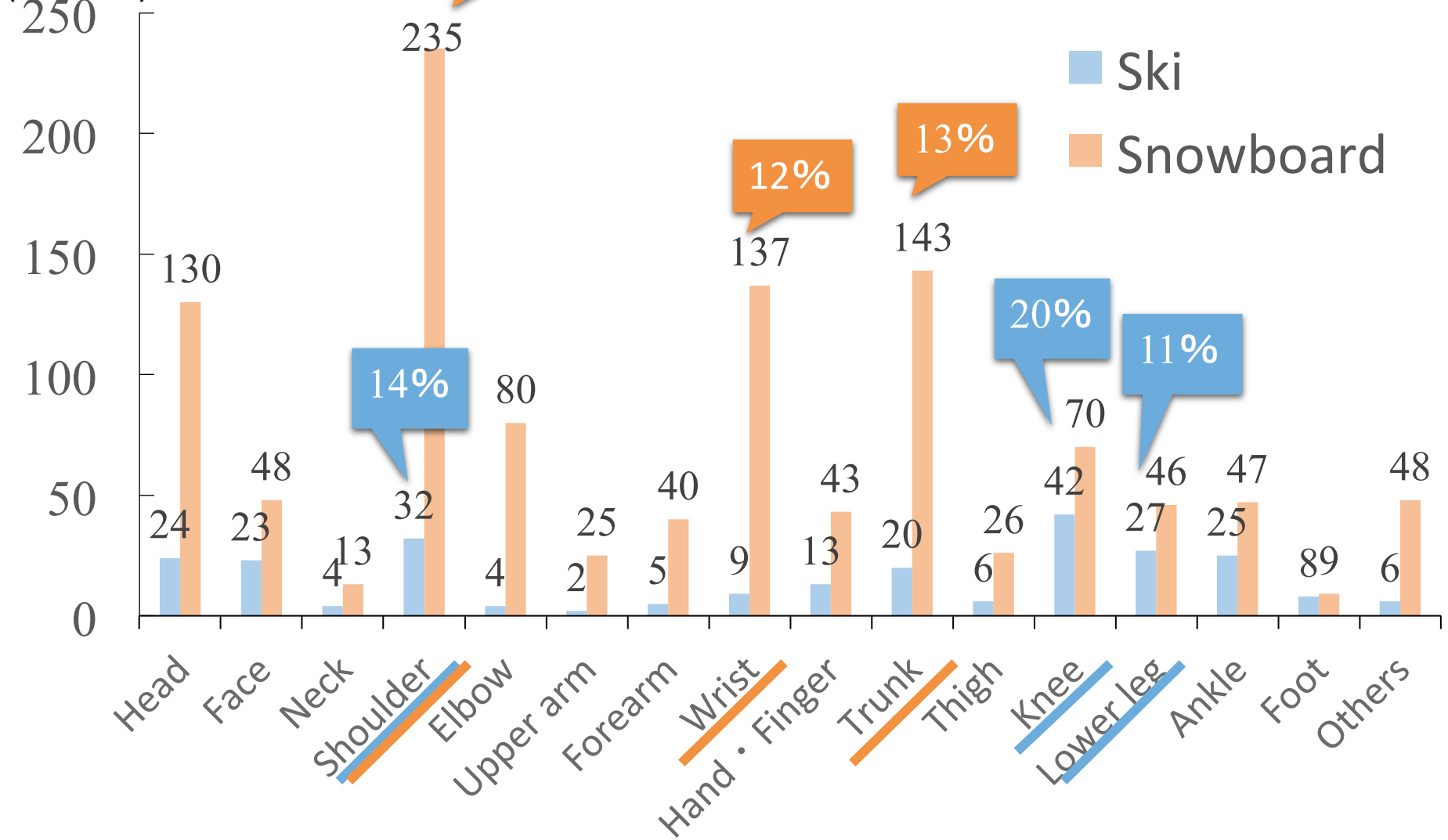
The incident rates ( per 100,00skiers/snowboarders )  
**skiers : snowboarders = 43.5 : 56.7**

★ **Higher incident rate in snowboarders compared with skiers**

- No fatal accident
- Ambulance transportation were 47 (6%)
- Wearing a helmet were 52 (6%)

# Distribution of injuries which occurred at M ski resorts

(number)

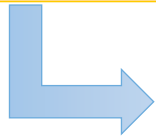


# Discussion

M ski resorts incident rates (per100,00 skiers/snowboarders)

**skiers : snowboarders = 43.5 : 56.7**

**Higher incident rate in snowboarders compared with skiers**



The incidence rate is approximately two times higher in snowboarders than that in skiers (JSSA 2013)

This study showed the same tendency in incidence rate during snowboarding and skiing

★ For prevention

➡ We should clarify the injuries which occurred in each of the ski resorts

Details :

- ✓ Which course did it occur in ?
- ✓ How many guests were in attendance on that day?
- ✓ Incline?
- ✓ Weather?
- ✓ ability level?
- ✓ snow conditions, etc.

## Distribution of injuries occurred

### **Ski : Knee 20%, Shoulder 14%, Lower leg 11%**

- ✓ the knee is the most frequently injured body part (Coury 2013, Ruedl.G 2012)
- ✓ JSSA suggested 39.0 % (2013)
- ✓ A previous study suggested 43.7 % (Coury et al 2013) .

### **Snowboard : Shoulder 21%, Trunk 13%, Wrist 12%**

- ✓ wrist injuries were the most common (Ekeland and Rødven 2010)
- This tendency is similar to previously reported, except for the most

↓ **Why ?**

M ski resort is relatively narrow → velocity may be low

↓ **Therefore**

It is possible that the energy imposed on the wrist when they fell on their hand was reduced

# Future task

## ● Proposal: All guests wear a helmet

More than 70 % of skiers and snowboarders wore their helmets in foreign countries (Fenerty, L 2013)

### ⇄ In contrast

Japanese skiers and snowboarders wear helmets only 10% (JSSA) , M ski resorts 5%

➔ Snowboarders only 4%



- We should propose that skiers and snowboarders wear a helmet.
- And We should inspect prevention effect wearing helmet

# *Conclusions*

1. 7 seasons (2007-2013) data were collected at M Ski resorts
2. M ski resorts showed a higher incident rate in snowboarders compared with skiers
3. To prevent winter sports injuries, we have to clarify the nature of the injuries in each ski resort to perform accurate measures of each scenario

*Thank you for your attention*



Lake Inawashiro