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**Prevention of frailty and healthy aging:
a 10-year community intervention in Japan.**

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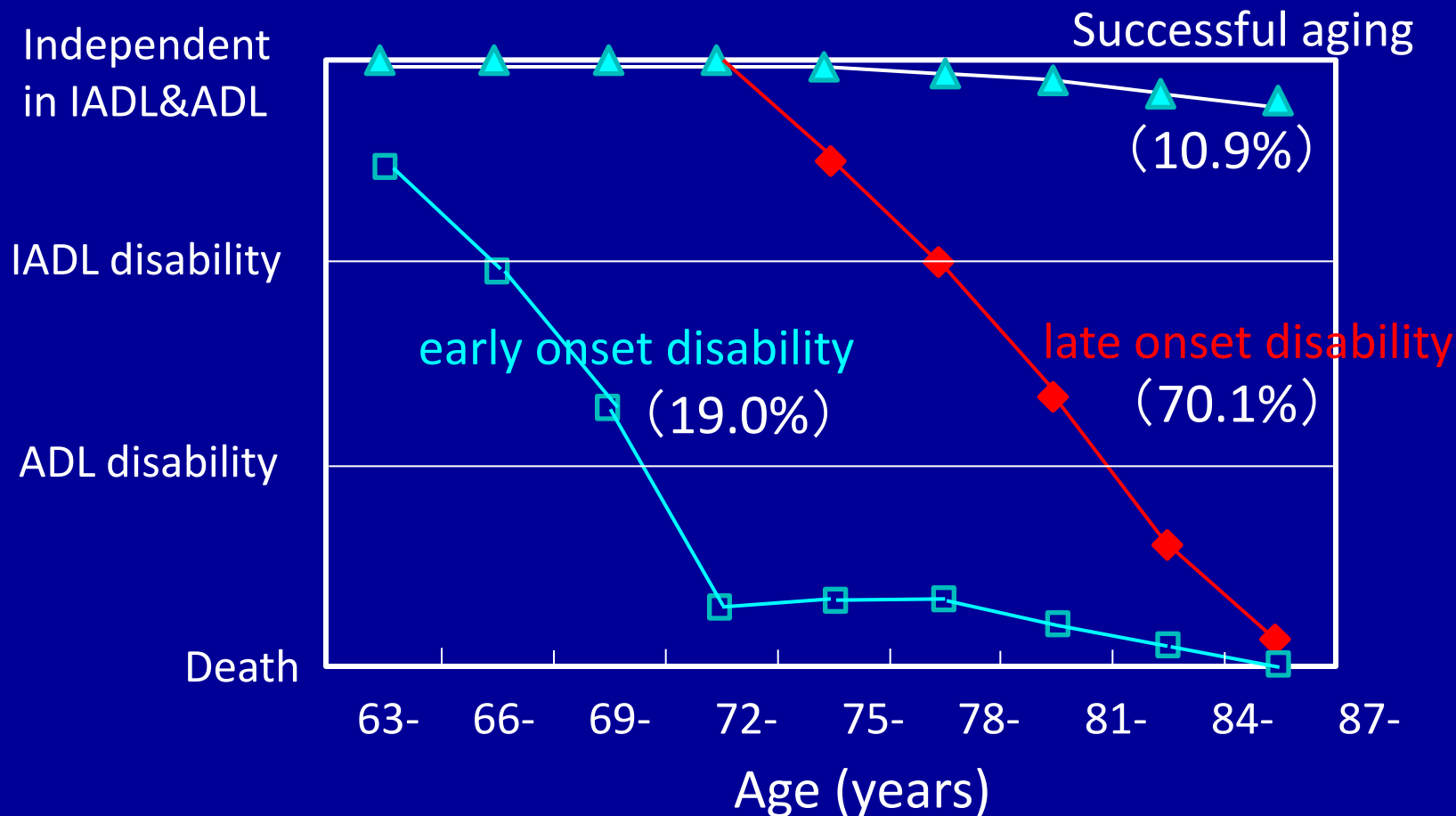
What I talk about will be:

- In Japan, the late onset disability becomes the major type of active life loss in old ages.
- For further achieving healthy aging in Japan, it is important to focus on frailty, which precedes the late onset disability.
- A comprehensive system incorporating primary to tertiary prevention of frailty is needed for tackling this issue.
- Our ten-year community intervention showed that such system was effective for assisting healthy aging in community-living older adults.

Patterns of Functional Decline in Later Life

20-year prospective study on Japanese elderly (N=5717)

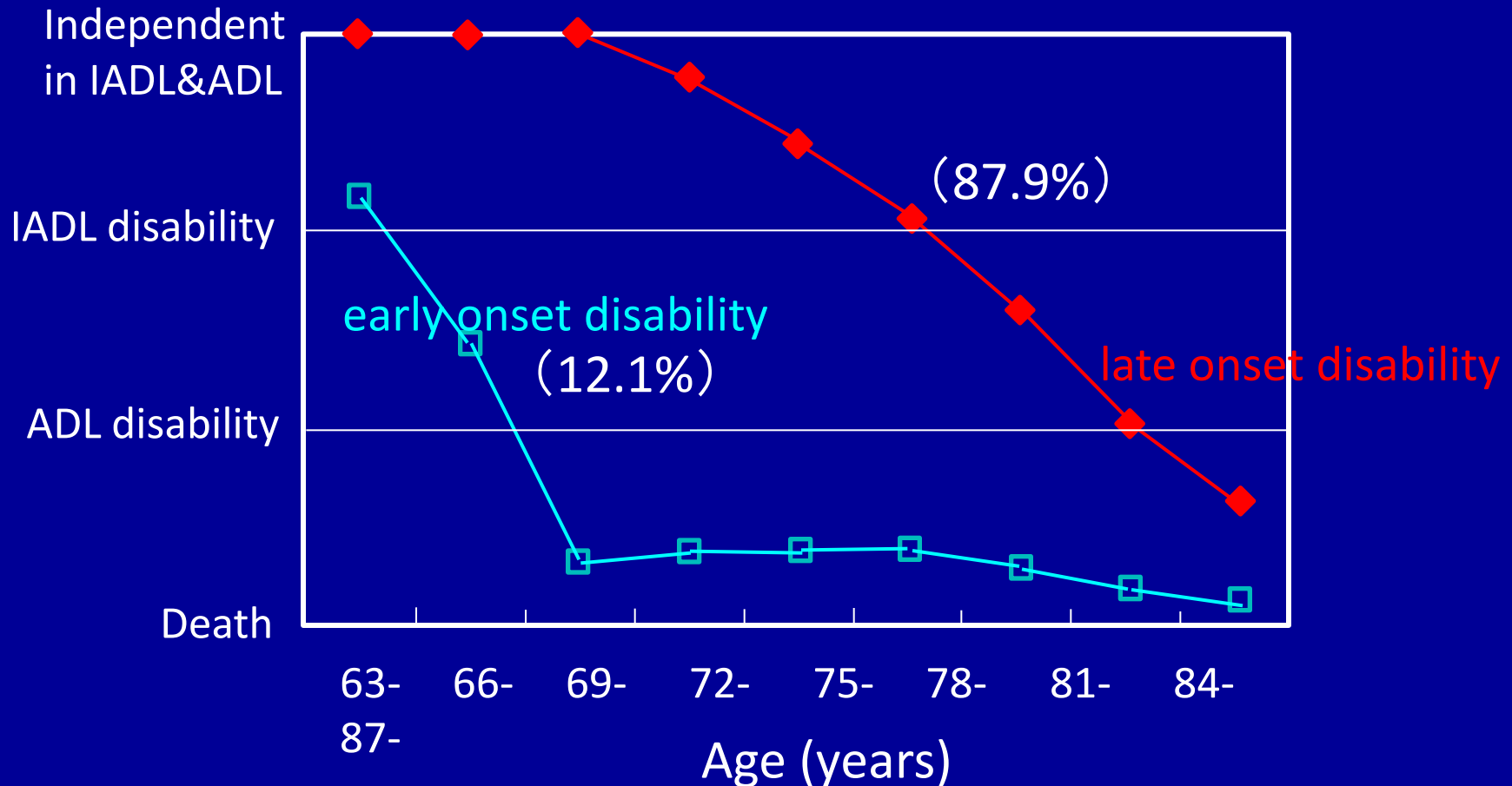
Males



Patterns of Functional Decline in Later Life

20-year prospective study on Japanese elderly (N=5717)

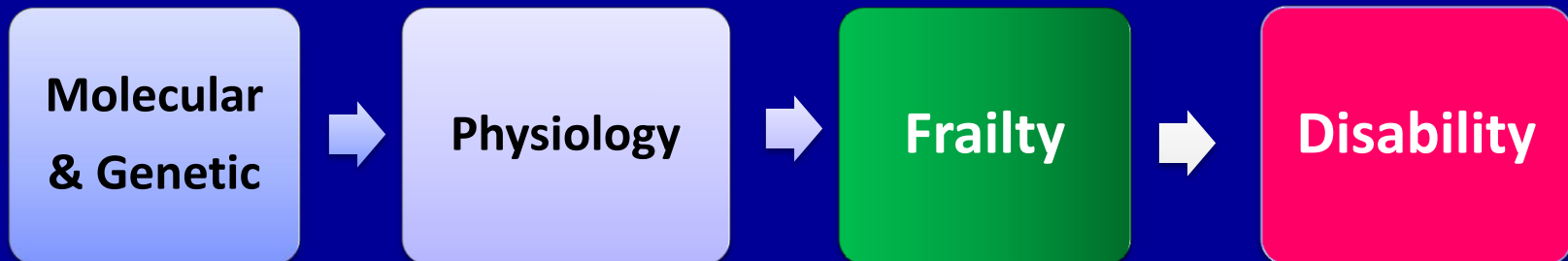
Females



'Frailty' precedes the late onset disability

What is frailty?

Frailty is an age-related syndrome of decreased reserve and resistance to stressors, resulting from cumulative declines across multiple physiologic systems and causing vulnerability to adverse outcomes (Fried et al, 2001).



A brief questionnaire for screening frailty - CL15

- 1 Do you usually stay at home all day long?
0. No 1. Yes
- 2 How often do you usually go outdoors ?
0. more than once per 2-3 days
1. less than once a week
- 3 Do you have any hobby ? **Homeboudness**
0. Yes 1. No
- 4 Do you have neighbors who you can talk friendly ?
0. Yes 1. No
- 5 Do you have close friends, families, or relatives you go to meet ?
0. Yes 1. No
- 6 Do you have an experience of falling in the last year ?
0. No 1. Yes
- 7 Can you walk continuously over 1 km ?
0. Able to do without any difficulty
1. No, or able to do but with difficulty

- 8 Can you see things clearly ? (visual impairment)
0. Yes 1. No (have problems)
- 9 Do you often slip or stumble at home ?
0. No 1. Yes **Falling**
- 10 Do you ever refrain from going outdoors because of fear of falling ?
0. No 1. Yes
- 11 Have you been hospitalized in the last year ?
0. No 1. Yes

- 12 Do you have appetite these days?
0. Yes 1. No **Lower nutrition**
- 13 Do you have any difficulty in chewing ?
0. have almost no difficulty 1. have difficulty
- 14 Did you lose weight of ≥ 3 kg in the last 6 months ?
0. No 1. Yes
- 15 Do you feel that you have lost body muscle and/or fat during the last 6 months ?
0. No 1. Yes

0 or 1 score for each item. 1 point is given to answer which indicates “having a risk ” e.g., have difficulty, low ability, have no friend. Each point of the 15 items is summed up to produce a composite score with a range of 0-15.

(Shinkai S et al. Jpn J Public Health 2010; 57: 345-354)

Predictive validity of CL15

Table Relative risk of CL ≥ 4 compared with CL ≤ 3

Outcome	Crude RR	Adjusted RR*
ADL disability		
2 years later	7.58 (4.20-13.7)	4.82 (2.54-9.15)
4 years later	4.97 (2.77-8.95)	3.07 (1.59-5.94)
LTCI service use	6.15 (4.39-8.63)	3.37 (2.31-4.91)
Death	3.73 (2.70-5.16)	2.40 (1.67-3.43)

*Adjusted for age, sex, and comorbidity

(Shinkai S et al. Jpn J Public Health 2013;60:262-274)

Independent predictors for developing frailty

Muscle

Mass (less), Strength (less)  Sarcopenia

Nutrition

Hb (low), Alb (low)  Lower nutrition

Vascular health

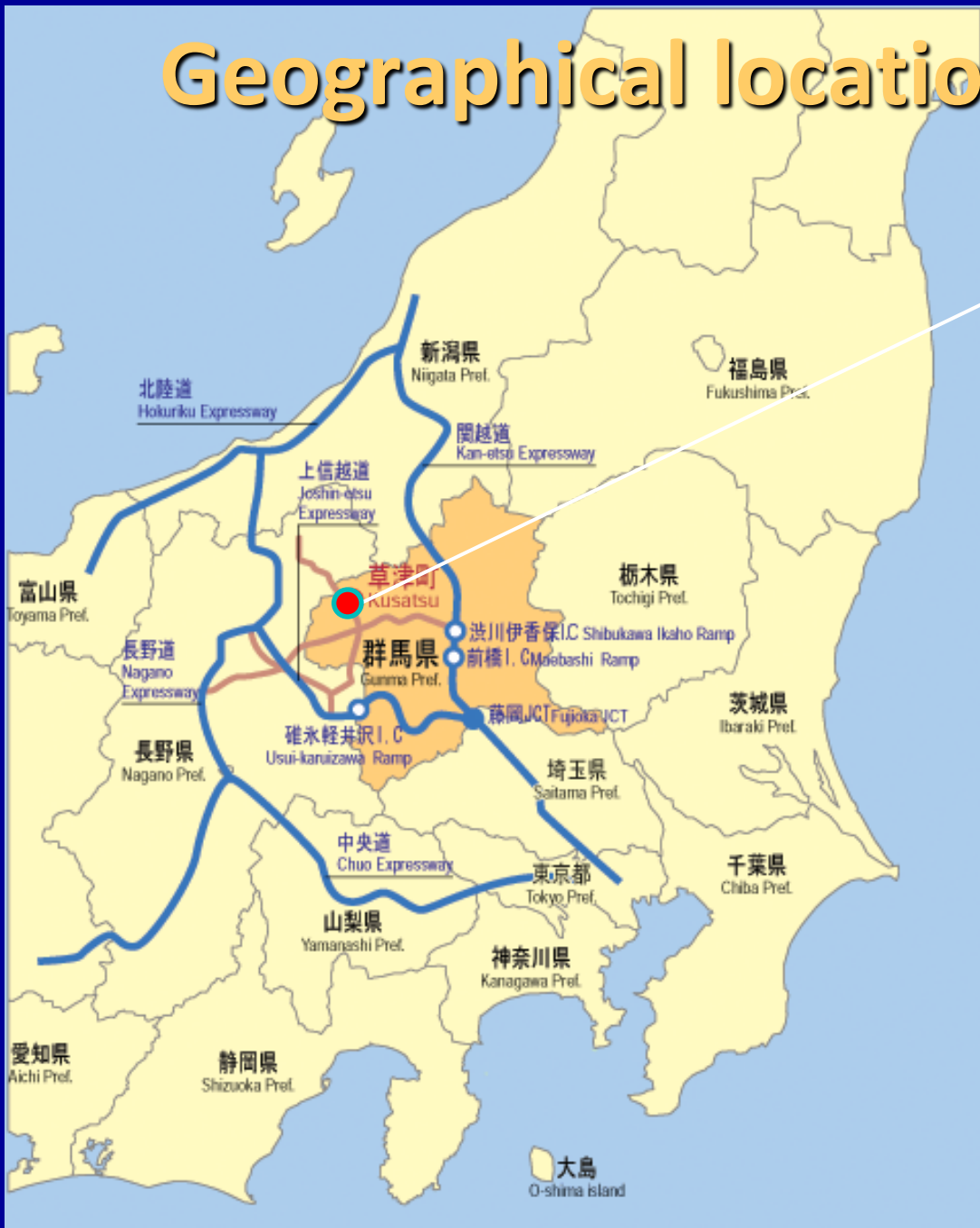
ABI (low), baPWV (high),
History of HT (+)  Subclinical
vascular
disease

Background and Purpose

To date there has been no study on community-based intervention for healthy aging.

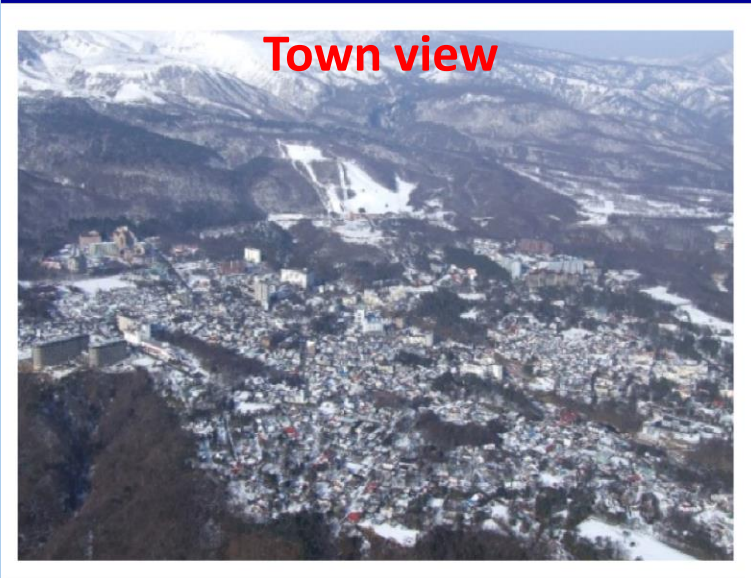
We have conducted a 10-year community intervention focusing on delaying the onset of frailty in later life, and examined its impact upon healthy aging.

Geographical location of study site



Kusatsu Town,
Gunma Prefecture

Population, 7,200
(≥65 y, 29.4%)
Main industry, hot spa
& resort



Strategy for frailty prevention

1. A tight collaboration with public health sector at local government

Public health sector at local government
Senior clubs, NPO, Health volunteers,
Other stake holders

→ formed a community forum
to discuss how to tackle
frailty issue in community



2. Primary prevention of frailty

Health promotion activities were focused on improvement of physical activity, nutrition and social participation of older residents.

Health education



Group activities



3. Secondary prevention of frailty

We introduced the comprehensive geriatric assessment to the routine health check-ups, through which high-risk persons were screened, and encouraged to participate in long-term care prevention class.



Walking speed test



Vascular health (baPWV, ABI) measurement

4. Tertiary prevention of frailty

Long-term care prevention classes

Strength exercise



Nutritional education



Learn your community



In memory of their participation,



Enjoy lunch!



10-year community-based intervention in Kusatsu

Process evaluation.

For outcome evaluation,

we conducted biannual health monitoring surveys over the period, and analyzed the data which was recorded in the Long-Term Care Insurance System during 2001 through present.

Result

Process evaluation

- The municipal staffs shared the common goal with us and have performed routine works from the aspect of healthy aging.

Result

Process evaluation

- Although the participation rate to annual health check-ups has remained at 30-40%, over 80% of the target population participated at least once during the 10 years.
- The response rate to the biannual monitoring survey has been very high (over 90%) over the period.

Result

Process evaluation

- Many residents joined the surveys as interviewers, through which they recognized the issue of aged community.
- Even after the end of long-term care prevention class, many participants continued such group activities by themselves.

Summary of process evaluation

- The municipal staffs and we could share the strategy for frailty prevention.
- Older residents became accustomed to the concept of healthy aging and improved their self-care ability.

Outcome evaluation

- **Impact of geriatric health check-ups on subsequent mortality and disability**
- Impact of community intervention on functional health of older residents
- Impact of community intervention on Long-Term Care Insurance data

Component of geriatric health check-ups

Routine test items

+

CGA

ADL / IADL

Physical
Performance

Comprehensive
Geriatric
Assessment
(CGA)

Nutritional
Function






Social
Function

Psychological?
Cognitive
Function



Kusatsu geriatric health check-ups in 2012



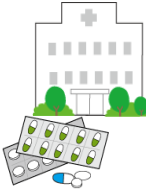
District: ●● Name ●● Male / 85 years old

1. Indications of Aging			判定	総合判定
① Nutritional Function (◎: High, ○: Middle, △: Low)				
	BMI	25.2 kg/m ²	◎	Excellent
	Total cholesterol	175 mg/dl	◎	
	Albumin	4.4 g/dl	○	
	Hemoglobin	13.8 g/dl	◎	
② Physical Performance (◎: 高い, ○: 中程度, △: 低い)				
	Hand Grip Strength	26.0 kg	△	Good
	Usual Walking Speed	83.0 m/min	○	
	Standing Balance	60.0 sec	◎	
③ Psychological / Cognitive Function (◎: 良い, ○: やや心配, △: 心配)				
	Depressive Mode	2 /15point	◎	/
	Forgetfulness	28 /30point	◎	
④ Social Function (◎: 高い, ○: 中程度, △: 低い)				
	Instrumental Self-maintenance	5 /5 point	◎	Excellent
	Intellectual Activity	4 /4 point	◎	
	Social Role	4 /4 point	◎	
Homeboundness			○	/
⑤ Risk of Long-Term Care Need (◎: absence, △: presence)				
	Frailty	5 /20point	◎	/
	Motor Function	4 /5 point	◎	
	Nutritional Improvement	4 /2 point	◎	
	Oral Function	5 /3 point	◎	

Number : 1002

2. Factors that Affect Aging

判定

① Blood Pressure Puls (◎: normal, ○: border, △: hypertension)			
	Blood Pressure	139 / 86 mmHg	△
	Puls	75 beat/min	/
② Blood Test (◎: 良好, ○: まあ良好, △: やや心配)			
	HbA1c (glucose metabolism)	5.5 %	◎
	Creatinine (Kidney Function)	0.84 mg/dl	○
	estGFR (Kidney Function)	70.0 ml/min/	/
③ Body Composition (◎: 高い, ○: 中程度, △: 低い)			
Muscle mass	23.1 kg	△	
Percentage of Skeletal Muscle Mass	39.3 %		
④ Medical History (✓: presence)			
	Hypertension		✓
	Strok		/
	Heart Disease		/
	Diabetes mellitus		/
	Arthritic disorder		✓
⑤ Arteriosclerosis (◎: 良好, ○: ふつう, △: 心配)			
P WV (blood vessel elasticity)	right: 1721 left: 1835	△	
A BI (血管の詰まり)	right: 1.1 left: 1.1	◎	
⑥ Oral Function (◎: 良好, ○: ふつう, △: 心配)			
Swallowing		○	
Chewing	聞き取り (主観)		○
	Gum Chewing Test	3 /5point	/

Number : 1002

A meeting to inform individuals of results from geriatric health check-ups



Result

Outcome evaluation

- Impact of geriatric health check-ups on

Participants vs. Non-Participants

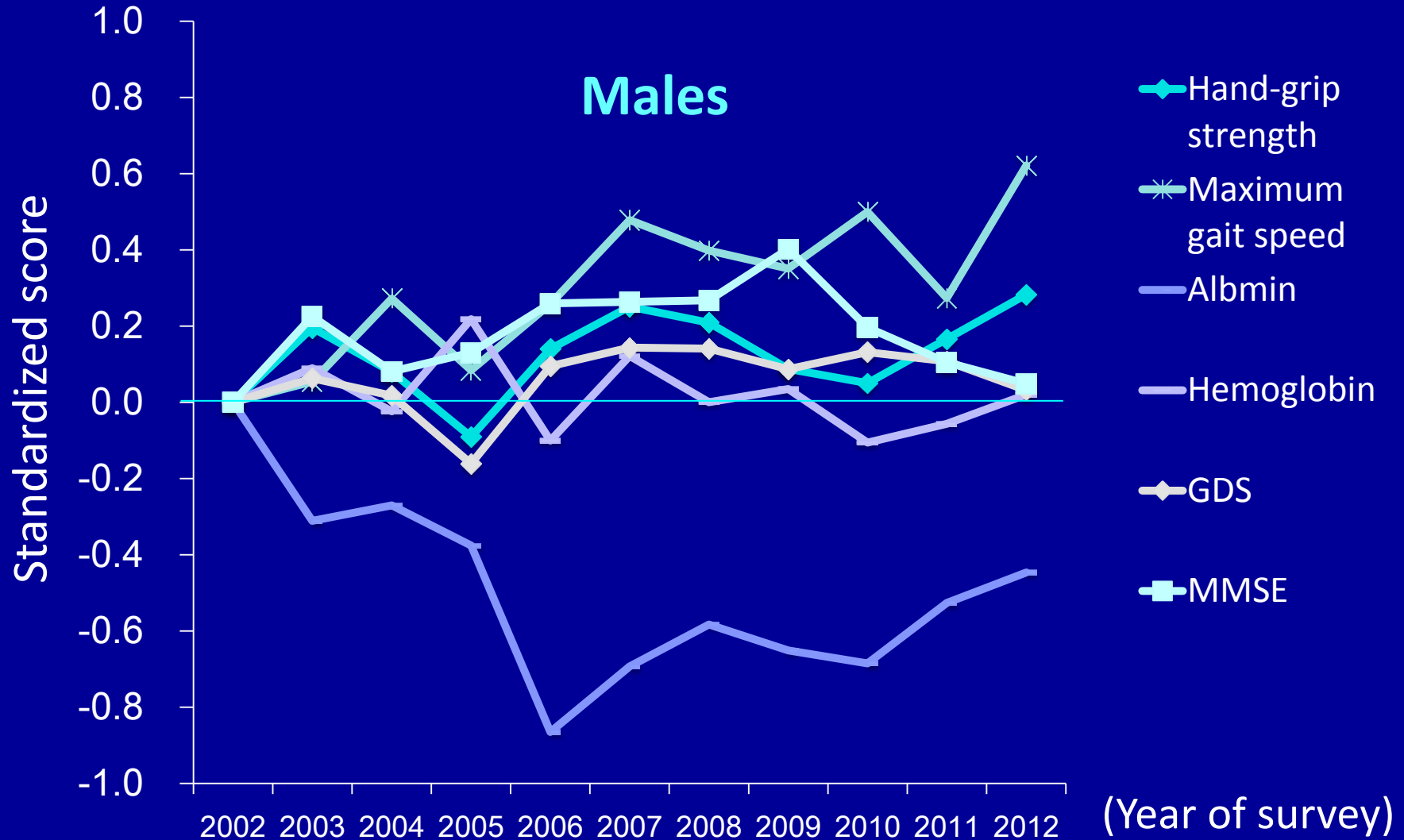
mortality ↓ (significant)

disability ↓ (marginally significant)

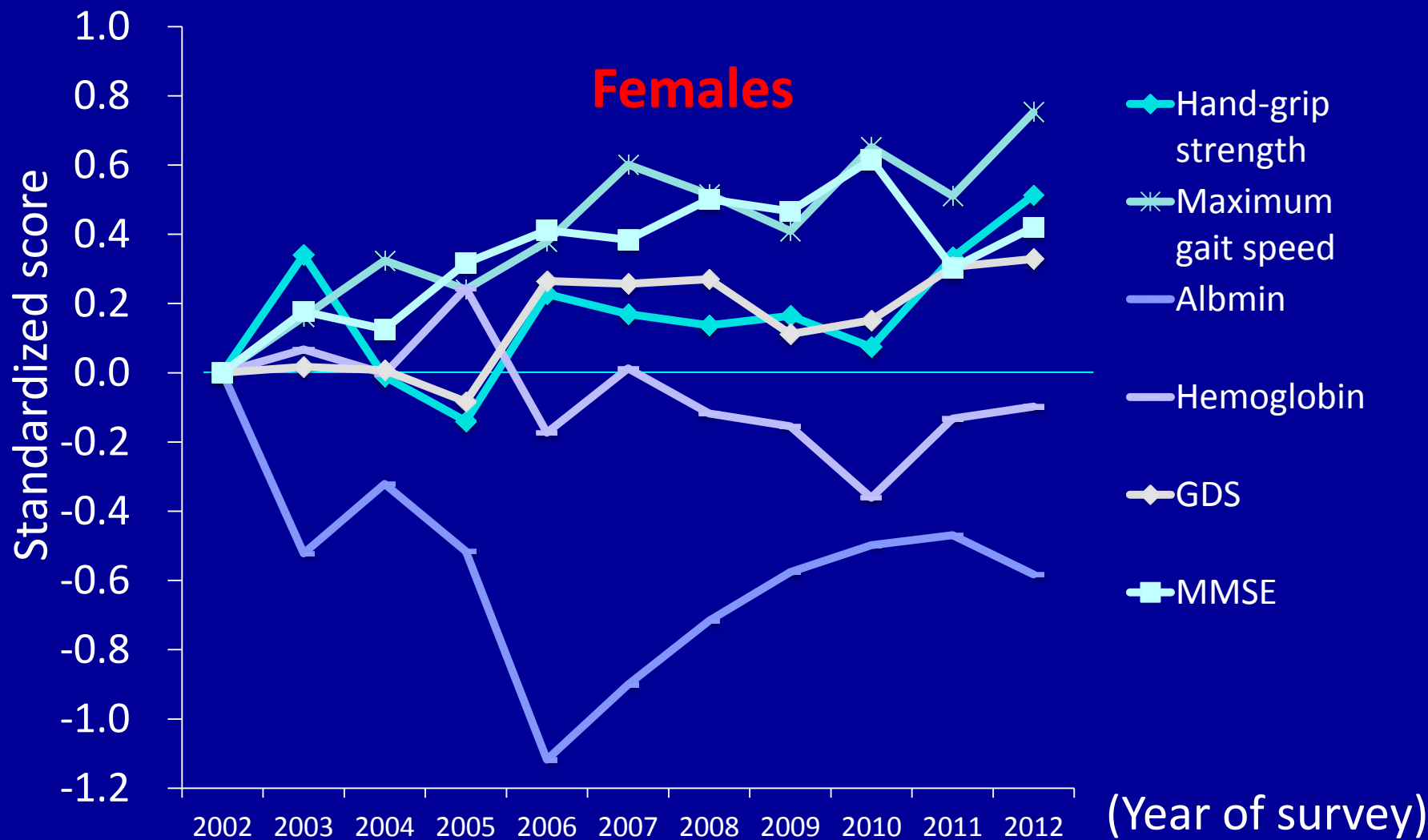
Outcome evaluation

- Impact of geriatric health check-ups on mortality and disability
- **Impact of community intervention on functional health of older adults**
- Impact of community intervention on Long-Term Care Insurance data

Changes in standardized score of physical, nutritional, psychological functions over time among participants to health check-ups

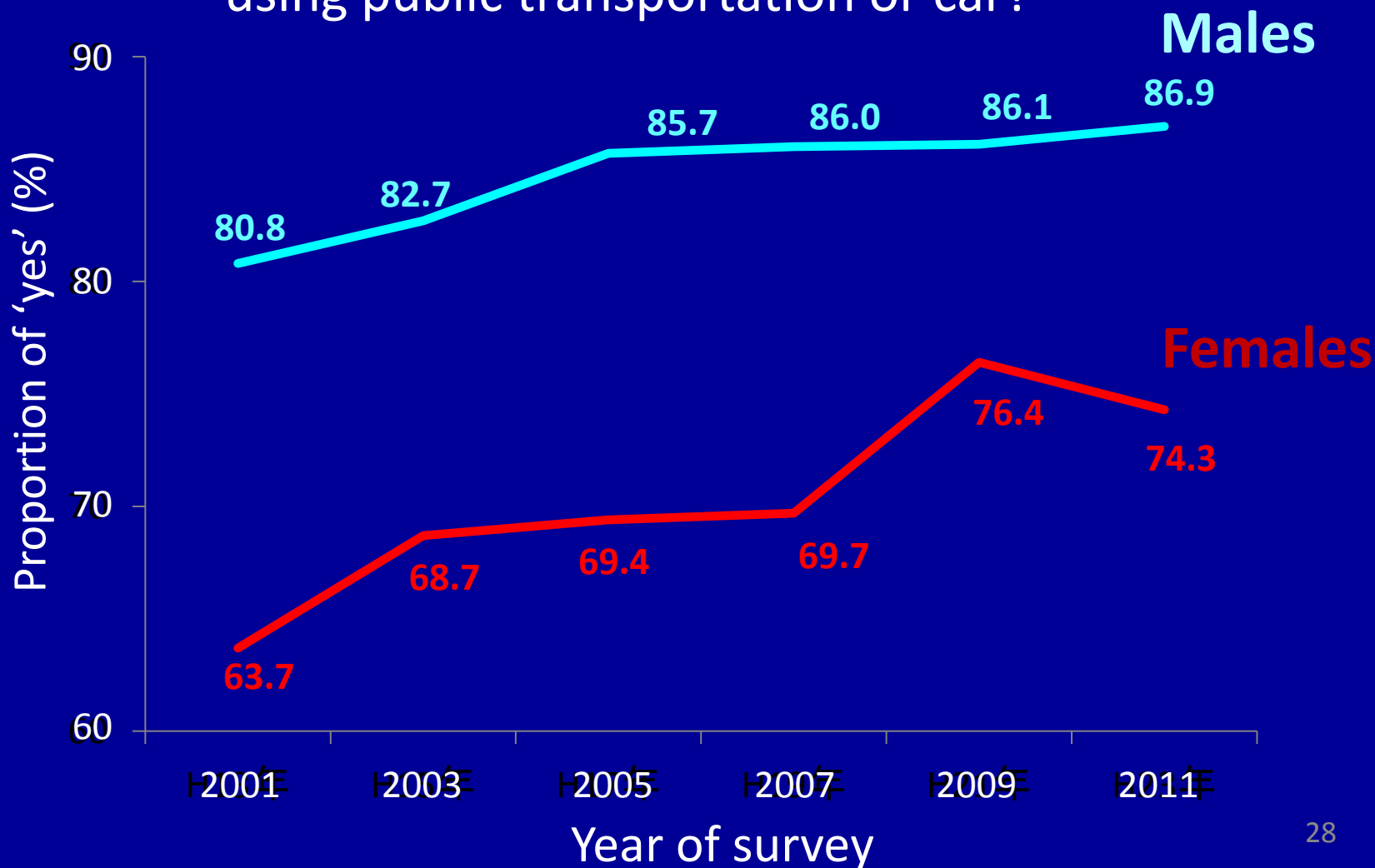


Changes in standardized score of physical, nutritional, psychological functions over time among participants to health check-ups



Changes in life space over time among all older residents

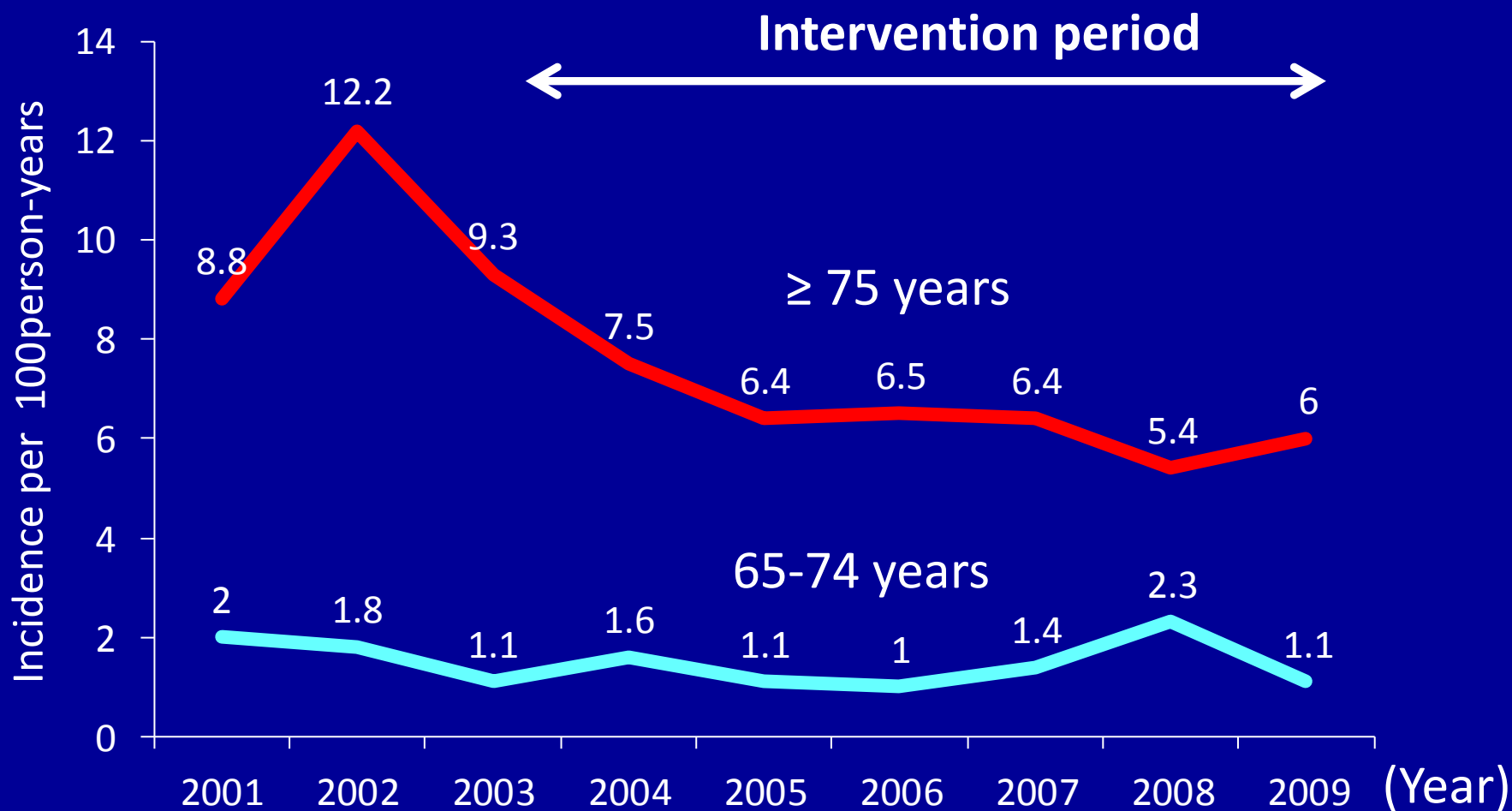
“Can you go outside of town by yourself using public transportation or car?”



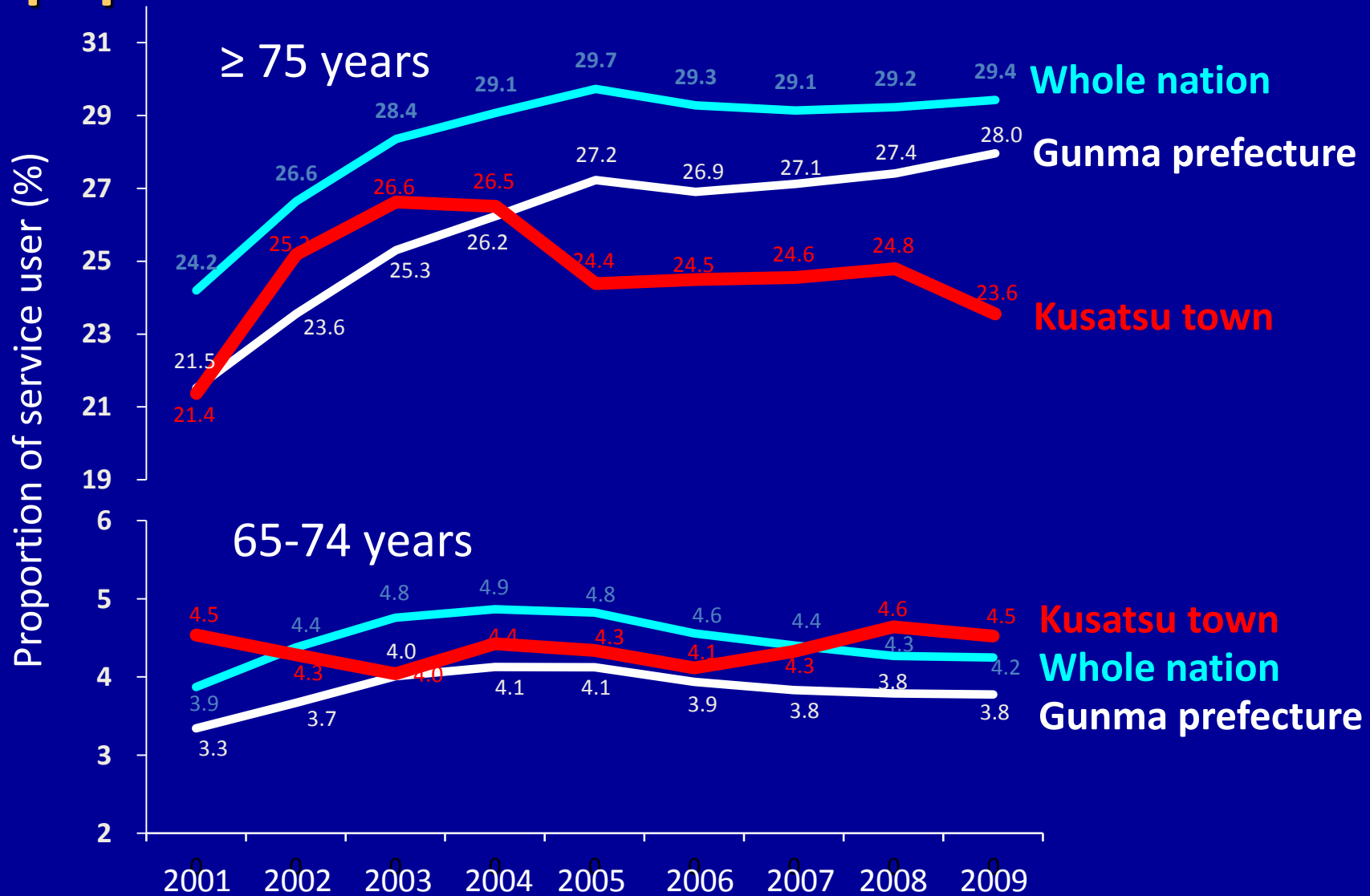
Outcome evaluation

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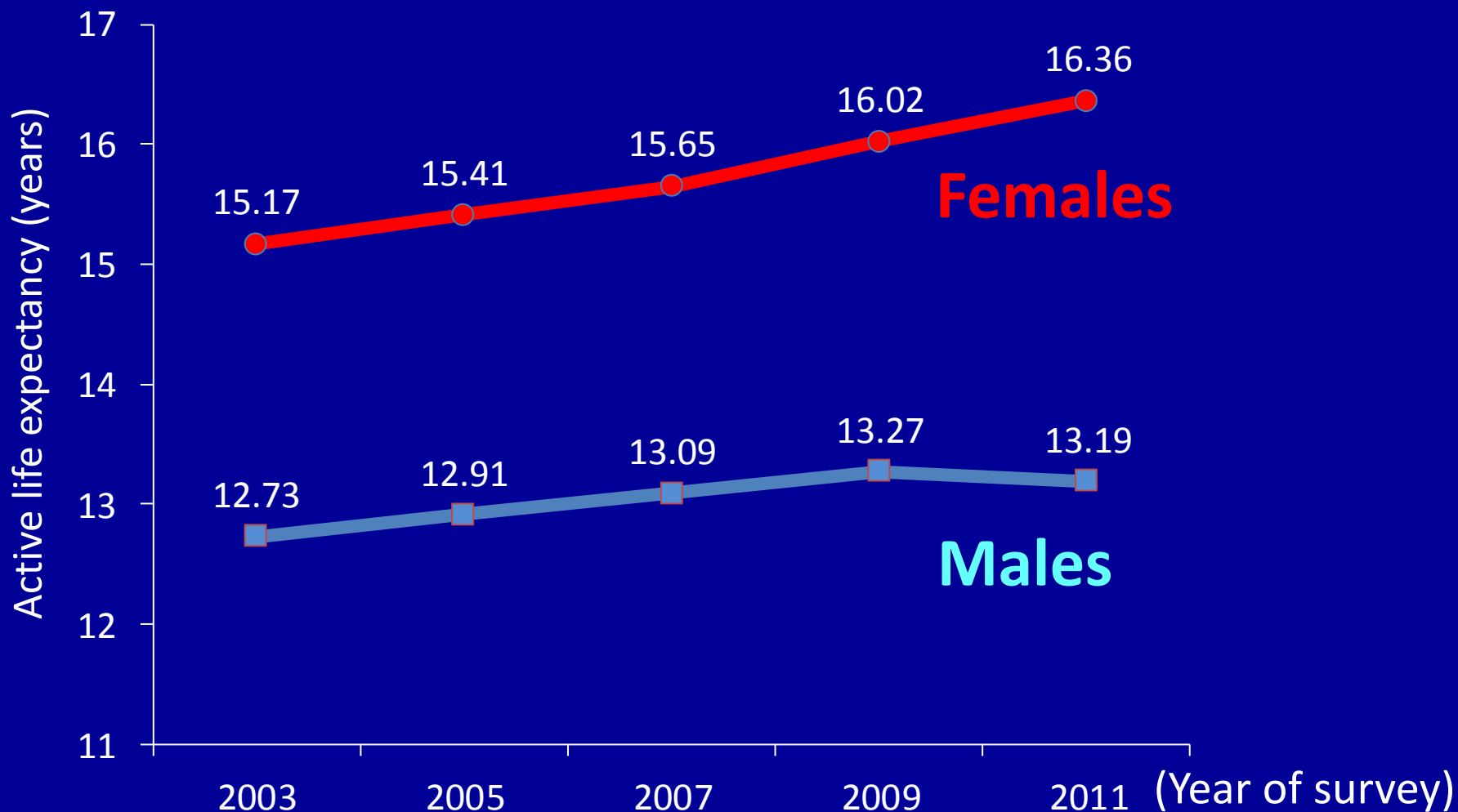
Changes in incidence rate of disability over time certified under the LTCI program among older adults



Changes in the proportions of service users over time under the LTCI program in older populations



Changes in active life expectancy at 70 years of age over time in Kusatsu



(Shinkai S et al. Jpn J Public Health 2013;60:596-605)

Summary of outcome evaluation

- The 10-year community intervention in Kusatsu successfully improved the functional health of older adults.
- Annual incidence rate of disability certified under the LTCl program significantly decreased over time in old-old population.
- Active life expectancy at the age of 70 was extended greatly, especially in women.

Implication of this intervention

- Public health approach is effective for preventing frailty in a community.
- Both high-risk and population approaches should be respected.
- Health professionals in local government should play a key role in frailty prevention in a community.
- “Think globally, act locally.”

Direction of Health Promotion for the Elderly in “Healthy Japan 21 (secondary), 2013”

