Examining the effect of 2005 reform on certification process and self-assessed health

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- Overview of Long-term care Insurance
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Preceding Study

- Factors related to feelings of burden among caregivers looking after impaired elderly in Japan under the Long-Term Care insurance system: Arai, et al. , 2004
- Factors that allow elderly individuals to stay at home with their families using the Japanese long-term care insurance system: Oyama, et al., 2013
- Exploring strategies to alleviate caregiver burden: Effects of the National Long-Term Care insurance scheme in Japan: Arai and Zarit, 2011
- The burden felt by family caregivrs of frail elderly before and after the introduction of public long-term care insurance system in Keichiku District, Fukuoka Prefecture, Kuwahara, et al., 2001
- A review and future tasks from the researches of factors which affect the care-taking strain, Yonehara et al., 2004
- Factors affecting the sense of caregiver burden- from the perspective of ADL, Nishii, et al., 2011
- Caregiver burden mediates between caregiver's mental health condition and elder's behavioral problems among Japanese family caregivers, Honda, et al., 2014
- What's needed in at-home services? – an analysis of family care burden, Kishida and Tanigaki, 2007
- Caregiver burden related factors of caregivers of frail elderly persons for commuting to rehabilitation institutions , Yasuda and Murata, 2011
- Revision of Long-term Care Needs Certification System :Introduction of Preventive Care Concept, Nishimura and Kawauchi 2006

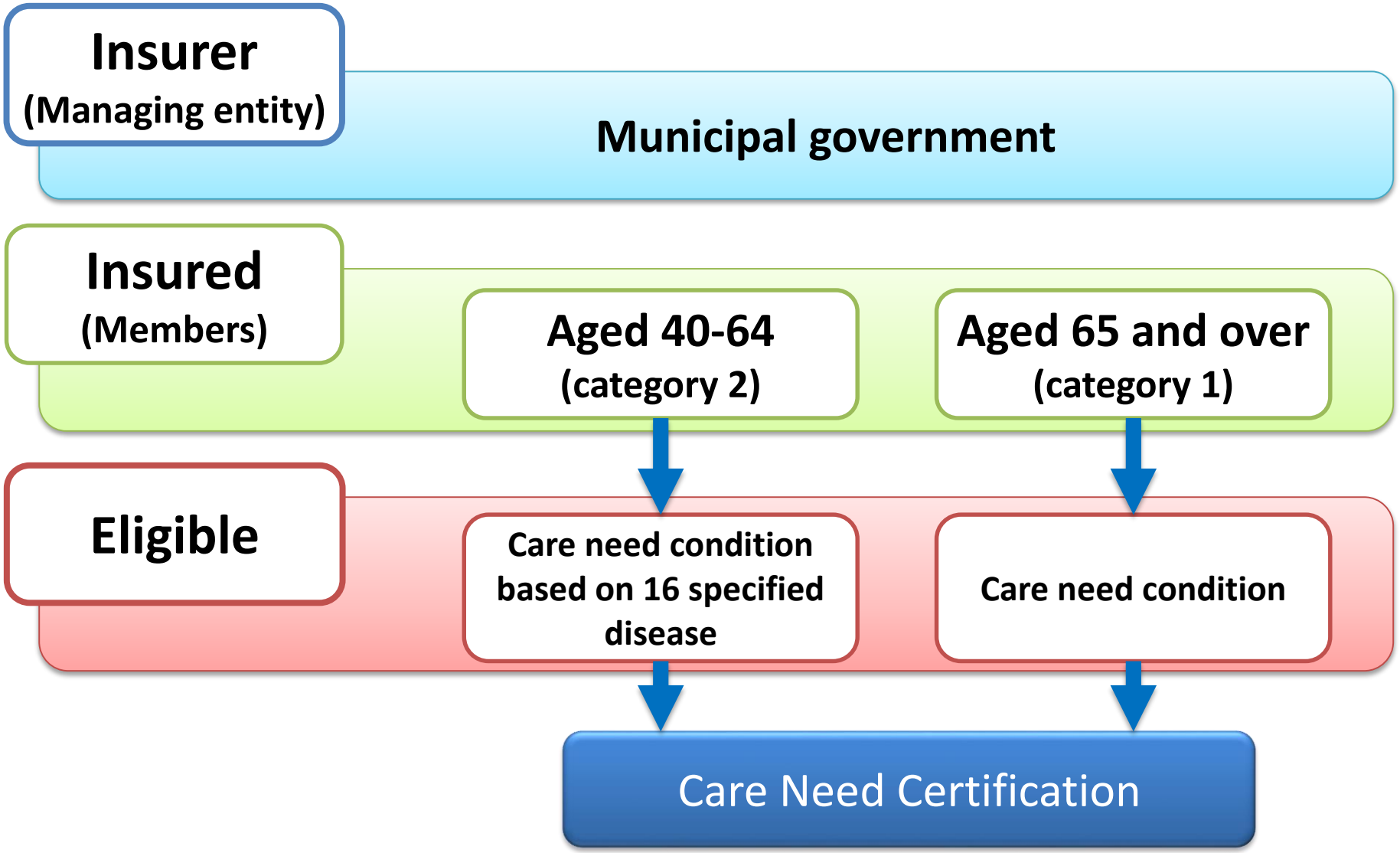
Limitations of Preceding Study

- Small sample size
  - relatively small sample: less than 100
- Low coverage rate
  - limited to certain area: one district, municipal,
- Not random sample
  - Select certain person
- Inconsistent Results
- One time survey
  - Unable to assess policy effect
- Only focus on main caregivers
  - Do not consider other family members

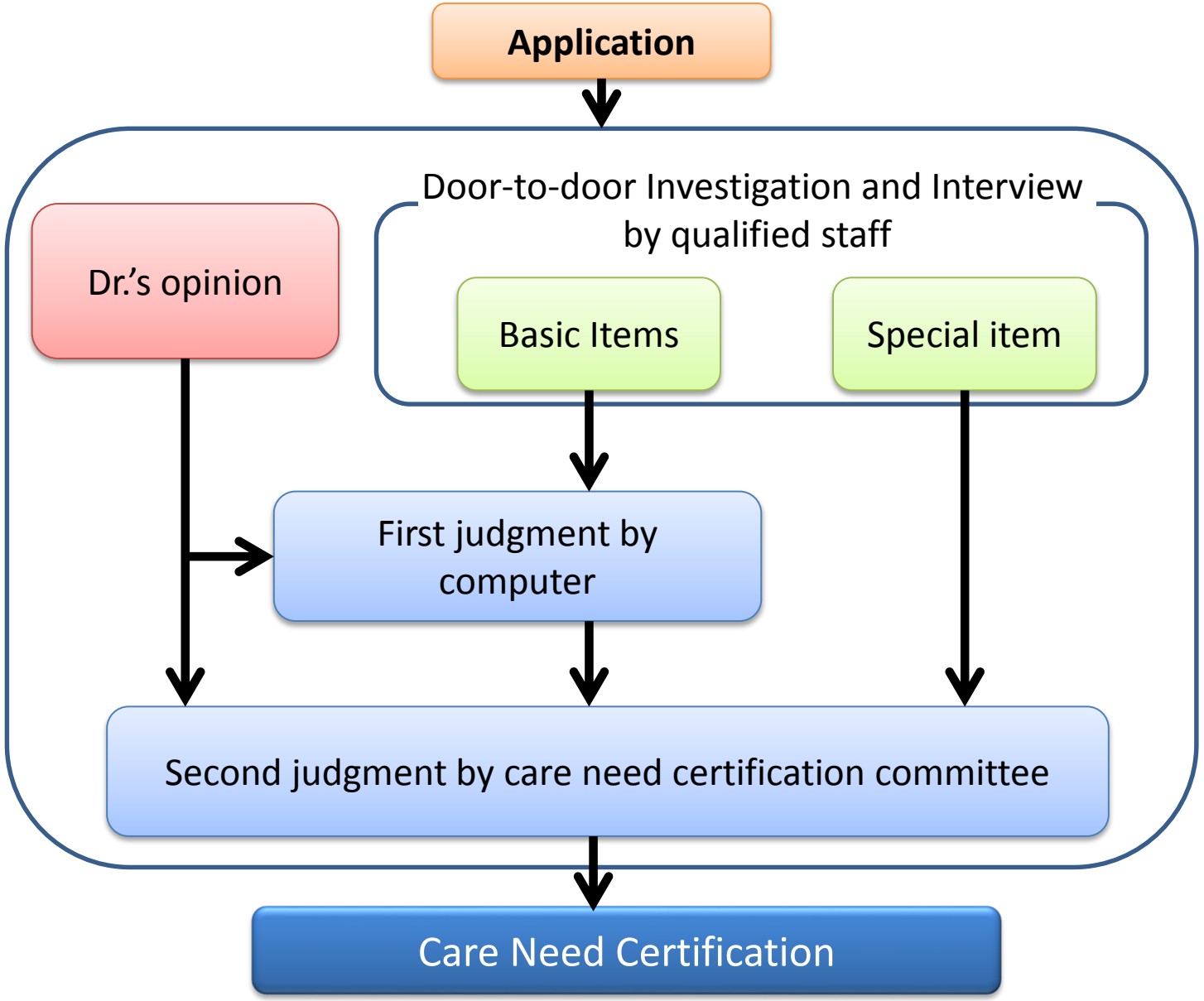
Objectives

- To find out how much policy change affect the probability of obtaining certification
- To analyze policy change impact on self-assessed health
  - Use nationally representative data: “Comprehensive survey of living conditions” (=Life survey)
  - Focus on changes in care need certification level and procedure (Big changes in 2005)
  - To cover both main caregiver and other family members

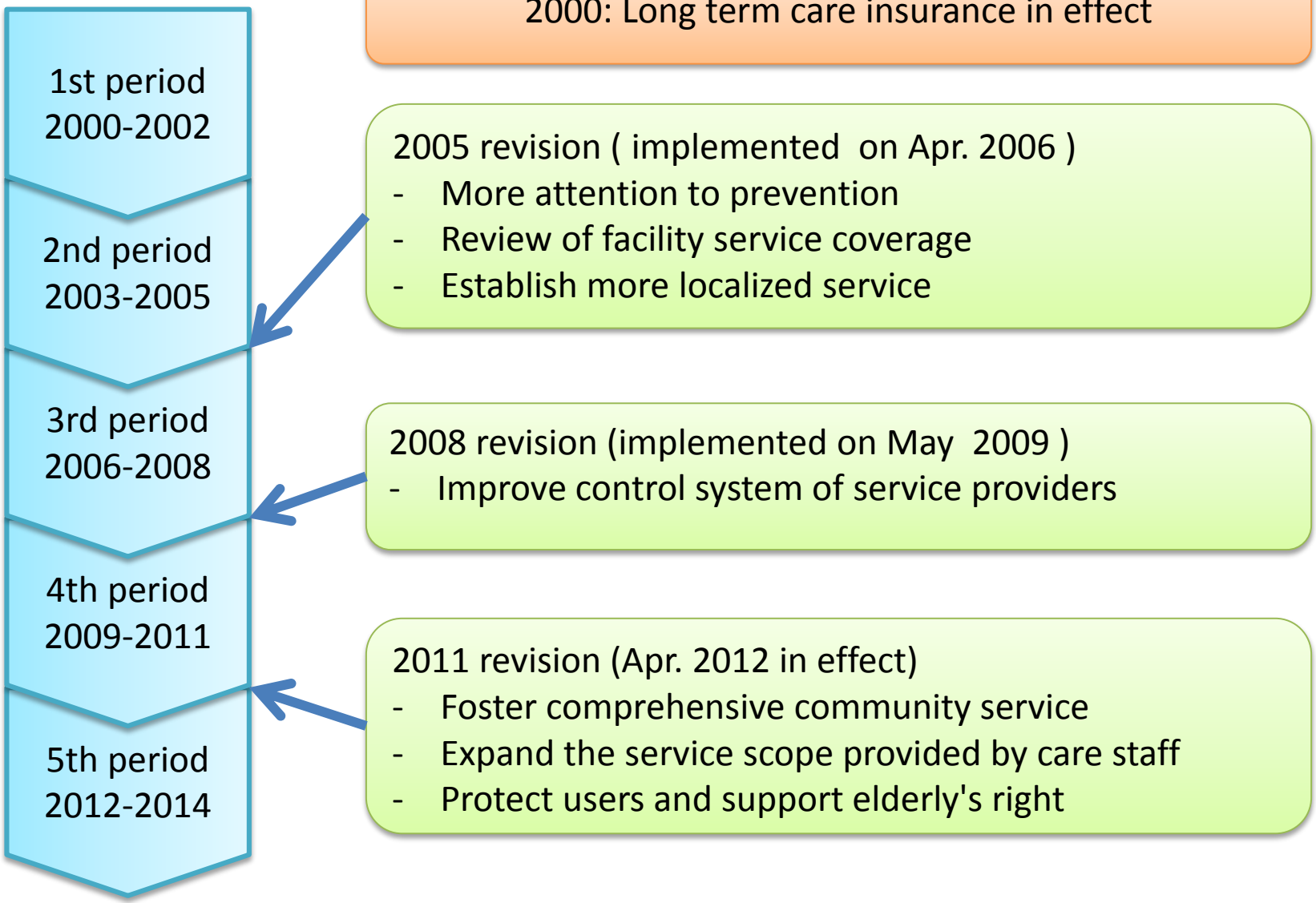
Structure of LTC insurance



Care need Certification process



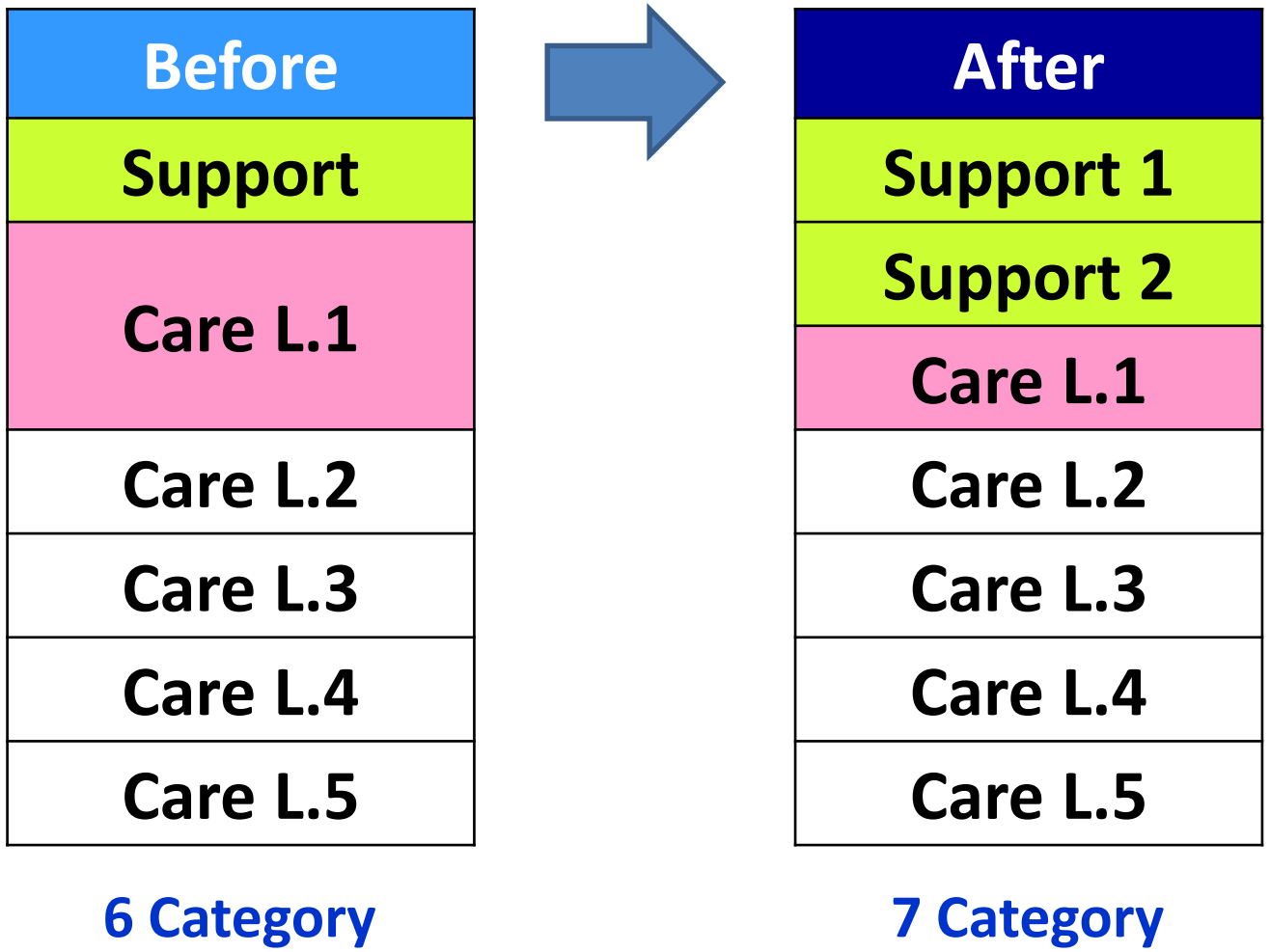
Reform of LTC



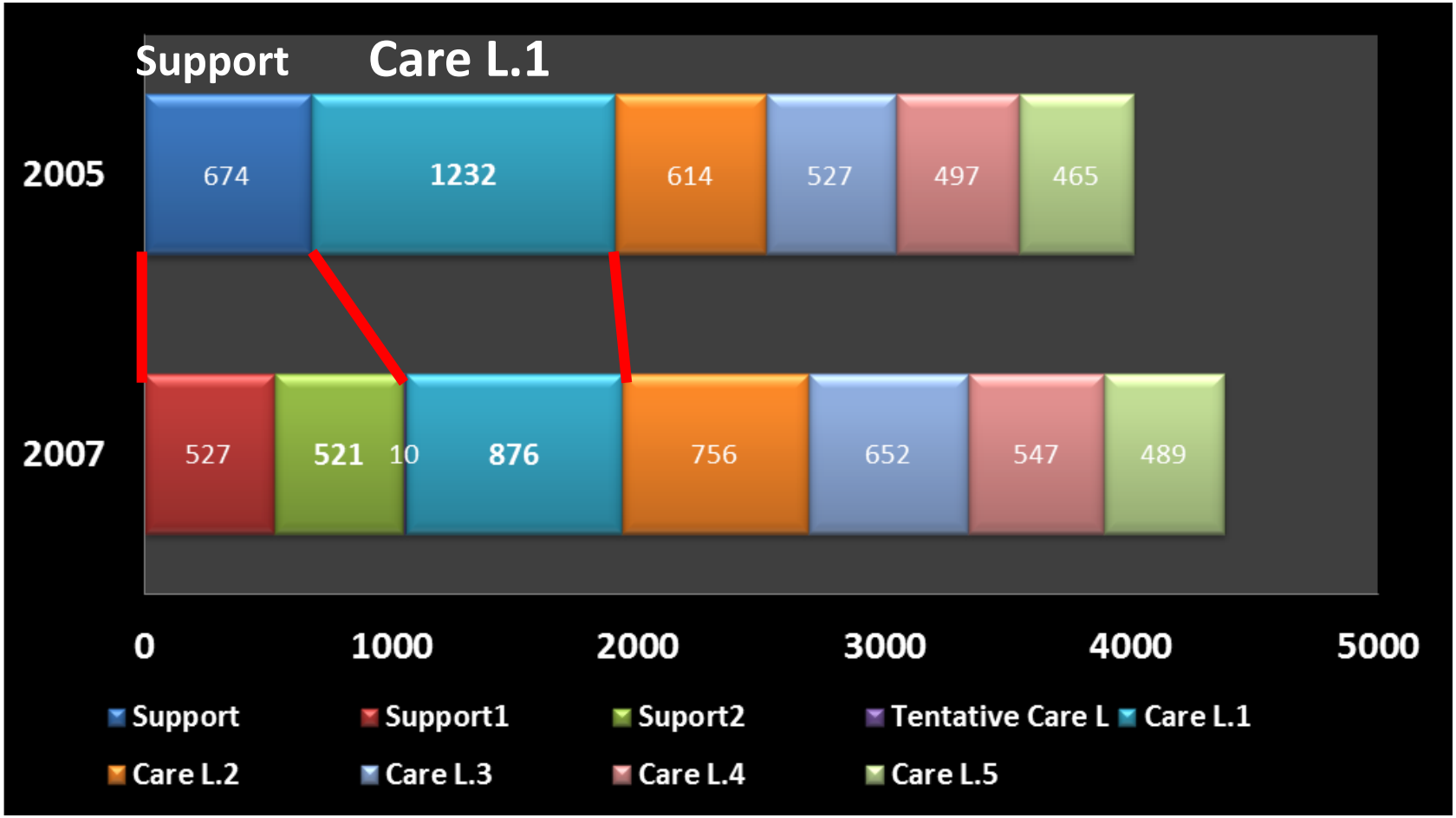
Reform in 2005 (implemented in 2006)

- Pay more attention to prevention
  - to reduce number of people who enter care or become severe
- Establish new service system
  - to provide more localized service
- Review facility service
  - to improve fairness between home-base and facility services.
- Improve quality of service
- Review premium, management of system
  - to review monthly premium
  - **to change category of care need certification (level)**
  - **to improve care need certification process for those who have dementia**

Changes In Care Need Level Category



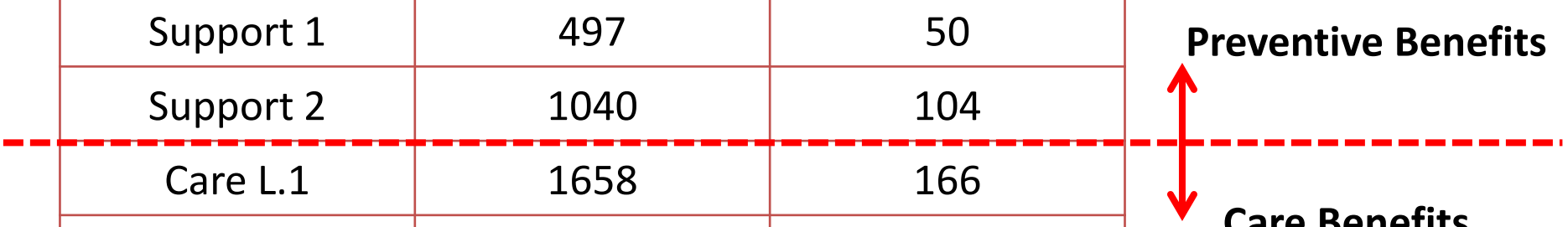
Changes In Care Need Level Category



Support and Care Category's differences

USD (1$=100JPY)

Category	Maximum coverage	10% copayment
Support 1	497	50
Support 2	1040	104
Care L.1	1658	166
Care L.2	1948	195
Care L.3	2675	268
Care L.4	3060	306
Care L.5	3583	358

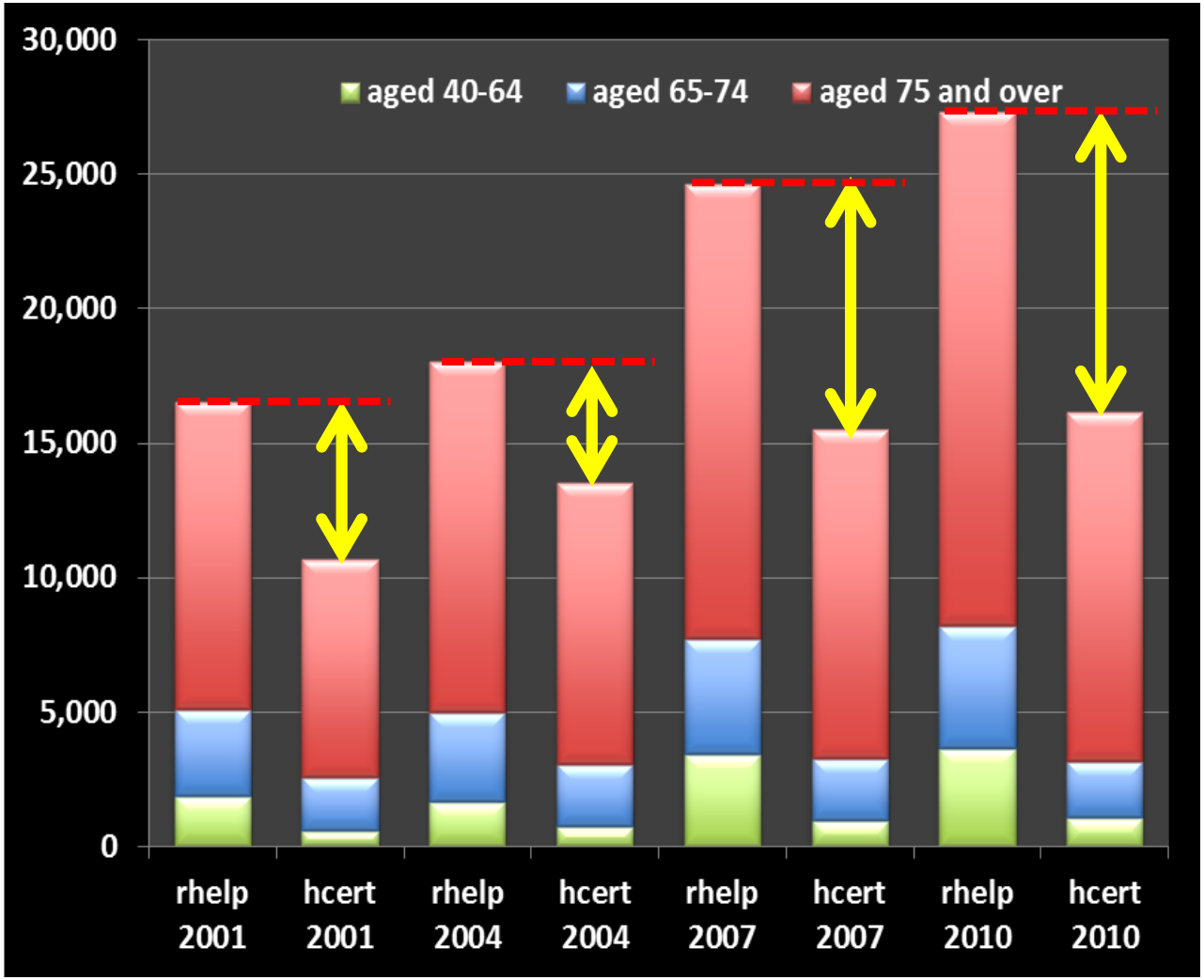


The Effect of 2005 Reform on Family living with care need people

- At the usage;
  - The kind of services are restricted
  - The amount of services are restricted
- Premium are increased
- Out of pocket payment of facility service are increased

The increase in financial, physical, mental burden of family

The trend of certification rate



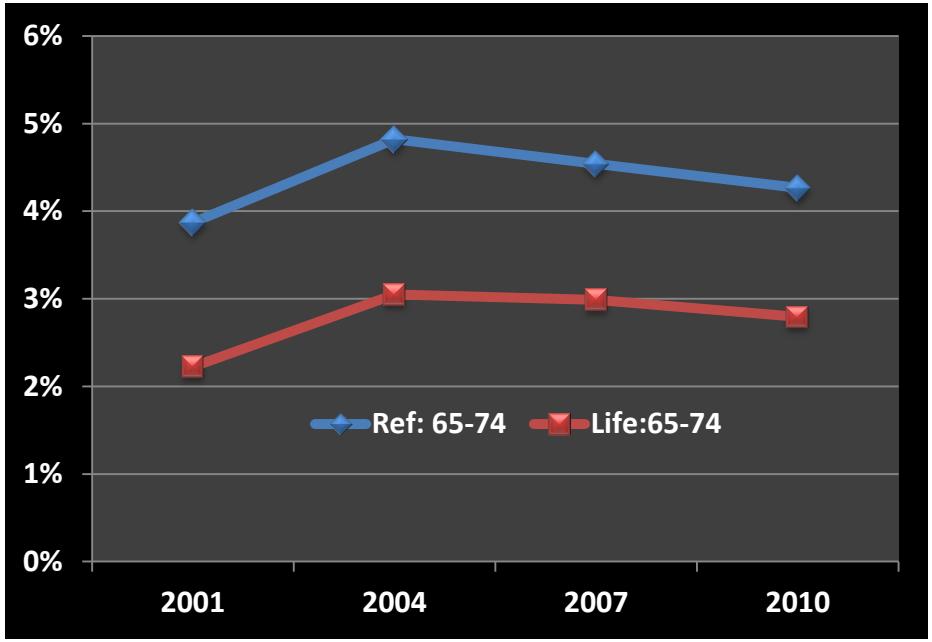
Overview of Data

- Survey Name : Comprehensive Survey of Living Conditions **(Life survey)**
- Conducted by: Ministry of Health, Labour and Welfare since 1986
- Aims: to obtain basic data about living conditions such as health, medical care, welfare, pension, income for policy administration.
- Data collection: stratified random sampling
- Size: 0.29 mil. households and 0.76 mil. members
- Frequency: large scale survey > every 3 years, small scale survey> interim year of Large-scale survey year.
- Questionnaire: household, health, long-term care, income and savings

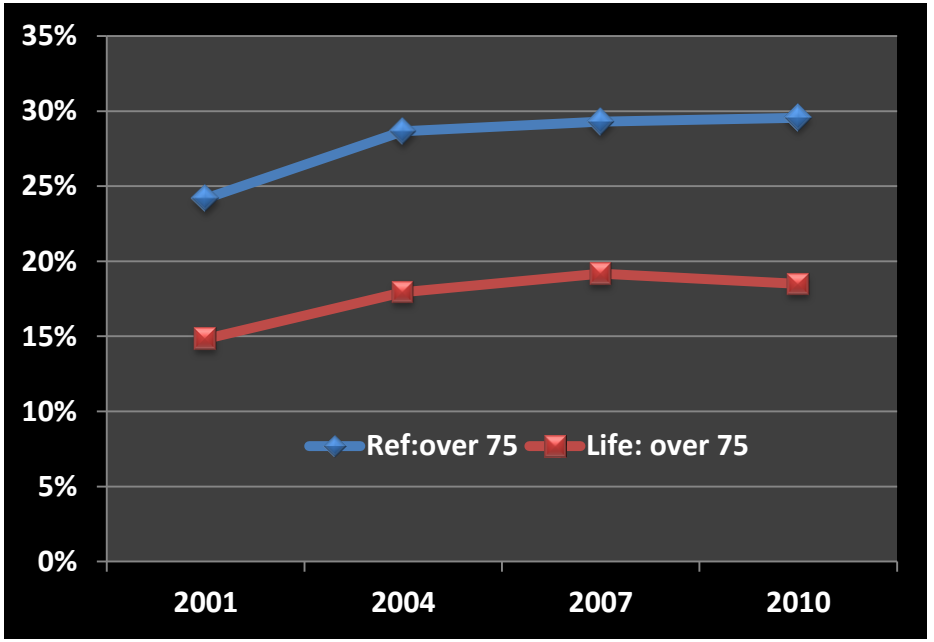
Need to check representativeness of data with reference to monthly and annual report of long term care insurance which are based on claims data

Check Representativeness: rate of certification by age group

Aged 65-74

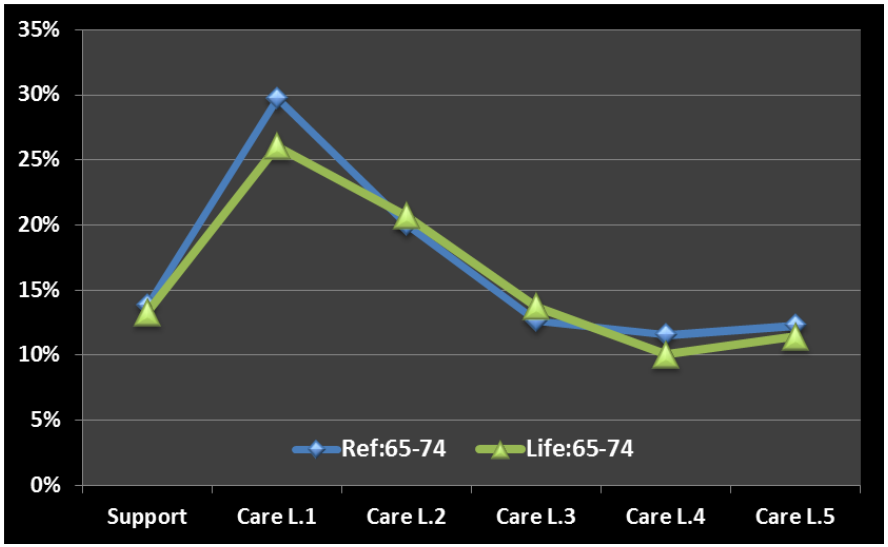


Aged 75 and over

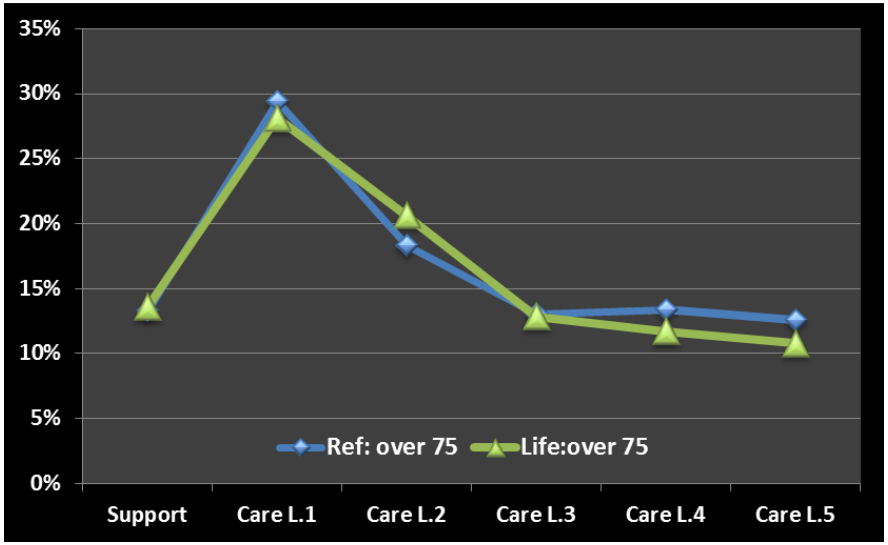


Check Representativeness: 2001
rate of certification by year and care level

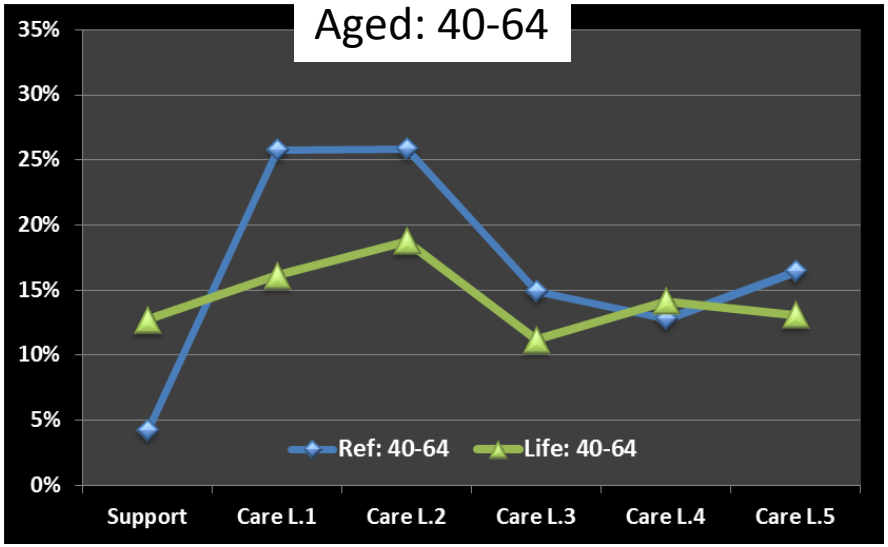
Aged: 65-74



Aged: 75 and over

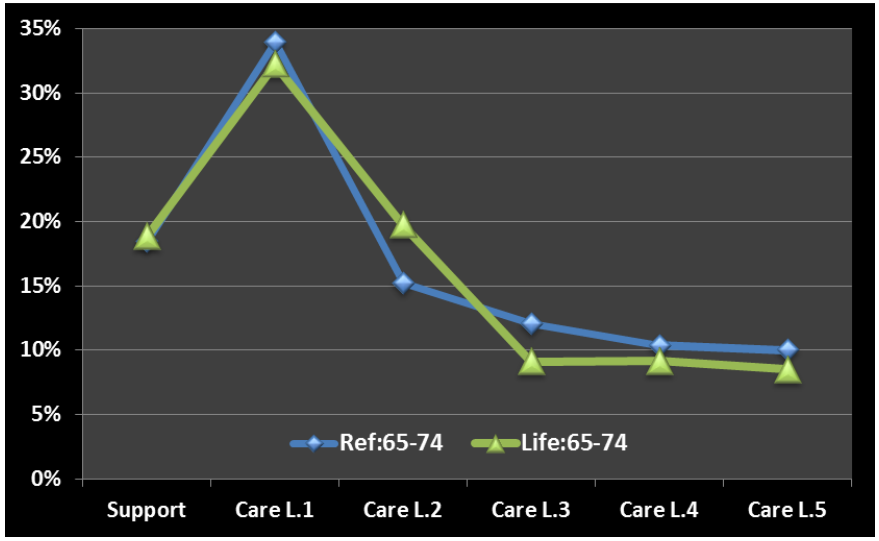


Aged: 40-64



Check Representativeness: 2004
rate of certification by year and care level

Aged: 65-74



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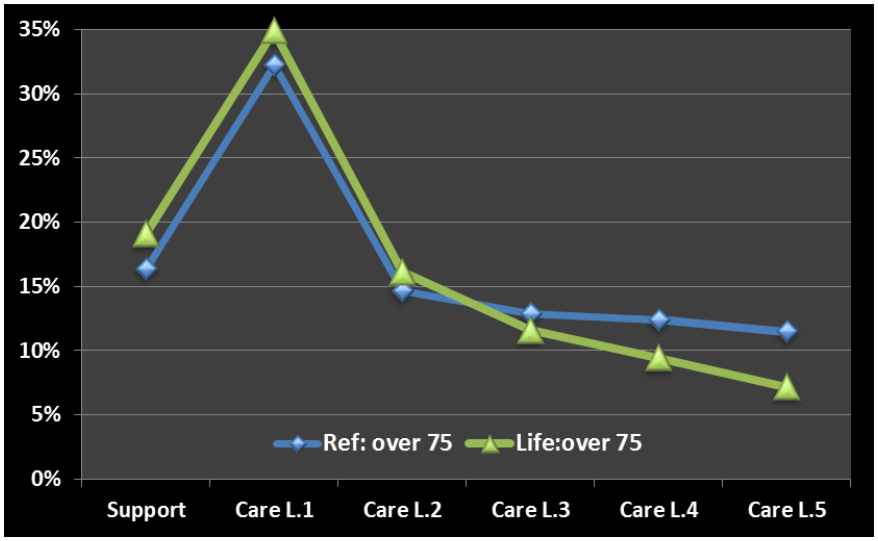
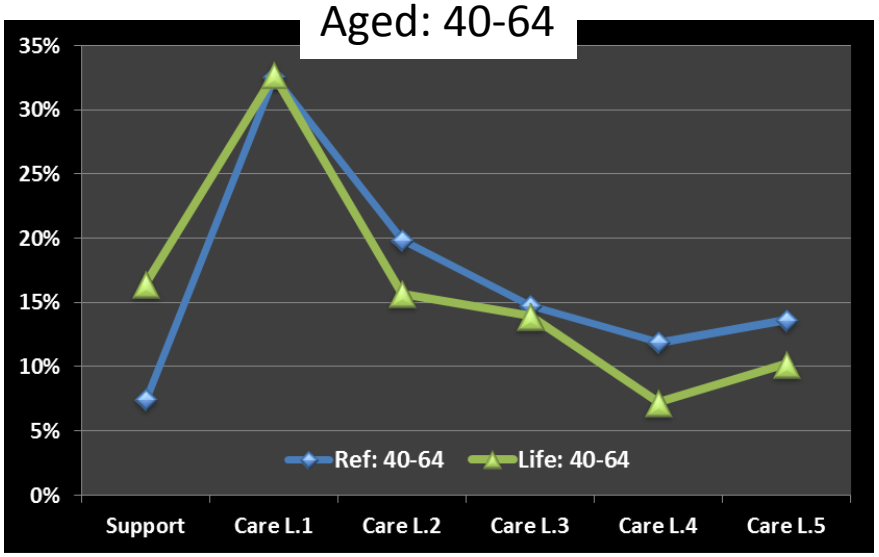
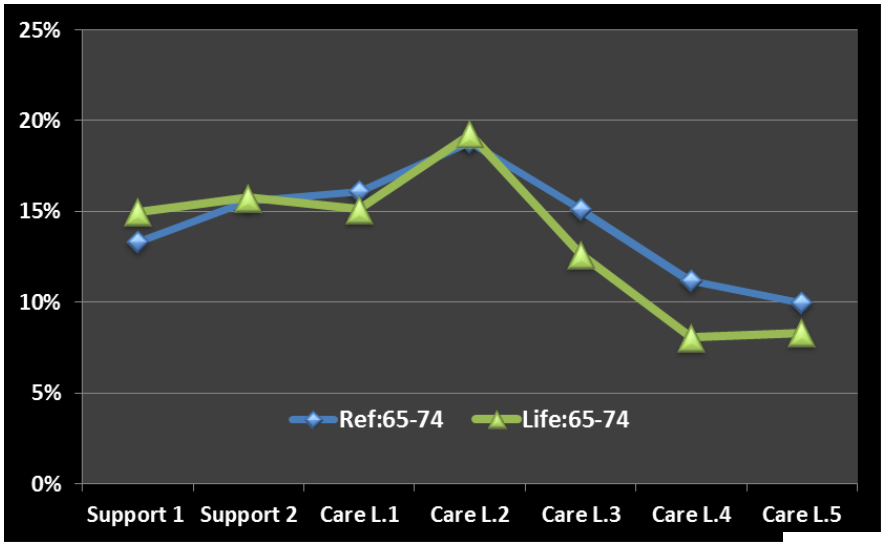


Aged: 40-64



Check Representativeness: 2007
rate of certification by year and care level

Aged: 65-74



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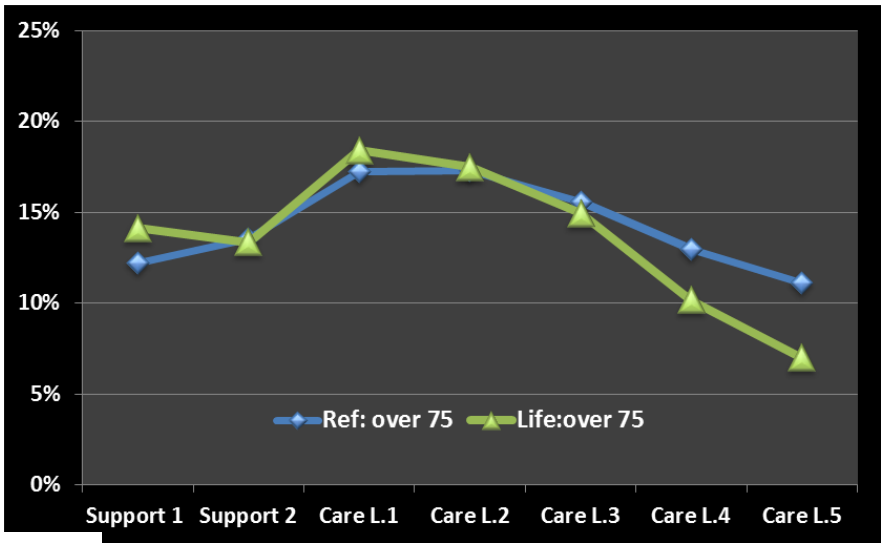
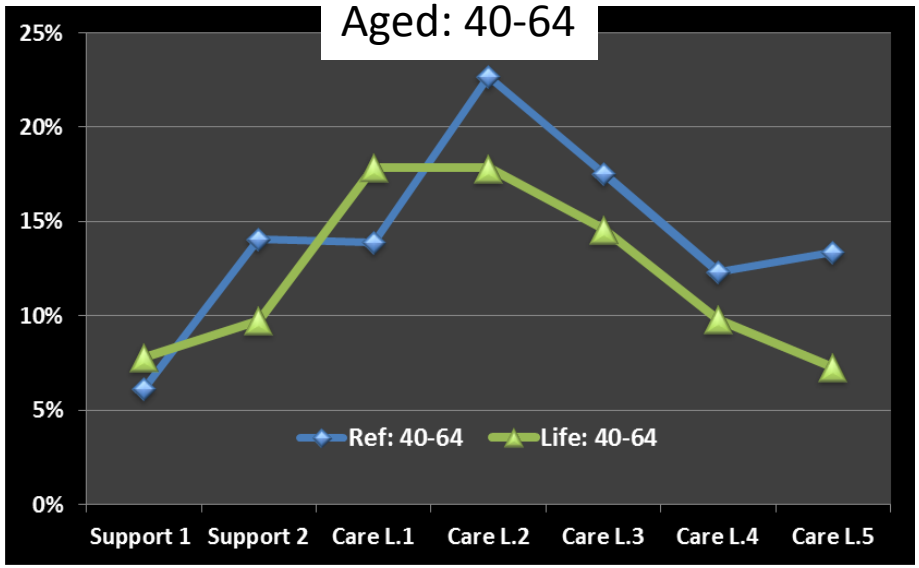
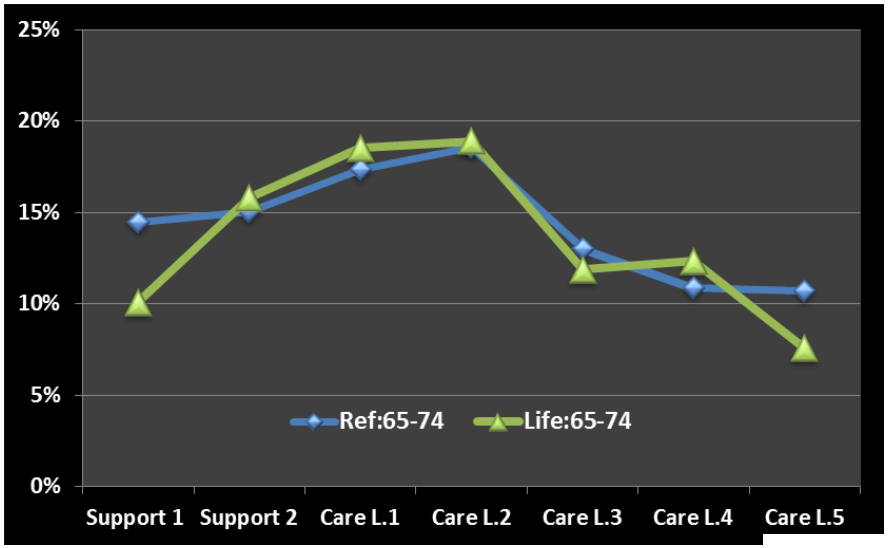


Aged: 40-64

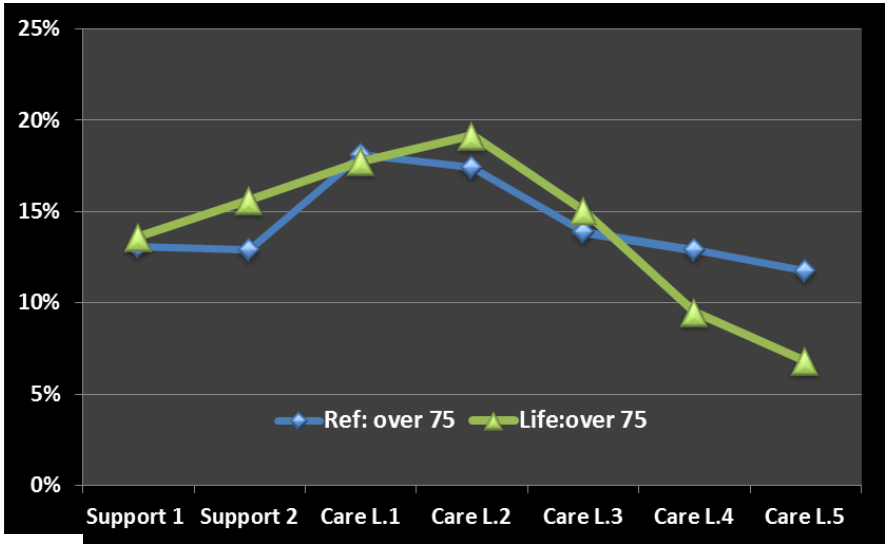


Check Representativeness: 2010
rate of certification by year and care level

Aged: 65-74



Aged: 75 and over



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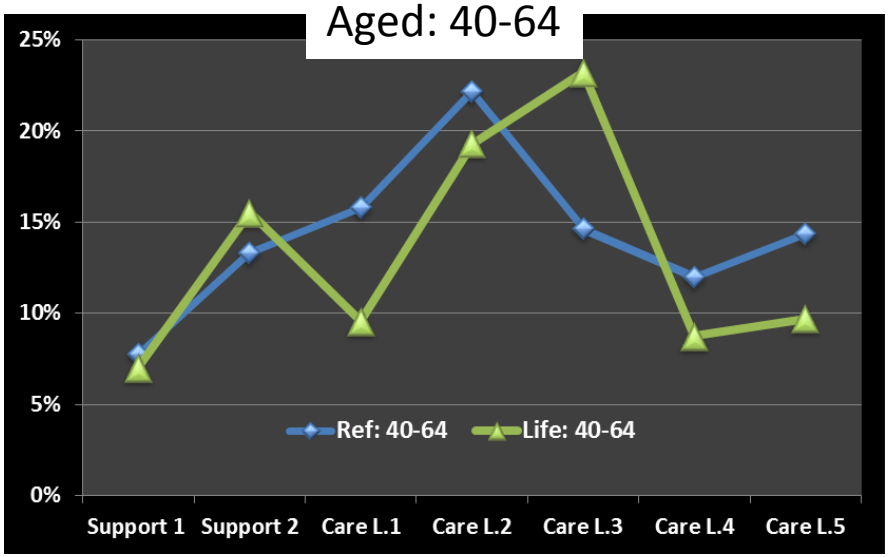


Aim and Method

- Aim:
  - To assess how policy change effect on the probability of obtaining certification
- Method:
  - Data: Comprehensive survey of living and conditions
  - Year: 2001, 2004, 2007, 2010
  - Analysis: pooling cross-section
    - logit regression for probability of obtaining certification
  - Statistical tool: STATA
  - Dependent variable :
    - obtain certification (1 or 0)
  - Independent variable:
    - Characteristics of those who require care
    - Socio-economic factors

Estimation model

Probability of obtaining certification

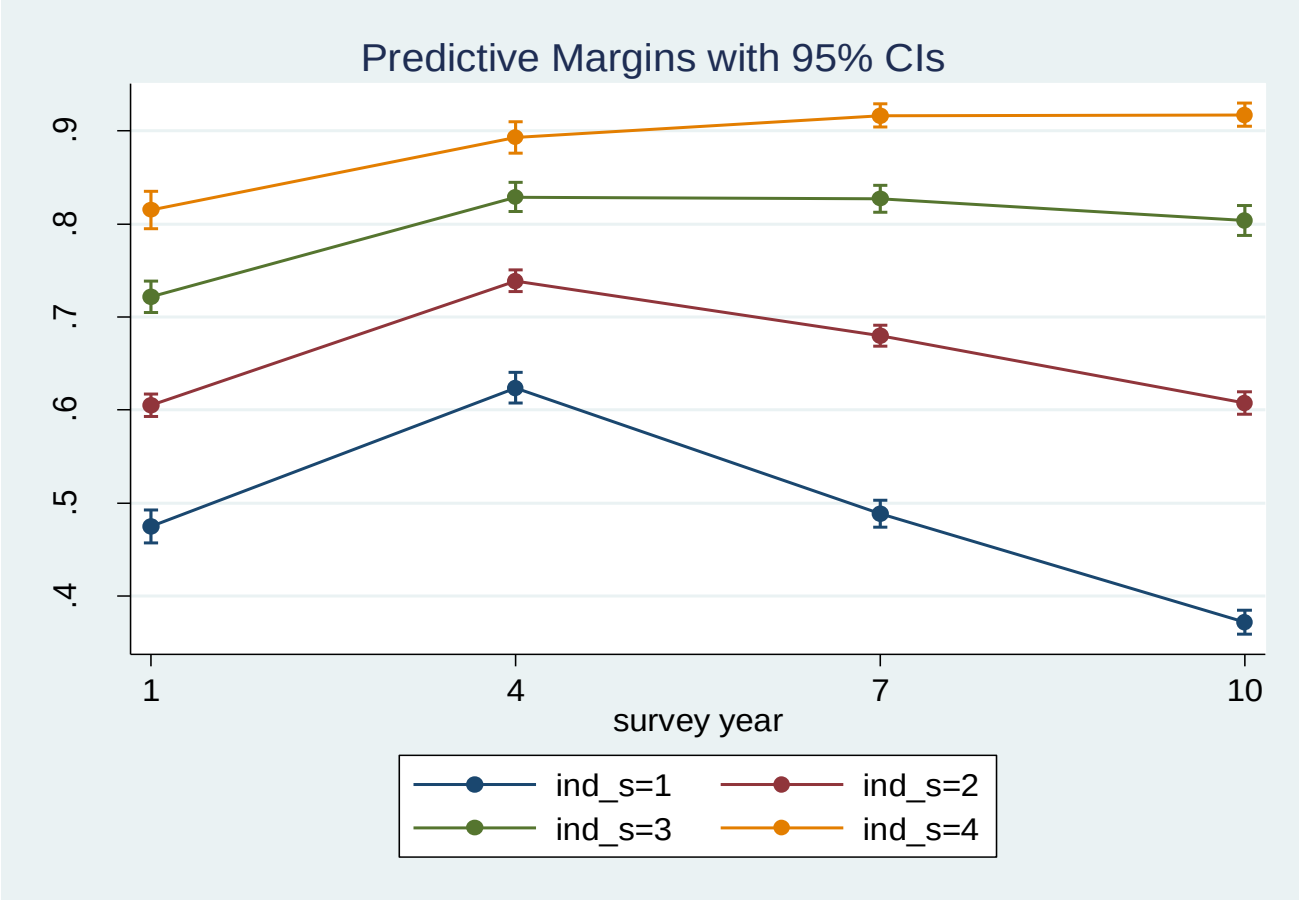
$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \mu$

Y: 1= obtain certification, 0= no certification

X_1: characteristics of those who require help (age, sex, independent status, out-patient disease)

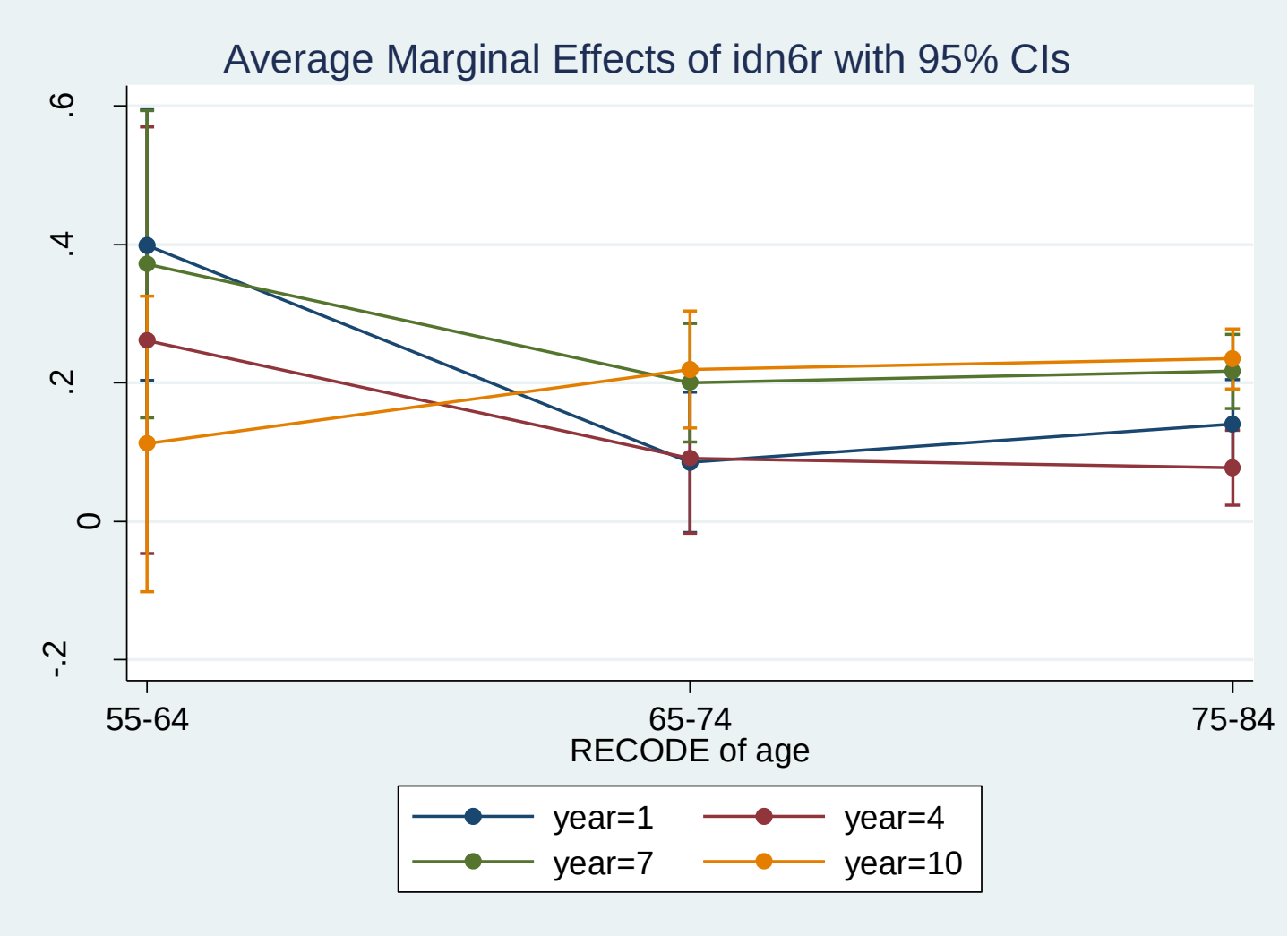
X_2: socio-economic factors (no. of household members prefecture, expenditure)

Result: probability of certification acquisition by independent status

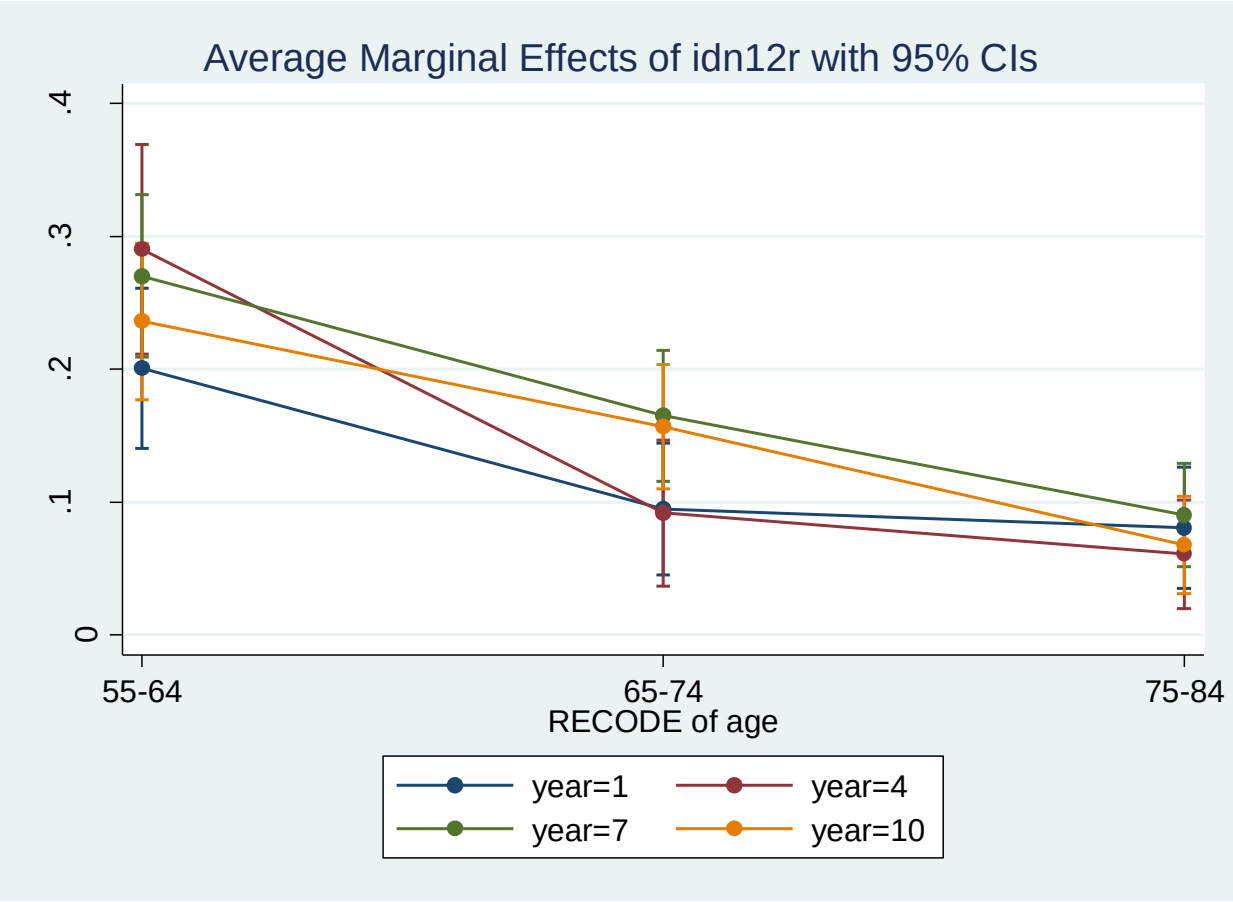


ind_s=1: have disability but daily-life are almost independent and can go out
ind_s=2: independent at home but cannot go out without help
ind_s=3: need help at home and spend most of time at bed, but can keep sitting position
ind_s=4: spend all time at bed and need help for eating, clothing and toilet

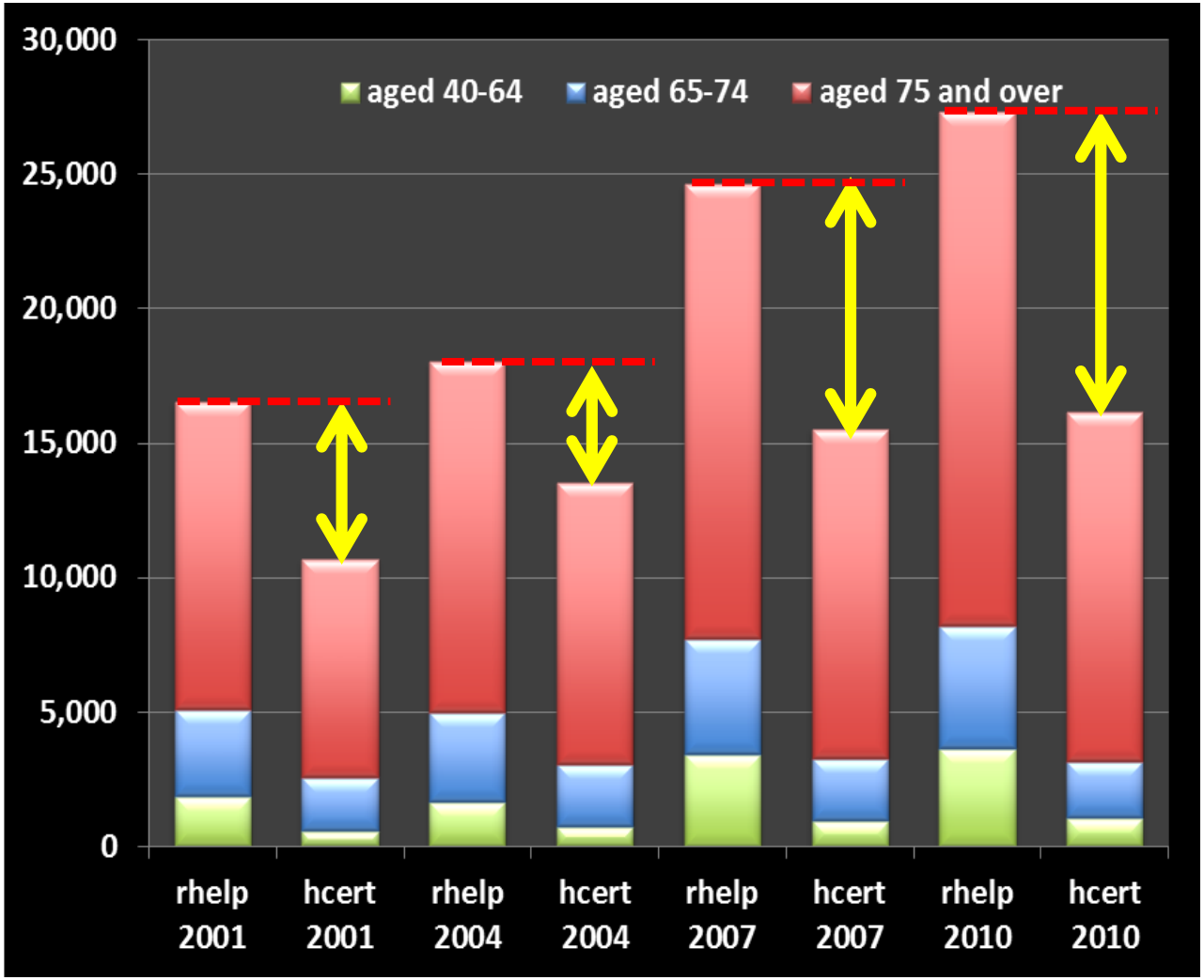
Result: probability of certification acquisition by dementia



Result: probability of certification by cerebrovascular disease



Result: descriptive statistics



Burden of care by SAH

- Using SAH to measure the subjective burden seems to be promising.
  - Most social surveys have SAH questions.
  - Recent tightening of the LTCI authorization seems to have increased the subjective burden, confirming our intuition.
  - Endogeneity problems (e.g. primary caregiver) are serious.

SAH and Impacts of Care Need of Family Members

- Firstly, we need to estimate the best function of Self-Assessed Health.
- One of the problems in the SAH function involving informal care is the endogeneity problem of principal caregiver assignment.
- A different family structure most likely means difference distribution of care responsibilities. It is better to estimate an SAH function separately for different family types.

Three Pure Types of Families

- We have avoided the issue by the restriction of family structures.
- Three pure types of families we have considered:
  - Husband and wife only
  - Husband, wife and children
  - Husband, wife, children
    - Husband's parent(s)
    - Wife's parent(s)
- To minimize heterogeneity in our samples, we will limit our sample to only one person with care need or less.

SAH: Specification

- self_h= i.sex+ i.age5G#i.rls+ i.year +i.year#i.work+ i.year#i.fam_hcert+ i.year#i.fam_rhelp+ i.year#i.s_kakei5c+ i.ken +i.n_setai+ idn1r+…+idn42r
- This specification would return identical sets of parameters as the four sets of independent cross-section estimations, had we not assumed constant parameters of each ken and each chronic disease for all years.
- The pooled estimation, however, allows us to conduct a D-in-D-in-D analyses on the marginal effects of a variable of two independent cross-section data of two different years, through stata's "margins" command.

SAH: Specification

- Because cross section surveys do not follow the same set of families over the years, we should compare the differences in marginal effects of two different groups between t-1 to t.
- For example, we compare the expected SAH of families providing care with the expected SAH of families free from care in t-1 and t, and test if the differences are statistically significant.

SAH: Specification

- Normally, the SAH function is estimated as an ordered logit function.
- Because we need to estimate the marginal effects of rhelp and hcert variables, we estimated by a simple OLS, and computed their average marginal effects.

An Example of Two Generation Family: 2007 to 2010

Between 2007 t0 2010, for example, families providing care experienced an increase , the marginal cost of care in terms of SAH increased by 0.09. Since the hypothetical marginal cost of care had decreased by 0.02 in the other families, we judge the former's SAH actually improved significantly (p=0.0032) as a result of some policy changes.

N=33303	2001	2004	2007	2010
w rhelp	2.664	2.642	2.684	2.771
w/o rhelp	2.56	2.532	2.659	2.643
Δ	0.104	0.11	0.025	0.128
Δ(t)-Δ(t-1)		0.006	-0.085	0.103
P-value		0.888	0.0032	0.000

An Example of Three Generation Family:2007 to 2010

Between 2007 t0 2010, for example, families providing care experienced an increase in terms of SAH by 0.04. Since the hypothetical marginal cost of care had decreased by 0.04 in the other families, we judge the former's SAH actually improved significantly (p=0.000) as a result of some policy changes.

N=33303	2001	2004	2007	2010
w rhelp	2.683	2.688	2.748	2.788
w/o rhelp	2.630	2.587	2.732	2.692
Δ	0.053	0.101	0.016	0.096
Δ(t)-Δ(t-1)		0.006	-0.085	0.103
P-value		0.888	0.0032	0.000

Results of LTCI Certification and Interpretation

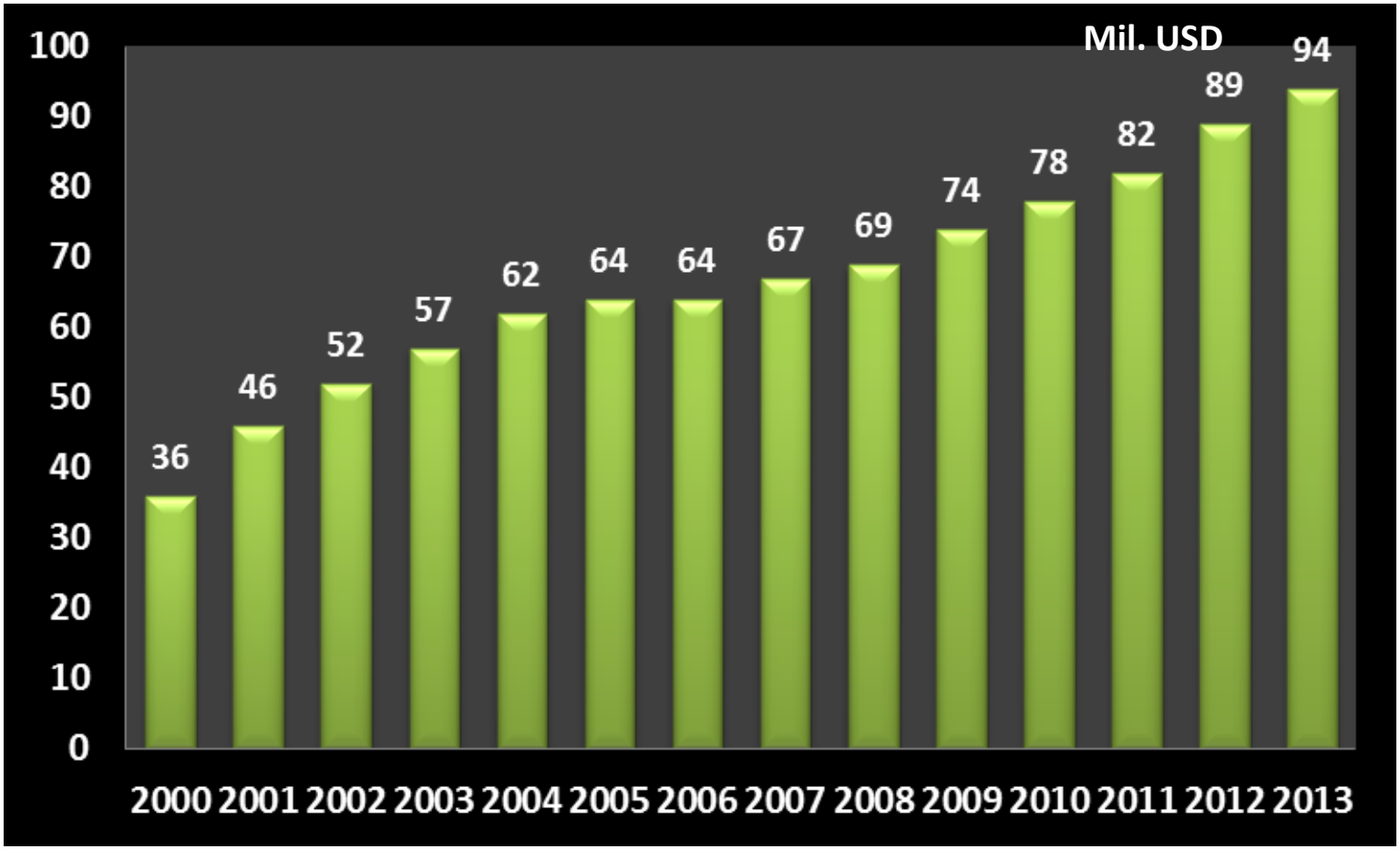
- In none of the three years tested, the marginal effects of LTCI certification caused statistically significant differences in the families providing informal care w or w/o LTCI benefits.
- This probably means that the subjective health of families with LTCI certification (or benefits) changed in similar fashion with those of families managing w/o LTCI benefits.

Conclusions

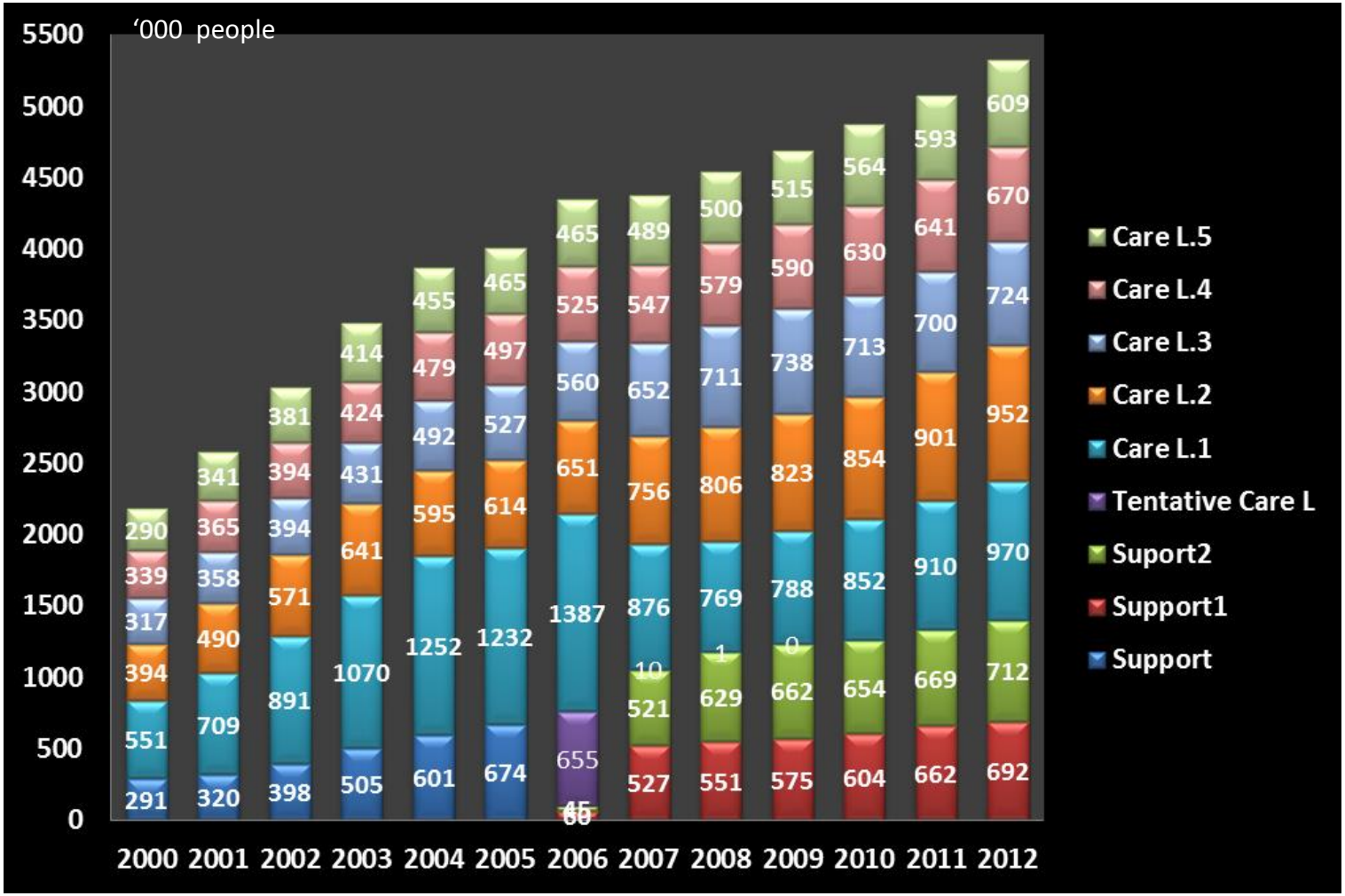
- We have modeled the authorization process of LTCI.
  - LTCI had been giving preferential treatment on those with dementia.
  - The other medical reasons have been losing importance in the LTCI authorization process.
  - Limitations of Activities of Daily Living have been dominant in the reasons for LTCI authorization.
  - Those who have lighter impairment in ADL are now having a hard time in getting LTCI benefit authorization.
- This tightened procedure resulted in increase in caregivers' burden of care in the two generation and third generation families, but not in one generation families.

Back Up

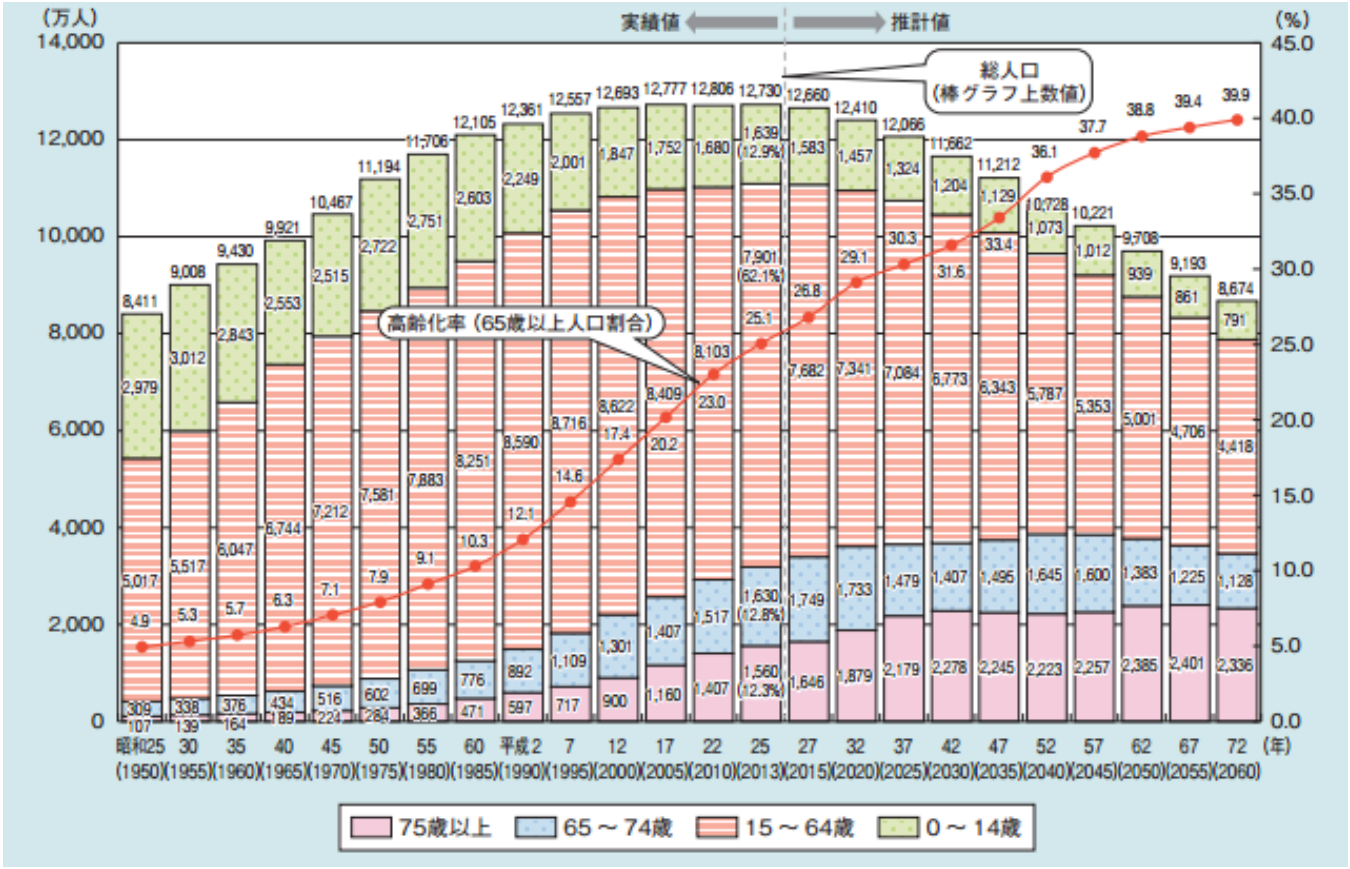
LTC Expenditure



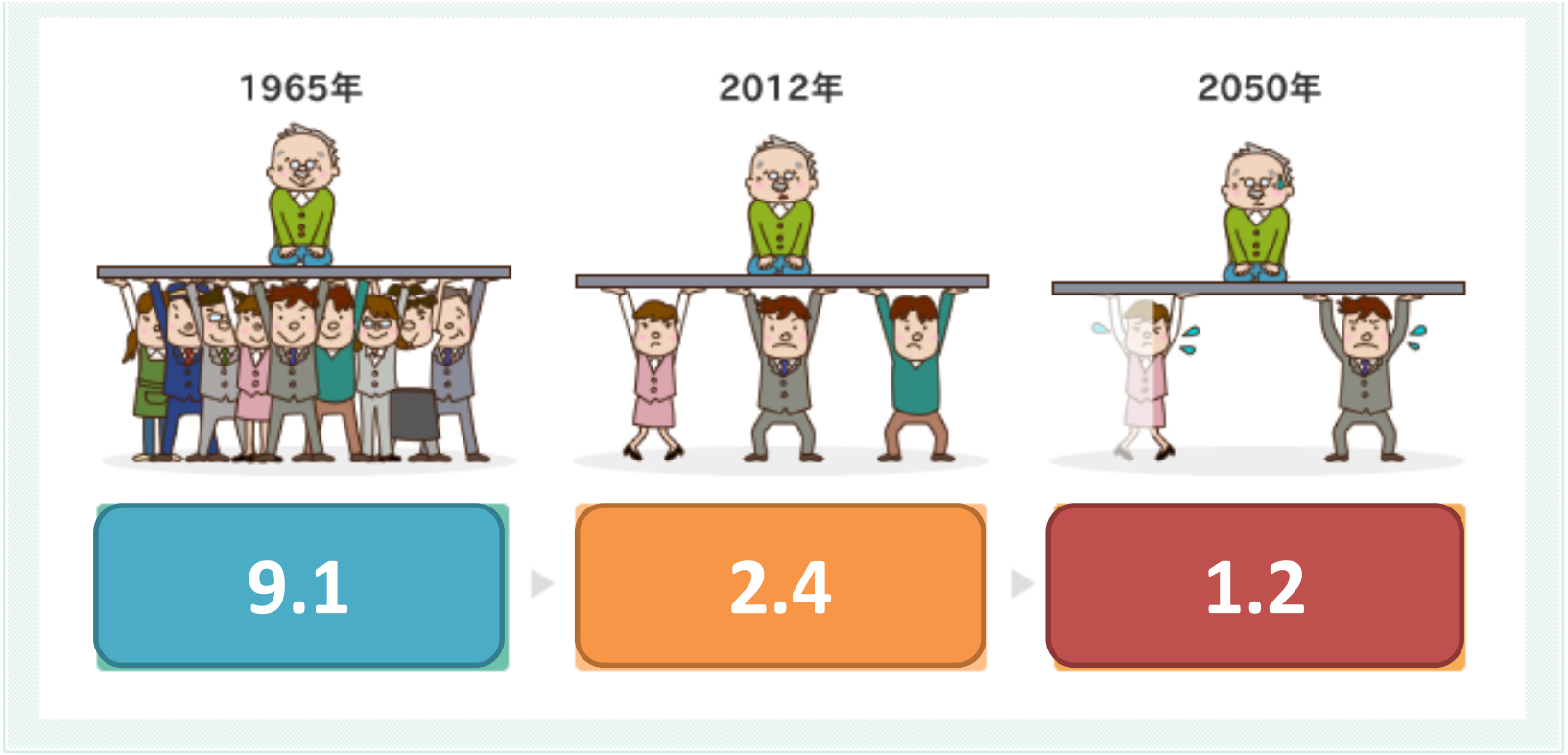
Care need certification



Rapid progress of ageing society



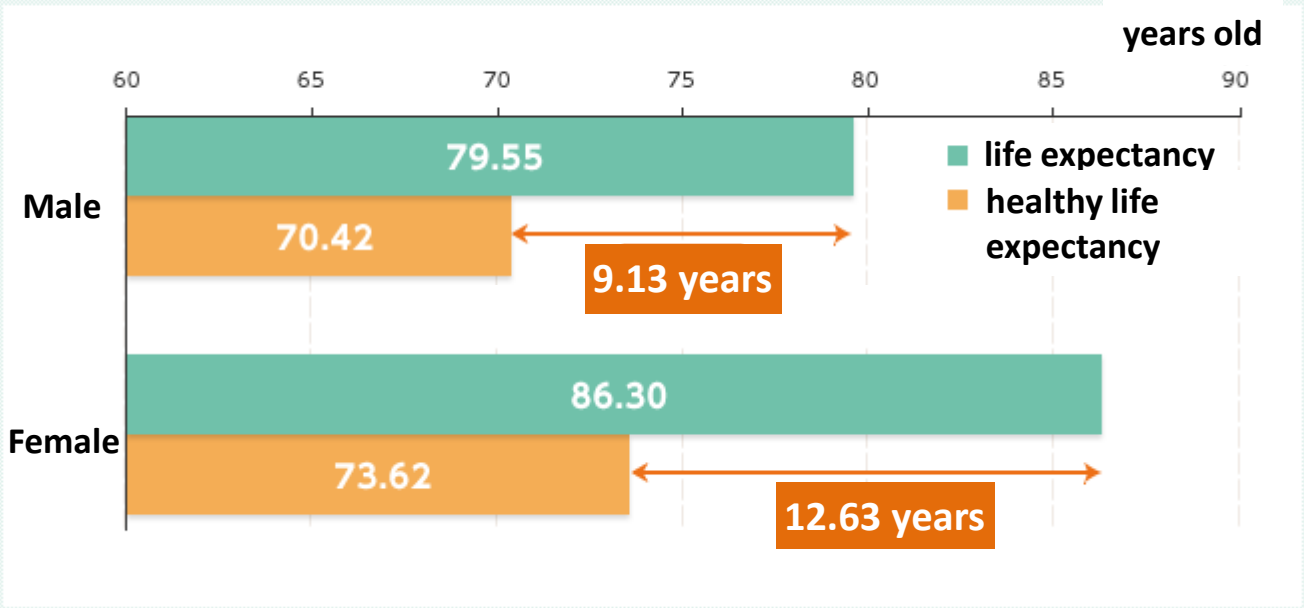
Result of low birth rate and longevity



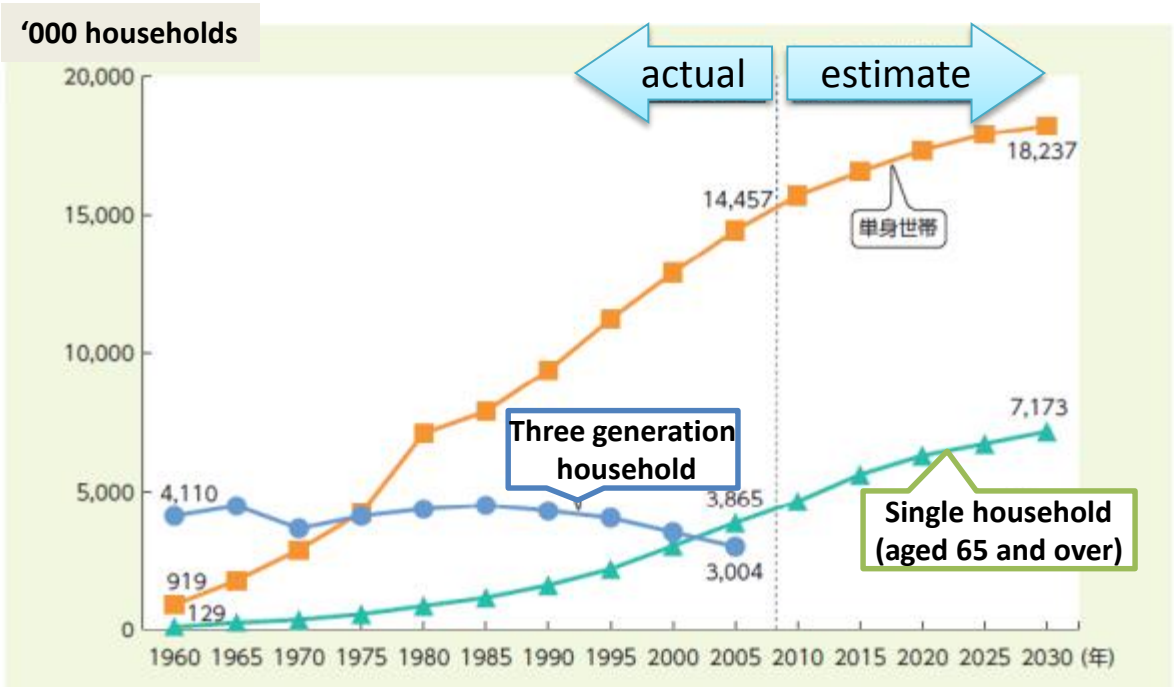
How many people aged 20-64 need to support aged 65 and over = $\frac{\text{pop. aged 65 and over}}{\text{pop. aged 20-64}}$

Longevity and long-term care risk

Difference between life expectancy and healthy life expectancy



Changes in household type



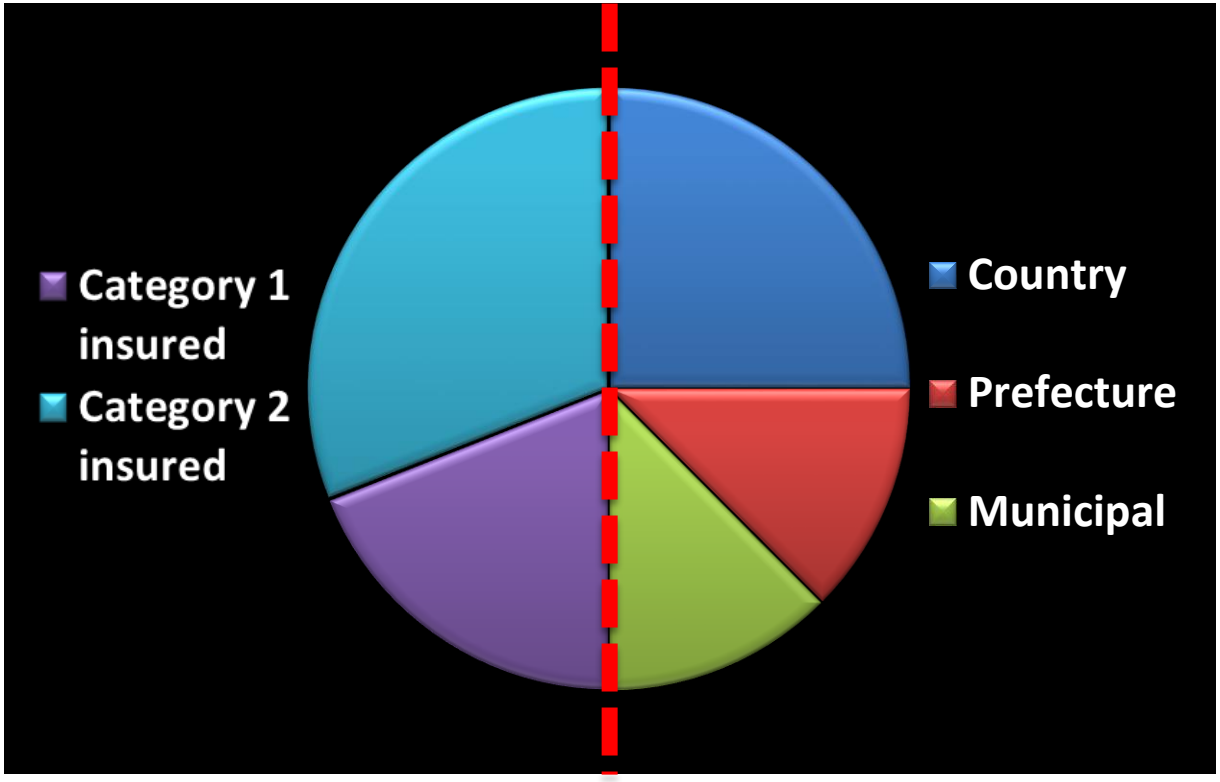
- Decrease in three-generation household
- Increase in single household, especially aged 65 and over

Advantages of Data

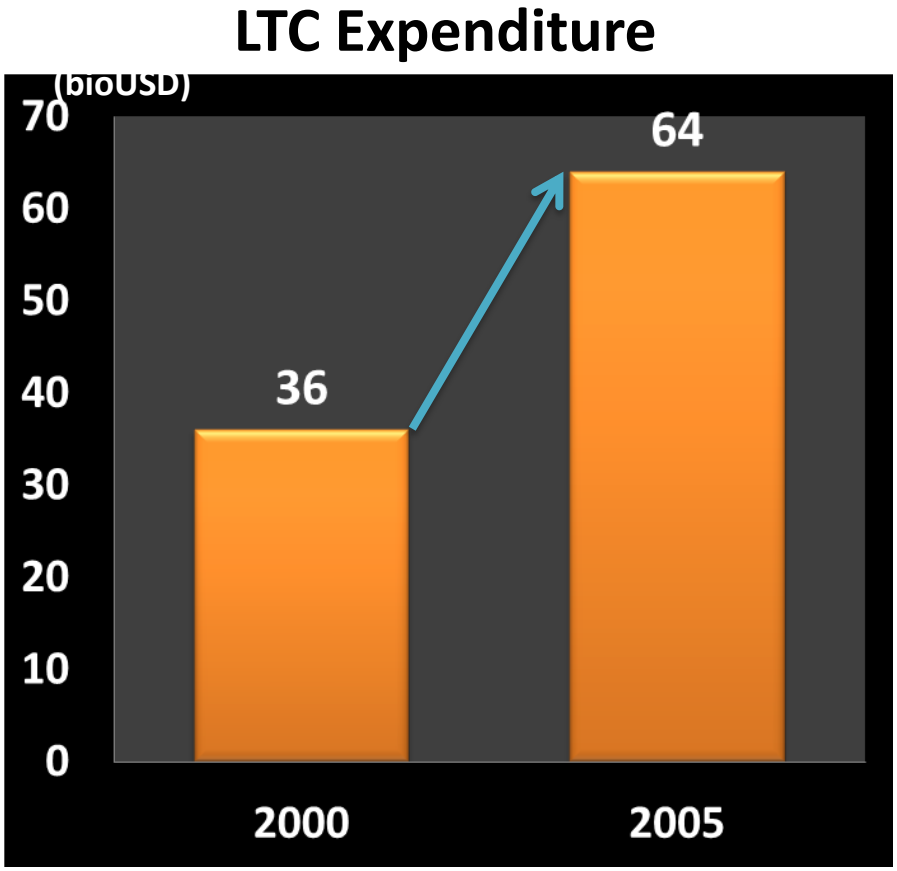
- Large sample size
- Random sample
- High coverage rate (all prefectures in Japan)
- Cover both main caregivers and others
- Cross Sections across Times (big scale survey in every three years)

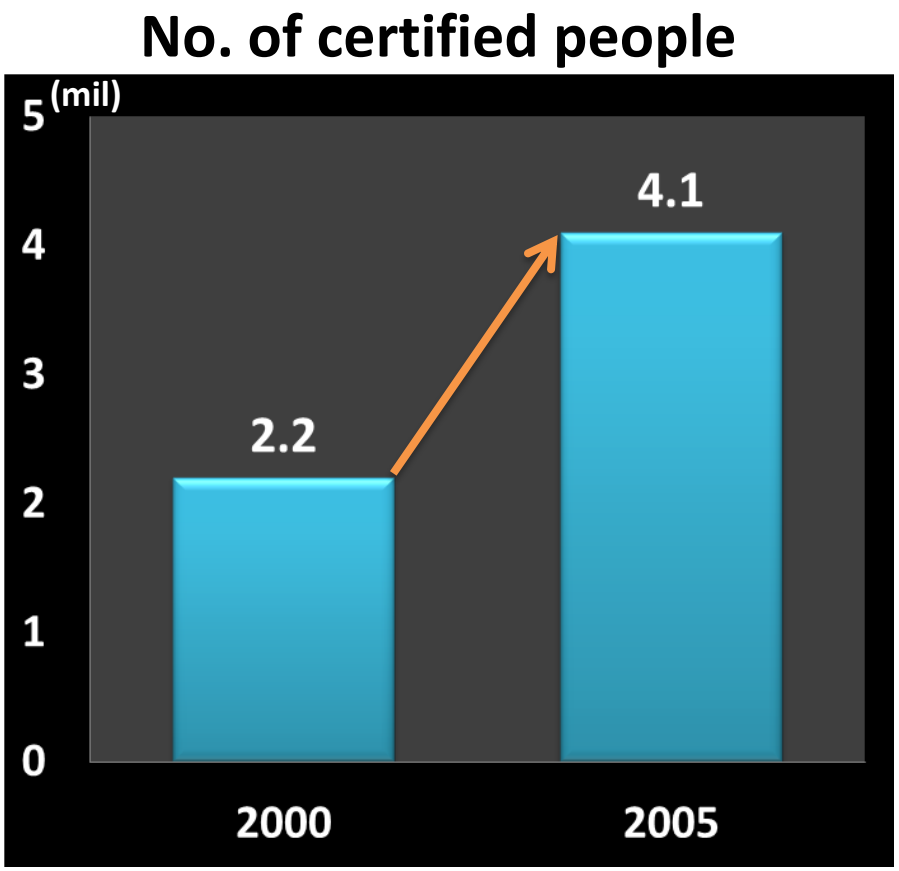
Financing Structure

50% Insurance premium & 50% public expense



LTC Expenditure & No. of Certified people



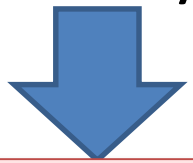


About 1.8 times increase

About 1.9 times increase

Reform in 2005 (implemented in 2006)

- Background of reform
  - Increase in total expenditure
  - Increase in number of those who obtain certification
  - Continuous growth the number of elderly
  - Changes in household type



1. **Establish bright ageing society**
2. **Sustainability**
3. **Comprehensive Social Security**

Effect of LTCI Certification

D in D in D = (ΔMarginal Effect of LTCI certification in w/hcert Families) – (ΔMarginal Effect of LTCI certification in wo/hcert Families)

N=333033		2001	2004	2007	2010
Marginal	w/hcert	2.533	2.781	2.911	2.8521
Effect	w/o hcert	2.565	2.801	2.877	2.8128
	Δ	-0.032	-0.020	0.034	0.0393
D in D in D	Δ(t)-Δ(t-1)		0.012	0.054	0.0056
	P-value		0.736	0.330	0.9106