The comprehensive cost of illness in super-aged society

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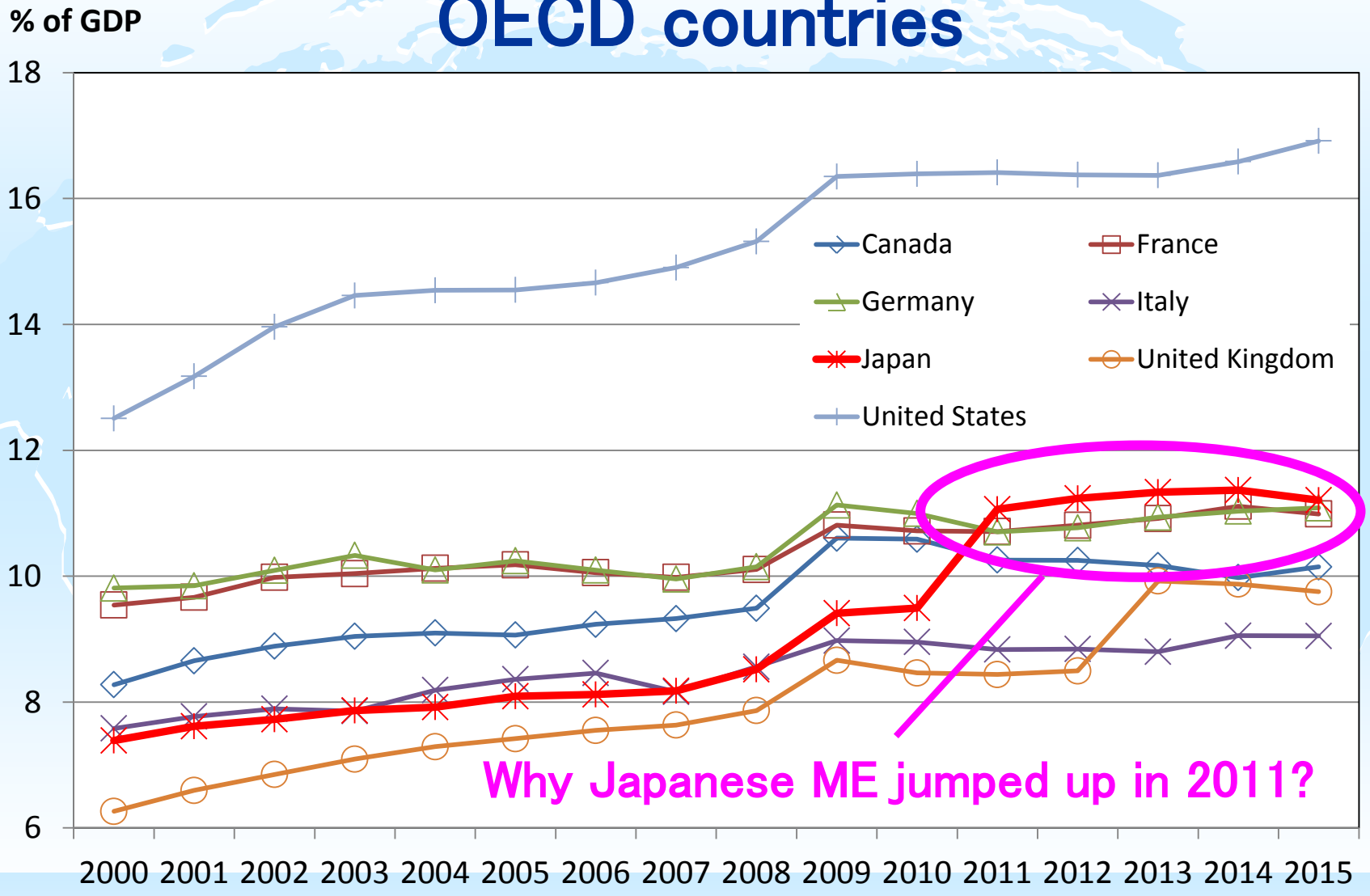
Trend of medical expenditure (% of GDP) in OECD countries



Background

- In 2011 OECD adopted revised SHA (system of health account).
  - → LTC (long-term care) includes services related to ADL and IADL.
  - → LTC related cost in a broad sense is becoming increasingly important for super-aged society.
  - → However, it is difficult to measure the social burden of such chronical diseases.
- The purpose of this study is to try to measure the burden of diseases that need LTC using cost of illness method.

Data set & Methodology

- **Diseases**：CVD (I60–I69), Malignant Neoplasm (ICD10: C00–D09), Heart disease (I01–I02.0, I05–I09, I20–I25, I27, I30–I52) **Years**：**2008・2011・2014**
- **Methodology**：**Comprehensive Cost of illness Method（C-COI）**
- **Data**：governmental office statistics

Using Rice, DP method

Patient Survey ・ Survey of National Medical Care Insurance Services ・Vital Statistics ・ Abridged life table・Basic Survey on Wage Structure ・Labor Force Survey ・ Estimates of monetary valuation of unpaid work・Population estimates series （2008・2011・2014年）
Comprehensive Survey of Living Condition of the People on Health and Welfare・ Fact-finding Survey on Economic Conditions in Long-term Care・Survey of Institutions and Establishments for Long-term Care・Survey of Long-term Care Benefit Expenditures （2007・2010・2013）

Breakdown of C-COI

1.Direct costs		estimated by public health insurance data and LTC insurance data
➢Organizing and operating costs within the health sector		
➢Out-of-pocket expenses		
➢Patient and family input into treatment		
➢LTC direct cost (cost for LTC insurance)※		
2.Indirect costs		estimated by human capital method
A)Morbidity costs		
➢Loss of income by going to hospital and hospitalization		
➢Family's burden for LTC※		
B)Mortality costs		
※ LTC related cost		

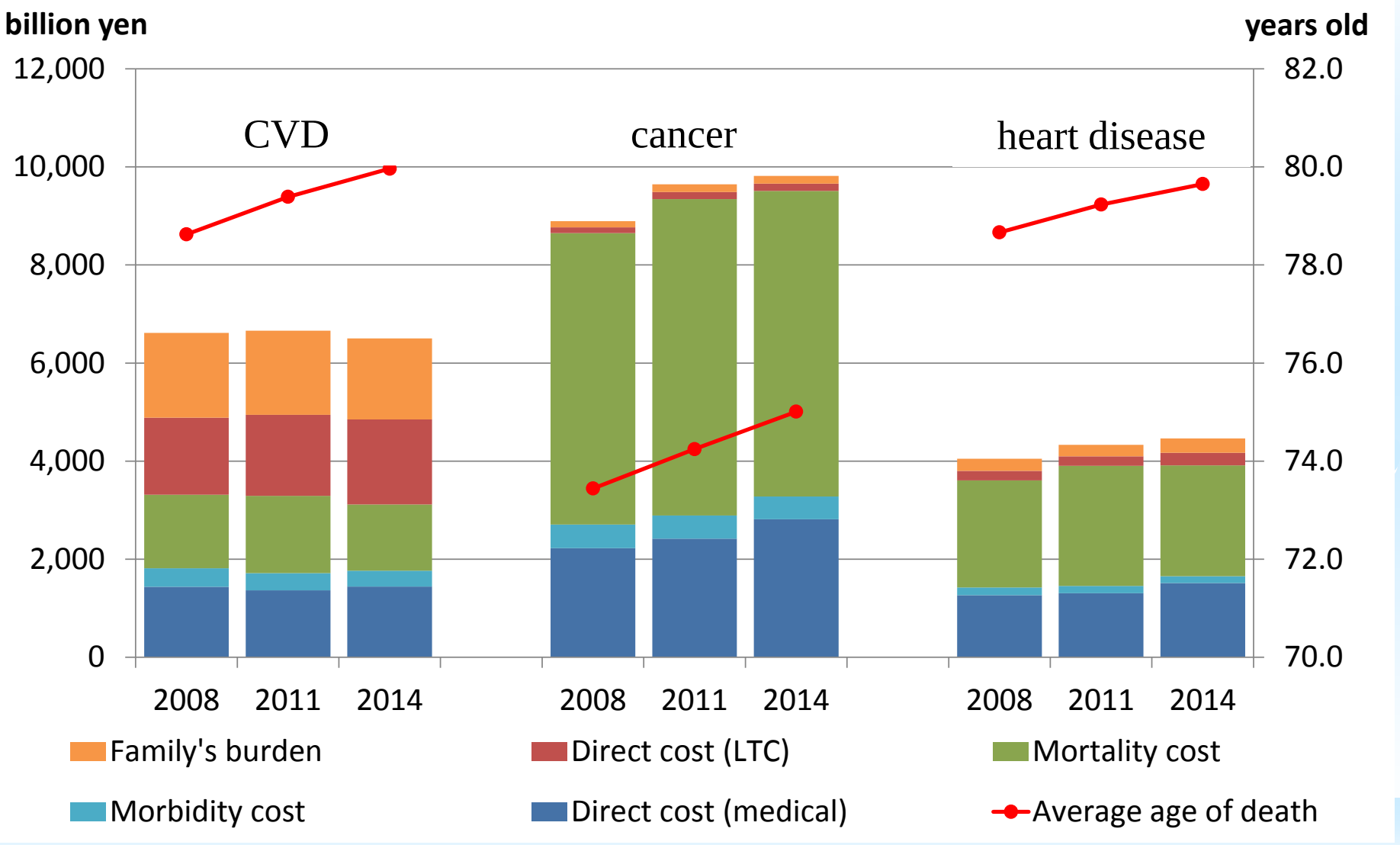
Method：calculation of C-COI（1）

- **Direct cost (medical)**：medical expenses
- **Morbidity cost**：〔total person-days of hospitalization × labor value per day〕＋〔total person-days of outpatient visit × labor value per day ×1/2〕
- **Mortality cost**：number of deaths × life labor value (Future labor value was adjusted to a present value using 3% discount rate)

Method：calculation of C-COI(2)

- **Direct cost (LTC)**：LTC insurance benefit（benefit per capita × number of recipients ÷ 0.9）
- **Family's burden**：number of family caregivers classified by sex, age class and main cause of LTC × rate of persons in need of LTC at home × average time for care a day classified by main causes × labor value per hour ×365

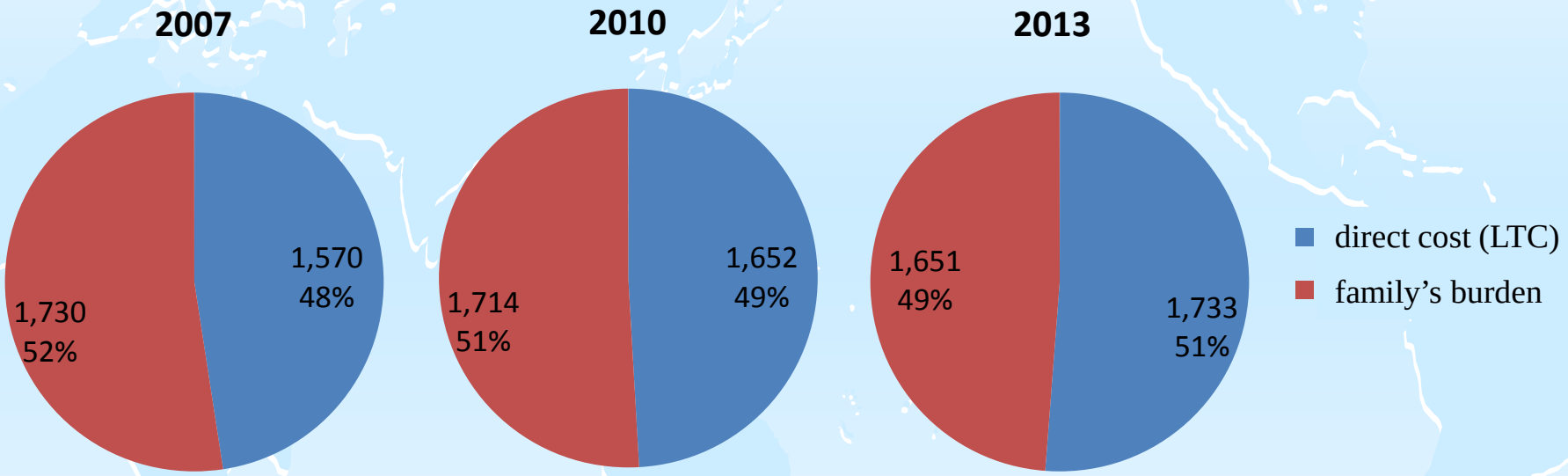
Result: C-COI


billion yen
years old
12,000
10,000
8,000
6,000
4,000
2,000
0
82.0
80.0
78.0
76.0
74.0
72.0
70.0
CVD
cancer
heart disease
2008
2011
2014
2008
2011
2014
2008
2011
2014
Family's burden
Direct cost (LTC)
Mortality cost
Morbidity cost
Direct cost (medical)
Average age of death

Comparison among 3 major diseases

	CVD			cancer			Heart disease		
	2008	2011	2014	2008	2011	2014	2008	2011	2014
Population (thousand persons)	127,690	127,799	127,083	127,690	127,799	127,083	127,690	127,799	127,083
Proportion of elderly (65 and over)	22.10%	23.28%	25.97%	22.10%	23.28%	25.97%	22.10%	23.28%	25.97%
Number of patients (thousand persons)	1,339	1,235	1,179	1,518	1,526	1,626	1,542	1,612	1,729
Average length of stay (days)	104.7	93.0	89.5	23.9	20.6	19.9	24.2	21.9	20.3
Number of deaths (persons)	127,006	123,847	114,188	342,940	357,289	368,072	181,900	194,886	196,883
Average age of death (years old)	78.7	79.2	79.7	73.4	74.2	75.0	78.6	79.4	80.0
Proportion of elderly for death	88.8%	89.6%	90.8%	79.1%	80.5%	83.7%	88.5%	89.6%	91.0%
Mortality cost per person (10 thousand yen)	1,183	1,270	1,184	1,733	1,805	1,693	1,201	1,258	1,146
Number of recipients of benefit of LTC insurance	619,404	647,080	678,713	47,884	68,069	83,986	112,395	121,292	163,758
Average nursing care level	2.8	2.9	2.9	2.8	2.4	2.3	2.5	1.9	2.2
C-COI (billion yen)	6,616	6,658	6,501	8,894	9,646	9,815	4,047	4,334	4,461

Direct cost (LTC) and family burden of CVD



Result

- Number of patients and deaths of cancer and heart disease have been increasing, but that of CVD have been decreasing.
- Average age of death of heart disease and CVD was higher that of cancer.
- Cost of LTC occupied 3.1 % of C-COI for cancer, 12.0% for heart disease, and 52.0% for CVD.
- Proportion of LTC cost of CVD was increasing. Especially direct cost (LTC) was increasing remarkably (23.7% → 24.8% → 26.7%).

Discussion

- We can demonstrate the burden of diseases that need LTC using cost of illness method.
- Family burden and direct cost (LTC) are in the relationship of trade-off. The introduction of LTC insurance decreased the proportion of family burden.