

*Disability-Free Life Expectancy Trends
in Taiwan :
Compression , Expansion or Dynamic Equilibrium*

Dr. Liang Ling-Yu
National Yang-Ming University , Taiwan
Chen Lea-Hua
Department of Health , Taiwan
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Outline

Background

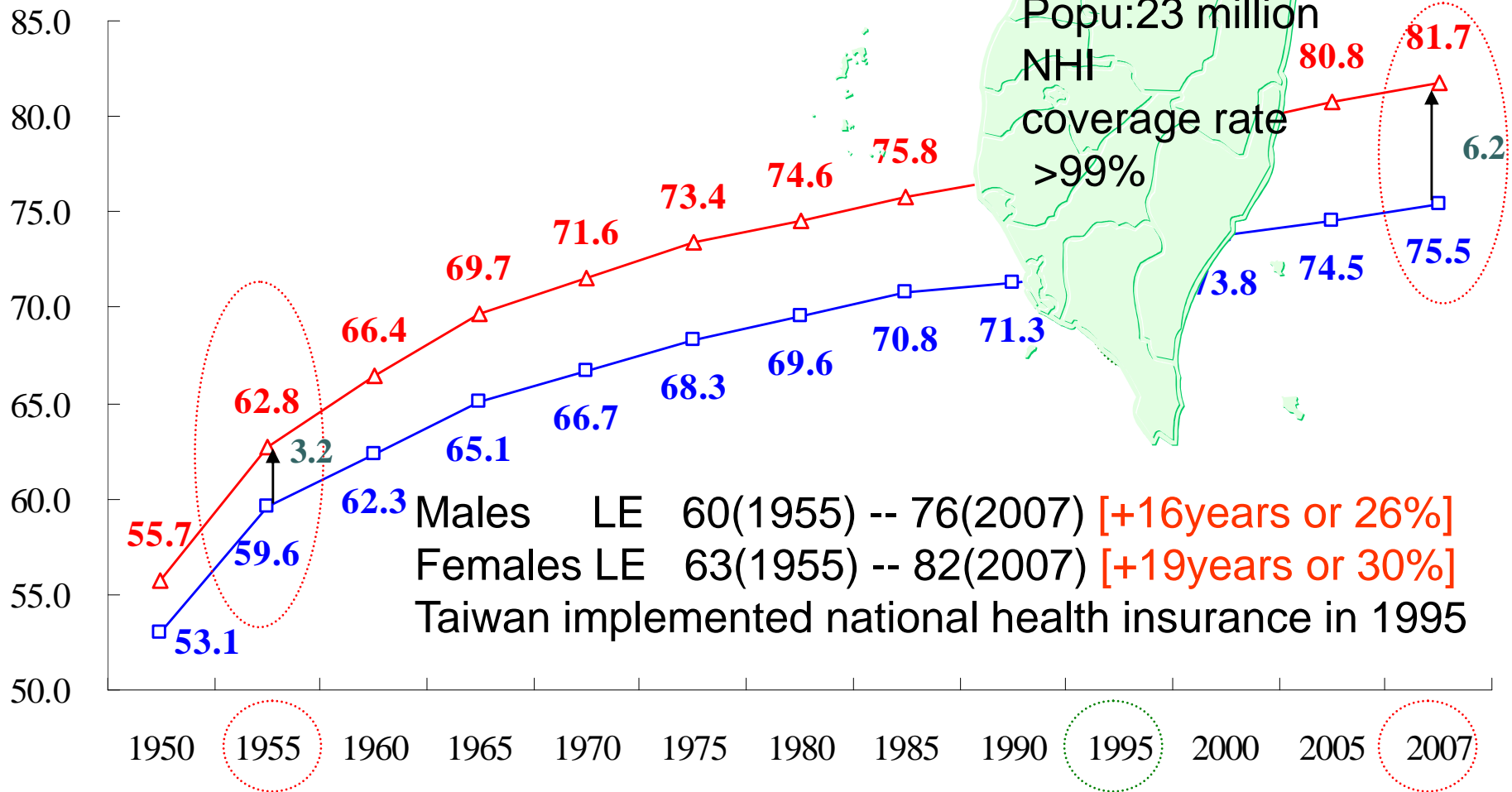
Objectives

Materials & Methods

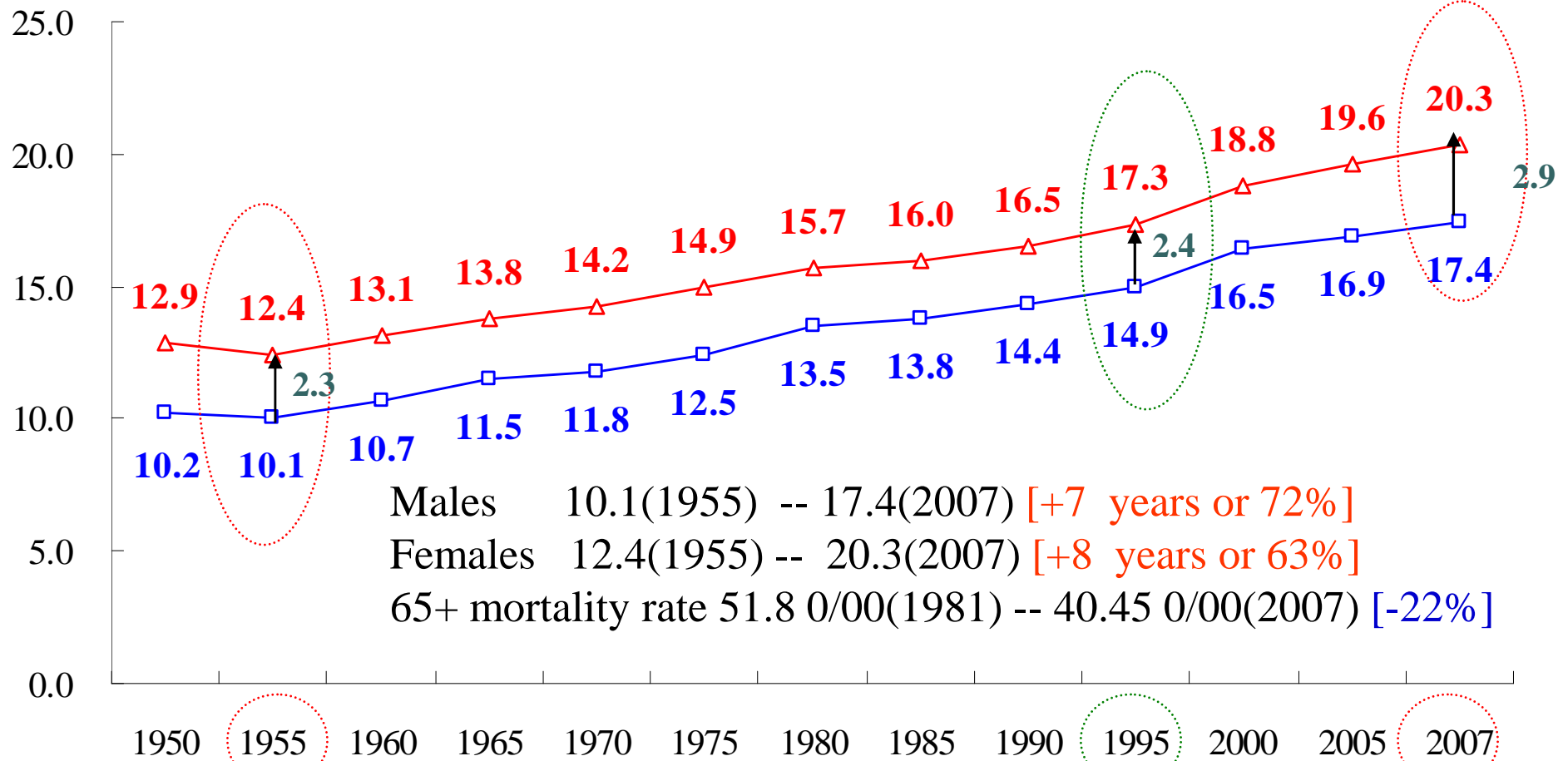
Results

Conclusions

Background – LE at birth



Background – LE at age 65



Objectives

To create health life expectancy with administrative data

To examine whether the proportion of life spent in disability or disease is expansion or compression in Taiwan

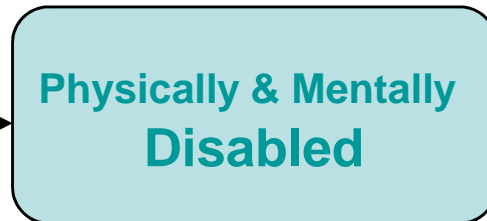
Materials & Database

by administrative data

Prevalence

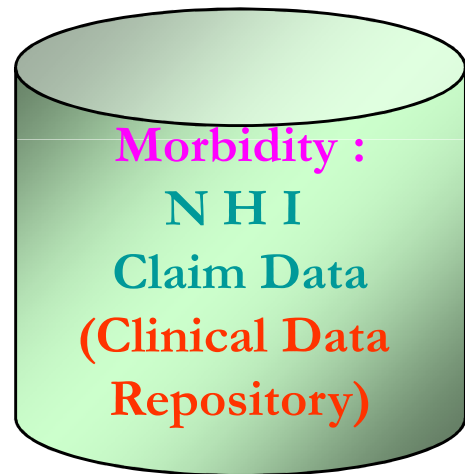
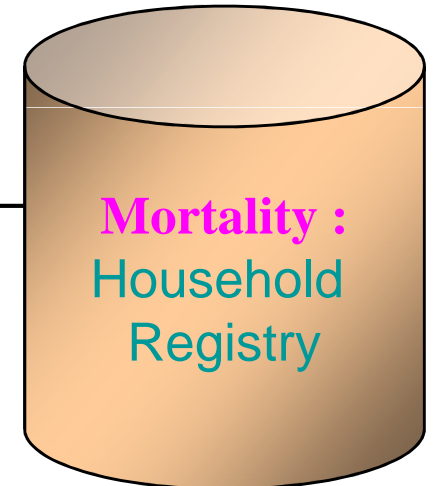


Disability

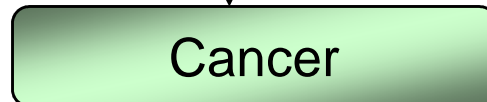
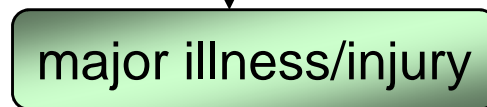
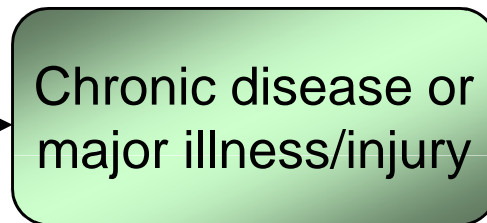


Incidence

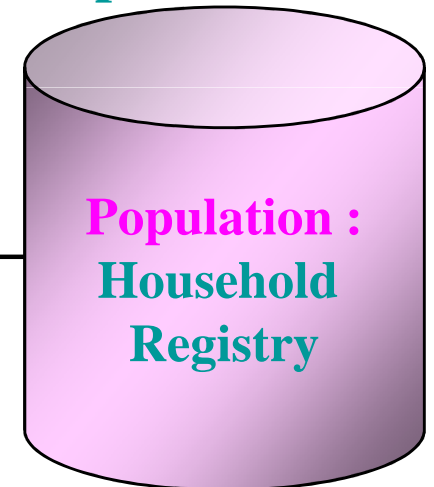
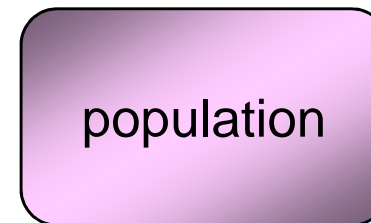
Death



Disease



Pop base data



27-29 May

2009 REVES

6

Methods

We computed health life expectancy ---
using **prevalence-base Sullivan's method**
and following EHEMU calculation guide.

Health status definition

Disability—physical & mental disabled depend on medical expert valuation based on ADL or IADL

Disease—long-standing illness depend on physician diagnoses

All Disease : include

1.Chronic disease:

Using chronic prescription and days of medicine - given ≥ 21 per month

2.Major illness/injury (serious disease)

Cancer

**Physically & Mentally Disabled
Depends on :Protection Act for
Rights and Interests of
Disabled Citizens**

four possibilities for the **evolution** of disability-free life expectancy

--- **Robine and Mathers identified**

absolute compression of morbidity: the increase in disability-free life expectancy exceeds the increase in total life expectancy, reducing the years lived with disability.

relative compression of morbidity: disability-free life expectancy and years lived with disability both increase, but disability-free life expectancy as a proportion of total life expectancy increases.

four possibilities for the evolution of disability-free life expectancy

--- Robine and Mathers identified

relative expansion of morbidity: disability-free life expectancy and **years** lived with disability **both increase**, but disability-free life expectancy as a **proportion** of total life expectancy **decreases**.

absolute expansion of morbidity: disability-free life expectancy decreases and years lived with disability increase.

Limitations

We applied dichotomous valuations to the health status

All health data are derived **from administrative data**

All health status valuation was conducted by **medical experts.**

All data base on **full population.**

RESULT

Disability-Free Life Expectancy

Disease-Free Life Expectancy

Serious Disease-Free Life Expectancy

Cancer-Free Life Expectancy

Part1:

Disability-Free Life Expectancy

Disability= Physically & Mentally Disabled

Disability is certificated by **medical experts** and determined on a standardized set of diagnostic criteria, like: **person's daily active or functional limitation criteria**

Data derived form Physically & Mentally Disabled Registration system

In 2007 no. of disability=1.02 million(4.5%)

Disability

Category Include : (16 kinds)

Vision Disability

Balancing Mechanism Disability

Limbs Disability

Losing Functions of Primary Organs

Unconscious Chronically

Autism

Multi-Disability

Stubborn (Difficult-to-Cure) Epilepsy

Hearing Mechanism Disability

Voice or Speech Mechanism Disability

Mentally Disability

Suffering Facial Damage

Senile **Dementia**

Chronic Psychosis

Caused by Infrequent Disease

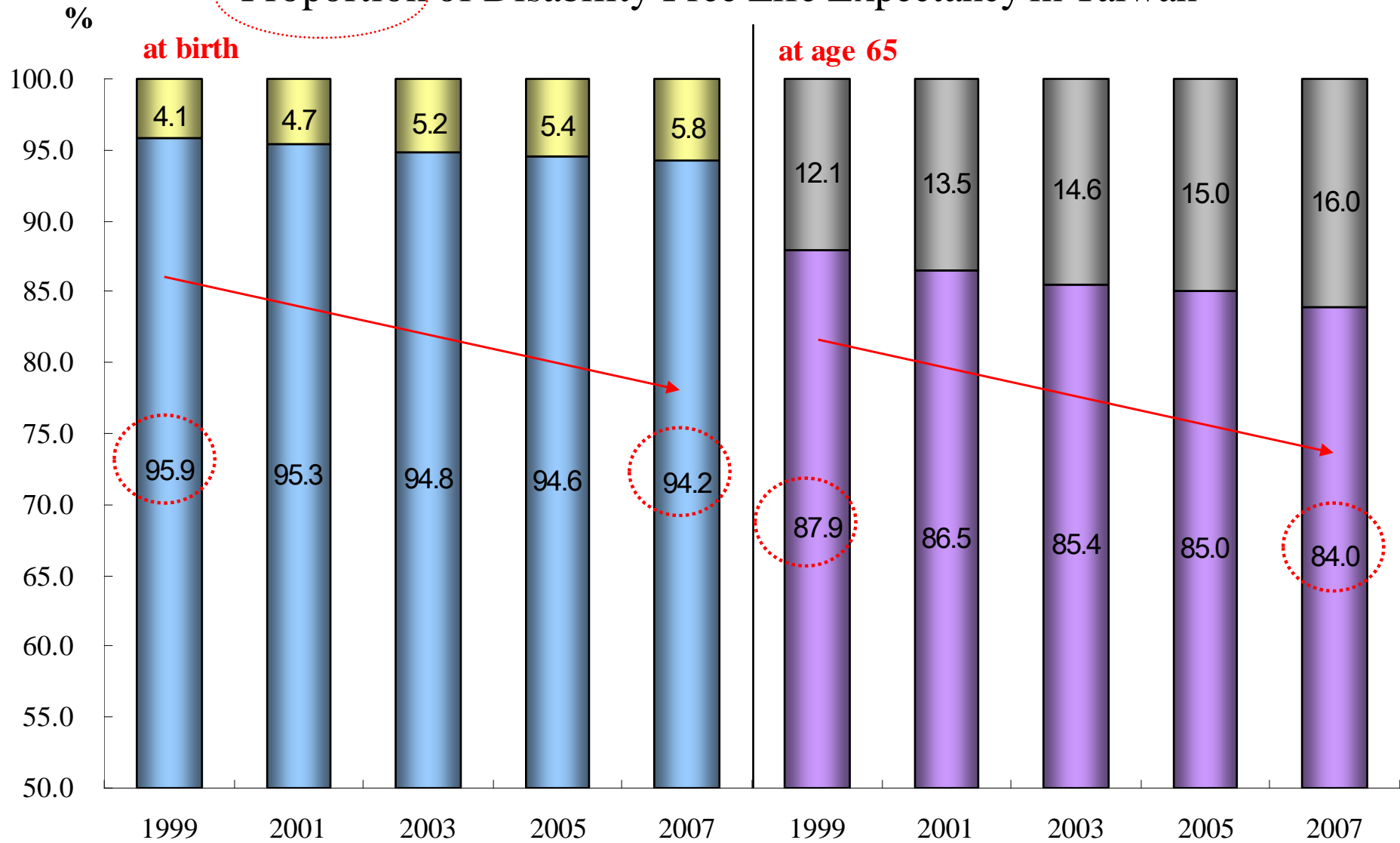
Others Disability

Grade by : **Severe** 、 **Extreme** 、 **Moderate**、 **Mild**

Disability-free Life Expectancy of Taiwanese

	at Birth			at Age 65		
	L.E	DFLE	DLE	L.E	DFLE	DLE
1999	75.9	72.8 (95.9%)	3.1	17.1	15.0 (87.9%)	2.1
2001	76.7	73.1 (95.3%)	3.6	17.5	15.1 (86.5%)	2.4
2003	77.4	73.4 (94.8%)	4.0	17.8	15.2 (85.4%)	2.6
2005	77.4	73.2 (94.6%)	4.2	18.0	15.3 (85.0%)	2.7
2007	78.3	73.7 (94.2%)	4.5	18.6	15.6 (84.0%)	3.0
	+2.4 3.2%	+0.9 4.4%	+1.4 45%	+1.5 8.8%	+0.6 4%	+0.9 49%

Proportion of Disability-Free Life Expectancy in Taiwan



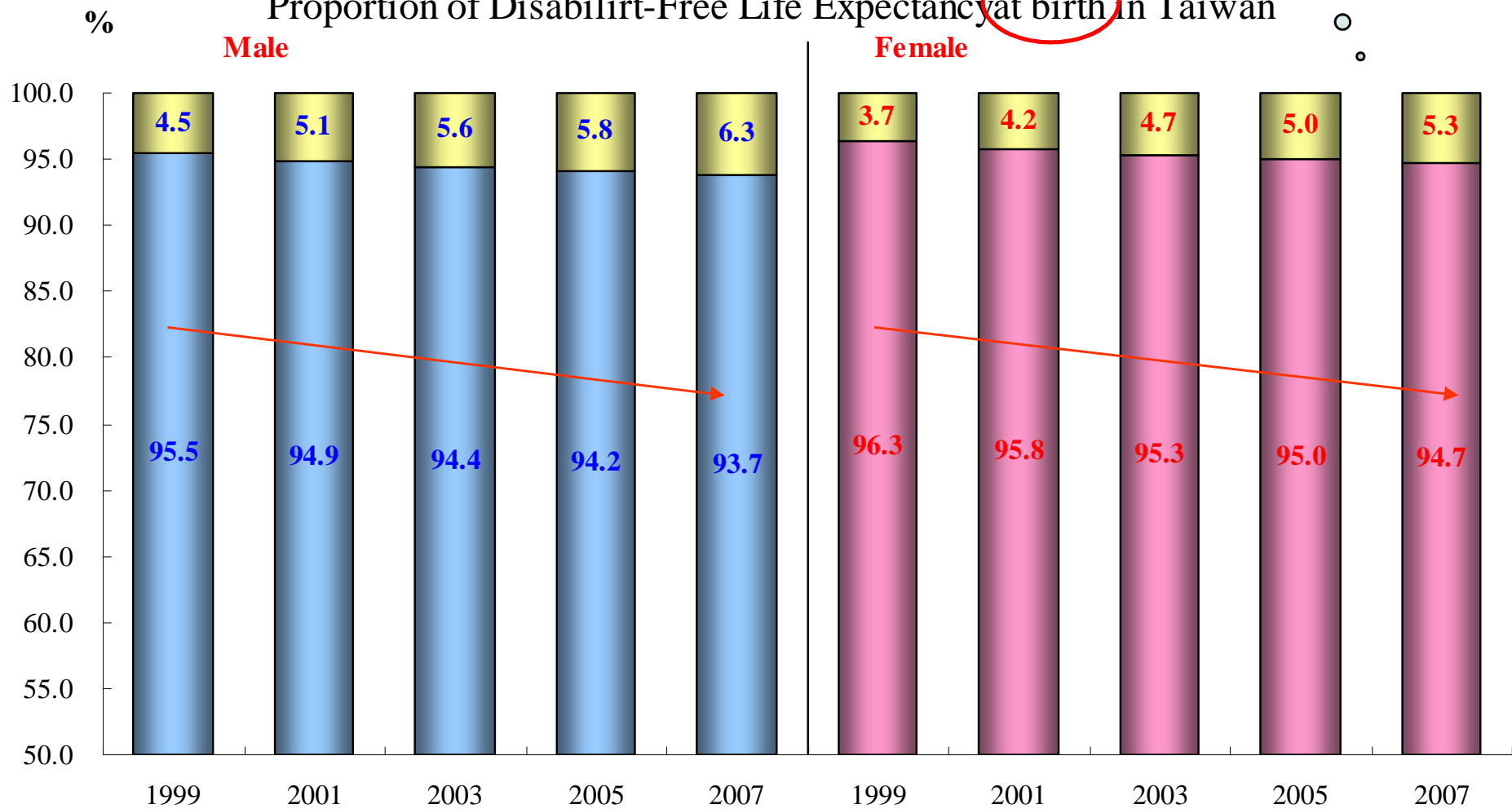
Disability-free Life Expectancy of Taiwanese

	Male			Female		
	L.E	DFLE	DLE	L.E	DFLE	DLE
1999	73.4	70.1 (95.5%)	3.3	78.9	76.0 (96.3%)	2.9
2001	74.1	70.3 (94.9%)	3.8	79.8	76.4 (95.8%)	3.4
2003	74.8	70.6 (94.4%)	4.2	80.3	76.5 (95.3%)	3.8
2005	74.5	70.2 (94.2%)	4.3	80.6	76.6 (95.0%)	4.0
2007	75.4	70.7 (93.7%)	4.7	81.4	77.1 (94.7%)	4.4
	↑ +2.0 2.7%	↑ +0.6 0.9%	↑ +1.4 42%	↑ +2.5 3.2%	↑ +1.1 1.5%	↑ +1.5 52%

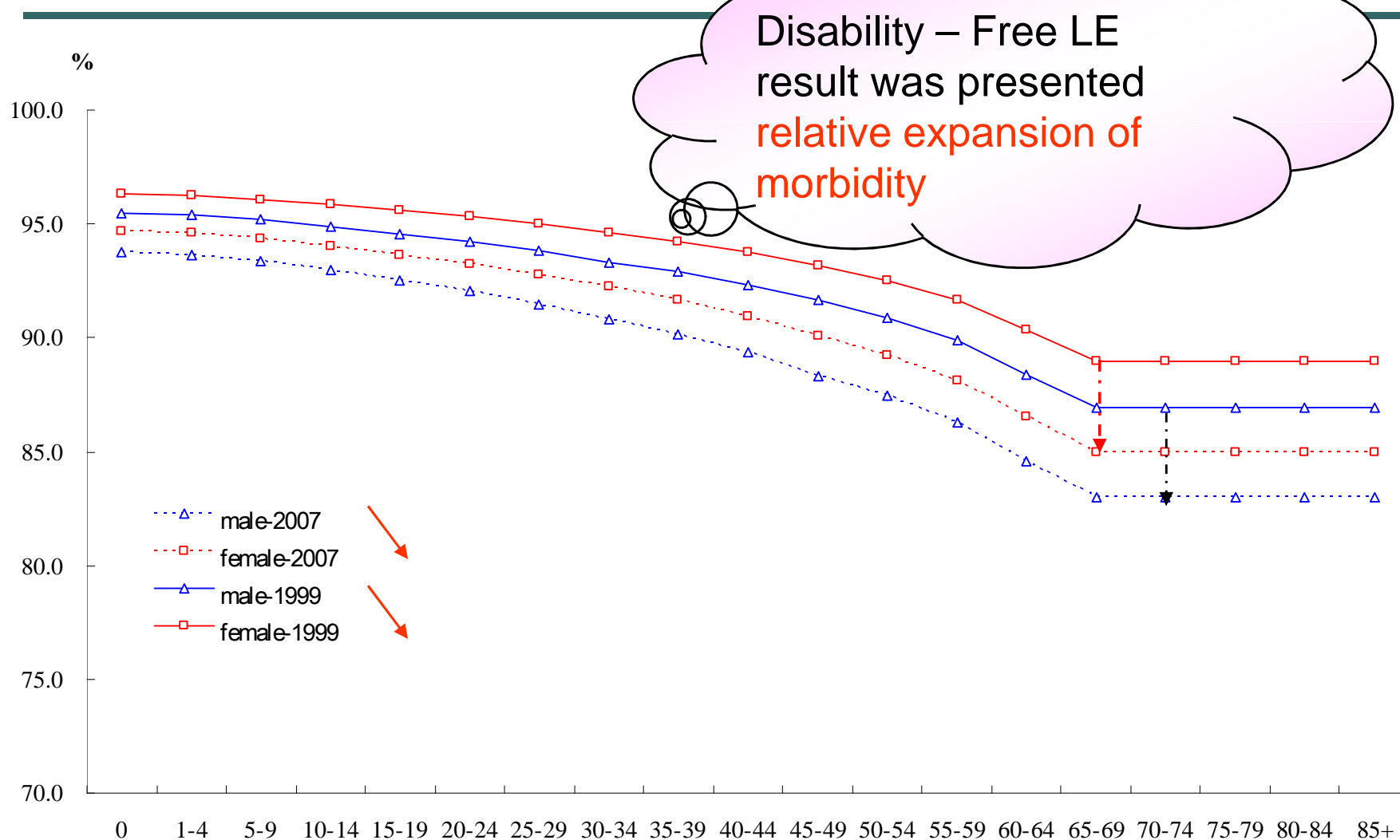
Proportion of healthy is declined

Female is healthier than male

Proportion of Disability-Free Life Expectancy at birth in Taiwan



Proportion of disability-free LE on total LE by gender in Taiwan, 1999 and 2007



PartII:

Disease-Free Life Expectancy

Diseases = “ **chronic disease** ” or
“ **major illness/injury** (serious disease) ”
are certified by physician diagnoses

In Taiwan **chronic disease patient** can **take medicine \geq 21 days per month** on each medical visit

Serious illness patient have **free-copayment** in each medical care visit

Data derived from **National Health Insurance Claim Database**

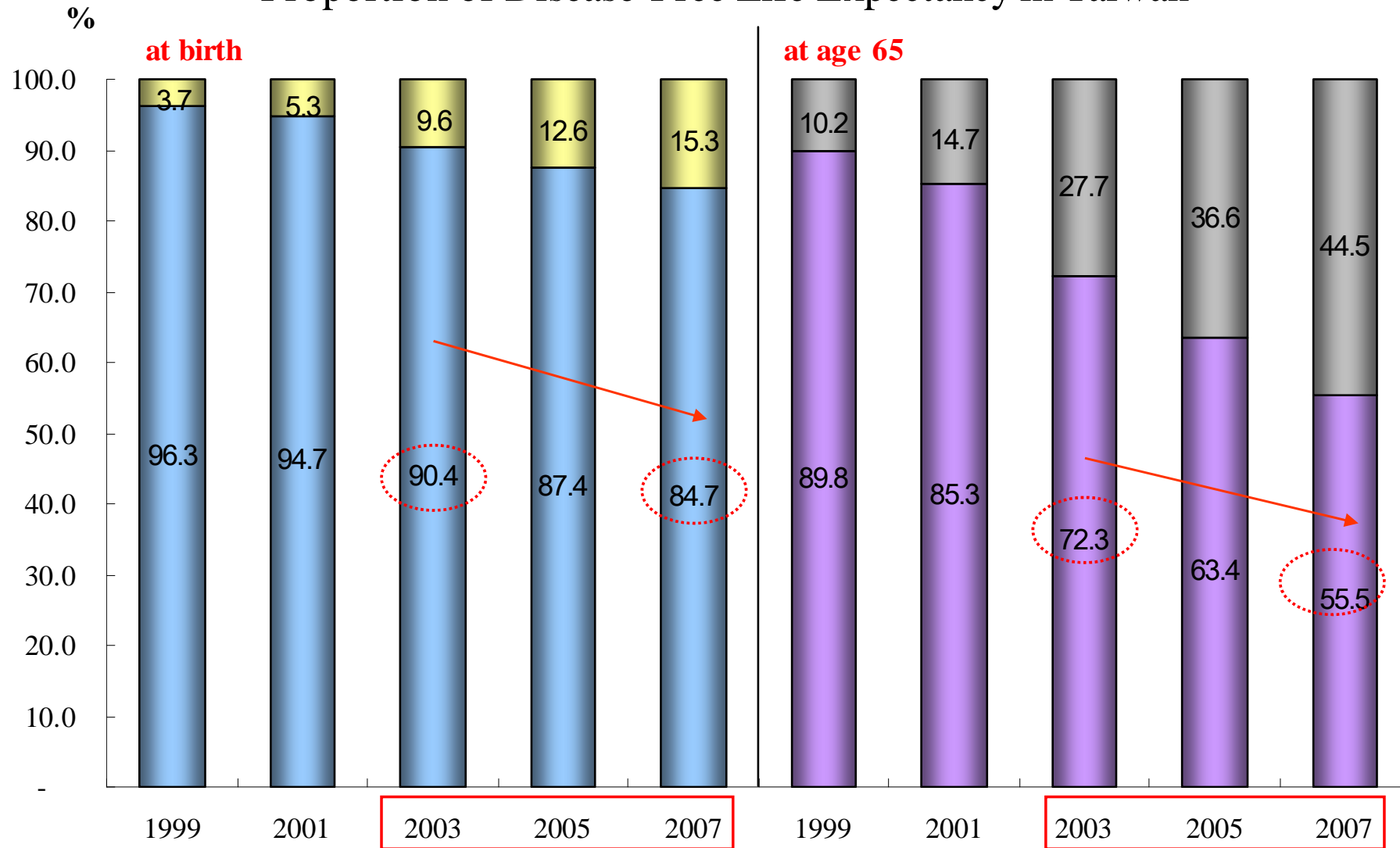
Clinical Data Repository—count by person not by physician visits

In 2007 no. of disease=2.5 million (11%)

Disease-Free Life Expectancy of Taiwanese

	at Birth			at Age 65		
	L.E	DFLE	DLE	L.E	DFLE	DLE
1999	75.9	73.1 (96.3%)	2.8	17.1	15.3 (89.8%)	1.7
2001	76.7	72.6 (94.7%)	4.1	17.5	14.9 (85.3%)	2.6
2003	77.4	69.9 (90.4%)	7.4	17.8	12.9 (72.3%)	4.9
2005	77.4	67.7 (87.4%)	9.7	18.0	11.4 (63.4%)	6.6
2007	78.3	66.3 (84.7%)	12.0	18.6	10.3 (55.5%)	8.3
		↑ -3.6 -5.2%	↑ +4.6		↑ -2.6 -20%	↑ +3.4

Proportion of Disease-Free Life Expectancy in Taiwan

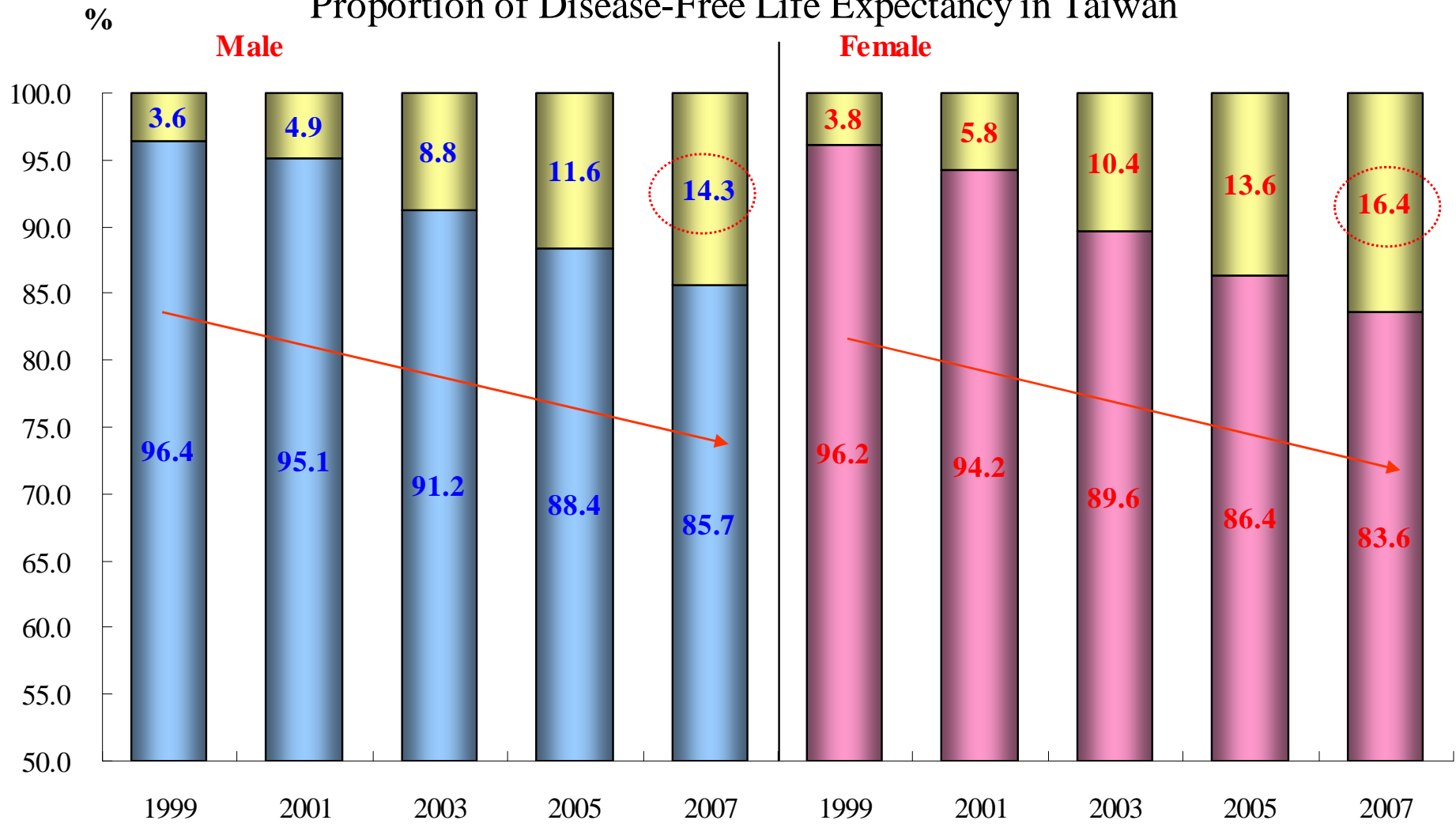


Disease-Free Life Expectancy of Taiwanese

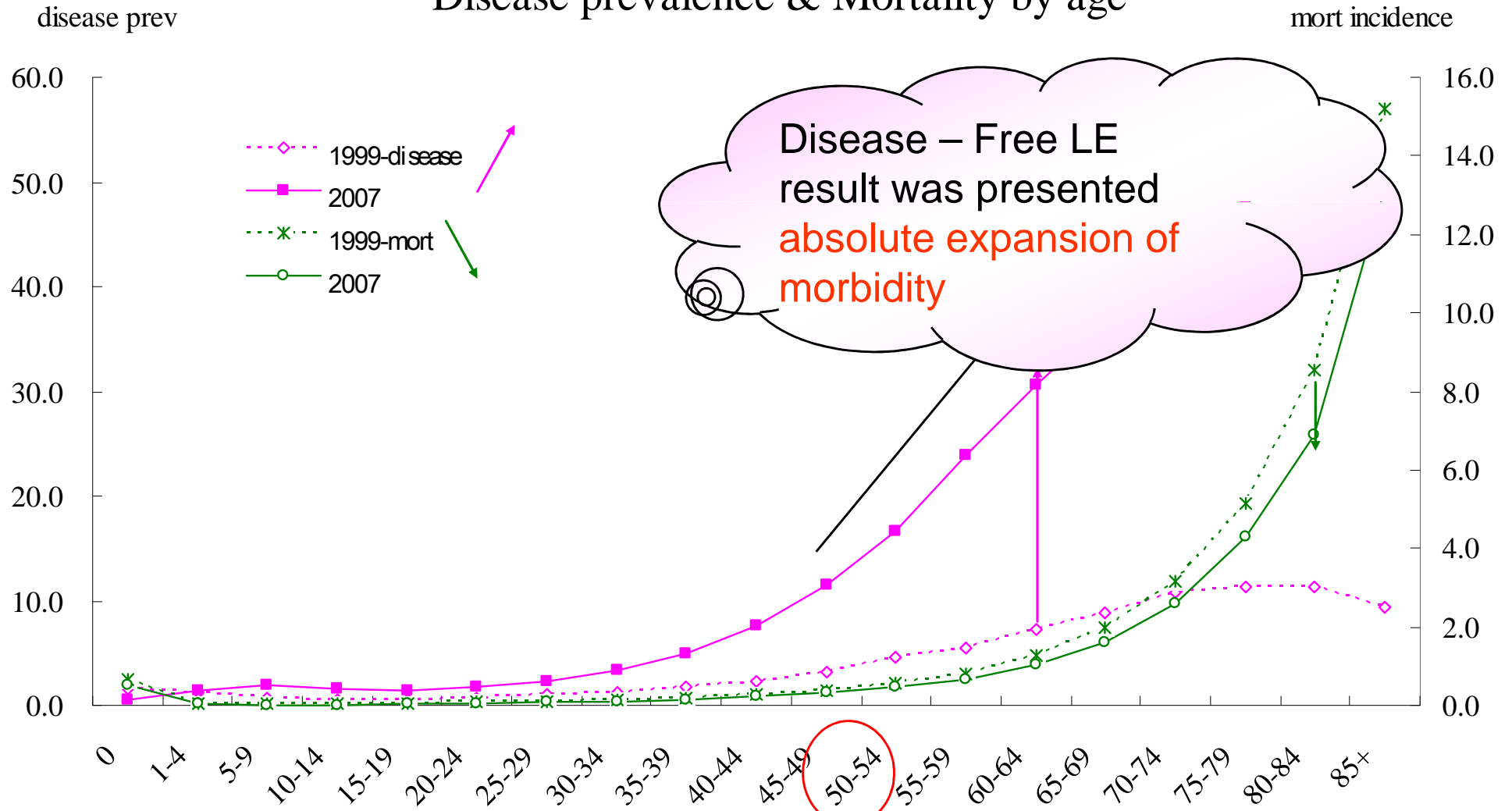
	Male			Female		
	L.E	DFLE	DLE	L.E	DFLE	DLE
1999	73.4	70.8 (96.4%)	2.6	78.9	75.8 (96.2%)	3.0
2001	74.1	70.5 (95.1%)	3.6	79.8	75.2 (94.2%)	4.6
2003	74.8	68.2 (91.2%)	6.6	80.3	71.9 (89.6%)	8.3
2005	74.5	65.9 (88.4%)	8.7	80.6	69.7 (86.4%)	11.0
2007	75.4	64.6 (85.7%)	10.8	81.4	68.1 (83.6%)	13.3
	+0.6 0.8%	-3.6 -5.3%	+8.2	+1.1 1.4%	-3.8 -5.3%	+10.3

Female live longer but less healthy than male

Proportion of Disease-Free Life Expectancy in Taiwan



Disease prevalence & Mortality by age



PartIII:

Serious Disease-Free Life Expectancy

Serious Disease= “ **major illness/injury**”

In Taiwan , Serious Disease have 30 category ,
like : cancer ; ESRD ; chronic psychotic
disorder ; respirator-dependent patient ;
cirrhosis of liver etc.

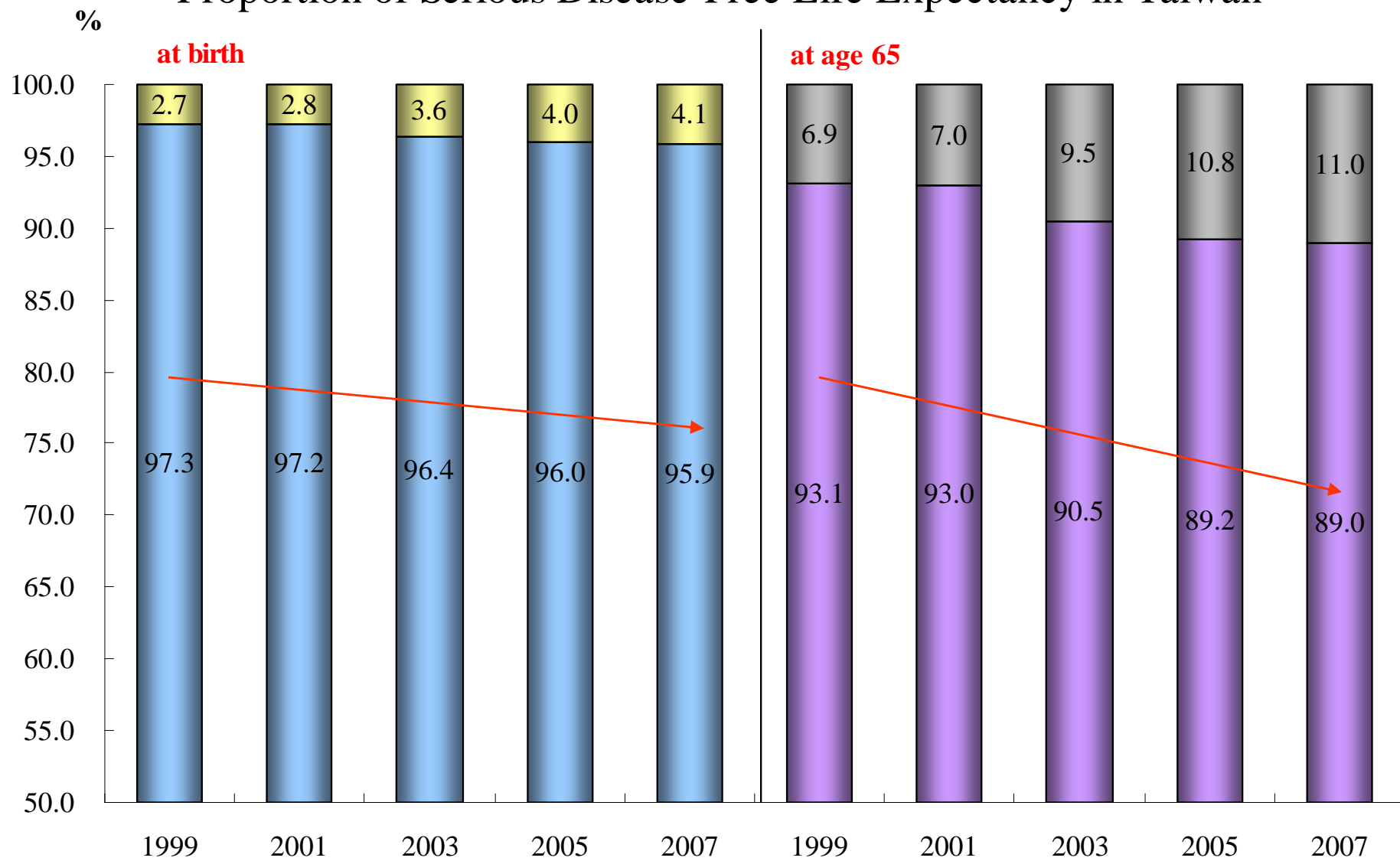
Data derived form **National Health Insurance
Claim Data**

In 2007 no. of serious disease=0.7 million (3.1%)

Serious Disease-Free Life Expectancy

	at Birth			at Age 65		
	L.E	DFLE	DLE	L.E	DFLE	DLE
1999	75.9	73.8 (97.3%)	2.1	17.1	15.9 (93.1%)	1.2
2001	76.7	↑ 74.6 (97.2%) ↓	↑ 2.1	17.5	16.3 (93.0%)	1.2
2003	77.4	74.6 (96.4%)	2.8	17.8	16.1 (90.5%)	1.7
2005	77.4	74.3 (96.0%) ↓	↑ 3.1	18.0	16.1 (89.2%)	1.9
2007	78.3	75.0 (95.9%)	3.2	18.6	16.5 (89.0%)	2.0
		↑ +1.2 1.6%	↑ +1.1 52%	↑ +0.6 3.8%	↑ +0.8 67%	

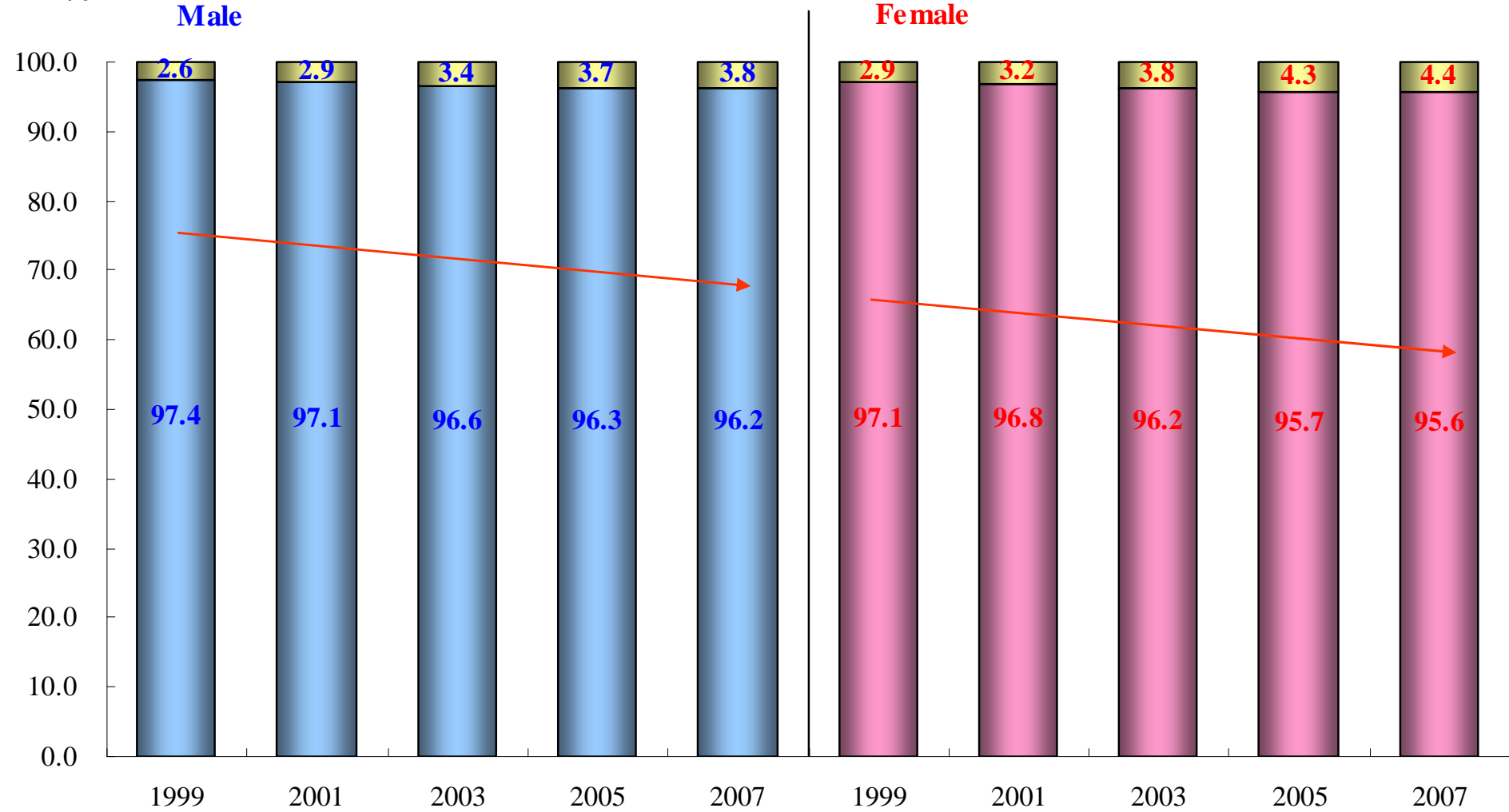
Proportion of Serious Disease-Free Life Expectancy in Taiwan



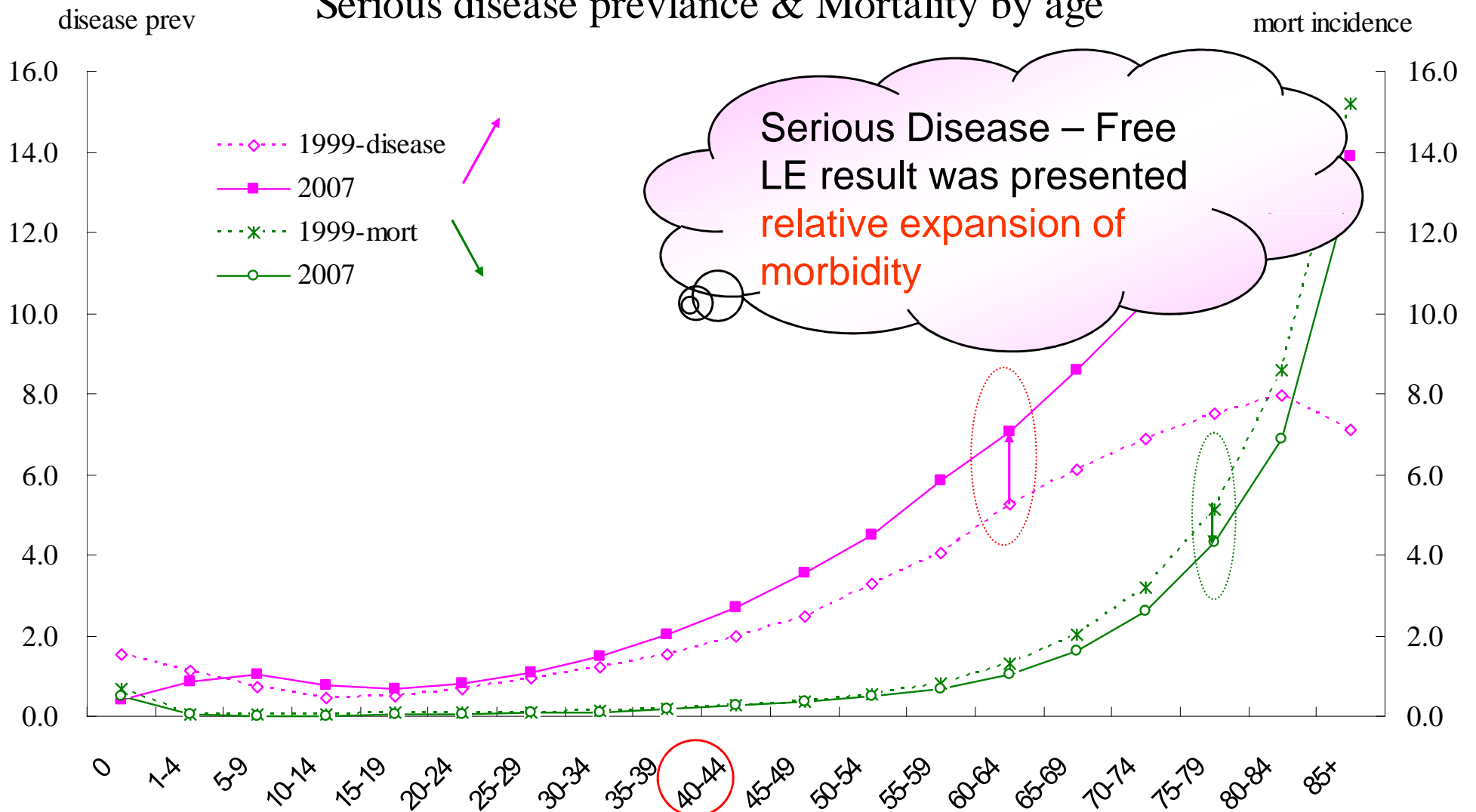
Serious Disease-Free Life Expectancy

	Male			Female		
	L.E	DFLE	DLE	L.E	DFLE	DLE
1999	73.4	71.5 (97.4%)	1.9	78.9	76.6 (97.1%)	2.3
2001	74.1	72.0 (97.1%)	2.1	79.8	77.2 (96.8%)	2.6
2003	74.8	72.3 (96.6%)	2.5	80.3	77.2 (96.2%)	3.1
2005	74.5	71.7 (96.3%)	2.8	80.6	77.2 (95.7%)	3.4
2007	75.4	72.5 (96.2%)	2.9	81.4	77.8 (95.6%)	3.6
		+1.0 1.4%	+1.0 53%		+1.2 1.6%	+1.3 57%

Proportion of Serious Disease-Free Life Expectancy at birth in Taiwan



Serious disease prevalence & Mortality by age



Serious Disease – Free LE result was presented
relative expansion of morbidity

Part IV:

Cancer-Free Life Expectancy

Disease = specified disease--“ cancer”
is a kind of serious disease
also a kind of chronic disease

Base on medical examination

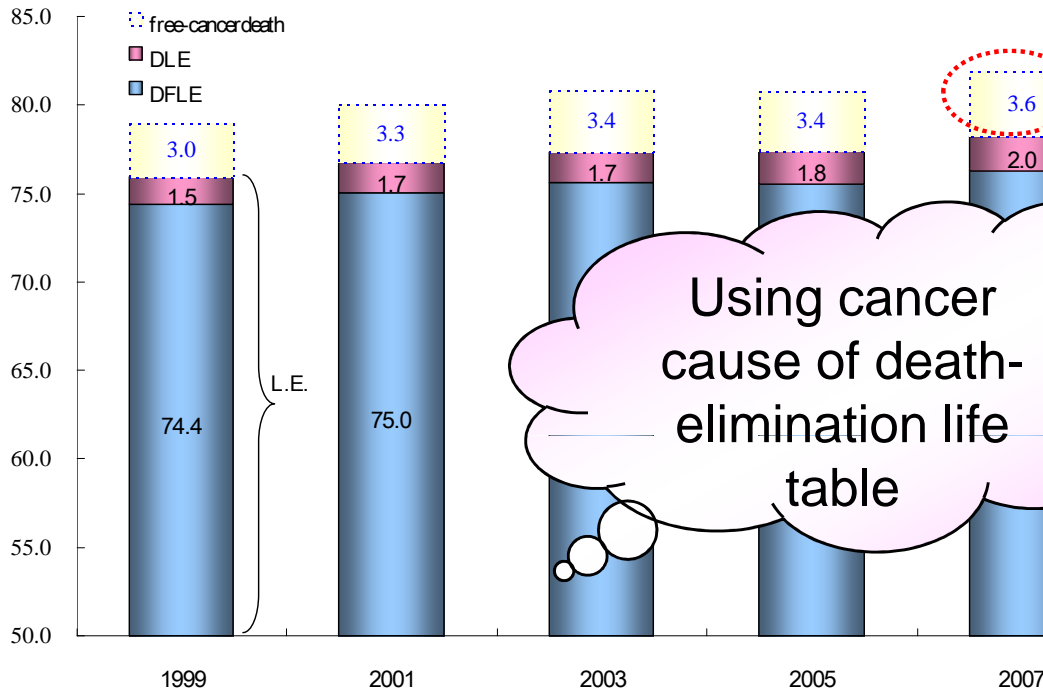
Data derived form **National Health
Insurance Claim Data**

In 2007 no. of cancer disease=0.4 million (1.9%)

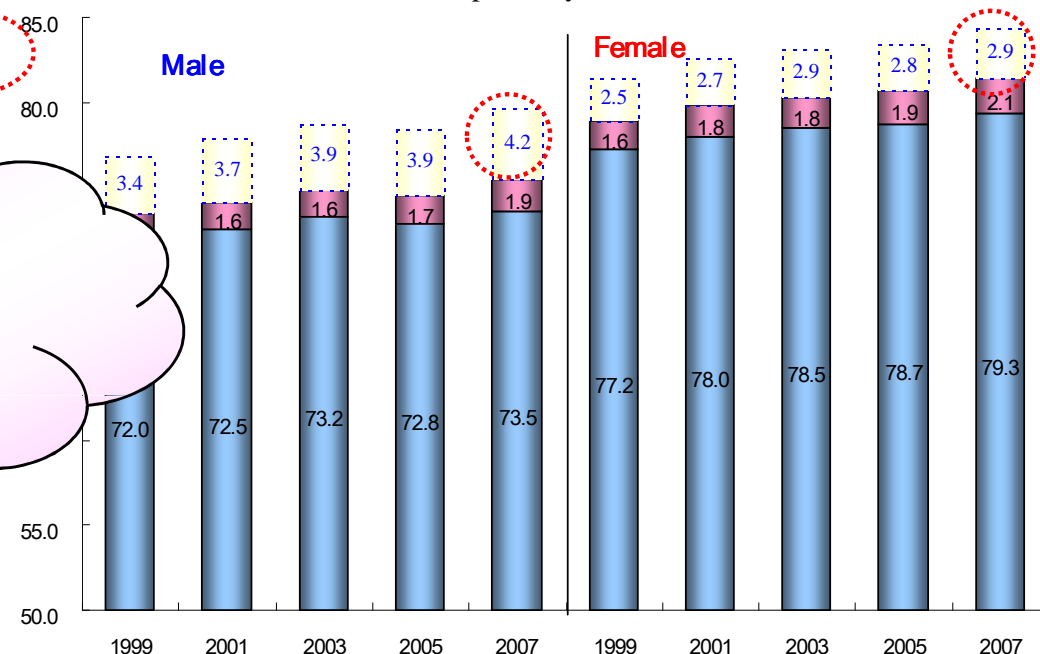
Cancer-Free Life Expectancy of Taiwanese

	at Birth			at Age 65		
	L.E	cancer FLE	cancer LE	L.E	cancer FLE	cancer LE
1999	75.9	74.4 (98.0%)	1.5	17.1	16.1 (94.2%)	1.0
2001	76.7	75.0 (97.8%)	1.7	17.5	16.4 (93.5%)	1.1
2003	77.4	75.6 (97.8%)	1.7	17.8	16.7 (93.4%)	1.2
2005	77.4	75.5 (97.6%)	1.8	18.0	16.7 (92.9%)	1.3
2007	78.3	76.2 (97.4%)	2.0	18.6	17.1 (92.3%)	1.4
		↑ +1.8 2.4%	↑ +0.5 33%	↑ +1.0 6.2%	↑ +0.4 40%	

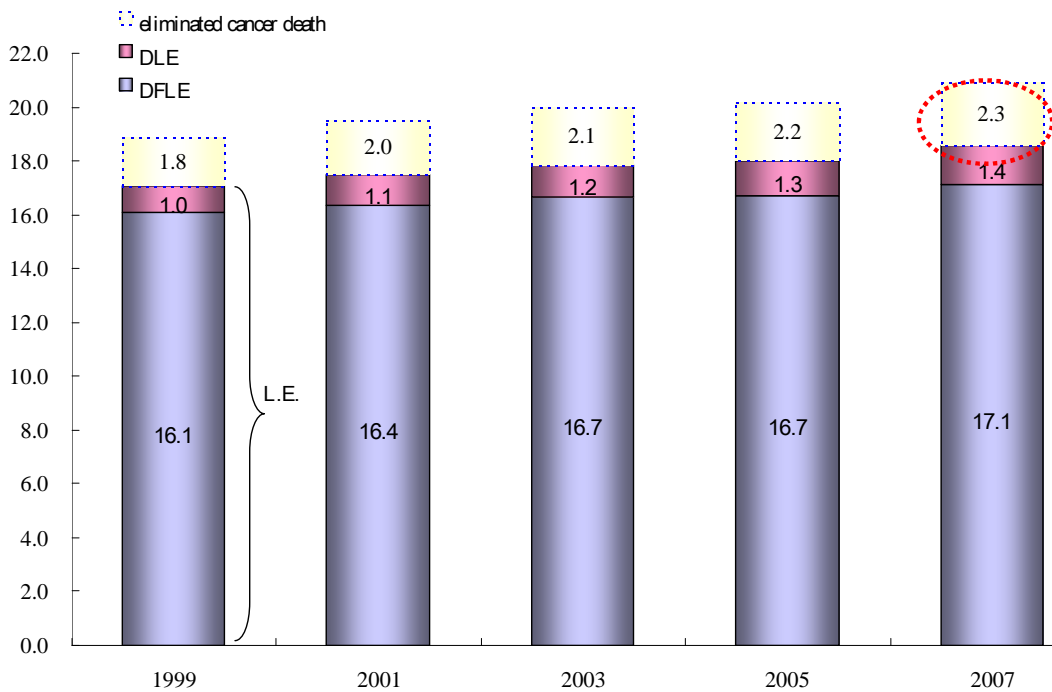
Cancer-Free Life Expectancy at birth in Taiwan



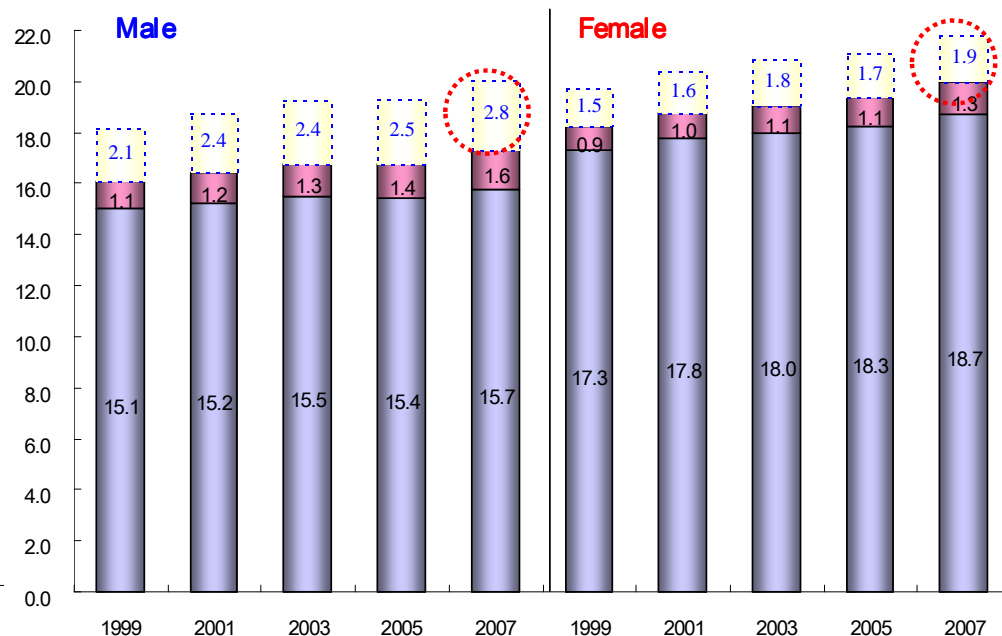
Cancer-Free Life Expectancy at birth in Taiwan



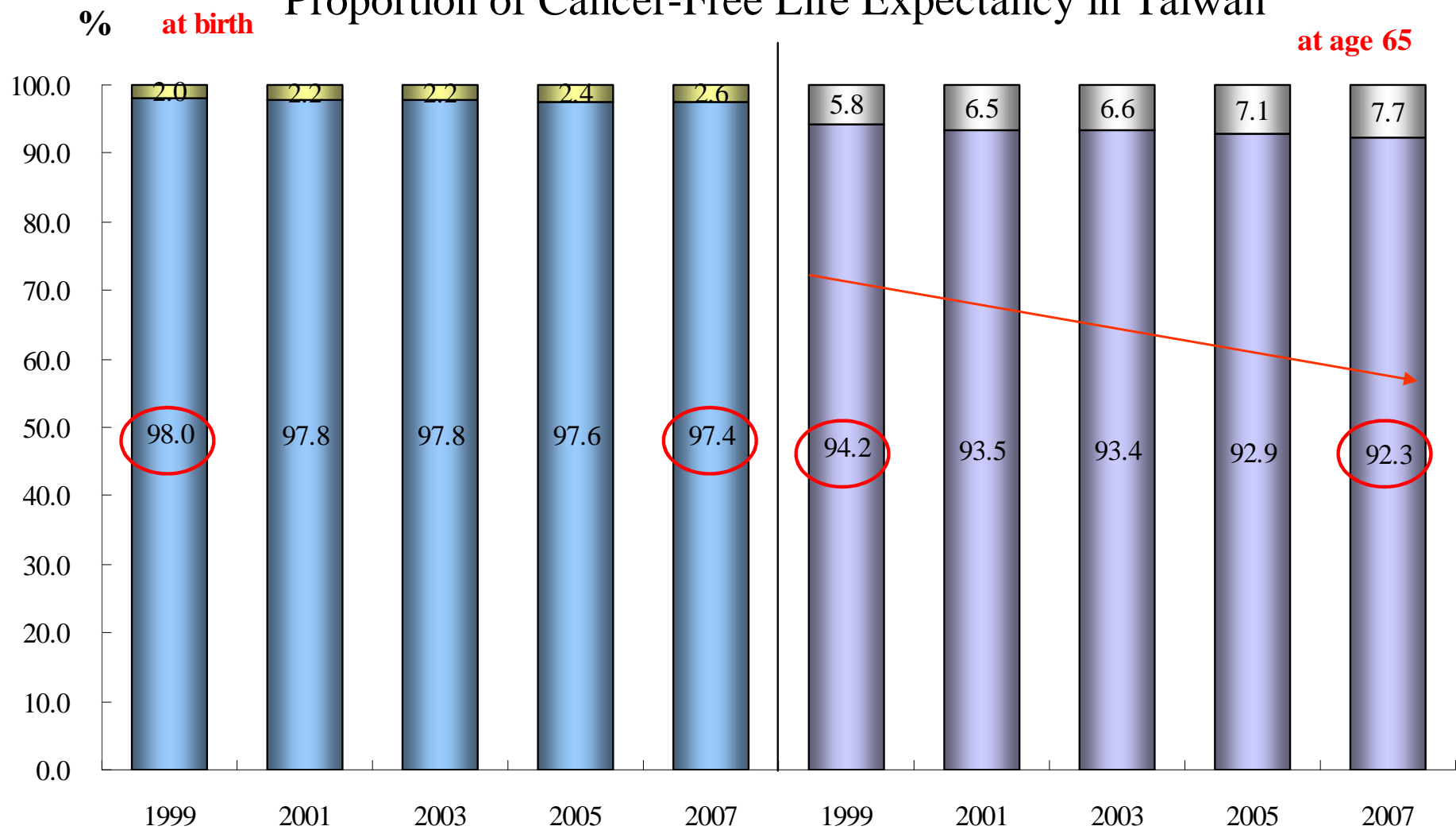
Cancer-Free Life Expectancy at age 65 in Taiwan



Cancer-Free Life Expectancy at age 65 in Taiwan



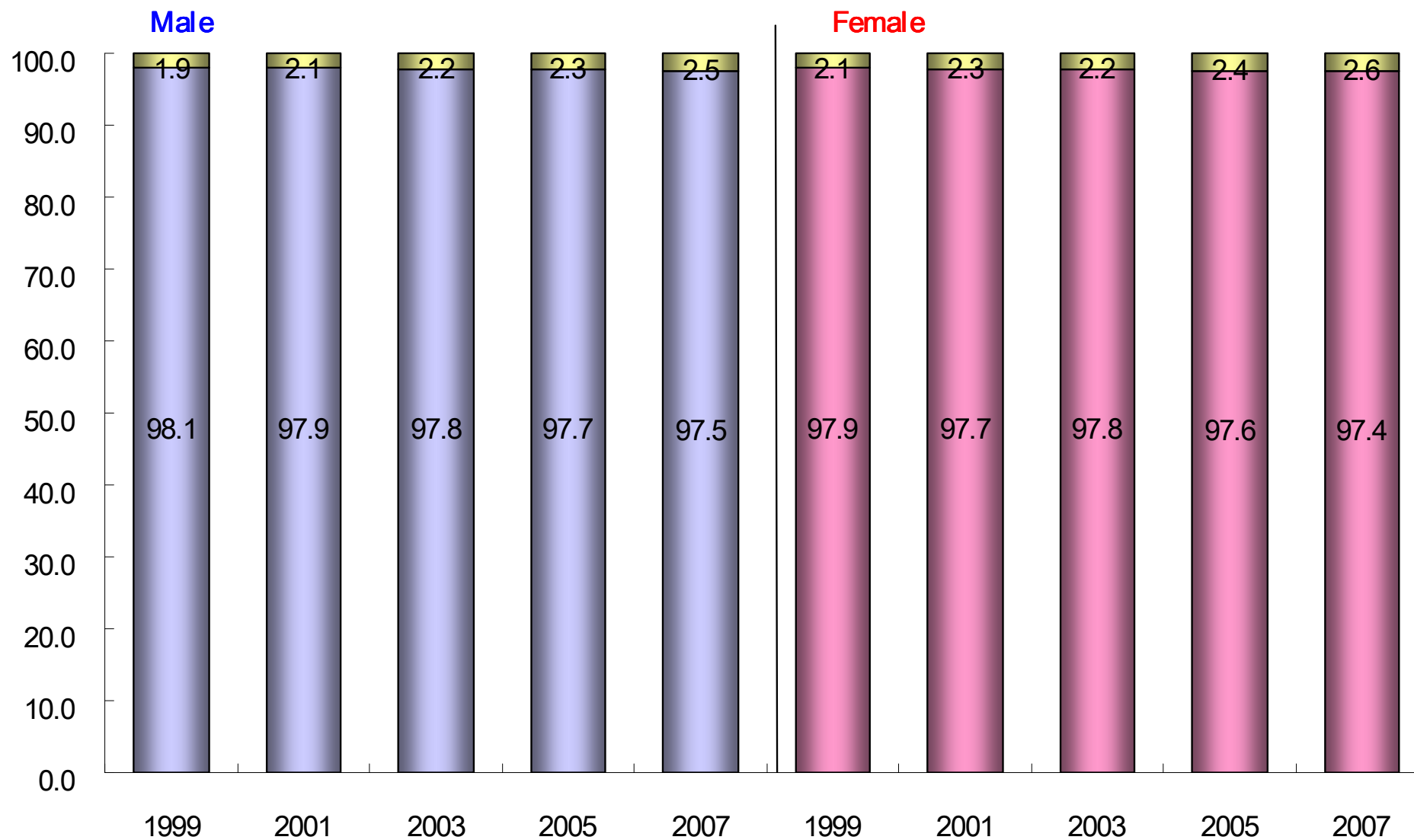
Proportion of Cancer-Free Life Expectancy in Taiwan



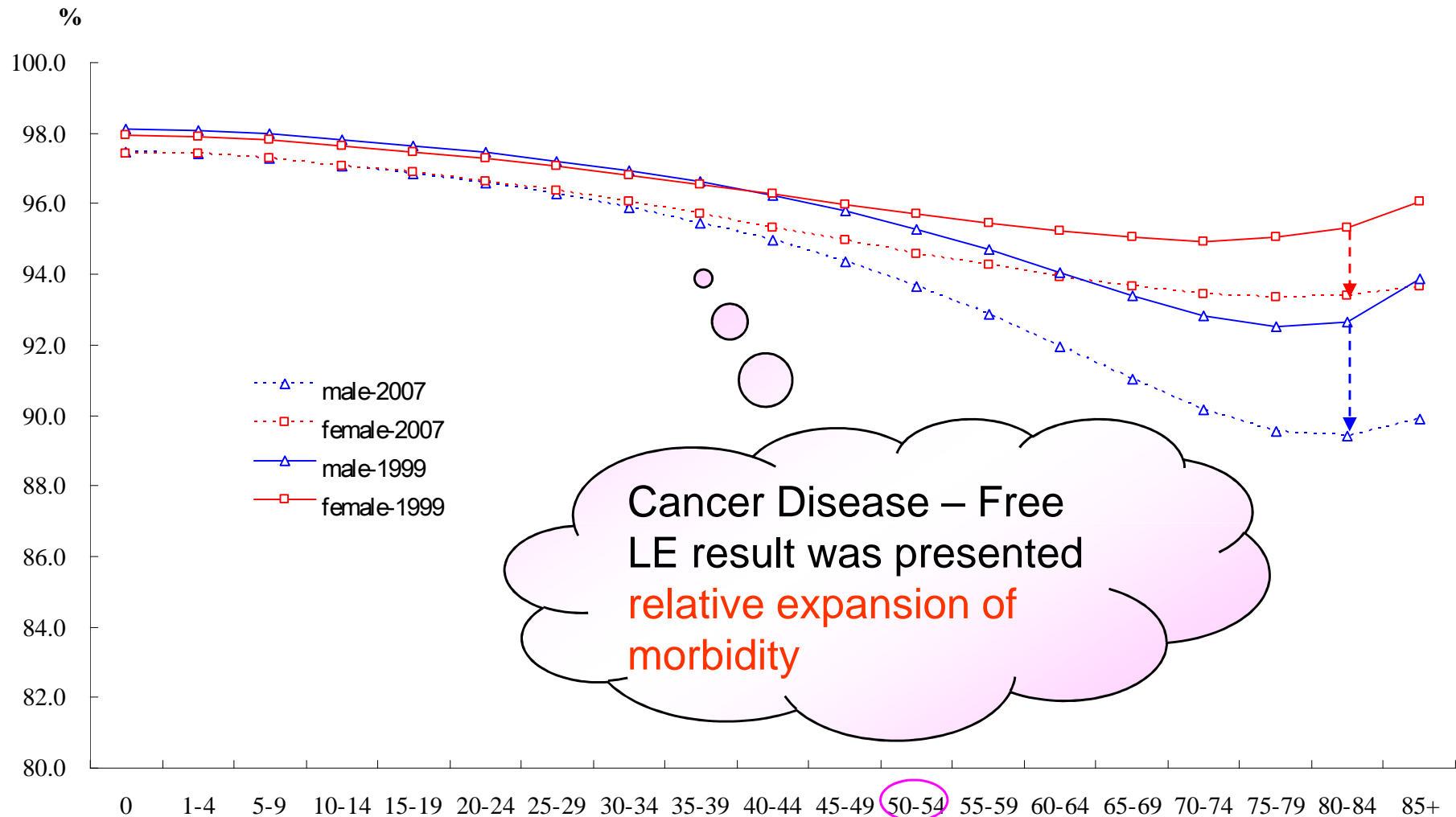
Cancer-Free Life Expectancy' at birth

	Male			Female		
	L.E	cancer FLE	cancer LE	L.E	cancer FLE	cancer LE
1999	73.4	72.0 (98.1%)	1.4	78.9	77.2 (97.9%)	1.6
2001	74.1	72.5 (97.9%)	1.6	79.8	78.0 (97.7%)	1.8
2003	74.8	73.2 (97.8%)	1.6	80.3	78.5 (97.8%)	1.8
2005	74.5	72.8 (97.7%)	1.7	80.6	78.7 (97.6%)	1.9
2007	75.4	73.5 (97.5%)	1.9	81.4	79.3 (97.4%)	2.1
		<div style="text-align: center;">↑</div> <div style="border: 1px solid gray; padding: 2px; width: 40px; margin: 0 auto;">+1.5 2.1%</div>	<div style="text-align: center;">↑</div> <div style="border: 1px solid gray; padding: 2px; width: 40px; margin: 0 auto;">+0.5 36%</div>		<div style="text-align: center;">↑</div> <div style="border: 1px solid gray; padding: 2px; width: 40px; margin: 0 auto;">+2.1 2.7%</div>	<div style="text-align: center;">↑</div> <div style="border: 1px solid gray; padding: 2px; width: 40px; margin: 0 auto;">+0.5 31%</div>

Proportion of Cancer-Free Life Expectancy at birth in Taiwan



Proportion of cancer-free LE on total LE by gender in Taiwan, 1999 and 2007



Cancer Disease – Free
LE result was presented
relative expansion of
morbidity

Conclusions

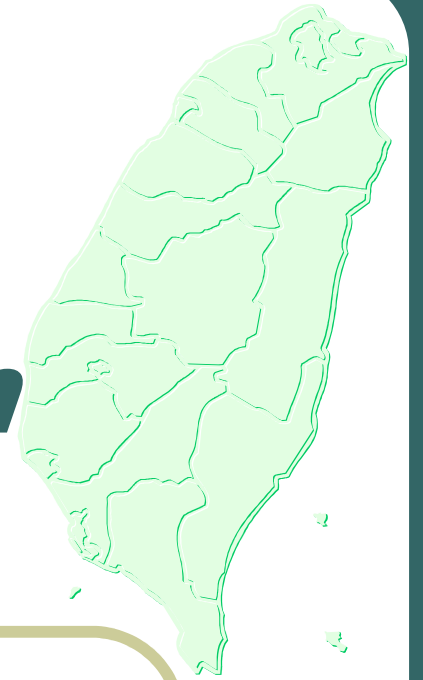
Taiwanese life expectancy will continue to increase.

The increasing life expectancy seems to be driven mainly by the continuing postponement of deaths from degenerative disease.

Taiwan perhaps exists an **Expansion of Morbidity**, which may be related to the improved access to health care service and preventive health screenings.

It also related to the successful implementation of the national health insurance.

***Thank you
for your attention***



Dr. Liang Ling-Yu

d85901@ym.edu.tw

Chen Lea-Hua

stleahua@doh.gov.tw