Willingness to pay to avoid minor morbidity: An international comparison

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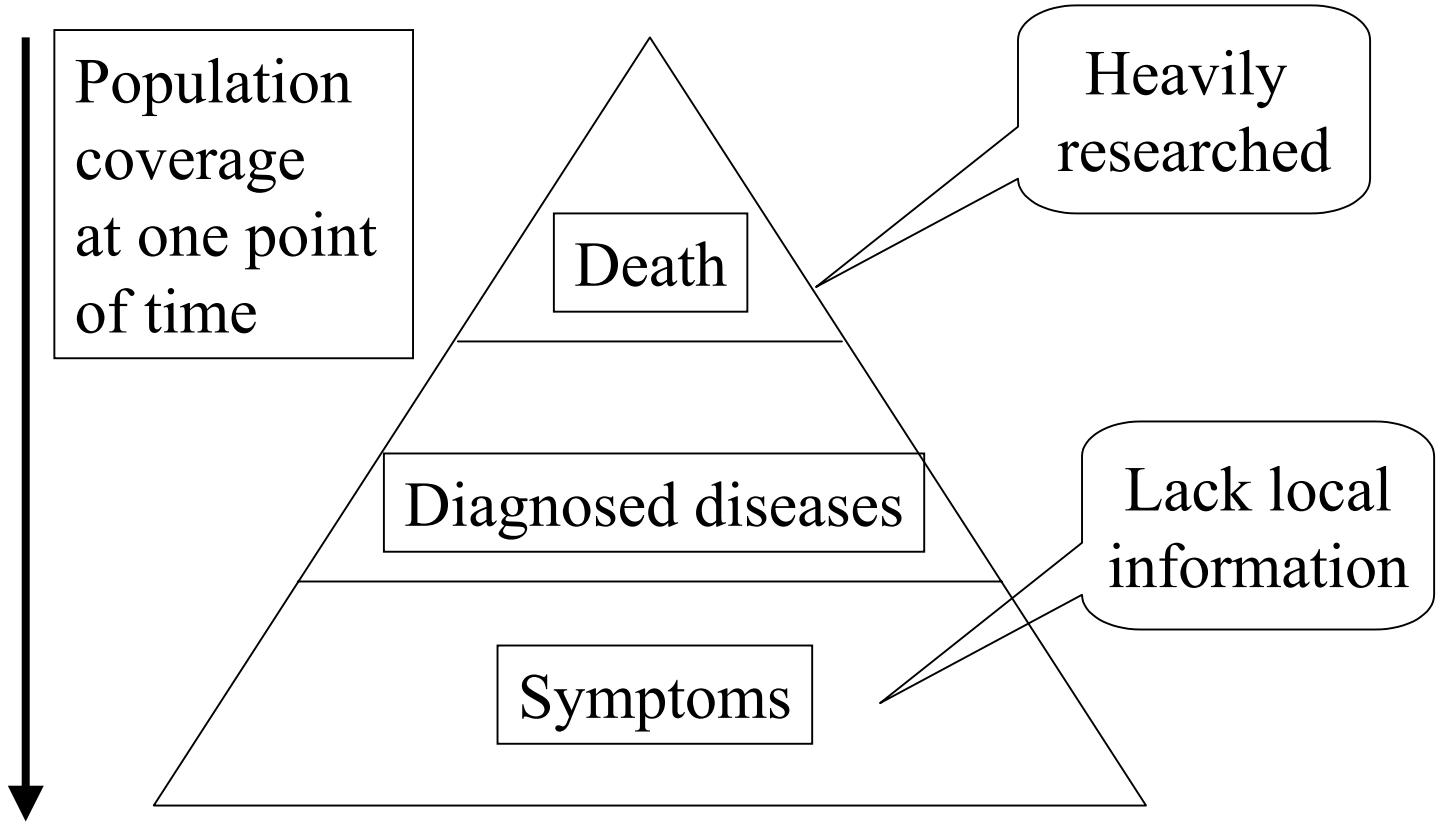
A pyramid of disease burden



Studies of symptom valuation

- US Studies - Dickie et al 1987, Loehman et al 1979, Rowe & Chestnut 1984, Johnson et al 1997, Tolley et al 1994
- Norwegian - Navrud 1996
- Taiwan - Alberini 1997

Methodology

- Random digit dialing followed with reliability checking
- Double-bounded with follow-up if “No-No”
- Interval regression – STATA 7.0
- Face validity; construct validity checking by regression
- International comparison – PPP/CPI adjusted

Symptom specification

– “We are going to ask your willingness to pay for avoiding a one day episode of the symptom. Please assume that money can help you to avoid the symptom and you can pay for it from your own pocket: that is, you will have less to spend on other goods or services. Please take a moment to think about the pain and suffering caused by the symptom.” (a 5 second break) “Now assume that you would experience one day of such [shortness of breath], the most troublesome you mentioned, are you willing to pay $X to avoid one day of this symptom?” [If the person says “No”] “What about $X/2?” or [if the person say “yes”] “What about $X * 2 ?” (back translated from the Chinese version)

Estimating WTP

Log-normal specification:

$$WTP_i = \exp(X_i\beta + u_i) \qquad u_i \sim N(0,\sigma^2)$$

$$\text{Median WTP} = \exp(\overline{X}\,\hat{\beta})$$

$$\text{Mean WTP} = \exp(\overline{X}\,\hat{\beta} + \hat{\sigma}^2/2)$$

Open-ended pilot data

wtp for the worst symptom	Freq.	Percent	Cum.
10	3	5.45	5.45
20	1	1.82	7.27
25	1	1.82	9.09
30	1	1.82	10.91
40	2	3.64	14.55
50	2	3.64	18.18
100	8	14.55	32.73
150	5	9.09	41.82
200	10	18.18	60.00
250	1	1.82	61.82
300	3	5.45	67.27
500	7	12.73	80.00
600	1	1.82	81.82
1000	5	9.09	90.91
5000	1	1.82	92.73
10000	2	3.64	96.36
100000	1	1.82	98.18
500000	1	1.82	100.00
Total	55	100.00	

Percentile

~10%

~20%

~33%

~60%

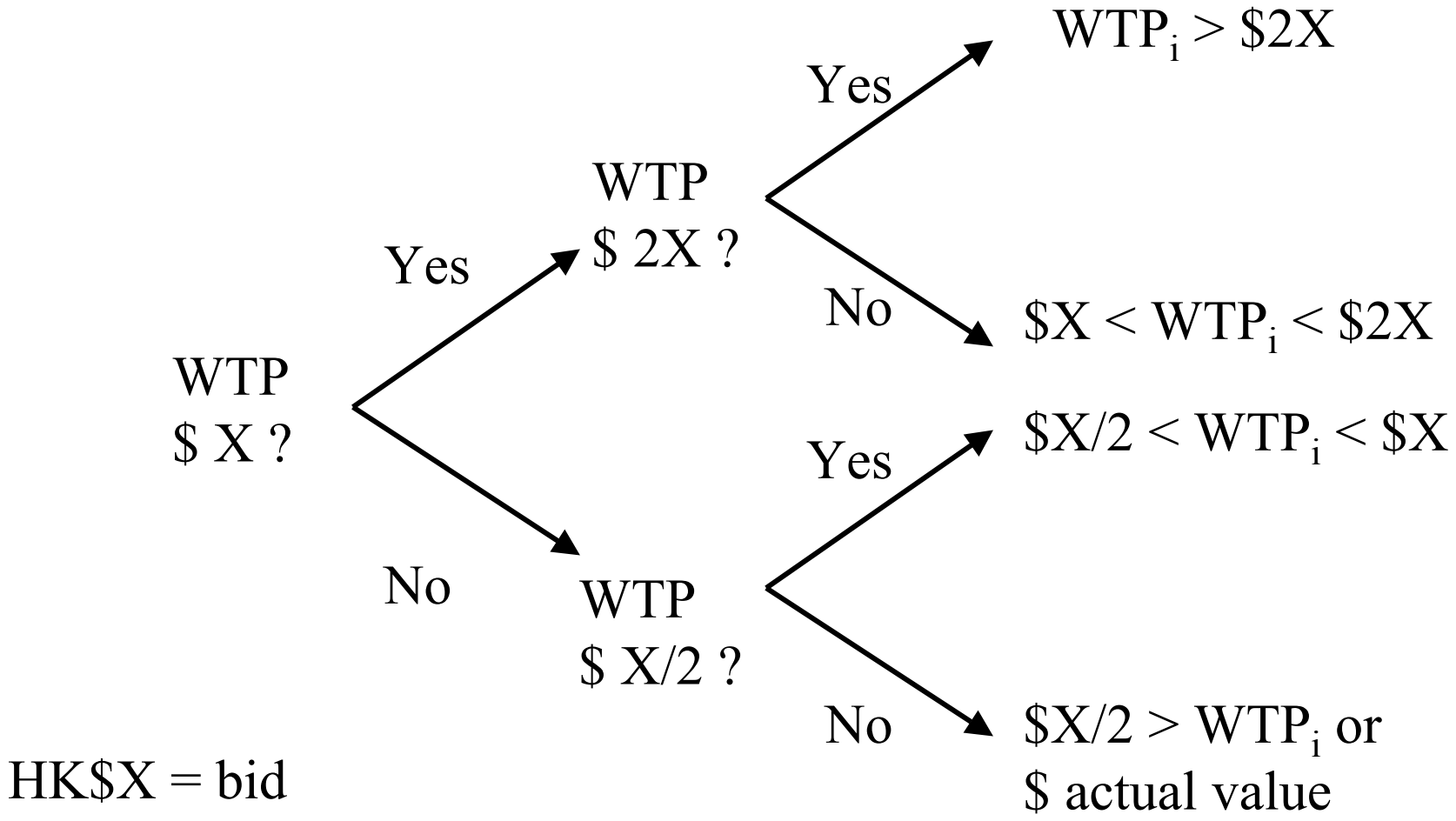
~66%

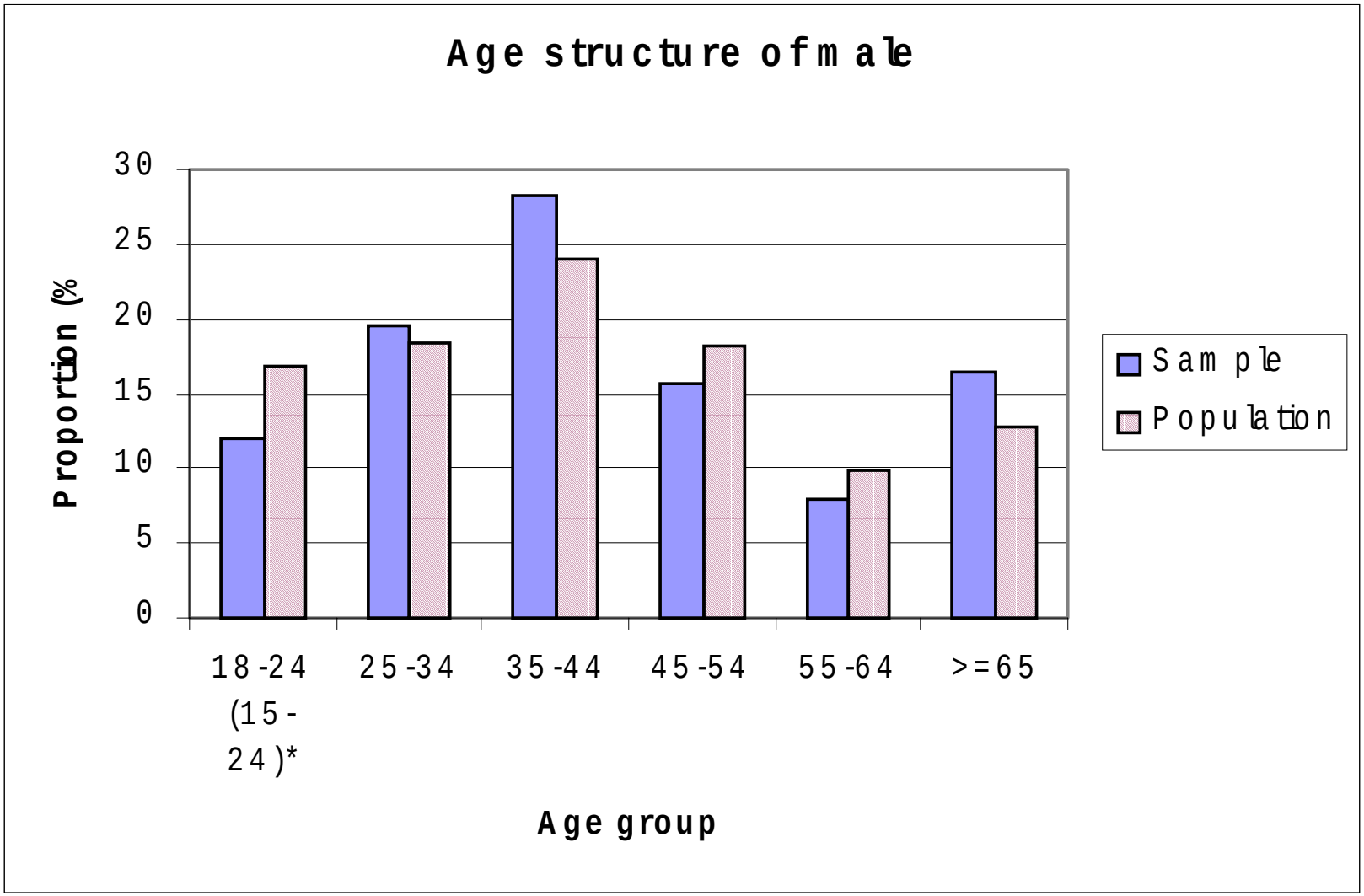
~80%

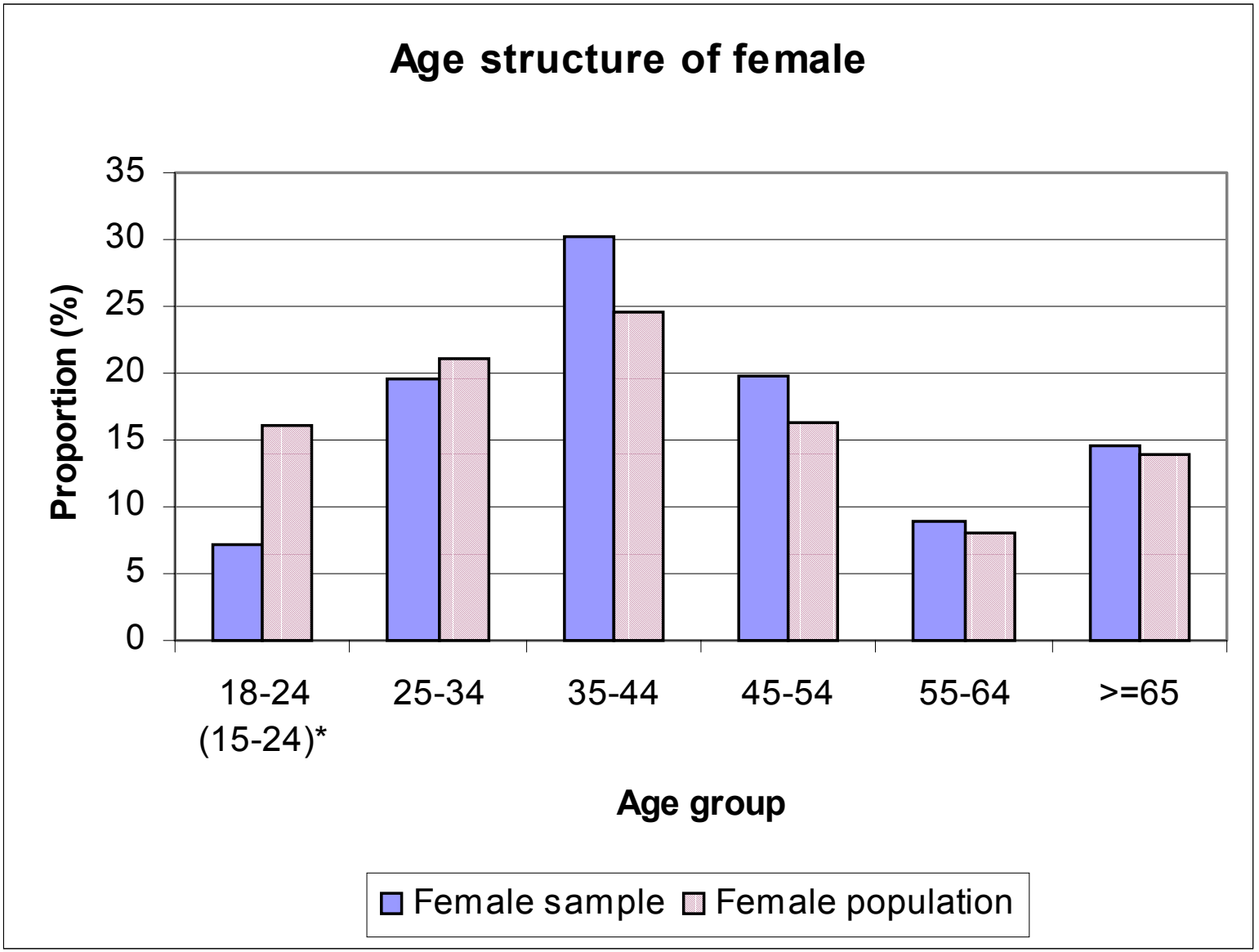
~90%

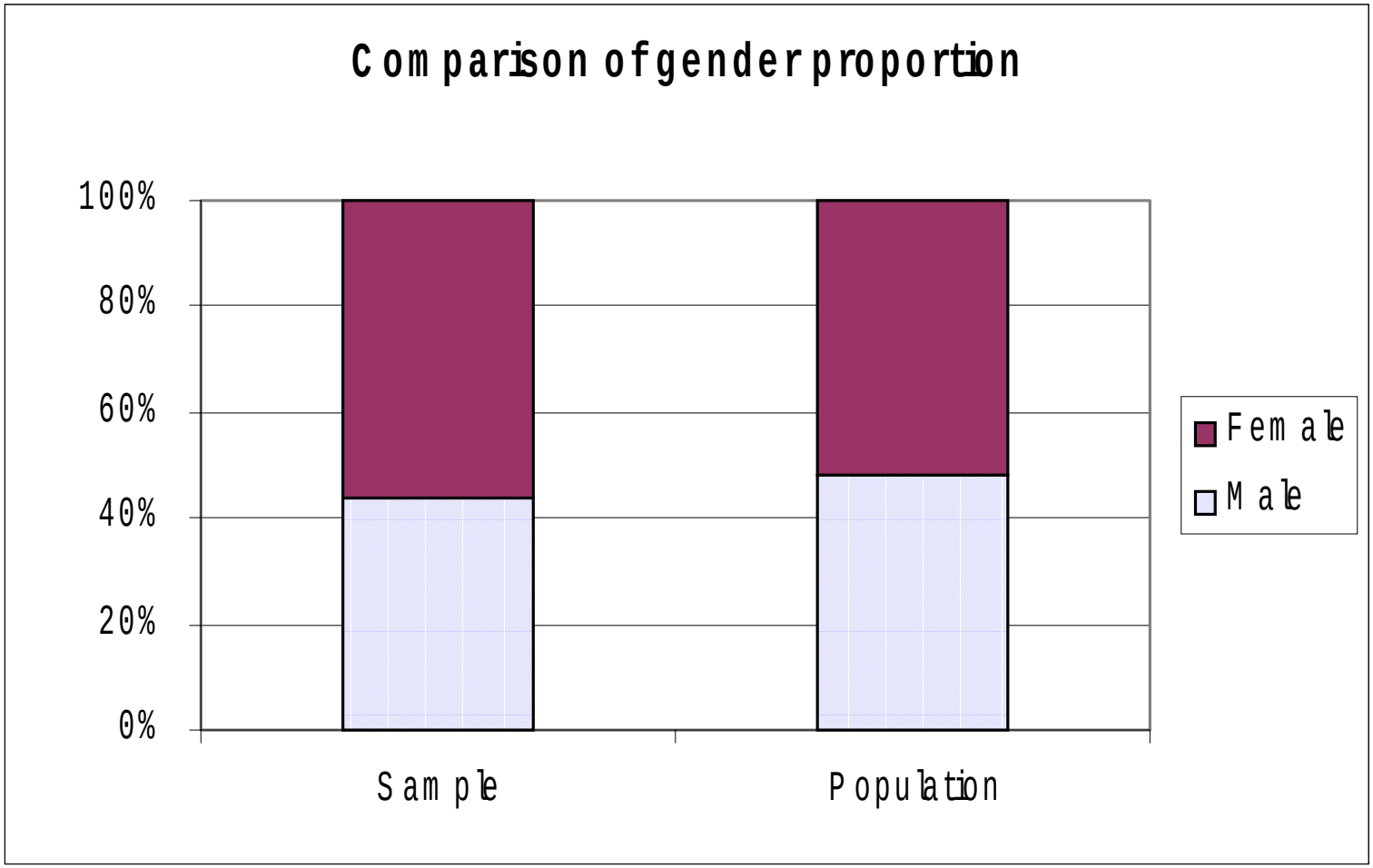
~93%

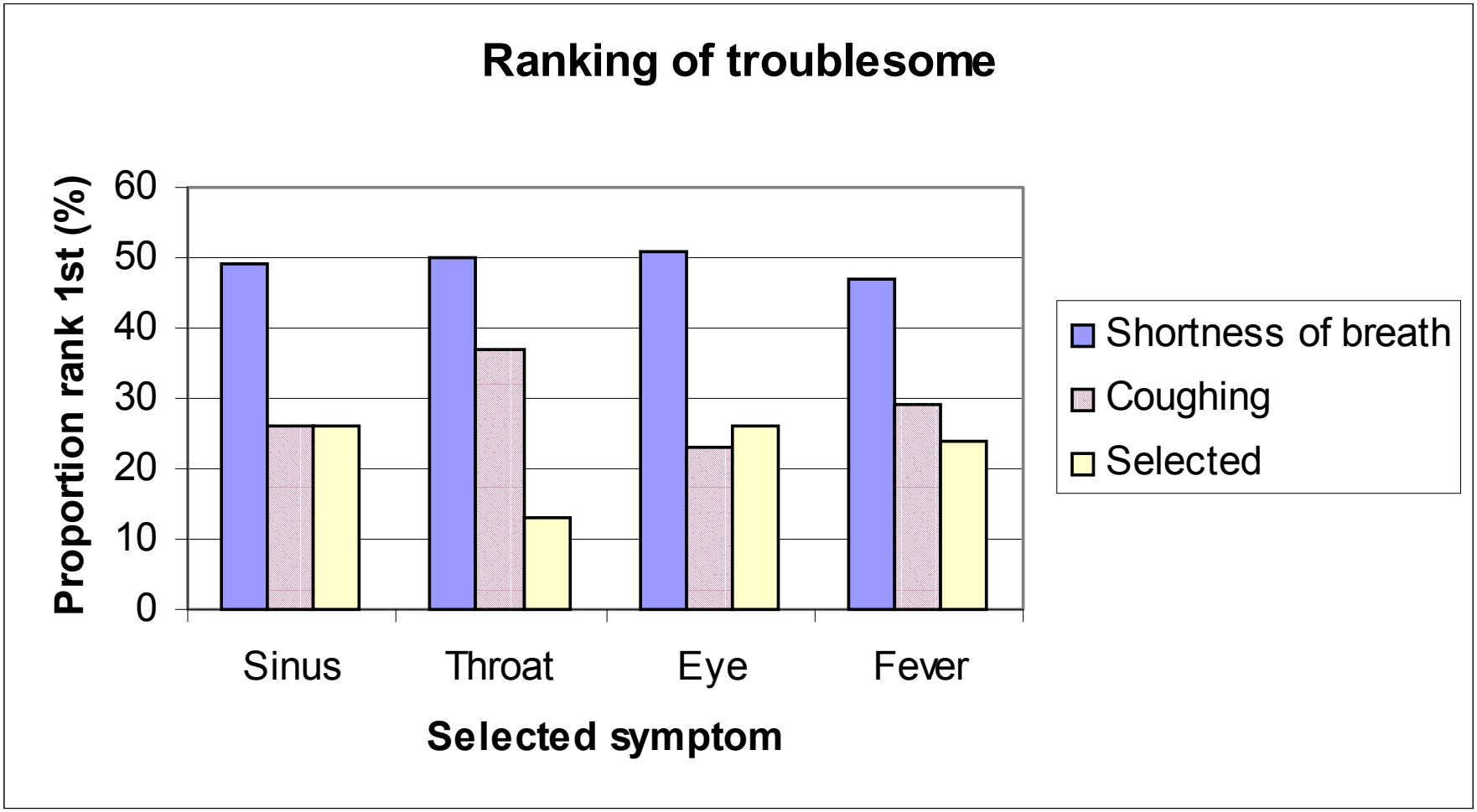
Double bounded dichotomous choice




Age structure of male
Proportion (%
30
25
20
15
10
5
0
18-24 (15-24)*
25-34
35-44
45-54
55-64
>=65
Age group
Sample
Population

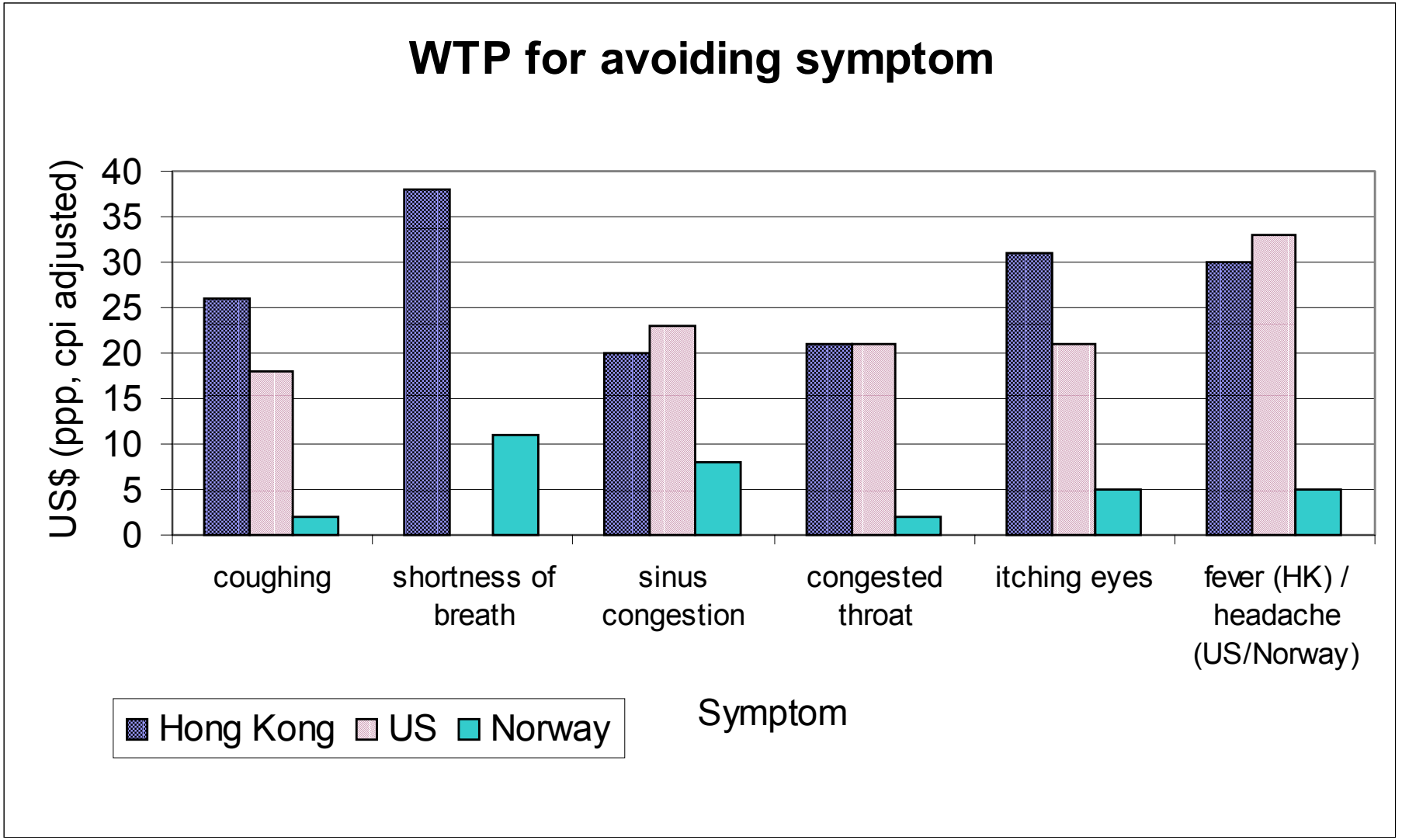

Age structure of female
Proportion (%)
35
30
25
20
15
10
5
0
18-24
(15-24)*
25-34
35-44
45-54
55-64
>=65
Age group
Female sample
Female population


Comparison of gender proportion
100%
80%
60%
40%
20%
0%
Sample
Population
Female
Male


Ranking of troublesome
Proportion rank 1st (%)
60
50
40
30
20
10
0
Sinus
Throat
Eye
Fever
Selected symptom
Shortness of breath
Coughing
Selected

Coefficient estimates

	N	β	S.E (β)	σ	Log-likelihood
coughing	1385	5.1883*	0.04	1.4968*	-2077.8
shortness of breath	1379	5.5808*	0.05	1.6952*	-2016.2
sinus congestion	367	4.9315*	0.09	1.5077*	-518.6
congested throat	341	4.9804*	0.09	1.4657*	-529.5
itching eyes	355	5.3545*	0.1	1.6425*	-542.3
Fever (HK) / Headache (US/Norway)	321	5.3165*	0.09	1.3611*	-425.68


WTP for avoiding symptom
US$ (ppp, cpi adjusted)
40
35
30
25
20
15
10
5
0
coughing
shortness of breath
sinus congestion
congested throat
itching eyes
fever (HK) / headache (US/Norway)
Symptom
Hong Kong
US
Norway

Limitation and potential extension

- Reconcile international variation
- Strengthen the construct validity
- Need symptom incidence for full CBA
- Any econometric extension