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Reducing Gaps in Health Expectancy

Are we heading to the compression of disability? The case of Hong Kong SAR, 1996-2006

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OUTLINE

- Background
- Research aims
- Data and methods
- Results
- Conclusions and discussions

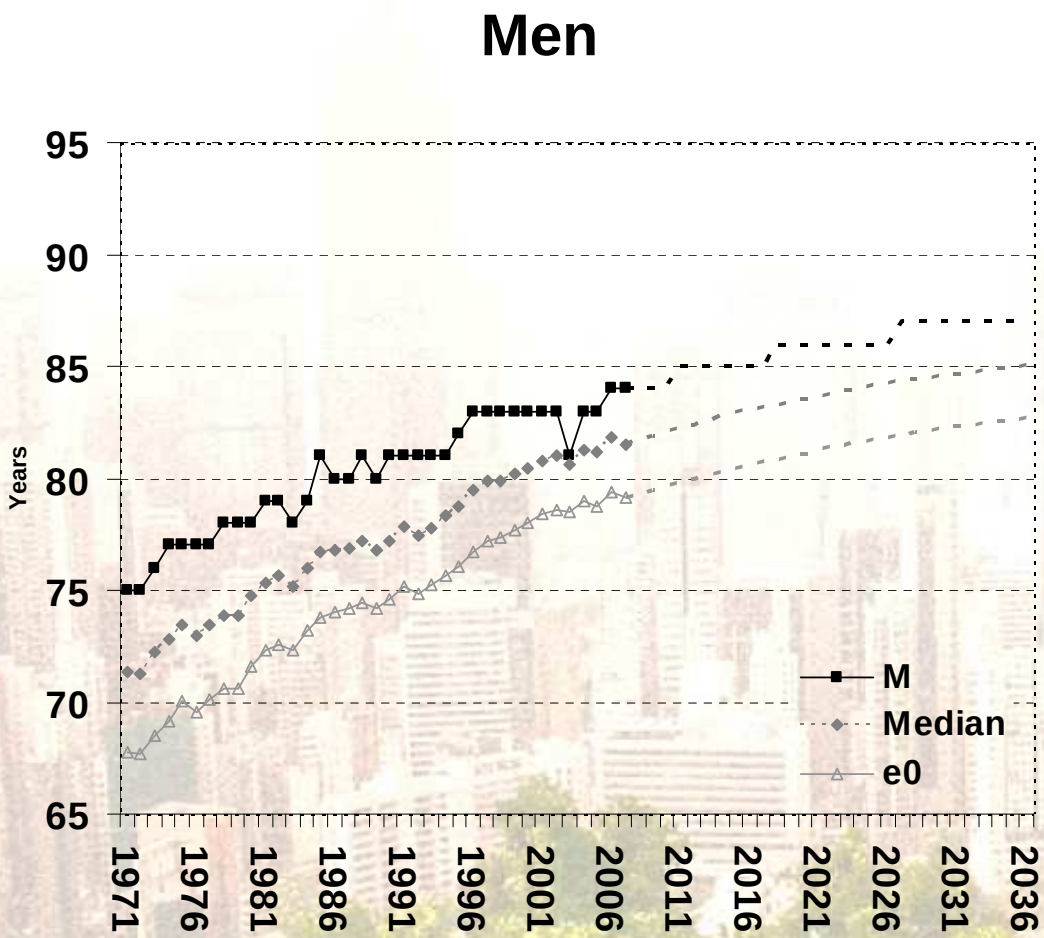
Number of elderly population in future

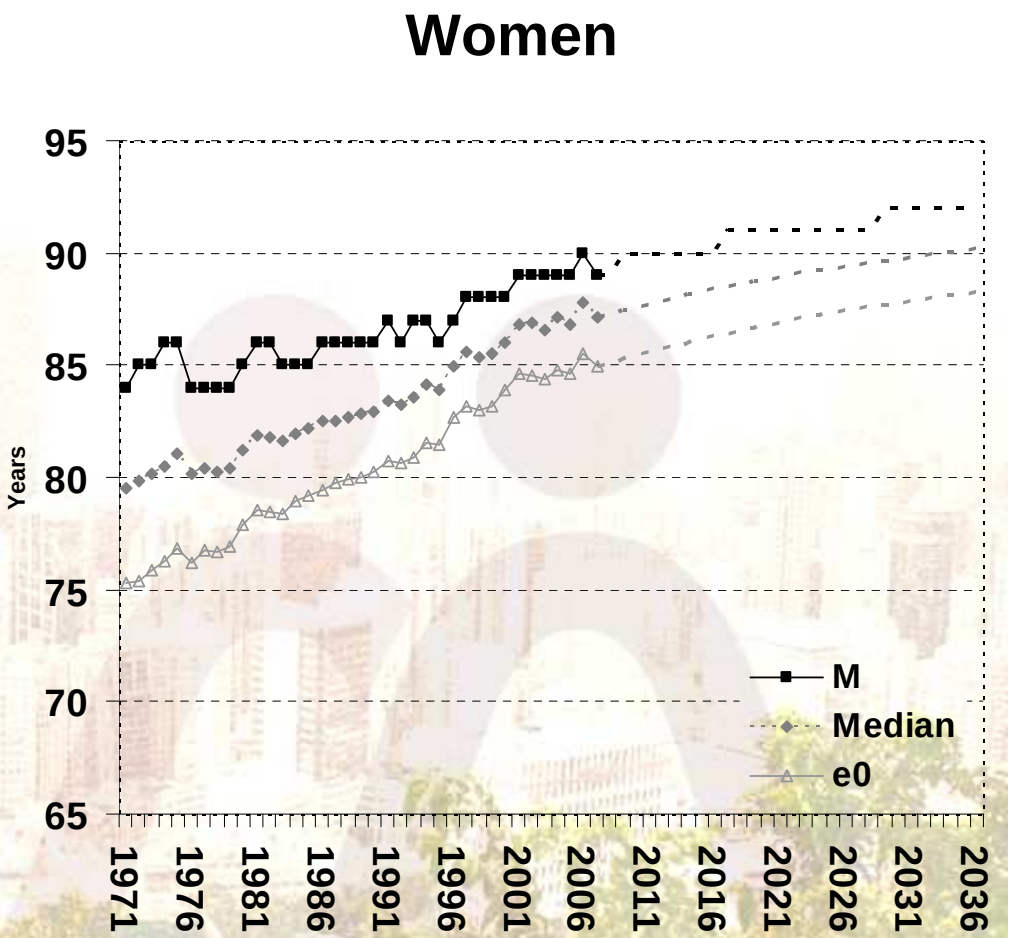
Year	Aged 65+	All population
1981	344 300 (6.6%) **(1 in 15 Persons)**	5183 400
2008	890 800 (12.7%) **(1 in 8 persons)**	7 008 900
2021	1 413 900 (18%) **(1 in 6 persons)**	7 784 000
2036	2 261 000 (26%) **(1 in 4 persons)**	8 570 200

Rapidly growing number of oldest-old in future

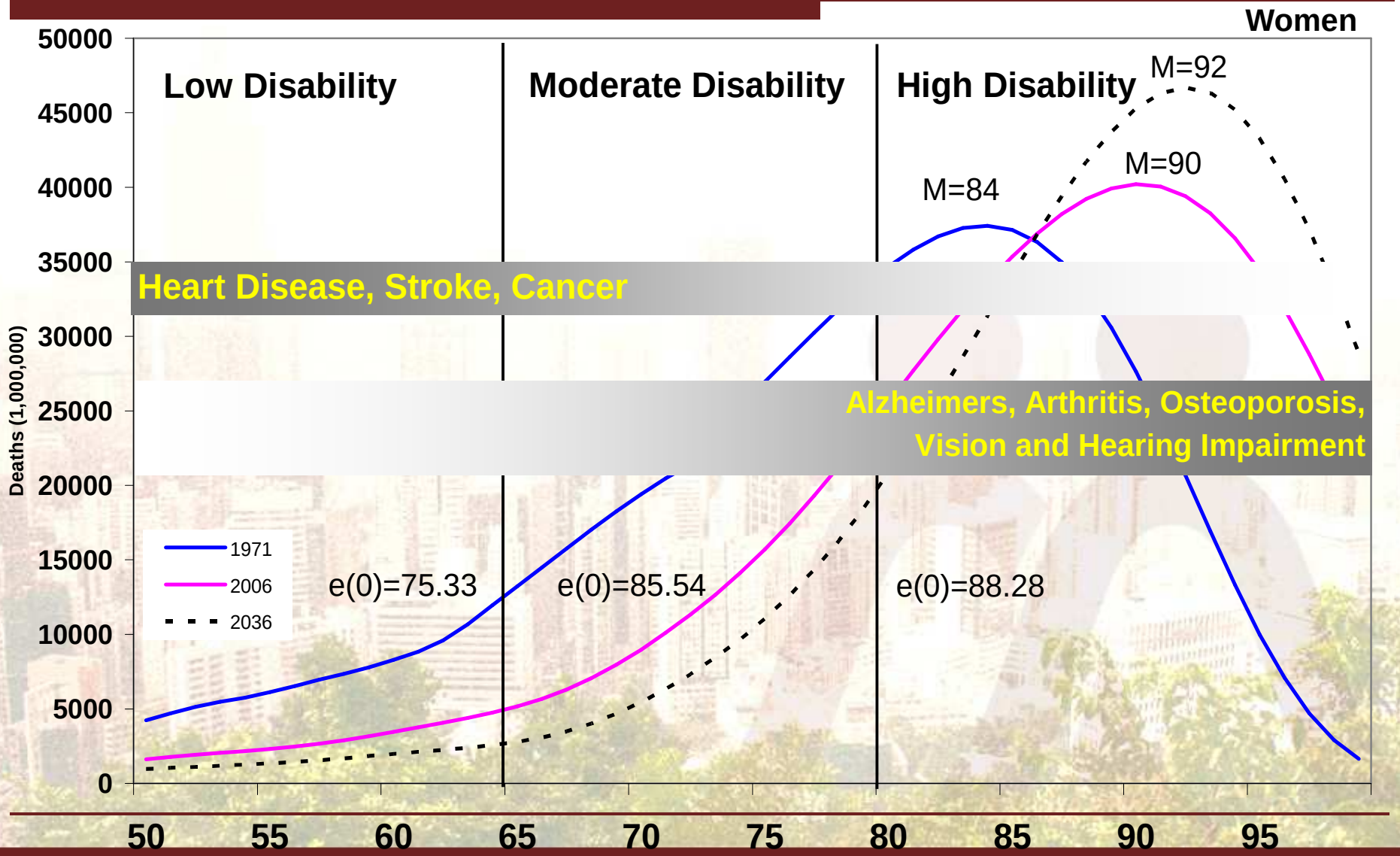
Year	Aged 80+	All population
1981	46 300 (0.9%) **(1 in 112 Persons)**	5183 400
2008	238 400 (3.4%) **(1 in 29 persons)**	7 008 900
2021	342 000 (4.4%) **(1 in 23 persons)**	7 784 000
2036	667 000 (7.8%) **(1 in 13 persons)**	8 570 200

Central Longevity Indicators (e0, Median & M), 1971-2006 & projected 2007-2036





Health and mortality paradox: compression or expansion of disability?



AIMS

Examine the increasing life expectancy of Hong Kong in relation to their health dimensions (i.e. chronic morbidity and disability) and institutionalization from 1996 to 2006;

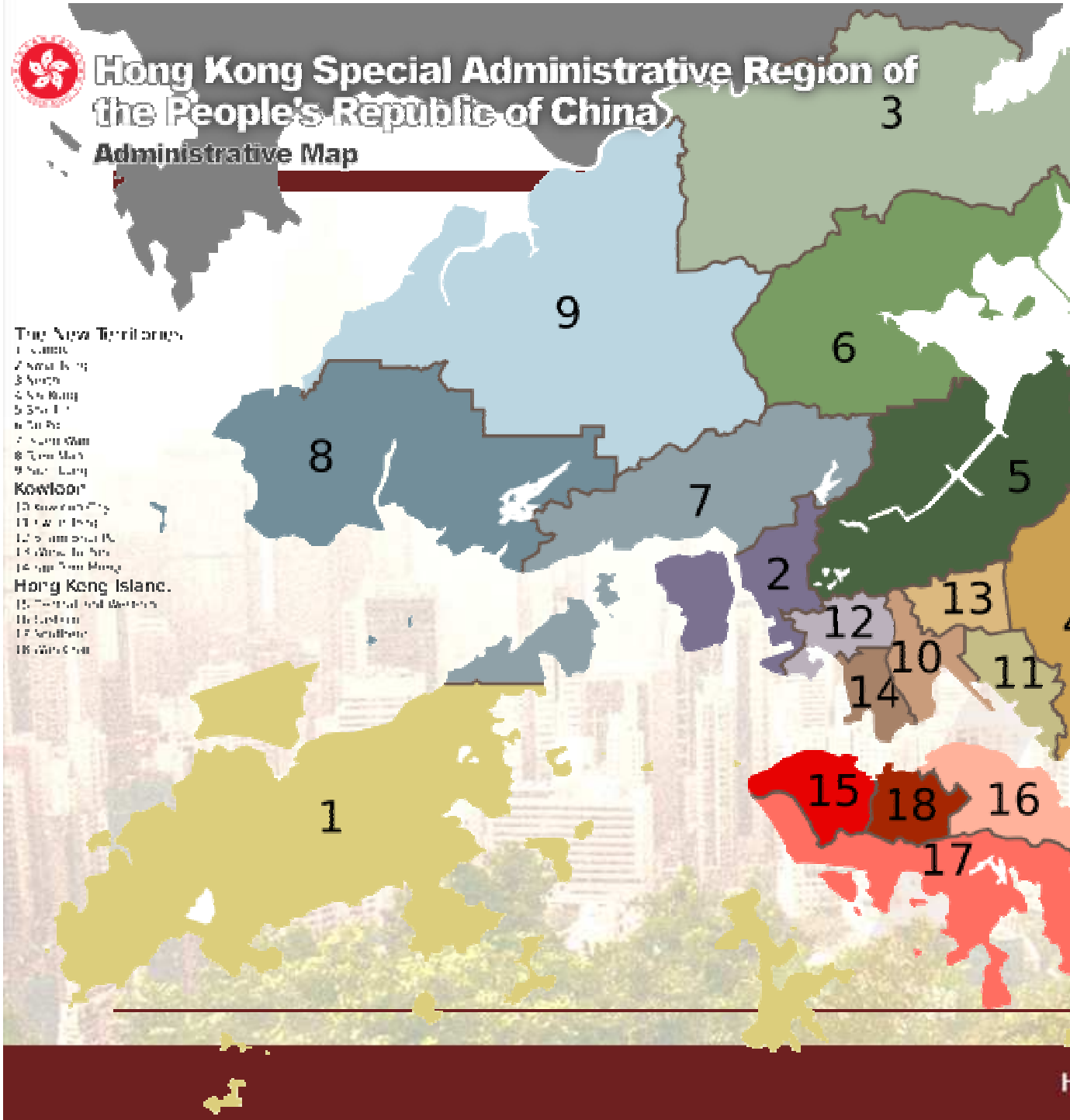
Compute healthy life expectancy for **THREE** time points (i.e. 1996, 2001, 2006) using the prevalence-based Sullivan method.

DATA (1)

Morbidity data (i.e. Persons who had chronic diseases that required long-term follow-up by doctors) from Thematic Household Survey, HKCSD, for **FOUR** time points (Sep – Nov 1999, Jan – May 2001, May – July 2002, and Nov 2005 – March 2006);

Land-based non-institutional population, a systematic random sample, independent, territory-wide survey;

All household members (excl. FDH), some 10 000 community-based households, constituting a response rate of 77.5% (CI 99%: 76.8-78.2).



A sample design involving non-uniform sampling fractions; a disproportionate stratified systematic sample was drawn for enumeration: (1) three strata & (2) 400 strata – referring to a DC Constituency Area.

DATA (2)

Disability data (i.e. **SIX** ADL limitations: ***eating, getting in or out of bed or seat, getting around inside, dressing, bathing and using the toilet***) for those aged 60+ who were residing in domestic household, General Household Survey, 1996, July-Sept 2000 and June-August 2004 ;

Chou and Leung (2008) *Disability Trends in Hong Kong Community-Dwelling Chinese Older Adults: 1996, 2000, and 2004*. J Aging & Health. 20: 385-404.

長者的自我照顧活動能力缺損程度的級別
Activities of Daily Living (ADL) impairment level of older persons

自我照顧活動能力缺損程度 Level of ADL impairment	未能獨立完成的自我照顧活動數目 Number of ADL that could not be performed independently
第一級 Level 1	0
第二級 Level 2	1 - 2
第三級 Level 3	3 - 4
第四級 Level 4	5 - 6

DATA (3)

Institutionalization data (i.e. Residential quarters in public/ subvented institutions (e.g. Homes for the aged/ blind/ mentally handicapped, rehabilitation centres, etc) from censuses and by-censuses, 1981, 1986, 1991, 1996, 2001, and 2006;

Abridged period LT by sex and 5-year age groups.

METHODS

Examine the **annual change** of chronic morbidity, disability and institutionalization, we fit a logit form, the formula of the logistic regression model is written as follows:

$$\ln\left(\frac{DR_{x,s}}{1-DR_{x,s}}\right) = \alpha_i + \beta_i(yr) + \varepsilon_i \qquad \varepsilon i \sim N(0,\sigma 2)$$

Where DR x, s is the age and sex specific disability rate; year (yr) is the independent variable; β is the slope coefficient of the regression model, which represents the annual change of logit form of DR x, s;α is the constant term, which represents the expected value of logit form of DR when year equals to zero.

Interpolation and extrapolation backward;

Sullivan prevalence-based method;

Compute **expected number of years** lived free of three health dimensions (i.e. c morbidity, disability, and institutionalization);

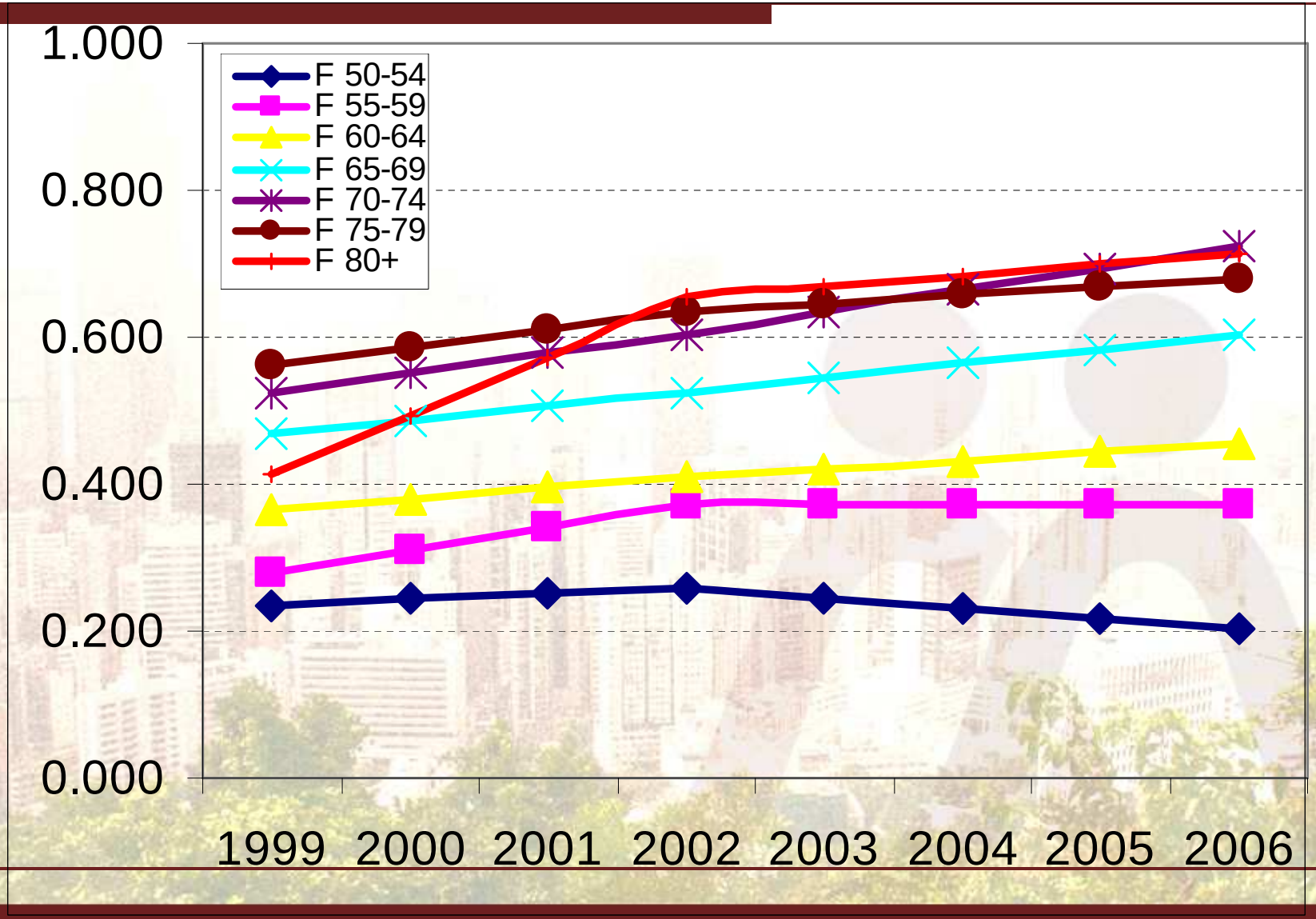
the **proportion of the life-time** free of c morbidity, disability, and institutionalization for across three time points in 1996, 2001 & 2006.

RESULTS

Chronic morbidity rate, 1999-2006

	Alpha	Beta		Alpha	Beta
M 50-54	-48.58	0.023505	F 50-54	55.05	-0.028078
M 55-59	-14.25	0.006589	F 55-59	-115.69	0.057459
M 60-64	-60.65	0.029988	F 60-64	-104.83	0.052172
M 65-69	-242.95	0.121311	F 65-69	-156.15	0.078049
M 70-74	-199.66	0.099807	F 70-74	-247.56	0.123881
M 75-79	-168.82	0.084489	F 75-79	-141.82	0.071089
M 80+	-485.90	0.242844	F 80+	-349.33	0.174686

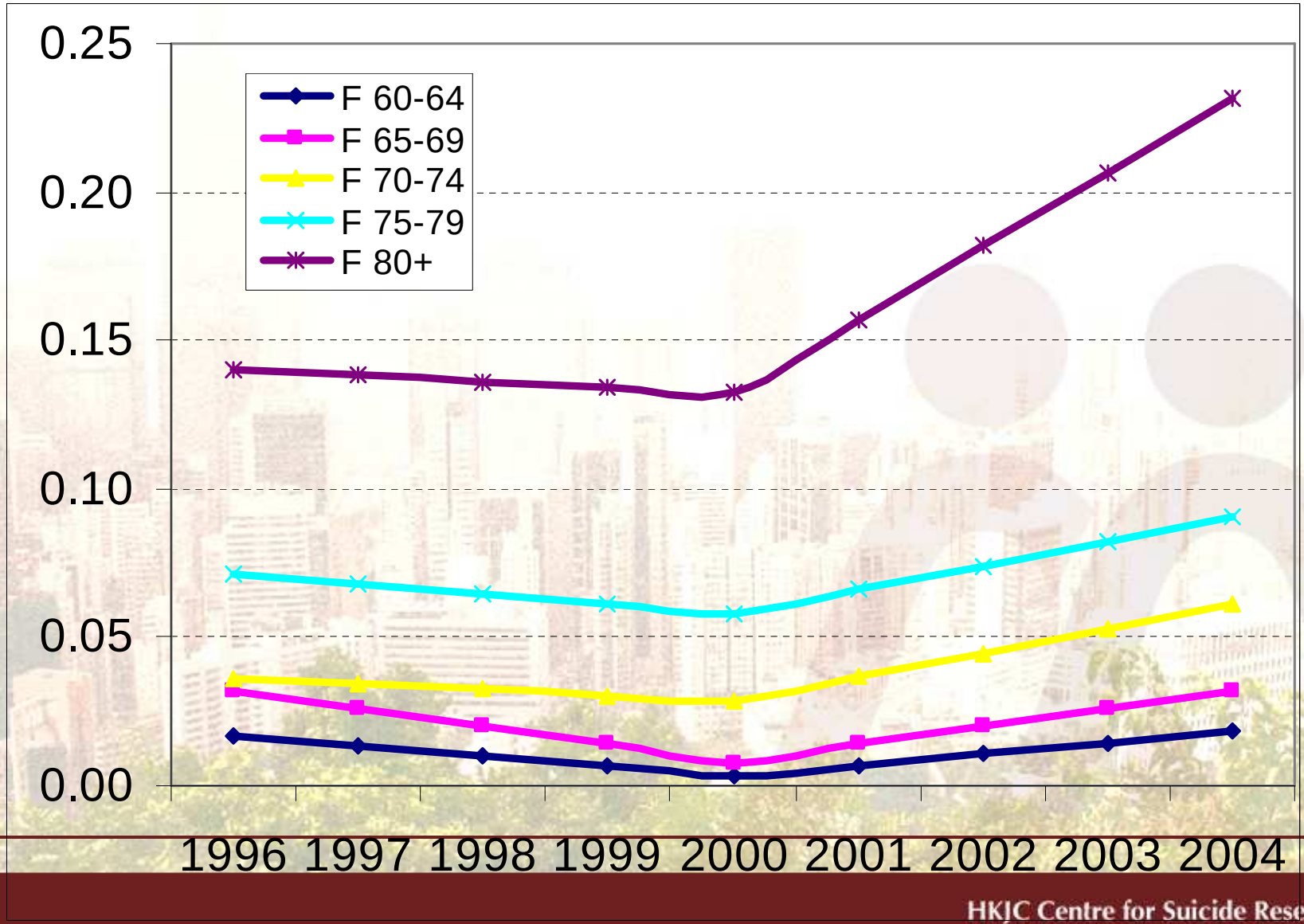
Chronic morbidity rate, women, 1999-2006



Disability rate, 1996-2004

	Alpha	Beta		Alpha	Beta
M 60-64	-26.09	0.010610	F 60-64	-23.22	0.009320
M 65-69	-5.56	0.000680	F 65-69	-2.64	-0.000637
M 70-74	-150.87	0.073680	F 70-74	-149.92	0.073350
M 75-79	-70.88	0.033998	F 75-79	-69.56	0.033488
M 80+	-155.91	0.076960	F 80+	-160.99	0.079665

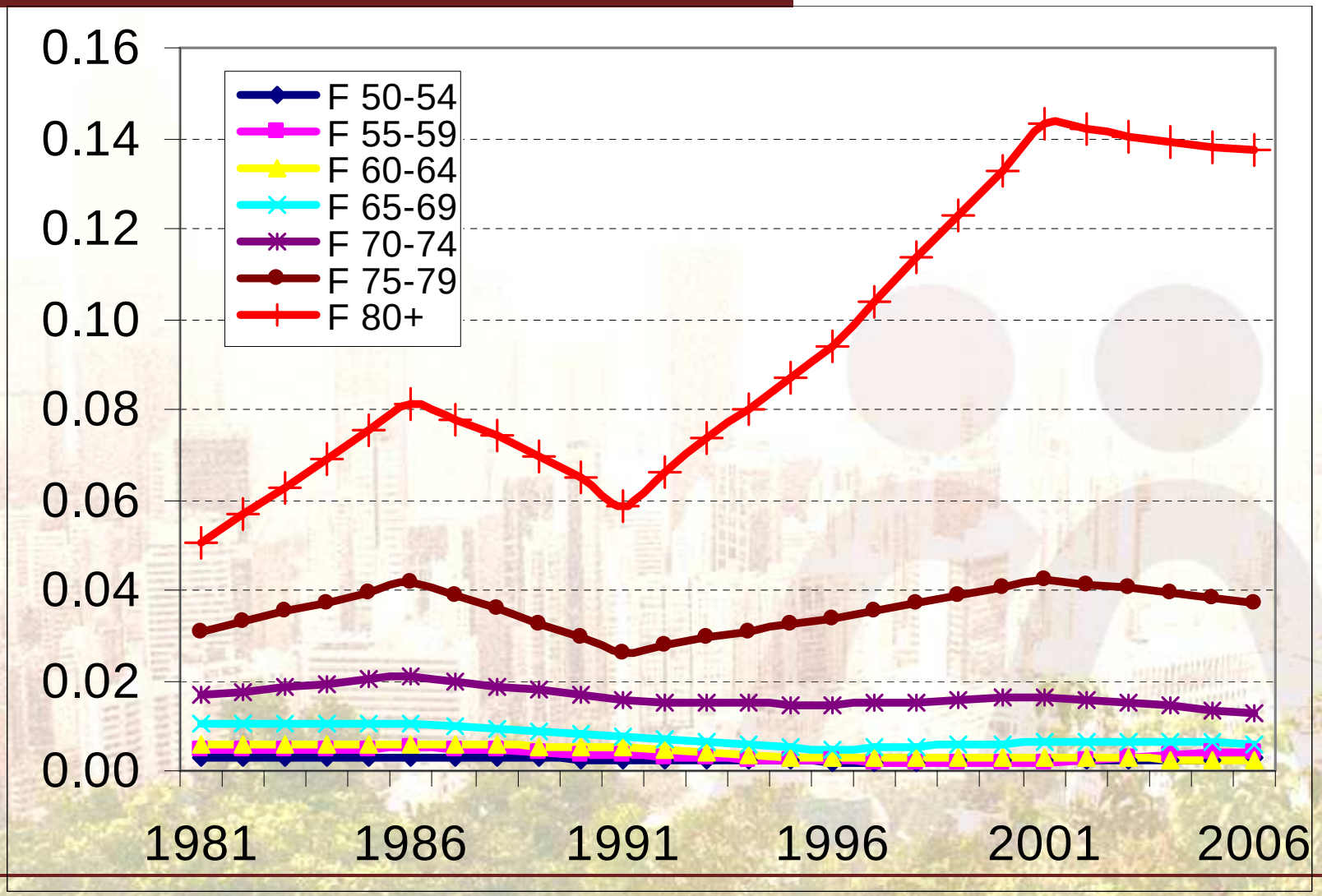
Disability rate, women, 1996-2004



Institutionalization rate, 1981-2006

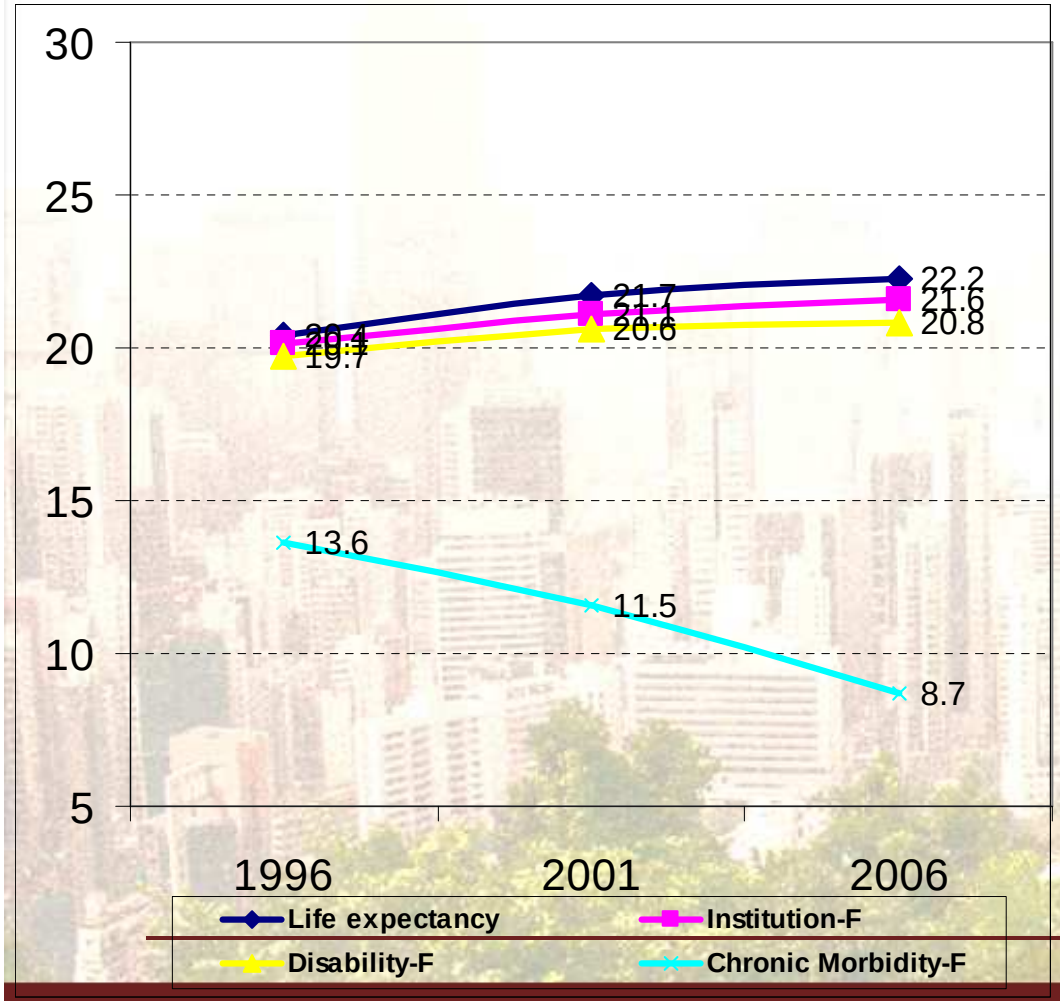
	Alpha	Beta		Alpha	Beta
M 50-54	4.244	-0.004729	F 50-54	11.863	-0.008976
M 55-59	31.555	-0.018418	F 55-59	52.247	-0.029087
M 60-64	58.198	-0.031705	F 60-64	83.876	-0.044858
M 65-69	44.185	-0.024495	F 65-69	55.015	-0.030069
M 70-74	21.156	-0.012711	F 70-74	22.225	-0.013206
M 75-79	-4.003	0.000186	F 75-79	-16.654	0.006695
M 80+	-52.075	0.024652	F 80+	-91.550	0.044763

Institutionalization rate, women, 1981-2006

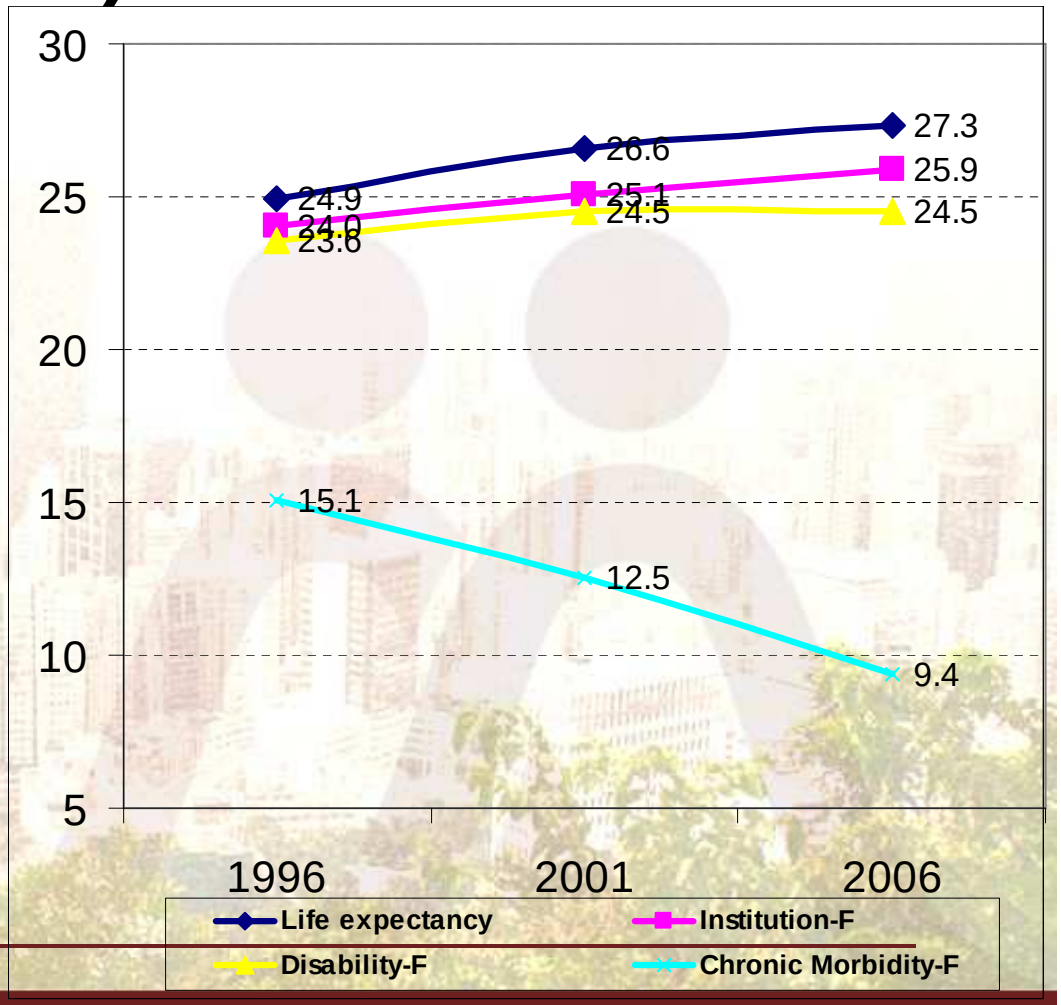


Life expectancy and expected number of years free of institutionalization, disability and c morbidity

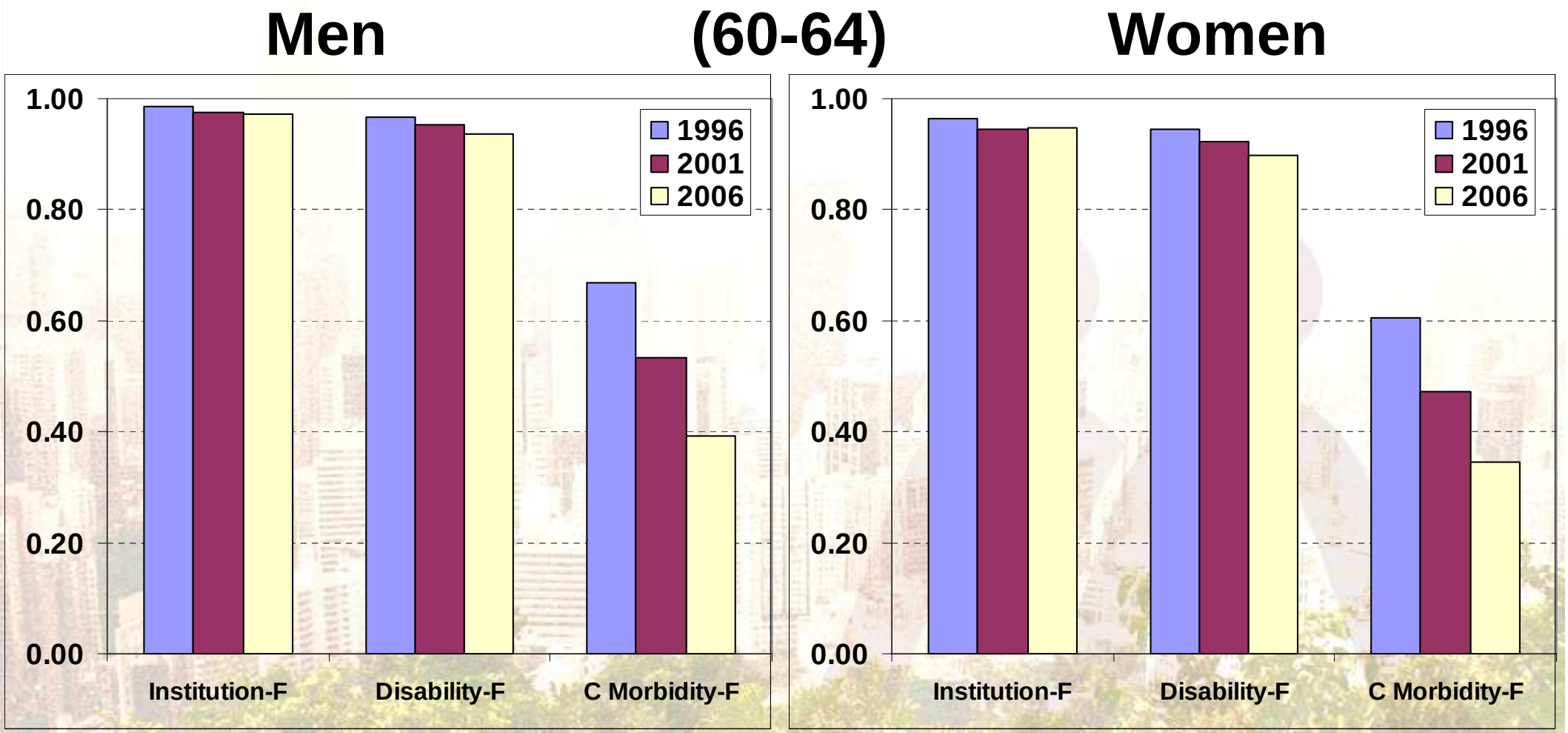
Men (60-64)



Women

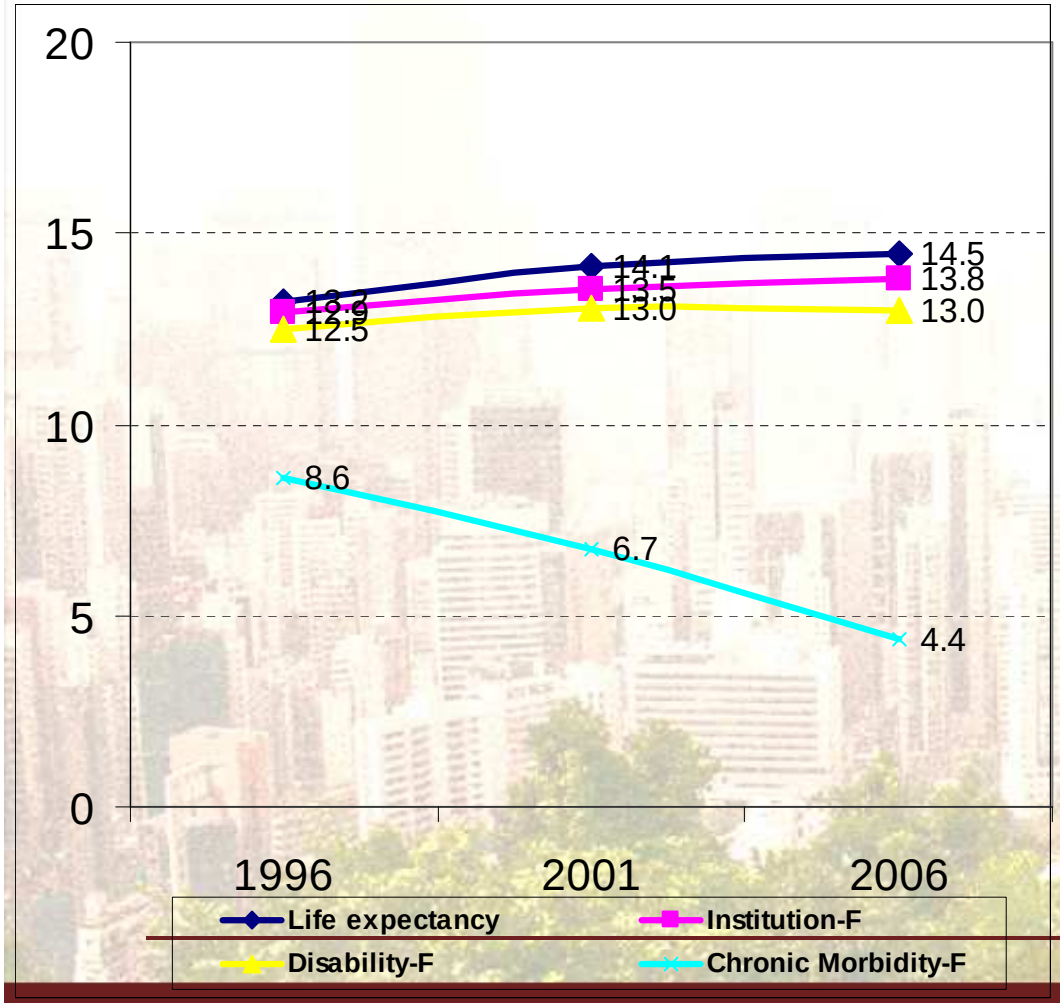


Proportion of life expectancy free of institutionalization, disability and c morbidity

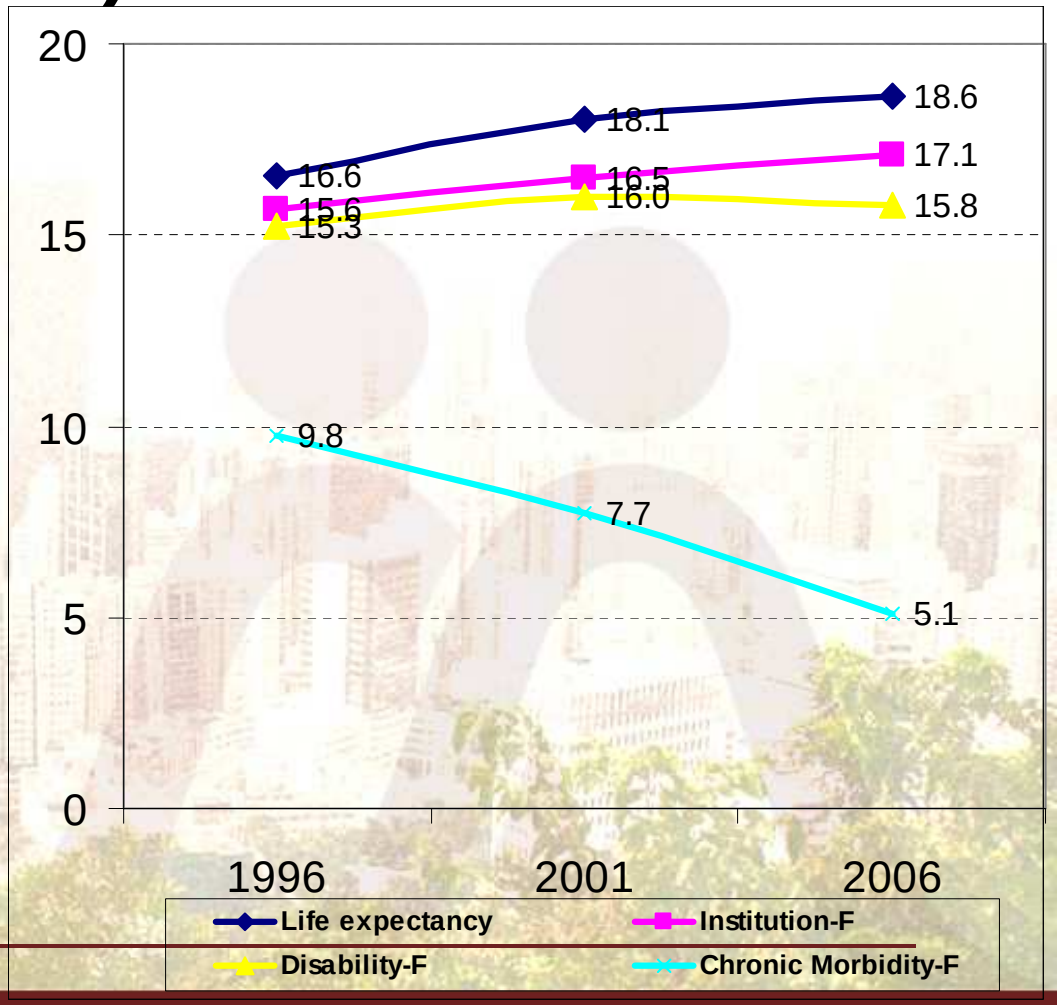


Life expectancy and expected number of years free of institutionalization, disability and c morbidity

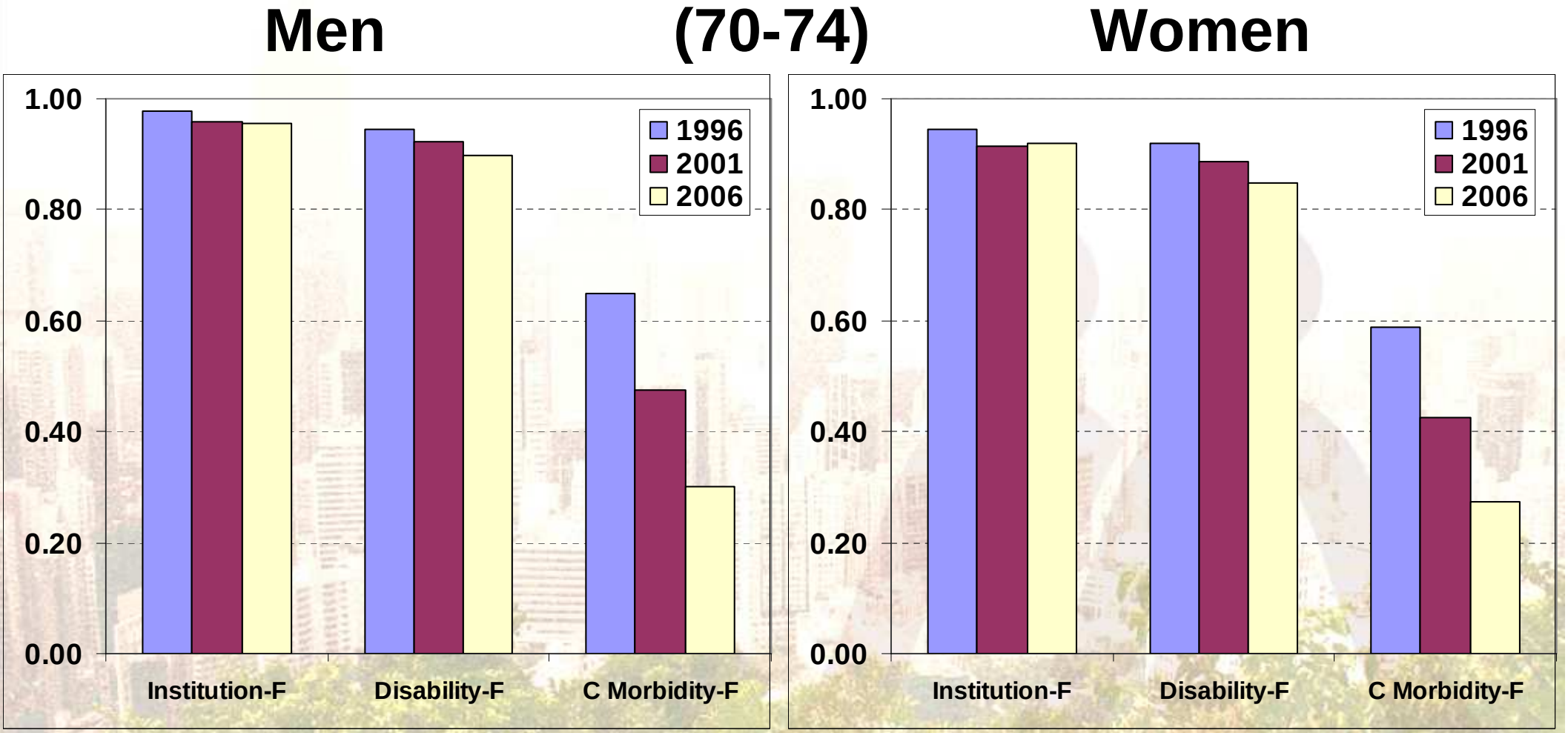
Men (70-74)



Women

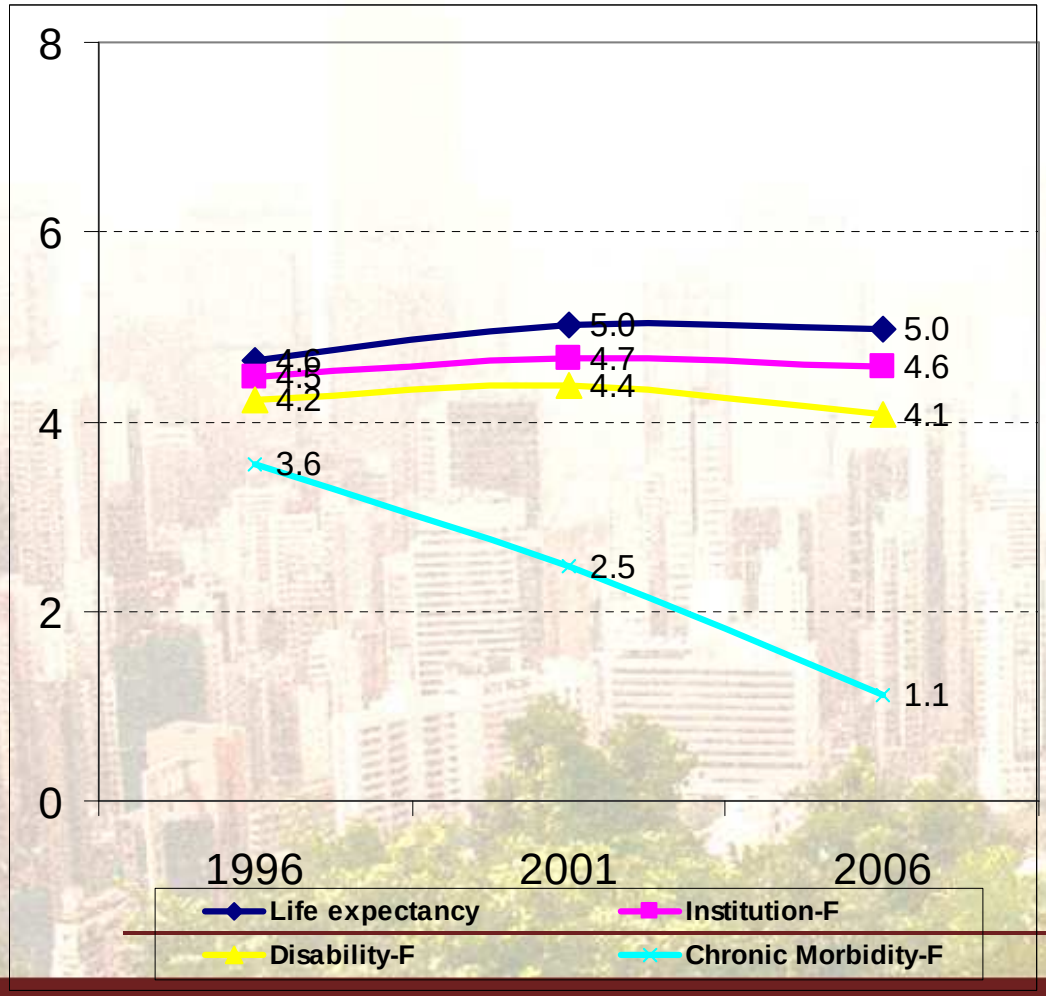


Proportion of life expectancy free of institutionalization, disability and c morbidity

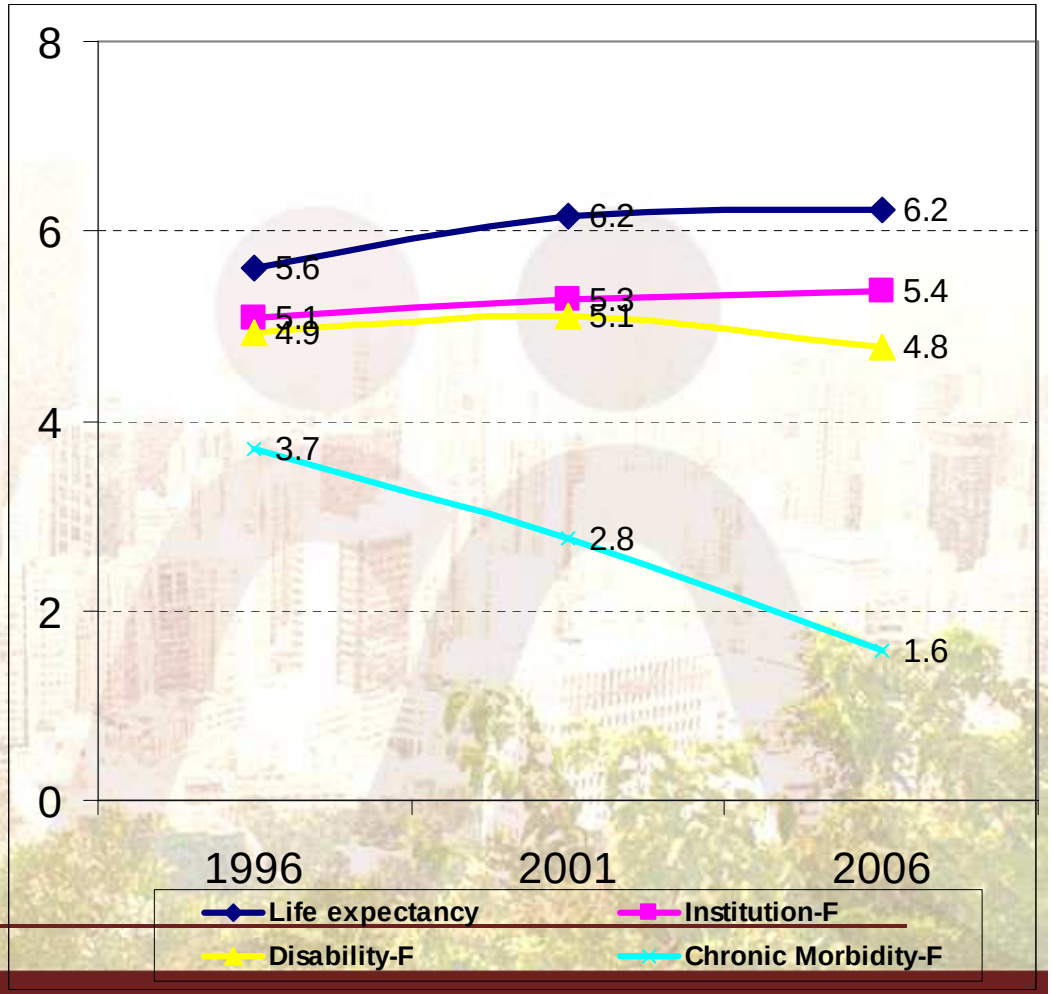


Life expectancy and expected number of years free of institutionalization, disability and c morbidity

Men (80+)

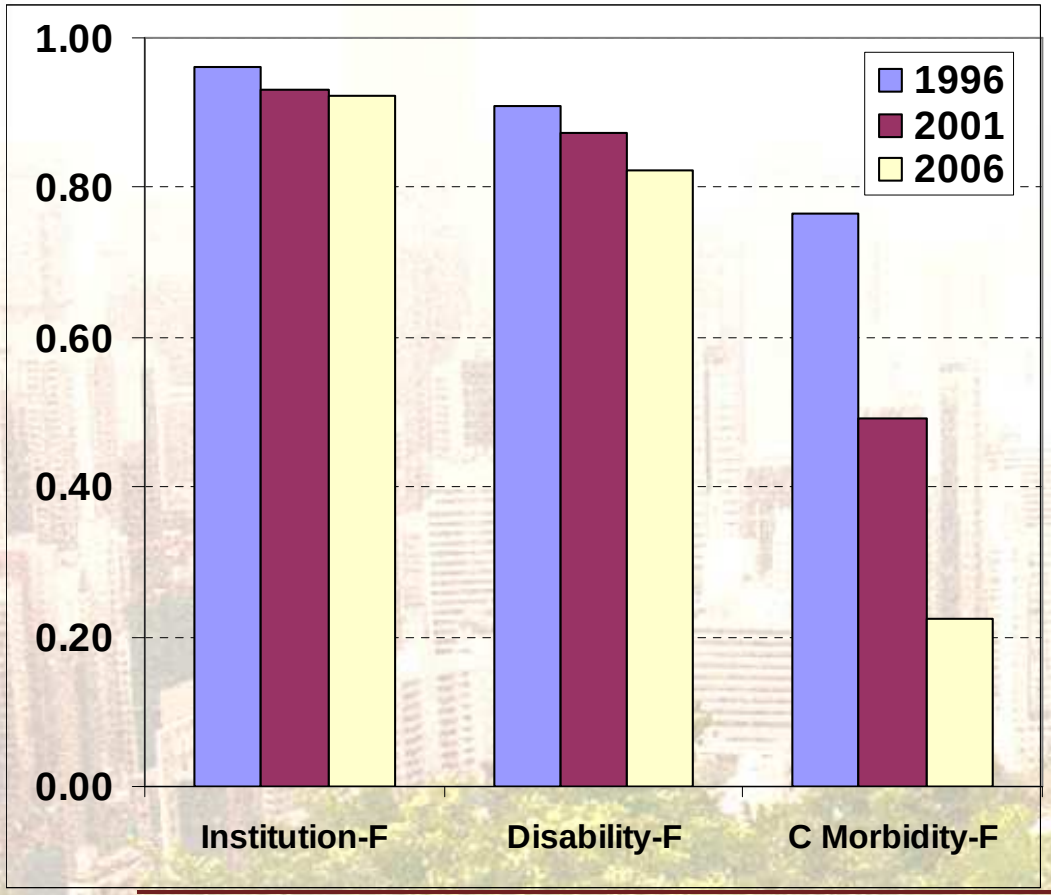


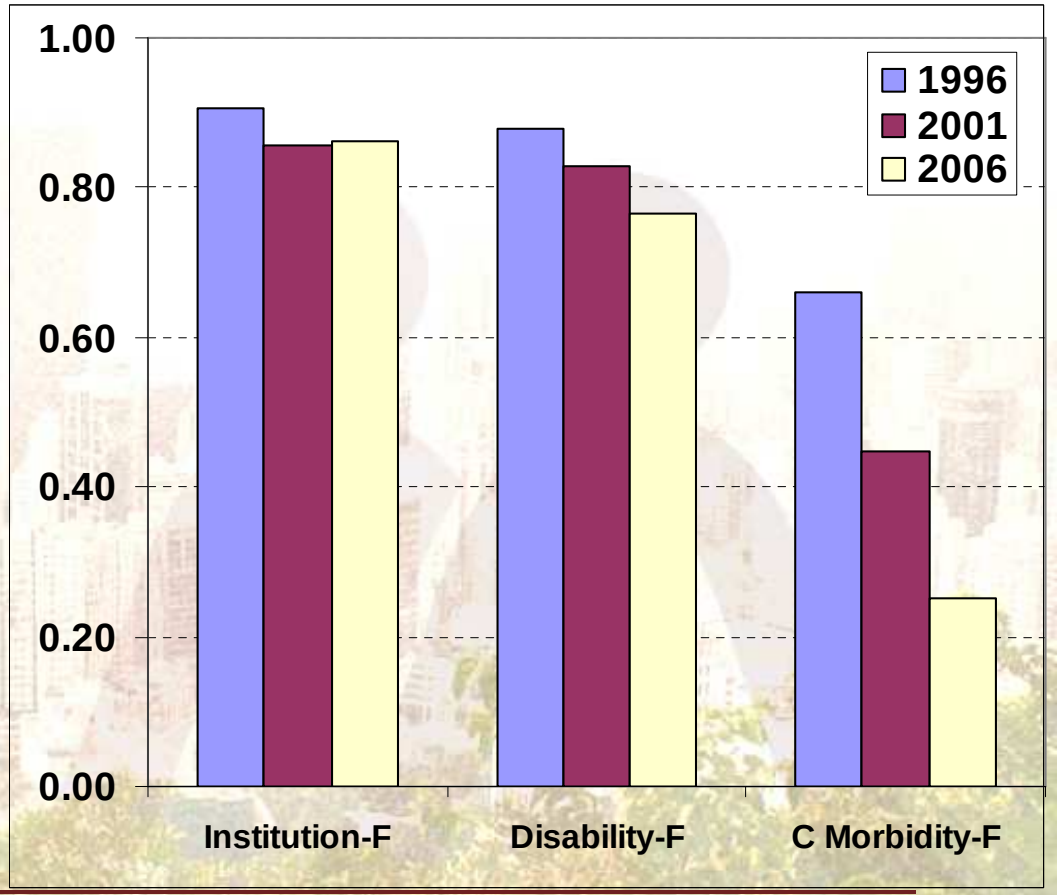
Women



Proportion of life expectancy free of institutionalization, disability and c morbidity

Men (80+) Women





CONCLUSIONS AND DISCUSSIONS

Expansion of chronic morbidity and disability from 1996 to 2006;

Expansion of institutionalization among women, age 80+, longer life but in an institutionalized setting;

A **"triple"** disadvantage – being HK women live longer in chronic morbidity, disability and institutionalization – **the survival of "unfittest";**

Limitations - shorter time series for survey data and future work.

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THANK YOU !