Impact of ageing on developing country health expenditure: Actuarial cost model for Sri Lanka 2001-2051

Ravi P. Rannan-Eliya
Institute for Health Policy (IHP)
& Health Policy Research Associates (HPRA)
Colombo, Sri Lanka
www.ihp.lk

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Outline

Global Experience

Sri Lanka Projection Model

Results

Global Experience

- Increasing interest in OECD area in impact of ageing on fiscal costs, including health since 1970s

- Projection methods
  - Epidemiological:
    - Forecast expenditures as a function of future disease prevalence - Data requirements unfeasible
  - Actuarial
    - Forecast expenditures as a function of changes in demographic structure

- Issues
  - Impact of ageing vs. other factors
  - Morbidity compression
    - Improvements in age-related disability prevalence
   - Expenditures in last year of life

Global Experience

- OECD region
  - Increasing routine use of actuarial models to forecast fiscal costs - USA, UK, Canada, New Zealand, etc.
  - Actuarial models favoured over alternatives
  - Common finding that non-ageing factors are more important than demographic factors
- Developing countries
  - Limited efforts to date
  - No results on potential impact of productivity change, price inflation, etc.

Sri Lanka

- Low-income developing economy, GDP US$ 850
- Mixed health care system
  - Tax-funded, public provision, with parallel private system
  - Financing: 50% public, 50% private (mostly out-of-pocket)
- High rates of use of medical services - similar to some European countries
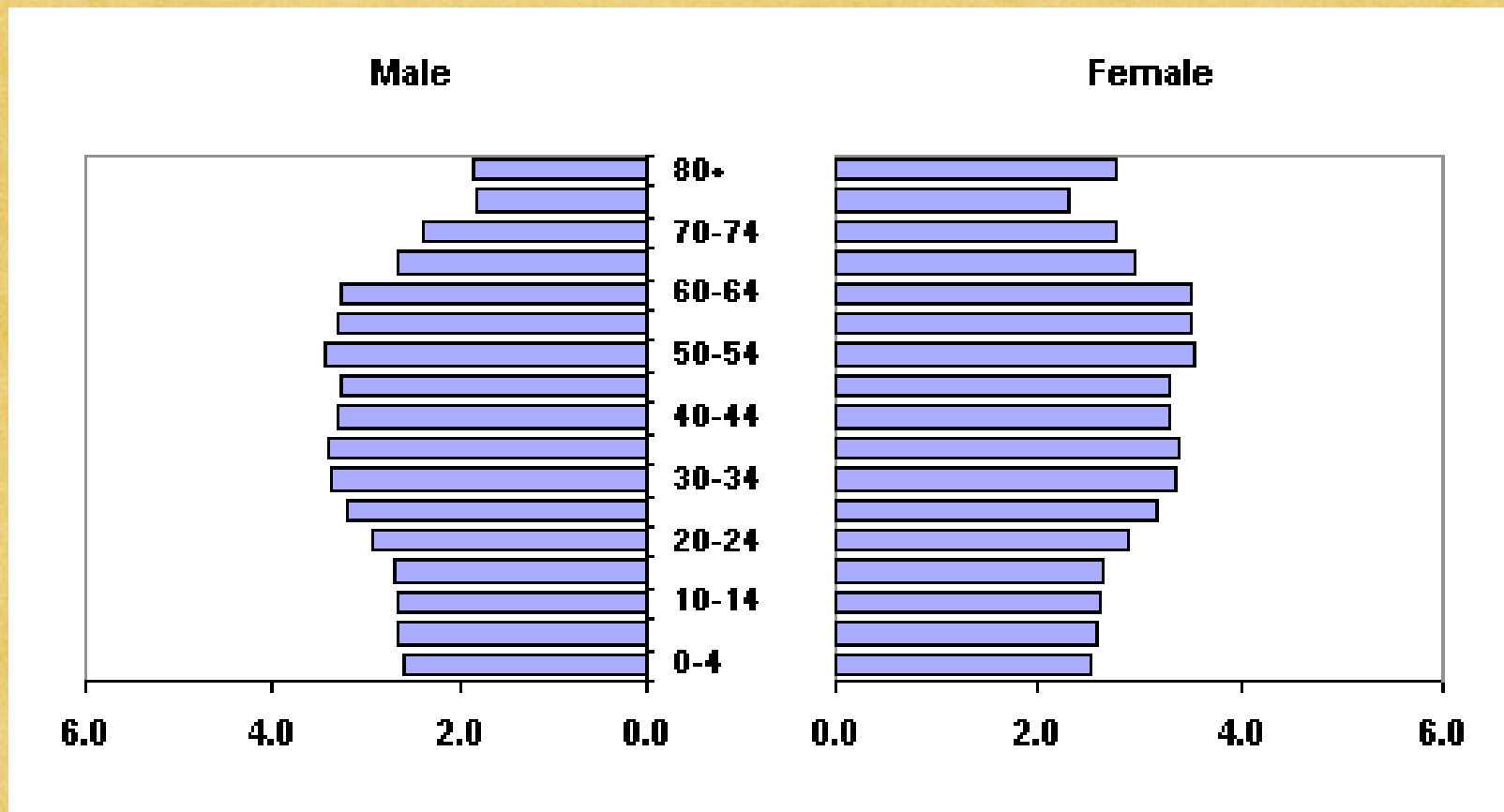- Most rapidly ageing country in Asia in 2001-2051

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Changes in Age Structure
Sri Lanka 2001
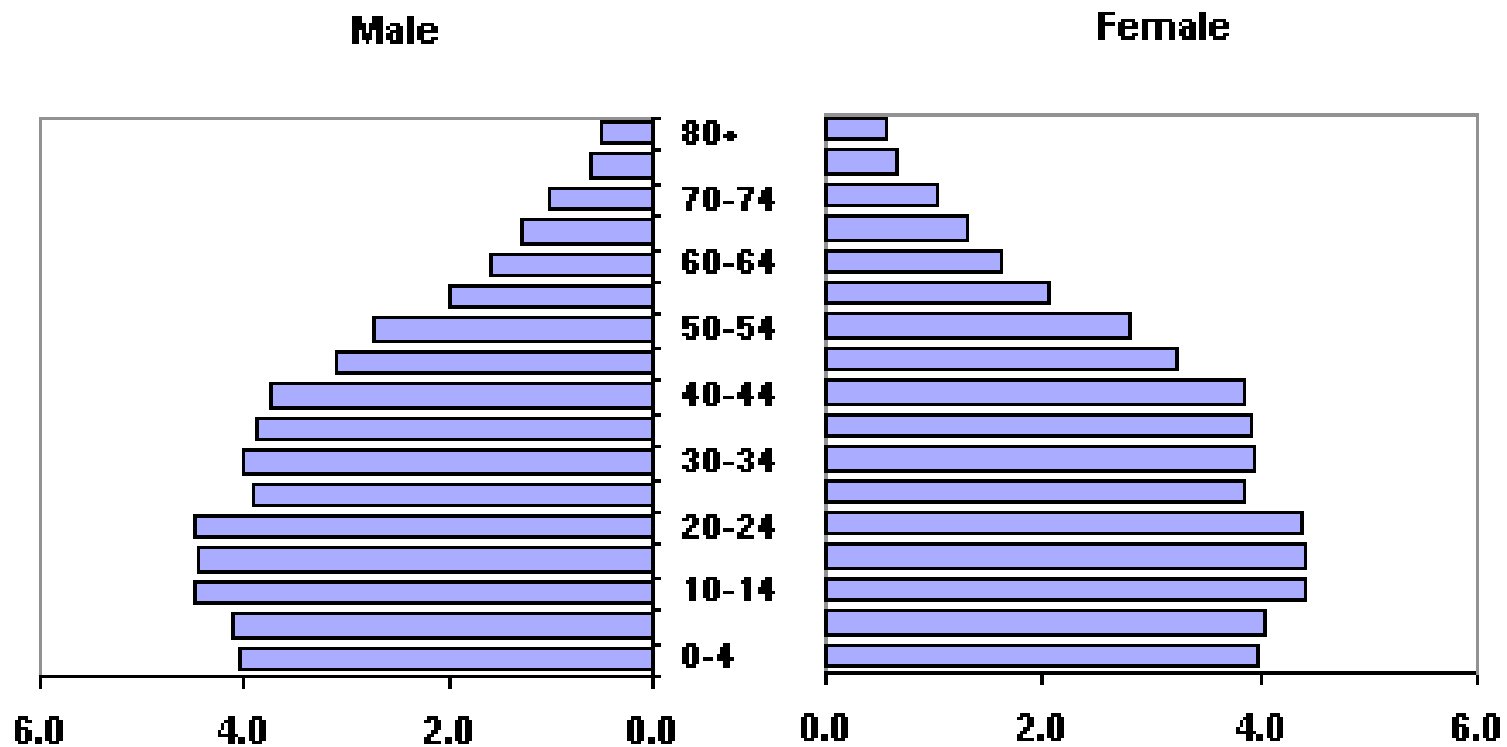
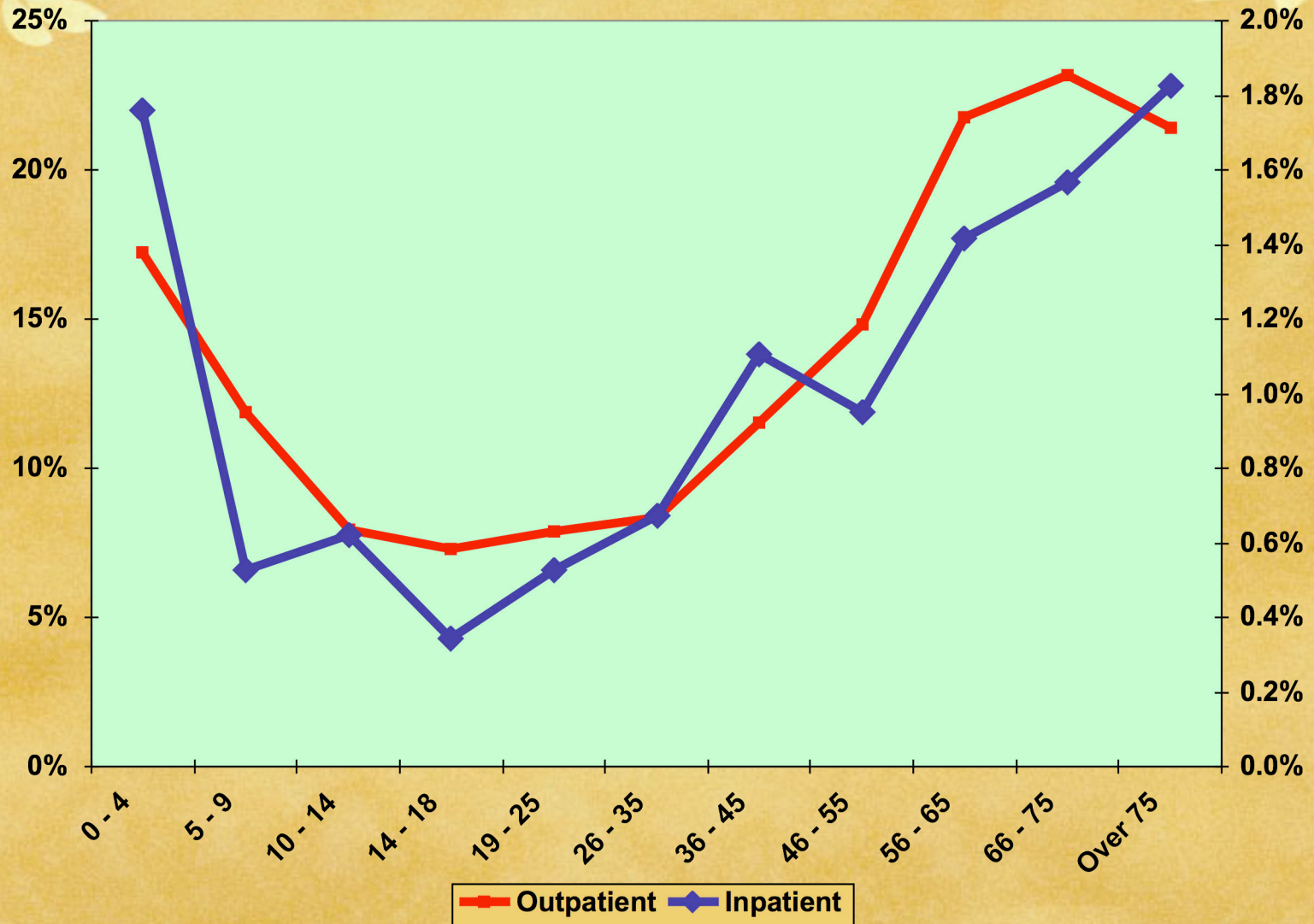# Changes in Age Structure
Sri Lanka 2041

Sri Lanka Health Expenditure Projection Model, 2001-2051

- Funding: Ministry of Health, US NIA grant
- Actuarial cost model incorporating:
  o Age structure change
  o Consumer demand change
  o Productivity change
  o Price inflation
- Omissions:
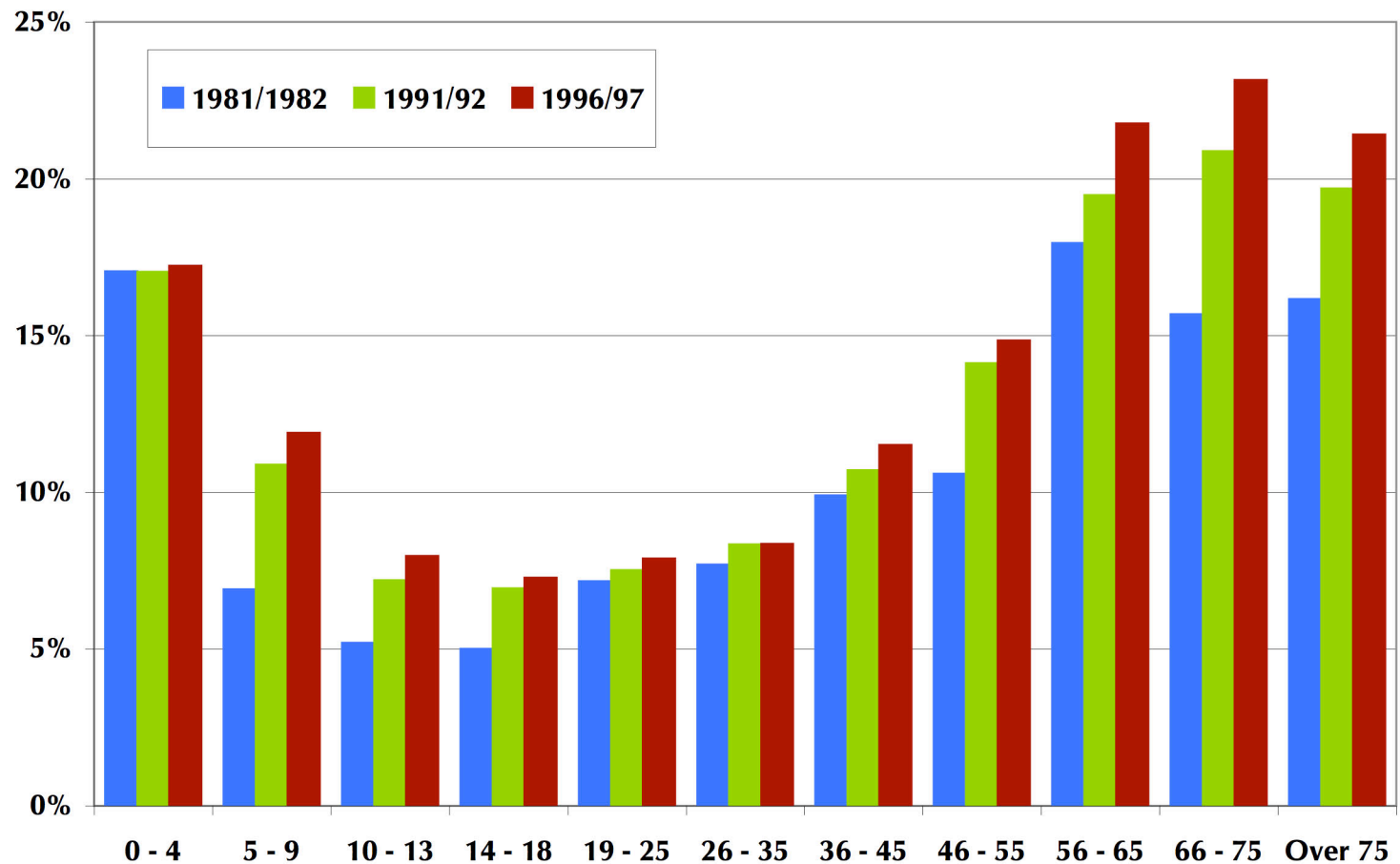 o Morbidity compression
  o Disability states

Model Methodology

1. Project population
   - Size, age-sex structure

2. Decompose national expenditures (using NHA)
   - Public sector personal medical services
   - Public sector preventive/collective services
   - Private sector personal medical services

3. Project age-sex specific utilization rates
   - Scenarios based on historical experience
     - Inpatient admissions, Outpatient visits
   - Assumptions about public/private mix

4. Project unit costs/prices of medical services
   - Scenarios based on historical experience

5. Future cost = Utilization rate x Unit cost
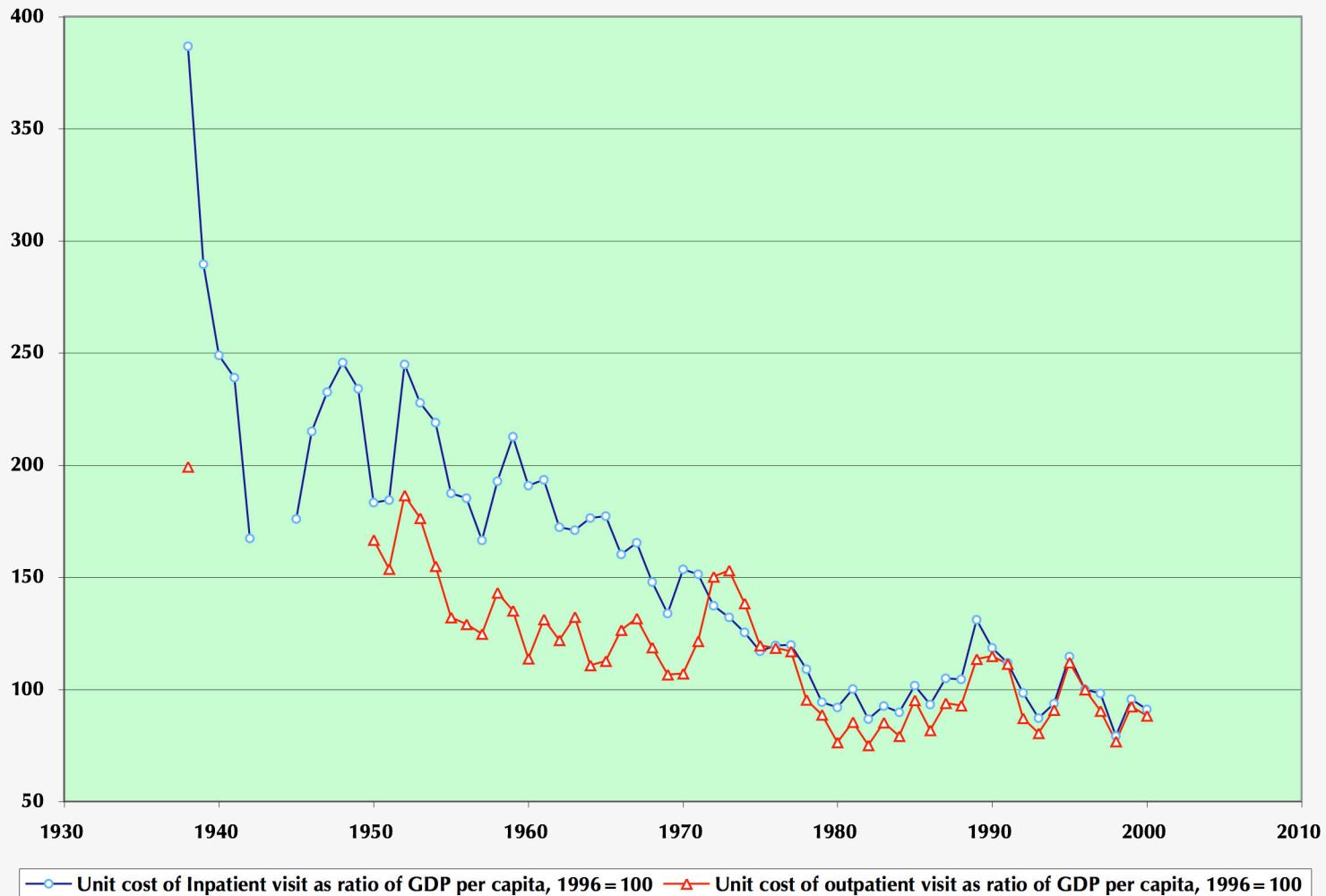   - Preventive costs added as constant share of GDP

Age-sex variation in medical demand:
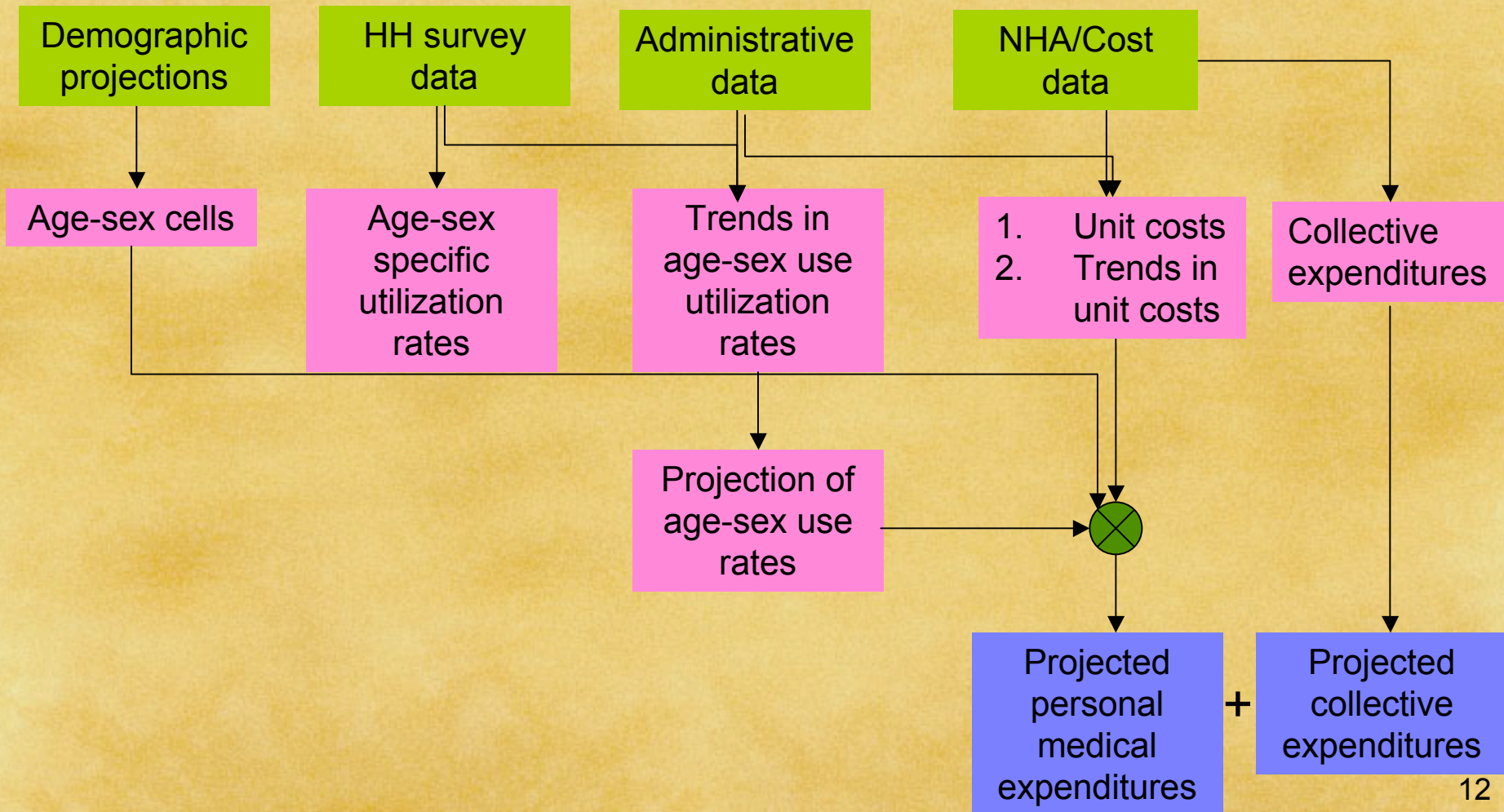## Females, Sri Lanka 1996/97

Age-specific Changes in Demand
Female Outpatient Use, Sri Lanka 1981-1996

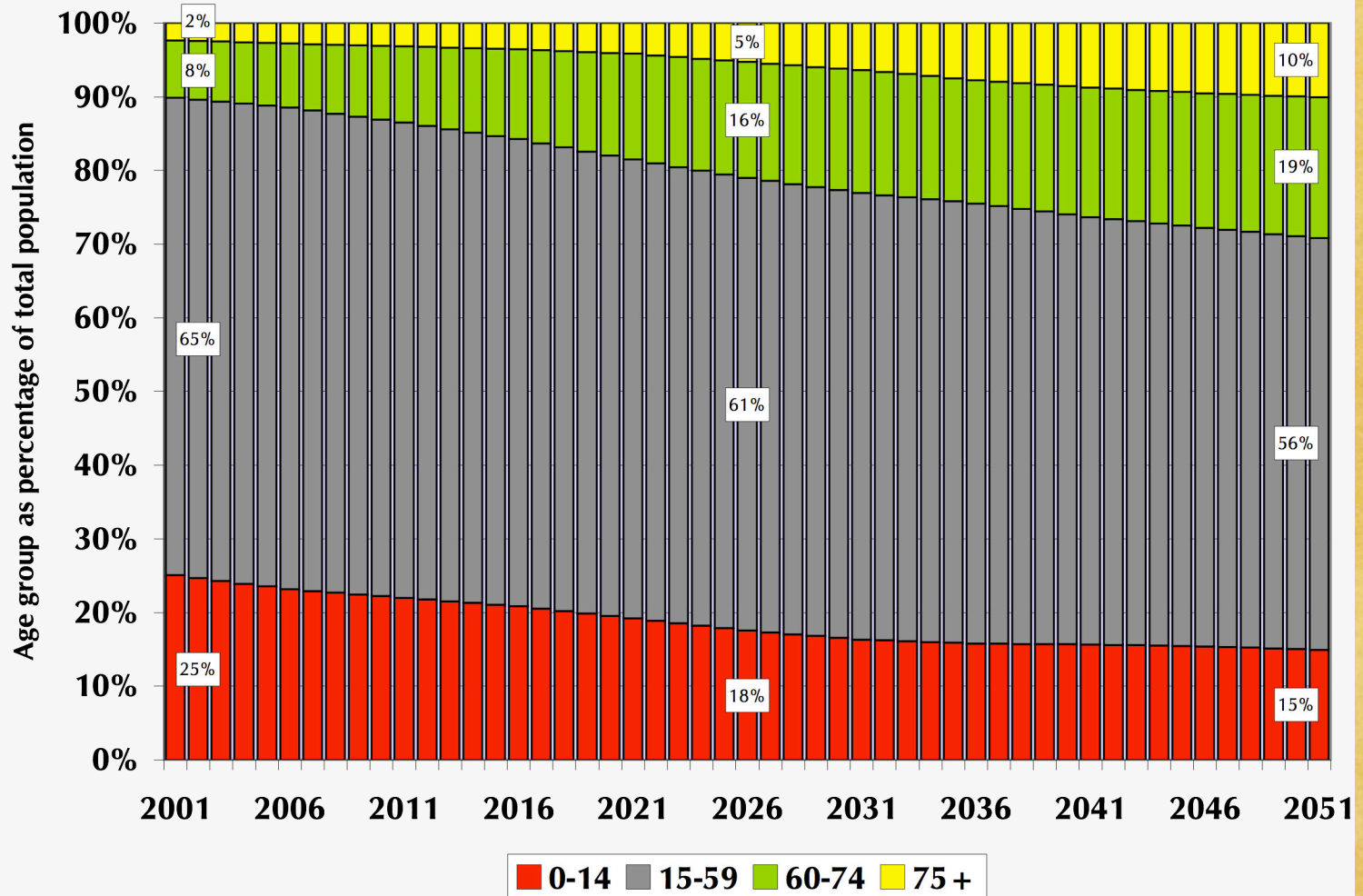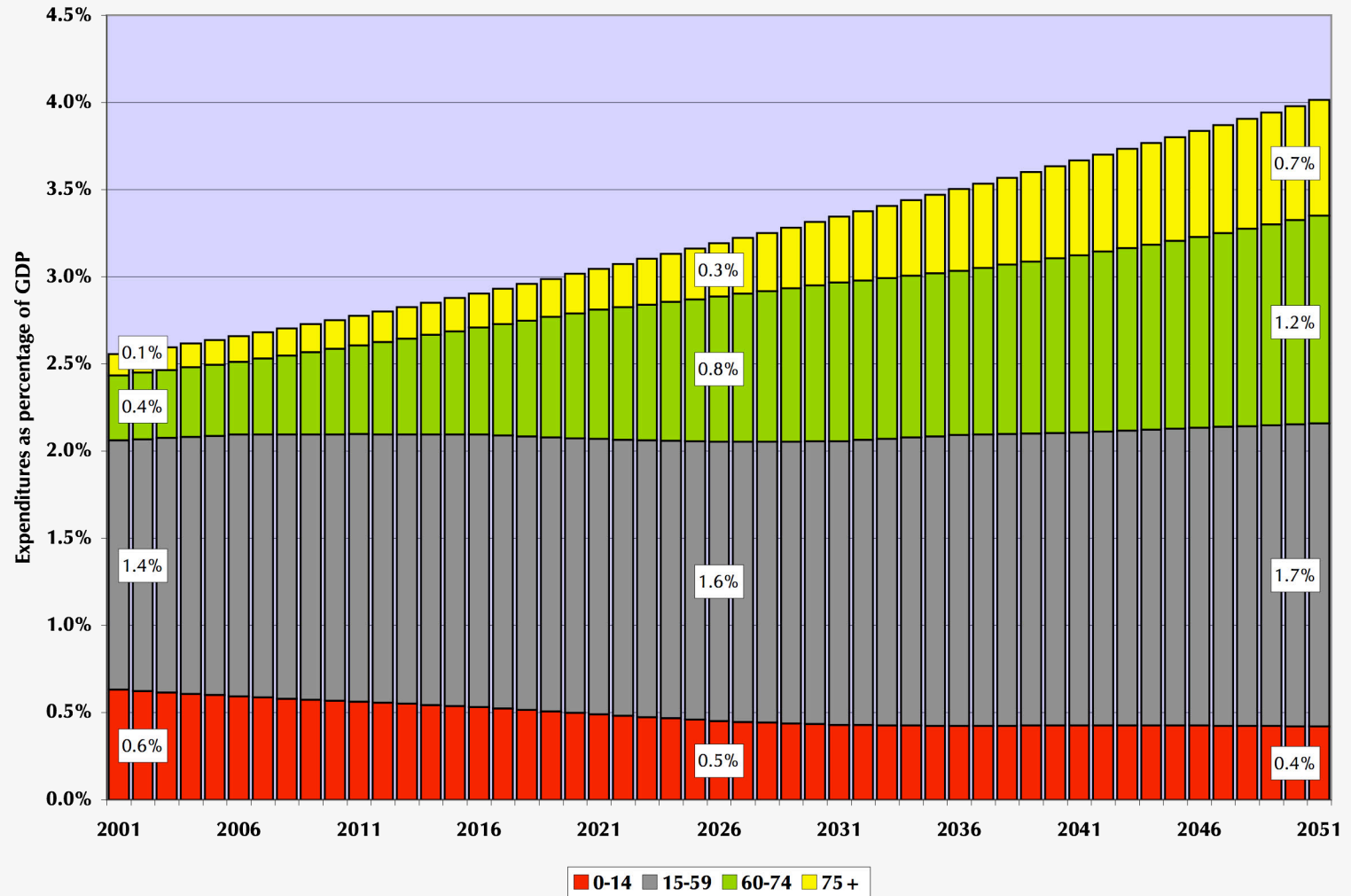# Public sector productivity:
MOH unit costs 1930-2002

Legend:
— o — Unit cost of Inpatient visit as ratio of GDP per capita, 1996 = 100   — △ — Unit cost of outpatient visit as ratio of GDP per capita, 1996 = 100

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Model Structure

Demographic projections → Age-sex cells

HH survey data → Age-sex specific utilization rates

Administrative data → Trends in age-sex use utilization rates

NHA/Cost data → 1. Unit costs 2. Trends in unit costs

NHA/Cost data → Collective expenditures

Age-sex cells + Trends in age-sex use utilization rates → Projection of age-sex use rates

Projection of age-sex use rates ⊗ Unit costs → Projected personal medical expenditures

+

Projected collective expenditures

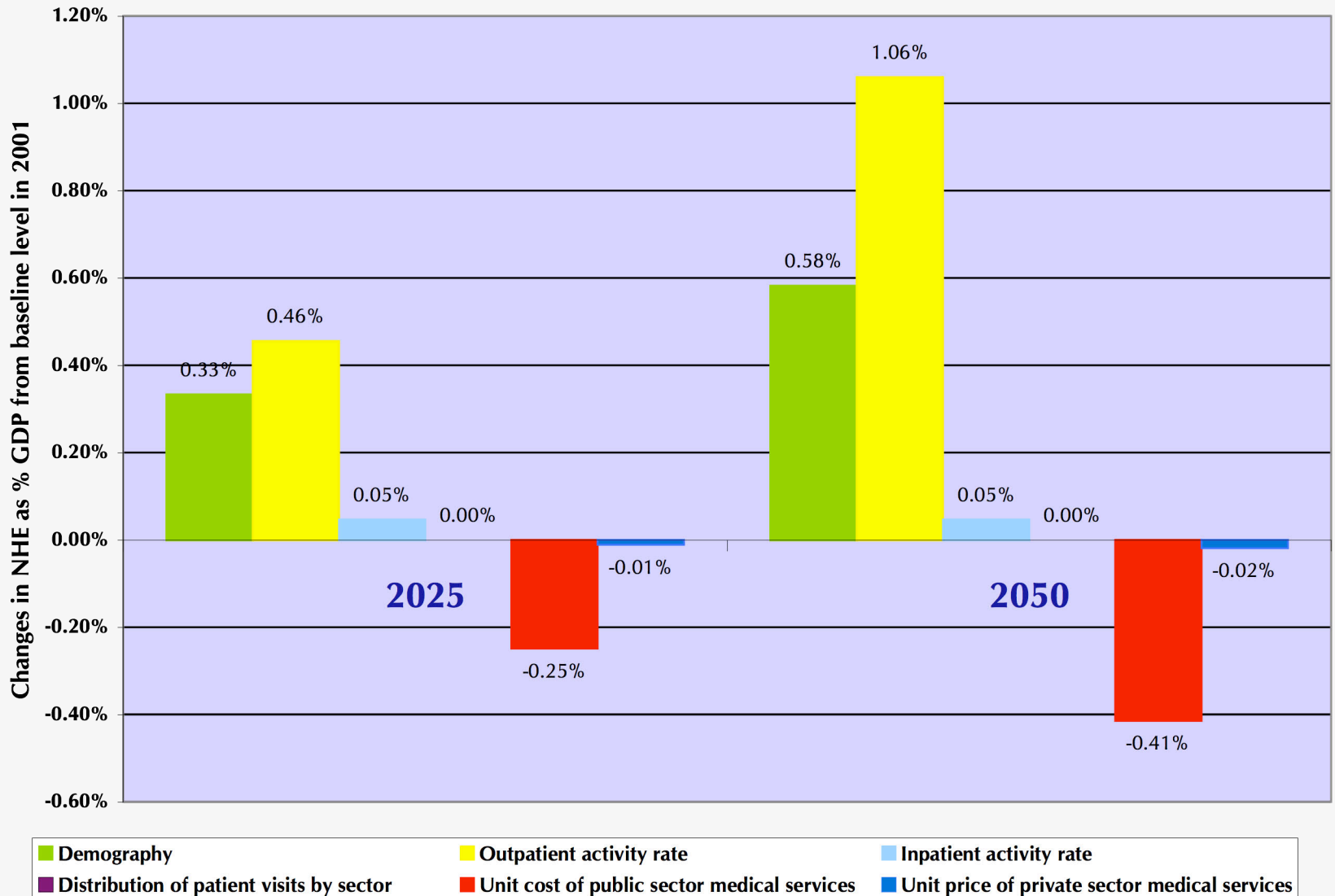# Model Results
Age structure 2001-2051

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Model Results
Health Expenditures 2001-2051

Model Results
Cost drivers 2001-2051

Conclusions

- Actuarial models feasible in developing country setting

- Confirms OECD results that changes in health seeking behaviour and health service productivity are as important as ageing even in very rapidly ageing economy

- Significant deficiency in current modeling of health spending in developing countries is evidence of morbidity compression