



# Modeling Sustainable Health Financing in Thailand

**WB-IHPP Workshop on the Development of Models for Sustainable Health  
Care Financing**

**WB-Thai Development Partnership in Health (CDP-H)**

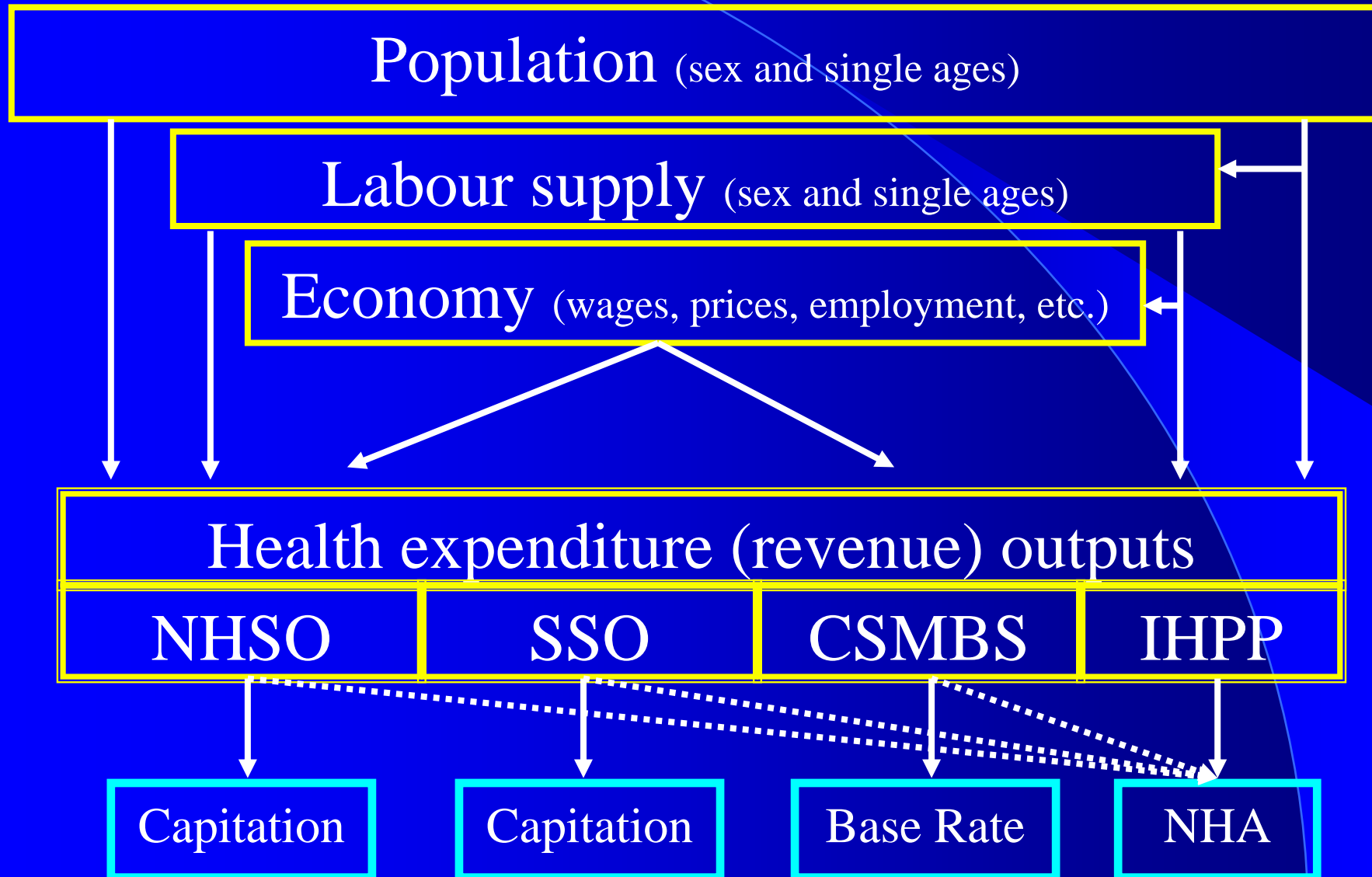
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**ILO - Social Security Department**

**Holiday Inn Silom Hotel  
Bangkok, 11 & 12 June 2007**



# The Model: overview





# Health Expenditure Model

$$\text{Exp}_{\text{Scheme}} = \text{Pop}_{\text{Scheme}} * \text{Frequency of contacts}_{\text{Scheme}} * \text{Costs per contact}_{\text{Scheme}}$$

- $e_{0 \text{ Sch}}$
- $e_{1 \text{ Sch}}$
- $e_{2 \text{ Sch}}$
- ...
- ...
- ...
- $e_{100 \text{ Sch}}$

- $p_{0 \text{ Sch}}$
- $p_{1 \text{ Sch}}$
- $p_{2 \text{ Sch}}$
- ...
- ...
- ...
- $p_{100 \text{ Sch}}$

- $f_{0 \text{ Sch}}$
- $f_{1 \text{ Sch}}$
- $f_{2 \text{ Sch}}$
- ...
- ...
- ...
- $f_{100 \text{ Sch}}$

- $c_{0 \text{ Sch}}$
- $c_{1 \text{ Sch}}$
- $c_{2 \text{ Sch}}$
- ...
- ...
- ...
- $c_{100 \text{ Sch}}$

$\text{SUM}_e$

$\text{SUM}_p$



Capitation =  $\text{SUM}_e / \text{SUM}_p$

Costs per contact<sub>Scheme</sub> =  $\text{?}$  Costs per contact<sub>Hospitals</sub>



# Health Expenditure Model: designing the population model

$$\text{Pop}_{\text{UC}} = \text{Pop}_{\text{TOT}} - \text{Pop}_{\text{SSO}} - \text{Pop}_{\text{CSMBS}} - \text{Pop}_{\text{OTH}}$$

with

$$\text{Pop}_{\text{TOT}} =: \text{Pop}_{\text{UC}} + \text{Pop}_{\text{SSO}} + \text{Pop}_{\text{CSMBS}} + \text{Pop}_{\text{OTH}}$$

$$\text{Pop}_{\text{UC}} =: \text{UC covered population} \quad (\text{age: 0 to 100})$$

$$\text{Pop}_{\text{SSO}} =: \text{SSO covered population} \quad (\text{age: 15 to [69]})$$

$$\text{Pop}_{\text{CSMBS}} =: \text{CSMBS covered population} \quad (\text{age: 15 to [100]})$$

$$\text{Pop}_{\text{OTH}} =: \text{Residual (non-CSMBS public schemes; residency abroad; others)} \quad (\text{age: 15 to [100]})$$



# How do population models work?

**Population<sub>Stock</sub> (t+1)**

**= Population<sub>Stock</sub> (t)**

**+ Immigration<sub>Flow</sub> (t+1) – Emigration<sub>Flow</sub> (t+1)**

*alternative:*

*[Entries<sub>Flow</sub> (t+1)*

*–*

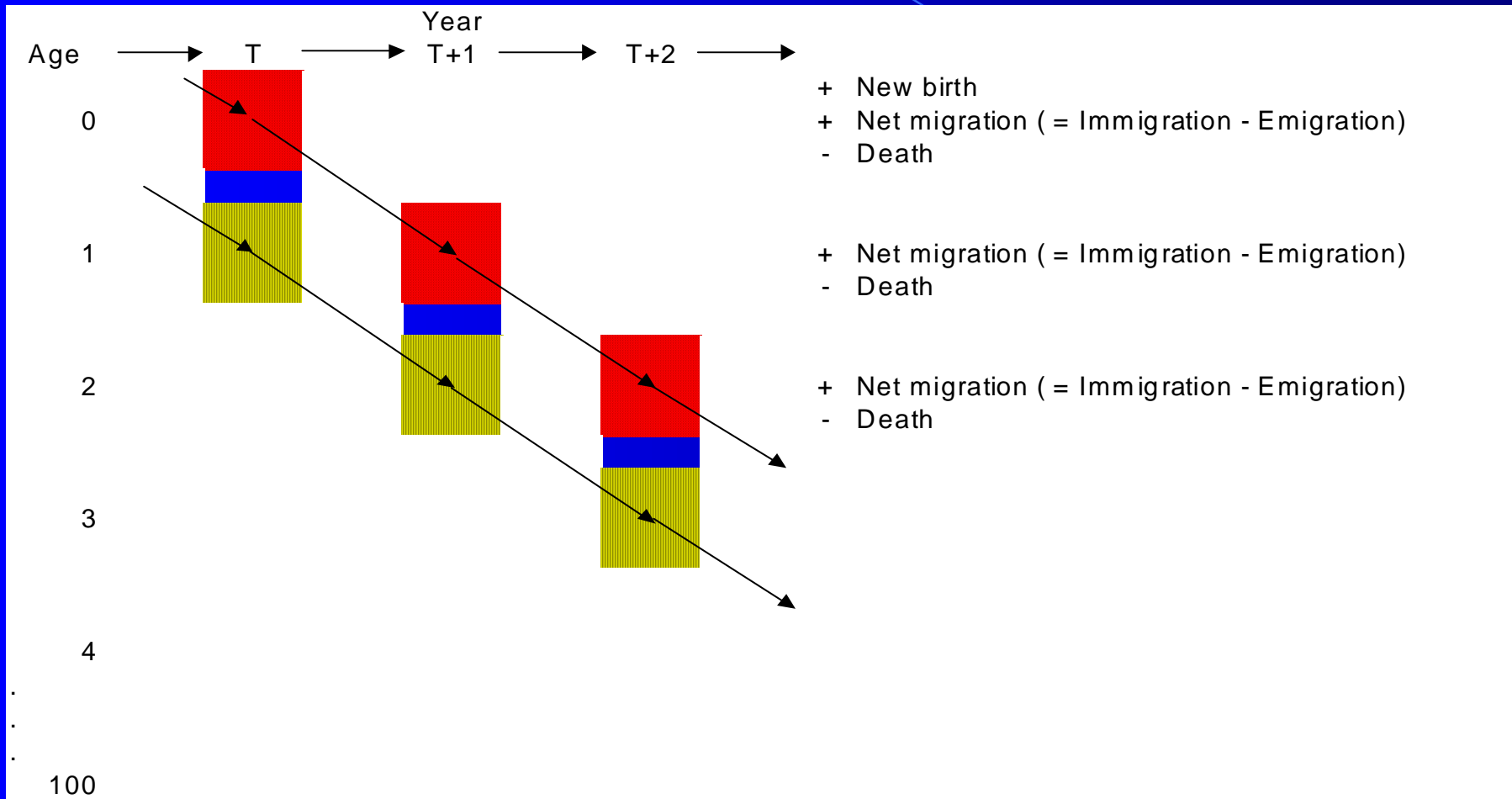
*Exits<sub>Flow</sub> (t+1)]*

**+ Newborns<sub>Flow</sub> (t+1) – Deaths<sub>Flow</sub> (t+1)**



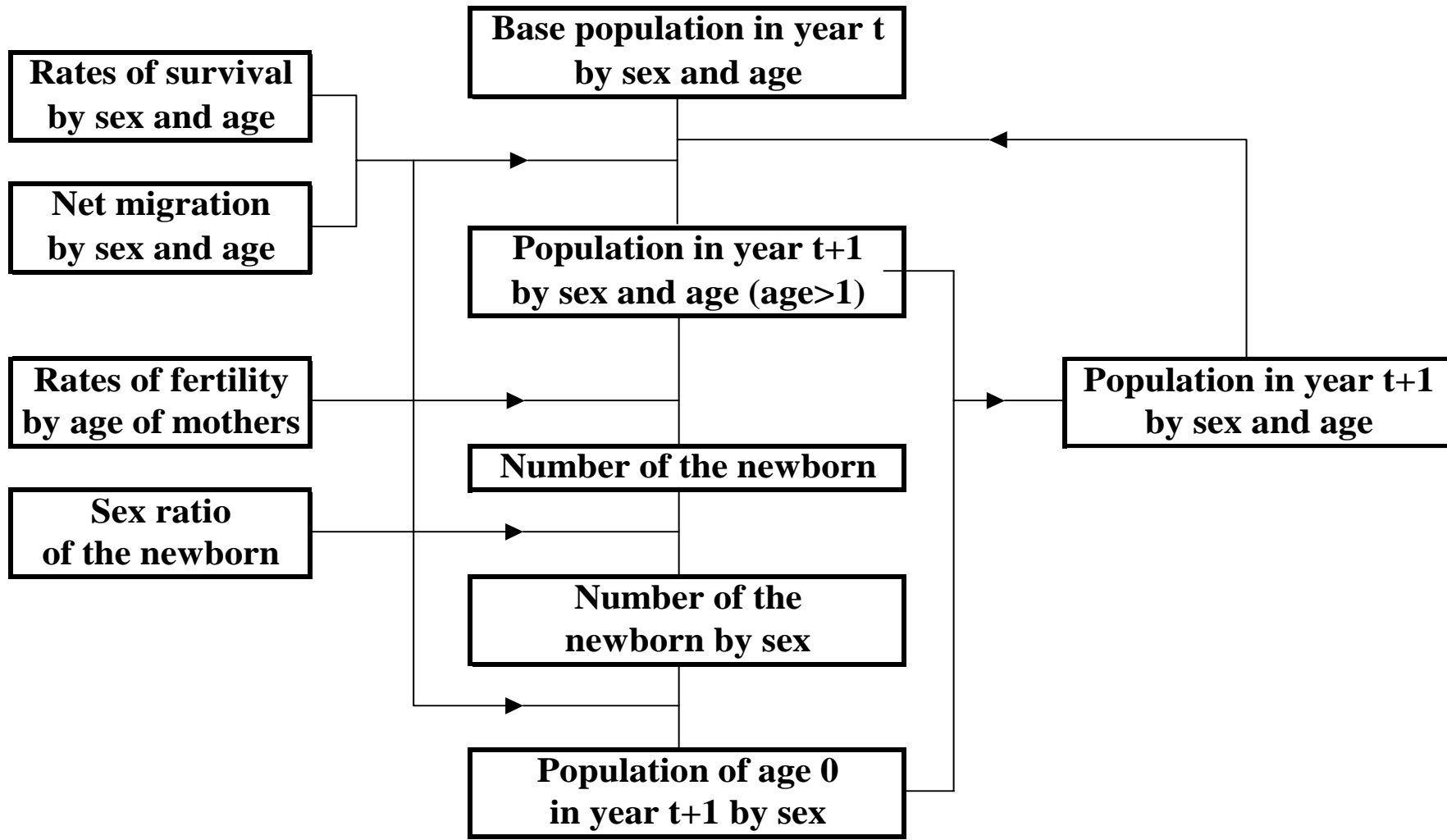
# How do population models work?

## Idea of cohort-wise projection - demographic projections





# How do population models work?





# Health Expenditure Model: designing the population model

## Problems / solutions:

$Pop_{TOT}$  =: **Data base MoI**

Weakness: **fertility** and **mortality** data

Solution: standard UN parameters (?)

$Pop_{OTH} = k * Pop_{TOT}$   $k =: Pop_{OTH} / Pop_{TOT} \Rightarrow$  exog; constant (?)

$Pop_{SSO}$  =: **Data base SSO**

Problem: labour market **entries & exits; mortality**

Solution: construction of theoretical rates (?)

$Pop_{CSMBS}$  =: **Data base CSMBS**

Problem: **dependents** (children; spouses; parents) = **f (actives)**

Solution: ??? [under investigation]



# How do population models work?

**Population<sub>Stock</sub> (t+1)**

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*alternative:*

*[Entries<sub>Flow</sub> (t+1)*

*–*

*Exits<sub>Flow</sub> (t+1)]*

**+ Newborns<sub>Flow</sub> (t+1) – Deaths<sub>Flow</sub> (t+1)**



# Health Expenditure Model: designing the population model

## Frequencies of contacts:

### Scheme specific

- UC
- SSO
- CSMBS



# Health Expenditure Model: designing the population model

## Costs per contact:

### Scheme specific

- UC [« hospital costs / shadow fees »]
- SSO [« hospital costs / shadow fees »]
- CSMBS [« hospital fees for service »]



# Health Expenditure Model: Hospital Expenditure Structure

Item	Month	Year
<b>Operating expense / personell expense</b>		
Salary and wages		
Salary	X	X
Wages	X	X
Temporary wages	X	X
Other salary and wages	X	X
Other personal expense	X	X
<b>Non-operating expense</b>		
Compensation	X	X
Sundries	X	X
Cost of goods		
Drugs	X	X
Medical material	X	X
Supplies		
Equipment	X	X
Other	X	X
Public utility	X	X
Depreciation and amortization		
Depreciation	X	X
Amortization	X	X
Other operating expense		
Bad debt	X	X
Doubtful accounts	X	X
Cross expense	X	X
Reimbursement to other hospitals	X	X
Other expense	X	X
Total operating expense		
Non-operating expense		
Government revenue (tax) expense	X	X
Total expense		



# Hospital Expenditure Structure: Cost and Volume Indicators

## Hospital labour costs:

Per capita wages (by profession (?))	=: Cost index
Number of staff (by profession (?))	=: Volume index

## Hospital non-labour costs:

For	Sundries, Pharmaceutical drugs, Medical material (goods), Equipment, Other supplies, Electricity / energy	
	=>	Price Indexes to be developed Volume indexes follow



# Open questions

**Permanently many.**