Smoking Costs Hong Kong
Over $5 Billion Every Year

The first comprehensive assessment of the costs of tobacco in Asia
A collaborative research project between University of Hong Kong and University of Queensland

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Why is this topic important?

• Smoking tobacco affects the health of the smoker and those around the smoker
• This effect on health creates costs which are shared by several groups
• Knowing the extent of these costs and who pays for them is essential information for policy decision-making
Pyramid of harm caused by active and passive smoking exposures

- Premature deaths
- Recurrent or chronic disease
- Doctor consultations
- Clinical symptoms
- Subclinical damage to cells, tissues & vital organs

Cancers
Stroke & heart attacks
Chronic lung disease
Cough, Phlegm, Wheeze, breathlessness
Damage to arteries and blood lipids

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The Population Attributable Fraction

\[ \text{PAF} = \text{AR} \times \text{P} \]

- **Exposure**
- **AR** Attributable risk in those Exposed
- **PAF** Population Attributable Fraction
- **P** Prevalence (%) of exposure (smokers/passive smokers)

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The population attributable fraction

“Is the proportion of disease or deaths which would be avoided if we prevented smoking or passive smoking”

We can now estimate the costs of these avoidable health problems.
What are the health effects included in the costing? – 1

- The impact of active smoking on the smoker
- It leads to
  - deaths
  - diseases requiring medical care
  - time lost from work
  - extra use of long term care due to disability
What are the health effects included in the costing? – 2

• The impact of passive smoking on non-smokers

• Also leads to
  – deaths
  – diseases requiring medical care
  – time lost from work
  – extra use of long term care due to disability
  – and illness in children
Are any health effects not yet costed?

- Cost of hospital care for children and young adults 15-35 years
- The cost of family members caring for a sick smoker or sick passive smoker
- The impact of pain and suffering due to disease or death of a family member
- The value of a lost life over and above lost earnings
How is this study different from previous studies?

- This study uses local Hong Kong data on the health effects of tobacco and is more comprehensive than any previous studies.
- *Previous estimates in Hong Kong have not included passive smoking.*
- The new results cover costs to the health care services but *also* to employers and individuals.
What information did we use?

HKU LIfestyle and MORtality (LIMOR) database provided risks of *active* and *passive* smoking

HKU Harvard Household Survey (HHS) provided information on health care use from *exposure* to active and passive smoking

HKU Police Health Survey (PHS) provided information on health care use and time off work due to passive smoking

Hospital Authority clinical database provided information on hospital episodes due to specific causes
## Examples of important causes of death and conditions needing health care included in the costing

<table>
<thead>
<tr>
<th>Cancers</th>
<th>Respiratory</th>
<th>Cardiovascular</th>
<th>Other medical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung</td>
<td>Pharynx</td>
<td>Upper respiratory complaints</td>
<td>Coronary heart disease</td>
</tr>
<tr>
<td>Oesophagus</td>
<td>Larynx</td>
<td>Acute bronchitis</td>
<td>Stroke</td>
</tr>
<tr>
<td>Stomach</td>
<td>Pancreas</td>
<td>Pneumonia</td>
<td>Other vascular disease</td>
</tr>
<tr>
<td>Liver</td>
<td>Rectum</td>
<td>COPD</td>
<td></td>
</tr>
<tr>
<td>Mouth</td>
<td>Bladder</td>
<td>Pulmonary heart disease</td>
<td></td>
</tr>
<tr>
<td>Other malignancies</td>
<td>Tuberculosis</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Estimation of deaths from active smoking (example: lung cancer)

- Risk of lung cancer in a smoker versus a non-smoker
- The number of smokers in Hong Kong
- The total number of lung cancer deaths

The number of lung cancer deaths caused by active smoking

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Estimation of deaths from passive smoking (example: lung cancer)

- Risk of lung cancer in a passive smoker versus a non passive smoker
- The number of passive smokers in Hong Kong
- The total number of lung cancer deaths in non-smokers

The number of lung cancer deaths caused by passive smoking

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Some attributable fractions for tobacco induced diseases for men

<table>
<thead>
<tr>
<th></th>
<th>For active smoking:</th>
<th>For passive smoking:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung cancer</td>
<td>70%</td>
<td>Lung cancer</td>
</tr>
<tr>
<td>Heart disease</td>
<td>10%</td>
<td>Heart disease</td>
</tr>
<tr>
<td>Stroke</td>
<td>11%</td>
<td>Stroke</td>
</tr>
<tr>
<td>Chronic lung</td>
<td>63%</td>
<td>Chronic lung disease</td>
</tr>
</tbody>
</table>
How did we do the costing?
How did we do the costing? – 1

Value of lives lost <65 years

Estimated number of lives lost due to smoking

\[ \text{Lost productive years} \times \text{median salary} = \] $ Value of lost productive years due to active and passive smoking

Note: All cost data was based on 1998 values
How did we do the costing? – 2

Value of smoking-related hospital admissions (example: lung cancer)

- Attributable fraction for lung cancer in smokers
  
  - All hospital bed-days used to treat lung cancer cases
    
    - No. of bed-days used that are attributable to smoking
      
      $ Value of a hospital bed-day
        
        $ Value of hospital inpatient care for lung cancer due to active and passive smoking
How did we do the costing? – 3
Value of other smoking-related public health care use

- Nursing homes
- Specialist outpatient clinics
- Accident and emergency services
- General outpatient clinics

Attributable fraction and $ unit cost

$ Value of other attributable care services

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How did we do the costing? – 4

Value of smoking-related private care and time off work

- Extra GP visits made by a smoker - from a CUHK and HKU study; unit cost from the HKU HHS study
- Estimated costs of private hospital care – from BUPA(Asia) Ltd data
- Domestic help at home for older people – from LIMOR and census data
- Time off work due to illness - from PHS and census data; costed at median salary
- Other health-related costs for active smoking
How did we do the costing? – 5

Value of smoking-related care for children and adult workers

Cost of extra health care use by infant passive smokers under 1 year – from HKU birth cohort study

Costs of extra GP visits by child passive smokers aged 1 to 15, from HKU study on 8-12 year olds

Extra GP visits by passive smokers at work – from PHS study

Other health care costs of passive smoking

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What are the findings on costs?
How many deaths every year are caused by active and passive smoking?

6,920 deaths in total

3,927 before age 75 years

1,707 under 65 years
What are the productivity losses due to active and passive smoking in Hong Kong?

- Working time lost due to death before 65 years: $1,353 million
- Time lost from work due to illness: $420 million

Total: $1,773 million per year
What are the total direct health care and long term care costs?

$3,572 million per year

- Public hospital: $1,952 million
- Private hospital: $128 million
- Public GPs: $241 million
- Private GPs: $330 million
- Public long term care: $328 million
- Private long term care: $593 million
What is the grand total of health related costs to the community?

$5.3 billion per year

- about 28% health care cost due to passive smoking
- about 82% of health care costs are in public sector
- about 50% of all costs fall on public sector
How does the new estimate compare with previous analyses?

The previously quoted figures of HK$700-HK$900 million are only based on Hospital Authority bed-days for three diseases

- Lung Cancer
- Coronary Heart Disease
- Chronic Obstructive Lung Disease
What can we learn from other international studies?
Australian studies

- A comprehensive assessment of the social and health care costs of active and passive smoking has been carried out in Australia.

- It included *tangible* and *intangible* costs.
Tangible and intangible costs

- **Tangible costs**, when reduced, release resources for consumption or investment
- Valuation is relatively easy because markets exist for the resources released
- **Intangible costs** (for example pain and suffering) do not release resources and are difficult to value
- Nevertheless intangibles are important
Examples of tangible costs

1. Health care costs from
   - Hospital services (e.g. inpatient, outpatient)
   - Long term care (e.g. nursing homes)
   - Medical services (e.g. primary care doctor visits)
   - Prescription & non-prescription drugs
   - Allied health services (e.g. physiotherapists)
Examples of tangible costs

2. Production losses resulting from
   - Death
   - Sickness
   - Reduced productivity
     - eg time for smoking, reduced health status of smokers
Examples of tangible costs

3. Welfare provision
4. Fires
5. Pollution and Litter
Examples of *intangible* costs

**Loss of life by**
- Smokers
- Passive smokers

**Pain & suffering of**
- Smokers
- Passive smokers
- Others
Tobacco attributable net *health care* costs, Australia, 1998/9

<table>
<thead>
<tr>
<th></th>
<th>Medical</th>
<th>Hospitals</th>
<th>Nursing homes</th>
<th>Pharmaceuticals</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco</td>
<td>$209</td>
<td>$309</td>
<td>$381</td>
<td>$196</td>
<td>$1,095</td>
</tr>
</tbody>
</table>

*Tobacco costs are 4 to 18 times greater than alcohol and other drugs*
Total social costs of tobacco, Australia, 1998/9

<table>
<thead>
<tr>
<th></th>
<th>Tobacco $Am</th>
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</thead>
<tbody>
<tr>
<td><strong>Tangible</strong></td>
<td>7,587</td>
</tr>
<tr>
<td><strong>Intangible</strong></td>
<td>13,476</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>21,063</td>
</tr>
</tbody>
</table>
Benefit-cost ratios for public health programmes in Australia

- Coronary Heart Disease 11.5
- HIV/AIDS 5.2
- Road trauma 1.8
- Tobacco 49
Avoidable costs

Costs which are amenable to policy initiatives and behaviour changes

Unavoidable costs

Costs which are currently borne relating to past abuse

and

Costs incurred by the proportion of the population who will continue to smoke
How do the social costs of tobacco compare with government’s revenue from tobacco duty?

- Total cost of tobacco is $5.3 billion per year
- Total direct health care costs are 3.6 billion
- Government revenue from tobacco duty is only $2.5 billion per year
## How does the Hong Kong estimate of costs compare with Australia and United States?

<table>
<thead>
<tr>
<th></th>
<th>Adjusted for Hong Kong</th>
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<tbody>
<tr>
<td></td>
<td>Overall country cost HK$</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>5.3 Billion</td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td>Australia¹</td>
<td>46.6 Billion</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>United States²</td>
<td>570 Billion</td>
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</table>


* Adjusted by current smoking rates
THE CRASHING ANNUAL TOLL FROM TOBACCO

The death toll from active and passive smoking in Hong Kong is equivalent to 20 aeroplanes each with 350 people crashing each year.
Health warning!!!

CIGARETTES SERIOUSLY DAMAGE THE BUDGET

Brand X

The grand total of $5.3 billion/year does not include the value of the lives lost

So the price of this pack of cigarettes does not reflect the true cost of smoking in Hong Kong

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This costing is very conservative and it does not include the costs of:

- hospital care for children and adults 15-35 years
- value of family care for a sick smoker or sick passive smoker
- value of pain and suffering due to illness
- full value of the lives lost.
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