GB experience of estimating ‘The Costs to Britain of workplace injuries and work related ill health’

Heidi Edwards – Accounting for cases
Mike Zand – Attributing Costs

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Overview: Accounting for cases

1. History of Costs estimates in GB
2. What the current GB estimates show
3. Conceptual basis of GB cost estimates
4. Accounting for cases: Numbers and Severity;
5. Handling uncertainty
6. Development work: Model for estimating costs of occupational cancer
1) Cost model evolved over time – approach dependent on available data. Non-financial costs have continued to be an important component.

- 1969
- 1979
- 1990
- 1995/6
- 2000/1
- 2006/7 onwards

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Monetary value of individual’s pain, grief and suffering
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Cases estimated from admin source

Illness-Prescribed/Compensated

Includes non-injury accidents

Costs to individuals, employers and society

Household survey based estimates of non-fatal illness and injuries
(largely excludes cancer and other long latency illness)

Illness - Prevalence

Excludes non-injury accidents

Illness - Incidence

Plus costs to government

Ongoing work to develop Cancer Cost model

2014
GB Estimate of the Costs of workplace injury and ill health (excluding long latency illness)

£13.8 bn (2010/11)

Injury (£5.4bn)

Illness (£8.4bn)

Costs fallen by 15% since 2006/07
GB Estimate of the Costs of workplace injury and ill health (excluding long latency illness)

2) Costs to employers and government are significant and should be included where possible

[Image: Doughnut chart showing the breakdown of costs.]

- Individual: £7.9bn (57%)
- Employer: £2.8bn (21%)
- Government: £3.0bn (22%)

Total: £13.8bn (2010/11)
3) Lost output and non-financial costs account for ~ 90% of total costs and should be included in any cost model. Healthcare costs, accounting for ~ 6%, are less important by comparison. Insurance premiums (compensation) important cost component for employer (~50%)
### GB Estimates of the Costs of workplace injury and ill health (excluding long latency illness) (2010/11)

<table>
<thead>
<tr>
<th></th>
<th>Unit Cost to Society</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatal injury</td>
<td>£1,576,000</td>
</tr>
<tr>
<td>‘Reportable’ injury</td>
<td>£23,500</td>
</tr>
<tr>
<td>‘Non-reportable’ injury</td>
<td>£700</td>
</tr>
<tr>
<td>Ill health</td>
<td>£16,700</td>
</tr>
</tbody>
</table>

4) Unit costs, calculated by dividing the aggregate costs to society by the number of cases of new incidence cases, are important for *Cost Benefit Analysis*. 
Conceptual basis of GB Cost Estimates

Earlier year

Historic conditions
Current new cases
- short latency
  e.g. stress, MSD
Workplace injury

Current year

Current conditions
Current new cases
- long latency
  e.g. cancer, COPD
Workplace Injury

Later year

Future cases esp.
Long latency

Conceptual basis of GB Cost Estimates

Current new cases – short latency
- e.g. stress, MSD

Future cases esp.
- Long latency

Historic conditions

Current year

Current new cases
- long latency
- e.g. cancer, COPD

Costs to Britain model

Earlier year

Current new cases
- short latency
- e.g. stress, MSD

Workplace injury

Later year

Current conditions

Workplace Injury

Historic conditions
Conceptual basis of GB Cost Estimates

Current new cases – short latency e.g. stress, MSD

Current conditions

Current new cases – long latency e.g. cancer, COPD

Future cases esp. Long latency

Costs to Britain model

Earlier year

Costs of Occupational Cancer Model

Current year

Later year

Historic conditions

Workplace injury
How are the costs estimated

- Mostly bottom-up approach (though some exceptions e.g. compensation)

\[ \text{Total cost} = \sum \text{(Number of Cases} \times \text{unit cost)} \]
Accounting for cases
Costs to Britain: Data Sources

**Source**
- Statutory reports of injuries
- National household survey (Labour Force Survey)

**Illness/injury type**
- Fatal Injuries
- Self-reported:
  - workplace injury
  - work-related illness (including illness caused or made worse by work)

**Data**
- Annual number
- Age profile

**Number of case**:
- By injury/illness type
- 3-yr annual average estimate
- People who have worked in the last 12 months

**Severity**
- Duration of time lost distribution
- Number of cases that permanently leave labour force (incl. average age)
Cost by Incidence Type

Proportional breakdown of incidence by incidence type

Proportional breakdown of cost by incidence type

5) Minor injuries contribution to total costs is small (2%)
Accounting for non-fatal cases: Costs to Britain
Self-reported estimates from household survey (LFS)

**Strengths**

- Most comprehensive estimate of totality of workplace injury and illness
- Includes employees and self-employed
- Captures small-scale incidents
- Estimates number withdrawing from labour market as result of illness or injury
- Not subject to the under-reporting seen in statutory schemes
- Research confirms self-reports are broadly reliable
- Using self-reported days lost from work, have an internal proxy measure for severity
- Survey contains wealth of other labour force data e.g. industry, occupation, region of work
- Annual data allows for annual cost updates
- To best capture illness from current working conditions, illness estimate based on new cases to those who worked in last 12 months
Accounting for non-fatal cases: Costs to Britain
Self-reported estimates from household survey (LFS)

**Limitations**

- Most comprehensive available estimate available, but still an undercount. Count of ‘people’ not ‘cases’
- Work related illness – Respondents record most serious illness over year
- Estimating cases that result in permanent withdrawal from labour market
- Model aims to estimate future costs arising from these injury and illness cases

**Workplace Injury**
- Respondents record most recent injury in the year

**Duration of absence**
- Used as proxy measure for severity
- Different groups will face different incentives for returning to work

**Particularly for illness**
- 12 month reference period may underestimate the severity
- Not a perfect proxy: Duration of absence does not always infer severity (e.g. limb fracture)

**Injury counts**
- Time off from accident till return to work

**Illness counts**
- Total episodic duration over 12 months

**Difference in measuring duration of absence**
- For illness and injury

**Illness estimate**
- Includes cases both caused and made worse by work

Due to lack of data, model does so ONLY for non-fatal cases that result in permanent withdrawal from labour market.
Estimating cases which permanently withdraw from labour market (‘Never returns’)

Important subset of cases
– High associated costs (33% of total)

Estimate sourced from Labour Force Survey:
Self-reports (Estimate approx 16,000 cases per year)

Alternative source gives estimate of a similar order of magnitude

Incidence cases of ‘Never Returns’, based on injury incidence and illness prevalence
Question ‘Do you expect to return to work in the future?’

Assuming a steady rate in terms of number of never returns over time, can assume estimate is a reasonable measure of ‘never returns’ from incidence cases, now and in the future

What do people interpret as ‘return to work in the future’?

How reliable are people’s assessment now for what may happen in the future?

Some evidence that factors other than extent of disablement effect decision to withdraw from Labour market

Never Returns used as a ball park estimate – estimate held constant over time

Use assumptions to apportion never returns by illness and Cannot disaggregate by illness type

Significant issue for estimating non-financial human costs
Accounting for uncertainty

Uncertainty in...

...estimates of case numbers
Survey based estimates, subject to sampling error
95% Confidence intervals around headline costs estimates

...price information
Sensitivity of these data items considered during model development, and influenced data sources used for price information and assumptions made

...assumptions
Each annual update, produce a back series in constant years prices with assumptions held fixed.
Total Costs over time

Costs in 09/10 prices

Source: HSE Cost Model
Cost of Occupational Cancer – Development Work Ongoing

**Case Estimation**
- Made possible by GB Occupational Cancer Burden Study by Dr Lesley Rushton et al
- Attributable fraction approach to estimating occupational cancer registrations – separate estimates by cancer type
- Cases of mortality estimated from registration data by applying survival rates

**Model Issues**
- Model uses similar framework to Costs to Britain model
- Potential for Cancer Cost model framework to be applied to other long latency conditions
- Particular challenge in estimating non-financial human costs

**Cost Estimates**
- Expect costs to be substantial
- Unit costs expected to be high in comparison to unit costs for average ill health
- Cancer cost estimates conceptually different from Costs to Britain due to latency effect