Comparing the Human Capital and Friction Cost approaches to estimating productivity costs

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Productivity losses

Human Capital Approach

- Basis in neoclassic economic model
- Assumes perfect market competition, and that earnings reflect productivity
- Variables: Time span, foregone activity, paid labour, benefits and fixed payroll costs

Friction Cost Approach

- No theoretical foundation
- Assumes unemployment in the labour market
- Variables: frequency and length of friction period, absence and productivity, value of lost production and macroeconomic consequences

Implications of selecting one method over the other for comparing sub-groups have not been examined

Berger (2001)
Aim

• Calculate the lost productivity associated with head and neck cancer (HNC) using both the HCA and FCA, and examine the implications of using each approach for the comparison of socio-demographic and clinical groups
Head and neck cancer

National Cancer Institute (2013); Boehringer Ingelheim (2012)
Methods and data

National Cancer Registry Ireland
(~2400 HNC survivors 1994-2008)

Survey sample (n=251)

Survival statistics

Temporary time off work

Permanent workforce departure

Reduced hours at work

Premature mortality

National employment and productivity data

Value of lost productivity
(Human Capital Approach and Friction Cost Approach)
Methods and assumptions

- Retirement age 65 years
- Friction periods 9.9 to 13.3 weeks
- Wage growth estimated 1.7% (ESRI 2012)
- Future costs discounted at 4% (HIQA 2010)

- Comparisons by socio-demographic and clinical variables, including:
  - gender
  - age
  - occupation
  - medical card status
  - cancer stage and treatment
Results – total productivity loss

HCA base case: € 253,833
FCA base case: € 6,803
Results – work absences

- Temporary time off: €20,423
- Permanent time off: €68,637
- Reduce work hours: €67,098
- Premature mortality: €97,674

HCA base case: €20,423
FCA base case: €4,953
€1,186
€489
€175
Results - demographic subgroups

**HCA total**

- Males
- Females
- Age 51+ years
- Up to 2ndary
- Tertiary/post
- Urban
- Rural
- Employed
- Self-employed
- Professional
- Service
- Manual

**FCA total**

- Males
- Females
- Age 51+ years
- Up to 2ndary
- Tertiary/post
- Urban
- Rural
- Employed
- Self-employed
- Professional
- Service
- Manual
Results – subgroups where FCA highlights differences

Percentage difference between subgroups

- Females (vs males): -15% (FCA) vs -1% (HCA), €6,053 vs €7,116
- Service (vs professional): -63% (FCA) vs -33% (HCA), €251,538 vs €254,792
- Manual (vs professional): -53% (FCA) vs -42% (HCA)
- No medical card (vs medical card): 36% (FCA) vs 8% (HCA)
- No radiotherapy (vs radiotherapy): -38% (FCA) vs -17% (HCA)
- Other cancer site (vs larynx): -22% (FCA) vs -3% (HCA)

Other cancer site (vs larynx): -22% (FCA) vs -3% (HCA)
Results – subgroups where HCA highlights differences

Percentage difference between subgroups

- Pharynx (vs larynx)
  - FCA: -49%
  - HCA: 36%

- Older (vs younger)
  - FCA: 14%
  - HCA: 17%
Summary

- The impact of method selected on subgroup comparisons is inconsistent
- This study highlights some implications for costing of both methods
Implications for jurisdictions

• Different jurisdictions use different methods
• Cost effectiveness different in different jurisdictions
  ➢ Due to different patient & clinical characteristics
  ➢ Due to overall method choice
  ➢ Due to economic conditions
    o Wage rates
    o Unemployment rates
    o Friction period durations
Implications - Equity

• Different cost effectiveness based on different methods has implications for:
  ➢ Inequitable access to treatments
  ➢ Inequitable outcomes / survival
  ➢ Inequitable targeting of interventions
  ➢ Treatment selection not based on efficacy or clinical need
Conclusions

• Productivity losses following head and neck cancer can be significant
• Choice of methodology influences not only magnitude of results, but also how sub-groups are compared
• These differences have implications for cost effectiveness across time and place, reimbursement decisions and healthcare equity
Acknowledgements

Thanks to:

• SuN Study participants
• NCRI staff involved in collection and processing of registry data
• Steering Committees & investigators of ICE Award & SuN Study
• COST Action IS1211 CANWON

Funding from:

• This work - HRB Interdisciplinary Capacity Enhancement Award
• SuN study - HRB project grant

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