

Variation in methodological approach to productivity cost valuation: Distributional effects in the case of prostate cancer



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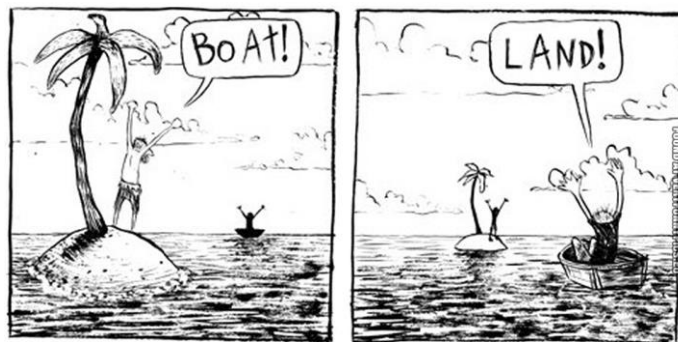
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Background

Perspectives



Perspective...

Externalities & Production effects



Versus



Measuring Productivity Lost

Human Capital Approach (HCA)

- **Potential Output Loss**
- **Assumptions**
 - Full employment
 - Competitive labour market
 - Minimum transaction costs
 - Profit maximisation
 - $MRP_L = \text{wage}$

Friction Cost Approach (FCA)

- **Actual Output Loss**
- **Assumptions**
 - Less than fully employed resources
 - Positive unemployment
 - Internal labour reserves
 - Return to full productivity after friction period

Wage Multipliers

- **Wages adjusted:**
- **Assumptions**
 - Team-dependent nature of modern work
 - Lack of perfect substitute workers
 - Time sensitivity of output to worker absence

Key Goal



Objective 1:



To Estimate the Productivity costs of working prostate cancer survivors using: The Human Capital Approach, the Friction Cost Approach and both adjusted for Wage Multipliers

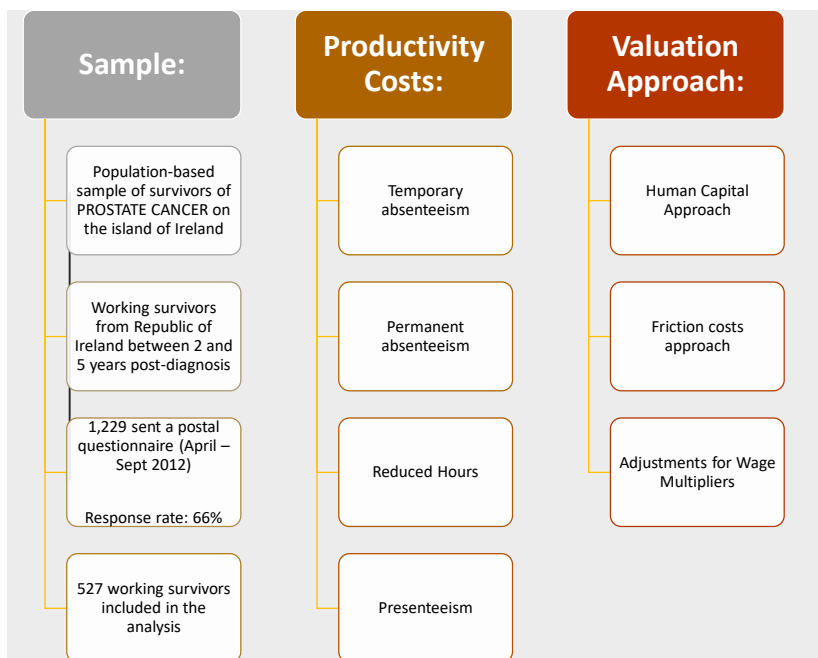
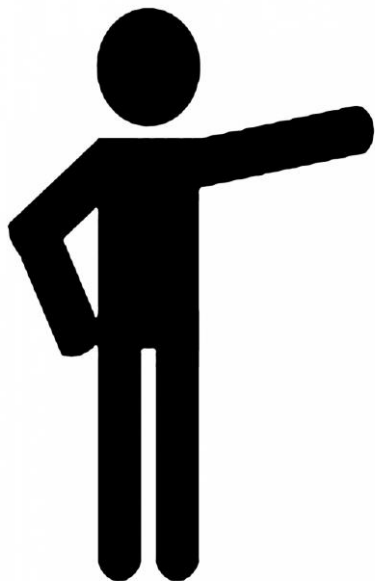


Objective 2:



Illustrate potential distributional consequences of each approach by key socio-demographic characteristics

Methods



Results

Sample Characteristics

Characteristic	No.	%
<u>Age at diagnosis</u>		
Up to 60	141	28.6
Over 60	352	71.4
<u>Highest level of Education</u>		
Up to Secondary	332	69.2
Tertiary	148	30.8
<u>Marital status at diagnosis</u>		
Married/Cohabiting	416	85.8
Other	69	14.2
<u>Have children</u>		
No	128	38.6
Yes	204	61.4
<u>In receipt of social welfare payments</u>		
No	418	86.7
Yes	64	13.3
<u>Employment status at diagnosis</u>		
Employed	303	61.5
Self-employed	188	38.5

Mean productivity costs per working prostate cancer survivor (€2012) and subcomponent costed by Human Capital Approach (national wage and self reported wage)

Productivity Cost Categories	Physical units (days or days equivalent)	Rank of cost component	Base case: HCA national wage (€)	Rank of cost component	HCA Self-reported wage (€)	Rank of cost component	% change from base case
Cost of temporary Absenteeism	86	2	6,386	4	6,893	4	7.9
Cost of permanent absenteeism	188	1	18,537	1	23,778	1	28.3
Cost of reduced hours	85	3	11,130	2	15,128	2	35.9
Cost of presenteeism	68	4	8,148	3	7,879	3	-3.3
Summed Totals	427		44,201		53,678		21.4

Mean productivity costs per working prostate cancer survivor (€2012) and subcomponent costed by Friction Cost Approach

Productivity Cost Categories	Physical units (days or days equivalent)	Rank of cost component	Base case: HCA national wage (€)	Rank of cost component	FCA national wage (€)	Rank of cost component	% change from base case
Cost of temporary Absenteeism	86	2	6,386	4	2,675	1	-58.1
Cost of permanent absenteeism	188	1	18,537	1	1,005	2	-94.6
Cost of reduced hours	85	3	11,130	2	566	3	-94.9
Cost of presenteeism	68	4	8,148	3	380	4	-95.3
Summed Totals	427		44,201		4,625		-89.5

Mean productivity costs per working prostate cancer survivor (€2012) and subcomponent costed by Human Capital Approach adjusted for the wage multiplier

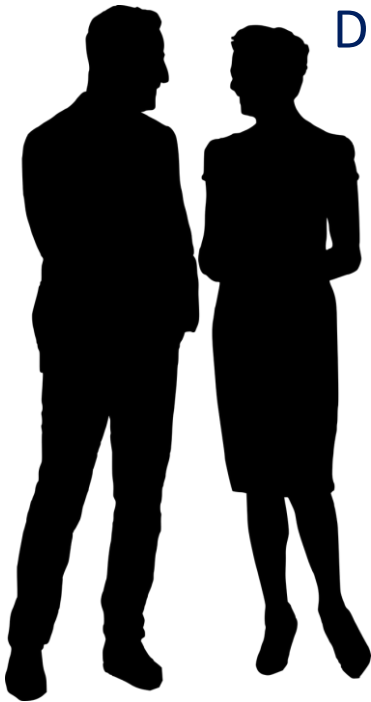
Productivity Cost Categories	Physical units (days or days equivalent)	Rank of cost component	Base case: HCA national wage (€)	Rank of cost component	HCA _{WM} adjusted national wage (€)	Rank of cost component	% change from base case
Cost of temporary Absenteeism	86	2	6,386	4	12,454	3	95.0
Cost of permanent absenteeism	188	1	18,537	1	18,537	2	0.0
Cost of reduced hours	85	3	11,130	2	22,944	1	106.1
Cost of presenteeism	68	4	8,148	3	11,829	4	45.2
Summed Totals	427		44,201		65,764		48.8

P values from significance tests for differences in median total productivity costs by valuation approach across groups defined by socio-demographic and economic characteristics

Category	Total days lost	HCA Base case National wage	HCA Self-reported wage	FCA national wage	FCA Self-reported wage	HCA _{WMA} national wage	HCA _{WMA} self-reported wage
Age Group	0.000***	0.001**	0.000***	0.011*	0.001**	0.000***	0.000***
Education Level	0.214	0.474	0.959	0.035*	0.861	0.505	0.887
Marital Status	0.406	0.948	0.676	0.919	0.311	0.963	0.653
Children	0.205	0.101	0.077	0.046*	0.062	0.089	0.065
Social Welfare	0.172	0.133	0.049*	0.125	0.035*	0.107	0.033*
Employment status	0.166	0.188	0.088	0.135	0.007**	0.227	0.092

Discussion

Discussion: Valuation Approaches



Valuation Approach

- Range: $-90\% FCA_{\text{national wage}}$ to $+82\% HCA_{\text{WM self-reported wages}}$
- Distorts ranking of components

Use of wages

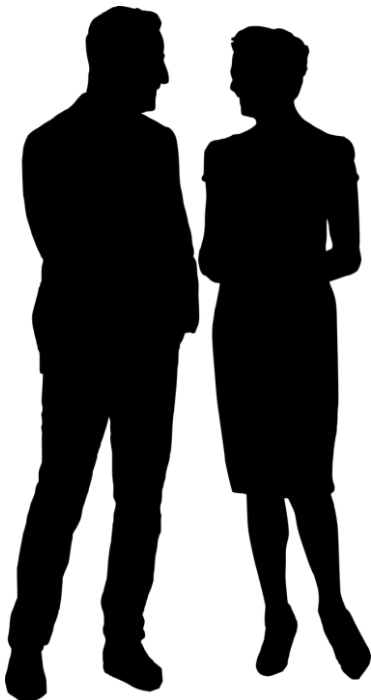
- Self reported versus national wages
- $+21\%$ for $HCA_{\text{self-reported wages}}$ to $+70\% FCA_{\text{self-reported wages}}$

Use of wage multipliers

- $+48\%$ and $+106\%$ compared to base case national wage estimates

15

Discussion: Distributional Impact Findings



Distributional issue 1

- Physical Units versus the base case (HCA)

Distributional issue 2

- Alternate valuation approaches produce significant differences in productivity cost by survivor characteristics

16

Conclusion: Key Take Home Message

A key trade off appears to exist between greater accuracy of Productivity cost estimates based on real world labour market data (efficiency) and the increased distributional concerns that arise (equity)



Use of Human Capital Approach with national gross wage as base and sensitivity analysis around this.



17

THANK YOU



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18

Mean productivity costs per working prostate cancer survivor (€2012) and subcomponent
costed by Friction Cost Approach adjusted for the wage multiplier

Productivity Cost Categories	Physical units (days or days equivalent)	Rank of cost component	FCA national wage (€)	Rank of cost component	FCA national WM and compensation adjusted (€)	Rank of cost component	% change from base case
Cost of temporary Absenteeism	86	2	2,675	1	5,335	1	-16.5
Cost of permanent absenteeism	188	1	1,005	2	2,072	2	-88.8
Cost of reduced hours	85	3	566	3	1,156	3	-89.6
Cost of presenteeism	68	4	380	4	552	4	-93.2
Summed Totals	427		4,625		8,745		-80.2