Pay, productivity, and social value: Why key workers deserve a better deal

Technical Appendix

This technical appendix details the calculations behind the tables included the working paper: *Pay productivity and social value: Why key workers deserve a better deal.*

Key worker deaths involving Covid-19

For the first time, CPP has estimated the increased overall fatality risk to key workers by aggregating data on death rates by individual occupation.

We have estimated the mortality rates across key worker occupation groups, comparing these to the average mortality rate for those of working age. Previously the data has only referred to individual occupations, so this new analysis helps to show the risks key workers have faced overall and by occupation group.

Our analysis is based on ONS data on Coronavirus (COVID-19) deaths by occupation for England and Wales for March to December 2020, which was published in January 2021. Death rates are for those aged 20-64 and have been age standardised by the ONS. We have additionally used gender standardised death rate data to isolate the impact of occupation on mortality risk.

Rates do not control for other factors which may influence mortality, such as ethnicity, due to problems with two-way causation. A report from the Race Disparity Unit found that most of the increased risk experienced by ethnic minorities is explained by factors like occupation, location, household occupancy, and pre-existing health conditions, which themselves are influenced by pay and economic security.[1] The interrelation of these factors makes it difficult to separate the impacts of ethnicity and occupation on health risk.

Where data for individual occupations are missing or based on a small sample, they have been replaced with data for minor, sub major or major occupations

Death rates for England and Wales are applied to UK-wide estimates of the number of key workers by occupational group.

Identifying key workers

Death rates for key workers are identified by individual occupation using the ONS keyworker reference tables, published in May 2020. These tables identify key workers by both occupation and sector.

As death rates are not also available by industrial sector, CPP cannot guarantee that everyone within every occupation is a key worker. For example, the 'Food and necessary goods' occupation group will include factory workers and inspectors in the sugar manufacturing industry, even though this industry is not designated as essential. This means that the differences between key workers and the wider working age population will be understated.

Eight individual occupation codes appear in multiple key worker groups (duplicates) and have been assigned to a single group. For example, the occupation 'Managers and directors in transport and distribution' is listed under both 'Transport' and 'Utilities and communication' in the ONS's definition of key workers. For the sake of estimating the aggregate risk to each group, 'Managers and directors in transport and distribution' have been assigned to 'Transport'.

Figure 1. Death rate involving Covid-19 by key worker occupation group (rate)

Key worker occupation	Share of all key workers[2]	Covid-19 death rate March to December 2020 (per 100,000)	Difference from average Covid-19 death rate (percent)
Education and childcare	20%	29.3	20%
Food and necessary goods	14%	36.0	47%
Health and social care	31%	46.2	89%
Key public services	5%	21.4	-13%
National and local government	2%	24.7	1%
Public safety and national security	5%	37.9	55%
Transport	6%	35.2	44%
Utilities and communication	16%	18.6	-24%
Weighted average		**33.9**	**39%**

Social compensation for key workers

The suggested social compensation per key worker reflects the additional fatality risk they have experienced in their occupation compared to the average working age person.

Suggested payments are based on the Value of a Prevented Fatality (VPF), which is set by Department for Transport guidance at £2.1m. This measure is intended to calculate the social value of changes in risk to life and is recommended for use in valuing small changes in fatality risks, where levels of human safety vary.

[1] Race Disparity Unit (2020) *Quarterly report on progress to address COVID-19 health inequalities: October 2020.* Available at: https://www.gov.uk/government/publications/quarterly-report-on-progress-to-address-covid-19-health-inequalities

[2] From ONS Key worker reference tables published in May 2020 which are based on 2019 data.

The minimum suggested compensation is based on the average additional risk experienced by those in key worker occupations. The average age and gender standardised Covid-19 death rate for key workers, weighted by occupation group is 33.9. The difference in Covid-19 death rate from average (24.4) is therefore 9.5. This is multiplied by the VPF and divided by 100,000 to get the compensation payment for each key worker.

Figure 3: Suggested average social compensation for key worker occupation groups based on a VPF of £2.1m

Key worker occupation group	Share of all key workers[3]	Difference in Covid-19 death rate from average	Suggested social compensation
Education and childcare	20%	4.9	£103
Food and necessary goods	14%	11.6	£243
Health and social care	31%	21.7	£456
Key public services	5%	-3.1	
National and Local Government	2%	0.3	£6
Public safety and national security	5%	13.4	£282
Transport	6%	10.7	£225
Utilities and communication	16%	-5.8	
Keyworker weighted average		**9.5**	**£199**

Our estimates suggest that some key worker groups experience lower than average death rates. However, this aggregation disguises significant variation at individual occupation level so we suggest compensation is based on job role. As, 1) we cannot guarantee that everyone within every occupation is a key worker and 2) we compare to average, rather than non-key workers, differences will be understated. For this reason, we suggest that all key workers are offered £200 as a minimum compensation.

This payment would not fully compensate for the additional stress and anxiety experienced by many frontline workers but would demonstrate public recognition of key workers' contribution to society, including the increased health risk that they have been exposed to by continuing to attend work.

Figure 3: Suggested social compensation range

Key worker occupation group	Minimum (based on average risk across all key worker occupations)	Maximum (based on riskiest individual occupation)
Education and childcare	£200	£700
Food and necessary goods	£200	£1,000
Health and social care	£200	£1,200
Key public services	£200	£900
National and local Government	£200	£400
Public safety and national security	£200	£800
Transport	£200	£800
Utilities and communication	£200	£800

Total cost estimates

Total cost estimates refer to ONS estimates for the number of key workers and assume take up rates to be the same as the Self-employment income support scheme.[4,5] They do not include the costs of administering the scheme.

The low estimate of £1.5 bn assumes a pay-out of £200 per worker. The high cost estimate of £4bn assumes that all those eligible for a higher rate of compensation are paid the maximum amount for their occupation group. This will be an overestimate of the true cost.

[3] From ONS Key worker reference tables published in May 2020 which are based on 2019 data.
[4] According to the ONS Key worker reference tables published in May 2020, there are 10.6 million key workers in the UK
[5] According to HMRC SEISS statistics for October 2020, take up of the scheme has been 67%. Data is available at: https://www.gov.uk/government/statistics/self-employment-income-support-scheme-statistics-october-2020/self-employment-income-support-scheme-statistics-october-2020.