

Smoking, employability, and earnings

September 2020



Executive Summary

In 2017, smoking killed almost 80,000 people in England.¹ But the costs of smoking don't stop there. Smoking also has a destructive financial impact on both individuals and the economy – preventing employment, driving down wages and costing the UK economy billions in lost productivity.

To measure the impact of smoking on employment, earnings and productivity, Action on Smoking and Health (ASH) commissioned Landman Economics to analyse *Understanding Society*, a UK longitudinal dataset.²

The impact of smoking on employment and earning prospects

This analysis shows that smoking has a significant negative effect on individual earnings and employment prospects. Unemployment and reduced earnings due to smoking result in £14.1bn of lost income across the UK each year. This includes £7.2bn in reduced earnings to working smokers and £6.9bn of lost earnings due to smokers being unemployed.

Controlling for other factors, current smokers are 5% less likely to be employed than non-smokers and long-term smokers are 7.5% less likely to be employed. This equates to around 309,000 people who are unemployed as a result of smoking. More optimistically however, quitting smoking has a positive impact, with ex-smokers only 2.5% less likely to be in work than non-smokers.

The analysis also finds that non-smokers earn 6.8% more than smokers, costing each person who smokes around £1,424 per year on average. The annual cost of tobacco is on average £1,355, making the average financial penalty to smokers £2,759 per year.

Behind these figures is a devastating personal cost. On page 4, Lisa shares how she lost her catering business of 35 years, due to ill health caused by smoking.

Impact on disabled smokers' employment prospects

After controlling for education, age and gender there was still a negative impact of smoking on employment prospects, indicating that the differences are not caused by these demographic variables.

Instead, the analysis found that almost all of the relationship between smoking and employment is explained by disability. Furthermore, disability has a bigger impact on the employment prospects of smokers, with disabled smokers being 12.5% less likely to be in employment than disabled non-smokers. Disability among smokers is linked to the length of time someone has smoked, confirmed by the finding from this analysis that the impact of smoking on employment in the under 30s is not statistically significant.

The cost of smoking to society

This analysis has revealed that smoking has a far greater impact on employment and earnings than was previously understood. In 2017 the Department for Health and Social Care (DHSC) estimated the output loss due to economic inactivity and unemployment, absenteeism and smoking breaks to be £6.3bn for England,³ and in 2019, it was estimated by ASH to be £6bn.⁴

This £14.1bn includes previously uncalculated costs of under-employment linked to smoking, not just economic inactivity. In addition, previous analyses of the impact of economic inactivity only included smokers who had applied for incapacity benefit, while this analysis includes all unemployed smokers. Less significantly, previous DHSC and ASH analyses were not UK-wide, but only applied to England. There may be other reasons too, and further research is needed.

However, there are also additional impacts of smoking on economic output caused by early deaths among smokers of £3bn for England alone,⁴ which have not been included in this analysis.

Research Summary

This briefing is accompanied by a technical report by Landman Economics: *"The impact of smoking history on employment prospects, earnings and productivity: an analysis using UK panel data"* which sets out the methodology and results in more detail.²

The data within this report is drawn from *Understanding Society*, a UK-wide longitudinal dataset. The analysis measures the likelihood of smokers (past and current) being in work and compares that to the likelihood among never-smokers. It also compares average wages of smokers (past and current) with never-smokers.

The research also combines the results of individual impact analysis with other aggregate statistics from the Office for National Statistics (ONS) relating to the UK labour market, to derive an estimate for the overall productivity losses to the UK economy arising from smoking.

Understanding Society has included nine waves since it began in 2009. Wave 9 is not included in this analysis, due to its recent publication date.

Case Study: Lisa's story

Lisa, aged 52 and from Salford, smoked for more than 30 years. Then her doctor found a lump in her throat. She had to have surgery and was told to take significant time away from work. Lisa had owned her own catering business for 35 years. Eight months ago, she had to shut it down.

"I started smoking when I was 13, because of peer pressure. I thought I was being very clever. I didn't really like smoking but joined in anyway. Cigarettes used to be £5 a pack. I didn't think about how addictive smoking was, as a kid you don't think about it. My whole family smoked except for my mum, so I hid it from her. My brother looked older, so cigarettes were easy to get. By the time I was 18, I was smoking 20 a day. On a night out I could smoke another 20, easy.

"Around six years ago, I started choking throughout the day and I felt that I was smoking too much. Over five months I was choking on and off every day - it was almost unmanageable. I couldn't chew food, I'd lost my voice and couldn't talk for 2-3 minutes at a time. I was run down for months before I saw a doctor.

"My business was my world, I would go in to work even if I was dying. If you don't work you still have to pay your rent, it's your responsibility as a business owner. I would never take a day off and would start at 5am. I'd even drag myself into work, crawling on the floor of the building when it was freezing, I don't know how I did it.

"Sometimes I was at breaking point and just couldn't go into work. On these days I'd have to pay someone to run my business for me, which wasn't something I could really afford. The time I had to take off work made things very stressful, there was a lot of financial pressure. I had to borrow money from my family to keep things afloat. I'm lucky they were there to help but the stress of it all was too much at times. They kept telling me to sell the business and take care of my health instead, but I couldn't bear to turn my back on my business.

"Eventually, I went to the doctor with what I thought was an ear infection. They did an x-ray, found a lump in my throat and took me straight to hospital. The specialist put a camera up my nose and down my throat, it wasn't a pleasant experience. They found two polyps on either side of my vocal cords. And three days later I had surgery. I quit smoking the day before my surgery in January 2014.

"After the surgery, the doctor ordered me to take time off because I couldn't speak properly even after months of voice therapy. I was in constant pain. There's no question I needed the surgery, but I never went back to normal after it. More time off work meant more money I had to borrow from my family to keep my business running.

"I went to hospital appointments for three years before I was diagnosed with fibromyalgia. The doctor and my family had been bugging me for years to sell the business. Finally, I just couldn't do it anymore. I was totally devastated when I had to give it up eight months ago.

"I still can't walk into the place, I will go to the area nearby, but I just can't face it, it's too hard. You have a bond with the regular customers and traders working there for over 30 years, you get to know people and be part of their lives. All that damage to my life and my business, it was not worth it for the smoking.

"I'm relieved I don't have cancer but the impact this has all had on my life has been massive. These days both my partner and I are on benefits. Even now I can't shout out or scream, I can't raise my voice or squeak, my voice just cracks. It's challenging because my mum is deaf so talking to her can be difficult. To think this all happened because of a habit that started in childhood."

What is the impact of smoking on employment?

Table 1, below, descriptively sets out the employment rate of current smokers compared to non-smokers, broken down by gender, disability and age, as found Wave 8 of the *Understanding Society* dataset.

Table 1: Employment rates in Understanding Society Wave 8

Sample characteristic	Employment rate		
	Non-smokers (%)	Current smokers (%)	Difference (% pts)
Gender:			
Male	74.7	62.1	12.6
Female	64.3	54.4	9.9
Age group:			
21-24	72.9	65.9	7.0
25-29	80.9	65.9	15.0
30-34	80.5	65.7	14.8
35-39	79.4	69.3	10.1
40-44	82.6	69.9	12.7
45-49	84.0	61.0	23.0
50-54	82.3	66.5	15.8
55-59	71.8	53.3	18.5
60-64	50.3	37.1	13.2
65-69	15.8	15.2	0.6
Highest educational qualification:			
Degree	78.0	74.8	3.2
Other HE	71.0	69.4	1.6
A Level	78.0	68.3	9.7
GCSE	70.7	63.1	7.6
Other	48.7	52.1	-3.4
None	46.4	38.0	8.4
Overall sample	69.2	58.2	11.0

Across every category, current smokers are less likely to be employed than non-smokers.

Gender

The employment gap is larger for men (12.6%) than it is for women (9.9%).

Age

By age group, the biggest gaps in employment rate between smokers and non-smokers are for 45-49 year olds (23 percentage points) and 55-59 year olds (18.5 percentage points). This is likely caused by the relationship between smoking and ill health: the longer someone smokes, the more likely they are to become sick from smoking.⁵

In contrast, the employment rate for 65-69 year olds is very similar for smokers and non-smokers at between 15 and 16 per cent for both groups. This is likely caused by the sharp fall in overall employment between 60-64 and 65-69, driven by the current UK retirement age of 66 (for those retiring now).⁶

Educational attainment

Smokers are less likely to be employed at every level of educational attainment (except 'Other') than non-smokers.

The difference is particularly striking for those with below degree level attainment – with an employment gap of 9.7% for those with A-levels as their highest level of attainment, 8.4% for those with no formal qualifications and 7.6% for those with GCSEs as their highest level of attainment.

Employment regression

The above provides a descriptive view of employment rates in the Understanding Society dataset. To further understand the relationship between smoking status and employment, we undertook a logistic regression of participants in Wave 8 of the survey, who had also appeared in Waves 1-7.

Importantly, this approach enables us to:

- » Control for other variables that might affect smoking status and employment, for example gender or age (for a full list of these variables, please see the technical report).²
- » Establish the direction of causation (whether being a smoker makes someone less likely to be in work, or whether being out of work makes someone more likely to be a smoker).

The regression results provide more detail on the relationship between smoking and a reduced likelihood of employment. Controlling for other factors:

- » Current smokers (those who smoked in Wave 7) are 5% less likely to be in employment in Wave 8 than people who have never smoked.
- » Ex-smokers (those who smoked in Wave 2 but gave up by Wave 7) are 2.5% less likely to be in employment in Wave 8 than people who have never smoked.
- » Smokers who had been smoking the longest (those who smoked in both Wave 2 and Wave 7) were 7.5% less likely to be in employment in Wave 8 than people who had never smoked.

This demonstrates that quitting smoking is likely to have a beneficial impact on likelihood of employment at the individual level, with those who had quit smoking by Wave 7 being significantly more likely to be employed than current and longer-term smokers.

Table 2: Impact of smoking on employment status in Wave 8, controlling for other factors

	Reduced likelihood of being employed in Wave 8, compared to never-smokers
Longer-term smokers (smoked in both Wave 2 and Wave 7)	7.5%
Current smokers (smoked in Wave 7)	5%
Ex-smokers (smoked in Wave 2 but not Wave 7)	2.5%

Smoking and disability

This section sets out our findings on the relationship between disability and smoking status, whilst controlling for other factors – the results were particularly stark and are therefore one of the most important relationships established by this research.

Table 3 below, like Table 1 above, descriptively sets out the employment rate of disabled and non-disabled current and non-smokers in the Understanding Society Wave 8 dataset. The employment gap between disabled smokers and disabled non-smokers is 16.5%, much larger than the 4.4% employment gap between non-disabled smokers and non-disabled non-smokers.

Table 3: Employment rates by disability status in Understanding Society Wave 8

Sample characteristic	Employment rate		Difference (% points)
	Non-smokers (%)	Current smokers (%)	
Non-disabled	76.5	72.1	4.4
Disabled	53.3	36.8	16.5

In order to better understand the relationship between disability and smoking, a further analysis using disability as the explanatory variable was conducted. This allows for the specific impact of smoking and disability on employment to be observed whilst controlling for other factors which may also have an effect. The analysis results were striking, finding:

- » Almost no correlation between employment rates and smoking status for non-disabled adults.
- » A substantial negative impact of smoking on employment for disabled adults – **disabled smokers are around 12.5% less likely to be in work than disabled non-smokers, controlling for other factors.**

This trend is supported by findings from a further analysis where the impact of smoking on disability was observed whilst controlling for other factors. The results show that there is a significant association between smoking and disability, with people who have ever smoked being 2.35% more likely to be disabled than those who have never smoked, controlling for other factors.

Smoking-related disability develops over time and is linked to the length of time smoked. The finding that disability drives the relationship between smoking and employment is therefore supported by the fact that the negative correlation between smoking and employment was largest (and statistically significant) for individuals aged 30-39, 40-49 and 50-59 years whereas the impact for those under 30 was not statistically significant.

Discussion

The most likely explanation for the relationship between smoking and unemployment is the high proportion of smokers who become disabled as a result of smoking. The increased likelihood of unemployment for longer-term smokers revealed by the employment regression, combined with the increased likelihood of unemployment for disabled smokers and findings from the disability and inactivity regressions, are all consistent with the established clinical evidence: that smoking is significantly associated with ill-health, greatly increasing a person's likelihood of developing a disability which could lead to them being unable to work. For every person who dies as a result of smoking, at least 30 people live with a serious smoking-related illness.⁴

What is the impact of smoking on earnings?

Smoking status also has a substantial impact on median monthly earnings. Table 4 below descriptively sets out median monthly earnings for people in work in Wave 8 of the dataset. As the table demonstrates, before controlling for other factors, non-smokers in Wave 8 of *Understanding Society* earned 25% more than smokers.

Table 4: Median monthly earnings for people in work in Understanding Society Wave 8

Sample characteristic	Median monthly earnings		
	Non-smokers (%)	Current smokers (%)	% gap (non-smokers compared to smokers)
Gender:			
Male	2,300	1,750	31
Female	1,500	1,200	25
Disability:			
Non-disabled	1,929	1,517	27
Disabled	1,750	1,387	26
Age group:			
21-24	1,400	1,300	8
25-29	1,775	1,370	30
30-34	1,916	1,586	21
35-39	2,167	1,654	31
40-44	2,153	1,500	44
45-49	2,150	1,731	24
50-54	2,100	1,560	35
55-59	1,900	1,463	30
60-64	1,560	1,500	4
65-69	894	850	5
Highest educational qualification:			
Degree	3,100	2,200	41
Other HE	2,528	2,300	10
A Level	1,817	1,600	14
GCSE	1,587	1,332	19
Other	1,428	1,387	3
None	1,300	1,300	0
Overall sample	1,877	1,500	25

Further logistic regression was carried out to observe the impact of smoking on earnings whilst controlling for other factors. The results showed that current smokers have weekly earnings that are **on average 6.8% lower than non-smokers. This means that on average people who smoke earn £1,424 per year less than non-smokers as a result of their smoking.**

The cost of smoking

For individuals who smoke and are in work, these findings imply a double financial penalty. Smokers' disposable income is reduced firstly because their wages are, on average, lower and are further reduced by the cost of tobacco.

By combining the average cost of smoking to employed smokers of lower earnings (£1,424) and average tobacco expenditure (£1,335) we calculate the average cost of smoking to employed smokers is £2,759 every year.

Table 5 below, provides further details of this calculation.

Table 5: The average cost of smoking to employed smokers

Total tobacco expenditure (2016-17)	A	£8.91bn ⁷
Smoking prevalence (USoc Wave 8)	B	16.2%
Total UK population aged 21-69 (2017)	C	41.2m ⁸
Calculation: A/(BxC) = D		
Average tobacco purchase costs per smoker in employment	D	£1,335
Average cost of smoking for smokers in employment	E	£1,424
Calculation: D + E = F		
Average cost of smoking to employed smokers	F	£2,759

What is the impact of smoking on the economy?

The analysis above sets out the impact of smoking on individual's likelihood of being in work, and on their median earnings. But what of the economy as a whole?

We can calculate the overall productivity loss to the economy from smoking by combining:

- » The increase in overall earnings for current smokers already in employment if they had never smoked
- » The additional earnings for smokers who are not currently in employment but would be if they had never smoked

We calculate that the total productivity loss to the UK economy from smoking is **£14.1bn**.

This total is made up of **£7.2bn of lost earnings** to working smokers and **£6.9bn of lost earnings due to smokers being out of work**.

It is worth noting that the true total loss will be greater than this figure. This is because this analysis focuses costs which could be reversed if all smokers were to quit with immediate effect. It does not capture the impact of smoking on longer-run disability (which is irreversible in many cases) as well as the impact of smoking on premature death, and the lost productivity arising from longer-run disability and early deaths caused by smoking.

There are likely other relationships between smoking, employment and earnings not considered here that are important and to uncover more information about them, further research is essential.

Conclusion

This new analysis builds on previous accounts of the cost of smoking to economy, digging deeper into the financial cost to individuals and showing the enormous impact of smoking on income as well as employment.

Individually, this can be devastating. Smoking forces people to take extended periods off work due to ill health and earn less than when they are in work. For some, like Lisa, this can result in the loss of a person's entire livelihood. Others are forced to retire early as they become disabled and unable to work. More still will experience additional sick days and lost income as a result of smoking.

The cumulative impact is no less significant, amounting to £14.1bn in lost income per year across the UK. This cost is made up of £7.2bn in reduced earnings as a result of smoking and £6.9bn of earnings lost due to people being unemployed as a result of their smoking. The benefits of addressing smoking to individuals who smoke, and the economy more broadly, could not be clearer.

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