

Smoking, employability, and wages

March 2020



Executive Summary

In 2018, smoking killed almost 100,000 people across the UK.¹ But the costs of smoking don't stop there. Smoking also has a destructive impact on both individuals and the economy – depriving smokers of work, driving down their 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 cost to smokers

The analysis of Understanding Society (wave 8) reveals that smoking has a significantly negative effect on individual earnings and employment prospects:

- » Current smokers are 11% less likely to be employed than non-smokers; and
- » Employed non-smokers earn 25% more than employed current smokers, costing each smoker around £1,750 per year on average

When you include the cost of tobacco, our analysis finds the average cost of smoking to each employed smoker is more than £3,000 per year.

Smoking also has a devastating personal cost. Below, Lisa shares how she lost her catering business of 35 years, due to ill health caused by smoking.

Further analysis

To ensure that the differences in employment rates and income are down to smoking rather than any other factor, we controlled for 10 variables (including age, gender, highest educational qualification and disability) in our further analysis. (For a full list of control variables see section 4.3 of the technical report.)

When controlling for these variables, we found a negative impact of smoking on employment prospects across almost all groups, indicating the differences are not caused by (for example) socio-economic status, age or gender.

However, the analysis did find that almost all of the relationship between smoking and employment falls on the shoulders of disabled people, many of whom will have become sick from smoking. We explore these findings in more detail below.

The further analysis also revealed that quitting smoking has a positive impact on employment. With ex-smokers significantly more likely to be in work than current smokers, as Table 1 shows.

Table 1: Likelihood of being in work by smoking status

	Likelihood of being employed, compared to never-smokers
Longer term smokers (smoked in both Wave 2 and Wave 7)	62%
Current smokers (smoked in Wave 7)	73%
Ex-smokers (smoked in Wave 2 but not Wave 7)	85%
Shorter term ex-smokers (ex-smokers, but smoked in neither Wave 2 nor Wave 7)	88%
Never-smokers	100%

The cost to society

Our analysis also finds that smoking costs the economy a staggering £74.4bn a year (3.5% of current UK GDP, about the same proportion of GDP that is spent on public education),³ due to reduced earnings and increased economic inactivity as a result of smoking.

The Government has set an ambitious target to make England smokefree by 2030⁴ (defined as a smoking prevalence of 5% or below).⁵ If it successfully meets that ambition, this analysis demonstrates that it will save almost £50bn a year in productivity costs, compared to today's figures.

This analysis clearly demonstrates the benefit achieving this ambition will deliver for the UK economy, as well as to the health and wellbeing of individual smokers.

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.

The data within this report is drawn from Understanding Society, a British longitudinal dataset. Our 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 9 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?

The Landman Economics analysis of the Understanding Society data finds that current smokers are 11% less likely to be employed than non-smokers.

Table 2, below, sets out the employment rate of current smokers compared to non-smokers, broken down by gender, disability and age.

Table 2: Employment rates in Understanding Society Wave 8

Sample characteristic	Employment rate		
	Non-smokers (%)	Current smokers (%)	Difference (% points)
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 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.⁶

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).⁷

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 other 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

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.

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).
- » 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 further highlight the relationship between smoking and a reduced likelihood of employment:

- » Current smokers (those who smoked in Wave 7) are a quarter (27%) 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 a sixth (15%) 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 more than a third (38.5%) less likely to be in employment in Wave 8 than people who had never smoked
- » Ex-smokers who smoked for a shorter period (they were not smoking in either Wave 2 or Wave 7, but had smoked at another time) were an eighth (12%) less likely to be in employment than those who had never smoked

This means that quitting smoking is likely to have a beneficial impact on employment and earnings at the individual level. If enough smokers quit smoking, it could also deliver significant improvements to national productivity.

Table 3: Likelihood of being in work by smoking status

	Likelihood of being employed, compared to never-smokers
Longer term smokers (smoked in both Wave 2 and Wave 7)	62%
Current smokers (smoked in Wave 7)	73%
Ex-smokers (smoked in Wave 2 but not Wave 7)	85%
Shorter term ex-smokers (ex-smokers, but smoked in neither Wave 2 nor Wave 7)	88%
Never-smokers	100%

When controlling for other variables to test the relationship between smoking and employment, only the relationship between disability, smoking status and employment produced unexpected results. We explore these findings further below.

Smoking and disability

The section sets out our findings on the relationship between smoking status and disability – one of the most important relationships established by this research.

Table 3, below, shows that the employment gap between disabled smokers and disabled non-smokers is 16.5%, dramatically higher than the 4.4% employment gap between non-disabled smokers and non-disabled non-smokers.

Table 4: Employment rates by disability status in Understanding Society Wave 8

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

The results of the disability regression, shown in Table 4 below, were even more striking. The analysis found that there is:

- » Almost no correlation between employment rates and smoking status for non-disabled adults.
- » A substantial negative impact of smoking on employment for disabled adults – the data implies that disabled smokers are around **55 percent less likely** to be in work than disabled non-smokers, controlling for other factors.

Thus, the entire relationship between smoking status and employment is driven by a lower probability of employment for disabled smokers than non-disabled smokers.

Table 5: Coefficients on interaction of Wave 7 smoking and disability

	Likelihood of being in work
Disabled smoker	0.446
Non-disabled smoker	1.005

To further explore this phenomenon, we looked more closely at those not in work, performing separate regressions on:

- » People unemployed in Wave 8 (actively seeking work)
- » People inactive in Wave 8 (retired people, those off work for health reasons etc.)

In the unemployment regression, none of the smoker variables are significant, and the smoker variables are also jointly insignificant. Therefore, there does not seem to be any identifiable relationship between previous smoking and unemployment in the Wave 8 sample.

By contrast, the inactivity regression does reveal a statistically significant relationship, suggesting that smokers at Wave 7 are around 66 per cent more likely to be inactive in Wave 8 than non-smokers, controlling for other factors.

Discussion

The most likely explanation for this relationship is the high proportion of smokers who become disabled as a result of their tobacco use. For every person who dies because of smoking, at least 30 people live with a serious smoking-related illness.⁸

This high likelihood of ill health clearly has some additional interplay with disability. It may be that becoming disabled as a result of being a smoker is more likely to result in being out of work than disabilities developed in other ways. For example, it is likely to be harder to retain employment while experiencing Chronic Obstructive Pulmonary Disease (COPD)⁹ or cardiovascular disease (CVD)¹⁰ than while experiencing diabetes, asthma or common mental health conditions.

The difference could also be caused by a cumulative health impact of smoking and disability. For example, smoking may worsen an existing diagnosis of asthma¹¹ or cancer¹² making it more difficult for disabled smokers to remain in work.

What is the impact of smoking on earnings?

Smoking status also has a substantial impact on median monthly earnings, as set out in Table 6 below. Non-smokers in Wave 8 of Understanding Society **earned 25% more than smokers**.

In more detail the earnings gap:

- » Is larger for men (31%) than for women (25%)
- » Is very small between disabled (26%) and non-disabled (27%) people

By age group:

- » The biggest earnings gaps are for 40-44 year olds (44%) and 50-54 year olds (35%)
- » The smallest earnings gap is for those aged 60 or over (4%)

By highest qualification level:

- » The biggest earnings gap is for degree holders (41%)
- » There is no earnings gap for workers with no qualifications (0%)

Table 6: Median monthly earnings for people in work in Understanding Society Wave 8

Sample characteristic	Median monthly earnings		% gap (non-smokers compared to smokers)
	Non-smokers (%)	Current 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

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 (£1,779) and average tobacco expenditure (£1,335) we calculate the average cost of smoking to employed smokers is £3,114 every year.

Table 7, below, provides further details of this calculation.

Table 7: The average cost of smoking to employed smokers

Total tobacco expenditure (2016-17)	A	£8.91bn ¹³
Smoking prevalence (USoc Wave 8)	B	16.2%
Total UK population aged 21-69 (2017)	C	41.2m ¹⁴
Calculation: $A/(B \times C) = D$		
Average tobacco purchase costs per smoker in employment	D	£1,335
Average cost of smoking for smokers in employment	E	£1,779
Calculation: $D + E = F$		
Average cost of smoking to employed smokers	F	£3,114

What is the impact of smoking on the economy?

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.

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 the total productivity loss to the economy from smoking is **£74.4bn**, equivalent to 3.5% of current UK GDP.

This total is made up of **£9.4bn of lost earnings** to working smokers and **£65bn of lost earnings due to smokers being out of work**.

Conclusion

This new analysis shows the enormous scale of the economic cost of smoking to the economy.

Individually, the impact can be devastating. Smokers like Lisa lose their businesses, as they are forced to take time off work due to ill health and earn less when they are in work. Others are forced to retire early as they become disabled, and unable to work, as a result of smoking. More still will experience additional sick days, time off and lost income as a result of smoking.

The impact on the economy as a whole is scarcely any less. A full 3.5% of current UK GDP is lost due to smoking, equivalent to around the same as the public cost of the UK's education system.

The Government has set an ambitious target to make England smokefree by 2030 (defined as a smoking prevalence of 5% or below). If it successfully meets that ambition, this analysis reveals that it will save almost £50bn a year in productivity costs, compared to today's figures.

The benefit to the health and wellbeing of individual smokers, as well as the national economy, could not be clearer.

References

1. NHS Digital. [Statistics on Smoking, England – 2019](#).
2. Landman Economics. The impact of smoking history on employment prospects, earnings and productivity: an analysis using UK panel data. 2020.
3. Public spending on education (indicator), doi: 10.1787/f99b45d0-en. Accessed 3 March 2020.
4. Cabinet Office and Department of Health and Social Care. [Advancing our health: prevention in the 2020s – consultation document](#). July 2019.
5. Department of Health and Social Care. [Towards a Smokefree Generation: A Tobacco Control Plan for England](#). July 2017.
6. U.S. Department of Health and Human Services. [The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General](#). Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2014
7. Department for Work and Pensions. [State Pension age timetables](#). 2014.
8. US Centers for Disease Control and Prevention. [Fast Facts. Diseases and Death](#). Accessed 2 March 2020.
9. K. Koskenvuo, U. Broms, T. Korhonen, L.A. Laitinen, A. Huunan-Seppälä, T. Keistinen, I. Autti-Rämö, J. Kaprio, M. Koskenvuo. [Smoking strongly predicts disability retirement due to COPD: the Finnish Twin Cohort Study](#). European Respiratory Journal 2011 37: 26-31; DOI: 10.1183/09031936.00008910
10. Price, A. E. [Heart disease and work](#), Heart (British Cardiac Society) vol. 90,9(2004): 1077-84. doi:10.1136/hrt.2003.029298
11. Polosa R, Thomson N. [Smoking and asthma: dangerous liaisons](#). European Respiratory Journal 2013 41: 716-726; DOI: 10.1183/09031936.00073312
12. Cataldo, J et al. [Smoking cessation: an integral part of lung cancer treatment](#). Oncology vol. 78,5-6 (2010): 289-301. doi:10.1159/000319937
13. HMRC. [Tobacco Statistics](#). 2019.
14. ONS. [United Kingdom population mid-year estimate](#). 2019.

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Action on Smoking and Health

6th Floor, Suites 59-63

New House

67-68 Hatton Garden

London, EC1N 8JY

tel: 020 7404 0242

fax: 020 7404 0850

e-mail: enquiries@ash.org.uk

Visit our website www.ash.org.uk for more information.



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