

Brief Report

Quit success rates in England 2007-2017

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Abstract

Background: More options for smokers wanting to stop, more restrictions on smoking, the introduction of standardised packaging, and a stronger anti-smoking culture in England all mean that it should be getting easier for smokers to stop. This paper examines quit success rates from 2007 to 2017 and compares rates for the first 6 months of 2017 with those in the preceding 10 years.

Methods: Data were collected from 18,356 participants using cross-sectional household surveys from representative samples of adults in England from January 2007 to June 2017. Quit success was defined as having tried to stop in the preceding 12 months and reporting still not-smoking at time of the survey. Socio-demographic information was collected on sex, age, region in England and socioeconomic status. Odds ratios were calculated comparing quitting in 2017 versus 2007-2016 in the full sample and interactions with socio-demographic variables were assessed.

Results: Quit success rates varied over time from a low of 13.4% (95% CI 11.9-14.9) in 2010 to a high of 19.8% (95% CI 16.7-22.9) in 2017. The figure for 2017 was significantly higher than the average for the preceding 10 years (OR=1.33, 95% CI 1.09-1.62). There was no clear evidence that the difference varied with sex, age or region but the increase in success rates was greater in people with lower socio-economic status (OR=1.66, 95% CI 1.11-2.51).

Conclusion: Quit smoking success rates in England in the first six months of 2017 were higher than the average rate during the preceding decade. This improvement was exclusively in those with lower socioeconomic status.

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Data access: Available upon request to lead author.

Commentaries: Readers are invited to comment on this article including presenting results of additional data analyses by going to: www.smokinginbritain.co.uk.

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Introduction

Smoking prevalence in England continues to decline, with official prevalence in 2016 estimated to be 15.5%, down from 21% in 2007 the year in which Smokefree legislation was enforced (1). The new Tobacco Control Plan for England, launched in July 2017, set an ambition of reducing this to 12% or less by the end of 2022 (2). A major contributor to the decline in prevalence is stopping by existing smokers. It is important to track quit success rates over time to assess whether and how far there have been improvements over time.

There are a number of reasons why quit rates may be high in England in 2017. The implementation of the EU Tobacco Products Directive was finalised during 2017, which included the introduction of standardised packaging for cigarettes (3), a prohibition on flavours in cigarettes and roll-your-own tobacco with the exception of menthol, minimum size/weight requirements, updated health warnings and banned descriptors, and new product rules for e-cigarettes (4). These changes occurred within a wider context: England already has a strong tobacco control climate (5) in which e-cigarettes are widely available and popular (6-8), together with a wide variety of medically licensed cessation aids (9), there is a behavioural support service free at the point of access available in most areas of the country (10, 11), and tobacco control mass media campaigns are frequently run (12, 13), including national quitting events, such as Stoptober (14). Up-to-date information on quit rates are important in informing policies and campaigns.

Smoking is an important cause of health inequalities, which remain a public health priority (15-17). To help address this issue, it is important to assess whether any trends extend across different social groups.

The aims of this report are:

- i) To describe quit smoking success rates from 2007 to 2017
- ii) To compare quit smoking success rates in England in the first six months of 2017 with 2007-2016
- iii) To assess whether any differences vary as a function of sex, age, region and socioeconomic status.

Methods

Design

Data were collected using repeated cross-sectional household surveys of representative samples of the population of adults in England conducted in consecutive monthly waves between January 2007 and June 2017. The surveys are part of the ongoing Smoking Toolkit Study (STS), which is designed to provide tracking information about smoking, cessation and related behaviours in England (18, 19). Each month a new sample of 1700-1800 adults aged 16+ complete a face-to-face computer-assisted survey. The sampling is a hybrid between random probability and simple quota.

Study sample

The analytic sample consisted of those respondents who:

- i) Reported smoking in the last year at the time of the survey;
- ii) Reported attempting to stop at least once in the last year; and
- iii) Provided complete data on outcome and sociodemographic measures.

Measures

Outcome: Last-year smokers who had also attempted to quit were asked “How long did your most recent serious quit attempt last before you went back to smoking?” and to select one of the following response options:

Still not smoking

Less than a day

Less than a week

More than 1 week and up to a month

More than 1 month and up to 2 months

More than 2 months and up to 3 months

More than 3 months and up to 6 months

More than 6 months and up to a year

Those who responded “Still not smoking” were classified as having quit successfully.

Sociodemographic: All respondents were also asked questions that assessed age, sex, an occupationally-based classification of socio-economic status called ‘social grade’ (ABC1=higher and intermediate professional/managerial, and supervisory, clerical, junior managerial/administrative/professional or C2DE=skilled, semi-skilled, unskilled manual and lowest grade workers or unemployed), region in England (North=North East, North West, and Yorkshire and the Humber; Central=East Midlands, West Midlands, and East of England; or South=London, South East, and South West).

Analysis

We weighted data using a raking (marginal) weighting technique to match an English population profile relevant to the time each monthly survey was conducted on the dimensions of age, social grade, region, tenure, ethnicity and working status within sex derived from English census data, ONS mid-year estimates and other random probability surveys. The raking weighting involved an iterative sequence of adjustments whereby a weight was applied to each respondent such that the monthly sample matched specified targets on a first dimension, and in the next step were then re-adjusted by an algorithm that sought to match the sample to a second dimension while minimising distortion and continued until the final dimension had been matched (20, 21). This process iterated until there was a good fit across the dimensions.

We calculated the quit rates for each of the years of the study, together with 95% confidence intervals. We then compared quit smoking success rates in the first six months of 2017 with overall rate between 2007 up to the end of 2016 in a logistic regression model. We tested sociodemographic variation by extending this model to include an interaction term across a series of models for sex (men and women), age (16-34, 35-54 and 55+) region (North, Central and South) and social grade (ABC1 and C2DE). In a further analysis, we then compared rates in the first six months of 2017 with the mean rate for each year separately between 2007 and 2016. In a sensitivity analysis, we repeated these analyses but including only the first 6 months for each year between 2007 and 2016. Finally, we explored more

detailed sociodemographic variation by repeating the annual comparisons stratified by sociodemographic subgroup.

Results

An unweighted total of 223,416 adults in England completed the baseline survey between January 2007 and June 2017, of whom 51,915 (23.2%, 95% CI 23.1-23.4) smoked in the last year and 18,366 (35.4%, 95% CI 35.0-35.8) also attempted to quit at least once, and 18,356 (99.9%, 95% CI 99.9-100.0) also had complete data on all relevant variables.

Quit success rates varied over time from a low of 13.4% (95% CI 11.9-14.9) in 2010 to a high of 19.8% (95% CI 16.7-22.9) during the first six months of 2017.

The figure for 2017 was significantly higher than the average for the preceding 10 years (15.7%, 95% CI 15.1:16.2; OR=1.33, 95% CI 1.09-1.62, see Table 1).

Table 1: A comparison of quit smoking success rates in England in 2017 with the preceding decade, and stratified by sociodemographic characteristics

	2007-2016 (N=17,742) ref	2017 Jan-Jun (N=614)
Whole sample (N=18,356)	15.7 (15.1-16.2) -	19.8 (16.7-22.9) 1.33 (1.09-1.62)
Men (N=8804)	16.0 (15.3-16.8) -	18.0 (13.8-22.3) 1.15 (0.86-1.54)
Women (N=9552)	15.3 (14.5-16.1) -	21.6 (17.1-26.1) 1.52 (1.16-2.00)
16-34 (N=8005)	14.9 (14.1-15.7) -	19.9 (15.1-24.7) 1.42 (1.05-1.92)
35-54 (N=6644)	15.7 (14.8-16.5) -	18.3 (13.5-23.0) 1.20 (0.87-1.66)
55+ (N=3707)	17.8 (16.4-19.1) -	23.2 (15.3-31.0) 1.40 (0.90-2.18)
North (N=6232)	16.6 (15.6-17.5) -	19.6 (14.4-24.9) 1.23 (0.88-1.73)
Central (N=5523)	15.1 (14.2-16.1) -	24.5 (18.0-30.9) 1.82 (1.28-2.59)
South (N=6601)	15.3 (14.4-16.2) -	16.7 (11.9-21.4) 1.10 (0.78-1.56)
Social grade ABC1 (N=6605)	18.3 (17.4-19.2) -	18.3 (13.5-23.0) 1.00 (0.72-1.37)
Social grade C2DE (N=11,751)	13.7 (13.1-14.4) -	20.9 (16.8-24.9) 1.66 (1.29-2.13)

Note: Ns are unweighted. Results are presented as % (95% CI) with OR (95% CI) against the indicated referent and p-values <0.05 indicated in bold

The difference in success rates did not depend upon sex (interaction OR=1.32, 95% CI 0.89-1.97), age (interaction OR=0.97, 95% CI 0.74-1.27) or region (interaction OR=0.95, 95% CI 0.75-1.20), but did differ by social grade (interaction OR=1.66, 95% CI 1.11-2.51): the change was significant in low (OR=1.66, 95% CI 1.29-2.13) but not high social grades (OR=1.00, 95% CI 0.72-1.37).

In annual comparison, the success rate in 2017 was the highest point estimate, and the years between 2007 to 2011 and 2013 were statistically significantly lower (see Table 2).

In the sensitivity analysis, the mean quit rate during the first six months of 2017 was also significantly greater than for the first six months of each year between 2007 up to the end of 2016 at 15.9% (95% CI 15.1-16.6; OR=1.31, 95% CI 1.07-1.60).

This difference also did not depend upon sex (OR=1.28, 95% CI 0.85-1.92), age (OR=0.97, 95% CI 0.74-1.28) or region (OR=0.98, 95% CI 0.77-1.24) but did differ by social grade (OR=1.73, 95% CI 1.14-2.63): the change was significant in low (OR=1.66, 95% CI 1.28-2.15) but not high social grades (OR=0.96, 95% CI 0.69-1.33). In annual comparisons, the success rate in 2017 was again the highest point estimate, and the years between 2007 to 2011 were significantly lower ($p<0.05$).

The annual comparisons stratified by sociodemographic subgroup are presented in Table 2. Although the interaction results indicated that the overall change was similar across sex, age and region, these stratified analyses suggest that the lower rates in most years before 2017 were more pronounced among women, younger people and in central regions. The greater change in low but not high social grades was evident in almost every annual comparison.

Discussion

Quit success rates between 2007 and 2017 fluctuated from below 14% (13.4%, 95% CI 11.9-14.9) to almost 20% (19.8%, 95% CI 16.7-22.9), with 2017 having the highest point estimate. Many factors may have contributed to the recent improvements in success rates, including an environment that is more conducive to quitting and the availability of a wide range of quitting methods, including e-cigarettes (3-14).

The improvement in success rates was exclusively in those with lower socioeconomic status. A previous analysis of Smoking Toolkit Study data collected predominantly in 2007 reported that smokers in lower socioeconomic groups were as likely as those in higher groups to attempt try to quit smoking and use aids to cessation but were half as likely to succeed (22). The current study indicates an important improvement in this regard. The improvement has resulted in parity between the groups in quit success rates for the first time in over 10 years and possibly ever.

The main limitation of the study is that it was primarily descriptive and did not seek to disentangle the different possible causes of fluctuations in quit rates. It also relied on self-report data, which is subject to forgetting and misreporting. However, it is unlikely that any such biases would have varied over time and so would not have affected to temporal trends.

Table 2: Quit smoking success rates in England from Jan-2007 to Jun-2017 stratified by sociodemographic characteristics

	2017 Jan-Jun (N=614) ref	2007 (N=2636)	2008 (N=1889)	2009 (N=1883)	2010 (N=2143)	2011 (N=1736)	2012 (N=1736)	2013 (N=1761)	2014 (N=1501)	2015 (N=1303)	2016 (N=1154)
Whole sample (N=18,356)	19.8 (16.7-22.9)	15.7 (14.2-17.1)	14.1 (12.5-15.7)	13.6 (12.0-15.1)	13.4 (11.9-14.9)	13.7 (12.1-15.4)	17.6 (15.7-19.4)	15.9 (14.1-17.6)	19.0 (17.0-21.0)	17.8 (15.8-19.9)	18.5 (16.3-20.7)
	-	0.75 (0.60-0.94)	0.66 (0.52-0.84)	0.64 (0.50-0.80)	0.63 (0.50-0.79)	0.64 (0.51-0.82)	0.86 (0.68-1.09)	0.76 (0.60-0.96)	0.95 (0.75-1.20)	0.88 (0.69-1.12)	0.92 (0.72-1.17)
Men (N=8804)	18.0 (13.8-22.3)	16.1 (14.1-18.1)	13.4 (11.2-15.6)	13.9 (11.6-16.2)	13.6 (11.6-15.7)	14.6 (12.2-16.9)	17.3 (14.8-19.9)	16.4 (14.0-18.9)	19.8 (16.9-22.6)	18.7 (15.7-21.7)	19.1 (16.1-22.1)
	-	0.87 (0.63-1.21)	0.70 (0.50-0.99)	0.73 (0.52-1.03)	0.72 (0.51-1.00)	0.77 (0.55-1.09)	0.95 (0.68-1.34)	0.89 (0.64-1.25)	1.12 (0.80-1.57)	1.05 (0.74-1.48)	1.07 (0.76-1.51)
Women (N=9552)	21.6 (17.1-26.1)	15.2 (13.2-17.2)	14.7 (12.4-17.0)	13.3 (11.1-15.4)	13.1 (11.0-15.2)	12.8 (10.5-15.2)	17.8 (15.1-20.5)	15.3 (12.8-17.7)	18.3 (15.5-21.1)	17.0 (14.1-19.9)	17.8 (14.6-21.0)
	-	0.65 (0.48-0.89)	0.63 (0.46-0.87)	0.56 (0.40-0.77)	0.55 (0.40-0.76)	0.54 (0.38-0.75)	0.79 (0.57-1.09)	0.65 (0.47-0.91)	0.81 (0.59-1.12)	0.74 (0.53-1.04)	0.79 (0.56-1.11)
16-34 (N=8005)	19.9 (15.1-24.7)	14.7 (12.7-16.7)	13.4 (11.1-15.7)	11.8 (9.7-13.9)	12.6 (10.5-14.8)	13 (10.5-15.5)	17.8 (15.0-20.7)	16.1 (13.4-18.7)	17.1 (14.1-20.0)	17.9 (14.8-21.0)	17.8 (14.7-21.0)
	-	0.69 (0.49-0.97)	0.62 (0.44-0.90)	0.54 (0.38-0.78)	0.58 (0.41-0.83)	0.60 (0.41-0.87)	0.87 (0.61-1.25)	0.77 (0.54-1.10)	0.83 (0.57-1.19)	0.88 (0.61-1.27)	0.87 (0.60-1.26)
35-54 (N=6644)	18.3 (13.5-23.0)	15.7 (13.4-18.0)	11.9 (9.5-14.3)	14 (11.3-16.6)	12.9 (10.4-15.3)	13.6 (10.9-16.3)	17.4 (14.5-20.4)	14.7 (12.0-17.5)	22.2 (18.8-25.6)	18.5 (15.0-21.9)	18.5 (14.9-22.1)
	-	0.83 (0.58-1.19)	0.61 (0.41-0.89)	0.73 (0.49-1.07)	0.66 (0.45-0.97)	0.70 (0.48-1.04)	0.94 (0.65-1.37)	0.77 (0.53-1.13)	1.28 (0.88-1.85)	1.01 (0.69-1.50)	1.02 (0.69-1.51)
55+ (N=3707)	23.2 (15.3-31.0)	18.4 (14.6-22.2)	21 (16.3-25.7)	18.2 (13.7-22.7)	16.3 (12.6-20.1)	15.7 (11.6-19.9)	17.4 (13.0-21.8)	17.7 (13.5-22.0)	16.8 (12.4-21.3)	16.5 (11.8-21.1)	20.2 (14.7-25.7)
	-	0.75 (0.45-1.23)	0.88 (0.52-1.48)	0.74 (0.43-1.25)	0.65 (0.39-1.08)	0.62 (0.36-1.06)	0.70 (0.41-1.19)	0.71 (0.42-1.20)	0.67 (0.39-1.15)	0.65 (0.38-1.13)	0.84 (0.49-1.46)
North (N=6232)	19.6 (14.4-24.9)	17.3 (14.7-19.9)	12.1 (9.5-14.7)	12.8 (10.0-15.6)	12.1 (9.6-14.6)	16.4 (13.2-19.7)	19.6 (16.2-23.0)	17.5 (14.6-20.5)	19.9 (16.6-23.3)	19.2 (15.4-22.9)	21.1 (17.2-25.0)
	-	0.85 (0.59-1.25)	0.56 (0.37-0.85)	0.60 (0.40-0.91)	0.57 (0.38-0.85)	0.81 (0.54-1.21)	1.00 (0.67-1.48)	0.87 (0.59-1.28)	1.02 (0.69-1.51)	0.97 (0.65-1.46)	1.10 (0.73-1.64)
Central (N=5523)	24.5 (18.0-30.9)	14.2 (11.8-16.7)	16.2 (13.3-19.1)	14.4 (11.7-17.2)	13.8 (11.3-16.4)	12.6 (9.8-15.4)	19.2 (15.7-22.6)	15.3 (12.1-18.6)	17.5 (13.8-21.1)	15.4 (11.8-19.0)	13.9 (10.2-17.6)
	-	0.51 (0.34-0.76)	0.60 (0.40-0.89)	0.52 (0.34-0.78)	0.49 (0.33-0.74)	0.45 (0.29-0.68)	0.73 (0.49-1.10)	0.56 (0.37-0.86)	0.65 (0.43-1.00)	0.56 (0.36-0.87)	0.50 (0.31-0.79)
South (N=6601)	16.7 (11.9-21.4)	15.5 (13.2-17.8)	13.9 (11.2-16.7)	13.4 (10.8-16.0)	14.1 (11.6-16.7)	12.3 (9.7-15.0)	14.5 (11.7-17.3)	14.5 (11.7-17.3)	19.3 (15.9-22.7)	18.6 (15.1-22.0)	19.4 (15.8-23.0)
	-	0.92 (0.63-1.34)	0.81 (0.54-1.22)	0.78 (0.52-1.16)	0.82 (0.55-1.22)	0.70 (0.46-1.07)	0.85 (0.57-1.28)	0.85 (0.57-1.27)	1.20 (0.80-1.79)	1.14 (0.76-1.71)	1.21 (0.80-1.82)
Social grade ABC1 (N=6605)	18.3 (13.5-23.0)	18.0 (15.7-20.3)	15.5 (12.9-18.1)	16.4 (13.7-19.1)	16.8 (14.3-19.2)	16.2 (13.5-19.0)	20.0 (17.0-23.0)	19.5 (16.5-22.5)	20.3 (17.2-23.5)	23.7 (20.2-27.2)	19.1 (15.8-22.4)
	-	0.98 (0.69-1.40)	0.82 (0.57-1.20)	0.88 (0.61-1.27)	0.90 (0.63-1.30)	0.87 (0.60-1.27)	1.12 (0.78-1.62)	1.08 (0.75-1.57)	1.14 (0.79-1.65)	1.39 (0.96-2.01)	1.06 (0.72-1.55)
Social grade C2DE (N=11,751)	20.9 (16.8-24.9)	13.9 (12.1-15.7)	13.1 (11.0-15.1)	11.6 (9.7-13.5)	10.9 (9.1-12.6)	12.0 (9.9-14.0)	15.8 (13.4-18.1)	13.4 (11.3-15.5)	18.1 (15.5-20.7)	13.4 (10.9-15.8)	18.0 (15.1-20.9)
	-	0.61 (0.46-0.81)	0.57 (0.42-0.77)	0.50 (0.37-0.68)	0.46 (0.34-0.63)	0.52 (0.38-0.71)	0.71 (0.53-0.96)	0.59 (0.43-0.80)	0.84 (0.62-1.13)	0.59 (0.42-0.81)	0.83 (0.61-1.14)

Note- Ns are unweighted. Results are presented as % (95% CI) with OR (95% CI) against the indicated referent and p-values <0.05 indicated in bold.

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