The value of frequent and rapid surveillance in a changing tobacco control landscape

Insights from 17 years of monthly national surveys in England 2006-2023

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SRNT-E, London, Sept 2023

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Statement of funding and declaration of interests

- I have undertaken research for pharmaceutical companies that manufacture medically licensed smoking cessation treatments
  - Co-investigators have also undertaken consultancy for same companies
  - Received no funds from e-cigarettes manufacturers, alcohol or tobacco industry
- The STS predominantly funded by CRUK
  - Initially GSK and Pfizer, and then Dept of Health
  - Recent investment to expand to GB from UKPRP as part of SPECTRUM consortium

CANCER RESEARCH UK

SPECTRUM
SHAPING PUBLIC HEALTH POLICIES TO REDUCE INEQUALITIES AND HARM

WP3 | NEW DATA
GATHERING & ANALYSING SURVEY DATA ON ALCOHOL & SMOKING ACROSS GREAT BRITAIN TO INFORM POLICY AND PRACTICE

UKPRP
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Joint action for a healthier, fairer future

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- Bonn – Tobias Raupach
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- QMUL – Peter Hajek
- Roswell Park – Maciej Goniewicz
- Waterloo – Dave Hammond
- St George's – Michael Ussher
- Auckland – Natalie Walker, Chris Bullen
- Bath – Anna Gilmore, Gemma Taylor
- LSHTM – Mark Petticrew
- Tasmania – Stuart Ferguson
- UNSW – Ryan Courtney
- Georgetown – David Levy
- UCSF – Gideon St Helen
- Ohio – Peter Shields
- Toronto – Rachel Tyndale

Aims of this presentation

- Introduce the Smoking Toolkit Study
- Value of establishing frequent and rapid surveillance
  - Enables rapid evaluation and policy impact
    - Stoptober
  - Early insight into fast-emerging phenomena
    - Trends in the use of e-cigarettes, disposables
  - Real-world triangulation with other sources of evidence
    - Effectiveness of e-cigarettes

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What is the Smoking Toolkit Study?

- National surveillance programme that **aims to provide insight into population-wide influences on smoking and cessation**
- Each month new sample of ~ 1700 adults (≥16) complete computer-assisted household survey with trained interviewer
  - Selected by hybrid between random location and simple quota sampling
  - Sample nationally representative in its socio-demographic composition[1]
- Data collected face-to-face up to Feb 2020 and via telephone since April 2020
  - The two methods yield similar estimates for key sociodemograph smoking and alcohol use measures[2]

Smoking Toolkit Study

[1] Fidler et al. (2011) BMC Public Health, 11: 479; Jackson et al. (2019) JAMA Netw Open, 2(8):e1910161

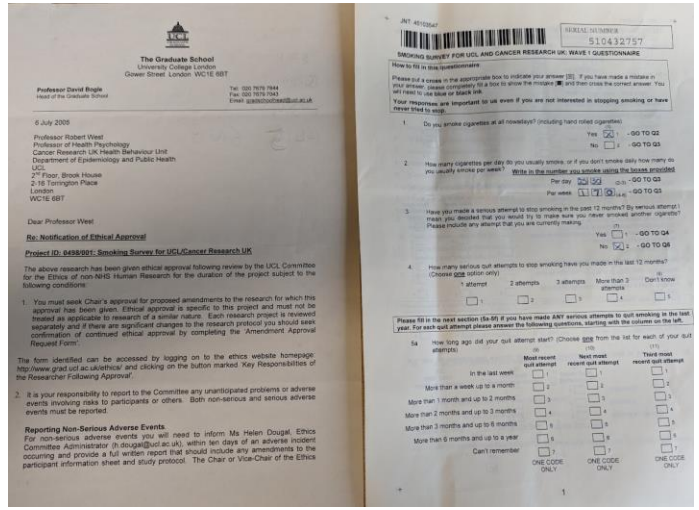
[2] Kock et al. (2022) Qeios; DOI 10.32388/CLXK4D

What is the Smoking Toolkit Study?

Established in 2006 and primarily funded by CRUK

Collected data from > 375,000 people over 200 waves

- smoking status
- smoking patterns
- sources of supply of tobacco
- use of non-tobacco nicotine products
- spending on cigarettes/tobacco
- motivation and dependence
- social networks
- smoking cessation activities
- use of smoking cessation aids
- receipt of smoking cessation advice
- socio-demographic variables
- locality



Alcohol Toolkit Study

- prevalence of hazardous and harmful alcohol use (AUDIT)
- types of drinks consumed
- amount spent
- urges to drink
- motivation to reduce consumption
- receipt of advice about alcohol consumption
- recent serious attempts to cut down
- help sought
- factors contributing to recent attempts to reduce intake

ATS Alcohol Toolkit Study

Why ‘toolkit’?

- The study is intended to be a ‘toolkit’ for policymakers, practitioners and collaborators
- Encouraged to apply and use funding for additional questions on specific issues beyond the basic scope of the study
- New questions then freely benefit from context of all other assessment


JAMA Network Open

Trends in Psychological Distress Among Adults in England, 2020-2022

Sarah E. Jackson, PhD[1,2]; Jamie Brown, PhD[1,2]; Lion Shahab, PhD[1,2]; Ann McNeill, PhD[2,3]; Marcus R. Munafò, PhD[2,4]; Leonie Brose, PhD[2,3]


The Guardian
Newspaper of the year

Distress in England's young adults has risen sharply since Covid, study shows

Research suggests those aged 18 to 24 have been deeply affected by pandemic and then cost of living and healthcare crises


BBC NEWS

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Health

Rise in psychological distress in young adults - survey

6 July

By Smitha Mundasad

Health reporter

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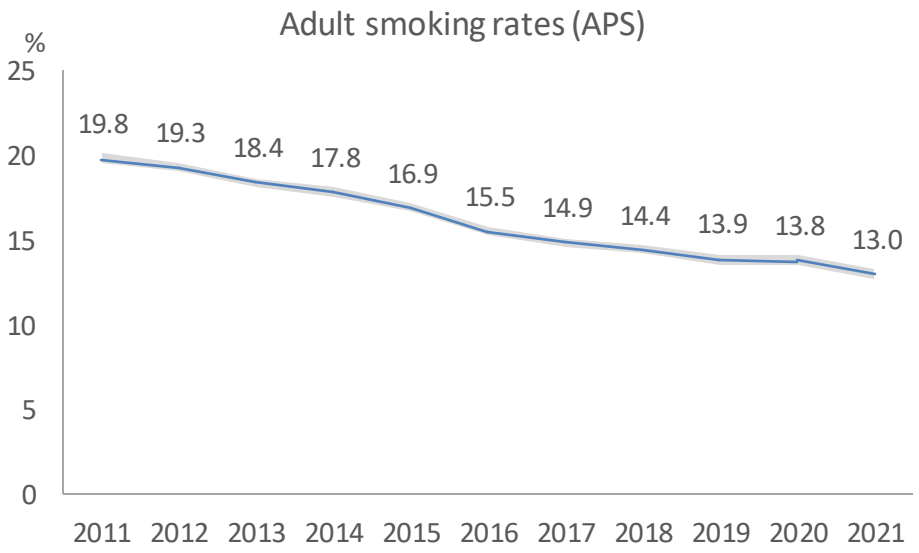
Smoke Free England

- Government set England smoke-free (<5%) target by 2030[1]
- Ambitions will not be realised on the current trajectory (~0.5% p.a.)[2]
  - 5% smoking prevalence will not be reached until 2037
- For disadvantaged groups, reductions will be slower
  - e.g., beyond 2060 in people living in social housing or with mental illness



[1] Department of Health and Social Care. Advancing our health: prevention in the 2020s, Jul 2019

[2] ONS Adult smoking habits in the UK: 2021, Dec 2022

Examples of evaluation research from STS

Hackshaw L, McEwen A, West R & Bauld L (2010) Quit attempts in response to smokefree legislation in England, Tob Control, 19 (2), pp. 160-164.

Beard E, Brown J, Jackson S, West R, Anderson W, Arnott D, Shahab L (2020) Long-term evaluation of the rise in legal age-of-sale of cigarettes from 16 to 18 in England: a trend analysis. BMC Medicine, 18: 85.

Brown J, Kotz D, Michie S, Stapleton J, Walmsley M, West R (2013) How effective and cost-effective was the national mass media smoking cessation campaign 'Stoptober'? Drug and Alcohol Dependence, 135, 52-58.

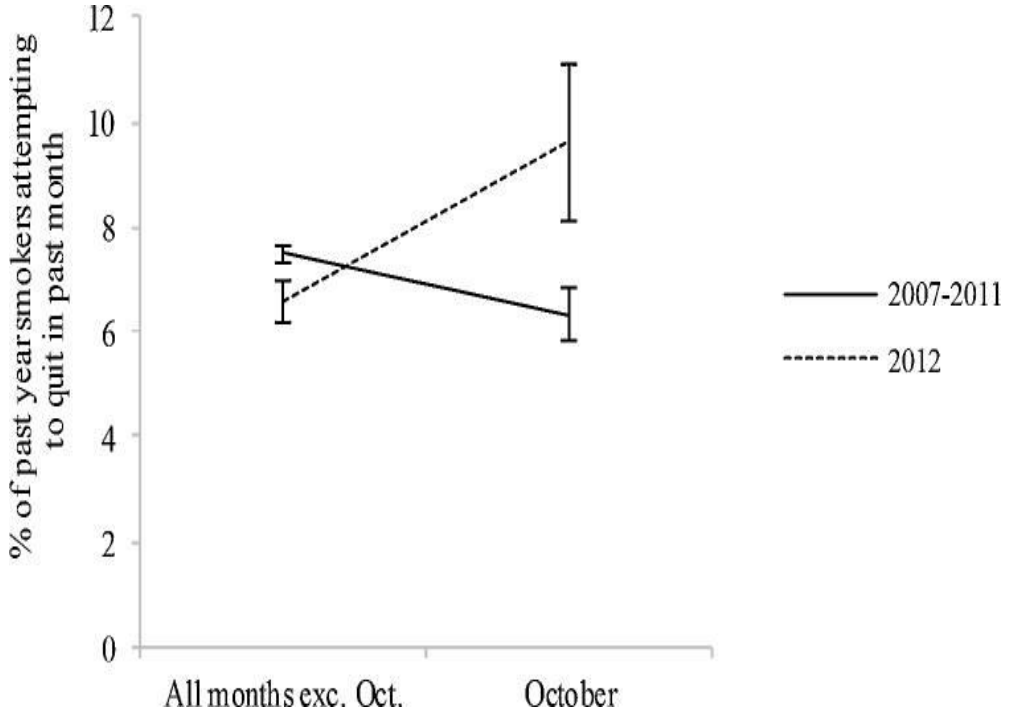
Kuipers M, Beard E, Hitchman S, Brown J, Stronks K, Kunst A, McNeill A, West R (2016) Impact on smoking of England's 2012 partial tobacco point of sale display ban: a repeated cross-sectional national study. Tob Control. 26: 141-148.

Opazo Breton M, Britton J, Brown J, et al (2023) Was the implementation of standardised tobacco packaging legislation in England associated with changes in smoking prevalence? Tob Control, 32:195-204.

Kock L, Shahab L, Bogdanovica I, Brown J (2023) Profile of menthol cigarette smokers in the months following the removal of these products from the market: a cross-sectional population survey in England. Tob Control 2023;32:e121-e124.

Stoptober evaluation

- Smoking cessation mass media campaign for smokers to abstain for 28 days during October
- STS research influential in its design[1]
- 2012 campaign generated an additional 350,000 quit attempts and saved 10,400 DLY at less than £415 per DLY in modal age group[2]
  - Instrumental in the event continuing to be funded in England[3]
  - Similar campaigns followed in Netherlands (2014 -), France (2016 -) and New Zealand (2014 – 2016)



Policy modelling

OSF HOME

Project Navigation

UCL modelling of recommendations for the Tobacco Control Plan

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Contributors: Emma Beard, Lion Shahab, Jamie Brown

Date created: 2021-06-04 07:44 AM | Last Updated: 2023-04-21 01:18 PM

Category: Project

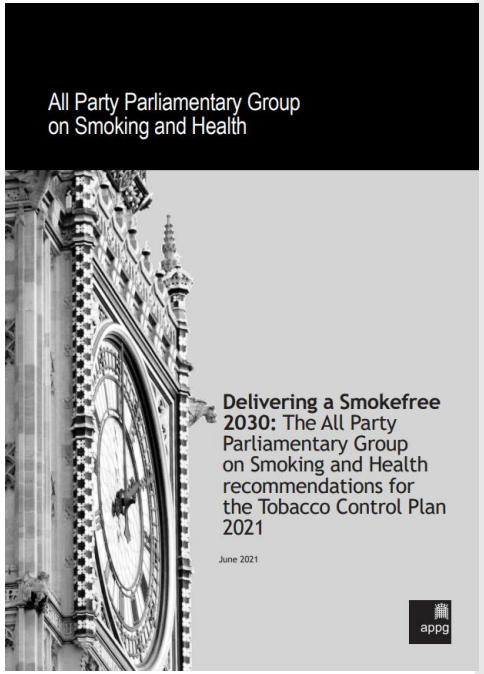
Wiki

This work was carried out for the APPG by the Cancer Research UK funded Tobacco and Alcohol Research Group at UCL, part of the SPECTRUM academic consortium.

Files

Filter

Name	Modified
UCL modelling of recommendations for the Tobacco Control Plan	
OSF Storage (United States)	
Additional Modelling Lung Cancer Screening.xlsx	2023-04-21 01:18 PM
Recommendation 12 of the APPG on Smoking and Health r...	2021-06-09 04:05 AM
Recommendation 4 of the APPG on Smoking and Health re...	2021-06-09 04:04 AM
Recommendation 5 of the APPG on Smoking and Health re...	2021-06-09 04:05 AM
Recommendation 6 of the APPG on Smoking and Health re...	2021-06-09 04:05 AM
Recommendation 6 of the APPG on Smoking and Health re...	2021-06-09 04:05 AM
Recommendation 7 of the APPG on Smoking and Health re...	2021-06-09 04:06 AM
UCL Modelling for APPG report June 2021.xlsx	2021-06-09 04:07 AM
UCL Modelling Lung Cancer Screening.xlsx	2022-10-04 01:56 PM



Recommendations

Setting course for a Smokefree 2030

Recommendation 1: Legislate to make tobacco manufacturers pay for a Smokefree 2030 Fund to bring an end to smoking

Recommendation 2: Take our place on the world stage as a global leader in tobacco control.

Recommendation 3: Set interim targets for 2025, and update our strategy if we are not on track to a Smokefree 2030 by then

Behaviour Change Policy and Interventions for a Smokefree 2030

Levelling up through targeted investment

Recommendation 4: Deliver anti-smoking behaviour change campaigns targeted at routine and manual and unemployed smokers (C2DE).

Recommendation 5: Ensure all smokers are advised to quit at least annually and given opt-out referral to Stop Smoking Services.

Recommendation 6: Target support to give additional help to those living in social housing or with mental health conditions, who have high rates of smoking.

Recommendation 7: Ensure all pregnant smokers are given financial incentives to quit in addition to smoking cessation support.

Recommendation 8: Fund regional programmes to reduce the use of illicit tobacco in deprived communities.

Shaping the Consumer Environment

Recommendation 9: Legislate to put health warnings on individual cigarettes, quit messaging on pack inserts and close other loopholes in existing regulations.

Recommendation 10: Reduce the appeal and availability of e-cigarettes and other nicotine products to children.

Recommendation 11: Make the route to medicinal licensing fit for purpose to allow e-cigarettes to be authorised for NHS prescription.

Recommendation 12: Consult on raising the age of sale for tobacco from 18 to 21.

https://osf.io/6hkpv/

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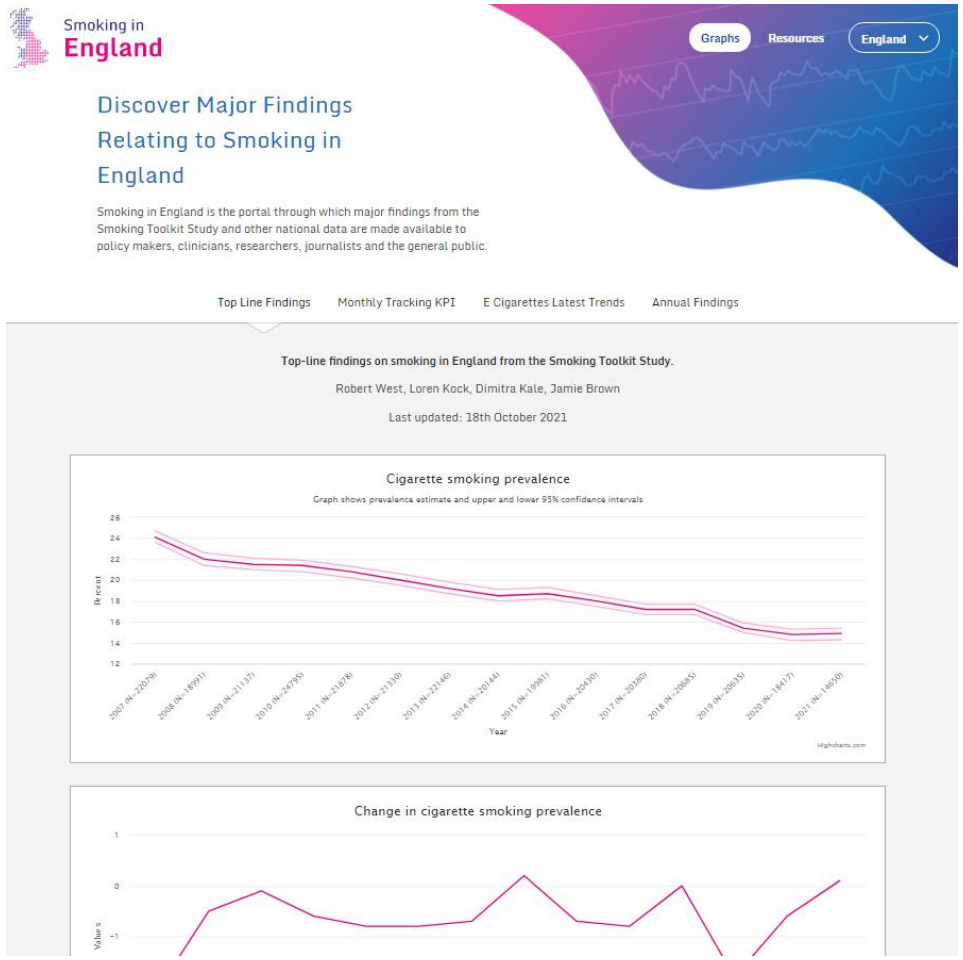
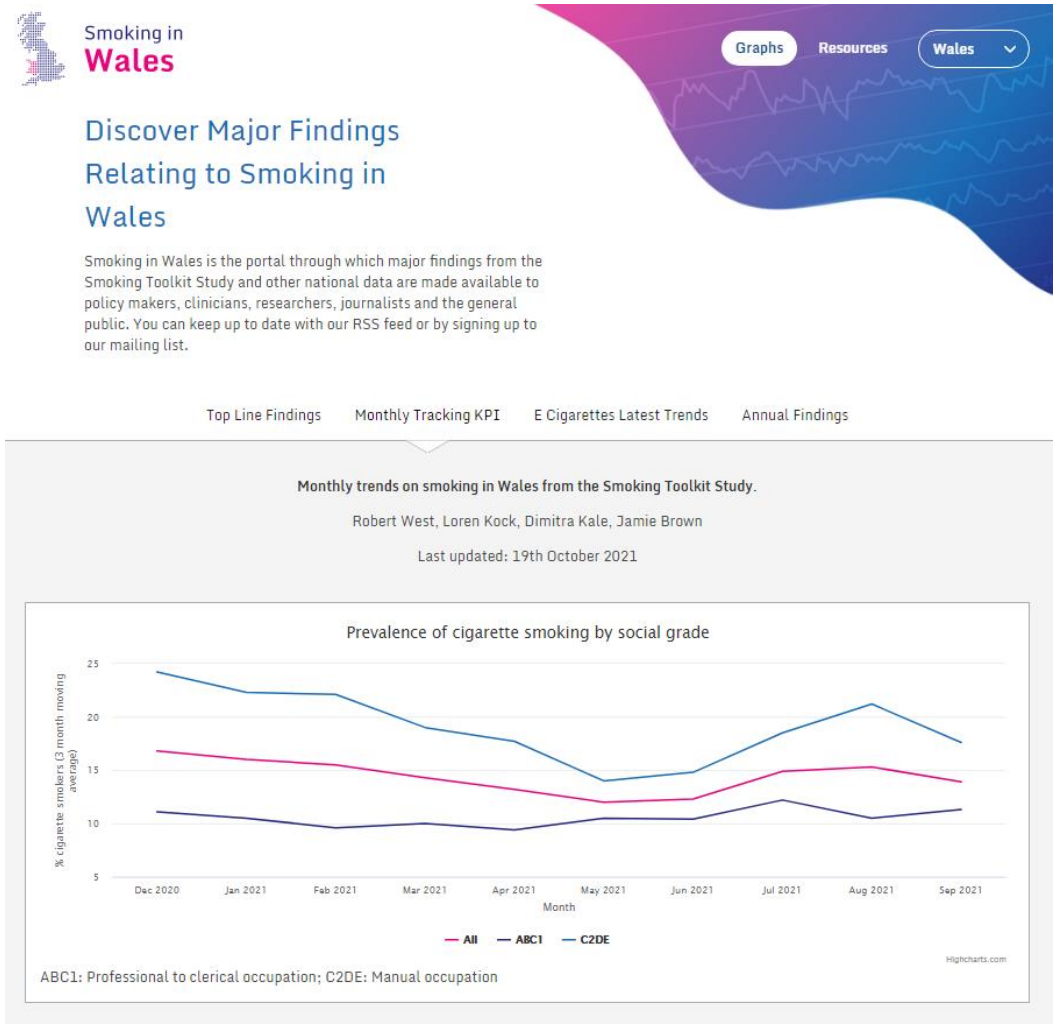
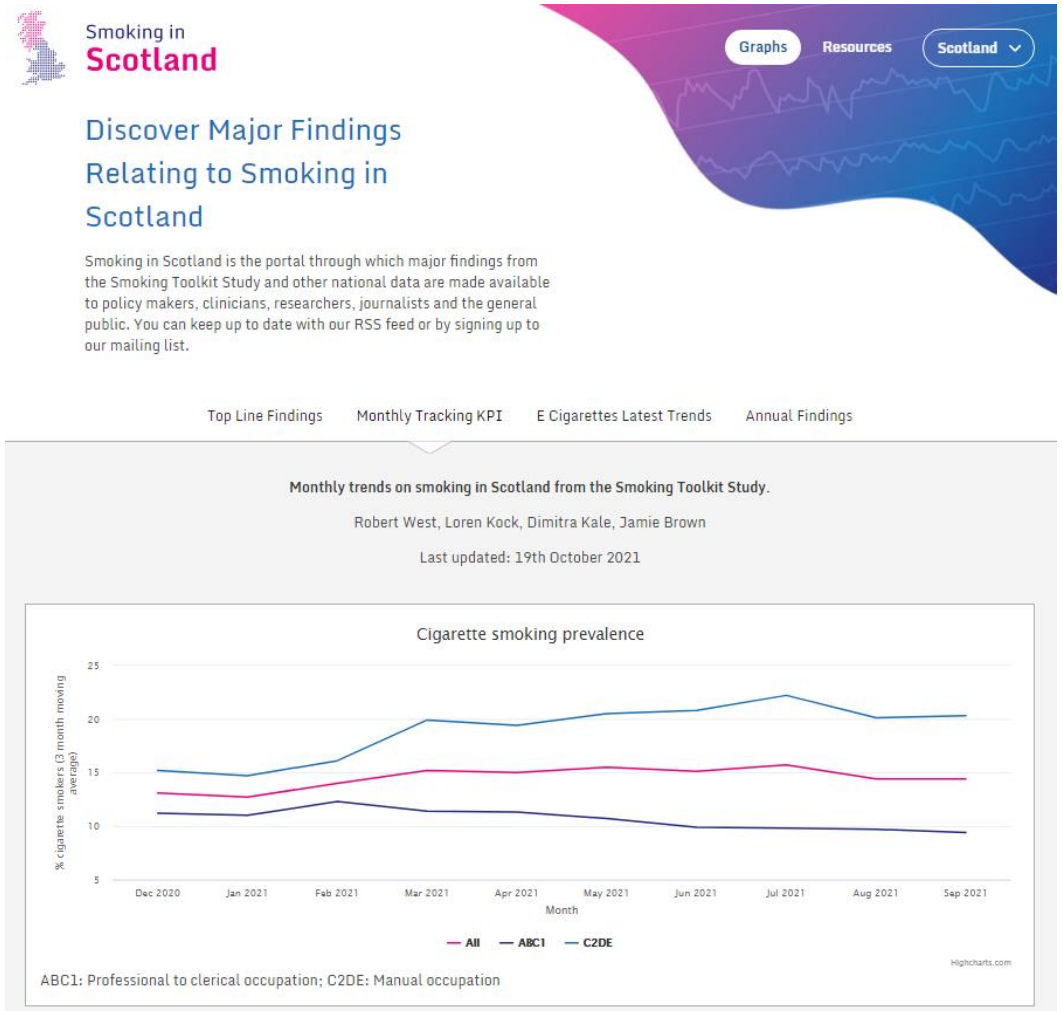
www.smokinginengland.info

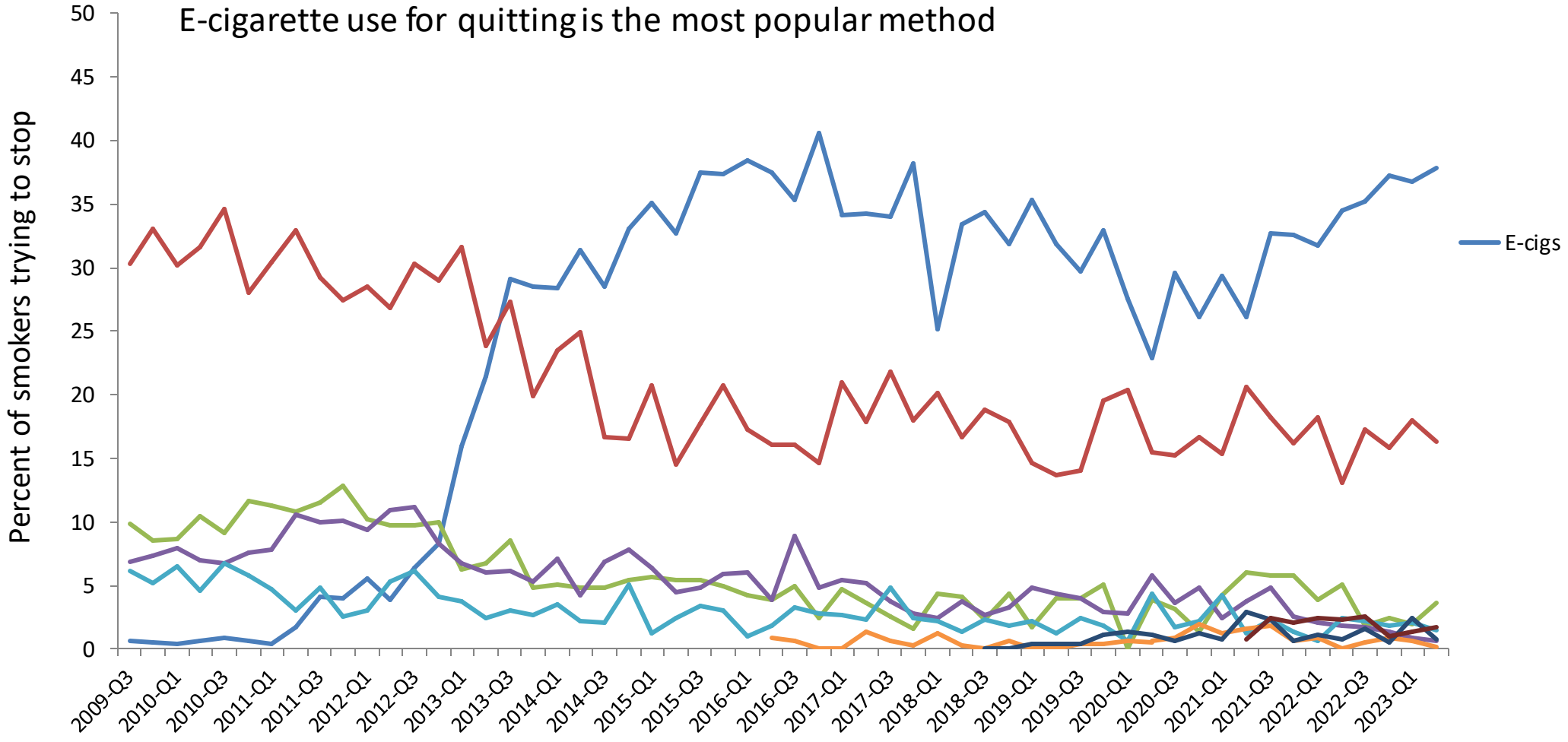


www.smokinginwales.info & www.smokinginscotland.info



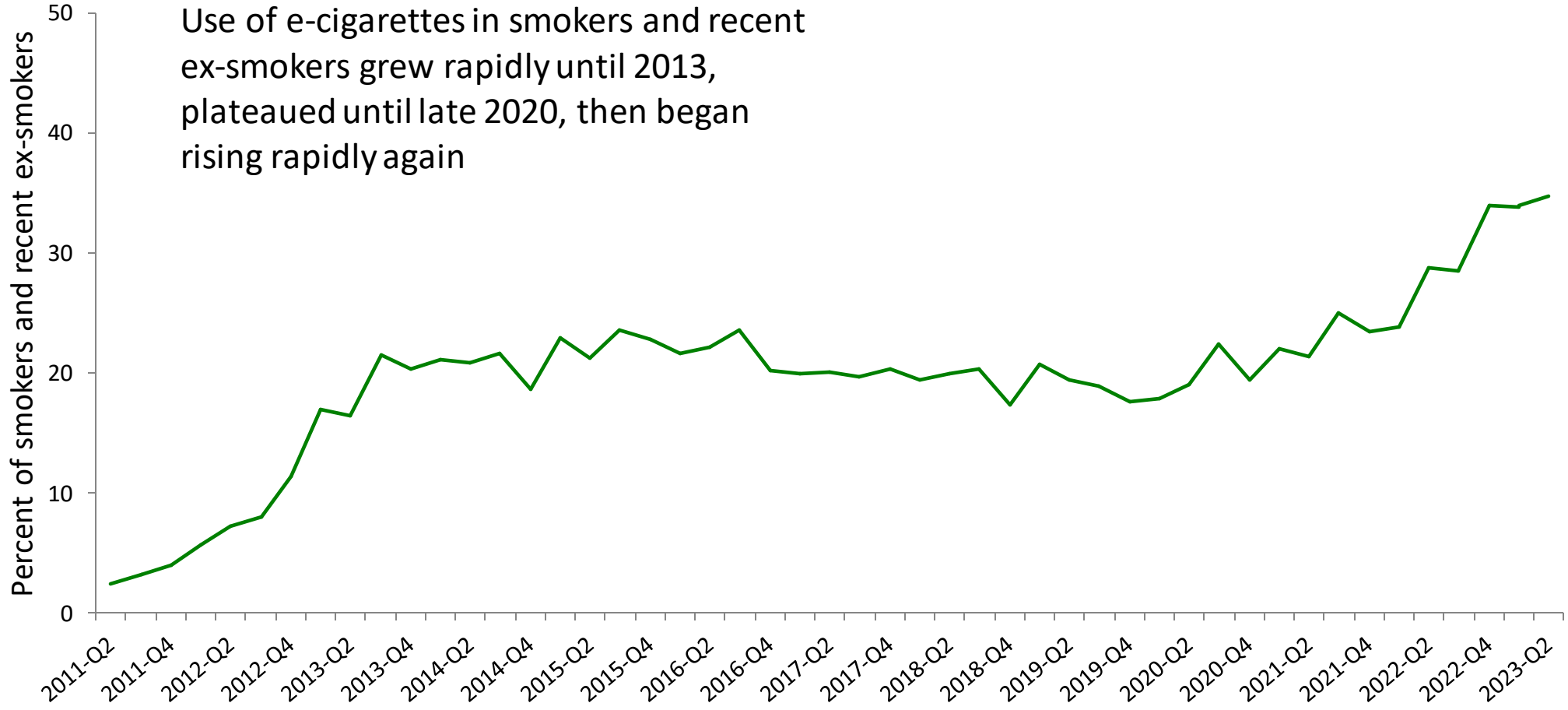


Aids used in most recent quit attempt



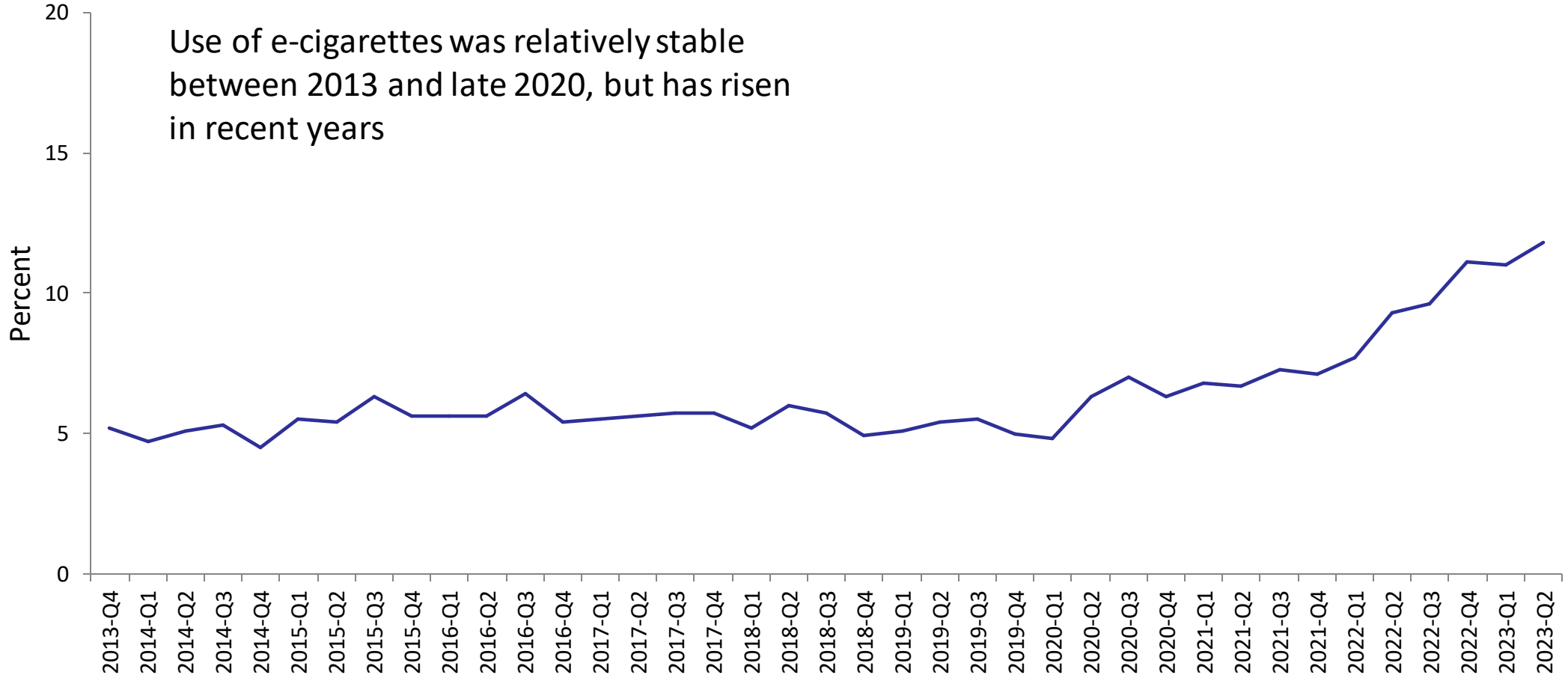
N=19654 adults who smoke and tried to stop or who stopped in the past year; method is coded as any (not exclusive) use

Prevalence of e-cigarette use: past-year smokers



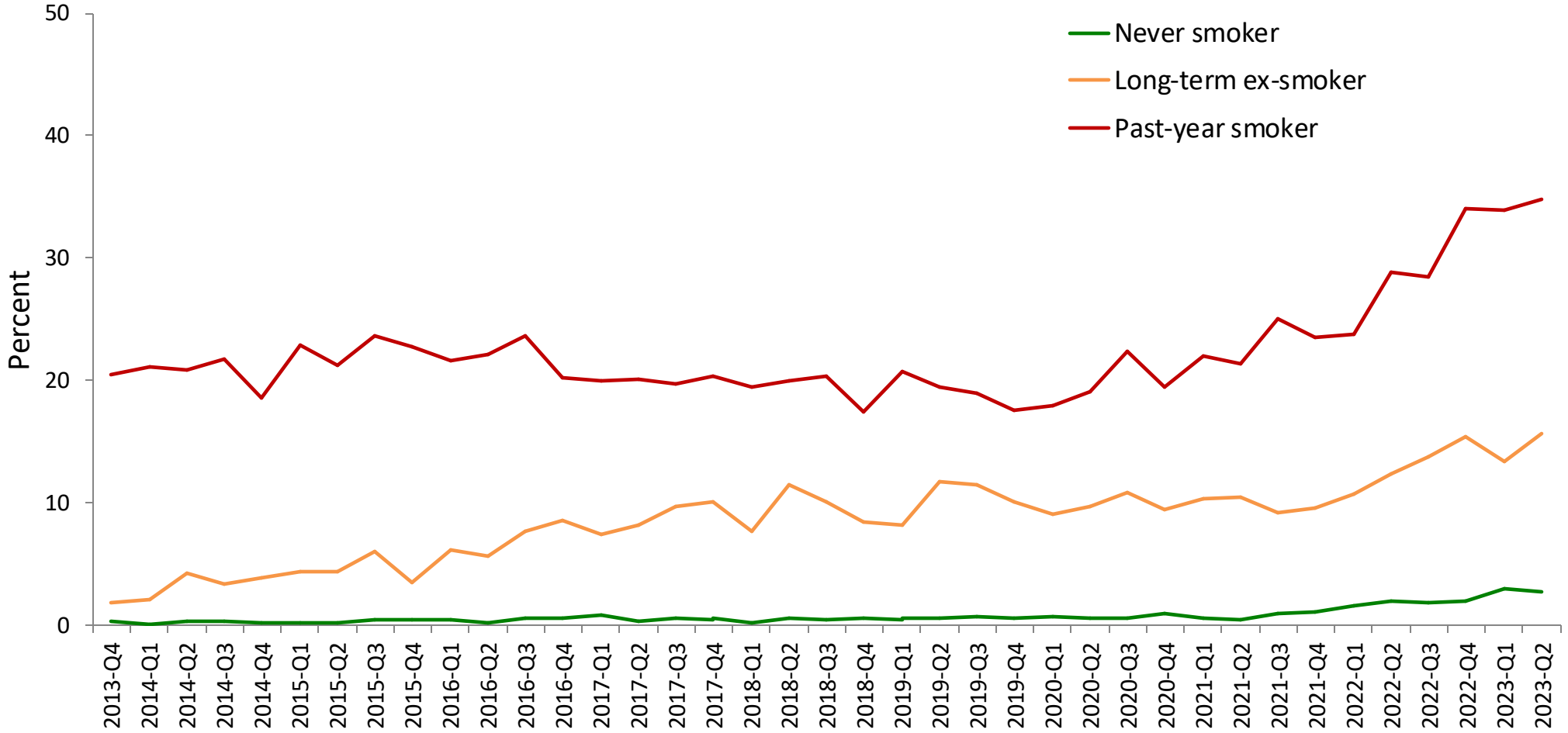
N=50518 adults who smoke or who stopped in the past year adults who smoke or who stopped in the past year

Prevalence of e-cigarette use



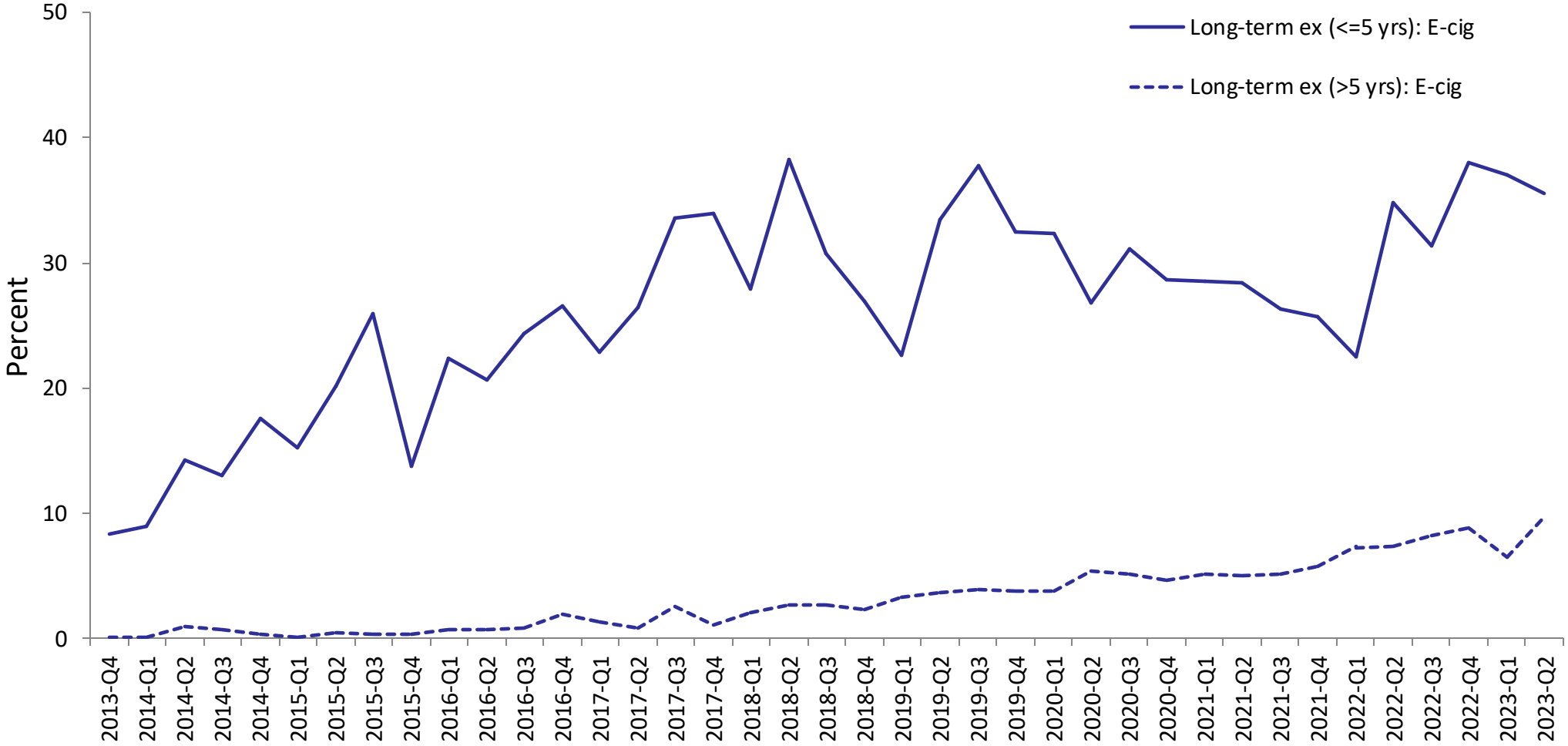
N=194335 **adults** in England from Nov 2013

Prevalence of e-cigarette use by smoking status



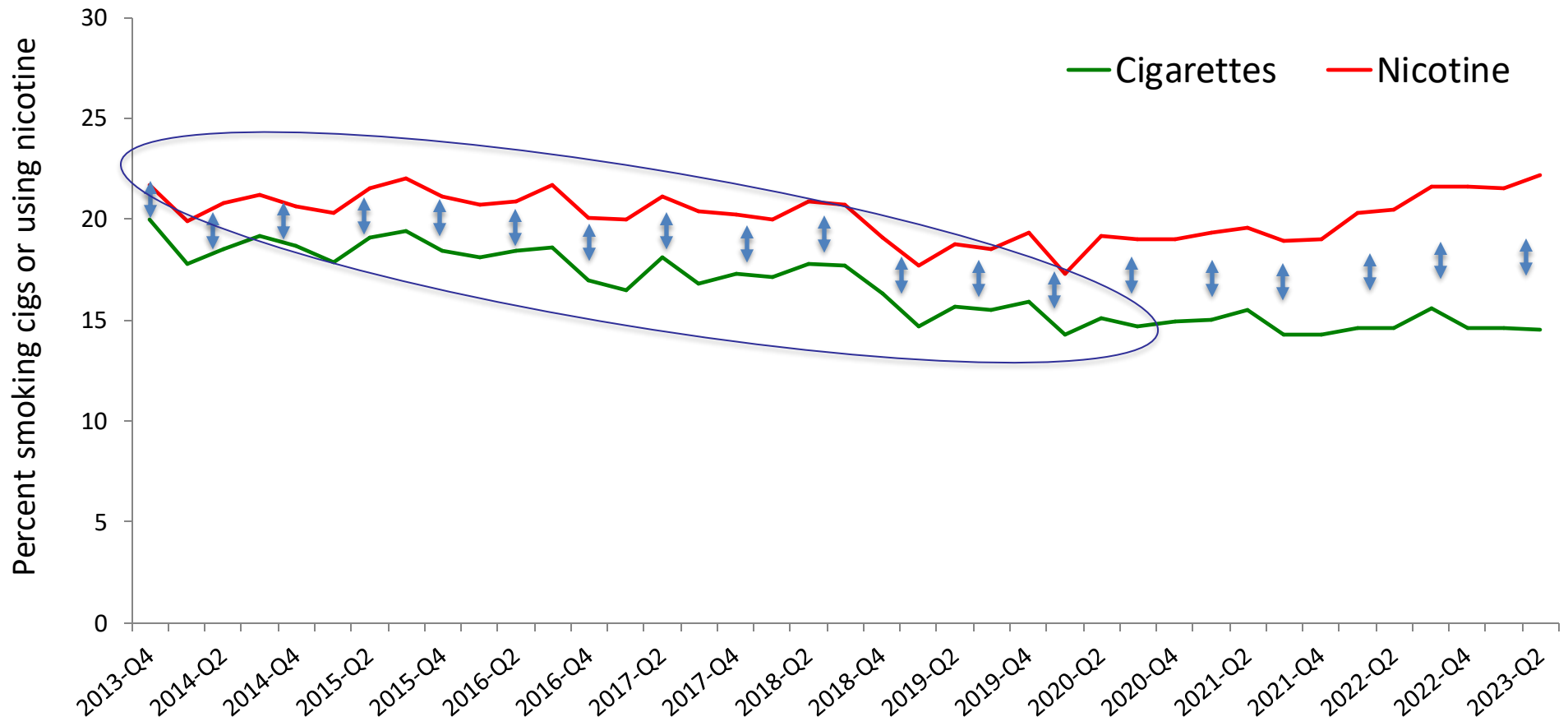
N=194335 adults including 121407 never smokers; 36355 long-term (>1year) ex-smokers; 36573 past year smokers

Prevalence of e-cig use: Splitting long-term ex-smokers



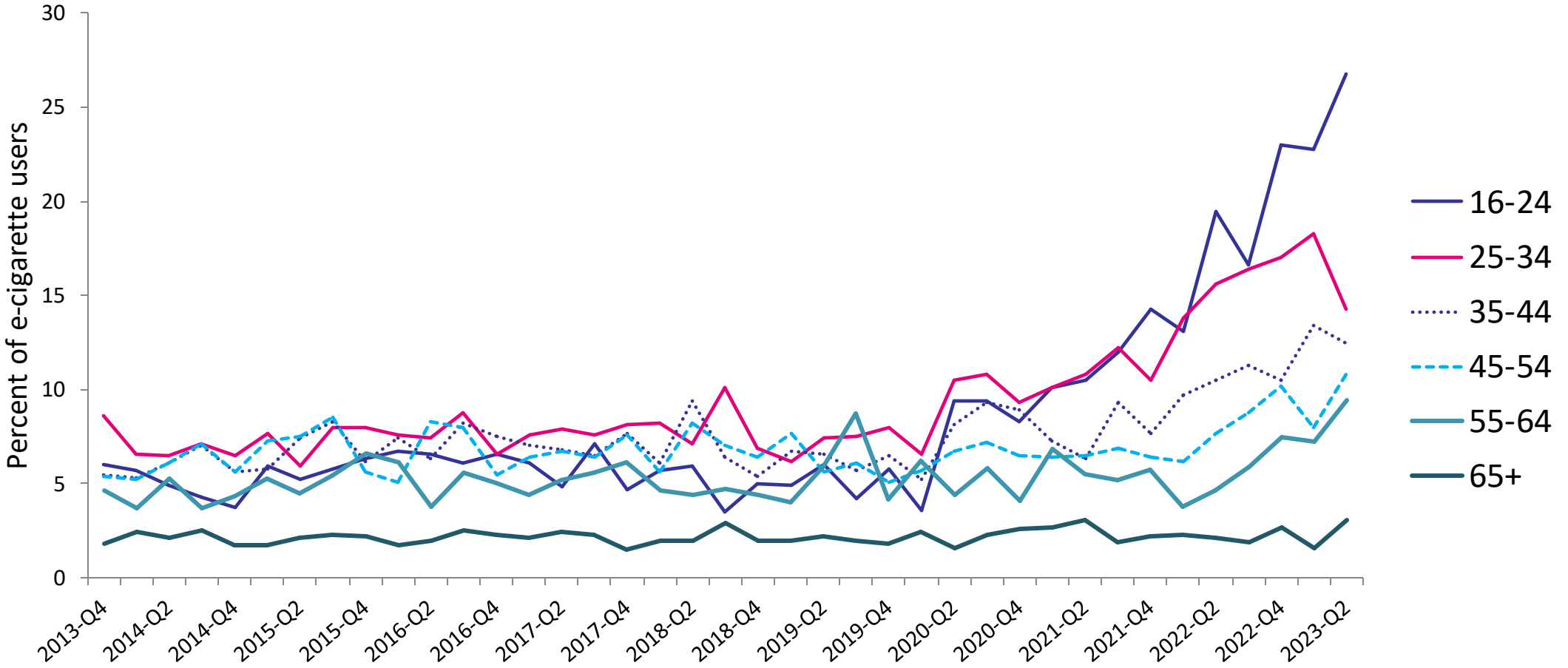
N=28826 ex-smokers >5 years from Nov 13; N=7529 ex-smokers <=5 years from Nov 13

Prevalence of nicotine/cigarette use



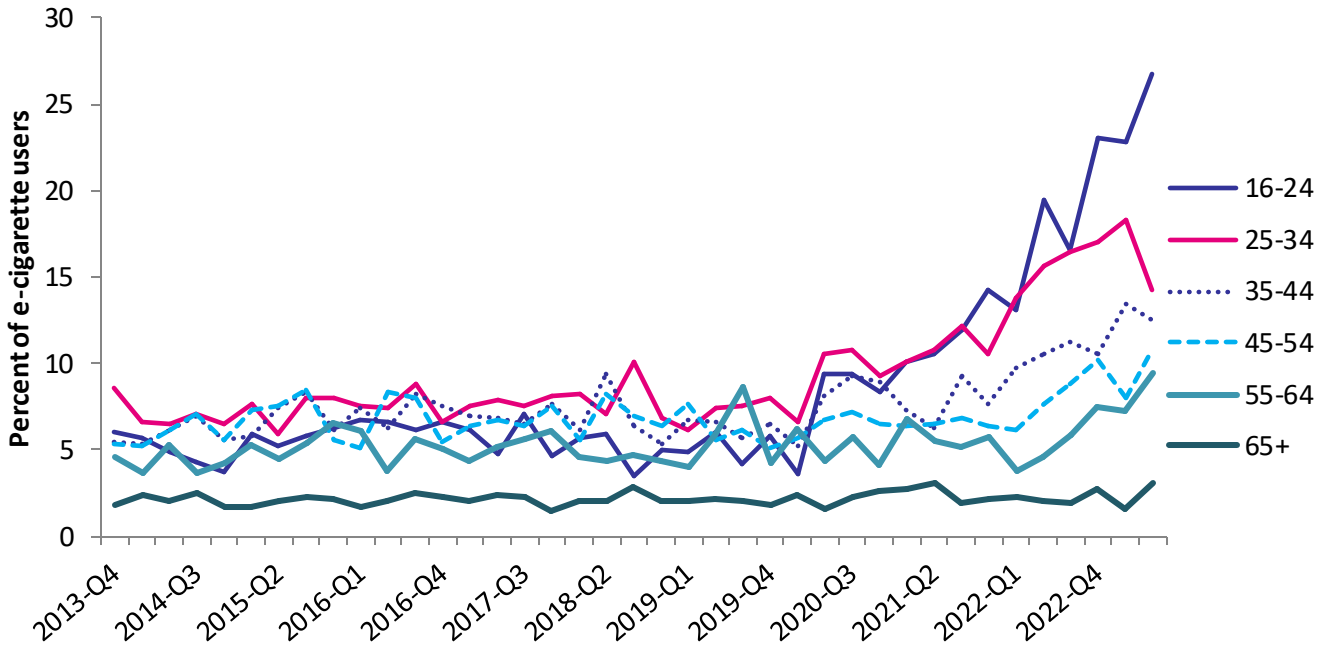
N=194335 adults

Prevalence of e-cigarette use by age

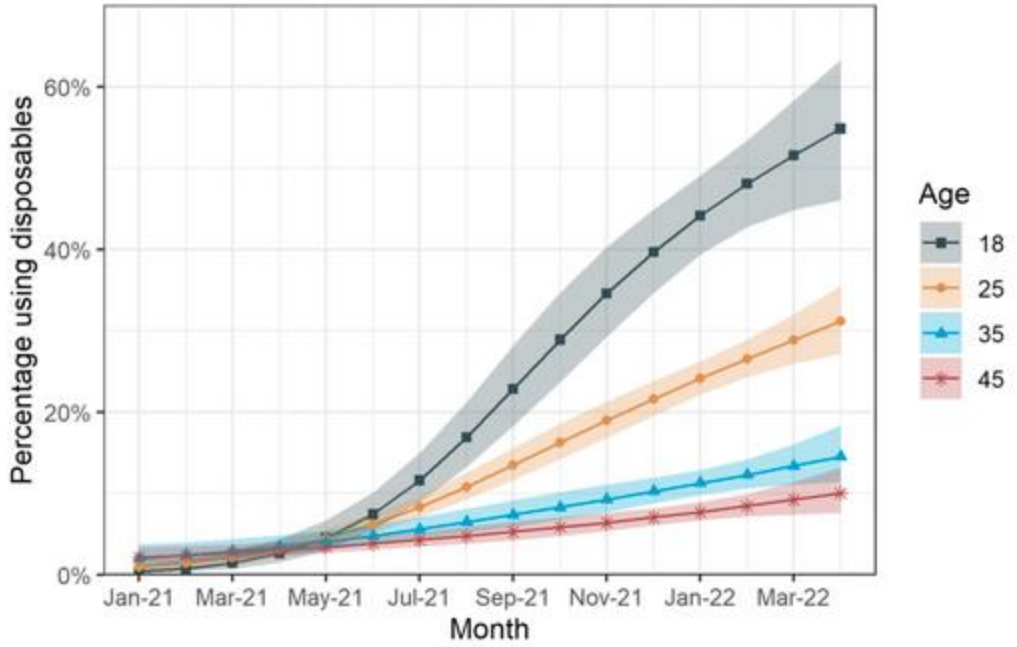


N=194335 adults (16 and over till Feb 20; 18 and over from April 20; 16 and over from Jan 22)

Prevalence of e-cigarette use by age

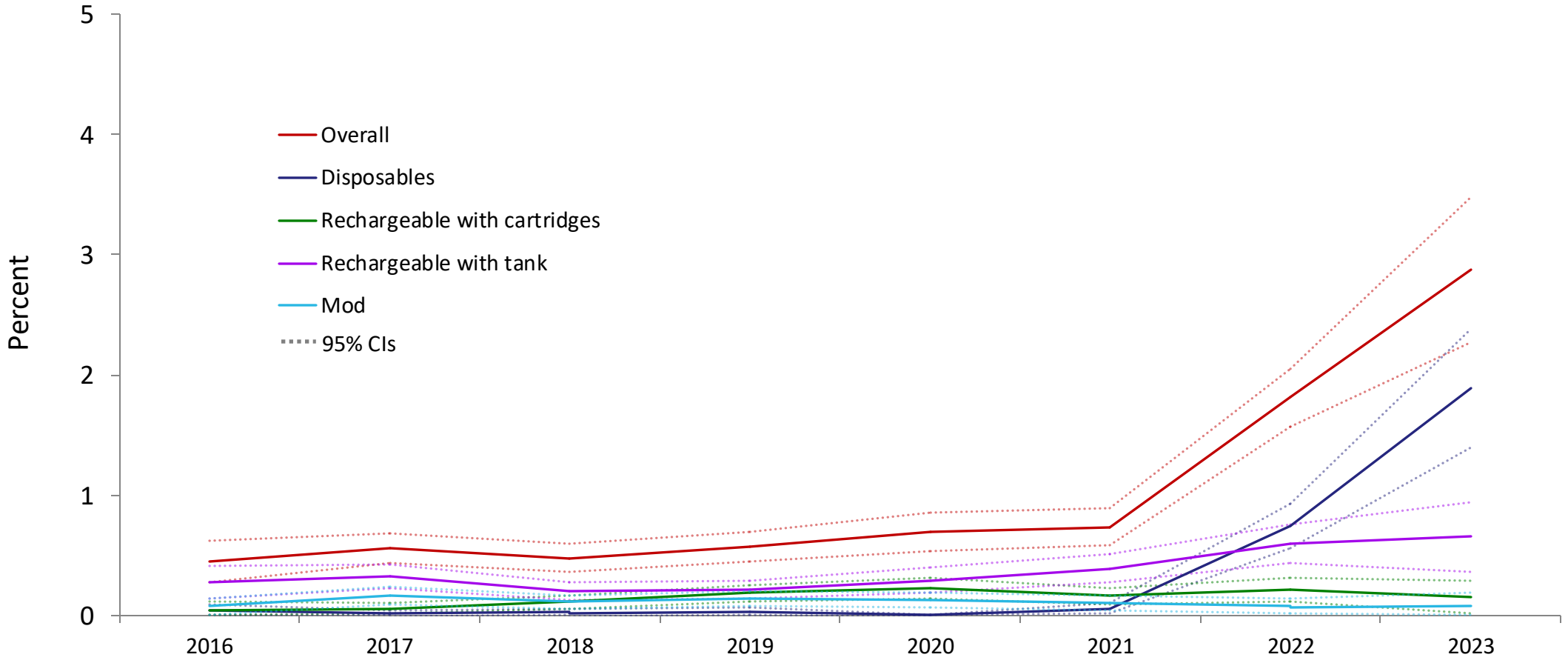


Use of disposable e-cigarettes among vapers



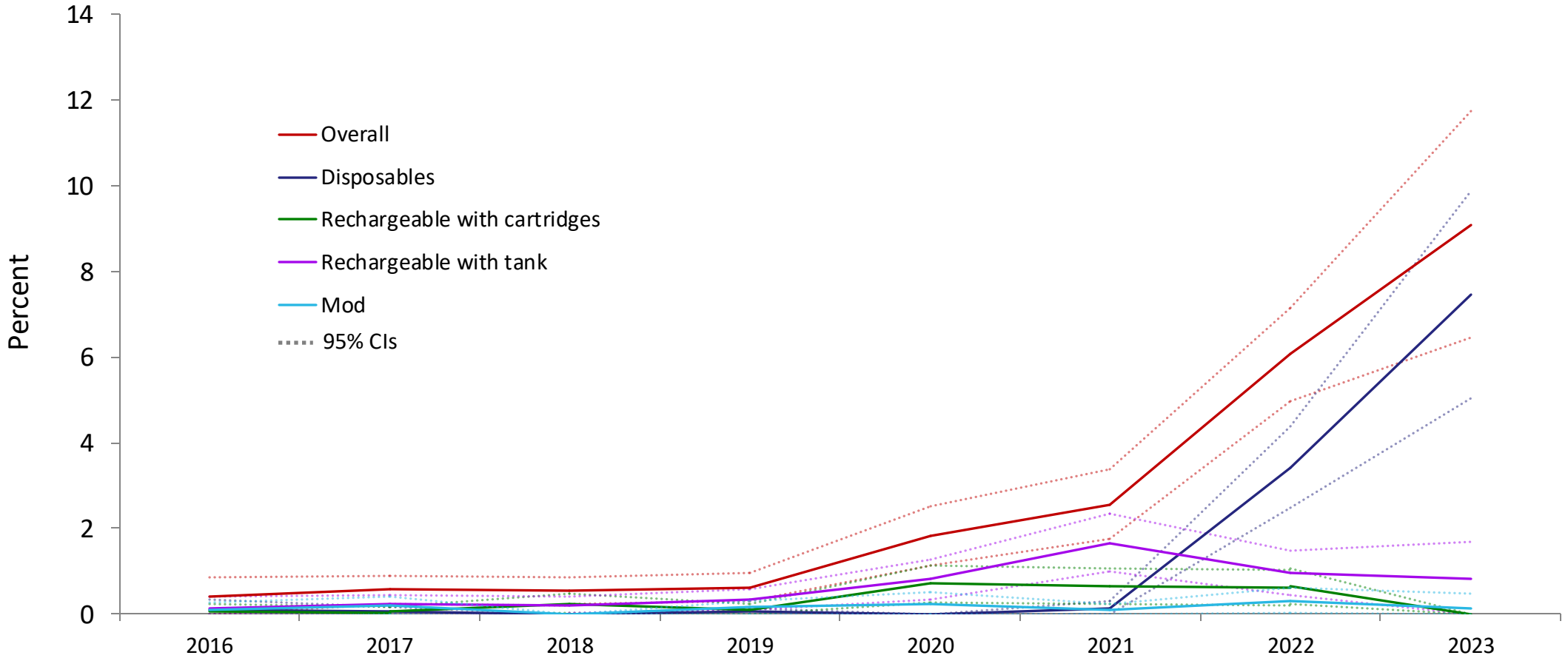
Tattan-Birch, Jackson, Kock, Dockrell, Brown (2022). Addiction, 118 (2), 382-6.

Prevalence of vaping by device among never smokers



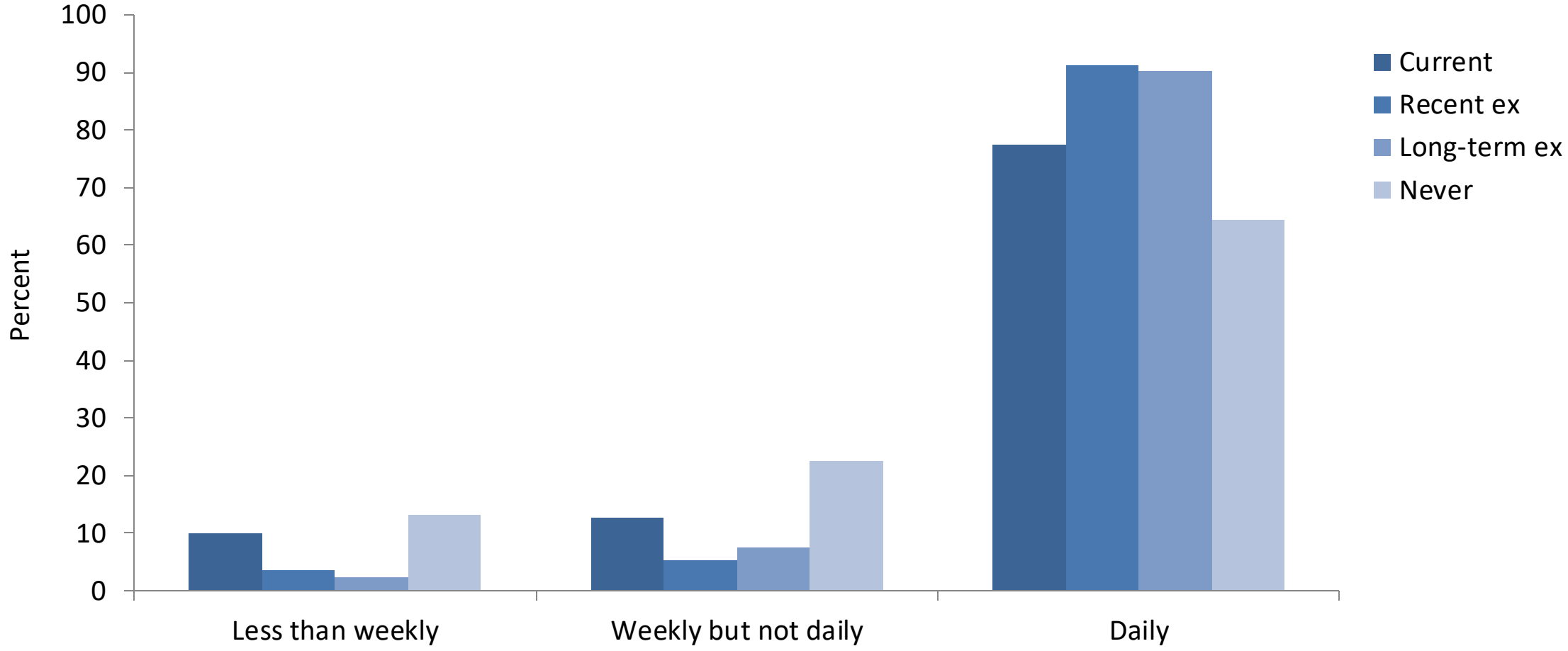
N=82935 never smokers; adapted from an upcoming section in a new RCP report, Brown et al, Trends in the use of non-tobacco nicotine products

Prevalence of vaping by device among never smokers: 16-24 year olds



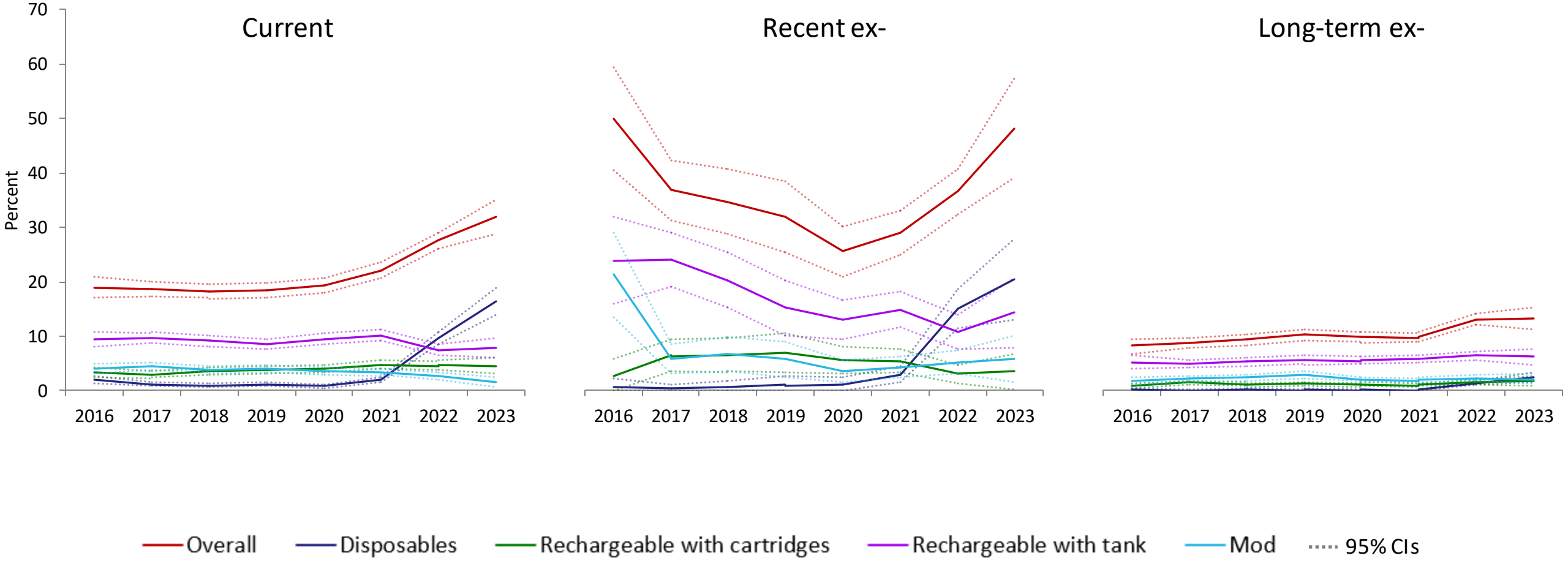
N=13488 16-24 year old never smokers; adapted from an upcoming section in a new RCP report, Brown et al, Trends in the use of non-tobacco nicotine products

Frequency of use



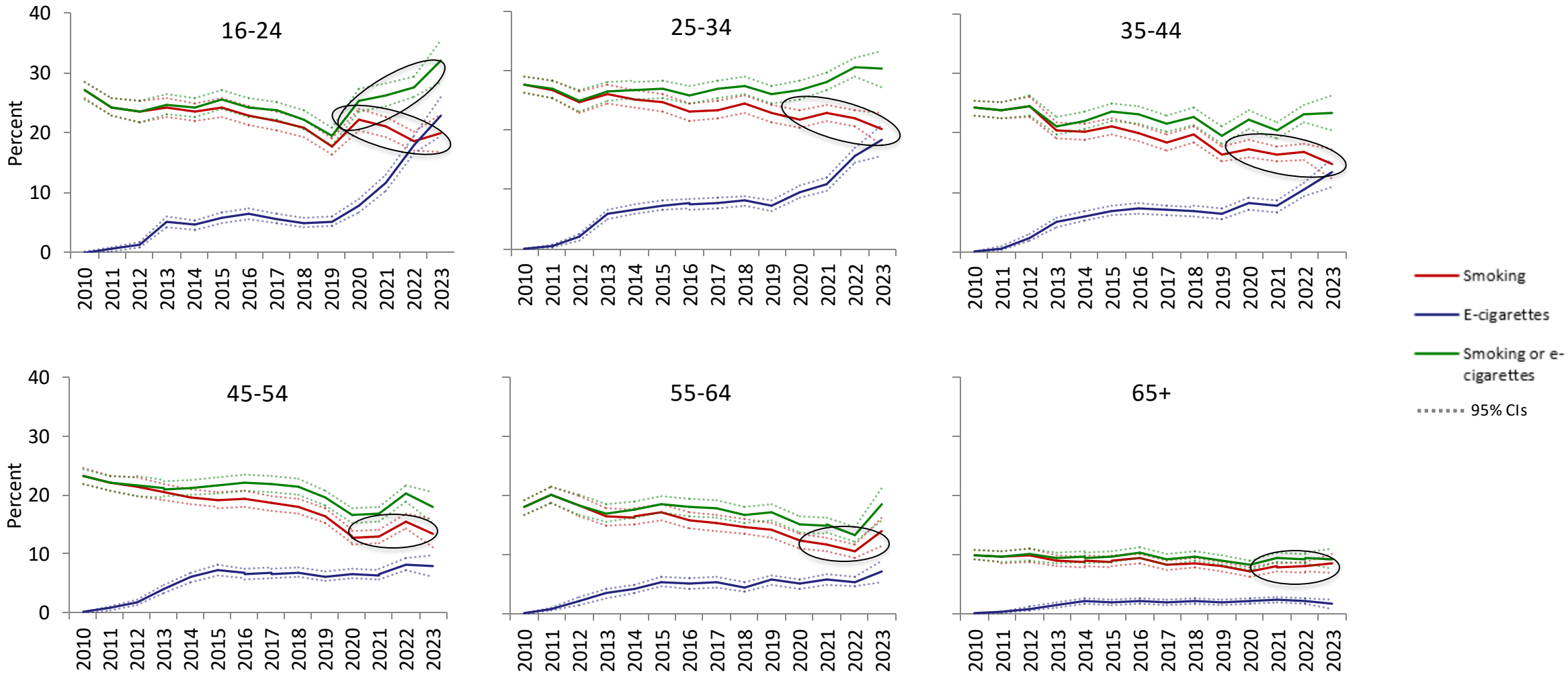
N=574 e-cigarette users **in 2023** not using NRT

Prevalence of vaping by device among ever smokers



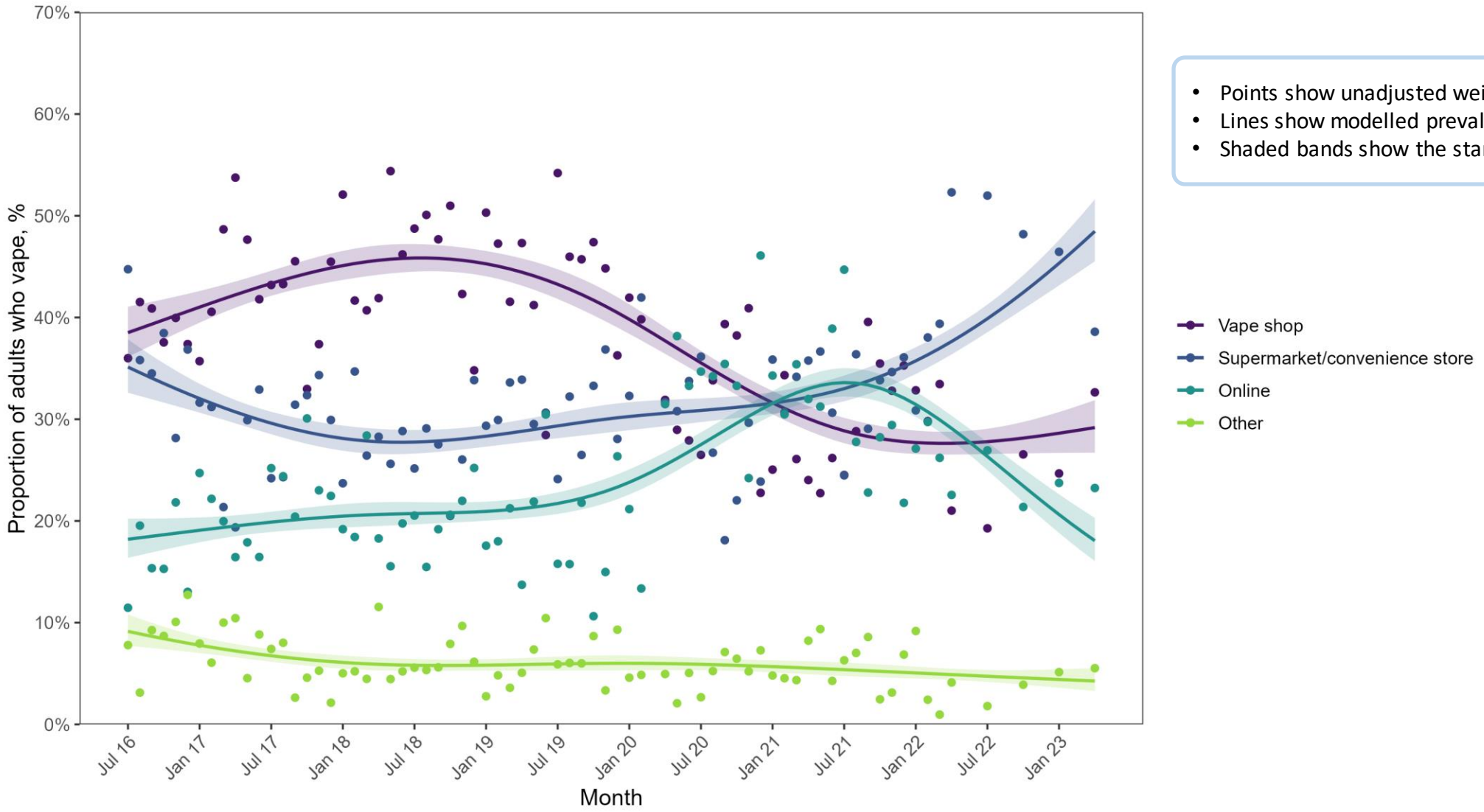
N=50285 ever smokers; adapted from an upcoming section in a new RCP report, Brown et al, Trends in the use of non-tobacco nicotine products

Prevalence of e-cigarette/cigarette use



N=265,415 adults; adapted from an upcoming section in a new RCP report, Brown et al, Trends in the use of non-tobacco nicotine products

Source of purchase

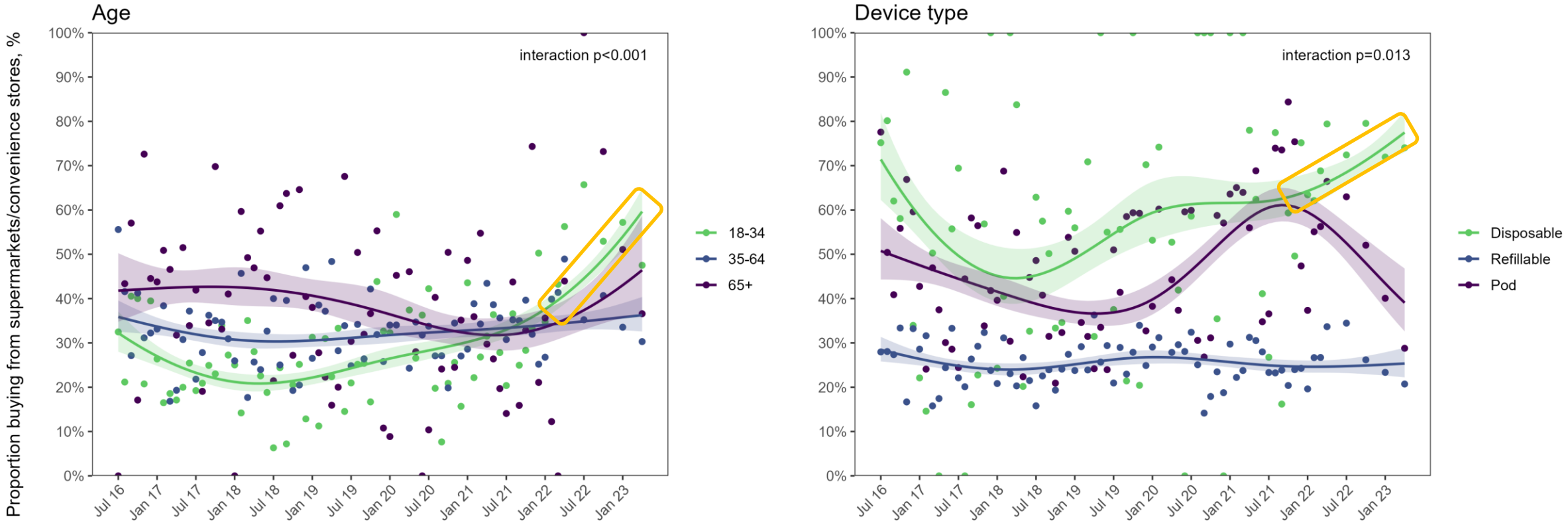


- Points show unadjusted weighted quarterly prevalence
- Lines show modelled prevalence adjusted for covariates
- Shaded bands show the standard error

Vape shop
Supermarket/convenience store
Online
Other

Jackson, Tattan-Birch, Brown. In prep. osf.io/85tk3

Source of purchase



Jackson, Tattan-Birch, Brown. In prep. osf.io/85tk3

Summary

- In England, e-cigarette use grew rapidly between 2011 and 2013
  - Overall prevalence was relatively stable thereafter, up to late 2020
  - Prevalence has risen again since 2021, as a new form of disposable e-cigarette rapidly became popular among young people
- Trends varied by smoking status
  - E-cigarette use by never smokers was rare (<1%) up to late 2020 but has risen to ~3% in 2023
  - Growth in use by current smokers stalled 2013-2020 but is now rising again
  - Use among ex-smokers continues to increase
- There has been long-term decline in cigarette smoking, which represents declining proportion of people who use nicotine
  - But may have stalled recently…except in young people
  - The prevalence of people using nicotine may have increased since 2020

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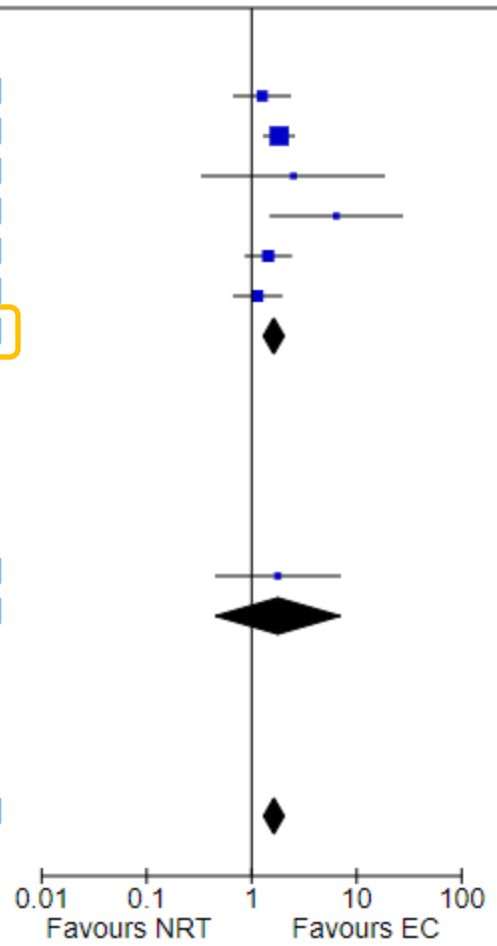
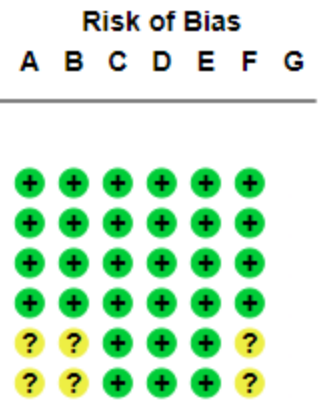
Cochrane review of e-cigarettes

Study or Subgroup	EC Events	EC Total	NRT Events	NRT Total	Weight	Risk Ratio M-H, Fixed, 95% CI
1.1.1 Not selected on pregnancy						
Bullen 2013	21	289	17	295	15.7%	1.26 [0.68 , 2.34]
Hajek 2019	79	438	44	446	40.7%	1.83 [1.30 , 2.58]
Lee 2018	5	20	1	10	1.2%	2.50 [0.34 , 18.63]
Myers-Smith 2022	13	68	2	67	1.9%	6.40 [1.50 , 27.30]
Russell 2021 (1)	44	145	15	71	18.8%	1.44 [0.86 , 2.40]
Russell 2021 (2)	34	140	15	70	18.7%	1.13 [0.66 , 1.94]
Subtotal (95% CI)		**1100**		**959**	**97.0%**	**1.62 [1.29 , 2.04]**
Total events:	196		94			
Heterogeneity: Chi² = 6.67, df = 5 (P = 0.25); I² = 25%						
Test for overall effect: Z = 4.19 (P < 0.0001)						
1.1.2 Pregnant population						
Hajek 2022 (3)	6	169	3	150	3.0%	1.78 [0.45 , 6.97]
Subtotal (95% CI)		**169**		**150**	**3.0%**	**1.78 [0.45 , 6.97]**
Total events:	6		3			
Heterogeneity: Not applicable						
Test for overall effect: Z = 0.82 (P = 0.41)						
Total (95% CI)		**1269**		**1109**	**100.0%**	**1.63 [1.30 , 2.04]**
Total events:	202		97			
Heterogeneity: Chi² = 6.70, df = 6 (P = 0.35); I² = 10%						
Test for overall effect: Z = 4.27 (P < 0.0001)						
Test for subgroup differences: Chi² = 0.02, df = 1 (P = 0.90), I² = 0%						





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Analysis 1.1 Comparison 1: Nicotine EC versus NRT, Outcome 1: Smoking cessation

Triangulation

- Robust research needs many lines of evidence
  - Munafo & Davey Smith, 2018

Observational data: individual-level

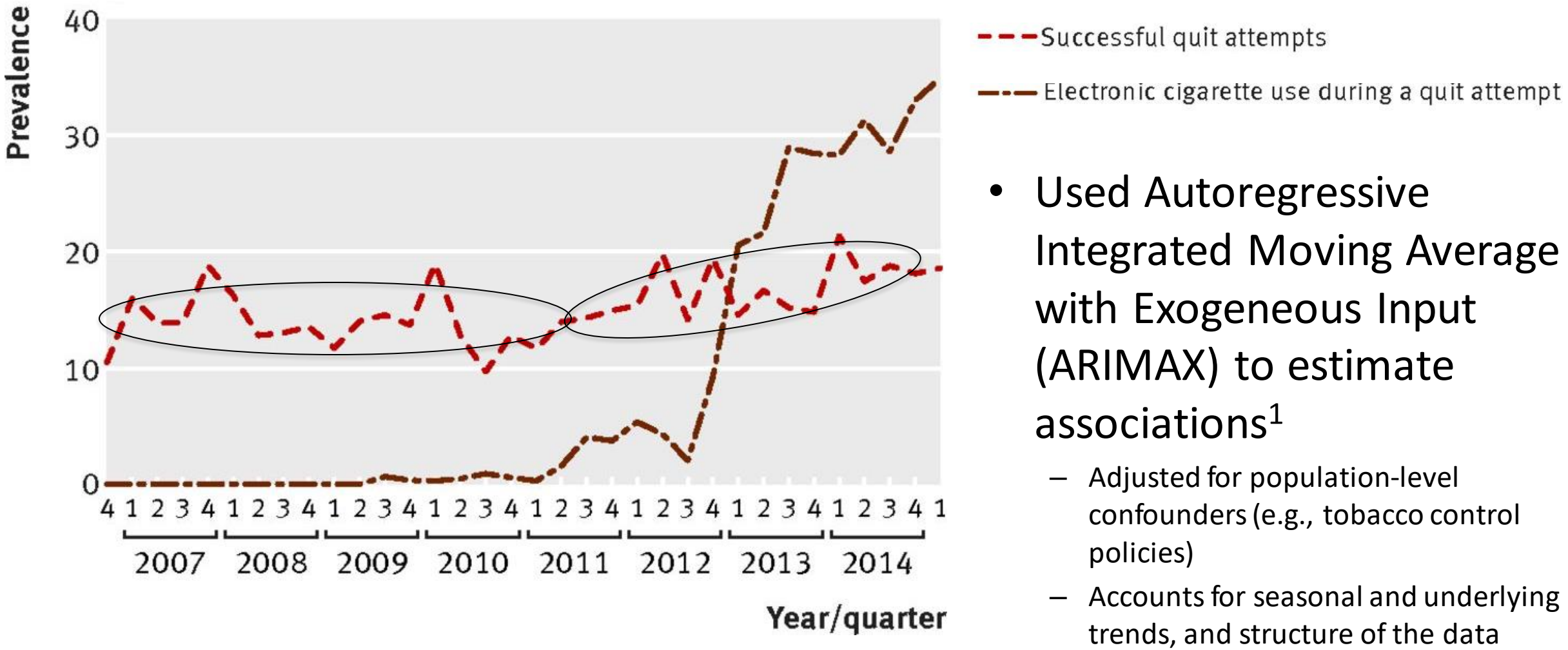
- Several large comparative observational studies yield similar findings to RCTs[1]
- However, mixed literature[2]
  - unable to control for important confounders such as dependence, inadequately assessed reasons or motives for using e-cigarette, or used an unsuitable comparison group[3]

E-cigarette use in a quit attempt associated with 95% higher odds of successful cessation
Adjusted OR = 1.95, 95%CI 1.69-2.24

N=18,929 adults who had smoked in the past year and made at least one quit attempt during that period

[1] Jackson et al (2019) Addiction, doi: 10.1111/add.12623; McNeill et al (2022) Nicotine vaping in England evidence review
[2] Kalkhoran & Glantz (2016) Lancet Respir Med.
[3] Abrams et al (2018) Ann Rev Public Health.

Population-level: time-series



- Used Autoregressive Integrated Moving Average with Exogeneous Input (ARIMAX) to estimate associations[1]
  - Adjusted for population-level confounders (e.g., tobacco control policies)
  - Accounts for seasonal and underlying trends, and structure of the data

[1] Cryer, Chan. Time series analysis with applications in R. Springer 2008; Jenkins, Box, Reinsel. Time series analysis: forecasting and control: Wiley & Sons 2011.

Population-level: time-series

- Success rate of quit attempts increased 0.058% (95%CI = 0.038 to 0.078; P < 0.001) for every 1% increase in the prevalence of e-cigarette use during a recent quit attempt

  N=41,301 past-year smokers, 2006-2015[1]

- Pattern of results has been consistent over time
  - 0.060% (95%CI = 0.043–0.078, P < 0.001) – N=50,498 past-year smokers, 2006-2017[2]
  - 0.040% (95%CI = 0.019–0.062, P < 0.001) – N=67,548 past-year smokers, 2007-2022[3]

[1] Beard, West, Michie, Brown (2016) BMJ, 354: i4645.
[2] Beard, West, Michie, Brown (2020) Addiction, 115 (5): 961-974.
[3] Jackson, Brown, Beard. Under review.

Triangulation

- RCT, comparative individual-level and time-series population-level approaches each have their own limitations
- Together provide powerful triangulation on true effect size of e-cigarettes on smoking cessation

Interpretation

- Leads to a population estimate of approx. 54,000 *additional* medium-term ex-smokers attributed to e-cigarette use in 2015
- And approx. 28,000 additional ex-smokers in 2022

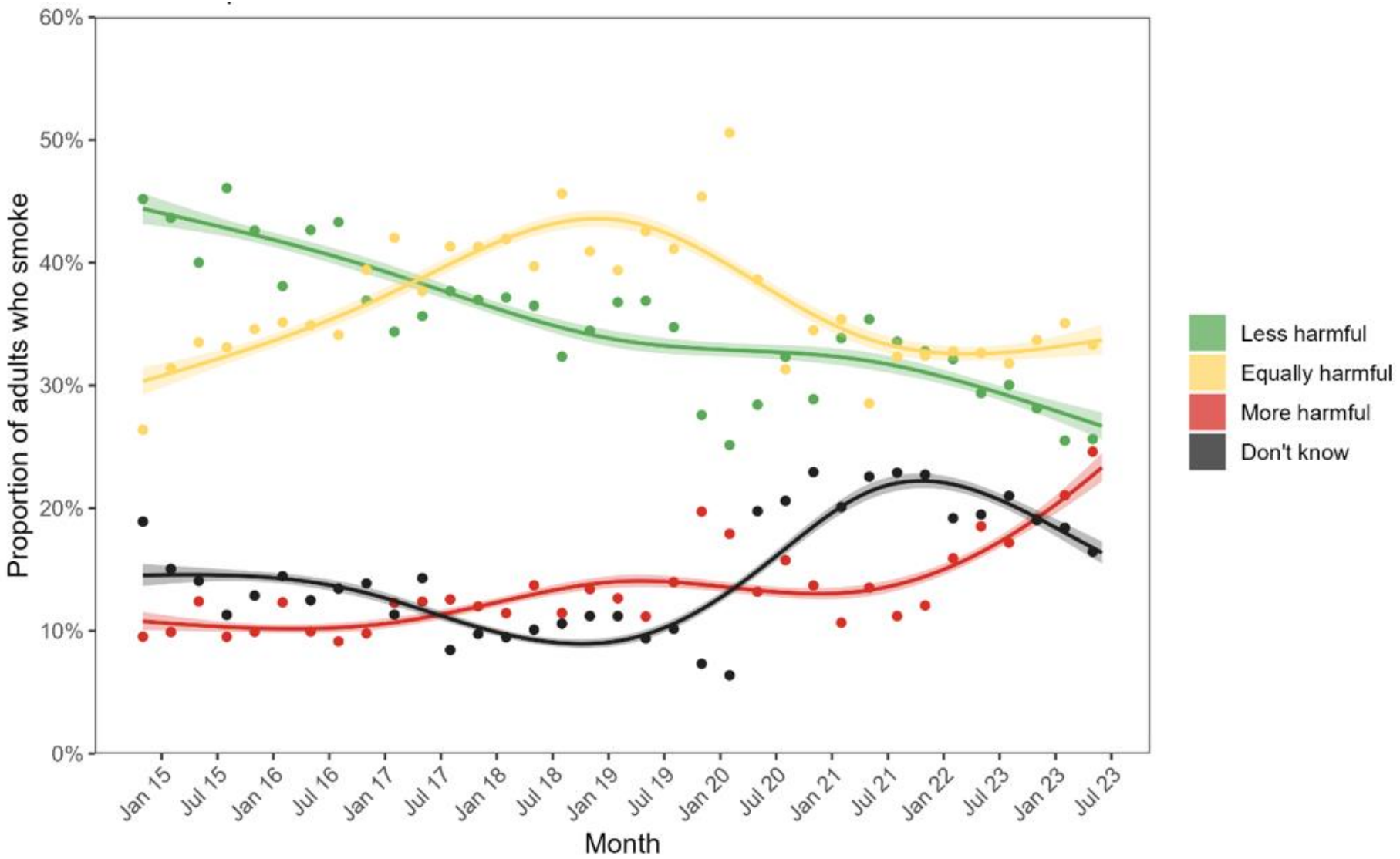
- Use of e-cigarettes in quit attempts has helped ~30,000-50,000 additional smokers to successfully quit each year since they have become popular
  - The results are consistent with e-cigarette use in quit attempts increasing chances of success at the level identified in RCTs[1]

[1] West, Shahab, Brown (2017) Addiction, doi.org/10.1111/add.13343

Comment on estimate

- Numbers relatively small?
  - Meaningful given huge health gains from quitting smoking
  - Absolute number of people stopping with e-cigarettes is much greater
    - Estimate is of how many more people stopped successfully *over and above* what was going on before they came into existence
  - Possible contribution may have been greater in different circumstances

Harm perceptions of e-cigarettes compared with cigarettes



Jackson, Tattan-Birch, East, Cox, Shahab, Brown. In prep. https://osf.io/wdhru/

Summary

- Results from two different methods corroborate RCT data that e-cigarettes are effective for smoking cessation
  - Modelling suggests e-cigarettes produced an *additional* tens of thousands of ex-smokers annually in England
- In England, e-cigarette use grew rapidly between 2011 and 2013
- Overall prevalence broadly stabilised between 2013 and late 2020
  - Use among never smokers was rare while use among long-term ex-smokers gradually increased from low levels
  - During this period, e-cigarettes contributed to a long-term decline in smoking prevalence
- Since advent of new disposable devices in 2021, there appears to have been substantial changes in a number of underlying trends
  - Most notably increases in use among never smokers, especially young people

Summary

- Results fro … e-cigarettes
  - Modellin … nds of ex-smokers
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- Overall pre …
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- Since adve … to have been substantial changes in a number of underlying trends
  - Most notably increases in use among never smokers, especially young people

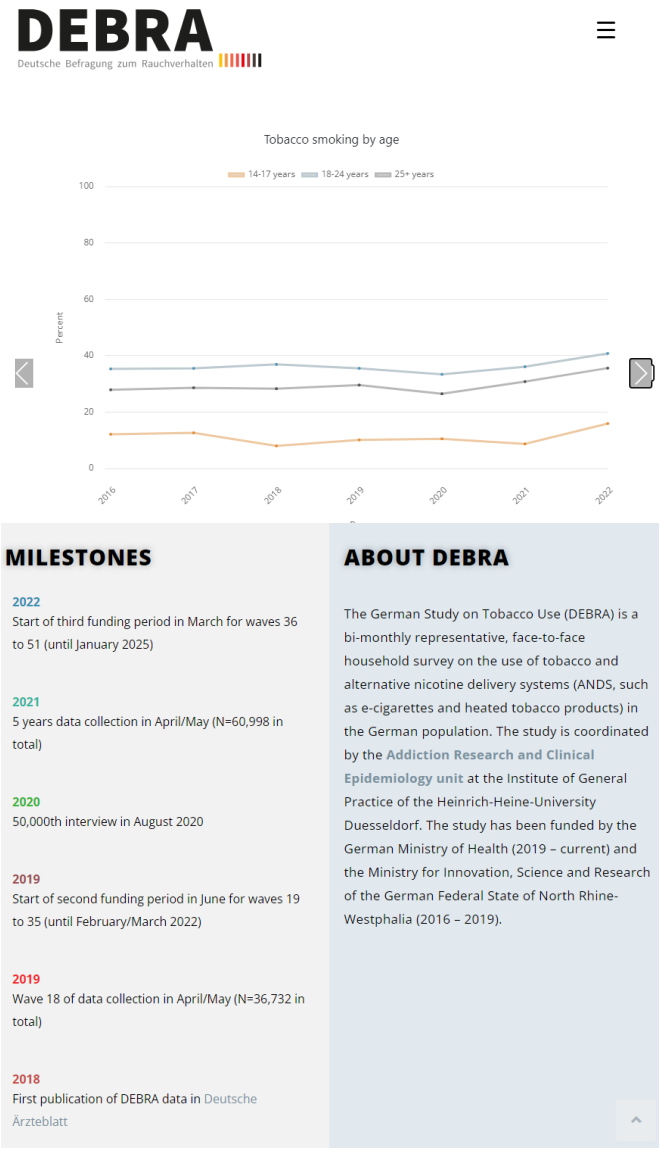
ash
action on smoking and health

ASH will set out for the Committee our top 3 recommendations to Government:

1. **Put a £5 excise tax on disposable vapes: making them less affordable for children and giving more powers to Border Force and HMRC for preventing illegal vapes flooding into the UK.**
2. **Prohibit branding with appeal to children: no more bright colours, sweet names and cartoon characters.**
3. **Prohibit promotion of e-cigarettes in shops: putting vapes out of sight and out of reach of children.**

Returning to value of establishing frequent and rapid surveillance

- Enables rapid evaluation and policy impact
- Early insight into fast-emerging phenomena
- Real-world triangulation with other sources of evidence



← CTP Newsroom

FDA and NIH Award Funding for New Center for Rapid Surveillance of Tobacco

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June 1, 2023

FDA and the National Institutes of Health (NIH) have awarded funding for a new Center for Rapid Surveillance of Tobacco (CRST). Through rapid surveillance and reporting of information, CRST will enhance CTP and the research community's ability to understand, document, and quantify changes in the tobacco product marketplace and tobacco use patterns.

Acknowledgments

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  - Primary funding of data collection for the Smoking Toolkit Study
    - Also, Pfizer & GSK, then Dept. of Health, at outset
- UKPRP and SPECTRUM
- All STS/ATS collaborators and co-authors
- Ipsos MORI for conducting fieldwork
- UTARG
  - Including Lion Shahab, Sarah Jackson, Robert West & Harry Tattan-Birch for comments on a first draft of this talk

www.smokinginengland.info

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