

Cigarette dependence is greatest in smokers who start young

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~95% start before age 25

Surgeon General 2012

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Birge 2018

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**This is why preventing smoking at young ages
is a key public health priority.**

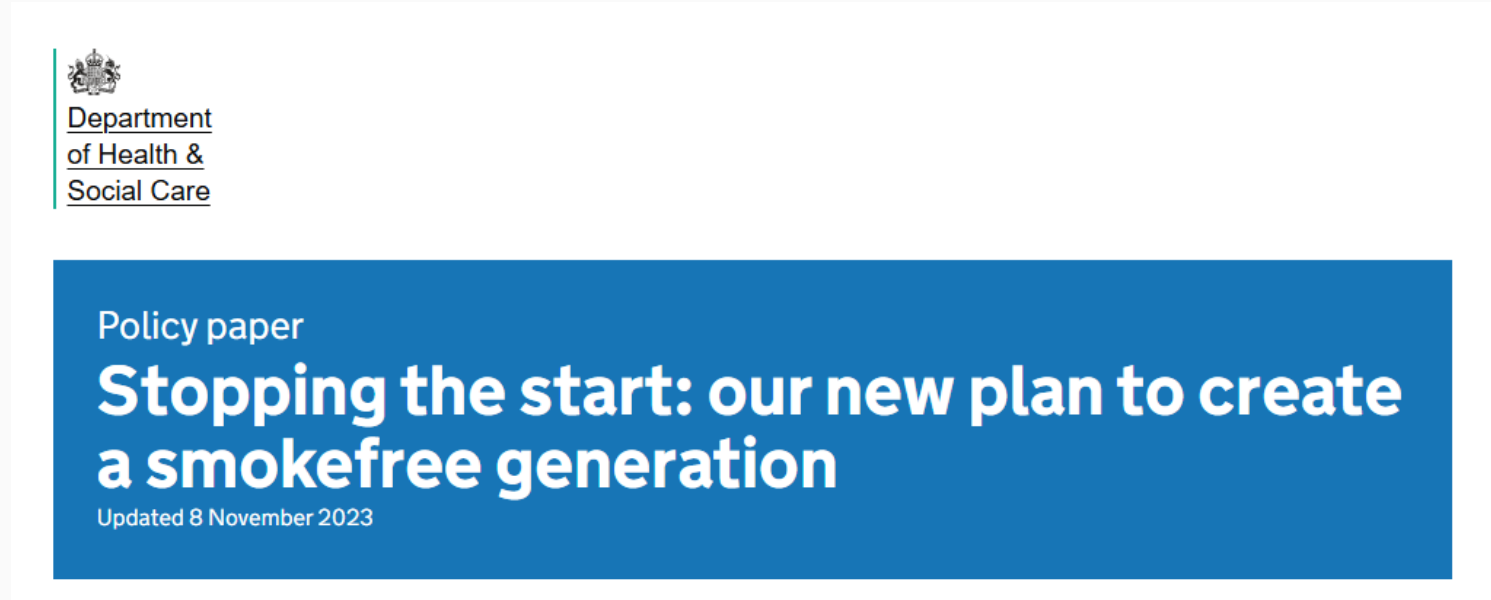
Age of sale restrictions

NATIONAL HEALTH
SERVICE ACT
2006 (UK)



- One core way of doing this is through **age of sale** restrictions.
- Age 16+ → 18+ (e.g., UK in 2007)
- Age 18+ → 21+ (e.g., USA in 2019)

“Smokefree Generation” Policy



- UK plans to implement “Smokefree generation” in January 2027.
- Anyone born after 2008 will never be able to legally buy cigarettes.

Challenge to such policies

Some might say the benefits are limited, if policies simply delay smoking rather than preventing it.

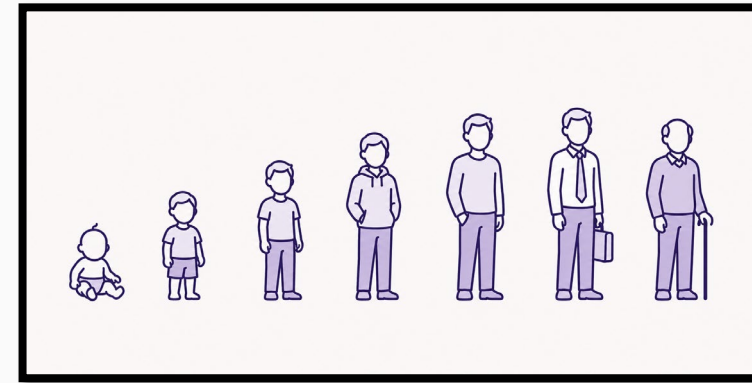


Challenge to such policies

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Is later uptake still be better? For example, might delaying reduce dependence throughout life.



Research question

Do smokers who start at a younger age have higher markers of cigarette dependence into adulthood?

Dataset

Dataset: Health Survey for England, 1998 to 2022

- Yearly cross - sectional survey.
- All participants are interviewed, then invited for nurse visit for biological measurements (e.g., saliva sample) several days later.

Participants

- Adults aged ≥ 25 included if they currently smoke cigarettes.
- 26,480 interviewed
- 13,630 provided saliva sample

Exposure

Age of starting smoking:

“How old were you when you started to smoke cigarettes?”

They could provide any age in years.

Outcomes

A. Saliva cotinine (ng/ml)

Saliva cotinine is a precise and widely validated biomarker of recent nicotine intake

B. Cigarettes per day

Asked the number of cigarettes they consume on weekends and weekdays, to construct mean cigarettes per day

C. Smoking soon (<15 mins) after waking

Asked “*How soon after waking do you usually smoke your first cigarette?*”

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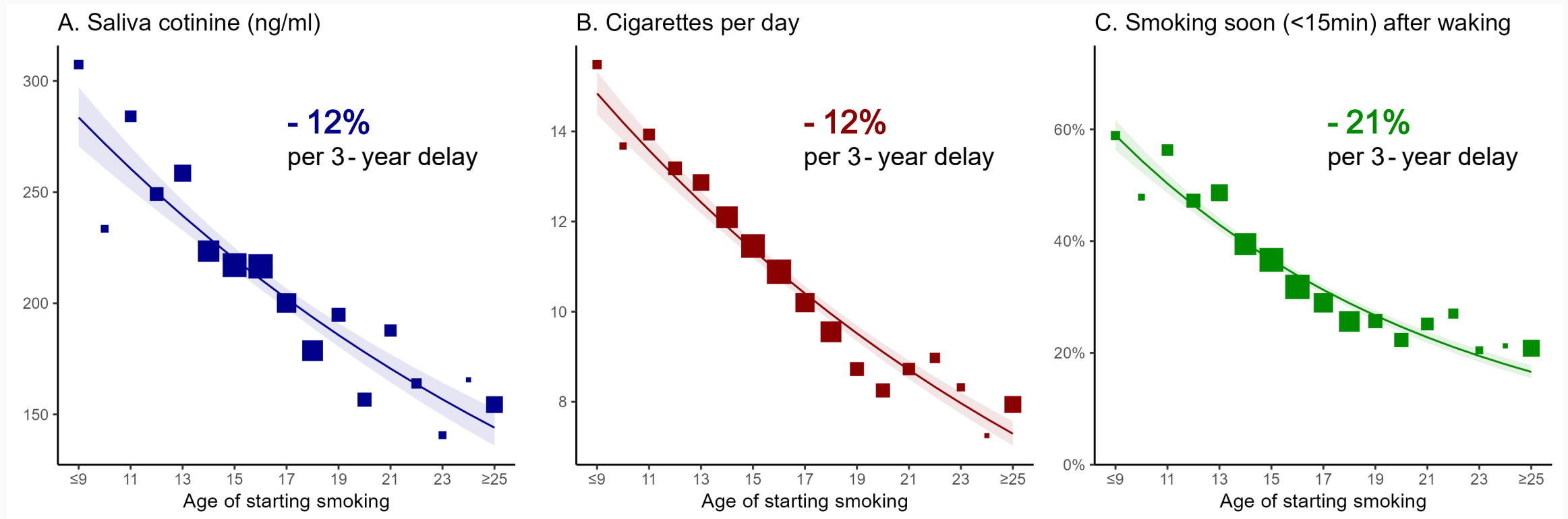
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Analysis

- Log-linear (for **Saliva cotinine** / **Cigarettes per day**) and log-binomial (for **Smoking soon after waking**) regression.*
- Before and after covariate adjustment.
- Estimated relative percentage change in each outcome for every 3-year delay in starting smoking.

*Analyses conducted in R, accounting for complex survey design and weighting.

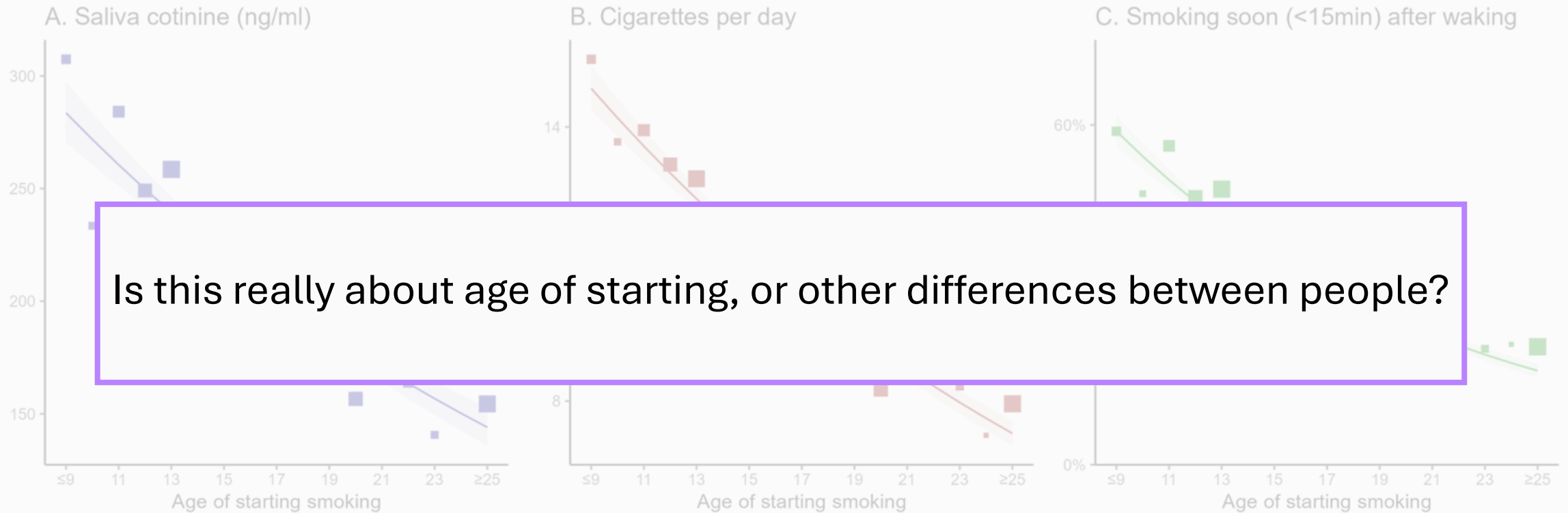
Results



Cigarette dependence by age of starting smoking among smokers (aged ≥ 25) in England.

Unadjusted for covariates.

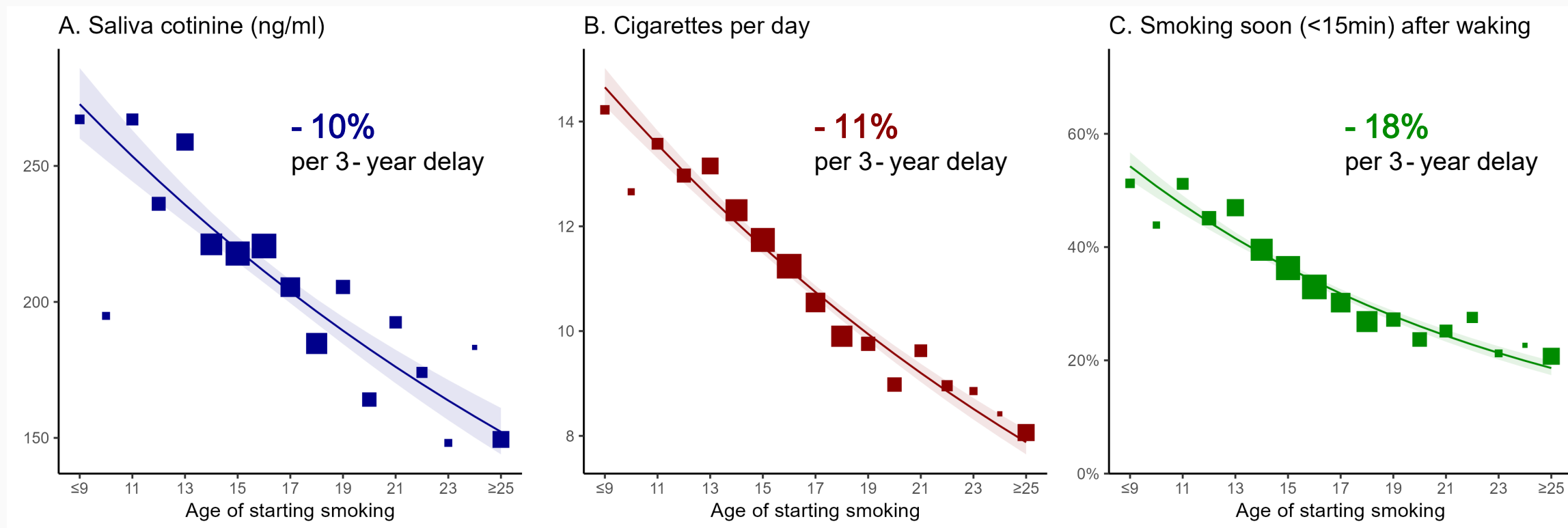
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Results, after covariate adjustment



Cigarette dependence by age of starting smoking among smokers (aged ≥ 25) in England.

Adjusted for covariates: current age, sex, housing tenure, social grade, education, and survey year .

Results, summary

- In England, people who start smoking earlier in life become more dependent than those who start later.
- The effect sizes were large:

Starting at age 10 is associated with **double** the nicotine intake and cigarettes per day compared with starting at 24.

- Associations found across all birth cohorts.

What explains this?

1. Sensitive period

2. Length of smoking

3. Confounding

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Smoking earlier in the process of neurological development may make one especially susceptible to dependence.

2. Length of smoking

3. Confounding

What explains this?

1. Sensitive period

2. Length of smoking

People who started smoking younger will typically have been smoking for longer, leading to more prolonged reinforcement.

3. Confounding

What explains this?

1. Sensitive period

2. Length of smoking

3. Confounding

Association may not be causal. Risk of collider/selection bias and unmeasured confounding.

Conclusions: What this means for policy

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↓ Initiation

↓ Dependence

However: Policies need to be evaluated directly

Find out more

Thanks to all my co - authors!

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