

# Exposure to secondhand smoke in cars and homes, and e-cigarette use among 10-11 year old children in Wales

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# Secondhand smoke exposure

- Harms of secondhand smoke are now well established (WHO 2004)
  - In recognition of these harms, legislation was introduced in Wales in 2007
  - Children appear particularly vulnerable due to rapid breathing rate and developing lungs (Oberg et al. 2005).
  - While ‘smoke-free’ legislation aimed primarily to protect adults such as hospitality workers effects on children received significant attention



# Childhood SHS exposure before and after legislation

- Surveys before and after 2007 'smoke-free' legislation showed small declines in childhood secondhand smoke exposure (CHETS Wales: Holliday et al. 2009)
  - Contradicting tobacco lobby 'concerns' that smoking would be displaced into the home
  - Increasing body of international evidence indicates that introduction of smoke free legislation was commonly be followed by voluntary restrictions on smoking in private spaces (Mons et al. 2013)
  - De-normalisation rather than displacement?

# Smoking in 'private' spaces

- But large proportions of children continued to be exposed to SHS in cars and homes
  - 1 in 5 children reported that smoking was allowed in their car
  - 1 in 3 that smoking took place in their home
- Exposure particularly high among children from poorer families (Moore et al. 2011; 2012)
  - Hence, childhood SHS exposure continues to be a public health problem, and a key mechanism in the reproduction of inequality

# Smoking in 'private' spaces

- Attention has therefore moved to understanding how to limit childhood SHS exposure in spaces such as cars and homes
- In 2011, the Welsh Government announced renewed emphasis on reducing childhood SHS exposure, with the Fresh Start Wales launched in 2012
- It announced that if smoking in cars had not sufficiently declined by 2014, legislative options would be considered



# Change in smoking in private spaces since legislation?

- A replication of the earlier surveys (CHETS Wales 2) conducted before and after 2007 legislation was commissioned to examine changes in exposure to smoke in cars (and homes)
- This survey took place against a background of intense political emphasis on smoking in cars
  - House of commons vote in early 2014 gave Westminster authority to legislate
- Hence, no attempt is made to make causal attributions (e.g. to say change occurred as a result of Fresh Start Wales)

# E-cigarette use

- While commissioned primarily to examine childhood SHS exposure, the survey included measures on e-cigarette use
- This became an increasingly divisive issue in international public health between the time the survey was commissioned and conducted
  - E.g. Welsh Government consultations on whether to ban e-cigarette use in public places

# Potential benefits of e-cigarettes?

- E-cigarettes are not harmless, but are less harmful than tobacco
  - if smokers were to switch to e-cigarettes, this would most likely produce substantial public health benefits
- Concerns that regulating and limiting visibility of e-cigarettes may have the perverse effect of protecting tobacco markets?





# Potential harms of e-cigarettes?

- Are they toxic to non-users (i.e. secondhand vaping?)
  - Being 'less toxic' than cigarette smoke may not be sufficient reason to ignore effects on air quality
- Are they used by non-smokers?
  - Harm reduction arguments hold no weight if users would not have otherwise been using tobacco
- Do they play a role in encouraging the uptake of smoking?
  - Renormalisation of the appearance of smoking?
  - 'Gateway' into active smoking for children?
    - Are any benefits achieved by smokers switching to e-cigarettes offset by the creation of a new generation of smokers?

## But what does the evidence tell us?

- Many in the public health community have already firmly chosen a side, and debate has become highly polarised
- But as recognised by WHO (2014), neither of these positions is really based on much evidence
  - Claims that e-cigarettes are effective for smoking cessation are not supported by evidence (and should be banned until they are)
  - Potential toxicity to non-users not yet fully understood (and use indoors should be restricted until it is)
  - Evidence for gateway effects and renormalisation currently non-existent (more evidence needed)

# But what does the evidence tell us?

- This lack of evidence is inevitable – they are a new phenomenon and the evidence base has yet to catch up
  - Need for dispassionate testing of hypotheses being advanced on both sides of the current debate
  - In addition to new items on e-cigarette added for the 2014 survey, the CHETS Wales surveys included items on smoking behaviour, parental smoking and smoking intentions
    - Opportunities to examine prevalence of e-cigarettes use among never smoking young children (10-11 years), and links with parental smoking and intentions to smoke

# Research questions

## Smoking in private spaces

- Has the adoption of smoking restrictions in cars and homes increased in Wales from 2008 to 2014?
- Have socioeconomic inequalities narrowed, widened or remained the same?
- Are increases in smoking restrictions reported among children of smokers?

## E-cigarette use

- How prevalent is e-cigarette use among 10-11 year old children in Wales?
- Is use of e-cigarettes more common among children of smokers?
- Are children who have used e-cigarettes more likely to report an intention to smoke tobacco?

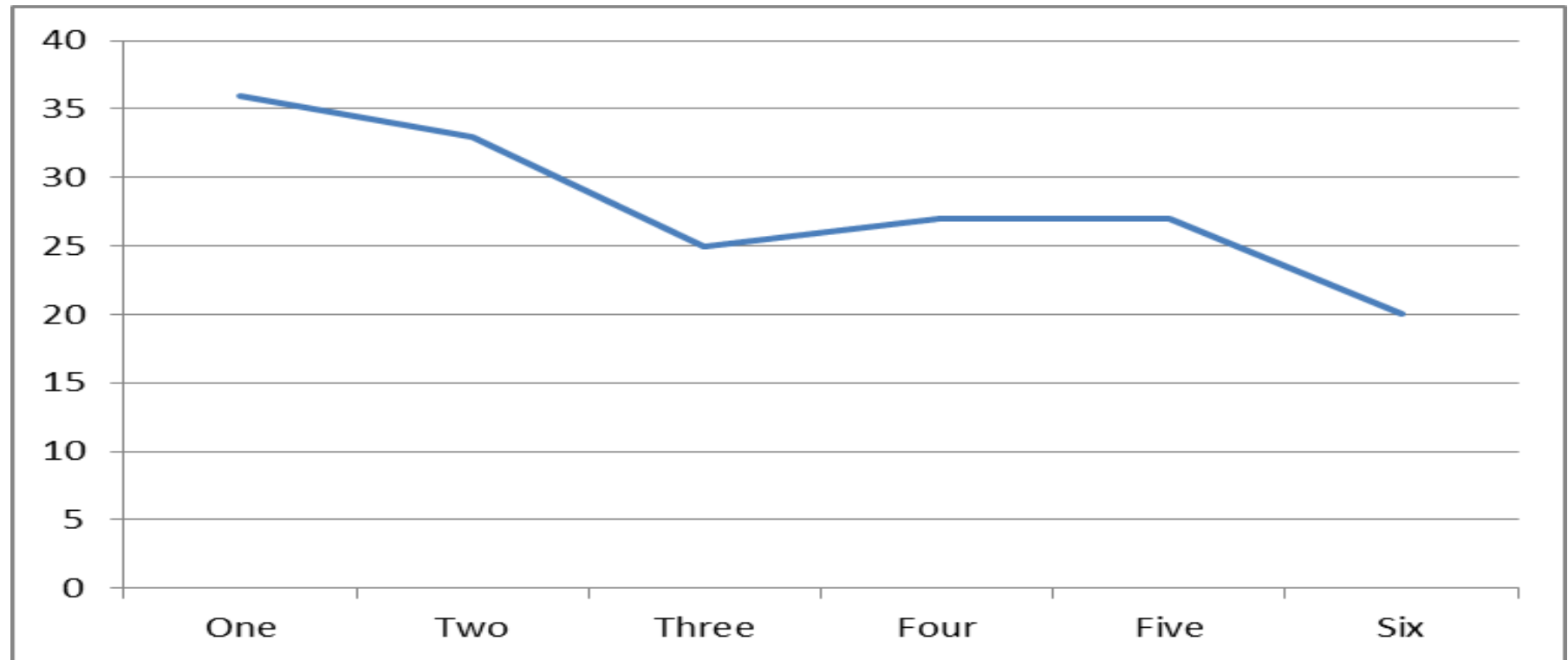
# Methods

- 75 schools in Wales
  - Same schools who participated in 2007-08 surveys approached
  - 51 of the original schools took part
  - Any who declined replaced by another matched on area/FSM entitlement
- Self-completion measures of SHS exposure in homes and cars, e-cigarette use and demographics
- Validated against salivary cotinine from 2007-08 data (though no saliva collected in 2014)

# Key findings : smoking in cars

		Smoking allowed in family car?*				In car where someone smoking yesterday?
		Yes	No	Don't know	No car	
<b>Whole sample</b>	2007	327 (20.4)	926 (57.8)	231 (14.4)	118 (7.4)	107 (6.9)
	2008	288 (18.0)	965 (60.3)	234 (14.6)	114 (7.1)	107 (6.7)
	2014	141 (8.9)	1140 (71.7)	195 (12.3)	115 (7.2)	57 (3.6)
<b>Children of adults who smoke</b>	2007	301 (38.6)	272 (34.9)	114 (14.6)	92 (11.8)	102 (13.5)
	2008	259 (34.8)	284 (38.2)	123 (16.5)	78 (10.4)	98 (13.3)
	2014	131 (19.6)	371 (55.5)	87 (13.0)	79 (11.8)	46 (7.0)

# Percentage of children reporting exposure to SHS in a car at least sometimes by family affluence score (high score=high affluence)



# Smoking in the home

- In 2008, 67% of children reported that they did not have a parent figure who smoked in their home, rising to 78% in 2014.
- Similarly, the percentage of children living in smoke free homes (i.e. reporting that smoking was not allowed in their home at all) increased from 63% to 74%).
  - Among children with at least one parent who smoked, those reporting that their home was smoke free were a clear minority in 2008 (34%).
  - However, in 2014, half (51%) of children with one or more smoking parent figure reported living in a home where smoking was not allowed.



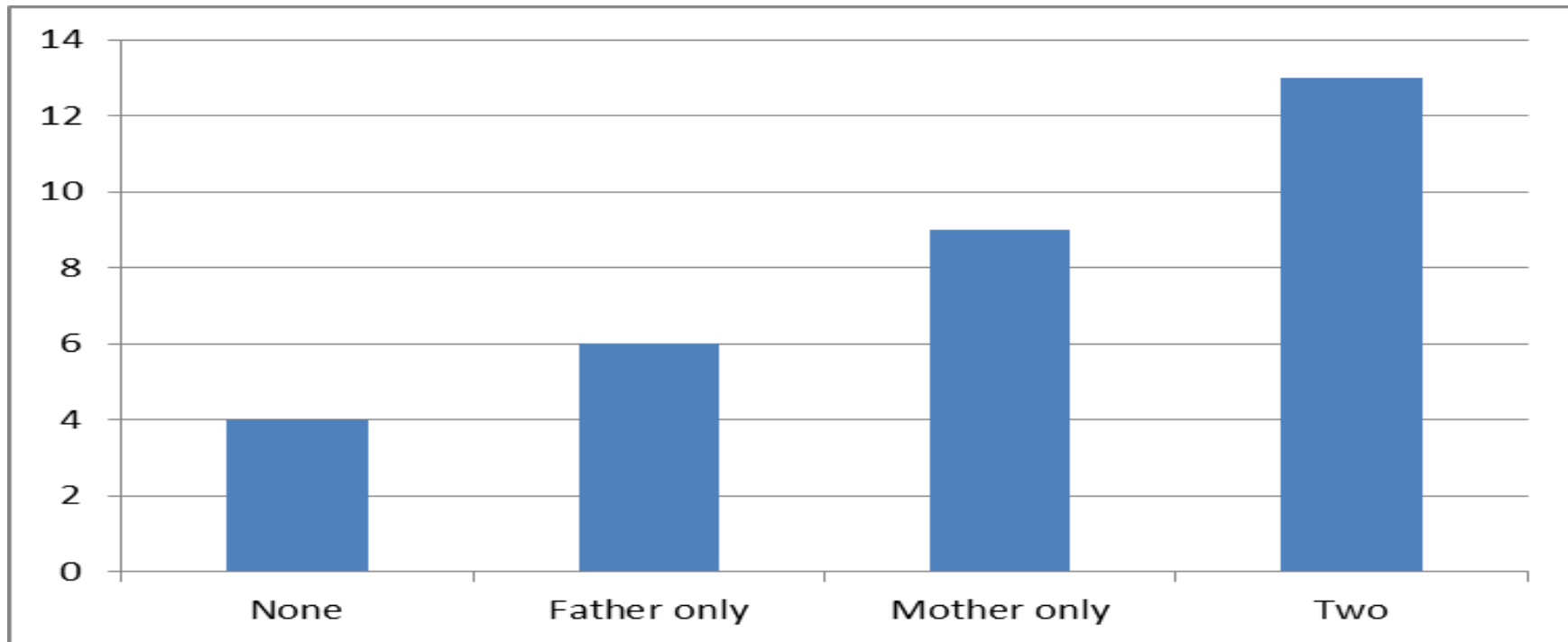


# E-cigarette use

- Few children of this age report having ever tried smoking tobacco (2%)
- However, the percentage who report that they have ever used an e-cigarette was 3 times as high (6%)
  - Hence, at this age, the majority of children who have used an e-cigarette have never used tobacco



# Percentage of children who have used e-cigarettes by number of parent figures who smoke tobacco



# E-cigarette use and future smoking intentions (among never smoking children)

- Very few children say that they probably or definitely will smoke within the next 2 years
- Children who report that they have used an e-cigarette however demonstrate weaker antismoking intentions than those who have not
  - Substantially less likely to say that they definitely will not take up smoking (71% vs 93%)
  - Substantially more likely to say that they might (12 vs 2%)

# Discussion - main findings

- SHS exposure in cars and homes has fallen substantially since 2008
  - But a substantial proportion of children remain exposed, particularly children from poorer families
- E-cigarette use appears to represent a new form of childhood experimentation with nicotine, which is substantially more prevalent than tobacco in this age group
  - E-cigarette use is more common among children of smokers
  - Children who have used an e-cigarette report weaker anti-smoking intentions

# Key limitations

- **Self-report measures**
  - Measures of SHS exposure validated. How valid are child reports of e-cigarette use?
- **Causality**
  - We do not know what caused reductions in SHS exposure
    - Continuation of denormalisation processes observed around the time of legislation?
    - Did campaigns such as Fresh Start Wales contribute?
  - We also don't know whether weaker anti-smoking intentions precede or follow from e-cigarette use

# Conclusions

- The Welsh Government has announced that it will ban smoking in cars carrying children
  - Research needed to understand effects on child health, and issues such as enforcement and compliance
  - Continued effort needed to reduce childhood exposure to SHS in homes, which remain the main location of exposure
- Further research using longitudinal designs is needed to understand
  - The role of e-cigarettes in the formation of smoking intentions
  - Whether these lead to tobacco smoking
- Further research to understand whether e-cigarettes can be promoted as a smoking cessation aid, while limiting use by non-smokers, including children, is a crucial direction for research

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