

## Outline of Key Research Questions, Key Outcome Variables, and Potential Effect Sizes:

### Smoke-Free Multiunit Housing Policy Quasi-Experimental Study

Key Research Questions	Key Outcome Variables	Policy Type	Study Design and Population	Effect Size	Source
5 What is the health impact of regulatory smoke-free MUH policy on MUH residents?	a. Frequency of having respiratory and sensory symptoms among both adults and children	Smoking ban in workplaces	Pre-post longitudinal follow up design, hospitality workers in New York	Respiratory symptoms: no change in overall prevalence.  Sensory symptoms: declined from 88% to 38% (P<0.01)	Farrelly, MC et al. Changes in hospitality workers' exposure to secondhand smoke following the implementation of New York's smoke-free law. Tobacco Control 2005; 14:236
		Smoking ban in indoor workplaces	Natural experiment, cohort, pre-post test with control group, non-smoking bar staff in Scotland	<b>Intervention area:</b> percent of people reporting any respiratory symptoms dropped from 65% at baseline to 49% at follow-up (P=0.001); percent of people reporting any sensory symptoms dropped from 67% to 45% (P<0.001)  <b>Control area:</b> no significant change for either type of symptoms	Allwright, S et al. Legislation for smoke-free workplaces and health of bar workers in Ireland: before and after study. BMJ 2005; 331: 1117
	b. Occurrence of asthma attacks among both children and adults	Not available	Not available	Not available	Not available
	c. Number of outpatient visit, ER visit related	National smoking ban in indoor	Hospitalization data pre- and post-policy adoption, children	Before the legislation was implemented, admissions for asthma were increasing	Mackay, D et al. Smoke-free legislation and hospitalizations for childhood asthma. New England Journal of

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	to asthma among both children and adults	public places	under 15 years old	at a mean rate of 5.2% per year (95% confidence interval [CI], 3.9 to 6.6). After implementation of the legislation, there was a mean reduction in the rate of admissions of 18.2% per year relative to the rate on March 26, 2006 (95% CI, 14.7 to 21.8; $P < 0.001$ ).	Medicine 2010; 363: 1139
	d. Lifetime incidence of heart attack among adults	Smoking ban in public buildings	Data on all AMI patients undergoing coronary angiography at the only tertiary hospital in the Canton of Graubunden, Switzerland, pre- and post-policy adoption comparison	The number of patients was 229 and 242 in the two years before policy adoption, respectively; and the number dropped to 183 (22% reduction) in the first year after policy adoption and remained at similar level in the second year after policy adoption (188).	Bonetti, PO et al. Incidence of acute myocardial infarction after implementation of a public smoking ban in Graubunden, Switzerland: two year follow-up. Swiss Medicine Weekly 2011; 141:w13206
	e. Lifetime incidence of hospitalization due to heart attack among adults	Smoking ban in indoor public and workplaces	AMI hospital admission data before and after policy enforcement, in Helena Montana	The number of hospital admission due to AMI dropped 16 (95% CI: 31.7 to -0.3) during the six after the law was enforced compared to the time period before law enforcement.	Sargent, RP, Shepard, RM, Glantz, SA. Reduced incidence of admissions for myocardial infarction associated with public smoking ban: before and after study. BMJ 2004; 328: 977
		Smoking ban in indoor public and	AMI hospitalization data during the 1.5 years before policy	In intervention city Pueblo: AMI hospitalization rate decreased from 257/100 000	Bartecchi, C et al. Reduction in the incidence of acute myocardial infarction associated with a citywide smoking

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		workplaces	adoption and 1.5 years after policy adoption with a control city, in Pueblo City and El Paso County, Colorado	person-years before policy implementation to 187/100 000 person-years, RR=0.74 (95% CI: 0.64-0.86)  In control city El Paso: decreased from 132 to 112 per 100 000 person-years, RR=0.87 (0.64, 1.17)	ordinance. Circulation 2006; 114: 1490
		Smoking bans in indoor public places	A systematic review and a Meta-analysis of 11 reports from 10 study locations	AMI risk decreased by 17% overall (IRR: 0.83, 95% CI: 0.75 to 0.92), with the greatest effect among younger individuals and nonsmokers. The IRR incrementally decreased 26% for each year of observation after ban implementation.	Meyers, DG, Neuberger, JS, He, J. Cardiovascular effect of bans on smoking in public places: a systematic review and meta-analysis. Journal of the American College of Cardiology 2009; 54: 1249
	f. Self-reported SHS exposure at policy-targeted areas	Smoking ban in indoor workplaces	Natural experiment, cohort, pre-post test with control group, non-smoking bar staff	<b>Intervention area:</b> SHS exposure at work decreased from 40 hours to 0 from baseline to follow-up (P<0.001)  <b>Control area:</b> decreased from 42 to 40 hours (P=0.02)	Allwright, S et al. Legislation for smoke-free workplaces and health of bar workers in Ireland: before and after study. BMJ 2005; 331: 1117
		Smoking ban in indoor	Pre-post longitudinal follow up design,	SHS exposure at work declined from 12.1 hours to	Farrelly, MC et al. Changes in hospitality workers' exposure to secondhand smoke

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		workplaces	hospitality workers in New York	0.2 hours (P<0.001)	following the implementation of New York's smoke-free law. Tobacco Control 2005; 14:236
	g. Salivary cotinine concentration	National smoking ban in indoor public places	Repeated cross-sectional study, primary school children (mean age: 11.4 years) in Scotland	The geometric mean salivary cotinine concentration in non-smoking children fell from 0.36 (95% confidence interval 0.32 to 0.40) ng/ml to 0.22 (0.19 to 0.25) ng/ml after legislation	Akhtar, PC et al. Changes in child exposure to environmental tobacco smoke (CHETS) study after implementation of smoke-free legislation in Scotland: national cross sectional survey. BMJ 2007; 335:545
		Smoking ban in indoor workplaces	Natural experiment, cohort, pre-post test with control group, non-smoking bar staff	<b>With policy:</b> dropped 80%, from median 29.0 nmol/l (95% confidence interval 18.2 to 43.2 nmol/l) to 5.1 nmol/l (2.8 to 13.1 nmol/l)  <b>Without policy:</b> dropped 20% (from median 25.3 nmol/l (10.4 to 59.2 nmol/l) to 20.4 nmol/l (13.2 to 33.8 nmol/l))	Allwright, S et al. Legislation for smoke-free workplaces and health of bar workers in Ireland: before and after study. BMJ 2005; 331: 1117
		Smoking ban in workplaces	Pre-post longitudinal follow up design, hospitality workers in New York	Decreased from 3.6 ng/ml (95% CI 2.6 to 4.7 ng/ml) to 0.8 ng/ml (95% CI 0.4 to 1.2 ng/ml) (p < 0.01)	Farrelly, MC et al. Changes in hospitality workers' exposure to secondhand smoke following the implementation of New York's smoke-free law. Tobacco Control 2005; 14:236
		National smoking ban	Repeated cross-sectional study,	The geometric mean salivary cotinine	Haw, SJ and Gruer , L. Changes in exposure of adult non-smokers to

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		in indoor public places	nonsmoking adults in Scotland	concentrations fell by 49% (40% to 56%), from 0.35 ng/ml to 0.18 ng/ml (P<0.001)	secondhand smoke after implementation of smoke-free legislation in Scotland: national cross sectional survey. BMJ 2007; 335: 549
	h. Fine secondhand smoke particle (PM <sub>2.5</sub> ) concentration	Smoking ban in indoor public places	Pre- and post-policy adoption comparison in 40 selected indoor public places including restaurants, game rooms, pubs in Rome, Italy	In the post-law period, PM2.5 decreased significantly from a mean concentration of 119.3 microg/m <sup>3</sup> to 38.2 microg/m <sup>3</sup> after 3 months (p<0.005), and then to 43.3 microg/m <sup>3</sup> a year later (p<0.01).	Valente P, et al. Exposure to fine and ultrafine particles from secondhand smoke in public places before and after the smoking ban, Italy 2005. Tobacco Control 2007; 16:312
	i. Cigarette consumption among adult respondents	National smoking ban in indoor areas in Norway in 2004	Pre- and 4 months post-policy implementation comparison, repeated cross-sectional telephone study, a national sample of food service workers	The number of cigarettes smoked by continuing smokers decreased 1.55 (P<0.001)	Braveman, MT, Aaro, LE, Hetland, J. Changes in smoking among restaurant and bar employees following Norway's comprehensive smoking ban. Health Promotion International 2008; 23:5

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		Smoking ban in indoor workplaces	Repeated cross-sectional study. Surveys were conducted at 6 months before, 6 months after, and 18 months after policy implementation among a random sample of telecom workers	A reduction in workday cigarette consumption of 3 to 4 cigarettes a day was observed at 6 and 18 months after policy adoption. Smoking prevalence dropped about 5 per cent 18 months after policy implementation	Borland, R, Owen N, Hocking, B. Changes in smoking behaviour after a total workplace smoking ban. Australian Journal of Public Health 1991;15:130
	j. Quitting intention / attempt among adult residents	Not available	Not available	Not available	Not available
<b>6</b> What is the social impact of regulatory smoke-free MUH policy on MUH residents and operators?	a. Total number of days unable to work or do normal activities due to asthma among adult residents	Not applicable	Not applicable	Not applicable	Not applicable
	b. Knowledge, attitudes, and beliefs regarding secondhand smoke exposure among adult residents	Smoke-free campus policy	Repeated cross-sectional surveys with a nested 4-wave longitudinal cohort design. Baseline of 3,266 Indiana University and Purdue University undergraduates and follow-up of 3,207	<b>Intervention area:</b> Change in attitude from 2007-2009 toward regulation of smoking in public places pre- and post- adoption=6.7% change (83.2% to 89.9%, p<0.01)  <b>Control area:</b>	Seo DC, Macy JT, Torabi MR, Middlestadt SE. The effect of a smoke-free campus policy on college students' smoking behaviors and attitudes. Prev Med. 2011 Aug 9.

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				Change in attitude from 2007-2009 toward regulation of smoking in public places=-4.2% change (91.3% to 87.1%)  <b>Intervention &amp; Control:</b> Difference in change between intervention & control=10.9 (P<0.01)	
	c. Operators' self-reported barriers and facilitators of MUH policy adoption, implementation and enforcement	Not applicable	Not applicable	Not applicable	Not applicable
	d. Operators' knowledge, attitudes, and beliefs about smoke-free MUH policies	MUH policy	Cross-sectional telephone and in-person survey with 241 Western New York State MUH residents	Odds ratio of interest among MUH operators (government-subsidized units vs. none) in restricting smoking in units=3.12, 95% CI = 1.14-8.52	King BA, Travers MJ, Cummings KM, Mahoney MC, Hyland AJ. Prevalence and predictors of smoke-free policy implementation and support among owners and managers of multiunit housing. Nicotine Tob Res. 2010 Feb;12(2):159-63.
7 What is the cost-effectiveness	a. Smoking-related operation cost	Smoke-free bars and restaurants	Pooled time series cross-sectional design with data from	Increase of total revenue in city-quarters due to comprehensive local ban	Collins NM, Shi Q, Forster JL, Erickson DJ, Toomey TL. Effects of

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ss of regulatory MUH smoke-free policies?	saving		10 Minnesota cities from 2003 to 2007	compared to those with no or partial ban=0.026% (p=0.05)	clean indoor air laws on bar and restaurant revenue in Minnesota cities. Am J Prev Med. 2010 Dec;39(6 Suppl 1):S10-5.
		MUH policy	Zero-inflated negative binomial model of property smoking-related costs of 343 California MUH complexes	Cost savings due to a comprehensive smoke-free policy=\$1,339 per property per year	Ong MK, Diamant AL, Zhou Q, Park HY, Kaplan RM. Estimates of Smoking-Related Property Costs in California Multiunit Housing. Am J Public Health. 2011 Aug 18.
	b. Smoking-related unit turn-over cost saving	Not available	Not available	Not available	Not available