

Reducing Tobacco Use and Secondhand Smoke Exposure: Smoke-Free Policies

Summary Evidence Tables for the Updated Search Period (2000-2011)

Secondhand Smoke Exposure

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Akhtar 2010 2006-2007 Least Suitable (Before-after) Good (1 limitation) Mean saliva cotinine 11-year old students	Scotland National smoke-free legislation passed in 2006. Prohibits smoking in enclosed public areas and workplaces includes bars and restaurants Comparison: Before-after	Study Population: Two nationally class-based surveys of 11- year old students Participating schools: 2006: 116 (68%) of 170 schools 2007: 111 (65%) of 170 schools Survey participants: 2006: 2532 (86% response) 2007: 2389 (85% response)	Mean saliva cotinine level Note: study provided stratified analyses by SES	<u>2006</u> 0.35 ng/mL (95% CI: 0.32, 0.37)	<u>2007</u> 0.20 ng/mL (95% CI: 0.19, 0.22)	<u>Absolute diff.</u> -0.15 ng/mL <u>Relative change</u> -42.9% <u>Linear regression</u> (Adjusted) B -0.61 (95% CI: -0.77, -0.45) P <0.001	1 year
Bohac 2010 (2007-2008) Least suitable (Before-after) Good (1 limitation) Air quality: PM _{2.5} Bars Limited service Full service	Minnesota State-wide smoke-free policy. Comprehensive law extending smoke-free requirements to bars and bar-restaurant. Implemented October 2007 Comparison: Before-after	Statistically representative sample three venue types within 20 miles of Minneapolis N Eligible: 395 venues N selected: 65 venues N analyzed(completed) 62 (95%) <u>N sample</u> Drinking places (bars) 19 Ltd. service restaurants 9 Full service restaurants 37	Median indoor air particles level: PM _{2.5} : All venues N=62	52.1 µg/m ³	1.9 µg/m ³	<u>Absolute diff.</u> -50.2 µg/m ³ <u>Relative change</u> -96.4% (95% CI: 95%, 98.3%)	0-18 months post

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Brennan 2010 (2007) Least Suitable (Before-after) Fair (3 limitations) Indoor and adjacent outdoor Air quality: PM _{2.5} Pubs and bars	Australia; Melbourne Victoria state legislation Tobacco act 2000, 2005 July 2007 ban extended to indoor areas of pubs and bars Note: most outdoor areas exempted Comparison: Before-after	Convenient sample of pubs and bars with adjacent outdoor areas located within 7km of Melbourne N eligible: NR N selected: 20 N analysis: 19 Note: one location violated smoking ban and was excluded	Geometric mean PM _{2.5}	61.3 µg/m ³	17.4 µg/m ³	<u>Absolute diff.</u> -43.9 µg/m ³ <u>Relative change</u> -71.6%	6 months
Carter 2008 (2004-2006) Least Suitable (Cross-sectional) Good (1 limitation) Air quality: RSPs µg/m ³ Bars/ restaurants	Charleston, SC 64 Bars/ restaurants <u>Smkng Non-smkng</u> Rest. 3 16 Bar 14 1 Both 28 2 Comparison: smoke-free venues vs. venues in which smoking is allowed	64 Bars/ restaurants in Charleston, SC listed as "restaurants, nightclubs, pubs, and bars" in Charleston County YellowPages.com	Overall average RSPs (µg/m ³)	<u>Smoking</u> 260 µg/m ³	<u>Smoke-free</u> 14 µg/m ³	<u>Absolute diff.</u> -246 µg/m ³ P<0.001 <u>Relative change</u> -94.6%	N/A
Connolly 2009 (2004-2006) Greatest Suitable (Other design with concurrent comparison) Fair (3 limitations) Air quality: PM _{2.5} Irish style pubs	15 countries Various national/state/ local laws regarding smoking in pubs Comparison: smoke-free pubs vs. pubs in which smoking is allowed	Selected countries: N=15 countries Selected pubs: N=128 Smoke-free pubs: N=41 Smoking permitted: N=87	Overall average PM _{2.5}	<u>Smoking permitted</u> 329 µg/m ³ 263 µg/m ³	<u>Smoke-free</u> 23 µg/m ³ 14 µg/m ³	<u>Absolute diff.</u> -306 µg/m ³ P <0.001 <u>Relative change</u> -93.0% <u>Absolute diff.</u> -249 µg/m ³ <u>Relative change</u> -94.7%	NA

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time												
Dove 2010 (1999-2006; subset analysis 2003-2006) Greatest Suitable (Other design with concurrent comparison) Fair (3 limitations) Saliva cotinine levels Non-smoking youth (NHANES)	United States; 117 counties Categories on smoking policies for workplaces, restaurants and bars: No: Limited: no state or county law but at least one city law Extensive: at least one law state or county Comparison: No smoke-free law	Study Population: -Non-smoking youth aged 3-19 years participating in NHANES N eligible: NR N included: 11,486 (subset: 5637) Subjects by exposure: <table border="1" data-bbox="596 584 989 698"> <thead> <tr> <th>Policy</th> <th>Counties</th> <th>Subjects</th> </tr> </thead> <tbody> <tr> <td>No</td> <td>80</td> <td>7361 (3317)</td> </tr> <tr> <td>Limited</td> <td>11</td> <td>1111 (681)</td> </tr> <tr> <td>Extensive</td> <td>26</td> <td>3014 (1639)</td> </tr> </tbody> </table>	Policy	Counties	Subjects	No	80	7361 (3317)	Limited	11	1111 (681)	Extensive	26	3014 (1639)	Geometric mean cotinine (Subset) Linear regression (Adjusted Model 2) Non-smoking homes Smoking homes	<u>No Policy</u> 0.128 ng/mL	<u>Extensive</u> 0.051 ng/mL	<u>Absolute diff.</u> -0.077 ng/mL <u>Relative change</u> -60.2% <u>Ratio of GM</u> 0.57 (95% CI 0.41, 0.79) P=0.002 0.98 (95% CI 0.75, 1.28) P=.860	NA
Policy	Counties	Subjects																	
No	80	7361 (3317)																	
Limited	11	1111 (681)																	
Extensive	26	3014 (1639)																	

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
<p>Edwards 2009 Large-scale evaluation of S-F ban using several different studies/ surveys (1990-2007 overall) Moderate/Least (time series/before- after) Good (1 limitation)</p> <p>Self-report SHS exposure</p>	<p>New Zealand</p> <p>Partial restriction to a full comprehensive national ban, effective December 2004</p> <p>Comparison: before-after</p>	<p>Study population varies by study/ survey; adults, children (students), and the Maori people were examined</p> <p>Sample sizes vary by survey</p> <p><u>HSC Monitor Surveys</u> Nationally representative, 2000- 2500 persons aged 15+, over- sampling of Maori.</p> <p><u>ASH Year 10 Smoking survey</u> ~30,000 14-15 year-old school children</p>	<p><u>% reporting workplace SHS exposure from others smoking indoors in the previous week</u></p> <p>Maori All employed adults</p> <p><u>Additional evidence SHS in home (any smoking by other person in home in past 7 days)</u></p> <p>Maori houses Non-maori houses</p> <p><u>% students reporting smoking in the home</u></p> <p>2005 37% of year 10 students in schools in decile 1-2 (schools in most disadvantaged areas) reported smoking in home, compared with 17% of students in decile 9-10 schools. (Scragg, 2006)</p>	<p>27.2% 18.7%</p> <p>31% 18%</p> <p><u>2001</u> <u>2004</u> 30.5% 27.1%</p>	<p>8.9% 7.5%</p> <p>16.7% 8.4%</p> <p><u>2006</u> 26.5%</p>	<p><u>Absolute diff.</u> -18.3 pct. pts. -11.2 pct. pts.</p> <p><u>Relative change</u> -67.3 % -59.9 %</p> <p><u>Absolute diff.</u> -14.3 pct. pts. -9.6 pct. pts.</p> <p><u>Relative change</u> -46.1 % -53.5 %</p> <p><u>Absolute diff.</u> 2001: -4 pct. pts., 2004: -0.6 pct. pts.</p> <p><u>Relative change</u> 2001: -13.1 % 2004: -2.1 %</p>	<p>Various; up to 3 years</p>

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Ho 2010 (2006-2008) Least Suitable (Before-after) Fair (4 limitations) Home and Outdoor SHS exposure in past 7 days Prevalence of respiratory symptoms	Hong Kong, China Jan 2007 ordinance bans smoking all indoor eating places, workplaces, shops, markets, playgrounds, escalators, beaches and most parks. Previously, smoking had been banned in public transport carriers, shopping malls, hospitals and partially banned in restaurants with more than 200 seats. Comparison: Before-after	Two cross-sectional school-based surveys were conducted among primary 2-4 students (US equivalent of grades 2-4) Participating schools: 2006 19 schools (68% response) 2008 24% (83% response) Survey participants: 2006: 3,243 (96% response) 2008: 4,965 (93% response)	<u>SHS exposure in past 7 days (% reporting):</u> Home Outside home Anywhere	<u>2006</u> 10.2% 19.8% 23.2%	<u>2008</u> 14% 27.2% 31.2%	<u>Absolute diff.</u> 3.8 pct. pts. 7.4 pct. pts. 8 pct. pts. <u>Relative change;</u> <u>Adjusted OR;</u> <u>(95% CI)</u> 37.3%; 1.56; (1.25 to 1.92) 37.4%; 1.60; (1.26 to 2.03) 34.5%; 1.54; (1.25 to 1.89)	1 year

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
<p>Holliday 2009 (2007 - 2008). Least Suitable (Before-after)</p> <p>Good (1 limitation)</p> <p>Self-report SHS exposure/ geometric mean salivary cotinine concentrations</p>	<p>Wales, UK</p> <p>S-F legislation implemented in Wales in April 2007 prohibited smoking in most public places.</p> <p>Comparison: Before-after</p>	<p>Two national class-based surveys and salivary cotinine assay of 1,750 year 6 (aged 10-11) children from 75 primary schools</p> <p>63% of original 80 schools responded. More schools were later added, bringing the total to 75.</p> <p>Survey participants: Pre: 1611 students Post: 1605 students 71 out of 75 schools analyzed pre- and post.</p>	<p><u>Adjusted Geometric mean salivary cotinine conc. (ng/mL)</u></p> <p><u>% Self-reporting SHS exposure: Yes</u></p> <p>Home</p> <p>Car</p>	<p><u>2007</u> 0.17 (.14 - .20)</p> <p><u>N (%)</u> 328 (20.67)</p> <p>107 (6.86)</p>	<p><u>2008</u> 0.15 (0.13- 0.18)</p> <p><u>N (%)</u> 313 (19.81)</p> <p>107 (6.74)</p>	<p><u>Absolute diff.</u> -0.02 ng/mL P = 0.07</p> <p><u>Relative change</u> -11.8%</p> <p>Homes: <u>Absolute diff.</u> -0.86 pct. pts.</p> <p><u>Relative change</u> -4.2%</p> <p>Cars: <u>Absolute diff.</u> -0.12 pct. pts.</p> <p><u>Relative change</u> -1.7%</p>	<p>10-13 months</p>
<p>Hyland 2008 2003-2007 Greatest Suitable (Other design with concurrent comparison) Fair (4 limitations)</p> <p>Indoor air quality PM 2.5</p>	<p>32 countries</p> <p>National or regional comprehensive smoke- free laws (Ireland, New Zealand and Uruguay)</p> <p>Comparison: National or regional policies permitting smoking in at least some indoor venues</p>	<p>Study population: -32 study nations -Convenient samples of venues in 32 study nations Venues categorized into: -Bars -Restaurants -Transportation -Other</p> <p>N=1822</p>	<p>Geometric mean indoor air quality RPS-PM_{2.5}</p>			<p>PM_{2.5} levels were 89% lower in nations with comprehensive smoke-free regulations</p>	<p>Not reported</p>

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
<p>Jensen 2010 (2007) Least suitable (Before-after) Good (1 limitation)</p> <p>Urinary cotinine, urinary NNAL, self- report exposure</p>	<p>Minnesota, USA</p> <p>Effective October 1, 2007, a comprehensive statewide law prohibited smoking in virtually all indoor workplaces, including bars and restaurants</p> <p>Comparison: Before-after</p>	<p>Non-smoking bar, restaurant, and bowling alley employees who reported work exposure to tobacco smoke and who lived in a nonsmoking household</p> <p>N consented by phone: 31 N returned pre + post samples: 24</p>	<p>Urinary cotinine levels, adjusted per mg creatinine</p> <p>Urinary total NNAL.</p> <p>Hours in smoking areas (work)- self report</p>	<p>NR LOD-1,820</p> <p>NR LOD-0.763</p> <p>7.2 hours</p> <p>*LOD- Limit of detection</p>	<p>NR LOD-651</p> <p>NR LOD-0.509</p> <p>N/R</p>	<p><u>Median percent decrease after the ban</u> -78.6%</p> <p><u>Median difference</u> -6.9 P= <0.001</p> <p><u>Geometric mean of before/ after (CI):</u> 9.3 (5.1-16.9)</p> <p><u>Median percent decrease after the ban</u> -56.5%</p> <p><u>Median diff.</u> 0.018 P= <0.001</p> <p><u>Geomet. mean of before/ after (CI):</u> 19.8 (5.4-72.8)</p> <p><u>Absolute diff.</u> ~-7.2 hours</p> <p><u>Relative change</u> ~100%</p>	<p>4-8 weeks</p>

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Kim 2009 (2005) Least suitable (cross-sectional) Good (1 limitation) Self-report exposure	South Korea Effective April, 2003, a national workplace smoking ban legislation implemented, requiring office buildings bigger than 3,000 square meters (in case of total office buildings or bigger than 2,000 square meters in case of multipurpose building) to make places such as offices, meeting rooms and lobby as smoke free Comparison: no smoking ban	Adults 20-65 excluding self-employed and non-working populations Follow up: N/A n= 1,414 of 3,122 for SHS Exposure outcome	Self-report SHS exposure- hours exposed to second hand smoke per day in work area specifically		<u>Partial ban regression coefficient</u> -1.356 <u>Full ban regression coefficient</u> -1.744	<u>Partial:</u> (-1.706 to -1.007) P < 0.0001 <u>Full:</u> -2.092 to -1.395) P < 0.0001	N/A
Lee 2009 After July 2008 Least Suitable (Before-after) Fair (4 limitations) Indoor air quality RSP-PM _{2.5}	USA; Kentucky Three different smoke-free policies adopted by local governments 1)Smoke-free workplaces(ALL) and enclosed public places 2) Smoke-free workplaces including restaurants, bars and other businesses 3) Partial smoke-free laws protecting some but not all public Comparison: Before-After	Study Population: Community: Policy 1: 6 communities Policy 2: 4 communities Policy 3: 6 communities Selected hospitality venues and study communities N=89 venues	Indoor air quality RSP-PM _{2.5} Policy 1 Policy 2 Policy 3 (Partial) One community evaluated change in partial and comprehensive smoke-free policies	161 µg/m ³ Not reported Not reported 304 µg/m ³ (No policy)	20 µg/m ³ Not reported Community 1 276 µg/m ³ Community 2 133 µg/m ³ Partial: 338 µg/m ³ Comp: 9 µg/m ³	<u>Policy 1</u> <u>Absolute diff.</u> -141 µg/m ³ <u>Relative change</u> -87.6% NA NA	Not reported

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Marin 2010 2007 Least Suitable (Before-after) Fair (3 limitations) Indoor air quality RSP-PM _{2.5}	Puerto Rico; San Juan Smoke-free workplace policy adopted March 2007 -Banned indoor smoking in public places incl. bars, pubs, casinos, hotels, workplaces with more than one employee, and cars with any passenger under age 13 Comparison: Before-after	Study population: Random samples of discos and resturants in metropolitan San Juan N eligible 985 restaurants 60 pubs and discos f/u <u>N visited</u> <u>N analysis</u> <u>loss</u> Restrntrs 38 32 16% Pubs/ discos 27 23 15%	Indoor air quality RSP- PM _{2.5} Resturants Pubs and discos	0.169 mg/m ³ 0.626 mg/m ³	0.028 mg/m ³ 0.028 mg/m ³	<u>Absolute diff.</u> -0.141 mg/m ³ <u>Relative change</u> -83.4% P=0.013 GLS: B -1.119 (p <0.05) <u>Absolute diff.</u> -0.598 mg/m ³ <u>Relative change</u> -95.6% P=0.004 GLS: B -2.144 (p<0.05)	6-9 months post
Muller 2010 2007-2009 Least suitable (Before-after) Fair (4 limitations) Self-reported SHS exposure -Work -Home Self-reported smoking prevalence	Germany Federal and state smoke- free policies with exceptions (some pubs and discos) Comparison: Before-after	Study Population: -Propensity score matched participants in national survey 2006 and 2009 <u>Survey</u> <u>N</u> 2006 3706 2009 3706 <u>Survey</u> <u>Work exp</u> <u>Prevalence</u> 2006 1454 3706 2009 1500 3706	Self-reported daily SHS exposure at work Self-reported daily SHS exposure at home	20.5%	9.9%	<u>Absolute diff.</u> -10.6 pct pts <u>Relative change</u> -51.7% RRR(2009): 0.37 (95% CI: 0.3, 0.47) RRR (2009): 0.81 (95% CI: 0.64, 1.02)	Not reported

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
<p>Naiman 2011 2003 & 2005 Greatest suitability (Other design w/ concurrent comparison) Good (1 limitation)</p> <p>Canadians in 15 Ontario municipalities, ages 12+</p>	<p>Ontario, Canada</p> <p>Various laws btwn. 1994- 2004, depending on municipality. Bans varied by municipality, strength, and year of implementation; some were full, others were partial, some had exemptions, and they covered different settings/ locations</p> <p>Comparison: concurrent/ no policy</p>	<p>Two national telephone surveys of Canadians in 15 Ontario municipalities, ages 12+</p> <p>Survey participants: ~65,000 Canadians</p>	<p><u>Self-report SHS exposure in public places (% reporting)</u> None to Full</p> <p>Partial to Full</p> <p>None to partial</p>	<p>2003 27.7%</p> <p>17.6%</p> <p>20.7%</p>	<p>2005 10.4%</p> <p>10.4%</p> <p>11.5%</p>	<p><u>Absolute diff. (CI)</u> -17.3 pct. pts. (-22.8, -11.8)</p> <p><u>Relative change:</u> -62.5%</p> <p><u>Absolute diff. (CI)</u> -7.2 pct. pts. (-11.9, -2.54)</p> <p><u>Relative change</u> -41.9%</p> <p><u>Absolute diff. (CI)</u> -9.20 pct. pts. (-13.05, -5.35)</p> <p><u>Relative change</u> -44.4%</p>	<p>>2 years (exact unknown)</p>

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Nebot 2009 (2005- 2006) Least suitable (Before-after) Good (0 limitations) Air nicotine conc. workplaces, including hospitality venues	Eight different regions of Spain National law; bans smoking in all indoor workplaces but only in some hospitality venues, because owners are allowed to establish a smoking zone (venues > 100 m ²) or to allow smoking without restrictions (venues < 100 m ²) Enforced by 1 Jan. 2006. Comparison: Before-after	398 premises from 8 regions; not sure how regions selected N Eligible: ?? venues N selected: 443 venues N analyzed(completed) 398 (90%) <u>sample</u> private offices (162), public admin. offices (90) university premises (43), bars and restaurants (79) discotheques and pubs (24) non-proportional quota sampling based on type of setting and size of venue; then, convenience sampling based on the feasibility and accessibility of venue to researchers	Median nicotine concentration (µg/m3); Split into workplace and hospitality venue settings <u>Public admin.</u> <u>Universities</u> <u>Private sector</u> <u>Bars/ rest.</u> Total ban: Designated areas: Non-smoking area :	<u>2005:</u> 0.2 (µg/m3) 0.21 (µg/m3) 0.39 (µg/m3) 2.71 (µg/m3) 5.58 (µg/m3)	<u>2006:</u> 0.08 (µg/m3) 0.07 (µg/m3) 0.01 (µg/m3) 0.09 (µg/m3) 0.62 (µg/m3)	<u>Relative change:</u> <u>absolute diff.: p-</u> <u>val</u> -60.0%; -0.12 µg/m3; P<0.001 -66.7%; -0.14 µg/m3; P<0.001 -97.4%; -0.39 µg/m3; P<0.001 -96.7%; -2.62 µg/m3; P<0.001 -88.9%; -4.96 µg/m3 P=0.036	10-12 months post

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Reijula 2010 (1999-2007) Least Suitable (Repeated cross-sectional/ before-after) Fair (2 limitations) SHS Exposure (self-report) Restaurants	Finland In 2000, the Tobacco Act forced restaurants to make at least 30%, and in 2001 at least 50%, of their premises smoke-free areas for customers. Comparison: 1999, 2001, 2003, 2007 changes as SF policies/restrictions increase	Study Population: Members of PAM, the nat'l assoc. for workers, Service Union United (PAM). (55,000 workers in hotels and restaurants = ~ 75-85% of all hospitality industry workers) N eligible: 1/10 of the 30,000 eligible union members were approached to participate. N included: 1,025 in 1999 (34%), 1,121 in 2001(40%), 1,690 in 2003 (56.3%) 1,008 in 2007 (35.4%)	% no SHS exp. (all participants) Self-reported SHS exposure over 4 hours/day (for all participants)	1999 34 1999 46%	2001 2003 07 38 41 54 2007 24%	<u>Absolute diff. compared to 2007:</u> 2003: 13 pct. pts. 2001: 16 pct. pts. 1999: 20 pct. pts. <u>Relative change, compared to 2007:</u> 2003: 31.7% 2001: 42.1% 1999: 58.8% P < 0.0001 <u>Absolute diff.</u> -22 pct. pts. <u>Relative change:</u> -47.8%	6 & 7 years
Rosen 2011 None to partial ban (2007-2008) Least Suitable (Before-after) Fair (2 limitations) Air quality (PM2.5)	Jerusalem and Tel Aviv, Israel In November 2007, Israel implemented a law to extend existing restrictions on smoking in public places and to strengthen enforcement. Bars and pubs were included for the first time *Mixture of no, full, and partial bans in venues; enforcement was up to owner. Comparison: Before-After	Study Population: popular bars, pubs, and cafes in Tel Aviv and Jerusalem 33 randomly selected venues (smoking +SF + designated area before implementation) N= 15 bars & pubs (9 Tel Aviv) N= 18 cafes (10 Tel Aviv) **data are for Jerusalem and Tel Aviv combined Final sample was 33 out of 34 venues that participated in air monitoring. One establishment had gone out of business.	Average respirable small particles (RSP) level Bars, pubs, and cafes Bars and pubs Cafes	245 µg-3 436 µg-3 85 µg-3	161 µg-3 273 µg-3 68 µg-3	<u>Absolute diff.</u> 84 µg-3 P=0.004 163 µg-3 17 µg-3 <u>Relative change</u> -34.3% -37.4% -20.0%	7-11 months post ban

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Semple 2010 Least Suitable (Before-after) Fair (3 limitations) Indoor air quality RSP-PM _{2.5} Disparities	UK; (Scotland, England and Wales) Smoke-free work policies prohibiting smoking in enclosed or substantially enclosed public places (similar policies adopted) Comparison: Before-after	Study Population: -Random sample of bars in selected regions of each Bars Pre Post Scotland 42 42 England 52 49 Wales 12 12	Indoor air quality RSP- PM _{2.5} Scotland Wales England	197 µg/m ³ 184 µg/m ³ 92 µg/m ³	15 µg/m ³ 24 µg/m ³ 18 µg/m ³	<u>Absolute diff</u> -182 µg/m ³ <u>Relative change</u> -92.4% <u>Absolute diff.</u> -160 µg/m ³ <u>Relative change</u> -87.0% <u>Absolute diff.</u> -74 µg/m ³ <u>Relative change</u> -80.4%	2-12 months
Vorspan 2009 2007 Least Suitable (Before-after) Fair (2 limitations) -Self-reported SHS exposure -Saliva Cotinine -Self-reported symptoms	France; Paris (Fernand Widal Hospital) Nationwide indoor smoke- free policy Comparison: Before-after	Study Population; -employees of the psychiatry department in the hospital N enrolled: 56 N nonsmokers: 42 (41 analyzed)	Self-reported SHS exposure assessed retrospectively Saliva cotinine Exposed (pre): 7 Nonexposed (pre): 34 Self-reported symptoms assessed retrospectively Exposed (pre): 7 Nonexposed (pre): 34	40 ± 17 ng/mL NR NR NR	32 ± 8 ng/mL Improved 75% 41%	Narrative <u>Absolute diff.</u> -8ng/mL <u>Relative change</u> -20% NR Narrative	1 month

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Wheeler 2007 (2004-2005) Least Suitable (repeated cross- sectional/ before- after) Fair (3 limitations) Self-report SHS exposure Hospital campus	Arkansas S-F hospital campus Comparison: Pre-ban group (in UAMS), before smoking ban	Study Population: Employees N= 1,754 for UAMS survey 60.1% (n=842) of the pre- implementation surveys and 65.1% (n=912) of the post-implementation surveys returned	Self-report SHS exposure (had to walk through cigarette smoke on campus, UAMS)	<u>Before</u> 43.1%	<u>After</u> 18.0%	<u>Absolute diff.</u> -25.1 pct. pts. <u>Relative change</u> -58.2% P<0.0001	10 months
York 2010 2007-2008 Least Suitable (Post only) Fair (4 limitations) Indoor air quality as measured in RSP- PM _{2.5}	USA; Las Vegas, Nevada State-wide Nevada Indoor Clean Air Act prohibited smoking in most indoor public places Exceptions to the law include: casinos (gaming floors), standalone bars and taverns, strip clubs and brothels, and retail tobacco stores Comparison: Post only compared EPA Air Quality Standards	Study Population: -Selected casinos in Las Vegas -Selected study areas in casinos (Gaming areas(exempt), restaurant non-smoking attached to casino and outside N=16 8 selected from Las Vegas strip area 8 slected from metro las Vegas area	Indoor air quality RSP- PM _{2.5} Gaming area Restaurant Outside		48 µg/m ³ SD (15.9 µg/m ³) 31 µg/m ³ Sd (22.9 µg/m ³) 5 µg/m ³	Gaming and resturant area indoor air quality levels exceeded annual EPA Exposure Standards for outdoor air quality	1-2 years after policy

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Zhang 2009 2006 Least Suitable (Post only) Fair (3 limitations) Air quality PPAH	Canada; Toronto Smoke-free Ontario Act, May 2006. Prohibits smoking in enclosed public places and workplaces but allows smoking on attached, uncovered patio spaces Comparison: Post only (with concurrent comparison of air quality in bar and patio)	Study Population: -Selected sample of Toronto area bars with patios N eligible: NR N selected: 25 bars with patios Air quality measures on patios within the bar area	Particulate polycyclic aromatic hydrocarbons (PPAH) Air quality categorized by density on patio	Not done	Smoking density (16.8- 41.7) Outdoor patio: Geometric mean: 27.0(2.9) GSD Inside bar PPAH: Geometric mean: 11.6 (2.6) GSD	Smoking on patio was common and associated with PPAH levels. Bars levels were lower	1-2 months post policy

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Zhang 2010 2006 Before-after (Least suitable) Fair (2 limitations) Indoor air quality as measured in RSP- PM _{2.5} PPAH	Canada; cities of Windsor and Toronto in Ontario Province Smoke-free Ontario Act, May 2006, smoke-free policy in all enclosed workplaces and public places	Study Population: -Selected Venues (matched in the cities of Windsor and Toronto) Toronto (allowed smoking rooms) Windsor (smoking allowed) Study venues analyzed (enrolled) <u>Toronto</u> <u>Windsor</u> Coffee shops 13 (15) 10 (10) Bars 14 (17) 10 (10)	Indoor air quality as measured in RSP-PM _{2.5} PPAH	Toronto 439.9 mm ² /m ³ Windsor 487.9 mm ² /m ³ Toronto 195.7 ng/m ³ Windsor 106.9 ng/m ³	Toronto 66.9 mm ² /m ³ Windsor 81.2 mm ² /m ³ Toronto 10.9 ng/m ³ Windsor 10.3 ng/m ³	<u>Absolute diff.</u> -373 mm ² /m ³ <u>Relative change</u> -84.8% P < 0.001 <u>Absolute diff.</u> -406.7 mm ² /m ³ <u>Relative change</u> -83.4% P < 0.001 <u>Absolute diff.</u> -184.8 mm ² /m ³ <u>Relative change</u> -94.4% P < 0.001 <u>Absolute diff.</u> -96.6 mm ² /m ³ <u>Relative change</u> -90.4% P < 0.0001	1-2 months post policy

Tobacco Use

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Ahijevych 2010 (2006-2007) Least suitable (cross-sectional/ econometric) Fair (2 limitations) Consumption (regression coefficients for avg. # of daily cigarettes) National sample	U.S.-nationally representative sample Impact of state clean indoor air laws on young adult smokers was assessed using a composite that rates the extensiveness to which states restrict indoor tobacco use. Strength of individual laws not described. Comparison: Implied: no clean air laws (regression)	Civilian non-institutionalized young adult aged 18-24 years N= 2241 daily smokers N= 688 non-daily smokers	Poisson Model coefficients Avg. # daily cigs.		<u>Daily smokers</u> <u>Coefficient (SE)</u> State clean air laws 0.001 (0.001) <u>Non-daily smokers</u> <u>Coefficient (SE)</u> State clean air laws -0.007 (0.004)	Clean air laws had no significant effect on the average daily number of cigarettes smoked.	N/A

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Biener 2010 2001-2006 Greatest Suitable (Other design with concurrent comparison) Fair (4 limitations) Tobacco use cessation Quit attempts	USA; Massachusetts Community smoking policies (various interventions) Home smoking policies Community youth access policies Comparison: Exposure to different community and home policies	Study Population: -Recruited tobacco users, recent quitters from a probability sample of Massachusetts adults Observations on tobacco users, recent quitters with follow-up N:2635:	Exposed to workplace smoking policy	No ban	Workplace ban		
			-Cessation	13.3 %	15.3%	<u>Absolute diff.</u> +2 pct pts <u>Relative change:</u> +15%	3 months
			-Quit attempts	68.4%	67.9%	<u>Absolute diff.</u> -0.5 pct pts <u>Relative change:</u> -0.7%	1 year
			Exposed to restaurant smoking policy	No ban	Restaurant ban		
			-Cessation	13.5%	13.3%	<u>Absolute diff.</u> -0.2 pct pts <u>Relative change:</u> -4.5 pct pts	3 months
			-Quit attempts	67.5%	72%		1 year
			Exposure to change in either workplace or restaurant smoking policy	No change	Stronger		
			-Cessation	13.8%	13.1%	<u>Absolute diff.</u> -0.7 pct pts OR: 0.95 (0.7-1.3)	3 months
-Quit attempts	67.5%	69.4%	<u>Absolute diff.</u> +1.9 pct pts OR: 1.1 (0.9-1.4)	1 year			

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Bitler 2010, Bitler 2011 1992-2007 Greatest Suitable (Other design w/concurrent comparison) Fair (4 limitations) Smoking prevalence	USA State clean indoor air laws categorized by strength and evaluated across 12 worksite venues Comparison: Categorized strength of state indoor air laws (from none to restricted to prohibited)	Study Population: - Working participants in the Tobacco Use Supplements to the Current Population Survey 1992-2007 N workers=515,121 N included=501,796 (97%) Sample size workers assigned to specific venues	Self-reported tobacco use		Narrative	Strenght of state level clean indoor air policy was not significantly associated with self-reported tobacco use in most venues Bartender subset (N=1380 over 15 years) "A one unit increase in the bar SCIAL variable is estimated to reduce smoking participation by 5.8 percentage points. This suggests that SCIALs covering bars reduced the fraction of bartenders who smoke by about 6.7 percentage points (5.8*1.17) or by about 13% relative to the sample mean (6.7/51).	NA

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]		Follow-up time																						
Boris 2009 Time (not reported) Least suitable (cross-sectional/ case- study) Fair (3 limitations) Prevalence Disparities/ differential effects <i>*Inverse association of policy and use in Af. Amer. children</i>	Louisiana School district comprehensive tobacco-free ban (no- use ban; 1 district) Comparison: indoor tobacco-use ban (4 school districts)	1,041 teachers; 4,469 9 th graders in 20 publicly funded schools from five districts in southern Louisiana	<u>Teacher Smoking Status:</u> Teachers who do smoke Of the teachers who smoke, those who smoke on campus	<table border="1"> <thead> <tr> <th colspan="2"><u>Restricted Use</u></th> </tr> <tr> <th><u>N</u></th> <th><u>%</u></th> </tr> </thead> <tbody> <tr> <td>110</td> <td>12.6</td> </tr> <tr> <td>54</td> <td>49.1</td> </tr> </tbody> </table>	<u>Restricted Use</u>		<u>N</u>	<u>%</u>	110	12.6	54	49.1	<table border="1"> <thead> <tr> <th colspan="2"><u>No Use Policy</u></th> </tr> <tr> <th><u>N</u></th> <th><u>%</u></th> </tr> </thead> <tbody> <tr> <td>17</td> <td>10.2</td> </tr> <tr> <td>7</td> <td>41.2</td> </tr> </tbody> </table>	<u>No Use Policy</u>		<u>N</u>	<u>%</u>	17	10.2	7	41.2	<table border="1"> <thead> <tr> <th><u>Abs. diff.</u></th> </tr> </thead> <tbody> <tr> <td>-2.4%</td> </tr> <tr> <td>-7.9%</td> </tr> </tbody> </table>	<u>Abs. diff.</u>	-2.4%	-7.9%	<table border="1"> <thead> <tr> <th><u>Rel. chng.</u></th> </tr> </thead> <tbody> <tr> <td>-19.0%</td> </tr> <tr> <td>-16.1%</td> </tr> </tbody> </table>	<u>Rel. chng.</u>	-19.0%	-16.1%	N/A
<u>Restricted Use</u>																														
<u>N</u>	<u>%</u>																													
110	12.6																													
54	49.1																													
<u>No Use Policy</u>																														
<u>N</u>	<u>%</u>																													
17	10.2																													
7	41.2																													
<u>Abs. diff.</u>																														
-2.4%																														
-7.9%																														
<u>Rel. chng.</u>																														
-19.0%																														
-16.1%																														

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Edwards 2009 (cont'd)		ASH Year 10 Smoking survey ~30,000 14-15 year-old school children	<u>Trends in smoking prevalence among year 10 students</u> (Scragg,06) Daily smoker (%) Initiation % never smoked	1999 2004 15.6% 9.8% 31.6% 47%	2005 9.0% 49.4%	<u>Absolute diff.</u> -5.6 pct. pts., -0.8 pct. pts. <u>Relative change</u> -35.9%, -8.9 % RR= 0.92 (95%CI= 0.88 – 0.96) <u>Absolute diff.</u> 17.8 pct. pts., 2.4 pct. pts. <u>Relative change</u> 56.3%, 5.1 % RR=1.05 (95% CI= 1.03 – 1.07) *Absolute and relative changes compared to 2005	

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Edwards 2009 (cont'd)		<u>HSC Monitor Surveys</u> Nationally representative, 2000-2500 persons aged 15+, over-sampling of Maori.	<u>Cessation</u> Increased quitting-related behavior: more caller registrations and NRT vouchers issued through Quitline in first 6-mo. after ban. 20% of callers were Maori; ban had similar effect on Maori and non-Maori. <u>Consumption</u> Smoking in bars, nightclubs, restaurants, and cafes showed similar decreases between Maori and non-Maori between 2003/4 and 2005/6. Smoking less than normal or not at all in bars and pubs: 12.6% in 2003, 45.9% in 2006. 3.2% decrease (488,000 packets) and 4.3% annualised rate decrease in tobacco/ cigarette packets sold from 2004-05. Small increase in per-capita cigarette consumption post-ban, but this had been declining overall before the ban.				

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Gadomski 2010 2005-2007 Least Suitable (Before-after) Fair (4 limitations) Tobacco use prevalence Inpatient management	USA; study hospital in Cooperstown, NY Campus-wide smoke- free policy + on-site staff and inpatient cessation services Comparison: Before-after	Study Population: -Subsets of hospital employees with 2 year follow-up: Cohort follow-up: Replied to 2005 and 2007 survey N=489 employees Subset: Replied in one or more Period N 2005 624 2006 661 2007 1,112 Inpatients over study period 18m study period Pre-ban (18m) Post-ban (23m)	Self-reported tobacco use Prevalence (cohort) Prevalence (survey) Inpatients	12% 14.3%	7.5% 9.4%	<u>Absolute diff.</u> -4.5 pct pts P<0.001 <u>Relative change</u> -37.5% <u>Absolute diff.</u> -4.9 pct pts P<0.0002 <u>Relative change</u> -34.3% No change in trend for patient smoking smoking status on entry (21.6%) over study period Patients signing out against medical advice (AMA) with the reason of having to smoke (AMA rate was very low of total inpatients)	2 years

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Grassi 2009 2001-2003; 2005-2006 Least Suitable (Before-after) Fair (4 limitations) Tobacco use cessation, consumption	Italy; treatment program in Rome National comprehensive indoor smoke-free policy Comparison: Before- after	Study Population: -Tobacco users participating in smoking cessation treatments -E100 fee N eligible: Not reported N study <u>Period</u> <u>N enrolled</u> <u>N analysis</u> Pre 2001-2003 336 214 Post 2005-2006 214 214	Carbon monoxide validated at one year Self-reported daily cigarette consumption <u>Abstinence rate</u> Group counseling Group counseling + bupropion	35.2% 50.7%	46.9% 68.1%	<u>Absolute diff.</u> +11.7 pct pts <u>Relative change</u> +33.2% (95% CI: -4.6, 28) Adj OR=0.48 (95% CI: 0.24, 0.96) <u>Absolute diff.</u> +17.4 pct pts <u>Relative change</u> +34.3% (95% CI: 6.3, 28.5) Adj OR = 0.59 (95% CI: 0.37, 0.96)	1 year

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Hackshaw 2010 2007-2008 Least Suitable (Before-after) Fair (4 limitations) Quit attempts	England National comprehensive indoor smoke-free workplace policy Comparisons: Before- after	Study Population: -Participants in national household surveys in England between Jan N=10,560 persons aged 16 or older who self-identified as having smoked in the past 12months 2007 and Dec 2008	Self-reported quit attempts			Overall there was no significant difference in previous month quit activity among surveyed self-identified smokers in 2007 and 2008 A greater percentage of smokers reported making a quit attempt in July and August 2007 (8.6%) compared with July and August 2008 (5.7%, Fischers exact test 0.022)	1 year

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
<p>Hahn 2010-1 Hahn 2010-2 University A (2004-07) University B (2005-08) Least suitable (Before-after) Fair (4 limitations) Tobacco use prevalence [Alcohol use]</p>	<p>USA; University in Lexington, Fayette County, KY USA; University of Louisville, KY Study 1: Prohibited smoking in all public buildings including restaurants, bars, bingo parlors, pool halls, public areas of hotels/motels, and all other buildings open to the public Comparison: Before- after Study 2: Enacted partial smoke-free policy (Nov 2005) most buildings open to the public but exempting most establishments serving alcohol - Ordinance strengthened to comprehensive (July 2007) Comparison: Before- after</p>	<p>Study Population: Study 1: Participating students in mailed surveys <u>Survey</u> <u>Npre</u> <u>Npost</u> Univ A 897 469 Study 2: Participating students in electronic survey <u>Survey</u> <u>Npre</u> <u>Npost</u> Univ B 703 701</p>	<p>Self-reported status as current smoker (any smoking in the last 30 days) Study 1 Study 2 Self-reported status as current drinker Study 1 Study 2</p>	<p>28% 21.5%</p>	<p>19.4% 16.9%</p>	<p><u>Absolute diff.</u> -8.6 pct pts P=0.0005 <u>Relative change</u> -30.7% <u>Absolute diff.</u> -4.6 pct pts P=0.03 <u>Relative change</u> -21.4% OR=0.68 (95%CI 0.50, 0.93) OR=0.79 (95%CI 0.59, 1.05)</p>	<p>Study 1: (3 yrs) Study 2: (8 mo)</p>

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Kabir 2009 2003-2005 Least Suitable (Before-after) Fair (4 limitations) Tobacco use prevalence Smoking cessation Birth outcomes	Ireland; one tertiary referral hospital National comprehensive workplace smoke-free policy Comparison: Before- after	Study Population: -Mothers who delivered at study hospital 2003 or 2005 <u>Period</u> <u>N mothers/births</u> Pre (2003) 7593 Post (2005) 7648	Self-reported tobacco use status -Current -Former -Never	<u>2003</u> 23.4% 23.9% 52.6%	<u>2005</u> 20.6% 25.3% 54%	<u>Absolute diff.</u> -2.8 pct pts <u>Relative change</u> -12.0% P <0.001 <u>Absolute diff.</u> +1.4 pct pts <u>Relative change</u> +5.9% P=0.047 <u>Absolute diff.</u> +1.4 pct pts <u>Relative change</u> + 2.7% P=0.08	1 year post
Khang 2009 (1995-1999; 2006) Least (Post-only) Fair (4 limitations) Current tobacco use prevalence -Men -Women Disparities -Changes by SES (education, occupation)	Republic of Korea Sequential tobacco control interventions (1995-2006) First two interventions in 1995 -Smoking restrictions in public buildings and places -Banned cigarette sales to minors Comparison: Post-only (smoking restrictions evaluated using first two national surveys 1995. 1999)	Participants in national social statistical surveys in Korea 1995- 2006 Evaluation here based on findings of the 1995 and 1999 surveys <u>N samples</u> Gender <u>1995</u> <u>1999</u> Men 28,187 23,896 Women 29,181 24,669	Self-reported current smoking prevalence Men Women Additional analyses stratified by Education Occupation	Post-only <u>1995</u> 74.4% 4.1%	<u>1999</u> 70.3% 3.1%	<u>Absolute diff.</u> -4.1 pct pts <u>Relative change</u> -5.5% <u>Absolute diff.</u> -1.0 pct pts <u>Relative change</u> -24.4% Reduced use but changes were smaller in magnitude	4 years 4 years

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Knudsen 2010 Sept 2006 – Jan 2008 Least Suitable (Cross Sectional) Fair (4 limitations) Tobacco use prevalence	USA; nationwide sample of substance abuse treatment centers Comprehensive (indoor and outdoor) smoke- free policy Comparison: Indoor smoke-free policy	Study Population: -Responding substance abuse conselors responding N analysis: 1910 (49.8%) from 417 treatment centers <u>Exposure</u> <u>Nconselors</u> Comprehensive 372 Indoor only 1538	Self-reported current tobacco	Indoor only Not reported	Comprehensive Not reported	Current user versus nonuser Comprehensive ban RRR=0.56 (95%CI 0.35, 0.89) P<0.05	NA
Muller 2010 2007-2009 Least suitable (Before-after) Fair (4 limitations) Self-reported SHS exposure -Work -Home Self-reported smoking prevalence Daily consumption	Germany Federal and state smoke-free policies with exceptions (some pubs and discos) Comparison: Before- after	Study Population: -Propensity score matched participants in national survey 2006 and 2009 <u>Survey</u> <u>N</u> 2006 3706 2009 3706 <u>Survey</u> <u>Work exp</u> <u>Prevalence</u> 2006 1454 3706 2009 1500 3706	Self-reported smoking prevalence Number of cigarettes/day	31.6% 13.5 cigs/day	29.1% 12.8 cigs/day	<u>Absolute diff.</u> -2.5 pct pts <u>Relative change</u> -7.9% RRR (2009): 0.91 (95% CI: 0.81, 1.02) <u>Absolute diff.</u> -0.7 cigs/day <u>Relative change</u> -5.2%	Not reported

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Nagelhout 2010 2001-2008 Least Suitable (Before-after) Fair (4 limitations) Tobacco use prevalence Cessation Quit attempts	Netherlands Two smoke-free policies: Workplace smoke-free policy (exempting hospitality industry) Comprehensive workplace smoke-free policy (2004) Comparison: Before- after	Study Population: -Participants in national surveys Surveys 2001-2008 (N=144,733)	Tobacco use prevalence Workplace Comprehensive Tobacco use cessation Workplace Comprehensive Quit attempts Workplace Comprehensive	<u>2003</u> 29.9% <u>2007</u> 27.5% <u>2003</u> 5.6% <u>2007</u> 6.9% <u>2003</u> 27.7% <u>2007</u> 24.1%	<u>2004</u> 27.9% <u>2008</u> 26.7% <u>2004</u> 8% <u>2008</u> 10% <u>2004</u> 33.3% <u>2008</u> 26.3%	<u>Absolute diff.</u> -2 pct pts <u>Relative change</u> -6.7% OR=0.91 P<0.0001 <u>Absolute diff.</u> -0.8 pct pts <u>Relative change</u> -2.9% OR=0.96 P=0.127 <u>Absolute diff.</u> +2.4 pct pts <u>Relative change</u> +42.9% OR=1.49 P<0.001 <u>Absolute diff.</u> +3.1 pct pts <u>Relative change</u> +44.9% OR=1.44 P<0.001 <u>Absolute diff.</u> +5.6 pct pts <u>Relative change</u> +20.2% OR=1.31 P<0.001 <u>Absolute diff.</u> +2.2 pct pts <u>Relative change</u> +9.1% OR=1.13 P=0.013	7 years

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time												
Overland 2010 (cont'd)			<u>Students are allowed to smoke in outdoor areas at school</u> Does not apply at all Does not apply well Applies fairly well Applies very well	523 10.9% 227 8.8%	209 9.1% 448 18.8%	Ref. 0.9 (0.5–1.5) 0.9 (0.5–1.5) 1.9 (1.3–2.8) <u>Applies very well vs. not at all:</u> -7.9% -42%													
Prochaska 2009 2001-2004 Least Suitable (Before-after) Fair (4 limitations) Tobacco use prevalence	USA; Fort Collins, Colorado 2003, Local smoke-free ordinances extending to both bars and restaurants Comparison: Before-after	Study Population: - Fort Collins adult residents responding to a mailed survey <table border="0" style="width: 100%;"> <tr> <td style="text-align: left;"><u>Period</u></td> <td style="text-align: center;"><u>n2001</u></td> <td style="text-align: center;"><u>n 2004</u></td> </tr> <tr> <td>ALL</td> <td style="text-align: center;">1680</td> <td style="text-align: center;">1689</td> </tr> </table> Subset analysis for persons: 50 or older <table border="0" style="width: 100%;"> <tr> <td style="text-align: left;"><u>Period</u></td> <td style="text-align: center;"><u>n2001</u></td> <td style="text-align: center;"><u>n 2004</u></td> </tr> <tr> <td>50+</td> <td style="text-align: center;">670</td> <td style="text-align: center;">715</td> </tr> </table>	<u>Period</u>	<u>n2001</u>	<u>n 2004</u>	ALL	1680	1689	<u>Period</u>	<u>n2001</u>	<u>n 2004</u>	50+	670	715	Prevalence of self-reported smoking *Attitudes measure towards public	16%	11.5% Subset analysis: Older adults (Aged 50 or older) showed less improvement	<u>Absolute diff.</u> -4.5 pct pts <u>Relative change</u> -28.1% OR: 0.79 (0.64-0.99) OR: 0.91 (0.62-1.4)	1 year
<u>Period</u>	<u>n2001</u>	<u>n 2004</u>																	
ALL	1680	1689																	
<u>Period</u>	<u>n2001</u>	<u>n 2004</u>																	
50+	670	715																	

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time										
Ripley-Moffitt 2010 (2008) Least suitability (before-after) Fair (4 limitations) Prevalence, influence of policy on those who quit	North Carolina Assesses impact of tobacco-free hospital campus policy on employee smoking behavior Pre-ban prevalence	210 in initial cohort, 166 at 6 mo., 156 at 12 mo. full-time employees (excluding physicians) with e-mail addresses from the UNC hospital payroll database who had quit with the previous 6 mo. or were currently smokers	Influence of policy on those who quit (%)			<u>Baseline:</u> Very much- 38.7% Some/moderate- 25.8% None at all- 35.5% <u>6 mo.</u> Very much- 36.4% Some/moderate- 30.3% None at all- 33.3% <u>12 mo.</u> Very much- 35.9% Some/moderate- 30.8% None at all- 33.3%											
Ruge 2010 Study period not reported Least Suitable (Cross Sectional) Fair (3 limitations) Quit attempts Daily consumption	Switzerland Workplace smoke-free policy Comparison: No workplace smoke-free policy	Study Population: -Tobacco using patients recruited from medical practices N= 2016 eligible n= 1012 included in analysis <table border="1" data-bbox="600 1031 999 1169"> <thead> <tr> <th>Policy</th> <th>N</th> </tr> </thead> <tbody> <tr> <td>None</td> <td>376</td> </tr> <tr> <td>Partial</td> <td>519</td> </tr> <tr> <td>SF</td> <td>117</td> </tr> <tr> <td>Total</td> <td>1012</td> </tr> </tbody> </table>	Policy	N	None	376	Partial	519	SF	117	Total	1012	Self-reported quit attempts in the last year Self-reported daily consumption	<u>No policy</u> 34.8% 17.9 cigs/day	<u>Smoke-free</u> 31.6% 14.3 cigs/day	<u>Absolute diff.</u> -3.2 pct pts <u>Relative change</u> -9.2% NS <u>Absolute diff.</u> -3.6 cigs/day <u>Relative change</u> -20.1% [95% CI: -11, 3.8] Logistic regression (stronger policy) Multivariate analysis OR=0.96 P=0.03	NA
Policy	N																
None	376																
Partial	519																
SF	117																
Total	1012																

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Regidor 2011 (2000-2008) Moderate (interrupted time series) Fair (4 limitations) Tobacco use prevalence- weekly -Age -Gender Subset analysis on workers	Spain National smoke-free indoor workplace legislation (exempted small bars and restaurants) -Jan 2006 Comparison: Before- after	Participants of national surveys in Spain -Three surveys per year with approximately 14,200 per survey (44,200 per year) -Response rates 70-75%	Self-reported weekly smoking prevalence presented by age group and gender -Before-after policy enactment -Full study period 2000-2008	<u>2005</u> Men 31.6%- 43.1% Women 19%-33.2% <u>Pre 2000-2005</u> Men -6.7 to -2.2 Women -7.6 to -4	<u>2006</u> Men 29.1%- 40.9% Women 17.8%-30.9% <u>Post 2006-2008</u> Men +2.9 to +8 Women +2.6 to +5.9	<u>Range of age group change</u> -2.2 to -5 pct pts -1.1 to -2.3 pct pts In both groups, tobacco use decreased 2000- 2005 but increased 2006- 2008	1 year post 8 years: 2 years post
Shetty 2010 2007-2008 Least Suitable (Before-after) Fair (3 limitations) Narrative patient management outcomes	United Kingdom; One medium-secure mental health hospital Smoke-free campus mental health hospital policy Comparison: Before- after	Study Population: N=56 inpatients during the study period			Patient management issues did not change significantly		12 months post policy

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time												
Verdonk-Kleinjan 2011 2003-2005 Least Suitable (Before-after) Fair (4 limitations) Tobacco use prevalence Quit attempts Daily consumption	Holland Workplace smoking policy (allowed designated smoking area option and exempted restaurants, bars, pubs and discos) Tobacco product tax increases 2004-2005 Comparison: Before- after	Study Population: - Paid workers participating in Dutch over 36 month N= 27150 <table border="1" data-bbox="600 503 999 617"> <thead> <tr> <th>Period</th> <th>Intervention</th> <th>N</th> </tr> </thead> <tbody> <tr> <td>Jan-Feb 04</td> <td>policy</td> <td>601</td> </tr> <tr> <td>Feb-Jan 05</td> <td>policy+tax</td> <td>8427</td> </tr> <tr> <td>Jan-Dec 05</td> <td>policy+tax+tax</td> <td>8908</td> </tr> </tbody> </table>	Period	Intervention	N	Jan-Feb 04	policy	601	Feb-Jan 05	policy+tax	8427	Jan-Dec 05	policy+tax+tax	8908	Smoking prevalence Quit attempts Daily consumption	27.5% 1% 15 cigs/day	SF Policy 25.5% SF Policy+tax+tax 24.3% SF Policy: NS SF Policy+tax+tax 1.2% SF Policy: 13.8 cigs/day SF Policy+tax+tax 14.2 cigs/day	<u>Absolute diff.</u> -2.0 pct pt NS <u>Relative change</u> -7.3% <u>Absolute diff.</u> -3.2 pct pts P<0.001 NS +0.2 pct pts NS <u>Absolute diff.</u> -1.2 cigs/day P=0.09 <u>Relative change</u> -8.0% <u>Absolute diff.</u> -0.8 cigs/day P=0.002	Post (1 m) Post (1 yr) Post (1 m) Post (1 m) Post (1 yr)
Period	Intervention	N																	
Jan-Feb 04	policy	601																	
Feb-Jan 05	policy+tax	8427																	
Jan-Dec 05	policy+tax+tax	8908																	

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Wheeler 2007 (2004-2005) Least Suitable (repeated cross-sectional/ before-after) Fair (2 limitations) Self-report SHS exposure Hospital campus	Arkansas S-F hospital campus Comparison: Pre-ban group (in UAMS), before smoking ban	Study Population: Employees N= 1,754 for UAMS survey 60.1% (n=842) of the pre-implementation surveys and 65.1% (n=912) of the post-implementation surveys returned	Employee smoking rates	<u>Before</u> 9.6%	<u>After</u> 2.6%	<u>Absolute diff.</u> -7% <u>Relative change</u> -72.9% P<0.0001	10 months

Tobacco Use among Young Persons

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Ahijevych 2010 (2006-2007) Least suitable (cross-sectional/ econometric) Fair (2 limitations) Consumption <i>Additional evidence</i>	U.S.; nationwide Statewide, Impact of state clean indoor air laws on young adult smokers was assessed using a composite that rates the extensiveness to which states restrict indoor tobacco use. Strength of individual laws not described. Comparison: Implied: no clean air laws (regression)	Study Population: - Nationally representative sample - Civilian non-institutionalized young adult aged 18-24 years N= 2241 daily smokers N= 688 non-daily smokers	Poisson Model coefficients Avg. # daily cigs.			<u>Daily smokers</u> <u>Coefficient (SE)</u> State clean air laws 0.001 (0.001) Clean air laws had no significant effect on the average daily number of cigarettes smoked.	N/A
Boris 2009 Time (not reported) Least suitable (cross-sectional/ case-study) Fair (3 limitations) Prevalence <i>Additional evidence</i>	US; Louisiana School district comprehensive tobacco-free ban (no- use ban; 1 district) Comparison: indoor tobacco-use ban (4 school districts)	Study Population: - 9 th graders in 20 publicly funded schools from five districts in southern Louisiana N=4,469 students	30-day prevalence of cigarette smoking	<u>Restricted Use</u> 25%	<u>No Use</u> 24.3%	Abs Change: -0.7 pct pts [95% CI: -4.6, 3.2] P=0.75	N/A

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Bortello-Haubaum 2009 2001-2002 Greatest Suitable (Other design w/concurrent comparison) Fair (2 limitations) Prevalence <i>Additional evidence</i>	US; nationwide Clean indoor air law + Minors' access Comparison: Partial or no smoke-free bans	Study Population: - Nationally representative sample of students - Adolescents grades 6-10 N=13,339	Self-reported smoking status - Middle school students - High school students			Youth in states with no restrictions were more likely to be daily vs. never smokers compared to youth living in states with stricter provisions. Youth in states with partial/no restrictions were more likely to be daily vs. never smokers compared to youth living in states with stricter provisions.	N/A
Buddlemeyer 2008 2001-2003 Greatest Suitable (Other design w/concurrent comparison) Fair (3 limitations) Initiation Cessation <i>Additional evidence</i>	Australia; 4 jurisdictions Statewide, smoke-free bans + Point of Sale Comparison: Rest of Australia without the changes during the same time period	Study Population: -Nationally representative Australian household sample from the first three waves of the Household, Income and Labour Dynamics in Australia (HILDA) survey. Approx. 14000 individuals in 7000 households -Aged 15-24 years (included in analysis)	Tobacco Initiation Cessation			The effects of tightening regulation on the probability of starting smoking were extremely minimal Tightening of the smoking regulations decreased the probability of quitting for adolescents and young adults by 5.7 pct pts - males and by 6.5 pct pts - females	N/A

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Darling 2006 2002 Least Suitable (Cross-sectional) Fair (4 limitations) Prevalence <i>Additional evidence</i>	New Zealand; North and South Islands National, Smoke-free Environments Act 1990, school boards of trustees decided the degree to which schools would be smoke-free and the extent of smoking restrictions Comparison: Cross-sectional	Study Population: -Surveyed students in grades 10 and 12 -Attending 63 schools N analysis=2658 (response rate 77%)	Self-reported smoking status (all smokers) Comprehensive			RR: 1.10 [95% CI: 0.92- 1.31]	N/A
Farkas 2000 1992-93 and 1995-96 Least Suitable (Cross-sectional) Fair (2 limitations) Prevalence Cessation	United States Indoor smoking restrictions in workplace (comprehensive and partial) bans Comparison: Partial smoking bans	Study Population: -Nationally representative sample of surveyed adolescents 15-17 years of age N=17 185	Self-reported smoking status (Workplace) -Comprehensive Smoking cessation (Workplace) -Comprehensive			OR: 0.68 (0.51,0.90),p=.002 OR: 1.58 (0.81,3.06), p=.12	N/A

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Hublet 2009 2005-2006 Least Suitable (Cross-sectional) Fair (2 limitations) Prevalence <i>Additional evidence</i>	Europe: 29 countries National, smoke-free public bans in addition to other cost-effective tobacco policies based on the TCS Comparison: Cross-sectional	Study Population: - nationally representative samples of adolescents -Aged 15 years N Girls 26509	Self-reported smoking status (weekly) -Girls			β (SE) -0.018 (0.013) OR: 0.98, P=0.189	N/A
Klein 2009 2000-2006 Greatest Suitable (Prospective cohort) Fair (4 limitations) Prevalence Initiation	USA; Minnesota Local clean indoor air policies (strong policies) Comparison: Exposure to local clean indoor air policies of weaker or no policies	Study Population: - Minnesota youth within the population-based cohort study Minnesota Adolescent Community Cohort (MACC) N recruits in 2000: 3636 N 12 yr old added 2001: 597 N total included in analysis: 4233 Follow-up: 77.9% at six years	Self-reported past month smoking Smoking initiation : Youth living in area with no CIA policy vs youth living in area with local CIA policy	All 12.4%	No Policy 28.7% Policy 28.3%	Absolute change: -0.4 pct pts [95% CI: -4.1 - 3.3] Relative diff: -1.4% Adj OR: 1.06 [95% CI 0.93, 1.21] OR: 1.08 [95% CI 1.00, 1.16]	6 years
Lippman-Kreda 2012 April-August 2009 Least Suitable (Cross-sectional) Fair (2 limitations) Prevalence <i>Additional evidence</i>	USA; California City-level smoke free policies (indoor/outdoor-low levels) + Minors' access laws Comparison: Moderate and high levels of local clean indoor air policy	Study Population: - Surveyed sample of youth residing in randomly selected households from 50 non-contiguous California cities with populations ranging between 50,000-500,000 N analysis=1491 youth	Self-reported smoking status over past 12 months -Low level (n=16 cities) -Moderate level (n=17 cities) -High level (n=17 cities)			β 0.14, P<.05 0.002 0.001	N/A

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
McCullen 2005 1996 and 1999 Least Suitable (Cross-sectional) Fair (3 limitations) Prevalence <i>Additional evidence</i>	USA; Nationwide State and local clean indoor air (CIA) policies Comparison: Cross-sectional	Study Population: - Nationally representative sample of students, Youth Risk Behavior Survey (YRBS) -Aged 12-17 years N=67,718 (YRBS)	Self-report smoking status - SCLD clean indoor air score: CIA (YRBS)			<u>Youth smoking</u> β (SE) -0.53 (0.14) P=0.00	NA
Ringel 2005 1999 and 2000 Least Suitable (Cross-sectional) Fair (2 limitations) Prevalence <i>Additional evidence</i>	US; Nationwide State tobacco control policies consisted of: (Purchase law, possession or use law, Clean indoor air law , state-sponsored media campaign) + Price of tobacco products	Study Population: - Nationally representative sample of students -Adolescents grades 6-12 -Aged 9-17 years N=33,632 participants	Self-report smoking status State tobacco control policies: Clean indoor air law (All)			<u>Overall</u> Coefficient: -0.002 (-0.33)	NA
Siegel 2008 2001-2004 & 2005-06 Greatest Suitable (Prospective cohort) Fair (3 limitations) Prevalence	US; Massachusetts Statewide clean indoor air law in local restaurants (Strong and Medium) Comparison: Statewide clean indoor air law in local restaurants (Weak)	Study Population: - Random sample of youth -Ages 12-17 years N=2623 youth	Self-reported smoking status (2005-06) Strong vs weak Medium vs weak <u>Initiation</u> Strong vs weak Medium vs weak			Adj OR: 0.60 (0.42, 0.85) Adj OR: 0.93 (0.67, 1.30) OR: 1.18 (0.94–1.49) OR: 1.01 (0.78–1.31)	4 years

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Schnohr 2008 2001/02 and 2003 Greatest Suitable (Other design w/concurrent comparison) Fair (2 limitations) Prevalence <i>Additional evidence</i>	27 European countries National, non-smoking policy at educational facilities + price + minors' access Comparison: Countries with voluntary school smoking ban	Study Population: -Representative sample of 13 and 15 year old school children N=92, 217 students from 27 countries included in final analysis	Self-report smoking status (daily) Voluntary vs National school smoking bans -Boys -Girls			OR: 1.49 [95% CI: 1.01- 2.18] OR: 1.48 [95% CI: 1.11- 1.98]	NA
Tauras 2004 Not reported Greatest Suitable (Prospective cohort) Fair (2 limitations) Cessation	US State-level smoke free policies + price Comparison:	Study Population: -Nationally representative sample of high school seniors conducted by the Institute for Social Research at the University of Michigan N analysis=NR	Self-reported monthly cigarette consumption- cigarette smoking during the past 30 days -Private Worksite -Restaurant -Other Public Places			β 0.037 (0.93) -0.008 (-0.19) -0.026 (-0.72)	7 years
Tauras 2005 1976-1993/FU-1995 Greatest Suitable (Prospective cohort) Fair (4 limitations) Consumption	USA; Nationwide State-level, smoke-free policies implemented in private worksites, restaurants, and other public places Comparison:	Study Population: -nationally representative sample of high school seniors conducted by the Institute for Social Research at the University of Michigan N analysis=44 985 individuals representing 170 684 person-follow- ups of data $\frac{n}{}$ Daily 7489 Moderate 6029 Heavy 7106	Self-reported smoking status (cigs/per day) -Private worksite -Restaurant -Government worksite -Healthcare facility -Other public places			<u>Moderate Uptake</u> <u>(10+ cigs/day)</u> β -0.121, P<0.05 0.117, P<0.10 0.113 0.071 -0.167, P<0.05	7 years

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Tworek 2010 1991-2006 Least Suitable (Cross-sectional) Fair (2 limitations) Cessation	US; Nationwide State-level, smoke-free policies + Price + Minors' access Comparison:	Study Population: -nationally representative sample of high school students (10 th and 12 th grade), regular smokers conducted by the Institute for Social Research at the University of Michigan N analysis=16, 709 students (discontinuation)	Self-reported smoking cessation behaviors -Smoke-free Air Index			β 0.001 OR: 0.997 [95% CI: 0.968-1.027]	N/A
Wakefield 2000 1996 Least Suitable (Cross-sectional) Fair (2 limitations) Prevalence Initiation	US; Nationwide State/local; Strong public place restrictions (incl. private worksites and restaurants) Comparison: Cross-sectional by strength of policies	Study Population: -Survey of US school students in grades 9-12 -Aged 14-17 years N schools=202 (73% overall school response rate) N students= 17 287 completed questionnaires n=8760 strong restrictions in public places	Self-reported 30 day smoking prevalence -Public place restrictions Initiation (early experimenter) -Public place restrictions			OR: 0.91 [95% CI: 0.83-0.99] P=0.03 OR: 0.93 [95% CI: 0.84-1.02]	NA
White 2011 1990-2005 Greatest Suitable (Propsective cohort) Fair (2 limitations) Prevalence	Australia State, clean indoor air laws (enclosed workplace, shopping centers, restaurants/cafes/gambling, alcohol licensed venues) + price + minors' access + mass reach Comparison: Cross-sectional by strength of policies	Study Populations: -Representative samples of Australian secondary school students conducted triennially between 1990-2005 -Aged 12-17 years N=(Range: 20, 560-27, 480 adolescents: sample size per survey)	Self-reported past month smoking Clean indoor air policies			Adj OR: 0.93 [95% CI: 0.92-0.94] P <0.001	NA

Health Outcome: Cardiovascular Morbidity and Mortality

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Barnett 2009 (2003-2006) Moderate (interrupted time-series) Fair (2 limitations) AMI hospital admissions	Christchurch, New Zealand National comprehensive smoking ban (from previous partial ban) Comparison: before/after	3,079 AMI admissions to Christchurch hospital aged 30+; repeat admissions, those that began outside Christchurch, and those not geocoded were excluded	AMI hospital admissions	<u>2003/04</u> 1580	<u>2005/06</u> 1499	<u>Relative % change:</u> -5.1% <u>Rate ratio:</u> 0.92 95% CI: (0.86 to 0.99)	2 years post-ban
Barone-Adesi 2011 (Jan. 2002- Nov. 2006) Moderate (interrupted time series) Good (1 limitation) Acute coronary events	Italy National smoking regulation banning smoking in all indoor public places, including hospitality venues; previous bans were weaker Comparison: time-series	Italian residents with primary diagnosis of AMI or other acute/sub-acute ischemic heart disease 936,519 acute coronary events during study period	Hospital admissions for acute coronary events			<u>Overall Rate ratio:</u> 0.98 (95% CI: 0.97-1.00) <u>Age <70 yrs. Rate ratio:</u> 0.96 (95% CI: 0.95-0.98) <u>Age ≥ 70yrs. Rate ratio:</u> 1.00 (95% CI: 0.99-1.02)	2 years post-ban

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Bonetti 2011 (combined with Trachsel 2010) (Mar. 2006-Feb. 2010) Greatest (other design with concurrent comparison) Fair (3 limitations) AMI incidence	Canton of Graubunden, Switzerland Regional ban of smoking in public buildings, including cafes, bars, and restaurants Comparison: before/ after and comparison to control location	Pre-ban data: corresponding data from diagnoses at discharge and from local databases; Post-ban data: patients with AMI and having coronary angiography; also, patients in the Lucerne region (no ban) were evaluated as a control group. AMIS Plus registry used for control data. 842 AMI hospitalizations in intervention group across the 4 study years 830 AMI hospitalizations in control group across the 3 study years with data	Total AMI hospitalizations Graubunden Lucerne (control)	<u>2 yrs.</u> <u>1 yr.</u> <u>pre</u> <u>pre</u> 229 242 N/R 227	<u>1 yr.</u> <u>2</u> <u>yrs.</u> <u>post</u> <u>post</u> 183 188 273 330	<u>Relative %</u> <u>change both yrs.</u> <u>post-ban vs. both</u> <u>yrs. pre-ban:</u> -21.2% P<0.05 for post yr. 1 vs. both pre- years and for post yr. 2 vs. post yr. 1 and pre yr. 1 <u>Control:</u> significant increase in AMI incidence both years post-ban P<0.05 for both post years vs. the pre-year, and the second post-year vs. the first post- year	2 yrs. post- ban
Bruitjies 2011 (Jul. 2002-Jun. 2006) Greatest (other design with concurrent comparison) Fair (4 limitations) AMI hospitalizations	Greely, Colorado Smoking banned in all public assembly locations, including hospitality venues and outdoor public assembly locations with seating Comparison: data presented as before/ after	All patients with first AMI and primary discharge diagnosis of AMI, confirmed by biomarkers from patient charts; patients not from intervention or control group locations were excluded; patients transferred from elsewhere were excluded; data was screened for outliers (which were presumably excluded) 706 AMI hospitalizations meeting above criteria (482 Greely residents, 224 outside Greely)	AMI hospitalization rates (per 100,000 person years) Greely (Intervention) Surrounding areas (control)	<u>Pre-ban</u> 170 120	<u>Post-ban</u> 125 100	<u>Relative %</u> <u>change</u> -26.5% <u>Relative %</u> <u>change</u> -16.7% <u>Adjusted relative</u> <u>% change</u> <u>(difference btwn.</u> <u>intervention and</u> <u>control):</u> -9.8%	30 months post-ban

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time										
Dove 2010 (1999-2006) Moderate (interrupted time-series) Fair (3 limitations) AMI deaths	Massachusetts State and local comprehensive bans Comparison: before/after; also, cities that previously had a S- F policy in place (comparison for state ban group)	3,342,917 Massachusetts adults aged 35+ years; 26,982 AMI deaths from 1999-2006	AMI mortality rate (per 100,000)	<u>109.2</u>	82.5	<u>Relative % change: -24.5%</u> <u>Adjusted relative change: -7.4%</u> <u>95% CI: (-11.4% to -3.3%)</u> <u>P< .001</u>	2 years post-ban										
Gasparini 2009 (2000-2005) Moderate (simple time-series) Fair (2 limitations) AMI incidence	Tuscany, Italy Italian smoking ban Comparison: time- series with multiple pre- ban measurements	Tuscany population aged 30-64 years; excluded multiple AMIs among same patient within 28-day period 13,456 AMI cases during study period	AMI Incidence Rate (x1000)	<table border="0"> <tr> <td><u>2000</u></td> <td><u>2004</u></td> </tr> <tr> <td>1.20</td> <td>1.23</td> </tr> </table>	<u>2000</u>	<u>2004</u>	1.20	1.23	<table border="0"> <tr> <td><u>2005</u></td> </tr> <tr> <td>1.20</td> </tr> </table>	<u>2005</u>	1.20	<table border="0"> <tr> <td><u>2004</u></td> <td><u>2005</u></td> </tr> <tr> <td>RR* 1.03</td> <td>1.00</td> </tr> </table> <u>95% CI:</u> 2004: 0.97 to 1.09 2005: 0.94 to 1.06 *(2000 is reference) <u>Model with linear trend: RR 0.95, (95% CI 0.89- 1.00)</u> <u>Model with non- linear trend: RR 1.00, (95% CI 0.93-1.10)</u> Authors mention that non-linear model better fits the data	<u>2004</u>	<u>2005</u>	RR* 1.03	1.00	1 year post- ban
<u>2000</u>	<u>2004</u>																
1.20	1.23																
<u>2005</u>																	
1.20																	
<u>2004</u>	<u>2005</u>																
RR* 1.03	1.00																

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
<p>Gupta 2011 (2000-2008) Moderate (interrupted time-series) Good (1 limitation) Acute coronary events (AMI, ACS)</p>	<p>Kanawha County, West Virginia County clean indoor air law enacted in 1995; changed in 2000 and 2003; 1995 law banned smoking in enclosed public places and could allow restaurants to have up to a 50% smoking area; changed in 2000 to increase penalties for non-compliance; 2003 law banned smoking in restaurants and at most worksites Comparison: time-series</p>	<p>Kanawha County residents aged 18+ with primary diagnostic code of myocardial infarction, non-ST segment elevation myocardial infarction, or unstable angina. All three of these are called acute coronary syndrome. 14,245 Acute coronary syndrome hospitalizations over study period</p>	<p>Acute coronary syndrome, acute myocardial infarction</p>			<p>37% decline for total population from 2000-2008; 6% overall decrease per year; (95% CI: 4%-8%); significant overall decline among non-smokers, but not among smokers 7% annual decrease post-2003 ban for male smokers (95% CI, 0.4%-12%) in hospital admission rates for ACS; no change over time before the revision; similar results for AMI <u>Poisson model</u> Regulation change coefficient: 0.02 (95% CI: -0.08 to 0.11) P=0.12 However, signif. Poisson coefficients for age, gender, tobacco use, and diabetes status</p>	<p>4-5 years post-ban for 2003 ban</p>

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Halbelsben 2010 (1998-2006; SET data from 2006) Least (cross-sectional w/ comparison group) Good (1 limitation) Self-report AMI as informed by health professional (asthma reported in other SET)	U.S. (national, but included data for 20 states because these questions were optional on the BRFSS) Self-report smoke-free workplace policy or restriction Comparison: no self- report policy	Included 20 states; telephone survey of civilian, non- institutionalized adults 50,882 surveyed	Self-report AMI as informed by health professional		Relationship btwn. S-F workplace policy and AMI: OR: 1.70 (95% CI: 1.27-2.27)		N/A

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time																						
Herman 2011 (Jan. 2004-May 2008) Greatest (other design with concurrent comparison) Fair (3 limitations) AMI (asthma reported in other SET)	Arizona Comprehensive statewide smoking ban Comparison: before/ after and cohort of local municipalities with pre- existing bans (compared with no pre- existing bans)	All Arizona residents with primary diagnosis of one of the outcomes; hospital discharge data from 87 Arizona hospitals	Hospital admissions AMI hospitalization per 100,000 adults no previous ban previous ban	<table border="0"> <tr> <td></td> <td><u>04/05</u></td> <td><u>05/06</u></td> <td><u>06/07</u></td> </tr> <tr> <td>164</td> <td>154</td> <td>148</td> <td></td> </tr> <tr> <td>248</td> <td>237</td> <td>232</td> <td></td> </tr> </table>		<u>04/05</u>	<u>05/06</u>	<u>06/07</u>	164	154	148		248	237	232		<table border="0"> <tr> <td><u>07/08</u></td> </tr> <tr> <td>124</td> </tr> <tr> <td>234</td> </tr> </table>	<u>07/08</u>	124	234	<table border="0"> <tr> <td><u>06/07 vs. 07/08</u></td> </tr> <tr> <td><u>Relative % change: -16.2%</u></td> </tr> <tr> <td>P<0.05 (post ban vs. pre-ban period)</td> </tr> <tr> <td> </td> </tr> <tr> <td><u>Relative % change: +0.90%</u> P<0.05</td> </tr> <tr> <td>P<0.05 (post ban vs. pre-ban period)</td> </tr> <tr> <td><u>Estimated effects in non-ban over ban counties from Poisson regression:</u> -13%, corresponding with 159 fewer AMIs in no prev. ban vs. prev. ban counties P=0.01</td> </tr> </table>	<u>06/07 vs. 07/08</u>	<u>Relative % change: -16.2%</u>	P<0.05 (post ban vs. pre-ban period)	 	<u>Relative % change: +0.90%</u> P<0.05	P<0.05 (post ban vs. pre-ban period)	<u>Estimated effects in non-ban over ban counties from Poisson regression:</u> -13%, corresponding with 159 fewer AMIs in no prev. ban vs. prev. ban counties P=0.01	1 year post- ban
	<u>04/05</u>	<u>05/06</u>	<u>06/07</u>																										
164	154	148																											
248	237	232																											
<u>07/08</u>																													
124																													
234																													
<u>06/07 vs. 07/08</u>																													
<u>Relative % change: -16.2%</u>																													
P<0.05 (post ban vs. pre-ban period)																													
<u>Relative % change: +0.90%</u> P<0.05																													
P<0.05 (post ban vs. pre-ban period)																													
<u>Estimated effects in non-ban over ban counties from Poisson regression:</u> -13%, corresponding with 159 fewer AMIs in no prev. ban vs. prev. ban counties P=0.01																													

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Naiman 2010 (Jan. 1996-Mar. 2006) Greatest (other design with concurrent comparison) Fair (2 limitations) Cardiovascular conditions (asthma reported in other SET)	Toronto, Canada Comprehensive city ban with restrictions implemented in three phases Comparison: time series, but also control locations and control health conditions	Patients from Toronto hospitals with cardiovascular, respiratory, or control (gastrointestinal) conditions; cardiovascular and chronic obstructive pulmonary disease only included those aged 45+ years; asthma limited to those younger than 65 Toronto population: ~2.5 million	Reductions in hospital admission rates (from regression model; per 10,000)		Phase 1: public & work places Phase 2: restaurants Phase 3: bars	Reduction in rate, (95% CI), p-val 0.171 (95% CI: -0.59 to 0.40) p= 0.150 -0.477 (95% CI: - 0.95 to -0.003) p= 0.040 -0.611 (95% CI: - 1.03 to -0.19) p= 0.004	2 years after phase 1 3 years after phase 2 2 years after phase 3
Shetty 2011 Greatest (other design with concurrent comparison) Fair (2 limitations) Hospitalization and mortality rates for AMI (asthma reported in other SET)	U.S. States, counties, and municipalities that implemented restrictions on smoking between 1990 and 2004 Comparison: controlled before/after	Medicare Provider Analysis and Review files, national death records, hospitalization data from the Healthcare Cost and Utilization Project's Nationwide Inpatient Sample (NIS)	Hospitalization rates for AMI (% change) Death rates for AMI			<u>% change:</u> -1.8% (95% CI: - 6.7 to 3.1) P=0.467 <u>% change:</u> +1.3% (95% CI: -1.1 to 3.6) P=0.294	Unknown
Sims 2010 (Jul. 2002-Sep. 2008) Moderate (simple time-series) Fair (2 limitations) AMI hospital admissions	England National smoking ban applying to enclosed workplaces and public places Comparison: time- series with multiple pre- ban measurements	Patients aged 18+ , residents of England, with myocardial infarction as primary emergency admission diagnosis; only first AMI within 28- day period and first hospital admission episode were included Decrease from 61,498 to 51,664 admissions per year (those included in study)	AMI hospital admissions (from regression model)			-2.4% AMI admissions in first year post-ban 95% CI (-4.06% to -0.66%) P=0.007	1 year post- ban

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Villalbi 2009 (2004-2006) Moderate (simple time-series) Fair (2 limitations) AMI hospitalization rate	Barcelona, Spain Strengthened previous national ban to a full ban w/ exemptions; workplace smoking ban (exemptions for cafés, bars, restaurants, night clubs, and discos) Comparison: before/after	All patients over 24 years with a primary diagnosis of AMI who lived in the area Barcelona population: ~5 million people	Adjusted AMI hospitalization rate	2005 Men 175.0 Women 75.6	2006 Men 156.4 Women 69.0	Relative % change men: -10.7% Relative % change women: -8.8% Weighted average relative % change: -10.1%	1 year post-ban
Villalbi 2011 (2004-2007) Moderate (interrupted time-series) Fair (3 limitations) AMI mortality	Spain Strengthened previous national ban to a full ban w/ exemptions; workplace smoking ban (exemptions for cafés, bars, restaurants, night clubs, and discos) Comparison: before/after	All AMI deaths of Spanish residents registered by the National Statistics Institute of those aged over 34 years Between ~21,500 and ~23,300 annual AMI deaths	Annual age-standardized relative risk of AMI death	Pre-ban RR: 1.0		1 yr. post-ban RR: 0.90 (95% CI: 0.88 to 0.92) P<0.001 2 yrs. post-ban RR: 0.86 (95% CI: 0.84 to 0.88) P<0.001	2 years post-ban

Health Outcome: Asthma Morbidity

Author & year (study period) Design suitability (design) Quality of execution (# of Limitations) Outcome Measurement	Location Intervention Comparison	Study population description Sample size	Effect measure	Reported baseline	Reported effect	Value used in summary [95%CI]	Follow-up time
Dove 2010 (1999-2006) Least Suitable (Cross-sectional w/ comparison group) Good (1 limitation) Self-report asthma prevalence; asthma attacks; emergency room visits among current asthma subjects Non-smoking youth (NHANES)	United States; 117 counties Categories on smoking policies for workplaces, restaurants and bars: S-F law: Completely banned smoking and did not allow for separately ventilated smoking rooms. No S-F Law: no state or county law Comparison: No smoke-free law	Non-smoking youth aged 3-15 years participating in NHANES N eligible: 50,939 N included: 8,800 Subjects by exposure: Policy Counties Subjects No 91 6573 (75%) S-F 26 2227 (21%)	Self-report asthma prevalence Self-report asthma attack Self-report emergency room visits		No Law: 682/6573 =10.4% w/ SF law: 215/2227 =9.7%	Absolute difference: 9.7-10.4= -0.7% Relative % change: -6.7% OR*: 1.08 (0.85-1.37) OR*: 0.66 (0.28 – 1.56) OR*: 0.55 (0.27-1.13) *Adjusted weighted logistic regression	NA
Halbelsben 2010 (1998-2006; SET data from 2006) Least Suitable (Cross-sectional w/ comparison group) Good (1 limitation) Self-report asthma prevalence *Also reported on AMI	U.S. (national, but included data for 20 states because these questions were optional on the BRFSS) Self-report smoke-free workplace policy or restriction Comparison: no self-report policy	Included 20 states; telephone survey of civilian, non-institutionalized adults N=50,882	Self-report asthma as informed by health professional		Relationship btwn. S-F workplace policy and asthma:	OR: 1.19 (95% CI: 1.04-1.37)	N/A

<p>Herman 2011 (Jan. 2004-May 2008) Greatest suitable (Other design with concurrent comparison) Fair (3 limitations) Asthma hospital admissions *Also reported on AMI</p>	<p>Arizona, US Comprehensive statewide smoking ban Comparison: before/ after and cohort of local municipalities with pre- existing bans (compared with no pre- existing bans)</p>	<p>All Arizona residents with primary diagnosis of one of the outcomes; hospital discharge data from 87 Arizona hospitals</p>	<p>Asthma hospitalization per 100,000 total population</p>	<p>04/05 05/06 06/07</p>	<p>07/08</p>	<p>06/07 vs. 07/08 Absolute difference: -19 hospital admissions Relative % change: -20.9% Absolute difference: -6 hospital admissions Relative % change: -5.0% Estimated effects in non-ban over ban counties from Poisson regression: -22%, corresponding with 249 fewer asthma admissions in no prev. ban vs. prev. ban counties P<0.001</p>	<p>1 year post- ban</p>
			no previous ban	91 100 91	72		
			previous ban	118 114 121	115		

<p>Mackay 2010 (2000-2009) Moderate suitable (Interrupted Time-Series) Fair (2 limitations)</p> <p>Asthma hospital admissions</p>	<p>Scotland (southwestern, southeastern, northern)</p> <p>Smoking, Health, and Social Care Act banned smoking in all enclosed public places and workplaces</p> <p>Comparison: Before/after</p>	<p>Included children ≤ 15 years; Hospital admissions collected from the Scottish Morbidity Record and death certificate data collected from the General Register Office for Scotland</p>	<p>Hospital admissions</p> <p>Before S-F policy</p> <p>After S-F policy</p>	<p>+5.2% hospital admissions per year (95%CI: 3.9-6.6)</p> <p>-18.2% hospital admissions per year (relative to rate of admissions on 3/26/06 when policy began)</p>	<p>Relative % change: -18.2% average reduction in asthma admissions per year (95% CI: 14.7, 21.8)</p>	<p>10-43 months post-ban</p>
<p>Naiman 2010 (Jan. 1996-Mar. 2006) Greatest suitable (Other design with concurrent comparison) Fair (2 limitations)</p> <p>Asthma hospital admissions</p> <p>*Also reported on AMI</p>	<p>Toronto, Canada</p> <p>Comprehensive city ban with restrictions implemented in three phases</p> <p>Comparison: time series, but also control locations and control health conditions</p>	<p>Patients from Toronto hospitals with cardiovascular, respiratory, or control (gastrointestinal) conditions; asthma patients limited to those younger than 65</p>	<p>Hospital admission rates per 10,000 (Regression model)</p>	<p>City ban in 3 phases:</p> <p>Public/workplaces</p> <p>Restaurants</p> <p>Bars</p>	<p>$\beta=-0.20$ (95%CI: -0.42-0.02), $p=0.07$</p> <p>$\beta=-0.35$ (95%CI: -0.53 - -0.02), $P<0.001$</p> <p>$\beta=-0.16$ (95%CI: -0.33 - 0.01), $p=0.06$</p>	<p>Reduction in annual rates of hospital admission (per 10,000) after S-F ban in restaurants only. $\beta= -0.35$ (95% CI: -0.53 - -0.02, $p<0.001$)</p> <p>2 years after phase 1</p> <p>3 years after phase 2</p> <p>2 years after phase 3</p>

<p>Shetty 2011 Greatest suitable (Other design with concurrent comparison) Fair (2 limitations) Asthma hospital admissions *Also reported on AMI</p>	<p>U.S. States, counties, and municipalities that implemented restrictions on smoking between 1990 and 2004 Comparison: before/after relative to control group</p>	<p>Medicare Provider Analysis and Review files, national death records, hospitalization data from the Healthcare Cost and Utilization Project's Nationwide Inpatient Sample (NIS) Young persons (0-17 years) Adults (18-64 years) Elderly (65+ years)</p>	<p>Hospital admission rates for asthma</p>		<p>% Change in hospital admission rates for asthma Young persons: 9.0 (-1 – 19.1), p=0.08 Adults: -7.6 (-13.4 - - 1.8), p=0.01 Elderly: 5.1 (-0.6 – 11.1), p=0.14</p>	<p>Non-sig. reduction in asthma admissions among all age groups. -1.3 (95% CI: -6.5 – 4.0), p=0.64</p>	<p>Unknown</p>
---	--	---	---	--	---	--	----------------