Online Appendix

Finally a Smoking Gun? Compensating Differentials and the Introduction of Smoking Bans

July 2020

By DANIEL WISSMANN

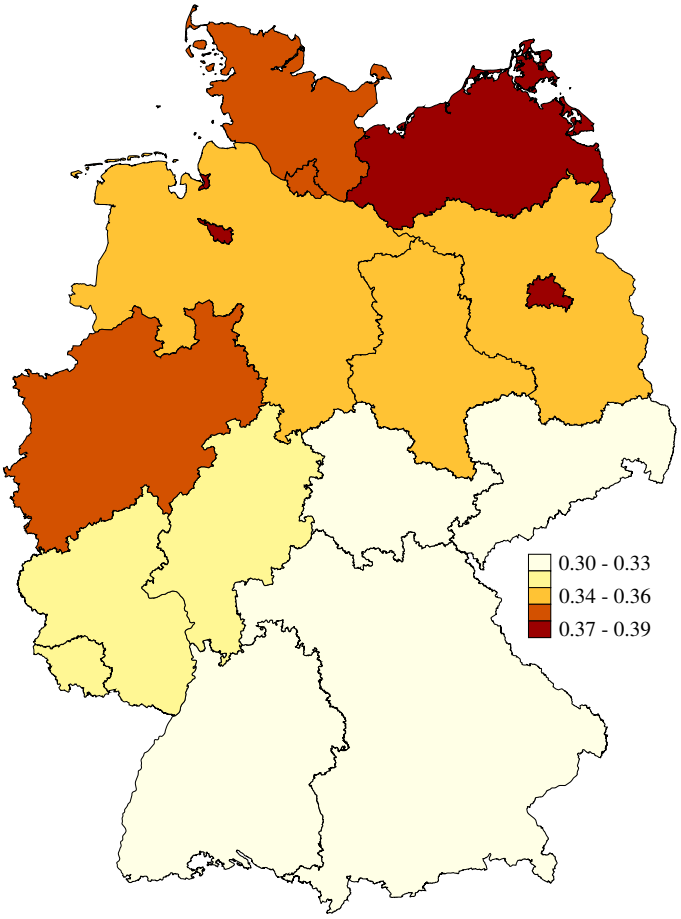


FIGURE A1. MAP OF SHARE OF POPULATION SMOKING

Note: This map shows the share of smokers in each state in 2005 based on Microcensus data. The sample is based on Microcensus waves 2005 and 2009 and is restricted to individuals aged 17-62 not in civil service (*Beamte*) and with non-missing values the control variable values used in Table 6. Statistics are weighted by survey weights.
Source: Author's calculations based on the German Microcensus.

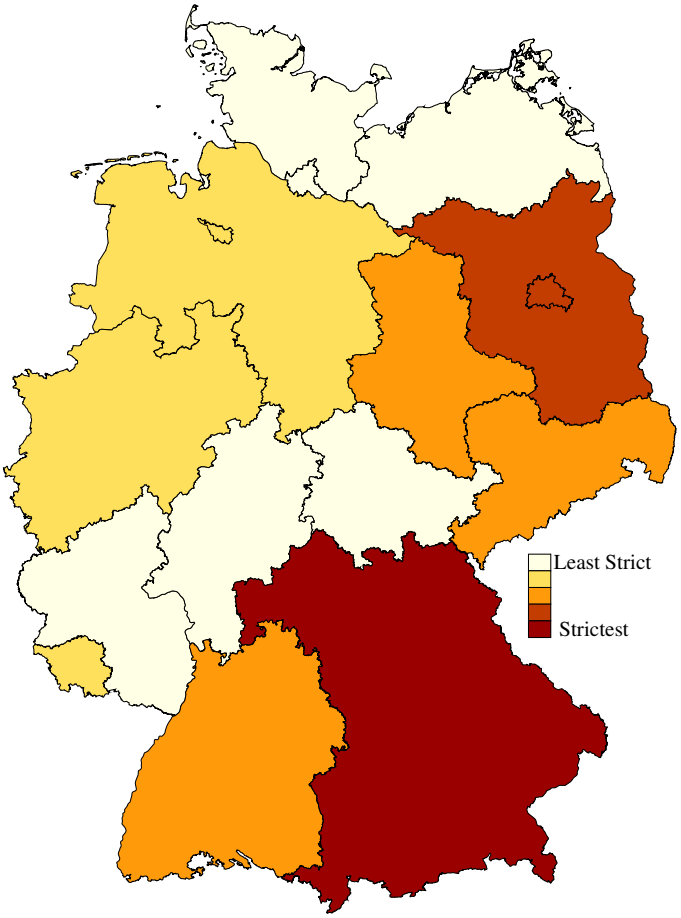


FIGURE A2. MAP OF INITIAL SMOKING BAN INTENSITIES IN GERMANY

Note: This map shows the initial intensity of smoking bans according to the index specified in equation 1. "Strictest" refers to the strictest ban (corresponding to Bavaria's initial smoking ban, index value 1) and "least strict" to the least strict ban observed (corresponding to Rhineland-Palantinate, index value 0.5).
Source: Author's calculations based on respective state regulations.

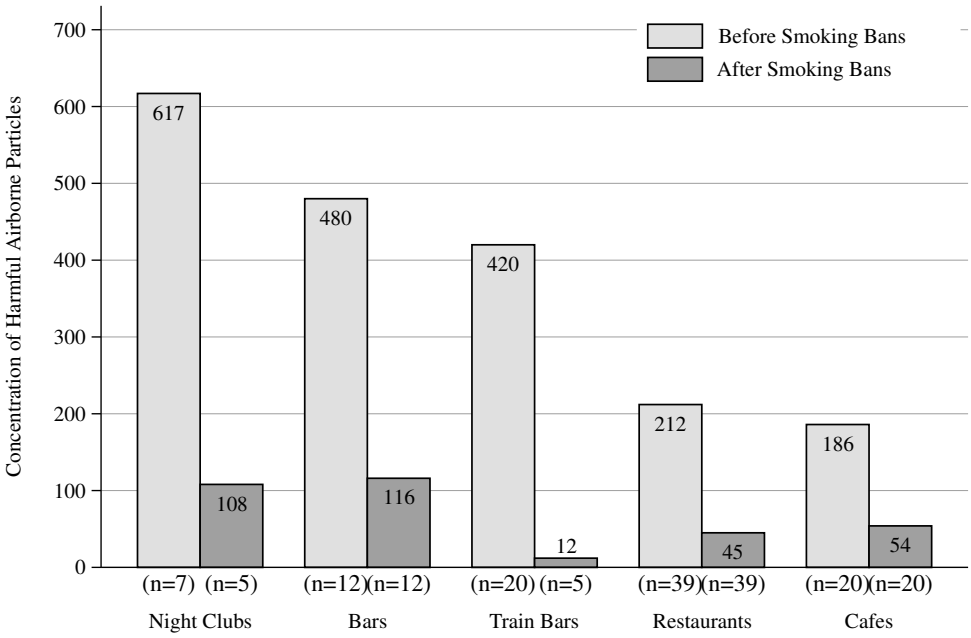


FIGURE A3. AIR QUALITY MEASUREMENTS BEFORE AND AFTER THE INTRODUCTION OF SMOKING BANS

Note: This figure compares the average concentration of particle matter (PM) up to $2.5\,\mu\mathrm{m}$ per m^3 measured in the indoor air of five different types of hospitality establishments in Germany before (2005) and after (2009) the introduction of smoking bans. The post measurement for train bars was taken in 2007.
Source:: DKFZ (2010, 24ff)

FIGURE A4. AIR QUALITY BEFORE AND AFTER THE INTRODUCTION OF SMOKING BANS IN GERMAN HOSPITALITY ESTABLISHMENTS WITH A COMPREHENSIVE BAN

Note: This figure compares the times series of the average concentration of particles up to $2.5\,\mu\text{m}$ in the indoor air before (dark gray/ red) and after (light gray/ orange) the introduction of smoking bans in hospitality establishments in Germany with a comprehensive smoking ban.
Source: DKFZ (2010, 25ff)

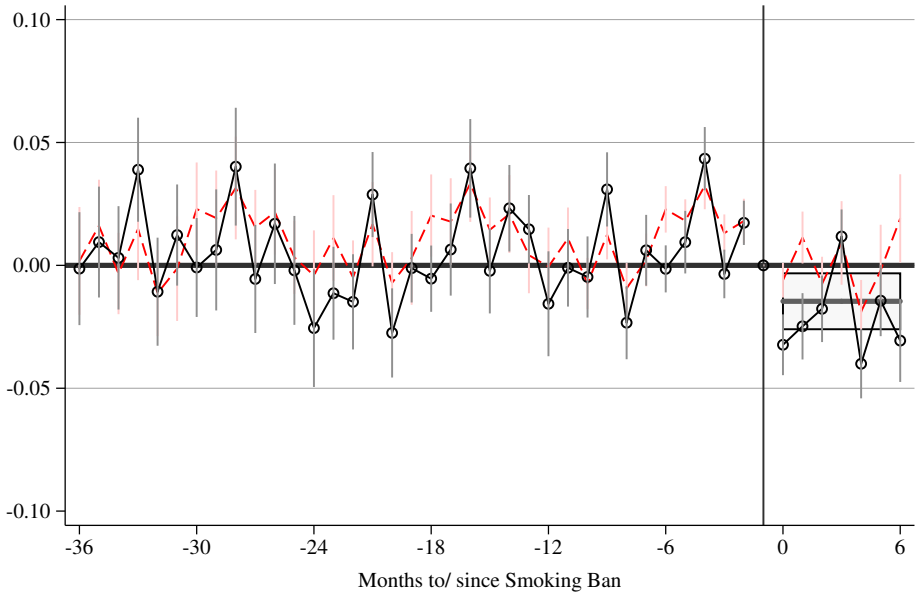


FIGURE A5. ILLUSTRATION OF DDD APPROACH

Note: See notes for Figure 2.
Source: Author's calculations based on IAB earnings data.

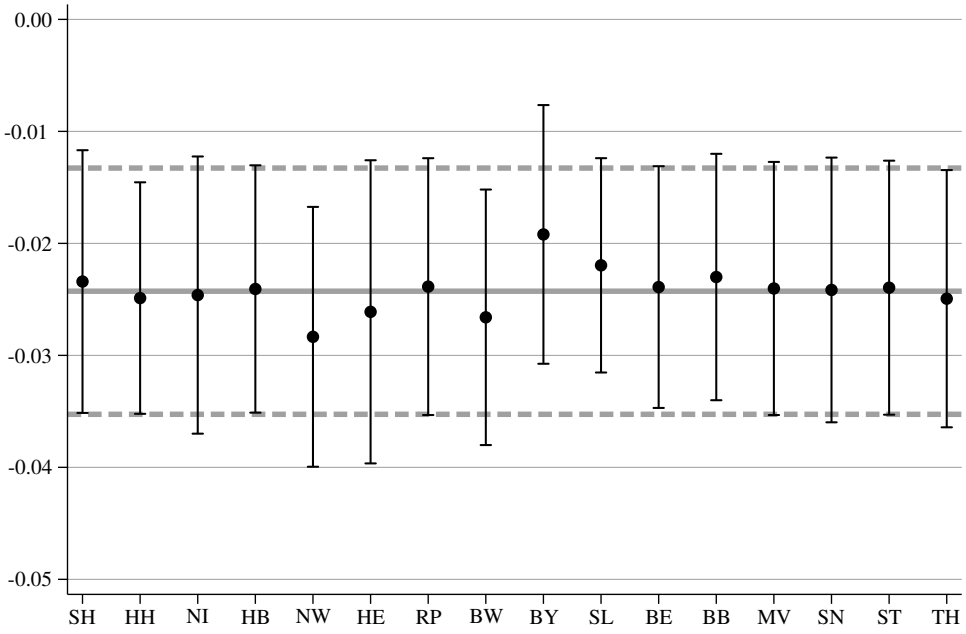
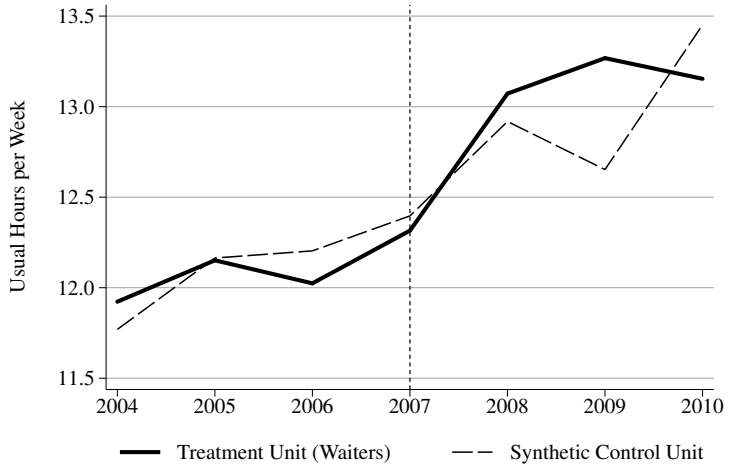


FIGURE A6. LEAVE ONE STATE OUT AT A TIME

Note: This figure plots the coefficients (filled black dots) and corresponding 95% confidence intervals (dashed lines) from regressions using extended controls of the smoking ban intensity on waiters' log daily earnings where observations from the state indicated on the x-axis are left out. The solid thick gray line (dashed gray lines) refers to the baseline estimate (95% confidence interval) including observations from all 16 states.
Source: Author's calculations based on IAB earnings data.

(A) ALL STATES (16/16)



(B) ONLY STATES WITH SMOKING BANS INTRODUCED IN 2008 (13/16)

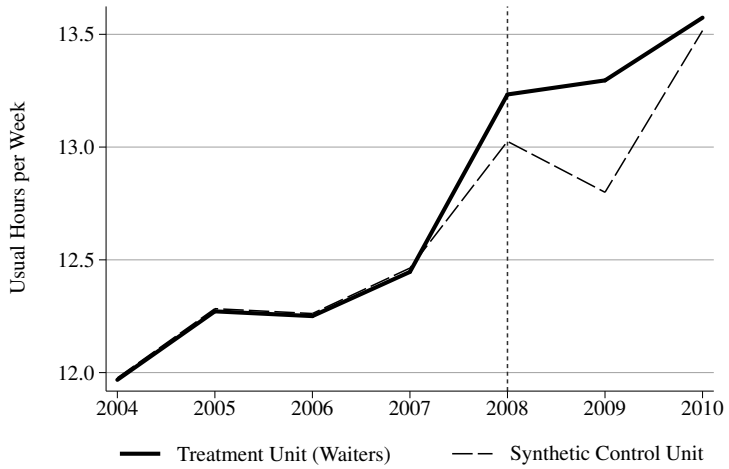
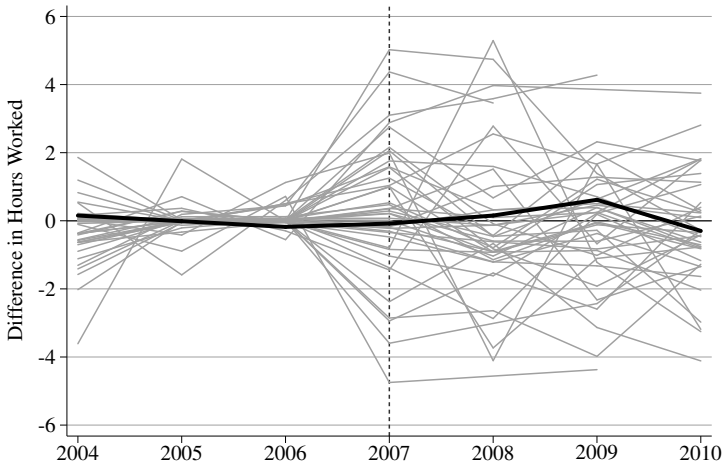


FIGURE A7. EVOLUTION OF HOURS WORKED (SYNTHETIC CONTROL GROUP APPROACH)

Note: This figure compares the evolution of the usual hours worked per week of mini job workers employed as waiters to a synthetic control group constructed from a pool of all other mini job workers in occupations with at least 15 observations per state. The predictor variables are averaged over the entire pre-treatment period and include age, the share of females, and the share of workers in East Germany along with the hours worked in 2005 and 2006. Fully nested and fully robust (global) optimization procedure of Hainmueller, Abadie, and Diamond's `synth` package applied. A complete list of donor pool occupations and the according synthetic control weights is provided in Table A20 (only in German).
Source: Author's calculations based on the German Microcensus.

(A) TREATMENT AND PLACEBO DIFFERENCES IN HOURS WORKED



(B) TREATMENT AND PLACEBO PRE/POST MSPE RATIOS

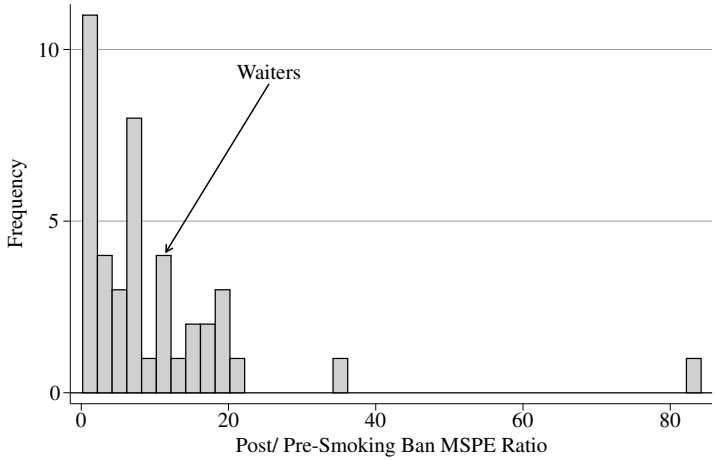
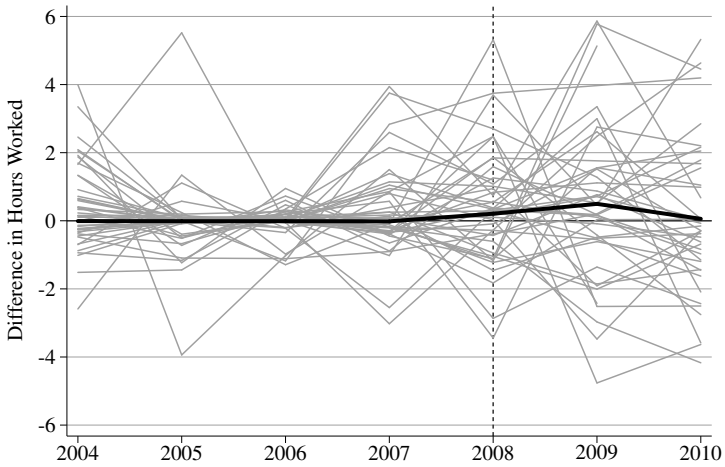


FIGURE A8. SYNTHETIC CONTROL INFERENCE GRAPHS
(All States)

Note: This figure presents two approaches commonly used for inference in a synthetic control approach. Figure A8a, shows the result of a placebo exercise in which all occupations in the donor pool are iteratively assigned to be treated while waiters are moved into the control group. For four occupation groups no synthetic control group could be constructed, they remain, however, in the donor pool. Figure A8b plots the ratios of the pre- and post mean squared prediction errors (MSPE). Occupations with pre-smoking ban MSPE ten times higher than that of waiters discarded. When including observations from all 16 state and setting 2007 to be the first treatment year, neither inference approach indicates that the hours worked would significantly differ between the group of waiters and a synthetic control group in the period after the introduction of smoking bans.
Source: Author's calculations based on the German Microcensus.

(A) TREATMENT AND PLACEBO DIFFERENCES IN HOURS WORKED



(B) TREATMENT AND PLACEBO PRE/POST MSPE RATIOS

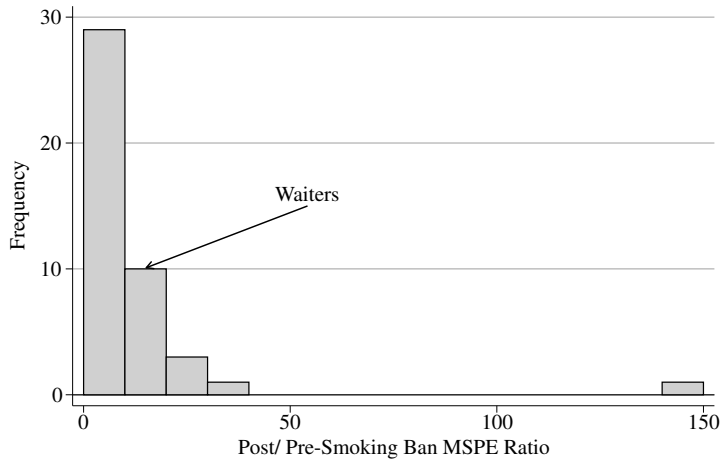


FIGURE A9. SYNTHETIC CONTROL INFERENCE GRAPHS
(Only States with Ban Introduction in 2008)

Note: This figure presents two approaches commonly used for inference in a synthetic control approach. Figure A9a shows the result of a placebo exercise in which all occupations in the donor pool are iteratively assigned to be treated while waiters are moved into the control group. Figure A8b plots the post/pre-ratio of the mean squared prediction errors (MSPE). Occupations with pre-smoking ban MSPE ten times higher than that of waiters discarded. When including observations from only the 13 states that introduced smoking bans in 2008 and setting 2008 to be the first treatment year, the post/pre-ratio of MSPEs indicates that no other control state achieves such a large ratio as the group of waiters implying that the hours worked significantly increases for waiters in comparison to a synthetic control group in the period after the introduction of smoking bans.
Source: Author's calculations based on the German Microcensus.

TABLE A1—SMOKING BEHAVIOR AMONG THE POPULATION AND WAITERS

	2005			2009		
	(1) Population	(2) Waiters	(3) Waiters (Mini Jobs)	(4) Population	(5) Waiters	(6) Waiters (Mini Jobs)
How Often do you Smoke?						
Regularly	29.7	43.3	42.4	29.6	39.2	38.5
Sometimes	4.8	5.6	8.1	4.8	6.0	6.9
Never	65.5	51.1	49.5	65.6	54.8	54.6
Observations	140,513	1,919	428	188,809	2,207	503
How many Cigarettes do you Smoke per Day? (if Smoking)						
1 to 5	13.9	10.6	14.1	14.3	12.7	16.5
5 to 20	70.8	72.9	75.3	72.7	74.2	75.0
12 to 40	14.4	15.3	10.2	12.3	12.4	7.1
41 and more	0.9	1.3	0.4	0.7	0.6	1.3
Observations	45,594	888	209	61,303	962	213

Note: This table shows descriptive statics regarding the smoking behavior of the general population, waiters, and waiters in mini jobs in 2005 and 2009. The sample is restricted to individuals aged 17-62 not in civil service (*Beamte*). Waiters are defined as those working in occupation groups 911 and 912. Mini job holders are those indicating that their main current job is a mini job. The questions regarding smoking behavior are not compulsory in the Microcensus. Statistics are weighted by survey weights.
Source: Author's calculations based on the German Microcensus.

TABLE A2—INITIAL SMOKING BAN REGULATIONS IN GERMAN STATES (UNTIL AUGUST 2008)

State	Ban Introduction (Legal)	Ban Introduction (Enforced) *if different*	(i) Separate Smoking Room Allowed? (Restaurants & Bars) SR1	(ii) Separate Smoking Room Allowed? (Dancing Clubs) SR2	(iii) Exception for Small Bars? SB	(iv) Exception for Party Tents? PT	**Intensity** (Baseline)
BB	2008 - 01	2008 - 07	✓				0.67
BE	2008 - 01	2008 - 07	✓				0.67
BW	2007 - 08		✓			✓	0.665
BY	2008 - 01					*a*	0.995
HB	2008 - 01	2008 - 07	✓	✓		✓	0.65
HE	2007 - 10		✓	✓		✓	0.65
HH	2008 - 01		✓	✓		✓	0.65
MV	2008 - 01	2008 - 08	✓	✓			0.505
NI	2007 - 08	2007 - 11	✓	✓			0.655
NW	2008 - 07		✓	✓			0.655
RP	2008 - 02		✓	✓	✓	✓	0.50
SH	2008 - 01		✓	✓	✓	✓	0.65
SL	2008 - 02	2008 - 06	✓	✓			0.655
SN	2008 - 02		✓		✓	✓	0.665
ST	2008 - 01	2008 - 07	✓			✓	0.665
TH	2008 - 07		✓	✓		✓	0.65

Note: Ticks in light gray indicate that exception was only granted for owner-operated bars without employees and thus was not considered in the empirical analysis. [a] Bavaria granted an exception to the smoking ban in party tents from January - December 2008, the intensity index value during this period for Bavaria is thus 0.995.
Source: Respective state laws from *beck-online*, Ahlfeldt and Maennig (2010, 516ff, table A.1)

TABLE A3—INDEX WEIGHTS USED TO CONSTRUCT THE INTENSITY INDEX

Type	Employees	WZ 2008	Weight ω
Restaurants & Bars, large (LB)[a]	567,900	56.1, 56.301, 56.303, 56.304, 56.309	0.66
Dancing Clubs (DC)	26,982	56.302	0.03
Restaurants & Bars, small (SB)[b]	250,428	56.1, 56.301, 56.303, 56.304, 56.309	0.30
Party Tents (PT)[c]	11,590	56.1, 56.301, 56.303, 56.304, 56.309	0.01
Total	856,900	56.1, 56.3	1.00
Other Food Services	91,132	56.2	–
Accomodation	408,599	55	–
Total Hospitality Industry	1,356,631	55, 56	–

Note: [a] 6 or more employees. [b] up to 5 employees. [c] estimated as 1% of employees in large restaurant and bars.
Source: Data refer to the year 2007 and are taken from the Yearly Statistics in the Hospitality Industry (*Jahresstatistik im Gastgewerbe*) published by the Federal Statistical Office (Statistisches Bundesamt 2011).

TABLE A4—DD REGRESSION MODELS: INDIVIDUAL INTENSITY INDEX COMPONENTS

	Dependent Variable: *Log Wage*				
	(1)	(2)	(3)	(4)	(5)
Ban in Side Rooms[a]	-0.024				-0.022
	(0.005)				(0.006)
Ban in Small Pubs[b]		-0.013			-0.011
		(0.004)			(0.005)
Ban in Party Tents			-0.000		0.001
			(0.009)		(0.010)
Ban in Side Room				-0.012	0.007
(Dancing Clubs)				(0.007)	(0.004)
Worker, Time, State FEs	✓	✓	✓	✓	✓
State-Month FEs	✓	✓	✓	✓	✓
Extended DD Controls	✓	✓	✓	✓	✓
Start	Aug 2006	Aug 2006	Aug 2006	Aug 2006	Aug 2006
End	Feb 2009	Feb 2009	Feb 2009	Feb 2009	Feb 2009
Clusters	16	16	16	16	16
Individuals	13,366	13,366	13,366	13,366	13,366
Observations	153,840	153,840	153,840	153,840	153,840
Adj. R^2	0.868	0.868	0.868	0.868	0.868

Note: Sample restricted to waiters in mini jobs working in the hospitality sector. The unit of observation is a worker and time is running in monthly intervals. The set of extended DD controls include state specific linear pre-trends as well as the current and six lags of the monthly state unemployment rate. Standard errors clustered at the state level. [a] in larger restaurants and pubs larger than 75m^2. [b] up to 75m^2.
Source: Author's calculations based on IAB earnings data.

TABLE A5—DDD REGRESSION MODELS (COOKS): INDIVIDUAL INTENSITY INDEX COMPONENTS

	Dependent Variable: *Log Wage*				
	(1)	(2)	(3)	(4)	(5)
Ban in Side Rooms^a × Waiters	-0.039				-0.035
	(0.007)				(0.008)
Ban in Side Rooms^a	0.013				0.010
	(0.006)				(0.008)
Ban in Small Pubs^b × Waiters		-0.015			-0.001
		(0.008)			(0.009)
Ban in Small Pubs^b		0.004			-0.004
		(0.005)			(0.007)
Ban in Party Tents × Waiters			-0.007		-0.008
			(0.008)		(0.010)
Ban in Party Tents			0.008		0.008
			(0.007)		(0.008)
Ban in Side Room × Waiters (Dancing Clubs)				-0.019	-0.003
				(0.010)	(0.008)
Ban in Side Room (Dancing Clubs)				0.008	0.007
				(0.004)	(0.006)
Worker, Occupation-State, Occupation-Time FEs	✓	✓	✓	✓	✓
State-Month FEs	✓	✓	✓	✓	✓
Extended DDD Controls	✓	✓	✓	✓	✓
Start	Aug 2006	Aug 2006	Aug 2006	Aug 2006	Aug 2006
End	Feb 2009	Feb 2009	Feb 2009	Feb 2009	Feb 2009
Clusters	16	16	16	16	16
Individuals	19,716	19,716	19,716	19,716	19,716
Observations	229,433	229,433	229,433	229,433	229,433
Adj. R^2	0.869	0.869	0.869	0.869	0.869

Note: Sample restricted to waiters and cooks in mini jobs working in the hospitality sector. The unit of observation is a worker and time is running in monthly intervals. The set of extended DDD controls include state-occupation specific linear pre-trends as well as the current and six lags of the monthly state unemployment rate. Standard errors clustered at the state level. ^{a}in larger restaurants and pubs larger than 75m^2. ^{b}up to 75m^2.
Source: Author's calculations based on IAB earnings data.

TABLE A6—DDD REGRESSION MODELS (ALL OTHER MINI JOB WORKERS): BAN INDICATORS

	Dependent Variable: *Log Wage*				
	(1)	(2)	(3)	(4)	(5)
Ban in Side Rooms^a × Waiters	-0.034				-0.038
	(0.005)				(0.005)
Ban in Side Rooms^a	0.008				0.013
	(0.004)				(0.004)
Ban in Small Pubs^b × Waiters		-0.012			-0.004
		(0.007)			(0.004)
Ban in Small Pubs^b		0.000			-0.001
		(0.003)			(0.005)
Ban in Party Tents × Waiters			-0.007		-0.007
			(0.007)		(0.007)
Ban in Party Tents			0.005		0.004
			(0.008)		(0.009)
Ban in Side Room × Waiters (Dancing Clubs)				-0.013	0.006
				(0.010)	(0.004)
Ban in Side Room (Dancing Clubs)				-0.000	-0.005
				(0.004)	(0.004)
Worker, Occupation-State, Occupation-Time FEs	✓	✓	✓	✓	✓
State-Month FEs	✓	✓	✓	✓	✓
Extended DDD Controls	✓	✓	✓	✓	✓
Start	Aug 2006	Aug 2006	Aug 2006	Aug 2006	Aug 2006
End	Feb 2009	Feb 2009	Feb 2009	Feb 2009	Feb 2009
Clusters	16	16	16	16	16
Individuals	28,393	28,393	28,393	28,393	28,393
Observations	342,854	342,854	342,854	342,854	342,854
Adj. R^2	0.873	0.873	0.873	0.873	0.873

Note: Sample restricted to mini job workers working in the hospitality sector. The unit of observation is a worker and time is running in monthly intervals. The set of extended DDD controls include state-occupation specific linear pre-trends as well as the current and six lags of the monthly state unemployment rate. Standard errors clustered at the state level. ^{a}in larger restaurants and pubs larger than 75m^2. ^{b}up to 75m^2.
Source: Author's calculations based on IAB earnings data.

TABLE A7—POTENTIAL DETERMINANTS OF THE INTRODUCTION TIME OF A STATE'S SMOKING BAN

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Ban Intensity	-1.345										77.784
	(1.169)										(55.268)
Share Smokers		0.122									-3.682
in 2005 (%)		(0.191)									(3.810)
Share Foreign			-4.543								-133.606
Tourists			(8.884)								(139.689)
Months to				-0.004							-0.190
Election				(0.049)							(0.111)
ln(Population)					-0.411						-7.389
					(1.121)						(11.201)
Conservative						-1.244					-19.822
Index						(1.019)					(20.673)
Trend Unemployment Rate							-0.310				3.799
2005-07							(0.294)				(2.940)
Trend Hospitality Wages								0.923			-16.773
2005-07								(1.295)			(23.014)
Trend Bar Revenues									0.547		9.352
2005-07									(1.283)		(11.278)
Trend Restaurant Revenues										1.220	5.244
2005-07										(1.362)	(4.950)
Observations	16	16	16	16	16	16	16	16	14	14	14
R^2	0.002	0.013	0.015	0.000	0.016	0.039	0.059	0.008	0.020	0.063	0.557
Adj. R^2	-0.069	-0.057	-0.055	-0.071	-0.055	-0.029	-0.008	-0.063	-0.062	-0.015	-0.918

Note: This table shows correlations between potential determinants of the introduction date of a state's smoking ban. The dependent variable is the introduction time of a state's smoking ban (measured in Stata's monthly date format, e.g. 571 refers to August 2008). The ban intensity refers to the intensity of the smoking ban in the month it first became effective. The conservative index is defined as the vote shares of CDU/ CSU and FDP over the the shares of SPD, Greens and the Left. The trend variables refer to coefficient from a regression of the state level unemployment rate, the revenues of bars, restaurants, and in the unemployment rate, respectively, on time. Robust standard errors in parentheses.
Source: Author's calculations based on respective state laws, German Microcensus 2005, Federal Statistical Office, Ahlfeldt and Maennig (2010).

TABLE A8—POTENTIAL DETERMINANTS OF THE INTENSITY OF A STATE'S SMOKING BAN

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Ban Intro Date	-0.002										0.006
	(0.001)										(0.002)
Share Smokers		-0.014									0.040
in 2005 (%)		(0.011)									(0.025)
Share Foreign			0.270								1.419
Tourists			(0.296)								(0.975)
Months to				-0.003							0.002
Election				(0.002)							(0.001)
ln(Population)					0.044						0.079
					(0.036)						(0.082)
Conservative						0.145					0.262
Index						(0.073)					(0.110)
Trend Unemployment Rate							-0.001				-0.046
2005-07							(0.011)				(0.017)
Trend Hospitality Wages								0.001			0.188
2005-07								(0.038)			(0.158)
Trend Bar Revenues									-0.024		-0.103
2005-07									(0.038)		(0.083)
Trend Restaurant Revenues										-0.051	-0.045
2005-07										(0.044)	(0.041)
Observations	16	16	16	16	16	16	16	16	14	14	14
R^2	0.002	0.150	0.043	0.161	0.145	0.439	0.001	0.000	0.031	0.090	0.973
Adj. R^2	-0.069	0.090	-0.025	0.101	0.083	0.399	-0.071	-0.071	-0.049	0.014	0.884

Note: This table shows correlations between potential determinants of the intensity of a state's smoking ban. The dependent variable is the intensity of a state's smoking ban at the month it first become effective. The conservative index is defined as the vote shares of CDU/ CSU and FDP over the the shares of SPD, Greens and the Left. The trend variables refer to coefficient from a regression of the state level unemployment rate, the revenues of bars, restaurants, and in the unemployment rate, respectively, on time. Robust standard errors in parentheses.
Source: Author's calculations based on respective state laws, German Microcensus 2005, Federal Statistical Office, Ahlfeldt and Maennig (2010).

TABLE A9—SUMMARY STATISTICS OF STATE LEVEL DATA

	Mean	SD	Min	Max
Monthly				
Unemployment Rate (in %)	11.5	[4.23]	4.10	21.2
Revenue Index Restaurants (2005=100)	103.4	[20.6]	57.3	173.7
Revenue Index Bars (2005=100)	91.2	[21.5]	45.1	174.2
Share of Foreign Arrivals (in %)[a]	16.1	[8.13]	2.84	39.1
Temperature (in Degrees Celsuis)	9.46	[6.03]	-3.90	19.1
Rain Amount (in l/m^2)	67.9	[33.9]	1.10	179.2
Sunshine Hours	127.7	[75.5]	18.3	351.3
Yearly				
Population (in Millions)	5.13	[4.70]	0.66	18.0
Share of Smokers in 2005 (in %)	28.5	[2.75]	24.5	33.7
With Election Cycles				
Turnout in State-Level Elections (in %)	58.6	[5.62]	44.4	70.6
Conservative Index	1.05	[0.44]	0.36	2.31

Note: This table presents summary statistics of state level data between August 2006 and February 2009. Standard deviation in brackets. [a] Data not available for Berlin and Brandenburg. [b] Share of registrations of tourists of foreign nationality in all touristic registrations at accommodation establishments.
Source: Deutscher Wetterdienst (2016), Federal Employment Agency (2016), Federal Statistical Office (2016a,b,c), and Statistical Offices of the Länder (2016)

TABLE A10—*p*-VALUE RESULTS FROM ALTERNATIVE INFERENCE METHODS

	(1) Ban vs. No Ban Indicator	(2) Smoking Ban Intensity Index
$\widehat{\beta}$	-0.013	-0.024
p-values:		
1. Analytical (clustered at state level)[1]	0.0038	0.0006
2. Wild Cluster Bootstrap (clustered at state level)[2]	0.0015	0.0010
3. Permutation based (shuffling policies across states)[3]	0.0080	0.0028

Notes: [1]Based on analytically derived standard errors and *t*-values evaluated against a Student-*t* distribution with 15 (16 states-1) degrees of freedom.
[2]Wild cluster (at the state level) bootstrap following Colin Cameron, Gelbach, and Miller (2008) with the null hypothesis imposed ($\beta = 0$), using Rademacher weights and 65,536 repetitions (2^{16} = the universe of Rademacher weights). The *p*-value is calculated as the two-tailed symmetric *p*-value following the suggestions in Roodman et al. (2018) and implemented via their `boottest` command in Stata.
[3]Two-tailed symmetric *p*-value based on 10,000 permutation placebos coefficients resulting from randomly shuffling smoking ban policies across states (without replacement) using a specification with extended controls.
Source: Author's calculations based on IAB earnings data.

TABLE A11—SELECTED OCCUPATION GROUPS OF MINI JOB WORKERS IN THE HOSPITALITY SECTOR

Occupation Group (KldB 1988)	Observations	Percent
40 Cooks until ready-to-serve meals, fruit, vegetable preservers, preparers	75,810	21.9
56 Unskilled laborer/ assistants (no further specification)	6,860	2.0
73 Salespersons	20,380	5.9
81 Motor vehicle drivers	8,904	2.6
86 Stowers, furniture packers until stores/transport workers	2,333	0.7
93 Office specialists	5,924	1.7
97 Doormen, caretakers until domestic and non-domestic servants	4,378	1.3
116 Others attending on guests (non-waiters, e.g. event management,...)	32,272	9.3
117 Housekeeping managers until employees by household cheque procedure	10,852	3.1
119 Household cleaners until glass, buildings cleaners	23,006	6.6
115 Restaurant, inn, bar keepers, hotel proprietors, catering trade dealers until waiters, stewards	**155,561**	**44.9**
Total	346,280.0	100.0

Note: Occupation group identifiers and labels refer to the classification of occupations (version 1988). Occupations groups required to have at least 20 observations per state.
Source: Author's calculations based on IAB earnings data.

TABLE A12—SUMMARY STATISTICS OF DDD OCCUPATION GROUPS

	(1) Waiters		(2) Cooks		(3) All Other Mini Job Workers	
Panel A: All Workers						
Full Time (share)	0.34	[0.47]	0.46	[0.50]	0.34	[0.47]
Regular Part Time (share)	0.087	[0.28]	0.16	[0.37]	0.13	[0.34]
Mini Job (share)	0.58	[0.49]	0.38	[0.48]	0.53	[0.50]
Panel B: Mini Job Workers						
Real Monthly Earnings (in 2010 euros)	238.2	[162.9]	275.5	[188.5]	268.2	[194.9]
Low Skilled (share)	0.33	[0.47]	0.41	[0.49]	0.35	[0.48]
Medium Skilled (share)	0.64	[0.48]	0.57	[0.50]	0.63	[0.48]
High Skilled (share)	0.036	[0.19]	0.019	[0.14]	0.028	[0.17]
Age (in years)	33.0	[11.5]	36.3	[12.2]	37.4	[12.4]
Female (share)	0.76	[0.43]	0.63	[0.48]	0.69	[0.46]
German (share)	0.85	[0.36]	0.70	[0.46]	0.81	[0.39]
East German (share)	0.11	[0.31]	0.15	[0.35]	0.14	[0.35]
Usual Weekly Hours Worked (Microcensus)		12.3		14.1		11.9

Note: This table presents summary statistics of individual earnings data and Microcensus data (hours). Standard deviation in brackets. The sample is restricted to individuals aged 17-62 years, employed in the hospitality sector between August 2006 and February 2009 (not restricted to the hospitality industry in case of the usual hours worked taken from the Microcensus). Real euro values are deflated to 2010 using the consumer price index of the German Bundesbank. Censored earnings are imputed following Gartner (2005).
Source: Author's calculations based on IAB earnings data and Microcensus.

TABLE A13—LEAVE ONE STATE OUT AT A TIME

	Intensity
Schleswig-Holstein	-0.023**
	(0.006)
Hamburg	-0.025***
	(0.005)
Niedersachsen	-0.025**
	(0.006)
Bremen	-0.024***
	(0.006)
NRW	-0.028***
	(0.006)
Hessen	-0.026**
	(0.007)
Rheinland-Pfalz	-0.024**
	(0.006)
Baden-Wuerttemberg	-0.027***
	(0.006)
Bayern	-0.019**
	(0.006)
Saarland	-0.022***
	(0.005)
Mecklenburg-Vorpommern	-0.024***
	(0.006)
Sachsen	-0.024**
	(0.006)
Sachsen-Anhalt	-0.024**
	(0.006)
Thueringen	-0.025***
	(0.006)
Berlin	-0.024***
	(0.006)
Brandenburg	-0.023**
	(0.006)

Note: All regressions replicate the baseline specification using extended controls but leave out observations from the state indicated in the corresponding row. The sample is restricted to waiters in mini job in the hospitality sector. Standard errors are clustered at the state-level.
Source: Author's calculations based on IAB earnings data.

TABLE A14—IMPACT OF SMOKING BANS ON REVENUES OF RESTAURANTS AND BARS (*Robustness Checks*)

	Dependent Variable: *Log Real Revenue Index*			
	(1) Baseline Full Controls	(2) No State CPI	(3) No State CPI + HH, SH	(4) Germany's CPI for HH, SH[a]
Panel A: Restaurants				
Ban Intensity	0.051	0.052	0.047	0.046
	(0.056)	(0.056)	(0.055)	(0.056)
Adj. R^2	0.853	0.850	0.864	0.866
Panel B: Bars				
Ban Intensity	0.056	0.057	0.053	0.052
	(0.069)	(0.068)	(0.065)	(0.066)
Adj. R^2	0.804	0.802	0.814	0.815
State & Time FEs	✓	✓	✓	✓
Unemp. Rate	✓	✓	✓	✓
State CPI	✓			✓
Linear State Trends	✓	✓	✓	✓
State-Month FEs	✓	✓	✓	✓
Weather Controls	✓	✓	✓	✓
Index of Domestic and Foreign Overnight Stays	✓	✓	✓	✓
Start	Jan 2005	Jan 2005	Jan 2005	Jan 2005
End	Feb 2009	Feb 2009	Feb 2009	Feb 2009
Clusters	12	12	14	14
Observations	576	576	676	676

Note: This table presents regressions of the monthly state-level log real revenues index of restaurants (panel A) and bars (panel B) on the smoking ban intensity index and further controls. All controls vary at the state-month level. Weather controls include the monthly state mean temperature, rain amount, and hours of sunshine. CPI refers to the monthly state consumer price index. The index of domestic and foreign overnights stays refers to the number of overnights stays by tourists of domestic or foreign origin. [a] Hamburg and Schleswig-Holstein are assigned the CPI of Germany since these two states do not report their own state-specific CPI. Standard errors clustered at the state level. All regressions are weighted by population size.

Source: Author's calculations based on Ahlfeldt and Maennig (2010).

TABLE A15—DD REGRESSION OF THE IMPACT OF SMOKING BANS ON HOURS WORKED

	(1) Simple DD	(2) + Ind. Controls	(3) + Trends	(4) + State-Quarter FEs
Panel A: Ban vs. No Ban Indicator				
Smoking Ban Indicator	0.064	0.091	0.083	0.063
	(0.044)	(0.035)	(0.031)	(0.027)
Adj. R^2	0.012	0.109	0.108	0.098
Panel B: Smoking Ban Intensity Index				
Ban Intensity	0.042	0.056	0.108	0.051
	(0.018)	(0.047)	(0.035)	(0.071)
Adj. R^2	0.012	0.109	0.108	0.098
Time, State Time FEs	✓	✓	✓	✓
State Level Controls Z	✓	✓	✓	✓
Individual Controls X		✓	✓	✓
State Specific Linear Trends			✓	✓
State-Quarter FEs				✓
Start	2005	2005	2005	2005
End	2009	2009	2009	2009
Cluster	6	6	6	6
Observations (Individuals)	1,483	1,483	1,483	1,483

Note: This table shows regression results of the impact of smoking bans on the log usual hours worked per week. The sample is restricted to individuals in mini-jobs. The unit of observation is a worker and time is running in quarterly intervals. Time refers to the running time variable, quarter to one of the four quarters of any year. The set of individual controls X include dummy variables for being female, having a partner, having children under 18 years of age in the household, having a German citizenship, and whether the main source of income is from own work (as opposed to transfers or capital income), dummies for each of eight age categories, nine city size categories, three education categories, five categories referring to the years passed since migrated to Germany, and five household size categories along with tenure and tenure squared at the current employer. Regressions weighted by survey weights. Standard errors clustered at the state level.
Source: Author's calculations based on the German Microcensus.

TABLE A16—HOURS WORKED:
ASSESSING THE BIAS FROM UNOBSERVABLES FOLLOWING THE APPROACH BY OSTER (2019)

	DD Table A15		DDD Table 6	
Panel A: Ban vs. No Ban Indicator				
$\hat{\beta}^R$	0.064^a		0.097^a	
$\hat{\beta}^F$	0.091^b	0.063^c	0.095^b	$0{,}102^c$
Ratio	3.4	63.0	47.5	20.4
Panel B: Smoking Ban Intensity Index				
$\hat{\beta}^R$	0.042^a		0.075^a	
$\hat{\beta}^F$	0.056^b	0.051^c	0.078^b	$0{,}099^c$
Ratio	3.0	4.7	25.0	3.1
Median Ratio	4.02		22.7	

Note: Own calculations based on the estimates of Table A15 for the DD estimates and Table 6 for the DDD estimates of the impact of smoking bans on the usual hours worked. ^{a} column 1 of respective table, ^{b} column 2, ^{c} column 4. $\hat{\beta}^R$ refers to the coefficient from the restricted regression and $\hat{\beta}^F$ to the coefficient from the regression using the full set of controls. The ratio is then calculated as $\left| \frac{\hat{\beta}^F}{\hat{\beta}^R - \hat{\beta}^F} \right|$

TABLE A17—TURNOVER AND EMPLOYMENT EFFECTS OF SMOKING BANS

	Probability to ... a Job (Individual Level Data)			Employment (State Level Data)	
	(1) Start or End	(2) Start	(3) End	(4) ln(Months Worked)	(5) ln(Turnover)
Panel A: Ban vs. No Ban Indicator					
Smoking Ban Indicator	-0.001	-0.002	0.001	-0.009	0.005
	(0.004)	(0.003)	(0.003)	(0.012)	(0.019)
Adj. R^2	0.217	0.113	0.119	0.997	0.970
Panel B: Smoking Ban Intensity Index					
Ban Intensity	0.002	0.005	-0.003	-0.006	0.041
	(0.004)	(0.005)	(0.004)	(0.015)	(0.028)
Adj. R^2	0.217	0.113	0.119	0.997	0.970
Worker FEs	✓	✓	✓		
Time, State FEs	✓	✓	✓	✓	✓
State-Month FEs	✓	✓	✓	✓	✓
Extended DD Controls	✓	✓	✓	✓	✓
Start	Aug 2004	Aug 2004	Aug 2004	Aug 2004	Aug 2004
End	Feb 2009	Feb 2009	Feb 2009	Feb 2009	Feb 2009
Clusters	16	16	16	16	16
Individuals	18,711	18,711	18,711		
Observations	264,548	264,548	264,548	880	880

Note: This table shows regression results of the impact of smoking bans on various employment outcomes of waiters in mini jobs working in the hospitality sector. The unit of observation in columns 1-3 is a worker and in columns 4-5 these are aggregated at the state-month level. Time is running in monthly intervals. ln(Months Worked) is defined as the natural logarithm of the number of (person-month) spells in a given state-month cell +1. ln(Turnover) is defined as the total number of spells starting and ending in a given state-month cell +1. State level regressions are weighted by the number of underlying observations from with the data was aggregated. Standard errors clustered at the state level. The set of extended DD controls include state specific linear pre-trends specific to each estimation sample as well as the current and six lags of the monthly state unemployment rate. Standard errors clustered at the state level.
Source: Author's calculations based on IAB earnings data.

TABLE A18—MZ DD INCOME

	(1) Simple DD	(2) + Ind. Controls	(3) + Trends	(4) + State-Quarter FEs
Panel A: Ban vs. No Ban Indicator				
Smoking Ban Indicator	0.003	0.017	0.005	-0.042
	(0.057)	(0.040)	(0.037)	(0.072)
Adj. R^2	0.014	0.211	0.210	0.203
Panel B: Smoking Ban Intensity Index				
Ban Intensity	-0.065	-0.060	-0.052	-0.117
	(0.043)	(0.040)	(0.030)	(0.079)
Adj. R^2	0.014	0.211	0.210	0.203
Time, State Time FEs	✓	✓	✓	✓
State Level Controls Z	✓	✓	✓	✓
Individual Controls X		✓	✓	✓
State Specific Linear Trends			✓	✓
State-Quarter FEs				✓
Start	2005	2005	2005	2005
End	2009	2009	2009	2009
Cluster	6	6	6	6
Observations (Individuals)	1,427	1,427	1,427	1,427

Note: This table shows regression results of the impact of smoking bans on the log real net household income. Income is measured in intervals and set to the midpoint of a given income bracket. The sample is restricted to individuals in mini-jobs. The unit of observation is a worker and time is running in quarterly intervals. Time refers to the running time variable, quarter to one of the four quarters of any year. The set of individual controls X include dummy variables for being female, having a partner, having children under 18 years of age in the household, having a German citizenship, and whether the main source of income is from own work (as opposed to transfers or capital income), dummies for each of eight age categories, nine city size categories, three education categories, five categories referring to the years passed since migrated to Germany, and five household size categories along with tenure and tenure squared at the current employer. Regressions weighted by survey weights. Standard errors clustered at the state level.
Source: Author's calculations based on the German Microcensus.

TABLE A19—MZ DDD INCOME

	(1) Simple DDD	(2) + Ind. Controls	(3) + Trends	(4) + Occupation -Quarter FEs
Panel A: Ban vs. No Ban Indicator				
Smoking Ban × Waiters Indicator	0.040	0.023	0.002	-0.039
	(0.069)	(0.037)	(0.044)	(0.055)
Smoking Ban Indicator	-0.008	-0.017	-0.018	-0.018
	(0.012)	(0.008)	(0.006)	(0.019)
Adj. R^2	0.044	0.197	0.197	0.192
Panel B: Smoking Ban Intensity Index				
Ban Intensity × Waiters	-0.049	-0.021	-0.021	-0.081
	(0.054)	(0.031)	(0.027)	(0.052)
Ban Intensity	0.009	-0.008	-0.026	-0.026
	(0.020)	(0.013)	(0.008)	(0.029)
Adj. R^2	0.044	0.197	0.197	0.192
Occupation-State, Occupation Time FEs	✓	✓	✓	✓
State Level Controls Z	✓	✓	✓	✓
Individual Controls X		✓	✓	✓
Occupation-State Specific Linear Trends			✓	✓
Occupation-State -Quarter FEs				✓
Start	2005	2005	2005	2005
End	2009	2009	2009	2009
Cluster	15	15	15	15
Observations (Individuals)	39,768	39,768	39,768	39,768

Note: This table shows regression results of the impact of smoking bans on the log real net household income. Income is measured in intervals and set to the midpoint of a given income bracket. The sample is restricted to individuals in mini-jobs. The unit of observation is a worker and time is running in quarterly intervals. Time refers to the running time variable, quarter to one of the four quarters of any year. The set of individual controls X include dummy variables for being female, having a partner, having children under 18 years of age in the household, having a German citizenship, and whether the main source of income is from own work (as opposed to transfers or capital income), dummies for each of eight age categories, nine city size categories, three education categories, five categories referring to the years passed since migrated to Germany, and five household size categories along with tenure and tenure squared at the current employer. Regressions weighted by survey weights. Standard errors clustered at the state level.
Source: Author's calculations based on the German Microcensus.

TABLE A20—WEIGHTS IN SYNTHETIC CONTROL APPROACH

Occupation Group	Description	Synth Weight (All)	Synth Weight (Only 2008)
1	Landwirtschaftliche Berufe	0	0
2	Tierwirtschaftliche Berufe	0	0
5	Gartenbauberufe	0	0
17	Druck- und Druckweiterverarbeitungsberufe	0	0
25	Metall- und Anlagenbauberufe	0	
26	Blechkonstruktions- und Installationsberufe	0	0
27	Maschinenbau- und -wartungsberufe	0	
28	Fahr-, Flugzeugbau- und -wartungsberufe	0	0
30	Feinwerktechnische und verwandte Berufe	0	0
31	Elektroberufe	0	0
32	Montierer/Montiererinnen und Metallberufe, a.n.g.	0	0
35	Berufe in der Textilverarbeitung	0	0
39	Berufe in der Back-, Konditor-, Süßwarenherstellung	0	0
41	Köche/Köchinnen	0	0
44	Hochbauberufe	0	0
47	Bauhilfsarbeiter	0	0
48	Ausbauberufe	0	0
50	Berufe in der Holz- und Kunststoffverarbeitung	0	0
51	Maler/Malerinnen, Lackierer/Lackiererinnen und verwandte Berufe	0	
52	Warenprüfer/Warenprüferinnen, Versandfertigmacher/Versandfertigmacherinnen	0	0
53	Hilfsarbeiter/Hilfsarbeiterinnen ohne nähere Tätigkeitsangabe	0	0
60	Ingenieure/Ingenieurinnen, a.n.g.	0	0
62	Techniker/Technikerinnen, a.n.g.	0	0
66	Verkaufspersonal	0	0
67	Groß- und Einzelhandelskaufleute, Ein- und Verkaufsfachleute	0	0
68	Warenkaufleute, a.n.g., Vertreter/Vertreterinnen	0	0
69	Bank-, Bausparkassen-, Versicherungsfachleute	0	0
70	Andere Dienstleistungskaufleute und zugehörige Berufe	0	0
71	Berufe des Landverkehrs	0	0
73	Berufe des Nachrichtenverkehrs	0	0
74	Lagerverwalter/Lagerverwalterinnen, Lager-, Transportarbeiter und -arbeiterinnen	0	0
75	Berufe in der Unternehmensleitung, -beratung und -prüfung	0	0
77	Rechnungskaufleute, Informatiker/Informatikerinnen	.497	.649
78	Büroberufe, Kaufmännische Angestellte, a.n.g.	0	0
79	Dienst-, Wachberufe	0	0
82	Publizistische, Übersetzungs-, Bibliotheks- und verwandte Berufe	0	0
83	Künstlerische und zugeordnete Berufe	.053	.066
84	Ärzte/Ärztinnen, Apotheker/Apothekerinnen	0	0
85	Übrige Gesundheitsdienstberufe	.359	.213
86	Soziale Berufe	0	0
87	Lehrer/Lehrerinnen	0	.064
88	Geistes- und naturwissenschaftliche Berufe, a.n.g.	0	0
89	Berufe in der Seelsorge	0	
90	Berufe in der Körperpflege	0	0
92	Haus- und ernährungswirtschaftliche Berufe	0	0
93	Reinigungs- und Entsorgungsberufe	0	0
99	Arbeitskräfte ohne nähere Tätigkeitsangabe	0	.009
100	Sonstige Berufe in der Gästebetreuung	.092	0

Note: This table provides the weights attached to each occupation group in the donor pool used in the synthetic controls approaches based on a sample that includes all stated (column 1) or only those which introduced smoking bans in 2008 (column 2).

SAMPLE RESTRICTIONS AND DATA PREPARATION

B1. IAB Earnings data

Sample Construction: Following common practice when working with the IAB earnings data, I drop spells with missing location information (after imputation, see below), spells of doctors and pharmacists (due to corrupted and missing records, see vom Berge, Burghardt, and Trenkle 2013), spells that last only one day, spells with statuses "seeking for employment but not registered unemployed", "without status", and "seeking advice", zero daily earnings spells, spells with missing employment status, full-time spells with daily earnings below the marginal earnings threshold, unemployment spells that overlap with non-unemployment spells and unemployment spells that overlap with other unemployment spells (and keep only one of them).
Daily Earnings: I impute censored earnings above the upper earnings threshold for compulsory social insurance (66,000 euros per year in 2010) using the "no heteroskedasticity" approach by Gartner (2005) and Dustmann, Ludsteck, and Schönberg (2009). Specifically, I consider earnings as censored that were up to two euros below the maximum earnings value observed in each year and then estimate for each year and for males and females separately a censored regression of log daily earnings on indicators of eight age groups, three skill groups and all their possible interactions, assuming that the error term is normally distributed and has the same variance across age and skill groups.
Education: I impute missing education information following Fitzenberger, Osikominu, and Völter (2006) and group individuals in three categories (low, medium, and high). Low comprises those with at most a *Realschule* degree, missing education, and those who have not completed any vocational training, Abitur, or a tertiary degree. Medium contains those with vocational training or Abitur. High refers to all those with a completed tertiary degree (*Fachhochschule* or *Universität*).
Location: If missing, location information is imputed with the last non-missing location.
Tenure: For each individual, the number of months at the same employer as observed from his/ her IAB labor market biography are summed up (potentially since 1985).
Experience in Hospitality Industry: For each individual, the number of months in the hospitality sector as observed from his/ her IAB labor market biography are summed up (potentially since 1985).

B2. Microcensus Data

Sample Construction: I restrict the sample to individuals interviewed at their main place of residence (to avoid double counting) living in private households (as opposed to community accommodations such as prisons), the years 2004 to 2010, to workers between 17 and 62 years of age who are not civil servants (*Beamte*) or self-employed and with their main or first job being a mini job. I then set the time variable of an observation to the quarter when the Microcensus was conducted. Finally, I restrict the sample to occupation-state-time cells with at least 15 observations across the sample period (balanced panel needed for the synthetic control approaches).

Occupation Groups: To ensure sufficiently large cells, occupations are aggregated from three-digit to two-digit level occupation groups according to the classification of occupations (*Klassifikation der Berufe*) version 1992.
Individual and Household Income: Income variables are set to the mean of the nominal income bracket in a given Microcensus wave and are then deflated to real net incomes.
Other Variables: Other variables used as controls include dummies for being female, having a partner, having children under 18 years of age in the household, having a German citizenship, and whether the main source of income is from own work (as opposed to transfers or capital income), dummies for each of eight age categories, nine city size categories, three education categories defined as in the IAB earnings data, five categories referring to the years passed since migrated to Germany, and five household size categories (1, 2, 3, 4, and 5 and more); tenure and tenure squared at the current employer.