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The Cost of Smoking Employees in Indiana and Marion County
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Introduction

Considerable progress has been made decreasing cigarette consumption in Indiana. According to the Behavioral Risk Factor Surveillance System (BRFSS), the smoking prevalence rate among adults in Indiana has fallen from 24.0% in 2012 to 17.3% in 2021. Despite these reductions, the rate of smoking in Indiana is significantly higher than the national rate of 14.4% in 2021 and places Indiana as the state with the 8th highest smoking rate in the country.

Cigarette smoking imposes a large toll on the health of individuals in Indiana with more than 11,000 adults dying each year from smoking related diseases (CTFK, 2022). Cigarette smoking also imposes a large toll on businesses in the state of Indiana. This report quantifies the excess costs smoking employees impose on employers in Indiana and in Marion County, Indiana associated with extra absenteeism, presenteeism, unsanctioned smoking breaks, and excess health care costs self-insured employers pay for smoking employees.

Absenteeism

Employees who smoke impose excess absenteeism costs on employers. A study by Berman et al. (2014) reviewed the previous literature on smoking attributable to excess absenteeism and concluded that the annual excess absences of smokers compared to never smokers ranged from 2.3 to 2.9 days per year. A meta-analysis by Weng et al. (2013) came to a similar conclusion. Weng et al. (2013) examined 17 studies and found that compared to non-smoking employees, employees who smoke are absent from the workplace for an average of 2.7 days more per year. In this section, we estimate the additional annual costs that smoking employees impose on employers in the state of Indiana and in Marion County, Indiana associated with excess absenteeism.

In our modeling, we express the total annual excess absenteeism costs as follows:

$$EAC = EACSE \times NSE \quad (1)$$

where EAC = total excess absenteeism costs; EACSE = excess absenteeism cost per smoking employee; and NSE = the number of smoking employees. We calculate these excess absenteeism costs for each of the major industries defined by the Bureau of Labor Statistics (BLS, 2022A). We then aggregate the industries to generate Marion County specific and Indiana specific excess absenteeism costs. We calculate the excess absenteeism cost per smoking employee (EACSE) as follows:

$$EACSE = ADWR \times ADEA \quad (2)$$

where ADWR = average daily wage rate; and ADEA = annual days of excess absences. The average daily wage rate by industry is derived by dividing the average weekly wage rate by industry by 5 days per week. The average weekly wage rate was obtained from the Bureau of Labor Statistics (BLS, 2022A) and represents the average weekly wages by major industries in Indiana and Marion County, Indiana for the first quarter of 2022. We use a conservative estimate of 2.5 annual days of excess absences (ADEA) attributable to smoking. We calculate the number of smoking employees (NSE) as follows:

$$NSE = NEI \times SPRI \quad (3)$$

where NEI = number of employees per industry; and SPRI = smoking prevalence rate in each industry. The number of employees in each industry for the first quarter of 2022 was obtained by the Bureau of Labor Statistics (BLS, 2022A). The smoking prevalence rate in each industry was derived by using the average annual incomes of employees in each industry and applying the smoking prevalence rate in Indiana for that income level from the 2021 Behavioral Risk Factor Surveillance Surveys (BRFSS).¹

Table 1 presents the excess absenteeism cost estimates for the state of Indiana and Table 2 presents the excess absenteeism cost estimates for Marion County. The excess annual absenteeism cost per smoking employee in the state of Indiana ranges from \$165 for state accommodation and food services workers to \$1,483 for management of companies and enterprises employees. The

¹ The income specific smoking prevalence rates for Indiana from the 2021 BRFSS were multiplied by 0.98 to account for the estimated 2% natural decline in smoking prevalence between years 2021 and 2022.

manufacturing industry has the highest excess absenteeism costs in 2022 estimated at \$60,742,634. This is not surprising given that the manufacturing industry has the highest estimated number of smoking employees (80,188) among all the different industries. The total absenteeism costs for the estimated 532,371 smoking employees in the State of Indiana is \$272,072,003 for the year 2022.

Table 1: State of Indiana Excess Absenteeism Costs

Sector	Industry	Excess Absenteeism Cost Per Smoking Employee	Number of Smoking Employees	Total Absenteeism Cost by Industry
Private	Agriculture, forestry, fishing, and hunting	\$425	2,954	\$1,255,353
Private	Mining, quarrying, and oil and gas extraction	\$722	772	\$556,934
Private	Utilities	\$1,134	1,070	\$1,213,646
Private	Construction	\$604	21,897	\$13,214,822
Private	Manufacturing	\$758	80,188	\$60,742,634
Private	Wholesale trade	\$801	18,885	\$15,117,204
Private	Retail trade	\$336	72,110	\$24,228,850
Private	Transportation and warehousing	\$497	24,140	\$11,985,663
Private	Information	\$718	3,957	\$2,840,786
Private	Finance and insurance	\$971	8,195	\$7,957,220
Private	Real estate and rental and leasing	\$584	5,180	\$3,025,343
Private	Professional, scientific, and technical services	\$771	20,730	\$15,972,250
Private	Management of companies and enterprises	\$1,483	2,866	\$4,250,336
Private	Administrative and support and waste management	\$409	36,253	\$14,809,450
Private	Educational services	\$424	9,682	\$4,105,070
Private	Health care and social assistance	\$565	61,367	\$34,641,953
Private	Arts, entertainment, and recreation	\$436	6,607	\$2,880,688
Private	Accommodation and food services	\$193	70,687	\$13,642,593
Private	Other services (except public administration)	\$368	16,965	\$6,234,775
Federal	Retail trade	\$361	7	\$2,390
Federal	Transportation and warehousing	\$604	1,733	\$1,046,552
Federal	Finance and insurance	\$899	21	\$19,150
Federal	Professional, scientific, and technical services	\$690	57	\$39,132
Federal	Educational services	\$927	1	\$1,105
Federal	Health care and social assistance	\$770	811	\$624,193
Federal	Arts, entertainment, and recreation	\$598	19	\$11,125
Federal	Accommodation and food services	\$179	5	\$875
Federal	Other services (except public administration)	\$489	3	\$1,455
Federal	Public Administration	\$783	3,052	\$2,389,632
State	Professional, scientific, and technical services	\$813	62	\$50,743
State	Educational services	\$690	7,663	\$5,283,295
State	Health care and social assistance	\$558	236	\$131,412
State	Arts, entertainment, and recreation	\$365	72	\$26,159
State	Accommodation and food services	\$165	107	\$17,658
State	Public Administration	\$577	4,317	\$2,491,087
Local	Utilities	\$674	292	\$196,581
Local	Transportation and warehousing	\$368	1,115	\$410,222
Local	Information	\$262	1,332	\$348,289
Local	Educational services	\$394	28,545	\$11,232,641
Local	Health care and social assistance	\$634	3,373	\$2,138,231

Local	Arts, entertainment, and recreation	\$298	131	\$39,089
Local	Accommodation and food services	\$205	160	\$32,840
Local	Other services (except public administration)	\$373	55	\$20,441
Local	Public Administration	\$466	14,698	\$6,842,134
	Total		532,371	\$272,072,003

The excess annual absenteeism cost per smoking employee in Marion County, Indiana ranges from \$238 for private accommodation and food services workers to \$1,740 for management of companies and enterprises employees. The health care and social assistance industry in Marion County has the highest estimated number of smoking employees (14,674) among all the different industries. This results in the health care and social assistance industry having the highest estimated excess absenteeism costs in 2022 with an estimate of \$10,183,687. The total absenteeism costs for the estimated 89,155 smoking employees in Marion County is \$55,871,901 for the year 2022.

Sector	Industry	Excess Absenteeism Cost Per Smoking Employee	Number of Smoking Employees	Total Absenteeism Cost by Industry
Private	Agriculture, forestry, fishing, and hunting	\$519	76	\$39,274
Private	Mining, quarrying, and oil and gas extraction	\$665	29	\$19,316
Private	Utilities	\$1,125	75	\$84,709
Private	Construction	\$719	4,461	\$3,207,284
Private	Manufacturing	\$1,474	4,282	\$6,310,093
Private	Wholesale trade	\$801	4,018	\$3,218,814
Private	Retail trade	\$367	8,888	\$3,261,838
Private	Transportation and warehousing	\$566	5,733	\$3,241,941
Private	Information	\$849	1,115	\$946,985
Private	Finance and insurance	\$1,193	2,126	\$2,535,939
Private	Real estate and rental and leasing	\$840	1,394	\$1,169,986
Private	Professional, scientific, and technical services	\$905	6,545	\$5,923,229
Private	Management of companies and enterprises	\$1,740	700	\$1,217,119
Private	Administrative and support and waste management	\$392	10,383	\$4,070,312
Private	Educational services	\$418	2,314	\$966,058
Private	Health care and social assistance	\$694	14,674	\$10,183,687
Private	Arts, entertainment, and recreation	\$907	1,171	\$1,061,759
Private	Accommodation and food services	\$238	11,745	\$2,789,411
Private	Other services (except public administration)	\$474	3,677	\$1,741,293
Federal	Retail trade	\$370	6	\$2,093
Federal	Transportation and warehousing	\$686	430	\$294,808
Federal	Finance and insurance	\$797	4	\$3,559
Federal	Professional, scientific, and technical services	\$830	2	\$1,855
Federal	Health care and social assistance	\$798	455	\$362,910

Federal	Other services (expect public administration)	\$449	2	\$787
Federal	Public Administration	\$794	1,322	\$1,050,039
State	Arts, entertainment, and recreation	\$366	65	\$23,769
State	Public Administration	\$625	1,637	\$1,023,262
Local	Utilities	\$771	175	\$135,089
Local	Transportation and warehousing	\$493	266	\$131,159
Local	Administrative and support and waste management	\$548	11	\$6,041
Local	Other services (expect public administration)	\$924	5	\$4,542
Local	Public Administration	\$617	1367	\$842,943
		Total	89,155	\$55,871,901

Presenteeism

Employees who smoke also impose excess presenteeism costs on employers. Presenteeism can be defined as lower on-the-job productivity attributed to nicotine addiction and withdrawal. Within a short time of smoking their last cigarette, smokers begin to feel the symptoms of physical and psychological withdrawal and these withdrawal symptoms decrease smokers’ productivity at work. Numerous studies have tried to measure presenteeism related to smoking. The estimates of lost productivity range from 1.9% to 4.0% of hours worked per year (Bunn et al., 2006; Burton et al., 2005; Shikiar et al., 2004). Berman (2014) uses a very conservative estimate of presenteeism of 1.0% of work hours per year, an estimate that we use in our calculations. In this section, we estimate the additional annual costs that smoking employees impose on employers in the state of Indiana and in Marion County, Indiana associated with excess presenteeism.

In our modeling, we express the total annual excess presenteeism costs as follows:

$$EPC = EPCSE \times NSE \quad (4)$$

where EPC = total excess presenteeism costs; EPCSE = excess presenteeism cost per smoking employee; and NSE = the number of smoking employees. We calculate these excess presenteeism costs for each of the major industries defined by the Bureau of Labor Statistics. We then aggregate the industries to generate Marion County specific and Indiana specific excess presenteeism costs. We calculate the excess presenteeism cost per smoking employee (EPCSE) as follows:

$$EPCSE = AAW \times SRLPP \quad (5)$$

where EPCSE = excess presenteeism cost per smoking employee; AAW = average annual wage; and SRLPP = smoking related lost productivity due to presenteeism. The average annual wage rate by industry is derived by multiplying the average weekly wage rate by industry by 52 weeks per year. The average weekly wage rate was obtained from the Bureau of Labor Statistics and represents the average weekly wages by major industries for the first quarter of 2022 (BLS, 2022A). Following Berman (2014) we use a smoking related lost productivity due to presenteeism of 1.0%. The number of smoking employees (NSE) is calculated as follows:

$$NSE = NEI \times SPRI \quad (6)$$

where NEI = number of employees per industry; and SPRI = smoking prevalence rate in each industry. The number of employees in each industry for the first quarter of 2022 was obtained by the Bureau of Labor Statistics (BLS, 2022A). The smoking prevalence rate in each industry was derived by using the average annual incomes of employees in each industry and applying the smoking prevalence rate in Indiana for that income level from the 2021 Behavioral Risk Factor Surveillance Surveys (BRFSS).²

Table 3 presents the excess presenteeism cost estimates for the state of Indiana and Table 4 presents the excess presenteeism cost estimates for Marion County. The excess annual presenteeism cost per smoking employee in the state of Indiana ranges from \$171 for state accommodation and food services workers to \$1,542 for management of companies and enterprises employees. The manufacturing industry has the highest excess presenteeism costs in 2022 estimated at \$63,172,340. This is not surprising given that the manufacturing industry has the highest estimated number of smoking employees (80,188) among all the different industries. The total presenteeism costs for the estimated 532,371 smoking employees in the State of Indiana is \$282,954,883 for the year 2022.

² The income specific smoking prevalence rates for Indiana from the 2021 BRFSS were multiplied by 0.98 to account for the estimated 2% natural decline in smoking prevalence between years 2021 and 2022.

Table 3: State of Indiana Excess Presenteeism Costs

Sector	Industry	Excess Presenteeism Cost Per Smoking Employee	Number of Smoking Employees	Total Presenteeism Cost by Industry
Private	Agriculture, forestry, fishing, and hunting	\$442	2,954	\$1,305,568
Private	Mining, quarrying, and oil and gas extraction	\$750	772	\$579,211
Private	Utilities	\$1,179	1,070	\$1,262,192
Private	Construction	\$628	21,897	\$13,743,415
Private	Manufacturing	\$788	80,188	\$63,172,340
Private	Wholesale trade	\$833	18,885	\$15,721,892
Private	Retail trade	\$349	72,110	\$25,198,004
Private	Transportation and warehousing	\$516	24,140	\$12,465,090
Private	Information	\$747	3,957	\$2,954,418
Private	Finance and insurance	\$1,010	8,195	\$8,275,509
Private	Real estate and rental and leasing	\$607	5,180	\$3,146,357
Private	Professional, scientific, and technical services	\$801	20,730	\$16,611,140
Private	Management of companies and enterprises	\$1,542	2,866	\$4,420,350
Private	Administrative and support and waste management	\$425	36,253	\$15,401,828
Private	Educational services	\$441	9,682	\$4,269,272
Private	Health care and social assistance	\$587	61,367	\$36,027,631
Private	Arts, entertainment, and recreation	\$453	6,607	\$2,995,916
Private	Accommodation and food services	\$201	70,687	\$14,188,297
Private	Other services (except public administration)	\$382	16,965	\$6,484,166
Federal	Retail trade	\$375	7	\$2,486
Federal	Transportation and warehousing	\$628	1,733	\$1,088,415
Federal	Finance and insurance	\$935	21	\$19,916
Federal	Professional, scientific, and technical services	\$717	57	\$40,697
Federal	Educational services	\$964	1	\$1,149
Federal	Health care and social assistance	\$801	811	\$649,161
Federal	Arts, entertainment, and recreation	\$621	19	\$11,570
Federal	Accommodation and food services	\$186	5	\$910
Federal	Other services (except public administration)	\$508	3	\$1,514
Federal	Public Administration	\$814	3,052	\$2,485,217
State	Professional, scientific, and technical services	\$846	62	\$52,772
State	Educational services	\$717	7,663	\$5,494,627
State	Health care and social assistance	\$580	236	\$136,669
State	Arts, entertainment, and recreation	\$379	72	\$27,206
State	Accommodation and food services	\$171	107	\$18,364
State	Public Administration	\$600	4,317	\$2,590,730
Local	Utilities	\$701	292	\$204,445
Local	Transportation and warehousing	\$383	1,115	\$426,631
Local	Information	\$272	1,332	\$362,221
Local	Educational services	\$409	28,545	\$11,681,947
Local	Health care and social assistance	\$659	3,373	\$2,223,760
Local	Arts, entertainment, and recreation	\$310	131	\$40,653
Local	Accommodation and food services	\$213	160	\$34,154
Local	Other services (except public administration)	\$388	55	\$21,258
Local	Public Administration	\$484	14,698	\$7,115,820
		Total	532,371	\$282,954,883

The excess annual presenteeism cost per smoking employee in Marion County, Indiana ranges from \$247 for private accommodation and food services workers to \$1,809 for management of companies and enterprises employees. The health care and social assistance industry in Marion County has the highest estimated number of smoking employees (14,674) among all the different industries. This results in the health care and social assistance industry having the highest estimated excess presenteeism costs in 2022 with an estimate of \$10,591,035. The total absenteeism costs for the estimated 89,155 smoking employees in Marion County is \$58,106,777 for the year 2022.

Table 4: Marion County, Indiana Excess Presenteeism Costs

Sector	Industry	Excess Presenteeism Cost Per Smoking Employee	Number of Smoking Employees	Total Presenteeism Cost by Industry
Private	Agriculture, forestry, fishing, and hunting	\$540	76	\$40,845
Private	Mining, quarrying, and oil and gas extraction	\$692	29	\$20,089
Private	Utilities	\$1,170	75	\$88,098
Private	Construction	\$748	4,461	\$3,335,575
Private	Manufacturing	\$1,532	4,282	\$6,562,497
Private	Wholesale trade	\$833	4,018	\$3,347,566
Private	Retail trade	\$382	8,888	\$3,392,311
Private	Transportation and warehousing	\$588	5,733	\$3,371,618
Private	Information	\$883	1,115	\$984,865
Private	Finance and insurance	\$1,241	2,126	\$2,637,377
Private	Real estate and rental and leasing	\$873	1,394	\$1,216,785
Private	Professional, scientific, and technical services	\$941	6,545	\$6,160,158
Private	Management of companies and enterprises	\$1,809	700	\$1,265,803
Private	Administrative and support and waste management	\$408	10,383	\$4,233,125
Private	Educational services	\$434	2,314	\$1,004,701
Private	Health care and social assistance	\$722	14,674	\$10,591,035
Private	Arts, entertainment, and recreation	\$943	1,171	\$1,104,229
Private	Accommodation and food services	\$247	11,745	\$2,900,987
Private	Other services (except public administration)	\$492	3,677	\$1,810,944
Federal	Retail trade	\$385	6	\$2,176
Federal	Transportation and warehousing	\$713	430	\$306,601
Federal	Finance and insurance	\$828	4	\$3,702
Federal	Professional, scientific, and technical services	\$863	2	\$1,929
Federal	Health care and social assistance	\$830	455	\$377,427
Federal	Other services (except public administration)	\$466	2	\$819
Federal	Public Administration	\$826	1,322	\$1,092,040
State	Arts, entertainment, and recreation	\$381	65	\$24,719
State	Public Administration	\$650	1,637	\$1,064,193
Local	Utilities	\$801	175	\$140,492
Local	Transportation and warehousing	\$513	266	\$136,405
Local	Administrative and support and waste management	\$570	11	\$6,282
Local	Other services (except public administration)	\$961	5	\$4,724
Local	Public Administration	\$641	1,367	\$876,661
	Total		89,155	\$58,106,777

Smoking Breaks

Employees who smoke often take unsanctioned smoking breaks. These smoking breaks result in a loss of productivity that imposes additional costs upon the employer. In our modeling, we express the total annual excess cost of smoking breaks as follows:

$$ECSB = ESBCPSE \times NSE \quad (7)$$

where ECSB = total excess costs of smoking breaks; ESBCPSE = excess smoking break cost per smoking employee; and NSE = the number of smoking employees. We calculate these excess smoking break costs for each of the major industries defined by the Bureau of Labor Statistics. We then aggregate the industries to generate Marion County specific and Indiana specific excess smoking break costs. We calculate the excess smoking break cost per smoking employee (ESBCPSE) as follows:

$$ESBCPSE = NUSB \times TPSB \times HWR \times DWPY \quad (8)$$

where NUSB = number of unsanctioned smoking breaks per work day; TPSB = time spent on each smoking break; HWR=Hourly wage rate; DWPY = days worked per year. We utilize the conservative estimates of Berman et al. (2014) of 2 unsanctioned smoking breaks per workday and 15 minutes taken for each smoking break. TPSB is calculated as a fraction of one hour or 0.25 hours per unsanctioned break. We calculate the hourly wage rate by industry by dividing the average weekly wage rate by the number of hours worked per week. We assume workers work 5 days a week and 8.1 hours per day on average. The average weekly wage rates were obtained from the Bureau of Labor Statistics and represents the average weekly wages by major industries in Marion County and in Indiana for the first quarter of 2022 (BLS, 2022A). The estimate of 8.1 hours worked per day for all workers was obtained from the Bureau of Labor Statistics (BLS, 2022B). The number of smoking employees (NSE) is calculated as follows:

$$NSE = NEI \times SPRI \quad (9)$$

where NEI = number of employees per industry; and SPRI = smoking prevalence rate in each industry.

The number of employees in each industry for the first quarter of 2022 was obtained by the Bureau of Labor Statistics (BLS, 2022A). The smoking prevalence rate in each industry was derived by using the average annual incomes of employees in each industry and applying the smoking prevalence rate in Indiana for that income level from the 2021 Behavioral Risk Factor Surveillance Surveys (BRFSS).³

Table 5 presents the excess smoking break cost estimates for the state of Indiana and Table 6 presents the excess smoking break cost estimates for Marion County. The excess annual smoking break cost per smoking employee in the state of Indiana ranges from \$1,056 for state accommodation and food services workers to \$9,520 for management of companies and enterprises employees. The manufacturing industry has the highest excess smoking break costs in 2022 estimated at \$389,952,714. This is not surprising given that the manufacturing industry has the highest estimated number of smoking employees (80,188) among all the different industries. The total smoking break costs for the estimated 532,371 smoking employees in the State of Indiana is \$1,746,635,082 for the year 2022.

Sector	Industry	Excess Breaks Cost Per Smoking Employee	Number of Smoking Employees	Total Breaks Cost by Industry
Private	Agriculture, forestry, fishing, and hunting	\$2,728	2,954	\$8,059,059
Private	Mining, quarrying, and oil and gas extraction	\$4,632	772	\$3,575,376
Private	Utilities	\$7,280	1,070	\$7,791,307
Private	Construction	\$3,874	21,897	\$84,835,894
Private	Manufacturing	\$4,863	80,188	\$389,952,714
Private	Wholesale trade	\$5,139	18,885	\$97,048,716
Private	Retail trade	\$2,157	72,110	\$155,543,238
Private	Transportation and warehousing	\$3,187	24,140	\$76,944,999
Private	Information	\$4,609	3,957	\$18,237,145
Private	Finance and insurance	\$6,234	8,195	\$51,083,390
Private	Real estate and rental and leasing	\$3,749	5,180	\$19,421,955
Private	Professional, scientific, and technical services	\$4,946	20,730	\$102,537,899
Private	Management of companies and enterprises	\$9,520	2,866	\$27,286,110
Private	Administrative and support and waste management	\$2,622	36,253	\$95,073,011
Private	Educational services	\$2,722	9,682	\$26,353,533
Private	Health care and social assistance	\$3,624	61,367	\$222,392,783
Private	Arts, entertainment, and recreation	\$2,799	6,607	\$18,493,306

³ The income specific smoking prevalence rates for Indiana from the 2021 BRFSS were multiplied by 0.98 to account for the estimated 2% natural decline in smoking prevalence between years 2021 and 2022.

Private	Accommodation and food services	\$1,239	70,687	\$87,582,078
Private	Other services (except public administration)	\$2,359	16,965	\$40,025,718
Federal	Retail trade	\$2,314	7	\$15,346
Federal	Transportation and warehousing	\$3,878	1,733	\$6,718,608
Federal	Finance and insurance	\$5,771	21	\$122,937
Federal	Professional, scientific, and technical services	\$4,426	57	\$251,216
Federal	Educational services	\$5,951	1	\$7,092
Federal	Health care and social assistance	\$4,943	811	\$4,007,165
Federal	Arts, entertainment, and recreation	\$3,836	19	\$71,423
Federal	Accommodation and food services	\$1,146	5	\$5,620
Federal	Other services (except public administration)	\$3,136	3	\$9,343
Federal	Public Administration	\$5,027	3,052	\$15,340,846
State	Professional, scientific, and technical services	\$5,219	62	\$325,756
State	Educational services	\$4,426	7,663	\$33,917,452
State	Health care and social assistance	\$3,582	236	\$843,634
State	Arts, entertainment, and recreation	\$2,340	72	\$167,936
State	Accommodation and food services	\$1,056	107	\$113,358
State	Public Administration	\$3,704	4,317	\$15,992,160
Local	Utilities	\$4,327	292	\$1,262,004
Local	Transportation and warehousing	\$2,362	1,115	\$2,633,525
Local	Information	\$1,679	1,332	\$2,235,932
Local	Educational services	\$2,526	28,545	\$72,110,785
Local	Health care and social assistance	\$4,070	3,373	\$13,726,912
Local	Arts, entertainment, and recreation	\$1,913	131	\$250,942
Local	Accommodation and food services	\$1,316	160	\$210,824
Local	Other services (except public administration)	\$2,395	55	\$131,224
Local	Public Administration	\$2,988	14,698	\$43,924,812
		Total	532,371	\$1,746,635,082

The excess annual smoking break cost per smoking employee in Marion County, Indiana ranges from \$1,525 for private accommodation and food services workers to \$11,167 for management of companies and enterprises employees. The health care and social assistance industry has the highest excess smoking break costs in 2022 estimated at \$65,376,756. This is not surprising given that the health care and social assistance industry has the highest estimated number of smoking employees (14,674) among all the different industries in Marion County. The total smoking break costs for the estimated 89,155 smoking employees in Marion County, Indiana is \$358,683,811 for the year 2022.

Sector	Industry	Excess Breaks Cost Per Smoking Employee	Number of Smoking Employees	Total Breaks Cost by Industry
Private	Agriculture, forestry, fishing, and hunting	\$3,332	76	\$252,127
Private	Mining, quarrying, and oil and gas extraction	\$4,269	29	\$124,006
Private	Utilities	\$7,222	75	\$543,814

Private	Construction	\$4,616	4,461	\$20,589,969
Private	Manufacturing	\$9,460	4,282	\$40,509,242
Private	Wholesale trade	\$5,142	4,018	\$20,663,989
Private	Retail trade	\$2,356	8,888	\$20,940,193
Private	Transportation and warehousing	\$3,630	5,733	\$20,812,458
Private	Information	\$5,450	1,115	\$6,079,411
Private	Finance and insurance	\$7,659	2,126	\$16,280,105
Private	Real estate and rental and leasing	\$5,389	1,394	\$7,511,020
Private	Professional, scientific, and technical services	\$5,810	6,545	\$38,025,668
Private	Management of companies and enterprises	\$11,167	700	\$7,813,601
Private	Administrative and support and waste management	\$2,517	10,383	\$26,130,400
Private	Educational services	\$2,680	2,314	\$6,201,856
Private	Health care and social assistance	\$4,455	14,674	\$65,376,756
Private	Arts, entertainment, and recreation	\$5,820	1,171	\$6,816,227
Private	Accommodation and food services	\$1,525	11,745	\$17,907,330
Private	Other services (except public administration)	\$3,040	3,677	\$11,178,668
Federal	Retail trade	\$2,375	6	\$13,434
Federal	Transportation and warehousing	\$4,404	430	\$1,892,596
Federal	Finance and insurance	\$5,113	4	\$22,850
Federal	Professional, scientific, and technical services	\$5,328	2	\$11,906
Federal	Health care and social assistance	\$5,123	455	\$2,329,795
Federal	Other services (except public administration)	\$2,879	2	\$5,054
Federal	Public Administration	\$5,097	1,322	\$6,740,989
State	Arts, entertainment, and recreation	\$2,350	65	\$152,589
State	Public Administration	\$4,012	1,637	\$6,569,090
Local	Utilities	\$4,946	175	\$867,236
Local	Transportation and warehousing	\$3,165	266	\$842,008
Local	Administrative and support and waste management	\$3,518	11	\$38,779
Local	Other services (except public administration)	\$5,932	5	\$29,159
Local	Public Administration	\$3,958	1,367	\$5,411,485
		Total	89,155	\$358,683,811

Health Care Costs for Self-Insured Companies

Cigarette smoking has been linked to an extensive and ever-growing list of diseases. Evidence from decades of research is sufficient to infer a causal relationship between smoking and diseases of nearly all organs of the body including cancer, cardiovascular diseases, respiratory diseases, diabetes, immune and autoimmune disorders, eye disease, and many more (USDHHS, 2014). Exposure to secondhand smoking is also found to increase the risk of cancer, heart disease, stroke, and numerous other diseases (USDHHS, 2014). Employers who self-insure bear the excess health care costs of smoking

employees. In our modeling, we calculate the total annual excess health care costs self-insured employers pay for smoking employees as follows:

$$\text{TEHCCS} = \text{NSESIP} \times \text{EAHCCPS} \quad (10)$$

where TEHCCS = total excess annual health care costs self-insured employers pay for smoking employees; NSESIP = number of smoking employees participating in self-insured health plans; EAHCCPS = excessive annual health care costs per smoker. The number of smoking employees participating in self-insured health plans is calculated as follows:

$$\text{NSESIP} = \text{PWESIHP} \times \text{NSE} \quad (11)$$

where PWESIHP = the percent of private sector workers enrolled in self-insured health insurance plans in the state of Indiana. The Employee Benefit Research Institute (EBRI) estimated that the percentage of private-sector employees enrolled in self-insured plans in each state in the year 2021 (Fronstin, 2022). For Indiana, the EBRI estimated that 69% of employees were covered by self-insured plans for 2021. We made the assumption that the percent of employees covered by self-insured plans did not change between 2021 and 2022. The number of smoking employees (NSE) is calculated as follows:

$$\text{NSE} = \text{NEI} \times \text{SPRI} \quad (12)$$

where NEI = number of employees per industry; and SPRI = smoking prevalence rate in each industry. The number of employees in each industry for the first quarter of 2022 was obtained by the Bureau of Labor Statistics (BLS, 2022A). The smoking prevalence rate in each industry was derived by using the average annual incomes of employees in each industry and applying the smoking prevalence rate in Indiana for that income level from the 2021 Behavioral Risk Factor Surveillance Surveys (BRFSS).⁴

The excessive annual health care costs per smoker (EAHCCPS) is calculated as follows:

$$\text{EAHCCPS} = \text{HCSAS}/\text{ASI} \quad (13)$$

⁴ The income specific smoking prevalence rates for Indiana from the 2021 BRFSS were multiplied by 0.98 to account for the estimated 2% natural decline in smoking prevalence between years 2021 and 2022.

where HCSAS = health care spending attributed to current smokers in 2020; and ASI = adult smokers in Indiana in 2020. The number of adults smokers in Indiana in 2020 was calculated by multiplying the adult population in Indiana in 2020, obtained from the US Census Bureau, by the fraction of adults who were current smokers in 2020, obtained from the Behavioral Risk Factor Surveillance Survey. The health care spending attributed to current smokers (HCSAS) is calculated as:

$$\text{HCSAS} = \text{THCSI} \times \text{SAF} \quad (14)$$

where THCSI = total health care spending in Indiana in 2020; and SAF = smoking attributable fraction.

The total health care spending in Indiana in 2020 was obtained from the Kaiser Family Foundation (KFF, 2022) and we used the smoking attributable fraction of 3.2% derived by Xu and colleagues (Xu et al., 2015).

The excessive annual health care costs per smoker (EAHCCPS) in Indiana for the year 2020 is estimated to be \$2,257.39. Using the medical care component of the Consumer Price Index, we adjusted this number for inflation to \$2,363 for the year 2022. Table 7 presents the estimates for the excess smoking attributable health care costs for self-insured companies in the state of Indiana and Table 8 presents the estimates for the excess smoking attributable health care costs for self-insured companies in Marion County. The excess smoking-attributable health care costs for self-insured companies in 2022 ranges from \$1,258,503 in the mining, quarrying, and oil and gas extraction industry to \$130,736,890 in the manufacturing industry in the state of Indiana. This is not surprising given that the manufacturing industry has the highest estimated number of smoking employees in self-insured health plans (55,330) among all the different industries. The total excess smoking-attributable health care costs for self-insured companies in 2022 for the estimated 320,509 private sector smoking employees who participated in a self-insured program in the State of Indiana is \$757,317,372 for the year 2022.

Table 7: State of Indiana Excess Health Care Costs for Private Employers Who Self-Insure				
Sector	Industry	Number of Smoking Employees	Number of Smoking Employees in Self-Insured Plans	Excess Smoking Attributable Health Care Costs for Self-Insured Companies
Private	Agriculture, forestry, fishing, and hunting	2,954	2,038	\$4,815,754
Private	Mining, quarrying, and oil and gas extraction	772	533	\$1,258,503
Private	Utilities	1,070	738	\$1,744,882
Private	Construction	21,897	15,109	\$35,700,246
Private	Manufacturing	80,188	55,330	\$130,736,890
Private	Wholesale trade	18,885	13,030	\$30,789,122
Private	Retail trade	72,110	49,756	\$117,565,717
Private	Transportation and warehousing	24,140	16,657	\$39,357,725
Private	Information	3,957	2,730	\$6,450,617
Private	Finance and insurance	8,195	5,654	\$13,360,703
Private	Real estate and rental and leasing	5,180	3,574	\$8,445,959
Private	Professional, scientific, and technical services	20,730	14,304	\$33,797,191
Private	Management of companies and enterprises	2,866	1,978	\$4,672,715
Private	Administrative and support and waste management	36,253	25,015	\$59,106,334
Private	Educational services	9,682	6,680	\$15,784,900
Private	Health care and social assistance	61,367	42,344	\$100,051,956
Private	Arts, entertainment, and recreation	6,607	4,559	\$10,772,014
Private	Accommodation and food services	70,687	48,774	\$115,246,243
Private	Other services (except public administration)	16,965	11,706	\$27,659,901
	Total	464,505	320,509	\$757,317,372

The excess smoking attributable health care costs for self-insured companies in 2022 ranges from \$47,358 in the mining, quarrying, and oil and gas extraction industry to \$23,923,942 in the health care and social assistance industry in Marion County, Indiana. This is not surprising given that the health care and social assistance industry has the highest estimated number of smoking employees in self-insured health plans (10,125) among all the different industries. The total excess smoking-attributable health care costs for self-insured companies in 2022 for the estimated 57,551 private sector smoking

employees who participated in a self-insured program in Marion County, Indiana is \$135,984,167 for the year 2022.

Table 8: Marion County Excess Health Care Costs for Private Employers Who Self-Insure

Sector	Industry	Number of Smoking Employees	Number of Smoking Employees in Self-Insured Plans	Excess Smoking Attributable Health Care Costs for Self-Insured Companies
Private	Agriculture, forestry, fishing, and hunting	76	52	\$123,373
Private	Mining, quarrying, and oil and gas extraction	29	20	\$47,358
Private	Utilities	75	52	\$122,763
Private	Construction	4,461	3,078	\$7,272,700
Private	Manufacturing	4,282	2,955	\$6,981,887
Private	Wholesale trade	4,018	2,773	\$6,551,647
Private	Retail trade	8,888	6,133	\$14,490,503
Private	Transportation and warehousing	5,733	3,956	\$9,346,728
Private	Information	1,115	770	\$1,818,539
Private	Finance and insurance	2,126	1,467	\$3,465,657
Private	Real estate and rental and leasing	1,394	962	\$2,272,203
Private	Professional, scientific, and technical services	6,545	4,516	\$10,670,803
Private	Management of companies and enterprises	700	483	\$1,140,764
Private	Administrative and support and waste management	10,383	7,165	\$16,928,904
Private	Educational services	2,314	1,597	\$3,772,542
Private	Health care and social assistance	14,674	10,125	\$23,923,942
Private	Arts, entertainment, and recreation	1,171	808	\$1,909,612
Private	Accommodation and food services	11,745	8,104	\$19,148,557
Private	Other services (except public administration)	3,677	2,537	\$5,995,687
	Total	83,407	57,551	\$135,984,167

Conclusion

This report quantifies the excess costs smoking employees impose on employers in Indiana and in Marion County, Indiana associated with extra absenteeism, presenteeism, unsanctioned smoking breaks, and excess health care costs self-insured employers pay for smoking employees. Aggregating the excess costs associated with absenteeism, presenteeism, smoking breaks, and health care, smoking employees imposed additional annual costs of \$3.1 billion on employers in the state of Indiana. These

costs can be thought of as an additional tax smoking employees impose upon employers. Employers in Indiana spent an estimated \$179.7 billion on wages in 2022. The additional excess costs of \$3.1 billion smoking employees impose on employers represents 1.7% of the wages employers paid to their employees in 2022. The excess costs in Marion County are likewise substantial. Aggregating the excess costs associated with absenteeism, presenteeism, smoking breaks, and health care, smoking employees imposed additional annual costs of \$608.6 million on employers in Marion County, Indiana in 2022.

Our study certainly underestimates the total cost smoking employees impose on employers because we did not include other costs such as: higher health insurance costs for employers who purchase private insurance, higher workers' compensation costs for smokers, higher life insurance premiums for smoking employees, higher fire insurance premiums for employers, facilities related costs such as maintenance, cleaning, property damage not covered by insurance, and ventilation in workplaces that do not ban smoking such as bars, taverns, hotels, motels, private worksites owned or leased by a casino, horse racing facility, or riverboats where smoking is legal in Indiana, the health effects of secondhand smoke on non-smokers in workplaces where smoking is permitted, lost productivity due to smoking-related premature mortality and retirement and the recruiting and training costs associated with finding replacements for early retirements, and various other costs directly related to smoking.

As this report demonstrates smoking employees impose very large costs onto employers in Indiana and in Marion County, Indiana. These costs may be slightly offset for companies that have defined benefit retirement plans. That is, in a defined benefit plan employees contribute to the plan while employed and the employer pays a set amount of money each year to an employee during retirement as part of a pension. If smokers have shorter post-employment lifespans than non-smokers, smokers may receive less in post-retirement benefits than they paid into the fund when employed, saving the company money. These saving, however, are likely to be very small. Berman (2014)

estimated the employer savings to be \$296 per smoking employee who was enrolled in a defined benefits plan. A vast majority of private employer retirement plans are not defined benefits plans, but rather, are defined contribution plans. According to the BLS in 2022 (Zook, 2023), only 15 percent of private industry workers had access to defined benefit retirement plans and not all of the workers eligible for defined benefits enrolled in the plans. It should be stressed that employers who offer defined contribution plans will not receive any savings from smoking employees who have shorter lifespans.

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