Projected Impacts of Local Restrictions on the Sale of Tobacco Products on Tobacco Excise Tax Revenues and State Program Funding

ECONOMIC IMPACT ANALYSIS PROJECT

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CONTENTS

1. Introduction and study objectives

In recent years, state and local governments in the United States (US) have implemented policies restricting the sale of flavored tobacco products, including electronic nicotine delivery systems (ENDS) like e-cigarettes. California has been a leader in this movement. More than one-third of all US localities that had enacted restrictions on the sale of flavored tobacco products by 2022 were in California.[1] Following a ballot initiative that upheld its Senate Bill (SB) 793, effective December 21, 2022, California became the second state after Massachusetts to prohibit the sale of most flavored tobacco products, including flavored ENDS and menthol cigarettes.

In California, a decline in cigarette use prevalence has coincided with the emergence of ENDS offered in an array of different flavors.[2] Advocates have focused on youth access to and use of these products because advertising, marketing, and product characteristics have often targeted and particularly appealed to this demographic.[3, 4] Many flavors in tobacco and ENDS products are widely used by youth (e.g., bubble gum and fruit flavors), while others such as menthol are disproportionately used by people of color.[5, 6] Policies that restrict the sale of flavored tobacco products have successfully reduced the sale of, and youth access to, ENDS products.[7, 8]

California is also home to the first two cities in the US to prohibit the sale of any tobacco products through no-sales policies: Beverly Hills and Manhattan Beach. Research finds high retailer compliance with the policies, suggesting that they are likely to reduce the sale of tobacco products.[9]

In a companion report, we documented the impacts of local flavor sales restrictions and local no-sales policies on tobacco product sales, combining retail scanner data and advanced econometric methods.[10] We found that both sets of policies were effective. However, the fiscal impact of these local policies and of the statewide flavored tobacco sales restriction are not well understood. One modeling study projected that the statewide sales restriction would reduce tax revenue for cigarettes by 4.1% ($61.0 million) and other tobacco products by 7.6% ($17.5 million).[11]

California has implemented a series of excise taxes on tobacco products. The taxes constitute an important part of the state's budget and an important strategy for increasing the price of tobacco products, thereby reducing consumer demand for the products. In November 1988, California voters approved Proposition (Prop) 99 that established a $0.25 per pack excise tax on cigarettes and an equivalent amount on other tobacco products. The revenues were earmarked for programs to reduce smoking, to provide health care, to support tobacco-related research, and to fund resource programs for the environment. In November 2016, California voters passed Prop 56, known as the California Healthcare Research and Prevention Tobacco Tax Act, to fund specific health care programs through a $2.00 per pack increase in the excise tax on cigarettes and an equivalent tax on other tobacco products. In November 2022, Prop 31 imposed a new excise tax on ENDS products, known as the California Electronic Cigarette Excise Tax (CECET), at a rate of 12.5% of the retail price.

In this study, we build on our empirical estimates of the impacts of local flavor and no-sales policies on tobacco product retail sales to project these policies' impacts on state tobacco tax revenues from all tobacco excise taxes (including Prop 99, Prop 56, and Prop 31 on ENDS only) and program funding from Prop 99 and Prop 56. CECET is included in our estimates of ENDS tax revenues but excluded from calculations for the purposes of program funding.

2. Approach

We used a custom store-level data set from NielsenIQ to assess the impact of local flavor and no-sales policies on retail sales. Details are provided in our companion report.[10] We combine estimates of the policy effects with data on tax revenue for cigarettes, publicly available through the California Department of Tax and Fee Administration (CDTFA) on its website.[12] Tax revenues for ENDS for 2022 are provided by CDTFA through a special request, and 2023 ENDS tax revenues are derived from unit sales reported by the CDC Foundation using retail sales data from Circana.[13]

For each policy type, we consider two different counterfactual scenarios.

1) Lost revenue from the adoption of the sales restrictions by selected California localities (i.e., if the treated cities had not been treated).
2) Anticipated lost revenue if all California cities had adopted the local sales restrictions (i.e., if untreated cities had been treated).

For the flavored tobacco policy analysis, we then estimate the lost revenue from the statewide ban and compare it to the anticipated lost revenue in scenario #2.

In calculating the expected decline under each scenario, we rely on the findings from our related work.[10] Specifically, we apply our difference-in-differences estimates of the effects of local flavored policies to forecast the effect of untreated cities having a flavored tobacco sales restriction, as well as the effect of treated cities not having one. For the analyses of local no-sales of tobacco policies, we assume perfect compliance (i.e., no tobacco sales) as was observed in our related work on Beverly Hills and Manhattan Beach in the aftermath of their policies.[10]

We make two major assumptions when scaling our local policy effect estimates to the entire state. First, CDTFA data is publicly available for the entire state and not disaggregated by city; we therefore assume that the proportion of tobacco sales that occur in treated cities versus control cities in the NielsenIQ retail scanner data matches the proportion statewide. Second, CDTFA does not publicly report tax revenues for cigars and smokeless tobacco (SLT), to our knowledge. We therefore assume that the ratio of sales for these products to cigarettes (whose tax revenue is available through CDTFA) is the same in the NielsenIQ data as the ratio statewide.

Program funding calculations

We applied the proportion of the current cigarette tax due to Prop 99 (8.7% = $0.25 / $2.87 per pack) to the calculation of tax revenue change under each counterfactual scenario. We report the impacts on Prop 99 funding in aggregate, rather than dividing into separate Prop 99 programs.

For Prop 56, we similarly took the applicable proportion of the current tax across the different tobacco product categories (69.7% = $2.00 / $2.87). We then used the formula provided in Chapter 2, Article 2.5, Section 30130.55 of California's Cigarette and Tobacco Products Tax Law to determine the distribution of tobacco tax revenues. According to this formula, the revenues are to be apportioned in the following manner: 82% to the Department of Health Care Services (DHCS) through the Healthcare Treatment Fund; 13% to tobacco prevention and control programs, of which 85% is distributed to the CDPH California Tobacco Prevention Program (CDPH/CTPP) and 15% to the California Department of Education (CDE); and 5% to the University of California for the Tobacco-Related Disease Research Program (TRDRP). We calculated the proportion of tax revenue distributed to each of these programs using this formula.

The calculations for Prop 56 and Prop 99 expenditures are the amounts prior to any adjustments to account for administrative spending or any other adjustments required by law.

3. Results for Flavored Tobacco Sales Restrictions

Table 1 and Table 2 show our calculations of observed revenue compared with the estimated total revenue under the two counterfactual scenarios. Under scenario #1, in which California cities with a local flavored tobacco sales restriction *had never implemented* the policy, we estimate that state tobacco tax revenues would have been $50.4 million higher in 2022 (Table 1). About 66% of this hypothetical revenue increase would be due to increased cigarette tax revenues, 16% due to increased SLT tax revenues, 14% due to increased ENDS tax revenues, and 4% due to increased cigar tax revenues.

Table 1. Projected effect of local policies restricting the sale of flavored tobacco products on tobacco tax revenues under counterfactual scenario #1 that no cities had a local flavor policy, 2022

	Total observed revenue	Total projected revenue under scenario #1	Projected revenue change
Cigarettes	$1,437,049,797	$1,470,451,034	$33,401,236
ENDS	$91,519,090	$98,601,967	$7,082,877
SLT	$137,803,986	$145,751,362	$7,947,376
Cigars	$75,580,095	$77,571,222	$1,991,127
Total	$1,741,952,969	$1,792,375,585	$50,422,616

Note: Total observed revenues for cigarettes are drawn from publicly available CDTFA data (https://www.cdtfa.ca.gov/dataportal/dataset.htm?url=MonthlyCigaretteRevenue). Total observed revenues for SLT and cigars are estimated using CDTFA data and NielsenIQ sales data. Total observed revenues for ENDS are drawn from CDTFA data provided by special request. Counterfactual revenues are calculated by applying the difference-in-differences estimates of the impact on sales.

Under scenario #2, in which California cities without a flavored tobacco sales restriction *had implemented* such a policy, we estimate that state tobacco tax revenues would have decreased by $139.1 million in 2022 (Table 2). About two-thirds (65%) of this revenue decrease would be due to decreased cigarette tax revenues, 19% due to decreased SLT tax revenues, 13% due to decreased ENDS tax revenues, and 4% due to decreased cigar tax revenues.

Table 2. Projected effect of local policies restricting the sale of flavored tobacco products on tobacco tax revenues under counterfactual scenario #2 that all cities had a local flavor policy, 2022

	Total observed revenue	Total projected revenue under scenario #2	Projected revenue change
Cigarettes	$1,437,049,797	$1,346,368,313	-$90,681,484
ENDS	$91,519,090	$73,871,924	-$17,647,166
SLT	$137,803,986	$111,957,826	-$25,846,161
Cigars	$75,580,095	$70,667,135	-$4,912,961
Total	$1,741,952,969	$1,602,865,197	-$139,087,771

Note: Total observed revenues for cigarettes are drawn from publicly available CDTFA data (https://www.cdtfa.ca.gov/dataportal/dataset.htm?url=MonthlyCigaretteRevenue). Total observed revenues for SLT and cigars are estimated using CDTFA data and NielsenIQ sales data. Total observed revenues for ENDS are drawn from CDTFA data provided by special request. Counterfactual revenues are calculated by applying the difference-in-differences estimates of the impact on sales.

We next used our estimates from scenario #2 of the projected impact of "treating" all California cities with a local flavored sales policy, versus our calculations of the observed revenue decline during the first year following implementation of SB 793. The results are provided for cigarettes and ENDS in Table 3; sources to estimate observed tax revenue data for SLT and cigars in 2023 were not available. Our projected model based on local flavor policies underestimates the impact of the statewide policy on tobacco tax revenues by $108.3 million. About 74% of the difference is due to cigarettes, and 26% due to ENDS products.

Table 3. Comparing the effect of the statewide flavor policy based on observed tax revenues and the effect based on projected revenues under counterfactual scenario #2

	Total observed revenue, 2023	Total projected revenue under scenario #2, 2022	Projected revenue difference (Observed 2023 – scenario #2)	Actual revenue change after Y1 of SB 793 (Observed 2023 – Observed 2022)
Cigarettes	$1,242,202,965	$1,346,368,313	-$104,165,349	-$194,846,833
ENDS	$37,443,868	$73,871,924	-$36,428,056	-$54,075,222
Subtotal	$1,279,646,833	$1,420,240,237	-$140,593,404	-$248,922,054

Note: This table shows the observed and projected change in tax revenues from 2022 and 2023. The third column shows the change between observed 2023 revenues and projected 2022 revenues under Scenario #2. The last column shows the change in observed 2023 revenues and observed 2022 revenues. Sources to estimate observed tax revenue data for smokeless tobacco and cigars in 2023 were unavailable.

In Table 4, we estimate the anticipated effects of our two counterfactual scenarios on Prop 99 program funding prior to any administrative adjustments. For scenario #1, the calculations suggest that Prop 99 programs would gain about $4.4 million in 2022 if California cities with a local flavor sales restriction policy had not implemented them. In contrast, for scenario #2, Prop 99 programs would lose $12.1 million in 2022 if all California cities had restricted flavored tobacco products.

Table 4. Projected change in tobacco tax revenue distribution for Prop 99 programs under counterfactual scenarios involving local flavor policies, 2022

	Projected revenue change for Prop 99 programs under scenario #1	Projected revenue change for Prop 99 programs under scenario #2
Cigarettes	$2,909,515	-$7,899,084
ENDS	$616,975	-$1,537,210
SLT	$692,280	-$2,251,408
Cigars	$173,443	-$427,958
Total	$4,392,214	-$12,115,660

In Table 5, we calculate the anticipated effects of our counterfactual scenarios on Prop 56 program funding. The programs would gain an estimated $33.3 million under scenario #1. Prop 56 programs would lose $92.4 million under scenario #2 if we apply the local flavor policies statewide. We also report the projected changes in revenues under the counterfactual scenarios for recipients of Prop 56 program funding. The projected changes are proportional to the funding formula, such that most of the changes affect DHCS.

Table 5. Projected change in tobacco tax revenue distribution for Prop 56 programs under counterfactual scenarios involving local flavor policies, 2022

	Projected revenue change for Prop 56 programs under scenario #1	Projected revenue change for Prop 56 programs under scenario #2
All tobacco tax revenues	$33,339,803	-$92,445,741
DHCS	$27,338,638	-$75,805,508
CDPH/CTPP	$3,684,048	-$10,215,254
CDE	$650,126	-$1,802,692
TRDRP	$1,666,990	-$4,622,287
Tax revenues by product type		
Cigarette tax revenues	$23,276,123	-$63,192,672
DHCS	$19,086,421	-51,817,991
CDPH/CTPP	$2,572,012	-6,982,790
CDE	$453,884	-1,232,257
TRDRP	$1,163,806	-3,159,634
ENDS tax revenues	$3,137,894	-$7,818,142
DHCS	$2,573,073	-$6,410,877
CDPH/CTPP	$346,737	-$863,905
CDE	$61,189	-$152,454
TRDRP	$156,895	-$390,907
SLT revenues	$5,538,241	-$18,011,262
DHCS	$4,541,358	-$14,769,235
CDPH/CTPP	$611,976	-$1,990,244
CDE	$107,996	-$351,220
TRDRP	$276,912	-$900,563
Cigar tax revenues	$1,387,545	-$3,423,666
DHCS	$1,137,787	-$2,807,406
CDPH/CTPP	$153,324	-$378,315
CDE	$27,057	-$66,761
TRDRP	$69,377	-$171,183

4. Results for No-Sales of Tobacco Policies

Table 6 and Table 7 show our calculations of observed revenue compared with total revenue under the two counterfactual scenarios. Under scenario #1, in which Beverly Hills and Manhattan Beach had not put into effect a no-sales of tobacco policy, we estimate that state tobacco tax revenues would have been $2.3 million higher in 2022. About 57% of this hypothetical revenue increase would be due to increased cigarette tax revenues, 34% due to increased ENDS tax revenues, 8% due to increased SLT tax revenues, and 2% due to increased cigar tax revenues.

Table 6. Projected effect of local no sale of tobacco policies on tobacco tax revenues under counterfactual scenario #1 that no cities had a no-sales policy, 2022

	Total observed revenue	Total projected revenue under scenario #1	Projected revenue change
Cigarettes	$1,437,049,797	$1,438,368,113	$1,318,316
ENDS	$91,519,090	$92,299,463	$780,373
SLT	$137,803,986	$137,980,731	$176,745
Cigars	$75,580,095	$75,626,341	$46,246
Total	$1,741,952,969	$1,744,274,648	$2,321,679

Note: Total observed revenues for cigarettes are drawn from publicly available CDTFA data (https://www.cdtfa.ca.gov/dataportal/dataset.htm?url=MonthlyCigaretteRevenue). Total observed revenues for SLT and cigars are estimated using CDTFA data and NielsenIQ sales data. Total observed revenues for ENDS are drawn from CDTFA data provided by special request. Counterfactual revenues are calculated by applying the difference-in-differences estimates of the impact on sales.

Under scenario #2, in which all California cities implemented a no-sales of tobacco policy, we estimate that state tobacco tax revenues would have decreased by $1.74 billion in 2022 (Table 7). About 83% of this revenue decrease would be due to decreased cigarette tax revenues, 5% due to decreased ENDS tax revenues, 8% due to decreased SLT tax revenues, and 4% due to decreased cigar tax revenues.

Table 7. Projected effect of local no sale of tobacco policies on tobacco tax revenues under counterfactual scenario #2 that all cities had a no-sales policy, 2022

	Total observed revenue	Total projected revenue under scenario #2	Projected revenue change
Cigarettes	$1,437,049,797	$0	-$1,437,049,797
ENDS	$91,519,090	$0	-$91,519,090
SLT	$137,803,986	$0	-$137,803,986
Cigars	$75,580,095	$0	-$75,580,095
Total	$1,741,952,969	$0	-$1,741,952,969

Note: Total observed revenues for cigarettes are drawn from publicly available CDTFA data (https://www.cdtfa.ca.gov/dataportal/dataset.htm?url=MonthlyCigaretteRevenue). Total observed revenues for SLT and cigars are estimated using CDTFA data and NielsenIQ sales data. Total observed revenues for ENDS are drawn from CDTFA data provided by special request. Counterfactual revenues are calculated by applying the difference-in-differences estimates of the impact on sales.

In Table 8, we estimate the anticipated effects of our two counterfactual scenarios on Prop 99. Funding for Prop 99 programs would increase by approximately $202,000 under scenario #1, in which Beverly Hills and Manhattan Beach had not implemented their no-sales policy. Under scenario #2, in which all cities in California adopted a no-sales of tobacco policy, funding for Prop 99 programs would be expected to decrease by $151.7 million.

Table 8. Projected change in tobacco tax revenue distribution for Prop 99 programs under counterfactual scenarios involving local no-sales policies, 2022

	Projected revenue change for Prop 99 programs under scenario #1	Projected revenue change for Prop 99 programs under scenario #2
Cigarettes	$114,836	-$125,178,554
ENDS	$67,977	-$7,972,046
Cigars	$4,028	-$6,583,632
SLT	$15,396	-$12,003,832
Total	$202,237	-$151,738,063

In Table 9, we calculate the anticipated effects of our counterfactual scenarios on Prop 56 program funding. The programs would gain an estimated $1.1 million under scenario #1. Prop 56 programs would lose $1.19 billion under scenario #2 if we apply the local no-sales policies statewide. We also report the projected changes in revenues under the counterfactual scenarios for recipients of Prop 56 program funding.

Table 9. Projected change in tobacco tax revenue distribution for Prop 56 programs under counterfactual scenarios involving local no-sales policies, 2022

	Projected revenue change for Prop 56 programs under scenario #1	Projected revenue change for Prop 56 programs under scenario #2
All tobacco tax revenues	$1,090,076	-$1,190,673,416
DHCS	$893,862	-$976,352,201
CDPH/CTPP	$120,453	-$131,569,412
CDE	$21,256	-$23,218,132
TRDRP	$54,504	-$59,533,671
Tax revenues by product type		
Cigarette tax revenues	$918,687	-$1,001,428,430
DHCS	$753,323	-$821,171,313
CDPH/CTPP	$101,515	-$110,657,842
CDE	$17,914	-$19,527,854
TRDRP	$45,934	-$50,071,422
ENDS tax revenues	$15,995	-$40,545,277
DHCS	$13,116	-$33,247,127
CDPH/CTPP	$1,767	-$4,480,253
CDE	$312	-$790,633
TRDRP	$800	-$2,027,264
SLT revenues	$123,167	-$96,030,652
DHCS	$100,997	-$78,745,135
CDPH/CTPP	$13,610	-$10,611,387
CDE	$2,402	-$1,872,598
TRDRP	$6,158	-$4,801,533
Cigar tax revenues	$32,227	-$52,669,056
DHCS	$26,426	-$43,188,626
CDPH/CTPP	$3,561	-$5,819,931
CDE	$628	-$1,027,047
TRDRP	$1,611	-$2,633,453

5. Discussion

We considered the fiscal impacts on tobacco excise tax revenues of two counterfactual scenarios, one scenario in which no California cities had implemented the local policy of interest—a local flavored tobacco sales restriction or a no-sales of tobacco policy—and one scenario in which all California cities had implemented the local policy of interest. We find that 2022 tax revenues would have increased by $50.4 million if no cities implemented a local flavor policy and revenues would have decreased by $139.1 million if all cities had implemented them. We find that 2022 tax revenues would have increased by $2.3 million if no cities implemented a local no-sales of tobacco policy and revenues would have decreased by $1.74 billion if all cities had implemented them.

Thus, we find evidence supporting that local and state policies have significant fiscal impacts on tobacco excise tax revenues and tax-supported program funding. Whereas local flavored tobacco restrictions are estimated to have a modest fiscal impact, no-sales of tobacco policies would be expected to have a large fiscal impact if adopted by more localities. Alternative funding mechanisms should be explored to consider how to maintain support for Prop 99 and Prop 56-supported programs through other funding streams. Provisions stipulate that some of the lost revenues going to Prop 99 and Prop 56 programs would be backfilled; however, a decline in revenue would be expected to result in a decline in percentage allocations for some programs over time.[14]

Our calculations further suggest that the statewide flavored tobacco restriction policy impacted tobacco tax revenues more than would be predicted from local flavor policies during its first year following implementation. One contributor may be the wide variation in the strength of local flavor policies, many of which were less stringent than the statewide policy. Another contributor may be that consumers can more easily avoid local restrictions through cross-border shopping in nearby unregulated jurisdictions, whereas the statewide policy would make such consumer avoidance behavior more difficult. Moreover, our accounting ignores the secular declines in California tobacco tax revenues that have occurred over time, which would not be attributable to SB 793 and would lead us to overstate the statewide policy's impact. Nevertheless, SB 793 faced some implementation challenges, as the state law did not provide enforcement authority to any state agency, and retailer compliance with the law lagged as a result. California has since passed a new law (Assembly Bill 935) that clarifies that the California Department of Public Health is the state's lead agency for enforcing the state law, in collaboration with other state agencies and local authorities.[15] We would expect that as statewide enforcement strengthens, the statewide policy would have a greater effect on tax revenues.

Limitations

Our estimates rely on limited data and are likely to be imprecise, based on a number of assumptions and a degree of extrapolation. To the extent that our assumptions are incorrect, the calculations would change accordingly. A major potential source of bias is that the retail scanner data includes a sample of large chain retailers, and sales at these stores may vary in important ways from other types of retailers, including independent retailers and tobacco specialty shops. Our calculations of program allocation estimates also do not take into account legislatively mandated adjustments for expenditures before allocations to programs. Another limitation is that analysis is based on calendar-year tax revenues instead of by fiscal year, which is how revenues are reported and allocated.

Conclusion

The statewide flavor ban may have important fiscal impacts. To date, the impacts have been greater than the experience from local flavor policies, although surveillance will continue to be important in the coming years. Beverly Hills and Manhattan Beach are two relatively small cities, and the impacts of their no sale of tobacco policies on the state budget have been and will be limited. If additional cities follow suit, to maintain Prop 99 and Prop 56 programs, alternative funding mechanisms should be explored. Future work might be able to account for variation in the strength of local policies, in terms of products and populations covered and exemptions, to determine their anticipated impacts. Estimates of projected local impacts would also be helpful for understanding geographic disparities in the fiscal impacts and the extent to which these disparities relate to population characteristics such as income, race, and ethnicity.

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Appendix

Appendix Table 1. Estimated ENDS tax revenues, 2023

Month	CECET revenues
1/30	$2,054,064
2/27	$2,162,049
3/27	$2,116,656
4/24	$2,045,496
5/22	$2,057,860
6/19	$2,041,084
7/17	$1,953,462
8/14	$1,920,307
9/11	$1,946,190
10/9	$1,983,836
11/6	$1,922,556
12/4	$1,863,495
Total	$24,067,055

Note: Estimated CECET revenues are derived from CDC Foundation data (https://tobaccomonitoring.org/state/california/).