

# UC San Diego

## UC San Diego Electronic Theses and Dissertations

### Title

Evidence of Tax Evasion Among Undercover Purchase Audits to Online Tobacco Retailers

### Permalink

<https://escholarship.org/uc/item/91j5n2kv>

### Author

Mejorado, Tomas

### Publication Date

2024

Peer reviewed|Thesis/dissertation

UNIVERSITY OF CALIFORNIA SAN DIEGO

Evidence of Tax Evasion Among Undercover Purchase Audits to Online Tobacco Retailers

A thesis submitted in partial satisfaction of the requirements for the Master of Public Health

in

Technology & Precision Health

by

Tomas Mejorado

Committee in Charge:

Professor Eric Craig Leas, Chair

Professor Angela Roberston Bazzi

Professor Cinnamon Bloss

2024

Copyright

Tomas Mejorado, 2024

All rights reserved.

The Thesis of Tomas Mejorado is approved, and it is acceptable in quality and form for publication on microfilm and electronically.

University of California San Diego

2024

## DEDICATION

*Les dedico este tesis a mis padres*

*Cuauhtémoc y Azucena, quienes son mis héroes e inspiración  
en todo lo que hago. Quiero agradecerles por su apoyo incondicional.*

*Quiero tambien agradecer a mi hermana Jackie  
por siempre creer en mí y apoyarme en todo lo que hago.*

*También quiero agradecer a  
mi familia por animarme en cada logro académico.*

*Los quiero mucho.*

*Por último, quiero agradecer a Dios que me guía, me da fuerza y protección.*

*Te ofrezco todo esto a ti.*

## TABLE OF CONTENTS

THESIS APPROVAL PAGE .....	iii
DEDICATION .....	iv
TABLE OF CONTENTS.....	v
LIST OF ABBREVIATIONS.....	vi
LIST OF FIGURES .....	vii
ACKNOWLEDGEMENTS .....	viii
ABSTRACT OF THE THESIS .....	ix
INTRODUCTION .....	1
METHODS .....	3
RESULTS .....	7
DISCUSSION .....	8
CONCLUSION.....	10
REFERENCES .....	12

## LIST OF ABBREVIATIONS

CECET	California Electronic Cigarette Excise Tax
Sales Tax	Sales and Use Tax
SB	Senate Bill
SD	Standard Deviation
P	P-value
K	Kappa Statistic
ICC	Intraclass Correlation Coefficient

## LIST OF FIGURES

Figure 1 Density Plot CECET Percent Paid. ....	11
Figure 2 Density Plot of Sales Tax Percent Paid Price Only.....	11



## ACKNOWLEDGEMENTS

I would like to extend my deepest gratitude to my mentor and chair, Dr. Eric Craig Leas, for his guidance and support throughout my entire MPH journey. I am also profoundly grateful to Dr. Angela Robertson Bazzi and Dr. Cinnamon Bloss for their invaluable contributions as committee members on this thesis. Their support and willingness to assist made this project possible.

Additionally, I wish to thank everyone in the E-commerce lab who has helped me reach my academic milestones. Lastly, I wish to extend my deepest gratitude to those who supported me along the way: Dr. Alonzo Campos, Dr. Julianna Rava, Kathia Nunez, and Natalie Quach. I thank you for the support you provided throughout this journey.

The methods section contains unpublished material coauthored with Ellis, Shannon; Satybaldiyeva, Nora; Harati, Raquel; Benitez, Gustavo; Leas, Eric C. The dissertation author was the primary author of this section.

## ABSTRACT OF THE THESIS

Evidence of Tax Evasion Among Undercover Purchase Audits to Online Tobacco Retailers

by

Tomas Mejorado

Masters of Public Health  
in  
Technology & Precision Health

University of California San Diego 2024

Professor Eric C. Leas, Chair

**Introduction:** SB-395 enacted the California Electronic Cigarette Excise Tax(CECET) that would require retailers to collect a 12.50% excise tax on electronic cigarette sales from California consumers. This analysis provides insight into the rates of CECET and sales tax adherence among tobacco retailers online.

**Methods:** In October 2023, 16 buyers attempted to purchase flavored nicotine-vaping products from 78 online tobacco retailers offering delivery to San Diego, resulting in 114 accepted credit card transactions. We analyzed 112 receipts for products containing nicotine, required by SB-395 to include CECET and local sales tax. Of these, 99 purchases were used to evaluate tax adherence and estimate revenue loss. We reported instances where retailers either failed to charge, undercharged, correctly charged, or overcharged CECET and sales tax.

**Results:** CECET adherence resulted with 87 purchases (88%) failing to charge the CECET, 1 purchase (1%) undercharged, and 11 purchases (11%) correctly charged. The average CECET rate charged was 1.49%, totaling \$27.09 collected but resulting in a \$146.66 revenue loss. Sales tax adherence showed 83 purchases (83.83%) did not charge sales tax, 2 purchases (2%) undercharged, 5 purchases (5.1%) correctly charged, and 9 purchases (9.1%) overcharged. The average sales tax rate charged was 2.3%, totaling \$30.96 collected but resulting in a \$78.88 revenue loss.

**Conclusion:** Our analysis revealed that adherence to the CECET and local sales tax was low among online retailers suggesting a need for enhanced enforcement tax compliance among e-commerce retailers.

## INTRODUCTION

Tobacco taxes are a well-documented intervention for curbing youth tobacco use.<sup>1</sup> To be effective, current tax laws need to be enforced. One way of promoting enforcement is to audit retailers for tax compliance. For example, some surveillance of e-liquid products across five brick-and-mortar stores distributed nationwide, found low tax compliance rates, with only 60% of the analyzed stores charging excise tax at checkout.<sup>2</sup> To achieve the highest fidelity, tax enforcement efforts should be comprehensive of the entire market, but to our knowledge, there is no routine surveillance of *online* retailers' compliance with e-cigarette tax laws.

Surveillance of tax compliance among online retailers is sorely needed. Online sales have become the fastest-growing segment in the tobacco marketplace.<sup>3</sup> Consumers are also shifting to purchasing tobacco or e-cigarettes potentially because of a lack of retailer compliance—with one survey identifying 71.3% of reporting they prefer online purchases of tobacco products due to convenience and pricing with available discounts and tax avoidance.<sup>4</sup> Assessments of other policies also suggest widespread non-compliance to public health policies. For example, recently researchers highlighted the loopholes associated with the California flavor ban (Senate Bill 793) in retail and its shift among consumers to the unregulated online shopping space.<sup>5</sup>

Despite the rapidly growing shift to e-commerce, there is a lack of understanding regarding the extent of tax avoidance in this platform. As of July 2022, Senate Bill (SB) 395 enacted the California Electronic Cigarette Excise Tax (CECET) that would require retailers to collect a 12.50% excise tax on electronic cigarette sales from California consumers. CECET would prevent the initiation of tobacco, promote cessation, and reduce use among adolescents and young adults.<sup>6</sup> Sales & Use Tax (sales tax) is another state-required fee that applies to all retail spaces selling merchandise within the State of California. As of 2024, the statewide sales

tax rate is 7.25%, however, rates vary by cities and counties based on their local tax rates and district tax rates (e.g. Chula Vista 8.750% and Encinitas 7.750%). This study had participants residing in San Diego County and San Diego City order flavored vape products to their residency to further understand the compliance of policies in place for online tobacco retailers. The adoption of the CECET allowed coders to analyze if retailers complied with the CECET charge when selling to buyers.

The primary objective of this study is to assess online retailers' compliance with the CECET on flavored tobacco products purchased online. Furthermore, the sales tax associated with the buyer's residential location was also assessed to determine adherence to local sales tax. Also providing a projected revenue loss based on our study sample to highlight the possible tax loss due to a lack of tax compliance. This analysis provides insight into the rates of CECET compliance that is critical for improving tobacco control interventions to prevent youth accessibility, as well as offers a comprehensive view of sales tax adherence among tobacco retailers online.

## METHODS

### *Study Samples*

During October 2023, 16 study-associated buyers made attempts to purchase flavored nicotine-vaping products from 78 online tobacco retailers who appeared to offer delivery to San Diego residents. These retailers' websites were selected by using three search engines (*Google Maps, Google Search, and Yelp*) to accumulate a list of potential websites selling flavored vapes. These websites were then manually reviewed by study members to identify the websites that allow delivery to San Diego, California. Buyers all had permanent residential San Diego addresses, were aged 21+ years old at the time of purchase, and all households were exclusively occupied by adults. Buyers were prompted to purchase products using their personal information such as name, age, and payment, as well as sending them to their home addresses. To assess tax compliance, buyers purchased products in sets of two with one buyer residing in San Diego City which has a local flavor restriction, and the other within San Diego County which does not have a local flavor sales restriction. Each buyer was provided with a list of products from various online vape stores and were instructed to purchase these identified products. All products listed for purchase met the criteria of a product required to collect the CECET and local sales tax; these products all contained flavored nicotine required under SB-395 to charge CECET as well as distributed within San Diego requiring a local sales tax.

Of the 156 purchases that were attempted, 114 resulted in accepted credit card transactions. After purchase, each buyer was prompted to upload their purchase receipt. A total of 112 receipts were provided for these transactions. Buyers then received the products they ordered, and when all products had been delivered, a member of the study staff retrieved these packages from each buyer's home. A total of 99 packages had complete packaging when

returned to study staff. The lead author then identified and digitized any packing slips contained in the packages. About two-thirds (66/99) of the packages contained packing slips. The Institutional Review Board of the University of California, San Diego determined this study did not use human subject research.

### *Extracting Tax Information*

The lead author (T.M.) took pictures of the shipping label, packing slip, and item(s) purchased. Coders were then formally trained by the study coordinator to distinguish any discrepancy among the product assigned to the buyer for purchase, product received, retailer information, identifying excise tax, and sales tax charges on packing slips and receipts. The digitalized images were then reviewed and coded by study staff in sets of two (E.L., G.B., N.S., R.H, S.E., T.M.). Agreement among coders were calculated for 1) whether sales tax was reported ( $p=0.86$ ;  $K=0.72$ ), 2) the exact amount of sales tax reported ( $p=1$ ;  $ICC=1$ ), 3) whether CECET tax payment was reported ( $p=0.9$ ;  $K=0.81$ ), and 4) the exact amount of CECET tax reported ( $p=1$ ;  $ICC=1$ ). Disagreements among coders were then adjudicated by a third reviewer (S.E.). Once we identified product price from all purchases, we excluded purchases with incomplete data (e.g. those that did not report a product price on either receipt or packaging slip). There were 99 purchases that were deemed to have complete information which we considered for study analysis after removing any purchases containing incomplete information. These 99 purchases were then used to evaluate CECET and sales tax adherence, as well as to provide a projected revenue loss based on our study sample.

## *Measures*

### CECET Adherence:

SB 395 requires all electronic cigarettes (in-state or out-of-state) to collect the CECET from California buyers at an excise tax rate of 12.50%, as well as providing a purchaser with a receipt or other documentation that states the CECET charge and the specific amount they paid on any electronic cigarette retail sale.<sup>7</sup> To take a conservative approach, CECET was determined on the price of the product only and did not include additional handling or shipping surcharges. We determined the calculated CECET charge for all purchases at 12.50% as outlined by the California Department of Tax and Fee Administration (e.g. if the product is priced at \$29.99 the calculated CECET charge was calculated as \$3.75). This calculated CECET was then compared to the identified CECET charged from retailers' explicit statements on receipt or other documentation provided (e.g. calculated CECET price of \$3.75 and receipt stating a charge of the CECET at \$3.75) to compare adherence.

### Sales Tax Adherence:

All buyers resided in San Diego County or city limits during the time of purchase. Any retailers engaged in business within the California state limits is required to collect state sales tax at a statewide rate of 7.25%, however, local tax rates can be included which might affect the sales tax rate (e.g. San Marcos 7.750% & Oceanside 8.250% ).<sup>8</sup> Within our sample we had buyers residing in various San Diego County and city limits which was used to calculate the adequate sales tax per buyer (e.g. buyer residing in San Diego County was determined to be charged a sales tax of 7.750% while a buyer residing in La Mesa would be calculated a sales tax of 8.500%). California warrants all retailers required to collect sales tax to provide a receipt detailing the amount of sales tax collected to each purchaser.<sup>9</sup> We were able to identify the sales



tax rates retailers had collected based on provided documentation like receipts and packing slips to compare proper adherence to sales tax. The calculated sales tax was determined using adequate local sales tax from the buyer's permanent address where the item was shipped and compared to the identified sales tax charge stated on the receipt or packing slip provided by the retailer. Sales tax calculation was done based on product price only and did not include other surcharges such as shipping and or handling.

### *Statistical Analysis*

We report the percent of retailers who correctly paid the CECET and sales tax. This was reported as failed to charge, underpaid, correctly charged, or overcharged. The observed sum was noted with the calculated percent. This also allowed us the ability to generate the means and standard deviations for our revenue tax loss projections on orders of \$100. All statistical analysis was conducted using R and R studio statistical software Version 2022.07.1

### **Acknowledgements**

The methods section contains unpublished material coauthored with Ellis, Shannon; Satybaldiyeva, Nora; Harati, Raquel; Benitez, Gustavo; Leas, Eric C. The dissertation author was the primary author of this section.

## RESULTS

### *CECET Adherence*

Of the 99 purchases that identified a CECET charge on either a packing slip or receipt 87 purchases failed to charge the CECET (88%), 1 purchase underpaid CECET (1%), and 11 purchases correctly charged CECET (11%) (Figure 1). The average tax rate charged for CECET was 1.5%. There was a total of \$27.09 collected in CECET charges, but \$173.75 should have been collected at the 12.5% tax rate, resulting in \$146.66 in lost CECET tax revenue for the purchases. At the average CECET tax rate (1.5%), a \$100 order would typically result in \$11.0 (SD= \$4.05) in lost tax revenue. By calculating the amount of products that were properly charged the CECET (12.5%) we highlighted products retailers undercharged or did not charge indicating the failure to comply with the charge. Those retailers failing to properly collect CECET were therefore considered to not adhere to California's SB-395 requiring the collection of CECET.

### *Sales Tax Adherence*

Similarly, of the 99 purchases that were analyzed, we calculated the adequate local sales tax to determine the tax charge collected. Those retailers failing to collect the proper sales tax were determined to not adhere to the local sales tax law. We identified 83 purchases not charging a sales tax (83.83%), 2 purchases undercharging (2%), 5 purchases correctly charging the sales tax (5.1%), and 9 that overcharged the calculated sales tax (9.1%) (Figure 1). The average sales tax rate collected was 2.3%. There was a total of \$30.96 in sales tax collected, however, \$109.84 in sales tax charges should have been collected, resulting in \$78.88 in lost sales tax revenue from this purchase. Using the average sales tax rate (2.3%), a \$100 would typically result in \$5.60 (SD = \$6.38) in lost sales tax revenue.

## DISCUSSION

The results of this study suggest there is a widespread lack of adherence to CECET and sales tax charges among online tobacco retailers. Eighty-five percent of purchases either failed to charge or underpaid the CECET among purchases that were made on their websites. Although more retailers collected a sales tax compared to the CECET there was still a considerable amount of non-adherence suggesting a substantial amount of lost tax revenue from online sales.

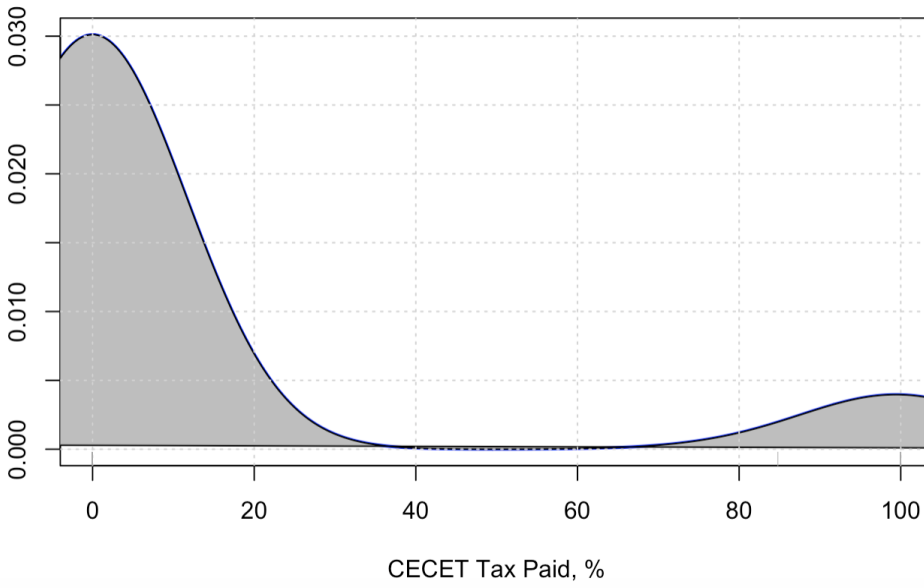
These results suggest a need for improved monitoring and enforcement of tax laws for e-commerce retailers. Similar to findings from previous research published, there is a lack of routine inspection of the e-commerce retailers by jurisdictions as compared to the routine brick-and-mortar retailers.<sup>2-3</sup> With the rapid growth of this space more research focused on tax adherence within e-commerce in efforts to improve current tobacco control policies is needed. Our findings are consistent with the overall findings of previous research suggesting inconsistency and failure to charge excise tax adequately.<sup>2</sup> However, our study extends this research to a larger sample size, buyers purchasing tobacco products online, and focuses on San Diego city and San Diego County residents. Our study allows us to focus our attention on the adherence to the CECET and local sales taxes within one county. Strengths in this research is the novelty of assessing tax evasion among online retailers distributing to California residents following the CECET implementation. To our knowledge, this is the first study that successfully purchases and had products delivered to buyer's homes from tobacco online retailers

One of our main limitations was the relatively small buyer size all residing in San Diego which is not a precise representation of compliance with the CECET and sales tax throughout the entire state of California. Sampling from a broader range of residents from across the state to increase the generalizability. Another limitation in our study was using the sale price of the

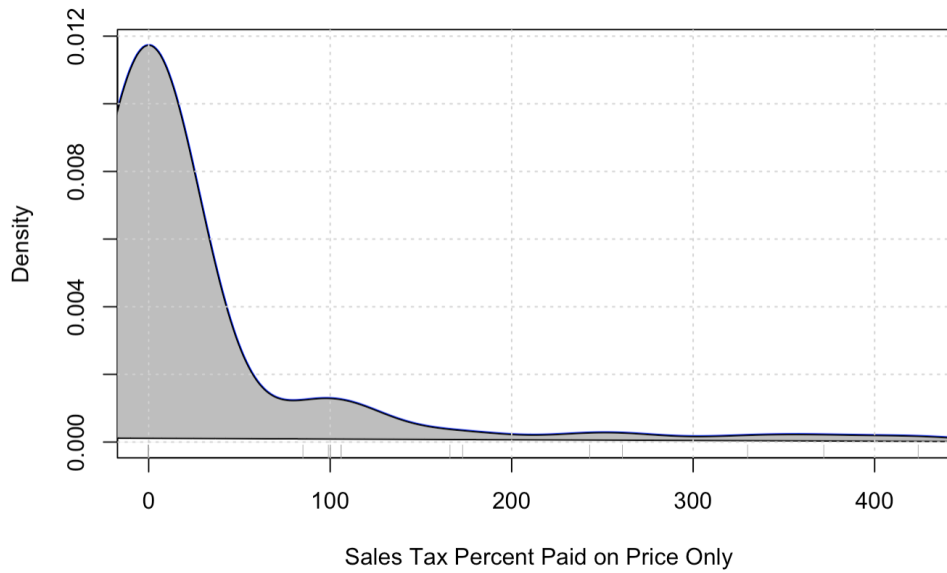
product to calculate the CECET and sales tax due to inconsistencies of retailers identifying handling charges on receipts. We assume that the sample loss would be greater if we had based our calculated CECET and sales tax on product price including handling. It is important to note another limitation in this study of the 9.1% of retailers identified as overcharging sales tax, this could potentially indicate these retailers adequately charged the 'handling' fee in their sales tax thus not equating to an overcharge. There is also a need for further research assessing tax compliance among e-commerce in efforts to improve tobacco control and expand the current knowledge gap on the topic. Possible suggestions could be to revise current tobacco control policies in effort to address e-commerce regulation. Another suggestion would be to implement mandated educational training for retailers selling tobacco products online to prevent non-adherence in required tax collection.

## CONCLUSION

This study explored tax evasion among tobacco retailers through undercover purchase audits following the implementation of SB-395. Our analysis revealed that adherence to the CECET and local sales tax was significant among online retailers suggesting a need for tax compliance regulation and surveillance within e-commerce. The findings warrant future research with a larger sample size as well as product price and handling fees to be included in the calculated projection price. Ultimately, understanding the adherence to the CECET and local sales tax among online retailers will improve the fidelity of existing tobacco control interventions.



**Figure 1. Density Plot CECET Percent Paid**



**Figure 2. Density Plot of Sales Tax Percent Paid Price Only**

## REFERENCES

1. Le, T.T.T., Jaffri, M.A. The association between smoking behaviors and prices and taxes per cigarette pack in the United States from 2000 through 2019. *BMC Public Health* 22, 856 (2022). <https://doi.org/10.1186/s12889-022-13242-5>
2. Ma, S., Jiang, S., Ling, M., Lu, B., Chen, J., & Shang, C. (2022). Excise taxes and pricing activities of e-liquid products sold in online vape shops. *Tobacco Control*,
3. Leas EC Need for improved regulation of tobacco e-commerce *Tobacco Control* Published Online First: 08 January 2024. doi: 10.1136/tc-2023-058515
4. King Jensen, J., Rebentisch, K., Tripp, H., & Merten, J. (2022). Price, convenience, the buying experience, and other motivations for purchasing tobacco and e-cigarettes online. *Tobacco Induced Diseases*, 20(September), 1–8. <https://doi.org/10.18332/tid/152138>
5. Leas EC, Mejorado T, Harati R, *et al* E-commerce licensing loopholes: a case study of online shopping for tobacco products following a statewide sales restriction on flavored tobacco in California *Tobacco Control* Published Online First: 07 November 2023. doi: 10.1136/tc-2023-058269
6. *STATE System Excise Tax Fact Sheet*. (2024, March 6). [www.cdc.gov](https://www.cdc.gov/statesystem/factsheets/excisetax/ExciseTax.html#:~:text=According%20to%20the%20US%20Surgeon). <https://www.cdc.gov/statesystem/factsheets/excisetax/ExciseTax.html#:~:text=According%20to%20the%20US%20Surgeon>
7. *Tax Guide for California Electronic Cigarette Excise Tax*. (2024). [www.cdtfa.ca.gov](https://www.cdtfa.ca.gov). <https://www.cdtfa.ca.gov/taxes-and-fees/california-electronic-cigarette-excise-tax/>
8. *Sales & Use Tax in California*. (n.d.-b). [www.cdtfa.ca.gov](https://www.cdtfa.ca.gov). <https://www.cdtfa.ca.gov/taxes-and-fees/sutprograms.htm>
9. *Regulation 1686*. (n.d.). [www.cdtfa.ca.gov](https://www.cdtfa.ca.gov). Retrieved June 20, 2024, from <https://www.cdtfa.ca.gov/lawguides/vol1/sutr/1686.html>