Research Protocol for Electronic Cigarette Laws

Prepared by the Policy Surveillance Program Staff

August 2017
Electronic Cigarette Laws

I. Date of Protocol: August 2017

II. Scope: Compile United States federal and state-level statutes and regulations addressing the required age for purchase, possession, and use of electronic cigarettes (e-cigarettes), product definitions for e-cigarettes, whether e-cigarette use is included in definitions of “smoking,” sale and use location restrictions and nicotine ingredient, licensing, product packaging and online purchasing requirements. State executive orders with legal authority pursuant to a state’s constitution and/or statutory code and final federal rules published in the federal register interpreting federal statutes and regulations with legal authority pursuant to the U.S. statutory code were also compiled. This longitudinal dataset includes relevant laws and regulations effective from August 1, 2016 to August 1, 2017.

III. Primary Data Collection


   b. Dates Covered in the Dataset: August 1, 2016 – August 1, 2017.

   c. Data Collection Methods: The research team (“Team”) building this dataset consisted primarily of two legal researchers (“Researchers”) and one supervisor (“Supervisor”) from the Policy Surveillance Program.

       Researchers began by writing a background memorandum to understand the key policy components of e-cigarette laws. Next, each Researcher wrote a five-state policy memorandum, summarizing laws related to the key components identified in the background memorandum. Secondary sources, such as 50-state reviews¹ of e-

cigarette laws and a paper by Lauren Lempert, et al., were consulted. Subject matter experts were also consulted, including: (1) Kristy Marynak, MPP, Office of Smoking and Health, Centers for Disease Control and Prevention; (2) Kisha-Ann S. Williams, MPH, CHES, Carter Consulting, Inc.; and (3) Mark Meaney, Lead Senior Staff Attorney for Technical Assistance at the Public Health Law Center’s Tobacco Control Legal Consortium. This dataset does not represent the views or opinions of the Centers for Disease Control and Prevention or the Public Health Law Center’s Tobacco Control Legal Consortium.

Once relevant statutes and regulations were identified, the Researchers created a Master Sheet for each jurisdiction. A Master Sheet is an internal document that includes citations, effective dates, and statutory histories for all relevant statutes, regulations and other laws.

The first 10 jurisdictions assigned were 100% redundantly researched to confirm that the Researchers were collecting all relevant law; 40% of the remaining jurisdictions were redundantly researched (17 of 42 jurisdictions), including U.S. federal laws regulating e-cigarettes.

d. **Databases Used:** Searches were conducted using WestlawNext and state-specific legislature websites.
   - Full text versions of the laws were collected from federal and state legislature websites.

e. **Search Terms:** The following searches were used:
   - Electronic cigarettes
   - Tobacco /s product
   - Vapor /s product
   - Nicotine /s product
   - Advanced (adv): “e-cigarettes”
   - adv: “electronic smoking device”
   - adv: “electronic nicotine delivery system”
   - adv: “smoking”
   - adv: “vapor product”
   - adv: “nicotine dispensing device”
   - adv: “electronic liquid”

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Keyword searches performed by the Researchers were supplemented by reviewing the tables of contents of the sections of federal and state law related to e-cigarettes, and smoking or clean air acts. All chapters were examined in their entirety for relevant law. The Researchers also collected effective dates for the most recent version of relevant statutes and regulations. State executive orders with legal authority pursuant to a state’s constitution and/or statutory code and final federal rules published in the federal register interpreting federal statutes and regulations with legal authority pursuant to the U.S. statutory code were also collected using the above search terms. Discrepancies were reviewed by the Supervisor and resolved by further research.

f. Information about initial returns and additional inclusion or exclusion criteria:

Included areas of laws include:

- Laws regulating the required age for purchase, possession, and use of e-cigarettes, product definitions for e-cigarettes, nicotine ingredient and tobacco derivation requirements for e-cigarettes and definitions of “smoking.”
- Laws related e-cigarette sale and use location restrictions, licensing requirements, product packaging and online purchasing requirements.

Excluded areas of laws include:

- Laws related to the manufacturing of e-cigarettes.
- Laws related to the taxation of e-cigarettes, except where these laws included relevant definitions, product names, nicotine content, or tobacco derivation requirements that applied to the dataset’s coding.
- Laws related to wholesalers and distributors of e-cigarettes.
- Laws related to penalties associated with improper sale of e-cigarettes.
- Laws related to the distribution of free samples of e-cigarettes.
- Laws related to the posting of signs in retail establishments related to e-cigarettes.

IV. Coding

a. Development of Coding Scheme: The Team worked in collaboration with the subject matter experts listed in Section III(c) to determine the focus of the research and the key questions to be coded. In addition, the Team consulted with these subject matter experts to discuss the coding scheme. Researchers then conceptualized coding questions and circulated them for review by the Supervisor. When the questions were finalized, the Researchers entered the questions into the MonQcle, a software-coding program.

Throughout the coding of jurisdictions’ records (A “record” refers to a set of coded responses for each jurisdiction, for each point in time included in the dataset), the Team frequently met as a group to narrow the scope of the dataset. As necessary, the coding scheme was altered to accommodate newly identified features of the law, and completed states were recoded. The dataset includes coding questions on: product types the law identifies as e-cigarettes; whether e-cigarettes must contain nicotine or be derived from tobacco; whether use of e-cigarettes is included in a jurisdiction’s definition of smoking; age restrictions regarding purchasing, possessing, or using e-cigarettes; restrictions on sale and use; where e-cigarette use is permitted; product packaging requirements; and online purchasing requirements.

b. Coding Methods: Researchers coded responses based on standard requirements regulating e-cigarettes within the law. Caution notes were provided to explain any variation in regulation for specific circumstances and/or where the law was unclear.

Below are specific rules used when coding certain questions and responses in the e-cigarette laws dataset:

Question: “Does the state have a law regulating electronic cigarettes (e-cigarettes)?”

- “Yes” was coded wherever a law or regulation explicitly identified “electronic cigarette,” “e-cigarette,” “alternative nicotine product,” “vapor product,” “electronic nicotine delivery system,” “inhalant delivery system,” “electronic smoking device,” “product containing nicotine” or any other
reference to a product classified as an e-cigarette within the text of the law.
  o For example, Alaska’s definition of “product containing nicotine” was used to identify the state’s regulation of e-cigarettes. Alaska Stat. § 11.76.109(d).

- “Yes” was coded if a law or regulation referenced a greater product category that included any of the above terms, such as “tobacco product,” “tobacco substitute,” or “nicotine product.”

**Question:** “How are e-cigarettes identified in the law?”

- This question captures the different product terms states used to identify e-cigarettes. Responses were selected if the term appeared anywhere in the collected law, regardless of whether or not it was defined or used to answer other coding questions.
- “Electronic smoking device” was coded where explicitly stated and where the law referenced “electronic delivery device” or “electronic oral device.”
- “Electronic cigarette” was coded where explicitly stated and where the law referenced “e-cigarette.”
- “Electronic nicotine delivery system” was coded where explicitly stated and where the law referenced “electronic nicotine delivery device.”
- “Vapor product” was coded where explicitly stated and where the law referenced “personal vaporizers,” “vape pens,” “vape mods,” or “nicotine vapor product.”
- “Tobacco product” was coded where the law indicated that tobacco products included “electronic cigarette,” “e-cigarette,” “alternative nicotine product,” “vapor product,” “electronic nicotine delivery system,” “inhaling delivery system,” “electronic smoking device,” or any other reference to a product classified as an e-cigarette within the text of the law. This answer choice was also coded when an e-cigarette or any of the above alternative definitions were defined as “other tobacco products.”
- “Nicotine product” was coded where explicitly stated or where the law referenced a “product containing nicotine.”

**Question:** “Are e-cigarettes required to contain nicotine?”

- “Yes” was coded when the jurisdiction’s definition of e-cigarettes indicated a nicotine requirement, including language such as “product containing nicotine,” “product that produces vapor from a nicotine product,” “provides for the ingestion into the body of nicotine,” or “provides a vapor of pure nicotine.”
- “Law states that e-cigarettes may contain nicotine” was coded when the jurisdiction’s definition of e-cigarettes included ambiguous language that made it unclear as to whether or not a nicotine requirement existed. Such language included, “may contain nicotine,” “can be used to deliver nicotine,” or “capable of delivering nicotine.”
- “Law states that e-cigarettes may contain nicotine” was also coded when a jurisdiction’s legal text contained multiple definitions applicable to e-cigarettes with contradictory or unclear nicotine requirements. When this response was coded for this reason, a caution note was provided to explain the law’s differing and/or unclear nicotine requirements and their application to specific circumstances:
  o For example, “Law states that e-cigarettes may contain nicotine” was coded in Delaware because there were two e-cigarette definitions that did not treat the nicotine content requirement identically. One definition fell into our “may contain nicotine” answer choice, while the other fell into “No.” The contradiction was explained with an accompanying caution note: “The identification of e-cigarettes as a “tobacco substitute,” which regulates sales, states that the product “can be used to deliver nicotine.” Del. Code tit. 11, § 1115(11). The identification of e-cigarettes as an “electronic smoking device,” which regulates use, does not require that the product contain nicotine. Del. Code tit. 16, § 2902(3).”
- “No” was coded when the jurisdiction’s definition of e-cigarettes included language such as “product that may or may not contain nicotine,” or “can be used to deliver nicotine or other substances.”

**Question:** “Are e-cigarettes required to be derived from tobacco?”

- “Yes” was coded when the jurisdiction’s definition of e-cigarettes explicitly stated that the product was derived from tobacco.
  o For example, in Arizona “vapor product” was defined as “a noncombustible tobacco derived product containing nicotine.” Ariz. Rev. Stat. § 13-3622(E)(3).
- “No” was coded when the jurisdiction’s definition of e-cigarettes did not contain a requirement that e-cigarettes be derived from tobacco, or when the definition stated that e-cigarettes may or may not be derived from tobacco.

**Question:** “Does the definition of “smoking” include the use of e-cigarettes?”

- “Yes” was coded where the definition of smoking explicitly included the use of e-cigarettes.
“Yes” was coded where the jurisdiction’s legal text contained multiple definitions of smoking with at least one definition including the use of e-cigarettes. When “Yes” was coded for this reason, a caution note was provided to explain the specific setting and/or circumstances where the law’s definition of smoking included the use of e-cigarettes.

- For example, in Illinois, the definition of smoking within state-supported institutions of higher education includes the use of e-cigarettes. 110 Ill. Comp. Stat. 64/10. No other definition of smoking includes the use of e-cigarettes. 410 Ill. Comp. Stat. 82/10.

“No” was coded where the definition of smoking did not include the use of e-cigarettes.

“Law does not include definition of smoking” was coded where the jurisdiction’s law did not have a definition of smoking.

**Question:** “What is the required age to purchase?”

- The required age to purchase e-cigarettes was coded based on either a minimum-age sales requirement placed on the retailer or a minimum-age purchase requirement placed on the purchaser.
- The required age to purchase e-cigarettes was not coded based on regulations that established a minimum age for possession or use.
- Laws that allowed for the underage purchase of e-cigarettes with a parent or guardian present were coded as if that exception was not present.
  - For example, Ohio law includes an exemption if the minor is “accompanied by a parent, spouse who is eighteen years of age or older, or legal guardian of the child,” but this exemption was ignored in the coding. Ohio Stat. § 2151.87(B).

**Question:** “What is the required age to possess?”

- This question was answered based on age requirements that explicitly mentioned the right of “possession” or right to “possess” e-cigarettes.
- A caution note was provided if a jurisdiction’s law requiring a minimum age for possession was only applicable in certain locations.
- Laws that allowed for the underage possession of e-cigarettes with a parent or guardian present were coded as if that exception was not present.
  - For example, Ohio law includes an exemption if the minor is “accompanied by a parent, spouse who is eighteen years of age or older, or legal guardian of the child,” but this exemption was ignored in the coding. Ohio Stat. § 2151.87(B).

**Question:** “What is the required age to use e-cigarettes?”
This question was answered based on explicit age requirements for use of e-cigarettes contained within the law, as well as age restrictions on “consumption,” “accepting for personal use,” or “possession for personal use.”

A caution note was provided if a jurisdiction’s minimum age requirement for use was only applicable in certain locations.

- For example, in Rhode Island, the use of e-cigarettes by a person under 18 years of age is only prohibited in any public street, place, or resort. R. I. Gen. Laws § 11-9-14.

Laws that allowed for the underage use of e-cigarettes with a parent or guardian present were coded as if that exception was not present.

- For example, Ohio law includes an exemption if the minor is “accompanied by a parent, spouse who is eighteen years of age or older, or legal guardian of the child,” but this exemption was ignored in the coding. Ohio Stat. § 2151.87(B).

Question: “Is a license required to sell e-cigarettes?”

- This question referred to the sale of e-cigarettes in retail outlets, and did not apply to wholesalers, subjobbers, or other non-retail sales.
- “Yes” was coded if the jurisdiction’s law explicitly required a permit, certificate, or any other type of license to sell e-cigarettes at retail. This response was also coded if such a license was not explicitly mentioned in the regulation, but was referenced in another section of the law, such as in an enforcement provision.

Question: “Where is sale restricted?”

- Not all sales restrictions present in every jurisdiction’s laws were coded. Only the most common restrictions were captured, based on recommendations from subject matter experts.
- Laws that limited the distribution of free samples of e-cigarettes were not included in the scope of this dataset.
- “Schools” was coded to include all school-owned property, including primary and secondary education facilities, private school property, and school buses.
- “Near schools” was coded to include any location that was within a specified distance of a school.
- “Self-service displays” was coded to include the placement of e-cigarettes at a retail location that is open to the public and not placed behind a counter and/or within an enclosed display case that can only be accessed directly by an employee of the retailer. This coding response included laws restricting the sale of e-cigarettes from an “unsecured display,” as well as laws only allowing sales in a sealed display case.
"Vending machines" was coded if sales from vending machines or "retail
distribution devices" were totally prohibited or were allowed under only certain
conditions.
  - For example, in California, sale from vending machines is prohibited,
except for machines located at least 15 feet from the entrance of a
premise issue an on-sale public premise licensed by the Department

Question: “Where is use restricted?”

- This question was only coded where the law explicitly prohibited the use of an
e-cigarette product.
- Responses to this question were coded if any restrictions were placed on an
e-cigarette product, even if there were exceptions for a restriction in specific
areas.
  - For example, in California, smoking a tobacco product was prohibited
in patient care areas, waiting rooms, and visiting rooms. Cal. Health &
Safety Code § 1286(a). However, this restriction did not apply to
“those areas specifically designated as smoking areas, and in patient
rooms where "all persons assigned to the room have requested a
room where smoking is permitted." Cal. Health & Safety Code §
1286(a); Cal. Health & Safety Code § 1286(b).
  - For example, in New Jersey, use of e-cigarettes in hotels is generally
prohibited because smoking is prohibited in “indoor public places,”
which includes hotels. N.J.S.A. 26:3D-57; N.J.S.A. 26:3D-58(a).
However, “the person having control of a hotel, motel or other lodging
establishment may permit smoking in up to 20% of its guest rooms.”
N.J.S.A. 26:3D-60(a).
- Not all use restrictions were coded. Only the most common restrictions were
captured under the 18 current answer choices included in this dataset for this
question. These answer choices were selected based on those areas that
were most commonly restricted in the law and based on recommendations
from subject matter experts as to which areas they felt were most important
to capture for public health purposes. If the only restricted use area in a
jurisdiction’s law was not included in the dataset’s 18 answer choice
locations, the response was coded as “Other” with an accompanying caution
note identifying the restricted area.
  - For example, in Alabama, the only location use of e-cigarettes is
• “Private multi-unit housing” was only coded when the law explicitly mentioned “multi-unit” housing, and was not coded based solely on a reference to a “private residence.”

• “Government worksites” was only coded when the law explicitly mentioned restrictions in government worksites.
  o For example, restrictions on use of electronic nicotine delivery systems “within capitol buildings” was not sufficient to code “government worksites.” See Ohio Admin. Code 128-4-02(G)(9).

• “Government multi-unit housing” was only coded when the law explicitly mentioned restrictions in government-owned multi-unit housing. This answer choice was not coded based on general restrictions on use of e-cigarettes in government buildings, or restrictions in specific government owned buildings not explicitly described as "government-owned multi-unit housing" or “public housing.”

• “Parks and recreation areas” was coded to include all indoor and outdoor facilities, including race tracks, facilities for sporting events, playgrounds, indoor sports arenas, bowling alleys, and gymnasiums.

• “Childcare facilities” was coded to include both commercial and/or home-based child care facilities.

• “Schools” was coded to include all school-owned property, including primary and secondary education facilities, private school property, school buses, and any school-sponsored excursions or field trips.

• “State sponsored institutions of higher learning” was coded to include public university campuses, vocational schools, and private university campuses that receive state funding and are subject to state laws. This response was also coded if the law identified public schools broadly, and did not explicitly define public schools as only including primary or secondary schools.

• “Healthcare facilities” was coded to include hospitals and other locations where patients are provided treatment, medical testing, or some other forms of health care.

• “Motor vehicles” was coded to include any restriction on the use of e-cigarettes in a motor vehicle for personal and/or non-commercial use. This response was not coded when specific types of commercial motor vehicles, such as ambulances, were explicitly mentioned in the law.

• “Enclosed areas of public use” was coded if the term was explicitly used in the text of the law. This response was coded in addition to other coded responses if the law explicitly included other specific areas under the definition of “enclosed areas of public use.”

• “Hotels” was coded to include motels.

• “Correctional facilities” was coded to include jails, prisons, penitentiaries, or any other penal institution.
“Public transportation” was coded to include public buses, trains, ferries, and other modes of transportation within public transit systems. Airplanes were not considered “public transportation” in this dataset.

“Other” was coded with a caution note when e-cigarettes use was only restricted in an area that did not fall into one of the 18 answer choices included in this dataset identifying a specific area. This answer choice was created in order to not misrepresent a jurisdiction’s law. If a state’s only restricted area of use was not included in the 18 answer choices it would not be accurate to code “Law does not include e-cigarette location use restrictions.” With one exception, wherever “Other” was coded, no other answer choices will have been selected for this question. The exception occurs in cases where “Other” was initially the only coded response, but a subsequent amendment added one of the 18 restricted areas. In such cases, “Other” remained coded along with the new restriction, in order to not misrepresent the restricted areas.

- For example, in Ohio, “Other” was left coded with a caution note (“The use of e-cigarettes is prohibited within capitol buildings. OH ADC 128-4-02(G)(9)”) for the record coded 8/8/2016 when a subsequent amendment became effective that led to the coding of “state sponsored institutions of higher learning,” because use within capitol buildings was still restricted.

**Question:** “Where is use permitted?”

- Responses to this question included locations that were exceptions to locations where the law restricted the use of e-cigarettes.
- Responses were coded as permitted locations even if e-cigarette use was conditionally restricted, such as if the law only permitted the use of e-cigarettes in designated areas of a location.
  - For example, in Oregon, “the owner or person in charge of a motel may designate up to 25 percent of the sleeping rooms of the hotel or motel as rooms in which the smoking, aerosolizing or vaporizing of inhalants is permitted.” Or. Rev. Stat. § 433.850(2)(a).
- Not all use permitted locations present in every jurisdiction’s laws were coded. Only the most common permitted areas were captured under the 7 current answer choices describing a specific location included in this dataset for this question. These answer choices were selected based on those areas that were most commonly permitted in the law and based on recommendations from subject matter experts as to which areas they felt were most important to capture for public health purposes. If the only permitted use area in a jurisdiction’s law was not included in the dataset’s 7
answer specific location answer choices, the response was coded as “Other” with an accompanying caution note identifying the permitted area.

- “Private residences” was coded only if the law explicitly referred to “private residences.”
- “E-cigarette retailers” was coded to include vapor shops, smoke shops, tobacco products retailers, and other similar commercial retailers. This was also coded for tobacco product retailers where “smoking” is permitted and smoking is defined to include use of e-cigarettes.
- “Smoking lounges” was coded to include hookah lounges, cigar bars, and other similar locations specifically provided for smoking and/or use of e-cigarettes. This answer choice was also coded if the definition of “e-cigarette retailer” included permission to smoke or use electronic cigarettes on site.
  - For example, Connecticut permits use of electronic cigarettes in “establishments without a permit for the sale of alcoholic liquor that sell electronic nicotine delivery systems, vapor products or liquid nicotine containers on-site and allow their customers to use such systems, products or containers on-site.” Conn. Gen. Stat. § 19a-342a(b)(2)(E).
- “Theatrical productions” was coded if e-cigarette use by performers in a theatrical or film production was permitted.
- “Government multi-unit housing” was only coded when the law explicitly mentioned permissions in government-owned multi-unit or public housing.
- “Hotel rooms” was coded to include motel rooms.
- “Gambling venues” was coded to include casinos, off-track betting facilities, and facilities hosting bingo games.
- “Private multi-unit housing” was initially included as an answer choice for this question. No jurisdiction explicitly permitted use of e-cigarettes in private multi-unit housing. Therefore, this answer choice was deleted prior to publication.
- “Other” was coded with a caution note when e-cigarettes use was only permitted in an area that did not fall into one the 7 answer choices included in this dataset identifying a specific area. This answer choice was created in order to not misrepresent a jurisdiction’s law by coding the answer choice “Law does not include locations where e-cigarette use is permitted” because the only permitted area did not fall under one of the 7 answer choices current specific area answer choices. For this reason, wherever “Other” was coded no other answer choices will have been selected for this question.
  - For example, in Arkansas, use of e-cigarettes is only permitted at “open picnic pavilions and outside of cabins” in Arkansas State Parks. Ark. Admin. Code 013.05.1-1191.
Question: “What are the product packaging requirements for e-cigarettes?”

- Responses to this question were coded based on packaging requirements for e-cigarettes as a whole and/or specifically for e-liquids, e-liquid containers, nicotine liquid containers and/or any liquid component that could be used in e-cigarettes. If packaging requirements varied between e-cigarettes as whole and any of the aforementioned liquid components or only applied to liquid components, a caution note was provided indicating the requirement’s application.
  - For example, in Massachusetts, the child-resistant packaging requirement only applies to liquid or gel containing nicotine. 940 Mass. Code Regs. 21.05.
- If the packaging requirement only applied to an e-cigarette in certain circumstances, such as a warning label only applicable to online sales, a caution note was provided.
  - For example, in Texas, the warning notice not to sell to minors is only required for delivery sales of e-cigarettes. Tex. Health & Safety Code § 161.454(b).
- “Warning notice on health risks of e-cigarette use” was coded if there was a requirement for any health risk warning, even if the required language was not specified. This response was coded only if the warning was required to be on the e-cigarette product packaging itself.
- “Warning notice to keep away from children” was coded if there was a requirement for any warning to keep e-cigarettes away from children, even if the required language was not specified. This response was coded only if the warning was required to be on the e-cigarette product packaging itself.
- “Must be sold in original package” was also coded if there was a requirement for “tamper evident packaging.”

Question: “What are the online purchasing requirements for e-cigarettes?”

- This question was coded based on explicit requirements for the purchase of e-cigarettes over the internet. Restrictions on the online advertising of e-cigarettes were not within the scope of this dataset.
- If the online purchasing requirements in the jurisdiction’s law only applied to e-liquids or e-liquid containers, and the e-cigarette definition did not explicitly include e-liquids or all component parts of an e-cigarette, a caution note was provided indicating the application of the requirement.
- “Distributor shall deliver the product to the purchaser’s verified mailing address” was coded based on any requirement to verify the purchaser’s mailing address, including a requirement that the seller must verify that the credit card address on file with the credit card company of the purchaser is
V. Quality Control

a. Quality Control – Background Research: 51% of jurisdictions were redundantly researched to confirm that the Researchers were collecting all relevant laws (27 of 52 jurisdictions). The Supervisor reviewed all redundant research, and any diverging laws found that were in scope were added to the collection of laws used to complete coding.

b. Quality Control – Coding:

i. Original Coding: Quality control of the original coding consisted of the Supervisor exporting the data into a Microsoft Excel document each day that the Researchers completed coding to examine the data for any missing entries, citations, or unnecessary caution notes. All needed citations and other entries were added and unnecessary caution notes were deleted.

ii. Redundant Coding: Redundant coding involves each Researcher independently coding the same record for a jurisdiction. Quality control of redundant coding consists of the Supervisor exporting the data into a Microsoft Excel after Researchers have completed redundant coding, calculating the rate of divergence and the team resolving any divergences. Redundant coding for this dataset was performed during each of the five batches of jurisdictions researched and coded. Each batch consisted of 10 jurisdictions, except the fourth batch which consisted of 11 jurisdictions. After all coding was completed for the five batches, which included the 50 states and D.C, redundant coding was also performed on the U.S. federal laws researched and coded.

During the first batch of coding conducted in July 2016, 100% of jurisdictions were redundantly coded (10 of 10 jurisdictions) and the rate of divergence was 13.90%. A coding review meeting was held and all divergences were resolved and any questions and responses were edited as needed for clarity in order to ensure objective coding of the laws collected. The Supervisor assigned 100% redundant coding for batch 2 (10 of 10 jurisdictions) in August 2016 and the rate of divergence was 12.50%. Again, a coding review meeting was held, and all divergences were resolved and questions and responses were edited as needed. The Supervisor assigned 100% redundant coding for batch 3 (10 of 10 jurisdictions) in October 2016 and the divergence rate was 5%. A coding review meeting was held, and all
divergences were resolved. The Supervisor assigned 100% redundant coding for batch 4 in November 2016 (11 of 11 jurisdictions) and the rate of divergence was 3.90%. A coding review meeting was held, and all divergences were resolved. The Supervisor assigned 50% redundant coding for batch 5 in February 2017 (5 of 10 jurisdictions) and the rate of divergence was 1.70%. A coding review meeting was held, and all divergences were resolved.

After the team resolved all divergences for batch 5, completion of the dataset was postponed due to the passage of several amendments to state e-cigarette laws in the year following the United States Federal Food and Drug Administration’s decision to formally regulate e-cigarette’s as tobacco products in August 2016. As a result, in early July 2017 the Team recommenced work on the dataset by redundantly researching and coding a federal record on e-cigarette laws and by conducting an update search to find all amendments that had been made to state cigarette laws since they were initially researched. The Supervisor and Researchers checked all existing legal citations on Westlaw and legislative tracking websites for any amendments after August 1, 2016. In addition, the search terms listed in section III(e) were used to search for any new laws that had been enacted since the last data collection phase. The Researchers created new records with updated legal text for states with new laws or changes to existing laws that affected answer choices. Researchers cloned records and updated the legal text for states with changes that did not affect answer choices.

Ten states had substantive updates (CA, DC, IA, IN, LA, NC, TX, PA, UT, WY), 54.5% of these states and the new federal record were redundantly coded (6 of 11 jurisdictions). Redundant coding revealed a divergence rate of 4.26% on August 1, 2017. The Team resolved all divergences and re-coded as necessary.

c. **Quality Control- Statistical Quality Control:** In order to assess the overall error rate of the dataset with a 95% confidence interval with a 5% margin of error, Statistical Quality Control (SQC) was performed after all of the original and redundant coding was completed. Seven percent of coding instances from a stratified sample of the 5,508 total coding instances included in the dataset were selected by a random number generator. This yielded 385 coding instances for redundant coding (7% of 5,508).

The stratified random sample was created by selecting 65% of the 385 random instances selected for redundant coding from 38 out of 68 total variable responses
(a variable refers to each answer choice that may be selected for each question included in the dataset) included in the dataset that had a history of higher divergences throughout all batches of redundant coding conducted during the dataset’s creation. This equaled 250 coding instances from the stratified random sample for redundant coding (65% of 385 total random coding instances selected). The 38 variables selected based on their high rate of divergence historically included responses related specifically to e-cigarette nicotine requirements, whether use of e-cigarettes was included in a jurisdiction’s definition of smoking, restricted and permitted areas of use and packaging and online sales requirements for e-cigarettes.

The other 35% of random coding instances were selected from 30 of the 68 total variables included in the dataset that did not historically have a high rate of divergence. These included 134 coding instances (35% of the 385 random coding instances selected).

The SQC yielded a divergence rate of 2.59% on October 11, 2017. All divergences were discussed and resolved as a team. All jurisdictions records were also revisited to ensure that any resolutions reached during the SQC review were uniformly applied across all coding instances that were not selected for redundant coding during SQC.

d. **Quality Control-Final Data Check:** Prior to publication, the Supervisor downloaded all coding data into Microsoft Excel to do a final review of coding answers, statutory and regulatory citations, and caution notes. All unnecessary caution notes were deleted and all necessary caution notes were edited for publication. Any responses which were inconsistent with the project’s coding rules were updated. Any missing citations were added.

The Team then performed an additional check, comparing the e-cigarette laws collected in the dataset to the those listed on Tobacco Legal Consortium’s “E-Cigarette Regulation - 50 State Review (2017)” page, to identify any gaps in research. Any additional laws from the secondary source found that were in scope and not found by the Team previously were collected and any needed changes to coding were implemented. Any additional laws found that impacted coding were also discussed by the Team until an agreement was reached on their exact impact on original coding.

The data went through a final check using Stata. All variables were checked to ensure they had 68 coding instances (i.e. no missing values), for a total of 5,508 coding instances checked (81 records multiplied by 68 variables). All variables
were tabbed to ensure that all values were consistent with the codebook options for the values of the variables. Any question responses that were never answered were also removed from the dataset. In addition, using excel, the effective dates and valid through dates for every record were checked to ensure that there were no gaps between them, such that every jurisdiction had records from August 1, 2016 – August 1, 2017.