

Zwick Center for Food and Resource Policy

Research Report No. 3

## **Examining the Regulatory Environment Facing Northeast Agricultural Producers**

Report prepared for Farm Credit East

Benjamin Campbell, Laura Dunn, and Adam N. Rabinowitz\*  
Department of Agricultural and Resource Economics  
Zwick Center for Food and Resource Policy  
University of Connecticut

Department of Agricultural and Resource Economics  
Zwick Center for Food and Resource Policy  
College of Agriculture, Health and Natural Resources  
University of Connecticut  
1376 Storrs Road  
Storrs, CT 06269-4021  
Phone (860) 486-2836 Fax (860) 486-2461

Originally Submitted October 1, 2015

Revised November 7, 2015

\*Senior authorship is shared by all authors. Benjamin Campbell is Assistant Professor and Extension Economist, Laura Dunn was a MA student and research assistant, and Adam N. Rabinowitz is an Assistant Research Professor. Funding for this project was provided by Farm Credit East and the Zwick Center for Food and Resource Policy. The content of this publication does not necessarily reflect the views or policies of Farm Credit East.



## **Executive Summary**

This report was produced by the Zwick Center for Food and Resource Policy with partial funding from Farm Credit East. The objective of this report was to provide information to producers, policy makers, and other interested stakeholders on the both the agricultural producer perceived and data driven regulatory environment of Northeastern states. Notably the specific objectives were:

- Identify regulatory perceptions of Northeastern agricultural producers
- Quantify the regulatory environment via an data driven index computation;
- Rank states within the Northeast as well as select comparable states throughout the United States;
- Provide recommendations on the state level to lessen the regulatory burden for Northeastern states.

## **Findings**

- Overall, agricultural producers in the Northeast indicated the number of regulations to be increasing since 2010. Furthermore, the amount of time and money spent on the regulations was also increasing.

- State regulations were found to have the most impact on producers changing their farming practices, followed by federal and to a lesser extent municipal regulations.
- Perception of regulatory impact are not always consistent with data driven indices. Several states ranking low on regulatory burden had a majority of agricultural producers perceiving there to be a high regulatory burden. In contrast, some states with a high burden had the perception of “just-right” or under-regulated.
- There were three tiers that were identified for ranking a states’ regulatory burden. New Jersey was found to be the least regulated state while Maine and New Hampshire were the most regulated, according to this study’s calculations. It is important to note that these rankings are relative to the other states in this study.
- On the whole, Northeastern states were more regulated than comparison states from around the United States. Of the sixteen states in the regulatory index, five of the bottom six were in the Northeast.
- Northeastern states, in general, moved around in how well they performed in the different policy components. Some states scored well in tax policy regulation but low in labor while others did well in labor but scored poorly in environmental. Thus individual components are important to consider with respect to regulatory impact.

Using the results from the report it is clear that each state has areas that they can improve their regulatory burden on agricultural producers. Some states need to focus on lessening the burden of taxes while others may need to focus on labor or environmental policies. Furthermore, this report does find support for the anecdotal evidence that Northeastern states by and large have more regulatory burdens than comparable states throughout the United States.

## Table of Contents

Executive Summary .....	ii
Table of Contents .....	iv
Introduction.....	1
Existing Research on State Regulatory Environments .....	2
Agricultural Regulatory Environment .....	4
Data and Methodology .....	8
Focus of this Study .....	10
Survey of Agricultural Producers .....	11
Survey Design .....	12
Survey Demographics .....	14
Regulatory Index Design .....	16
Policy Categories .....	16
Non-Policy Categories .....	19
Aggregation Methodologies .....	20
Results .....	21
Survey Results .....	21
Trends .....	22
Regulatory Areas of Concern .....	23
Regulatory Compliance .....	23
State versus Federal/Municipal Regulations .....	23
Out-of-State Perceptions .....	24
Growth in Agricultural Production .....	25

Econometric Modelling of Overall Regulatory Environment .....	27
Econometric Modelling of Specific Regulatory Components .....	29
Regulatory Index .....	30
Overall – Northeast .....	30
Overall – All States .....	32
Connecticut .....	33
Maine .....	34
Massachusetts .....	35
New Hampshire .....	36
New Jersey .....	37
New York .....	38
Rhode Island .....	39
Vermont .....	40
Conclusions .....	41
References .....	43
Tables .....	45
Figures .....	69

# Examining the Regulatory Environment Facing Northeast Agricultural Producers

The Zwick Center for Food and Resource Policy, a policy oriented economic research center at the University of Connecticut was requested by Farm Credit East, a credit and financial services company, to analyze the regulatory climate for agricultural businesses in the Northeastern United States. The motivation for this research was anecdotal evidence that the state regulatory environment in the Northeast has been negatively impacting agricultural production compared to other areas throughout the country. For the purposes of this study the Northeastern states were Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont. In an effort to provide unbiased research based evidence of the impact of the regulatory environment on agricultural production, the Zwick Center undertook a multi-pronged approach. First, we identified existing regulations in each state via previous studies and a search of relevant agency websites in order to understand state regulatory and business climates; second, we developed and implemented a survey of agricultural producers to understand their perceptions on the business and regulatory environment; and third, we created an index of policy and non-policy components that impact agricultural production.

Regulatory and business climate studies of states are becoming more common (see Story, 2012; Cohn, 2014; The Economist, 2014), but there are few studies that have focused specifically on the agricultural sector (Mortensen, Perry, and Pritchett, 2014). For this reason gaining an understanding of the agricultural specific regulatory and business climate is critical. Understanding producer perceptions and developing an agriculturally focused index provides the necessary insight into issues that may be affecting agricultural production in the Northeast.

To obtain a better understanding of the perceptions of farmers and move beyond anecdotal evidence, a comprehensive 75 question survey was developed and administered throughout the Northeast. Focused on questions relevant to the agricultural regulatory and business climate, we were able to gain insight into the perceptions of producers with regard to the impact of the state climate on production activities and investment. Furthermore, creating an agricultural regulatory climate index we were able to comparatively rank the agricultural regulatory environment of the Northeastern states as well as for eight comparable states from around the United States. The states selected for comparison were Idaho, Illinois, Michigan, Nebraska, Ohio, Pennsylvania, and Wisconsin, and Wyoming. The objective of this ranking was to use quantifiable factors that impact agricultural production and understand how states compare to each other both within the Northeast and throughout the United States. Thus our index covers sixteen states throughout the U.S. focusing on cost of tax and labor policies, environmental issues, and other sector specific and non-policy factors.

### **Existing Research on State Regulatory Environments**

Much of the existing evidence on the regulatory environment of states occurs with respect to general businesses and not agricultural production. According to *Forbes Magazine*, “The regulatory environment is now the top issue that can have the most impact on a company, according to 400 U.S. CEOs across all major industries” (Moreno, 2014). While there is no set definition of what a state-level ‘regulatory environment’ is, for the purpose of our study we define it as the mix of different regulation types and regulatory attributes that applies a general pressure on affected stakeholders such as agricultural producers. Although the regulatory environment has

been identified as the top issue impacting companies nationwide, the impact does not seem to be consistent across all regions.

Three recent high-profile studies by *The New York Times*, The Consumer News and Business Channel (CNBC), and *The Economist* have found the Northeast to be less favorable for businesses than other regions of the United States. Referring to Figure 1, CNBC provides a visual representation of state business competitiveness from the least favorable (darkest) to the most favorable (lightest) business climates. In Figure 2, *The Economist* depicts the small business-friendliness of state level regulations from the least friendly (darkest) to the most friendly (lightest). In Figure 3, *The New York Times* ranked states based on the total expenditure on incentives per year from the least favorable for business (smallest amount) to the most favorable for business (highest amount). Disregarding methodologies, a consistency among these studies is the poor outlook of the business climate in the Northeast compared to other areas of the United States. Given that the studies all ranked different measures, it comes as no surprise that out of all three state rankings only one state (Texas) consistently ranks favorably. Interestingly enough, the only three Northeastern states that ranked in the top ten were Massachusetts, New York, and Pennsylvania, which was only in *The New York Times* study. In *The Economist's* state rankings for overall small-business friendliness, the South ranks the highest followed by the West, Mid-West, and the North, respectively. Only one out of the eight Northeastern states (12.5 percent) received a ranking of C or higher in comparison to six out of the twelve Mid-Western states (50 percent). More specifically, *The New York Times* top ten state rankings of total expenditure on *agriculturally related* incentives per year does not list a single Northeastern state. Therefore, while the regulatory environment is of utmost concern to businesses nationwide, these three studies show that there may be a more adverse effect on businesses in our study area of interest.

Given the stark differences between Northeastern states and other state levels of regulatory complexity, it is essential to analyze what potential causes might be and what impact these differences might have on each state. According to Newman (1983), as cited in Drenkard and Henchman (2013), one potential impact is the trending migration of businesses to the South due to less taxation.

Analyzing state-level real Gross Domestic Product, another regional trend, is also of interest. In a 2013 analysis of state-level real Gross Domestic Product (GDP) by the United States Department of Commerce Bureau of Economic Analysis (USDOC BEA), the Eastern regions of the country were found to have much lower amounts of economic growth compared to their Western counterparts. The majority of states with small percentage increases in real GDP were in the Mideast or Southeast regions while the majority of states with a large increase were in the Rocky Mountain or Plains regions (Bureau of Economic Analysis, 2014). The parallel between low (high) ranked regulatory environments and small (high) growth in real GDP, further implies that the regulatory environment of Northeast states may be a detriment to growth capabilities.

#### *Agricultural Regulatory Environment*

Narrowing the focus from the *general* regulatory environment to the *agricultural* regulatory environment another regional trend can be seen between contributions of the agricultural sector to state-level real GDP in Eastern compared to Western states. According to a USDOC report (2013), the three main industry sectors responsible for growth were: professional and technical services, health care and social assistance, and certain sectors such as the agriculture, forestry, fishing and hunting sector as well as mining (Bureau of Economic Analysis, 2014). Interesting enough, “[the agriculture, forestry, fishing, and hunting industry sector] was the largest contributor to the growth

of GDP in the Plains region” – one of the regions with the strongest growth in real GDP (Bureau of Economic Analysis, 2014). In another report, the agricultural and mining goods sectors were recognized for their positive impact as “strong contributors to growth in many of the fastest growing states, most of which are located in the central part of the country” (Coakley, Reed, and Taylor, 2009). Given the general business environment in the Northeast and the lack of agricultural GDP growth compared to other regions, this study’s focus on quantifying concerns about the state level agricultural regulatory environment is crucial to agricultural production in the region.

Only one national agriculturally-focused study of state rankings is known to exist, where Mortensen, Perry, and Pritchett (2014) develop an Agribusiness Friendliness Index to quantify the factors that influence the business climate for agribusiness. The authors focus on agricultural inputs, crop, fruit, and vegetable production, meat and livestock products, and first level agricultural processing. States in the Northeast rank as high as 3<sup>rd</sup> for New Hampshire to 49<sup>th</sup> for New York. A review of the methodology and variables, however, raises questions about alternative specifications.

In fact, from the three major rankings previously discussed, as well as other general rankings and the Mortensen, Perry, and Pritchett (2014) ranking, there were a variety of methodologies used to measure the relative differences among a business climate, or in our case a state’s agricultural regulatory environment. When considering what the most appropriate measure might be, it is important to note that not all regulations are created equal. That is, not all regulations are created for the same purpose, or have the same impact. While some regulations are intended to promote economic growth, others are intended to fulfill social goals and improve quality of life standards (Kolko, Neumark, Mejia, 2011). The sheer ambiguity of a regulation’s purpose is shown in the very definition of the word. According to the Merriam-Webster online dictionary, a

‘regulation’ is defined as “an official rule or law that says how something should be done.”<sup>1</sup> This varying nature of a regulation’s purpose makes state level regulatory comparisons very challenging and may explain why so many state rankings differ across indexes. Each state has its own unique school of thought as to *how* and *why* regulation should exist, influenced by a deep-rooted belief system formed by a mix of political affiliations, income levels, and trade skills, among other factors.

While no school of thought can be deemed as either correct or incorrect, for the purpose of this study it will be assumed that the best measure of a state-level regulatory environment’s effectiveness is state level economic growth. In economic theory, when considering the question of reverse causality (that explanatory factors and the explained outcome could actually be reversed and still represent a meaningful relationship), it is also more likely that the fulfillment of social goals and the improvement of quality of life standards may indirectly influence economic growth by attracting more business rather than the other way around (Kolko, Neumark, Mejia, 2011). The issue of reverse causality between a state’s regulatory environment and economic growth could also be raised; a poor regulatory environment could be partially responsible for poor economic growth due to inefficient policies or overburdening compliance requirements, while on the other hand a lack of economic opportunity and growth could create a lack of resources and funding for adequate policies that eventually leads to a poor regulatory environment. But again, it is assumed to be more likely that a state’s regulatory environment indirectly influences a state’s economic growth rather than the reverse. Thus the importance of a regulatory environment that is conducive to agricultural production is important for continued growth of the industry.

However, choosing what regulatory types or attributes as well as any additional non-regulatory variables worth factoring into state comparisons are much more challenging tasks –

---

<sup>1</sup> <http://www.merriam-webster.com/dictionary/>

regardless of whether or not the focus is on analyzing regulatory impacts on all businesses of the state or just for a specific sector like agriculture. As pointed out by Kolko, Neumark, and Mejia (2013) in their analysis of 11 state-level business climate indexes, every state in the United States has been both highly ranked and poorly ranked depending on what variables were included or omitted in the corresponding index. Given the political use of these index-ranking outcomes, Kolko, Neumark, and Mejia (2013) could not have been more accurate in stating, “Nearly every state could be praised for having a good business climate or criticized for having a bad one.” Given these conflicting outcomes, it is important to keep our focus on the impact of a state’s agricultural regulatory environment on its agricultural contributions to state level real GDP. For this study, regulation types, regulatory attributes, and non-regulatory variables were included if considered influential in historical studies, important in our survey of Northeast agricultural producers, or if deemed important in the exploratory analysis of state level regulations conducted by the research team.

Given the outcomes of recent studies and both the recent regional and sector trends, we focused on the following research questions: (1) Are there perceived differences between how agricultural producers view the regulatory and business environment compared to a quantitative analysis of the environment? (2) Are there significant differences between the agricultural regulatory environments in the Northeast and that of other regions? (3) If there are significant differences can the differences be attributed to specific policy factors (taxes, wages, etc.) or non-policy factors (input costs, weather, etc.)?

The goals of this study were as follows: (a) to identify agricultural producer perceptions of the regulatory environment in Northeastern states of interest using a producer survey, and (b) to compare these perceptions with the data driven rankings of Northeastern states and comparison

states in an agricultural regulatory environment index comprised of policy and non-policy factors that impact state level economic growth in the agricultural sector. In answering these questions, especially ranking states regulatory environment based on quantitative and qualitative measures, it must be emphasized that a state that ranks poorly does not necessarily mean that a low (high) ranking state is over-burdened (under-burdened), but rather it means that the state experiences more (less) regulations than the states ranked higher (lower).

## **Data and Methodology**

There are no standard methodologies for choosing regulatory factors of interest for a comparison of ‘business climates’ or ‘regulatory environments’ – regardless of whether or not the comparison is focused on analysis of all businesses or a specific sector like agriculture. In reviewing literature on ‘regulatory environments’ and ‘business climates,’ some of the challenges researchers face are choosing the regulatory areas of focus, ranking methodologies, and the regulatory area weighting method to be applied (e.g. weight all regulations equally or at different levels). Based on the areas of concentration chosen and weighting method selected, a wide variety of ranking outcomes can be calculated. As identified by Kolko, Neumark, and Mejia (2013) in their analysis of 11 state-level business climate indexes, every state in the United States has been both highly ranked and poorly ranked depending on what variables were included or omitted in the corresponding index, thus care must be taken in computing rankings and interpreting results.

A comparison of recent state-level business climate indexes by *The New York Times*, The Consumer News and Business Channel (CNBC) exemplifies the wide variation of positive or negative rankings each state has received. After a 10-month investigation of business incentives, *The New York Times* compiled a database and concluded that 1,874 local government programs

provide a total of 80.4 billion dollars in incentives per year across the United States (Story, 2012). In CNBC's more recent article scoring of all 50 states, 56 measures of competitiveness within 10 differently weighted areas of interest were used<sup>2</sup> (Cohn, 2014). As a further comparison, *The Economist* assessed the best and worst states for small businesses whereby each state received a business-friendliness rating on an A+ to F scale (The Best and the Worst States for Small Business: Red Tape Blues, 2014). Mortensen, Perry, and Pritchett (2014) use 38 variables divided into four different indices. To further complicate matters, different studies have used different methodologies for data weighting to compute the index.

One thing, however, is very clear: a state's business climate is complex to navigate and analyze, so care and diligence must be taken in choosing regulatory variables. In particular, an immediate concern in selecting the regulatory variables to be used in the analysis is selection bias based on a researcher(s) own views. To alleviate this concern studies have utilized primary data mining techniques by examining state government websites and publicly available information to identify key regulatory areas that impact the agricultural sector. Notably, Hurley (2005) and Carroll, Luzadis, Wagner, and Floyd (2000) utilize primary data while also using interviews to determine regulatory areas of concern. Hurley (2005) finds these regulatory areas to be environmental regulations, labor regulations, and food safety regulations, while Carroll et al. (2000) find the regulatory areas of interest to be land use policy, property taxes, transportation regulations, workers' compensation costs and energy costs. Both these studies were narrowly focused on one particular agricultural product market - California Specialty Crops and Northeastern Forest Products, respectively. In other studies, additional areas of interest were

---

<sup>2</sup> The 10 areas of interest in order of highest to lowest weight were cost of doing business, economy, infrastructure, workforce, quality of life, technology and innovation, business friendliness, education, cost of living, and access to capital.

corporate taxes, licensing, permitting, training, networking, zoning, input costs, and health insurance costs (Allen and Daniels, 2013; Mortensen, Perry, and Prichett, 2014; Kolko, Neumark and Mejia, 2011). Based on these findings of the relevant literature we focus our regulatory index on environmental, labor, food safety, land use, tax, and transportation.

### *Focus of this Study*

Exploratory research focused on the various regulations in each state was conducted by data mining websites of regulatory bodies for each state. These included State Departments of Agriculture, Environmental Protection, Labor, Revenue Services, and Economic and Community Development amongst others. Two research assistants' compiled regulations pertaining to agriculture by state, cross checking each other's work to ensure accuracy. Once this was completed, all research was compiled on an aggregate level and was reviewed. This second round of revisions allowed for the comparison of different types of regulations across all states.

For the purpose of this study our industry of interest was the agricultural industry in general, with a focus on the fruit, vegetable, nursery, greenhouse, and dairy markets. These agricultural sectors have continuously been shown to have the highest economic output in their states compared to other agricultural sectors in the Northeast (Lopez and Laughton, 2012; Lopez, Plesha, and Campbell, 2015). With respect to the regulation areas of interest we focus on tax, labor, environmental, food safety, and transportation or distribution. These areas were included based on their relevance in previous studies, examination of state level regulations, and consultation with Farm Credit East. Farm Credit East was consulted because they work with over 12,000 different agricultural producers in the Northeast, representing about 17 percent of the total population of

agricultural producers,<sup>3</sup> and the assumption that they are an informed organization of the regulations that impact agricultural producers.

To further understand whether we have included the necessary regulation areas we conducted an agricultural producer survey. The survey served a dual purpose, notably to understand the regulation areas impacting producers in each state but also to understand the producer perceptions for various regulations. The use of surveys to assess agricultural producer perceptions toward state regulatory environments is not new (Coppock, 1996; Esseks, Kraft, and McSpadden, 1998; Hurley and Noel, 2006). Carroll et al. (2000) found that study results are often strengthened through the use of both a regulatory summary and survey of producers because “areas of convergence and dissonance” between the two business environment measures are revealed.

### *Survey of Agricultural Producers*

Anecdotal evidence exists that the state regulatory environment in the Northeast is negatively impacting agricultural production compared to other areas throughout the country. To help quantify this perception and better understand the position of local farmers, a comprehensive 75-question survey was developed and administered throughout Connecticut, New Hampshire, New Jersey, New York, Maine, Massachusetts, Rhode Island, and Vermont. Focused on questions relevant to the agricultural regulatory and business climate, we were able to gain insight into the perceptions of producers and identify *which* state regulatory burdens producers encounter in different states and *how* agricultural producers find specific areas of regulation burdensome on their production. Therefore, the survey focused on collecting information on regulatory areas of concern, regulatory attributes impacting perceptions, and demographics. In addition, questions

---

<sup>3</sup> The total population of agricultural producers (13,700) was estimated using the total farm operators by state from the 2012 National Agricultural Statistics Survey of the United States Department of Agriculture.

were designed to identify specific state and sector effects on agricultural producer perceptions of state level regulatory environments.

Survey Design. Given the intent of this study to focus on regulatory impacts, we focused on policy issues including land use, environmental factors, labor, business taxes and fees, transportation, and food safety regulations.<sup>4</sup> Respondents were asked multiple questions regarding regulatory areas of concern using many different approaches in order to obtain a well-rounded view of agricultural producer perceptions of their own states' regulatory environments and that of other Northeastern states. Many questions were asked concerning trends with a time period specified after the end of the recession to minimize global economic impacts. These questions were phrased similar to, "Since 2010, what have been the trends for your state around the following areas?" As part of an answer to these questions, respondents were given the option of ranking areas of regulation (land use, environmental, etc.) on a Likert Scale of 1-5 from significantly decreasing to significantly increasing or selecting the option "Do Not Know." Respondents were also asked to rank the state level regulatory areas that impacted their farm the most, whether or not they felt their state regulatory environment was conducive and encouraging for agricultural business investment, and whether or not they would recommend other new or experienced farmers to engage in new operations in their state given the regulatory environment they face. In addition to questions about the perception of trends of the regulatory environment in the state, participants were asked about their own time spent on regulatory compliance, the monetary cost of compliance, demand for farm products, competition within and out of state, and the impact of federal or municipal regulations in comparison to state regulations.

---

<sup>4</sup> Respondents were instructed to ignore regulations related to the Food Safety Modernization Act (FSMA) which are federal guidelines.

Demographic information was also collected for two different classes: information about the farm and about the farmer. Demographic information about the farm was state of primary production, other states of production, type of business organization, age of main farm, main farming activity, range of sales, percentage of sales from different types of farming activities, and the zip code of the main farm location. Demographic information about the farmer responding to the survey included years of experience in farming, age, gender, highest level of education obtained, and percentage of household income from farming.

An online survey was chosen as the distribution and collection method given the benefits in comparison to a mail or phone survey. The use of an online survey has the benefits of reducing costs, minimizing human error from data coding, and accessing a larger sample size with limited additional costs. The online survey system, Qualtrics, was used to build the survey, to host the survey for respondents, and to store data collected as the survey is completed. These features are extremely beneficial in that the survey administrators are able to track the number of participants and data quality at any point throughout the process. This software also has the beneficial feature of randomizing the order of appearance for questions and answers to avoid response biases based on presentation of the questions and options.

A link to the Qualtrics survey was distributed via a number of different outlets in an attempt to reach a broad audience of agricultural producers in our survey area. Farm Credit East published a link to the survey via their newsletter while state level Farm Bureaus, university extension educators, and regional agricultural associations emailed their member lists based on a sample email provided by the research team, shown in Figure 4.

While the approach to solicit participation in the survey had the potential to be far reaching, it is difficult to track how many agricultural producers became aware of the survey and through

which avenue. This makes defining the response rate nearly impossible. However, this method of distribution was considered necessary in order to collect enough informative data from agricultural producers throughout the region, especially since direct financial incentives were not offered for participation. All avenues used are considered credible methods for reaching agricultural producers and measures were taken to avoid duplicate responses. The survey was administered from September through November 2014.

Survey Demographics. A total of 701 respondents completed the survey spending an average of 23 minutes for completion. Given that the survey was 75 questions long only 423 respondents fully answered all questions, thus the survey had a completion rate of 60 percent. However, even if respondents skipped questions, their responses to questions they did answer are still usable. After cleaning the sample and removing respondents from states not of interest or those who did not represent an agricultural producer there were 664 usable responses.

While a response rate is not possible to calculate due to the means of sampling, we can compare the demographics of our sample to that of the target population. As shown in Table 1, New York represents almost half of the agricultural producers in the Northeast, with 44.7 percent. Our sample of survey producers also contains a majority from New York, with 35.1 percent. Connecticut, Massachusetts, New Hampshire, and Rhode Island are somewhat over-represented in the sample while New Jersey, Maine, and Vermont are under-represented. Ideally our sample would be more representative of the region, although analysis is still possible with our sample recognizing this caveat.

This study also identifies sector effects on agricultural producer perceptions of their states' regulatory environment. Table 2 shows the representation of each agricultural sector in the final

survey sample. Similar to state representation one must recognize the caveat that our sample is not entirely consistent with the composition of agricultural sectors in the Northeast. Dairy, field crops, and fruits and vegetables are all oversampled in our data while livestock is under-sampled. Greenhouse and nursery is the most representative sector with 8.8 percent of our sample respondents from this sector while they represent 10.1 percent of Northeast agriculture.

Table 3 contains additional demographics of the business and farmer. Focusing on the business organization, 46.4 percent of the respondents identified themselves as a sole proprietorship, with 25.5 percent as a Limited Liability Company and almost 15 percent as a Corporation. The age of the farm operations are split primarily on the ends, with 36.5 percent having a farm operation over 50 years of age and 21.4 percent less than 10 years of age. The relative large number of newly started farms is somewhat surprising. The sample also is heavily weighted to smaller farms, i.e. those with sales from farm sources that total less than \$100,000 comprise 57 percent of the respondents with another 18 percent still under the \$350,000 USDA limit for small farm classification.

For demographic questions related to farmers, there exists a somewhat normal distribution curve in the number of years of farming experience, centered around 23.7% of the respondents farming for 31-40 years, however, almost 17 percent of the respondents have been farming for less than 10 years, again pointing toward a newer generation of farmers. Over 90 percent of the respondents are 40 years or older, with 30 percent 65 or more. The survey is also heavily weighted toward males who represent 68 percent of respondents.

The highest level of education of respondents was somewhat evenly distributed around a 4-year college degree with 38.1 percent obtaining that level of education. 24.7 percent of respondents have a graduate or professional degree, while 27.8 percent have only attended some

college or obtained an associate's degree. The final farmer demographic presented in Table 3 is the percent of household income from farming. With 37.5 percent of respondents reporting less than 25 percent and 35.7 percent of respondents reporting more than 75 percent, it is evident that our respondents are a combination of both primary farming households and secondary farming households.

### *Regulatory Index Design*

In order to better assess the agricultural business climate an agricultural business and regulatory climate index was developed for the eight Northeastern states including Connecticut, New Hampshire, New Jersey, New York, Maine, Massachusetts, Rhode Island, and Vermont. In addition, eight other states were selected for comparison, including Idaho, Illinois, Michigan, Nebraska, Ohio, Pennsylvania, Wisconsin, and Wyoming. The comparative states were chosen in consultation with Farm Credit East as well as through research indicating their likeness to the Northeastern states. The index focused on both policy and non-policy variables. Within each of the policy and non-policy categories there were four main components:

<u>Policy Category</u>	<u>Non-Policy Category</u>
• Tax Policies	• Input Prices
• Labor Policies	• Credit Rating
• Environmental Policies	• Transportation
• Sector Specific Policies	• Weather

Each of the components contained multiple variables. Overall, 51 variables were included in the final index, a list of which is presented in Table 5.

Policy Categories. Looking at tax policy there were seven different types of taxes included in the analysis. The first tax was the sales tax rate. Higher sales tax rates was considered to be a negative

factor, but adjustments were made for the existence of farmer exemptions, a positive offset factor. The second tax was the median adjusted farmer personal income tax rate, higher implies a negative factor, which is calculated as the tax bracket for the average farm income for the state. The number of personal income tax brackets was also included to help delineate the complexity of the regulatory tax structure within a state, whereby the greater the number of tax brackets the more complex the level of regulation. Similar to the sales tax, agricultural exemptions to personal income taxes are positive offset factors. Corporate income tax rates were also included and modeled in a similar fashion as personal income tax rates. The property tax rate was more complicated than many other tax rates because much of this occurs at a local town or county level of government and not state level. As a result we include the average county level property tax rate paid with higher rates implying increased regulatory burden. State regulated agriculture exemptions were taken into account. Motor vehicle fuel taxes included the tax rate for gas and diesel with farmer exemptions used as a correction factor given this reports focus on the agricultural sector. The estate tax included the minimum estate tax adjusted for farmer exemptions (i.e. degree of agricultural exemptions possible). The final tax variable was the inheritance tax. The regulatory impact of an inheritance tax was determined based on Class A designation, an identifier for 1<sup>st</sup> degree relatives (spouses, parents, children, and grandchildren).

The second component of the policy index focused on labor issues. Five variables were included that measured various state labor factors affecting agricultural production. The first was workers' compensation which identified whether agricultural employers are required to pay for workers' compensation insurance. Unemployment insurance was the second labor factor included, and while there exists federal laws pertaining to agricultural laborers, some states also have their own additional agricultural unemployment laws. The third variable included the minimum

agricultural wage, which is an agricultural adjustment to the state minimum wage. Higher minimum wages are more costly to producers, thus creating a negative factor. The adverse effects wage was also included and is the minimum wage rate determined by the Department of Labor that must be offered and paid to U.S. and foreign workers by employers of nonimmigrant foreign agricultural workers (H2-A visa holders). Even though this is a federal regulation the impact varies by state and can be viewed as an agricultural cost of living proxy. The final variable included in labor pertains to agricultural overtime compensation, which we define as an adjustment to state level overtime laws specific to agricultural producers.

Environmental regulations make up the third policy component of the index. Six items that cover an array of environmental regulations were included. The first variable was the existence of fees for private pesticide application. While a one-time fee, this does represent a cost and complexity to private pesticide application. A further complicating factor on pesticide use is the training necessary for certification, a negative factor indicated by the pesticide application complexity variable. Variable three contains water permit costs which were based on reporting, registration, and permitting requirements. The fourth environmental variable was the voting history of state representatives at the federal level on environmental regulations. The degree to which state representatives support environmental regulations was used as a proxy for greater regulations at the state level, a negative factor on agricultural producers. It can be argued that some of the regulations voted on were beneficial to agriculture; however, higher voting levels for environmental regulations would generally exact higher regulatory burden on agricultural producers. We utilize voting patterns at the federal level instead of voting patterns by state specific regulations given this puts all representatives on the same footing with respect to the number and types of environmental bills being put forward for a vote. The carbon intensity of the economy by

state is the fifth environmental variable. While less environmentally regulated states have higher carbon intensity levels, we consider this as a negative factor in that it creates expectations for future regulatory actions by policymakers. A sixth variable was the percentage of agricultural conservation easement acreage, a positive factor for the degree of land preserved for farming.

The fourth policy component were sector specific variables. These affect a variety of different agricultural sectors including product registration fees, product sales restrictions, and food safety regulations. All of these variables have a negative impact on the index as they represent state specific regulations more stringent than federal laws.

Non-Policy Categories. The non-policy category included four different components. The first component included input prices, including electricity rates, land rental rates, and expenditures on chemical products, gasoline, fuel, and oils. Higher values for these inputs represent a negative factor to doing business for agricultural producers in the state. The second component regarded financial factors in the state. The state S&P credit rating and the amount of direct expenditure per capita in the state are both general economic health indicators of the states wellbeing and ability to provide resources for agricultural producers and to rely less on tax revenue. While these two factors have a positive impact on the index, the debt per capita has a negative impact where higher amounts of debt are indicative of a less healthy economic environment in the state.

The third component of the non-policy category involves transportation. This is an important cost of business variable for agricultural producers who require shipments of feed and other inputs to production while also needing to transport goods for sale. Focused on roads, railways, airports, and water ports, this category provides a positive factor on businesses. The fourth and final component included weather related variables such as the average annual

temperature and average annual precipitation, both considered positive factors on agricultural producers.

Aggregation Methodology. All raw data are normalized to a zero-one scale and then aggregated to create an index. To combine the variables into an index, weights must be assigned to each category, component, and variable within a category. There is no single best method for assigning weights and often this assignment can lead to biased results if inappropriate weights are assigned. For instance, if we assign high weights to non-policy components and low weights to policy components then the regulatory implications may be completely different than if we reverse the weighting mechanism and give higher weights to policy components. To lessen the impact of arbitrarily assigning weights we randomly assigned weights to the categories, components, and variables and then conducted 10,000 iterations with the weights varying in each simulation. Via the simulation method we can rank each state based on an aggregated regulatory burden while also examining the distributional rankings based on the varying weighting factors. From the simulations we aggregate the weighted variables in each category and rank their sum relative to other states in the analysis. For each category of variables we end up with a distribution of rankings from which we compute a continuous average ranking and a 95% confidence interval<sup>5</sup>.

For our results we present an absolute ranking, a relative score, and a 95% confidence interval. The absolute ranking ranges from 1 to 8 for Northeastern states only and 1 to 16 for Northeastern and comparable states, each at one unit intervals. This is developed based on an ordering of the continuous average ranking. Absolute rankings, however, do not tell the full story of how one state compares to another because they are restricted to unit intervals, while in reality

---

<sup>5</sup> A 95% confidence interval means that there is a 95% probability that the true value is within that range.

there may be smaller or larger differences in relative scores between states. As a result we also present a relative score on a scale from 0 to 10. The 95% confidence interval is also presented to further fine-tune the interpretative differences between states.

## **Results**

### *Survey Results*

The main purpose of the survey was to quantify the degree of regulatory impact that agricultural producers perceive in their state. Therefore, participants were asked “For the state where you have your primary farming activities, how do you view that state’s regulatory environment of agricultural activities?” For all states combined, 66.5 percent of respondents view their state as over-regulated, with 26% indicating just the right amount of regulation. Not surprisingly, only 7.4% of respondents indicated they view the regulatory environment as under-regulated. With the depth of demographic information that was collected we can also examine this issue for different groups of producers.

Figure 5 shows a breakdown of perceptions by state with the percent of respondents that indicated over-regulated or perfect/under-regulated. Here we can obtain a much more detailed view of producer perceptions. In particular, about 80 percent of farmers in New Jersey and New York view their state as over-regulated. By a large majority Vermont farmers view their state as either perfectly or under-regulated, at about 70 percent versus about 30 percent over-regulated. Rhode Island and New Hampshire are about similar in their views with a slight preference toward over-regulation but hovering around the 50 percent mark.

Another way to view the perceptions is by grouping states in their geographic region as shown in Figure 6. Here we find that agricultural producers in northern New England (ME, NH,

VT) are split 50/50 on their perceptions of regulations affecting their state. Moving to southern New England (CT, MA, RI) we see an increase to just over 60 percent of respondents indicating a view that their state is over-regulated. Shifting west and further south to New York and New Jersey we find that about 80 percent agricultural producers feel over-regulated. The findings of this geographic divide are not unexpected.

The next demographic variable we can use to examine regulatory perception is the age of the farm, Figure 7. Here we find the 50 year mark as the division between about 60 percent and 80 percent of farmers viewing their state as over-regulated. Those farms that have existed for more than 50 years tend to view states as being over-regulated. These results are to be expected given that many of those farms would have long established practices and in some cases generations of history to a period when agricultural regulations were not as stringent.

Figure 8 examines a breakdown of producer perceptions by seven different agricultural sectors. Very similar views across sectors exist, indicating that the location of farming is the bigger deciding factor rather than the type of production. A breakdown by sales in Figure 9 shows the same results, although producers with \$1 million or more do tend to feel more over-regulated than others.

Trends. Since 2010, about 65 percent of respondents perceived their farm sales to have increased, 44 percent perceived their production size to have also increased and just under 50 percent perceived their profitability to have increased (with the other half split between unchanged and decreased). The trend in competition from other firms both in-state and out-of-state is an item respondents felt they do not know. Alternatively, demand for their products has increased since 2010. Table 4 depicts these trends in business/farm activities.

Regulatory Areas of Concern. In general, the overall consensus of the agricultural producers in the sample found regulations to be increasing. For example, when asked about the trends in regulatory areas of concern since 2010, over 50 percent of respondents claimed regulations were increasing in all areas: land use, environment, labor, business taxes and fees, transportation and motor vehicles, food safety, and other. Food safety, at 74 percent of respondents, was seen as the regulatory area of concern that people found to be increasing the most since 2010. This is an interesting finding and raises concern about respondents thinking about increased regulations from the federal Food Safety Modernization Act (FSMA), even though they were instructed not to consider those regulations in their response. The next highest regulatory area with increasing trends is environmental regulations at 71 percent and business taxes or fees at 70 percent. Table 6 presents the percentage of agricultural producers who found specific areas to be decreasing, unchanged or increasing in regulatory requirements.

Regulatory Compliance. Producers also responded that their time and money spent on regulatory compliance was increasing since 2010. Roughly 68 percent of respondents found the necessary time spent on compliance to be increasing while roughly 63 percent of respondents found money spent on compliance to be increasing. Table 7 shows the trends in money and time spent on regulatory compliance.

State versus Federal/Municipal Regulations. When analyzing the impact of state level regulations it is also important to note the impact of federal and municipal level regulations. When asked how influential federal, state, and municipal regulations were on changes made to farming practices

since 2010, respondent answers were mixed between not influential, moderately influential, and highly influential. Municipal regulations were found to be not influential by 54 percent of respondents, state regulations were mainly found to be moderately influential by 44 percent of the sample, and federal regulations were mainly found to be moderately influential by 43 percent of the sample. In order to rank the levels of influence of municipal, state, and federal regulations, respondent answers were assigned scores on a scale of 1 – 3. A lower score of 1 reflects a lower level of influence while a higher score of 3 reflects a higher level of influence. Municipal regulations received a score of 1.58, federal regulations received a score of 2.07, and state regulations received the highest score of 2.13. This shows that federal and state regulations tended to have the same level of influence on farms with state level regulations carrying a slightly higher weight. Table 8 represents the perceived influence of municipal, state, and federal regulations on changes to farming practices.

Out-of-State Perceptions. In order to gauge differences in perception of producers own state relative to other states we asked respondents to indicate on a scale of 1 to 5, how the regulatory environment of other states compares to their own state. An average value of 3 indicates states are perceived to be similarly regulated while a value of 1 is significantly less regulated and a value of 5 is significantly more regulated. Additionally, respondents indicated on the same scale how they perceived their own states regulatory environment, with a value of 1 indicating significantly under-regulated and a value of 5 as significantly over-regulated. Table 9, shows the average perception for respondents in their own state, for other states, and from others for the respondents state.

New Jersey and New York are perceived by producers in their state as having the most over-regulated environment. New York producers viewed other states as being similarly regulated

while New Jersey producers viewed other states as being less regulated. However, both states are viewed by other state producers as being more regulated than their state. The same general results hold true for Connecticut, Massachusetts, and Rhode Island.

Interestingly, Maine producers view their state as being somewhat over-regulated, with other states also tending to be more regulated, however, other states view Maine regulations as being less regulated. Vermont and New Hampshire tell a different story. In New Hampshire producers view their own state as being somewhat over-regulated, however, those producers also view other states as being more regulated while other state producers view their state as being considerably less regulated, in fact less regulated than any other state. Vermont producers view their own state as having the lowest average level of regulation, closer to the “right amount of regulation”, but also view other states as being less regulated while other states view Vermont as being less regulated.

In summary, it appears that “the grass is greener on the other side” holds true for agricultural producers in all states except Maine and New Hampshire. Agricultural producers in other states also share the perspective that Maine and New Hampshire are less regulated than their state. One important caveat does exist with regard to these findings. Roughly 70 percent of respondents indicated they “Do Not Know” how other state regulatory environments compare to their own. Thus a large majority of producers are unable to make such a comparison and are thus solely focused on the regulatory environment of their own state and not other states in the region.

Growth in Agricultural Production. Survey respondents were also asked their view of whether the state regulatory environment was conducive to agricultural investment in general or encouraged investment on their own farm. Unfortunately, only a few respondents from Maine, New Jersey,

Rhode Island, and Vermont answered this question which were not enough to report. Table 10 shows the states where we do have enough data to report. New Hampshire is perceived to be more supportive than others, but an equal percentage of respondents reported that state as not supportive, both at 26.2 percent of respondents. New York producers primarily view the state as not supportive with 60.7 percent responding in this fashion. Connecticut and Massachusetts were viewed very similar to each other with 42-44 percent responding the state regulatory environment is not supportive to agricultural investment. Interestingly, a very large number of respondents, ranging from 22.2 percent in New York to 47.7 percent in New Hampshire, responded they were not sure whether the state regulatory environment was conducive to agricultural investment.

With respect to producers own farms there is very little evidence that state regulations are encouraging investment, as shown in Table 11. Just over 10 percent of respondents in New Hampshire felt that the regulatory environment in that state encouraged investment on their farm. This is almost double the percent from the next highest positive response in New York. Meanwhile, 25.8 percent of New Hampshire producers felt the state regulatory environment discouraged investment on their farm. This was far less than Connecticut, Massachusetts, and New York where roughly 41-44 percent of respondents felt the environment discouraged investment on their farm. Throughout these same four states about half of the respondents felt the regulatory environment of their state neither encouraged nor discouraged investment. Once again we do not have enough respondents from Maine, New Jersey, Rhode Island, and Vermont to discuss activities in those states.

Another key element to growth in agriculture is the perception current producers have regarding the level of difficulty new entrants would have navigating the state regulatory environment. This can take the form of either new farmers or experienced farmers looking to

develop new farming operations. We asked survey respondents to report the level of difficulty they saw for both types of entrants on a scale of 1 (very difficult) to 5 (very easy). On average, respondents from all states viewed the regulatory environment facing new entrants as being between somewhat difficult (2) and neutral (3) with new farmers having more difficulty than experienced farmers, as shown in Table 12. New Jersey farmers are perceived to have the greatest level of difficulty whereas New Hampshire and Vermont are more neutral or even to the side of somewhat easy for experienced farmers. As one might expect, respondents found experienced farmers as having a relatively easier time of dealing with the state regulatory environment compared to new farmers. The overall findings of difficulty with the regulatory environment both toward new entrants and investment are consistent with the overall view of the regulatory environment as being over-regulated. However, these results also raise concerns about the potential for growth opportunities in agricultural production throughout the Northeast as a result of this issue.

Econometric Modelling of Overall Regulatory Environment. To further explore state and sector effects, econometric models were estimated to determine if agricultural producers from specific states, sectors, or demographics are more likely to view the state regulatory environment as more or less regulated, while controlling for other factors. The specific survey question of interest is, “For the state where you have your primary farming activities, how do you view that state’s regulatory environment for agricultural activities?” Respondents were given the option of selecting an answer based on a Likert scale from 1-5: 1 being significantly under-regulated, 2 being somewhat under-regulated, 3 being the right amount of regulation, 4 somewhat over-regulated, and 5 significantly over-regulated. Given the Likert scale, an ordered logit model is used to predict

the probability that agricultural producers perceive the regulatory environment to be either more regulated, less regulated, or the same as a specified base. This model also allows us to estimate how changes in demographic variables increase/decrease the perceived level of regulation, holding all else constant. The general ordered logit model is identified as:

$$S = \{ B_1X_{State} + B_2X_{Sector} + B_3X_{FarmerExperience} + B_4X_{Gender} + B_5X_{EducationLevel} + B_6X_{Sales} + B_7X_{BusOrgType} + B_8X_{FarmAge} + B_9X_{ChangeProductionSize} + B_{10}X_{ChangeProfitability} \} \quad (1)$$

In equation (1), the left-hand side variable, S is the respondent's level of perceived regulatory environment in their state as denoted with the Likert score value of 1-5. The right-hand side of the equation denotes the state and sector effects as well as farmer and farm demographic variable necessary for control. Demographic variables include years of farmer experience, gender, highest level of education, total annual sales, business organization type, age of the farm, trends in production size since 2010, and trends in profitability since 2010.

Given the specification of the ordered logit model, it is important to note that interpretation is relative to a specific classification base. As shown in Table 13, we find that agricultural producers in New Jersey have a more over-regulated perception of their regulatory environment relative to agricultural producers in Connecticut. Alternatively producers in Vermont perceive their regulatory environment as less restrictive compared to Connecticut.

One of the advantages of this type of modeling approach is that we not only observe a variation from the base but also can determine statistical significance of the results. In fact, even though the other five states are perceived to be more/less regulated, those estimates are not statistically significant from zero and thus are interpreted as being no different than the base, in this case Connecticut.

In addition to state differences, we also explore sector specific differences. We find that relative to the field crops sector, agricultural producers in other sectors perceive their regulatory environment as no different. For demographic variables, the model predicts that an agricultural producer is likely to find their regulatory environment to be unfavorable (over-regulated) if they are a general proprietorship relative to a corporation, have sales between \$100,000 to \$350,000 relative to less than \$100,000, or have experienced a decrease in their production size since 2010 relative to a neutral change. Conversely, the model estimates indicate that an agricultural producer in the survey sample is likely to find their regulatory environment to be favorable if their main farm was established more than 10-50 years ago relative to less than 10 years ago or if they had less than 10 years of farming experience relative to over 50 years of experience.

Econometric Modelling of Specific Regulatory Components. As a follow up question to respondents who perceived their regulatory environment to be over-regulated we asked, “Given you indicated there is over-regulation in your state, which areas should less regulation be centered?” Respondents were given the option of selecting any or all of the following regulatory areas - environment, business taxes and fees, labor, land use, transportation and motor vehicles, and food safety. From these responses we are able to estimate a second econometric model to predict the probability that a respondent would select a specific area. Thus we again estimate the following logit equation separately for each of the six options:

$$S = \{ B_1X_{State} + B_3X_{Sector} + B_3X_{FarmerExperience} + B_4X_{Gender} + B_5X_{EducationLevel} + B_6X_{Sales} + B_7X_{BusOrgType} + B_8X_{FarmAge} + B_9X_{ChangeProductionSize} + B_{10}X_{ChangeProfitability} + e \} \quad (2)$$

In equation (2), the left-hand side, S is the respondents’ decision of whether or not a specific regulatory area is perceived as over-regulated. The right-hand side of the equation is the same as

the ordered logit model in equation (1) where state and sector effects as well as farmer and farm demographic variable are included for control.

Table 14 summarizes the findings from the six logit models with respect to state and sector specific estimates. Results of these models are again relative to the base state/sector, in this case Connecticut and Field Crops. For environmental regulations, New Jersey and New York producers have a greater probability of indicating they perceive their state as over-regulated. The same holds true for business taxes and fees. New York producers are also more likely to indicate labor issues are a concern while land use is more of a concern in New Jersey. Interestingly, when it comes to business taxes and fees, Maine and Vermont both have a lower probability of agricultural producers in those states having indicated they are over-regulated. The only other regulatory category with a lower odds of producers indicating over-regulation is in Vermont with respect to land use.

While there are not many significant findings with respect to agricultural sectors in the logit model, we do find that the livestock sector perceives labor as being over-regulated, whereas transportation is an area that is less likely to be perceived as over-regulated for fruit and vegetable producers. With respect to food safety, we find dairy, fruit and vegetables, livestock, and aquaculture and timber producers all have increased odds of their state being viewed as over-regulated.

### *Regulatory Index*

Overall – Northeast. Within the overall rankings that focus only on the Northeastern states we find that New Jersey is, relatively speaking, the least regulated state as shown in Figure 10. Vermont and Massachusetts are in the second tier of regulations. Connecticut, New York, and Rhode Island rank in the middle in terms of regulatory burden with Maine and New Hampshire

having the highest regulatory agricultural burden. These findings are interesting in that they are counter to what many agricultural producers perceive. In the survey of Northeastern agricultural producers we found that New Jersey was cited as the most over-regulated state followed by New York and Massachusetts. On the other hand, Vermont, New Hampshire, and Rhode Island were mostly likely to be cited as having the right amount of regulation or even being under-regulated. Perceptions of agricultural producers were consistent with index rankings about Vermont but perceptions differed from the index when focusing on New Jersey and New Hampshire. These conflicting findings reinforce the concept that producer perception and data driven rankings do not always align when it comes to regulations.

Examining the ranking by category and component area give valuable insights into the regulatory environment. New Jersey and Maine top the rankings with respect to labor policy (Figure 13) while Rhode Island and New York have the highest agricultural regulatory burden in this category. However, when looking at the environmental components (Figure 14) we find that New Jersey does well but Maine drops to seventh out of eight Northeastern states. Meanwhile, New York again is the most regulated state. Of interest, throughout the different categories we see wide swings in rankings for some of the states, such as New York and Maine, but consistently mid-tier results for Connecticut and Vermont. For sector specific policies (Figure 15), such as food safety regulations, Rhode Island is the least regulated followed by New Jersey and Connecticut. However, Maine has the lowest relative score, indicating the greatest regulatory burden. Taking these rankings in totality, we find that New Jersey was by far the least regulated state from a policy perspective as shown in Figure 11. The second tier of states were Vermont, Massachusetts, Rhode Island, New Hampshire, and Connecticut with there being less differences

between Vermont and Massachusetts compared to Vermont and Connecticut. The bottom two states, policy wise, were Maine and New York.

When examining the non-policy rankings in Figure 16, in aggregate we find that New Jersey is again the least regulated state. Vermont, Massachusetts, and New York make up a second tier of states while Maine, Connecticut, and Rhode Island are a third tier. New Hampshire is at the bottom of the rankings for non-policy factors.

Putting the findings above in context it is clear how New Jersey does so well in the overall rankings as it has the most favorable ranking in both the policy and non-policy categories. New Hampshire is ranked as the most regulated state largely in part due to the non-policy indicators. Using only the policy indicators New Hampshire is mid-tier in regulatory burden. New York, on the other hand, was one of the most regulated states via the policy category, but mid-tier for the non-policy category. Based on the aggregation of scores New York moved to number five out of eight in the rankings. The other states consistently held their rankings across the policy and non-policy categories. For instance, Connecticut was sixth in both the policy and non-policy categories but moved to fourth in the overall rankings due to fluctuations by the other states. By and large the overall ranking results show a clear four tiered regulatory structure whereby tier one (least regulated) is New Jersey, tier two is Vermont and Massachusetts, tier three is Connecticut, New York, and Rhode Island, and tier four (most regulated) is Maine and New Hampshire.

Overall – All States. When comparative non-Northeastern states are evaluated as well we find that five of the bottom six states in the rankings are from the Northeast, as shown in Figure 17. Based on these findings agricultural producers in Northeastern states, in general, face a greater regulatory burden compared to their counterparts throughout the U.S. Some Northeastern states (i.e. New

Jersey and Vermont) do perform well in the rankings; however, states such as New Hampshire, Maine, Rhode Island, New York, and Connecticut are relatively more regulated.

Connecticut. Connecticut ranked fourth in the Northeast and eleventh out of all states in the analysis with respect to regulatory burden. As noted earlier, this does not imply that Connecticut is over-burdened with regulation, but rather it denotes that Connecticut is more regulated than numerous other Northeastern states. Examining factors that are most associated with regulations, the policy rankings, we find that Connecticut is sixth out of the eight Northeastern states and thirteenth out of the sixteen total states. Within the Northeast, Connecticut would be considered in the lower second tier of regulatory burden, similar to that of Rhode Island and New Hampshire. A contributing factor to the low Connecticut ranking are the mid-tier rankings associated with tax, labor, and environmental policy where Connecticut consistently ranks in the lower half of Northeastern states. When examining the non-policy factors Connecticut is sixth and ninth out of the eight Northeastern and sixteen total states, respectively.

With respect to addressing the regulatory climate in Connecticut, large gains can be made by focusing on areas that are ranked near the bottom instead of making marginal changes to variables with mid-tier scores. Table 15 identifies for Connecticut the high ranking factors, those that fall in the top quarter of all state rankings, and the low ranking factors, those that fall in the bottom quarter of all state rankings. Compared to other states, Connecticut appears to have a higher cost associated with operating in the state, notably the tax rates for sales, corporate income, property tax, estate, and fuel. Connecticut does offer agricultural exemptions that lower the tax rates; however, for farms that have on- and off-farm livelihoods the off-farm rates most likely have a direct impact on the agricultural operations. Connecticut is further hurt by the higher minimum agricultural wage compared to other states and the fees associated with product and pesticide

application fees. With respect to non-policy factors, the high cost of electricity and fuel are potential limiting factors to the agricultural sector, especially due to the need for heating during the colder months.

Connecticut does a good job in offering agricultural exemptions for many regulations, such as for fuel, estate, and property taxes. Also, despite many perceptions Connecticut ranks favorably for land rents compared to other states. All in all, Connecticut has a mid-to-low ranking associated with many of the variables. Focusing on the low rankings, especially around tax rates, could help drive Connecticut's ranking higher.

Maine. Maine ranked seventh in the Northeast and fifteenth out of all states in the analysis with respect to regulatory burden. As noted earlier, this does not imply that Maine is over-burdened with regulation, but rather it denotes that Maine is more regulated than numerous Northeastern states. Examining factors that are most associated with regulations, the policy rankings, we find that Maine is seventh out of the eight Northeastern states and fifteenth out of the sixteen total states. Within the Northeast, Maine would be considered in the bottom tier of regulatory burden, i.e. highly regulated, similar to that of New York and slightly below Connecticut. A contributing factor to the low Maine ranking are low tax, environmental, and sector specific regulation rankings. Maine does do well with respect to labor policy. When examining the non-policy factors Maine is fifth and eighth out of the eight Northeastern and sixteen total states, respectively.

With respect to addressing the regulatory climate in Maine, large gains can be made by focusing on areas that are ranked near the bottom instead of making marginal changes to variables with mid-tier scores. Table 16 identifies for Maine the high ranking factors, those that fall in the top quarter of all state rankings, and the low ranking factors, those that fall in the bottom quarter of all state rankings. Compared to other states, Maine appears to have a higher cost associated

with operating in the state, notably fees associated with registering products as well as for water permits. Certain tax rates are also a burden but can be offset to a degree by agricultural exemptions.

Maine ranks highly for their sales tax rate. As with many of the other states, Maine offers numerous agricultural exemptions. All in all, Maine has a greater regulatory burden compared to the other states as its' scores across many of the attributes are low with the high scoring areas being the same variables as other states. Focusing on regulations around product registration and usage, while also focusing on gas taxes could benefit Maine's ranking.

Massachusetts. Massachusetts ranked third in the Northeast and seventh out of all states in the analysis with respect to regulatory burden. As noted earlier, this does not imply that Massachusetts is over-burdened with regulation, but rather it denotes that Massachusetts is more regulated than numerous Northeastern states. Examining factors that are most associated with regulations, the policy rankings, we find that Massachusetts is third out of the eight Northeastern states and tenth out of the sixteen total states. Within the Northeast, Massachusetts would be considered in the upper second tier of regulatory burden, similar to that of Vermont and Rhode Island. A contributing factor to the Massachusetts ranking is a high ranking for tax policies. On the other hand, the environmental ranking for Massachusetts was low (7 of 8). Labor and sector specific policies were mid-tier. When examining the non-policy factors Massachusetts is third and fifth out of the eight Northeastern and sixteen total states, respectively.

With respect to addressing the regulatory climate in Massachusetts, large gains can be made by focusing on environmental areas that dragged the overall ranking downward. Table 17 identifies for Massachusetts the high ranking factors, those that fall in the top quarter of all state rankings, and the low ranking factors, those that fall in the bottom quarter of all state rankings.

Notably, Massachusetts has highly restrictive environmental standards which can be good for the environment, but also make it more difficult for the Massachusetts agricultural sector. With respect to non-policy factors, the high cost of electricity and fuels are potential limiting factors to the agricultural sector, especially due to the need for heating during the colder months.

Massachusetts does a good job in offering agricultural exemptions for many regulations, such as for fuel, estate, and property taxes. Furthermore, the complexity of the personal and corporate income tax structure was less than for other states, thereby, potentially reducing the time and costs associated with filing income taxes. Massachusetts also benefits from a good credit rating and direct expenditures per capita which are indicators of a healthier economy. All in all, Massachusetts has an above average to high ranking associated with many of the variables. Focusing on the low rankings, especially around environmental regulations, could help drive Massachusetts's ranking higher.

New Hampshire. New Hampshire ranked eighth in the Northeast and sixteenth out of all states in the analysis with respect to regulatory burden. As noted earlier, this does not imply that New Hampshire is over-burdened with regulation, but rather it denotes that New Hampshire is more regulated than all states analyzed in this study. Examining factors that are most associated with regulations, the policy rankings, we find that New Hampshire is fifth out of the eight Northeastern states and twelfth out of the sixteen total states. Within the Northeast, New Hampshire would be considered in the lower second tier of policy related regulatory burden, similar to that of Connecticut. A contributing factor to the low New Hampshire ranking is mid-tier rankings associated with tax and labor and the low ranking associated with sector specific variables. When

examining the non-policy factors New Hampshire is eighth and sixteenth out of the eight Northeastern and sixteen total states, respectively.

With respect to addressing the regulatory climate in New Hampshire, large gains can be made by focusing on areas that are ranked near the bottom instead of making marginal changes to variables with mid-tier scores. Table 18 identifies for New Hampshire the high ranking factors, those that fall in the top quarter of all state rankings, and the low ranking factors, those that fall in the bottom quarter of all state rankings. Compared to other states, New Hampshire appears to have a higher cost associated with registering products in the state, notably for seeds, lime, and commercial fertilizer. With respect to non-policy factors, which is the primary driver for the low policy ranking, the high cost of electricity and fuels, along with transportation issues are impediments to the agricultural sector.

New Hampshire does a good job with their tax and labor policies. Notably, tax rates and the existence of agricultural exemptions for many regulations are benefits to the agricultural sector. Furthermore, lower private pesticide application complexity and water permit costs reduce the regulatory burden on agricultural producers. All in all, New Hampshire has the worst regulatory ranking in the study. Sector specific regulations and the non-policy rankings are the primary drivers of the low ranking for New Hampshire.

New Jersey. New Jersey ranked first in the Northeast and second out of all states in the analysis with respect to regulatory burden. As noted earlier, this simply implies that New Jersey is less regulated than the other Northeastern states. Examining factors that are most associated with regulations, the policy rankings, we find that New Jersey is first out of the eight Northeastern states and third out of the sixteen total states. Within the Northeast, New Jersey would be considered in

the first tier of regulatory burden, which implies less burden than the other states. A contributing factor to the high New Jersey ranking are high rankings associated with labor, environmental, and sector specific policies and the mid-tier ranking for tax policy. When examining the non-policy factors New Jersey is first and third out of the eight Northeastern and sixteen total states, respectively.

With respect to addressing the regulatory climate in New Jersey, regulatory changes may be best addressed toward tax policies. Table 19 identifies for New Jersey the high ranking factors, those that fall in the top quarter of all state rankings, and the low ranking factors, those that fall in the bottom quarter of all state rankings. Notably, the tax rates for farmer income, property, and sales are negative regulatory factors. With respect to non-policy factors, the high cost of electricity, debt per capita, and credit rating are potential limiting factors to the agricultural sector.

New Jersey does a good job in a wide array of regulatory areas, notably in labor and environmental policies. In these areas New Jersey consistently ranks outside the bottom quarter of states. All in all, New Jersey has a high ranking associated with many of the variables.

New York. New York ranked fifth in the Northeast and twelfth out of all states in the analysis with respect to regulatory burden. As noted earlier, this does not imply that New York is overburdened with regulation, but rather it denotes that New York is more regulated than numerous Northeastern states. Examining factors that are most associated with regulations, the policy rankings, we find that New York is eighth out of the eight Northeastern states and sixteenth out of the sixteen total states. Within the Northeast, New York would be considered in the bottom tier of regulatory burden, similar to that of Maine. A contributing factor to the low New York ranking is low rankings associated with labor and environmental policy where New York consistently

ranks last in regulatory burden. When examining the non-policy factors New York is fourth and sixth out of the eight Northeastern and sixteen total states, respectively.

With respect to addressing the labor and environmental regulatory climate, New York ranks right outside the bottom quarter for most all the labor and environmental variables, as identified in Table 20. This is in contrast to other states that have highs and lows associated with the different variables, New York ranks toward the bottom across almost all of the labor and environmental variables. This trend continues with the non-policy factors, whereby New York is not at the bottom for the policy variables but rather is near the bottom. New York does a good job in regards to tax policies, such as sales tax rate, farmer corporate income tax rate, and gas tax rate.

Rhode Island. Rhode Island ranked sixth in the Northeast and thirteenth out of all states in the analysis with respect to regulatory burden. As noted earlier, this does not imply that Rhode Island is over-burdened with regulation, but rather it denotes that Rhode Island is more regulated than numerous Northeastern states. Examining factors that are most associated with regulations, the policy rankings, we find that Rhode Island is fourth out of the eight Northeastern states and eleventh out of the sixteen total states. Within the Northeast, Rhode Island would be considered in the middle second tier of regulatory burden, similar to that of Vermont. A contributing factor to the low Rhode Island ranking is low rankings associated with tax and labor policy where Rhode Island ranks at or near the bottom of the rankings. When examining the non-policy factors Rhode Island is seventh and eleventh out of the eight Northeastern and sixteen total states, respectively.

With respect to addressing the regulatory climate in Rhode Island, large gains can be made by focusing on areas that are ranked near the bottom instead of making marginal changes to variables with mid-tier scores. Table 21 identifies for Rhode Island the high ranking factors, those

that fall in the top quarter of all state rankings, and the low ranking factors, those that fall in the bottom quarter of all state rankings. Compared to other states, Rhode Island appears to have a higher cost associated with operating in the state, notably the tax rates for sales, corporate income, and property. Rhode Island does offer agricultural exemptions that lower the tax rates; however, for farms that have on- and off-farm livelihoods the off-farm rates most likely have a direct impact on the agricultural operations. With respect to non-policy factors, the high cost of electricity and fuels are potential limiting factors to the agricultural sector, especially due to the need for heating during the colder months.

Rhode Island does a good job in tax policy, especially the complexity of some of their tax laws, such as corporate income and inheritance. Furthermore, land rent and transportation due to road miles is also a benefit. All in all, Rhode Island has a mid-tier ranking which is lowered by non-policy areas.

Vermont. Vermont ranked second in the Northeast and fifth out of all states in the analysis with respect to regulatory burden. This implies that Vermont is more regulated than New Jersey but less regulated than most other Northeast states. Examining factors that are most associated with regulations, the policy rankings, we find that Vermont is second out of the eight Northeastern states and ninth out of the sixteen total states. Within the Northeast, Vermont would be considered in the top second tier of regulatory burden, similar to that of Massachusetts. A contributing factor to the Vermont ranking is mid-tier rankings associated with tax, labor, and environmental policy. Contrary to other states, Vermont is consistently in the middle to upper tier of rankings across factors. When examining the non-policy factors Vermont is second and fourth out of the eight Northeastern and sixteen total states, respectively.

With respect to addressing the regulatory climate in Vermont, there appears to be a higher costs associated the income tax rate, property tax rate, as well as a higher minimum agricultural wage, as shown in Table 22. Vermont does a good job in offering agricultural exemptions for many regulations, such as for fuel, estate, and property taxes. Non-policy factors that are in Vermont's favor are the states' credit score and direct expenditures per capita. As noted earlier, these are economic growth indicators. All in all, Vermont has a mid to high ranking associated with many of the variables which drives up the overall ranking.

## **Conclusions**

This study addresses several critical issues around the regulatory burden of agricultural producers in the Northeast. We utilized a survey of agricultural producers to assess perceptions and trends of the regulatory environment in the Northeast. A regulatory index was then created to quantify and rank states based on an overall policy environment as well as individual components (e.g. tax policy, environmental policy, labor policy, etc.). Through these mechanisms several findings are evident.

- Overall, agricultural producers in the Northeast indicated the number of regulations to be increasing since 2010. Furthermore, the amount of time and money spent on the regulations was also increasing.
- State regulations were found to have the most impact on producers changing their farming practices, followed by federal and to a lesser extent municipal regulations.
- Perception of regulatory impact are not always consistent with data driven indices. Several states ranking low on regulatory burden had a majority of agricultural producers perceiving

there to be a high regulatory burden. In contrast, some states with a high burden had the perception of “just-right” or under-regulated.

- There were three tiers that were identified for ranking a states’ regulatory burden. New Jersey was found to be the least regulated state while Maine and New Hampshire were the most regulated, according to this study’s calculations. It is important to note that these rankings are relative to the other states in this study.
- On the whole, Northeastern states were more regulated than comparison states from around the United States. Of the sixteen states in the regulatory index, five of the bottom six were in the Northeast.

Based on these findings it is clear that Northeastern states, in general, are more regulated than many states outside the Northeast. The reason for this is varied as Northeastern states tended to perform differently with respect to the various policy components. For instance, some states scored well in tax policy regulation but poorly in labor while others did well in labor but scored poorly in environmental. As policymakers and stakeholders begin to think about addressing the regulatory burden faced by agricultural producers within their state, the results from this report can play a pivotal role in determining where to focus attention to have the most impact.

## References

- Allen, Nathan and Sander Daniels. 2013. 2013 Thumbtack.com Small Business Friendliness Survey: Methodology & Analysis.
- Bureau of Economic Analysis. 2014. <http://www.bea.gov>
- Carroll, Megan E., Valerie A. Luzadis, John E. Wagner, and Donald W. Floyd. 2000. Assessing the Business Environment for the Forest Products Industry in the Northeast. *Forest Products Journal*, 5(5): 61-66.
- Coakley, Caitlin E., Daniel A. Reed, and Shane T. Taylor. 2009. "Gross domestic product by state." *Survey of Current Business*.
- Cohn, Scott. 2014. America's Top States For Business 2014. June 24. <http://www.cnbc.com/2014/06/24/americas-top-states-for-business.html>
- Coppock, Raymond. 1996. Farmers Say Regulations Complicate Farming. *California Agriculture*, 50(5): 4-5.
- Drenkard, Scott, and Joseph Henchman. 2013. 2013 State Business Tax Climate Index. *Tax Foundation*, 5-8.
- Esseks, J. Dixon, Steven E. Kraft, and Lettie M. McSpadden. 1998. Owner's Attitudes Towards Regulations of Agricultural Land: Technical Report on a National Survey. American Farmland Trust, May.
- Hurley, Sean. 2005. A Synopsis of the Regulatory Environment Affecting California Specialty Crops. Report prepared for the California Institute for the Study of Specialty Crops. January 31.
- Hurley, Sean P. and Jay E. Noel. 2006. A Regional and Industry Analysis of the Complexity of the Regulatory Environment Affecting Agricultural Producers in California. Selected

- paper American Agricultural Economics Association Annual Meeting, Long Beach, California, July 23-26.
- Kolko, Jed, David Neumark, and Marisol Cuellar Mejia. 2013. What do Business Climate Indexes Teach us about State Policy and Economic Growth? *Journal of Regional Science*, 53(2): 220-255.
- Kolko, Jed, David Neumark, and Marisol Cuellar Mejia. 2011. Business Climate Rankings and the California Economy, Technical Appendices. San Francisco: Public Policy Institute of California. [http://www.ppic.org/content/pubs/other/411JKR\\_appendix.pdf](http://www.ppic.org/content/pubs/other/411JKR_appendix.pdf)
- Lopez, Rigoberto and Chris Laughton. 2012. The Overlooked Economic Engine: Northeast Agriculture. <http://ageconsearch.umn.edu/handle/153397>
- Lopez, Rigoberto, Nataliya Plesha, and Benjamin Campbell. 2015. Economic Impacts of Agriculture in Eight Northeastern States. [http://www.zwickcenter.uconn.edu/outreach\\_reports\\_7\\_2768804440.pdf](http://www.zwickcenter.uconn.edu/outreach_reports_7_2768804440.pdf)
- Moreno, Kasia. 2014. Regulatory Environment Has More Impact on Business Than the Economy, Say U.S. CEOs. *Forbes*. August 12. <http://www.forbes.com/sites/forbesinsights/2014/08/12/regulatory-environment-has-more-impact-on-business-than-the-economy-say-u-s-ceos/>
- Mortensen, Ryan, Gregory M. Perry, and James G. Prichett. 2014. The Agribusiness Friendliness Index. Colorado State University. <http://abfi.agsci.colostate.edu/>
- Story, Louise, Tiff Fehr, and Derek Watkins. 2012. UNITED STATES OF SUBSIDIES: A series examining business incentives and their impact on jobs and local economies. *The New York Times*. [http://www.nytimes.com/interactive/2012/12/01/us/government-incentives.html?\\_r=0](http://www.nytimes.com/interactive/2012/12/01/us/government-incentives.html?_r=0)

## Tables

Table 1. Percent share comparisons by state of the target population and survey respondents.

State	Percent of Northeast Agricultural Producer Population <sup>a</sup>	Percent of Survey Respondents
CT	7.5%	16.1%
ME	10.3%	3.6%
MA	9.8%	16.1%
NH	5.5%	17.3%
NJ	11.4%	3.5%
NY	44.7%	34.5%
RI	16.0%	4.4%
VT	9.2%	4.4%

<sup>a</sup> Source: Northeast agricultural producers based on NASS USDA Quickfacts, 2012.

Table 2. Percent share comparisons by agricultural sector of the target population and survey respondents.

Agricultural Sector	Percent of Northeast Agricultural <sup>a</sup>	Percent of Survey Respondents
Dairy	7.9%	12.2%
Field Crops	5.0%	10.9%
Fruits and Vegetables	13.6%	32.4%
Greenhouse & Nursery	10.1%	8.8%
Livestock	36.1%	15.7%
Aquaculture & Timber	27.3%	5.7%
All Other		14.3%

<sup>a</sup> Source: Percent of Northeast agricultural based on number of farms reported in the USDA Census of Agriculture, 2012.

Table 3. Farmer and farm operation characteristics from the survey.

Farm Operation Variables	Percent of Respondents	Farmer Specific Variables	Percent of Respondents
<b>Business Organization</b>		<b>Years of farming experience</b>	
Sole Proprietorship	46.4%	Less than 10 years	16.6%
General Proprietorship	3.8%	11-20 years	17.7%
Limited Partnership	4.8%	21-30 years	17.7%
Limited Liability			
Company	25.5%	31-40 years	23.7%
Corporation	14.8%	41-50 years	13.5%
		Over 50 years	10.7%
<b>Age of Farm Operation</b>		<b>Age of farmer</b>	
Less than 10 years	21.4%	Less than 40 years old	8.8%
11-20 years	16.7%	40-64 years old	60.6%
21-30 years	10.4%	65 and over	30.6%
31-40 years	9.9%		
41-50 years	5.2%		
Over 50 years	36.5%	<b>Males</b>	68.0%
<b>Range of sales from farm sources</b>		<b>Education</b>	
Under \$100,000	57.2%	High school or less	9.3%
\$100,000 to \$349,999	18.0%	Some college	27.8%
\$350,000 to \$999,999	7.6%	4-year degree	38.1%
\$1 Million or greater	17.2%	Graduate/Professional degree	24.7%
		<b>Percent of household income from farming</b>	
		Less than 25%	37.5%
		25% to 75%	26.7%
		More than 75%	35.7%

Table 4. Trends in personal business/farm activities since 2010 based on responses from the survey.

	Do Not Know	Significantly Decreased	Somewhat Decreased	Unchanged	Somewhat Increased	Significantly Increased
Farm sales	2.4%	2.2%	12.9%	17.3%	50.6%	14.7%
Production size	2.0%	4.0%	8.5%	42.5%	36.0%	7.1%
Farm profitability	2.4%	7.4%	15.1%	26.2%	40.2%	8.7%
Competition from other firms in state	12.4%	1.2%	2.6%	45.6%	29.9%	8.4%
Competition from other firms out of state	22.8%	0.4%	2.0%	46.1%	22.4%	6.3%
Demand for products	2.2%	1.4%	8.1%	21.3%	46.0%	20.9%

Table 5. List of index categories, components, sub-components, and variables.

Category	Component	Sub-Component	Variable
Policy	Tax	Sales Tax	Sales Tax Rate
			Sales Tax Farmer Exemption Scalar
		Personal Income Tax	Median Adjusted Farmer Personal Income Tax Rate
			Personal Income Tax Bracket Complexity Scalar
			Personal Income Tax Bracket Agricultural Exemption Scalar
		Corporate Income Tax	Median Adjusted Farmer Corporate Income Tax Rate
			Corporate Income Tax Complexity Scalar Corporate Income Tax Agricultural Exemption Scalar
	Property Tax	Adjusted Average Property Tax Rate	
		Property Tax Rate Exemption Scalar	
	Motor Vehicle Fuel Tax	Motor Vehicle Gas Fuel Tax	
Motor Vehicle Diesel Fuel Tax			
Motor Vehicle Fuel Farmer Exemption Scalar			
Estate Tax	Farmer Minimum Estate Tax Rate		
	Estate Tax Exemption Scalar		
Inheritance Tax	Farmer Class A (lineal) Inheritance Tax Rate		
	Inheritance Tax Complexity		
Labor		Worker's Compensation Scalar	
		Unemployment Insurance Scalar	
		Minimum Agricultural Wage	
		Adverse Effects Wage Rate	
		Agricultural Overtime Compensation	
Environmental		Private Pesticide Applicator Fees	
		Private Pesticide Application Complexity	
		Water Permit Costs	
		Federal State Environmental Voting History	
		Carbon Intensity of Economy	
% Total Farm Conservation Easement Acreage			
Sector Specific		Pesticide Product Registration Fee	
		Feed Product Registration Fee	
		Soil Amendment Product Registration Fee	
		Seed Product Registration Fee	
		Lime Product Registration Fee	
		Commercial Fertilizer Product Registration Fee	
		Retail Raw Milk Laws More Restrictive than Federal Laws	
		On Farm Raw Milk More Restrictive than Federal Laws	

		Meat/Poultry Food Safety Laws More Restrictive than Federal Laws Potato Food Safety Laws More Restrictive than Federal Laws
Non-policy	Input Prices	Industrial Prices of Electricity in kw/hr. Land Rent per Farm Operator Total Expenditure on Chemical Products Total Expenditure on Gasoline, Fuel, Oils
	Financial	State Credit Rating S&P's State Direct Expenditure per Capita Long-Term & Short-Term Debt per Capita
	Transportation	Public Road Mileage per 1000 Acres Miles of Railroad per 1000 Acres Total Airports per 1000 Acres # Top 50 Water Ports by Tonnage
	Weather	Average Annual Temperature (F) Average Annual Precipitation (inches)

Table 6. Trends in the perception of state regulation areas since 2010 based on survey responses.

Area of Regulation	Decreased	Unchanged	Increased
Land Use	1.9%	40.7%	57.4%
Environmental	0.7%	28.5%	70.8%
Labor	0.8%	33.5%	65.7%
Business Taxes and Fees	0.4%	29.7%	69.9%
Transportation and Motor Vehicles	1.0%	37.9%	61.1%
Food Safety	2.6%	22.9%	74.5%
Other	0.5%	43.8%	55.7%

Table 7. Trends in money and time spent on regulatory compliance since 2010 based on survey responses.

---

Trend	Percent of Respondents	
	Money Spent	Time Spent
Decreased	2.5%	2.6%
Unchanged	34.6%	29.6%
Increased	62.9%	67.8%

---

Table 8. Average influence of municipal, state, and federal regulations on changes made to farming practices based on survey responses.

---

	Municipal	Federal	State
Degree of Influence	1.58	2.07	2.13

---

Scored on a scale of 1 to 3. Higher values represent greater influence on changes to farming practices.

Table 9. Average in-state and out-of-state producer perception of the regulatory environment from producers in-state based on survey responses.

State	Average Perception of Own State	The State's Average Perception of All Other States, Relative to the State	Other States' Average Perceptions of the State, Relative to Other States
CT	3.78	2.58	3.42
ME	3.85	3.26	2.38
MA	3.94	2.53	3.52
NH	3.51	3.81	2.25
NJ	4.22	2.63	3.33
NY	4.07	3.01	3.22
RI	3.57	2.85	3.10
VT	3.14	2.88	2.77

Scored on a scale of 1 to 5, an average value of 3 indicates similarly regulated while a value of 1 is significantly less/under regulated and a value of 5 is significantly more/over regulated.

Table 10. Perception of state regulatory environment on agricultural investment based on survey responses.

State	Supportive	Not Supportive	Not Sure
CT	18.0%	42.6%	39.3%
MA	20.6%	44.4%	34.9%
NH	26.2%	26.2%	47.7%
NY	17.0%	60.7%	22.2%

Note: Not enough respondents answered this question to report for ME, NJ, RI, and VT.

Table 11. Regulatory impact on investment on own farm based on survey responses.

---

State	Encouraged	Discouraged	Neither
CT	4.9%	42.6%	50.8%
MA	3.2%	44.4%	42.9%
NH	10.6%	25.8%	57.6%
NY	5.5%	41.7%	47.9%

---

Note: Not enough respondents answered this question to report for ME, NJ, RI, and VT.

Table 12. Perception of regulatory environment toward new and experienced entrants based on survey responses.

State	New			Experienced				
	Average	Percent of Respondents			Average	Percent of Respondents		
		Difficult	Neutral	Easy		Difficult	Neutral	Easy
CT	2.26	64.5%	26.3%	9.2%	2.42	56.8%	35.1%	8.1%
ME	2.44	68.8%	12.5%	18.8%	2.63	62.5%	12.5%	25.0%
MA	2.38	61.0%	28.6%	10.4%	2.51	51.9%	35.1%	13.0%
NH	2.91	37.0%	37.0%	25.9%	3.09	32.1%	38.3%	29.6%
NJ	1.83	72.2%	27.8%	0.0%	2.00	66.7%	33.3%	0.0%
NY	2.04	76.8%	12.2%	11.0%	2.26	70.6%	17.8%	11.7%
RI	2.71	47.6%	33.3%	19.0%	2.81	42.9%	38.1%	19.0%
VT	2.90	40.0%	25.0%	35.0%	3.21	31.6%	26.3%	42.1%
Overall	2.35	62.2%	23.5%	14.4%	2.53	55.4%	28.6%	16.0%

Note: Average is based on a 1-5 scale with 1 very difficult, 3 neutral, and 5 very easy.

Table 13. Ordered logit regression model results indicating which factors are more likely to lead to a producer to say their state is overregulated.

Variable	Coefficient	P-value
State		
Connecticut	--	--
Maine	-0.45	0.441
Massachusetts	0.48	0.148
New Hampshire	-0.49	0.165
<b>New Jersey</b>	<b>2.09</b>	<b>0.034</b>
New York	0.50	0.157
Rhode Island	-0.51	0.367
<b>Vermont</b>	<b>1.62</b>	<b>0.002</b>
Business Structure		
Corporation	--	--
Solo Proprietorship	0.37	0.346
<b>General Proprietorship</b>	<b>1.61</b>	<b>0.065</b>
Limited Partnership	0.90	0.108
LLC	0.16	0.664
Years in Operation		
0-10	--	--
<b>11-20</b>	<b>-1.16</b>	<b>0.025</b>
<b>21-30</b>	<b>-1.08</b>	<b>0.032</b>
<b>31-40</b>	<b>-1.59</b>	<b>0.003</b>
<b>41-50</b>	<b>-1.23</b>	<b>0.035</b>
51 or more	-0.27	0.545
Type of Business		
Field Crop	--	--
Dairy	-0.00	0.988
Greenhouse/Nursery	-0.11	0.849
Fruit/Vegetable	-0.16	0.713
Livestock	0.05	0.924
Specialty Crop	0.43	0.483
All other	-0.34	0.505
Sales		
0-100k	--	--
<b>101-350k</b>	<b>0.60</b>	<b>0.099</b>
351-750k	-0.13	0.777
751k - 1 million	-0.21	0.801
More than 1 million	0.50	0.292
Production Trend since 2010		
<b>Decreasing</b>	<b>1.16</b>	<b>0.022</b>

Increasing	-0.04	0.877
Unchanged	--	--
Profit Trend since 2010		
Decreasing	0.38	0.264
Increasing	-0.43	0.127
Unchanged	--	--
<b>Gender: female</b>	<b>-0.06</b>	<b>0.030</b>
Education		
High School	-0.58	0.133
Some University	0.32	0.245
Bachelor's	--	--
More than Bachelor's	0.22	0.500
Producer's Farming Experience		
<b>0-10 years</b>	<b>1.13</b>	<b>0.035</b>
11-20 years	-0.17	0.720
21-30 years	0.20	0.649
31-40 years	-0.33	0.418
41-50 years	0.18	0.700
Over 50 years	--	--

\*Variable in bold are significant at the 0.1 p-value or less. A significant variable implies that the farm/farmer characteristic associated with the variable is more/less likely to perceive their state is overregulated. For instance, females are less likely than males to perceive their state is overregulated.

Table 14. Regulatory areas perceived to be over-regulated by state and sector based on logit model results.

Regulatory Area	Higher Odds of Perceived to be Over-Regulated		Lower Odds of Perceived to be Over-Regulated	
	State	Sector	State	Sector
Environmental	NJ, NY	--none--	-- none--	--none--
Business Taxes and Fees	NJ, NY	--none--	ME, VT	--none--
Labor	NY	Livestock	-- none--	--none--
Land Use	NJ	--none--	VT	--none--
Transportation	-- none--	--none--	-- none--	Fruit and Vegetables
Food Safety	-- none--	Dairy, Fruit and Vegetables, Livestock, Aquaculture & Timber	-- none--	--none--

Note: Results are relative to Connecticut and Field Crops.

Table 15. Specific regulatory factors that were ranked high and low in Connecticut.

Component	High Ranking	Low Ranking
Tax	<ul style="list-style-type: none"> <li>-Median adjusted farmer personal income</li> <li>-Corporate income tax complexity -</li> <li>Property tax rate exemption</li> <li>-Motor vehicle gas fuel tax exemption</li> <li>-Estate tax agricultural exemption</li> <li>-Inheritance tax rate</li> </ul>	<ul style="list-style-type: none"> <li>-Sales tax rate</li> <li>-Farmer exemptions</li> <li>-Personal income tax bracket complexity</li> <li>-Farmer corporate income tax rate</li> <li>-Adjusted average property tax rate</li> <li>-Motor vehicle gas fuel tax</li> <li>-Motor vehicle diesel fuel tax –</li> <li>-Farmer minimum estate tax rate</li> </ul>
Labor	<ul style="list-style-type: none"> <li>-Agricultural overtime compensation</li> <li>-Unemployment insurance</li> </ul>	<ul style="list-style-type: none"> <li>-Worker’s compensation</li> <li>-Minimum agricultural wage</li> </ul>
Environmental	<ul style="list-style-type: none"> <li>- Private pesticide application complexity</li> <li>-Carbon intensity of state economy</li> </ul>	<ul style="list-style-type: none"> <li>-Private pesticide applicator fees</li> <li>-Federal/state environmental voting history</li> </ul>
Sector Specific	<ul style="list-style-type: none"> <li>-Pesticide product registration fee</li> <li>-Feed product registration fee</li> <li>-Seed product registration fee</li> </ul>	<ul style="list-style-type: none"> <li>-Soil amendment product registration fee</li> <li>-Lime product registration fee</li> <li>-Commercial fertilizer product registration fee</li> </ul>
Non-Policy	<ul style="list-style-type: none"> <li>-Land rent per farm operator</li> </ul>	<ul style="list-style-type: none"> <li>-Industrial prices of electricity</li> <li>-Total expenditure on gasoline, fuel, oils</li> <li>-Long- and short-term debt per capita</li> </ul>

\*High = in top quarter of all state rankings; Low = in bottom quarter of all state rankings

Table 16. Specific regulatory factors that were ranked high and low in Maine.

Component	High Ranking	Low Ranking
Tax	-Sales tax rate -Property tax farmer exemption -Motor vehicle gas fuel tax exemption -Estate tax exemption -Inheritance tax rate	-Median adjusted farmer personal income -Sales tax farmer exemption -Corporate tax complexity -Motor vehicle gas fuel tax
Labor	-Worker's compensation -Unemployment insurance	--
Environmental	--	-Private pesticide applicator fees -Water permit costs -Federal/state environmental voting history -Percent of total conservation easement acreage that is a farm
Sector Specific	--	-Feed product registration fee -Seed product registration fee -Lime product registration fee -Commercial fertilizer product registration fee
Non-Policy	-Transportation (airports/1000 acres, top 50 water ports)	-Total expenditure on chemical products -Transportation (road and railroad miles/1000 acres) -Average annual temperature

\*High = in top quarter of all state rankings; Low = in bottom quarter of all state rankings

Table 17. Specific regulatory factors that were ranked high and low in Massachusetts.

Component	High Ranking	Low Ranking
Tax	-Personal income tax bracket complexity -Personal income tax agricultural exemption -Corporate income tax complexity -Property tax agricultural exemption -Motor vehicle gas fuel tax exemption -Estate tax exemption -Inheritance tax rate	--
Labor	-Unemployment insurance -Agricultural overtime compensation	-Worker's compensation
Environmental	- Private pesticide application complexity -Carbon intensity of state economy	-Private pesticide applicator fees -Federal/state environmental voting history
Sector Specific	-Soil amendment product registration fee -Seed product registration fee	-Pesticide product registration fee -Feed product registration fee -Lime product registration fee -Commercial fertilizer product registration fee
Non-Policy	-Land rent per farm operator -State credit S&P rating -State direct expenditures per capita -Transportation (road miles/1000 acres, top 50 water ports) -Annual precipitation	-Industrial prices of electricity -Total expenditure on gasoline, fuel, oils -Long- and short-term debt per capita -Transportation (airports/1000 acres)

\*High = in top quarter of all state rankings; Low = in bottom quarter of all state rankings

Table 18. Specific regulatory factors that were ranked high and low in New Hampshire.

Component	High Ranking	Low Ranking
Tax	<ul style="list-style-type: none"> <li>-Sales tax rate</li> <li>-Sales tax farmer exemption</li> <li>-Median adjusted farmer personal income tax rate</li> <li>-Personal income tax bracket complexity</li> <li>-Corporate income tax complexity</li> <li>-Property tax rate farmer exemption</li> <li>-Motor vehicle gas fuel tax</li> <li>-Motor vehicle fuel farmer exemption</li> <li>-Farmer minimum estate tax rate</li> <li>-Farmer inheritance tax rate</li> <li>-Inheritance tax complexity</li> </ul>	<ul style="list-style-type: none"> <li>-Adjusted average property tax rate</li> <li>-Motor vehicle diesel fuel tax</li> </ul>
Labor	<ul style="list-style-type: none"> <li>-Unemployment insurance</li> <li>-Minimum agricultural wage</li> <li>-Agricultural overtime compensation</li> </ul>	<ul style="list-style-type: none"> <li>-Worker's compensation insurance</li> </ul>
Environmental	<ul style="list-style-type: none"> <li>-Private pesticide application complexity</li> <li>-Water permit costs</li> </ul>	<ul style="list-style-type: none"> <li>-Percent of total conservation easement acreage that is a farm</li> </ul>
Sector Specific	<ul style="list-style-type: none"> <li>-Pesticide product registration fee</li> <li>-Soil amendment product registration fee</li> </ul>	<ul style="list-style-type: none"> <li>-Seed product registration fee</li> <li>-Lime product registration fee</li> <li>-Commercial fertilizer product registration fee</li> </ul>
Non-Policy	<ul style="list-style-type: none"> <li>-Land rent per farm operator</li> <li>-Total expenditures on chemical products</li> <li>-Annual precipitation</li> </ul>	<ul style="list-style-type: none"> <li>-Industrial prices of electricity</li> <li>-Total expenditures on gasoline, fuel, oils</li> <li>-State direct expenditures per capita</li> <li>-Transportation (road miles/1000 acres, airports/1000 acres)</li> </ul>

\*High = in top quarter of all state rankings; Low = in bottom quarter of all state rankings

Table 19. Specific regulatory factors that were ranked high and low in New Jersey.

Component	High Ranking	Low Ranking
Tax	<ul style="list-style-type: none"> <li>-Mean adjusted farmer personal income</li> <li>-Corporate income tax complexity</li> <li>-Corporate income tax agricultural exemption</li> <li>-Property tax rate agricultural exemption</li> <li>-Motor vehicle gas fuel tax</li> <li>-Motor vehicle diesel fuel tax</li> <li>-Motor vehicle fuel farmer exemption</li> <li>-Farmer inheritance tax rate</li> <li>-Inheritance tax complexity</li> </ul>	<ul style="list-style-type: none"> <li>-Sales tax rate</li> <li>-Personal income tax bracket complexity</li> <li>-Median adjusted farmer corporate income tax rate</li> <li>-Adjusted average property tax rate</li> </ul>
Labor	<ul style="list-style-type: none"> <li>-Worker's compensation</li> <li>-Unemployment insurance</li> <li>-Adverse effects wage rate</li> <li>-Agricultural overtime compensation</li> </ul>	<ul style="list-style-type: none"> <li>-Minimum agricultural wage rate</li> </ul>
Environmental	<ul style="list-style-type: none"> <li>-Private pesticide applicator fees</li> <li>-Private pesticide application complexity</li> <li>-Percent of total conservation easement acreage that is a farm</li> </ul>	--
Sector Specific	<ul style="list-style-type: none"> <li>-Soil amendment product registration fee</li> <li>-Lime product registration fee</li> <li>-Commercial fertilizer product registration fee</li> </ul>	<ul style="list-style-type: none"> <li>-Pesticide product registration fee</li> <li>-Feed product registration fee</li> <li>-Seed product registration fee</li> </ul>
Non-Policy	<ul style="list-style-type: none"> <li>-Transportation (road miles/1000 acres, railroad miles/1000 acres, top 50 water ports)</li> <li>-Average annual temperature</li> </ul>	<ul style="list-style-type: none"> <li>-Industrial prices of electricity</li> <li>-Total expenditures on chemical products</li> <li>-State credit S&amp;P rating</li> <li>-Long- and short-term debt per capita</li> </ul>

\*High = in top quarter of all state rankings; Low = in bottom quarter of all state rankings

Table 20. Specific regulatory factors that were ranked high and low in New York.

Component	High Ranking	Low Ranking
Tax	<ul style="list-style-type: none"> <li>-Sales tax rate</li> <li>-Sales tax farmer exemption</li> <li>-Median adjusted farmer corporate income tax rate</li> <li>-Corporate income tax complexity</li> <li>-Property tax rate agricultural exemption</li> <li>-Motor vehicle gas fuel tax</li> <li>-Motor vehicle fuel farmer exemption</li> <li>-Estate tax agricultural exemption</li> <li>-Farmer inheritance tax rate</li> <li>-Inheritance tax complexity</li> </ul>	<ul style="list-style-type: none"> <li>-Mean adjusted farmer personal income</li> <li>-Personal income tax bracket complexity</li> <li>-Motor vehicle diesel fuel tax</li> </ul>
Labor	--	<ul style="list-style-type: none"> <li>-Unemployment insurance</li> <li>-Agricultural overtime compensation</li> </ul>
Environmental	<ul style="list-style-type: none"> <li>-Carbon intensity of economy</li> </ul>	<ul style="list-style-type: none"> <li>-Private pesticide applicator fees</li> <li>-Private pesticide application complexity</li> </ul>
Sector Specific	<ul style="list-style-type: none"> <li>-Soil amendment product registration fee</li> <li>-Seed product registration fee</li> <li>-Commercial fertilizer product registration fee</li> </ul>	<ul style="list-style-type: none"> <li>-Pesticide product registration fee</li> </ul>
Non-Policy	<ul style="list-style-type: none"> <li>-State direct expenditures per capita</li> <li>-Transportation (top 50 water ports)</li> </ul>	<ul style="list-style-type: none"> <li>-Long- and short-term debt per capita</li> </ul>

\*High = in top quarter of all state rankings; Low = in bottom quarter of all state rankings

Table 21. Specific regulatory factors that were ranked high and low in Rhode Island.

Component	High Ranking	Low Ranking
Tax	-Corporate income tax complexity -Motor vehicle fuel farmer exemption -Farmer inheritance tax rate -Inheritance tax complexity	-Sales tax rate -Median adjusted farmer corporate income tax rate -Adjusted average property tax rate -Property tax rate agricultural exemption -Motor vehicle gas fuel tax
Labor	-Agricultural overtime compensation	-Unemployment insurance
Environmental	-Water permit costs -Carbon intensity of economy	-Private pesticide applicator fees -Private pesticide application complexity -Federal/state environmental voting history -Percent of total conservation easement acreage that is a farm
Sector Specific	-Seed product registration fee	-Soil amendment product registration fee -Commercial fertilizer product registration fee
Non-Policy	-Land rent per farm operator -Transportation (road miles/1000 acres) -Average annual temperature -Average annual precipitation	-Industrial prices of electricity -Total expenditures on gasoline, fuels, oils -Long- and short-term debt per capita -Transportation (railroad miles/1000 acres)

\*High = in top quarter of all state rankings; Low = in bottom quarter of all state rankings

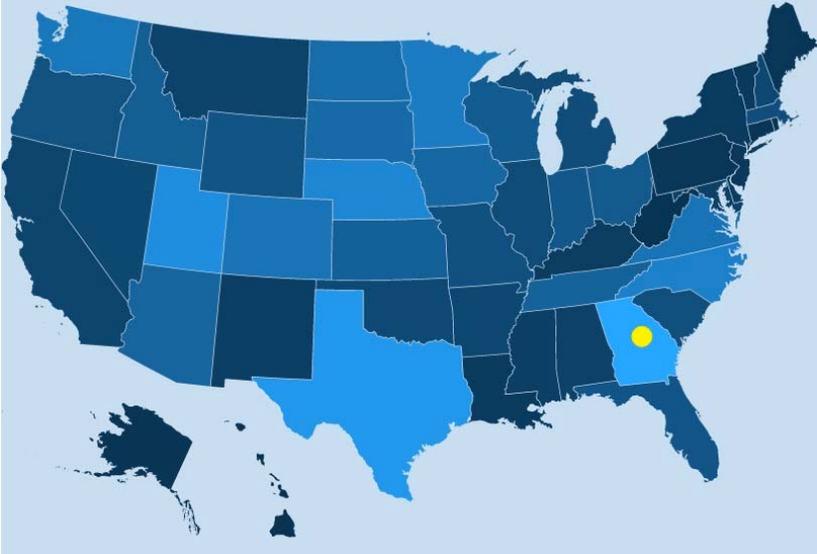
Table 22. Specific regulatory factors that were ranked high and low in Vermont.

Component	High Ranking	Low Ranking
Tax	<ul style="list-style-type: none"> <li>-Sales tax rate</li> <li>-Person income tax bracket complexity</li> <li>-Corporate income tax agricultural exemption</li> <li>-Property tax rate agricultural exemption</li> <li>-Motor vehicle fuel farmer exemption</li> <li>-Estate tax agricultural exemption</li> <li>-Inheritance tax complexity</li> </ul>	<ul style="list-style-type: none"> <li>-Mean adjusted farmer corporate income tax rate</li> <li>-Corporate income tax complexity</li> <li>-Adjusted average property tax rate</li> </ul>
Labor	<ul style="list-style-type: none"> <li>-Unemployment insurance</li> <li>-Agricultural overtime compensation</li> </ul>	<ul style="list-style-type: none"> <li>-Minimum agricultural wage</li> </ul>
Environmental	<ul style="list-style-type: none"> <li>-Private pesticide applicator fees</li> </ul>	<ul style="list-style-type: none"> <li>-Private pesticide application complexity</li> <li>-Federal/state environmental voting history</li> </ul>
Sector Specific	<ul style="list-style-type: none"> <li>-Pesticide product registration fee</li> <li>-Soil amendment product registration fee</li> <li>-Seed product registration fee</li> </ul>	<ul style="list-style-type: none"> <li>-Feed product registration fee</li> </ul>
Non-Policy	<ul style="list-style-type: none"> <li>-Total expenditures on chemical products</li> <li>-State credit S&amp;P rating</li> <li>-State direct expenditures per capita</li> </ul>	<ul style="list-style-type: none"> <li>-Transportation (road miles/1000 acres, airports/1000 acres)</li> <li>-Annual average temperature</li> </ul>

\*High = in top quarter of all state rankings; Low = in bottom quarter of all state rankings

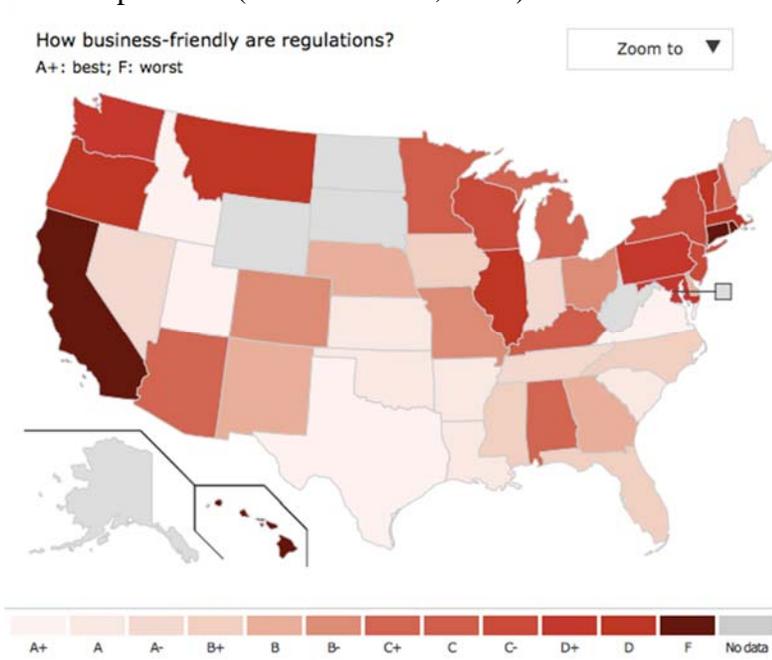
# Figures

Figure 1. America's Top States for Doing Business in 2014 by CNBC (Cohn, 2014)



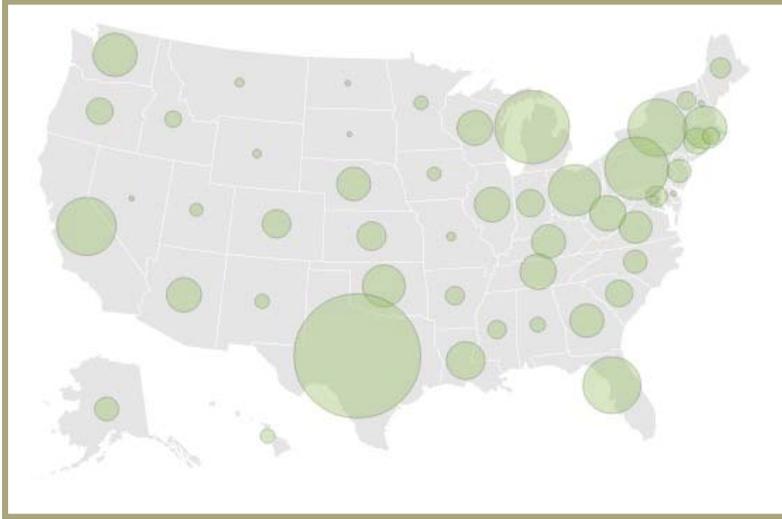
\* This table depicts more favorable states for doing business in lighter blue and less favorable states for doing business in darker blue. Rankings were based on 56 measures of competitiveness within 10 differently weighted areas of interest in order of highest to lowest being cost of doing business, economy, infrastructure, workforce, quality of life, technology and innovation, business friendliness, education, cost of living, and access to capital. The top ten states according to the study are Georgia, Texas, Utah, Nebraska, North Carolina, Minnesota, Washington, Colorado, Virginia, and North Dakota. The bottom ten states are Rhode Island, Hawaii, West Virginia, Alaska, Connecticut, Maine, Pennsylvania, New Jersey, Vermont, and New York.

Figure 2: The Best and Worst States for Small Businesses: Red Tape Blues (*The Economist*, 2014)



\*This table depicts the overall friendliness of state regulations to small businesses on a grading scale of A+ for the best to F for the worst. The top ten states with grades of A- or above are Idaho, Texas, Utah, Virginia, Arkansas, Kansas, Louisiana, Oklahoma, South Carolina and Nevada. The bottom ten states with grades of D+ or below are California, Connecticut, Hawaii, Rhode Island, Illinois, Massachusetts, Montana, Oregon, Pennsylvania and Vermont. This study also provides 3 additional state level indexes ranking states on overall, tax code, and license friendliness to small businesses.

Figure 3: The United States of Subsidies by the New York Times, 2012 (Story, 2012)



\*After a 10-month investigation of business incentives, *The New York Times* compiled a database and concluded that 1,874 local government programs provide a total of 80.4 billion dollars in incentives per year across the United States. The year from which data is reported varies from 2007 to 2013 without any mention of accounting for annual changes in inflation. ). Top ten states are Texas, Michigan, Pennsylvania, California, New York, Florida, Massachusetts, Washington, Ohio, and Oklahoma. Bottom ten states are South Dakota, North Dakota, Nevada, New Hampshire, Delaware, Wyoming, Missouri, Montana, Iowa, and Minnesota.

Figure 4. Example of email content sent out to agricultural producers.

Dear Agricultural Producer,

We are asking for your participation in an important survey of Northeast agricultural producers.

The University of Connecticut (UConn) Zwick Center for Food and Resource Policy is interested in finding out your views on state and municipal regulations that affect farming activities and profitability. This survey should take approximately 20 minutes of your time, and your participation is very important. Your responses will be anonymous, and your name or contact information is not requested. The results of this survey will be developed into a report which will be shared with Northeast agricultural leaders, and policy makers at the state and local levels. Your participation in this important survey is appreciated.

To participate, click the following link to be taken to the survey site administered by UConn:

<http://www.zwickcenter.uconn.edu/survey.php>

If you have any questions about this study, you may contact Dr. Benjamin Campbell at [ben.campbell@uconn.edu](mailto:ben.campbell@uconn.edu) or Dr. Adam Rabinowitz at [adam.rabinowitz@uconn.edu](mailto:adam.rabinowitz@uconn.edu)

Thank you,  
The University of Connecticut Zwick Center for Food and Resource Policy

Figure 5. Survey respondent perceptions of regulations by state.

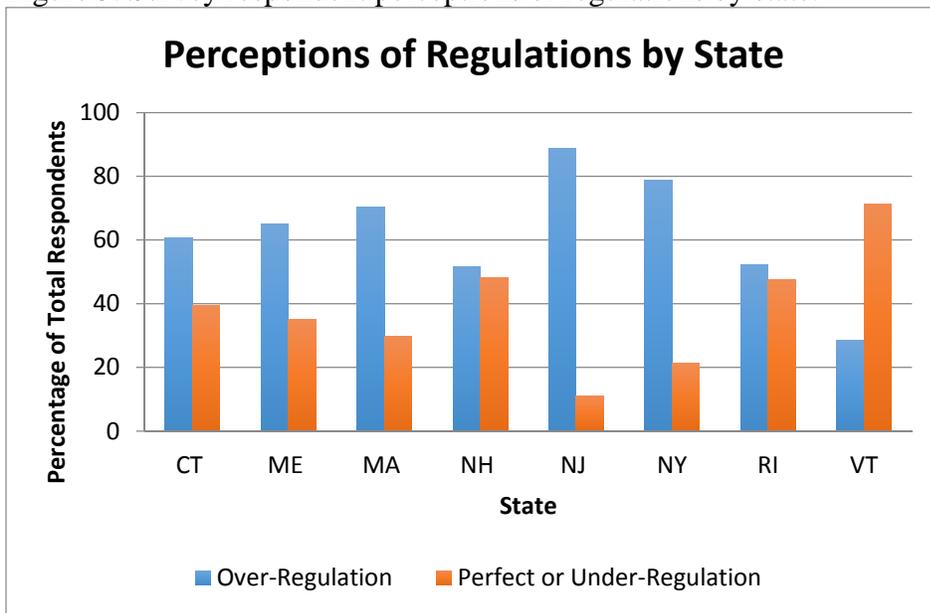


Figure 6. Survey respondent perceptions of regulations by region.

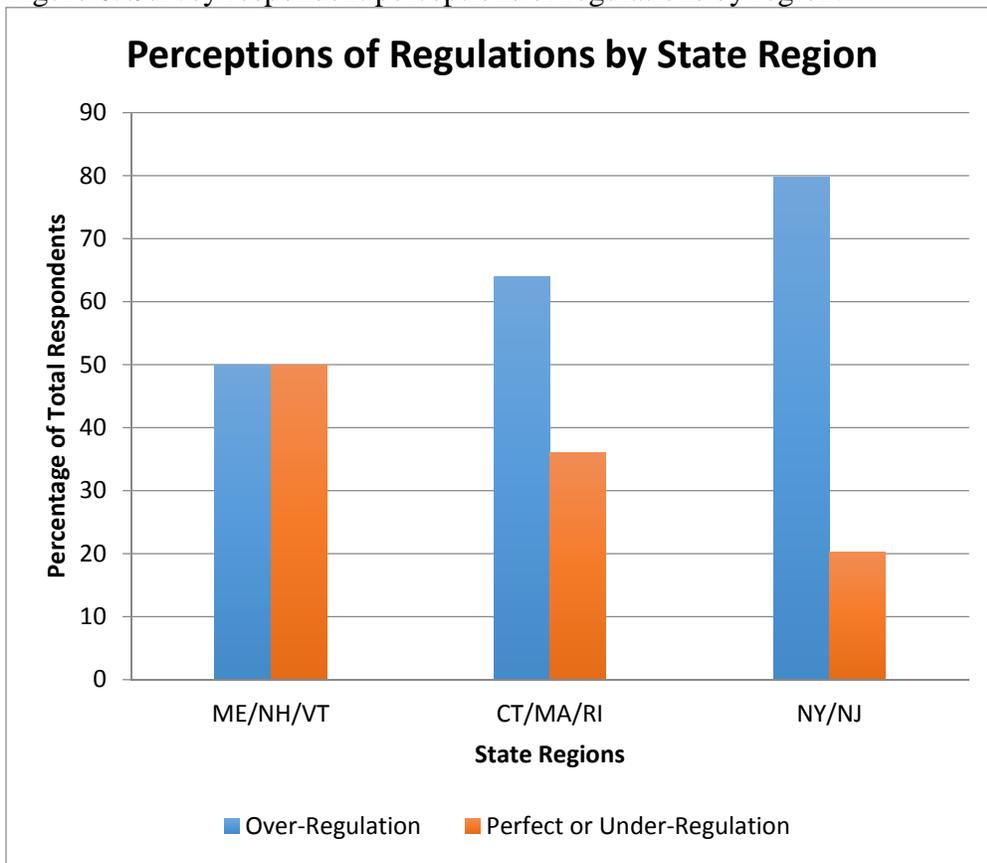


Figure 7. Survey respondent perceptions of regulations by farm age.

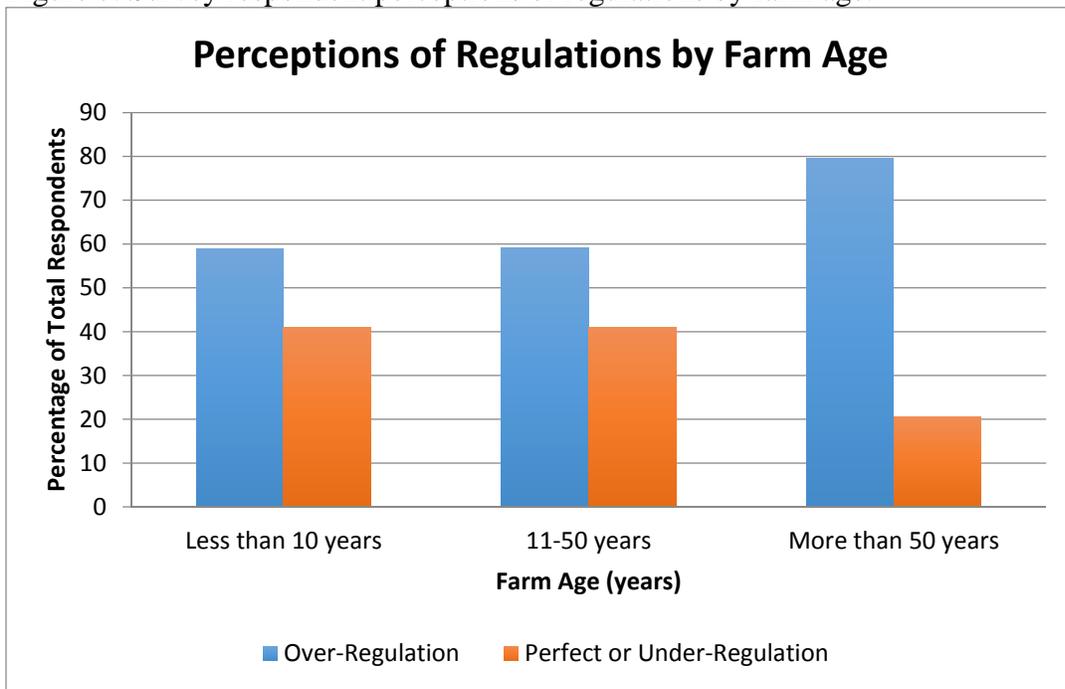


Figure 8. Survey respondent perceptions of regulations by industry.

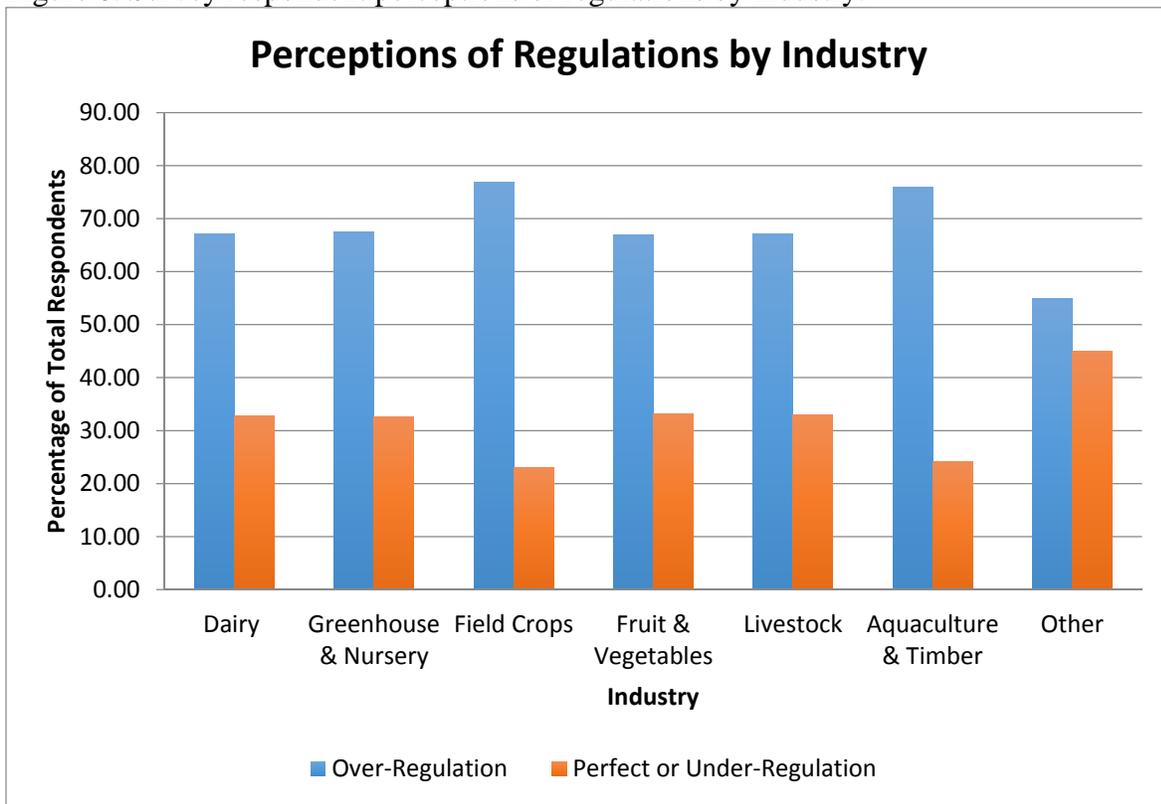


Figure 9. Survey respondent perceptions of regulations by sales category of farm.

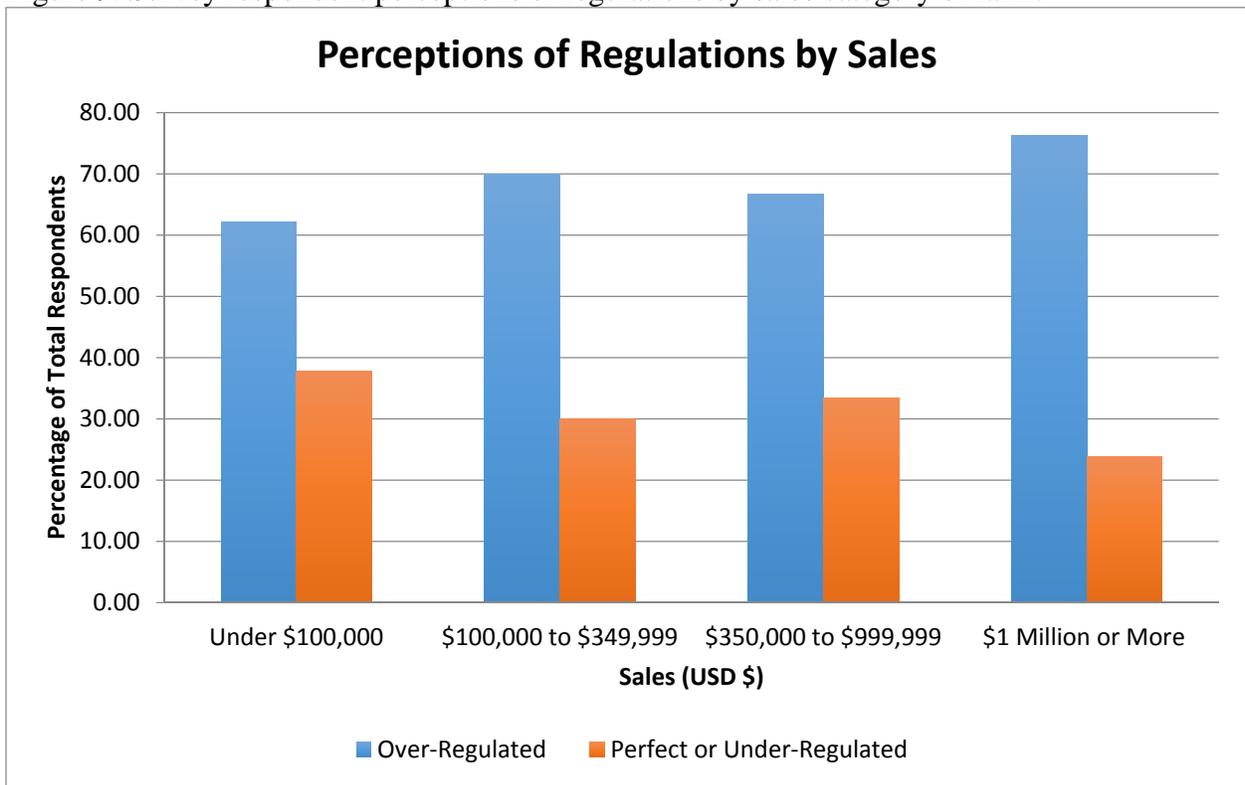
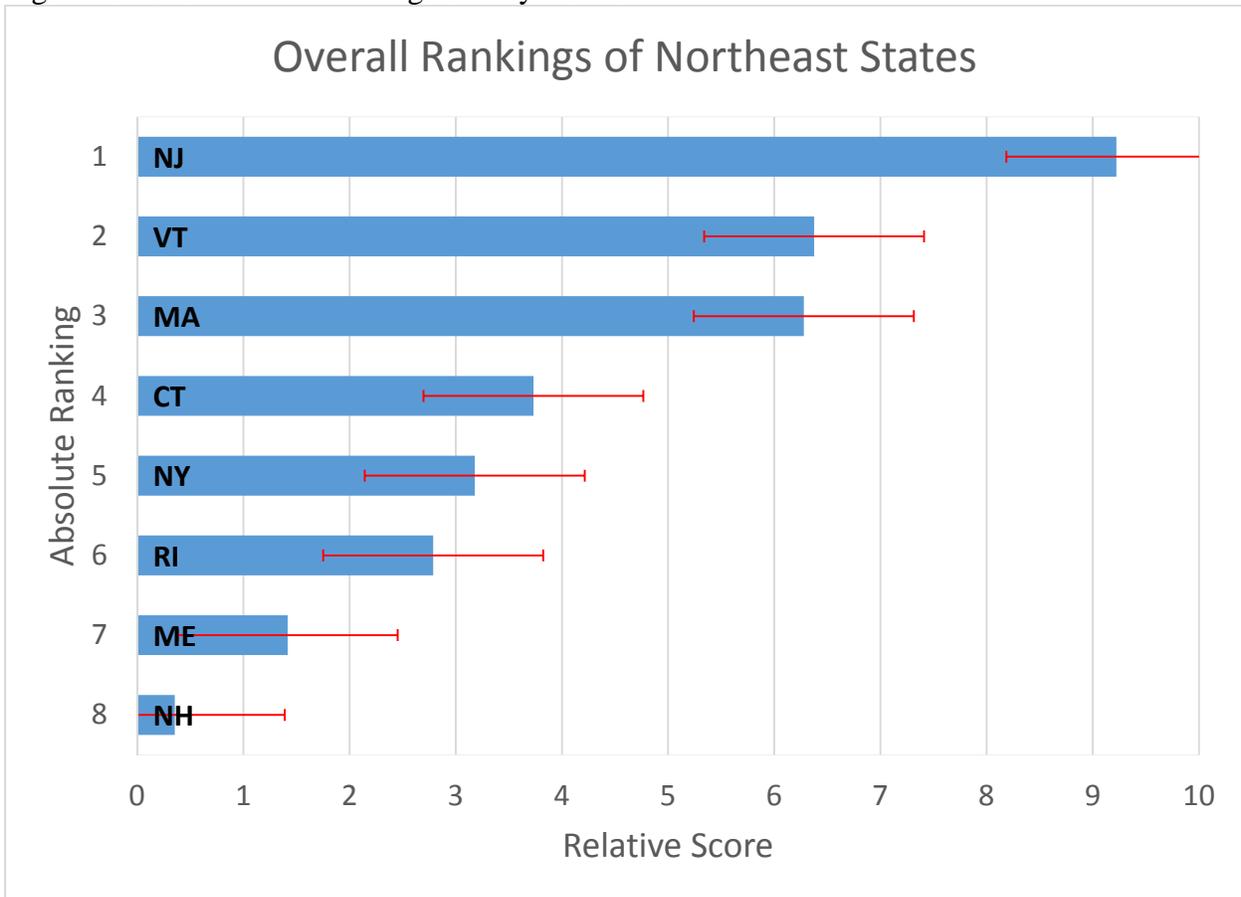
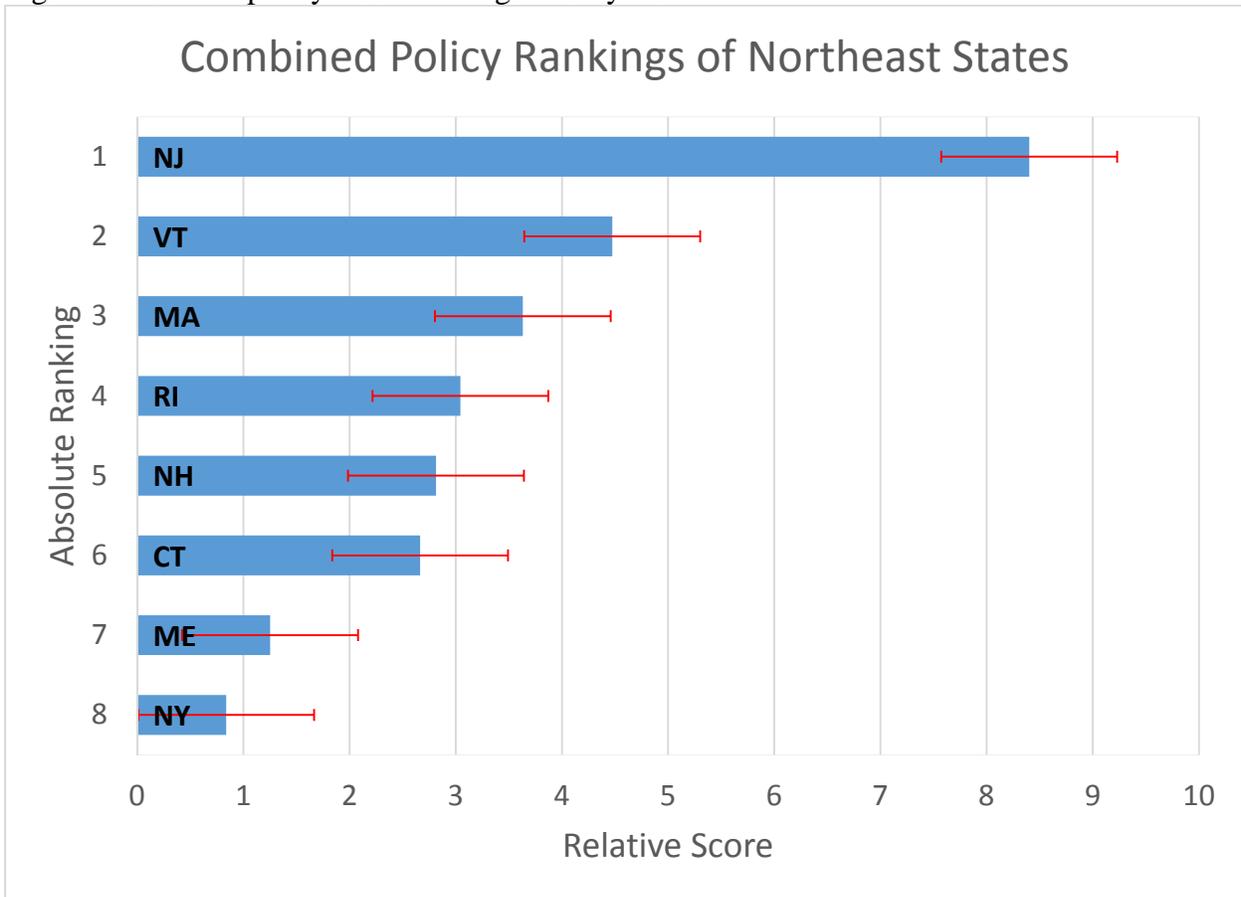


Figure 10. Overall index rankings of only the Northeastern states.



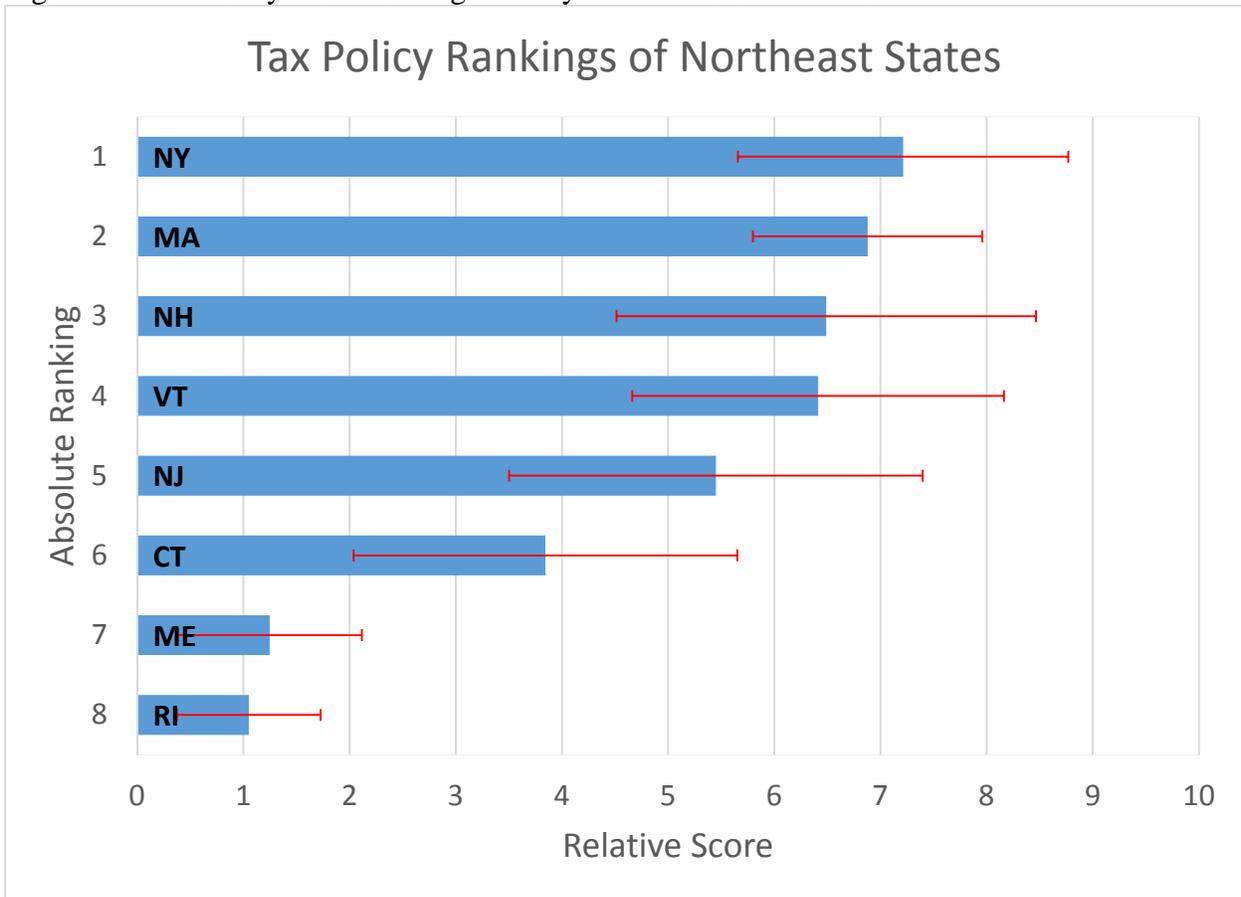
\*The red line on the graph indicates a 95% confidence interval which gives an idea where the true ranking lies. Overlapping confidence intervals imply there is a chance the rankings are similar, thereby, not significantly different.

Figure 11. Overall policy index rankings of only the Northeastern states.



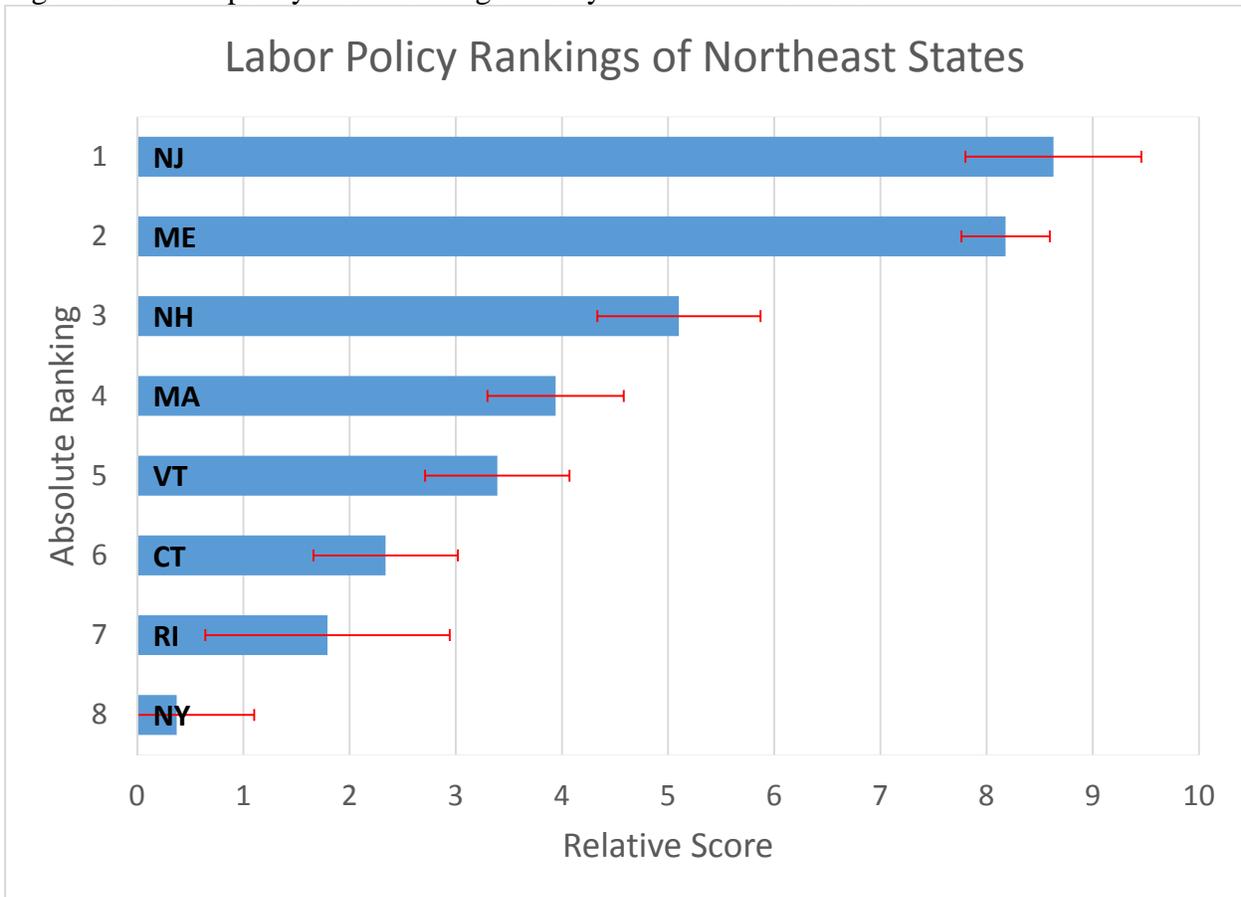
\*The red line on the graph indicates a 95% confidence interval which gives an idea where the true ranking lies. Overlapping confidence intervals imply there is a chance the rankings are similar, thereby, not significantly different.

Figure 12. Tax Policy index rankings of only the Northeastern states.



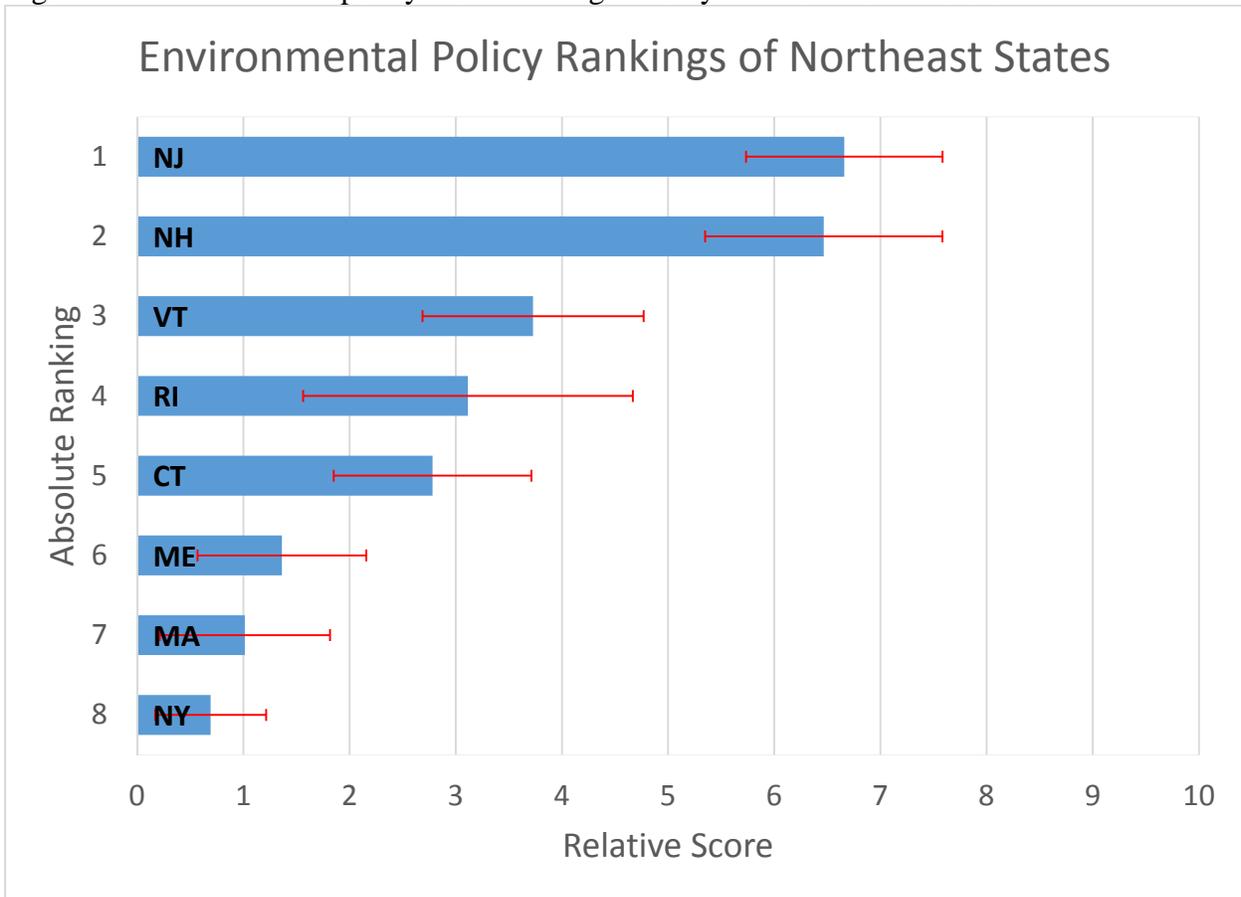
\*The red line on the graph indicates a 95% confidence interval which gives an idea where the true ranking lies. Overlapping confidence intervals imply there is a chance the rankings are similar, thereby, not significantly different.

Figure 13. Labor policy index rankings of only the Northeastern states.



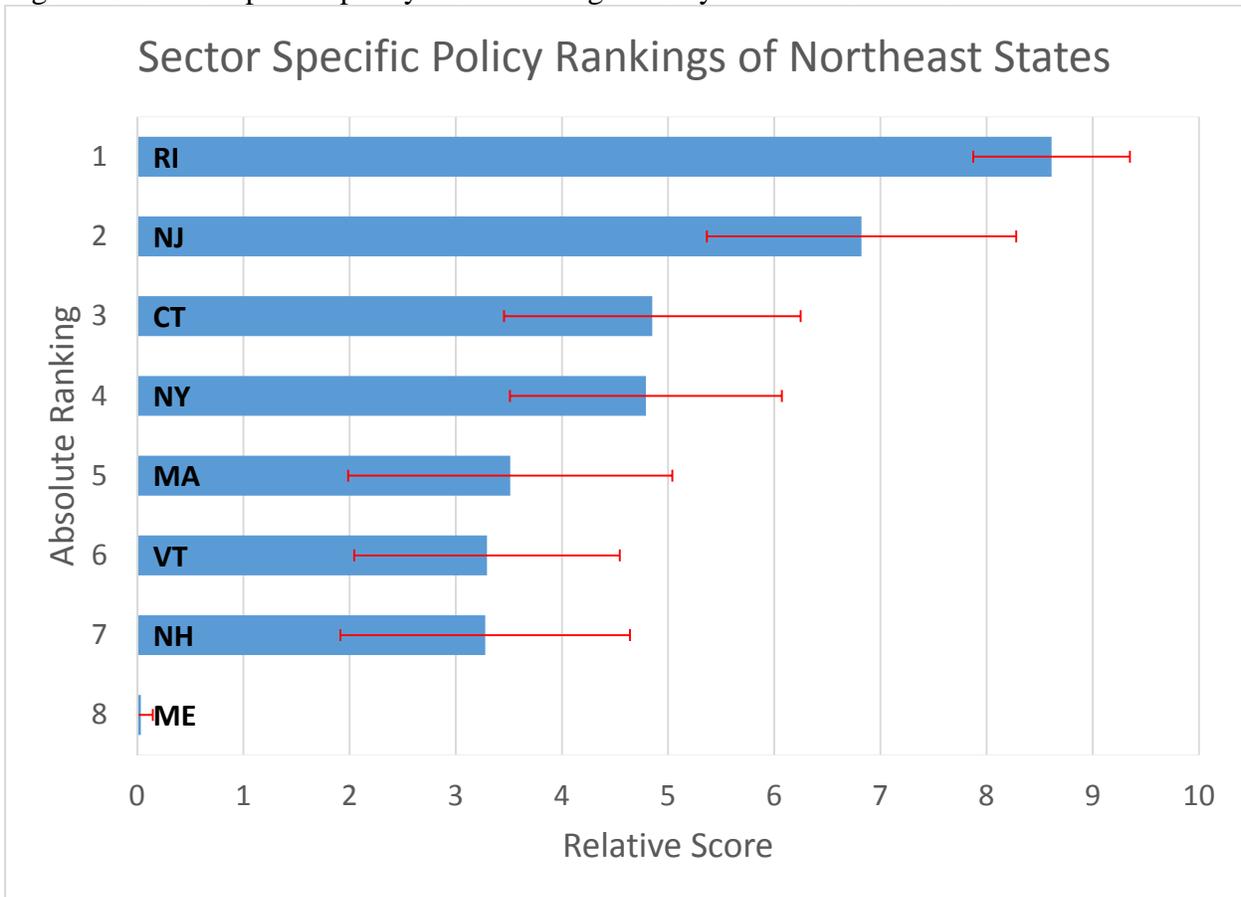
\*The red line on the graph indicates a 95% confidence interval which gives an idea where the true ranking lies. Overlapping confidence intervals imply there is a chance the rankings are similar, thereby, not significantly different.

Figure 14. Environmental policy index rankings of only the Northeastern states.



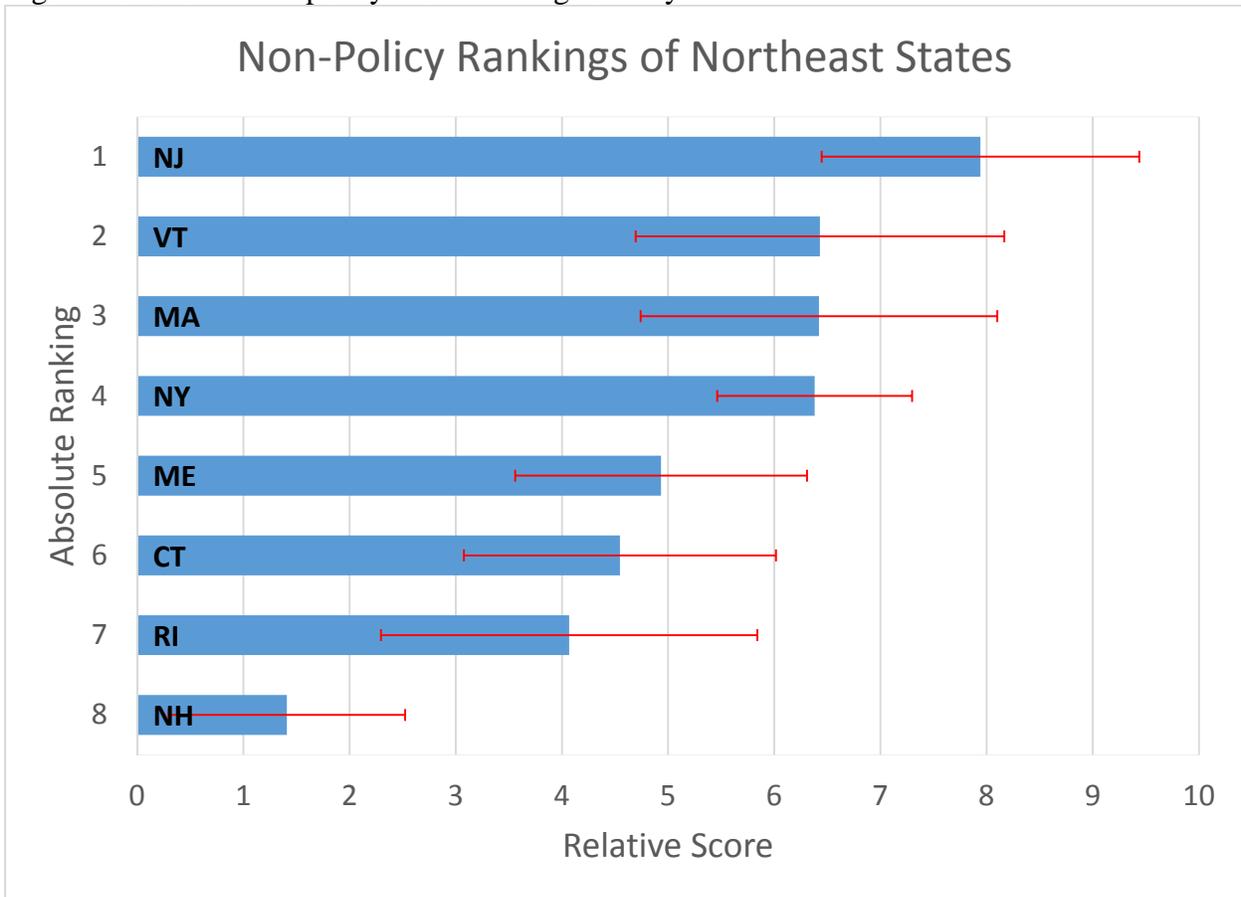
\*The red line on the graph indicates a 95% confidence interval which gives an idea where the true ranking lies. Overlapping confidence intervals imply there is a chance the rankings are similar, thereby, not significantly different.

Figure 15. Sector specific policy index rankings of only the Northeastern states.



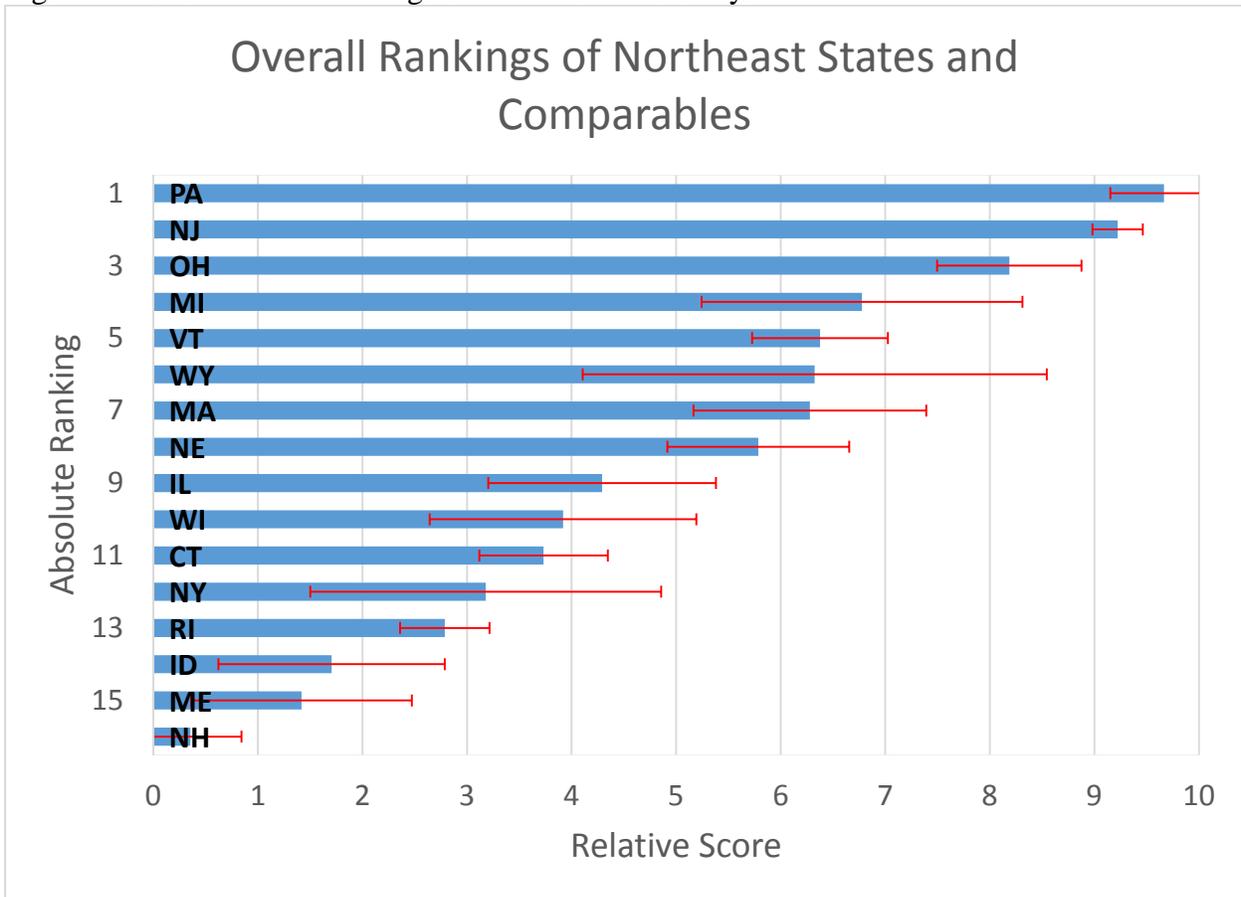
\*The red line on the graph indicates a 95% confidence interval which gives an idea where the true ranking lies. Overlapping confidence intervals imply there is a chance the rankings are similar, thereby, not significantly different.

Figure 16. Overall non-policy index rankings of only the Northeastern states.



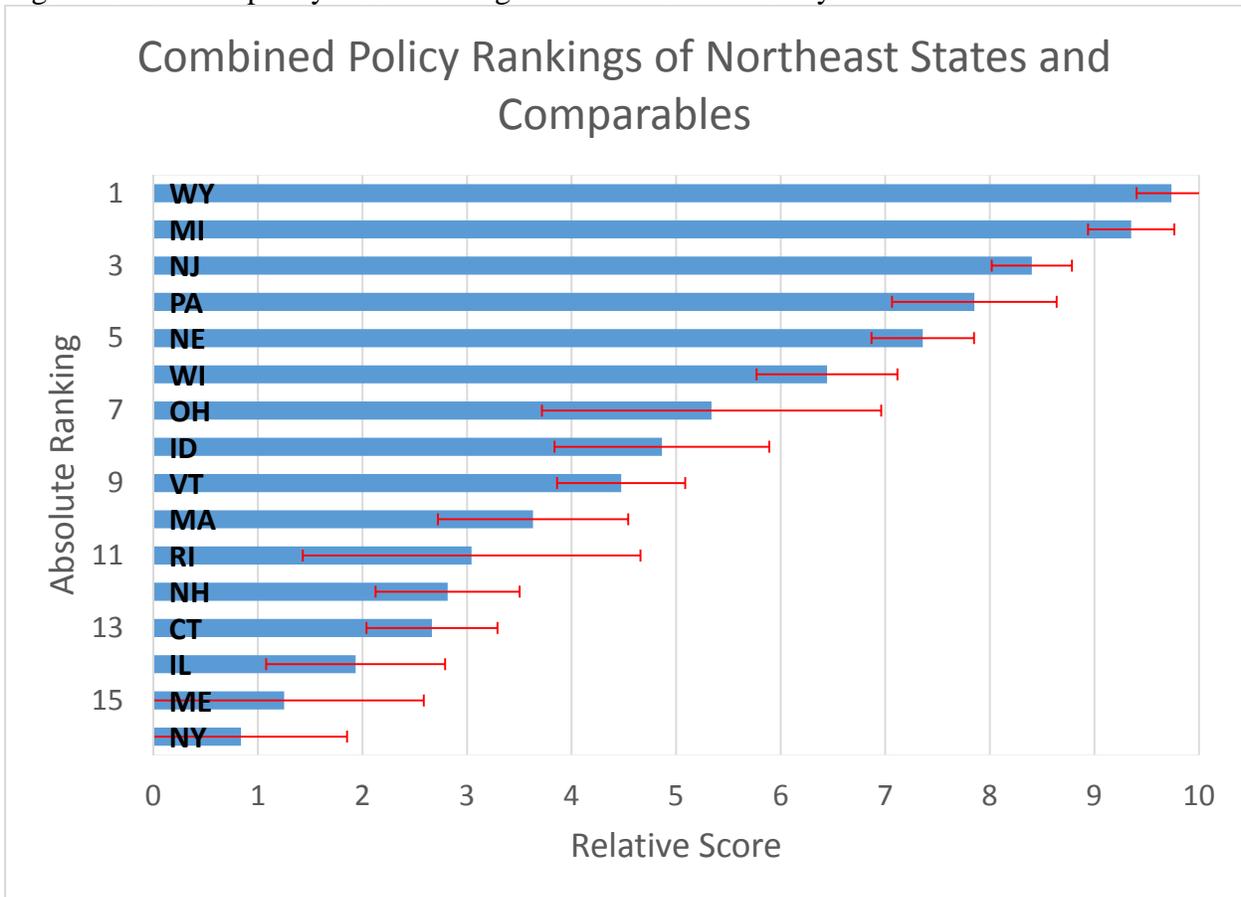
\*The red line on the graph indicates a 95% confidence interval which gives an idea where the true ranking lies. Overlapping confidence intervals imply there is a chance the rankings are similar, thereby, not significantly different.

Figure 17. Overall index rankings of all states in the analysis.



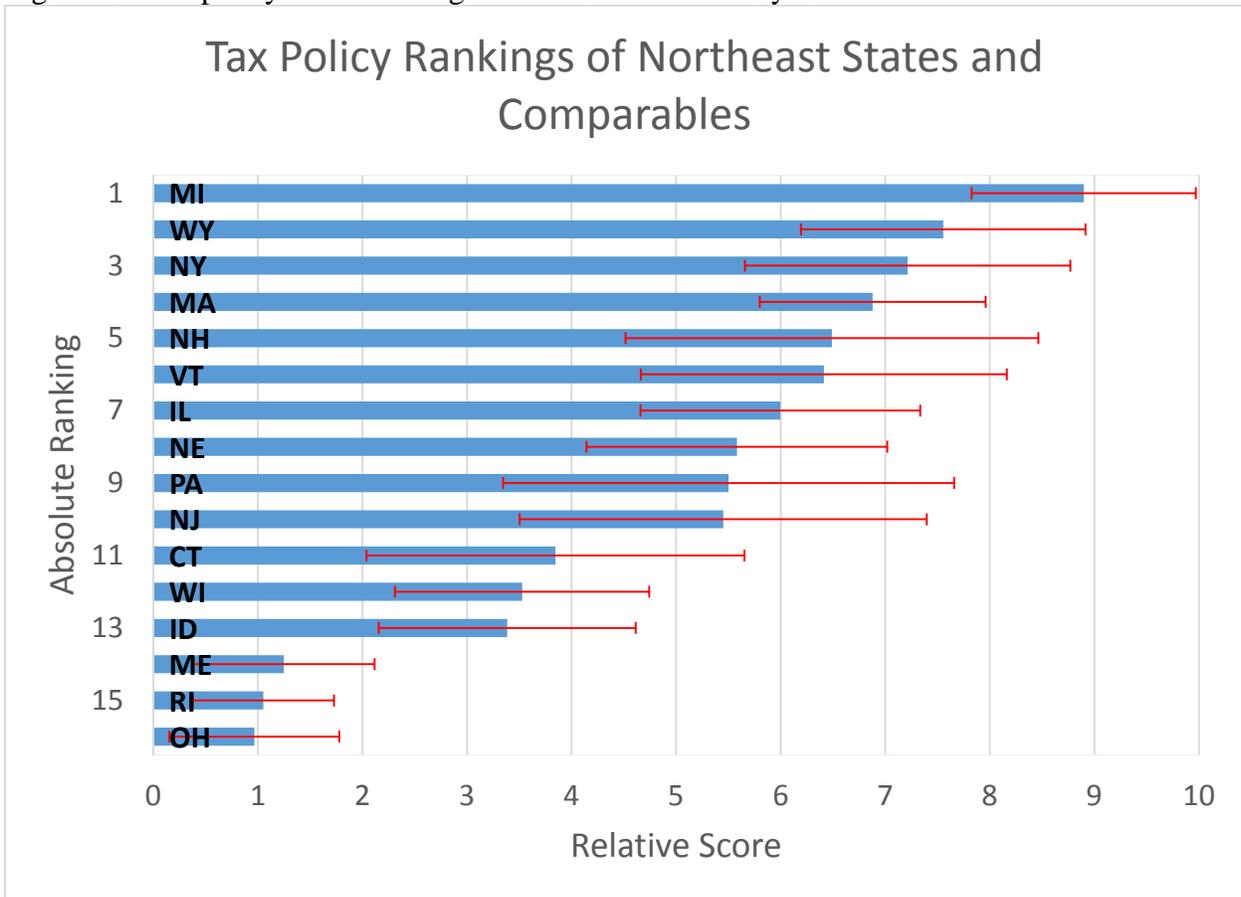
\*The red line on the graph indicates a 95% confidence interval which gives an idea where the true ranking lies. Overlapping confidence intervals imply there is a chance the rankings are similar, thereby, not significantly different.

Figure 18. Overall policy index rankings of all states in the analysis.



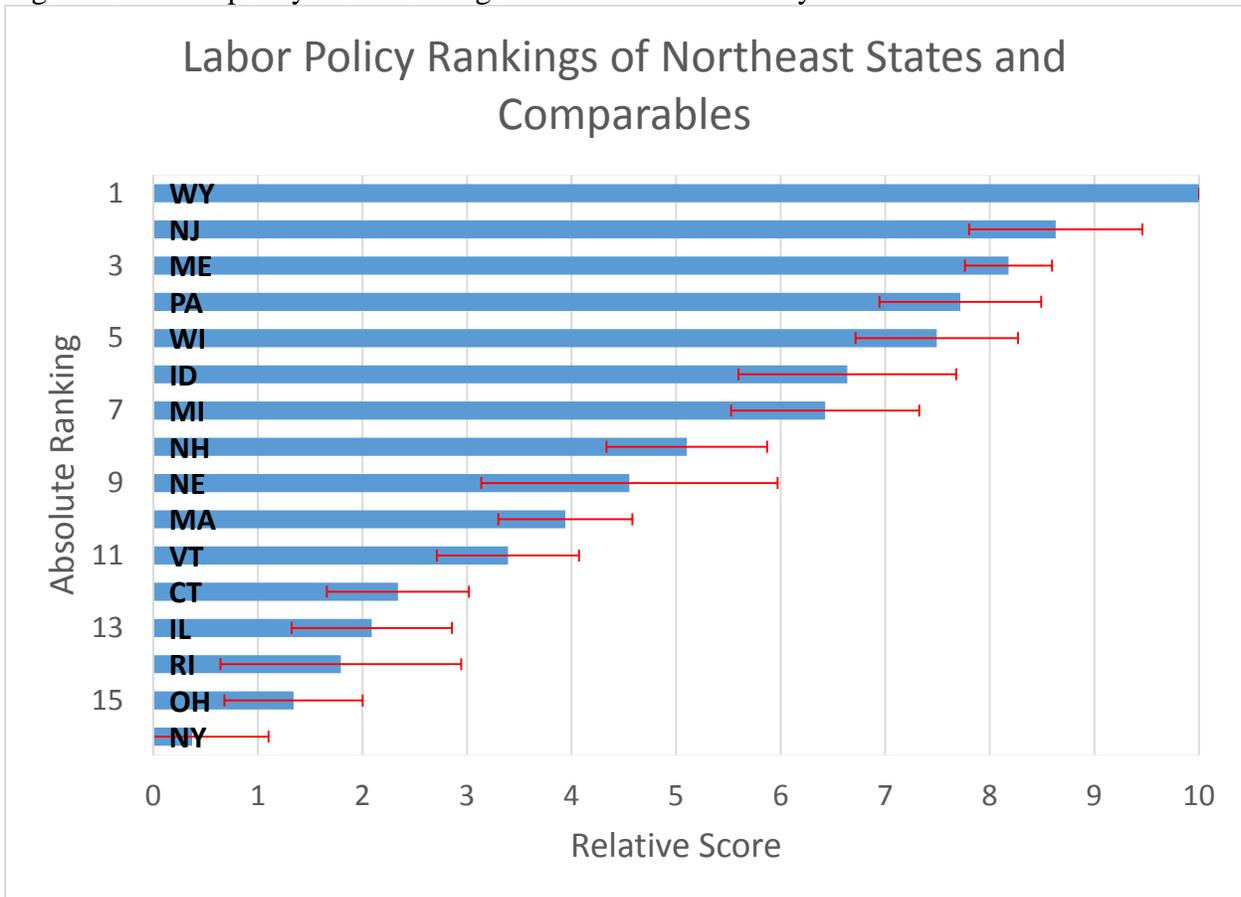
\*The red line on the graph indicates a 95% confidence interval which gives an idea where the true ranking lies. Overlapping confidence intervals imply there is a chance the rankings are similar, thereby, not significantly different.

Figure 19. Tax policy index rankings of all states in the analysis.



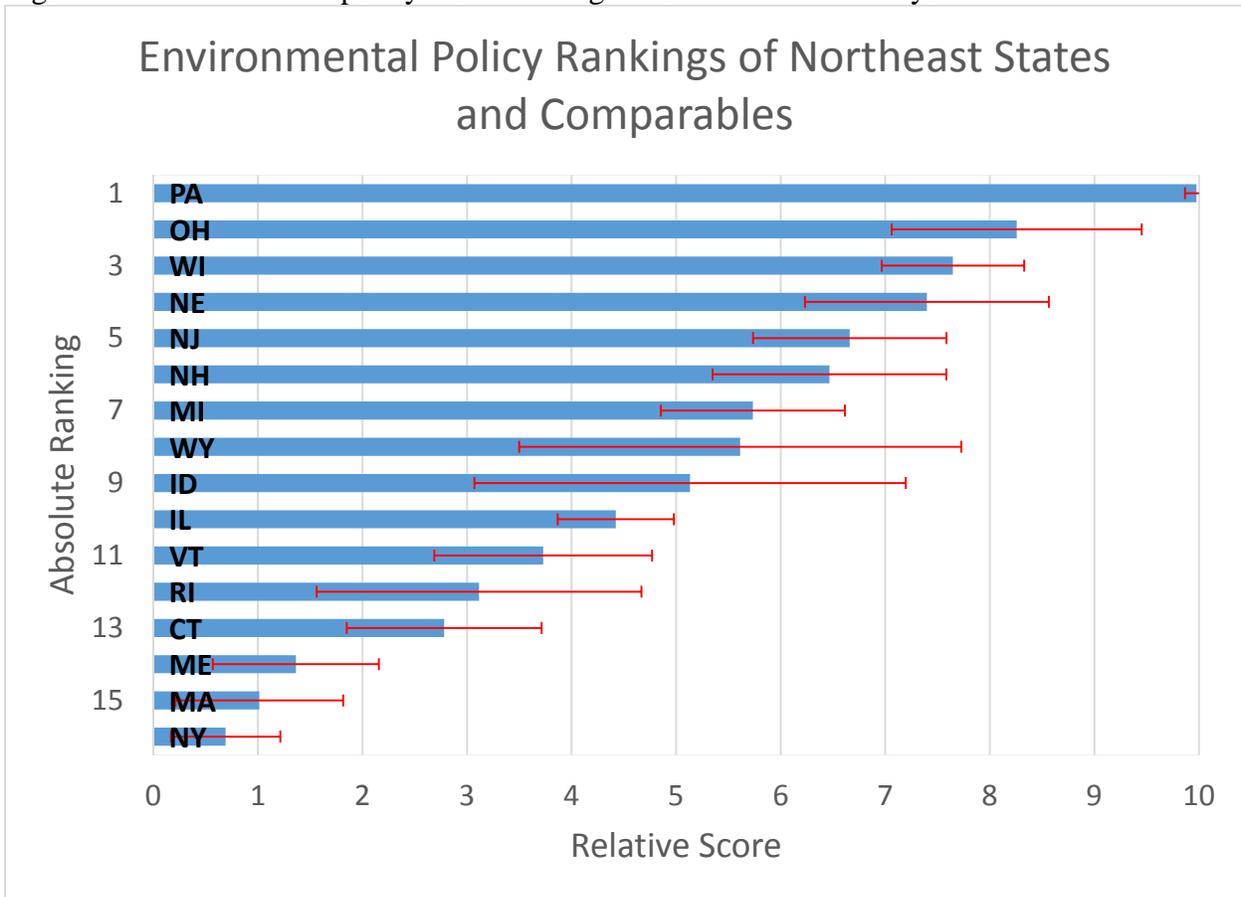
\*The red line on the graph indicates a 95% confidence interval which gives an idea where the true ranking lies. Overlapping confidence intervals imply there is a chance the rankings are similar, thereby, not significantly different.

Figure 20. Labor policy index rankings of all states in the analysis.



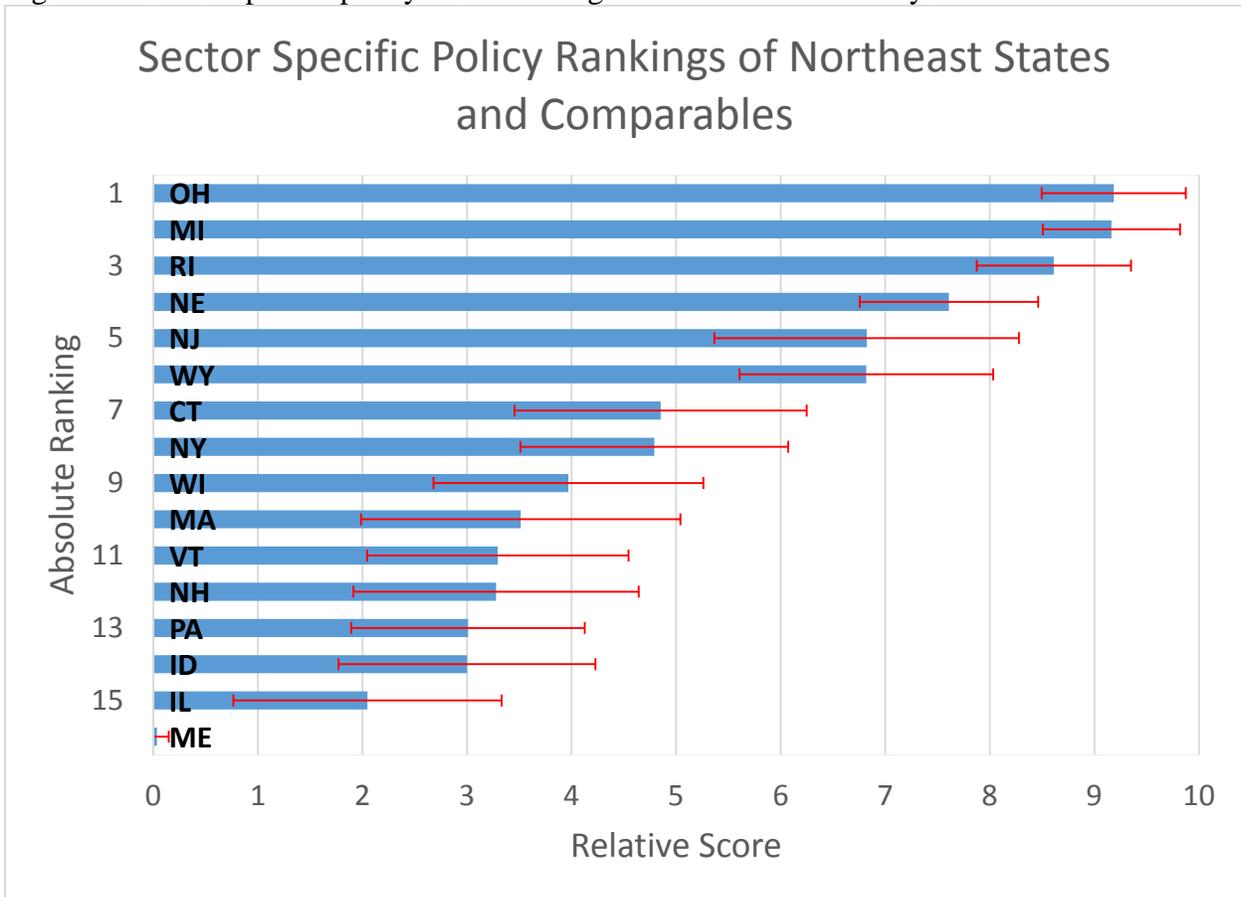
\*The red line on the graph indicates a 95% confidence interval which gives an idea where the true ranking lies. Overlapping confidence intervals imply there is a chance the rankings are similar, thereby, not significantly different.

Figure 21. Environmental policy index rankings of all states in the analysis.



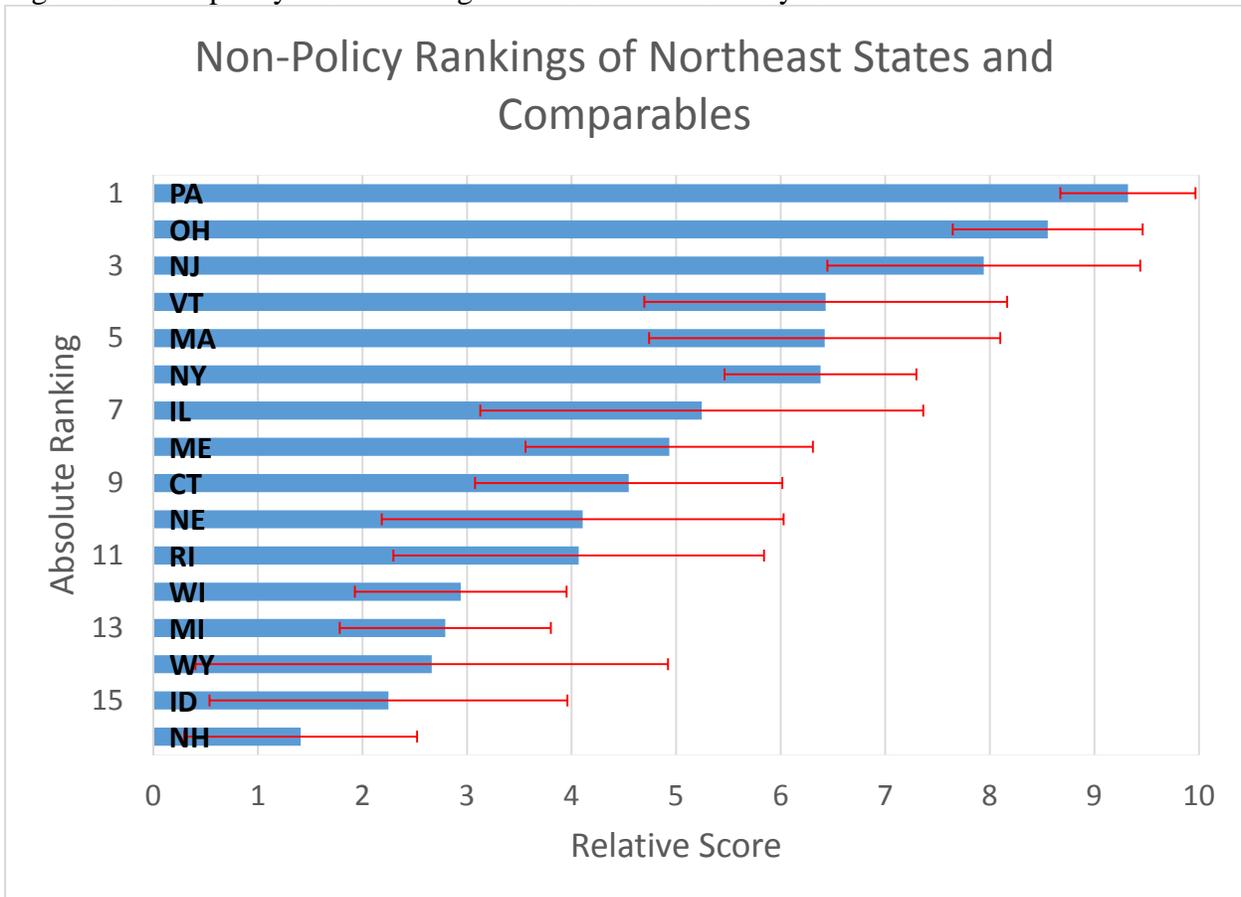
\*The red line on the graph indicates a 95% confidence interval which gives an idea where the true ranking lies. Overlapping confidence intervals imply there is a chance the rankings are similar, thereby, not significantly different.

Figure 22. Sector specific policy index rankings of all states in the analysis.



\*The red line on the graph indicates a 95% confidence interval which gives an idea where the true ranking lies. Overlapping confidence intervals imply there is a chance the rankings are similar, thereby, not significantly different.

Figure 23. Non-policy index rankings of all states in the analysis.



\*The red line on the graph indicates a 95% confidence interval which gives an idea where the true ranking lies. Overlapping confidence intervals imply there is a chance the rankings are similar, thereby, not significantly different.