



Identifying Environmental Violation Patterns in Vermont

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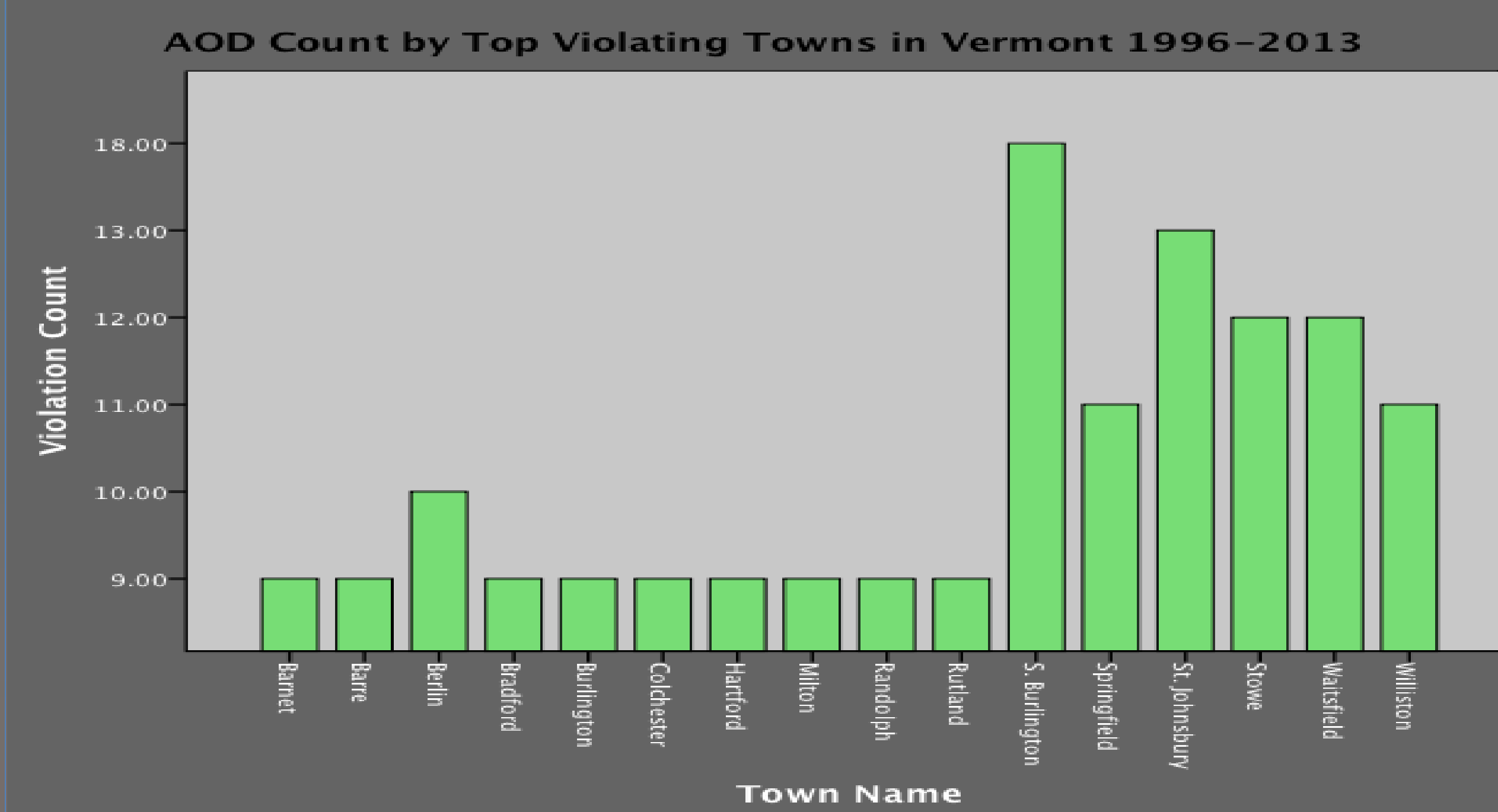
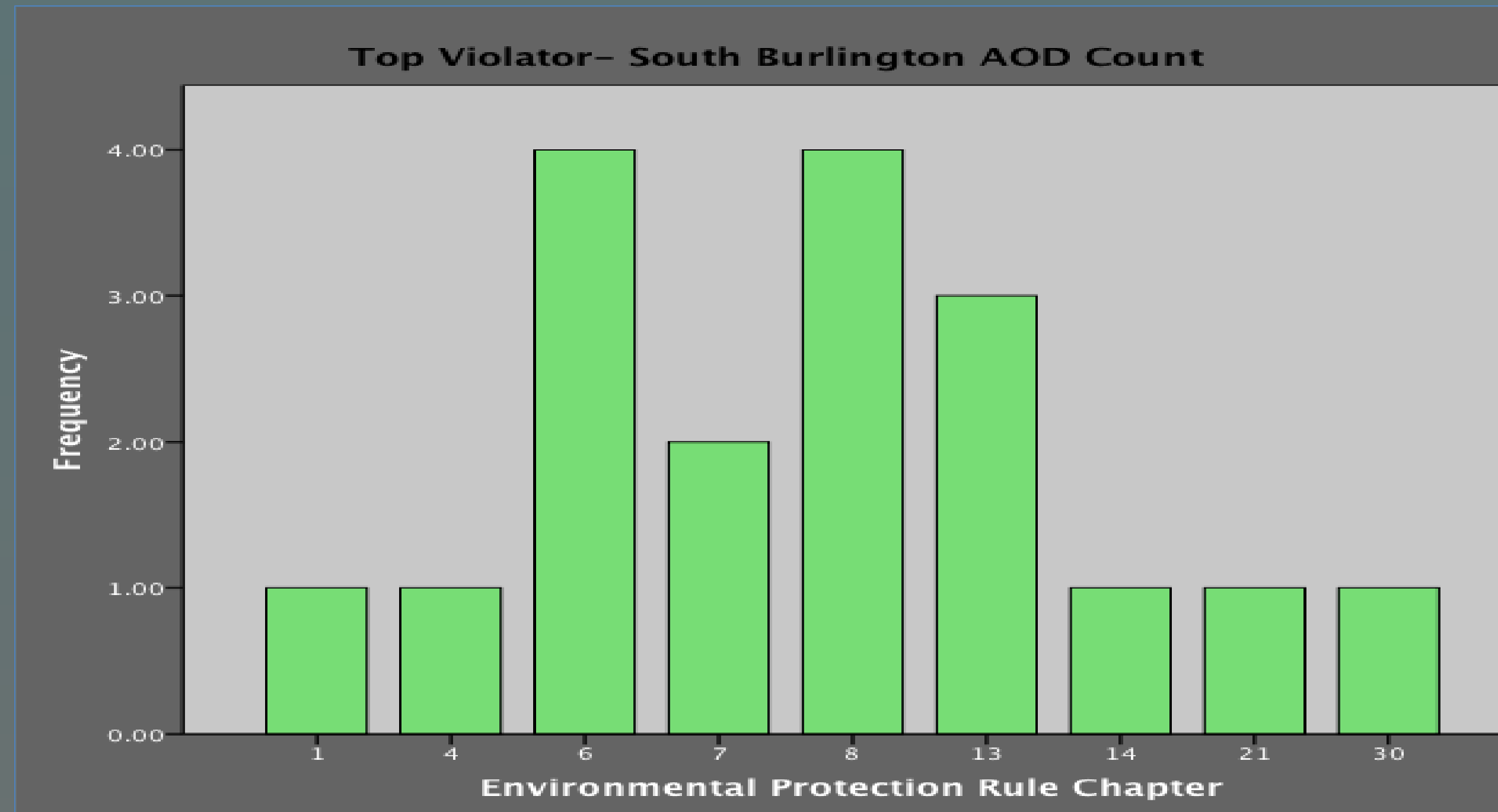
Introduction

The purpose of this research is to identify modelable patterns of the Vermont Agency of Natural Resources' Department of Environmental Conservation Compliance and Enforcement Division's enforcement data. When creating the database, we are specifically looking for patterns that indicate how frequently the Compliance and Enforcement Division has been enforcing water quality related regulations over time. As climate change mitigation and adaptation policies become increasingly necessary, as will their enforcement. By analyzing the Compliance and Enforcement Division's record of enforcement actions between 1996 to 2013 and categorizing the actions into groups regarding the type of violation and town location, we are able to see patterns and frequencies. By identifying these patterns, we are able to see where the most violations occur and frequencies in the type of violations enforced. Most of this information comes from the Uniform Environmental Law Enforcement Act, which streamlined Vermont environmental enforcement in 1989. This act outlines the enforcement process within ANR and gave the CED most of their authority. We focus on the Civil Complaints [10 V.S.A. Section 8019 authorizes the Secretary to issue a Civil Complaint when it is determined that a violation exists.], Supplemental Environmental Projects (SEPs) [Is an environmentally beneficial project approved by the Agency and a Respondent as part of a settlement. The Respondent funds the SEP by contributing all or a portion of their penalty to the approved project. Typically, SEPs are performed by third party, non-profit organizations. SEPs must involve an activity which the Respondent is not otherwise legally required to perform, and which does not directly benefit the Respondent. The project must have some relationship or nexus to the violation and must be a discreet project with a beginning and an end. SEP funds may be used in conjunction with funding sources other than the Respondent to accomplish a specific project. SEPs include the following types: environmental enhancement; education and awareness; research, monitoring and data collection; emergency planning and preparedness; pollution prevention; and pollution reduction projects.], Assurance of Discontinuances (AODs) [An AOD is a written settlement agreement, signed by the Secretary and the respondent to discontinue the violating action(s)], Emergency Orders (EO) [When a violation presents an immediate threat of substantial harm to the environment or public health.] and Administrative Orders (AOs) [when it is determined that a violation exists.]

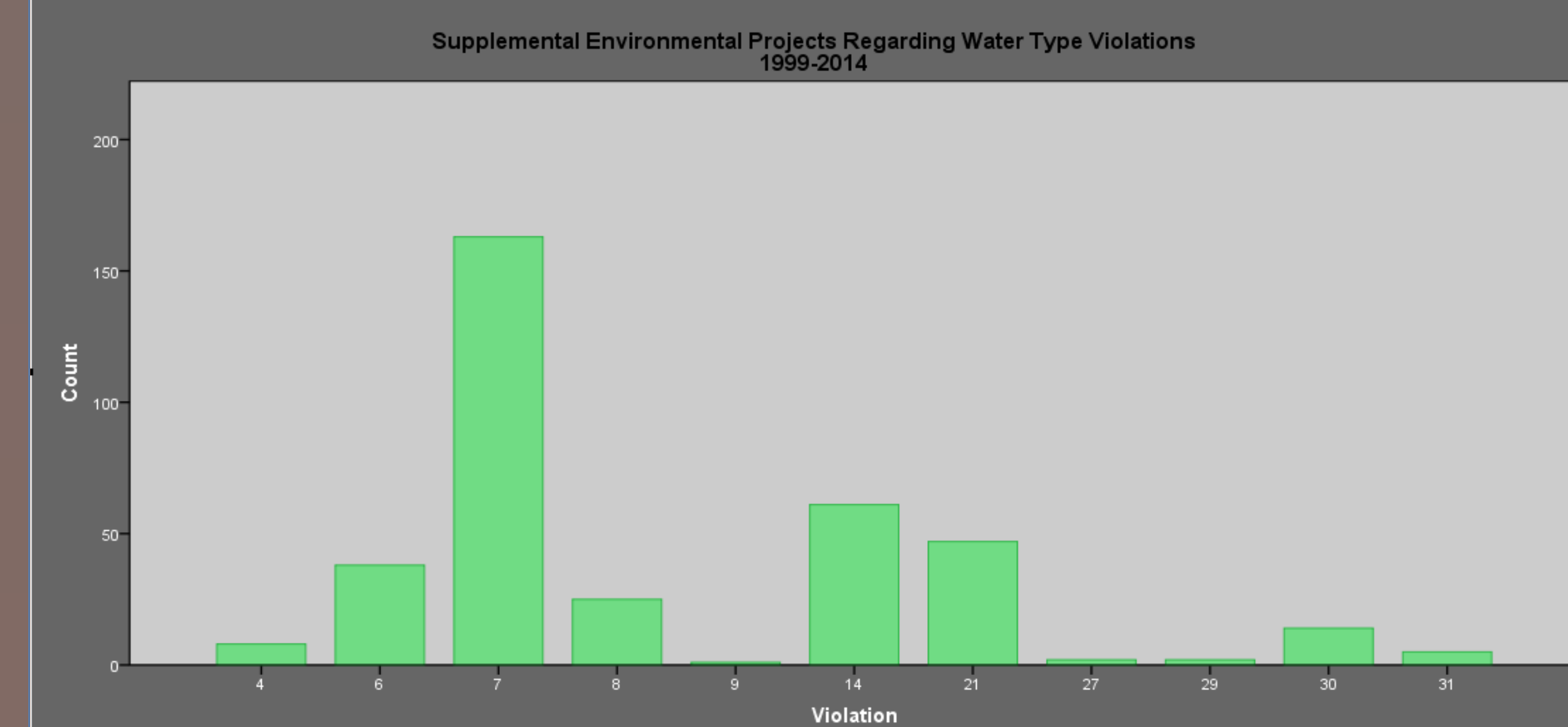
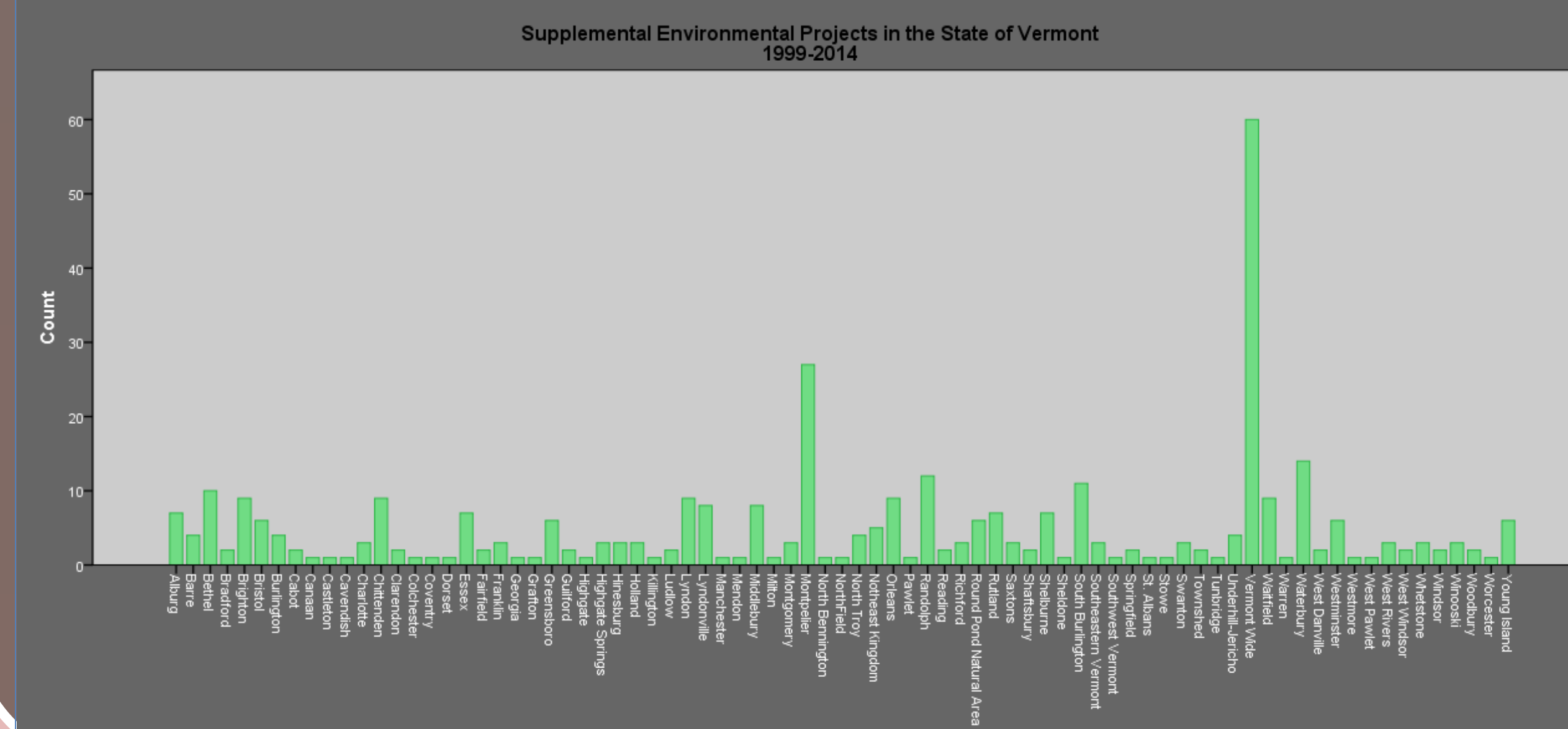
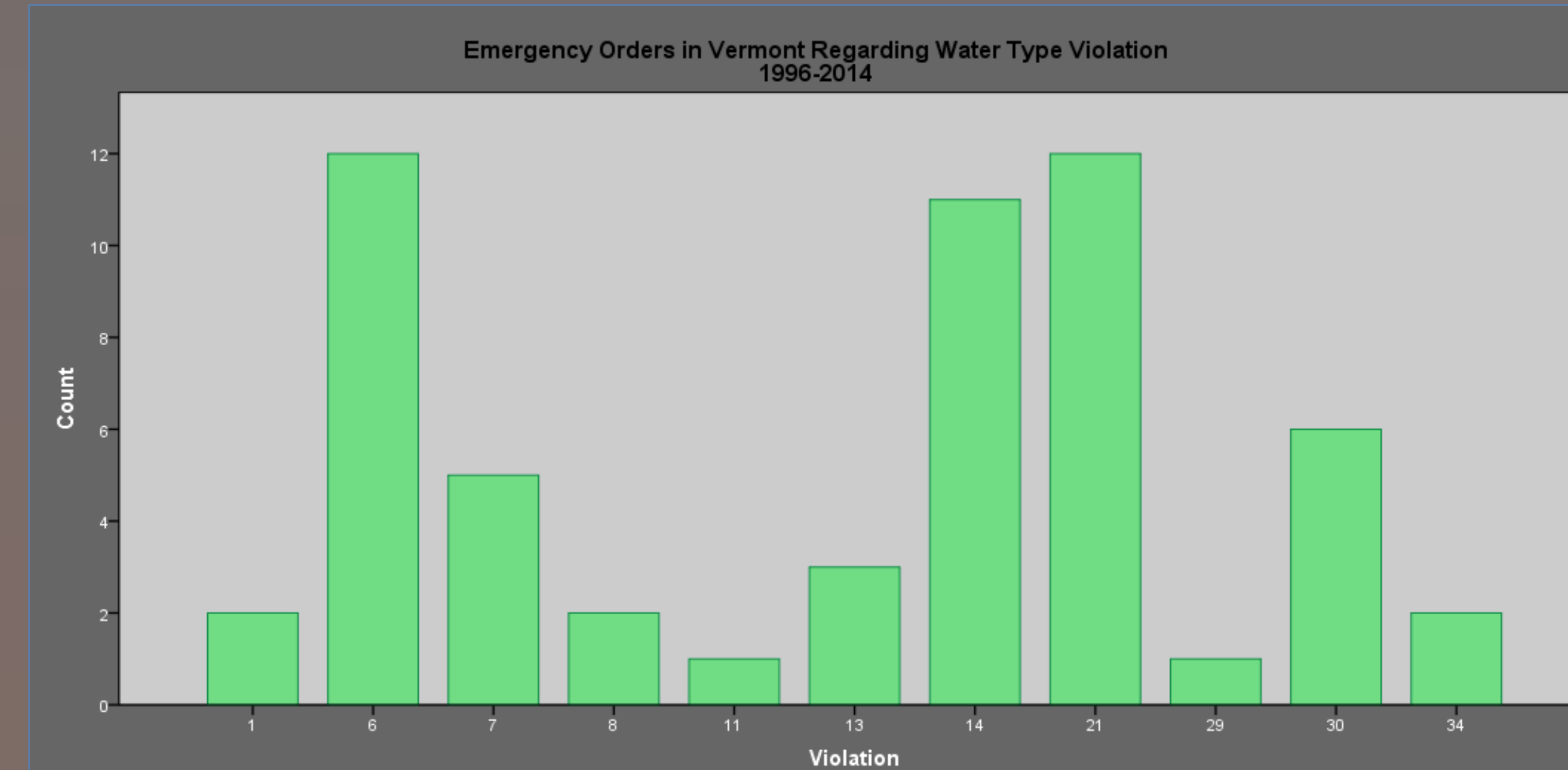
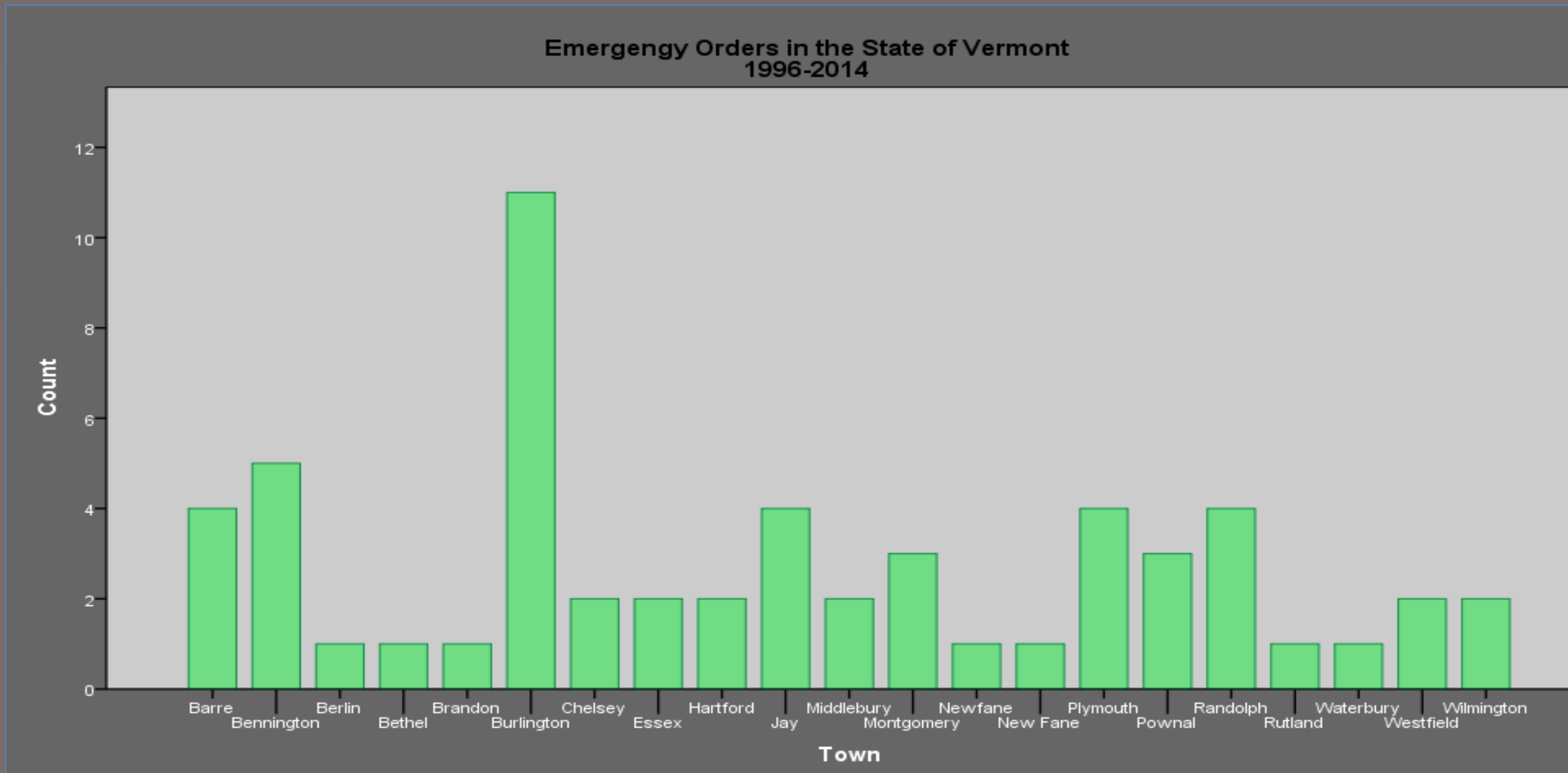
Methods

- Create a dataset of all the rules, statutes, and laws that the Compliance and Enforcement Division (CED) of the Agency of Natural Resources is legally allowed to enforce related to water quality, as well as map the process of enforcement within the Agency of Natural Resources (ANR).
- Compose a database with the Civil Complaints, Administrative Orders (AO's), Assurance of Discontinuances (AOD's), Emergency Orders (EO's) and Supplemental Environmental Projects (SEP's).
- After getting all the data organized, we started to code for type of violations and location of violation by town. Type of violations was coded with the Environmental Protection Rule Chapter number and location of the violation was coded with the name of the town.
- Use IBM SPSS Statistics 22 to analyze the data and make the graphs.
- With this new data, we were able to identify patterns between 1996- 2013 and by town in Vermont.

Results



DEC Division	Env. Prot. Rule Ch.	Rule Name
Drinking Water & Ground Water Protection	12	Groundwater Protection Rule and Strategy
Drinking Water & Ground Water Protection	14	Indirect discharge Rules
Drinking Water & Ground Water Protection	15	Well Driller Licensing Rule
Drinking Water & Ground Water Protection	24	Groundwater Withdrawal Reporting and Permitting Rule
Drinking Water & Groundwater Protection	21	Water Supply Rule
Drinking Water and Groundwater Protection	1	Wastewater system and Potable Water Supply Rules
Drinking Water and Groundwater Protection	11	Underground Injection Control
Waste Management & Prevention	6	Solid Waste Mgmt Rules
Waste Management & Prevention	7	Hazardous Waste Management
Waste Management & Prevention	8	Underground Storage Tank Regulations
Waste Management & Prevention	9	Aboveground Storage Tank
Waste Management & Prevention	10	Deposits for Beverage Containers
Watershed Management Division	4	Wastewater Facility Operator Certification Regulation
Watershed Management Division	13	Water Pollution Control Permit Regulations (1974) (amendment 1991)
Watershed Management Division	16	Water Withdrawals for Snowmaking
Watershed Management Division	17	Wasteload Allocation Process Rule
Watershed Management Division	18	Stormwater Mgmt Rule- Stormwater for Unimpaired Water
Watershed Management Division	22	Stormwater for Impaired Water
Watershed Management Division	27	Stream Alteration Rule
Watershed Management Division	29	Water Quality Standards
Watershed Management Division	30	Vermont Wetland Rules
Watershed Management Division	31	Rules for Determining Mean Water Level for Lakes and Ponds
Watershed Management Division	32	Use of Public Waters Rule
Watershed Management Division	33	Surface Level Rules



Conclusions

In conclusion, there are areas of Vermont that have more frequent water related environmental enforcement violations than others. This only represents *where* the violations occurred, not *who* violated the regulations. Violators, in most cases, are industry or individuals located in these towns. Through cross referencing top violator counts from the AODs, SEPs, EOs, and CCs (not pictured), eight towns in Vermont were identified as frequent violators. These towns include:

- Barre
- Bennington
- Brighton
- Burlington
- Randolph
- Rutland
- South Burlington
- Waitsfield

The most frequent violations overall were:

- Solid Waste Management Rules
- Indirect Discharge Rules
- Water Supply Rules
- Hazardous Waste Management Rules

Next Steps

The next logical steps for research would be to take the locations of these violations and map them against areas with water quality issues. Water quality is of high concern in Vermont and these next steps could identify areas that are not experiencing rigorous enough enforcement to make water quality a priority.

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