

# Mapping Access to Vermont's Prescription Drug Disposal System

## Introduction

The widespread opioid crisis has highlighted the relationship between prescription opioid misuse and lifelong drug misuse, opioid use disorder, and overdose death. In 2015, 11.5 million adults in the US reported misusing opioid painkillers, and of those, approximately 49% accessed those medications through friends or family.<sup>1</sup> Safe medication storage education and prescription drug disposal programs are methods currently in place to minimize the risk of prescription drug misuse.

In 2015, Vermont established a statewide drug disposal system to prevent drug diversion and increase the public's awareness about safe disposal practices for prescription medications. Kiosks for medication drop-offs are located at law enforcement facilities, pharmacies, and hospitals. This disposal system is one of many efforts by the state to encourage safe drug disposal and minimize the potential for medication misuse.

This project aims to integrate data about the prescription drug disposal kiosks, population demographics, and community awareness to better understand the reach and accessibility of Vermont's statewide Prescription Drug Disposal System. Insights about the distribution and accessibility of this disposal system could potentially point to regions of Vermont that could benefit from having a disposal site or alternate methods for safely disposing of prescription medications.

## Methods

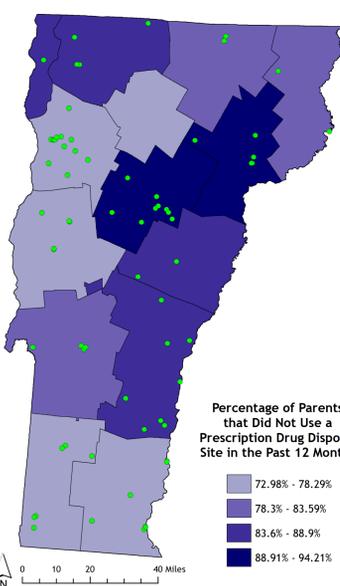
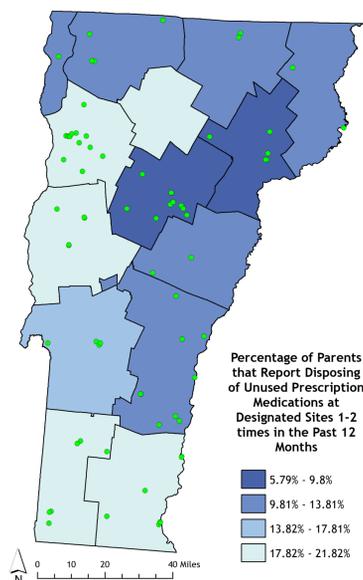
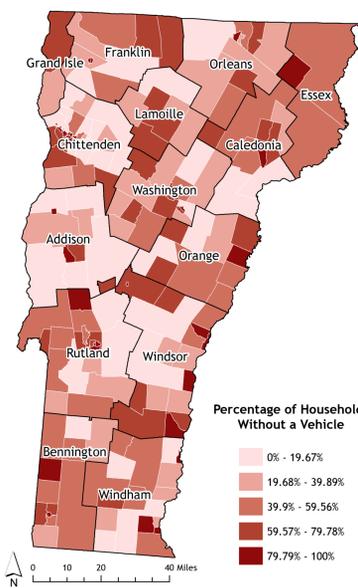
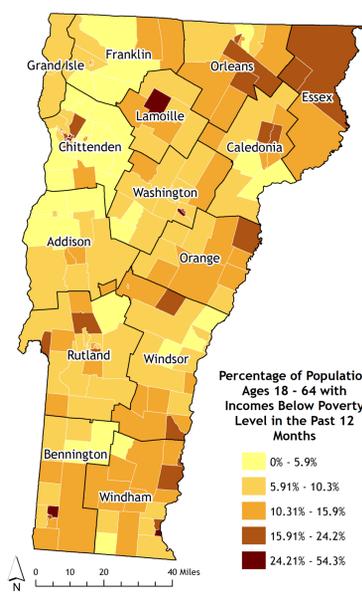
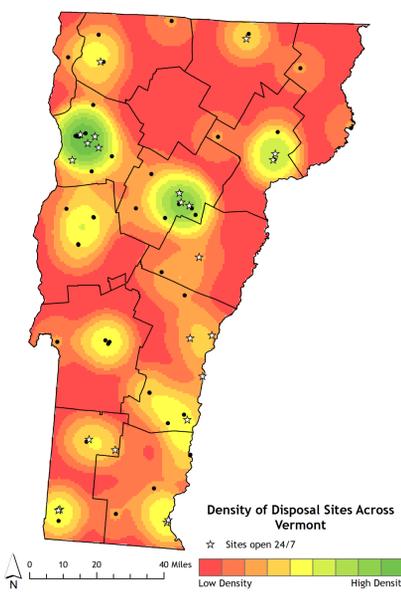
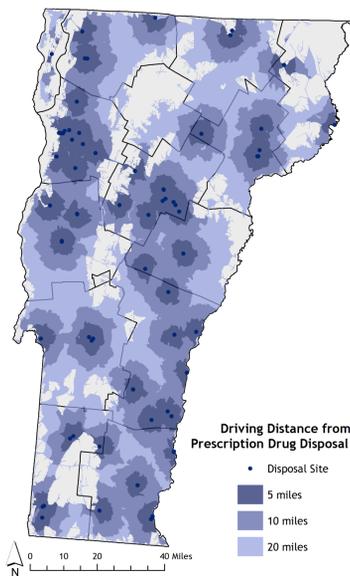
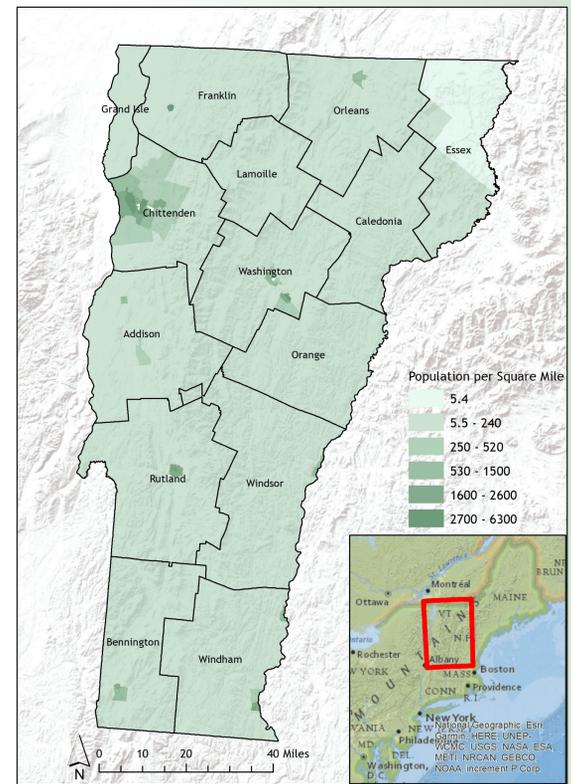
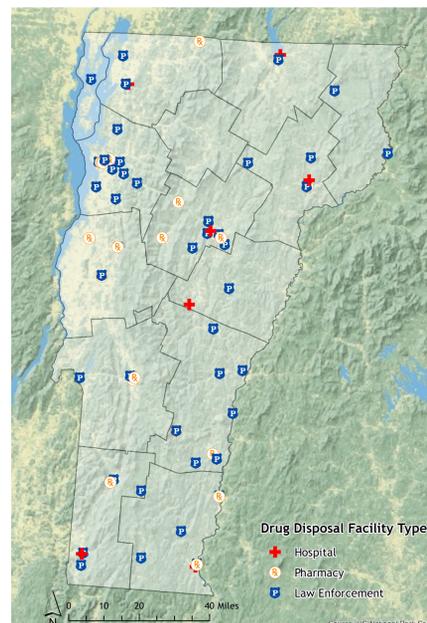
Drug disposal site information from 2018 were provided by the Vermont Department of Health (VDH). These data included information about each site's address, facility type, hours of operation, and types of products accepted. The addresses of these disposal kiosks were geocoded with data from the US Census Bureau's 2018 TIGER/Line reference files. Kernel density mapping was also used to show the density and distribution of disposal kiosks.

After disposal locations were geocoded, a network analysis was performed to determine the accessibility of these sites from three different driving distances.

To better understand socioeconomic factors that may influence access to and usage of disposal sites, census tract-level population data were obtained from the US Census Bureau's American Community Survey, 5-year estimates (2013-2017) and Vermont's Social Vulnerability Index from the VDH Environmental Public Health Tracking Program. Factors of interest were populations with incomes below the poverty level and households without access to a vehicle.

As a rough method of estimating the levels of community awareness and utilization of the prescription drug disposal system, survey responses to the Vermont Parent Survey of 2017 from the Pacific Institute for Research and Evaluation (PIRE) were incorporated. Response data were aggregated at the county level to preserve anonymity.

Reference: Koh HK. Community-Based Prevention and Strategies for the Opioid Crisis. *JAMA*. 2017;318(11):993-994. doi:10.1001/jama.2017.13767



Due to small sample sizes, response data represented in Essex and Orleans counties and Franklin and Grand Isle counties are combined.

## Results

Of the 84 disposal kiosks around Vermont, the geocoding process was able to locate 71. Overall, there is a widespread distribution of kiosks accepting prescription drugs across the state. The majority of disposal sites are law enforcement facilities, and approximately one fourth of all sites are available 24/7.

Vermont's population distribution over a large area of land highlights the challenges residents face in accessing and using the prescription drug disposal kiosks. Most of the sites are concentrated in Chittenden and Washington counties, particularly in regions with a higher population density. On the other hand, no sites exist within Lamoille county. While disposal kiosks can be accessed within a 20 mile drive from most areas of Vermont, there are other pockets of rural or sparsely-populated areas with low income and low access to vehicles that lack reasonable access to disposal sites, such as northern Essex county and eastern Orange county.

Additionally, the Vermont Parent Survey found a fairly high level of awareness about the existence of drug disposal kiosks. However, the maps demonstrating recent usage of disposal sites found low utilization among parents.

## Discussion

Based on this preliminary view of Vermont's statewide drug disposal system, additional efforts ought to further investigate the accessibility and effectiveness of this disposal strategy. Due to the recency of Vermont's adoption of this disposal system, current data about the usage of disposal kiosks and disposal counts are not available and not representative for state. Additionally, this assessment does not take into account other efforts taking place in the state to increase safe disposal practices, including but not limited to medication mailback programs, law enforcement medication collection projects, DEA Drug Takeback days, and community programs.

Limitations of this project include data with limited sample sizes, lack of utilization rates for each facility, and a network analysis that should ideally be represented as drive-time areas. Future analysis efforts should compare usage rates across types of facilities, incorporate medication mailback contributions, and include additional responses from both the Vermont Parent Survey and the Young Adult Survey. Eventually, an analysis of the impacts of Vermont's safe drug disposal efforts within the context of accessibility, utilization, and potentially measures for prescription medication misuse or drug diversion, would be compelling.