



# Evaluation and Impact Assessment of Virginia's REVIVE! for First Responder Training Program 2021 Update Report

Center for Urban and Regional Analysis, VCU

September - 2021



**VCU**

Center for Urban and Regional Analysis  
L. Douglas Wilder School of Government and Public Affairs



**VIRGINIA ASSOCIATION  
of CHIEFS of POLICE  
& Foundation**



**Virginia Department of  
Behavioral Health &  
Developmental Services**

# Evaluation and Impact Assessment of Virginia's REVIVE! Training Program: 2021 Update

Prepared for:  
Virginia Association of Chiefs of Police and Foundation (VACP)  
And  
Virginia Department of Behavioral Health & Developmental Services (VDBHDS)

September 2021

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Cover photo:  
Tiernan, Bill. "REVIVE kits carried by all Virginia Beach police officers". The Virginian-Pilot, as appears on an article by Jane Harper on December 12, 2016.  
[https://www.pilotonline.com/news/crime/article\\_ff2ac9df-99c7-5d27-bb51-8c735f48f24f.html](https://www.pilotonline.com/news/crime/article_ff2ac9df-99c7-5d27-bb51-8c735f48f24f.html)

## Acknowledgment

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## About the Wilder School

The L. Douglas Wilder School of Government and Public Affairs at Virginia Commonwealth University informs public policy through cutting-edge research and community engagement while preparing students to be tomorrow's leaders. The Wilder School's Center for Public Policy conducts research, translates VCU faculty research into policy briefs for state and local leaders, and provides leadership development, education and training for state and local governments, nonprofit organizations and businesses across Virginia and beyond.

## About CURA

The Center for Urban and Regional Analysis (CURA) is the economic and policy research center of the L. Douglas Wilder School of Government & Public Affairs at Virginia Commonwealth University. The Center serves stakeholders and organizations at all levels of focus, providing information systems support, program impact analysis, public policy evaluation, targeted investment models, and strategic plans to state agencies, regional and metropolitan organizations, planning districts, cities, counties, and towns, as well as businesses and non-profit organizations.

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## Abbreviations

AAGR	Average Annual Growth Rate
EMS	Emergency Medical Service
LE	Law Enforcement
OD	Overdose
OONE	Opioid Overdose and Naloxone Education
VACP	Virginia Association of Chiefs of Police and Foundation
(V)DBHDS	Virginia Department of Behavioral Health and Developmental Services

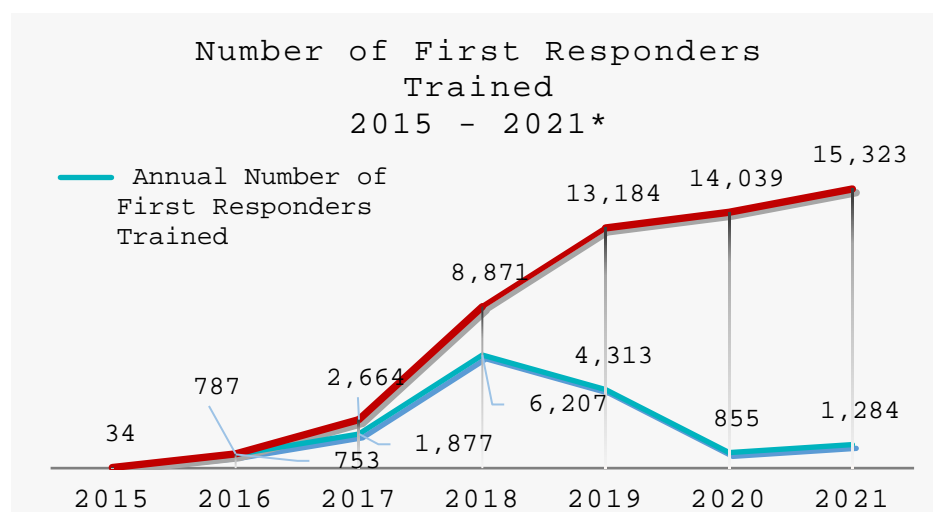
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## Executive Summary

Opioid Overdose and Naloxone Education for Virginia program (OONE), more commonly referred to as the REVIVE! for First Responders program was implemented in 2015. REVIVE! provides training to first responders including law enforcement officers, fire fighters, and private citizens on symptoms recognition and response to opioid overdose emergencies. All trainings cover the basics of opioids, how opioid overdoses occur, the risk factors involved with an opioid overdose, and how a person should respond to an opioid overdose with Naloxone. The trainees are expected to administer Naloxone upon arrival at the scene of incidence and help reverse physical symptoms of opioid overdose instantaneously. The REVIVE! for First Responders training program was run by DBHDS from 2015 to 2019 and provided training to 14,031 first responders. The VACP has been managing the training program since March of 2020. This update report was prepared in September of 2021 to review the output and outcome of the REVIVE! for First Responders program activities from 2020 to the third quarter of 2021.

The Center for Urban and Regional Analysis (CURA) at Virginia Commonwealth University received a request from Virginia Association of Chiefs of Police and Foundation (VACP) to conduct the updated analysis building upon the comprehensive report that was prepared in September of 2020. CURA used quantitative modeling methods in the 2020 report to evaluate the impact of the REVIVE! program before and after the program was launched. This update report follows a slightly different approach since the objective of this study is to evaluate the continuation of the trend since the last reporting period and to understand strengths, shortcomings, and consideration for future course correction of the program. We have used a combination of quantitative and qualitative methods to achieve that goal. The following is a list of important findings from the 2021 evaluation.



- 2,139 First Responders were trained under Virginia's REVIVE! program in 2020 and 2021. Due to the setbacks caused by the COVID-19 pandemic, only about 855 first responders were trained in 2020 but the number ramped-up to 1,284 in 2021, most of which were trainings conducted over remote meeting platforms.
- Death due to opioid overdose increased by 1.5 times between 2019 and 2020, and by about 1.8 times between 2020 and 2021. By 2021, the overdose death rate has more than doubled (2.6 times) compared to what it was in 2019 (before the Covid-19 pandemic).
- Central Virginia, South, and Southwest part of the Commonwealth saw the highest number of REVIVE! trained first responders in 2020 and 2021.
- The same regions also reported among the highest overdose deaths per 1,000 people during the two-year period. The geographic distribution of REVIVE! training is starting to correlate better with locations reporting higher overdose deaths during the 2020-21 period compared to the previous years. The location and number of training offerings look more strategically placed compared to before. Although, there is still some room for more strategically targeted trainings.
- Most Virginia localities show good correlation between the number of first responders trained and the rate of overdose death reported. Although, we have identified some localities that have disproportionate share – more trainees where overdose death rates are relatively lower, or less trainees where overdose deaths are relatively higher. We recommend that VACP focus their training activities in some of those identified localities and make course corrections when necessary based on the prevalence of overdose and overdose related deaths in the most recent years.
- Two-third of first responders participated in REVIVE! training voluntarily. Almost two-third took the training through virtual meeting platforms.
- About two-third of the participants were very satisfied with their trainers and the level of expertise/experience they brought to the training. The participants were also satisfied with the training materials, although some participants suggest that there is some room for improvement.
- Participants felt more confident is administering Naloxone and using their newly acquired skill to train other participants in the future.
- Participants suggested that the hybrid model of training (in person with remote option) be continued even after the impacts of the Covid-19 pandemic are gone. They suggested that hybrid model will allow for more people to participate in new or re-training exercises.
- Significant improvement in confidence and positive attitude towards Naloxone administration was noted by comparing participant responses taken before and after training sessions.
- The following are some highlights from the survey responses that summarize the importance and effectiveness of the program:



"It has empowered me to teach officers, to empower them to help save a life"

"This program is an asset to the [agency name]. In my current position, I have not administered Naloxone, however, I have been in the field and witnessed first-hand countless citizens being Revive(ed) after a drug overdose. Many have thanked the officers for saving their lives. Hence, the reason why I volunteered for the train-to-trainer course."



## Background

In 2015, the Opioid Overdose and Naloxone Education for Virginia Program (OONE) was established following a 2014 executive order signed by Governor McAuliffe. This program, more commonly known as REVIVE! for First Responders, and aims to provide training to Virginia's first responders, as well as to everyday citizens, on how to recognize and respond to opioid overdoses.

REVIVE! Includes three types of training: Lay Rescuer Training, Lay Rescuer Training of Trainers, and a separate training specifically for first responders. All three of these trainings include basic information about opioids, how overdoses occur, risk factors that may lead to increased chances of an opioid overdose, and how to administer Naloxone in response to an opioid overdose. In addition, those who completed the REVIVE! training in October 2019 and later receive a free Naloxone kit upon successfully completing the training.

During the summer of 2020, the Center for Urban and Regional Analysis (CURA) at the Virginia Commonwealth University L. Douglas Wilder School of Government and Public Affairs was contracted by the Virginia Association of Chiefs of Police (VACP)<sup>1</sup> to conduct an evaluation of the REVIVE! Program and its perceived effectiveness in reducing deaths related to opioid overdoses in Virginia. The 2020 report was the first of its kind in evaluating the impact of the REVIVE! Program and in which we studies 10 years of historical data on opioid overdose related deaths in Virginia – prior to and after the implementation of the program – to measure significant changes. We found that annual average rate of opioid related deaths were significantly reduced after 2017 which also coincides with significant number of REVIVE! trained first responders and distribution of free Naloxone. The 2020 study also highlighted Virginia counties that showed higher number of deaths per capita and corresponding REVIVE! training activities in those areas.

Key quantitative findings from the 2021 CURA report include:

- The number of overdose deaths in Virginia has been on the rise since 2012. However, the growth rate after 2017 is considerably lower than that between 2012 and 2016.
- Localities with higher number of REVIVE! trainees have reported steeper reduction in growth rate compared to localities with fewer REVIVE! trainees.
- Larger cities and counties where there are substantially more first responders trained under the REVIVE! program compared to smaller localities have reported the maximum reduction in overdose death rates.
- Localities with the lowest number of REVIVE! trainees and historically low overdose deaths show no change in death rates in pre- and post- REVIVE! timelines.

CURA concluded that REVIVE! did have some impact on reducing overdose related death rate in Virginia. While the findings were encouraging, the post-REVIVE! time period was only 3-years long and it was difficult to assess if the more recent trend was just a random phenomenon. It was recommended that the evaluation be continued over a longer period of time to improve confidence in statistical measures.

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<sup>1</sup> VACP is also the sponsor of this study.

The study also included a qualitative component to better understand participant perceptions of the program and avenues for improvement. Some of the key qualitative findings from the 2020 report are presented below:

- While some participants took the training voluntarily and for others it was a mandatory part of their job, all reported that they were happy to have the opportunity and were willing to participate.
- Some participants felt that the training should be offered to a greater number of people, perhaps as part of police academy training.
- Participants suggested expanding the training to other groups such as tow truck drivers and those working at funeral homes who could help save lives.
- Creating a virtual training option, even after the coronavirus crisis has ended, could expand the program's reach and make it more attractive to people around the commonwealth.

Like the quantitative findings, the qualitative findings were also encouraging. Areas of success as well as opportunities for improvement were noted by past program participants, yet even those with recommendations for improvement would still recommend the program to others.

Following the 2020 report, the CURA team was contracted by VACP in 2021 to conduct a follow-up evaluation of the REVIVE! program. This includes updates to the 2020 quantitative analysis to better understand the impact of the REVIVE! program on lives saved, as well as an evaluation of survey data collected by VACP on perceptions of the program. The updated study focuses on evaluating training activities in 2020 and compare that to the historic trend while considering the impacts due to COVID-19 related social distancing protocols adopted across the Commonwealth discouraging on-location training activities.

2020 was an outlier in terms of opioid abuse and deaths. Reported drug overdose deaths increased by about 30 percent in the 12-month period between March 2020 to March 2021 compared to the previous year, with an all-time high of estimated 100,000 deaths nationwide<sup>2</sup>. Virginia reported a 40 percent increase in opioid-related deaths in 2020 with a total 2,186 reported deaths compared to 1,538 in 2019<sup>3</sup>.

In 2021, Virginia Association of Chiefs of Police and Foundation (VACP) - the organization that manages the REVIVE! for First Responders training program - requested the Center for Urban and Regional Analysis at Virginia Commonwealth University to update the study with the most current data and evaluate program performance through quantitative method and also by using the survey of program participants. The following sections highlight the methodological approach and findings from the updated study.

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<sup>2</sup> <https://www.cnn.com/2021/10/13/health/overdose-deaths-march-2021/index.html>, retrieved on 11/15/2021

<sup>3</sup> <https://wset.com/news/addicted-america/virginia-drug-overdose-deaths-rose-more-than-40-in-2020> retrieved on 11/15/2021



## Objective

This update report builds on the study conducted by CURA in 2020 and it seeks to evaluate the changes since the last reporting period. The effectiveness of the REVIVE! for First Responders program is measured by tracking the program output (number of first responders trained) during the reporting period, and the program outcomes – a reduction in the number of reported overdose deaths. Additionally, the program's effectiveness has also been assessed through a survey of training participants. Following are the three core objectives of this update report.

- Evaluate the trend in program output (number of trainees) with reference to the trend reported in the 2020 report,
- Evaluate the trend in program outcomes (reported overdose deaths) since the 2020 reporting period<sup>4</sup>
- Evaluate the program's effectiveness from the perspective of program participants as collected through the survey administered by VACP.

## Research Methodology, Data Sources, and Limitations

The total number of first responders trained through the REVIVE! program is the variable representing program output. VACP provided us the comprehensive training data from 2015 through 2021 in electronic format. The data included information on the type of the training – e.g. Rescuer, Trainer, Master Trainer, etc., training date, trainer name, trainee name, name of the organization where the trainee works, and geographic location of the trainee. The database also mentions the location of the organization where the trainee belongs to, and this location has been assumed to be the primary service location of the trainee and matched with the corresponding geographic identifiers. We compared all 132 localities<sup>5</sup> in Virginia to better understand trends and gaps in REVIVE! Training and overdose related deaths.

The CURA team performed further data cleaning by removing multiple entries for the same trainee under the same trainer and on the same date. During the cleaning process, special consideration was given to the individuals coming for a refresher training or those registering into multiple training categories. A new field combining individual IDs and the date of training was created and multiple entries for the same combination of person, date, training type, and training location were removed.

Death due to drug overdose is our outcome variable. We obtained the data from the Virginia Department of Health's Office of the Chief Medical Examiner which prepares and maintains a

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<sup>4</sup> We understand that using this measure to evaluate program output could be affected by the post-COVID 19 surge in drug overdose and overdose-related deaths. We also acknowledge that there are no alternative quantitative measures of program outcome available in the public realm at the time of this reporting.

<sup>5</sup> Virginia has 133 localities (Counties and Independent city) in total. We aggregated Fairfax City's data with Fairfax County due to the former's insignificantly small numbers.



public repository of opioid related death database for the Commonwealth <sup>6</sup>. We used historical data from 2015 to 2021 for this update report.

In order to maintain methodological consistency with the previous report, this study uses average annual rate of change in the output and the outcome variables to compare the growth trend of the current reporting period with that of the historical trend between 2015 and 2020. We first calculated year-to-year percentage change and then calculated average of the growth rate for the corresponding period. The AAGR method used here can be summarized by the following equation:

$$AAGR = \frac{GR_{[2,1]} + GR_{[3,2]} + GR_{[4,3]} + \dots + GR_{[t,t-1]}}{N}$$

Where, *GR* is the rate of change in the aggregate number for each individual year compared to the previous year, and *N* is the total number of years included in the calculation. We compared the 2020-2021 growth rates with those of the prior years to make an assessment of the program's output and outcomes in the most recent two years impacted by Covid-19 pandemic.

Finally, evaluation of the program's effectiveness was done using the perspective of program participants, using the survey data collected by VACP. Seventy-two trainees participated in this survey, which included questions related to:

- Reasons for attending the training,
- Overall satisfaction with the training and content,
- Overall satisfaction with the trainers,
- Perceptions of the training (likes, dislikes, and areas of improvement),
- Comfort with and perceptions of naloxone administration following the training,
- Frequency of naloxone administration following the training, and
- If participants would recommend the training to others

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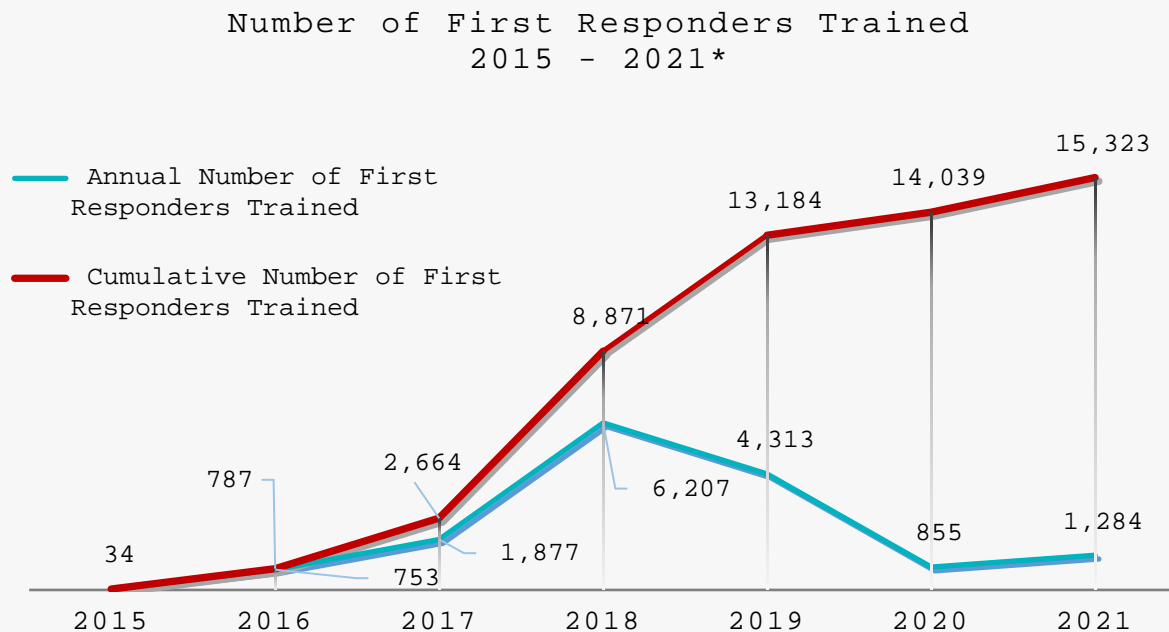
<sup>6</sup> <https://www.vdh.virginia.gov/medical-examiner/forensic-epidemiology/>

# REVIVE! Training and Opioid Overdose Trends in Virginia

## REVIVE! Training Statewide Trend

Figure-1a represents the annual and cumulative trend in REVIVE! for First Responders Training in 133 Virginia localities from 2015 to 2021\*. The number of first responders trained through the program grew consistently between 2015 and 2018 with the highest reported 6,207 trained in the year 2018 alone. The trend plateaued in 2019 with a total of 4,313 trainees and a sharp drop in 2020 to a total of 855 trainees. It should be noted that after the first quarter of 2020 the on-site training activities were stopped due to the pandemic caused by COVID-19.

Figure 1.a

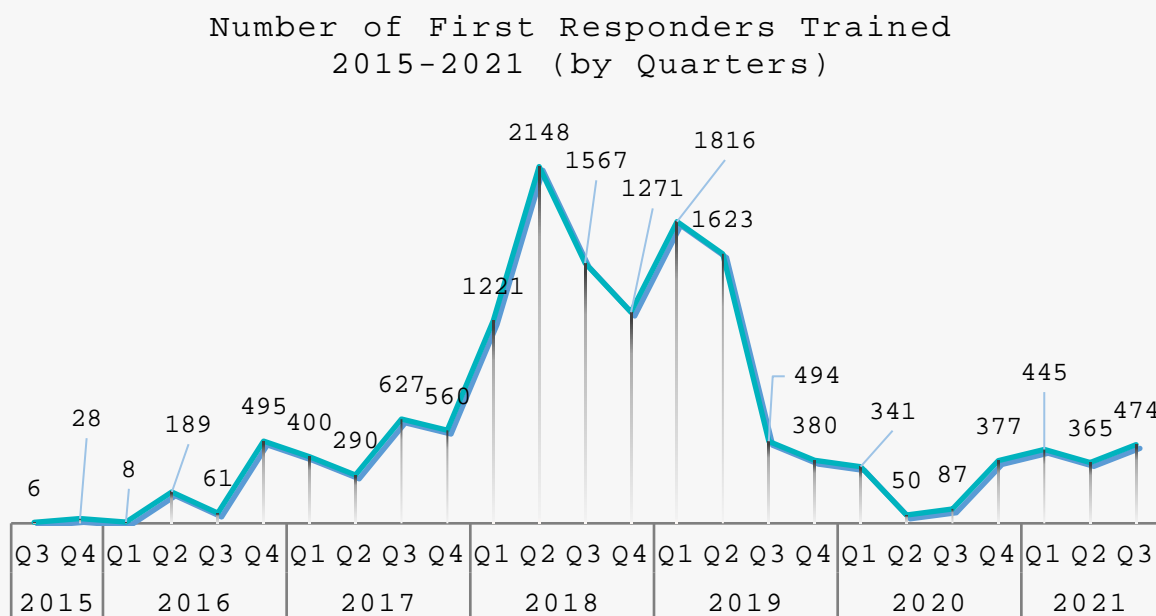


\* REVIVE! trainee data for 2021 is available through Q3 (up to September 2021).

The cumulative aggregate of trainees between 2015 and the third quarter of 2021 across all localities has grown from 34 to 15,323. Understandably, during the earlier years of the program the number of trained first responders increased rapidly with an average of 235% between 2016 and 2018. In 2019, the cumulative gain was a modest 48% and in 2020 it dropped to about 6% cumulative gain. 2021 has started to show slow rebound with a cumulative gain of about 9%. In terms of raw numbers, a total of 1,284 first responders were trained in 2021, which is about 8.4% of all first responders trained over the program's history. In comparison, the share of total in 2016 was 4.9%, in 2017 was 12.2%, and in 2020 was 5.6%. The year 2018 had the highest contribution of 40.5% to the total pool of trained first responders.

Figure 1b presents the numbers by quarters to make it possible to compare the first three quarters of 2021 with the first three quarters of the prior years. A total of 258 first responders were trained in the first three quarters of 2016. The total trained during the first three quarters of 2017 was 1,317, in 2018 it was 4,936, and 3,933 in 2019. The number dropped to 478 during the first three quarters of 2020 whereas in 2021 it rebounded back to 1,284. First responders trained in 2021 make about 10.5% of all those trained during the first three quarters from 2016 to 2021. This share is comparable to that of 2017, which is about 10.8% of the total. In comparison, the total trained in the first three quarters of 2018 and 2019 make about 40.4% and 32.2% of the total respectively.

Figure 1.b





## Geographic Distribution of REVIVE! Training across Virginia Localities (2020-2021)

The top five localities with the highest total cumulative number of trainees as of the third quarter of 2021 are Chesterfield County (663), Fairfax County (645), Wise County (627), Newport News City (488), and Chesapeake City (426). Similarly, the five localities with the lowest total number of trainees as of 2021 Q3 are Charles City County (1), Colonial Heights City (2), Carroll County (2), Manassas Park City (2), and Floyd County (2). In terms of per-capita numbers, Sussex County has a total of 3.01 trained first responders per 1,000 people, which is the highest among all Virginia localities, followed by Bland County (2.33 trained per 1000 people), Grayson County (2.26), Greenville County (1.81), and Wise County (1.59). Virginia localities with the least number of trainees per 1000 people are Carroll County (0.01), City of Alexandria (0.02), Charles City County (0.02), City of Colonial Heights (0.02), and City of Falls Church (0.02). The full list of Virginia counties and the corresponding numbers of trainees are available upon request.

Figure-2a shows the geographic distribution of all First Responders trained under the REVIVE! program from its inception in 2015 until the third quarter of 2021. The color spectrum runs from 1 to 663 where lighter colors represent fewer trainees and darker color represent higher numbers. Augusta County, Chesterfield County, Chesapeake City, Newport News City, Hampton City, and Wise County show a total higher than 400 first responders trained so far. The Southern Virginia counties of Wythe, Grayson, Sussex, Greenville, and Buchanan have between 200 and 400 first responders trained under the program.

Figure-2a: Cumulative Total First Responders Trained under Revive! Program

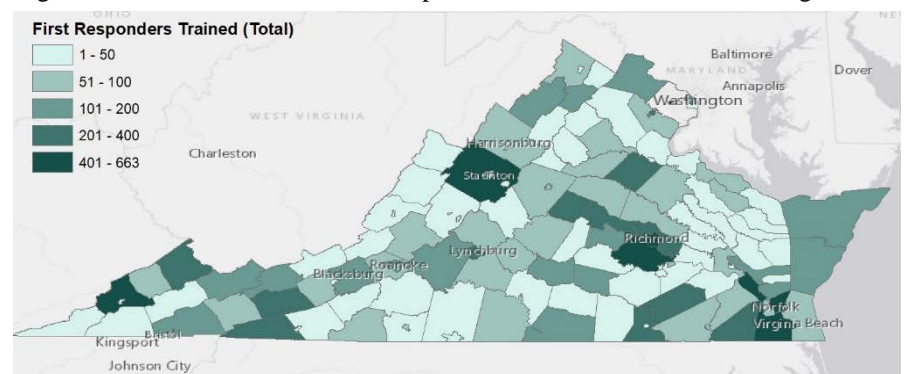


Figure-2b: First Responders Trained under Revive! Program in 2020 and 2021

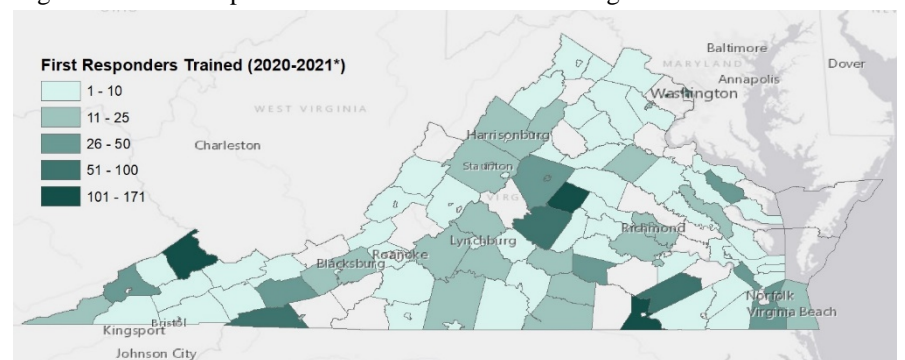


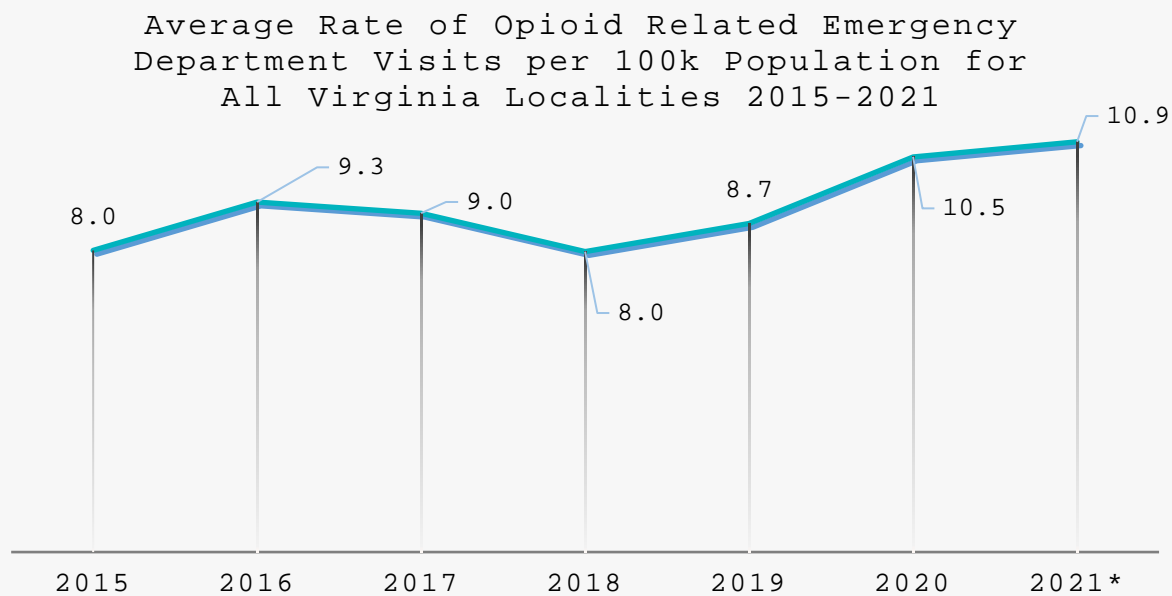
Figure-2b shows the total number of First Responders trained under the program during 2020 and 2021. Despite the challenges created by the COVID-19 pandemic, there were more than 100 First Responders trained to administer naloxone in Buchanan County, Fluvanna County, and Greenville County. Grayson County, Sussex County, and Buckingham County had 51-100 First Responders trained under the program.



## Opioid Overdose Death Trend in Virginia

We also examined overdose related deaths, and opioid related emergency department visits in 133 Virginia localities. We examined the trend in opioid related ED visits between 2015 and 2021 Q3 for all Virginia localities. The average rate of opioid related ED visits per 100k population for all Virginia localities rose between 2015 and 2016 before dropping to a low in 2018 (7.96) then subsequently increasing each year to the highest rate in 2021 Q2 (10.87). In 2020<sup>7</sup>, the counties with the highest rates of opioid related ED visits per 100,000 population was Prince George County with Scott County as the lowest<sup>8</sup> (0.77). Figure 2 shows the average rate of opioid related ED visits per 100k population for all Virginia localities between 2015 and 2021 Q2.

Figure 3: Emergency room visit due to overdose



\*Data for opioid related emergency department visits for 2021 is only available through Q2 (up to June 2021) and 2021 data was incomplete for some counties.

Figure-4 represents the rate of opioid overdose deaths per 100k population for all Virginia localities between 2015 and 2021 Q2. The overdose death rate has been consistently increasing by an average growth rate of about 20% from 2015 to 2019. It rose by about 44% between 2019 and 2020 when the death per 100,000 people went from 15.4 to 22.3. It further increased by almost 78% between 2020 and 2021 when the per 100k death rates increased from 22.3 to 39.8. And that is only when the 2021 data only includes numbers for the first two quarters. As of Q2 2021, the three Virginia localities with the highest reported rate of opioid overdose deaths per 100k population were Winchester City, Roanoke City, and Page County (233.69, 215.18, and 205.00,

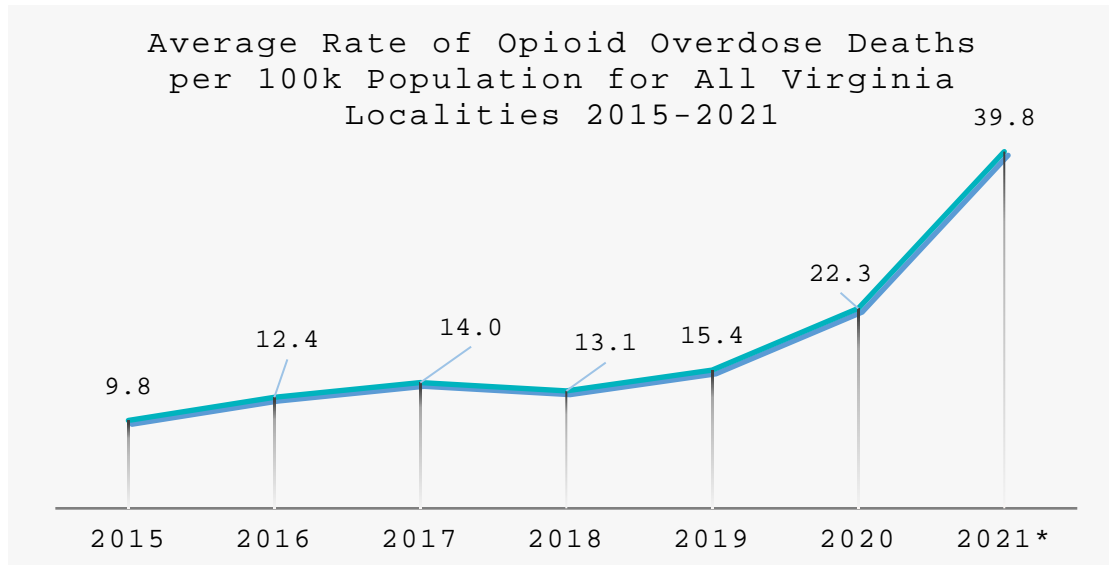
<sup>7</sup> Data from 2020 was used for comparison due to missing data for multiple Virginia localities in 2021 data.

<sup>8</sup> Two localities—Highland County and Williamsburg City—were excluded from the calculations due to significant incomplete data for 2020.



respectively). It should also be noted that all 2020 and 2021 data is likely impacted by the COVID-19 pandemic.

Figure-4: Overdose death trend 2015-2021\*

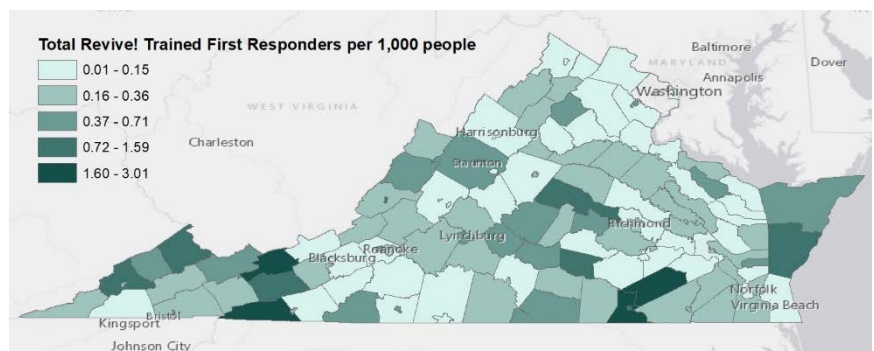


\*Data for opioid related emergency department visits for 2021 is only available through Q2 (up to June 2021) and 2021 data was incomplete for some counties.

## Geographic distribution of overdose deaths and REVIVE! training outputs

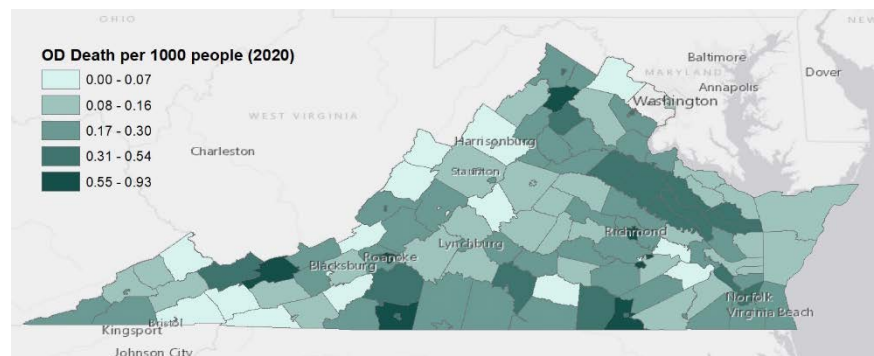
Figure-5a represents the geographic distribution of REVIVE! trained First responders per 1,000 people across Virginia. Per capita measures allows for standardized comparison across multiple variables. Sussex County, Greensville County, Bland County, and Grayson County have the highest per capita number of trained first responders ranging from 1.6 to 3.01 trained professional per 1,000 people.

Figure-5a: Trained first responders per 1,000 people



In comparison, Grayson County has one of the lowest overdose death metrics within the range of 0-0.07 deaths per 1,000 people as shown in Figure-5b. On the other hand, Bland County has among the highest death rates within the category 0.55 – 0.93 deaths per 1,000 people. Generally, larger cities in northern and central Virginia and rural counties in the

Figure-5b: Overdose deaths per 1,000 people



Southern part of the commonwealth and along the I-81 highway show darker colors in both the maps suggesting that these areas have higher reported per capita overdose deaths and there are more first responders per capita in these counties that have received REVIVE! training. In this regard, the training activities seem to be strategically focused across localities with higher need. However, there are noticeable lighter areas in the Figure-5a representing lower per capita numbers of trained first responders that correspond with darker shades in Figure-5b which represents per capita overdose deaths. These highlight the areas where the program can strategically focus their future training campaigns. A detailed table of localities with estimated gaps in training outputs and observed overdose deaths in 2020 are available in Excel format upon request.

To better understand the geographic correlation between REVIVE! trained first responders and reported overdose related deaths, we converted both the variables into natural logarithmic scale and plotted them on a scatter diagram (presented in Figure-6). Both axes in the figure are represented in logarithmic scale which suggests that the value of the numbers do not mean anything by themselves. However, where both x-axis and y-axis values are comparable, whether they are high-high or low-low, they tend to lie along or near the solid diagonal line.

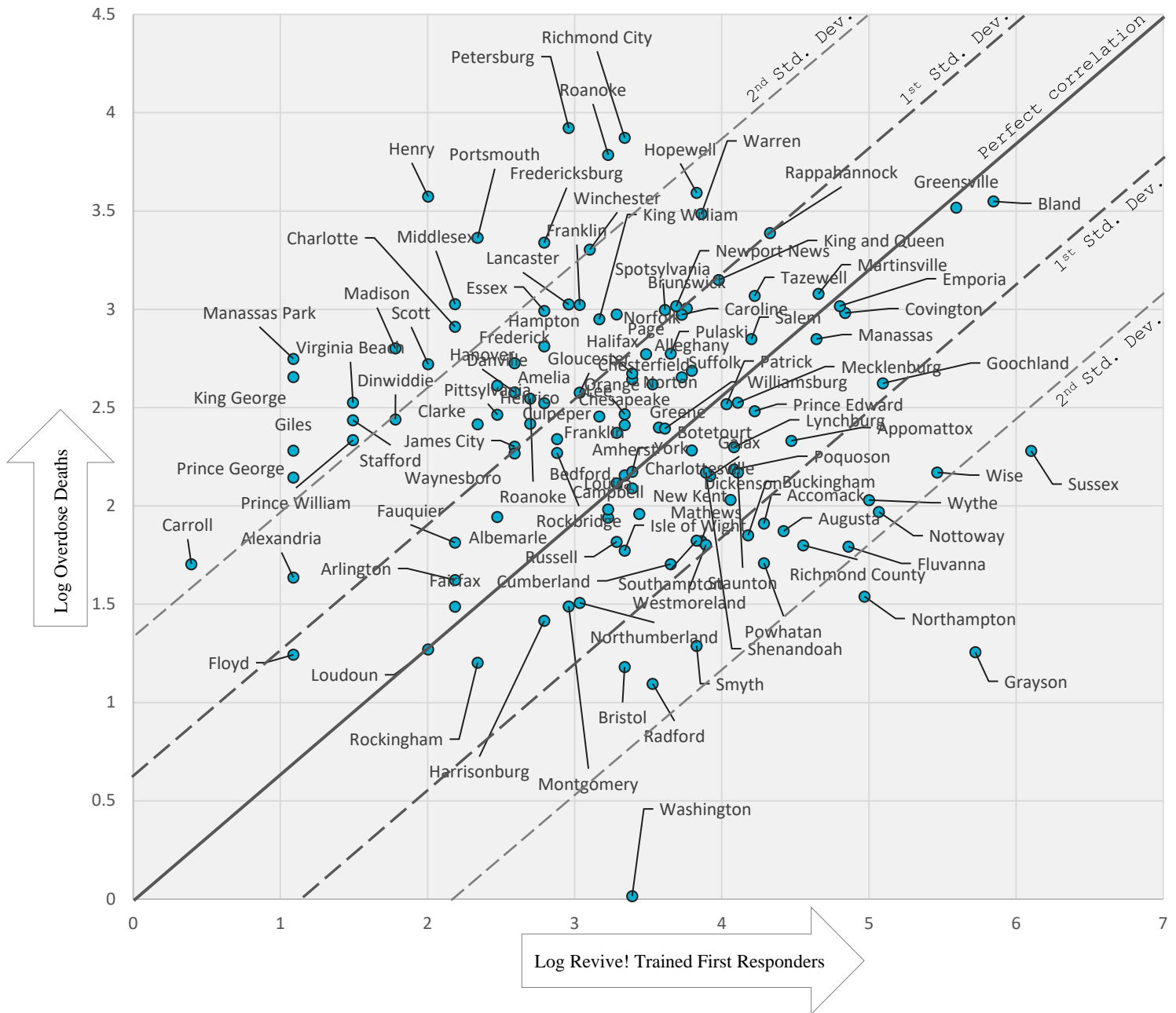
The two dotted diagonal lines represent the first standard deviation for the corresponding axes they are drawn from. Virginia localities (represented by dots) that are above the upper dotted line have relatively higher per capita overdose death rates and relatively lower per capita REVIVE! trained first responders. Similarly, localities that are below the lower dotted line have lower per capita overdose death rates but relatively higher per capita first responders trained by the program. All localities that lie along the central diagonal line and in between the two dotted standard deviation lines have relatively better balance between overdose death rates and REVIVE! trained first responders per capita.

The second dotted lines on each side represent the margin at twice the standard deviation for the corresponding axes. Virginia localities that fall outside (above) the second dotted line are those experiencing very high overdose deaths per 1,000 population which also have severely low numbers of REVIVE! trained first responders per 1,000 people. Similarly, the localities that are below the second dotted line have reported relatively lower numbers of overdose related deaths in 2020, but at the same time they have relatively higher numbers of REVIVE! trained first responders per 1,000 people.

We further calculated the Pearsons correlation coefficient between opioid overdose deaths per 1,000 people in 2020 and number of REVIVE! trainees in Q4 of 2020 and the first three quarters in 2021. We found weak correlation coefficient of .165 statistically significant at 99% confidence interval. This signifies that the training activities in late 2020 and 2021 were not necessarily guided by the rate of overdose deaths recorded in 2020. This further substantiates the need for strategic planning in rolling out REVIVE! training events.



Figure-6: Log-log plot of overdose death per 1,000 and number of REVIVE! trained first responders per 1,000 people.



## Summary of Quantitative Findings

Following are some of the highlights from the quantitative exercise:

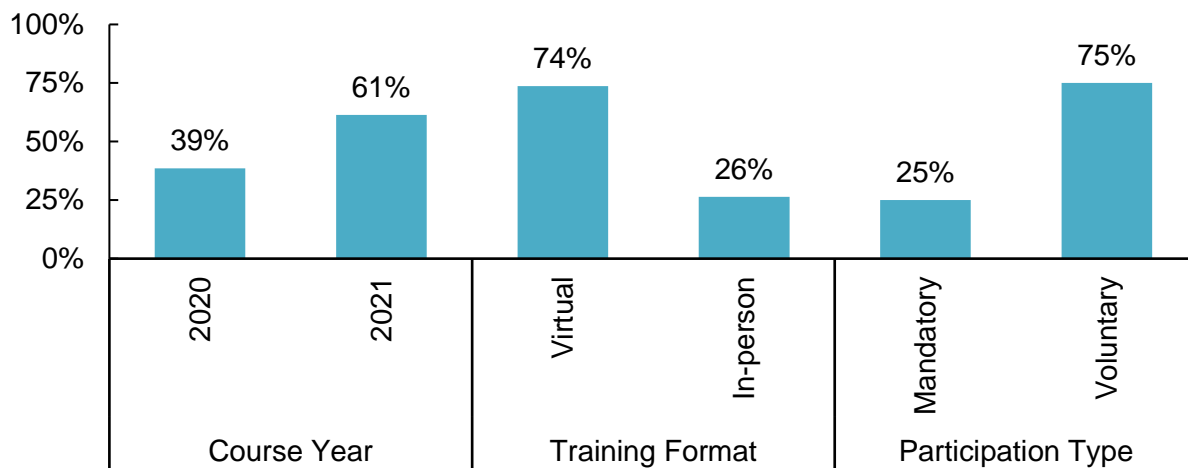
- 2,139 First Responders were trained under Virginia's REVIVE! program in 2020 and 2021. Due to the setbacks caused by the COVID-19 pandemic, only about 855 first responders were trained in 2020 but the number ramped-up to 1,284 in 2021, most of which were trainings conducted over remote meeting platforms.
- Death due to opioid overdose increased by 1.5 times between 2019 and 2020, and by about 1.8 times between 2020 and 2021. By 2021, the overdose death rate has more than doubled (2.6 times) compared to what it was in 2019 (before the Covid-19 pandemic).
- Central Virginia, South, and Southwest part of the Commonwealth saw the highest number of REVIVE! trained first responders in 2020 and 2021.
- The same regions also reported among the highest overdose deaths per 1,000 people during the two-year period. The geographic distribution of REVIVE! training is starting to correlate better with locations reporting higher overdose deaths during the 2020-21 period compared to the previous years. The location and number of training offerings look more strategically placed compared to before. Although, there is still some room for more strategically targeted trainings.
- Most Virginia localities show good correlation between the number of first responders trained and the rate of overdose death reported. Although, we have identified some localities that have disproportionate share – more trainees where overdose death rates are relatively lower, or less trainees where overdose deaths are relatively higher. We recommend that VACP focus their training activities in some of those identified localities and make course corrections when necessary based on the prevalence of overdose and overdose related deaths in the most recent years.

## Participant perception on effectiveness of REVIVE! Training

The Virginia Association of Chiefs of Police (VACP) administered a survey of all REVIVE! training participants in 2020 and 2021. 72 respondents completed the survey and were included in the analysis. We studied the survey responses by first describing the data by categories and then by performing significance tests as appropriate.

Figure-7 presents the training characteristics of the surveyed trainees including course year, training format, and participation type. 74% of trainees who participated in the survey primarily received their training virtually. 39% of the respondents completed their training in 2020 and 61% completed in 2021. 86% of those who completed their training in 2021 said they completed their training virtually compared to 56% of trainees from 2020. Similarly, 75% of respondents said they voluntarily participated in the training and 25% participated because it was mandatory for them.

Figure 7. Participant training information from survey data



Of the 72 respondents, 52 participated voluntarily. They were asked to explain their reason to participate in the training event. The responses can be summarized under the following three themes, with some participant responses falling into multiple categories:

- A desire to increase their personal knowledge and skills (54 percent),
- A desire to save lives and help others (31 percent), and
- A desire to help support their agency or department (29 percent).

Those who reported a desire to increase their personal knowledge and skills expressed an interest in the topic as well as the desire to be able to pass on these skills to others. About 38 percent of the participants stated that they hoped to be able to train others in the future. Others expressed a desire to help others while also building their own skills. For example, one participant stated that they took the training to “[b]etter [themselves] as an officer and to be able to provide assistance in the outside world if needed.” This was a common sentiment across most responses.



Other participants felt that the REVIVE! training could supplement other trainings that they received; for example, three participants stated that they already taught CPR and/or other medical training, and that this would be another useful skill to have under their belt.

Those who primarily expressed a desire to save lives and help others were supportive of the program and seemed to believe in the work being done. As one participant stated: *"I understood the importance of REVIVE! training and the need for Narcan in the City of Petersburg."* Similarly, another participant stated that their *"...department was in need of a new trainer and I really support this program and have seen how much it helps first responders."*

One of the common themes across most responses was the importance of taking the training to be able to help their agency or department, with many noting that they hoped to assist their agency or department by providing new information and by being able to pass on information to others.

Another prominent theme gleaned from the qualitative responses focused on the participants' desire to assist their agency or department by administering Naloxone. For example, one participant said that they took the training *"to be better prepared to assist in the event of an OD and to train others."* Another stated that they *"wanted the ability to pass along this knowledge that could help save lives."*



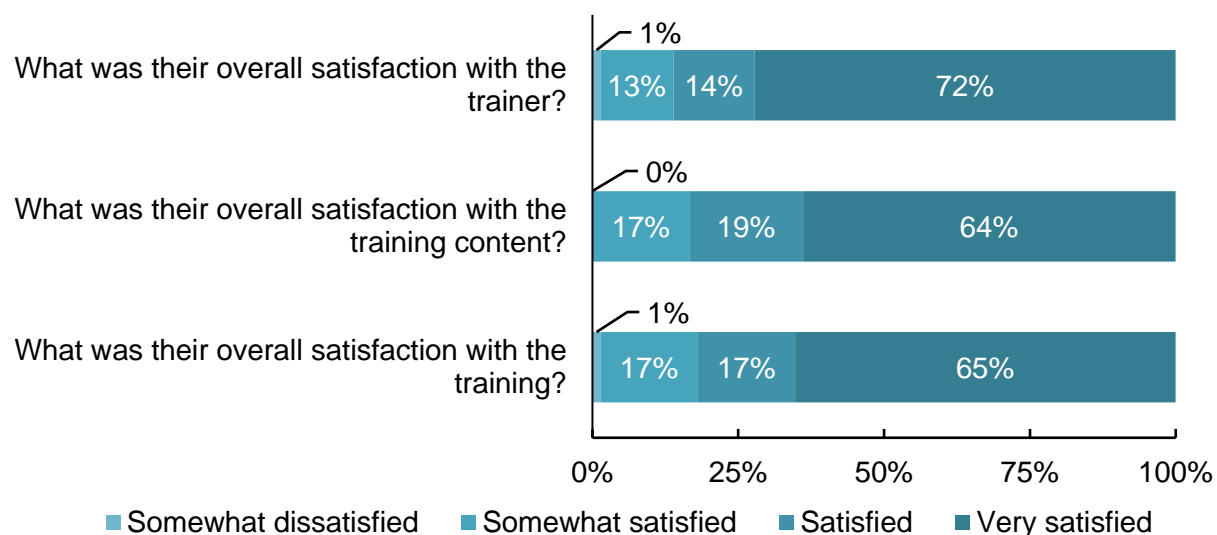
Stephanie Diaz and Danielle Noon from VACP conducting a presentation at the VACP Women in Law Enforcement Conference

## Overall satisfaction with the training, content, and trainers

About 65 percent of trainees reported being “very satisfied” with the training overall. About 64% said they were “very satisfied” with the training contents, about 72% reported being “very satisfied” with their trainer. Only 1% of trainees were “somewhat dissatisfied” with their trainer but no one reported dissatisfaction with the training contents.

Satisfaction levels for all aspects of training were, on average, significantly higher for trainees who learned new information compared to those who did not. Figure-8 shows the breakdown of satisfaction ratings for all three items and Figure-9 shows the average satisfaction ratings by whether or not the trainee said that they learned new information from the training. There were no significant differences in satisfaction levels based on the year of training, whether the training was virtual or in-person, or whether the training was mandatory or voluntary.

Figure 8. Satisfaction with Trainer and Training Materials

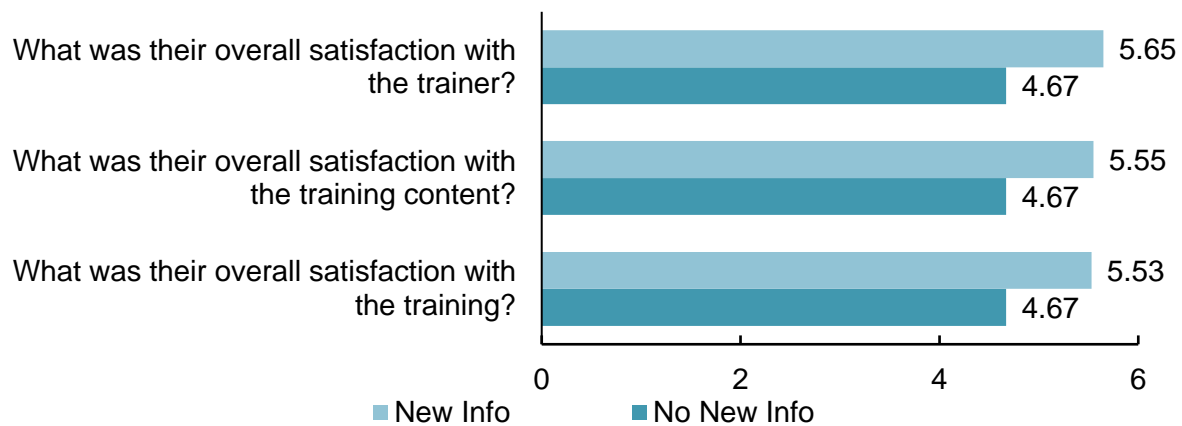


Note: Very dissatisfied and dissatisfied are not shown as no respondents chose those options.

In addition, those who reported learning new information were more likely to be satisfied with the training than those who did not report learning new information, as show in Figure 9.



Figure 9. Average Satisfaction by Information Learned



Stephanie Diaz and Danielle Noon providing information about the REVIVE! program at the VACP Annual Chiefs of Police Conference

## Participant perceptions: Likes and dislikes

Participants noted many things that they liked about the training, with those who provided a response focusing primarily on the following things:

- The information provided during the training (42 responses),
- The trainers (5 responses),
- The ability to help others and save lives (5 responses).

Those who reported that they were satisfied with the information provided during the training said that it was *“informative,” “comprehensive and easily understood,”* and that it *“gave [them] a better understanding in what to do in the event of an emergency.”* Others discussed specific information that they appreciated learning, including:

- The purpose of the REVIVE! program,
- How Narcan works,
- Required paperwork,
- Survivor rates, and
- How to train others.

Participants also complemented the trainers. One participant, for example, said that *“the instructors spoke from experience and did not just read the slide,”* and another said that *“the trainer was knowledgeable and excited to teach the course...”*

As was the case when asked about reasons for attending the training, the ability to help others and save lives was noted as something that multiple participants liked. *“Knowing I would have the ability to save lives,”* was something that one participant mentioned, with another stating that they liked that they *“got to see the reasons we use this in everyday life and how it can save people.”*

When asked about dislikes, most participants (44) reported that they had no dislikes. Of those who did note a dislike, 16 stated that they did not like the virtual format, with one participant stating that he is *“personally not a big virtual fan, I usually prefer in person training.”* However, some participants also expressed understanding of the virtual format; for example, one participant said that *“in person training would have been nice, but due to Covid it wasn't possible.”*

Three participants noted something they disliked about the training content, with one saying that their *“instructor went off topic and gravitated towards law enforcement and ignored EMS”* (another participant provided a similar response) and another saying that *“it was a little dry/not very interactive.”*

Two participants from an in-person training expressed their dislike of the location and the long drive to get to the training.

## Participant perceptions: Areas for improvement

Participants were also asked for recommendations as to how the training could be improved. Thirty-seven participants did not have any suggestions and/or stated that the training should be kept as is. The majority of recommendations for improvement (13) were requests for in-person and hands-on trainings (conversely, one participant stated that they would recommend keeping a virtual option).

Other recommendations for improvement related to course content. One participant suggested adding *“more information about what to do if the overdose isn't contained and is all over them and [Covid-19] could be easily spread by their clothing,”* while others suggested including *“videos of real world overdoses to give a visual aid”* and *“...a dummy that you could do real world training with.”*

One participant felt that not all content was relevant to their community, and suggested *“update[ing] the resources involved in assisting people [to] get through addiction. I feel like there are not many that are applicable to most places or rural places. Such as maybe finding online resources that are trusted to assist people with addiction if there are any.”*

Finally, one participant suggested including follow-up trainings once the initial training was completed, saying that they would recommend *“offer[ing] mini online refreshers to keep obligations current, and in the forefront of trainer's minds.”*

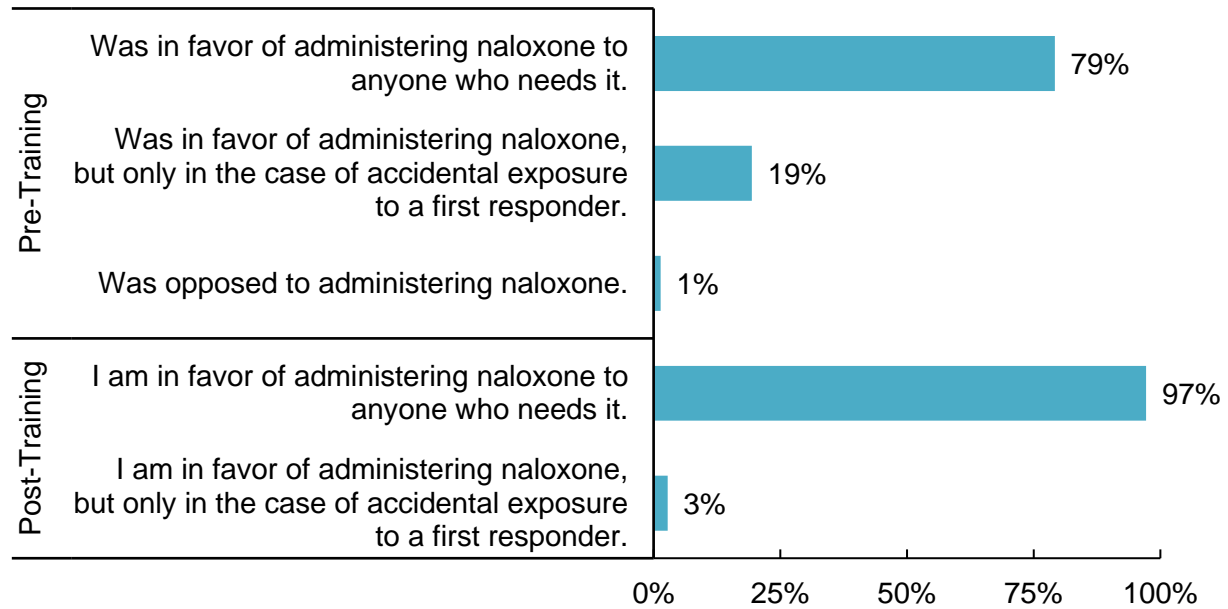
## Comfort with naloxone administration

Prior to the training, most of the trainees were in favor of administering naloxone to anyone who needs it (79%) with 19% in favor only in the case of accidental exposure to a first responder (19%)—only 1% of trainees were opposed to administering naloxone prior to their training. After completing training, nearly all trainees were in favor of administering naloxone to anyone who needs it, 3% were in favor only in the case of accidental exposure to first responders, and none were opposed to naloxone administration—feelings regarding administration of naloxone changed for 18% of trainees after training. The results for feelings regarding naloxone administration before and after training are shown in Figure 10.

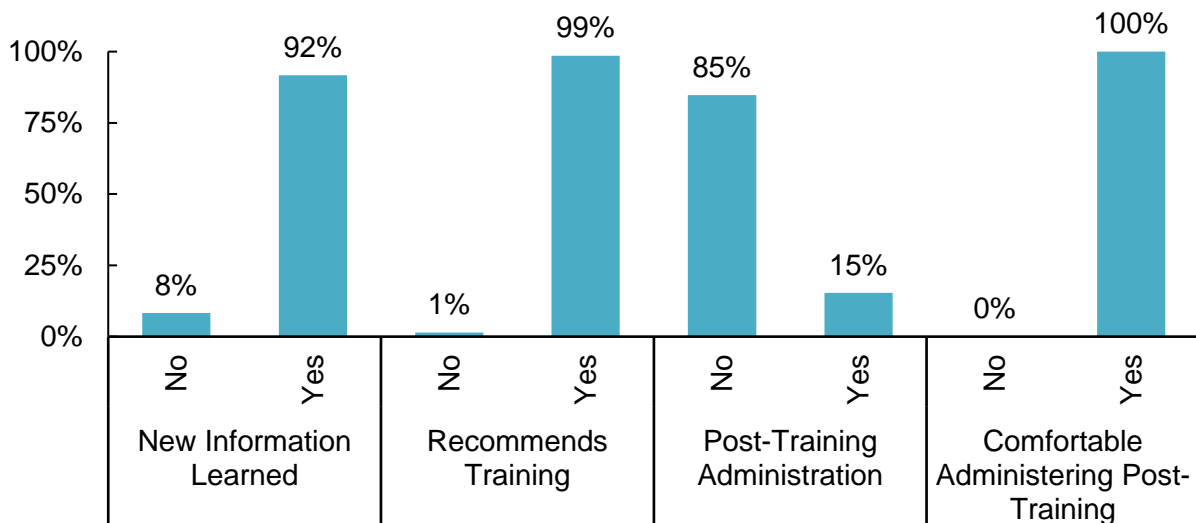


Sample Narcan Wall Mount Kit

Figure 10. Pre/Post-Training feelings towards administration of Naloxone



Although 85% of trainees had not administered naloxone in response to an opioid overdose since attending training, all of them said that they felt comfortable administering naloxone nasal spray after training. Trainees who learned new information during training were significantly less likely to have reported administering naloxone since training compared to those who did not (9% versus 83%, respectively). Figure 5 shows the post-training information for all survey respondents.



## Looking ahead

Looking ahead, the future seems promising for the REVIVE! program. Nearly all participants stated that they would recommend the program to others and, when asked if there was any additional information they would like to share, responses were positive. One participant said that they “...enjoyed the class and would like to learn more about this subject,” while another said to “keep up this great work.” Participants noted the importance of the program and the impact on their community. In the words of one final participant: “*This program is an asset to the [City] Bureau of Police...I have been in the field and witnessed first-hand countless citizens being REVIVE! after a drug overdose. Many have thanked the officers for saving their lives.*”

## Summary of interviews

In sum, key findings from the interviews include:

- Two-third of first responders participated in REVIVE! training voluntarily.
- Almost two-third took the training through virtual meeting platforms.
- About two-third of the participants were very satisfied with their trainers and the level of expertise/experience they brought to the training. The participants were also satisfied with the training materials, although some participants suggest that there is some room for improvement.
- Participants felt more confident in administering Naloxone and using their newly acquired skill to train other participants in the future.
- Participants suggested that the hybrid model of training (in person with remote option) be continued even after the impacts of the Covid-19 pandemic are gone. They suggested that hybrid model will allow for more people to participate in new or re-training exercises.
- Significant improvement in confidence and positive attitude towards Naloxone administration was noted by comparing participant responses taken before and after training sessions.



## Discussion and Closing Remarks

The national and statewide trends clearly show that opioid epidemic is a public health emergency. The rise in the number of overdose deaths over the last decade is staggering. The trend has further worsened during the Covid-19 pandemic as death rates surge to unprecedented levels in the recent history. Both administrative leadership and local communities in Virginia have felt the severity of opioid addiction and overdose deaths. REVIVE! for First Responders is one of the initiatives towards addressing the issue and it focuses on educating first responders – professionals or civilian – on early detection and intervention to reduce harm to the victim. REVIVE! program is founded on the assumption that with the correct training and right tools first responders can help reverse the effects of opioid overdose and save lives even before medical assistance reaches the incidence site. Launched in mid-2015, the training program quickly caught traction and within two years, it already had enough graduates to start making measurable difference in the affected communities.

The program has already proved to be effective in what it does – provide life-saving Naloxone and the necessary training needed to successfully administer it in overdose-related emergencies to save lives. There is sufficient evidence – both quantitative (outcome) and qualitative (respondent perception and experience) – that the program is effective. Despite the challenges caused by the Covid-19 pandemic, the program has still been able to effectively conduct trainings, albeit at a slower pace than before. It is however, encouraging to see that the training output has improved since the third quarter of 2020 and it has been following an upward trend until at the time this report was being prepared. The program has also been able to garner positive response from the participants over the course of multiple years. Respondents vow for how helpful this training has been in empowering them to save lives and teach others to save lives as well.

In the previous iteration of this report – in 2020 – we identified some shortcomings, especially related to misalignment between geographic distribution of training events, the number of trainee output and the scale of the opioid related deaths by localities. By the time of preparing this report, we found that the mismatch has reduced and now a number of Virginia localities show some correlation between with opioid related deaths and the REVIVE! training output. This is a positive change since the last reporting period. On the basis of our study and the responses obtained through the survey, we believe that the program will be even more successful in the future to produce more trainee outputs if the trainings are offered in hybrid format even after the impact due to Covid-19 has subsided. We also believe that there are still some impacted localities in Virginia that could benefit from more strategic and locationally focused training campaigns.

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## Appendix : Participant Survey Questionnaire

1. Date of train the trainer course you attended (mm/dd/yyyy)
2. Was the training in-person or virtual?
3. Was your participation in the training mandatory or voluntary?
  - a. If voluntary, what was the reason you chose to attend the training?
4. What was your overall satisfaction with the training? (5 pt. Likert scale)
5. What was your overall satisfaction with the training content? (5 pt. Likert scale)
6. Did you learn new information during the training? (y/n)
7. What was your overall satisfaction with the trainer? (5 pt. Likert scale)
8. What did you like about the training?
9. What did you dislike about the training?
10. After completing the training, did you feel comfortable with administering Naloxone nasal spray?
  - a. If not, why? (open-ended)
11. Would you recommend the training to others? (y/n)
12. How could this training be improved?
13. What were your feelings prior to the training about administering Naloxone in the event of an opioid overdose?
14. What are your feelings now about administering Naloxone in the event of an opioid overdose?
15. Have you administered Naloxone in response to an opioid overdose since attending the training? (y/n)
  - a. If yes, how many individuals have you administered Naloxone to?
  - b. If yes, how many individuals showed an improved response after receiving Naloxone?
16. Is there anything else you would like to share? (open-ended)

