

Evaluation and Impact Assessment of Virginia's REVIVE! for First Responder Training Program

2022 Update



September 2022

Evaluation and Impact Assessment of Virginia's REVIVE! for First Responder Training Program: 2022 Update

Prepared for:
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And
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Tieman, 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

Acknowledgment

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About PlanRVA

PlanRVA is a regional convener, planning agency and provider of essential services to the localities of the Richmond Region. We are an organization comprising nine local governments for the purpose of encouraging collaboration to address regionally significant issues and opportunities. Also known as the Richmond Regional Planning District Commission (RRPDC), our organization encompasses the localities of Ashland, Charles City, Chesterfield, Goochland, Hanover, Henrico, New Kent, Powhatan and Richmond. PlanRVA convenes community representatives to build relationships and capacity across the region; provides technical assistance to member jurisdictions; serves as a liaison between local, state and federal governments; and implements services when requested by members.

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Abbreviations

AAGR	Average Annual Growth Rate
CSB	Community Service Board
DCJS	Department of Criminal Justice Services
DMAS	Department of Medical Assistance Services
DOC	Department of Corrections
DSS	Department of Social Services
EMS	Emergency Medical Service
FAACT	Framework for Addiction Analysis and Community Transformation
HIDTA	High Intensity Drug Trafficking Area
LE	Law Enforcement
OD	Overdose
OONE	Opioid Overdose and Naloxone Education
Q	Quarter (Calendar year)
VACAP	Virginia Community Action Partnership
VACP	Virginia Association of Chiefs of Police and Foundation
DBHDS	Virginia Department of Behavioral Health and Developmental Services
VDH	Virginia Department of Health
VOPRC	Virginia Overdose Prevention Resource Committee

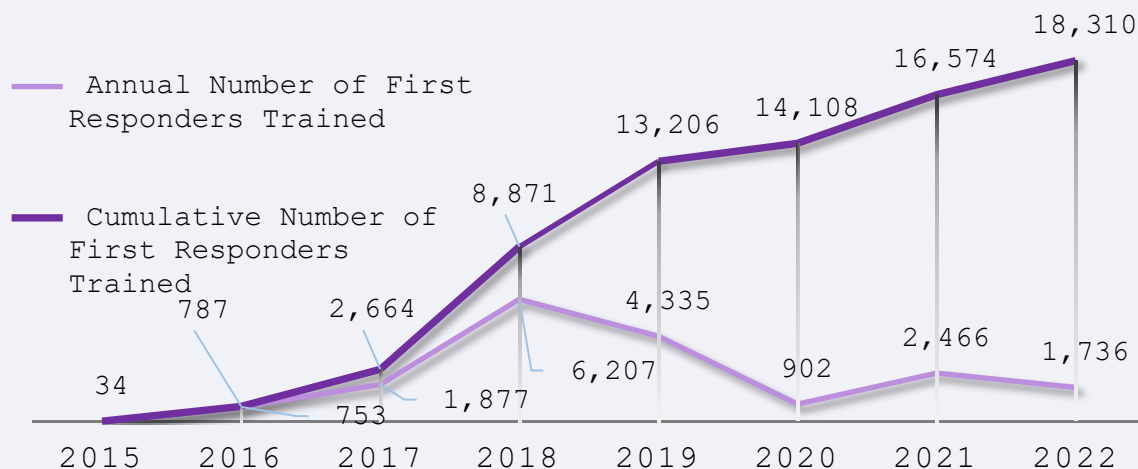
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Executive Summary

Opioid Overdose and Naloxone Education for Virginia program (OONE), more commonly referred to as the REVIVE! for First Responders program was implemented in 2015. The Virginia Association of Chiefs of Police (VACP) is managing a First Responder Naloxone grant for the Virginia Department of Behavioral Health and Developmental Services (DBHDS). The project goals are to increase access and distribution of Naloxone to all First Responders in the Commonwealth of Virginia, increase participation in the DBHDS REVIVE! for First Responders training, and to increase the number of REVIVE! Trainers and Master Trainers. To meet this goal, VACP provides training to First Responders in law enforcement agencies, non-EMS fire service agencies, and correctional facilities. Since 2020, the training has been expanded to also include military police, court services, regional and local jails, juvenile justice, probation and parole, State parks, and forestry located in the Commonwealth of Virginia. The training covers introduction to various types of opioids, how opioid overdoses occur, how to identify symptoms, the risk factors involved with an opioid overdose, and how a person should respond to an opioid overdose with Naloxone. The training is provided for free, and the trainees are also eligible to receive free Naloxone and rugged Naloxone carrying cases. The REVIVE! for First Responders training program was run by DBHDS from 2015 to 2019. VACP has been managing the training program since March of 2020. This update report was prepared in September of 2022 to review the output and outcome of the REVIVE! for First Responders program activities from July 2021 to June 2022. PlanRVA (Richmond Regional Planning District Commission) received a request from VACP to conduct the updated analysis building upon the comprehensive report that was prepared in September of 2021.

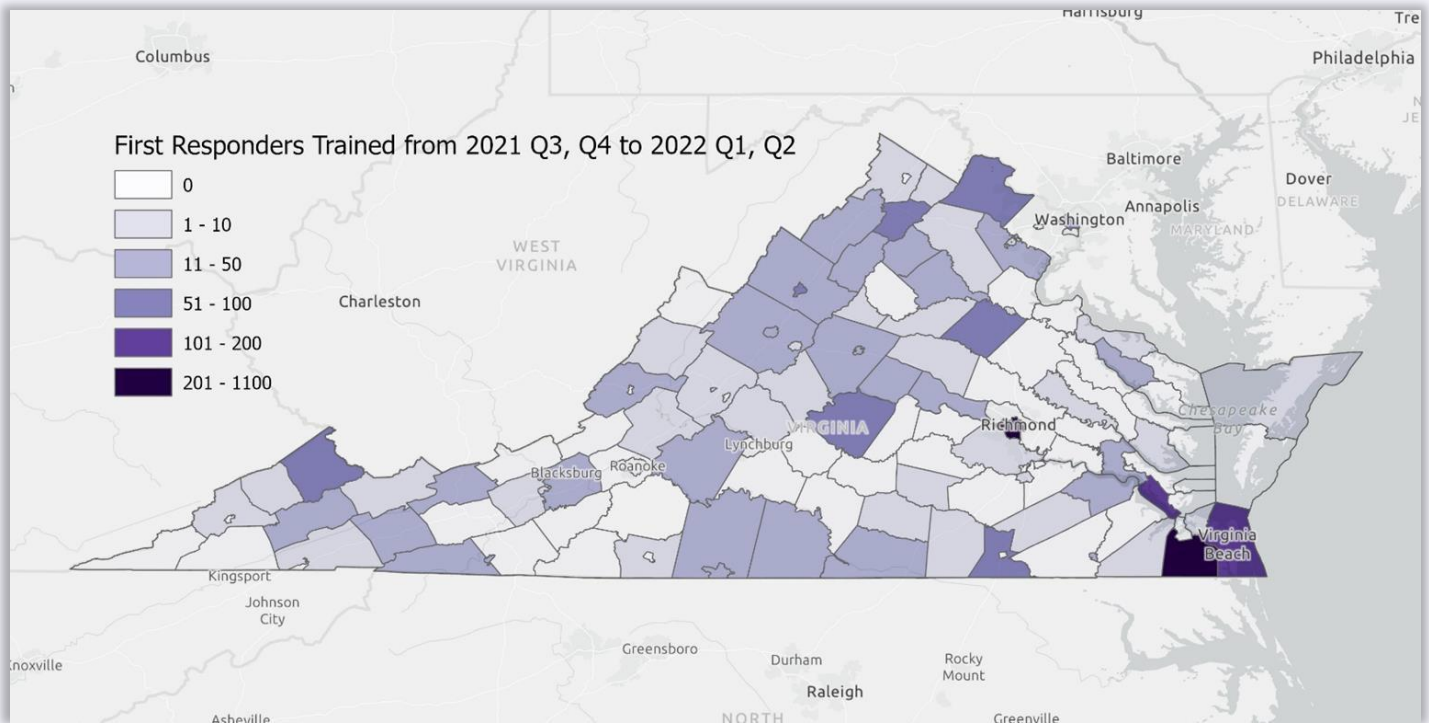
Number of First Responders Trained
2015 - 2022



The objective of this study is to evaluate the training data since the last reporting period, compare outcomes with historical trend, 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 2022 evaluation.

- 3,265 First Responders were trained under Virginia's REVIVE! program from July 2021 to June 2022. This is more than double the number of trainees compared to 1,413 in the 2020-21 reporting period (2020 July – 2021 June). Previous reporting period saw reduced training output due to the difficulty caused by the COVID-19 pandemic. However, VACP seems to have successfully pivoted towards conducting trainings through virtual platforms and/or in-person events depending on the prevalent guidelines.
- According to Virginia Department of Health office of the Chief Medical Examiner, the rate of death due to opioid overdose increased by about 16 percent between 2020 and 2021. As a reference, the increase in opioid related death rate between 2019 and 2020 was 46.6 percent.

First Responders Trained under Revive! Program from 2021 Q2 to 2022 Q2 (current reporting period)



- Hampton Roads, Shenandoah Valley, Northern Virginia, and the Southside region saw the highest number of REVIVE! trained First Responders in 2021-22. These regions also reported among the highest overdose deaths per 1,000 people during the 2021-22 reporting period. The geographic distribution of REVIVE! training correlates better with locations reporting higher overdose deaths during the 2021-22 period compared to the previous years. The location and number of training offerings seem strategically placed, however, there is still room for more strategic targeting.
- Most Virginia localities show high correlation between the number of First Responders trained and the rate of overdose death reported. This report also identifies localities that have disproportionate share – more trainees where overdose death rates are relatively lower, or less trainees where overdose deaths are relatively higher. Although, such imbalance has reduced during the current reporting period, we recommend that VACP continue to focus on providing training in those localities and make course corrections when necessary, based on the prevalence of overdose and overdose related deaths in the most recent years.
- An online survey of REVIVE! FR Trainers was administered in July of 2022 to understand the program's effectiveness. The survey shows that 67 percent of First Responders participated in REVIVE! training voluntarily. About 58 percent took the training through virtual meeting platforms compared to 42 percent who participated in person.
- About 76 percent of the participants were very satisfied with their trainers and the level of expertise/experience they brought to the training. 85 percent of the participants were either *very satisfied* or *satisfied* with the training materials. 15 percent were *somewhat satisfied*, and a few noted suggestions for improvement.
- Participants felt more confident is administering Naloxone and were interested to train others in the future.
- Participants suggested that in-person trainings are more effective, but virtual meetings are better for those that live far from training venues. Many suggested going back to primarily in-person training model, but also keeping a hybrid option, if possible, especially for those participating in refresher courses, and experienced trainers who are looking to learn about recent developments.
- 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:

“I encourage our department to have more trainings both within and outside the department. After this training, I am a big proponent of Naloxone”

"I feel this should be a subject in a requirement for graduation for all First Responder basic academies”

Background

The Virginia Association of Chiefs of Police (VACP) manages a First Responder Naloxone grant for the Virginia Department of Behavioral Health and Developmental Services (DBHDS). The project goals are to increase access and distribution of Naloxone to all First Responders in the Commonwealth of Virginia, increase participation in the DBHDS REVIVE! for First Responders training, and to increase the number of REVIVE! Trainers and Master Trainers. To meet the goals of this program, First Responder agencies in the Commonwealth of Virginia are eligible to receive Naloxone, rugged Naloxone carrying cases, and training at no cost to the agency. Since 2020, the types of organizations eligible to receive free Naloxone, supplies, and training has been expanded from providing services to only Law Enforcement, Non-EMS Fire Service Agencies, and Correctional Facilities, to also include Military Police, Court Services, Regional and Local Jails, Juvenile Justice, Probation and Parole, State Parks, and Forestry located in the Commonwealth of Virginia.

Training

REVIVE! is the Opioid Overdose and Naloxone Education (OONE) program for the Commonwealth of Virginia that provides training on how to recognize and respond to an opioid overdose emergency. There are two types of REVIVE! training, a Lay Persons training for private citizens and a First Responders training for members of Law enforcement, EMS, Fire Departments, Local and Regional Jails, Probation and Parole, Forestry, Military, Juvenile Justice, Court Services, State Parks, and Correctional Facilities. Successful completion of the REVIVE! for First Responders training is required to receive Naloxone supplies through the First Responders Naloxone Program.

There are two levels of training provided to First Responders, Basic Rescuer and Train-the-Trainer. The training objectives for the Basic Rescuer training are to:

- Increase awareness of the opioid epidemic across Virginia and the role of First Responders in curbing the opioid crisis.
- Become familiarized with the sections of the Virginia Code that apply to dispensing and administering Naloxone, and safe reporting of overdoses.
- Become familiarized with the harm reduction model and sections of the Virginia Code that apply to harm reduction programs in the Commonwealth.
- Understand risk factors for opioid overdose, the overdose continuum, and how Naloxone works.
- Be able to recognize the signs for opioid overdose and effectively respond to an opioid overdose.
- Learn about the “Leave Behind” program and how to conduct a Rapid Revive training.
- Become familiarized with actual risk factors of fentanyl exposure to First Responders and recommendations for safety.
- Discuss responder fatigue and resources for support.

In addition to covering the information included in the Basic Rescuer training, the Train-the-Trainer provides instruction on how to conduct a training and the reporting requirements for Certified First Responders Trainers.

Naloxone

Naloxone is provided free of charge to eligible agencies. Participating agencies are required to complete REVIVE! for First Responders training program and sign a Memorandum of Understanding (MOU) with the Virginia Department of Health. Agencies then may order Naloxone directly from VDH Division of Pharmacy Services using an online ordering and reporting system, and have the Naloxone shipped directly to them. The Naloxone provided through this grant is Narcan 4 mg nasal spray and Kloxxado 8 mg nasal spray (as of January 2021). The Naloxone available to First Responders includes two doses of Naloxone in each kit. First Responder organizations have the ability to order enough kits for every active First Responder in their organization to have the ability to carry two doses and may order more Naloxone to replace any used or expired kits. Invoices for Naloxone orders are sent by VDH directly to the VACP for payment; agencies are not required to pay up front and wait for reimbursement.

Carrying Cases

To enable and encourage First Responders to always carry Naloxone while on-duty, the VACP provides rugged nylon carrying cases at no cost. First Responders have the option to choose hard-shell cases or soft cases and have the choice to order cases that attach with either a metal clip, a Molle clip, or a Velcro clip. Carrying cases are shipped directly to First Responder agencies from ODKit.com, and invoices are sent directly to the VACP for payment; agencies are not required to pay up front and wait for reimbursement.

Summary of Findings from prior studies

This 2022 update report is focused on evaluating the impact of training activities that took place since the beginning of third quarter of 2021 through the second quarter of 2022. The report, prepared in 2020 was the first of its kind in evaluating the impact of the REVIVE! Program and was focused on studying 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 the 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. This led us to believe that, although a statistical causation between the number of REVIVE! trained First Responders and the reduction in the number of overdose deaths cannot be explicitly made, this program still provides valuable knowledge to people who, by the nature of their work, have the ability to save someone's life if they learn to read signs of overdose and are trained in administering Naloxone successfully.

Key quantitative findings from the 2020 long-term evaluation 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.

It was concluded that REVIVE! possibly had some role to play on reducing overdose related deaths 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.

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.

And many of these suggestions still ring true in 2022 as these themes still make to the top of survey responses. 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.

The 2022 follow-up evaluation of the REVIVE! program included tracking data outcomes through June of 2022 and understand the overall trend of REVIVE! training outcomes compared to previous reporting periods. Also included is the evaluation of survey data collected by VACP in July of 2022 asking training participants to share their experience and overall perception of the program. The updated study focused on evaluating training activities in 2021-22 and compare that to that of 2021 when most of the training activities were limited to remote platforms due to COVID-19 related social distancing protocols adopted across the Commonwealth discouraging on-location training activities. The 2022 update gives us an opportunity to compare training outcomes and perceptions between in-person and remote participants.

Drug overdose deaths rates were reduced slightly in 2021-2022 compared to the sharp increase in the prior year. 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 nationwide¹. Virginia reported a 46 percent increase in opioid-related deaths in 2020 with a total 1,915 reported deaths compared to 1,298 in 2019².

¹ <https://www.cnn.com/2021/10/13/health/overdose-deaths-march-2021/index.html>, retrieved on 11/15/2021

² Virginia Department of Health, Office of the Chief Medical Examiner (<https://www.vdh.virginia.gov/medical-examiner/forensic-epidemiology/>)

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.

Study Objective

This update report builds on the study conducted in 2021 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 is also 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 2021 study,
- Evaluate the trend in program outcomes (reported overdose deaths) since the 2021 reporting period³
- 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 measure representing program output. VACP provided us the comprehensive training data from 2015 through 2022 Q2 in electronic format. The data included information on training date, trainer name, trainee name, and the name of the organization where the trainee works. 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 133 localities⁴ in Virginia to better understand trends and gaps in REVIVE! Training and overdose related deaths.

The PlanRVA 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

³ 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. Additionally, we would like the reader to know that the public release of the data on overdose-related death lags behind by about two quarters.

⁴ There are a total of 133 counties and independent cities in Virginia. For statistical comparisons, we have merged the data for independent cities that have less than 10,000 population with that of their containing counties.

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 public repository of opioid related death database for the Commonwealth⁵. We used historical data from 2015 to 2022 Q2 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 2021. 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. We used these rates to calculate trend-based estimates for both of our outcome variables and compare the estimated values with the observed values to make an assessment of program performance.

Next, we created a linear regression model to evaluate the trend in the opioid overdose death rates taking into consideration the prior year rates and calculated the estimated rate for the current reporting period. The estimated rate is compared with observed rate (as published by Virginia Department of Health) for the 2021-22 period. Following is the mathematical representation of the model:

$$Y_t = B_0 + B_1T_1 + B_iT_i + e$$

Where,

Y_t is the outcome variable – number of deaths due to opioid overdose

T_1 is the numerical representation of time from 2015 to 2022 increasing one unit every year

T_i is a dummy variable coded "0" for years prior to the current period and "1" for the current year.

This model was used to numerically estimate the overdose death rate for the current year based on historical data and the estimated value was compared with observed value for 2021-22. In the end, the program's effectiveness was evaluated using the participant response collected through an online survey. The survey was administered by VACP staff in June of 2022 and received a response of 310 participants. Following probes were included in the survey instrument:

- 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),

⁵ <https://www.vdh.virginia.gov/medical-examiner/forensic-epidemiology/>

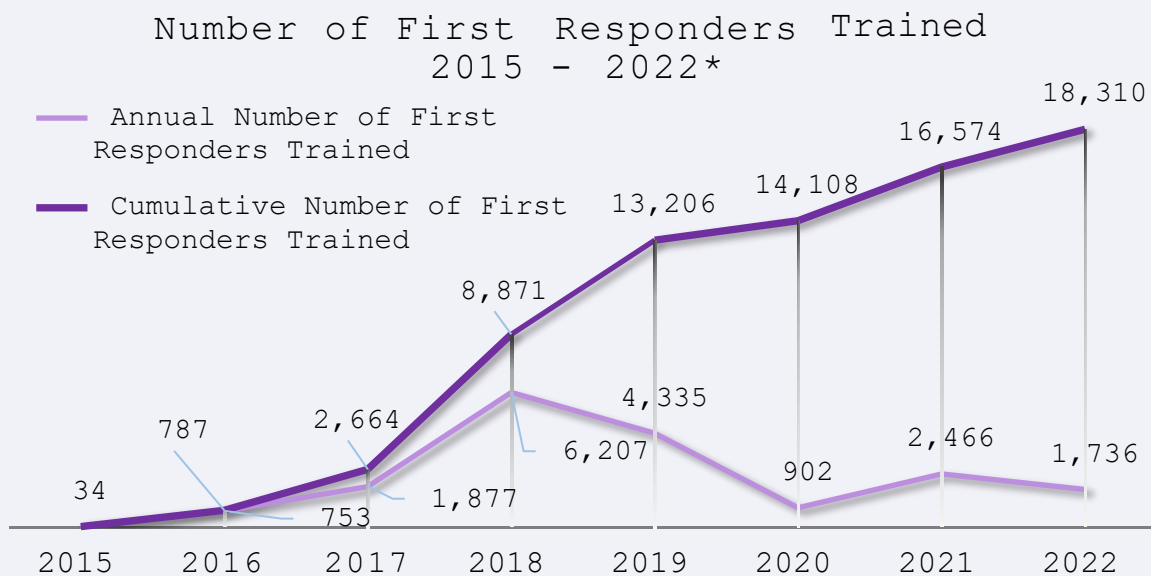
- Comfort with and perceptions of Naloxone administration following the training,
- Frequency of Naloxone administration following the training, and
- If participants would recommend the training to others

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 2022*. 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 4,335 trainees and a sharp drop in 2020 to a total of 902 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

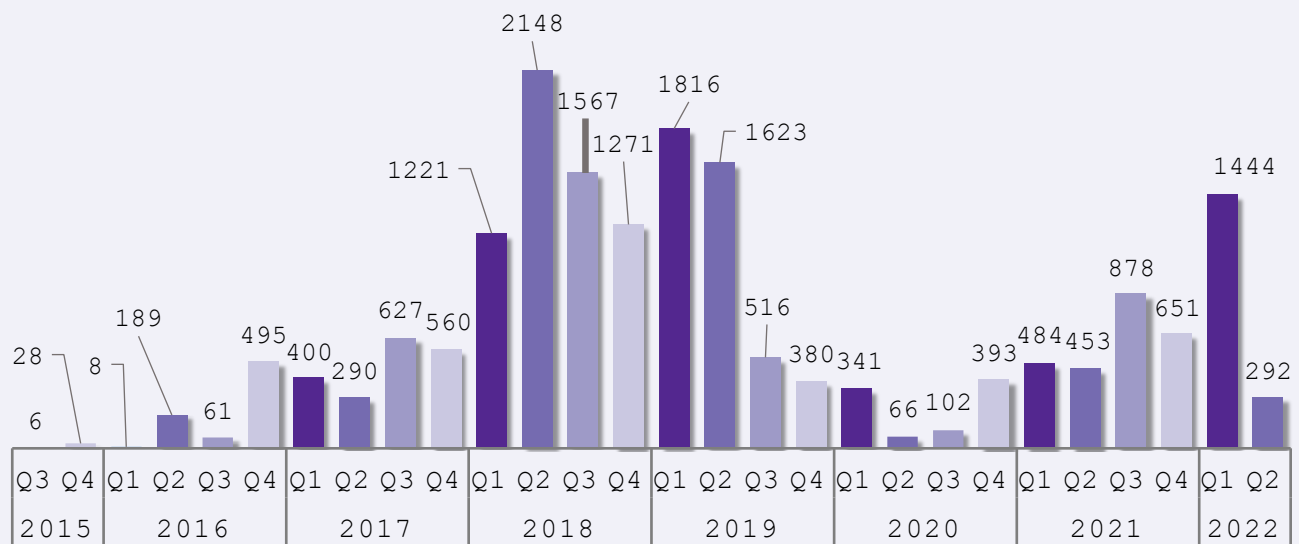


* REVIVE! trainee data for 2022 is available for Q1 and Q2 (Calendar year quarters, Jan through Jun 2022).

The cumulative aggregate of trainees between 2015 and the third quarter of 2021 across all localities has grown from 34 to 18,310. 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 showed a strong rebound with a cumulative gain of about 17.5%. In terms of raw numbers, a total of 2,466 First Responders were trained in 2021, which is about 13.5% 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 two quarters of 2022 with the corresponding quarters of the prior years. A total of 197 First Responders were trained in the first two quarters of 2016. The total trained during the first two quarters of 2017 was 690, in 2018 it was 3,369, and 3,439 in 2019. The number dropped to 407 during the first two quarters of 2020 whereas in 2021 it rebounded back to 937. During the same period in 2022, a total of 1,736 First Responders were trained. During the 2021-2022 reporting period a total of 3,265 First Responders were trained which makes about 18% of all those trained since the inception of the program.

Figure 1.b Number of First Responders Trained from 2015-2022 Q2 (by Quarters)



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 2022 Q2 are the City of Richmond (1,382), Chesapeake City (764), Fairfax County (652), Chesterfield County (628), and Newport News City (485). Similarly, the five localities with the lowest total number of trainees as of 2022 Q2 are Falls Church City (3), Lexington City (5), Highland County (6), Northumberland County (6), and Middlesex County (7).

Figure-2a: Cumulative Total First Responders Trained under REVIVE! Program from 2015 to 2022 Q2

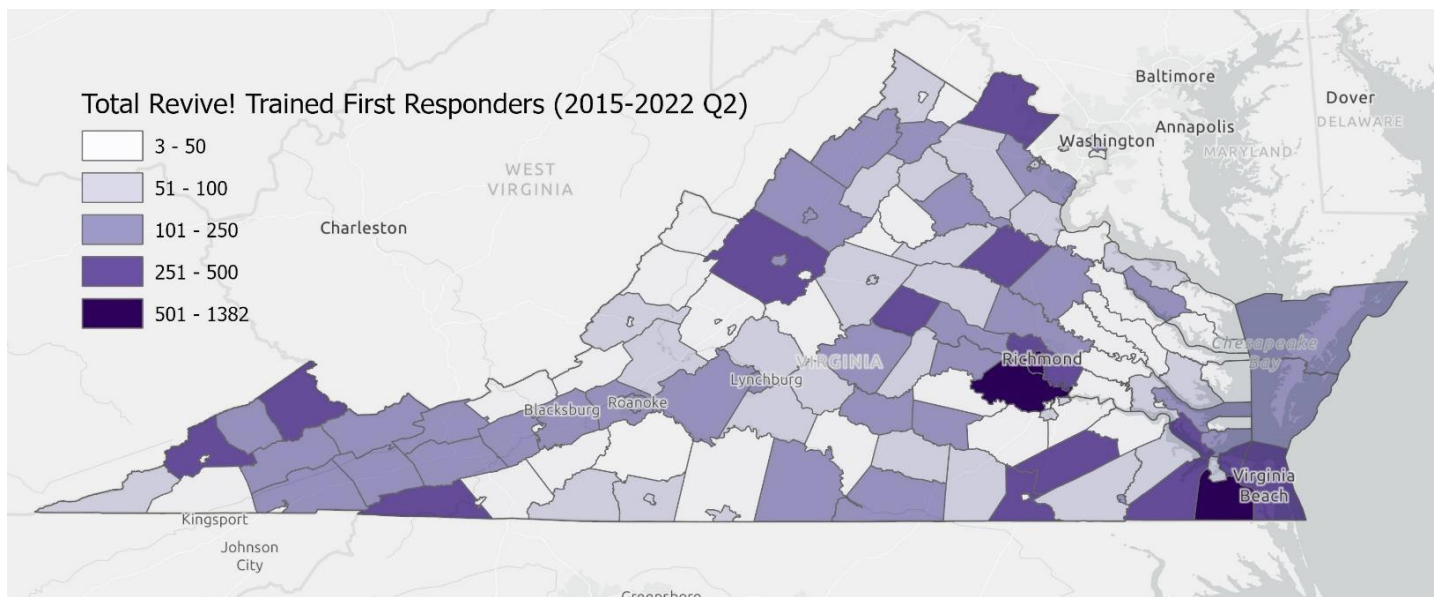
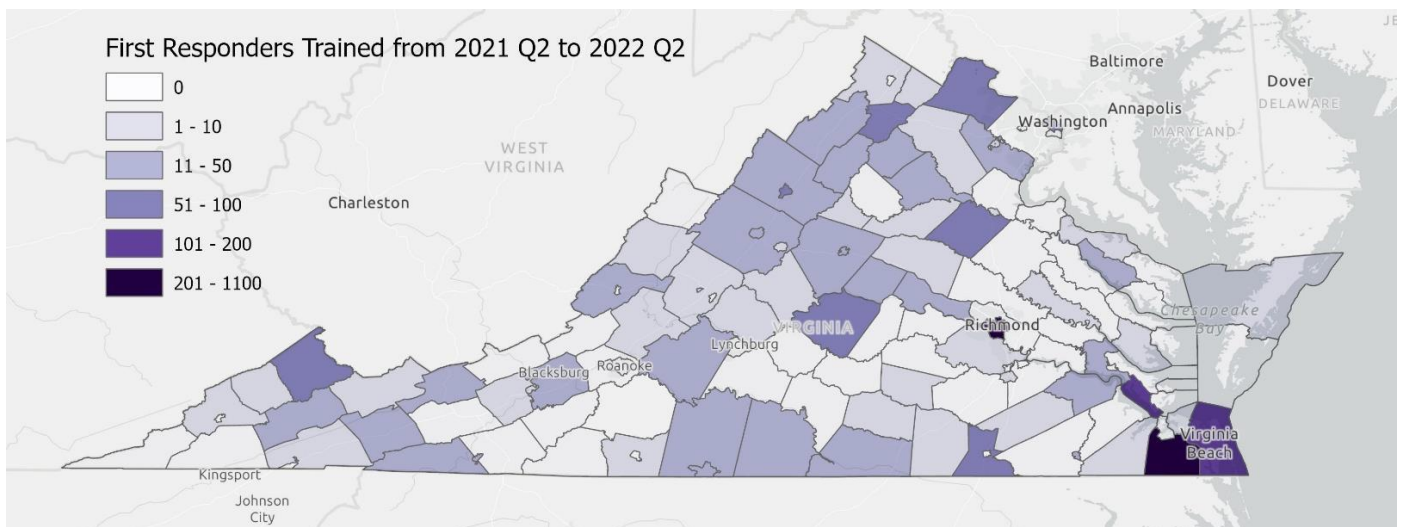


Figure-2b: First Responders Trained under REVIVE! Program from 2021 Q2 to 2022 Q2 (current reporting period)



In terms of per-capita numbers, Greensville County and Sussex County have 27 trained First Responders per 1,000 people, which is the highest among all Virginia localities, followed by Grayson County with 23 trained First Responders per 1000 people, Bland County (19 per 1000), Buchanan County (18 per 1000), and Wise County (13 per 1000).

Virginia localities with the least number of trainees per 1000 people are City of Alexandria, Falls Church City, Prince William County, Manassas Park City, Stafford County, and the City of Colonial Heights, all of which have less than one First Responder trained per 1000 people. A 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 second quarter of 2022. The color spectrum runs from 3 to 1,382 where lighter colors represent fewer trainees and darker color represent higher numbers. City of Richmond, Chesterfield County, Chesapeake City, Fairfax County show more than 500 First Responders trained so far. The highest value of 1,382 is reported for Richmond City. Similarly, the following localities have reported between 250 to 500 First Responders trained under the program.

- Newport News City
- Wise County
- Augusta County
- Spotsylvania County
- Buchanan County
- Grayson County
- Norfolk City
- Henrico County
- Fluvanna County
- Greensville County
- Virginia Beach City
- Sussex County
- Loudoun County
- Suffolk City

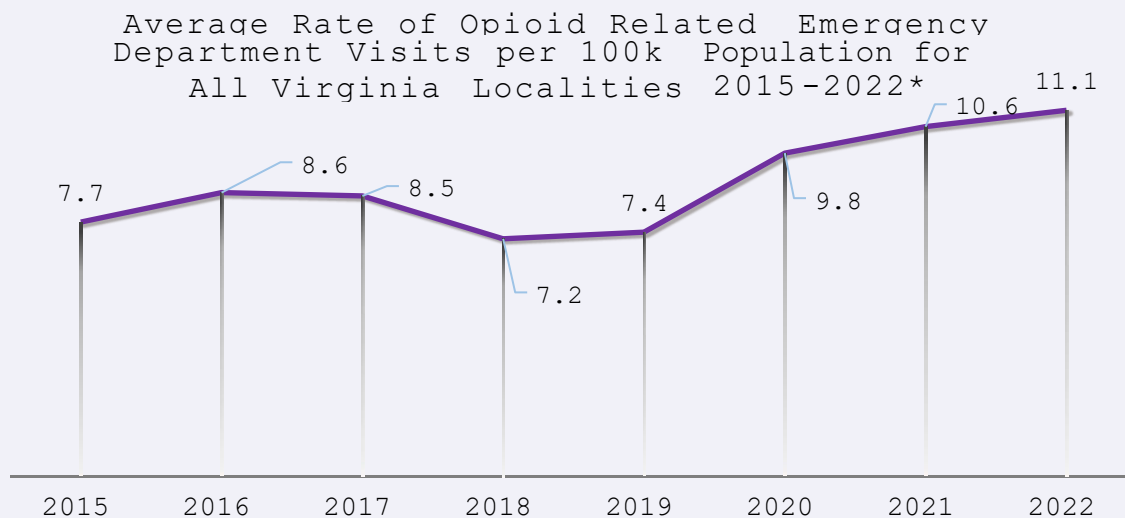
And similarly, the lighter color swatches represent Virginia localities with fewer total First Respondents trained through the history of the program.

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 Greensville 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 2022 Q2 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 2021⁶, the counties with the highest rates of opioid related ED visits per 100,000 population was Prince George County with Scott County as the lowest⁷ (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



*Average rate calculations for the year 2022 is based on data from January through August.

Source: Virginia Department of health (<https://www.vdh.virginia.gov/opioid-data/emergency-department/>), accessed on 9/6/2022.

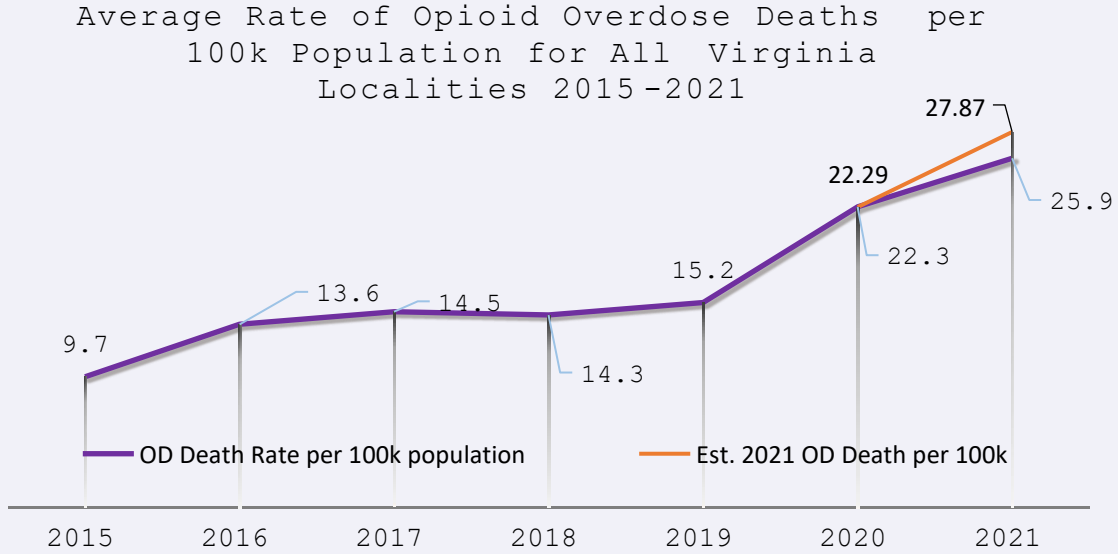
Figure-4 represents the rate of opioid overdose deaths per 100k population for all Virginia localities between 2015 and 2022 Q2. The overdose death rate has been consistently increasing by an average growth rate of about 20% from 2015 to 2019. It rose by about 44% between 2019 and 2021 when the death per 100,000 people went from 15.4 to 22.3. Our regression model estimates the rate for 2021 at 27.87 deaths per 100,000 people. However, the observed rate for 2021 based on the data obtained from VDH Office of the Chief Medical Examiner is 25.9 deaths per 100,000 people. In this regard, the observed rates are slightly lower than the estimated rate for 2021. We do not have definite causal relationship between the trend in the number of REVIVE! trainees

⁶ Data from 2020 was used for comparison due to missing data for multiple Virginia localities in 2021 data.

⁷ Two localities—Highland County and Williamsburg City—were excluded from the calculations due to significant incomplete data for 2020.

and opioid overdose death rates, but the data shows that the rates have reduced during the time frame when more First Responders were trained.

Figure-4: Overdose death trend 2015-2021, Estimated and Observed



*Complete data for opioid related deaths is available through the end of 2021. Numbers for 2022 Q1 are not included in the rate calculations.

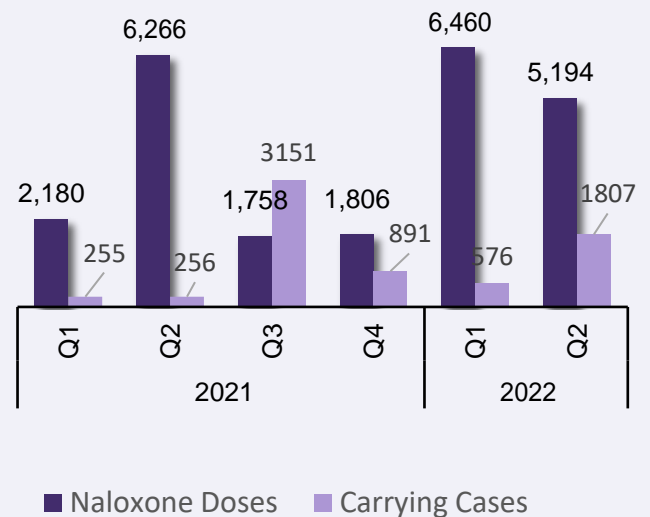
Source: Virginia Department of Health, Office of Medical Examiner

(<https://www.vdh.virginia.gov/medical-examiner/forensic-epidemiology/>), accessed on 9/5/2022.

Distribution of Naloxone Doses and Carrying Cases

We received the total number of Naloxone doses and carrying cases distributed to local law enforcement and emergency rescue departments by VACP provide at no cost to the training participants. A total of 15,218 Naloxone does were distributed, together with 6,425 carrying cases. The data also substantiates findings on accelerated training activities in late 2021 and early 2022. The number of Naloxone doses distributed during the first six months in 2022 is almost equal to the total doses distributed in all of 2021.

Figure-5: Distribution of Naloxone supplies



Geographic Distribution of Overdose Deaths and REVIVE! Training Outputs

Figure-6a represents the geographic distribution of REVIVE! trained First Responders per 1,000 people across Virginia. Per capita measures allow for standardized comparison across our two outcome variables – number of REVIVE! trained First Responders, and count of reported opioid overdose deaths. The following are the top 10 localities with the highest number of First Responders trained per 1,000 people.

- Greensville County
- Sussex County
- Grayson County
- Bland County
- Buchanan County
- Wise County
- Richmond County
- Dickenson County
- Fluvanna County
- Nottoway County

Figure-6a: REVIVE! -Trained first responders per 1,000 people

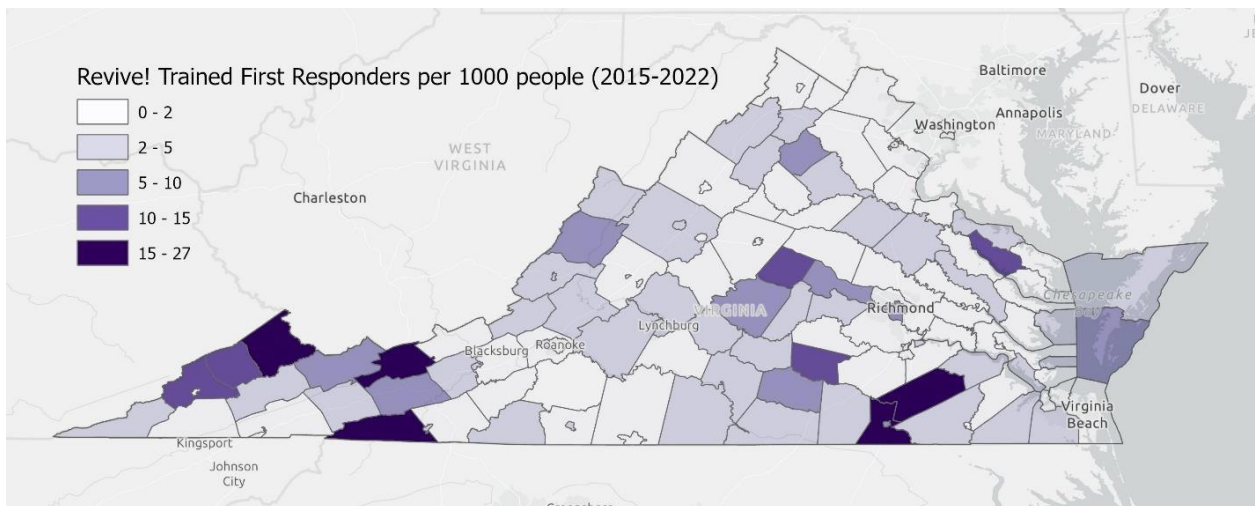
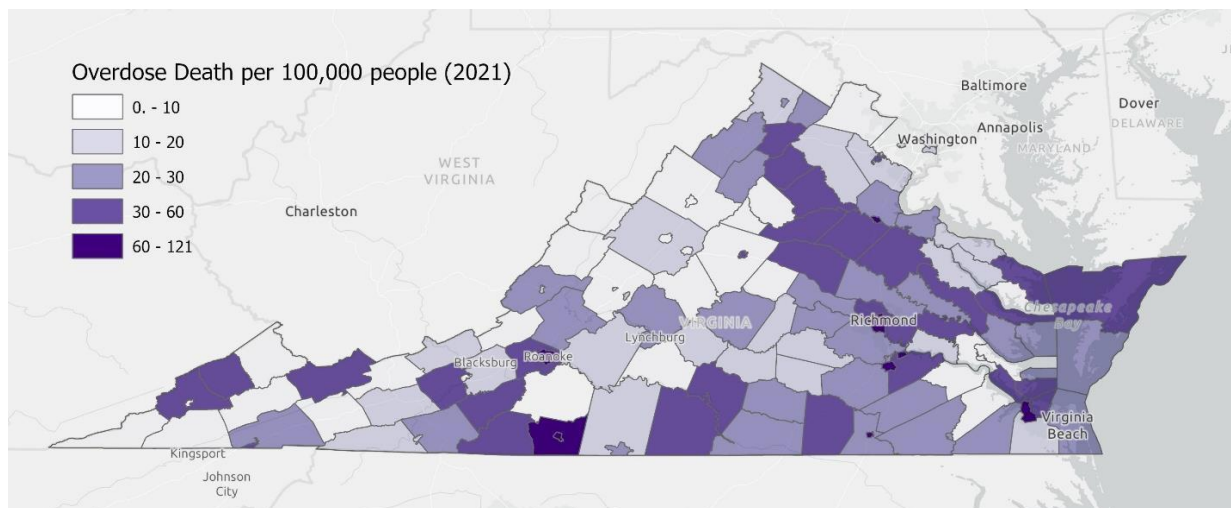


Figure-6b: Overdose deaths per 100,000 people



Similarly, the top 10 localities with the lowest number of REVIVE! trained First Responders per 1,000 people are as follows:

- Alexandria City
- Falls Church City
- Prince William County
- Stafford County
- Colonial Heights City
- Prince George County
- Manassas Park City
- Fairfax County
- Northumberland County
- Lexington City

Figure-6.b represents the geographic distribution of rates of opioid related deaths for various Virginia localities. As of 2021, the top 10 localities with the highest reported opioid related deaths per 100,000 population were:

- Petersburg City
- Richmond City
- Portsmouth City
- Hopewell City
- Emporia City
- Henry County
- Roanoke City
- Martinsville City
- Fredericksburg City
- Charlotte County

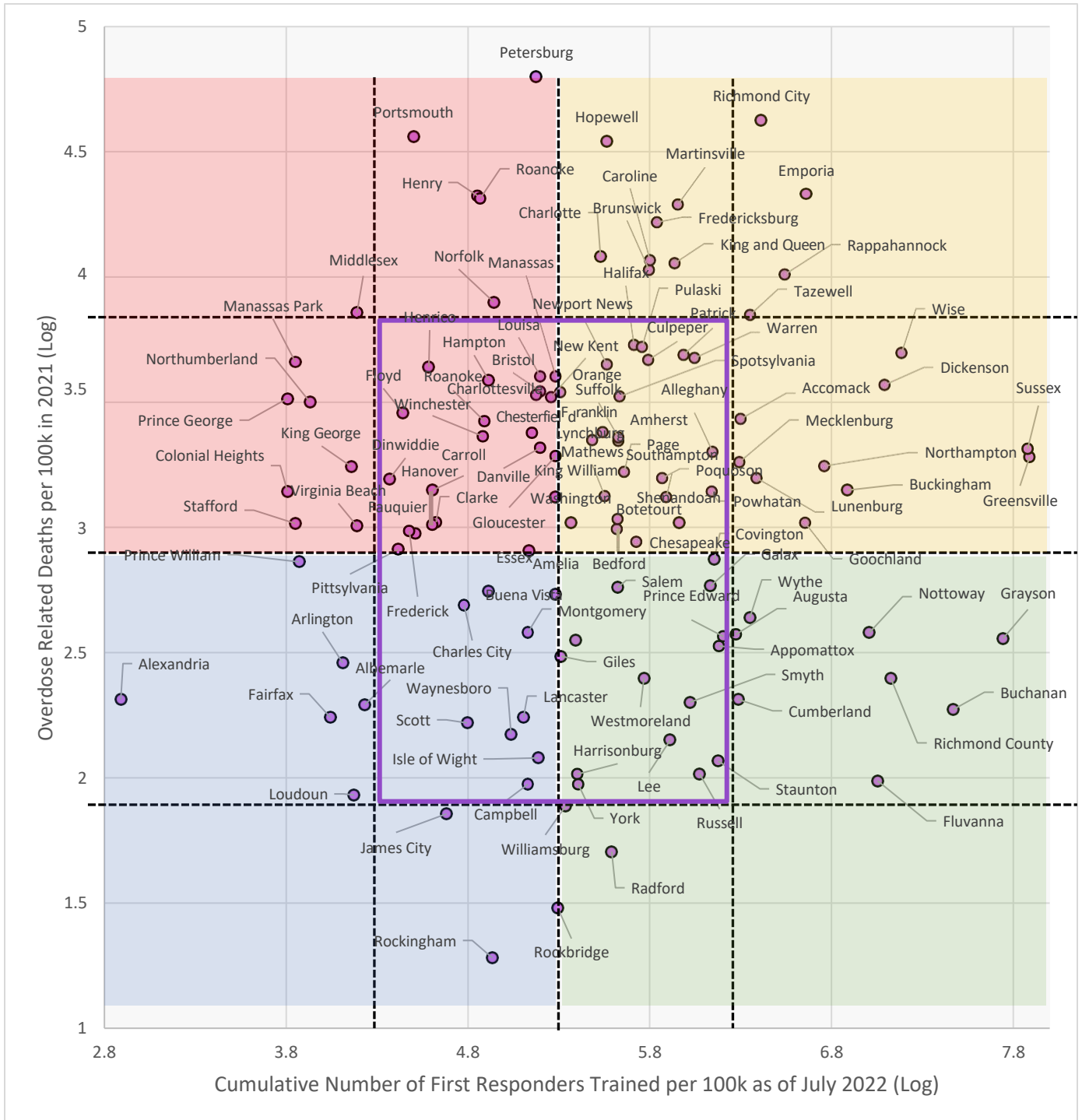
Similarly, the top 10 Virginia localities with the least reported rate of opioid overdose deaths per 100k population were:

- Bland County
- Nelson County
- Bath County
- Madison County
- Lexington City
- Greene County
- Surry County
- Craig County
- Highland County
- Falls Church City

Generally, larger cities in northern and central Virginia and rural counties in the 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-6a representing lower per capita numbers of trained First Responders that correspond with darker shades in Figure-6b 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-7). Both axes in the figure are represented in logarithmic scale. The numerical value of the axes do not mean anything by themselves, but the diagram lets us compare the relative ratio of REVIVE! trained First Responders and the corresponding overdose-related death rates for each locality.

Figure-7: Log-log plot of overdose death per capita and number of REVIVE! trained First Responders per capita



The dotted lines in the middle of both vertical and horizontal axes represent the average value for the corresponding measures. The other two dotted lines on either side of the average value represent the first standard deviation – one representing average + standard deviation and another representing average - standard deviation. This is a standard statistical way of representing how far a single value is from the average of all values. The purple bounding box represents the area where the localities that fall inside the box can be considered to have a relative balance of the total number of Revive! trained First Responders per 100,000 population relative to the total number of overdose deaths per 100,000 population. Any localities that fall outside the purple bounding box can be considered to be relatively imbalanced in terms of how many REVIVE! trained First Responders are there compared to the rate of overdose-related deaths.

The localities in blue shaded area outside the purple box are those which relatively low overdose death per capita while also having relatively low REVIVE! trained First Responders per capita. Similarly, the localities in yellow shaded area outside the purple bounding box have high per capita overdose-related death rates while they also have relatively higher numbers of per capita REVIVE! trained First Responders.

The localities outside the purple bounding box on the red and green shaded regions are the ones with more imbalance. The localities in red shaded area have relatively higher per capita overdose-related deaths but also have relatively fewer per capita REVIVE! trained First Responders. For example, Manassas Park City reported 38.9 overdose-related deaths per 100,000 people in 2021, which is higher than the average value of 26 deaths per 100,000 among all localities. Manassas Park City has a total of 47 REVIVE! trained First Responders per 100,000 people by July of 2022 which is substantially lower than the average of 378 per 100,000 among all localities.

Similarly, localities in green shaded area have relatively less overdose deaths but at the same time have higher numbers of trained First Responders. For example, the overdose-related deaths in Fluvanna County as of 2021 is 7.3 per 100,000 people which is substantially lower than the average value of 26 per 100,000. While the number of REVIVE! trained First Responders per 100,000 in Fluvanna is 1,157 which is considerably higher than the average value of 378 among all localities.

The chart presented in Figure-7 can be useful to identify localities with training saturation and also those with training deserts. This information is expected to be useful in planning of geographically targeted training activities in the future.

Summary of Quantitative Findings

The following are some of the highlights from the quantitative exercise:

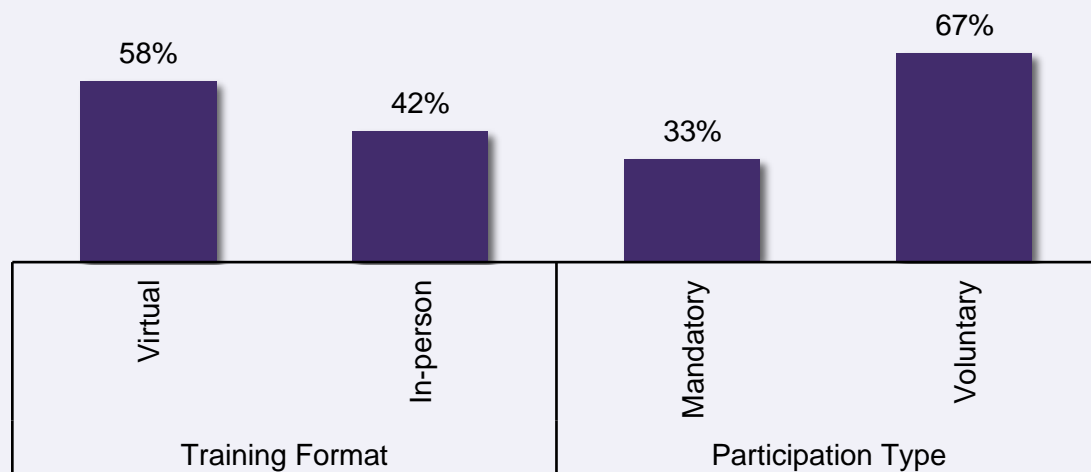
- 3,180 First Responders were trained under Virginia's REVIVE! program from July 2021 to June 2022. The training activities ramped up substantially since the prior reporting period which was impacted by the COVID-19 protocols that existed in 2020 and early 2021. By June of 2022, a total of 18,310 First Responders have received training and refresher courses.
- The rate of opioid-related emergency department visits increased by about 5 percent in 2022 compared to that of 2021. Death due to opioid overdose increased by about 16 percent 2020 and 2021. This is lower than the estimated death rate of 27.8 if the growth rate had remained unchanged.
- Central Virginia, South, and Southwest part of the Commonwealth saw the highest number of REVIVE! trained First Responders in 2021 (Jul-Dec) and 2022 (Jan-Jun).
- The geographic distribution of REVIVE! training is starting to correlate better with locations reporting higher overdose deaths during the 2021-22 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 balance 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 acknowledge that VACP has been working towards providing more training strategically where the need is the highest. We recommend that VACP continue to focus their training activities in localities reporting higher number of opioid emergencies and make course corrections when necessary.

Participant Perception on Effectiveness of REVIVE! Training

The Virginia Association of Chiefs of Police (VACP) administered a survey of all REVIVE! FR Trainers in 2021 and 2022. 310 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-8 presents the training characteristics of the surveyed trainees including training format and participation type. 58% of trainees who participated in the survey primarily received their training virtually. Of the total number of First Responders trained in the current reporting period, 47% completed their training in 2021 and 53% completed in 2022. 58% of those who completed their training in 2022 said they completed their training virtually compared to 86% in the previous reporting period. Similarly, 67% of respondents said they voluntarily participated in the training and 33% participated because it was mandatory for them.

Figure 8. Participant training information from survey data



Respondents were asked to explain their reason to participate in the training event. 207 out of 302 trainees reported that they have voluntarily participated in the training. Their primary reason to participate can be summarized under the following three themes, with some participant responses falling into multiple categories:

- A desire to train others and help their department and the community, and
- A desire to save lives and help others

Some reported a desire to increase their personal knowledge and skills while also being able to pass on these skills to others. For example, one participant stated that they took the training to “*be an asset for our [agency] and to help others recognize possible overdose and know how to properly administer Narcan.*” 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. As one participant noted *“I am already a CPR/FA instructor for our agency and we needed more Narcan instructors. I also have my EMT and felt comfortable becoming an instructor since I do have medical experience.”*

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 wanted to be able to save lives using Naloxone and teach other Law Enforcement Officers to do the same”* Similarly, another participant stated that their *“...department wanted trainers and due to the amount of times we use Narcan on the streets for overdoses, I volunteered to attend.”* Another respondent noted *“to train people how to use Narcan – a drug that I have personally used to save no less than 5 people over the last 3 years.”*

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 able to train my school nurses in Narcan administration as more cases of illicit drugs are coming into our school district.”* Another stated that they *“wanted to help subjects with potential overdoses and to ensure the safety of my officers if there was an exposure.”*

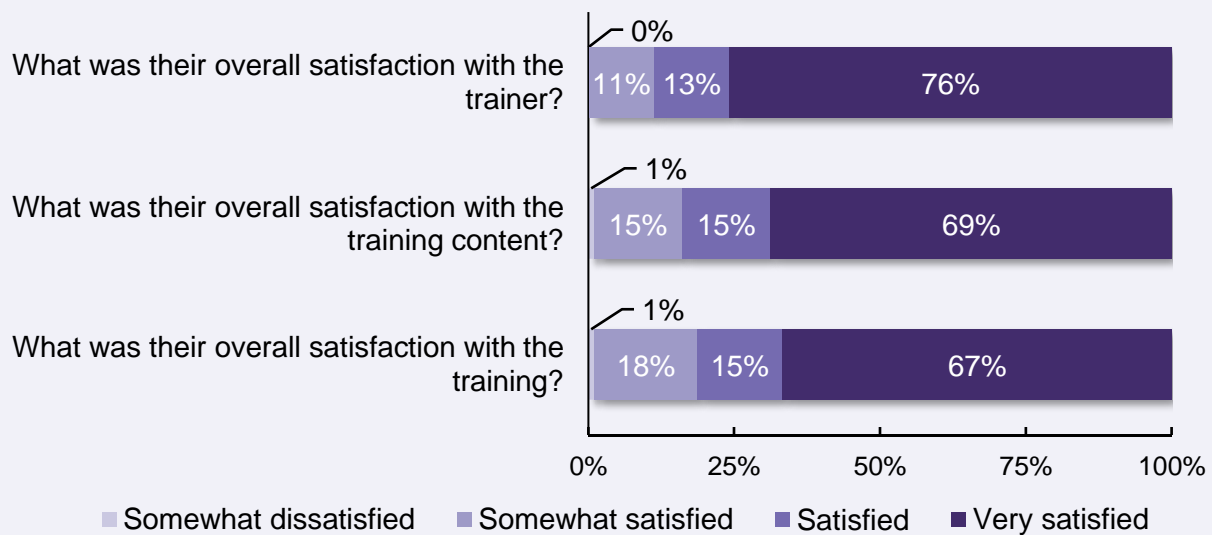


Danielle Noon speaking to the attendees of the 2022 VACP/VACLEA Winter Conference about the REVIVE! for First Responders program, February 2022 [photo by Erin Schrad].

Overall satisfaction with the training, content, and trainers

About 67 percent of trainees reported being “very satisfied” with the training overall. About 69% said they were “very satisfied” with the training contents, about 76% reported being “very satisfied” with their trainer. Only 1% of trainees were “somewhat dissatisfied” with their trainer and 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-9 shows the breakdown of satisfaction ratings for all three items.

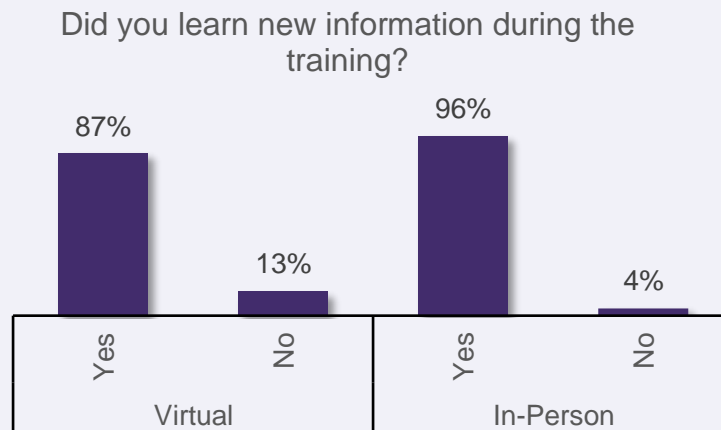
Figure 9. Satisfaction with Trainer and Training Materials



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

There is a significant difference in the perception of learning new information, especially the hands-on practical skills, depending on if the training was hosted in-person or through a virtual platform. As shown in Figure 10, participants overwhelmingly noted that they learned new information during the training. Among those who participated in-person, only 4% said that they did not learn anything new compared to 13% of those participating virtually who also responded “no” to the same question.

Figure 10. New information learned during the training



Danielle Noon providing information about the REVIVE! for First Responders program at the VACP/VACLEA Winter Conference, February 2022 [photo by Erin Schrad].

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 is very useful to me (126 responses),
- The training materials were to-the-point and easy to follow (54 responses)
- The trainers were knowledgeable and patient (26 responses),
- That the training had hands-on practical component (22 responses)
- I could participate over virtual platform (19 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,” “to-the-point,”* 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,
- How to train others.
- Learning about the effects of different drugs and how it affects our bodies

Those who reported that they were somewhat dissatisfied with the training also reported *having learned more information than they did before the training.*

Participants also complimented the trainers. One participant, for example, said that *“the trainer was very passionate, knowledgeable, and did not just read slides,”* and another said that *“the trainer encouraged questions from the attendants and explained everything very clearly. The combined effect of those things made the training very effective...”*

As was the case when asked about reasons for attending the training, a vast majority (123 respondents) said they are there because [they] *“...want to go out and train others...”, “...we are planning on setting up our own Narcan unit...”, “...I want to be able to train rural area First Responders on how to properly administer Naloxone...”,* and more responses that alluded that the participants are looking forward to transferring their knowledge in their communities. The ability to help others and save lives was noted in several responses. *“I chose to attend this training because I like to train others. Learning about how serious drug overdose has become and how to administer Naloxone to help save lives,”* was something that one participant mentioned, with another stating that they wanted to participate because of *“my personal and family experience with opioid overdose.”*

When asked about dislikes, most participants (101) explicitly mentioned that they had no dislikes. Of those who did mention a dislike, 29 stated that they did not like the virtual format, with one participant stating that they are *“it was not a dislike with training but I do better with hands-on in-person sessions but with the circumstances, virtual was the only option.”* On the same line of thought one participant responded that *“I am a hands on learner and the course was virtual. There wasn't much hands on training so it makes it difficult when it comes time to use it.”* However, some participants also expressed a need to have virtual as an option as they mentioned that they

"...hated driving four hours for the training". Another participant noted that there are benefits and weaknesses of both methods as they stated "I am new to the virtual training and I know it will be implemented even more as we move forward, but I'm just not used to it yet. It was beneficial in allowing me to be trained without travel through."

A few participants noted something they disliked about the training content, with one saying that the training materials were mostly the same over time and that they are getting fatigued. A participant noted *"Being a certified medic, I found it boring and a repeat of information I already knew."* Another mentioned *"It was refresher training, so I did not learn anything new. Same feeling when having to go through CPR training."* Similarly, another participant noted that the [training materials] *"...were redundant."* On the same lines, a few participants complained about the length and format of the training. Nine participants noted that the *"training session was longer than it needed to be"*, *"seemed like it took too long for the amount of information."*

Some participants were not happy that the training was not customizable to their unit as they mentioned *"the training was not geared towards our department. We are a large urban fire department and the training is more focused on smaller police and sheriff departments. I do not see this as a fault of the program."* Another participant mentioned that they disliked the training because they *"are not able to train non-security employees with the program that I learned, only Law Enforcement personnel."*



Danielle Noon providing information about the REVIVE! for First Responders program at the Spotsylvania County Sheriff's Office Health Initiative, June 2022 [photo by Margarida McBride].

Participant Perceptions: Areas for Improvement

Participants were also asked for recommendations as to how the training could be improved. Fifty-nine participants did not have any suggestions and/or stated that the training should be kept as is. The majority of recommendations for improvement (20) were requests for in-person and hands-on trainings, although a few participants noted that it would be flexible if they had both in-person and virtual option to choose from.

Other recommendations for improvement related to course content. One participant suggested adding *“more detail, especially to newer officers of how people react when coming out of an overdose”* while others suggested including *“more real life situations and incidents, more visualizations.”*

A few participants commented on the administrative side of the training and suggested that they be provided information in a checklist format with details of needed documentation at various stages. They note that it might help if they had *“a start to finish checklist for officers who train in the district. This list may show who to reach out to two weeks prior to the training and what paperwork we should get from them, the rosters and paper works that have be signed during the class ...”* Some participants suggested to not *“..overdo the training material. Students have become disengaged because the class is too long.”*

Finally, more than five participants mentioned that the training should be conducted in more places, and should be offered more often. And in addition to training the Law Enforcement officers, the training should also include non-security personnel and other lay persons.

Comfort with Naloxone Administration

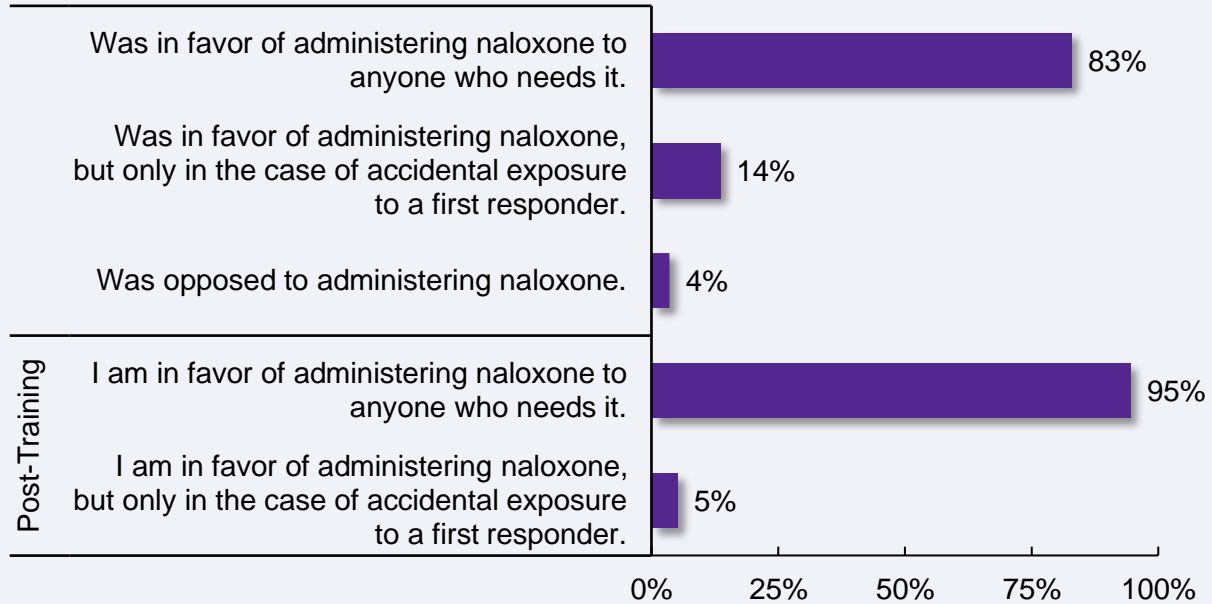
Prior to the training, about 83% of the trainees were in favor of administering Naloxone to anyone who needs it. About 14% in favor of using it only in the case of accidental exposure to a First Responder, and about 4% of trainees were opposed to administering Naloxone.

After completing training, 95% of trainees were in favor of administering Naloxone to anyone who needs it, 5% were in favor only in the case of accidental exposure to First Responders, and none were opposed to Naloxone administration. The training was helpful in improving the confidence, comfort levels, and opinion about administering Naloxone. The results for feelings regarding Naloxone administration before and after training are shown in Figure 11.



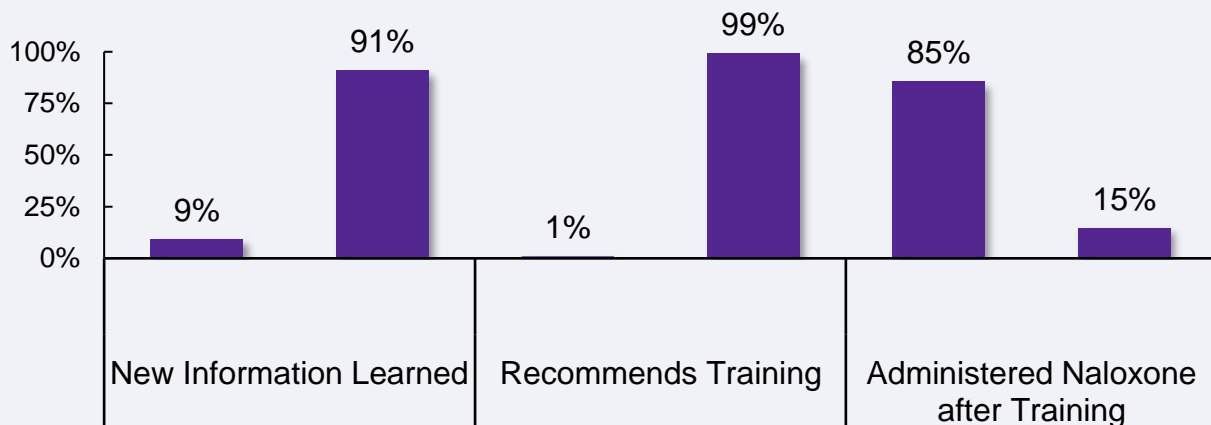
Sample Narcan Wall Mount Kit

Figure 11. 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. Figure 12 shows the post-training information for all survey respondents.

Figure 12. Post-training outcomes



Looking ahead

Looking ahead, the future seems promising for the REVIVE! program. 307 out of 310 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 overwhelmingly positive. One participant said that the program should focus on continuing the training and noted that

“ [the program should focus on] getting more First Responders in the program to attempt to save more lives to be able to help their communities out in the time of need..., ”

while many other said to “*keep up this great work!*” Participants noted the importance of the program and the impact on their community. In the words of another participant:

“This is a great training, and it is encouraged that trainers recruit others who want to be trained. Having this wealth of knowledge and sharing it with others is very beneficial.”

A few participants highlighted the need “*...to do a refresher course every so often*”.

Opinions were also shared about extending the training beyond First Responders to their other staff as one respondent noted “*I believe that non-security [personnel] should be taught how to use it [as well]*”, and another noted “*I would suggest that we need to extend the training to our secretarial staff. They are monitoring the lobby, which is where an incident may easily occur when a compromised person is reporting to the office.*”

Summary of participant survey

In sum, key findings from the interviews include:

- 67 percent of First Responders participated in REVIVE! training voluntarily.
- 42 percent took the training through in-person interactions
- 82 percent of participants were “very satisfied” or “satisfied” with the training overall. 89 percent were “very satisfied” or “satisfied” with their trainers and the level of expertise and experience they brought to the training. 84 percent of participants reported being “very satisfied” or “satisfied” with the training content.
- 91 percent of participants mentioned that they learned new information after taking the training.
- 96 percent of respondents who participated in an in-person training noted that they learned new skills compared to 87 percent who participated through a virtual platform. Participants were overwhelmingly in favor of “hands-on” in-person training, but others who were geographically dispersed seem to be in favor of conducting the training in both in-person and virtual formats. Participants suggested that the hybrid model 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 refresher courses.
- Significant improvement in confidence and positive attitude towards Naloxone administration was noted by comparing participant responses taken before and after training sessions.
- While more than 95 percent of respondents think that VACP should “*keep up the good work and do what they are doing*”, some also suggested areas for improvement along the following themes:
 - Expand on more in-person and hands-on training
 - Including more real-life examples and visualizations
 - Trainings to be offered in more places and conducted more often
 - Include more non-security personnel and lay persons in the future

REVIVE's Ongoing Challenges

REVIVE! is one of the largest and most comprehensive Naloxone training and distribution programs in Virginia. However, over the last few years VACP has faced and overcome a few notable challenges in administering the program. One of the biggest challenges was to adjust to the in-person meeting limitations caused by the COVID-19 pandemic while still maintaining the momentum of the program to provide quality hands-on in-person training to new trainees. Where necessary, many refresher trainings were performed through virtual platforms. The sharp increase in training output in 2021-22 also substantiate the efforts by the VACP team to push through and outperform themselves compared to the numbers in the previous reporting period.

However, VACP program administrators have identified a few other challenges they are facing in maintaining the quality of training received by First Responders and lay persons in some communities. VACP is aware that many communities are reluctant to working with the police and tend to approach local health departments and other community organizations for help. A few such organizations are providing their own flavor of Naloxone training, some of which are not as per the code or at par with the quality standard maintained by REVIVE! program over the years. This trend is especially prevalent in rural communities. In many such locations, the trainees are not receiving Naloxone after completing the training.

VACP has been proactively expanding their networks to such communities and is making sure that they are properly trained and that they are receiving the Naloxone supplies they need to administer when needed. VACP is looking to train at least two trainers in each department that provide First Responder services in those communities.

VACP's Outreach and Improvement Efforts

In the 2021-22 performance period, VACP has been proactively reaching out to communities reporting higher overdose-related deaths, and those with fewer resources to address the problem. VACP has been working closely with the Virginia Overdose Prevention Resource Committee (VOPRC) by participating in their bi-monthly meetings and collaborating with state agencies and other stakeholders working on opioid overdose prevention and response. The VOPRC is comprised of members from the Department of Behavioral Health and Developmental Services (DBHDS), Virginia Department of Corrections (DOC), Virginia Department of Criminal Justice Services (DCJS), Virginia Department of Social Services (DSS), Virginia Department of Health (VDH), Comprehensive Harm Reduction, Virginia Community Action Partnership (VACAP), Virginia department of medical Assistance Services (DMAS), Chief Medical Examiner's Office, Community Service Boards (CSB's), Peer Recovery Specialists, Virginia State Police, Framework for Addiction Analysis and Community Transformation (FAACT), High Intensity Drug Trafficking Area (HIDTA), Virginia Association of Chief's of Police (VACP), and other stakeholders.

The Committee meets on the second and fourth Tuesday of the month to collaborate and share information to increase the success of harm reduction efforts in Virginia. On the fourth Tuesday, the VOPRC has data meetings where data is reported by FAACT and HIDTA teams. The VSP,

FAACT Commonwealth report focuses on substance use related police incidents reported to Virginia State Police's Incident Based Reporting (IBR) system to answer various questions of interest. More specifically, the report contains information related to the demographics and trends in the number of opioid abuse related incidents over time. HIDTA uses the Overdose Mapping and Application Program (ODMAP) – a nationally used data mapping program - that provides near real-time suspected overdose surveillance data to support public safety and public health. VACP uses this information to pivot their strategies and to focus their resources in communities that report higher number of opioid-related incidents and/or deaths.

Closing Remarks

The national and statewide trends show that opioid cases surged to unprecedented heights during late 2020 and early 2021 due to the effects of COVID-19 pandemic, mostly caused by job losses, disconnected family ties, lack of in-person support, and to some extent by stimulus money that was available to those facing distress. Local governments and community organizations in Virginia have felt the severity of opioid addiction and overdose deaths during this period, and the impact has been documented by numerous national and local news agencies. VACP's REVIVE! for First Responders program has been on the forefront of helping to reduce overdose deaths by training First Responders to administer Naloxone and providing them with necessary supplies to save lives when needed. 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. However, social distancing protocols adopted during the pandemic added further challenge to the program in their efforts to reach out and provide in-person training in impacted communities. VACP quickly responded by pivoting their outreach strategy and provided necessary trainings either through in-person interactions or via remote meeting portals whatever worked best at the time. After a slight slump in training activities in early 2021, the program was quickly put back on track by late 2021 and early 2022 and started conducting training activities that was comparable to the pre-pandemic levels.

Looking over the previous iteration of the program's outcomes, it has already proved to be effective in what it does – provide life-saving Naloxone and the necessary training to First Responders. We have seen an overwhelmingly positive response from the participants on how the program has empowered them to handle emergency situations that involve opioid overdose. Besides the training to administer Naloxone, participants have also mentioned that the training is helpful to them to learn about different types of opioids and understand visible cues while responding to emergencies.

It is admirable how VACP has been able to reach out to all corners of the Commonwealth and conduct trainings despite the challenges caused by the COVID-19 pandemic. It is encouraging to see that the training output, which had slumped during the previous reporting period, has reached and surpassed the pre-pandemic levels.

In the previous iteration of this report – in 2021 – 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. It is commendable that VACP has responded to those concerns during the current reporting period by increasing their community outreach efforts, getting monthly data feedback from state and local agencies, and by focusing

their training efforts to communities that are hard hit by overdose emergencies and deaths. The mismatch, identified in prior studies, has sharply reduced during the 2021-22 performance period as highlighted in the analysis section of this report. We recommend that VACP continue to follow a data-driven approach to strategically train First Responders in affected communities. Additionally, COVID-19 pandemic allowed us unique opportunity to compare outcomes between in-person and virtual modes of training. Based on the responses from survey participants and also considering the difficulty in making the training accessible to rural communities, we recommend that VACP continue to provide virtual training options for refresher courses and for those who cannot participate in an in-person training due to longer travel times. We presume that in-person events are going to be the primary mode of training in the future but keeping virtual outreach options for disseminating education materials and refresher trainings can be helpful in expanding the program's footprints.

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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)