

Testing Narcan Boxes in Practice Against Increasing OD Rates in a Small Southwestern County

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Short Report

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Abstract

In seeking an intervention to help reduce the rates of opioid-related overdoses, the Rio Arriba County Department of Health and Human Services guided by studies reporting the successful use of “naloxone boxes,” small boxes deployed in a community that distribute Narcan. Based on these studies, naloxone boxes were deployed in Española, New Mexico in locations with high rates of overdoses. After an eight-month trial period, overall rates of overdoses decreased by 51.65% in a comparison between the eight months prior and after deployment. The department also recorded high rates of dosage refills, indicating that the community was utilizing the boxes as planned to obtain doses of naloxone. These two indicators, combined with others, indicate that the boxes can be an effective intervention for high rates of opioid-related overdoses in small communities.

Introduction

The overdose (OD) death rate of Rio Arriba County (RAC), New Mexico is 115.6 deaths per 100,000 people (Deaths due to Drug Overdose by County, 2025). This is compared to an average of 43 deaths for all of New Mexico (Deaths due to Drug Overdose by County, 2025), and 31.3 for the United States (Drug Overdose Deaths in the United States, 2026). Further, from 2015 to 2022, RAC saw a 60.6% increase in drug OD deaths and had the highest number of opioid OD related emergency department (ER) visits (189.6 visits per 100,000), 14% more than the second highest county in the state (Rise in overdose deaths and ER visits, 2025).

Naloxone, more commonly referred to by its brand name, Narcan, was introduced in 1960 (Kolbe & Fins, 2021), and when administered (via nasal spray or shot), immediately reverses and blocks the effect of opioids, reviving someone experiencing an opioid overdose (OOD), restoring their breathing, and removing them from the OD state (van Dorp et al., 2007). It is an effective and safe treatment against deaths caused by opioids and has saved the lives of thousands of people.

In RAC, naloxone has and continues to be a primary intervention used to decrease the number of OOD-related deaths through numerous programs and initiatives. For example, education about naloxone and its distribution has been taken up through mainly county-run programs. Between 2021 and 2026, the Rio Arriba County Department of Health and Human Services (RACHHS) obtained numerous grants that focused specifically on increasing naloxone use within the community. These programs included training in administering naloxone, public information campaigns to encourage its use, distribution to clinics and health centers, and stigma reduction campaigns.

Despite this work, OD-related deaths increased. The New Mexico Department of Health reported that during the first half of 2025, OD-related deaths increased by 48% (New Mexico Department of Health, 2025). In response, RACHHS carried out a focus group of community members suffering from opioid use disorder (OUD). At this focus group it was revealed that, though naloxone is freely available in the county, it was not conveniently located. In the only city in the county, naloxone was provided at the RACHHS office as well as three other medical clinics. However, none of these were near any of the areas

where ODs were regularly occurring. After searching for methods of delivering naloxone where it is most needed, RACHHS settled on naloxone boxes as the best solution.

As the name implies, naloxone boxes are simply naloxone-dispensing receptacles (typically in the form of the branded nasal-spray, Narcan) posted or mounted in specific locations. Unlike naloxone vending machines, boxes do not need a power source to operate and are available 24 hours. The size of the boxes range with different dimensions but can be as small as a shoebox. Because they are small, they can be placed in locations that might not otherwise accommodate a vending machine. They are usually affixed to a wall and so cannot be easily removed or stolen. To dispense naloxone, a user simply lifts the lid and removes the doses by hand with no limit to the number they may take. Because the boxes are small and simple they are much more economical, and so a higher number can be purchased for the same price as a single vending machine.

According to a pair of 2025 studies, one with a statewide scope and the other focusing on a much smaller region, naloxone boxes can increase distribution and reduce the number of OD deaths. In the larger study, findings indicated that naloxone distribution increased in the areas in which they were deployed and an overall decline in overdoses were reported throughout the state. Though the researchers did not provide specific data of the reduction, they did provide anecdotal evidence of stakeholders who insisted that people were saved due to the close proximity of boxes (Lynch, Gamalski, Roys, Albers, et al., 2025).

The second study focused on a single county in West Virginia and reported a 37% decrease in OD deaths. The authors attributed at least part of this decrease to the use of naloxone boxes, which provided the medication to people in areas that otherwise might not have had access (Kothe, Gray, Guthrie, Londner, 2025). Based on these findings, RACHHS decided to try this approach as a new method for decreasing OD deaths in the county. The following sections provide the details of our initiative and comparison of our results and those recommendations in earlier studies.

Methods

Using the insight of Lynch, et al., RACHHS created a map displaying the regions of RAC where ODs are most frequent (see Fig. 1).

With this information, we concentrated on the only city in the county, Española, where 35% of ODs occurred in 2024, much of them within a one-mile radius. After discussions with local business partners and stakeholders, 14 naloxone boxes were placed within the city at 14 locations. The deployment of boxes was paired with a public information campaign that included flyers and posts around the city as well as brochures at businesses. All resources told residents where naloxone could be found and provided addresses and directions to boxes.

Each box holds between 8–20 doses of the naloxone nasal spray, Narcan. Boxes were installed in their respective locations in October 2025. At the end of an eight-month trial period, we used emergency

dispatch data to track the number of ODs recorded in Española, NM from October 2025 to May 2026. We also tracked the locations of ODs before and after naloxone box deployment. Finally, we recorded the numbers of doses used to restock each box to understand how many doses were provided to the community over the eight-month period.

Results

The most obvious indicator of performance is the number of OD calls recorded by 911 dispatch before and after deployment. While OD deaths and ER visits would be ideal measures, statistics are still being gathered. Table 1 displays the number of OD 911 calls for Española pre and post naloxone box deployment per month for eight months prior to deployment and eight months afterwards. In total, the eight months before deploying the naloxone boxes, Española 911 dispatch had 91 OD calls. In the 8 months after deployment, there were 44 OD calls (see Table 1).

Table 1
Number of ODs 8 months pre and post
deployment.

Pre-Deployment	Number of ODs
02/2025	12
03/2025	17
04/2025	7
05/2025	15
06/2025	7
07/2025	6
08/2025	15
09/2025	12
Total	91
Post-Deployment	
10/2025	7
11/2025	4
12/2025	1
01/2026	6
02/2026	1
03/2026	6
04/2026	9
05/2026	10
Total	44

In a month-to-month comparison (Table 2) there were 75 calls in the same months the previous year compared to the 44 calls in those after boxes were installed.

Table 2
Number of ODs month to month comparison.

Date	Number of ODs	Date	Number of ODs
10/2024	7	10/2025	7
11/2024	6	11/2025	4
12/2024	11	12/2025	1
01/2025	8	01/2026	6
02/2025	8	02/2026	1
03/2025	13	03/2026	6
04/2025	7	04/2026	9
05/2025	15	05/2026	10
Total	75		44

In order to understand where to place boxes we analyzed the location density of ODs within the city limits. Taking this data, we placed the 14 boxes in specific points (2 in one location with a particularly high density). Table 3 displays the proximity to the box locations of ODs eight months before and eight months after deployment.

Table 3
OD proximity to naloxone boxes.

Distance Interval (yards)	Pre	Post
0-100	11	1
100-200	2	0
200-300	5	1
300-400	3	0
400-500	7	2
500-600	6	0
600-700	6	2
700-800	5	4
800-900	3	2
900-1000	4	2
1000-2000	25	23
2000-5000	14	7

The boxes were checked bi-weekly and refilled as needed. Each box could contain between 8–20 doses of Narcan (naloxone nasal spray). Table 4 displays the number of refills each box required over the eight-month period.

Table 4
Dose refills per box over 8-month period.

Box Number	Original Quantity Doses	Number Added Over 8 Months
1	20	143
2	10	175
3	10	43
4	10	133
5	12	235
6	10	37
7	10	61
8	10	92
9	10	25
10	10	32
11	8	101
12	12	5
13	12	15
14	12	0
Total	156	1097

Discussion and Conclusion

The most striking result was the 51.65% decrease in the number of OD's experienced in Española in the eight months after deployment of the naloxone boxes. Further, in a month-to-month comparison, the number of ODs decreased by 41.4% with the introduction of the naloxone boxes. These statistics indicate the boxes could have a positive impact on the number of ODs in specific locations. Based on prior OD location data, 12.08% of overdoses occurred within 100 yards of where the naloxone boxes were installed. That number dropped to just 2.2% after the installation. Further, 30.7% of the ODs occurred within 500 yards of the installation sites. Post-installation, only 9.1% of ODs occurred within 500 yards of the box installation. Finally, the number of refills needed at each box indicates the population was removing the doses as needed. This could be the result of many factors, but at the very least it means the boxes were dispensing Narcan throughout the community.

The two studies we used as comparison relied much more on anecdotal evidence to indicate whether the intervention had a positive effect, but in both cases concluded that the naloxone-dispensing boxes lowered the number of ODs in their respective regions. By all accounts our findings were similar and indicate the previous findings remain true. It is important to point out that there were no other new interventions introduced into Española in the time the naloxone boxes were being tried. The combination of lowered ODs in Española, combined with the reduction in ODs in close proximity to the boxes and the number of refills the boxes required, suggest that this intervention was successful.

Naloxone boxes are an economical method of distributing Narcan into the community. They are portable, easily maintained, and do not require complicated infrastructure. Based on our experience and the conclusions of previous research, they are highly recommended to communities searching for new intervention methods for lowering rates of ODs.

Abbreviations

RAC – Rio Arriba County

OD – Overdose

ER – Emergency Room

OOD – Opioid Overdose

RACHHS – Rio Arriba County Health and Human Services

Declarations

Ethics approval and consent to participate

Not applicable

Consent for publication

Not applicable

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

AD analyzed the target area for deployment, procured and placed the intervention, oversaw their maintenance, obtained and distilled raw data, reviewed and edited draft articles.

CL analyzed and interpreted data, planned and drafted the article.

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Not applicable

References

1. Deaths due to Drug Overdose by County, New Mexico, 2019–2023. New Mexico Department of Health. 2025. <https://ibis.doh.nm.gov/indicator/view/DrugOverdoseDth.Cnty.html>. Accessed May 11, 2026.
2. Drug Overdose Deaths in the United States, 2023–2024. Center for Disease Control. 2026. <https://www.cdc.gov/nchs/products/databriefs/db549.htm>. Accessed May 11, 2026.
3. Kothe N, Gray A, Guthrie S, Londner M. dispensing hope: leveraging distribution boxes to enhance low-barrier access to naloxone in healthcare settings. *Harm Reduct J*. 2025;22:85–92.
4. Lynch PS, Gamalski L, Roys V, Albers A, Burk K, Durán S, Facente SN. (2025). Use of low-threshold naloxone boxes for opioid overdose prevention in a Midwestern US State: a public health program evaluation. *Harm Reduction Journal* 2025; 22:185–192.
5. Rise in overdose deaths and ER visits in three Northeast counties. New Mexico Department of Health. September 18, 2025 <https://www.nmhealth.org/news/awareness/2025/9/?view=2275>. Accessed May 16, 2026.

Figures

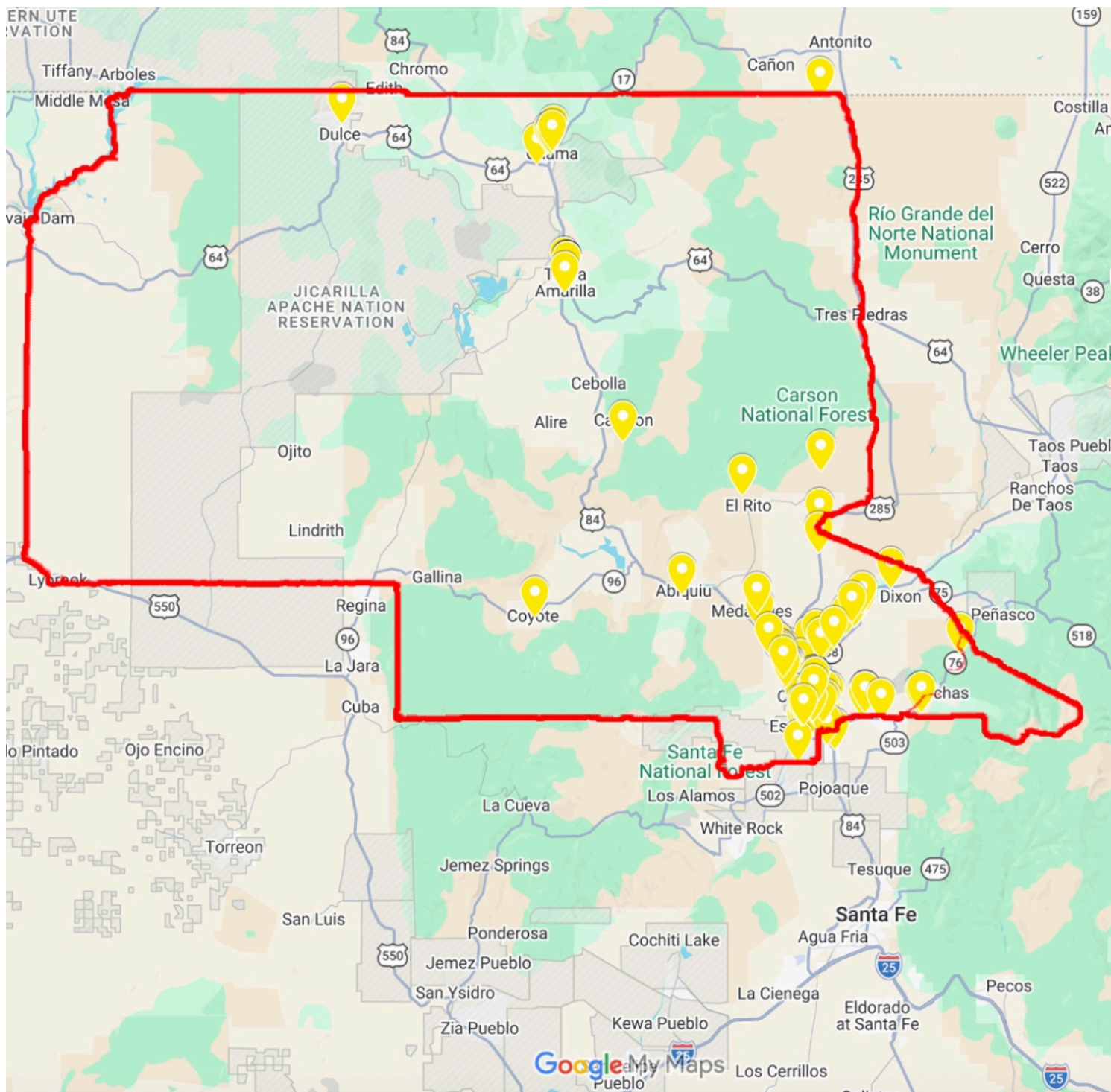


Figure 1

Overdose locations in Rio Arriba County, 2024.