

## BACKGROUND

- Marin County is located in the San Francisco Bay Area with a population of approximately 256,000 people.<sup>1</sup>
- Marin County ranks as the healthiest county in California, yet fares poorly in substance abuse indicators, including drug overdose mortality.<sup>2</sup>
- Marin County developed a drug overdose mortality surveillance system in response to this concern.

## OBJECTIVES

### Surveillance System

- Track local drug overdose deaths, including manner of death and associated drugs, to inform local programs and policies

### Evaluation

- Determine if the system is correctly counting the total number of drug overdose deaths and fully describing the underlying causes of death
- Compare Marin County's surveillance system to other California jurisdictions

## METHODS

- Used CDC's 2001 *Updated Guidelines for Evaluating Surveillance Systems*.<sup>3</sup>
- Conducted structured interviews with the Marin County Sheriff's Office, Division of the Coroner

### Data Sources

- Multiple Cause of Death (MCOD) files: contributing causes of death and associated pharmaceuticals<sup>4</sup>
- Death Statistical Master Files (DSMF): underlying cause and manner of death (intentional, unintentional, or undetermined)

### Data Quality

- Evaluated completeness of pharmaceutical data among drug overdose deaths using ICD-10 codes and MCOD files (unspecified drugs and unspecified narcotics)<sup>5</sup>
- Assessed consistency of total death counts between MCOD and DSMF files

### Stability

- Compared change in assignment of manner of death over time with change in coroner

### Stakeholder Survey

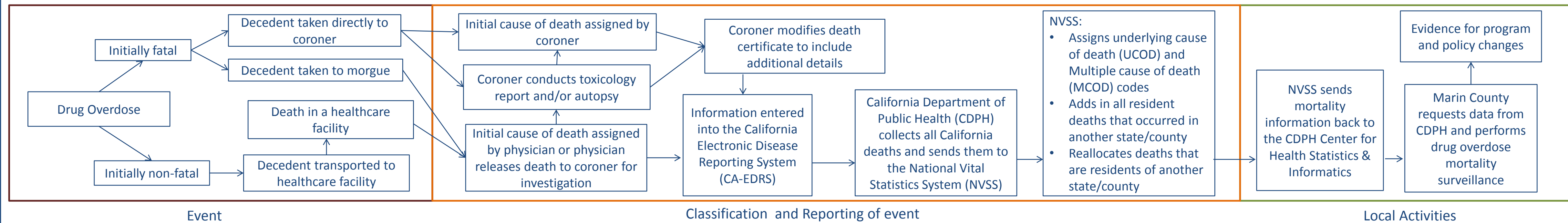
- Conducted questionnaire of 9 key stakeholders assessing usefulness, acceptability, timeliness, stability, and simplicity

### Case Definition Comparison

- Queried 42 California counties through state-wide data managers group for data sources and definitions used for drug overdose mortality surveillance

## RESULTS

**Figure 1. Description of Marin County's drug overdose mortality surveillance system**



### DATA QUALITY: COMPLETENESS OF PHARMACUETICAL DATA

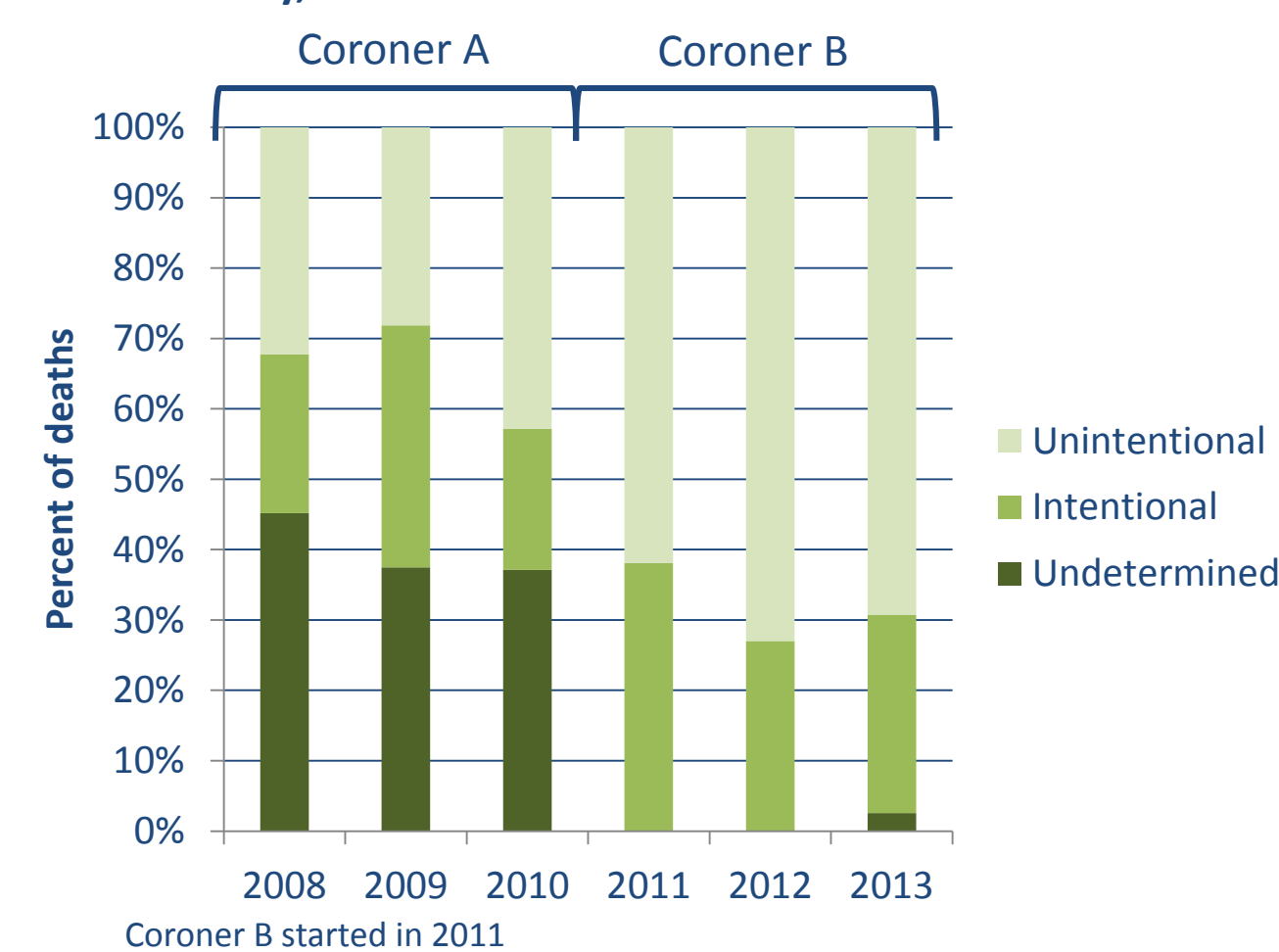
**Table 1. Completeness of pharmaceutical data in drug overdose mortality deaths using ICD-10 codes – Marin County, CA, 2009-2013**

| Drug Overdose Deaths   | 2009 N (%) | 2010 N (%) | 2011 N (%) | 2012 N (%) | 2013 N (%) |
|--|------------|------------|------------|------------|------------|
| Total drug overdose deaths (underlying causes of X40-44, X60-64, X85, Y10-14)  | 35         | 36         | 21         | 37         | 40         |
| Drug overdose deaths that only have a multiple cause of death of "other and unspecified drugs" (T50.9)                               | 0 (0)      | 1 (3)      | 9 (43)     | 10 (27)    | 16 (40)    |
| Total narcotic drug overdose deaths (underlying causes of X40-44, X60-64, X85, Y10-14 AND multiple cause of death codes T40.0-T40.6) | 28         | 25         | 6          | 16         | 10         |
| Narcotic drug overdose deaths that only have a narcotic multiple cause code of "other and unspecified narcotics" (T40.6)             | 0 (0)      | 0 (0)      | 0 (0)      | 1 (6)      | 1 (10)     |

Narcotic drug overdose deaths are a subset of total drug overdose deaths.  
Source: Multiple Causes of Death (MCOD) Files

### STABILITY

**Figure 2. Manner of death of drug overdose deaths by coroner – Marin County, CA 2008-2013**



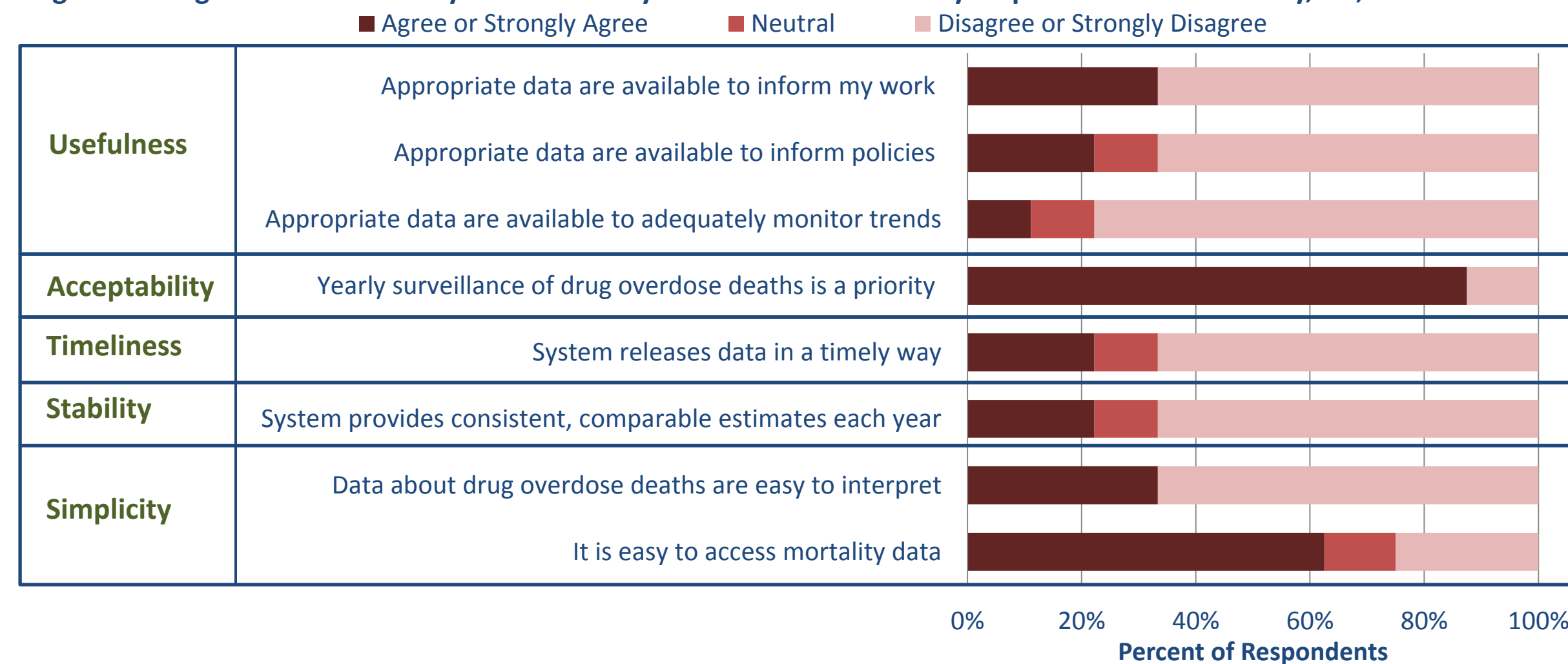
### DATA QUALITY: CONSISTENCY

**Table 2. Reported drug overdose deaths (N) by source– Marin County, CA, 2009-2013**

| Year of Death | Reported drug overdose deaths |            |
|---------------|-------------------------------|------------|
|               | DSMF Files                    | MCOD Files |
| 2009          | 32                            | 35         |
| 2010          | 35                            | 36         |
| 2011          | 21                            | 21         |
| 2012          | 37                            | 37         |
| 2013          | 39                            | 40         |
| <b>Total</b>  | <b>164</b>                    | <b>169</b> |

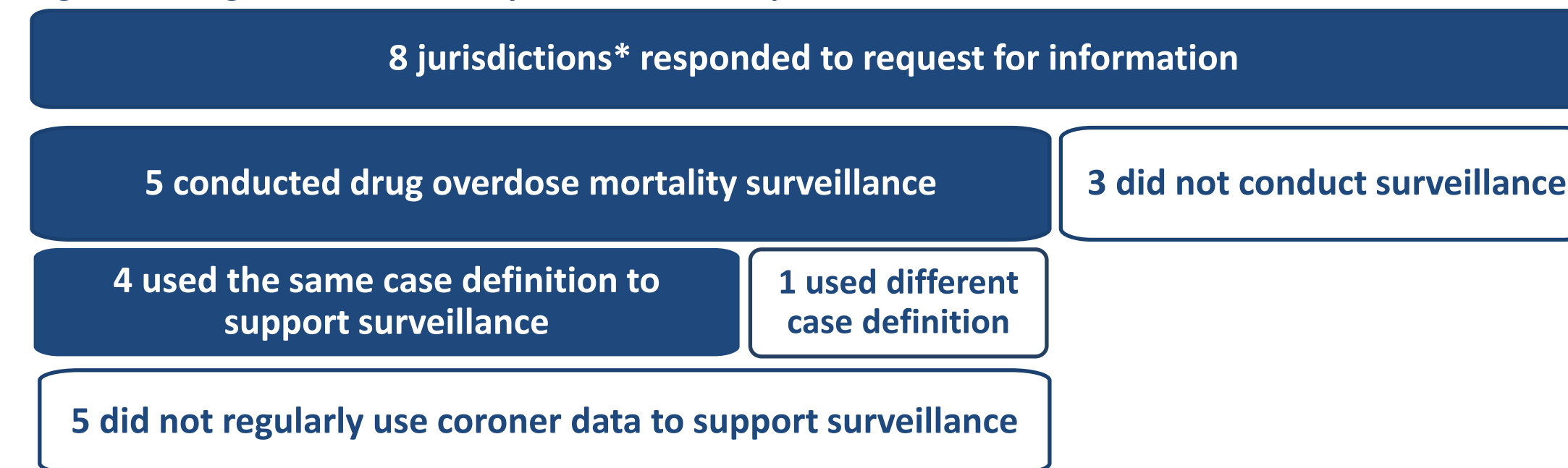
### STAKEHOLDER SURVEY

**Figure 3. Drug overdose mortality surveillance system stakeholder survey responses – Marin County, CA, 2015**



### CASE DEFINITION COMPARISON

**Figure 4. Drug overdose mortality surveillance comparison across California Jurisdictions, 2015**



\*19% of California jurisdictions participating in the data managers group (n=42)

## CONCLUSIONS

- The system meets its objectives, but several weaknesses reflect that the system is still in development.
- Drug overdose surveillance is sensitive to individuals involved in the death classification process.
- There is a need for more timely information to adequately respond to emergent events.

## LIMITATIONS

- No "gold standard" to compare the current surveillance system against in order to assess positive predictive value and sensitivity
- Little guidance on formal, standardized ways to assess drug overdose mortality surveillance

## RECOMMENDATIONS

- Collaborate with key stakeholders throughout the death classification process to increase specificity and stability
- Cross-reference MCOD and DSMF files to ensure complete reporting of drug overdose deaths
- Report information about drug overdose deaths to the community in an easily understood way
- Ensure alignment with state and national surveillance standards and recommendations
- Evaluate recently implemented mortality data system for improvements in timeliness, data quality, and completeness

## REFERENCES

- US Census Bureau, 2010.
- University of Wisconsin Population Health Institute and Robert Wood Johnson Foundation. County Health Rankings 2016. <http://www.countyhealthrankings.org/>
- Centers for Disease Control and Prevention. Updated guidelines for evaluating public health surveillance systems: recommendations from the guidelines working group. MMWR 2001;50 (No. RR-13):1-35
- California Department of Public Health Vital Records, <http://www.cdph.ca.gov/certific/birthdeathmar/Pages/default.aspx>
- Sabel, Jennifer et al. CSTE Overdose Subcommittee. Recommendations and Lessons Learned from Improved Reporting of Drug Overdose Deaths on Death Certificates. CSTE April 2016.

## ACKNOWLEDGEMENTS

We would like to thank RxSafe Marin and the Marin County Sheriff's Office, Division of the Coroner for their collaboration and support. This evaluation was supported in part by an appointment to the Applied Epidemiology Fellowship Program administered by the Council of State and Territorial Epidemiologists (CSTE) and funded by the Centers for Disease Control and Prevention (CDC) Cooperative Agreement Number 1U38OT000143-03.