



Phase 1 Fund Oversight, Analytics & Insights Solution

Tennessee Department of Mental Health & Substance Abuse Services - Opioid Abatement Council



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Tennessee Opioid Abatement Council

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Executive Summary

Landmark opioid settlement lawsuits, exceeding \$1 Billion earmarked for Tennessee, cannot bring back the Tennesseans lives lost to drug overdose deaths. However, the Opioid Abatement Council (OAC) can best honor those lost by ensuring these funds will be spent wisely to respond to substance use disorders and save lives, and to bolster public health and safety.

Research has shown that community members and people on the front lines know what is best for their own community. Tennessee recognizes this, as \$31 Million has already been distributed directly to its counties. However, help and oversight from the state is needed.

The impact of wise spending cannot be overstated. As substance use disorders continue to shift, health, mental health, and public safety officials are at a critical crossroads. Data analytics is the foundational tool for informed decisioning as governments confront the evolving substance use disorder crisis.

Technology tools alone do not deliver results. The people who are planning, designing, and solving challenges together, and the processes where projects are scoped effectively, are equally important and help determine success.

SAS prides itself with our people, processes, and technology. SAS would welcome a partnership to serve alongside the OAC to save lives and detect, prevent, and address opioid abuse and misuse.

Project Initiation

SAS understands the OAC desires a comprehensive substance use disorder analytics platform for ensuring data-driven distribution of resources, identifying successful interventions, and rapidly detecting changes in patterns of substance use.

The SAS Substance Use Disorder (SUD) Management Solution

is a matrix of offerings that provides a data and analytic foundation for establishing baseline metrics to support decisions and oversight of settlement fund allocation and impact, with capacity to extend data integration and analysis for broader public safety, care coordination, behavioral health and syndromic disease surveillance strategies. Our solution matrix illustrates how various analytic solutions can be layered on our platform to address each of these problems when and if the timing is right for various Tennessee government agencies (Figure 1).

SAS has extensive experience breaking down health data siloes and creating robust analytic data assets that extend the value of behavioral health data (e.g., claims and clinical data, specialized reports), public health data (e.g., prescription drugs, public health registries, clinical, syndromic surveillance), and law enforcement data (e.g., naloxone deployment) for actionable insights.

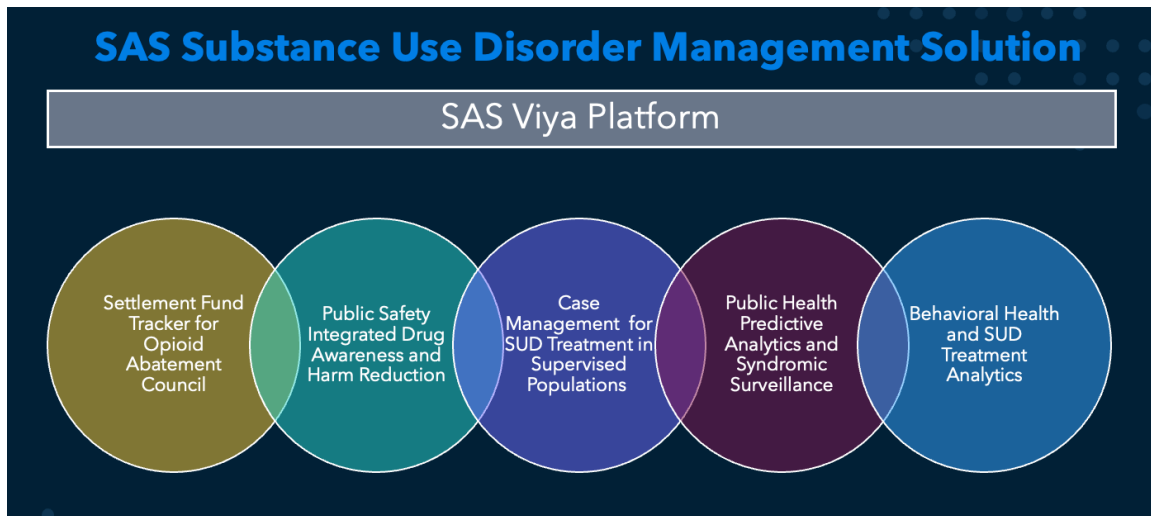


Figure 1. SAS Substance Use Disorder Management Solution Matrix

SAS recommends a phased implementation approach with the initial phases focused on settlement fund oversight. Phase 1, which is defined in the sub-heading below, is a data-driven solution to address fund allocation, fund tracking, and measurement against baseline outcome metrics for benchmarking program improvements over time.

This phase will serve as a resource for the Executive Director and staff as well as the members of the OAC in providing key information and analytic capacity to support effective grant review and funding decisions. With the insights of these analyses, the Council will be able to establish baseline metrics and understand the underlying factors driving Tennessee's opioid/SUD numbers and can prioritize funding toward appropriate prevention, education, harm reduction, treatment and recovery programs. In collaboration with data from the SmartSimple grants management system, this solution can provide reporting and visualizations that add transparency and tracking for settlement fund allocation. And longitudinally, the Council can use the data and analysis to track changes in baseline metric trends to understand impact and outcomes of overarching funding decisions.

In addition, consolidated grant data can enable a more automated search capability that allows staff and council members to quickly find grants, grant recipients and grant program information for compilation and comparison activities, saving time and manual effort.

The long-term objective of the first phase of this project is to form a reliable, accessible, intuitive solution to serve as the state's central source of SUD information. SAS' SUD management solution is the perfect foundation to build upon as new data are introduced or needed, it can be adapted to serve a myriad of stakeholder needs and will allow the Agency and OAC staff exceptional situational awareness. As the challenges of SUD change, the solution can be adapted to reposition or identify new approaches to accessing treatment, recovery services, and harm reduction or prevention strategies.

Phase I

SAS has the understanding, from internal research as well as conversations with OAC, the terms of the first settlement agreement. With 35% of proceeds distributed to county governments, and the remaining 65% of funds distributed through a competitive grant process, SAS is prepared to support OAC with the tools necessary to manage allocation, baseline key performance measure development, and other priorities as identified in Phase 1 of this project.

First round distributions to 95 county governments for a total of \$31.4 million were completed in Q1 of 2023, where counties now must select activities from a list approved by the Tennessee Opioid Abatement Council drawn from Exhibit E in the Opioid Settlement Agreement. The OAC continues to focus and prioritize review of the Community Grant applications and awarding of funds. Synchronous to this, the OAC desires the creation of progress reports, transparency dashboards, and short and long-term performance measurements for grantees. Noting there are many additional steps and complexities to implementing a successful program to manage these efforts, SAS proposes to work with the OAC through a comprehensive analytics roadmap process with the following possible objectives:

- A process to ensure equitable distribution of resources to the people and places in need;
- A method for discerning appropriate resource use within the constructs of the State of Tennessee and Opioid Settlement Agreement;
- Identification of key performance metrics, both public and state-sourced, with clear agreements for data provision, agreement, submission, and reporting; and,
- A process for trending and forecasting key performance measures, developing progress reports, and public and stakeholder dissemination of data.

The approach and objectives outlined in Phase 1 of this proposal may not be comprehensive and are likely to shift throughout the roadmap development effort.

SAS has multiple tools within our solutions to advance the starting point for this Phase. We anticipate leveraging the following collateral in planning and development sessions with OAC:

- 1) **SAS Overdose Prediction Model.** The SAS machine learning overdose model utilizes country-level data that extends beyond measuring overdoses. This model can be used to select appropriate abatement strategies or draft policies for such things as impacting the cost of housing, employment stability, reducing recidivism, or better placement of treatment centers.
 - **Sample baseline metrics for outcome measurements over time for ROI.** Having a starting point for measuring the success of an initiative is critical to compare progress over time and evaluate the effectiveness of interventions.

- **Collation of relevant public data.** Aggregating the relevant data starts with the data for modeling, determining baseline metric data, fund distribution data, and any other necessary data for ad hoc analytics. SAS has an extensive repository of datasets and sources for use in augmenting key performance measures or advanced analytic models.
- **Dashboards highlighting transparency of spending with outcomes by remediation strategy.** Developing reports or dashboards that answer the who, what, were, and why questions about the fund spending is critical for accountability, transparency, and trust for all stakeholders.

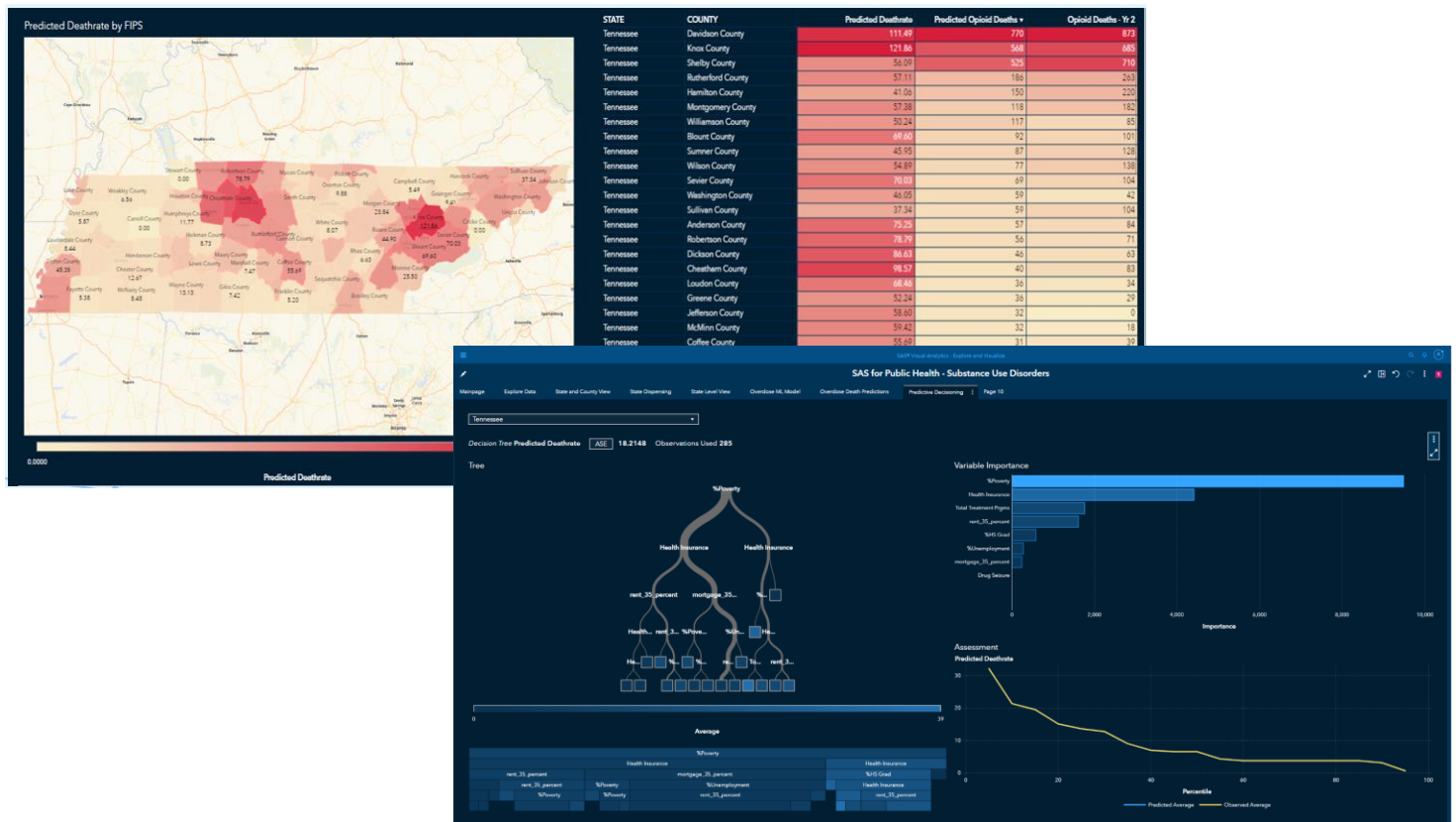


Figure 2. Example of report outputs to monitor ongoing community risk of overdose and key variables. Decision tree sample that can be used to predict drivers or communities at risk for overdose.

Scope of Work

The following details the deliverables expected for Phase 1 of the SAS engagement with OAC. These deliverables may shift throughout the project as mutually agreed upon by both parties.

Project Initiation

A kickoff meeting will be set to identify the following:

- Executive Director, Deputy Director, and other staff from OAC, key stakeholders and others as needed
- Critical resources needed from SAS including subject matter experts and technical resources
- Roadmap session discussion – timeline, objectives, vision, outcomes
- Discussion on external stakeholder expectations and needs (e.g., public, media, political)
- Operational details – project leads, meeting cadence, communication preference

Post-Initiation

Subsequent sessions will involve the exploration of the following:

- Determination of SAS-supplied datasets and TN desired and available datasets
- SAS' detailed analysis of social, economic, and demographic factors driving overdose poisonings and deaths
- Identification of baseline metrics
 - State and county-level performance measures
 - Progress indicators for county and grant recipients
- Evaluation of funding alignment with Tennessee overdose predictive model
- Documentation of report data sources, methods, and interpretation of results
- Data processing effort (detailed in the Data Source and Processing section)

Development of Visual Analytics reports:

- At least two (2) analytic iterations and feedback sessions, as mutually agreed upon between the parties; **reports may include semi-annual reports from counties and Community Grant awardees along with maps to visually depict where and how grant funds are being distributed.**
- Development of a series of dashboards and/or reports within Visual Analytics **that can be published to OAC website to aid in transparency.**

- Overlay of overdoses, actual and predicted, treatment center locations, settlement fund allocations
- Baseline metrics as detailed above
- Optional – public-facing dashboard as defined by OAC

Data Source and Processing

SAS public datasets and sources includes, but is not limited to the following:

- American Communities Survey
- SAMHSA
- CDC Wonder
- CDC Social Vulnerability Index
- DEA diversion data
- VERA incarceration data
- County business patterns

Additionally, mutually agreed upon Tennessee specific data for the model and baseline metrics, may include:

- Medicaid OUD diagnosis in county by year or quarter
- Naloxone Administrations by county by year or quarter
- Law enforcement data
- CSMD data – count of individuals prescribed >90 MME by county by year or quarter
- Funding data by county (if possible, programs or remediation strategy associated)
- Funding data by grant and remediation strategy
- Overdose deaths by county if different from public data
- Treatment facility data
- Treatment providers

Data Cleaning and Preparation: The collected data will then be cleaned and prepared for analysis. This will involve identifying and addressing missing or incomplete data, checking for outliers or errors, and standardizing data formats.

Exploratory Data Analysis: Once the data has been prepared, an exploratory analysis will be conducted to identify patterns and trends in drug overdose incidents across different states and counties. This analysis will provide insights into the key factors that contribute to drug overdose incidents, such as demographic, socioeconomic, and geographic factors.

Model Development: Based on the exploratory analysis, the overdose prediction model will be refined with the additional Tennessee specific data.

Model Evaluation and Validation: The predictive model will be evaluated and validated. The model will be tested on historical data to assess its performance, and the results will be compared to actual drug overdose incidents to ensure that the model is accurate and reliable. People, Processes, Technology

People

Successful data projects are more about people than data —both the people on the data project team and the people served by the agency’s initiatives. Projects should adopt a human-centered design approach, which focuses the data analysis design on the people most affected by the projects. It requires staff to rethink and transform the way project design and analysis are usually deployed and may require consulting with the people the program intends to serve.

Equally as important, project teams also should be interdisciplinary to incorporate people of diverse skill sets beyond data expertise so that important perspectives that can make or break the project are captured.

That said, SAS believes our interdisciplinary SUD Response Team mirrors the make-up of the TN Opioid Abatement Council.

Meet the SAS Substance Use Disorder Response Team

							
Shaun Barry Global Fraud Director	Josh Morgan National Director of Behavioral Health	Meg Schaeffer National Public Health Advisor	Juan Colon Law Enforcement Industry Consultant	Ann Cutrell Pharmacy Supply Chain Industry Consultant	Kevin Harrington Policy Advisor Law Enforcement	Joseph Dunlap PDMP Analytical Consultant	Steve Kearney Global Medical Director

SAS has assembled multi-disciplinary expertise to organize our approach to help governments make better decisions using data and analytics.

Processes

Project scoping is a way to set boundaries on your project by defining specific goals, deliverables and timelines. The idea is to start small (The Phase 1 approach) and then use what you learn to build more complex and nuanced analyses. SAS will work with TN to gather requirements and define additional scope or assumptions as additional information is available.

If the proposal is approved, SAS will conduct a series of workshops for requirements gathering, beginning with the project kickoff. Individual follow-up meetings with the Agency staff will then be conducted as needed. SAS will orchestrate the workshops over four to six weeks, covering both business and technical requirements.

The agenda, timing, and details of the workshops will be reviewed and coordinated with the Agency. The output from the workshops and individual follow-ups will be documented in a 'Requirements Definition' document. The document will describe the requirements for deployment, data integration, analytic and reporting enablement, open-source integration, security, and IT. The document will be stored in the project repository and will be updated as needed.

Following the requirements workshops, SAS recommends working with the Agency using the Agile development methodology. More details about SAS' suggested implementation approach will be provided if requested.

Phase 2 and Beyond (Additional Engagements)

SAS is committed to supporting the State of Tennessee in achieving sustained, long-term reductions in the impacts of substance use disorders. The first phase of this project will set a solid foundation for a number of expansion options for Phase 2 and beyond. Ideally, SAS will continue to assist in visioning future projects with OAC leveraging industry expertise

- 1) Longitudinal tracking system
 - a. Self-service data submission and progress reporting
 - b. Site-specific project monitoring
 - c. Extensive, multi-agency data integration
- 2) Evaluation of multi-agency needs to combat the SUD crisis
 - a. Public health
 - b. Public safety
 - c. Human services
 - d. Medicaid
 - e. Others
- 3) Comprehensive, interactive public reporting
- 4) Partnership projects with academic institutions

Pending a successful implementation of Phase 1, next steps would be to identify additional data set to be added to the platform for additional ad hoc analysis -or- explore other SAS solutions such as:

Integrated Drug Awareness & Harm Reduction Solution:

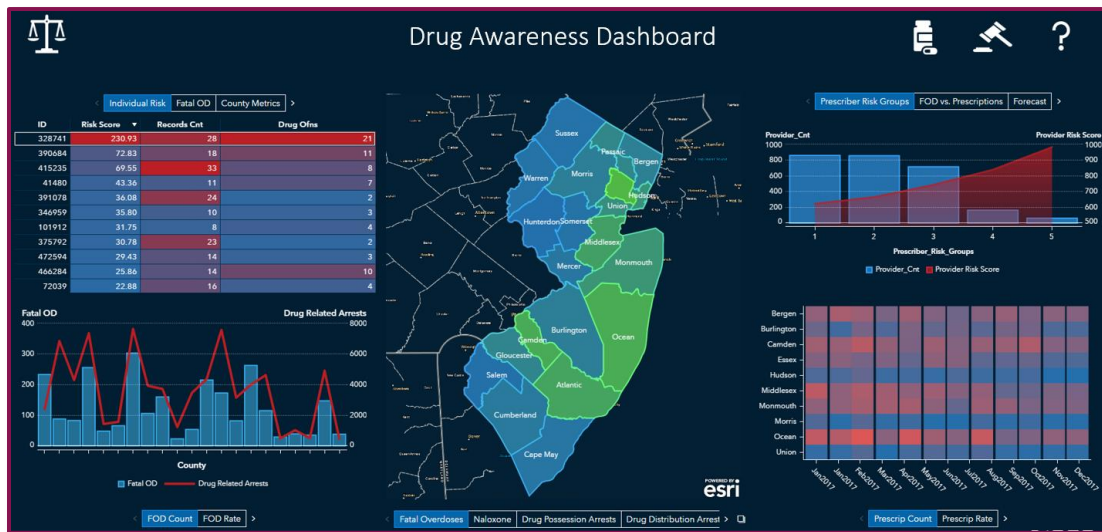


Figure 3

Medication Assisted Treatment (MAT) Solution for Supervised Populations:

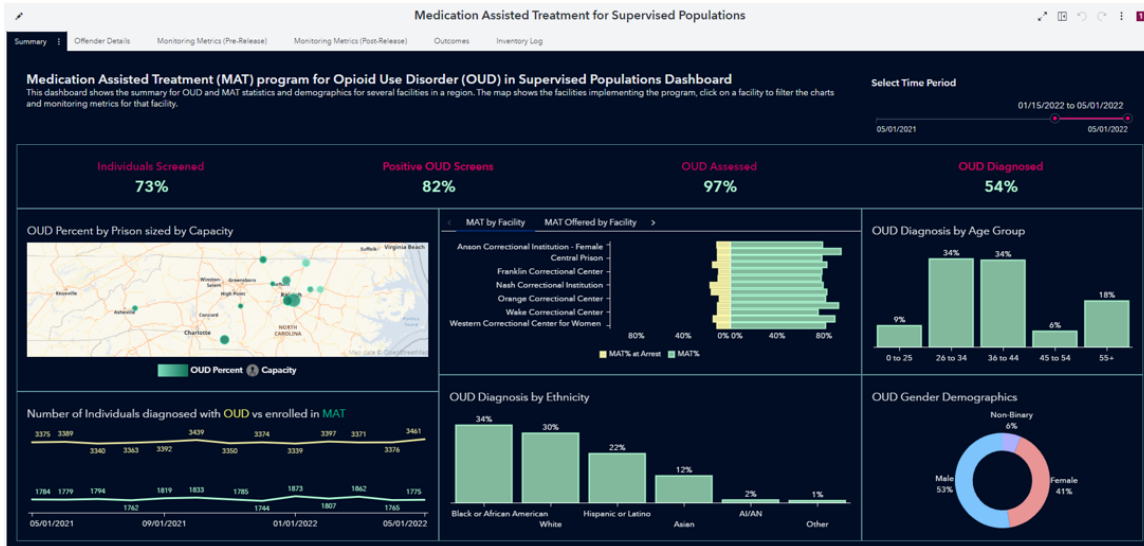


Figure 4

Estimated Pricing Range

Estimated Software and Services Cost

The effort and pricing identified is a good-faith estimate based on the information known at this time. SAS will work with OAC to gather additional requirements to achieve a final price. Final pricing may fall outside of this range if the scope changes or additional information arises. As reflected in the estimate below, the first year is the estimate provided during the OAC meeting on October 2, 2023. Year two reflects small additional development and maintenance and support of the platform. Year three is maintenance and support.

Year 1	Year 2	Year 3
1/1/2024-12/31/24	1/1/2025-12/31/25	1/1/2026-12/31/26
Design, Implementation & Delivery	Continued Development & Platform Maintenance/Support	Maintenance/Support
\$1,465,805.00	\$446,050.00	\$363,327.63

Key Assumptions

- During pre-kickoff planning and preparation, the parties will identify and mutually agree upon the data for use in this project.
- SAS will provide public datasets and sources at county level geography for the State of Tennessee
- SAS will work with TN and to identify potential additional data sources
- Data may include multiple data tables with mutually agreed upon specifications and requirements, including number of tables and field.
- SAS is not responsible for the quality of the publicly available data
- All SAS services will be based on Time-and-Materials.
- The effort and pricing identified is a good-faith estimate based on the information known at this time, with an assumption that final pricing is anticipated to fall within the provided range based on the current scope. SAS will work with TN to gather additional requirements to achieve a final price. Final pricing may fall outside of this range if the scope changes or additional information arises.
- TN will make data sources identified as part of SAS requirements gathering available by the date specified in a mutually agreed upon project schedule. Such data sources must be fit for the purposes of this project as defined.
- SAS will work with TN to gather requirements and define additional scope or assumptions as additional information is available.
- All texts from applications will be provided in English.
- SAS assumes that approximately 50,000 document pages will be processed for text extraction per month.
- SAS assumes there will be between one (1) and twenty (20) unique form types with a maximum of three (3) pages per form type and a maximum of twenty (20) unique extractions (key/values). One of the form types may be the application document itself. An example of an additional form type may be a 1099 form.
- The only document used for contextual extraction will be the application form.
- The processing of document types will not be on demand.
- Application forms will be uploaded as a .pdf format only. Applications may be handwritten as a scanned .pdf or in a fillable .pdf format.
- SAS assumes that the web portal to store and manage applications will not be public or entity facing. Entities applying for grant funding would apply to TN and the application will be uploaded to the web portal internally by TN users.
- TN is responsible for procuring all third-party software licenses or Services required to complete the Services, including Microsoft OCR Services.

Conclusion

By allocating funds at the county level, the state of Tennessee has proven they trust the members of a particular community know their needs best. According to a study just released from the state of Pennsylvania:

“If you fund communities and provide structured support, you can make transformational change beyond what might be possible with a top-down approach.”
--lead author Renee Cloutier, PhD.”

It is the article's statistics that are impactful. Counties that implemented a strategy of coordinating communities around addressing the opioid overdose crisis reached a high of 3.8 fewer deaths per 100,000 compared to non-coordinating communities.

This proposed Phase I Solution is designed to be the foundation to allow the state of Tennessee to help counties plan, implement, and sustain individualized efforts to reduce opioid supply, opioid demand, and risk of opioid overdose.

For fiscally responsible government agencies, cost is always a factor when making decisions for assets, including data analytic solutions. How do you determine the ROI? While it is impossible to put a value on saving a life, consideration the study cites an estimated the average economic cost of one opioid overdose death in 2015 was \$10.5 million (The Council of Economic Advisers, 2017).



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