

November 2019



# **The VILLAGE** **Prevention Plan:** Improving prevention efforts and health outcomes for people who use drugs.

Findings from the VILLAGE Project:  
A Jurisdictional Plan for Rhode Island



**BROWN**  
School of Public Health



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# Our Challenge

The current drug overdose crisis is causing a rise in infectious diseases. Our team at Brown University worked with the Rhode Island Department of Health to understand the state's risk for an outbreak of new HIV or hepatitis C infections. We needed new tools to help identify an outbreak if it occurred. Using these tools, we can establish resources in those areas to help prevent such an outbreak from occurring.

## How were we successful?

By combining national census data and regional opioid overdose surveillance information, we were able to use advanced data analysis methods to understand the factors that put communities at risk for a potential outbreak. We then created new tools, such as heat maps, to help identify neighborhoods and towns that are at higher risk for potential outbreaks in the future, as compared to other towns in Rhode Island.

## What do we recommend?

Our team at Brown recommends a statewide prevention plan. We recommend that local towns and cities focus on increasing their prevention services. To start, this means working with state agencies and policymakers, like the Governor's Overdose Prevention & Intervention Task Force. The Task Force has an Action Plan for our state to help save lives, and this prevention plan will complement the Action Plan. **Our prevention plan is a toolkit of programs that will help prevent an outbreak. These include services like HIV/HCV rapid testing, vaccination clinics, and syringe service programs.** We recommend that all communities work to improve prevention services for people who use drugs, but especially those who are at higher risk.

## Acknowledgements

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### Community Partners

Special thanks to the many organizations in Rhode Island who are working hard to address the overdose crisis in our state. Additional thanks to the members of our stakeholder group, your thoughtful input and critical insights made this work possible. Finally, thanks to our partners at the Rhode Island Department of Health, including Thomas Bertrand, Katharine Howe, Anna Civitarese, Theodore Marak, and Jennifer Koziol.

The opinions presented herein do not represent the views of the Centers for Disease Control & Prevention, nor do they represent the official policy of the Rhode Island Department of Health or other Rhode Island state agencies.



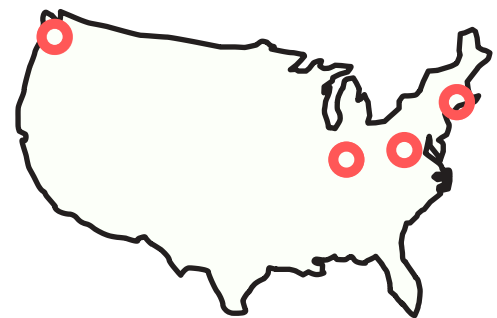
## Our Challenge: Improving prevention efforts and health outcomes for people who use drugs.

The United States (US) is in the middle of a sharp rise in opioid-related overdose deaths. This has created a public health crisis in many parts of the country. These deaths are caused by a rise in opioid use, such as heroin and illicit fentanyl use, **among people who use or inject drugs (PWUD)**.<sup>1</sup> The number of new HIV and hepatitis C (HCV) infections are also growing among PWUD, which means HIV can potentially spread to entire social groups (also called **social networks**). When these infections happen in large, concentrated outbreaks in a social network we refer to it as an **opioid-related infectious disease outbreak**, and it is often a result of **unsterile injection drug use**.<sup>2–4</sup> Unsterile drug use is when someone re-uses or shares a needle or other supplies used to inject drugs (such as cotton filters, metal cookers, or even water), leaving behind trace amounts of blood for potential transmission of HIV or HCV to another person.<sup>5</sup>

The first major opioid-related infectious disease outbreak started in a rural county in Indiana, where more than 200 people were newly diagnosed with HIV over a two-year period (2015-2017).<sup>6</sup> Many of these people were also diagnosed with HCV. This outbreak led the Centers for Disease Control and Prevention (CDC) to take action to investigate and understand the causes of the outbreak, and to try and prevent similar outbreaks.<sup>7</sup> To do this, the CDC used the standard methods available for predicting, or forecasting, where the next outbreak might happen. They did this by merging large datasets such as national census data and snapshots of surveillance data such as new HCV infections.<sup>2</sup> The CDC's investigation found 220 counties across the United States as being at "high risk" for an opioid-related infectious disease outbreak due to factors such as unemployment rates, overdose fatalities, and high sales of prescription opioids.<sup>8</sup>

New opioid-related infectious disease outbreaks continue to be identified and investigated, such as recent outbreaks in Massachusetts, West Virginia, and Washington state.<sup>9,10</sup> Unfortunately, these most recent outbreaks were not identified in the CDC's initial county-level investigation. As such, the CDC wanted to repeat the original evaluation, but this time they asked individual states to do their own investigations. They encouraged states to use more regional and local data. The CDC's investigation provided an important foundation for using large datasets to look at HIV, HCV and overdose surveillance.

Drug-related outbreaks  
identified in the United States



The **Rhode Island Department of Health** (RIDOH) was awarded one-time funding to conduct the CDC-funded evaluation in Rhode Island, as part of the network of other states being asked to do similar work. RIDOH partnered with our team at **Brown University** (Brown), to help predict which areas in Rhode Island may be at highest risk for an opioid-related outbreak of overdose and HIV & HCV (*discussed more in the Data 101 section*). Our team at Brown decided to use newer methods that could help predict future opioid-related overdose and infectious disease outbreaks. As part of this project, RIDOH and Brown invited members of local **community organizations** to serve as a **stakeholder group** to oversee the project and to ensure that it was representative of the work being conducted in our state. This report contains the results of our evaluation and our recommendations to RIDOH to improve prevention efforts and health outcomes among PWUD in our state.

Our team at Brown named this work **The VILLAGE Project** (***V**ulnerability **I**nterpretation of **u**nder**L**ying **L**ocal risk **A**nd **G**eographic **E**vents*).

We used multiple datasets to identify both towns and neighborhoods in Rhode Island that may be at risk for a future outbreak of HIV infection or other drug-related harms. Using Rhode Island's own detailed geographic data, we were able to answer **our big question**:

**What areas in Rhode Island are at greatest risk for future overdoses and other drug-related harms?**

By answering this question we were able to offer options to key stakeholders as they lead a data-driven response to this issue.

# How did we answer this question?



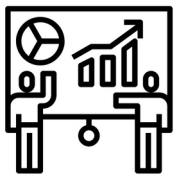
## First, we used data and statistics

We wanted to know what areas of our state were at risk for future overdoses or outbreaks of drug-related harm. We used very detailed neighborhood data, like census data, to create a predictive model, or forecast, of where a potential overdose or infectious disease outbreak might happen (see the section, "How does our model work?"). Some things were more likely to make an area higher-risk, like a neighborhood's prior history of fatal overdoses.



## Then, we mapped the results

Using those results, we made a color-coded map of Rhode Island to show the risks by neighborhood. Each neighborhood got a risk rating of Lower, Medium, or Higher, as compared to other towns in our state.



## Finally, we created the VILLAGE Prevention Plan

This is a plan for our state to improve prevention efforts and health outcomes for people who use drugs. This plan is meant to help communities feel confident using data to understand new trends. It also serves as a guide for how to make data-driven decisions. By using data, we can increase resources for people who use drugs and improve access to evidence-based prevention interventions.

## What do we mean by "data and statistics"?

In this section, we talk about how we analyzed our data, and how we created a map to better understand the results. **The model helped us answer our big question: "What areas in Rhode Island are at risk for future overdoses and other drug-related harms?"**

### What results were we looking for?

**Drug-related harms** is the term we used to describe some of the harmful health issues that can happen when someone uses drugs, like an accidental drug overdose or an infection. Drug-related harms are often related to unsterile drug use, or sometimes they are caused by the injection drug use itself. In addition to seeing more HIV infections, we have seen growth in other health issues, like hepatitis A, hepatitis C virus (HCV), and endocarditis.<sup>3,11,12</sup> **So, when we talk about our results, we mean that some communities are at higher risk of an outbreak of these specific health issues: like accidental drug overdose, HIV, and HCV.**

### What is a model?

Models are used every day to explain, predict, or test different ideas. A model can be used to answer different questions, such as "what is the weather forecast this week?" We created a model to predict where overdose and other drug-related harms could happen across our state. Our VILLAGE model is like a weather forecast for opioid-related outbreaks. It can help us answer the question "what areas in Rhode Island are most at risk for future overdoses or drug-related harms?"

Models contain many different variables, or categories of information, collected over a period of time. In the example of a weather forecast, scientists take years of information about variables such as temperature, humidity, and wind speed, and then use that information to predict what will most likely happen over the next week. Together, these pieces of information would be called a dataset. Mathematical formulas are used to create these predictions and the larger the dataset, the more accurately the model can predict the weather.



## Why use maps?

**Geographic data, like addresses, help us see information like where overdoses are happening.** We can put this data on a map to understand the information in new ways.

Addresses can also tell us about the neighborhoods where overdoses are happening, and about the people that live there, like how much people spend on rent or how many vacant buildings are in that neighborhood. Geographic data can be sorted by county, city, voting district, or by neighborhood.

Using geographic data can help answer important questions, such as “What parts of the state have the most overdoses?” or “Where is there the biggest gap in services?”

Here are some common examples of geographic data:

- A city, town, or village (Woonsocket, Burrillville, Wakefield)
- A zip code (02865, 02909)
- A location of interest (Kennedy Plaza, Colt State Park)
- A point on a map or an address (224 Westminster Street, Providence, RI)

## Why does detailed geographic data matter to us?

In terms of geographic data, we can think of something being “more detailed” as being packed with more information. Using detailed units of geographic data helped us answer specific questions that couldn’t be answered if we had used more general units of geographic data. This difference in size is called **geographic resolution**, and the higher the resolution, the greater the detail. Consider this example of why higher geographic resolution matters:

*You have 100 kits of naloxone to distribute within a large city. You might ask: “Where is the need for naloxone greatest in the city?” If you had a map showing the need at just the city level, it would be difficult to decide where to send the kits. Some neighborhoods might have a greater need for the kits than other neighborhoods. If you had a map with high geographic resolution, showing data at the street and address level, you would be better able to make a decision.*

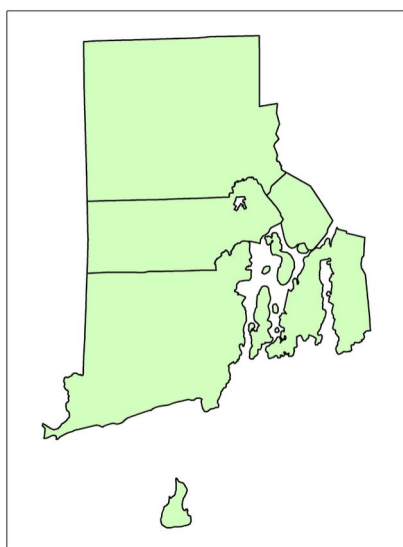


Unlike other states which have many counties, Rhode Island only has five. This is important because the CDC used county-level geographic data for their initial investigation. This meant that for us to create a detailed map, we would need to use smaller measurements of geographic data.

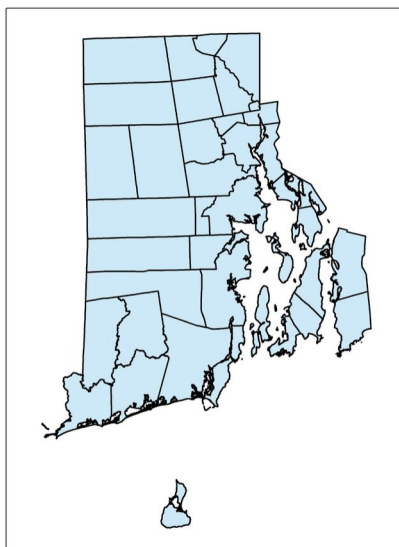
For our VILLAGE model, we created predictions at the **neighborhood-level**, also known as census tracts. Each census tract contains around 2,500 to 8,000 people, which we called a "neighborhood". Census tracts are not always the same geographic size but contain about the same number of people. This means that smaller census tracts are denser than larger ones.

**Density** can tell us how many people are living closer to one another and can be an important factor when deciding where and how services are distributed within the state.

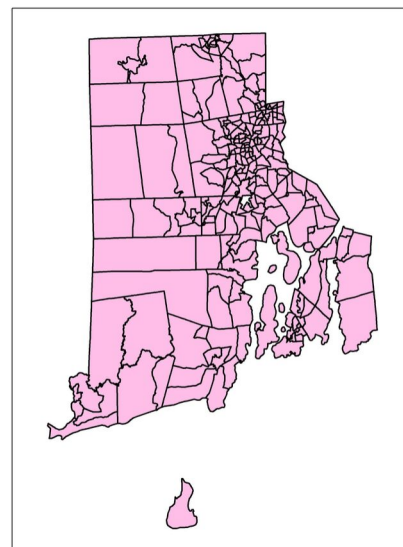
### County



### Town



### Neighborhood



**Above:** Differences in geographic resolution between county, town, and neighborhood maps. For our VILLAGE model, we used neighborhood-level detail, also known as census tracts

## How does our model work?

An overview of our VILLAGE model:



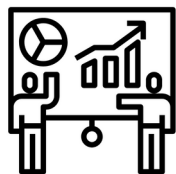
Many data sets were combined, including census and surveillance data



The data was analyzed by the Brown team of epidemiologists using computers



The results were refined and then put on a map that would be understandable



We presented our map and the results to stakeholders and diverse audiences



There were many questions and ideas from experts and community members



This feedback led to improvements to the model, the maps, and our findings

Like a weather forecast, the VILLAGE model works by using a series of algorithms to run thousands of mathematical calculations on a large amount of data on a computer. Each time we run the calculations on the computer, our results get better and more accurate. This process is also known as **machine learning**, using a computer and algorithms to run calculations and improve your results as you go. This process doesn't just run automatically, however; the machine learning process needs a lot of supervision by epidemiologists to run correctly and the results need to be interpreted accurately.

We wanted our model to focus on overdose deaths as a proxy, or stand-in, to represent the behaviors that would lead to an opioid-related outbreak generally. This means that if there were a high number of overdoses in a neighborhood, there would probably be a greater chance of other drug-related harms such as HIV and HCV infection. In our model, there were many more factors we included, like the treatment resources available in a neighborhood, or the average income of the neighborhood, all of which influenced the results. The results are called a **predictive model**, or forecast, like the map in **Figure 1**. A full description of our process will soon be published and included as a reference.

**The neighborhoods our model identifies as being at high risk share characteristics with neighborhoods that have seen high levels of overdose, infectious diseases, and other drug-related harms historically.** While the underlying factors about each neighborhood might be different, such as demographics, treatment resources, and harm reduction services, many might be at a higher risk for an opioid-related outbreak. This also means that two different neighborhoods, such as a rural town and an urban community, could have a similar level of risk.



## What makes a neighborhood "high-risk"?

The VILLAGE model identified some of the most influential factors that determined whether a neighborhood was "higher risk". Our model used machine learning methods for predicting health outcomes by neighborhood. More than 200 neighborhood-level variables were used to predict future opioid-related outbreaks as accurately as possible. As you can see in **Table 1**, some variables increased the chance of a neighborhood being higher risk while others decreased this chance. A paper describing our methods is forthcoming.

**Table 1: Important neighborhood variables**

These factors **increased** the chance of a neighborhood being high risk

- Households consisting of a single member living alone
- Residents age 15 years and older who are divorced
- High number of drug-related overdose deaths (2014 to 2016)
- Housing units with 1 or more occupants per room
- Residents who are Black/African American (non-Hispanic/Latino)
- Households with income under \$10,000
- Number of injection drug-related overdose deaths (2014 to 2016)
- Employed males in production, transportation, and material moving occupations
- Families with children and no workers
- Housing units with no car

These factors **decreased** the chance of a neighborhood being high risk

- The number of units with a complete kitchen (a refrigerator, a stove, and a sink with a faucet)
- Males aged 16 years and older who earned between \$75,000 and \$99,999
- Households with income from interest, dividends, or net rent
- Female residents who are between 15 and 24 years old
- Females aged 16 years and older who earned between \$65,000 and \$74,999
- Housing units with telephone service available
- Males age 25 years and older whose highest education level is a bachelor's degree

## Putting our results on a map

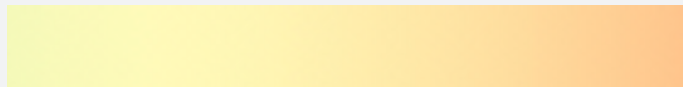
We created a map that shows what the model predicted for each neighborhood, which we broke out into three groups: Lower Risk, Medium Risk, and Higher Risk. **Please see Table 2 for detailed results by town/city, or Figure 1 for the full map.** We have included results by county in **Appendix C.** If you would like to see an interactive version of the highest risk areas, please visit our online map: <https://preventoverdoseri.org/village-map/>

### Areas at **Lower Risk:**



If your town is shaded blue on the map, it means you have a lower chance of experiencing future overdoses or drug-related harms as compared to other towns in our state. The blue shaded towns and neighborhoods might already have the resources and services necessary for preventing overdose and drug-related harms, or may have lower substance use when compared to other neighborhood

### Areas at **Medium Risk:**



If your town or neighborhood is shaded in yellow it means your community may be at a transition point between becoming high risk or becoming low risk. **These are the towns that have at least one medium risk neighborhood.** These neighborhoods may also border a high risk and a low risk area.

### Areas at **Higher Risk:**



If your town or neighborhood is shaded in red it means your community may be at higher risk of experiencing future overdose or drug-related harms. **These are the towns that have at least one high risk neighborhood.** These areas share characteristics with other neighborhoods that have seen higher levels of overdose, infectious disease outbreaks, and other drug-related harms.

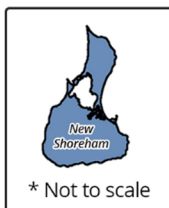
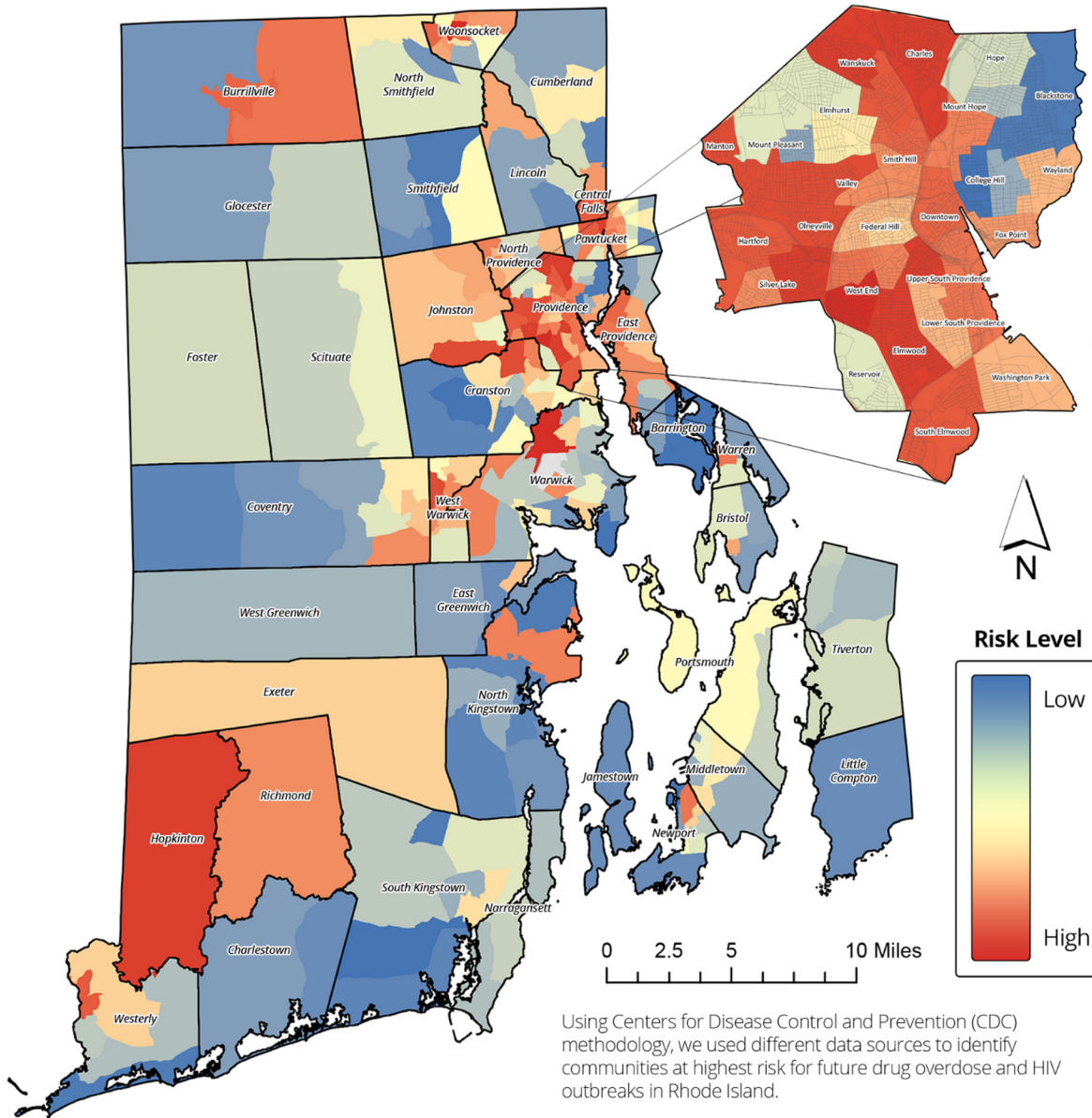
Figure 1: Map of Community Level Risks

## Community Level Risks for Potential Drug-Related HIV Infections and Overdose

by census tracts within municipalities (Rhode Island, 2018)



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**Red areas – those of high risk – indicate areas that share characteristics with neighborhoods that have seen high levels of overdose.**

The risk level does not necessarily mean that these communities have seen or will see high levels of overdose, but this map can be used to help deploy resources appropriately to prevent harms in communities that may face the biggest risk.

Please visit [preventoverdoseri.org/rfpmmap](http://preventoverdoseri.org/rfpmmap) to view an online version of this map.

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## Table 2: Community Map Results by Town

These categories group each town or city by their highest risk neighborhood.

### Low Risk Towns

- Barrington
- Charlestown
- Foster
- Gloucester
- Jamestown
- Little Compton
- Narragansett
- New Shoreham
- Portsmouth
- Scituate
- Smithfield
- Tiverton
- West Greenwich

### Medium Risk Towns

- Bristol
- Coventry
- Cumberland
- East Greenwich
- Exeter
- Lincoln
- Middletown
- Newport
- North Kingstown
- North Providence
- North Smithfield
- Richmond
- South Kingstown

### High Risk Towns

- Burrillville
- Central Falls
- Cranston
- East Providence
- Hopkinton
- Johnston
- Pawtucket
- Providence
- Warren
- Warwick
- West Warwick
- Westerly
- Woonsocket

## How can we improve health outcomes for people who use drugs?

1

**Universal Precautions:** Doing what already works in Rhode Island

2

**Scale Up:** Increasing universal precautions

3

**Taking it further:** Implementing promising practices

**In this section, we will go over the different risk categories, and what they mean for our state, and more specifically, your own neighborhood or town.** This means we will suggest prevention programs and interventions based on risk level, to give each community a better understanding of how to respond. We have split this section into three response categories:

- **Universal Precautions** (baseline interventions for all communities to consider)
- **Doing more of what works** (increasing existing interventions for neighborhoods at Medium or Higher Risk)
- **Taking it further** (potentially new interventions for Higher Risk communities or for communities who want to take extra precautions)

**These recommendations are designed to help shift Rhode Island's overdose prevention response to include other health risks related to drug use.** This means we can continue the strong, community-led interventions already happening across our state, while being proactive about new health risks.

**These recommendations align with ongoing prevention work across the state, and efforts to increase our use of data to drive the response.** This includes interventions that are recommended through RIDOH's CODE (Community Overdose Engagement) Project or the Governor's Overdose Prevention and Intervention Action Plan,<sup>13,14</sup> as well as at the national level through the CDC and the National Institute on Drug Abuse (NIDA).<sup>7,15</sup>

**Finally, RIDOH has existing technical assistance and evaluation support available to all communities who are working to implement or expand these interventions.** As part of a statewide effort to increase our understanding of this crisis, we encourage you to collect information about your programs or interventions--like how much, where, and to who you are giving services to.

- To learn more about Rhode Island's community overdose engagement, please contact: Jennifer Koziol, [Jennifer\\_Koziol@health.ri.gov](mailto:Jennifer_Koziol@health.ri.gov)

## Universal Precautions: Doing What Works in Rhode Island

Target: Low, Medium, and High Risk Communities

### Connect state & local prevention efforts

As the overdose crisis continues and changes, now is the time to ensure that all communities are represented during statewide policy, funding, and programming discussions.

#### Attend the Governor's Overdose Prevention and Intervention Task Force & Working Groups

- This is a monthly public meeting where statewide leaders and community members come together for data presentations and policy discussions about the overdose crisis. Each month there is a data-focused presentation about the overdose epidemic in our state, often followed by presentations from local programs or one of the statewide Working Groups. Policy efforts to address the overdose crisis are also highlighted at this meeting.
  - Task Force Meeting Schedule & Information, as well as past presentations can be found here: <https://preventoverdoseri.org/the-task-force>
- The Working Groups are smaller meetings that are more interactive and focused on one or two specific topics. **The Harm Reduction workgroup** would be a great place for local community leaders to connect with others around the state doing similar work.
  - Harm Reduction Workgroup: Contact [Ryan.Erickson@governor.ri.gov](mailto:Ryan.Erickson@governor.ri.gov) for more information.

#### Get Funding for Prevention: Community Overdose Engagement (CODE)

- A critical resource for increasing prevention efforts is through CODE, led by RIDOH and funded by the CDC. This is an opportunity for Rhode Island communities to align their local work with the Governor's Overdose Prevention and Intervention Action Plan, such as Peer Recovery Coaches, and naloxone distribution.
  - See video examples of statewide CODE Projects on PreventOverdoseRI.org: <https://preventoverdoseri.org/community-overdose-engagement>

## Universal Precautions: Doing What Works in Rhode Island

Target: Low, Medium, and High Risk Communities

### Promote Low-Barrier Health Interventions

Communities should take inventory of what prevention resources exist or may be needed in their town or neighborhood and determine if there are additional low-cost interventions that could increase their prevention efforts. See **Appendix B** for a sample Community Needs Assessment.

#### Ensure Access to Syringe Service Programs (SSPs)

- Syringe service programs (SSPs) are evidence-based interventions for preventing the spread of HIV and HCV as a result of drug use, and for improving the health of people who use drugs.<sup>16</sup> **They offer important supplies, health services, and referrals to people who use drugs.** Some of the supplies they offer include sterile syringes, fentanyl test strips, sterile water and cookers, as well as sharps containers. Most SSPs also offer HIV and HCV rapid testing, referrals and linkage to recovery coaches or substance use treatment. Additionally, most organizations that offer SSP services also provide case management support, which means they help people find housing resources, enroll in benefits, and connect with other basic needs.
  - Rhode Island has contracted organizations, such as **AIDS Care Ocean State (ACOS)** and **Project Weber/RENEW**, that oversee SSP coverage across the state through a combination of mobile, outreach, and fixed site locations.
  - Contact Katie Howe at RIDOH: [Katharine.Howe@health.ri.gov](mailto:Katharine.Howe@health.ri.gov); Ray Joseph of ACOS for details: [rayj@aidscareos.org](mailto:rayj@aidscareos.org); or Colleen Daley Ndoye of Project Weber/RENEW: [cdn@weberrenew.org](mailto:cdn@weberrenew.org)

#### Offer Free Vaccinations for People Who Use Drugs (PWUD)

- The CDC recommends that vaccines and preventative health screenings are offered alongside harm reduction services, including Hepatitis A and Hepatitis B vaccines.<sup>12</sup>
  - RIDOH has partnered with some community-based organizations in Providence, such as Project Weber/RENEW, to provide Hepatitis A vaccines for PWUD.
  - Contact Katie Howe at RIDOH for details: [Katharine.Howe@health.ri.gov](mailto:Katharine.Howe@health.ri.gov)
- People who use drugs, people experiencing homelessness, and people with a history of incarceration also experience an increased risk of developing tuberculosis (TB).<sup>17</sup> Screenings for TB may be another important addition to screening tests that harm reduction organizations can provide to help improve health outcomes.



## Universal Precautions: Doing What Works in Rhode Island

Target: Low, Medium, and High Risk Communities

### Promote Low-Barrier Health Interventions (continued)

#### Provide On-Demand Rapid HIV and HCV Testing and Linkage to Care

- Increased screening for HIV and HCV using rapid tests among people who use drugs (PWUD) will help with early detection and diagnosis of new infections. **Integrating rapid testing at community-based locations may help address lack of access for some communities.** Rapid tests are straightforward and easy to use, and offer results in 20 minutes or less.
- **All rapid testing programs should be closely linked with HIV Linkage to Care coordinators.** Wherever possible, linkage to HCV care and treatment should also be provided. RIDOH recently piloted a non-medical case management program for HCV linkage to treatment that showed promising results.
  - Contact Katie Howe at RIDOH for details: [Katharine.Howe@health.ri.gov](mailto:Katharine.Howe@health.ri.gov)
- Medications that can help prevent HIV infection, **pre-exposure prophylaxis (PrEP)**, are also recommended for people who have injected drugs in the past 6 months and have shared needles or works, or those who have been in drug treatment in the past 6 months.
  - Contact Dr. Phil Chan at The Miriam Hospital STD Clinic for details: [PChan@lifespan.org](mailto:PChan@lifespan.org)

#### Distribute Naloxone and Fentanyl Rapid Test Strips

- Since 2015, Rhode Island has focused heavily on increasing naloxone distribution to communities, including friends and loved ones of people who use drugs. In 2018, more than 16,000 naloxone kits were distributed in the state.<sup>19</sup> **Naloxone distribution is one of the best ways to prevent a fatal overdose** and offers the opportunity to engage the community regarding additional harm reduction and support services.
  - Contact Erin McDonough at Rhode Island Disaster Medical Assistance Team (RIDMAT) for details about community training and naloxone distribution: [emcdonough@ridmat.org](mailto:emcdonough@ridmat.org)
- Since 2018, Rhode Island has started piloting the distribution of fentanyl rapid test strips, **a low-cost rapid test that allows people who use drugs to test their drug supply for fentanyl**, prior to ingesting or injecting a drug.<sup>20,21</sup> Test strips may help people avoid unwanted fentanyl exposure, as well as additional opportunities to engage with harm reduction services and HIV/HCV testing.
  - Contact the Colleen Daley Ndoye at Project Weber/RENEW: [cdn@weberrenew.org](mailto:cdn@weberrenew.org)

## Scale Up: Increasing universal precautions

Target: Medium and High Risk Communities



### Take Inventory & Scale-Up

For Medium and High Risk Communities, we recommend taking inventory of what prevention and harm reduction resources exist, and assessing low-cost interventions for any unmet needs. This means **using a small survey** to get information directly from people who use drugs in your community.

- See **Appendix B** for a sample Community Needs Assessment, a short survey that can be used to understand what services are useful, and what might be missing. They can also tell you if more hours or additional locations for services might improve the number of people using those services.

We recommend establishing the same prevention interventions listed under Universal Precautions, but strongly encourage communities to organize and scale up such services, which means providing more of those services to meet the specific needs of their community.

- Some services, like SSPs, may not be available for more than a few hours per week in some areas. If a community is Medium or High Risk, **the needs assessment may help them understand the scope of drug use in the community**, and strategize ways to increase services to improve prevention against overdose, HIV & HCV.
- **Community organizing at the city and town level to develop customized "response plans" have proven to be a successful strategy for addressing local needs.** The Community Overdose Engagement project through RIDOH has encouraged innovative overdose response plans all across the state.
  - See <https://preventoverdoseri.org/community-overdose-engagement> for specific examples.
- To increase low-cost health interventions and address the prevention needs of PWUD, new models point to the efficiency of **using mid-level clinicians such as nurse practitioners to improve health outcomes.** These mid-level clinicians help to increase access to healthcare and treatment by working in community-based and street outreach settings, such as SSPs, to support engagement in programs such as medication-assisted treatment (MAT) and HCV treatment.<sup>22–24</sup>

## Scale Up: Increasing universal precautions

Target: Medium and High Risk Communities

### Assess Funding Opportunities

Another important consideration is the available funding for prevention and harm reduction interventions. At the state level, Rhode Island spent \$100,000 on all SSPs, which served approximately 500 people during FY 2018. Thanks to additional funding, this will be increased to \$160,000 in FY2020. Statewide, SSPs in Rhode Island distribute naloxone and provide HIV and HCV rapid testing, as well as referrals to other critical services.

- **There is room for improvement here.** For context, in 2019 the state of Massachusetts funded six statewide SSPs; the SSP in Springfield, MA (a city smaller than Providence) had an operating budget of \$600,000.<sup>25</sup> Nearby, Vermont spent \$400,000 statewide in 2016 and served 5,000 people.<sup>26</sup>
- **Rhode Island can also engage more people in harm reduction services.** States such as Vermont have a similar population and overdose burden, but Vermont served 4,500 more people in 2017.<sup>26</sup> They also provide state-led standards for SSP implementation and evaluation.<sup>26</sup>
- If funding is to remain at similar levels as FY2018, **considerations for low-cost SSP services should be considered**; for example, standalone syringe dispensing machines.<sup>27,28</sup>

## Taking it Further: Implementing promising practices

Target: High Risk Communities

### Low Barrier Buprenorphine Access

Different states have started offering “low-threshold” or “low-barrier” buprenorphine, a medication used to treat opioid use disorder. **This means that instead of finding a doctor who will prescribe buprenorphine, you can meet with a provider in places outside of an office**, like a syringe service program or park, for an initial prescription and then pick up your medications at a pharmacy.<sup>30,31</sup>

- **Rhode Island** is in the early stages of implementing a mobile crisis service, which will also be used to support low barrier buprenorphine access. This is a promising avenue for connecting people to at least one form of medication assisted treatment (MAT), and providing linkages to other substance use treatment services in our state.
- **Vermont** established their “Hub-and-Spoke” model for services in 2011. In this model, patients can get intensive treatment at main “hubs” and then get continuing treatment at “spokes”, which are located in places where treatment may otherwise be inaccessible. “Spoke” locations offer low threshold treatment and are in communication with the main “hubs” so that patients can get the level of care that they need.<sup>23</sup>
- In **Philadelphia**, the Prevention Point needle exchange allows clients to meet with a doctor who can prescribe buprenorphine on-site. Clients then meet with case managers to learn about the medication and expectations for the program. Patients meet with the case manager weekly initially, but then as the client is stabilized, they meet only monthly.<sup>32</sup>

## Taking it Further: Implementing promising practices

Target: High Risk Communities

### Low Barrier Hepatitis C (HCV) Treatment Using Nurse Practitioners

Similar to programs that provide low-threshold buprenorphine, there are programs designed to provide low-threshold options for treating hepatitis C (HCV).

- In **San Francisco**, a harm reduction center teamed up with a sexual health services provider to offer patients a 12-week course of HCV treatment. This partnership came together after the realization that some people who access harm reduction services have difficulty accessing other medical care.<sup>33</sup> In this model, instead of going to one place for harm reduction services, and one place for medical care, people receive all of their services in one location.
- In **Massachusetts, Texas, and Washington DC**, nurse practitioners have successfully treated HCV in primary care settings.<sup>34</sup> Embedding HCV treatment in primary care setting can expand the number of people who can enroll in a treatment program that is financially affordable and easy to reach.<sup>35,36</sup>

### Faith communities and harm reduction

A number of religious communities in Washington, Ohio, New York, and North Carolina provide harm reduction services, like syringe service programs and naloxone distribution, to members of their organizations and their local communities. Such services could be expanded to also help meet the basic needs of the community, such as food, clothing or shelter, as well as rapid HIV and HCV testing events.

- Different religious groups, like the United Methodist Church, Presbyterian Church, United Church of Christ and the National Council on Jewish Women, have vocalized their support for syringe service programs, and some have even opened their own.<sup>29</sup>
- The Church of Safe Injection, a mobile syringe service programs founded in Maine and expanded to 8 different states, serves people of all faiths.<sup>13</sup>

## Final Recommendations: Considerations for long-term improvement

### Outreach to New Populations

**While our report widely focuses on universal precautions, it is important that we continue to improve and create prevention efforts relevant to the needs of all Rhode Islanders.** Tailoring prevention and education programming to be culturally responsive will be important to engaging new populations as the opioid epidemic continues to grow and shift.<sup>37</sup> Not much is known about how the overdose crisis is affecting communities of color in Rhode Island. However, national trends suggest that opioid related overdose is a growing problem amongst Black, Latinx and American Indian populations. For instance, data collected by the Kaiser Family Foundation shows that the number of Black Americans who died from opioid-related overdose doubled in the span of two years, from 2015 to 2017.<sup>38</sup> Studies have also suggested there are disparities in people's ability to access treatment options, such as MAT, based on race and ethnicity.<sup>39</sup> More research is needed to investigate the impact of the overdose crisis on communities of color in Rhode Island.

Outreach to new populations could also include non-English speaking communities, young adults, women, the elderly, and those who identify as LGBTQ. Messages and educational materials that are culturally responsive may help to engage new communities in prevention efforts across the state.

### Increased Use of Data for Surveillance

As more data are collected throughout Rhode Island, this Prevention Plan can be updated with new results which will help us better identify prevention interventions and a community-led response. During the next year, Rhode Island has the opportunity to increase its use of data, for example, by collecting more data with geographic detail at the address- or zip code-level, more race and ethnicity data, information about those who have ever witnessed an overdose, and information about LGBTQ identity of people who have experienced an overdose. **The VILLAGE Prevention Plan is a tool to be used by state policy makers, state agencies, and community organizations and leaders to help guide the policy, funding, and intervention decisions happening in our state today.**

## Table 2: Glossary

**Census data:** These data refer to information collected about the population, which includes social, economic, and demographic characteristics. Census data are broken up geographically by census tracts, which contain from 2,000 to 8,000 people.

**Drug-related harms:** There are many harms that can come from unsterile and unsafe drug use, such as HIV and HCV transmission, MRSA or endocarditis and overdose. In order to look at all of these outcomes, we created one measure, risk of drug-related harms. This measure captures all of these events, not just HIV or overdose. See more detail on page 6.

**Opioid-related infectious disease outbreak:** This is a general term that refers to when the number of overdoses, infectious diseases and other drug-related harms suddenly increase. These are often found in large, concentrated social networks or in the same town, and are related to unsterile injection drug use.

**Low-threshold or Low-barrier:** These are settings where there are fewer steps to getting treatment or services than in a traditional office or clinic setting. A low-barrier options would be to meet with a nurse practitioner in a community setting, like a park, shelter, or harm reduction organization. This option takes fewer steps for the client, and is easier to access.

**Machine learning:** Machine learning using a series of algorithms to run thousands of mathematical calculations on a large amount of data on a computer. Each time we run the calculations on the computer, our results get better and more accurate. Our machine learning process was supervised by epidemiologists to make sure the algorithms were run correctly and the results were interpreted accurately.

**Medications for addiction treatment (MAT):** There are many ways to treat opioid use disorder. One way is to use medications. These FDA-approved medications, like methadone, buprenorphine, and naltrexone, can help to prevent relapse, lessen withdrawal side effects, and lower the risk of overdose.

**Neighborhood-level data or Detailed geographic data:** Neighborhood-level and detailed geographic data tell us what is happening at the local level, instead of describing something across the whole state.

**Predictive model:** A predictive model is a way of using data and statistics to create a forecast for the future, similar to a weather forecast. Our predictive model was created by using supervised machine learning methods, and the results were put on a map.

**Social Networks:** These are groups of people who are connected through some common activity. In the case of drug use, social networks are people who use drugs together. They might share equipment like spoons, filters, water, or needles, all of which could lead to infections or other harms.

**Stakeholder group:** We held a quarterly meeting during this project and invited leaders from the community, focusing on those with expertise providing harm reduction services, overdose prevention and education resources, or substance use treatment services.

**Surveillance data:** Information that is collected to monitor and keep track of health-related trends. A common example of this would be tracking the spread of a disease.

**Syringe Services Program:** This is a harm-reduction service that often includes free access to sterile syringes. Some programs are also called Syringe Exchange Programs if they require someone to exchange used syringes in order to get new ones.

**Unsterile injection drug use:** When someone reuses or shares a needle or other supplies used to inject drugs (such as cotton filters, metal cookers, or even water), leaving behind trace amounts of blood for potential transmission of HIV, hepatitis C (HCV) or other infections to another person.

**Variable:** Stores amounts, measurements, or quantities of something. Multiple variables are called a dataset.

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# Appendix A



Date (mm/dd/yyyy) : \_\_\_\_ / \_\_\_\_ / \_\_\_\_

## Safer Drug Use Community Needs Assessment

Provider Name: \_\_\_\_\_ Participant zip code: \_\_\_\_\_

**1. In the past year, which of these services have you used: (Check all that apply)**

- |   |  |   |
|---|--|---|
| <input type="checkbox"/> Office-based needle exchange | <input type="checkbox"/> Referral to a health clinic   | <input type="checkbox"/> Community-based support groups for recovery from substance use (like AA, NA) |
| <input type="checkbox"/> Mobile needle exchange       | <input type="checkbox"/> Referral for mental health care                                     | <input type="checkbox"/> In-patient treatment for substance use                                       |
| <input type="checkbox"/> Rapid HIV test               | <input type="checkbox"/> Meeting with a peer counselor/coach for recovery from substance use | <input type="checkbox"/> Medications for addiction (MAT), like buprenorphine                          |
| <input type="checkbox"/> Rapid HCV test               |  | <input type="checkbox"/> None of these  |

**2. Which service was the most important to you: (Check only 1)**

- |   |  |   |
|---|--|---|
| <input type="checkbox"/> Office-based needle exchange | <input type="checkbox"/> Referral to a health clinic   | <input type="checkbox"/> Community-based support groups for recovery from substance use (like AA, NA) |
| <input type="checkbox"/> Mobile needle exchange       | <input type="checkbox"/> Referral for mental health care                                     | <input type="checkbox"/> In-patient treatment for substance use                                       |
| <input type="checkbox"/> Rapid HIV test               | <input type="checkbox"/> Meeting with a peer counselor/coach for recovery from substance use | <input type="checkbox"/> Medications for addiction (MAT), like buprenorphine                          |
| <input type="checkbox"/> Rapid HCV test               |  | <input type="checkbox"/> Other: _____   |

**3. Are there other services/resources you are looking for to help you stay healthy, but haven't been able to get (such as housing, food stamps, or health insurance)? (List up to 3)**

**4. Have any of these barriers stopped you from getting these services? (Check all that apply)**

- |  |  |
|--|--|
| <input type="checkbox"/> I do not have transportation/too far away       | <input type="checkbox"/> I feel uncomfortable going to these places because of my drug use |
| <input type="checkbox"/> There are no places to get what I need          | <input type="checkbox"/> I do not have the time to go to these places                      |
| <input type="checkbox"/> The organizations are not open when I need them | <input type="checkbox"/> A partner or family member will not let me                        |
| <input type="checkbox"/> I do not know where to get find the services    | <input type="checkbox"/> I did not have any barriers                                       |
|  | <input type="checkbox"/> Other: _____  |

**5. In the past year, have you had at least one naloxone kit of your own? (Circle one):** YES NO

**If NO, skip to question 7**

**6. Where did you get your naloxone (Narcan) kit(s) from? (Check all that apply)**

- |   |   |
|---|---|
| <input type="checkbox"/> Pharmacy                                 | <input type="checkbox"/> Outreach organization (like PONI or Anchor MORE) |
| <input type="checkbox"/> Office-based needle exchange             | <input type="checkbox"/> Emergency department                             |
| <input type="checkbox"/> Delivery or street-based needle exchange | <input type="checkbox"/> Other: _____                                     |
| <input type="checkbox"/> Friend or family member                  |   |

**7. In the past year, have you injected any drugs? (Circle one):** YES NO

**If NO, skip to question 9**

**8 a. Where do you usually get your new needles-syringes? (Check all that apply)**

- ☐ Pharmacy  
☐ Office-based needle exchange  
☐ Delivery or street-based needle exchange  
☐ Other community organization  
☐ Friend or family member  
☐ Other: \_\_\_\_\_

**8 b. Where do you usually get your works, like cookers, cottons, sterile water? (Check all that apply)**

- ☐ Office-based needle exchange  
☐ Delivery or street-based needle exchange  
☐ Other community organization  
☐ Friend or family member  
☐ Other: \_\_\_\_\_

**9. Have you ever used a fentanyl "test strip" to test your drugs? (Circle one):** YES NO DON'T KNOW

**10. Do you currently have health insurance? (Circle one):** YES NO

**11. In the past year, how many times have you been to the emergency room? (Check only 1)**

- ☐ None ☐ 1 - 2 times ☐ 3 - 4 times ☐ 5 or more times

## Appendix A

12. I'm going to read out a few things, for each one, please tell me how much you **Disagree** or **Agree** with each of them.  
(Circle one for each section)

It is easy for me to get new needles	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A (Not applicable)
It is easy for me to get new works (like cookers, cottons, sterile water)	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A (Not applicable)
It is easy for me to get naloxone	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A (Not applicable)
It is easy for me to get health insurance	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A (Not applicable)
It is safe to take methadone for opioid use disorder	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A (Not applicable)
It is safe to take buprenorphine for opioid use disorder	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A (Not applicable)

13a. In the past year, have you received methadone? (Circle one): YES NO

If YES to 13, answer questions 14 a -14 b

If NO to 13, 15 a - 15 b:

14 a. Have you had difficulties getting your Methadone?  
(Circle one):

YES NO N/A

14 b. If so, what made it hard to get your methadone?  
(Check all that apply)

- ☐ I did not have the transportation to get there  
☐ The methadone clinic is not open when I need it  
☐ I stigma or judgment when I go to the clinic

15 a. Have you wanted to get Methadone in the past year? (Circle one):

YES NO N/A

15 b. If so, what stopped you from getting methadone?  
(Check all that apply)

- ☐ I did not have the transportation to get there  
☐ The methadone clinic is not open when I need it  
☐ I feel stigma or judgment when I go to the clinic

16b. In the past year, have you received buprenorphine? (Circle one): YES NO

If YES to 17, answer questions 17 a - 17b:

If NO to 16, answer questions 18 a- 18 b:

17 a. Have you had difficulties getting your buprenorphine?  
(Circle one):

YES NO N/A

17 b. If so, what made it hard to get buprenorphine?  
(Check all that apply)

- ☐ I could not find a doctor to prescribe it  
☐ I could not get transportation to a doctor  
☐ I felt stigma or judgment when going to the doctor

18 a. Have you wanted to get buprenorphine in the past year? (Circle one):

YES NO N/A

18 b. If so, what stopped you from getting buprenorphine?  
(Check all that apply)

- ☐ I could not find a doctor to prescribe it  
☐ I could not get transportation to a doctor  
☐ I felt stigma or judgment when going to the doctor

19. What is the longest time you would be willing to travel to get buprenorphine or methadone? (Check only one)

- ☐ 1-5 minutes ☐ 6-10 minutes ☐ 11-20 minutes ☐ 21-30 minutes ☐ more than 30 minutes

20. What time of day would you be most likely to get MAT, like buprenorphine or methadone? (Check only one)

- ☐ Mornings (8am-12pm) ☐ Afternoons (12pm-4pm) ☐ Evenings (4pm-8pm) ☐ Late evenings (8pm-midnight)

21. If you could get buprenorphine outside of a doctor's office, where would you be most comfortable going?  
(Check all that apply)

- ☐ A pharmacy ☐ A community health clinic ☐ A health department office  
☐ A needle exchange program ☐ A community-based organization ☐ Other: \_\_\_\_\_

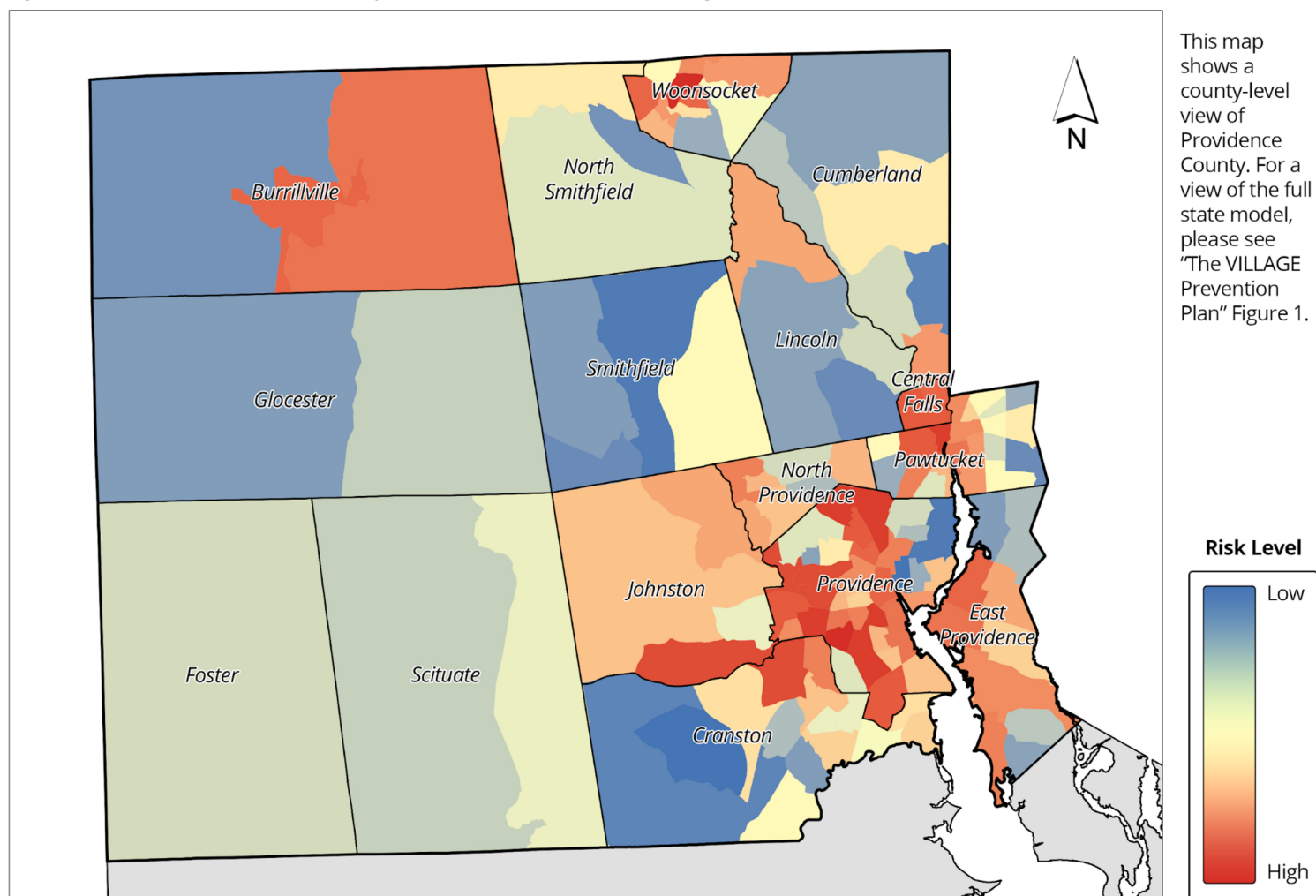
## Appendix B

### Community Level Risks for Potential Drug-Related HIV/HCV Infections and Overdose

by census tracts within municipalities (Providence County, Rhode Island, 2018)



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School of Public Health



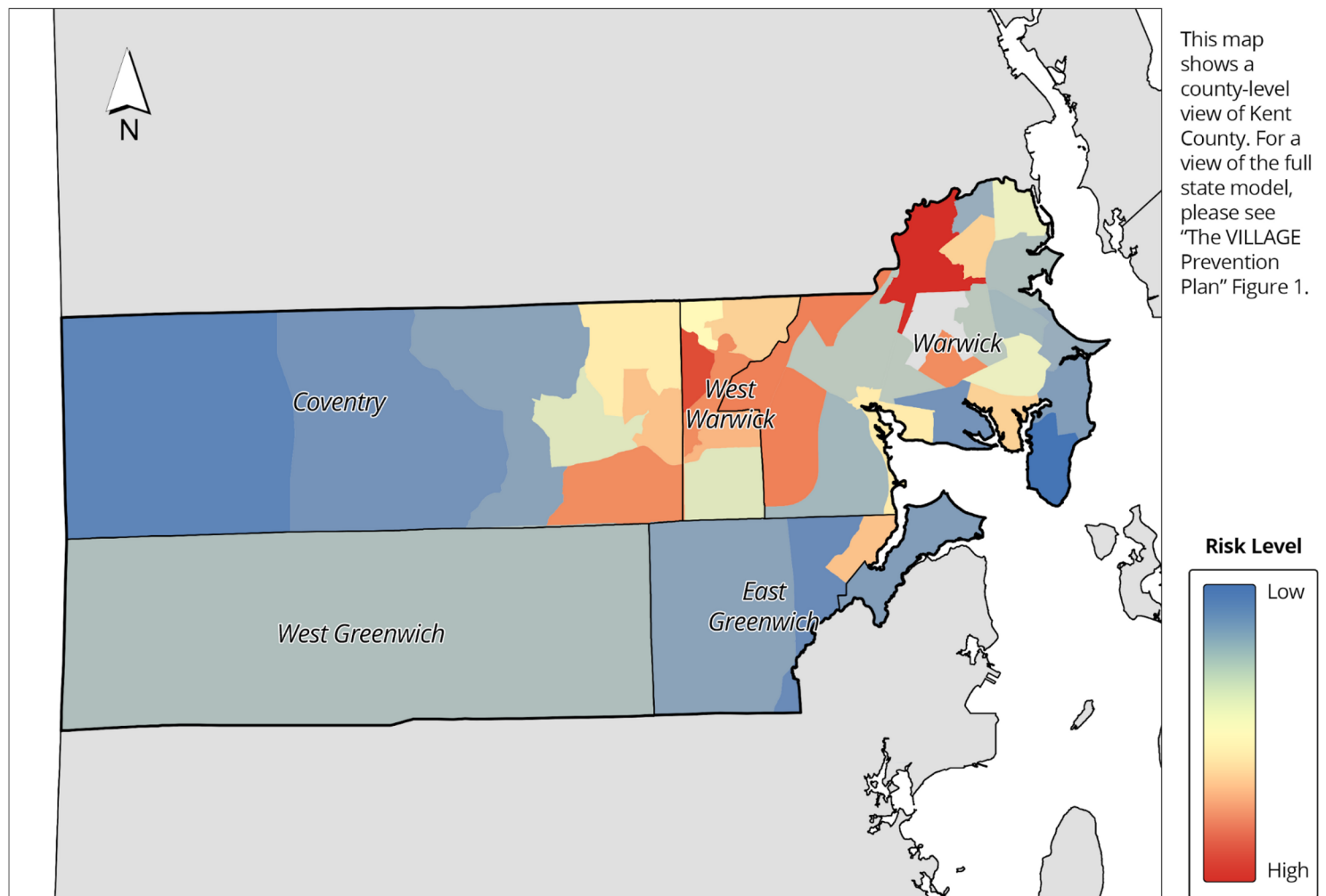
## Appendix B

### Community Level Risks for Potential Drug-Related HIV/HCV Infections and Overdose

by Census Tracts within Municipalities (**Kent County**, Rhode Island, 2018)



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School of Public Health



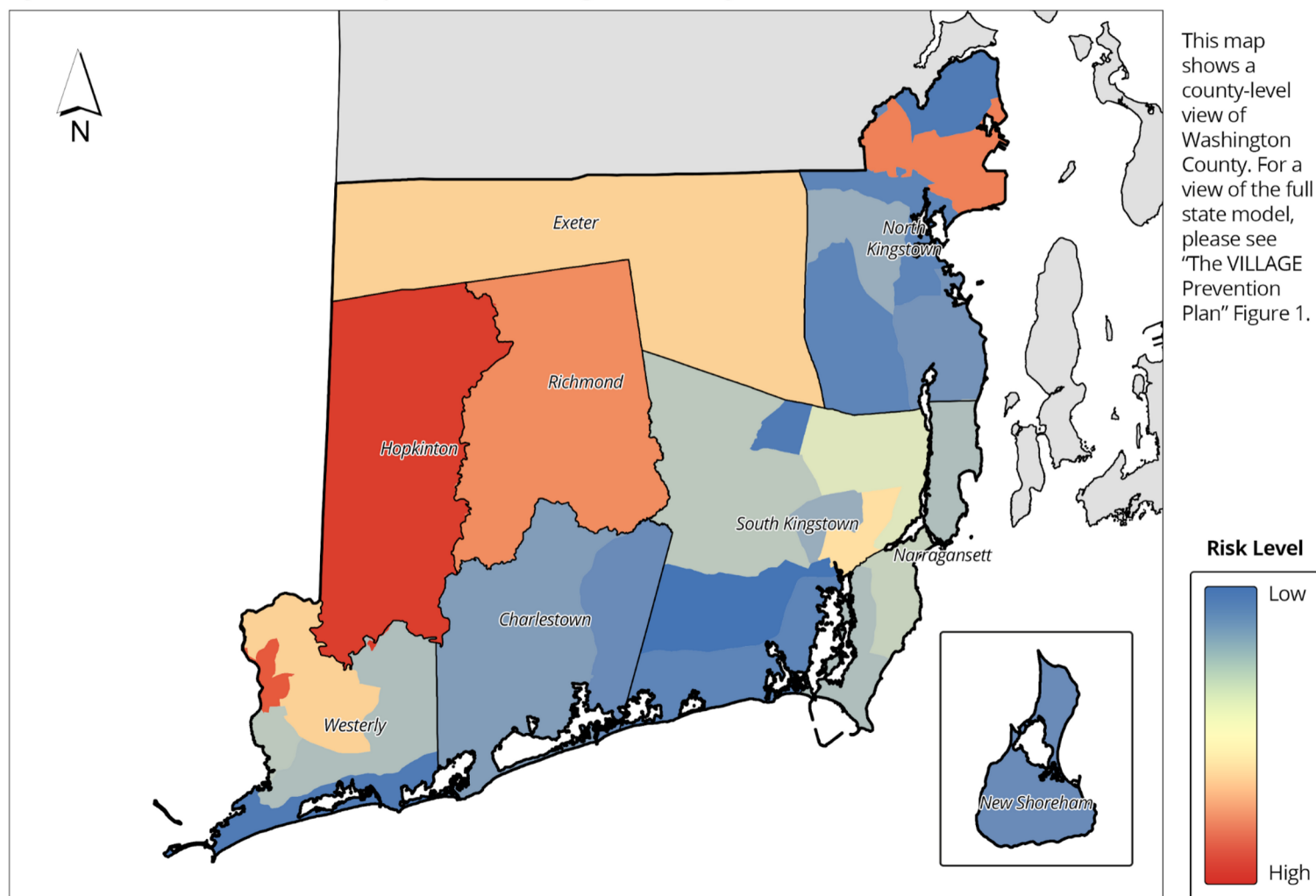
## Appendix B

### Community Level Risks for Potential Drug-Related HIV/HCV Infections and Overdose

by Census Tracts within Municipalities (Washington County, Rhode Island, 2018)



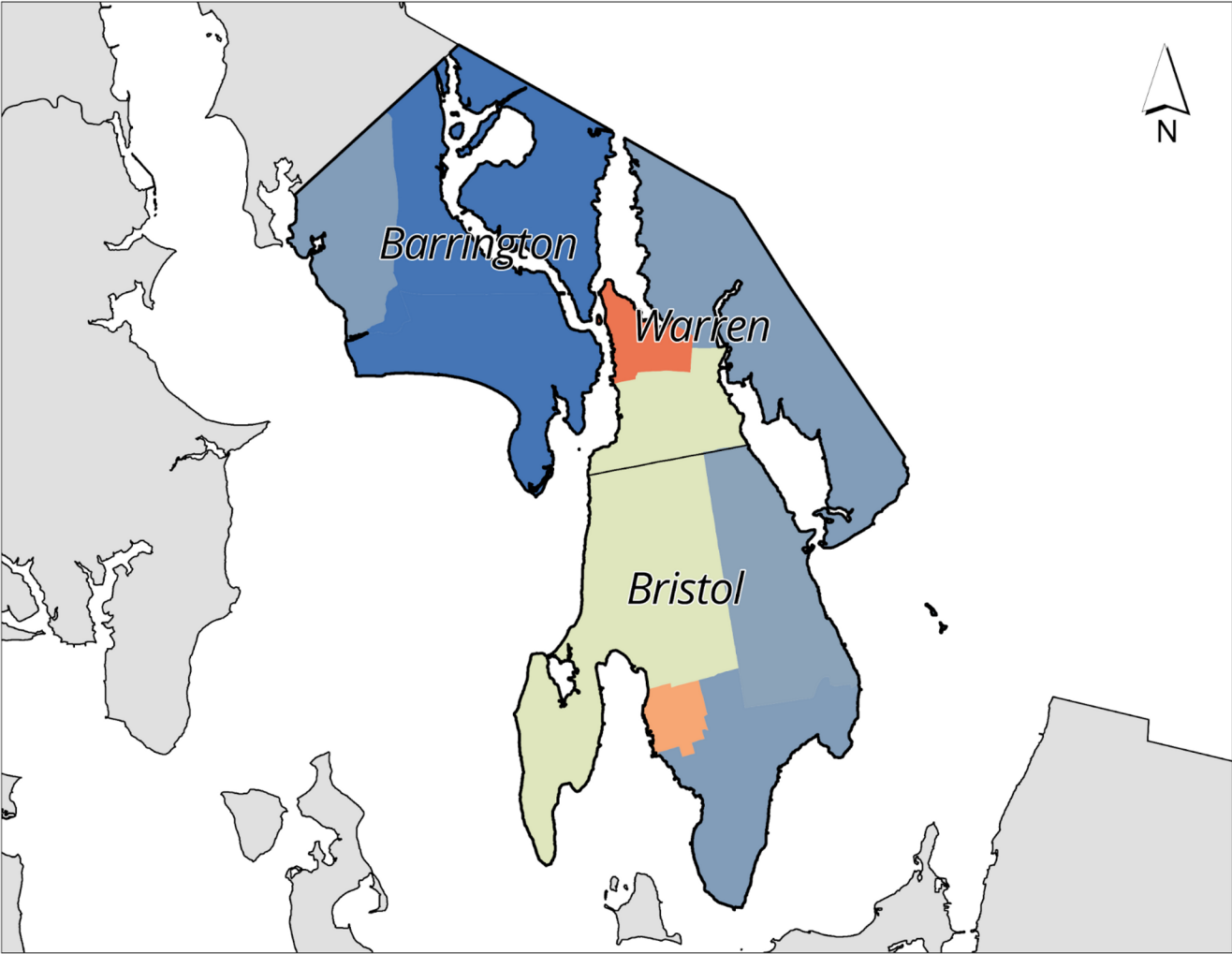
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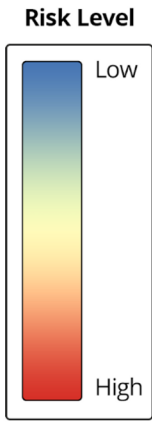
Appendix B

Community Level Risks for Potential Drug-Related HIV/HCV Infections and Overdose

by Census Tracts within Municipalities (Bristol County, Rhode Island, 2018)



This map shows a county-level view of Bristol County. For a view of the full state model, please see "The VILLAGE Prevention Plan" Figure 1.





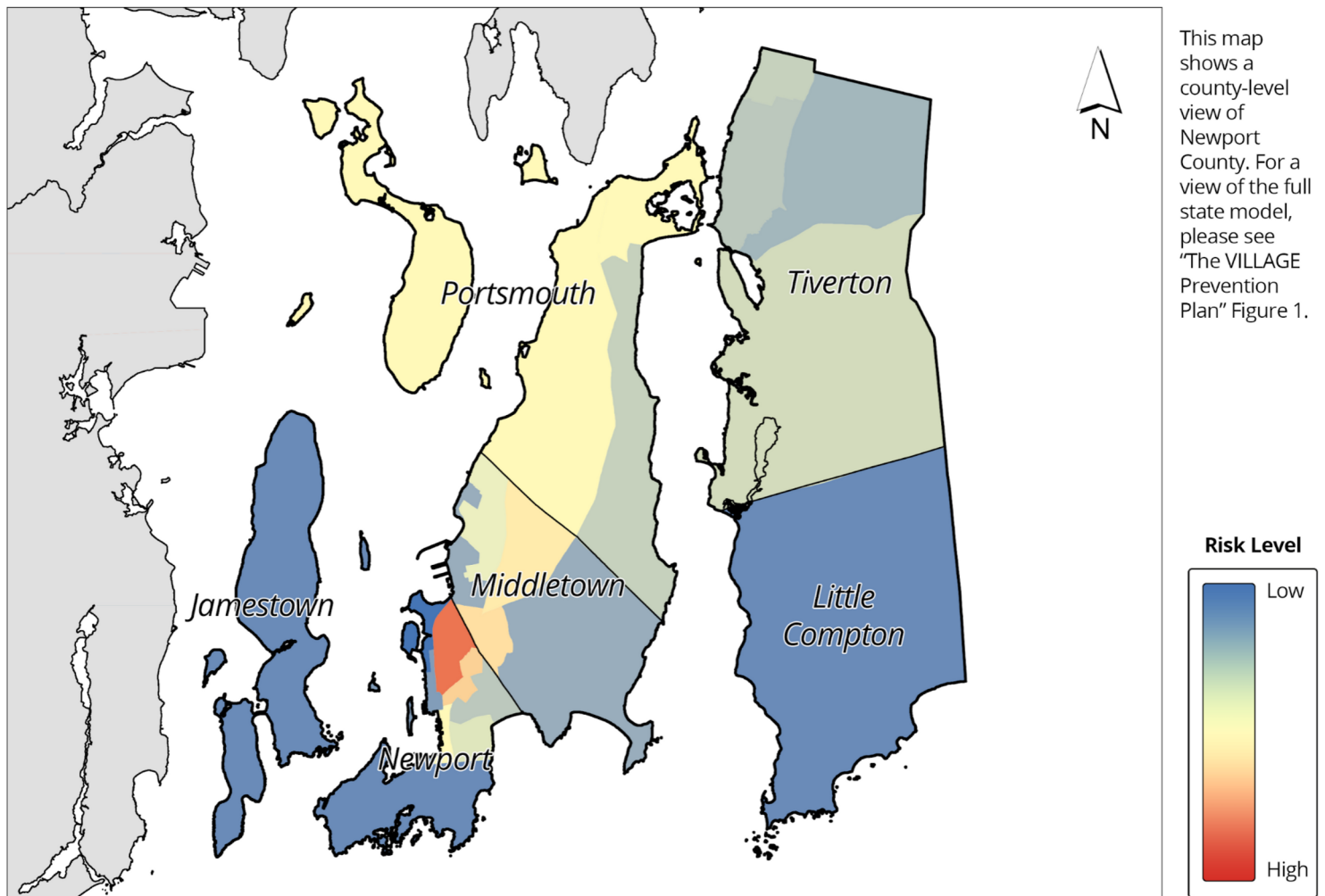
## Appendix B

### Community Level Risks for Potential Drug-Related HIV/HCV Infections and Overdose

by Census Tracts within Municipalities (Newport County, Rhode Island, 2018)



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