COVID READINESS DASHBOARDS for Illinois School Districts and Schools

Overview and User Guide

Version 1.0

For Breen, Fiona, Baird, Gus, and Lulu with whom every day is an education unto itself.

Revision History

Date of Revision	Revised by	Notes
5 Sep 2020	BSM	Initial Draft
12 Sep 2020	BSM	Release Version 1.0 of User Guide
21 Sep 2020	BSM	Added some of the technical documentation

Contents

Introduction

Short of a parent's love, I believe education is the most important thing in a child's life. The infinite possibilities that the future holds are not restricted when a child is encouraged and supported in the expansion of their mind, their mental confidence, their social and emotional engagement with others, and their ability to understand the vastness of the world around them.

At the end of 2019 and the beginning of 2020 when the SARS-CoV-2 virus began to impact the United States and the number of COVID cases begin to increase dramatically, the ability for schools in Illinois and around the world to provide that necessity of education was drastically impacted. Thrust abruptly into a world of remote education that teachers, parents, administrators, and most importantly students were unprepared for, the final part of the 2019-2020 school year for many was an exercise in frustration and futility.

Through the summer, school districts prepared for the upcoming 2020-2021 school year in a sea of ambiguous direction and a shortage of information. Lacking clear, consistent, and concise guidance from state administrations, state and local health departments, and federal institutions, district administrations tried with varying levels of effort and types of approaches to prepare for the end of summer. The challenge at hand was to answer the question of how to safely get kids in schools. Social distancing guidelines limit how many desks can fit in a classroom or how many students can ride on a bus together. The needs for masks, cleaning supplies, and other personal protective equipment must be treated like crayons, pencils, paper, and other necessary supplies. The challenge of quarantining symptomatic individuals makes maintaining adequate staffing levels in an already resource challenged environment even more daunting. In many ways, every student became a student with special needs. The question of how to provide a Free Appropriate Public Education is a challenge that every Special Education coordinator, Teaching Assistant, Administrator and parent of a child with special needs struggles with every year. Now, the needs of social distancing, hygienic behaviors, and restrictions on human engagement have become special needs that challenge us all.

With the mounting efforts required to tackle the work at hand, communication of the status of districts and schools with respect to their preparedness in these areas becomes even more challenging as well. Parents want to be informed about what is going on in their children's schools and classrooms, and in the absence of information rumor mills and supposition begin to take hold. Teachers need to know that the district and facilities are doing what is necessary to prepare and provide for their safety and that of the students they adore. The noise that fills the silence when communication wanes adds to the difficulty for administrators and educators to deliver on their challenging tasks.

With all this in mind, I set out to create a series of dashboards with data driven metrics to help reduce the noise. In conjunction and with the support of the Administration of Lake Forest School District 67 and Lake Forest High School District 115, I've developed and deployed this platform to allow any school district in Illinois to utilize these metrics to help in their own communication. Each district may choose to use whichever parts of these metrics suit their needs. I am providing this platform at no charge to any school district in the State of Illinois, and have made the code freely available for others to adapt and modify as desired.

Here's to the hope that its necessity is short lived.

About the Metrics

While metrics are the foundation of a data-driven approach to decision making, it is important to understand that they are only inputs into the difficult process of judging what an appropriate response to any given situation must be. To this end, it is essential to recognize that while the visual 'green' and 'red' on these dashboards implies a 'yes' or 'no' status, they are not sufficient to indicate that a specific prescriptive action must be taken. Instead, they are meant as guidance and information to help simplify the process of viewing data in context.

Any inherent bias in the metrics of these dashboards has been carefully reviewed and considered. Where directed, appropriate threshold and duration values have been established in consultation with epidemiologists, county health departments, local, state, and federal authorities, and published resources and research regarding preparedness for a district to engage in safe in-person learning. It is of course important to remember that these metrics, thresholds, and criteria may change as the pandemic situation continues to evolved day by day. In order to support the changing metrics, certain key values and thresholds may be modified by districts to better align to their desire for representation. This is an important bias that must be considered when interpreting the metrics shown on the dashboards.

The following groups and resources were used in the preparation of these metrics and review of these guidelines.

- Illinois State Board of Education
- Illinois Department of Public Health
- Lake County Health Department
- Northern Illinois Public Health Consortium, Return to School Metrics Workgroup

Special thanks go to the following individuals for their support and engagement.

- Michael Simeck, Superintendent, Lake Forest School District 67 and Lake Forest High School District 115
- Thomas Herion, Principal, Deerpath Middle School
- Lucas Livingston, Principal, Cherokee Elementary School
- Susan Milsk, Principal, Sheridan Elementary School
- Angela Sopko, Principal, Everett Elementary School
- Lane Linder, Director of Safety and Security, Lake Forest High School District 115
- Jefferson McMillan-Wilhoit, Director Health Informatics and Technology, Lake County Health Department

Getting Started

If you would like to get your Illinois school district setup to use these dashboards, you will need to start by following these steps:

1. Visit https://il.covidmetrics.bsmartin.info/signup and enter your email address, name, and a password which you will use to login to the site. Make sure to select the correct district from the dropdown list.

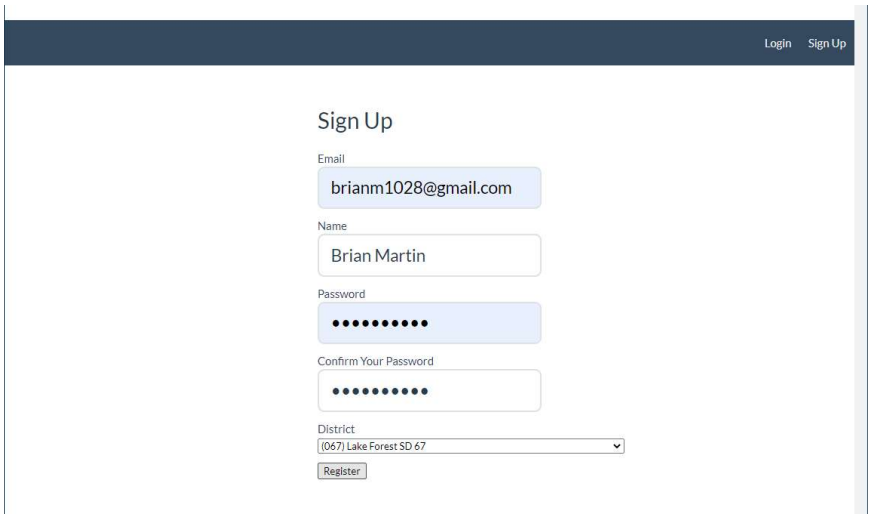


Figure 1- Signup screen

2. Click 'Register' to create your account making sure to select your district.

   Note: If for any reason your district is not found in the list or you have responsibilities for multiple districts, reach out to covidmetrics-admin@bsmartin.info with the district name/number in question. The list of districts and facilities in the system was populated by the most up to date listings from the Illinois State Board of Education Entity Profile System (EPS) website1 as of the publishing of this users guide, and may not contain any subsequent updates.

3. Request appropriate manager/administrator privileges:
   a. If you are the superintendent of a district or an authorized representative of one that does not have your district activated yet, email covidmetrics-admin@bsmartin.info and include appropriate information to have your request verified. Authorized representatives should either include the district superintendent's authorization or contact information. You will be contacted once your account has been enabled for site configuration and administration rights.
   b. If you are a staff member, administrator, or authorized part of an enabled district, reach out to your district administrator to request the appropriate administrative privileges.

[1] https://www.isbe.net/Pages/Entity-Profile-System.aspx

Once your privileges are enabled, you will be able to login to the site and have access to the data management and configuration tools for your facility or district.

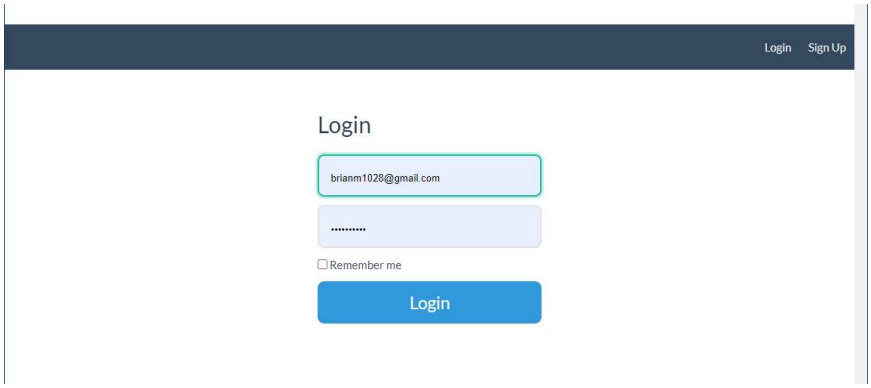


Figure 2 - Login screen

Site Navigation

District Selection Screen

The first screen displayed on entry is the district selection screen. Districts which have been enabled in the system and connected to an administrative account are listed at the top for quicker access. All Illinois school districts which have not yet been enabled are listed on the bottom part of the page. Even if a district has not been enabled, some geographic metrics – those available from the Illinois Department of Public Health website – have been automatically enabled for every district in the state.

Click on any district to view the Snapshot Summary page for the district.

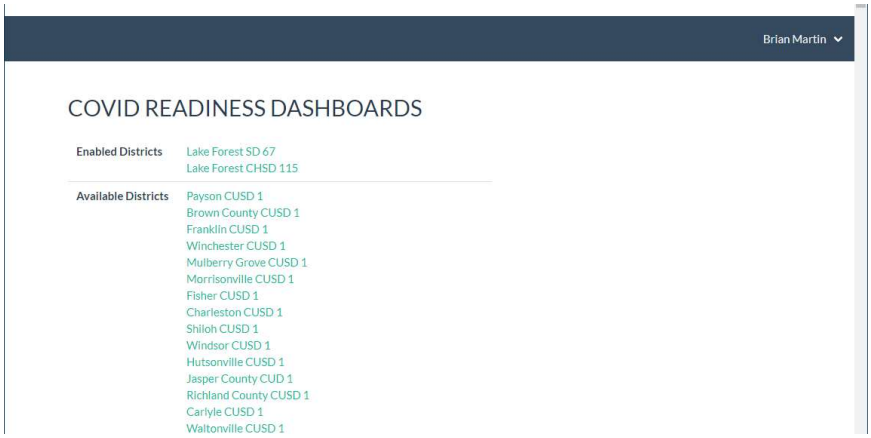


Figure 3 - District selection screen

Navigation Menu Bar

On all Snapshot, Data Management, and Configuration pages, the Navigation Menu Bar at the top of the page will provide quick links to the various different sections and tools in the platform. Depending on your privileges in the active district, some menus and options may not be displayed. To switch from the current district to a different district, click on the name of the currently active district on the left of the Navigation Menu Bar.

If you are logged in as an active user, your name will appear on the right end of the Navigation Menu Bar. If you are not logged in, you will see the options to Login or Sign Up on the right end.

Figure 4 - Navigation Menu Bar

Narrow / Mobile Browsers

For smaller screens including those of mobile devices, the menu bar will appear as a ‘hamburger’ image on the right side of the Navigation Menu Bar. Click the three lines at the right end of the menu bar to expand the menu giving you access to the navigation links.

Figure 5 - Expanded hamburger navigation menu

Summary Screen

The Summary Screen is the home page for each district. It provides a space that displays the district metrics sections snapshots and a space for message and communication from the district.

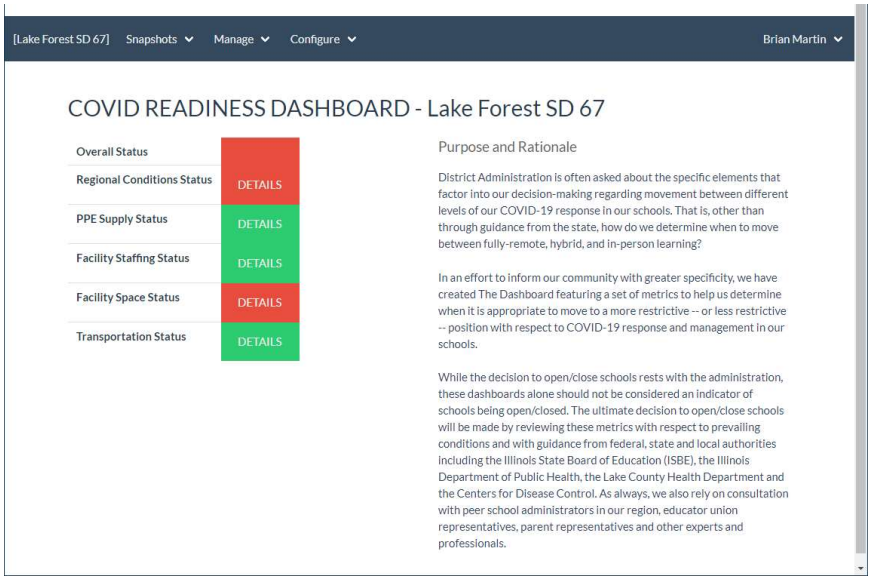


Figure 6 - District Summary Screen

Snapshots

The platform supports five types of metrics all available either on the Summary Screen or in detailed form on individual screens for each section. These detail screens can be viewed either by clicking on the appropriate section in the menu bar or clicking where it says 'DETAILS' in each of the red/green indicators.

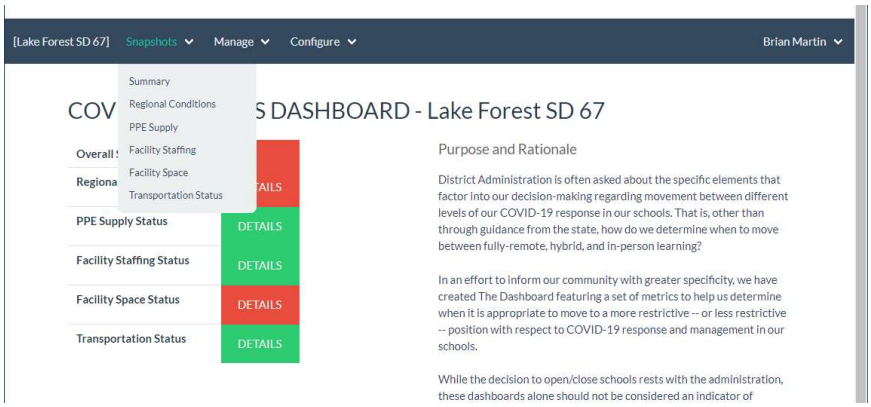


Figure 7 - Snapshots Menu

Regional Conditions

The top of the Regional Condition Metrics detail screen indicates the overall status of the metrics for the COVID Region, County, and Zip Codes for the district. If any one of the metrics within a region, county, or zip code indicates a 'red' status, the entire overall status will reflect that also. Only if all conditions in the area are 'green' will an overall status also be 'green'.

Figure 8 - Regional Condition Metrics

Positivity Rate in Region

The regional positivity testing rate is calculated by dividing the number of confirmed COVID cases per day within a region by the number COVID tests given on that day within the region. The data to calculate this metric is retrieved on request by download from the Illinois Department of Public Health website[2].

Like all positivity rate calculations, this metric is subject to bias from the number and disposition of those choosing to get tested from day to day. During seasons or periods of heightened awareness, the positivity rate

[2] https://www.dph.illinois.gov/sitefiles/COVIDHistoricalTestResults.json?nocache=1

can understate the prevalence of an infectious disease through increased numbers of asymptomatic patients choosing to be tested to calm individual concerns.

Figure 9 - Positivity Rate in Region

Incidence Rate in County

The incidence rate in a county is calculated by determining the number of confirmed COVID cases in a county and adjusting for the population of the county. The data to calculate this metric is retrieved on each request by download from the Illinois Department of Public Health website[3].

The metric displayed here may vary slightly from the data on the LCHD Return to Schools dashboards[4], but will generally align with that information. The underlying data from the Illinois National Disease Surveillance System (INEDSS) is not available to the general public but is the same data used in the IDPH website reporting. Additionally, slight variations in the source for county population also account for the differences between these metrics and those published by LCHD.

As the incidence rate is population based daily variations are not adjusted for the number of individuals choosing to be tested. This metric tends to show a bias in alignment with the demand for testing.

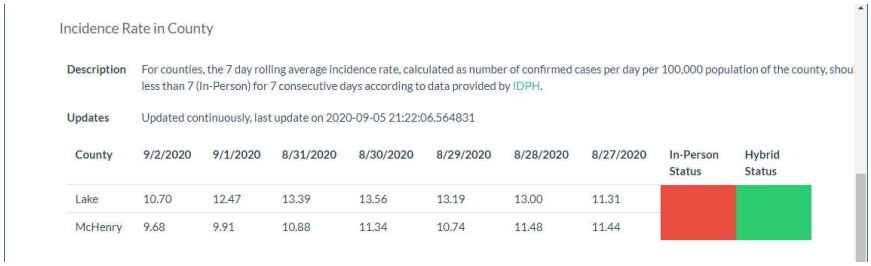


Figure 10 - Incidence Rate in County

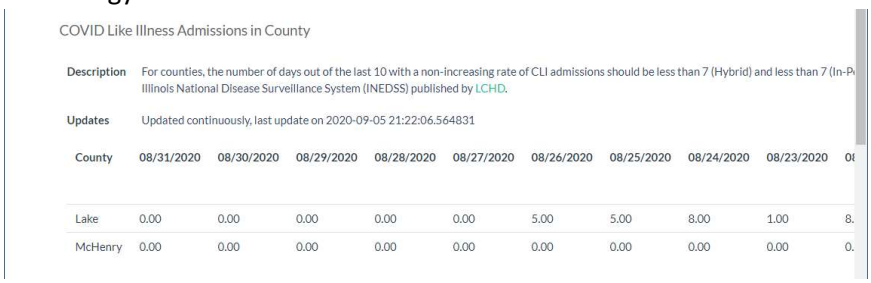
COVID Like Illness Admissions (CLI) in County

The COVID Like Illness admissions in a county looks at the number of admissions to hospitals for conditions that may or may not be COVID related symptoms. The metric threshold itself is based on the number of days of non-increasing admissions over a specific time window as opposed to a daily number itself. The data for this metric is only available from the Illinois National Disease Surveillance System (INEDSS) and is not available to the

[3] https://www.dph.illinois.gov/sitefiles/COVIDHistoricalTestResults.json?nocache=1
[4] https://covid19response-lakecountyil.hub.arcgis.com/pages/schools-dashboard

general public. The platform relies on manual entry of the numbers published on the LCHD Return to Schools Dashboards[5] being populated in the platform.

These metrics may be biased during seasonal durations of illnesses with similar symptoms, specifically influenza and allergy seasons.


COVID Like Illness Admissions in County

Description For counties, the number of days out of the last 10 with a non-increasing rate of CLI admissions should be less than 7 (Hybrid) and less than 7 (In-P
Illinois National Disease Surveillance System (INEDSS) published by LCHD.

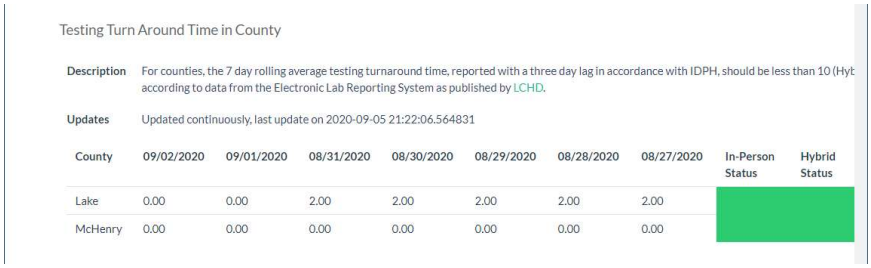
Updates Updated continuously, last update on 2020-09-05 21:22:06.564831

County	08/31/2020	08/30/2020	08/29/2020	08/28/2020	08/27/2020	08/26/2020	08/25/2020	08/24/2020	08/23/2020	0(
Lake	0.00	0.00	0.00	0.00	0.00	5.00	5.00	8.00	1.00	8.
McHenry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.

Figure 11 - COVID Like Illness Admissions in County

Testing Turn-Around-Time (TAT) in County

The testing Turn-Around-Time (TAT) metric is calculated based on the rolling average time from testing to results delivery. The rolling average is determined based on both a threshold and rolling average duration window. Data for the metric is only available in the Electronic Lab Reporting System which is not available to the general public. The platform relies on manual data entry of the numbers published on the LCHD Return to Schools dashboards[6].


Testing Turn Around Time in County

Description For counties, the 7 day rolling average testing turnaround time, reported with a three day lag in accordance with IDPH, should be less than 10 (Hyb
according to data from the Electronic Lab Reporting System as published by LCHD.

Updates Updated continuously, last update on 2020-09-05 21:22:06.564831

County	09/02/2020	09/01/2020	08/31/2020	08/30/2020	08/29/2020	08/28/2020	08/27/2020	In-Person Status	Hybrid Status
Lake	0.00	0.00	2.00	2.00	2.00	2.00	2.00		
McHenry	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

Figure 12 - Testing Turn-Around-Time in County

Positivity Rate in County

The county positivity testing rate is calculated by dividing the number of confirmed COVID cases per day within a county by the number COVID tests given on that day within the county. The data to calculate this metric is retrieved on request by download from the Illinois Department of Public Health website[7].

Like all positivity rate calculations, this metric is subject to bias from the number and disposition of those choosing to get tested from day to day. During seasons or periods of heightened awareness, the positivity rate

[5] https://covid19response-lakecountyil.hub.arcgis.com/pages/schools-dashboard
[6] https://covid19response-lakecountyil.hub.arcgis.com/pages/schools-dashboard
[7] https://www.dph.illinois.gov/sitefiles/COVIDHistoricalTestResults.json?nocache=1

can understate the prevalence of an infectious disease through increased numbers of asymptomatic patients choosing to be tested to calm individual concerns.

Figure 13 - Positivity Rate in County

New Cases in Zip Code

The number of new cases in a zip code is calculated by looking at the number of confirmed cases on a given day divided by the population of the zip code area in question. The data used to calculate this metric is downloaded on demand from the IDPH Covid Statistics website.

As the calculation is based on the population of a zip code, daily variations are not adjusted for the number of individuals choosing to be tested. This metric tends to show a bias in alignment with the demand for testing. It is also important to note that only zip codes where a district has facilities are listed in the snapshot and many districts rely on staff and administrators who come from areas and zip codes outside of the locations of the facilities themselves. To this end, the metric tends to understate the transmission risk from educators and administrators to the children.

Figure 14 - New Case Counts in Zip Code

PPE Supply

The PPE Supply Metrics screen shows an overview of the status of PPE supplies for each facility in the district. In the case of districts which share a single purchasing agreement for supplies, the inventory supply is likely to be updated by a central district purchasing resource. As distribution and consumption happens at the individual facility level, the inventory is likely to be updated by a resource in the facility responsible for managing and distributing those materials. The overall supply status for the district is dependent on all facilities having sufficient supply for their own operations. In the case that a single facility is running low on a supply, the opportunity to resupply by shifting materials from one facility to another may be visible through this metric detail screen.

Figure 15 - PPE Supply Metrics

Each facility detail section will list the inventory of the item at the facility and show the 7-day and 14-day demand based on consumption as reported using the tool. A fully-stocked status is considered when the inventory exceeds the projected 14-day demand, the status of supply will change to a 'red' status when the inventory falls below the 7-day projected demand.

As the demand numbers are dependent on active and consistent reporting of supply consumption and usage, these numbers will be biased based on patterns of consumption reporting.

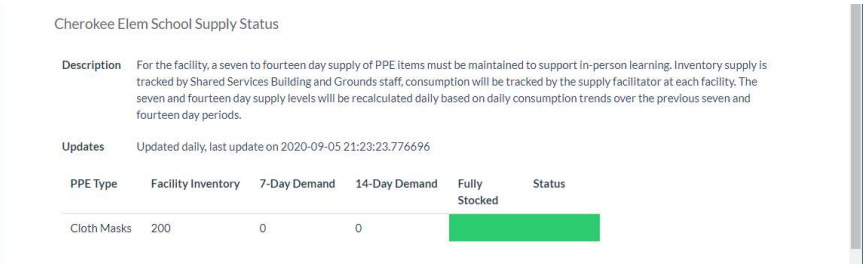


Figure 16 - Facility PPE Supply

Facility Staffing

The Facility Staffing Metrics screen shows the status of required and available staff to support in-person operations at each facility. Facility administration defines the roles and number of required resources performing that role in order to support in-person operations. The number of available staff is also noted here. It is anticipated that the number of available staff be updated by resources responsibility for the employee time-tracking, attendance, or other similar system. If a resource calls in either to report that they must quarantine or will be unavailable due to other reasons, the available staff for persons in that role should be updated accordingly. This metric should give district administration the ability to see where substitute resources may be required in order to maintain the necessary levels of available staff.

Figure 17 - Facility Staffing Metrics

The detailed metrics for each facility lists the role and required number of resources, as well as the currently available resources. The ability to identify resources in surplus across the district will allow the administration of a district to identify where district wide substitute or alternative resources need to be enabled or supported.

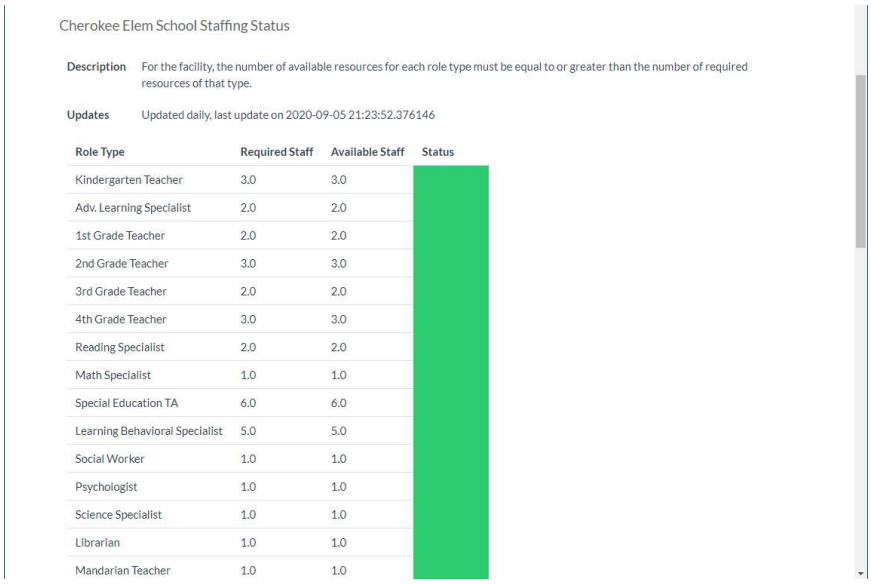


Figure 18 - Facility Staffing Detail

Facility Space

Due to the challenges in maintaining social distancing within the classroom space, the Facility Space Metrics screen shows an overview for each facility of their current capacity and demand for educational spaces. As with the other metrics, if any facility is indicated with a 'red' status, the district will also be shown with a 'red' status. The data for spaces is tracked on an individual room level and summarized based on what purpose the room will be utilized for.

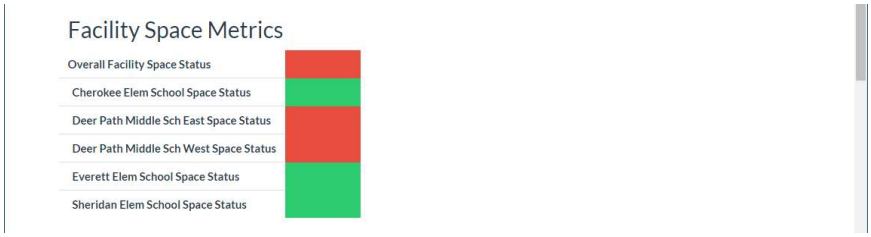


Figure 19 - Facility Space Metrics

The detailed metrics screen for each facility indicates the capacity of seats available for that type of space, the number demanded for that type of space, and the current fill percentage for that space.

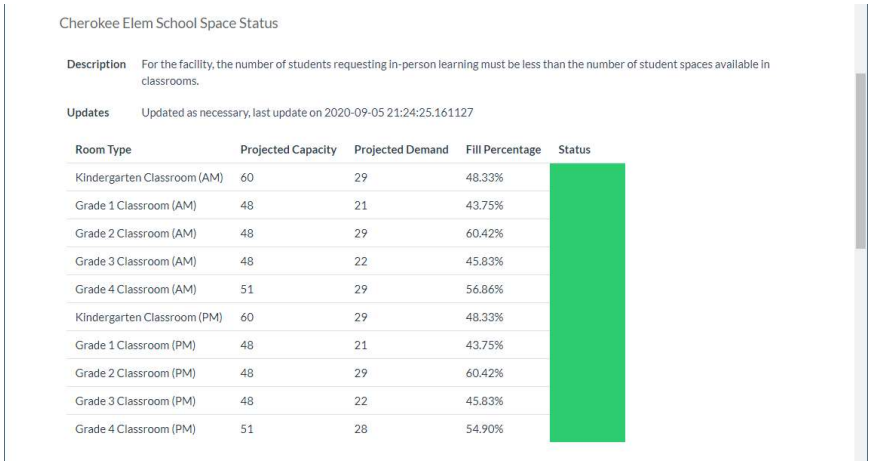


Figure 20 - Facility Space Detail

Transportation Status

Additionally, the challenges of maintaining social distancing make student bus transportation difficult. Making sure there is enough space on each bus for the bus routes that are necessary may be a requirement that is difficult to track. Other bus metrics such as the number of drivers may also be considered if that is also challenging to track.

Figure 21 - Transportation Metrics

The details screen shows the available seats and required seats for each bus route. These are tracked on the district level, and each route is tracked independently.

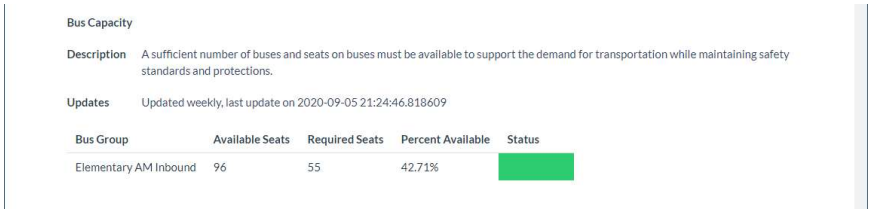


Figure 22 - Transportation Details

Data Management

In order to keep the information for the non-regional conditions up to date, a series of data management screens exist to allow district administrators and staff to maintain and manage the data presented in the snapshots. The individual data management screens are available only to users with the appropriate permissions as granted by a District Administrator (Superintendent).

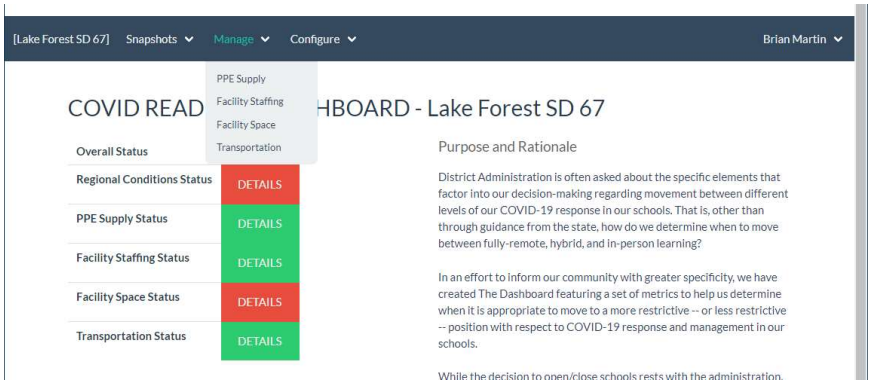


Figure 23 - Data Management Menu

PPE Supply

PPE supplies are managed on a per facility basis. The quantity for any individual PPE item in a facility can be updated either by setting the specific quantity and clicking the 'Save' button, or by selecting the facility and item and entering the amount of the change and clicking the 'Add' or 'Sub' buttons to add or subtract from the total. A PPE item which no longer is desired to be tracked at a facility can be removed by clicking the 'Del' button next to that row.

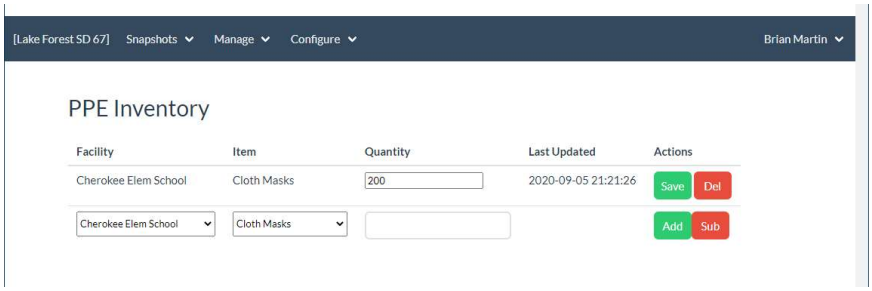


Figure 24 – Update / Add PPE Data

New PPE items not currently listed can be requested by sending an email to covidmetrics-admin@bsmartin.info.

Facility Staffing

Staffing status is also managed on a per-facility basis. Each facility can select the appropriate roles to be managed and specify the number of that role available and required. As part-time resources may also need to be tracked, these fields allow for a decimal value to be used. Changes to the required or available number of resources can be made by updating the values and clicking the 'Save' button. Roles which are no longer desired

to be tracked for a facility can be removed by clicking the 'Del' button.

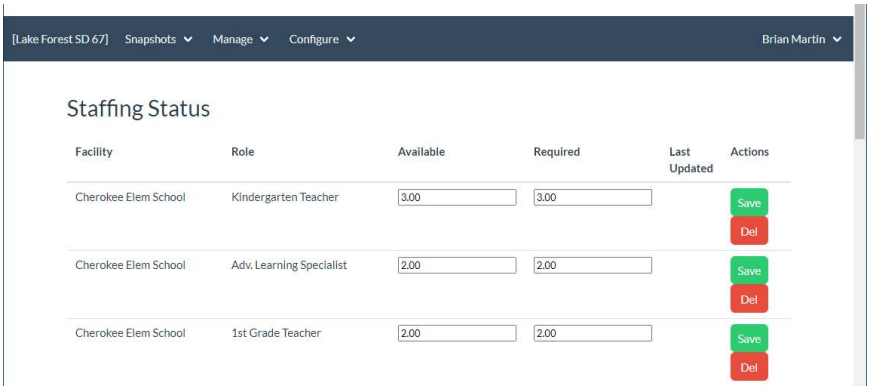


Figure 25 – Update Staffing Data

New roles which are desired to be tracked at a facility can be implemented by selecting the facility and the role, entering values for the number of resources required and available, and clicking the 'Add' button.

Figure 26 - Add Staffing Data

New roles that may be required and are not currently listed can be requested by sending an email to covidmetrics-admin@bsmartin.info.

Facility Space

Space status is also managed on a per-facility basis. Each facility can select the appropriate room types to be managed, and can enter capacity on a per room basis to take into account that a room may be used at different times for different purposes, and that different rooms may have different capacities based on configuration. Demand for space is tracked at the room type level and is based on the number of students enrolled requiring the use of that space. Updates to the capacity of a room or removal of a room can be made by updating the value of the Capacity field for a room and clicking the 'Save' or 'Del' button. Demand for a room type can be made by updating the value of the Required field for the Facility and Room Type and clicking the 'Save' or 'Del' button.

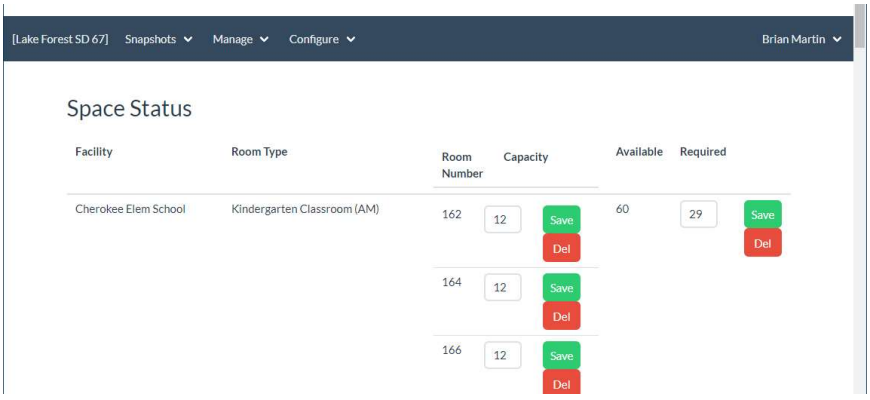


Figure 27 - Update Space Data

To add a new room, select the Facility, the Room Type, enter a Room Number (or other unique name for the room) and the capacity of the room, then click the ‘Add’ button.

Figure 28 - Add Room Capacity

To add demand for a Facility and Room Type where no capacity has yet been specified, select the Facility and Room Type and enter the Required value, then click the ‘Add’ button.

Figure 29 - Add Space Demand

New Room Types that may be required and are not currently listed can be requested by sending an email to covidmetrics-admin@bsmartin.info.

Transportation

Transportation status is tracked at the district level, but per-facility bus groups could easily be specified. In each case, a simple number of Available and Required seats is tracked for each bus group. No tracking is done on a per-route level, as routes can be modified as necessary to optimize for capacity and timing. Management of the route level configurations is currently outside the scope of the dashboards. To update an existing Bus Group, simply change the Available or Required values and click the ’Save’ button. To remove a Bus Group, click the ‘Del’ button for the group.

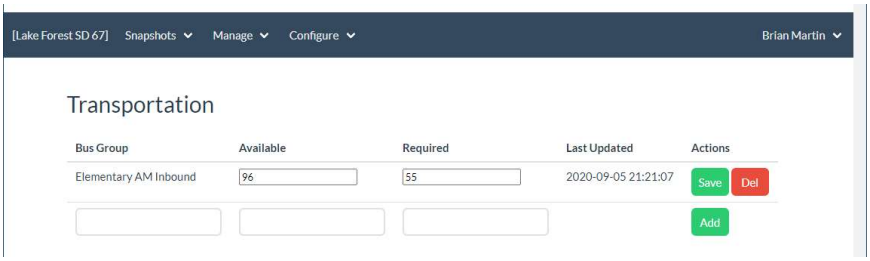


Figure 30 - Update / Add Transportation Data

Site Configuration / Administration

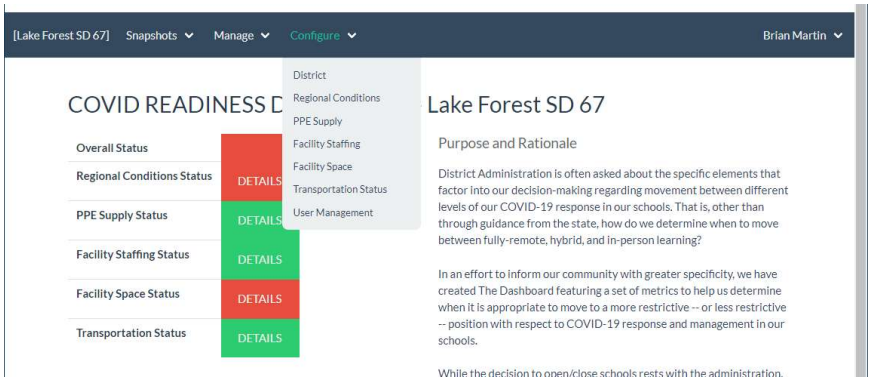


Figure 31 - Configuration Menu

Certain options for the dashboard site can be configured as well to change how different snapshots are displayed and to disable certain snapshots. The configuration screens can be found under the Configure menu for users who are authorized as District Administrator (Superintendent).

District

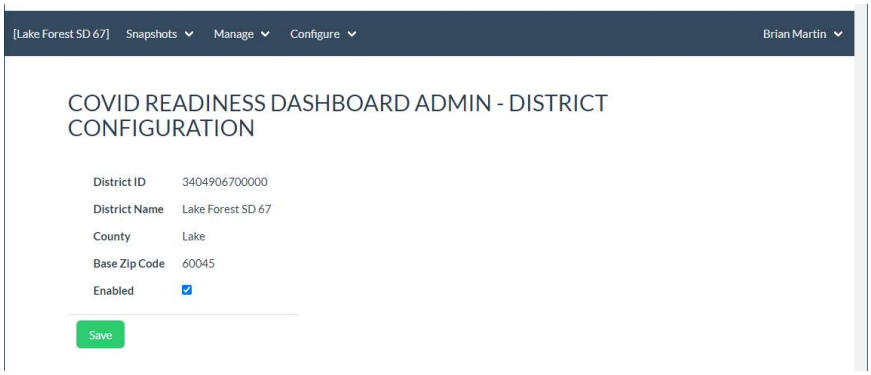


Figure 32 - District Configuration

For the District as a whole, the option to disable the district exists so that no metric snapshots are provided, although administrators and data managers will have the ability to login and update the data in the system.

Regional Conditions

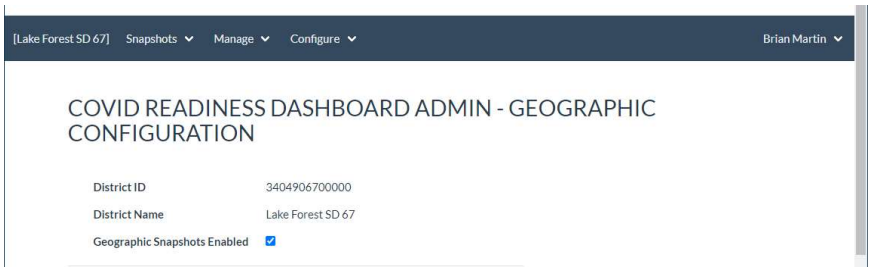


Figure 33 - Regional Metrics Configuration

Enabling geographic region snapshots will enable the calculation and presentation of the selected specific metrics. To disable or enable geographic snapshots entirely, click the enabled checkbox and then the 'Save' button at the bottom of the page.

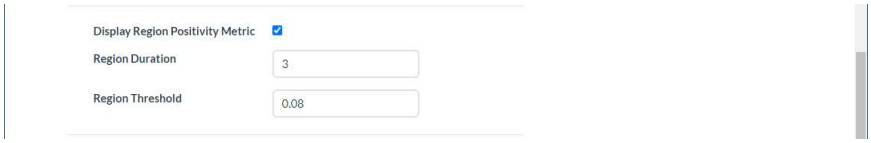


Figure 34 - Region Positivity Configuration

For the Region Positivity Metric, the duration (number of days) and threshold are both modifiable. Additionally, the Region Positivity Metric can be enabled or disabled.

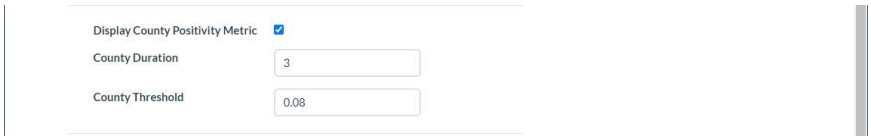


Figure 35 - County Positivity Configuration

For the County Positivity Metric, the duration (number of days) and threshold are both modifiable. Note that this threshold will apply to all counties in the case where a district has facilities in multiple counties. Currently, separate threshold values cannot be specified for each county. Additionally, the County Positivity Metric can be enabled or disabled.

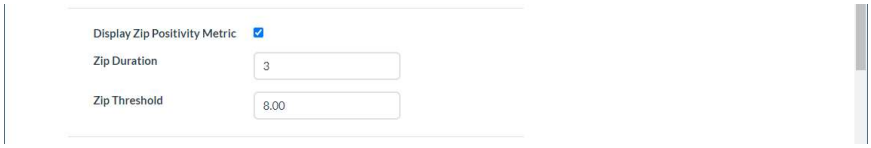


Figure 36 - Zip Positivity Configuration

For the Zip Positivity Metric, the duration (number of days) and threshold are both modifiable. Note that this threshold will apply to all zip codes in the case where a district has facilities in multiple zip codes. Currently, separate threshold values cannot be specified for each zip code. Additionally, the Zip Positivity Metric can be enabled or disabled.

Figure 37 - County Incidence Configuration

For the County Incidence Rate Metric, the Rolling Average Duration (number of days to include in calculation of the rolling average), the Duration (number of days to check the Rolling Average against the threshold), the Hybrid Learning Threshold, and the In-Person Learning Threshold can all be specified. Additionally, the County Incidence Rate Metric can be enabled or disabled.

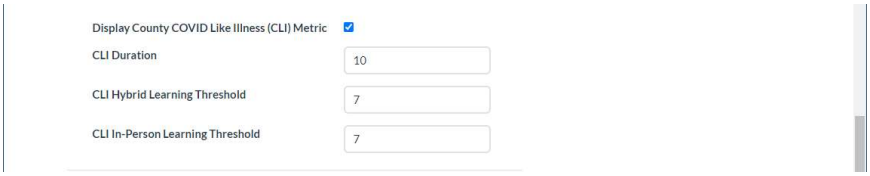


Figure 38 - County COVID Like Illness Configuration

For the County COVID Like Illness Metric, the Duration (number of days), the Hybrid Learning Threshold, and the In-Person Learning Threshold can all be specified. Additionally, the County COVID Like Illness Metric can be enabled or disabled.

Figure 39 - County Time-After-Testing Configuration

For the County Time-After-Testing Metric, the Duration (number of days), the Hybrid Learning Threshold, and the In-Person Learning Threshold can all be specified. Additionally, the County Time-After-Testing Metric can be enabled or disabled.

PPE Supply

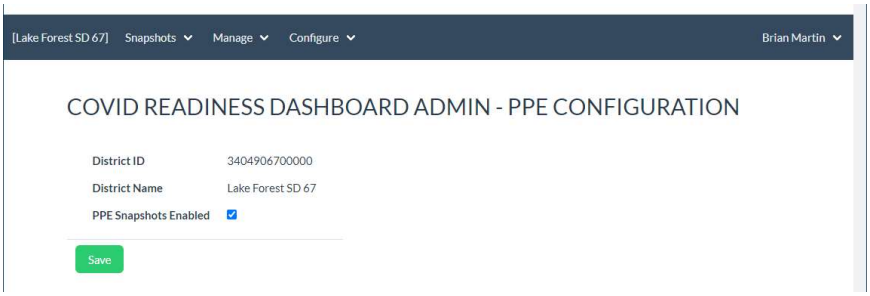


Figure 40 - PPE Supply Configuration

The PPE Supply metric can only be enabled or disabled. To change, click the enabled checkbox and then the 'Save' button.

Facility Staffing

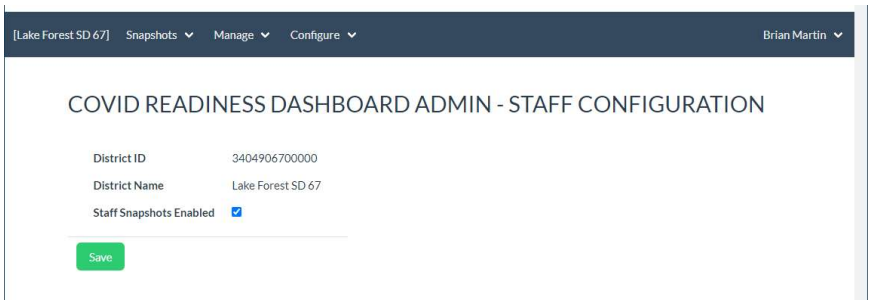


Figure 41 - Staffing Configuration

The Facility Staffing metric can only be enabled or disabled. To change, click the enabled checkbox and then the 'Save' button.

Facility Space

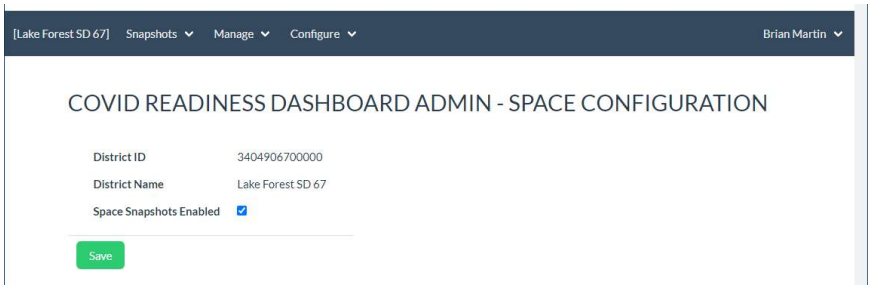


Figure 42 - Space Configuration

The Facility Space metric can only be enabled or disabled. To change, click the enabled checkbox and then the 'Save' button.

Transportation Status

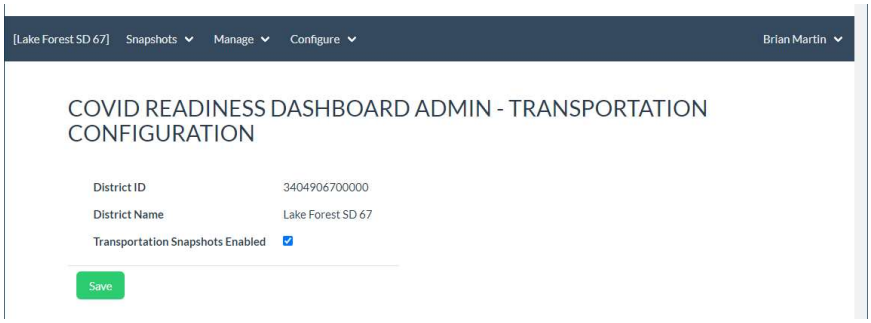


Figure 43 - Transportation Configuration

The Transportation Status metric can only be enabled or disabled. To change, click the enabled checkbox and then the 'Save' button.

User Management

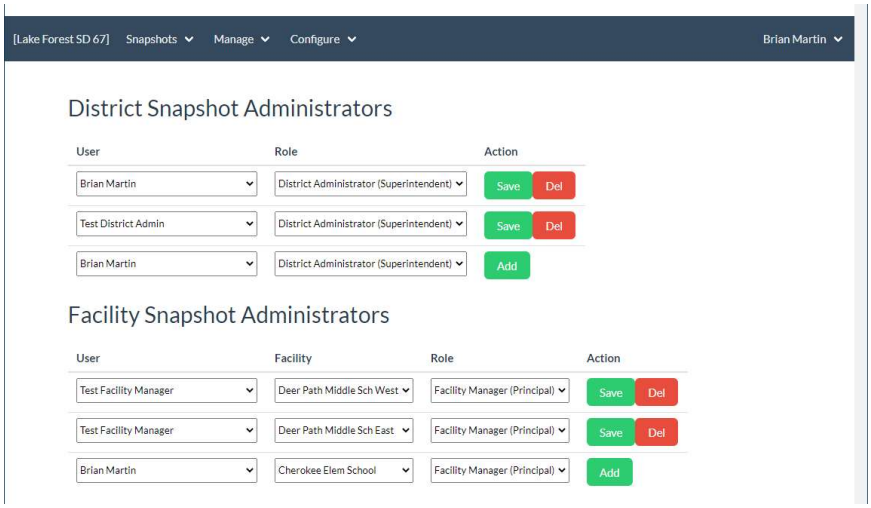


Figure 44 - User Management

For District Administrators, the User Management screens give them the ability to delegate permissions to users registered with their district. To change granted district level permissions, change the value of the User or Role and click the 'Save' button. To revoke district level permissions, click the 'Del' button next to the User/Role. To add a new district level data manager, select the User and the Role and click the 'Add' button.

For Facility Administrators, the User Management screens give District Administrators the ability to delegate data management tasks to users at the facility level. To change granted facility level permissions, change the User, Facility, and Role values and click the 'Save' button. To revoke facility level permissions, click the 'Del' button next to the User/Facility/Role. To add a new facility level data manager, select the User, Facility, and Role, and click the 'Add' button.

If new Role/Permissions configurations are desired and not available in the Role selection dropdown, send an email to covidmetrics-admin@bsmartin.info to discuss what is desired.

Technical Information

Installation

Detailed installation instructions are under development, but the high level steps are as follows:

1. Clone repository to server
2. Build environment and install dependencies
3. Build and deploy database
4. Create initial user
5. Start server

Server Configuration

To run and deploy the platform, a linux server is required that supports Python and the set of Python dependencies. In addition, the server needs to support connectivity to or deployment of a relational database platform such as MySQL.

In addition, the current deployed version of the dashboards relies on NGINX and Gunicorn to handle scalable deployment.

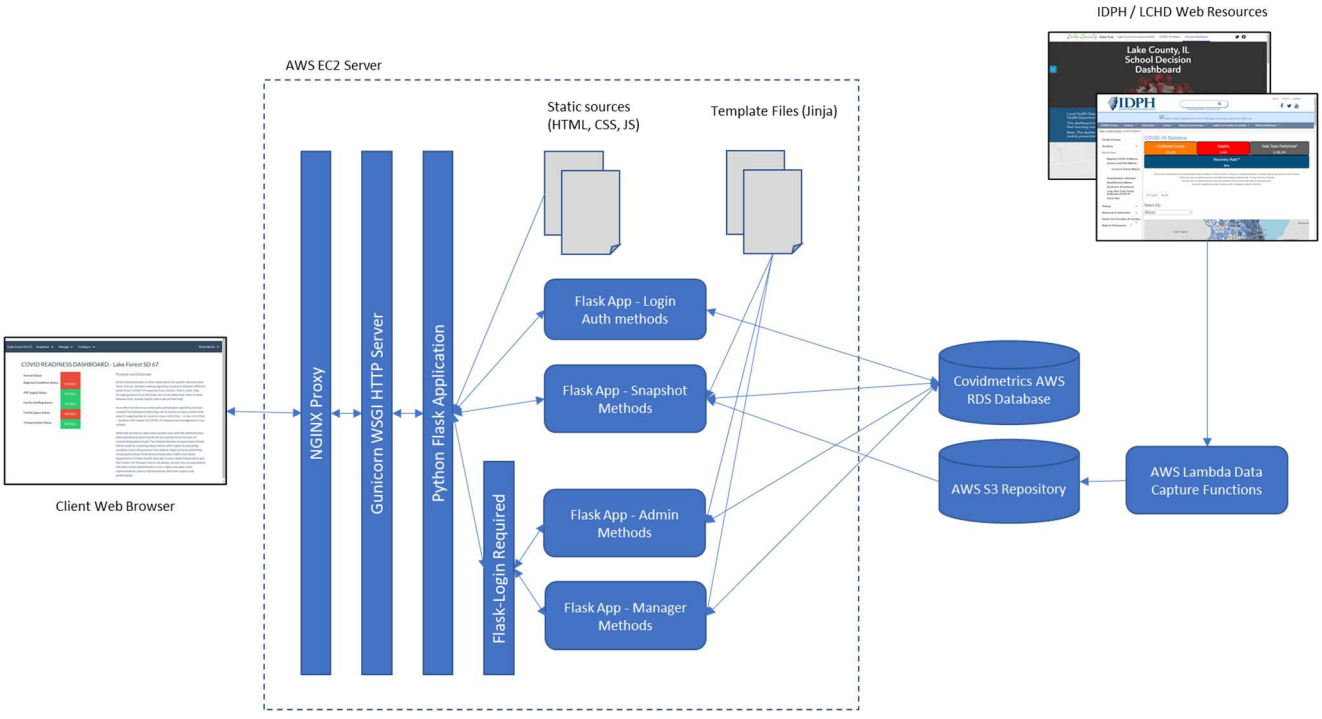


Figure 45- High Level Architectural Diagram

Database Configuration

The platform requires a database on the backend, AWS RDS MySQL is the currently deployed backend database. Full DDL to the database is provided, but no other databases have been tested or validated. The database connectivity within the platform is provided through Python SQLAlchemy and the Flask SQLAlchemy library.

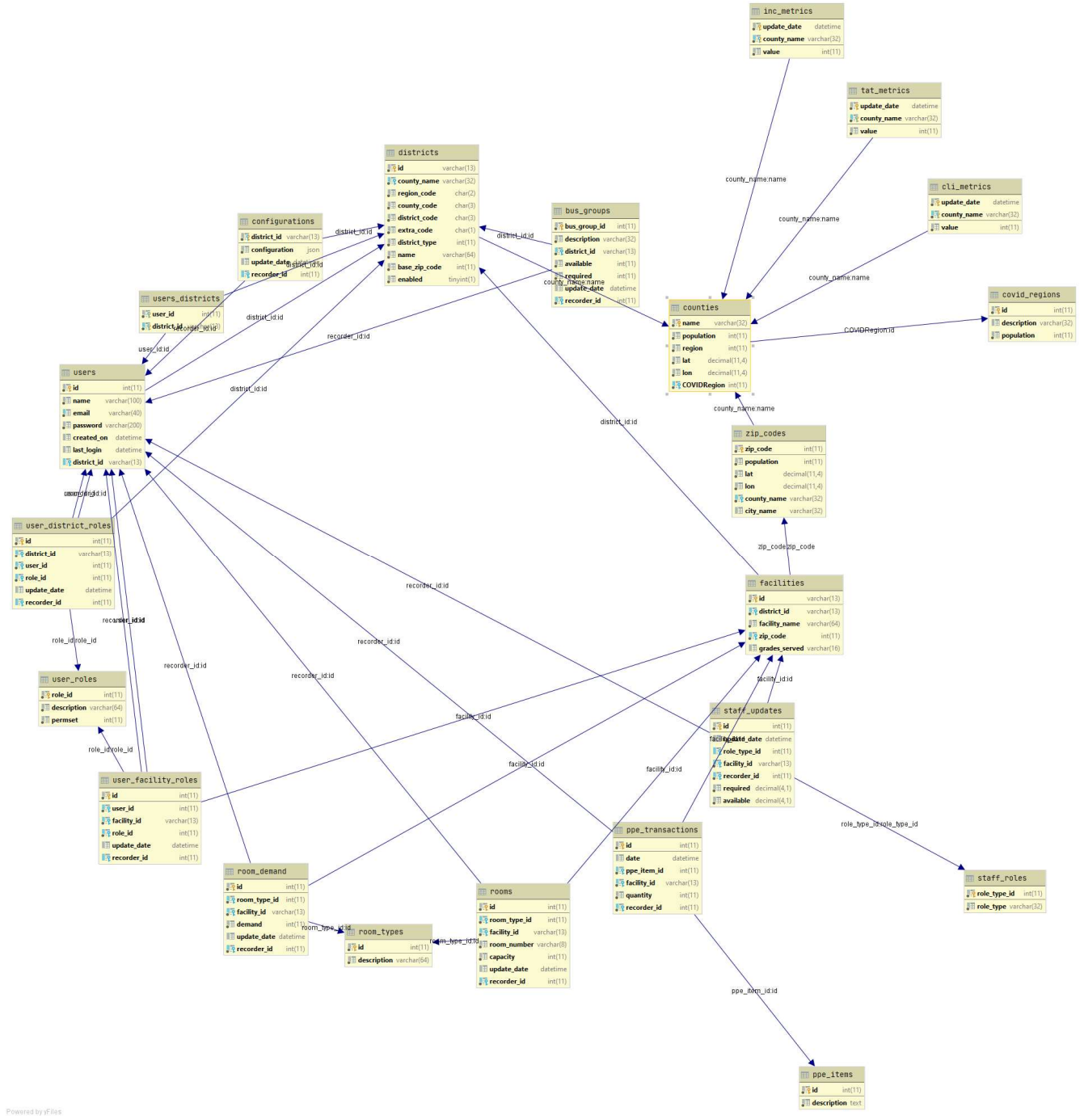


Figure 46- COVIDMETRICS Database Diagram

Source Code

The source code for the dashboards is available at https://github.com/brianm1028/covid-scorecards

The code is provided free for any use and fixes/pull requests are encouraged.

The code for the platform is deployed using the following key technologies/libraries:

- Python 3.x
- SQLAlchemy
- WTForms
- Werkzeug
- Flask
    - Flask – Login
    - Flask – Session
    - Flask – Caching
    - Flask – SQLAlchemy
    - Flask - WTForms

Future Enhancements

At this time, some of the following have been suggested for enhancements:

- Providing a map showing the state with the status of the underlying metrics.
- Single sign on integration with Google or other identity providers to provide for authorization tied to district accounts.
- Graphs and visualizations showing trends in the metrics.
- User subscription/notification to receive alerts when a metric's status changes.

Table of Figures