

Deloitte's Health360 Solution, Coronavirus Response Management Platform (CRMP) Module

A Population Analytics Platform Leveraging Social Determinants of Health (SDoH)

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1. The Novel Coronavirus (SARS-CoV-2) and COVID-19

Coronavirus Overview

On March 13, 2020, the President of the United States declared COVID-19 outbreak a national emergency.¹

The United States continues to see the number of cases of Coronavirus grow and states will likely **struggle to manage the patient flow**, and many are worried that healthcare facilities will be at **over-capacity**. Although the Centers for Disease Control and Preventions (CDC) recommends that Americans take appropriate **social distancing** and **self-quarantine** measures, many will face **barriers** to maintaining appropriate behaviors.

Example Barriers Include:



The need to get prescriptions if an individual has **chronic disease** requiring daily medications



Limited access to stocked grocery stores to acquire 2-4 weeks of **supplies**



Missing reliable **transportation** to and from food and medical care vendors



A living environment that prevents appropriate **social distancing**

1. Proclamation on Declaring a National Emergency Concerning the Novel Coronavirus Disease (COVID-19) Outbreak. Washington, DC. The White House Presidential Actions.

2. Deloitte's Health360 Solution, Coronavirus Response Management Platform (CRMP) Module

2.1 Deloitte's Health360 Solution, CRMP Module Overview

Deloitte's Health360 Solution, CRMP Module, will help states to identify subpopulations of

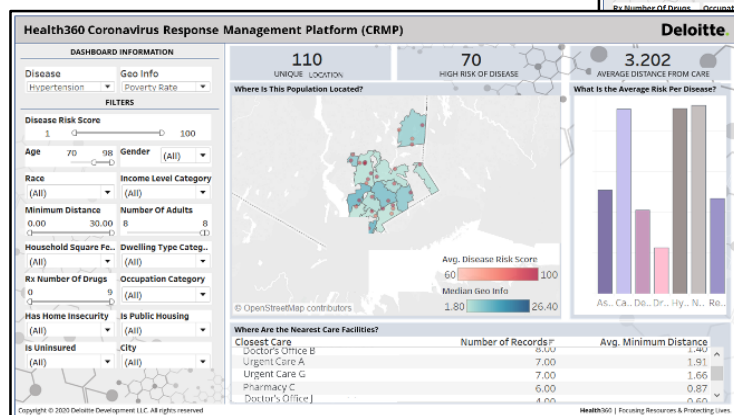
patients that are at highest risk, to allow states to provide tailored testing, care, and services to these populations.

The CRMP Module is a cloud-based population analytics platform with 1,500 Social Determinants of Health

(SDoH) data points across millions of records. Deloitte's Health360 Solution, CRMP Module, can support operational and policy leaders in every state as a standalone platform using only Deloitte data, but can also integrate with states' data sources.

Deloitte's Health360 Solution, CRMP Module enables:

1. Identification and geolocation of the highest risk groups by age cohort, medical condition, and comorbidities associated with highest mortality



2. SDoH can predictively identify populations that have a higher likelihood of facing barriers to self-quarantine/or self-isolate, and map them to nearby services

Who should use the CRMP Module? State officials responsible for managing the Coronavirus response.

How quickly can the CRMP Module be stood up? The initial operational capability can typically be stood up in a matter of days or less than a week for any state. The cloud infrastructure is rapidly scalable to handle the data the state can make available.

2. Deloitte's Health360 Solution, Coronavirus Response Management Platform (CRMP) Module

2.2 Looking Under the Hood

What are CRPM's features?

- Data on all **50 states**
- Predictive disease models for identifying likely co-morbidities of the most **vulnerable populations**, such as populations at elevated risk of respiratory conditions, hypertension, asthma, and diabetes
- 60+ filterable **SDoH factors** viewable at the population-level
- Detailed information on sources of **health and other needed services** such as minute clinics, transportation, groceries, etc.
- Travel routing analysis tools to study SDoH, **barriers to social distancing**, and ability to self-quarantine for vulnerable populations

Why is CRMP valuable? The CRMP Module helps those on the front lines across the United States answer questions such as:

- Which populations are at highest risk and where are they located?
- Which populations cohabitate with a high-risk population?
- What is the dwelling type of high-risk populations?
- How far are populations from a health clinic/facility, and other essential points of interest?
- When an individual tests positive, how does that change the risk profile of others in the surrounding neighborhood?

Why is CRPM unique?



Constantly updated data on the population



150+ health predictive models

** Models do NOT require access to State medical records.



Clinical Epidemiological Insight Advisor



Geographic information



Cloud-based Google Cloud Platform Solution

3. Appendix

Sample Business Questions

Deloitte's Health360 Solution, CRMP Module can help Policy Makers, Public Health Specialists and Epidemiologists identify at-risk populations, their proximity to resources, potential shortages of resources and travel routing information in order to manage the Coronavirus response. Within each of these categories, Deloitte's Health360 Solution, CRMP Module can assist in addressing the following sample business questions:

Category 1: Identify at-risk populations

- Who is most at-risk and should be considered by State officials for prioritized testing?
- What locations have elderly or high-risk populations and the young adult population cohabitating?
- Who likely has elevated SDoH risks – food, housing, and/or transportation insecurity?
- Where are populations over of the age of 60 located?
- How can we best contact at-risk populations? (e.g. by phone, email, etc.)
- For areas with poor air quality, where are populations over the age of 60, at high-risk of asthma or other respiratory conditions, and likely smoke located?
- Where are the populations with a single parent household or live with the elderly population located?
- Where are at-risk rural populations located across the state? Which populations likely does not have reliable transportation? Which population is likely uninsured? Which population is likely on Medicaid?

Category 2: Identify proximity of needed resources

- How far away are populations over the age of 60 from a minute-clinic? What are the locations more than 20, 15, 10 or 5 miles from a clinic based on the shortest travel route? Does the population have reliable transportation, or will they use mass transit (e.g. do they rely on a local bus/train and is this a social distancing risk)?
- In a given county with confirmed infections, where is high-risk population within 1, 2, and 5 miles of each known infected location? How far is the high-risk population to a medical testing location? If testing kits need to be taken to the high-risk population, what area should it be delivered to?
- For a given clinic or medical facility, which populations in their area-of-responsibility are at highest risk and most in need of testing? How does this population change as new confirmed infections are discovered (e.g. dynamic scoring as test results come in)?

3. Appendix

Sample Business Questions

Category 3: Identify possible medical resource shortages and locations at-risk of being overwhelmed

- Where are additional hospital beds and acute care capacity most likely needed?
- Across a state, what health clinics and medical locations are surrounded by the highest concentration of high-risk populations?
- Near a known infected population, what are the top 5% of locations at-risk of being overwhelmed and not having capacity to address the high-risk populations?
- Where should additional respiratory and other equipment be deployed?

Category 4: Travel Routing information between at-risk populations and needed resources

- Based on travel routing information, which high-risk populations have expensive or long travel routes to a testing or treatment location?
- If a bus, train, or mass transit mode is limited or shutdown, which high-risk populations are impacted?

Category 5: Scenario platform for epidemiologists to explore and test hypotheses

The following data and analytics can be made available to epidemiologists to study high-risk populations:

- Populations at-risk of respiratory problems, hypertension with certain prescriptions, smokers at certain ages, etc.
- SDoH inputs such as housing, food, transportation insecurity, etc.

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