

## Software Engineering for Healthcare Applications

BigR.io's expertise in software engineering, product development, database technologies, cloud engineering, web and mobile applications development has helped us to create some highly specialized solutions for the healthcare sector.

## Patient Data Registry and Real World Evidence

BigR.io has extensive experience with implementing high-throughput models of patient data portals in which a registry can be 'configured' to meet a specific set of study goals.

Different disease areas have several requirements with respect to data variables, study endpoints, assessments, clinical outcomes and patient reported outcomes. We provide a configuration capability so once the study variables and endpoints have been identified, they could be quickly included into a finished product. We have a true understanding of the importance in the 'discovery phase' within registry construction, in which the data variables, end points, measures, interventions, biomarkers and outcomes are identified.

A healthcare information management company requires a comprehensive and extensive data dictionary to capture all the elements necessary to perform comprehensive cohort analysis. In collaboration with provider groups, secure mechanisms are recommended to integrate patient de-identified data with data from external organizations. This process requires support for master patient record linking.



We have experience in this domain from a data model and service application programming interface (API) perspective. The data integration process also requires robust data mapping capabilities in which incoming data is mapped to common standard terminologies. The data import mechanism needs to be robust enough to identify aliases for a wide range of data types including, but not limited to, disease condition and staging, interventions (drugs), comorbidity, adverse events, procedures, observations, measurements, biomarkers and outcomes. Without a high-quality data import strategy, the quality of cohort exploration and any related analysis can suffer.

BigR.io offers a flawless execution model for the development of a Patient Data Registry.

## Pandemic Response Platform

BigR.io package is a proprietary predictive model, built by the data science team that oversees our machine learning and deep learning capabilities. This package is being used a globally renowned healthcare facility to show up to the minute data on cases in the COVID-19 pandemic. The package has three primary capabilities.

### Predictive Modeling

This package models out the number of cases, peaks, and deaths associated with the pandemic. The model simulates likelihood scenarios according to data specific to the organization's geographic and regulatory setting. It utilizes social determinants, claims history, EMR/clinical data, and pharmaceutical data to model out a robust patient-centric view. Additionally, it takes into account macroeconomic factors including unemployment, wage index, social distancing preparedness and adherence, and population density which are critical input features to the model. This is a definite heads up over most other models that have not been updated to reflect the changing social climate.



### Resource Utilization and Logistics

Resource Utilization and Logistics is a crucial output prediction for most healthcare organizations. The current pandemic proves the acute shortage of beds, ICUs, PPE, staff, and equipment. A particularly useful feature of this model is that it can assess a hospital's or organization's current and future resource needs, from ER physicians and nurses to ICU beds and invasive ventilators and puts them well prepared and step ahead from the others.

### Prescriptive Modeling

Prescriptive Modeling moves beyond simple prediction into prescription, helping healthcare clients understand what the information means for them and what to do about it. Here our internal research and development team incorporates evidence-based clinical pathways as they become available into the modeling, so that the best of clinical knowledge and praxis is always reflected in the recommendations. A neural network assesses patient profiles against the larger macroeconomic setting of the healthcare industry, then recommends clinical pathways on a patient-specific basis.

