



# PANDEMIC ANALYTICS:

Forecasting the Impact of COVID-19  
on National Security

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**B**efore the onset of the pandemic, common measures of security and prosperity focused on external threats, resources, and stakeholders—a framework that has quickly been replaced by the close-proximity, day-to-day fight against COVID-19. As critical national security missions shift to challenges like hospital capacity, PPE production and distribution, and food availability, the need for a tested and reliable method to derive and deliver predictive analytics has become a clear priority for enterprises around the globe.

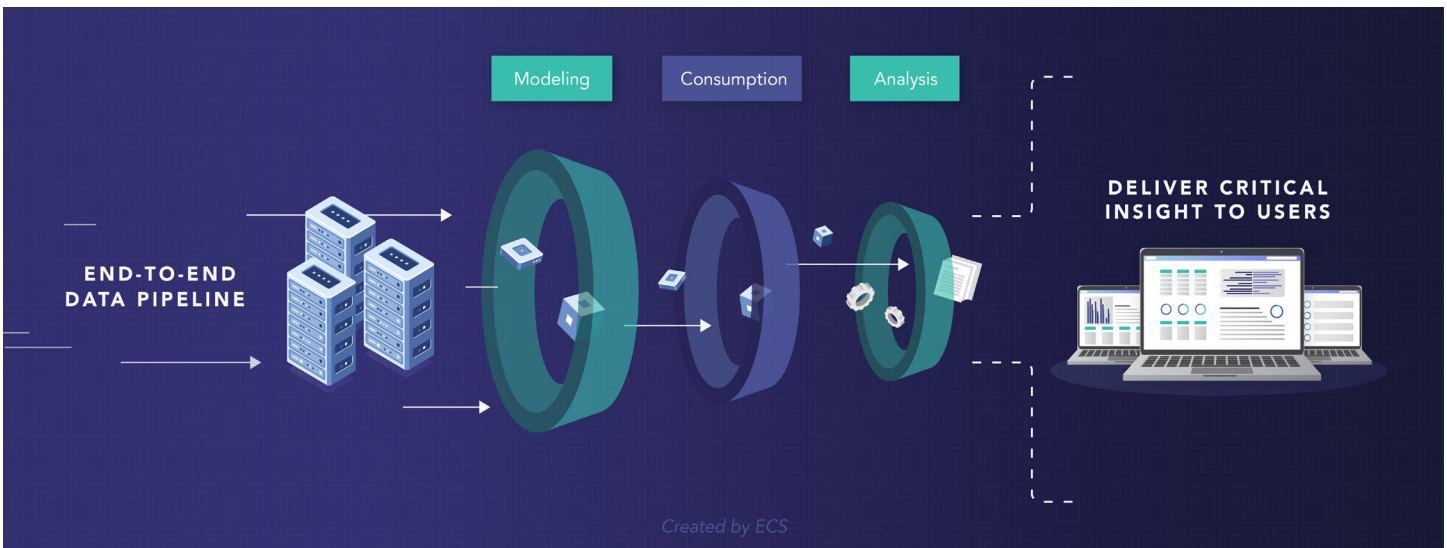
This dynamic, high-risk environment demands new tools, developed in record time, to **deliver the key promise of AI/ML**: data-driven insights to navigate the fast-evolving pandemic world. Decision-makers across government, healthcare,

and industry need tools that harness the volume, velocity, and variety of data to identify patterns, develop predictions, and prescribe best-scenario planning—all at the speed of mission.

ECS' data and AI professionals term this challenge “pandemic analytics”—leveraging data science tools that integrate critical vectors like hospitalizations, vaccine distribution, and PPE inventories to produce accurate, timely, and repeatable insights. Using automated processes, data operations, and advanced analytics, ECS' experts work hand-in-hand with our partners, leveraging the full strength of AI/ML to forecast and combat the impact of COVID-19 on national security, health, and the economy.

## BUILDING PANDEMIC ANALYTICS

The large teams, long projects, and legacy thinking of the pre-pandemic workplace are ill-suited to the immediate needs of COVID-19. ECS' approach is to deploy small "tiger" teams of AI engineers and strategists who act as trusted advisors, applying experience, best practices, and industry standards to delivering agile integration, applied innovation, and expert communication for the rapid development and implementation of advanced AI/ML solutions.

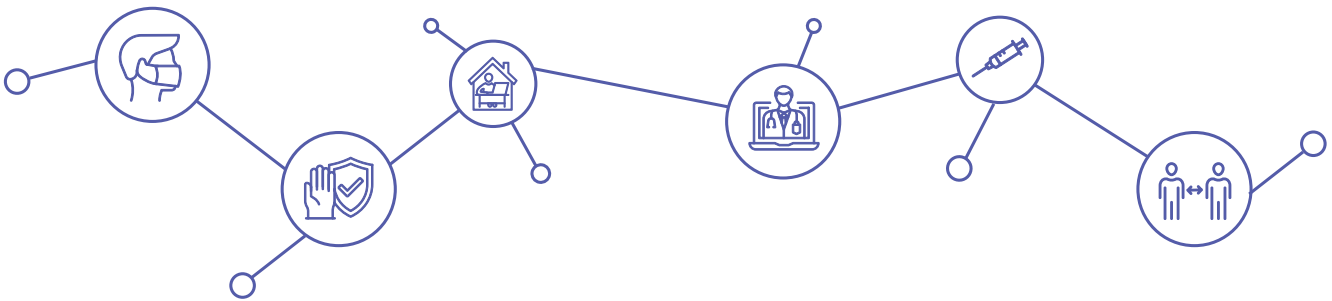


ECS delivers end-to-end data pipelines, enabling decision-making and operational orchestration from initial data collection through modeling, analysis, and consumption. Our data engineers ingest data from multiple sources, which is stored within a filesystem data lake and provided to modeling teams via enclaves and an analytics workbench/platform. We use pertinent data to constantly monitor, update, and enrich models, while providing feedback to engineers. Finally, in the data consumption stage, we provide our customers easy access to information and insights to assist in strategic, data-driven decision-making.

To meet the demands of the pandemic and capitalize on the opportunities of today's interconnected world, our pandemic **analytics applications** deliver solutions across devices, providing users ranging from government planners to first responders with secure access to the insights they need anywhere and anytime. Web applications and mobile interfaces provide ready availability to information and outcomes, regardless of platform or database, when leaders and operators through the pandemic need them most.

## Additional pandemic analytics applications include:

- Contact tracing automation
- Demand forecasting
- Employee management
- Epidemic size forecasting
- Epidemic waves forecasting
- IoT conditions and locality-based monitoring
- Manufacturing optimization
- Market effects forecasting with semantic network analysis
- Multi-echelon inventory optimization
- Patients' needs forecasting
- Population effects forecasting
- Transportation and distribution optimization
- Vaccine administration optimization
- Workforce planning and optimization



## DEPLOYING PANDEMIC ANALYTICS FOR IMPACT

Working with a domestic healthcare provider, ECS built algorithmic models to predict COVID-19 infection waves and forecast the impacts of disease spread, enabling our customer to optimize conditions for training, distribution, and medical readiness. Our solution incorporated automated data preparation, blending, and loading to develop data visualization tools and real-time COVID-19 dashboards with alerts, nudges, and recommendations to support decision-making. Real-time supply-chain tracking gives healthcare providers the means to manage critical care equipment like ventilators, PPE, anesthesia, and neuromuscular blocking agents.

ECS also developed a predictive analytics solution for a defense agency's pandemic response, assisting an interagency effort encompassing hospital capacity, COVID-19 hotspots, food scarcity, and destructive weather evacuation. Our platform aggregates open source, government, and anonymized commercial proprietary datasets on a protected, government-owned hybrid-cloud network. We have integrated over 90 domestic and international datasets to serve over 150 users with over 25 predictive analytics models. This solution outputs models and data to any existing user interface—including Palantir Vantage, Advana, Esri ArcGIS, and GBSP—supporting commanders, analysts, and data scientists with critical data and a dynamic common operating picture.

Efforts to combat COVID-19 and hedge against future disruption demand more than traditional problem-solving frameworks. Enterprises across government and industry must harness the latest in AI/ML technology to effectively track, remediate, optimize, and transform for national security and prosperity.

ECS' data scientists are leading the effort to transform critical government and commercial programs through the pandemic. We are ready to quickly and comprehensively accelerate your digital transformation and solution development with custom tools, automated processes, data operations, advanced analytics, and AI/ML-enabled decision-making.

### **Interested in learning more about our pandemic analytic solutions?**

Reach out and **speak to an expert today.**

ECS is a leading information technology provider delivering solutions in cloud, cybersecurity, software development, IT modernization, and science and engineering. The company's highly skilled teams solve critical, complex challenges for customers across the U.S. public sector, defense, and commercial industries. ECS maintains partnerships with leading cloud and cybersecurity technology providers and holds specialized certifications in their technologies.

**CONTACT OUR EXPERTS**