CONTENTS

Introduction ix
How to use this book xvii

PART 1: SITUATIONAL AWARENESS 1

Global dashboard keeps tabs on the virus 5
Johns Hopkins University

Supporting state dashboards to better monitor cases and capacity 10
US Centers for Disease Control and Prevention

It’s in the wastewater: Sensing and mapping COVID-19 14
University of California San Diego

A new tool for contact tracing 20
Esri

GIS-based contact tracing initiative sets US precedent 24
Cities of Allentown, Bethlehem, York, and Wilkes-Barre, Pennsylvania

PART 2: EQUITABLE RESOURCE ALLOCATION 31

Analyzing racial inequities during COVID-19 35
Esri

Spatial approaches to determining accessibility 41
Esri

GIS helps achieve equitable, speedy vaccine distribution 47
Esri

Applying location intelligence to vaccine distribution 57
City of Bethlehem Health Bureau, Pennsylvania; Kansas Department of Health and Environment; and Lewis and Clark Public Health, Montana
Dashboards mark progress of rapid vaccinations 63
Chilean National System for the Coordination of Territorial Information

Using GIS to reach homebound residents for COVID-19 vaccination 68
Oregon Public Health Department

PART 3: CAPACITY AND INFRASTRUCTURE 73
Models and maps explore COVID-19 surges and capacity 76
Penn Medicine’s Predictive Healthcare Team

Using maps and models to create surge hospital capacity 82
US Army Corps of Engineers

Solving medical supply chain problems 89
Direct Relief

PART 4: COMMUNICATION AND ENGAGEMENT 93
Communication hub sites share COVID-19 news, resources 96
Montgomery County, Pennsylvania; Maryland Department of Information Technology; University of South Florida; and Delaware County, Indiana

Equitable community engagement during COVID-19 101
Esri

GIS hub helps keep residents informed and safe 107
Cobb County, Georgia

Location intelligence helps boost census response rates 113
US Census Bureau
PART 5: RECOVERY AND RESILIENCE  

Five spatial approaches to safely reopening 125  
Esri  

Evaluating readiness for relaxing stay-at-home measures 133  
Esri  

Assessing economic fallout with shared maps 140  
Montgomery, Bucks, Chester, and Delaware Counties, and the city and county of Philadelphia, Pennsylvania  

Balancing response and recovery 144  
Esri  

How to reopen the workplace during COVID-19 148  
Esri  

COVID-19: OUR LESSONS LEARNED 155  

NEXT STEPS 161  

Conclusion 181  
Contributors 185