



HOULIHAN LOKEY

HEALTHCARE TECHNOLOGY

SEGMENT SPOTLIGHT | SPRING 2020



Houlihan Lokey Healthcare Technology Market Update

Dear Clients and Friends,

We hope you, your families, and respective teams are well, safe, and healthy during this unprecedented and challenging time. We are acutely aware of the significant risks and potential disruptions the current situation has created. We are hopeful that as we collectively navigate the various risks and challenges we are all facing, we will emerge stronger in the long run.

As the healthcare landscape continues to be impacted by COVID-19, we expect healthcare technology providers to thrive and define the next economic cycle as all industry stakeholders seek new business models, new sources for revenue growth, cost savings, and workflow optimization solutions at a rapidly increasing rate.

We have spent some time considering various sectors where we expect to see dramatic disruption and further adoption, and we are pleased to present our perspectives on what we believe to be some of the more exciting opportunities in healthcare information technology (HCIT).

We have included brief industry thought pieces on seven areas within HCIT to help you stay ahead of the curve in this ever-changing environment, and we hope you find this resource helpful. If there is additional content you would find useful or if you are interested in discussing any of our perspectives further, please don't hesitate to reach out. We look forward to staying in touch with you.

Regards,

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Healthcare Technology Verticals Covered

REVENUE CYCLE MANAGEMENT

CARE DELIVERY

WORKFORCE MANAGEMENT

PATIENT-FACING SOLUTIONS

PAYOR SOLUTIONS

PHARMA IT SOLUTIONS

PROVIDER TECHNOLOGY

AI AND MACHINE LEARNING

HLI
LISTED
NYSE

Houlihan Lokey is the trusted advisor to more top decision-makers than any other independent global investment bank.

Houlihan Lokey's Healthcare Group Is a Leading Advisor to Healthcare Companies...

2019 M&A Advisory Rankings All U.S. Healthcare Transactions		
Advisor	Deals	
1 Houlihan Lokey	27	
2 KeyBanc Capital Markets Inc	21	
3 Piper Jaffray Cos	20	
4 Goldman Sachs & Co	19	
5 JP Morgan	16	
5 Jefferies LLC	16	

Source: Refinitiv (formerly known as Thomson Reuters)

2018 M&A Advisory Rankings All U.S. Healthcare Transactions		
Advisor	Deals	
1 Houlihan Lokey	36	
2 JP Morgan	23	
3 KeyBanc Capital Markets Inc	19	
4 Piper Jaffray Cos	15	
4 The Braff Group	15	
4 Jefferies LLC	15	

Source: Thomson Reuters

2017 M&A Advisory Rankings U.S. Healthcare Transactions Under \$1 Billion		
Advisor	Deals	
1 Houlihan Lokey	21	
2 Piper Jaffray Cos	19	
3 JP Morgan	16	
3 Jefferies LLC	16	
5 Cain Brothers Co.	13	

Source: Thomson Reuters

...With Exceptional Qualifications in Healthcare Technology and Tech-Enabled Services

35
CLOSED
TRANSACTIONS
SINCE JAN. 1, 2015

~\$255 million
AVERAGE
TRANSACTION SIZE
SINCE JAN. 1, 2016

90%+
DEALS CLOSED IN OR
ABOVE PITCH RANGE
SINCE JAN. 1, 2016

~25%
TRANSACTIONS SOLD
TO A STRATEGIC
SPONSOR
SINCE JAN. 1, 2016

~75%
OF DEALS SOLD TO A
FINANCIAL SPONSOR
SINCE JAN. 1, 2016

2020					2019				
 ACCLARA a portfolio company of ALTARIS has been acquired by Providence Sellside Advisor	 Enterprise Content Management (ECM) Business of Ingersoll Rand has been acquired by Hyland a portfolio company of THOMAS BRAVO Sellside Advisor	 TrustHCS a portfolio company of WINDROSE has been acquired by medical knowledge group. a portfolio company of WINDROSE Buy-side Advisor	 MRO a portfolio company of MRO has been acquired by FARTHEIM CAPITAL Sellside Advisor	 Optima a portfolio company of ALPINE has been acquired by net health. a portfolio company of THE CARLISLE GROUP LEVEL EQUITY Sellside Advisor	 ADVARRA a portfolio company of LINDEN has been acquired by GENSTAR Sellside Advisor				
 W2O a portfolio company of AR has been acquired by NMC Sellside Advisor	 Project Atlas Healthcare Tech-Enabled Financial Integrity Solutions Company Has been acquired by a PE Fund Sellside Advisor	 GeBBS HEALTHCARE HEALTHCARE has been acquired by CHRYSCAPITAL Sellside Advisor	 Q-Centrix a portfolio company of STERLING PARTNERS has been acquired by TPG Sellside Advisor	 Verzend a portfolio company of VERITAS CAPITAL has acquired Cotiviti Financial Opinion	 OneContam™ a content management software asset of Allscripts has been acquired by Hyland a portfolio company of THOMAS BRAVO Financial Advisor				
 CONNECTURE has been acquired by EP Financial Advisor	 MedPartners has been acquired by AMN Sellside Advisor	 GENERAL DYNAMICS Information Technology has divested its Commercial Health Insurance Paper Products Business to Verzend a portfolio company of VERITAS CAPITAL Sellside Advisor	 New Minerals Capital LLC has partnered with and made an equity investment in IMA Consulting Buy-side Advisor	 The Connectbusiness unit of INFLUENCE HEALTH has been acquired by APTEAN Sellside Advisor	 RemitDATA has been acquired by eSolutions a portfolio company of EP Sellside Advisor				
 ANTATA HEALTH the healthcare software asset of NTT DATA have been acquired by EP Sellside Advisor	 rmp a portfolio company of THOMPSON STREET Series D has been acquired by NexPhos Sellside Advisor	 MRA has been acquired by Riverside PARTNERS Sellside Advisor	 HEALTH SOLUTIONS a portfolio company of COMVEST has been acquired by NMC Sellside Advisor	 CARDON OUTREACH a portfolio company of Serenit has been acquired by MedData a MEDNAX company MEDNAX Sellside Advisor	 GI PARTNERS in partnership with Allscripts has acquired Netsmart a portfolio company of GENSTAR Buy-side Advisor				
					 avadynehealth has been acquired by MTS HEALTH INVESTORS Sellside Advisor				

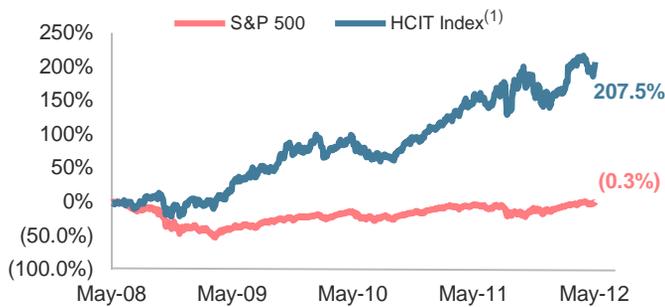
Healthcare Technology Outlook: 2020 and Beyond

Houlihan Lokey's Outlook

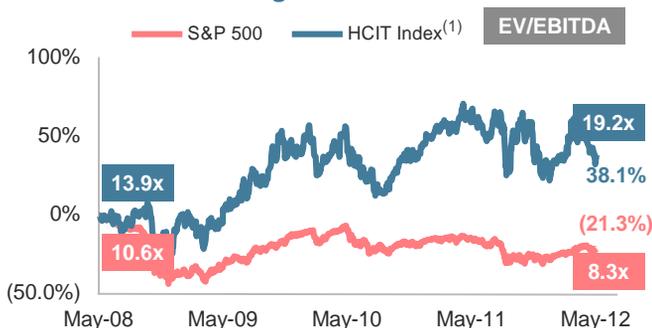
The current COVID-19 crisis has touched the life of every reader of this outlook. We in Houlihan Lokey's Healthcare Technology practice have stayed in close contact with health systems, solution providers, and investors and shared our view on how healthcare technology can help in the short term, as well as what segments we are excited about in the long term.

Healthcare IT (HCIT) has historically been an attractive sector in tough times due to long-term, recurring revenue models and high levels of free cash flow. Providers have historically sought outsourced solutions coming out of crises, e.g., hospital outsourcing grew at a CAGR of ~14% from 2008 to 2010. This trend is evident in the stock performance of healthcare technology companies versus the S&P 500 through the Great Recession. From May 2008 to May 2012, our HCIT index hit a low of ~(-22%) and ultimately returned ~208% with EV/EBITDA multiple expansion of ~38%. In contrast, the S&P 500 hit a low of ~(-52%), ultimately only returning slightly below par with a ~(-21%) multiple contraction in the same period.

Great Recession Market Performance



Great Recession Change in EV/EBITDA



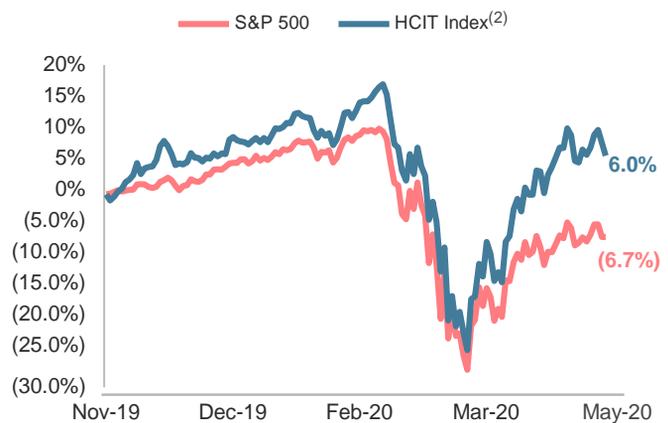
Within our HCIT index, the rationale for outperformance is clear. While still facing pressure, clinical platform providers saw an increase in revenue through the Great Recession. Healthcare technology providers saw increased adoption as their solutions enabled healthcare companies to contain costs and optimize workflows at a highly critical juncture.

Similarly, Houlihan Lokey expects to observe this trend in the near term, as cash-strapped health systems seek solutions that drive revenues, turn fixed costs into variable, and provide tangible ROI.

This crisis has catapulted investment in healthcare technology to the top of the priority list for both providers and payors, with the explosion of telehealth as a clear example. HCIT vendors are also aggressively developing COVID-19 specific solutions to help their customers better navigate through this environment and we view this crisis as a catalyst to further accelerate innovation in healthcare in the near term. Many HCIT segments that had been near tipping points have tipped, and the ecosystem will respond by adopting technology at a rapidly increasing rate.

The public markets are already evidencing similar trends that were seen during the Great Recession, with our HCIT index demonstrating significant stability, up 6.0% over the last six months while the S&P is down (6.7%) over the same period.

COVID-19 Market Performance (L6M)



Source: Orion Health, Centers for Medicare & Medicaid Services (CMS), Office of the National Coordinator (ONC) for Health Information Technology, Industry Research, Modern Healthcare | (1) Includes CERN, CPSI, MDRX, NXGN, ATHN, and HMSY. | (2) Includes CHNG, PINC, RCM, PHR, HCAT, VCRA, CERN, MDRX, NXGN, CPSI, LVGO, HQY, INOV, HMSY, VEEV, IQV, SYNH. Updated as of 5/13/20.

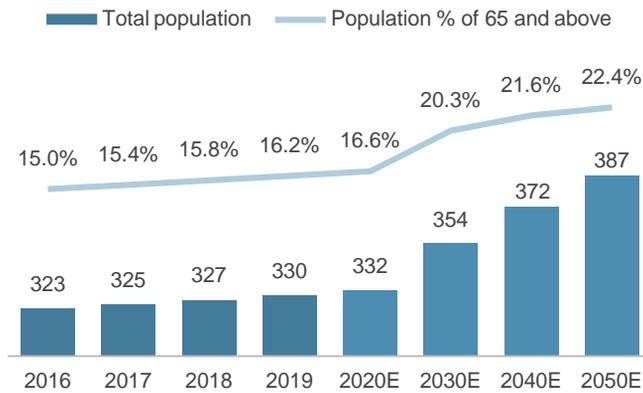
Healthcare Technology Outlook: 2020 and Beyond

Key Themes

- All of the healthcare subverticals detailed in this presentation are poised to benefit from fundamental shifts in U.S. demographics and the overall healthcare system at large.

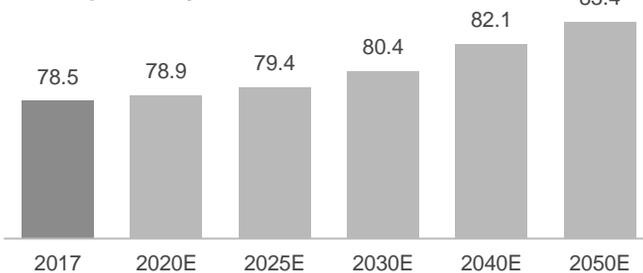
A Aging U.S. Population

(#s in millions)



B Growing Average Life Expectancy

Life Expectancy at Birth



C Increasing per Capita Healthcare Costs

Per Capita Healthcare Cost

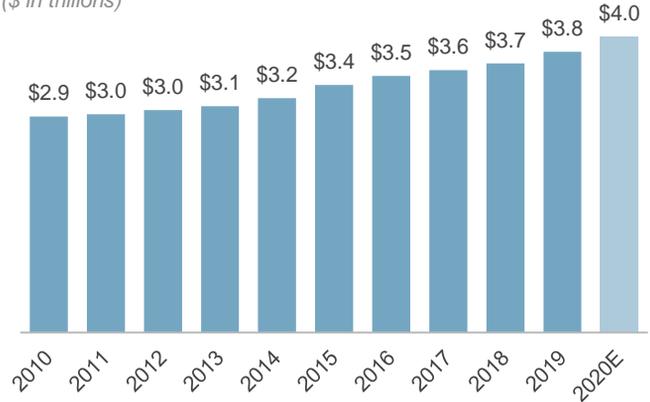
(\$ in 000s)



D Rising Healthcare Costs

U.S. Healthcare Spending

(\$ in trillions)



Sector Spotlight

The outlook is that there is a myriad of opportunities that will fare well during, and thrive after, the pandemic-created economic downturn. We have highlighted a few of these key areas that are poised for growth.

Revenue Integrity—After years of being outgunned by payment integrity solutions, providers seek capabilities of their own.

Outsourced Coding—Providers faced a crisis when offshore workers were forced home. Onshore delivery capability has never been more important.

Virtual Care/Telehealth—The promise of telehealth has come to fruition out of necessity.

Provider-Focused AI—Advancements in AI enables providers to enhance capabilities across both clinical and administrative functions.

Data Management and Interoperability—Walls will come down across the healthcare ecosystem to improve care delivery.

Real-World Evidence—More advanced data collection capabilities will enable life-saving developments at a faster pace.

Risk Adjustment—Sustained shifts towards value-based care, coupled with an aging, chronically ill population, necessitates risk adjustment solutions.

Revenue Integrity

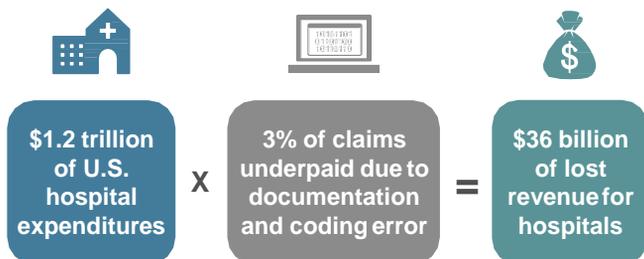
Market Overview

Healthcare providers continue to face financial pressures from many directions, including an ever-evolving regulatory environment, rising operating and capital costs, and payors armed with more sophisticated payment integrity technologies that have attracted significantly more investment over recent years. Providers are in an arms race with payors, and this creates significant opportunity for investors in the next generation of revenue cycle solutions: revenue integrity. This has evolved from historical RCM, which ensures providers are paid the *revenue they billed for*, whereas revenue integrity ensures providers are paid the *revenue they are owed* based on the care provided.

Entrepreneurs and investors are capitalizing on this opportunity by developing a variety of innovative revenue integrity solutions. Some vendors come at it from a clinical documentation angle, seeking to proactively ensure claims and charge accuracy and timely submission, while others are taking a retrospective approach such as underpayment review, denials management, and specialty reimbursement.

The revenue integrity market opportunity is large and growing. While its recent emergence makes market sizing an inexact science, analysts estimate that documentation and coding errors account for approximately \$36 billion in lost revenue for hospitals. This presents a tremendous opportunity for revenue recovery by simply improving the processes surrounding the documentation and submission of claims.

Lost Revenue Opportunity for Hospitals⁽¹⁾



Key Themes

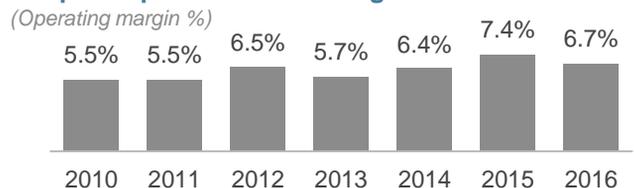
A Changing Reimbursement Environment

- Providers are experiencing difficulty adapting to a rapidly changing reimbursement environment, high operating costs, shifting patient mix, and complex, continually evolving compliance requirements.
- Healthcare reimbursement's shift from a fee-for-service model to value-based care creates greater complexity.
 - In 2018, more than 50% of Medicare payments were via alternative payment models with another 40% linked to value.
- Providers will need trusted outsourcing partners to help navigate the obstacles inherent in an industry-wide transition.
- Market turbulence caused by reimbursement model evolution will favor flexible RCM vendors.

B Low Margins and Margin Pressure

- Healthcare providers face significant financial pressure due to high rates of uninsured and public health insurance patients, resulting in lower reimbursement rates.
- At the same time, the shift from fee-for-service to value-based payment models is putting pressure on all hospitals to reduce costs.
- Further, increased healthcare payor scrutiny, coupled with significant investment in solutions directed at auditing healthcare claims, has further driven down provider revenue.
- With provider revenue being squeezed from multiple angles, resulting in margins below 7%, providers are seeking outsourced solutions that contain costs, minimize revenue leakage, and enhance revenue levels.

Hospital Operators: Low-Margin Environment



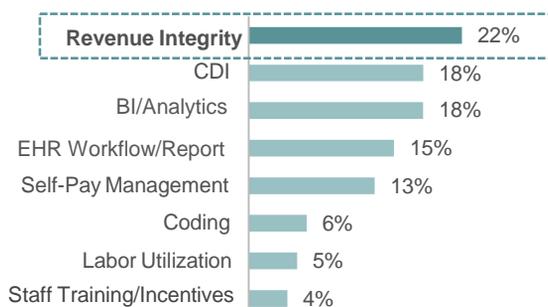
Source: MedPAC analysis of Medicare hospital cost report data, 2017 HFMA survey of hospital CFOs and revenue cycle management executives. | (1) \$1.2 trillion of hospital expenditures times estimated 3% of claims underpaid due to documentation and coding errors (RevCycleIntelligence, Becker's Hospital review), AHIP Survey.

Revenue Integrity (cont.)

C Shifting Provider Priorities

- Seeking to change the dynamics they have been facing with payors, providers have moved revenue integrity to the top of their list of priorities from an RCM perspective.
- It is no coincidence that CDI is second on the list, given that documentation is a critical piece to ensuring providers are paid what they're owed based on care and patient acuity.

Survey: “Which RCM capability is your organization most focused on next year?”



Revenue Integrity Solutions

A Documentation's Role

- Some of the most innovative revenue integrity offerings focus on documentation to optimize revenue.
- Health systems are completely overwhelmed by ever-increasing clinical coding and documentation requirements, leaving a significant ongoing problem in providers' efforts to improve their financial position.
- DRG optimization ensures each encounter is documented accurately in order to mitigate revenue leakage caused by undercoding.

Hand Denials Management

- Denied claims continue to financially squeeze healthcare providers; an estimated \$262 billion in annual claims are initially denied.
- Denial management solutions have become imperative for providers to identify root causes, capture coding and validation changes, appeal denials, implement preventative measures, and ultimately maximize reimbursements.

Specialty Reimbursement

- Hospitals have traditionally segmented and managed their payors in four primary categories, while leaving approximately 6% of their revenue in an “other” bucket, which includes specialty reimbursement.
 - These areas of specialty reimbursement include auto, property and casualty, workers' compensation, out-of-state Medicaid, and other government and nontraditional sources.
- While healthcare providers have developed processes for capturing revenue within primary categories, providers are increasingly utilizing outsourced specialty reimbursement providers to capture additional revenue and make up for declining, tight margins.

COVID-19 Developments

- On March 18, 2020, the CDC announced an off-cycle update to ICD-10 to include a new COVID-19 CPT code, effective April 1, 2020.
- On April 3, 2020, HHS secretary Alex Azar announced hospitals and health systems will be reimbursed at Medicare rates for treating uninsured COVID-19 patients.
- While the cancellations of elective procedures will impact revenue integrity vendors, hospitals are already seeking to restart this volume in the near term.

Key Takeaway

In an environment with ever-changing reimbursement dynamics and continued pressure on already razor-thin margins, providers have realized that reducing costs alone will not suffice. As the COVID-19 crisis progresses, hospital administrators are focused on shoring up their financial well-being. This focus, along with the desire to align incentives and reduce fixed costs, will drive more providers to seek outsourced solutions that bring in cash to their bottom line. Best-in-class revenue integrity vendors are positioned to perform well in our current environment as well as when we inevitably emerge in the long term.

Revenue Integrity (cont.)

Select Industry Players



Accuity conducts secondary review of prebill inpatient medical records to improve clinical documentation and case mix index in order to enable full and accurate reimbursement.



Change Healthcare's revenue integrity business aims to improve clinical documentation and charge capture, ensure quality and compliance, and offer efficient workflows and AI solutions.



Through its BLS segment, Revecore's revenue integrity solution provides underpayment identification and recovery as well as denial prevention and recovery.



Revint's revenue assurance suite of solutions uses a combination of technology and services to provide DRG validation, charge capture, and transfer DRG.



Waystar's revenue integrity solution provides actionable insights through predictive analytics, advanced rules, and expert auditors—helping hospitals and health systems increase revenue.

Other Industry Players

Revenue Integrity Point Solution/Analytics



Diversified RCM



Outsourced Coding

Market Overview

As documentation has increased in importance to accurate reimbursement, the outsourced coding market has evolved into one of balancing cost and quality, creating a highly competitive market increasingly driven by new technologies integrated with best-in-class human capital management.

Medical coding is a complex function of HIM that requires a skilled technical workforce to review and apply appropriate CPT codes based on the charts and transcripts that are submitted by providers following their patient encounter.

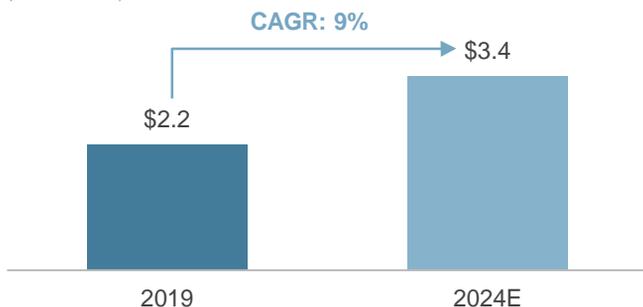
The medical coding market has experienced tremendous change in recent years, defined by multiple operational and technological advancements, including:

- The adoption of encoder technology.
- The ICD-10 conversion in 2015–2016.
- The proliferation of offshore vendors and their market share scrape from onshore operators.
- The continued advancement in next-generation technologies such as AI and machine-learning-backed computer-assisted coding (CAC) platforms.
- More recent trends of operators seeking “dual-shore” onshore/offshore operating models.

Industry operators that remain ahead of the curve and continue to adapt in this ever-changing macro environment will prevail, particularly with the rollout of ICD-11, scheduled to go live in early 2022 on the horizon.

Outsourced Medical Coding Market

(\$ in billions)



Source: Third-party study, 2018 HIMSS survey of hospital and health system finance, RCM, and HIM executives.

Key Themes

A Coding Remains Most Vulnerable HIM Area

- With continued reimbursement pressure from governmental and commercial payors, clinical documentation and coding remains the number one area of vulnerability for lost revenue.
 - 72% of claim denials are a result of incorrect or insufficient documentation.
- Outsourced coding demand has been further fueled by numerous regulatory complexities, the value-based care transition, and an increase in patient volumes and medical encounters.

Survey: “Most Vulnerable Areas of HIM for Revenue Leakage”

	Risk Level:		
	High	Medium	Low
Clinical Documentation and Coding	41%	43%	16%
Charge Capture	30%	44%	26%
Payment, Appeals, Collections	30%	46%	24%
POS Registration & Counseling	29%	45%	26%
Remittance Processing & Rejections	28%	45%	27%
Scheduling/Preregistration	27%	45%	28%
Claim Submissions	22%	47%	31%
Third-Party Follow-Up	22%	50%	28%

B Onshore to Offshore to Dual-Shore

- Recently, the market has been characterized by offshore vendors increasingly scraping share from onshore vendors. However, the market is shifting, where onshore and offshore vendors are combining to deliver dual-shore capabilities.

Case Study—Carlyle and Cannae Form Healthcare JV



- We believe the combination of T-System, Visionary RCM, and TrustHCS is the beginning of a continued trend of outsourced vendors seeking dual-shore delivery capabilities.
 - Through the dual-shore model, the newly formed entity is better diversified and equipped to serve its clients, particularly in this environment resulting from COVID-19.

Outsourced Coding (cont.)

COVID-19 Considerations

- The COVID-19 pandemic has significantly disrupted the outsourced coding market, particularly offshore vendors operating in markets where coders are unable to work remotely due to lack of access to Internet in the home and insufficient security protocols.
- Many of the traits that made an offshore model attractive, including highly secure, centralized operations and robust technology infrastructure, have been compromised by stay-at-home orders in developing countries.
- Offshore operators unable to meet client demand, due to capacity constraints as workers are unable to report to work, have begun to consider ways to leverage onshore resources from other vendors further highlighting the need for a dual-shore, tech-enabled operating model.

C Technological Advancements

- As technology continues to proliferate across the healthcare industry, new innovations promise to streamline the coding workflow, creating greater efficiency with a reduction in errors and cost.



Medical Encoders

- Medical encoders are software programs designed to automate and augment large portions of the coding workflow.
- Encoders automatically update to include new codes, ensuring medical coders are working with the most up-to-date information.
- Medical encoders have been critical for providing a range of benefits, including:
 - Reduction of denials from coding errors.
 - Enhancement of coder productivity through a reduction in keystrokes.
 - Improvement of coding accuracy.



AI-Backed Computer Assisted Coding

- While encoders have been around for some time now and have become commonplace, AI-backed CAC promises to deliver the next generation of coding workflow.

- Through the use of natural language processing, AI algorithms can analyze language and documents to identify patterns and assign codes.
- AI-backed CAC systems serve as a check on human coding practices, thus identifying and displaying inconsistencies in coding patterns.
- As medical coders continue to adopt AI-backed CAC systems, the immense access to data will only serve to enhance the speed and accuracy of these systems.



Overall Impact of Technology

- Combining the efficiencies of medical coding technologies with human oversight will define the next generation of medical coders and likely deliver increased efficiency at a fraction of the cost, creating significant value for outsourced providers and their customers.

Key Takeaway

As hospitals and health systems continue to face mounting financial pressure from payors, they are increasingly relying on outsourced experts to ensure coding and documentation accuracy. With significant dependence on outsourced coding, healthcare providers continue to witness the benefits of working with vendors with dual-shore delivery models. The need for dual-shore capabilities has been further highlighted by offshore disruption brought on by COVID-19.

Moving forward, we expect to see the trend in dual-shore delivery models to be further augmented by the continued development of technology systems, enabling a more efficient and accurate overall coding workflow. While there is some debate around these modern technologies potentially replacing human involvement, the risks associated with documentation errors and potential wrongful diagnoses are too great to completely eliminate the need for human supervision. We instead expect humans and technology to coalesce, increase efficiency, reduce errors, and ultimately reduce costs in the healthcare system.

Outsourced Coding (cont.)

Select Industry Players



m³Modal

3M's 360

Encompass System provides a sophisticated, easy-to-learn solution for accurate complete and compliant CAC leveraging NLP to help automate the medical coding workflow.



AGS Health provides a comprehensive suite of offshore medical coding solutions, with EMR and billing system integration, including facility coding, professional coding, coding audits, and coding denials.



Through its two platforms, iCode Workflow and iCode Assurance, GeBBS provides offshore coding solutions, including medical coding, coding and documentation, and compliance audits.



hImagine is the largest privately held HIM outsourcing company in the U.S. providing onshore coding solutions across all settings (IP, OP, ED, professional, and HCC) for all provider organizations.



Omega Healthcare provides a comprehensive suite of medical coding solutions, with nearly 4,000 experienced coders in its workforce assisted by CAC capabilities and processes more than 90 million charts annually.

Other Industry Players

Diversified RCM



Coding Point Solution



Staffing



Technology



Virtual Care/Telehealth

Market Overview

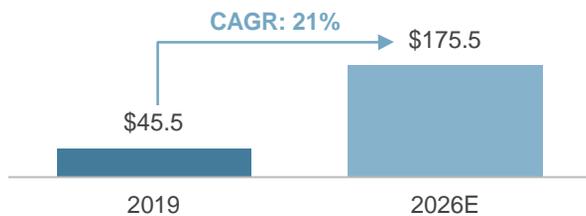
The use of virtual care and telehealth technologies has expanded tremendously as patient-provider communication has become more streamlined to provide services for diagnosis, treatment, and more.

Virtual care has expanded rapidly to include care coordination and management, patient adherence, remote patient monitoring, synchronous care, physician communication, and chronic disease management, among many other use cases.

Virtual care promises to provide tremendous value from a cost perspective, which has led to a significant increase in user adoption, largely encouraged by positive changes in the regulatory environment.

Global Telemedicine Market Size

(\$ in billions)



Key Themes

A COVID-19 Regulatory and Market Changes

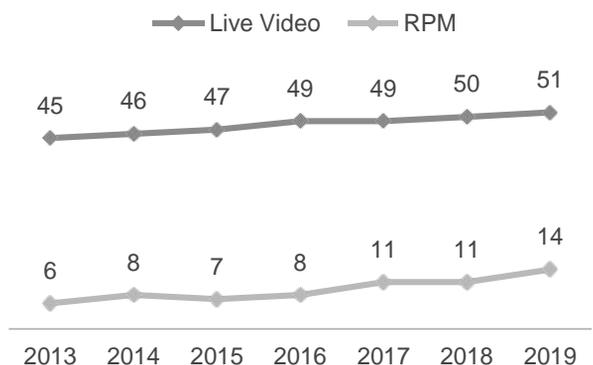
- Telehealth has emerged as a silver lining, providing an essential medium for patient-provider interactions, delivering striking demand figures during the COVID-19 crisis given the inability for patients to access care in person.
- Federal and state governments have moved swiftly, temporarily implementing or changing policy to encourage the use of virtual care.
 - On March 17, 2020, CMS released a temporary waiver, paying for more than 80 additional telehealth services.
 - The Office for Civil Rights and the Department of Health and Human Services (HHS) announced they would temporarily allow remote communications through non-HIPAA compliant technologies.

- In addition to public support, commercial payors have extended support to increase access to telehealth, with many insurers temporarily expanding coverage and waiving copays.
- While many regulatory and private market changes are temporary, as virtual care undoubtedly experiences a surge in visits and positive feedback from patients and providers, post crisis, regulators will need to reevaluate their previous position and strongly consider easing telehealth restrictions permanently.
- With tremendous support for telehealth within the COVID-19 environment, industry operators who remain flexible in this rapidly changing reimbursement environment will be poised to deliver tremendous value while benefitting from widespread virtual care adoption.

B Other Regulatory Change

- Prior to recent COVID-19 regulatory changes, virtual care was already experiencing a wave of support from federal and state legislators.
- The Bipartisan Budget Act of 2018 included several key telehealth provisions, expanding coverage to include additional diseases and plan types.
- State Medicaid reimbursement for live video and remote patient monitoring (RPM) expanded to 50 states and 14 states, respectively, as of 2019.

Medicaid Reimbursement by State (Including DC)



Virtual Care/Telehealth (cont.)

- According to Chiron Health, 37 states have telehealth parity laws requiring commercial payors to reimburse for telemedicine.
- Currently, Medicare Advantage plans are allowed to offer more telehealth benefits than government-issued Medicare.
- Clearly, the telehealth industry has garnered regulatory momentum—on top of recent changes resulting from COVID-19.
- While telehealth technology providers have already experienced significant user adoption, those technology providers that are able to differentiate their product offering will provide outsized value and be the beneficiaries of further regulatory and industry support.

C The Future of Telehealth

- While many COVID-19-related regulatory changes have been called temporary, the landscape has been changed forever by this “forced trial” for patients, providers, and regulators.
- According to recent surveys, health systems expect to lobby for the permanent continuity of many of these regulatory changes that have removed barriers for growth. Impactful changes expected to become permanent include:
 - Allow new regions for telehealth previously blocked (i.e., urban areas).
 - Reimbursement in line with in-person visits.
 - Broader adoption and utilization by both physicians and patients.
 - Significant investment in infrastructure.
- In fact, approximately 90% of surveyed hospitals expect to maintain COVID-19 levels of telehealth, or increase even further.
- However, an outstanding question remains: How can smaller telehealth platforms compete when so many providers have had success with consumer-type products such as Zoom?
- This highlights the importance of competitive differentiation with capabilities such as data integration, specialty focus, or POC presence.

Source: Chiron Health, LEK.

Select Provider Use-Cases

- Different healthcare provider specialties are witnessing many valuable use cases for virtual care and telemedicine solutions, encouraging further adoption across the entire healthcare ecosystem.



General Healthcare Providers

- While telehealth solutions are currently providing a lifeline to provider practices, current adoption is likely to contribute to increases in care quality and patient satisfaction in the long term.



At-Risk Providers

- At-risk providers can utilize telemedicine to offer preventative medicine to improve long-term health outcomes, better engage and manage patients with chronic diseases, and reduce long-term costs.



Behavioral Health

- The HHS reports that there is a shortage of mental health professionals. Telemedicine provides significant opportunity for behavioral health providers to expand their scope and provide access to underserved populations.

Key Takeaway

The unprecedented COVID-19 pandemic has resulted in rapid regulatory and commercial support for telehealth and other virtual health solutions. This spotlight is bringing about a revolution in telehealth that will be sustainable, wide-ranging, and will foster in an era of technology use in healthcare that has been promised for some time and never materialized. As tremendous industry tailwinds continue to build further support for telehealth solutions, technology providers that are able to differentiate in new and creative ways will be the greatest beneficiaries within the changing healthcare landscape.

Virtual Care/Telehealth (cont.)

Select Industry Players



Amwell provides a range of telehealth solutions to health systems, health plans, Medicare Advantage plans, employers and brokers, governments and nursing facilities.



Dr. on Demand offers telemedicine solutions—utilizing U.S.-based providers—for urgent care, behavioral health, preventive health and chronic care.



MDLive offers 24-hour service for its members, covering 50 non-emergency conditions across medical health, behavioral health, and dermatology.



Teladoc provides patients with access to doctors, therapists and specialists to help with the flu, infections, anxiety, stress, skin conditions, and other medical advice.



TytoCare develops handheld devices and applications that connect patients with providers for an on-demand medical exam, diagnosis, and prescription if needed—anytime and anywhere.

Other Industry Players

Primary and Specialty

General



Dermatology



Second Opinion



Women's Health



Platform



Pharmacy



Testing



Optometry



Behavioral



Acute Care



Wellness / Patient Engagement



Post-Acute



Dental



Provider-Focused AI

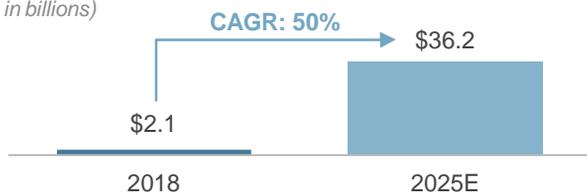
Market Overview

The healthcare industry is on the verge of a fast-growing revolution with the opportunity to potentially create billions in annual savings by augmenting human activity with AI. In addition to clinical application and cost savings, AI technologies are designed to increase efficiency and improve workflows, freeing up clinicians to add additional value.

Investment continues to pour into AI technologies as research indicates most consumers are ready to accept and embrace AI for healthcare needs. At the same time, healthcare stakeholders across subsectors have demonstrated a desire to adopt these technologies. HCIT companies that provide new and innovative AI solutions will benefit from the rapid market growth and value creation that has started to unfold.

Healthcare AI Market Size

(\$ in billions)



Key Themes

A Increasing Provider Utilization

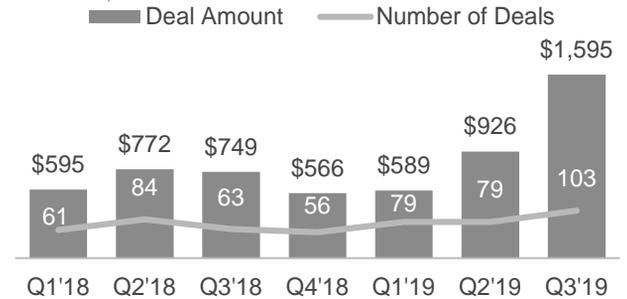
- Healthcare providers are viewing the emergence of AI as an extension rather than a replacement of their capabilities.
- According to a survey conducted by MIT and GE Healthcare, 80% of providers believe AI will improve revenue opportunities, while 81% believe AI will make them more competitive.
- Within the same survey, 79% of providers indicated plans to increase their budget for AI applications in the near term.
- Providers are not only increasing near-term investments in AI, but many have already begun to realize the benefits; 78% of providers report AI has created workflow improvement.

B Significant VC Funding/Deal Volume

- As multiple use cases for healthcare AI have become clear, total funding and deal volume have remained strong with recent significant expansion.

AI Healthcare Funding

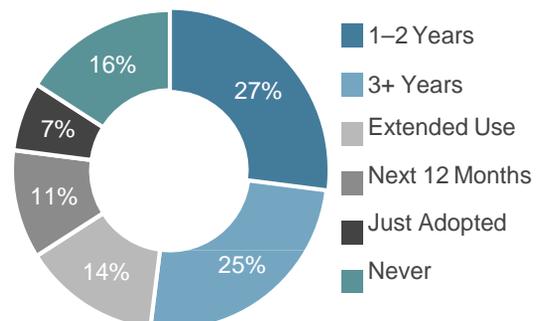
(\$ in millions)



C Pent-Up Demand for Diagnostics Applications

- Estimates suggest that medical imaging data comprises more than 90% of all healthcare data and remains unused or analyzed.
- “Automated image diagnosis” has been identified as one of 10 AI applications with the greatest near-term impact for cost-saving potential in healthcare.
- Most imaging professionals are either already using or plan to adopt machine-learning technologies in the near term, with only 16% of professionals indicating no plans to adopt in the future.

Percentage of Medical Imaging Professionals Using or Planning to Use AI in a Given Time Period



Provider-Focused AI (cont.)

Top Provider AI Applications⁽¹⁾

- There are myriad use cases across multiple specialties for healthcare AI applications in addition to diagnostic applications.

Robot-Assisted Surgery

- AI is not likely to replace surgeons, but rather augment their capabilities by analyzing data prior to and during a surgery in order to produce actionable insights.

Virtual Nursing Assistant

- At the care setting, effective AI technologies will monitor patients 24/7, answering questions while collecting and analyzing data to optimize care coordination.
- AI systems will be able to handle simpler patient complications while handing off care to medical professionals as needed.

Administrative Workflow

- Amongst the wide range of applications for AI within the administrative workflow, natural language processing (NLP) promises to deliver tremendous value.
- Effective NLP promises to automate clinical documentation, coding, and claims submission, freeing providers from manual data entry.

(Estimated Potential Annual Benefit by 2026)

	Robot-Assisted Surgery	\$40B
	Virtual Nursing Assistant	\$20B
	Administrative Workflow	\$18B
	Dosage Error Reduction	\$16B
	Connected Machines	\$14B
	Preliminary Diagnosis	\$5B
	Automated Image Diagnosis	\$3B

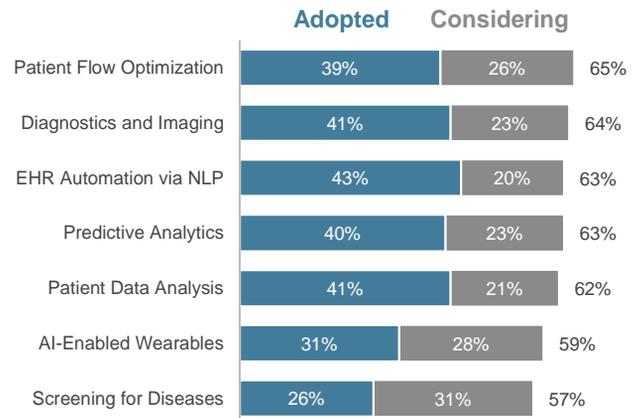
Source: Accenture, MIT, GE Healthcare.

(1) \$ value represents value created to the entire subvertical.

AI Investment Areas

- With a multitude of use cases and significant market demand, providers have adopted or are considering adopting healthcare AI for a wide range of applications.

AI Services Deployed or Under Consideration



Key Takeaway

As leading AI developers have continued to improve the functionality of their software, it has become clear that AI will not replace healthcare workers, but rather augment their workflow and create a more scalable and efficient healthcare ecosystem. AI applications will witness further adoption as healthcare market participants continue to realize the benefits of these software applications and this adoption is likely to have a snowball effect, as greater adoption among providers allows AI technology providers to collect data, iterate on algorithms, and exponentially improve their technological capabilities. Thus, as solutions across subspecialties continue to improve with usage, there appears to be significant opportunity for point-solution providers, as the range of applications from robot-assisted surgery to dosage error reduction each promise significant growth. With the long-promised benefits of AI rapidly starting to materialize, a surge in demand—both from healthcare providers and investors—has positioned healthcare AI market participants at the outset of immense value creation.

Provider-Focused AI (cont.)

Select Industry Players

Google Health



Google Health, in combination with Google's DeepMind, uses AI for a wide range of medical applications, including cancer diagnosis, predicting patient outcomes, detecting breast cancer, and more.



IBM Watson offers a wide range of AI healthcare applications for use in oncology, genomics, clinical trial matching, drug discovery, care management, imaging clinical review, and patient synopsis.



Jvion's Eigen Sphere engine provides prescriptive analytics that offer a comprehensive view of the patient to improve outcomes and drive patient engagement.



Through Odyssey AI Workflow, Inteleraad provides a fully integrated and automated radiology workflow solution providing rules-based configuration at the facility level.



Nuance provides omnichannel customer engagement through its AI solution offerings, including automatic speech recognition, natural language processing, text-to-speech, biometrics, and more.

Other Industry Players

Deep Learning and Predictive Analytics



AYASDI



Caption Health



DEEP 6 AI



ElectrifAi



freanoma



ginger

H₂O.ai



Hindsait

HUMA



Intendu



lumiata



Numerate



oviahealth

physIQ

picwell



Qventus



Welltok.



NLP

clinithink



ROAM

Machine Vision



Behold.ai



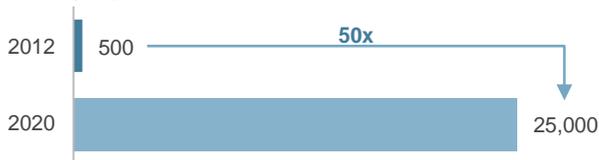
Data Management and Interoperability

Market Overview

Healthcare data has exploded, increasing in quantity by 50x from 2012 to 2020. The rapid expansion in healthcare data has been further accelerated by the increase in healthcare technology systems, including EHRs.

Global Healthcare Data

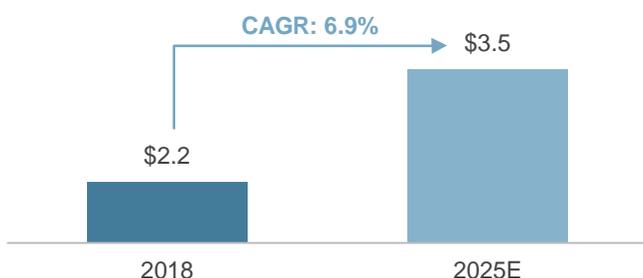
(In Petabytes)



As data has promised to contribute to superior healthcare outcomes at a lower cost, regulators have stepped in to break down data silos and promote interoperability across the market. With significant financial benefits and regulatory pressure, healthcare providers are turning to technology companies offering interoperability solutions to allow health information systems to work together within and across organizational boundaries, enabling hospitals, clinics, and other healthcare service providers to cohesively exchange, interpret, and use patient healthcare data. With the volume and necessity of healthcare data continuing to grow, companies must prioritize data management or they will be left behind. The technology providers poised to benefit must remain flexible within a rapidly changing regulatory environment, while providing superior interoperability solutions fueled by new technologies such as cloud, big data, and cybersecurity.

Global Healthcare Interoperability Market

(\$ in billions)



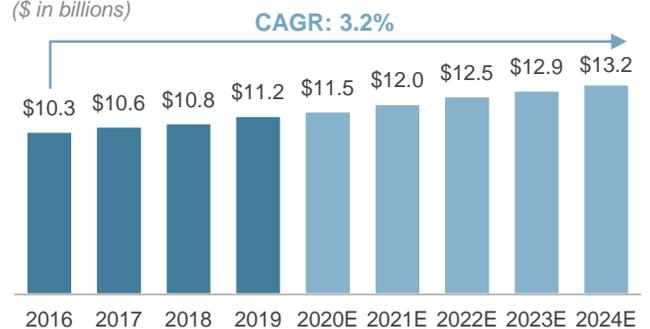
Key Themes

A Increased EHR Adoption

- The widespread adoption of modern EHRs has proliferated healthcare data that, with investment in interoperability, opens tremendous opportunity to improve care at better value.

U.S. Electronic Health Record Market

(\$ in billions)



B Regulatory Change

- On March 9, 2020, the Department of Health and Human Services finalized two transformative rules under the 21st Century Cures Act that will give patients unprecedented, secure access to their data as well as advance interoperability and the exchange of clinical and plan information.
- The goal of the Cures Act is to provide patients easier access to their electronic medical record at no additional cost, while allowing providers to choose the IT tools that allow them to provide the best care for patients without excessive costs or technical barriers.
- The Cures Act significantly advances interoperability, stating that “all electronically accessible health information” should be used “without special effort on the part of the user.”
- As regulators continue to advance interoperability rules, patients and providers will benefit greatly, forcing companies currently operating in silos to adapt or potentially be left behind.

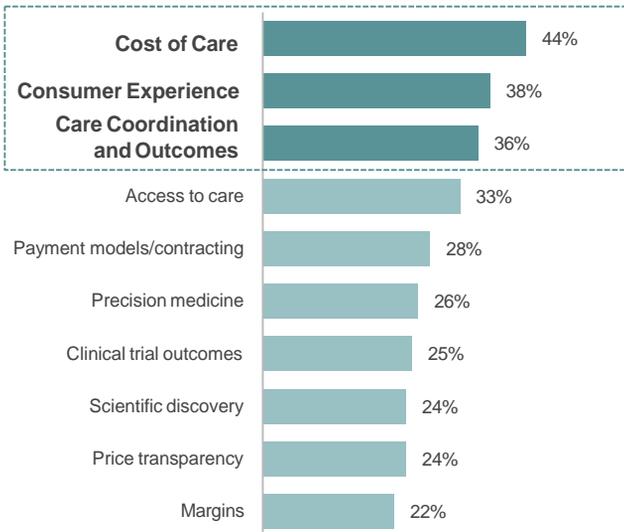
Data Management and Interoperability (cont.)

- Further, as healthcare data continues to move across systems, technology providers that are helping connect nonintegrated systems, reduce EHR system information blocking, standardize system protocols, and enhance cybersecurity will benefit greatly as healthcare data becomes more interoperable.

C Increased Focus on Cost and Patient Experience

- Efficient data management allows organizations to streamline workflows, provide more accurate diagnosis, and eliminate waste, resulting in a lower cost of care and improved patient experience with better outcomes.

Survey: “Over the next three years, which of the following areas do you believe will benefit the most from greater interoperability?”



Key Innovations

- In order to resolve key concerns in the health data management space, such as the increasing volume of healthcare data, cybersecurity concerns, and the rising need for AI-based automated processes, operators in the healthcare data management market have made technological innovations to further streamline workflow and enhance healthcare data security.



Cloud

Healthcare providers are unequipped to manage the computing equipment, storage, staffing, and physical space needed to accommodate and utilize growing healthcare data. Cloud solutions address this problem while transforming data formats to those that are interoperable with other systems.



Big Data Management

The increase in healthcare data comes in response to the digitization of healthcare information and the rise of value-based care, which has encouraged the industry to leverage data management tools to collect, store, and sort large volumes of data.



Cybersecurity

The presence of big data in healthcare has given rise to the need for innovative solutions to ensure data is properly secured, stored, managed, and transferred, leading to the proliferation of cybersecurity data management solutions.

Key Takeaway

The future of healthcare lies in the digitization of its underlying data. As the healthcare industry continues to undergo massive shifts—from the proliferation of EHR systems and other technology platforms to extensive regulatory change—healthcare providers must be proactive in implementing winning healthcare data strategies. Proactive, early movers are poised to deliver on multiple healthcare imperatives—better care at a lower cost for a greater percentage of the population—while other companies that may currently benefit from keeping healthcare data fragmented need to adapt or risk being left behind. These shifts in the healthcare environment point to the immediate and extensive need for comprehensive healthcare data management and interoperability solutions. Outsourced technology providers poised to deliver the most value will remain flexible while providing innovative solutions that capitalize on key innovations.

Data Management and Interoperability (cont.)

Select Industry Players



Ciox offers a fully scalable clinical data platform using AI technology to enable higher quality data, drive down administrative burden, and improve financial performance.



Edifecs provides a range of interoperability solutions designed to assure compliance, correlate clinical and administrative data, and deliver real-time visibility of partner data exchanges.



Health Catalyst provides data and analytics to healthcare organizations to provide measurable, data-informed healthcare improvement..



InterSystems' IRIS health data platform helps customers extract value from healthcare data by providing interoperability and other data management solutions.



NextGen provides an interoperable platform to help customers more easily exchange health information from within the clinical workflow and at the point of care.

Other Industry Players

EHR



Data Exchange



Analytics/Aggregation



Real-World Evidence

Market Overview

As general data collection has become commonplace, healthcare stakeholders are increasingly collecting data on patients' use of a product or service that is on the market (outside of a clinical trial) known as real-world data (RWD). With the value of data abundantly clear, companies have expanded their data collection sources to include electronic health records, medical claims, disease and product registries, and additional patient-generated repositories. With larger repositories of data, companies are using new software such as AI to structure the data and discover evidence of risks and benefits of a product or service, known as real-world evidence (RWE). Regulators are increasingly supporting the use of RWE and other alternative data sources across the healthcare landscape to deliver better health outcomes at lower costs. The benefits of RWE not only accrue to healthcare providers but expand across multiple stakeholders, including life science firms, payors, patients, and regulators.

Real-World Evidence Solutions Market

(\$ in billions)



Key Themes

A Regulatory Change

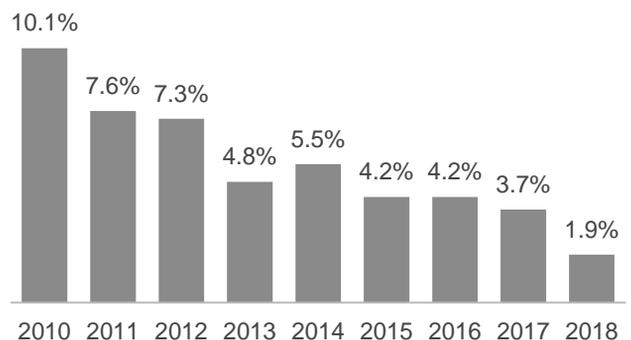
- Under the 21st Century Cures Act, signed into law in December 2016, the FDA created a framework to evaluate how RWE could be used to support approval of new drugs.
 - Under the Act, the FDA reports that RWE can be generated from hybrid and pragmatic trial designs and observational studies.
 - The FDA uses RWE to monitor the safety of products to better inform regulatory decisions.

- The European Medicines Agency (EMA) has been an outspoken proponent for the use of high-quality RWD in decision-making.
 - Through the Innovative Medicines Initiative, the European Commission has invested heavily to enable RWD in the healthcare system.
- Overall, there has been significant government support for the use of RWE, driving many industry stakeholders to adopt and benefit from the proliferation of RWD.

B Life Science Industry Inefficiencies

- Life science serves as one of the most research-intensive industries in the world, with companies investing as much as 5x more than their sales in R&D.
- The average cost to develop a new medicine is estimated to have doubled in the last decade, reaching approximately \$2.6 billion (including cost of failures) and takes at least 10 years from initial discovery to the marketplace.
- R&D returns for large-cap life science businesses have fallen from 10.1% in 2010 to a low of 1.9% in 2018.
- Life science companies are in need of RWE solutions to reduce inefficiencies, manage regulatory complexities, increase the success rate of drug discovery, contain development costs, and achieve faster delivery to the market.

Return on R&D Investment



Real-World Evidence (cont.)

C

Efficiencies Along the Drug Life Cycle

- While life science R&D is plagued by thin margins and numerous inefficiencies, RWE is a beacon of hope within the drug life cycle.



Research and Development

- Prior to collecting clinical trial data, life science companies are increasingly using RWE to identify insights into diseases and unfulfilled market demands.



Clinical Trials

- Once a company has identified a market need, RWE can be used to provide insight into a clinical trial's design and feasibility, optimize protocols, and assist with recruiting the appropriate patient population.



Market Authorization and Access

- After successful clinical trials, companies can utilize RWE to navigate pre- and post-approval regulatory environments as well as inform go-to-market pricing and marketing strategies.



Launch and Post Marketing

- Once a product is in market, RWE is used to inform analysis of benefits and risks, patient adherence, and optimization of care, as well as identify new business opportunities.

COVID-19 Considerations

- As COVID-19 continues to spread across the global population, the healthcare industry is utilizing RWD to better understand, monitor, and prepare for the pandemic.
- Hospitals and health systems are using RWD to analyze utilization rates in order to better predict capacity constraints.
- Further, RWD is being used to identify high-risk populations and take action in order to slow the spread of the virus within these communities.
- RWD is also being used to track treatment success and inform next steps.

Additional RWE Stakeholders

- **Providers** will be better able to leverage patient data to improve diagnosis, treatment pathways and detection of adverse impacts.
 - An increasing number of healthcare data companies are providing clinical diagnosis and decision tools to illuminate treatment outcomes pertaining to key health factors.
- **Payors** can use RWE to generate insights for personalized reimbursement models, allowing firms to more efficiently deploy resources and manage costs.
 - Payors automatically collect relevant real-world data and can use it to determine reimbursements based on usage, outcomes, and other insights.
- **Patients** will benefit from value-based care initiatives that are likely to improve quality of care while reducing costs.
 - Patients have a vested interest in RWE applications across the value chain.
 - Success in drug trials provides patients with new medicines, more informed providers contribute to greater patient care, and personalized reimbursement plans that can help maintain skyrocketing costs.

Key Takeaway

As the healthcare industry undertakes initiatives to overcome interoperability challenges, the proliferation of real-world data has the potential to benefit stakeholders across the healthcare ecosystem. With significant regulatory and market support, RWE will contribute to better patient outcomes, higher success rates across all stages of the drug development cycle, evidence-based medicine, cost management, and more. As healthcare data continues to proliferate, stakeholders across the healthcare ecosystem that collect, structure, and utilize real-world data will experience significant value creation.

Real-World Evidence (cont.)

Select Industry Players



Flatiron offers a real-world evidence oncology platform that collects data from EHRs and reveals insights linked to clinical and genomic data as well as informs new research endpoints.



IQVIA provides a deep portfolio of real-world solutions with offerings such as drug development acceleration, data from federated data networks, and demand analytics platforms to support commercialization.



Parexel offers a range of RWE solutions within the late-phase drug development cycle, including consulting, genomics, study optimization, pharmacovigilance, RWE generation, and market access planning.



Shyft's Quantum RWE platform allows companies to gain insight from outcomes-based observational research for epidemiology, HEOR, pharmacovigilance, market research, and commercialization.



Syneos Health offers an end-to-end RWE solution to provide evidence to ensure regulatory approval, payor authorization, provider acceptance and drug prescription, and evidence for patient health pathways and outcomes.

Other Industry Players



Risk Adjustment

Market Overview

The continued shift towards a value-based care reimbursement system continues to open new opportunities for healthcare technology providers offering risk adjustment solutions. As Medicare Advantage (MA) plans have exploded in popularity, risk adjustment solutions have come to play a vital role as the actuarial tool designed to capture patient risk profiles—based on demographic and health status data—in order to regulate payor reimbursement and ensure patients are able to receive coverage. The importance of risk adjustment tools is further highlighted by an aging patient population that is prone to multiple chronic conditions.

Risk adjustment solutions serve as a critical liaison between those that are the least well and healthcare payors and those that are designed to assist specific payors that enroll a greater-than-average number of high-risk individuals by compensating for additional costs associated with these patients. As the number of MA enrollees with multiple chronic conditions continues to skyrocket, risk adjustment tools have become imperative to managing the increase in capitated rates and ensuring health plan profitability.

While the market for risk adjustment solutions becomes more crowded, it is no longer enough for vendors to offer standard retrospective reviews. Moving forward, the most successful risk adjustment technology providers will introduce new and creative methods to optimize both retrospective and prospective reviews. To be effective, technology companies must devise new ways to reach plan members and capitalize on next-generation technologies to deliver the most value.

Key Themes

A Regulatory Change

- The enactment of the Affordable Care Act in 2014 instated that insurers could not deny coverage to individuals with preexisting conditions.

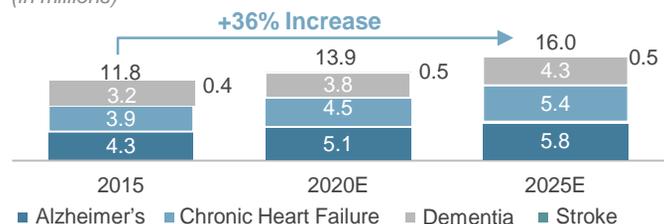
- In order to adequately compensate insurers for coverage of the population that is most unwell, the risk adjustment market came onto the scene to ensure capitated payments are in line with expected services rendered.
- In 2019, the 21st Century Cures Act led to the implementation of the Alternative Payment Condition Count (APCC), which made new changes to the risk adjustment model to factor in multiple conditions for each plan member.
 - With additional coding complexity brought on by the APCC, it is crucial for health plans to utilize effective risk adjustment solutions to ensure they are maximizing revenue.
- As political and regulatory support for MA remains strong, the expansion of Medicaid managed care represents a growth opportunity for health insurers and risk adjustment solution providers.
 - If Medicaid managed care comes to fruition, variation in risk adjustment approach state by state creates challenges for vendors, leading to greater demand for outsourced risk adjustment service providers.
- Outsourced risk adjustment service providers may also see growth within the provider market, as transformation to value continues and payors pursue provider education and coding accuracy initiatives.

B Increase in Chronic Conditions

- It is projected that 70%–80% of healthcare costs come from 20%–25% of people suffering from, or are at risk of, a chronic condition.

U.S. Citizens With Chronic Conditions

(in millions)



Risk Adjustment (cont.)

- With an aging population increasingly qualifying for Medicare—for which over two thirds live with two or more chronic conditions—it is imperative for health plans to utilize effective risk adjustment tools to be adequately compensated for the risk among their patient populations.

C Medicare Advantage Plan Growth

- MA plans are playing an increasingly larger role in the Medicare program with the share of Medicare beneficiaries consistently rising over the past 10 years.
- MA enrollment growth is expected to remain robust as the population continues to age at an unprecedented rate, providing a steady demographic tailwind for the foreseeable future.
- Under MA, the payor's shared risk payment arrangement is driving tremendous need for vendors that enable providers to drive revenue and track, report, and increase quality.

Medicare Advantage Enrollment

(in millions)



Provider Risk Adjustment Solutions

- As the healthcare system transitions to value-based care reimbursement models, risk adjustment solutions have become imperative to ensure appropriate reimbursement for at-risk healthcare providers.
 - Value-based payments are predicted to make up 22% of all care delivery payments in 2019, up from 18% in 2018.
- With an increasing amount of provider reimbursement tied to a range of quality metrics, risk adjustment solutions can help ensure providers accurately capture all services and patient conditions, improving quality scores.

Future of Risk Adjustment Solutions

- Current risk adjustment solutions tend to be retrospective in nature, meaning they analyze collected patient data to update risk scores.
 - The collected data from these reviews tend to be months outdated and therefore do not capture the full picture of the health status of a patient population.
 - Retrospective reviews are often burdensome, requiring chart retrieval, chart review, coding, and quality assurance.
- Prospective reviews, while often times more complex than retrospective reviews, allow health plans to proactively reach out to patients that are likely to have chronic conditions but don't have supporting documentation.
 - Effective prospective review solutions will utilize patient outreach and coding accuracy to deliver operational and financial efficiencies by increasing capitated rates and reducing workflow inefficiencies.
- Moving forward, leading risk adjustment solutions will combine both retrospective and prospective review in order to continuously update population risk scores while proactively capturing the most up-to-date patient data.

Key Takeaway

As MA plans continue to see increased adoption and plan participants continue to be plagued by chronic conditions, risk adjustment solutions have demonstrated their effectiveness in reaching plan members and adjusting capitated rates. Moving forward, risk adjustment solutions will need to uncover new ways to reach additional plan members and improve their capacity to effectively segment these populations in order to truly optimize insurer reimbursement. Risk adjustment technology solution providers that effectively capture new data and use advanced analytics tools, including RWE and artificial intelligence, will deliver superior value to all stakeholders.

Risk Adjustment (cont.)

Select Industry Players



AdvantMed's risk adjustment platform, ELEVATE, provides a comprehensive offering that includes advanced suspecting and targeting, probability trend analysis, and coding gap intervention.



Through its Centauri Advance platform, Centauri offers comprehensive retrospective and prospective risk adjustment solutions to health plans and providers, with services such as retrieval, coding, submission, and analytics.



Episource provides risk adjustment solutions for MA plans, commercial plans, and Medicaid managed care plans, with services such as retrospective charts reviews, record retrieval, quality reporting, and analytics.



Inovalon's risk-score accuracy improvement and submission solution provides performance improvement through retrospective and prospective risk adjustment, as well as RAPS, EDS, and EDGE server submission.



Matrix Medical Network provides risk adjustment solutions through prospective comprehensive health assessments, quality improvement for value-based care models, and care management for high-risk members.

Other Industry Players

Analytics and Software

Data Management/Submission and Reporting



Retro and Pro Services

Member Engagement and Records Management



AI-Enabled Solutions

Machine Learning and NLP



Coding Services

HCC Coding and Abstraction



Recent Transactions

Tech-Enabled Services—Select Transactions (2019–Present)

(\$ in millions)

Ann. Date	Target	Target Description	Acquirer	Enterprise EV as a Multiple of LTM			
				Value	Revenue	EBITDA	Margin
May-20	NaviHealth	Provider of tech-enabled, post-acute, clinical support services	Optum (United Health)	\$2,500	ND	18.5x	ND
May-20	Change's Connected Analytics Unit	Performance manager, analytics explorer, data platform, HIE, and more	Kaufman Hall	55	1.1x	ND	ND
Mar-20	Acclara Solutions	Tech-enabled patient financial responsibility and reimbursement solutions	Providence St. Joseph Health	ND	ND	ND	ND
Jan-20	Decision Resources Group	Offers data and analytic insights related to the biotech and pharma industries	Clarivate Analytics	950	ND	12.0x	ND
Jan-20	SCI Solutions	SaaS-based scheduling and patient engagement solutions	R1 RCM (NASDAQ:RCM)	190	6.3x	9.5x	66.7%
Jan-20	TrustHCS	Staffing and advisory services for coding, CDI, and denial management	The Carlyle Group (NASDAQ:CG)	ND	ND	ND	ND
Dec-19	Medical Knowledge Group	Data-driven healthcare marketing and communications consulting	Court Square Capital Partners	ND	ND	ND	ND
Oct-19	MedData, Inc.	Offers tech-enabled management services to hospitals and health systems	Frazier Healthcare Partners	250	ND	ND	ND
Oct-19	MRO	Enterprise solutions for protected health information exchange	Parthenon Capital	ND	ND	ND	ND
Jun-19	Press Ganey Associates	Performance improvement solutions through census-based surveying	Ares Mgmt; Leonard Green & Partners	4,000	12.6x	ND	ND
Jun-19	Advarra	IRB, IBC, and regulatory compliance consulting solutions for pharma market	Genstar Capital	ND	ND	ND	ND
May-19	W2O	Analytics-driven marketing communications to the healthcare sector	New Mountain Capital	ND	ND	ND	ND
May-19	InstaMed Communications	Cloud-based healthcare payments network for providers, payors, and patients	JPMorgan Chase & Co. (NYSE:JPM)	600	7.5x	ND	ND
Apr-19	Comprehensive Pharmacy Services	Enterprise pharmacy solutions to hospitals and healthcare facilities	Frazier Healthcare Partners	ND	ND	ND	ND
Mar-19	AGS Health	Tech-enabled financial integrity solutions for healthcare	Baring Private Equity Asia	ND	ND	ND	ND
Mean				\$817	5.1x	13.1x	33.3%
Median				\$340	4.1x	13.1x	22.5%

Healthcare Technology—Select Transactions (2019–Present)

(\$ in millions)

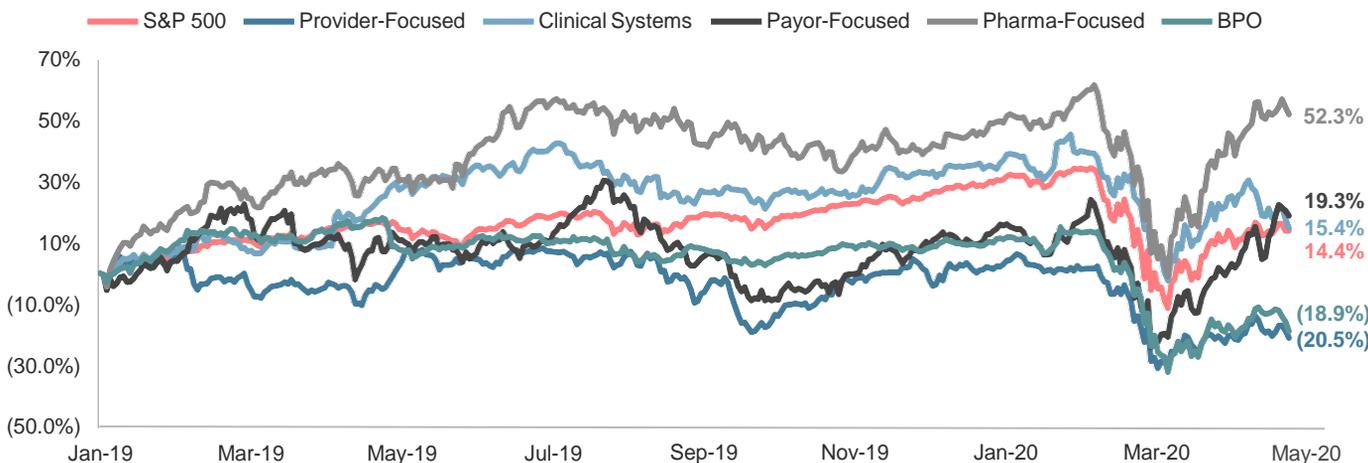
Ann. Date	Target	Target Description	Acquirer	Enterprise EV as a Multiple of LTM			
				Value	Revenue	EBITDA	Margin
May-20	Co-Pilot Analytics	Provider of analytical solutions for pay-for-performance relationships	PointClickCare	ND	ND	ND	ND
Feb-20	Cernermedico, Soarian Assets	Hospital information system and document archiving solutions in Europe	CompuGroup Medical SE (ETR:COP)	\$247	3.0x	17.7x	16.9%
Jan-20	Intelerad Medical Systems	Provider of medical imaging software specializing in diagnostic viewing	HG Capital	650	ND	ND	ND
Aug-19	WebPT	Web-based EMR solutions for physical therapists	Warburg Pincus	675	6.8x	ND	ND
Aug-19	RedCard Systems	Healthcare payments and communications technology solutions	Zellis Healthcare	5,700	ND	19.0x	ND
Jul-19	Waystar	Revenue cycle management software for health systems and providers	EQT, CPPID	2,700	ND	18.0x	ND
Jul-19	CitiusTech	Offers healthcare technology and solutions across the healthcare spectrum	Baring Private Equity Asia	1,000	5.7x	18.2x	31.4%
Jul-19	Optima Healthcare Solutions	SaaS solutions for SNF therapy, outpatient clinics, and hospice markets	Net Health Systems	ND	ND	ND	ND
Jun-19	Equian	Payment integrity and payment processing solutions	UnitedHealth Group (NYSE:UNH)	3,200	7.5x	17.0x	44.2%
Jun-19	Medidata Solutions	Cloud-based data solutions and analytics for the life sciences industry	Dassault Systems Americas Corp.	5,822	8.8x	ND	ND
May-19	iContracts	Contract and compliance management solutions across healthcare	RLDatix	210	ND	12.0x	ND
Apr-19	WageWorks	Tax-advantaged spend solutions for consumer-directed health	HealthEquity	2,010	4.3x	20.1x	21.1%
Mean				\$2,040	6.0x	17.4x	28.4%
Median				\$1,000	5.8x	18.0x	26.3%

Note: Mean and Median take into account deals in which Houlihan Lokey served as the financial advisor.

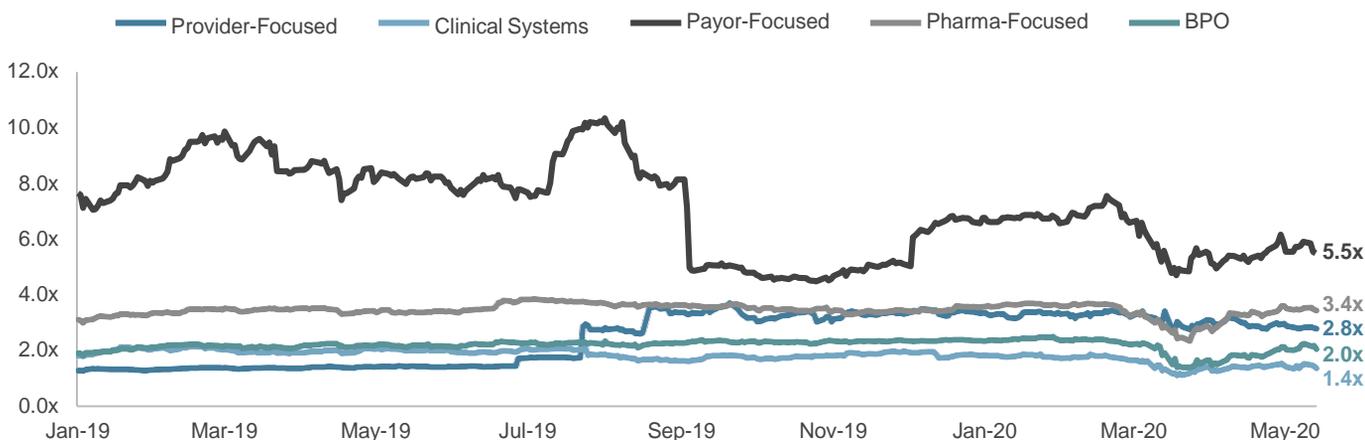
Source: Company Filings; Bloomberg; CapIQ; pitchbook.com; Mergermarket

Public Company Valuation

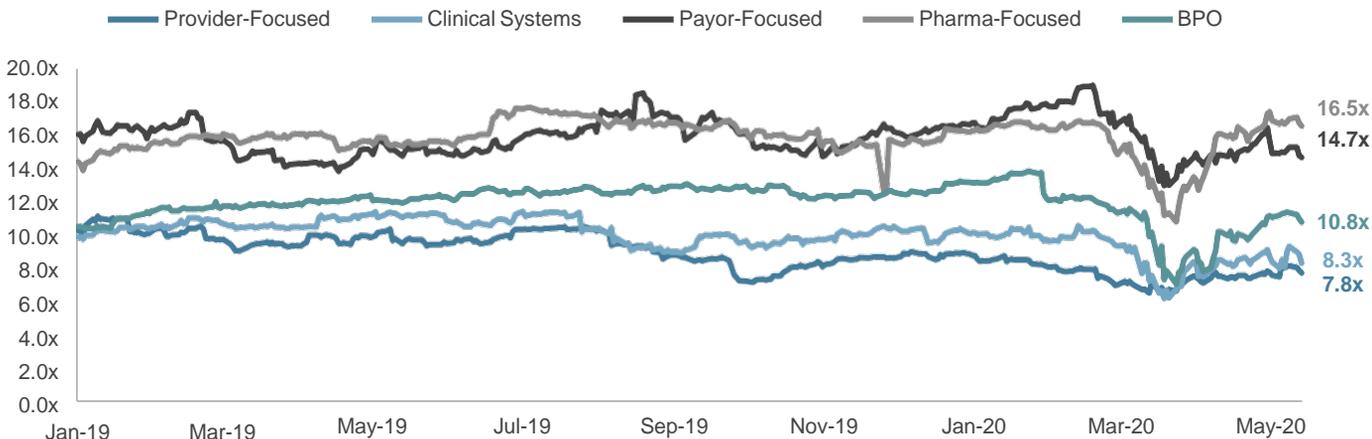
Performance vs. S&P 500 (2019–Present)



Median NTM EV/Revenue (2019–Present)



Median NTM EV/EBITDA (2019–Present)



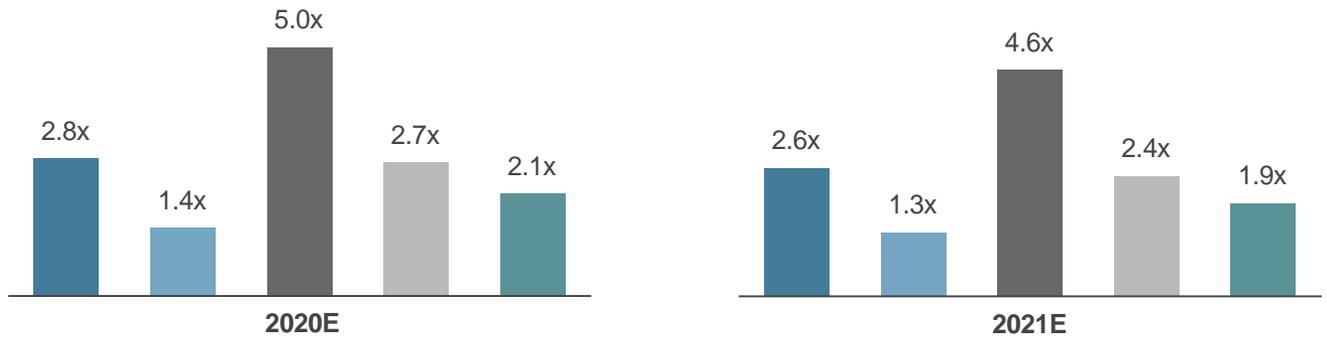
Note: Public company constituents can be seen on following page. | Source: S&P Capital IQ data as of 5/13/20.

Payor-Focused and Provider-Focused Indexes are adjusted for introduction of new companies into indices since Jan-19.

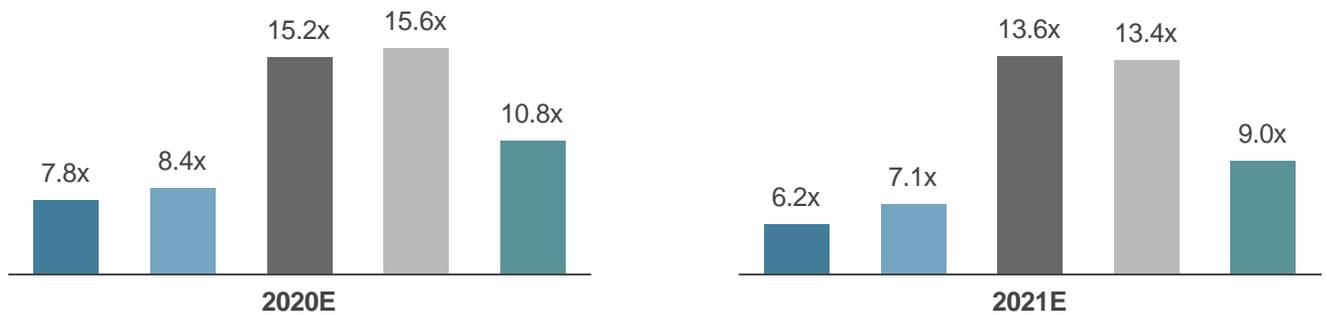
Public Company Valuation (cont.)

■ Provider-Focused
 ■ Clinical Systems
 ■ Payor-Focused
 ■ Pharma-Focused
 ■ Business Process Outsourcing

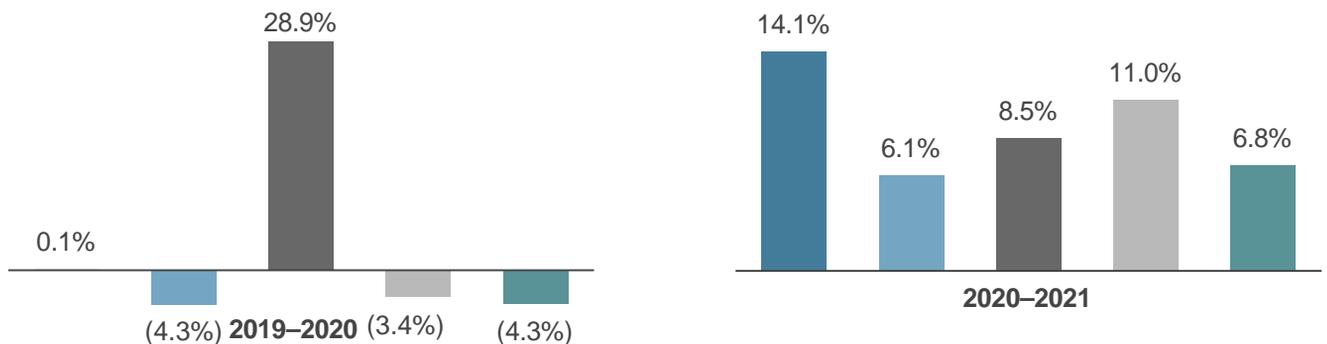
Median EV/Revenue



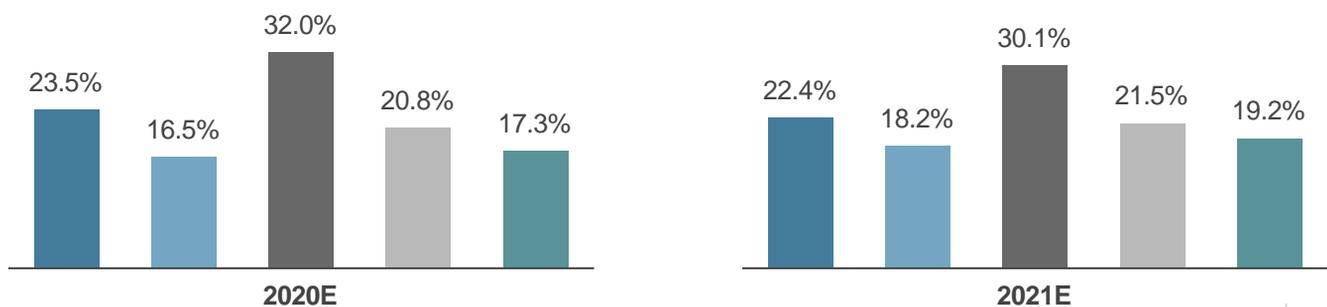
Median EV/EBITDA



Median Revenue Growth Rate



Median EBITDA Margin



Note: Public company constituents can be seen on following page. | Source: S&P Capital IQ data as of 5/13/20.

Public Company Valuation (cont.)

(\$ in millions)

	Market Cap	Enterprise Value	EV/Revenue		EV/EBITDA		Revenue Growth Rates		EBITDA Margin	
			2020E	2021E	2020E	2021E	'19-'20	'20-'21	2020E	2021E
Provider-Focused										
Change Healthcare Inc.	\$3,135	\$7,752	2.3x	2.3x	7.8x	7.6x	0.5%	2.8%	30.2%	30.1%
Premier, Inc.	2,125	3,699	2.9x	2.7x	6.6x	6.2x	(4.8%)	4.1%	43.0%	44.4%
Health Catalyst, Inc.	1,077	924	6.0x	5.1x	NM	NM	15.8%	21.4%	NM	NM
R1 RCM Inc.	1,008	1,608	1.3x	1.1x	7.9x	5.1x	2.0%	17.3%	16.8%	22.4%
Phreesia, Inc.	965	899	7.3x	5.5x	NM	NM	(1.4%)	31.8%	NM	4.5%
Vocera Communications, Inc.	594	487	2.7x	2.4x	NM	NM	(0.3%)	10.9%	6.8%	10.2%
Median			2.8x	2.6x	7.8x	6.2x	0.1%	14.1%	23.5%	22.4%
Mean			3.8x	3.2x	7.4x	6.3x	2.0%	14.7%	24.2%	22.3%
Clinical Systems										
Cerner Corp.	\$19,767	\$20,887	3.7x	3.5x	12.2x	10.8x	(1.4%)	6.4%	30.6%	32.5%
Allscripts Healthcare Solutions, Inc.	915	1,892	1.1x	1.1x	6.7x	6.0x	(4.1%)	4.5%	16.5%	17.7%
NextGen Healthcare, Inc.	574	633	1.2x	1.2x	7.7x	6.6x	(4.6%)	6.1%	16.0%	17.6%
Computer Programs and Systems, Inc.	289	394	1.5x	1.4x	9.1x	7.6x	(4.5%)	6.2%	16.5%	18.7%
Median			1.4x	1.3x	8.4x	7.1x	(4.3%)	6.1%	16.5%	18.2%
Mean			1.9x	1.8x	8.9x	7.7x	(3.7%)	5.8%	19.9%	21.6%
Payor-Focused										
Livongo Health, Inc.	\$5,610	\$5,259	NM	NM	NM	NM	76.4%	56.7%	NM	3.9%
HealthEquity, Inc.	3,639	4,749	6.1x	5.7x	19.0x	17.5x	46.8%	6.4%	32.0%	32.7%
Inovalon Holdings, Inc.	2,464	3,418	5.0x	4.6x	15.2x	13.6x	5.9%	9.9%	33.1%	33.6%
HMS Holdings Corp.	2,385	2,498	3.6x	3.4x	13.7x	12.2x	10.9%	7.1%	26.2%	27.5%
Median			5.0x	4.6x	15.2x	13.6x	28.9%	8.5%	32.0%	30.1%
Mean			4.9x	4.5x	16.0x	14.4x	35.0%	20.0%	30.5%	24.4%
Pharma-Focused										
Veeva Systems Inc.	\$29,278	\$28,246	NM	NM	NM	NM	25.8%	19.7%	37.0%	38.0%
IQVIA Holdings Inc.	25,297	37,250	3.5x	3.1x	16.7x	14.6x	(3.4%)	11.0%	20.8%	21.5%
Syneos Health, Inc.	5,579	8,492	1.9x	1.7x	14.5x	12.3x	(5.3%)	10.6%	13.2%	14.1%
Median			2.7x	2.4x	15.6x	13.4x	(3.4%)	11.0%	20.8%	21.5%
Mean			2.7x	2.4x	15.6x	13.4x	5.7%	13.8%	23.7%	24.5%
Business Process Outsourcing										
Cognizant Technology Solutions Corp.	\$26,748	\$25,865	1.6x	1.5x	9.3x	7.9x	(4.0%)	4.7%	17.3%	19.4%
CGI Inc.	15,646	18,385	2.1x	2.1x	10.8x	10.4x	(8.8%)	4.4%	19.8%	19.8%
Wipro Ltd.	14,316	11,184	1.4x	1.3x	7.2x	7.0x	(5.6%)	4.5%	19.5%	19.2%
Tech Mahindra Ltd.	6,285	5,161	1.1x	1.0x	7.6x	6.4x	(4.3%)	6.8%	13.9%	15.5%
WNS (Holdings) Ltd.	1,976	1,966	2.4x	2.1x	13.2x	9.0x	(4.1%)	12.8%	17.9%	23.3%
ExlService Holdings, Inc.	1,833	1,913	2.1x	1.9x	13.9x	10.7x	(6.8%)	10.1%	14.9%	17.5%
Perficient, Inc.	1,083	1,211	2.1x	2.0x	12.9x	11.1x	2.4%	7.1%	16.2%	17.7%
Median			2.1x	1.9x	10.8x	9.0x	(4.3%)	6.8%	17.3%	19.2%
Mean			1.8x	1.7x	10.7x	8.9x	(4.5%)	7.2%	17.1%	18.9%
Total Median			2.2x	2.1x	10.8x	9.0x	-2.4%	7.1%	17.9%	19.4%
Total Mean			2.9x	2.6x	11.2x	9.6x	5.1%	11.8%	21.8%	21.8%

Source: S&P Capital IQ data as of 5/13/20.

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