

ANNUAL
REPORT 2018



Moving healthcare



forward.



William C. Lucia
Chairman & Chief
Executive Officer

Dear Shareholder:

Our Company executed well in 2018 and our positive operating and financial performance led to strong shareholder returns. Our results included record revenues, improved profitability and a strengthened balance sheet, which provides a solid foundation for continued success in the year ahead.

More specifically, total revenue for the year was just under \$600 million after topping \$500 million for the first time in 2017. Revenue from commercial customers grew double digits, while payment integrity and total population management revenues were both up in excess of 20%. Earnings per share for the full year increased 36% and adjusted EPS, excluding discrete tax benefits in both years, jumped 46% year-over-year. Net income and adjusted EBITDA were 37% and 30% higher, respectively, as we benefited from strong contribution margin on incremental revenue growth and the early-stage operational efficiencies generated from our technology investments. Operating cash flow in 2018 was nearly \$100 million, and we ended the year with very low net debt and a liquidity profile that positions HMS well to continue investing for future business growth.

We also accomplished several important strategic goals in 2018. We leveraged our investments in advanced technologies to streamline operating processes and boost profit margins. We ramped up our cross-selling activities with the Eliza consumer engagement platform in our first full year of ownership. And we expanded our product suite with the launch of an innovative, internally developed clinical analytics and risk stratification tool – Elli. It uses historical claims data to produce actionable, predictive analytics to help identify at-risk and potentially high-cost members as early as the point of enrollment.

We continue to believe the macro backdrop for the services we offer is favorable, and we see significant opportunity for market expansion of the payment accuracy and total population management services we currently offer. We expect that our robust and market-leading data, advanced analytics capabilities, expansive customer base and engaged workforce will serve as a strong foundation to help reduce the cost of health care and improve patient health and overall consumer experience of care, while driving growth for HMS for many years to come.

In fact, we expect the need for the types of services HMS provides will only increase over the next decade. Consistent with what has been a multi-year trend of escalating healthcare spending, CMS recently estimated healthcare costs will grow at a 5.5% annual pace over the next several years – reaching 19.4% of GDP by 2027. These rising costs continue to drive demand for payment accuracy and actionable analytics and technology solutions to improve patient engagement.

As consumers have taken on increased financial responsibility in recent years, new care delivery models focused on treating the whole person – including addressing behavioral and social determinants of health – have gained greater acceptance. These trends have also contributed to heightened interest among payers, providers and consumers in pursuit of solutions which reduce costs, improve health outcomes and enhance the individual member experience.

HMS is well positioned to assist those key constituencies in this important mission. Our approach to total population management provides personalized engagement and care plans at enterprise scale – leading to needed behavioral change, healthier outcomes and more satisfied consumers.

Our introduction of Elli last year significantly enhances our ability to provide actionable insights to customers. We can now create a health profile of new enrollees, for example, so appropriate medical management activities can begin expeditiously – rather than payers and their care management personnel waiting months to identify an individual member’s needs. Going forward, we are promoting and selling Elli together with our Essette care management and Eliza multi-model engagement platforms as a comprehensive suite of services to efficiently manage the health of any discrete population.

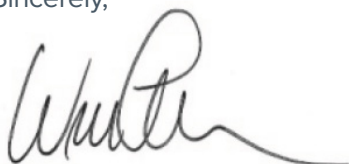
Looking ahead, we expect 2019 will be another strong year of top line and bottom line growth. We are projecting total revenue will be 8 - 10% higher than last year (excluding the impact of a Medicare RAC reserve release in the first quarter of 2018), and expect both net income and adjusted EBITDA will continue to grow at a rate faster than revenue. We plan to continue our increased investment in technology, in order to develop innovative products, support data security and enhance our IT infrastructure. We believe we are only in the early innings of realizing the full benefits of machine learning, robotics and other technological enhancements that further our automation initiatives and continue to increase efficiencies, lower costs and improve yields across our business.

Our strategic framework for achieving our Company’s 2019 operating and financial goals includes four pillars:

- Broadening the use of technology to expand margins and profitability by maintaining a focus on product yield and process improvements, while diligently managing operating expenses;
- Increasing sales by expanding our existing customer relationships and capturing new logos;
- Expanding our market opportunities by continuing to develop innovative new products, pursuing strategic acquisition opportunities, and moving further into markets where HMS is relatively less penetrated, such as self-insured employers, PBMs and other risk-bearing entities; and
- Continuing to focus on employee engagement and a high-performance culture, which rewards outstanding individual achievement and positions HMS to retain and recruit top talent as we grow.

We are very proud of our significant achievements last year, and look forward to 2019 with deep appreciation for the support and encouragement we have received from shareholders. We are confident that we have the right talent, strategic focus and operational tools in place to achieve our objectives this year and in the future.

Sincerely,



William C. Lucia

Chairman and Chief Executive Officer

April 12, 2019

Safe Harbor: This letter contains certain “forward-looking statements” within the meaning of the U.S. Private Securities Litigation Reform Act of 1995. These statements relate to our current expectations, projections and assumptions about our business, the economy and future events or conditions; they do not relate strictly to historical or current facts. For a discussion identifying important factors that could cause actual results to differ from those stated or implied in our forward-looking statements, see the Company’s filings with the SEC, including, but not limited to the “Cautionary Note Regarding Forward-Looking Statements,” “Risk Factors,” “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” and “Quantitative and Qualitative Disclosures about Market Risk” in the Form 10-K portion of this Annual Report. Our forward-looking statements speak only as of the date of this letter or as of the date they are made, and we undertake no obligation to update them.

Additionally, this letter contains certain non-GAAP measures that our management believes are relevant and provide our shareholders with useful information about the Company’s operating performance because the measures allow them to understand and compare the Company’s actual and expected operating results during the prior, current and future periods in a more consistent manner. These non-GAAP measures are not measurements of financial performance or liquidity under GAAP and should not be considered alternatives to the Company’s other financial information determined under GAAP. For a reconciliation of these non-GAAP measures to comparable GAAP measures, please refer to Appendix A.

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Form 10-K

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2018

Or

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from to

Commission File Number 000-50194



HMS HOLDINGS CORP.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of incorporation or organization)

5615 High Point Drive, Irving, TX
(Address of principal executive offices)

11-3656261

(I.R.S. Employer Identification No.)

75038
(Zip Code)

(214) 453-3000

(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Name of each exchange on which registered
Common Stock \$0.01 par value	The Nasdaq Stock Market LLC (Nasdaq Global Select Market)

Securities registered pursuant to section 12(g) of the Act: **None**

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer Accelerated filer Non-accelerated filer Smaller reporting company Emerging growth company
If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act) Yes No

The aggregate market value of the registrant's common stock held by non-affiliates as of June 29, 2018 the last business day of the registrant's most recently completed second quarter was approximately \$1.8 billion based on the last reported sale price of the registrant's common stock on the Nasdaq Global Select Market on that date. Solely for purposes of this disclosure, shares of common stock held by executive officers, directors and persons who hold 10% or more of the outstanding shares of common stock of the registrant as of such date have been excluded because such persons may be deemed to be affiliates. This determination is not necessarily a conclusive determination for any other purposes.

There were 85,271,867 shares of common stock outstanding as of February 15, 2019.

Documents Incorporated by Reference

Unless provided in an amendment to this Annual Report on Form 10-K, the information required by Part III is incorporated by reference to the registrant's 2019 definitive proxy statement, to the extent stated herein. Such proxy statement or amendment will be filed with the Securities and Exchange Commission within 120 days of the registrant's fiscal year ended December 31, 2018.

HMS HOLDINGS CORP. AND SUBSIDIARIES
ANNUAL REPORT ON FORM 10-K
TABLE OF CONTENTS

	<u>Page</u>
Glossary of Terms and Abbreviations	1
PART I	
Item 1. Business	4
Item 1A. Risk Factors	10
Item 1B. Unresolved Staff Comments	24
Item 2. Properties	24
Item 3. Legal Proceedings	24
Item 4. Mine Safety Disclosures	24
PART II	
Item 5. Market for Registrant's Common Equity, Related Shareholder Matters and Issuer Purchases of Equity Securities	25
Item 6. Selected Financial Data	27
Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations	28
Item 7A. Quantitative and Qualitative Disclosures About Market Risk	42
Item 8. Consolidated Financial Statements and Supplementary Data	42
Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure	42
Item 9A. Controls and Procedures	42
Item 9B. Other Information	43
PART III	
Item 10. Directors, Executive Officers and Corporate Governance	44
Item 11. Executive Compensation	44
Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Shareholder Matters	44
Item 13. Certain Relationships and Related Transactions and Director Independence	45
Item 14. Principal Accounting Fees and Services	45
PART IV	
Item 15. Exhibits, Financial Statement Schedules	46
Item 16. Form 10-K Summary	50

Glossary of Terms and Abbreviations

ACA	Patient Protections and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act of 2010
ACO	Accountable Care Organization
ADR	Additional Documentation Request
ASO	Administrative Service Only
ASU	Accounting Standards Update
CHIP	Children's Health Insurance Program
CMS	Centers for Medicare & Medicaid Services
CMS NHE	CMS National Health Expenditures
COB	Coordination of Benefits
COSO	Committee of Sponsoring Organizations of the Treadway Commission
Credit Agreement	The Amended and Restated Credit Agreement dated as of May 3, 2013, as amended by Amendment No. 1 to Amended and Restated Credit Agreement dated as of March 8, 2017, and as further amended by Amendment No. 2 to Amended and Restated Credit Agreement, dated as of December 19, 2017, by and among HMS Holdings Corp., the Guarantors party thereto, the Lenders party thereto and Citibank, N.A. as Administrative Agent
DSO	Days Sales Outstanding
ERISA	Employment Retirement Income Security Act of 1974
Exchange Act	Securities Exchange Act of 1934, as amended
FASB	Financial Accounting Standards Board
HIPAA	Health Insurance Portability and Accountability Act of 1996
HITECH	Health Information Technology for Economic and Clinical Health
IRC	Internal Revenue Code
IRS	U.S. Internal Revenue Service
LIBO Rate	Intercontinental Exchange London Interbank Offered Rate (or any successor rate determined in accordance with the Credit Agreement)
MCO	Managed care organization
PBM	Pharmacy Benefit Manager
PHI	Protected health information
PI	Payment Integrity
R&D Credit	U.S. Research and Experimentation Tax Credit pursuant to IRC Section 41
RAC	Recovery Audit Contractor
RFP	Request for proposal
SEC	U.S. Securities and Exchange Commission
Securities Act	Securities Act of 1933, as amended
Section 199 Deduction	U.S. Production Activities Deduction pursuant to IRC Section 199
SG&A	Selling, general and administrative
TPL	Third-party liability
TPM	Total Population Management
U.S. GAAP	United States Generally Accepted Accounting Principles
401(k) Plan	HMS Holdings Corp. 401(k) Plan
2006 Stock Plan	HMS Holdings Corp. Fourth Amended and Restated 2006 Stock Plan, as amended by Amendment No. 1 to the HMS Holdings Corp. Fourth Amended and Restated 2006 Stock Plan dated as of February 16, 2012
2011 HDI Plan	HDI Holdings, Inc. Amended 2011 Stock option and Stock Issuance Plan
2016 Omnibus Plan	HMS Holdings Corp. 2016 Omnibus Incentive Plan
2017 Tax Act	Tax Cuts and Jobs Act of 2017
2018 Form 10-K	HMS Holdings Corp. Annual Report on Form 10-K for the year ended December 31, 2018

Cautionary Note Regarding Forward-Looking Statements

For purposes of this 2018 Form 10-K, the terms “HMS,” “Company,” “we,” “us,” and “our” refer to HMS Holdings Corp. and its consolidated subsidiaries unless the context clearly indicates otherwise. Included in this 2018 Form 10-K are “forward-looking statements” within the meaning of the U.S. Private Securities Litigation Reform Act of 1995. From time to time, we also provide forward-looking statements in other materials we release to the public, as well as oral forward-looking statements. Such statements relate to our current expectations, projections and assumptions about our business, the economy and future events or conditions. They do not relate strictly to historical or current facts.

We have tried to identify forward-looking statements by using words such as “aim,” “anticipate,” “believe,” “estimate,” “expect,” “forecast,” “future,” “intend,” “likely,” “may,” “plan,” “project,” “seek,” “strategy,” “target,” “will,” “would,” “could,” “should,” and similar expressions and references to guidance, although some forward-looking statements may be expressed differently. These statements include, among other things, information concerning our future growth, business strategy, strategic or operational initiatives, our future operating or financial performance, our ability to invest in and utilize our data and analytics capabilities to expand our capabilities, the benefits and synergies to be obtained from completed and future acquisitions, the future performance of companies we have acquired, our future expenses, interest rates and tax rates, our ability to meet our future liquidity requirements, the impact of changes to U.S. healthcare legislation or healthcare spending affecting Medicare, Medicaid or other publicly funded or subsidized health programs, and other statements regarding our possible future actions, business plans, objectives and prospects.

Forward-looking statements are not guarantees and involve risks, uncertainties and assumptions that are difficult to predict. Actual results may differ materially from past results and from those indicated by such forward-looking statements if known or unknown risks or uncertainties materialize, or if underlying assumptions prove inaccurate. These risks and uncertainties include, among other things:

- our ability to execute our business plans or growth strategy;
- our ability to innovate, develop or implement new or enhanced solutions or services;
- the nature of investment and acquisition opportunities we are pursuing, and the successful execution of such investments and acquisitions;
- our ability to successfully integrate acquired businesses and realize synergies;
- significant competition for our solutions and services;
- variations in our results of operations;
- our ability to accurately forecast the revenue under our contracts and solutions;
- our ability to protect our systems from damage, interruption or breach, and to maintain effective information and technology systems and networks;
- our ability to protect our intellectual property rights, proprietary technology, information processes and know-how;
- our failure to maintain a high level of customer retention or the unexpected reduction in scope or termination of key contracts with major customers;
- customer dissatisfaction or our non-compliance with contractual provisions or regulatory requirements;
- our failure to meet performance standards triggering significant costs or liabilities under our contracts;
- our inability to manage our relationships with data sources and suppliers;
- our reliance on subcontractors and other third party providers and parties to perform services;
- our ability to continue to secure contracts and favorable contract terms through the competitive bidding process;
- pending or threatened litigation;
- unfavorable outcomes in legal proceedings;
- our success in attracting and retaining qualified employees and members of our management team;
- our ability to generate sufficient cash to cover our interest and principal payments under our credit facility;
- unexpected changes in tax laws, regulations or guidance and unexpected changes in our effective tax rate;
- unanticipated increases in the number or amount of claims for which we are self-insured;
- changes in the U.S. healthcare environment or healthcare financing system, including regulatory, budgetary or political actions that affect healthcare spending or the practices and operations of healthcare organizations;
- our failure to comply with applicable laws and regulations governing individual privacy and information security or to protect such information from theft and misuse;
- our ability to comply with current and future legal and regulatory requirements;

- negative results of government or customer reviews, audits or investigations;
- state or federal limitations related to outsourcing of certain government programs or functions;
- restrictions on bidding or performing certain work due to perceived conflicts of interests;
- the market price of our common stock and lack of dividend payments; and
- anti-takeover provisions in our corporate governance documents.

These and other risks are discussed under the headings “Part I, Item 1. Business,” “Part I, Item 1A. Risk Factors,” “Part II, Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations,” and “Part II, Item 7A. Quantitative and Qualitative Disclosures about Market Risk” of this 2018 Form 10-K and in other documents we file with the SEC.

Any forward-looking statements made by us in this 2018 Form 10-K speak only as of the date on which they are made. We undertake no obligation to publicly update forward-looking statements, whether as a result of new information, future events or otherwise, except as may be required by law. We caution readers not to place undue reliance upon any of these forward-looking statements. You are advised, however, to consult any further disclosures we make on related subjects in our Form 10-Q and Form 8-K reports and our other filings with the SEC.

Market and Industry Data

This 2018 Form 10-K contains market, industry and government data and forecasts that have been obtained from publicly available information, various industry publications and other published industry sources. We have not independently verified the information and cannot make any representation as to the accuracy or completeness of such information. None of the reports and other materials of third party sources referred to in this 2018 Form 10-K were prepared for use in, or in connection with, this 2018 Form 10-K.

Trademarks and Trade Names

We have a number of registered trademarks, including HMS®, as well as the corresponding HMS + logo design mark, HMS IntegritySource®, Eliza® Essette® and Elli®. These and other trademarks of ours appearing in this 2018 Form 10-K are our property. Solely for convenience, trademarks and trade names of ours referred to in this 2018 Form 10-K may appear without the ® or ™ symbols, but such references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights or the right of the applicable licensor to these trademarks and trade names. This 2018 Form 10-K contains additional trade names and trademarks of other companies. We do not intend our use or display of other companies’ trade names or trademarks to imply an endorsement or sponsorship of us by such companies, or any relationship with any of these companies.

PART I

Item 1. Business

Founded in 1974, HMS is an industry-leading provider of cost containment solutions in the healthcare marketplace. We use healthcare data technology, analytics and related services to deliver coordination of benefits, payment integrity, population risk intelligence, care management and consumer engagement solutions to help payers reduce costs, improve healthcare outcomes and enhance member experiences. We provide coordination of benefits services to government and commercial healthcare payers to ensure that the correct party pays a claim, and payment integrity services to ensure the correct amount is paid. Our total population management solutions provide risk-bearing organizations with reliable intelligence across their member populations to identify risks and improve patient engagement and outcomes. Together these services help move the healthcare system forward for our customers and contribute to bending the healthcare cost curve for the nation.

HMS began its operations as Health Management Systems, Inc., which became our wholly owned subsidiary in March 2003 when we assumed its business in connection with the adoption of a holding company structure. In recent years HMS has grown both organically and through targeted acquisitions of businesses that helped expand our solution suite, including IntegriGuard, LLC (doing business as HMS Federal) in 2009; HealthDataInsights, Inc. (“HDI”) in 2011; Essette, Inc. (“Essette”) in 2016; and Eliza Holding Corp. (“Eliza”) in 2017. We currently operate as one business segment with a single management team that reports to the Chief Executive Officer.

We were originally incorporated in the State of New York in October 2002 and reincorporated in the State of Delaware in July 2013. Our principal executive offices are located at 5615 High Point Drive, Irving, Texas 75038, and our telephone number is (214) 453-3000. As of December 31, 2018, we had approximately 2,500 employees. Additional information about HMS is available on our website at www.hms.com.

Copies of our recent Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and Proxy Statements, as well as amendments to these reports or statements, are available free of charge on our website through the Investor Relations page, as soon as reasonably practicable after we electronically file them with, or furnish them to, the SEC. These materials, as well as similar materials for SEC registrants, may be obtained directly from the SEC through their website at <http://www.sec.gov>.

The content of any website referred to in this 2018 Form 10-K is not incorporated by reference into this filing unless expressly noted. References to the URLs for these websites are intended to be inactive textual references only.

Our Solutions

We provide solutions that apply broadly across Medicaid, Medicare, commercial at-risk, and employer self-insured populations. Our services span the payment and care continuum from an individual's enrollment in a program before medical service is rendered, to pre-payment review of a claim, through recovery where identification of improper payments is made via audit, and back to the individual where our consumer-driven solutions allow health plans to manage their members on a personal level, and at scale, by using actionable analytics that drive patients to take action to improve health outcomes. Our coordination of benefits and payment integrity services ensure payment accuracy by addressing a wide spectrum of payment errors, including eligibility and coordination of benefits errors, the identification and investigation of potential fraud, and the review of claims on a pre-payment and post-payment basis. Our total population management services assist customers in managing quality, risk, cost and compliance across all lines of business by engaging members, providing the tools to manage their care, and identifying existing or emerging health risk among members. As a result of these services, our customers saved billions of dollars in 2018 through the prevention of erroneous payments, improved clinical outcomes for their members, and reduced enrollment turnover; and they received billions more in cash recoveries for improperly paid claims.



Coordination of Benefits

Industry-leading solution ensures the right payer pays the claim, both prospectively for cost avoidance and retrospectively for recoveries of improper payments



Payment Integrity

Comprehensive solution set to reduce fraud, waste and abuse by identifying and correcting healthcare claims that are billed and paid improperly



Total Population Management

Population and member health management suite of services addresses cost, quality and compliance through risk analytics, member engagement and care management platforms

Our comprehensive solutions offer value throughout the healthcare continuum and include the following:

Coordination of Benefits (COB)

Our COB services are provided primarily for state governments and Medicaid managed care plans, pursuant to Federal law which mandates that Medicaid is the payer of last resort, and draw principally upon proprietary information management and data mining techniques designed to ensure the correct party pays a healthcare claim. We offer cost avoidance services, which include providing validated insurance coverage information that is used by payers to coordinate benefits properly for future claims. With validated insurance information, Medicaid payers can avoid unnecessary costs by ensuring they pay only after all other insurance coverage available has been exhausted. Nevertheless, due to a variety of factors, many Medicaid claims are paid even when there is a known responsible third party. Our customers rely on us to identify Medicaid eligibility, before a claim is submitted, and retrospectively, for those claims that were paid in error, and then recover these payments from the liable third party. We also provide services to assist customers in identifying other third-party insurance and recovering medical expenses where a member is involved in a casualty or tort incident. Lastly, for Medicaid agencies exclusively, we provide estate recovery services to identify and recover Medicaid expenditures from the estates of deceased Medicaid members in accordance with state policies. For the years ended December 31, 2018, 2017 and 2016, our COB services represented 66.4%, 73.4% and 72.2% of our total revenue, respectively.

Analytical services

Analytical services consists of our payment integrity and total population management solutions.

Payment Integrity (PI)

Our PI services ensure healthcare payments are accurate and appropriate. These services are applicable to all customers HMS serves, including federal and state governments, commercial health plans and other at-risk or self-insured entities. Our solutions verify that healthcare services are utilized, billed and paid appropriately. We combine data analytics, clinical expertise and proprietary algorithms and technology to identify and prevent improper payments on submitted claims to optimize savings before a claim is even paid, and on a post-payment basis, to identify and recover overpayments and correct underpayments; detect and prevent fraud, waste and abuse; and identify process improvements. For the years ended December 31, 2018, 2017 and 2016, our PI services represented 24.1%, 20.0% and 27.6% of our total revenue, respectively.

Total Population Management (TPM)

Our TPM services consist of population risk analytics, consumer engagement and care management solutions, which are the result of internal product development and our acquisitions of Essette in 2016 and Eliza in 2017. These solutions help customers better manage quality, cost, compliance and patient outcomes and improve their members' experience. The services span across the care continuum. Our flexible, scalable architecture and modular platform integrates early risk identification, advanced analytics, multi-channel outreach, social engagement and care management components to address our customers' increased focus on consumer engagement, performance management and program design—all key components of an effective population health management program. Our Elli, Eliza and Essette solutions leverage HMS data and advanced analytics to support population risk management, member engagement and care management, respectively, and provide customers with a tailored, integrated platform that addresses core healthcare industry challenges on an enterprise scale. For the years ended December 31, 2018, 2017 and 2016, our TPM services represented 9.5%, 6.6% and 0.2%, of our total revenue, respectively.

Intellectual Property

Our ability to develop and maintain the proprietary aspects of our technology and operate without infringing the proprietary rights of others is important to our business and competitive position. We establish and protect our proprietary technology and intellectual property through a combination of patents, patent applications, trademarks, copyrights, domain names and trade secrets, as well as through contractual rights, including confidentiality, non-disclosure and invention assignment agreements, and other security measures.

As of December 31, 2018, our patent portfolio is comprised of approximately 60 domestic and international patents, and we are currently pursuing several patent applications in the United States and around the world. Our principal trademarks are HMS®, and the corresponding HMS + logo design mark, HMS IntegritySource®, Eliza®, Essette®, and Elli®. We also hold copyrights relating to certain aspects of our solutions and services. While we consider all of our intellectual and proprietary rights important to HMS, we believe our business as a whole is not materially dependent on any particular patent, trademark, license or other intellectual property right.

Customers

We provide our solutions to customers across a broad range of entities within the healthcare industry, including health plans, state agencies, federal programs, private employers and other risk-bearing healthcare organizations. For the years ended December 31, 2018, 2017 and 2016, our total revenue was \$598.3 million, \$521.2 million and \$489.7 million, respectively. No single customer accounted for 10% or more of our total revenue during any period presented.

The composition of our 10 largest customers changes periodically. For the years ended December 31, 2018, 2017 and 2016, our 10 largest customers represented 41.4%, 39.5% and 40.6% of our total revenue, respectively. We provide services under contracts (or subcontracts) that contain various revenue structures, including contingent revenue and to a lesser extent fixed-fee arrangements. The current terms of many of our federal and state government contracts range from one to five years, including renewal terms at the option of the customer. In many instances, we provide our services pursuant to agreements that are subject to periodic reprocurments. Several of our contracts, including those with some of our largest customers, may be terminated for convenience, in whole or in part, by the customer. Because we provide our services pursuant to agreements that are open to competition from various businesses in the U.S. healthcare arena, we cannot provide assurance that our contracts, including those with our largest customers, will not be terminated for convenience or awarded to other parties. Additionally, we cannot provide assurance that any contracts that are renewed will have the same fee structures as the expiring contracts or otherwise be on satisfactory terms. The early termination of key contracts with significant customers, or the inability to renew such contracts on favorable terms or at all, may have an adverse effect on our financial condition, results of operations and cash flows.

In providing solutions and services to our customers, we rely heavily upon our technology systems and networks, as well as on those of third-party providers, to process, transmit, maintain, store and host the confidential, proprietary and sensitive information and data we receive from our customers and other data suppliers, including private insurance plans and financial institutions. The secure processing and maintenance of this information is critical to our operations and business strategy. Although we have spent significant resources to implement security and privacy programs and controls, train our workforce and augment our security measures with the implementation of new technologies and processes, our information technology and infrastructure, and those of third parties on which we rely could continue to be potentially subject to various forms of cyber-attacks, as further discussed under the heading "Part I, Item 1A. Risk Factors."

Healthcare Landscape

The market for cost containment solutions is large and growing, driven by increasing healthcare costs, rising program enrollment and payment complexities. Established in 1965 under the Social Security Act, Medicaid provides health insurance and long-term care services and support to low-income families and individuals with disabilities in the United States. Medicaid is funded jointly by the federal and state governments and administered by the states. The Balanced Budget Act of 1997 created CHIP to help states expand coverage primarily to children whose families earned too much to qualify for Medicaid, yet not enough to afford private health insurance. Medicare is a federal program that is administered by CMS, and provides eligible persons age 65 and over and some disabled persons with a variety of hospital, medical insurance and prescription drug benefits. All three of these programs have opted to contract with managed care organizations in whole or in part as a means of delivering quality healthcare to program beneficiaries and controlling costs.

By law, Medicaid programs serve as the payer of last resort and all other sources of coverage must pay for medical costs incurred by a Medicaid-eligible individual. The TPL rules of the Medicaid statute require, among other things, that states take reasonable measures to identify potentially liable third parties and process claims accordingly. Since 1985, we have provided state Medicaid agencies with services to identify third parties with primary liability for paying claims for Medicaid members, and since 2005, we have provided similar services to Medicaid managed care plans.

The Deficit Reduction Act enacted by Congress in 2006 contained provisions to strengthen the TPL rules and created the Medicaid Integrity Program under the Social Security Act to increase the government's capacity to prevent, detect and address fraud, waste and abuse in the Medicaid program. Later that year, Congress passed the Tax Relief and Health Care Act of 2006, which established the Medicare RAC program. These measures, at both the federal and state level, have strengthened our ability to identify and recover erroneous payments on behalf of our customers. We also serve as a Medicaid RAC to certain states pursuant to provisions of the ACA and became the Medicare RAC for Region D with our acquisition of HDI. We again were awarded a region under the new Medicare RAC contracts in October 2016. Following the implementation of the new Medicare RAC contracts and completion of contract closeout activities for RAC Region D, our original Medicare RAC contract expired on January 31, 2018.

The ACA, generally referred to as Obamacare, was signed into law in 2010 and has made broad-based changes to the U.S. healthcare system, including many provisions impacting healthcare delivery and payment programs, such as employer-sponsored health coverage, Medicaid, Health Insurance Exchanges with premium subsidies and payment integrity efforts. The ACA also further expanded the recovery audit contractor program to states. CMS and various states have proposed Medicaid program design alternatives and changes to enrollment criteria which could impact future Medicaid enrollment. As ACA-related changes develop or are enacted, we will assess their potential impact, including opportunities they may present for our customers and for us.

Industry Trends and Opportunities

U.S. healthcare expenditures continue to escalate and consume an increasingly larger proportion of the U.S. GDP, presenting challenges for payers who wish to contain costs and promote quality healthcare outcomes. For 2019, Medicare and Medicaid are projected to pay approximately 37.9% of the nation's healthcare expenditures and serve over 136.3 million beneficiaries. Many of these beneficiaries are enrolled in managed care plans, which have the responsibility for both patient care and claims adjudication. The dual aims of cost containment and quality healthcare outcomes are the same across all at-risk entities, including commercial health plans and government healthcare programs, such as Medicaid and Medicare.

Within the commercial market, health plans sell policies directly to individuals (on the open market or via health insurance exchanges), contract with employers to underwrite their employees' care, or contract with self-insured employers to oversee benefit administration for their employees. This market also includes a growing number of risk bearing provider-sponsored plans that operate and market health plan benefits. According to CMS NHE projections, private health insurance covered approximately 197.5 million individuals at a cost of approximately \$1.24 trillion in 2018.

Several commercial health plans also offer government-sponsored lines of business, including partnering with Medicare, Medicaid and CHIP to oversee care delivery for beneficiaries enrolled in those programs. States continue to focus on improving value, quality and outcomes through arrangements with MCOs. At the end of state fiscal year 2018, 47 states and the District of Columbia operated with some form of managed care, and Alaska reported plans to implement a managed care program in 2019. Comprehensive risk-based managed care continues to be the predominant delivery system for Medicaid services in the US. Among the 39 Medicaid programs with comprehensive risk-based MCOs, 33 reported that 75% or more of their Medicaid beneficiaries were enrolled in MCOs as of July 1, 2018. Of the 32 states that had implemented Medicaid expansion pursuant to the ACA, 27 were using MCOs to cover newly eligible adults as of July 1, 2018. Managed care health plans also continue to assume risk for a growing number of Medicare lives. Approximately 34% of all Medicare beneficiaries, or 20 million lives, were enrolled in Medicare Advantage plans in 2018.

HMS continues to serve government agency fee-for-service programs at the state and federal level. These plans are generally reliant on and susceptible to the government appropriations process that determines their budget and governs the number of beneficiaries they serve. According to the CMS NHE projections, Medicare programs in 2018 covered approximately 59 million people at a cost of approximately \$748 billion and Medicaid/CHIP covered approximately 81.2 million people, costing approximately \$641 billion. Altogether, it is projected that the government programs we serve covered approximately 140.2 million people at a total cost of nearly \$1.39 trillion in 2018.

CMS projects that Medicare enrollment growth will increase by 3.03% in 2019, with expenditures to increase by 7.95% in 2019 compared to 2018; and Medicaid/CHIP enrollment growth will increase by 1.97% in 2019, with expenditures to increase by 5.5% in 2019 compared to 2018. As commercial and government health plans focus on strategies to contain costs across their different lines of business, HMS will continue offering solutions to meet their evolving needs.

Competitors

The U.S. healthcare marketplace is a dynamic industry with a range of businesses currently offering cost containment services, both directly or indirectly (through subcontracting), to some or all of the various healthcare payers, providers, employers and consumers. In addition, with improvements in technology and the growth in healthcare spending, new businesses are incentivized to enter this marketplace. Many customers also have the ability to perform some or all of the needed cost containment services themselves and choose to exercise that option to varying degrees. Therefore, competition is robust as customers have many alternatives available to them in their effort to contain healthcare costs.

We compete based on a variety of factors, including our ability to provide a broad range of solutions that span the entire healthcare claims payment and services continuum. These include payment accuracy solutions focused on COB and PI related functions, as well as TPM solutions which support the ability of payers to better understand and engage consumers, perform effective outreach, and impact both costs and health outcomes.

We have a proven record of delivering results that optimize savings and recoveries, enabled by:

- in-depth government and commercial healthcare program experience;
- clinical staff expertise;
- expansive data resources;

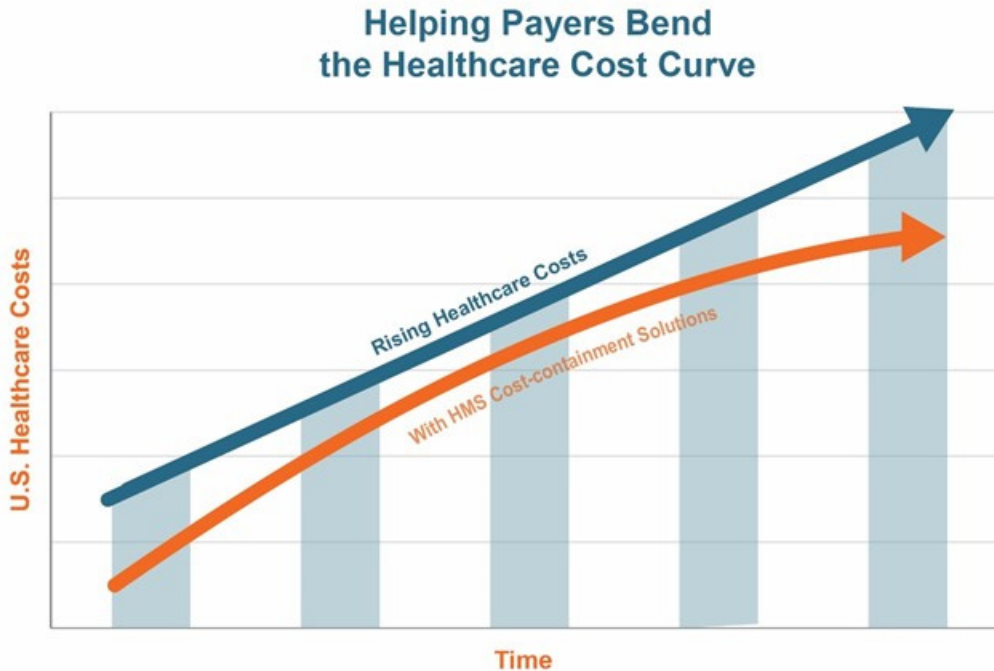
- innovative technology;
- enterprise analytics;
- an extensive insurance eligibility database;
- extensive relationships with customers and other industry stakeholders; and
- an ability to provide customers with actionable intelligence to improve clinical outcomes, optimize patient engagement, and better manage costs.

Our competitors range in size from large, diversified national companies, to small, specialized firms. Some of these competitors have significantly greater financial and technical resources, and others have longer operating histories and greater name recognition than we do in certain markets. Within our payment accuracy portfolio of products and services, we compete primarily with large business outsourcing and technology firms, claims processors and PBMs, clearinghouses, healthcare consulting firms, and other vendors who provide some or all of these solutions to payers. In addition, we frequently work with customers who may elect to perform some or all of their cost avoidance and recovery functions in-house. Within the population health management sector, we compete primarily with vendors who provide care management, consumer engagement, and related technology services. Companies with whom we compete across our offerings include:

- | | | |
|------------------------------------|--------------------------|---|
| ▪ Accenture plc | ▪ CaseNet LLC | ▪ Change Healthcare |
| ▪ Cotiviti Corporation | ▪ DXC Technology Company | ▪ Equian, LLC |
| ▪ EXL Service Holdings, Inc. | ▪ Experian Health | ▪ IBM Watson Health |
| ▪ LexisNexis | ▪ MedHok, Inc. | ▪ Optum (subsidiary of UnitedHealthGroup) |
| ▪ Performant Financial Corporation | ▪ Welltok, Inc. | ▪ ZeOmega LLC |

Business Strategy

We believe that the steadily increasing enrollment and rising expenditures for Medicare and Medicaid, with most new enrollees entering managed care plans; an aging U.S. population with an increasing concentration of individuals with high cost chronic conditions and often co-morbidities; and the overall complexity of the healthcare claims payment system in the U.S. all combine to create substantial growth opportunities for the suite of cost containment solutions we offer.



We also believe these factors present growth opportunities for our TPM services. We are focused on growing our business over the course of 2019 and beyond, both organically and inorganically, by leveraging existing key assets (e.g., our data, analytics, in-house expertise, and distribution channel) and pursuing a number of strategic objectives or initiatives, including:

- *Expanding the scope of our relationship with existing customers* – by selling additional solutions and services, including those designed to improve member engagement and improve clinical outcomes.
- *Adding new customers* – by marketing to commercial health plans, including Medicaid managed care and Medicare Advantage plans, at-risk group and individual health lines of business and ASOs; government healthcare payers, including Medicaid agencies, state employee health benefit plans and CHIPs; at-risk provider organizations and ACOs; and commercial self-insured employers.
- *Introducing new innovative solutions and services* – through internal development initiatives designed to enhance or expand our existing suite of cost containment solutions.
- *Utilizing technology tools to leverage a big data environment* – to create a more nimble operating environment, create operating efficiencies, improve the yield on our existing solution suite and identify new revenue opportunities within our current service delivery models.
- *Promoting automation and innovation to improve the efficiency and effectiveness of our services* – by continuing to implement new technology and process improvements designed to increase recovery yields, increase customer satisfaction and achieve greater operating efficiencies.
- *Prudent deployment of capital* – by investing in internal growth initiatives; selectively investing in capabilities, technologies, and assets to complement our core cost-containment expertise; building care management and care coordination adjacencies to complement the Essette and Eliza acquisitions and our internally developed Elli risk intelligence product; and expanding our data analytics capabilities. Our focus may include acquisitions that represent long-term growth potential, target high-growth areas, are accretive to earnings, enhance our technological capabilities and fill a strategic need in our business portfolio as we seek to provide increasingly comprehensive solutions to our customers. We may also repurchase our shares, pursuant to a two-year \$50 million authority granted by our Board of Directors in November 2017, which has a remaining unused authority of approximately \$29.9 million.

Item 1A. Risk Factors

Our business is subject to significant risks, including the risks and uncertainties described below. You should carefully consider these risks, as well as the other information in this 2018 Form 10-K, including our Consolidated Financial Statements and the related Notes. The occurrence of any of these risks could adversely affect our business, financial condition, results of operations, and cash flows in a material way.

Risks Relating to Our Company

Our ability to expand our business will be adversely affected if we fail to implement our growth strategy.

The size and scope of our business operations have expanded over the past several years, and we currently intend to continue our growth and expansion into new healthcare areas and markets, however, our growth and expansion strategy carries costs and risks that, if not properly managed, could adversely affect our business. Our future growth will depend on, among other things, our ability to successfully execute our business plans, which includes penetrating new markets, broadening and deepening our customer relationships, identifying and executing future acquisitions and strategic partnerships, and increasing the speed and scale at which we deliver our services, all while remaining competitive. We must also be flexible and responsive to customers' needs and changes in the political, economic and regulatory environment in which we operate. The greater size and complexity of our expanding business may put additional strain on our administrative, operational and financial resources and can make optimal resource allocation more difficult to determine. It is possible that we may not be able to maintain or accelerate our growth. A failure to anticipate or properly address the demands and challenges that our growth strategy and potential diversification may have on our resources and existing infrastructure may result in unanticipated costs and inefficiencies that could negatively impact our ability to execute on our business plans and growth goals, which may have a material adverse effect on our business, financial condition, results of operations and cash flows.

If we fail to innovate and develop new or enhanced solutions and services, or if these solutions and services are not adopted by our customers, it could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Part of our growth strategy depends on our ability to respond to the evolving healthcare landscape with new and enhanced solutions and services that our existing and potential customers are willing to adopt. The development, marketing and implementation of these solutions and services may require that we make substantial financial and resource investments. We face risks that our new or modified solutions and services may not be responsive to customer preferences or industry changes, and that the solution and service development initiatives that we prioritize may not yield the gains that we anticipate, if any. If we are unable to predict market preferences or healthcare industry changes, or if we are unable to develop or adapt solutions and services that are responsive to existing and potential customers' needs, we may fail to expand our business, which could constrain our future revenue growth and materially adversely affect our business, financial condition, results of operations and cash flows.

Our acquisition strategy may subject us to considerable business and financial risk.

Historically, to achieve our strategic goals, we have made a significant number of acquisitions that have expanded the solutions and services we offer, provided a presence in complementary business lines, or expanded our geographic presence and/or customer base. We intend to pursue future acquisitions that will continue to expand and complement our business and to periodically engage in discussions regarding such possible acquisitions. We are subject to risks and uncertainties relating to our ability to identify suitable potential acquisition candidates, to consummate additional acquisitions that will be advantageous to us, and to successfully integrate future acquisitions. Future and potential business acquisitions involve a number of risk factors that could affect our operations, including, but not limited to:

- diversion of management's attention and other resources;
- our ability to successfully and timely integrate operational, accounting and technology functions, policies, processes, systems and controls, and to implement these functions, policies, processes, systems and controls, without incurring substantial expenses, delays, difficulties or other issues;
- our ability to integrate personnel and human resource systems as well as the cultures of the acquired business;
- our ability to retain or replace the key personnel of the acquired business;
- our ability to maintain relationships with the customers of the acquired business;
- our ability to expand and further develop the acquired business;
- our ability to cross-sell our solutions and the solutions of the acquired business to our respective customers;
- customer dissatisfaction or performance problems with the acquired business;
- our ability to comply with regulatory requirements and avoid potential conflicts of interest in markets that we serve;
- the misuse of intellectual property by the personnel of the acquired business;
- our ability to successfully enter into unfamiliar markets or manage new business lines;
- assumption of unanticipated legal or financial liabilities and/or negative publicity related to prior acts by the acquired business;
- we may become subject to litigation or other claims in connection with the acquired business, including claims from terminated employees, customers, former shareholders or third parties;
- we may become significantly leveraged as a result of incurring debt to finance an acquisition;
- the acquired business may not perform as projected which could negatively impact earnings or contingent consideration;
- we may suffer impairment of goodwill and other acquired intangible assets; and
- we may suffer dilution to our earnings per share.

If we fail to adequately address these risks, or to successfully integrate the businesses that we acquire, we may not realize cost efficiencies, synergies or other benefits that we anticipated when selecting our acquisition candidates, and our reputation, business, financial condition, results of operations and cash flows could be materially adversely affected.

We face significant competition for our solutions and services and we expect competition to increase, which could materially adversely affect our business, financial condition, results of operations and cash flows.

The market for healthcare cost containment solutions is intensely competitive, driven by rapidly changing technologies, evolving industry standards and customer demands to become more efficient. Our competitors range in size from large, diversified national companies (some of which have emerged as a result of industry consolidation), to small, specialized firms. Some of our competitors may include current or former subcontractors or teaming partners seeking to establish direct relationships with our customers and provide similar services as the prime contractor, as well as current and prospective customers that elect to perform recovery and cost avoidance functions in-house or to develop in-house capacities for solutions and services that we provide or seek to provide. Consolidation among vendors and healthcare providers, as well as the merging of some of our competitors or formation of business alliances with other competitors, have contributed to the increasingly competitive environment. For example, certain state customers have combined or “bundled” TPL services under large-scale IT procurements, as they shift to implementing modular Medicaid Enterprise Systems. As part of this modular approach, they may select a new or less experienced vendor to provide the TPL module based on preferred relationships or favorable pricing. In addition, companies that have invested in proprietary technology different from our own service offerings, such as front-end analytics, have emerged as new competitors due to the rapidly evolving healthcare landscape. There is also increasing sophistication in the solutions and services that our competitors are developing that may become more efficient or appealing to our customers. In order to remain competitive, we may need to quickly develop and market new and enhanced solutions and services responsive to emerging technologies and changes in the healthcare industry, which may require that we make substantial financial and resource investments.

We may not be able to compete successfully against our existing or future competitors. Some of these competitors have significantly greater financial and technical resources, and others have longer operating histories and greater name recognition than we do in certain markets. They may be able to (i) offer lower prices or negotiate fee reductions on our current solutions and services, (ii) respond more quickly than we can to new and emerging technologies and changing customer requirements, (iii) devote greater resources to the sale of their products and the development and implementation of new and improved systems, solutions and services for customers that we serve, and (iv) pursue various acquisitions that allow them to rapidly amass a wide array of capabilities. We may be forced to lower our pricing, unexpectedly increase or enhance our technological or data capabilities, or modify our solution or service offerings. Notwithstanding any changes we make in response to increased competition, the demand for our solutions and services may decrease as a result of increased competition. A failure to be responsive to our existing and potential customers’ needs or the changing industry landscape could hinder our ability to maintain or expand our customer base, hire and retain new employees, pursue new business opportunities, complete future acquisitions and operate our business effectively. Any inability to compete effectively could materially adversely affect our business, financial condition, results of operations and cash flows.

You will not be able to rely on our operating results in any particular period as an indication of our future performance because they are subject to significant fluctuation which may cause the market price of our common stock to decrease significantly.

Our revenue and operating results may fail to match our past or projected performance and could vary significantly from period-to-period as a result of a number of factors, some of which are outside of our control. We have experienced fluctuations in our revenue and operating results in the past and they may vary in the future for reasons that include, but are not limited to:

- fluctuations in sales activity given our sales cycle;
- the length of contract and implementation periods;
- the commencement, completion or termination of contracts during any particular quarter;
- contract costs and expenses, which may be incurred in periods prior to revenue being recognized;
- the timing of period revenue recovery projects and third party payers’ claim adjudication;
- the billing and budgeting cycles of our customers;
- the timing of government procurement activities, including when contract awards are announced and the time required to resolve bid protests;
- contract renewal discussions, which may result in delayed payments for services already performed;
- changes in the pricing structure or other significant terms in our contract, or the scope of services we perform;
- technological and operational issues affecting our customers, including delays in payment receipt for previously recognized revenue due to certain customers delayed processing of our findings through their systems, and restrictions on our ability to use or access certain data or a lack of integrity or quality in the data or information we receive from certain data sources;
- adjustments to age/quality of receivables and accruals as a result of factors such as delays involving contract limitations or changes, subcontractor performance deficiencies or managerial decisions not to pursue identified claim revenue from customers;
- the impact of service disruptions or delays in the systems or operations of subcontractors, partners, vendors and other third party providers on which we rely on to deliver a single-source solution or service to our customers;
- changes in applicable laws;

- changes in accounting policies or guidelines concerning the timing of recognition of revenue; and
- regulatory changes or general economic conditions as they affect healthcare providers and payers.

We cannot predict the extent to which future variations could occur due to these or other factors. In addition, occasionally our state and federal customers are requested by third party payers to refund payments that we previously recovered for our customers. If our state and federal customers choose to refund money in response to these requests, regardless of whether an error actually occurred in connection with the payments, we may also be required to return contingent revenue which we were previously paid associated with such refunded payment. Consequently, our operating results are subject to significant fluctuation for any particular quarter, fiscal year, or other period, and may not be indicative of future periods. Our business is also subject to seasonal patterns resulting from increased efforts at year-end by certain customers to generate additional savings, complete compliance obligations and close gaps in care. However, taken as a whole, we do not consider our operations to be seasonal to any material degree. Due to all of these factors, our revenue and operating results are difficult to predict and are subject to significant fluctuation, which may cause the market price of our common stock to decrease significantly.

We face challenges associated with forecasting the revenue under our contracts, and any failure to accurately forecast such revenue could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We may not be able to accurately estimate the factors upon which we base our contract pricing, or the costs and timing for implementing and completing our contracts. For a majority of our customer contracts, the payment of our fee is contingent upon the recoveries received by our customers. We also have cost-plus or time-and-materials based contracts with the federal government where our revenue is recognized based on costs incurred plus an estimate of the negotiated fee earned. Our ability to earn a profit on these contracts requires that we accurately estimate the costs involved with these contracts and assess the probability of achieving certain outcomes or milestones within the contracted time period. In addition, we cannot predict with certainty the costs or the period in which implementation or contracts may be completed when we introduce new solutions into the marketplace. For our coordination of benefits and payment integrity services, we may face a long implementation period with a new customer or a new contract with an existing customer, making it difficult to reliably forecast revenue under those contracts. If we do not accurately estimate the costs and timing for completing projects, or if we encounter increased or unexpected costs, delays, failures, liabilities or risks, including those outside of our control, our contracts could prove unprofitable for us or yield lower profit margins than anticipated. Although we believe that we have recorded adequate provisions in our financial statements for losses on our fixed price and cost-plus contracts where applicable, as required under U.S. GAAP, our contract loss provisions may not be adequate to cover all actual future losses.

System interruptions or failures could expose us to liability and harm our business.

Our data and operation centers are essential to our business and our operations depend on our ability to maintain and protect our information systems. We attempt to mitigate the potential adverse effects of a disruption, relocation or change in operating environment; however, the situations we plan for and the amount of insurance coverage that we maintain may not be adequate in every case. Despite systems redundancy and security measures, our systems and operations are vulnerable to damage or interruption from, among other sources:

- power loss, transmission cable cuts and telecommunications failures;
- fire, flood, earthquake and other natural disasters;
- hardware failures or software defects;
- operator error;
- cyber security breaches; and
- physical break-ins, sabotage, intentional acts of vandalism, terrorist attacks and other events beyond our control.

In addition, while there are backup systems in many of our facilities, an extended outage of utility or network services supplied by third party IT vendors may delay or disrupt the delivery or performance of the services we provide for our customers. We also utilize third-party cloud service providers to help us efficiently scale certain cloud-based solutions. If we or our cloud service providers encounter a lengthy business interruption, or in the event our business continuity plans and business interruption insurance coverage are not adequate or fail to compensate us on a timely basis, we could suffer operational disruptions, disputes with customers, civil or criminal penalties, regulatory problems, increases in administrative expenses, loss of our ability to produce timely and accurate financial and other reports, damage to our reputation or customer relationships or other adverse consequences, any of which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Our systems and networks and those of third parties on which we rely may be subject to cyber security breaches and other disruptions that could compromise our information and harm our business.

In the ordinary course of our business, we rely heavily upon our technology systems and networks, as well as on those of third-party providers, to process, transmit, maintain, store and host the confidential, proprietary and sensitive information and data we receive from our customers and other data suppliers, including private insurance plans and financial institutions. In addition, subcontractors, teaming partners or other third-party vendors may receive or utilize this information on our behalf in support of the services we perform for our customers. The secure processing and maintenance of this information is critical to our operations and business strategy. Although we have spent significant resources to implement security and privacy programs and controls, train our workforce and augment our security measures with the implementation of new technologies and processes, our information technology and infrastructure, and those of third parties on which we rely, could continue to be subject to computer hacking or phishing efforts, acts of vandalism or theft, introduction of malware, computer viruses or other malicious codes, employee error or malfeasance issues, catastrophes, unforeseen events or other cyber-attacks. We may be unable to implement adequate preventive measures to protect against such compromises in the future or to effectively adapt our security measures to evolving security risks. As a result, our technology systems, including our data and our customers' data, could be accessed improperly, made unavailable, improperly modified, corrupted or otherwise breached or compromised, or we could suffer system disruptions, shutdowns and denials of service. Similarly, we could be materially adversely affected by the loss of proprietary, trade secret or confidential technical and financial data if our internal networks are compromised. The occurrence of any of these events could harm the market perception of the effectiveness of our security measures, lead to reputational damage or the loss of our customers' confidence in our solutions, negatively affect our ability to attract new customers, cause existing customers to terminate or not renew their existing contracts with us, or deter them from using our solutions or services in the future, all of which could reduce our revenue, increase our expenses and expose us to potential liability under privacy, security or other applicable laws and regulations. We could also be forced to expend significant resources in response to a security breach, including investigating the cause of the breach, repairing system damage, remediating vulnerabilities in our security procedures, increasing cyber security protection costs by deploying additional personnel and protection technologies, paying regulatory fines and penalties imposed by government regulatory agencies, and damages and other substantial costs associated with litigation, indemnification obligations as well as increased cybersecurity insurance premiums, and undertaking additional remediation efforts such as credit monitoring, all of which could increase our expenses, divert the attention of our management and key personnel away from our business operations and materially adversely affect our business, financial condition, results of operations and cash flows.

Any failure to maintain effective information processing systems and the integrity of the data in, and operations of, those systems could materially adversely affect our business, financial condition, results of operations and cash flows.

Our ability to conduct our operations and accurately report our financial results depends on the integrity of the data in our information systems and the processes performed by those systems. As a result of the services we provide, we process a number of complex transactions that require us to access, store, retrieve, manipulate, manage and transmit the information and data of our customers' and external third parties, as well as our own data. Although we have invested a great deal of time and resources in developing systems, processes and controls that protect the integrity of the data, such measures cannot provide absolute security. It is possible that failures or errors in hardware and software, including those in third-party technology, or technical deficiencies in our systems could result in data loss or corruption, or cause the data that we collect, utilize or disseminate to be incomplete or contain inaccuracies that our customers regard as significant. In addition, these information systems and applications require continual maintenance, upgrading and enhancement to meet our operational needs, satisfy customer requests and handle our expansion and growth. Despite our testing and quality control measures, we cannot be certain that errors or system deficiencies will be found and that remediation can be done in a timeframe that is acceptable to our customers, or that customer relationships will not be impaired by the occurrence of errors or the need for remediation. In addition, implementation of upgrades and enhancements may cost more, take longer or require more testing than originally expected. Situations may also arise in which the accuracy of our data analysis or the content and quality of our work product is central to the disposition of claims, controversies or litigation between our customers and third parties that would require us to allocate significant resources to fulfilling our contractual obligations to provide our customers with full and complete access to records, analysis and back-up documentation of our work. Assuring our capacity to fulfill these obligations as well as actually fulfilling them could impose significant burdens on our infrastructure for data storage, maintenance and processing, and require us to incur increased costs to supplement our personnel, data storage and computing resources, which could materially and negatively impact other business operations.

If we are unable to protect our proprietary technology, information, processes, know-how, and other intellectual property and intellectual property rights, or become subject to claims of infringing or misappropriating the intellectual property of third parties, the value of our solutions and services may be diminished and our business may be materially adversely affected.

Our success as a company depends in part upon our ability to protect our core technology and intellectual property. Our expanding operations and efforts to develop new solutions and services also make protection of our intellectual property more critical. We seek to protect our intellectual property and other proprietary information through a combination of patent, trademark, copyright, trade secret and unfair competition laws, confidentiality agreements and invention assignment agreements with employees, consultants and other third parties, as well as through the terms of our agreements with customers and vendors, and other security measures. However, the steps we have taken to deter misappropriation of intellectual property may be insufficient to protect our proprietary information. We may not always be successful at obtaining government registrations for our patents, trademarks, or copyrights that we seek to register. Third parties may also attempt to misuse our company name or trademarks to engage in improper or illegal conduct such as cyber-squatting or other cybercrimes using our marks, and we may not always be successful at quickly obtaining relief from agencies tasked with enforcing parties' rights, or stopping such conduct before harm to third parties occurs. Similarly, misappropriation of our other intellectual property by third parties, or any disclosure or dissemination of our confidential and proprietary trade secrets, business intelligence, queries, algorithms and other similar information by any means, could undermine any competitive advantage we currently derive or may derive from that intellectual property. For example, our current or former employees, consultants or other third parties may unintentionally or willfully disclose our trade secrets, know-how or other confidential and proprietary information to competitors. Competitors have also attempted to use state and/or federal open records laws (such as the federal Freedom of Information Act and analogous state laws) to obtain our proposal responses and other documents we provide to our government customers. We cannot be certain that our efforts to protect the confidential and proprietary trade secret information or intellectual property in these proposals or other documents will always be successful, due to the many factors underlying the various state and federal decisions to release information in response to open records requests (even in spite of our objections and efforts to protect such information). In addition, there remains the possibility that others will independently develop competing technologies that may be equivalent or superior to ours. If our efforts to protect our intellectual property and other proprietary rights are inadequate to prevent unauthorized use or appropriation by third parties or our employees, the value of our brand and other intangible assets may be diminished and others may be able to more effectively compete with our business by offering solutions or concepts that are substantially similar to ours, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

In addition, third parties may claim that we are infringing upon or misappropriating their intellectual property, or assert other legal challenges to our intellectual property. Our exposure to risks related to the use of intellectual property may also increase as a result of acquisitions because third parties may make infringement and similar or related claims after we have acquired technology. Any of these situations could cause us to expend significant time and resources and to incur substantial costs associated with litigation or legal proceedings that may be necessary to defend ourselves or to enforce our intellectual property rights, in which we may not ultimately prevail, and could result in our being prevented from furnishing certain solutions and services.

Our business could be materially adversely affected if we fail to maintain a high level of customer retention, if our customers elect to reduce the scope of our contracts or terminate them before their scheduled expiration dates or if we fail to meet performance standards under our customer contracts.

We historically have derived and expect to continue to generate a significant portion of our revenue from a limited number of large customers at the federal and state level. Our contracts with these customers are subject to periodic renewal and some permit them to terminate their contracts on short notice, with or without cause. If a customer is dissatisfied with the quality of our work or if we fail to meet performance standards under our contracts, or if our solutions, technical infrastructure or services do not comply with the provisions of our contractual agreements or applicable regulatory requirements, customers might seek to reduce the scope of the services we perform or prematurely terminate their agreements with us, or we could incur additional costs that may impair the profitability of a contract and damage our ability to obtain additional work from that customer, or other current or prospective customers. For example, some of our contracts contain liquidated damages provisions and financial penalties related to performance failures, which if triggered, could materially adversely affect our reputation, business, financial condition, results of operations and cash flows. We also may be required to disclose such liquidated damages or other financial penalties assessed against us in connection with future bids for services with other customers.

In addition, government customers are subject to financial pressures or pressure from stakeholders that may cause them to terminate contracts for our services that may be regarded as non-essential or to redefine or reduce the scope of our contracts by, for example, significantly reducing the volume of data that we are permitted to audit or renewing the contract at lower performance fee levels. Despite our right to prompt and full payment under the terms of our contracts, we could face challenges in obtaining timely or full payments for our properly provided services from our customers. If there is a substantial reduction in the scope of our services under, or a termination of, any of our key contracts with our major customers, or if we are exposed to significant costs, liabilities or negative publicity, our ability to compete for new contracts with current or prospective customer could be damaged and our business, financial condition, reputation, results of operations and cash flows could be materially adversely affected.

We depend on many different entities to supply information and an inability to successfully manage our relationships with a number of these suppliers may harm the quality and availability of our solutions and services.

We obtain the data used in our solutions and services from many sources, including commercial health insurance plans, financial institutions, managed care organizations, government entities and non-government entities. From time to time, challenges arise in managing and maintaining our relationships with data sources that are not our customers and that furnish information to us pursuant to a combination of voluntary cooperation and legal obligations under laws and regulations that are often subject to differing interpretations. If a number of our information sources become unable or unwilling to provide us with certain data under terms and conditions of receipt, processing or use that are acceptable to us and our customers, or if laws and regulations for use and protection of this data changes in a way that disincentivizes our suppliers, or imposes unacceptable or unreasonable conditions, costs, or risks on us, we may not be able to obtain new or favorable agreements with alternative data suppliers. In addition, our ability to normalize and fully utilize the information we receive from various data sources to enhance and improve current services for our customers is an important component of our growth strategy. Although we believe that we have the legal and contractual rights necessary to normalize and use the data we have obtained from these sources for potential or contemplated solution and service offerings, we cannot provide assurance that these entities will permit the use of their data for these purposes. If we lose a number of our data sources or our access to their data, and fail to identify and reach the requisite agreements with suitable alternative suppliers or to successfully integrate their data into our solutions and services, or if there is a lack of accuracy or integrity in the data that current or future suppliers provide, we could experience service disruptions, increased costs, reduced quality of our solutions and services, or performance penalties under our customer contracts, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We may rely on subcontractors and other third party providers to provide customers with a single-source solution or service or we may serve as a subcontractor to a third party prime contractor. If these parties fail to satisfy their obligations to us or if we are unable to maintain these relationships, our business, financial condition, results of operations and cash flows could be materially adversely affected.

In some areas of our business we may engage subcontractors, teaming partners, vendors or other third party providers to provide our customers with a single-source solution for a broader range of service needs. These third parties include software vendors, utility and network providers, cloud service providers and other information technology service providers and solution partners. Our ability to deliver and implement solutions and serve our customers effectively depends on these third parties meeting our service standards in both timeliness and quality, and in certain instances, on our ability to obtain customer approval for the use of these third party subcontractors. While we believe that we perform appropriate due diligence on these third parties and take adequate measures to ensure that they comply with the appropriate laws and regulations, we cannot guarantee that they will comply with the terms set forth in their agreements with us. Performance deficiencies or misconduct by subcontractors, teaming partners, vendors or other third party providers may be perceived as inadequacies in our solutions or services or cause us to fail to fulfill our contractual obligations to our customers, which could materially adversely affect our customer relationships and reputation, result in termination of a customer contract, and subject us to a dispute with our customer. In addition, if our third party service providers terminate or refuse to renew their relationships with us or offer their products to us in the future on less advantageous terms, we may not be able to perform or deliver solutions or services for existing customers as expected.

Similarly, we are and may in the future be engaged as a subcontractor to a third party prime contractor. Subcontracting arrangements where we are not the prime contractor pose unique risks to us because we do not have control over the customer relationship, and our ability to generate revenue under such subcontracts is dependent on the prime contractor, its performance and relationship with the customer, and its relationship with us. We cannot be certain that the prime contractor will provide adequate and timely services to the customer, comply with the terms of its prime contract with the customer or its subcontract agreement with us, or that it will construe its contractual rights and obligations in a reasonable way, act appropriately in dealing with us or customers, and remain in compliance with the relevant laws, rules or regulations. Any failure of the prime contractor to adequately perform its obligations under the prime contract to comply with applicable laws, rules and regulations could materially adversely affect our reputation and subject us to a dispute with the prime contractor or the customer. In the event a prime contract is terminated, whether for non-performance by the prime contractor or otherwise, our subcontract will similarly terminate, and the resulting contract loss could materially adversely affect our business, financial condition, results of operations and cash flows.

We obtain a portion of our business through competitive bidding in response to government requests for proposals. Reprocurements and future contracts may not be awarded through this process on the same level or our contract awards may be challenged by interested parties which could materially adversely affect our business, financial condition, results of operations and cash flows.

In order to market our solutions and compete for contracts with existing and potential state and federal customers, we are often required to respond to government-issued RFPs. These responses typically require us to assemble and submit a large volume of information within a rigid timetable, and to accurately estimate our cost structure for servicing the proposed contract, the time required to establish operations and the likely terms of proposals submitted by our competitors. We may also be required to disclose the occurrence of certain negative events suffered by our business, such as customer disputes, a government inquiry or an adverse judgment or settlement in litigation or a legal proceeding, which could impair our ability to win the contract at issue or have a material adverse effect on our reputation in the industry.

Even if we win these contracts, we may fail to secure favorable contract terms and conditions, or a government's determination to award us the contract may be challenged by an interested party. Under the state and federal laws and regulations governing procurements of goods and services, challenges and award protests may be filed even if there are no valid legal grounds on which to base the protest. The filing of such challenges could potentially delay the start or implementation of the contract if the government agency determines to withhold a contract award or suspend contract performance while the protest is being considered, or to take corrective action on its own, such as soliciting new bids or terminating the contract award or current procurement. In the event of irregularities, we perceive or learn of in the award or bidding process, we also may be forced to file protests in response to RFP awards to other bidders. Resolution of a protest, even in our favor, could force us to expend considerable funds in disputing the potential award or to incur additional expenses to maintain our ability to timely start implementation, which may cause our actual results to differ materially and adversely from those anticipated. In addition, if we are unable to win reprocurements or protests of particular contracts, we may be precluded from entering certain customer markets for the term of the contract awarded to another party. Any failure to continue to obtain contracts in response to government RFPs, to design proposals that result in profitable contracts, to win new contracts or re-procure current contracts after they expire or to prevail in protests or challenges of contract awards could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Adverse judgments or settlements in legal proceedings could materially harm our business, financial condition, operating results and cash flows.

We are subject and may be a party to legal proceedings and claims that arise from time to time in the ordinary course of our business, which may include, but are not limited to, those related to, claims brought by our customers in connection with billing and contractual disputes, subcontracts and teaming agreements, protection of confidential information or trade secrets, claims relating to pending, terminated or completed acquisitions or dispositions, adversary proceedings arising from customer bankruptcies, employment of our workforce and immigration requirements or compliance with any of a wide array of state and federal statutes, rules and regulations that pertain to different aspects of our business. We may also be required to initiate expensive litigation or other proceedings to protect our business interests. There is a risk that we will not be successful or otherwise be able to satisfactorily resolve any pending or future litigation. In addition, litigation and other legal claims are subject to inherent uncertainties and management's view of currently pending legal matters may change in the future. Those uncertainties include, but are not limited to, litigation costs and attorneys' fees, unpredictable judicial or jury decisions and the differing laws and judicial proclivities regarding damage awards among the states in which we operate. Resolution may also require that HMS accept some amount of loss or liability in order to avoid customer abrasion, negative marketplace perceptions and other disadvantageous results. Unexpected outcomes in such legal proceedings, or changes in management's evaluation or predictions of the likely outcomes of such proceedings (possibly resulting in changes in established reserves), could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We may not be able to deliver our solutions and perform services efficiently if we are unable to attract and retain qualified employees.

Our successful delivery of solutions and services and ability to maintain our productivity and profitability is dependent on our ability to identify, recruit, employ, train and retain skilled personnel. The success of recruitment and retention strategies depend on a number of factors, including the competitive demands for employees having the skills we need and the level of compensation required to hire and retain such employees. Customers or competitors may seek to hire away qualified and seasoned employees, which could reduce our ability to innovate and operate effectively. We may not be able to recruit or maintain the personnel necessary to efficiently operate and support our business in the future, and even if our recruitment and retention strategies are successful, our labor costs may increase significantly. Our inability to hire sufficient personnel on a timely basis without significantly increasing our labor costs could materially adversely affect our business, financial condition, results of operations and cash flows.

Our future success depends, in part, on the continued service of members of our management team.

Our ability to execute on our business plans and future success requires that we attract, develop, motivate and retain experienced and innovative executive officers and senior leaders who have successfully managed, designed, implemented and led government services programs or information technology initiatives, or have relevant experience in other healthcare sectors, including data management and analytics. These individuals are in great demand and are likely to remain a limited resource in our industry. The loss of services of one or more members of our management team could adversely affect our business, financial condition, results of operations and cash flows. In addition, to the extent we lose an executive officer or senior leader, we may incur increased expenses in connection with the hiring, promotion or replacement of these individuals and the transition of leadership and critical knowledge.

Our outstanding indebtedness could materially adversely affect our financial condition and our ability to operate our business, and we may not be able to generate sufficient cash flows to meet our debt service obligations or capital requirements.

As of December 31, 2018, the outstanding principal balance under our Credit Agreement was \$240.0 million. Our Credit Agreement provides for a senior secured revolving credit facility in an aggregate principal amount equal to \$500 million and is secured, subject to certain customary carve-outs and exceptions, by a first priority lien and security interest in substantially all of our tangible and intangible assets. Our outstanding indebtedness and any additional indebtedness we incur may have important consequences for us, including, without limitation, that:

- we may be required to use a substantial portion of our cash flow to pay the principal of and interest on our indebtedness;
- our indebtedness and leverage may increase our vulnerability to adverse changes in general economic and industry conditions, as well as to competitive pressures;
- our indebtedness may expose us to the risk of increased interest rates because certain of our borrowings are and will be at variable interest rates;
- our ability to obtain additional financing for working capital, capital expenditures, acquisitions and for general corporate and other purposes may be limited;
- our indebtedness and leverage may prevent us from taking advantage of business opportunities as they arise or successfully carrying out our plans to expand our business; and
- our flexibility in planning for, or reacting to, changes in our business and our industry may be limited.

Under the Credit Agreement, we are also required to comply with specified financial and operating covenants, which may limit our ability to operate our business as we otherwise might operate it. The Credit Agreement also contains (i) certain affirmative covenants that impose certain reporting and/or performance obligations on us and our restricted subsidiaries, (ii) certain negative covenants that generally limit, subject to various exceptions, us and our restricted subsidiaries from taking certain actions, including, without limitation, incurring indebtedness, creating liens, engaging in mergers and consolidations, disposing of certain assets or property, making certain investments and acquisitions, entering into certain transactions with affiliates, swap agreements or sale-leasebacks, making certain restricted payments, including dividends and share repurchases, changing our fiscal year or the lines of business that we or our restricted subsidiaries conduct to a material extent, and prepaying certain junior indebtedness, (iii) financial covenants consisting of a maximum consolidated leverage ratio and a minimum interest coverage ratio, and (iv) customary events of default for financings of this type.

Our obligations under the Credit Agreement may be declared due and payable upon the occurrence and during the continuance of an event of default, which includes, without limitation: non-payment of principal or reimbursement obligation when due; non-payment of interest, fees and other amounts for a period of five business days after the due date; material inaccuracies of representations and warranties; failure to perform or observe covenants, conditions or agreements (subject to any applicable grace periods); cross-defaults to certain indebtedness; inability to pay debts; certain acts of bankruptcy or insolvency; certain ERISA events; failure to pay certain material judgments; and a change of control as defined in the Credit Agreement. If not cured, an event of default could result in any amounts outstanding, including any accrued interest and unpaid fees, becoming immediately due and payable, and would give our lenders the right to proceed against the collateral granted to them to secure the debt, which would require us to, among other things, seek additional financing in the debt or equity markets, refinance

or restructure all or a portion of our indebtedness, sell selected assets, and/or reduce or delay planned capital or operating expenditures. Such measures might not be sufficient to enable us to service our debt, and any such financing or refinancing might not be available on economically favorable terms or at all. Our ability to make payments of principal and interest on our outstanding credit facility depends upon our future performance and our ability to generate cash flows. If we are unable to generate sufficient cash flows to meet our debt service obligations or are forced to take additional measures to be able to service our indebtedness, our business, financial condition and results of operations could be materially and adversely affected.

Changes in, or interpretations of, tax rules and regulations may materially adversely affect our effective tax rates.

We are a United States-based company subject to various federal, state, U.S. Territory and local tax laws and regulations in multiple U.S. jurisdictions that govern numerous aspects of our business. As we expand our business, we may perform services for new customers located outside of the United States or in a U.S. Territory, which may subject us to foreign tax laws and regulations that could increase our exposure to additional tax liabilities. Our future effective tax rates could be materially affected by various factors, including changes in tax rates of jurisdictions in which we do business, changes in relevant tax and accounting rules, regulations and interpretations, increases in expenses not deductible for tax purposes, including impairments of goodwill, and changes in the valuation of our deferred tax assets and liabilities. For example, in December 2017, Congress enacted the 2017 Tax Act which, among other things, reduced the U.S. corporate tax rate, modified limitations on certain deductions for executive compensation, placed new limitations on interest deductions, repealed the Section 199 Deduction and certain capital investment deductions, and shifted U.S. taxation of multinational corporations from a tax on worldwide income to a territorial system. Any unanticipated changes in our tax rates could affect our future results of operations.

In addition, we are subject to the continual examination of our income tax returns by the IRS and other tax authorities. We regularly assess the likelihood of outcomes resulting from these examinations to determine the adequacy of our provision for income taxes and have reserved for potential adjustments that may result. The final determination of any of these examinations could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Our health insurance coverage and self-insurance reserves may not cover future claims, which could materially adversely affect our business, financial condition, results of operations and cash flows.

We maintain various insurance policies for company employee health, workers' compensation, general liability and property damage. We are self-insured for our health plans, and have purchased a fully-insured stop loss policy to help offset our liability for both individual and aggregate claim costs. We are also responsible for losses up to a certain limit for workers' compensation, general liability and property damage insurance.

For policies under which we are responsible for losses, we record a liability that represents our estimated cost of claims incurred and unpaid as of the balance sheet date. Our estimated liability is not discounted and is based on a number of assumptions and factors, including historical trends, actuarial assumptions and economic conditions, and is closely monitored and adjusted when warranted by changing circumstances. Our prior growth could affect the accuracy of estimates based on historical experience. Should a greater amount of claims occur compared to what was estimated or medical costs increase beyond what was expected, our accrued liabilities might not be sufficient and we may be required to record additional expense. Unanticipated changes may also produce materially different amounts of expense than reported under these programs, which could materially adversely affect our business, financial condition, results of operations and cash flows.

Risks Relating to Our Industry

Our business could be materially adversely affected by changes in the U.S. healthcare environment or in laws relating to healthcare programs and policies, particularly as they relate to the ACA and the Medicare and Medicaid programs.

The healthcare industry in which we operate is subject to changing political, economic and regulatory influences that directly affect the practices and operations of federal, state and commercial healthcare organizations in the United States. When the ACA was passed, its emphasis on program integrity, cost containment and expansion of Medicaid created new opportunities to grow our business and our service offerings. However, certain provisions of the ACA have yet to be implemented and there have been a number of judicial and legal challenges to certain aspects of the ACA. In February 2018, 20 states filed suit in the U.S. District Court for the Northern District of Texas alleging that the ACA is unconstitutional in light of the repeal of the penalties associated with the individual mandate. On December 14, 2018, the Court issued a ruling that the mandate was no longer permissible under Congress's taxing power and was thus unconstitutional. As such, the Court further found that the entire ACA is deemed to be invalid because the individual mandate is "essential" and inseparable from the ACA. Although, a stay and partial final judgment has been issued, ensuring that the ACA remains in full effect for the foreseeable future, we cannot predict the outcome of the litigation that has been filed relating to the constitutionality of the ACA. Additionally, since its adoption into law in 2010, there have been continued efforts by Congress to amend, repeal or replace all or part of the ACA. For example, under the 2017 Tax Act, the "individual mandate" introduced by the ACA was repealed effective January 1, 2019. Congress has introduced several other bills to delay, defund or repeal implementation or amend significant provisions of the ACA, though none of these other bills have passed the House and Senate. There have also been a number of proposed and adopted legislative initiatives and healthcare reform proposals from the federal and state governments. These include (i) measures that would fundamentally change the financial structure of the Medicaid program (currently funded jointly by the

states and the U.S. Federal Government), which could result in early termination, reduced scopes or non-renewal of our contracts with certain state government customers, and (ii) changes at the federal level that would reduce reimbursement rates to states, establish new payment models, further limit the Medicare RAC program, or otherwise change the operating environment for our customers and transform the government's involvement in healthcare. In addition to these legislative proposals, the President has taken several steps to limit the functionality of the ACA and advocate for its repeal and replacement since taking office. During 2017, the President signed two executive orders and other directives designed to waive, defer, grant exemptions from or delay the implementation of certain requirements mandated by the ACA.

Another variable that impacts our business will be how state programs, commercial health plans, private employers and other healthcare payers will respond to changes during this continued period of uncertainty surrounding the ACA. These organizations may react to such changed circumstances and financial pressures by taking actions to ramp up, curtail or defer their retention of cost containment providers like us, which could impact the demand for our solutions and services and our ability to increase or maintain sales of our existing solutions and services. While certain changes may present new opportunities to us, our business, financial condition, results of operations and cash flows could be materially adversely affected if we are unable to adapt our solutions and services to meet changing requirements or expand service delivery into new areas, or if the demand for our solutions and services is reduced as a result of future legislative changes affecting Medicare, Medicaid or other publicly funded or subsidized health programs, or efforts to waive, modify or otherwise change or invalidate the ACA. Although we will continue to evaluate the effect that the ACA and its possible invalidation or repeal and replacement may have on our business, it is difficult to predict the full impact and influence that the ACA and the varying healthcare reform measures may have on the U.S. healthcare industry or policy, and any resulting changes may take time to unfold.

Healthcare spending fluctuations, simplification of the healthcare payment process or other aspects of the healthcare financing system, budgetary pressures and/or programmatic changes diminishing the scope of program benefits, or limiting payment integrity initiatives, could reduce the need for and the price of our solutions and services, which would have a material adverse effect on our business, financial condition, results of operations and cash flows.

Our projections and expectations are premised, in part, upon consistent growth rates in the Medicare and Medicaid programs and government spending on these programs, and the impact on the current healthcare financing system overall and need for our solutions and services within that existing framework. Our continued success as a company is based in large part on offering solutions and services that improve the ability of our customers to identify and recover revenue that would otherwise be lost often as a result of procedural inefficiencies and complexities in the healthcare delivery and payment system. However, the need for our solutions and services, the price customers are willing to pay for them and the scope and profitability of our contracts could be negatively affected by a number of factors, including, but not limited to:

- a lower than projected growth in Medicare and Medicaid program enrollment and expenditures;
- changes in the level of federal government spending due to budgetary or deficit considerations, including the continuance of existing programs, as well as budgetary pressures that may drive changes at the state level;
- unanticipated reductions in the scope of healthcare program benefits (such as, for example, state decisions to eliminate coverage of optional Medicaid populations or services or shifting lives into managed care plans);
- the transition of healthcare beneficiaries from fee-for-service plans to value-based plans;
- modifications in provider billing behavior and habits, often in response to the success of our solutions and services or to changes that reduce healthcare spending;
- the adoption of healthcare plans with significantly higher deductibles;

- customer improvements and enhancements to their internal healthcare claims and billing processes;
- the simplification of the healthcare benefit and payment system through legislative or regulatory changes at the federal or state level (for example, legislative changes impacting the scope of mandatory audits, including limits on the look-back period for review in areas where we conduct audits);
- limits placed on ongoing program integrity initiatives, including the Medicare RAC program and state Medicaid RAC programs (for example, limitations or reductions in the amount of reviewable claims we audit, such as the modified ADR limits and sliding scale policy implemented by CMS for the current Medicare RAC contracts, which have a significant impact on the volumes of claims that Medicare RACs are permitted to review for inpatient providers and reduce their ability to identify overpayments and underpayments); and
- legislative healthcare reforms and developments, including the absence of near-term compliance deadlines effected by the ACA, the possible repeal or modification of the ACA, and other legislative actions to reduce program eligibility or services, or reform Medicaid spending.

The occurrence of any of these events, or other changes to the funding of the Medicare and Medicaid programs or limitations in the scope of program eligibility, benefits, initiatives and healthcare spending that materially reduce our revenue or profitability with such programs may have an adverse effect on our future business, financial condition, results of operations and cash flows.

A failure to comply with the laws and regulations that apply to companies in our industry regarding individual privacy and information security could subject us to legal actions, fines and penalties and negatively impact our reputation and operations.

As a cost containment service provider, we often receive, process, transmit and store sensitive data, including PHI and personally identifiable information of individuals, as well as other financial, confidential and proprietary information belonging to our customers, subcontractors, government agencies, data suppliers and other third parties from whom we obtain information. The use and disclosure of that information is regulated at the federal, state, international and industry levels. For example, we are subject to federal regulation under HIPAA, as amended by HITECH, and the Final Omnibus Privacy, Security, Breach Notification, and Enforcement Rule, as well as various state laws. HIPAA also imposes standards and requirements on our business associates (as defined under HIPAA). We are also obligated by our contractual requirements with customers, which may require that we comply with additional privacy regulations imposed upon certain types of customers, such as the federal Gramm-Leach-Bliley Act and other laws.

Even though we take measures to comply with all applicable regulations and to ensure our business associates and subcontractors comply with these laws, regulations and rules, we have less than complete control over our business associates' and subcontractors' actions and practices. We may be exposed to data breach risk if there is unauthorized access to one of our or our subcontractors' secure facilities, or to third-party enterprise cloud storage and cloud computing application services that we use, or from lost or stolen laptops or other portable media from current or former employee theft of data containing PHI, from computer hacking, malware, computer viruses or other malicious codes, phishing or other cyber-attacks, from misdirected mailings containing PHI, or other forms of administrative or operational error. If we or our subcontractors fail to comply with applicable laws; if unauthorized parties gain physical access to one of our facilities and steal or misuse confidential information; if we erroneously use or disclose data in a way that is inconsistent with our granted rights; or if such information is misdirected, lost or stolen during transmission or transport, we may suffer damage to our reputation, potential loss of existing customers and difficulty attracting new customers. We could also be exposed to, among other things, unfavorable publicity, governmental inquiry and oversight, allegations by our customers that we have not performed our contractual obligations, costs to provide notifications or remediation (such as credit monitoring) to affected individuals, fines or other penalties imposed by government regulatory agencies, or litigation by affected parties and possible financial obligations for damages or indemnification obligations related to the theft or misuse of such information, any of which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

In addition, laws, rules and regulations concerning the protection of personal information are subject to frequent change by legislation, regulatory issuances or administrative interpretation. As regulatory focus on privacy issues continues to increase and these laws and regulations continue to expand and become more complex, these potential risks to our business could intensify. Changes in laws or regulations associated with the enhanced protection of certain types of sensitive data, such as healthcare data or other personally identifiable information, along with increased customer demands for enhanced data security infrastructure, could greatly increase our cost of providing our solutions and services, and may subject us to additional liabilities.

We are subject to extensive government regulation, including government and customer audits and investigations relating to our compliance with the laws and regulations applicable to companies in our industry, and a negative finding or other adverse determination could have a material adverse effect on our reputation, business, financial condition, results of operations and cash flows.

A significant portion of our business is regulated by the federal government and the states in which we operate. The laws and regulations governing our operations are generally intended to benefit and protect individual citizens, including government program beneficiaries, health plan members and their dependents. The federal and state governmental agencies administering these laws and regulations have broad latitude to enforce them. As such, we are subject, on an ongoing basis, to various governmental and customer reviews, audits and investigations to verify our compliance with our contracts and applicable laws and regulations, as well as legal actions and enforcement proceedings. For example, because we receive payments from federal and state governmental agencies, we are subject to laws, such as the Federal Acquisition Regulations, the U.S. Foreign Corrupt Practices Act, federal and state employment, equal opportunity and affirmative action laws, federal and state prompt pay statutes, healthcare fraud, waste and abuse laws and similar legislation. We are also subject to the Federal False Claims Act and similar state statutes, which permit government law enforcement agencies to institute suits against us for violations and, in some cases, to seek double or treble damages, penalties and assessments. In addition, private citizens, acting as whistleblowers, can sue on behalf of the government under the “*qui tam*” provisions of the Federal False Claims Act and similar statutory provisions in many states.

As we expand into new areas of the healthcare industry, we may develop new or enhanced solutions that may further expose us to requirements under additional statutes and legislative schemes that have previously not been relevant to our business, such as the Fair Debt Collection Practices Act and other banking and credit reporting statutes. For example, in connection with our acquisition of Eliza, we became subject to the Telephone Consumer Protection Act of 1991, state and federal audio and telephone recording laws, and other consumer laws and regulations as a result of the member engagement services that we perform. Our increased involvement in population health services and penetration into new markets, such as ACOs, PBMs and commercial self-insured employers, could increase the likelihood and incidence of our being subjected to regulatory scrutiny or legal actions by third parties other than our customers, which may impose significant costs and strain on our resources.

These laws and regulations, along with the terms of our government contracts, regulate how we do business, what services we offer and how we interact with customers, providers, other healthcare payers and the public. If the government discovers improper or illegal activities in the course of audits or investigations, we may be subject to various civil and criminal penalties and administrative sanctions, which may include termination of contracts, forfeiture of profits, suspension of payments, fines and suspensions and debarment from doing business with the government. Similarly, if our customers assert that we have failed to properly perform or comply with our contractual obligations, or if the carriers to which we send billings assert that we have failed to properly comply with applicable federal or state billing rules and regulations, we may be required to provide refunds or make payments to resolve such issues. If we are found to be in violation of any applicable law or regulation, or if we receive an adverse review, audit or investigation from a government agency or customer related to our compliance with such laws or regulations or the terms of our government contracts, any resulting negative publicity, penalties or sanctions could have an adverse effect on our reputation in the industry, impair our ability to compete for new contracts or bid in response to RFPs in one or more jurisdictions, and have a material adverse effect on our business, financial condition, results of operations and cash flows.

Federal and state governments may limit or prohibit outsourcing of certain programs or functions, refuse to grant consents or waivers necessary to permit private entities to perform such work, or impose other limitations on outsourcing or certain vendors that may obstruct cost-effective performance of our contracts.

Federal or state governments could limit or prohibit private contractors like us from operating or performing elements of certain government functions or programs. As a condition of receiving federal funding, state, and local governments may be required to operate such programs with government employees. Under current law, in order to privatize certain functions of government programs, the federal government must grant a consent and/or waiver to the petitioning state or local agency. If the federal government does not grant a necessary consent or waiver, the state or local agency will be unable to outsource that function to a commercial entity. Such a situation could eliminate a contracting opportunity or reduce the value of an existing contract.

Similarly, other state or federal limitations on outsourcing certain types of work to vendors that supplement our workforce could make it more difficult for us to fulfill our contracts in a cost-effective manner. Certain areas of our operations use or involve vendor or subcontractor personnel located outside of the United States, who may (under carefully controlled circumstances) access certain PHI in the course of assisting us with various elements of the services we provide to our customers. The federal government and a number of states have considered laws or issued rules, regulations, and orders that would limit, restrict or wholly prohibit the use of offshore labor in performance of government contracts, or impose sanctions for the use of such resources. Some of our customers have already chosen to contractually limit or restrict our ability to use offshore resources. Intensified restrictions of this type or associated penalties could raise our costs of doing business, expose us to unexpected fines or penalties, increase the prices we must charge to customers to realize a profit and eliminate or significantly reduce the value of existing contracts or potential contract opportunities, any of which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We may be precluded from bidding on or performing certain work due to work we currently perform, which could materially adversely affect our business, financial condition, results of operations and cash flows.

Various laws, regulations and administrative policies prohibit companies from performing work for government agencies in capacities that might be viewed to create an actual or perceived conflict of interest. In particular, CMS has stringent conflict of interest rules, which can limit our bidding for specific work for CMS, or for other contracts that might conflict, or be perceived by CMS to conflict, with contractual work for CMS. State governments and managed care organizations also have conflict of interest restrictions that could limit our ability to bid for certain work and impede our overall sales strategy. As we continue to expand and diversify our business operations, the likelihood that customers or potential customers will perceive conflicts of interest between our various subsidiaries, solutions, services, activities and customer relationships may increase. Such conflicts, whether real or perceived, could result in a loss of contracts or additional internal structural barriers that delay operational efficiency. We may also need to divest certain existing businesses or reorganize our current management and personnel structure, as well as our corporate organization and entity structure, in order to qualify for new contract awards or to appropriately mitigate conflicts and otherwise accommodate the increasing complexity of our business. Our failure to devote sufficient care, attention and resources to managing these adjustments may result in technical or administrative errors that could expose us to potential liability or adverse regulatory action. In addition, conflict of interest rules and standards change frequently, and are subject to varying interpretations and varying degrees and consistency of enforcement. We may not be successful in navigating these restrictions. If we are prevented from expanding our business or are unable to effectively implement our strategic initiatives due to real or perceived conflicts of interest, our business, financial condition, results of operations and cash flows could be materially adversely affected.

Risks Related to Our Common Stock

The market price of our common stock may be volatile, and fluctuations in the price of our common stock may materially adversely affect our business, financial condition, results of operations and cash flows and materially adversely affect our shareholders.

The market price of our common stock has fluctuated widely and may continue to do so. During the 52-week period ended December 31, 2018, our common stock traded on the Nasdaq Global Select Market as high as \$37.38 per share and as low as \$15.06 per share. Our stock price is subject to fluctuation as a result of a variety of factors, including factors beyond our control, such as the risk factors described above and those which are related to:

- quarterly or annual earnings results or those of other companies in our industry;
- changes in estimates of our performance or recommendations by securities analysts or in the operating and stock price performance of other companies that investors deem comparable to our company;
- news reports relating to trends, concerns and other issues in the healthcare industry, including perceptions in the marketplace regarding us and our competitors;
- the financial projections we publicly provide and any changes in or failure to meet those projections;
- future sales of shares of common stock in the public market by our executive officers or directors;
- any changes in the number of our outstanding shares, including as a result of share repurchases;
- actual or proposed changes in federal or state laws affecting the healthcare industry;
- changes in accounting principles;
- the public's response to our press releases, or other public announcements, including our filings with the SEC;
- securities class actions, shareholder lawsuits or other litigation; and
- market conditions in the industry and the economy as a whole.

In addition, the stock market often experiences significant price and volume fluctuations. These broad market fluctuations may materially adversely affect the market price of our common stock regardless of our operating performance. When the market price of a company's stock drops significantly, shareholders may institute securities class action litigation against that company. Any litigation against us could cause us to incur substantial costs, divert the time and attention of our management and other resources or otherwise harm our business.

Because we do not intend to pay dividends, you will benefit from an investment in our common stock only if it appreciates in value.

We have not paid or declared cash dividends on any of our capital stock to date and currently intend to retain our future earnings, if any, to fund the development and continued growth of our business and repurchase shares opportunistically from time to time. As a result, we do not expect to pay any cash dividends in the foreseeable future. The success of your investment in our common stock will likely depend entirely upon any future appreciation. There is no guarantee that our common stock will appreciate in value or even maintain the price at which you purchased your shares.

Certain provisions of our certificate of incorporation and bylaws could discourage unsolicited takeover attempts, which could depress the market price of our common stock.

Our certificate of incorporation authorizes the issuance of up to 5,000,000 shares of "blank check" preferred stock with such designations, rights and preferences as may be determined by our Board of Directors. Accordingly, our Board of Directors is empowered, without shareholder approval, to issue preferred stock with dividend, liquidation, conversion, voting or other rights, that could adversely affect the voting power or other rights of holders of our common stock. In the event of issuance, preferred stock could be utilized, under certain circumstances, as a method of discouraging, delaying, or preventing a change in control. Although we have no present intention to issue any shares of preferred stock, it is possible that we will do so in the future. In addition, our bylaws currently require advance notice of shareholder proposals for business to be conducted at meetings of our shareholders and for nominations of candidates for election to our Board of Directors and provide for Delaware as an exclusive forum for certain disputes with our shareholders, all of which could also have the effect of discouraging a change of control.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

Our corporate headquarters and other material leased properties as of December 31, 2018 are shown in the following table:

Location	Approximate Square Footage	Owned/Leased
Irving, TX (corporate headquarters)	242,260	Owned
Las Vegas, NV (office space)	63,593	Leased
Danvers, MA (office space)	38,868	Leased
New York, NY (office space)	34,759	Leased
Westerville, OH (office space)	25,212	Leased
All other locations (23)	80,759	Leased

All other locations consist principally of office space and also include data centers, which are all located in the United States. The above locations have expiration dates through 2026. A portion of the above Las Vegas, NV and New York, NY office spaces are sub-leased. In general, we believe our facilities are suitable to meet our current and reasonably anticipated future needs. See "Lease Commitments" in Note 15 to the Consolidated Financial Statements in Part II, Item 8 for additional information.

Item 3. Legal Proceedings

The information set forth under the caption "Litigation" in Note 15 to the Consolidated Financial Statements in Part II, Item 8 is incorporated herein by reference.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Shareholder Matters and Issuer Purchases of Equity Securities

Market Information

Our common stock is listed on the Nasdaq Global Select Market under the symbol "HMSY".

Holders

As of the close of business on February 15, 2019, there were 252 holders of record of our common stock.

Dividends

We have not paid or declared any cash dividends on our common stock and do not anticipate paying cash dividends in the foreseeable future. Our current intention is to retain future earnings to support the continued growth of our business and possibly for the repurchase of shares from time to time. Our Board of Directors will evaluate various factors, including, without limitation, our future earnings, operating cash flows, financial condition, results of operations and capital requirements in determining whether to pay any cash dividends in the future. In addition, our Credit Agreement generally limits, subject to certain exceptions, our ability to make certain payments or distributions with respect to our capital stock, including cash dividends to our shareholders. These restrictions are described in more detail under the heading "Liquidity and Capital Resources" in Part II, Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations, and in Note 10 to the Consolidated Financial Statements in Part II, Item 8.

See Part III, Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Shareholder Matters for information relating to securities authorized for issuance under our equity compensation plans.

Repurchases of Shares of Common Stock

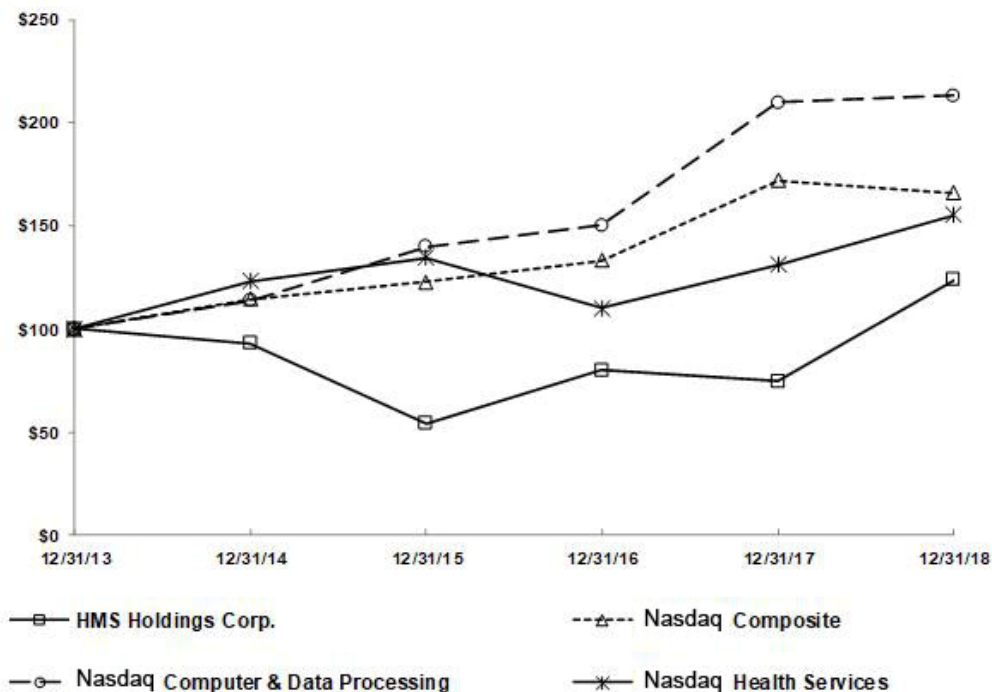
On November 1, 2017, the Board of Directors of the Company approved a share repurchase program authorizing the Company to repurchase up to \$50.0 million of shares of its common stock from time to time on the open market or in privately negotiated or other transactions. We publicly announced the program in November 2017. The repurchase program is authorized for a period of up to two years, and may be suspended or discontinued at any time. In order to facilitate repurchases, the Company may enter into a Rule 10b5-1 plan from time to time, which would permit shares to be repurchased when the Company might otherwise be precluded from doing so under insider trading laws or because of a self-imposed trading blackout period. All repurchases were made under the program and using cash resources. See "Equity" in Note 11 to the Consolidated Financial Statements in Part II, Item 8 for additional information regarding share repurchases. There were no repurchases of shares of common stock in the fourth quarter of 2018.

Period	Total Number of Shares Purchased	Average Price Paid Per Share	Total Number of Shares Purchased as Part of Publicly Announced Program	Maximum Approximate Dollar Value of Shares That May Yet Be Purchased Under the Program
October 1, 2018 to October 31, 2018	—	\$ —	—	\$ —
November 1, 2018 to November 30, 2018	—	—	—	—
December 1, 2018 to December 31, 2018	—	—	—	—
Total	—	\$ —	—	\$ 29,933,055

Comparative Stock Performance Graph

COMPARISON OF 5 YEAR CUMULATIVE TOTAL RETURN*

Among HMS Holdings Corp., the Nasdaq Composite Index,
the Nasdaq Computer & Data Processing Index and the Nasdaq Health Services Index



*\$100 invested on 12/31/13 in stock or index, including reinvestment of dividends.
Fiscal year ending December 31.

The graph below compares the cumulative total shareholder return on our common stock with the cumulative total shareholder returns of the Nasdaq Composite Index, the Nasdaq Computer & Data Processing Index and the Nasdaq Health Services Index assuming an investment of \$100 on December 31, 2013 and the reinvestment of dividends through the year ended December 31, 2018.

	12/31/13	12/31/14	12/31/15	12/31/16	12/31/17	12/31/18
HMS Holdings Corp.	\$ 100.00	\$ 93.13	\$ 54.36	\$ 80.00	\$ 74.67	\$ 123.92
NASDAQ Composite	100.00	114.62	122.81	133.19	172.11	165.84
NASDAQ Computer & Data Processing	100.00	113.68	140.03	150.12	209.72	212.97
NASDAQ Health Services	100.00	123.14	134.70	110.22	131.32	155.16

Notwithstanding anything to the contrary set forth in any of our previous or future filings under the Securities Act or the Exchange Act that might incorporate by reference this 2018 Form 10-K or future filings made by us under those statutes, the Comparative Stock Performance Graph is not deemed filed with the SEC, is not deemed soliciting material and shall not be deemed incorporated by reference into any of those prior filings or into any future filings we make under those statutes, except to the extent that we specifically incorporate such information by reference into a previous or future filing, or specifically request that such information be treated as soliciting material, in each case under those statutes.

Item 6. Selected Financial Data

The following table sets forth selected consolidated financial amounts at and for each of the five fiscal years in the period ended December 31, 2018. It should be read in conjunction with Part II, Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations, and the Consolidated Financial Statements and Notes thereto, in Part II, Item 8 of this 2018 Form 10-K.

Statement of Operations Data

<i>(in thousands, except per share amounts)</i>	Years ended December 31,				
	2018	2017	2016	2015	2014
Revenue	\$ 598,290	\$ 521,212	\$ 489,720	\$ 474,216	\$ 443,225
Total operating expenses	535,052	470,781	432,051	426,644	409,021
Operating income	63,238	50,431	57,669	47,572	34,204
Interest expense	(11,310)	(10,871)	(8,519)	(7,812)	(7,931)
Interest income	1,089	295	321	49	57
Income before income taxes	53,017	39,855	49,471	39,809	26,330
Income taxes	(1,972)	(199)	11,835	15,282	12,383
Net income	\$ 54,989	\$ 40,054	\$ 37,636	\$ 24,527	\$ 13,947

Net Income Per Common Share

Basic income per common share:					
Net income per common share - basic	\$ 0.66	\$ 0.48	\$ 0.45	\$ 0.28	\$ 0.16
Diluted income per common share:					
Net income per common share - diluted	\$ 0.64	\$ 0.47	\$ 0.43	\$ 0.28	\$ 0.16
Weighted average shares:					
Basic	83,625	83,821	84,221	87,881	87,673
Diluted	86,144	85,088	86,987	88,361	88,164

Balance Sheet Data

<i>(in thousands)</i>	Years ended December 31,				
	2018	2017	2016	2015	2014
Cash and cash equivalents	\$ 178,946	\$ 83,313	\$ 175,999	\$ 145,610	\$ 133,116
Working capital	\$ 328,684	\$ 199,967	\$ 277,478	\$ 240,456	\$ 226,271
Total assets	\$ 1,078,518	\$ 975,160	\$ 882,755	\$ 850,597	\$ 880,988
Revolving credit facility	\$ 240,000	\$ 240,000	\$ 197,796	\$ 197,796	\$ 197,796
Total shareholders' equity	\$ 713,396	\$ 606,229	\$ 556,610	\$ 524,702	\$ 533,090

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following Management's Discussion and Analysis is intended to help the reader understand the results of operations and financial condition of HMS. You should read this discussion and analysis in conjunction with the other sections of this 2018 Form 10-K, including the Cautionary Note Regarding Forward-Looking Statements appearing prior to Part I, the information in Part I, Item 1A, and the Consolidated Financial Statements and Notes thereto in Part II, Item 8. The historical results set forth in Part II, Item 6, Item 7 and Item 8 of this 2018 Form 10-K should not be taken as necessarily indicative of our future operations or financial results.

Business Overview

HMS provides a broad range of cost containment solutions to help healthcare payers and at-risk providers reduce costs, improve health outcomes and enhance member experiences. Using industry-leading technology, analytics and engagement solutions, we deliver coordination of benefits, payment integrity and total population management solutions through our operating subsidiaries to move the healthcare system forward for our customers. We are managed and operate as one business segment with a single management team that reports to the Chief Executive Officer.



We serve state Medicaid programs, commercial health plans, federal government health agencies, government and private employers, CHIPs and other healthcare payers. We also serve as a subcontractor for certain business outsourcing and technology firms. As of December 31, 2018, our customer base included the following:

- over 40 state Medicaid programs;
- more than 325 health plans, including 23 of the top 25 health plans nationally (based on membership) in support of their multiple lines of business, including Medicaid managed care, Medicare Advantage and group and individual health;
- over 150 private employers;
- CMS, the Centers for Disease Control and Prevention, and the Department of Veterans Affairs; and
- PBMs, third-party administrators and other risk-bearing entities, including independent practice associations, hospital systems, ACOs and specialty care organizations.

Outlook

We have grown our business both organically, through internal innovation and the development of new solutions and services, as well as by acquisition of businesses whose core services strengthened our overall mission to help our customers contain healthcare costs. Our largest growth during 2018 was with commercial health plan customers and we currently expect this market to present the greatest opportunity for continued growth in the year ahead. In addition to cross-sales of our total population management solutions and other internal growth initiatives in 2019, various factors related to the macro healthcare environment are expected to contribute to our expected growth, including:

- an aging U.S. population with high-cost, chronic conditions and often co-morbidities;
- projected growth in Medicare enrollment from 2018 to 2026 is estimated by CMS to be at 24%, with a projected increase in spending of 83% during this same time period;
- Medicaid expenditures are projected to grow 60% from 2018 to 2026 based on CMS NHE projections;
- government program payment error rates remain high at approximately 9%;
- more than half of the U.S. population is projected by CMS to remain covered by employer-sponsored plans;
- continued support for moving the focus of U.S. reimbursement models away from volume of service to quality outcomes; and
- increased healthcare industry focus on improved population health, enhanced consumer outcomes and experience, and reduced costs.

We plan to drive our future growth by leveraging our expertise to expand solution offerings, attracting new customers and broadening our relationships with current customers through the introduction of new services, audit strategies and claim types. Our goal is to develop and build on existing partnerships with our state, federal and commercial health plan customers to provide services that better address their business needs and promote consumer engagement and satisfaction in the constantly evolving healthcare marketplace. We also expect to continue increasing recovery yields from our current services by enhancing our operating and organizational efficiency and by implementing new technologies that will improve the quality, effectiveness and profitability of our service offerings.

We are subject to a number of significant risks in the operation of our business, including operational, strategic, financial and regulatory risks. These include risks related to legal compliance, financial performance and condition, protection of our information technology networks and systems and intellectual property, and other risks. With respect to cybersecurity, the effective operation of our information technology networks and systems, and the secure processing and maintenance of the confidential, proprietary and sensitive information and data we receive from our customers and other data suppliers are critical to our operations and business strategy. Although we have processes and procedures to attempt to mitigate many of the risks that we face, there can be no assurance that such processes or procedures will be successful. For a discussion of certain risks relating to the Company, see the information under the heading “Part I, Item 1A. Risk Factors.”

Critical Accounting Policies and Estimates

Our consolidated financial statements are prepared in accordance with U.S. GAAP. The preparation of these consolidated financial statements requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenue, costs and expenses, and related disclosures. We evaluate our estimates and assumptions on an ongoing basis. Our estimates are based on historical experience and various other assumptions that we believe to be reasonable under the circumstances. Our actual results could differ from these estimates. The accounting policies that we believe to be the most critical to an understanding of our financial condition and results of operations and that require the most complex and subjective management judgments are below:

Revenue Recognition

Description	Judgments and Uncertainties	Effect if Actual Results Differ from Assumptions
The Company recognizes revenue when our customers realize economic benefits from our services when our services are completed.	Due to the range of solutions and services that HMS provides and the differing fee structures associated with each type of contract, revenue may be recognized in irregular increments. A portion of our revenue is recorded net of an estimate of future revenue adjustments, with an offsetting entry to accounts receivable allowance, based on historical patterns of billing adjustments, length of operating and collection cycle and customer negotiations, behaviors and payment patterns. Changes in these estimates are recorded to revenue in the period of change.	If we were to enter any new contracts with differing fee structures or performance obligations or if we were to change any of the judgments or estimates related to estimated future revenue adjustments, it could cause a material increase or decrease in the amount of revenue we report in a particular period.

Estimated Liability for Appeals

Description	Judgments and Uncertainties	Effect if Actual Results Differ from Assumptions
<p>Under our contracts with certain commercial health plan customers and our Medicare RAC contracts with CMS, we recognize revenue when HMS claim findings are sent to the Company's customers for offset against future claim payments to providers. These contracts permit providers the right to appeal HMS claim findings and to pursue additional appeals if the initial appeal is found in favor of HMS's customer. The total estimated liability for appeals balance was \$21.7 million and \$30.8 million as of December 31, 2018 and December 31, 2017, respectively. The Company's original Medicare RAC contract with CMS expired on January 31, 2018.</p>	<p>The appeal process established under the Medicare RAC contract with CMS includes five levels of appeals and resolution of appeals can take substantial time to resolve. HMS records (i) a liability for findings which have been adjudicated in favor of providers and (ii) an estimated liability based on the amount of revenue that is subject to appeals and which is probable of being adjudicated in favor of providers following their successful appeal. Our estimated liability is based on the Company's historical experience.</p> <p>As a result of the original Medicare RAC contract expiration, the Company's contractual obligation with respect to any appeals resolved in favor of providers subsequent to the expiration date have ceased and therefore the Company released its estimated return obligation liability and increased revenue by \$8.4 million during the first quarter of 2018.</p>	<p>To the extent the amount to be returned to providers following a successful appeal exceeds or is less than the amount recorded, revenue in the applicable period would be reduced or increased by such amount. Any future changes to any of our customer contracts, including modifications to Medicare RAC contracts, may require us to apply different assumptions that could materially affect both the Company's revenue and estimated liability for appeals in future periods.</p>

Business Combinations

Description	Judgments and Uncertainties	Effect if Actual Results Differ from Assumptions
<p>We record assets acquired and liabilities assumed in a business combination based upon their acquisition date fair values. Goodwill is the excess of acquisition costs over the fair values of assets and liabilities of acquired businesses. During the measurement period, which is up to one year from the acquisition date, we may record adjustments to the assets acquired and liabilities assumed, with the corresponding offset to goodwill. Upon the conclusion of the measurement period, any subsequent adjustments are recorded to earnings.</p>	<p>In most instances there is not a readily defined or listed market price for individual assets and liabilities acquired in connection with a business, including intangible assets. We determine fair value through various valuation techniques including discounted cash flow models, quoted market values and third party independent appraisals, as considered necessary. Significant assumptions used in those techniques include, but are not limited to, growth rates, discount rates, customer attrition rates, expected levels of revenues, earnings, cash flows and tax rates.</p>	<p>The use of different valuation techniques and assumptions are highly subjective and inherently uncertain and, as a result, actual results may differ materially from estimates.</p>

Description	Judgments and Uncertainties	Effect if Actual Results Differ from Assumptions
<p>Goodwill is subject to a periodic assessment for impairment. We assess goodwill for impairment on an annual basis as of June 30th of each year or more frequently if an event occurs or changes in circumstances would more likely than not reduce the fair value of a reporting unit below its carrying amount. Assessment of goodwill impairment is at the HMS Holdings Corp. entity level as we operate as a single reporting unit. The Company's carrying amount of goodwill was \$487.6 million as of December 31, 2018.</p>	<p>We have the option to perform a qualitative or quantitative assessment to determine if impairment is more likely than not to have occurred. The Company completed the annual impairment test as of June 30, 2018 electing to perform the quantitative assessment of which the first step is to compare the fair value of the reporting unit with its carrying value, including goodwill.</p> <p>In calculating the fair value of the reporting unit, the Company utilized a weighting across three commonly accepted valuation approaches: an income approach, a guideline public company approach, and a merger and acquisition approach. The income approach to determining fair value computes projections of the cash flows that the reporting unit is expected to generate converted into a present value equivalent through discounting. Significant assumptions in the income approach include income projections, a discount rate and a terminal growth value which are all level 3 inputs. The income projections include assumptions for revenue and expense growth which are based on internally developed business plans and largely reflect recent historical revenue and expense trends. The discount rate was based on a risk free rate plus a beta adjusted equity risk premium and specific company risk premium. The terminal growth value is Company specific and was determined analyzing inputs such as historical inflation and the GDP growth rate. The guideline public company approach and merger and acquisition approach are based on pricing multiples observed for similar publicly traded companies or similar market companies that were sold.</p>	<p>The results of the annual impairment assessment provide that the fair value of the reporting unit was significantly in excess of the Company's carrying value, including goodwill; therefore, no impairment was indicated. If actual results are not consistent with our estimates or assumptions, the Company may be exposed to an impairment charge that could materially adversely impact our consolidated financial position and results of operations. There were no impairment charges related to goodwill during the years ended December 31, 2018, 2017, or 2016.</p>

Impairment of Long-Lived and Intangible Assets

Description	Judgments and Uncertainties	Effect if Actual Results Differ from Assumptions
<p>Long-lived assets, including property and equipment and intangible assets, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of the asset may not be recoverable. When indicators exist, recoverability of assets is measured by a comparison of the carrying value of the asset group to the estimated undiscounted future net cash flows expected to be generated by the asset. If such assets are considered to be impaired, the impairment to be recognized and charged to earnings is measured by the amount by which the carrying value of the asset group exceeds the fair value of the assets.</p>	<p>We use significant judgment in assessing events or changes in circumstances which indicate that the carrying amount of the asset may not be recoverable.</p>	<p>The Company's carrying amount of long-lived assets, including property and equipment and intangible assets was \$161.6 million as of December 31, 2018. The Company did not recognize any impairment charges related to long-lived and intangible assets during the years ended December 31, 2018, 2017 or 2016. However, if actual results are not consistent with our estimates or assumptions, we may be exposed to an impairment charge that could materially adversely impact our consolidated financial position and results of operations.</p>

Valuation of Stock-Based Compensation

Description	Judgments and Uncertainties	Effect if Actual Results Differ from Assumptions
<p>The determination of the fair value of the options on the grant date using the Black-Scholes pricing model and/or the Monte Carlo Simulation is affected by the Company's stock price, as well as assumptions regarding a number of complex and subjective variables. Certain key variables include: the Company's expected stock price volatility over the expected term of the awards; a risk-free interest rate; and any expected dividends. The fair value of all awards also includes an estimate of expected forfeitures.</p>	<p>We estimate stock price volatility based on the historical volatility of the Company's common stock and estimate the expected term of the awards based on the Company's historical option exercises for similar types of stock option awards. The assumed risk-free interest rate is based on the yield on the measurement date of a zero-coupon U.S. Treasury bond with a maturity period equal to the option's expected term. The Company does not anticipate paying any cash dividends in the foreseeable future and therefore, uses an expected dividend yield of zero in the option valuation models. Forfeitures are estimated based on historical experience.</p>	<p>If we were to change any of these judgments or estimates, it could cause a material increase or decrease in the amount of stock compensation expense we report in a particular period. For example, if actual forfeitures vary from estimates, a difference in compensation expense will be recognized in the period the actual forfeitures occur.</p>

Income Taxes

Description	Judgments and Uncertainties	Effect if Actual Results Differ from Assumptions
<p>Income taxes are accounted for under the asset and liability method. Under this method, deferred tax assets and liabilities are recognized for the future tax consequences attributable to temporary differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases. This method also requires the recognition of future tax benefits for net operating loss carry-forwards.</p>	<p>Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized as income or expense in the period that includes the enactment date. A valuation allowance is provided against deferred tax assets to the extent their realization is not more likely than not.</p> <p>Uncertain income tax positions are accounted for by prescribing a minimum recognition threshold that a tax position is required to meet before being recognized in the financial statements. We make adjustments to these reserves in accordance with the income tax accounting guidance when facts and circumstances change, such as the closing of a tax audit or the refinement of an estimate.</p>	<p>To the extent that the final tax outcome of these matters is different than the amounts recorded, such differences will affect the provision for income taxes in the period in which such determination is made, and could have a material impact on our financial condition and operating results.</p> <p>Although the Company believes that it has adequately reserved for uncertain tax positions (including interest and penalties), it can provide no assurance that the final tax outcome of these matters will not be materially different.</p>

Contingencies

Description	Judgments and Uncertainties	Effect if Actual Results Differ from Assumptions
<p>From time to time, we are involved in legal proceedings in the ordinary course of business. We assess the likelihood of any adverse judgments or outcomes to these contingencies as well as potential ranges or probable losses and establish reserves accordingly.</p>	<p>We record accruals for outstanding legal matters when we believe it is probable that a loss will be incurred and the amount can be reasonably estimated. Significant judgment is required to determine both probability and the estimated amount. We review these provisions at least quarterly and adjust the provisions to reflect the impact of negotiations, settlements, rulings, advice of legal counsel and updated information.</p>	<p>Litigation is inherently unpredictable and is subject to significant uncertainties, some of which are beyond the Company's control. The amount of reserves required may change in future periods due to new developments in each matter or changes in approach to a matter such as a change in settlement strategy which could have a material impact on our financial condition and operating results.</p>

For further information on these critical accounting policies and all other significant accounting policies refer to the discussion under "Business and Summary of Significant Accounting Policies" in our Note 1 to the Consolidated Financial Statements in Part II, Item 8.

Results of Operations

2018 Highlights

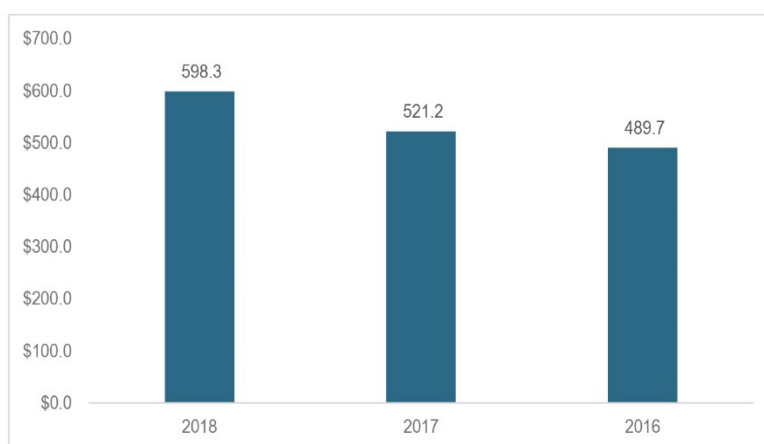
- Revenue growth of 14.8%
- Operating income growth of 25.4%
- Cash flow from operations of \$96.5 million
- Repurchased approximately 384,000 shares of common stock for \$6.0 million
- Net income growth of 37.2%

Comparison of 2018 to 2017 and 2017 to 2016

dollars in millions

	Year Ended December 31,			\$	%	\$	%
	2018	2017	2016	Change	Change	Change	Change
				2018 vs 2017		2017 vs 2016	
Revenue	\$ 598.3	\$ 521.2	\$ 489.7	\$ 77.1	14.8%	\$ 31.5	6.4%
Cost of Services :							
Compensation	224.9	202.0	189.3	22.9	11.3	12.7	6.7
Information technology	53.4	45.7	37.3	7.7	16.8	8.4	22.5
Occupancy	16.0	17.2	14.0	(1.2)	(7.0)	3.2	22.9
Direct project costs	42.9	41.4	46.3	1.5	3.6	(4.9)	(10.6)
Other operating costs	31.4	28.4	27.8	3.0	10.6	0.6	2.2
Amortization of acquisition related software and intangible assets	33.0	30.4	28.0	2.6	8.6	2.4	8.6
Total Cost of Services	401.6	365.1	342.7	36.5	10.0	22.4	6.5
Selling, general and administrative expenses	113.5	105.7	89.4	7.8	7.4	16.3	18.2
Settlement expense	20.0	-	-	20.0	100.0	-	-
Total Operating Expenses	535.1	470.8	432.1	64.3	13.7	38.7	9.0
Operating Income	63.2	50.4	57.6	12.8	25.4	(7.2)	(12.5)
Interest expense	(11.3)	(10.8)	(8.5)	(0.5)	4.6	(2.3)	27.2
Interest income	1.1	0.3	0.3	0.8	266.7	0.0	0.3
Income before income taxes	53.0	39.9	49.4	13.1	32.8	(9.5)	(19.2)
Income taxes	(2.0)	(0.2)	11.8	(1.8)	900.0	(12.0)	(101.7)
Net Income	\$ 55.0	\$ 40.1	\$ 37.6	\$ 14.9	37.2%	\$ 2.5	6.6%

Revenue



Revenue in Millions

2018 vs. 2017

During the year ended December 31, 2018, revenue was \$598.3 million, an increase of \$77.1 million or 14.8% compared to \$521.2 million for the year ended December 31, 2017.

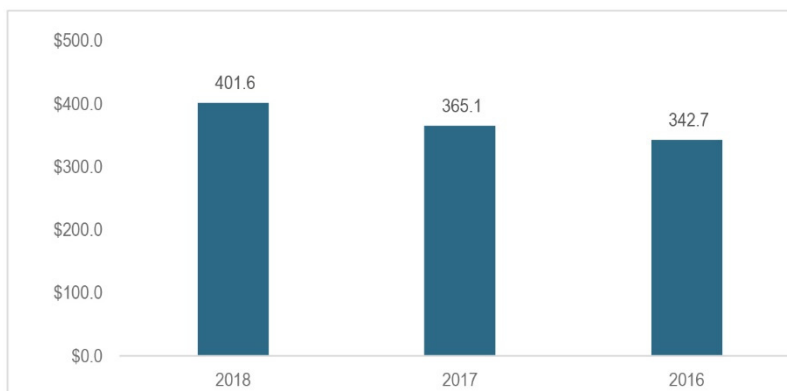
- By solution, which consists of coordination of benefits and analytical services, and included in analytical services are our payment integrity and total population management solutions:
 - Coordination of benefits product revenue increased \$14.4 million or 3.8% which was attributable to yield improvements and the addition of Medicaid enrollees which entered our customer eligibility files in 2018.
 - Payment integrity revenue increased \$39.7 million or 38.0% which was attributable to expanded commercial health plan scopes, including the addition of health plans to current contracts and yield improvements. Within payment integrity, Medicare RAC revenue increased \$17.8 million which includes an \$8.4 million reserve release during the first quarter of 2018 as compared to prior year.
 - Total population management revenue increased \$23.0 million or 67.4% of which \$21.4 million is due to Eliza (acquired in April 2017). Additionally, Essette revenue increased \$1.6 million as compared to prior year.
- By market:
 - Commercial health plan market revenue increased \$54.0 million or 20.1% which includes increases of \$21.4 million from Eliza (acquired in April 2017) as compared to the prior year and \$1.6 million from Essette as compared to prior year. The increases are due to expanded commercial health plan scopes, including the addition of health plans to current contracts and yield improvements.
 - State government market revenue increased \$6.9 million or 3.0%, which was attributable to expanded scopes and yield improvements.
 - Federal government market and other revenue increased \$16.2 million or 64.8% which includes an \$8.4 million Medicare RAC reserve release.

2017 vs. 2016

During the year ended December 31, 2017, revenue was \$521.2 million, an increase of \$31.5 million or 6.4% compared to \$489.7 million for the year ended December 31, 2016.

- By solution, which consists of coordination of benefits and analytical services, and included in analytical services are our payment integrity and total population management solutions:
 - Coordination of benefits service revenue increased \$29.0 million or 8.2% which was attributable to yield improvements and the addition of Medicaid enrollees which entered our customer eligibility files in 2017.
 - Payment integrity revenue decreased \$30.7 million or 22.8% which was attributable to a \$14.7 million decrease in Medicare RAC revenue because the Medicare RAC Region D program ceased generating revenue in late 2016, as expected, and a \$16.1 million decrease due to various contract completions and expirations.
 - Total population management revenue increased \$33.3 million or 3746.8% almost all of which is due to the Eliza acquisition in April 2017.
- By market:
 - Commercial health plan market revenue increased \$39.0 million or 17.0% which was attributable to Eliza contributing revenue of \$30.4 million since its acquisition in April 2017, Essette increasing revenue \$2.9 million as compared to prior year and expanded commercial health plan scopes, including the addition of health plans to current contracts and yield improvements.
 - State government market revenue increased by \$7.9 million or 3.6%, which was attributable to expanded scopes and yield improvements.
 - Federal government market and other revenue decreased \$15.4 million, which was primarily attributable to a reduction of Medicare RAC revenue because the Medicare RAC D Region D program ceased generating new claims for active auditing in 2016, as expected.

Cost of Services



Cost of Services in millions

2018 vs. 2017

During the year ended December 31, 2018, total cost of services was \$401.6 million, an increase of \$36.5 million or 10.0% compared to \$365.1 million for the year ended December 31, 2017. This change resulted primarily from increases in compensation expense of \$22.9 million, information technology expense of \$7.7 million, other operating costs of \$3.0 million and amortization of intangibles expense of \$2.6 million.

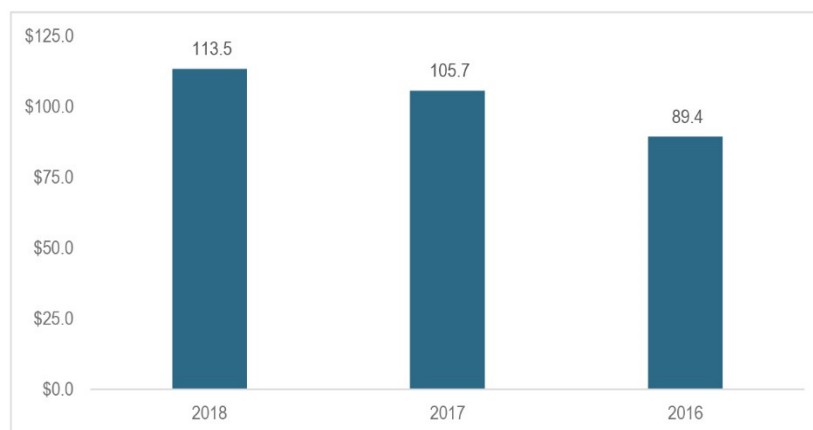
- The increase in total cost of services relating to Eliza (acquired in April 2017) represented \$14.4 million of the increase.
- Excluding Eliza, total cost of services increased by \$22.1 million which was primarily related to increases in compensation expenses of \$17.0 million related to the overall performance of the Company and information technology expenses of \$4.2 million.

2017 vs. 2016

During the year ended December 31, 2017, total cost of services was \$365.1 million, an increase of \$22.4 million or 6.5% compared to \$342.7 million for the year ended December 31, 2016. This change resulted primarily from increases in compensation expense of \$12.7 million, information technology expense of \$8.4 million, and amortization of intangibles expense of \$2.4 million.

- The Eliza acquisition and the related compensation, data processing, occupancy and amortization of intangibles expenses incurred since its acquisition in April 2017 represented \$23.4 million of the increase.
- Excluding Eliza, total cost of services decreased by \$1.0 million which was primarily related to a reduction in direct project costs partially offset by increases in data processing and compensation expenses.

Selling, General and Administrative Expenses



SG&A in millions

2018 vs. 2017

During the year ended December 31, 2018, SG&A expense was \$113.5 million, an increase of \$7.8 million or 7.4% compared to \$105.7 million for the year ended December 31, 2017.

- Eliza (acquired in April 2017) represented \$1.9 million of the increase.
- Excluding Eliza, expenses increased by \$5.9 million primarily related to increased variable compensation expense due to the overall performance of the Company.

2017 vs. 2016

During the year ended December 31, 2017, SG&A expense was \$105.7 million, an increase of \$16.3 million or 18.2% compared to \$89.4 million for the year ended December 31, 2016.

- The Eliza acquisition and related transaction fees and other SG&A expenses incurred since its acquisition in April 2017 represented \$8.7 million of the increase.
- Excluding Eliza, stock compensation expense also increased by \$7.3 million primarily due to stock compensation expense for retirement eligible employees.

Income Taxes

2018 vs. 2017

During the year ended December 31, 2018, we recorded an income tax benefit of (\$2.0) million, an increased benefit of \$1.8 million compared to an income tax benefit of (\$0.2) million for the year ended December 31, 2017.

- On December 22, 2017, the 2017 Tax Act was signed into law and includes provisions reducing the federal tax rate for years beginning in 2018 from 35% to 21%.
- Our effective tax rate was (3.7%) for the year ended December 31, 2018 compared to an effective tax rate of (0.5%) for the year ended December 31, 2017. The low 2018 effective tax rate is primarily due to favorable tax benefits related to current year credits, equity compensation, subsidiary basis write off, prior year state tax apportionment changes, uncertain tax position releases, and acquisition adjustments.
- Our normalized effective tax rate of 25.8% for 2018 decreased from our normalized effective tax rate of 36.1% for 2017 primarily due to a lower federal tax rate. The normalized effective tax rate excludes prior years' expense and benefit adjustments recognized in the respective fiscal year.

2017 vs. 2016

During the year ended December 31, 2017, we recorded an income tax benefit of (\$0.2) million, a decrease of \$12.0 million compared to the year ended December 31, 2016.

- Our effective tax rate was (0.5%) for the year ended December 31, 2017 compared to an effective tax rate of (23.9%) for the year ended December 31, 2016. The decrease is primarily due to the revaluation of our deferred tax liabilities based on the reduced federal tax rate described above.
- Our normalized effective tax rate of 36.1% for 2017 is comparable to our normalized effective tax rate of 36.2% for 2016. The normalized effective tax rate excludes prior years expense and benefit adjustments recognized in the respective fiscal year.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements.

Liquidity and Capital Resources

The following tables should be read in conjunction with the Consolidated Financial Statements and Notes thereto, in Part II, Item 8 of this 2018 Form 10-K.

Our cash and cash equivalents, working capital and available borrowings under our credit facility (based upon the borrowing base and financial covenants in our Credit Agreement) were as follows (*in thousands*):

	Years ended December 31,	
	2018	2017
Cash and cash equivalents	\$ 178,946	\$ 83,313
Working capital	\$ 328,684	\$ 199,967
Available borrowings under credit facility	\$ 253,500	\$ 254,600

A summary of our cash flows was as follows (*in thousands*):

	Years ended December 31,		
	2018	2017	2016
Net cash provided by operating activities	\$ 96,457	\$ 86,464	\$ 88,639
Net cash used in investing activities	(30,413)	(204,364)	(39,201)
Net cash provided by/(used in) financing activities	29,589	25,214	(19,049)
Net increase / (decrease) in cash and cash equivalents	\$ 95,633	\$ (92,686)	\$ 30,389

Our cash and cash equivalents and working capital increased as of December 31, 2018 as compared to December 31, 2017, primarily as a result of the cash generated by our operating activities as discussed below.

Our principal source of cash has been our cash flow from operations and our \$500 million five-year revolving credit facility. Other sources of cash include proceeds from exercise of stock options and tax benefits associated with stock option exercises. The primary uses of cash are capital investments, compensation expenses, data processing, direct project costs, SG&A expenses and acquisitions. We may also use available cash to repurchase shares of our common stock.

We believe that expected cash flows from operations, available cash and cash equivalents, and funds available under our revolving credit facility will be sufficient to meet our liquidity requirements for the following year, which include:

- the working capital requirements of our operations;
- investments in our business;
- business development activities;
- repurchases of common stock; and
- repayment of our revolving credit facility.

Any projections of future earnings and cash flows are subject to substantial uncertainty. We may need to access debt and equity markets in the future if unforeseen costs or opportunities arise, to meet working capital requirements, fund acquisitions or repay our indebtedness under the Credit Agreement. If we need to obtain new debt or equity financing in the future, the terms and availability of such financing may be impacted by economic and financial market conditions as well as our financial condition and results of operations at the time we seek additional financing.

Cash Flows from Operating Activities

Net cash provided by operating activities for the year ended December 31, 2018 was \$96.5 million, a \$10.0 million increase from net cash provided by operating activities of \$86.5 million for the year ended December 31, 2017. The increase was primarily due to a \$14.9 million increase in net income and increases in reconciling items of \$14.3 million as compared to prior year. These increases were offset by decreases in operating assets and liabilities of approximately \$19.2 million.

Net cash provided by operating activities for the year ended December 31, 2017 was \$86.5 million, a \$2.1 million decrease from net cash provided by operating activities of \$88.6 million for the year ended December 31, 2016. The decrease was primarily due to a decrease in deferred income taxes of \$13.0 million related to our revaluation of the Company's deferred tax balances from the federal tax rate of 35% to 21% under the 2017 Tax Act, offset by an increase in stock based compensation expense of \$10.9 million primarily related to retirement eligible employees. The decrease was also impacted by changes in operating assets and liabilities and offset by increases in net income, and depreciation and amortization expenses.

Our DSO calculation can be derived by dividing total net accounts receivable at the end of period, by the daily average of the current quarter's annualized revenue. For the year ended December 31, 2018, revenue was \$598.3 million, an increase of \$77.1 million compared to revenue of \$521.2 million for the year ended December 31, 2017. DSO increased by 4 days to 119 days as of December 31, 2018, as compared to 115 days as of December 31, 2017. The change was due to timing delays in certain clients processing our findings through their systems. We do not currently anticipate collection issues with our accounts receivable, however, nor do we currently expect that any extended collections will materially impact our liquidity.

The majority of our customer relationships have been in place for several years. Our future operating cash flows could be adversely affected by a decrease in a demand for our services, delayed payments from customers or if one or more contracts with our largest customers is terminated or not renewed.

Cash Flows from Investing Activities

Net cash used in investing activities for the year ended December 31, 2018 was \$30.4 million, a \$174.0 million decrease compared to net cash used in investing activities of \$204.4 million for the year ended December 31, 2017. This decrease was primarily due to the use of approximately \$171.3 million for the Eliza acquisition in April 2017. Purchases of property and equipment and investment in capitalized software also decreased by \$2.7 million year over year.

Net cash used in investing activities for the year ended December 31, 2017 was \$204.4 million, a \$165.2 million increase compared to net cash used in investing activities of \$39.2 million for the year ended December 31, 2016. This increase was primarily due to the use of approximately \$171.3 million for the Eliza acquisition in April 2017 as compared to the use of approximately \$20.7 million for the Essette acquisition in September 2016. Purchases of property and equipment and investment in capitalized software also increased by \$12.0 million year over year.

We currently expect to incur capital expenditures of \$35-\$40 million during the year ended December 31, 2019.

Cash Flows from Financing Activities

Net cash provided by financing activities for the year ended December 31, 2018 was \$29.6 million, a \$4.4 million increase from net cash provided by financing activities of \$25.2 million for the year ended December 31, 2017. This increase was primarily attributable to an increase of \$36.0 million of proceeds from exercise of stock options over prior year and an \$8.2 million decrease in repurchases of common stock as compared to prior year. Additionally, there was a \$39.8 million decrease in proceeds from our credit facility net of deferred financing cost payments.

Net cash provided by financing activities for the year ended December 31, 2017 was \$25.2 million, a \$44.2 million increase from net cash used in financing activities of \$19.0 million for the year ended December 31, 2016. This increase was primarily attributable to \$42.2 million of proceeds from additional borrowings under our amended credit facility.

Share Repurchase Program

During the year ended December 31, 2018, we repurchased 0.4 million shares of our common stock for approximately \$6.0 million using cash resources. See the discussion under “Repurchases of Shares of Common Stock” under Part II, Item 5 and “Equity” in Note 11 to the Consolidated Financial Statements under Part II, Item 8 for additional information regarding share repurchases.

Credit Agreement

In May 2013, we entered into the Credit Agreement with certain lenders and Citibank, N.A. as administrative agent. The Credit Agreement originally provided for an initial \$500 million five-year revolving credit facility maturing on May 3, 2018. On December 19, 2017, we entered into an amendment to the Credit Agreement that, among other things, provided for an extension of the maturity date of our then-existing senior secured revolving credit facility to December 19, 2022, which includes a \$50 million sublimit for the issuance of letters of credit and a \$25 million sublimit for swingline loans. In addition, the Credit Agreement includes an accordion feature that permits us to increase the revolving credit facility up to the sum of (a) the greater of \$120 million and 100% of Consolidated EBITDA (as defined in the Credit Agreement) and (b) additional amounts so long as our first lien leverage ratio (as defined in the Credit Agreement) on a pro forma basis is not greater than 3.00:1.00, in each case subject to obtaining commitments from lenders therefor and meeting certain other conditions.

The obligations and amounts due under the Credit Agreement are secured by a first security priority interest in all or substantially all of our tangible and intangible assets and our material 100% owned subsidiaries' assets. The Credit Agreement contains customary representations and warranties, affirmative and negative covenants, including financial covenants, and events of default.

As of December 31, 2018, the outstanding principal balance under our revolving credit facility was \$240.0 million.

As part of a contractual agreement with a customer, the Company has an outstanding irrevocable letter of credit for \$6.5 million, which is issued against our revolving credit facility and expires June 30, 2019.

As of December 31, 2018, we were in compliance with all terms of the Credit Agreement.

See Note 10 to the Consolidated Financial Statements in Part II, Item 8 for additional information regarding our Credit Agreement.

Contractual Obligations

The following table represents the scheduled maturities of our contractual cash obligations and other commitments:

Contractual Obligations ⁽¹⁾	Payments Due by Period <i>(in thousands)</i>				
	Total	Less than 1 year	1 - 3 years	3 - 5 years	More than 5 years
Operating leases ⁽²⁾	\$ 22,654	\$ 5,778	\$ 9,162	\$ 4,767	\$ 2,947
Revolving credit facility ⁽³⁾	240,000	-	-	240,000	-
Interest expense ⁽⁴⁾	41,687	10,494	21,016	10,177	-
Commitment fee ⁽⁵⁾	2,610	651	1,320	639	-
Capital leases ⁽⁶⁾	8	8	-	-	-
Letter of Credit fee ⁽⁷⁾	49	49	-	-	-
Purchase obligations and commitments ⁽⁸⁾	26,966	10,180	13,970	2,816	-
Total	\$ 333,974	\$ 27,160	\$ 45,468	\$ 258,399	\$ 2,947

- (1) The Company has excluded long-term unrecognized tax benefits, net of interest and penalties, of \$4.8 million from the amounts presented as the timing of these obligations is uncertain.
- (2) Represents the future minimum lease payments under non-cancelable operating leases.
- (3) Represents scheduled repayments of principal on the revolving credit facility under the terms of our Credit Agreement. See Note 10 to the Consolidated Financial Statements in Part II, Item 8 for additional information regarding the Credit Agreement.
- (4) Represents estimates of amounts due on the revolving credit facility based on the interest rate as of December 31, 2018 and on scheduled repayments of principal. See Note 10 to the Consolidated Financial Statements in Part II, Item 8 for additional information regarding the Credit Agreement.
- (5) Represents the commitment fee due on the revolving credit facility. See Note 10 to the Consolidated Financial Statements in Part II, Item 8 for additional information regarding the Credit Agreement.
- (6) Represents the future minimum lease payments under capital leases.
- (7) Represents the fees for the letter of credit issued against the revolving credit facility. See Note 10 to the Consolidated Financial Statements in Part II, Item 8 for additional information regarding the Credit Agreement.
- (8) Represents future purchases related to outstanding purchase orders and supplier requisitions.

Recently Issued Accounting Pronouncements

The information set forth under the caption "Summary of Significant Accounting Policies" in Note 1 to the Consolidated Financial Statements in Part II, Item 8 is incorporated herein by reference.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

At December 31, 2018, we were not a party to any derivative financial instruments. We conduct all of our business in U.S. currency and hence do not have direct foreign currency risk. We are exposed to changes in interest rates, primarily with respect to our revolving credit facility under our Credit Agreement. If the effective interest rate for all of our variable rate debt were to increase by 100 basis points (1%), our annual interest expense would increase by a maximum of \$2.4 million based on our debt balances outstanding at December 31, 2018. Further, we currently invest substantially all of our excess cash in short-term investments, primarily money market accounts, where returns effectively reflect current interest rates. As a result, market interest rate changes may impact our interest income or expense. The impact will depend on variables such as the magnitude of rate changes and the level of borrowings or excess cash balances. We do not consider this risk to be material. We manage such risk by continuing to evaluate the best investment rates available for short-term, high quality investments.

Item 8. Consolidated Financial Statements and Supplementary Data

The information required by Item 8 is found under Item 15 of this 2018 Form 10-K.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

(a) Evaluation of Disclosure Controls and Procedures

We are responsible for maintaining disclosure controls and procedures (as defined in Rule 13a-15(e) under the Exchange Act) that are designed to ensure that information required to be disclosed in our reports filed under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow for timely decisions regarding required disclosure. In designing and evaluating the disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives, and management is required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

As required by Rule 13a-15(b) under the Exchange Act, management, with the participation of our Chief Executive Officer and Chief Financial Officer, performed an evaluation of the effectiveness of our disclosure controls and procedures as of December 31, 2018. Based on that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were effective as of the end of the period covered by the 2018 Form 10-K.

(b) Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting and for the assessment of the effectiveness of internal control over financial reporting. As defined by Rule 13a-15(f) under the Exchange Act, internal control over financial reporting is a process designed by, or under the supervision of our Chief Executive Officer and our Chief Financial Officer and effected by our Board of Directors, management and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of the consolidated financial statements for external purposes in accordance with U.S. GAAP.

Our internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect our transactions and dispositions of our assets; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of the consolidated financial statements in accordance with generally accepted accounting principles and that our receipts and expenditures are being made only in accordance with authorizations of our management and directors; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on the consolidated financial statements.

In connection with the preparation of our annual consolidated financial statements, management has undertaken an assessment of the effectiveness of our internal control over financial reporting as of December 31, 2018, based on criteria established in the Internal Control-Integrated Framework issued by COSO. Management's assessment included an evaluation of the design of our internal control over financial reporting and testing of the operational effectiveness of those controls. Based on that assessment, we believe that the Company's internal control over financial reporting was effective based on those criteria as of December 31, 2018.

Our independent registered public accounting firm, Grant Thornton LLP, audited our consolidated financial statements and has issued an attestation report on the effectiveness of our internal control over financial reporting as of December 31, 2018, a copy of which is included with this 2018 Form 10-K.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

(c) Changes in Internal Control Over Financial Reporting

There have been no changes to the Company's internal control over financial reporting during the quarter ended December 31, 2018 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

The information required by this Item 10 is incorporated herein by reference to the applicable disclosure found in our definitive proxy statement to be filed with the SEC pursuant to Regulation 14A under the Exchange Act in connection with HMS Holdings Corp.'s 2019 Annual Meeting of Shareholders under the captions "Proposal One: Election of Class II Directors," "Executive Officers," "Section 16(a) Beneficial Ownership Reporting Compliance," "Director Nomination Process," "Additional Information—Shareholder Proposals and Director Nominations for 2020 Annual Meeting," and "Board Committees and Related Matters."

Our Board of Directors has adopted a Code of Conduct applicable to all of our directors, officers and employees, including all employees, officers, directors, contractors, contingent workers and business affiliates of HMS subsidiaries. The Code of Conduct is publicly available on our website under the "Investors—Corporate Governance" tab at <http://investor.hms.com/corporate-governance.cfm> and can also be obtained free of charge by sending a written request to our Corporate Secretary. To the extent permissible under the Nasdaq Marketplace Rules, we intend to disclose amendments to our Code of Conduct, as well as waivers of the provisions thereof, that relate to our principal executive officer, principal financial officer, principal accounting officer, controller or persons performing similar functions on the Company's website under the "Investors—Corporate Governance" tab at <http://investor.hms.com/corporate-governance.cfm>.

Item 11. Executive Compensation

The information required by this Item 11 is incorporated herein by reference to the applicable disclosure found in our definitive proxy statement to be filed with the SEC pursuant to Regulation 14A under the Exchange Act in connection with HMS Holdings Corp.'s 2019 Annual Meeting of Shareholders under the captions "Executive Compensation," "Director Compensation," and "Compensation Committee Interlocks and Insider Participation."

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Shareholder Matters

Except as provided below, the information required by this Item 12 is incorporated herein by reference to the applicable disclosure found in our definitive proxy statement to be filed with the SEC pursuant to Regulation 14A under the Exchange Act in connection with HMS Holdings Corp.'s 2019 Annual Meeting of Shareholders under the caption "Ownership of HMS Common Stock."

Equity Compensation Plan Information

The following table summarizes information about our equity compensation plans as of December 31, 2018. For additional information about our equity compensation plans see the discussion set forth under the caption "Stock-Based Compensation" in Note 13 to the Consolidated Financial Statements in Part II, Item 8.

Plan Category	Number of securities to be issued upon exercise of outstanding options, warrants and rights	Weighted-average exercise price of outstanding options, warrants and rights	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a))
	(a)	(b)	(c)
Equity compensation plans approved by shareholders	5,825,734 ⁽¹⁾	\$ 17.07	4,758,398
Equity compensation plans not approved by shareholders	19,004 ⁽²⁾	\$ 12.00	—
Total	5,844,738		

(1) This includes stock options and restricted stock units granted under our 2006 Stock Plan and 2016 Omnibus Plan.

(2) This includes stock options granted under the 2011 HDI Plan, which was assumed in connection with our acquisition of HDI and approved by the Compensation Committee of our Board.

Item 13. Certain Relationships and Related Transactions and Director Independence

The information required by this Item 13 is incorporated herein by reference to the applicable disclosure found in our definitive proxy statement to be filed with the SEC pursuant to Regulation 14A under the Exchange Act in connection with HMS Holdings Corp.'s 2019 Annual Meeting of Shareholders under the captions "*Certain Relationships and Related Transactions*" and "*Director Independence*."

Item 14. Principal Accounting Fees and Services

The information required by this Item 14 is incorporated herein by reference to the applicable disclosure from the proposal captioned "*Ratification of the Selection of Independent Registered Public Accounting Firm*" found in our definitive proxy statement to be filed with the SEC pursuant to Regulation 14A under the Exchange Act in connection with HMS Holdings Corp.'s 2019 Annual Meeting of Shareholders.

PART IV

Item 15. Exhibits and Financial Statement Schedules

1. *Financial Statements.*

The financial statements are listed in the Index to Consolidated Financial Statements on page 52.

2. *Financial Statement Schedules.*

Financial Statement Schedule II-Valuation and Qualifying Accounts is set forth on page 82. All other financial statement schedules have been omitted as they are either not required, not applicable or the information is otherwise included.

3. *Exhibits.*

The Exhibits include agreements to which the Company is a party or has a beneficial interest. The agreements have been filed to provide investors with information regarding their respective terms. The agreements are not intended to provide any other actual information about the Company or its business or operations. In particular, the assertions embodied in any representations, warranties, and covenants contained in the agreements may be subject to qualifications with respect to knowledge and materiality different from those applicable to investors and may be qualified by information in confidential disclosure schedules not included with the exhibits. These disclosure schedules may contain information that modifies, qualifies and creates exceptions to the representations, warranties and covenants set forth in the agreements. Moreover, certain representations, warranties, and covenants in the agreements may have been used for the purpose of allocating risk between parties, rather than establishing matters as facts. In addition, information concerning the subject matter of the representations, warranties and covenants may have changed after the date of the respective agreement, which subsequent information may or may not be fully reflected in the Company's public disclosures. Accordingly, investors should not rely on the representations, warranties and covenants in the agreements as characterizations of the actual state of facts about the Company or its business or operations on the date hereof.

Where an exhibit is filed by incorporation by reference to a previously filed registration statement or report, such registration statement or report is identified after the description of the exhibit.

Exhibit Number	Description
2.1	Agreement and Plan of Merger, dated December 16, 2002, among Health Management Systems, Inc., HMS Holdings Corp. and HMS Acquisition Corp. (incorporated by reference to Exhibit A to the Company's Prospectus and Proxy Statement (Reg No. 333-100521) as filed with the SEC on January 24, 2003)
2.2	Agreement and Plan of Merger, dated July 17, 2013, by and between HMS Holdings Corp., a Delaware corporation, and HMS Holdings Corp., a New York corporation (incorporated by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K/12g-3 (File No. 000-50194) as filed with the SEC on July 23, 2013)
2.3	Agreement and Plan of Merger, dated March 10, 2017, by and among HMS Holdings Corp., Echo Acquisition Sub, Inc., Eliza Holding Corp., and Parthenon Investors III, L.P., solely in its capacity as the representative for equity holders of Eliza Holding Corp. (incorporated by reference to Exhibit 2.1 to the Company's Quarterly Report on Form 10-Q (File No. 000-50194) as filed with the SEC on June 6, 2017)
3.1	Conformed copy of Certificate of Incorporation of HMS Holdings Corp., as amended through May 23, 2018 (incorporated by reference to Exhibit 3.1 to the Company's Quarterly Report on Form 10-Q (File No. 000-50194) as filed with the SEC on August 6, 2018)

Exhibit Number	Description
3.2	Second Amended and Restated Bylaws of HMS Holdings Corp. dated May 23, 2018 (incorporated by reference to Exhibit 3.2 to the Company's Current Report on Form 8-K (File No. 000-50194) as filed with the SEC on May 25, 2018)
4.1	Specimen Common Stock Certificate (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K/12g-3 (File No. 000-50194) as filed with the SEC on July 23, 2013)
10.1.1	HMS Holdings Corp. Fourth Amended and Restated 2006 Stock Plan (incorporated by reference to Exhibit 99.2 to the Company's Current Report on Form 8-K (File No. 000-50194) as filed with the SEC on July 12, 2011)†
10.1.2	Amendment No. 1 to the HMS Holdings Corp. Fourth Amended and Restated 2006 Stock Plan (incorporated by reference to Exhibit 10.6 to the Company's Annual Report on Form 10-K (File No. 000-50194) as filed with the SEC on February 29, 2012)†
10.1.3	Form of 2012 Director Non-Qualified Stock Option Agreement under the 2006 Stock Plan (incorporated by reference to Exhibit 10.20 to the Company's Annual Report on Form 10-K (File No. 000-50194) as filed with the SEC on March 1, 2013)†
10.1.4	Form of 2012 Executive Non-Qualified Stock Option Agreement under the 2006 Stock Plan (incorporated by reference to Exhibit 10.22 to the Company's Annual Report on Form 10-K (File No. 000-50194) as filed with the SEC on March 1, 2013)†
10.1.5	Form of 2013 Executive Restricted Stock Unit Agreement under the 2006 Stock Plan (incorporated by reference to Exhibit 10.24 to the Company's Annual Report on Form 10-K (File No. 000-50194) as filed with the SEC on March 1, 2013)†
10.1.6	Form of 2013 Director Non-Qualified Stock Option Agreement under the 2006 Stock Plan (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q (File No. 000-50194) as filed with the SEC on May 12, 2014)†
10.1.7	Form of 2013 Executive Non-Qualified Stock Option Agreement under the 2006 Stock Plan (incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q (File No. 000-50194) as filed with the SEC on May 12, 2014)†
10.1.8	Form of March 2014 Executive Restricted Stock Unit Agreement under the 2006 Stock Plan (incorporated by reference to Exhibit 10.4 to the Company's Quarterly Report on Form 10-Q (File No. 000-50194) as filed with the SEC on May 12, 2014)†
10.1.9	Form of November 2014 Executive Restricted Stock Unit Agreement under the 2006 Stock Plan (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q (File No. 000-50194) as filed with the SEC on November 10, 2014)†
10.1.10	Form of 2014 Director Non-Qualified Stock Option Agreement under the 2006 Stock Plan (incorporated by reference to Exhibit 10.26 to the Company's Annual Report on Form 10-K (File No. 000-50194) as filed with the SEC on March 2, 2015)†
10.1.11	Form of 2014 Executive Non-Qualified Stock Option Agreement under the 2006 Stock Plan (incorporated by reference to Exhibit 10.28 to the Company's Annual Report on Form 10-K (File No. 000-50194) as filed with the SEC on March 2, 2015)†
10.1.12	Form of March 2015 Executive Non-Qualified Stock Option Agreement under the 2006 Stock Plan (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q (File No. 000-50194) as filed with the SEC on May 11, 2015)†
10.1.13	Form of March 2015 Executive Restricted Stock Unit Agreement under the 2006 Stock Plan (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q (File No. 000-50194) as filed with the SEC on May 11, 2015)†

Exhibit Number	Description
10.1.14	Form of 2015 Director Non-Qualified Stock Option Agreement under the 2006 Stock Plan (incorporated by reference to Exhibit 10.21 to the Company's Annual Report on Form 10-K (File No. 000-50194) as filed with the SEC on February 29, 2016)†
10.1.15	Form of 2015 Director Restricted Stock Unit Agreement under the 2006 Stock Plan (incorporated by reference to Exhibit 10.22 to the Company's Annual Report on Form 10-K (File No. 000-50194) as filed with the SEC on February 29, 2016)†
10.1.16	Form of November 2015 Executive Non-Qualified Stock Option Agreement under the 2006 Stock Plan (incorporated by reference to Exhibit 10.23 to the Company's Annual Report on Form 10-K (File No. 000-50194) as filed with the SEC on February 29, 2016)†
10.1.17	Form of 2016 Executive and Senior Vice President Non-Qualified Stock Option Agreement under the 2006 Stock Plan (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q (File No. 000-50194) as filed with the SEC on May 10, 2016)†
10.1.18	Form of 2016 Executive and Senior Vice President Restricted Stock Unit Agreement under the 2006 Stock Plan (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q (File No. 000-50194) as filed with the SEC on May 10, 2016)†
10.2.1	HMS Holdings Corp. 2016 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K (File No. 000-50194) as filed with the SEC on June 27, 2016)†
10.2.2	Form of Non-Qualified Stock Option Award Agreement for Employees under the 2016 Omnibus Plan (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q (File No. 000-50194) as filed with the SEC on November 9, 2016)†
10.2.3	Form of Restricted Stock Unit Award Agreement for Employees under the 2016 Omnibus Plan (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q (File No. 000-50194) as filed with the SEC on November 9, 2016)†
10.2.4	Form of Non-Qualified Stock Option Award Agreement for Non-Employee Directors under the 2016 Omnibus Plan (incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q (File No. 000-50194) as filed with the SEC on November 9, 2016)†
10.2.5	Form of Restricted Stock Unit Award Agreement for Non-Employee Directors under the 2016 Omnibus Plan (incorporated by reference to Exhibit 10.4 to the Company's Quarterly Report on Form 10-Q (File No. 000-50194) as filed with the SEC on November 9, 2016)†
10.3.1	Executive Employment Agreement, dated March 1, 2013, by and between William C. Lucia and HMS Holdings Corp. (incorporated by reference to Exhibit 10.29 to the Company's Annual Report on Form 10-K (File No. 000-50194) as filed with the SEC on March 1, 2013)†
10.3.2	Letter of Amendment to Executive Employment Agreement, dated April 30, 2013, by and between William C. Lucia and HMS Holdings Corp. (incorporated by reference to Exhibit 10.1 to Amendment No. 1 to the Company's Annual Report on Form 10-K/A (File No. 000-50194) as filed with the SEC on April 30, 2013)†

Exhibit Number	Description
10.3.3	Second Amendment to Executive Employment Agreement, dated January 20, 2015, by and between HMS Holdings Corp. and William C. Lucia (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K (File No. 000-50194) as filed with the SEC on January 23, 2015)†
10.3.4	Third Amendment to Executive Employment Agreement, dated February 21, 2018, by and between William C. Lucia and HMS Holdings Corp. (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K (File No. 000-50194) as filed with the SEC on February 23, 2018)†
10.4	Amended and Restated Employment Agreement, dated April 2, 2018, by and between Jeffrey S. Sherman and HMS Holdings Corp. (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q (File No. 000-50194) as filed with the SEC on May 7, 2018)†
10.5	Amended and Restated Employment Agreement, dated March 29, 2018, by and between Meredith W. Bjorck and HMS Holdings Corp. (incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q (File No. 000-50194) as filed with the SEC on May 7, 2018)†
10.6	Amended and Restated Employment Agreement, dated March 29, 2018, by and between Douglas M. Williams, Jr. and HMS Holdings Corp. (incorporated by reference to Exhibit 10.5 to the Company's Quarterly Report on Form 10-Q (File No. 000-50194) as filed with the SEC on May 7, 2018)†
10.7	Amended and Restated Employment Agreement, dated April 2, 2018, by and between Emmet O' Gara and HMS Holdings Corp.†
10.8	Amended and Restated Employment Agreement, dated April 2, 2018, by and between Semone Neuman and HMS Holdings Corp. (incorporated by reference to Exhibit 10.4 to the Company's Quarterly Report on Form 10-Q (File No. 000-50194) as filed with the SEC on May 7, 2018)†
10.9	Separation, Waiver and General Release Agreement, dated January 9, 2019, by and between Semone Neuman and HMS Holdings Corp.†
10.10	Form of Indemnification Agreement (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q (File No. 000-50194) as filed with the SEC on August 6, 2018)†
10.11	HMS Holdings Corp. Director Deferred Compensation Plan, as amended through June 29, 2016 (incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q (File No. 000-50194) as filed with the SEC on August 9, 2016)†
10.12	HMS Holdings Corp. Annual Incentive Compensation Plan as amended and restated (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K (File No. 000-50194) as filed with the SEC on June 27, 2016)†
10.13.1	Amended and Restated Credit Agreement, dated May 3, 2013, as amended by Amendment No. 1 to Amended and Restated Credit Agreement dated as of March 8, 2017, and as further amended by Amendment No. 2 to Amended and Restated Credit Agreement, dated as of December 19, 2017, by and among HMS Holdings Corp., the Guarantors party thereto, the Lenders party thereto and Citibank, N.A., as Administrative Agent (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K (File No. 000-50194) as filed with the SEC on December 21, 2017)
10.13.2	Amended and Restated Security Agreement, dated December 19, 2017, by and among HMS Holdings Corp., the Subsidiary Securing Parties party thereto and Citibank, N.A., as Collateral Agent (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K (File No. 000-50194) as filed with the SEC on December 21, 2017)
10.14	Settlement Agreement, dated June 27, 2018, by and among Dennis Demetre, Lori Lynn Lewis Demetre, John Alfred Lewis, Christopher Brandon Lewis, and HMS Holdings Corp. (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q (File No. 000-50194) as filed with the SEC on August 6, 2018)

Exhibit Number	Description
21.1	HMS Holdings Corp. List of Subsidiaries
23.1	Consent of Grant Thornton LLP
23.2	Consent of KPMG LLP
31.1	Rule 13a-14(a)/15d-14(a) Certification of the Principal Executive Officer of HMS Holdings Corp., as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2	Rule 13a-14(a)/15d-14(a) Certification of the Principal Financial Officer of HMS Holdings Corp., as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1	Section 1350 Certification of the Principal Executive Officer of HMS Holdings Corp., as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002*
32.2	Section 1350 Certification of the Principal Financial Officer of HMS Holdings Corp., as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002*
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document

† Indicates a management contract or compensatory plan, contract or arrangement

* The certifications attached hereto as Exhibit 32.1 and Exhibit 32.2 are furnished with this 2018 Form 10-K and shall not be deemed "filed" by the Company for purposes of Section 18 of the Exchange Act

Item 16. Form 10-K Summary

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended, the Registrant has duly caused this Annual Report on Form 10-K to be signed on its behalf by the undersigned, thereunto duly authorized on February 25, 2019.

HMS Holdings Corp.

/s/ William C. Lucia

William C. Lucia

Chairman of the Board, President and Chief Executive Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, this Annual Report on Form 10-K has been signed below by the following persons on behalf of the Registrant and in the capacities indicated on February 25, 2019.

Signature	Title
<u>/s/ William C. Lucia</u> William C. Lucia	Director, Chairman of the Board, President and Chief Executive Officer (Principal Executive Officer)
<u>/s/ Jeffrey S. Sherman</u> Jeffrey S. Sherman	Executive Vice President, Chief Financial Officer and Treasurer (Principal Financial Officer)
<u>/s/ Greg D. Aunan</u> Greg D. Aunan	Senior Vice President and Chief Accounting Officer (Principal Accounting Officer)
<u>/s/ Robert Becker</u> Robert Becker	Director
<u>/s/ Craig R. Callen</u> Craig R. Callen	Director
<u>/s/ William F. Miller III</u> William F. Miller III	Director
<u>/s/ Ellen A. Rudnick</u> Ellen A. Rudnick	Director
<u>/s/ Bart M. Schwartz</u> Bart M. Schwartz	Director
<u>/s/ Richard H. Stowe</u> Richard H. Stowe	Director
<u>/s/ Cora M. Tellez</u> Cora M. Tellez	Director

HMS HOLDINGS CORP. AND SUBSIDIARIES
INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

	Page Number
Consolidated Financial Statements:	
Reports of Independent Registered Public Accounting Firm	53
Consolidated Balance Sheets as of December 31, 2018 and 2017	56
Consolidated Statements of Income for the Years Ended December 31, 2018, 2017 and 2016	57
Consolidated Statements of Shareholders' Equity for the Years Ended December 31, 2018, 2017 and 2016	58
Consolidated Statements of Cash Flows for the Years Ended December 31, 2018, 2017 and 2016	59
Notes to the Consolidated Financial Statements	60
Financial Statement Schedule:	
Schedule II - Valuation and Qualifying Accounts	82

Report of Independent Registered Public Accounting Firm

Board of Directors and Shareholders
HMS Holdings Corp.

Opinion on the financial statements

We have audited the accompanying consolidated balance sheets of HMS Holdings Corp. (a Delaware corporation) and subsidiaries (the "Company") as of December 31, 2018 and 2017, the related consolidated statements of income, changes in shareholders' equity, and cash flows for each of the two years in the period ended December 31, 2018, and the related notes and financial statement schedule included under Item 15 (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2018, in conformity with accounting principles generally accepted in the United States of America.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in the 2013 *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"), and our report dated February 25, 2019 expressed an unqualified opinion.

Basis for opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ GRANT THORNTON LLP

We have served as the Company's auditor since 2017.

Dallas, Texas
February 25, 2019

Report of Independent Registered Public Accounting Firm

The Board of Directors and Shareholders
HMS Holdings Corp.:

We have audited the accompanying consolidated balance sheet of HMS Holdings Corp. and subsidiaries as of December 31, 2016, and the related consolidated statements of income, shareholders' equity, and cash flows for the year ended December 31, 2016. In connection with our audit of the consolidated financial statements, we also have audited financial statement schedule II as it relates to the year ended December 31, 2016. These consolidated financial statements and financial statement schedule are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements and financial statement schedule based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of HMS Holdings Corp. and subsidiaries as of December 31, 2016, and the results of their operations and their cash flows for the year ended December 31, 2016, in conformity with U.S. generally accepted accounting principles. Also in our opinion, the related financial statement schedule as it relates to the year ended December 31, 2016, when considered in relation to the basic consolidated financial statements taken as a whole, presents fairly, in all material respects, the information set forth therein.

/s/ KPMG, LLP

Dallas, Texas
June 6, 2017

Report of Independent Registered Public Accounting Firm

Board of Directors and Shareholders
HMS Holdings Corp.

Opinion on internal control over financial reporting

We have audited the internal control over financial reporting of HMS Holdings Corp. (a Delaware corporation) and subsidiaries (the “Company”) as of December 31, 2018, based on criteria established in the 2013 *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (“COSO”). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on criteria established in the 2013 *Internal Control—Integrated Framework* issued by COSO.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (“PCAOB”), the consolidated financial statements of the Company as of and for the year ended December 31, 2018, and our report dated February 25, 2019 expressed an unqualified opinion on those financial statements.

Basis for opinion

The Company’s management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management’s Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company’s internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and limitations of internal control over financial reporting

A company’s internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company’s internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company’s assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ GRANT THORNTON LLP

Dallas, Texas
February 25, 2019

HMS HOLDINGS CORP. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
(in thousands, except share and per share amounts)

	December 31, 2018	December 31, 2017
Assets		
Current assets:		
Cash and cash equivalents	\$ 178,946	\$ 83,313
Accounts receivable, net of allowance of \$13,683 and \$14,799, at December 31, 2018 and December 31, 2017, respectively	206,772	189,460
Prepaid expenses	19,970	16,589
Income tax receivable	18,817	1,892
Deferred financing costs, net	564	564
Other current assets	240	836
Total current assets	425,309	292,654
Property and equipment, net	94,435	98,581
Goodwill	487,617	487,617
Intangible assets, net	67,140	91,482
Deferred financing costs, net	1,673	2,237
Other assets	2,344	2,589
Total assets	\$ 1,078,518	\$ 975,160
Liabilities and Shareholders' Equity		
Current liabilities:		
Accounts payable, accrued expenses and other liabilities	\$ 74,902	\$ 61,900
Estimated liability for appeals	21,723	30,787
Total current liabilities	96,625	92,687
Long-term liabilities:		
Revolving credit facility	240,000	240,000
Net deferred tax liabilities	18,485	21,989
Deferred rent	4,118	4,852
Other liabilities	5,894	9,403
Total long-term liabilities	268,497	276,244
Total liabilities	365,122	368,931
Commitments and contingencies		
Shareholders' equity:		
Preferred stock -- \$0.01 par value; 5,000,000 shares authorized; none issued	—	—
Common stock -- \$0.01 par value; 175,000,000 shares authorized; 98,924,501 shares issued and 85,261,664 shares outstanding at December 31, 2018; 96,536,251 shares issued and 83,256,858 shares outstanding at December 31, 2017	989	965
Capital in excess of par value	425,748	368,721
Retained earnings	422,235	366,164
Treasury stock, at cost: 13,663,194 shares at December 31, 2018 and 13,279,393 shares at December 31, 2017	(135,576)	(129,621)
Total shareholders' equity	713,396	606,229
Total liabilities and shareholders' equity	\$ 1,078,518	\$ 975,160

See accompanying notes to the consolidated financial statements.

HMS HOLDINGS CORP. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF INCOME
(in thousands, except per share amounts)

	Year Ended December 31,		
	2018	2017	2016
Revenue	\$ 598,290	\$ 521,212	\$ 489,720
Cost of services:			
Compensation	224,893	202,049	189,271
Information technology	53,428	45,723	37,337
Occupancy	15,968	17,190	14,000
Direct project expenses	42,908	41,347	46,254
Other operating expenses	31,438	28,425	27,778
Amortization of acquisition related software and intangible assets	32,975	30,393	28,030
Total cost of services	401,610	365,127	342,670
Selling, general and administrative expenses	113,442	105,654	89,381
Settlement expense	20,000	-	-
Total operating expenses	535,052	470,781	432,051
Operating income	63,238	50,431	57,669
Interest expense	(11,310)	(10,871)	(8,519)
Interest income	1,089	295	321
Income before income taxes	53,017	39,855	49,471
Income taxes	(1,972)	(199)	11,835
Net Income	\$ 54,989	\$ 40,054	\$ 37,636
Basic income per common share:			
Net income per common share -- basic	\$ 0.66	\$ 0.48	\$ 0.45
Diluted income per common share:			
Net income per common share -- diluted	\$ 0.64	\$ 0.47	\$ 0.43
Weighted average shares:			
Basic	83,625	83,821	84,221
Diluted	86,144	85,088	86,987

See accompanying notes to the consolidated financial statements

HMS HOLDINGS CORP. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY
(in thousands, except share and per share amounts)

	<u>Common Stock</u>			Retained Earnings	<u>Treasury Stock</u>		Total Shareholders' Equity
	# of Shares Issued	Par Value	Capital in Excess of Par Value		# of Shares	Amount	
Balance at January 1, 2016	95,263,461	\$ 952	\$ 330,290	\$ 288,474	11,273,746	\$ (95,014)	\$ 524,702
Net income	-	-	-	37,636	-	-	37,636
Stock-based compensation expense	-	-	13,277	-	-	-	13,277
Purchase of treasury stock	-	-	-	-	1,140,332	(20,470)	(20,470)
Exercise of stock options	510,512	5	2,935	-	-	-	2,940
Vesting of restricted stock awards and units, net of shares withheld for employee tax	192,879	2	(1,477)	-	-	-	(1,475)
Balance at December 31, 2016	95,966,852	\$ 959	\$ 345,025	\$ 326,110	12,414,078	\$ (115,484)	\$ 556,610
Net income	-	-	-	40,054	-	-	40,054
Stock-based compensation expense	-	-	24,143	-	-	-	24,143
Purchase of treasury stock	-	-	-	-	865,315	(14,137)	(14,137)
Exercise of stock options	172,326	2	2,718	-	-	-	2,720
Vesting of restricted stock awards and units, net of shares withheld for employee tax	397,073	4	(3,165)	-	-	-	(3,161)
Balance at December 31, 2017	96,536,251	\$ 965	\$ 368,721	\$ 366,164	13,279,393	\$ (129,621)	\$ 606,229
Adoption of accounting standard (Note 1 and 2)	-	-	-	1,082	-	-	1,082
Net income	-	-	-	54,989	-	-	54,989
Stock-based compensation expense	-	-	21,507	-	-	-	21,507
Purchase of treasury stock	-	-	-	-	383,801	(5,955)	(5,955)
Exercise of stock options	2,017,442	20	38,342	-	-	-	38,362
Vesting of restricted stock units, net of shares withheld for employee tax	370,808	4	(2,822)	-	-	-	(2,818)
Balance at December 31, 2018	98,924,501	\$ 989	\$ 425,748	\$ 422,235	13,663,194	\$ (135,576)	\$ 713,396

See accompanying notes to the consolidated financial statements.

HMS HOLDINGS CORP. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)

Years Ended December 31,

	2018	2017	2016
Operating activities:			
Net income	\$ 54,989	\$ 40,054	\$ 37,636
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization of property, equipment and software	33,254	27,515	24,882
Amortization of intangible assets	24,342	22,555	20,164
Amortization of deferred financing costs	564	2,258	2,083
Stock-based compensation expense	21,507	24,143	13,277
Deferred income taxes	(3,504)	(20,409)	(7,368)
(Gain) / Loss on disposal of assets	-	209	(948)
Change in fair value of contingent consideration	(35)	(2,865)	-
Release of estimated liability for appeals	(8,436)	-	-
Changes in operating assets and liabilities:			
Accounts receivable	(17,312)	(6,976)	(3,554)
Prepaid expenses	(3,381)	(1,463)	(2,399)
Other current assets	596	165	2,066
Other assets	245	124	234
Income taxes receivable / (payable)	(16,925)	1,462	(7,227)
Accounts payable, accrued expenses and other liabilities	11,181	(340)	12,116
Estimated liability for appeals	(628)	32	(2,323)
Net cash provided by operating activities	96,457	86,464	88,639
Investing activities:			
Acquisition of a business, net of cash acquired	-	(171,321)	(20,678)
Proceeds from sale of cost basis investment	-	-	2,496
Purchases of property and equipment	(11,264)	(17,318)	(13,703)
Investment in capitalized software	(19,149)	(15,725)	(7,316)
Net cash used in investing activities	(30,413)	(204,364)	(39,201)
Financing activities:			
Proceeds from credit facility	-	42,204	-
Payments for deferred financing costs	-	(2,269)	-
Proceeds from exercise of stock options	38,362	2,720	2,940
Payments of tax withholdings on behalf of employees for net-share settlements	(2,818)	(3,161)	(1,475)
Payments on capital lease obligations	-	(143)	(44)
Purchases of treasury stock	(5,955)	(14,137)	(20,470)
Net cash provided by/(used in) financing activities	29,589	25,214	(19,049)
Net increase/(decrease) in cash and cash equivalents	95,633	(92,686)	30,389
Cash and Cash Equivalents			
Cash and cash equivalents at beginning of year	83,313	175,999	145,610
Cash and cash equivalents at end of period	\$ 178,946	\$ 83,313	\$ 175,999
Supplemental disclosure of cash flow information:			
Cash paid for income taxes, net of refunds	\$ 22,225	\$ 17,995	\$ 20,326
Cash paid for interest	\$ 10,326	\$ 9,944	\$ 6,196
Supplemental disclosure of non-cash activities:			
Change in balance of accrued property and equipment purchases	\$ 1,305	\$ 51	\$ 684

See accompanying notes to the consolidated financial statements.

HMS HOLDINGS CORP. AND SUBSIDIARIES
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

1. Business and Summary of Significant Accounting Policies

(a) Business

HMS is an industry-leading provider of cost containment solutions in the healthcare marketplace. We use healthcare technology, analytics and engagement solutions, to deliver coordination of benefits, payment integrity, population risk analytics, and care management and consumer engagement solutions to help payers reduce costs, improve healthcare outcomes and enhance member experiences. We provide coordination of benefits services to government and commercial healthcare payers to ensure that the correct party pays the claim. Our payment integrity services promote accuracy by fighting fraud, waste and abuse, and our total population management solutions provide risk-bearing organizations with reliable intelligence across their member populations to identify risks and improve patient engagement and outcomes. Together these various services help move the healthcare system forward for our customers. We currently operate as one business segment with a single management team that reports to the Chief Executive Officer.

(b) Summary of Significant Accounting Policies

For certain accounting topics, the description of the accounting policy may be found in the related Note.

(i) Principles of Consolidation

The consolidated financial statements include the Company's accounts and transactions and those of the Company's wholly owned subsidiaries. All intercompany balances and transactions have been eliminated in consolidation.

(ii) Use of Estimates

The preparation of the consolidated financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

(iii) Cash and Cash Equivalents

The Company considers all highly liquid investments with an original maturity of three months or less to be cash equivalents. Cash equivalents consist of deposits that are readily convertible into cash.

(iv) Concentration of Credit Risk

The Company's policy is to limit credit exposure by placing cash in accounts which are exposed to minimal interest rate and credit risk. HMS maintains cash and cash equivalents in cash depository accounts with large financial institutions with a minimum credit rating of A1/P1 or better, as defined by Standard and Poor's. The balance at these institutions generally exceeds the maximum balance insured by the Federal Deposit Insurance Corporation of up to \$250,000 per entity. HMS has not experienced any losses in cash and cash equivalents and believes these cash and cash equivalents do not expose the Company to any significant credit risk.

The Company is subject to potential credit risk related to changes in economic conditions within the healthcare market. However, HMS believes that the billing and collection policies are adequate to minimize the potential credit risk. The Company performs ongoing credit evaluations of customers and generally does not require collateral.

(v) *Property and Equipment*

Property and equipment are stated at cost less accumulated depreciation. Depreciation is provided over the estimated useful lives of the assets utilizing the straight-line method. HMS amortizes leasehold improvements on a straight-line basis over the shorter of (i) the term of the lease or (ii) the estimated useful life of the improvement. Equipment leased under capital leases is depreciated over the shorter of (i) the term of the lease or (ii) the estimated useful life of the equipment. Capitalized software costs relate to software that is acquired or developed for internal use while in the application development stage. All other costs to develop software for internal use, either in the preliminary project stage or post-implementation stage, are expensed as incurred. Amortization of capitalized software is calculated on a straight-line basis over the expected economic life. Land is not depreciated.

Estimated useful lives are as follows:

Property and Equipment	Useful Life (in years)		
Equipment	2	to	5
Leasehold improvements	5	to	10
Furniture and fixtures		5	
Capitalized software	3	to	10
Building and building improvements		up to	39

Property and equipment is reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of the asset may not be recoverable. When indicators exist, recoverability of assets is measured by a comparison of the carrying value of the asset group to the estimated undiscounted future net cash flows expected to be generated by the asset. If such assets are considered to be impaired, the impairment to be recognized and charged to earnings is measured by the amount by which the carrying value of the asset group exceeds the fair value of the assets. The Company did not recognize any impairment charges related to property and equipment during the years ended December 31, 2018, 2017 or 2016.

(vi) *Intangible assets*

The Company records assets acquired and liabilities assumed in a business combination based upon their acquisition date fair values. In most instances there is not a readily defined or listed market price for individual assets and liabilities acquired in connection with a business, including intangible assets. The Company determines fair value through various valuation techniques including discounted cash flow models, quoted market values and third party independent appraisals, as considered necessary. Significant assumptions used in those techniques include, but are not limited to, growth rates, discount rates, customer attrition rates, expected levels of revenues, earnings, cash flows and tax rates. The use of different valuation techniques and assumptions are highly subjective and inherently uncertain and, as a result, actual results may differ materially from estimates.

All of the Company's intangible assets are subject to amortization and are amortized using the straight-line method over their estimated period of benefit. Estimated useful lives are as follows:

Intangible Assets	Useful Life (in years)		
Customer relationships	7	to	15
Restrictive covenants	1	to	3
Trade names	1.5	to	7
Intellectual property	4	to	6

Intangible assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of the asset may not be recoverable. When indicators exist, recoverability of assets is measured by a comparison of the carrying value of the asset group to the estimated undiscounted future net cash flows expected to be generated by the asset. If such assets are considered to be impaired, the impairment to be recognized and charged to earnings is measured by the amount by which the carrying value of the asset group exceeds the fair value of the assets. The Company did not recognize any impairment charges related to intangible assets during the years ended December 31, 2018, 2017 or 2016.

(vii) Goodwill

Goodwill is the excess of acquisition costs over the fair values of assets and liabilities of acquired businesses. During the measurement period, which is up to one year from the acquisition date, the Company may record adjustments to the assets acquired and liabilities assumed, with the corresponding offset to goodwill. Upon the conclusion of the measurement period, any subsequent adjustments are recorded to earnings.

Goodwill is subject to a periodic assessment for impairment. The Company assesses goodwill for impairment on an annual basis as of June 30th of each year or more frequently if an event occurs or changes in circumstances would more likely than not reduce the fair value of a reporting unit below its carrying amount. Assessment of goodwill impairment is at the HMS Holdings Corp. entity level as the Company operates as a single reporting unit. We have the option to perform a qualitative or quantitative assessment to determine if impairment is more likely than not to have occurred. The Company completed the annual impairment test as of June 30, 2018 electing to perform the quantitative assessment of which the first step is to compare the fair value of the reporting unit with its carrying value, including goodwill. In calculating the fair value of the reporting unit, the Company utilized a weighting across three commonly accepted valuation approaches: an income approach, a guideline public company approach, and a merger and acquisition approach. The income approach to determining fair value computes projections of the cash flows that the reporting unit is expected to generate converted into a present value equivalent through discounting. Significant assumptions in the income approach include income projections, a discount rate and a terminal growth value which are all level 3 inputs. The income projections include assumptions for revenue and expense growth which are based on internally developed business plans and largely reflect recent historical revenue and expense trends. The discount rate was based on a risk free rate plus a beta adjusted equity risk premium and specific company risk premium. The terminal growth value is Company specific and was determined analyzing inputs such as historical inflation and the GDP growth rate. The guideline public company approach and merger and acquisition approach are based on pricing multiples observed for similar publicly traded companies or similar market companies that were sold. The results of the annual impairment assessment provide that the fair value of the reporting unit was significantly in excess of the Company's carrying value, including goodwill; therefore, no impairment was indicated. There were no impairment charges related to goodwill during the years ended December 31, 2018, 2017 or 2016. There were no changes in the carrying amount of goodwill for the year ended December 31, 2018.

(viii) Income Taxes

Income taxes are accounted for under the asset and liability method. Under this method, deferred tax assets and liabilities are recognized for the future tax consequences attributable to temporary differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases. This method also requires the recognition of future tax benefits for net operating loss carry-forwards. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized as income or expense in the period that includes the enactment date. A valuation allowance is provided against deferred tax assets to the extent their realization is not more likely than not. Uncertain income tax positions are accounted for by prescribing a minimum recognition threshold that a tax position is required to meet before being recognized in the financial statements. Although the Company believes that it has adequately reserved for uncertain tax positions (including interest and penalties), it can provide no assurance that the final tax outcome of these matters will not be materially different. The Company makes adjustments to these reserves in accordance with the income tax accounting guidance when facts and circumstances change, such as the closing of a tax audit or the refinement of an estimate. To the extent that the final tax outcome of these matters is different than the amounts recorded, such differences will affect the provision for income taxes in the period in which such determination is made, and could have a material impact on our financial condition and operating results.

(ix) Expense Classifications

HMS cost of services is presented in the categories set forth below. Each category within cost of services excludes expenses relating to SG&A functions, which are presented separately as a component of total operating costs. A description of the primary expenses included in each category is as follows:

Cost of Services:

- *Compensation*: Salary, fringe benefits, bonus and stock-based compensation.
- *Information technology*: Hardware, software and data communication costs.
- *Occupancy*: Rent, utilities, depreciation, office equipment and repair and maintenance costs.
- *Direct project expense*: Variable costs incurred from third party providers that are directly associated with specific revenue generating projects and employee travel expenses.
- *Other operating expenses*: Professional fees, temporary staffing, travel and entertainment, insurance and local and property tax costs.
- *Amortization of acquisition related software and intangible assets*: Amortization of the cost of acquisition related software and intangible assets.

SG&A:

- Expenses related to general management, marketing and administrative activities.

(x) Estimating Valuation Allowances and Accrued Liabilities

The preparation of financial statements requires management to make estimates and assumptions that affect the reported amount of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amount of revenue and expenses during the reported period. In particular, management must make estimates of the probability of collecting accounts receivable. When evaluating the adequacy of the accounts receivable allowance, management reviews the accounts receivable based on an analysis of historical revenue adjustments, bad debts, customer concentrations, customer credit-worthiness, current economic trends and changes in customer payment terms. As of December 31, 2018 and 2017, the accounts receivable balance was \$206.8 million and \$189.5 million, net of allowance of \$13.7 million and \$14.8 million, respectively.

(xi) Stock-Based Compensation

Long-Term Incentive Award Plans

The Company grants stock options and restricted stock units (“equity awards”) to HMS employees and non-employee directors under the 2016 Omnibus Plan, as approved by the Company’s shareholders on June 23, 2016. The 2016 Omnibus Plan replaced and superseded the Company’s 2006 Stock Plan and 2011 HDI Plan. As of December 31, 2018, the number of securities remaining available for future issuance under equity compensation plans, excluding securities to be issued upon exercise of outstanding options and vesting of restricted stock units, is 4,758,398 shares. All of the Company’s employees as well as HMS non-employee directors are eligible to participate in the 2016 Omnibus Plan. Awards granted under the 2016 Omnibus Plan generally vest over one to four years. The exercise price of stock options granted under the 2016 Omnibus Plan may not be less than the fair market value of a share of stock on the grant date, as measured by the closing price of the Company’s common stock on the Nasdaq Global Select Market and the term of a stock option may not exceed ten years. Prior to 2018, the Company granted two types of equity awards: 1) equity awards with service conditions and 2) equity awards with market and service conditions. The market condition is based on the Company’s common stock price during the applicable measurement period. In 2018, the Company only issued equity awards with service conditions.

Stock-Based Compensation Expense

The Company recognizes stock-based compensation expense equal to the grant date fair value of the award on a straight-line basis over the requisite service period.

The fair value of each option grant with only service-based conditions is estimated using the Black-Scholes pricing model. The fair value of each option grant with market and service-based conditions is estimated using a Monte Carlo simulation model. The fair value of each restricted stock unit is calculated based on the closing sale price of the Company's common stock on the grant date.

The determination of the fair value of the options on the grant date using the Black-Scholes pricing model and/or the Monte Carlo simulation model is affected by the Company's stock price, as well as assumptions regarding a number of complex and subjective variables. Certain key variables include: the Company's expected stock price volatility over the expected term of the awards; a risk-free interest rate; and any expected dividends. The Company estimates stock price volatility based on the historical volatility of the Company's common stock and estimates the expected term of the awards based on the Company's historical option exercises for similar types of stock option awards. The assumed risk-free interest rate is based on the yield on the measurement date of a zero-coupon U.S. Treasury bond with a maturity period equal to the option's expected term. The Company does not anticipate paying any cash dividends in the foreseeable future and therefore, uses an expected dividend yield of zero in the option valuation models. The fair value of all awards also includes an estimate of expected forfeitures. Forfeitures are estimated based on historical experience. If actual forfeitures vary from estimates, a difference in compensation expense will be recognized in the period the actual forfeitures occur. Upon the exercise of stock options or the vesting of restricted stock units, the resulting excess tax benefits or deficiencies, if any, are recognized as income tax expense or benefit.

(xii) Fair Value of Financial Instruments

Financial instruments are categorized into a three-level fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value into three broad levels. The fair value hierarchy gives the highest priority to quoted prices in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3). If the inputs used to measure fair value fall within different levels of the hierarchy, the category level is based on the lowest priority level input that is significant to the fair value measurement of the instrument. In the event the fair value is not readily available or determinable, the financial instrument is carried at cost and referred to as a cost method investment. The fair value hierarchy is as follows:

- *Level 1:* Observable inputs such as quoted prices in active markets;
- *Level 2:* Inputs, other than the quoted prices in active markets, that are observable either directly or indirectly; and
- *Level 3:* Unobservable inputs in which there is little or no market data, which require the reporting entity to develop its own assumptions.

(xiii) Leases

HMS accounts for lease agreements as either operating or capital leases, depending on certain defined criteria. Lease costs are amortized on a straight-line basis without regard to deferred payment terms, such as rent holidays, that defer the commencement date of required payments. Additionally, incentives such as tenant improvement allowances, are capitalized and are treated as a reduction of rental expense over the term of the lease agreement.

(xiv) Recent Accounting Guidance

Recently Adopted Accounting Guidance

In May 2014, the FASB issued ASU 2014-09, *Revenue from Contracts with Customers* (Topic 606) ("ASU 2014-09"), which is the new comprehensive revenue recognition standard that supersedes all existing revenue recognition guidance under U.S. GAAP. The Company adopted ASU 2014-09 on January 1, 2018 using the modified retrospective method and the Company recognized the cumulative effect of initially applying the new revenue standard as an adjustment to the opening balance of retained earnings. The financial information for comparative prior periods has not been restated and continues to be reported under the accounting standards in effect for those periods. The effect of adopting ASU 2014-09 in the current annual reporting period as compared with the guidance that was in effect before the change is immaterial. The Company's internal control framework did not materially change, but existing internal controls were modified due to certain changes to business processes and systems to support the new revenue recognition standard as necessary. The Company continues to expect the impact of the adoption of the new standard to be immaterial to its net income and its internal control framework on an ongoing basis.

In March 2016, the FASB issued ASU No. 2016-09, *Compensation – Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting*, (“ASU 2016-09”) that changes the accounting for certain aspects of share-based payments to employees. The new guidance requires excess tax benefits and tax deficiencies to be recorded in the income statement when stock awards vest or are settled. In addition, cash flows related to excess tax benefits will no longer be separately classified as a financing activity apart from other income tax cash flows. The standard also allows companies to repurchase more of an employee’s vesting shares for tax withholding purposes without triggering liability accounting, clarifies that all cash payments made to tax authorities on an employee’s behalf for withheld shares should be presented as a financing activity on the cash flows statement and provides an accounting policy election to account for forfeitures as they occur. ASU 2016-09 is effective for annual reporting periods beginning after December 15, 2016, including interim periods within such annual reporting periods with early adoption permitted. The Company elected to early adopt the new guidance in the fourth quarter of fiscal year 2016 which requires us to reflect any adjustments as of January 1, 2016, the beginning of the annual period that includes the interim period of adoption. The primary impact of adoption was the recognition of excess tax benefits in the provision for income taxes rather than paid-in capital for all periods in fiscal year 2016. Additional amendments to the accounting for income taxes and minimum statutory withholding tax requirements had no impact to retained earnings as of January 1, 2016, where the cumulative effect of these changes are required to be recorded. The Company elected to continue to estimate forfeitures expected to occur to determine the amount of compensation cost to be recognized in each period. Adoption of the new standard resulted in the recognition of net excess tax benefits in the provision for income taxes rather than paid-in capital of \$1.9 million for the year ended December 31, 2016. The presentation requirements for cash flows related to employee taxes paid for withheld shares had no impact to any of the 2016 periods presented on the consolidated statements of cash flow since such cash flows have historically been presented as a financing activity.

In August 2016, the FASB issued ASU No. 2016-15, *Statements of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments* (“ASU 2016-15”). ASU 2016-15 clarifies where certain cash receipts and cash payments are presented and classified in the statement of cash flows. The amendments are effective for annual reporting periods beginning after December 15, 2017, and for interim reporting periods within such annual periods. The Company adopted this guidance on January 1, 2018. The adoption of this guidance did not have a material effect on the Company’s consolidated financial statements.

In January 2017, the FASB issued ASU No. 2017-01, *Business Combinations (Topic 805) – Clarifying the Definition of a Business* (“ASU 2017-01”). ASU 2017-01 finalizes previous proposals regarding shareholder concerns that the definition of a business is applied too broadly. The guidance assists entities with evaluating whether transactions should be accounted for as acquisitions of assets or of businesses. The amendments are effective for annual periods beginning after December 15, 2017, including interim periods within those periods. The Company adopted this guidance on January 1, 2018. The adoption of this guidance did not have a material effect on the Company’s consolidated financial statements.

In May 2017, the FASB issued ASU No. 2017-09, *Compensation – Stock Compensation (Topic 718): Scope of Modification Accounting*, (“ASU 2017-09”). ASU 2017-09 requires entities to apply modification accounting to changes made to a share-based payment award. The new guidance specifies that entities will apply modification accounting to changes to a share-based payment award only if any of the following are not the same immediately before and after the change: 1) The award’s fair value (or calculated value or intrinsic value, if those measurement methods are used), 2) the award’s vesting conditions, and 3) the award’s classification as an equity or liability instrument. ASU 2017-09 is effective for annual reporting periods beginning after December 15, 2017, including interim periods within such annual periods, with early adoption permitted. The Company adopted this guidance on January 1, 2018. The adoption of this guidance did not have a material effect on the Company’s consolidated financial statements.

In January 2017, the FASB issued ASU No. 2017-04, *Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment* (“ASU 2017-04”). This amendment simplifies the manner in which an entity is required to test for goodwill impairment by eliminating Step 2 from the goodwill impairment test. Step 2 measures goodwill impairment loss by comparing the implied fair value of a reporting unit’s goodwill with the carrying amount of that goodwill. The amendment simplifies this approach by having the entity (1) perform its annual or interim goodwill impairment test by comparing the fair value of a reporting unit with its carrying amount, and (2) recognize an impairment charge for the amount by which the carrying amount exceeds the reporting unit’s fair value, with the understanding that the loss recognized should not exceed the total amount of goodwill allocated to that reporting unit. The Company elected to early adopt the new guidance in the fourth quarter of fiscal year 2018. The adoption of this guidance did not have a material effect on the Company’s consolidated financial statements.

On August 17, 2018 the SEC issued SEC Final Rule Release No. 33-10532, *Disclosure Update and Simplification* ("Final Rule"). The Final Rule amends certain disclosure requirements to facilitate the disclosure of information to investors and simplify compliance without significantly altering the total mix of information provided to investors. The Final Rule was effective for public entities that are SEC filers on November 5, 2018. The adoption of this guidance did not have a material effect on the Company's consolidated financial statements.

Recent Accounting Guidance Not Yet Adopted

In February 2016, the FASB issued ASU No. 2016-02, *Leases (Topic 842)* ("ASU 2016-02"). ASU 2016-02 will require most lessees to recognize a majority of the company's leases on the balance sheet, which will increase reported assets and liabilities. ASU 2016-02 was subsequently amended by ASU No. 2018-01, *Land Easement Practical Expedient for Transition to Topic 842*; ASU No. 2018-10, *Codification Improvements to Topic 842, Leases*; and ASU No. 2018-11, *Targeted Improvements*. The new standard establishes a right-of-use model (ROU) that requires a lessee to recognize a ROU asset and lease liability on the balance sheet for all leases with a term longer than 12 months. Leases will be classified as finance or operating, with classification affecting the pattern and classification of expense recognition in the income statement. ASU 2016-02 is effective for annual reporting periods beginning after December 15, 2018 including interim periods within such annual reporting periods with early adoption permitted. The Company has not early adopted this guidance, and therefore is adopting this guidance on January 1, 2019 and will use the effective date as our date of initial application. Consequently, financial information will not be updated and the disclosures required under the new standard will not be provided for dates and periods prior to the date of adoption. The Company developed a preliminary implementation plan and reviewed historical lease agreements in order to quantify the impact of adoption. Based upon the preliminary implementation plan, the Company expects the adoption of ASU 2016-02 will have a material impact on the consolidated balance sheet due to the recognition of the ROU assets and lease liabilities. The adoption of ASU 2016-02 is not expected to have a material impact on the consolidated statement of income or consolidated statement of cash flow. However, the Company continues to perform the necessary reviews and other implementation considerations, including an evaluation of the incremental borrowing rate, in order to appropriately quantify the changes. While we continue to assess all of the effects of adoption, we currently believe the most significant effects relate to (1) the recognition of new ROU assets and lease liabilities on our balance sheet for our real estate operating leases and (2) financial statement disclosures. We do not expect a significant change in our leasing activities between now and adoption. A range of undiscounted ROU assets and lease liabilities at January 1, 2019 is \$28 million to \$31 million. We expect to recognize operating lease ROU assets and lease liabilities that reflect the present value of these future payments. The Company plans adopt this guidance using the optional transition method. The new standard also provides practical expedients for an entity's existing and ongoing accounting and we expect to adopt the package of practical expedients as well as the practical expedient to not separate lease and non-lease components of our leases and the short-term lease practical expedient.

In June 2016, the FASB issued ASU No. 2016-13, *Financial Instruments – Credit Losses* ("ASU 2016-13"). ASU 2016-13 introduces the current expected credit losses methodology ("CECL") for estimating allowances for credit losses. ASU 2016-13 applies to all financial instruments carried at amortized cost and off-balance-sheet credit exposures not accounted for as insurance, including loan commitments, standby letters of credit, and financial guarantees. The new accounting standard does not apply to trading assets, loans held for sale, financial assets for which the fair value option has been elected, or loans and receivables between entities under common control. ASU 2016-13 is effective for public entities for fiscal year beginning after December 15, 2019, including interim periods within that fiscal year. Early adoption is permitted. The Company is currently evaluating the impact on the Company's financial statements of adopting this guidance but this guidance is not expected to have a material impact on the Company's financial position, results of operations or internal control framework.

In June 2018, the FASB issued ASU No. 2018-07, *Compensation – Stock Compensation (Topic 718) – Improvements to Nonemployee Share Based Payment Accounting*, ("ASU 2018-07"). ASU 2018-07 requires entities to apply similar accounting for share-based payment transactions with non-employees as with share-based payment transactions with employees. ASU 2018-07 is effective for public entities for fiscal year beginning after December 15, 2018, including interim periods within that fiscal year. Early adoption is permitted. The Company is currently evaluating the impact on the Company's financial statements of adopting this guidance but this guidance is not expected to have a material impact on the Company's financial position, results of operations or internal control framework.

2. Revenue

The Company's revenue disaggregated by service for the year ended December 31, 2018 is as follows (*in thousands*):

Coordination of Benefits	\$	397,095
Payment Integrity		144,063
Total Population Management		57,132
Total	\$	598,290

Coordination of benefits revenue is derived from contracts with state governments and Medicaid managed care plans that typically span 1 to 5 years with the option to renew. Types of service contracts could include: (a) the identification of erroneously paid claims; (b) the delivery of verified commercial insurance coverage information; (c) the identification of paid claims where another third party is liable; and (d) the identification and enrollment of Medicaid members who have access to employer insurance. Most of these types of service contracts contain multiple promises, all of which are not distinct within the context of the contract. Therefore, the promises represent a single, distinct performance obligation for the types of services we offer. Revenue derived from these performance obligations is largely based on variable consideration where, based on the number of claims or amount of findings the Company identified, a contingent or fixed transaction price/recovery percentage is allocated to each distinct performance obligation. The Company utilizes the expected value method to estimate the variable consideration related to the transaction price for its service contracts. Key inputs and assumptions in determining variable consideration includes identified pricing and expected recoveries and/or savings. The expected recoveries and/or savings are based on historical experience of information received from our customers. Revenue is primarily recognized at a point in time when our customers realize economic benefits from our services when our services are completed. However, we have a limited number of fixed fee arrangements where revenue is recognized over time as performance obligations are satisfied within one to three years. Generally, coordination of benefit contract payment terms are not standardized within the respective contract; however, payment is typically due on demand and there is a clear and distinct history of customers making consistent payments.

Analytical services consists of payment integrity services and total population management.

Payment integrity services revenue is derived from contracts with federal and state governments, commercial health plans and other at-risk entities that can span several years with the option to renew. Types of service contracts could include: (a) services designed to ensure that healthcare payments are accurate and appropriate; and (b) the identification of over/(under)payments or inaccurate charges based on a review of medical records. Most of these types of service contracts contain multiple promises, all of which are not distinct within the context of the contract. Therefore, the promises represent a single, distinct performance obligation for the types of services we offer. Revenue derived from these performance obligations is largely based on variable consideration where, based on the number of claims or amount of findings the Company identified, a contingent or fixed transaction price/recovery percentage is allocated to each distinct performance obligation. The Company utilizes the expected value method to estimate the variable consideration related to the transaction price for its service contracts. Key inputs and assumptions in determining variable consideration includes identified pricing and expected recoveries and/or savings. The expected recoveries and/or savings are based on historical experience of information received from our customers. Revenue is primarily recognized at a point in time when our customers realize economic benefits from our services when our services are completed. However, we have a limited number of fixed fee arrangements where revenue is recognized over time as performance obligations are satisfied within one to three years. Generally, payment integrity contract payment terms are not standardized within the respective contract; however, payment is typically due on demand and there is a clear and distinct history of customers making consistent payments.

Total population management revenue is derived from contracts with health plans and other risk-bearing entities that can span several years with the option to renew. Types of service contracts could include: (a) programs designed to improve member engagement; and (b) outreach services designed to improve clinical outcomes. Most of these types of service contracts contain multiple promises, all of which are not distinct within the context of the contract. Therefore, the promises represent a single, distinct performance obligation for the types of services we offer. Revenue derived from these services is largely based on consideration associated with prices per order/transfer and PMPM/PMPY fees. The Company believes the output method is a reasonable measure of progress for the satisfaction of our performance obligations, which are satisfied over time, as it provides a faithful depiction of (1) our performance toward complete satisfaction of the performance obligation under the contract and (2) the value transferred to the customer of the services performed under the contract. The Company has elected the right to invoice practical expedient for recognition of revenue related to its performance obligations when the amount we have the right to invoice the customer corresponds directly with the value to the customer. Additionally, certain total population management contracts have distinct performance obligations related to software license and implementation fees which have historically been recognized as revenue ratably over the life of the contract. Lastly, we have a limited number of fixed fee arrangements where revenue is recognized over time as performance obligations are satisfied within one to three years. Upon adoption of ASC 606, revenue for software licenses is recognized at the beginning of the license period when control is transferred as the license is installed and revenue for implementation fees is recognized when control is transferred over time as the implementation is being performed. As the performance obligation is deemed to have been satisfied and control transferred to our customers for software licenses and implementation fees on or before December 31, 2017, the Company recorded a decrease to deferred revenue and an increase to opening retained earnings of \$1.1 million, net of tax, as of January 1, 2018 for the cumulative

impact of adopting ASC 606. Generally, total population management contract payment terms are stated within the contract and are due within an explicitly stated time period (e.g., 30, 45, 60 days) from the date of invoice. A portion of the payment received may relate to future performance obligations and will result in an increase to deferred revenue until the obligation has been met.

The Company's revenue disaggregated by market for the year ended December 31, 2018 is as follows (*in thousands*):

Commercial	\$	323,150
State		233,921
Federal		41,219
Total	\$	598,290

A portion of the Company's services are deferred and revenue is recognized at a later time. Deferred revenue was approximately \$6.4 million as of December 31, 2017; \$1.1 million, net of tax, was recorded as a decrease to deferred revenue as of January 1, 2018 as discussed above; and \$5.3 million of this amount was recognized as revenue during the year ended December 31, 2018. Deferred revenue was approximately \$5.6 million as of December 31, 2018. Deferred revenue is included in Accounts payable, accrued expenses and other liabilities in the Consolidated Balance Sheets.

Contract modifications are routine in nature and often done to account for changes in the contract specifications or requirements. In most instances, contract modifications are for services that are not distinct, and, therefore, modifications are accounted for as part of the existing contract. The Company has elected to use the practical expedient to expense the incremental costs of obtaining a contract if the amortization period of the asset that the Company would have otherwise recognized is one year or less.

3. Fair Value of Financial Instruments

Financial instruments (principally cash and cash equivalents, accounts receivable, accounts payable and accrued expenses) are carried at cost, which approximates fair value due to the short-term maturity of these instruments. The Company's long-term credit facility is carried at cost, which due to the variable interest rate associated with the revolving credit facility, cost approximates its fair value. The Company has no Level 1 or Level 2 financial instruments and there were no transfers between Level 1 or Level 2 financial instruments. Included in Other liabilities on the Consolidated Balance Sheet is a contingent consideration liability of \$0 and \$35 thousand at December 31, 2018 and 2017, respectively, is valued using a Monte Carlo simulation and includes unobservable inputs such as expected levels of revenues and discount rates. The liability was classified as level 3 within the fair value hierarchy. Changes in the unobservable inputs in the fair value measurement of this instrument could result in a significant change in the fair value measurement. There were no sales, settlements, purchases, issuances and/or transfers related to this level 3 instrument in 2018 or 2017. There were no other level 3 instruments.

4. Acquisitions

(a) Eliza Holding Corp.

On April 17, 2017, the Company completed the acquisition of 100% of the outstanding capital stock of Eliza, for a purchase price of \$171.6 million funded with available liquidity of approximately 75% cash on hand and 25% from the Company's existing credit line.

The allocation of the purchase price to the fair value of the assets acquired and the liabilities assumed as of April 17, 2017, the effective date of the acquisition, is as follows (*in thousands*):

Cash and cash equivalents	\$	435
Accounts receivable		8,902
Prepaid expenses		1,427
Property and equipment		1,146
Intangible assets		76,240
Goodwill		107,754
Other assets		63
Accounts payable		(2,620)
Deferred tax liability		(19,681)
Other liabilities		(2,057)
Total purchase price	\$	171,609

The purchase price allocated to the intangibles acquired was as follows (*in thousands*):

	Useful Life (in years)		
Customer relationships	15	\$	56,200
Intellectual property	6		19,600
Trade name	1.5		310
Restrictive covenants	1		130
Fair value of intangibles acquired		\$	76,240

Acquisition costs recorded to selling, general and administrative expenses were as follows (*in thousands*):

Other operating expenses - consulting fees	\$	3,515
Other operating expenses - legal fees		832
Other operating expenses - transaction costs		185
Acquisition-related costs	\$	4,532

The financial results of Eliza's operations since April 17, 2017 have been included in the Company's consolidated financial statements. Eliza contributed \$51.9 million and \$30.4 million in revenue to HMS results of operations in the years ended December 31, 2018 and 2017, respectively.

(b) Essette

On September 2, 2016, the Company acquired the outstanding capital stock of Essette for a purchase price of \$24.2 million funded by cash on hand. The immaterial results of Essette's operations since September 2, 2016 have been included in the Company's consolidated financial statements.

5. Property and Equipment

Property and equipment consisted of the following (*in thousands*):

	December 31,	
	2018	2017
Equipment	\$ 95,350	\$ 106,768
Leasehold improvements	7,547	8,357
Building	8,624	8,624
Building improvements	14,825	14,546
Land	2,769	2,769
Furniture and fixtures	9,404	10,352
Capitalized software	131,819	125,655
	270,338	277,071
Less: accumulated depreciation and amortization	(175,903)	(178,490)
Property and equipment, net	\$ 94,435	\$ 98,581

	December 31,		
	2018	2017	2016
Depreciation and amortization expenses related to property and equipment	\$ 33,254	\$ 27,515	\$ 24,882

6. Intangible Assets

Intangible assets consisted of the following (*in thousands*):

	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Weighted Average Amortization Period in Years
December 31, 2018				
Customer relationships	\$ 156,790	\$ (104,740)	\$ 52,050	12.8
Trade names	16,246	(16,215)	31	0.7
Intellectual property	21,700	(6,670)	15,030	4.1
Restrictive covenants	263	(234)	29	0.7
Total	\$ 194,999	\$ (127,859)	\$ 67,140	

	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Weighted Average Amortization Period in Years
December 31, 2017				
Customer relationships	\$ 159,290	\$ (89,106)	\$ 70,184	11.3
Trade names	16,246	(13,916)	2,330	1.0
Intellectual property	21,700	(2,874)	18,826	5.2
Restrictive covenants	263	(121)	142	1.3
Total	\$ 197,499	\$ (106,017)	\$ 91,482	

Amortization expense of intangible assets is expected to approximate the following (*in thousands*):

Year ending December 31,	Amortization
2019	\$ 9,195
2020	7,664
2021	7,197
2022	7,197
2023	4,822
Thereafter	31,065
Total	\$ 67,140

For the years ended December 31, 2018, 2017 and 2016, amortization expense related to intangible assets was \$24.3 million, \$22.6 million, and \$20.2 million, respectively. In addition, during the year ended December 31, 2018, some of the intangible assets became fully amortized.

7. Accounts Payable, Accrued Expenses and Other Liabilities

Accounts payable, accrued expenses and other liabilities consisted of the following (*in thousands*):

	December 31, 2018	December 31, 2017
Accounts payable, trade	\$ 12,394	\$ 19,330
Accrued compensation and other	42,833	24,072
Accrued operating expenses	19,675	18,498
Total accounts payable, accrued expenses and other liabilities	\$ 74,902	\$ 61,900

8. Income Taxes

Income tax expense is as follows (*in thousands*):

	December 31,		
	2018	2017	2016
Current tax expense:			
Federal	\$ 2,965	\$ 17,008	\$ 16,274
State	(1,433)	3,201	2,929
Total current tax expense:	1,532	20,209	19,203
Deferred tax expense (benefit):			
Federal	(2,650)	(19,425)	(7,115)
State	(854)	(983)	(253)
Total deferred tax benefit:	(3,504)	(20,408)	(7,368)
Total income tax expense (benefit)	\$ (1,972)	\$ (199)	\$ 11,835

A reconciliation of the income tax expense calculated using the applicable federal statutory rate to the actual income tax expense is as follows (*in thousands*):

	December 31,					
	2018	%	2017	%	2016	%
Computed at federal statutory rate	\$ 11,134	21.0	\$ 13,949	35.0	\$ 17,315	35.0
State and local tax expense, net of federal benefit	2,367	4.5	2,226	5.6	2,448	5.0
Net permanent deduction and credit tax benefits from current year	(1,143)	(2.2)	(1,513)	(3.8)	(1,509)	(3.1)
Net permanent deduction and credit tax benefits from prior years	-	-	-	-	(6,213)	(12.6)
Net uncertain tax positions excluding current permanent deduction and credit benefits	(3,756)	(7.0)	(373)	(0.9)	-	-
Subsidiary basis write off	(3,423)	(6.5)	-	-	-	-
Equity compensation net tax windfall	(2,890)	(5.5)	-	-	-	-
State tax apportionment changes	(3,737)	(7.0)	-	-	-	-
Disallowed executive compensation	682	1.3	-	-	-	-
Tax Reform - revaluation of deferrals	-	-	(15,130)	(38.0)	-	-
Acquisition adjustments	(1,226)	(2.3)	(1,003)	(2.5)	-	-
Acquisition costs	-	-	697	1.7	203	0.4
Other, net	20	-	948	2.4	(409)	(0.8)
Total income tax expense	\$ (1,972)	(3.7)	\$ (199)	(0.5)	\$ 11,835	23.9

The Company's effective tax rate decreased to (3.7%) for the year ended December 31, 2018 from (0.5%) for the year ended December 31, 2017, primarily from favorable tax benefits relating to current year credits, equity compensation, subsidiary basis write-off, prior year state apportionment changes, uncertain tax position releases and acquisition adjustments. The Company has no adjustments, to any previously recorded provisional amounts, relating to the Tax Cuts and Jobs Act which was enacted on December 22, 2017. During the year ended December 31, 2018 and in conjunction with the Settlement Agreement in Note 15 to the Consolidated Financial Statements, the Company determined that the common stock of its wholly owned subsidiary, Allied Management Group Special Investigation Unit, Inc. was worthless, resulting in the write off of basis for federal income tax purposes.

As a result of an analysis performed during 2016, the Company determined certain activities it performs qualify for (i) R&D Credits provided in IRC Section 41 and (ii) the Section 199 Deduction provided in IRC Section 199. As a result, the Company recognized net tax benefits during the year ended December 31, 2016 of \$6.2 million for federal and state R&D Credits and the Section 199 Deduction relating to tax years 2012 through 2015.

Deferred income taxes are recognized for the future tax consequences of temporary differences between the financial statement and tax bases of assets and liabilities. The tax effect of temporary differences that give rise to a significant portion of the deferred tax assets and deferred tax liabilities are as follows (*in thousands*):

	December 31,	
	2018	2017
Deferred tax assets:		
Stock-based compensation	\$ 9,545	\$ 9,980
Goodwill and intangible assets	5,874	6,524
Allowance for doubtful accounts	3,537	3,822
Deferred rent	696	909
Tenant improvements	569	669
Estimated liability for appeals	5,632	7,775
Net operating loss carry-forwards	1,527	3,358
Tax credit carry-forwards	4,076	3,667
Property and equipment	49	256
Accrued expenses and other	7,839	3,615
Total deferred tax assets	39,344	40,575
Deferred tax liabilities:		
Goodwill and intangible assets	43,400	48,186
Section 481(a) adjustment	5,073	7,413
Prepaid expenses	668	624
Capitalized software cost	8,688	6,341
Total deferred tax liabilities	57,829	62,564
Total net deferred tax liabilities	\$ 18,485	\$ 21,989

Included in Other liabilities on the Consolidated Balance Sheets, are the total amount of unrecognized tax benefits of approximately \$4.8 million and \$8.2 million as of December 31, 2018 and 2017, respectively, net of the federal benefit for state issues that, if recognized, would favorably affect the Company's future effective tax rate. Also included in Other Liabilities on the Consolidated Balance Sheets, are accrued liabilities for interest expense and penalties related to unrecognized tax benefits of \$0.7 million and \$0.6 million as of December 31, 2018 and 2017, respectively. HMS includes interest expense and penalties in the provision for income taxes in the Consolidated Statements of Income. The amount of interest expense, net of federal and state income tax benefits, and penalties in the Consolidated Statements of Income for the years ended December 31, 2018, 2017, and 2016 was \$0.1 million, \$0.02 million and \$0.2 million, respectively. The Company believes it is reasonably possible the amount of unrecognized tax benefits may decrease by \$1.7 million during 2019, due to the expiration of the statute of limitations in various jurisdictions.

A reconciliation of the beginning and ending amounts of unrecognized tax benefits are as follows (*in thousands*):

	2018	2017
Unrecognized tax benefits at January 1	\$ 8,234	\$ 7,433
Additions for tax positions taken during prior periods	399	599
Additions for tax positions taken during current period including amended prior years	360	1,174
Reductions relating to settlements with taxing authorities	(2,227)	-
Reductions related to the expiration of statutes of limitations	(1,927)	(972)
Unrecognized tax benefits at December 31	\$ 4,839	\$ 8,234

The Company increased the provision for unrecognized tax benefits by \$0.4 million during the year ended December 31, 2018, related to tax benefits recognized for current period R&D Credits. At December 31, 2018, HMS had federal and state pre-tax net operating loss and tax credit carryforwards of approximately \$24.3 million and \$4.1 million, respectively, which will be available to offset future taxable income. If not used, these net operating loss and tax credit carryforwards will begin to expire in 2020 and 2019, respectively. The Company files income tax returns with the U.S. Federal government and various state, territory, and local jurisdictions. HMS is no longer subject to U.S. Federal income tax examinations for years before 2013. The Company settled an audit by the Internal Revenue Service for years 2013 and 2014 which resulted in immaterial assessments and recognition of prior unrecognized tax benefits. HMS operates in a number of state, territory and local jurisdictions. Accordingly, HMS is subject to state, territory and local income tax examinations based upon the various statutes of limitations in each jurisdiction. Previously recognized Texas refund claims were examined by the state and resulted in a favorable apportionment method change for all open tax years.

9. Estimated Liability for Appeals

Under the Company's contracts with certain commercial health plan customers and its Medicare RAC contracts with CMS (included within the Company's PI services revenue), providers have the right to appeal HMS claim findings and to pursue additional appeals if the initial appeal is found in favor of HMS's customer. The appeal process established under the Medicare RAC contracts with CMS includes five levels of appeals, and resolution of appeals can take substantial time to resolve. HMS records a) an actual return obligation liability for findings which have been previously adjudicated in favor of providers and b) an estimated return obligation liability based on the amount of revenue that is subject to appeals and which are probable of being adjudicated in favor of providers following their successful appeal. The Company's estimate is based on the Company's historical experience. To the extent the amount to be returned to providers following a successful appeal exceeds or is less than the amount recorded, revenue in the applicable period would be reduced or increased by such amount.

A roll-forward of the activity in the estimated liability for appeals is as follows (*in thousands*):

	Original RAC contract	RAC 4 contract	Commercial contracts	Total
Balance at December 31, 2016	\$ 28,427	\$ -	\$ 2,328	\$ 30,755
Provision	2,054	-	2,729	4,783
Appeals found in providers favor	(2,665)	-	(2,086)	(4,751)
Balance at December 31, 2017	\$ 27,816	\$ -	\$ 2,971	\$ 30,787
Provision	108	20	2,038	2,166
Appeals found in providers favor	(108)	-	(2,686)	(2,794)
Release of estimated liability	(8,436)	-	-	(8,436)
Balance at December 31, 2018	\$ 19,380	\$ 20	\$ 2,323	\$ 21,723

The Company's original Medicare RAC contract with CMS expired on January 31, 2018. As a result of the original contract expiration, the Company's contractual obligation with respect to any appeals resolved in favor of providers subsequent to the expiration date have ceased and therefore the Company released its estimated return obligation liability and increased revenue by \$8.4 million during the first quarter of 2018.

The Company continues to assess the remaining CMS liability for the original Medicare RAC contract to determine management's best estimate of liability for any findings which have been previously adjudicated prior to the expiration of the contract. Any future changes or modifications to the Medicare RAC contracts or to the Company's commercial customer contracts may require the Company to apply different assumptions that could materially affect both the Company's revenue and estimated liability for appeals in future periods.

10. Credit Agreement

In May 2013, we entered into the Credit Agreement with certain lenders and Citibank, N.A. as administrative agent. The Credit Agreement originally provided for an initial \$500 million five-year revolving credit facility maturing on May 3, 2018.

On December 19, 2017, the Company entered into an amendment to the Credit Agreement, which, among other things, extended the maturity of its then existing revolving credit facility by five years to December 2022. The availability of funds under the amended revolving credit facility includes sublimits for (a) up to \$50 million for the issuance of letters of credit and (b) up to \$25 million for swingline loans. In addition, the Company may increase the commitments under its revolving credit facility and/or add one or more incremental term loan facilities, provided that such incremental facilities do not exceed in the aggregate the sum of (i) the greater of \$120 million and 100% of Consolidated EBITDA (as defined in the Credit Agreement) and (ii) an additional amount so long as our first lien leverage ratio (as defined in the Credit Agreement) on a pro forma basis is not greater than 3.00:1.00, subject to obtaining commitments from lenders therefor and meeting certain other conditions.

During the year ended December 31, 2018, no principal payments were made against the Company's then existing revolving credit facility. As of December 31, 2018, the outstanding principal balance under the amended revolving credit facility was \$240.0 million.

Borrowings under the Credit Agreement will bear interest at a rate equal to, at the Company's election (except with respect to swingline borrowings, which will accrue interest based only at the base rate), either:

- a base rate determined by reference to the greatest of (a) the prime or base commercial lending rate of the administrative agent as in effect on the relevant date, (b) the federal funds effective rate plus 0.50% and (c) the one-month LIBO Rate plus 1.00%, plus an interest margin ranging from 0.50% to 1.00% based on the Company's consolidated leverage ratio for the applicable period; or
- an adjusted LIBO Rate, equal to the LIBO Rate for the applicable interest period multiplied by the statutory reserve rate (equal to (x) one divided by (y) one minus the aggregate of the maximum reserve percentage (including any marginal, special, emergency or supplemental reserves) established by the Board of Governors of the Federal Reserve System of the United States), plus an interest margin ranging from 1.50% to 2.00% based on the Company's consolidated leverage ratio for the applicable period.

In addition to paying interest on the outstanding principal, the Company is required to pay unused commitment fees on the revolving credit facility during the term of the Credit Agreement ranging from 0.375% to 0.250% per annum based on the Company's consolidated leverage ratio and letter of credit fees equal to 0.125% per annum on the aggregate face amount of each letter of credit, as well as customary agency fees.

The Company's obligations under the Credit Agreement are secured, subject to certain customary carve-outs and exceptions, by a first priority lien and security interest in substantially all tangible and intangible assets of the Company and certain subsidiaries of the Company. The Credit Agreement contains certain restrictive covenants, which affect, among other things, the ability of the Company and its subsidiaries to incur indebtedness, create liens, make investments, sell or otherwise dispose of assets, engage in mergers or consolidations with other entities, and pay dividends or repurchase stock. The Company is also required to comply, on a quarterly basis, with two financial covenants: (i) a minimum interest coverage ratio of 3:00:1:00, and (ii) a maximum consolidated leverage ratio of 4.75:1.00 through December 2019 and 4.25:1.00 from and after January 2020. The consolidated leverage ratio is subject to a step-up to 5.25:1.00 for four full consecutive fiscal quarters following a permitted acquisition or similar investment. As of December 31, 2018, the Company was in compliance with all terms of the Credit Agreement.

Interest expense and the commitment fees on the unused portion of the Company's revolving credit facility are as follows (*in thousands*):

	Years ended December 31,		
	2018	2017	2016
Interest expense	\$ 9,294	\$ 7,170	\$ 4,837
Commitment fees	1,189	1,359	1,518

The Company deferred \$2.3 million of financing fees associated with the amendment. At December 31, 2018 and 2017, the unamortized balance of deferred financing costs was \$2.2 million and \$2.8 million, respectively. The Company amortized deferred financing costs of \$0.6 million, \$2.3 million and \$2.1 million in the years ended December 31, 2018, 2017 and 2016.

As part of a contractual agreement with a customer, the Company has an outstanding irrevocable letter of credit for \$6.5 million, which is issued against its revolving credit facility and expires June 30, 2019.

11. Equity

(a) Share Repurchase

Following are the Company's quarterly repurchases of shares of common stock for fiscal year 2018, all of which were made as part of publicly announced plans or programs:

Period	Total Number of Shares Purchased	Average Price Paid Per Share	Total Number of Shares Purchased as Part of Publicly Announced Program	Maximum Approximate Dollar Value of Shares That May Yet Be Purchased Under the Program
January 1, 2018 to March 31, 2018	383,801	\$ 15.50	383,801	\$ 29,933,055
April 1, 2018 to June 30, 2018	-	-	-	-
July 1, 2018 to September 30, 2018	-	-	-	-
October 1, 2018 to December 31, 2018	-	-	-	-
Total	383,801	\$ 15.50	383,801	\$ 29,933,055

(b) Preferred Stock

The Company's certificate of incorporation, as amended, authorizes the issuance of up to 5,000,000 shares of "blank check" preferred stock with such designations, rights and preferences as may be determined by the Company's Board of Directors. As of December 31, 2018, no preferred stock had been issued.

12. Employee Benefit Plan

The Company sponsors the 401(k) Plan for eligible employees. Eligible employees must complete 90 days of service in order to enroll in the 401(k) Plan. Participants may make voluntary contributions to the 401(k) Plan of up to 60% of their annual base pre-tax compensation not to exceed the federally determined maximum allowable contribution. In addition, the 401(k) Plan permits the Company to make discretionary contributions. During 2018, HMS matched 100% of the first 4% of pay contributed by each eligible employee and 50% of the next 1% of pay contributed. During 2017 and 2016, HMS matched 100% of the first 3% of pay contributed by each eligible employee and 50% on the next 2% of pay contributed. These matching contributions vest immediately and are not in the form of the Company's common stock.

For the years ended December 31, 2018, 2017 and 2016, HMS contributed \$7.3 million, \$5.9 million and \$4.8 million, respectively, to the 401(k) Plan in the form of matching contributions.

13. Stock-Based Compensation

Stock-Based Compensation Expense

Total stock-based compensation expense in the Company's Consolidated Statements of Income related to the Company's long-term incentive award plans was as follows (*in thousands*):

	Years ended December 31,		
	2018	2017	2016
Cost of services-compensation	\$ 7,421	\$ 7,354	\$ 3,805
Selling, general and administrative	14,086	16,789	9,472
Total	\$ 21,507	\$ 24,143	\$ 13,277

The total tax benefits recognized on stock-based compensation for the years ended December 31, 2018, 2017 and 2016 was \$9.1 million, \$4.0 million and \$4.1 million, respectively.

Stock Options

Stock-based compensation expense related to stock options was approximately \$9.6 million, \$10.3 million and \$6.9 million for the years ended December 31, 2018, 2017 and 2016, respectively.

Presented below is a summary of stock option activity for the year ended December 31, 2018 (in thousands except for weighted average exercise price and weighted average remaining contractual terms):

	Number of Options	Weighted Average Exercise Price	Weighted Average- Remaining Contractual Terms	Aggregate- Intrinsic Value
Outstanding balance at December 31, 2017	5,554	\$ 17.35		
Granted	1,010	19.58		
Exercised	(2,017)	19.14		
Forfeitures	(114)	17.74		
Expired	(31)	22.34		
Outstanding balance at December 31, 2018	4,402	17.07	5.80	\$ 48,339
Expected to vest at December 31, 2018	1,481	\$ 18.60	8.22	\$ 14,119
Exercisable at December 31, 2018	2,370	\$ 15.87	3.83	\$ 29,068

As of December 31, 2018 and 2017, the Company had 1,999,069 and 2,372,682, respectively, in unvested options with a weighted-average-grant-date fair value of \$7.27 and \$6.39, respectively. The weighted-average-grant-date fair value per share of the stock options granted during the years ended December 31, 2018, 2017 and 2016 was \$7.52, \$7.66 and \$5.55, respectively. The weighted-average-grant-date fair value per share of stock options vested during the year ended December 31, 2018 was \$6.18. The weighted-average-grant-date fair value per share of the stock options forfeited during the years ended December 31, 2018, 2017 and 2016 was \$6.86, \$5.24 and \$6.26, respectively.

HMS estimated the fair value of each stock option grant on the date of grant using a Black-Scholes option pricing model. Weighted-average assumptions are set forth in the following table:

	Year ended December 31,		
	2018	2017	2016
Expected dividend yield	-	-	-
Risk-free interest rate	2.7%	1.8%	1.2%
Expected volatility	42.4%	44.2%	44.0%
Expected life (years)	6.0	5.0	4.9

HMS estimated the fair value of 2017 and 2016 market condition option grants on the date of grant using a Monte-Carlo simulation model. There were no market condition awards granted in 2018. Assumptions are set forth in the following table:

	Year ended December 31,		
	2018	2017	2016
Expected dividend yield	-	-	-
Risk-free interest rate	-	2.2%	1.6%
Expected volatility	-	52.5%	40.5%
Expected life (years)	-	6.5	4.9

During the years ended December 31, 2018, 2017 and 2016, the Company issued 2,017,442, 172,326 and 510,512 shares, respectively, of the Company's common stock upon the exercise of outstanding stock options and received proceeds of \$38.3 million, \$2.7 million and \$2.9 million, respectively. The total intrinsic value of stock options exercised during the years ended December 31, 2018, 2017 and 2016 was \$27.6 million, \$0.5 million and \$6.3 million, respectively.

As of December 31, 2018, there was approximately \$5.5 million of total unrecognized compensation cost related to stock options outstanding, which is expected to be recognized over a weighted average period of 0.9 years.

Restricted Stock Units

Stock-based compensation expense related to restricted stock units was \$11.9 million, \$13.8 million and \$6.4 million for the years ended December 31, 2018, 2017 and 2016, respectively.

Presented below is a summary of restricted stock units activity for the year ended December 31, 2018 (*in thousands, except for weighted average grant date fair value per unit*):

	Number of Units	Weighted Average Grant Date Fair Value per Unit
Outstanding balance at December 31, 2017	1,346	\$ 17.65
Granted	766	16.80
Vesting of restricted stock units, net of units withheld for taxes	(371)	17.06
Units withheld for taxes	(163)	17.06
Forfeitures	(90)	17.31
Outstanding balance at December 31, 2018	1,488	\$ 17.60

As of December 31, 2018, 1,259,003 restricted stock units remained unvested and there was approximately \$9.2 million of unrecognized compensation cost related to restricted stock units, which is expected to be recognized over a weighted average vesting period of 0.87 years. During the years ended December 31, 2018, 2017 and 2016, the Company's vested restricted stock units had a fair value \$9.9 million, \$9.5 million, and \$6.8 million, respectively. The weighted average grant date fair value per share of the restricted stock units vested during the years ended December 31, 2018, 2017 and 2016 was \$17.06, \$15.39 and \$18.64, respectively. The weighted average grant date fair value per share of the restricted stock units forfeited during the years ended December 31, 2018, 2017 and 2016 was \$17.31, \$15.37 and \$16.95, respectively.

14. Earnings per Share

The following table sets forth the computation of basic and diluted earnings per share (*in thousands, except per share amounts*):

	Years ended December 31,		
	2018	2017	2016
Net income	\$ 54,989	\$ 40,054	\$ 37,636
Weighted average common shares outstanding-basic	83,625	83,821	84,221
Plus: net effect of dilutive stock options and restricted stock units	2,519	1,808	2,766
Weighted average common shares outstanding-diluted	86,144	85,629	86,987
Net income per common share-basic	\$ 0.66	\$ 0.48	\$ 0.45
Net income per common share-diluted	\$ 0.64	\$ 0.47	\$ 0.43

For the years ended December 31, 2018, 2017 and 2016: (i) 804,959, 2,646,100 and 2,070,771 stock options, respectively, and (ii) restricted stock units representing 0, 31,155 and 46,651 shares of common stock, respectively, were not included in the diluted earnings per share calculation because the effect would have been anti-dilutive.

15. Commitments and Contingencies

(a) Lease Commitments

The Company primarily leases office space but also leases information technology equipment and software licenses under operating leases that expire on various dates through 2026. Additionally, the Company has nominal capital leases. Total lease expense, net of office space sublease income for the years ended December 31, 2018, 2017 and 2016 was \$3.6 million, \$5.1 million and \$5.0 million, respectively.

Minimum annual lease payments to be made under operating leases, net of \$8.3 million office space sublease payments to be received, for each of the next five years ending December 31 and thereafter are as follows (*in thousands*):

	Operating Lease Payments
2019	\$ 5,778
2020	5,420
2021	3,742
2022	2,531
2023	2,236
Thereafter	2,947
Total	\$ 22,654

(b) Litigation

In July 2012, Dennis Demetre and Lori Lewis (the "Plaintiffs"), filed an action in the Supreme Court of the State of New York against HMS Holdings Corp., claiming an undetermined amount of damages alleging that various actions by HMS unlawfully deprived the Plaintiffs of the acquisition earn-out portion of the purchase price for Allied Management Group Special Investigation Unit, Inc. ("AMG") under the applicable Stock Purchase Agreement (the "SPA") and that HMS had breached certain contractual provisions under the SPA. The Plaintiffs filed a second amended complaint with two causes of action for breach of contract and one cause of action for breach of implied covenant of good faith and fair dealing. HMS asserted a counterclaim against Plaintiffs for breach of contract based on contractual indemnification costs, including attorneys' fees arising out of the Company's defense of AMG in *Kern Health Systems v. AMG, Dennis Demetre and Lori Lewis* (the "California Action"), which are recoverable under the SPA. In June 2016, Kern Health Systems and AMG entered into a settlement agreement that resolved all claims in the California Action. In July 2017, the Court issued a decision on the Company's motion for partial summary judgment and granted the motion in part, dismissing one of Plaintiffs' breach of contract causes of action against HMS. On November 3, 2017, following a jury trial, a verdict was returned in favor of the Plaintiffs on a breach of contract claim, and the jury awarded \$60 million in damages to the Plaintiffs. On March 14, 2018, the Court held a hearing on the Company's post-trial motion for an order granting it judgment notwithstanding the verdict or, alternatively, setting aside the jury's award of damages. On June 27, 2018, prior to the Court issuing a decision on the motion, the Company entered into a Settlement Agreement (the "Settlement Agreement") with the Plaintiffs, John Alfred Lewis and Christopher Brandon Lewis. Pursuant to the terms of the Settlement Agreement, the Company paid \$20 million to resolve all matters in controversy pertaining to the lawsuit.

On July 5, 2018, the Court entered an order to discontinue the lawsuit pursuant to the Stipulation of Discontinuance with Prejudice filed by the parties.

In February 2018, the Company received a Civil Investigative Demand (“CID”) from the Texas Attorney General, purporting to investigate possible unspecified violations of the Texas Medicaid Fraud Prevention Act. The Company provided certain documents and information in March 2018 in response to the CID. HMS has not received any further requests for information in connection with this CID.

In September 2018, a former employee filed an action in the New York County Supreme Court entitled Christopher Frey v. Health Management Systems, Inc. alleging retaliation under New York law. The complaint seeks recovery of an unspecified amount of monetary damages, including back pay and other compensatory and equitable relief. The Company has moved to dismiss the complaint and the motion is currently under consideration by the Court. The Company continues to believe that this claim is without merit and intends to vigorously defend this matter.

From time to time, HMS may be subject to investigations, legal proceedings and other disputes arising in the ordinary course of the Company's business, including but not limited to regulatory audits, billing and contractual disputes, employment-related matters and post-closing disputes related to acquisitions. Due to the Company's contractual relationships, including those with federal and state government entities, HMS's operations, billing and business practices are subject to scrutiny and audit by those entities and other multiple agencies and levels of government, as well as to frequent transitions and changes in the personnel responsible for oversight of the Company's contractual performance. HMS may have contractual disputes with its customers arising from differing interpretations of contractual provisions that define the Company's rights, obligations, scope of work or terms of payment, and with associated claims of liability for inaccurate or improper billing for reimbursement of contract fees, or for sanctions or damages for alleged performance deficiencies. Resolution of such disputes may involve litigation or may require that HMS accept some amount of loss or liability in order to avoid customer abrasion, negative marketplace perceptions and other disadvantageous results that could affect the Company's business, financial condition, results of operations and cash flows.

HMS records accruals for outstanding legal matters when it believes it is probable that a loss will be incurred and the amount can be reasonably estimated. The Company evaluates, on a quarterly basis, developments in legal matters that could affect the amount of any accrual and developments that would make a loss contingency both probable and reasonably estimable. If a loss contingency is not both probable and estimable, HMS does not establish an accrued liability.

16. Customer Concentration

(a) Geographic Information

The Company operates within the United States.

(b) Major Customers

For the years ended December 31, 2018, 2017 and 2016 no one individual Company customer accounted for more than 10% of the Company's total revenue.

(c) Concentration of Revenue

The composition of the Company's ten largest customer's changes periodically. For the years ended December 31, 2018, 2017 and 2016, the Company's ten largest customers represented 41.4%, 39.5% and 40.6% of HMS' total revenue, respectively. Excluding those contracts that contain automatic renewal provisions or evergreen terms, the Company's agreements with the ten current largest customers generally expire between 2019 and 2026. In many instances, HMS provides services pursuant to agreements that may be renewed or subject to a competitive procurement process. Several of the Company's contracts, including those with some of its largest customers, may be terminated for convenience.

17. Subsequent Events

Annual Grants to Employees

On February 14, 2019, the Compensation Committee of the Board of Directors approved approximately \$21.3 million in stock option and restricted stock unit awards to employees. The awards generally will vest over three years and will be issued three business days subsequent to the filing of this 2018 Form 10-K.

In connection with the preparation of our consolidated financial statements, an evaluation of subsequent events was performed through the date of filing and there were no other events that have occurred that would require adjustments to the financial statements or disclosure.

18. Quarterly Financial Data (Unaudited)

The table below summarizes the Company's unaudited quarterly operating results for the last two fiscal years (*in thousands, except per share amounts*):

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Year Ended
2018					
Revenue	\$ 141,425	\$ 146,791	\$ 154,246	\$ 155,828	\$ 598,290
Operating income	\$ 11,922	\$ (763)	\$ 24,231	\$ 27,848	\$ 63,238
Net income	\$ 6,391	\$ (3,367)	\$ 18,574	\$ 33,391	\$ 54,989
Net income per common share - basic	\$ 0.08	\$ (0.04)	\$ 0.22	\$ 0.40	\$ 0.66
Net income per common share - diluted	\$ 0.07	\$ (0.04)	\$ 0.22	\$ 0.38	\$ 0.64
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Year Ended
2017					
Revenue	\$ 113,733	\$ 133,313	\$ 125,673	\$ 148,493	\$ 521,212
Operating income	\$ 3,943	\$ 14,361	\$ 12,861	\$ 19,266	\$ 50,431
Net income	\$ 1,442	\$ 6,517	\$ 6,372	\$ 25,723	\$ 40,054
Net income per common share - basic	\$ 0.02	\$ 0.08	\$ 0.08	\$ 0.30	\$ 0.48
Net income per common share - diluted	\$ 0.02	\$ 0.08	\$ 0.07	\$ 0.30	\$ 0.47

(1) Second quarter 2018 results include the Company's entry into the Settlement Agreement for the payment of \$20.0 million, as described in Note 15.

(2) Fourth quarter 2017 results include a non-cash tax benefit of \$15.1 million due to the revaluation of the Company's deferred tax balances pursuant to the tax rate reduction included in the 2017 Tax Act.

SCHEDULE II – VALUATION AND QUALIFYING ACCOUNTS
For the years ended December 31, 2018, 2017 and 2016

Accounts receivable allowance and Estimated liability for appeals as of December 31, 2018, 2017 and 2016 are as follows:

Accounts receivable allowance (in thousands):

	Balance at Beginning of Year	Provision	Recoveries	Charge-offs	Balance at End of Year
Year ended December 31, 2016	\$ 11,464	\$ 21,583	\$ 108	\$ (22,383)	\$ 10,772
Year ended December 31, 2017	10,772	20,233	-	(16,206)	14,799
Year ended December 31, 2018	14,799	20,453	-	(21,569)	13,683

Estimated liability for appeals (in thousands):

	Balance at Beginning of Year	Provision	Appeals found in providers favor	Release of estimated liability	Balance at End of Year
Year ended December 31, 2016	\$ 12,801	\$ 721	\$ (2,396)	-	\$ 11,126
Year ended December 31, 2017	11,126	83	(2,665)	-	8,544
Year ended December 31, 2018	8,544	-	(108)	(8,436)	-

The above chart represents the CMS estimated reserve liability only.

Appendix A

HMS HOLDINGS CORP. AND SUBSIDIARIES (unaudited)

Reconciliation of Net Income to EBITDA and Adjusted EBITDA

(in thousands, except percentages)	Twelve Months Ended	
	December 31, 2018	December 31, 2017
Net Income	\$ 54,989	\$ 40,054
Net interest expense	10,221	10,576
Income taxes	(1,972)	(199)
Depreciation and amortization of property and equipment and intangible assets	57,596	50,070
Earnings before interest, taxes, depreciation and amortization (EBITDA)	120,834	100,501
Stock-based compensation expense	21,507	24,143
Settlement expense	20,000	-
Adjusted EBITDA	\$ 162,341	\$ 124,644
% of Revenue	27.1%	23.9%
Adjusted EBITDA, excluding Medicare RAC reserve release	\$ 156,041	\$ 124,644
% of Revenue	26.5%	23.9%

Reconciliation of Net Income to GAAP EPS (Diluted) and Adjusted EPS (Diluted)

(in thousands, except per share amounts)	Twelve Months Ended	
	December 31, 2018	December 31, 2017
Net Income	\$ 54,989	\$ 40,054
Stock-based compensation expense	21,507	24,143
Settlement expense	20,000	-
Amortization of acquisition related software and intangible assets	32,975	30,393
Income tax related to adjustments ⁽¹⁾	(19,216)	273
Adjusted net income	\$ 110,255	\$ 94,863
Weighted average common shares, diluted	86,144	85,088
Diluted GAAP EPS ⁽²⁾	\$ 0.64	\$ 0.47
Diluted adjusted EPS	\$ 1.28	\$ 1.11
Discrete tax benefits	\$ 0.19	\$ 0.40
Medicare RAC reserve release benefit	\$ 0.05	\$ -
Diluted adjusted EPS after Medicare RAC reserve release and discrete tax benefits	\$ 1.04	\$ 0.71

(1) Tax effect of adjustments is computed as the pre-tax effect of the adjustments multiplied by the adjusted annual effective tax rate at period end.

(2) Diluted GAAP EPS for the year ended December 31, 2018 included discrete tax benefits of \$0.19 per diluted share, primarily related to state tax apportionments, the closure of routine outstanding prior year tax audits, the exercise of employee stock options, the abandonment of subsidiary stock related to a 2010 acquisition, and year-end federal and state tax adjustments or provision true ups. Diluted GAAP EPS for the year ended December 31, 2017 included a non-cash tax benefit of \$0.40 per diluted share, primarily related to federal tax legislation enacted in December 2017.

Board of Directors:

Robert Becker

Retired President and Chief Executive Officer,
Wolters Kluwer Health

Craig R. Callen

Former Senior Advisor,
Crestview Partners

William C. Lucia

Chairman, President and Chief Executive Officer,
HMS Holdings Corp.

William F. Miller III

Senior Executive Advisor,
Beecken, Petty, O'Keefe & Company
Former Chairman of the Board and Chief Executive Officer,
HMS Holdings Corp.

Ellen A. Rudnick

Senior Advisor for Entrepreneurship, Adjunct Faculty,
University of Chicago Booth School of Business

Bart M. Schwartz

Chairman and Chief Executive Officer,
SolutionPoint International, LLC

Richard H. Stowe

Lead Independent Director,
HMS Holdings Corp.
General Partner,
Health Enterprise Partners, LP

Cora M. Tellez

President and Chief Executive Officer,
Sterling HSA

Executive Officers:

William C. Lucia

Chairman, President and Chief Executive Officer

David A. Alexander

Senior Vice President,
Chief Human Resources and Chief Compliance Officer

Meredith W. Bjorck

Executive Vice President,
Chief Legal Officer and Corporate Secretary

Emmet W. O'Gara

Group President, Total Population Management

Maria E. Perrin

Senior Vice President,
Chief Marketing and Strategy Officer

Jeffrey S. Sherman

Executive Vice President,
Chief Financial Officer and Treasurer

Jacob J. Sims

Senior Vice President,
Chief Technology Officer

Tracy A. South

Executive Vice President,
Chief Administrative Officer

Douglas M. Williams Jr.

Executive Vice President,
Chief Operating Officer

Corporate Headquarters:

5615 High Point Drive
Irving, TX 75038
Tel. 214.453.3000
Fax. 214.453.3023

Financial Information

The Company's 2018 Form 10-K, as filed with the SEC, is included in this Annual Report in its entirety with the exception of certain exhibits. Copies of the Company's quarterly earnings results and additional copies of the 2018 Form 10-K, including all exhibits, are available on the Internet at <http://investor.hms.com/financial-information/sec-filings> or by accessing our filings with the SEC. In addition, shareholders may obtain a paper copy of these materials upon request from our Office of Investor Relations by emailing robert.borchert@hms.com.

Stock Registrar and Transfer Agent

Common stock of HMS Holdings Corp. is traded on the NASDAQ Stock Exchange under the symbol HMSY. Questions with regard to registered shares of HMSY should be submitted to: HMS Holdings Corp. c/o Broadridge Corporate Issuer Solutions, Inc., P.O. Box 1342 Brentwood, NY 11717. Phone: 888.418.5059. Email: shareholder@broadridge.com. Internet: <http://www.broadridge.com>.

 **hms**[®]
Moving healthcare **forward.**

[hms.com](https://www.hms.com)
  
©HMS 2019