



BUSINESS INTELLIGENCE REPORT ASSIGNMENT 3

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ASSIGNMENT 3 FRONT SHEET

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INTRODUCTION

Business intelligence (BI) leverages software and services to transform data into actionable insights that inform an organization's strategic and tactical business decisions. BI tools access and analyze data sets and present analytical findings in reports, summaries, dashboards, graphs, charts, and maps to provide users with detailed intelligence about the state of the business.

There are many reasons why organizations adopt business intelligence and analytics tools, and many ways these solutions are put to work to benefit the organization. All projects, however, have the common goal to use business intelligence software to turn data into insights and action.

As the primary competitive advantage business intelligence should deliver an increase in the understanding of the forces shaping markets and businesses, and help companies to act on that knowledge.

Ultimately, the hope is to be able to outsmart and out-deliver competitors, while proactively addressing customer needs.

In the big picture, BI is essentially a comprehensive analytics solution that you can use to better understand your company and the state of the market that you're growing in. The operative word here is comprehensive: for BI to work, you have to start from the ground up and ensure that you don't leave out any key components.

Discuss the impact of business intelligence tools and technologies for effective decision-making purposes and the legal/regulatory context in which they are used

1. How business intelligence tools can contribute to effective decision-making.

By utilizing a fact-based, real-time, singular version of the truth, companies are now empowered to achieve and maintain a competitive edge through the use of industry-specific business intelligence. Executives have immediate access to crucial information to make fast and educated decisions.

Data is available across core business processes such as industry trends, customer behavior, productivity, inventory, and detailed financial analysis. Business intelligence software extracts the information, transforming it into clear insights to enable actionable and strategic decision-making to readily achieve their goals.

- **Better sales decisions:**

Industry-specific business intelligence enables companies to discover detailed sales trends based on their customers' preferences, reactions to promotions, online shopping experiences, purchasing habits, and patterns and trends which affect sales. Leveraging customer buying habits permits a company to decide the best course of action to retain valuable customers and take advantage of missed sales opportunities.

By drilling down to such comprehensive insights, a company can quickly decide which link-sell opportunities to increase or which products are best for cross-selling. By identifying customers in decline, a business can determine the best plan to reposition the product before they stop buying altogether. Sales managers can identify the best type of customers, where to find them, and determine the most effective acquisition and conversion strategies. By identifying bottom-buyers, a company may make decisions around the best promotional strategies or whether to let those customers go.

Having a clear picture of sales trends also allows collaboration in marketing and management decision-making. (myabcm)

- **Better marketing strategy:**

By monitoring trends to determine customer preferences, a company can quickly make strategic marketing decisions to best capitalize on their products or services. Data analytics software can identify promotional returns and analyze campaign outcomes. A company can now use it to decide how to prioritize campaigns, tailor promotions, and engage in social media to maximize marketing efforts. This enables a company to make decisions that will fine-tune its marketing strategies, reduce overhead and garner a better return on investment.

- **Better business decisions:**

Data analytics allows Executives to make decisions based on statistical facts. Those facts can be used to guide choices about future company growth by evaluating a long-term view of the market and competition. Data analytics can help Executives decide how to streamline processes by using visualizations identifying the productivity in each area of the company, including employee management. By identifying actionable insights, a manager can determine the most effective strategies to improve employee productivity, streamline the recruitment process, or reduce employee turnover. Data analytics allows Executives to funnel all of the facts into making crucial operational decisions.

- **Better inventory decisions:**

Using data analytics to identify problem areas and opportunities allows a company to make decisions that will refine their inventory management. For example, the decision to reduce excess inventory also reduces the cost to maintain it. With better visibility, a company can make better decisions about how much to order and when. Knowing a product's ordering patterns along with the best times, prices, and quantities to buy also allows managers to change pricing tiers to increase profit margins and capitalize on every opportunity.

- **Better financial decisions:**

Data analytics offers an up to date view of a company's financial picture. A Manager can view profit and loss, general ledger, and balance sheet figures through features such as Phocas' Financial Statements. Top-notch BI will allow businesses to drill down to individual transactions to get instant answers to revenue opportunities and cost concerns. By examining incoming and outgoing finances of the present and past, a business can make decisions based on the company's future financial status. Breaking down revenue by location evaluates the strength of product lines by branch. For example, a business may decide to remove a specialty item from one location and increase its promotion in another. Customizing the dashboard allows Executives to track key performance indicators (KPI's) to enable effective financial oversight and management.

Apart from the above, other advantages companies can realize due to business intelligence include:

- **Improve Business Productivity:**

Businesses can channel their vital resources and workforce to foster business productivity as they need not divert their resources to business intelligence (BI) gathering work. Since all BI gathering work is handled by the BI team, it results in cost-saving, time-saving and efficient reporting supporting improved business productivity. The BI gathering team can pull up vital information from customer interactions and present it in a manner that is easy to understand, communicate and execute. BI gathering teams ensure that detailed reports are provided to companies ensuring that all the crucial information is presented in a well-documented and presentable manner so that information can be used to efficiently manage the business.

- **Crucial Information Easily Accessed:**

Business intelligence provides crucial information to companies, improving their ability to make quick decisions and generating a competitive advantage.

- **Good Return on Investment (ROI):**

BI ensures stronger ROI as companies can significantly reduce costs, enhance revenue, improve margin, drive cost avoidance and much more. Also, BI ensures qualitative ROI such as improvements in business and process efficiency, employee productivity, better strategic decision making, customer satisfaction and much more. Companies relying on business intelligence can reduce operational costs due to improved operational efficiency and optimized business processes.

For example: suppose Joe invested \$1,000 in Slice Pizza Corp. in 2017 and sold his stock shares for a total of \$1,200 one year later. To calculate his return on his investment, he would divide his profits ($\$1,200 - \$1,000 = \$200$) by the investment cost ($\$1,000$), for a ROI of $\$200/\$1,000$, or 20 percent.

With this information, he could compare his investment in Slice Pizza with his other projects. Suppose Joe also invested \$2,000 in Big-Sale Stores Inc. in 2014 and sold his shares for a total of \$2,800 in 2017. The ROI on Joe's holdings in Big-Sale would be $\$800/\$2,000$, or 40 percent. (See Limitations of ROI below for potential issues arising from contrasting time frames.)

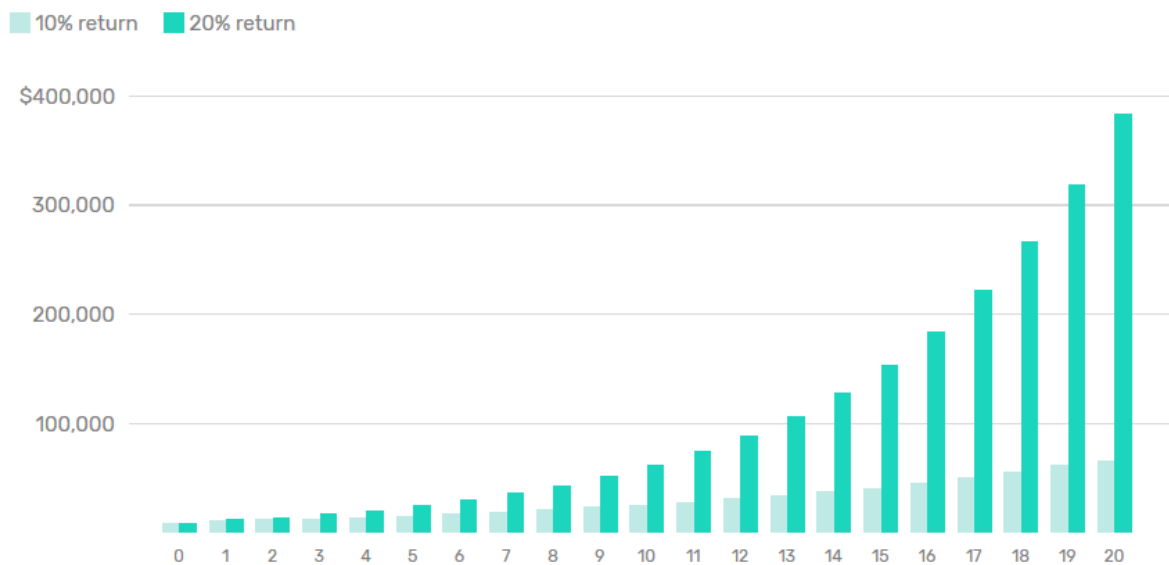


Figure 1. The Balance in ROI

- **Informed Decision Making:**

Reporting based on accurate and timely information helps companies measure the performance of their processes. Business Intelligence helps companies make informed decisions on strategic issues by providing crucial information on the current and historical performance of the company along with future trends, expected demands, customer behavior, etc.

Business Intelligence teams ensure that the company receives real-time advanced reports to ensure that the company can efficiently utilize the information at hand to better manage the business.

For example:

Unite Business Intelligence provides departments and offices an effective way to consolidate and coordinate the production of, and access to, data and reports across the global Secretariat, including:

- Coordinating Umoja reporting on supply and demand;
- Assisting local BI teams to develop Umoja ad-hoc reports;
- Developing statutory reports;
- Analyzing and integrating data sources;
- Establishing BI governance mechanisms;
- Working closely with business areas to assess BI requirements and capacity; and
- Delivering reports, dashboards, and visualizations across substantive and administrative business areas.

Unite Business Intelligence will make it easier to access information that will support efficient, effective, and accurate decision-making on both administrative and substantive matters.

To better assess and respond to the BI needs of individual entities, OICT is hosting BI workshops to understand, identify, and prioritize BI requirements. To date, workshops have been conducted with 11 departments and entities, including the United Nations Office at Nairobi (UNON), the Economic Commission for Latin America and the Caribbean (ECLAC) and the Department of Field Support (DFS).
(un)

2. The legal issues involved in the secure exploitation of business intelligence tools

Businesses are continuously advised to protect their information from being hacked and at the same time warned that they should not share it broadly. For example Analytics software process tons of data quickly, use make-shift queries to extract data and display it in an easily understood format. However, these business intelligence application software is vulnerable to security risks if certain safeguards aren't present, be it policies or some form of monetary investment, etc.

Business Intelligence strategies have definitely effected cost, efficiency and decision making but the influence of business intelligence on data security has still not been clearly understood.

If data is not secured it poses a lot of threat. The ones who incorporate Business Intelligence strategies are most aware of the type of data and where it is stored but that does not ensure security. We now have easily understood and extremely vulnerable data that can easily be acquired by a hacker.

Business Intelligence Opportunities and Risks that come with it: Business intelligence provides a lot of opportunities and constantly bettering its performance seems mandatory. At the same time security is also important, which, as per a survey done recently, it seems to be a minor concern for a lot of organizations when a report from Computer World Survey, 50% respondents have increased their investment for data security and only 35% consider security concerns as an obstacle.

Vendors are looking for ways to take advantage of such an opportunity and we have proofs that prove this statement true.

At the same time, major data breaches have been reported from high profile companies like the voter database, Anthem Insurance, and Sony. New risks are involved when Software IT outsourcing and analytics have successfully the internal systems as well as the external and cloud platforms. (nexsoftsys)

- **Choice of your Business Intelligence tool:**

The first check on security is what tool your BI strategy would use. Major organizations consider cloud implementation as an essential part of their strategy despite security concerns. The cloud option is comparatively cost-effective but data security measures have to be determined.

- **Data Encryption:**

At the very base level, data should be encrypted to avoid being accessed by hackers. The IBM Z machine can process 12 billion encrypted transactions in a single day. These measures of encryption would slow down a hacker from acquiring information. Segmenting data and network storage is also beneficial which would prevent hackers from accessing all parts of your sensitive data at once.

- **Managing Data Security by Analytics Vendors:**

Companies like FireEye, PaloAlto Networks and Fortinet provide solutions intelligence or analytics via external systems like the cloud and are considered the potential for the future of security intelligence. Security is a major concern in the coming years and expectedly, of the upcoming vendors to create plug-ins meant for data security.

- **Responsible Data Sharing:**

The sharing of important data in and around your company should be done based on “need to know”. Care should be taken to maintain data privacy. Employees requiring access to certain information should justify the need and intent of the data being requested. Since there is a rapid flow of data from sensors and devices with IoT flourishing, there is a major need for security and analytics vendors to perform powerfully and consistently.

- **Managing Cloud Security:**

With information assets being secured on the cloud, the need to maintain some security constraints are essential. A safe analytics hub can be ensured when we use standard and certified API or user interface instead of coding our connection.

- **Evolving Models:**

Hackers often use phishing or social engineering scams to access systems and breach cloud security. This would require you to maintain an h3 authentication for your password and limited access to information. Also, caution against phishing is important.

- **The advent of Big Data:**

Big Data indicates a lot of responsibility, so multiple layers of abstraction for the sake of security should be maintained such as firewalls, vulnerability checking, intrusion prevention, etc.

- **Outsourcing:**

Outsourcing data management involves a lot of risks when a third party company is entrusted with your information. Companies contracting with Microsoft, Cloud Services of IBM with Cognos can ward off these dangers for security with a single vendor. For any vendor, security becomes a risk that is shared.

Businesses need to be careful about data protection while investing in analytics and strategic systems. Potential manipulation and leakage of data by staff or the contractors should be taken care of and the commitment of employees and executives to protect sensitive data is mandatory.

Big data brings with it new privacy and security concerns. Although our data capacity is growing exponentially, we have imperfect solutions for many security issues that affect even local, self-contained data. While data warehousing handles the integration of the big amount of data across multiple business systems, business intelligence is concerned with how to use that integrated data to make strategic business decisions. However, whenever private data is accessed, security becomes a concern. Data breaches, location-based services, cloud computing, and regulatory changes force organizations to review and revise their current privacy policies.

No.	Security type	Security and Privacy issues
1	Infrastructure security	<ul style="list-style-type: none"> Secure computations in distributed programming frameworks Security best practices for non-relational data stores
2	Data privacy	<ul style="list-style-type: none"> Privacy-preserving data mining and analytics Cryptographically enforced data-centric security Granular access control
3	Data Management	<ul style="list-style-type: none"> Secure data storage and transactions logs Granular audits Data provenance and verification
4	Integrity/Reactive Security	<ul style="list-style-type: none"> End-point input validation and filtering Real-time security monitoring

Table 1. Security and Privacy Issues

Outside of legal, it is the norm that clients and market conditions drive change. It's widely accepted that if an organization doesn't acknowledge that norm, that organization dies. Example: Kodak and Blockbuster.

Now, in what seems to be a foreshadowing, that accepted norm is seeming into legal. The fundamental differences are that law firms, unlike corporations or other market-beholden organizations, are arranged as a partnership that holds to cultural mores brought on by the lawyers that make up the partnership. However, this arrangement does not make law firms invincible to such changing tides. We've watched the extinction of firms in legal as well. Example: Bingham McCutchen.

Accounting is a perfect example of just this, a similarly structured organization to legal that nevertheless led the change it needed. The focus for accounting – and thus the template for legal – is on who is leading the change, with the tacit implication that the best path is for the industry to forge its path. Indeed, for law firms in the new environment, it is not enough to let the more sophisticated client push for change, rather the onus should be placed on the law firm to change first. So, what is a law firm to do?

There are plenty of options out there in the form of change management around processes and people. But before over complicating it, law firms would be wise to looking inward for insight that already exists.

Example Using Tools to Configure Security in Oracle Business Intelligence: (oracle)

To configure security in Oracle Business Intelligence uses the following tools:

- **Using Oracle WebLogic Server Administration Console:**

You use the Oracle WebLogic Server Administration Console to manage the WebLogic LDAP Server that enables you to authenticate users and groups.

Oracle WebLogic Server is automatically installed and serves as the default administration server. The Oracle WebLogic Server Administration Console is browser-based and is used, among other things, to manage the embedded directory server.

When you configure Oracle Business Intelligence, the initial security configuration uses the embedded Weblogic LDAP directory, the default authenticator, as the Identity Store. In 11g, the BI installation seeded some specific users and groups into the LDAP directory. In 12c, the installation does not seed default BI groups into the LDAP directory. If your application expects LDAP groups such as BIconsumers, BIContentAuthors, and BIServiceAdministrators to exist in the Identity Store, you need to add these groups manually or configure the domain to use a different Identity Store where these groups are already provisioned after the initial BI configuration has finished.

If you use an alternative authentication provider, such as Oracle Internet Directory instead of the default the WebLogic LDAP Server, then you must use the alternative authentication provider administration application, for example, an administration console to manage users and groups.

- Display the Oracle WebLogic Server login page by entering its URL into a web browser.
For example, <http://hostname:9500/console>.
- Log in using the Oracle Business Intelligence administrative user and password credentials and click Login.
- Use the tabs and options in the Domain Structure as required to configure users, groups, and other options.

- **Using Oracle Fusion Middleware Control:**

Fusion Middleware Control is a web browser-based graphical user interface that enables you to administer a collection of components.

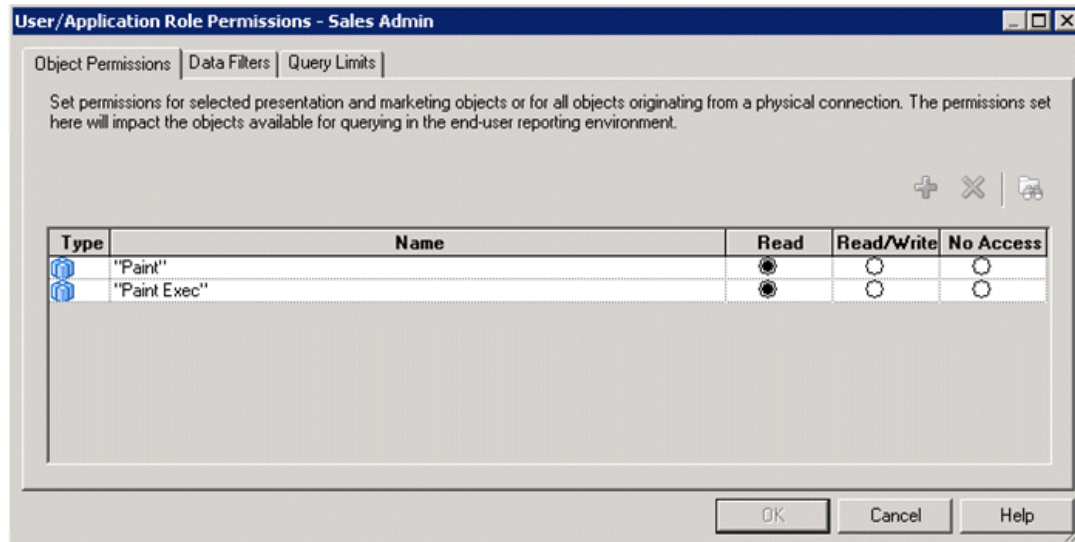
The components consist of Oracle WebLogic Server domains, one Administration Server, one or more Managed Servers, clusters, and the Fusion Middleware Control components that are installed, configured, and running in the domain. During configuration of Oracle Business Intelligence, an Oracle WebLogic Server domain is created and Oracle Business Intelligence is configured into that domain. The domain is named bi in Enterprise installations and is found under the WebLogic Domain folder in the Fusion Middleware Control navigation pane.

You use Oracle Fusion Middleware Control to manage Oracle Business Intelligence security as follows:

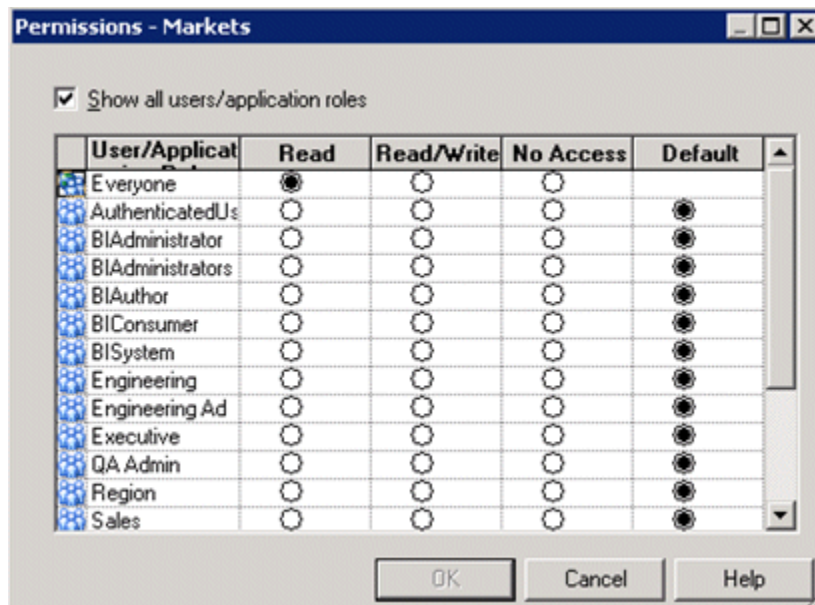
- Manage the application roles and application policies that control access to Oracle Business Intelligence resources.
- Configure multiple authentication providers for Oracle Business Intelligence.

- **Using the Oracle BI Administration Tool:**

You use the Oracle BI Administration Tool to configure permissions for users and application roles against objects in the metadata repository.



Picture 1. User/Application role permissions



Picture 2. Setup permissions

- **Using the Presentation Services Administration Page:**

You use the Presentation Services Administration page to configure user privileges.

Category	Privilege	Role
Access	Access to Dashboards	BI Consumer
	Access to Answers	BI Content Author
	Access to BI Composer	BI Content Author
	Access to Delivers	BI Content Author
	Access to Briefing Books	BI Consumer
	Access to Mobile	BI Consumer
	Access to Administration	BI Service Administrator
	Access to Segments	BI Consumer
	Access to Segment Trees	BI Content Author
	Access to List Formats	BI Content Author
	Access to Metadata Dictionary	BI Content Author
	Access to Oracle BI for Microsoft Office	BI Consumer
	Access to Oracle BI Client Installer	BI Consumer
	Catalog Preview Pane UI	BI Consumer
	Access to Export	BI Consumer
	Access to KPI Builder	BI Content Author
	Access to Scorecard	BI Consumer
Actions	Create Navigate Actions	BI Consumer
	Create Invoke Actions	BI Content Author

Picture 3. Using Oracle BI

Category	Privilege	Role
Access	Access to Dashboards	BI Consumer
	Access to Answers	BI Content Author
	Access to BI Composer	BI Content Author
	Access to Delivers	BI Content Author
	Access to Briefing Books	BI Consumer
	Access to Mobile	BI Consumer
	Access to Administration	BI Service Administrator
	Access to Segments	BI Consumer
	Access to Segment Trees	BI Content Author
	Access to List Formats	BI Content Author
	Access to Metadata Dictionary	BI Content Author
	Access to Oracle BI for Microsoft Office	BI Consumer
	Access to Oracle BI Client Installer	BI Consumer
	Catalog Preview Pane UI	BI Consumer
	Access to Export	BI Consumer
	Access to KPI Builder	BI Content Author
	Access to Scorecard	BI Consumer
Actions	Create Navigate Actions	BI Consumer
	Create Invoke Actions	BI Content Author

Picture 4. Manage access in oracle BI

The diagram summarizes the tools used to configure security in an example installation of Oracle Business Intelligence that uses the embedded WebLogic LDAP Server.

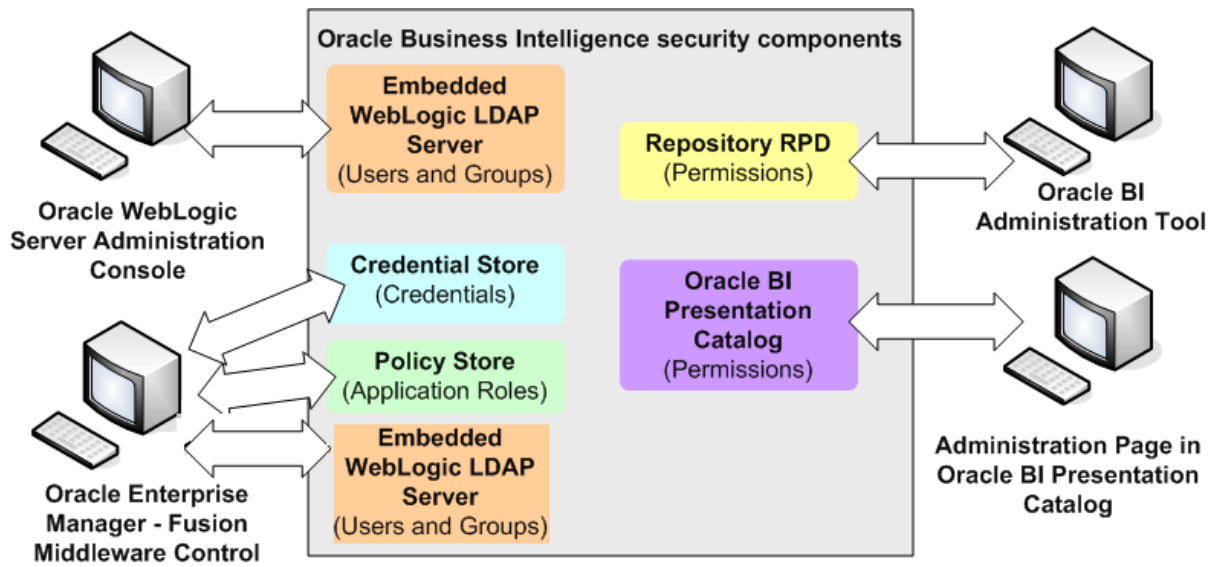


Figure 2. Description of the illustration

3. Examples of organizations that have used business intelligence tools to enhance or improve operations.

Cigna embraces Tableau, improves healthcare affordability and cares for 95M customers. (tableau, tableau)



Picture 5. Cigna logo

Cigna® delivers affordable, quality care to 95 million global customers through commercial health, dental, life, accident, and Medicare and Medicaid insurance products. Cigna relies on data from across the organization and from its Collaborative Care program to achieve its business goals of “better health, better affordability, and a better experience for patients and providers,” said Paul Van Dorpe, Business Analytics Director at Cigna.

In 2017, the company implemented Tableau as the visual analytics platform for its 550 Cigna Collaborative Care partner organizations in 32 U.S. states. Using Tableau, Cigna’s analytics team reviews financial transactions, customer and provider data, creates meaningful reports and shares them with partnering providers so they can offer better, more affordable patient treatment. After completing its 2018 survey of providers titled “CCC Reporting Portal and Registration Process Survey,” 41 percent of respondents indicated that they use the quarterly reports more frequently to understand patient history, diagnoses, and treatments. The reports help them determine who to follow up with for appointment reminders and when, and provide information for brief health updates, medication compliance reinforcement, and post-surgery recovery documentation.



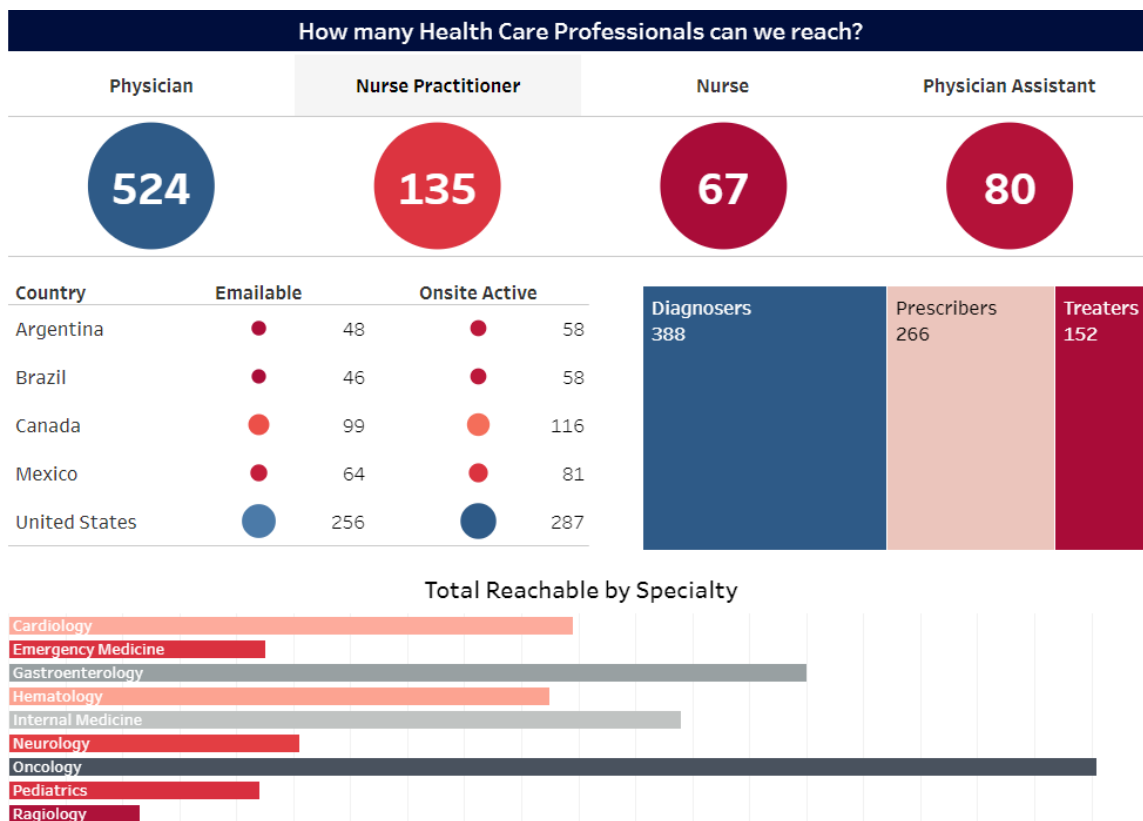
Picture 6. Cigna's wilde side garden

Analytics help providers reduce opioid prescriptions by 25 percent:

Opioid misuse and addiction is a national public health crisis that adversely affects social and economic welfare. More than 100 people die from overdoses, daily, and the Centers for Disease Control and Prevention (CDC) estimate that the economic impact of prescription opioid misuse in the US is \$78.5 billion per year derived from healthcare costs, lost productivity, and treatment. Unfortunately, a serious issue arises when primary care physicians, who are unaware of patients' treatment by other providers, write opioid prescriptions for patients who have not been identified as at risk for opioid misuse or abuse.

In collaboration with Collaborative Care partners, Cigna hypothesized that existing data could be used to better control opioid delivery. This led to the creation of the Opioid Drug Utilization report in Tableau that filters by number of patients treated per provider, the number of prescriptions written, their duration, and by date filled. The report incorporated both patients that the provider is contractually obligated to manage, as well as other patients (e.g. patients without primary care providers) since misuse and addiction reach beyond those patients within their contractual obligations. As a result, providers now have a view into which patients are at risk or fall outside of CDC guidelines.

With this comprehensive view, Cigna provider partners decreased opioid prescriptions by 25 percent - a goal that was met earlier than planned and Cigna now has a goal to reduce overdoses by 25 percent in key markets during the next two years. Tableau will track progress in quarterly reviews as they take action, and these efforts dovetail with the U.S. Surgeon General's "Turn the Tide" pledge and the CDC's opioid prescribing guidelines.



Picture 7. How many health care professionals. (reddit)

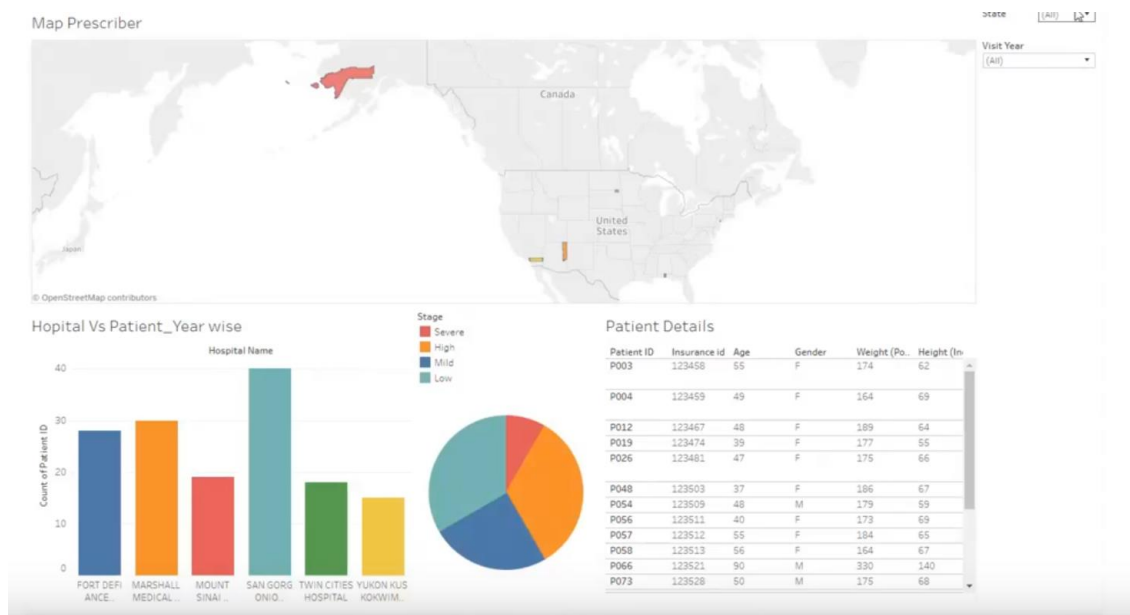
How bi helps the company to improve:

- Saved \$145M in total medical cost to-date with annual per-patient savings of \$120
- Reduced opioid prescriptions by 25%
- Top-performing Collaborative Care participants save 3% in medical costs
- **Connections:** (cigna)
 - 500+ hospitals in the Hospital Quality Incentive Program
 - 650+ collaborative care relationships with care providers, striving to provide better overall health, affordability, and experience, covering 3.6 million customers
 - 68K+ contracted pharmacies in our networks representing more than 99% of all U.S. pharmacies
 - The global network of 1M+ relationships with health care providers, clinics and facilities
- **Performance:**
 - Ranked #65 on the 2019 Fortune 500 List
 - Cigna named to the Dow Jones Sustainability Indices in 2018: World Index and North America Index
- **Community:**
 - \$200M committed to the Cigna Foundation and our communities
 - \$25M committed by the Cigna Foundation to Healthier Kids for our Future

4. How organizations could use business intelligence to extend their target audience and make them more competitive within the market, taking security legislation into consideration

Cigna using tableau tools:

Tableau provided Cigna the flexibility to securely integrate multiple data sources with its existing data infrastructure and offer governed reports to Collaborative Care partners. To date, this has resulted in \$145 million in medical cost savings, and annual per-patient savings of \$120. With Tableau, Cigna also supports internal analysts who synthesize healthcare costs and data from more than 140,000 physician partners, helping keep the quality of care standards high for its 95 million customers.



Picture 8. Cigna using tableau tools

Tableau-powered reports enhance patient care and affordability, guarantee data security:

Relationships with primary care providers and specialists, clinics, and facilities who participate in Cigna Collaborative Care (CCC), plus the data from all of its insured customers, put Cigna in a unique position to reveal insights for the best, most affordable treatment of patients.

Cigna previously used Excel to analyze their multiple, disparate data sets. This created confusion about the performance of Cigna's Collaborative Care participants and made it difficult for them to know if their industry-leading engagement, satisfaction, and experience levels were maintained or exceeded. Pre-Tableau, Collaborative Care providers took static legacy reports, adapted them, and sifted through data points to gain insights. But this workflow wasn't optimal, generated low engagement, created missed opportunities and made it difficult to positively influence patient outcomes.

The analytics team audited 14 previous Collaborative Care reports to determine a go-forward strategy. "We try to build relationships with all of our ACO (Accountable Care Organization) partners by delivering new tools, and news reports that will enable them to focus on what's important the health and well-being of their patient population," explained Jo Ann Bidwell, Business Analytics Manager at Cigna. Consequently, Cigna combined financial transactions, customer, provider, treatment, and other data in

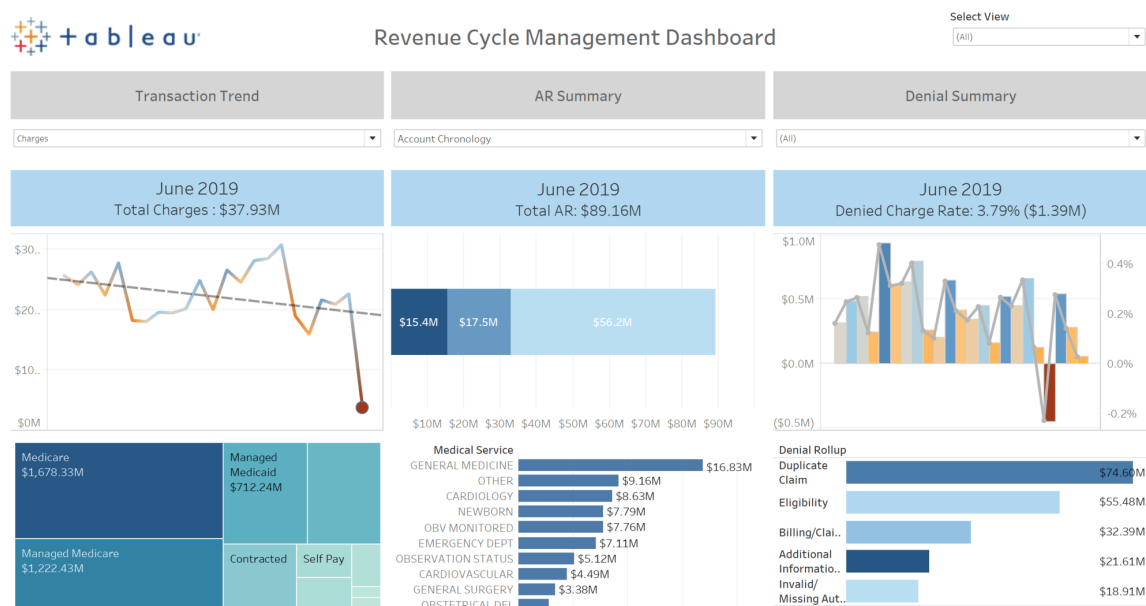
Tableau dashboards that “make the complex simple, which is our guiding approach for how we provide useful information,” stated Paul.

Performance monitoring is critical for tracking quality of care - individually, as a practice, in comparison with peers and for understanding which measures have opportunities or require focus. The provider report card that is accessible in Cigna’s secure Collaborative Care reporting portal is rooted in Evidence-Based Medicine and provides valuable performance metrics. It has multiple filters - ER metrics, inpatient treatment instances, out-of-network treatments, and primary care provider-to-specialist ratios, to name just a few. Drilling into prescription patterns, for example, providers may discover new opportunities to offer generic medicine at a lower cost to patients.

Tableau provides Cigna with greater flexibility to support our Collaborative Care providers who benefit from on-demand, actionable data, and access to analysts who study their medical cost patterns and trends, allowing them to improve care and generate cost savings for their patients. Additionally, the Tableau reporting suite can identify potentially avoidable complications related to certain procedures and the occurrence rate, thus focusing efforts on the best opportunities to improve outcomes and avoid additional future complication costs.

This level of detail, not typically found in electronic health records, provides value to clinicians, surgical groups and medical facilities, by uncovering significant cost savings for the practice that can translate into increased affordability for their patients. Other benefits made possible by Cigna's Tableau reporting include:

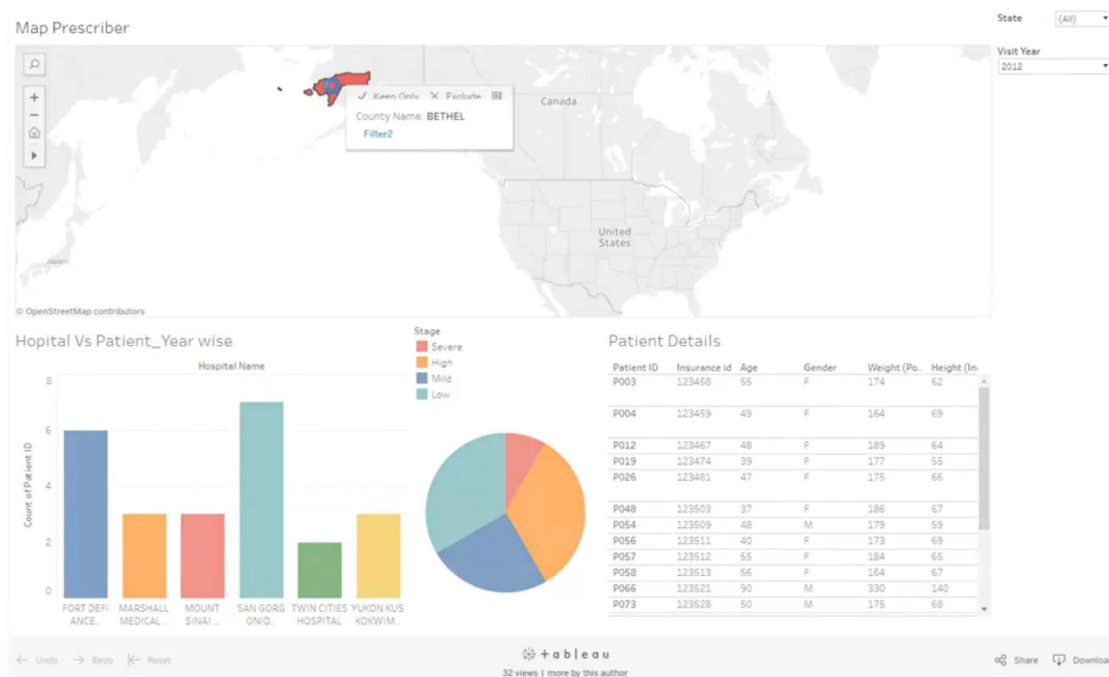
- Improved HIPAA compliance, facilitated by Tableau’s integration with Cigna's user-authenticated portal for reporting access
- An understanding of physician or hospital utilization patterns that lead to shared savings
- Ability to assess savings on the episode level (e.g. knee replacement, hip revision, etc. for orthopedic episodes)
- Better resource prioritization and optimization, enabled by actionable insights



Picture 9. Revenue cycle management dashboard. (tableau, tableau)

Dashboard adoption positively impacts population health:

To ensure comprehensive stakeholder support, Cigna implemented two Tableau Server instances: one geared for internal analysts and management who offer consultative services to ACOs and another that is directly accessed by ACOs in the reporting portal. The analytics team monitors dashboard performance across the servers to identify training opportunities, look for areas where design changes may help adoption, and monitor how specific reports influence use.



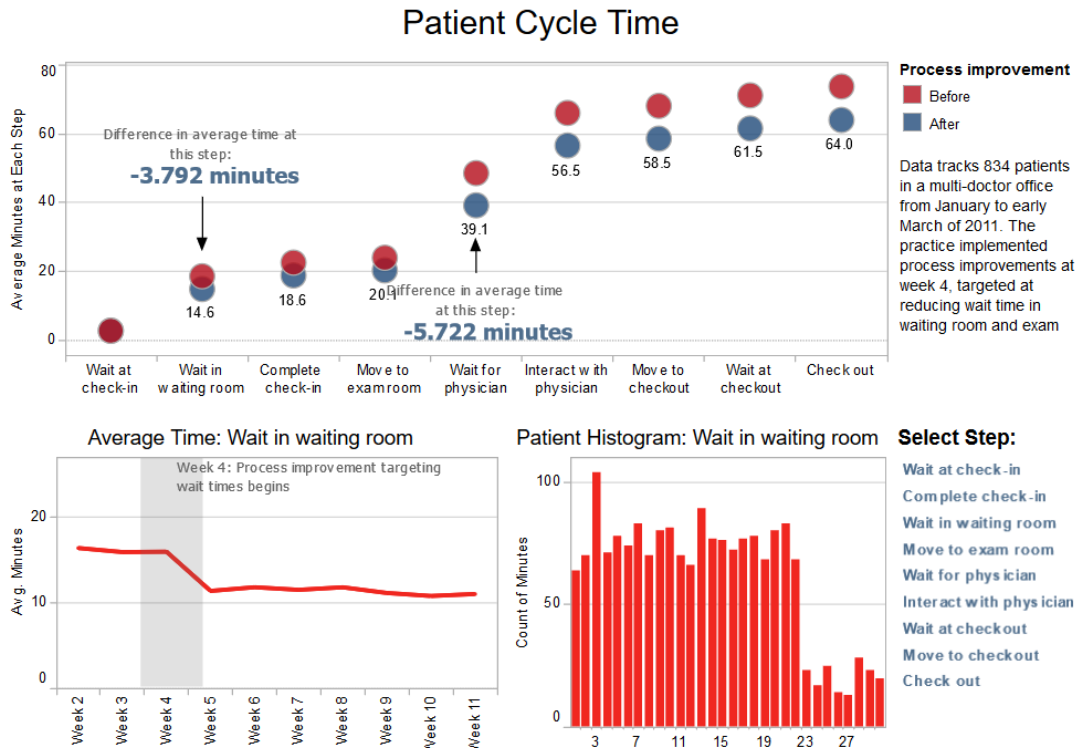
Picture 10. Dashboard adoption positively impacts population health

This detailed evaluation wasn't possible before Tableau. "We didn't know if people used or ignored them, and how fruitful they were. Now we can track individual dashboard utilization to users and connect population health performance to how strongly providers made use of our reporting solutions," stated Paul. As previously noted, Cigna learned that 41 percent of respondents use the quarterly performance dashboards more often thanks to Tableau's visual format. "One of our ACO clients in North Carolina told us that the 'more detailed, practical reporting shows us specific ways to reduce costs,'" Paul explained.

The business intelligence will be supporting Cigna Supplemental Benefits (CSB), a fast-growing and dynamic Cigna business. It will work closely with colleagues across the business (including partners in operations, finance, actuarial, strategy, marketing, sales, etc.) to identify key analytics needs and to provide insights that address business questions and influence future decision-making.

Business intelligence will solve:

- Measuring price elasticity and competitive positioning.
- Helping optimize profitable growth for each of CSB's sales channels
- Segment customers into meaningful cohorts to differentiate acquisition and retention efforts.
- Measuring and analyzing cross-sell efforts across various Cigna lines of business
- What is driving medical cost trend?

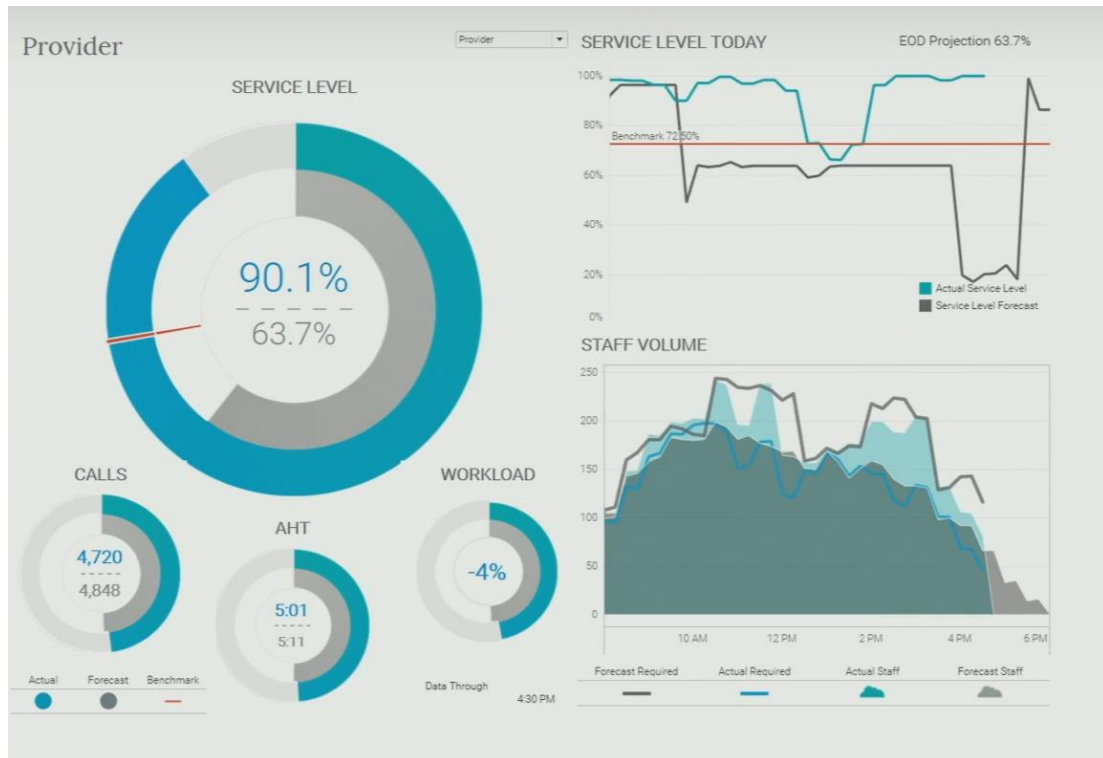


Picture 11. Patient cycle time

BI will be responsible for developing research questions, creating hypotheses, gathering and synthesizing data, summarizing your findings clearly and concisely, and delivering the results or recommendations to a broad audience. It will form consultative partnerships and balance multiple stakeholder requests concurrently to become a trusted partner/leader across the CSB business.

Customer service call:

- Real-time visibility: Provide a more consistent customer experience through the day
- Refines our focus: High-impact actions targeting areas of greatest need
- Easily consumable: Skips reporting intermediaries and tell a more concise story



Picture 12. Customer service call

Global Privacy and Information Protection:

A key part of Cigna's cybersecurity program is Cigna's enterprise-wide security policies and standards. CIP has aligned Cigna's cybersecurity program and its security policies and standards with the NIST Cybersecurity Framework. NIST is an internationally recognized security control framework used by companies to assess and improve their ability to prevent, detect, and respond to cyber-attacks. In addition to the NIST framework, CIP also leverages the internationally accepted standards of ISO 27001 and 27002, which provide best practice recommendations for initiating, implementing, or maintaining information security management systems. We believe that aligning with and leveraging these frameworks helps to ensure that Cigna's cybersecurity and information protection program remains relevant and appropriate in light of changes to the cybersecurity landscape and emerging technologies. CIP reviews Cigna's security policies and standards and updates them regularly to facilitate compliance with regulatory, industry, and contractual requirements and recommendations.

CIP is also responsible for the implementation and effective operation of the following critical security processes:

- Cyber risk assessments.
- Application and infrastructure security assessments.
- Identity and access management.
- Security awareness and training
- Third-party security oversight.
- Security operations and monitoring.
- Cybersecurity incident response planning.

CONCLUSION

Above all else, BI and IT managers see their tools and platforms as a means to deliver faster and more accurate information to decision-makers. Faster and more accurate reporting, analysis or planning; better business decisions; improved employee satisfaction and improved data quality top the list.

Benefits achieved least frequently include reducing costs, increasing revenues and reducing IT headcount. With growing efforts to monetize data by improving commercial offerings, we might see the “increased revenues” outcome rising in frequency in the future.

Implementing an effective BI strategy is not done overnight. It takes considerable effort, time and consideration to be done correctly.

But an effective suite of BI analytics will be valuable to your business in many ways. It can help improve internal processes. It can provide information on efficiencies. It can give insight into possible new products, or adjustments to existing products. It can even provide information on competitors.

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