Business Intelligence

Applied to

Telemental Health in the Age of COVID-19

An analysis of telemental health pre-COVID-19 versus post-COVID-19

PRESENTED TO

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Introduction

Though not familiar to most people, telemental health and telepsychiatry are accepted terms of art in the mental health industry. The terms describe the practice of remotely accessing mental health treatment and counseling through technologies such as video conferencing or by phone. Being a named phenomenon indicates that receiving counseling via remote technologies is a well-established practice.

While social scientists are beginning to address the phenomenon, as of now there exists little empirical evidence or literature concerning the impact of transitioning to telemental health. Currently, we are in possession of a large store of information, yet the data has not been sorted out. Business intelligence could harness this data and give us a foundation upon which to base sound decisions.

Research indicated that virtually all the material related to pandemic-era concerns. It was slightly challenging to find material that covered the Pre-COVID-19 era.

The most challenging aspect of the research was determining the most potent search terms that would uncover the most significant number of research articles and papers on telemental health. Right below that in difficulty was/is going through the enormous amount of research and picking parts to address. Most of the research is in the form of scholarly papers, which tend to be long and inundated with terms of art that must then be researched.

Summary

While telemental health existed before the pandemic, its use exploded with the coming of COVID-19. Before the virus, many therapists were hesitant about providing mental healthcare via communications technology as opposed to in-person treatment. There were too many problematic concerns, such as confidentiality, the inability to develop the critical client/counselor relationship, and even license and liability issues (Morgan et al., 2021).

While the end of the tunnel may be in sight with the pandemic, questions remain about the future consequences that will develop. How many clients and therapists will want to continue with telemental health? What ethics issues will be part of the equation? How will the client/therapist relationship be permanently affected? What do we do about training therapists? Elements on which therapists rely, such as body language nuances, will be affected.

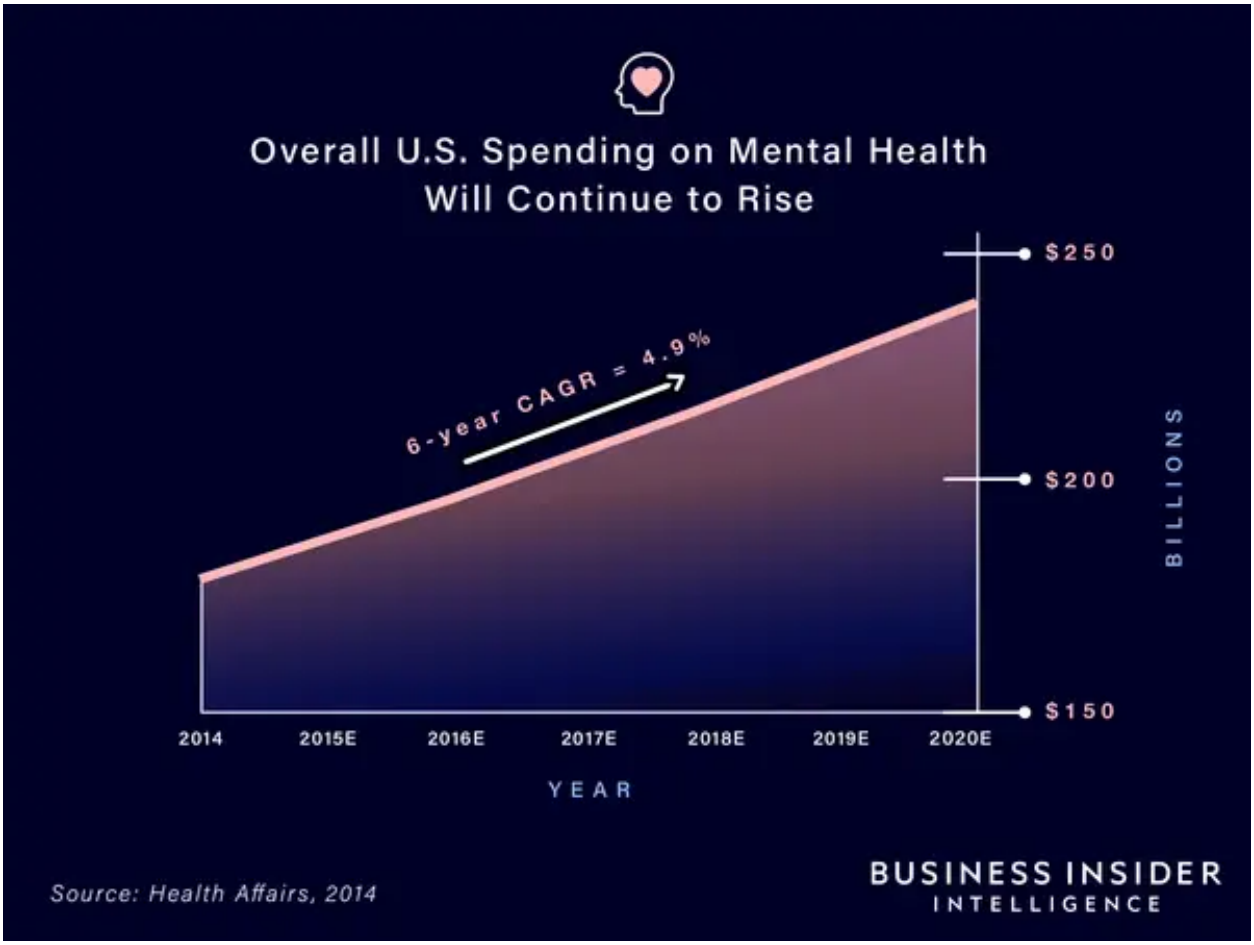
While social scientists are beginning to address the phenomenon, as of now there exists little empirical evidence or literature concerning the impact of transitioning to telemental health. Currently, we are in possession of a large store of information, yet the data has not been sorted out. Business intelligence could harness this data and give us a foundation upon which to base sound decisions.

Numerous questions remain, many we haven't even grasped yet. But they must be addressed. Where do we start? The first order of business is to harness all the data generated and develop a solid foundation to begin the ambitious plan of untangling these questions. The industry needs all the information and knowledge that can be generated to move forward with this new post-pandemic world. It's a new day, and the pandemic has brought it to us.

State of Telemental Healthcare Pre-COVID-19

Pre-COVID-19, the U.S. mental healthcare system was undergoing a severe need for delivery reform. Suicide rates had increased by 33% from 1999 to 2017. Many would-be patients lived in rural areas, making it difficult to travel long distances to see a therapist in person. The United States was undergoing a shortage of mental healthcare providers. The low-income segment with Medicaid had difficulties accessing mental healthcare (Barnett & Huskamp, 2019). Hospital emergency departments were becoming inundated with patients who required mental health services.

Facing these factors, the United States mental health system was in the midst of an impending financial disaster. Predictions in 2019 foretold that the year 2020 would see $238 billion in costs in 2020. (LaRock, 2019)



Before the pandemic, a study showed that mental health facilities were rapidly adopting telemental healthcare. According to Spivak et al., "Telemedicine nearly doubled, from 15% in 2010 to 29% in 2017" The South and Midwest were particularly eager to offer telemental healthcare. The study also showed that telemental care was already widely adopted, especially in public safety net facilities. (Spivak et al.,

2019) The increase is tempered by the results of a telephone survey, which found that only 2.1% of clients and providers engaged in telemental healthcare. (Severe et al., 2020)

Drivers of increased usage of telemental health care are: (Barnett & Huskamp, 2019)

1. Mental healthcare is critically short of providers. The shortage doesn't show signs of abating. The most need, before the pandemic, was in rural areas.
2. Internet access is becoming ubiquitous. The lack of broadband access was a handicap in prior years.
3. Federal, state, and insurers became champions of telemental healthcare, boosting its use. 2018's SUPPORT Act (H.R. 6) eased Medicare restrictions. States have been putting forth legislation that makes payment parity laws to provide for telemedicine reimbursements. Medicaid programs expanded coverage for telemental services.

While being primarily used in rural areas, the prevalence of telemental health was not reflected in the general population as opposed to the rural population.

Before the pandemic, telemental healthcare was only beginning to get a foothold in the United States. A majority of telemedicine sessions were for people with mental health issues, with "More than 50% of the annual compound growth in the number of telemental health service visits over more than a decade." (Barnett & Huskamp, 2019)

One major limitation with telemental health was that patients didn't have the chance for an in-person meeting. Therapists worried that building a therapist/patient relationship would be difficult. But mental health diagnosis and treatment do not require a physical examination such as telemedicine requires (Barnett & Huskamp, 2019).

State of Telemental Healthcare During COVID-19

“Over the span of 2 weeks in March of 2020, traditional, in-person methods of working, learning, and socializing changed dramatically. Businesses transitioned employees to work from home, schools converted curriculum to online learning, and a wide range of healthcare services moved online. In particular, mental health providers rapidly transitioned from in-person mental health care to teletherapy,” (Morgan et al., 2021)

"These data suggest an opportunity to turn the experience of the pandemic into an opportunity to improve access to mental health care and improve the continuity of care," says Jennifer Severe. (Gavin, 2021)

March 2020 saw the shutdown of most businesses in the United States, including non-urgent health care facilities. Telecommunication became the only means to continue sessions between mental health providers and clients. Most clients adapted rapidly to the novel approach of treatment.

According to Severe, many factors can lead to a client preferring telemental healthcare. Childcare, lack of transportation, work requirements, or the underlying mental health condition are just a few examples of why a patient would choose telemental health care. (Severe et al., 2020)

Some people are uncomfortable sitting in the waiting room. Others would not want to risk the stigma of receiving mental healthcare, fearing that they might bump into someone they know while sitting in the waiting room.

The primary reason that loomed large during the past year was COVID-19. Not only was there a quarantine, but even when restrictions were eased, many people did not want to take a chance of contracting the disease.

Pre-COVID-19 saw the use of telemental health increasing, generally for the rural population. However, with the onset of the pandemic, telemental healthcare exploded. With the beginning of the pandemic, many businesses were shuttered, leaving patients without a place to go for a session and therapists without an office to treat clients.

The use of telemental healthcare became the only option for patients and providers to work together on mental health issues. This led to telemental healthcare becoming the norm for mental health treatments. Learning through practicing telemental health, providers began to become adept at discovering methods for delivering therapy through telecommunications. Doing so prepares therapists for how much mental healthcare will be carried out in the future. (Healthcare I.T. News, 2021).

Below are outtakes of a conversation between two experts on the future of virtual mental healthcare, PCHA Managing Director Rob Havasy and Cloudbreak Health CEO Jamey Edwards discussing the future of virtual care for mental health. (Healthcare I.T. News, 2021)

1. Younger patients are more likely to embrace a variety of virtual tools. "Different age groups seem to prefer different modalities and different ways of interacting with any clinician, but particularly in the behavioral health space. It basically breaks down to the younger you are, the more likely you are to prefer to use voice communication or chat-based communication, or some other form of a virtual visit. It doesn't always have to be video," Havasy said.
2. Virtual mental healthcare can help patients address problems as they unfold. Instead of trying to remember what happened a week ago and talking about it during a scheduled session, patients can communicate virtually with providers when an issue comes up. Therapists can immediately address the problem via chat-based or guided virtual tools, or patients can "record what happened in the moment so it can be brought back up when they do have a face-to-face encounter" with providers, Havasy said.

3. Providers need an escalation strategy. "Just like the digital front door would be the first step to accessing a healthcare system, the same is true in mental health, where you might be able to start off with a chat or a chatbot … but you can then escalate to a higher level of care" such as a virtual video visit and then an in-person visit, Edwards said.
4. Virtual care can help destigmatize mental health. "A lot of people feel more comfortable engaging with a provider when they don't have to go into an office. They don't have to be seen going into that building," Havasy pointed out.
5. Some populations are being shut out of virtual mental healthcare. "What we saw during COVID was a dramatic increase in things like anxiety and depression. We saw a dramatic increase in drug-related deaths and the opioid epidemic getting worse. The thing that we have to be conscious of is a lot of times those types of issues affect the underserved," Edwards said.

A telephone survey led by Jennifer Severe found that half of the respondents were likely to continue telemental healthcare even after things settle down from the pandemic. Furthermore, most respondents stated that their telemental experiences exceeded expectations. Still, more research is needed. At this time, we know little of what makes patients prefer telemental treatment over in-person treatment. (Severe et al., 2020)

The survey also found that older clients preferred telephone sessions while younger clients preferred video sessions. "Understanding challenges to patient-facing technologies can help advance health equity and guide best practices for engaging patients and families through telehealth," according to Severe. (Severe et al., 2020)

Concerning the adoption rate of telemental healthcare, psychiatrists saw an 85% increase in the technology. Before the pandemic, only 2.1% of clients and providers engaged in telemental healthcare,

according to the survey. The findings will assist in developing actionable insights, contributing to the increase of telemental healthcare.

Business Intelligence and Telemental Healthcare

Data is gathered through digital activities with their clients, such as intake forms, questionnaires, electronic health records (EHR), or self-paced learning modules. Data is also gathered from a therapist's notes, although all attention must be paid to HIPAA rules and regulations, and confidentiality is paramount in the therapist/client relationship.

It's not surprising that the United States is at ranks first in healthcare expenditures. Professionals are starting to consider data analytics and Business Intelligence (B.I.) as means to help reduce costs and at the same time improve patient outcomes.

B.I. serves up several advantages for healthcare providers. With BI, providers will: (Business Intelligence in Healthcare, 2020)

- Gain insight into reducing costs
- Increase revenue
- Improve patient safety
- Improve patient outcomes
- Ensure they are complying with regulations and best practices
- Gain insight into their financial operations
    - Identify highly profitable and underutilized services
    - Monitor cash flow
    - Generate compliance reports.

On the client-side of the process, B.I. will help:

- Improve patient care
- Ensure quality performance and safety analyses
- Provide a foundation for evidence-based clinical decision-making
- Improve patient outcomes
- Better monitor and forecast patient diagnoses

Finally, B.I. will assist in improving operational performance by:

- Improve claims and clinical analyses
- Optimize pricing
- Streamline claims processes.
- Control costs
- Improve efficiency
- Provide insight into marketing efforts.

As in other industries, B.I. in healthcare relies on Big Data to successfully reach goals and outcomes. Healthcare data includes information from related sectors such as pharmaceutical professionals, insurance companies, and clinical trial results. As mentioned earlier, health records also add to Big Data. Data can also be obtained from hospitals and private providers. B.I. allows for improved treatment protocols. The volume of healthcare data is becoming immense as more of it becomes available (Business Intelligence in Healthcare, 2020).

In addition to dimensions that are critical to regular B.I., the healthcare industry also must support the measurement of quality, effectiveness, and value. Madsen's definition of healthcare B.I. is "The integration of data from clinical systems, financial systems, and other disparate data sources into a data warehouse that requires a set of validated data to address the concepts of clinical quality, the effectiveness of care, and value for business usage." (Madsen, 2012)

The Five Tenets

Madsen states that five tenets that a healthcare B.I. model should possess. These are Sponsorship and Leadership, Technology and Architecture, Value, Cultural Change, and Data Quality. (Madsen, 2012)

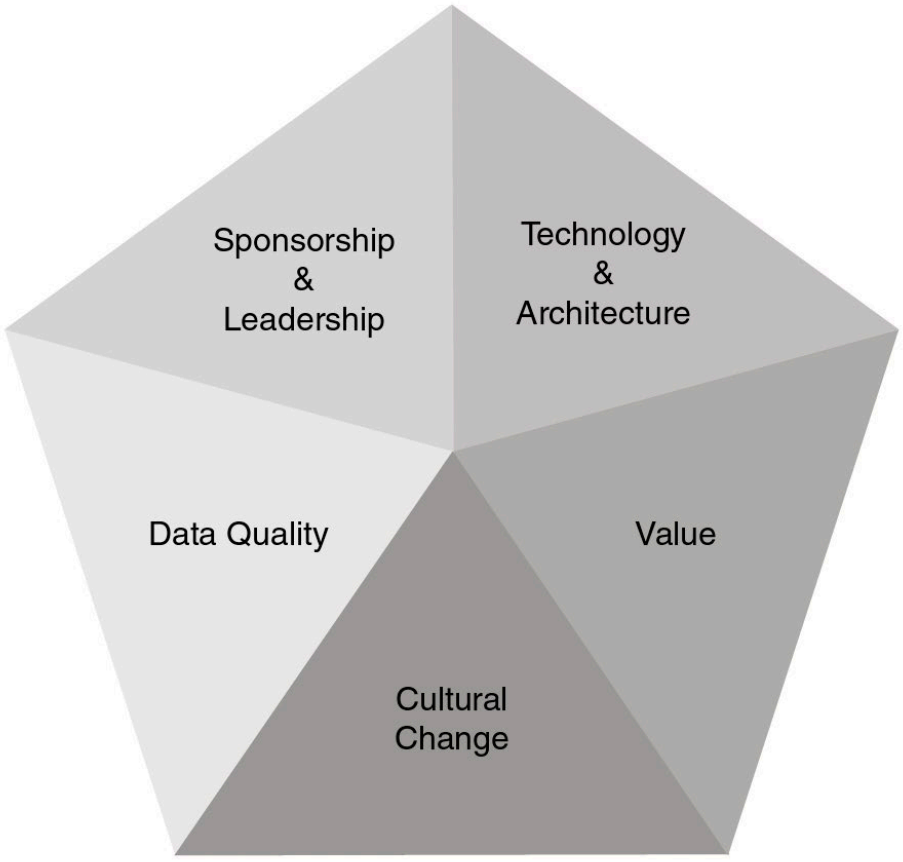


FIGURE 2.1 The Five Tenets of Healthcare BI

Data Quality

Data Quality is vital in normal B.I. but is especially essential to healthcare B.I., where mistakes can have dire outcomes. Quality data engenders trust. It also brings about user adoption of the program, in this case, telemental health.

Madsen writes that 100% clean data does not exist. He states the data is flawed from the beginning, and to change this would require enormous efforts. But he goes on to point out that just because we don't have that 100% clean data is no reason not to strive for the most fully validated data set. We must do the best we can with what we have.

Leadership and Sponsorship

Without that one person passionate about how data can improve decision-making in an organization, B.I. could not get off the ground. B.I. programs require leadership that is dedicated and in it for the long term. The team must see B.I. as the lifeblood of the organization.

Technology and Architecture

While B.I. is not an I.T. activity, it does rely on data monitoring, including extraction, transformation, and load. Health industry data is fragmented and disorganized because it comes from so many disparate sources.

Value

The healthcare industry is overburdened and understaffed, leaving no room for going off on tangents with B.I. It is essential that the B.I. team focus on what provides the most value to the organization.

Cultural Change

Collaboration is essential to a B.I. team. According to Madsen, "much of the challenge isn't bad data quality or poor tools, but politics and organizational dynamics." Madsen goes on to write that one needs to be a talented ambassador to navigate the process.

Four Key Trends That Will Impact the Future of Healthcare B.I. (Madsen, 2012)

- Integration of data from disparate sources
- Changing population of consumers
    - The new population is willing to seek information from social media.
- Mobile technologies for B.I.
- Big Data and analytics will drive home the value equation for healthcare B.I.

Electronic Health Records (EHR) will be the cornerstone of future B.I. and healthcare, allowing for a holistic view of a patient. The challenge that remains is integrating data to avoid a siloed "view of the patient," writes Madsen.

As mentioned above, the new generations are comfortable with social media and trust that this channel will provide reliable mental health information. These groups share their mental health issues on social media. They have a different view of privacy. The task for mental health advocates is not so much how "we deliver healthcare differently, but how we deliver information about health. … There is no doubt that as the technically savvy generations come of age and consume more healthcare, they will demand a more robust, transparent, and contextually driven source of healthcare information." (Madsen, 2012) "

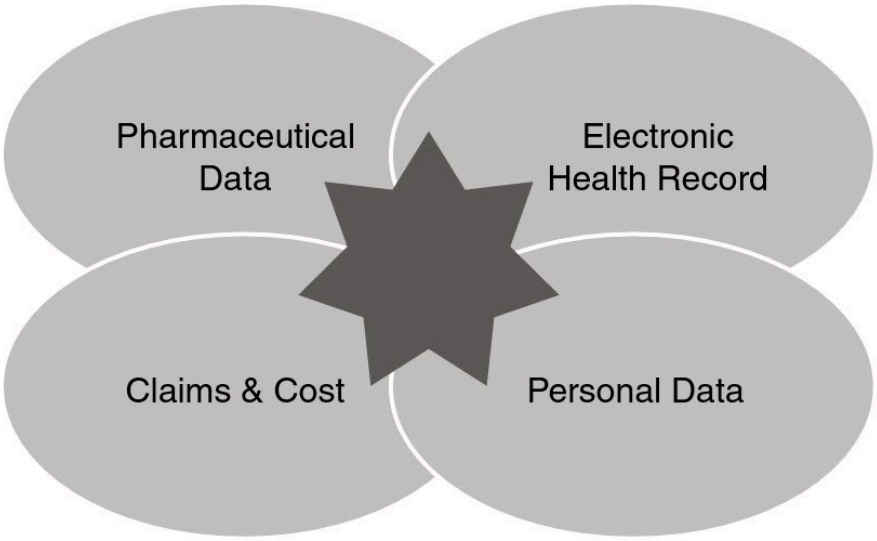


FIGURE 8.1 Disparate Healthcare Data Sources

The main point that the topic addressed involved applying B.I. to telemental healthcare, with an analysis of telemental health care before and after COVID-19. Before COVID-19, telemental health was growing in the rural population where access to mental health care was limited because of travel distances. Much of the data on telemental health before COVID-19 focuses on enabling treatment for those in rural populations.

Three catalysts of telemental healthcare before the pandemic are that first, there was (and is) a shortage of mental healthcare providers. This led to the increased use of telemental health, with both providers and clients able to cut time off traditional mental health treatment.

Second, the availability of broadband Internet access became ubiquitous. In the not-so-distant past, broadband was not as available to the population, especially in rural settings.

The third catalyst was that federal, state, and insurers became champions of telemental healthcare, which boosted its use.

Another point that the topic addressed is the state of telemental healthcare during COVID-19. Suddenly provider offices were closed, and clients and therapists were under stay-at-home orders. In-person mental treatment became nearly impossible. The solution was telemental health, which spread from the rural areas to the general population areas because of the pandemic.

It turns out the most people prefer telemental treatment for a variety of reasons, and many clients will probably continue with telemental treatment.

The topic touched on how B.I. serves up several advantages for telemental healthcare providers and patients. It also assists in improving operational performance.

Madsen's five tenets of a healthcare B.I. model was covered. The tenets are Sponsorship and Leadership, Technology and Architecture, Value, Cultural Change, and Data Quality. (Madsen, 2012)

Finally, the four key trends that will impact the future of healthcare B.I. were addressed. (Madsen,

The drivers behind this topic were that there is much that we do not understand about telemental healthcare and how B.I. impacts it. A mountain of change affected telemental health, which moved this type of healthcare from rural and underserved populations into the general population, forever changing how mental healthcare is delivered. We have only begun to form an understanding of telemental health.

The challenges of addressing this topic were searching for relevant information specific to telemental health in contrast to telemedical health. I adapted the telehealth information, believing that telemental health care is a subset of telemedicine. It was also a challenge to uncover information about telemental health related to pre-pandemic times.

Solutions that the topic delivered were to use B.I. to manage data and produce information that helps in telemental healthcare with patient outcomes, reduced costs, compliance with government regulations, and improved operational functions.

Conclusion

Telemedicine healthcare is the future of the medical industry. Telemental healthcare is especially prone to lend itself to treatment through telecommunications. Usually, physical proximity to the client is not necessary.

Telemental healthcare was used pre-COVID-19, primarily in rural areas where access to in-person mental healthcare was difficult. A shortage of mental healthcare providers lent itself to telemental methods of therapy. The mental healthcare market was facing an imminent financial catastrophe. Although not prevalent in the general population, telemental health was gaining ground in the underserved and rural populations.

When COVID-19 arrived, telemental health in the general population exploded. It was the only option for therapy with the stay-at-home orders and mandated shutdowns of non-emergency healthcare facilities. As it turns out, a healthy number of clients prefer telemental therapy for several reasons. Several clients decided they would continue with telemental health even after the worst of COVID-19 passed. Both telemedicine and telemental healthcare was here to stay.

With technological advances in data collection, healthcare became eligible for BI. Engaging in BI leads to better patient outcomes, improved financial, and operational status. Telemental healthcare is fertile ground for successfully engaging BI.

Madsen lists five tenets that a healthcare B.I. model should possess. These are Sponsorship and Leadership, Technology and Architecture, Value, Cultural Change, and Data Quality. (Madsen, 2012)

The future of medical and mental healthcare is almost inevitable. Four key trends will change healthcare for the better are:

- Integration of data from disparate sources

- Changing population of consumers
    - The new population is willing to seek information from social media.
- Mobile technologies for B.I.
- Big Data and analytics will drive home the value equation for healthcare B.I.

Business intelligence is a huge stride towards the positive future of mental healthcare. The results are good for patients, providers, facilities and government and insurance entities.

Source:

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Addendum

I used all my partner's suggestions. Neel Blair gave excellent feedback and helpful suggestions that proved to on-point. He was thoughtful and obviously spent time going over my work.

I also used Professor Shaw's recommendation to focus on telemental healthcare before and after the pandemic. I found the topic challenging and enjoyable as I foraged for information.