



BREAKING NEW GROUND:

USING DATA FOR BETTER HEALTH OUTCOMES



acxiom

Veeva Crossix

**McCANN
HEALTH**

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EXECUTIVE SUMMARY

The data revolution is helping every industry take giant leaps forward, with healthcare as a prime example. Digitalization is rapidly changing the healthcare industry. With proliferation of data becoming available, analytics of medical information is allowing improved diagnostics, therapy, development of personalized medicines, and overall better experiences delivered by pharma, retail, and various other industries. While there is still much work to be done, this could potentially help provide unprecedented treatment and care, leading to better patient outcomes and lower health costs.

During this time of pandemic, the ability to understand, collate, and bring together various forms of data on a global basis, is essential to both the overall health and economic wellness of society. Our culture's current transformation represents a new and lasting shift in how society will approach health. Both healthcare and other connected industries will need to figure out how to function, adapt, and thrive in a virtual world. This will determine how effective we will be in responding to and managing crises.

The altruistic implications from data provide an excellent opportunity to transform an industry and have a revolutionary impact on both public health and the provider-customer relationship. Because healthcare is such a highly regulated industry, its digitalization has progressed much slower than other sectors, such as financial services. Further, most medical information is currently only available in data silos. And privacy concerns are of the utmost importance. To address these rising concerns, brands need to focus on the experience and create trust with their customers.

There's no question that data can help transform the world of healthcare. But numerous questions must be considered as we explore new ground in this industry.

- How are health brands using data to provide better customer experiences?
- How do we determine which data is helpful?
- How do we access this new data?
- How to use data ethically?
- How can you achieve a complete view of a person/patient?
- How are health brands effectively engaging audiences?
- How does a data-driven approach improve engagement?
- How can this data be used to improve society?



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HEALTHCARE IS RAPIDLY EVOLVING

Data has unlocked an exciting world of possibilities in the healthcare industry. By connecting health data (e.g., clinical, prescriptions, electronic health records, medical claims, etc.) with consumer data (e.g., demographics, purchasing behavior, social media behavior, etc.), brands can uncover more meaningful insights about their core consumer. We have the opportunity to support health and wellness decisions by giving people more information to make informed decisions, and even in some circumstances, anticipate their health-related purchase behavior. With this opportunity comes both the need for a deep understanding of each person's health as well as an understanding of the microlocality of their environment, what is going on and what is relevant to them at a given time. These insights not only drive better marketing decisions that are better aligned with consumer needs, but they also have the power to influence the patient journey, and in turn, improve health outcomes, optimize the entire field of healthcare, and give people the ability to navigate their own health and wellness.

This optimization of healthcare is becoming a genuine possibility as the gap narrows between patient interests and health brands' abilities to connect with them. As we approach this intersection, there is a need to acknowledge the responsibility of health brands to provide accurate data and information. Incorrect information could lead to adverse outcomes, and with the vast span and accessible nature of the internet today, brands must be conscious of how they inform their customers. The inevitable rise of big data in healthcare has unlocked new insights for understanding patients with higher resolution, thereby giving health consumers greater power in making high fidelity health purchasing decisions. Clinicians have a better ability to identify the most up-to-date nuances in health indications and contraindications, enabling them to provide higher quality care than previously possible. As data empowers patients and health consumers, we should expect a natural marketplace convergence towards informed decision making. As people corroborate their own health data, they will become wiser about the what, when, and why with medicine, doctors, and wellness.

The use of big data and the convergence of insights in healthcare today are not limited to providers of healthcare products and services. It is important to recognize the different levels where data can create betterment for any stakeholder who is influencing the care path. Not only will patients benefit by making better decisions on a medical, interpersonal, and even societal levels, charitable and non-profit organizations can benefit as well. The ability to harness a broader range of insights while building on past techniques, including individual healthcare surveys and area-level census data, can improve the effectiveness of marketing designed for education and awareness just as easily as brand marketing. This means local, state, and federal tax dollars, as well as charitable contributions, can have an increased impact on issues like smoking and vaping prevention, the allocation of child welfare services, and youth venereal disease education.



AN EXPLOSION IN CLINICAL DATA

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The data revolution has only just begun. Sequencing the first human genome in 2003 took 13 years, cost \$1 billion, and produced zero health insights. Today, sequencing a human genome costs \$1000, takes several days, and can lead towards immediate risk prediction and improved treatments (Snyder, et al., 2019). But while genomics data begins to be recognized as necessary by both general health consumers and government healthcare systems (numerous government agencies across the world have launched population-wide genomics programs to sequence +1M whole genomes in their nation), other new sources of healthcare data have also emerged and risen to popularity. For example, a decade ago, few people in the general public knew they had a “microbiome.” Today, numerous popular health brands have emerged around this once mysterious concept of feeding the good bacteria in our bodies.

With data becoming such a common way to advance the world of medicine, it can potentially be turned to in times of crisis. In such a situation as the coronavirus pandemic which has swept the globe, information collected from those currently fighting the disease as well as those on the mend could be used to combat the disease in the moment and further our understanding in case it resurfaces again. Notably, New York University used artificial intelligence with existing data to find indicators that are most likely to lead to more severe symptoms.

The last decade has also demonstrated an explosion in another data source: wearable biosensors. Ranging from the Apple Watch to EEG headbands to continuous glucose monitors, these wearables provide a rich set of real-time data that can be used to improve healthcare insights dramatically.

These new data sources are just the beginning. New genome-based technology platforms are currently being developed and validated in research labs around the world, quantifying virtually every molecule in the human body: expressed genes (transcriptomics), proteins (proteomics), fats (lipids), and all the small molecules (metabolomics). We can even go so far as to measure every molecule in the air around someone. Furthermore, as imaging procedures – both from something as simple as a smartphone or something as complex as MRI – become more ubiquitous, even more data is added to the mix.

With all these advances in technology and medicine, it becomes, at the same time, more important and easier to be proactive with health. Remote health and real time touchpoints are becoming even more relevant and will grow in importance as part of outcomes-based decision making for the total stakeholder health ecosystem. All the data that is collected from these new devices and tools can be used to better predict health on both a holistic and everyday level.

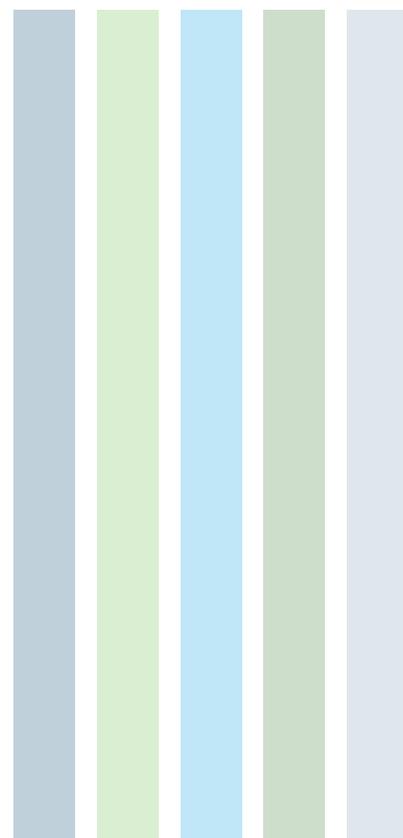
We also see an increase in sampling frequency. The old paradigm suggested that individuals should be profiled and tested once a year or less. However, new research indicates that more meaningful health insights are possible by profiling individuals far more regularly than this (Snyder et al., 2019).

While more data allows for higher resolution insights and more precise medicine, it also accompanies a host of challenges in terms of storage and computation. As healthcare data extends in orders of magnitude from megabytes to petabytes of data per individual, we'll need new tools to store and analyze all available information.

UNDERSTANDING AND UTILIZING ALL THE NEW DATA

The rapid availability of health data from so many sources can make it hard for brands to get information that is helpful to reach people likely to be in market for health products and services. Marketers need to be armed with data that helps them understand target patients as actual people, not just as demo and geo attributes. By leveraging diverse data sets, including medical claims, clinical data, CPG/OTC purchases, consumer, media data, etc., we can achieve deeper insights that can be applied across the full marketing lifecycle, from audience selection to measurement and optimization. Moreover, the explosion of data is likely only to continue to grow, making it critical to properly and safely collect, connect, and analyze this data in the right way. Hand in hand with this technological growth comes a challenge to the privacy of data. The question then becomes how does society bring health status privacy back to the forefront.

Healthcare brands are battling to improve data quality, integration, access, and usage on two fronts: the medical data that physiologically describes who we are in illness and health, and the customer data that defines our brand, product preferences, and behavior. Any discussion about data improvement in the healthcare field needs to recognize that these areas are not automatically combined; there needs to be an acknowledgment of differentiation between these two types of data.





ACCESS TO DATA IS CHANGING

Healthcare marketers today have the benefit of advances in big data, including lower cost of processing and storage, improvements in consumer technology, and developments in the AdTech industry. This is the result of many industries investing over the years in infrastructure and tools to reach and engage consumers. The virtuous cycle that is created between signal (e.g., marketing or educational message) and response (e.g., someone reading an article or signing up for an email newsletter) creates more significant insights over time. It allows for the connection of data by time, geography, consumer segments, etc. To do this in the right way, we need the right infrastructure, data philosophy, and platform.

Healthcare's ever-increasing competitive landscape and the influx of marketing channels and tactics available to reach consumers has increased brands' appetite for actionable data and insights. Many healthcare brands now look to improve marketing efforts by using new technology to connect media investments to health data, like prescription sales, to uncover drivers of patient behavior.

With such data strategies comes data privacy concerns. It is vital that such technology and systems in place keep healthcare data segregated and secure, providing insights based only on de-identified health data. One successful approach is to use federated technology to link different types of data sets. This technology uses data and analytics behind privacy firewalls where the original data resides, enabling breakthrough connections to be made across historically siloed datasets.

Blockchain represents another opportunity for data security and privacy that was previously impossible. Data that is stored in blockchain cannot be altered, and this technology can provide the backbone for a health data infrastructure that enables patients to control and benefit financially from their health data. Companies are already using blockchain to secure patient health records, clinical trial information, and much more.

The combination of semi-public consumer behavioral data with de-identified, private customer healthcare data is a new frontier of insight. From a patient-centered perspective, it's possible to combine these datasets to create new epidemiological models of disease risk and prevention. It's also possible to determine new social determinants of health that were previously undetectable. From this patient-centered perspective, we could utilize this data to potentially identify signals that could be operationalized to intervene on illness earlier and reduce the need for specific products. On the other hand, the misuse of this data could demonstrate that at-risk populations may be selected and exploited based on nonobvious correlations that emerge from the data.

Medical data has many "owners," so integration and streamlined access remain a hindrance. The nation of Estonia has figured out how to overcome this fragmentation without compromising privacy through its National Digital ID-Card program. With this program, patient data does not sit in a single merged database at risk of being hacked, but rather the human owner of the data can access it in its totality.



ETHICAL DATA USE

**“ETHICS IS IN ITS UNQUALIFIED FORM
EXTENDED RESPONSIBILITY WITH REGARD
TO EVERYTHING THAT HAS LIFE.”**

Albert Schweitzer, philosopher

Health is life, and the intimacy of health-related data means we must be intimate with the data. That is, knowing exactly how it was collected and under what circumstances. This includes the customer-facing notice and choice as well as the terms and conditions of the engagement where the data were collected. The provenance of the data is the first step in understanding what can be done with the data and its rightful place. What is done with the data, and what actions and impact that has, are all part of an ethical framework required.

Ethical data use is not only viable, it can and should be the standard. While recent advances in technology have enabled more precise, data-driven capabilities to bolster marketing efforts, it has also increased the risk that protected health information could be tied back to individual patients. Technology that connects health and non-health data should be purpose-built to protect individual privacy and exceed HIPAA requirements.

The ethics of data use are centered around the ideas of transparency, control, confidentiality, and integrity. Brands need to be open about what they do with someone's data, and individuals need to know they are in control of their own data, that no one else will see it, and it will remain untouched and unaltered.

Ultimately, the ethical use of data cannot be viably discussed until we first understand the potential implications of data ownership. For example, in Google's purchase of Fitbit, do former users have a say in Google's access to their heart rate data? And what happens when regulators realize that heart rate is actually a unique identifier (as distinct as a fingerprint)? Even if future wearables data is de-identified through Fitbit, Google now has access to enough data to identify 30 million people across any device that measures heart rate.

Therefore, two questions must be answered at once: First, what data – or combination of data – can be uniquely identifying? Second, what concerns are there with the use of this data? It's difficult to answer both these questions, especially considering that new technologies are rapidly emerging that can utilize old data sources, like heart rate, in ways never previously imagined (e.g., predicting infectious disease) (Snyder, et al., 2017).



EFFECTIVELY REACHING YOUR AUDIENCE

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The growing amount of people data now available is allowing pharma marketers to take a more personalized approach to the enhancement of campaign strategies. By using analytics to examine de-identified health data across millions of patients, brands can identify patterns and extract key insights to better understand, reach, and engage their intended health audiences at all the various stages in the patient journey. However, this “more personalized approach” cannot be achieved via a one-way-street with just actions taken by the marketer. The required “personalized” actions need to expand the knowledge, involvement, and experience of the customer, as a way of building a more meaningful relationship between brands, healthcare providers and people.

A data-driven approach to segmentation allows brands to understand better how key audiences engage with content and improve behavioral-based targeting. For instance, knowing a segment’s preferences for consuming media and the optimal timing to deliver messaging can help optimize a brand’s marketing strategy and media investments. But with the proliferation of data also comes challenges. Marketers must have the right technology and teams in place to accurately analyze complex data, convert it into actionable information, then act on it in real-time to make more informed decisions.

In addition, ethics are just as important in the use of data as in its collection. Data-driven approaches increase the chance of reaching the right people, but how you approach people is critical in any sensitive domain. Insights applied the wrong way in marketing execution can often have damaging results if not thought through from the perspective of the individual. However, approaching people the right way involves more than the ethical treatment of data, which is just the cost of entry. Privacy impact assessments are a best practice in the industry and crucial to investigate the goals, approach, and potential risks or consequences. They should be used by every organization using health-related data to engage people.

FOCUS ON THE EXPERIENCE

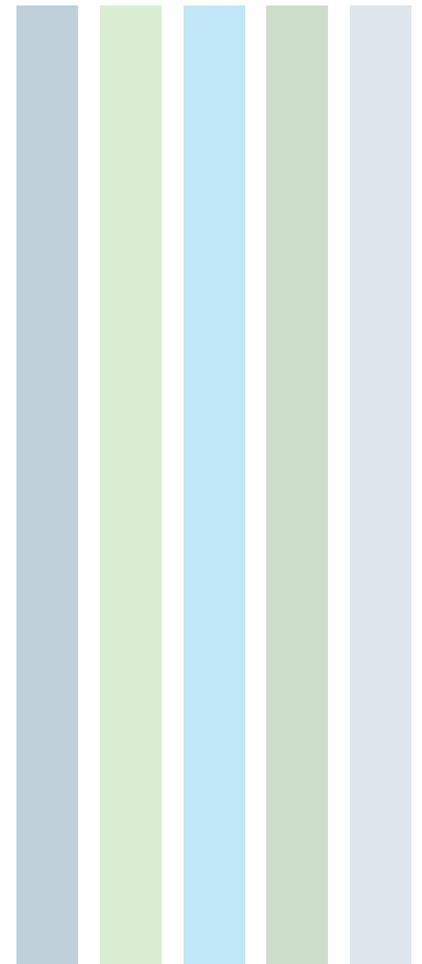
The brands in healthcare that have decided the experience is as important as the clinical are the ones doing the best job reaching audiences. Some of these brands look at the journey from the stage of clinical trials to people living with an illness, looking at every touchpoint from a relationship map perspective, and engaging their audiences when they know it will be the most meaningful and effective. Not only should brands focus on the experience of people living with debilitating diseases, but this should also extend to the most basic level of wellness as well; a person’s journey to buying antacids being just as important. With 57% of people saying advertising is too impersonal, it is essential that brands create an experience the consumer will appreciate. The overlay of interrelated influences in the health stakeholder ecosystem is something that should be kept in mind

when using such data-driven strategies. As companies use more data, the multi-layered individual decision structure becomes even more complex. All stakeholders (doctors, insurance companies, etc.) are becoming more critical parts of the ecosystem.

CREATING TRUST WITH THE INDIVIDUAL

Marketers need to adopt a precision approach to health brand marketing. For example, an individual would probably not approve of a leading healthcare brand tracking their online data, then sending real-time offers based on this information. However, if a drugstore chain did this, the person might be far more receptive. Health brands need to know where they stand in this new data-driven economy.

New portals need to be created for health brands to deliver purchasing recommendations to patients based on insights. Trust is key. In this new era of big data in healthcare, brands have the opportunity to create more trust with patients. If this trust is broken, it could set-back the entire opportunity for precision health – delivering the right treatment, to the right patient, in the right context, at the right time. Health brands have to be especially careful to work together with trusted healthcare data and insight platforms to nurture patients into this next era of healthcare without scaring them.





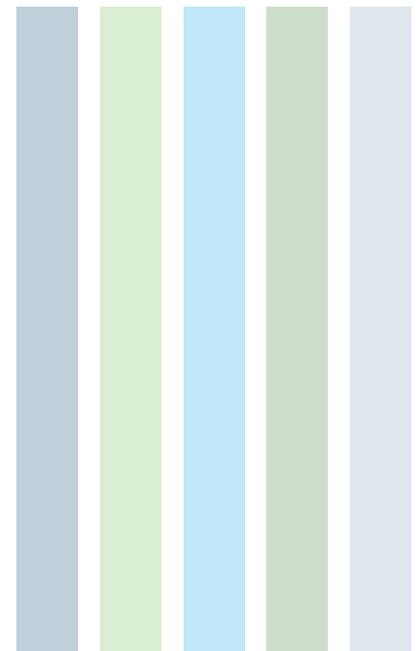
IMPROVING ENGAGEMENT

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Historically, marketers have only based their engagement strategy on what people have done in the past, not what they are most likely to do in the future. But with the massive amount of data now available, brands have the opportunity to use predictive analytics to enhance targeting and engagement possibilities. However, these “predictive models” need to do more than analyze data better. A key component of improving engagement is factoring in patient/customer input, concerns, knowledge, etc. more thoroughly and effectively. These predictive models deliver enhanced insights that allow brands to shift their focus from identifying which media channels to focus on, to determining how to reach precise audience segments at the right moment, wherever and whenever they are consuming content.

For example, a well-known non-profit organization uses survey data, census geo-level health data, and behavioral data from third-party data providers to drive customer segment-level, geographically focused awareness campaigns. This ensures they are reaching the people most likely to benefit where health behaviors can be changed. Another organization uses all of the same types of data, but instead of awareness campaigns, they are using it to help local communities determine where best to provide critical social services.

Both of these examples leverage representative insights and geographic data to understand where the people they need to impact live. And both drive better engagement as a result: one through getting the right information to people who need it, and the other by providing services in precisely the locations necessary for the unique populations served.



THE IMPACT COULD BE EXTRAORDINARY

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Data is the lifeblood of Marketing. But, it can be used for so much more. Data has the potential to solve health crises and help us live longer, healthier lives. But this is nothing new. Health brands have been using data for more than a century to help benefit society.

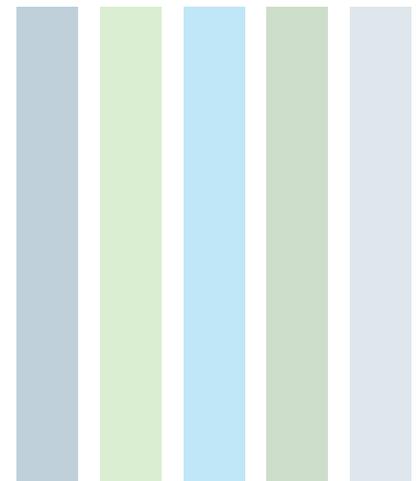
In the early 1900s, America had a dental health problem: only 7 percent of the population brushed their teeth, and tooth decay was rampant. Ad man Claude Hopkins used data (lack of sales) and insights from research on human behavior concerning dental health to create a craving for Pepsodent toothpaste by linking teeth brushing with a beautiful smile. His campaign was wildly successful, and the number of people who regularly brushed their teeth jumped from 7 percent to 65 percent in less than a decade. Hopkins had solved a health crisis by selling a product more effectively.

More recently, data has been used in a collaboration between Dr. Nina Vasan from Stanford and the website Pinterest. Based on data around self-harm search results and the current mental health crisis, Pinterest worked with Dr. Vasan to create a new “Compassionate Search” designed to make users happier and provide them empirically validated resources to address mental health challenges. It helped change the experience of how mental health is addressed online towards a more open and honest experience that is free from stigma.

As we enter this new era of healthcare, an influx of groundbreaking insights could emerge from the collaboration of biomedical researchers, data marketing gurus, and traditional marketing data sources; the possibilities are potentially endless. The data revolution in healthcare is a monumental opportunity not only to transform an industry but to have a major impact on public health. By carefully breaking down silos across the industry, carefully cultivating the plethora of data, and utilizing advanced analytics, better health outcomes and improved social change are inevitable.

TO LEARN MORE

Please reach out to us at info@acxiom.com.





STANFORD HEALTHCARE INNOVATION LAB (SHIL)

The Healthcare Innovation Lab unites leading scientists at Stanford Medicine as an extension of the work of Dr. Michael Snyder. Dr. Snyder is the world's leading expert in genomics, personalized molecular profiling, and precision medicine. In 2009, Dr. Snyder was recruited by Stanford University to Chair the Genetics Department and to direct the Center for Genomics and Personalized Medicine. Under his leadership, U.S. News & World Report has ranked Stanford University first or tied for first in Genetics, Genomics and Bioinformatics every year since 2010. For the past decade, Dr. Snyder has been using longitudinal, baseline tracking and measuring every molecule and aspect of human health to predict and prevent disease. Now, the Healthcare Innovation Lab is changing the landscape of infectious disease, diabetes, cancer, cardiovascular disease, aging, neurodevelopment disease, and mental health by learning how to keep people healthy rather than just treating them once they are already sick.

www.innovations.stanford.edu

ABOUT ACXIOM

Acxiom provides data-driven solutions that enable the world's best marketers to better understand their customers to create better experiences and business growth. A leader in customer data management, identity, and the ethical use of data for more than 50 years, Acxiom now helps thousands of clients and partners around the globe work together to create millions of better customer experiences, every day. Acxiom is a registered trademark of Acxiom LLC and is part of The Interpublic Group of Companies (IPG). For more information, visit Acxiom.com.

ABOUT VEEVA SYSTEMS

Veeva Systems Inc. is the leader in cloud-based software for the global life sciences industry. Committed to innovation, product excellence, and customer success, Veeva serves more than 800 customers, ranging from the world's largest pharmaceutical companies to emerging biotechs. Veeva is headquartered in the San Francisco Bay Area, with offices throughout North America, Europe, Asia, and Latin America. For more information, visit veeva.com.

To learn more about Veeva Crossix, visit veeva.com/crossix.

ABOUT MCCANN HEALTH

McCann Health, three-time Network of the Year winner at Cannes Lions Health and winner of an unprecedented twelve Network of the Year titles from the industry's top five creative award shows, is one of the world's most awarded global healthcare communications networks. Through combining science, creative and strategy we strive to deliver best-in-class services to our clients. Our 1,900+ employees in 60 offices across 20 countries and 6 continents are united by one vision: to help our clients play a meaningful role for healthier lives. McCann Health, spans a range of global practices including strategic consulting, healthcare professional marketing, medical communications, consumer health and wellness, global health and specialty practices like pharmacy, payer and patient engagement. McCann Health is a part of McCann Worldgroup and the Interpublic Group (NYSE: IPG), a global leader in modern marketing solutions.

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