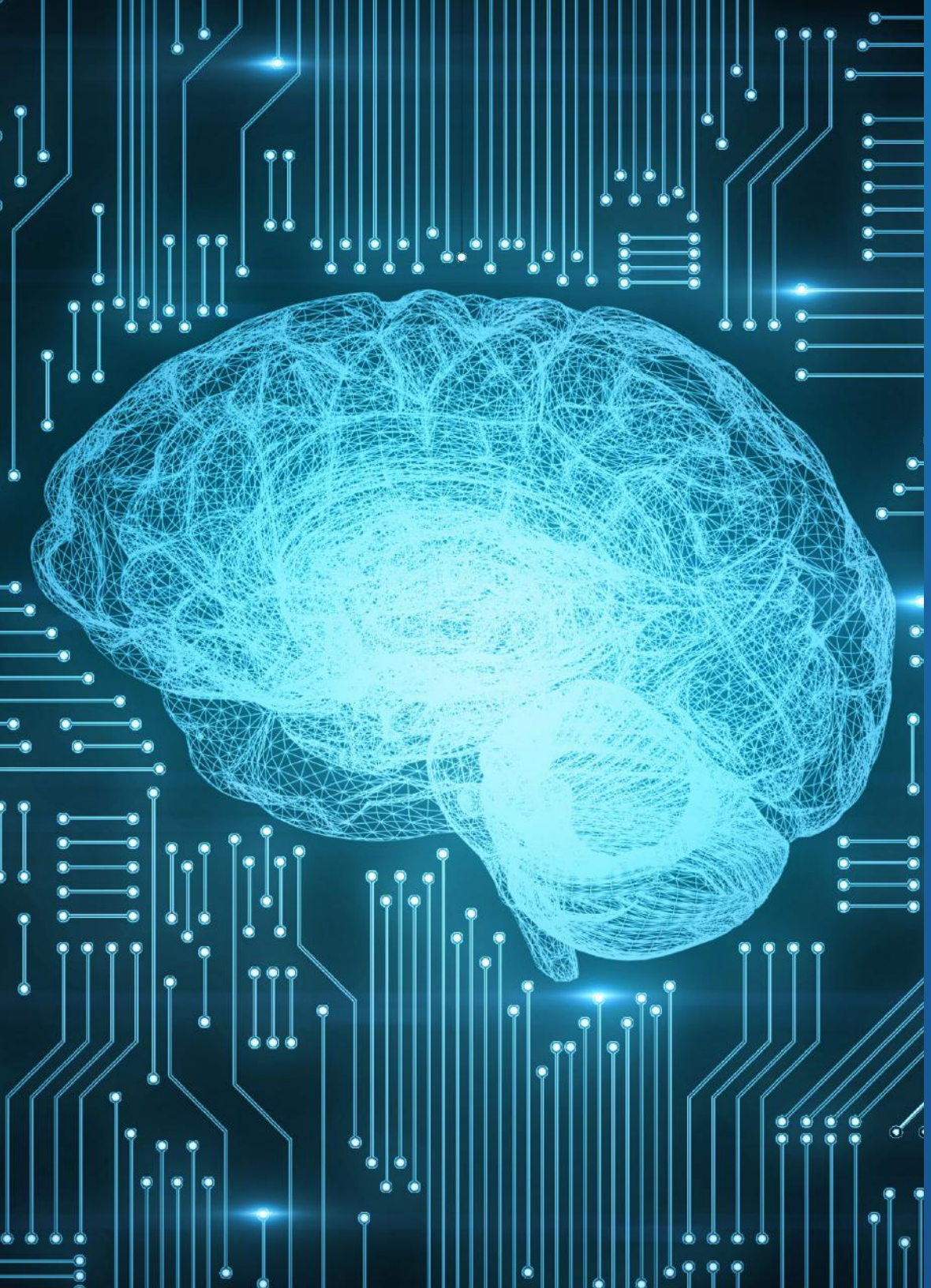


BEHAVIORAL ANALYTICS IN THE ERA OF TRANSHUMANISM

The new human era and evolving human behavior will redefine our outlook toward society, businesses, and governments

Visionary Innovation Group

October 2019

FROST & SULLIVAN

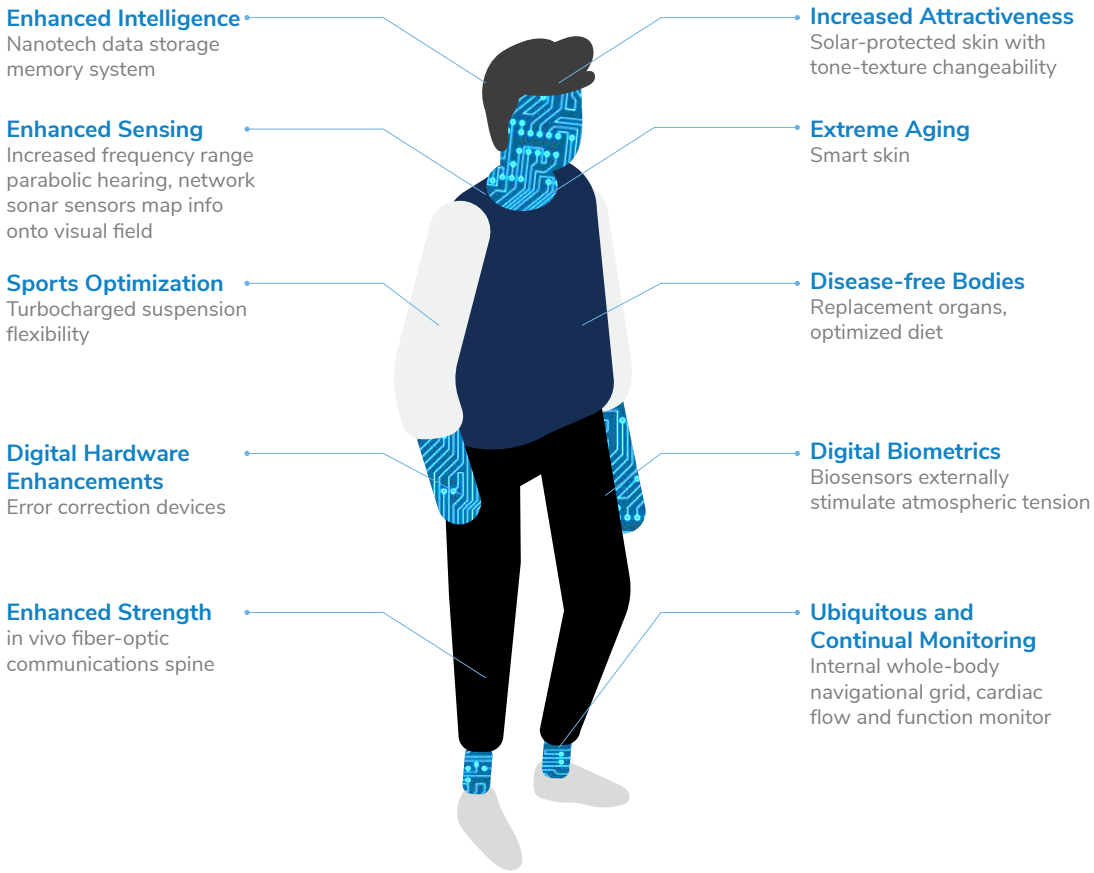
Contents

Introduction: The Future Human

As we enter a new era of humanity, hardware and biological augmentation in several ways will enhance our ability to think, sense, feel, perceive and function. The mind, body, and behavior will be heavily influenced and shaped by technology, triggering the next evolution in humankind—becoming transhuman.

Transhumanism focuses on converging forces of the future, which will shape human experience and refine the nature of humanity3. Disparate advancements in technological, social, medical, and behavioral aspects will result in a revolutionary convergence, blurring our existing identities into "transhumanism."[1] Exhibit 1 shows advances in hardware and biological augmentation that will enhance physical capabilities.

Exhibit 1: The Transhuman Era—A Future Whole-body Prototype, Global, 2030



Source: Frost & Sullivan

[1] Forbes: Transhumanism And The Future Of Humanity: 7 Ways The World Will Change By 2030

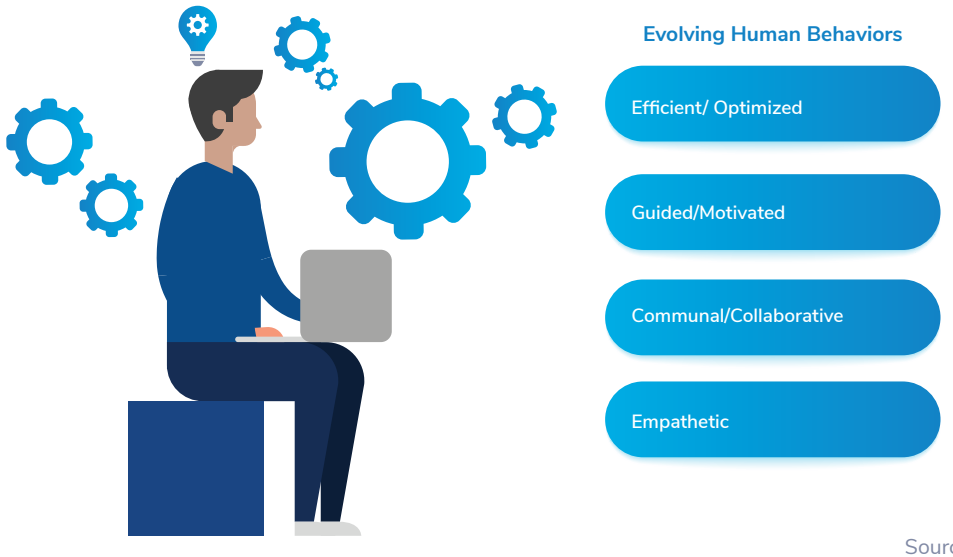
Advances in hardware and biological augmentation will transform our physical capabilities, resulting in a biologically enhanced "transhuman."

External wearables will improve our sensory and movement capabilities. Internal implants in the brain will have the ability to enhance human intelligence.

The evolution of the human body and thought is expected to trigger an evolution in human behavior and experience. Among these, human behavior is intriguing because evolution in the way that we behave largely shapes us as individuals, our society, businesses, and public policy.

Human actions can be stimulated using behavior as the primary focus. Behavioral science derives its roots from behaviorism, a theory based on the premise that all behaviors are attained through conditioning.[1] As such, behavioral conditioning can be classified into two major types. The first type is classical conditioning, wherein an environmental stimulus is paired with a naturally occurring stimulus.[1] For instance, a food delivery service introduces discounts or offers to its customers during lunch hours to stimulate a feeling of hunger. The second type is operant conditioning, wherein human behavior is driven by consequence.[2] For instance, Uber uses motivational tactics to compel drivers to drive for longer in anticipation of incentives. As a subset of behavioral science, behavioral economics emerged as the study of this human irrationality, which is used to make economic decisions. The focus of this white paper will revolve around behavioral analytics, which delves deeper into the "whats" and "hows" of human behavior to yield meaningful understanding and implications of decisions taken over time as we move toward this new era of transhumanism.[3] As shown in Exhibit 2, human behavior, in particular, is expected to transform to be more communal, empathetic, motivated and efficient/optimized.[4]

Exhibit 2: Key Framework Themes for Evolving Human Behavior, Global, 2025–2030



Source: Frost & Sullivan

[2] Very Well Mind.com: https://www.verywellmind.com/behavioral-psychology-4157183
[3] Business.com: https://www.business.com/articles/guy-greenberg-what-is-behavioral-analytics/
[4] Frost & Sullivan—Transhumanism: How Humans will Think, Behave, Experience, and Perform in Future, and the Implications to Businesses

Transformative technologies will span the evolution of thought capabilities.

Behavioral analytics will have a far-reaching impact on a wide variety of spheres, including public policy and industries.

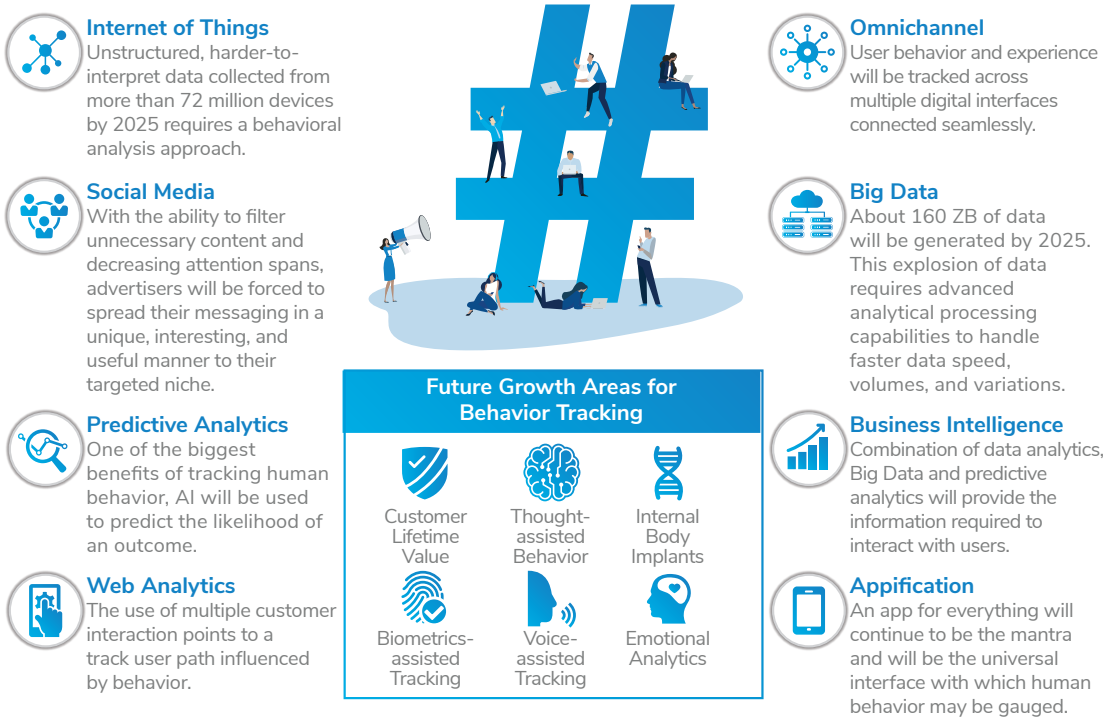
Technology will propel humans to be more communal, collaborative, empathetic, motivated, and efficient.

With the evolution of human behavior, disciplines such as gamification and behavioral analytics—supported by technological leaps in AI and sensorization—will propel the use of common "nudge" tactics toward desired outcomes across all aspects of life.

The Next Revolution is Psychological and will be Aided by Technology

Human behavior is dynamic and complex. Its high degree of variance makes it harder to predict behavioral outcomes.[5] As evolution occurs in the way humans think, behave, experience and perform, in the future, behavioral analytics will play a major role in conditioning human efficiency, communal behavior, motivation and empathy.[3] Exhibit 3 highlights different avenues of tracking human behavior over the short term.[6]

Exhibit 3: Technologies Aiding Behavior Tracking, Global, 2025-2030



Source: SCC.com; Frost & Sullivan

With recent advancements in AI and Big Data analytics, it is possible to analyze small datasets collected over short intervals of time to predict emotional traits leading to a certain behavioral outcome.

While technology will certainly play a major role in the way we assess and predict behavioral outcomes, it will remain more of a means to an end, rather than an end in itself. In a transhuman era, future growth areas for behavior

Wearables, implants, apps, supplements, and virtual reality come together to advance ways of thinking.

[5] American Psychological Association: Controlling Uncertainty: A Review of Human Behavior in Complex Dynamic Environments
[6] SCC: Consumer Analytics Whitepaper

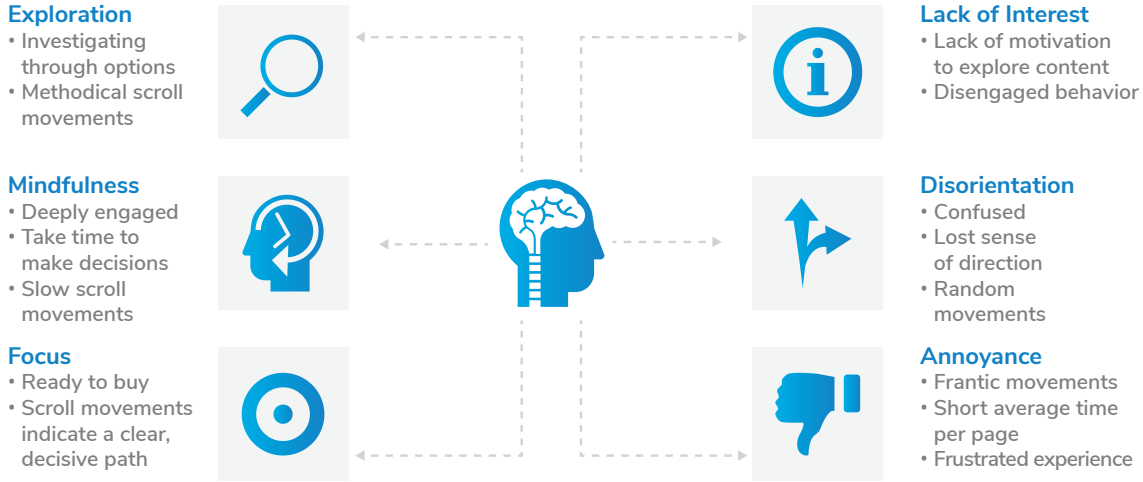
tracking will include a combination of wearable devices and body implants in constant communication with the human body. Wearables will far surpass smartwatches and fitness trackers used today; exosuits in the form of an external rigid body covering will improve physical capabilities and camera-based artificial retinas will capture photographic moments. Implants such as brain microchips will leverage behavioral movements to enable mind-controlled prosthesis. For instance, Elon Musk's company, Neuralink, recently launched a brain-machine interface system, which consists of implants that connect human brains with computer interfaces using artificial intelligence.[7]

With the help of these intrinsic and extrinsic enhanced devices, analyzing human experiences and behavior will evolve from measuring tangible data (call history, purchase history, credit card transactions, and GPS locations) to intangible, behavioral data in real time. These include social media activity, feelings, behaviors, judgment, and physical likeness. By 2030, behavioral analytics will evolve to a point where "information actively seeks its consumers," rather than the other way around, thereby driving predictive decision-making ability.

Why are Companies Using Behavioral Analytics?

Emotion has a greater influence than reason in both customer and employee behavior and can be measured and managed.[8] Emotionally satisfied customers are inclined to have a stronger emotional connection with a company, while rationally satisfied customers have a lower level of emotional attachment. Companies have now realized that recommendations based on demographic data, such as age, gender or locations, are poor indicators of human behavior. Behavioral analytics provides companies with the power to isolate common behavioral characteristics and patterns, gauge potential business opportunities, and accordingly devise an engagement strategy.

Exhibit 4: Popular Human Behavioral Traits Being Analyzed by Companies, Global, 2019–2030



Source: Frost & Sullivan

[7] Neuralink Official Website
[8] Gallup: The Next Discipline: Applying Behavioral Economics to Drive Growth and Profitability

Emotional behavior constitutes 70% of economic decision-making while rational behavior accounts for 30%.

Human behavior and interaction are dynamic, complex, and constantly evolving; this makes the modern customer journey hard to predict.

Changing human bodies, thought, and behaviors will usher in changes to industry that require new competitive strategies.

Transhumanism will transform how companies communicate with customers. Contact lenses with virtual reality and networking capabilities will enable users to view and share products within their social groups for validation. Brain-machine interfaces will allow companies to better understand consumer behavior and influence product design. Facebook is building a non-invasive wearable device that lets people type using their thoughts and imagination. However, enhanced bodies also usher in new risks and challenges. For instance, companies can abuse behavioral data collected from individuals. BMIs can be used to manipulate the human brain and create the need for a product or service, without the user's inclination for it. As humanity itself evolves, trust and emotional connection will become key parameters for companies to anticipate and analyze customers' future behavior.[8]

Key Industry Applications

Listed below are a few scenarios across industries, representing the vast implications of behavioral analytics expected to occur as we approach the transhumanism era. These scenarios will radically transform how governments and corporate entities connect with citizens and customers, among countless other scenarios we cannot yet imagine.

Gaming: The current use of behavioral analytics allows companies to predict future usage and target in-game upselling opportunities. Game environments will be applied in a broader setting to establish continuous engagement, motivation, and dopamine stimulation. A "virtuality-reality continuum" will influence human behavior as the lines between the real and digital worlds begin to blur.

eCommerce and retail: AI-enabled intelligent assistants will recommend the best style, size, shape, and price. Virtual clothing will become the norm, with a camera-based artificial retina. Customer behavior patterns will be analyzed to make product recommendations, roll out personalized offers, and forecast future sales trends. New customers will be acquired on the basis of their behavioral preferences collected through devices in constant contact with the human body. Monitoring consumption behavior will allow for the automated purchase of home goods, based on personal inventory.

Entertainment & Media: Behavioral patterns such as scrolls, taps, and major touchpoints will be observed and recorded to analyze the effectiveness of apps and, accordingly, forecast future trends. Earlier this year, Samsung introduced its MagicINFO Analytics platform, which allows marketers to monitor in-store customer behavior, track signage and display the most relevant, customized solution to meet customer needs.[9] Today, streaming platforms like Netflix or Amazon Prime Video can record user preferences and recommend similar movies and television programs.

Future streaming interfaces will leverage BMI to accurately predict human inclination and recommend uniquely personalized movies, TV shows or documentaries attuned to specific content and preferences.

Exhibit 5 shows the various sources through which behavioral data will emerge from within and around us, mainly implants, wearables, websites, devices and vehicles that we use in our daily lives. Transhumanism is expected to result in an exponential increase in the generation of behavioral data through wearables and implants in a human body.

The new humanity will see consistent themes emerge across all aspects of life.

[9] Samsung Official Website: Samsung Introduces New Digital Display Innovations at InfoComm 2019

Exhibit 5: Behavioral data will emerge from people and things within and around us, Global, 2025–2030

Source: Frost & Sullivan

Financial Services: With improving data quality, Finserv institutions will increasingly use behavioral analytics as an opportunity to fundamentally change user interaction and decision-making for commercial gains. Chatbots and digital assistants will be able to address customer needs and inquiries, walk them through processes, record behavioral insights, and provide automated task solutions related to money transfers and balance inquiries. For instance, Hello Bank! analyzed customer behavior using click heatmaps and redesigned its offering page, reducing user exits by 12%.[10] Over time, intelligent digital assistants will collect behavioral data and accordingly respond to user requests.

Cybersecurity: Through NLP and sentiment analysis, which focuses on the emotional content of the communication, behavioral analytics can be used to detect patterns and anomalies driven by human behavior related to misconduct, fraud, and non-compliance. Hacking of body parts for control or espionage is more likely to be monitored by community watch groups over the short term due to limited use.

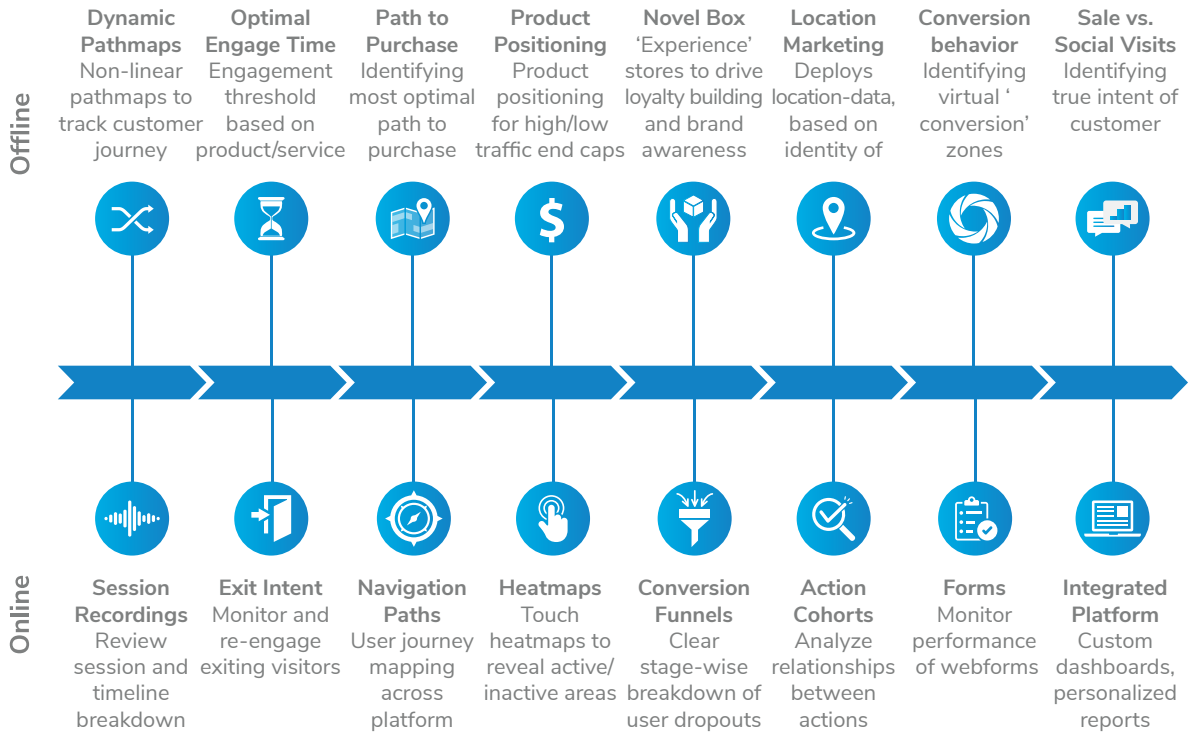
Healthcare: Intermountain Medical Center Heart Institute adopted the "nudge theory" to improve medication adherence by 20% among cardiovascular patients.[11] A range of channels, including emails, texts, voice recordings, voice calls, social media, Alexa assistance, and Apple Watch were used to nudge patient behavior. Moving forward, enhanced vision will enable periodic health monitoring. For instance, Google and Novartis are developing smart lenses that can monitor glucose, cortisol, and cholesterol in real time. Wearables and smart pills will be linked to our unique genome, and insurance will encourage optimized eating habits.

Exhibit 6 shows various methods companies employ to track online and offline human behavior. These are expected to further expand to include input from wearables and implants.

The augmentation of human bodies will be a combination of external wearables, implants, and biological manipulation.

[10] Clicktale.com: Hello Bank! Case study: https://www.clicktale.com/media/2352/hello-bank-casestudy_090516.pdf
[11] American Medical Association: "Nudge theory" explored to boost medication adherence

Exhibit 6: Growing Use of Behavioral Analytics Tracking Methods, Global, 2019



Source: Prototypr.io; behavioralanalyticsretail.com; Frost & Sullivan

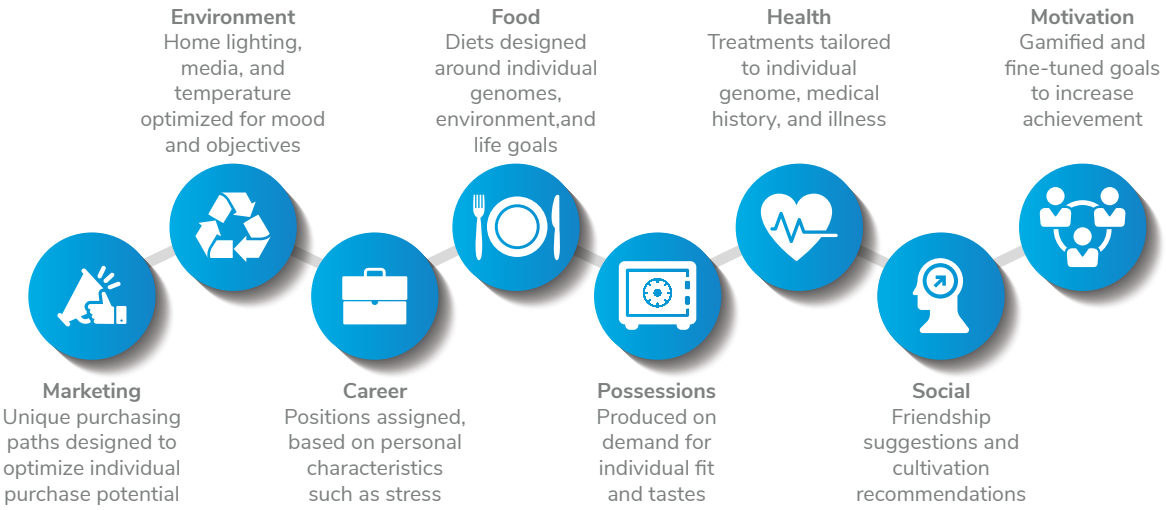
Personalization—Empowering the Customer

In a recent study on Global Mega Trends to 2030, the Visionary Innovation Group at Frost & Sullivan identified "personalization" as one of the emerging and fastest-growing business models that will shape our future lives.[12] We are already seeing instances wherein companies are leveraging Big Data and behavioral analytics to deliver targeted, personalized content and build customer relationships. As shown in Exhibit 7, extreme personalization will occur across every aspect of life, including purchasing, health and everyday consumption of products and services.

The proliferation of omnichannel platforms makes the path to purchase even more challenging.

[12] Frost & Sullivan study: Global Mega Trends to 2030: Futurecasting key themes that will shape our future lives

Exhibit 7: Evolving Human Experience through Extreme Personalization, Global, 2025–2030



Source: Frost & Sullivan

Advanced natural language processing (NLP) devices and interactive digital assistants, combined with Big Data and AI, will extract meaning from unstructured datasets to analyze customers' preferences, modes of communication and relationships across diverse user groups to enable this level of personalization. In an increasingly virtual environment, gesture-based behavioral attributes can be used to achieve extreme personalization.

The short to mid-term will witness the proliferation of intelligent assistants that leverage our behavioral habits and coach us throughout the day to achieve personal productivity, health, and other goals. In the long term, companies capable of leveraging behavioral insight influence, to achieve full personalization using an individual's demographics, genome, emotional state, and environmental context, will gain a competitive edge.

Transhumanism will bring about an era of extreme personalization, wherein marketers will be able to change the context of their messaging in response to our current mood. Personalization will eventually result in customization on a mass scale where products and services are completely configured to individual human behavior.

The Power of a Nudge: Disrupting Social Behavior

Nudge tactics are used to encourage positive behavioral change and improve decision-making, without the need for significant investment. More than 150 governments around the globe have tried nudge tactics; we have seen several instances where behavioral analytics has been applied to shape public policy. These include David Cameron's "Nudge Unit" in the Cabinet Office, President Barack Obama's Social and Behavioral Sciences Team (SBST), and EU Policy Labs.[13]

[13] Center for Public Impact.org: The Behavioral Insights Team in the UK

While extreme personalization will enable evolution in human experiences, it could also result in addictive human behavior.

Amazon and Netflix leverage customer behavior data to unlock upselling and cross-selling opportunities

Gamification and behavioral analytics supported by AI are being used to "nudge" citizens toward desired outcomes.

In the corporate environment, the powerful combination of behavioral analytics, gamification, and AI is already being harnessed by UBER as one of the early innovators in the market. UBER's techniques range from nudging drivers to "take up the next drive" as a default option without revealing the profitability of that ride and recognizing them with non-monetary awards and titles such as "Above and Beyond." A video game-like graphical interface is used to engage drivers and constantly prompt goals just out of their reach and to encourage continued pursuit. As Integrated Mobility takes center stage, nudge tactics can be used to motivate commuters to use a certain mode of transport at any particular time and incentivize positive behavior.

Some additional applied nudge behavioral examples include:

Automatic Enrollment for Private Pension: The UK government increased private pension enrollments by making workplace pensions an opt-out option, rather than an opt-in. To encourage citizens to pay taxes on time, they were sent letters stating that the majority of taxpayers had paid their taxes on time.[14]

Singapore's Health Promotion Board: The Healthy Dining Programme provides a grant to food and beverage entities if they provide healthier options to diners.[15]

Optical Illusion Intersection Crossings: Towns in India, China and Iceland trialed "floating zebra crossings," which are 3D optical illusions that look like they are floating above ground level to urge drivers to reduce speed.[16]

Diabetes Screening: A medical center in Qatar utilized the occasion of Ramadan to increase the uptake of diabetes screening by testing people while they are fasting.[17]

Organ Donation: Citizens in Spain and France are automatically enrolled in an organ donation program unless they explicitly choose to opt out.[18]

Voting Turnout: The San Mateo government increased its voting rate by sending behaviorally designed text messages to citizens ahead of local elections.[19]

Exhibit 8 shows different guidance and motivational tactics used by UBER to compel drivers to operate for longer periods, sometimes to the detriment of their health and safety.

[14] The Behavioral Insights Team: Automatic Enrolment and Pensions: a behavioral success story
[15] BBC.com: The Nation that thrived by 'nudging' its population
[16] BBC.co.uk: Would these floating 3D zebra crossings slow you down?
[17] World Innovation Summit for Health: Applying Behavioral Insights—Simple ways to improve health outcomes
[18] The American Journal of Bioethics: "Nudging" Deceased Donation Through an Opt-Out System: A Libertarian Approach or Manipulation?
[19] Psychology Today: #NudgetheVote. https://www.psychologytoday.com/us/blog/nudging-ahead/201811/nudgethevote

Exhibit 8: UBER's Use of Behavioral Analytics, Global, 2019

Uber's Goals

Balance the demand from riders with the supply of drivers to reduce wait time and decrease the incidence of surge

Pricing:

- Optimize when drivers work
- Optimize where drivers work
- Optimize how long drivers work

Outcomes

- Drivers may continue for dangerously long periods of time.
- Many drivers are not making livable incomes from the work.
- Tactics are likely to grow in the gig economy to optimize and direct flows of contract workers because of less oversight than traditional employers

Uber's Tactics

Forward dispatch algorithm cues up new rides before the current ride is completed. This tactic has been used by Netflix which is thought to encourage binge watching.

It does not disclose the destination or profitability of the next ride before the driver accepts, employing the tactic of uncertainty, which has been shown to lengthen the time spent on activities such as gambling.

Video-game-like graphics make the driving experience feel like a game and encourage longer drive times, in much the same way that video games can be addictive.

Drivers earn badges, such as 'Above and Beyond', Excellent Service, and Entertaining Drive, that incentivize them to continue working but do not have any value (or cost to Uber).

Uber anchors earned revenue to goals that are always just beyond reach; goals that work to persuade drivers to stay on longer, building off of income-targeting tendencies.

It constructs beneficial decision architecture to drive driver behavior where they want and highlights default choices that are optimal for the company such as 'keep driving.'

Male managers adopt female personas to text drivers because the uptake is higher.

Source: New York Times; Frost & Sullivan

While there are well-documented examples from the Western countries, developing countries with varied governments, capacities and social needs will also benefit from behavioral analytics. In such economies,

adopting nudge tactics can improve tax compliance, recordkeeping accuracy, access to education and healthcare. Moving forward, more governments and corporations are expected to increasingly adopt "nudge" interventions to influence peoples' decisions to achieve policy objectives.

As companies increasingly use nudge tactics to influence customer behavior, caution must be exercised around the use of "sludge" tactics to avoid controlling behavior.[20] For instance, a publication service is likely to have a faster, one-click sign-up option, but a highly complicated exit procedure where the user must complete several steps to unsubscribe from the service.

2030 Scenario: Risks, Challenges, and the Way Forward

Combatting Resistance to Change

As we have now witnessed examples of several highly successful businesses shutting down shortly after reaching prominence, companies must wake up to consider that change is the only constant. The success of digital empires that started small only a few decades ago, such as Amazon, Netflix and Google, all point toward the importance and potential of behavioral analytics in this constantly changing business landscape. Instead of reacting to changes, the future of behavioral analytics and transhumanism will revolve around anticipating it proactively. Businesses and government entities that invest in resources and capital to understand behavioral patterns—how they are generated and can be analyzed to influence purchasing decisions—are expected to gain a competitive advantage. Similarly, companies, governments and consumers alike must also embrace the advancements made in nanotechnologies, genetic engineering and medical sciences to enhance the biological and mental functioning that will make us transhuman. And these changes are expected to be rapid.

Over the short term, we will see companies and governments invest in dedicated behavioral units that conduct research, gather insights, and develop actionable plans to analyze and leverage customer behavior. Scientists with backgrounds in the fields of behavioral analytics, psychology, marketing, and cognitive science will take up leadership positions in corporations and governments. Zoltan Istvan, founder of the Transhumanist Party and former presidential candidate, is one of the most vocal figures fighting to bring about awareness of transhumanism in the United States.

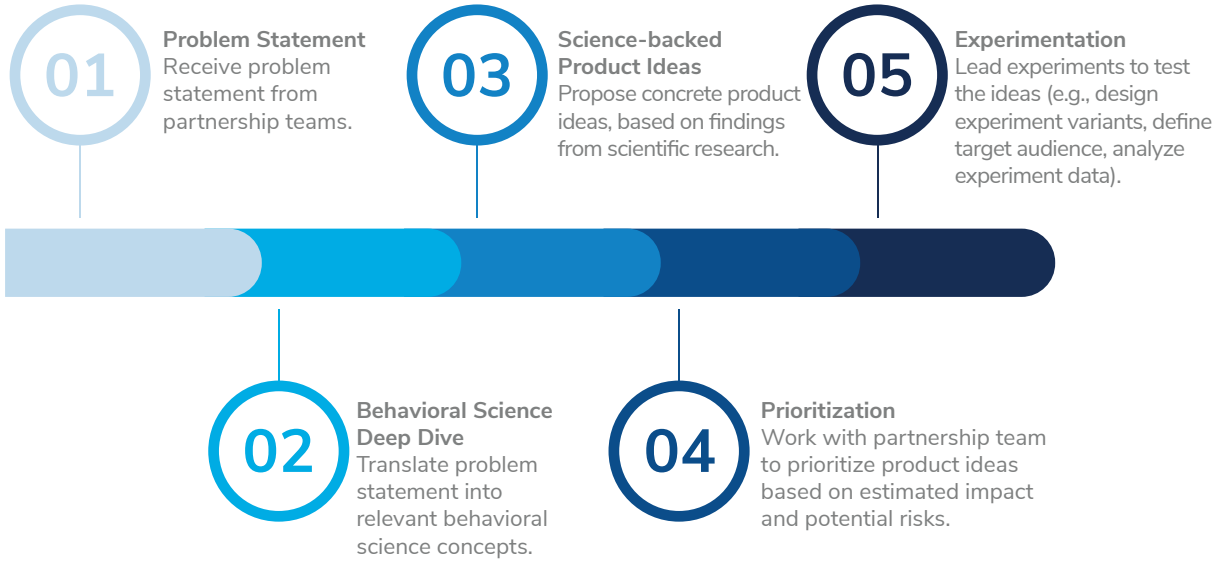
Exhibit 9 shows Uber's deep-dive workflow used by the company to leverage applied behavioral analytics at scale, from defining a problem statement to experimentation stages.[21]

Uber has come under scrutiny due to the guidance and motivational tactics it uses to compel drivers to drive longer, sometimes to the detriment of safety and earning potential.

The resistance to change is the most significant challenge. Future tactics will be based on disrupting the equilibrium between the driving and restraining forces of change.

[20] Chicago Booth.edu: Richard Thaler: Words to live by: Flops, nudges, and sludge
[21] Uber Engineering: How Uber Leverages Applied Behavioral Science at Scale

Exhibit 9: Uber's Behavioral Analytics Deep-dive Workflow, Global, 2019



Source: Uber Engineering; Frost & Sullivan

Data Privacy as a Rising Concern

According to Frost & Sullivan, the total worldwide generation of data will expand to 163 ZB by 2025, about 10 times the volume of data generated in 2018.[12] Our digital footprint contains an enormous volume of data. With an increasing range of digital data source points and methods to extract data, privacy and security of personally identifiable information (PII) will become a matter of concern. Behavioral parameters such as feelings, judgments and behavior could expose participants to potential cyber threats and manipulation. A lapse in data management could result in cyber warfare shifting toward citizen manipulation in the interest of nefarious actors. To ensure trust, customer retention, and loyalty, companies analyzing behavioral data will be required to ensure the highest level of encryption, masking, and security. Undesirable behavior, if normalized on social media platforms, can influence real-world behavior. For instance, Instagram recently added a "restrict" feature, which allows users to restrict a person's comments on their posts.[22]

'Ethical' Behavioral Analytics

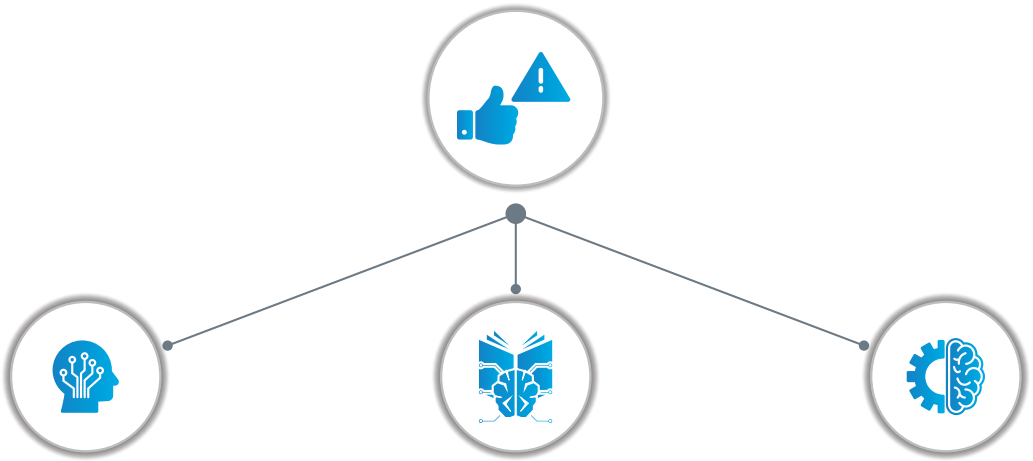
The ongoing debate between data privacy versus data protection calls for "ethical" behavioral analytics. Compliance regulations such as the GDPR adopted earlier this year will further push the need for data privacy and consent.

[22] Instagram-press.com: Our Commitment to Lead the Fight Against Online Bullying

Ultraconservatism, anti-science sentiment, protectionism, and ethno-religious rebellions are likely to slow down the transition to new humanity.

Companies leveraging tangible and intangible data to unlock data monetization opportunities must apply best practices in data consent and data-sharing procedures. For instance, Killi allows users to cash in on their personal data by choosing the information they want to share or sell to data buyers in exchange for money.[23] Users can also easily access the shared data, which is stored on their device. As human behavior evolves, behavior analytics may also have adverse effects on the human mind, body and society at large. As digital technologies become ubiquitous and smarter in tracking human behavior, it is imperative that we understand and exercise the importance of data consent. Exhibit 10 shows the risks, challenges and detrimental consequences that may occur as human behaviors evolve.

Exhibit 10: Risks and Challenges That Will Emerge as Human Behaviors Evolve, Global, 2025–2030



Body
- Hacking the mind or other digital implants
- Overcoming challenges of individual brain and body uniqueness (shape, chemical make up, daily routine) in order to exert stimulation currents accurately

Machine Learning/AI
- Situational context difficult for machines to understand, leading to errors
- Changing human culture as AI increases influence
- Viral spreading of disinformation or propaganda with increasing effectiveness
- Potential for learned helplessness as AI drives daily life

Behavioral and Societal
- Big brother monitoring, evaluation, and manipulation of employees and citizens
- Driving predatory purchases from consumers with overly manipulative personalization
- Deskilled workers as computers take over decision guidance and tasks
- Emotional backlash when embodying extreme oppositional groups
- Addictive digitally immersive environments that draw users away from physical society
- Surreptitiously influencing individual behavior against a person's own interests

Source: DARPA; Fast Company; Frost & Sullivan

[23] Killi Official Website

Risks and challenges include both limitations of emerging influencers as well as the detrimental consequences these influences may have.

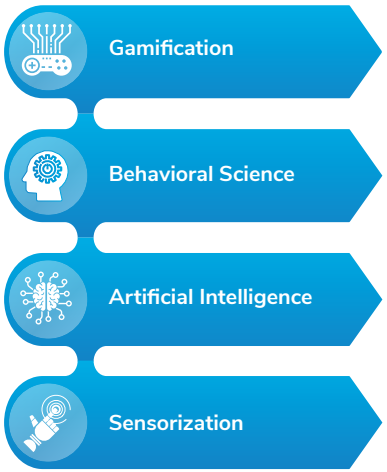
As transhumanism will affect our bodies and thought processes, it also raises a number of questions around ethics and its implications on human behavior. First, it is likely to create an unbridgeable divide between consumers who can afford such technology advancements and those who cannot. It also provides organizations with an opportunity to manipulate certain behaviors through external wearables and internal implants. For instance, based on the user's location, a popular fast food joint can send signals through symbiotic implants to our brain to create a feeling of hunger, triggering an immediate reaction to eat at the joint.

Behavioral Change for Good

Advancements in our emotional, cognitive, and perceptual abilities, which currently restrict our rational view of the world around us, will have a profound effect on our decision-making abilities. Government and intelligence agencies are investigating how behavioral analytics can be used to bridge social divides and curb terrorist activity to strengthen national security. Governments and corporate brands could increasingly use behavioral tactics to understand societal needs and use motivational tactics such as nudges and light-touch gestures to trigger a certain type of behavior.

Exhibit 11 shows how disciplines, such as gamification and behavioral analytics, which are supported by AI and sensorization, are being used to "nudge" citizens toward desired outcomes across all aspects of life.

Exhibit 11: Evolving Human Behaviors That are Increasingly Guided and Motivated, Global, 2019–2030



Present Bias: Present Bias: An opt-out default is more likely to result in the desired outcome.

Loss-aversion Bias: Emphasis of potential losses are more powerful than potential gains.

Normative Feedback: Signals of social norms normative behavior

Hyperbolic Time Discount: Dramatically less emphasis on the future than the present

Common 'Nudge' Tactics

Evolving Human Behaviors: Example Guidance Applications

Government	Workplace	Social	Lifestyle
Reminders and information encouraging enrollment in beneficial government programs	Default increase of retirement contributions to workplace plans tied to pay raises and through delayed enactment	Facebook's filtering of news feed material affecting users' emotional state	Health improvement through motivational games and incentives to maintain diet, exercise and physical therapy
Applying normative feedback on comparisons with social norms to improve on-time tax payment ratios	Rewarding medial tasks or long work hours in the gig economy with (non-value) badges, icons, and productivity scores	Applying social norm incentives to reduce household utility usage by comparing usage with neighbors and energy-efficient households	Proactive purchase recommendations based on usage patterns

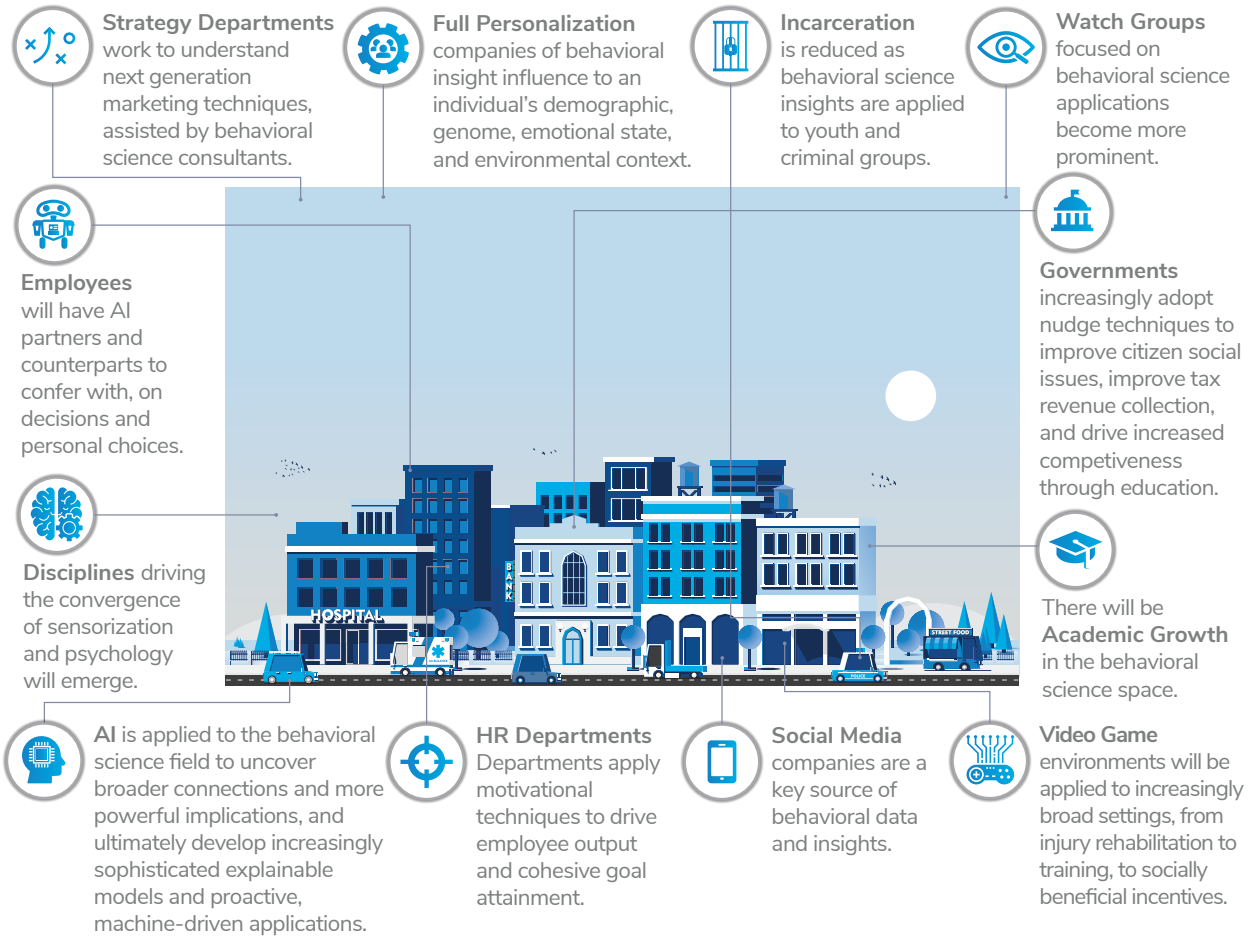
Source: New York Times; Fast Company; World Economic Forum; Frost & Sullivan

Industries and governments may be pushed to choose sides between highly advanced minority of transhumans or the unenhanced population.

Human behavior will evolve to be more empathetic.

Technology used in an attempt to change behavior for good can help countries and their governments eradicate issues such as childhood obesity, smoking or alcoholism, improve adherence to medication, exercise better control over eating habits and promote overall well-being. For instance, the 2030 Agenda for Sustainable Development to eradicate poverty and hunger urges public policy and government officials to leverage current understanding of human behavior and psychology, which prevent societies from fully achieving sustainable development.[24] Exhibit 12 represents the dramatic changes in humanity that will occur throughout the workplace and in numerous social, government-related, and educational spheres.

Exhibit 12: Human Behaviors That Will Evolve Across Work and Lifestyle Settings, Global, 2025–2030



Source: Science Magazine; Frost & Sullivan

[24] International Institute for Sustainable Development: The Case for a Digital Ecosystem for the Environment

To embrace transhumanism, the aim will be to create a biologically enhanced rather than a bio-technologically controlled human.

Through various technologies enabling transhumanism, diverse people will come to understand one another, work toward the same goals, be deterred from socially destructive behavior, and exhibit more respectful behavior.[3] For instance, virtual reality can embody races, genders and ages, which can increase diversity sensitivity. Embodying those with disabilities, refugees, colleagues, or family members with PTSD can increase willingness to help others. A wearable device will stream data from the brain to a phone or computer, which will allow users to learn new skills, monitor brain activity and overcome fundamental limitations, such as aging, paralysis or the power of our brains. As a starting point, BMI advancements are likely to be adopted by injured, sick or elderly patients but will find further relevance among the healthy or the young as they seek ways to boost their lifestyle or performance. Neuralink's BMI promises to treat devastating injuries and critical health conditions, such as Alzheimer's, spinal injuries and blindness. An athlete whose limbs are replaced with carbon-fiber blades can outperform those with biological limbs.[25]

Conclusion

There is no doubt that governments and corporates will increasingly capitalize on human behavior and its predictability to achieve desired outcomes over the next decade. The application of behavioral analytics to drive customer engagement and predict outcomes will form the core of every organization and change the way businesses operate. The transition of human-kind and behavioral analytics will not just shape our economies, but our human character and the society in its entirety. As humanity enters the rise of technology-driven evolution, propelling deeper questions at the heart of what it is to be human, it is imperative to set out a framework for behavioral interventions that can shape better and fairer environments.

In the workplace and in numerous social, government-related, and educational spheres, humanity will witness dramatic changes that alter our daily lives.

[25] Guardian: No death and an enhanced life: Is the future transhuman?

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