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STRATEGIC HUMAN CAPITAL IN THE EXTRACTIVE INDUSTRIES

Navigating the intersection of diversity, digitalisation, and the demographic cliff

Next Generation
LEADERSHIP INSTITUTE

INTRODUCTION

THE STRATEGIC IMPERATIVE FOR "NEXT PRACTICE" LEADERSHIP

The global mining and natural resources sector currently stands at a precarious intersection of history, geology, and technology. For decades, the industry operated under a relatively stable, albeit cyclical, paradigm: extract resources efficiently, manage costs rigorously, and maintain social license through local employment and compliance. However, the contemporary business environment has shattered these traditional certainties. As delineated in recent analyses by the Savannah Group, the sector is now navigating a landscape defined by three relentless forces: volatility, variability, and velocity—collectively known as the "Three Vs".

This report serves as a comprehensive examination of the critical necessity for diversifying senior leadership within the mining industry. It posits that diversity—encompassing gender, ethnicity, Indigenous representation, neurodiversity, and cross-sectoral experience—is no longer merely a metric of corporate social responsibility (CSR) or a box-ticking exercise in Environmental, Social, and Governance (ESG) compliance. Rather, it has evolved into a fundamental lever for strategic survival and value creation. The industry is facing a "perfect storm" of talent scarcity, driven by a massive retirement cliff of experienced Baby Boomers and a simultaneous, exponential explosion in demand for the digital skills required by Industry 4.0.

The thesis of this analysis is straightforward but profound: the mining industry cannot solve the problems of 2030 with the leadership models of 1990. The "heroic," command-and-control leadership style that characterized the previous super-cycle is ill-suited for an era requiring complex stakeholder management, digital fluency, and agile decision-making. To bridge the widening chasm between talent supply and demand, mining organizations must radically expand their aperture. They must tap into historically underutilized groups and leverage advanced leadership intelligence to dismantle the systemic barriers that have homogenized mining boardrooms for over a century. By moving from "best practice" to "next practice," utilizing partners like Savannah Group and technologies such as MapX, the industry can secure the transformational leadership required to navigate the volatile decades ahead.

THE "THREE VS": A NEW CONTEXT FOR GOVERNANCE

To understand the urgency of the diversity mandate, one must first appreciate the texture of the current operating environment. The Savannah Group's Next Generation Board Leadership Report provides a framework for understanding this new reality.

VOLATILITY OF EVENTS

The era of linear predictability is over. "Black swan" events have morphed into a continuous flock. The COVID-19 pandemic was merely a precursor to a cascade of disruptions, including geopolitical fragmentation, the weaponization of critical mineral supply chains, sudden climate-related infrastructure failures, and the rapid, destabilizing emergence of generative AI. Boards that rely on annual strategic planning cycles are finding their roadmaps obsolete before the ink is dry. In this context, a homogenous board—one that shares the same background, education, and biases—is a single point of failure. It lacks the peripheral vision to see the disruption coming from the "left field".

VARIABILITY OF MARKETS

The macroeconomic consensus has fractured. Boards must now contend with divergent market conditions simultaneously: hyper-inflation in one jurisdiction, deflationary pressure in another; a race for green metals in the OECD, and resource nationalism in the Global South. Strategies must be robust enough to perform across a multiverse of scenarios, rather than optimized for a single, "most likely" future. This requires a cognitive elasticity that is rarely found in monocultural leadership teams.

VELOCITY OF CHANGE

Perhaps the most daunting factor is the sheer speed of transformation. Product development cycles have compressed; technological adoption curves have gone vertical. The transition from manual to autonomous haulage, or from diesel to battery-electric fleets, is happening at a pace that outstrips the industry's traditional ability to retrain its workforce. This velocity demands compressed decision cycles. Boards can no longer afford to wait for perfect information; they must synthesize complex, incomplete data streams rapidly—a capability that research suggests is significantly enhanced by cognitive diversity.

THE SCOPE OF ANALYSIS

This report will proceed through four distinct analytical movements. First, it will establish the empirical business case for diversity, grounding the argument in financial data and safety statistics. Second, it will dissect the "Talent Cliff," quantifying the dual pressures of retirement and digitalization. Third, it will map the "Untapped Pools" of talent—women, Indigenous peoples, neurodivergent individuals, and cross-sector executives—that offer a solution to the crisis. Finally, it will articulate how the Savannah Group's specific methodologies, including MapX technology and "Outside-In" talent intelligence, provide the tactical machinery to operationalize this strategic shift.

THE EMPIRICAL CASE

PERFORMANCE, SAFETY, AND STRATEGIC RESILIENCE

For decades, the push for diversity in mining was framed largely as a moral imperative or a reputational necessity. While these drivers remain valid, the conversation in the C-suite has shifted decisively toward performance. The data is now unequivocal: diverse leadership teams simply run better mining companies.

FINANCIAL OUTPERFORMANCE: THE EBITDA CORRELATION

The most direct rebuttal to the "diversity is a distraction" argument is found in the Profit and Loss statement. Comprehensive research conducted by White & Case, analyzing the top-100 listed mining companies globally, has established a robust positive correlation between board diversity and financial health.

The data reveals a stark performance differential.

Mining companies with mixed-gender boards achieved an average Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA) margin of 38.0%.

In sharp contrast, their peers with all-male boards managed only 32.7%. This 5.3 percentage point gap is not statistical noise; in an industry characterized by capital intensity and cyclical commodity prices, a margin expansion of this magnitude represents billions of dollars in shareholder value.

Board Composition	Average EBITDA Margin	Implications for Shareholders
Mixed-Gender Boards	38.0%	Superior capital efficiency and cost control.
All-Male Boards	32.7%	Potential value leakage and sub-optimal strategy.
Performance Gap	+5.3%	The "Diversity Dividend."

Source: White & Case, Women in Mining UK [5]

Furthermore, the relationship appears to be linear rather than binary.

The data indicates that companies with higher percentages of women on their boards (specifically those in the 45–55% range) consistently outperformed those with tokenistic representation (10–15%).[5]

This suggests that the benefits of diversity are not unlocked by simply appointing one female director to avoid scrutiny. Rather, a critical mass is required to change the dynamic of boardroom discourse, moving from performative inclusion to genuine cognitive heterogeneity.

The underlying mechanism for this outperformance is likely rooted in risk management and capital discipline. Research suggests that diverse boards are less prone to overconfidence—a frequent killer of value in mining M&A—and more rigorous in their interrogation of capital projects. This aligns with broader findings that female directors often bring different risk appetites and a stronger focus on stakeholder engagement and ESG factors, which are increasingly material to financial performance.

COGNITIVE DIVERSITY AS A RISK MITIGATION STRATEGY

The greatest risk to a mining company is often not geological, but cognitive.

In the volatile environment described by Savannah Group's "Three Vs," the greatest risk to a mining company is often not geological, but cognitive. Groupthink—the psychological phenomenon where the desire for harmony or conformity results in irrational or dysfunctional decision-making—is a systemic peril in the mining industry. The sector's history is replete with examples of catastrophic failures, from tailings dam collapses to failed multi-billion dollar acquisitions, that were retrospectively attributed to a lack of internal challenge and "optimism bias".

Savannah Group's analysis identifies cognitive diversity as the primary antidote to this peril. Boards that lack diverse perspectives risk "not hearing the quiet voice at the end of the room that says 'we're heading for disaster'". In a homogenous boardroom, assumptions go unchallenged because everyone shares the same mental models. A diverse board, by definition, brings a wider array of heuristics and experiences to the table.

ANTICIPATING NON-LINEAR RISKS

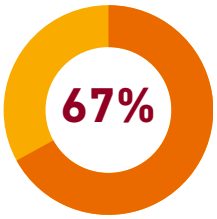
Diverse boards are better equipped to anticipate "Black Swan" events. A director with a background in digital technology might see a cybersecurity vulnerability that a mining engineer misses. A director with deep community relations experience might detect early warning signs of social unrest that a financier overlooks.

THE "CONDUCTOR" MODEL

To harness this diversity, the role of the Chair must evolve. Savannah argues that the modern Chair must act not as an autocrat but as a "conductor," whose role is to bring out different sections of the orchestra at the right time. This facilitative leadership style creates "psychological safety," ensuring that the dissenting views provided by diverse directors are actually aired and integrated into strategy.

THE SAFETY DIVIDEND: DIVERSITY SAVES LIVES

Perhaps the most visceral argument for diversity in mining is its impact on physical safety. In an industry where operational failure can lead to loss of life, any lever that improves safety performance is mission-critical.



Data from BHP, one of the world's largest resources companies, provides a compelling case study. BHP reported that their most inclusive and diverse teams recorded a 67% lower injury frequency rate compared to their less diverse counterparts.

Analysis of the Mechanism:
Why would a more diverse team be safer? The answer likely lies in the disruption of complacency.

BREAKING "AUTOPILOT"

Homogenous teams often develop shorthand ways of working and can drift into "autopilot," ignoring subtle changes in the environment. Diverse teams, by virtue of their differences, must communicate more explicitly and deliberately. This heightened level of communication forces a constant re-evaluation of the environment and risks.

PSYCHOLOGICAL SAFETY

Inclusive cultures, which are necessary to support diversity, tend to encourage the reporting of near-misses and hazards. In hyper-masculine, homogenous cultures, there can be a stigma attached to "stopping work" for safety concerns. Diverse leadership teams tend to erode this stigma, prioritizing well-being over bravado.

ADHERENCE TO PROTOCOL

Some studies suggest that female employees in industrial settings are often more strictly adherent to safety protocols and less likely to take unauthorized shortcuts, influencing the overall safety culture of the crew.

THE CURRENT LANDSCAPE

A SECTOR LAGGARD

Despite the overwhelming business case, the mining industry remains one of the least diverse sectors in the global economy. The gap between the rhetoric of inclusion and the reality of the boardroom is stark, creating a vulnerability that investors and stakeholders are increasingly scrutinizing.

THE GENDER CHASM IN THE C-SUITE

The "leaky pipeline" metaphor is frequently used, but in mining, it is more akin to a broken pipe. While women are graduating in relevant fields (law, commerce, environmental science) and entering the industry in greater numbers, their representation evaporates as they ascend the corporate hierarchy.

EXECUTIVE REPRESENTATION

As of 2023, women held approximately 12–13% of C-suite positions globally within the mining sector. This places mining at the bottom of the pile, lagging behind even other heavy industries like oil and gas and manufacturing.

THE "ZERO" STATISTIC

A sobering statistic from White & Case reveals that 42% of the top-100 listed mining companies still have no women in executive management positions. This total exclusion in nearly half of the sector's leading firms indicates a systemic resistance to change.

THE "GLASS WALLS"

When women do reach the C-suite, they are frequently siloed into functional roles—Human Resources, Legal, External Affairs, or Sustainability. While these roles are vital, they are rarely the "feeder" roles for the CEO position. The operational P&L roles (COO, Asset President) that typically lead to the top job remain overwhelmingly male-dominated. This structural segregation limits the pool of female candidates ready for the CEO chair.

THE INDIGENOUS DISCONNECT

The mining industry operates disproportionately on or near Indigenous lands. From the Pilbara in Australia to the Athabasca Basin in Canada and the copper belts of South America, the industry's physical footprint is deeply intertwined with Indigenous territories. Yet, this geographical reality is not reflected in the corridors of power.

AUSTRALIA

In the ASX 300, a major index for global mining capital, Indigenous representation on boards is statistically negligible. As of 2024, there were only four First Nations directors holding a total of seven seats across the entire index.13 This is a profound disconnect in a country where the social license to mine is increasingly contingent on Indigenous partnership.

CANADA

The situation is similar in Canada. Despite Indigenous peoples accounting for over 11% of the upstream mining labor force—making mining one of the largest private-sector employers of Indigenous people—representation on TSX-listed mining boards hovers around 1%.

This lack of representation at the governance level creates a "validity gap."

Decisions regarding land use, heritage protection, and community benefit sharing are frequently made by boards with no lived experience or cultural understanding of the communities they impact. This significantly increases the risk of conflict, project delays, and reputational damage, as seen in the fallout from the destruction of Juukan Gorge.

THE INVISIBLE NEURODIVERSITY GAP

While gender and ethnicity are tracked metrics, neurodiversity remains largely invisible in mining leadership statistics. This is despite the fact that the industry relies heavily on cognitive traits often associated with neurodivergence—such as hyper-focus, pattern recognition, and systems thinking. Currently, there is little formal tracking of neurodiverse leaders, and recruitment processes (often relying on unstructured interviews and "cultural fit") may actively filter out neurodiverg

THE LOOMING TALENT CRISIS

A "PERFECT STORM" OF DEMOGRAPHICS AND DIGITALIZATION

The urgency to address these diversity gaps is driven by a crisis of supply. The mining industry is facing a "pincer movement": a massive outflow of experienced talent due to retirement, and a simultaneous inability to attract new talent due to a skills mismatch and branding failure.

THE RETIREMENT CLIFF: THE "GREY TSUNAMI"

The mining workforce is aging at a rate that far exceeds the general population. This "Grey Tsunami" threatens to wash away the industry's institutional memory.

THE NUMBERS

Globally, approximately 22% of the mining workforce belongs to the Baby Boomer generation (born 1946–1964).20 In the United States, the situation is even more acute: the Society for Mining, Metallurgy & Exploration (SME) estimates that more than half (over 50%) of the current workforce—approximately 221,000 workers—will retire by 2029.

THE KNOWLEDGE VOID

The retirement of these professionals is not just a headcount issue; it is a knowledge issue. Senior geologists, mine planners, and metallurgists hold decades of "tacit knowledge"—instinctive understandings of ore body behavior or processing quirks—that is rarely codified in software. When they leave, this intellectual property leaves with them.

THE LEADERSHIP VACUUM

This demographic cliff is particularly steep at the leadership level. The cohort that would typically step into senior executive roles (Generation X) is smaller, and the pipeline below them (Millennials) has been thinned by years of low enrollment in mining engineering programs.

THE DIGITALIZATION DISRUPTION: A NEW SKILLS PARADIGM

Just as the experienced workforce is exiting, the nature of the work is fundamentally changing. The mining industry is undergoing a digital transformation often referred to as Mining 4.0. This shift is characterized by the adoption of Autonomous Haulage Systems (AHS), Digital Twins, Remote Operating Centers (ROCs), and AI-driven exploration.

THE SKILLS MISMATCH

The "miner of the future" looks less like a manual laborer and more like a tech worker. The demand is surging for data scientists, automation engineers, drone pilots, and cyber-security specialists.

THE COMPETENCY GAP

Current leadership is often ill-equipped to manage this transition. A staggering 73% of mining companies acknowledge that a digital skills gap is a major barrier to technology implementation. Furthermore, traditional mining education has collapsed in key jurisdictions; Australia has seen a 63% drop in mining engineering enrollments since 2014.

STRATEGIC STAGNATION

The impact of this shortage is tangible. 71% of mining leaders report that talent shortages are actively holding them back from delivering on production targets and strategic objectives.

THE BRANDING CRISIS

The industry is caught in a branding trap. It needs to attract digital natives (Gen Z) to solve its problems, but these cohorts prioritize values—sustainability, diversity, and flexibility—that they do not associate with mining. The perception of mining as "dirty, dangerous, and dated" is repelling the very talent needed to make it "clean, safe, and futuristic". This necessitates a radical rethinking of the employee value proposition, one where diversity is central to the brand.

UNLOCKING UNTAPPED TALENT POOLS

THE SOLUTION SET

To solve the equation of the "Three Vs" and the talent crisis, mining organizations must look beyond the traditional "black book" of contacts. They must systematically unlock four specific "untapped" talent pools.

WOMEN: LEVERAGING THE REMOTE WORK REVOLUTION

Women represent the single largest underutilized asset in the sector. While cultural barriers persist, technology is providing a powerful unlock.

THE ROC EFFECT

The shift to Remote Operating Centers (ROCs) in urban hubs like Perth, Brisbane, Santiago, and Calgary is decoupling mining work from the remote mine site. This removes the primary barrier for many women: the Fly-In-Fly-Out (FIFO) roster, which is notoriously incompatible with primary caregiving responsibilities. By moving the "control room" to the city, mining companies can access a vast pool of female talent that was previously geographically excluded.

FINANCIAL IMPERATIVE

As noted in Section 2.1, tapping into this pool is not charity. It is a strategy to capture the 38% EBITDA margins associated with mixed leadership.

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INDIGENOUS LEADERSHIP: ECONOMIC RECONCILIATION

The industry must move Indigenous engagement from the "Community Relations" department to the Boardroom. Indigenous leaders bring a form of "situational intelligence" regarding land, water, and community dynamics that is becoming the primary determinant of project success.

ECONOMIC POWER

In Canada, Indigenous businesses generated

$12.5 BILLION

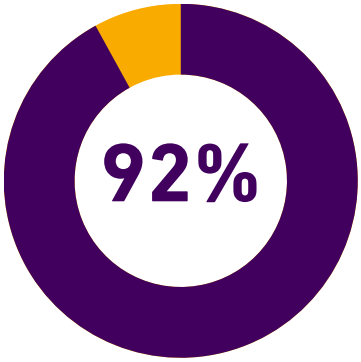
in economic activity related to the resource sector in 2024. This demonstrates a sophisticated level of commercial capability that is ready for senior leadership.

STRATEGIC ALIGNMENT

Indigenous leaders are often aligned with the long-term horizons of mining projects (decades/generations), contrasting with the short-termism of quarterly reporting. Their inclusion in governance can stabilize the "Social License to Operate" (SLO) and de-risk projects against social unrest.

NEURODIVERSITY: THE "CANARY IN THE COAL MINE"

Neurodivergent individuals (including those with Autism, ADHD, and Dyslexia) represent a potent source of innovation for the digital mine.



JPMorgan Chase's "Autism at Work" program found that neurodivergent employees were 92% more productive than their neurotypical peers in certain technical roles

THE "CANARY" ANALOGY

Neurodivergent employees often function as "canaries in the coal mine" for corporate culture. They are highly sensitive to toxic environments, ambiguity, and poor processes. A workplace that works for neurodivergent people—one that is clear, fair, and psychologically safe—tends to be a higher-performing workplace for everyone.

COGNITIVE MATCH

The specific cognitive profiles of neurodivergent individuals map perfectly to Mining 4.0. Skills such as superior pattern recognition, the ability to sustain focus on monitoring autonomous systems, and "savant-like" capabilities in data analysis are critical for the digital mine.

PRODUCTIVITY

Evidence from other sectors is compelling. Mining leaders like BHP and Rio Tinto are now piloting similar programs to staff their data science and cybersecurity divisions.

CROSS-SECTOR MOBILITY: IMPORTING THE FUTURE

The skills shortage is too severe to be solved by internal promotion alone. The mining industry must become an importer of leadership talent from parallel sectors.

AUTOMOTIVE CONVERGENCE

As mining integrates deeper into the battery supply chain, the line between miner and automaker is blurring. Mining companies are hiring executives from the automotive sector (e.g., Ford, GM, Tesla) to manage the complex logistics of battery metals and the maintenance of electric vehicle (EV) fleets.

These leaders bring "Just-in-Time" manufacturing discipline to the extraction process.

THE TECH INJECTION

To survive digitalization, mining companies are hiring C-suite leaders directly from the technology sector.

A prime example is Maaden, the Saudi mining giant, which recently appointed a new Chief Technology Officer (CTO) from outside the traditional mining sphere to lead their AI push.[34] This signals a structural shift where the CTO is no longer a "Head Geologist" but a "Head of Tech."

SAVANNAH GROUP

THE ARCHITECT OF TRANSFORMATIONAL LEADERSHIP

In this complex, high-stakes environment, the traditional methods of executive search are failing. Relying on a "Rolodex" of known industry insiders simply recycles the same homogenous talent pool.

The Savannah Group distinguishes itself by offering a "Next Generation" approach that leverages technology and deep market intelligence to solve the diversity equation.

MAPX: PRECISION THROUGH AI

Savannah's proprietary platform, **MapX**, represents a technological leap in talent acquisition. Unlike traditional mapping, which relies on manual research and subjective networks, MapX utilizes artificial intelligence to analyze over 80 million data points globally.

UNCOVERING THE INVISIBLE

MapX is specifically designed to find diverse talent "in places others would never think to look". By analyzing skills and experiences rather than just job titles, it surfaces candidates who may not have followed the traditional linear path but possess the requisite competencies.

ELIMINATING BIAS

The AI-driven approach helps strip out the unconscious bias inherent in human networks. It presents a data-led view of the talent landscape, allowing boards to see the actual availability of diverse talent rather than the perceived scarcity.

SPEED AND RIGOUR

In a market defined by "Velocity," speed is a competitive advantage. MapX cuts the time to shortlist by 2 weeks while delivering 20% more relevant candidates.

"THINKING BEYOND": BREAKING THE OFF-LIMITS TRAP

A critical structural advantage of Savannah Group is its boutique agility

Large global search firms are often hamstrung by "off-limits" agreements—contractual clauses that prevent them from recruiting from their existing clients. In a consolidated industry like mining, this can block access to a huge swath of the top talent pool.

NO OFF-LIMITS

Savannah operates with significantly fewer off-limits restrictions.

This allows them to headhunt the best diverse talent from direct competitors and major players that larger firms effectively cannot touch. This structural freedom provides clients with "more rigour, diversity, and choice".

CROSS-SECTOR PIPELINING

Leveraging their integrated practice areas in Digital & Technology and Industrial, Savannah is uniquely positioned to execute the cross-sector hires described in Section 5.4. They can seamlessly identify a CIO in the FinTech sector or an Operations Director in Automotive and translate their value proposition to a mining client.

Savannah is uniquely positioned to execute the cross-sector hires

INTEGRATED TALENT INTELLIGENCE: DIAGNOSE, DESIGN, DELIVER

Savannah treats diversity not as an afterthought but as a core component of the search architecture.

DIAGNOSE

Their Talent Intelligence service provides upfront "Diversity Assessments" and "Talent Mapping." This allows boards to benchmark their internal succession plans against the external market reality before a search even begins.

DESIGN

They assist in Succession Planning that specifically targets the "Retirement Cliff." By identifying high-potential diverse talent early, they help clients build a pipeline that is resilient to the upcoming demographic exit.

DELIVER

The proof is in the data. Savannah reports that 58% of their placements (average 2024 & H1 2025) were diverse candidates—a figure that significantly outperforms industry norms.1

THE "CONDUCTOR" ADVISORY MODEL

Beyond recruitment, Savannah advises Chairs on the cultural transformation required to make diversity stick. Drawing on their Next Generation Board Leadership research, they help Chairs evolve from "figureheads" to "conductors." This advisory capability is crucial for creating the psychological safety required to retain diverse talent. By coaching Chairs to "hear the quiet voice," they help convert diversity from a headcount statistic into a strategic asset.

PROVEN IMPACT

Savannah's track record validates this approach. They have successfully placed transformative leaders such as the CEO of Aston Martin and Group Directors for Sustainability and Innovation at major natural resources firms. These placements illustrate their ability to bridge the gap between legacy industrial leadership and the future-focused, sustainable leadership required for the next era of mining.

CONCLUSION

THE DIVERSITY DIVIDEND

The evidence presented in this report leads to a singular conclusion: the mining industry faces an existential choice. It can cling to the leadership models of the past and face a slow attrition of capability, safety, and social license. Or, it can embrace diversity as a strategic lever to navigate the "Three Vs" of volatility, variability, and velocity.

The data confirms that diversity is a mechanism for superior performance:

FINANCIAL

Driving a 38% EBITDA margin in mixed boards.

INNOVATION

Accessing the 92% productivity gains potential of neurodivergent talent.

SAFETY

Achieving a 67% reduction in injury rates through diverse teams.

RESILIENCE

Mitigating the risk of groupthink in a volatile world.

However, recognizing the need is only half the battle. The execution requires a sophisticated partner capable of navigating the complex, data-rich talent landscape. Savannah Group, with its MapX technology, cross-sector reach, and "No Off-Limits" methodology, provides the necessary infrastructure to operationalize this shift.

By partnering with Savannah to unlock untapped talent pools—from women and Indigenous leaders to tech and auto executives—mining companies can secure the "Next Practice" leadership required not just to survive the current disruption, but to lead the global energy transition.

APPENDIX

KEY DATA SUMMARY

Metric	Statistic	Source	Strategic Implication
EBITDA Margin	38.0% (Mixed Boards) vs 32.7% (Male Boards)	White & Case	Diversity is a direct driver of profitability and capital efficiency.
Safety	67% lower injury rate in diverse teams	BHP	Diversity disrupts complacency and improves risk awareness.
Retirement Risk	>50% of US workforce retiring by 2029	SME	A critical loss of institutional knowledge is imminent.
Digital Skills Gap	73% of miners cite skills gap as tech barrier	Mining Tech	The current workforce cannot support the digital transition.
Indigenous Econ.	$12.5bn generated by Indigenous biz (Canada)	Canadian Mining Journal	Indigenous partnership is a massive, sophisticated economic engine.
Neurodiversity	92% higher productivity in some tech roles	JPMorgan Chase	Neurodiversity is an untapped source of efficiency for digital mining.
Savannah Impact	63% Diverse Placements	Savannah Group	Proven capability to deliver diverse leadership solutions.

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