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The Binocular View: Understanding Family Decision-Making in Marginalised Communities through Behavioural Insight and Data

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A heartfelt thank you to my friends, family, and all those whose lives I've witnessed over the years—your experiences have taught me that everyone deserves to be truly seen, included, and understood.

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ABSTRACT

Family decision-making in marginalised communities is often misunderstood. Choices that appear irrational or self-destructive in reality represent sophisticated adaptations to hostile environments shaped by scarcity, cultural context, and structural barriers. This thesis argues that to design fair support for these families, we must move from describing their 'poor choices' to mapping the decision landscapes they navigate. I introduce a "binocular framework" that combines behavioural insights (including bounded rationality, prospect theory, and cultural influences) with large-scale data analysis. The approach reveals how environmental constraints shape available options while families develop strategic responses within these limitations. Through case studies ranging from the Opportunity Atlas to community-led mapping initiatives, I demonstrate that behaviours labelled as problematic often reflect expert navigation of constrained terrain. The research reframes marginalised communities as cartographers of their own experience rather than subjects requiring intervention. The findings show that effective support requires redesigning hostile decision landscapes rather than correcting individual choices. This approach transforms policy design by centring community expertise and addressing structural barriers that limit family opportunities. To design fair support for marginalised families, we must move from describing their ‘poor choices’ to mapping the decision-landscapes that scarcity, culture and place jointly create.

KEY WORDS: behavioural economics, big data, family decision-making, marginalised communities, policy design

INTRODUCTION

Family decision-making is shaped by a complex interplay of financial constraints and cultural expectations, particularly in communities facing economic hardship. These factors influence critical life choices, from how families allocate resources to decisions about parenting, education, and healthcare access. Families in marginalised communities often face significant economic hardship, which shapes many aspects of their daily lives and long-term decisions. But the ways they adapt, make choices, and draw on cultural strengths are often overlooked. Research in psychology and behavioural economics has explored some of these patterns. Now, big data offers new opportunities to see them more clearly and at a much larger scale.

Building on this foundation, this thesis explores how big data can help us understand the relationship between culture, economic pressure, and the everyday choices families make. It focuses on how these forces shape behaviour in ways that traditional research often misses. By working with large-scale datasets, the study connects behavioural theory to real-life decision-making. The goal is to offer a clearer picture of how families respond to difficult circumstances and to support the design of policies that are more thoughtful, respectful, and effective.

Hence, by examining these decisions through a behavioural economics lens, this research investigates how cognitive biases, prospect theory, and other behavioural economics concepts manifest in family decision-making within culturally specific contexts. Traditional economic models often assume rational decision-making, but behavioural economics shows that emotions, cognitive limitations, and social influences significantly impact the choices of marginalised families.

Additionally, Big data allows for analysing large-scale, real-time decision-making behaviours, offering deeper insights than traditional survey-based or ethnographic research. By using big data sources, this study can uncover trends in spending habits, healthcare access, and educational investments across different cultural and socioeconomic groups. This approach enables a more particular understanding of marginalised families and their financial and social decisions.

The opening chapter looks at the potential and the limits of using data to understand how families make decisions under pressure. Big data can reveal these important patterns, but without context, these patterns can be misleading. The next section turns to behavioural economics to explore how stress, limited resources, and cultural norms shape everyday choices. It also looks at how families sometimes turn to coping strategies like substance use, not out of recklessness, but as a response to real pressure. At the same time, the chapter reflects on how data is changing the way we do research and the ethical questions this raises. Lastly, the final chapter brings everything together. It shows how families often respond with creativity and strength, even in the hardest conditions. Thereafter, the thesis concludes with suggestions for how policy can improve by listening more closely, recognising what families already know, and supporting the solutions they have been developing all along.

Being a South African, I have seen firsthand how policies often misunderstand the choices families in marginalised communities make, labelling them as irrational or dysfunctional. In reality, these decisions are often smart adaptations to difficult circumstances, but some, such as substance abuse or risky financial behaviours, may emerge as coping mechanisms rather than rational choices. This highlights the complex trade-offs families make under pressure. As a 1st generation family post-Apartheid, shaped by a deeply unequal and segregated society, I have had the privilege of observing my family and other families around me grow and evolve, while also witnessing the challenges that shape and even sometimes imprison them.

These lived experiences have made me deeply aware of how easily complex realities can be misunderstood, especially when seen only through a distant perspective. Big data and predictive models have the potential to provide real insight rather than just reinforce stereotypes, but only if used thoughtfully. Instead of flattening people's lives into simplified narratives, data can help us see the structural inequalities and pressures that shape family decision-making. Thus, I aim to explore how data-driven approaches can move beyond assumptions and offer a more accurate, respectful, and empathetic understanding of these communities.

For a long time, family decision-making, especially within marginalised communities, has been shaped by more than individual preferences or rational calculations. Traditional surveys and interviews often fail to capture the fluid, moment-to-moment decisions families make under pressure. Hence, Big Data, large-scale datasets from health records and educational outcomes, allow researchers to move beyond small samples and anecdotal insight.

In short, the behavioural economics lens explains *why* families may make certain decisions by illuminating cognitive biases, cultural influences, and emotional trade-offs, while big data allows us to observe *how* and *when* those decisions occur across broader populations, revealing patterns that often remain hidden in conventional research.

I. MAPPING THE TERRAIN: THE PROMISE AND PERILS OF DATA-DRIVEN INSIGHT

What does the landscape of opportunity look like for marginalised families?

Traditional approaches to family support start with individual choices: asking why families make 'poor decisions' about money, health, or housing. But this misses the fundamental question: what does the terrain of available choices actually look like? This chapter introduces our binocular framework to map the decision landscapes that marginalised families must navigate. Through the left lens of big data, we'll see how large-scale analysis reveals structural constraints that families cannot control. Through the right lens of behavioural economics, we'll examine how families develop sophisticated strategies for reading and navigating these constrained terrains.

1.1 The Clear Left Lens: The Promise of Data

Big data analytics represents a powerful tool for revealing the true landscape of family decision-making. Big data approaches use algorithms to analyse large datasets, and have already proven effective in guiding resource allocation in areas like healthcare and health promotion.[1] These fields involve similarly complex decisions influenced by social conditions and limited resources. The success of big data in healthcare shows that, when applied thoughtfully, it can guide smarter and more responsive support. This same potential can be applied to better understand and assist isolated and misunderstood families.

By analysing thousands of family decisions simultaneously, big data analytics can reveal how economic constraints interact with cultural values to shape outcomes. Unlike traditional research, which might follow a few dozen families in depth, big data can analyse thousands of family decisions all at once. Hence, these insights could transform how we design interventions, allocate resources, and measure success in supporting vulnerable families.

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[1] Pokhrel, S. (2004). Household decision-making on child health care in developing countries: the case of Nepal. *Health Policy and Planning*, 19(4), pp.218–233. doi:https://doi.org/10.1093/heapol/czh027.

Additionally, Big data is especially promising for marginalised communities who have often been misunderstood or misrepresented in traditional research. As Harding notes, "Big data can help identify previously hidden patterns of disadvantage and reveal the cumulative effects of structural barriers that shape family outcomes."[2] By examining patterns across many families in similar circumstances, data analysis can reveal how economic constraints influence decision-making without imposing the researcher's own cultural assumptions. This approach helps identify which families might benefit most from support and which interventions have been most effective in similar contexts. When properly designed, data-driven systems can play a key role in this process. While participatory approaches involve community members directly, data systems can complement these efforts by revealing broader patterns that might otherwise remain unseen.

When we can see patterns across whole communities, not just single families, it helps researchers and policymakers spot factors in the environment that affect families. Factors such as whether a neighbourhood has good resources or how economic policies affect family life. Understanding these bigger issues helps us create solutions that fix the real problems, not just treat the symptoms.

One of the most important benefits of big data is that it helps us change how we view families facing challenges. Traditionally, programs for struggling families have focused on their problems or what they're doing wrong. Big data allows us to see something different: the creative and effective ways families adapt to difficult situations. Instead of just identifying "bad" decisions, we can recognise the smart strategies families develop to cope with limited resources. This shifts our approach from trying to "fix" families to understanding and supporting the positive decisions they're already making. When we use data this way, we can build programs that enhance families' existing strengths rather than imposing solutions that don't fit their real lives.

A clear example of this can be seen in Bywaters et al. (2014), where large-scale data on child welfare interventions revealed that children’s chances of entering foster care are more strongly

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[2] Harding, D.J., Morenoff, J.D., Nguyen, A.P. and Bushway, S.D. (2017). 'Short- and long-term effects of imprisonment on future felony convictions and prison admissions.' *Proceedings of the National Academy of Sciences*, 114(42), pp.11103-11108. doi:https://doi.org/10.1073/pnas.1701544114.

linked to neighbourhood poverty than to race.[3] This kind of analysis shifts the focus from individual families to the broader structural conditions shaping their lives.

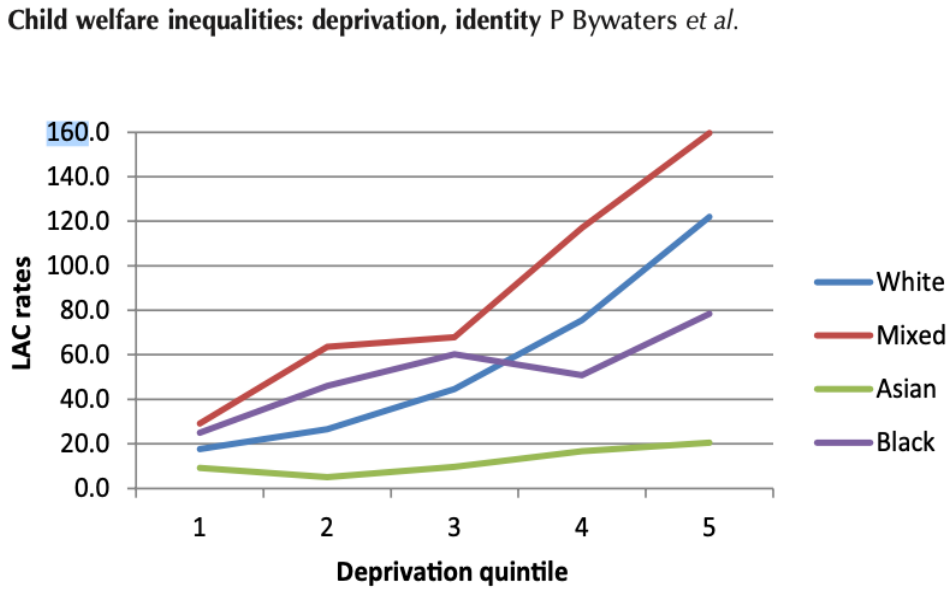

Figure 1: Child welfare intervention rates (LAC rates) by deprivation quintile and ethnicity.

The graph shows which kids end up in foster care based on how poor their neighbourhood is and what ethnic group they belong to.[4]

The most important things we see are:

1. All kids are more likely to be in foster care if they live in poorer neighbourhoods. The lines go up for everyone as neighbourhoods get poorer.
2. In the poorest neighbourhoods (level 5):
    - About 160 out of every 10,000 Mixed-race kids are in foster care

[3] Bywaters, P., Brady, G., Sparks, T. and Bos, E. (2014). Inequalities in child welfare intervention rates: the intersection of deprivation and identity. *Child & Family Social Work*, 21(4), pp.452–463. doi:https://doi.org/10.1111/cfs.12161.

[4] Idem

    - About 122 out of every 10,000 White kids are in foster care
    - About 78 out of every 10,000 Black kids are in foster care
    - Only about 20 out of every 10,000 Asian kids are in foster care
3. White kids are about 1.6 times more likely than Black kids to be in foster care when they live in the same poor neighbourhoods.
4. White kids are about 6 times more likely than Asian kids to be in foster care when they live in the same poor neighbourhoods.

This data flips what people thought before; it's not that Black kids are more likely to be in foster care because of their race. It's that they're more likely to live in poor neighbourhoods, and that's what increases the chance of being in foster care. This changes how we approach solutions; if we believe the problem is primarily about racial bias in individual decisions, we might focus on training social workers about bias. But if we understand it's more about neighbourhood poverty, we should focus on economic support and community resources. This insight couldn't be discovered without analysing large datasets because it revealed hidden patterns that challenge our assumptions.

This kind of insight shows why big data is so valuable. It helps us look beyond the surface and better understand what shapes family outcomes. When patterns like this are revealed, they give us a chance to change how we respond, not based on guesses, but on what's happening. If used with care, data can help us build solutions that truly reflect the needs of the communities we aim to support.

DECISION-MAP: CHILD WELFARE INTERVENTIONS

Terrain (Left Lens): Big data reveals that neighbourhood poverty, not race, predicts foster care placement. Children in the poorest areas are 8x more likely to enter care regardless of ethnicity.

Navigation (Right Lens): Families in high-poverty areas face structural barriers (unemployment, housing instability, limited services) that increase stress and reduce available support options.

Policy Insight: Focus policy on these structural barriers and community resources rather than race-specific interventions, since poverty is the common terrain feature affecting all families.

1.2 The Foggy Left Lens: The Perils of Data

"*It is imperative that the dataset used to train an algorithm accurately represents what it is being taught to predict."* – Philip Gillingham[5]

While big data offers a powerful magnifying glass to see patterns invisible to the naked eye, that magnifying glass can sometimes distort reality in dangerous ways. The story of New Zealand's Predictive Risk Modelling (PRM) system shows just how easily this can happen.

In New Zealand, a team of experts built an algorithm they believed could predict which children were at risk of abuse with 76% accuracy. This seemed like a breakthrough that could help social workers identify vulnerable children before harm occurred. However, there was a fundamental problem: the algorithm was trained using cases that social services had labelled as "substantiated." The researchers assumed this meant proven cases of child abuse. In reality, this category included many children who hadn't been abused at all – siblings of abused children, children considered at risk but not harmed, unaccompanied refugee minors, and even young people who simply needed mental health services.

It was like teaching a computer to identify apples by showing it a mixed basket of fruits and calling them all apples. No matter how sophisticated the algorithm, it was doomed to fail because it was learning the wrong lessons from misunderstood data.

This cautionary tale reveals a critical challenge in using big data to understand family decision-making. The algorithms we build are only as good as our understanding of the data feeding them. Without deep knowledge of what the numbers actually represent in families' real lives, we risk creating systems that amplify misunderstandings rather than revealing truth.

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[5] Gillingham, P. (2019) 'Can Predictive Algorithms Assist Decision-Making in Social Work with Children and Families?', *Child Abuse Review*, 28(2), pp. 114–126. Available at: https://doi.org/10.1002/car.2547.

1.2.1 The Behavioural Economics Connection

Thus, this New Zealand Child Abuse case illustrates the intersection of big data with behavioural economics principles. The PRM system was designed partly to overcome cognitive biases that affect human decision-makers, and social workers might fall prey to availability bias (overweighting recent or vivid cases) or confirmation bias (seeking one's initial bias). Yet the system itself fell victim to what behavioural economists call framing error. By misframing the meaning of "substantiated" cases, the developers created a classic "garbage in, garbage out"[6] scenario. The psychological tendency to trust categories and labels without questioning their underlying meaning created a flawed foundation for the entire predictive system. This behavioural trap is precisely what behavioural economics research warns us about; our cognitive shortcuts and categorisation systems profoundly influence how we interpret data, even when using supposedly objective computational methods.[7] As we harness the power of big data to understand how families navigate complex choices, we must remember that behind every data point is a real child, a real family, with circumstances that may not fit neatly into our categories and assumptions.

DECISION-MAP: NEW ZEALAND CHILD ABUSE PREDICTION

Terrain (Left Lens): Administrative category "substantiated abuse" mixed actual abuse victims with siblings, refugee children, and kids needing mental health services, like a fruit basket labelled "all apples."

Navigation (Right Lens): Algorithm designers trusted official labels without questioning what they actually meant, falling into framing error and confirmation bias.

Policy Insight: Require frontline workers and affected communities to help define data categories before building predictive systems, rather than assuming administrative labels reflect reality. Effective big data analysis must be grounded in both technological expertise and psychological insight into how humans categorise, interpret, and respond to information.

[6] Kilkenny, M.F. and Robinson, K.M. (2018) 'Data quality: "Garbage in – garbage out"', *Health Information Management Journal*, 47(3), pp. 103–105. Available at: https://doi.org/10.1177/1833358318774357.
[7] Idem

1.3. The Binocular View: Combining Big Data and Cultural Insight

In response to the risks addressed in this chapter and associated with data-driven decision-making, particularly within marginalised communities, I introduce the 'binocular view': a framework that combines big data analysis with cultural and behavioural insight.

Figure 2: Image generated by Midjourney with prompt: "giant binoculars, one lens showing data and graphs, the other a cityscape, minimalistic, symbolic and detailed")

Visually represents the "binocular view" framework proposed in this thesis, which integrates big data analysis with cultural and behavioural insight. The left lens symbolises the analytical side of big data, featuring abstract visuals such as charts, graphs, and network structures. The right lens reflects cultural and community-based perspectives, illustrated through imagery of people, homes, and social environments. At the centre, the merging of both views signifies a more holistic understanding of family decision-making in marginalised communities. The binoculars illustrate the need to view complex social issues through dual lenses to avoid one-dimensional interpretations.

While algorithmic approaches present certain risks when datasets are misunderstood or misinterpreted, research on cultural identity points us toward a more comprehensive framework that can harness computational power while respecting cultural context. Benjamin et al.'s (2010) experimental research on identity and economic preferences offers a bridge toward more culturally informed analysis, demonstrating the profound impact of cultural identity on economic

decision-making and providing essential insights for developing more nuanced approaches to understanding family choices.[8]

Their carefully controlled experiments revealed a pattern: when Asian-American participants were primed to think about their ethnic identity, they made significantly more patient financial choices. Similarly, when native-born Black Americans were primed to consider their racial identity, they too exhibited increased patience in economic decisions.

This points toward a more integrative approach in analysing family decision-making that centres on cultural competence. Economic behaviours that might appear irrational when viewed through conventional models often reflect sophisticated adaptations to complex social and economic environments. Big data approaches that fail to account for these cultural dimensions risk misinterpreting patterns and reinforcing stereotypes rather than revealing true insights.

Cultural competence in data analysis requires recognising that the same economic behaviour may carry different meanings across cultural contexts. What appears to be excessive risk aversion might instead reflect community-oriented resource preservation. Similarly, what seems like impatience might represent rational adaptation to environments where long-term planning has historically been disrupted by structural barriers.[9]

By integrating cultural frameworks into our analysis of big data patterns, we can move beyond simplistic narratives about “good” versus “poor” decision-making and develop more nuanced understandings of how families navigate complex choices under pressure.

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[8] Benjamin, D.J., Choi, J.J. and Strickland, A.J. (2010) 'Social Identity and Preferences', American Economic Review, 100(4), pp. 1913-1928. Available at: https://doi.org/10.1257/aer.100.4.1913.

[9] Idem

II. ADJUSTING THE BINOCULARS: FRAMEWORKS FOR UNDERSTANDING FAMILIES

Chapter 1 mapped the structural terrain, showing how big data reveals environmental constraints that families cannot control. But to truly understand family decision-making, we need to adjust our binoculars and bring both lenses into focus. This chapter develops the theoretical frameworks that allow us to see clearly through each lens of our binocular view.

We'll start with Field View, examining behavioural economics frameworks that explain how families navigate constrained landscapes; bounded rationality under scarcity, prospect theory and cultural variations in loss aversion, and how socioeconomic conditions shape decision-making patterns.

Thereafter, we'll develop Depth Perception by layering these behavioural insights with structural analysis. We'll see how families develop adaptive strategies under pressure, and how behaviours often labelled as destructive (like substance use) represent rational responses to economic strain.

Finally, we'll expand to Panoramic Vision, showing how big data approaches can reveal patterns invisible to traditional research methods. The Opportunity Atlas demonstrates how large-scale analysis identifies entirely different factors predicting children's success, leading to real-world policy applications that transform support systems.

Each section reveals not family failures, but sophisticated frameworks for understanding and responding to difficult terrain. By adjusting our analytical binoculars, we can see these responses as strategic adaptations rather than poor choices

.2.1 Field View: Behavioural Economics and Family Decision-Making

Traditional approaches to understanding family choices in poor communities often point to outside problems like crime or inadequate schools. However, behavioural economics reveals that something deeper is happening. As Mullainathan and Shafir explain, "When we study poverty, we often focus on the environmental failures like crime, broken families, poor schools... But

scarcity creates its own psychology. It's not that poor people have fewer capabilities as such. Poverty itself taxes the mind."[10]

This perspective shows us how scarcity affects thinking and decision-making whilst creating mental burdens that shape choices in ways invisible to traditional economic models. Through this field of view, we see how families under pressure navigate complex trade-offs with limited mental resources, often making decisions that appear irrational to outside observers but reflect sophisticated adaptations to their circumstances.

My personal experience of coming from a developing country, South Africa, to a developed country like Italy, enhanced my privilege of observing the differences in both individual and family decision-making. This ranges from small nuances like how to split the bill or more significantly, the freedom of choice in educational and career pathways. What behavioural economics might frame as “bounded rationality” in one setting reveals itself as a sophisticated adaptation to limited opportunities in another. Hence, the necessity of looking through both lenses simultaneously; understanding the cognitive processes at work while recognizing how cultural and socioeconomic environments shape the decision landscape itself.

2.1.1 Bounded Rationality

Bounded rationality as a concept explains that people make decisions with key limitations:

1. *Limited knowledge of the world*[11]*:* Families in resource-constrained environments often lack access to complete information about financial options, educational options, or support system
2. *Limited ability to evoke this knowledge:* Under the stress of scarcity, accessing stored knowledge becomes more difficult
3. *Limited ability to work out consequences of actions:* Financial pressure makes long-term planning more difficult

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[10] Sendhil Mullainathan and Eldar Shafir (2013). *Scarcity : why having too little means so much*. New York: Times Books, Henry Holt And Company.
[11] Grüne-Yanoff, T. (2007) ‘Bounded Rationality’, *Philosophy Compass*, 2(3), pp. 534–563. Available at: https://doi.org/10.1111/j.1747-9991.2007.00074.x.

4. *Limited ability to conjure up possible courses of action:* Structural constraints actually limit available options
5. *Limited ability to cope with uncertainty:* Marginalized families face greater uncertainty in their environments
6. *Limited ability to adjudicate among competing wants:* Competing needs (food security vs. education vs. healthcare) create difficult trade-offs

The behavioural economics field view allows us to recognize that bounded rationality doesn't indicate deficient thinking but rather an adaptation to environments where cognitive resources are taxed by scarcity.

This bounded rationality framework is further enhanced by Mullainathan and Shafir's concept of "tunnelling"[12], which explains how scarcity affects cognitive processes in ways particularly relevant to marginalized communities. Tunnelling describes how financial scarcity captures attention and narrows cognitive focus, creating a mental bandwidth tax that intensifies the bounded rationality limitations already discussed. When families face persistent resource constraints, their attention naturally focuses intensely on managing immediate shortage like securing enough food for the week or paying an overdue utility bill; often at the expense of longer-term considerations.

The tunnelling effect helps explain patterns we observe in family decision-making that might otherwise be misinterpreted. For example, what might appear as neglect of preventative healthcare or educational investments often reflects not indifference to these needs, but rather the cognitive consequence of having attention captured by more immediate scarcity threats. As Mullainathan and Shafir explain, "Scarcity creates its own psychology. It's not that poor people have less bandwidth as such. Poverty itself taxes the mind".[13] This means that instead of seeing families' choices as poor decisions or bad judgment, we can recognize they're making smart adjustments to tough situations.

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[12] Sendhil Mullainathan and Eldar Shafir (2013). *Scarcity : why having too little means so much*. New York: Times Books, Henry Holt And Company. Pg. 47

[13] Idem

DECISION-MAP: SNAP SPENDING PATTERNS

Terrain (Left lens): Benefit systems create predictable monthly scarcity cycles. Families receive lump sum payments at the start of the month but face food shortages by the end.

Navigation (Right lens): Families plan ahead by buying non-perishable, high-calorie foods early in the month as “food insurance” against later shortages. This is deliberate, not impulsive.

Policy Insight: Change how benefits are paid to avoid early spending followed by end-of-month shortages. The problem is when the payments are made, not how families manage their money.

Through the binocular framework, we can understand these cognitive adaptations while simultaneously examining the structural factors that create and maintain conditions of scarcity in the first place. Thus, helping us move beyond individual-level explanations to a more comprehensive understanding of family decision-making under pressure.

A straight-forward example of cognitive adaptations was an analysis of SNAP (food stamp) benefit usage patterns across millions of households. When researchers examined the transaction data, they discovered most recipients spent majority of their benefits within the first two weeks of receiving them. Without context, this appears to demonstrate poor financial management or impulsivity.

However, when researchers interviewed recipients, they revealed a deliberate strategy: families intentionally purchased non-perishable, calorie-dense foods early in the month as a form of "food insurance" against the predictable scarcity they would face later. Rather than demonstrating bounded rationality's limitations, this pattern showed a thought out adaptation to recurring resource constraints.

This example illustrates how big data can reveal behavioural patterns while cultural insights explain the rational adaptations behind them. What traditional economic models might interpret as present bias or poor planning is revealed through our binocular framework as resource

management under constraint, exactly the kind of nuance that's lost when marginalized communities' decisions are viewed through a single lens.

2.1.2 Prospect theory and Loss Aversion

While bounded rationality helps us understand the cognitive constraints that shape decision-making in marginalized communities, these constraints manifest in specific patterns of choice that require further examination. Among the most powerful patterns is the asymmetric response to potential gains versus losses. Prospect theory, developed by Kahneman and Tversky (1979), provides our second key behavioural economics concept for understanding family decision processes under pressure.

Prospect theory demonstrates that people do not evaluate outcomes based on final states, but rather as gains or losses relative to a reference point. The probability of a gain or a loss is reasonably assumed as 50/50 instead of the probability that is actually presented. The actual probability shows losses loom larger than equivalent gains; a phenomenon known as loss aversion. For families navigating economic hardship, this asymmetry plays a crucial role in decisions that might otherwise appear puzzling through traditional economic models.

While bounded rationality explains the cognitive limitations that shape decision-making, prospect theory offers another crucial component for understanding family choices under pressure. Developed by Kahneman and Tversky (1979), prospect theory reveals that people evaluate outcomes as gains or losses relative to a reference point rather than final states. More importantly, losses generally hurt more than equivalent gains feel good, a phenomenon known as loss aversion. This asymmetric response to losses varies significantly across cultures[14] with individualistic societies typically demonstrating higher loss aversion than collectivistic ones. For

[14] Wang, M., Rieger, M.O. and Hens, T. (2016) 'The Impact of Culture on Loss Aversion', *Journal of Behavioral Decision Making*, 30(2), pp. 270–281. Available at: https://doi.org/10.1002/bdm.1941.

families in marginalized communities, loss aversion provides a powerful explanatory framework for decisions that might otherwise appear puzzling. When resources are scarce, the psychological impact of potential losses becomes magnified, often leading to choices that prioritize preventing losses over pursuing equivalent gains.

This cultural framing of risk and decision-making is echoed in the findings of Wang, Rieger, and Hens (2016), who demonstrate how loss aversion varies across societies.

The graph in Figure 3 shows how differently people from various cultures feel about losing things compared to gaining them.

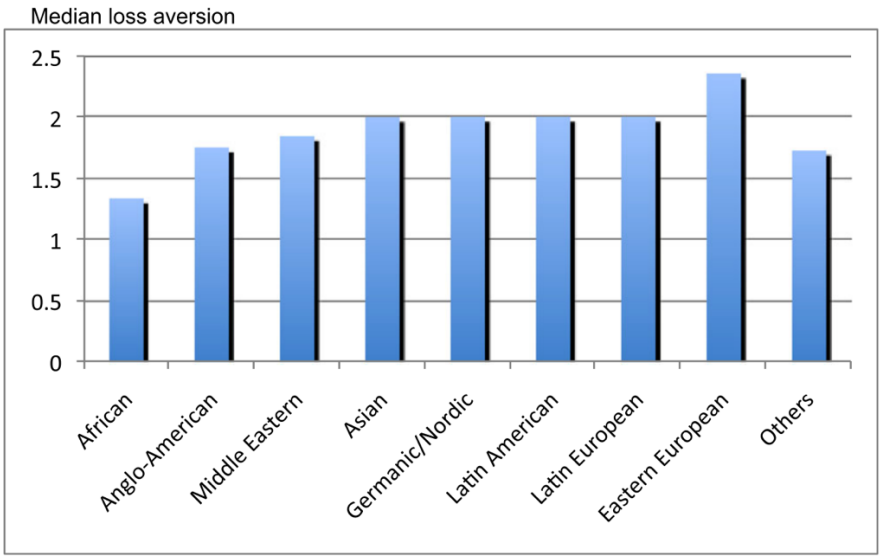

Figure 3: Median loss aversion across different cultural groups[15]

If you had a 50% chance of losing $10, how much would you need to potentially win to make that bet worth taking? Would you need $15? $20? More?

This experiment asked that question to people from 53 different countries. The bars in the graph show the results for different cultural groups.

[15] Idem

Eastern Europeans (the tallest bar) had the strongest reaction to potential losses. They needed to win about 2.4 times as much as they might lose before they'd take a risk.

African participants (one of the shortest bars) had the lowest loss aversion. They were more willing to take risks with smaller potential rewards.

This shows something important: how we make decisions isn't just about math or logic: it's shaped by our cultural background. In some cultures, people have stronger safety nets from family and community, so losses don't feel as threatening. In other cultures, people feel more on their own, so they're more cautious about potential losses. If we looked through only the data lens without taking into account the individualistic vs. community cultural context, we would misunderstand marginalized communities' decisions, in this case African partipants.

For families in tough economic situations, this helps explain why they might make certain choices that others might not understand. They're not being irrational, they're responding to loss in ways that make sense within their cultural context.

A Zambian respondent described it perfectly: *"Without [indigenous knowledge], theoretical and practical developments of community psychology will be futile. … An understanding of the milieu and culture of the community is very important."*[16]

In other words, efforts to improve psychological services or social interventions will fail if they don't reflect the lived realities of the communities they aim to serve. The term "milieu" refers to the social and cultural environment, highlighting that context is not optional; it is essential. This directly supports the need for a "binocular view" in research and policy design: one lens focused on data and the other on cultural insight. Without both, models risk becoming disconnected from how people actually think, feel, and make decisions in their everyday lives.

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[16] Lazarus, Sandy, et al. "Community Psychology in Africa: Views from across the Continent." *Journal of Psychology in Africa*, vol. 16, no. 2, Jan. 2006, pp. 147–160, https://doi.org/10.1080/14330237.2006.10820116.

2.1.3 Cultural and Socioeconomic Influences on Decision-Making

While behavioural concepts such as loss aversion and bounded rationality provide critical insights into how individuals make choices under pressure, they often abstract these decisions from the broader social and cultural realities in which they occur. Yet decision-making is never fully individual or context-free. Cultural norms, socioeconomic constraints, and social structures shape and not only the options available to people but also how those options are perceived, valued, and emotionally processed. In contexts of economic hardship, for instance, the perception of risk is often filtered through collective experience, intergenerational survival strategies, and social expectations. To fully understand decision-making in these settings, we must look beyond individual psychology and consider how culture and material conditions shape and produce behavioural patterns.

Wang, Rieger, and Hens' (2016) cross-cultural study of loss aversion provided compelling evidence of this interplay.[17] Their research across 53 countries found that Eastern Europeans exhibited the highest loss aversion (requiring potential gains approximately 2.4 times greater than potential losses), while African participants demonstrated the lowest levels (roughly 1.4). This variation cannot be explained by economic factors alone, as many African countries faced greater economic challenges than their Eastern European counterparts.

Instead, cultural dimensions such as collectivism versus individualism offer more explanatory power. In collectivistic societies, the "cushion hypothesis"[18] suggests that social support networks distribute the impact of individual losses, effectively creating informal insurance mechanisms that reduce the psychological burden of risk. This is reflected in the concept of ubuntu in many African societies: a philosophy emphasizing that a person exists through their

[17] Idem

[18] Illiashenko, P. (2019). ‘Tough Guy’ vs. ‘Cushion’ hypothesis: How Does Individualism Affect risk-taking?. *Journal of Behavioral and Experimental Finance*, 24, p.100212. doi:https://doi.org/10.1016/j.jbef.2019.04.005.

relationships with others. “Ubuntu is an African concept of personhood in which the identity of the self is understood to be formed interdependently through community”[19]

These cultural frameworks shape family decision-making in profound ways. What might appear as excessive caution in some cultural contexts becomes real adaptation in others. In the African example, communities with extended family networks provide reliable support during hardship, decisions prioritize social investment over financial security often reflect sound strategy rather than poor planning. Conversely, in more individualistic societies where families bear risks largely alone, heightened sensitivity to potential losses represents a necessary adaptation. Hence, studies have found that individuals from post-communist countries exhibit higher risk aversion, especially in gains, compared to those from Western Europe. This heightened risk aversion is attributed to the enduring effects of life under communist regimes and the subsequent erratic transition processes, which have instilled a cautious approach to risk-taking. [20]

Cultural and material conditions do not sit in the background of decision-making; they actively shape how choices are formed, interpreted, and acted upon. What might be dismissed as hesitation or poor judgment often reveals a deeper logic rooted in experience and shaped by the realities people live with each day. These decisions emerge from within a broader social fabric that includes relationships, inherited knowledge, and responses to uncertainty that have developed over time. Understanding this helps us move away from narrow assumptions and toward a more grounded view of how families navigate complex and often difficult circumstances.

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[19] Battle, M. (2009). *Ubuntu : I in you and you in me*. New York: Seabury Books, p.2.

[20] Schaewitz, J., Wang, M. and Rieger, M.O. (2022). Culture and Institutions: Long-lasting effects of communism on risk and time preferences of individuals in Europe. *Journal of Economic Behavior & Organization*, [online] 202(202), pp.785–829. doi:https://doi.org/10.1016/j.jebo.2022.07.009.

2.2 Depth Perception: Layers of Choice Under Structural Constraints

2.2.1 Adaptive Strategies Under Pressure

While our "Field View" revealed the behavioural economics principles that shape family decisions, true understanding requires depth perception, the ability to see not just what choices families make, but the multi-dimensional reality behind those choices. Just as binoculars transform flat images into three-dimensional landscapes, combining behavioural insights with cultural understanding creates depth perception in our analysis of family decision-making under pressure.

This section examines how families in marginalised communities navigate economic hardship through both adaptive and maladaptive strategies. The decisions families make under economic strain aren't simply rational or irrational responses to immediate circumstances. They emerge from complex interactions between psychological needs, cultural frameworks, and structural constraints.

The adaptive strategies families develop represent their responses to scarcity that deserve recognition rather than criticism. Simultaneously, behaviours often pathologised as individual failings, such as substance use, reveal themselves as predictable responses to systemic pressure when viewed through an appropriate analytical lens.

By developing depth perception in our research approach, we move beyond simplistic narratives about family decision-making to understand the full dimensionality of responses to economic marginalisation. This perspective becomes particularly powerful when combined with big data analytics, allowing us to identify patterns of adaptation and resilience that might otherwise remain invisible.

When families in resource-constrained environments manage their finances, they often employ strategies that appear counterintuitive but are actually clever responses to their circumstances.

In "Portfolios of the Poor: How the world's poor live on $2 a day" (pp. 164-175)[21] in Chapter 6 The Strategic Debt Management section researchers using financial diaries methodology documented how households in India maintained multiple small debts with various local vendors simultaneously, rather than fully paying off these obligations when they had extra funds.

This practice might seem financially inefficient at first glance. Conventional financial knowledge suggests minimising debt accounts or paying off the smallest debts first. However, these families were strategically maintaining what we might call a "credit portfolio diversification."

By keeping small, active accounts with multiple shopkeepers, perhaps owing small amounts to the grocer, the pharmacy, and the grain merchant, these families were effectively maintaining access to future credit across multiple channels. If an emergency arose, such as a health crisis or temporary income disruption, they could rely on their established borrowing relationships with various vendors.

This approach served as an informal insurance mechanism, creating financial resilience through social capital. The families were essentially investing in relationships that could provide critical resources during future hardships.

This example illustrates how detailed transactional big data can reveal nuanced decision-making patterns that broader economic surveys might miss. Like watching someone navigate a familiar neighbourhood through shortcuts no map would show, these financial diaries capture the wisdom in what outsiders might mistake for wrong turns. They reveal parents creating safety nets through

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[21] Collins, D., Morduch, J., Rutherford, S. and Ruthven, O. (2009). *Portfolios of the Poor*. [online] Google Books. Available at: https://books.google.co.za/books?hl=en&lr=&id=esDhcbEHOfkC&oi=fnd&pg=PP2&dq=Portfolios+of+the+Poor:+How+the+World%27s+Poor+Live+on+%242+a+Day&ots=81M5hkch8W&sig=_PPxqTtEagKglR0JSdbxOHHWnAc&redir_esc=y#v=onepage&q=Portfolios%20of%20the%20Poor%3A%20How%20the%20World [Accessed 22 Apr. 2025].

relationships rather than bank accounts; a form of financial wisdom that only becomes visible when we track the small, daily decisions that traditional research often overlooks.

Further, this pattern reveals a troubling double standard in how we interpret financial behaviours. This double standard doesn't just come from researchers or outsiders but one's own mind. A wealthy entrepreneur maintaining multiple credit lines is praised for financial savvy. A mother in a township doing the same thing with smaller amounts often judges herself harshly as financially irresponsible.

This mirrors what South African anti-apartheid activist Steve Biko identified the most potent weapon of oppression: when the oppressed begin to judge themselves through the eyes of the oppressor[22] (Biko, 1996, p. 68). Biko articulated a philosophy that emphasised psychological liberation as a necessary precursor to political freedom. He argued that Black South Africans needed to overcome internalised oppression and reject the negative self-image imposed by the apartheid system. This attests to how people from marginalised communities internalise negative messages, for example, about their financial capabilities. When people from marginalised communities consume media and data that judge financial decisions by middle-class standards, they start to doubt their own strategies. This internalised judgment creates a cycle where people question choices that are actually rational adaptations to their circumstances. Over time, this self-doubt can lead to genuinely harmful financial decisions.

This cycle of internalised judgment and self-doubt creates significant psychological strain for families in marginalised communities. When people constantly question their own financial strategies, even rational ones, the resulting stress affects many aspects of life.

The erosion of confidence impacts overall well-being, not just economic decisions. This strain often leads to various problematic coping mechanisms. The connection between systemic pressures and substance use that we explore in the next section must be understood within this broader context. The psychological burden comes from navigating a world where racial

[22] Biko, S. (1996) I Write What I Like: A Selection of His Writings. Johannesburg: Ravan Press

stereotypes, cultural bias, and economic marginalisation all work together to misinterpret and devalue decision-making in these communities.

DECISION-MAP: MULTIPLE SMALL DEBTS STRATEGY

Terrain: Formal financial systems exclude marginalized families, forcing reliance on informal credit networks. Emergency needs can arise unpredictably with no institutional safety net.

Navigation: Families strategically maintain small active debts with multiple vendors (grocer, pharmacy, grain merchant) to preserve diversified credit access and social relationships for future emergencies.

Policy Insight: Recognize and support informal financial systems rather than imposing formal banking requirements. Create policies that strengthen rather than disrupt existing community credit networks.

2.2.2 Substance Abuse as a Response to Economic Strain

When examining substance use in marginalised communities, researchers have traditionally viewed it through a moral or pathological lens. However, this approach fails to recognise how these behaviours emerge as responses to sustained economic, social, and psychological pressures. Rather than simply labelling substance use as irrational or self-destructive, behavioural economics reveals the complex factors that contribute to these decisions.

Evidence suggests that substance use often follows predictable patterns tied to economic circumstances. Studies show higher rates of alcohol and drug consumption during periods of economic downturn, particularly in communities already facing structural disadvantages. This correlation points to substance use functioning not merely as an individual failing but as a response to chronic stress within environments that offer limited options for relief.

As a child, I would observe family members and community members struggling with alcohol abuse from the outside, unable to understand why this was happening. My patience would wear thin watching the same cycles repeat. But as I grew up and gained a deeper understanding of the pressures these individuals faced, I began to realise that those immersed in alcohol abuse weren't seeking destruction—they were craving understanding. They were responding to circumstances that felt impossible to navigate sober.

The relationship between economic strain and substance use can become clearer when viewed through our binocular framework. Data reveals patterns of drug and alcohol use spike during times of economic hardship, while cultural context explains how these behaviours are interpreted and addressed differently across communities. This dual perspective helps explain why conventional prevention approaches focusing solely on individual behaviour change often fail to address the underlying conditions that drive substance use in marginalised communities.

Substance Use as a Survival Strategy

Recent research from Hungary provides compelling evidence supporting this thesis about the rational nature of substance use in economically strained environments. In rural Hungarian

villages, Csák and colleagues (2020) discovered that new psychoactive substance (NPS) use serves primarily as what they term a "survival strategy" rather than a recreational activity.

This finding directly links to the discussion of bounded rationality and decision-making under resource constraints. The participants' experiences revealed that drug use in these communities wasn't about enjoyment but about coping with seemingly impossible circumstances.

The researchers identified three distinct substance use patterns, each representing different forms of situational utility maximisation:

Recreational use: Seeking experiences and social connections

Productive use: Using substances to manage everyday tasks

Escapist use: Using substances to flee from stress and hopelessness[23]

The third pattern dominated among people in rural communities. Most participants described using substances not for pleasure but to handle overwhelming stress, boredom, poverty, and psychological problems stemming from their marginalised status.

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[23] Csák, R., Szécsi, J., Kassai, S., Márványkövi, F. and Rácz, J. (2020). New psychoactive substance use as a survival strategy in rural marginalised communities in Hungary. *International Journal of Drug Policy*, p.102639. doi:https://doi.org/10.1016/j.drugpo.2019.102639.

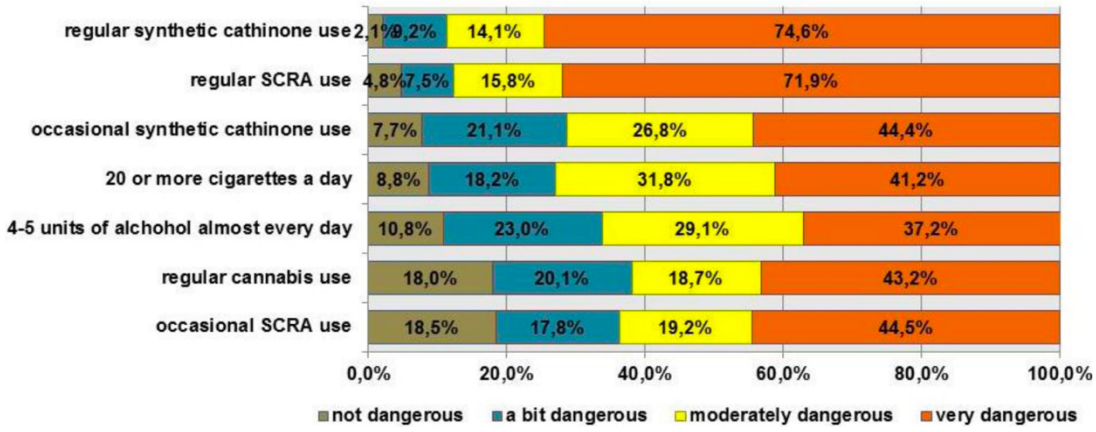

Fig. 4. Perceived risks of substances and the frequency of use, % (N = 149).

The figure shows how people use substances differently based on how much money they have. In the Hungarian study, researchers found clear patterns that tell an important story.

What we can see in this figure is that people with very little money mostly use drugs to escape their problems. Almost 70% of the poorest group uses substances mainly to get away from stress and hardship in their lives.

People with more money tend to use substances for fun or social reasons. As income goes up, using drugs for pleasure becomes much more common.

The middle category, using substances to help get through daily tasks, stays somewhat similar across all income levels, though slightly less common among wealthier people.

This example was selected because it provides cross-cultural validation for the economic pressure model of substance use discussed earlier. By examining communities in Hungary with different structural conditions than those in the United States, we gain evidence that the relationship between economic strain and substance use follows similar patterns across diverse settings.

This figure helps us understand that economic pressure changes why people use substances. When someone has very few resources, drugs become less about having fun and more about coping with difficult circumstances. It's like a temporary escape from problems they can't solve.

This connects directly to the discussion of tunnelling. When economic pressures capture attention and narrow cognitive focus, substances can provide temporary mental relief. This isn't optimal long-term decision-making, but it represents a coherent response to immediate cognitive burdens.

Rational Adaptation in Context

What makes the Hungarian research particularly valuable is how it demonstrates the interaction between personal decision-making and structural constraints. These rural communities face limited job opportunities, unstable income, strong social stigmatisation, and significant barriers to accessing services.

The value of tranquillity emerged as a key motivator. Participants described substance use as creating moments where they could forget everything and find peace. This reflects cognitive unburdening, temporary mental relief from the strain of poverty's cognitive tax.

The findings strongly align with prospect theory. For someone in poverty, the temporary relief of substance use provides escape from the psychological weight of constantly experiencing loss and deprivation. Since losses are felt more strongly than equivalent gains according to prospect theory, the temporary absence of pain becomes extraordinarily valuable when pain is constant.

Policy Implications

Understanding substance use as strategic adaptation rather than simple irrationality suggests different policy approaches. Similar to observations about the financial strategies of marginalized communities, the seemingly problematic behaviours make sense within their context.

These findings reinforce the thesis that effective interventions must address both immediate behaviours and the underlying economic and social conditions that make these behaviours reasonable responses to difficult circumstances.

DECISION-MAP: SUBSTANCE USE AS SURVIVAL STRATEGY

Terrain: Rural Hungarian communities face limited job opportunities, unstable income, social stigmatization, and significant barriers to accessing basic services, creating chronic stress environments.

Navigation: Substance use provides temporary cognitive relief from "poverty's mental bandwidth tax", 70% of poorest groups use substances for escapist coping rather than recreation, seeking "moments of tranquillity."

Policy Insight: Address underlying economic and social conditions creating impossible circumstances rather than focusing solely on individual behaviour change programs that ignore structural stressors.

2.3. Panoramic Vision: Big Data Revolution in Social Science

Chapter 1 introduced the fundamental promises and perils of using big data to understand family decision-making. We looked at how data can uncover patterns that might otherwise remain hidden, offering new ways to see and understand communities. At the same time, we considered how data can mislead when taken out of context or handled without care. These reflections led to the idea of a binocular framework that joins the broad reach of data with the depth of cultural and behavioural insight.

This chapter builds on that foundation by shifting the focus toward a more panoramic view of what big data offers to social science. Instead of capturing only isolated points, this perspective allows us to follow the wider and more complex picture of how families make decisions across time. It invites us to think about the past, present, and future together and to consider how decisions unfold in environments shaped by uncertainty, inequality, and resilience. This can give us a wholistic view of how big data has shifted the narrative for marginalized communities.

In the past, social scientists usually studied people by picking a small group and using what they learned to guess how larger groups behave. This method is called sampling, and it’s helpful but

not perfect. It can be especially tricky when studying communities that are often left out, like those who do not always have access to the internet or do not feel comfortable answering questions honestly. That makes it harder to get the full picture of what is really going on in their lives.

Big data has changed the way researchers study people. Instead of just looking at a small group and guessing about the rest, they can now study huge numbers of people all at once. Geoffrey Bowker (2005) writes, “Raw data is both an oxymoron and a bad idea; to the contrary, data should be cooked with care.”[24] This means that data is never completely pure or untouched. It is always shaped by the decisions people make about what to collect, how to collect it, and how to explain it. Because of this, we need to be careful about how we use data, especially when it involves real people and their experiences.

For decades, economists, policymakers, and city planners relied on a handful of basic economic indicators to measure opportunity in communities:

- Job growth rates
- Average wages
- Economic development metrics
- Business growth

Using these traditional measures, cities like Atlanta and Charlotte were celebrated as success stories of economic development. Their strong job markets and growing economies were seen as evidence that they provided excellent opportunities for upward mobility. Policymakers designed

[24] Gitelman, L. (2005). *" Raw Data " Is an Oxymoron*. [online] Cambridge, Massachusetts: MIT Press, p.3. Available at: https://raley.english.ucsb.edu/wp-content/Engl800/RawData-excerpts.pdf.

programs to replicate these apparent success factors in other regions, focusing primarily on attracting employers and skilled workers (Chetty et al., 2020).[25]

As Brown University economist John Friedman explained: "Cities like Atlanta and Charlotte that have high rates of job and wage growth also have among the lowest rates of upward mobility for children who grow up there" (Brown University, 2018).[26] The traditional indicators that suggested economic health were misleading when it came to actual opportunities for local children.

2.3.2 The Big Data Revolution: The Opportunity Atlas Approach

In 2018, researchers Raj Chetty and Nathaniel Hendren from Harvard University, John Friedman from Brown University, and Maggie Jones and Sonya Porter from the U.S. Census Bureau took an entirely different approach. Rather than relying on proxy measures of economic opportunity, they traced actual outcomes using massive datasets that covered nearly the entire U.S. population.[27]

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[25] Chetty, R., University, H., Nber, J., Friedman, Hendren, N., Nber, M., Jones, Abowd, J., Bergman, P., Deming, D., Glaeser, E., Grusky, D., Katz, L., Moretti, E., Sampson, R., Dockes, C., Droste, M., Goldman, B., Hoyle, J. and Gonzalez Rodriguez, F. (2020). *The Opportunity Atlas: Mapping the Childhood Roots of Social Mobility* *. [online] Available at: https://opportunityinsights.org/wp-content/uploads/2018/10/atlas_paper.pdf.

[26] Friedman, J. (2018). *New 'Opportunity Atlas' tracks economic mobility by neighborhood*. [online] Brown University. Available at: https://www.brown.edu/news/2018-10-01/opportunity.

[27] I Chetty, R., University, H., Nber, J., Friedman, Hendren, N., Nber, M., Jones, Abowd, J., Bergman, P., Deming, D., Glaeser, E., Grusky, D., Katz, L., Moretti, E., Sampson, R., Dockes, C., Droste, M., Goldman, B., Hoyle, J. and Gonzalez Rodriguez, F. (2020). *The Opportunity Atlas: Mapping the Childhood Roots of Social Mobility* *. [online] Available at: https://opportunityinsights.org/wp-content/uploads/2018/10/atlas_paper.pdf.

The researchers asked a fundamental question: "Which neighbourhoods in America offer children the best chances of climbing the income ladder?" [28] To answer this, they:

1. Analysed anonymized data on 20 million Americans who are now in their 30s
2. Tracked exactly where they grew up as children (down to the census tract level)
3. Measured their adult outcomes including earnings, incarceration rates, and other life outcomes
4. Mapped these outcomes by parental income, race, and gender
5. Created detailed, interactive maps showing which neighbourhoods help kids succeed

This was only possible with big data capabilities that allowed them to process and analyse information on an unprecedented scale. The result was the Opportunity Atlas (www.opportunityatlas.org), an interactive tool that maps the geography of opportunity across America with pinpoint precision.

The Opportunity Atlas represents one of the most powerful examples of how big data approaches can reveal insights that traditional data analysis missed entirely. This revolutionary project demonstrates how comprehensive data analysis can overturn long-held assumptions about economic opportunity and social mobility in America. The findings completely transformed our understanding of economic opportunity in America:

Hyperlocal Variations in Opportunity

[28] Friedman, J. (2018). *New 'Opportunity Atlas' tracks economic mobility by neighborhood*. [online] Brown University. Available at: https://www.brown.edu/news/2018-10-01/opportunity.

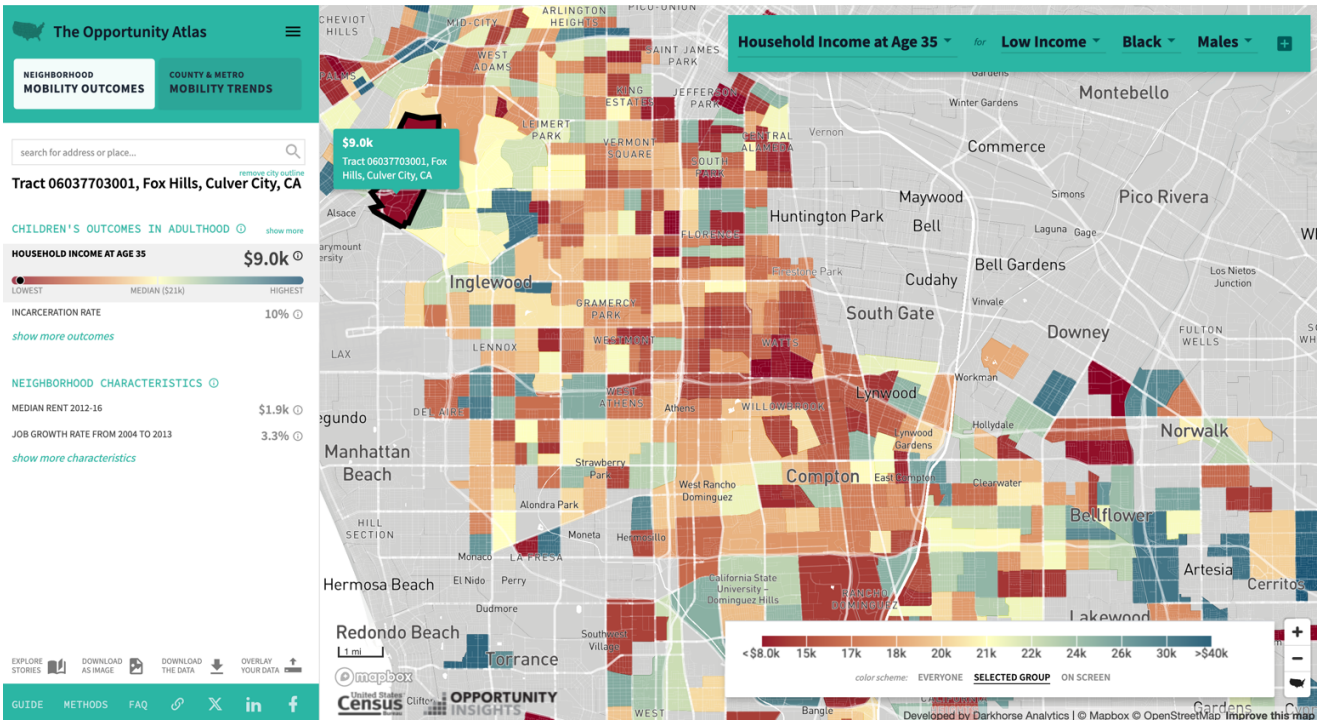

Figure 5: Los Angeles Census Tract
Average household income at age 35 for Black males from low-income families: $24,000.
Source: Opportunity Atlas (Chetty et al., 2020).

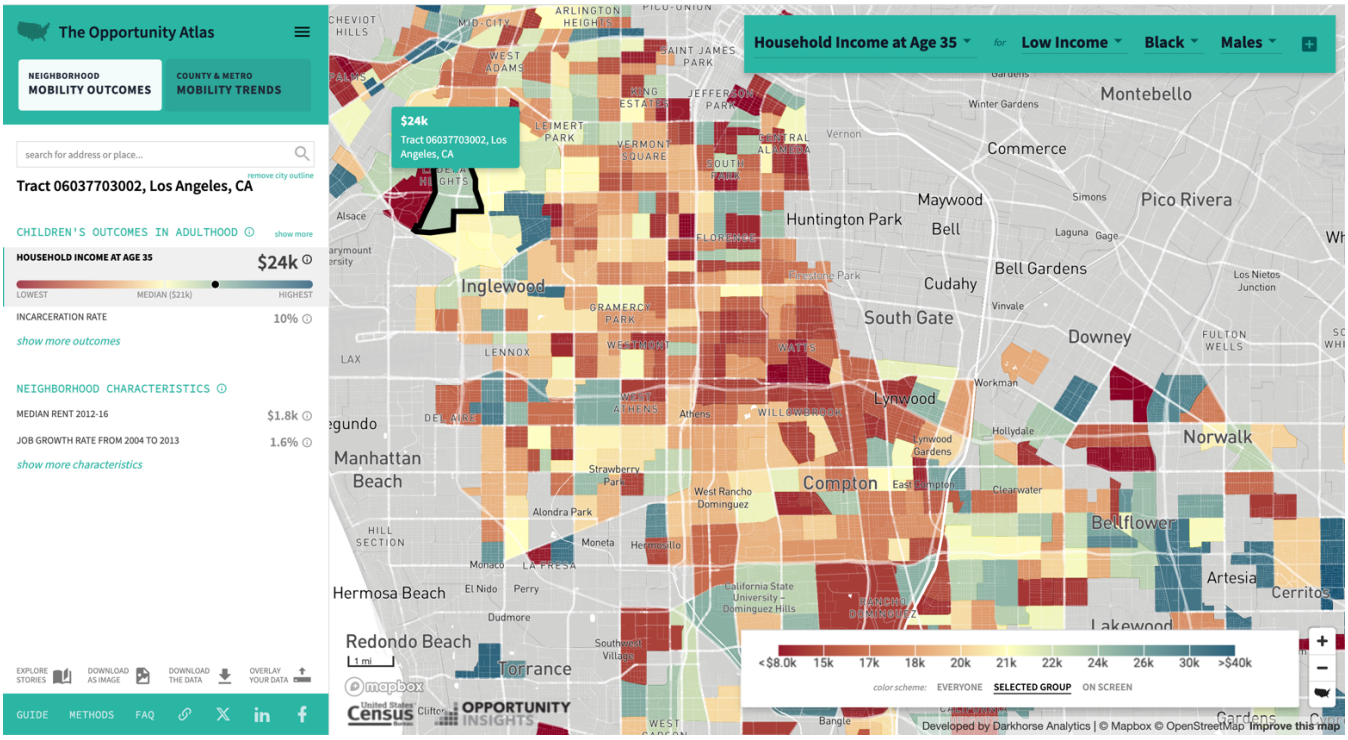

Figure 6: Fox Hills/Culver City Census Tract

Average household income at age 35 for Black males from low-income families: $9,000. Source: Opportunity Atlas (Chetty et al., 2020).

The Atlas showed that opportunity can change dramatically even between neighbourhoods that are right next to each other. This is called "*hyperlocal variation,*" meaning there are significant differences in people's outcomes depending on where they grow up, even if it's just a few blocks apart. The researchers found that for children from low-income families, the average income they earn as adults can vary widely depending on the exact area they were raised in. As they explain, "children's outcomes vary sharply across nearby tracts: for children of parents at the 25th percentile of the income distribution, the standard deviation of mean household income at age 35 is $5,000 across tracts within counties" (Chetty et al., 2020).

As illustrated in Figures 1 and 2, in Los Angeles, two neighbouring areas showed a dramatic gap: Black males from low-income families in one census tract earned about $24,000 a year by age 35, while those in the adjacent tract earned only $9,000—a 167% difference. Traditional economic analyses would completely miss these variations by measuring broader geographic areas like cities or counties. Only through the big data approach, analysing millions of individual outcomes at the census tract level, could these crucial neighbourhood-level differences be detected.

2.3.3 Different Factors Predict Children's Success

The big data approach identified entirely different factors that predicted children's success. The strongest predictors weren't job growth or average income, but rather:

- The presence of employed adults in a neighbourhood
- Two-parent family structures
- Social capital measures
- Less racial and economic segregation

As Friedman and colleagues noted, "children are more likely to be upwardly mobile if they grow up around people who have jobs" (Brown University, 2018). These social factors proved far more predictive than traditional economic metrics.

2.3.4. Real-World Policy Applications

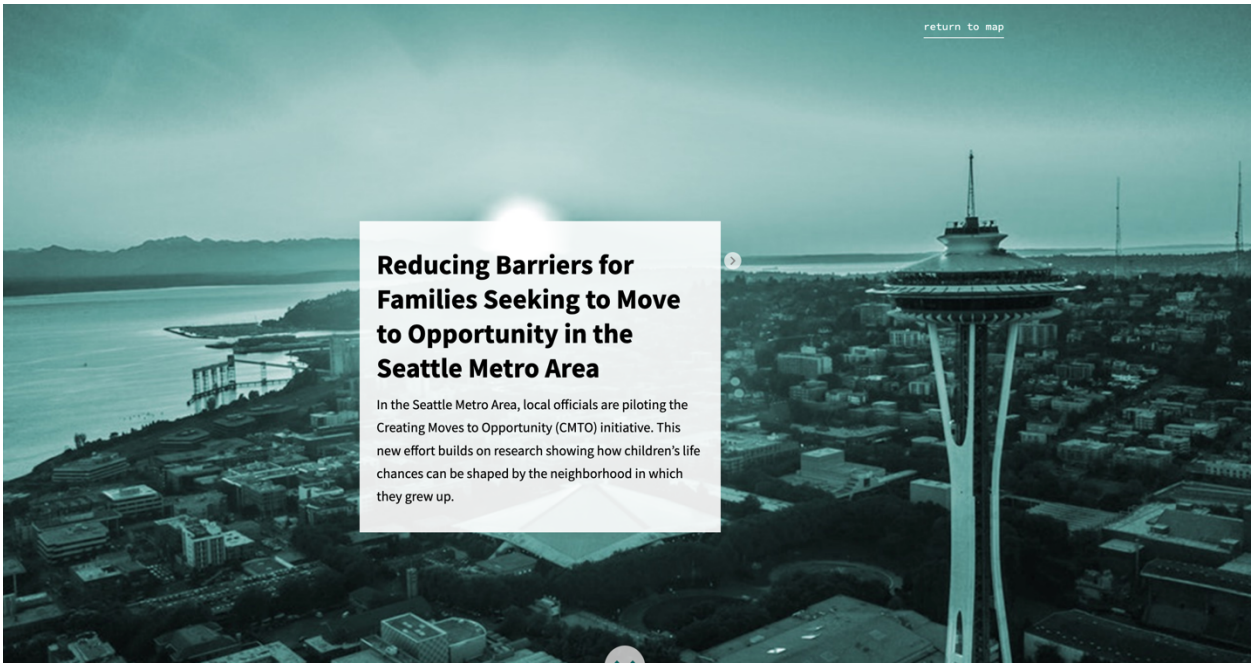

Figure 7: Creating Moves to Opportunity Initiative in Seattle Source: Opportunity Atlas (Opportunity Insights, 2018).

The Opportunity Atlas research has directly translated into tangible policy changes. As shown in Figure 3, in the Seattle Metro Area, local officials implemented the Creating Moves to Opportunity (CMTO) initiative, which helps families with children access high-opportunity neighbourhoods identified through the Atlas. This initiative builds on the research findings by reducing barriers for families seeking to move to areas with better prospects for their children's future economic mobility.

This real-world application demonstrates how big data insights can lead to concrete policy interventions. By identifying which specific neighbourhoods offer better opportunities for children, policymakers can design more targeted and effective programs than was possible with traditional economic analyses.

The Opportunity Atlas perfectly illustrates the value of the binocular approach emphasized throughout this thesis. Looking solely through the lens of traditional economic data provided a distorted picture of opportunity in America. Only by combining big data analytical power with

contextual understanding of neighbourhoods could researchers reveal the true landscape of economic mobility.

This case study demonstrates how big data can reveal patterns invisible to traditional approaches, but also how those patterns must be interpreted with cultural and contextual understanding. The Atlas doesn't just show where opportunity exists; it helps us understand why it exists in some places and not others, providing the foundation for more effective policies to expand economic opportunity for all children.

DECISION-MAP: OPPORTUNITY ATLAS FINDINGS

Terrain: Adjacent Los Angeles neighbourhoods show 167% income differences for Black males from low-income families ($24,000 vs $9,000 by age 35). Hyperlocal environmental factors, not family choices, determine life outcomes.

Navigation: Families develop detailed knowledge of local opportunity pathways and barriers, but individual navigation skills cannot overcome structural terrain constraints between neighbouring areas.

Policy Insight: Replace broad city-level economic development with hyperlocal interventions. Create community-informed opportunity mapping tools rather than generic risk assessment scores that miss crucial neighbourhood variations.

III. REDRAWING THE MAP: FINDINGS, IMPLICATIONS AND CONCLUSION

3.1. Mapping Assumed Terrain: Beyond Stereotypes

Dominant narratives about decision-making in marginalised communities are filled with persistent stereotypes that distort our understanding. While these stereotypes extend across multiple dimensions, including race, socioeconomic status, and geography (as explored in previous chapters), this section focuses specifically on gender-based stereotypes, particularly those affecting women's decision-making.

Women's financial and economic decision-making faces particularly pervasive stereotyping. Gender stereotypes that women are more loss-averse and risk-averse than men when making decisions, and are also not as adept at mathematics and finance as men, may be an important cause of the underrepresentation of women in these fields.[29] Research by Carr and Steele has demonstrated that these observed differences are not innate but rather emerge from situational factors. The researchers found that men and women made different choices only when a negative stereotype about women was involved. When there was no stereotype mentioned or relevant, men and women made the same kinds of decisions (p.1414). The stereotype caused the difference not the gender itself.

These stereotypes still show up in financial advising. Women are often given safer, more cautious advice than men, even if they have the same goals or comfort with risk. This is a problem because research shows that when women are not made to feel judged or limited by negative stereotypes, they are just as willing to take risks as men (p. 1411).

These gender stereotypes extend into household financial management. Women's spending is often characterized as frivolous or impulsive, while identical purchases by men are framed as

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[29] Carr, P.B. and Steele, C.M. (2010). Stereotype Threat Affects Financial Decision Making. *Psychological Science*, 21(10), pp.1411–1416. doi:https://doi.org/10.1177/0956797610384146.

investments or necessities. These stereotypes influence not just external perceptions but internal family dynamics, with women's economic contributions and financial acumen frequently undervalued even within households.

For mothers in particular, stereotypes about financial decision-making intersect with broader judgments about maternal competence. Single mothers face especially harsh stereotyping, with their economic choices scrutinised and pathologized regardless of actual outcomes. Welfare programs designed with these stereotypes in mind often impose counterproductive restrictions that actually undermine the sophisticated resource management strategies these mothers have developed.

Additionally, immigrant women face multiple stereotypes at the intersection of gender, ethnicity, and citizenship status. Their financial choices, such as sending money to family or supporting loved ones in other countries, are often seen as emotional or irrational. In reality, these are smart strategies to protect their families by spreading risk across different places.

To move beyond these stereotypes, we need to recognise that choices that seem “non-optimal” can still be logical. Cognitive research shows that what looks like risk aversion may actually be caused by “powerful but subtle cues of stereotypes embedded in the environment” (p. 1141). Carr and Steele explain that stereotype threat leads to “ego depletion,” which means a loss of mental energy. This loss “directly affects decision-making processes,” often causing people to make more cautious financial choices when they feel judged or stereotyped (p. 1141).[30] Community-based research approaches offer promising pathways for redrawing these maps with greater accuracy. When women document their own decision journeys, patterns emerge that challenge stereotypical assumptions. These maps, created by the women themselves, show smart and careful ways of navigating their lives. Traditional research often misses this because it relies on outside ideas or perspectives that don’t match their real experiences.

[30] Idem

By replacing gender-based stereotypes with more accurate representations of women's decision landscapes, we create space for policies that recognise and build upon existing strengths rather than attempting to "fix" misunderstood behaviours. As research confirms, creating "environments that are identity safe and do not burden decision making" (p. 1415) allows women to make financial choices free from stereotype-induced constraints. This remapping process has profound implications for designing support systems that amplify rather than undermine the resilience strategies already present in women's decision-making.

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3.2. Cartographers Of Their Own Experience

As mentioned previously, there needs to be emphasis on marginalised communities holding the lens of their lives and mapping their own experiences. This section shows the importance in marginalised families and communities as skilled cartographers of their own experience, with the precision that outside researchers often lack.

A powerful example of communities as cartographers comes from Slum Dwellers International's 'Know Your City' initiative[31], which demonstrates how marginalised communities can generate knowledge that challenges official narratives and reshape power dynamics. This global network supports community-led data collection in informal settlements across 32 countries in Africa, Asia, and Latin America. Community members collect detailed data about their settlements, including household surveys, infrastructure mapping, and land tenure information. The data is used to negotiate with authorities and challenge evictions.

In Cape Town, South Africa, settlement communities mapped over 2,000 informal settlements, creating profiles that include demographic data, service access, and community priorities. This information helped communities advocate for improved services by countering government data

[31] Slum Dwellers International . (2022). *What We Do - Slum Dwellers International*. [online] Available at: https://sdinet.org/what-we-do/.

that underestimated population sizes and needs. The initiative demonstrates how marginalised communities can use self-collected data to reshape power dynamics and decision environments.

Patel and Baptist (2012) highlight the significance of this approach: "To be counted in city surveys and to have documents to prove that you have been counted and have an address implies that you (and often your neighbourhood) are considered part of the legal city" (p. 3). Without such documentation, residents are often denied access to public services, including water, sanitation, education, healthcare, and legal protection. By conducting their own documentation, communities transform their status from "invisible" to recognised and capable members of the urban landscape.

The Know Your City initiative embodies the binocular framework developed throughout this thesis by combining the technical aspects of data collection (GPS mapping, household surveys, geographic information systems) with deep cultural understanding and community participation. This approach doesn't just produce more accurate data; it transforms the power relationships between informal settlements and government authorities by creating a bridge of understanding and negotiation based on shared information.

When we view families as cartographers rather than subjects, we recognise the deep expertise developed through generations of navigating resource-constrained environments. The financial strategies documented throughout this thesis, from maintaining multiple small credit lines to strategic timing of essential purchases, represent sophisticated mapping of available pathways.

Communities possess detailed knowledge of their local decision landscapes. This knowledge isn't merely reactive but actively created and shared, forming community maps that guide individual family journeys. These maps contain information about both geographical features and temporal patterns.

Recent advances in big data and machine learning offer promising new tools to support this shift in perspective. As Mullainathan and Spiess (2017) suggest, "The real breakthrough came once

we stopped trying to deduce these rules... we simply let the data tell us which rules work best"[32] (p.103). This mirrors our approach of listening to communities' own mapping of their experiences rather than imposing external frameworks. Big data approaches can amplify previously marginalised voices when communities themselves participate in deciding what questions to ask and how to interpret results.

However, we must remain vigilant about who controls the narrative derived from these new data sources. When algorithms analyse patterns without community input, they risk encoding existing biases. Different analytical approaches can yield entirely different explanations while achieving similar predictions (p.97)[33].

The emergence of community-led data initiatives represents a formalisation of this expertise. When communities gather, analyse, and interpret their own data, they can challenge dominant narratives and advocate for systemic change based on their lived experience. Hence, the binocular approach we've developed is most powerful when one lens is held by the community itself.

As we move toward our concluding discussion, this section underscores that the future of research with marginalised communities lies not just in new data or methods, but in fundamentally transforming relationships. By recognising communities as expert cartographers of their own experience and equipping them with the tools to document their journeys through increasingly complex data landscapes, we open pathways to more accurate and effective support systems that build upon existing strengths rather than attempting to correct misunderstood behaviours.

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[32] Mullainathan, S. and Spiess, J. (2017). Machine Learning: an Applied Econometric Approach. *Journal of Economic Perspectives*, 31(2), pp.87–106.

[33] Idem

3.3. Redrawing the Map: From Insight to Action

Understanding the decision landscape and recognising communities as expert cartographers leads naturally to a different approach to intervention, one focused on reshaping the terrain itself rather than simply helping families navigate unchanged environments. The insights from behavioural economics and big data can inform efforts to transform decision landscapes in ways that expand opportunity.

Reshaping terrain requires first understanding its current features in detail. The Opportunity Atlas provides one such mapping tool, revealing neighbourhood-level variations in economic mobility that would otherwise remain invisible. When combined with community expertise, these data-driven insights can identify precisely where environmental changes might have the greatest impact.

The revolution in machine learning and big data analytics offers powerful new tools for understanding these landscapes with unmatched precision. Rather than imposing pre-existing frameworks, these approaches allow patterns to emerge from the data itself, much as communities generate their own maps of their environments.

Environmental interventions can work in different ways. They might help families move to better neighbourhoods, bring resources into areas that have been left behind, remove obstacles to basic services, or open up new opportunities through education and job training. What all these efforts have in common is that they focus on changing the environment around families, instead of expecting families to cope better with the same difficult conditions.

Drawing on the behavioural insights and big data analytics explored throughout this thesis, several principles emerge for reshaping decision landscapes:

1. **Recognise and build upon existing community maps** rather than imposing navigation systems from outside. The expertise contained in community knowledge represents a valuable resource for identifying both barriers and potential pathways. As our analysis of smart financial strategies in Chapter 2 demonstrated, what appears inefficient from the outside often represents adaptive wisdom from within.

2. **Address structural constraints that shape decision landscapes** rather than focusing solely on individual navigation skills. The dramatic differences in outcomes between adjacent neighbourhoods demonstrated by the Opportunity Atlas highlight the power of place in shaping opportunity. These hyperlocal variations reveal how environmental features, not just individual choices, determine life trajectories.
3. **Involve communities as co-designers in terrain reshaping efforts**. The expertise gained through generations of navigating complex constraints represents valuable knowledge about which environmental features most need transformation. This approach shifts from imposing solutions to co-creating them with the people who understand the environment best.
4. **Recognise cultural variation in how communities map and navigate their environments**. The cultural differences in loss aversion documented by Wang, Rieger, and Hens remind us that effective terrain reshaping must be culturally responsive. What works in one community may not translate directly to another because of these fundamental differences in how risks and opportunities are perceived.
5. **Use big data approaches to identify patterns while remaining grounded in community expertise**. The binocular view developed throughout this thesis provides a framework for combining the broad perspective of data analytics with the depth perception of cultural understanding. The use of big data and our new fast-paced world has introduced new and interesting ways of conducting and understanding research. It is worthwhile to utilise these new tools.

Big data and machine learning represent powerful new tools for creating more accurate maps of opportunity and challenge in marginalised communities. However, their greatest potential lies not in replacing community expertise but in amplifying it. When communities themselves participate in collecting, analysing, and interpreting data about their environments, these tools can help transform narratives that have long mischaracterized their decision-making.

As we conclude this exploration of behavioural economics, big data, and family decision-making, the path forward becomes clear. The future lies not in choosing between data-driven insight and community wisdom but in creating approaches that integrate both perspectives. By reshaping terrain in this way, guided by community cartography and informed by both

behavioural insights and big data, we can create landscapes where families have access to multiple pathways toward stability and opportunity. The journey toward more equitable environments is ongoing, but the approaches outlined in this thesis provide a compass for continued progress.

3.4. The View from Here

The Synthesis of Perspectives

Throughout this thesis, we have traced how single-lens approaches consistently fail to capture the full reality of family decision-making in marginalised communities. Whether purely data-driven or exclusively focused on individual behaviour, these approaches miss crucial dimensions. The binocular framework emerged not as a theoretical preference but as a practical necessity, born from the recognition that neither behavioural economics nor big data analytics alone provides sufficient insight into complex social realities.

The left lens of big data revealed patterns invisible to traditional research. The hyperlocal variations in opportunity documented by the Opportunity Atlas, the structural factors underlying child welfare interventions, and the massive scale needed to understand how economic constraints shape family choices across populations. This lens showed us that what appears to be individual pathology often reflects environmental barriers operating beyond single-family experience.

The right lens of behavioural and cultural understanding provided the depth perception necessary to interpret these patterns meaningfully. Loss aversion variations across cultures, the sophisticated financial strategies employed by families in resource-constrained environments, and the rational adaptation evident in substance use patterns. All demonstrated that behaviours often seen as irrational represent intelligent responses to complex circumstances.

Most crucially, we discovered that this binocular framework achieves its greatest power when communities themselves hold one of the lenses. The expertise gained through generations of navigating structural constraints represents knowledge that cannot be replicated through external observation, no matter how sophisticated the analytical tools employed.

Perhaps the most significant contribution of this research lies in demonstrating how communities labelled as dysfunctional actually employ remarkably sophisticated decision-making strategies. The mothers maintaining multiple small credit relationships weren't exhibiting financial irresponsibility. They were creating resilient insurance mechanisms through social capital. The families spending benefits early in the month weren't demonstrating impulsivity. They were implementing strategic responses to predictable scarcity cycles.

This reframing extends beyond individual cases to challenge fundamental assumptions about rationality, competence, and adaptive capacity in marginalised communities. When we recognise the intelligence embedded in seemingly problematic behaviours, our entire approach to intervention transforms. Instead of seeking to correct deficient decision-making, we begin to understand how environmental constraints limit the effectiveness of sophisticated strategies.

The gender analysis revealed how stereotype threat actively undermines decision-making capabilities, creating the very behaviours it claims to identify. This finding suggests that many observed disparities may be artefacts of prejudiced environments rather than inherent group differences. This insight has profound implications for how we understand and address inequality.

The research consistently pointed toward environmental factors as primary determinants of family outcomes. The dramatic differences between adjacent neighbourhoods revealed by the Opportunity Atlas, the structural pressures underlying substance use in Hungarian communities, the social support networks that buffer loss aversion in collectivistic cultures. All demonstrate that individual choices occur within contexts that fundamentally shape available options.

This way of thinking shifts the focus from trying to change how people behave to changing the situations they are in. Instead of helping families get better at coping with the same hard conditions, the goal is to improve those conditions and create more real opportunities for stability and growth.

To do this well, we need to see communities as experts in their own lives. The everyday strategies people use carry important knowledge about what needs to change. Whether it’s how they manage money, share resources, or support one another, these practices offer valuable insight for making lasting improvements.

My journey as a first-generation post-apartheid South African has paralleled the broader transformation this research documents. What began as observation of how policies misunderstand marginalised communities' choices evolved into recognition that these choices represent strategic adaptations to structural constraints. These insights extend far beyond academic analysis.

Steve Biko's observation about internalised oppression proves remarkably relevant to contemporary research. When marginalised communities consume analysis that judges their decision-making by inappropriate standards, they may begin to doubt their own adaptive wisdom. This internalised judgment can lead to genuinely harmful decisions, creating cycles where external misunderstanding generates internal confusion about strategies that are actually rational adaptations.

The path forward requires not just better research methods but fundamental shifts in power dynamics between researchers and communities, between technical experts and lived experience, between institutional knowledge and grassroots wisdom.

The approaches outlined throughout this thesis provide frameworks rather than final answers. The binocular view, the recognition of communities as cartographers, the focus on environmental transformation. These represent directions for ongoing work rather than completed solutions.

What emerges clearly is that the future of research with marginalised communities lies in authentic collaboration that recognises community expertise alongside academic knowledge. This doesn't mean abandoning rigorous analysis, but rather expanding our understanding of what constitutes rigor to include the sophisticated analytical capabilities communities develop through navigating complex challenges.

At some point in life, we have all felt misunderstood or ignored. It is a deeply human experience, and it never feels good. Often, all it takes is one person who chooses to listen with care to change how we see ourselves and how others see us. In the same way, policies and support systems need to listen more closely. Not to fix people, but to understand them. This research shows that everyday decisions, especially under pressure, hold meaning and insight. Recognising this takes humility and a willingness to learn from others.

The binocular framework is not just a metaphor, but a method: it calls on us to use every zoom, adjust every focus, and test every angle to understand families not only through data but through the depth of their lived realities. To study communities in this way is to accept that knowledge does not sit at a distance. It is embedded, contextual, and already present: waiting not to be discovered, but recognised.

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