Wealth is Health:
The Relationship between Household Income, Physical Health and Mental Wellbeing in South Africa

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COMPULSORY DECLARATION:

This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works of other people have been attributed, cited and referenced.

Signature: Signed by candidate Date: 15/01/2025

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ABSTRACT

Healthier employees contribute to greater productivity at the individual, but also organisational level as healthier employees tend to be more productive, less frequently absent from work and more socially engaged. Organisations should thus have an interest in promoting their employees' mental and physical health. One contributor to health are the financial means which an individual has available to support their health. Through the remuneration provided, employers have a direct influence over this variable. To assess in how far remuneration relates to physical and mental health in the current South African working population and if so, what income would be required to sustain good health, this dissertation investigated the relationship between household income, physical health and mental wellbeing. Using secondary data from the South African Research Chair Initiative's (SARChI) National Living Wage Study, this study examined whether and how household income is associated with an individual's perceived ability to maintain physical health and mental wellbeing as well as individuals' self-rated physical health. Guided by the absolute income hypothesis, which suggests that higher income leads to greater health, the study employed a cross-sectional, quantitative and descriptive design with a sample size of N = 1,665 participants across South Africa's nine provinces who provided survey data between November 2023 and January 2024. Statistical analyses revealed a significant relationship between household income and the three health indicators, demonstrating that higher household income was associated with a better perceived ability to maintain physical health and mental wellbeing alongside better self-rated physical health. A key contribution of this research is the identification of a household income threshold (ZAR 11,850) required for individuals to sustain their physical health and mental wellbeing. Given the documented relationship between employee health and organisational performance, this income threshold provides actionable insights for organisations aiming to improve employee health and organisational performance. By identifying this income threshold, this study contributes a novel insight into the income-health literature, offering a practical foundation for fostering healthier workplaces and better-performing organisations.

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1. INTRODUCTION

At an individual level, good health is fundamental to an individual's ability to contribute to their organisations (McCartney et al., 2019). Higher levels of individual health have been shown to improve productivity, reduce absenteeism, promote social engagement, increase mental wellbeing, enhance quality of life, reduce the risk of disease, reduce healthcare costs and promote the ability to learn (Bloom & Canning, 2000; Burton et al., 2021; Ogbuoji, 2020; White et al., 2015). These effects culminate to influence organisational performance (Bloom & Canning, 2000; Chang, 2024; Goetzel et al., 2014). The increased productivity and reduced absenteeism among healthier individuals lead to more efficiently operating organisations thanks to enhanced employee engagement, increased retention, lower costs and increased organisational productivity (Adams, 2019; Diener et al., 2020; Sonnentag et al., 2023). As a healthier population is a more productive population, economic growth, development and stability are in turn promoted in society. Healthcare costs are reduced, and society as a whole is more socially cohesive (Bloom & Canning, 2000, 2009; Miller et al., 2021).

Conversely, poor individual health has detrimental effects at an individual, organisational and societal level. Poor individual health is associated with lower productivity, absenteeism, reduced social engagement, increased risk of chronic diseases and mental health disorders and increased medical expenditures (Bryan et al., 2021; Burton et al., 2021; Luo et al., 2020). At a societal level, this leads to a less productive society, a higher expenditure on health care and reduced economic output (Bloom & Canning, 2000, 2009; Bor et al., 2017). At an organisational level, this may lead to decreased productivity, higher costs, reduced employee engagement, lower employee cohesion and ultimately a decline in the organisational reputation (Chang, 2024; Kundi et al., 2021). Individual health is therefore an important workplace issue of relevance to organisations. Healthy employees lead to a myriad of benefits for the organisation whereas poor health among employees has notable negative consequences. It is in the organisation's best interests to understand and foster employee health.

In 1948 the World Health Organization (WHO) defined 'health' as "a state of complete physical, mental and social wellbeing, and not merely the absence of disease or infirmity (World Health Organization, 2005, p. 1)." While this definition captures the multidimensional and interconnected nature of health, it has since been criticised for failing to acknowledge that a person could still be

considered ‘healthy’, even if they do not reflect complete physical, mental and social wellbeing (McCartney et al., 2019). Over time, attempts have been made to define health in a manner that captures its multidimensional aspect while acknowledging that being ‘healthy’ does not necessarily hinge on achieving complete wellbeing in each of the three aspects of health. Accordingly, Card (2017) pointed out that health and ill health are not dichotomies but lie on a continuum made up of experiences of physical and psychological wellbeing. Good health is not necessarily contingent on the absence of disease or disability.

Starfield (2001, p. 453) described health as “the extent to which an individual or group is able to realise aspirations, satisfy needs, and cope with the interpersonal, social, biological, and physical environments… It is a positive concept embracing social and personal resources as well as physical and psychological capabilities.” Regardless of which definition one aligns with, it is clear that health is a complex, multidimensional and interconnected state of being influenced by numerous personal and environmental factors.

The WHO emphasised that “the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition (World Health Organization, 2005, p. 1).” However, despite the highest attainable standard of health being a fundamental human right for all, disparities in health exist in societies globally, driven by factors such as income, education and access to healthcare (Nwosu & Oyenubi, 2021; Tangcharoensathien et al., 2024; de Villiers, 2021; Zajacova & Lawrence, 2019). Research has shown that these factors lead to poorer physical health and mental wellbeing towards the lower end of the socioeconomic spectrum (Ataguba et al., 2011; Kroger et al., 2015). Those with higher incomes tend to experience higher and those with lower incomes have lower levels of health (Adeline & Delattre, 2017; Mukong et al., 2017; Vanzella-Yang & Veenstra, 2021). Studies with South African samples have indicated this relationship between income and various conceptualisations of health (Adjaye-Gbewonyo et al., 2016; Bredenkamp et al., 2021; Burns et al., 2017; Lund et al., 2013; Mukong et al., 2017; Nwosu & Oyenubi, 2021). However, what these studies have failed to show is the numerical South African Rand (ZAR) threshold required to maintain/sustain one’s health. This is a gap that this study hopes to fill by potentially identifying the monetary threshold that ensures that maintaining health (both physical health and mental wellbeing) is possible. Before identifying this threshold, this study re-examined

the established findings of the relationship between income and health in South Africa, more specifically, the relationship between household income, physical health and mental well-being.

By understanding these relationships, organisations can make informed decisions on how to address income-related health disparities and improve health and wellbeing among their employees (and consequently society), ultimately promoting organisational performance and efficiency.

In late 2023 and early 2024, a wealth of socio-demographic, wellbeing-related income data was collected in South Africa under the South African Research Chair Initiative (SARChI) Research Chair in Creation of Decent Work and Sustainable Livelihood situated at the University of Cape Town. The study aimed at determining a national living wage and featured measures of both physical health and mental wellbeing. Access to this data provided a unique opportunity to empirically evaluate household income's relationship with physical health and mental wellbeing using a large, representative pool of diverse participants in South Africa.

Therefore, this dissertation sought to 1) empirically evaluate the relationship between household income, physical health and mental wellbeing in South Africa and 2) identify the income level at which health becomes sustainable. By examining how income influences health, this study aims to provide insights that can guide future research as well as organisational policy with the goal of improving health outcomes, organisational performance and efficiency in industry and promoting, ultimately, a healthier society.

There are four chapter which follow. The literature review in Chapter 2 examines the existing research on the relationship between income and health in both the global and South African context. The methods chapter outlines the research design, including the use of the South African Research Chair Initiative's Chair (SARChI) dataset, participant makeup, variables and the statistical analyses used to investigate the relationship between household income, physical health and mental wellbeing. The results chapter presents the findings of the statistical analyses, providing insights into the investigated relationships. The discussion interprets these findings with support of the literature while considering the implication of the findings for organisational and societal policy as well as the potential for future research.

2. LITERATURE REVIEW

This chapter provides an overview of the existing literature examining the relationship between income, physical health and mental well-being. This chapter begins by exploring how research into the relationship between income and health has changed over time as conceptualisations of 'health' have changed. Early research viewed 'health' as purely physical. Over time, however, research broadened the conceptualisation of 'health' to integrate the importance of mental wellbeing alongside physical health. This change underlines the growing recognition in research that health is a multifaceted construct.

Next, the chapter focuses on the organisational implications of employee health, addressing both physical health and mental wellbeing. Employee health is central to employee productivity, absenteeism, engagement and ultimately organisational performance and efficiency.

Following this, the key theories used to explain the relationship between income, physical health and mental wellbeing are evaluated. Particular attention is paid to the absolute income hypothesis, which posits that individuals with higher incomes experience better health outcomes (Preston, 1975).

Finally, the income–health relationship in South Africa is contextualised to set the stage for the exploration of the relationship between household income, physical health and mental wellbeing in South Africa.

While the relationship between income and health is well established, existing research in South Africa does not identify a specific monetary threshold at which health becomes sustainable. This study addresses this critical gap by identifying such a threshold in South Africa.

2.1 Research on the Income – (Physical) Health Relationship Over Time

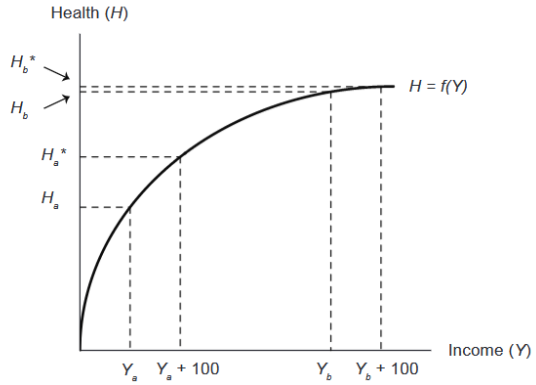
By the late 90s, research focusing on the relationship between income and health already had differing approaches to the conceptualisation of income (Ecob & Smith, 1999). Up to this point, individual income and socioeconomic position were the main conceptualisations of income used to compare health across income or socioeconomic groups (Eachus et al., 1996; Ecob & Smith, 1999; Sorlie et al., 1995). Interestingly, Ecob and Smith (1999) point out that these differences were region-dependent and stated that this was likely due to differences in data collection methods present in different regions. Notably, research at this time only mentioned the term health, without

differentiating between physical and mental health. In practice, health was measured through indicators of physical health only, particularly morbidity and mortality (Backlund et al., 1996; Eachus et al., 1996; Ecob & Smith, 1999).

Researchers found notable correlations throughout the research on the relationship between income and (physical) health (Eachus et al., 1996; Ecob & Smith, 1999; Sorlie et al., 1995). The shape of this relationship (see Figure 1) was distinctly concave indicating that at lower income levels, individuals experienced poorer physical health but as income increased from a lower level, health initially increased rapidly. As income reached the middle and upper levels the increased health effect began to diminish significantly (Backlund et al., 1996; Ecob & Smith, 1999; Evans et al., 2012).

Figure 1

A Visual Representation of the Relationship between Income and Health by Evans et al. (2012)



In the early 2000s, research began considering the impact of household incomes on health. The thought process behind this was that household income would be a more meaningful measure of an individual's socioeconomic position as it allows for the consideration of spousal/familial income and social benefits, all of which can be used by individuals to attain/maintain health (Fritzell et al., 2004). Household income is therefore considered in some research to capture the overall socioeconomic position and consequently more of the indirect factors (such as education and access to resources) that influence health (Fang et al., 2023; Fritzell et al., 2004). The results revealed the same concave relationship that had emerged between individual income and household income (Fritzell et al., 2004; Mackenbach et al., 2005). For this reason, household income was chosen over individual income for the use of this study.

Both individual income and household income continue to be used in contemporary studies (Adeline & Delattre, 2017; Cui & Chang, 2021; Fang et al., 2023; Vanzella-Yang & Veenstra, 2021). Studies have compared health indicators between income groups (Chetty et al., 2016; La Porta & Zapperi, 2024; Meisters et al., 2023). Meisters et al. (2023) and La Porta and Zapperi (2024), for example, compared health outcomes between individual and household income quartiles and quintiles, respectively, in their samples. Meisters et al. (2023) found a strong association between income and self-rated health. La Porta and Zapperi (2024) found that income class is strongly associated with chronic pathologies and their associated risk factors.

The concept of broad, definable socioeconomic groups have been used (and continue to be used) as a differentiator when evaluating the relationship between income and health beyond individual or household income (Ataguba et al., 2011; Braveman et al., 2010; Kim et al., 2023; Pampel et al., 2010). However, in most cases, socioeconomic groups are ultimately determined, in some part, by household income (Ataguba et al., 2011; Braveman et al., 2010; Pampel et al., 2010). Socioeconomic groups also tend to consider the level of education (Braveman et al., 2010; Pampel et al., 2010). The results of these studies mirror what previous studies using individual income or household income have found, that those who are in 'lower' socioeconomic groups are less healthy than those in 'higher' socioeconomic groups (Braveman et al., 2010; Kim et al., 2023; Pampel et al., 2010).

There is a body of research that instead of focusing on the relationship between income and physical health, explores the relationship between poverty and physical health (Knifton & Inglis, 2020; Shields-Zeeman et al., 2021; Zimmerman et al., 2022). While this may only be a sub-section of an income distribution, it holds a particularly important impact. Poverty has been shown to create a framework of negative influences on health through hunger, poor working environments, lack of access to water, lack of access to healthcare, poor educational opportunities and an increase in financial stress among other factors (Murray, 2006; Zimmerman et al., 2022). These factors tend to lead to vicious cycles that keep individuals stuck in poverty which, in turn, keeps them in poorer health (Knifton & Inglis, 2020; Murray, 2006). The consensus in the literature is that the biggest impact of income on physical health occurs on the lower end of the income distribution. The impact of income on physical health is particularly powerful when an income increase moves an individual out of poverty (Schofield et al., 2018).

Most research focusing on individual physical health uses self-report measures, varying in complexity from simple single-items (Fritzell et al., 2004; Meisters et al., 2023) to scales (Adeline & Delattre, 2017; La Porta & Zapperi, 2024; Mackenbach et al., 2005), the presence of long-standing illnesses (Ataguba et al., 2011; Braveman et al., 2010; Vanzella-Yang & Veenstra, 2021) or short-term illness (Beck et al., 2015; Paul, 2021), life-expectancy (Chetty et al., 2016; Schwandt et al., 2022) and health-related behaviours (Mukong et al., 2017; Pampel et al., 2010). While rare, objective health indices have also been used in some studies (Carrieri & Jones, 2016; Ecob & Smith, 1999). Ecob and Smith (1999) assessed their participants' self-perceived malaise and probability of long-term illness and measured height, waist-hip ratio and respiratory function. All of the above studies found a significant and positive relationship between their conceptualisation of income and their conceptualisation of health. Carrieri and Jones (2016) used blood-based biomarkers as an objective measure of health and related these to participants' self-reported monthly net household income. They found the same significant and concave relationship as in the income – (physical) health research.

Lastly, an important differential in studies exploring the relationship between income and health is the time period over which income and health are measured. Most research focuses on cross-sectional data, in which the impact of income on health is measured at a singular point in time (Carrieri & Jones, 2016; Ecob & Smith, 1999; Fritzell et al., 2004; Paul, 2021). More recently, longitudinal analyses of the relationship between income and health have been published (Kim et al., 2023; La Porta & Zapperi, 2024; Vanzella-Yang & Veenstra, 2021). While the cross-sectional studies found a significant and positive relationship between income and (physical) health, the longitudinal studies have found that the gap in health between individuals on the extreme ends of income distribution widening (Chetty et al., 2016; Kim et al., 2023; La Porta & Zapperi, 2024).

Regardless of a study's conceptualisation of income or physical health, it is believed that income influences physical health by allowing individuals the ability to afford the resources (such as healthy food) and services (such as private health care, education or gym memberships) necessary for maintaining health (Cui & Chang, 2021; Igelstrom et al., 2024; Murray, 2006). Higher levels of income allow individuals to experience lower levels of economic stress leading to physical health benefits (Ryu & Fan, 2023). Furthermore, higher levels of income allow individuals to live

in healthier communities that have access to places like retail stores that sell fresh produce, higher quality schools and green spaces (Burns et al., 2017; Finkelstein et al., 2022; Mukong et al., 2017).

The review presented in this section shows that regardless of how income and physical health have been measured, the results consistently showed a positive, curvilinear relationship between income and health.

For this reason, it is hypothesised that higher household income is associated with a significantly better perceived ability to maintain physical health in South Africa. Secondly, it is hypothesised that higher household income will be associated with significantly better self-rated health in South Africa. The reason 'perceived ability to maintain physical health' and 'self-rated physical health' are used as the physical health measures is due to the secondary dataset's measures of physical health (to be discussed in depth in the methods section).

2.2 The Relationship between Income and Mental Wellbeing

Contemporary definitions of 'health' consider it a multi-faceted construct (Card, 2017; Starfield, 2001). As was mentioned in the introduction section, Card (2017) defines 'health' as "the experience of physical and psychological wellbeing… (p. 131)." Even in 1948, the WHO saw health as more than physical health. They defined health as "a state of complete physical, mental and social wellbeing, and not merely the absence of disease or infirmity (World Health Organization, 2005)." It is clear that mental wellbeing is considered to be an important facet of overall health.

Most research exploring the relationship between mental wellbeing and income has been published in the last 14 years which is in line with the reducing stigma around mental illness, greater emphasis on mental wellbeing care and insight into the power of mental wellbeing's influence on an individual's physical health (Lien et al., 2019). In studies which have considered mental wellbeing as a facet of health, the variable has been defined considerably differently. For example, Li et al. (2022) equated symptoms of depression to low mental wellbeing, Thomson et al. (2022) used a measure of a combination of anxiety and depression as a way to assess mental wellbeing and Shields-Zeeman et al. (2021) measured "levels of psychological distress". Sareen et al. (2011) used a comprehensive list of mental disorders from the Diagnostic and Statistical Manual of Mental Disorders IV (DSM-IV). Rather than measure mental ill-health, some researchers opted to assess happiness, life satisfaction and the presence of positive moods as measures of mental

wellbeing (Syren et al., 2020). While these studies have generally revealed a positive relationship between mental health and income (Burns et al., 2017; Li et al., 2023; Rauf, 2023; Sareen et al., 2011; Shields-Zeeman et al., 2021; Syren et al., 2020; Thomson et al., 2022), the shape of this relationship differed across studies.

Li et al. (2023) found a linear or near linear relationship between income and mental wellbeing while Rauf (2023) found a curvilinear relationship, similar to the typical income-physical health relationship but with a less steep gradient. Li et al.'s (2022) Chinese data revealed a U-shaped relationship: as income increased mental wellbeing improved up to a certain income level. After this point, greater income was related to deteriorating mental wellbeing. Li et al. (2022) theorised that this is due to individuals with high incomes having high workloads and work hours. This does raise an interesting question on the contextual role that society and culture can have on the impact of the relationship between income and mental wellbeing as there are no other studies that indicate this form of relationship. While the researchers do not provide a reason for this potential anomaly, it could be due to higher income leading to increased workloads, longer hours and greater responsibility leading to high stress and lower mental wellbeing.

Adjaye-Gbewonyo et al. (2016), on the other hand, found no relationship between income and depression as measures of mental wellbeing. The findings are considered anomalous when looking at the overarching research on the relationship between income and mental wellbeing and the authors believe this is due to using Gini Coefficients as a measure of income inequality rather than income or an alternative socioeconomic measure.

While there are disagreements on the shape of the relationship between income and mental wellbeing, or even if there is a relationship at all, there is a strong body of research that demonstrates that those at the lower end of the socioeconomic spectrum, particularly those living in poverty, are at greatest risk of poor mental wellbeing (Knifton & Inglis, 2020; Shields-Zeeman et al., 2021; Thomson et al., 2022).

Poverty affects mental wellbeing through social, economic and environmental mechanisms (Knifton & Inglis, 2020). It is believed that those in poverty experience greater chronic stress from financial instability which in itself may increase risk for mental wellbeing issues but also lead to risky behaviours which have negative mental wellbeing effects (Shields-Zeeman et al., 2021). Additionally, those living in poverty live in locations where they may lack access to basic resources

like water or basic sanitation, and be at greater risk of witnessing or experiencing violence, which both have adverse effects on physical and mental wellbeing (Thomson et al., 2022). Compounding these issues would be the lack of access to adequate mental wellbeing care due to availability and affordability which leads to a lack of mental wellbeing mitigation (Shields-Zeeman et al., 2021).

Those who may not be considered in 'poverty' but are still on the low end of the income distribution scale experience similar stressors that influence their mental wellbeing. The increased financial stress, even for those not in poverty, is significantly associated with an increase in anxiety and depression (Parra-Mujica et al., 2023; Shields-Zeeman et al., 2021; Syren et al., 2020). Those with lower incomes are also more likely to partake in unhealthy coping behaviours such as substance abuse (Mukong et al., 2017; Thomson et al., 2022). This is compounded by those with low income being unable to access mental wellbeing-affirming resources such as mental health care or education that teaches them what mental wellbeing is and how to maintain it (Burns et al., 2017; Thomson et al., 2022).

Research has found that increased income has significant effects on improving mental wellbeing but when and income increase moves an individual out of poverty, the effects are up to 13 times larger (Thomson et al., 2022). Given that South Africa has a large proportion of the country living in poverty, and the effect of poverty alleviation on mental wellbeing is clear, the importance of understanding the relationship between poverty and mental wellbeing in the South African context is indisputable.

Overall, the literature generally demonstrates a positive relationship between income and wellbeing, with higher income associated with higher mental wellbeing (Burns et al., 2017; Li et al., 2023; Rauf, 2023; Sareen et al., 2011; Shields-Zeeman et al., 2021; Syren et al., 2020; Thomson et al., 2022). The nature of this relationship does seem to vary based on the conceptualisation of mental wellbeing and contextual factors with differing shapes apparent in the research.

Based on the literature in this review, it is hypothesised that a higher household income is associated with a significantly better perceived ability to maintain mental wellbeing. The reason 'perceived ability to maintain mental wellbeing' is used as the mental wellbeing measure is due to the method in which the secondary dataset measures mental wellbeing (to be discussed in depth in the methods chapter).

2.3 Understanding Physical Health and Mental Wellbeing's Impact on Employees and Organisations

From an organisational psychology perspective, employee health is a crucial factor in driving organisational success. Understanding how income contributes to employees' health is of high importance as it directly contributes to organisational performance and efficiency (Burton et al., 2021; McCartney et al., 2019; White et al., 2015).

Both physical health and mental wellbeing are strongly associated with positive organisational outcomes (Bryan et al., 2021; Sonnentag et al., 2023; White et al., 2015; Wu et al., 2021). Physically healthy employees are more engaged, focused, and perform at a higher level which ultimately increases productivity, job satisfaction and reduces absenteeism (Goetzel et al., 2014; White et al., 2015). Similarly, when employees have higher levels of mental wellbeing, their stress levels are lower, their productivity increases, their job satisfaction is higher, they experience less burnout and they are retained at higher rates (Bryan et al., 2021; Wu et al., 2021). These factors combine and create more productive organisations, retain employees at a higher rate, experience lower costs, have higher rates of engagement, have increased organisational reputation and have happier employees overall (Adams, 2019; Burton et al., 2021; Diener et al., 2020; Kundi et al., 2021).

When employees are experiencing poor physical health, absenteeism increases, productivity decreases, turnover increases and job satisfaction decreases all influencing the overall organisation's performance (Ogbuoji, 2020; White et al., 2015). When employees struggle with their mental wellbeing there can be similar negative outcomes for organisations. Similarly to poor physical health, poor employee mental wellbeing leads to higher rates of absenteeism, burnout, decreased job satisfaction, increased stress and increased turnover (Sonnentag et al., 2023; White et al., 2015; Wu et al., 2021). These factors combine to lead to decreased organisational productivity, reduced employee engagement, higher rates of turnover, a decline in organisational reputation, reduced employee cohesion and increased costs (Adams, 2019; Kundi et al., 2021; White et al., 2015).

The relationship between physical health, mental wellbeing and organisational outcomes is well established. As income is a key determinant of health and organisations are the key determiners of income, this represents an opportunity for said organisations to enhance employees' physical

health and mental wellbeing, while simultaneously reaping benefits that will ensure the performance, efficiency and success of the organisation. This makes the relationship between income, physical health and mental wellbeing a key issue in organisational psychology. The following section in the literature review will delve into theories about the income-health relationship, particularly the absolute income hypothesis.

2.4 Theory Explaining the Relationship Between Income, Physical Health and Mental Wellbeing

Studies examining the relationship between income and health (both physical health and mental wellbeing) are largely grounded in one of two theoretical frameworks: the relative income hypothesis and the absolute income hypothesis. When focusing purely on the relationship between income and mental wellbeing, there are two additional theories: social causation and social drift.

The Relative Income Hypothesis. The relative income hypothesis, originally developed by Wilkinson (1996), is a theory that posits that the level of income inequality within a society affects the physical and mental health outcomes within that nation (Cui & Chang, 2021; Jen et al., 2009). The theory states that societies with higher levels of income inequality will have poorer health (Adeline & Delattre, 2017). Increases in the average income of a society will have a larger impact on the health of that society when the income inequality is low compared to when it is high (Adeline & Delattre, 2017; Pickett & Wilkinson, 2015). This hypothesis evaluates the relationship between income and health at a societal level and is useful for explaining the differences between income and health between societies. As the aim of this dissertation is to address the relationship between household income and health at the individual level within South African society, this theory is not immediately relevant to the question of how income might shape health in our local context.

The Absolute Income Hypothesis. The absolute income hypothesis is a basic theoretical model that was originally developed by Preston (1975) and provides a theoretical framework for understanding the relationship between income and health. This hypothesis states that with all other factors controlled, the higher the income, the better both physical health and mental wellbeing will be (Meisters et al., 2023; Preston, 1975; Traore, 2021).

Higher levels of income allow individuals better access to the medical services available, the ability to purchase and eat healthier foods, a better education and thus greater knowledge about

how to maintain health and lastly, a better social network which leads to better psychological support and access to resources (Finkelstein et al., 2022; Igelstrom et al., 2024; Zhang & Xiang, 2019). Higher levels of income are also associated with less stress, which is associated with better health outcomes (Ryu & Fan, 2023).

At the macroeconomic level, higher income levels in society lead to societal health improvements by stimulating economic development and improving public resources such as education, healthcare and social support systems which, while improving societal health, also lead to improved individual health (Cui & Chang, 2021).

While there is overwhelming empirical support in the literature for the absolute income hypothesis, there is minor disagreement over how this relationship is represented in the data. A small contingency of researchers believe that this relationship manifests in a linear or near-linear relationship (Beck et al., 2015; Li et al., 2023). On the other hand, most researchers believe that the absolute income hypothesis presents as a positive, concave (curvilinear) relationship (Adeline & Delattre, 2017; Ecob & Smith, 1999; Evans et al., 2012; Preston, 1975). This is the shape that most of the research believes is the correct interpretation of income and health and can be seen in Figure 1.

The concavity of this relationship means that those on the lower end of the income distribution will have significantly worse health outcomes than those on the higher end of the income distribution while the health benefit of increased income diminishes towards the upper end of the income distribution. However, there comes a point where the steepness of the slope is reduced, and the effect of income has a diminished effect on health (Adeline & Delattre, 2017; Ecob & Smith, 1999; Evans et al., 2012; Mackenbach et al., 2005). It is theorised that this is due to there being a point where individuals have sufficient income to meet all their needs and from there, the per-unit impact of income becomes greatly diminished (Traore, 2021).

When looking at the relationship between absolute income and mental wellbeing, the social causation hypothesis provides a framework within which to further understand this relationship. The social causation hypothesis states that the economic and social conditions of poverty, such as lack of education, lack of access to adequate nutrition, poor environmental factors (such as increased exposure to violence) and reduced resources to cope with adverse life events, increase the prevalence of mental illness (Lund & Cois, 2018). Conversely, individuals with higher income

levels not only have access to better life conditions but also experience an increased sense of control and autonomy, which positively influences mental health outcomes (Rauf, 2023).

The social drift model proposes the reverse cause-and-effect relationship: individuals who struggle to maintain mental wellbeing are likely to end up in poverty as they struggle to access and maintain work opportunities. Once in poverty, social causation takes effect, and mental wellbeing decreases, further leading to a vicious cycle that is extremely difficult to escape from (Lund & Cois, 2018).

It is important to note that the diminishing returns of income at higher levels are evident in both physical and mental health. Once an individual can meet their basic needs, the impact of increased income begins to diminish, leading to the concave effect that has been seen throughout the research on the relationship between income and health (Traore, 2021).

In summary, the Absolute Income Hypothesis provides the ideal framework for understanding how income influences both physical health and mental wellbeing. The relationship is strongest at lower income levels, where increases in income allow individuals to overcome critical barriers to health, the relationship weakens as we reach the higher end of the income distribution.

2.5 Contextualising Income and Health in South Africa

South Africa is the most unequal society in the world. This inequality was born through colonialism and the apartheid regime, with its socioeconomic effect continuing to be experienced to this day (Sulla et al., 2022).

To give an overview of the income distribution in South Africa, the minimum wage in South Africa is ZAR 27.58 an hour which amounts to ZAR 4,776.86 per month given a standard 40-hour workweek (Department of Employment and Labour, 2024). According to Statistics South Africa (2023), the mean monthly household income is ZAR 17,029.92. However, the mean household income of a country can be misleading as it is skewed by the high earners in society and so median household income can be used to get a better sense of what 50% of earners earn less and more than (Chiripanhura, 2011). In South Africa, the median monthly household income is ZAR 7,980.83, significantly lower than the mean (Statistics South Africa, 2023). Within the top 5% of South Africans, the monthly median income was ZAR 35,000 and in the bottom 5%, the monthly median was ZAR 1,000 (Statistics South Africa, 2022)..

The fact that South Africa sits at the extreme end of the spectrum of inequality paints a worrying picture of the implications for the overall health of the country, especially when related to income. The average life expectancy in South Africa is 64 years, substantially below the global average of 73 years (Statistics South Africa, 2022; World Health Organization, 2022). South Africa has the highest number of people living with Human Immunodeficiency Virus (HIV) globally and a high rate of non-communicable diseases such as obesity, diabetes, heart disease and increased blood pressure leading to increased morbidity and mortality (Rasesemola et al., 2023; Zuma et al., 2022).

The statistics surrounding mental health and mental wellbeing in South Africa paint an equally worrying picture. The 4th annual Mental State of the World published by Sapien Labs (2023) indicates that South Africa ranks in the bottom 3 countries concerning mental wellbeing levels. A recent study on the prevalence of probable depression and probable anxiety in South Africa showed that up to 25.7% of South Africans show signs of probable depression and anxiety (Craig et al., 2022).

While there is a considerable body of work surrounding the socioeconomic disparities of health in South Africa, there are only a few research articles specifically and quantitatively addressing the relationship between income and physical health or income and mental wellbeing in the South African context.

Mukong et al. (2017) found that health behaviours associated with stress such as smoking and alcohol use are more prevalent in poorer households and that these lead to poorer health outcomes. This finding can be tied to the theorised link between income and stress implying that low income leads to higher stress, which leads to poor health behaviours such as smoking and drinking, leading to poorer health (Mukong et al., 2017; Ryu & Fan, 2023; Thomson et al., 2022).

Using data from the 2001 Census and Community Surveys of 2007 and 2016, Bredenkamp et al. (2021) explored, amongst others, trends in life expectancy among 210,000 households in South Africa ranked by an asset-based index as a measure of income. They found that survival prospects increased with income in the bottom three income quintiles. However, as they used an asset-based index to rank income, no numerical South African Rand value was associated with each quintile. These findings are supported by the international literature stating that as income increases on the lower ends of the income distribution spectrum, health increases (Ecob & Smith, 1999; Fang et al., 2023; Fritzell et al., 2004). One notable contrast is that the literature shows that at higher levels

of income, the impact on health diminishes. Bredenkamp et al. (2021), however, found no association between income and life expectancy (as a measure of health) in the top 2 quintiles.

Two other studies in South Africa measured the relationship between socioeconomic group and health and found that those in the lower socioeconomic groups disproportionately experience the presence of non-communicable diseases, ill health and disability (Ataguba et al., 2015; Omotoso & Koch, 2018).

The research on the relationship between income and mental wellbeing, specifically, has been touched on by a few studies in the South African context. Using the National Income Dynamic study (NIDS) data from 2008 and 2012, Adjaye-Gbewonyo et al. (2016) measured the relationship between income inequality and depression in South Africa. However, were unable to find a statistically significant relationship. In direct contrast to this, Burns et al. (2017) using the NIDS data from 2008, 2010, and 2012, found that income inequality does increase the risk of depression in South Africa. This contradiction is likely due to the fact that Burns et al. (2017) used household income as a measure of income inequality and Adjaye-Gbewonyo et al. (2016) used district-level Gini coefficients.

Zimmerman et al. (2022) investigated depressive symptoms in youth participants using multi-dimensional poverty and income poverty data within Colombia, Mexico, and South Africa. Multi-dimensional poverty measures measure poverty as a spectrum of resource deprivation, through factors such as household economic conditions, individual childhood and youth education conditions, labour, health, access to public utilities and housing conditions (Zimmerman et al., 2022). In comparison, income poverty sees poverty as earning below a certain income threshold. In this dataset, the South African threshold was determined by dividing the sample into four quartiles and having the bottom quartile represent poverty (no specific numerical value is given). Interestingly, multi-dimensional poverty was associated with higher rates of depression in Colombia and Mexico but not in South Africa. Income poverty, however, was associated with higher levels of depression in South Africa, but not in Mexico and Colombia. The conclusion drawn from this discrepancy is that specific interactions between poverty and mental wellbeing in youth may be greatly influenced by “the lack of an association for child labour and health insurance” in South Africa (Zimmerman et al., 2022, p. 8).

Lund et al. (2013) investigated the relationship between mental illness and lost income among adult South Africans. They focused on how mental wellbeing issues created income losses. This study found a significant association between depression and poverty and attributed these findings to both social causation and social drift.

Nwosu and Oyenubi (2021) conducted research on the relationship between socioeconomic groups and health during the COVID-19 pandemic to investigate the impact that COVID-19 had on the health of South Africa. They found that the poor disproportionately experienced income-related health inequalities due to the impact that COVID-19 had on the South African economy.

This section has highlighted research investigating the relationship between various conceptualisations of income and various conceptualisations of health in South Africa. The trend that was found was that higher income is generally associated with better health. However, all these articles lack a distinct monetary threshold at which physical health or mental wellbeing switches from being poor to being sustainable. This is a crucial gap that would be of importance to South African organisations as it would enable them to understand the level of income that would allow their workers to be both physically healthy and mentally well, which would ultimately lead to the myriads of organisational benefits mentioned in section 2.3. This study hopes to fill that gap by establishing the monetary threshold in which physical health and mental wellbeing becomes sustainable while simultaneously testing the relationship between household income, physical health and mental wellbeing in a statistically representative sample.

2.6 Hypotheses

Based on the reviewed literature, the following hypotheses are formulated on the relationship of income, health, and mental wellbeing.

Hypothesis 1: Higher household income is associated with a significantly better perceived ability to maintain physical health in South Africa.

Hypothesis 2: Higher household income is associated with a significantly better perceived ability to maintain mental wellbeing in South Africa.

Hypothesis 3: Higher household income is associated with a significantly better self-rated health.

Conclusion

Research has consistently highlighted a positive relationship between various conceptualisations of income and various conceptualisations of health, including physical health and mental wellbeing. This is the case both internationally, and in the South African context. Despite this consistency, a crucial gap in identifying the specific income threshold at which health becomes sustainable remains. Addressing this gap is essential for organisations to understand the level of income that can assure a healthy workforce and bring a myriad of organisational benefits. Before this can be done, however, the relationship between household income, physical health and mental wellbeing needs to be affirmed.

This study seeks to reaffirm the relationship between household income, physical health and mental wellbeing in the South African context and to determine a monetary threshold for sustainable health. The following chapter outlines the methods used to achieve these objectives including research design, sampling and participants, measures, procedure and data analysis.

3. METHODS

The purpose of this chapter is to outline the research methodology used to investigate the relationship between household income and health, specifically physical health and mental wellbeing, within the South African context. This chapter provides details on the research design, sampling and participants, measures, data collection procedure and data analysis.

3.1 Research Design

The research design used in this study to investigate the relationship between household income, physical health and mental wellbeing in the South African context was a cross-sectional, quantitative design using secondary data analysis. This design was chosen due to the structure of the secondary dataset, which consisted of quantitative data collected at a single point in time for each participant. A cross-sectional design was appropriate given the study's purpose, which was to explore the relationship between household income, physical health and mental wellbeing at a single point in time. This design allowed for efficient analysis of the relationship between these variables using an existing dataset with a representative population.

The empirical data used to test the study hypotheses was made available in an Excel spreadsheet. The spreadsheet contained data collected from working individuals residing in South Africa between November 2023 and January 2024 as part of the annual National Living Wage Study, conducted through the Department of Science and Innovation and National Research Foundation's South African Research Chair Initiative's Chair (SARChI) in Creation of Decent Work and Sustainable Livelihood at the University of Cape Town.

The dataset included variables relevant to the study objectives, allowing for the statistical analysis to test the proposed hypothesis.

3.2 Sampling and Participants

Data was obtained from N = 2,231 predominantly low to middle-income earners residing in South Africa. To limit the investigation to this group of individuals, households earning above ZAR 30,000 net per month were excluded. The rationale behind this decision was that the primary data was collected to determine a living wage threshold in South Africa. Prior research has found this amount to be between ZAR 12,000 and ZAR 15,000 (Botha, 2021). With the assumption that the living wage would be around this range, participants earning around this range were recruited.

Those earning over ZAR 30,000 are considered outliers (more than 2 standard deviations away from the mean) and are were excluded. Additionally, 286 respondents did not provide a household income. These factors brought the total sample size used in the data analysis to $N = 1{,}665$.

A key assumption in this study was that the study sample was an adequate representation of the population of South Africa and that the outcomes measured could be generalised to the population of working individuals in South Africa.

The number of individuals sampled per province was proportional to the overall percentage of individuals living in each province. To determine the proportion, Statistics South Africa's Census 2011 data had been used (Statistics South Africa, 2012). This was done as the data quality of the more recent 2021 census has been heavily criticised (Moultrie & Dorrington, 2024). The census indicates that the Eastern Cape makes up 12.7% of the total population of South Africa. The Free State makes up 5.3%, Gauteng makes up 23.7%, KwaZulu Natal makes up 19.8%, Limpopo makes up 10.4%, Mpumalanga makes up 7.8%, North West Province makes up 6.8%, Northern Cape makes up 2.2% and the Western Cape makes up 11.2%.

The sample for this study consisted of 138 individuals from the Eastern Cape (8.3% of the total sample), 102 from the Free State (6.1%), 507 from Gauteng (30.5%), 290 from KwaZulu Natal (17.4%), 204 from Limpopo (12.3%), 139 from Mpumalanga (8.3%), 70 from North West Province (4.2%), 43 from the Northern Cape (2.6%) and 172 from the Western Cape (10.3%). These percentages indicate that the sample is representative of the population.

Participants for this study were selected using a convenience sampling method. Sampling was conducted by university students who were trained to be data collectors for the National Living Wage Study during their year-end holiday break. Each student used convenience sampling in their respective provinces to gather participants.

Although convenience sampling was employed due to practical constraints, effort was made to ensure that the sample was representative of the population as a whole. This was done by aligning the proportion of individuals sampled from each province with the population proportions of the provinces. While this method of sampling produces limitations on generalisability, it was appropriate due to the logistical challenges of conducting a national study.

The sample's age ranges from 18 to 65 (mean: 33.81, SD: 9.87) and was made up of 928 females (55.7%), 698 males (41.9%), 15 who preferred not to disclose gender (0.9%), 11 gender non-conforming individuals (0.6%) and 2 transgender individuals (0.1%).

3.3 Measures

The full measure is available in Appendix A. It included 5 sections that assessed socio-demographics, perceived importance of specific domains in life, perceived freedom to attain specific domains of life, empowerment and living arrangements. For this study, demographic information related to participants' household income (assessed through items 1, 2, 4 and 5) was used.

To measure physical health and mental wellbeing, three individual items from the quality-of-life measure were used. Two items were from the 'perceived freedom to attain specific domains of life' section and one item was from the 'empowerment' section. These were:

- How possible is it for you right now to get the PHYSICAL HEALTH that allows you to have a good life? (Item 37 in Appendix A)

Participants could choose between the answer options: completely impossible; almost impossible, quite possible and completely possible. This makes up the dependent variable 'perceived ability to maintain physical health.'

- I am physically well. (Item 48 in Appendix A)

Participants provided answers by choosing one of the following six options: never; almost never; sometimes; often; almost always and always. This makes up the dependent variable 'self-perceived physical health.'

- How possible is it for you right now to get the PSYCHOLOGICAL/ MENTAL HEALTH & EMOTIONAL WELLBEING that allows you to have a good life? (Item 38 in Appendix A)

The answer options were: Completely impossible; almost impossible, quite possible; and completely possible. This makes up the dependent variable 'perceived ability to maintain mental wellbeing.'

It might be argued that such few, general subjective ratings can not adequately assess health and mental wellbeing, but research has shown that self-rated health is a valid indicator of objective health (Bombak, 2013; Meng et al., 2014).

Regarding the response formats, Meyer (2023) reported that previous studies had found that South Africans with low education and income levels tended to have difficulties in choosing an option when Likert-type responses ranging from “strongly disagree” to “strongly agree” were provided. For this reason, the 4-point Likert scales utilised responses from “completely impossible” to “completely possible” and the 6-point Likert scale utilised responses from “never” to “always”.

The independent variable was monthly household income assessed through item 65. Participants provided an income amount in response. The number of people supported by the household income was used as a control variable.

Individual income, which was determined by item 14 and item 15, was also considered as an independent variable. Upon investigation using Spearman rank correlations with the dependent variables, both household income and individual income showed similar correlations and the decision was taken to use household income as it is believed to be more reflective of the total amount of funds individuals have access to when sustaining their physical health and mental wellbeing.

The assumption was that greater income – measured as a scale variable – would be related to greater health indicators – measured as ordinal variables, assuming here that household income was the cause and health as the effect. As the data was collected via cross-sectional survey data this causal relationship could only be inferred but not tested. It is, for example, also possible that better health leads to individuals acquiring higher-paid jobs over time which then created greater household income. In that case, health would be the cause and household income the effect. Regardless of the cause, in both cases, the data should show that individuals with better health indicators, on average, have higher household incomes.

Despite the limitations of this cross-sectional design, namely the inability to establish causality, this dataset continues to provide valuable insights into the numerical income levels that differentiate between poorer and better physical health and mental wellbeing outcomes. The ordinal health indicators allow for meaningful differences in health to be observed when compared

to household income and the representativeness of the sample enhances the generalisability of the findings. All these factors support the dataset's appropriateness for examining the relationship between household income, physical health and mental wellbeing in South Africa despite the limitations of the cross-sectional design.

3.4 Procedure

While secondary data analysis was conducted for this study, the following section describes the processes behind the collection of the dataset. This has been done to assess the scientific rigour employed in the process and thus to be able to evaluate the quality of the data.

The data was collected by 116 University of Cape Town students. Each data collector participated in a 2-hour training session which served to ensure that they were familiar with the survey instrument, understood the purpose and aims of the study and standardised the data collection. Data collectors were requested to collect data in the province in which they were staying during the university holidays at the end of 2023. Each data collector was provided with a specific number of datasets to collect by administering the questionnaire to participants one-on-one. The maximum target was 21 responses. As each questionnaire took between 20 and 30 minutes to complete, this served to minimise the risk of data collectors fabricating data. Data collectors entered participants' responses directly into the survey software Qualtrics or used hardcopy questionnaires to capture the data. In that case, they needed to transfer the data into Qualtrics at a later stage. Once captured, the data was checked for completion and likely accuracy by the study coordinator. After the data quality had been checked, data collectors were paid ZAR 85 per completed questionnaire via a token sent to their cell phone number which allowed them to withdraw the total amount in cash at an automated teller machine (ATM). Payment corresponded to the living wage rate determined in the previous year's National Living Wage study. In provinces in which the target number of responses had not been met, data collectors who had submitted their target number of responses were offered an opportunity to collect additional data.

Participation in the study was both voluntary and anonymous unless a participant indicated being willing to participate in future studies. In that case, they provided a phone number. Once a participant agreed to participate in the study, the data collector provided an overview of the study and offered the participant the opportunity to either complete the questionnaire on their own or with assistance. Questionnaires were available in either English or Afrikaans. Data collectors

translated words or items into local languages where required and recorded their names and the start and end times of the survey administration.

It's clear that the process of data collection was scientifically rigorous and that the data included in the dataset can be considered of sound quality.

3.5 Data Analysis

Using the IBM software SPSS, descriptive statistics were used to gain a preliminary overview of the data about monthly household income, ability to maintain physical health, ability to maintain mental wellbeing, self-perceived physical health and the number of people supported by income. As the level of measurement of the physical and mental wellbeing variables was ordinal, Spearman rank correlation was used to determine the relationships between monthly household income, the number of people supported by the household income and the two physical health and one mental wellbeing variables.

Three separate Analysis of Variance (ANOVA) tests were conducted to investigate the nature of the relationship between household income and the perceived ability to maintain physical health, household income and self-rated physical health as well as household income and the perceived ability to maintain mental wellbeing. One-way ANOVAs were used for the physical health variables, while a Welch test was used for the perceived ability to maintain mental wellbeing variable as the assumption of homogeneity of variances was violated. Furthermore, due to violations of assumptions, household income was log-transformed to ensure the data met the criteria for ANOVA.

One of the external examiners pointed out that the increased risk of type I errors arising from multiple ANOVAs has not been considered as no adjustments to the alpha level have been carried out. The reason no such adjustment was considered is as following Garcia-Perez's (2023) critical review of alpha inflation, it would not be appropriate in this case.

Following the empirical investigation into the relationship between household income, physical health and mental wellbeing, household income was de-transformed to establish the numerical monetary threshold (in ZAR) at which maintaining physical health and mental wellbeing is 'quite possible' and individuals rate themselves as physically healthy 'often.' This contribution is novel as it quantifies a specific income level required to maintain/sustain physical health and mental

wellbeing which has previously not been done in South Africa. Identifying this threshold provides organisations with the information necessary to support employee health and enhance productivity, engagement and organisational success.

The methodology outlined in this chapter provided the framework for investigating the relationship between household income, physical health, and mental wellbeing within the South African context. The following chapter presents the results of the data analyses, illustrating the nature of these relationships. Key findings related to the study's hypotheses are detailed, forming the foundation for the discussion in the subsequent chapter.

4. RESULTS

This chapter presents the results of the statistical analyses used to examine the relationship between monthly household income and perceived ability to maintain physical and mental wellbeing and self-perceived physical health of working individuals residing in South Africa.

The chapter starts with an overview of the descriptive statistics related to the study variables. The results related to the inferential statistics related to the research question follow before a monetary threshold for sustainable health is identified.

4.1 Descriptive Statistics

4.1.1 Central Tendency and Distribution of Study Variables

As shown in Table 1, the mean monthly net household income among the 1,665 participants was ZAR 11,236.92 (SD: ZAR 6,887.31), ranging from ZAR 500 to ZAR 28,400 per household per month. Even though health-related perceptions varied from very negative to very positive, most responses were on the positive end of the spectrum for all three items. As the response format for all three items was ordinal, the frequencies and percentages of the sample choosing each response option are presented. The distribution of household income showed minor deviations from normality. Household income had a skewness value of .70 (*SE* = .06) and a kurtosis value of -.57 (*SE* = .12). This shows a moderate right skew indicating that most incomes are lower with a few of the higher incomes pulling the distribution to the right.

The distribution of the number of people supported by income had a skewness of 1.21 (*SE* = .60) and kurtosis of 2.71 (*SE* = .12) indicating that the distribution is strongly positively skewed and platykurtic. The mean, median, standard deviation, min, max and *N* can be seen in Table 1.

For the perceived ability to maintain physical health, 2.7% (*N* = 45) of the sample found it ‘completely impossible’, 16.2% (*N* = 268) found it ‘almost impossible’, 53.1% (*N* = 878) found it ‘quite possible’ and 28.0% (*N* = 463) found it ‘completely possible’ to maintain their physical health.

These results were highly similar to participants’ perceived ability to maintain mental wellbeing, as 3.6% (*N* = 60) of the sample found it ‘completely impossible’, 21.7% (*N* = 359) found it ‘almost

impossible', 53.4% (*N* = 884) found it 'quite possible' and 21.3% (*N* = 352) found it 'completely possible' to maintain their mental wellbeing.

The self-perceived health question asked how often individuals felt 'physically well.' The least chosen response option was 'never' with 1.5% (*N* = 25), 5.4% (*N* = 89) of the sample indicated 'almost never', 21.0% (*N* = 349) of the sample indicated 'sometimes', 27.6% (*N* = 458) indicated 'often', 24.7% (*N* = 412*)* 'almost always' and 19.6% (*N* = 326) of the sample indicated 'always.'

Table 1

Descriptive Statistics for Household Income, Health Indicators and Number of People Supported by Income

Variable	Mean	Median	SD	Min	Max	N
Net Monthly Household Income (ZAR)	11,236.92	9,300.00	6,887.31	500	28,900	1,665
Ability to Maintain Physical Health (Q37)	-	3	-	1	4	1,654
Self- Perceived Physical Health (Q48)	-	4	-	1	6	1,659
Ability to Maintain Mental Wellbeing (Q38)	-	3	-	1	4	1,655
Number of People Supported by Income	3.63	3	2.04	1	15	1,644

Note. Disparities in 'N' are due to incomplete response sets.

Table 2 illustrates the means, medians, standard deviation, min, max (all in ZAR) and the *N* (number of respondents) of each category of the variables: perceived ability to maintain physical health, perceived ability to maintain mental health and self-perceived physical health.

Table 2

Descriptive Statistics for Each Category of the Variables: Perceived Ability to Maintain Physical Health, Perceived Ability to Maintain Mental Wellbeing and Self-Perceived Physical Health

Variable	Categories	Mean	Median	SD	Min	Max	N
Perceived Ability to Maintain Physical Health	Completely Impossible	7,717.96	6,000.00	4,939.24	1,500	23,000	45
	Almost Impossible	8,759.66	7,000.00	5,878.42	700	27,000	268
	Quite Possible	11,816.08	10,000.00	7,002.59	980	29,400	878
	Completely Possible	11,948.78	10,000.00	6,987.41	500	29,100	463
Perceived Ability to Maintain Mental Wellbeing	Completely Impossible	6,934.73	6,000.00	3,934.41	1,500	20,000	60
	Almost Impossible	9,776.26	8,000.00	6,022.85	600	26,000	359
	Quite Possible	11,846.54	10,000.00	7,058.25	980	29,400	884
	Completely Possible	11,973.79	10,000.00	7,228.74	500	29,100	352
Self-Perceived Physical Health	Never	7,966.92	7,000.00	4,519.89	1,500	18,000	25
	Almost Never	8,979.76	7,000.00	6,140.88	1,205	27,000	89
	Sometimes	10,495.96	8,500.00	6,806.62	1,200	29,000	349
	Often	11,721.75	10,000.00	7,143.69	600	29,400	458
	Almost Always	11,958.79	10,000.00	6,884.62	700	29,000	412
	Always	11,335.43	9,900.00	6,702.79	500	29,100	326

4.1.2 Bivariate Relationships Between Study Variables

As the study variables were a mixture of ratio (household income, number of individuals supported by household income) and ordinal variables (health indicator variables), the bivariate correlations were determined using Spearman rank correlations as this correlation procedure does not require continuous and normally distributed variables. The correlation coefficients and associated p-values are shown in Table 3. The effect sizes were assessed using Cohen's (1988) guidelines: 0.01 to 0.29 were considered a small effect, 0.30 to 0.49 a medium effect and correlations greater than 0.50 as a large effect size. Based on these guidelines, monthly household income showed weak but significant correlations with all three of the health indicator variables. These correlations were equivalent in size to the correlations between the health indicator variables and individual income which was positively and strongly correlated with household income. There was a large correlation between the perceived ability to maintain physical health and perceived ability to maintain mental wellbeing. The assumed covariate (number of people supported by household income) was not significantly related to individual or household income or self-perceived physical health. There were very small but statistically significant correlations indicating that a greater number of individuals supported by household income related to lower ability to maintain physical health and mental wellbeing.

4.2 Inferential Statistics

It was originally theorised that to gain a more accurate understanding of the relationship between these factors, controlling for the number of people supported by income would be necessary. This was based on the assumption that should there be more individuals needing to be supported by household income, the less income an individual would have to support physical health and mental wellbeing, influencing this relationship. This would have necessitated three separate Analysis of Covariances (ANCOVAs) with the number of individuals supported by household income as a covariate, the health indicator variable as the independent variable and household income as the dependent variable. Separate ANCOVAs, each including just one independent variable, were envisaged instead of one 4 x 4 x 6 ANCOVA as combining the variables would test the overall effect of household income on all outcomes simultaneously, obscuring the distinct impact of household income on physical health and mental wellbeing separately.

Table 3

Spearman rank correlations of IVs, DV and Control Variable

	Individual Income	**Perceived Ability to Maintain Physical Health**	**Perceived Ability to Maintain Mental Wellbeing**	**Self-Perceived Physical Health**	**Number of Individuals Supported by Household Income**
Monthly Household Income	**.65** ($p < .001$) ($N = 1,664$)	**.15** ($p < .001$) ($N = 1,654$)	**.14** ($p < .001$) ($N = 1,655$)	**.10** ($p < .001$) ($N = 1,659$)	.01 ($p = .650$) ($N = 1,644$)
Individual Income		**.15** ($p < .001$) ($N = 1,653$)	**.15** ($p < .001$) ($N = 1,654$)	**.09** ($p < .001$) ($N = 1,658$)	-.01 ($p = .818$) ($N = 1,643$)
Perceived Ability to Maintain Physical Health			**.52** ($p < .001$) ($N = 1,649$)	**.43** ($p < .001$) ($N = 1,648$)	**-.10** ($p < .001$) ($N = 1,633$)
Perceived Ability to Maintain Mental Wellbeing				**.30** ($p < .001$) ($N = 1,649$)	**-.06** ($p <. 05$) ($N = 1,638$)
Self-Perceived Physical Health					-.04 ($p = .109$) ($N = 1,643$)

As the bivariate correlations had shown that the number of individuals supported by household income was not related to the size of household income (see Table 3), it was not necessary to control for the number of people supported by income. Univariate ANOVA was thus employed with household income as the dependent variable and each of the health indicators as independent variables, due to the ANOVA's requirement for a continuous dependent variable.

4.2.1 ANOVA Assumption Testing

The dependent variable was continuous, and the independent variable consisted of two or more categorical independent groups, which ensures that two of the assumptions that data needs to fulfil for ANOVA to provide meaningful results were met. Each observation was independent as each participant within the sample was present in only one of the categories of the independent

variables, which met the assumption of independence of observations. Additionally, the box and whisker plots for perceived ability to maintain mental wellbeing and self-perceived physical health indicated no significant outliers. However, perceived ability to maintain physical health indicated a single significant outlier that was higher than expected in the group 'completely impossible' (see Appendix B, figures B1 to B3). Significant outliers can indicate a violation of ANOVA assumptions, such as normality and homogeneity of variance. Addressing such outliers, particularly in a category where $N = 45$, is important as it can greatly influence the category mean and variance, biasing results. This violation is addressed in sections 4.2.2 and 4.2.3.

Levene's test was used to check the assumption of homogeneity of variance. The Levene's test for all three ANOVAs was significant (perceived ability to maintain physical health as independent variable: $F(3, 1650) = 14.89$, $p < .001$; perceived ability to maintain mental wellbeing as independent variable: $F(3, 1651) = 21.51$, $p < .001$; self-perceived physical health as independent variable: $F(5, 1653) = 3.35$, $p = .005$). This indicated that the assumption of homogeneity of variance was violated in all three models.

To check the assumption of normal distribution of the dependent variable (household income) at each level of the independent variables, a Shapiro-Wilk test was conducted on each level of the three independent variables. The significant test results displayed in Table 4 show that normality was violated in each case. Though this is a likely result when large samples are used, the Q-Q plots in Appendix C, D and E supported these results. The Q-Q plot depicts the percentage of error scores expected to lie below each value if the error distribution was normal versus the percentage of error scores falling below each of these values in the sample.

Table 4 illustrates the results of the Shapiro-Wilk test on perceived ability to maintain physical health was significant for all four categories: 'Completely impossible', 'almost impossible', 'quite possible' and 'completely possible.' Q-Q plots were used to further investigate and confirm this deviation from normality (see Appendix C, Figures C1 to C4).

The same can be said for perceived ability to maintain mental wellbeing with each category indicating significance (see Table 6). These were: 'completely impossible', 'almost impossible', 'quite possible' and 'completely possible'. Q-Q plots also indicated significant deviations from normality (see Appendix D, Figures D1 to D4).

Table 4

Results of Shapiro-Wilk Test with the Three Ordinal Variables: Perceived Ability to Maintain Physical Health, Perceived Ability to Maintain Mental Wellbeing and Self-Perceived Physical Health.

Variable	Category	W Statistic	p-value	*N*
Perceived Ability to Maintain Physical Health	Completely Impossible	.82	< .001	45
	Almost Impossible	.89	< .001	268
	Quite Possible	.93	< .001	878
	Completely Possible	.94	< .001	463
Perceived Ability to Maintain Mental Wellbeing	Completely Impossible	.86	< .001	60
	Almost Impossible	.91	< .001	359
	Quite Possible	.94	< .001	884
	Completely Possible	.93	< .001	352
Self-Perceived Physical Health	Never	.92	< .001	25
	Almost Never	.87	< .001	89
	Sometimes	.90	< .001	349
	Often	.93	< .001	458
	Almost Always	.94	< .001	412
	Always	.93	< .001	326

The Shapiro-Wilk test conducted on the categories of self-perceived physical health indicated significance for all 6 categories: 'never', 'almost never', 'sometimes', 'often', 'almost always' and 'always' (see Table 6). Q-Q plots affirmed this deviation from normality (see Appendix E, Figures E1 to E6). These Shapiro-Wilk tests indicated that the assumption of normal distribution of the dependent variable at each category of the independent variable(s) is violated for each of the three independent variables.

4.2.2 Variable Transformation

Due to the violation of the assumption of normal distribution of the dependent variable at each category of the independent variables, the decision was taken to log transform the dependent variable, household income, in hopes of creating an income distribution which more closely resembled a normal distribution. Log transformations create a distribution that more closely resembles a normal distribution by compressing larger values and spreading out smaller values. This transformation also stabilises the variance which aids in ensuring that the assumptions of ANOVA are met (Field, 2018).

4.2.3 ANOVA Assumption Testing with Log-Transformed Household Income

After the log transformation, there were no longer extreme outliers in the dependent variables as shown in the Box and Whisker plots in Figure 3.

Levene's test was used to investigate the assumption of homogeneity of variance. Perceived ability to maintain physical health and self-perceived physical health both showed non-significant results with $F(3, 1650) = 1.18$, $p = .316$ and $F(5, 1653) = 0.72$, $p = .607$, respectively, meeting the assumption of homogeneity of variance. Levene's test for perceived ability to maintain mental wellbeing, however, was significant ($F(3, 1651) = 3.73$; $p = .011$) indicating a violation of this assumption. However, the literature indicates that should the largest group variance be no more than four times the size of the smallest variance, ANOVA is robust against this assumption violation (Schmider et al., 2010). This was the case as the largest variance was $s^2 = .463$ and the smallest $s^2 = .264$. However, out of an abundance of caution, this violation was addressed by using a Welch Test (a variant of ANOVA) and a Games – Howell post hoc test as both account for a violated assumption of homogeneity of variance.

Table 5

Results of Shapiro-Wilk Test (After Log Transformation of Household Income) with the Three Ordinal Variables: Perceived Ability to Maintain Physical Health, Perceived Ability to Maintain Mental Wellbeing and Self-Perceived Physical Health.

Variable	Category	W Statistic	p-value	*N*
Perceived Ability to Maintain Physical Health	Completely Impossible	.97	.220	45
	Almost Impossible	.99	.006	268
	Quite Possible	.97	< .001	878
	Completely Possible	.95	<.001	463
Perceived Ability to Maintain Mental Wellbeing	Completely Impossible	.98	.448	60
	Almost Impossible	.97	< .001	359
	Quite Possible	.97	< .001	884
	Completely Possible	.95	<.001	352
Self-Perceived Physical Health	Never	.97	.630	25
	Almost Never	.99	.485	89
	Sometimes	.98	<.001	349
	Often	.97	.630	458
	Almost Always	.96	< .001	412
	Always	.96	< .001	326

To test if the dependent variable was normally distributed at each level of the independent variables, Shapiro-Wilk tests were conducted on each level of the independent variables (see Table 5). For perceived ability to maintain physical health, there were no significant deviations from normality in the 'completely impossible' category. The dependent variable was not normally distributed among participants who had provided 'almost impossible', 'quite possible' or 'completely possible' as is evidenced through significant test statistics as displayed in Table 5.

Equivalent results were found when the perceived ability to maintain mental wellbeing was considered as the independent variable. The household income data for participants who saw it as 'completely impossible' to maintain their mental wellbeing did not differ significantly from a normal distribution (see Table 5 above). This was not the case for the household income data among participants who had indicated that it was 'almost impossible', 'quite possible' or 'completely possible' to maintain their mental wellbeing.

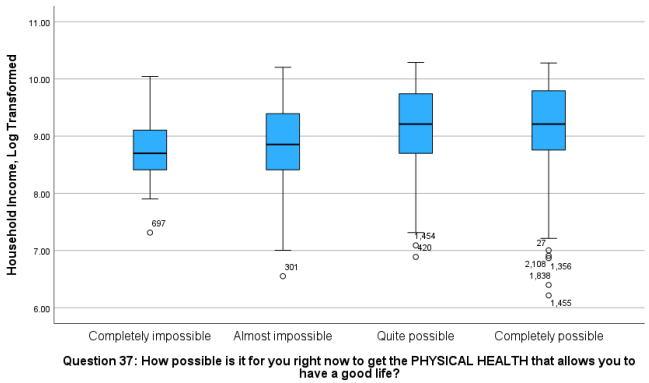
For self-perceived physical health (see Table 5 above), household income was normally distributed for the categories of 'never' and 'almost never', but not for participants who had indicated 'sometimes', 'often', 'almost always' or 'always' for this independent variable. Visual investigations of the residual Q-Q plots illustrated a great improvement over the non-transformed data. Deviations from normality remained towards the upper end of the dataset for each of the categories of the independent variables (see Appendix F, G and H, Figures F1 to F4, Figure G1 to G4 and Figure H1 to H6 for Q-Q plots).

Given that ANOVA is robust to minor deviations in normality (Schmider et al., 2010), it was deemed appropriate to proceed with ANOVAs using the log-transformed income scores, using Tukey's Honest Significant Difference (HSD) for perceived ability to maintain physical health and self-perceived physical health and a Welch test with a Games-Howell post hoc test for perceived ability to maintain mental health.

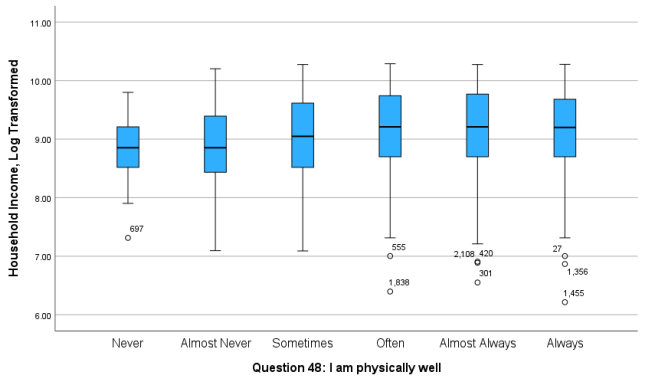
Figure 2

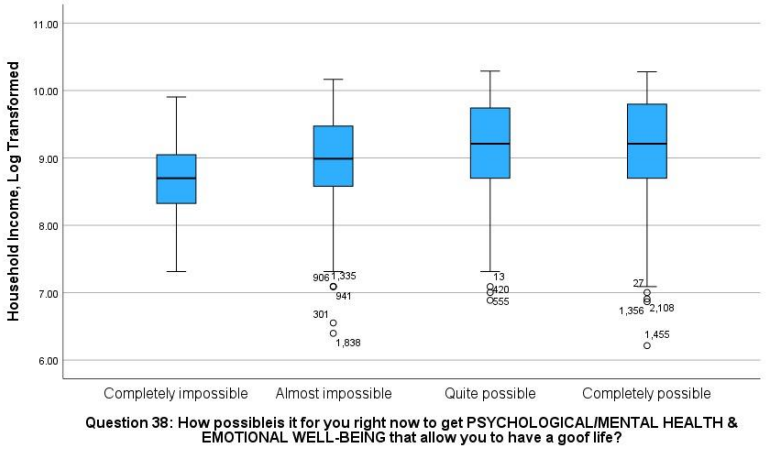
Box and Whisker plots of log transformed Household Income for each level of the (a) Perceived Ability to Maintain Physical Health, (b) Psychological/Mental Health and Emotional Wellbeing and (c) Self-Perceived Physical Health variables

(a) *(b)*



(c)





4.2.4 Model 1: Perceived Ability to Maintain Physical Health and Household Income (Hypothesis 1)

A one-way ANOVA was conducted to examine whether there were differences in household income (dependent variable) among individuals who differed in their perceived ability to maintain physical health (independent variable). The results showed that household income differed significantly between the perceived ability to maintain physical health categories, $F(3, 1650) = 21.60$, $p < .001$.

Table 6

Tukey's HSD Post hoc Comparison Between the Categories of Perceived Ability to Maintain Physical Health

Compared Group (I)	Comparative Group (J)	Mean Difference (I-J)	Std. Error	Significance
Completely Impossible	Almost impossible	-.06	.11	.938
	Quite possible	-.39	.10	**< .001**
	Completely Possible	-.40	.11	**< .001**
Almost impossible	Quite possible	-.33	.05	**< .001**
	Completely possible	-.34	.05	**< .001**
Quite Possible	Completely possible	-.01	.04	.996

Post hoc comparisons using Tukey's HSD test (Table 6) revealed that individuals who found it 'completely impossible' to maintain the physical health that would allow them to have a good life ($M = 8.79$, $SD = .57$, $N = 45$) and those who found it 'almost impossible' ($M = 8.85$, $SD = .71$, $N = 268$) reported significantly lower household incomes than those who found it 'quite possible' ($M = 9.18$, $SD = .67$, $N = 878$) or 'completely possible' ($M = 9.19$, $SD = .69$, $N = 463$) to maintain their physical health. However, no significant differences emerged between those who saw it as completely impossible and almost impossible to maintain their physical health and between those who found the same as 'quite possible' and 'completely possible'. These

results affirm the hypothesis that higher household income is significantly associated with a better perceived ability to maintain physical health.

4.2.5 Model 2: Perceived Ability to Maintain Mental Wellbeing (Hypothesis 2)

A Welch test (ANOVA) was conducted to examine the effects of monthly household income on perceived ability to maintain mental wellbeing. The results showed significant differences between the perceived ability to maintain mental wellbeing categories, $F(3, 256.53) = 19.10$, $p < .001$. As the assumption of homogeneity of variance was violated, a Games-Howell post hoc test was used to determine which groups differed from each other, as it accounts for this violation (Field, 2018).

Table 7

Games-Howell Post hoc Comparison Between the Categories of Perceived Ability to Maintain Mental Wellbeing

Compared Group (I)	Comparative Group (J)	Mean Difference (I-J)	Std. Error	Significance
Completely Impossible	Almost impossible	-.28	.08	**.003**
	Quite possible	-.47	.07	**< .001**
	Completely Possible	-.47	.08	**< .001**
Almost impossible	Quite possible	-.18	.04	**< .001**
	Completely possible	-.18	.05	**< .001**
Quite Possible	Completely possible	.0004	.04	.999

The Games-Howell post hoc test (see Table 7) revealed that those who found it ‘completely impossible’ ($M = 8.71$, $SD = .53$, $N = 60$) to maintain the psychological/mental wellbeing to have a good life reported a significantly lower monthly household income than those who found it ‘almost impossible’ ($M = 8.99$, $SD = .67$, $N = 359$), ‘quite possible’ ($M = 9.17$, $SD = .68$, $N = 884$) and ‘completely possible’($M = 9.17$, $SD = .71$, $N = 352$). Those who found it

'almost impossible' reported significantly less monthly household income than those who found it 'quite possible' as well as 'completely possible'. A non-significant difference was found between those in the 'quite possible' and 'completely possible' groups. These results affirm the hypothesis that higher household income is significantly associated with a better perceived ability to maintain mental wellbeing.

4.2.6 Model 3: Self-Perceived Physical Health (Hypothesis 3)

The one-way ANOVA with self-perceived physical health as the independent variable and household income as the dependent variable showed that the average household income differed between individuals in the different self-perceived physical health groups, $F(5, 1653) = 5.51$, $p < .001$.

Table 8

Tukey's HSD Post hoc Categories between the Categories of Self-Perceived Physical Health

Compared Group (I)	Comparative Group (J)	Mean Difference (I – J)	Std. Error	Significance
Never	Almost Never	-.07	.15	.998
	Sometimes	-.22	.14	.623
	Often	-.34	.14	.115
	Almost Always	-.38	.14	.072
	Always	-.32	.14	.220
Almost Never	Sometimes	-.16	.08	.389
	Often	-.27	.08	**.008**
	Almost Always	-.32	.08	**.001**
	Always	-.25	.08	**.025**
Sometimes	Often	-.12	.05	.158
	Almost Always	-.16	.05	**.015**
	Always	-.10	.05	.446
Often	Almost Always	-.04	.05	.928
	Always	.02	.05	.999
Almost Always	Always	.06	.05	.795

Post hoc testing using Tukey's HSD (see Table 8) illustrated that the household income of individuals who felt 'never' ($M = 8.82$, $SD = .62$, $N = 25$) physically well did not differ

significantly from any of the other groups ('almost never': M = 8.88, SD = .68, N = 89, 'sometimes' (M = 9.04, SD = .69, N = 349), 'often' (M = 9.15, SD = .70, N = 458), 'almost always' (M = 9.20, SD = .66, N = 412) 'always' (M = 9.13, SD = .69, N = 326). While the mean differences are large, 'never' only had 25 responses, which could account for the lack of significance when compared to the other groups.

Those who almost never felt physically well indicated a significantly lower monthly household income compared to those who 'often' 'almost always' and 'always' felt physically well. Those who sometimes felt physically well had a significantly lower household income compared to those who almost always felt physically well but their household income did not differ significantly from any other group. The household income of those who often, almost always and always felt physically healthy did not differ significantly.

These findings affirm the hypothesis that higher household income is significantly associated with better self-rated health. However, the number of non-significant results between some adjoining categories highlights a potential issue with the current six-category scale. The lack of differences between certain categories could be due to a low number of respondents in categories due to the oversaturation of options. As adjoining categories may too similar (eg: never and almost never), this may lead to a lack of differentiation ultimately leading to non-significant results. The same could be said for 'quite possible' and 'completely possible' for perceived ability to maintain physical health and perceived ability to maintain mental wellbeing. An alternative explanation is that, similar to the absolute income hypothesis, the income-health effect is diminished towards the upper end of the income spectrum.

4.3 Establishing the Monetary Threshold for Sustainable Health

To establish a monetary threshold associated with sustainable health, the results of each ANOVA were evaluated to identify the significant differences between the health categories. For both perceived ability to maintain physical health and perceived ability to maintain mental wellbeing, there was a significant difference between 'completely impossible' and 'quite possible' (see Table 6 and 7). For self-rated physical health, there was a significant difference between 'almost never' healthy and 'often' healthy (see Table 8). Based on these findings, the decision was taken that the category of 'quite possible' represents sustainable health for perceived ability to maintain physical health and mental wellbeing while "often" represents being physically healthy a reasonable amount of the time.

Household income was then de-transformed and the descriptive statistics of the variables (see Table 2) were used to determine the mean household income (in ZAR) that is associated with the categories ‘quite possible’ and ‘often’. The mean household income for those who perceived it ‘quite possible’ to maintain physical health was ZAR 11,816.08 (*SD* = 7,002.59) per month. The mean household income for those who perceived it ‘quite possible’ to maintain mental wellbeing was ZAR 11,846.54 (*SD* = 7,058.25) per month. The mean household income for those who self-reported being physically healthy ‘often’ was ZAR 11,721.75 (*SD* = 7,143.69) per month.

The large standard deviations observed in these thresholds indicate a large amount of variability of household income within each category. This suggests that while the mean amount serves as a useful benchmark, additional factors may influence health outcomes. One potential explanation for this variability may be differences in household sizes, where bigger households see their income divided by a greater number of individuals leading to increased difficulty in maintaining physical health and mental wellbeing or being physically healthy. A second explanation may be differences in the cost of living in differing regions of the country, where small towns or rural areas are more affordable and require less household income to maintain health and be physically health.

Based on these results, the mean household income threshold associated with individuals' ability to sustain their physical health and mental wellbeing while being physically healthy a reasonable amount of the time is approximately ZAR 11,850. This threshold represents a benchmark for understanding the relationship between household income and sustainable health.

Concluding Remarks

The results of this study indicated significant positive relationships between monthly household income and ability to maintain physical health, ability to maintain mental wellbeing and self-perceived physical health. While the correlations demonstrated that higher income was associated with better health outcomes, the ANOVA tests allowed for deeper examination by illustrating the nature of the relationship between household income and the Likert categories of the three ordinal variables. The results indicated which groups had significant differences with the others and which did not. These results then enabled the identification of the household income threshold that corresponds to sustainable health outcomes which was approximately ZAR 11,850.

The following discussion chapter will discuss the implications of the identified monetary threshold associated with sustainable health before reflecting on the results of the hypotheses and potential reasons for the findings of this study. The practical implications of these findings are outlined before the theoretical contributions of this study are discussed. The limitations of this study are evaluated and recommendations for future research are put forward. Finally, the chapter concludes with an overview of this dissertations findings.

5. DISCUSSION

The dissertation aimed to affirm the strength and direction of the relationship between household income and physical and mental wellbeing in South Africa to evaluate whether employee physical health and mental wellbeing benefit from higher pay and, in turn, employers from healthier employees. Based on a review of existing literature in Chapter 2, it was hypothesised that higher household income is associated with a higher perceived ability to maintain the physical health and mental wellbeing required to live a good life and ability to be physically healthy. The results supported all three hypotheses. Furthermore, this dissertation aimed to identify a monetary threshold associated with sustainable health. The identified threshold was ZAR 11,850 per month.

In this chapter, the implications of these findings are discussed after comparing them to related literature. The implications of these findings for practice are then outlined, limitations discussed and suggestions for future research on income, physical health and mental wellbeing which arise from this study are provided.

5.1 Discussing the Monetary Threshold for Sustainable Health

The key contribution of this study is the determination of the household monetary threshold that would be associated with an individual's ability to sustain their physical health and mental wellbeing and be physically healthy a reasonable amount of the time. Due to the cross-sectional nature of this study, causality cannot be inferred between household income and the health variables. Therefore, the monetary threshold serves as a guide to the household income level associated with sustainable health rather than determining that said household income level leads to sustainable health.

Based on the results, the mean household income threshold associated with individuals' ability to sustain their physical health and mental wellbeing while being physically healthy a reasonable amount of the time is approximately ZAR 11,850. This is a critical insight as it highlights not only the health challenges experienced by individuals with lower household incomes but also allows organisations to understand the monetary threshold that is associated with sustainable physical health and mental wellbeing. This could potentially have implications for organisational outcomes such as productivity, turnover and job satisfaction (Goetzel et al., 2014; White et al., 2015). However, it’s important to note that this threshold should serve as a guide and that the threshold may differ across regions of the country (rural vs urban) as can be evidenced by the large standard deviation.

This threshold of ZAR 11,850 is particularly noteworthy as it is more than double the monthly national minimum wage (ZAR 4,968.40) in South Africa when working the maximum allotted hours of 45 per week as governed by the Basic Conditions of Employment Act (Republic of South Africa, 1997). The implication is that in a household with two income earners, if both earners are at minimum wage, the total monthly household income would not meet the threshold associated with an individual's ability to maintain physical health and mental wellbeing or with being physically healthy a reasonable amount of the time.

As organisations are the leading controllers of individual income, which is a key contributor to household income, they are uniquely positioned to influence the health of the workforce by implementing a wage that meets or exceeds the household income threshold identified. As employee health (both physical health and mental wellbeing) is associated with higher levels of job satisfaction, increased productivity, increased retention, increased engagement, lower costs and reduced absenteeism, meeting this monetary threshold may translate to significant benefits in organisational performance, efficiency and effectiveness (Bryan et al., 2021; Goetzel et al., 2014; Sonnentag et al., 2023; White et al., 2015; Wu et al., 2021).

The question of whether the increased cost of paying all employees at this threshold amount is outweighed by the organisational benefits is complex, likely influenced by numerous contextual factors (such as organisational size or the industry type), and is beyond the scope of this study. This question should, however, go beyond a pure "cost-benefit" analysis. The WHO asserts that "the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition (World Health Organization, 2005, p. 1)" Ensuring that full-time employees receive an income that sufficiently allows them to sustain/maintain their physical health and mental wellbeing aligns with this principle which illustrates an ethical motivation to meet this threshold.

5.2 Results Compared to Hypotheses

The hypotheses were tested by comparing the household income among participants who had indicated that it was completely impossible, almost impossible, quite possible and completely possible to obtain the physical and mental wellbeing they needed to live a good life, and between participants who never felt healthy, almost never, sometimes, often, almost always and always felt healthy. While not all groups differed significantly in their household income, the trend corresponded to the findings of other studies between income, physical health and

mental wellbeing (Burns et al., 2017; Ecob & Smith, 1999; Fang et al., 2023; Fritzell et al., 2004; La Porta & Zapperi, 2024; Li et al., 2023; Meisters et al., 2023; Rauf, 2023; Sareen et al., 2011; Syren et al., 2020; Thomson et al., 2022).

5.2.1 Household Income and Physical Health

Hypothesis 1 stated that higher household income is associated with a significantly better perceived ability to maintain physical health in South Africa. Hypothesis 3 stated that higher household income is associated with significantly better self-rated health.

The findings from the Spearman rank correlations and ANOVA analyses affirmed these hypotheses by finding that higher household income was indeed associated with an increased perceived ability to maintain physical health and higher self-rated physical health.

5.2.1.1 Correlations

The Spearman rank correlation analyses conducted between household income and both physical health measures revealed statistically significant positive, albeit small, relationships ($r = .15$, $p < .001$; $r = .10$, $p < .001$). While the correlation may be modest, this is to be expected as individual physical health is extremely multifaceted and can be influenced by factors beyond household income such as lifestyle choices, environmental conditions or predisposition to certain illnesses (Mukong et al., 2017; Vanzella-Yang & Veenstra, 2021).

These modest correlations may be explained by the fact that in South Africa, the public healthcare system allows for free or affordable healthcare, allowing those with lower household incomes to receive essential care despite their lack of funds (Govender et al., 2021). Furthermore, correlations between income and health vary widely in the research dependent on the conceptualisations of health and income in the literature (Igelstrom et al., 2024). These modest correlations could also be explained, in part, due to the conceptualisation of physical health as ‘perceived ability to maintain physical health’ and ‘self-rated physical health’ as opposed to other conceptualisations present in literature such as ‘presence of long-standing illnesses’ or ‘life-expectancy’ (Ataguba et al., 2015; Braveman et al., 2010; Chetty et al., 2016; Schwandt et al., 2022).

Although the correlations are modest, they highlight an important link between household income and physical health for organisations to take note of. Even modest correlations, at an individual level, can have significant impacts at the organisational level when physical health improves across a workforce due to increased income.

5.2.1.2 ANOVAs

The ANOVA analyses with Tukey's HSD post-hoc tests were conducted to examine whether household income differed significantly across the health categories of the variables perceived ability to maintain physical health and self-rated physical health.

For perceived ability to maintain physical health, significant differences were found between most of the health categories except for between 'completely impossible' and 'almost impossible' and between 'quite possible' and 'completely possible'. The lack of significant difference between 'completely impossible' and 'almost impossible' could be due to minimal income variation between the two groups. Using de-transformed household income, the mean household income threshold value for 'completely impossible' was ZAR 7,717.96 (*SD* = 4939.24) while for 'almost impossible' it was ZAR 8,759.66 (*SD* = 5,878.32). The similarity in the household income levels suggests that individuals in these health groups likely face similar economic constraints resulting in similar perceptions of their lack of perceived ability to maintain physical health.

A similar reasoning may be used for the lack of significant difference between 'quite possible' (ZAR 11,816.08, *SD* = 7,002.59) and 'completely possible' (ZAR 11,948.78, *SD* = 6,987.41). The similarity in household income threshold indicates similar economic positions which likely means that individuals have similar access to health-promoting resources such as healthy foods and education (Fang et al., 2023; Fritzell et al., 2004). Furthermore, as has been established in the absolute income hypothesis, at higher income levels, further increases in income have diminishing positive health effects (Adeline & Delattre, 2017; Preston, 1975). Therefore, once an individual perceives maintaining their physical health as 'quite possible' they may have the household income necessary to maintain physical health. Increasing income may no longer significantly impact individuals' perceived ability to maintain physical health.

For self-rated health, significant differences were only found between categories 'almost never' when compared to 'often', 'almost always', 'always' as well as category 'sometimes' when compared to 'almost always'. The lack of significant differences between numerous combinations of the categories (see Table 8 in Results) could be due to the six-point Likert scale having adjoining categories (such as 'never' and 'almost never') whose health experiences are too similar, accounting for the lack of statistically significant difference. Additionally, the six-point Likert scale may lead to certain groups having fewer participants which reduces the statistical power and ability to detect significant differences between these groups (Field, 2018).

Outside of those non-significant results, the overarching results indicate that as household income increases, individuals are more likely to perceive themselves as capable of maintaining their physical health and report themselves as being healthy more often in the South African context. These findings are consistent with literature that identifies income as an important factor when it comes to influencing health outcomes (Ecob & Smith, 1999; Finkelstein et al., 2022; Fritzell et al., 2004; Igelstrom et al., 2024; La Porta & Zapperi, 2024; Meisters et al., 2023; Schwandt et al., 2022). These findings also align with the absolute income hypothesis that states that higher levels of income are associated with higher levels of health (Adeline & Delattre, 2017; Preston, 1975).

While identifying the mechanisms through which household income influences individual physical health is beyond the scope of this study, the literature theorises that higher levels of income allow individuals to be more physically healthy due to decreased financial stress, increased educational opportunities (which educate people to live healthier lifestyles), increased access to healthy foods, better living conditions, better health behaviours and increased access to private or higher quality healthcare (Beck et al., 2015; Cui & Chang, 2021; Fang et al., 2023; Finkelstein et al., 2022; Knifton & Inglis, 2020; Mukong et al., 2017; Murray, 2006; Shields-Zeeman et al., 2021). All of these may factor into the relationship between household income and physical health as was present in this study.

These findings highlight the association between household income and physical health outcomes. This could be useful to organisations as it highlights the level of household income at which sustainable employee physical health is present. This provides a potential avenue for organisations to increase performance and efficiency, by paying an adequate wage. The implications that these results will have on workplace policies and organisational outcomes will be discussed in the practical implications section.

5.2.2 Household Income and Mental Wellbeing

Hypothesis 2 stated that higher household income is associated with a significantly better perceived ability to maintain mental wellbeing. The Spearman rank correlation and ANOVA analysis affirmed this hypothesis and found that household income is indeed associated with a better perceived ability to maintain mental wellbeing.

5.2.2.1 Correlation

Similar to the physical health variables, the Spearman rank correlation analysis conducted between household income and the perceived ability to maintain mental wellbeing revealed a

significant small correlation ($r = .14$, $p < .001$). This is likely due to the multifaceted nature of individual mental wellbeing. Mental wellbeing can be influenced by numerous factors outside of household income such as life events (such as trauma), social networks and social support, personal personality traits (such as resilience) and personal health behaviours (exercise, substance use) (Burns et al., 2017; Klainan-Yobas et al., 2021; Mukong et al., 2017; Wyatt et al., 2018). That being said, research has shown that income is associated with some of these mental wellbeing factors such as personal health behaviours and social networks (Burns et al., 2017; Mukong et al., 2017). The secondary data analysis places constraints on evaluating the potential mechanisms through which household income in associated with mental wellbeing.

Furthermore, the perceived ability to maintain mental wellbeing was measured via the question: "How possible is it for you right now to get the psychological/mental health and emotional wellbeing that allows you to have a good life? This refers to giving importance to yourself, having a clear mind, being calm and at peace, and being able to decide for yourself. This also refers to being respected by your family and other people; the ability to handle your problems and face changes." This conceptualisation varies from those present in the literature that generally revolve around the presence of psychological disturbances such as anxiety, depression or psychological distress which generally found stronger associations than those present in this study (Li et al., 2022; Shields-Zeeman et al., 2021; Syren et al., 2020; Thomson et al., 2022).

As was the case with physical health, a small correlation between household income and mental wellbeing is still of interest to organisations as a small effect on an individual can have a larger cumulative effect across a workforce. Especially when combining the association that higher household income has on mental wellbeing with the established association between household income and the physical health variables.

5.2.2.2 ANOVA

A Welch test (ANOVA) analysis with a Games-Howell post hoc test was conducted to evaluate whether household income varied significantly across the health categories of 'completely impossible', 'almost impossible', 'quite possible' and 'completely possible' for the variable perceived ability to maintain mental wellbeing.

Significant differences were found between most categories except for 'quite possible' and 'completely possible.' As was the case with the perceived ability to maintain physical health, the non-significant difference between these categories could be explained by the same two

reasons. Firstly, the de-transformed mean household income threshold values for these two categories show minimal income variation. 'Quite possible' had a mean household income threshold of ZAR 11,846.54 (*SD* = 7,058.25) while 'completely possible' had a mean household income of ZAR 11,973.79 (*SD* = 7,228.74). This indicates that individuals in these categories likely have very similar economic positioning, allowing them access to the resources necessary (such as mental health care and education) to maintain their mental wellbeing (Burns et al., 2017; Thomson et al., 2022). Secondly, there is a potential presence of a 'ceiling effect', where once a certain level of household income (in this case ZAR 11,846.54) is reached the individuals have the resources to maintain mental health and any increase in household income has diminished effect, explaining the non-significant difference between the two groups (Kahneman & Deaton, 2010).

Despite the lack of significant differences between 'quite possible' and 'completely possible', the results indicate that as household income increases, the perceived ability to maintain mental wellbeing increases in the South African context. These findings align with literature that asserts that income is an important influencer of mental wellbeing (Burns et al., 2017; Mukong et al., 2017; Parra-Mujica et al., 2023; Shields-Zeeman et al., 2021; Syren et al., 2020; Thomson et al., 2022). The literature believes that income influences mental wellbeing by reducing financial stress (which is associated with increased depression and anxiety), ensuring greater access to mental wellbeing mitigation resources and ensuring a lower prevalence of unhealthy behaviours such as substance abuse (Burns et al., 2017; Mukong et al., 2017; Parra-Mujica et al., 2023; Shields-Zeeman et al., 2021; Syren et al., 2020; Thomson et al., 2022).

These findings highlight that higher household income is associated with a better perceived ability to maintain mental wellbeing. The implications of this finding as well as the findings on the association between household income and physical health will be discussed in the following "practical implications" section.

5.3 Practical Implications

In the context of organisational psychology, understanding the association between income, physical health and mental wellbeing is of importance for organisations. This is due to the established link between employee physical health and mental wellbeing with organisational outcomes such as absenteeism, turnover, productivity, job satisfaction and costs (Adams, 2019; Diener et al., 2020; Sonnentag et al., 2023). Literature has consistently underlined that healthier employees are less likely to turnover, be absent and are more likely to be engaged and perform

better (Burton et al., 2021; Ogbuoji, 2020; White et al., 2015). These individual employee benefits culminate to improve organisational performance and efficiency (Adams, 2019; Chang, 2024; Kundi et al., 2021). Unhealthy employees, on the other hand, experience higher rates of turnover, absenteeism and lower performance (Goetzel et al., 2014; Wu et al., 2021). This leads to a decline in organisational performance, efficiency and reputation (Chang, 2024; Kundi et al., 2021).

Organisations hold a significant influence over the income levels of their employees through wages and benefits. This allows organisations to potentially influence physical health and mental wellbeing through income. While this study cannot infer causality due to its cross-sectional nature, the observed association between household income, physical health and mental wellbeing underlines the importance of income's association with health.

This study provides practical insights for organisations. This study reinforced the observed association between household income and individual (employee) physical and mental wellbeing in South Africa, factors which ultimately influence organisational outcomes such as job performance, turnover, absenteeism and job satisfaction. Furthermore, this study also identifies a monetary threshold, ZAR 11,850, which is associated with sustainable physical health and mental wellbeing (Adams, 2019; White et al., 2015; Wu et al., 2021). Organisations could use this threshold as a guideline for setting wages that contribute to household income in such a manner that may foster a healthy workforce, reaping the organisational benefits in the process.

It may not be feasible for some organisations to meet the household income threshold due to budgetary constraints. In such cases, the household income threshold may still be used as a guide to implementing health and wellness programmes for those who fall below this threshold as a method of potentially increasing organisational health without increasing wages. Such programs could include access to educational resources on health and wellbeing or access to mental health support (Goetzel et al., 2014; Wu et al., 2021).

To make use of these findings, organisations should consider raising wages to meet the identified threshold or institute health benefits for those who sit below the identified threshold. Doing so will not only bring organisational benefits but will also reflect a broader commitment to social responsibility and ethical practice.

Furthermore, the results of this study will be of great use to the national government of South Africa. The South African government has expressed its commitment to fighting poverty and

inequality as well as improving the health of the country (Republic of South Africa, 2024). By understanding the significant association between income, physical health and mental wellbeing, policymakers can use this information to create targeted interventions that may influence the overall health of the country by meeting the household income threshold such as implementing a higher national living wage or target health intervention for those below the threshold amount.

5.4 Theoretical Contributions

This study makes a significant theoretical contribution by identifying a household monetary threshold of ZAR 11,850 associated with sustainable physical health and mental wellbeing in South Africa. Although the relationship between income and health is relatively well established in South Africa, no prior research has identified a specific income threshold that is associated with sustainable health. This threshold provides specificity to existing income-health theory.

The findings of this study refine the absolute income hypothesis for the context of South Africa. Previous studies have established that higher income is associated with better health, but this study extends those findings by identifying the specific monetary threshold associated with sustainable health. This addresses a gap present in South African literature and moves the narrative from associations between income and health to specific, more actionable thresholds.

Additionally, this study integrates physical health and mental wellbeing as interconnected constructs representing overall individual health. This is useful for organisations as it aligns with theories linking overall employee wellbeing with productivity, engagement and overall organisational performance and success (Haddon, 2018; van der Merwe & Olivier, 2024). By illustrating the association between the household income threshold and sustainable health levels, this study provides support for theories that link compensation to organisational performance outcomes (Leana & Meuris, 2015).

Furthermore, the threshold of ZAR 11,850 offers insights for employers and policymakers alike. It underlines the potential health benefits of compensating individuals (employees) at a level that ensures their household is at this income level. This fosters a healthier workforce (and ultimately society) which leads to the positive organisational outcomes of increased productivity, reduced absenteeism, lower turnover, greater engagement and lower costs which all are integral to organisational efficiency, performance and success (Adams, 2019; Chang,

2024; Diener et al., 2020; Kundi et al., 2021; Sonnentag et al., 2023). This is especially relevant for South Africa where income inequality and health disparities are high.

Lastly, this research provides a foundation for future studies to further explore the relationship between income, health and organisational outcomes. It provides a basis to explore how leveraging compensation can be used to improve the health of an organisation and society while simultaneously meeting ethical and economic goals.

5.5 Limitations

While this study contains a valuable insight into the relationship between household income, physical health and mental wellbeing in the context of South Africa, the limitations of this study need to be acknowledged. These limitations could potentially affect the interpretations of the results and the degree to which they can be generalised to the population or applied to organisational contexts.

One such limitation lies in the use of secondary data. This study relied on using secondary data from the National Living Wage Study, which ultimately restricted the control over the variables measured. This could have restricted the scope of the analysis as original data collection might have allowed an investigation into the mechanisms through which household income influences physical health and mental wellbeing to foster a deeper understanding of how income increases can be used to improve physical health and mental wellbeing.

Furthermore, the variables of physical health and mental wellbeing consisted of three self-reported questions. While research supports the idea that self-rated health is a valid measure of objective health, there is a chance that the simplicity or lack of breadth of these questions may not have fully captured the nuance present in physical health and mental wellbeing. This is likely as physical health and mental wellbeing are multidimensional, influenced by numerous factors (such as the presence of illness, psychological resilience, social support and health behaviours) and these broad self-reported questions may fail to account for or capture these intricacies (Burns et al., 2017; Mukong et al., 2017; Vanzella-Yang & Veenstra, 2021).

Two of the questions were made of a 4-point Likert scale while the third item was a 6-point Likert scale. These Likert scales may not have adequately represented the constructs being measured which could limit how income related to these scales. This could be one explanation for the findings of non-significance between certain groups in each of the items.

Early in the research process, the decision was taken to use household income as the income measure as literature has shown it to be a more suitable indicator of socioeconomic position than individual income (Fang et al., 2023; Fritzell et al., 2004). However, in hindsight, the use of individual income would have allowed for easier interpretation of the income threshold as organisations likely will only have control over individual income and not household income. Additionally, the household income – individual health relationship only focuses on one individual in the household and this study was unable to provide insight as to whether this singular household income would be sufficient to maintain health across the entire household.

The data used for this study was cross-sectional. This ultimately limits the ability to infer causality between household income, physical health and mental wellbeing whereas longitudinal data would be able to strengthen the argument for a causal relationship.

Lastly, this study is working on the assumption that the sample is an accurate representation of the working population of South Africa. As convenience sampling was used, the representativeness of the sample cannot be completely assured. Similarly, as the data was truncated to exclude household income above ZAR 30,000, the impact of higher household incomes is lost which impacts the ability to infer, statistically, the impact of overall income inequality on physical health and mental wellbeing. South Africa has a large unemployed population, who were also not included in the study which further impacts the generalisability of the study to the whole population of South Africa.

5.6 Recommendations for Future Research

Considering the findings and limitations of this study, recommendations can be made for future research. In the case of replication, or further in-depth investigation into the relationship between income, physical health and mental wellbeing, it is recommended to use a multi-item self-rated health measure that captures a holistic picture of overall health. This would allow for greater specificity into the different avenues of health that are influenced by the relationship with income. Future studies should consider using individual income to investigate a monetary threshold as this would allow organisations a more implementable ZAR amount for their employees.

Future research could follow a longitudinal research design which would assist with an even greater understanding of the relationship that household income has on physical health and mental wellbeing over time, whether there is a causal relationship and the direction of this relationship. Future research should also incorporate organisational measures that evaluate

individual and organisational performance and efficiency as influenced by increases in income above the established threshold. The combination of established causality and measured organisational benefits will serve as the ultimate confirmation for organisations that the implementation of adequate wages is in the best interest of organisations nationally (and globally).

As mentioned previously, South Africa has a large unemployed population and including this part of the population in future data analysis would help solidify the relationship between income and health as well as aid in the generalisability of the findings to the population, as a whole, in South Africa.

5.7 Conclusion

This dissertation was conducted to explore the relationship between household income, physical health and mental wellbeing within the context of South Africa. Previous research on this relationship has indicated that there is a significant relationship between these variables. However, no previous research in the country had identified a specific income threshold that was associated with sustainable health. By investigating this relationship within the South African context, using a large and representative sample, this study aimed to address this gap in the literature with the hope of affirming the established relationship while also providing an income threshold that could guide policy and organisational interventions.

The findings of this study supported the hypotheses that household income would be significantly (and positively) related to physical health and mental wellbeing. More specifically, three key models were tested:

1. Model 1 investigated the relationship between household income and the perceived ability to maintain physical health. The results indicated a significant and positive relationship. Individuals from lower-income households were more likely to report that they found it more difficult to maintain their physical health when compared to those of higher household income groups.
2. Model 2 investigated the relationship between household income and the perceived ability to maintain mental wellbeing. The results indicated a significant and positive relationship. Individuals from lower-income households were more likely to report that they found it more difficult to maintain their mental wellbeing when compared to those of higher household income groups.

3. Model 3 investigated the relationship between household income and self-perceived physical health. The results indicated a significant and positive relationship. Individuals from lower-income households were more likely to report a lower self-perceived physical health when compared to those of higher household income groups.

The findings of this study affirm the findings of existing research. The findings of this research also align with the existing theory of the absolute income hypothesis, which states that individuals with higher incomes are able to access health resources, such as health care, healthier living environments and nutritious food which lead to better health outcomes. Individuals with lower incomes are not able to access these resources which ultimately leads to poorer health outcomes and poorer health. This study adds a specific new insight by establishing a household income threshold of ZAR 11,850 that is associated with sustainable health in South Africa.

This research makes a few contributions to existing research and the field. This study affirms the generalisability of income-health theory to low-middle income countries, and more specifically South Africa. This dissertation also adds to the existing literature by showing that income does not only influence physical health but also of mental wellbeing. This supports the notion that income is a significant influencer of overall wellbeing, not just physical health or mental wellbeing independently. There is a complex interrelationship between the two factors.

This research holds significant practical implications. The findings suggest that increasing household income could have enormous benefits for individuals, organisations and the nation as a whole. Higher household income means healthier individuals. Healthier individuals mean healthier employees. Healthier employees mean decreased turnover and absenteeism, increased job satisfaction and productivity which leads to increased organisational efficiency and performance. As more individuals start receiving a wage capable of sustaining health, the healthier the nation becomes.

These findings provide reasoning for organisations to consider the implementation of wages at or above the threshold to not only improve employee health and organisational efficiency but also to improve the health of the nation. Implementation of these wages is not only a sound organisational strategy due to its long-term employee health benefits but it’s also the morally and ethically correct decision to make.

However, while this study provides insights, it’s important to weigh these insights alongside the limitations of this research. This research was constrained by its use of secondary data and

the items this data used to measure physical health and mental wellbeing. The self-reported nature of these health items also opens the potential of over or under-estimation on the part of the participants. Additionally, the cross-sectional nature of this study limits the depths to which the relationship between household income, physical health and mental wellbeing can be evaluated.

In future, research on this relationship could address these limitations by using comprehensive health items and by using longitudinal data. Furthermore, the organisational impacts can be better evaluated by including organisational outcomes in the evaluation of income and health, such as absenteeism or productivity. This would further strengthen the argument for increasing wages (to the threshold amount) both internationally and in South Africa.

In conclusion, this dissertation has clearly shown that there is a significant relationship between household income, physical health and mental wellbeing in the context of South Africa. These findings highlight the importance of addressing health and, in turn, organisational efficiency by addressing income, namely through increasing wages. Both organisations and the government alike should consider increasing wages as a critical method through which to address public health disparities between income and socioeconomic groups.

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Appendix A

SURVEY ON SOUTH AFRICANS' WELLBEING AT WORK AND IN LIFE

Respondent No. _____

Interviewer _____

Province in which participant resides _____

Village, town, or suburb in which participant resides _____

Good morning/afternoon. I am _____ from the University of Cape Town. We are conducting research that looks into the quality of living and quality of work of South Africans. We would like to know what South Africans consider important in having a good life and how possible it is for them to achieve this.

If you – or someone living in your household who works – and who is willing to assist us, I will be asking the person questions regarding their work, household, health, and other aspects of daily living. This should take no more than 30 minutes.

All information you share with me will be treated confidentially and will only be used for research purposes. We are not recording your name, or address. If you would like to participate in this study next year, we will record your phone number, which will be stripped from the final data set before analysis. It will not be possible for us to say which answers were given by which household.

The research is led by Professor Ines Meyer from the Section for Organisational Psychology. If you have any questions you can contact her on ines.meyer@uct.ac.za or 021 650 3829. It is important that you know that you can also stop participating in this study at any point.

Would you be willing to participate in this study?

Yes ☐ **No** ☐

Date of Interview _____**Time Started** _____ **Time Ended**_____

Comments *(here the interviewer or the person being interviewed can note down any observations they made during the interview*)

_____

_____

_____

_____

_____

BLOCK 1: SOCIO-DEMOGRAPHIC PROFILE OF THE RESPONDENT

1. What is your age? _____ *(write down age in years)*

2. What is your gender?

Female ☐
Male ☐
Gender variant/Non-conforming ☐
Transgender ☐
Other ☐
Prefer not to say ☐

3. What is your home language?

Afrikaans ☐
English ☐
isiNdebele ☐
isiXhosa ☐

isiZulu ☐

Sepedi ☐
Sesotho ☐
Setswana ☐
siSwati ☐
Thivenda ☐
Xitsonga ☐
Other ☐

4. How many family members live in your house (including you)? _____

5. How many people do you support with your salary (including you)? _____

6. What is the highest level of education that you completed?

Some high school ☐

High school graduate ☐

Tertiary education ☐

College diploma ☐

Degree ☐

Honours ☐

Masters ☐

Doctorate ☐

7. What jobs do you have? Position(s) _____

8. How long have you been with your employer(s)? *(write down the number of years)*

Employer 1 _____

Employer 2 _____

Employer 3 _____

Employer 4 _____

Employer 5 _____

9. Nature of main employment:

_____ Permanent full-time
_____ Permanent part-time
_____ Contract full-time
_____ Contract part-time
_____ Project-based full-time
_____ Project-based part-time
_____ Self-employed

10. How many people are employed by your main employer?

_____only me _____ less than 10 _____ 11 to 49 _____50 to 149 _____150 to 499
_____ 500 or more

11. Is there an employee union in the workplace?

_____ Yes _____No _____ I don't know

12. Are you a union member? _____ Yes _____ No _____ I don't know

13. Do you get paid <u>daily</u>, <u>weekly</u>, <u>every two weeks</u>, or <u>monthly</u>? *(circle the applicable one)*

14. If you do not mind sharing, how much income do you get paid into your bank account or in cash? _____

<u>Only</u> ask question 15 if the previous question was not answered. Thank the participant and end the questionnaire if the participant does not want to provide their income.

15. On average, how much income do you earn per month? (only ask if the previous question was not answered)

Under R2000 ☐
R2000 to R3 500 ☐
R3 500 to R7 000 ☐
R7 000 to R10 000 ☐
R10 000 to R15 000 ☐
R15 000 to R25 000 ☐
Over R25 000 ☐

16. How many days did you work in the last month? _____

BLOCK 2: PERCEIVED IMPORTANCE OF SPECIFIC DOMAINS OF LIFE

Now I am going to read a list of things in a person's life that may or may not be important to you to have a good life. For each thing that I will mention, please indicate if this is ***not at all important***, ***not really important***, ***important***, or ***very important***.

Encircle the answer that is true for you:

17. How important is **HOUSING** for you to say that you have a good life? *This refers to having a place that is near your place of work, school, etc.; that it is safe from fire and floods; clean and strong, with electricity, water and toilet facilities.*	Not at all important	Not really important	Important	Very Important
18. How important is **QUALITY OF NEIGHBOURHOOD** for you to say that you have a good life? *This refers to having a safe place to live; where you have good relations with your neighbours.*	Not at all important	Not really important	Important	Very Important
19. How important is **EMPLOYMENT** for you to say that you have a good life? *This refers to having regular, permanent and legal employment; a place to work that gives you adequate pay.*	Not at all important	Not really important	Important	Very Important
20. How important is **QUALITY OF WORKING LIFE** for you to say that you have a good life? *This refers to having a safe place to work; that is suitable to your education, and where you enjoy good relations with your boss and colleagues.*	Not at all important	Not really important	Important	Very Important
21. How important are **SAVINGS, WEALTH AND BELONGINGS** for you to say that you have a good life? *This refers to having your own house, things that you need, savings and being free from debt.*	Not at all important	Not really important	Important	Very Important
22. How important are **SOCIAL RELATIONSHIPS** for you to say that you have a good life? *This refers to being with your (spouse, child/children, friends), and enjoy the love of your relatives and friends.*	Not at all important	Not really important	Important	Very Important
23. How important are **LEISURE AND SPARE TIME ACTIVITIES** for you to say that you have a good life? *This refers to having time for yourself, being able to rest, relax, and have fun with your loved ones.*	Not at all important	Not really important	Important	Very Important

24. How important is **PHYSICAL HEALTH** for you to say that you have a good life? *This refers to being free from sickness and disability, being able to exercise regularly, having regular & nutritious food, enough sleep, and a long life.*	Not at all important	Not really important	Important	Very Important
25. How important are **PSYCHOLOGICAL/ MENTAL HEALTH & EMOTIONAL WELLBEING** for you to say that you have a good life? *This refers to giving importance to yourself, having a clear mind, being calm and at peace, and the ability to make decisions yourself. This also refers to being respected by your family and other people; the ability to handle your problems and face changes.*	Not at all important	Not really important	Important	Very Important
26. How important are **RELIGION AND SPIRITUAL LIFE** for you to say that you have a good life? *This refers to having the opportunity to worship, pray, give to the church/synagogue/mosque/temple, and do good to others.*	Not at all important	Not really important	Important	Very Important
27. How important are **INFORMATION AND KNOWLEDGE** for you to say that you have a good life? *This refers to having the ability to read and write, finish school, learn in different ways aside from school (e.g. watching TV or reading the newspaper), study in a good school (if you plan to study again) and being able to use your education.*	Not at all important	Not really important	Important	Very Important
28. How important is **POLITICAL PARTICIPATION** for you to say that you have a good life? *This refers to knowing what is happening in the country, voting in the election, joining community organizations, and being free to express your political opinion.*	Not at all important	Not really important	Important	Very Important
29. How important is **GOVERNMENT PERFORMANCE** for you to say that you have a good life? *This refers to having a country that is peaceful, crime-free, has good public services and a stable economy, where citizens are united, and where everyone has equal access to justice and opportunities.*	Not at all important	Not really important	Important	Very Important

BLOCK 3: PERCEIVED FREEDOM TO ATTAIN SPECIFIC DOMAINS OF LIFE

I have asked you how important certain things are for a good life. Now I would like to ask you how possible it is for you to achieve these. For every point that I will mention, please say if for you it is **completely impossible, almost impossible, quite possible, completely possible**.

Encircle the answer that is true for you

30. How possible is it for you right now to get **HOUSING** that allows you to have a good life? *This refers to having a place that is near your place of work, school, etc.; that it is safe from fire and floods; clean and strong, with electricity, water and toilet facilities.*	Completely impossible	Almost impossible	Quite possible	Completely possible
31. How possible is it for you right now to get the **QUALITY OF NEIGHBOURHOOD** that allows you to have a good life? *This refers to having a safe place to live; where you have good relations with your neighbors.*	Completely impossible	Almost impossible	Quite possible	Completely possible
32. How possible is it for you right now to get **EMPLOYMENT** that allows you to have a good life? *This refers to having regular, permanent and legal employment; a place to work that gives you adequate pay.*	Completely impossible	Almost impossible	Quite possible	Completely possible
33. How possible is it for you right now to get the **QUALITY OF WORKING LIFE** that allows you to have a good life? *This refers to having a safe place to work; that is suitable to your education, and where you enjoy good relations with your boss and colleagues.*	Completely impossible	Almost impossible	Quite possible	Completely possible
34. How possible is it for you right now to get the **SAVINGS, WEALTH AND ASSETS** that allow you to have a good life? *This refers to having your own house, things that you need, savings and being free from debt.*	Completely impossible	Almost impossible	Quite possible	Completely possible
35. How possible is it for you right now to get the **SOCIAL RELATIONSHIPS** that allow you to have a good life? *This refers to being with your spouse, child/children, friends, and enjoy the love of your relatives and friends.*	Completely impossible	Almost impossible	Quite possible	Completely possible
36. How possible is it for you right now to get the **LEISURE AND SPARE TIME ACTIVITIES** that allow you to have a good life? *This refers to having time for yourself, being able to rest, relax, & have fun with your loved ones.*	Completely impossible	Almost impossible	Quite possible	Completely possible

37. How possible is it for you right now to get the **PHYSICAL HEALTH** that allows you to have a good life? *This refers to being free from sickness and disability, able to exercise regularly, having regular & nutritious food, enough sleep, and a long life.*	Completely impossible	Almost impossible	Quite possible	Completely possible
38. How possible is it for you right now to get the **PSYCHOLOGICAL/ MENTAL HEALTH & EMOTIONAL WELLBEING** that allow you to have a good life? *This refers to giving importance to yourself, having a clear mind, being calm and at peace, and being ability to decide for yourself. This also refers to being respected by your family and other people; the ability to handle your problems and face changes.*	Completely impossible	Almost impossible	Quite possible	Completely possible
39. How possible is it for you right now to get the **RELIGIOUS AND SPIRITUAL LIFE** that allows you to have a good life? *This refers to having the opportunity to worship, pray, give to the church/synagogue/mosque/temple, and do good to others.*	Completely impossible	Almost impossible	Quite possible	Completely possible
40. How possible is it for you right now to get the **INFORMATION AND KNOWLEDGE** that allow you to have a good life? *This refers to having the ability to read and write, finish school, learn through different ways aside from school (e.g. watching TV or reading the newspaper), study in a good school (if you plan to study again) and being able to use your education.*	Completely impossible	Almost impossible	Quite possible	Completely possible
41. How possible is it for you right now to **PARTICIPATE POLITICALLY** in a way that allows you to have a good life? *This refers to knowing what is happening in the country, voting in the election, joining community organizations, and being free to express your political opinion.*	Completely impossible	Almost impossible	Quite possible	Completely possible
42. How possible is it for you right now to get the **GOVERNMENT PERFORMANCE** that allows you to have a good life? *This refers to having a country that is peaceful, crime-free, has good public services and a stable economy, where citizens are united, and where everyone has equal access to justice and opportunities.*	Completely impossible	Almost impossible	Quite possible	Completely possible

BLOCK 4: EMPOWERMENT

In this section of the survey, we will use a different scale to almost every question.

43. Empowerment at work means you feel you **have some control over how you do your work**, and in workplace decisions that directly affect you personally. On a scale from 0 to 10 how 'empowered' do you feel at work in general? 0 means not empowered at all, 10 means completely empowered

*(*Please indicate *how empowered you feel. 10 is full empowerment and 0 is zero.)*

0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐

44. I am satisfied with my job in general.	Never	Almost never	Some-times	Often	Almost always	Always
45. I am satisfied with my pay.	Never	Almost never	Some-times	Often	Almost always	Always
46. My work makes me feel proud.	Never	Almost never	Some-times	Often	Almost always	Always
47. I am stressed.	Never	Almost never	Some-times	Often	Almost always	Always
48. I am physically well.	Never	Almost never	Some-times	Often	Almost always	Always
49. I am satisfied with life in general.	Never	Almost never	Some-times	Often	Almost always	Always

50. Overall, how fair would you say your pay is?	Very Unfair	Unfair	Quite Unfair	Neither Unfair nor Fair	Quite Fair	Fair	Very Fair

Do you think your wage is a 'fair rate'…?			
51. For the job	Yes	No	Don't Know
52. Compared to your effort?	Yes	No	Don't Know
53. Compared to your qualifications	Yes	No	Don't Know
54. Compared to similar jobs elsewhere	Yes	No	Don't Know
55. Compared to <u>your direct supervisor</u> in your organization	Yes	No	Don't Know

56. Does your pay provide enough for your basic needs?	Yes	No

57. Does your income exceed what you consider to be your basic needs (e.g., enable you to have some savings, to enjoy some leisure activities, to enjoy the occasional treat)?		Yes	No
58. Do you feel that your employment income contributes not only to your own life but also to others in your household (parents, dependents)?	Yes	No	Not Applicable

BLOCK 5: LIVING ARRANGEMENTS

To finish, just a few more questions about your household.

59. When you are ill, do you mostly go to a government clinic or a private doctor/traditional healer/hospital?

- Government clinic ☐
- Private doctor/traditional healer/hospital ☐

60. What best describes your living arrangements?

- Rent home (formal structure) ☐
- Rent home (informal structure) ☐
- Home owner (formal structure, **with bond**) ☐
- Hone owner (informal structure, **with bond**) ☐
- Home owner (formal structure, **bond free**) ☐
- Home owner (informal structure, **bond free**) ☐
- Given a RDP house ☐

61. How many people live in your household?

1 ☐ 2 ☐ 3 ☐ 4 ☐

5 ☐ 6 or more ☐

62. How many children live in the household?

0 ☐ 1 ☐ 2 ☐ 3 ☐

4 ☐ 5 ☐ 6 or more ☐

63. What is the total number of (working) incomes in your household?

1 ☐ 2 ☐ 3 ☐ 4 ☐

5 ☐ 6 or more ☐

64. How many of these incomes are full-time?

0 ☐ 1 ☐ 2 ☐ 3 ☐

4 ☐ 5 ☐ 6 or more ☐

65. How much money in total comes into your household each month? _____

66. How many other dependent adults live in your household?

0 ☐ 1 ☐ 2 ☐ 3 ☐

4 ☐ 5 ☐ 6 or more ☐

We are planning to update this research every year.
Are you willing to participate in this research again?

Yes ☐ No ☐

If **yes**, please provide us with a phone number which we can contact you on:

_____

Appendix B

Box and Whisker Plots of Household Income (untransformed) with each independent variable

Figure B1

Untransformed household income and perceived ability to maintain physical health

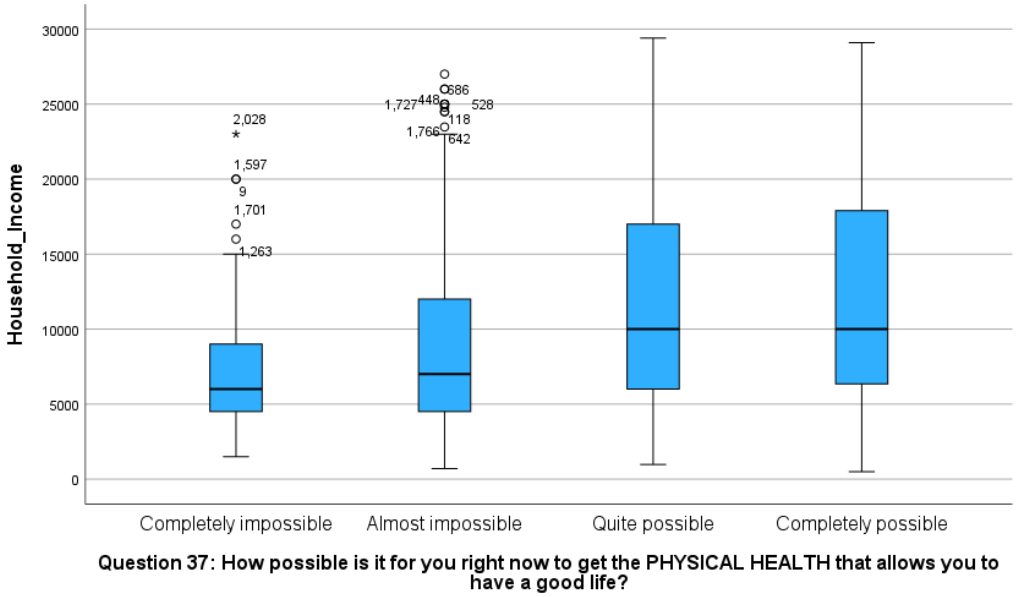


Figure B2

Untransformed household income and perceived ability to maintain mental wellbeing

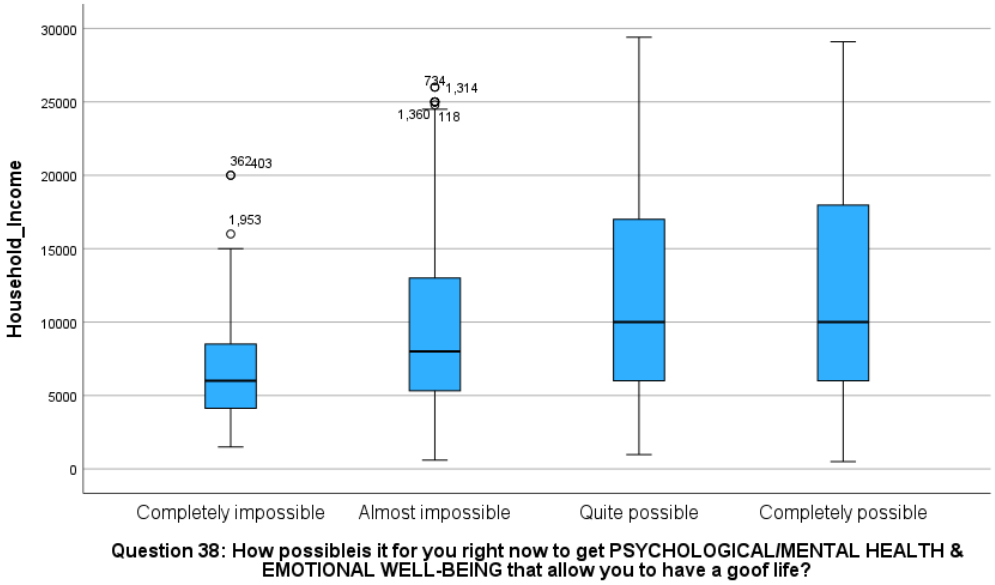
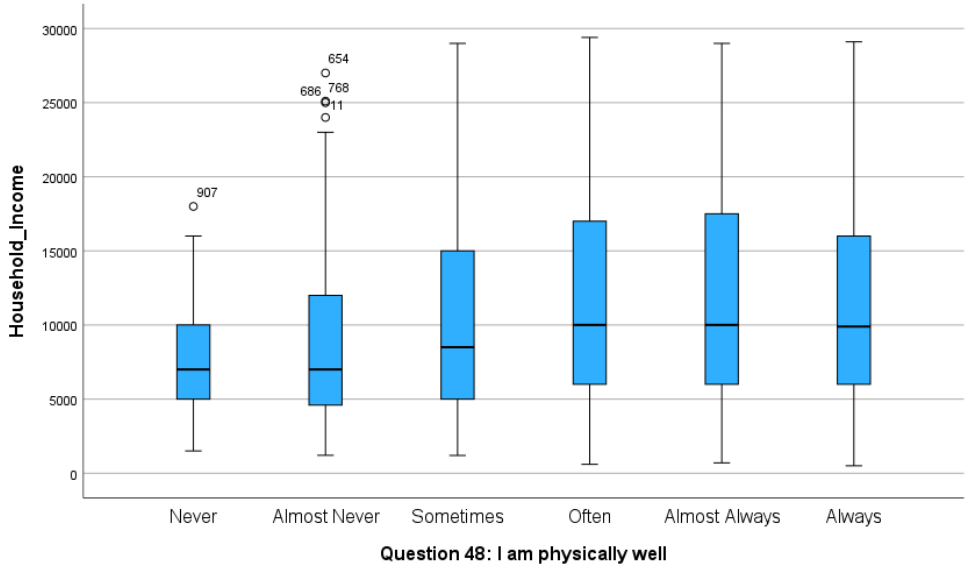


Figure B3

Untransformed household income and self-perceived physical health



Appendix C

Normal Q-Q plots for untransformed household income and perceived ability to maintain physical health

Figure C1

Normal Q-Q plot for untransformed household income and the category of 'completely impossible' within perceived ability to maintain physical health

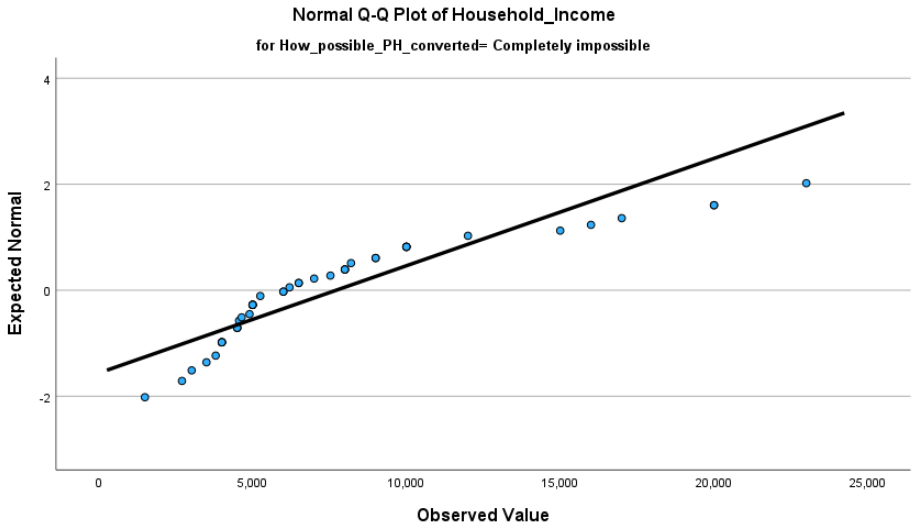


Figure C2

Normal Q-Q plot for untransformed household income and the category of 'almost impossible' within perceived ability to maintain physical health

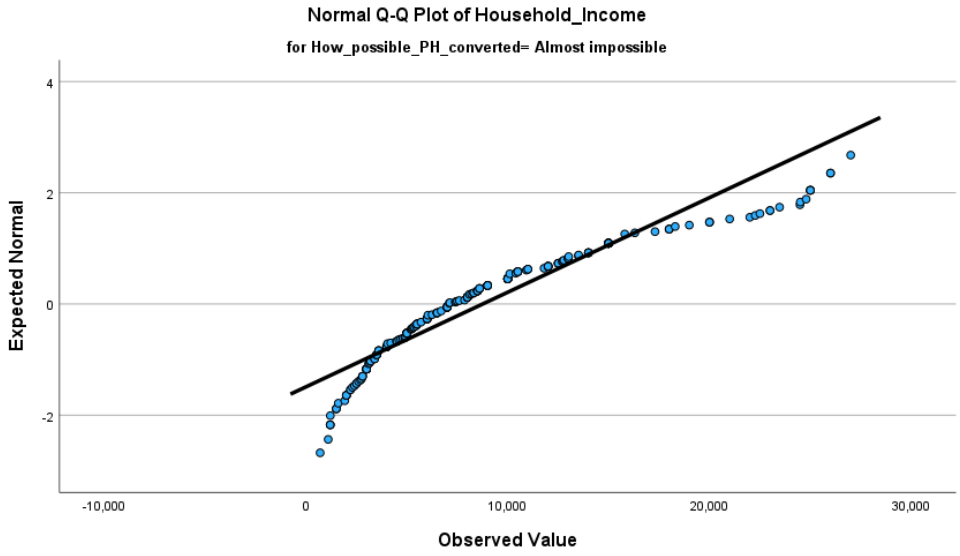


Figure C3

Normal Q-Q plot for untransformed household income and the category of ‘quite possible’ within perceived ability to maintain physical health

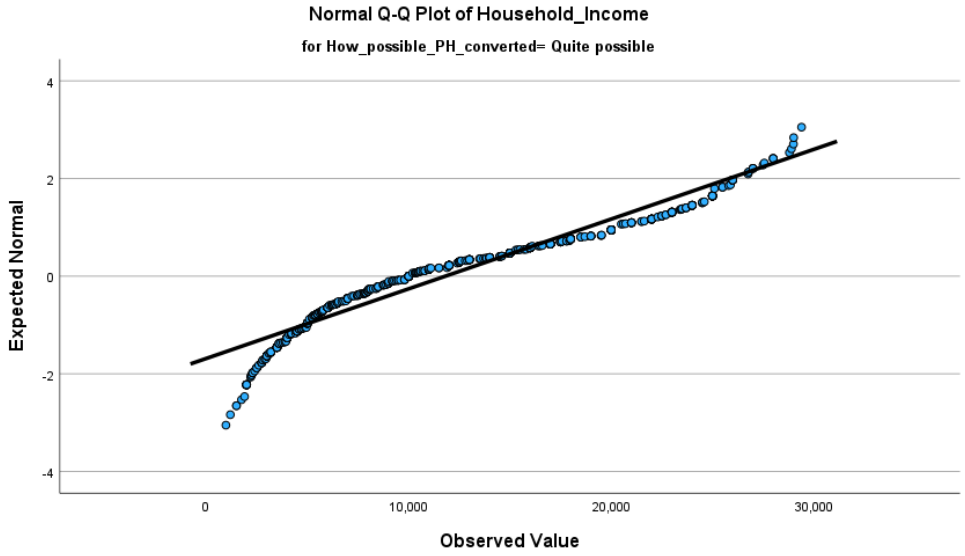
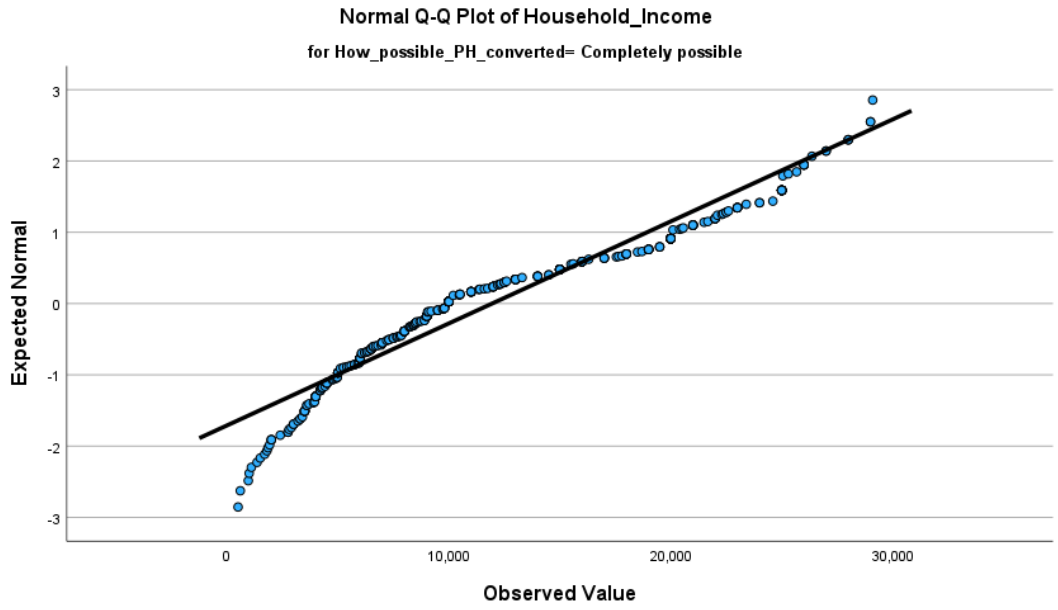


Figure C4

Normal Q-Q plot for untransformed household income and the category of ‘completely impossible’ within perceived ability to maintain physical health



Appendix D

Normal Q-Q plots for untransformed household income and perceived ability to maintain mental wellbeing

Figure D1

Normal Q-Q plot for untransformed household income and the category of 'completely impossible' within perceived ability to maintain mental wellbeing

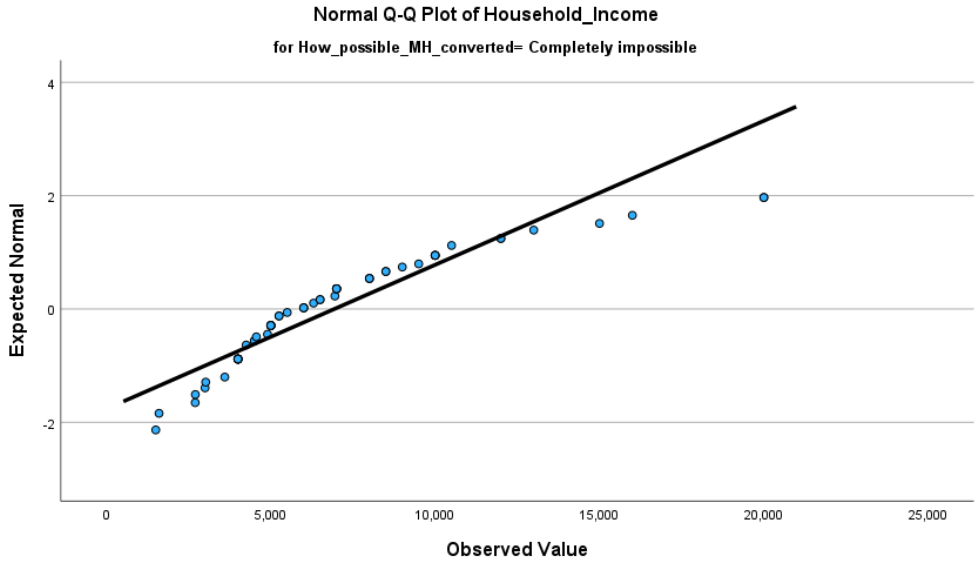


Figure D2

Normal Q-Q plot for untransformed household income and the category of 'almost impossible' within perceived ability to maintain mental wellbeing

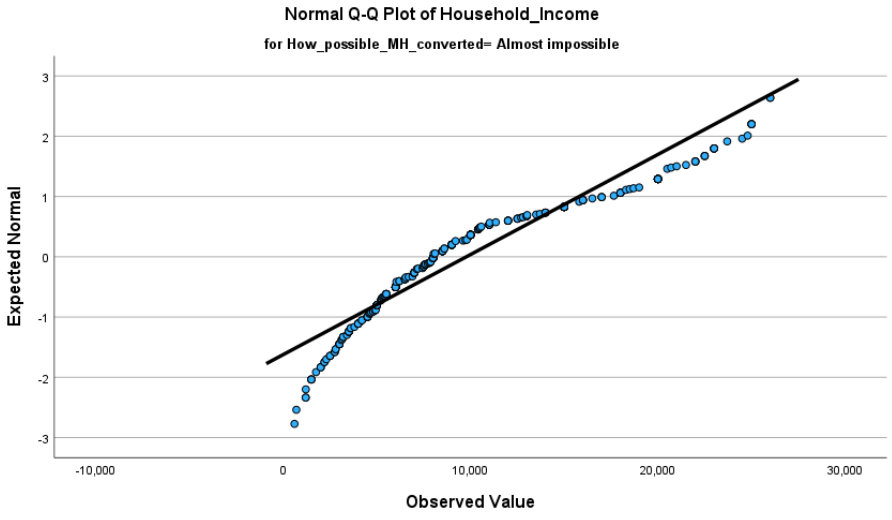


Figure D3

Normal Q-Q plot for untransformed household income and the category of ‘quite possible’ within perceived ability to maintain mental wellbeing

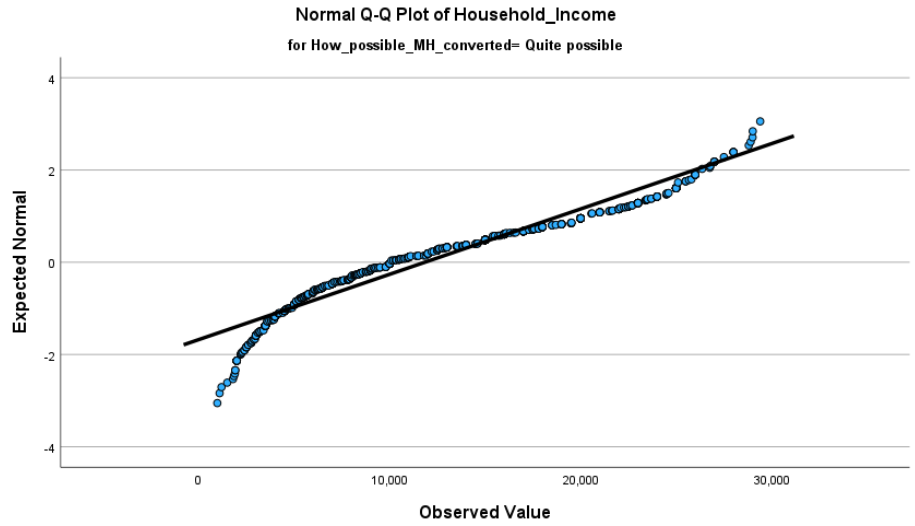
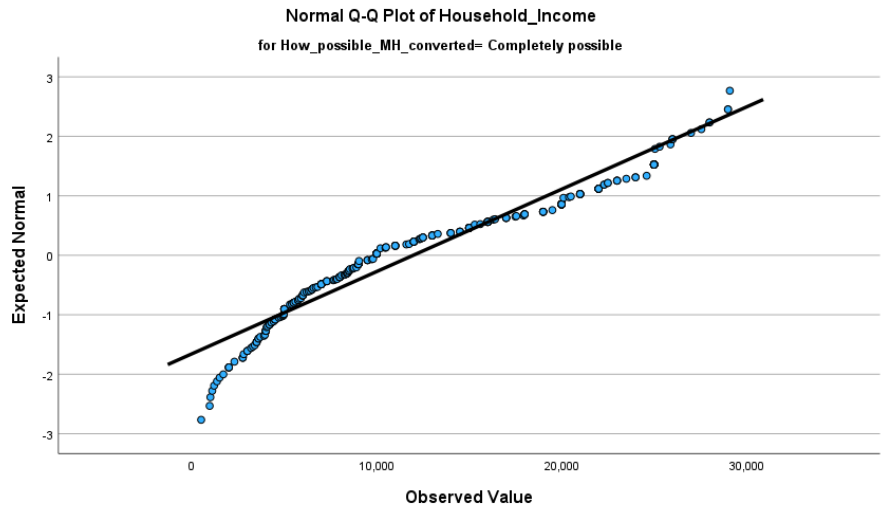


Figure D4

Normal Q-Q plot for untransformed household income and the category of ‘completely possible’ within perceived ability to maintain mental wellbeing



Appendix E

Normal Q-Q plots for untransformed household income and self-perceived physical health

Figure E1

Normal Q-Q plot for untransformed household income and the category of 'never' within self-perceived physical health

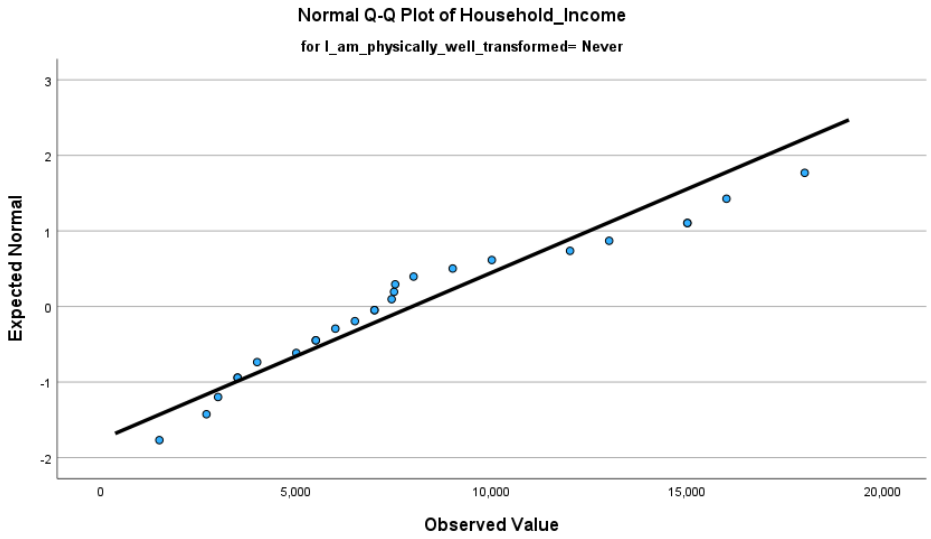


Figure E2

Normal Q-Q plot for untransformed household income and the category of 'almost never' within self-perceived physical health

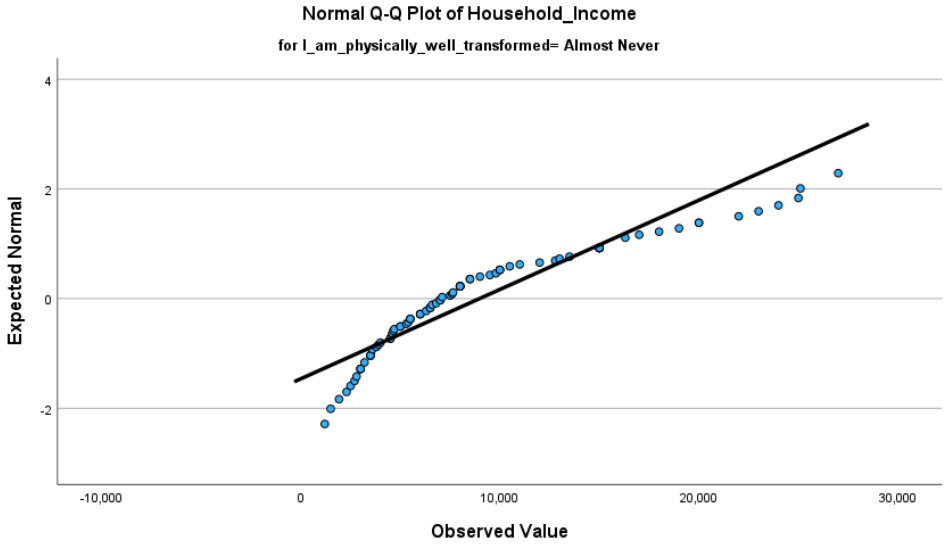


Figure E3

Normal Q-Q plot for untransformed household income and the category of ‘sometimes’ within self-perceived physical health

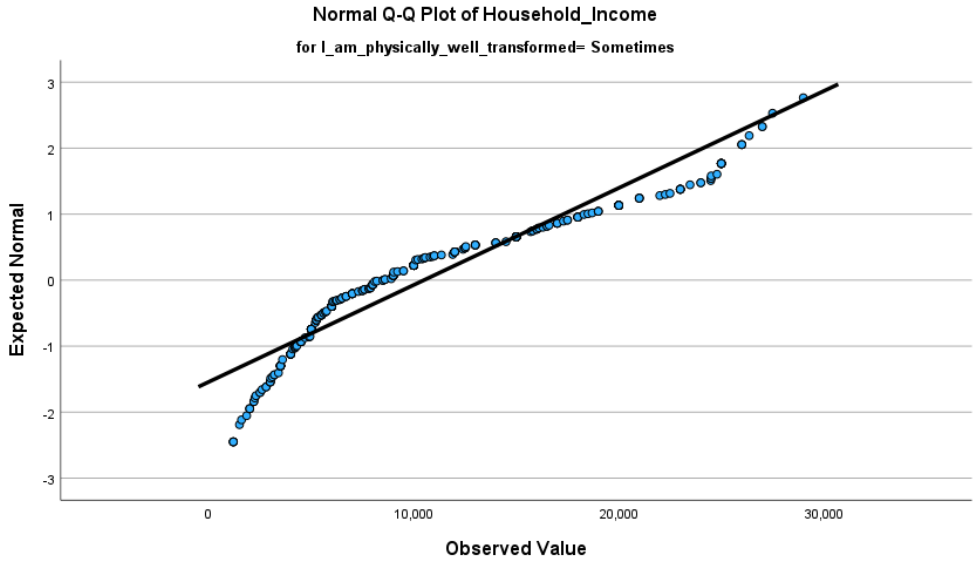


Figure E4

Normal Q-Q plot for untransformed household income and the category of ‘often’ within self-perceived physical health

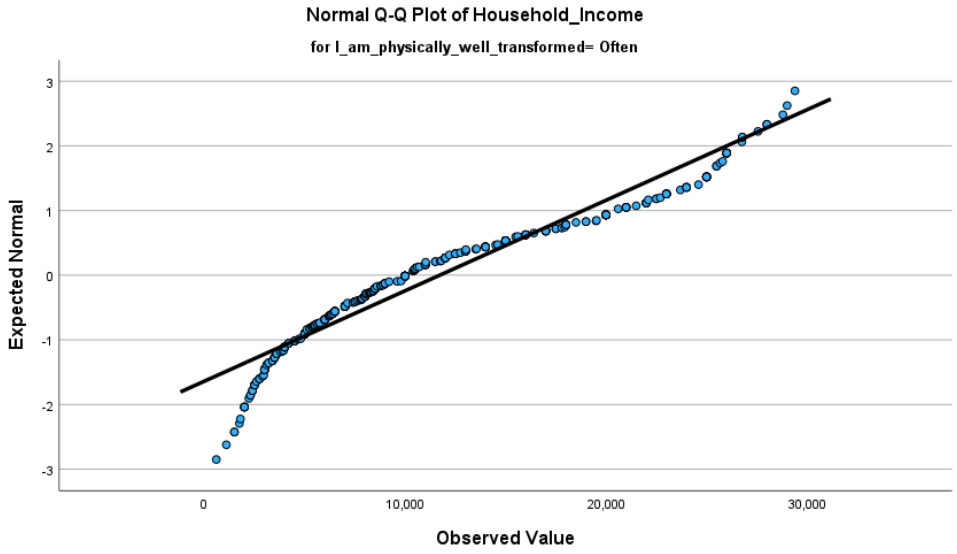


Figure E5

Normal Q-Q plot for untransformed household income and the category of ‘almost always’ within self-perceived physical health

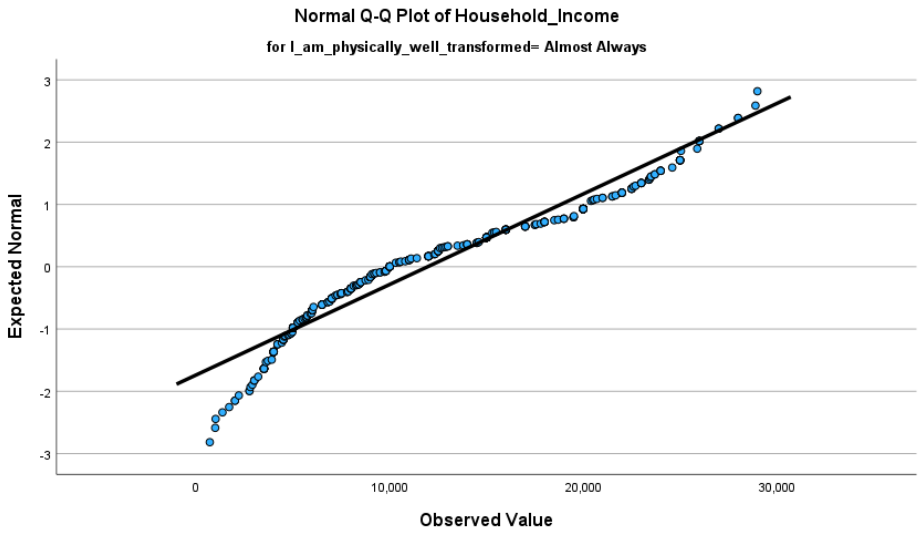
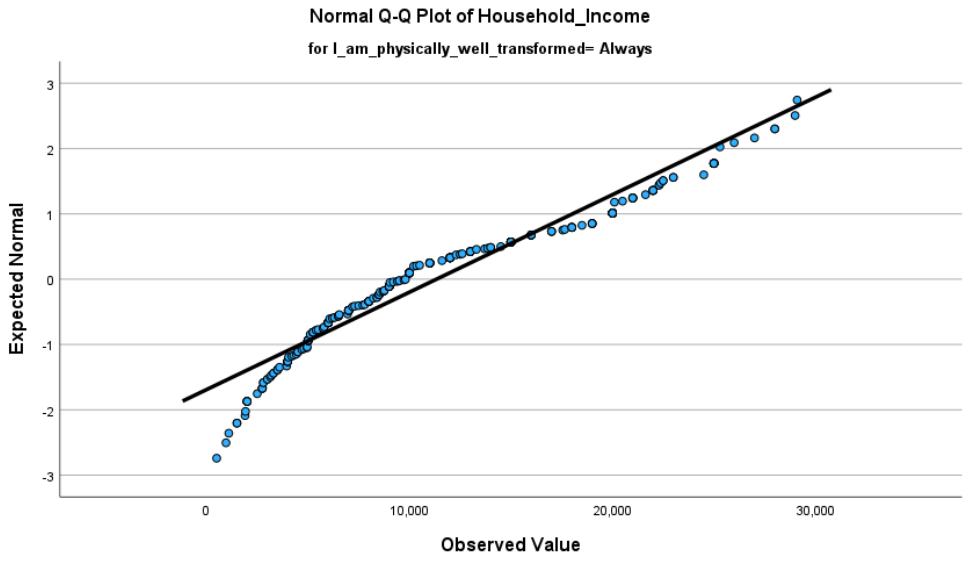


Figure E6

Normal Q-Q plot for untransformed household income and the category of ‘always’ within self-perceived physical health



Appendix F

Figure F1

Normal Q-Q plot for log-transformed household income and the category of 'completely impossible' within perceived ability to maintain physical health

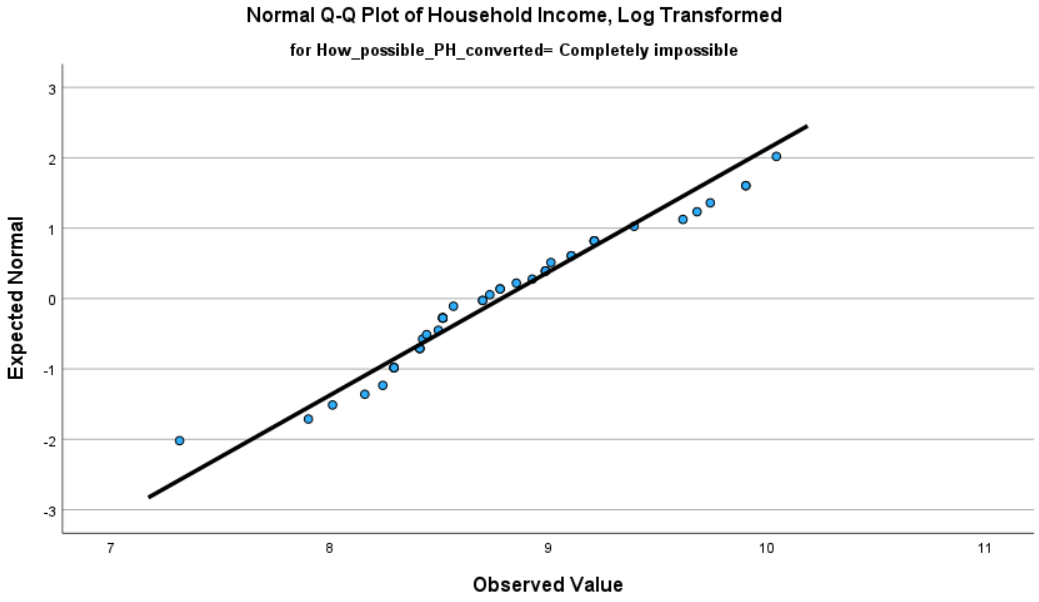


Figure F2

Normal Q-Q plot for log-transformed household income and the category of 'completely impossible' within perceived ability to maintain physical health

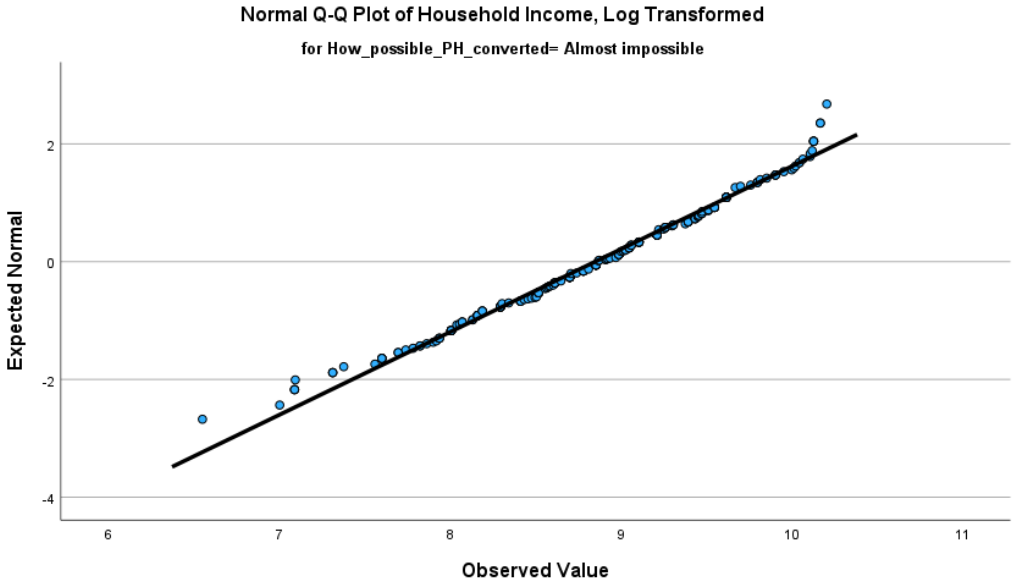


Figure F3

Normal Q-Q plot for log-transformed household income and the category of ‘quite possible’ within perceived ability to maintain physical health

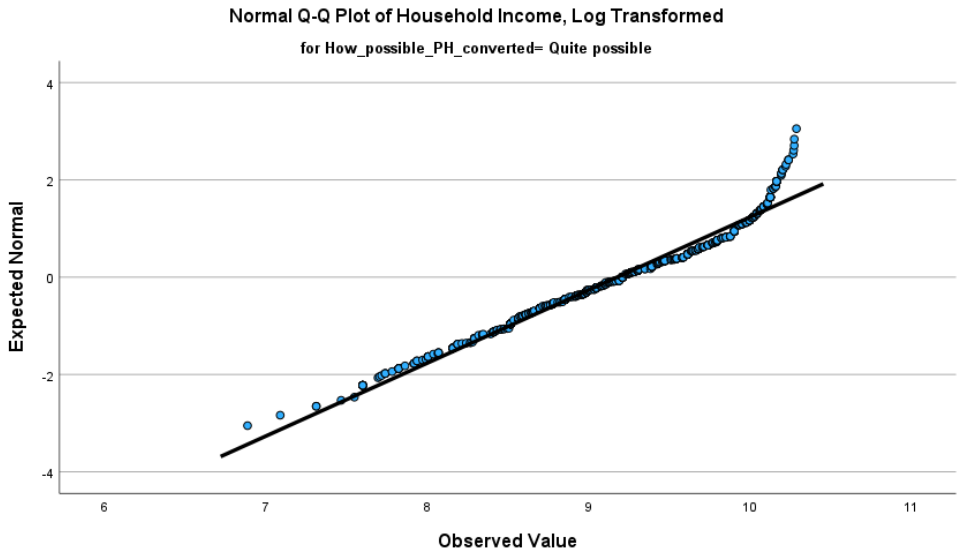
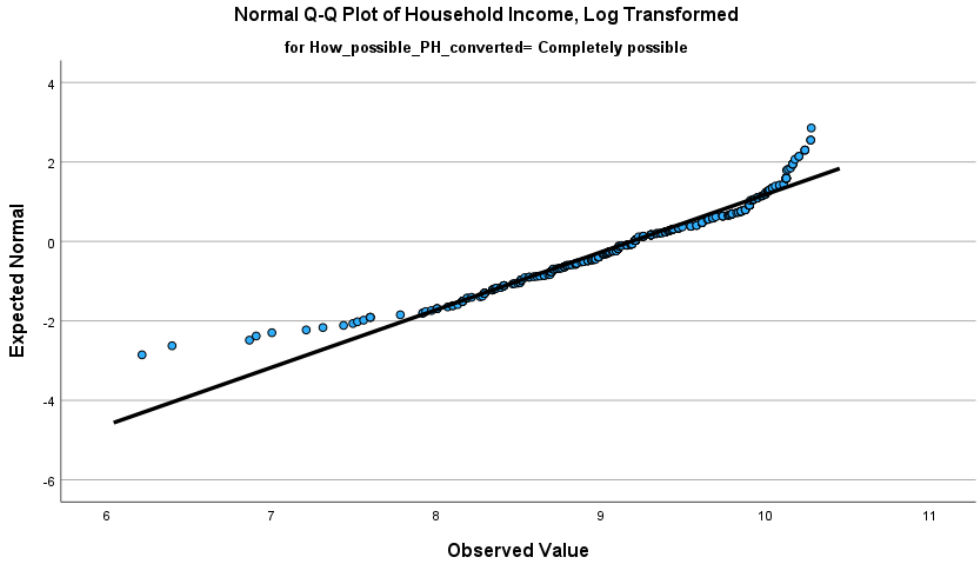


Figure F4

Normal Q-Q plot for log-transformed household income and the category of ‘completely possible’ within perceived ability to maintain physical health



Appendix G

Figure G1

Normal Q-Q plot for log-transformed household income and the category of 'completely impossible' within perceived ability to maintain mental wellbeing

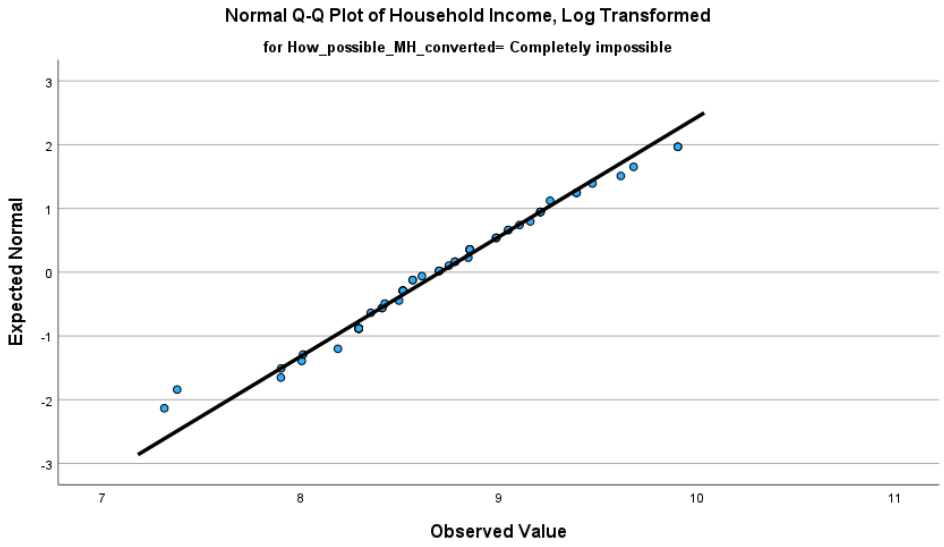


Figure G2

Normal Q-Q plot for log-transformed household income and the category of 'almost impossible' within perceived ability to maintain mental wellbeing

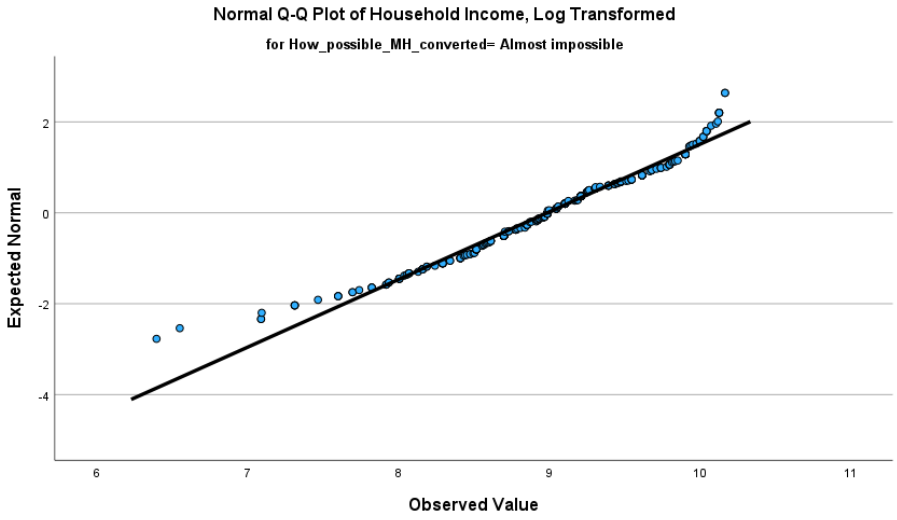


Figure G3

Normal Q-Q plot for log-transformed household income and the category of ‘quite possible’ within perceived ability to maintain mental wellbeing

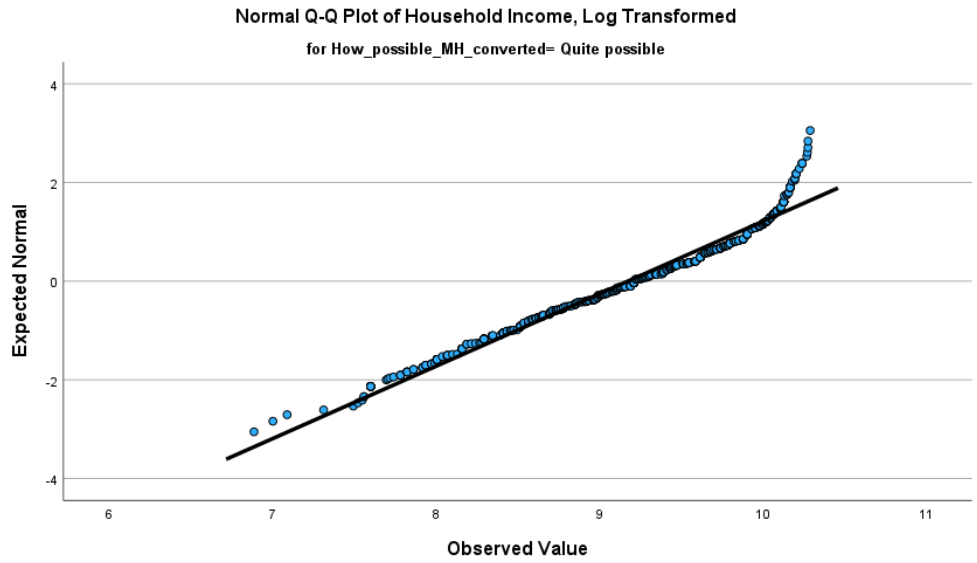
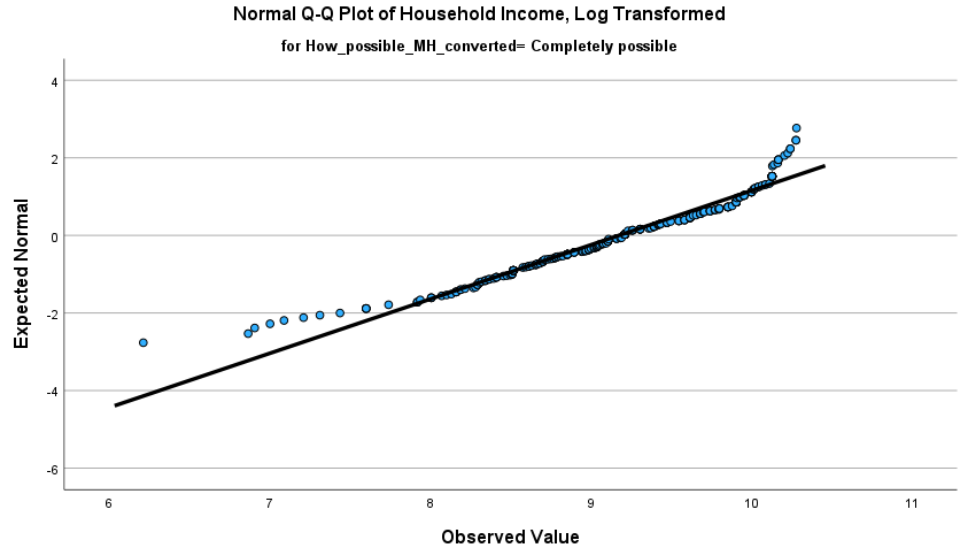


Figure G4

Normal Q-Q plot for log-transformed household income and the category of ‘completely possible’ within perceived ability to maintain mental wellbeing



Appendix H

Figure H1

Normal Q-Q plot for log-transformed household income and the category of 'never' within self-perceived physical heath

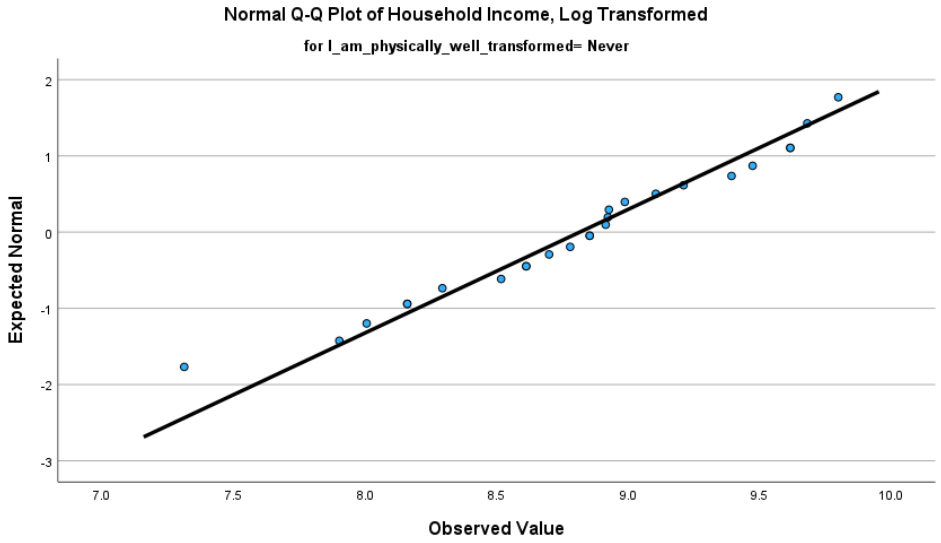


Figure H2

Normal Q-Q plot for log-transformed household income and the category of 'completely possible' within self-perceived physical health

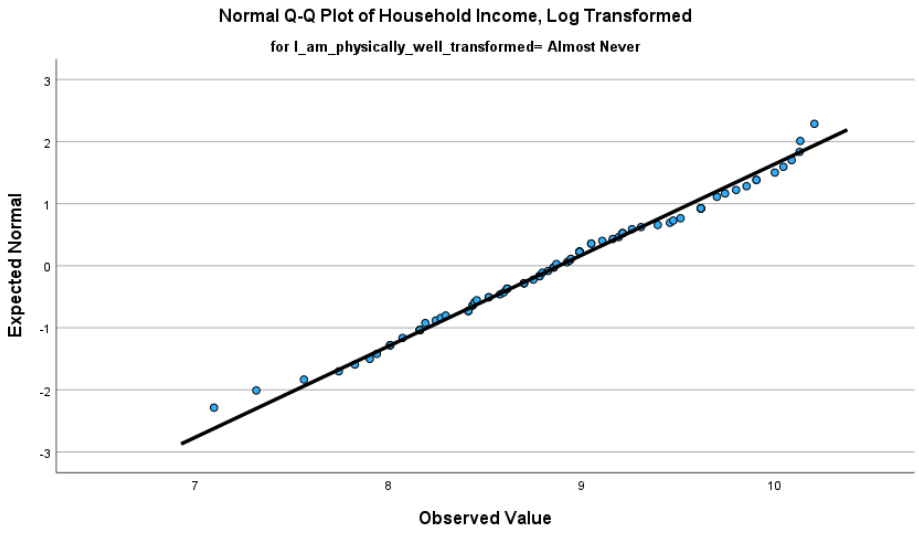


Figure H3

Normal Q-Q plot for log-transformed household income and the category of ‘sometimes’ within self-perceived physical health

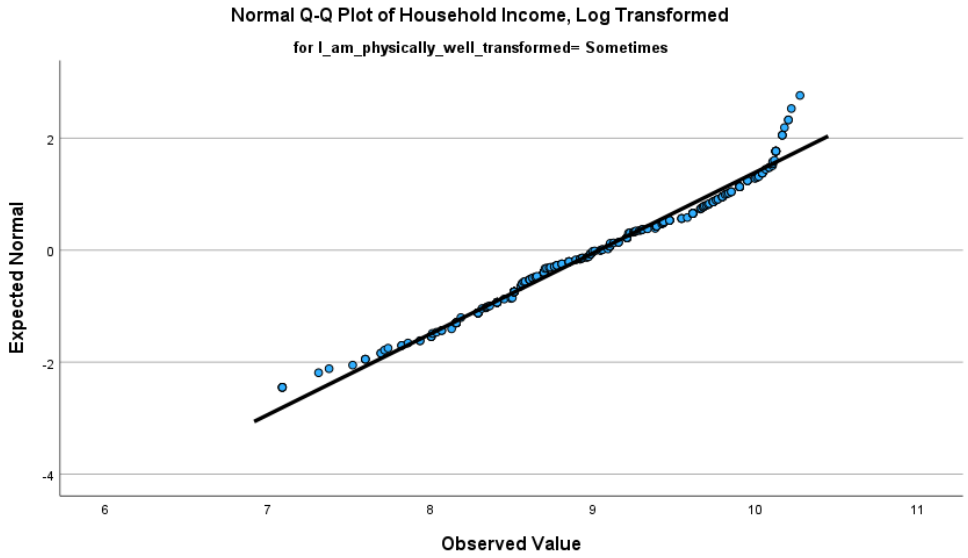


Figure H4

Normal Q-Q plot for log-transformed household income and the category of ‘often’ within self-perceived physical health

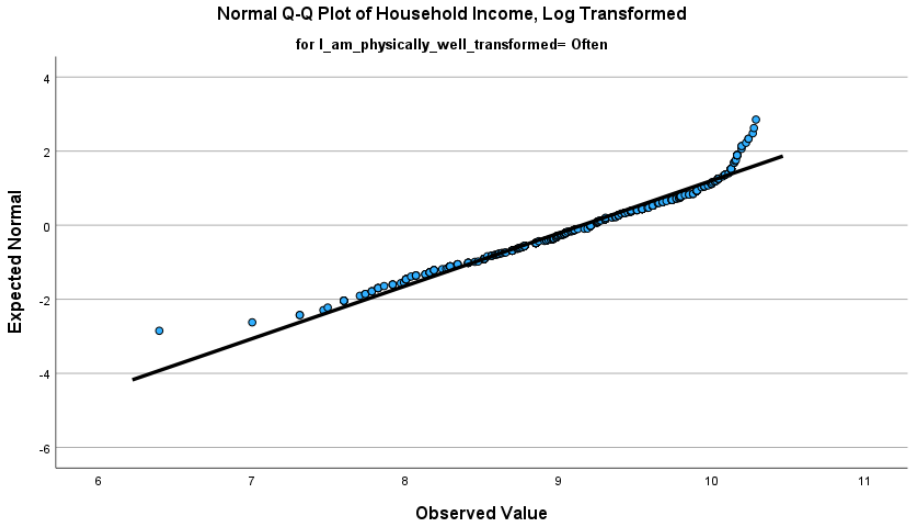


Figure H5

Normal Q-Q plot for log-transformed household income and the category of ‘almost always’ within self-perceived physical health

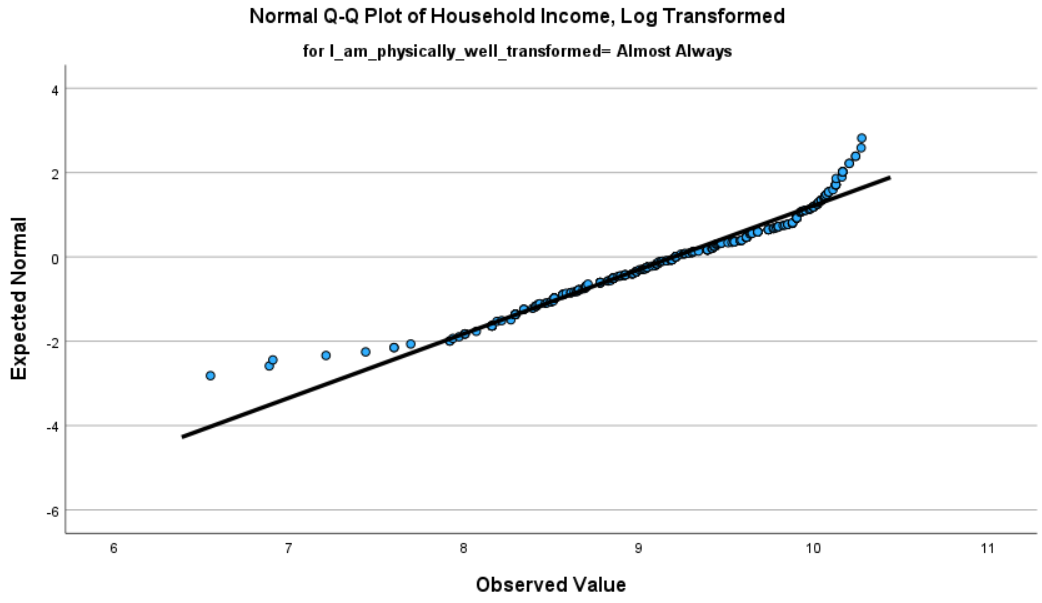


Figure H6

Normal Q-Q plot for log-transformed household income and the category of ‘always’ within self-perceived physical health