

The impact of implicit bias on Indigenous business ownership rates in Australia

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Abstract

Business ownership provides Indigenous Australians with an opportunity to seek economic independence and greater self-determination. However, societal barriers created through systemic discrimination may limit the potential for Indigenous Australians to enter into business. While other research has alluded to the deleterious effect of a discriminatory environment on Indigenous business ownership, much of that research is qualitative and relies on the self-reported experiences of the phenomenon. This paper extends earlier quantitative research that explains lower local rates of business ownership among Indigenous people compared with other Australians using socioeconomic and demographic factors (Shirodkar and Hunter, 2019). Project Implicit developed and collected data from the Implicit Association Test that measures implicit biases against Indigenous Australians, arguably the root cause of systemic discrimination, collecting over 11,000 unique observations from Australians over a decade (Shirodkar, 2019). An ecological regression model of Indigenous business ownership finds that after accounting for other pertinent economic factors, higher rates of implicit bias in Australian regions has a statistically significant and negative relationship with Indigenous business ownership. The result suggests that the implicit biases of non-Indigenous Australians drives lower levels of Indigenous business ownership.

JEL Codes: C21, J15, J70, J71

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1. Introduction

Systemic racial discrimination in our community has the potential to restrict socioeconomic opportunity and mobility for marginalised groups, and arguably for none more so than Australia's First Peoples. But seldom does our national debate consider if the poor socioeconomic outcomes that Aboriginal and Torres Strait Islander Australians experience result from a discriminatory local environment. Often the complaints of explicit racial discrimination are ignored, dismissed or minimised (Maley, 2018; and Augoustinos, Tuffin and Rapley, 1999).

The manifestation of explicit interpersonal racism may represent but a small symptom of a wider phenomenon that reflect a society's view of a particular group. Such a 'societal view' or implicit societal bias has the potential to taint our perception, thereby distorting pathways and in many cases creating societal barriers to achieving social and economic self-determination.

Business ownership is one pathway to achieving greater economic self-determination, and a driver for Indigenous employment outcomes as well (Hunter, 2014). Growth in the sector and its potential to support Indigenous communities has been well documented (Shirodkar, Hunter and Foley, 2020; Shirodkar, Hunter and Foley, 2018; Dana, 2015; Hunter, 2014; Schaper, 2007; Foley, 2006; Foley, 2003; Altman, 2001; Foley, 2000; and Daly, 1993). Using information from the Australian Census Longitudinal dataset that follows approximately 5 per cent of the Australian population over three Censuses (i.e., over 10 years), Shirodkar, Hunter and Foley (2020) estimate that there were over 19,000 Indigenous business owner-managers at the time of the 2016 Census, but that the rate of Indigenous business ownership was only around 3.7 per cent compared with around 8.6 per cent for non-Indigenous Australia. Shirodkar and Hunter (2019) find that identifying as Indigenous explains a significant proportion of the difference in business ownership rates between Indigenous and non-Indigenous Australians after accounting for other relevant economic and demographic variables. The result indicates a race-related factor is limiting rates of Indigenous business ownership. But Shirodkar and Hunter (2019) could not distinguish if the constraint relates to an external discriminatory environment that suppresses Indigenous agency, or if it reflects internalised racism within Indigenous communities, or both. Paradies, Harris and Anderson (2008) provide a useful summary for distinguishing between an external discriminatory environment (encompassing systemic racism and interpersonal racism) and internalised racism. Note that Paradies, Harris and Anderson (2008) recognise the, '... importance of each level of racism, but noted that systemic racism is the level of racism that fundamentally underpins racial/ethnic inequalities in health. Systemic racism is the most pervasive form of racism across a range of life domains such as education, employment and housing.' (2008:4). Arguably, systemic racism is also the underlying phenomenon underpinning socioeconomic inequalities more broadly.

Hunter, Howlett and Biddle (2014) identify that historically, a lack of psychological data limits understanding of discrimination directed at Indigenous Australians. Shirodkar (2019) attempts to address this gap in the literature, presenting never before published social psychology data from Project Implicit's *Implicit*

Association Test (IAT), designed to measure the levels of implicit bias in this country against Australia's First Peoples. Evidence from Shirodkar (2019) suggests that a societal bias may exist in Australia, predisposing the majority of Australian participants of the test to consider Indigenous Australians through a negative lens in almost every setting (see section 3 for a fuller discussion).¹

This paper builds on the findings from Shirodkar (2019) and Shirodkar and Hunter (2019) to develop an *ecological* regression analysis, testing whether the average IAT D Scores in Australian SA3 regions affect the variation in Indigenous business ownership rates across Australia.² This paper establishes that a statistically significant negative relationship exists between levels of measured implicit bias and Indigenous business ownership rates. The results suggest that living in an area with higher levels of bias against Indigenous people can have a highly detrimental effect on local Indigenous business ownership rates, thus reducing prospects for greater Indigenous economic self-determination. The analysis provides evidence to suggest that any bias amongst Indigenous Australians against other Indigenous Australians or 'internalised discrimination' (as measured through Indigenous Australia's IAT D Scores) has no statistically significant correlation with rates of Indigenous business ownership. The implication of these findings is that the challenges to Indigenous entrepreneurship do not necessarily reflect a toxic internal environment in Indigenous communities, but rather an impaired and ultimately prejudicial perception within non-Indigenous communities.

The paper will proceed as follows: Section 2 reviews sociology, psychology and economics literature exploring the links between discrimination and socioeconomic outcomes for marginalised groups, with a focus on implications for business ownership. Section 3 introduces the IAT and reports some of the key findings from Shirodkar (2019). Section 4 presents the ecological regression model testing the correlations between IAT results and Indigenous business ownership rates. Section 5 reports the findings, while section 6 concludes.

2. Literature review

Shirodkar, Hunter and Foley (2018) suggest the bias against Indigenous Australians occurs without awareness of prejudice amongst the majority, meaning the bias is implicit, inherent and unacknowledged, seeping seamlessly into the everyday decision making of societal actors, including those in positions of power. Biddle and Lahn (2016) state 'that most prejudice is implicit and, perhaps even more surprisingly, that implicit discrimination can have a more damaging effect on those who experience it [than conscious or explicit discrimination]' (2016:4). And Zeigert and Hanges (2005) find evidence to suggest that implicit racist attitudes in labour markets interact with a corporate climate for racial bias to predict discriminatory treatment of minorities in relation to hiring decisions.

1 Around 75 per cent of the 11,099 Australians who took part in the test from 2009-2019 received a positive IAT D Score, implying an implicit bias against Indigenous Australian faces.

2 The D Score, which is a standardised unit of measurement for implicit bias, is based on the Cohen's D Score.

Much of the Australian data around discrimination tends to report the causal consequence of direct interpersonal discrimination from its victims. For instance, the 2018 Australian Reconciliation Barometer survey found that 43 per cent of Indigenous Australians reported experiencing at least one form of racial prejudice in the previous six months compared with 20 per cent of non-Indigenous people (see *the Australian Reconciliation Barometer*, 2019). Some research attempts to gain insight into the views of those who are witness to racism, including the *Challenging Racism Project* and the *Scanlon Social Cohesion survey*. But as with all such surveys, an individual often has the incentive to hide their proximity or engagement in socially undesirable acts, such as racism, because such proximity could reflect poorly on their own behaviours and social groupings. And further, claims of bias and racism against Indigenous Australians have historically been discounted or neutralised in mainstream discourses (Maley, 2018; and Augoustinos, Tuffin and Rapley, 1999). These phenomena may reflect an unwillingness to accept that *we* – non-Indigenous Australians – are perhaps major contributors to the challenges that Indigenous Australians face. This is despite the extensive literature that correlates self-reported experiences of discrimination to poor health and wellbeing outcomes amongst minorities, particularly Indigenous Australians (Grollman and Hagiwara, 2019; Paradies, 2018; Bodkin-Andrews and Carlson, 2016; Bodkin-Andrews *et al.* 2013; Paradies, Harris and Anderson, 2008; Bourguignon *et al.*, 2006; Spalding, 1999). Pedersen *et al.* (2000) argues that while explicit and ‘traditional prejudice’ may have subsided in Australia, it has been replaced by ‘modern prejudice’, described as a more subtle form of prejudice, which contains a veneer of egalitarianism. These scholars argue this modern prejudice, or ‘subtle racism’, is characterised by a general ambivalence towards minority groups, an approach of attempting to de-racialise (Augoustinos, Tuffin and Rapley, 1999) what may otherwise be seen as discriminatory talks, or to refer to issues of race indirectly.

Additional Australian research also accords with this view of a modern or hidden prejudice existing in Australian discourses. Hage (2014) states that ‘Australian racism generally is far less overt and direct, and far less easy to delineate.’ (2014:233–234). Seet and Paradies (2015), however, argue that the distinction between ‘old racism’ – overt and direct racial prejudice – and ‘new’ or modern prejudice may move the emphasis away from the experiences of actual verbal and physical displays of discrimination that Indigenous Australians and other minority groups still routinely experience.

While old racism may have subsided in day-to-day interactions, the impact of discrimination continues, perhaps manifesting as the more subtle modern prejudice. And its manifestation may occur without our conscious thought, because our prejudicial views may reflect ingrained stereotypes or views about groups that we marginalise, which are difficult to dislodge. Those views may exist contrary to our values of equality and egalitarianism. And if sufficiently widespread and ingrained, may hide within the Australian psyche unchallenged. But the consequence is that our society continues to severely limit the opportunities for marginalised groups to engage freely with the economy and society. It is likely that in both cases – of overt racial prejudice and subtle modern prejudice – implicit bias is the underlying phenomenon that is driving the manifestation of discrimination. And while the presence of a

prejudicial social and economic environment remains, however it may manifest, one cannot discount its social and economic effects. We will return to implicit bias and a measurement tool for the phenomenon later.

Studies have described discrimination in labour markets as occurring when individuals, who are equally productive as their peers, are either overlooked, underpaid or treated unequally, because of an observable but immutable difference such as race, gender, ethnicity or ability, to name a few (Biddle and Lahn, 2016; Altonji and Blank, 1994, Arrow, 1972 and Becker, 1957). The result of labour market discrimination is that marginalised groups continue to experience poorer overall life outcomes than other communities, reflected in their lifetime incomes, health outcomes, social mobility and diminished opportunities to maximise their community and economic contributions.

Becker's (1957) seminal work on the economics of discrimination in labour markets established the concept of a 'taste for discrimination' within Caucasian Americans against African Americans. In Becker's model, the production and consumption functions of Caucasians reflect the taste for discrimination as a price premium for avoiding contact with African Americans. He argued that this price premium remained artificially high and that price competitiveness could not erode it away. He surmised that its presence thereby circumvented the low entry cost principle of competitive markets. He used this model to explain much of the significant disparity between the socioeconomic status of Caucasian and African American communities. Arrow (1972) was not satisfied with Becker's taste for discrimination as it added an additional non-economic parameter to the general principle of profit maximisation amongst market participants. He later developed a hypothesis that economic systems may maintain racially exclusive or homogenous networks in order to create 'social capital benefits' amongst the inside group (Arrow, 1998). The benefits more than offset the higher costs of transacting exclusively with insider group peers. The result, he argues, is the radical alteration of resource allocation decisions. Arrow indicates that with social capital, 'discrimination no longer has a cost to the discriminator; indeed, it has social rewards' (1998:98). In effect, Arrow (1998) provided an economic rationale for why racial discriminatory barriers remained and were not sensitive to market power principles.

In Australia, the unique societal prejudices that only Indigenous Australians continue to experience (see Australian Reconciliation Barometer) – resulting from dispossession, massacre, the state stealing one's children and forced assimilation – has also created a persistent discriminatory barrier between Indigenous and non-Indigenous Australians. One cannot ignore how such experiences may continue to limit the prospects for many Indigenous Australians to access the mainstream economy to this day, because arguably, the pre-conditions that resulted in such wanton hostility from our colonial ancestors has never fully disappeared. While we aspire to equality and egalitarianism, and we may genuinely believe in those concepts, our individual and collective views may continue to reflect ideas of racial superiority of one group over another. The result is the creation of a discriminatory backdrop to Australian society, which is so ingrained in our landscape, that we may well seldom recognise it as an abhorrence. A labour market study, Collins (1994), argues that employers (and Australian society as a whole) are geared towards discriminating

against minorities, including Indigenous Australians. Booth, Leigh and Varganova (2012) attempt to measure labour market discrimination through a revealed preference approach, finding that CVs with *Indigenous names* are 30 per cent less likely to receive a call back for an interview than CVs with *distinctively Anglo Saxon names*, despite having identical CVs. And Biddle *et al.* (2013) find using self-reported discrimination data that individuals may decrease their labour supply in order to avoid potentially discriminatory situations. But few studies have attempted to understand the possible effects of discrimination on business ownership in Australia. Shirodkar and Hunter (2019) undertake the first quantitative Australian study to look into the matter, finding that differences in identity can explain much of the difference in business ownership rates between Indigenous and non-Indigenous Australia.

Foley (2000) observes that, at great personal cost – and even with the risk of ostracisation from their own community – some Indigenous business owners hide their Indigenous identity from the wider non-Indigenous public. The business owner recognises the crippling effect of discriminatory attitudes on their opportunities to succeed in business. In one example, Foley (2000) accounts for how one Indigenous business owner states he is of ‘Spanish descent’ if a customer or trade supplier asks. The business owner was forced to cut off contact completely with the Indigenous community stating that, ‘... if my customers or suppliers knew I was a blackfella I would not last two minutes in this town.’ (2000:48). Clearly, coming from a different minority background meant that he would receive a modicum of acceptance from the non-Indigenous community – at the cost of denying his heritage. Foley (2000) reports that despite the man’s denials, the situation is a cause of significant anguish, resulting in his children feeling as if the business has made them ‘orphans’ from their community. But doing so has meant that his family has been able to claw out of poverty, caused by a long period of unemployment prior to going into business.

The trade-off is not unique for Indigenous business owners across Australia. Shirodkar, Hunter and Foley (2020) use the three-wave Australian Census Longitudinal Dataset to identify that between the 2006 and 2016 Censuses, an additional 56 per cent of Indigenous business owners did not self-identify as Indigenous in 2006, but did so by 2016. In contrast, the non-identification rate for the whole Indigenous 15+ population was only 14 per cent over the same period, four times lower. For around a third of the Indigenous business population in 2006, denying their heritage and self-identity was likely the only way they felt they could survive in business in the presence of a racially discriminatory environment. And that was just in the context of something as innocuous as the Census, which only reports de-identified data. In our opinion, the propensity to hide one’s Indigenous identity from mainstream society reflects more on Australian society – forcing so many to deny who they, their family, their ancestors and their people are – than on the individuals themselves. In the past 20 years, the number of Indigenous Australians in business has grown rapidly, as have the numbers of Indigenous entrepreneurs who openly identify as Indigenous. Shirodkar, Hunter and Foley (2020) estimate that in the 10 years between 2006 and 2016, the number of Indigenous owner-managers of businesses grew from 10,500 to 19,400 – an 85 per cent increase. Part of the estimates reflects the fact that more Indigenous Australians in business are identifying their Indigenous status than previously. But that does not

diminish the likelihood that a substantial proportion of current Indigenous business owners likely did not identify as Indigenous at the latest Census (in 2016), for much the same reasons as previously.

Despite the phenomenon of discriminatory treatment, only a few Australian papers have asserted that discrimination and prejudice have impacts on Indigenous business ownership in Australia, including Shirodkar, Hunter and Foley (2020); Shirodkar and Hunter (2019); Shirodkar, Hunter and Foley (2018); Wood and Davidson (2011); Foley (2006); Foley (2003); Foley (2000) and Dana (1996). In particular, Foley (2003) finds that racial discrimination from mainstream Australia was a common occurrence and a constant presence in the life of the Indigenous entrepreneur, '[t]his was evident when dealing with Government institutions, financiers, creditors and even the entrepreneurs' clientele. To an Indigenous Australian, racial discrimination is a part of life' (2003:17). He also identifies that '[d]iscrimination (racism) is so common to Indigenous Australians that it is only acknowledged when it is physical or exclusionary' (2003:17).

Some research has also raised the phenomenon of internalised discrimination as a possible cause of poorer outcomes for Indigenous Australians. Paradies, Harris and Anderson (2008) identify internalised racism as a type that people within the same racial/ethnic group perpetuate against one another, with the lateral violence that may occur used as evidence of its presence. It presents a contentious issue within Indigenous communities, but the authors suggest that discussion of the phenomenon may well just present a manifestation of "victim-blaming" discourses that characterise racism as an Indigenous 'problem' rather than recognising it as a consequence of systemic racism within non-Indigenous society.' (2008:5). Following an extensive series of interviews with Indigenous entrepreneurs, Foley (2000) finds some evidence for this behaviour but that the racism the entrepreneurs experience, '... is predominantly directed from the non-Indigenous population, and secondly, it is experienced to a lesser degree from within the Indigenous Australian community.' (2000:51).

Almost all of the Australian research on the impacts of discrimination on Indigenous entrepreneurship is qualitative. Shirodkar and Hunter (2019) undertake the first published quantitative study to determine if a racial element may affect the likelihood of business ownership for Indigenous Australians, once accounting for other demographic and socioeconomic factors. Shirodkar and Hunter (2019) use an individual-level probit cross-sectional estimation to determine the probability of a person entering into business based on characteristics identified in the Australian Census Longitudinal Dataset. The characteristics include Indigenous status, gender, age, income, home ownership, disability, education levels and socioeconomic advantage or disadvantage of their suburb. The study determines that identifying as an Aboriginal and/or Torres Strait Islander Australian in the Census explains between 4–5 percentage points of difference between Indigenous and non-Indigenous business ownership rates, which is statistically significant at the 1.0 per cent level. That is sizeable, considering the Shirodkar, Hunter and Foley (2020) estimates suggest that the rate of Indigenous business ownership sits at around 3.7 per cent compared with around 8.6 per cent for non-Indigenous Australia. But the study provides only a partial response to the question of whether or not discrimination is a confounding factor in

the decision of individuals to go into business. Clearly, a racial element exists. The study cannot determine if systematic societal discrimination is the primary cause or if internalised factors within the Indigenous community also play a role. For that, one requires data that can measure the internal psychological factors of a population, which enables an understanding of societal biases. The challenge has been attempting to identify a sufficiently robust measure (Hunter, Howlett and Biddle, 2014). To address the challenge, this paper uses the Implicit Association Test (IAT), offering a means to gain some measurable insight into those internal psychological processes.

3. The Implicit Association Test (IAT)

Greenwald, McGhee and Schwartz (1998) developed the IAT as a *behavioural tool* in social psychology, providing a means to measure implicit attitudes in individuals towards various target concepts. The authors define implicit attitudes as ‘actions or judgements that are under the control of automatically activated evaluation, without the performer’s awareness of that causation’ (1998: 1464). Over time, the concept has become synonymous with the more widely used terms, *unconscious attitudes*, *unconscious bias* and *implicit bias* (Hehman, Flake and Calanchini, 2018; Green *et al.*, 2007; and Nosek, Banaji and Greenwald, 2002).

The IAT technique offers a versatile means to measure inherent attitudes towards a range of concepts including ethnicity, Indigeneity, homosexuality, age, weight, self-esteem, gender, smoking, and even contraceptive use. Many of the US-based IATs have collected millions of observations in free online-based tests. Anyone can participate in an IAT, assuming access to the internet, and can complete the test within 30 minutes. Since participants generally find their own way to perform IATs, a random sampling framework does not apply. But Shirodkar (2019) argues that the shortcoming does not diminish the overall generalisability of the aggregated results. If anything, the average result for even a very large sample may underestimate the extent of implicit bias because of the disproportionately high number of women and left-leaning participants drawn to taking the test (who tend to display on average lower levels of implicit bias). The IAT is widely known for its ability to measure implicit attitudes within individuals—particularly towards marginalised groups, and has been applied extensively in psychology. In addition, it can measure the biases of a person from a marginalised group towards or against their own community, thereby providing a measure of both an external discriminatory environment and internalised racism. Given the large numbers of individuals who participate in online IATs, the real value of the test for economists and sociologists arises from looking at results for large segments of society that have participated in the test.

The most well-known version of the IAT measures US participants’ automatic evaluation of African Americans compared with Caucasian Americans. When analysing the data for large samples, the test has displayed predictive validity – arguably the most important form of establishing the validity of a measure – with a number of studies correlating IAT-measured implicit bias with poorer outcomes for the African American community. Heman, Flake and Calanchini (2017) correlate higher implicit bias in US regions with higher police shootings of unarmed African American men.

Orchard and Price (2017) establish a correlation between the higher levels of racial prejudice and differing birth outcomes of African American and Caucasian babies. And Green *et al.* (2007) find that US doctors with a measured implicit bias against African Americans were on average less likely to prescribe required heart medication to African American patients compared with Caucasian patients.

The studies reveal that the IAT may well capture the previously unmeasurable and often unobservable factors that lead to poorer socioeconomic and health outcomes for some communities compared with others, on a systematic basis. Sociologists such as Bonilla-Silva (2003) suggest that systemic bias in the absence of intentional discrimination leads to 'racism without racists', which accords with the notion in psychology of implicit bias (Payne, Vuletich and Lundberg, 2017). Indeed, Payne, Vuletich and Lundberg (2017) argue that implicit bias may well provide a marker for systemic prejudice (interchangeable with systemic racism). The authors also suggest that implicit bias offers, '... a mechanism that translates systemic prejudice into individual[-level] discrimination.' (2017:239).

Shirodkar (2019) reports IAT data for Australian participants measuring the implicit bias of participants towards Indigenous Australians (the Australian IAT). The study combines the individual results of participants to make general claims about the pool of participants based on different demographic characteristics. The research shows that on average, the 11,099 Australian participants who undertook the test between December 2009 and April 2019 displayed a statistically significant implicit bias against Indigenous faces and in favour of Caucasian faces, with an average IAT D Score of +0.29. The IAT D Score (unit of measuring implicit bias) was comparable in magnitude to that displayed towards African Americans in the US race-based IAT. Around three quarters of participants of the Australian IAT received a positive IAT D Score, implying a bias against Indigenous Australians. The results provide interesting insights about various cross-sections of the participants, including those based on gender, age, ethnicity, occupation, education levels and political persuasions.

The results in Shirodkar (2019) are confronting. If one accepted that the results are capturing a valid societal phenomenon that is generalisable, it suggests that Indigenous Australians are on average likely to experience implicit bias in almost every social setting when in contact with most non-Indigenous Australians and their Indigenous identity is known and/or observable. Having said that, many whose identity is not observable may still be exposed to discriminatory views about Indigenous Australians, but may not feel empowered to refute such claims for fear of having the perpetrator's ire directed at them. Hence the previous example of the Indigenous entrepreneur claiming Spanish descent in order to continue in business.

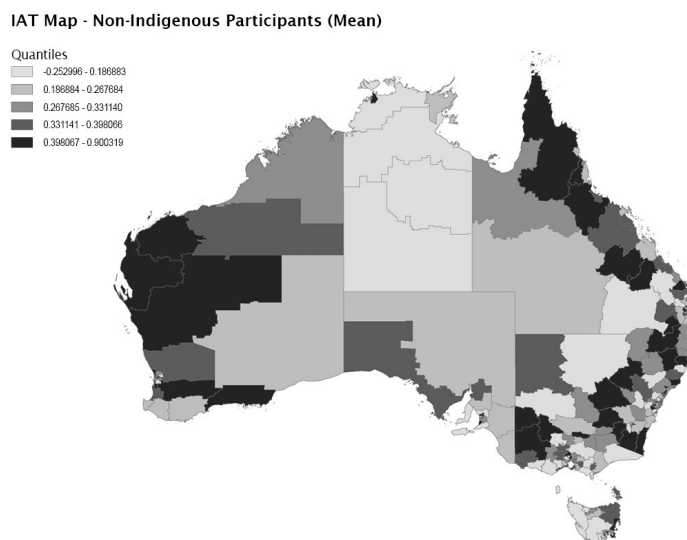
The following section attempts to establish if the Australian IAT results have any explanatory power in determining an impact on Indigenous business ownership rates.

4. Modelling the effect of implicit bias on Indigenous business ownership rates

This paper employs a simple *ecological* regression model specification to understand the extent to which IAT results impact on variations in Indigenous business ownership rates across SA3 regions. We control for a range of regional variables that are associated with higher rates of local Indigenous businesses in the literature (Shirodkar and Hunter, 2019), and test for the significance of the coefficients associated with IAT variables. The model applies a cross-sectional specification, with most of the variables in the model coming from the 2016 Census of Population and Housing. However, the key determinant tested in this paper, the IAT D Scores, treat the entire testing period (2009-2019) as a single sample, since taking a point estimate for 2016 would have severely reduced the sample size. Given the remarkable stability of the IAT D Score over time, this approach does not pose many challenges (Shirodkar, 2019).

Access to participants' postcode data provides an opportunity to map individual IAT results to Australian Bureau of Statistics (ABS) statistical areas, on the assumption that the average IAT D Score of participants reflects the general implicit bias of a region. Chart 1 provides a map of non-Indigenous IAT D Scores across Australia. The maps reveals that almost all areas are on average in the positive range of IAT D Scores (i.e., *biased against Indigenous Australians*), barring four regions (two of which had five or fewer observations and were those not included in the regression model). The lowest average non-Indigenous IAT D Score (i.e., the most negative) for a region with at least five observations was recorded in the Huon-Bruny Island SA3 in Tasmania, which interestingly recorded an Indigenous business ownership rate that was more than twice the national average. And the highest average non-Indigenous IAT D Score for a region with at least five observations was the Armidale SA3 in regional NSW, which had a lower than average Indigenous business ownership rate. In order to reduce the impact of outlier results, SA3 regions that contained five or fewer IAT observations were removed from the sample. The distribution of non-Indigenous and Indigenous IAT D Scores by SA3 are provided at Appendix 1.

Chart 1: Map of non-Indigenous IAT D Scores across Australian SA3 regions



The model specification for explaining Indigenous business ownership rates is largely parsimonious. ABS data sources provide the explanatory variables for the economic performance of the region, including incomes, employment rates and education levels. Table 1 provides a list of the economic explanatory variables in the model, including an indication of the relevant literature that supports its inclusion.

The equation below specifies the structure of the model:

$$y_i = X_i\beta + \varepsilon_i$$

where y_i = the proportion of the Indigenous 15+ population that are owner-managers in SA3 region i ; and X_i = the vector of determinants of the rate of business ownership in SA3 region i (see table 1). The error term ε_i will account for SA3 regional variations that are not otherwise specified.

Table 1. Determinants of business ownership

| <i>Explanatory variables</i> | <i>Supporting literature</i> | <i>Source of data</i> |
|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| Non-Indigenous IAT results by SA3 (2009-2019) as a measure of an external discriminatory environment | Dana, 1996; Foley, 2000; Foley, 2003; Foley, 2006; Wood and Davidson, 2011; Shirodkar, Hunter and Foley, 2018; Shirodkar and Hunter, 2019 | IAT results for Australia, Project Implicit |
| Indigenous IAT results by SA3 (2009-2019) as a measure of an internal discriminatory environment | Foley, 2000; Paradies, Harris and Anderson, 2008 | IAT results for Australia, Project Implicit |
| Education level (number of people with diplomas and advanced diplomas in region divided by the 15+ population) by SA3 in 2016 | Schultz, 1972; Delmar and Davidsson, 2000; Foley, 2000; Lazear, 2004; Uhlaner and Thurik, 2007; Acs, Armington and Zhang, 2007; Shirodkar and Hunter, 2019 | ABS Census of Population and Housing 2016 |
| Mean total income levels by SA3 in 2015-16 | Kuznets, 1971; Lucas, 1978; Schultz, 1990; Wennekers <i>et al.</i> , 2007 | ABS Estimates of Personal Income for Small Areas (2011-17) |
| Indigenous employment rate (number of Indigenous employed in full-time or part-time work divided by the 15+ population) by SA3 in 2016 | Lucas, 1978; Evans and Leighton, 1990; Krugman, 1991; Meager, 1992; Acs, Armington and Zhang, 2007; Wennekers <i>et al.</i> , 2007; Krugman, 2011 | ABS Census of Population and Housing 2016 |
| Employment rate (number employed in full-time or part-time work divided by the 15+ population) by SA3 in 2016 | Lucas, 1978; Krugman, 1991; Acs, Armington and Zhang, 2007; Krugman, 2011 | ABS Census of Population and Housing 2016 |

External discriminatory environment – reflecting systemic discrimination

The literature review above provides sufficient justification for the inclusion of IAT results. The model incorporates the IAT results for all non-Indigenous Australians who participated in the test by SA3 regions. Removing the results of Indigenous Australians from the IAT score variable means that the model can isolate the specific impact of bias from both populations.

Based on the literature, one would expect that a higher IAT D score (i.e., an implicit bias against Indigenous Australians) would result in lower rates of Indigenous business ownership in region *i*. That is because the greater latent hostility towards Indigenous Australians would reduce the scope for business ownership. For example, a business owner could face discrimination directly from three points, 1) as a result of customers who do not pay invoices once they find out a business is Indigenous-owned, 2) suppliers who do not extend credit and 3) lenders who may claim that

Indigenous Australians present too much of a risk (Shirodkar, Hunter and Foley, 2018). Additionally, customers may choose not to frequent the business just because they do not want to purchase from an Indigenous retailer, and Indigenous businesses may be shunned from established local business networks.

Internalised racism within the Indigenous community

Internalised racism within the Indigenous community is a contentious topic. It draws upon views of *self-loathing* and *lateral violence* within marginalised groups in relation to their circumstances. Since the IAT data collects results from Indigenous (and non-Indigenous) participants, this ecological analysis provides a means to gauge the potential impact of internalised Indigenous biases on Indigenous business ownership. Given the small number of Indigenous participants who had undertaken the test (N = 410), and given Indigenous participants are only in 180 SA3 regions, the estimation includes SA3 regions that had fewer than six Indigenous IAT D Scores. This may well limit the robustness of any statistical significant result. One could reasonably expect a small negative relationship, if any, between the two variables if both were reliably measured, implying that an increase in IAT D Scores amongst Indigenous Australians will have a negative effect on Indigenous business ownership.

Education levels

Education levels are an important explanatory factor behind business ownership rates (Shirodkar and Hunter, 2019; Acs, Armington and Zhang, 2007; Uhlaner and Thurik, 2007; Lazear, 2004; Delmar and Davidsson, 2000; Foley, 2000; and Schultz, 1978). Shirodkar and Hunter (2019) find that having Diplomas and Certificate level qualifications increased the likelihood of a person entering into business compared to having a university level qualification or a secondary school qualification. The result accords with Lazear (2004), who suggests business owners must be multi-skilled or require a balanced range of skills in order to perform a 'jack of all trades' function. Many small business people are often forced to engage in such a role, given the limited resources that are at their disposal. Diplomas and advanced diplomas provide what Shirodkar and Hunter (2019) refer to as a practical qualification, delivering skills that are more easily deployable across a range of industries, offering a key economic lubricant, particularly in a small business environment.

Average total income levels

Including average total (nominal) income levels provides an approximate measure of a region's affluence compared with other regions, creating strong incentives for business ownership (Kuznets, 1971; and Lucas, 1978). An income variable provides an indication of the average disposable income available in a region. A higher level of income would presumably attract greater numbers of owner-managers. One would assume therefore a positive relationship between the average income in region *i* and Indigenous business ownership all other things being equal. In international studies looking at business ownership rates, GDP or GNP per capita is used as a measure of income (Wennekers *et al.*, 2007; Schultz, 1990). Given that this paper measures

cross-sectional differences in the one time-period and in the one country, the ABS's Estimates of Personal Income for Small Areas in 2015-16 will suffice.

Indigenous employment rate

The model includes the rate of Indigenous employment (i.e., Indigenous Australians employed as a share of the 15+ population) as a means of explaining general economic prospects for Indigenous Australians in the region. The variable serves as an anchor of the general opportunities available for Indigenous Australians in the region, with an assumption that higher rates of Indigenous employment results in higher rates of Indigenous business ownership. Presumably then, a general participation effect improves the economic prospects of the entire community assuming all other things being equal. Also note that a reverse causation may also result, since Indigenous businesses are anywhere between 40 to 100 times more likely to hire Indigenous employees compared to non-Indigenous businesses (Shirodkar and Hunter, 2019; and Hunter, 2014). Other studies have also argued the potential for a negative relationship to result, that is, more favourable labour market conditions may reduce the need for necessity business ownership (Wennekers *et al.*, 2007; Meager, 1992; and Evans and Leighton, 1990). But perhaps different incentives and opportunity costs apply for those from a majority background to enter into necessity entrepreneurship as opposed to a person from a marginalised background.

Regional total employment rate

The new economic geography literature provides a theoretical basis for understanding the growing disparities in opportunities for different regions based on factors such as infrastructure, degree of urbanisation, and access to physical and human capital, which are functions of transportation costs, economies of scale and factor mobility (Krugman, 1991; Acs, Armington and Zhang, 2007; and Krugman, 2011). The abundance (or lack thereof) of these factors will affect the exploitable opportunities available for business owners. A region's overall employment rate provides a parsimonious measure of overall economic opportunity in a given geography. The employment rate as measured in this paper provides an indication of the share of local 15+ population who are actively productive in the region as at the time of the 2016 Census of Population and Housing. One would assume, therefore, a positive relationship between the employment rate in region i and Indigenous business ownership all other things being equal. Note that Indigenous Australians are included in the calculation of the total employment rate, since they form part of economic capacity of the region. Their exclusion from the calculation could understate the productive capacity of a region. For instance, in certain SA3 regions (particularly in the Northern Territory) Indigenous Australians make up a large share of the workforce.

5. Results

The two ecological regression models are specified as:

$$1) y_i = f(\text{constant}, x_{1i}, x_{3i}, x_{4i}, x_{5i}, x_{6i})$$

$$2) y_i = f(\text{constant}, x_{1i}, x_{2i}, x_{3i}, x_{4i}, x_{5i}, x_{6i})$$

Where y_i = Indigenous business ownership rate for region i ; x_{1i} = Average IAT D Score of non-Indigenous participants for region i ; x_{2i} = Average IAT D Score of Indigenous participants for region i ; x_{3i} = Diploma rate for region i ; x_{4i} = Average income level for region i ; x_{5i} = Indigenous employment rate for region i ; x_{6i} = regional employment rate for region i .

Table 2 provides summary statistics for the models specified above.

Table 2. Summary statistics of model specifications 1) and 2)

| Variable | <i>N</i> | Mean | Std. Dev | Min | Max |
|------------------------------------------------------------------------------------------------|----------|--------|----------|--------|---------|
| y_i = Indigenous business ownership rate | 337 | 0.035 | 0.025 | 0 | 0.198 |
| x_{1i} = Average IAT D Score of non-Indigenous participants (excl. regions < 6 participants) | 289 | 0.307 | 0.108 | -0.253 | 0.645 |
| x_{2i} = Average IAT D Score of Indigenous participants | 186 | -0.004 | 0.351 | -0.931 | 1.177 |
| x_{3i} = Diploma rate | 340 | 0.085 | 0.017 | 0 | 0.127 |
| x_{4i} = Average total income level ('000s) | 334 | 60.490 | 14.205 | 41.386 | 129.254 |
| x_{5i} = Indigenous employment rate | 337 | 0.483 | 0.126 | 0 | 1.23 |
| x_{6i} = regional employment rate | 340 | 0.555 | 0.075 | 0 | 0.784 |

The difference between the two specifications is that 1) only incorporates non-Indigenous IAT D Scores while 2) also adds Indigenous IAT D Scores as a measure of internalised racism in Indigenous communities. The results reported will primarily focus on specification 1), with a small commentary of the results from 2) at the end of the section.

Table 3 presents the results for each model specified. Initial estimations indicated the presence of heteroscedastic errors, i.e., that $\varepsilon_i \sim (0,1)$ does not hold, and therefore, one cannot assume homoscedastic errors. Using heteroscedasticity-consistent standard errors does not require assuming homoscedasticity (Hayes and Cai, 2007). P-values reported in Table 3 reflect the inclusion of heteroscedasticity-consistent standard errors.

The OLS regression in specification 1) explains roughly 48 per cent of the variation in Indigenous business ownership rates across SA3 regions and the model is jointly significant with an F-value of 52.65. All explanatory variables in the model (apart from the constant and income) are statistically significant at the 1.0 per cent level.

Table 3. Regression models for the determinants of business ownership

| <i>Dependent variable:</i> | | |
|---------------------------------------------------------------|----------------------------------|----------------------------------|
| <i>Indigenous business ownership rate by SA3</i> | <i>Specification 1</i> | <i>Specification 2</i> |
| x_{1i} = Average IAT D Score of non-Indigenous participants | -0.027 (0.002)*** [-0.121] | -0.025 (0.012)** [-0.117] |
| x_{2i} = Average IAT D Score of Indigenous participants | | -0.0004 (0.902) [-0.008] |
| x_{3i} = Diploma rate | 0.543 (0.000)*** [0.324] | 0.482 (0.000)*** [[0.328] |
| x_{4i} = Average total income level ('000s) | 0.0004 (0.02)** [0.224] | 0.0003 (0.02)** [0.230] |
| x_{6i} = Indigenous employment rate | 0.112 (0.000)*** [0.497] | 0.099 (0.000)*** [0.519] |
| x_{5i} = regional employment rate | -0.120 (0.000)*** [-0.299] | -0.095 (0.002)*** [-0.280] |
| Constant | -0.014 (0.02)** [NA] | -0.016 (0.088)* [NA] |
| Number of Observations | 289 | 180 |
| R ² | 0.482 | 0.478 |
| F statistic – joint significance test | 52.65 | 23.92 |

Note: The table reports the beta coefficients of the explanatory variables. Figures in parenthesis are P-values (reflecting heteroscedasticity-consistent standard errors). Figures in square brackets are standardised coefficients. NA is not applicable. *** denotes statistically significant at the 1.0 per cent level. ** denotes statistically significant at the 5.0 per cent level. * denotes statistically significant at the 10 per cent level.

Importantly, the model shows that the average IAT D score of non-Indigenous participants had a statistically significant negative correlation with the rate of Indigenous business ownership across SA3 regions. The coefficient is -0.027, meaning if the IAT D score of a region increased from 0 (perfectly unbiased) to 1 (highly biased against Aboriginal Australians), the rate of Indigenous business ownership would reduce by 2.7 percentage points all other things being equal. To put that into context, the unadjusted average rate of Indigenous business ownership as measured in the 2016 Census was 2.7 per cent. As such, a highly biased operating environment can have a significant negative effect on Indigenous business ownership. The standardised coefficient (i.e., how many standard deviations a dependent variable will change based on a per standard deviation change in the independent variable) for the non-Indigenous IAT D Score is -0.12, implying that a one standard deviation increase in IAT D scores will result in a 0.12 standard deviation decrease in business ownership rates.

As predicted, the overall diploma rate has a positive coefficient, showing that a 1.0 per cent increase in the region's diploma rate increases the rate of Indigenous business ownership by 0.54 percentage points and the standardised coefficient is +0.32. The size of the result implies that the variable may well be doing more than just having a supply-side effect on business ownership rates. It may well also present the economic 'lubricant' of skilled labour that provides easily deployable skills necessary to make business formation possible across multiple sectors. Further research into understanding the importance of diplomas and other similar qualifications in improving the economic prospects of regions is warranted.

Higher average income levels for SA3 regions increased rates of Indigenous business ownership. For each \$10,000 increase in average regional income, the rate of Indigenous business ownership grows by 0.004 percentage points, with a standardised coefficient of 0.22. The result implies that Indigenous business ownership rates are higher in increasingly affluent regions, as expected.

The Indigenous employment rate for a region has a sizeable, positive and statistically significant correlation with the Indigenous business ownership rate. A 1.0 per cent increase in the Indigenous employment rate results in a 0.11 per cent increase in the Indigenous business ownership rate, and the standardised coefficient is +0.50. The result implies that a general Indigenous economic participatory effect likely significantly benefits Indigenous business ownership. The result implies that greater employment conditions for Indigenous Australians will do the most to improve Indigenous business ownership rates compared with any other variable tested. The result is at odds with the notion that improving labour market conditions raises the opportunity cost for business ownership, thereby reducing the rate of business ownership, or perhaps it reflects the different dynamics that apply to marginalised groups. But as this analysis only establishes correlation, the effect may also reflect a reverse causal relationship as suggested in Hunter (2014), who finds Indigenous businesses are much more likely to hire Indigenous workers than non-Indigenous businesses.

Interestingly, the overall employment rate for a region (which includes non-Indigenous and Indigenous employment) has a negative and statistically significant effect on the Indigenous business ownership rate once the region's Indigenous employment rate is included in the model. The negative sign is surprising and somewhat at odds with the positive coefficient for higher average incomes, meaning that the negative coefficient is not a function of affluence necessarily. The result implies that once accounting for Indigenous employment specifically, Indigenous businesses may currently be more abundant in regions that have relatively low overall rates of employment.

Table 3 reveals that the Indigenous IAT D Score variable x_{2i} (in specification 2) had insignificant explanatory power at the 10 per cent level. The variable's inclusion reduced the overall significance of the model from an F value of 52.65 for 1) to an F value of 23.92 for 2). The results imply the inclusion of the Indigenous IAT D Score may misspecify the model. As such, there is no quantitative evidence to suggest that internal biases within Indigenous communities have a meaningful impact on Indigenous business ownership rates. Having said that, the relatively small number of Indigenous IAT observations in many regions means that we should be cautious about interpreting too much from the null result.

6. Conclusion

The quantitative findings of this research supports other evidence from the Indigenous business literature around the negative effects of discrimination (Shirodkar, Hunter and Foley, 2020; Shirodkar and Hunter, 2019; Shirodkar, Hunter and Foley, 2018; Wood and Davidson, 2011; Dana, 1996; Foley, 2006; Foley, 2003; Foley, 2000). The experiences of African Americans attempting to access the mainstream economy formed the basis for the literature around the economics of discrimination as pioneered by American Nobel Laureates, Gary Becker and Kenneth Arrow. This paper attempts to contribute to that body of literature on the economics of discrimination by developing quantitative findings that support the view that implicit racial biases limit economic opportunities for marginalised communities. The situation causes a circumvention of the low entry cost principle of well-functioning markets, thereby resulting in a market failure.

The findings from the ecological regression offer evidence to suggest that societal biases are reducing Indigenous business ownership rates. The use of the Australian IAT, a first in Australian research, shows that the presence of an external biased operating environment curtails rates of Indigenous business ownership across Australia, once other major economic factors are considered. Further, the overall model specification 1) displays a high explanatory power (r^2) of 48 per cent.

The results suggest that the presence of a highly implicitly biased environment reduces opportunities for Indigenous Australians to enter into business. In order to avoid discrimination and survive as a business owner, some must completely or at least partially subsume their self-identity into that of the dominant culture – i.e., identify as non-Indigenous. For those potential entrepreneurs who are unwilling to make such a costly trade-off, the results suggest that society's implicit bias – reflective of systemic racism in Australia – may create an invisible yet impervious barrier into business ownership. For some an infringement on one's integrity may present too high a price to pursue such a life, thereby limiting their participation in enterprise. For those who do subsume their identity, such a decision is likely at great personal cost to themselves, their families and to their community. But wider society may perceive such behaviour as dishonest and by association, the proprietor as untrustworthy, not recognising that society's own implicit biases are the cause of such a drastic action. But Shirodkar, Hunter and Foley (2020) provide irrefutable evidence to show that as recently as 2006, around a third of the Indigenous business owners at that time denied their Indigenous identity in the Census. One must take pause to recognise the magnitude, and the social, economic and personal ramifications of the observation.

This paper finds no evidence to suggest that internalised racism has a statistically significant impact on Indigenous business ownership rates, but we recognise the scope for error to creep into the small number of Indigenous IAT D scores across regions.

Overall the findings largely accord with Foley (2000), who argues the racism that the Indigenous entrepreneur experiences, '... is predominantly directed from the non-Indigenous population, and secondly, it is experienced to a lesser degree from within the Indigenous Australian community.' (2000:51). The results put into question whether a narrative around internalised discrimination actually limits business

prospects for Indigenous Australia. As Paradies, Harris and Anderson (2008) suggest, such a narrative may well represent a convenient ‘victim-blaming’ discourse that characterises racism as an *Indigenous problem*. But it is hard to argue that such a narrative has not influenced much of the research in the Indigenous space. It may well also infiltrate the context in which many well-meaning authors in the Indigenous business literature write within.

The findings of this research have implications for policy makers. One cannot simply focus on improving the skills and capabilities of Indigenous Australians and assume the approach can sufficiently address the persistent gap in socioeconomic outcomes between Indigenous and non-Indigenous Australia. We must recognise the undermining effect of our implicit biases, and the consequences for Indigenous Australians and other marginalised groups. Recognising uniqueness and distinctiveness does not necessarily require the ‘othering’ and marginalisation of entire subsets of our citizenry. A number of studies have attempted to evaluate treatments to implicit biases, such as implicit bias training, exposure to others’ perspectives, induced threats, invoking goals and motivation but they often produce mixed results and the positive benefits if any are relatively weak (Forscher *et al.*, 2019, FitzGerald *et al.*, 2019, Atewologun, Cornish and Tresh, 2018; and Noon, 2018). Mitchell and Tetlock (2006) argue the inappropriateness of using an individual’s IAT score as a measure of prejudice for the purposes of practising anti-discrimination law, although they note the IAT may well still capture implicit associations that individuals make. Such a caution is reasonable, particularly given the potential measurement errors that could creep into an individual’s score. But we should also not discount the diagnosis because of the potential ineffectiveness of a single prescription. The criticisms are premised on the notion that the IAT is primarily a means of measuring ‘individual-level’ bias. This analysis shows that the IAT, arguably, provides greater value when thinking about large subsets of the population. The right psychological tools may not necessarily exist today to address the challenges that affect an individual’s level of implicit bias, and indeed, ethical concerns plague any intervention on individuals based on such a test. But that should not discount the potential for this research to diagnose an underlying phenomenon that is rarely explored in Australia. Changing our mindsets requires individuals challenging their own automatic or implicit associations, particularly when they cast an already marginalised group in a negative light. That is an introspective and, ultimately, individual journey for each of us, and not necessarily a role for policy makers. However, policy makers could help create an environment that encourages individuals to question their own immediate and implicit reactions, particularly when those reactions cause harm.

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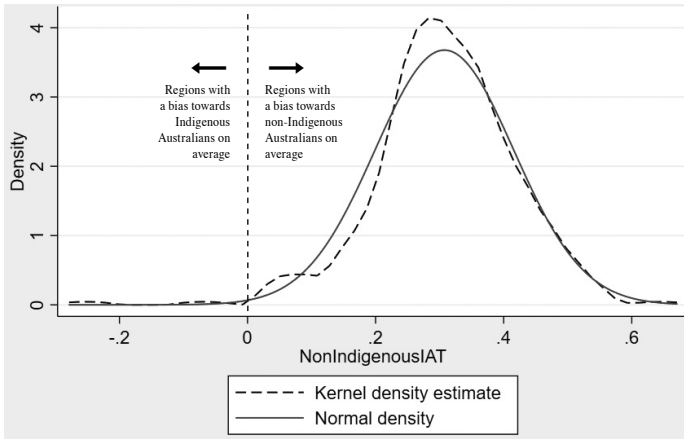
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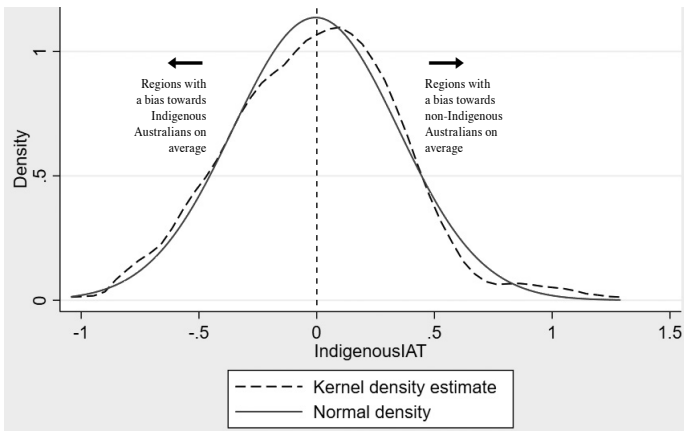
Appendix 1: Distribution of IAT D Scores by SA3 regions

Appendix Figure 1.1. Kernel density estimate of non-Indigenous IAT D Scores by SA3 regions



Notes: Average IAT for at least 5 respondents per region, N = 289

Appendix Figure 1.2. Kernel density estimate of Indigenous IAT D Scores by SA3 regions



Notes: Average IAT, no limit on number of respondents per region, N = 186