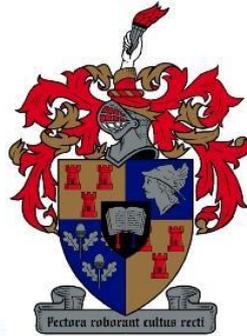


DEPARTMENT OF ECONOMICS

UNIVERSITY OF STELLENBOSCH



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Is Diversity Enough?

An Empirical Investigation of the Influence of Social Identity,
Out-group Exposure and Affirmative Action Policies on the
Academic Success of Undergraduate Students at Stellenbosch
University.

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(This version is a working version of the author's BCom Honours
thesis and is NOT final and should NOT be cited).

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1 Abstract

This paper uses retrospective data for undergraduate students from the period 2008 to 2018 to examine what empirical relationships exist between academic success and demographic, geographic and situational characteristics. We place an emphasis on the roles of social identity theory on student academic success at Stellenbosch University. It is our assumption that the extent to which intersections of social identities and social distance from the dominant identity within social spaces (classrooms and residences) varies might account for variation in the outcomes of “low-status” minority groups. Through understanding the complex correlation between social identity and academic performance, particularly within an educational space that is becoming increasingly diverse, we are able to discover important policy conclusions for the management and implementation of affirmative action policy aimed at the transformation of institutions of higher education. Ultimately we find that these social distance factors are at play, but that increasing diversity on Stellenbosch (SU) campus that has been brought about by these affirmative action policies has resulted in better academic performance for not only marginalised groups but for all students on SU campus.

2 Introduction

Stellenbosch University has undertaken the immense challenge of transforming the institution to better represent, support and educate students in a post-Apartheid South Africa to as to reduce inequality. An important part of this has been widening access to education across all groups of students, with a particular emphasis on supporting previously disadvantaged groups.

Much of the transformation of the student body at Stellenbosch University (SU) has been facilitated by ‘affirmative action’ policies that support the constitutional Bill of Rights in redressing inequalities. In order to achieve greater social equality, it is important that stigmatised groups strive toward improving their position within society. In equalising access to higher education, not only will these policies contribute to a more equal distribution of economic and social capital, but can contribute to positive shifts in publicly-held perceptions and valuation of social group identity.

This paper investigates the role of language exposure, school background and residence placement on student success. Section three provides a brief background and literature review, looking particularly at the motivation for policies aimed at redressing past inequality, and provides a rationale behind why certain groups may feel marginalised and stigmatised on

the campus resulting in a potential downward bias in their academic performance. This is contextualised by considering social distance and stereotype threat theory. Section four provides some descriptive statistics to conceptualise the makeup and background of the SU student body over the period. Section five considers the academic performance of minority students and how schooling, language and residence placement may affect these students. Section 6 summarises and concludes.

3 Background

Since the democratic transition in 1994, Stellenbosch University (SU) has become an increasingly more ethnically and socially diverse space: In 1990, only 5.4 percent of the student population at SU was made up of coloured, black African, Indian, Asian (CBIA)¹ students. In 2018, the student profile was far more diverse, with nearly 42 percent of the student body made up of CBIA students. Part of this remarkable growth in CBIA representation on campus is owed to the adoption of several affirmative action based SU policies aimed at rectifying inequalities in access to tertiary education. Several policies have been phased in throughout the period considered by this study, such as the various iterations of the language policy, the recruitment bursary policy and the residence placement policy.

The residence placement policy aims to rectify inequalities in access, and requires that students placed and allocated in residences be representative of a diversity of social backgrounds, such that "... it will contribute positively to the formation of sound, diverse communities that will in turn contribute to optimal growth and development in the out-of-class experience to eventual success". The placement of vulnerable students (*inter alia* new first-year students and students requiring financial support bursaries) is also emphasised as a policy objective. This policy, in tandem with the recruitment bursary policy exist as incentives to CBIA students, whom have been historically less likely to apply to Stellenbosch University.

In spite of these policies, the proportion of CBIA representation was below the anticipated target for 2018 of 50 percent, and it is now expected that 50 percent CBIA representation will be reached by 2022 (SU, 2018). It is furthermore important to note that CBIA representation differs substantially by qualification and faculty, displaying as much as 20 to 25 percentage points in variation. CBIA representation within the faculty of Economic and Management

¹ The authors of this proposal recognise race as a social construct. The use of race as a form of classification and nomenclature in South Africa is still widespread within academic literature, with the four largest race groups (as defined under apartheid laws and applied by DHET) being black African, Indian, coloured and white. This serves a functional (rather than normative) purpose. Stellenbosch University does not attempt to determine the race classification of applicants and enrolled students, but relies on a system of self-classification.

Sciences, for example, stood at 24 percent in both 2015 and 2016 (EMS, 2015; 2016) and 26.3 percent in 2017 (SU, 2018); postgraduate diversity in 2017 indicated 49 percent CBIA students across all SU faculties, suggesting that undergraduate diversity is less than the overall SU proportion of 42 percent. If we view only the Stellenbosch campus in 2018, representation is a much lower at only 32.64 percent.

According to the recently launched Strategic Framework 2019-2024 (SU, 2018), SU has placed the “delivery of a student experience that is transformative” as one of its core strategic themes. The framework expands on this theme through setting institutional goals, such as the provision of a “... unique, personalised student experience... which prepares graduates to lead and excel in a diverse world”, as well as the “...[enhancement of] our student success rate through educational innovation” [p.20]. Whilst the socio-economic and CBIA composition of the total student body are key performance indicators linked to the successful achievement of the strategic framework goals listed above, so too are the first-year retention rate, student success rate and student throughput rate. Yet, there is very little published work specifically documenting the academic success of SU students and, more importantly, the determinants of academic success.

There is, however, a widely held notion that CBIA students perform worse academically than white students: they are often thought to have lower marks, and take longer to graduate. This notion is not wholly unfounded, as across many societies, members of low status social groups (defined on the basis of *inter alia* ethnicity, ‘race’, gender and social class), when compared to members of high-status groups, generally display lower levels of grade and cognitive achievement across all levels of schooling (Thomson, 2018). Recent evidence from Van der Berg et al. (2016) and Spaul and Van Broekhuizen (2017), for example, has shown extraordinary racial inequalities in *access to* and the successful *conversion of* tertiary education; for instance, whilst a third of white women who had written the 2008 matric exam had obtained a university degree within six years, this proportion was only 5 percent amongst black African women.

Several theories that have been utilised to great effect internationally in answering questions related to inequities in academic outcomes have yet to be empirically explored in the South African context. These include stereotype threat (Steele, 1997; Aronson et al., 1999) and social identity (Tajfel & Turner, 1986) theory, and the relative status attached to social groups, underlying these. In the discussion that follows, we hope to illustrate the value not only to our understanding of social dynamics in South Africa, but also to furthering and broadening the scope of the existing international literature, of applying these theoretical frameworks to analysing academic success at SU.

In his seminal work, 'Economy and Society', Weber ([1918] 1968) provides an analysis of three different yet interrelated bases for inequality in industrial societies, namely, resources, power, and status. The role of resources and (to a lesser extent) power in accounting for differences in educational outcomes has received attention within the South African literature over the past 20 years (see, for example, Van der Berg, 2001; Spaul, 2013; Van der Berg et al., 2011; Van der Berg et al., 2016). In contrast, however, status has yet to be viewed as an independent mechanism by which inequalities arise and persist. As argued by Ridgeway (2013), when we regard inequality as merely a structural struggle for resources and power, we tend to underestimate the importance of an individual's sense of worth and belonging within society (Goode, 1978). Unlike resources and power which tend to be based in material arrangements, status is based primarily in widely held cultural beliefs about rankings of social categories of people (Jackson, 1998). However, material arrangements and status beliefs are inherently linked, as the latter develop more quickly under conditions where salient categorical difference (e.g. race and gender) is correlated with material inequalities (e.g. education and income).

Social identity theory presumes that individuals are motivated to maintain a positive view of the self. There is a shared notion amongst both advantaged and disadvantaged groups that the "type" of people who have more resources are "better" than the "types" with fewer resources, thereby legitimating the inequality (Ridgeway & Correll 2006). Membership of various social groups, and personal attachment to these social groups, motivates individuals to maintain positive identities. When individuals who belong to stigmatised ('low status') groups are confronted with status-relevant domains (e.g. schools or workplaces) dominated by members of high-status outgroups (a social group with which an individual does not identify), there may be an increased perception amongst low status group members that their competence and suitability for this domain is at risk of being judged; a threat to social identity is experienced. An increased emphasis on the relative inferiority of stigmatised groups brings with it the added challenge of avoiding confirming the stereotype. This in turn elicits disruptive responses, such as a decrease in working memory needed to competently complete a task, resulting in academic performance deficits, 'proving' the stereotype correct (Johns 2003, 2005).

According to Inzlicht and Ben-Zeev (2000), intergroup settings such as institutions of learning are inherently "threatening environments" in which the contextual salience of one's group membership and social standing relative to that of other groups can be increased. All students are potentially vulnerable to stereotype threat, because everyone has at least one social identity that is targeted by a negative stereotype in some given situation. However, biases and the need to protect social identity and maintain positive views of the self are notably stronger in higher outgroup institutional settings, such as elite universities for class and race, and

engineering classrooms for gender (Derks, Van Laar & Ellemers, 2015). Over 500 social experiments conducted over the past two decades support the notion of stereotype threat (Spencer, Logel & Davies, 2016), with evidence indicating that stereotype threat explains an important part (but not all) of the race gap in academics and the gender gap in mathematics (Walton & Spencer 2009).

However, evidence from this vast body of research has indicated that not all members of stereotyped groups are equally (if at all) negatively impacted by stereotype threat (see, for example, Aronson et al, 1999; Schmader, 2002; Brown & Pinel, 2003). Factors such as group identification, stigma consciousness and opportunities for individual (social) mobility, social ties and (as already discussed) group salience play important moderating and/or mediating roles on academic performance. When confronted with identity threat, members of stigmatised groups will actively try to protect their identity through adopting social creativity strategies that maintain positive views of the self and ingroups (Van Laar, Derks, Ellemers & Bleeker, 2010). Assimilationist responses are one creative strategy used to cope with stereotype threat, whereby members of a stigmatised social group might actively detach from (devalue) a social identity in order to 'justify' their ability to perform in a particular domain (e.g. a woman studying engineering might argue that her ability to perform academically arises from the fact that she is not like other women). Alternatively, the response might be to further attach (value) to the stigmatised identity and disengage/disidentify from performance domains in which the group is devalued (e.g. "you may be smarter, but we are nicer"). This can lead to self-segregation into contexts that are dominated by ingroup members, thereby lowering the likelihood of being faced with stigma.

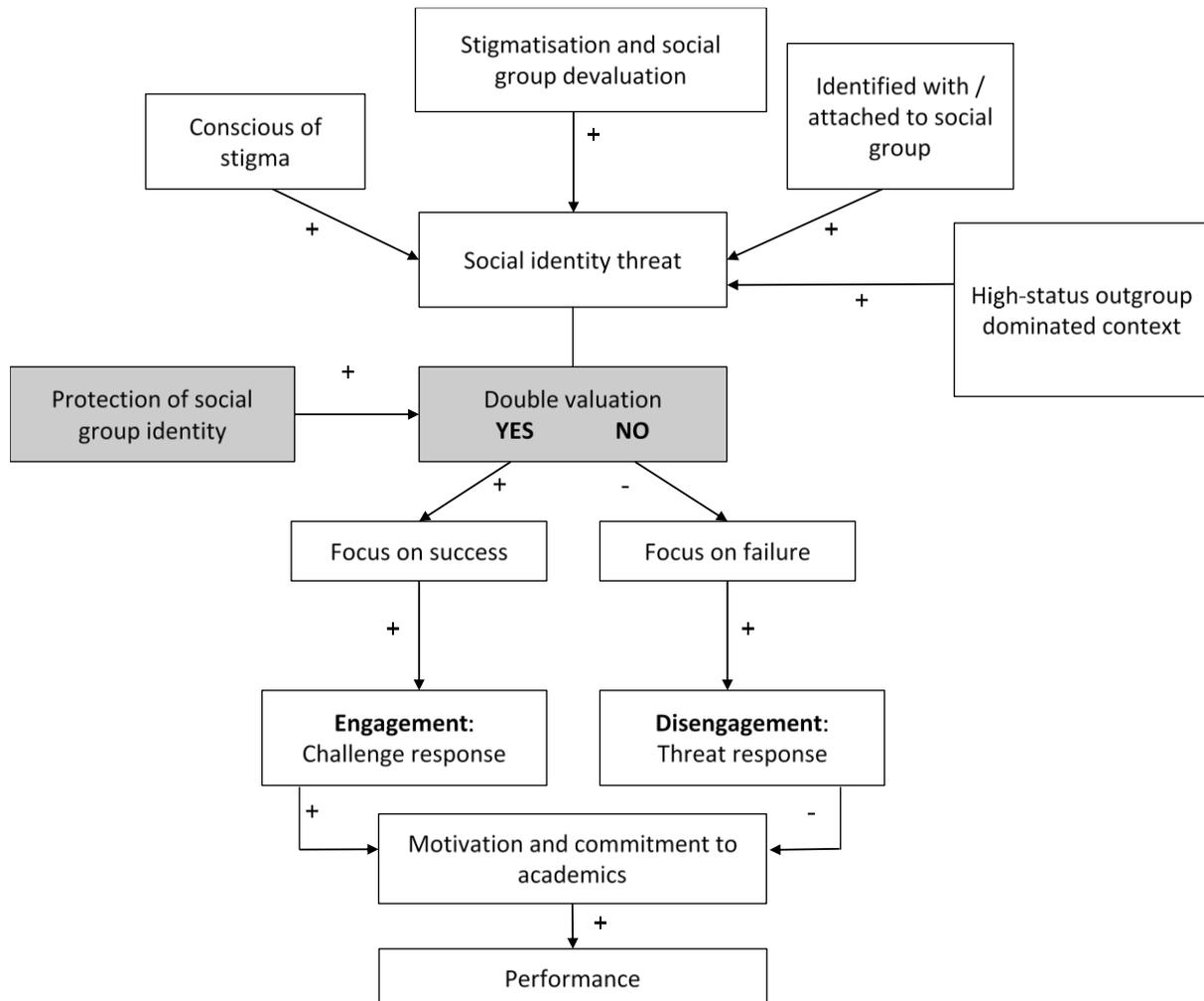
Van Laar, Levin and Sinclair (2008) argue that stereotype threat works through either personal (concerns for how the stereotype reflects their personal identity) or social (concerns for how the stereotype reflects others that share their social identity) channels. They show that, as expected, if an individual identifies highly with their social identity (e.g. gender or ethnicity) then they are most affected by social identity stereotype threat; conversely, if they do not identify highly with their social identity, then they are most affected by personal identity stereotype threat. This is why in some instances, the negative effects of stigmatisation can be turned into a positive outcome when the educational setting not only emphasises the importance of performing well, but also simultaneously values characteristics that are important to the social group. Specifically, the negative effects of stigmatisation and identity devaluation can be mitigated through a process of "double valuation" (Derks et al, 2007). When educational settings emphasise the importance of performing well whilst *simultaneously* acknowledging group characteristics that are important to minority groups, members of these

groups will focus on possible success and interpret identity threats as a challenge to be overcome. In this case, motivation and performance will improve.

Experimental studies have shown that when members of stigmatised groups use new comparison dimensions that exert positive value on their social identity, and therefore allow their social identity to be protected, they are more motivated to perform on a dimension on which their group is negatively stereotyped (see e.g. Derks et al, 2007). This process is an improvement over devaluation responses (as described above), as social identity protection (as opposed to personal identity protection) benefits the outcomes of the entire group. However, double valuation will only benefit performance if membership to the social group is important to the individual. If stigmatized group members guard themselves against stereotype threat by focussing on personal identity and disidentifying from the group, working towards achieving individual upward mobility can come at the cost of group cohesion and collective action to improve group outcomes. This means that, at an institutional level, protection of social (group) *as well as* personal identity needs to be offered.

These mechanisms of stereotype threat have profound implications for the application and success of affirmative action policy in education settings. Figure 1 shows this mechanism and how stereotype threat may affect academic performance. The concern that CBIA and female students hold for being stereotyped, as well as their level of identification, can dramatically alter the manner in which affirmative action policies are perceived, resulting in significant differences in the impact on individual sense of self and sense of self-worth. Much of the prior work on affirmative action has concentrated on attitudes toward and the potential stigmatising effects of policy (see Crosby, 2004, for a review), with many social commentators making the assumption that the potential burden of stigma brought by affirmative action policy may hinder relevant performance. However, lower performance (and debilitating behaviours) must be seen within the larger context of a social environment where differing group power and status, as well as salience, can force particular comparisons, or prevent others.

Figure 1: The Mechanism Through with Social Identity Threat Impacts Academic Performance



The 'living laboratory' that is Stellenbosch University allows for the examination of diversity and inclusivity in learning and social environments, and their relation to affirmative action and academic success. Specifically, how do the multiple social identities of students, social identity salience and the application of affirmative action policies at Stellenbosch University contribute to academic success? Although we expect all SU students to be subject to stereotypes, the experiences of recruitment bursary recipients and CBIA students receiving residence placement are likely to be most relevant for answering questions related to social identity threat. This is because bursary and residence placement eligibility not only relies on group identity, but also on own academic capabilities; identification with academic performance, a high-status domain, interacts directly with group identification.

It is worth noting the especially important role of residences: These are not merely social spaces in which students sleep, eat and study, but are also environments that offer valuable opportunities for both in- and outgroup friendships, support networks and connections with

alumni to be formed. Furthermore, whereas some residences present as multicultural and modern spaces, others may exhibit proud traditional cultures that can provide for additional out-group exposure beyond what is experienced on campus in general, and in classrooms specifically. Brown (2016), for example, explored narratives of belonging amongst students at SU, and found that, amongst other factors, residence traditions (and students' feelings towards those traditions), identification with a racial group, differing socio-economic backgrounds and assimilation all influenced a student's feeling of belonging in their respective residence. Importantly, not all residence traditions were spoken of as 'bad': Brown found that traditions that create a sense of "us" and "them" (students within the residence versus students of other residences) assist in the creation of an inclusive culture and social cohesion. For example, Oyserman and colleagues (1995, 2001) find that, rather than creating a stereotype threat response, an awareness of structural barriers and discrimination with increased in-group cohesion amongst African American students contributed positively to academic commitment and motivation. Therefore, the role of residences for mitigating the negative effects of stereotype threat (through maintaining academic commitment and motivation in what can be perceived to be a hostile campus setting) or further augmenting the negative effects of stereotype threat (through increasing in-group solidarity and perceptions of discrimination) warrant investigation.

4 The Data

This paper makes use of student records for the period 2008 to 2018. Students are identified only by a unique ID and no characteristics that allow the researchers to identify individuals are contained in the dataset. There are approximately 67500 observations of individual students and approximately 196000 observations in total. The data contains information on demographic factors, matric performance, accommodation status at SU, performance of SU, faculty, programme, and many more individual records. In order to gain a grasp of the make-up of the student body, this section looks at the background characteristics of the Matie student before their arrival at SU, and then their situational characteristics once at SU.

Some important characteristics of the data set are that for many variables where the categorisation is unknown, this is due to the university only recording certain characteristics (such as home province, or subject choices outside of the National Senior Certificate) in certain years. As a result, little can be said about variables where the categorisation is listed as is unknown.

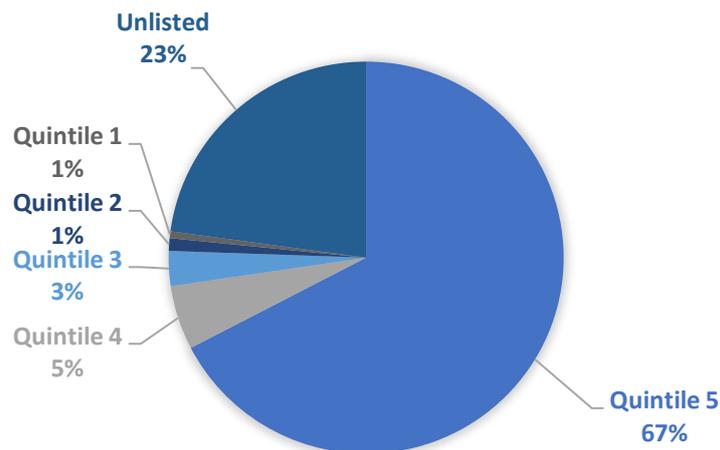
For the purposes of this paper we only consider the Stellenbosch Campus as systems, procedures and cultures on the main campus differ greatly from other campuses, such as the

Medical Campus in Tygerberg where the race of students features much more heavily in admittance decisions or on the Saldana Military campus where the general institutions also differ.

4.1 School, Language and Geographic Background

4.1.1 School Quintile

Figure 1: School Quintile



Schools in South Africa are categorised by the Ministry of Basic Education into quintiles based on their performance level. Each quintile represents 20 percent of all schools, and the quintile level represents the level of performance of the school. To illustrate Quintile 1 schools are the lowest performing 20 percent of schools, and quintile 5 schools are the highest performing 20 percent of schools. Furthermore, as private schools, and schools in foreign countries are not classified into quintiles these form part of the unlisted sections. We see that 67 percent of students come from quintile 5 schools, and 23 percent come from unlisted schools, suggesting that the bulk of the student body has come from the best performing schools in the country. This is expected, as students are selected for university as based on their school performance, and the best performing schools are logically the biggest contributors to the student body.

Students from schools that are typically previously disadvantaged (quintile 1-3) make up only around 5 percent of the student body, as do students from typically wealthier quintile 4 schools. This is also as expected as these are the outlier students in these schools and may be seen to be among the best performing students in the country in spite of their schooling background.

4.1.2 Language Subject Choices at School

Figure 3: High School Levels of English and Afrikaans

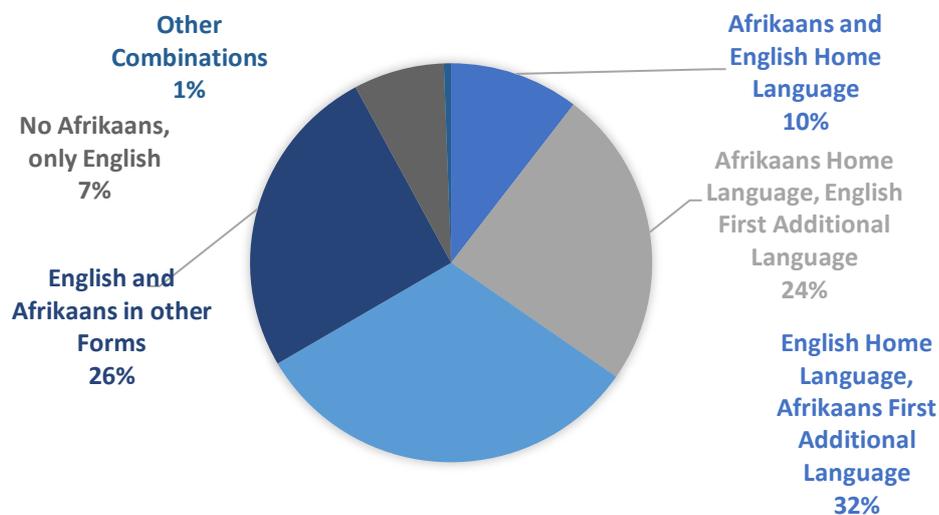


Figure 3 shows the language subject choices of the entire sample over the period. The data set allows us to see the type of English or Afrikaans - where one of either, or in the case of some programmes, both, are required for entry to the University- taken by the student at matric level. We are thus able to see the amount of English exposure and Afrikaans exposure that the student body has on average at the admittance stage.

We observe that approximately 10 percent of students take both English and Afrikaans as a home language. The majority of SU students take either Afrikaans First-Language and English First-Additional Language or English First Language and Afrikaans First Additional Language. This makes up 58 percent of the student body. 26 percent of the student body takes both English and Afrikaans at high school, but due to the presence of alternative schooling systems, such as Cambridge International Examinations (CIE) or Independent Examinations Board (IEB), their results are not classified in the National Senior Certificate (NSC) system of classification. These students thus have both English and Afrikaans exposure at high school, but we do not know the exact subjects taken. About 7 percent of the student body has only English and no Afrikaans. The remaining 1 percent of the sample is made up of students who have taken other combinations such as having either language as a second language or only Afrikaans exposure.

4.1.3 Geographic Origins of the Student Body

Figure 4: Home Province

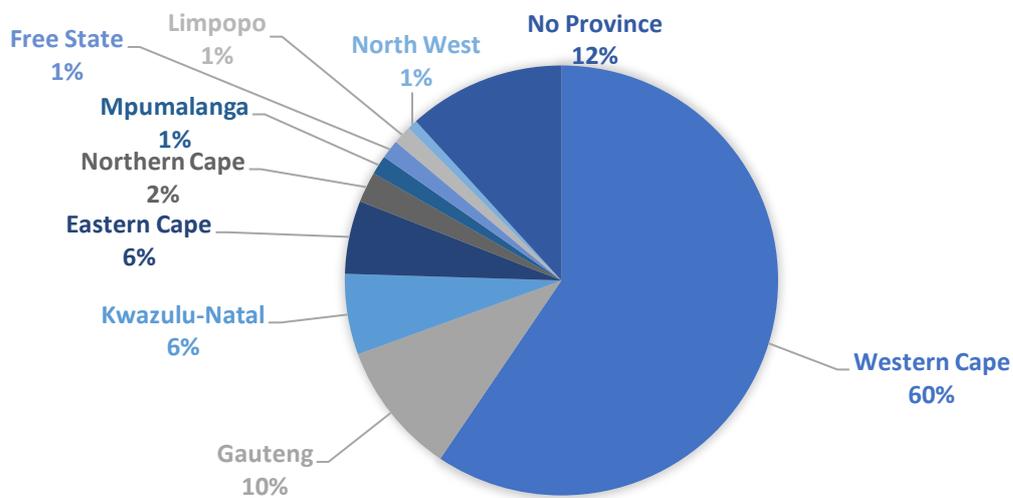
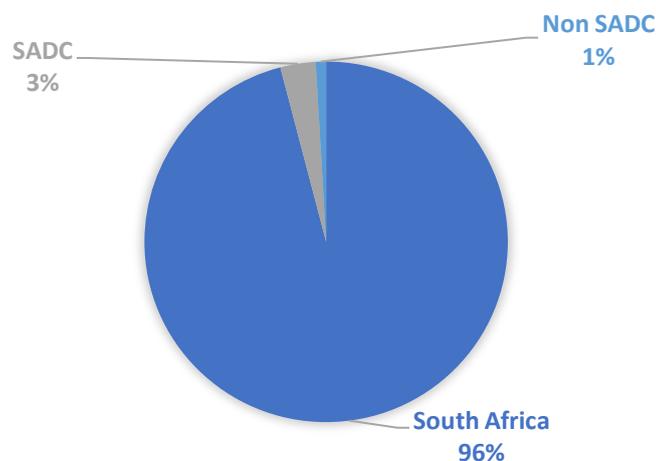


Figure 4 shows the province of origin of the student body. The majority of the student body is made up of students from the Western Cape, but SU does have students from all the provinces in South Africa. The student body is thus made up primarily of students from the Western Cape, Gauteng, Kwazulu-Natal and the Eastern Cape, with a minority of students being from the rest of the country.

The university only began recording provinces in 2009, and thus the “no province” dummy is primarily made up of students enrolled in 2008 and the rest of a small minority of foreign students.

Figure 5: International Students in the Student Body



Only about 4 percent of enrolled students at the undergraduate level are international students, and around 75 percent of international students come from the SADC region (outside of South Africa).

4.2 Student Body Characteristics at SU

4.2.1 The Composition of the Student Body

In order to understand how the aims of transforming the student body in this time period, this paper considers the racial composition of the student body during this period, as well as, specifically, the racial make-up of residences.

Figure 6: Undergraduate Enrolment by Race; Exact Figures and Growth Rates

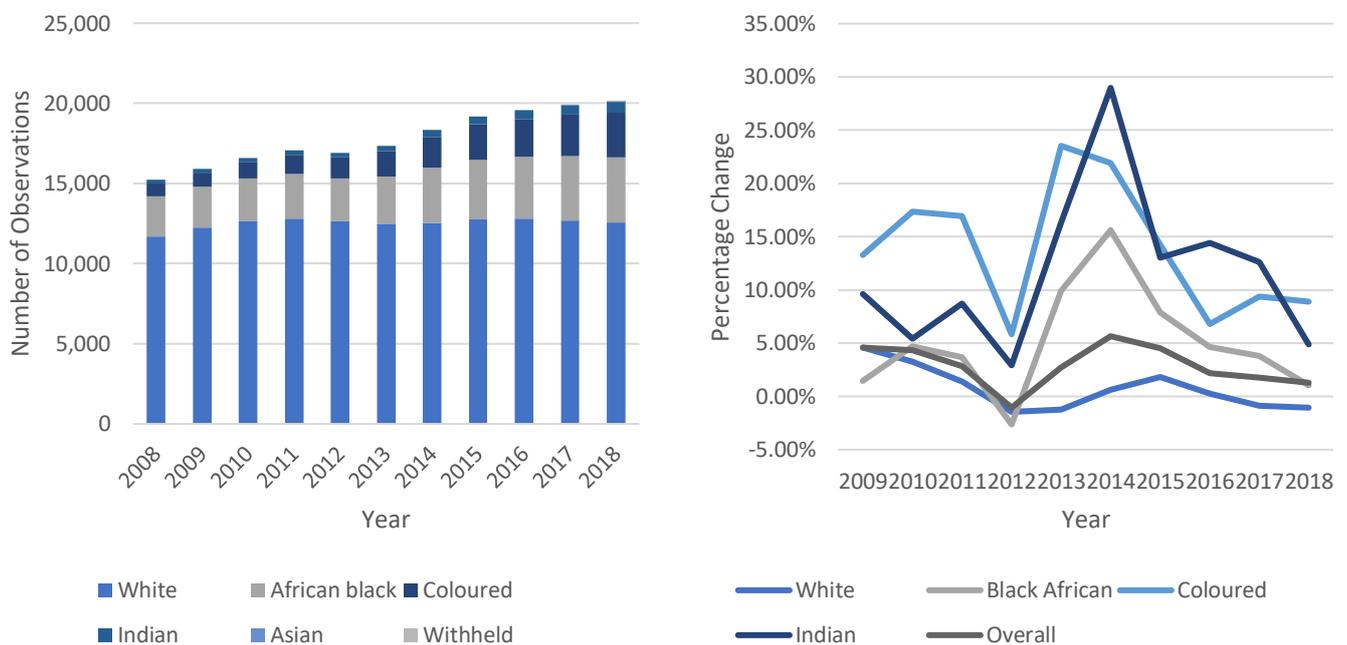
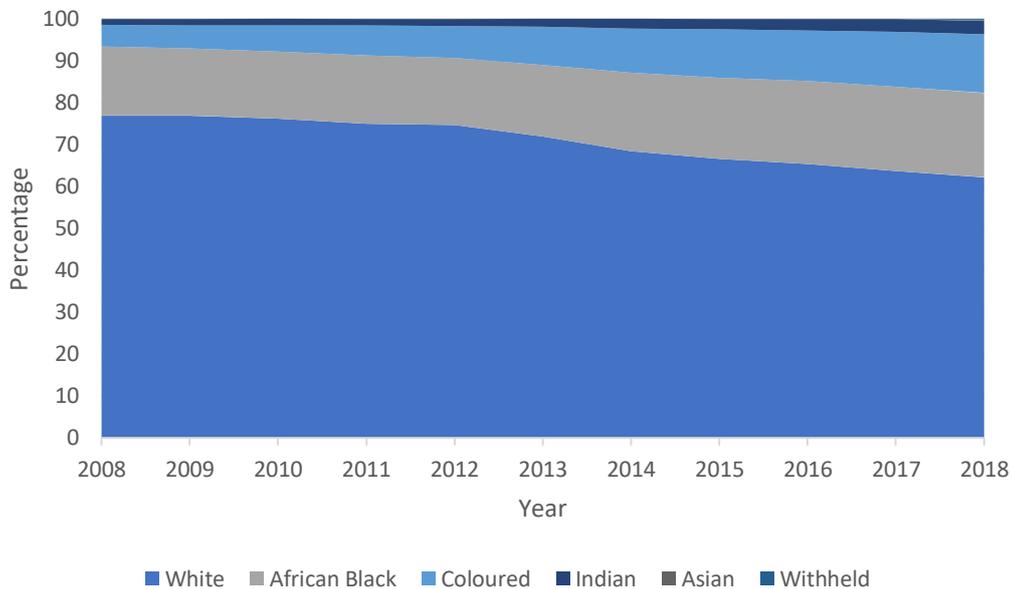


Figure 6 shows that over the period the number of undergraduate enrolments has increased over the time period. Much of the increase appears to be due to increasing numbers of students of colour enrolling at SU, rather than increasing numbers of white students enrolling at SU.

In order to better understand the growth of the student body we examine the growth rates. The student body has grown at rate of between 0 and 5 percent, with a small shrinking of the student body in 2012. The growth of the number of white students has been small, with the number of white students growing between around -1 percent and 2 percent annually. The growth of the black student body is between -2 percent and 15 percent, notably peaking in 2014. The growth of the coloured and Indian student body has been the most remarkable, with rates at a minimum of 4 percent and up to 28 percent. The spikes in 2014 are most

correlated with the official launch of the recruitment bursary policy and likely accounts for the remarkable growth in the diversity profile of SU.

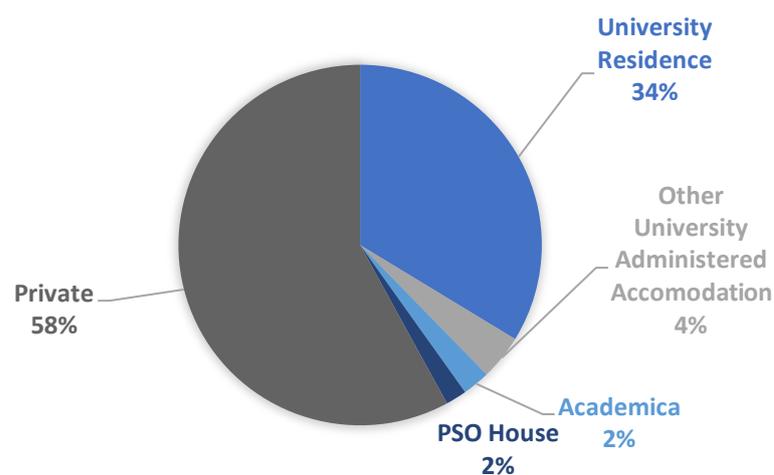
Figure 7: Racial Composition Over Time



Most importantly, the racial composition by percentage has changed over time, with an increase in the percentage of students of colour of about 16 percent. In 2018 the percentage of students of colour is around 38 percent.

4.2.2 Accommodation Types

Figure 8: Accommodation Types²

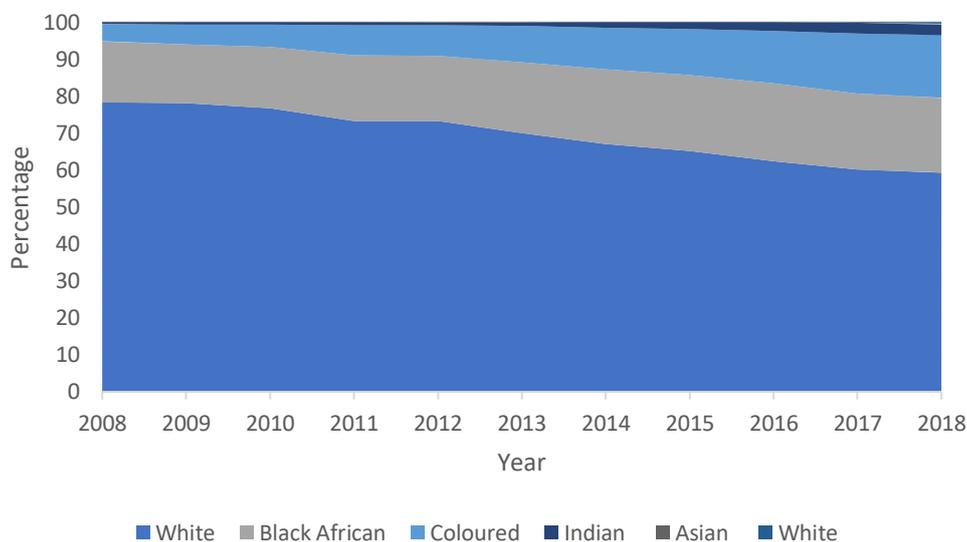


² The data set includes 29 undergraduate residence listings, including the residences on the medical campus. At this stage, we treat residences as homogeneous.

University residences (and university administered residences, that is, living spaces that are owned and run by the university but are not necessarily undergraduate residences) are one of the cheaper accommodation types, and as a result, the demand for spots in these types of accommodation is very large. About 40 percent of students are housed in University Residences, University Flats, and University Houses. Academia is a private residence on campus that is much more expensive than University housing but offers many of the benefits, such as proximity, facilities and social events. The remaining 58 percent of students live privately. A number of these students stay in private accommodation on campus, but many of them will commute in from other parts of the Western Cape.

4.2.3 Residence Racial Composition

Figure 9: Racial Composition of Residences



Residences, as one of the most important social spaces at SU reflect a different diversity to the rest of campus, with a smaller pool of white students living in residences. Within residences, there appears to be more diversity than there is in campus as a whole, with the percentage of students of colour being closer to 40 percent in residences than on campus. The overall trend of growth in the percentage of students of colour follows the same trend as the growth in diversity on the rest of campus.

4.2.4 Tuition Language

Figure 10: Tuition Language and Home Language

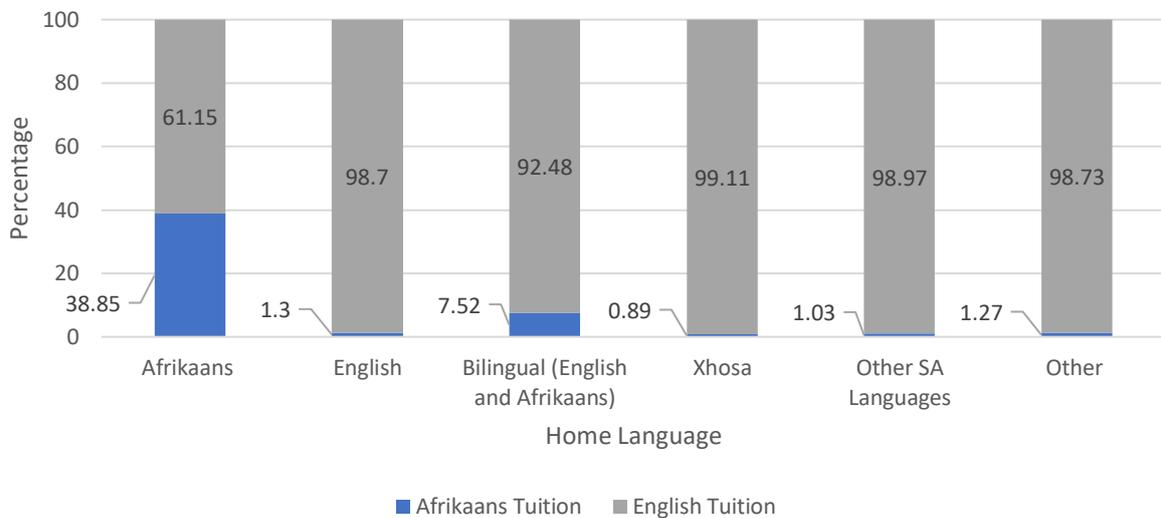
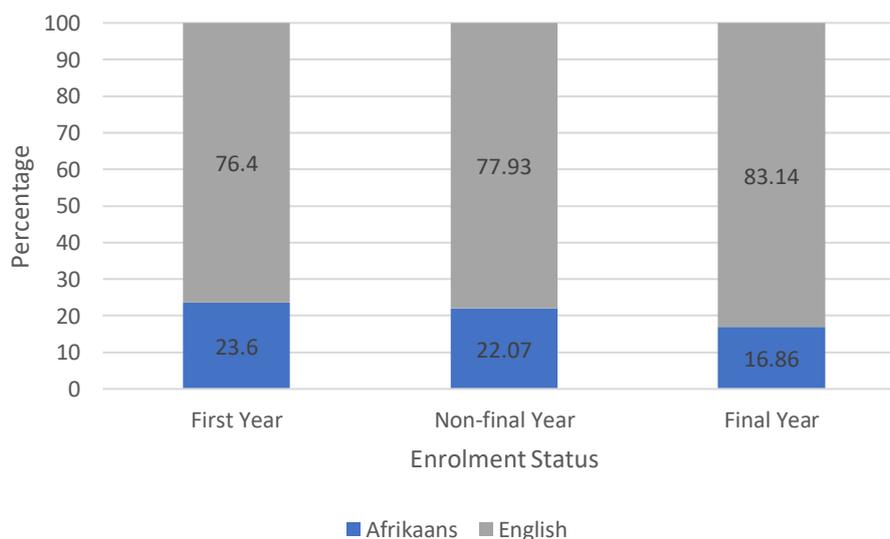


Figure 10 shows the interaction between home language and tuition language. Over the whole period, the majority of students study in English. Only a small group of students study in Afrikaans, and this group is made up of predominantly Afrikaans home language students. There are a small minority of students that have other home languages that study in Afrikaans but this is likely to be a result of them having done their schooling in Afrikaans.

Figure 11: Tuition Language Over the Course of Degree



It is also observed that the number of students studying in Afrikaans decreases over the course of their degree. This is likely due to fewer modules being provided in only Afrikaans and these students electing to take on more English in their course.

5 Investigating Factors that Influence Student Success

In this section regression analysis is employed to investigate the characteristics that are statistically capable of predicting success. Rather than testing a hypothesis and forming a mathematical model, an exploratory approach is taken, and the effect of controlling for different characteristics is investigated. Nothing about a causal mechanism is inferred, only the correlations are examined.³

5.1 Factors that Correlate with Performance over the Whole Period

5.1.1 The Correlation Between Race and Performance

Table 1 shows that if race and academic year are the only considered factors, then there appears to be a suggestion that in each year, students generally experience a drop in their year average. White students experience a statistically significant decrease in average of about 5.8 percentage points over the course of their degree, whereas students of colour experience a decrease in average of about 6.3 percentage points. Furthermore, a statistically significant difference in the averages of white and students of colour amounting to 5.8 percentage points in year one is observed as well, 6.1 percentage points in non-final years, and up to 7.38 percentage points in the final year.

Thus, not only are decreasing averages for all students observed, but a widening gap between white students and students of colour is also seen. This is of particular concern given the expected year average of a white first year student is 57.59 percent, as many of these marks result in a below passing grade, potentially lengthening the student's degree or causing them to have to drop out.

5.1.2 The Correlation Between Language Exposure and Performance

The results suggest that taking either language at a First Language level is a strong predictor of the student's performance. Both Afrikaans and English First Language are valuable, but the results suggest that taking English at a "Additional Language" level, as well as at a "Second Additional Language" level have a more negative effect than taking Afrikaans at these levels. No exposure to either language can also be seen to have large detrimental effects on performance, especially a lack of exposure to English.

These are all to be expected given the language policy at SU. Each student must pick a language of tuition. In most cases, students will study in this language and have limited exposure to other languages. In some cases, students will have to take a mixed class, where

³ The regression tables are in the appendix.

Afrikaans and English are used in the same lecture or tutorial, but the language policy requires that the content be communicated in both languages in the lecture. In rare cases, a student may have to take a lecture that is not in their preferred language, and in this case the student receives translation services (SU 2019). It is thus conceivable that the more fluent a student is in a language, the better their ability to learn in that language, and having fluency in both English and Afrikaans prepares a student for any learning scenario that may occur. The language policy has, during this period, become much more accommodating to students, so the results may suggest that the effect has less to do with taking a specific language, but rather that the mastery of a language⁴ is a better predictor of success.

5.1.3 The Correlation Between Age and Gender and Student Performance

It can be observed that on average, male students do significantly worse than female students by around 5.3 percentage points. There is some suggestion that non-binary students do up to 10 percent better than other students, but unfortunately there are only two non-binary students observed in the sample, so there are no statistically significant estimates of their performance.

It is also observed that performance decreases as age increases by 1.3 percentage points per year⁵. This is not as important when we consider students who are only 18 or 19, but this may suggest that adults that start university later on in their 20s or 30s do significantly worse than those that start straight out of school.

5.1.4 The Correlation Between Prior Academic Performance and Student Performance

Grade 12 averages are taken as a proxy for prior student performance- showing that for a 1% increase in grade 12 average, university performance increases by 0.515%. This variable gives some indicator of the student's natural level of academic performance.

5.1.5 The Correlation Between Geographic Characteristics and Performance

The relationship between being from certain provinces and performance is considered first. It can be observed that province is a variable that is, more or less insignificant (when compared to the Western Cape). The only statistically significant provinces are the Eastern Cape, Mpumalanga, Limpopo and the North West. For most provinces, the difference in performance is small, resulting in a less than one percentage point difference from the Western Cape. Only the North West has a large difference in percentage, with a difference of -1.579 percentage

⁴ proxied by the level it is taken on.

⁵ Age is adjusted by taking their original age minus 16 for ease of analysis.

points, but as the size of the sample of students that come from the North West is small, it may not be worth that much consideration.

An interesting observation is that students from the other SADC countries perform significantly better than South African Students by 2.2 percentage points. Students from the rest of the world also perform better, but this difference is only 0.73 percentage points and is only significant at the 10 percent level, which is likely due to the small sample size.

5.1.6 The Correlation Between Faculty and Performance

It is seen that all faculties have significantly different levels of performance. In this analysis the faculty of Economics and Management Sciences (EMS) is treated as the reference category. Difference in performance ranges from as low 0.5 percentage points less than EMS, as is the case in the law faculty, to as high as 13 percent more, as is the case in the education faculty. It can be observed that most faculties lie within the same band of around a 55 percent year average to a 60 percent year average (EMS, Arts and Social Sciences, Science, Agri-science, Engineering and Theology), *ceteris paribus*.

5.1.7 The Correlation between Accommodation and Performance

On average, the results show that the best academic performance occurs in residences. All other forms of housing have averages that are around 7 percentage points less than those observed in residences, except for Academia, which has only a -4.2 percentage point difference.

5.1.8 Considering all the Controls Simultaneously

If all the above controls are considered simultaneously, we do observe a relative stability of all co-efficients considered, except for the coefficient on the performance of non-final year white students and final year white students. Instead, we see these co-efficients become positive. In the case of non-final year white students, the coefficient is not significant, and the non-final year co-efficient is significant, but only 0.74 percentage points, suggesting that the academic performance of white students is fairly stable over the course of their degree and any year to year differences are not statistically or economically significant. If we consider demographic, geographic and situational characteristics, their performance is stable across years.

Students of colour on the other hand, still perform worse than white students, but their performance is also stable over the course of their degree. It appears as though there is a 7 percentage point difference between their performance and the performance of white students, even when many other factors are considered and controlled for.

We also observe relative stability with other co-efficients. The faculty variable, for example, remains statistically significant in all cases, except for the Law faculty, which only had a very small negative coefficient to begin with. The only area in which we see the co-efficients change drastically is in the exposure to language variable, where the difference between Afrikaans First Language and First Additional Language and Second Additional Language is no longer significant. This is likely due to controlling for faculty, as different faculties employ different language policies and it is possible that the faculty is more important than general language exposure. It is also very likely that only students that studied in Afrikaans in school are being exposed to Afrikaans in the later part of their degree. Furthermore, English remains significant as many textbooks are only in English and many Afrikaans students switch over to taking modules in English, thus, it may appear that both languages have some influence on success, but exposure to English is more important than exposure to Afrikaans.

5.1.9 Summary of Findings

Thus, we see that race does in fact have a significant relationship to performance, although the exact causal method can not be seen directly here. The results also suggest that exposure to English is very important for success, but exposure to Afrikaans is not as vital, furthermore, high school performance has a strong effect on university performance. Lastly, home province is not a very significant predictor of success, but status as an international student is, however there is a high change of endogeneity in this regard.

5.2 Performance Differences Over Time

5.2.1 Performance Differences between White Students and Students of Colour over Time

Given social distance and social identity theories, the increasing diversity composition of the SU student body has the potential to greatly improve the gap in performance between students of colour and white students. In this next section we investigate whether this gap is decreasing over time. This provides some evidence that increased diversity results in a changing social centre. This has the potential to reduce stereotype threat and improve individual social valuations and thus individual academic performance.

We estimate using the same model as in 5.1.7, but instead of considering students in a specific enrolment year in the same model, we consider only one enrolment group at a time in a specific academic year. Models 8, 9 and 10 consider first year students, non-final year students and final year students respectively. Model 11 considers the whole student body.

Model 9 shows that in 2008, the difference in performance of first year students of colour and white students (controlling for demographic, geographic and situational characteristics as in

section 5.1) is quite large in 2008 and sits at a 10 percentage point difference. This decreases rapidly over the course of 2008-2010 to a low of around 4.4 percentage points, and it stays around this level until around 2016, where it increases to 6.3 percentage points. By 2018, the difference has levelled out at 5.5 percentage points. Thus, in spite of the lack of stability in the later years, we can see a definite decrease in the difference in performance over the time period.

Model 9 shows a similar pattern for non-final year students, with a difference of nearly 8 percentage points in 2008 decreasing to around 5.7 percentage points around 2014, and increasing back up to around 6.8 percentage points. This overall decrease in the period is not as strong as the first-year decrease and exhibits more variability, but there is still a statistically significant difference between performance in 2008 and 2018.

The same is also true for final year students, as in model 10. The difference between the performance of white students and students of colour starts around 7.6 percent and fluctuates more than the previous two groups of students, but also decreases to around 6.7 percentage points in the final year.

Finally model 11 consolidates these results and shows that even though the decrease in the difference is not as strong in the non-final and final years as it is in the first year, there is still a decrease in the gap between students of colour and white students. The gap begins at around 8.8 percentage points in 2008 and ends up around 6.6 percentage points in 2018, thus there is undoubtedly a significant change in the difference in performance.

5.2.2 Variables that are Correlated with Time and the Effect of Considering Diversity

From the data, it appears as though the increased diversity could be a possible explanation for this decrease in the gap over time. Furthermore, regression 14 suggests that *ceteris paribus*, averages are increasing by about 0.475 percentage points per year. A diversity variable is constructed that allocates the diversity in each period to each observation of each student. Diversity is regarded as a percentage, with the number of students of colour in any given year as the numerator and the total number of students as the denominator.

In order to understand what variables are changing over time and might be possible for this change in averages, the correlates of time are considered.

Figure 12: The Correlates of Time

	Year	Diversity	Student of Colour Indicator	Age	Gender	Grade 12 Averages	SADC Indicator	Home Province	English Exposure	Afrikaans Exposure	Faculty
Year	1										
Diversity	0.9813	1									
Student of Colour Indicator	0.1046	0.1066	1								
Age	-0.0108	-0.0146	0.0649	1							
Gender	-0.0294	-0.0311	-0.077	0.0817	1						
Grade 12 Averages	0.0192	0.0355	-0.2805	-0.206	-0.05	1					
SADC Indicator	0.0227	0.022	0.0713	0.0502	0.0166	-0.0007	1				
Home Province	-0.3322	-0.2475	-0.0003	0.0067	0.0226	0.0498	0.2906	1			
English Exposure	-0.5493	-0.4938	-0.0086	0.3152	0.0575	0.0219	0.1746	0.4411	1		
Afrikaans Exposure	-0.4096	-0.3583	0.1551	0.2713	0.0383	-0.0233	0.2585	0.4432	0.7215	1	
Faculty	0.034	0.0311	0.063	0.1187	-0.0634	-0.1547	-0.0186	-0.0364	0.0238	-0.0128	1

Figure 12 shows that the year variable and the diversity variable are the most highly correlated variables. Very few other variables are correlated, most notably, the grade 12 average variable, which suggests that students are not merely performing better as a result of increased ability over the period. The other variables that are highly correlated with time are the language exposure variables, further emphasising the shift in the composition of the student body to being more less Afrikaans. This reinforces the idea of a changing social norm, as Stellenbosch is a historically white and Afrikaans university, and is becoming more English and diverse in this period. Ultimately, regressions 15 and 16 show that we can attribute a positive increase in diversity to a better student performance that is not conditional on the race of students.

6 Conclusion

This paper has presented a brief overview of the change in the diversity in the student body at Stellenbosch University during the period 2008 and 2018. Affirmative action policies aimed at redressing past injustices have succeeded at attracting more students to SU. Social identity theory and social distance theory, however, predict that the presence of a distinct minority group on campus has potential negative effects for stereotyping and devaluation of specific groups, which may have negative effects on the academic performance of these groups of students.

This paper has shown that there is a difference in the academic performance of white students and students of colour at SU, but that the gap has been closing over the period. It can also be observed that the only variable that has a substantial correlation with time is the diversity variable. There is thus strong evidence to suggest that it is the improved diversity on campus that appears to reduce the potential for social devaluation of minority groups. Furthermore, it is shown that improved diversity has a positive effect on the performance of *all* students. It would therefore appear that even though the change is slow, that the improved diversity of the Stellenbosch campus is undoubtedly benefitting marginalised groups as well as promoting social cohesion, suggesting that increasing diversity might not be the only solution to improving the performance of marginalised students, and that it is definitely not enough, but it is a good place to start.

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8 Appendix

8.1 Regressions for Section 5.1

Figure 13: Regression Table 1

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	yearaverage							
First Year White Student	0	0	0	0	0	0	0	0
Non-Final Year White Student	-2.362***	-0.148	-1.825***	-2.516***	-2.375***	-2.646***	-1.823***	-0.777***
Final Year White Student	-0.112	-0.114	-0.112	-0.107	-0.112	-0.11	-0.11	-0.106
First Year Student of Colour	-4.753***	-0.913***	-3.705***	-5.010***	-4.774***	-4.631***	-3.353***	-1.153***
Non Final Year Student of Colour	-0.124	-0.135	-0.126	-0.119	-0.124	-0.122	-0.124	-0.128
Final Year Student of Colour	-5.843***	-5.776***	-5.454***	-3.008***	-5.921***	-6.148***	-6.742***	-3.925***
Afrikaans Exposure (Home Language)	-0.166	-0.162	-0.169	-0.161	-0.167	-0.163	-0.164	-0.158
Afrikaans First Additional Language	-8.487***	-6.190***	-7.760***	-5.323***	-8.581***	-9.023***	-8.357***	-4.330***
Afrikaans Second Additional Language	-0.148	-0.15	-0.15	-0.144	-0.149	-0.145	-0.146	-0.145
Other Afrikaans	-12.13***	-7.967***	-10.92***	-9.152***	-12.22***	-12.21***	-10.81***	-5.641***
No Afrikaans	-0.19	-0.199	-0.191	-0.184	-0.191	-0.187	-0.191	-0.189
Unknown Exposure			-1.332***					0.499***
			-0.14					-0.132
			-2.800*					-0.236
			-1.504					-1.362
			-6.017***					-4.568***
			-0.327					-0.31
			-2.778***					-1.586***
			-0.245					-0.23
			-7.560***					
			-0.827					

English Exposure (Home Language)							
English First Additional Language			-2.196***				-1.204***
			-0.139				-0.128
English Second Additional Language			-7.978**				-3.623
			-3.461				-3.124
Other English			0.21				0.369
			-0.317				-0.307
No English			-4.499***				2.341*
			-1.32				-1.235
Unkown Exposure to English			-				
Gender (Female)							
Male		-5.259***					-2.336***
		-0.0791					-0.0799
Non-Binary		10.15					5.821
		-11.24					-10.35
Age (adjusted)		-1.281***					-0.685***
		-0.0202					-0.0212
Grade 12 Average				0.515***			0.563***
				-0.00426			-0.00479
Home Province (Western Cape)							
Gauteng					-0.221		0.197
					-0.138		-0.127
Kwazulu-Natal					0.0933		-0.234
					-0.172		-0.161
Eastern Cape					0.683***		0.654***
					-0.184		-0.167
Northern Cape					-0.0245		0.606**
					-0.273		-0.246
Mpumalanga					-0.802**		0.423
					-0.352		-0.317
Free State					0.564		1.232***
					-0.365		-0.329

Limpopo					-0.924**			0.731**
					-0.371			-0.337
North West					-1.579***			-1.049**
					-0.524			-0.472
Unknown					-1.804***			0.159
					-0.14			-0.147
SADC Status (South Africa)								
SADC (excluding SA)					2.225***			2.757***
					-0.248			-0.243
Rest of World					0.731*			1.154***
					-0.412			-0.386
Faculty (Economics)								
Arts and Social Sciences						3.690***		6.834***
						-0.111		-0.107
Engineering						2.898***		1.201***
						-0.122		-0.117
Science						1.802***		2.561***
						-0.131		-0.121
Agri-Science						2.221***		6.819***
						-0.154		-0.144
Education						13.70***		17.50***
						-0.182		-0.175
Law						-0.507**		0.0257
						-0.25		-0.229
Theology						4.994***		16.26***
						-0.381		-0.36
Accommodation Status (Residence)								
University Administered Residence							-6.927***	-2.871***
							-0.24	-0.225
Academia							-4.156***	-2.161***
							-0.248	-0.234
PSO House							-7.590***	-6.349***

							-0.363	-0.333
Private							-6.897***	-3.667***
							-0.0868	-0.0869
Constant	57.59***	64.53***	59.67***	18.50***	57.76***	55.23***	61.56***	17.59***
	-0.0871	-0.113	-0.138	-0.334	-0.0944	-0.103	-0.0997	-0.437
Observations	164,300	164,300	164,300	163,838	164,300	164,300	164,300	163,838
R-squared	0.039	0.09	0.052	0.118	0.04	0.073	0.075	0.228
Standard errors below co-efficients								
*** p<0.01, ** p<0.05, * p<0.1								

8.2 Regressions for Section 5.2

Figure 14: Regression Table 2

VARIABLES	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	yearaverage						
White Student 2008	0	0	0	0			
	0	0	0	0			
White Student 2009	1.965***	0.101	-0.0389	-0.207			
	-0.526	-0.438	-0.768	-0.322			
White Student 2010	2.589***	0.995**	0.391	0.0134			
	-0.538	-0.437	-0.769	-0.323			
White Student 2011	2.000***	1.634***	-1.652**	-0.229			
	-0.541	-0.448	-0.766	-0.327			
White Student 2012	2.282***	0.839*	-2.172***	-0.363			
	-0.548	-0.455	-0.781	-0.333			
White Student 2013	2.671***	1.066**	-1.599**	0.0373			
	-0.549	-0.46	-0.798	-0.336			
White Student 2014	2.378***	0.623	-2.166***	-0.372			
	-0.546	-0.461	-0.809	-0.337			
White Student 2015	2.926***	1.305***	-2.096***	0.123			
	-0.544	-0.46	-0.811	-0.337			

White Student 2016	3.576***	1.884***	-1.758**	0.810**		
	-0.547	-0.458	-0.809	-0.336		
White Student 2017	3.360***	2.197***	-1.650**	0.972***		
	-0.546	-0.461	-0.805	-0.337		
White Student 2018	3.476***	1.440***	-1.584**	0.635*		
	-0.547	-0.46	-0.806	-0.337		
Student of Colour 2008	-1.786***	-3.481***	-4.785***	-4.046***		
	-0.505	-0.447	-0.807	-0.33		
Student of Colour 2009	-1.402**	-2.839***	-4.424***	-3.790***		
	-0.667	-0.558	-0.998	-0.414		
Student of Colour 2010	3.164***	-2.616***	-5.512***	-2.867***		
	-0.643	-0.553	-0.984	-0.406		
Student of Colour 2011	1.260**	-1.949***	-5.035***	-3.204***		
	-0.639	-0.546	-0.978	-0.402		
Student of Colour 2012	2.073***	-2.990***	-7.420***	-3.919***		
	-0.67	-0.541	-0.979	-0.406		
Student of Colour 2013	1.723***	-2.424***	-5.740***	-3.121***		
	-0.621	-0.544	-0.986	-0.397		
Student of Colour 2014	0.999*	-3.121***	-7.165***	-3.967***		
	-0.607	-0.527	-1	-0.389		
Student of Colour 2015	1.535**	-3.514***	-5.819***	-3.765***		
	-0.61	-0.515	-0.972	-0.383		
Student of Colour 2016	0.334	-2.324***	-6.922***	-3.661***		
	-0.609	-0.511	-0.937	-0.38		
Student of Colour 2017	0.745	-3.014***	-7.467***	-3.881***		
	-0.6	-0.512	-0.917	-0.376		
Student of Colour 2018	1.006*	-4.060***	-7.988***	-4.513***		
	-0.599	-0.506	-0.905	-0.373		
Gender (Female)						
Male	-1.264***	-2.612***	-2.792***	-2.311***		-2.336***
	-0.126	-0.108	-0.189	-0.0799		-0.0799
Non-Binary	-1.336			6.273		5.516

	-8.954			-10.35			-10.35
Age (adjusted)	0.314***	-0.306***	-2.146***	-0.806***			-0.702***
	-0.0397	-0.0291	-0.0496	-0.0195			-0.0214
Afrikaans Exposure (Home Language)							
Afrikaans First Additional Language	-0.923***	0.901***	1.685***	0.498***			0.438***
	-0.203	-0.179	-0.335	-0.133			-0.133
Afrikaans Second Additional Language	-1.988	0.974	2.731	0.0757			-0.263
	-1.842	-1.79	-4.605	-1.362			-1.361
Other Afrikaans	-0.422	-2.709***	-7.441***	-4.384***			-4.422***
	-0.504	-0.432	-0.859	-0.32			-0.312
No Afrikaans	-2.869***	-0.43	-0.913	-1.400***			-1.659***
English Exposure (Home Language)							
English First Additional Language	-0.333	-0.309	-0.685	-0.233			-0.231
	-1.912***	-0.628***	-1.066***	-1.233***			-1.245***
English Second Additional Language	-0.195	-0.171	-0.325	-0.128			-0.128
	-12.22***	-0.629	13.66	-3.4			-3.761
Other English	-4.482	-3.941	-10.26	-3.124			-3.124
	-2.113***	1.099***	0.978	0.316			0.526*
No English	-0.475	-0.422	-0.844	-0.313			-0.308
	-5.349**	2.41	1.759	2.362*			2.507**
	-2.111	-1.598	-2.922	-1.236			-1.235
Grade 12 Average	0.869***	0.488***	0.392***	0.553***			0.558***
	-0.00842	-0.00656	-0.0108	-0.00483			-0.00486
Home Province (Western Cape)							
Gauteng	0.380*	-0.161	0.656**	0.174			0.179
	-0.195	-0.173	-0.31	-0.127			-0.127
Kwazulu-Natal	-0.334	-0.255	-0.0116	-0.290*			-0.257
	-0.246	-0.219	-0.396	-0.161			-0.161
Eastern Cape	1.510***	0.371*	0.253	0.648***			0.672***
	-0.267	-0.222	-0.398	-0.167			-0.167
Northern Cape	0.481	0.580*	0.52	0.601**			0.632**
	-0.402	-0.327	-0.576	-0.246			-0.246

Mpumalanga	0.781	0.263	-0.0189	0.444		0.414
	-0.491	-0.418	-0.804	-0.317		-0.317
Free State	1.272**	0.551	1.787**	1.188***		1.219***
	-0.529	-0.433	-0.799	-0.329		-0.329
Limpopo	0.845	0.257	1.427*	0.713**		0.715**
	-0.514	-0.449	-0.857	-0.337		-0.337
North West	-1.065	-1.312**	-0.109	-1.024**		-1.034**
	-0.732	-0.627	-1.174	-0.472		-0.472
Unknown	-0.184	0.162	0.487	0.221		0.192
	-0.429	-0.362	-0.643	-0.269		-0.147
SADC Status (South Africa)						
SADC (excluding SA)	2.537***	1.263***	3.762***	2.715***		2.633***
	-0.451	-0.39	-0.702	-0.289		-0.244
Rest of World	-1.816***	0.649	5.191***	1.193***		1.125***
	-0.585	-0.535	-0.956	-0.39		-0.386
Faculty (Economics)						
Arts and Social Sciences	5.686***	7.708***	6.498***	6.889***		6.825***
	-0.17	-0.151	-0.239	-0.107		-0.107
Engineering	-0.594***	1.917***	3.786***	1.331***		1.205***
	-0.189	-0.15	-0.302	-0.116		-0.117
Science	2.998***	2.402***	1.645***	2.601***		2.566***
	-0.183	-0.17	-0.282	-0.121		-0.121
Agri-Science	4.690***	6.688***	10.53***	6.889***		6.789***
	-0.234	-0.188	-0.36	-0.144		-0.144
Education	12.22***	18.58***	21.68***	17.58***		17.47***
	-0.29	-0.221	-0.449	-0.174		-0.175
Law	-1.369***	0.516*	2.724***	0.141		0.0313
	-0.382	-0.284	-0.609	-0.229		-0.229
Theology	9.895***	16.55***	23.57***	16.75***		16.19***
	-0.531	-0.491	-0.937	-0.359		-0.36
Accomodation Status (Residence)						
University Administered Residence	-0.389	-4.388***	-4.403***	-3.035***		-2.928***

	-0.473	-0.311	-0.444	-0.224			-0.226
Academia	-1.337***	-1.281***	0.0669	-2.276***			-2.260***
	-0.312	-0.313	-0.914	-0.236			-0.235
PSO House	-5.791***	-4.645***	-10.52***	-6.392***			-6.355***
	-0.497	-0.462	-0.808	-0.333			-0.333
Private	-1.136***	-3.258***	-7.186***	-3.797***			-3.696***
	-0.136	-0.114	-0.227	-0.0867			-0.0871
First Year White Student					0	0	0
					0	0	0
Non-Final Year White Student					-2.405***	-2.396***	-0.797***
					-0.112	-0.112	-0.106
Final Year White Student					-4.807***	-4.793***	-1.188***
					-0.124	-0.124	-0.128
First Year Student of Colour					-6.216***	-6.222***	-3.991***
					-0.166	-0.166	-0.158
Non Final Year Student of Colour					-8.905***	-8.900***	-4.404***
					-0.147	-0.147	-0.146
Final Year Student of Colour					-12.51***	-12.50***	-5.727***
					-0.19	-0.19	-0.189
Academic Year					0.475***		
					-0.0128		
Diversity						0.322***	0.0533***
						-0.0087	-0.00989
Constant	-11.81***	18.09***	42.61***	18.14***	55.22***	49.56***	16.68***
	-0.901	-0.731	-1.274	-0.531	-0.108	-0.234	-0.468
Observations	48,480	72,360	42,998	163,838	164,300	164,300	163,838
R-squared	0.289	0.236	0.245	0.228	0.047	0.047	0.228
Standard errors listed below co-efficients							
*** p<0.01, ** p<0.05, * p<0.1							