ASSESSING PGDA ENTRANCE REQUIREMENTS:
APPROPRIATE OR IN NEED OF CHANGE?

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ABSTRACT

With the decreasing student pass rates in the Postgraduate Accounting Degree (PGDA) at the University of Cape Town (UCT) as well as UCT's lowered placement in ITC pass rate rankings – an assessment on PGDA's current entrance requirements could provide insight into a way-forward. The objective of this study is to evaluate endogenous factors that affect student performance in PGDA and ITC, namely race, secondary school type, home language, gender, age, and core final-year accounting course results (Financial Reporting III (FR3), Taxation II (TAX2), Corporate Governance II (CG2), Management Accounting II (MA2), and Business Analysis and Governance (BAG)). After identifying the factors linked to success, these factors were used to determine optimal entrance requirements that maximise the success of students in passing PGDA and ITC. Finally, the recommended entrance requirements were assessed against current and old entrance requirements and the effects of these requirements on student diversity was considered. A quantitative research method was used – comprising of stepwise regression, multivariate regression, and logistic regression models, together with receiver operator curves. The data was obtained from a sample of students that had commenced PGDA in 2018, 2019 and 2020 at UCT. The findings indicate that race and prior academic performance are the best predictors of academic success, however race was not considered when setting entrance requirements. Interesting findings were identified between core undergraduate courses and success in the four PGDA courses and ITC as not all undergraduate courses predicted academic success. Specifically, the lack of a significant relationship between core accounting subject – FR3 – and postgraduate courses – CG3 and MAF – in addition to ITC success. Furthermore, a significant, negative relationship was identified between MA2 and FR4. Recommended entrance requirements were identified to have adverse effects on student diversity for access, but minimal effect on pass rates. This study adds to existing literature on student performance in tertiary accounting programmes in South Africa with a specific focus on CTA course success. These findings could be useful for the UCT in determining the most appropriate entrance requirements to set for PGDA as well as whether setting such requirements would be equitable.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

Abbreviation	Explanation
APC	Assessment of Professional Competence
AUC	Area Under the Curve
BAG	Business Analysis and Governance
BBusSci	Bachelor of Business Science: Finance & Accounting
BCom	Bachelor of Commerce: Financial Accounting
CA(SA)	South Africa Chartered Accountant
CG1	Corporate Governance I
CG2	Corporate Governance II
CG3	Corporate Governance III
CTA	Certificate in Theory of Accounting
DFFITS	Difference in Fits measure
FR1	Financial Reporting I
FR2	Financial Reporting II
FR3	Financial Reporting III
FR4	Financial Reporting IV
GPA	Grade Point Average
GQPA	Graduate Quality Point Average
IEE	Independent Institute of Education
IQ	Intelligence Quotient
ITC	Initial Test of Competency
MA1	Management Accounting I
MA2	Management Accounting II
MAF	Management Accounting and Finance
NBT	National Benchmark Test
NQF	National Qualifying Framework
PGDA	Post Graduate Diploma in Accounting
PGDip	Post Graduate Diploma in Accounting
ROC	Receiver Operator Curve
SAICA	South African Institute of Chartered Accountants
TAX1	Taxation I
TAX2	Taxation II
TAX3	Taxation III
UCT	University of Cape Town
UNISA	University of South Africa
UW	University of Witwatersrand
VIF	Variance Inflation Factor

INTRODUCTION

Tertiary education institutions are regarded as the primary providers of higher education. These institutions rely on their prestige and reputation to attract prospective students. Consequently, entrance requirements have always formed part of an academic institution's filtering process to ensure the most competent and proficient students are selected – maintaining and enhancing the institution's reputation. These entrance criteria range from admission into the academic institution, to criteria required to progress within the institution down the selected path of study. Although entrance criteria are still used by all universities today, they are not without controversy. Critics of the current system argue that entrance requirements can perpetuate systemic inequalities and disadvantage students from underprivileged backgrounds who may not have access to the same resources and opportunities as their more privileged counterparts.

In the context of South African tertiary education institutions – there is a massive demand for tertiary education, with a gross percentage of only 23.8% of the total population having been enrolled in tertiary education as of 2018 (UNESCO, 2021). Furthermore, the tertiary education institution of focus for this research – the University of Cape Town (UCT) – is ranked as the top tertiary education institute in Africa (Times Higher Education, 2020). Therefore, there is an increased demand for the university's services due to its prestigious reputation. In addition to the above, the effects of the extreme inequality perpetuated during the Apartheid era have resulted in the need for transformation of the higher education across South African universities. Currently, entrance criteria for accessing university includes a disadvantage factor which reweights a student's GPA to provide redress by enabling more underprivileged members of society to access tertiary education. However, after gaining access to university, no such benefit is provided for course entrance requirements that utilise university results.

This research will be centred around UCT's Post Graduate Diploma in Accounting (PGDA) entrance requirements. PGDA is UCT's South African Institute of Chartered Accountants (SAICA) certified CTA programme. Certified CTA programmes exist to prepare students for beginning their SAICA training contract and the writing of their first board exam (the Initial Test of Competence [ITC]). PGDA's current entrance criteria require UCT students to have either graduated with their accounting degree in the minimum time – effectively passing all their final-year courses (scoring more than 50%) – or to have passed their final year courses within the preceding two years of their applicable PGDA year and achieved an average mark of 53% for these courses (UCT, 2021c).

In recent years UCT has experienced reduced pass rates in PGDA and ITC. These reduced pass rates threaten the reputation of UCT's PGDA course as Auditing firms are required to secure contracts with trainees before their graduation and are left short-staffed if pass rates are lower than anticipated. Furthermore, the reduced ranking of UCTs performance in ITC results in the programme becoming less attractive to future applicants. UCT was ranked fourth and sixth for ITC pass rates in 2019 and 2020, respectively. In 2017 and 2018 UCT ranked third and second respectively. The reason for this drop-in pass rate may be attributable to UCT changing (lowering) its PGDA entrance criteria in 2018 (affecting the 2019 ITC results onwards).

The objective of this study is to analyse factors influencing academic performance in PGDA and ITC and determine the best predictors of success over which entrance criteria should be based. Although student demographic factors cannot be included in entrance requirements, their relationship to academic performance in PGDA and ITC will be included in the assessment. Following this, an optimal set of entrance criteria will be determined and tested against current and previous criteria. Finally, the results of the criteria recommended will be evaluated for equity purposes to ensure their implementation would not further inequality issues already present.

The study will examine data obtained from UCT to determine the predictive factors and consequent entrance criteria. The comparison of predictive factors to each PGDA course will be performed – which is the first time a study of this kind will be performed in South African academic literature. The results would provide valuable information to UCT educators (and others), allowing them to have a clearer understanding of factors that should be considered, thus refining the selection process. This will ensure that places are offered to students who have high chances to succeed and if not (in terms of education equity in a South African context), which specific students admitted may require interventions to enable them to succeed. Furthermore, through assessing entrance criteria, additional insight will be provided to the existing body of knowledge on endogenous factors that impact academic performance at a tertiary accounting level in South Africa. While there are several studies that have investigated these factors, a large number of these studies are at an undergraduate accounting level. Therefore, this study will add to the more limited research on post-graduate accounting (CTA-level) and ITC. Additionally, UCT's student profile has, and is, changing considerably over-time – as noted by the UCT 2018 Teaching and Learning Report (2018). Thus, supplementary findings will still provide value to both existing bodies of literature.

The research will commence with an analysis of prior literature on predictors of academic performance, which is used to formulate the various research questions. The research approach is then created – providing an explanation of the data sources and methodology applied to interpret this data. Thereafter, the results of the modelling are presented and discussed. Finally, a conclusion is drawn-up in the context of the overall study and areas of future research – identified during the study – are set-out.

BACKGROUND

ABOUT ENTRANCE REQUIREMENTS

All tertiary education institutions have some form of entrance criteria. These can usually be grouped into two categories: one, requiring students to have passed the previous modules needed for the academic programme of choice; or two, requiring students to have passed these modules along with achieving a minimum specified mark. While tertiary education institutions would ideally accept as many students as possible to bolster their revenue, almost all institutions have limited space and resources. It should be noted that honours and master's programmes do not fall under this mould and their requirements can vary – however these types of entrance requirements are not relevant to PGDA and will not be discussed further.

UCT – along with other universities – does not directly disclose the purpose of their entrance requirements, although the general understanding is that entrance requirements are implemented to reduce the number or applicants whilst ensuring students who are likely to 'succeed' are admitted (Truell & Woosley, 2008). The concept of 'success' is commonly linked to good academic performance, allowing students to complete their respective programme in the allocated time-period (York et al., 2015; Zimdars, 2016). However, UCT is also expected to consider factors other than those directly related to 'success' in their selection process, for the purpose of providing redress to South African citizens, as a result of South Africa's history of gross inequality, structured along racial lines (UCT, 2021a).

Upon application to undergraduate accountancy at UCT, the Faculty of Commerce uses a student's secondary school grade point average (GPA) and their performance in the National Benchmark Tests (NBTs) – South Africa's nationally standardized admissions tests – as a basis for selection (UCT, 2021a). The use of nationally standardized admission tests is due to the lack of direct comparability in academic performance between secondary schools, who each mark academic performance differently (Zimdars, 2016). These entrance criteria also consider a student's disadvantage factor. This form of redress uses the following factors to determine how a student's GPA upon application should be reweighted: where the student went to high school; their mothers first language; the highest level of education achieved by their parents and grandparents; and whether their family rely on child-support grants or a social pension from the government (UCT, 2021b).

After a student completes their undergraduate accounting degree, they may apply to UCT's Post-Graduate Diploma in Accounting (PGDA). The purposes of PGDA is to prepare students to write the Initial Test of Competency (ITC) and for their subsequent SAICA training contract with the aim of becoming a qualified South African Chartered Accountant (CA(SA)). The ITC is SAICA's first board exam, which aims to provide standard setting for future CA(SA)s by assessing core technical competencies (SAICA, 2021c).

PGDA's current entrance criteria require UCT students to have either graduated with their accounting degree in the minimum time – effectively passing all their final-year courses (scoring more than 50%) – or to have passed their final year courses within the preceding two years of their applicable PGDA year and achieved an average mark of 53% for these courses (UCT, 2021c). Students that have graduated from a different SAICA-accredited undergraduate programme in South Africa are required to complete at least two years at UCT, passing all second- and final-year accounting undergraduate courses, prior to admission into PGDA (UCT, 2021e). This eliminates the need for PGDA applicants to undergo standardized admissions tests, as all students will gain access to PGDA application through their academic performance at UCT, allowing for direct comparability.

These current criteria are a mixture of the two aforementioned categories, with the first category being the predominate criteria, as the majority of PGDA students are UCT students who have completed their undergraduate accounting degree in the expected timeframe. In contrast, PGDA's previous entrance criteria – requiring students to graduate and score 55% in final-year Financial Reporting, an average a mark of 55% across their final-year courses, and 60% in Business Analysis and Governance – fit purely into the second category (UCT, 2016). Consequently, the comparison between these two forms of entrance criteria may provide valuable information on the effectiveness and necessity of entrance requirements.

LITERATURE REVIEW

This literature review will first discuss the role of Biggs' *3P Model* as a theoretical framework for analysing academic performance. Various factors that influence academic performance will then be reviewed, separated into 'Demographic' and 'Prior Academic Performance' factors. Finally, the entrance criteria of all South African universities providing SAICA accredited CTA programmes will be discussed, along with their relationship to performance in ITC.

BIGGS' 3P MODEL

There are various theoretical models identifying factors that influence a student's academic performance in higher education (for example, Astin (1984); Biggs (1987b); and Tinto (1987)). Biggs' '3P Model' has been used frequently as a framework for researchers analysing academic performance in the accounting field, such as Kraus (2019); Papageorgiou (2017); and Shamsoodien (2020). Furthermore, in the analysis of entrance requirements and their relationship to academic performance, Biggs' '3P Model' is most appropriate as it directly addresses the factors on which entrance requirements are based and how these factors may influence a student's academic performance. The *3P Model* separates these factors into three stages: presage, process, and product (Biggs, 1987b, 1987c)

The initial stage – the presage stage – focuses on factors that exist before a student enters their learning situation. Biggs (1987a, 1987b) identified two variations of these factors: personal and situational. Personal factors relate to a student's prior academic knowledge, their intelligence quotient (IQ), and other values, attitudes, and biases they may have. Situational factors focus on the structure of the learning situation in the form of course content and layout affecting the difficulty of each task and the time spent on it.

Following this, the process stage addresses how a student perceives their academic environment. This relates to a student's motive to adopt a certain approach in learning their content: a less intense, simpler 'surface' approach; an 'achieving' approach where a student aims to perform academically through being time and content efficient; or a 'deep' approach where a student invests in a topic by reading more widely to ensure it is actually understood (Biggs, 1987b, 1987c). Additionally, Biggs

(1987b) noted that these learning approaches could be combined to form a composite approach – specifically an ‘achieving’ approach with either ‘deep’ or ‘surface’ learning.

Finally, the product stage is the culmination of a student’s efforts, measured as a student’s performance. This can be separated into two elements: cognitive and affective. The affective element is linked to a student’s satisfaction of the learning process – whether they enjoyed it or not, whereas the cognitive element addresses whether a student correctly reproduced specific factors or detail – essentially their academic performance (Biggs, 1987b, 1987c).

The stages of the *3P Model* flow naturally from presage to product, where a student’s personal and situational factors influence their approach to learning which in turn influences the outcome achieved. However, Freeth and Reeves (2004) noted that the *Biggs’ 3P Model* is complex and dynamic. Thus, some presage factors may influence the product directly, allowing for analysis on specific factors of the model in relation to the outcome (Freeth & Reeves, 2004). The primary objective of this research is to examine the relationship between entrance criteria and academic performance in PGDA and ITC. As a result, this study will focus on the presage and product stages of *Biggs’ 3P Model*.

Presage

As aforementioned, the presage stage can be separated into two groups, personal and situational. In the context of this research, the personal presage factors will be of focus as they relate to factors measurable by entrance criteria before a student begins their PGDA journey. Typically researched academic performance-related endogenous factors include age, gender, race, home language, and prior academic performance (Kraus, 2019). Prior academic performance can be split-up into various subsections such as performance in secondary school accounting, secondary school GPA, and undergraduate GPA.

While it is common practice for entrance criteria to assess prior academic performance and language – institutions cannot prohibit a student due to their age, gender, or race as this would contravene The Constitution of the Republic of South Africa (1996) on the basis of unfair discrimination. Tertiary education institutions may desire a certain level of experience or maturity which could be strongly correlated to applicant age;

however this does not account for recognition of prior learning. An applicant may have started working in the desired field early, thus exhibiting the required characteristics in a manner other than solely their age. Nonetheless, these factors are still relevant as they may indicate whether entrance criteria centred purely around prior academic performance affect certain demographics of students more significantly and whether the effect of such requirements on equity (in the context of South Africa) warrant the increase in likelihood of 'successful' students.

Product

As explained in the background, research on the meaning of 'success' at tertiary education institutions suggests that success is commonly measured by academic performance (York et al., 2015; Zimdars, 2016). Therefore, in the context of this research, academic performance in both PGDA and the ITC board exam would determine whether a student is successful. A student that has achieved a mark of 50% (or more) for each of their four PGDA subjects would have successfully passed PGDA – subsequently qualifying them to write ITC. Students may attempt SAICA's ITC board exam twice each year, thus a student will be successful if they pass ITC within their first two attempts – which would take place in the year immediately following their PGDA year.

DEMOGRAPHICS

Upon application to any UCT undergraduate degree, entrance requirements consider a student's various demographic factors in the form of a disadvantage score (as mentioned in the background). Once a student begins their UCT journey they are given equal access to all its facilities along with UCT's various faculty programmes – such as the Educational Development Unit in the Commerce Faculty – to help close gaps in both education and life experiences (UCT, 2021f). Consequently, when applying to PGDA and other postgraduate degrees, entrance criteria revert to a wholly prior academic performance focus so as not to discriminate against certain student demographics (as discussed above with regards to age).

Therefore, while the exclusion of demographic consideration may be justified, it may not be 'appropriate' for equity purposes in the context of South Africa. As mentioned in the background, South Africa suffered from extreme inequality due to the institutionalised racial segregation sanctioned by the Apartheid government – the effects of which are still being felt today. The World Bank (2021) determined South Africa to have a Gini-coefficient of 0.63 in 2015 (This is the most recent year in which data has been received from South Africa) placing South Africa amongst countries with the highest, persistent inequality rates in the world. The South African government has implemented measures to reduce this inequality since the end of Apartheid in 1994, but the process of restoration has been slow. Legislation implemented by the South African government, relevant to this study, is the *Higher Education Act.* Specifically, the *Education White Paper 3* – which proceeded the *Act* – provided a programme for the transformation of higher education (Department of Education, 1997). Two of the fundamental principles guiding transformation mentioned are:

- "*equity and redress - 'a critical identification of existing inequalities ... and a programme of transformation with a view to redress"*
- "*quality - 'maintaining and applying academic and educational standards ... in the sense of ideals of excellence that should be aimed at"*

(Department of Education, 1997, pp. 11–12)

Thus, 'appropriate' entrance criteria for the remainder of this study will be defined as requirements which balance both the two aforementioned principles, where quality (academic success in PGDA) can be improved without unnecessary harm to equity (students being given equal opportunity to succeed).

Race

At an international level, there is little literature on the link between academic performance in accounting and race. While all countries have some form of diversity, often resulting in subsequent issues due to the unfair treatment of certain ethnic groups (usually minorities) – South Africa is a special case due to its incredibly diverse population and its history of oppression (of the majority). Where international research has been performed on the matter, it is not a main focus, and results are inconclusive (Douglas, 2017; Guney, 2009; Reddy & Moores, 2012).

In South Africa, due to past inequalities touched on, students of colour – specifically Black students – have fewer resources available to them that would enable academic success. This has resulted in race being the primary factor of focus in the calculation of a student's disadvantage score. This is justified, as UCT's 2018 Teaching and Learning report (2018) concluded that only 11% of Black graduates in comparison to 44% of White graduates achieve an upper-second-class pass or above. This performance gap has also been highlighted in the accounting field with (E. Papageorgiou, 2017) findings, indicating there is a significant difference between Accounting I marks for White students compared to Coloured and Black students. This was also confirmed by (Shamsoodien, 2020), who observed race to be significantly correlated to academic performance in a second-year core accounting course, with White students outperforming Coloured and Black students.

Therefore, one may assume that stricter entrance requirements (based off academic performance) would prevent a greater number of students of colour from entering PGDA. This may be justified as (Kraus, 2019) found race to be statistically significant to success in a CTA programme with White students 3.5 times more likely to pass than Black students. Similar results were found in a study at UNISA's CTA programme, with White students 2.8 times more likely to pass than Black students (Ungerer et al., 2016). Consequently, the increased acceptance of students – who will likely fail – may be deemed inappropriate. However, it was also noted that this correlation with success became less significant (only being considered statistically significant at a 90% confidence level, as opposed to 95%) at an ITC level – the purpose of a CTA course (Kraus, 2019). Although, the performance gap at an ITC level is still very high, with White students achieving an 83 percent pass rate compared to a 59 percentage of Black students (SAICA, 2020b, p. 14).

Thus, race is a significant demographic factor to consider in relation to success and equity. Though, it should also be noted that there are a multitude of significant factors related to race that impact academic performance – such as class, home language, and geographical region (Hyland, 2017). Therefore, to analyse this relationship further, the type of secondary school a student attended will also be discussed along with home language (a typically researched demographic factor as aforementioned). The type of secondary school attended will function as a proxy for class and geographical region as both these factors influence the schooling options available to students.

Type of Secondary School

The body of research covering the correlation between secondary school type and academic performance at university is relatively small. Furthermore, the South African schooling system is very distinct – which makes direct comparability to international research difficult. South African schools are classified into three categories: private (independent schools), public (government) and a mixture of both – previously classified as 'Model-C Schools' (Tikly & Mabogoane, 1997). These categories are determined through the level of government funding each respective school receives, where private schools are wholly privately funded, former Model-C schools receive part funding from the government and from private sources, and public schools are funded entirely by the government (Tikly & Mabogoane, 1997).

Internationally, research in Australia is potentially comparable as there are also three different types of schooling systems: private, catholic, and public schools. Catholic schools are predominately private but do receive partial funding from Government funds (Birch & Miller, 2005). Findings suggest that there is a significant relationship between the type of school attended and academic performance at a tertiary level, where students that attended government schools outperform those that attended private or catholic schools (Evans & Farley, 1998; Win & Miller, 2005). Academics attributed this relationship to private schools artificially inflating secondary school results and government schools requiring students to be more self-directed and responsible in their learning (West, 1985; Win & Miller, 2005).

In South Africa, Jansen and de Villiers (2016) established similar findings, whereby students who attended government schools outperformed those who attended private or ex-Model-C schools. However, this benefit was only significant for the first year of study. Specific to postgraduate accounting, Weldon (2019) examined student aptitudes and their impact on success. A relationship between schooling type and aptitudes was observed, although, no statistically significant correlation was found between postgraduate accounting success and school type (Weldon, 2019). The above suggests the benefits of school type diminish as a student progresses within their tertiary institution, as they gain experience and adapt to the learning environment.

Research at an undergraduate accounting level, by Shamsoodien (2020), broke-down the classification of school type further by using quintiles – provided by the South

African Department of Basic Education – separating schools across five quintiles in relation to their wealth. It was found that there was a significantly positive relationship between academic performance and higher school quintiles (wealthier schools – generally private) which contrasts the findings from previous studies. It was noted that numerous government schools fell into the same quintile as private or ex-Model-C schools, which may be reason for the contradiction mentioned. Additionally, schools in higher quintiles where usually in more affluent areas allowing these schools and students more resources – positively impacting their education (Shamsoodien, 2020). This, in-turn, links back to a student's class (or wealth), geographical region and consequently, race.

Home Language

A student's mother tongue can also be strongly linked to race, with South Africa having 11 official languages – nine of which are African. In the current South African higher accounting education environment, African students are required to learn and be assessed in their non-native language at university and their subsequent board exams (in either English or Afrikaans). This disadvantage was highlighted by (Sartorius & Sartorius, 2013), who found that race and home language significantly affected the performance of African accountancy students at the University of Witwatersrand.

Another example of this can be seen through an observation of SAICA's most recent (2020) final board exam – the Assessment of Professional Competence (APC) – where 29% of African students passed compared to 69% white students (SAICA, 2020a). The difference is likely attributable to the nature of the APC, placing a large reliance on interpreting and applying complex information. The concept of interpretation was also identified by Pullen *et al.* (2015), where no significant correlation was found in undergraduate management accounting modules compared to a significantly positive correlation in post graduate management accounting – which was more complex, requiring application of key principles in unfamiliar scenarios.

This logic was applied by (Shamsoodien, 2020) in her study on factors predicting academic performance in Corporate Governance I (CG1) – a core second-year accounting subject at UCT. The assumption was that due to CG1 being a theoretical course, requiring interpretation and application of information and key principles, the language of assessment would have a significant effect on a student's performance.

Surprisingly, no significant correlation was found (Shamsoodien, 2020). Furthermore, (Jansen & de Villiers, 2016) also found no significant relationship in final-year accounting. At a CTA level, home language was also found to not be statistically significant, however students who attempted their CTA in their home language where 1.3 times more likely to obtain their CTA at first attempt (Ungerer et al., 2016).

Other researchers used English first language (a secondary school subject) as a proxy for discussing the correlation between language and academic performance. Similarly, this topic is also subject to a lack of agreement and is discussed below under prior academic performance. Additionally, This presents supplementary issues as many students taking English as a first language do not speak English as their home language (Kraus, 2019).

Therefore, analysing the relationship between home language and academic success is subject to limitations of available data. Moreover, it is likely that the generally observed positive – although not significant – correlation between home language and academic performance (by academics mentioned above) is indirectly accounted for through its connection with race.

Other Demographics

Other typically researched demographic factors, not related to race, include age and gender. The general consensus amongst South African accounting researchers regarding age is that younger students tend to outperform those who are older (Jansen & de Villiers, 2016; Carpenter & Shamsoodien, 2021; Steenkamp, 2014; Ungerer et al., 2016; van Wyk, 2011). Recent studies concluded that age is not significantly related to academic performance at a postgraduate or undergraduate accounting level, respectively (Kraus, 2019; E. Papageorgiou, 2017). Although, it was noted that the odds of success were still in favour of younger students (Kraus, 2019). This is expected, as older students may have additional family commitments and responsibilities (Aboo, 2017), or are older due to extending the time taken to complete their degree – as a result of failing courses or taking a hiatus.

A similar trend can be observed in international literature, where the same positive correlation has been found at an undergraduate accounting and professional accounting examination level (Deschacht & Goeman, 2015; Koh & Koh, 1999;

Rodrigues et al., 2018), but other recent studies have found no significant correlation (Douglas, 2017; Herdan et al., 2019).

In the context of UCT accounting, there are two streams a student may follow to qualify for PGDA: a Bachelor of Commerce: Financial Accounting or a Bachelor of Business Science: Finance and Accounting (UCT, 2020). These degrees are completed in a minimum of three and four years respectively thus a student's choice in accounting stream will also affect their age. Business Science students are exposed to a larger number of business-related courses – improving their critical thinking, and ability in certain subjects such as finance. Therefore, it is expected these students perform better in PGDA – even though they are, on average, older than Bachelor of Commerce students. Although the age gap between the aforementioned students is only one year, the range of PGDA's student age is relatively small due to all students being full-time students – as no part-time PGDA course is offered at UCT.

Research on the relationship of gender – usually the gender provided by a student, which they identify as – and academic performance in accounting has been inconclusive (Bokana & Tewari, 2014; Jansen & de Villiers, 2016; Kraus, 2019; E. Papageorgiou, 2017; Shamsoodien, 2020). Jansen and de Villiers (2016) noted that male students outperformed their female counterparts in undergraduate accounting courses at the University of the Western Cape. In contrast, Shamsoodien (2020) found a significant relationship between gender and academic performance in CG1, with females outperforming males. Other studies concluded that there was no significant correlation between gender and academic performance in undergraduate and postgraduate accounting (Bokana & Tewari, 2014; Kraus, 2019; E. Papageorgiou, 2017). At an international level, parallel conclusions are drawn – with the majority of literature finding no significant correlation (al Mamun, 2019; Byrne et al., 2014; Guney, 2009; Thorpe et al., 2017).

It was suggested by Koh and Koh (1999) that a potential reason for the inconsistency of results on genders correlation to academic performance may be due to the uneven number of particular genders in studies as accounting is typically a male-dominated field. The premise of this argument was that the majority gender motivated the outnumbered gender to perform better (Koh & Koh, 1999). Similar to this, E. Papageorgiou (2017) identified that female students may work harder, consequently performing better, to overcome the stereotype of accounting being a male-dominated profession. However, in the recent studies mentioned above, the number of female students enrolled in accounting was greater than or equal to male students, reducing the impact of the two aforementioned factors (Kraus, 2019; E. Papageorgiou, 2017). In particular, Koh and Koh's reasoning may no longer hold true.

Additionally, analysing gender has become more difficult as constructed gender – the gender a student chooses to identify as – has been found to play a larger role in accounting academic performance (Gammie et al., 2003). This has become more relevant with the increased acceptance on the matter by the general public and universities.

In conclusion, the impact of both age and gender on student success lacks academic consensus. Considering age: Students will be of different ages depending on the UCT accounting stream chosen, thus the inconsistency and lack of significance (in recent research) will likely increase. Considering gender: the factors driving differences in gender performance have been mitigated, along with the identification of biologically determined gender being more inaccurate.

PRIOR ACADEMIC PERFORMANCE

A fundamental aspect of modern entrance criteria is a student's prior academic performance. Initially, upon application, Tertiary education institutions may require students to achieve a minimum GPA whilst having taken certain secondary school subjects (and achieving the required results for these subjects). Once a student has specialised at a tertiary education institution and aims to study further, their academic performance at their respective institution is generally the focal point in admittance consideration. Thus, prior academic performance can be split into pre- and post-university, both of which, are discussed below.

Secondary School Academic Performance

Aciro *et al*. (2021) conducted a systematic review on literature (with the majority from America and Europe) covering the relationship between students' secondary school grades and their academic performance in university. Of the 43 relevant articles reviewed, 26 (60.47%) and 13 (30.23%) of them revealed the existence of positive and mixed correlations respectively, with the remainder (9.30%) expressing negative correlations. While the greater part of the articles included suggest that secondary school grades are positively linked to university academic performance, an agreement of 60.47% is not a convincing standpoint. This inconsistency may be a result of the environment to which the different literature was based as it has been found that environment should be an important consideration (Arquero et al., 2009).

In a South African context, there appears to be considerably more agreement on the matter (Baard et al., 2010; Bokana & Tewari, 2014; Carpenter & Kraus, 2020; Kraus, 2019; E. Papageorgiou, 2017; K. Papageorgiou & Halabi, 2014; Pullen et al., 2015; Shamsoodien, 2020; van Rooy & Coetzee-Van Rooy, 2015). Bokana and Tewari (2014) concluded that a student's secondary school GPA is an accurate predictor of success in first year university accounting and economic courses. This is corroborated by Baard *et al*. (2010) and Papageorgiou and Halabi (2014), who noted academic performance in secondary school to be the most important predictor of success in Financial Accounting and Accounting I, respectively. Additionally, Papageorgiou and Halabi (2014) found that the significance of secondary school performance persisted as an accurate predictor of success in Accounting II (a core second-year accounting module). Shamsoodien (2020) discussed the relationship of secondary school GPA and performance in CG1 (another core second year accounting subject). It was found that a student's secondary school GPA had a positive and significant relationship with their performance in CG1.

This persistence can be portrayed further by Jansen and de Villiers (2016), who investigated academic performance in a final undergraduate accounting module at the University of the Western Cape and identified that secondary school GPA is significantly correlated to academic performance. Therefore, based on the above literature, one may conclude that academic performance in secondary school remains a significant predictor of success throughout a student's university career. However, Jansen and de Villiers (2016) noted that although secondary school performance remains positively correlated to success, its level of predictability does decrease each year as a student progresses through their accounting undergraduate degree. To analyse this relationship further, a student's performance in certain secondary school subjects should be discussed – specifically subjects that would provide a student with a strong foundation to succeed in university.

Secondary school accounting is a prevalent topic amongst South African academics as it is not a prerequisite to study accounting at South African universities. Thus, there are questions as to whether its inclusion in entry requirements would benefit the success rate of students (Bokana & Tewari, 2014; E. Papageorgiou, 2017; E. Papageorgiou & Carpenter, 2019). E. Papageorgiou and Carpenter (2019) established that students having prior accounting knowledge (through taking accounting in secondary school) were significantly more likely to pass their first-year accounting course – Accounting I. However, Bokana and Tewari's (2014) research displayed that the significant positive correlation of secondary school accounting did not persist throughout an accounting student's university career. This is mainly attributable to a student having pre-exposure to the topic before facing it at a university level, where this benefit is no longer applicable to second-year accounting students who would have all completed their respective first year 'Accounting I' module (Bokana & Tewari, 2014).

Similar to secondary school accounting, English as a first language in secondary school was found to have a strong correlation to academic success in a student's first year at a South African university by numerous studies (Bokana & Tewari, 2014; Eng et al., 2017; E. Papageorgiou, 2017). This is likely due to the majority of universities choosing to teach using English, whereas South Africa has 11 official languages, thus students who have a better understanding of English will encounter less communication barriers and learn more effectively (Aboo, 2017). Conversely, other studies indicated that there is no significant correlation between English first language and academic success (Aboo, 2017; Jansen & de Villiers, 2016; van Rooy & Coetzee-Van Rooy, 2015). Furthermore, Pullen *et al*. (2015) concluded that English first language was not associated with success in undergraduate management accounting (another core accounting subject) whilst it was a predictor of success in the PGDA-level management accounting course. Thus, English first language may be correlated to academic performance, but is not a reliable predictor of such.

Finally, mathematics is the last of the three commonly studied secondary school subjects to have a significant positive correlation to academic performance in accounting undergraduate degrees (Bokana & Tewari, 2014; Eng et al., 2017; K. Papageorgiou & Halabi, 2014). Parallel to secondary school accounting, the correlation of mathematics with university performance tends to be an accurate predictor of success in early university but becomes less reliable further into a student's university career (Jansen & de Villiers, 2016).

It is interesting to note that from the above studies, a student's overall secondary school GPA, subjects taken, and marks scored for these subjects are all positively correlated to academic performance when beginning their accounting degree (Bokana & Tewari, 2014; E. Papageorgiou & Carpenter, 2019; K. Papageorgiou & Halabi, 2014). However – as a student progresses further in their undergraduate accounting degree – the predictability of a student's academic performance using specific secondary school subjects and GPA lessen, although the predictive value of a student's overall secondary school GPA remains more reliable (Jansen & de Villiers, 2016; Pullen et al., 2015; van Rooy & Coetzee-Van Rooy, 2015). A possible explanation may be that other non-quantitative factors are attributable to a student who performs well across all their secondary school subjects – such as time-management and grit – both of which have been shown to be positively correlated to academic performance (Alsalem et al., 2017; Sallehuddin et al., 2019).

Furthermore, additional factors become available during a student's university process that may predict their success. These additional factors may also be responsible for the decrease of certain elements that added value to the predictability of secondary school results, such as all university accounting students completing the same modules – effectively levelling out the playing field (with regards to prior knowledge and ability).

University Academic Performance

When applying for admission into PGDA, a student has an additional set of results – when compared to their undergraduate application – available to them: their academic performance in their undergraduate accounting degree (or undergraduate GPA). In a study by Guney (2009), the relationship between academic performance in accounting modules and non-accounting modules was discussed. The study found that the GPA of previous modules taken at university has a strong and positive significance to academic performance in accounting modules.

In Shamsoodien's (2020) study on factors affecting academic performance in CG1, it was found that on the first day of entering university, secondary school results were the most positive and significant predictors of performance, however upon registering for the course and thereafter, the student's prior year's university GPA was the most positive and significant predictor. It was also found that a student's result in 'Accounting I' – another key first-year UCT accounting course – has a significant positive relationship with academic performance in CG1 (Shamsoodien, 2020). Specific to accounting modules, Jansen & de Villiers (2016) found that a student's university Accounting I, and Accounting II marks were the most positive and significant indicator of academic performance in their final-year accounting course (Accounting III) when looking at a student's prior academic performance from first year and second year respectively. Therefore, based off the aforementioned studies, a 'prior academic performance' hierarchy can be constructed, as the most accurate predictor of success is a student's prior academic performance, with the most recent set of performance being the single-best predictor of success. This hierarchy of prior academic performance may be a reason to rely solely on the most recent set of prior academic performance available upon selection for PGDA.

Knowledge learnt from a course can follow two key structures, in horizontal or hierarchical. Horizontal knowledge involves learning that is not based on previous knowledge or does not require previous knowledge to be learnt, whereas hierarchal knowledge can be seen as a chain, where one is required to learn about previous information before building on the newly available information to acquire new knowledge (Bernstein, 2000). Knowledge structures are not rigid concepts and different disciplines may have elements of horizontal and hierarchal knowledge, in determining whether a discipline is more hierarchal, the degree of verticality should be inspected (Myers, 2016a).

Myers (2016b) described an introductory accounting course – Financial Accounting – at a South African university to have a high degree of verticality, thus having a hierarchical knowledge structure. In a study by Mkhize (2015) it was found that CTA level courses also have a hierarchical knowledge structure. Therefore, one may suggest that the accounting courses throughout a UCT student's undergraduate and PGDA career have a high degree of verticality. This can be seen simply by examining a primary stream to PGDA – UCT's Bachelor of Commerce specialising in Financial Accounting – course requirements: A student is required to complete Financial Accounting and Financial Reporting I (FR1) in first-year; having completed these courses, a student may take Management Accounting I (MA1), FR2, Corporate Governance I (CG1), and Taxation I (TAX1) in second-year; finally, after completing these courses, a student will take MA2, FR3, CG2, and TAX2 in their final-year (UCT, 2020). Once accepted into PGDA, a student will only take four, year-long courses in FR4, CG3, TAX3, and MAF – all of which are continuums of undergraduate accounting courses (UCT, 2021d).

In conclusion, when assessing a student's prior academic performance for entrance into PGDA, their most recent academic performance, in their final-year results, may be the most accurate predictors of success. One can expect this hypothesis to hold more weight when a course uses a hierarchal knowledge structure. Hence, numerous accounting education studies have shown that the single best predictor of academic performance is the most recent set of prior academic performance. Furthermore, this has been shown to hold true for university CTA courses in South Africa (Kraus, 2019; Pullen et al., 2015; Steenkamp, 2014; Swart & Becker, 2014). This method is also a significant predictor of success in professional exams, such as ITC, which are ultimately the reason CTA courses exist – to prepare students for their ITC board exam which upon passing would allow them to begin their SAICA traineeship (Dehrmann, 2013; Kraus, 2019; van Wyk, 2011).

ENTRANCE REQUIREMENTS

As mentioned in the background – UCT's PGDA past and current entrance requirements rely solely on a student's past academic performance, specifically their academic performance in the final-year of their accounting undergraduate degree. This is expected, and common practise, due to the most recent set of prior academic performance results being proven to be the single-most accurate predictor of success – which has been discussed above.

This focus on recent prior academic performance can be observed across entrance criteria for all South African universities providing SAICA accredited CTA courses (SAICA, 2020c). The simplified [(1)] entrance requirements for each of these universities are shown in the table below:

Table 1: University Entrance Criteria

University	Entrance Criteria
Independent Institute of Education – MSA AND Independent Institute of Education – Varsity College (IIE)	● Graduated with a IIE accounting degree within four years and completed all four major 3rd year subjects in the preceding year applicable to PGDip. OR ● Successfully completed accountancy bridging programme and completed all four major subjects in the preceding year applicable to PGdip. (IIE MSA, 2021; IIE Varsity College, 2020)
Institute of Accounting Science (IAS)	● Graduated with a NQF7 accounting degree from any SAICA accredited university. (Institute of Accounting Science, 2021)
Milpark Education (CA Connect) (3)	● Graduated with a NQF7 accounting degree from any SAICA accredited university. ● Students are selected based off their average mark across their major NQF7 modules, the time taken to complete their undergraduate degree, and their average mark if they have previously attempted a CTA programme. (Milpark Education, 2020)
Nelson Mandela University (NMU)	● Graduated with a NQF7 accounting degree from any SAICA accredited university. OR ● Graduated with a NQF7 general accounting degree and achieved a minimum mark of 55% for all four major final-year accounting modules. (Nelson Mandela University, 2021)

North-West University (NWU)	● Graduated with a NQF7 accounting degree from any SAICA accredited university. AND ● Achieved 57% in each of the four major final-year accounting courses ● (North-West University, 2020)
Regent Business School (RBS) (4)	● Graduated with a NQF7 accounting degree from any SAICA accredited university. (Regent Business School, 2021)
Rhodes University (RU)	● Graduated with a NQF7 accounting degree from any SAICA accredited university AND ● Achieved an average of 58% across all four major final-year accounting courses and a subminimum of 55% for each of these courses. AND ● Completed all four major final-year courses in the preceding year applicable to PGDA. (Rhodes University, 2021)
University of Cape Town (UCT)	● Graduated with UCT accounting degree in the minimum time, passing(>50%) all major final-year accounting courses. OR ● Have passed UCT final-year accounting courses within the preceding two years of applicable PGDA year and achieved an average mark of 53% for these courses. (UCT, 2021c).
University of Fort Hare (UFH)	● Graduated with a NQF7 accounting degree from any SAICA accredited university AND

	• Must not have had an absence of study greater than one year AND • 55% for final-year Accounting, and an average of 55% for the 3 other major final-year accounting courses. (University of Fort Hare, 2021)
University of the Free State (UFS)	• Graduated with a NQF7 accounting degree from any SAICA accredited university AND • Achieved 55% for each module set in terms of the four major final-year accounting modules and their previous modules. AND • An average of 58% for the four major final-year accounting modules. (University of the Free State, 2019)
University of Johannesburg (UJ)	• Graduated with a NQF7 accounting degree from any SAICA accredited university AND • An average of 55% for the four major final-year accounting modules, and a minimum of 52% for each module. AND • Passed all four major final-year modules in the same year. (University of Johannesburg, 2021)
University of KwaZulu-Natal (UKZN)	• Graduated with a NQF7 accounting degree from any SAICA accredited university AND • 55% for final-year Accounting AND

	● An average of 55% across all four major final-year accounting modules. (University of KwaZulu-Natal, 2019)
University of Limpopo (UL)	● Graduated with a NQF7 accounting degree from any SAICA accredited university AND ● An average of 55% across all four major final-year accounting modules AND ● All four modules must be completed in the same year. AND ● Student's must have been completing their accounting undergraduate degree or have been registered for a CTA course in the previous year. (University of Limpopo, 2017)
University of South Africa (UNISA)	● Graduated with a NQF7 accounting degree from any SAICA accredited university. (UNISA, 2021)
University of Stellenbosch (SU)	● Have passed all final-year accounting courses within the preceding two years of the applicable PGA year. AND ● A weighted average of 60% across all four major final-year accounting courses. OR ● A weighted average of 55% across all four major final-year accounting courses, and 55% for Financial Accounting (University of Stellenbosch, 2019)
University of Pretoria (UP)	● An average mark of 57% across all four major final-year accounting modules, and a minimum of 53% for each module. AND

	● All four modules must be completed in the year of study preceding applicable PGDA year. (University of Pretoria, 2019)
University of the Western Cape (UWC)	● Graduated with a NQF7 accounting degree from any SAICA accredited university. AND ● An average of 57.5% across all four major final-year accounting modules, and a minimum of 55% for each module. (University of the Western Cape, 2021)
University of Witwatersrand (UW)	● Graduated with Wits accounting degree, passing all major final-year accounting courses, in the preceding year to PGDA application. (University of the Witwatersrand, 2021)

(1) The entrance criteria shown are simplified as they only discuss the requirements for students who have followed the expected university stream to gain access to each respective universities CTA programme

(2) Both these universities provide their CTA course through the IEE online space; thus these two universities will be counted as a single entity.

(3) The completion of CA Connect's CTA course occurs mid-year, thus students write their first ITC attempt in June. This is in contrast to all other universities; thus, success rates were not comparable.

(4) No clear pass rates were attributed to RBS by SAICA thus, their success rate was not included.

These universities all fall within the two categories mentioned in the background, with some universities being a mix of the two. Ten out of 18 (55.56%) of the SAICA-accredited universities fall into category two, requiring students to not only pass but achieve certain mark thresholds. The remaining eight (44.44%) only require students to achieve their undergraduate degree. However, of these eight, UCT and UW only accept students that have passed their respective programmes – otherwise requiring students from other universities to repeat their programmes before qualifying for application to their CTA course. It is assumed that these two universities have these requirements in place as they assess students in a different manner, along with potentially changing the roadmap in which content is covered from undergraduate to postgraduate. The specificness of these two universities may make their accounting undergraduate degrees more rigorous than other universities – this could potentially place them in category two, by virtue of having stricter entrance requirements.

Therefore, upon categorising these universities (excluding UCT and UW), only six (33.33%) universities clearly fall under category one. Following this, a brief analysis can be performed between categorised universities and their relationship to ITC pass rates to assess whether their respective entrance requirements were meaningful. While the main determinant to success in the ITC is the structure and pedagogy of each universities' respective CTA course, the setting of entrance requirements is still relevant as they exist to select students that are more likely to succeed in said CTA course (and subsequently the ITC).

The ITC results are published by SAICA (in terms of pass or fail), after each respective ITC examination, and these results are displayed in various contexts – including the pass rate for each university (SAICA, 2021a). The pass rates for students passing within their first two attempts (successful students as defined) was used, as shown in *Figure 1.1* of Appendix 1, where category two universities had a consistently higher pass rate throughout 2013 to 2020. This suggests that there is a correlation between stricter entrance requirements and the increased rate of success of a university's students.

Further examination was performed on these pass rates in relation to UCT, with the results shown in *Figure 1.2* of Appendix 1. UCT's ranking in ITC pass rates dropped substantially from third and second in 2017 and 2018 respectively, to fourth and sixth in 2019 and 2020 which correlates to their change in PGDA entrance criteria – implemented in 2018 – affecting ITC results from 2019 onwards. Therefore, the more favourable performance in students' ITC results prior to the change in entrance criteria could be linked to UCT's entrance requirements moving from category two to a mixture (as covered in the background) in 2018. However, there is no clear link to UCT's change, as UCT's ranking ranged from first to seventh in the six years prior (2013-2018) to 2019. Although, UCT's average ranking in the prior six years was 3.33 compared to a post-change in entrance requirements average of 5.00.

The recent release of ITC 2021 April results – the first attempt available to students who successfully completed their CTA year in 2020 – furthers the lack of clarity of the correlation discussed. UCT placed joint-second with a 96% pass-rate, a similar performance to the pre-change in entrance requirement 'conditions' (SAICA, 2021b, p. 10). These results do only account for the first attempt of the students concerned, however due to the pass rate of 96%, UCT's ranking in the 2021 ITC is likely to remain unchanged upon remaining students' second attempt.

In determining the success of a university there are also other factors to consider such as their reputation. Eight out of the 18 listed SAICA accredited universities were ranked within the top 1000 universities by Times Higher Education (2020) – all of which were category two universities or uncategorised (UCT and UW). Category one universities are often less sought-after universities, having lower entrance requirements for the purpose of providing a market to students who were unable to be admitted to higher-rated universities or were unsuccessful at a higher-rated university. Thus, students' more likely to succeed (with academic performances considerably above the designated entrance criteria) will choose to attend category two universities due to their reputation. Although, it may be argued that in the long-term a university's reputation is a consequence of its student success rate, and therefore linked to the strictness of its entrance criteria

To complicate matters further, the use of a student's most recent academic performance in entrance criteria may be the single best predictor of success, but it is not without its flaws. In a study by Hoefer and Gould (2000) the predictability of admission criteria (using a graduate quality point average (GQPA) – a similar construct to GPA) for academic performance in graduate business school was discussed. They noted that the majority of errors in the predictability of the GQPA could be assigned to the high or low ends of the GQPA scale, specifically a GQPA below 3.15 and above 3.65 (Hoefer & Gould, 2000). This occurrence was also noted by van Rooy & Coetzee-Van Rooy (2015) when researching predictability of secondary school GPA in relation to academic success in university. It was established that secondary school GPA was the best predictor of success however, the value of the predictability notably decreased for GPA's below 65 percent (van Rooy & Coetzee-Van Rooy, 2015).

Entrance criteria utilising a student’s prior-academic performance does not significantly increase above the pass rate for the respective prior academic modules, with the majority of strictest entrance requirements (covered in the table above) requiring students to score an average of 57%. This likely falls into the lower quartile of academic performance which may hinder the predictive value of these entrance criteria as evidenced above – potentially reducing their appropriateness.

METHODOLOGY

RESEARCH OBJECTIVE

As stated, the primary objective of this research is to assess the relationship between a students' personal presage factors (race, home language, age, gender, and prior academic performance) and academic success in PGDA and ITC. Following this, an optimal set of entrance criteria will be constructed and evaluated against UCT's past and current entrance criteria. Entrance requirements will be assessed on the number of successful students along with the effects of the trade-off – of the decrease/increase in success – on equity (providing an equal opportunity to all students).

RESEARCH QUESTIONS

Research Question 1

"What are student personal presage factors that significantly impact academic performance in PGDA at UCT?"

Research Question 2

"What are the optimal entrance requirements UCT should implement for PGDA, constructed from factors that have strong predictability of academic success but remain reasonable?"

Research Question 3

"Do entrance criteria that use the strongest predictors of academic success (whilst remaining constitutional) increase student pass rates in PGDA at UCT and the subsequent ITC pass rates?"

Research Question 4

"Is the increase/decrease in pass rates in PGDA and ITC achieved by specific entrance criteria justifiable in the context of equity?"

RESEARCH HYPOTHESES

The hypotheses below are presented as null hypotheses and have been formulated based on findings from previous literature and available data discussed above.

Research Question 1 – *performance predictors*

- H1: Race has no impact on a student's academic performance in PGDA.
- H2: The type of secondary school attended has no impact on a student's academic performance in PGDA.
- H3: Home Language has no impact on a student's academic performance in PGDA.
- H4: Gender has no impact on a student's academic performance in PGDA.
- H5: Age has no impact on a student's academic performance in PGDA.
- H6: Financial Reporting III has no impact on a student's academic performance in PGDA.
- H7: Corporate Governance II has no impact on a student's academic performance in PGDA.
- H8: Management Accounting II has no impact on a student's academic performance in PGDA.
- H9: Taxation II has no impact on a student's academic performance in PGDA.
- H10: Business analysis and Governance has no impact on a student's academic performance in PGDA.
- H11: University final-year undergraduate GPA has no impact on a student's academic performance in PGDA.

Research Question 2 – optimal entrance criteria

- H12: Race has no impact on a student's FR4, CG3, TAX3 or MAF mark.
- H13: Financial Reporting III has no impact on a student's FR4, CG3, TAX3 or MAF mark.
- H14: Corporate Governance II has no impact on a student's FR4, CG3, TAX3 or MAF mark.
- H15: Management Accounting II has no impact on a student's FR4, CG3, TAX3 or MAF mark.
- H16: Taxation II has no impact on a student's FR4, CG3, TAX3 or MAF mark.
- H17: University final-year undergraduate GPA has no impact on a student's FR4, CG3, TAX3 or MAF mark.

H18: Race has no impact on a student's ability to pass ITC.
H19: Financial Reporting III has no impact on a student's ability to pass ITC.
H20: Corporate Governance II has no impact on a student's ability to pass ITC.
H21: Management Accounting II has no impact on a student's ability to pass ITC.
H22: Taxation II has no impact on a student's ability to pass ITC.
H23: University final-year undergraduate GPA has no impact on a student's ability to pass ITC.

Research Question 3 – entrance criteria pass rates

H24: The predictive value of final-year undergraduate academic performance, within the 50-60% band, does not change significantly for success in PGDA and ITC.
H25: Entrance requirements constructed from final-year undergraduate academic performance do not significantly change PGDA and ITC pass rates compared to previous entrance requirements.

Research Question 4 – equity of entrance criteria

H26: Entrance requirements constructed from final-year undergraduate academic performance do not significantly affect student diversity.

DATA ACQUISITION AND PREPARATION

Prior to the commencement of this research, ethical clearance was obtained from the UCT Ethics Committee. Undergraduate Accounting and PGDA data were obtained through UCT's Institutional Planning Department, and UCT student-specific ITC results were obtained through UCT's College of Accounting. Spreadsheets containing the relevant information applicable to UCT PGDA classes of 2018, 2019, 2020 were obtained along with the classes' ITC results for the year immediately following their respective PGDA year (2019, 2020, and 2021). The undergraduate accounting data obtained also related to these respective PGDA classes, where students either completed their Bachelor of Commerce: Financial Accounting, or Bachelor of Business Science: Finance and Accounting degree. Thus, the undergraduate data related to the year preceding the respective PGDA year – in the case of Management Accounting II the data obtained for BBusSci. students was two years preceding their respective PGDA year.

Although the data was analysed and presented in aggregate, the original data obtained contained individual student data as this was needed to link students' UCT results with their respective ITC pass or fail result. To ensure confidentiality and anonymity the author's supervisor agreed with the College of Accounting to link the UCT and ITC data and remove the student-identifying data thereafter before providing the data to the author to be processed.

The reason for obtaining the years mentioned is due to UCT's entrance criteria changing for the 2018 PGDA year – accepting all students who achieved their UCT undergraduate accounting degree. This provides a population of students that was accepted at the minimum possible entrance requirements (Passing their undergraduate final-year). The information received from UCT contained demographic information entered into the online application system by students when they first applied to UCT along with final marks for each of the four core subjects for both final-year undergraduate accounting and PGDA. Information obtained relating to ITC results related to whether students passed or failed their first ITC attempt.

Only the first ITC attempt was used due to the results for students' first two attempts not being available for ethical clearance and subsequent processing upon completion of this research. Therefore, to maintain consistency in ITC data used, only the ITC results for students' first attempt will be analysed (to allow for the inclusion of the 2021 results). This should not have a significant effect on the outcome as UCT's pass rates do not change substantially after the inclusion of students' second attempts (shown in *Figure 1.3* of Appendix 1).

Additionally, issues due to the effects of the Covid-19 Pandemic on the most recent year (2020) of academic performance were considered. The learning method and environment changed rapidly due to the Covid-19 Pandemic in PGDA, whereby UCT operated in 'emergency remote learning' conditions which resulted in the majority of the PGDA year being taught online with no face-to-face lessons. However, PGDA's final exams were ultimately still written face-to-face (to which the weighting was further increased), thus reliance may still be placed on these results. Furthermore, previous years have also been influenced by non-standard situations, such as the 'Fees Must Fall' protests experienced by UCT in 2016 and 2017, also affecting their respective academic calendars and how assessments were run.

The Covid-19 Pandemic also led to the first attempt of ITC being written in April 2021, as opposed to the examination usually taking place in January. The same procedures and strictness were still applied to these examinations; thus, reliance may be placed on the results.

Furthermore, the mentioned circumstances were considered prudently when preparing the data and no significant differences were noted (as confirmed through the analysis of assumptions underpinning the regression models used – which requires data to be consistent with no major outliers).

The original sample of data (n = 1277) consisted of all student's enrolled for PGDA in 2018, 2019 and 2020. Of the original sample, the sets of data pertaining to 105 students in the above years was not complete, and subsequently removed due to the following reasons: 89 of the above students form part of the Unizulu cohort whilst the remainder (16) of students were not able to complete their PGDA year.

The College of Accounting ran a programme in collaboration with the University of Zululand (Unizulu) whereby Unizulu students complete their undergraduate accounting degree at Unizulu and are given access to completing their PGDA at UCT – effectively bypassing the current entrance requirements as they do not need to complete UCTs undergraduate accounting courses. As a result, the Unizulu cohort has no data with regards to their undergraduate marks at UCT and would not form part of a discussion around entrance requirements into PGDA (as this would not apply to these students). Furthermore, it is unlikely that entrance criteria will be applied to this cohort as the programme above is assisted by the Thuthuka Education Upliftment Fund managed by SAICA for the purposes of transformation and skills development (SAICA, 2023b).

Students may not complete their PGDA year for various reasons; these reasons are recorded as a leave of absence, course incomplete, absent from one or more examination, deceased, or duly performed certificate refused. A student may be denied the option to write their final examinations by the College through not being provided a duly performed certificate. Students that are not provided this opportunity are identified through the assessment of their attendance to tutorials, and results in tests and examinations during the year. If a student has not met the attendance requirements, and test result requirements, they are denied access to writing the final examination as an assumption has been made that they will not pass these examinations due to the lack of effort provided during the academic year. These students are directed to rather focus on solidifying the basics and come back the following year more prepared to succeed in PGDA. Such students have been included in the sample as they are linked to academic failure to which entrance requirements hope to prevent (these students do not form part of the remaining 16 students mentioned above).

The remaining incomplete records may be a result of academic failure, but this is not always the case, as a student may deregister or chose to not write final examinations due to various reasons – therefore these students have been excluded from the population.

The sample of students that qualified to write the ITC examination was reduced to 879 (from 1172) as 293 students failed their respective PGDA year. Of the sample data 12 students did not attempt the ITC examination for reasons unknown. These students have been excluded from the models assessing ITC results resulting in a remaining population of n = 867.

Descriptive statistics to provide insight into the population and comparison between the various population demographics have been provided in Table 2 and Table 3 below.

VARIABLES FOR RESEARCH QUESTIONS 1 AND 2

Dependent Variable(s)

The dependant variable for the following two models is a student's academic performance. For Models *1* and *2A,* academic performance is defined as the final marks achieved by students in PGDA. *Model 1* uses a sole dependant variable in the cumulative average of a students' PGDA final marks. After the Independent variables were refined through *Model 1*, *Model 2A* used four dependant variables – namely the students' final marks for each of the four PGDA subjects – Financial Reporting IV, Taxation III, Corporate Governance III, and Management Accounting and Finance. The use of four dependant variables allowed for *Model 2A* to provide information that is more robust due to PGDA requiring a student to pass all four courses (in the same year) to complete the PGDA year.

Model 2B measured academic performance in terms of whether a student passes ITC. ITC results are detonated as either '0' (if a student passes) or '1' (if a student fails) – actual marks achieved by students cannot be used as these are not made available by SAICA.

Independent Variables

The independent variables comprise of factors related to academic performance, discussed in the literature review, and are drawn from the hypotheses listed under *Research Question 1*. The variables consist of both numerical (ordinal variables) and converted non-numerical (indicator and categorical variables) amounts. *Model 1* used all the independent variables provided below, whereas *Model 2* only used independent variables selected through *Model 1* – removing variables with low predictive value, in terms of academic performance, and those that caused contradiction.

Hypothesis 1 – Race

Race is commonly categorised into the following: Black, White, Indian, and Coloured. These categories are used by Statistics South Africa (2020) when preparing demographic information and are also used by UCT in their respective reports, such as their annual transformation report (UCT, 2019). When applying to UCT, students self-declare their race and are provided with an additional declaration option of 'Unclassified'. Therefore, for the purposes of this research, the independent variable of race will be split into five categories: Black, White, Indian, Coloured, and Unclassified.

To incorporate race most appropriately into both *Models 1* and *2,* dummy variables were created with the race category 'White' being assigned as the base group. Each dummy variable was coded as follows: coded '1' if a student's race was classified as the respective dummy variable (Black, Coloured, Indian, Unclassified) and coded '0' if the student was classified as 'White'. This resulted in the comparison of each race group to the base group – 'White' – presenting a limitation in the regression analysis due to the output of each non-base race obtained not being compared to the other non-base races. 'White' was selected as the base group owing to prior literature, which identified White students to perform better than students in the other race categories (Kraus, 2019; Ungerer et al., 2016).

Hypothesis 2 – Type of Secondary School

The type of secondary school attended by students will be categorised into school quintiles, as classified by the South African Department of Basic Education (2021). Therefore, this independent variable with be expressed as a number from one to five.

The analysis of school quintiles is presented separately from the original model as an alternative model due to the incomplete government school quintile records reducing the sample size.

Hypothesis 3 - 4 – Home Language and Gender

Home language will be coded as ‘1’ if the student’s home language is English and ‘0’ if not. Similarly, gender will be coded as ‘1’ if the student is male and ‘0’ if they are female.

Hypothesis 5 - 10 – Age and Undergraduate final-year results

The remaining independent variables are all in their appropriate numerical form.

Similar to the school quintiles above, Business analysis and Governance (BAG) is presented separately in an alternative model due to the 2020 BBusSci. Cohort having not completed BAG as it became non-compulsory in their undergraduate final-year.

As a result of the above the final-year undergraduate GPA is calculated as the average of results achieved in FR3, CG2, TAX2 and MA2.

Table 2: Summary statistics for indicator and categorical variables

Variable	2018		2019		2020		Total	
	Count	Percentage (%)	Count	Percentage (%)	Count	Percentage (%)	Count	Percentage (%)
Race								
Black (1)	127	31,75%	112	28,87%	139	36,20%	378	32,25%
Chinese (1)	8	2,00%	3	0,77%	4	1,04%	15	1,28%
Coloured (1)	48	12,00%	48	12,37%	50	13,02%	146	12,46%
Indian (1)	48	12,00%	42	10,82%	42	10,94%	132	11,26%
White (0)	134	33,50%	135	34,79%	113	29,43%	382	32,59%
Unclassified (1)	35	8,75%	48	12,37%	36	9,38%	119	10,15%
Total	**400**	**100,00%**	**388**	**100,00%**	**384**	**100,00%**	**1172**	**100,00%**
Home Language								
English (0)	261	65,25%	268	69,07%	235	61,20%	764	65,19%
Other (1)	139	34,75%	120	30,93%	149	38,80%	408	34,81%
Total	**400**	**100,00%**	**388**	**100,00%**	**384**	**100,00%**	**1172**	**100,00%**
Gender								
Female (0)	207	51,75%	176	45,36%	196	51,04%	579	49,40%
Male (1)	193	48,25%	212	54,64%	188	48,96%	593	50,60%
Total	**400**	**100,00%**	**388**	**100,00%**	**384**	**100,00%**	**1172**	**100,00%**

***Table 3: Descriptive statistics for all ordinal (and converted) variables**

Total	FR3	CG2	TAX2	MA2	*BAG	*GPA	School Quintile	Age	Race	Home Language	Gender
Mean	60,447	60,998	58,818	60,539	65,245	61,190	4,755	23,025	0,657	0,348	0,506
Standard Deviation	8,460	7,924	8,027	8,965	6,194	6,340	0,692	1,124	0,475	0,477	0,500
Standard Error	0,247	0,231	0,234	0,262	0,191	0,185	0,022	0,033	0,014	0,014	0,015
Skewness	0,748	0,550	0,714	0,425	0,128	0,827	-3,206	2,403	-0,662	0,638	-0,024
Kurtosis	0,185	-0,072	0,137	-0,218	0,107	0,297	10,727	22,782	-1,564	-1,595	-2,003
Variance	71,580	62,798	64,436	80,363	38,361	40,191	0,479	1,264	0,226	0,227	0,250
Median	59	60	57	59	65	60	5	23	1	0	1
Mode	50	50	50	50	67	58	5	23	1	0	1
Minimum	41	40	40	33	45	49	1	20	0	0	0
Maximum	90	91	88	88	87	88	5	37	1	1	1
Range	49	51	48	55	42	38	4	17	1	1	1
Sum	70844	71490	68935	70952	68442	71714	4726	26985	770	408	593
Count	1172	1172	1172	1172	1049	1172	994	1172	1172	1172	1172

*Business Analysis and Governance became non-mandatory for 2020 Business Science PGDA applicants as a similar course was covered in this undergraduate degree’s finance programme. Thus, the dataset of BAG results does not cover the entire population. Grade Point Averages were calculated exclusive of BAG as these results would skew the averages of students that completed BAG compared to those that did not.
Refer to *Figures 2.1* to *2.3* in Appendix 2 for the above descriptive statistics for each academic year-group.

RESEARCH APPROACH FOR RESEARCH QUESTIONS 1 AND 2

Research Question 1 – Model 1

The data obtained was first analysed to establish which predictor variables had a low predictive value in relation to academic performance in PGDA. These variables were subsequently removed, resulting in the remaining pool of variables being accurate predictors of academic performance and non-redundant. A stepwise regression analysis was used to determine the above. This statistical technique uses a computer algorithm to select the best group of predictor variables (independent variables) that account for the majority of variance in the outcome – the R-squared of the dependant variable (Christensen, 2018; Sahay, 2016). The technique is often utilised to decide which independent variables should be included in a subsequent multiple regression model (Yu et al., 2014).

The appropriate pool of predictor variables, determined in a stepwise regression, can be computed using two different methods. The model can either begin by including all the respective predictor variables and sequentially eliminate variables that are not accurate predictors or are contradictory; or the model is constructed with no independent variables, and they are sequentially added if they have strong predictive values (Christensen, 2018). The statistical programme performs t-tests for each predictor variable and includes (or removes) the respective variable with the largest (or smallest) t-value and this process is repeated numerous times until the appropriate pool of predictor variables is determined (Sahay, 2016). For the purposes of this research, a backward stepwise regression analysis was performed as this is more appropriate due to the small number of predictor variables (Smith, 2018). The above analysis was performed using Microsoft Excel for Office 365 (with the ToolPak add-in enabled).

Research Question 2 – Model 2

Having determined the appropriate pool of predictor variables through *Model 1,* the relationship between the selected independent variables and academic performance in each of the four PGDA courses and ITC was examined. Two separate models were constructed with the first analysing PGDA results and the second, ITC results. The models were denoted as *Model 2A* and *Model 2B*, respectively. Following this, receiver operating characteristic curves were drawn up from the data obtained in the above models to determine an optimal set of entrance criteria. The analysis for *Model 2A* and *2B* – and the remaining models – was performed using XLStat by Lumivero, which operates within Microsoft Excel for Office 365.

Research Question 2 – Model 2A

To establish the relationship between selected predictor variables and academic performance in PGDA – which is separated into the four courses – a multivariate regression analysis was used. This statistical technique is a multiple linear regression analysis that also considers the relationship between dependant variables, instead of computing the relationship between independent variables and each dependent variable separately. Thus, multivariate regression analysis allows for the modelling of the straight-line relationship between variables, where two or more predictor (independent) variables are inputted to explain the outcomes of the dependant variables (Kutner et al., 2005; Young, 2018).

Research Question 2 – Model 2B

In analysing the relationship between the selected predictor variables and ITC results, a logistic regression analysis was used. This form of regression is similar to the above but computes the relationship between independent variables and a single dependant variable, whereby the dependant variable is typically binomial (Kutner et al., 2005; Young, 2018).

Research Question 2 – Receiver-operating Characteristic Curve

Upon computation of the relationships between the selected predictor variables and academic performance in terms of PGDA marks and ITC results, receiver-operating characteristic curves are drawn to analyse the trade-off concerning the predictive value of independent variables at different ranges. This provided guidance for the recommendation of an optimal set of entrance criteria which aims to have a student pass both PGDA and ITC.

A Receiver-operating characteristic (ROC) curve is a tool frequently used to determine the accuracy of a statistical model, with accuracy being split into three subsections of sensitivity, specificity, and area under the curve (AUC) (Zou et al., 2007). Sensitivity and specificity analyse the predictive accuracy above and below a set of cut-off data, respectively, and the AUC is an indicator of the overall accuracy of the predictions made (Stoltzfus, 2011; van Erkel & Pattynama, 1998; Zou et al., 2007).

Assumptions underpinning stepwise, multivariate, and logistic regression analyses

The first two methods of regression analyses, discussed above, are subject to the same six key assumptions, namely: linearity, homoscedasticity, normality, independence, absence of multicollinearity, and absence of significant outliers (Kutner et al., 2005; Marshall, 2016; Sahay, 2016; Young, 2018). Logistic regression analyses require the same assumptions to be met, excluding homoscedasticity and normality (Stoltzfus, 2011). The requirements of these assumptions need to be met in order for the models produced to be meaningful. If any of the following requirements are not met, the method would need to be adjusted – either through removing problematic independent variables or removing data points in specific circumstances (Marshall, 2016; Young, 2018).

Linearity

Firstly, a linear relationship needs to exist between the independent variables and the dependant variable(s). This can be observed by producing a scatterplot of the independent and dependant variables whereby the data plotted should form a linear pattern (Kutner et al., 2005; Sahay, 2016; Young, 2018). In the case of a logistic regression, the scatterplot would be represented by the independent variables and the logit values (Stoltzfus, 2011; Young, 2018).

Homoscedasticity

The residuals (prediction errors) are required to have a constant variance, meaning the variances of the data should have a similar spread across the range of predicted values (Sahay, 2016; Young, 2018). Again, a scatterplot can be produced – using the residuals and predictive values – to assess for the amount of deviation from the predicted values. The data plotted should not illustrate a clear distribution pattern, which suggests homoscedasticity (Marshall, 2016).

Normality

The residuals of the regression analyses are also required to be normally distributed. This can be assessed through presenting a histogram of the residuals – where the resultant graph is bell-shaped – indicating that there is not a large amount of deviation from a normal distribution (Marshall, 2016; Sahay, 2016; Young, 2018).

Independence

Finally, residuals must be independent of each other, where each data point should come from a different subject (Kutner et al., 2005; Marshall, 2016). The data used in this study relates to individual student data, thus each data point (and the consequent residual) is independent as it relates to different students. Testing for this assumption can become more complex when a time-series of data is used, however the data used in this study was obtained at a point in time (Marshall, 2016; Sahay, 2016; Young, 2018).

Absence of multicollinearity

While regression analysis requires a linear relationship between independent variables and dependant variable(s), a strong linear relationship between independent variables must not exist. This relationship is referred to as a collinear relationship – or multicollinearity (Kutner et al., 2005). A common, formal method, used by researchers in the field of this paper, to detect for the presence of multicollinearity is the use of variance inflation factors (VIF). Here the general consensus is that VIF values that exceed ten identify a multicollinearity problem, whereas numbers lower than ten are considered acceptable (Guney, 2009; Jansen & de Villiers, 2016; Kutner et al., 2005).

Absence of significant outliers

Lastly, the data used must not contain any significant outliers. Some data points may be influential, causing major changes to the regression function when excluded (Kutner et al., 2005; Marshall, 2016). If such data points are present, they must be removed from the regression analysis. Cook's Distance and the Difference in Fits measure (DFFITS) are diagnostics which allow for one to observe how influential a data point is in the regression analysis. The consensus here is that Cook's Distance values greater than one and DFFITS values where the absolute value is greater than two is indicative of an influential data point(s) (Kutner et al., 2005; Marshall, 2016). The calculation of DFFITS for logistic regression models is not applicable, thus only Cook's Distance is used (Stoltzfus, 2011).

VARIABLES FOR RESEARCH QUESTIONS 3 AND 4

Dependent Variables

The dependant variable for *Model 3* was the success rate (passing both PGDA and ITC) of students. Parallel to the approach of the dependant variable in Model 2B – the ITC results will be detonated as either '0' (if a student passes) or '1' (if a student fails).

For *Model 4,* the dependant variable was the level of student diversity. This was determined by classifying race numerically, whereby the race category 'White' was assigned the value '0' and the remaining race categories were grouped into 'students of colour' which was assigned the value '1'

Independent Variables

The independent variables for the final two models were the type of entrance requirements implemented. This was split into the following categories: PGDA's current criteria, PGDA's old criteria, and criteria recommended through *Model 2.*

RESEARCH DESIGN FOR RESEARCH QUESTIONS 3 AND 4

Logistic Regression Analysis

Further logistic regression analyses were performed to determine which form of entrance requirements most appropriately predicts success in PGDA and ITC as well as the relationship of each form of entrance requirements with student diversity. The assumptions testing performed in the preparation of previous models provided coverage for the below models as the input data remained the same.

Research Question 3 – Model 3

This model assessed the relationship between the different entrance criteria implemented by UCT (for PGDA), along with the entrance criteria recommended by *Model 2,* and the success rate of students in PGDA and ITC.

Research Question 4 – Model 4

The final model evaluated the different entrance criteria, discussed in the previous model, in relation to their effects on student diversity. Subsequently, the results of *Model 4* will be compared to those of *Model 3* to determine whether the relevant entrance requirements are appropriate.

RESULTS AND DISCUSSION

RESEARCH QUESTION 1 & 2

Results of testing assumptions necessary to perform regression analysis

To assess whether the mentioned statistical techniques are appropriate to address *Research Question 1* and *Research Question 2*, the following key assumptions were evaluated:

1) Linearity – A linear relationship exists between independent and dependant variable(s).
2) Homoscedasticity – A constant variance across residuals.
3) Normality – A normal distribution of residuals.
4) Independence – Independent residuals.
5) Absence of Multicollinearity – No strong linear relationships between independent and dependant variables exists.
6) Absence of significant outliers – No significant outliers are present in the data. (Guney, 2009; Jansen & de Villiers, 2016; Kutner et al., 2005; Marshall, 2016; Sahay, 2016; Young, 2018)

Assumption 4), the independence of residuals, has been previously addressed as all data used is obtained from an independent student's records. The results for the testing of the remaining assumptions are detailed below.

For the purposes of *Model 1*, the assumptions were evaluated against the PGDA average achieved by each student as well as the ITC result of each student. Based on the results, the PGDA average was deemed an appropriate proxy for the individual PGDA courses. This is due to the primary concern being multicollinearity between undergraduate courses and their respective PGDA course – however, no relatively concerning VIF values were noted.

To analyse whether a linear relationship exists between the independent and dependant variables, scatterplots of these variables were created (refer to Appendix 3, *Figures 3.1.1* to *3.2.11)*. Secondly, the VIF values for each independent variable was calculated to identify the strength of the above linear relationships (refer to Appendix 3, *Figure 3.3*). (Guney, 2009; Jansen & de Villiers, 2016; Kutner et al., 2005; Sahay, 2016; Young, 2018)

The results indicated linear relationships per the scatterplots and relatively low VIF values. Although various predictor variables had weak linear relationships, linear relationships were reasonably identifiable across all variables indicating no serious violations. (Kutner et al., 2005; Marshall, 2016; Sahay, 2016)

As mentioned, the consensus from researchers on VIF values is that values exceeding 10 are deemed to identify multicollinearity problems (Guney, 2009; Jansen & de Villiers, 2016; Kutner et al., 2005). The values observed did not exceed three with a maximum value of 2.60 being observed, thus the assumption of the absence of collinearity has not been seriously violated.

To address the homoscedasticity of residuals assumption, scatterplots were created which depicted the residuals and predicted values (refer to Appendix 3, *Figure 3.4.1* to *3.4.3*). *School Type* and *BAG Results* were addressed separately as a result of data populations differing. No specific patterns or conical shapes were identified in the scatterplots generated; therefore, it is reasonable that the assumption of homoscedasticity has not been violated (Marshall, 2016; Sahay, 2016; Young, 2018).

The normality of distribution was assessed through the creation of histograms using the residuals and the frequency of such residuals (refer to Appendix 3, *Figure 3.5.1* to *3.5.3*). Similar to above, *School Type* and *BAG Results* were addressed separately. All histograms generated resembled a normal (bell-shaped) distribution curve which suggests that this assumption of normality has not been violated (Marshall, 2016; Sahay, 2016; Young, 2018).

Finally, the presence of significant outliers in the data was assessed through the use of Cook's Distance and the Difference in Fits measure (DFFITS) diagnostics (refer to Appendix 3, *Figure 3.6*). Academic consensus suggests values greater than one or absolute values greater than two indicate an influential data point(s), respectively (Kutner et al., 2005; Marshall, 2016). A single student data point in the alternate model for the purposes of including School Type was identified to have a DFITTS value of 2.122. This data point was excluded from the alternative regression performed. No such other values were noted; thus, the assumption of significant outliers has not been violated.

Consequent to the tests discussed above, no assumptions necessary for the regression analyses utilised were seriously violated. Therefore, the use of the respective regression models in this study is deemed appropriate and Model 1 (Table 4.1 – 4.3) – stepwise regression performed to ascertain the most accurate predictor variables; Model 2A (Table 5.1) – multivariate regression performed to assess the relationship between predictor variables determined in Model 1 and the four core PGDA courses; Model 2B (Table 5.2) – logistic regression performed to assess the relationship between predictor variables determined in Model 1 and ITC results; were all generated below:

Stepwise Regression Model Variations

Table 4.1: Stepwise Regression Output – Model 1

- Not statistically significant, and least statistically significant, thus eliminated from the Model

Version 1					
Variable	***Coefficients***	***Standard Error***	***t Stat***	***P-value***	***Sign.***
Intercept	7,647	3,597	2,126	0,034	
Race Group	-2,387	0,364	-6,552	0,000	***
Gender	0,423	0,299	1,415	0,157	
Age	-0,204	0,131	-1,559	0,119	
Home Language	-0,445	0,356	-1,248	0,212	
FR3	0,144	0,026	5,482	0,000	***
CG2	0,313	0,024	13,134	0,000	***
Tax2	0,333	0,027	12,280	0,000	***
MA2	0,119	0,022	5,540	0,000	***
Version 2					
Variable	***Coefficients***	***Standard Error***	***t Stat***	***P-value***	***Sign.***
Intercept	6,997	3,560	1,966	0,050	
Race Group	-2,566	0,335	-7,655	0,000	***
Gender	0,467	0,297	1,574	0,116	
Age	-0,191	0,131	-1,467	0,143	
FR3	0,141	0,026	5,397	0,000	***
CG2	0,315	0,024	13,253	0,000	***
Tax2	0,335	0,027	12,392	0,000	***
MA2	0,122	0,021	5,730	0,000	***

Cont.

Version 3					
Variable	***Coefficients***	***Standard Error***	***t Stat***	***P-value***	***Sign.***
Intercept	2,274	1,516	1,499	0,134	
Race Group	-2,527	0,334	-7,559	0,000	***
Gender	0,454	0,297	1,530	0,126	
FR3	0,139	0,026	5,338	0,000	***
CG2	0,317	0,024	13,343	0,000	***
Tax2	0,335	0,027	12,390	0,000	***
MA2	0,127	0,021	6,002	0,000	***
Version 4					
Variable	***Coefficients***	***Standard Error***	***t Stat***	***P-value***	***Sign.***
Intercept	2,573	1,505	1,710	0,087	
Race Group	-2,614	0,330	-7,931	**<0,001**	***
FR3	0,142	0,026	5,447	**<0,001**	***
CG2	0,312	0,024	13,248	**<0,001**	***
Tax2	0,335	0,027	12,386	**<0,001**	***
MA2	0,128	0,021	6,065	**<0,001**	***
R Square	0,654				
Adjusted R Square	0,652				
N	1172				
F-statistic	440,971				
df	5				
Model Sign. (P-value)	**<0,001**				

Notes:

*** Indicates statistical significance at the 5% level.**

**** Indicates statistical significance at the 1% level.**

*****Indicates statistical significance at the 0.1% level.**

Table 4.2: Alternate Stepwise Regression Output – Incl. School Quintile

Alternate Version (School Quintile)					
Variable	*Coefficients*	*Standard Error*	*t Stat*	*P-value*	*Sign.*
Intercept	8,739	4,126	2,118	0,034	
Race Group	-2,433	0,397	-6,134	**<0,001**	***
CG2	0,310	0,026	11,874	**<0,001**	***
Tax2	0,321	0,029	10,936	**<0,001**	***
MA2	0,130	0,024	5,515	**<0,001**	***
FR3	0,146	0,028	5,126	**<0,001**	***
Home Language	-0,558	0,415	-1,346	0,178	
Age	-0,190	0,146	-1,302	0,193	
Gender	0,549	0,326	1,684	0,093	
School Quintile	-0,270	0,247	-1,090	0,276	

Table 4.3: Alternate Stepwise Regression Output – Incl. BAG

Alternate Version (BAG)					
Variable	*Coefficients*	*Standard Error*	*t Stat*	*P-value*	*Sign.*
Intercept	-4,089	1,971	-2,075	0,038	
Race Group	-2,413	0,361	-6,686	**<0,001**	***
CG2	0,281	0,028	10,120	**<0,001**	***
Tax2	0,314	0,030	10,526	**<0,001**	***
MA2	0,103	0,022	4,620	**<0,001**	***
FR3	0,114	0,027	4,145	**<0,001**	***
BAG	0,197	0,032	6,168	**<0,001**	***
R Square	0,648				
Adjusted R Square	0,646				
N	1049				
F-statistic	320,010				
df	6				
Model Sign. (P-value)	**<0,001**				

Notes:

*** Indicates statistical significance at the 5% level.**

**** Indicates statistical significance at the 1% level.**

*****Indicates statistical significance at the 0.1% level.**

Multivariate and Logistic Regression Models

Table 5.1: Multivariate Regression Output – Model 2A

Financial Reporting 4					
Variable	***Coefficients***	***Standard Error***	***t Stat***	***P-value***	***Sign.***
Intercept	-1,687	2,437	-0,692	0,489	
Race Group	-3,114	0,534	-5,834	**<0,001**	***
CG2	0,301	0,038	7,886	**<0,001**	***
Tax2	0,588	0,044	13,415	**<0,001**	***
MA2	-0,145	0,034	-4,241	**<0,001**	***
FR3	0,293	0,042	6,953	**<0,001**	***
Corporate Governance 3					
Variable	***Coefficients***	***Standard Error***	***t Stat***	***P-value***	***Sign.***
Intercept	7,415	1,869	3,968	0,000	
Race Group	-2,178	0,409	-5,321	**<0,001**	***
CG2	0,374	0,029	12,784	**<0,001**	***
Tax2	0,347	0,034	10,320	**<0,001**	***
MA2	0,123	0,026	4,685	**<0,001**	***
FR3	0,014	0,032	0,425	**0,671**	
Taxation 3					
Variable	***Coefficients***	***Standard Error***	***t Stat***	***P-value***	***Sign.***
Intercept	-4,933	2,212	-2,231	0,026	
Race Group	-2,162	0,484	-4,463	**<0,001**	***
CG2	0,369	0,035	10,655	**<0,001**	***
Tax2	0,226	0,040	5,687	**<0,001**	***
MA2	0,195	0,031	6,275	**<0,001**	***
FR3	0,206	0,038	5,387	**<0,001**	***

Cont.

Management Accounting & Finance					
Variable	***Coefficients***	***Standard Error***	***t Stat***	***P-value***	***Sign.***
Intercept	9,499	1,692	5,613	0,000	
Race Group	-3,001	0,371	-8,095	**<0,001**	***
CG2	0,205	0,027	7,713	**<0,001**	***
Tax2	0,180	0,030	5,900	**<0,001**	***
MA2	0,340	0,024	14,300	**<0,001**	***
FR3	0,054	0,029	1,849	**0,065**	
	FR4	**CG3**	**TAX3**	**MAF**	
R Square	0,516	0,516	0,494	0,544	
Adjusted R Square	0,514	0,514	0,492	0,542	
N	1172	1172	1172	1172	
F-statistic	249,017	248,693	227,423	278,374	
df	5	5	5	5	
Model Sign. (P-value)	**<0,001**	**<0,001**	**<0,001**	**<0,001**	

Notes:

*** Indicates statistical significance at the 5% level.**

**** Indicates statistical significance at the 1% level.**

*****Indicates statistical significance at the 0.1% level.**

Table 5.2: Logistic Regression Output – Model 2B

ITC Results					
Variable	***Coefficients***	***Standard Error***	***Wald Chi-Square***	***P-value***	***Sign.***
Intercept	7,349	1,435	26,224	0,000	
Race Group	0,909	0,264	11,827	**<0,001**	***
CG2	-0,101	0,020	25,486	**<0,001**	***
Tax2	0,009	0,022	0,187	**0,665**	
MA2	-0,050	0,017	8,808	**0,003**	**
FR3	-0,022	0,019	1,357	**0,244**	
-2 Log (Likelihood)	588,343				
R^2 (McFadden)	0,152				
R^2 (Cox and Snell)	0,114				
R^2 (Nagelkerke)	0,207				
N	867				
F-statistic	249,017				
df	5				
Model Sign. (P-value)	**<0,001**				

Notes:

*** Indicates statistical significance at the 5% level.**

**** Indicates statistical significance at the 1% level.**

*****Indicates statistical significance at the 0.1% level.**

Biggs 3P model

This study utilised Biggs 3P model, detailing various factors that may affect a student's performance. The presage and product factors were of focus, specifically personal presage factors and cognitive product factors. Consequently, the presage stage related to endogenous demographic factors while the product stage was considered to be a student's academic success (Biggs, 1987a, 1987b). The regression analyses performed identified which demographic factors were significantly related to academic performance in PGDA, along with assessing the relationship between prior-period academic results and PGDA. The results of these models have been discussed below:

Model 1

Model 1 (*Tables 4.1 – 4.3*) was produced through performing a backward stepwise regression analysis, for the purposes of narrowing the number of predictor variables to be included in the more advanced analysis of academic performance in terms of individual PGDA subjects and ITC (Smith, 2018; Yu et al., 2014). The relationship between the independent (predictor) variables – namely, Gender, Age, Home Language, Secondary School Quintile, Financial Reporting 3 (FR3), Corporate Governance 2 (CG2), Taxation 2 (TAX2), Management Accounting 2 (MA2), and Business Analysis and Governance (BAG) – and the dependant variable, a student's final PGDA grade-point-average, was assessed to eliminate variables with no clear statistical significance.

The independent variables found to not be significantly related to performance in PGDA at a threshold of 0.05 were eliminated in the following order: School Type ($\beta = -0.270$, $p = 0.276$), Home Language($\beta = -0.445$, $p = 0.212$), Age($\beta = -0.191$, $p = 0.143$), and Gender($\beta = 0.454$, $p = 0.126$). The coefficients and p-values provided relate to the amounts generated when the respective variable was selected for elimination. BAG was only included in the Model after elimination of statistically insignificant predictor variables above, as its final predictive value – after the elimination process – is the most accurate for determining potential future model inclusion. This was not necessary for School Type as it was the first predictor identified to be eliminated.

The remaining variables found to be statistically significant ($p < 0.001$) were Race as well as all undergraduate academic courses (FR3, CG2, TAX2, MA2, BAG). All such variables were positively related to academic performance – asides race which had a negative relationship (β = -2.614) with performance, whereby White students (the base group represented by the dummy variable ‘0’) outperformed those of other races (represented by dummy variable ‘1’).

Model 2A

Consequent to the results of *Model 1*, a multivariate regression analysis was performed to further investigate the relationship between the predictor variables and each of the four PGDA subjects (independent variables) – Financial Reporting 4 (FR4), Corporate Governance 3 (CG3), Taxation 3 (TAX3), and Management Accounting and Finance (MAF).

Although BAG was found to have a significantly positive relationship to academic success in PGDA, the subject was removed from the analyses performed in *Model 2A* and *2B*. BAG was previously a course required for the completion of both BCom. Accounting and BBusSci. Finance and Accounting, however the course was removed from the syllabus for BBusSci. students in the 2019 academic year (qualifying for PGDA in 2020). Therefore, the inclusion of BAG would require the BBusSci. portion of the PGDA 2020 cohort’s data to be removed in performing the above analysis. This would effectively reduce the sample size (affecting the reliability of results) as well as create potentially inaccurate conclusions as the 2020 data would only compromise of BCom students who have had a different university experience relative to their age, courses taken, and year-group when compared to the 2018 and 2019 PGDA cohort’s data. Furthermore, the purpose of this research is to suggest entrance requirements to improve future academic success in PGDA and ITC – for both BBusSci. and BCom. Students – thus the inclusion of BAG in subsequent models would result in the suggested entrance requirements only being applicable to BCom students.

After factoring in the above, all independent variables were found to have a statistically significant ($p < 0.001$) relationship to success in FR4 and TAX3. Unexpectedly, MA2 was found to have a negative statically significant relationship with FR4 (β = -0.145, $p < 0.001$) which does not follow expectations set by prior research (Guney, 2009). Positive relationships were observed for CG3 and MAF with all predictor variables (asides race), and statically significant ($p < 0.001$) relationships were identified for CG2, TAX2, MA2 and Race.

Model 2B

The same process per *Model 2A* was performed in relation to ITC results – using a logistic regression analysis due to the single binomial dependant variable (Kutner et al., 2005). Converse to the above models, *Model 2B* was expected to exhibit negative relationships between academic and ITC results due to the coding of the ITC results being '0' for a pass result and '1' for a failure.

CG2, MA2, and FR3 were found to have negative relationships to success in ITC, with CG2 and MA2 having statistically significant relationships ($\beta = -0.101$, $p < 0.001$ and $\beta = -0.050$, $p < 0.01$, respectively). FR3 was found to have a statistically insignificant relationship ($\beta = -0.022$, $p = 0.244$) and TAX2 was found to have a statistically insignificant positive relationship ($\beta = 0.009$, $p = 0.665$). Finally, race was found to have a statistically significant and positive relationship to ITC results ($\beta = 0.909$, $p < 0.001$).

Discussion of results for specific variables in the regression models

Prior to analysing and discussing the result of the remaining models, *Model 3* and *Model 4*, which identify the most statistically appropriate entrance requirements as well as the equity thereof – the relationships between each independent, predictor variable and academic success in PGDA and ITC have been discussed below.

Race

Race was found to be statistically significant to success in PGDA and ITC across all three models, with the category '0' dummy variable (White students) being more likely to succeed academically than students of other race groups (category '1'):

Model 1 – PGDA-Grade Point-Average ($\beta = -2,614$, $p < 0.001$).

Model 2A – FR4 ($\beta = -3.114$, $p < 0.001$); CG3 ($\beta = -2.178$, $p < 0.001$);
TAX3 ($\beta = -2.162$, $p < 0.001$); MAF ($\beta = -3.001$, $p < 0.001$).

Model 2B – ITC Result ($\beta = 0.909$, $p < 0.001$).

The aforementioned findings disagree with international research, which is inconclusive on the matter (Douglas, 2017; Guney, 2009; Reddy & Moores, 2012). However, the results are consistent with local (South African) research performed, whereby White students were found to outperform Black students in first-year university (E. Papageorgiou, 2017), second-year university (Shamsoodien, 2020), and in CTA programmes (Kraus, 2019). Kraus (2019) highlighted the increased likelihood to pass CTA for other race groups when compared to Black students, with Indian and all other racial groups being more likely to pass their academic year than Black students. Additionally, Shamsoodien (2020) identified that White students performed significantly better on average than Black and Coloured students.

The research performed herein categorised all other race groups into a single dummy variable category – ‘1’ – of which 47.85% of this grouping compromised of Black students and 66.33% Black and Coloured students. Therefore, the expected underperformance of Black and Coloured students – and their high population weighting – has likely resulted in the statistically significant relationships identified, with the relationship potentially becoming more exasperated should other race groups be excluded from the grouped dummy variable.

Although the correlation of race and success in ITC decreased in relation to academic performance in PGDA, race was the single highest predictor of academic success across all three models. This supports the notion that personal factors strongly linked to race such as class and geographical region – effectively the abilities derived from a student’s home background per Biggs’ 3P model (Biggs, 1987a, 1987b) – affect a student throughout their university studies (Hyland, 2017) and do not only put them in a position of academic catch-up which can simply be ‘recovered’ from.

The above is supported by the Employment Equity Act, as students of colour are classified as previously disadvantaged due to having less social and cultural capital (on average) compared to White students – affecting their ability to succeed academically throughout their career. Furthermore, the effects of equity around academic success have shown to prevail in board exams – post-university and ITC – with a 48% versus an 86% pass rate for the 2019 APC examination for African and White students respectively (SAICA, 2019). The same was true for the APC 2020, with a 24% versus 64% pass rate (SAICA, 2020a).

Thus, it is important for proactive steps to be taken to help remedy this inequity – particularly for public institutions such as universities. Although universities alone cannot solve this issue, careful consideration should be taken in relation to factors affecting the redress provided – such a less strict, or stricter entrance requirements.

Therefore, Hypothesis 1 – Race has no impact on a student's performance in PGDA; Hypothesis 12 – Race has no impact on a student's FR4, CG3, TAX3 or MAF mark; and Hypothesis 18 – Race has no impact on a student's ability to pass ITC – are rejected.

Secondary School

Students' secondary school attended, and the consequent school quintile attached, were found to be negatively related to academic performance in PGDA, however this relationship was identified as statistically insignificant:

Model 1 (Table 4.2) – PGDA-Grade Point-Average (β = -0,270, p = 0.276).

Secondary School quintile data provided by the South African Department of Basic Education is not complete as various secondary schools are marked as "Not Applicable" or blank per the most recent available records. As a result, the population of school quintiles reduced the sample size from 1172 to 994 when performing the regression analysis. Out of this reduced data sample, school quintile was the first predictor variable to be removed from the model due to being the most unrelated to performance in PGDA.

The findings contradict research performed by Shamsoodien (2020) who used school quintiles and identified a significantly positive relationship between academic performance in a second-year accounting course and school quintiles. The negative relationship ascertained agreed with international research on the matter, whereby students that attend lower-income, government schools are more likely to be self-directed and take responsibility for their own learning (West, 1985; Win & Miller, 2005). Whilst the mentioned research noted significant positive and negative relationships, Jansen & de Villiers (2016) noted that the significance of this relationship only applied for the first year of study in accounting. This is supported by other local research on success in postgraduate accounting which did not identify a statistically significant correlation between school type and academic success (Weldon, 2019). Consequently, due to PGDA occurring four to six years into a student's study, the relationship would not be expected to be statistically significant.

The abilities of a student deriving from their home background, forming part of Biggs' 3P model, would be related the secondary school they attended (Biggs, 1987a, 1987b). However, this is a converse relationship to that which was identified in analysing student race, indicating that the correlation between secondary school type and factors derived from a student's home background that affect academic performance is limited.

Therefore, Hypothesis 2 – The type of secondary school attended has no impact on a student's academic performance in PGDA – is not rejected.

Home Language

Home Language was found to be negatively related to academic performance in PGDA, with English speakers performing better than non-English speakers. However, this relationship was identified as statistically insignificant:
Model 1 – PGDA-Grade Point-Average ($\beta = -0.445$, $p = 0.212$)

Home language was the second predictor variable to be removed from the stepwise regression performed, after the removal of School Quintile in the alternate stepwise model, due to being the least statistically significant to performance in PGDA.

The favouring of English Home Language in the analysis performed was expected as students are expected to write the majority of their assessments in English in anticipation for the board exams which are required to be written in English. Furthermore, Pullen *et al.* (2015) identified significant relationships between accounting subjects which were complex and required interpretation and application of key principles in unfamiliar scenarios. Contrary to this research, no statistically significant relationship was noted in the model, which aligns with more recent research on the matter (Shamsoodien, 2020; Ungerer et al., 2016).

A student's home language should theoretically form an important part of their home background – affecting their academic abilities per Biggs' 3P model (Biggs, 1987a, 1987b). The above should be strongly linked to race, however these variables delivered deviating results. This is largely a result of the assumption that the selection of English as a home language translates to the respective student being predominately English-speaking. Kraus (2019) acknowledged this issue when assessing English first-language as a proxy for English home language and it is likely that this issue translates at a university application level whereby students that took English first-language in secondary school selected English as their home language in hopes to bolster their application (appearing bi-lingual). This ‘disconnect’ is supported by the statistically significant relationship identified between race and academic success.

Therefore, Hypothesis 3 – Home Language has no impact on a student’s academic performance in PGDA – is not rejected.

Gender

Gender was found to be positively related to academic performance in PGDA, with males outperforming females. However, this relationship was identified as statistically insignificant:

Model 1 – PGDA-Grade Point-Average ($\beta = 0.454$, $p = 0.126$)

The findings concur with those identified amongst other researchers, where no significant correlation between gender and academic performance in accounting was noted, locally and internationally (al Mamun, 2019; Bokana & Tewari, 2014; Jansen & de Villiers, 2016; Kraus, 2019; E. Papageorgiou, 2017; Thorpe et al., 2017).

Prior research suggests that the inconsistency may be due to the uneven number of a particular gender in accounting studies (Koh & Koh, 1999), however the data utilised – per Table 2 – exhibits close to a perfect 50/50 split with 49.40% of the sample having selected Female on application to university and 50.60% selecting Male. In contrast to other research, Shamsoodien (2020) found a significant relationship between gender and academic performance in a second-year accounting course, although the potential stereotypes that may have resulted in these findings (or will to disprove such stereotypes) seem to have dissipated during a student’s academic journey (Bokana & Tewari, 2014; Kraus, 2019; E. Papageorgiou, 2017).

Furthermore, the analysis of results has become more difficult due to constructed gender – which has been found to have more predictive value in accounting academic performance (Gammie et al., 2003). The effect of constructed gender on the data processed was not able to be assessed as it appeared students were only presented with two options – female or male – upon application. Thus, gender would not be considered as a notable personal presage factor in Biggs’ 3 P model that affects the product – academic performance in accounting (Biggs, 1987a, 1987b).

Therefore, Hypothesis 4 – Gender has no impact on a student's academic performance in PGDA – is not rejected.

Age

Age was found to be negatively related to academic performance in PGDA, with younger students outperforming older students. However, this relationship was identified as statistically insignificant:

Model 1 – PGDA-Grade Point-Average ($\beta = -0.204$, $p = 0.212$)

This is in-line with findings of other academics, whereby no statistically significant relationship was identified (Jansen & de Villiers, 2016; Kraus, 2019; E. Papageorgiou, 2017; Steenkamp, 2014) but the likelihood of success favoured younger students (Kraus, 2019). The above is expected as older students may have additional family commitments and other responsibilities or are older due to the extension of their degree because of failure, or as a result of additional responsibilities mentioned (Aboo, 2017).

Additionally, most students completing PGDA are of a similar age with the mean age of the sample being 23.025 and the standard deviation from such mean being 1.124. Thus, age may be considered a personal presage factor that could affect academic performance (Biggs, 1987a, 1987b), although the specific effects of this difference in one-to-two years of age band will not produce sufficiently predictive results.

Therefore, Hypothesis 5 – Age has no impact on a student's academic performance in PGDA – is not rejected.

Business Analysis and Governance

BAG was found to be positively, statistically significant to success in PGDA in the alternate *Model 1*:

Model 1 (*Table 4.3*) – PGDA-Grade Point-Average ($\beta = 0.197$, $p < 0.001$).

As previously mentioned, BAG was removed from the subsequent testing due to the sample size and compositional issues presented. The overall predictivity of the final stepwise regression – after eliminating variables for no clear significance – was an adjusted R-Square of 0.652. The inclusion of BAG decreased the adjusted R-Square value of the final model to 0.646 which highlights the negative effect of the reduced sample size and composition on the model.

Notwithstanding the above, the predictive ability of BAG was noteworthy – providing a stronger correlation to success in PGDA ($\beta = 0.197$) than both MA2 ($\beta = 0.103$) and FR3 (0.114). BAG offers a different academic method to typical accounting courses as the majority of the course revolves around student's performing industry and business-specific research which culminates in a final mergers and acquisitions project as well as examinations on a specific industry that has been pre-emptively researched. Thus, the verticality of BAG relative to typical accounting course in the hierarchical knowledge structure is lower as BAG requires a fair degree of horizontal knowledge which is not based on previous knowledge learnt (Bernstein, 2000; Myers, 2016a, 2016b).

Whilst CTA courses are reliant on a hierarchical knowledge structure (Mkhize, 2015) and would typically favour prior courses that form part of this hierarchy in predicting academic success, BAGs benefit to such a model is the assessment of a different factor that affects academic success in metacognition (Schleifer & Dull, 2009). Students are effectively required to 'think about what they know' in BAG and apply themselves as part of their self-regulated learning. As a result, a student who can perform the above sufficiently has been found to be significantly more likely to succeed academically in accounting (Schleifer & Dull, 2009). However, the predictor courses that vertically integrate into CTA programmes (FR3, CG2, TAX2 and MA2) should still be the predominate inputs into an academic success centred prediction model, but BAG may offer an added predictability element. This method can be observed in PGDA's previous entrance requirements as student's were required to score a sufficient average result across all their undergraduate final-year courses as well as 60% for BAG.

Therefore, Hypothesis 10 – Business Analysis and Governance has no impact on a student's academic performance in PGDA – is rejected.

Undergraduate GPA

The undergraduate grade-point-average of a student's core final-year course marks was found to have a positive and statistically significant relationship to success in

PGDA and ITC as per the results below. This finding is expected as research unanimously agrees that the best predictor of academic success in accounting is a student's most recent prior academic results (Dehrmann, 2013; Guney, 2009; Jansen & de Villiers, 2016; Kraus, 2019; Pullen et al., 2015; Shamsoodien, 2020; Steenkamp, 2014; Swart & Becker, 2014; van Wyk, 2011). Furthermore, research on success in CTA courses, specifically, concurs with the above (Kraus, 2019; Pullen et al., 2015; Steenkamp, 2014; Swart & Becker, 2014) as well as research on success in ITC (Dehrmann, 2013; Kraus, 2019; van Wyk, 2011).

Therefore, Hypothesis 11 – university final-year undergraduate GPA has no impact on a student's academic performance in PGDA; Hypothesis 17 – university final-year undergraduate GPA has no impact on a student's FR4, CG3, TAX3 or MAF mark; and Hypothesis 23 – university final-year undergraduate GPA has no impact on a student's ability to pass ITC – are rejected.

The relationship between each individual core final-year undergraduate subject and success in PGDA and ITC has been discussed below.

Financial Reporting III

FR3 was found to have a positive and statistically significant relationship to success in PGDA. However, the relationship between specific PGDA subjects – namely CG3 and MAF – as well as ITC results, were found to be statistically insignificant:

Model 1 – PGDA-Grade Point-Average ($\beta = 0.142$, $p < 0.001$).

Model 2A – FR4 ($\beta = 0.293$, $p < 0.001$); CG3 ($\beta = 0.014$, $p = 0.671$);
TAX3 ($\beta = 0.206$, $p < 0.001$); MAF ($\beta = 0.054$, $p = 0.065$).

Model 2B – ITC Result ($\beta = -0.022$, $p = 0.244$).

The positive and statistically significant relationships identified between FR3 and PGDA courses – TAX3 and FR4 – are expected, as past research has exhibited that the best predictor of success is the most recent set of prior academic performance (Kraus, 2019; Pullen et al., 2015; Steenkamp, 2014; Swart & Becker, 2014). Moreover, this expectation would apply to FR4, in particular, as it is the successor course to FR3 – having direct verticality in the hierarchal knowledge structure (Mkhize, 2015). Interestingly, the statistically insignificant relationship between FR3 and PGDA courses – CG3 and MAF – as well as with ITC success, does not echo these expectations.

Research performed by Myers (2016b) noted various methods less (and more) successful students used to construct knowledge in first year accounting – discussing procedures of investigation, ‘recognition’ and ‘realisation’ rules, and the development of a ‘trained gaze’. These methods revolve around a student understanding accounting theory principles; and applying these principles correctly in changing scenarios as well as identifying the relevant information in a question and what information is needed to answer said question (Myers, 2016b). In an analysis of CTA programmes, performed by Mkhize (2015), academics across universities noted that no ‘new’ knowledge is taught at a CTA level but rather a higher level of application of already ‘learned’ knowledge. Thus, the knowledge construction methods mentioned may be particularly applicable to success in PGDA as students are required to adapt and develop more effective ways to utilise their ‘learned knowledge’. Additionally, different methods used to construct knowledge may favour success in certain PGDA courses – more so than others.

Financial reporting is a highly technical subject which revolves around the use and understanding of the *International Financial Reporting Standards* (IFRS). Whilst completing the various financial reporting courses, a student would be expected to perform various accounting calculations as well as discuss the reporting of specific situations in line with the accounting legislation (IFRS). Similarities in technicality may be drawn to management accounting which also requires students to perform complex calculations; although the context is vastly different, with a focus on business strategy and no ties to specific legislation. Taxation is heavily reliant on legislation and is considered less technical than the aforementioned subjects, however it still requires in-depth application of the relevant tax laws and regulations. Finally, corporate governance (known as auditing at other universities) is the least technical subject, requiring a high degree of interpretation whilst using the relevant regulatory codes for guidance (International Standards of Auditing, SAICA Code of Professional Conduct, KING IV, and SA Companies Act).

The findings above suggest that the beneficial knowledge construction methods developed from FR3 directly benefit performance in taxation and do not benefit management accounting and corporate governance performance. The positive relationship between financial reporting and taxation may be a result of both subjects being legislation-based – thus students' who learn to effectively understand and apply the applicable legislation are more likely to be successful across both subjects. In contrast, the technical aspect that should allow 'mathematically' inclined students to perform better in financial reporting and management accounting, collectively, was not observed.

This may be a result of the 'recognition' and 'realisation' rules as well as the 'trained gaze' developed to allow for vertical success in FR3 to FR4 (Mkhize, 2015; Myers, 2016b) – whereby the interpretation of the scenario, and the subsequent answer, is largely different due to the context of the subject-matter. Management accounting involves performing business strategy and analysis from a strictly business and industry perspective, whereas financial reporting requires the correct accounting and reporting of a scenario from an accounting standards perspective. Therefore, one may assume that students who are technically strong but 'business thinking' orientated are not correlated to technically strong students who can apply and interpret the accounting standards effectively.

For the purposes of interpreting success in the ITC board exam: the ITC aims to test for knowledge obtained from completion of all four CTA courses but favours a degree of integration whereby a single question may combine principles from more than one course. Furthermore, the ITC places significance on effective and efficient communication, awarding up to 10% in the exam for these communication skills (SAICA, 2023a). As discussed – success in FR3 has not shown to be transferrable to success across all PGDA courses – thus, the level of integrated thinking learned from FR3 is presumably not sufficient to predict success in ITC. Additionally, it would be expected that legislation-based subjects, which follow a more specific method, would be less beneficial to integrated thinking and consequent ITC success. Whilst the results illustrated above concur with this reasoning – further examination is performed in the assessment of other final-year undergraduate courses below.

Therefore, Hypothesis 6 – Financial Reporting III has no impact on a student's academic performance in PGDA – is rejected; and

Hypothesis 13 – Financial Reporting III has no impact on a student's FR4, CG3, TAX3 or MAF mark; and Hypothesis 19 – Financial Reporting III has no impact on a student's ability to pass ITC – are not rejected with H13 only being rejected for FR4 and TAX3.

Corporate Governance II

CG2 was found to be statistically significant to success in PGDA and ITC across all three models:

Model 1 – PGDA-Grade Point-Average ($\beta = 0.312$, $p < 0.001$).

Model 2A – FR4 ($\beta = 0.301$, $p < 0.001$); CG3 ($\beta = 0.374$, $p < 0.001$);
TAX3 ($\beta = 0.369$, $p < 0.001$); MAF ($\beta = 0.205$, $p < 0.001$).

Model 2B – ITC Result ($\beta = -0.101$, $p < 0.001$).

The results correspond with expectations set by prior research (Dehrmann, 2013; Kraus, 2019; Pullen et al., 2015; Steenkamp, 2014; Swart & Becker, 2014), as well as the assessment performed over course verticality (Mkhize, 2015; Myers, 2016b). All four PGDA courses were found to have a statistically significant, and positive, relationship to CG2 whilst a statistically significant, negative relationship was observed for ITC success.

As briefly mentioned in the considerations of FR3, corporate governance is a non-technical subject – requiring broad interpretation and application. In the assessment of constructed knowledge and accounting success, Myers (2016b) identified that moderately successful students used learning and remembering tools to aid them in the learning process and to develop an understanding whilst showing some evidence of metacognition, with highly successful students showing an even greater metacognitive awareness. Due to the largely varying degree of corporate governance questions and answers, learning and remembering tools will anticipatedly be less sufficient in enabling success – thus the developments of one's metacognition abilities will likely be a better enabler to academic success.

Accordingly, a student who is able to succeed in CG2 is assumed to have exhibited greater metacognition qualities which would enable success across all PGDA courses and ITC. The results confirm this notion, as CG2 was statistically significantly related to success in all PGDA courses and was identified to be the best predictor of ITC success from the prior-year courses assessed.

Therefore, Hypothesis 7 – Corporate Governance II has no impact on a student's academic performance in PGDA; Hypothesis 14 – Corporate Governance II has no impact on a student's FR4, CG3, TAX3 or MAF mark; and Hypothesis 20 – Corporate Governance II has no impact on a student's ability to pass ITC – are rejected.

Taxation II

TAX2 was found to be statistically significant to success in all PGDA courses. Conversely, the course's relationship with ITC success was identified as positive and statistically insignificant:

Model 1 – PGDA-Grade Point-Average ($\beta = 0.335$, $p < 0.001$).

Model 2A – FR4 ($\beta = 0.588$, $p < 0.001$); CG3 ($\beta = 0.347$, $p < 0.001$);
TAX3 ($\beta = 0.226$, $p < 0.001$); MAF ($\beta = 0.180$, $p < 0.001$).

Model 2B – ITC Result ($\beta = 0.009$, $p = 0.665$).

Similar to above, the results are consistent with previous research performed in terms of PGDA success (Kraus, 2019; Mkhize, 2015; Myers, 2016; Pullen et al., 2015; Steenkamp, 2014; Swart & Becker, 2014). However, TAX2 depicted a positive, statistically insignificant relationship with ITC success. The predictability of TAX2 in ITC success suggests that poorer TAX2 results will result in a greater likelihood of passing ITC – although it should be noted that the correlation coefficient approximates nil suggesting there is statistically significant relationship between the two variables.

The statistically significant relationship of TAX2 with all four PGDA courses provides further discourse on the matter of technical and legislative-based subjects. While a statistically significant relationship with FR4 is expected, the statistically significant relationship with CG3 and MAF is not. Although it is not necessarily intuitive, the model results indicate that CG2 is the best predictor of success in TAX3 and CG3, with TAX2 being the second-best predictor for both TAX3 and CG3. Therefore, there appears to be a positive correlation of students who perform well in both of these subjects. This may be attributable to the technicality of the courses in question, as students who are less 'technically' strong would be expected to perform better in non-technical subjects.

It should be noted that all PGDA courses are technically challenging, however the mathematical, calculation-based aspect is much more dominant in financial reporting, management accounting and finance. A student who is struggling to succeed in these aforementioned subjects would be required to adapt their approach through building on their strengths. Subsequently, positive knowledge construction methods such as learning and remembering tools, and development of one's metacognition would aid a student in succeeding in these subjects (Myers, 2016b). Thus, the improved performance in TAX2 may be indicative of qualities that improve performance in CG2 – consequently predicting success across all PGDA courses.

The effect of the above is highlighted in ITC results as TAX2 is a statistically insignificant predictor of success at an ITC level. To investigate the relationship further, The logistic regression analysis was re-run to exclude CG2 which resulted in the following results (Refer to the Appendix 4, Figure 4.1):
Model 2B (Excl. CG2) – FR3($\beta = -0.029$, $p = 0.117$); MA2($\beta = -0.049$, $p = 0.003$); TAX2($\beta = -0.036$, $p = 0.056$).

The exclusion of CG2 resulted in FR3 remaining statistically insignificant as well as MA2 remaining statistically significant at a second-degree level ($p < 0.010$). The negative coefficient of FR3 increased by 0.007 and the negative coefficient of MA2 decreased by 0.001. Finally, TAX2 became statistically significant (from insignificant) at a third-degree level ($p < 0.100$) and its positive coefficient changed to negative and increased by an effective 0.045. The above confirms that a large portion of the predictability provided by TAX2 can be linked to performance in CG2 – particularly at an ITC level. However, the lack of significance at first- and second-degree significance level, after removing CG2. can be attributed to the fact that TAX2 is still a legislation-based subject and consequently suffers in terms of its ITC predictability as discussed above.

Therefore, Hypothesis 9 – Taxation II has no impact on a student's academic performance in PGDA; and Hypothesis 16 –Taxation II has no impact on a student's FR4, CG3, TAX3 or MAF mark – is rejected; and
Hypothesis 22 – Taxation II has no impact on a student's ability to pass ITC – is not rejected.

Management Accounting II

MA2 was found to be statistically significant to success in PGDA and ITC across all three models. However, the significance in relation to ITC success was only statistically significant at a second-degree level ($p < 0.010$):

Model 1 – PGDA-Grade Point-Average ($\beta = 0.128$, $p < 0.001$).

Model 2A – FR4 ($\beta = -0.145$, $p < 0.001$); CG3 ($\beta = 0.123$, $p < 0.001$);
TAX3 ($\beta = 0.195$, $p < 0.001$); MAF ($\beta = 0.340$, $p < 0.001$).

Model 2B – ITC Result ($\beta = -0.050$, $p = 0.003$).

The positive, statistically significant relationship with CG3, TAX3 and MAF as well as the negative, statistically significant relationship with ITC was anticipated per prior research (Dehrmann, 2013; Kraus, 2019; Mkhize, 2015; Myers, 2016; Pullen et al., 2015; Steenkamp, 2014; Swart & Becker, 2014). Unexpectedly, MA2 was found to have a statistically significant, negative relationship with FR4 performance which suggests poor MA2 performance effectively predicts better performance in FR4. Importantly, performance in MA2 does actually have a negative relationship with performance in FR4, however after controlling for three other final-year-courses in the regression model the only predictive value MA2 can offer is negative.

Upon inspection of the correlation grid generated for Model 2A (refer to Appendix, Figure 4.2), there is a positive correlation between MA2 and FR4 of 0.354 and a correlation of 0.555 between FR3 and MAF. This underlines the positive relationship between management accounting and financial reporting – yet also emphasises the lack of technical skill transferability between the two, as non-technical courses – CG2 and TAX2 – are able to account for the entirety of this positive correlation. Nevertheless, the additional predictability provided by MA2 for success in PGDA courses TAX3 and CG3 – after controlling for TAX2 and CG2 – should still be considered.

As previously observed, FR3 had a statistically significant relationship to success in TAX3 likely due to both courses being legislative based and a statistically insignificant relationship with CG3. The transferrable benefit of success in MA2 to these two courses is most probably linked to the business and industry analysis skills learned in MA2, whereby a student who performed better in MA2 has a broader skill-set – demonstrating greater metacognition (Myers, 2016). In corporate governance, particularly at a postgraduate level (CG3), understanding the type of business in a test scenario is key to performance as this enables a student to identify audit risks, controls, and create procedures to address these risks. The relationship between MA2 and TAX3 is less clear, exhibited by MA2 being the poorest – while still statistically significant – predictor of success and is likely a result of better soft-skills developed by a well-rounded student.

An additional factor to consider in assessing the predictability of MA2 is when it was completed. BBusSci. students are assigned MA2 in their third year of study, consequently the data relating to MA2 is effectively a year-old for the BBusSci. cohort. As research suggests, a student's most recent set of academic results is the strongest predictor of success (Jansen & de Villiers, 2016; Pullen et al., 2015), thus the predictive value of MA2 may have declined with regards to the BBusSci. cohort. Nonetheless, MA2 was identified as a statistically significant predictor of success for CG3, TAX3, MAF and ITC, therefore the reliability of these results to predict academic success is still present. The remaining negative significance of MA2 could be attributable to the above – whereby a BBusSci. student performed poorly in MA2 and as a result realised they were technically weak. This deficiency identified would motivate said student to improve their technical ability in final year, focusing on FR3 (as no management accounting course is taken), which would subsequently result in success in FR4 due to the verticality of the hierarchal knowledge structure (Mkhize, 2015).

Finally, success in ITC would be expected, as an understanding of businesses and industries would favour integrated scenarios and integrated thinking. This would add to a student's diversified skillset – improving a student's answers – which SAICA aims to promote and reward (SAICA, 2023a)

Therefore, Hypothesis 8 – Management Accounting II has no impact on a student's academic performance in PGDA – is rejected; and
Hypothesis 15 –Management Accounting II has no impact on a student's FR4, CG3, TAX3 or MAF mark – is rejected; and Hypothesis 21 – Management Accounting II has no impact on a student's ability to pass ITC – are not rejected with H15 only being rejected for FR4.

In summary, the benefits gained from success in CG2 and TAX2 (debated above) translate to success in all PGDA courses – however, the majority of the benefit gained from success in technical courses, FR3 and MA2, only vertically benefit their successor courses (Mkhize, 2015; Myers, 2016). Another factor considered is whether the course is legislative based, where FR3 and TAX2 are more valuable predictors for FR4 and TAX3. Finally, business and industry understanding should be considered which may be developed in management accounting courses – resulting in MA2 predicting performance in MAF, CG3 and TAX3.

With regards to ITC – students who exhibit better metacognition and business/industry knowledge are expected to be more likely to pass. Thus, CG2 and MA2 are the best predictors of success for ITC purposes.

Ultimately, all four-undergraduate final-year courses provide valid and statistically significant predictability to either success in PGDA, ITC, or both – thus the results of all of these courses have been considered in the modelling and setting of entrance requirements below.

RESEARCH QUESTION 3 & 4

Receiver Operator Curve

The receiver operator curves (ROC) analysed provide four outcomes:

1) True Negative – A student is correctly predicted to pass PGDA and ITC.
2) True Positive – A student is correctly predicted to fail PGDA and ITC.
3) False Negative – A student is predicted to pass PGDA and ITC but fails.
4) False Positive – A student is predicted to fail PGDA and ITC but passes.

The aim of setting entrance requirements through the use of a ROC is to maximise the rate of true negatives and true positives. The sensitivity and specificity of an ROC relate to the proportion of correct diagnoses versus the incorrect diagnoses (Zou et al., 2007). Sensitivity – correctly predicting whether a student passes – can be increased, but the trade-off is a corresponding decrease in specificity – increased number of students that are incorrectly predicted to pass (Stoltzfus, 2011; Zou et al., 2007).

The primary concern of this research is false positives, where entrance requirements are set to prevent students from accessing PGDA who are expected to fail PGDA and ITC but in actuality the student would have passed if given access. Having no entrance requirements (the current entrance requirements) reduces this effect as it maximises the number of students who are given an opportunity to pass PGDA (and attempt ITC thereafter). The implementation of entrance requirements introduces the element of predicting failure (true positive) and the corresponding incorrect prediction of failure (false positive). (Stoltzfus, 2011; van Erkel & Pattynama, 1998; Zou et al., 2007)

The differences in predictability noted in the ROC curves below compared to researched performed in addressing Research Question 1 & 2 is a result of the ROC curves valuing the significance of each predictor variable in predicting the passing of all four PGDA courses as well as ITC collectively. Furthermore, it was noted in prior research that successful academic performance predictive factors tend to suffer from a reduced level of predictivity in the lower band of student marks (Hoefer & Gould, 2000; van Rooy & Coetzee-Van Rooy, 2015).

As per Table 6 – and the corresponding Figures 5.1 to 5.5 – below, entrance criteria have been selected based on the above factors as well as what remains reasonable for a university – from the perspective of the author – which was determined to be within the 50 – 60 percentiles. The optimal prediction points for two of the ROCs generated – where the maximum sensitivity and specificity is achieved – fell above the reasonable range of entrance requirements. Furthermore, the remaining optimal predictions points were in the upper range of this reasonability. Therefore, entrance requirements were selected through the consideration of the highest true negative prediction points, the maximum sensitivity and specificity points, and the results of testing performed in Model 2A and Model 2B.

Factors resulting in MA2 and CG2 being the best predictors of success in ITC were considered as well as the predictive value of both these course in PGDA. Furthermore, both these courses are the most statistically significant predictors of success in their PGDA 'parent' courses – MAF and CG3. Thus, the factors that resulted in these courses successfully predicting ITC success were presumed to apply to their 'parent' courses – MAF and CG3 – due to the verticality of hierarchical knowledge structure (Mkhize, 2015). Thus, predictors of success in these mentioned courses were prioritised in selecting the optimal entrance criteria.

Table 6: Important ROC prediction points

1	Highest true negative prediction accuracy				
2	Maximum sensitivity and specificity				
3	Determined as most appropriate				
	Average	**CG2**	**TAX2**	**MA2**	**FR3**
1	55,50	55,00	53,00	50,00	55,00
2	59,75	62,00	57,00	63,00	59,00
3	**55,00**	**55,00**	**53,00**	**55,00**	**53,00**

Based on the above, row 3 percentages were determined to be the most appropriate entrance criteria and are classified and evaluated as the 'recommended criteria' hereafter.

Results of testing assumptions necessary to perform logistic regression analysis

As the sub-analysis below was conducted using logistic linear regression analysis, the four assumptions underpinning logistic linear regression analysis needed to be met. Assumption testing was performed for stepwise, multivariate, and logistic regression analyses for models above – *Model 1*, *2a* and *2b* – which compromised of testing for all independent variables forming part of entrance requirements and their relationships with the dependant variables – the PGDA and ITC pass rate. Based on the assumption testing, all the assumptions underpinning the various regression models above were met and therefore, the use of logistic regression analysis for the remaining models below was deemed appropriate.

Refer to *Table 6* and *Figures 5.1 – 5.5*; *Table 7*; and *Table 8* for the testing performed over the determination and setting of optimal entrance requirements

Optimal Entrance Criteria

Key	
FN	Predicted to Pass but Fails
FP	Predicted to Fail but Passes
TN	Correctly predicted to Pass
TP	Correctly predicted to Fail

Figure 5.1: Receiver Operator Curve Analysis – Undergrad. Average

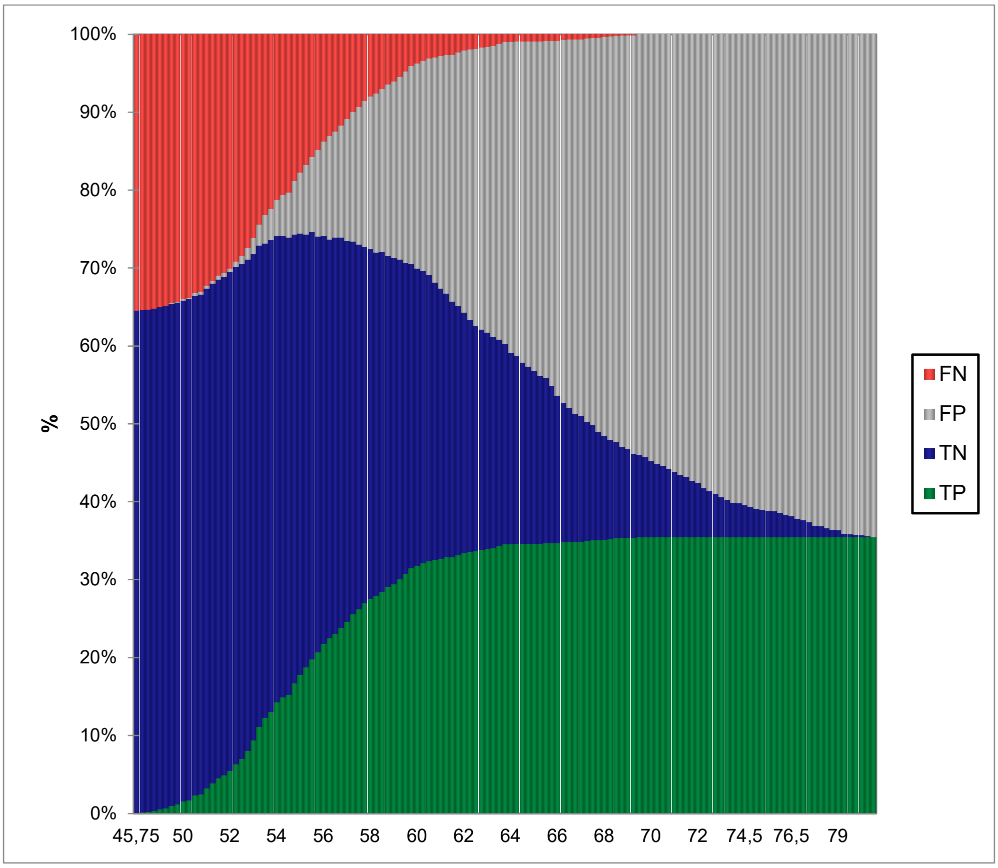


Figure 5.2: Receiver Operator Curve Analysis – CG2

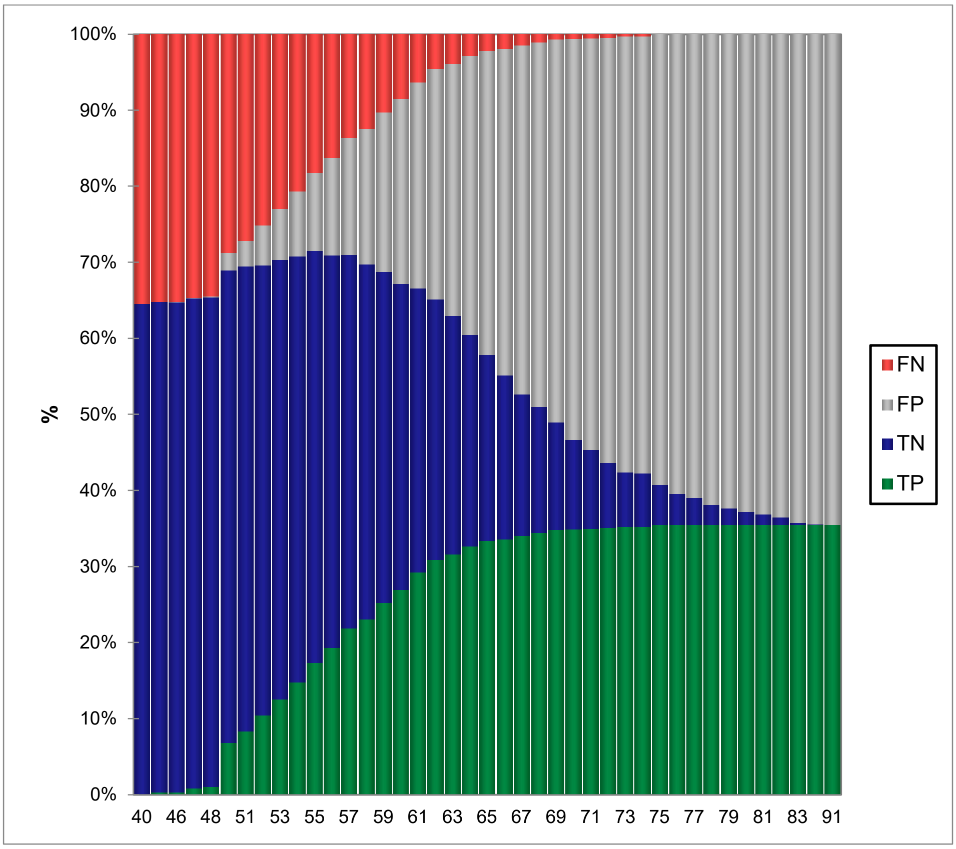


Figure 5.3: Receiver Operator Curve Analysis – TAX2

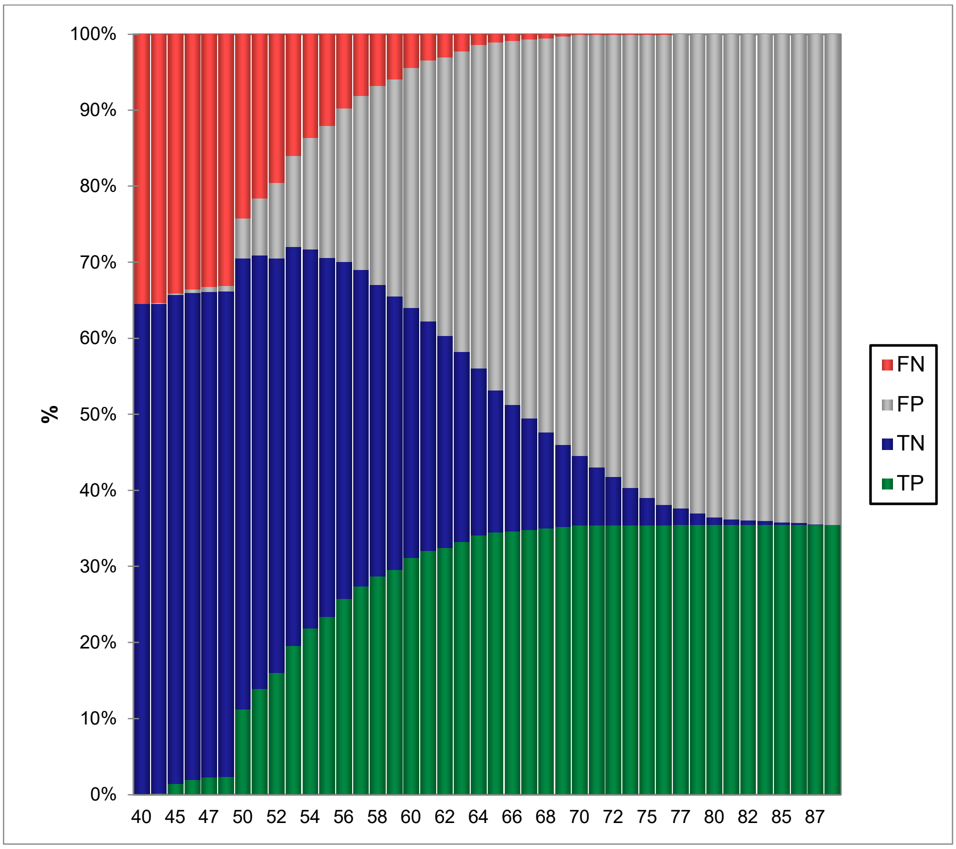


Figure 5.4: Receiver Operator Curve Analysis – MA2

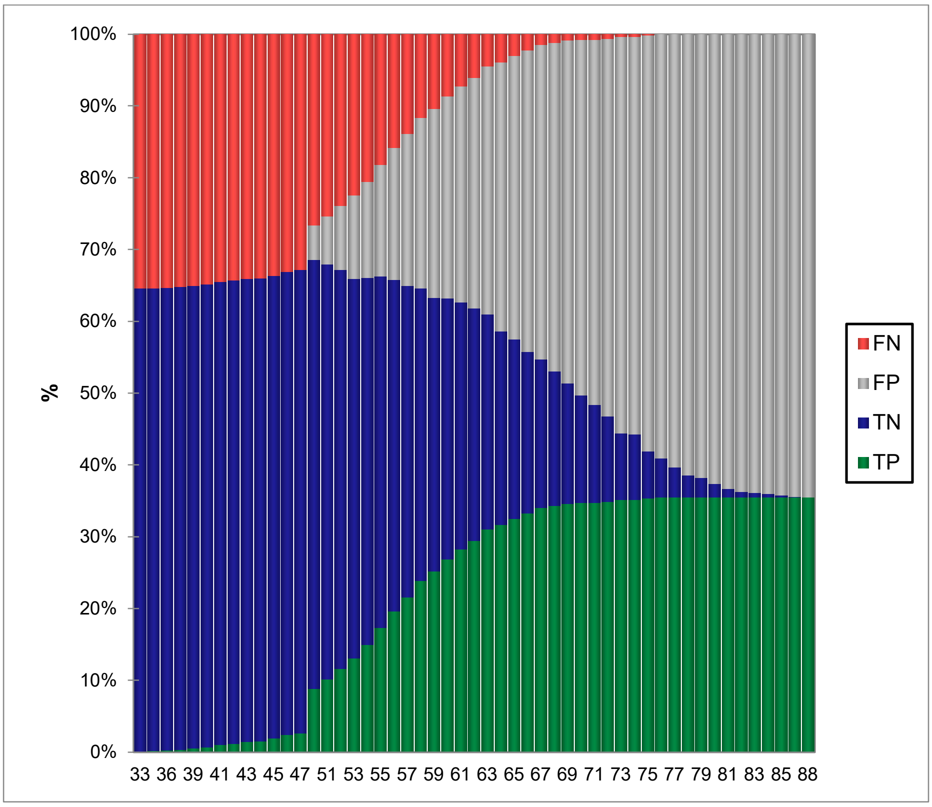
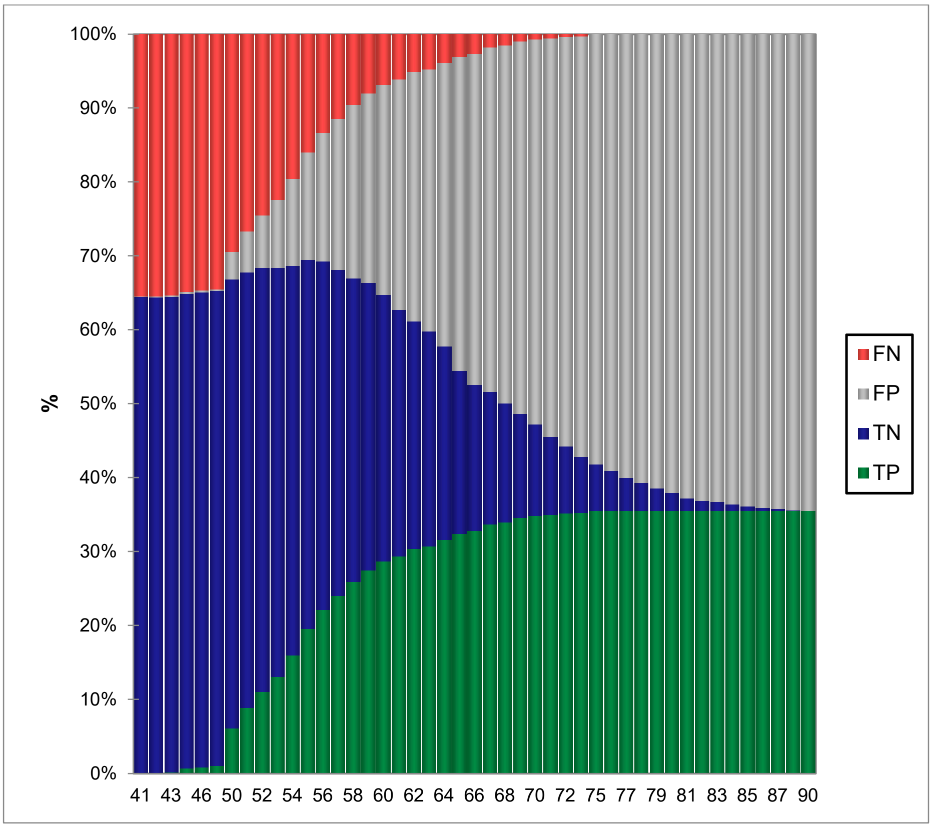


Figure 5.5: Receiver Operator Curve Analysis – FR3



Logistic Regression Models & Analysis

Table 7: Logistic Regression Output – Model 3

Success in PGDA and ITC					
Variable	***Coefficients***	***Standard Error***	***Wald Chi-Square***	***P-value***	***Sign.***
Intercept	-1,753	0,120	212,414	0,000	
Current Criteria	0,000	0,000			
Old Criteria	0,975	0,156	38,933	**<0,001**	***
Recommended Criteria	1,272	0,166	58,957	**<0,001**	***
-2 Log (Likelihood)	1289,524				
R^2 (McFadden)	0,146				
R^2 (Cox and Snell)	0,173				
R^2 (Nagelkerke)	0,237				
N	1160				
df	3				
Model Sign. (P-value)	**<0,001**				

Notes:

*** Indicates statistical significance at the 5% level.**

**** Indicates statistical significance at the 1% level.**

*****Indicates statistical significance at the 0.1% level.**

Table 8: Logistic Regression Output – Model 4

Student Diversity					
Variable	***Coefficients***	***Standard Error***	***Wald Chi-Square***	***P-value***	***Sign.***
Intercept	0,053	0,087	0,366	0,545	
Current Criteria	0,000	0,000			
Old Criteria	0,272	0,180	2,275	**0,131**	
Recommended Criteria	1,204	0,162	55,561	**<0,001**	***
-2 Log (Likelihood)	1356,840				
R^2 (McFadden)	0,076				
R^2 (Cox and Snell)	0,092				
R^2 (Nagelkerke)	0,128				
N	1160				
df	3				
Model Sign. (P-value)	**<0,001**				

Notes:

*** Indicates statistical significance at the 5% level.**

**** Indicates statistical significance at the 1% level.**

*****Indicates statistical significance at the 0.1% level.**

Model 3

The Old entrance criteria (β = 0.975, $p < 0.001$) and the Recommended entrance criteria (β = 1.272, $p < 0.001$) were both found to be statistically significant to success in PGDA and ITC. The current entrance criteria offered no predictive value as a student is simply required to pass their respective UCT undergraduate accounting programme to access PGDA. The requirement of achieving 60% in BAG was not considered in determining whether a student would pass or fail in the Old criteria as the data used for this research includes students who were not required to complete BAG (as previously discussed).

The proportion of predictability of Model 3 and success in PGDA was approximately 43.39% attributable to the Old requirements and the remaining 56.61% was attributable to the Recommended requirements. The predictability offered by the Old criteria is made-up of a final-year undergraduate average of 55% and a 55% result for FR3. Therefore, the additional predictability provided by the Recommended criteria relates to a 55% result for CG2, 53% result for TAX2, and a 55% result for MA2. The reduced FR3 result requirement between the Old and Recommended criteria (55% to 53%) would provide the Old criteria with additional predictive value.

Prior to the research performed in Model 2A and Model 2B, one would expect the 55% undergraduate final-year GPA to approximate the predictive value of the Recommended criteria as the aggregate value of individual undergraduate course requirements is less than 55%. This is due to the fact that past research identifies prior academic performance as the best predictor of success – without separation of the specific academic courses (Kraus, 2019; Pullen et al., 2015; Steenkamp, 2014; Swart & Becker, 2014; van Wyk, 2011).

However, upon separation of the undergraduate course predictability data, the additional 56.61% predictive value provided by the Recommended criteria is justified due to certain undergraduate courses providing greater predictive value for success in PGDA and ITC (CG2 and MA2). Additionally, the research performed also identified the benefit of improved performance across all final-year courses which would improve a student's metacognitive ability – resulting in future academic success (Myers, 2016).

Therefore, Hypothesis 24 – the predictive value of final-year undergraduate academic performance, within the 50-60% band, does not change significantly for success in PGDA and ITC; and Hypothesis 25 – entrance requirements constructed from final-year undergraduate academic performance do not significantly change PGDA and ITC pass rates compared to previous entrance requirements – are rejected.

Model 4

The Recommended entrance criteria ($\beta = 1.204$, $p < 0.001$) were found to be statistically significant to race, whilst the old criteria ($\beta = 0.272$, $p = 0.131$) were found to be positively correlated but statistically insignificant.

The Recommended entrance requirements impose stricter academic performance measures, which enable success in PGDA and ITC when compared to the Old (and current) requirements. Therefore, it is expected that the higher academic requirements will be significantly related to race given the relationship with race and the four PGDA courses – as well as ITC – identified in Models 2A and 2B. The results concur with research performed on the matter, where race was identified as a significant predictor of academic success (Carpenter & Roos, 2020; Kraus, 2019; E. Papageorgiou, 2017; Shamsoodien, 2020).

The predictability gain from the Recommended criteria – discussed in *Model 3* – when compared to the Old criteria is substantially lower than the statistical significance of the Recommended criteria with regards to race. This can be seen through observation of the coefficients – whereby the Recommended criteria makeup 43.39% of the predictive equation for determining success in PGDA and ITC, but makeup 81,57% of this equation for determining student diversity. This highlights the potential issues of introducing entrance requirements and their subsequent effects on equity – which will be analysed in more detail below.

As a result, the Old entrance criteria were found to be statistically insignificant to student diversity as the majority of the predictive value was determined by the stricter Recommended criteria – which demanded higher academic performance. Consequently, the greater demand for academic performance resulted in more students of colour, classified in the dummy variable ‘1’, being excluded on a statistically significant level.

Therefore, Hypothesis 26 – entrance requirements constructed from final-year undergraduate academic performance do not significantly affect student diversity – is rejected.

Discussion of results of entrance requirements and equity

Firstly, as a result of the research performed – entrance requirements set on prior-year academic performance, specifically final-year undergraduate results, have been identified to improve the success rate in PGDA and ITC. Through projecting the different entrance requirements into the student data available the following success rates for PGDA and ITC were identified:

A. Current Criteria – 64.48%
B. Old Criteria – 77.51%
C. Recommended Criteria – 83.36%

Although, the results show an increase in pass-rates, there is a clear element of exclusion – reducing the PGDA cohort size due to the requirements in place. Furthermore, a problem noted in the setting of the entrance requirements was the addressing of false positives, whereby students were theoretically predicted to fail and denied an opportunity to enter PGDA when in actuality these students passed both PGDA and ITC.

As per the ROC illustrations above (*Figures 5.1 – 5.5)* it can be observed that the increase in true positives with higher cut-off percentages increases relatively in-line with the increase in false positives. Determining the exact nature of this relationship is not possible (in the context of this paper) and is a limitation on the research performed. However, this reinforces the notion – identified in prior research – that the predictive value of models utilising academic performance to predict future performance tend to be less accurate in the lower ranges of academic performance (Hoefer & Gould, 2000; van Rooy & Coetzee-Van Rooy, 2015).

From a purely monetary perspective, the reduced student cohort would have financial implications on the university – as less revenue would be generated through students not being given access to PGDA. However, further research would be required to identify the proportion of rejected students that would re-apply to UCT to achieve the required requirements the following academic year and gain access to PGDA as this would negate the monetary loss. In addition to this, students may be more willing to repeat specific undergraduate courses to gain access to PGDA compared to repeating PGDA – where all courses are required to be repeated (in the context of students accepted who then fail PGDA). This would potentially allow for more students to be retained in the university system for an additional year – generating more revenue for the university.

Furthermore, effective balance of the university's resources should be considered – if PGDA is projected to be oversubscribed – entrance requirements could assist with reducing the cohort to a satisfactory level, while ensuring those selected are most likely to succeed academically. Additionally, the effectiveness of academic staff should be considered, as a larger cohort may result in staff becoming stretched – not being able to provide an optimal level of care and guidance to students. Thus, maximising the student intake will not only decrease pass rates due to the acceptance of poor academic performers but may also reduce the pass rate due to students receiving a lowered education quality, which is a critical concern for UCT's reputation as a centre of excellence in terms of PGDA and ITC success.

Although the recommended entrance requirements reduce the PGDA cohort size substantially – when applied to the student data – this is ultimately a conservative estimate. The projected entrance requirements to not consider borderline student cases and supplementary exams. The current data includes students who accessed PGDA through passing their respective supplementary exam; with new entrance requirements there would be an increased number of students that would have been given the opportunity to write a supplementary exam in hopes of achieving the entrance requirement needed. Borderline student cases would also be considered by the university, where a student has fallen just below the requirements to enter PGDA but has exhibited the characteristics valued by the university that should result in the student's success. Both these factors would increase the cohort size under the new entrance requirements.

Moreover, the psychological effect of the entrance requirements would also affect the incoming PGDA cohorts. Many students are comfortable with achieving the bare minimum to continue academically or will only start to 'focus' on their studies when a potential barrier to academic progression is presented. The introduction of stricter entrance requirements will naturally result in 'threatened' students putting in more effort to ensure they fall above the cut-off – increasing the projected cohort size. Furthermore, setting the 'bar' higher will require students to adjust their goals which has shown to increase student effort and engagement (Richardson et al., 2012). The above may also result in higher levels of self-efficacy amongst students which has been identified as a significant predictor of academic performance in accounting (Shamsoodien, 2020). Finally, the suggested entrance requirements require students to perform above the minimum requirement across all four, core final-year courses – this may push students to improve their understanding and metacognitive abilities – resulting in greater future success (Myers, 2016).

Regardless of the above, the effects of stricter entrance requirements on student diversity are a serious consideration in the context of South Africa. A further analysis was performed on the effects of entrance criteria on student diversity in *Tables 9.1* and *9.2* below:

Table 9.1: Student Diversity and Pass Rates

	Population		Pass PGDA	Pass Rate	Pass ITC	Pass Rate	Combined Pass Rate
Black	378	32,25%	228	60,32%	178	78,07%	47,09%
Chinese	15	1,28%	11	73,33%	10	90,91%	66,67%
Coloured	146	12,46%	92	63,01%	74	80,43%	50,68%
Indian	132	11,26%	106	80,30%	93	87,74%	70,45%
White	382	32,59%	351	91,88%	334	95,16%	87,43%
Unclassified	119	10,15%	79	66,39%	59	74,68%	49,58%

Table 9.2: Entrance Requirements and Student Diversity

	Passing Population	Population per Recommended Criteria	Changes in Population
Black	23,80%	22,96%	-3,64%
Chinese	1,34%	1,83%	26,96%
Coloured	9,89%	9,65%	-2,51%
Indian	12,43%	12,81%	2,96%
White	44,65%	44,43%	-0,51%
Unclassified	7,89%	8,32%	5,19%

As per *Table 9.1*, the pass rates in PGDA and ITC are not even across different race groups. This occurrence is confirmed by the statistical models performed in this paper as well as by prior research performed (Kraus, 2019; E. Papageorgiou, 2017; Shamsoodien, 2020; Ungerer et al., 2016). Most notably, the pass rates amongst Black, Coloured, and Unclassified students are substantially below the remainder of the PGDA cohort. This is particularly concerning as these race groups make up 54.86% of the total population – effectively accounting for 78.30% of the total students failing to pass both PGDA and ITC. Whilst limited discussion can be had regarding Unclassified students, as the race of these students is unknown and therefore circumstances cannot be attributed to their failure; the increased failure rates of Black and Coloured students is not indicative of the students' inherent ability or intelligence but rather their circumstances.

These students were previously disadvantaged as a result of South Africa's abhorrent political past – the effects of which, are still being felt today. This has resulted in such students having fewer social and economic resources available to them that would typically aid a student in their academic endeavours, resulting in the performance gap noted in the accounting field (E. Papageorgiou, 2017). Although, the government and the university have put measures in place to help reduce this 'gap' – there is still a way to go – as exhibited by the statistics above.

The reduced academic performance of such students is not exclusive to PGDA as evidenced by research on accounting performance in undergraduate courses (E. Papageorgiou, 2017; Shamsoodien, 2020). Therefore, the introduction of entrance criteria will inherently affect these students – more so than other race groups – due to a greater proportion being denied access into PGDA. In determining whether this decision is equitable, the likelihood of such students passing – if given access – is key to this debate. As per *Table 9.2*, the reduced population – as a consequence of the implementation of the Recommended entrance requirements – resembles the population distribution of students that passed both PGDA and ITC. The primary concern is decreases in the passing population, where Black students decreased by 3.64%, Coloured by 2.51% and White by 0.51%. These movements relate to the success of the recommended criteria, whereby movements from the passing population indicate changes from the population that actually passed versus those projected to pass – thus negative movements suggest exclusion of students that may have passed. These decreases are not substantial – suggesting relative fairness in terms of the entrance criteria effectively determining successful students. Whilst more Black and Coloured students would be denied access to PGDA, when compared to other race groups, this prevention may be justified if these students were accepted and subsequently faced with failure.

Prevention of entrance to PGDA would result in a student deciding to re-take the required courses where they fell short in the following academic year with the aim of reapplying to PGDA thereafter. Alternatively, a student could pursue their PGDA at another institution where they are able to gain access without repeating undergraduate course. Other than this, the student may decide to not pursue PGDA and enter the job market with their achieved Bcom./BBusSci. Degree or decide to pursue other interests. Both of these aforementioned alternatives may be more ideal for a student.

From a financial perspective, PGDA is on par with expenses incurred for each undergraduate accounting year for a student aiming to become a CA(SA) (UCT, 2023). However, PGDA can only be attempted through taking all four courses – if failed all four courses must be taken again in the following year (this is applicable to all PGDA programmes provided by academic institutions in South Africa). In terms of undergraduate accounting – once a course has been passed a student does not need to redo this course, thus the cost of only repeating certain courses in final-year – that prevented access to PGDA – is expected to be substantially cheaper than repeating PGDA, in its entirety. Furthermore, from a funding perspective, bursaries or scholarships provided for PGDA will typically only cover one attempt – if a student is to fail this attempt the likelihood of receiving further funding is greatly reduced. Therefore, it may be preferable for a student to complete another year of undergrad and shore-up their weaknesses to ensure their success in PGDA the following year.

In the alternative scenario, a student may decide to enter the job market and begin building their career. While being a CA(SA) may have been the initial aim, if a student was to attempt this – and fail – and not be given the opportunity to try again (due to various reasons such as funding, other duties, confidence, etc.), it could have been preferrable that the individual rather spent a year earning an income – building their career and avoiding paying for a fruitless PGDA year (or deciding to complete PGDA part-time whilst working, through another academic institution).

Finally, it is important to note that the above analysis is done on a passing both PGDA and ITC basis. A student may pass PGDA and subsequently fail ITC – still qualifying them to begin their SAICA articles. This may have a long-term ‘domino’ effect whereby less capable students are attracted to UCT – resulting in subsequently lower pass rates throughout the accounting programme. Although a reduced ITC pass rate is suboptimal for the university’s reputation (as mentioned), this scenario greatly benefits the individual as they can begin their CA(SA) career path – being allowed numerous ITC attempts during their three years (or more) of articles. If a student were prevented access to PGDA on the basis that they would pass PGDA but fail ITC – this would not be an equitable decision. Of the students entering PGDA, 13.23% Black students, and 8.90% of Coloured students passed PGDA but failed ITC, which is a considerable portion given the context of the outcome.

Ultimately, there is no one correct answer that addresses all equitable concerns that surround the positive and negative factors of introducing entrance criteria. Nevertheless – at a minimum – the Recommended criteria provided can be used as student identifiers whereby students are flagged by the system and provided with a greater level of care and guidance (by the PGDA academic staff) in hopes of maximising the success rate of such students.

CONCLUSION

The objective of this paper was to identify student endogenous factors that predict academic performance in the University of Cape Town's Post Graduate Diploma in Accounting and the subsequent SAICA Initial Test of Competence. Thereafter, entrance requirements were recommended to improve the pass rates of PGDA and ITC. Finally, the criteria recommended were evaluated against past criteria as well as assessed on a basis of equity, due to their potential effects on student diversity. The Biggs 3P model was applied as the theoretical framework to determine the relationship between predictive – presage stage – factors (race, secondary school type, home language, gender, age, and final-year undergraduate results) and academic performance in the product stage – success in PGDA and ITC.

A student's secondary school type, home language, gender, and age were found to be statistically insignificant to academic performance in PGDA whilst controlling for all other factors. Gender was positively correlated to academic performance with males outperforming their female counterparts. The remaining mentioned variables were negatively correlated to academic success, with government-funded schools being preferred, English speaking students performing better than non-English speakers, and younger students exceeding the performance of older students.

Race and all final-year undergraduate results were found to be statistically significant to performance in PGDA. Further analysis revealed that race was a statistically significant predictor for all four PGDA courses. All final-year undergraduate courses (Corporate Governance II, Taxation II, Management Accounting II, and Financial Reporting III) were statistically significant to performance in Financial Reporting IV as well as Taxation III. Excluding FR3, all final-year undergraduate courses – excluding FR3 – were identified as statically significant to performance in Corporate Governance III and Management Accounting and Finance. For each respective PGDA course, the strongest predictor of success was its undergraduate predecessor (such as FR3 for FR4, or MA2 for MAF) – however this did not apply to TAX3 as CG2 provided the highest predictive value. Interestingly MA2 had a negative statistically significant relationship with FR4, and FR3 was statistically insignificant to performance in CG3 and MAF.

In the assessment of ITC success, only race and CG2 were statistically significant at a significance level of $p < 0.001$. MA2 was found to be statistically significant at a significance level of $p < 0.01$. The remaining variables – FR3 and TAX2 – were not statistically significant to success in ITC.

The results confirmed the verticality of courses in the hierarchical knowledge structure as each undergraduate course was a strong, statistically significant predictor of success in its respective proceeding course. Results also suggested improved metacognition, as well as business and industry knowledge, are most beneficial to overall success in PGDA and ITC. Additionally, relationships were noted between legislative-based courses (financial reporting and taxation).

Entrance requirements recommended led to a projected increase in pass rates in PGDA and ITC when compared to current and past criteria. When assessed with previous requirements, both old and recommended requirements were statistically significant to success in PGDA and ITC – however the recommended requirements provided, added substantial predictive value. Finally, the criteria recommended were identified as statistically significant to student diversity – affecting students categorised as non-White.

These requirements recommended may be beneficial to the university given the context of the recent academic performance experienced in PGDA and ITC. Additionally, the effect of these requirements on specific race groups is relatively justified due to the reduced pass rates of respective groups. However, concerns around the equity of academic exclusion were still noted.

Overall, this study contributes to the current pool of knowledge on predictors of academic success at tertiary education institutions – specifically students pursuing their accounting degree at a post-graduate (CTA or equivalent) level – through separate analysis of predictor variables and each PGDA course. The value of this study lies in the predictive factors identified and the subsequent predictive criteria provided. UCT has faced recurring poor PGDA pass-rates in recent years and its ranking in ITC pass rates has diminished. The criteria recommended could assist UCT (and other universities) in improving student success rates – through introducing such criteria or using the criteria for flagging students for academic guidance. The factors and criteria provided could also serve as a basis for future research into this area – which may provide more optimal predication and balance other applicable concerns.

Furthermore, the predictive factors identified have added-value due to the ever-changing profile of UCT students in recent years – justifying the need for the continuous updating of academic performance predictors to align with the current profile of students (UCT, 2018).

Finally, this study draws attention to the equity effects – in terms of student diversity – of utilising academic-based performance measures and the consequences thereof.

LIMITATIONS AND AREAS OF FUTURE RESEARCH

Firstly, this paper only investigated certain endogenous factors that impacted academic performance in PGDA and ITC. Furthermore, some endogenous factors were excluded on the basis of failure to predict performance in PGDA and consequently not assessed against success in ITC. While age was taken into account as a predictor variable, various important aspects relating to age were not. Time taken to complete one's degree and/or time taken to complete final-year undergraduate courses are both important factors considered by universities in predicting future academic performance – with UCT including these factors in their past and current entrance requirements (requiring students to complete final-year courses within two years before applying to PGDA). Other factors could also be considered, such as student's psychological and emotional states, or their living conditions. Further research in these factors could help improve the predictability of academic performance. Additionally, presage factors – per Bigg's 3P Model – were of focus in this research, more research is required on process factors such as a student's attitude towards learning and their enjoyment of learning.

To simplify variables, race groups were classified into two categories – White and non-White – this reduced the predication accuracy of race on academic performance and the potential additional conclusions that could be drawn. A more detailed analysis into all race groups could prove more beneficial in terms of model prediction and equity optimisation. This would also allow for the comparison of all race groups with each other.

The data used consisted of BCom. and BBusSci. students to maximise model accuracy, however, reperforming this study with a specific focus on one cohort with the increased data available could provide more precise predictive value that is cohort specific. This could prove extremely beneficial as both cohorts experience a substantially different curriculum plan – in terms of courses taken and timing of said courses – thus potential entrance criteria for specific cohorts may allow for more accurate prediction of successful students. For the setting of entrance requirements specifically, research could be performed on a larger data sample whereby only student results within the 50 – 60 percentile band are accounted for to improve model predictivity for this range specifically.

This research also identified further work needing to be performed with regards to failure rates and failing to meet entrance requirements. Research could be performed on what a student is likely to do thereafter and whether they elect to continue their studies. Of particular value – research into the likelihood of the repeat student passing and whether this passing probability changes depending on when in their academic career the repetition occurs (and how this affects subsequent academic years).

Finally, the data utilised was sourced from on university for three years only (2018, 2019, 2020) due to entrance criteria only being lowered in 2017. If lower entrance criteria persist – further research could be performed over a larger sample size. Furthermore, the data obtained may be more relevant if additional data is obtained from other institutions – helping to specific exactly what results in success, particularly in the ITC.

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APPENDICES

APPENDIX 1: UNIVERSITY ITC PASS RATES AND RANKINGS

1.1 University ITC Pass Rates

University	Category	ITC 2020	ITC 2019	ITC 2018	ITC 2017	ITC 2016	ITC 2015	ITC 2014	ITC 2013
Milpark Education*	1	-	-	-	-	-	-	-	-
Institute of Accounting Science	1	36%	42%	-	-	-	-	-	-
IIE	1	31%	64%	80%	60%	66%	55%	46%	-
Nelson Mandela University	1	89%	81%	81%	87%	81%	97%	74%	77%
North-West University	2	75%	93%	91%	90%	81%	94%	75%	62%
Rhodes University	2	41%	40%	57%	73%	72%	65%	74%	87%
University of Cape Town	1 and 2	71%	84%	94%	87%	75%	90%	95%	94%
University of Fort Hare	2	41%	65%	82%	74%	90%	89%	79%	71%
University of the Free State	2	67%	82%	71%	76%	52%	59%	59%	70%
University of Johannesburg	2	70%	83%	70%	84%	76%	85%	94%	79%
University of KwaZulu-Natal	2	44%	77%	82%	74%	59%	88%	89%	71%
University of Limpopo	2	36%	63%	61%	-	-	-	-	-
University of Pretoria	2	89%	93%	95%	89%	89%	91%	98%	93%
University of South Africa	1	31%	41%	59%	66%	62%	68%	66%	48%
University of Stellenbosch	2	74%	86%	93%	85%	91%	83%	77%	87%
University of the Western Cape	2	44%	57%	63%	68%	71%	87%	93%	90%
University of Witwatersrand	1 and 2	74%	83%	90%	86%	65%	91%	91%	60%
Average		57%	71%	78%	79%	74%	81%	79%	76%
Change		-19%	-9%	-1%	7%	-10%	3%	4%	
UCT Rank		6	4	2	3	7	5	2	1

*First time writers write in June

1.1 University ITC Pass Rates Cont.

Average (1)	47%	57%	73%	71%	70%	73%	62%	63%	***With UCT and Wits excluded**
Average (2)	58%	74%	76%	79%	76%	82%	82%	79%	
Average (1)	47%	57%	73%	71%	70%	73%	62%	63%	***With UCT and Wits in (2)**
Average (2)	61%	76%	79%	81%	75%	84%	84%	79%	
Average (1)	55%	66%	81%	77%	70%	80%	74%	70%	***With UCT and Wits in (1)**
Average (2)	58%	74%	76%	79%	76%	82%	82%	79%	

1.2 UCT ITC Pass Rate Ranking

UCT Ranking	**June**	**Jan**	**Combined**
2020	4	6	6
2019	4	4	4
2018	5	1	2
2017	4	4	3
2016	11	6	7
2015	10	3	5
2014	1	2	2
2013	13	1	1
Average Pre-change	8,75	2,83	3,33
Average Post-change	4,25	5,00	5,00

1.3 UCT ITC Pass Rates

Year	June/November Pass Rate	January Pass Rate	Combined Pass Rate	Difference
2020	41%	78%	71%	-7%
2019	74%	85%	84%	-1%
2018	79%	95%	94%	-1%
2017	81%	88%	87%	-1%
2016	32%	83%	75%	-8%
2015	66%	92%	90%	-2%
2014	100%	95%	95%	0%

APPENDIX 2: DESCRIPTIVE STATISTICS FOR ALL ORDINAL (AND COVERED VARIABLES)

2.1 Descriptive Statistics – 2018

2018	FR3	CG2	TAX2	MA2	*BAG	*GPA	School Quintile	Age	Race	Home Language	Gender
Mean	58,953	62,965	60,253	54,715	66,135	60,604	4,728	23,145	0,615	0,348	0,483
Standard Deviation	7,474	7,323	7,676	6,598	6,336	6,115	0,758	1,242	0,487	0,477	0,500
Standard Error	0,374	0,366	0,384	0,330	0,317	0,306	0,041	0,062	0,024	0,024	0,025
Skewness	1,063	0,356	0,733	0,291	0,236	0,880	-3,029	3,879	-0,474	0,643	0,070
Kurtosis	1,140	-0,205	0,168	0,766	0,128	0,635	8,967	38,661	-1,784	-1,595	-2,005
Variance	55,860	53,633	58,921	43,538	40,142	33,298	0,575	1,543	0,237	0,227	0,250
Median	57	62	59	53	66	60	5	23	1	0	0
Mode	50	57	50	50	60	60	5	23	1	0	0
Minimum	50	47	50	33	48	49	1	21	0	0	0
Maximum	89	83	87	75	87	80	5	37	1	1	1
Range	39	36	37	42	39	31	4	16	1	1	1
Sum	23581	25186	24101	21886	26454	24242	1636	9258	246	139	193
Count	400	400	400	400	400	400	346	400	400	400	400

2.2 Descriptive Statistics – 2019

2019	FR3	CG2	TAX2	MA2	*BAG	*GPA	School Quintile	Age	Race	Home Language	Gender
Mean	62,755	59,059	60,611	65,198	65,196	62,566	4,828	23,031	0,652	0,309	0,546
Standard Deviation	8,792	6,491	8,278	8,668	6,101	6,396	0,558	0,931	0,477	0,463	0,498
Standard Error	0,446	0,330	0,420	0,440	0,310	0,325	0,031	0,047	0,024	0,023	0,025
Skewness	0,531	0,535	0,581	0,137	0,135	0,603	-3,599	0,382	-0,641	0,828	-0,187
Kurtosis	-0,291	-0,254	-0,211	-0,840	-0,013	-0,248	13,706	1,231	-1,597	-1,320	-1,975
Variance	77,307	42,139	68,533	75,126	37,223	40,911	0,312	0,867	0,227	0,214	0,248
Median	62	58	60	65	65	61	5	23	1	0	1
Mode	58	50	50	73	63	58	5	23	1	0	1
Minimum	45	47	48	50	50	51	1	20	0	0	0
Maximum	90	79	88	87	85	82	5	27	1	1	1
Range	45	32	40	37	35	31	4	7	1	1	1
Sum	24349	22915	23517	25297	25296	24276	1603	8936	253	120	212
Count	388	388	388	388	388	388	332	388	388	388	388

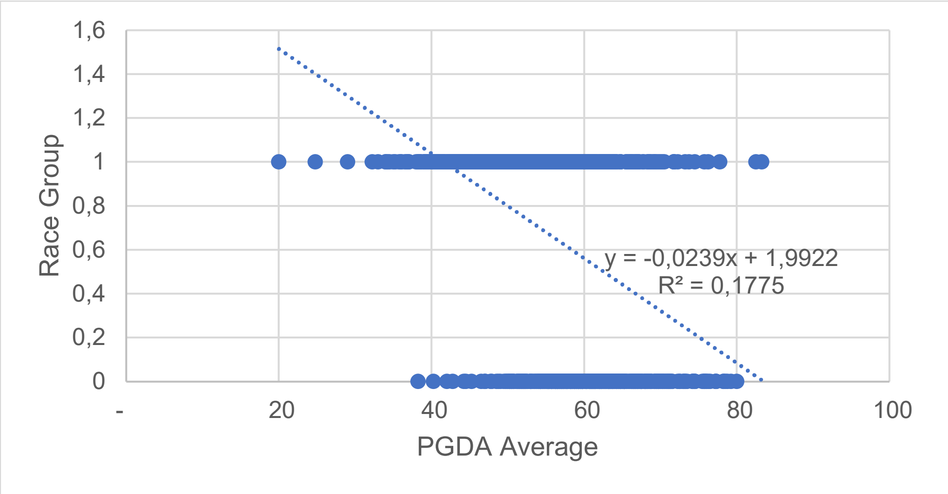
2.3 Descriptive Statistics – 2020

2020	FR3	CG2	TAX2	MA2	*BAG	*GPA	School Quintile	Age	Race	Home Language	Gender
Mean	59,672	60,909	55,513	61,898	63,954	60,409	4,706	22,893	0,706	0,388	0,490
Standard Deviation	8,615	9,257	7,073	8,073	5,892	6,631	0,738	1,161	0,456	0,488	0,501
Standard Error	0,440	0,472	0,361	0,412	0,365	0,338	0,042	0,059	0,023	0,025	0,026
Skewness	0,696	0,612	0,963	0,622	-0,175	1,037	-2,998	1,506	-0,906	0,461	0,042
Kurtosis	0,181	-0,272	0,969	-0,101	-0,116	0,772	9,779	6,797	-1,185	-1,796	-2,009
Variance	74,211	85,691	50,021	65,167	34,721	50,061	0,545	1,349	0,208	0,238	0,251
Median	58	60	54	61	65	59	5	23	1	0	0
Mode	50	50	50	58	68	58	5	23	1	0	0
Minimum	41	40	40	45	45	49	1	21	0	0	0
Maximum	87	91	84	88	82	88	5	30	1	1	1
Range	46	51	44	43	37	38	4	9	1	1	1
Sum	22914	23389	21317	23769	16692	23197	1487	8791	271	149	188
Count	384	384	384	384	261	384	316	384	384	384	384

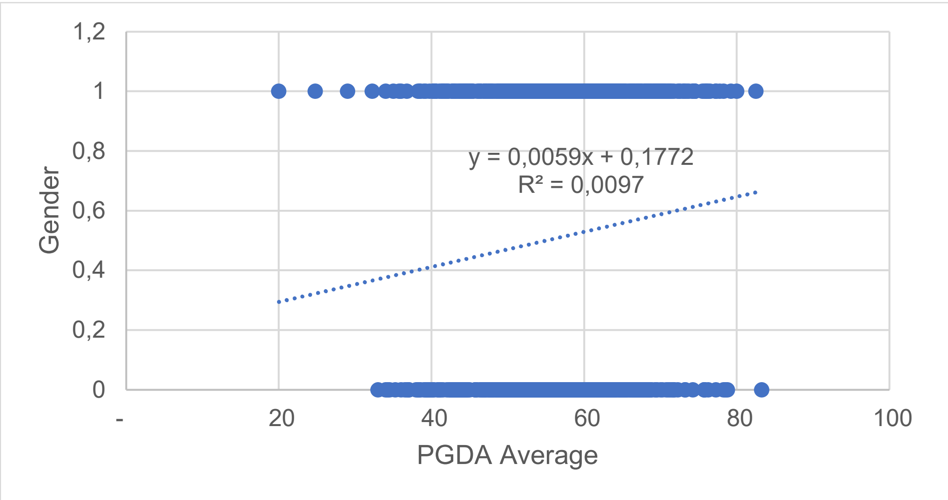
APPENDIX 3: ASSUMPTION TESTS FOR RESEARCH QUESTION 1 & 2 – REGRESSION ANLAYSIS

Assumption 1 – Linear Relationship

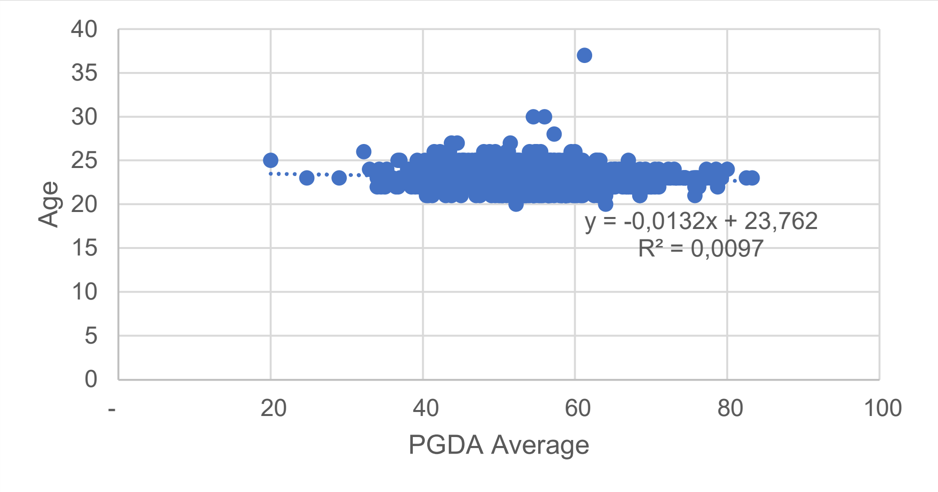
3.1.1 Scatterplot of PGDA Average and Race Group



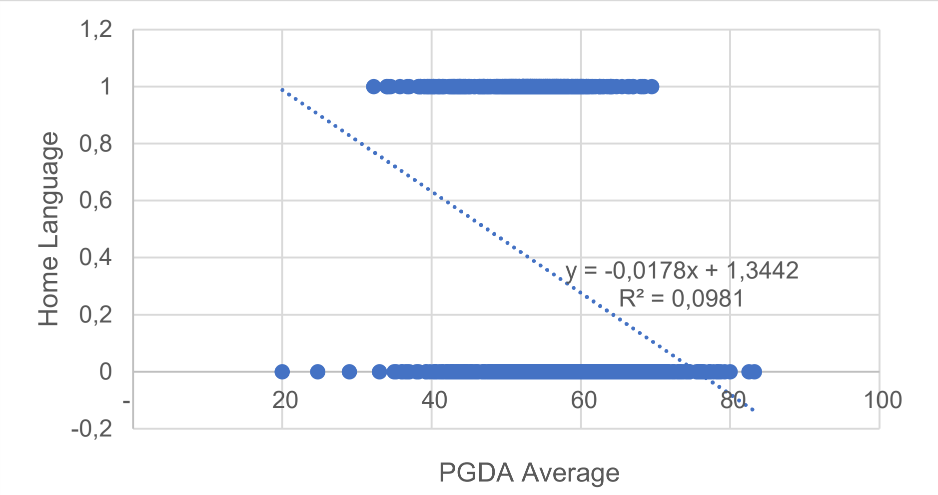
3.1.2 Scatterplot of PGDA Average and Gender



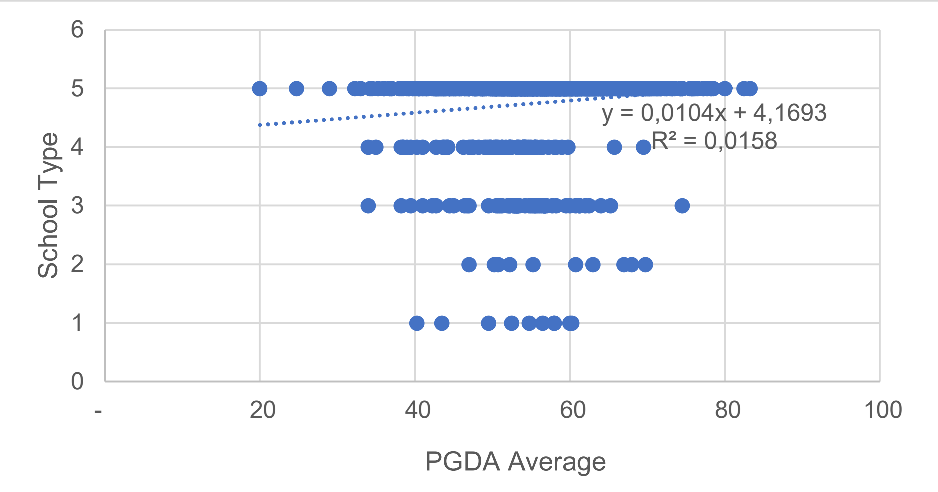
3.1.3 Scatterplot of PGDA Average and Age



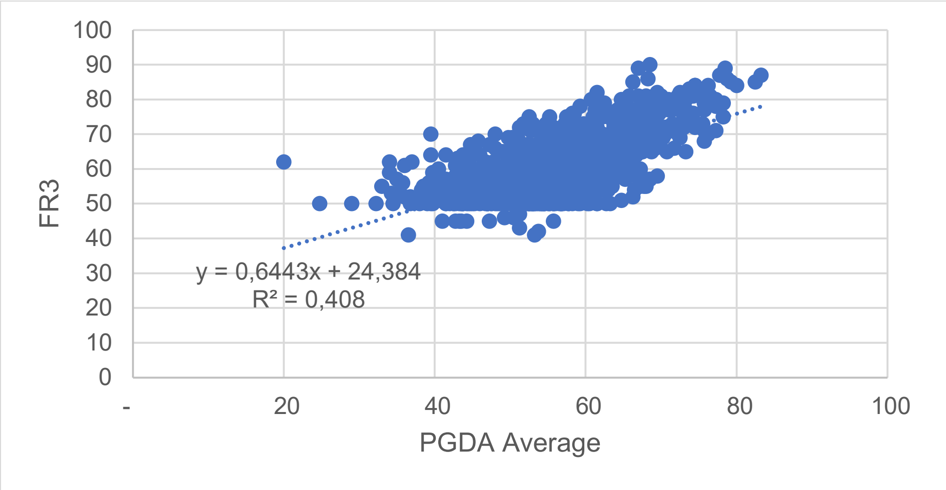
3.1.4 Scatterplot of PGDA Average and Home Language



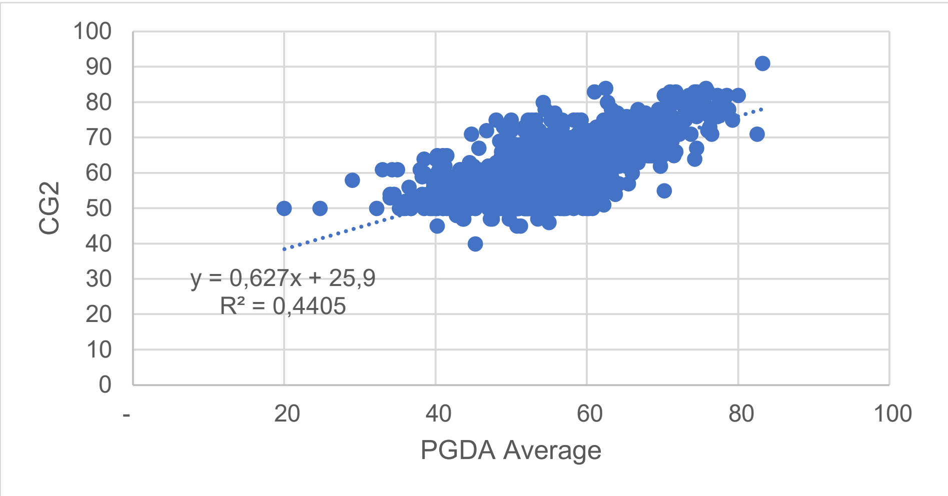
3.1.5 Scatterplot of PGDA Average and School Type



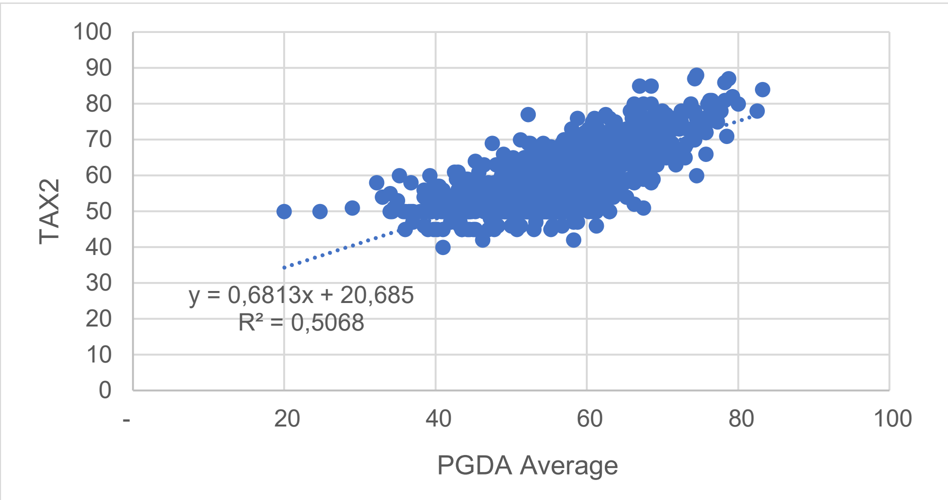
3.1.6 Scatterplot of PGDA Average and FR3



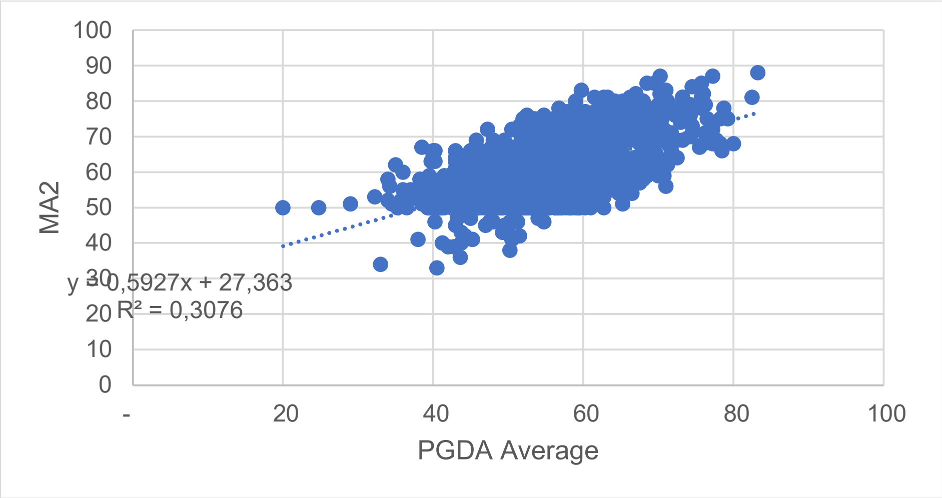
3.1.7 Scatterplot of PGDA Average and CG2



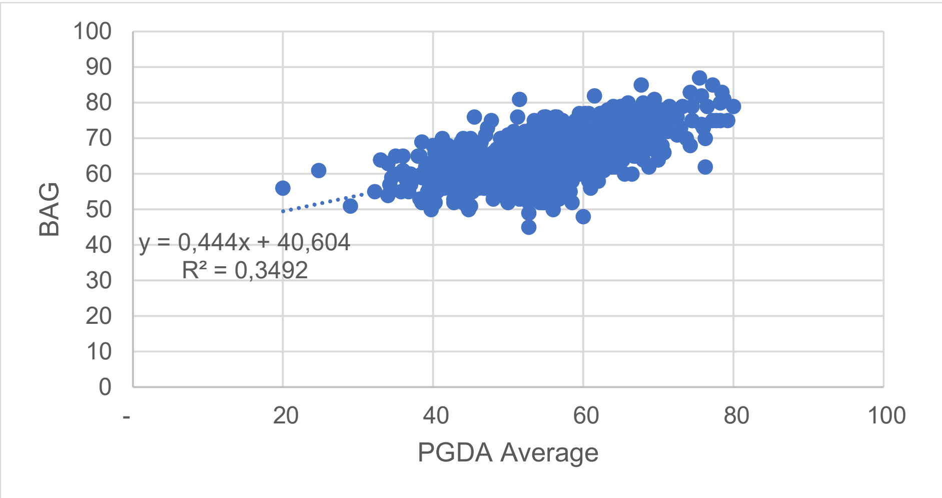
3.1.8 Scatterplot of PGDA Average and TAX2



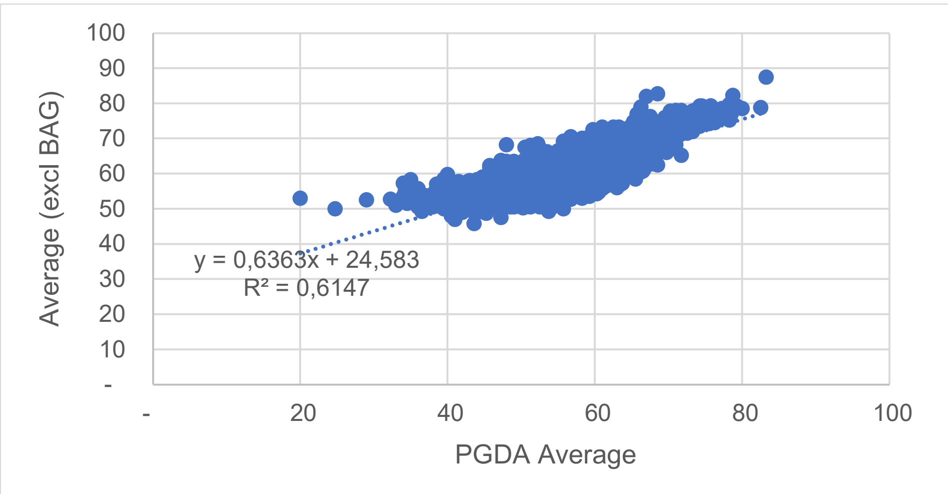
3.1.9 Scatterplot of PGDA Average and MA2



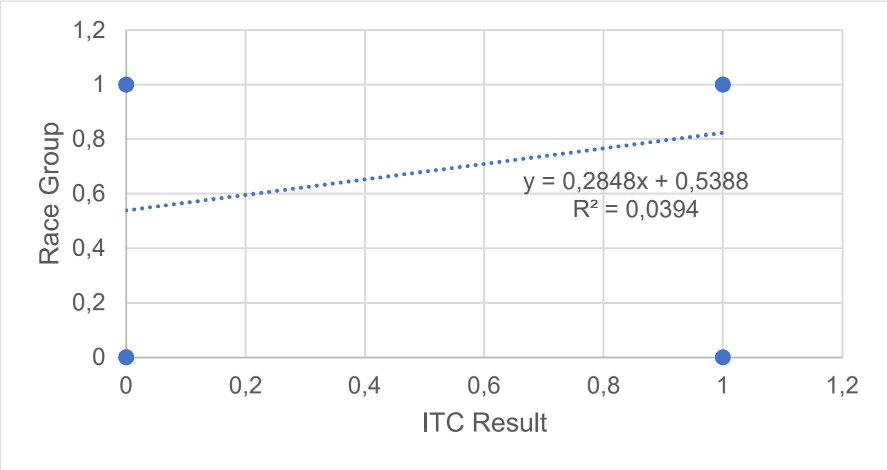
3.1.10 Scatterplot of PGDA Average and BAG



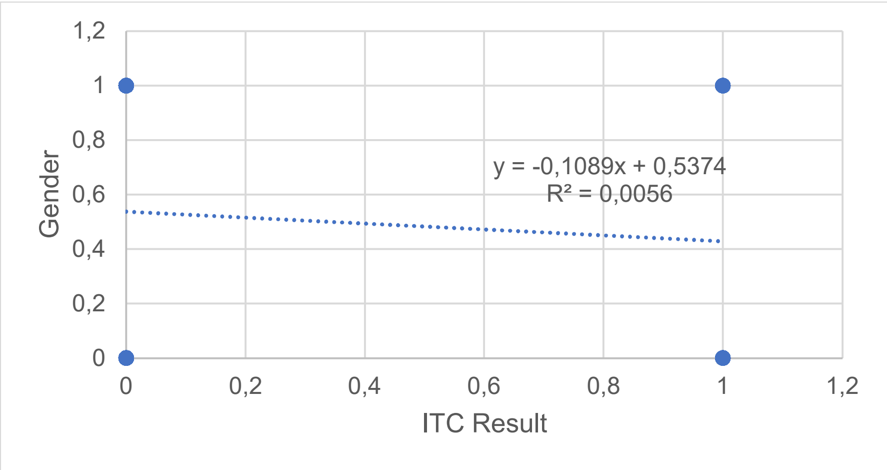
3.1.11 Scatterplot of PGDA Average and Average (excl. BAG)



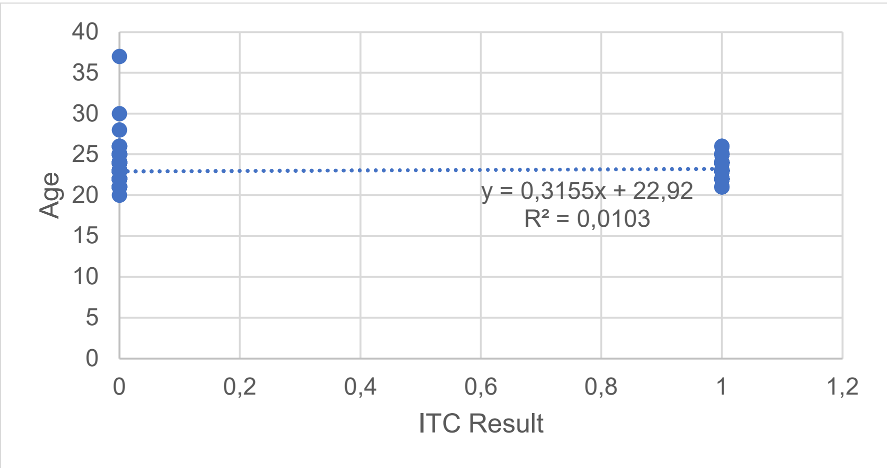
3.2.1 Scatterplot of ITC Result and Race Group



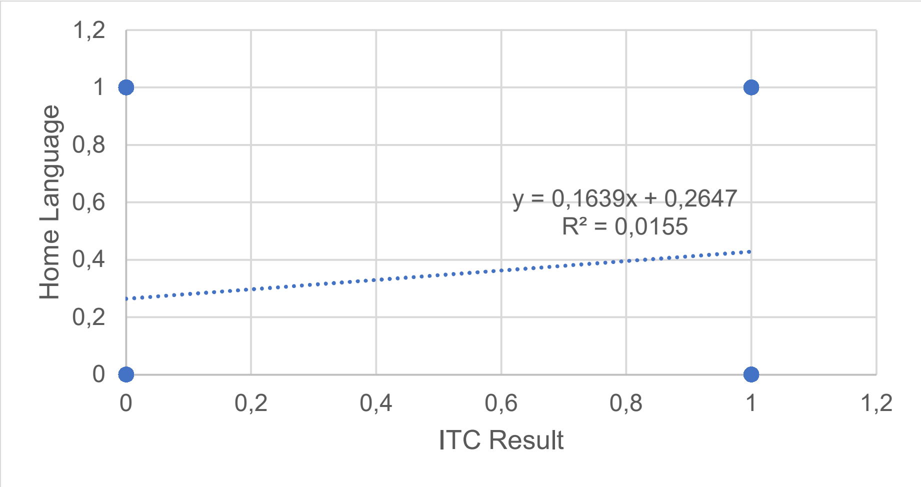
3.2.2 Scatterplot of ITC Result and Gender



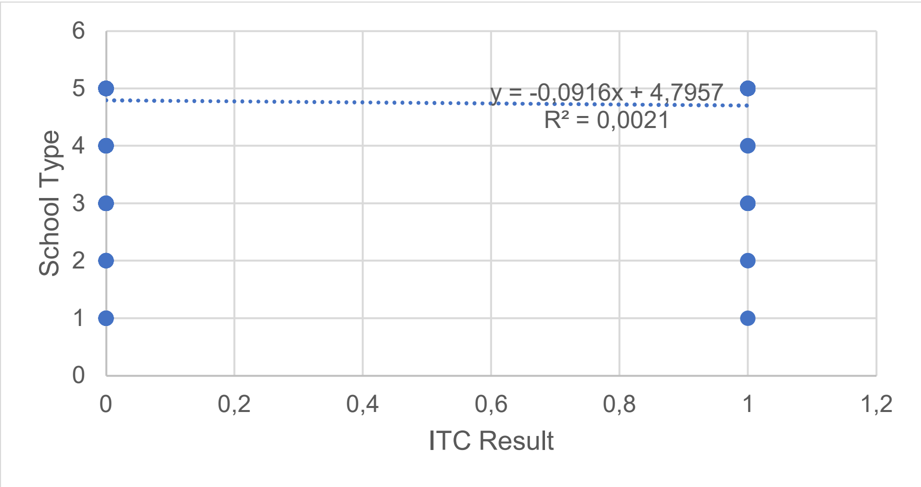
3.2.3 Scatterplot of ITC Result and Age



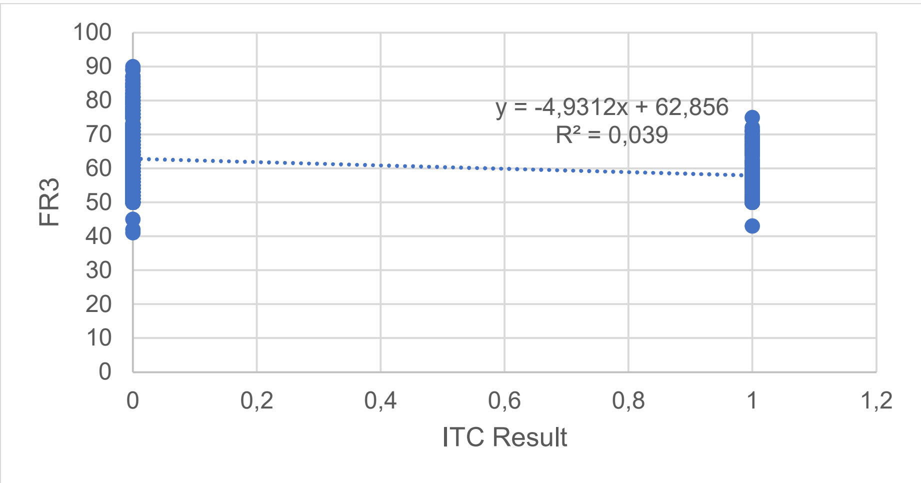
3.2.4 Scatterplot of ITC Result and Home Language



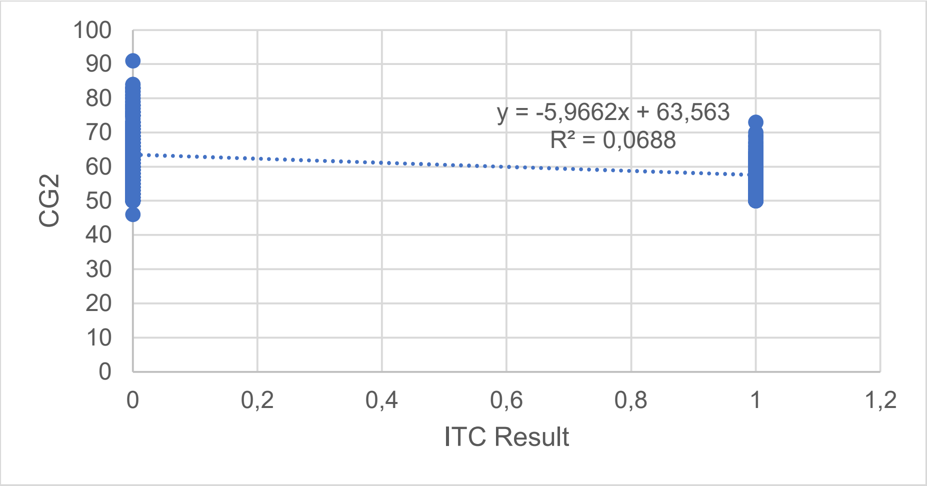
3.2.5 Scatterplot of ITC Result and School Type



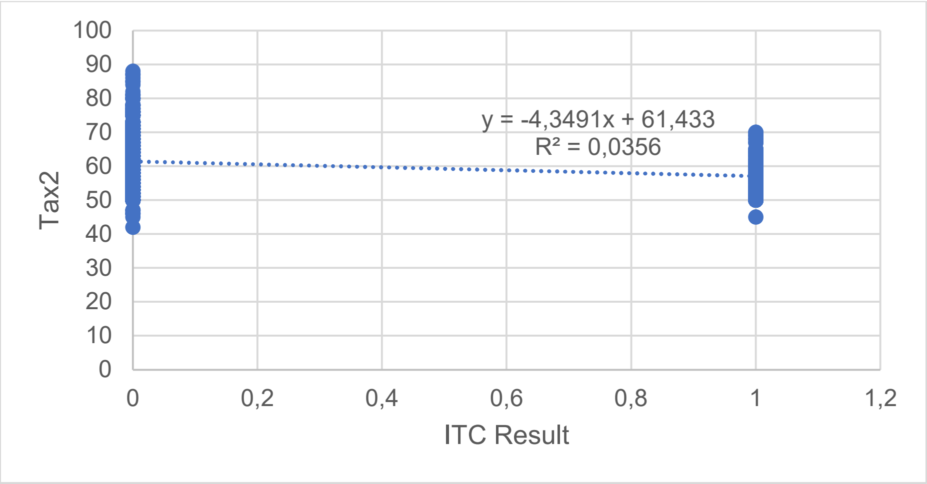
3.2.6 Scatterplot of ITC Result and FR3



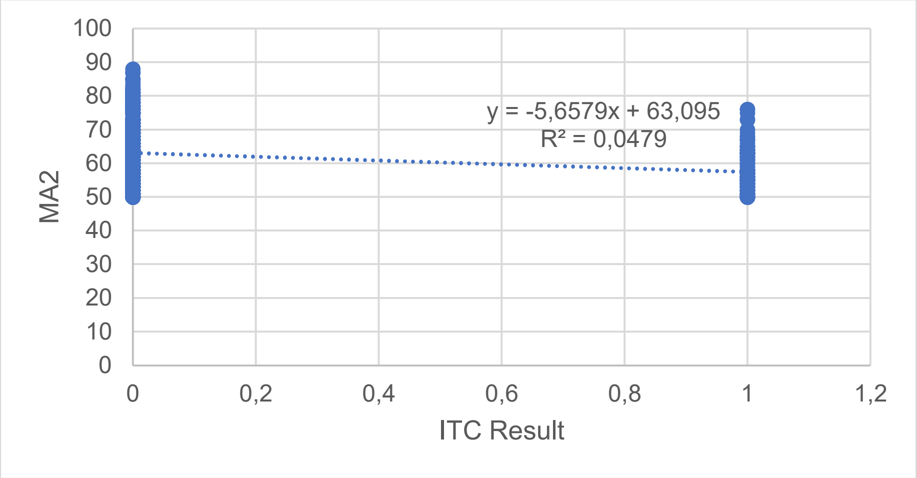
3.2.7 Scatterplot of ITC Result and CG2



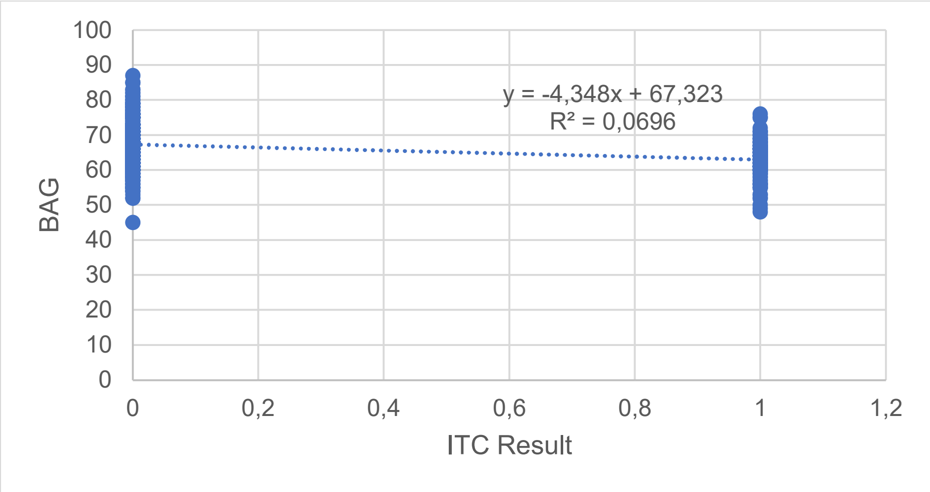
3.2.8 Scatterplot of ITC Result and TAX2



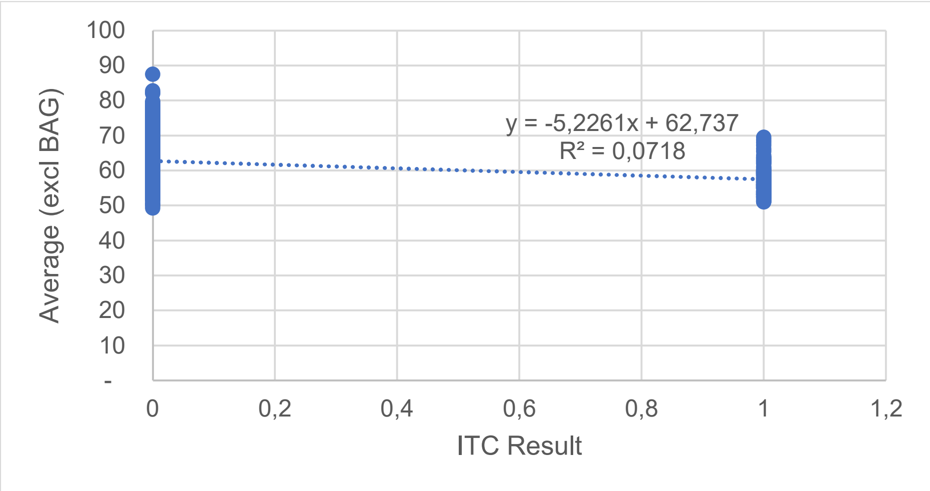
3.2.9 Scatterplot of ITC Result and MA2



3.2.10 Scatterplot of ITC Result and BAG



3.2.11 Scatterplot of ITC Result and Average (excl. BAG)



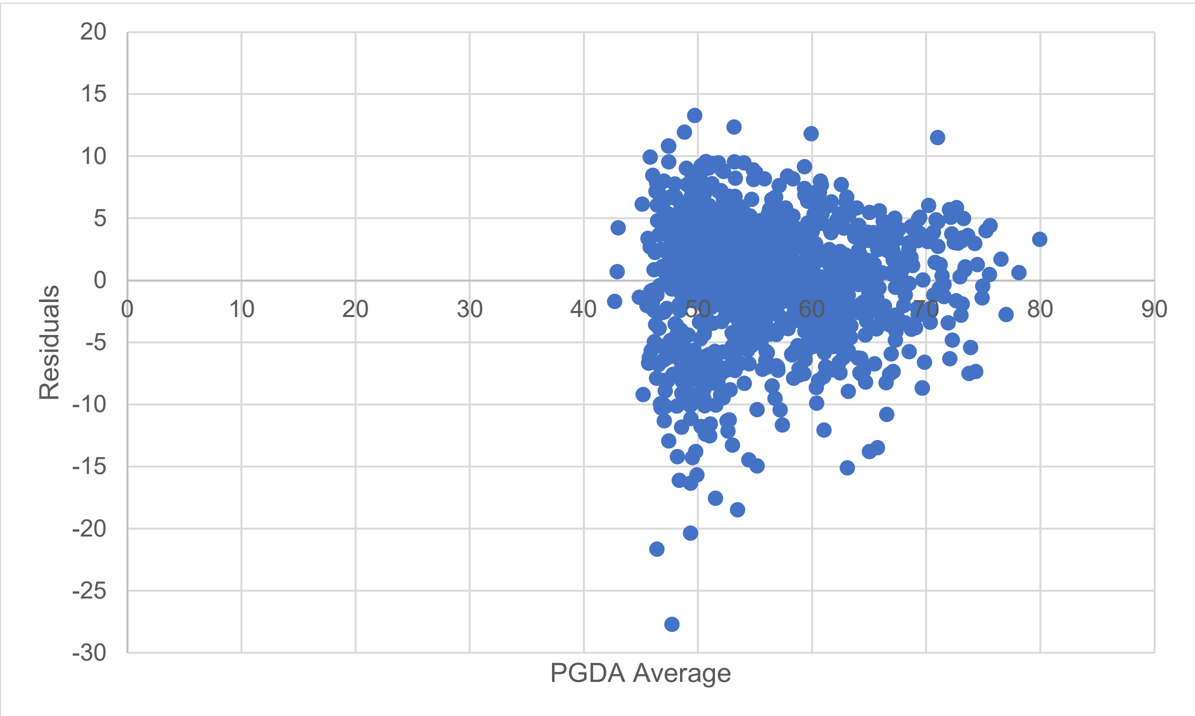
Assumption 2 – Absence of Collinearity

3.3 VIF Values for PGDA Averages and ITC Results

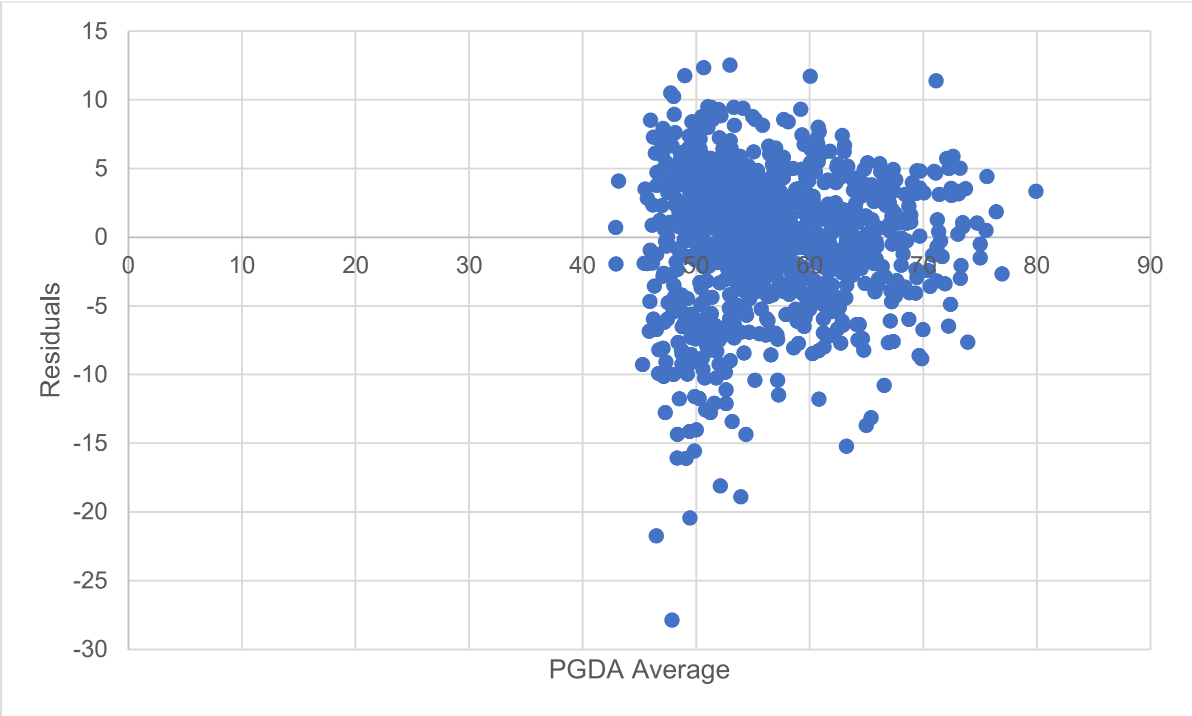
	VIF Values	
Independent Variable	**PGDA Average**	**ITC Result**
Race Group	1,216	1,041
Gender	1,010	1,006
Age	1,010	1,010
Home Language	1,109	1,016
School Type	1,016	1,002
FR3	1,689	1,041
CG2	1,787	1,074
TAX2	2,028	1,037
MA2	1,444	1,050
BAG	1,537	1,075
Average (excl. BAG)	2,596	1,077
Average (Incl. BAG)	2,566	1,087

Assumption 3 – Homoscedasticity of Residuals

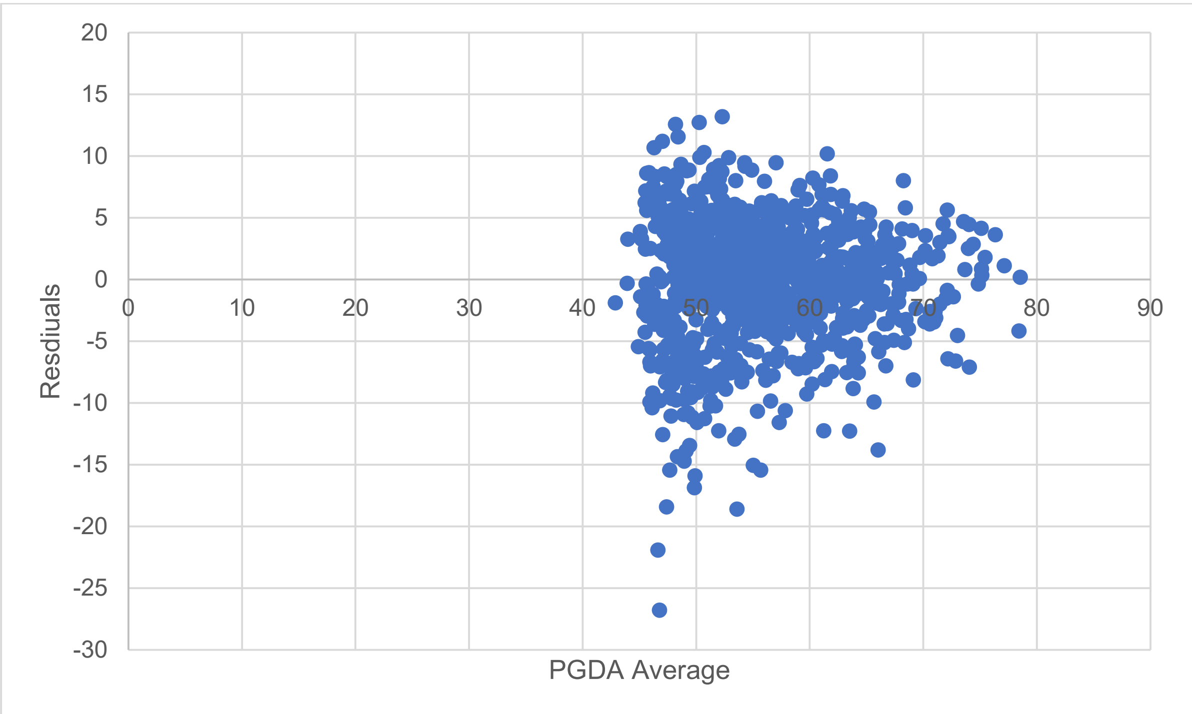
3.4.1 Scatterplot of Residuals against PGDA Average



3.4.2 Scatterplot of Residuals (Incl. School Type) against PGDA Average

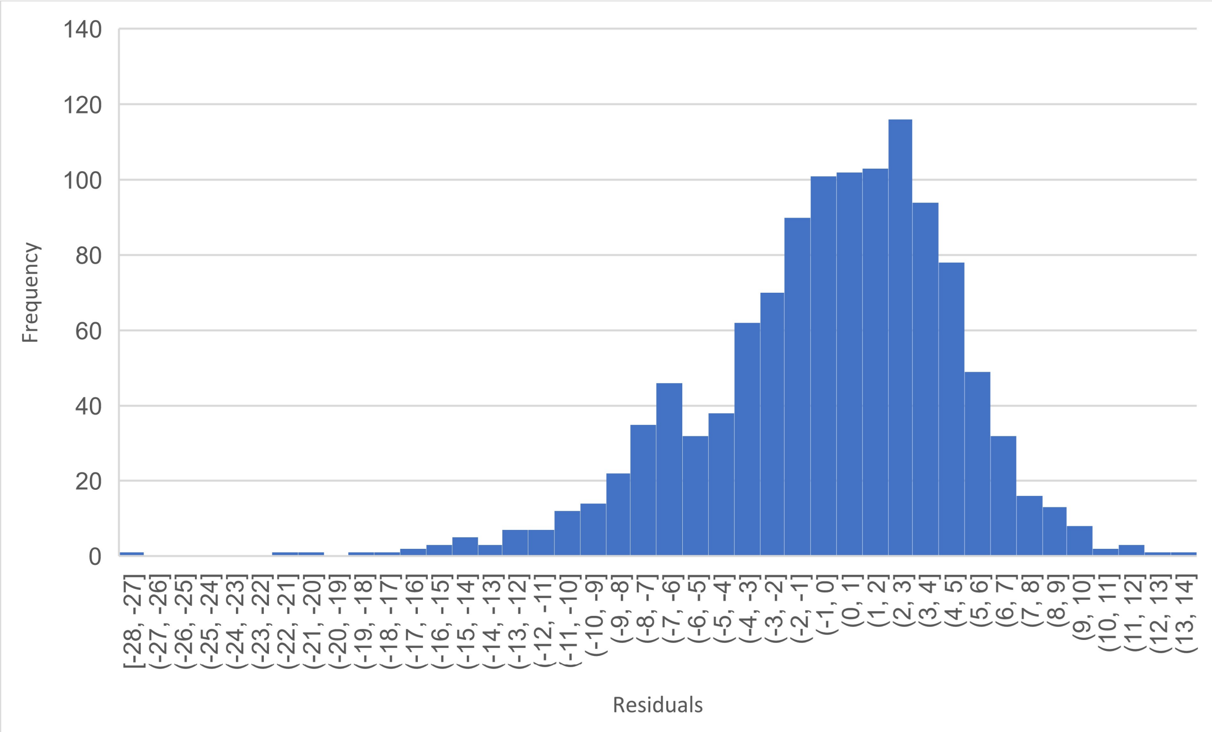


3.4.3 Scatterplot of Residuals (Incl. BAG) against PGDA Average

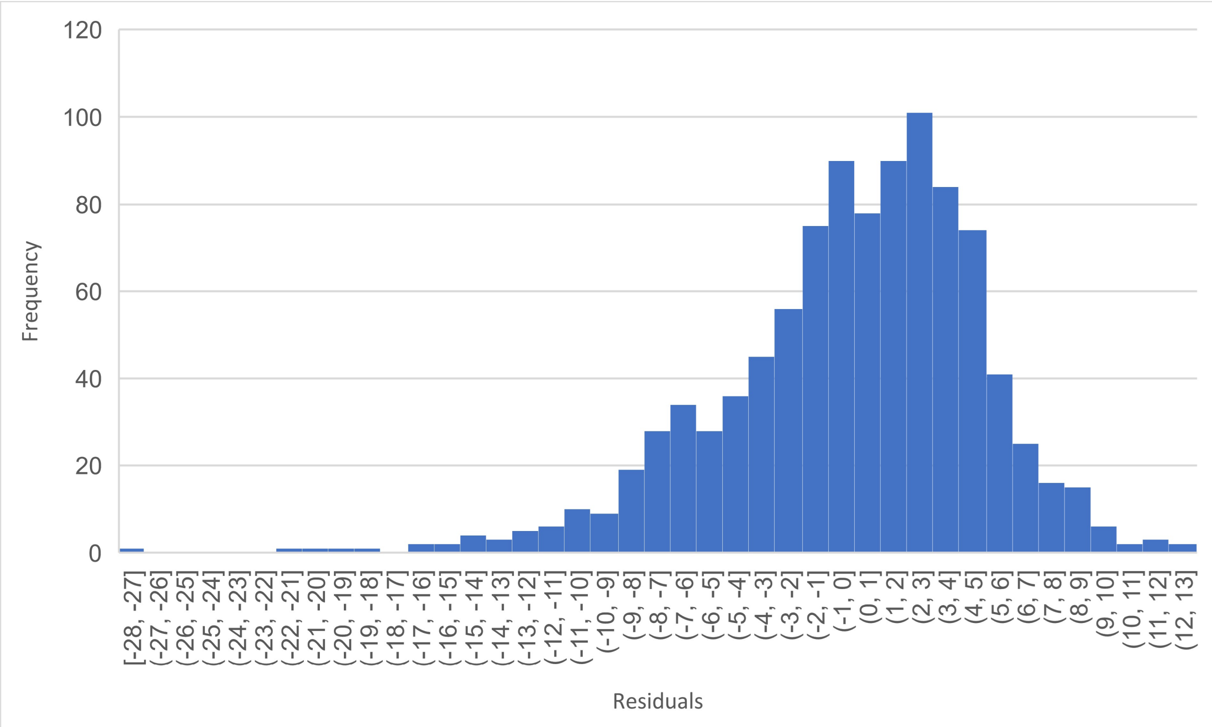


Assumption 4 – Homoscedasticity of Residuals

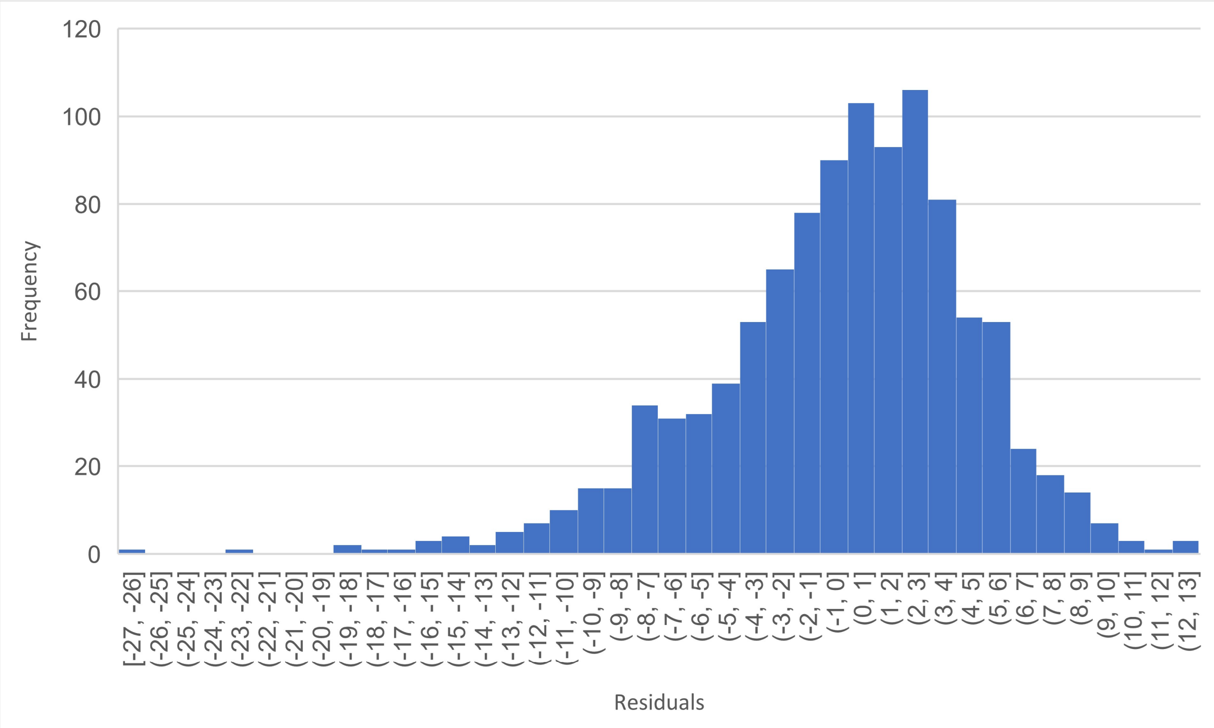
3.5.1 Histogram of Residuals



3.5.2 Histogram of Residuals (Incl. School Type)



3.5.3 Histogram of Residuals (Incl. BAG)



Assumption 5 – Absence of Influential Data Points

3.6 Descriptive Statistics for Cook's Distance and DFITTS

Key	
3.6.1	PGDA Average
3.6.2	PGDA Average (Incl. School Type)
3.6.3	PGDA Average (Incl. BAG)
3.6.4	ITC Result
3.6.5	ITC Result (Incl. School Type)
3.6.6	ITC Result (Incl. BAG)

		Count	Minimum	Maximum	Mean	Standard Deviation
3.6.1	**Cook's Distance**	1172	0,000	0,086	0,001	0,003
	DFITTS	1172	-0,288	0,883	0,001	0,064
3.6.2	**Cook's Distance**	994	0,000	0,098	0,001	0,004
	DFITTS	994	-0,349	2,122	0,002	0,087
3.6.3	**Cook's Distance**	1049	0,000	0,080	0,001	0,003
	DFITTS	1049	-0,314	1,744	0,001	0,073
3.6.4	**Cook's Distance**	867	0,000	0,283	0,010	0,024
	DFITTS	-	-	-	-	-
3.6.5	**Cook's Distance**	749	0,000	0,461	0,013	0,033
	DFITTS	-	-	-	-	-
3.6.6	**Cook's Distance**	766	0,000	0,380	0,013	0,029
	DFITTS	-	-	-	-	-

APPENDIX 4: ADDITIONAL DATA ANALYSIS

4.1 Logistic Regression Output – Model 2B (Excl. CG2)

ITC Results					
Variable	*Coefficients*	*Standard Error*	*Wald Chi-Square*	*P-value*	*Sign.*
Intercept	4,284	1,253	11,683	0,001	
Race Group	0,997	0,261	14,635	**<0,001**	***
Tax2	-0,036	0,019	3,640	**0,056**	
MA2	-0,049	0,017	8,733	**0,003**	**
FR3	-0,029	0,019	2,457	**0,117**	
-2 Log (Likelihood)	616,616				
R^2 (McFadden)	0,111				
R^2 (Cox and Snell)	0,085				
R^2 (Nagelkerke)	0,154				
N	867				
df	5				
Model Sign. (P-value)	**<0,001**				

4.2 Multivariate Regression Output – Model 2A Correlation Grid

	Race Group	CG2	Tax2	MA2	FR3	FR4	CG3	TAX3	MAF
Race Group	**1**	-0,309	-0,306	-0,322	-0,279	-0,342	-0,362	-0,347	-0,423
CG2	-0,309	**1**	0,607	0,399	0,514	0,563	0,622	0,583	0,534
Tax2	-0,306	0,607	**1**	0,509	0,677	0,665	0,629	0,587	0,575
MA2	-0,322	0,399	0,509	**1**	0,621	0,354	0,466	0,516	0,630
FR3	-0,279	0,514	0,677	0,621	**1**	0,567	0,511	0,574	0,555
FR4	-0,342	0,563	0,665	0,354	0,567	**1**	0,671	0,661	0,642
CG3	-0,362	0,622	0,629	0,466	0,511	0,671	**1**	0,677	0,696
TAX3	-0,347	0,583	0,587	0,516	0,574	0,661	0,677	**1**	0,661
MAF	-0,423	0,534	0,575	0,630	0,555	0,642	0,696	0,661	**1**