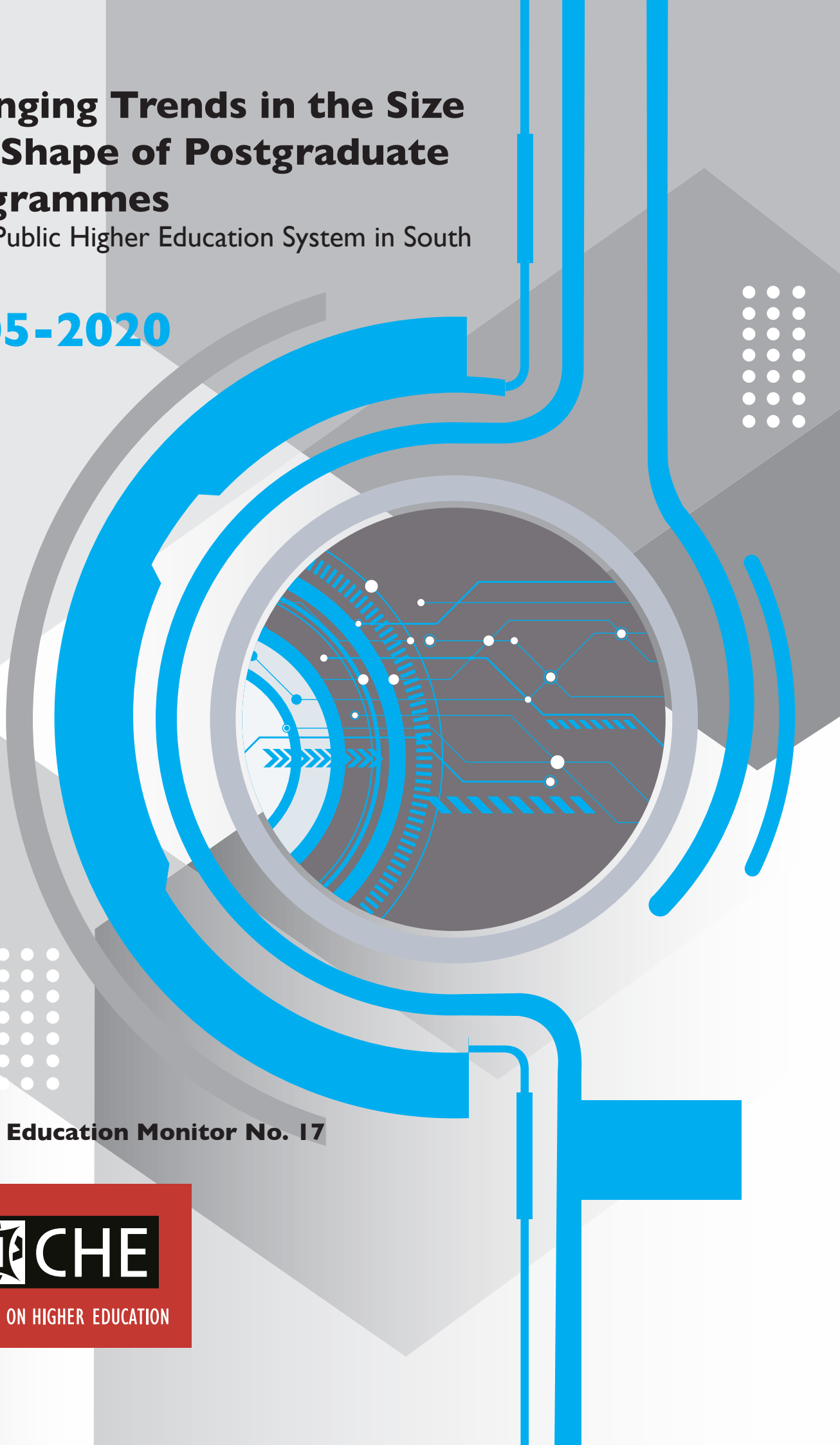
Changing Trends in the Size and Shape of Postgraduate Programmes

in the Public Higher Education System in South Africa,

2005-2020



Higher Education Monitor No. 17

CHE
COUNCIL ON HIGHER EDUCATION

Changing Trends in the Size and Shape of Postgraduate Programmes in the Public Higher Education System in South Africa, 2005-2020

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For the Council on Higher Education

Higher Education Monitor No. 17

Published by the Council on Higher Education

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The *Higher Education Monitor* series comprises publications emanating from the research and monitoring work of the Council on Higher Education. These are scholarly publications that do not present policy positions, plans, or strategies formally adopted by the Council.

Acknowledgements

The *Higher Education Monitor* Number 17 is based on research commissioned by the Council on Higher Education (CHE) and undertaken by the South African Research Chairs Initiative (SARChI) Chair on Teaching and Learning at the University of Johannesburg. The CHE expresses sincere appreciation to the SARChI Chair on Teaching and Learning and the researcher, Mr Ahmed Essop, The CHE and the SARChI Chair on Teaching and Learning would also like to convey their gratitude to the people who agreed to be interviewed for this study, as well as those who reviewed the draft of this report and made recommendations for its improvement.

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ISSN: 978-1-0672559-9-2

Published: March 2025

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Foreword

Section 5(1)(d) of the Higher Education Act No. 101 of 1997, as amended, mandates the Council on Higher Education (CHE) to regularly publish information about developments in higher education, including regular reports on the state of higher education. The CHE fulfils this mandate by conducting research and monitoring developments on key issues within the higher education system in South Africa and by disseminating the information and findings through reports and publications. One of such publications is the *Higher Education Monitor* series, whose purpose is to present data and information from research undertaken or commissioned by the CHE on topical issues of interest to the broader higher education sector in South Africa. The first issue of the *Higher Education Monitor* series was published in 2003, and this publication on *Changing Trends in the Size and Shape of Postgraduate Programmes in the Higher Education System in South Africa, 2005-2020*, is the seventeenth in the series.

This volume of *Higher Education Monitor* is an output of the collaboration between the Council on Higher Education (CHE) and the SARChI for Teaching and Learning in Higher Education at the University of Johannesburg. It presents a study on the changing trends in the size and shape of postgraduate programmes offered by public higher education institutions in South Africa for the fifteen-year period spanning from 2005 to 2020. The small size of the postgraduate band of higher education relative to the undergraduate one has been an area of concern in higher education policy environment. The post-apartheid higher education policy documents flag growing the postgraduate band of higher education and increasing the participation in postgraduate studies of students from previously disadvantaged backgrounds, as some among key policy priorities. Therefore, the study on which this volume of the *Higher Education Monitor* is based is very important because its findings clearly demonstrate that much remains to be done to grow this band of higher education significantly. It also emphasises the need to couple initiatives to widen access to postgraduate studies with support to improve the levels of success, particularly among South African postgraduate students from previously disadvantaged backgrounds. One important welcome development is the finding that the postgraduate programmes offered by the South African public higher education attract students from the Southern African Region, as well as from across the African continent, and beyond. Most of these foreign students are funded by their governments, national funding agencies, or multilateral funding bodies. They, therefore, comparatively, do not encounter some of the debilitating challenges related to funding that most South African postgraduate students face.

The sector needs to pay attention to the recommendations presented in this volume of the *Higher Education Monitor* in order to increase the participation and success of students from previously disadvantaged backgrounds in postgraduate studies. For example, the recommendation to reform and restructure undergraduate curricula to expose students to research and the development of research skills is critical and cannot be overemphasised enough. Addressing the shortcomings in the supervisor-student relationship through developing and implementing policies and procedures to regulate the relationship as proposed in the CHE's Doctoral Degrees National Report is equally critical. Undoubtedly, the intervention that holds the key towards unblocking the blockages and eliminating the barriers as far as increasing the participation and success of students from previously disadvantaged backgrounds in postgraduate studies is concerned, is the provision of full-cost of study and full-cost of living bursaries and scholarships to as many eligible students from previously disadvantaged backgrounds as possible.

The CHE believes that the contents of this volume of *Higher Education Monitor* are a good resource for research and analysis, just as they are a good material to inform institutional and national policies on growing the postgraduate band of higher education and on increasing the participation and success of students from previously disadvantaged backgrounds

in postgraduate studies in South Africa. For example, from the policy point of view, the analysis and the results thereof presented in this volume provide sufficient grounds to start thinking of revising some of the national development targets related to higher education as articulated in the National Development Plan (NDP).

The CHE expresses its appreciation to the SARChI for Teaching and Learning in Higher Education at the University of Johannesburg for agreeing to partner with the CHE on the research project on which this volume of the *Higher Education Monitor* is based. The CHE acknowledges, with sincere gratitude the invaluable contribution of the researcher, Mr Ahmed Essop, as well as that of Dr Charles Sheppard who assisted in the collation of the data and in the preparation of the data tables, towards realising the goal of publishing this volume of the *Higher Education Monitor.* The CHE also extends its appreciation to Prof. Shireen Motala, SARChI Chair for Teaching and Learning in Higher Education, for the support provided to the researcher and for the overall management of the research project. In the same vein, the CHE thanks the Director: Research, Monitoring and Advice and his team for coordinating processes related to the project from the CHE's point of view.

As a scholarly publication, this volume of *Higher Education Monitor* will undoubtedly be a subject of critical reading and re-analysis of the data, leading to some views being formed about the contribution that the publication makes to the higher education sector. The CHE encourages that such views should be shared with the CHE as feedback on the publication. All feedback on this publication should be sent by email to research@che.ac.za.

Dr Whitfield J Green
Chief Executive Officer
March 2025

1. Introduction

This volume of *Higher Education Monitor* is based on study that was undertaken by SARChI Chair for Teaching and Learning in Higher Education at the University of Johannesburg on behalf of the Council on Higher Education (CHE). The main motivation for the CHE to commission the study was to respond to a request from the former Minister of Higher Education, Science and Innovation to investigate the participation of black South African students in postgraduate programmes offered by South African public higher education institutions, in relation to the participation of international (non-South African) students. Another motivation was to establish if there has been progress in addressing the concern expressed in in the White Paper for Post-School Education and Training (WPPSET) (DHET, 2013) and in the National Development Plan 2030 (NDP), that the renewal of the academic profession was under threat because of the low enrolments in postgraduate studies in the country. Low enrolments in postgraduate programmes, in particular, in master's and doctoral programmes, has been a key policy concern in the past two decades, as indicated in the National Plan for Higher Education (NPHE):

> It is clear that unless strategies are developed at system-wide and institutional levels to make postgraduate and academic careers more attractive options, the future sustainability of the national research system and of the higher education system is under threat. Both are dependent on the production of postgraduates for the replenishment of academic and research ranks (DoE, 2001: 74).

The NDP set three targets to address the low enrolments, in particular, at the doctoral level, by 2030, namely:

(i) Postgraduate enrolments should constitute "over 25% of university enrolments".

(ii) 100 doctoral graduates per million to be produced annually, which would require producing "more than 5 000 doctoral graduates per year".

(iii) Improve academic staff qualifications with over 75% of staff with doctorates (NPC, 2002:319).

The NDP targets provide the backdrop for assessing the changing trends in the size and shape of postgraduate programmes in the context of the challenge of equity of access to redress past inequalities implicit in the minister's concern.

It should also be highlighted given the minister's reference to concerns raised that "participation in postgraduate programmes is becoming increasingly skewed towards foreign students", that both the NPHE and WPPSET argued for increasing the recruitment of international students. The NPHE's focus was on recruitment from the Southern African Development Community (SADC) to enable South Africa to meet its commitment to target a maximum of 10% of student places for students from SADC in line with the SADC Protocol on Education and Training. The NPHE argued that, in addition to contributing to the human resource needs of the region, recruiting students from SADC would also contribute to enriching the "educational experience of South African students and broaden their understanding of the social, cultural, economic and political ties that underpin the peoples and countries" of SADC (DoE, 2001: 29).

The WPPSET similarly recognised the benefits for the higher education system of the growing trend of the internationalisation of higher education:

The movement of academics and students across borders can improve international communication, cross-cultural learning and global citizenship. All of these are important for improving peace and cooperation, and for finding solutions to global challenges such as sustainable development, security, renewable energy and HIV/AIDS (DHET, 2013: 40).

1.1 Timeline

The timeline, 2005-2020, for assessing the changing trends in the size and shape of postgraduate programmes, is informed by the fact that:

(i) 2005 represents a key policy moment in post-

apartheid higher education in two respects:

- The implementation of the three (linked) levers for steering the higher education system to meet national policy goals and objectives, namely, national and institutional planning, funding, and quality assurance.
- The restructuring of the institutional landscape of the higher education system through mergers and incorporations, which reduced the number of higher education institutions from 36 to 23.

(ii) The 2020 cut-off date is due to the fact that there is a two-year time lag in the collection and verification of data in the Higher Education Management Information System (HEMIS), which is the national database for the public higher education system.

1.2 Methodology

The report is based on a combination of quantitative and qualitative analyses, including unstructured, open-ended interviews with a selection of higher education institutional role-players, doctoral students, and graduates, including postdoctoral fellows (PDFs) (see Appendix One for a list of interviewees). In line with this, the report is divided into two parts: the first focuses on the changing trends in the size and shape of postgraduate programmes in higher education through a quantitative analysis of the key data, including assessing progress towards achieving the NDP targets; the second seeks to address the Minister's concern through locating the emerging trends in the context of the challenges faced by, and the experience of, black[1] South Africans in pursuing postgraduate study, specifically at the doctoral level.

1.2.1 Data Sources

The main data source used was Higher Education Management Information System (HEMIS). The timeline, 2005-2020, is divided into four periods – 2005, 2010, 2015 and 2020 – to facilitate trend analysis and for ease of presentation of the data. The assumptions that were made for interpreting the data in HEMIS for purposes of this study include the following:

- The analysis of overall enrolment and graduate trends is based on the Categorisation of Educational Subject Matter (CESM) in HEMIS. There are four broad categories, namely, Science, Engineering and Technology (SET), Business and Commerce (B&C), Humanities (including the social sciences), and Education, which is a separate category from the humanities because of the priority accorded to teacher training in national policy.
- Postgraduate qualifications include postgraduate diploma's, honours, master's – both research and coursework – and doctorates.
- Postgraduate diploma and honours qualifications are not separated for reporting purposes in HEMIS.
- There are a number of qualifications that were previously defined as postgraduate qualifications in HEMIS that have been discontinued as a result of the revised Higher Education Qualifications Sub-Framework (HEQSF) (CHE, 2013a). These have not been included in the data; the numbers are small and do not materially impact the analysis.
- The data on undergraduate enrolments does not include occasional students[2] as the numbers are small and do not materially impact the analysis.
- The "unknown" category in enrolments where included refers to students who have chosen not to declare their race.
- Enrolments, unless indicated otherwise, refer to postgraduate headcount enrolments.

1.2.2 Institutional Categories

The public higher education institutions have been categorised into five types for the purposes of this report, namely:

(i) Research-intensive universities (RIUs) – Universities of Cape Town (UCT), KwaZulu-Natal (UKZN), Pretoria (UP), Stellenbosch (US) and the Witwatersrand (Wits).

1 Black refers to African, Coloured and Indian.

2 Occasional students refers to students who are registered for an approved course but not for an approved qualification and includes students enrolled for non-degree purposes.

(ii) Other universities (OUs) – Nelson Mandela University (NMU), North West University (NWU), Rhodes University (RU), Universities of the Free State (UFS), Johannesburg (UJ), Mpumalanga (UMP) and Sol Plaatje University (SPU).

(iii) Historically Black Universities (HBUs) – Universities of Fort Hare (UFH), Limpopo (UL), Venda (UV), Western Cape (UWC), Zululand (UZ), Walter Sisulu University (WSU) and Sefako Makgatho Health Sciences University (SMH).

(iv) Universities of Technology (UoTs) – Cape Peninsula (CPUT), Central (CUT), Durban (DUT), Mangosuthu (MUT), Tshwane (TUT) and the Vaal (VUT) Universities of Technology .

(v) Distance University – University of South Africa (Unisa).

The categorisation was informed by the categories previously used in the analysis of the higher education system and enables assessing changes in the system based on historical categories. Although the categories have, in some instances, been affected by the restructuring of the institutional landscape through mergers and incorporations and the establishment of three new universities, the categorisation in broad terms remains relevant for comparative purposes.[3]

The inclusion of institutions in the RIU category is based on two research-related criteria – publication outputs and master's and doctoral graduates. In the 1990s about two-thirds of all publication outputs and master's and doctoral graduates were produced by the RIUs, which were all historically white universities. This was the result of the apartheid legacy in higher education. In 1993, as the National Commission on Higher Education pointed out, 83% of research outputs and 81% of master's and doctoral graduates were produced by the historically white universities, while the comparable figures for the HBUs was 7% and 5%, for the historically white technikons it was 1% and 2%, and for Unisa (including Technikon South Africa[4]) it was 9% and 12%, respectively (Simpson and Gevers, 2016: 195).

It is also necessary to highlight the new institutional type that was introduced as part of the institutional restructuring process, namely, comprehensive institutions. The introduction of comprehensive institutions as a new institutional type took two forms: (i) the merger of a university with a technikon, and (ii) the expansion of the mission of existing universities in rural areas where there were no technikons to include the provision of career-focused programmes. In practice, there are only four comprehensive institutions out of the proposed seven. The four – UJ, NMU, WSU and Unisa – were established based on mergers between universities and technikons, while the remaining three institutions – UL, UV and UZ – have not been able to give effect to their mission to introduce career-focused programmes. However, for purposes of this report, the four institutions have been categorised along historical lines. The comprehensive institutions resulting from the merger of a historically white university and technikon – UJ and NMU have been included in the OU category, the comprehensive institution resulting from the merger of a historically black university and Technikon – WSU, has been included in the HBU category, and the two merged distance institutions in the distance university category.

3 For example, the (historically white) University of Natal was merged with the (historically black) University of Durban-Westville; similarly, except for Mangosuthu University of Technology and the Central University of Technology (which incorporated the Welkom campus of the (historically black) Vista University, all the historically black and white Technikons were merged. The two new institutions – University of Mpumalanga and Sol Plaatje University, which are outside the historical categories, have been included in the "other universities" category. They were established in 2012 and have only recently started offering postgraduate programmes. Sefako Makgatho University, although classified as a "new" university, is the erstwhile Medical University of South Africa (Medunsa), which was merged and subsequently demerged from the University of Limpopo and has been included as an HBU.

4 Technikon South Africa (TSA) was a distance education technikon, which was merged in 2005 with Unisa.

2. Headcount Enrolments: Overall

The enrolment trends in Table 1 show that as a proportion of total enrolments between 2005 and 2020, undergraduate and postgraduate enrolments remained unchanged – 86% and 14%, respectively. And the difference is marginal if the enrolments in the postgraduate qualifications that have been discontinued are included – postgraduate enrolments were slightly higher in 2005 – 16% but decreased to 15% in 2020 (see Table A1 in Appendix 2).

Table 1: Headcount Enrolments: Qualification Level - Undergraduate and Postgraduate (excl. withdrawn PG qualifications and occasional students), 2005-2020

	2005	% Total	2010	% Total	2015	% Total	2020	% Total	%C
Undergraduate	600 620	86%	726 882	86%	804 469	86%	925 489	86%	54%
Postgraduate	98 725	14%	115 766	14%	132 745	14%	151 268	14%	53%
Total	**699 345**	**100%**	**842 648**	**100%**	**937 214**	**100%**	**1 076 757**	**100%**	**54%**

This suggests that the NDP target of over 25% of total enrolments in postgraduate programmes by 2030 is unrealistic and will not be met. The target is unrealistic even if the participation rate[5] in higher education increases, as proposed in the WPPSET and the NDP, from the current 21% to 25%, which equates to a total headcount enrolment of roughly 1,62 million in 2030. This would require postgraduate enrolments increasing from 151 268 to 405 000 between 2020 and 2030, that is, by 168% or more than three times the growth rate between 2005 and 2020. It would also require reducing the growth rate in undergraduate enrolments from 54% to 31%, which is untenable given the pressures to increase access to higher education to address the inequalities of the past. This is brought into stark relief by the fact that in 2023, 580 330[6] students qualified to pursue higher education based on the 2022 National Senior Certificate (matriculation) examination results. However, there were only 197 753 first-time undergraduate places available. And while not all the students who qualify meet the entry requirements for the different programmes offered, which are determined by higher education institutions, even if only 50% of the students met these requirements, there would not have been sufficient places available. This indicates the scale of the access challenge.

The higher education system is an undergraduate system and on current trends it will remain so in the short-to-medium term. Aside from access pressures, increasing postgraduate enrolments, as the report argues, requires addressing the inefficiencies in the system, in particular, low throughput and graduation rates at both the undergraduate and postgraduate levels, the low progression rates from honours to master's to doctoral programmes, and inadequate bursary funding to support postgraduate study.

2.1 Headcount Enrolments by Qualification Level

Although postgraduate enrolments as a proportion of total enrolments remained unchanged, there were significant differences in the growth rates of the different postgraduate qualification levels between 2005 and 2020, as shown in Table 2. Doctoral enrolments grew by a massive 150% – from 9 434 to 23 588, an annual average increase of 6%, while master's enrolments grew by 36% – from 44 321 to 60 132, an annual average increase of 2%, and postgraduate diploma and honours (PgD/H) enrolments grew by 50% – from 44 970 to 67 548, an annual average increase of 3%. As a result of these changes, doctoral enrolments as a proportion of total enrolments increased from 10% to 16%, while master's enrolments decreased from 45% to 40%, and PgD/H enrolments remained within range (+/-1-2%).

The increase in doctoral enrolments is due to a range of factors, including a substantial increase in the subsidy for doctoral enrolments in the funding framework, which came on stream in 2005, increased

5 The participation rate, as defined by UNESCO, is the percentage of 20–24-year-olds enrolled in higher education.

6 This comprised of 278 814 Bachelor passes; 193 357 Diploma passes; and 108 159 Higher Certificate passes.

supervisory capacity and the growing attractiveness of South Africa as a destination for postgraduate students from the rest of Africa (RoA) (Cloete et.al, 2015: 55; Mouton, et.al, 2019: 2). Indeed, it is the latter, that is, increased enrolments from the RoA that underpins the growth in doctoral enrolments, as discussed in section 5 below.

Table 2: Headcount Enrolments: Proportion of Total Postgraduate Enrolments by Qualification Type, 2005-2020

	2005	% T	2010	% T	2015	% T	2020	% T	% C	AAG
PG Dip/Hons	44 970	47%	57 477	50%	57 686	43%	67 548	45%	50%	3%
Master's	44 321	45%	46 699	40%	55 546	42%	60 132	40%	36%	2%
Doctoral	9 434	10%	11 590	10%	19 513	15%	23 588	16%	150%	6%
Total	**98 725**	**101%**	**115 766**	**100%**	**132 745**	**100%**	**151 268**	**101%**	**53%**	**3%**

2.2 Headcount Enrolments: Institutional Type

The growth in enrolments between 2005 and 2020 is across all the institutional types, as shown in Table 2a. However, there was a larger increase in the HBUs and Unisa, which grew by 102% and 77%, respectively, as against the RIUs, OUs and the UoTs, which grew by 54%, 18%, and 53%, respectively. This has resulted in changes in the distribution of enrolments between the different institutional types. As a proportion of total enrolments, the RIUs and UoTs share has remained the same – 41% and 6%, respectively, while the share of the OUs decreased – from 25% to 19%, the share of the HBUs increased from 8% to 10%, and that of Unisa – from 20% to 23%.

Table 2a: Headcount Enrolments: Institutional Type, 2005-2020

	2005		2010		2015		2020		2005-2020	
	T	% T	T	% T	T	% T	T	% T	% C	AAG
RIU	40 403	41%	46 520	40%	57 363	43%	62 142	41%	54%	3%
Other	24 731	25%	28 030	24%	28 160	21%	29 301	19%	18%	1%
HBUs	7 809	8%	10 062	9%	12 632	10%	15 743	10%	102%	5%
UoTs	6 134	6%	4 761	4%	6 380	5%	9 376	6%	53%	3%
UNISA	19 648	20%	v26 387	23%	28 210	21%	34 706	23%	77%	4%
Total	**98 725**	**100%**	**115 766**	**100%**	**132 745**	**100%**	**151 268**	**100%**	**53%**	**3%**

The changes in the proportionate share are the result of important shifts in the distribution of enrolments in the different qualification levels across institutional types. The most significant changes between 2005 and 2020, as Tables 2b, c and d show, have been in the HBUs – PgD/H, master's and doctoral enrolments increased by 104%, 74% and 249%, respectively; the UoTs – master's and doctoral enrolments increased by 91% and 403%, respectively; and Unisa – PgD/H and doctoral enrolments increased by 116% and 154%, respectively.

Table 2b: PG Dip/Honours Headcount Enrolments: Institutional Type, 2005-2020

	2005		2010		2015		2020		2005-2020	
	T	% T	T	% T	T	% T	T	%T	% C	AAG
RIU	13 515	30%	16 396	28%	18 306	32%	20 737	31%	53%	3%
Other	13 238	30%	15 866	28%	13 575	24%	11 899	18%	-11%	-1%
HBUs	2 795	6%	3 661	6%	4 165	7%	5 701	8%	104%	5%
UoTs	2 645	6%	1 644	3%	1 273	2%	1 659	2%	-37%	3%
UNISA	12 777	28%	19 910	35%	20 367	35%	27 552	41%	116%	5%
Total	**44 970**	**100%**	**57 477**	**100%**	**57 686**	**100%**	**67 548**	**100%**	**50%**	**3%**

Table 2c: Master's Headcount Enrolments: Institutional Type, 2005-2020

	2005		2010		2015		2020		2005-2020	
	T	% T	T	% T	T	% T		%T	% C	AAG
RIU	21 790	49%	24 084	52%	28 884	52%	29 939	50%	37%	2%
Other	9 240	21%	9 360	20%	10 539	19%	12 147	20%	32%	2%
HBUs	4 258	10%	5 191	11%	6 301	11%	7 400	12%	74%	4%
UoTs	3 156	7%	2 605	6%	4 096	7%	6 041	10%	91%	4%
UNISA	5 877	13%	5 459	12%	5 726	10%	4 605	8%	-22%	-2%
Total	**44 321**	**100%**	**46 699**	**101%**	**55 546**	**99%**	**60 132**	**100%**	**35%**	**2%**

Table 2d: Doctoral Headcount Enrolments: Institutional Type

	2005		2010		2015		2020		2005-2020	
	T	% T	T	% T	T	% T	T	%T	% C	AAG
RIU	5 098	54%	6 040	52%	10 173	52%	11 466	49%	125%	6%
Other	2 253	24%	2 804	24%	4 046	21%	5 255	22%	133%	6%
HBUs	756	8%	1 210	10%	2 166	11%	2 642	11%	249%	9%
UoTs	333	4%	512	4%	1 011	5%	1 676	7%	403%	11%
UNISA	994	10%	1 024	9%	2 117	11%	2 549	11%	156%	7%
Total	**9 434**	**100%**	**11 590**	**100%**	**19 513**	**100%**	**23 588**	**100%**	**150%**	**6%**

These changes, albeit from low baselines in the case of the HBUs and UoTs, have impacted the proportionate share of total enrolments in the different qualification levels across institutional types. PgD/H enrolments grew by an annual average of 3%, while in the HBUs and Unisa it grew by 5%, respectively, as against 3% in the RIUs, and decreased by 1% in the OUs and 3% in the UoTs. As a result, the HBUs share of PgD/H enrolments increased from 6% to 8% and Unisa's share from 28% to 41%, while the RIUs share remained within range (+/-1%) and the OUs share decreased from 30% to 20% and the UoTs from 6% to 3%. The reasons for the large increase at Unisa are not clear, although it is probably due to over-enrolment, which has been an ongoing issue at Unisa. The decrease in the OUs specifically, the comprehensive universities, and the UoTs is due to the discontinuation of the erstwhile Bachelor of Technology (B.Tech) degree, which the UoTs regarded as a postgraduate qualification, and its replacement by an advanced diploma, which is an undergraduate qualification in terms of the HEQSF (CHE, 2013a:42). This has reduced enrolments in the advanced diploma as, aside from the fact that it is a new qualification, students are not eligible for funding from the National Student Financial Aid Scheme (NSFAS) as it is a second qualification, and neither are students who enrol for a postgraduate diploma on completion of an advanced diploma, eligible for funding from the National Research Foundation (NRF).

Master's enrolments grew by an annual average of 2%, while in the HBUs and UoTs it grew by 4%, as against 2% in the RIUs and OUs and decreased by 2% at Unisa. As a result, the HBUs share of master's enrolments increased from 10% to 12% and the UoTs share from 7% to 10%, while the RIUs and the OUs share remained within range (+/-1%), and Unisa's share decreased from 13% to 8%. The reason for the latter is unclear.

Doctoral enrolments grew by an annual average of 6%, while in the HBUs and the UoTs it grew by 9% and 11%, respectively, albeit from a low base, as against 6% in the RIUs and the OUs, and 7% at Unisa. As a result, the HBUs share of doctoral enrolments increased from 8% to 11% and the UoTs share from 4% to 7%, while the OUs and Unisa's share remained within range (+/-1%-2%), and the RIUs share decreased from 54% to 49%.

2.3 Summary of Main Findings

- Enrolments increased by 53%; however, as a proportion of total enrolments, postgraduate enrolments remained unchanged at 14%.
- PgD/H enrolments increased by 50% but decreased as a proportion of total enrolments from 47% to 45%.
- Master's enrolments increased by 36% but decreased as a proportion of total enrolments from 45% to 40%.
- Doctoral enrolments increased by 150% and increased as a proportion of total enrolments from 10% to 16%.
- RIUs: enrolments increased by 54%, and the share of total enrolments remained unchanged at 41%.
- OUs: enrolments increased by 18%, and the share of total enrolments decreased from 25% to 19%.
- HBUs: enrolments increased by 102%, and the share of total enrolments increased from 8% to 10%.
- UoTs: enrolments increased by 53%, and the share of total enrolments remained unchanged at 6%.
- Unisa: enrolments increased by 77%, and the share of total enrolments increased from 20% to 23%.
- RIUs: PgD/H increased by 53%, and the share remained within range (+/-1%); master's increased by 37%, and the share remained within range (+/-1%); doctoral increased by 125%, and the share decreased from 54% to 49%.
- OUs: PgD/H decreased by 11% and the share decreased from 30% to 20%; master's decreased by 32%, and the share remained within range (+/-1%); doctoral decreased by 133%, and the share remained within range (+/-1%).
- HBUs: PgD/H increased by 104%, and the share increased from 6% to 8%; master's increased by 74% and the share increased from 10% to 12%; doctoral increased by 249%, and the share increased from 8% to 11%.
- UoTs: PgD/H decreased by 37% and the share decreased from 6% to 3%; master's increased by 91%, and the share increased from 7% to 10%; doctoral increased by 403%, and the share increased from 4% to 17%.
- Unisa: PgD/Hons increased 77%, and the share increased from 28% to 41%; master's decreased by -22% and the share decreased from 13% to 8%; doctoral increased by 156% and share remained within range (+/-1%).

3. Enrolments: Race, Qualification Level and Institutional Type

3.1 Race and Qualification Level

The growth in enrolments between 2005 and 2020, as Table 3 shows, was the result of a large increase in black enrolments (including from the RoA), which grew by 88% – from 64 247 to 120 808, an annual average growth rate of 4%, which was slightly higher than the overall annual growth rate of 3%. This was underpinned by a massive increase in black doctoral enrolments, which grew by 289% – from 4 601 to 17 915, an annual average growth rate of 10%.

The growth in black enrolments was mirrored by a decrease in white enrolments (including from the RoW) of 23% – from 34 282 to 26 523, an annual average decrease of 2%. However, white enrolments did grow at the doctoral level, albeit marginally, by 4% – from 4 601 to 4 986, an annual average increase of 1%. As a result, the demographic profile of postgraduate students has changed, with black students constituting 80% and white students 17% of the total headcount enrolments, as against 65% and 35%, respectively in 2005. This change in the demographic profile is reflected in all the qualification levels.

Table 3: Headcount Enrolments: Race (South Africa and International) and Qualification Level, 2005-2020

	2005	2010	2015	2020	% Change
Black					
PG/Honours	32 925	44 677	44 876	56 528	72%
Master's	26 721	30 251	38 696	46 365	74%
Doctoral	4 601	6 614	12 936	17 915	289%
Total: Black	**64 247**	**81 452**	**96 508**	**120 808**	**88%**
White					
PG/Honours	11 967	12 145	10 918	9 932	-17%
Master's	17 504	16 015	15 028	11 605	-33%
Doctoral	4 811	4 853	5 777	4 986	4%
Total: White	**34 382**	**33 013**	**31 723**	**26 523**	**-23%**
Unknown	96	1 301	4 514	3 937	4001%
Total	**98 725**	**115 766**	**132 745**	**151 268**	**53%**
Black as % of Total PG/Hons	73%	79%	80%	85%	
White as % of Total PG/Hons	27%	21%	20%	15%	
Black as % of Total Master's	60%	65%	72%	80%	
White as % of Total Master's	40%	35%	28%	20%	
Black as % of Total Doctoral	49%	58%	69%	78%	
White as % of Total Doctoral	51%	42%	31%	22%	
Black as % of Total PG	65%	70%	73%	80%	
White as % of Total PG	35%	29%	24%	17%	
Unknown as % of Total PG	0%	1%	3%	3%	

The change in the demographic profile is similar if only South African black and white enrolments are included, as Table 3a shows. Black enrolments increased by 82%, which was underpinned by a massive growth in doctoral enrolments of 230%, and white enrolments decreased by 23%. However, there were significant differences in the proportion of black and white enrolments at the master's and doctoral levels, which indicate continued inequalities. In 2020, as a proportion of total enrolments, black students constituted 78% of master's and 72% of doctoral enrolments and white students 22% and 28%,

respectively. However, as a proportion of total black and white enrolments, black students constituted 38% of master's and 10% of doctoral enrolments, and white students 44% and 17%, respectively.

Table 3a: Headcount Enrolments: Race (South Africa) and Qualification Level, 2005-2020

	2005	2010	2015	2020	% Change
Black					
PG/Honours	30 253	40 657	39 572	52 235	73%
Master's	21 936	23 503	29 493	38 411	75%
Doctoral	3 105	3 895	6 360	10 232	230%
Total: Black	**55 294**	**68 055**	**75 425**	**100 878**	**82%**
White					
PG/Honours	11 561	11 828	10 638	9 672	-16%
Master's	16 132	14 739	13 995	10 862	-33%
Doctoral	4 130	4 118	4 761	4 053	-2%
Total: White	**31 823**	**30 685**	**29 394**	**24 587**	**-23%**
Total B&W SA	**87 117**	**98 740**	**104 819**	**125 465**	**44%**
Unknown	96	1 301	4 514	3 937	4001%
Total	**87 213**	**100 041**	**109 333**	**129 402**	**48%**
Black as % of Total PG/Hons	72%	78%	79%	84%	
White as % of Total PG/Hons	28%	22%	21%	16%	
Black as % of Total Master's	58%	62%	68%	78%	
White as % of Total Master's	42%	38%	32%	22%	
Black as % of Total Doctoral	43%	49%	57%	72%	
White as % of Total Doctoral	57%	51%	43%	28%	
Black as % of Total PG	64%	69%	72%	80%	
White as % of Total PG	36%	31%	28%	20%	
Unknown as % of Total PG	0%	1%	3%	3%	
Black PG/H as % of Total Black PG	55%	60%	53%	52%	
Black Master's as % of Total Black PG	40%	34%	40%	38%	
Black Doctoral as % of Total Black PG	6%	6%	8%	10%	
White PG/H as % of Total White PG	36%	39%	36%	39%	
White Master's as % of Total White PG	51%	48%	48%	44%	
White Doctoral as % of Total White PG	13%	13%	16%	17%	

3.2 Race and Institutional Type

In line with the changed demographic profile, black students are in the majority in all the institutional types. However, significant inequalities continue to characterise the access of black students to the different institutional types, as Table 3b shows. As a proportion of total enrolments, black students are under-represented in the RIUs and the OUs. In the RIUs between 2005 and 2020, black enrolments increased from 57% to 70% and white enrolments decreased from 43% to 24%; however, as a proportion of the total black and white enrolments, black enrolments in the RIUs remained the same at 36%, while white enrolments increased from 51% to 56%.

In the OUs, black enrolments increased from 64% to 76% and white enrolments decreased from 36% to 24%; however, as a proportion of total black and white enrolments, black enrolments in the OUs decreased from 25% to 18%, while white enrolments remained

within range (+/-1%).

The proportionately larger number of white students in the RIUs and the OUs, which is similar to the trend at the undergraduate level, reflects the differential access of black and white students to good quality schooling, which impacts access to the RIUs and the OUs as they have higher minimum entry requirements.

In the other institutional types, except for the HBUs, white enrolments decreased both in overall terms and as a proportion of total white enrolments. In the HBUs, although white enrolments decreased from 7% to 4%, white enrolments as a proportion of total white enrolments remained the same at 2%. This was due to an increase in white enrolments in two HBUs, namely, SMU and UWC – from 70% in 2005 to 80% in 2020. The two institutions have a large number of white postgraduate students because both offer medical and dental programmes, which are in high demand.

Table 3b: Headcount Enrolments: Race and Institutional Type, 2005-2020

2005								
	T	% T	TB	TW	% B	% W	B % T PG*	W % T PG*
RIU	40 403	41%	22 856	17 456	57%	43%	36%	51%
Other	24 731	25%	15 710	8 978	64%	36%	25%	26%
HBUs	7 809	8%	7 281	511	93%	7%	11%	2%
UoTs	6 134	6%	5 021	1 106	82%	18%	8%	3%
UNISA	19 648	20%	13 379	6 231	68%	32%	21%	18%
Total	**98 725**	**100%**	**64 247**	**34 282**	**65%**	**35%**	**100%**	**100%**

2020								
	T	% T	TB	TW	% B	% W	B % TPG*	W % T PG*
RIU	62 142	41%	43 833	14 739	71%	24%	36%	56%
Other	29 301	19%	22 203	7 057	76%	24%	18%	27%
HBUs	15 743	10%	15 058	563	96%	4%	13%	2%
UoTs	9 376	6%	8 721	626	93%	7%	7%	2%
UNISA	34 706	23%	30 993	3 538	89%	10%	26%	13%
Total	**151 268**	**100**	**120 808**	**26 523**	**80%**	**18%**	**100%**	**100%**

* Black as percentage of total black postgraduate enrolments; and white as percentage of total white postgraduate enrolments.

3.3 Race, Qualification Level and Institutional Type

The inequalities in access to different institutional types is also reflected in the access of black students to the different qualification levels in the different institutional types, in particular in the RIUs and the OUs. As Table 3c shows, between 2005 and 2020, black enrolments in PgD/H in the RIUs increased from 67% to 74% and white enrolments decreased from 33% to 22%; however, as a proportion of total black and white enrolments in PgD/H programmes, black enrolments remained at 27%, while white enrolments increased from 37% to 46%. Similarly, in the OUs, black enrolments increased from 75% to 78%, while white enrolments decreased from 25% to 22%; however, as a proportion of total black and white enrolments in PgD/H programmes, black enrolments in the OUs decreased from 30% to 16%, while white enrolments remained within range (+/-1%).

Table 3c: PgD/H Headcount Enrolments: Race and Institutional Type, 2005-2020

	2005							2020						
	B	% TB	W	% TW	T	% B	% W	B	% TB	W	% W	T	% B	% W
RIU	9 036	27%	4 469	37%	13 515	67%	33%	15 247	27%	4 558	46%	20 737	74%	22%
Other	9 934	30%	3 273	27%	13 238	75%	25%	9 271	16%	2 606	26%	11 899	78%	22%
HBUs	2 698	8%	87	1%	2 795	97%	3%	5 565	10%	119	1%	5 701	98%	2%
UoTs	2 458	7%	187	2%	2 645	93%	7%	1 619	3%	40	0%	1 659	98%	2%
Unisa	8 799	27%	3 951	33%	12 777	69%	31%	24 826	44%	2 609	26%	27 552	90%	9%
Total	**32 925**	**100%**	**11 967**	**100%**	**44 970**	**73%**	**27%**	**56 528**	**100%**	**9 932**	**100%**	**67 548**	**84%**	**15%**

In the case of master's enrolments, as Table 3d shows, between 2005 and 2020, black enrolments in the RIUs increased from 52% to 69% and white enrolments decreased from 48% to 24%; however, as a proportion of total black and white enrolments in master's programmes, black enrolments increased from 42% to 44%, while white enrolments increased from 60% to 63%. Similarly, in the OUs, black enrolments increased from 53% to 76% and white enrolments decreased from 25% to 22%; however, as a proportion of total black and white enrolments in master's programmes, both black and white enrolments remained within range (+/-1%).

In the other institutional types, except for the HBUs, white enrolments decreased both overall and as a proportion of total white enrolments. However, in the HBUs, although white students as a proportion of total white enrolments decreased from 7% to 4%, white enrolments as a proportion of total white master's enrolments increased from 2% to 3%, which, as indicated above, is due to the larger than usual number of white enrolments at SMU and UWC.

Table 3d: Master's Headcount Enrolments: Race and Institutional Type, 2005-2020

	2005							2020						
	B	% TB	W	% TW	T	% B	% W	B	% TB	W	% W	T	% B	% W
RIU	11 312	42%	10 409	60%	21 790	52%	48%	20 564	44%	7 315	63%	29 939	69%	24%
Other	4 938	19%	4 293	24%	9 240	53%	46%	9 175	20%	2 959	25%	12 147	76%	24%
HBUs	3 953	15%	301	2%	4 258	93%	7%	7 030	15%	312	3%	7 400	95%	4%
UoTs	2 410	9%	739	4%	3 156	76%	23%	5 584	12%	449	4%	6 041	92%	7%
Unisa	4 108	15%	1 762	10%	5 877	70%	30%	4 012	9%	570	5%	4 605	87%	12%
Total	**26 721**	**100%**	**17 504**	**100%**	**44 321**	**60%**	**39%**	**46 365**	**100%**	**11 605**	**100%**	**60 132**	**77%**	**19%**

In the case of doctoral enrolments, as Table 3e shows, between 2005 and 2020, black enrolments in the RIUs increased from 49% to 70% and white enrolments decreased from 51% to 25%; however, as a proportion of total black and white enrolments in doctoral programmes, black enrolments in the RIUs decreased from 55% to 45%, while white enrolments increased from 54% to 58%. Similarly, in the OUs, black enrolments increased from 37% to 71% and white enrolments decreased from 63% to 28%; however, as a proportion of total black and white enrolments in doctoral programmes, black enrolments in the OUs increased from 18% to 21%, while white enrolments remained within range (+/-1%).

In the other institutional types, unlike with PgD/H and master's programmes, the changes in doctoral enrolments were starker. In the HBUs, black enrolments, increased from 83% to 91% and white enrolments decreased from 16% to 8%; however, black and white enrolments as a proportion of total black and white enrolments remained the same at 3%. In the UoTs, on the other hand, black enrolments increased from 46% to 91% and white enrolments decreased from 54% to 8%; however, as a proportion of total black and white enrolments in doctoral programmes, black enrolments increased from 3% to 19%, and white enrolments remained within range (+/-1%). At Unisa, black enrolments increased from

47% to 85% and white enrolments decreased from 52% to 14%; however, as a proportion of total black and white enrolments in doctoral programmes, black enrolments increased marginally from 10% to 12%, and white enrolments decreased from 11% to 7%.

Table 3e: Doctoral Headcount Enrolments: Race and Institutional Type, 2005-2020

	2005							2020						
	B	% TB	W	% TW	T	% B	% W	B	% TB	W	% W	T	% B	% W
RIU	2 508	55%	2 578	54%	5 098	49%	51%	8 022	45%	2 866	57%	11 466	70%	25%
Other	838	18%	1 412	29%	2 253	37%	63%	3 757	21%	1 492	30%	5 255	71%	28%
HBUs	630	14%	123	3%	756	83%	16%	2 463	14%	132	3%	2 642	93%	5%
UoTs	153	3%	180	4%	333	46%	54%	1 518	8%	137	3%	1 676	91%	8%
Unisa	472	10%	518	11%	994	47%	52%	2 155	12%	359	7%	2 549	85%	14%
Total	**4 601**	**100%**	**4 811**	**100%**	**9 434**	**49%**	**51%**	**17 915**	**100%**	**4 986**	**100%**	**23 588**	**76%**	**21%**

The overall changes in black and white and total enrolments by qualification level and institutional type are summarised in Table 3f below.

Table 3f: Change in Headcount Enrolments: Race, Qualification Level and institutional Type, 2005-2020

	PG Dip/Hons			Master's			Doctoral		
	%C B	%C W	%C T	%C B	%C W	%C T	%C B	%C W	%C T
RIU	69%	2%	53%	82%	-30%	37%	220%	11%	125%
Other	-7%	-20%	-10%	86%	-31%	31%	348%	6%	133%
HBUs	106%	37%	104%	78%	4%	74%	291%	7%	249%
UoTs	-34%	-79%	-37%	132%	-39%	91%	892%	-24%	403%
UNISA	182%	-34%	116%	-2%	-68%	-22%	357%	-31%	156%
Total	**72%**	**-17%**	**50%**	**74%**	**-34%**	**36%**	**289%**	**4%**	**150%**

3.4 Summary of Main Findings

- Black enrolments increased by 82% (88% including RoA); and white enrolments decreased by 23% (including RoW).
- The black share of total enrolments increased from 64% to 80%, and the white share decreased from 35% to 20%.
- Black PgD/H, master's, and doctoral enrolments increased by 73%, 75%, and 230% (289% including RoA), respectively, and white enrolments decreased by 16%, 33%, and 2% (increased by 4% if RoW included), respectively.
- The black share of PgD/H enrolments increased from 72% to 84%, master's from 58% (60% if RoA included) to 78%, and doctoral from 43% (49% including RoA) to 72% (78% including RoA); and the white share (including RoW) decreased from 28% to 16%; 42% to 22% and 57% to 28%, respectively.
- As a proportion of total black and white enrolments, blacks constituted 52% of PgD/H, 38% of master's, and 10% of doctoral enrolments, and whites constituted 39%, 44%, and 17%, respectively.

4. Headcount Enrolments: Gender, Qualification Level and Institutional Type

4.1 Enrolments: Gender and Qualification Level

The growth in enrolments between 2005 and 2020, as with race, was the result, as Table 4 shows, of a large increase in female enrolments, which grew by 68%, from 51 144 to 86 047, an annual average growth rate of 4% – which was slightly higher than the overall annual growth rate of 3%. This was underpinned by a massive increase in female doctoral enrolments, which grew by 190%, from 3 905 to 11 304, an annual average growth rate of 7%. There was also substantial growth in female enrolments at the PgD/H level, which grew by 55%, from 27 112 to 47 012, an annual average growth rate of 4% and at the master's level, which grew by 63%, from 20 127 to 33 026, an annual average growth rate of 3%.

In contrast, the growth rate in male enrolments was half that of female enrolments, from 47 851 to 64 831, or 36%, an annual average increase of 2%. This was also underpinned by a substantive increase in male doctoral enrolments, which grew by 122% – from 5 529 to 12 282, an annual average growth rate of 6%. However, unlike female enrolments, the growth in PgD/H and master's enrolments was much lower. PgD/H enrolments grew by 43%, from 17 858 to 25 510, an annual average growth rate of 2% – while master's enrolments grew by 12%, from 24 194 to 27 039, an annual average growth rate of 1%.

As a result, the gender profile of postgraduate students has changed, with female students constituting 57% and male students 43% of the total headcount enrolments in 2020, as against 52% and 48%, respectively, in 2005. However, there are important differences across the different qualification levels. There are more females at the PgD/H and master's levels (66% and 55%, respectively), but at the doctoral level, males are in the majority, albeit marginally – at 52%. However, based on current trends, this is likely to change in favour of females in the future.

The change is largely the result of the increase in the undergraduate pipeline – there are more females enrolled, and they perform better than males at the undergraduate level (Essop, 2020: 25 & 33). This is consistent with and reflects the performance of females in schools, which continues into higher education. As a study of the 2008 matriculation cohort by Spaull and Van Broekhuizen found:

> …relative to their male counterparts 27% more females qualified for university, 34% more enrolled in university, 56% more completed any undergraduate qualification and 66% more attained a bachelor's degree, this despite there being roughly equal numbers of boys and girls at the start of school (quoted in Spaull and Makaluza, 2019:217).

Table 4: Headcount Enrolments: Gender and Qualification Level, 2005-2020

	2005	2010	2015	2020	% Change
Female					
PG/Honours	27 112	36 431	36 091	42 027	55%
Master's	20 127	22 340	28 077	33 076	64%
Doctoral	3 905	4 888	8 649	11 304	190%
Total Female	**51 144**	**63 659**	**72 817**	**86 047**	**68%**
Male					
PG/Honours	17 858	21 046	21 595	25 510	43%
Master's	24 194	24 356	27 467	27 039	12%
Doctoral	5 529	6 700	10 862	12 282	122%
Total Male	**47 581**	**52 102**	**59 924**	**64 831**	**36%**

	2005	2010	2015	2020	% Change
Unknown	0	5	5	390	
Total	**98 725**	**115 766**	**132 745**	**151 268**	**53%**
Female as % of Total PG/Hons	60%	63%	63%	62%	
Male as % of Total PG/Hons	40%	37%	37%	38%	
Female as % of Master's	45%	48%	51%	55%	
Male as % of Master's	55%	52%	49%	45%	
Female as % of Total Doctoral	41%	42%	44%	48%	
Male as % of Total Doctoral	59%	58%	56%	52%	
Female as % of Total PG	52%	55%	55%	57%	
Male as % of Total PG	48%	45%	45%	43%	
Unknown as % of Total PG	0	0	0	0	

4.2 Gender and Institutional Type

In line with the changing gender profile, female enrolments have grown, and female students are in the majority in all the institutional types, except the UoTs, where female and male enrolments are close to parity, as Table 4a shows. Similarly, unlike the inequalities that characterise the access of black students, although female enrolments as a proportion of total female and male enrolments are lower in all institutional types, the difference is marginal – between 1%-3%, except in the HBUs and Unisa. In the HBUs, females constitute a marginally higher proportion – 11% as against 8% for males, while at Unisa it is significantly higher – 26% as against 19% for males. The higher proportion of female students at Unisa suggests that this may be the result of the limited support for women to study full-time given their domestic and child-bearing roles.

Table 4a: Headcount Enrolments: Gender and Institutional Type, 2005-2020

2005								
	T	% T	TF	TM	% F	% M	F %TPG*	M %TPG*
RIU	40 403	41%	19 278	21 125	48%	52%	38%	44%
Other	24 731	25%	13 782	10 949	56%	44%	27%	23%
HBUs	7 809	8%	3 959	3 850	51%	49%	7%	8%
UoTs	6 134	6%	3 187	2 947	52%	48%	6%	6%
UNISA	19 648	20%	10 938	8 710	56%	44%	21%	18%
Total	98 725	100%	51 234	47 581	52%	48%	100%	100%

2020								
	T	% T	TF	TM	% F	% M	F %TPG*	M %TPG*
RIU	62 142	42%	34 331	27 781	55%	45%	40%	43%
Other	29 301	19%	16 122	13 179	55%	45%	19%	20%
HBUs	15 743	10%	9 016	6 727	57%	43%	10%	8%
UoTs	9 376	6%	4 744	4 632	51%	49%	5%	7%
UNISA	34 706	23%	22 194	12 512	64%	36%	26%	19%
Total	151 268	100%	86 407	64 831	57%	43%	100%	100%

* Female as percentage of total female pos graduate enrolments; and male as percentage of total male postgraduate enrolments.

4.3 Gender, Qualification Level and Institutional Type

The access of female students to the different qualification levels in the different institutional types, unlike the inequalities that characterise the access of black students, is mixed. As Table 4b shows, between 2005 and 2020, in the RIUs in PgD/H programmes, female enrolments increased from 55% to 58% and male enrolments decreased from 45% to 42%; however, as a proportion of total female and male enrolments in PgD/H programmes, female enrolments in the RIUs increased from 27% to 29%, while male enrolments remained the same at 34%. In the OUs female enrolments in PgD/H programmes decreased from 66% to 60% and male enrolments increased from 34% to 40%; however, as a proportion of total female and male enrolments in PgD/H programmes, female enrolments in the OUs decreased from 32% to 17%, while male enrolments decreased from 26% to 19%.

In the HBUs, female enrolments in PgD/H programmes increased from 55% to 59% and male enrolments decreased from 45% to 41%; however, as a proportion of total female and male enrolments in PgD/H programmes, female enrolments in the HBUs increased from 6% to 8%, while male enrolments increased from 7% to 9%. In the UoTs, female enrolments in PgD/H programmes decreased from 67% to 57%, while male enrolments increased from 33% to 43%; however, as a proportion of total female and male enrolments in PgD/H programmes, both decreased – females from 7% to 2% and males from 5% to 3%. At Unisa, female enrolments in PgD/H programmes increased from 60% to 68%, and male enrolments decreased from 40% to 32%; however, as a proportion of total female and male enrolments in PgD/H programmes, female enrolments at Unisa increased from 28% to 44% and males from 28% to 35%. This suggests that at this level, which is largely pursued for career opportunities, women, as indicated above, may be studying at a distance given their greater domestic and child-bearing roles.

Table 4b: PgD/H Headcount Enrolments: Gender and Institutional Type, 2005-2020

	2005							2020						
	F	%TF	M	% TM	T	% F	% M	F	%TF	M	% TM	T	% F	% M
RIU	7 430	27%	6 085	34%	13 515	55%	45%	11 984	29%	8 742	34%	20 737	58%	42%
Other	8 676	32%	4 562	26%	13 238	66%	34%	7 084	17%	4 815	19%	11 899	60%	40%
HBUs	1 532	6%	1 263	7%	2 795	55%	45%	3 389	8%	2 312	9%	5 701	59%	41%
UoTs	1 776	7%	869	5%	2 645	67%	33%	945	2%	714	3%	1 659	57%	43%
Unisa	7 698	28%	5 079	28%	12 777	60%	40%	18 625	44%	8 927	35%	27 552	68%	32%
Total	**27 112**	**100%**	**17 858**	**100%**	**44 970**	**60%**	**40%**	**42 027**	**100%**	**25 510**	**100%**	**67 548**	**62%**	**38%**

In the case of master's enrolments, as Table 4c shows, between 2005 and 2020, females were in the majority – between 55%-58% in all the institutional types, except the UoTs where female enrolments were lower – 52%. Furthermore, as a proportion of total enrolments, female and male enrolments were close to parity, and where there were differentials, these were within a 1%-2% range.

Table 4c: Master's Headcount Enrolments: Gender and Institutional Type, 2005-2020

	2005							2020						
F	%TF	M	% TM	T	% F	% M	F	%TF	M	% TM	T	% F	% M	F
RIU	9 737	48%	12 053	50%	21 790	45%	55%	16 533	50%	13 389	49%	29 939	55%	45%
Other	4 140	21%	5 100	21%	9 240	45%	55%	6 572	29%	5 575	21%	12 147	54%	46%
HBUs	2 094	10%	2 164	9%	4 258	49%	51%	4 319	13%	3 081	11%	7 400	58%	42%
UoTs	1 313	7%	1 843	7%	3 156	42%	58%	3 117	9%	2 924	11%	6 041	52%	48%
Unisa	2 843	14%	3 034	13%	5 877	48%	52%	2 535	8%	2 070	8%	4 605	55%	45%
Total	**20 127**	**100%**	**24 194**	**100%**	**44 321**	**45%**	**55%**	**33 076**	**100%**	**27 039**	**100%**	**60 132**	**55%**	**45%**

In the case of doctoral enrolments, as Table 4d shows, between 2005 and 2020, in the RIUs female enrolments increased from 41% to 51% and male enrolments decreased from 59% to 49%; however, as a proportion of total female and male enrolments in doctoral programmes, both female and male enrolments decreased from 54% to 51% and 54% to 46%, respectively. In the OUs, female enrolments increased from 43% to 47% and male enrolments decreased from 57% to 53%; however, as a proportion of total female and male enrolments in doctoral programmes, female enrolments in the OUs decreased from 25% to 23% and male enrolments increased marginally from 22% to 23%.

In the HBUs, female enrolments increased from 44% to 50% and male enrolments decreased from 56% to 50%; however, as a proportion of total female and male enrolments, they were close to parity – female enrolments increased from 9% to 12%, while male enrolments increased from 8% to 11%. In the UoTs, female students increased from 29% to 41% and male students decreased from 71% to 59%; however, as a proportion of total female and male enrolments in doctoral programmes, both increased – females from 3% to 6% and males from 4% to 8%. At Unisa, the changes were marginal – female enrolments decreased from 60% to 59% and male enrolments increased from 40% to 41%; however, as a proportion of total female and male enrolments in doctoral programmes, female enrolments at Unisa increased from 11% to 12% and males decreased from 10% to 9%.

Table 4d: Doctoral Headcount Enrolments: Gender and Institutional Type, 2005-2020

	2005							2020						
	F	%TF	M	% TM	T	% F	% M	F	%TF	M	% TM	T	% F	% M
RIU	2 111	54%	2 987	54%	5 098	41%	59%	5 814	52%	5 650	46%	11 466	51%	49%
Other	966	25%	1 287	23%	2 253	43%	57%	2 466	22%	2 789	23%	5 255	47%	53%
HBUs	333	8%	423	7%	756	44%	56%	1 308	12%	1 334	11%	2 642	50%	50%
UoTs	98	3%	235	4%	333	29%	71%	682	6%	994	8%	1 676	41%	59%
Unisa	397	10%	597	11%	994	40%	60%	1 034	9%	1 515	12%	2 549	41%	59%
Total	**3 905**	**100%**	**5 529**	**100%**	**9 434**	**41%**	**59%**	**11 304**	**100%**	**12 282**	**100%**	**23 588**	**48%**	**52%**

The overall changes in female and male and total enrolments by qualification level and institutional type are summarised in Table 5f below.

Table 4e: Changes in Headcount Enrolments: Gender, Qualification Level and Institutional Type, 2005-2020

	PG Dip/Hons			Master's			Doctoral		
	%C F	%C M	%C T	%C F	%C M	%C T	%C F	%C M	%C T
RIU	61%	44%	53%	70%	11%	37%	175%	89%	125%
Other	-18%	6%	-10%	59%	9%	31%	155%	117%	133%
HBUs	121%	83%	104%	106%	42%	74%	293%	215%	249%
UoTs	-47%	-18%	-37%	137%	59%	91%	596%	323%	403%
UNISA	142%	76%	116%	-11%	-32%	-22%	160%	154%	156%
Total	**55%**	**43%**	**50%**	**64%**	**12%**	**36%**	**189%**	**122%**	**150%**

4.4 Summary of Main Findings

- Female and male enrolments increased by 68% and 36%, respectively.
- The female share of total enrolments increased from 52% to 57% and the male share decreased from 48% to 43%.
- Female PgD/H, master's and doctoral enrolments

increased by 55%; 64%, and 190%, respectively; and male enrolments increased by 43%, 12%, and 122%, respectively.

- The female share of PgD/H enrolments remained within range (+/-1-2%); master's and doctoral enrolments increased from 45% to 55% and 41% to 48%, respectively; and the male share of PgD/H enrolments remained within range (+/-1-2%) and the master's and doctoral shares decreased from 55% to 45% and 59% to 52%, respectively.
- As a proportion of total female and male enrolments, females constituted 62% of PgD/H, 55% of master's and 48% of doctoral enrolments; and males constituted 38%; 45%; and 52%, respectively.

5. Enrolments: Nationality

5.1 Nationality and Qualification Level

There has been a steady growth in international enrolments, which increased by 92%, from 11 412 to 21 866 between 2005 and 2020, an annual average growth rate of 4%, as Table 5 shows. This growth was driven by increased enrolments from the RoA (including SADC), which grew by 123% from 8 983 to 19 930, an annual average growth rate of 6%. In comparison, enrolments from the RoW decreased by 24% from 2 459 to 1 936, an annual average decrease of 2%.

The increased enrolments from the RoA (including SADC) were across all qualification levels. However, doctoral enrolments, which increased by 414% from 1 496 to 7 683, an annual average growth rate of 12%, far outstripped the increases in PgD/H and master's enrolments, which increased by 61% and 66%, an annual average growth rate of 3%, respectively. There are also important differences in terms of the countries of origin of the students from the RoA and their distribution across postgraduate qualifications. The majority of students come from SADC – 67% in 2020, as against 33% from non-SADC countries. However, 71% of SADC students are enrolled in PgD/H and master's programmes – 28% and 43%, respectively, and 28% in doctoral programmes, while 42% of students from the non-SADC countries are enrolled in PgD/H and master's programmes – 9% and 33%, respectively, and 58% in doctoral programmes. The difference in enrolments in the different qualification levels between SADC and non-SADC enrolments suggests that there are fewer opportunities for postgraduate study at all levels within SADC, while in the RoA this is largely limited to doctoral study. This is most likely due to the fact that universities in SADC, unlike the RoA, are relatively young.

Furthermore, the SADC non-doctoral enrolments were evenly split between PgD/H and master's programmes – 39% and 41%, respectively, while the majority of non-SADC enrolments were in master's programmes – 78% and 22% in PgD/H programmes. This suggests that students from non-SADC countries enrol in master's programmes as a stepping stone for enrolling in doctoral programmes.

The overall increase notwithstanding, it should be noted that there has been a decline in enrolments from the RoA (including SADC) between 2015 and 2020 in PgD/H programmes – from 5 304 to 4 293 or 19%, and master's programmes – from 9 203 to 7 954 or 17%. This is probably due to a combination of the impact of "Rhodes Must Fall" and "Fees Must Fall" protests and the COVID-19 pandemic, which would have had a greater impact on taught programmes than research programmes, which is indicated by the fact that doctoral enrolments increased – from 6 576 to 7 683 or 17% between 2015 and 2020. This was smaller than the 82% increase between 2005 and 2010, and the massive 142% increase between 2010 and 2015 from the RoA, and suggests that institutional capacity at the doctoral level may be at the maximum, especially given a similar trend in South African doctoral enrolments, which increased by 47% between 2005 and 2010 and by 26% between 2015 and 2020.

Table 5: Headcount Enrolments: Nationality and Qualification Level, 2005-2020

Country	2005	2010	2015	2020	% Change
SADC					
PG/Honours	2 353	3 492	4 590	3 678	56%
Master's	3 170	4 604	6 370	5 812	83%
Doctoral	769	1 460	3 301	3 895	407%
Total: SADC	**6 292**	**9 556**	**14 261**	**13 385**	**113%**
RoA					
PG/Honours	319	528	714	615	93%
Master's	1 615	2 144	2 883	2 142	33%
Doctoral	727	1 259	3 275	3 788	421%
Total: RoA	**2 661**	**3 931**	**6 822**	**6 545**	**146%**
RoA & SADC					
PG/Honours	2 672	4 020	5 304	4 293	61%
Master's	4 785	6 748	9 203	7 954	66%
Doctoral	1 496	2 719	6 576	7 683	414%
Total: RoA & SADC	**8 953**	**13 487**	**21 083**	**19 930**	**123%**
RoW					
PG/Honours	406	317	280	260	-36%
Master's	1 372	1 276	1 033	743	-46%
Doctoral	681	735	1 016	933	37%
Total: RoW	**2 459**	**2 328**	**2 329**	**1 936**	**-24%**
Total: International	**11 412**	**15 815**	**23 412**	**21 866**	**92%**
South Africa					
PG/Honours	41 892	53 140	52 102	62 995	50%
Master's	38 164	38 675	45 310	51 435	35%
Doctoral	7 257	8 136	11 921	14 972	106%
Total: South Africa	**87 313**	**99 951**	**109 333**	**129 402**	**48%**
Total: All Nationalities	**98 725**	**115 766**	**132 745**	**151 268**	**51%**
SADC % of Total Postgraduate	6%	8%	11%	9%	
RoA % of Total Postgraduate	3%	3%	5%	4%	
RoW % of Total Postgraduate	3%	2%	2%	1%	
International % of Total Postgraduate	12%	14%	18%	15%	
South Africa % of Total Postgraduate	88%	86%	82%	85%	
RoA & SADC as % of Total PG/Hons	6%	7%	9%	6%	
RoW as % of Total PG/Hons	1%	0%	1%	0%	
South Africa as % of Total PG/Hons	93%	93%	90%	93%	
RoA & SADC % of Total Master's	11%	14%	17%	13%	
RoW as % of Total Master's	3%	3%	2%	1%	
South Africa as % of Total Master's	86%	83%	82%	86%	
RoA & SADC as % of Total Doctoral	16%	24%	34%	33%	
RoW as % of Total Doctoral	7%	6%	5%	4%	
South Africa as % of Total Doctoral	77%	70%	61%	63%	

As a result of these changes, South African enrolments as a proportion of total headcount enrolments decreased from 88% to 85% between 2005 and 2020. This is due to a decrease in the proportion of doctoral enrolments from 77% to 64%, while PgD/H and master's enrolments remained stable at 93% and 86%, respectively, which indicates that these qualifications play an important role in employment in professional careers.

The proportionate decline in South African doctoral enrolments does not signal that doctoral enrolments are being "skewed" in favour of international students at the expense of black South Africans. This is indicated by the fact that between 2005 and 2020, black South African doctoral enrolments increased by 230%, from 3 105 to 10 232 – and overall, black and white enrolments increased by 97%, from 7 235 to 14 285 (see Table 3b above). However, international doctoral enrolments increased by 296%, from 2 177 to 8 616 – which was underpinned by a massive growth in doctoral enrolments from the RoA, which increased by 414%, from 1 496 to 7 683, as Table 5 shows. This suggests that the institutional capacity for doctoral enrolments was filled by increased demand from the RoA and not from South Africa, which is due both to the cheaper cost of studying in South Africa than in Europe, the United Kingdom, and North America, and the reputation of the RIUs, in particular, where the majority of students from the RoA are enrolled.

The institutional benefits of recruiting students from the RoA include maximising capacity and the resultant increase in subsidy; the majority of students study full-time and are funded; and as several postgraduate coordinators mentioned, they are better prepared in terms of foundational skills and thus able to complete within regulation time. This should not be interpreted, and there is no evidence to suggest that institutions deliberately favour recruiting students from the RoA instead of South Africa. There are a range of challenges and constraints, including but not only funding, as discussed in Section 8 below, which impact on and limit the pursuit of doctoral study by black South Africans. In the absence of interventions to address these challenges and constraints, institutions have little choice in their recruitment strategies, as filling the available places is critical to ensuring the sustainability of their doctoral programmes.

The increase in enrolments at the doctoral level from the RoA is to be welcomed. This not only benefits and contributes to the development of the region and continent but also benefits South Africa's social and economic development as many of the graduates remain in South Africa and contribute to the renewal and transformation of the academic profession and the research and innovation system in particular, and the development of the economy in general. This is indicated by a survey of doctoral graduates, both South African and non-South African, by Mouton et.al., which found that:

> Combining the number of SA nationals who remained in the country after graduating with the numbers of students from the rest of Africa and the rest of the world, South Africa's net gain in terms of non-South Africans finding employment in the country increased by nearly 5 percentage points over the past 19 years. Of the 3 770 graduates in our sample who were born in South Africa, 372 or 9,2% left the country after graduation. At the same time, of the 1 812 graduates from outside the country in our sample, 633 (or 35%) remained in the country. This translates into a net brain gain of 261 graduates or 4,6% of our sample. If we average this out over the past 19 years, it means that South Africa has a net gain of 1 400 doctoral graduates from other countries who remained in the country (after subtracting those SA nationals who left the country) (Mouton, et.al.: 2022: xxvi)

The benefits of recruiting international students notwithstanding, it remains imperative to increase the enrolment of South Africans in general and black South Africans in particular, in doctoral programmes.

The blockages in addressing this include low enrolment and progression rates and long completion rates. As the *Report of the Ministerial Task Team on the Recruitment, Retention and Progression of Black South African Academics* indicates, the "pipeline

decreases as students progress from undergraduate to postgraduate studies, and through the various levels of postgraduate studies programmes" (DHET, 2019: 13). This is illustrated by the progression and graduation rate of the first-time entering honours cohort in 2014 – after 7 years, 78% graduated and 50% of the graduates enrolled for a master's degree; 12% of the latter graduated after 6 years and 9% of the graduates enrolled for a doctoral degree with 1% graduating after 5 years (see Table A2 in Appendix Two). The fact that the progression rate from honours to master's is higher than that from master's to the doctoral level confirms the point that PgD/H and master's programmes are important for employment and career opportunities, in particular, in professional occupations.

The main constraint in attracting South African students into doctoral programmes and for the low progression and long completion rates is financial in terms of the quantum of funds available for bursary support. This is indicated by the fact that in 2022, out of the 13 519 eligible applicants for the different postgraduate qualifications, the NRF was only able to fund 4 898, or 36%. The funding shortfall to cover the remainder – 8 621 or 64% – was R1.3b. And significantly, of those not funded, 78% were South African citizens, 8% were permanent residents, and 14% were international students, while 72% were black and 61% were female (NRF e-mail communication).

Furthermore, the 36% of eligible students funded were 6% less than the 42% of eligible students funded in 2021 (NRF, 2021: 27), which was the result of increasing the value of the annual bursary. The full cost of study (FCS) bursary, which is based on either financial need – family income of less than R350 000 per annum, or exceptional academic achievement (an average of 75% or above), was increased from R60 000 to R148 715 for honours, R90 000 to R166 713 for master's and R120 000 to R174 713 for doctorates. Similarly, the partial cost of study (PCS) bursary, which is for students who are neither financially needy or exceptional academic achievers, was increased from R30 000 to R90 000 for honours, R50 000 to R100 000 for master's and R70 000 to R90 000 for doctorates (NRF, 2021: 33). Moreover, the 42% of postgraduates supported by the NRF in 2021 represented a paltry 3% of total enrolments (NRF, 2021: 27). In relation to doctoral students, 73% of the eligible students were funded in 2021.

The lack of access to funding results in the majority of students studying part-time. As Mouton et.al. (2022: xix & xx) found, 60% of South African doctoral students study part-time and 40% study full-time and this has "remained nearly unchanged over the past two decades, suggesting that this is a structural feature of the South African doctoral system". And the breakdown of the funding sources of the students surveyed is instructive: 33% were self-financing either through loans or family support and mainly studied part-time; 30% had institutional funding and were academic staff; 22% were funded by the NRF and mainly studied full-time; 8% were funded by international organisations and 6% by employers. Furthermore, 19% of the full-time students who were self-financing were black and 60% were white, which indicates differential access to family funding linked to continued inequalities in wealth between black and white South Africans.

The result of the large number of students studying part-time is that the "typical study trajectory from a completed bachelors to a completed doctoral degree can be anywhere between 12 (minimum period) and 25 years (average maximum)" (Cloete et.al, 2015: 75). This increases the average age of doctoral graduates, which has "remained constant at 41 to 42 years old" in the past two decades, whereas the average age of completion of full-time students was 36 (Mouton, et.al., 2022: 35). In 2020, only 16% were under 30 – the average age of doctoral graduates for students who pursue postgraduate study uninterrupted after completing their undergraduate degree, while the majority – 66% – were between 31 and 50 years old. (see Table A3 in Appendix Two). And this has not changed since 2010, aside from a small improvement in doctoral graduates under 30 – from 12% to 16% (NRF, 2019: 23).

It is likely that the majority of graduates over 31 years old comprise academics pursuing doctoral study given the pressure on institutions to increase the number of staff with doctoral qualifications to enable meeting the NDP target of 75%, together with individuals pursuing doctoral study for self-enrichment or promotion purposes. This is illustrated by the fact that between 2005 and 2020, the number of permanent staff with doctorates in higher education increased from 4 631 to 6 535 or by 116% – an annual average growth rate of 5%. (see Table A4 in Appendix Two). As a result, the number of permanent staff with doctorates increased from 30% to 49%. Assuming the annual average growth rate remains the same and there is no increase in the number of permanent staff employed, the percentage of staff with doctorates will increase to 60% by 2030, which is well below the 75% NDP target.

The target is based on the assumption that the "most important factor that determines quality is the qualifications of staff" (NPC, 2012: 318). This assumes, as Cloete points out, that quality both in terms of supervisory capacity and research productivity, as well as student performance at the undergraduate level is dependent on staff holding doctorates (Cloete, 2015:1). There is no evidence to support this. In fact, as far as student performance at the undergraduate level is concerned, it is the scholarship of teaching and learning that is critical, that is, the mastery of the discipline and the ability to teach/transmit knowledge in an accessible manner, taking into account the social and educational background of students (Essop, 2020: 40). Similarly, in practice-based professional disciplines such as accounting, law, journalism and the fine arts, as Webbstock and Seehole (2016: 311) argue, "industrial or professional expertise is more apposite than deep academic disciplinary knowledge". Furthermore, as Badat argues, a doctorate in and of itself does not signal that the quality of supervision would improve. The latter requires that:

> Attention has to be given to equipping academics to supervise effectively through formal development programmes, mentoring and experience in co-supervising alongside experienced supervisors. More effective supervision could contribute to improving current poor postgraduate throughput and graduation rates (Badat, 219: 266 - 267)

The NDP target is a thumb-suck and not evidence-based. In fact, as Essop (2020: 41) points out, "higher education systems in developed countries would fall short in meeting the NDP target" – in 2019, 66% of academic staff in the United Kingdom and 68% in Australia had doctorates.

The high average age of doctoral graduates adversely impacts on academic and research careers, including research productivity. As the NRF argues, the average age of completion "needs to be reduced since it takes a further ten years for an individual to become an established researcher, leaving only ten years for active participation in research before mandatory retirement" (NRF, 2019: 23). In line with this, the NRF has introduced an age-limit at graduation of 35 for doctoral students based on the average age of completion of NRF-funded doctoral students (NRF, 2019: 25).

5.2 Nationality and Institutional Type

The growth in international headcount enrolments is unevenly distributed in the different institutional types. The majority of international students – 88% in both 2005 and 2020, were enrolled in three institutional types, namely, the RIUs, OUs and Unisa. The role of Unisa as a distance education institution aside, the fact that just under half were enrolled in the RIUs and two-thirds in the RIUs and OUs combined suggests that international students are aware of the strengths of the RIUs and OUs in postgraduate education and research, in particular, the comprehensive range of postgraduate programmes offered. In addition, it is likely that this information and the choice of institution has been influenced by rankings given that South African institutions, in particular, the RIUs, feature high in the African rankings.

Table 5a: Headcount Enrolments: Nationality and Institutional Type, 2005-2020

2005								
	SADC	% T	RoA	% T	RoW	% T	Total	%T
RIU	2 354	37%	1 477	56%	1 427	58%	5 258	46%
Other	1 549	25%	345	13%	298	12%	2 192	19%
HBUs	370	6%	314	12%	147	6%	831	7%
UoTs	277	4%	91	3%	93	4%	461	4%
UNISA	1 742	28%	434	16%	494	20%	2 670	23%
Total	**6 292**	**100%**	**2 661**	**100%**	**2 459**	**100%**	**11 412**	**100%**

2020								
	SADC	% T	RoA	% T	RoW	% T	Total	%T
RIU	6 278	47%	3 110	48%	1 289	67%	10 677	49%
Other	2 775	21%	1 110	17%	309	16%	4 194	20%
HBUs	754	6%	608	9%	63	3%	1 425	6%
UoTs	639	5%	514	8%	54	3%	1 207	5%
UNISA	2 939	22%	1 203	18%	221	11%	4 363	20%
Total	**13 385**	**100%**	**6 545**	**100%**	**1 936**	**100%**	**21 866**	**100%**

5.3 Summary of Main Findings

- International enrolments increased by 92%; enrolments from the RoA (including SADC) increased by 123% and from the RoW decreased by 24%.
- The international share of total enrolments increased from 12% to 15% and the South African share decreased from 88% to 85%.
- RoA (including SADC) PgD/H, master's, and doctoral enrolments increased by 61%, 66%, and 414%, respectively; RoW PgD/H and master's enrolments decreased by 36% and 46%, respectively, and doctoral increased by 37%.
- South African PgD/H, master's and doctoral enrolments increased by 50%, 35%, and 106%, respectively.
- The RoA (including SADC) share of PgD/H enrolments remained unchanged at 6%, master's increased from 11% to 13%, and doctoral from 16% to 33%. RoW share decreased from 1% to 0%; 3% to 1%; and 7% to 4%, respectively.
- The South African share of PgD/H and master's enrolments remained unchanged at 93% and 86%, respectively, and doctoral enrolments decreased from 77% to 63%.

6. Enrolments: Field of Study

A key policy commitment in the NPHE was the need to ensure an appropriate balance in enrolments (undergraduate and postgraduate) between different fields of study. This was informed by the fact that prior to 1994 there was an imbalance in enrolments with humanities (including education), accounting for 57% of total enrolments. The imbalance was due to two factors: (i) the lack of access to SET programmes by black students because of poor quality schooling, in particular, in mathematics and physical science; and (ii) the apartheid legacy in higher education, which restricted the HBUs in the main to offering programmes in public administration to fill clerical and administrative posts in the Bantustan bureaucracies (DoE, 2001: 30). Furthermore, although there was a shift in balance between 1993 and 1999, with enrolments in the humanities (including education) declining from 59% to 47%, the impact on SET was marginal – enrolments increased from 24% to 25%, while in B&C enrolments increased from 19% to 26% (DoE, 2001: 20). This shift, as indicated in the NPHE, was due to a decline in enrolments in education as a result of an oversupply of teachers and the erosion of the status of teaching as a profession, and labour market signals indicating skills shortages in management and finance. It is against this background that the NPHE set a 10-year target to change the balance in enrolments between the humanities (including education), B&C and SET from 49%: 26%: 25% to 40%: 30%: 30% (DoE, 2001:30). The overall target (undergraduate and postgraduate) is close to being reached – in 2020 it was 42%: 27%: 31%, while at the postgraduate level, as Table 6 shows, enrolments between the humanities (including education) and SET were evenly split – 36% each, and lower in B&C – 28%. This is a significant shift from 2005, when the ratio was 53%: 22%: 26%.

Table 6: Headcount Enrolments: Field of Study, 2005-2020

	2005		2010		2015		2020	
	T	%T	T	%T	T	%T	T	%T
SET	25 822	26%	34 256	30%	45 912	35%	55 210	36%
B&C	21 292	22%	25 362	22%	31 921	24%	42 091	28%
Hum	26 438	27%	26 661	23%	34 629	26%	37 423	25%
Educ	25 173	25%	29 486	25%	20 283	15%	16 542	11%
Total	**98 725**	**100%**	**115 766**	**100%**	**132 745**	**100%**	**151 268**	**100%**

6.1 Enrolments: Field of Study and Qualification Level

The decline in enrolments in the humanities (including education) was due to the large decrease in PgD/H enrolments in education, from 18 849 to 9 928, or 47.3%, and a smaller decrease in master's enrolments, from 5 829 to 4 103, or 22.4%, as shown in Table 6a. The decline in PgD/H enrolments is due to the discontinuation of the Postgraduate Diploma in Education. The reason for the decline in the master's is not clear.

In the other fields of study both PgD/H and master's enrolments have increased. The increase in PgD/H enrolments was substantive in SET and B&C – 161% and 130%, respectively; and lower in the humanities – 81.%. Similarly, master's enrolments have increased but the rate of increase is lower – 79.7% in SET, 32.2% in B&C, and 8.4% in the humanities.

There has also been a substantive increase in doctoral enrolments in SET, B&C and Education – 189% in SET, 349% in B&C, and 143% in education; and lower in the humanities – 76.1%.

Table 6a: Headcount Enrolments: Field of Study and Qualification Level, 2005-2020

	2005				2020				% Change: 2005-2020			
	PgD/H	M	D	Total	PgD/H	M	D	Total	O	PgD/H	M	D
SET	5 391	16 394	4 037	25 822	14 088	29 461	11 662	55 210	114%	161%	79%	189%
B&C	12 159	8 500	633	21 292	28 005	11 240	2 846	42 091	98%	130%	32%	349%
Hum	8 572	14 137	3 730	26 438	15 527	15 328	6 568	37 422	42%	81%	8%	76%
Educ	18 849	5 289	1 035	25 173	9 928	4 102	2 512	16 542	-34%	-47%	-22%	143%
Total	**44 971**	**44 320**	**9 435**	**98 725**	**67 548**	**60 131**	**23 588**	**151 265**	**53%**	**50%**	**36%**	**150%**

These trends indicate that the policies to increase doctoral enrolments and to rectify the imbalances in enrolments between fields of study, in particular, SET, are bearing fruit. However, the decline in the humanities below the 40% target proposed in the NPHE, is cause for concern. As the NPHE argued, reducing the share of the humanities (including education) below 40% is not desirable given the role of the humanities in knowledge production as outlined in Education White Paper 3: A Programme for the Transformation of the Education System, which states:

> The focus on science, engineering and technology programmes is necessary to correct present imbalances, in particular, the shortage of trained personnel in these fields. However, this will not diminish the importance of programmes in the social sciences and humanities which contribute to knowledge production, in particular, to the understanding of social and human development, including social transformation. They also play an important role in career-oriented training in a range of fields such as education, law, private and public sector management, social development and the arts. In addition, in the context of the communications and information revolution, the social sciences and humanities, as well as the sciences and technologies, must contribute to the development of the analytic, intellectual, cultural and ethical skills and competencies necessary for participation in the knowledge society (DoE 1997: #2.25).

Similarly, the NDP argues that the humanities provide a comparative advantage for higher education and the science and innovation systems given South Africa's past and its commitment to building a non-racial and non-sexist society in the cradle of humankind (NDP, 2011:290). Furthermore, there is an increasing recognition that interdisciplinarity, through transcending the divide between the sciences and the humanities, is critical to addressing the global grand challenges such as climate change, food security, and health pandemics. The humanities have a central role to play in foregrounding the social, cultural, and economic dimensions of the global grand challenges and, in the context of the developments in technology, in particular, Artificial Intelligence (AI), the danger of technological determinism, which if unchecked, could result in robots and machines replacing human beings.

The need to arrest the decline in the humanities is also recognised in the WPPSET, which resulted in the establishment of a National Institute for Humanities and Social Sciences (NIHSS) to "stimulate a new and fresh scholarship in the humanities and social sciences for the post-apartheid era" (DHET, 2013: 37-38).

The establishment and role of the NIHSS in funding doctoral studies notwithstanding, the main challenge remains contradictory policies, as reflected in the 2013 ministerial guidelines for improving equity in the distribution of bursaries and fellowships, which states:

> At all levels, priority should be given to students and fellow engaged in SET studies or research, while concomitantly ensuring a fair representation of students and fellows across SSH [social sciences and humanities]. The percentage of supported students from the SET domain should be between 70% and 80% of the total number of students supported (quoted in NRF, 2021: 30).

This hardly constitutes "fair representation", which is reflected in the distribution of bursaries for new students by the NRF in 2021 – 72% of honour's, 75% of master's, and 81% of doctoral bursaries were allocated to SET, and the corresponding allocation to the SSH was 4%, 12% and 10%. The remainder – 24%, 13% and 9% was allocated B&C (NRF, 2021: 30).

In addition, it should be highlighted that the increase in doctoral students in education – 142.7%, is more than double the increase in doctoral students in the humanities – 76.1%. This is cause for concern as most students pursuing doctoral studies in education do not do so to pursue academic careers but to improve promotion opportunities for senior posts in the school system. Although not a requirement for promotion, it is status-enhancing and perceived as advantageous. In policy terms it is arguable whether this level of growth should be allowed to continue as there is no correlation between obtaining a doctorate and the performance of the school system.

There is clearly a need to clarify policy to ensure that funding to support postgraduates in different fields of study is distributed fairly.

6.2 Summary of Main Findings

- Enrolments as a proportion of total enrolments in:
  - ► SET increased from 26% to 36%.
  - ► B&C increased from 22% to 28%.
  - ► Humanities decreased from 27% to 25%.
  - ► Education decreased from 25% to 11%.
- Enrolments as a proportion of total PgD/H, master's and doctoral enrolments in:
  - ► SET increased by 161%, 79%, and 189%, respectively.
  - ► B&C increased by 130%, 32%, and 349%, respectively.
  - ► Humanities increased by 81%, 8%, and 76%, respectively.
  - ► Education decreased by 47%, 22%; and increased by 143%, respectively.

7. Graduation Rates, Output Rates and Throughput Rates

The NPHE raised concerns regarding the inefficiencies in the production of graduates as reflected in low throughput and high drop-out rates and the fact that enrolment growth was not matched by the growth in graduates (DoE, 2001: 21). It established graduation rate benchmarks (see Table A5 in Appendix Two) to improve the efficiency of graduate outputs, which were developed based on reviewing student retention, drop-out, and graduation rates over a five-year period, including the fact that the majority of students took longer than the stipulated minimum time to graduate across the different qualification levels (DoE 20011: 23).[7]

It should be noted, however, that the graduation rate is not an accurate measure of the efficiency of the system as it is unable to track the throughput of students in the system. It "calculates the number of graduates in a given year expressed as a percentage of that year's total enrolment" and is "skewed by fluctuations" in total enrolments annually (CHE, 2013b: 40). It was used as a proxy for measuring student throughputs prior to the implementation of HEMIS in 2000, which is a student record system that enables the tracking of individual students and cohorts from the point of entry to the point of graduation.[8]

Although there has been progress in the rate of growth of graduates and the graduation rate has improved, this is limited, and gross inefficiencies continue to characterise the higher education system, as indicated by the analysis of the data below.

7.1 Graduate Outputs and Graduation Rate

There has been a steady increase in the number of graduates produced annually, from 24 936 in 2005 to 50 356 in 2020, or 103%, an annual average growth rate of 5%, as Table 7 shows. This is higher than the growth rate in enrolments, which increased by 53%, an annual average growth rate of 3% (see Table 3b above). This, together with the fact that the graduation rate has increased from 25% in 2005 to 33% in 2020, suggests improved efficiency.

Table 7: Total Number of Graduates and Graduation Rate: Institutional Type, 2005-2020

	Graduates			Graduation Rate	
	2005	2020	% C	2005	2020
RIUs	11 533	21 634	88%	29%	35%
OUs	7 476	11 207	50%	26%	38%
HBUs	1 808	4 585	154%	23%	29%
UoTs	969	1 889	95%	16%	20%
Unisa	3 150	11 041	251%	16%	32%
Total	**24 936**	**50 356**	**103%**	**25%**	**33%**

Despite this, the NPHE graduation rate benchmarks were not met in 2020, except for the PgD/H benchmark, which was met by the RIUs, Ous, and Unisa, as Table 7a shows.

7 The benchmarks set were aspirational and stretch targets based on the graduation rates of the best performing institutions, all of whose performance was below the set benchmark.

8 The CHE has since 2010 undertaken annual cohort studies, which are reported in its annual publication of key data in public higher education, VitalStats.

Table 7a: Growth in Graduates and Graduation Rate: Qualification Level and Institutional Type (NPHE Benchmarks: Contact/Distance), 2005-2020

	% Change: 2005-2020			Graduation Rate: 2005-2020					
	PgD/H	M	D	PgD/H (60/30)		M (33/25)		D (20/20)	
RIUs	98%	62%	151.4	47%	61%	21%	24%	14%	15%
OUs	53%	28%	160.8	38%	65%	23%	23%	13%	15%
HBUs	168%	94%	409.7	41%	54%	14%	15%	10%	14%
UoTs	14%	263%	680.0	27%	49%	7%	14%	9%	14%
Unisa	291%	60%	359%	19.4	35%	8%	20%	9%	17%
Total	**116%**	**61%**	**199%**	**34.9**	**50%**	**18%**	**22%**	**13%**	**15%**

At the doctoral level there has been steady progress, with the graduation rate increasing from 13% to 15% but still below the 20% benchmark. As a result, doctoral graduates increased by 199%, from 1 189 to 3 552, an annual average growth rate of 8%, as Table 7b shows. This suggests that if the annual average growth rate stays constant, the NDP target of 5000 doctoral graduates by 2030 is within reach.

Table 7b: Total Number of Graduates: Qualification Level and Institutional Type, 2005-2020

	2005						2020					
	PgD/H		M		D		PgD/H		M		D	
RIUs	6 351	40%	4 483	56%	699	59%	12 595	37%	7 282	56%	1 757	50%
OUs	5 029	32%	2 151	27%	296	25%	7 689	23%	2 746	21%	772	22%
HBUs	1 155	7%	581	7%	72	6%	3 090	9%	1 128	9%	367	10%
UoTs	705	%	234	3%	30	2%	805	2%	850	7%	234	7%
Unisa	2 485	16%	573	7%	92	8%	9 703	29%	916	7%	422	12%
Total	**15 725**	**100%**	**8 022**	**100%**	**1 189**	**100%**	**33 882**	**100%**	**12 922**	**100%**	**3 552**	**100%***

Furthermore, the increase in graduates produced is across the different institutional types. The most significant change in this regard is the decrease in the proportionate share of master's and doctoral graduates produced by the RIUs and the OUs and the increase in the share of the HBUs, UoTs, and Unisa, in line with their increased share of enrolments. The RIUs share of master's graduates remained the same – 56%, and its share of doctoral graduates decreased from 59% to 50%. The OUs share of both master's and doctoral graduates decreased from 27% to 21% and from 25% to 22%, respectively. The HBUs share of both increased from 7% to 9% and from 6% to 10%, respectively. The UoTs share of both increased from 3% to 7%, respectively. Unisa's share of master's graduates remained the same – 7%, and its share of doctoral graduates increased from 8% to 12%.

However, despite the decline from the high of the 1990s when the RIUs produced about two-thirds of all master's and doctoral graduates, they remain dominant – accounting for half of all the master's and doctoral graduates produced. Furthermore, the RIUs, together with the OUs, which comprise 10 out of the 26 public higher education institutions[9] account for over two-thirds of all master's and doctoral graduates – 77% and 72%, respectively. This raises the unresolved issue of differentiation of the higher education system and the need, as the NDP argues, to "strengthen universities that have an embedded culture of research and development" (NPC, 2012: 319).[10]

9 The University of Mpumalanga and Sol Plaatje University have been excluded, as although categorised as OUs, their postgraduate numbers are low given that they were established in 2012 and initially only offered undergraduate programmes.

10 Differentiation in the context of changes in the size and shape of the higher education system is discussed in Essop, A. (2020).

7.1.1 Graduates and Race

The inequalities in access between black and white students discussed in Section 3 is also reflected in the graduates produced between 2005 and 2020, as Table 7c shows. As with enrolments, the number of black graduates increased by 184%, from 13 383 to 37 963, and white graduates decreased marginally by 4%, from 11 519 to 11 099. However, as a proportion of total black and white enrolments, there were more white than black graduates. In 2005, blacks constituted 65% of total enrolments and 53% of total graduates, and whites 35% and 46%, respectively. Although the gap had narrowed by 2020, the difference remained: blacks constituted 80% of total enrolments and 75% of total graduates, and whites 18% and 22%, respectively.

Table 7c: Total Number of Graduates: Race and Institutional Type, 2005-2020

2005								
	T	% T	TB	TW	% B	% W	B % T PG	W % T PG
RIU	11 533	46%	5 470	6 048	47%	52%	41%	52%
Other	7 476	30%	3 726	3 742	50%	50%	28%	33%
HBUs	1 808	7%	1 671	134	92%	7%	13%	1%
UoTs	969	4%	727	240	75%	25%	5%	2%
UNISA	3 150	13%	1 789	1 355	57%	43%	13%	12%
Total	**24 936**	**100%**	**13 383**	**11 519**	**54%**	**46%**	**100%**	**100%**

2020								
	T	% T	TB	TW	% B	% W	B % TPG	W % T PG
RIU	21 634	43%	14 245	6 214	66%	29%	38%	56%
Other	11 207	22%	8 042	3 147	72%	28%	21%	28%
HBUs	4 585	9%	4 392	165	96%	4%	12%	2%
UoTs	1 889	4%	1 732	153	92%	8%	5%	1%
UNISA	11 041	22%	9 552	1 420	87%	13%	25%	13%
Total	**50 356**	**100%**	**37 963**	**11 099**	**75%**	**22%**	**100%**	**100%**

The inequality is also reflected in the graduates produced in the different institutional types. As with enrolments, the majority of white graduates are produced by the RIUs and the OUs. In 2005, as a proportion of the total black and white graduates, the RIUs and OUs produced 69% of black and 85% of white graduates, while in 2020 the number of black graduates produced had decreased to 59% and the number of white graduates remained within range (-1%). This change in part reflects the increased enrolments in the HBUs, which remain predominantly black and the substantive decline in white enrolments in the UoTs.

These trends are also reproduced in the graduates produced at the different qualification levels. In PgD/H programmes between 2005 and 2020 in the RIUs, as Table 7d shows, black graduates increased from 51% to 67% and white graduates decreased from 49% to 28%; however, as a proportion of total black and white graduates, black graduates decreased from 35% to 32%, and white graduates increased from 47% to 52%. In the OUs, black graduates increased from 54% to 73% and white graduates decreased from 46% to 26%; however, as a proportion of total black and white graduates, black graduates decreased from 30% to 21%, and white graduates decreased from 35% to 29%.

Table 7d: PgD/H Graduates: Race and Institutional Type, 2005-2020

	2005							2020						
	B	% TB	W	% TW	T	% B	% W	B	% TB	W	% TW	T	% B	% W
RIU	3210	35.3	3136	47.3	6351	50.5	49.4	8438	32.1	3565	51.7	12595	66.9	28.1
Other	2729	30.0	2295	34.6	5029	54.3	45.6	5642	21.4	2031	29.4	7689	73.4	26.4
HBUs	1101	12.1	52	0.8	1155	95.3	4.5	3000	11.4	80	1.2	3090	97.1	2.6
UoTs	587	6.5	118	1.8	705	83.3	16.7	787	2.9	18	0.3	805	97.8	2.2
Unisa	1458	16.0	1023	15.4	2485	58.7	41.2	8443	32.1	1206	17.5	9703	87.0	12.4
Total	**9085**	**100**	**6624**	**100**	**15725**	**57.8**	**42.1**	**26310**	**100**	**6900**	**100**	**33882**	**77.7**	**20.4**

In master's programmes between 2005 and 2020 in the RIUs, as Table 7e shows, black graduates increased from 44% to 64% and white graduates decreased from 56% to 29%; however, as a proportion of total black and white graduates, black graduates remained at 51%, and white graduates increased from 60% to 64%. In the OUs, black graduates increased from 42% to 69% and white graduates decreased from 58% to 31%; however, as a proportion of total black and white graduates, black graduates decreased from 24% to 21%, and white graduates decreased from 30% to 26%.

Table 7e: Master's Graduates: Race and Institutional Type, 2005-2020

	2005							2020						
	B	% TB	W	% TW	T	% B	% W	B	% TB	W	% TW	T	% B	% W
RIU	1959	51.4	2515	59.9	4483	43.7	56.1	4658	51.2	2116	64.2	7282	64.0	29.1
Other	901	23.7	1247	29.7	2151	41.9	58.0	1883	20.7	862	26.2	2746	68.6	31.4
HBUs	511	13.4	69	1.6	581	88.0	11.9	1048	11.5	70	2.1	1128	92.9	6.2
UoTs	129	3.4	103	2.5	234	55.1	44.0	744	8.2	104	3.2	850	87.5	12.2
Unisa	306	8.0	266	6.3	573	53.4	49.9	769	8.4	143	4.3	916	84.0	15.6
Total	**3806**	100	**4200**	100	8022	47%	52%	**9102**	100	**3295**	100	12 922	71%	25.5

In doctoral programmes between 2005 and 2020 in the RIUs, as table 7f shows, black graduates increased from 43% to 65% and white graduates decreased from 57% to 30%; however, as a proportion of total black and white graduates, black graduates decreased from 61% to 45%, while white graduates increased from 57% to 59%. In the Ous, black graduates increased from 32% to 67% and white graduates decreased from 68% to 33%; however, as a proportion of total black and white graduates, black graduates remained at 20%, while white graduates decreased marginally from 29% to 28%.

Table 7f: Doctoral Graduates: Race and Institutional Type, 2005-2020

	2005							2020						
	B	% TB	W	% TW	T	% B	% W	B	% TB	W	% TW	T	% B	% W
RIU	301	61.2	397	57.1	699	43.0	56.8	1149	45.0	533	59.0	1757	65.4	30.3
Other	96	19.5	200	28.8	296	32.4	67.6	517	20.3	254	28.1	772	67.0	32.9
HBUs	59	12.0	13	1.9	72	81.9	4.2	344	13.5	15	1.7	367	93.7	4.1
UoTs	11	2.2	19	2.7	30	36.7	63.3	201	7.9	31	3.4	234	85.9	13.2
Unisa	25	5.1	66	9.5	92	27.2	71.7	340	13.3	71	7.6	422	80.6	16.8
Total	**492**	**100**	**695**	**100**	**1189**	**41.4**	**58.5**	**2551**	**100**	**904**	**100**	**3552**	**71.8**	**25.5**

The overall changes in black and white graduates by qualification level and institutional type are summarised in Table 7g below.

Table 7g: Change in Graduates: Race, Qualification Level and Institutional Type, 2005-2020

	PG Dip/Hons			Master's			Doctoral		
	%C B	%C W	%C T	%C B	%C W	%C T	%C B	%C W	%C T
RIU	163%	14%	96%	138%	-16%	62%	282%	34%	151%
Other	107%	-12%	53%	109%	-31%	28%	438%	27%	161%
HBUs	172%	54%	167%	105%	1%	94%	483%	15%	410%
UoTs	34%	-85%	14%	476%	1%	263%	1 727%	63%	680%
UNISA	479%	18%	290%	151%	-46%	60%	1 260%	8%	359%
Total	**190%**	**4%**	**115%**	**139%**	**-22%**	**61%**	**418%**	**-24%**	**199%**

7.1.2 Graduates and Gender

The growth in female enrolment between 2005 and 2020 is matched by a growth in female graduates, which is significantly higher than the growth in male graduates. Female graduates grew by 125%, from 13 434 to 30 154, while male graduates grew by 76%, from 11 502 to 20 192, as Table 7h shows. Furthermore, as a proportion of total female and male enrolments, there are more female graduates than male graduates, and the growth has been substantial. In 2005, females constituted 52% of total enrolments and 54% of total graduates, and males 48% and 46%, respectively. In 2020 – female constituted 57% of total enrolments and 60% of total graduates, and male 43% and 40%, respectively.

In addition, female graduates have grown and are in the majority in all the institutional types, except the UoTs, which is in line with enrolment trends discussed above. In the UoTs, although in the majority, female graduates decreased from 59% in 2005 to 53% in 2020, which is consistent with the fact that female and male enrolments are close to parity (see Table 4b above). Furthermore, as a proportion of the total female and male graduates, female and male graduates are close to parity in all the institutional types except the RIUs and Unisa. In 2020, in the RIUs as a proportion of total female and male graduates, there were more male – 47%, than female – 40% graduates, while at Unisa there were more female – 25%, than male – 17% graduates.

Table 7h: Graduates: Gender and Institutional Type, 2005-2020

2005								
	T	% T	TF	TM	% F	% M	F% T PG	M% T PG
RIU	11 533	46%	5 801	5 732	50%	50%	43%	50%
Other	7 476	30%	4 338	3 138	58%	42%	32%	27%
HBUs	1 808	7%	964	844	53%	47%	7%	7%
UoTs	969	4%	567	402	59%	41%	4%	4%
UNISA	3 150	13%	1 764	1 386	56%	44%	13%	12%
Total	**24 936**	**100%**	**13 434**	**11 502**	**54%**	**46%**	**100%**	**100%**

2020								
	T	% T	TF	TM	% F	% M	F% TPG	M %T PG
RIU	21 634	43%	12 210	9 417	56%	44%	40%	47%
Other	11 207	22%	6 607	4 600	59%	41%	22%	23%
HBUs	4 585	9%	2 719	1 863	59%	41%	9%	9%
UoTs	1 889	4%	994	895	53%	47%	3%	4%
UNISA	11 041	22%	7 624	3 417	69%	31%	25%	17%
Total	**50 356**	**100%**	**30 154**	**20 192**	**60%**	**40%**	**100%**	**100%**

However, the trends in relation to qualification levels is more mixed. In 2020, in PgD/H programmes, as Table 7i shows, although female graduates were in the majority in all institutional types, as a proportion of total female and male graduates, there were more male than female graduates in the RIUs – 42% and 34%, respectively, while at Unisa there were more female than male graduates – 32% and 22%, respectively. In all the other institutional types, there was parity between female and male graduates.

Table 7i: PgD/H Graduates: Gender and Institutional Type, 2005-2020

	2005							2020						
	F	% TF	M	% TM	T	% F	% M	F	% TF	M	% TM	T	% F	% M
RIU	3 536	37.9	2 815	43.9	6 351	55.7	44.3	7 437	34.4	5 154	41.9	12 595	59.0	40.9
Other	3 212	34.5	1 817	28.3	5 029	63.9	36.1	4 756	22.0	2 933	23.9	7 689	61.9	38.1
HBUs	635	6.8	520	8.1	1 155	54.9	45.0	1 923	8.9	1 165	9.5	3 090	62.2	37.7
UoTs	459	4.9	246	3.8	705	65.1	34.9	495	2.3	310	2.5	805	61.5	38.5
Unisa	1 466	15.7	1 019	15.9	2 485	59.9	41.0	6 977	32.3	2 726	22.2	9 703	71.9	28.1
Total	**9 308**	**100**	**6 417**	**100**	**15 725**	**59.2**	**40.8**	**21 588**	**100**	**12 288**	**100**	**33 882**	**63.7**	**36.3**

In master's programmes in 2020, as table 7j shows, although female graduates were in the majority in all institutional types, except for the UoTs, where the difference was marginal (1%), as a proportion of total female and male graduates, there was parity (+/-1%).

Table 7j: Master's Graduates: Gender and Institutional Type, 2005-2020

	2005							2020						
	F	% TF	M	% TM	T	% F	% M	F	% TF	M	% TM	T	% F	% M
RIU	1966	54.6	2517	56.9	4483	43.9	56.1	3 979	56.6	3 301	56.0	7 282	54.6	45.3
Other	997	27.7	1154	26.1	2151	46.3	53.6	1 514	21.5	1 232	20.9	2 746	55.1	44.9
HBUs	292	8.1	289	6.5	581	50.3	49.7	628	8.9	499	8.5	1 128	55.7	44.2
UoTs	95	2.6	139	3.1	234	40.6	59.4	416	5.9	434	7.4	850	48.9	51.1
Unisa	252	6.9	321	7.3	573	43.9	56.0	489	6.9	427	7.2	916	53.4	46.6
Total	**3602**	**100**	**4420**	**100**	**8022**	**44.9**	**55.1**	**7 026**	**100**	**5 893**	**100**	**12 922**	**54.4**	**45.6**

However, in doctoral programmes in 2020, as Table 7k shows, there was a significance difference – there were more male than female graduates in all the institutional types – 57% and 43%, respectively, but as a proportion of total female and male doctoral graduates, the difference was not large – ranging from 1- 4%.

Table 7k: Doctoral Graduates: Gender and Institutional Type, 2005-2020

	2005							2020						
	F	% TF	M	% TM	T	% F	% M	F	% TF	M	% TM	T	% F	% M
RIU	299	57.1	400	60.2	699	42.8	57.2	794	51.6	962	47.8	1 757	45.2	54.8
Other	129	24.6	167	25.1	296	43.6	56.4	337	21.9	435	21.6	772	43.7	56.3
HBUs	37	7.1	35	5.3	72	51.4	48.6	168	10.9	199	9.9	367	45.8	54.2
UoTs	13	2.5	17	2.6	30	43.3	56.7	83	5.4	151	7.5	234	35.4	64.5
Unisa	46	8.8	46	6.9	92	50.0	50.0	158	10.3	264	13.1	422	37.4	62.6
Total	**524**	**100**	**665**	**100**	**1 189**	**44.1**	**55.9**	**1 540**	**100**	**2 011**	**100**	**3 552**	**43.3**	**56.6**

The overall changes in gender graduates by qualification level and institutional type are summarised in table 7l below.

Table 7l: Change in Graduates: Gender, Qualification Level and Institutional Type, 2005-2020

	PG Dip/Hons			Master's			Doctoral		
	%C F	%C M	%C T	%C F	%C M	%C T	%C F	%C M	%C T
RIU	110%	83%	98%	102%	31%	62%	165%	140%	151%
Other	48%	61%	53%	52%	7%	28%	161%	160%	161%
HBUs	203%	124%	168%	115%	73%	94%	354%	468%	410%
UoTs	8%	26%	14%	338%	212%	263%	538%	788%	680%
UNISA	376%	168%	290%	94%	33%	60%	243%	474%	358%
Total	**132%**	**91%**	**115%**	**95%**	**33%**	**61%**	**194%**	**202%**	**199%**

7.2 Throughput Rates

7.2.1 Overall

The increase in the graduation rate from 25% in 2005 to 33% in 2020 is confirmed by an analysis of the throughput rate trends in Table 7m, which compare the performance of two first-time entering cohorts – 2010 and 2015 – in the different qualification levels (for details comparing performance by qualification level and institutional type, see Tables A6a, b, c, and in Appendix Two). The comparison is based on completion time, that is, the stipulated minimum duration of a qualification plus five years in the case of honours degrees and three years in the case of master's and doctoral degrees. The six-year completion time recognises that students take longer to complete than the stipulated minimum because of a range of factors such as finance, family responsibilities, and inadequate foundational skills to pursue postgraduate programmes. The trends that emerge from the table are summarised below:

- Honours – students graduating in regulation time increased from 32% to 45%; the total number of graduates after six years increased from 65% to 75%.
- Master's by coursework – students graduating in regulation time increased from 37% to 41%; the total number of graduates after six years increased from 55% to 60%.
- Master's by research – students graduating in regulation time increased from 37% to 41%; the total number of graduates after six years increased from 41% to 59%.
- Doctorates – students graduating in regulation time increased from 18% to 40%; the total number of graduates after six years increased from 40% to 66%.

Table 7m: Throughput Rates: First-Time Entering Cohorts – 2010-2020: Honours (N=1); Master's (Coursework)(N=3); Master's (Research)(N=3); Doctorate (N=3)

	2010 Cohort						2015 Cohort					
Degree	N	N+1	N+2	N+3	N+4	N+5	N	N+1	N+2	N+3	N+4	N+5
Honours	32%	50%	58%	62%	65%	65%	45%	62%	69%	72%	74%	75%
Master's (CW)	37%	47%	52%	55%	X	X	41%	51%	57%	60%	X	X
Master's (R)	37%	46%	52%	54%	X	X	41%	51%	57%	59%	X	X
Doctorate	18%	32%	43%	50%	X	X	40%	52%	61%	66%	X	X

The trends indicate that although there has been progress, the higher education system remains inefficient in two respects, namely, (i) the low number of students graduating in regulation time across the different qualification levels, which ranges from just under 30% in coursework master's to just under half in honours; and (ii) the high drop-out rate, which ranges from 25% at the low end in honours to 51% at the high end in master's by coursework.

The inefficiencies impact both the participation rate – for each student who stays in the system beyond regulation time, another student is denied access –

and the cost of higher education – students dropping out without a qualification represent a huge waste in financial and human resources.

A key contributory factor to the long completion times is funding, which results in students pursuing part-time studies, as discussed in Section 5. This is confirmed by the NRF, which indicates that the average completion time of NRF-funded students is well below the average for non-NRF-funded students – honours = 1.19 years as against 3 years; master's = 2.11 years as against 5 years; and doctoral = 3.41 years as against 7 years (NRF, 2021: 19).

In addition, the poor throughput rates and long completion times are due to the fact that, as the *Ministerial Task Team Report on the Recruitment, Retention and Progression of Black South African Academics* suggests, "postgraduate student success initiatives are limited across universities" and recommends that:

> Sustained attention must be paid to improving undergraduate and postgraduate student success in order to create a bigger pool of undergraduates who meet the admission requirements for postgraduate studies (DHET, 2020: 19).

The need to improve undergraduate success rates is important not only to create a bigger pool but, more importantly, to ensure that undergraduates have the requisite skills to successfully engage with the demands of postgraduate study, in particular, at the research master's and doctoral levels. As indicated, several postgraduate coordinators mentioned that students from the RoA are better prepared in terms of foundational skills to pursue and complete doctoral studies within regulation time. In the case of South African students, the lack of foundational skills is the result of the articulation gap in knowledge and skills between the outcomes of schooling and the requirements of higher education at the undergraduate level. The closing of the gap requires more than current interventions, which are limited to the first year of the undergraduate degree. It requires a fundamental rethinking and restructuring of the curriculum structure through adding an extra year to the traditional three-year and four-year undergraduate qualifications, as proposed by the CHE Task Team report, *A proposal for undergraduate curriculum reform in South Africa: The case for a flexible curriculum structure* (CHE, 2013b). In the absence of the latter, the success of interventions to improve foundational skills at the postgraduate level is likely to remain limited.

The inefficiencies notwithstanding, the overall increase both in the number of graduates completing in regulation time and after six years is to be welcomed. On average the overall increase is 5%, except in honours, where it is between 10% and 13%, and doctoral programmes, where it is between 22% and 25%. There are two exceptions: honours programmes in the UoTs, which decreased from 75% to 70% after six years, and doctoral graduates in regulation time at Unisa, which decreased from 43% to 31%. The reasons for these exceptions are not clear. In addition, there are also large increases in honours completions in the OUs and HBUs – 15% and 22%, respectively and in research master's in the RIUs – 12%.

The large increase raises quality concerns, especially as there is little evidence, as indicated, to suggest that it is the result of the successful implementation of support measures and interventions. If anything, at least anecdotally, there is evidence to suggest that there is pressure within institutions to improve throughput rates at the doctoral level, in particular, completion in minimum time, because of the subsidy implications, which are substantial.

7.2.2 Throughput Rates: Race

The inefficiencies linked to low progression and completion rates impacts differently on black and white students and reflect continued race-based inequalities in higher education, which is the result of differential access to quality schooling. In all the qualification levels, both in terms of completion in minimum time and after six years, white students performed better than black students as Table 7n shows (for details comparing performance by qualification level and institutional type, see Tables A7a, b, c, and d, in

Appendix Two). Although there has been a steady improvement in the performance of black students and the gap between black and white performance has narrowed by 5%-10%, it remains large – between 16%-18%, except at the doctoral, where it is in the 4%-8% range. The narrowing of the gap at the doctoral level is most likely due to a combination of factors, including the increase in the number of academic staff enrolled in doctoral programmes, the growth in doctoral students from the RoA who, as indicated above, have better foundational skills, and the subsidy-driven pressure within institutions to improve completion in minimum time.

Table 7n: Throughput Rates Race: First-Time Entering Cohorts – 2010-2020: Honours (N=1); Master's (Coursework)(N=3); Master's (Research)(N=3); Doctorate (N=3)

		2010 Cohort						2015 Cohort					
		N	N+1	N+2	N+3	N+4	N+5	N	N+1	N+2	N+3	N+4	N+5
Hons	Black	22%	40%	49%	55%	58%	59%	39%	56%	64%	68%	69%	71%
	White	58%	76%	80%	82%	82%	83%	65%	82%	86%	87%	88%	88%
	Overall	**32%**	**50%**	**58%**	**62%**	**65%**	**65%**	**45%**	**62%**	**69%**	**72%**	**74%**	**75%**
Master's (CW)	Black	30%	39%	45%	48%	X	X	38%	47%	53%	57%	X	X
	White	51%	62%	67%	70%	X	X	54%	64%	70%	72%	X	X
	Overall	**37%**	**47%**	**52%**	**55%**	**X**	**X**	**41%**	**51%**	**57%**	**60%**	**X**	**X**
Master's (R)	Black	31%	40%	44%	47%	X	X	36%	46%	52%	55%	X	X
	White	47%	59%	65%	68%	X	X	54%	64%	69%	71%	X	X
	Overall	**37%**	**46%**	**52%**	**54%**	**X**	**X**	**41%**	**51%**	**57%**	**59%**	**X**	**X**
Doctorate	Black	17%	29%	40%	47%	X	X	38%	50%	59%	65%	X	X
	White	22%	36%	47%	55%	X	X	44%	56%	64%	69%	X	X
	Overall	**18%**	**32%**	**43%**	**50%**	**X**	**X**	**40%**	**52%**	**61%**	**66%**	**X**	**X**

7.2.3 Throughput Rates: Gender

There are no significant differences between the performance of female and male students between 2005 and 2020, as Table 7o shows (for details comparing performance by gender, qualification level and institutional type, (see Tables A8a, b, c, and d, in Appendix Two). In 2005, except in coursework master's, males performed better than females in completing in regulation time – the overall difference was in the 1-5% range. In 2020, except in doctoral programmes, females performed better than males in completing in regulation time – the overall difference was similarly in the 1-5% range. However, and interestingly, in both 2005 and 2020 in all qualifications, females performed better than males in completing after six years, albeit, within the same 5% range. The reasons for this are not clear, but it may be that women are better than men in managing part-time study given that the majority of students in postgraduate programmes, in particular, master's and doctoral programmes study part-time.

Table 7o: Throughput Rates Gender: First-Time Entering Cohorts – 2010-2020: Honours (N=1); Master's (Coursework)(N=3); Master's (Research)(N=3); Doctorate (N=3)

		2010 Cohort						2015 Cohort					
		N	N+1	N+2	N+3	N+4	N+5	N	N+1	N+2	N+3	N+4	N+5
Hons	Female	30%	49%	57%	63%	65%	67%	46%	63%	70%	74%	75%	77%
	Male	34%	52%	58%	61%	63%	64%	45%	61%	68%	70%	71%	72%
	Overall	**32%**	**50%**	**58%**	**62%**	**65%**	**65%**	**45%**	**62%**	**69%**	**72%**	**74%**	**75%**
Master's (CW)	Female	38%	48%	54%	57%	X	X	43%	53%	59%	63%	X	X
	Male	36%	46%	51%	53%	X	X	39%	49%	54%	58%	X	X
	Overall	**37%**	**47%**	**52%**	**55%**	**X**	**X**	**41%**	**51%**	**57%**	**60%**	**X**	**X**
Master's (R)	Female	31%	26%	16%	9%	X	X	43%	53%	59%	62%	X	X
	Male	37%	45%	50%	53%	X	X	39%	49%	55%	57%	X	X
	Overall	**37%**	**46%**	**52%**	**54%**	**X**	**X**	**41%**	**51%**	**57%**	**59%**	**X**	**X**
Doctorate	Female	18%	32%	44%	52%	X	X	39%	52%	61%	67%	X	X
	Male	19%	32%	42%	48%	X	X	41%	52%	60%	66%	X	X
	Overall	**18%**	**32%**	**43%**	**50%**	**X**	**X**	**40%**	**52%**	**61%**	**66%**	**X**	**X**

7.3 Summary of Main Findings

- The graduation rate increased from 25% to 33%.
- PgD/H graduation rate increased from 35% to 50%.
- Master's graduation rate increased from 18% to 22%.
- Doctoral graduation rate increased from 13% to 15%.
- Graduates increased by 103%.
  - ► PgD/H, master's and doctoral graduates increased by 116%; 61% and 99%, respectively:
  - ► RIUs: PgD/H decreased from 40% to 37%; master's were unchanged at 56%; and doctoral decreased from 59% to 50%.
  - ► OUs: PgD/H decreased from 32% to 23%; master's decreased from 27% to 21%; and 25% to 22%.
  - ► HBUs: PgD/H increased from 7% to 9%; master's increased from 7% to 9%; and doctoral increased from 6% to 10%.
  - ► UoTs: PgD/H decreased from 5% to 2%; master's increased from 3% to 7%; and doctoral increased from 2% to 7%.
  - ► Unisa: PgD/H increased from 16% to 29%; master's were unchanged at 7%; and doctoral increased from 8% to 12%.
- Black graduates increased by 184% and white graduates decreased by 4%:
  - ► PgD/H: black graduates increased from 58% to 78%; and white graduates decreased from 42% to 20%.
  - ► Master's: black graduates increased from 47% to 71%; and white graduates decreased from 52% to 26%.
  - ► Doctoral: black graduates increased from 41% to 72%; and white graduates decreased from 59% to 26%.
- As a proportion of total black and white enrolments and graduates, black enrolments increased from 65% to 80% and black graduates from 53% to 75%; and white enrolments decreased from 35% to 18% and white graduates from 46% to 22%.
  - ► Female graduates increased by 125% and male graduates increased by 76%:
  - ► PgD/H: female graduates increased from 59% to 64%; and male graduates decreased from 41% to 36%.
  - ► Master's: female graduates increased from 45% to 54%; and male graduates decreased

from 55% to 46%.
  - ► Doctoral: female graduates decreased from 44% to 43%; and male graduates increased from 56% to 57%.

- As a proportion of total female and male enrolments and graduates, female enrolments increased from 52% to 57% and female graduates from 54% to 60%; and male enrolments decreased from 48% to 43% and male graduates from 46% to 40%.

- The throughput rate comparing first-time entering cohorts in 2010 and 2015 graduating in regulation time and after six years is:
- Honours – increased from 32% to 45%; and from 65% to 70%, respectively.
  - ► Black increased from 22% to 39%; and from 59% to 71%, respectively.
  - ► White increased from 58% to 65%; and from 83% to 88%, respectively.
  - ► Female increased from 30% to 46%; and from 67% to 77%, respectively.
  - ► Male increased from 34% to 45%; and from 65% to 75%, respectively.

- Master's (Coursework) – increased from 37% to 41%; and from 55% to 60%.
  - ► Black increased from 30% to 38%; and from 48% to 57%, respectively.
  - ► White increased from 51% to 54%; and from 70% to 72%, respectively.
  - ► Female increased from 38% to 43%; and from 57% to 63%, respectively.
  - ► Male increased from 36% to 39%; and from 53% to 58%, respectively.

- Master's (Research) – increased from 37% to 41%; and from 41% to 59%.
  - ► Black increased from 31% to 36%; and from 47% to 55%, respectively.
  - ► White increased from 47% to 54%; and from 68% to 71%, respectively.
  - ► Female increased from 31% to 43%; and from 59% to 62%, respectively.
  - ► Male increased from 37% to 39%; and from 54% to 59%, respectively.

- Doctoral – increased from 18% to 40%; and from 40% to 66%.
  - ► Black increased from 17% to 38%; and from 47% to 65%, respectively.
  - ► White increased from 22% to 44%; and from 55% to 69%, respectively.
  - ► Female increased from 18% to 39%; and from 52% to 67%, respectively.
  - ► Male increased from 19% to 41%; and from 48% to 68%, respectively.

8. Challenges of Postgraduate Study for Black South Africans

In relation to doctoral programmes, at first glance the decline in South African enrolments can largely be ascribed to the lack of funding, which is indicated by the fact, as discussed above, that the majority of students study part-time. And indeed, funding was identified as the main driver by all the academics responsible for coordinating postgraduate programmes at the institutional level. As one put it, "funding is 80% of the challenge". There is no doubt that funding looms large as an obstacle in the pursuit of doctoral study for black South Africans. However, while important and without underplaying its role, the focus on funding is too simple and hides as much as it illuminates. It cannot, on its own, account for why black South Africans, in particular, first-generation students, that is, first in their family to go to university, pursue, or not pursue doctoral study.

There are a range of factors, social, cultural and educational, that impact on and influence the pursuit of doctoral study by first-generation black students, which, in addition to funding, need to be addressed to attract black South Africans to pursue doctoral study. To gain an understanding of these factors, a small group of current and recent doctoral students and PDFs were interviewed to unpack the journey that they traversed from undergraduate to postgraduate study, the challenges encountered along the way, and the factors that enabled the successful completion of their studies. The group, although small, was representative in terms of the balance between urban and rural students, first-generation students and students whose parents had been educated – either school and/or university, students who attended state and private schools, and students from the SADC region (see Appendix Three for breakdown). It was, however, not representative in relation to fields of study – except for one each from B&C and the humanities; the rest were all from education, albeit from different fields in the humanities and social sciences at the undergraduate level. The picture that emerges, which is outlined below, provides a fuller understanding of the challenges, including funding, that first-generation black South African students confront and navigate on the journey from undergraduate to postgraduate study. The most salient feature of this journey, both in terms of the choice of field of study at the undergraduate stage and the subsequent progression through the different postgraduate stages, is that by and large, the majority of students stumbled through the journey by chance – as one colleague put it, they are "accidental academics".

8.1 From Undergraduate to Postgraduate: the Doctoral Journey

8.1.1 Choice of Field of Study

At the undergraduate stage, except for two students who had a clear idea of what they wanted to study, for the rest the choice of study programme was based either on the fact that the minimum requirements for their first choice were not met; or it was what their friends who preceded them to university were studying; or because they performed well in certain subjects at school; or the availability of bursary support; or because a sibling who was at university had the required textbook for the programme; or because the family wanted the student to pursue a professional qualification for employment purposes – as one student put it, "my father who was a professional had wanted this to ensure that his child could stand on her own feet".

There was little if any career guidance offered at school and, if offered at all, it was limited to the occupations that those who had pursued further study in the community had followed – mostly teaching, social work, and nursing. In some cases, students were influenced both by the subjects taken at school – commercial subjects such as accounting, as well as the fact that individuals from the surrounding area had pursued successful accounting careers and had done well financially, such as Wiseman Nkuhlu, the first African chartered accountant, Sizwe Nkosana, who started the first black-owned audit firm in South Africa and Tito Mboweni, the first black governor of the Reserve Bank. The two students whose choice of study programme was influenced by their own interests both attended private schools and had

educated parents who put no pressure on their choice of study programme. As one indicated, her mother told her "do whatever you want; don't focus on what will bring you a job". The student put down her interests in community and development issues to the "holistic education – academic, cultural, and sport" provided by the school, including learning about research through participation in the debating society. However, the faculty in which she enrolled to pursue a degree in Politics, Philosophy and Economics was influenced by the availability of bursary support – the foundation that provided the bursary did not support programmes in the social sciences.

Career guidance was similarly not provided at the universities they attended, both at the point of enrolment as well as during the course of their undergraduate studies. If students changed their course of study as two, who had both enrolled for engineering programmes, did at the end of the first year, this was because in one case the student realised that engineering was not in line with his "passion for working with people", which was developed as a result of participation in community projects while at school in a rural area. In another case, the student developed an interest in philosophy – as part of the first-year engineering programme it was compulsory to do modules in literature and philosophy, specifically ethics and logic, which she enjoyed and while she found the "questions and issues discussed weird," she was "good at it". The change to majoring in philosophy resulted in her losing her bursary from a private foundation, which did not fund programmes in the humanities and social sciences, and she subsequently received funding from the NSFAS.

8.1.2 Research in the Undergraduate Curriculum

There was no exposure in the undergraduate curriculum to research and the development of research skills that influenced their choice to pursue postgraduate study. The importance of exposure to research through projects and other activities was highlighted by two of the students who were the recipients of a Mellon-Mays Undergraduate Fellowship (MMUF), which identified talented undergraduates and supported them through a range of activities separate from their formal programme, such as a mentor to guide their development, research training workshops, participation in seminars and conferences, presentations at an annual conference, writing retreats, and an international trip, all of which played a role in influencing their decision to pursue an academic career. The benefits of the programmes, as one of the students pointed out, was that "you learned about academic work and the nature of academic work". The programme also created a community of fellows, which acted as a support group as they embarked on postgraduate study. Similarly, a student whose programme incorporated a research project in the second and third year, including research methodology courses, indicated that it built her confidence, and she felt "comfortable to do research".

8.1.3 Role Models and Mentors

There were few role models, mentors or lecturers during their undergraduate studies who were intellectually exciting and inspired students to pursue academic careers. As one student indicated, throughout his undergraduate studies he was mainly taught by academics whose highest qualification was a master's. And as another suggested, "university kills talent – academics are not inspiring".

The importance of role models was highlighted by an academic who indicated that "you go as far as you can see". And although this referred to the need for black academics as role models, interestingly, there were three students who were influenced and supported by white role models. In the one case, the concerns of the student who transferred from engineering to philosophy about future career options and funding, as she "did not want to accumulate debt", were allayed by the Head of Department, who helped her develop a plan for her studies and career options at the outset and continued to mentor and support her throughout her undergraduate studies.

In the second case, a student at a HBU who changed from a B.Ed in History to a BA in Heritage Studies as he was unhappy with the B.Ed curriculum, which was untransformed, was influenced and encouraged

by the Head of Department of Heritage Studies, who saw his potential to pursue an academic career. As he pointed out, "it took a white Afrikaner to influence my career path and study choices", while the "black lecturers were all horrible".

Similarly, in the third case, a student who had enrolled to study law, enjoyed the course but "did not feel welcome as all the staff were white Afrikaners". He subsequently transferred and majored in politics based on his experience in politics in his first year. The politics department, which was staffed by both white and a few (early career) black academics was welcoming and "recognised and understood the context of black students". In addition, aside from the black academics providing support and mentorship, undergraduate students were invited and encouraged to attend departmental seminars, including informal social events such as braai's, which exposed them to academic and intellectual work and built their confidence in engaging with ideas. Another student at the same university but in a different department had a similar experience. She characterised the approach to teaching and learning as a "pedagogy of engagement" based on lecturers also acting as tutors, which fostered a "personal relationship and social connection that was not alienating".

In highlighting the role of white academics, it is not to suggest either that role models based on race and gender or that the transformation of the demographic composition of staff in higher education, is not important. It is to recognise that there is not a simple correlation between the race and gender background of academics in influencing the career paths of black and female students in pursuing academic careers.

The participation of students in Student Representative Councils (SRCs) and through the latter on Senate and Faculty Boards also played a role in influencing students to pursue academic careers, as two of the students who were student activists and SRC representatives indicated. As one pointed out, this exposed him to the challenges facing higher education, in particular, the shortage of academics and the need to transform the academy, which influenced his decision to pursue an academic career. And in the case of the second student, his participation in discussions on the establishment of a Post-School Education and Training (PSET) Centre at the university, following the release of the PSET Green Paper in 2012, led to his being offered a part-time research assistant post in the Centre while studying for a master's and influenced his decision to pursue an academic career.

Student role models and siblings also influenced the pursuit of postgraduate study and academic careers. One student enrolled for a master's as a result of meeting and interacting with postgraduate students on campus, which also influenced her subsequent decision when she became disenchanted with the corporate world to register for a doctorate. And another was influenced and encouraged by an older sibling who had completed doctoral studies.

8.1.4 The Doctoral Experience

The doctoral experience was mixed and underpinned, whether positive or negative, by the relationship with, and the support provided by, the supervisor. This is not surprising given the one-on-one model, which, as one student put it, is the "embedded culture" in South African higher education. He went on the argue that as education is a social process and ideas develop through intellectual engagement with peers and supervisors and not in isolation, the one-on-one model should be replaced by a faculty-based structured model in which cohorts of doctoral students participate in common activities, including seminars at which students and staff present work-in-progress, conference presentations, both national and international, writing retreats, and participation in supervisor-linked research projects and course work.

The benefits of a structured model it was suggested, is three-fold; (i) it builds a community of peers, which addresses and helps overcome the lonely nature of the one-on-one model; (ii) it contributes to the building of an academic identity through an intellectual environment characterised by critique and engagement and exposure to a range of different ideas; and (iii) it is "intentional" in providing support and mentorship and is dependent on the approach

and commitment of the supervisor(s) and requires utilising supervisor budgets to fund activities. It should be noted that intentionality in terms of supervisory support and commitment is not dependent on a structured model but can and should underpin the one-on-one model.

The suggestion that the structured model should be faculty-based recognises that intellectual engagement and building academic identities cannot be left to Postgraduate Centres, which have been established in a number of institutions, as these focus on the provision of technical skills support such as writing consultations, referencing tools, and so on. As one student indicated, the guidance received from the Postgraduate Centre in writing consultations is "not the same as the guidance received from the supervisor". And as another argued, the activities offered by the Postgraduate Centre are a "tick-box exercise".

On the negative side, there were, as one student put it, "horror stories" regarding the role of supervisors, which was both experienced by some of the students interviewed and based on the experience of their peers. This included supervisors not reading and commenting on draft chapters submitted – in one case for a whole year, or getting peers to read and comment on chapters with no involvement of the supervisor; not making time to meet with students to discuss progress; one student met with supervisor every two weeks and although the students submitted drafts prior to each meeting, the discussion was limited to the student providing an update on progress but the submitted drafts were not read and no comments provided – the student finally received comments six months after submitting the drafts; one student was forced to change topic to align it with the supervisor's interests despite the fact that the proposal was accepted with comments by the Higher Degrees Committee; supervisors also exploit students – load them with marking, including providing input for conference papers but don't acknowledge the student's contribution. As one of the students argued, the student-supervisor relationship needs to be reviewed as currently there is nothing in place to "keep the supervisors accountable", which makes it difficult, as another pointed out, for students to raise their concerns because of "fear – how will the supervisor react given the power dynamic".

The academic support concerns aside, it was also suggested that non-academic support was not taken seriously, in particular, providing support to students with mental health issues. In this regard, it was suggested that the counselling service provided at institutions is not adequately funded and tends to rely on employing interns who do so as part of the practical requirements of their qualification. This is problematic in two senses, (i) there are no senior staff to supervise the interns; and (ii) the interns focus on completing the practical hours required and then leave, which impacts the consistency of the service and, importantly, the building of rapport between the students and the counsellors.

8.1.5 Funding

The first unexpected and surprising finding is that except for one student, there was no family pressure on the students from poor and working-class backgrounds to find work after completing their undergraduate studies. The family and community did not understand why they were continuing and asked, as one student put it, "What is the value of this education?" but there was no pressure not to continue with postgraduate study. In fact, the "black tax" was not mentioned or referred to, except in passing by one student, who indicated that as she was "single there was some black tax and she contributed to supporting her sibling and family", but this was limited as the "family was working class and poor but not expecting to live in Sandton". Likewise, it seems as all the students from similar backgrounds made a contribution, albeit small, it was appreciated by the family and alleviated any pressure to find work. However, one student did take a break and worked as a teacher to support his siblings to complete their schooling before continuing with his postgraduate studies, but this was based on his own decision to do so rather than because of family pressure.

The fact that there was no family pressure did not mean that on completion of their undergraduate studies

the option of working was not considered. However, as three students pointed out, they continued with postgraduate study as they applied for but were not successful in obtaining jobs after completing their undergraduate studies. As one student indicated, there was no family pressure but his "own pressure", as he could not "justify or reconcile the fact that he had two degrees [undergraduate and honours] but was unemployed", and while it was his ambition to pursue an academic career instead of working, it "would take too long" before he could earn a living as an academic.

The main source of funding was the NRF and more recently, the NIHSS. The main concern raised by students was in relation to the amount allocated. In their view, the NRF allocation, which for doctoral students in 2023 is R176 430 (including fees but excluding devices) (NRF, 2022) is inadequate to cover student needs. It is not a "living scholarship" as one student put it, and as another argued, it does not "treat students like adults" and does not take into consideration that "students need to live and look like adults", which requires supporting their own needs as adults – renting a house, buying a car, paying school fees for their children and so on. As one student indicated, "I am not expecting a corporate lifestyle, but I can't scrape by and live in student accommodation". And as another pointed out, it is precisely because the bursary is not sufficient to support an adult lifestyle that forces doctoral students to study part-time. In his case, balancing work and study is easier as he is employed as a researcher in a local Council working on youth unemployment, which is also the focus of his doctorate. However, his salary is not sufficient to cover his fees given his family responsibilities and he does not qualify for an NRF bursary as he is working full-time. In his view providing job opportunities and internships such as the master's internships offered by the Human Sciences Research Council (HSRC), which allows 40% of time to be allocated to study purposes is a model that should be considered.

In the absence of a "living scholarship", which one student argued should be pegged at R350 000, doctoral students supplemented their bursary income by working part-time on a variety of jobs such as research assistants, data collection and analysis, including statistical support to other students, and transcribing interviews. It was also suggested that doctoral students should be employed as tutors, which apparently is not allowed in some institutions. In this regard, as one student argued, institutions should develop a policy framework for the employment of doctoral students in teaching and research projects, as currently this is done on an ad hoc basis, and the decision is left to individual supervisors.

The supplementary income activities speaks both to the commitment and resilience of students in their pursuit of academic careers. This was brought home in the case of two students – a master's student who was not aware of the availability of NRF bursaries and applied late and a doctoral student whose funding was withdrawn due to differences with his supervisor. In both cases the students worked a variety of jobs to cover their costs both in the university – tutoring, acting residence warden, library assistant, and outside the university – group therapy with hospital patients (the student was a trained social worker) and in organising local events.

8.1.6 Time to Completion

The average completion time for full-time students was between 4-5 years. As one student suggested, "three years is sufficient if the conditions are right and there are no other responsibilities", such as doing part-time work to supplement the bursary. In the same vein, another argued that "four years was ideal given other factors and responsibilities – the balance between study and other responsibilities is difficult as life intervenes; for example, a friend whose mother died had to take over the responsibility for her brother who has social problems", which delayed her studies. She argued that these issues, which are not financial, also have to be considered in determining the number of years of study funded.

8.1.7 The Post-Doctoral Fellowship Experience

There were three issues raised with regard to employment as PDFs. The first was in relation to salaries – between R18 000-R20 000 per month,

which is seen as too low, especially for PDFs who have started and have responsibilities for their own families. As one PDF put it, “the remuneration is unattractive”. The second and linked concern was that PDFs were exploited. Although the main requirement for PDFs is to publish, they were often, in addition, also given heavy teaching loads, in particular, teaching first-years, which, as one PDF indicated, was “very difficult”. In this regard, as another student pointed out with regard to junior staff rather than PDFs, “there is a toxic departmental environment and culture in which junior academics are loaded with work, while the senior academics focus on research. Third, there was a concern both among the doctoral graduates and the PDFs about the limited opportunities for academic and research posts in higher education, including a perception, as one recent graduate suggested, that “who you know matters more” than qualifications and experience, and as another indicated that “keeping older academics” in particular, emeritus professors, is “not creating space for new entrants” into the academy. The latter is perceived in part as the result of the lack of, and commitment to, transformation, which as one PDF who was employed as an assistant lecturer after completing her master’s indicated, made her “feel even more out of place” as coming from a working-class background she was “socially inept” in a middle-class white department where she was the only black staff member. Furthermore, not only were issues she raised regarding the non-payment of her salary on time “not taken seriously and handled unprofessionally”, but there was an assumption in the discussion on decolonisation of the curriculum in the context of “Rhodes Must Fall” that this should be done by her, although her interests lay elsewhere. The fact that the department was alienating was made worse by the “grief from black students who saw her as a coconut”.

9. Addressing the Challenges

The insights that emerge from the doctoral journey of first-generation black South African students bring to the fore the issues that require addressing to attract young black undergraduates to pursue postgraduate study and a career in the academy. The insights are important because they go beyond the standard view, which all the postgraduate programme coordinators interviewed held, that a combination of funding and family and societal pressures to enter the labour market and to earn a living after completing their first degree are the main explanatory factors that stand in the way of black graduates from pursuing postgraduate study and academic careers. Although funding is critical, family and societal pressures have had little bearing on the decision of black graduates to pursue postgraduate study, other than in influencing whether this was done on a full-time or part-time basis. It could be argued that a firm conclusion in this regard cannot be made given the small sample on which this study is based. However, what it does suggest is that there is a greater need to undertake qualitative research – narrative biographies, to deepen our understanding of the real-life experience of black students and their families as they navigate the journey to create a better life for themselves.[11]

It is against this backdrop and based on the insights from the student views that the issues outlined below require addressing.

9.1 Undergraduate Study: Curriculum Reform and Innovation and Nurturing Talent

9.1.1 Undergraduate Curriculum

The exposure to research and the development of research skills through research projects and research methodology courses in the undergraduate degree, as indicated, played an important role in influencing students to pursue postgraduate study. In this regard, as one postgraduate coordinator suggested, the "biggest challenge is the undergraduate curriculum – it is not what it should be" in terms of the "development of research skills and an understanding of what research is and how it fits into postgraduate programmes". And as another indicated, postgraduate students in the UoTs "struggle to develop research proposals as their undergraduate studies have not prepared them for postgraduate study".

This suggests that there is a need to review the undergraduate curriculum to incorporate the development of research skills, including statistical skills, which, as one student pointed out, is not done at the postgraduate level either, students depend on institutional statistics units to assist them with data analysis.

The development of research skills at the undergraduate level is important in its own right and not only for postgraduate study given the increasing role of data analysis in a range of occupations. In this regard, it can be argued that given the exponential increase in knowledge and its accessibility via the internet, it is no longer possible or necessary to master all the knowledge in a particular field. This requires shifting the focus from understanding, that is, mastering of the subject matter or discipline, to the application of knowledge through the development of broad skills and competencies. In short, a shift from knowing to knowing how to, including the ability to "manage and mine the knowledge base" (Bridges, 2000; Byne, 2011; Dezure, 2002). This shift globally in undergraduate curricula is taking different forms, including:

- Inter-disciplinary projects (up to a year-long), combining theory and practice, which bring together research teams consisting of staff and students – postgraduate and undergraduate – to address "wicked problems" or societal challenges – local, national, and global. These have included courses addressing transport issues in a city, food waste in an institutional setting, and courses linked to inter-disciplinary research institutes focusing on thematic issues such as Brain and Society, Global Health, Information, Culture and Society and so on.

11 An excellent example of this is the study of the undergraduate experience by Case, et.al., 2018.

- Co-curricular courses or activities such as industry-community projects, which bring together mixed-disciplinary groups of students working with a company or community organisation to address and find solutions for an identified problem (Essop, 2019).

The review of the undergraduate curriculum was not the focus of this report, and although there were one or two examples of the incorporation of modules in research methods in the undergraduate curriculum, these are likely to be the exceptions rather than signifying a wider trend in undergraduate curriculum reform and innovation in line with global shifts. However, a cautionary note – reforming the curriculum along these lines is resource intensive in particular, in relation to staff workloads, which are already stretched, and staff buy-in may be difficult, as one institution that has introduced a mandatory research module in its undergraduate programme has found. Moreover, there is little appetite for curriculum reform and innovation in the higher education sector. This is indicated by the fact that the CHE's proposal for creating a flexible curriculum structure to address the articulation gap, discussed above, as well as the "Rhodes Must Fall" demand for the decolonisation of the curriculum, has not made significant headway as a result of political and institutional inertia.

9.1.2 Nurturing Talent

The exposure to research and academic careers can also be done through mentoring and support activities that are separate from the formal undergraduate curriculum, such as the MMUF activities, which, as two students indicated, influenced their decision to pursue academic careers. The MMUF programme "identifies exceptionally promising black South African scholars at the end of the second year of their undergraduate degree. Through a two-year fellowship, they are mentored and trained in all the fields related to academic research and writing" (Mellon Foundation, 2018: 93). As Vanessa Brown, one of the programme coordinators points out:

> When they start the Mellon Mays, they are quite young and immature, and there is no doubt it is a difficult and rigorous journey. We immediately start working with the Fellows on the research they would like to pursue and to start developing their scholarliness. They need to make the transition from a consumer of knowledge to an original thinker and producer of knowledge (Mellon Foundation, 2018: 94).

The development of the students' "scholarliness" or learning about the "nature of academic work", as one of the students put it, is based on a range of activities – mentoring, participation in conferences, etc. – as outlined in 8.1.2 above. The distinguishing feature of the MMUF is its "intentionality", which is indicated by the fact that students recruited into the programme, "must have an excellent academic record and by their final undergraduate year should have expressed a strong commitment to pursuing an academic career" (Mellon Foundation, 2018: 94). The students are recruited at the end of the second year and financially supported until the completion of their honours degree. Subsequently, the Mellon Foundation assists them in finding bursaries for master's (which apparently is very difficult) and doctoral study (Mellon Foundation, 2018: 93-94). And importantly, the movement from honours to master's is close to 100%, "with only a handful stopping after honours as a result of various personal and financial pressures" (Mellon Foundation, 2018: 95). However, the movement from master's to doctoral study is less successful – for example, between 2009-2018 out of a total cohort of 45 at the University of the Western Cape, only eight students enrolled for doctoral study (Mellon Foundation, 2018: 95). The reasons for this are not clear although it is probably a combination of factors such as lack of access to funding, financial pressure if they plan to or have started a family, and job opportunities that are taken up because of concerns about the uncertainty of the availability of academic and research jobs.

The benefits of the MMUF programme, in particular, exposure to research and the nature of academic work and peer support networks, suggests that consideration should be given to introducing a similar national programme that is funded by government and is intentional in purpose in terms of recruiting, exposing, and encouraging talented undergraduates

to pursue academic careers. A programme along these lines, the Nurturing Emerging Scholars Programme (NESP), is included in the DHET's "Staffing South Africa's Universities" Framework (SSAUF). The purpose of the NESP is to "assist in creating a viable talent pool from which future academics can be recruited" (DHET, 2015: 18). The NESP is similar to the MMUF in its intention to encourage final-year undergraduate students and honours and master's graduates "whose academic performance is strong" to pursue academic careers. As the SSAUF indicates:

- The NESP recognises the potential of this group of students or graduates and seeks to actively direct some of that potential towards a career in academia, through making structured, attractive prospects and opportunities visible and available to them.
- Universities will be requested to identify high achievers early in their study programmes. These students will be targeted actively to continue with their studies. They will receive regular email correspondence from the DHET, spelling out the advantages and opportunities offered by academic careers, clarifying the processes needed to achieve in this regard, and making known details of national funding opportunities. Students will be encouraged and reminded to stay in touch via the SSAUF website and will be invited to seminars and presentations on relevant issues (DHET, 2015: 17-18).

However, a key shortcoming in the NESP is that both scholarships and "opportunities for development, and exposure to academic life" through participation in "structured university tutorship and mentorship programmes" are not guaranteed but will be provided "as far as possible", presumably based on the availability of funding. Thus, the apparent intentionality underpinning the programme is undermined by the lack of guaranteed funding, mentorship, and other development opportunities. Although the shortcomings have been addressed in the implementation of NESP since 2020, it is limited to students enrolling in master's programmes, that is, final year undergraduates and honours students are not included. Furthermore, the completion of a master's degree does not guarantee bursary support at the doctoral level – students have to apply to the NRF and other sources and nor is there a guaranteed route into the New Generations Academics Programme (nGAP).

It is recommended that the NESP should be restructured to identify talented students early in their undergraduate studies and to provide them with funding, mentorship and other opportunities to develop their research skills on a continuum from the point of entry into the programme at the undergraduate stage to the doctoral stage. The support must be intentional and ongoing to attract and recruit young black South Africans to pursue academic careers.

Furthermore, to introduce students to research and academic careers, including knowledge and awareness of postgraduate programmes, universities should consider annual faculty-based research days at which undergraduate and honours students are exposed to the range of research being undertaken within the faculty, including the sharing of experiences by current or past doctoral graduates and supervisors. There may also be merit in holding an annual national or regional event – PhD festivals, as the NRF did in the past, which brought together prospective students (participation was funded by NRF based on applications), supervisors, and mentors to share experiences and the different universities had booths to inform and advice prospective students on the programmes they offered.

Finally, as indicated, the choice of field of study at the undergraduate level was not based on any understanding of the options and career paths available, including their abilities and aptitudes. This is confirmed by the findings of Case, et.al. (2019: 37) in their study of the undergraduate experience:

> …perhaps contrary to the assumptions underpinning the curriculum structure, many students do not have a good idea at the start of university of what their particular strengths and interests are, and many times this needs to be discovered through trial and error.

There is clearly a need to provide career guidance and advice on study options in both schools and

universities. In relation to universities, as Case, et.al. (2019: 54) suggest, unlike other countries, in particular, the USA, where "academic advising" is major focus of support, in "South African universities it is mostly ad hoc in the context when a student has failed courses and is facing exclusion". This suggests that career guidance and academic advising should be developed and offered at universities, in particular, at registration.

Similarly, there is a need for career guidance services to be offered at public schools by trained specialists. In the past, there were a range of non-governmental organisations that provided career guidance in different regions but post-1994, many, if not all, closed down due to funding constraints. There is a National Qualifications Framework and Career Advice Service (CAS) that was established in 2011 by the South African Qualifications Authority (SAQA), and the DHET and the Department of Basic Education. The service has a "website, a career advice helpline [with qualified career advisors], guidance materials, and a weekly radio programme in partnership with SABC Education that is broadcast on nine regional radio stations in nine languages" (DBE). However, and although it is not clear if the efficacy of this service has been evaluated, it cannot replace career guidance advice that should be provided by teachers based on their assessment of the students they teach. Although ideally each school should have a career guidance specialist, at a minimum teachers should be provided with training to offer career guidance, which could be done in conjunction with the CAS.

9.2 Doctoral Programmes

9.2.1 Structured Programmes

The CHE national review of doctoral qualifications indicates that while no university imposes a "specific supervisory model" and while there are variations within institutions, the most common model across the sector is the one-on-one (or apprenticeship) model, except for "one private institution where the cohort model is an intentional focus" (CHE, 2022: 43). Furthermore, the review notes that several institutions in their review reports indicated that the "apprenticeship model can lead to challenges in terms of the power dynamics between the supervisor and student, which can be exacerbated by differences in background and culture" (CHE, 2022: 43). In a different vein, the efficiency of the one-on-one model in enabling the rapid increase in the production of doctoral graduates was raised in the ASSAf study on doctoral programmes (2010: 16).

The cohort model, as Mckenna and van Schalkwyk point out, with some variation, involves the "establishment of a doctoral community and increased structure in the doctoral curriculum" (McKenna and van Schalkwyk, 2023:5). In both the CHE review and the ASSAf study, the benefit of the cohort model, aside from addressing the power dynamic in the supervisor-student relationship, is narrowly focused on efficiency in terms of increasing throughput rates and managing the "supervision load" (CHE, 2022: 42). There is no engagement with its role in contributing to intellectual engagement and the building of an academic identity and community, which was highlighted by students, as well as by the coordinators of two, albeit different variations, of structured and collaborative cohort models in which the supervisor(s) and students meet on a regular basis to critique draft proposals and/or papers prepared by students. As the academics involved in one of these programmes argue:

> A major strength of the programme lies in the presentation of work in a group context. Group engagement not only facilitates intellectual stimulation, theoretical enrichment and refinement of ideas and draft material, but also importantly allows for accountability to an entity beyond the self, as well as peer and team support in progressing through the doctoral process (Long et.al., 2017: 533).

Other benefits of a cohort model include, as McKenna and van Schalkwyk (2023:1) suggest, based on a review of the literature on the move to structured approaches internationally, the "possibility of a stronger research foundation and interdisciplinary work". It needs to be recognised, however, that the cohort model requires "investment in time and resources", may not be suited to all disciplines (McKenna and

van Schalkwyk, 2023: 11-12; CHE, 2022: 42), and can take different forms, both formal – structured courses, and informal – joint staff-student seminars, etc. In addition, the power imbalance in the one-on-model does not disappear in the cohort model. It is replaced by the power dynamics in the cohort, which may be more complex given the multiple relationships and diversity of views both between supervisors and between supervisors and students. As Long, et.al. (2017: 534) point out:

> Supplementary supervision from the team and one's peers (beyond one's individual supervisor) means that candidates also have to learn to deal with conflicting feedback, finding their own way of negotiating between different theoretical perspectives and directions. It requires particular maturity to embrace multiple pieces of feedback and then to sort through this in order to find one's own voice and agency.

In juxtaposing the one-on-one model with the cohort model is not to suggest that one is better than the other. As McKenna and van Schalkwyk (2023:12) argue, a "one-size-fits-all" approach is inappropriate as the model implemented must take into account the institutional and disciplinary context, including the aims and purposes of specific doctoral projects. The key question that needs to be asked and answered is whether the model will enhance the educational and intellectual experience of both students and supervisors or whether its main purpose is managerial efficiency.

The focus of the discussion in South Africa, as Cloete, et.al. (2015: 137) argue, has been on improving the apprenticeship model rather than an overall review of the design and the different routes to obtaining a doctorate, except with regard to the introduction of the doctorate by publication. However, there is a recognition amongst academics, as a report on doctoral education in the arts, humanities, and social sciences found, that the one-on-one model "is not appropriate in the South African context [and] is in part responsible both for the poor completion rates… and the apparent weak conceptual, theoretical, and methodological grounding of doctoral graduates" (Essop, 2015: 13). The shortcomings of the model are captured in the proposal submitted by the University of the Witwatersrand for funding support for a structured cohort-based approach:

> For all its simplicity and brevity, a growing consensus sees this model as poorly fit for South African circumstances. It routinely generates a sense of profound alienation and isolation—more so in the humanities, where doctoral candidates pursue research individually rather than as members of project teams or laboratories. For students who are inadequately prepared at the pre-doctoral level to undertake a large-scale, individually-designed research project, and to situate that project in relation to several fields of empirical scholarship and theoretical debate, the model can a produce profound sense of frustration and inadequacy. Unreliable or inadequate funding - notably for research expenses, but equally for mere subsistence - only amplify the pressure to complete a task of overwhelming dimensions" (quoted in Essop, 2015: 13).

In response to these shortcomings, as the report notes, there was consensus that developing and strengthening postgraduate culture requires the development of a cohort-based common programme for doctoral students consisting of three components, namely:

- Academic - exposure to different disciplinary, theoretical and methodological traditions.
- Technical - reading, writing, presentation and publication skills.
- Subjective - cultivating the development of an academic and scholarly identity and the internalisation of the underpinning values; in short, what it means to be an academic citizen (Essop, 2015: 13).

This, including the fact that some structured doctoral programmes have been introduced, suggests that what is required is a broader sector-wide discussion and debate on the design of the doctorate, in particular, the benefits of a cohort model in improving the educational and intellectual experience of students.

9.2.2 Supervisor-Student Relationship

The negative experiences relating to the supervisor-student relationship, as the CHE Review found, is the result either of the non-implementation of institutional policies on the roles and responsibilities of supervisors and students, appeals and complaints processes, or the lack of systems and policies on mentorships and personal support systems. The proposals to address these shortcomings has been covered in detail in the CHE review and are not necessary to repeat here (CHE, 2022: 45-50). Furthermore, as the CHE review notes, several of the institutional review reports indicated that the "power dynamic' in the one-on-one model "can be exacerbated by differences in background and culture" (CHE, 2022: 43), which was highlighted by the student who felt "socially inept" as a staff member while pursuing her master's. This suggests that postgraduate centres that offer training programmes for new, as well as experienced supervisors, should not only focus on the technical aspects of supervision but should also provide training in dealing with social and cultural diversity.

9.2.3 Time- to-Completion

The majority of full-time students take between 4-5 years to complete a doctorate, which is in part related to the fact that they have to work part-time to supplement the bursary. The NRF does allow an extension (4th) year of funding if this is supported by the supervisor. However, given that on average full-time students take four years to complete a doctorate, it is suggested that this should be made the norm, which would bring it in line with the nGAP, which provides funding for six years – the first four years of which are allocated for the completion of the doctorate.

10. Funding

The main concern raised by students, as indicated, was in relation to the NRF bursary allocation, which is not sufficient to cover all their expenses. As one postgraduate coordinator suggested, the NRF bursary was "adequate as long as it was supplemented by other support, which forced students to work" while studying full-time. This despite the fact that, unlike previously, the bursary covers the total cost of study (TCS), including tuition, accommodation, living allowance, and books and electronic devices (NRF, 2019: 18).

The need for supplementary income, as indicated, was not driven by (extended) family pressure but to support the students' own needs as adults. The bursary allocation – R 176 196 in 2023 (including fees but excluding devices) is a disincentive to pursue doctoral study when compared with entry-level salaries in the public and private sectors. For example, in 2023 the starting salary for an Assistant Director post, which is an entry-level professional post in the public sector, is R376 596 (excluding benefits) and the required qualification is either a three-year diploma or degree. Thus, the opportunity cost of pursuing doctoral study is high in terms of lost income given that it takes a minimum of 8-10 years from enrolling for an undergraduate degree to obtaining a doctorate.

Furthermore, in the absence of employment opportunities in the academy at the point of completion, doctoral graduates who are committed to an academic career, enter the academic labour market through the PDF route and earn between R200 000 and R240 000 annually, which, as one academic suggested, is "atrocious". And there is no guarantee of employment at the end of the PDF given the paucity of jobs in the universities. A tracer survey of PDFs found that on average PDFs spend three years in post – 67% between 2-4 years; 25% more than 4 years; 5% more than 6 years; and 2% more than 9 years. The main reason for long-time spent in PDFs, other than gaining research experience and working on specific projects, was the lack of employment opportunities in universities (Mouton, et.al., 2022: 89).

Similarly, there are few opportunities for employment in the private sector. A study of 350 leading companies in South Africa found that in 2014, out of the 1,4 million employees surveyed, only 995 were doctoral graduates. It also found that "PhD graduates are often excluded from the recruitment space because they are seen as overqualified by human resource personnel" (Mashifana, 2022). This is apparently due to a concern that doctoral graduates would require "on-the-job retraining and/or demand too much in terms of income" (Mouton, et.al., 2022: 65). It is all the more surprising that first-generation black students pursue doctoral study at all.

The disconnect between the policy to increase the pool of doctoral graduates and the main financial driver – bursaries – needs to be addressed if young black South Africans are to be encouraged to pursue academic and research careers. This raises the question of what constitutes a "living scholarship", taking into account affordability and sustainability. As indicated, one student argued that it should be pegged at R350 000, which is close to the starting salary for an Assistant Director. This may be on high side for doctoral students but not for PDFs. There is clearly a need to revisit and review the criteria and parameters – apparently it was based on the needs of a single student – including the methodology used that informed the NRF in arriving at the current TCS. The starting point should be a survey of doctoral students and PDFs, both single and those with families of their own, to assess their living costs. It goes without saying that increasing the TCS allocation and the salaries of PDFs without a concomitant increase in the quantum of funds available for bursaries will result in a decrease in the number of students supported and PDFs employed. However, irrespective of whether the TCS is raised, there is clearly a need to increase the quantum of funds allocated for postgraduate bursaries in the context of the policy commitment to increase enrolments.

This raises a further question, that is, the appropriateness of targets set in the NDP, in particular, the target to produce "more than 5 000

doctoral graduates per year" by 2030. The target, as indicated, will be met largely as a result of the substantial increase in doctoral enrolments from the RoA, which, as indicated above, is beneficial as it results in a brain gain. However, the prior question that needs to be asked is on what basis was this target arrived at? This is especially pertinent given that despite rising student-staff ratio's, new posts are not being created in the universities because of declining funding. Furthermore, a doctorate is not required for employment in the public and private sectors. As one academic argued, the "high premium on the doctorate based on the perceived link between the doctorate and economic competitiveness" is misplaced and "undervalues the master's", which is more highly rated in the labour market. This is borne out by the fact that although, as a proportion of total enrolments, South African doctoral enrolments have decreased from 77% to 64%, PgD/H and master's enrolments remained stable – 93% and 86% (see Table 5).

The need to review the TCS and targets notwithstanding, the following suggestions to alleviate the financial pressures faced by doctoral students should be considered:

- Institutions should develop policy guidelines for the employment of doctoral students as research assistants, including support for conference attendance, both national and international, linked to supervisor-funded research projects.
- Institutions should prioritise the employment of postgraduates instead of senior undergraduates as tutors, library and IT support assistants, etc.
- Government departments, research organisations, and parastatals should provide internships, such as the master's internships offered by the Human Sciences Research Council (HSRC), which allow a balance between work and study responsibilities based on a 60%-40% ratio.

11. Conclusion

The main finding of this report is that the participation of black South Africans in postgraduate studies is not diminishing. On the contrary, in all postgraduate qualifications, black enrolments have increased between 2005 and 2020. However, there has been a decline in the proportion of South African students, both black and white, enrolled in doctoral programmes. This decline, as argued above, does not signify that doctoral enrolments are being "skewed" in favour of international students at the expense of black South Africans. Instead, it reflects an increase in demand from the RoA and the capacity of universities to meet this demand.

The focus on the increase in students from the RoA distracts from the real question, that is, why is there a limited demand for doctoral study by black South Africans? The answer to this question is to be found in the range of factors that emerge from the voices and experiences of the students outlined above. These include the paucity of bursary funding for full-time study and the fact that the amount allocated is insufficient to meet the living needs of students; limited job opportunities; the poor quality of schooling and the resultant articulation gap between the outcomes of schooling and the demands of higher education; the structure and nature of the undergraduate curriculum; the lack of career guidance in schools and academic advising in universities; the structure of the doctorate; poor supervision and other forms of support; and the lack of mentors and role models. It is these factors that need to be addressed if young black South Africans are to be attracted to pursue doctoral study and academic careers.

12. Appendices

Appendix One: Interviews

1. Institutions

- Prof. Brett Bowman, Head: Postgraduate Strategy, University of the Witwatersrand.
- Dr Vaneshree Govender, Acting Director, Research and Postgraduate Support, Durban University of Technology.
- Prof. Vusi Gumede, Dean, Faculty of Economics, Development and Business Studies, University of Mpumalanga.
- Prof. Laetus Lategan, Research Professor, Research Education and Postgraduate Development, Central University of Technology.
- Prof. Carol Long, Head: Department of Psychology, University of the Witwatersrand.
- Dr Romilla Maharaj, Executive Director, Human and Infrastructure Capacity Development, National Research Foundation.
- Prof. Sioux McKenna, Director, Centre for Postgraduate Studies, Rhodes University.
- Dr Christel Marais, Senior Lecturer, Department of Human Resource Management (Academic), Vaal University of Technology.
- Prof. Anna Moteetee, Senior Director, Postgraduate School, University of Johannesburg.
- Prof. Witness Mudzi, Director, Centre for Graduate Support, University of the Free State.
- Dr Dorothy Stevens, Director, Postgraduate Office, University of Stellenbosch.
- Prof. Jesika Singh, Deputy Vice-Chancellor, Research, Innovation and Partnerships, University of Limpopo.
- Prof. Liezl-Marie van der Westhuizen, Associate Professor, Department of Marketing Management, University of Pretoria.

2. Doctoral Students and PDFs

- Student 1, Doctoral Candidate, University of Johannesburg.
- Student 2, Associate Professor, University of Johannesburg.
- Student 3, Researcher, Non-Governmental Organisation.
- Student 4, PDF, University College, London.
- Student 5, PDF, University of Johannesburg.
- Student 6, PDF, University of the Witwatersrand.
- Student 7, PDF, University of Johannesburg.
- Student 8, PDF, University of Johannesburg (RoA)
- Student 9, Doctoral Student, University of Johannesburg.
- Student 10, PDF, University of Basel, Switzerland.
- Student 11, Doctoral Student, University of Johannesburg (RoA).
- Student 12, Doctoral Candidate, University of the Witwatersrand.
- Student 13, Doctoral Student, University of Johannesburg (Part-time).

Appendix Two

Table A1: Headcount Enrolments: Qualification Level: Undergraduate and Postgraduate (incl. discontinued PG qualifications but excl. occasional students)

	2005	% Total	2010	% Total	2015	% Total	2020	% Total	%C
Undergraduate	600 620	84%	726 882	84%	804 469	84%	925 489	85%	54%
Postgraduate	115 189	16%	138 610	16%	159 182	16%	160 244	15%	39%
Total	**715 809**	**100%**	**865 492**	**100%**	**963 651**	**100%**	**1 085 733**	**100%**	**52%**

Table A2: 2014 First-time entering Honours students continuing with Master's and Doctorate - 2014 to 2021

	2014	2015	2016	2017	2018	2019	2020	2021	Total: 2014-2021
First-time entering Honours	25 013								25 013
Graduated with Honours	11666	3 989	1 887	834	467	239	209	111	19 402
Continued with Master's		2 907	3 162	2 441	1 690	1 120	739	561	12 620
Graduated with a Master's		355	809	722	521	339	207	162	3 115
Continued with PhD			56	266	434	529	503	486	2 274
Graduated with a PhD				5	13	48	57	54	177

	2014	2015	2016	2017	2018	2019	2020	2021	Total: 2014-2021
First-time entering Honours	100%								100%
Graduated with Honours	47%	16%	8%	3%	2%	1%	1%	0%	78%
Continued with Master's		12%	13%	10%	7%	4%	3%	2%	50%
Graduated with a Master's		1%	3%	3%	2%	1%	1%	1%	12%
Continued with PhD			0%	1%	2%	2%	2%	2%	9%
Graduated with a PhD				0%	0%	0%	0%	0%	1%

Table A3: Doctoral Students: Age at Graduation

Age	2005	2020
22-25	2%	1%
26-30	17%	15%
31-40	37%	38%
41-50	30%	28%
51-60	11%	14%
60+	3%	3%
Total	100%	100%

Table A4: Permanent Academic Staff (PAS) with Doctorates (P/D) as a Proportion of the Total Permanent Academic Staff in the Higher Education System (PD/HE) and by Institutional Type (PD/I), 2005-2020

	2005				2020				2005-2020	
	PAS	P/D	% PD/I	% PD/HE	PAS	P/D	% PD/I	% PD/HE	% C	AAG
RIUs	5 609	2 313	41%	50%	6 157	3 963	64,4%	40%	71%	4%
OUs	3 169	1 020	32%	22%	5 161	2 635	51,1%	26%	158%	6%
HBUs	2 517	547	22%	12%	3 892	1 426	36,6%	14%	161%	7%
UoTs	2 699	270	10%	6%	3 268	1 017	31,1%	10%	277%	9%
Unisa	1 308	481	37%	10%	1 830	980	53,6%	10%	104%	5%
Total	**15 302**	**4 631**	**30%**	**100%**	**20 308**	**10 021**	**49,3%**	**100%**	**116%**	**5%**

Table A5: NPHE Benchmark Graduation Rates: Postgraduate Qualifications

Qualification Type	Contact	Distance
Postgraduate/Honours	60%	30%
Master's	33%	25%
Doctoral	20%	20%

Table A6a: Throughput Rates: First-Time Entering Cohorts: Honours Degree (N+3), 2010-2020

	2010 Cohort						2015 Cohort					
	N	N+1	N+2	N+3	N+4	N+5	N	N+1	N+2	N+3	N+4	N+5
RIUs	53%	70%	77%	81%	82%	83%	57%	73%	80%	82%	83%	84%
OUs	35%	53%	63%	68%	70%	71%	53%	72%	76%	79%	80%	81%
HBUs	43%	62%	67%	69%	70%	70%	65%	76%	79%	80%	80%	81%
UoTs	10%	56%	66%	71%	74%	75%	12%	57%	66%	67%	69%	70%
Unisa	11%	28%	35%	41%	44%	45%	11%	29%	40%	46%	48%	51%
Overall	**32%**	**50%**	**58%**	**62%**	**65%**	**65%**	**45%**	**62%**	**69%**	**72%**	**74%**	**75%**

Table A6b: Throughput Rates: First-Time Entering Cohorts: Master's Degree (Coursework) (N+3), 2010-2020

	2010 Cohort				2015 Cohort			
	N	N+1	N+2	N+3	N	N+1	N+2	N+3
RIUs	44%	53%	58%	60%	47%	56%	62%	65%
OUs	43%	52%	57%	59%	46%	55%	61%	64%
HBUs	30%	40%	46%	49%	33%	44%	49%	53%
UoTs	19%	27%	36%	40%	16%	29%	41%	48%
Unisa	14%	27%	34%	37%	20%	29%	35%	40%
Overall	37%	47%	52%	55%	41%	51%	57%	60%

Table A6c: Throughput Rates: First-Time Entering Cohorts: Master's Degree (Research) (N+3), 2010-2020

	2010 Cohort				2015 Cohort			
	N	N+1	N+2	N+3	N	N+1	N+2	N+3
RIUs	42%	52%	56%	59%	54%	64%	69%	70%
OUs	46%	58%	64%	66%	44%	54%	60%	62%
HBUs	27%	33%	37%	39%	29%	38%	43%	45%
UoTs	25%	36%	42%	48%	29%	39%	48%	52%
Unisa	23%	32%	38%	41%	100%*	100%*	100%*	100%*
Overall	**42%**	**52%**	**56%**	**59%**	**54%**	**64%**	**69%**	**70%**

* This is an outlier and incorrect; there is an anomaly in the data submitted.

Table A6d: Throughput Rates: First-Time Entering Cohorts: Doctoral Degree (N+3), 2010-2020

	2010 Cohort				2015 Cohort			
	N	N+1	N+2	N+3	N	N+1	N+2	N+3
RIUs	18%	33%	45%	53%	41%	54%	63%	68%
OUs	22%	36%	47%	53%	43%	56%	65%	70%
HBUs	17%	27%	36%	40%	38%	49%	56%	61%
UoTs	20%	34%	44%	52%	39%	50%	59%	66%
Unisa	15%	25%	34%	60%	31%	40%	47%	55%
Overall	**18%**	**32%**	**43%**	**50%**	**40%**	**52%**	**61%**	**66%**

Table A7a: Throughput Rates Race: First-Time Entering Cohorts: Honours Degree (N+3), 2010-2020

	2010 Cohort						2015 Cohort					
	N	N+1	N+2	N+3	N+4	N+5	N	N+1	N+2	N+3	N+4	N+5
Black	22%	40%	49%	55%	58%	59%	39%	56%	64%	68%	69%	71%
White	58%	76%	80%	82%	82%	83%	65%	82%	86%	87%	88%	88%
Overall	**32%**	**50%**	**58%**	**62%**	**65%**	**65%**	**45%**	**62%**	**69%**	**72%**	**74%**	**75%**

Table A7b: Throughput Rates Race: First-Time Entering Cohorts: Master's Degree (Coursework) (N+3), 2010-2020

		2010 Cohort			2015 Cohort			
	N	N+1	N+2	N+3	N	N+1	N+2	N+3
Black	30%	39%	45%	48%	38%	47%	53%	57%
White	51%	62%	67%	70%	54%	64%	70%	72%
Overall	**37%**	**47%**	**52%**	**55%**	**41%**	**51%**	**57%**	**60%**

Table A7c: Throughput Rates Race: First-Time Entering Cohorts: Master's Degree (Research) (N+3), 2010-2020

	2010 Cohort				2015 Cohort			
	N	N+1	N+2	N+3	N	N+1	N+2	N+3
Black	31%	40%	44%	47%	36%	46%	52%	55%
White	47%	59%	65%	68%	54%	64%	69%	71%
Overall	**37%**	**46%**	**52%**	**54%**	**41%**	**51%**	**57%**	**59%**

Table A7d: Throughput Rates Race: First-Time Entering Cohorts: Doctoral Degree (N+3), 2010-2020

	2010 Cohort				2015 Cohort			
	N	N+1	N+2	N+3	N	N+1	N+2	N+3
Black	17%	29%	40%	47%	38%	50%	59%	65%
White	22%	36%	47%	55%	44%	56%	64%	69%
Overall	**18%**	**32%**	**43%**	**50%**	**40%**	**52%**	**61%**	**66%**

Table A8a: Throughput Rates Gender: First-Time Entering Cohorts: Honours Degree (N+3), 2010-2020

	2010 Cohort						2015 Cohort					
	N	N+1	N+2	N+3	N+4	N+5	N	N+1	N+2	N+3	N+4	N+5
Female	30%	49%	57%	63%	65%	67%	46%	63%	70%	74%	75%	77%
Male	34%	52%	58%	61%	63%	64%	45%	61%	68%	70%	71%	72%
Overall	**32%**	**50%**	**58%**	**62%**	**65%**	**65%**	**45%**	**62%**	**69%**	**72%**	**74%**	**75%**

Table A8b: Throughput Rates Gender: First-Time Entering Cohorts: Master's Degree (Coursework) (N+3), 2010-2020

	2010 Cohort				2015 Cohort			
	N	N+1	N+2	N+3	N	N+1	N+2	N+3
Female	38%	48%	54%	57%	43%	53%	59%	63%
Male	36%	46%	51%	53%	39%	49%	54%	58%
Overall	**37%**	**47%**	**52%**	**55%**	**41%**	**51%**	**57%**	**60%**

Table A8c: Throughput Rates Gender First-Time Entering Cohorts: Master's Degree (Research) (N+3), 2010-2020

	2010 Cohort				2015 Cohort			
	N	N+1	N+2	N+3	N	N+1	N+2	N+3
Female	31%	26%	16%	9%	43%	53%	59%	62%
Male	37%	45%	50%	53%	39%	49%	55%	57%
Overall	**37%**	**46%**	**52%**	**54%**	**41%**	**51%**	**57%**	**59%**

Table A8d: Throughput Rates Race: First-Time Entering Cohorts: Doctoral Degree (N+3), 2010-2020

	2010 Cohort				2015 Cohort			
	N	N+1	N+2	N+3	N	N+1	N+2	N+3
Female	18%	32%	44%	52%	39%	52%	61%	67%
Male	19%	32%	42%	48%	41%	52%	60%	66%
Overall	18%	32%	43%	50%	40%	52%	61%	66%

14 References

Academy of Science of South Africa (2010) The PhD Study. An evidence-based study on how to meet the demands for high-level skills in an emerging economy. ASSAf: Pretoria.

Badat, S. (2019) The Equity – Quality/Development Paradox, and Higher Education Transformation in post-1994 South Africa in Reynolds, J., Fine, B., and Van Niekerk, R. (eds.) *Race, class, and the post-apartheid democratic state.* UKZN Press: Durban.

Bridges, D. (2000) Back to the Future: the higher education curriculum in the 21st century, *Cambridge Journal of Education,* Vol 30, No 1.

Byrne, E. (2011) Monash vs Melbourne Model, The Conversation Australia, 3 May - https://theconversation.com/monash-v-melbourne-model-one-size-doesnt-fit-all-1059

Case, JM., Marshall, D., McKenna,S. and Mogashana, D. (2018) Going to University: The Influence of Higher Education on the Lives of Young South Africans. African Minds. Johannesburg.

Cloete, N. (2015) Nurturing doctoral growth: Towards the NDP's 5000 in *South African Journal of Science*, Vol. 111, Number 11/12, November-December 2015.

Cloete, N. Mouton, J and Sheppard, C. (2015) *Doctoral Education in South Africa – Policy, Discourse and Data.* African Minds: Cape Town.

Council on Higher Education. (2013a) *The Higher Education Qualifications Sub-Framework*. CHE: Pretoria.

Council on Higher Education. (2013b) *A proposal for undergraduate curriculum reform in South Africa: The case for a flexible curriculum structure.* CHE: Pretoria.

Council on Higher Education. (2022) Doctoral Degrees National Report. CHE: Pretoria.

Department of Education. (2001) *National Plan for Higher Education*. DoE: Pretoria.

Department of Higher Education and Training. (2013) *White Paper for Post-School Education and Training – Building an Expanded, Effective and Integrated Post-School System.* DHET: Pretoria.

Department of Higher Education and Training. (2015) *Staffing South Africa's Universities Framework. A Comprehensive, Transformative Approach to Developing Future Generations of Academics and Building Staff Capacity.* DHET: Pretoria.

Department of Higher Education and Training. (2020) *Report of the Ministerial task Team on the Recruitment, Retention and Progression of Black South African Academics.* DHET: Pretoria.

Department of Higher Education and Training. (2020) *Higher Education Management Information System 2005-2020.* DHET: Pretoria.

Dezure, D. (2002) Innovations in the Undergraduate Curriculum, Curriculum, Higher Education, in Encyclopedia of Education.

Essop, A. (2015) *Report on the State of the Arts, Humanities and Social Sciences in South African Universities,* a report commissioned by the Andrew W. Mellon Foundation, New York, December 2015 - http://mellon.org/arts-humanities-social-sciences-south-african-universities/

Essop, A. (2015) *Curriculum Trends in Higher Education Internationally,* Unpublished Report, University of

Johannesburg.

Essop, A. (2020) *The Changing Size and Shape of the Higher Education System in South Africa, 2005-2017*, Ali Mazrui Centre for Higher Education Studies, University of Johannesburg. July. https://www.uj.ac.za/wp-content/uploads/2021/09/size-and-shape-of-the-he-system-2005-2017.pdf

Long, C., Eagle, G., and Stevens, G. (2017) The clinician in the university: reflections on a South African psychoanalytically oriented doctoral programme, *Int J of Psychoanal,* 98:517-542.

Mashifana, T. (2022) The high cost of obtaining a PhD degree in South Africa, Independent Online, 4 April. https://www.iol.co.za/news/politics/opinion/the-high-cost-of-obtaining-a-phd-degree-in-south-africa-cb0301b2--0294-42b9-b5a4-26619176bb46

McKenna, S. & S van Schalkwyk. (2023) A scoping review of the changing landscape of doctoral education, Compare: A Journal of Comparative and International Education. https://doi.org/10.1080/03057925.2023.2168121

Andrew W. Mellon Foundation. (2018) 30th Anniversary of Grant making in South Africa, 1988-2018. New York.

Mouton, J., Basson, I., Blanckenberg, J., Boshoff, N., Prozesky, H., Redelinghuys, H., Treptow, R., Van Lill, M. & Van Niekerk, M. (2019). The state of the South African research enterprise. National Research Foundation: Pretoria.

Mouton, J., van Lill, M., Prozesky, H., Bailey, T., Duncan, M., Boshoff, N., Albertyn, C., and R Treptow. (2022) A *National Tracer Study of Doctoral Graduates in South Africa,* Report to the Department of Science and Innovation. DSI: Pretoria.

National Planning Commission. (2012) *National Development Plan 2030:* Our Future – make it work. The Presidency: Pretoria.

National Research Foundation. (2019) *Advancing Transformation priorities in line with NRF Strategy 2020: enhancing equity of postgraduate student access, success and throughput using funding.* NRF: Pretoria.

National Research Foundation. (2021) Progress on the Implementation of the "DSI-NRF Postgraduate Funding Policy"; Presentation to the Parliamentary Portfolio Committee on Higher Education, Science and Technology, Cape Town, 31 August.

National Research Foundation. (2021) NRF Postgraduate Student Funding Policy: Frequently Asked Questions (FAQs).

Simpson, G. and Gevers, W. (2016) Research in *South African Higher Education Reviewed – Two Decades of Democracy.* CHE: Pretoria.

Spaull N. and Makaluza, N. (2019) Girls Do Better. The pro-female gender gap in learning outcomes in South Africa 1995-2018. Agenda 121/33.4. *Unisa/Routledge*. https://doi.org/10.1080/10130950.2019.1672568

Webbstock, D. and Seehole, C. (2016) Academic Staffing in South African Higher Education Reviewed – *Two Decades of Democracy.* CHE: Pretoria.

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ISSN 978-1-0672559-9-2

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in the Public Higher Education System in South Africa