NELSON MANDELA UNIVERSITY

VISION 2020 DECADAL REVIEW: ACADEMIC SIZE AND SHAPE INDICATORS

Compiled by the Office for Institutional Strategy

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1. INTRODUCTION AND CONTEXT

As the only university in the world that carries the revered name of Nelson Mandela, the University has been exploring how to give intellectual and practical expression to its intentions to be in the service of society. From 2018 to 2020, a range of intensive strategic review and planning processes have been underway to review the University's Vision 2020 strategy and to identify broad thematic focus areas informing the strategic positioning of the University over the next decade as part of Vision 2030.

After a decade of implementation, a wide-ranging review of Vision 2020 has revealed distinctive intellectual niches and capabilities, as well as several areas for improvement, that need to be optimised and addressed by Mandela University as it seeks to chart its future strategic trajectories. Based on the outputs of these processes, senior management distilled core messages to underpin the formulation of the Vision 2030 institutional strategy, including the following:

- Pursue distinctive strategic academic trajectories that differentiate Mandela University nationally, on the African continent and globally in the service of society.
- Enhance student access for success through humanising pedagogies, holistic student-centric support and vibrant living and learning experiences that liberate the full potential of all students.
- Pursue impactful research and innovation that generate knowledge recognised for its contribution to promoting sustainable, socially just futures.
- Reposition engagement to advance contextually responsive solutions to grand societal challenges through mutually beneficial, collaborative partnerships.
- Foster an inclusive, transformative institutional culture that promotes social solidarity and cohesion in keeping with the legacy and values of Nelson Mandela.
- Position the University as an employer of first choice for diverse, talented and engaged employees.
- Embrace agile, responsive and digitalised systems, processes and infrastructure that promote an exceptional experience for all students, employees and stakeholders.
- Promote long-term sustainability through innovative resource mobilisation, strategy-aligned resource allocation and responsible stewardship.

In addition to the above, the University seeks to position itself intellectually within a differentiated post-schooling landscape through several game-changing trajectories, such as:

- Re-centering Africa through our commitment to awakening African scholarship and systems of thought, expanding our partnership footprint on the continent, and developing the next generation of African scholars and leaders.
- Establishing the Transdisciplinary Institute for Mandela Studies (TIMS), whereby Mandela, as a figure of social justice, becomes the lens through which the major challenges of our time are grappled with and solved.
- Redrawing the frontiers between the sciences and humanities to foster inter- and transdisciplinary scholarship and innovation.

- Positioning the University as a leading destination of choice for ocean sciences on the African continent.
- Establishing the country's 10th medical school to deliver integrated and transformative health sciences education.

The advent of the COVID-19 global pandemic in 2020 has fundamentally shifted the higher education landscape nationally and globally through the rapid transition to remote, online learning and ways of working. Within the prevailing uncertainty and complexity of this moment in history, higher education institutions are being called upon to take stock of where they have come from and to chart future directions informed by a rapidly evolving context and responsiveness to societal needs, particularly within a context of deep social inequalities that foreground the plight of the marginalised. This includes critically reflecting on the effectiveness of current operating models, systems and processes and exploring innovative practices that promote organisational resilience and agility in pursuit of our overarching mission to be in the service of society[1].

2. PURPOSE AND SCOPE OF VISION 2020 DECADAL REVIEW

Given its distinctive niche as a comprehensive university, Nelson Mandela University seeks to provide enhanced access and articulation opportunities to all students with the potential to succeed within a wide range of general formative and vocational, career-focused qualifications from certificate to doctoral levels. Of significance in this regard, is the need to maintain a balance between undergraduate diploma and degree enrolments, as well as between under- and postgraduate enrolments across a broad range of fields of study.

The purpose of this strategic review is to assess the extent to which Nelson Mandela University has achieved the academic size and shape targets articulated in Vision 2020. This will establish a foundation for forward planning to ensure that the University is best positioned to achieve the strategic aspirations outlined above. As part of this decadal review, the focus will be on analysing progress from 2010 to 2020 in respect of key performance indicators shaping the academic size and shape of the University, such as those relating to student access; student success and throughput; the demographic profile of students and staff; and research outputs.

The University carefully monitors enrolment and other key performance indicators against the six-year enrolment plans approved by the Department of Higher Education and Training (DHET), as well as the targets contained in its Vision 2020 strategic plan and Annual Performance Plans (APPs). The scope of this report is informed by the strategic priorities outlined in the Vision 2020 strategic plan, the first of which is to offer a diverse range of life-changing educational experiences to create a supportive, humanising learning environment that is conducive to student access for success.

[1] [1] Muthwa, S. (2018) *Taking Nelson Mandela University Boldly into the Future in Service of Society*, Inaugural Address, 17 April 2018

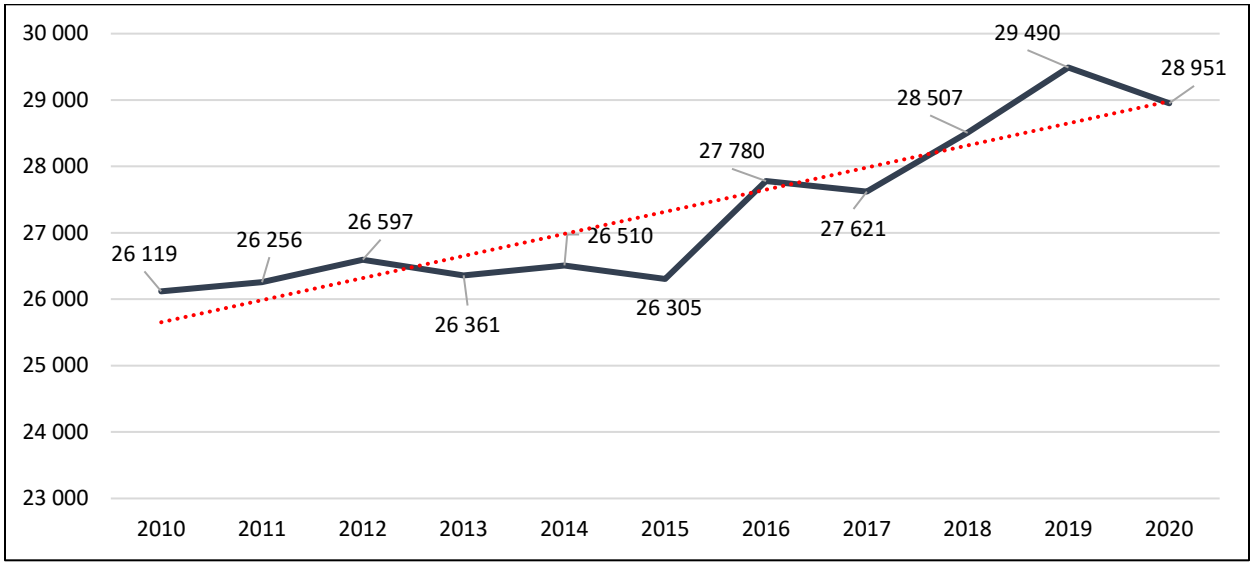
3. STUDENT ACCESS

In line with its vision and mission, Mandela University has been systematically increasing access to higher education for first generation students from socio-economically disadvantaged backgrounds, particularly those from schools in quintiles one to three, which are the most deprived. Various interventions have been designed and implemented by the University to promote student access for success, the effectiveness of which will be explored as part of this strategic review.

3.1 Total student headcount enrolments

The total enrolments increased by 12.9% from 26 119 in 2010 to 29 490 in 2019, but then declined to 28 951 in 2020. The total increase for the period 2010 to 2020 was 10.8%. Overall enrolments increased over the period at an average annual growth rate of 1.4% over the period 2010 to 2019, as the trend line in Figure 1 indicates. When including the 2020 decline in enrolments, the average annual growth rate over the period 2010 to 2020 declines to 1.0%.

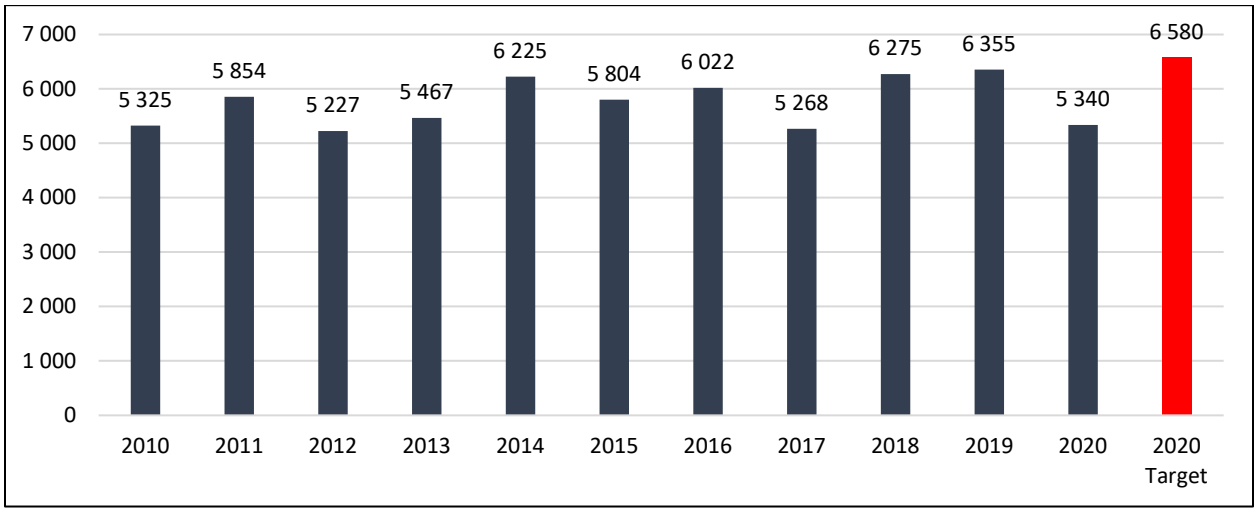
Figure 1: Total headcount enrolments, 2010 – 2020



3.2 First-time entering undergraduate students, extended programme enrolments and financial aid

First-time entering undergraduate students increased from 5 325 in 2010 to 6 355 in 2019, which was a 19% increase, but then declined sharply to 5 340 in 2020 which was approximately the same number as in 2010. The first-time entering student undergraduate intake for the period 2010 to 2020 is shown in Figure 2 below.

Figure 2: First-time entering students 2010 to 2020



Looking at the trend over the period, the first-time entering undergraduate intakes appear to be very erratic, with the highest intake in 2019. This can be attributed to the expanded financial aid provided by national government, which enabled more students from poorer backgrounds to access higher education. Research is currently underway to identify the reasons for the low intake of first-time entering students in 2020. Only 5 340 students registered, which was 1 240 less than the target of 6 580. If this trend continues, the University will need to scale down future projections of first-time entering students as part of the mid-term enrolment planning review in 2022.

Comparing the average annual growth rate in first-time entering undergraduate students by faculty over the period 2010 to 2019 (see Figure 3), shows that the highest average annual growth was in the Faculty of Humanities (9.1%), followed by the Faculty of Law (7.8%). First-time entering undergraduate enrolments in the Faculty of Science increased by 2% on average per annum and in the Faculty of Engineering, Built Environment and Technology (EBET), the average annual increase was 1.3%. The Faculties of Health Sciences and Business and Economic Sciences had relatively low annual increases, namely 0.9% and 0.6% respectively. In the Faculty of Education, undergraduate first-time entering students declined by -6.4% on average per annum, but this can be attributed to the phasing out of distance education offerings.

Figure 3: Average annual growth rate of first-time entering undergraduate students per faculty, 2010 to 2019

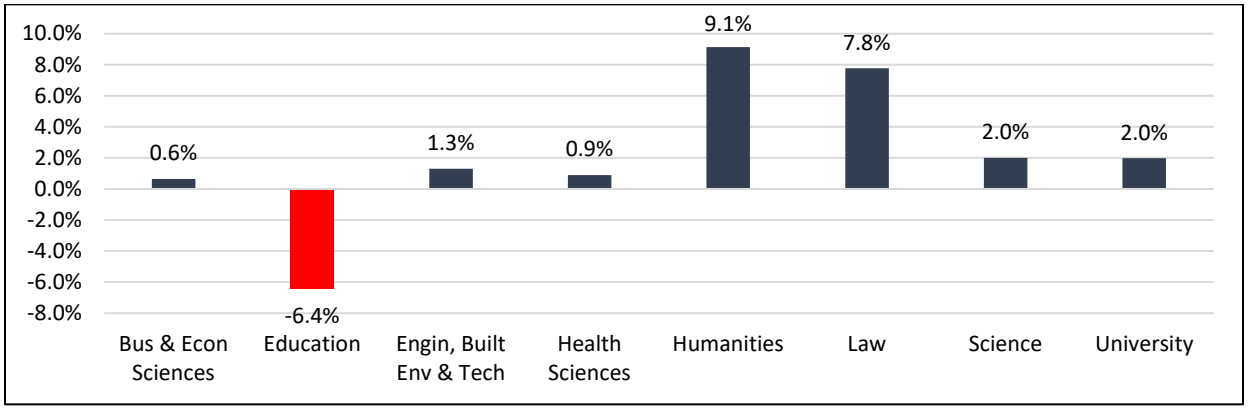
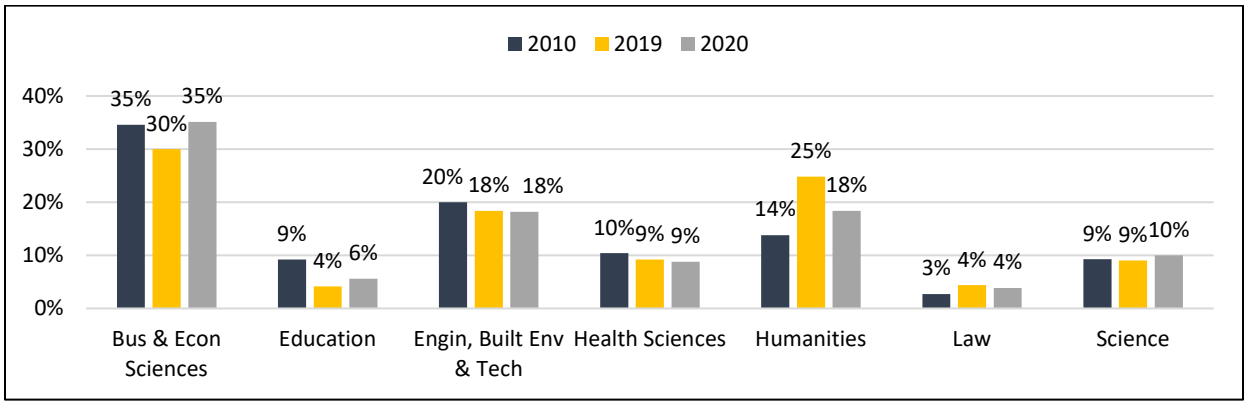


Figure 4 provides an overview of the percentage undergraduate first-time entering intake per faculty for the period 2010 to 2019.

Figure 4: Percentage undergraduate first-time entering intake per faculty, 2010 to 2019



The Faculty of Business and Economic Sciences (BES) consistently constituted the highest proportion of the first-time entering intake, since it has always been the largest faculty. However, the intake declined from 2010 to 2019, from 35% of the total in 2010 to 30% in 2019 but increased again to 35% in 2020. This was due to the increased admission criteria in respect of the mathematical requirements for the undergraduate diploma programmes.

A large number of students, who historically would register for the diploma programmes in BES, but who did not qualify in terms of the new admission criteria, registered for programmes in the Faculty of Humanities leading to the significant increase from 14% of the total intake in 2010 to 25% in 2019. The proportion of the intake in the Faculty of Humanities declined to 18% in 2020. The Faculty of Education's proportion of the intake declined from 9% in 2010 to 4% in 2019, with a slight increase to 6% in 2020.

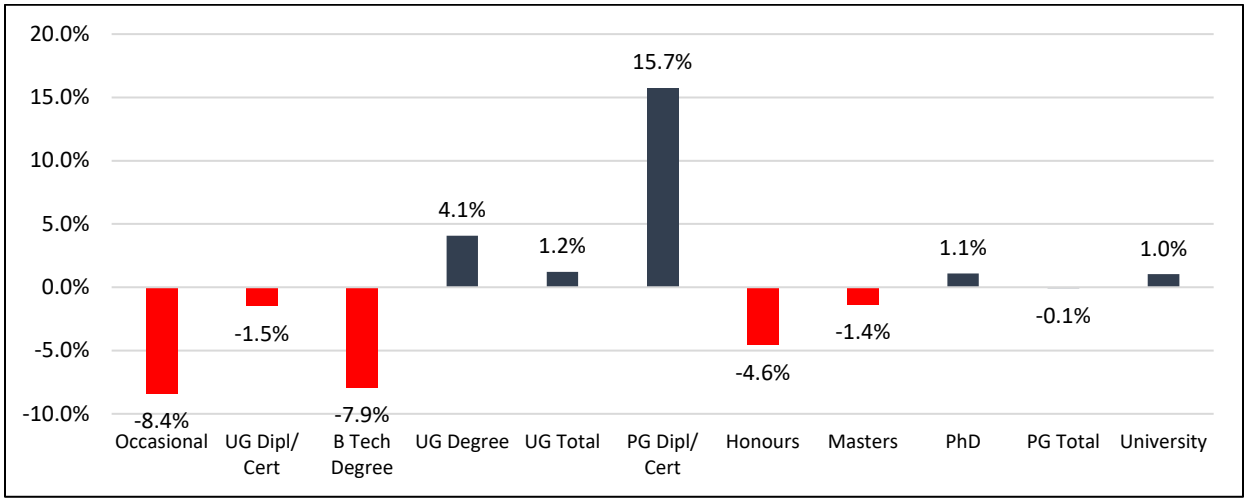
As the smallest faculty, the Faculty of Law increased its share of first-time entering students from 3% in 2010 to 4% in 2019 and 2020. Similarly, the Faculty of Science increased their share from 9% in 2010 to 10% in 2020.

The proportion of the intake of first-time entering undergraduate students in the Faculty of EBET decreased from 20% in 2010 to 18% in 2019 and 2020. The poor Grade 12 school-leaving results in Mathematics and Physical Science in the Eastern Cape Province make it difficult for the scarce skills faculties to reach their enrolment targets and may point to the need to expand the student recruitment footprint to target talented learners from other provinces, while also expanding extended curriculum programme offerings as a transition into higher education studies.

3.3 Enrolments by undergraduate qualification type

The average annual growth rate by qualification type for the period 2010 to 2020 is shown in Figure 5 and Table 1 below.

Figure 5: Average annual growth rate by qualification type, 2010 – 2020



Note: Advanced diplomas grew at 71% over the period 2013 to 2020, but this is not shown in the graph to allow for a clearer indication of the growth rate in the other qualifications.

As indicated in Figure 5, occasional students declined by -8.4% on average per annum over the period 2010 to 2020. This is not of concern, since these are not qualification registrations, but students registering for individual modules that are often part of credit-bearing short courses or students that register for an additional module that is not part of their qualification.

There was a decline of -1.5% on average per annum in undergraduate diplomas and certificates, largely due to the replacement of national diplomas with bachelor's degree programmes in the Faculties of Health Sciences and EBET as required by professional bodies.

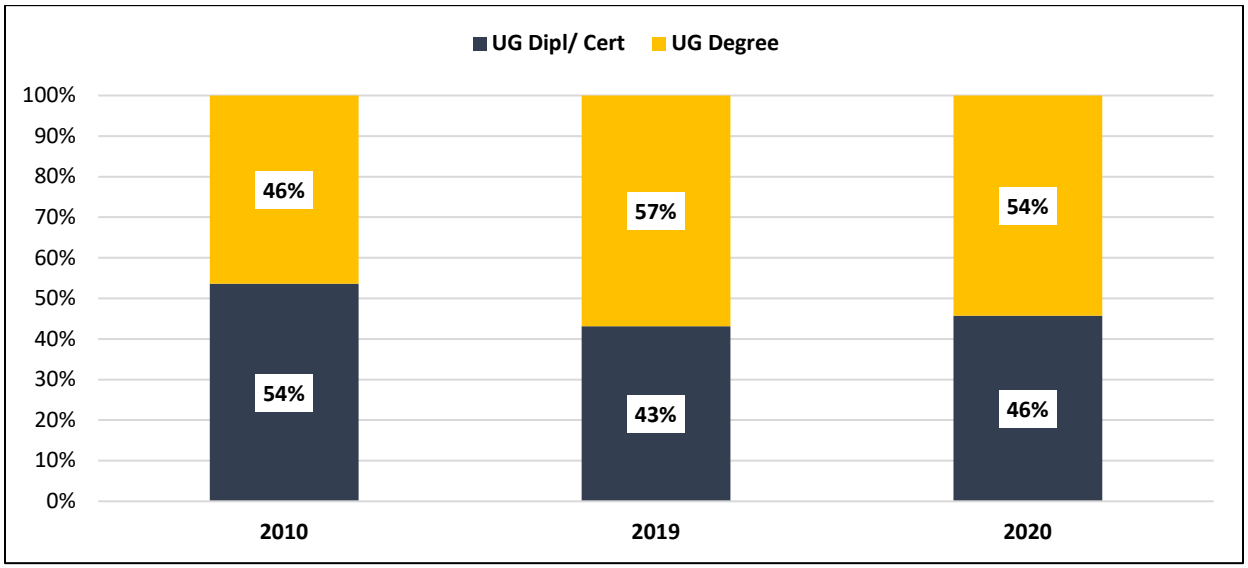
Table 1: Headcount enrolments and average annual growth rates by qualification type

Qualification Type	2010	2019	2020	Average Annual Growth Rate 2010-2019	Average Annual Growth Rate 2010-2020
Occasional	682	370	284	-6.6%	-8.4%
UG Diploma/Certificate	11 705	10 010	10 063	-1.7%	-1.5%
Adv Diploma		796	1 408	71.0%	71.0%
B Tech Degree	1 417	1 287	622	-1.1%	-7.9%
UG Degree	8 716	12 951	13 001	4.5%	4.1%
UG Total	**22 520**	**25 414**	**25 378**	**1.4%**	**1.2%**
PG Diploma/Certificate	181	758	781	17.2%	15.7%
Honours	1 205	814	756	-4.3%	-4.6%
Masters'	1 767	1 872	1 539	0.6%	-1.4%
PhD	446	632	497	3.9%	1.1%
PG Total	**3 599**	**4 076**	**3 573**	**1.4%**	**-0.1%**
TOTAL	**26 119**	**29 490**	**28 951**	**1.4%**	**1.0%**

The undergraduate diploma and certificate numbers declined from 11 705 in 2010 to 9 831 in 2013, but then started increasing again to 10 065 in 2020. This was due to the replacement of the B Tech degrees with Advanced Diplomas, which are categorised in the Higher Education Qualifications Sub-Framework (HEQSF) as undergraduate diplomas. The phasing out of B Tech degrees also explains the sharp decline in these enrolments at an average annual rate of -7.9% from 1 417 in 2010 to 622 in 2020.

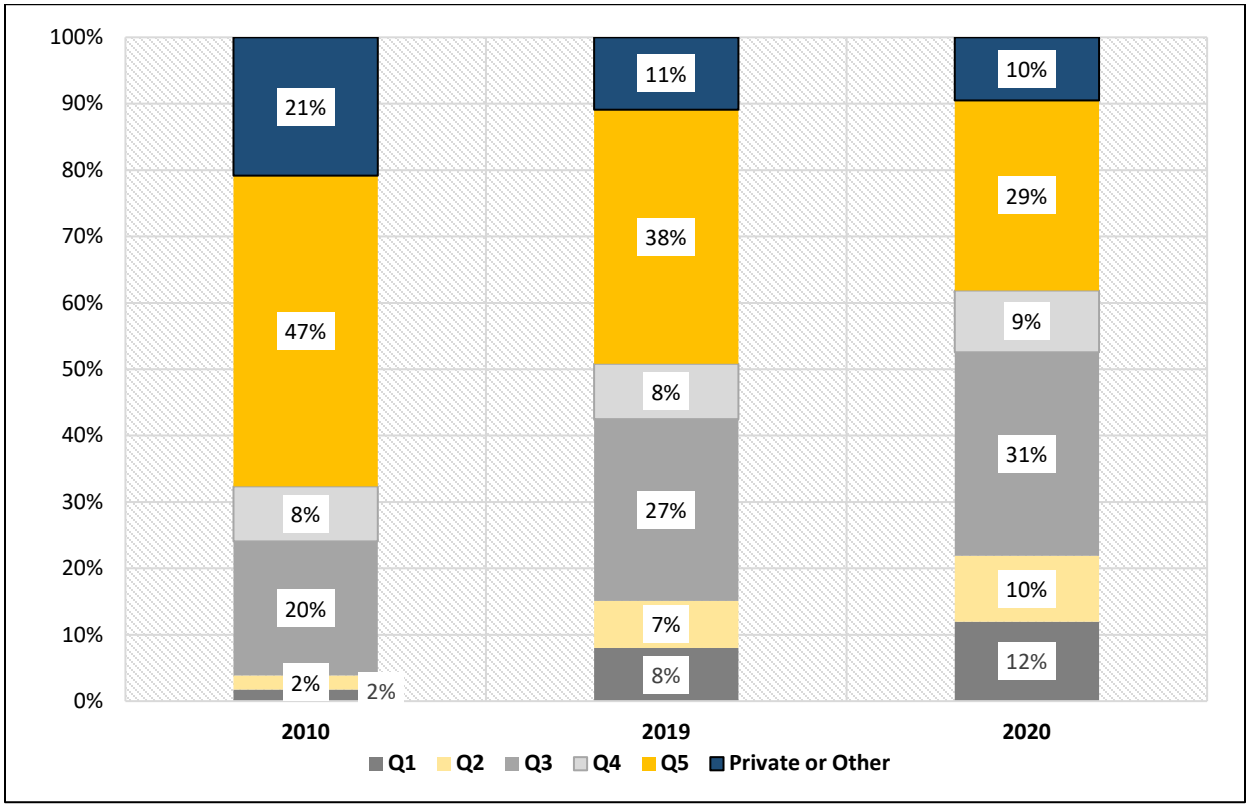
The University experienced a very healthy growth in undergraduate degree enrolments from 8 716 in 2010 to 13 001 in 2020, at an average annual increase of 4.1%. This can partly be attributed to the replacement of national diplomas by degree programmes as noted above. Figure 6 below shows the proportion of undergraduate diplomas and certificates as a total of undergraduate enrolments declined from 54% in 2020 to 46% in 2020, whilst the percentage of undergraduate degrees increased from 46% to 54%.

Figure 6: Undergraduate diploma/certificate and degree distribution: 2010, 2019 & 2020



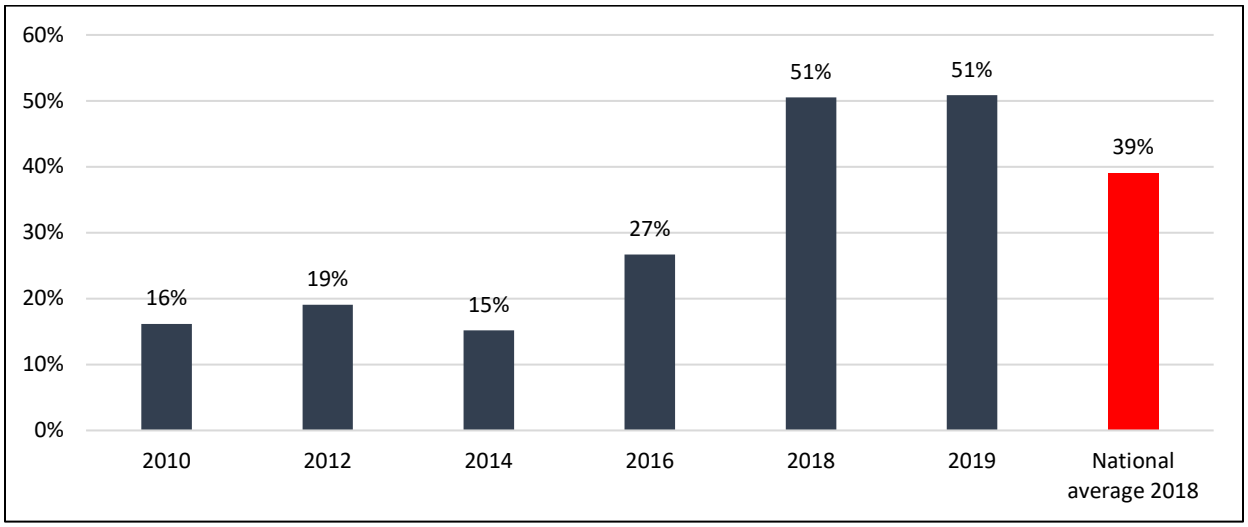
The quintile profile of the new intakes of school-leaving students has changed drastically over the period 2010 to 2020. Figure 7 below shows that new school-leaving, first-time entering students from quintiles 1, 2 and 3 schools increased from 24% in 2010 to 53% in 2020. Concomitantly, the percentage from quintiles 4 and 5 declined from 55% to 38%. Students coming from private and other schools also declined from 21% to 10%.

Figure 7: New matric first-time entering students by quintile school, 2010 and 2020



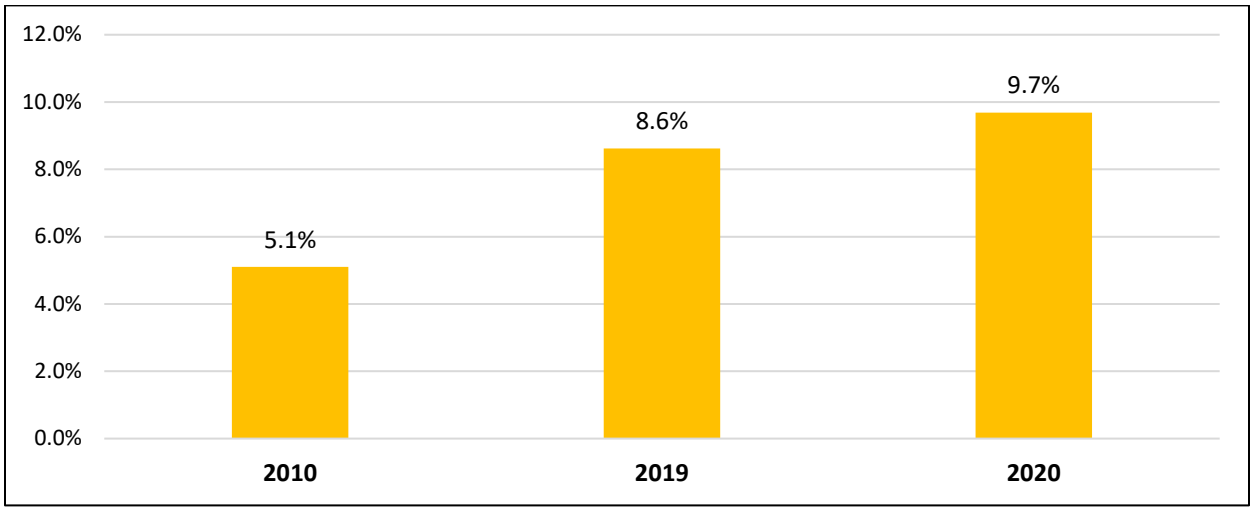
In essence, more than half (53%) of new matriculating, first-time entering students enrolling at Mandela University are from schools in poorer areas and this has significant implications for financial support, as well as the need for expanded academic support to ensure that these students are given every opportunity to successfully complete their studies. The changing profile of the incoming student population is also reflected in the increased percentage of NSFAS-funded undergraduate students. At Mandela University, the percentage of NSFAS-funded students increased from 16% in 2020 to 51% in 2019 compared to the national average of 39% (see Figure 8).

Figure 8: Percentage undergraduate students that are NSFAS-funded: 2010 - 2019



Drawing a higher percentage of students from more disadvantaged backgrounds also led to a rapid increase in extended programme enrolments, which more than doubled from 1 149 in 2010 to 2 457 in 2020. As indicated in Figure 9, this represents an average annual growth rate of 9.7% in 2020 compared to 5.1% in 2010, which is much higher than the average annual growth rate of 1.2% in total undergraduate enrolments.

Figure 9: Percentage undergraduate students enrolled in extended programmes



3.4 Enrolments by major field of study

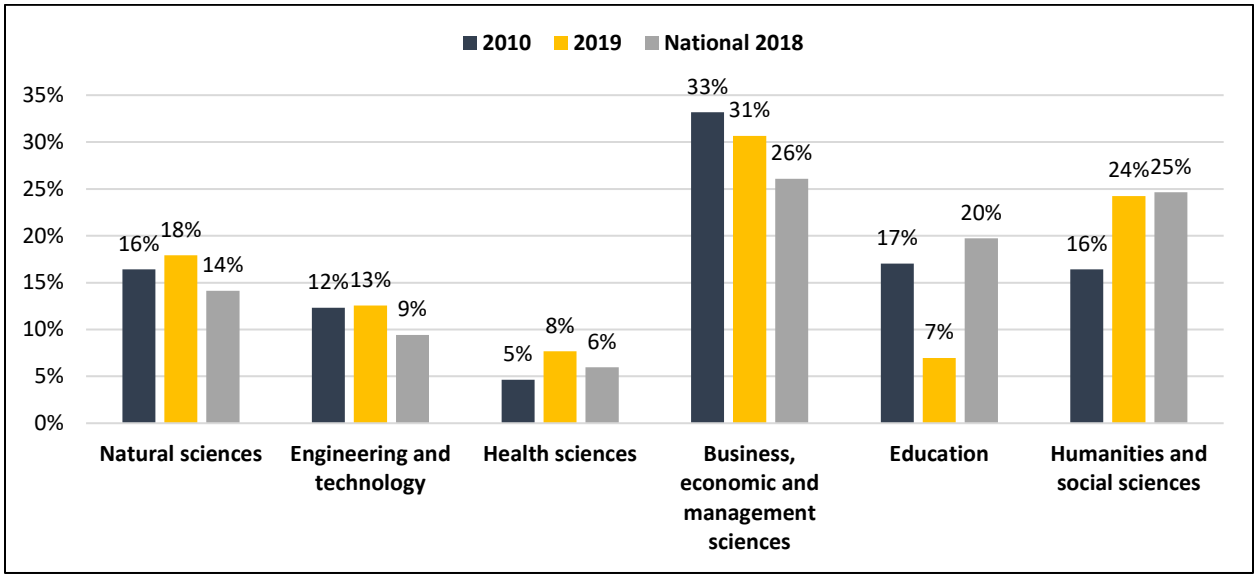
Most students at Mandela University are enrolled in business, economic and management sciences (31%), followed by humanities and social sciences (24%), and natural sciences (18%). Of all enrolments, 13% of students were enrolled in engineering and technology programmes, whilst 8% of all enrolments were in health sciences and 7% in education.

Over the period 2010 to 2019, the percentage of total enrolments increased for all three fields of Science, Engineering and Technology (SET). Natural sciences increased from 16% in 2010 to 18% in 2019, engineering and technology from 12% to 13%, and health sciences from 5% to 8%. In total, SET increased from 11 000 enrolments in 2018 to 11 251 enrolments in 2019, which is a total increase of 29%.

Business, economic and management enrolments declined from 33% of total enrolments in 2010 to 31% in 2019, and education enrolments from 17% to 7%. The decline in business, economic and management sciences could be attributed to the decline in the undergraduate diploma programme enrolments due to an increase in the mathematics admission requirements, whilst the decline in education enrolments was as a result of the phasing out of the distance programme offerings.

The University experienced a huge increase in enrolments in humanities and social sciences as a result of rapid increases in enrolments in the Faculties of Arts and Law, from 4 292 to 7 147 which is a 40% increase in total.

Figure 10: Enrolments by major field of study, 2010 and 2019



Compared to the national averages in these major fields of study, Nelson Mandela University had higher percentages of enrolments in SET and business, economic and management sciences, much lower

enrolments in education (7% compared to 20% for national), and basically the same percentage in humanities and social sciences (24% compared to the 25% for national).

3.5 Geographical origin of students

Figure 11 provides an overview of the geographical origin of students enrolled at Mandela University with the majority originating from the Eastern Cape, although this percentage has declined from 74% in 2010 to 68% in 2020. In recent years, the University has been drawing many more students from other provinces in the country, with the percentage increasing from 18% of total enrolments in 2010 to 28% in 2020.

Figure 11: Geographical origin of students: 2010, 2019 and 2020

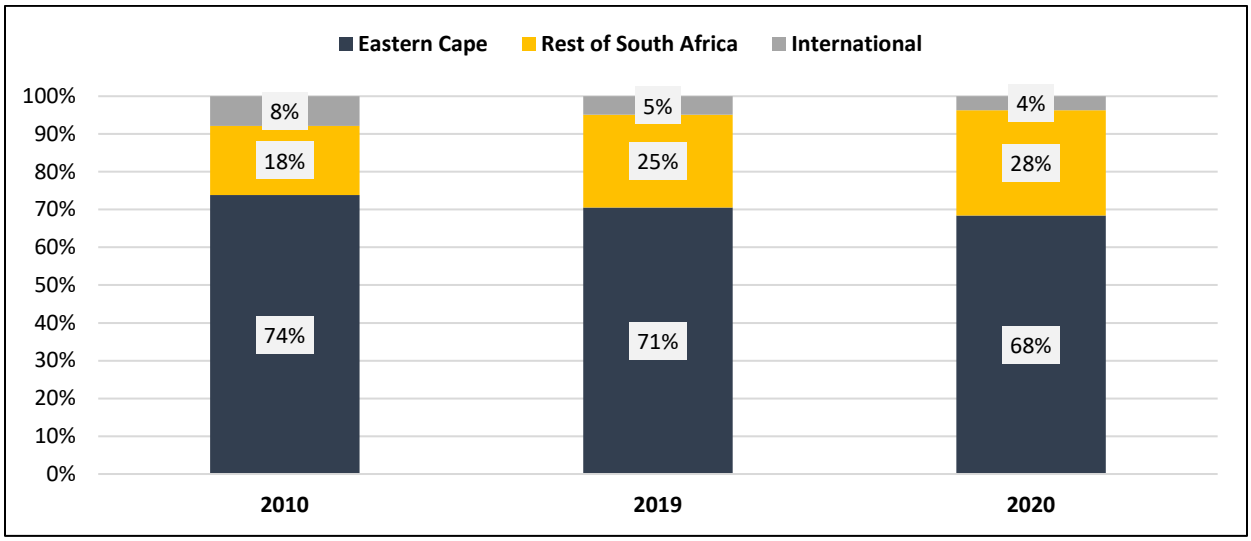
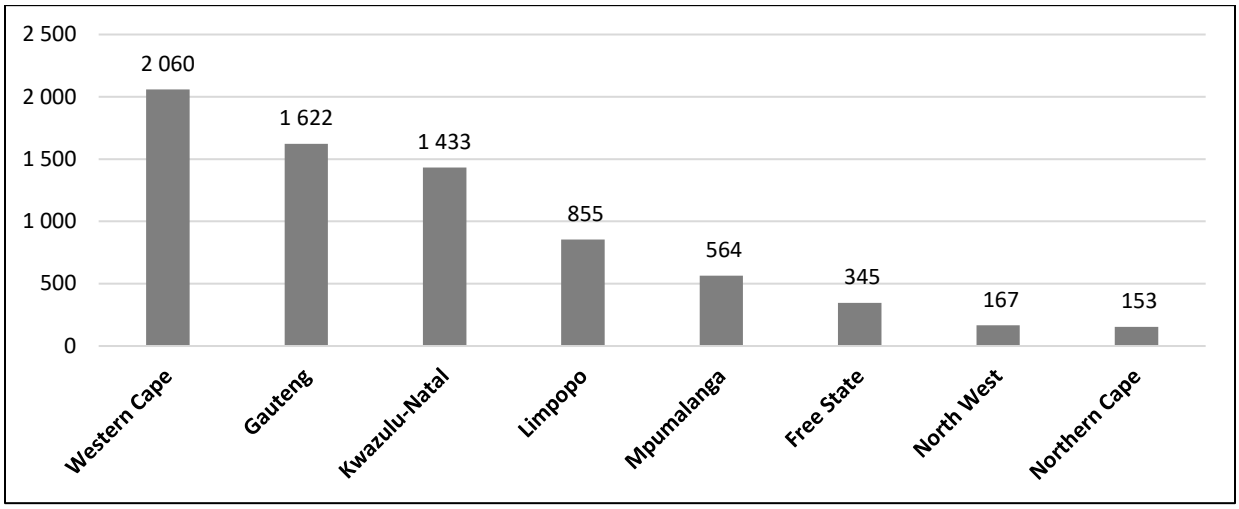


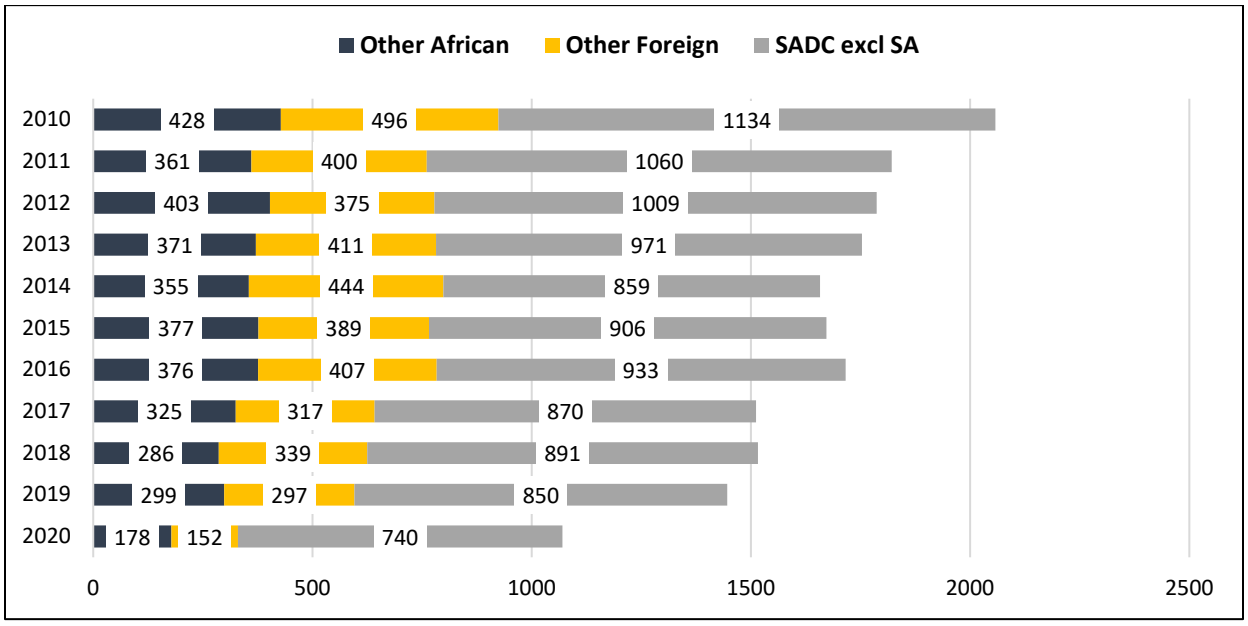
Figure 12 below shows that the largest number of students from other provinces in 2020 was from the Western Cape (2 060), which is to be expected due to the University's satellite campus in George. Students from Gauteng were 1 622, which is surprising given the many universities located in Gauteng. Students originating from KwaZulu-Natal were the next largest group with an enrolment of 1 433 in 2020. Students from Limpopo were 855 and from Mpumalanga 564, which are substantial numbers given how far these provinces are from the Eastern Cape. The smallest numbers were from the Free State (345), North West (167) and Northern Cape (153), but these three provinces also have the smallest populations in South Africa.

Figure 12: National enrolments from provinces outside the Eastern Cape, 2020



International students declined from 8% of total enrolments in 2010 to 4% in 2020. As indicated in Figure 13 below, international student enrolments declined from 2 058 in 2010 to 1 070 in 2020 (-92% in total). The biggest decline was in international students from outside Africa, declining by -226% from 496 in 2010 to 152 in 2020. The next biggest decline was from other African countries, excluding SADC. The enrolments from these countries declined by -140% in total, from 428 to 178. Enrolments from SADC countries (excluding South Africa), declined by -53% in total from 1 134 in 2010 to 740.

Figure 13: International student enrolment by country group, 2010 to 2020



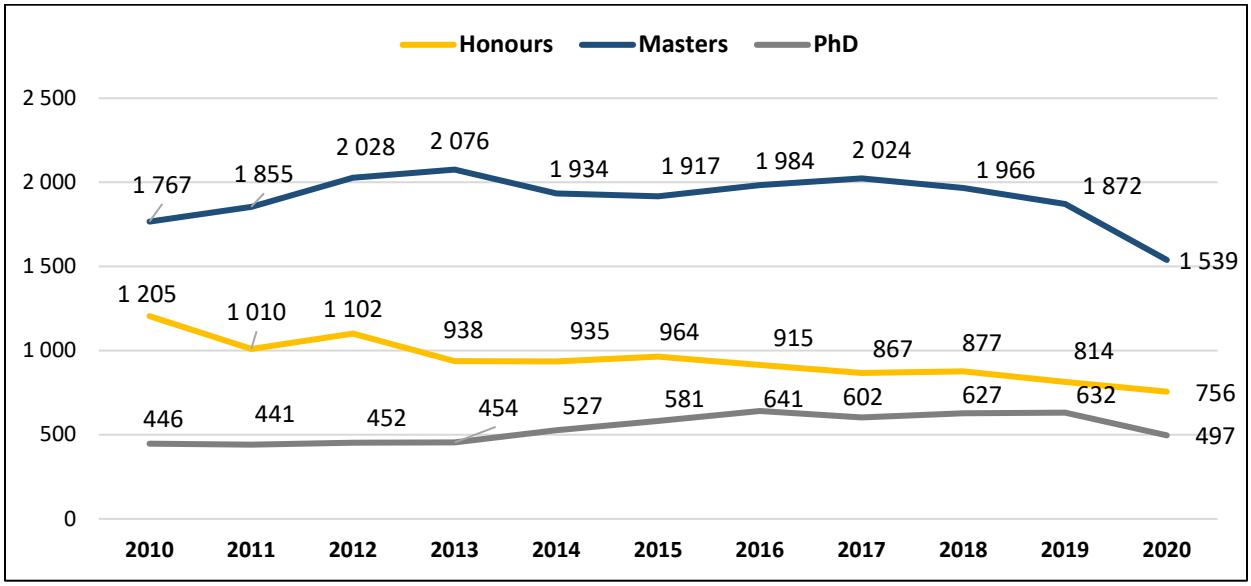
Declines in international student enrolments can also contributed to the decline in postgraduate enrolments. Over the period 2010 to 2020, international postgraduate enrolments declined by -3.7% on average per annum.

3.6 Postgraduate enrolments

The introduction of various new postgraduate diplomas led to an average annual increase of 15.7% over the 2010 to 2020 period, which represents an increase in these enrolments from 181 in 2010 to 781 in 2020. The Faculty of Business and Economic Sciences currently offers seven postgraduate diplomas and the Faculties of Law and Education have one postgraduate diploma offering each.

Figure 14 below gives an indication of concerning trends in respect of Honours, Masters' and PhD enrolments.

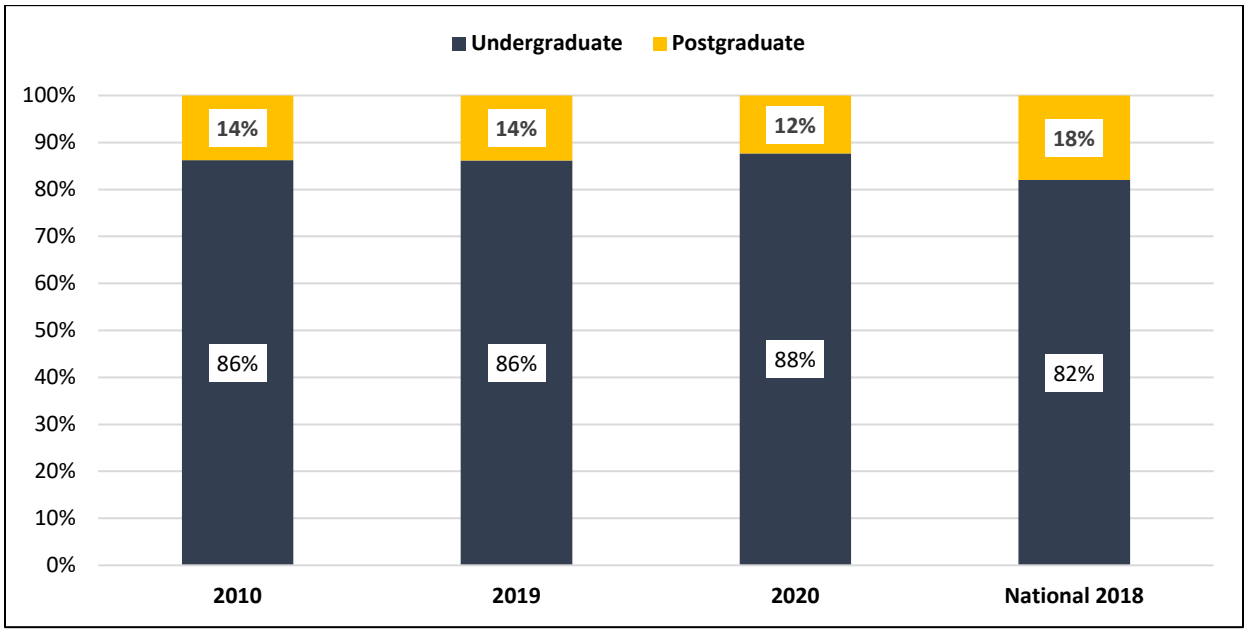
Figure 14: Honours, Masters' and PhD enrolments, 2010 to 2020



Honours enrolments declined from 1 205 in 2010 to 756 in 2020, which constitutes an average annual decline of - 4.6%. In some instances, a large portion of this decline can be explained by the replacement of Honours programmes with postgraduate diplomas. There is, however, a shortage of funding support for Honours students, which makes it difficult to recruit more students into this important pipeline for Masters' and PhD programmes.

Master's enrolments increased from 1 767 in 2010 to 2 076 in 2013, but have been declining since, resulting in only 1 539 enrolments in 2020. This is an average annual decrease of -1.4%. PhD enrolments increased from 446 enrolments in 2010 to 632 in 2019, but then declined sharply to 497 in 2020. The enrolment declines in these postgraduate qualifications will have an adverse impact on the expansion of the available pool of researchers, innovators and the next generation of academic staff. Such declines will furthermore have a particularly negative impact on the subsidy generation of the University, since postgraduate enrolments and graduate outputs are funded at much higher levels than undergraduate students.

Figure 15: Undergraduate versus postgraduate enrolment distribution: 2010, 2019 & 2020



Due to the above enrolment patterns, Figure 15 shows that the undergraduate: postgraduate enrolment ratio at Mandela University changed from 86%: 14% in 2010 to 88%: 12% in 2020. The national average shows that 18% of all enrolments nationally are registered at a postgraduate level. Nelson Mandela University therefore has a much lower percentage of postgraduate enrolments compared to the average of the system and this impacts on its academic character and reputation, as well as postgraduate and research outputs.

4. STUDENT SUCCESS

At Nelson Mandela University, student success is defined as is being self-aware, understanding one's own strengths and weaknesses, mindfully setting and achieving one's personal goals with persistence and commitment, and taking co-responsibility with staff and support structures to progress academically, and to graduate as holistically developed, responsible citizens. The University recognises that access must be linked to success and various strategies are in place to provide supportive living and learning environments conducive to improved academic performance, including providing a range of student academic support and development services within and beyond the classroom. These services include peer support and mentoring, supplemental instruction, and providing various forms of extended curricula and foundation programme provisioning to assist underprepared students in transitioning effectively into post-schooling education.

Experience has shown us that broadening access, most especially to students from impoverished backgrounds, carries additional costs. Opening the doors of learning to all requires that universities address broader systemic issues impacting negatively on the academic success of economically and

academically vulnerable students. This includes student nutrition and food security, access to study materials, transport, accommodation, and access to computing devices and Wi-Fi connectivity. The University has sought to create an enabling environment for teaching and learning through modern, technology-enabled facilities, Wi-Fi connectivity on all campuses, as well as new infrastructure.

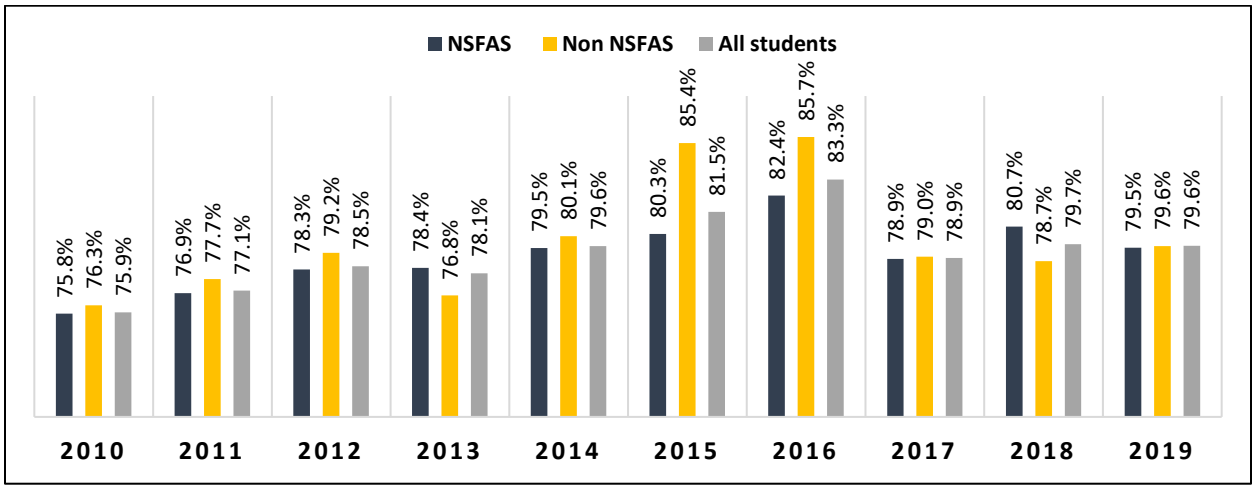
The University makes a considerable investment in student development and support, which yielded a remarkable improvement in success rates from 75% in 2010 to 83% in 2016. Unfortunately, this pleasing trend did not continue into 2017 largely due to the rolling impact of the prolonged Fees Must Fall student protests and shutdown in 2016. However, a student data analytics programme called *Siyaphumelela* (together we succeed), supported by grant funding from the Kresge Foundation, made it possible for the University to develop an integrated early-warning, data tracking system to monitor student academic performance to identify and support students who are academically vulnerable. This has significantly boosted our capacity at institutional and faculty levels for using cohort analyses to better understand underlying causes of high student attrition, throughout the academic cycle of a student, and to use this information to structure targeted student support strategies.

4.1 Student success rate

The student success rate is defined as the percentage of enrolled credits that were successfully completed. Figure 16 shows that the University was very successful in improving the success rate of students with an increase from 75.9% in 2010 to 83.3% in 2016, but then declined to 78.9% in 2017. The success rate improved slightly in 2018 and 2019 to 79.7% and 79.6% respectively.

NSFAS-funded students had lower success rates in all years over the period 2010 to 2019 except in 2013 and 2018 when the achieved a higher success rate than the other students. It is pleasing to note that, in 2019, there was not a significant difference between the success rates for NSFAS-funded students (79.5%) compared to other students (79.6%). The University is implementing a variety of interventions to ensure that it can achieve the national benchmark for student success of at least 80% going forward.

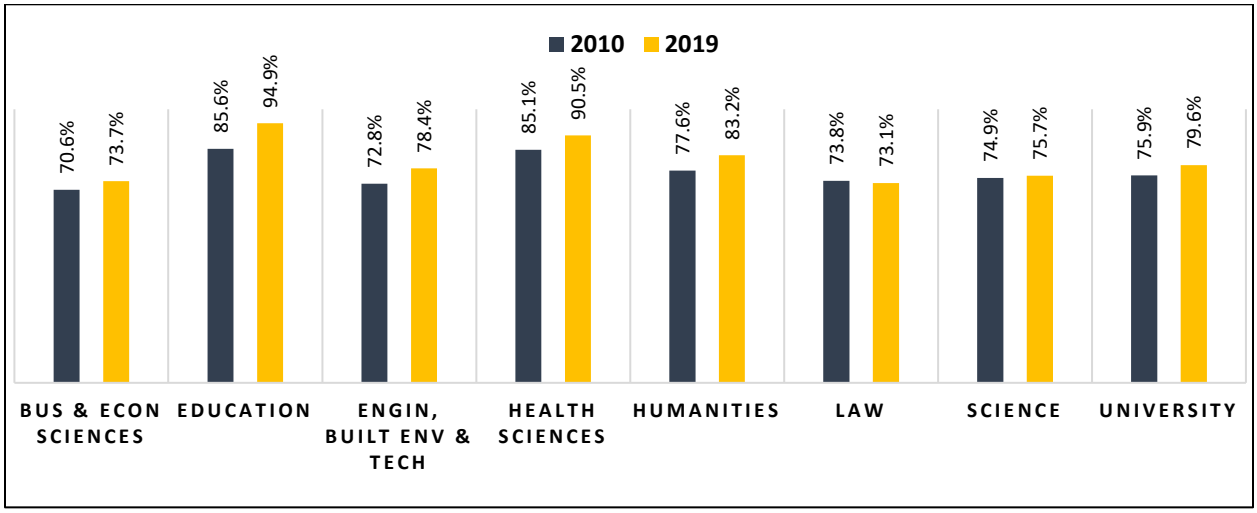
Figure 16: Coursework success rate, 2010 - 2019



A comparison of the success rates per faculty for the years 2010 and 2019 is shown in Figure 17. Over this period, the success rate increased in all faculties except in the Faculty of Law where it declined slightly (- 0.7%) from 73.8% in 2010 to 73.1% in 2019. The biggest increase in success rate was in the Faculty of Education (9.3%) from 85.6% in 2010 to 94.9% in 2019. The phasing out of all distance education offerings over this period, most likely explain this considerable increase in success rate.

The success rates of the Faculty of Engineering, Built Environment and Technology as well the Faculties of Health Sciences and Humanities all increased by more than 5% over the period 2010 to 2019. In 2019, the Faculties of Education (94.9%), Health Sciences (90.5%) and Humanities (83.2%) had the highest success rates. The Faculty of Engineering, Built Environment and Technology has a success rate of 78.4% in 2019, whilst the Faculty of Science had a 75.7% success rate. The faculties with the lowest success rates in 2019 were the Faculties of Business and Economic Sciences (73.7%) and Law (73.1%).

Figure 17: Coursework success rate by Faculty, 2010 and 2019



4.2 Retention of first-time entering undergraduate students

Various cohort studies conducted over the years by the Council on Higher Education (CHE) and the DHET have shown that the biggest dropout of students in higher education occurs in the first year of study. An important indicator of student success is thus the retention of undergraduate first-time entering students from the first to the second year of study. There are, however, students that graduate at the end of the first year of study, mostly those registered for a higher certificate who may not return for further studies and they should be discounted in the calculation of retention rates since they have successfully completed their qualification.

Figure 18 shows the retention of undergraduate first-time entering students of 2010 to 2011, compared to the retention from 2019 to 2020 as indicated in Figure 19. The numbers for 2019 might still increase as returning students may register in the second semester if they need to repeat second semester modules.

In 2011, 78.5% of the 2010 first-time entering cohort returned to either continue their studies in the same programme, in another programme, or in an advanced programme. By comparison, a considerable improvement in the retention of undergraduate first-time entering students is observed for the 2019 first-time entering cohort compared to the 2010 cohort. In 2020, 85.2% of the 2019 first-time entering cohort returned to either continue their studies in the same programme, in another programme, or to study in an advanced programme.

Figure 18: 2010 undergraduate first-time entering retention

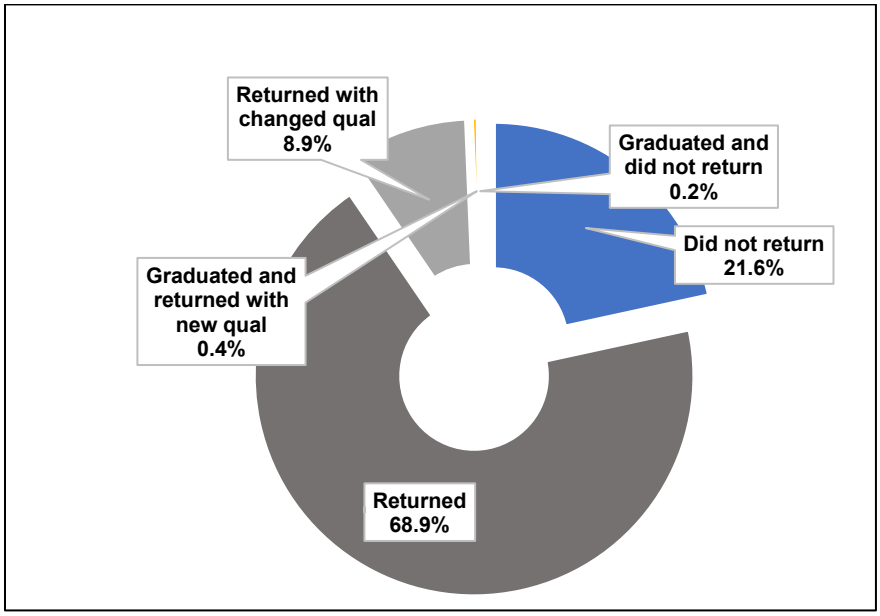
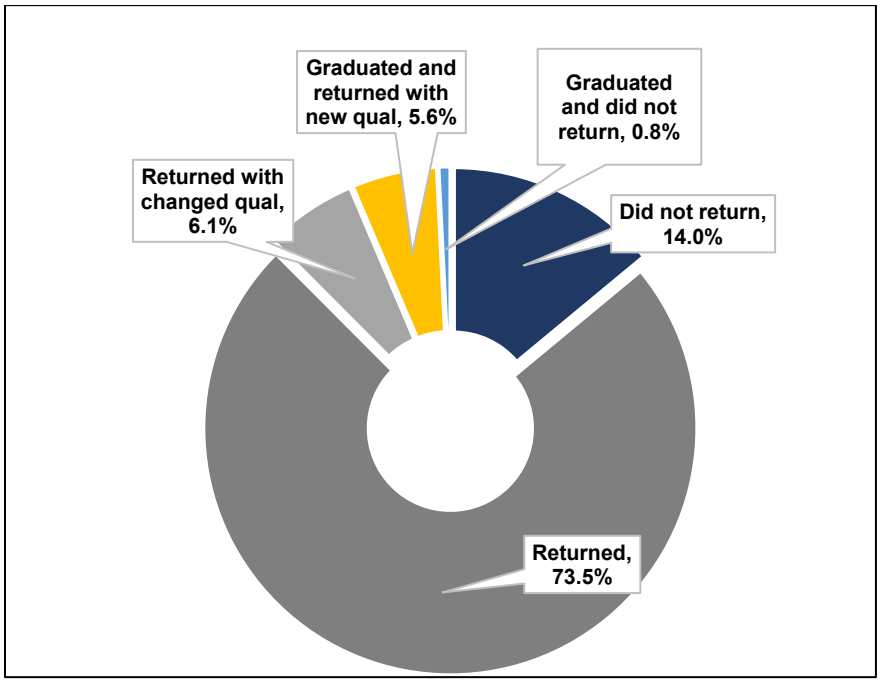
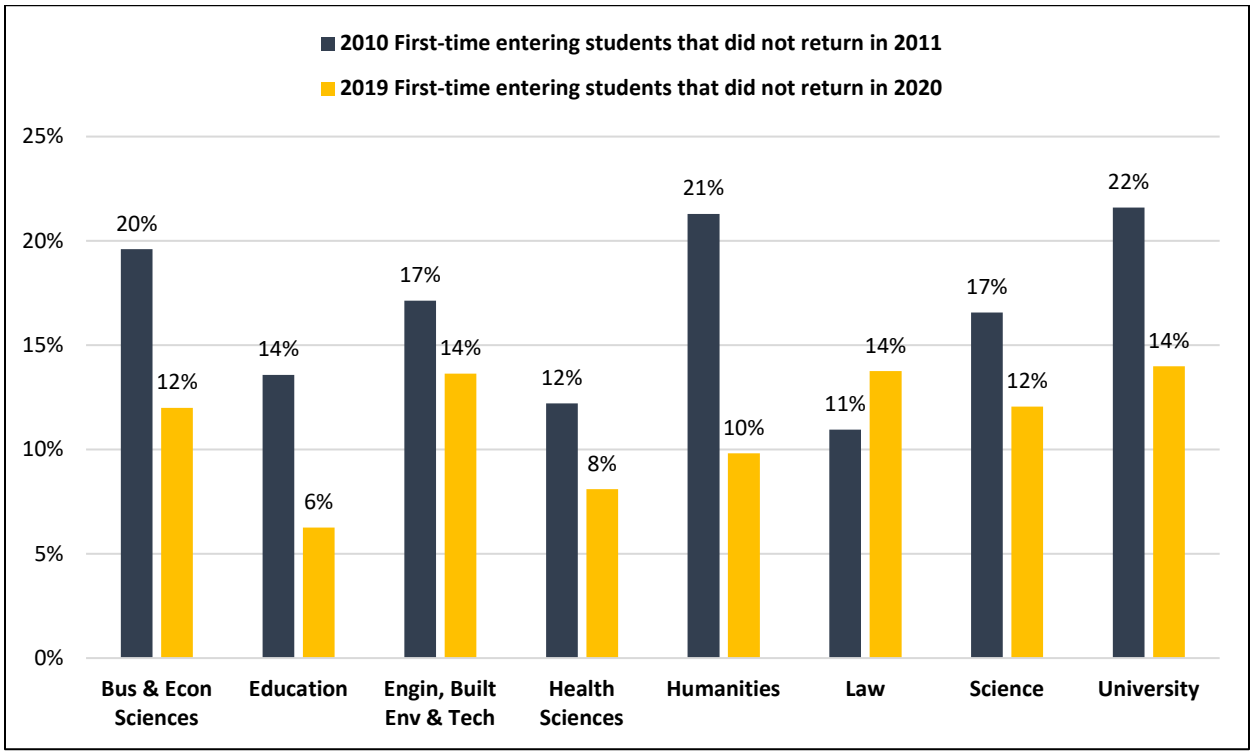


Figure 19: 2019 undergraduate first-time entering retention



Looking at the first-time entering students that dropped out per faculty (see Figure 20) from 2010 to 2011 and from 2019 to 2020 shows that the percentage decreased in all faculties except the Faculty of Law where the percentage increased from 11% in 2010 to 2011 to 14% in 2019 to 2020. For the University as a whole, the dropout rate of first-time entering undergraduate students that dropped out during or after the first year of study for the 2010 and 2019 cohorts, declined from 22% to 14%.

Figure 20: 2010 and 2019 first-time entering students that did not return the following year by faculty



Another indicator of retention of all students in all years of study is to look at the number or percentage of students that were registered in a particular year and did not graduate in that year, but did not return the following year. Although some of these students might return in later years, it does give a rough indication of the extent of dropouts. In 2011, 3 940 students (15%) of the 26 119 2010 enrolled students who did not complete their studies did not return to continue their studies. In 2020, 3 547 (12%) of the 29 490 2019 registered students who did not complete their studies did not return. This shows an improvement in the retention of students from the 2019 enrolled students compared to the 2010 students.

4.3 Graduate outputs

Graduates increased from 5 398 in 2010 to 6 947 in 2019, a total increase of 29%. Graduates for undergraduate qualifications increased in total by 27%, from 4 259 in 2010 to 5 419 in 2019. Graduates for postgraduate qualifications increased by 34%, from 1 139 in 2010 to 1 528 in 2019 (see Figure 21).

Figure 21: Graduates by qualification level, 2010 and 2019

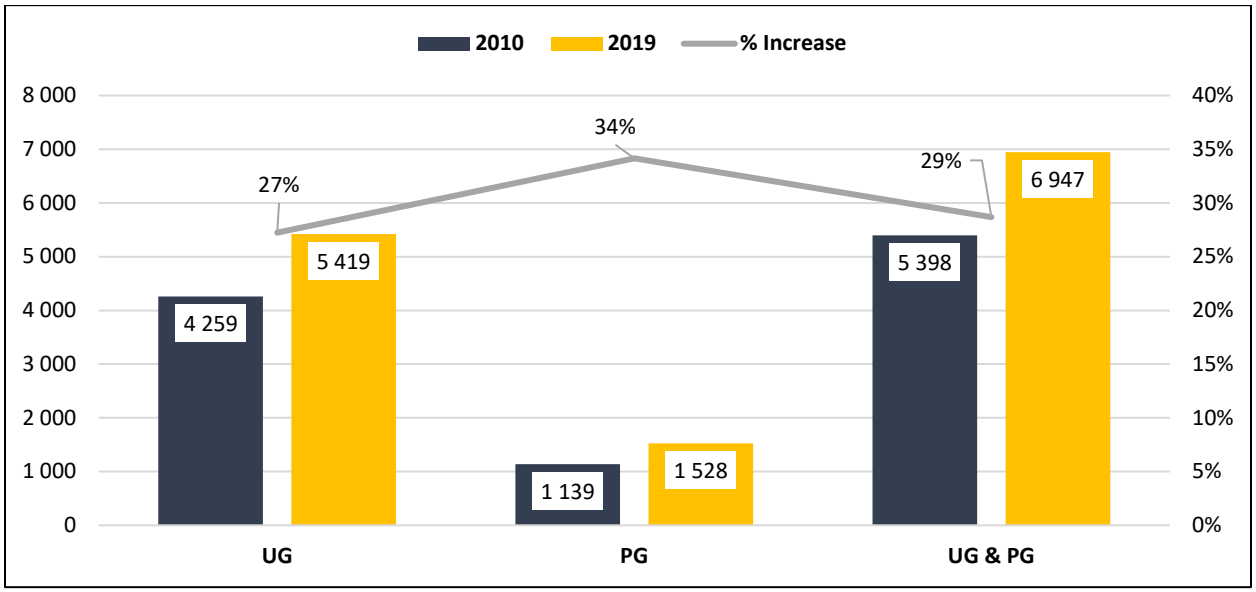
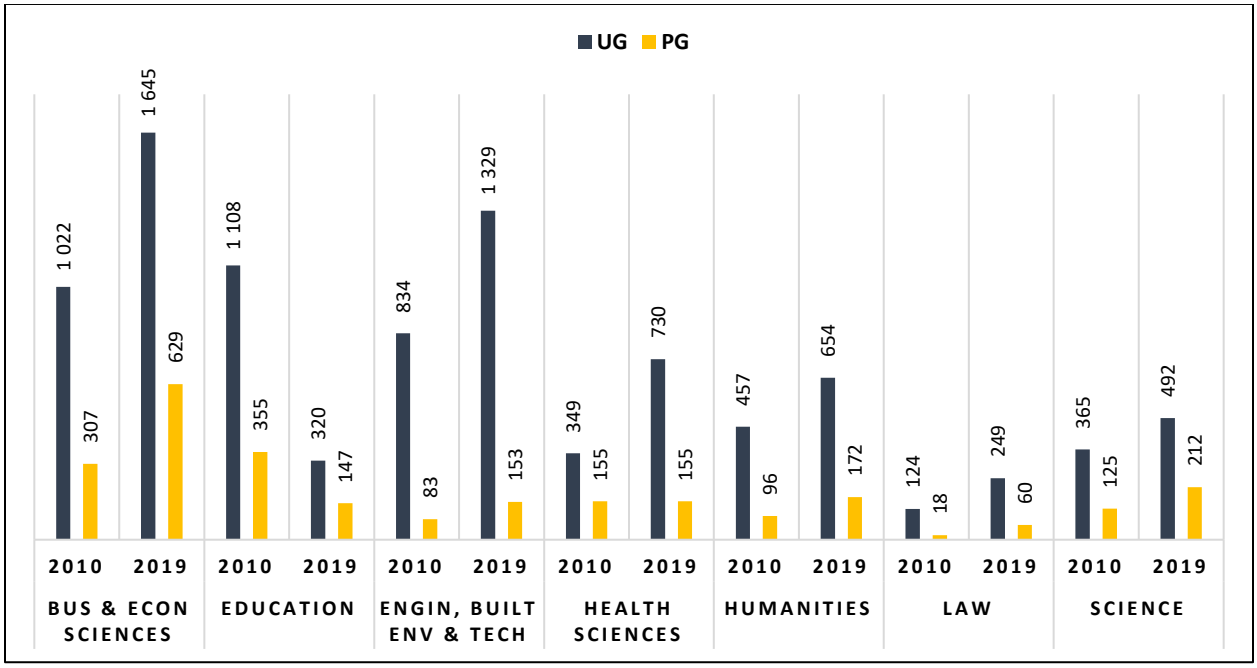


Figure 22 shows that graduates at both under- and postgraduate levels increased in all faculties, except in the Faculty of Education where graduates at undergraduate level declined from 1 108 to 320, and from 355 to 320 at postgraduate level. This was as a result of the phasing out of distance education offerings, which had large numbers of enrolments in the Advanced Certificates in Education and in B Ed Honours programmes.

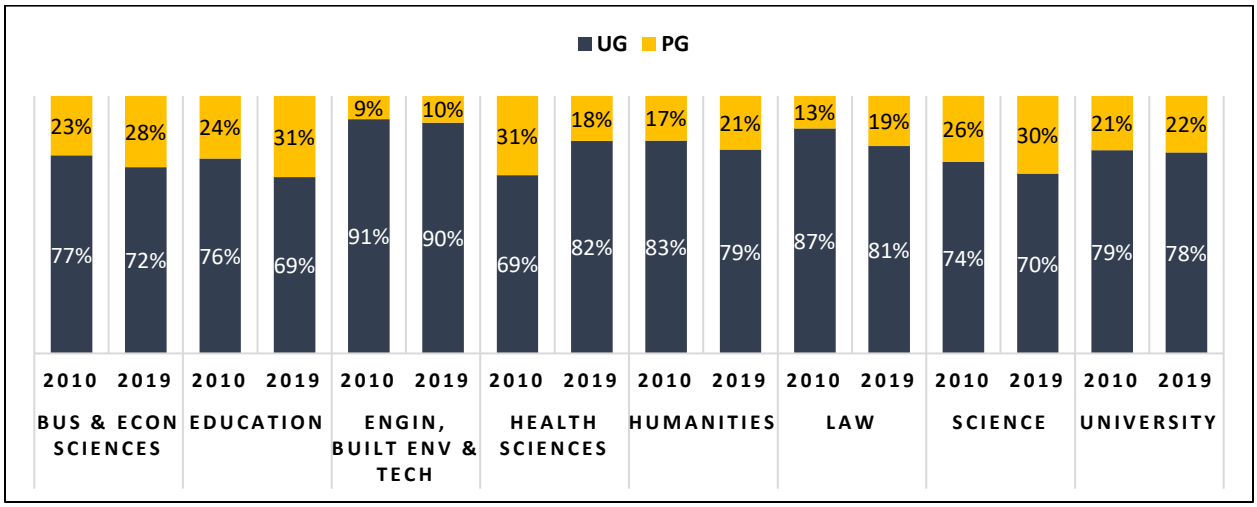
Figure 22: Under- and postgraduate graduates by faculty, 2010 to 2019



The changes in the mix of under- and postgraduate graduates in the faculties from 2010 to 2019 are shown in Figure 23. In 2010, 79% of the University graduates were undergraduate students, which declined to 78% in 2019, whilst the percentage of postgraduate graduates increased from 21% in 2010 to 22% in 2019.

As indicated in Figure 23, increases in the percentage of graduates at postgraduate level were experienced in most faculties from 2010 to 2019. The Faculty of Health Sciences was the only faculty that showed a decline in postgraduate graduates, from 31% in 2010 to 18% in 2019.

Figure 23: Graduates by qualification level, 2010 and 2019



Changes in the mix of graduates by qualification type from 2010 to 2019 is shown in Figure 24. Undergraduate diplomas and certificates awarded declined sharply from 43.1% in 2010 to 33.7% in 2019. Again, this can be attributed to the phasing out of the distance Advanced Certificate in Education programmes, as well as the replacement of several national diplomas with bachelor's degree programmes, especially in the Faculties of Health Sciences and EBET. B Tech degree programmes are being phased out and replaced by advanced diplomas, which is reflected in the 3.9% advanced diploma graduates in 2019, and the decline from 10.8% of B Tech graduates in 2010 to 9.8% in 2019. Undergraduate degrees awarded, increased from 25% in 2010 to 30.6% in 2019.

Graduates in postgraduate diploma and certificates increased from 2.8% of the total graduates in 2010 to 6.5% in 2019 due to the introduction of postgraduate diplomas at NQF level 8 in the Faculties of Business and Economic Sciences, Law and Education. Honours degree graduates declined from 11.3% in 2010 to 8.1% in 2019, due to decline in enrolments in distance B Ed Honours programmes, the replacement of Honours programmes by postgraduate diplomas, as well as a general decline in enrolments in Honours programmes at the University. Masters' graduates increased slightly from 5.9% in 2010 to 6.0% in 2019, and PhD graduates from 1.2% of total graduates in 2010 to 1.4% in 2019.

Figure 24: Graduates by qualification type, 2010 and 2019

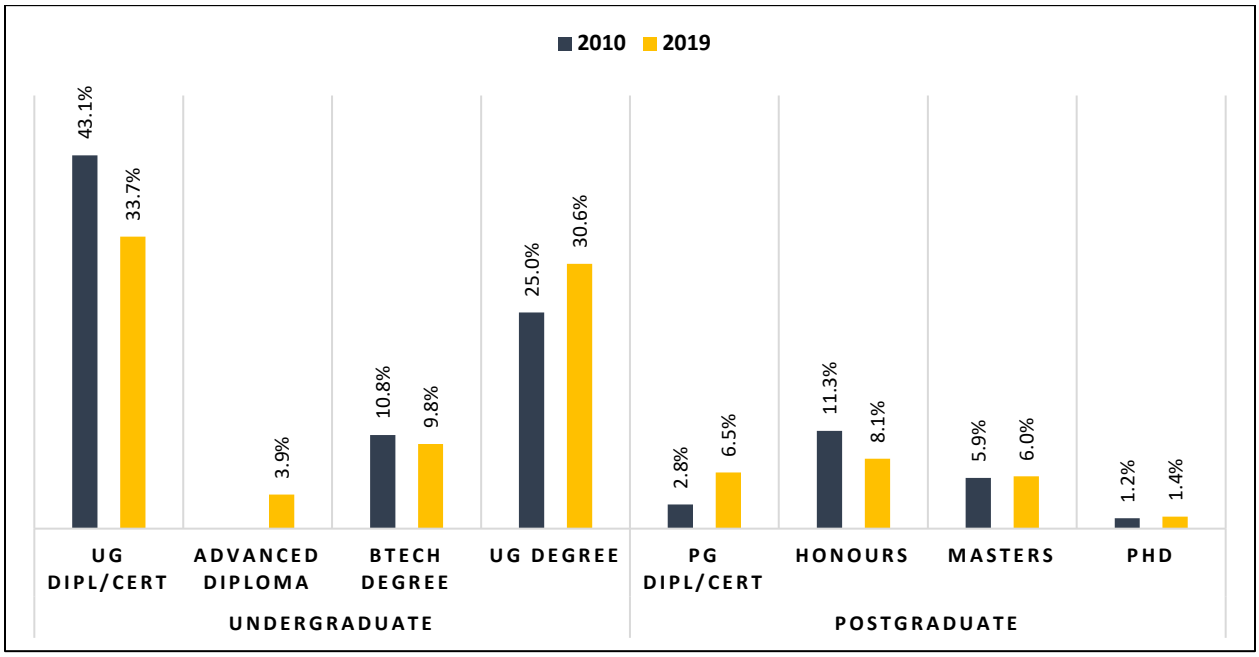
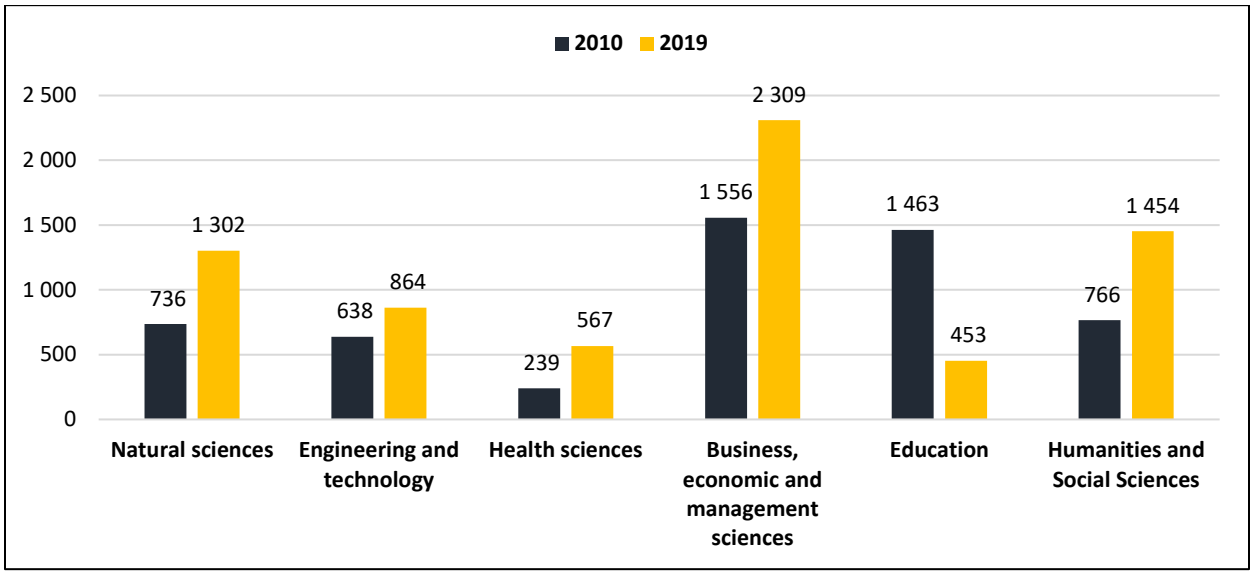


Figure 25 shows the graduates by major field of study for the years 2010 and 2019, whilst Figure 26 gives an indication of the percentage increase/decrease by major field of study over the same timeframe.

The major fields of study are categorised as follows:

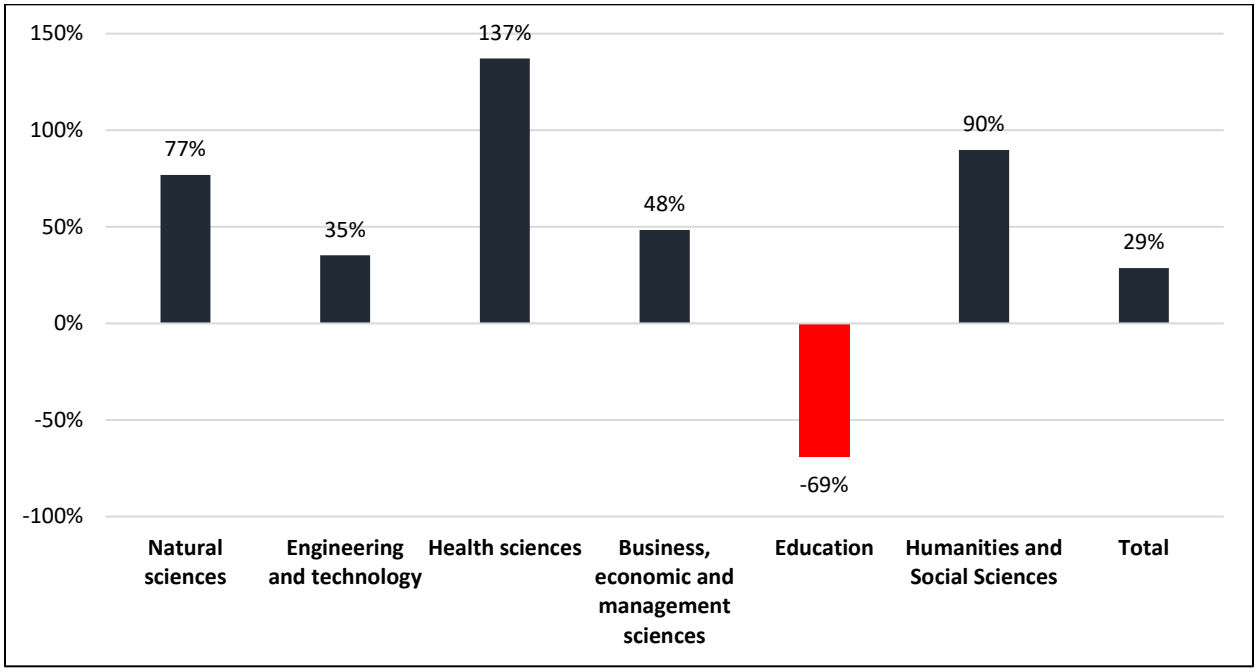
- *Natural Sciences* – Agriculture and agriculture operations, computer & information sciences, family ecology & consumer sciences, life sciences & physical sciences, mathematics & statistics.
- *Engineering and Technology* – Engineering and architecture and the built environment
- *Health Sciences* – Health professions and related clinical sciences.
- *Business, Economics and Management* – Accounting, auditing, economics, finance, business administration, and various management programmes.
- *Education* – Pre-primary, primary, secondary and post-school education, and the training of teachers at all levels.
- *Humanities and Social Sciences* – Fine arts, music and drama, communication and journalism studies, languages and literature, law, public management and services, psychology, sociology and anthropology, history, political sciences, military sciences, philosophy and religious studies.

Figure 25: Graduates by major field of study, 2010 and 2019



As can be seen from Figures 25 ad 26, the only decline was in the field of education (-69%) due to the phasing out of distance education programmes. In 2019, the University produced the most graduates in the field of business, economic and management sciences (2 309), followed by humanities and social sciences (1 454) and natural sciences (1 302). In 2019, 864 graduates were in the field of engineering and technology, 567 in health sciences and 453 in education. The biggest increases in graduates by major field of study were in health sciences (137%), followed by humanities and social sciences (90%) and natural sciences (77%).

Figure 26: Percentage increase/decrease by major field of study, 2010 to 2019

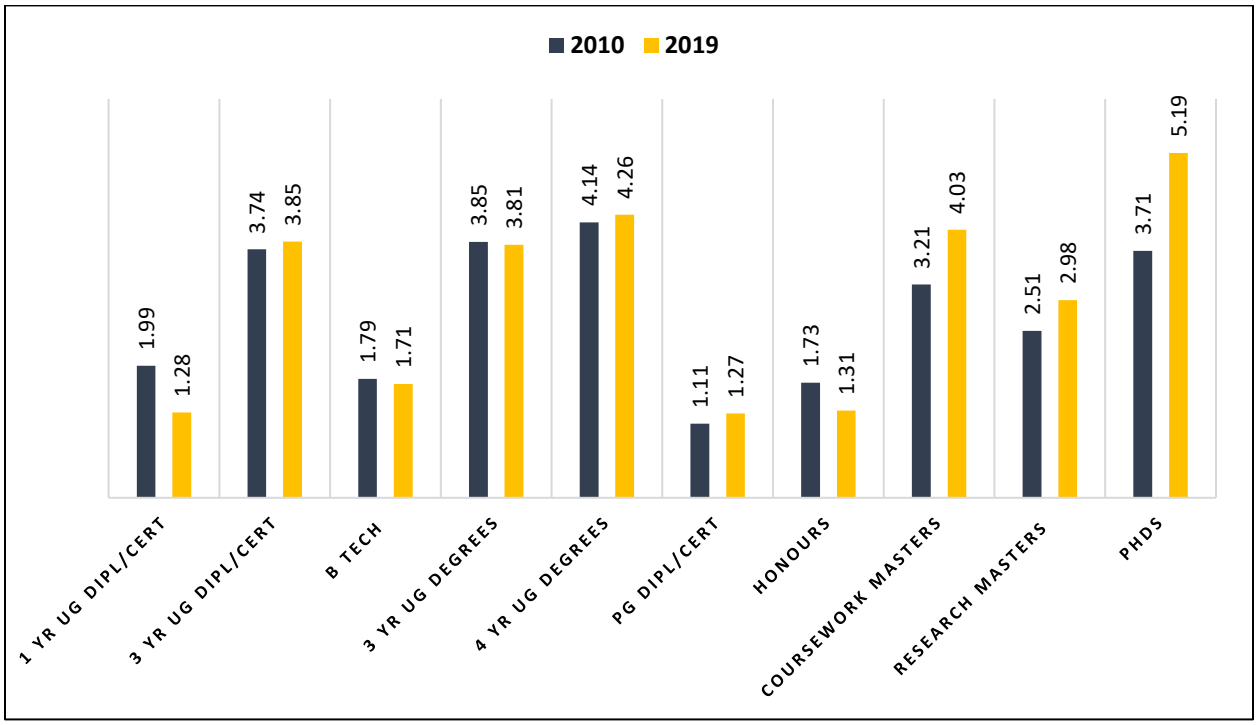


4.4 Average number of years to graduate

Figure 27 provides an indication of the average number of years to graduate by qualification type for 2010 and 2019. The shorter the average number of years is, the more efficient the University is in producing graduates in that qualification. However, for Masters' and PhD students, the expected number of years should not be too few, because then questions may arise regarding the quality of the qualification. An average of three years for Masters' and five years for PhD graduates are acceptable according to the Department of Higher Education and Training (DHET).

Furthermore, students studying through distance mode offerings take longer to graduate, which must be kept in mind when interpreting the data. It is precisely for this reason that the average number of years to graduate decreased for one-year undergraduate diplomas/certificates, as a result of the phasing out of the distance Advanced Certificate in Education programmes.

Figure 27: Average number of years to graduate by qualification type, 2010 and 2019



The average number of years to graduate increased for three-year undergraduate diplomas/certificates, four-year undergraduate degrees, postgraduate diplomas and certificates, coursework and research Masters', as well as PhDs.

The increase for research Masters' and PhDs could be attributed to the phasing out of M Tech and D Tech degrees since 2010. Students registered for the M Tech and D Tech degrees on average graduated in fewer years than the other research Masters' degrees and PhD degrees. The average of 2.98 years for research Masters' in 2019, and 5.19 years for PhDs in 2019 are within acceptable ranges.

The decline in the average number of years to graduate for Honours degrees from 1.73 in 2010 to 1.31 in 2019, could be attributed to the decline in the distance B Ed Honours programmes. There were declines in the average number of years to graduate for B Tech programmes (1.79 to 1.71) and the three-year undergraduate Bachelor's degrees (3.85 to 3.81), which indicates an improvement in efficiency. It must be noted that this indicator does not consider the students that drop out. It can only be calculated for students that graduate. There is thus not a direct relation between the average numbers of years to graduate and throughput rates (which is a better indicator of student success), because the more students that drop out, the lower the throughput rate will be.

4.5 Growth rate in headcount enrolments compared to graduates

Comparing the average annual growth rate in headcount enrolments to the average annual growth rate in graduates, provides an indication of the improvement of graduation efficiency. If the average annual growth rate in graduates is higher than the average annual growth rate in enrolments it means that the University is producing graduates at a higher rate than it is enrolling students. It can be seen from Figure 28 that the University has improved its graduation efficiency, since the average annual growth rate of graduates (2.8%) was double that of the average annual growth rate in headcount enrolments (1.4%) over the period 2010 to 2019.

Figure 28: Average annual growth rate in headcount enrolments and graduates, 2010 to 2019

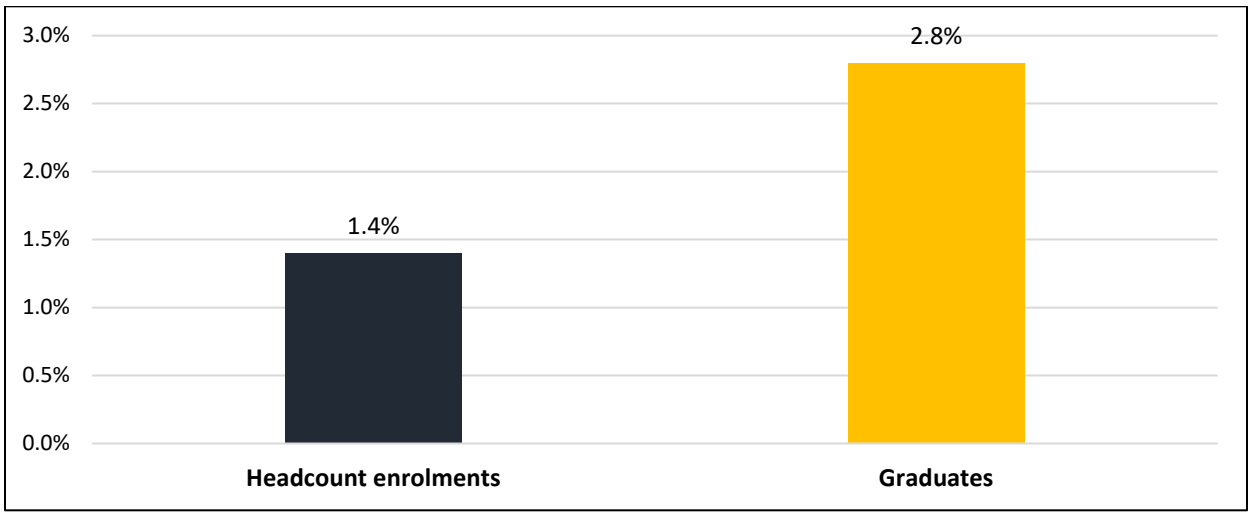


Table 2 and Figures 29 to 30 below, show changes in enrolments and graduates in Masters' and doctoral programmes according to nationality for the period 2010 to 2019. Enrolments and graduates for Masters' enrolments and graduates reached a peak in 2017 (2 024 enrolments and 442 graduates) whereafter they declined year on year.

Table 2: Masters' and PhD enrolments and graduates by nationality, 2010 and 2019

Qualification Type	Nationality	2010		2019		Percentage increase/decrease 2010 to 2019	
		Enrolled	Graduates	Enrolled	Graduates	Enrolled	Graduates
Masters'	International	215	71	153	45	-3.7%	-4.9%
	National	1 552	245	1719	374	1.1%	4.8%
Masters' Total		**1 767**	**316**	**1872**	**419**	**0.6%**	**3.2%**
PhD	International	134	23	196	40	4.3%	6.3%
	National	312	41	436	57	3.8%	3.7%
PhD Total		**446**	**64**	**632**	**97**	**3.9%**	**4.7%**

Over the period 2017 to 2019, the enrolments in Masters' programmes declined on average per annum by -3.8% (to 1 719) and the graduates by -2.6% (to 374). The biggest decline over this period was in international students. The enrolments in international Masters' students declined by -9.5% per annum, whilst the graduates declined by -14.8%. Over the total period from 2010 to 2019, Masters' enrolments increased by only 0.6%, whilst the graduates increased by 3.2%.

Doctoral enrolments and graduates increased over the period 2010 to 2019. Enrolments increased from 446 in 2010 to 631 in 2019, a 3.9% increase in total. Doctoral graduates increased from 64 in 2010 to 97 in 2019, which constitutes an increase of 4.7%. International PhD student enrolments and graduates increased at a higher rate than their South African counterparts did over the same period. International PhD enrolments increased by 4.8% in total over the period, while graduates increased in total by 6.3%.

Figure 29: Percentage increase or decrease in international and national doctoral enrolments and graduates, 2010 to 2019

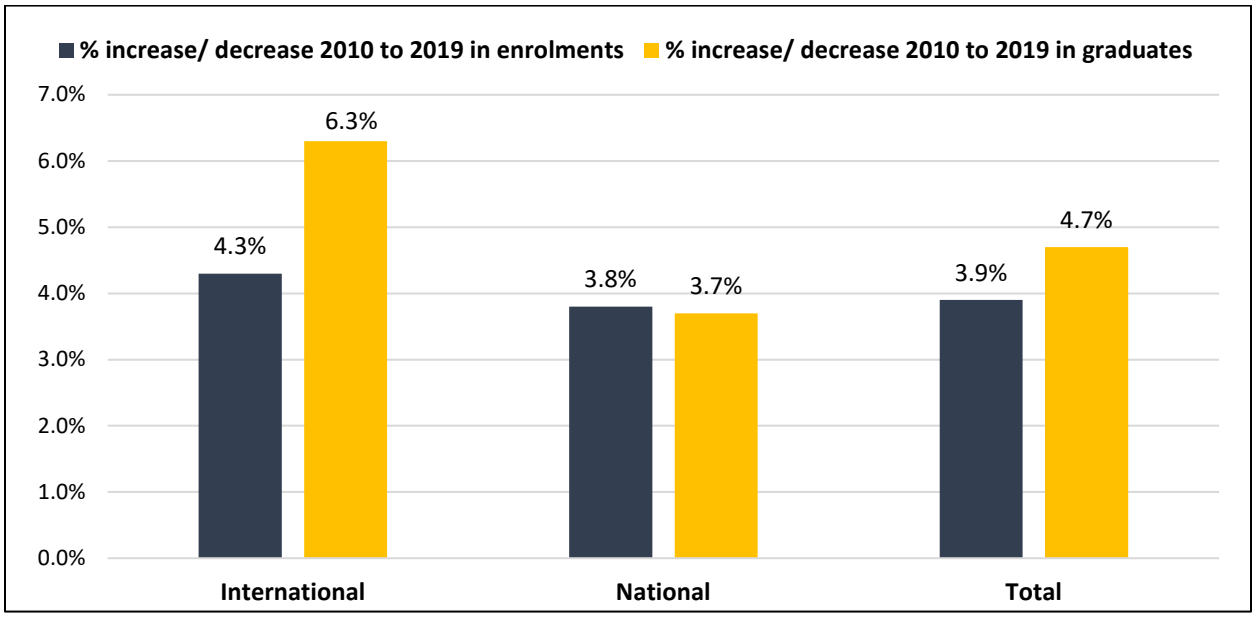
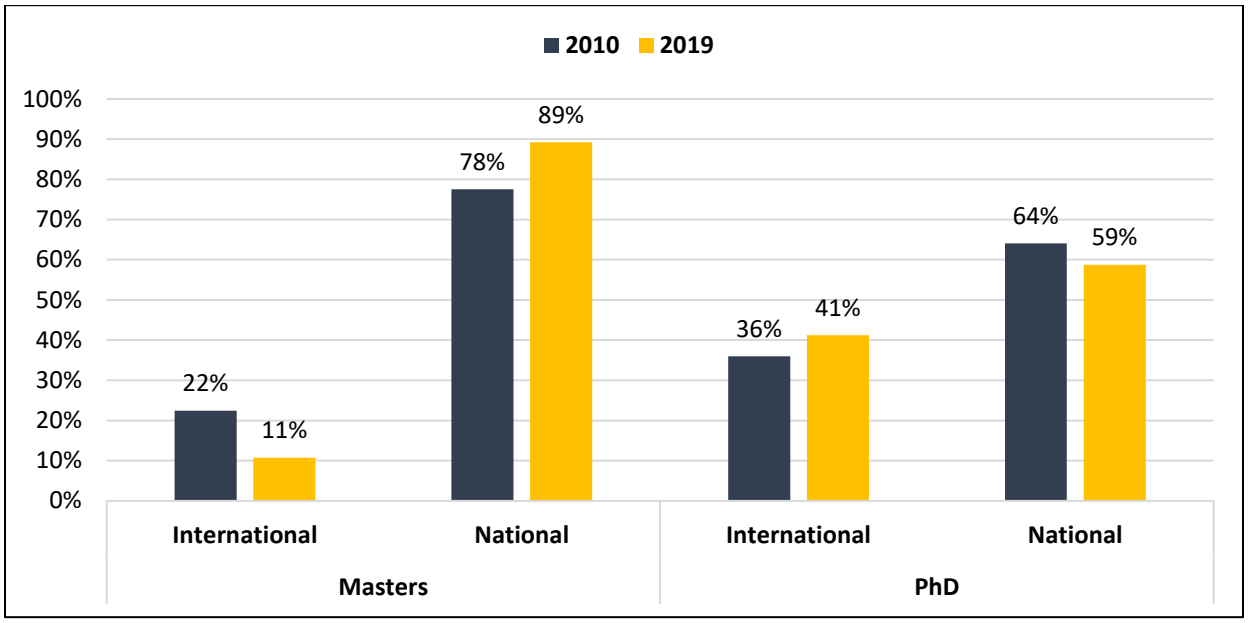


Figure 30: Percentage international and national master's and PhD graduates, 2010 and 2019



Looking at the Masters' and PhD graduates by nationality, international Masters' graduates declined from 22% of Masters' graduates to 11% over the period 2010 to 2019, while international PhD graduates constituted 36% of all PhD graduates in 2010 compared to 41% in 2019. The University has clearly been successful in attracting and graduating international PhD students.

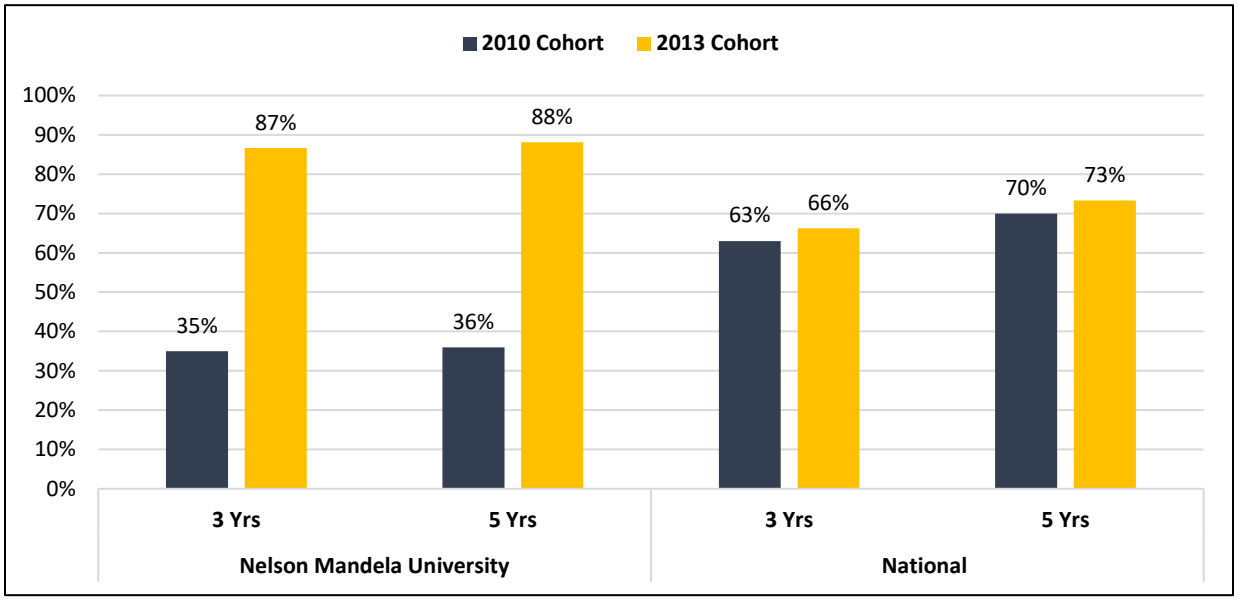
4.6 Student throughput rates

Throughput rates (also called completion rates in some countries) are the percentage of a new intake of students (cohort) in a particular year that graduate at specific time intervals, normally calculated for the minimum duration needed to complete the qualification as well as the minimum time plus two years. For certain qualifications, such as Masters' and doctoral programmes, a longer period is considered since students in general need more time than the minimum time to complete their studies. The results of the throughput rates of the 2010 and 2013 cohorts for the various qualifications are shown in Figures 31 to 40.

The trends for the various qualification types are as follows for the 2010 and 2013 cohorts:

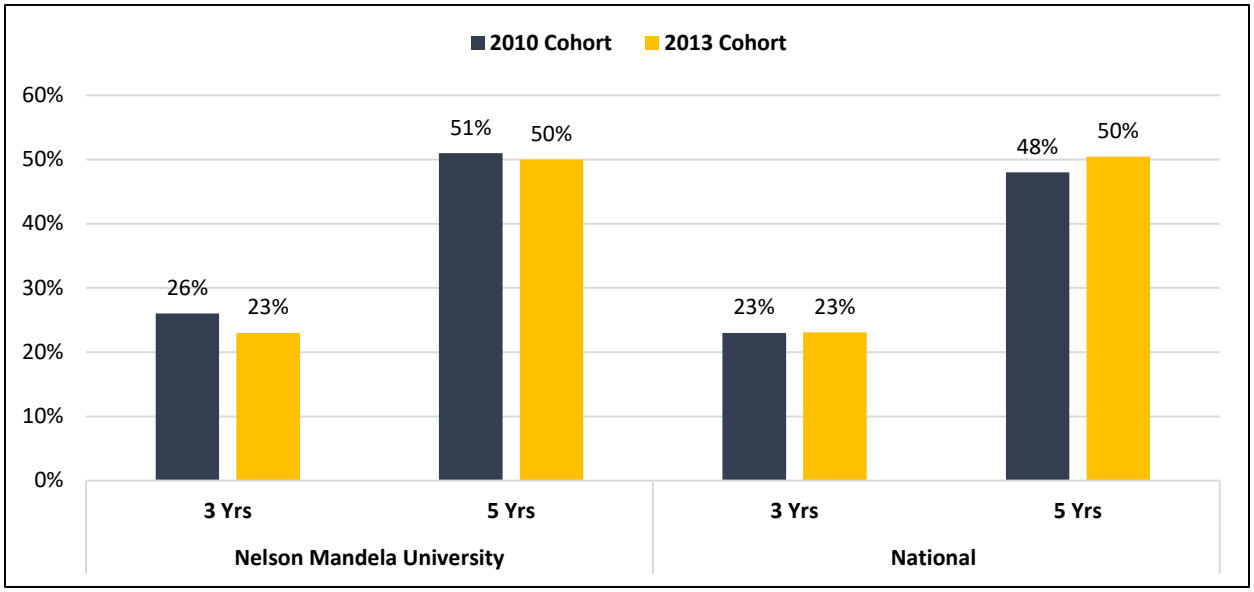
One- and two-year diplomas/certificates: Throughput rates increased from 35% after 3 years for the 2010 cohort to 87% after 3 years for the 2013 cohort and from 36% for the 2010 cohort after 5 years to 88% after 5 years for the 2013 cohort. The throughput rates were lower than the national averages (63% after 3 years and 70% after 5 years) for the 2010 cohort, but much higher than the national averages for the 2013 cohort (66% after 3 years and 73% after 5 years) – See Figure 31. This can be explained by the decline in the large number of distance ACE programmes in the Faculty of Education.

Figure 31: Throughput rates of 1- and 2-year diplomas or certificates for the 2010 and 2013 cohorts



Three-year diplomas/certificates: Throughput rates decreased from 26% after 3 years for the 2010 cohort to 23% after 3 years for the 2013 cohort and from 51% for the 2010 cohort after 5 years to 50% after 5 years for the 2013 cohort. The throughput rates were higher than the national average (48%) after 5 years for the 2010 cohort, but the same as the national averages for the 2013 cohort (23% after 3 years and 50% after 5 years) – See Figure 32.

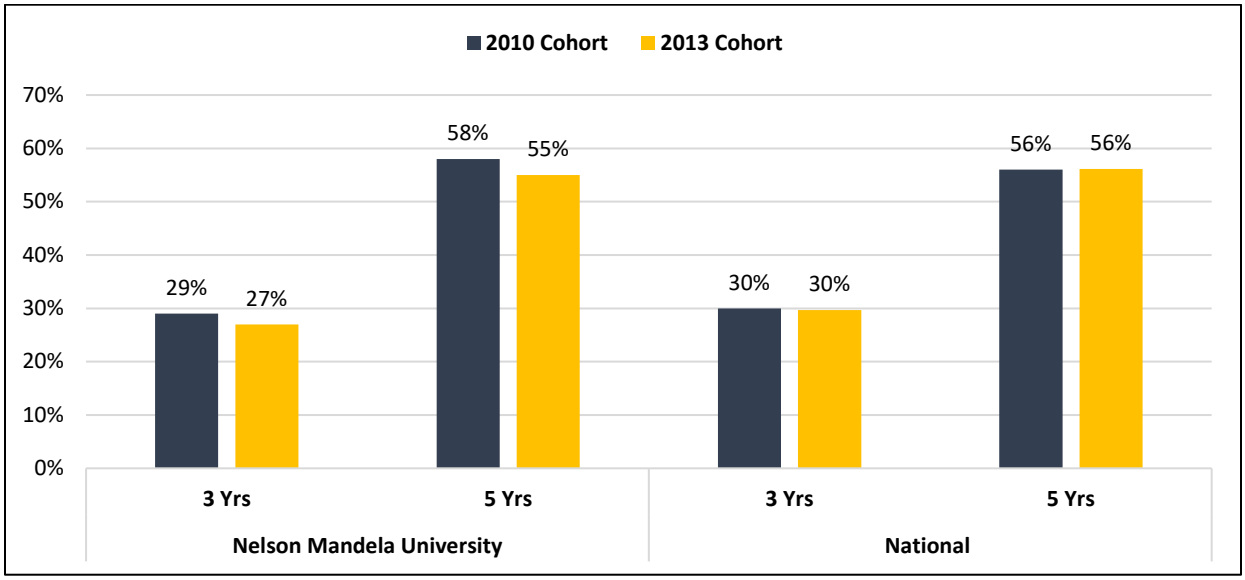
Figure 32: Throughput rates of 3-year diplomas or certificates for the 2010 and 2013 cohorts



Three-year B degrees: Figure 33 shows that the throughput rate for three-year Bachelor's degrees decreased from 29% after 3 years for the 2010 cohort to 27% after 3 years for the 2013 cohort and from 58% for the 2010 cohort after 5 years to 55% after 5 years for the 2013 cohort. The throughput rate after

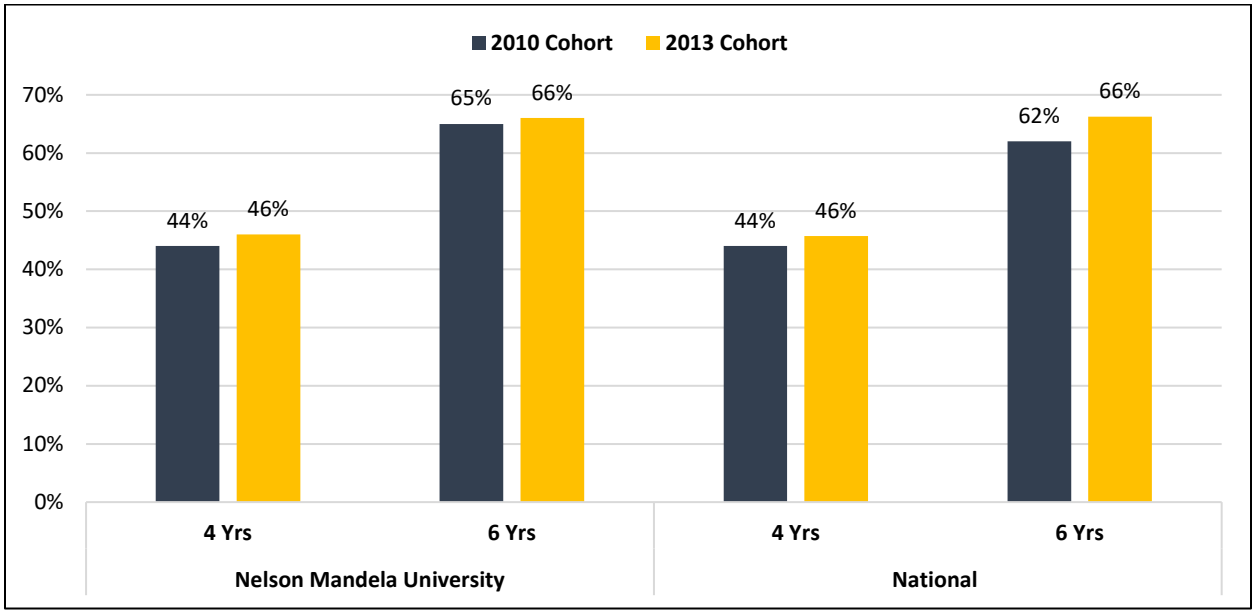
5 years for the 2010 cohort (58%) was higher than the national average (56%), but for the 2013 cohort it was lower after 5 years (55%) than the national average (56%).

Figure 33: Throughput rates of 3-year B-degrees for the 2010 and 2013 cohorts



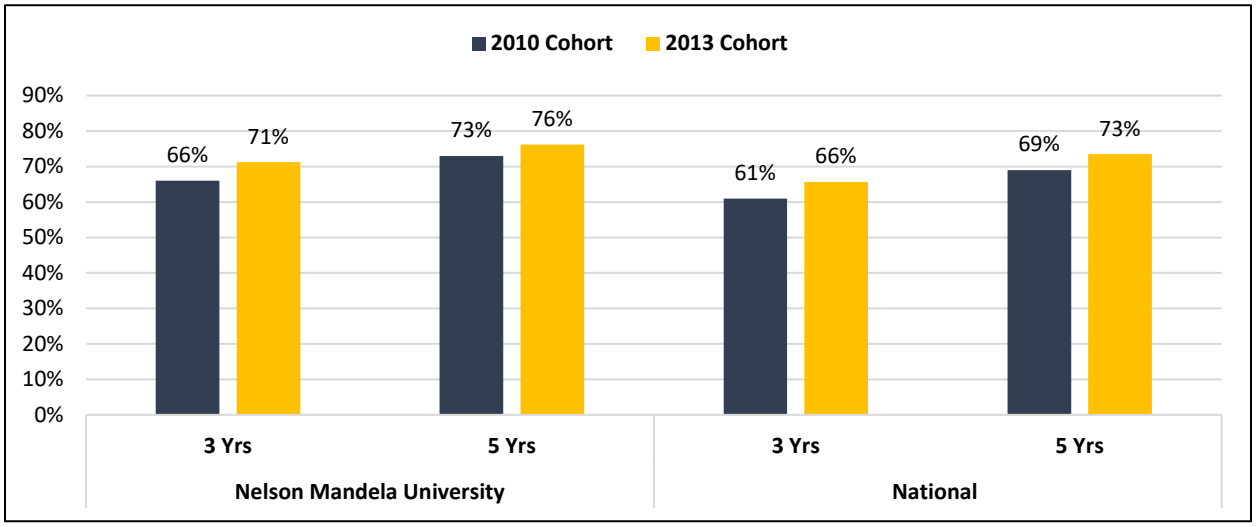
Four-year B degrees: Throughput rates increased from 44% after 4 years for the 2010 cohort to 46% after 4 years for the 2013 cohort and from 65% for the 2010 cohort after 6 years to 66% after 6 years for the 2013 cohort. The throughput rates after 6 years were higher (65%) than the national average (62% after 6 years) for the 2010 cohort, but the same as the national average for the 2013 cohort (66% after 6 years) – See Figure 34.

Figure 34: Throughput rates of 4-year B degrees for the 2010 and 2013 cohorts



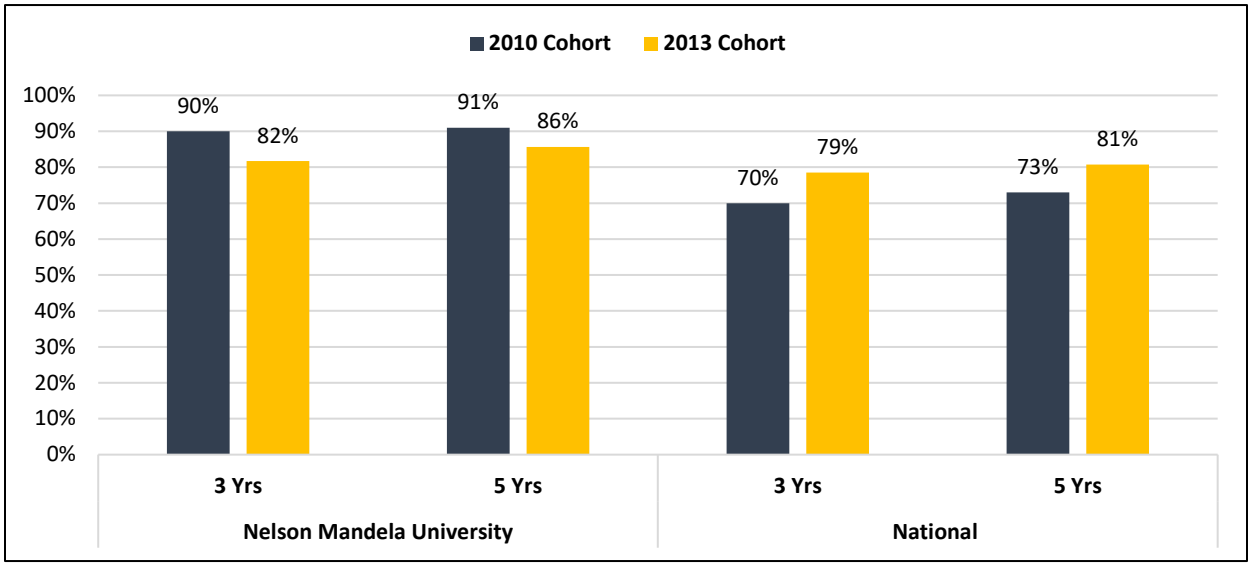
B Tech degrees: Throughput rates increased from 66% after 3 years for the 2010 cohort to 71% after 3 years for the 2013 cohort and from 73% for the 2010 cohort after 5 years to 76% after 5 years for the 2013 cohort. The throughput rates were higher than the national averages (61% after 3 years and 69% after 5 years) for the 2010 cohort, and higher than the national averages for the 2013 cohort (66% after 3 years and 73% after 5 years) – See Figure 35.

Figure 35: Throughput rates of B Tech degrees for the 2010 and 2013 cohorts



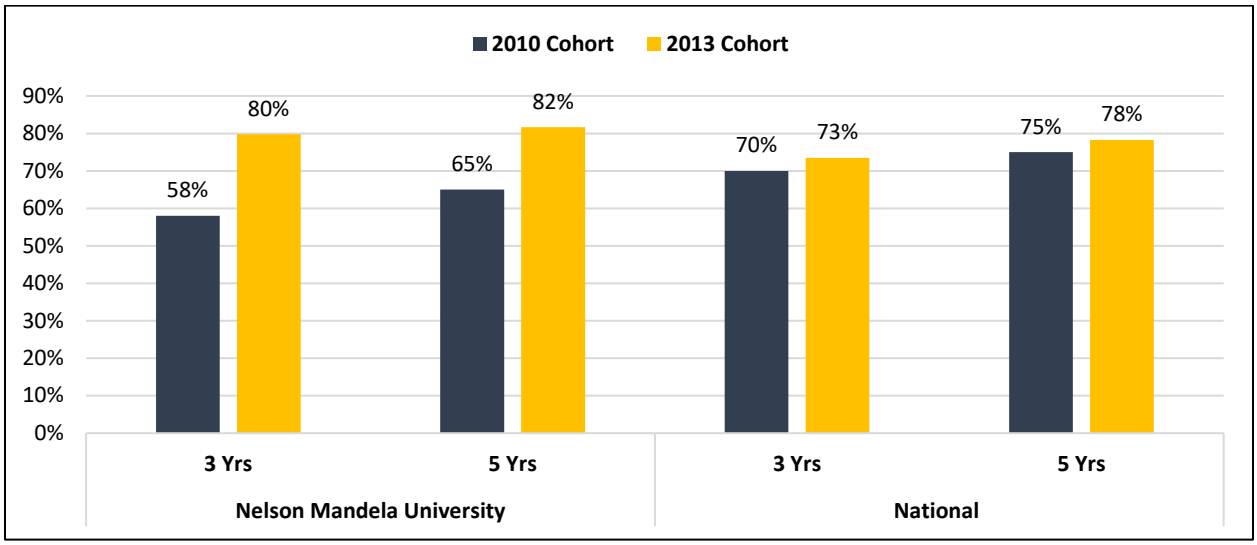
Postgraduate Diplomas and Certificates: Throughput rates decreased from 90% after 3 years for the 2010 cohort to 82% after 3 years for the 2013 cohort and from 91% for the 2010 cohort after 5 years to 86% after 5 years for the 2013 cohort. The throughput rates were higher than the national averages (70% after 3 years and 73% after 5 years) for the 2010 cohort, and higher than the national averages for the 2013 cohort (79% after 3 years and 81% after 5 years) – See Figure 36.

Figure 36: Throughput rates of PG Diplomas and Certificates for the 2010 and 2013 cohorts



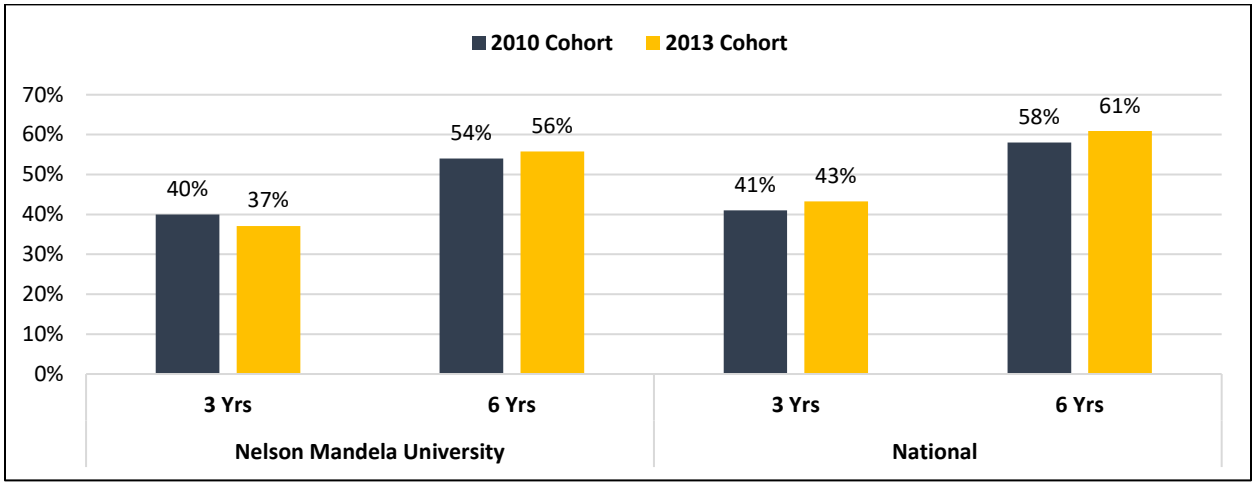
Honours degrees: Throughput rates increased from 58% after 3 years for the 2010 cohort to 80% after 3 years for the 2013 cohort and from 65% for the 2010 cohort after 5 years to 82% after 5 years for the 2013 cohort. This could be explained by a sharp decline in distance B Ed Honours programme enrolments. The throughput rates were higher than the national averages (70% after 3 years and 73% after 5 years) for the 2010 cohort, and higher than the national averages for the 2013 cohort (75% after 3 years and 78% after 5 years) – See Figure 37.

Figure 37: Throughput rates of Honours degrees for the 2010 and 2013 cohorts



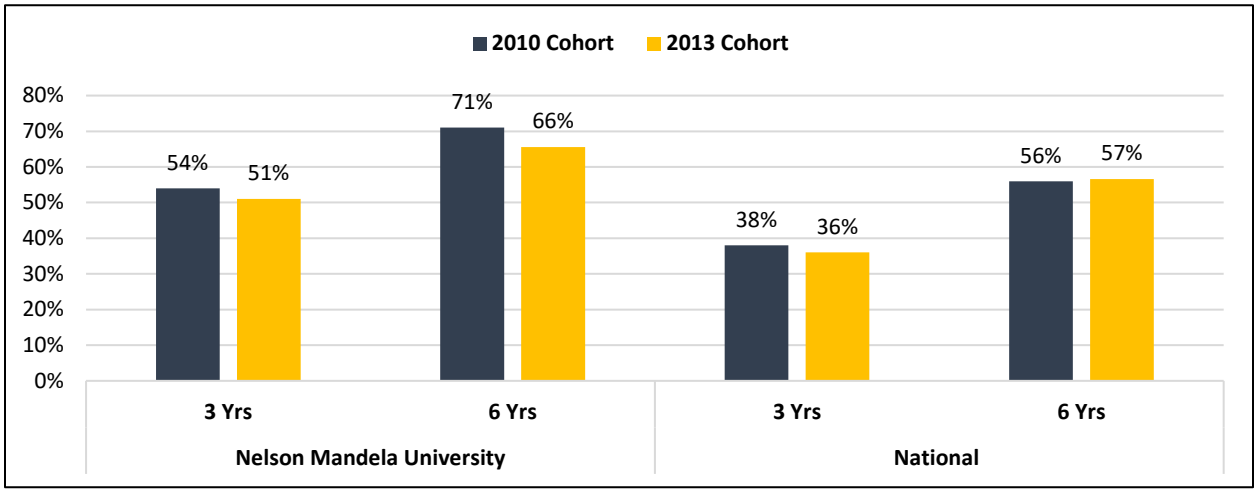
Coursework Masters' degrees: Throughput rates decreased from 40% after 3 years for the 2010 cohort to 37% after 3 years for the 2013 cohort and increased from 54% for the 2010 cohort after 6 years to 56% after 6 years for the 2013 cohort. The throughput rate after 6 years for the 2010 cohort (54%) was lower than the national average (58%), and lower (56%) after 6 years than the national average (61%) for the 2013 cohort – See Figure 38.

Figure 38: Throughput rates of Coursework Masters' degrees for the 2010 and 2013 cohorts



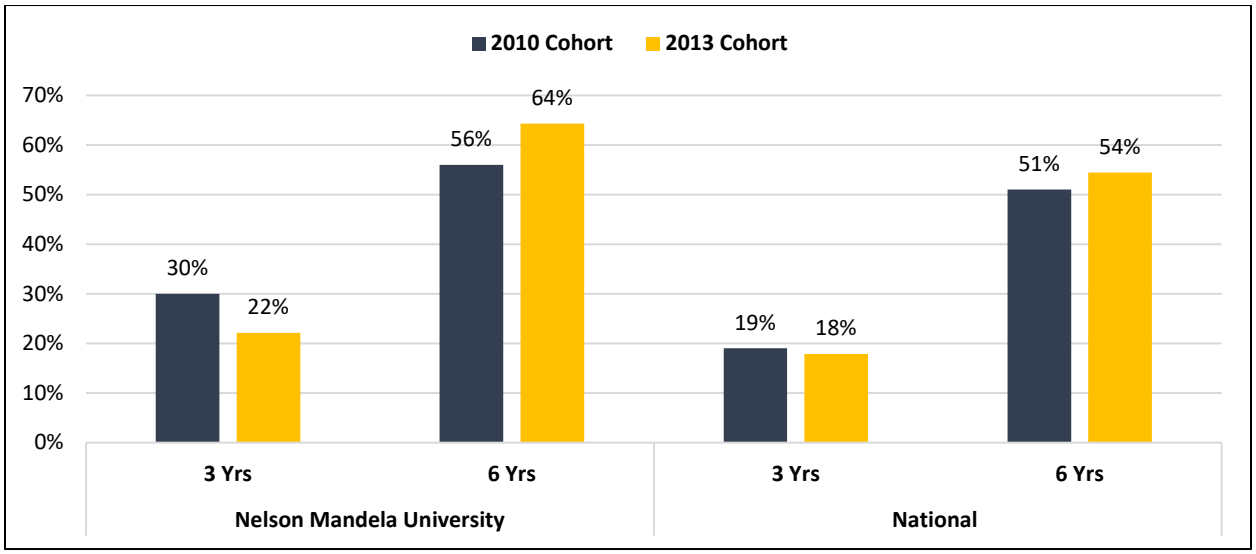
Research Masters' degrees: Throughput rates decreased from 54% after 3 years for the 2010 cohort to 51% after 3 years for the 2013 cohort and from 71% for the 2010 cohort after 6 years to 66% after 6 years for the 2013 cohort. The throughput rate after 6 years for the 2010 cohort (71%) was much higher than the national average (56%), and much higher after 6 years (66%) than the national average (57%) for the 2013 cohort – See Figure 39.

Figure 39: Throughput rates of Research Masters' degrees for the 2010 and 2013 cohorts



PhD degrees: Throughput rates decreased from 30% after 3 years for the 2010 cohort to 22% after 3 years for the 2013 cohort and increased from 56% for the 2010 cohort after 6 years to 64% after 6 years for the 2013 cohort. The throughput rate after 6 years for the 2010 cohort was higher (56%) than the national average (51%), and much higher (64%) after 6 years than the national average (54%) for the 2013 cohort – See Figure 40.

Figure 40: Throughput rates of PhD degrees for the 2010 and 2013 cohorts

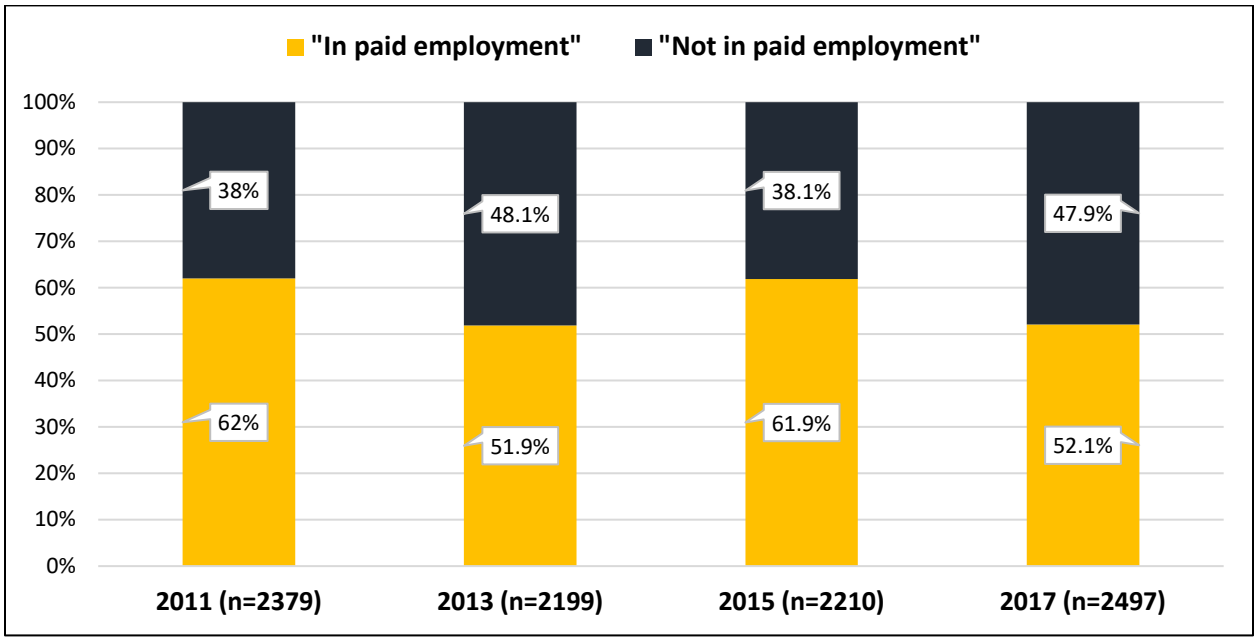


4.7 Graduate employability

Arguably, one of the most important outcome indicators of student success is the employability of its graduates. Although entrepreneurship remains an important cornerstone of a vibrant economy, the percentage of graduate respondents that are in paid employment at the time of administering the institutional Graduate Destinations Survey is a good indicator of the extent to which the University is producing graduates that are absorbed into the labour market.

Figure 41 shows that the percentage of graduate respondents that were in paid employment declined from 62% in 2011 to 51.9% in 2013 and then increased to 61.9% in 2015 but declined again to 52.1% in 2017. The 2019 administration of the survey was disrupted by the national lockdown to prevent the spread of COVID-19 so this data is not yet available.

Figure 41: Percentage of graduate respondents in paid employment: Graduate Destinations Survey, 2011, 2013, 2015 and 2017



5. STAFF

The permanent academic and PASS staff at the Nelson Mandela University increased from 1 611 in 2010 to 2 554 in 2019 at an average annual growth rate of 5.5%, compared to a national average growth rate 3.5% from 2010 to 2018. The University permanent staff complement increased at a higher rate than the average for the rest of the system.

The full-time equivalent staff at Nelson Mandela University, which includes all full-time and part-time permanent and temporary staff, increased from 2 000 in 2010 to 3 321 in 2019, at an average annual growth rate of 5.8% compared to the national average growth rate of 3.8% over the period 2010 to 2018.

The full-time equivalent enrolled students at Nelson Mandela University increased only by 1.8% on average per annum over the period 2010 to 2019, compared to the national average increase per annum over the 2010 to 2018 period of 3.8%. This shows that the University staff complement grew at a much faster rate than the national average annual increase in full-time equivalent staff relative to the growth in full-time equivalent enrolled students.

The population group distribution of all permanent staff at the Nelson Mandela University changed as follows over the 2010 to 2019 period:

- African staff increased from 24% to 51% (compared to the national percentage of 56% in 2018);
- Coloured staff from 17% to 18% (compared to the national percentage of 12% in 2018);
- Indian staff declined from 4% to 3% (compared to the national percentage of 6% in 2018); and
- White staff declined from 55% to 28% (compared to the national percentage of 26% in 2018).

At Nelson Mandela University, the proportion of female permanent staff increased from 55% in 2010 to 58% in 2019, whilst the percentage of female permanent staff nationally was 54% in 2018. It is thus evident that the University's demographic profile of permanent staff in 2019 was close to the national demographic profile of all permanent staff in the higher education system.

5.1 Demographic profile of permanent academic staff

Achieving a demographically diverse academic staff profile remains a challenge for the higher education sector, with huge pressures on universities to transform in alignment with South Africa's transformation policy goals. Nelson Mandela University has made concerted efforts to diversify the academic staff profile through the rigorous implementation of employment equity targets and protocols.

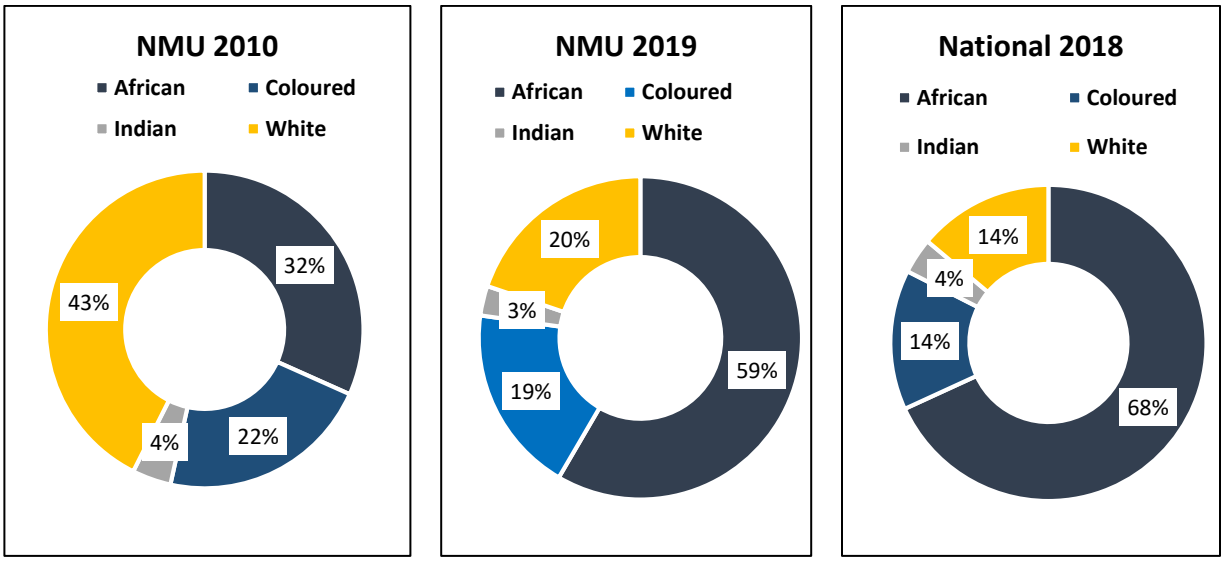
In addition, as from 2016, budget innovations resulted in the creation of an earmarked *Academic Staff Equity Development Fund*, held in the Office of the Vice Chancellor, to target the most promising black postgraduates wishing to develop academic careers, and fund their integration and development within the academy.

Talent continuity strategies will be especially critical as increasing numbers of senior academic staff with PhDs retire over the next few years. To this end, the sector-wide University Capacity Development Grant (UCDG) furthermore made provision for funding from 2018 onwards to enable the University to scale up the development of the next generation of academics. These capacity development opportunities target four different groups of academics and researchers, namely:

- Emerging academics and researchers from designated equity groups;
- Established academics from designated equity groups who need to be supported in preparation for future academic management roles (such as Heads of Departments and Directors of Schools);
- Established academics from designated equity groups who wish to grow into internationally renowned researchers and scholars; and
- Academics nearing retirement who need to be prepared for future mentoring roles.

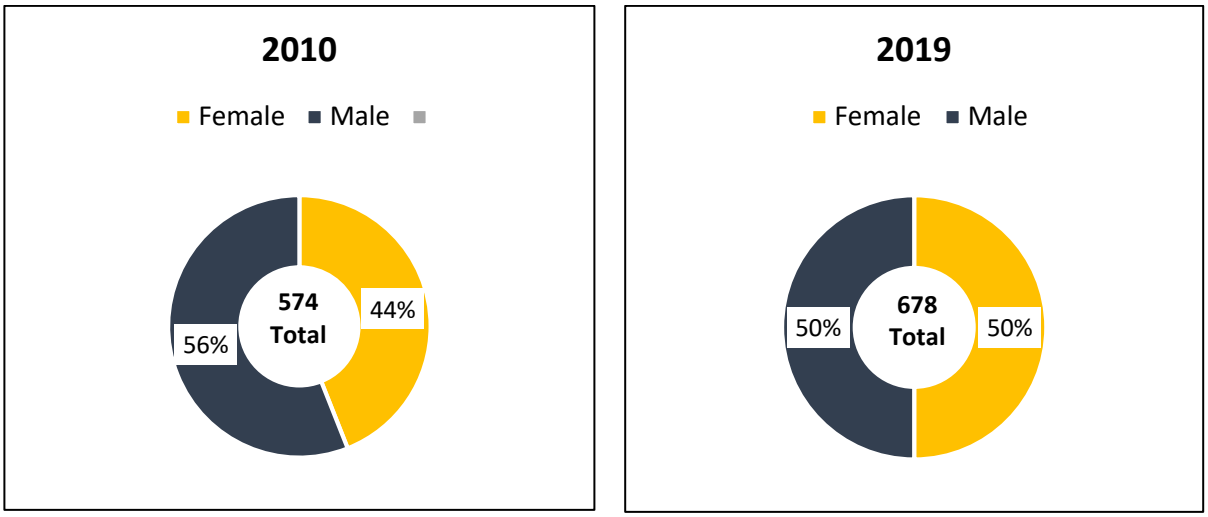
As a result of these interventions, the demographic profile of the permanent academic staff changed considerably over this period. Figure 42 shows the permanent academic staff by population group for the years 2010 to 2019.

Figure 42: Permanent academic staff by population group, 2010 and 2019



The permanent academic staff increased from 574 in 2010 to 678 in 2019, at an average annual growth rate of 1.9%. This is higher than the average annual increase in student headcounts over this period of 1.4%. African staff increased from 12% to 27% (compared to 40% at national level in 2018), Indian staff from 3% to 5% (compared to 9% at national level in 2018), Coloured staff from 9% to 16% (compared to 9% at national level in 2018), while White academic staff declined from 76% to 52% of the total (compared to 41% at national level in 2018.

Figure 43: Permanent academic staff by gender, 2010 and 2019



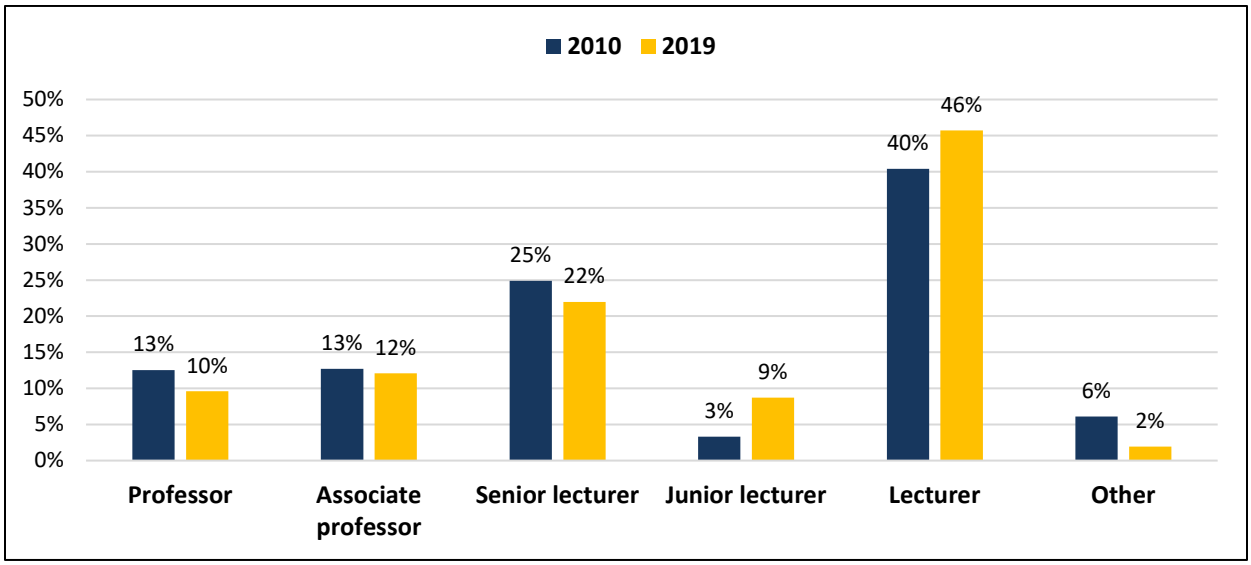
As can be seen from Figure 43 above, the gender profile of the permanent academic staff at Nelson Mandela University also improved with female staff increasing from 44% in 2010, to 50% in 2019. This compares favourably with 49% female permanent academic staff members at national level in 2018.

Overall, the University has made considerable progress in diversifying the demographic profile of the permanent academic staff over the 2010 to 2019 period, but efforts to develop the next generation of Black and female academics will need to continue to promote demographic representivity.

5.2 Permanent academic staff by rank

In 2019, the overall profile of the permanent academic staff by rank, shifted to more junior staff employed than in 2010. The percentage professors and associate professors declined from 13% in 2010 to 10% in 2019 and from 13% to 12% respectively. Senior lecturers as a percentage of the total declined from 25% to 22%, whilst junior lecturers increased from 3% to 9% and lecturers from 40% to 46%. These shifts are as a result of the retirement of highly qualified staff being replaced with the incoming younger generation of staff, many of whom are pursuing their higher qualifications.

Figure 44: Permanent academic staff by rank, 2010 and 2019



The changes in the demographic profile are also reflected in the demographics of the permanent academic staff by rank. In 2010, 6% of professors and associate professors were African and 88% White. In 2019, this had changed to 18% African professors and associate professors, with 69% White professors and associate professors. The percentage African senior and junior lecturers, increased from 12% in 2010 to 24% in 2019, with a decline in White senior and junior lecturers from 78% to 55%. The percentage of African lecturers and other academic staff increased from 14% in 2010 to 33% in 2019, with a decline from 69% in White lecturers and other staff in 2010, to 43% in 2019.

Figure 45: Permanent academic staff by rank and population group, 2010 and 2019

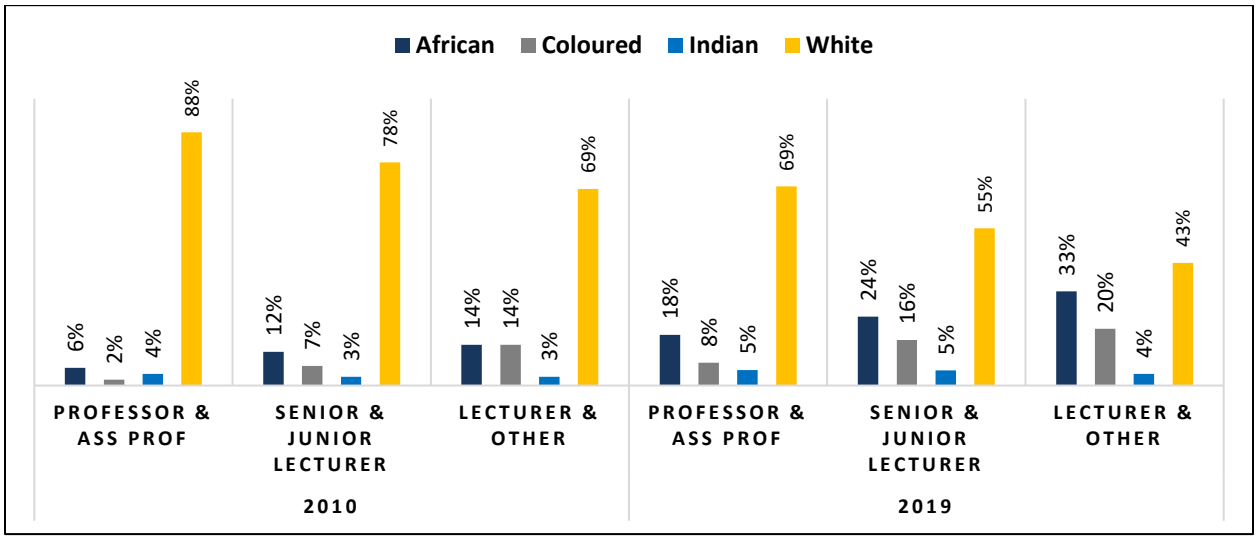
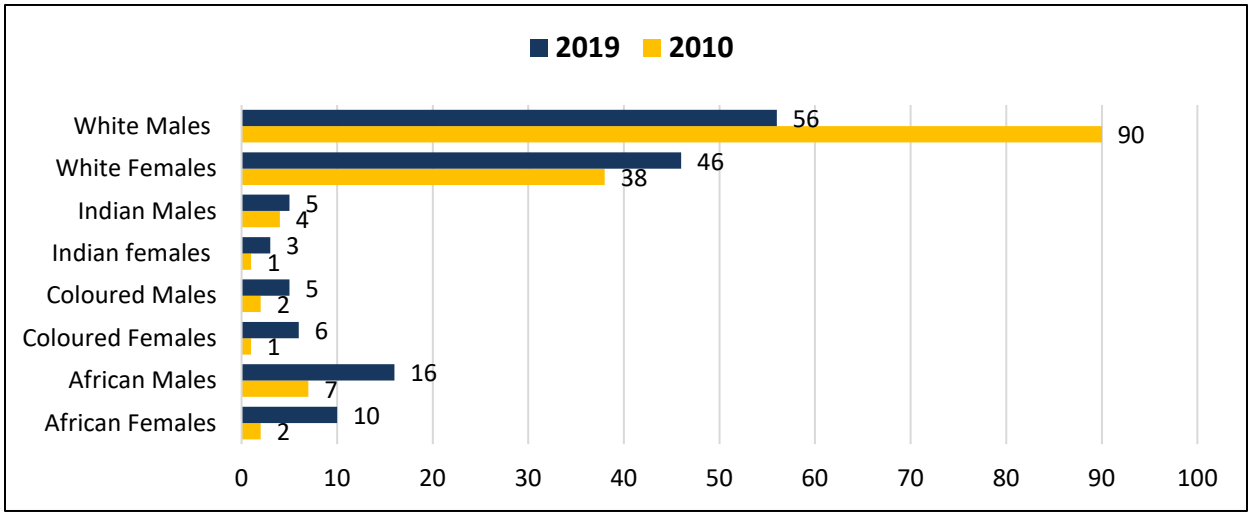


Figure 46 shows headcounts of permanent professors and associate professors by population group and gender for 2010 and 2019. White males declined from 90 to 56, whilst White females increased from 38 to 46. Collectively, Black (A, C, I) professors and associate professors increased from 17 to 45 of all permanent academic staff.

Figure 46: Headcounts of permanent professors and associate professors by population group and gender, 2010 and 2019



5.3 Highest qualification of permanent academic staff

Figure 47 below shows that the percentage of permanent academic staff with PhDs increased by 7 percentile points from 38% in 2010 to 45% in 2018. This is lower than the national average of 48%. Permanent academic staff with Masters' degrees remained at 37%, whilst staff with qualifications below a Masters' degree declined from 25% to 19%.

Figure 47: Highest qualification of permanent academic staff, 2010 and 2019

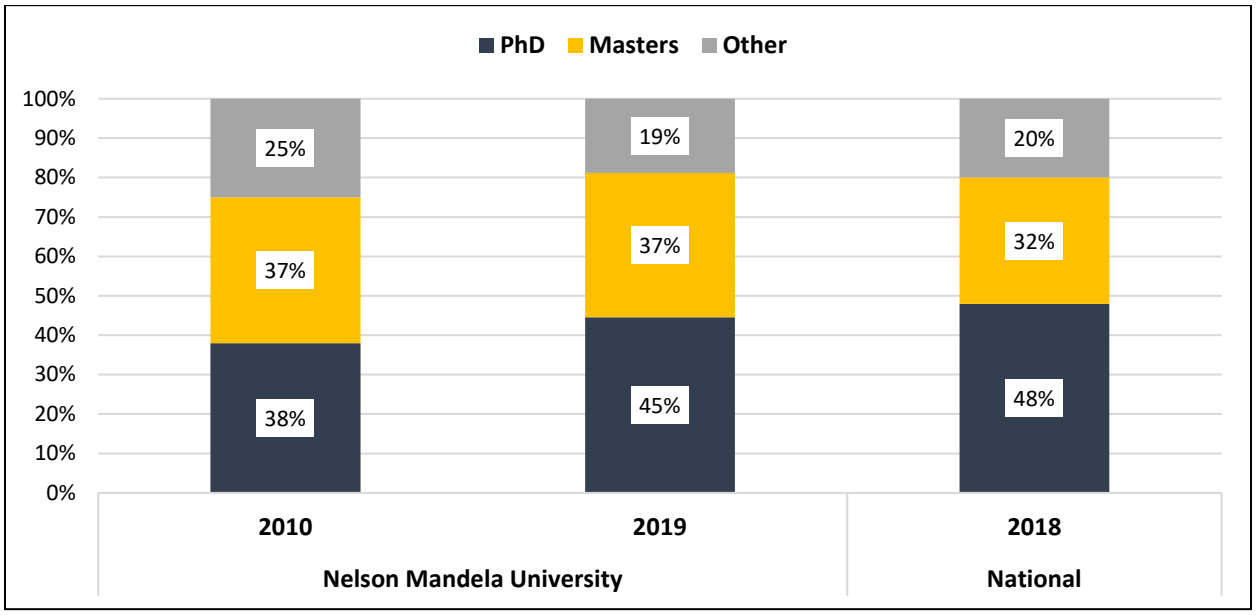
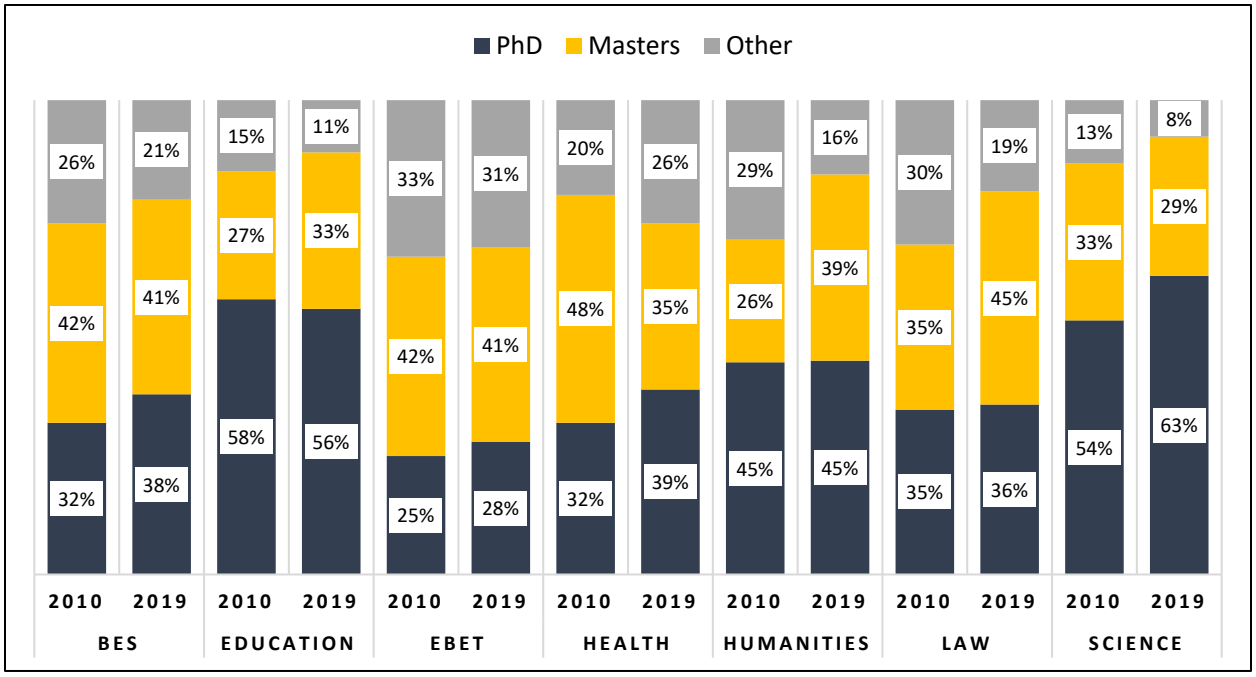


Figure 48 shows that the most significant increase in staff with PhDs was in the Faculty of Science from 54% in 2010 to 63% (9% more) in 2019, followed by the Faculty of Health Sciences increasing from 32% to 39% (7% more). The only decline in the percentage of staff with PhDs (from 58% in 2010 to 56% in 2019) was experienced in the Faculty of Education and this can probably be attributed to the exit of senior academics with PhDs due to retirement.

Figure 48: Highest qualification of permanent academic staff by faculty, 2010 and 2019

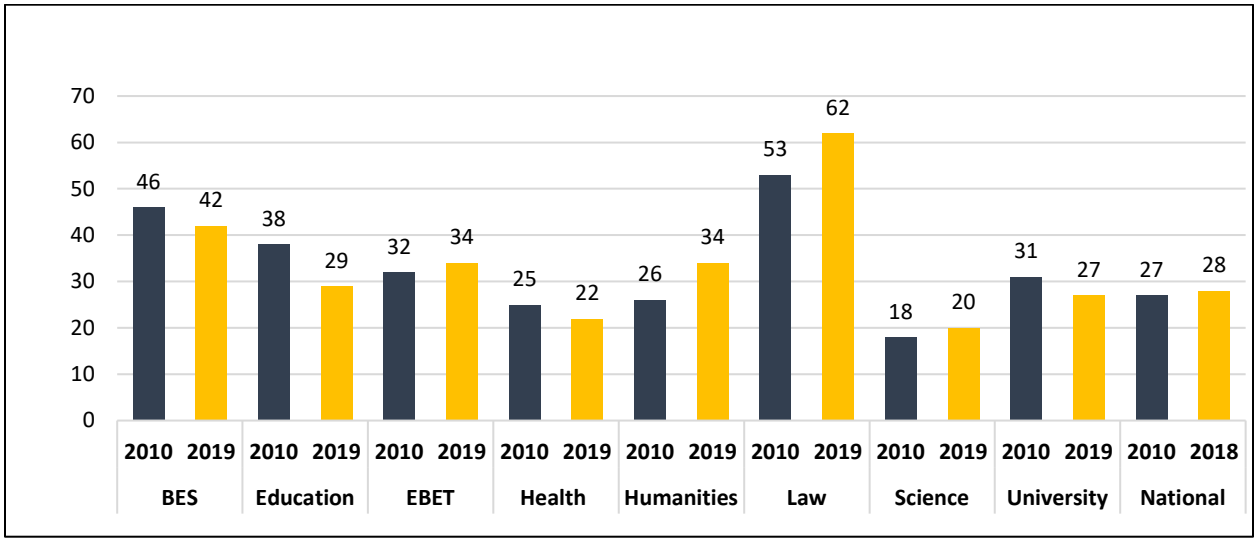


5.4 Student: staff full-time equivalent (FTE) ratios

Student: staff full-time equivalent (FTE) ratios are an important indicator of teaching quality. In general, lower student: staff FTE ratios contribute to higher levels of student success and research outputs due to more manageable workloads for academic staff.

Figure 49 below indicates that, in total, the student: staff FTE ratio for the University decreased from 31: 1 in 2010 to 27: 1 in 2019, which is a positive improvement and slightly lower than the national average of 28: 1 for all public universities.

Figure 49: Student: staff full-time equivalent ratios by faculty, 2010 and 2019



5.5 Permanent Professional Administrative and Support Services (PASS) staff

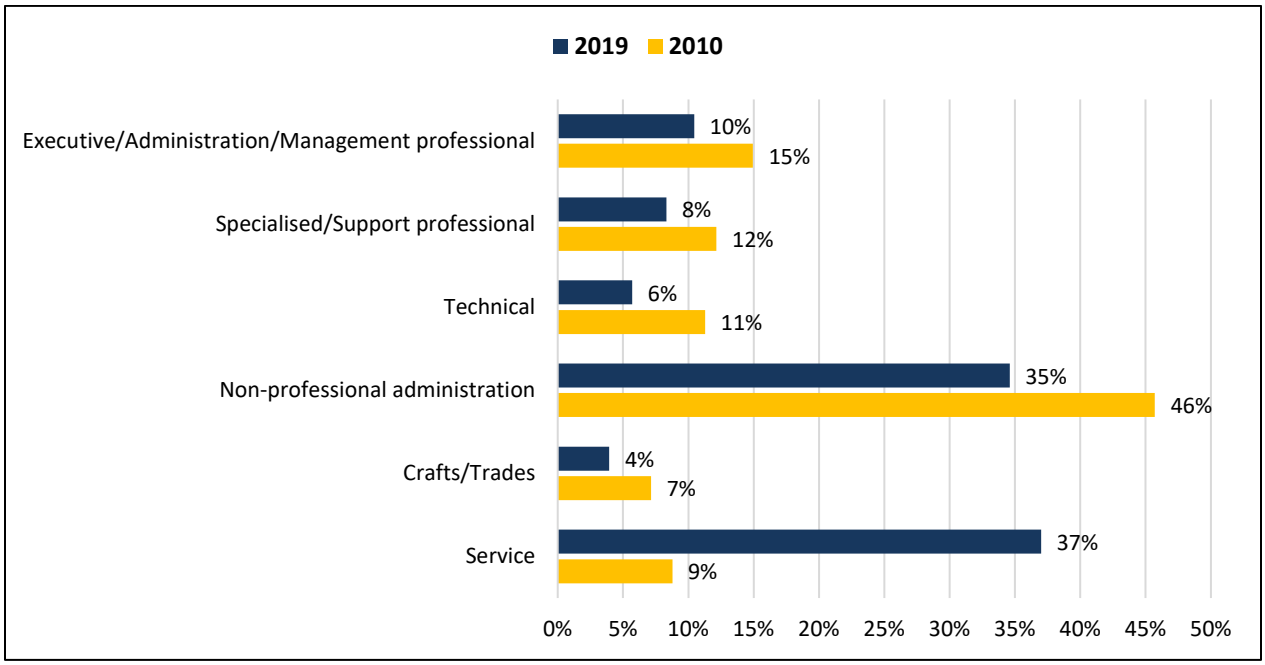
In 2015, the University Council resolved that all previously outsourced services should be reintegrated as part of the University's staff complement in a phased manner as the contracts with the service providers expired. Since 2018, 874 previously outsourced catering, protection services, cleaning and gardening employees have been reintegrated.

Insourcing such a large cohort of employees had a significant impact on the University's professional, administrative and support services (PASS) staff complement and demographic profile, as well as on financial sustainability going forward. The University therefore invested in the development of innovative business models that will simultaneously drive down costs and optimise service delivery across these service platforms.

As a result of insourcing, the PASS staff complement at Mandela University increased from 1 037 in 2010 to 1 876 in 2019, at an average annual growth rate of 6.8%. However, by 2019, there was a slightly lower number of service staff (694) due to a moratorium on the filling of PASS vacancies.

Figure 50 shows the percentage of PASS staff by occupational category, as well as the average annual growth rates over the period 2010 to 2019. Service staff increased from 9% to 37% of total PASS staff with an annual average growth rate of 25.3%.

Figure 50: Percentage PASS staff by occupational category, 2010 and 2019



As a result, the proportions of all the other occupational categories as a percentage of the total PASS staff declined although this does not mean that their numbers have declined (see Table 2 below).

Table 2: Number of PASS staff by occupation category 2010 and 2019

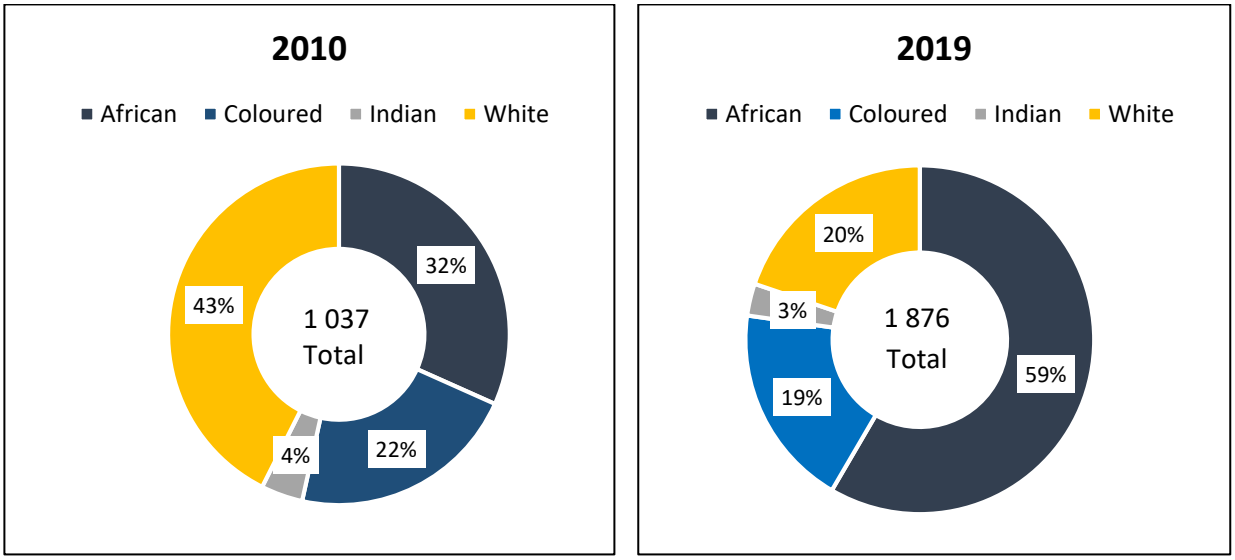
Occupational category	2010	2019
Executive/Administration/Management professional	155	196
Specialised/Support professional	126	156
Technical	117	107
Non-professional administration	474	649
Crafts/Trades	74	74
Service	91	694
Total	**1 037**	**1 876**

Figure 51 indicates the demographic profile of PASS staff by population group for the years 2010 to 2019. As with the demographic profile of permanent academic staff, the University has also made considerable progress in diversifying the demographic profile of permanent PASS staff over this period. African PASS

staff increased from 32% to 59%, while Indian PASS staff declined from 4% to 3%, Coloured PASS staff also declined from 22% to 19%, and White PASS staff declined from 43% to 20% of the total.

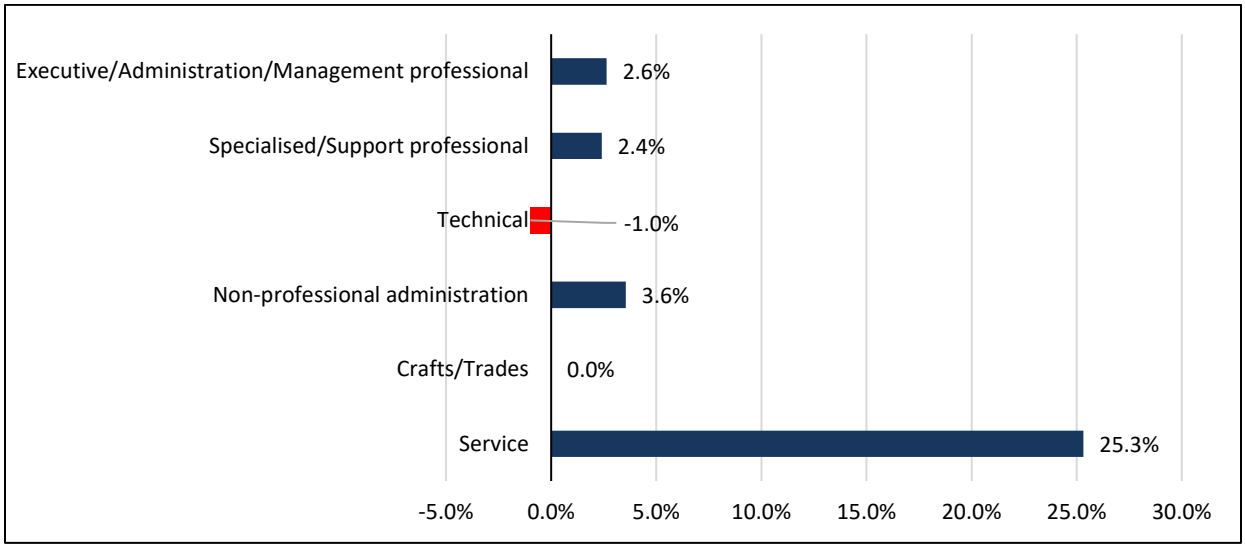
Over the period 2010 to 2019, the gender profile of permanent PASS staff remained relatively stable at 61% female and 39% male. The percentage differently abled permanent academic and PASS staff declined slightly from 2.6% in 2010, to 2% in 2019.

Figure 51: PASS staff by population group, 2010 and 2019



From Figure 52 below, it is clear that, apart from technical and crafts/trades staff, all of the other categories of permanent PASS staff grew at much higher average annual rates than permanent academic staff, which increased at an average annual growth rate of 1.9%.

Figure 52: Average annual growth rate of PASS staff by occupation category, 2010 to 2019



6. RESEARCH OUTPUTS

6.1 Research and Innovation Strategy

The University's research agenda is driven by the Vision 2020 strategic priority to develop and cultivate an engaged, innovative scholarship culture that generates knowledge recognised for its contribution to sustainability. Nelson Mandela University is recognised for its engaged scholarship, which seeks to co-create innovative, contextually responsive solutions to a broad spectrum of societal challenges in collaboration with multiple stakeholders. In pursuit of the public good, our research and scholarly endeavours seek to impact on and improve the lives of all – from Nelson Mandela Bay to the rest of Africa and the world - with the aim of achieving a more socially just, humane and sustainable future for all.

As a comprehensive university, Mandela University seeks to promote the convergence of inter- and transdisciplinary "blue sky" and applied research as a centrepiece of progressive scholarly inquiry. This includes concerted efforts to revitalise the humanities whilst consolidating our strengths in science and engineering to foreground the scholarly contributions of all disciplines and fields of study.

In the following sections, the trends in research outputs for the 2010 to 2019 period will be analysed and an overview provided of key challenges impacting on these trends, including the funding available for postgraduate scholarships over the period 2016 to 2019.

6.2 Weighted Research Output Units (WROUs)

The University is considerably intensifying its efforts to diversify its sources of research income, so as to enhance its sustainability and reduce the risk associated with heavy reliance on State funding. The University receives research output subsidy from DHET based on weighted research output units.

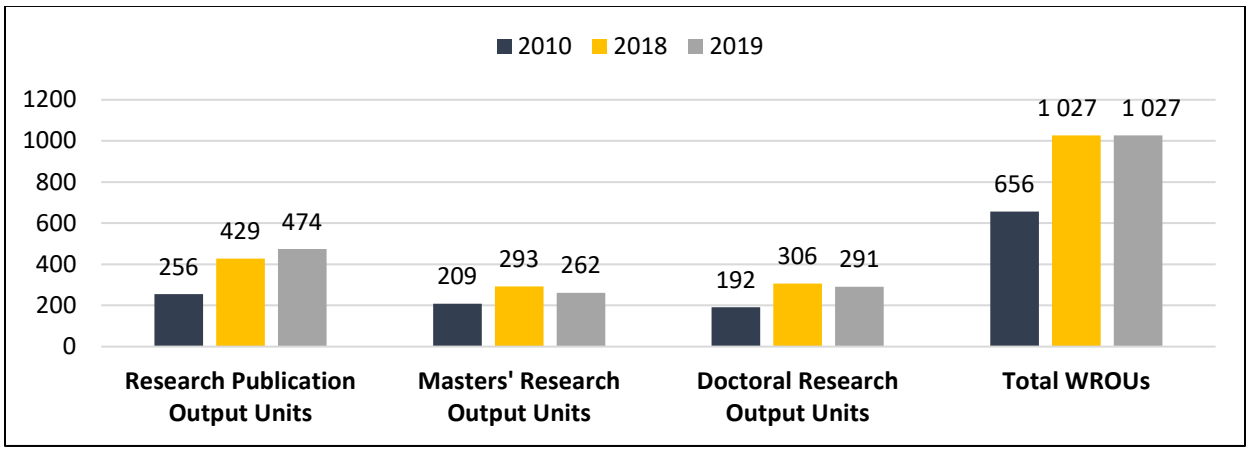
Weighted research output units (WROUs) are calculated by assigning a weight of one to research publications, a weight of one to the masters' research output units and a weight of three to doctoral research output units. Masters' research output units are the portion of masters' degrees that are research based. A masters' degree with for example a 50% research component is equal to a 0.5 research output unit, whilst a full research masters' degree is equal to one unit.

Despite heavy teaching loads (full time equivalent staff: student ratio of 1:27 in 2019), and the fact that only about 30% of academic staff published at all in recent years, the research trajectory of the University with regards to research publications shows an upward trend. The University has being doing very well with regard to increases in research publications, which increased from 256 in 2010 to 429 (68% increase) in 2018 with a further increase of 11% to 474 in 2019. The research publication units increased on average by 7.1% per annum over the period 2010 to 2019.

Masters' research output units increased from 209 in 2010 to 293 in 2018 (40% increase) and then decreased by -10% to 262 in 2019. The masters' research output units increased by 2.6% on average per annum, which was the lowest average annual increase of the three research output types, but still a satifactory average annual increase over the period. Doctoral research output units increased from 192 in 2010 to 306 in 2018, which constitutes a 59% increase, but then declined by -5% to 291 in 2019. The average annual increase of doctoral research output units was 4.7% over the 2010 to 2019 period.

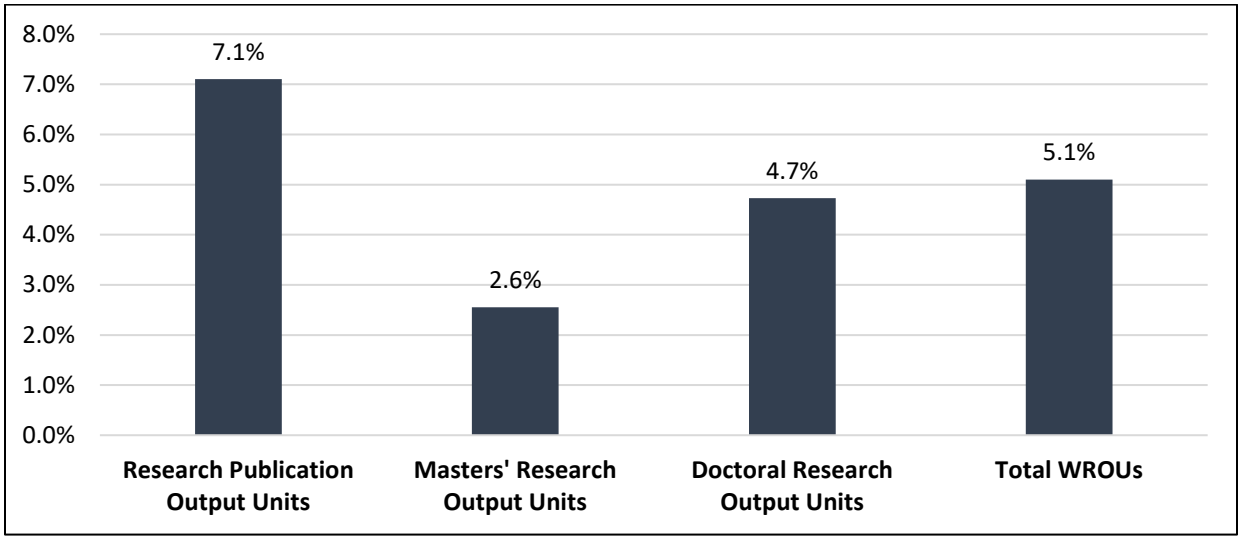
Figures 53 and 54 show the weighted research output units (WROU) for 2010, 2018 and 2019, as well as the average annual growth rate for the three types of research outputs for the period 2010 to 2019.

Figure 53: Weighted research output units (WROUs): 2010, 2018 and 2019



The total weighted research output units increased from 656 in 2010 to 1 027 in 2018, and remained at 1 027 in 2019, a total increase of 56% with an average annual increase of 5.1% over the period 2010 to 2019. The decline in masters' and doctoral research output units from 2018 to 2019, was offset by the increase in research publications from 2018 to 2019.

Figure 54: Average annual growth rates in in weighted research output units (WROU), 2010 to 2019

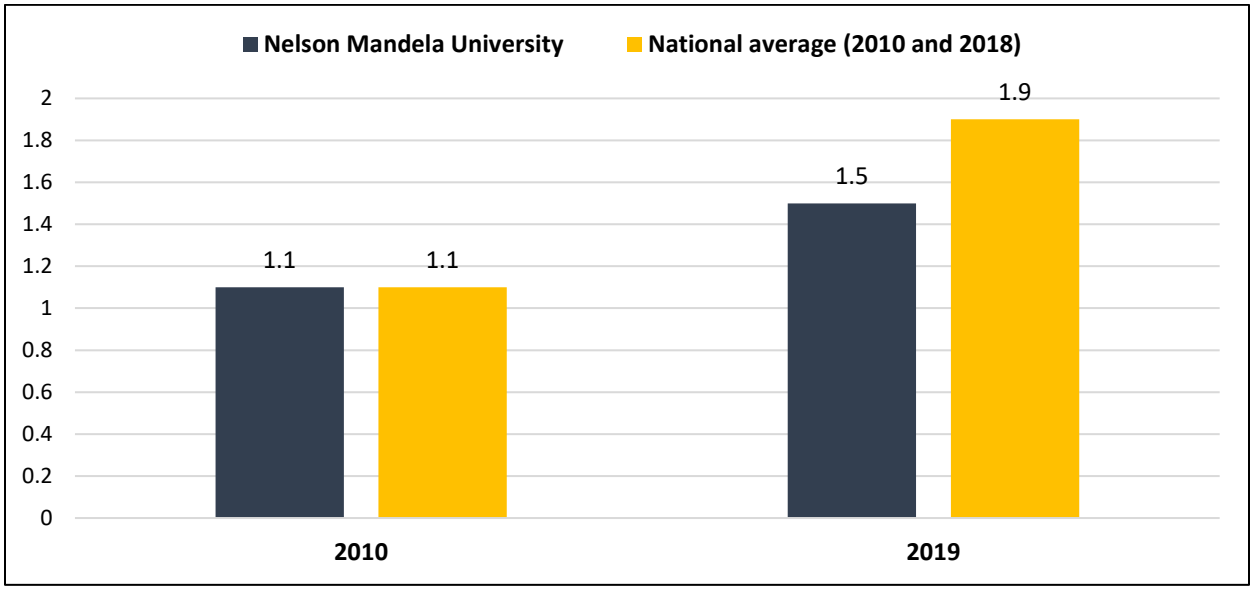


Research activity and productivity at Mandela University are currently largely dominated by the Science and EBET faculties. In her inaugural address in 2018, the Vice-Chancellor signalled strongly that the frontiers between "science" and the "humanities" need to be reconceptualised and redrawn. This is in recognition of the fact that the commanding challenges facing our country, continent and the world cannot be solved within the confines of a single disciplinary lens. The University is therefore engaged in a drive to revitalise the humanities. To this end, it is encouraging to note the recent announcement of several key strategic interventions such as the establishment of two University-wide entities namely: the Centre for Women and Gender Studies and the Centre for Philosophies in Africa. In addition, in 2018, the University saw the announcement of the first SARChi Research Chair in the Arts Faculty (Identities and Social Cohesion in Africa) as well as the establishment of the Chair in Critical Studies in Higher Education Transformation.

6.3 Ratio of weighted research output units per permanent academic staff member

The ratio of weighted research output units per permanent academic staff member is an indicator of the research productivity of academic staff members. The ratios for 2010 and 2019 compared to the national averages are shown in Figure 55. The ratio for Nelson Mandela University increased from 1.1 in 2010 to 1.5 in 2019. In 2010, the University had the same ratio (1.1) than the national average, but a much lower ratio of 1.5 in 2019 compared to the national average of 1.9. The research outputs for the rest of the university system have thus grown at a faster rate than at the University.

Figure 55: Weighted research output units (WROUs) per permanent academic staff member compared to the national average: 2010 and 2019

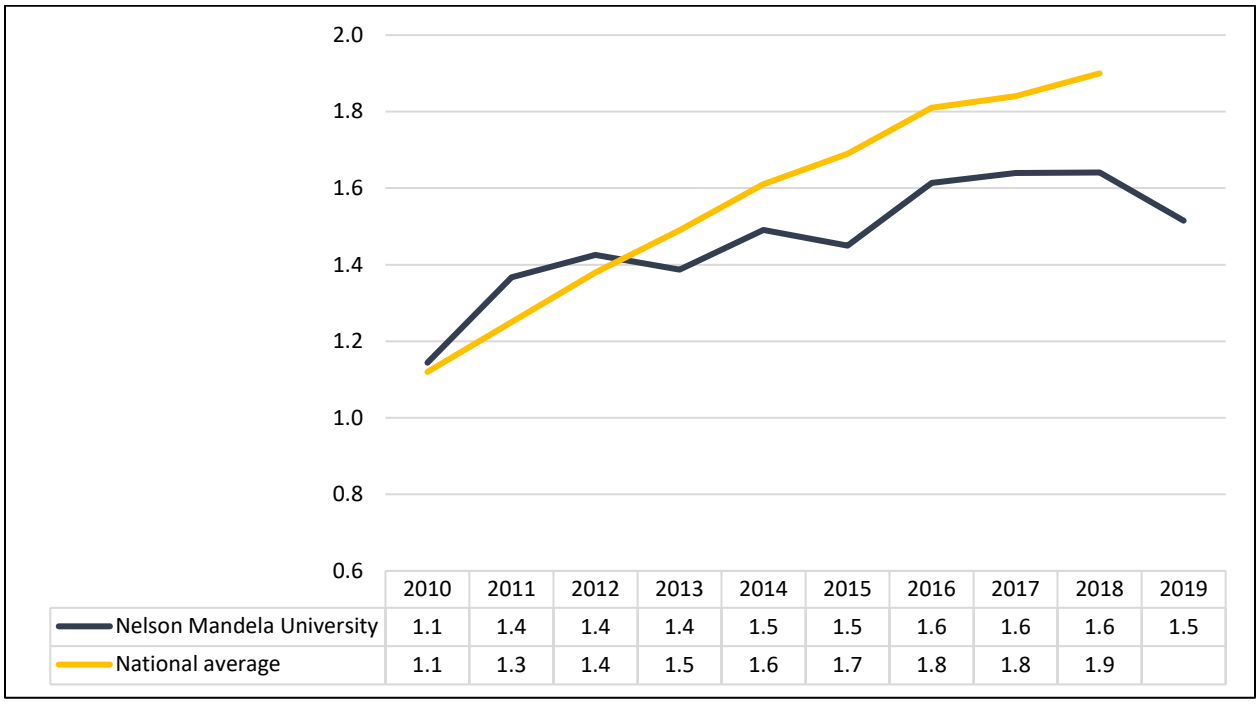


The research outputs of a university are highly correlated to the percentage academic staff with PhDs. The percentage permanent academic staff with a PhD for the universities who had a per capita weighted research output unit ratio higher than 3.0 in 2018 were: University of Pretoria – 70%; University of

KwaZulu-Natal – 56%, Stellenbosch University – 57% and the University of the Witwatersrand – 66%. In comparison, the percentage of permanent staff with a PhD at the Nelson Mandela University was 45% in 2019. The average annual decrease of masters' enrolments at the Nelson Mandela University at an average annual decline of -1.4% since 2013, whilst the average annual increase in masters' enrolments nationally was 3.2%, could be another reason why Nelson Mandela University's per capita weighted research output units were much lower than the national average.

Figure 56 below shows how the ratio of weighted research output units to permanent academic staff members has increased each year over the period 2010 to 2019. The University had a ratio of 1.6 for the years 2016, 2017 and 2018, but then experienced a slight decrease to 1.5 in 2019, mainly due to a decrease in research masters' and doctoral research output units.

Figure 56: Weighted research output units (WROUs) per permanent academic staff member: 2010 to 2019



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Nelson Mandela University	1.1	1.4	1.4	1.4	1.5	1.5	1.6	1.6	1.6	1.5
National average	1.1	1.3	1.4	1.5	1.6	1.7	1.8	1.8	1.9	

The national average for 2019 will only be available by the end of 2020. Nationally, the increases were much steeper with an average of 1.9 in 2018. The Report of the Ministerial Committee for the Review of the Funding of Universities (DHET, 2013: 92) recommended that: *"Each and every university should develop research capacity and participate in research and innovation, albeit to varying extents."*. Universities thus do not need to strive to all be research intensive but should be guided by the University's mission and attempt to maximise its research outputs within the available resources.

6.4 Postgraduate research funding

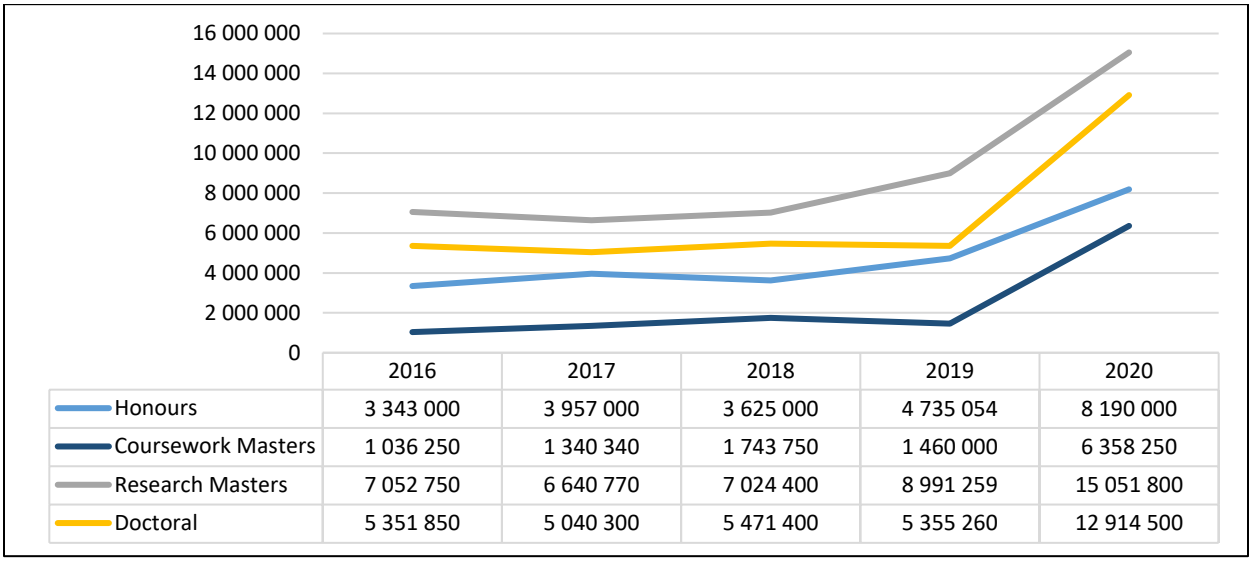
It must be noted that 47% of Mandela University graduates at undergraduate level received NSFAS funding for their first qualification, but this support only extends as far as the first qualification. Consequently, we have an increasing number of previously funded NSFAS students who are wanting to pursue postgraduate studies, but they cannot register due to financial barriers. Financial support from the University through the Council-approved bursary funding of more than R60 million for 2019 was extremely welcome, but not adequate to cater for the number of academically eligible, financially needy students. Efforts are being made to grow the external funding for postgraduate students through fellowships offered by the National Research Foundation (NRF), but these opportunities are highly competitive.

In SET fields, this is further constrained in some cases due to limitations in respect of laboratories and insufficient funding for successful grant applications submitted to national funding agencies, thus negatively affecting the implementation of these research projects as well as the recruitment of postgraduate students by grant holders. Evidence also shows that postgraduate students are increasingly mobile and will often make the choice of where to study, based on the research focus area and the reputation of a research professor. To address this, the University intends to increasingly market postgraduate degrees around defined institutional research themes, research "champions" (such as the SARChI Chairs), and research entities.

Another limitation constraining some faculties from accepting more postgraduate students is the lack of postgraduate supervisory capacity, which is largely caused by the exit of increasing numbers of senior academics with Doctoral qualifications due to retirement. This is being addressed through various programmes to improve the postgraduate qualification profile of academic staff and to attract talented scholars with PhDs and postgraduate supervision experience to the University. Furthermore, the appointment of research associates, HEAVA (honorary, emeritus, adjunct, visiting) professors and postdoctoral candidates also contributes to expanding the postgraduate supervisory pool.

Figures 57 below shows the postgraduate research funding awarded, as well as the percentage increases, over the period 2016 to 2020. It is evident that the average annual increases over the period 2016 to 2019 were much lower than the increases from 2019 to 2020.

Figure 57: Postgraduate research funding awarded: 2016 to 2020



	2016	2017	2018	2019	2020
Honours	3 343 000	3 957 000	3 625 000	4 735 054	8 190 000
Coursework Masters	1 036 250	1 340 340	1 743 750	1 460 000	6 358 250
Research Masters	7 052 750	6 640 770	7 024 400	8 991 259	15 051 800
Doctoral	5 351 850	5 040 300	5 471 400	5 355 260	12 914 500

As can be seen in Figure 58 below, there was a significant financial injection of Council-controlled income into postgraduate research funding in 2020 compared to 2019. On average, research funding for funding increased as follows for the various postgraduate qualification types:

- Allocations for Honours students increased on average at 12% per annum for the period 2016 to 2019, with a 73% increase from 2019 to 2020.
- Allocations for coursework master's studies increased on average by 12% per annum over the period 2016 to 2019, with a huge increase of 335% from 2019 to 2020.
- The average annual increase for research masters was 8% over the 2016 to 2019 period, with a 67% increase from 2019 to 2020.
- Allocations for doctoral studies did not show increases for the period 2016 to 2019, but did benefit from an increase of 141% from 2019 to 2020.

Figure 58: Percentage increases in postgraduate research funding: 2016 to 2020

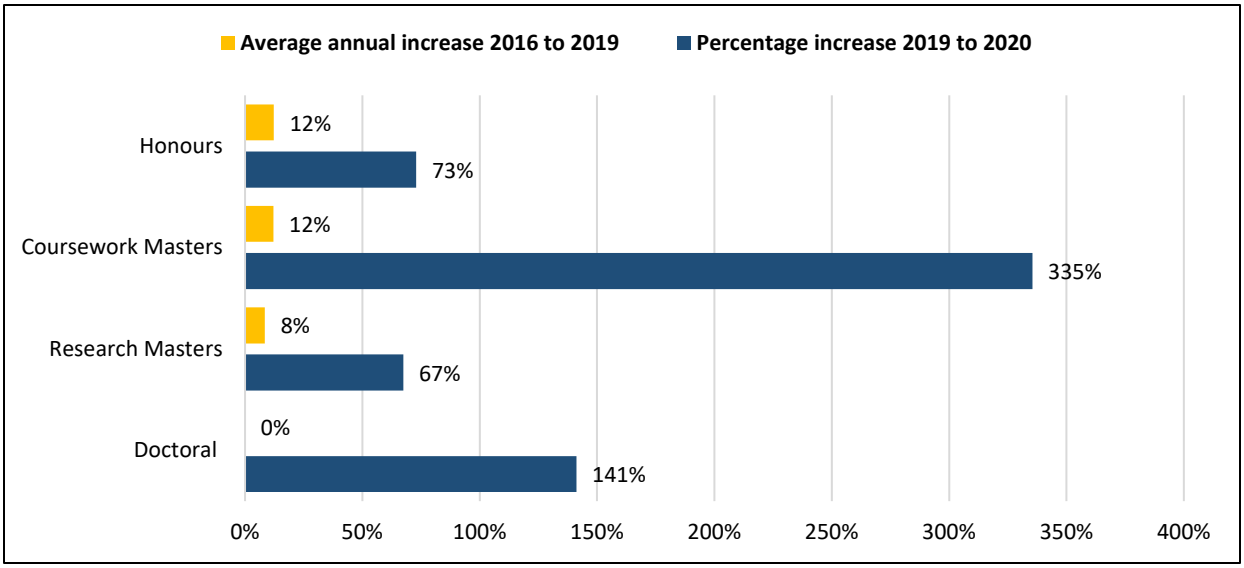
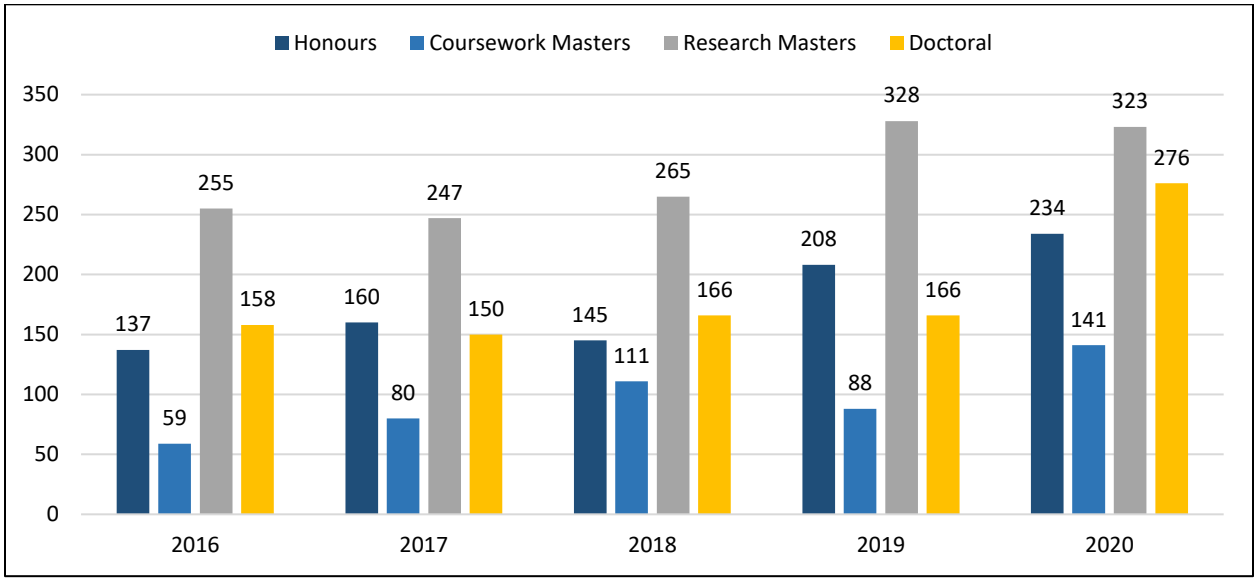


Figure 59 shows the number and average annual growth rate in postgraduate research capacity development funded recipients for the period 2016 to 2020. Recipients of postgraduate capacity development funding for honours studies increased by 14%; for coursework masters' studies by 24.3%, for research masters' studies by 6.1%; and for doctoral studies by 15%.

Of concern is that, although the number of recipients increased from 2019 to 2020 for honours studies by 13%, for coursework masters' studies by 60%, and for doctoral studies by 66%, this did not lead to a growth in the total number of postgraduate enrolments which declined sharply from 2019 to 2020. The number of research masters research masters' recipients actually showed a decline of -2% from 2019 to 2020. The total enrolments in honours students declined by -7%, in masters' students by -18%, and in doctoral enrolments by -21% from 2019 to 2020.

Figure 59: Postgraduate research capacity development funded recipients: 2016 to 2020



The sharp decline in international student enrolments impacted negatively on postgraduate enrolments, which was further exacerbated by the COVID-19 pandemic in 2020. As a result of the negative impact of the pandemic on the economy and the reprioritisation of the national budget for COVID-19 health-related expenses, the budget of the National Research Foundation (NRF) was cut by 20% for the current financial year with significant expected cuts in the coming years, which will impact on postgraduate students, researchers, and research equipment.

Figure 60: Average annual growth rate in postgraduate research capacity development funded recipients: 2016 to 2020

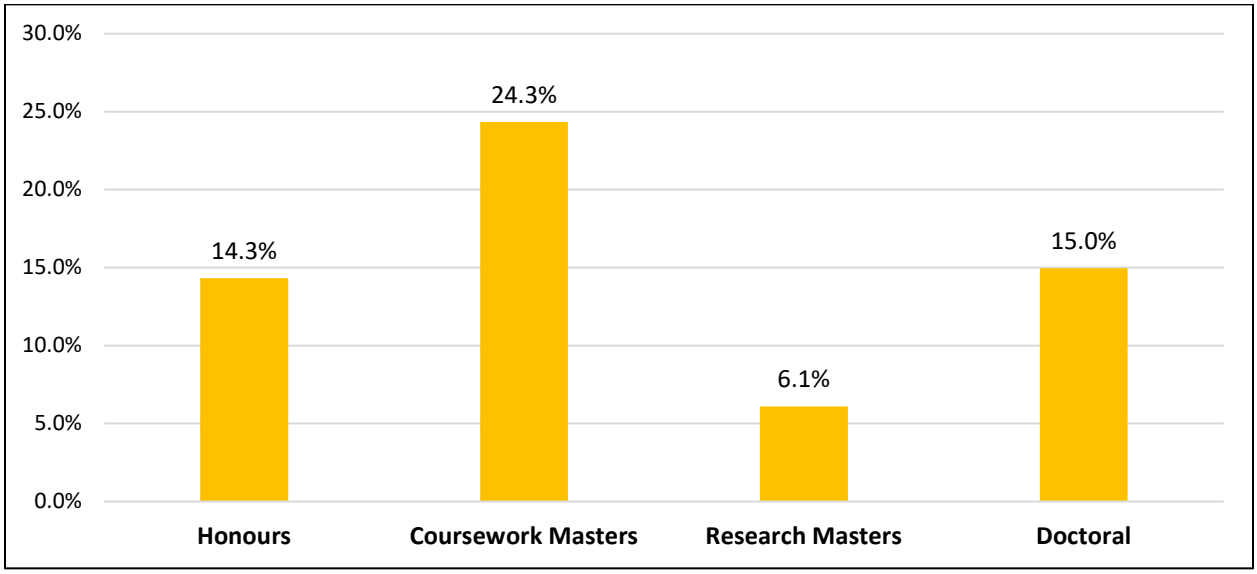
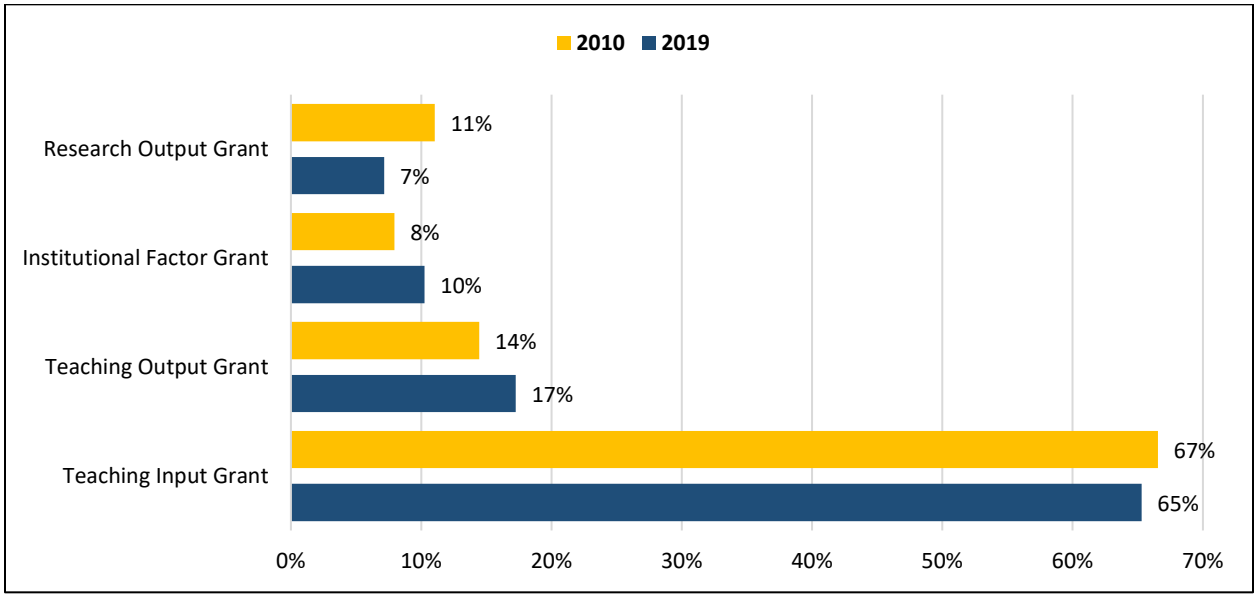


Figure 61 below shows an analysis of the percentage that the various components of the block grant constituted of the total block grant in 2010 and 2019. The research output grant declined from 11% to 7%, indicating that the research output grant did not increase at the same rate as the teaching output grant. The growth in the total graduates was higher than the growth in research outputs, since the teaching output grant increased from 14% of the block grant in 2010 to 17% of the block grant in 2019.

Figure 61: Percentage of the various block grant allocation components as a percentage of the total block grant: 2010 and 2019



6.5 Research entities, research chairs and rated researchers

The University policy framework provides for three categories of research entities, namely institutes, centres and units. The entities differ in stature with the Institutes being the largest and most impactful and units/research groups normally the smallest. The differences between the various research entities are as follows:

- An **Institute** is characterised by an integrated, inter- and/or transdisciplinary approach working across faculties; and headed by a member who is preferably an internationally recognised research leader in the field leading a number of other academics who are Internationally/nationally renowned, each working with a number of academics and their postgraduate students.
- A **Centre** is either a research or engagement entity normally operating across departments and primarily within faculties.
- A **Unit** affords recognition to a nationally or internationally recognised researcher within a department, school or faculty, working with or without postgraduate students and preferably with collaborators.

In 2010, Nelson Mandela had 30 registered research entities, consisting of three institutes, nine centres and eighteen units. By 2019, the University still had three institutes, whilst the centres had increased to twelve and the units decreased to seven. In 2019, there were 22 research entities in total. Technology stations remained at two in 2010 and 2019.

Table 3: Research entities, technology stations, research chairs and rated researchers: 2010 to 2019

	2010	2019
Institutes	3	3
Centres	9	12
Units	18	7
Total Research Entities	**30**	**22**
Technology Stations	2	2
Research Chairs*	5	10
NRF Rated Researchers	64	84

**This includes all research chairs and not only those awarded by the NRF as SARCHI Chairs*

Table 3 above also shows that the number of research chairs increased from five (5) in 2010 to ten (10) in 2019, while the NRF-rated researchers also increased from 64 to 84. The research chairs include all research chairs and not only those awarded by the National Research Foundation as SARCHI Chairs.

In terms of international partnerships, the University had 73 agreements in 2020, of which 53 are active, 19 need to be renewed and one is pending further information.

7. CONCLUSION AND RECOMMENDATIONS

As part of a comprehensive situational analysis to inform the formulation of Vision 2030, the Office for Institutional Strategy conducted a decadal review of Vision 2020 to analyse key trends, particularly as it relates to the academic size and shape parameters of the University. It is recommended that senior management engage with the trends highlighted in this report and the accompanying infographic to address a range of strategic questions as part of formulating the Vision 2030 institutional strategy, namely:

Student access:

- How do we increase our first-time entering student enrolments to ensure we meet the targets set in our enrolment plan? What strategies need to be developed and implemented to improve the conversion of applications and admissions to registrations?
- How do our admission requirements and programme mix impact on widening access for increasing numbers of incoming first-time entering students from Quintile 1-3 schools?
- What are our targets in respect of the demographic profile of our students as it relates to:
  - Population group
  - Gender
  - Differently abled
  - School quintiles
  - Provincial/national/international
- What kinds of bridging/foundation/extended programme provision mechanisms should be in place to facilitate the transition from schooling to university studies for incoming students who show potential, but do not qualify for direct admission to their programmes of choice, especially in scarce skills fields?
- What are the underpinning principles and goals of our student enrolment and recruitment strategy? Do we want to continue the trend of attracting most of our incoming students from Quintile 1-3 schools in the Eastern Cape? If so, what are the resource implications in terms of the expanded support required to facilitate student success for NSFAS-funded students who experience difficult material conditions?
- If we wish to target other markets and expand our geographical footprint, what strategies do we need to put in place to make this possible?
- What are the implications for student housing and financial aid, bursaries and scholarships if we expand our footprint to attract high-performing, financially needy under- and postgraduate students from other parts of the country and the continent?
- What targets inform our international student recruitment and enrolment strategies at under- and postgraduate levels?

Academic programme and qualification mix:

- In which fields do we need to develop and offer additional extended programmes?
- What should the balance be between extended programme offerings and Higher Certificates in catering for different profiles of incoming students?

- What qualification types and modes of delivery would be best suited to different markets (e.g. adult learners)?
- How do we package our programmes and qualifications in a manner that facilitates micro-credentialing and the offering of credit-bearing short learning programmes?
- In what ways are we designing our programmes and qualifications to promote disciplinary depth and expertise whilst simultaneously facilitating inter- and transdisciplinarity?
- In what ways do our curriculum, programmes and qualifications develop our desired graduate attributes?
- In what ways do our curriculum, programmes and qualifications equip graduates for the future world of work/entrepreneurship?
- Are the naming conventions and curricula of our programmes and qualifications perceived as attractive and responsive to our transformation imperatives and the markets we serve?
- What strategies need to be in place to increase our enrolments in the following postgraduate qualification types:
  - Postgraduate diplomas
  - Honours
  - Coursework Masters'
  - Research Masters'
  - PhD
- What should the proportions be for each field of study:
  - Humanities
  - Education
  - Science
  - Engineering and technology
  - Business
- What impact will increasing proportions of digitalisation and blended modes of delivery have on our enrolments and LT strategies?

Student success:

- What impact is the COVID-19 pandemic likely to have on student success and throughput?
- What strategies do we put in place to address declining student success rates, especially with increasing proportions of incoming students from historically disadvantaged backgrounds?
- What impact will the rapid transition to blended and digital modes of delivery have on student success? How do we promote student success through the use of technology-enabled tools and strategies?
- How do we make best use of the University Capacity Development Grant to promote student success across all faculties through high-impact practices such as academic advising, peer mentoring, tutorials and Supplemental Instruction?
- How should we improve our tracking of student success, especially in high-risk gateway courses and modules, to facilitate early support interventions and prevent dropouts?

- Should we be prioritising first-year students for placement in on-campus student accommodation given the evidence that this contributes to improved academic success and first-year student retention?
- How do we reduce the achievement gap in success rates on the basis of gender and population group?

Research and innovation:

- What strategies are required to ramp up research productivity and outputs across all faculties and academic ranks?
- What impact do the increasing levels of "juniorisation" of academic staff have on research outputs and postgraduate supervisory capacity?
- How do we make optimal use of our HEAVA professors and research associates to improve our research outputs and postgraduate supervisory capacity?
- What strategies are required to systematically increase the proportion of academic staff with PhD qualifications?
- How do we address high student: staff ratios and heavy teaching loads to ensure that every academic staff member is given a fair opportunity to improve their qualifications, produce research outputs and supervise postgraduate students?
- In what ways do we scale up research outputs and impact in alignment with our strategic growth areas and institutional research themes?
- What role should research chairs and entities fulfil in enhancing research output and productivity?
- How do we leverage funding and additional postgraduate supervisory capacity through our international partnerships?

Staff profile:

- What talent attraction, retention and management strategies need to be in place to ensure that the University becomes a destination of choice for high-performing staff?
- What should the ideal ratio of academic: PASS staff be? What strategies are required to achieve this ratio over time?
- What levels of investment are required over time to address unacceptably high student: staff ratios in certain fields of study/faculties?
- What strategies do we have in place to achieve our employment equity targets at institutional, faculty/divisional and departmental levels especially in occupational categories and levels which are not demographically representative?
- What impact will digitalisation have on ways of working and talent management requirements?
- How will the University sustainably address skills shortages in mission critical areas within a context of resource scarcity and financial constraints?
- How do we facilitate the development of the next generation of socially diverse academics while retaining sufficient seniority across academic departments and faculties to provide mentorship, postgraduate supervision and research output capacity? What talent continuity plans need to be in place to achieve this?

Sustainability and stewardship:

- What strategies are in place to enhance the long-term financial sustainability of the University especially within the prevailing context of economic stagnation and decline?
- What targets and priority areas should inform our strategic resource mobilisation interventions?
- What innovative strategies and operating models can be implemented to generate third stream income, improve efficiencies, reduce costs and enhance sustainability?
- In what ways might our resource allocation models need to be adapted to support strategic imperatives such as digitalisation, transformation, transdisciplinarity, etc.?
- What levels and types of investment are required going forward in a context of digitalisation?

Addressing the above questions will provide the basis of a robust review of where the University has come from, what its distinctive institutional identity and strengths are, coupled with a clear vision supported by forward-looking strategic trajectories to propel the University into an unknown and highly volatile future in pursuit of its mission to be in the service of society.