



GCRO DATA BRIEF: NO. 4

Transformation of Higher Education for Development in
the Gauteng City-Region (GCR)

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*A partnership of the University of Johannesburg (UJ), University of the
Witwatersrand, Johannesburg (Wits), the Gauteng Provincial Government (GPG) and
organized local government*

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1. Introduction

The GCRO is a unique type of institution where two universities (the University of Johannesburg and the University of the Witwatersrand, Johannesburg), the Gauteng Provincial Government (GPG) and organized local government work together in order to address the developmental challenges of the Gauteng City-Region (GCR). Given GCRO's advantageous positioning and core research interest in regional development, we are looking to understand how higher education institutions (HEIs) can contribute to growth, development and transformation in the GCR. We are aware of an increasing body of theory and practice on the role of HEIs in regional development which sees regions as important sites of development and innovation and supports the close engagement of universities with government, civil society and the private sector in their regions (i.e. the so-called 'triple-helix'). We are also aware of the sophisticated level of HEI engagement and collaboration in OECD countries (OECD, 2007) as well as other countries such as Brazil. This has stirred critical reflection on our part about why similar initiatives of this kind of sophistication are not happening in the GCR and in other regional contexts in South Africa. The central focus of this Data Brief is on the developmental potential of HEIs in the GCR to collaborate effectively with each other and other stakeholders.

Realising this developmental potential is no small matter, as there are many challenges and practical impediments to collaboration between HEIs as well as with other key stakeholders in the city-region. HEIs in the city-region are operating in a national context which is 'spatially blind' to all intents and purposes. This national focus may limit their scope for regional action and collaboration. There is a history of competition between different institutions, particularly with regard to the apartheid legacy of white minority hegemony over higher education and the academy. The incentives for higher education collaboration are limited, particularly across the binary divide of traditional universities and universities of technology or the comprehensives. University leadership and management may not be sufficiently equipped with sufficient knowledge about the specific challenges of regional development and the mechanics of engaging their respective institutions.

A city-region scale of analysis has seldom, if ever, been applied to the state of higher education in the GCR. This Data Brief is a preliminary output ahead of a full-fledged Occasional Report by the GCRO which will develop and deepen analysis of the data offered herein. Specifically the purpose of this Data Brief is to establish a set of information and data about the state of higher education in the GCR. This will then allow a deeper analysis of the potential of HEIs to engage collaboratively with each other and with other key stakeholders in the city-region.

The following facts and trends are in line with the goals and strategies posited in the National Plan for Higher Education for South Africa (National Department of Higher Education and Training (NDHET), 2001). This Data Brief is based on data compiled by the Council of Higher Education (CHE) in collaboration with the Higher Education Management Information System (HEMIS).

2. Higher education provision in the GCR

Figure 1: The institutional landscape of higher education in the GCR



TYPES OF INSTITUTIONS

- PUBLIC UNIVERSITIES [8 CAMPUSES]**
 - University of Pretoria (UP) and Vista University (Mamelodi campus)
 - University of the Witwatersrand (Wits)
 - North West University (NWU). This is a merger between Potchefstroom University of Christian Higher Education (PUCHE), University of the North West (UNW) and Vista University (Schokeng campus)
- PRIVATE UNIVERSITIES [2 CAMPUSES]**
 - Monash University South Africa, Johannesburg
 - CIDA City Campus, Johannesburg
- UNIVERSITIES OF TECHNOLOGY [10 CAMPUSES]**
 - Tshwane University of Technology (TUT). This is a merger between Technikon Pretoria (TP), Technikon Northern Gauteng (TNG) and Technikon North-West (TNW)
 - Vaal University of Technology (VUT)
- COMPREHENSIVE UNIVERSITIES [5 CAMPUSES]**
 - University of Johannesburg (UJ). UJ is the former Rand Afrikaans University (RAU) incorporating Technikon Witwatersrand and Vista University (East Rand and Soweto campuses)
 - University of South Africa (UNISA). UNISA incorporates Technikon South Africa (TSA) and Vista University Distance Education Centre (VUDEC)
- NATIONAL INSTITUTES FOR HIGHER EDUCATION [1 INSTITUTE]**
 - Mpumalanga National Institute for Higher Education
- FET COLLEGES [11 CAMPUSES]**
 - Central JHB FET College in Parktown, Johannesburg
 - Ekurhuleni East FET College in Springs, Ekurhuleni
 - Ekurhuleni West College in Germiston, Ekurhuleni
 - Sedibeng FET College in Vereeniging, Sedibeng
 - South West Gauteng FET College in Soweto, JHB
 - Tshwane North FET College in Pretoria
 - Tshwane South FET College in Pretoria
 - Western College for FET in Randfontein
 - Nkangala FET College in Witbank
 - Orbit FET College in Rustenburg
 - Vuselela FET College in Klerksdorp
- PRIVATE COLLEGES [80 CAMPUSES]**
 - 60 private colleges, registered with the NDHET in Gauteng; 2 in North West and 2 in Mpumalanga

As depicted in Figure 1, the current configuration of HEIs in the city-region reflects the radical post-1994 restructuring process of the university and college systems in which universities and technikons of the apartheid era were replaced with 'traditional' universities (offering Bachelor degrees, with high proportions of postgraduate students and with strong research capacity), comprehensive universities (mergers of universities and technikons) and universities of technology (vocationally-oriented institutions which award higher certificates, diplomas and degrees in technology and have some postgraduate and research capacity). This configuration also reflects the growth of Further Education and Training (FET) colleges as well as a brand new sector of higher education in the form of private sector providers such as universities and colleges.

As such there is a diverse and differentiated mix of HEIs in the GCR linked to historical origins, location, and mission of institutions. This diversity is underscored by the historical racial fragmentation of the higher education system and the associated inequities in terms of student and staff access and opportunities as well as the level of development of institutional facilities and capacities.

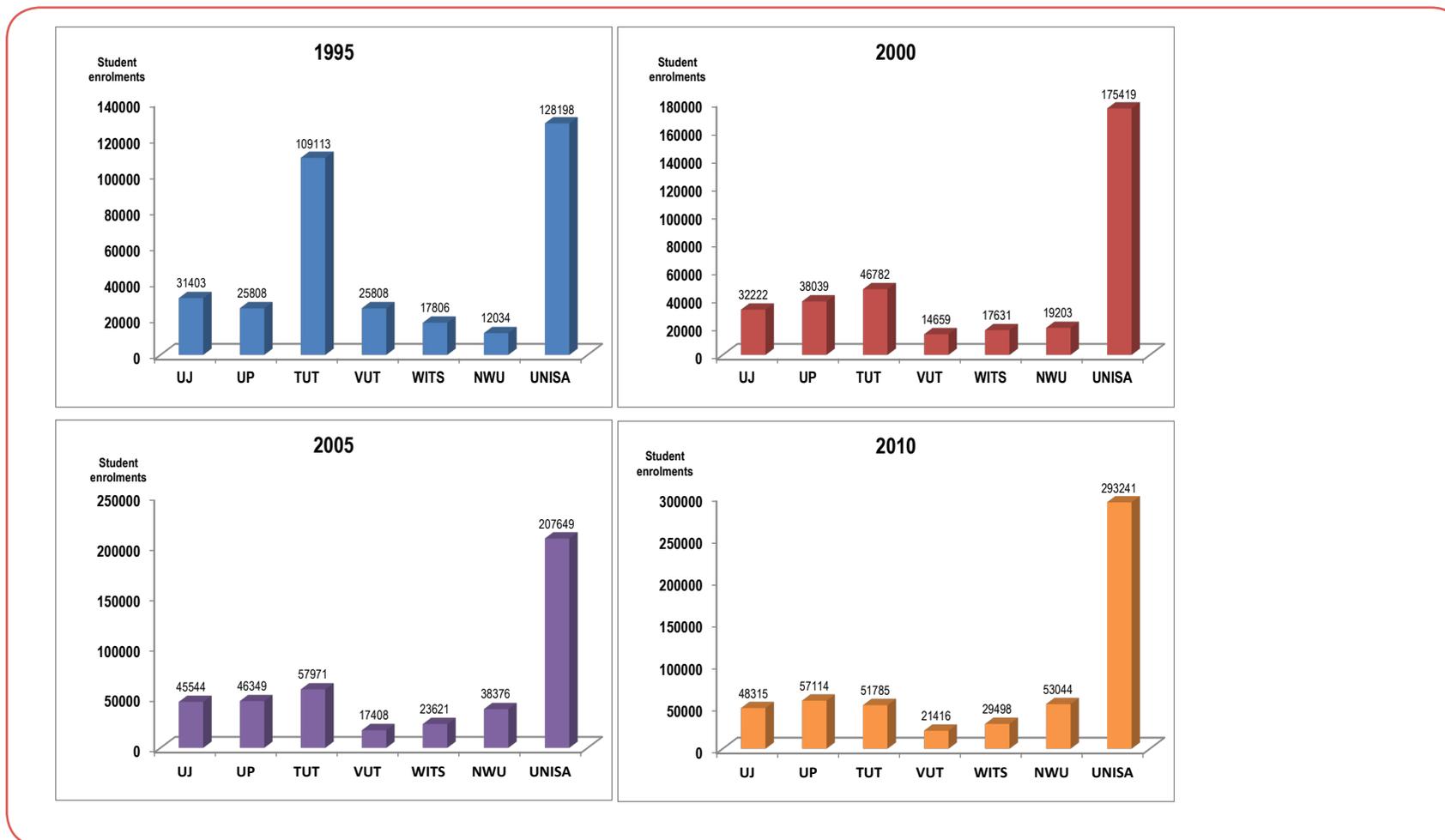
The configuration of higher education shows that provision is unevenly distributed across the city-region. The more urbanised, densely populated and economically active parts of the city-regions such as Johannesburg and the core of Tshwane offer more educational and learning opportunities. FET colleges are located in both urban and rural settings, which may facilitate easier access for learners. Distance education plays a valuable role in providing access to learners who may not otherwise be able to participate.

Research and anecdotal evidence appear to indicate an increasing demand for higher education, which constrains the capacity of HEIs to absorb large numbers of applicants (CHE, 2009). Statistics are not available to demonstrate this. However when considering the provision of higher education from a spatial distribution perspective, it may require a rethink of where HEIs are best located and how an ideal institutional landscape ought to be best constituted.

3. Producing the graduates needed for social and economic development

3.1 Enrolments by GCR HEIs

Figure 2: Number of student enrolments by university: 1995 - 2010



Considerable progress has been made in terms of overall access to universities. According to NDHET (2012) there has been a national increase of 82% in increase in enrolments in universities in the 1995-2010 period. Approximately one third of the increase in enrolments was in distance education.

In terms of the GCR, overall enrolment in both absolute and relative terms is similarly substantial. Thus between 2000 and 2010, university enrolment in the GCR increased by 53%.

If we use figures that exclude UNISA (more appropriate as many UNISA students are outside the GCR), approximately 30% of South Africa's university students are in the GCR. This may be seen as representing a huge potential for making a significant contribution to the economic and social development of the city-region in the medium to long term.

In considering enrolment trends per HEI over the 1995-2010 period it is possible to see uneven growth in enrolments across the different institutional types. Enrolments are dominated by large historically advantaged public HEIs. This is despite the fact that smaller enrolment numbers are initially indicated for the large traditional public universities, such as Wits, UJ, UP and NWU, in relation to the universities of technology.

In 1995 there is a noticeable spike in enrolments for Tshwane University of Technology (TUT). This is an interesting trend that requires further investigation. Enrolment figures at Vaal University of Technology (VUT) are low in comparison to the other HEIs.

3.2 Enrolment by fields of study for GCR HEIs¹

Figure 3: Proportion of student enrolments by field of study: 1995 - 2010

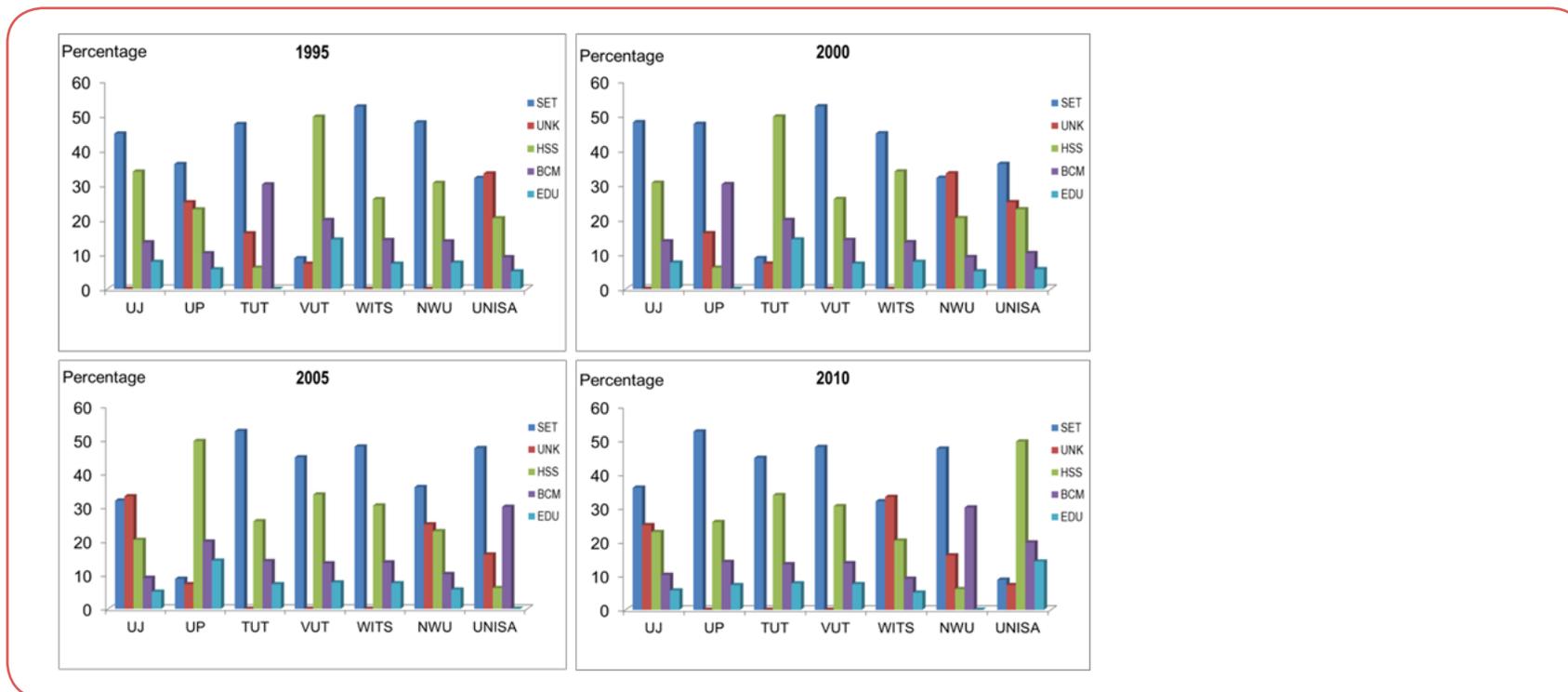


Figure 3 lists enrolments by various fields of study per HEI in the GCR. There is a residual category called UNK or Unknown which remains unaccounted for.

As indicated by Figure 3 there appear to be an uneven pattern of enrolment by different fields of study across the years. Consider for example, enrolment patterns for the Science and Technology (SET) field at UP which shows great variation in enrolment percentages over the years. The data has been rigorously checked in order to account for any possible discrepancies or errors. Despite this, we remain unable to account for the variations in enrolment patterns.

¹ SET-Science Engineering and Technology, BCM-Business, Commerce and Management Studies, EDU-Education, Training and Development, HSS- Human and Social Studies, UNK-Unknown

Enrolments in the fields of Science, Engineering and Technology and Human and Social Studies (HSS) are consistently high across all the HEIs in the GCR. Education, Training and Development (EDU) is less well-represented in enrolment figures. However graduate output and growth for EDU indicates a different picture (as seen below). Throughput in the EDU field is high despite low enrolment numbers.

3.3 Graduate output and growth, 2000-2010

As seen in Table 1 below, there is an increase in graduates from the EDU, BCM and SET fields. However there is an alarming drop in the numbers of humanities graduates.

Table 1: Graduate output: 2000-2010

Field of Study	2000	2005	2010	% increase (annual average)
SET	24 136	33 499	41 156	5.5
BCM	19 912	28 144	40 751	7.4
EDU	15 568	29 054	37 665	9.2
HSS	25 581	29 355	30 015	0.5

When viewed by qualification type (i.e. undergraduate and postgraduate levels) at both GCR and national level (as seen in Table 2 below), it can be seen that 30% of undergraduate enrolments in HEIs were in the GCR in 2005 and declined by 26% in 2010. However the proportion of GCR-to-national postgraduates is higher at 36,5% in 2005 and 36,7% in 2010. This has important implications for research, innovation and development of the knowledge economy if these postgraduate students are utilised in the future of the GCR economy (and are not lured to greener pastures abroad i.e. the 'brain drain').

Table 2: GCR enrolment by qualification level: 2005 and 2010

	Level	Enrolment	2005	2010
			% of RSA	% of RSA
GCR HEIs (incl. UNISA)	Undergraduate	360 174	60.0	59.9
	Postgraduate	64 397	55.6	61.0
GCR HEIs (excl. UNISA)	Undergraduate	184 744	30.1	26.3
	Postgraduate	42 020	36.5	36.7

4. Achieving equity in the higher education system

4.1 Student Enrolment by race and sex – 1995-2010

Figure 4: Percentage of student enrolment by race and sex: 1995 - 2010

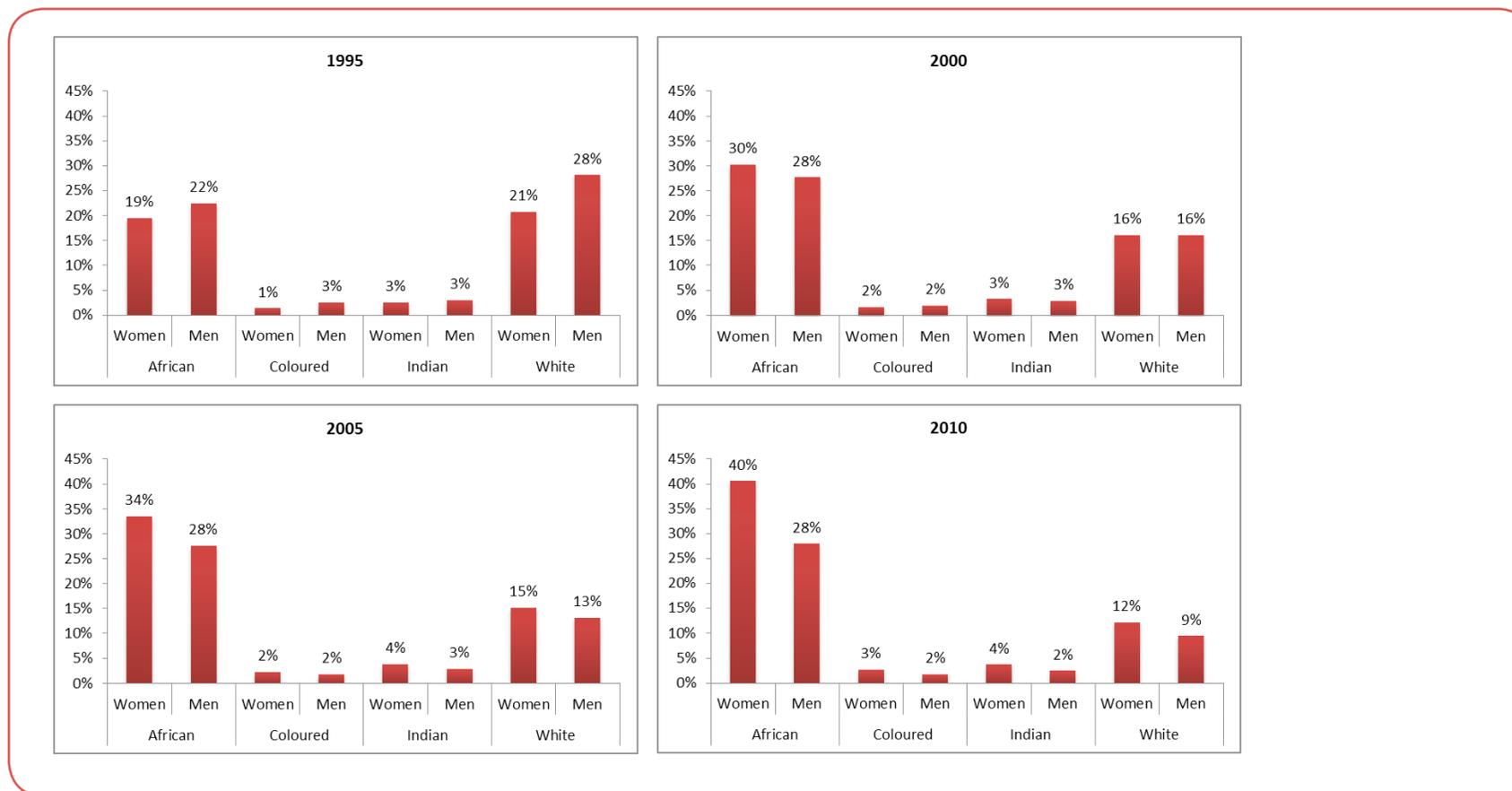


Figure 4 above shows total student enrolment in the GCR by race and sex. Enrolment patterns show considerable progress in terms of racial and gender equity. However the racial balance remains skewed in favour of white and Indian students while Coloured and African students are under-represented in comparison². The racial balance

² South Africa continues to use racial apartheid-inherited categories in order to distinguish between different population groups. The terms 'African' 'white' 'Coloured' and 'Indian' are used here in line with the official classifications as used by Statistics South Africa (StatsSA) for Census purposes.

can be seen more clearly when viewed against institutional type. White students, in particular white males, remain over-represented at the historically advantaged public universities. Universities of technology come the closest to matching the racial profile of the population. Take for example, TUT which shows significant numbers of African men. However black African women at TUT are less well-represented.

Figure 4 also shows an encouraging increase in enrolments for Africans over the period 1995-2010, in particular for African women. This is in comparison to decreasing enrolments for white students.

5. Staff Equity

5.1 Staff by personnel category for all HEIs in GCR, 2010

Table 3: Staff by personnel category for all GCR HEIs: 2010

Staff category	Total GCR	% of national
Academic	23 214	49.8
Management	892	37
Support	5615	45.7
Technical	1290	20
Admin	24 153	46.3
Crafts/Trades	452	48.4
Service	2 625	36.9
Total	58 241	45.5

Table 3 demonstrates that higher education employs a considerable proportion of staff in all personnel categories, particularly when viewed in a national context. However, there are other pressing staffing concerns such as equity and the quality of academic staff. This includes the concern that most staff are white and in academic and senior management positions. Accordingly, Africans, in particular African women, remain under-represented in academic and professional positions, especially at senior levels. There is also a concern that women academics are concentrated at the lower end of the academic scale. In general there are very few women who achieve top senior management positions in academia (CHE, 2009). There are very few women heads of universities, with only seven in the history of South African higher education. Currently there are two women vice chancellors in the GCR i.e. Professors Cheryl de la Rey of UP and Nthabiseng Ogude of TUT.

5.2 Staff by qualification levels

Retaining a solid base of appropriately qualified staff is a key priority for the GCR. Staff qualifications play an important role in determining research capacity as it is generally staff with PhDs or Masters degrees who drive research productivity at universities. Figures 5 and 6 below show staff qualification levels per GCR HEI for the years 2005 and 2010.

Figure 5: Percentage distribution of academic staff by qualification level per university: 2005

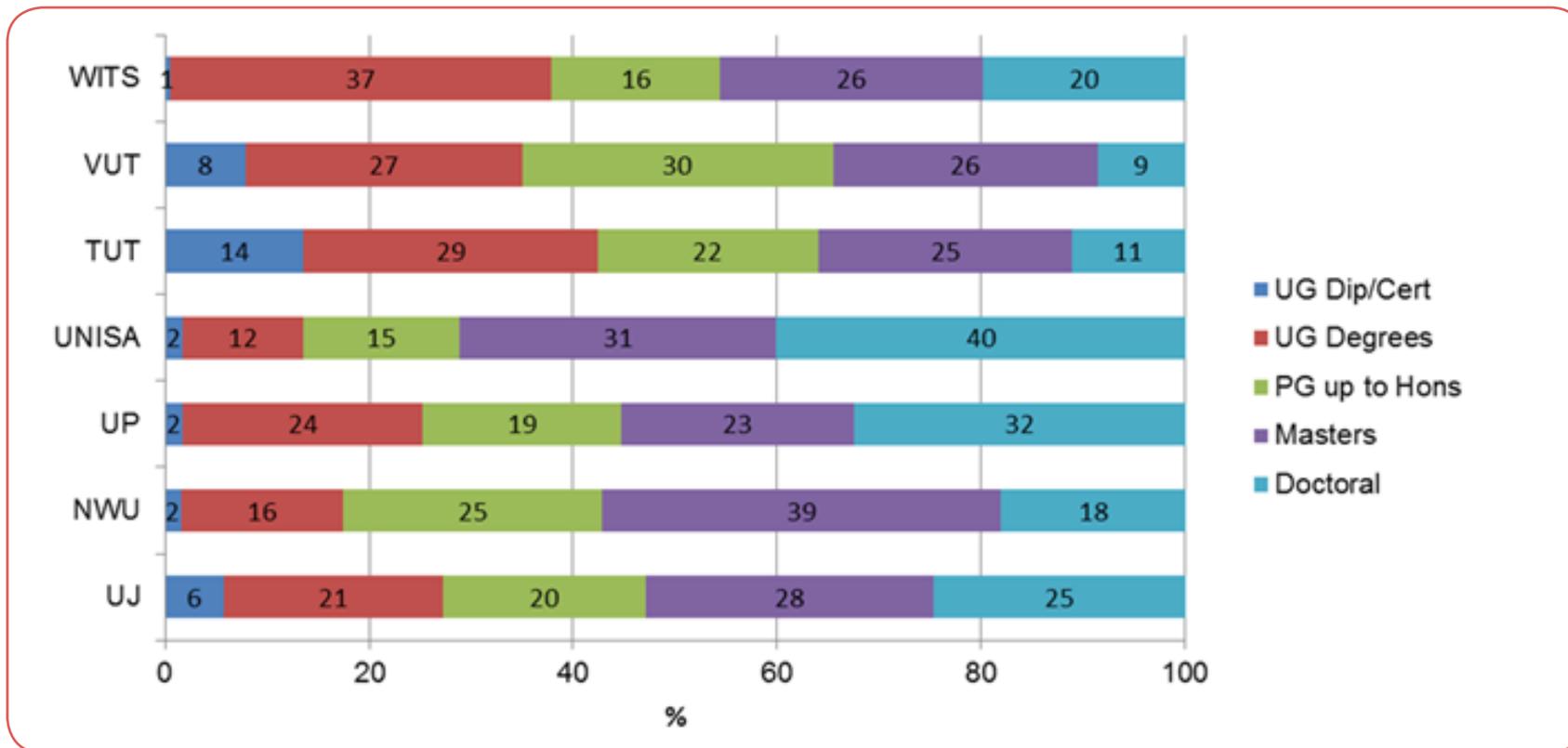
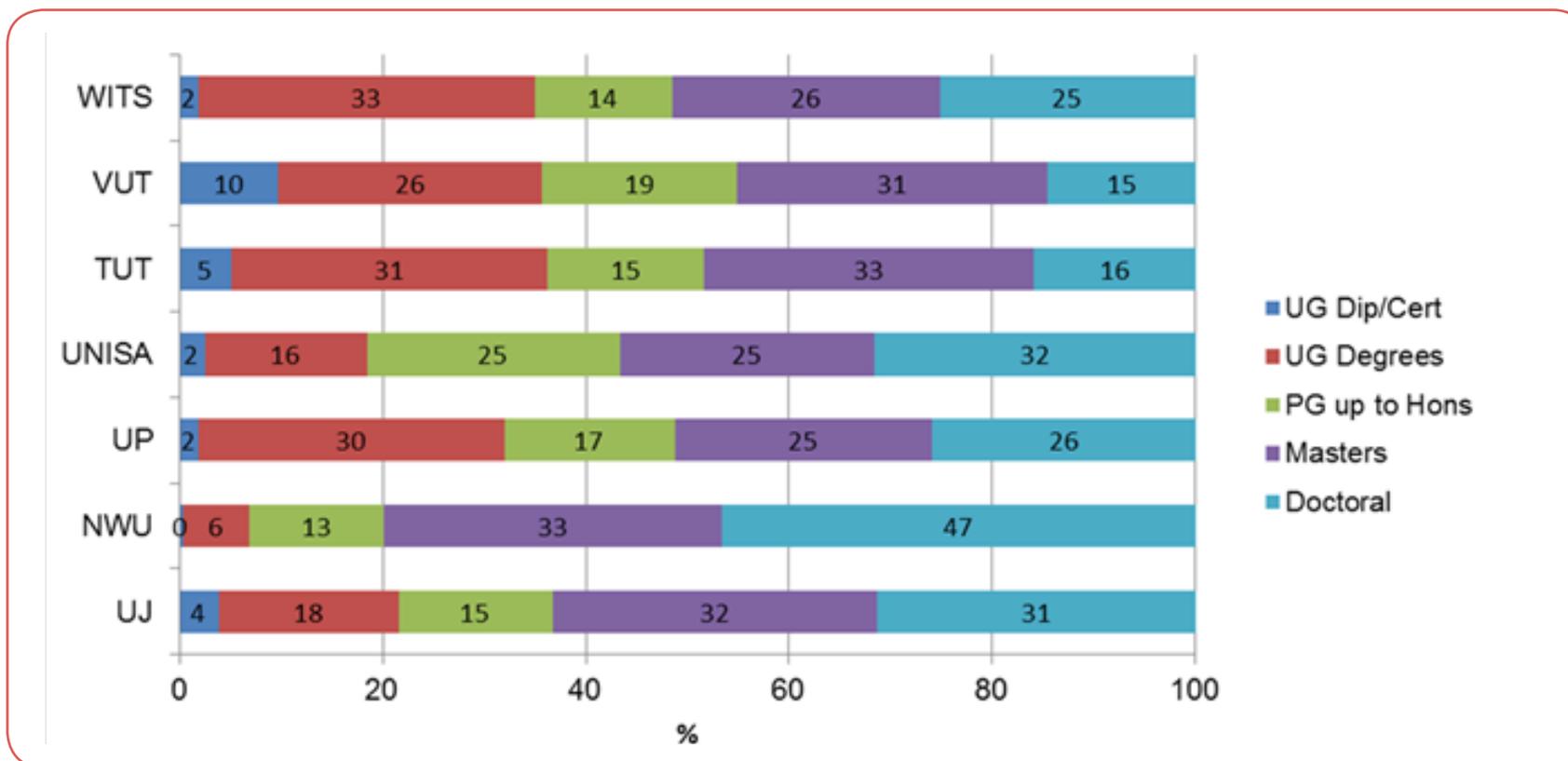


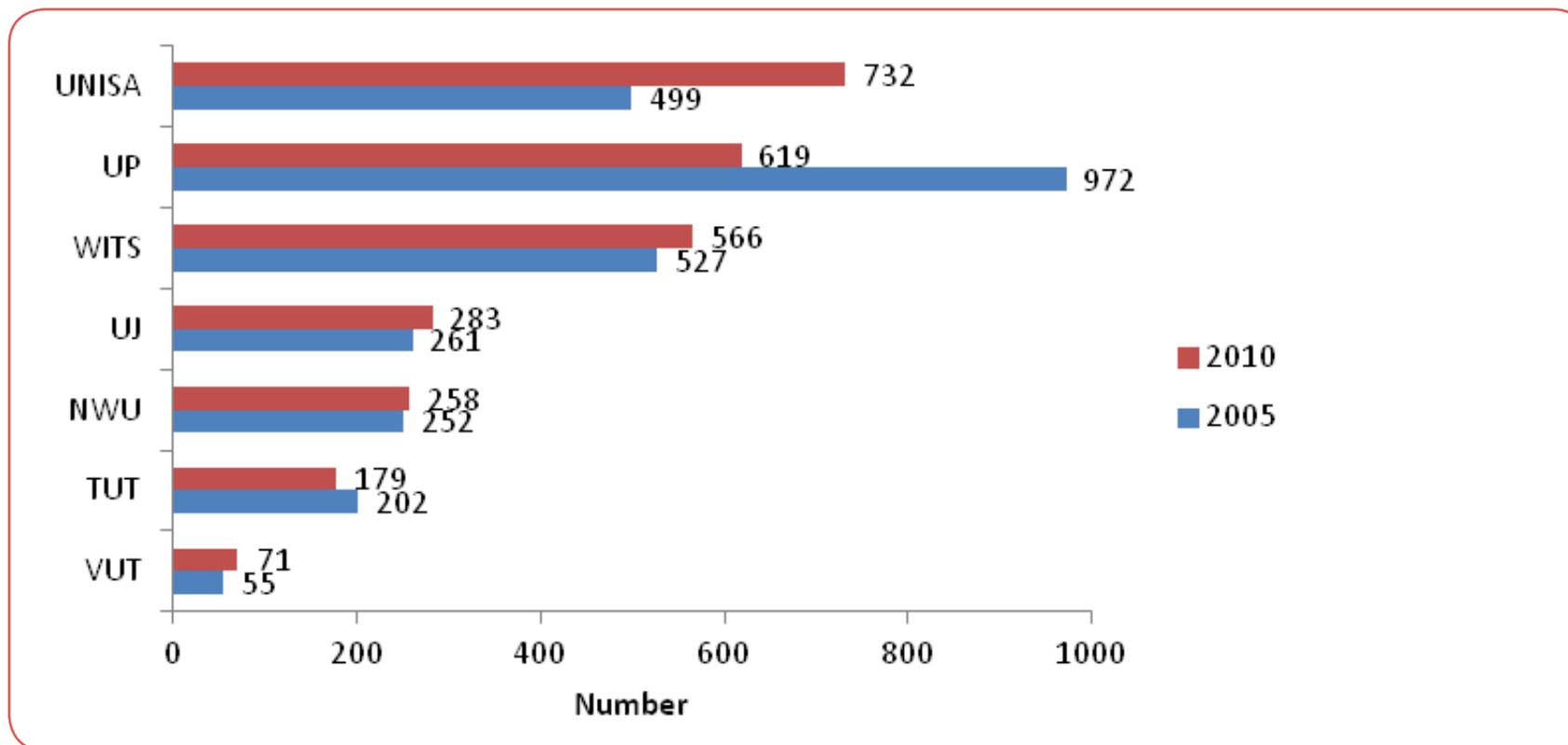
Figure 6: Percentage distribution of academic staff by qualification level per university: 2010



Generally, there is a higher percentage of academic staff holding undergraduate degrees at HEIs. This is an important area for further analysis, particularly given national imperatives to drive the production of PhDs at HEIs. We also remain aware of the need to interrogate the category of 'academic staff', which may possibly include all levels of researchers such as laboratory technical assistants and others.

As seen in Figure 7 below, UNISA and UP lead consecutively in terms of staff with doctorates followed by the other historically advantaged public universities. In contrast, the universities of technology hold the least number of PhDs but this must be considered in relation to their size.

Figure 7: Number of staff with PhDs per university in the GCR: 2005-2010



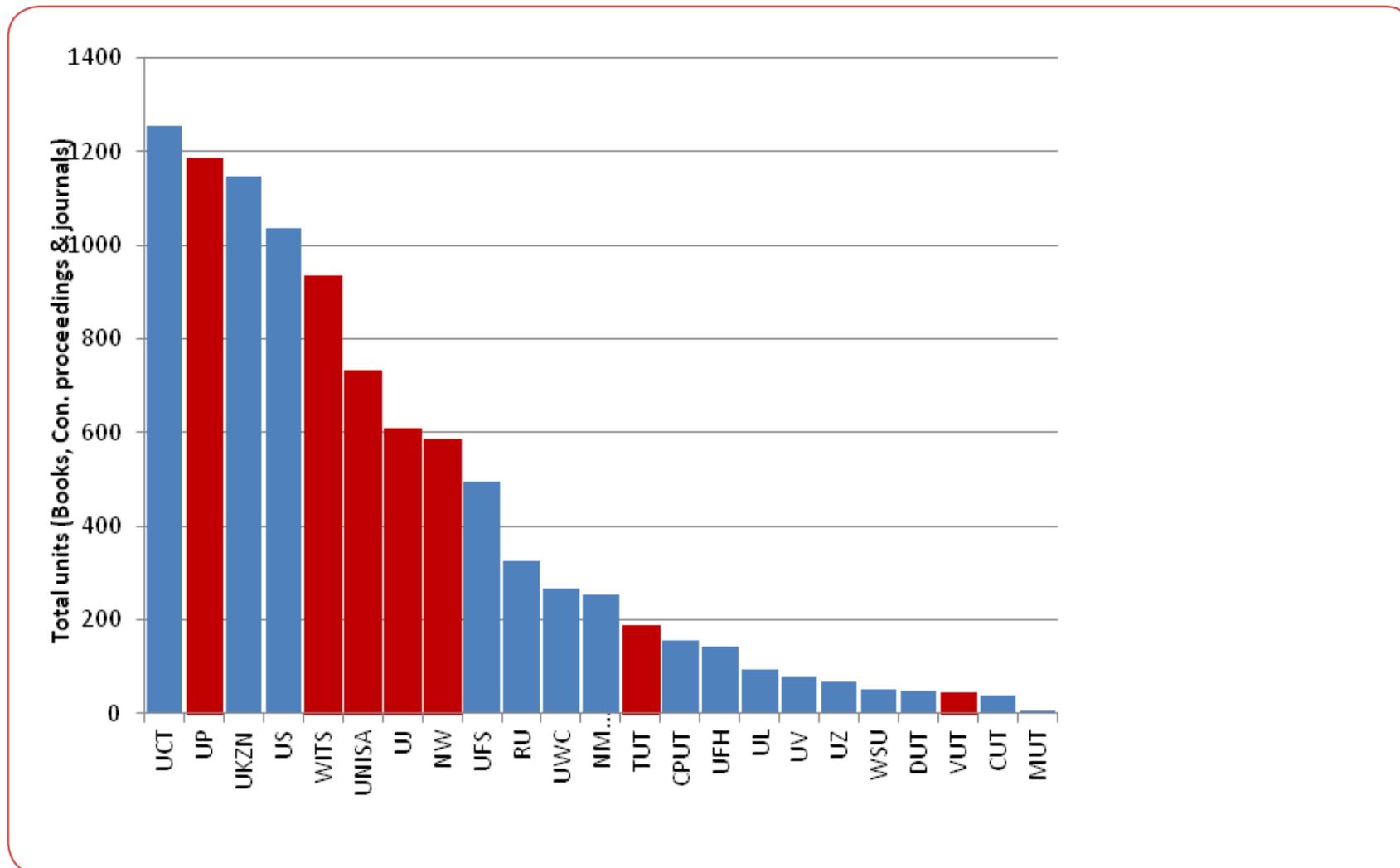
Between 2005 and 2010 UNISA and VUT had the largest increases in staff with PhDs of 46% and 29% respectively. In comparison, UJ, Wits and NWU enjoyed only modest increases of staff with PhDs. Unfortunately UP experienced a significant decrease of 36% in staff with PhDs between 2005 and 2010. The reasons for the curious decrease in staff with PhDs at UP remain a subject for further exploration. TUT also experienced a reduction in staff with PhDs during the same period, although to a lesser degree (i.e. -11%).

6. Sustaining and promoting research

6.1 Increasing research outputs

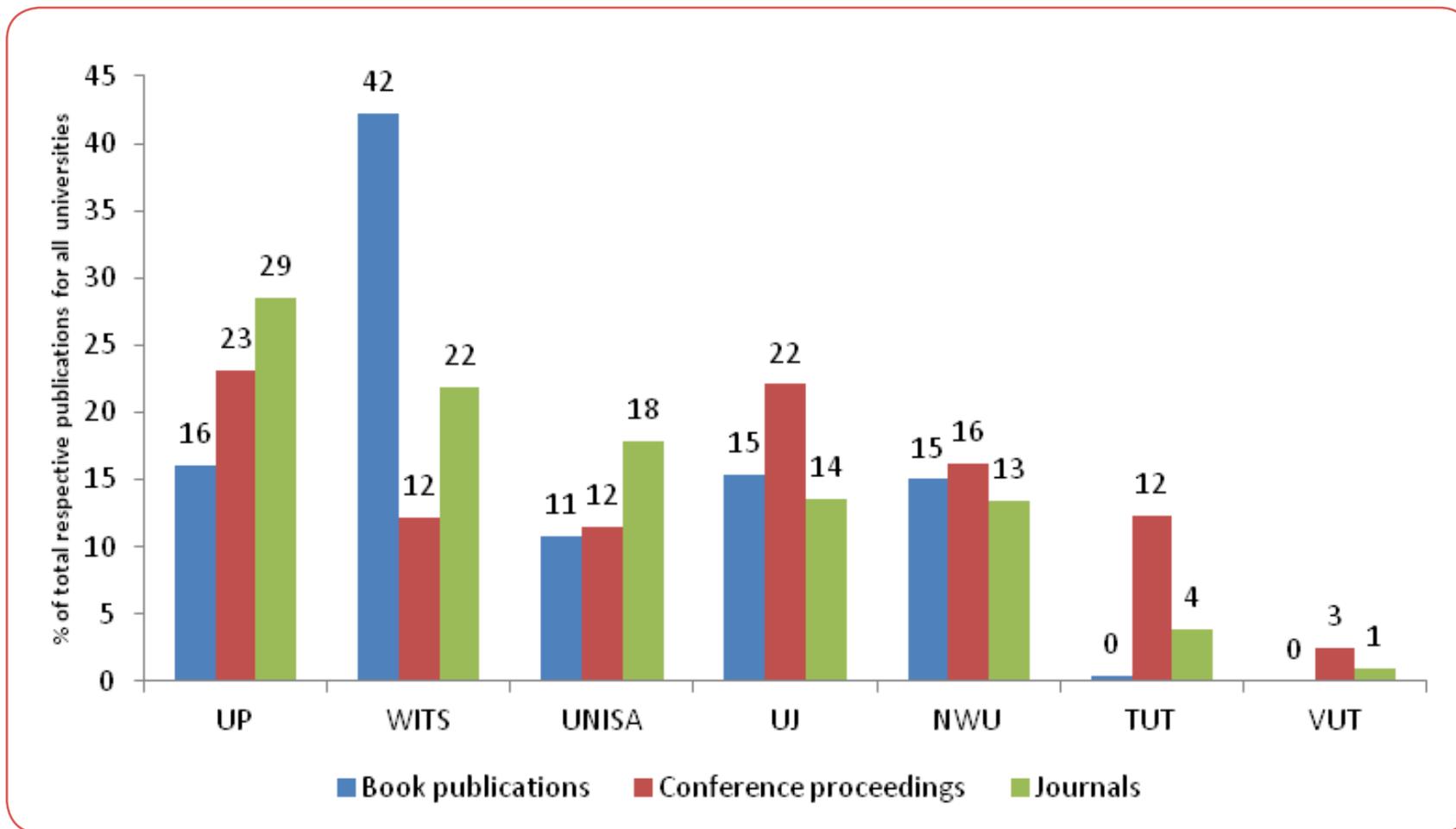
Five universities dominate the production of research in South Africa, two of which are located in the GCR i.e. UP and Wits. The University of Cape Town (UCT) leads the country in terms of research output. As shown in Figure 8 below, UCT is followed by UP, University of KwaZulu- Natal (UKZN), University of Stellenbosch (US) and Wits.

Figure 8: Research output units per university in South Africa: 2010



In the context of universities in the GCR, the leading universities in terms of research outputs are the large historically advantaged public universities, i.e. UP, Wits, UNISA and UJ respectively.

Figure 9: Distribution of research publications by HEIs in the GCR: 2010



When considered by publication type, Wits appears to dominate in terms of book publications and UP by journal articles and conference proceedings. In 2010, it is encouraging to note that Wits, UJ and UP exceeded their publication targets (NDHET, 2012).

7. Conclusion

This Data Brief is an initial stab at understanding the state of transformation in HEIs in the GCR. It draws on data made available to GCRO by the Council for Higher Education (CHE) and other sources. Further in-depth analysis of the issues raised in this Data Brief will be reported in the GCRO's forthcoming Occasional Report on *Higher Education Collaboration for Development in the Gauteng City-Region (GCR)*.

In reflecting on the key priorities as laid out in the National Plan for Higher Education (2001), this Data Brief is considering the city-region's progress toward the goals set for higher education. It raises (but does not answer) a set of critical questions for consultation and debate such as the most effective shape and configuration of the higher education landscape in the GCR, access, equity and diversity as well as the imperatives of producing high-quality research. In highlighting such key developmental challenges for HEIs at both an individual and collective level, this Data Brief lays the groundwork for a thoughtful analysis of how best HEIs can collaborate with each other and other key stakeholders to the same level of sophistication as elsewhere in the world.