

PUBLIC HIGHER EDUCATION FUNDING, POSTGRADUATE STUDENTS AND RESEARCH OUTPUT 2021

Supplement to

VitalStats 2021

**PUBLIC HIGHER EDUCATION
FUNDING, POSTGRADUATE STUDENTS
AND RESEARCH OUTPUT
2021**

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VitalStats 2021

The Council on Higher Education (CHE) is an independent statutory body established by the Higher Education Act, No. 101 of 1997 (as amended). The CHE is the Quality Council for Higher Education, advises the Minister responsible for Higher Education, Science and Innovation on all higher education issues and is responsible for quality assurance and promotion through the Higher Education Quality Committee (HEQC).

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Foreword

The Higher Education Act 101 of 1997, as amended, mandates the Council on Higher Education (CHE) to, *inter alia*, monitor developments in higher education and publish the resultant data and information on a regular basis for the benefit of stakeholders and the public at large. One of the ways in which the CHE fulfils this mandate is to compile and publish data on key parameters within the higher education system from which inferences can be made about the development trajectory of the higher education system in South Africa. The publication is titled *VitalStats*, and it has been published annually since 2012. It has become an important resource material for researchers, policy makers, institutional planners, funding agencies and other stakeholders with interest on the changes that are going on within the higher education system.

Over the years, the parameters on which data and information are provided in the *VitalStats* publication have increased tremendously in response to requests and suggestions from the stakeholders. As a result, the size of the *VitalStats* publication has been increasing steadily until in 2022 a decision was made to compile and publish two complementary volumes per year. Therefore, in 2022 in addition to the ordinary *VitalStats* publication that stakeholders are customised to, a supplementary volume was also published presenting data and information on funding, research and postgraduate students. This volume titled *Public Higher Education, Postgraduate Students and Research Output 2021: Supplement to VitalStats 2021* is the second volume of a supplement to a *VitalStats* publication. It presents data and information on (i) State funding of public universities; (ii) Permanent academic staff with master's and doctoral qualifications; (iii) Master's and doctoral students first-time enrolment and completion; (iv) Analysis of cohorts of research-based postgraduate students; and (v) Research output and subsidy funding.

The CHE encourages researchers, policy makers, institutional planners, funding agencies and other stakeholders to continue taking keen interest in the two volumes of *VitalStats* published annually and making good use of their contents. They are also requested to continue providing constructive feedback which the CHE commits to utilise in its quest for continuous improvement in the compilation, analysis and presentation of the relevant sets of data and information. Feedback should be sent by email to research@che.ac.za.

The CHE expresses its sincere appreciation to the staff in the Research, Monitoring and Advice (RMA) Directorate, and to the external experts who worked tirelessly to source the relevant datasets, undertake the required analyses, and plot the graphs presented in this volume with the requisite levels of rigour and professionalism. It would also like to acknowledge the critical role played by external peers who reviewed the data and graphs, checked the accuracy of the analyses, and made constructive recommendations that assisted in improving the presentation of some of the graphs.

Copies of the *Public Higher Education, Postgraduate Students and Research Output 2021: Supplement to VitalStats 2021*, and other volumes in the *VitalStats* publication series can be accessed through the CHE website: www.che.ac.za/publications. Print copies can be requested from research@che.ac.za or can be collected in person at 1 Quintin Brand Street, Perseus Technopark, Brummeria, in Pretoria.

Dr Whitfield J Green
Chief Executive Officer
January 2024

Acronyms

CESM: Classification of Educational Subject Matter

Comp: Comprehensive Universities

FTE: Full-time Equivalent

Trads: Traditional Universities

UCD: University Capacity Development

UoTs: Universities of Technology

Definitions

Classification of Educational Subject Matter or CESM categories:

A set of classifications aiming to provide a single coherent system for categorising subject matter irrespective of the level of instruction or type of institution. For a list of first-order CESM categories, see Appendix 2.

Cohort:

The first-time entry students in a given year who have enrolled for a particular higher education programme.

Comprehensive Universities (Comp):

This refers to institutions that offer the full spectrum of programmes, including vocational, professional and general formative programmes at both undergraduate and postgraduate levels.

Field of study:

Enrolments are divided into four broad fields or areas of study, calculated by aggregating enrolments by CESM category as below. For a description of each CESM category, see Appendix 2:

- Science, Engineering and Technology (SET): CESM 01, 02, 06, 08, 09, 10, 13, 14, 15 and 16
- Business and Commerce (BandC): CESM 04
- Humanities (Hum): CESM 03, 05, 11, 12, 17, 18, 19 and 20
- Education (Ed): CESM 07

Full-time equivalent (FTE):

FTE student enrolments are calculated (a) by assigning to each course a fraction representing the weighting it has in the curriculum of a qualification, and (b) by multiplying the headcount enrolment of that course by this fraction. FTE staff numbers are calculated in a similar way.

Headcount:

The total number of students enrolled at each institution whether as full-time, part-time, or occasional students.

Percentage accumulative (for Cohort Study):

This indicates (in the relevant graphs) the total number of students of a particular first-time entering cohort who have graduated or dropped out up to that point. It includes all the students of that cohort who have graduated or dropped out in previous years.

Percentage non-accumulative (for Cohort Study):

This indicates (in the relevant graphs) the total number of students of a particular first-time entering cohort who have graduated or dropped out in that particular year. It does not include the students of that cohort who have graduated or dropped out in previous years.

Permanent employee:

A person is classified as a permanent staff member if he/she contributes to an approved retirement fund of the institution.

Personnel categories:

The personnel category indicates the type of duties to be undertaken in a position which a staff member occupies in the institution, and the qualifications and experience normally required by the incumbent of that position. The duties, qualifications and experience referred to relate to those of the position. The personnel categories are:

Instruction/research professional (Academic): A position in which (a) at least 50% of time is spent on instruction and/or research activities, and (b) the position requires a higher education qualification equivalent to at least 4 years of higher education study.

Executive/administrative/managerial professional (Senior Management): A position in which (a) the primary function is the management of the institution or one of its major divisions or sections, and (b) the position requires an educational attainment equivalent to at least 4 years of higher education study.

Non-professional administration (Administrative): A position in which (a) the primary function is clerical, secretarial or administrative duties, and (b) an educational attainment equivalent to 4 years of higher education study is not required.

Service staff: A group of staff for whom the primary function comprises unskilled activities.

Staff member:

A staff member is a person who is either compensated by the institution by pay or other means for services rendered, or who, while not being paid or compensated by the institution, performs services which relate to the institution's normal activities and those activities which would otherwise have been performed by staff receiving compensation from the institution.

Temporary employee:

A staff member who does not contribute to an approved retirement fund of an institution is classified as a temporary employee.

Throughput rate:

A throughput rate calculates the number of first-time entry undergraduate students of a specific cohort of a specific year who have graduated either within the minimum time, or up to 2 years beyond the minimum time, to the number of students in the baseline enrolments of that cohort. Throughput rates are reflected in the section on cohort studies.

Traditional Universities (Trad):

This refers to institutions that offer a broad range of general formative and professional programmes at both undergraduate and postgraduate levels.

University of Technology (UoT):

This refers to an institution that offers a range of programmes that are vocationally and/or professionally orientated, primarily at the undergraduate level, previously called a Technikons.

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State Funding of Public Universities

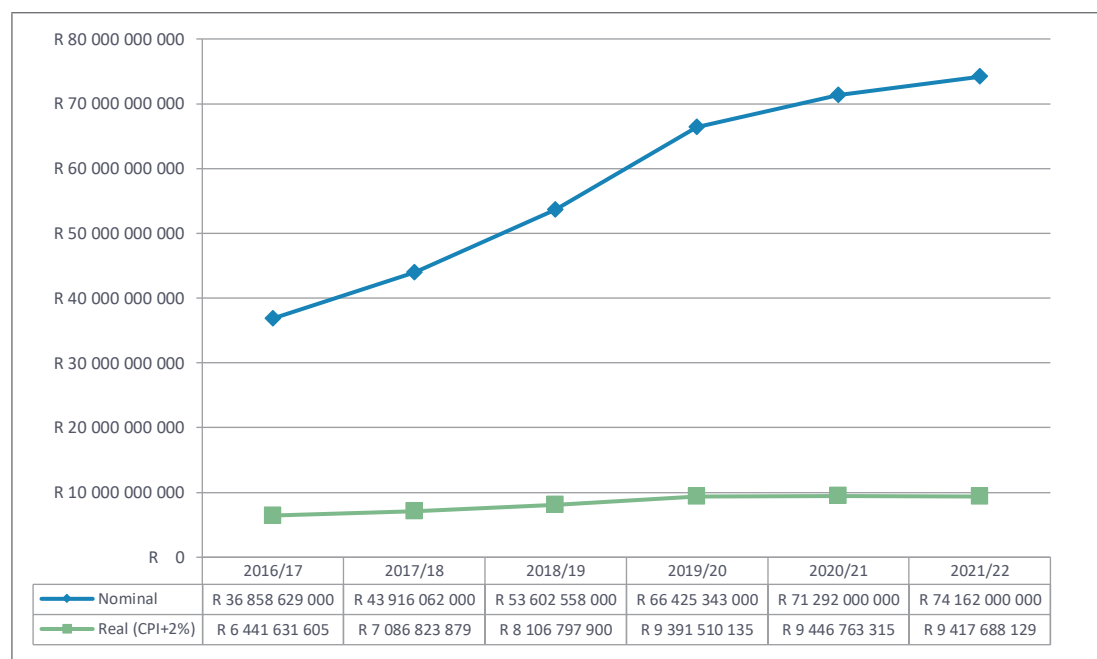
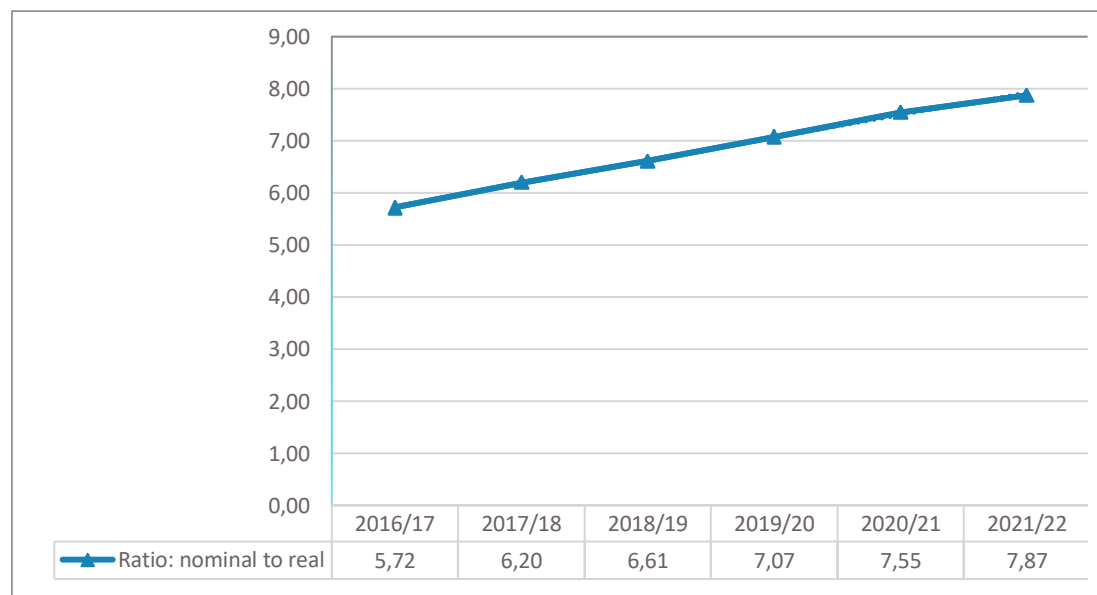
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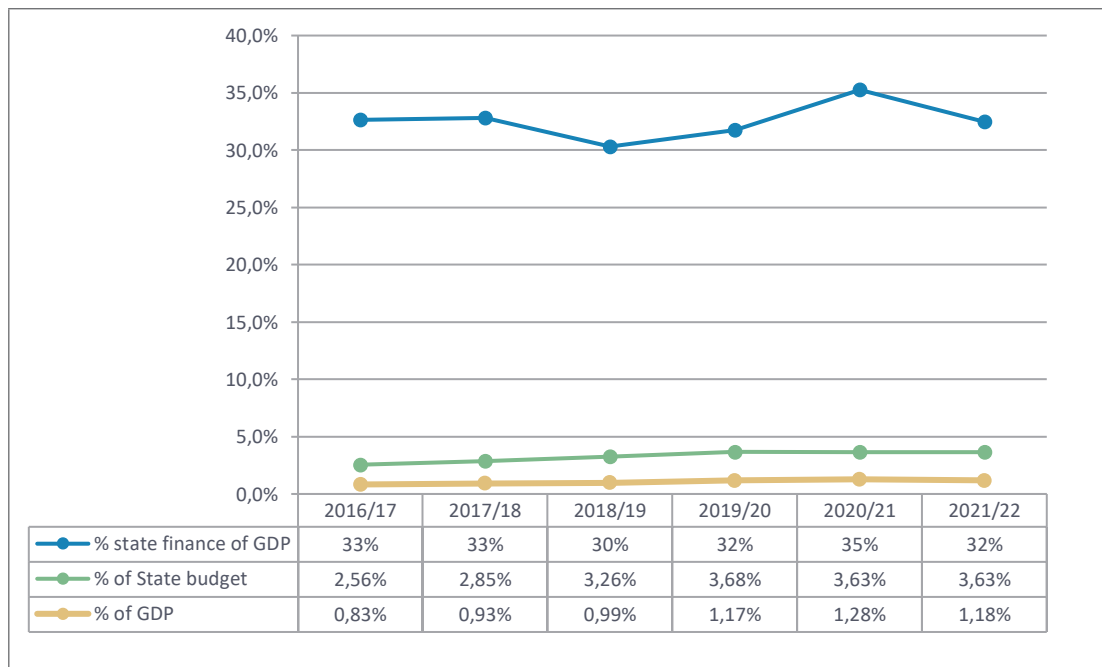
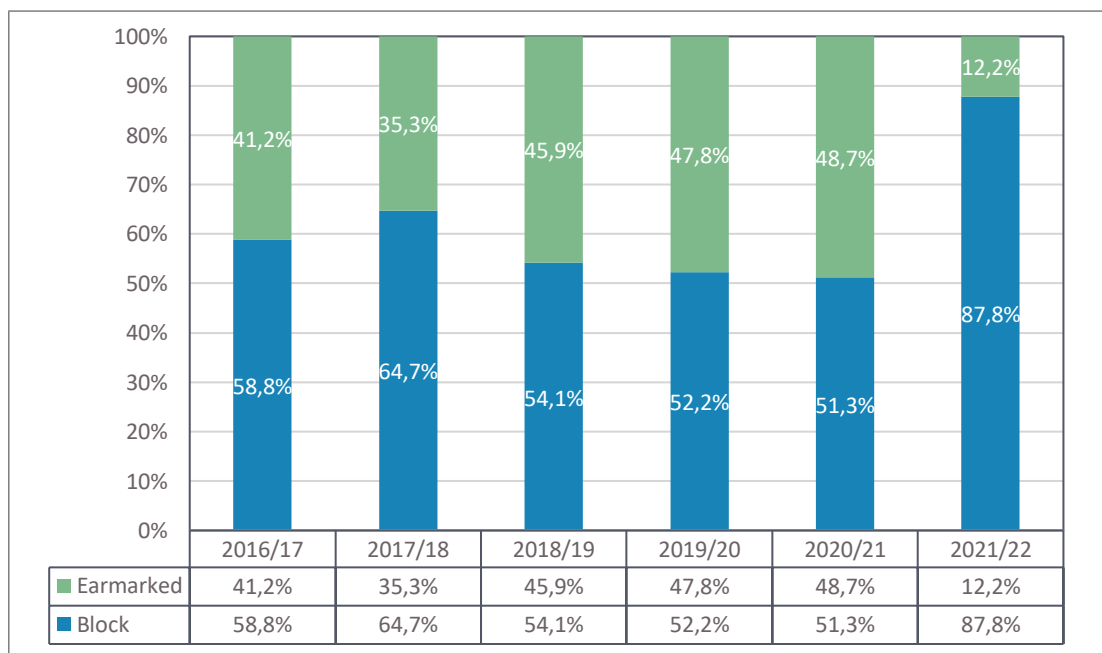
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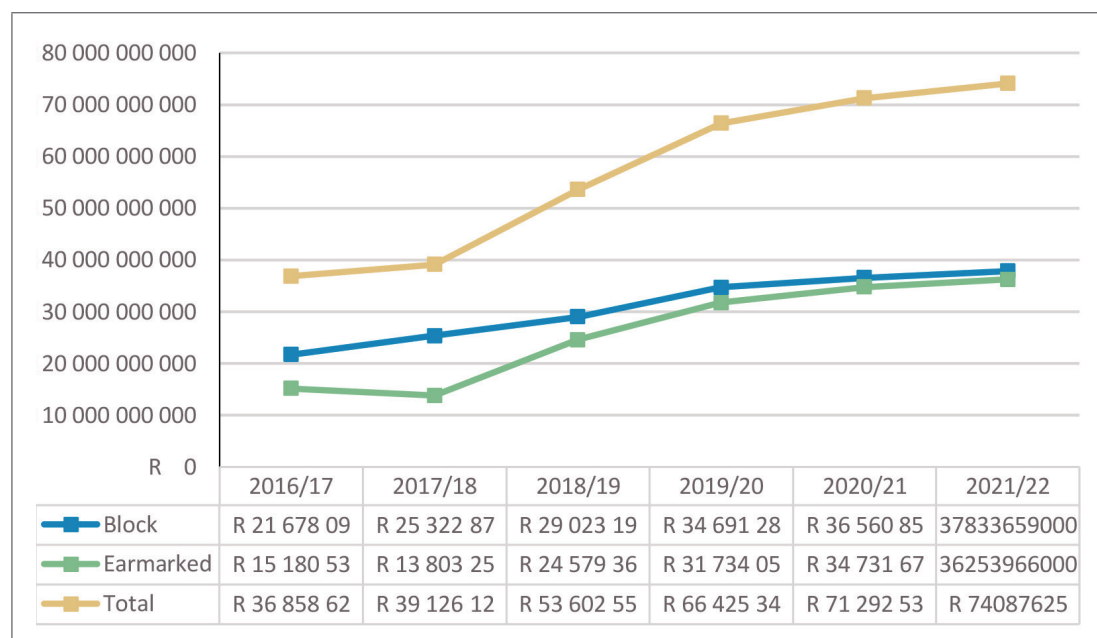
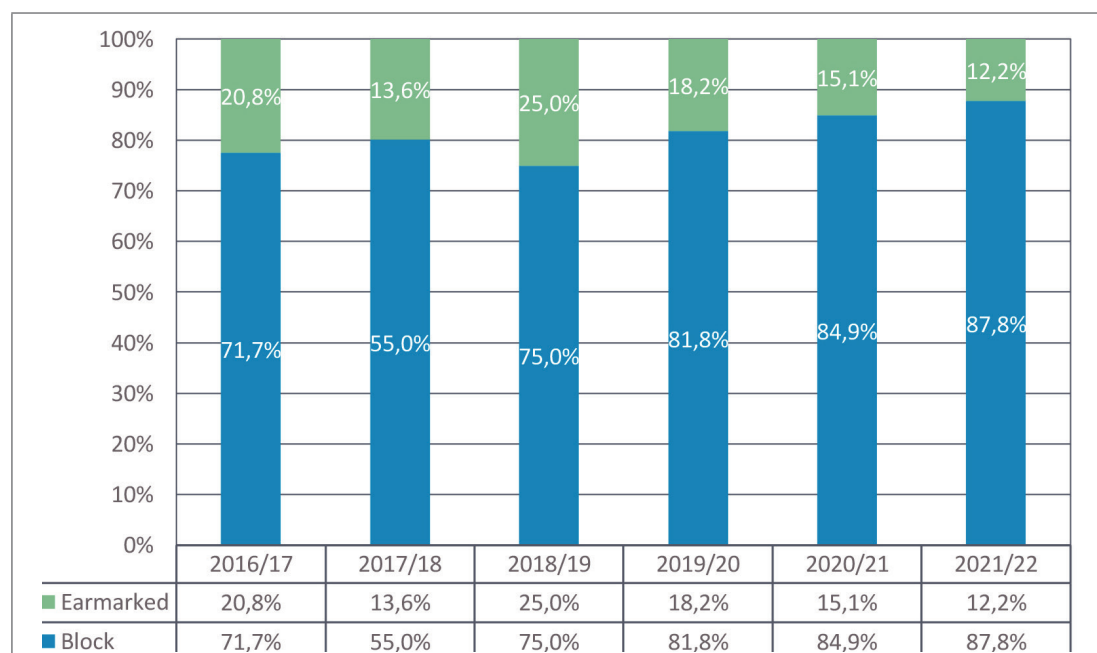
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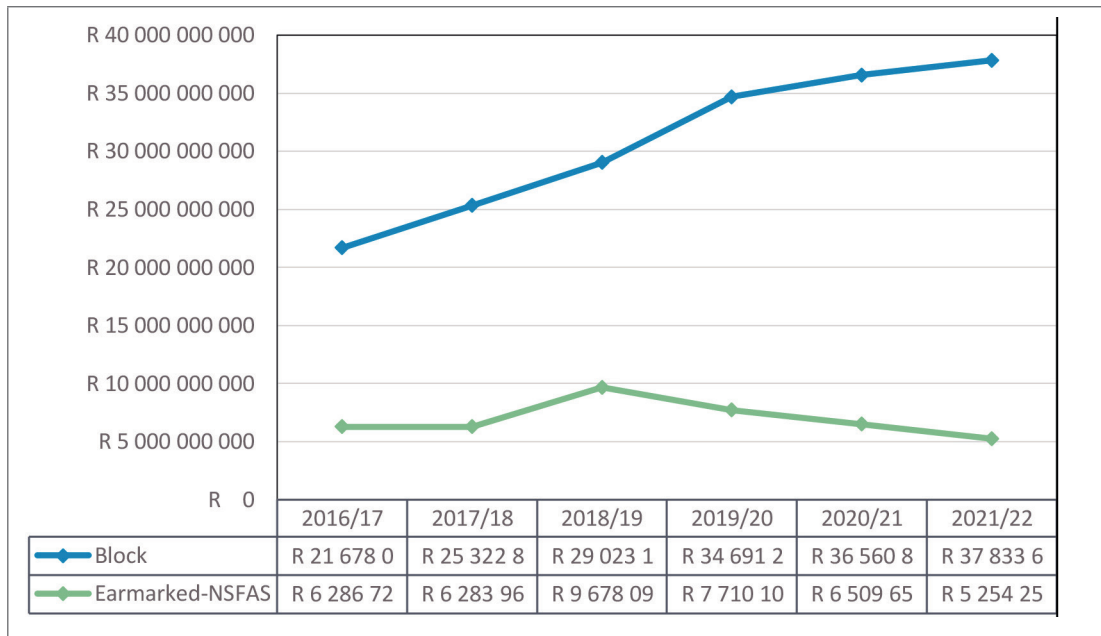
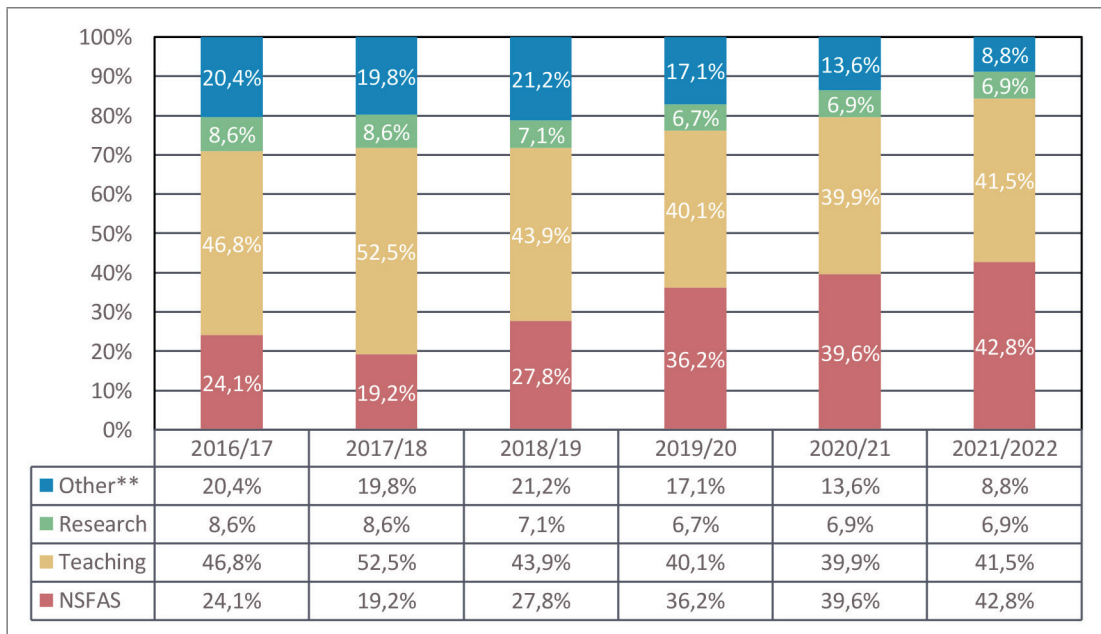
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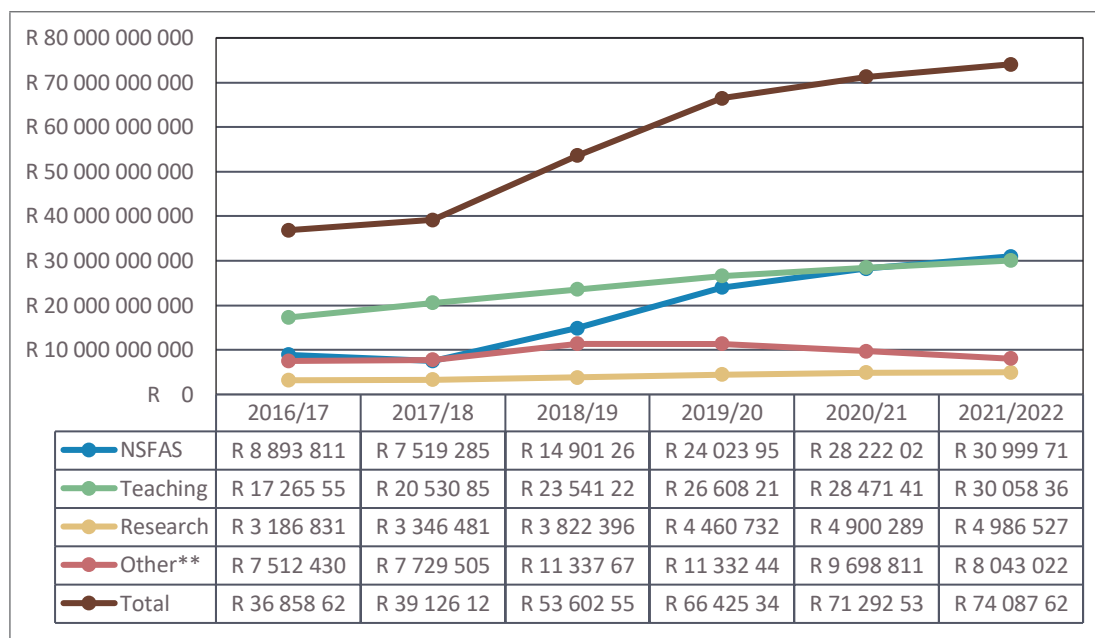
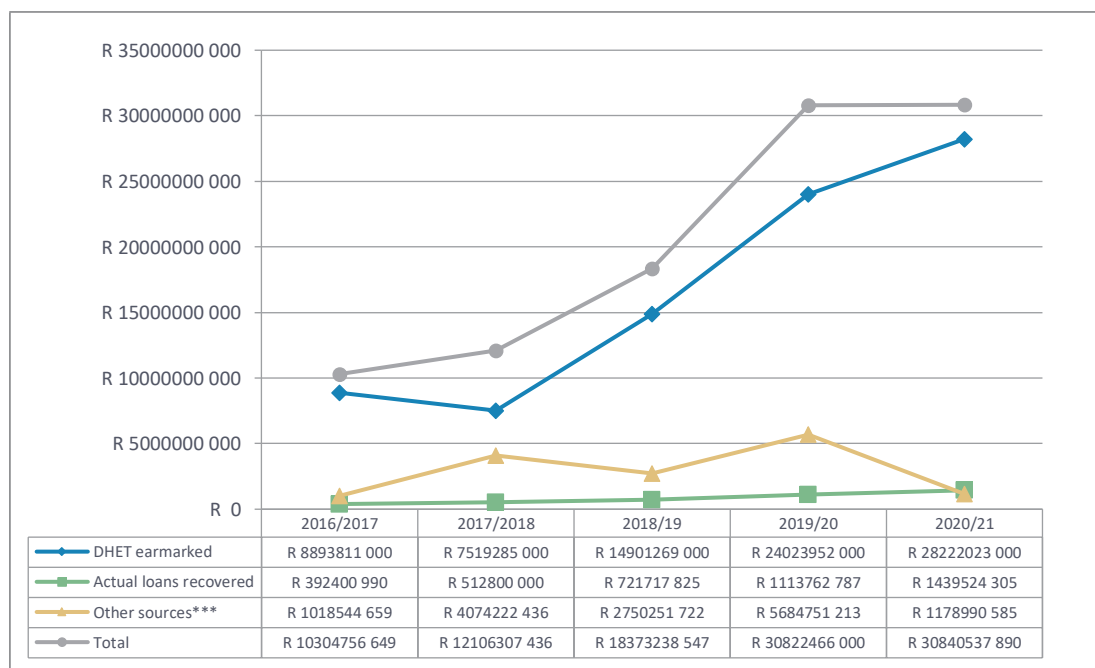
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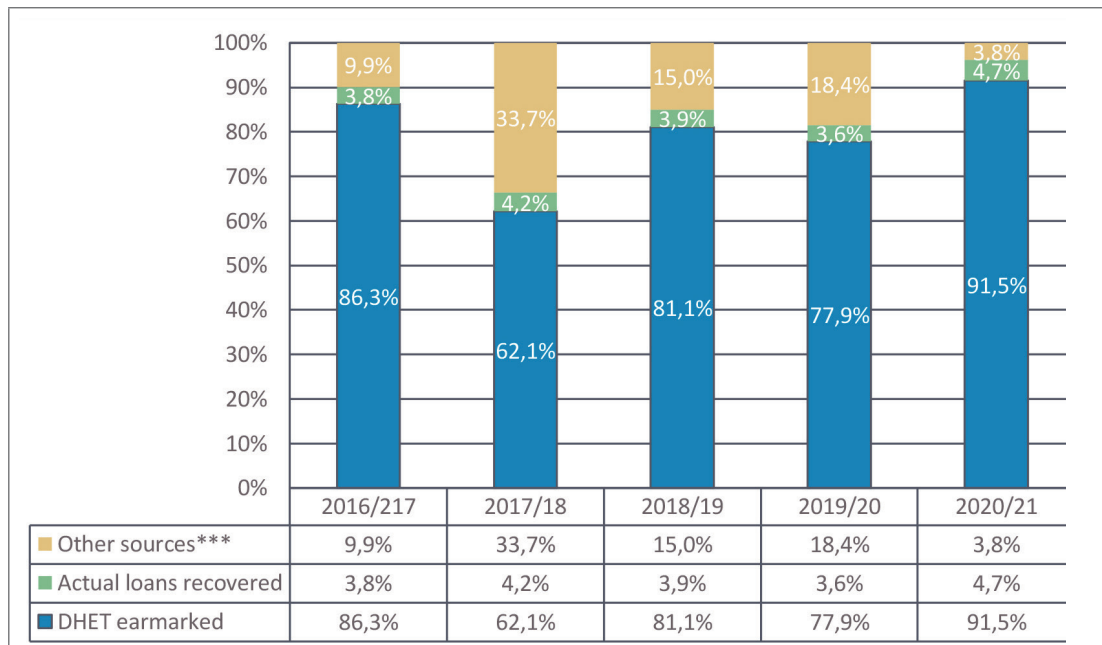


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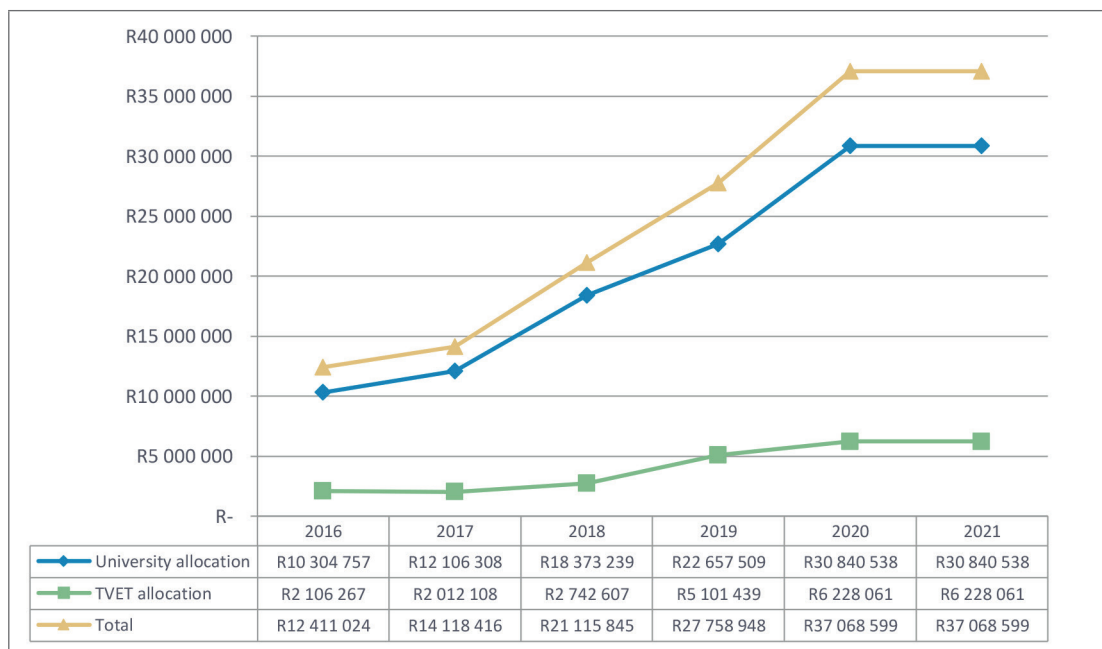


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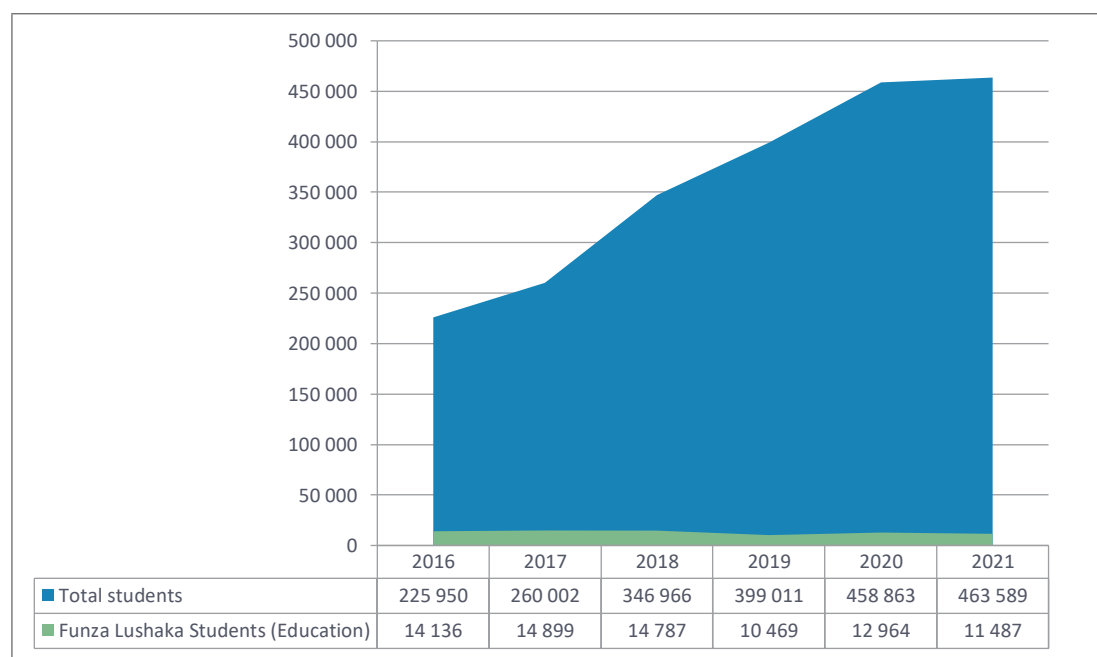


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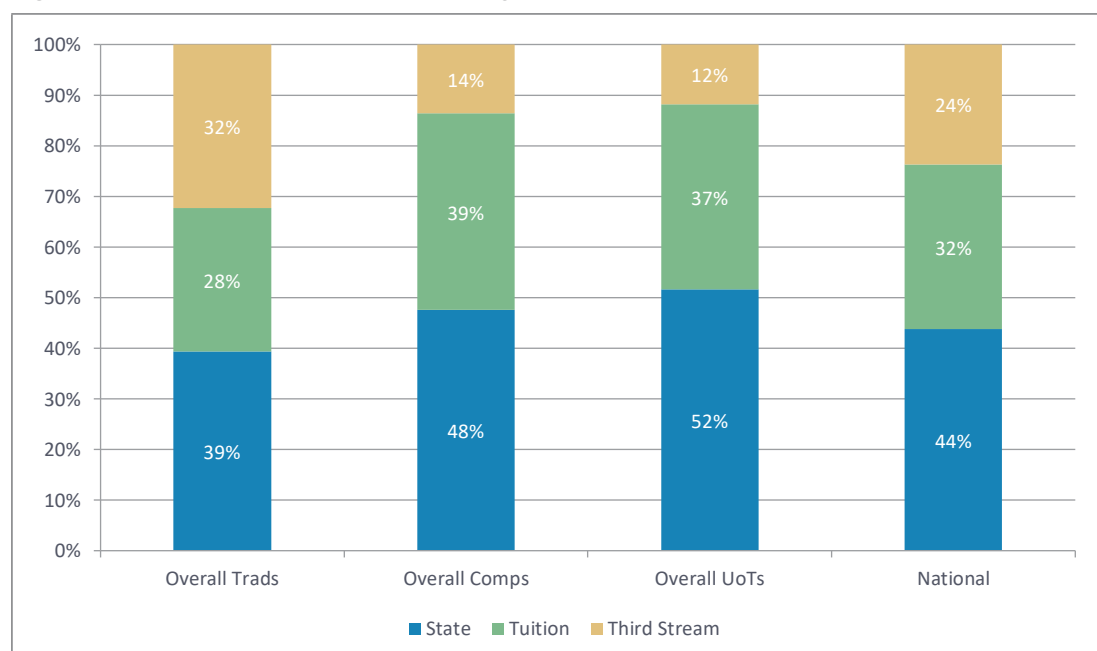


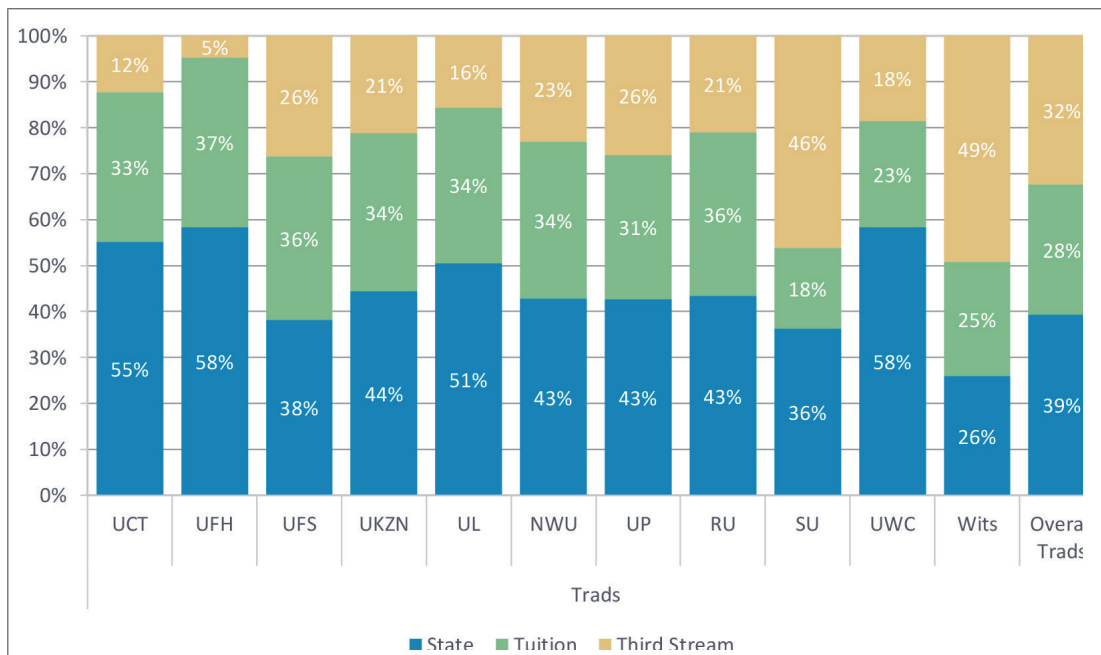
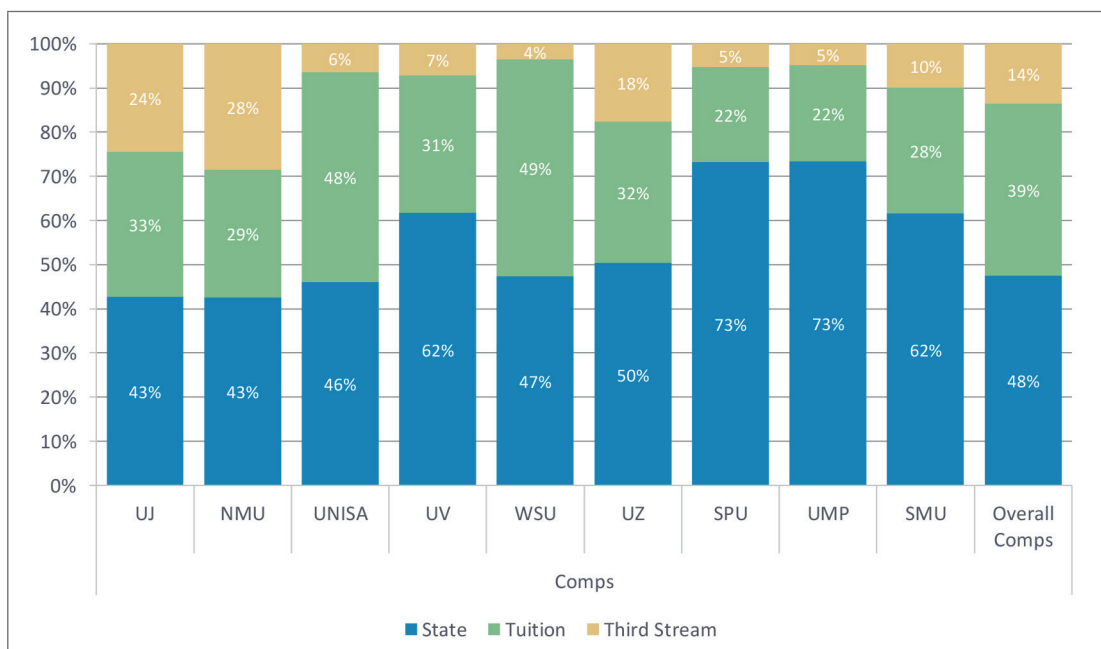
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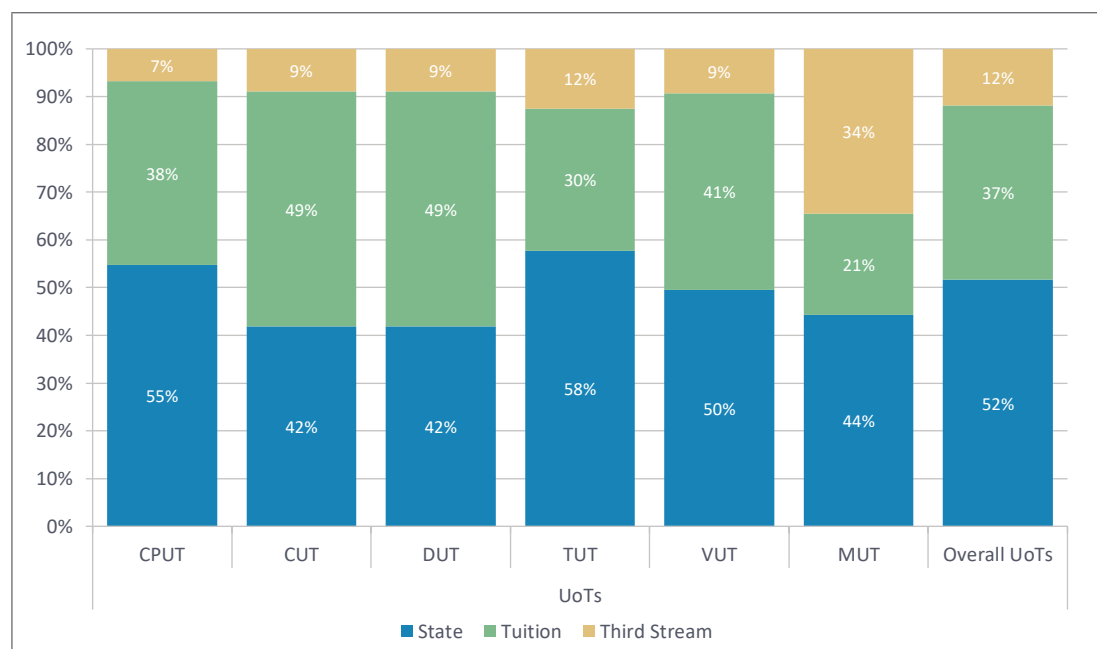


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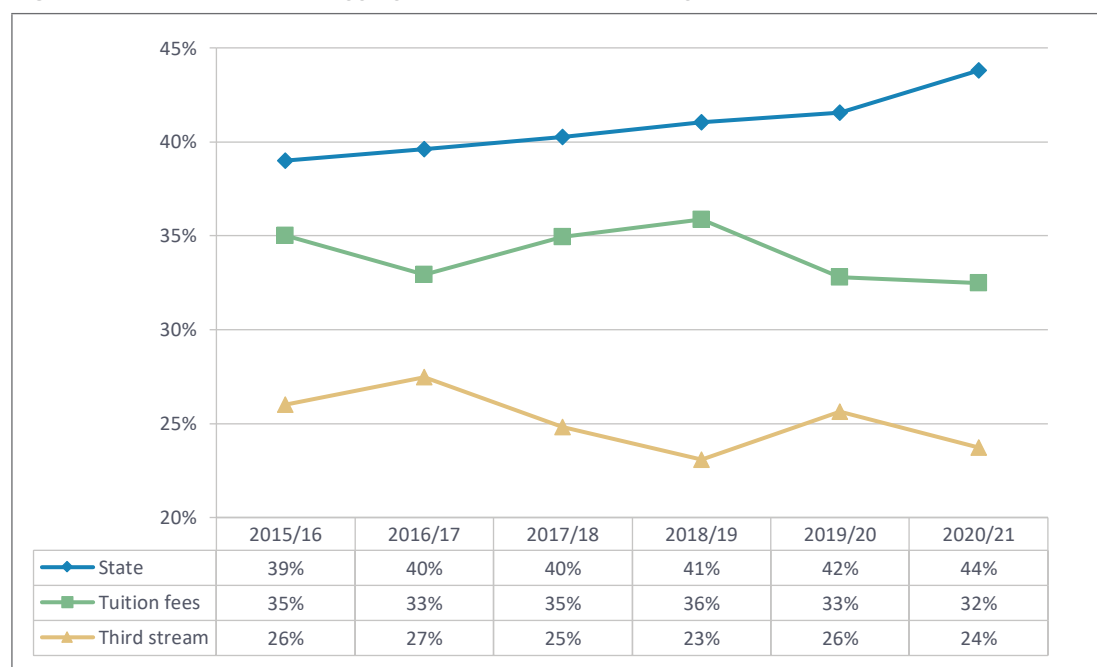


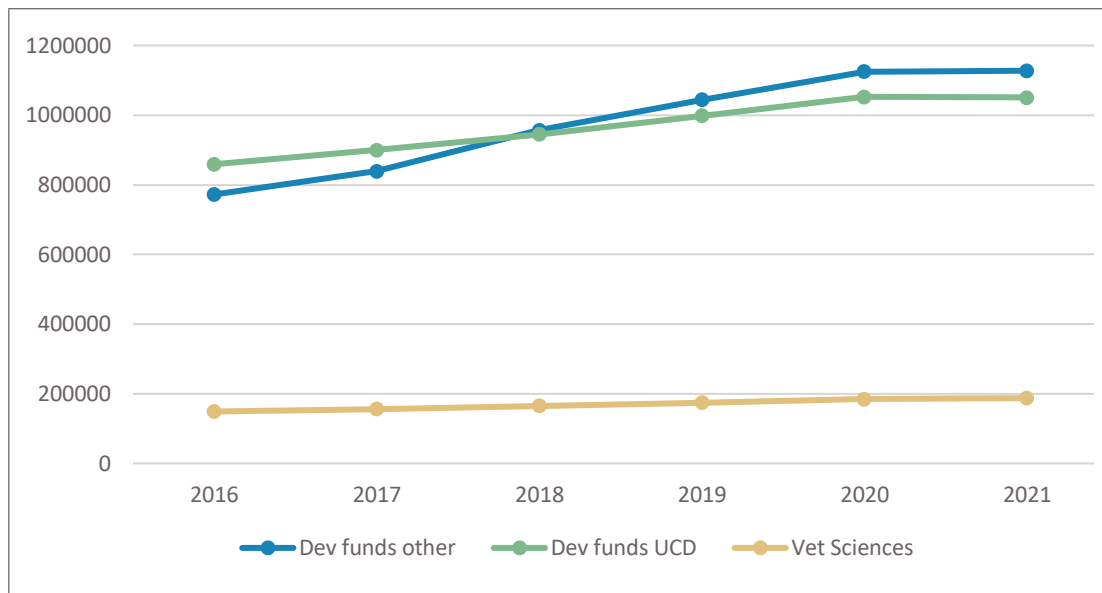
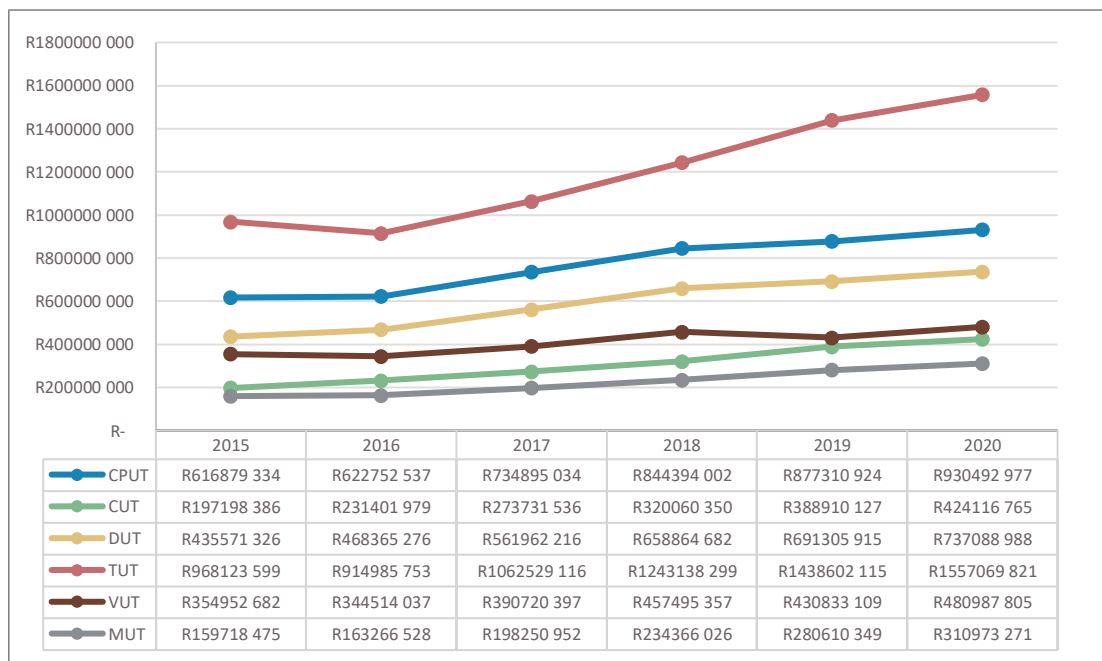
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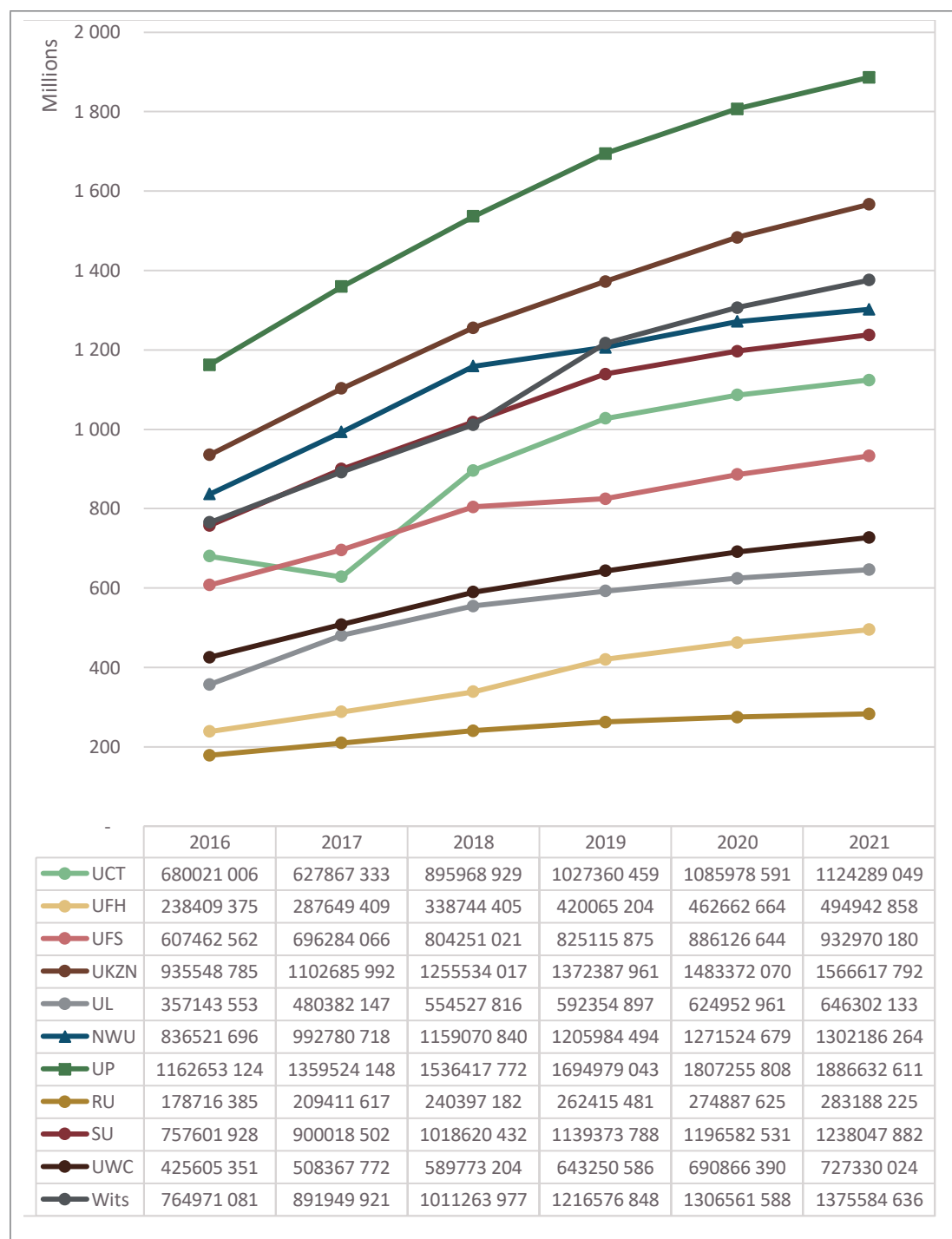
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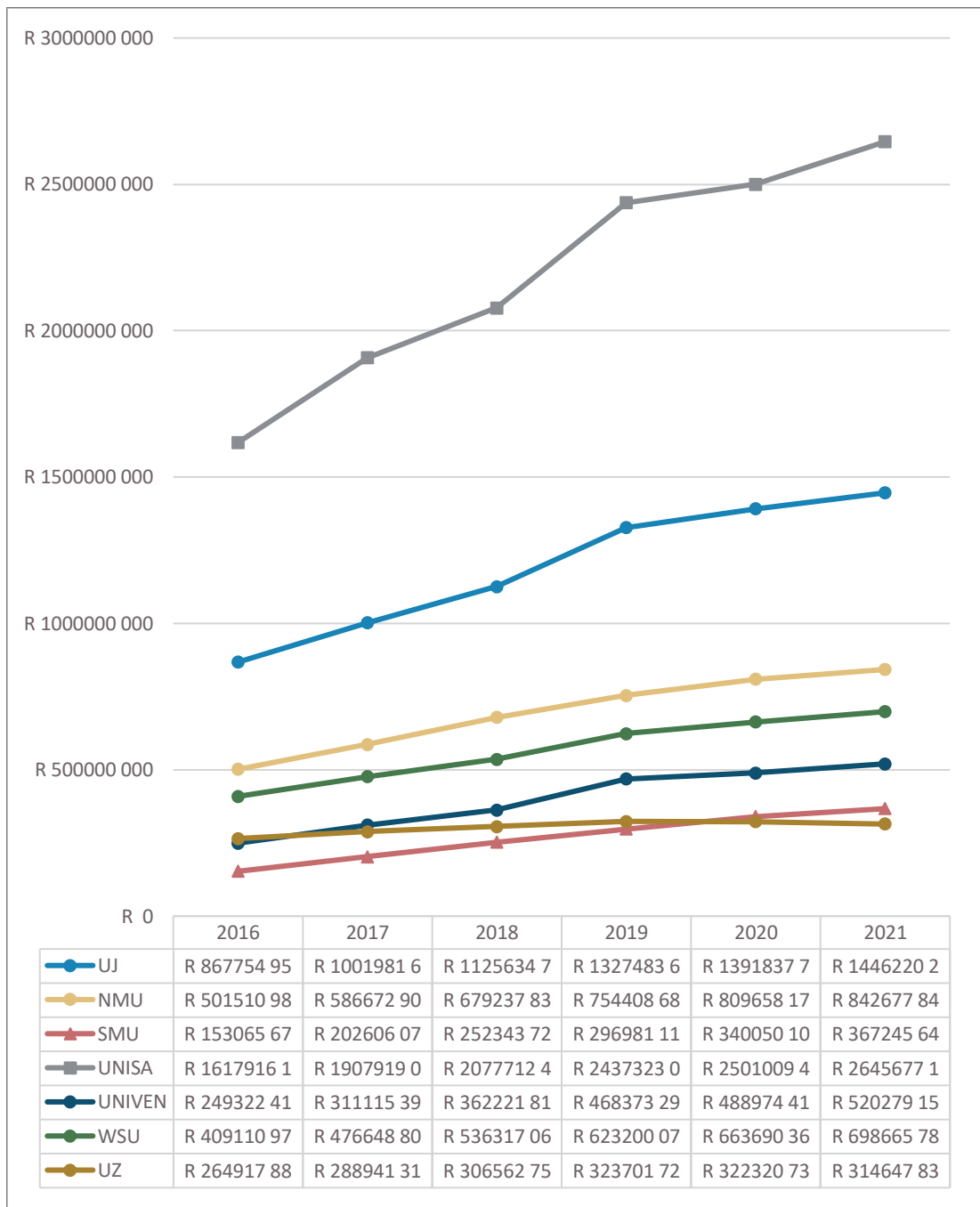
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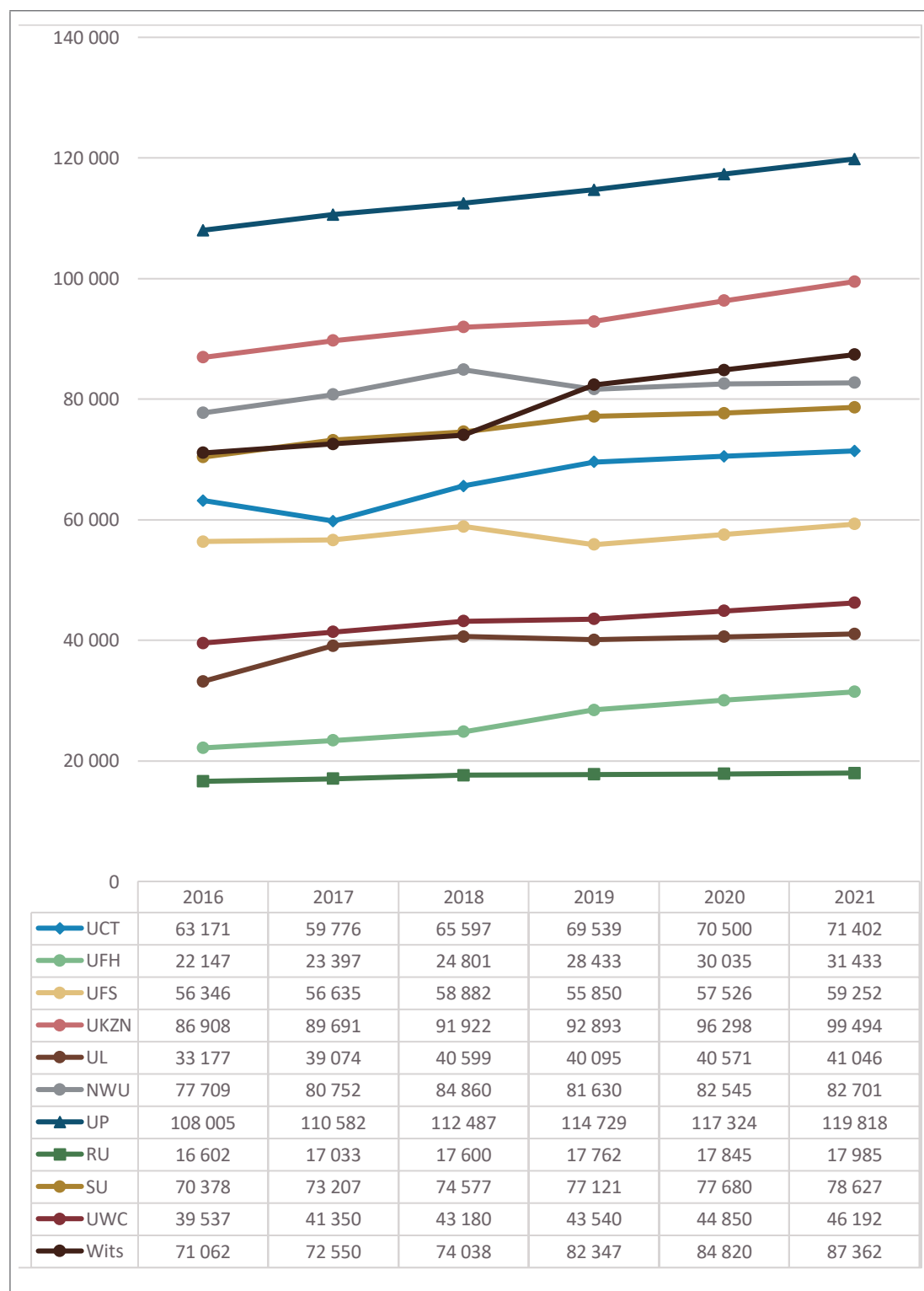
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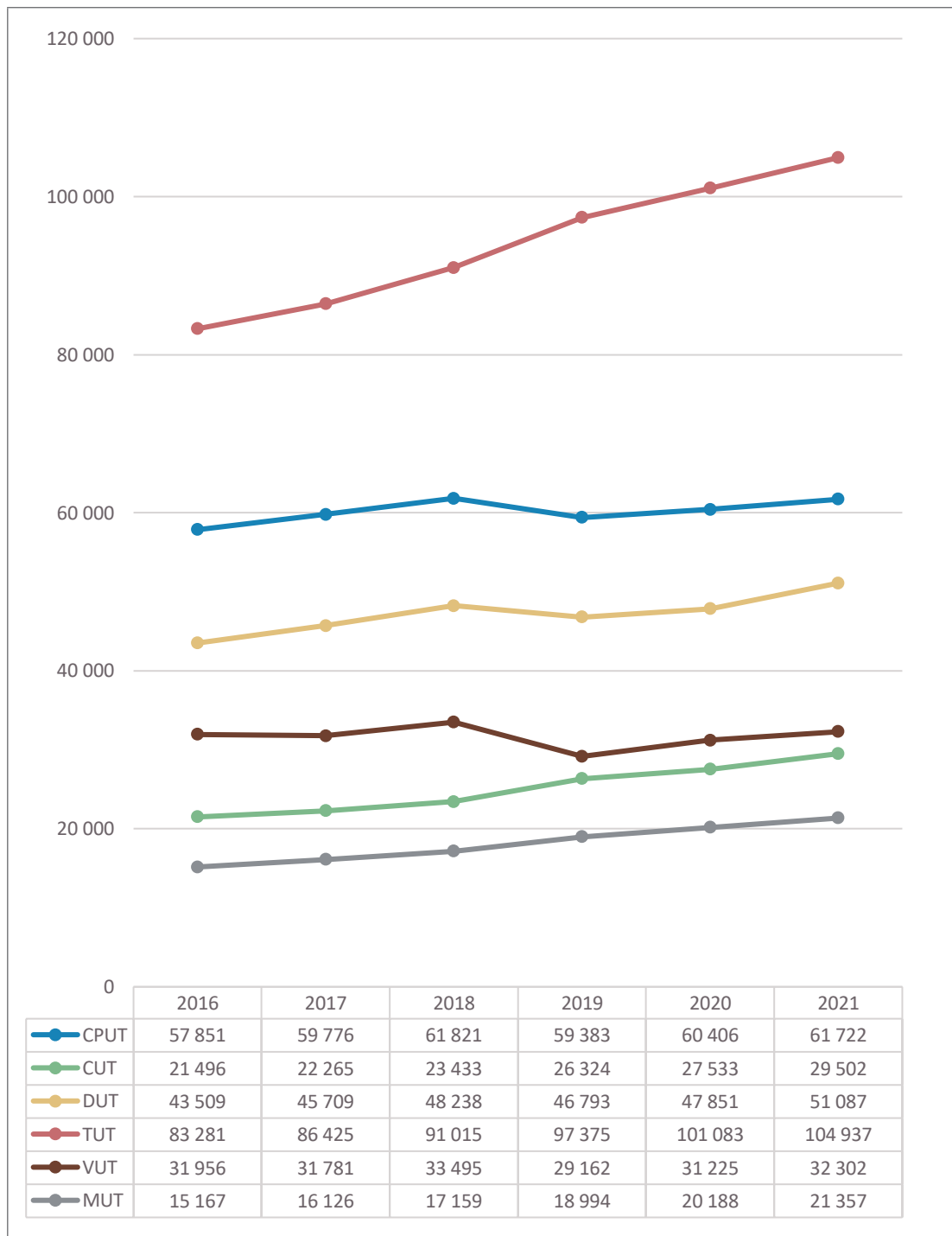
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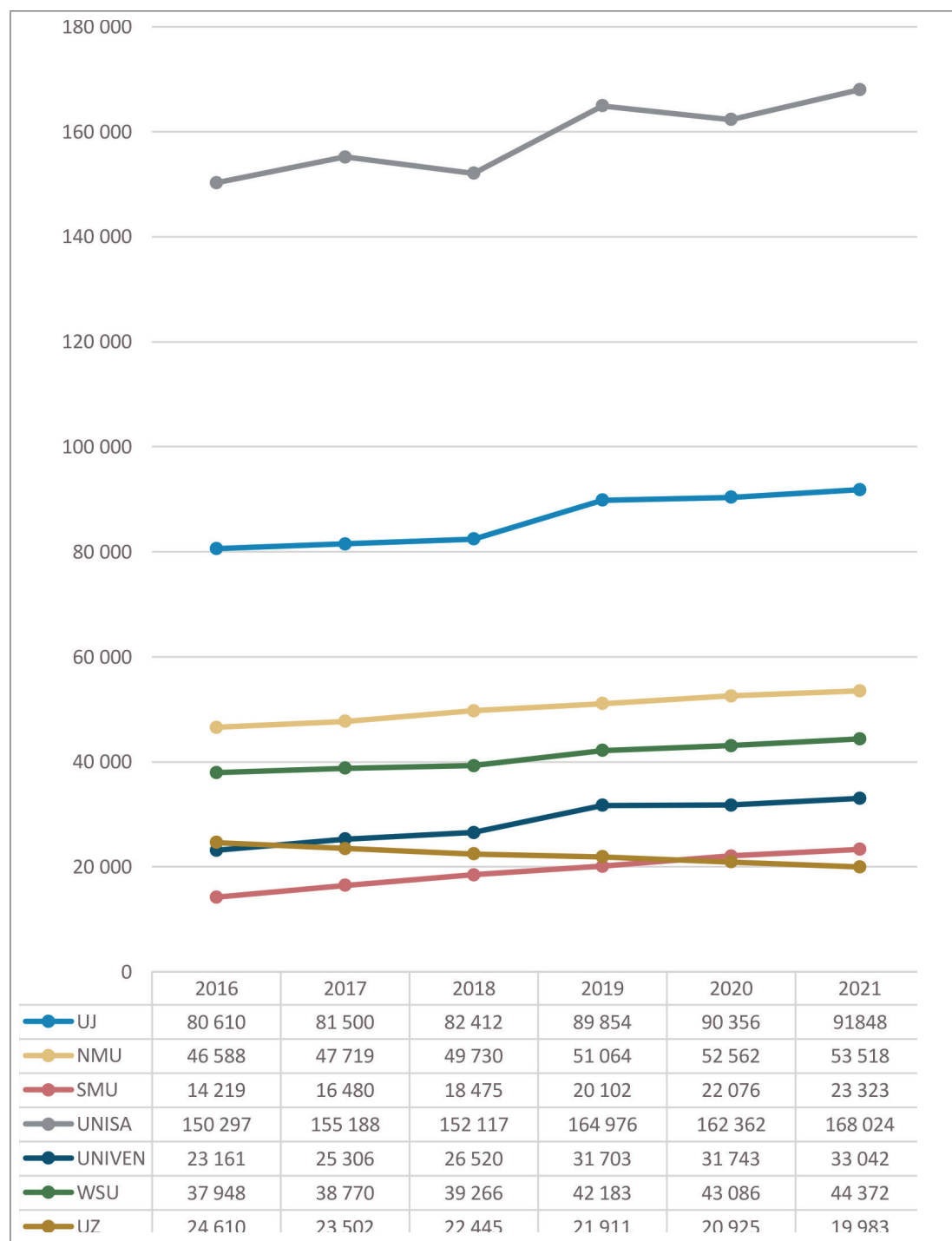
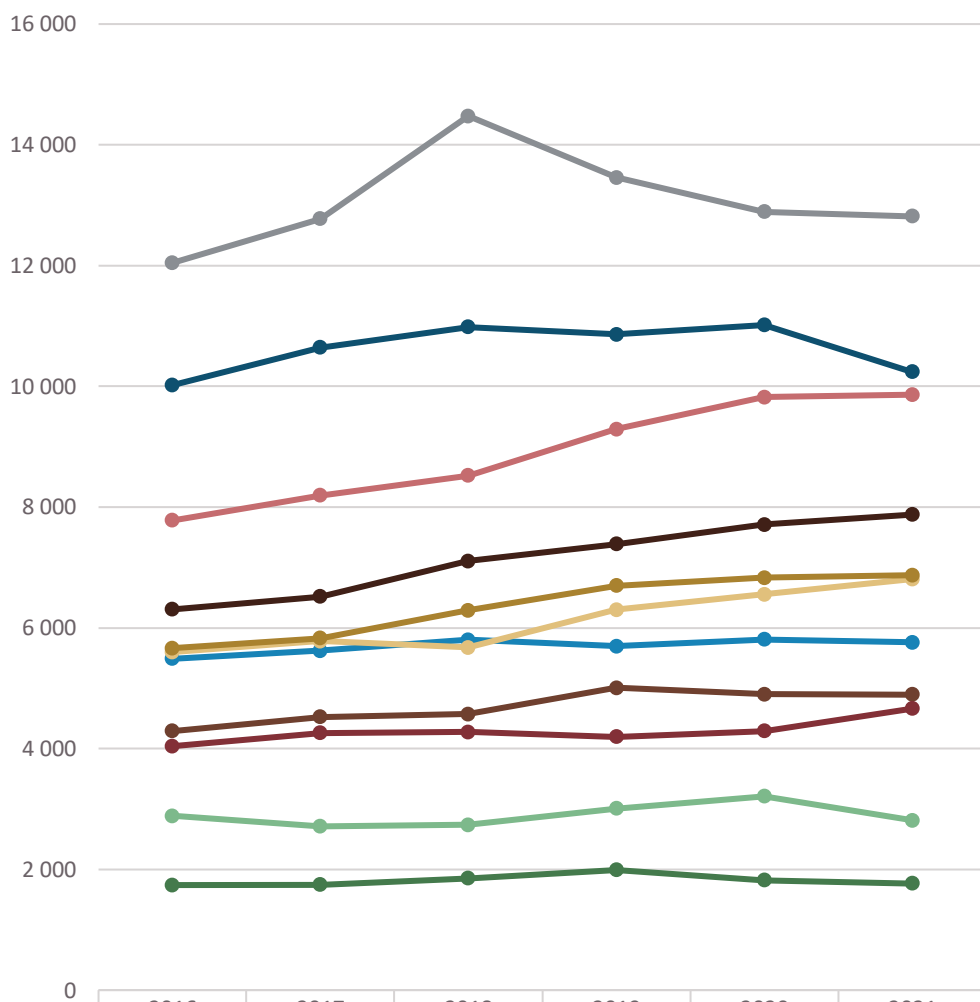
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Figure 26: Teaching output units: Trads

	2016	2017	2018	2019	2020	2021
UCT	5 487	5 622	5 802	5 695	5 805	5 759
UFH	2 884	2 712	2 739	3 008	3 208	2 813
UFS	5 599	5 778	5 674	6 299	6 552	6 808
UKZN	7 778	8 193	8 523	9 289	9 822	9 862
UL	4 289	4 524	4 572	5 009	4 901	4 895
NWU	12 045	12 774	14 477	13 456	12 891	12 818
UP	10 020	10 646	10 982	10 861	11 015	10 240
RU	1 740	1 744	1 849	1 989	1 822	1 767
SU	5 664	5 828	6 288	6 698	6 832	6 872
UWC	4 040	4 259	4 276	4 197	4 289	4 662
Wits	6 305	6 520	7 107	7 385	7 709	7 875

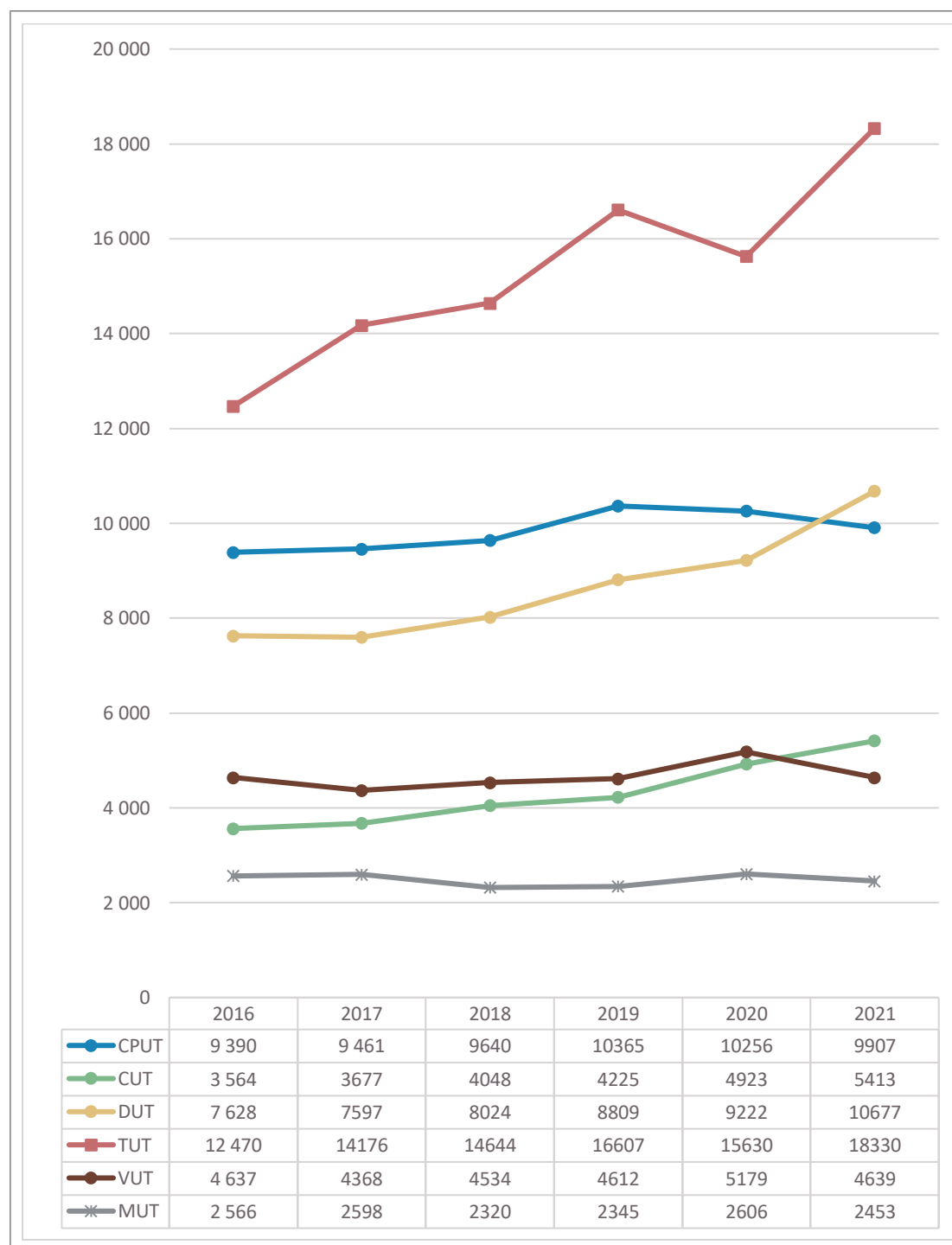
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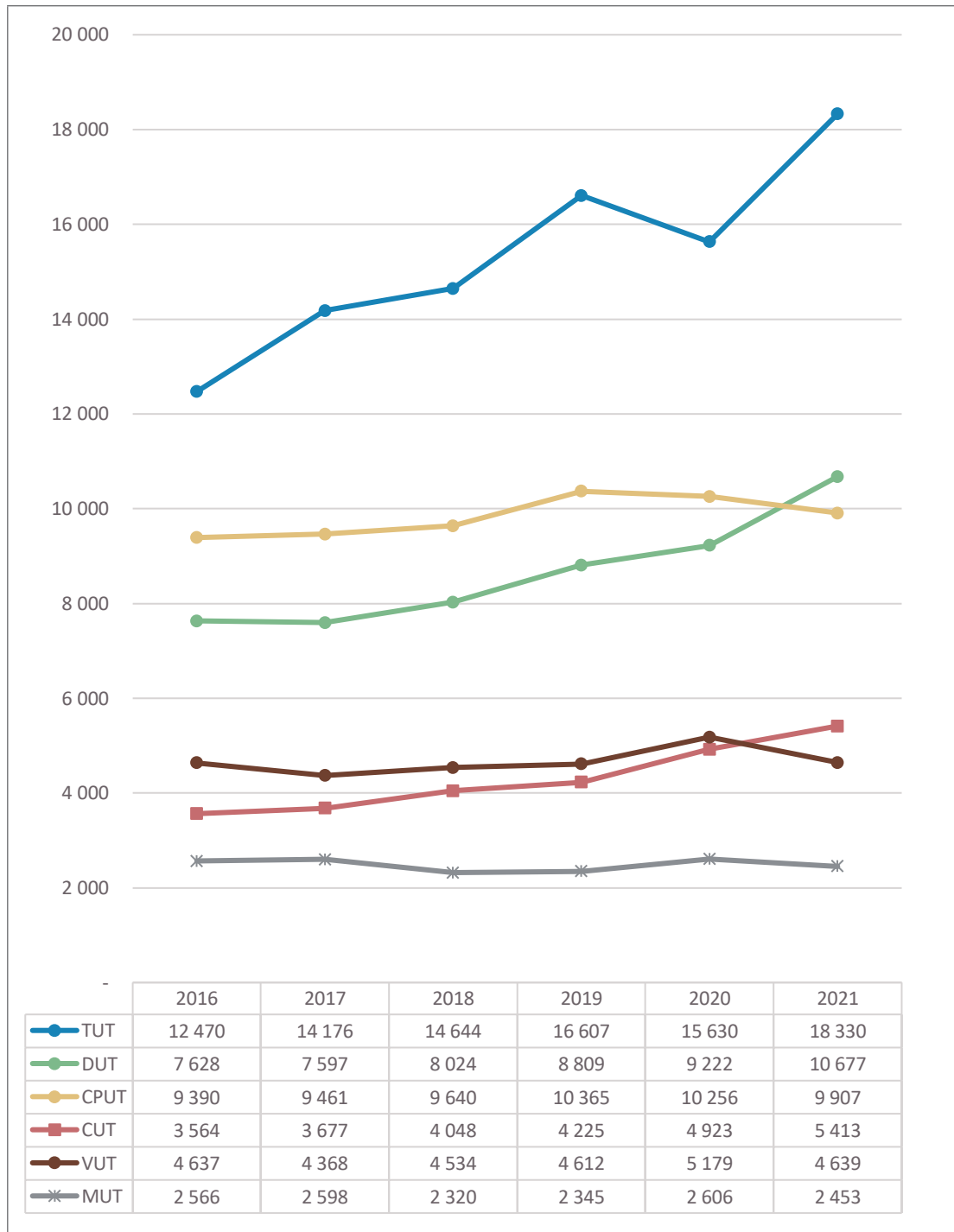
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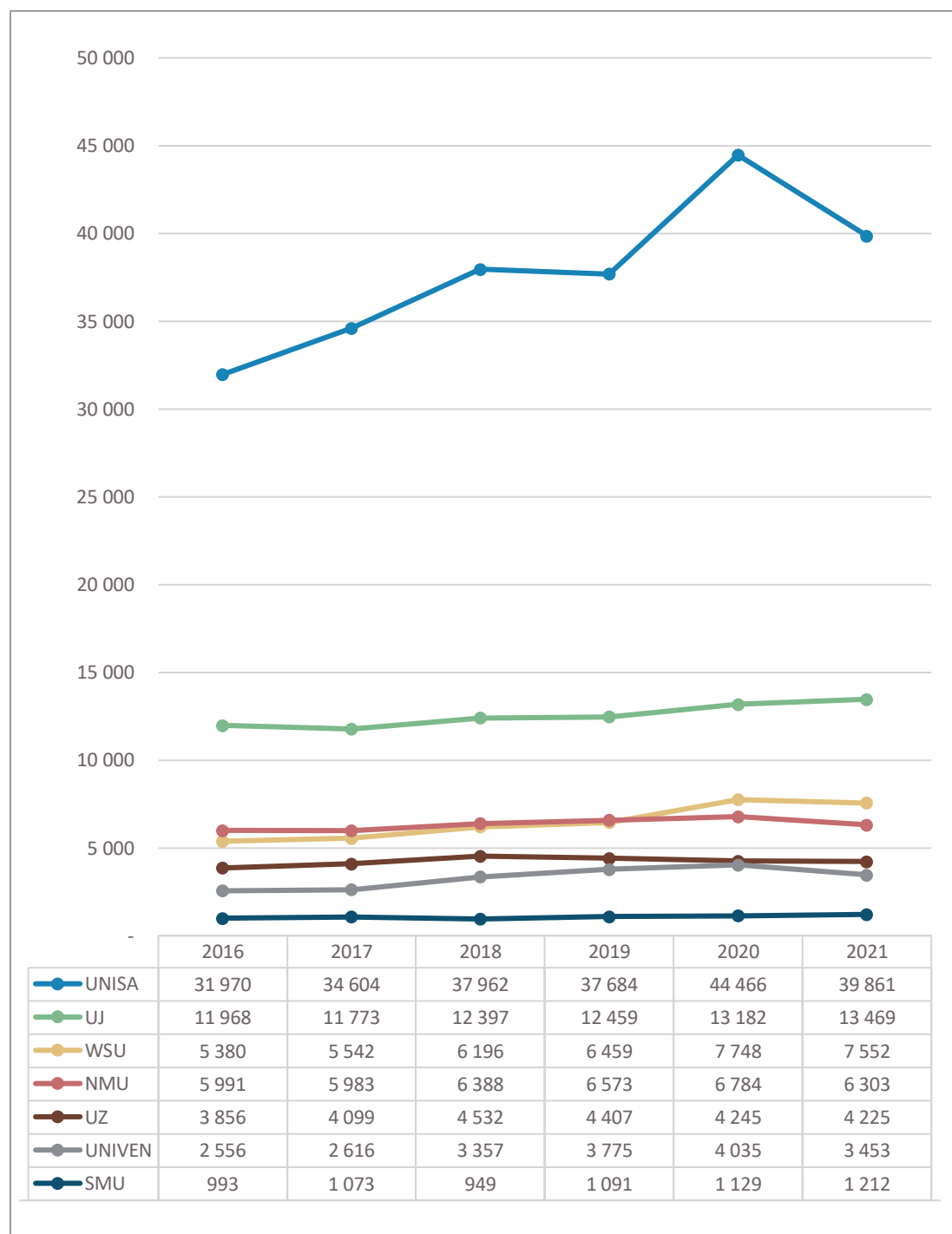
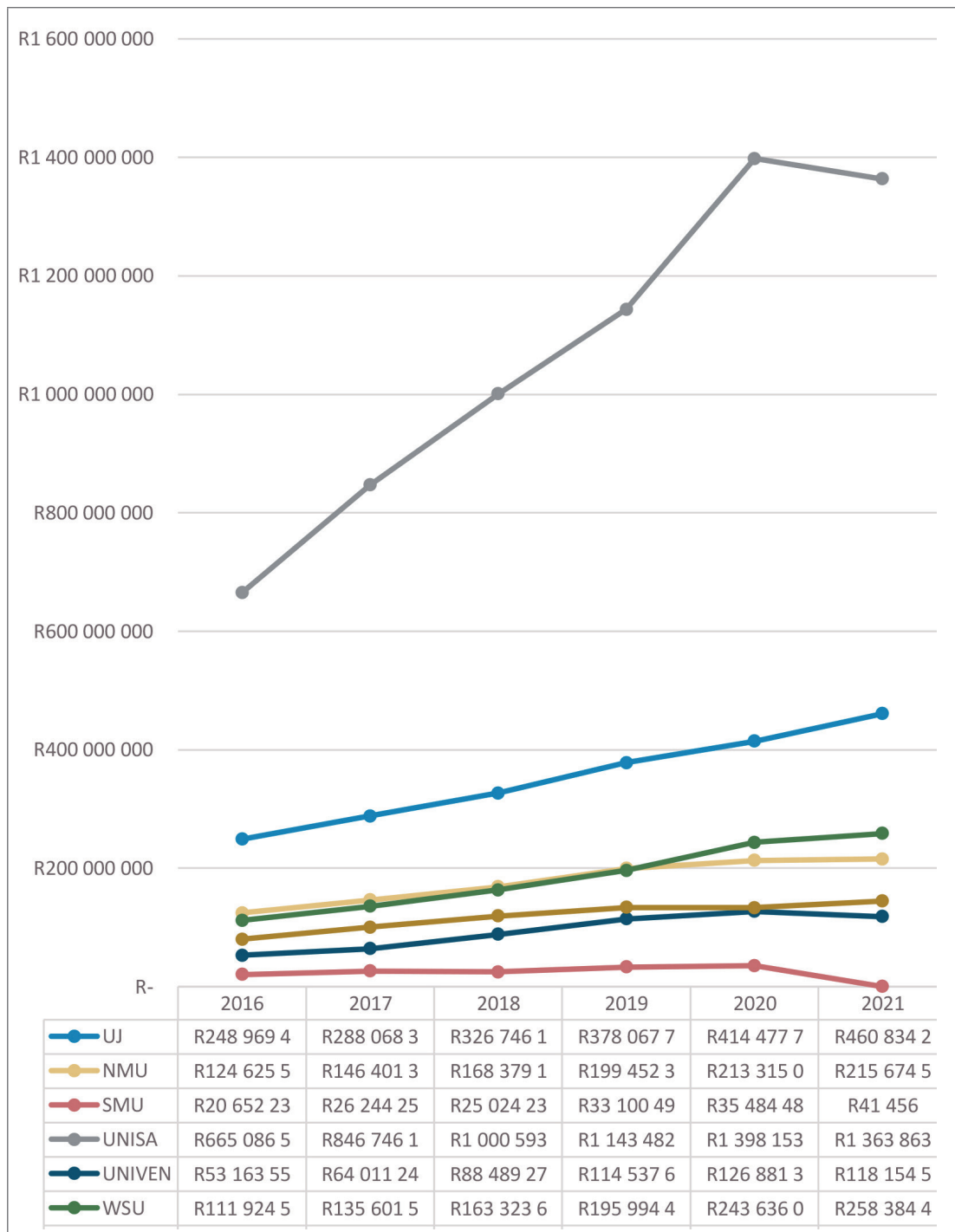
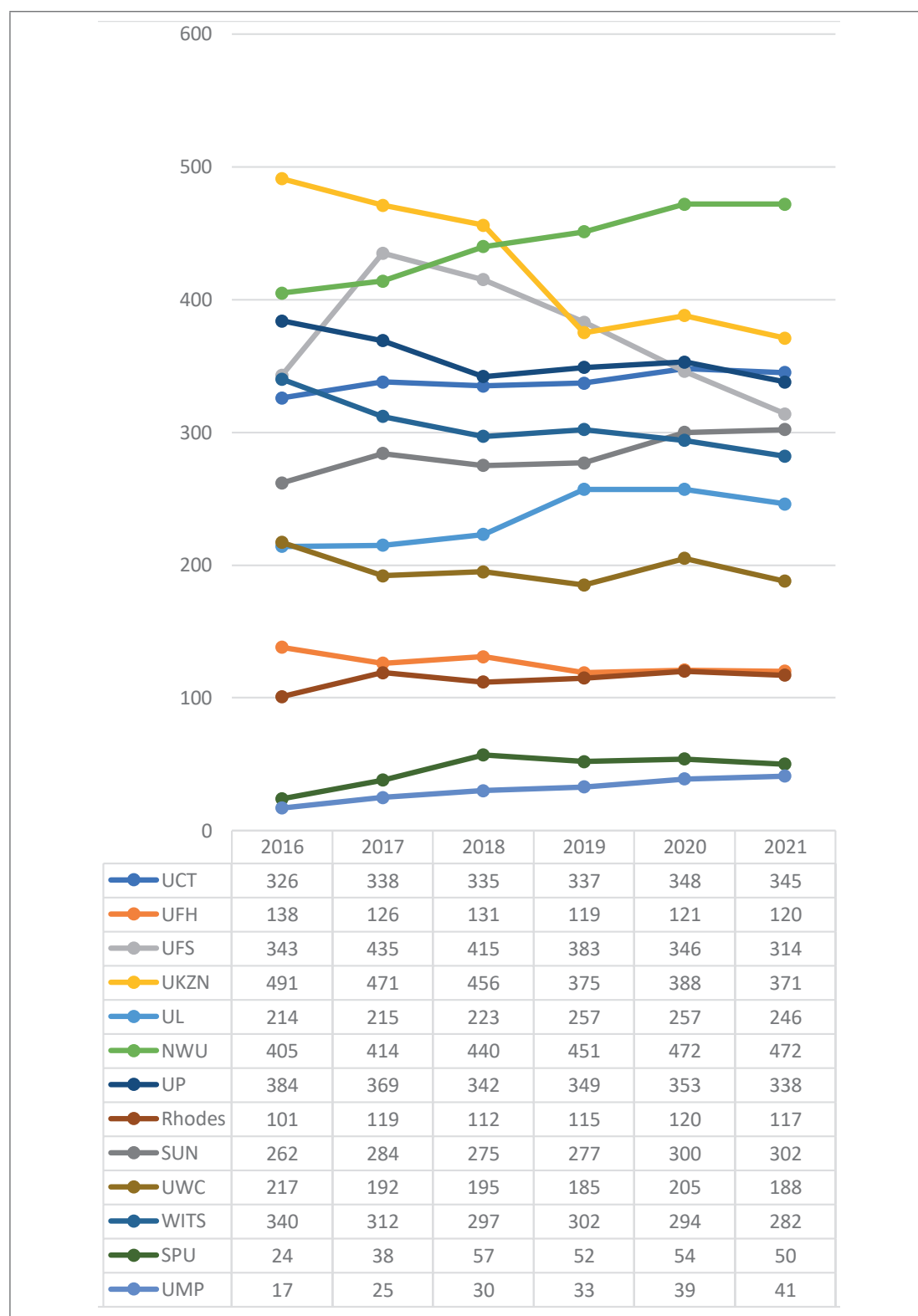
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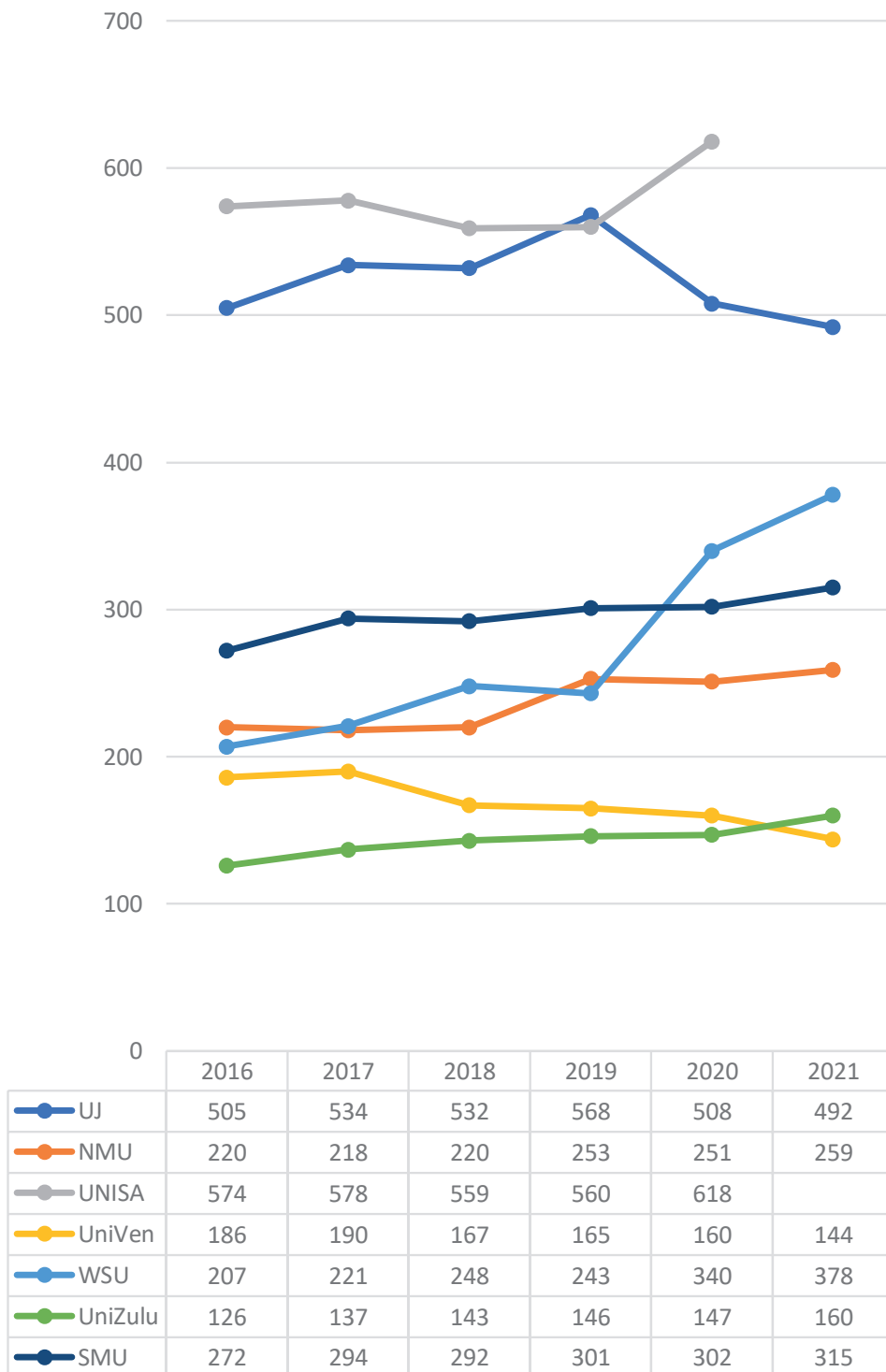


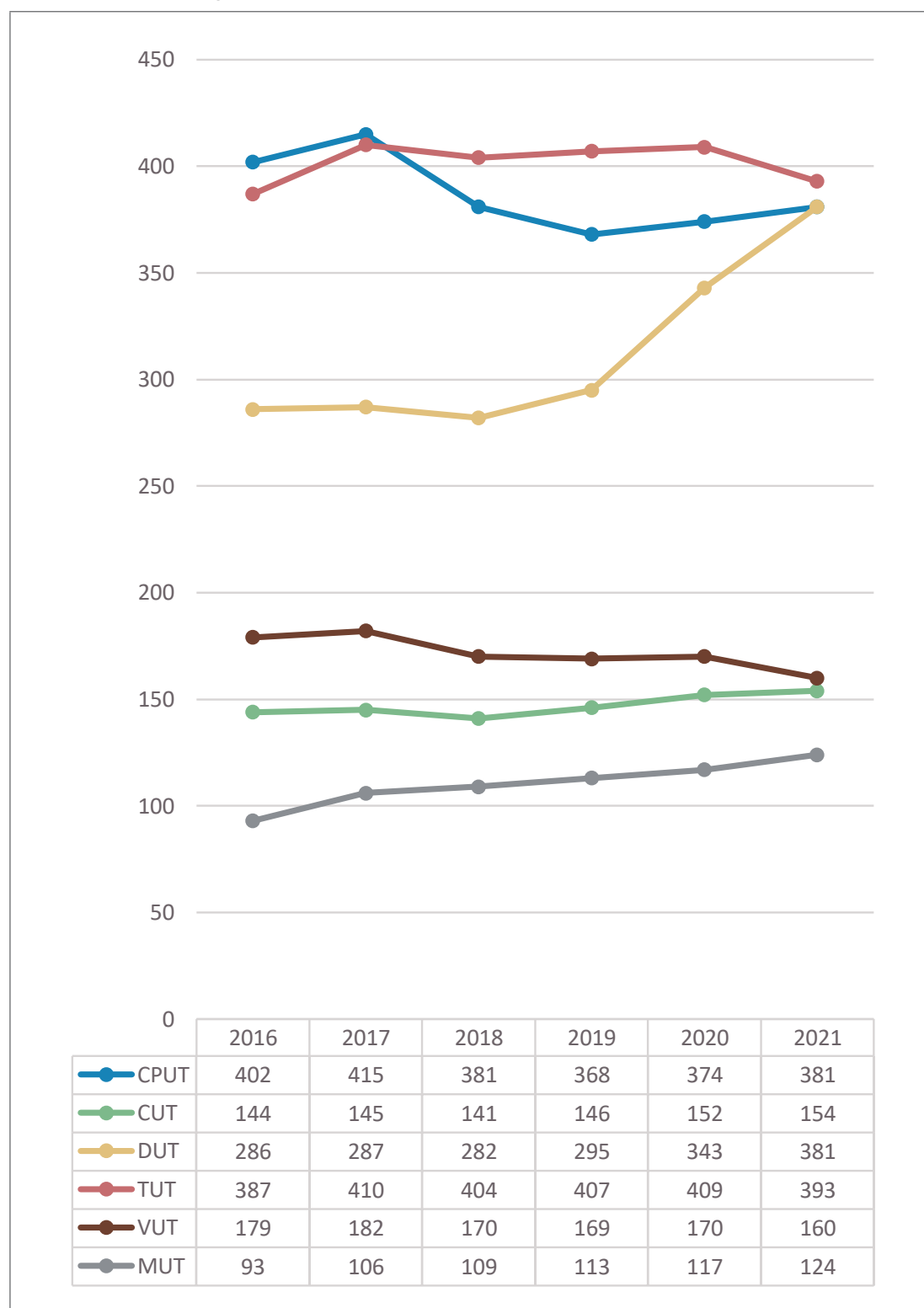
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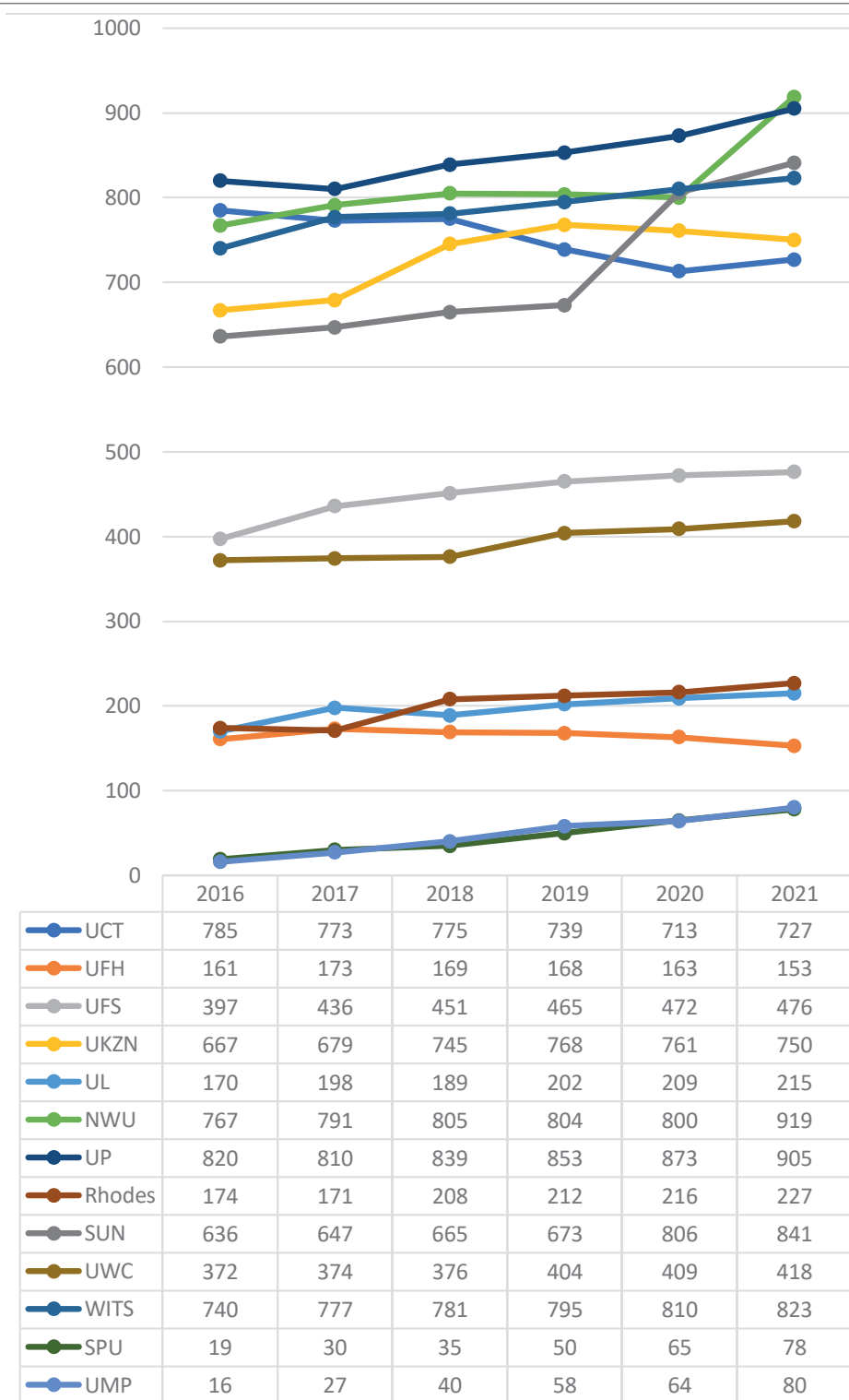


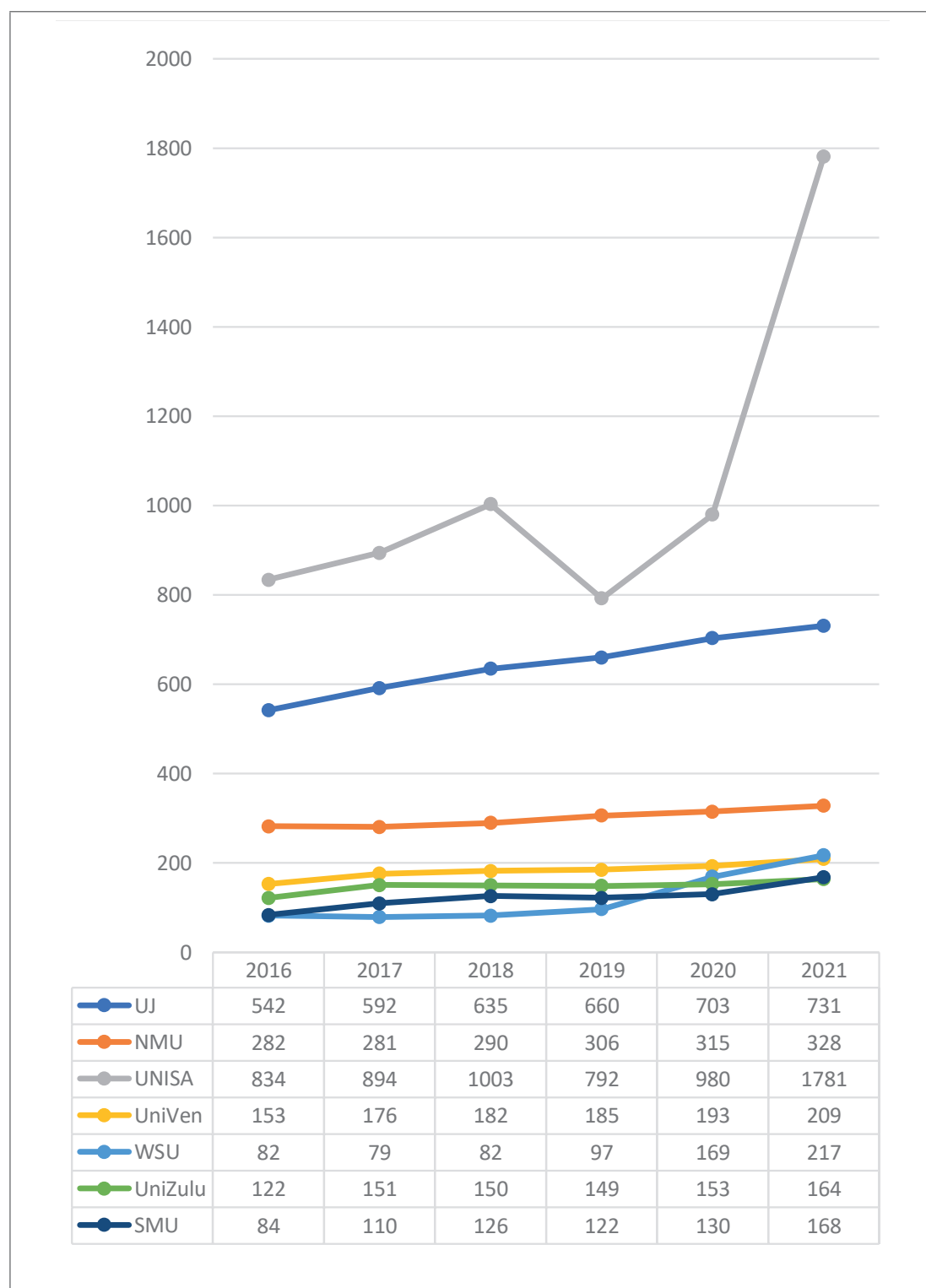
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Figure 36: Headcount permanent academic staff with a Doctoral qualification per university of technology

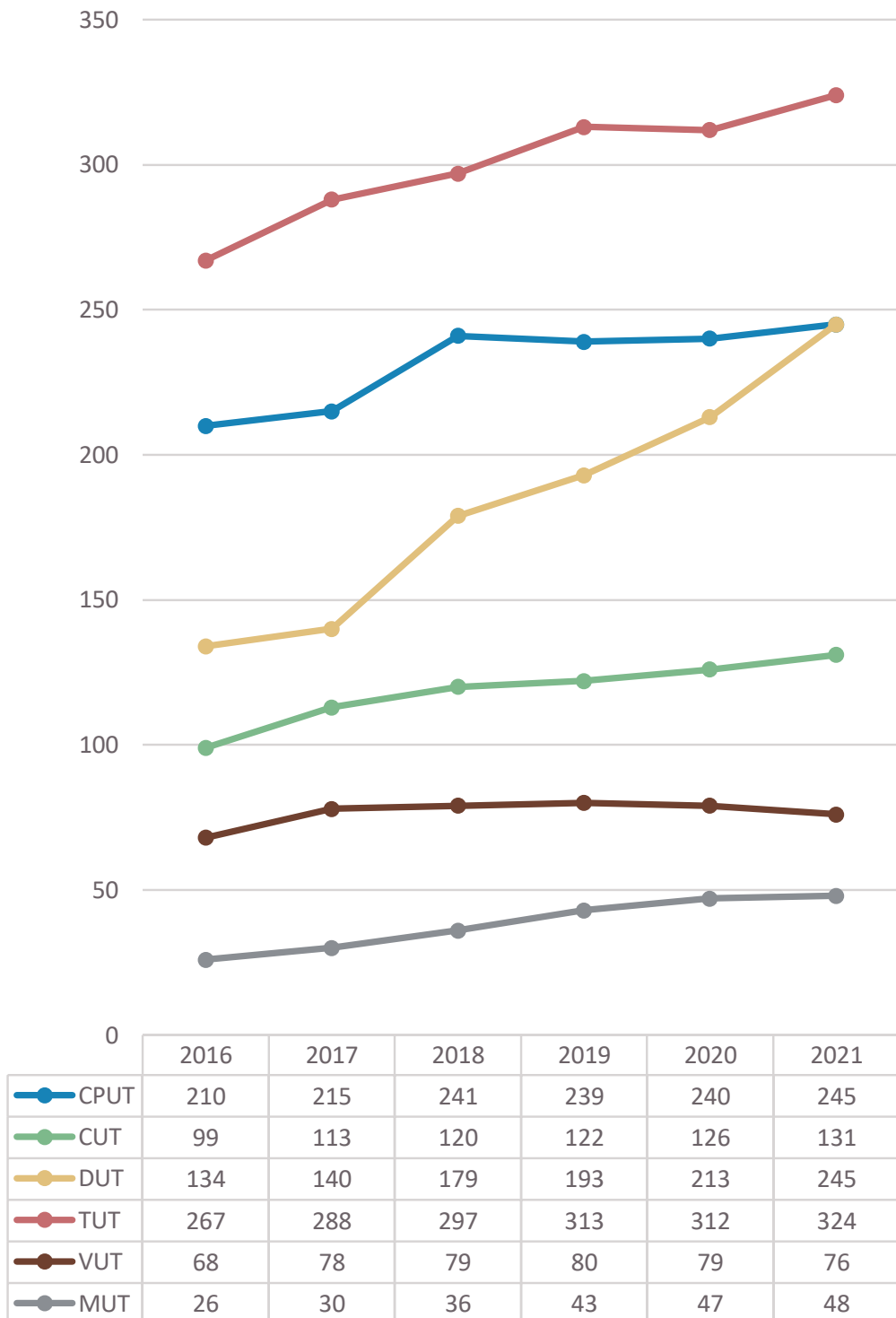


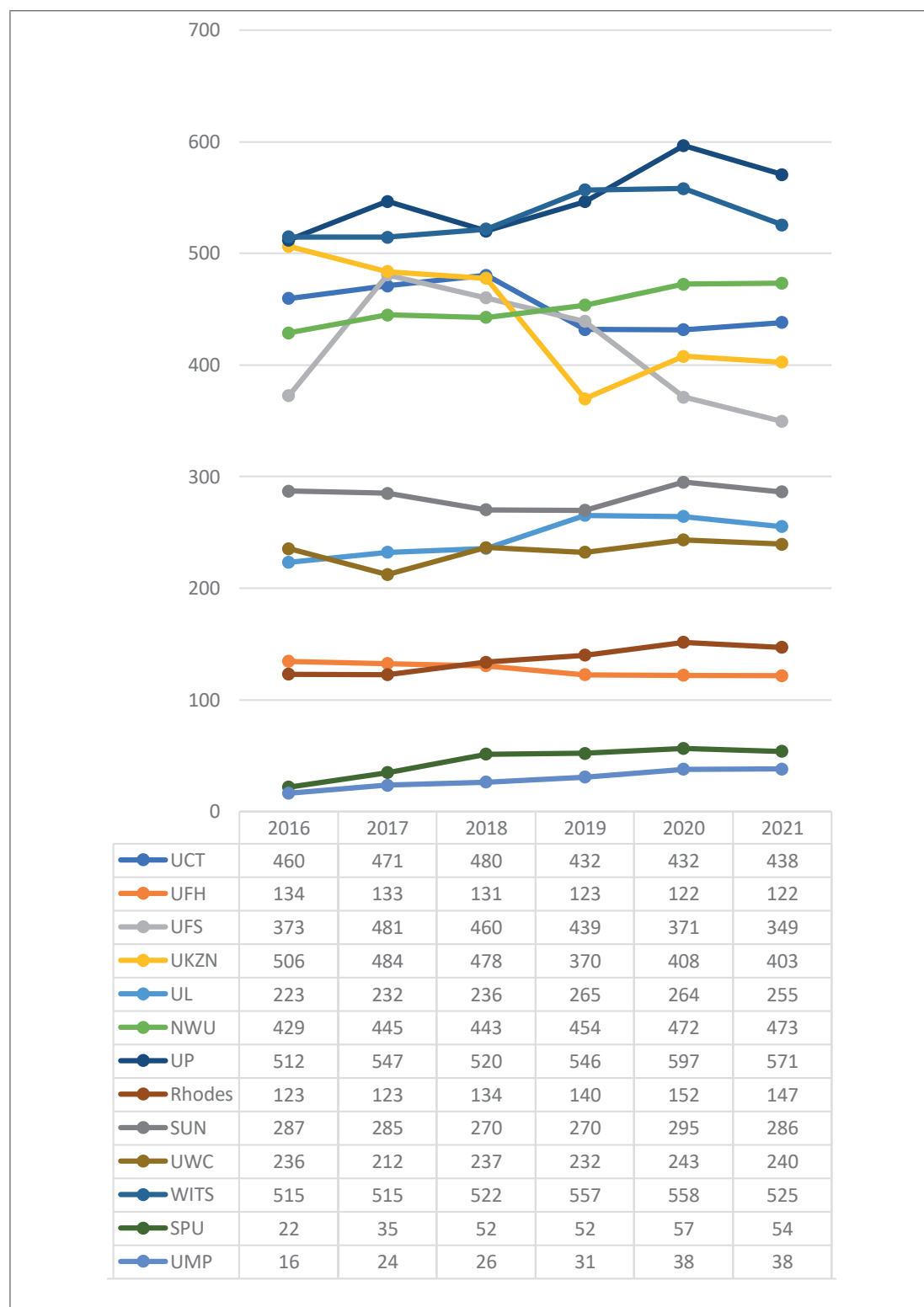
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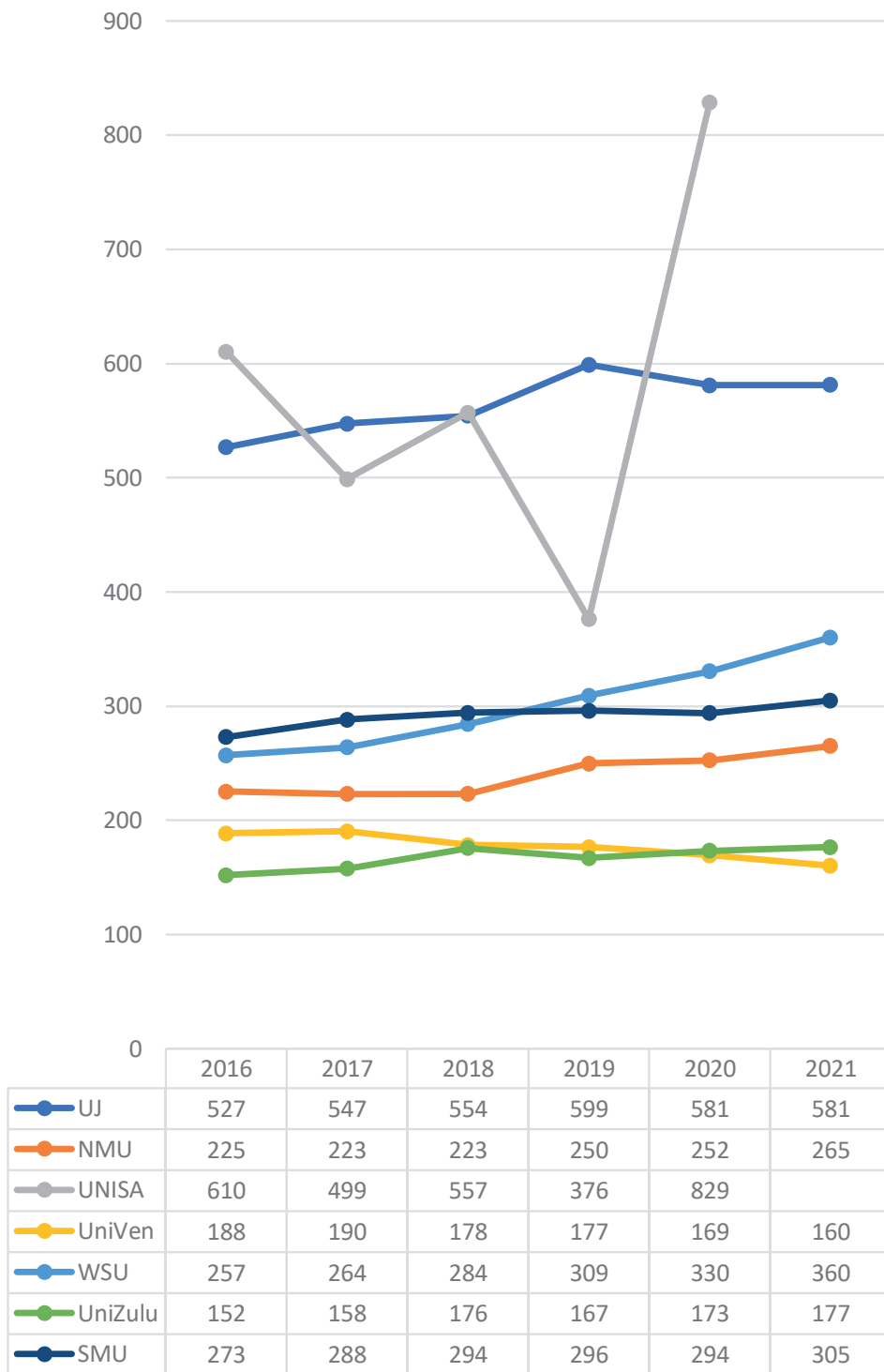
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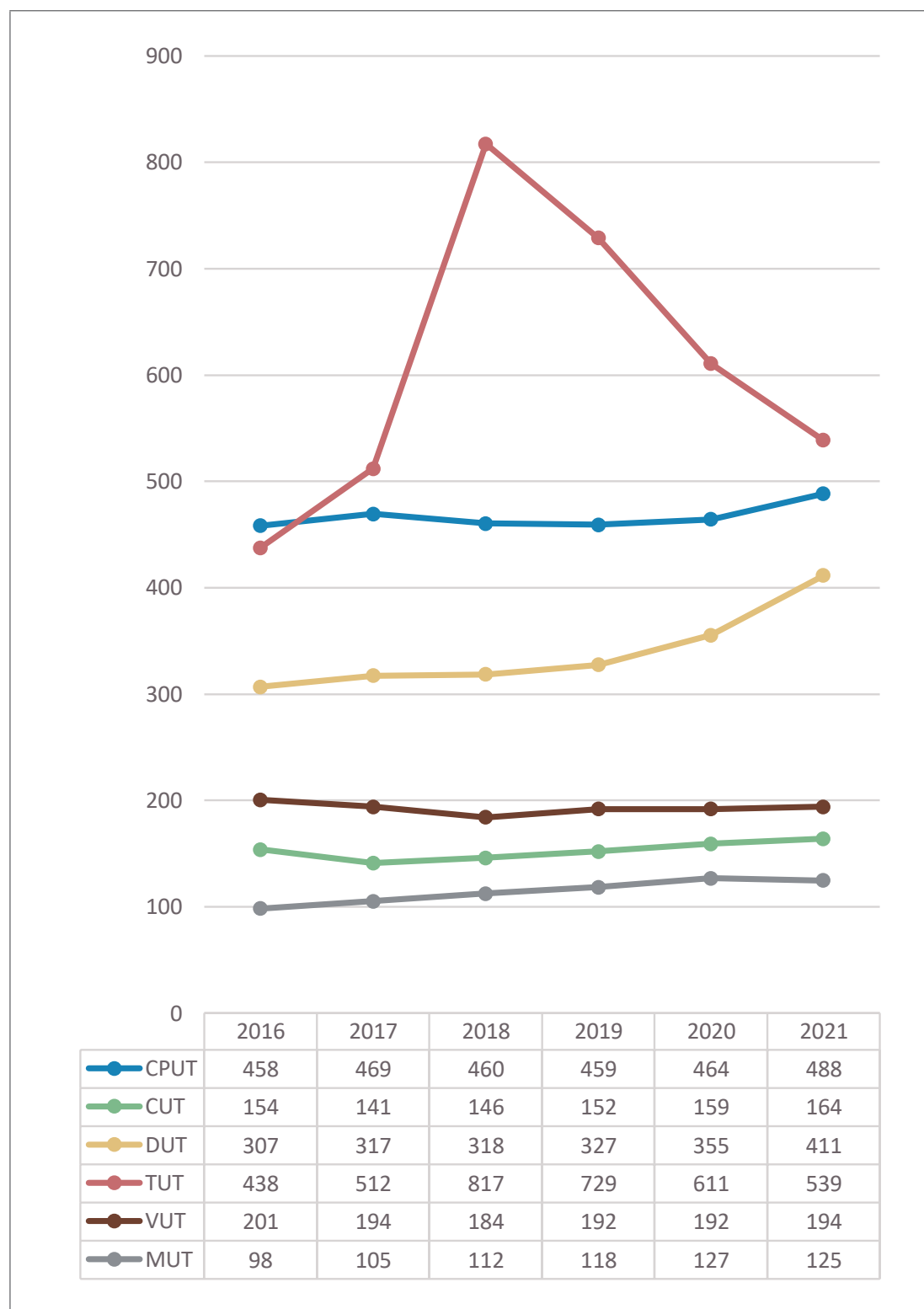
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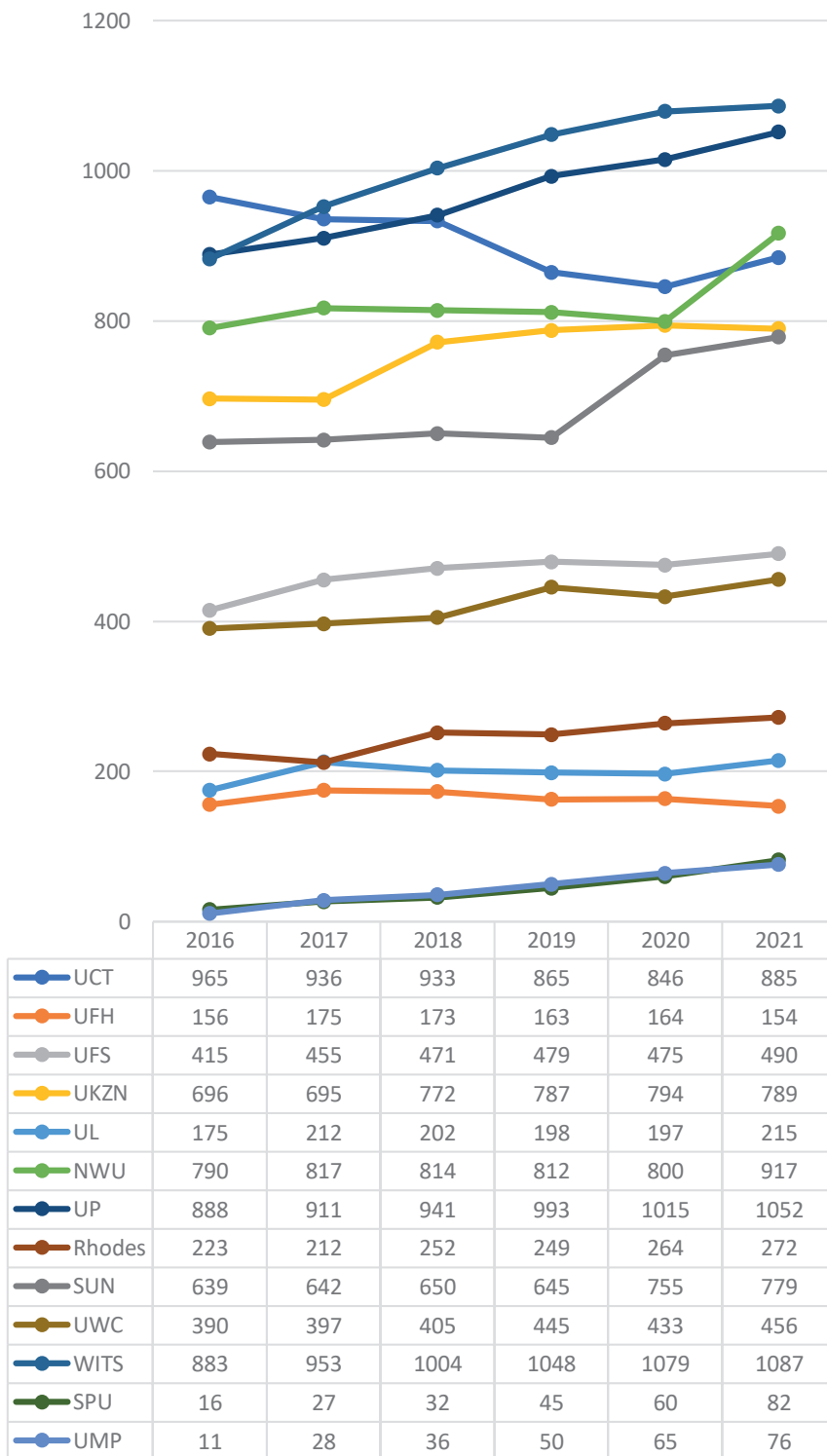
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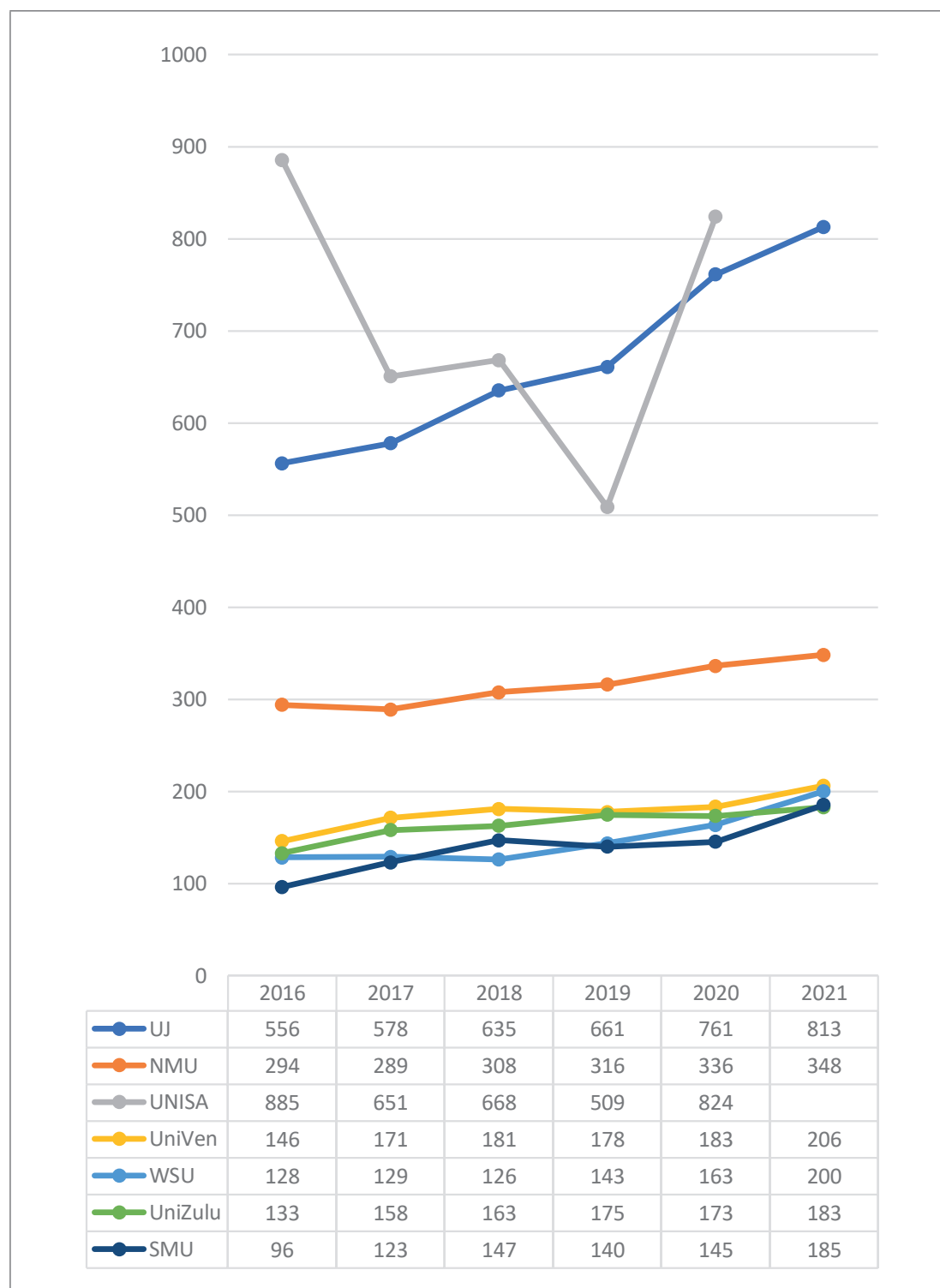
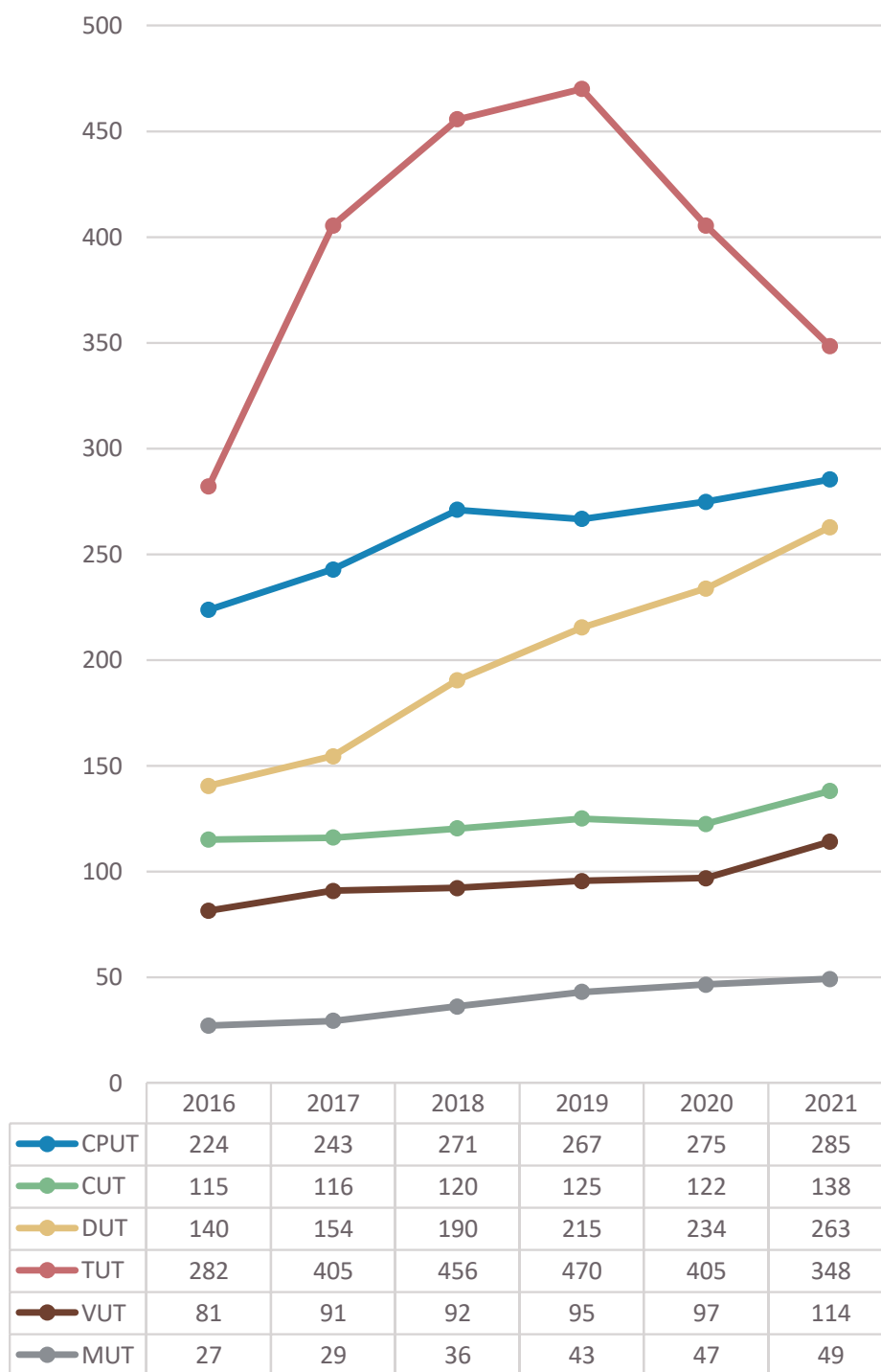
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Figure 42: FTE academic staff with a Doctoral qualification per university of technology

Master's and Doctoral Enrolments and Graduates

Master's and Doctoral Enrolments and Graduates

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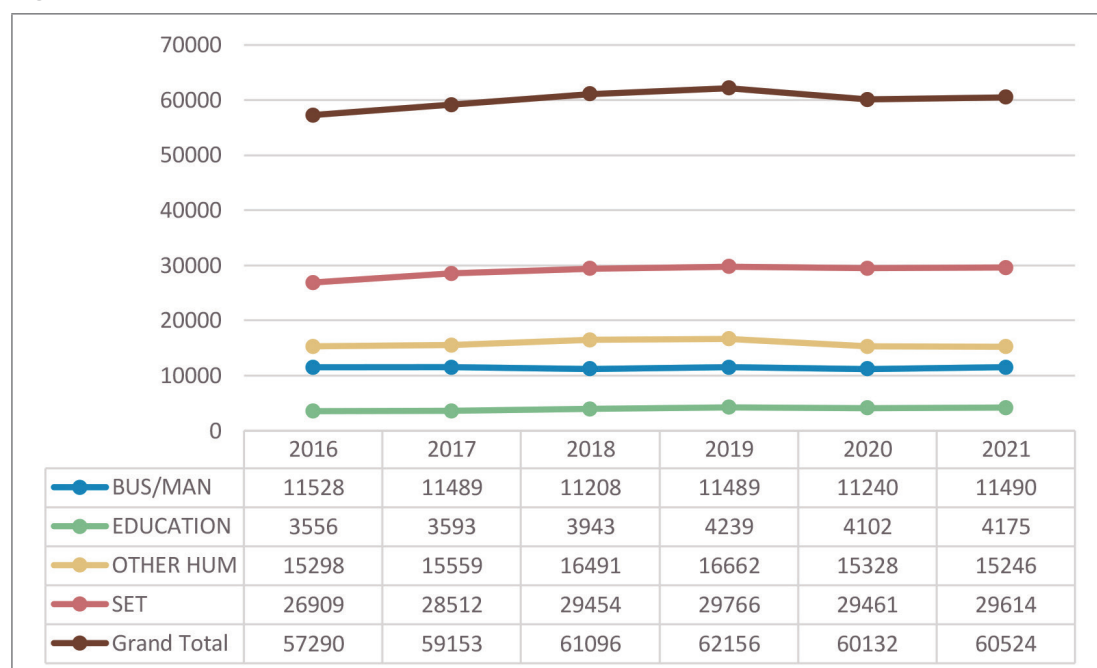


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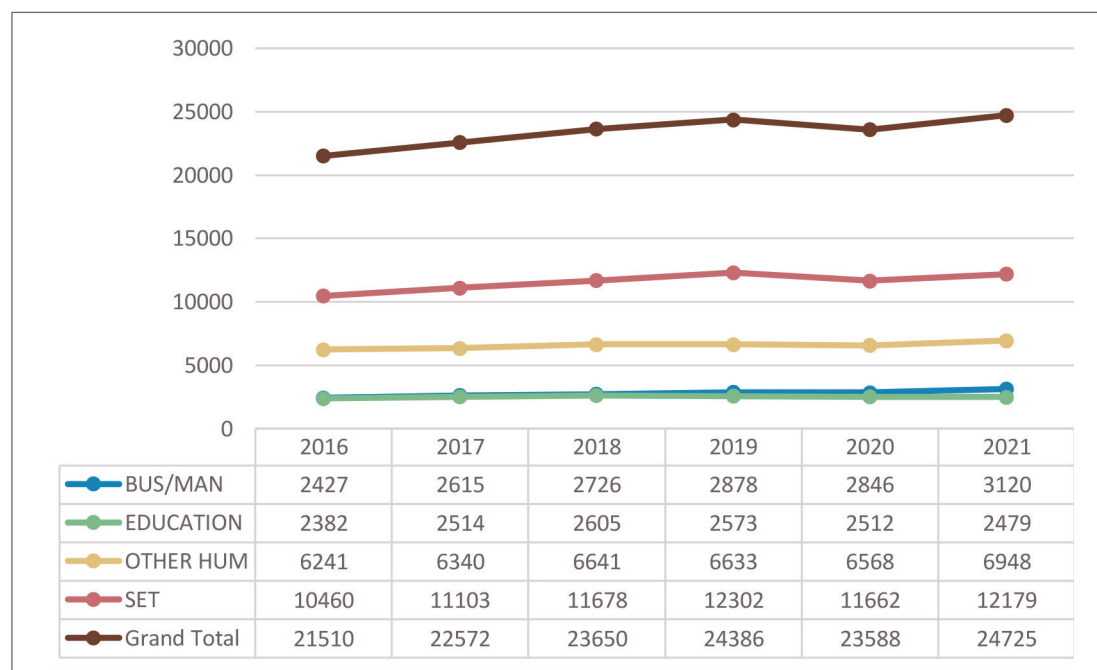


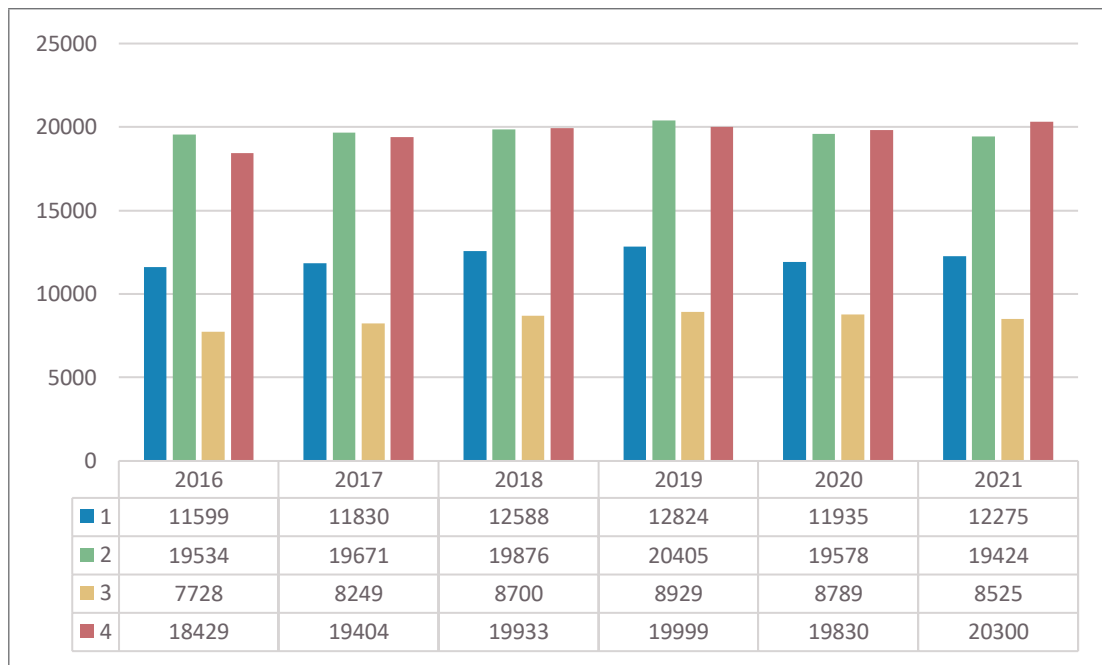
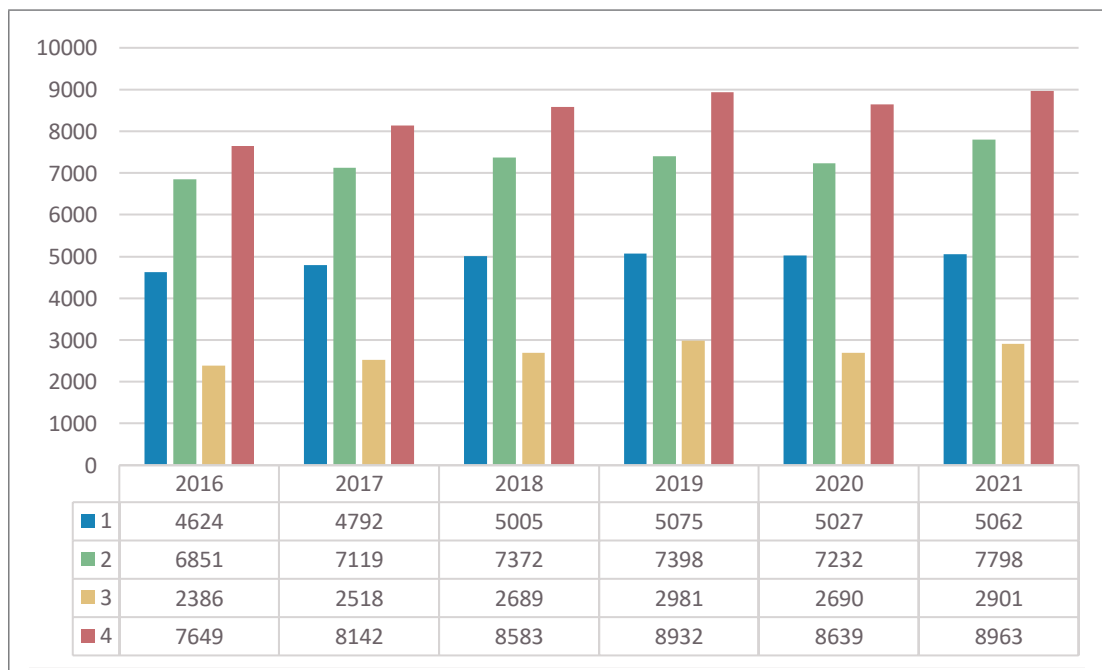
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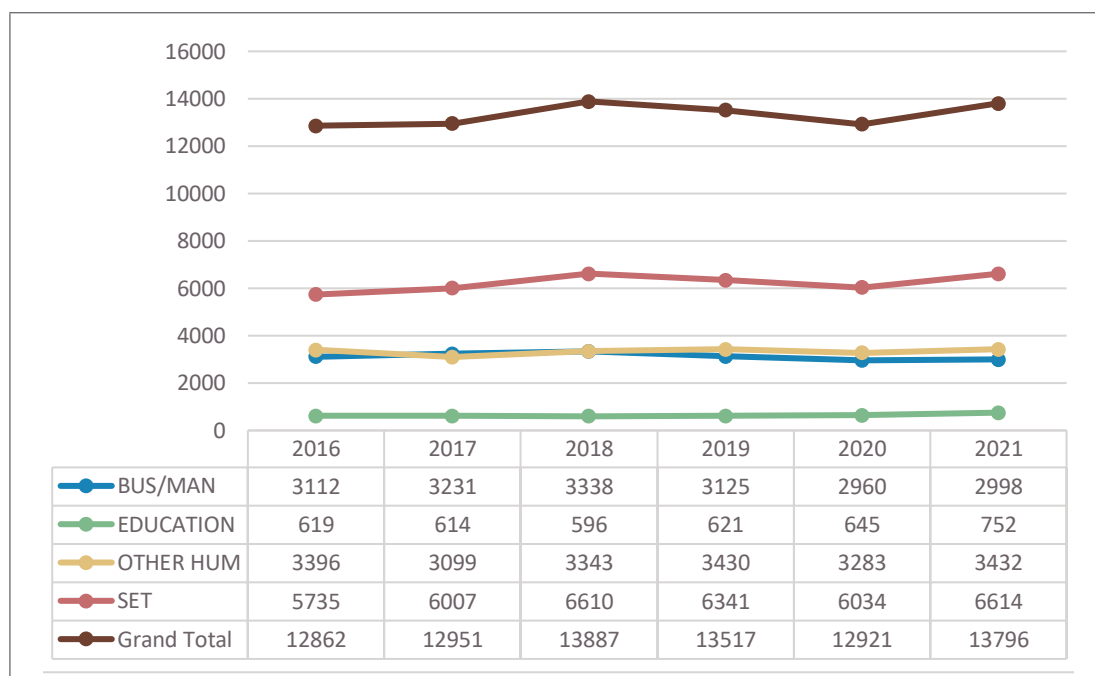
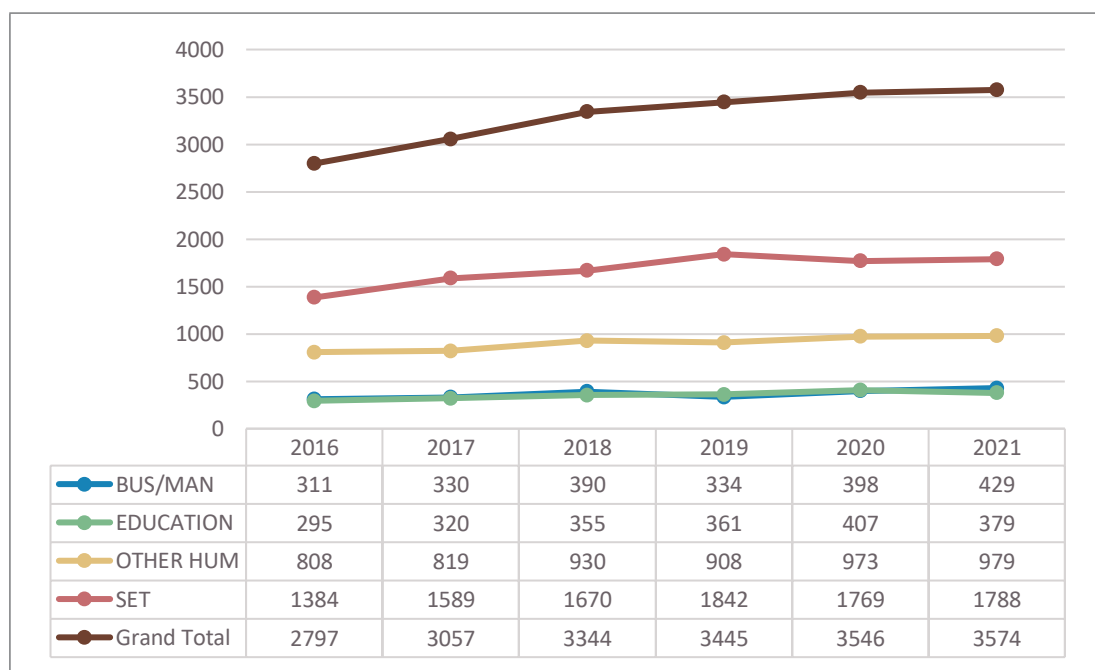
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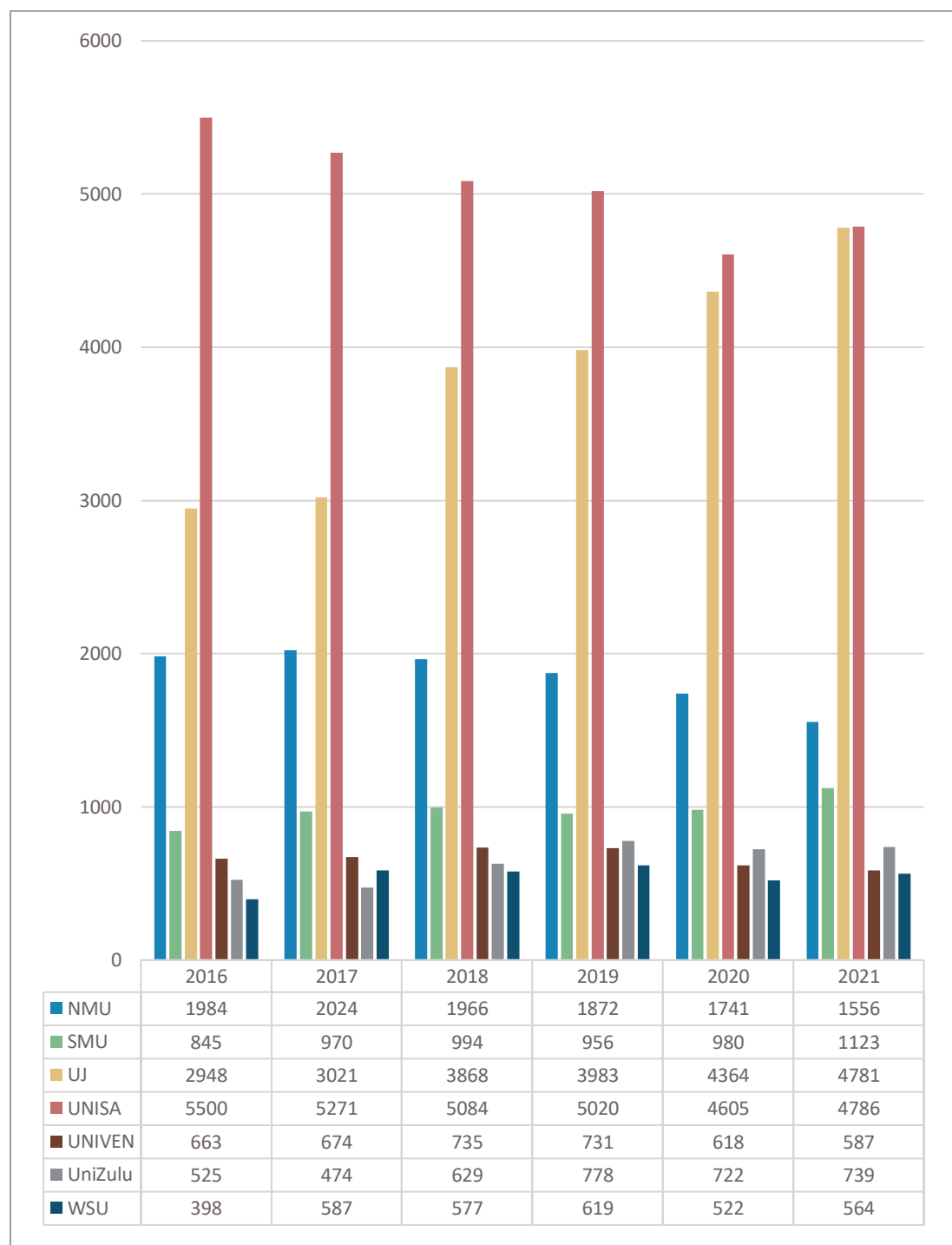
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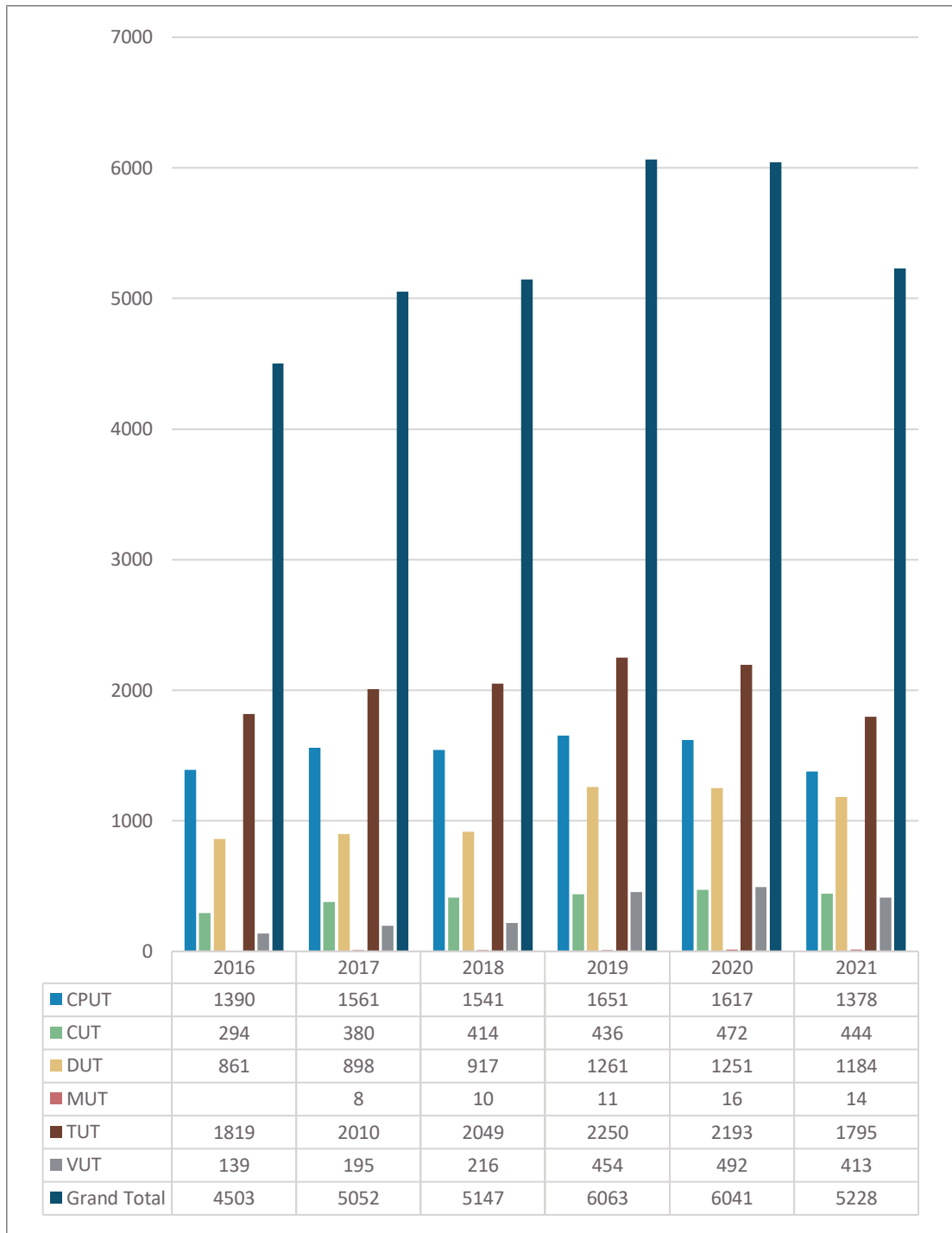
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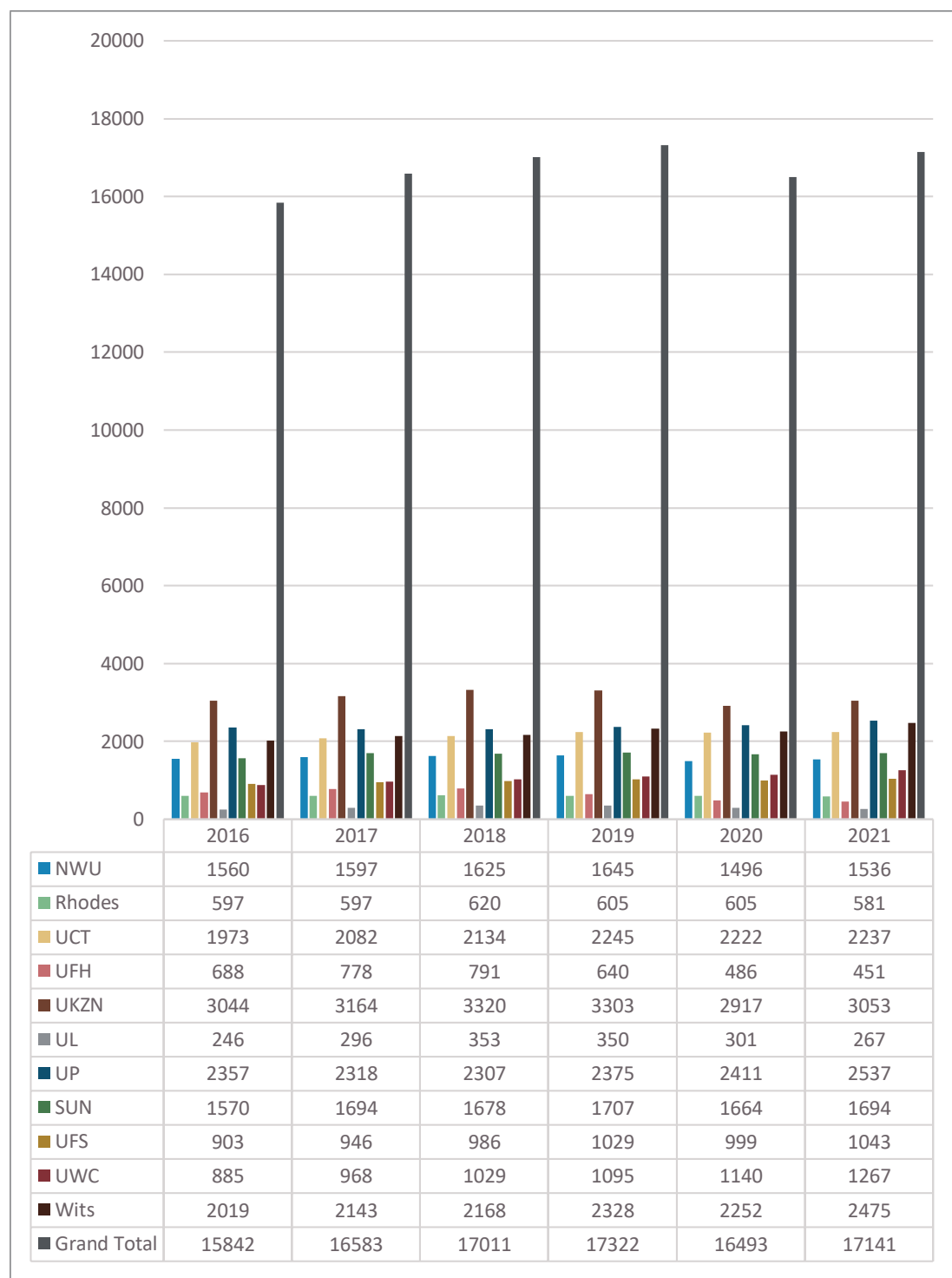
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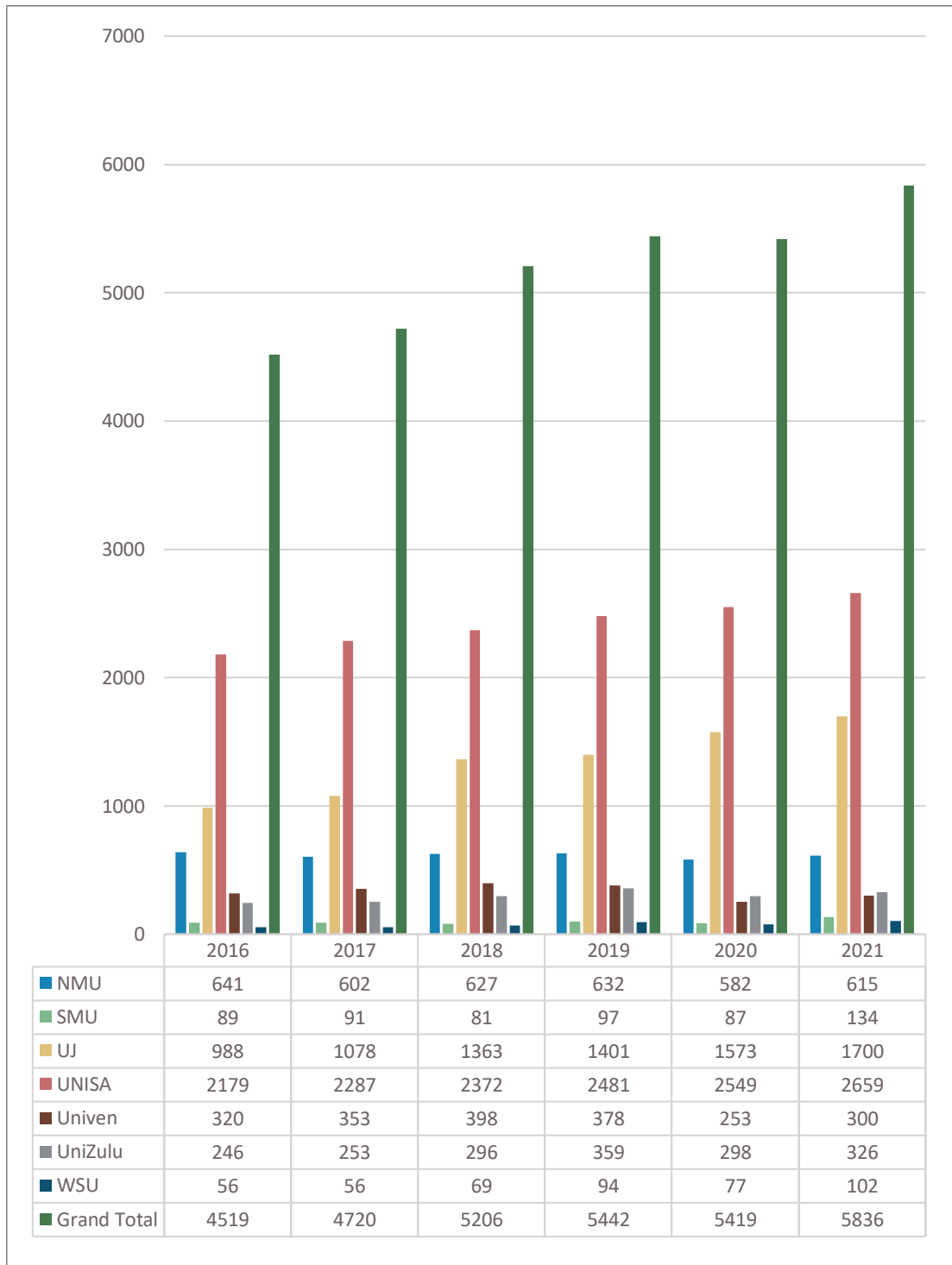
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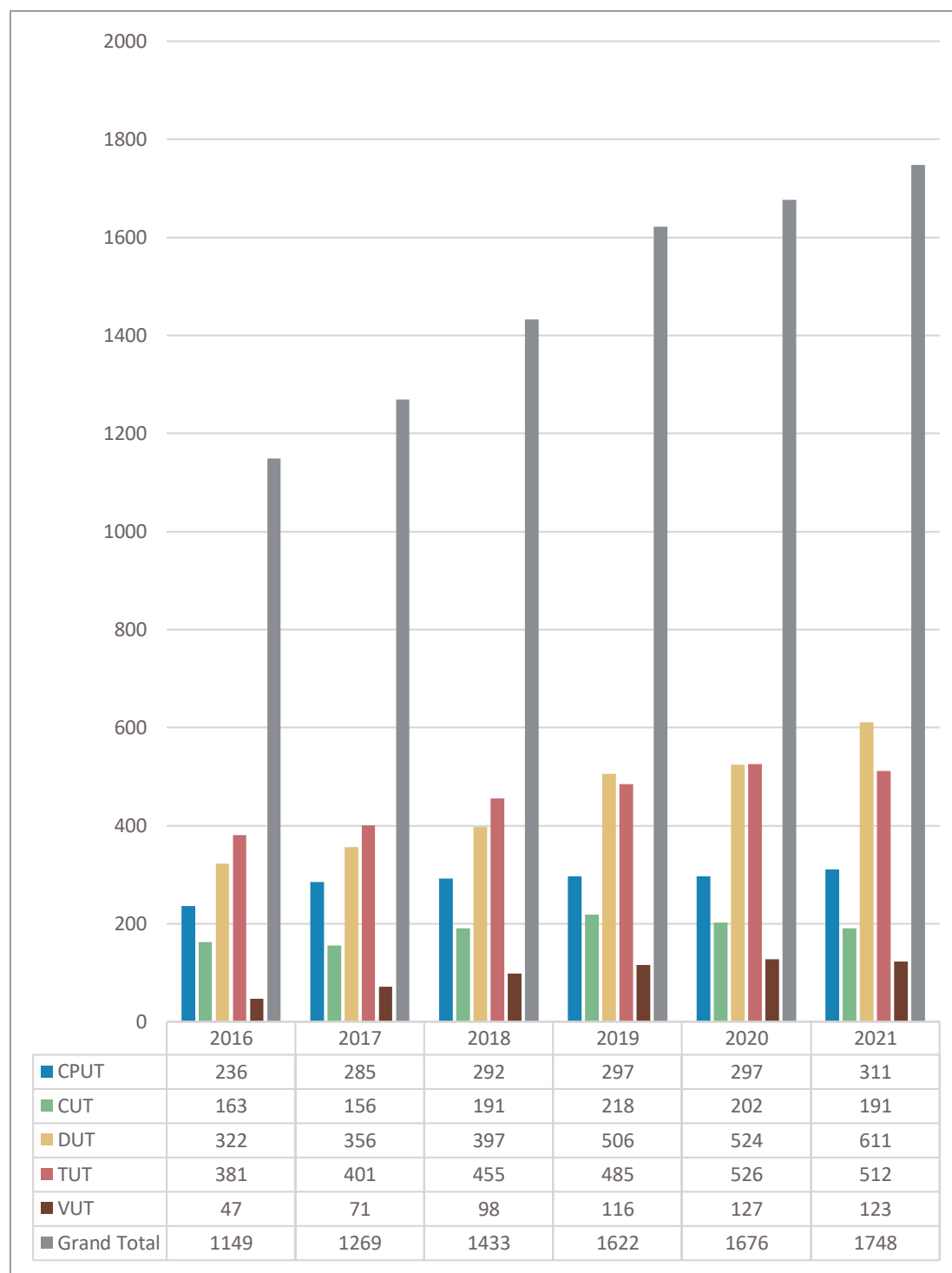
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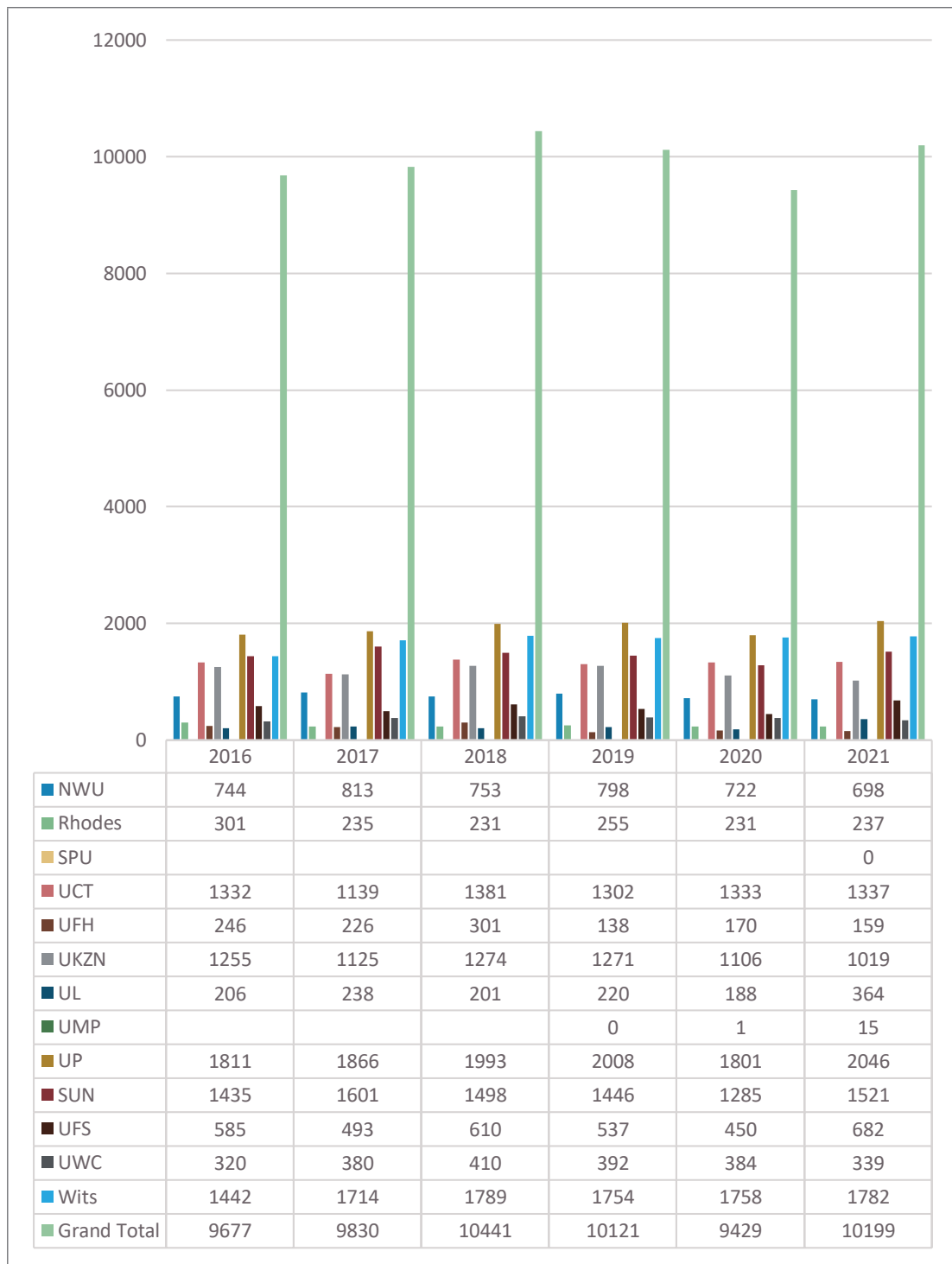
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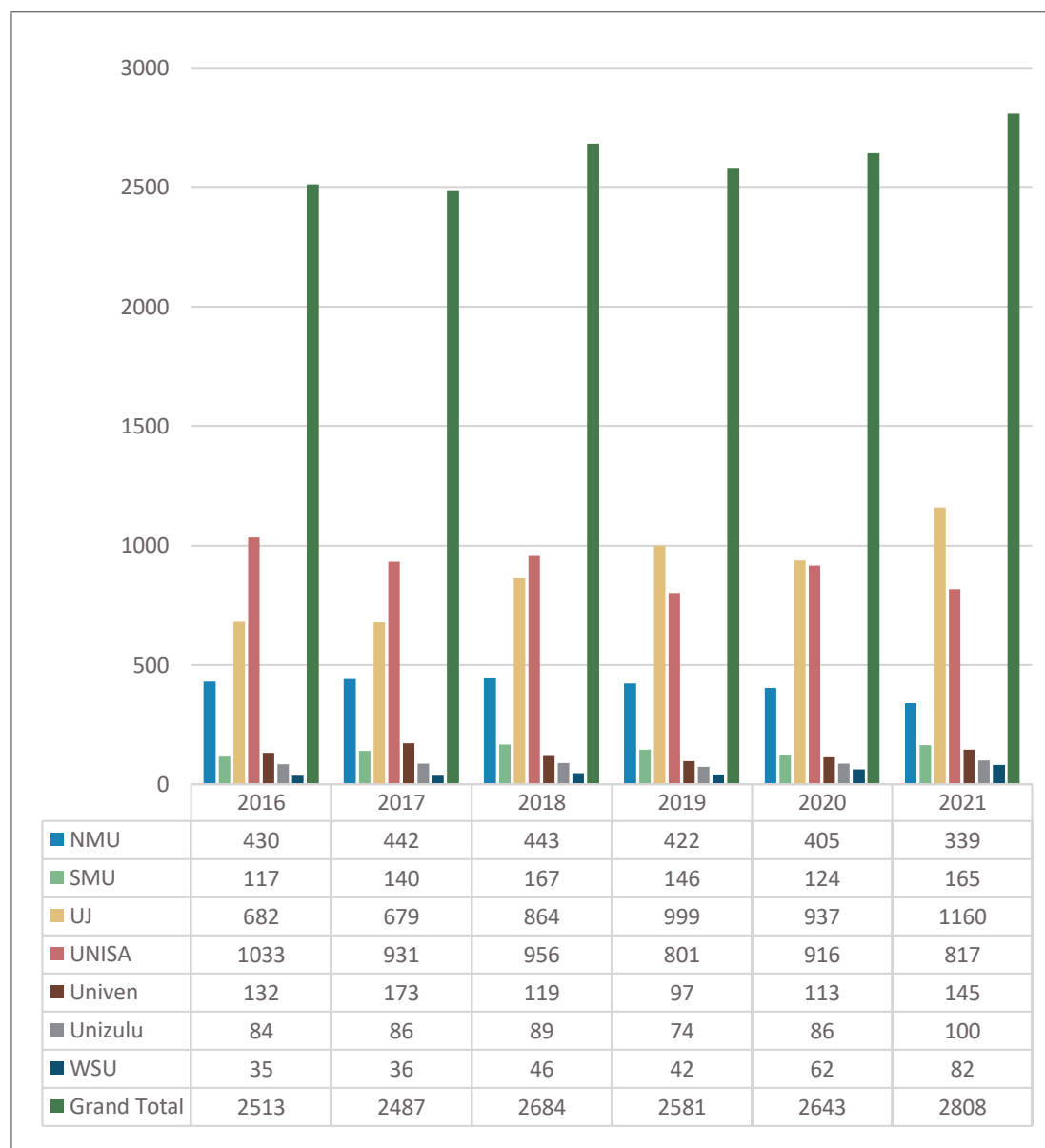
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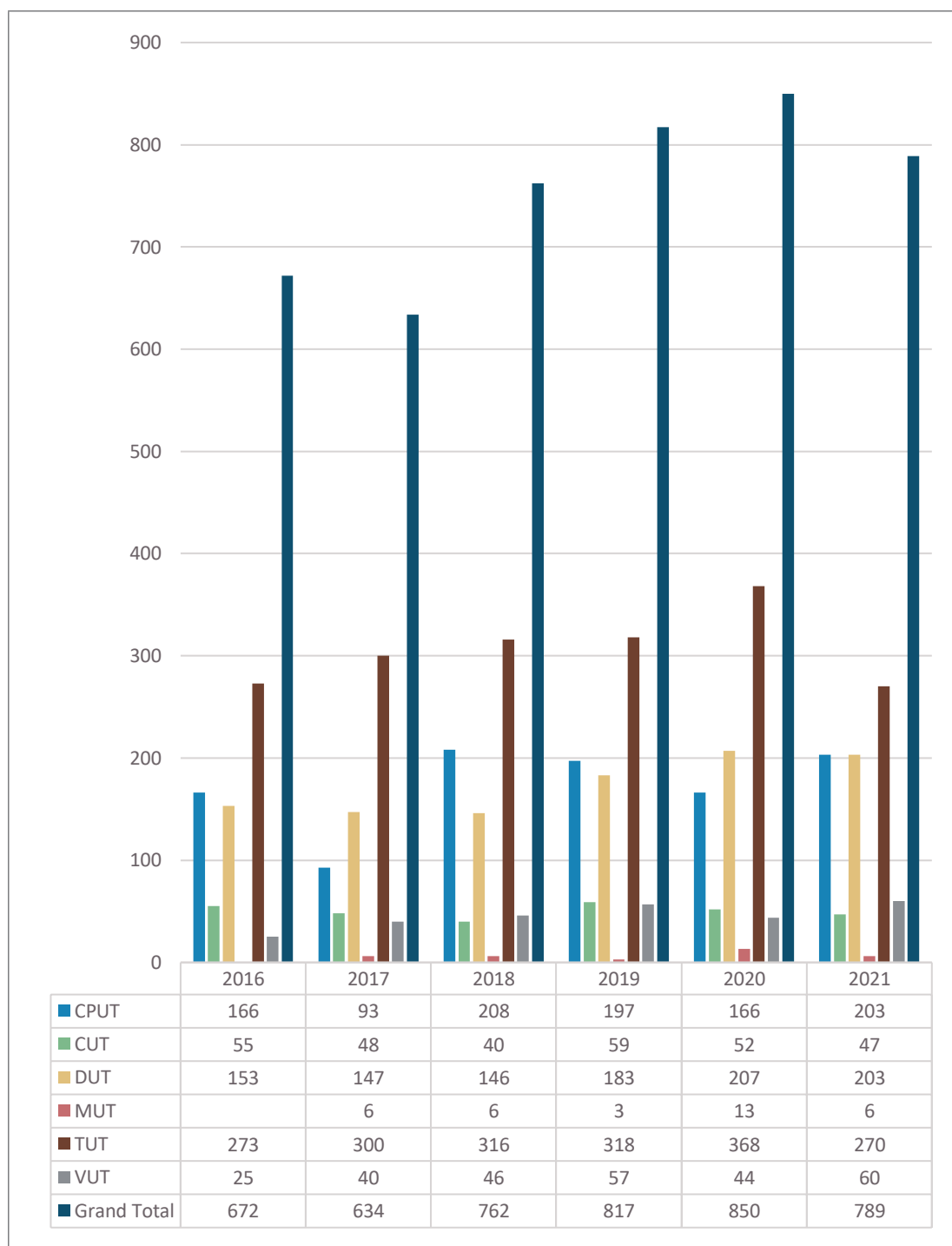
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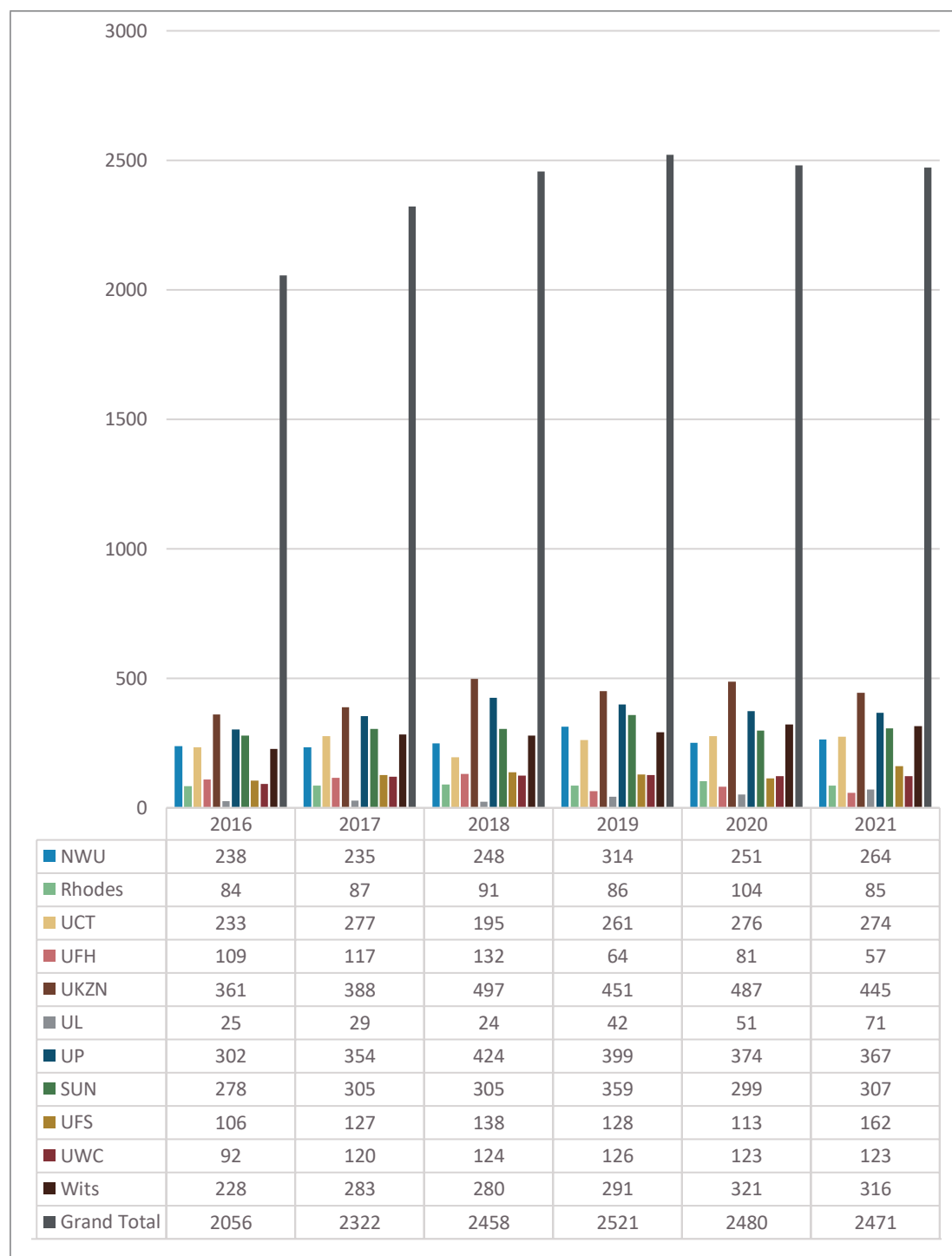
Figure 58: Doctoral Graduates per Traditional University

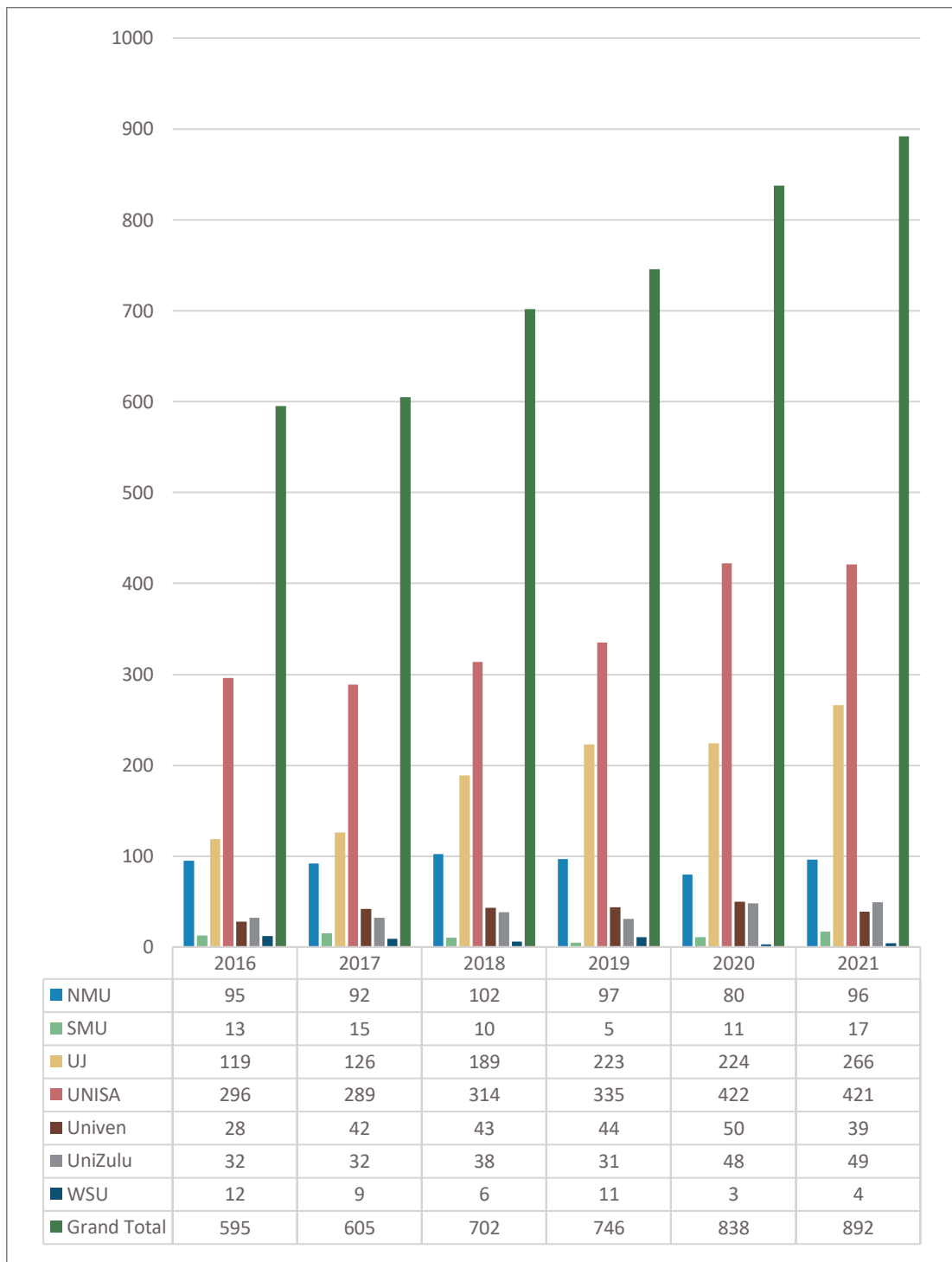
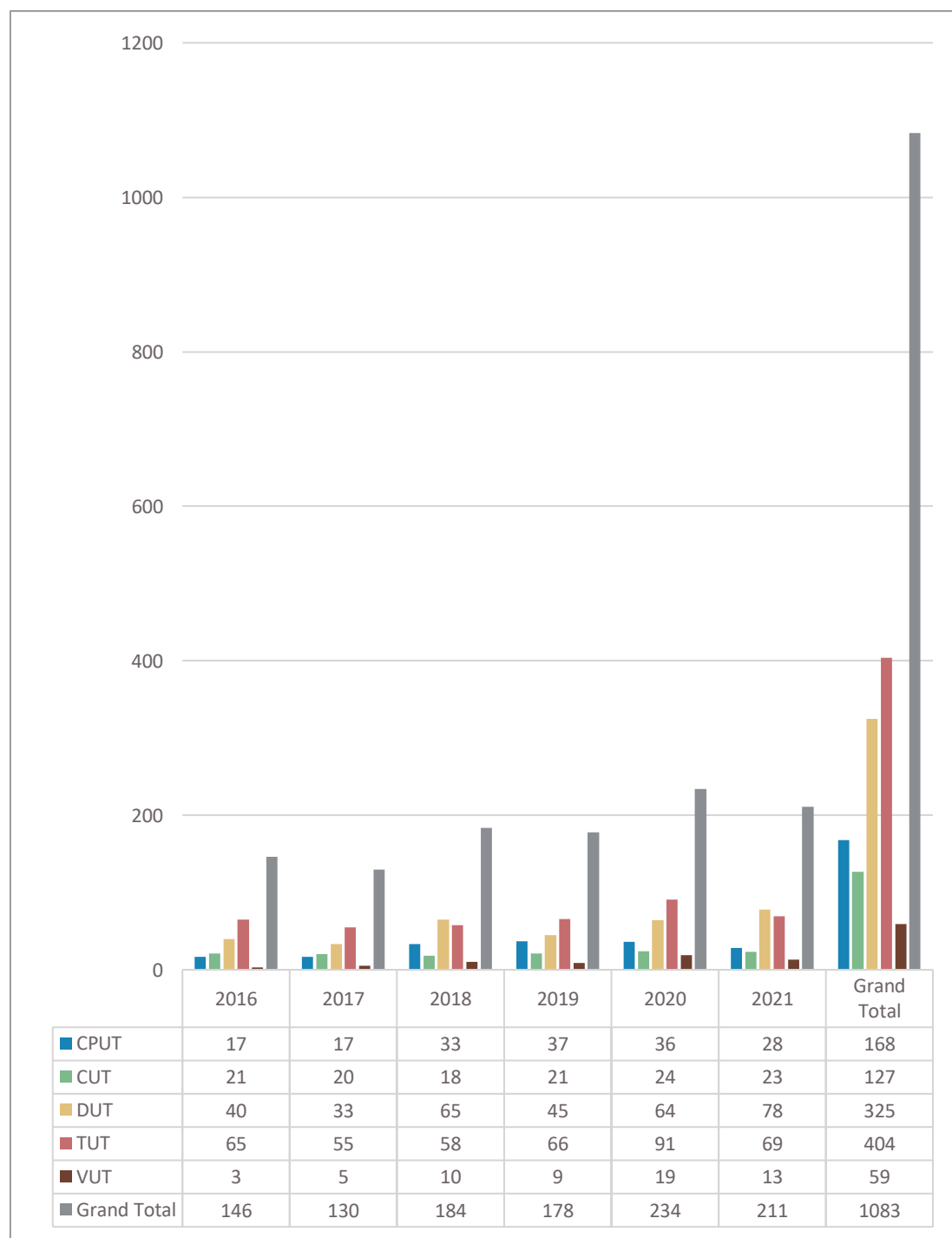
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Figure 60: Doctoral Graduates per University of Technology

Master's Cohort Analysis

Master's Cohort Analysis

Figure 61: Throughput rate for research Master's with first year of enrolment in 2016 (excluding UNISA)

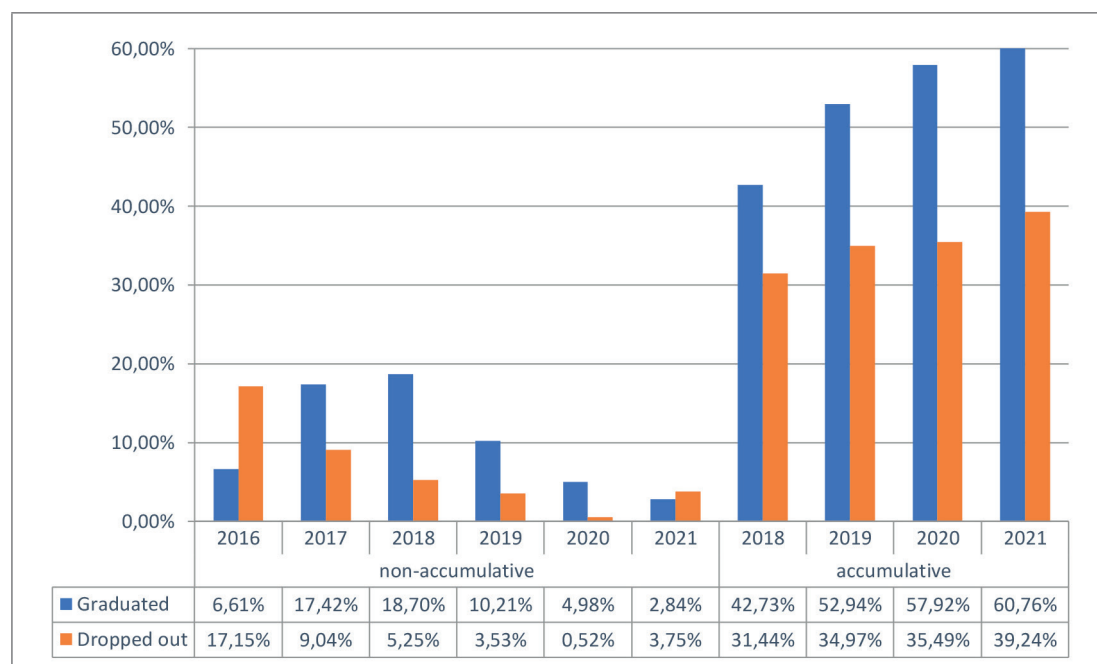


Figure 62: Throughput rates for research Master's with first year of enrolment in 2016 in Science (excluding UNISA)

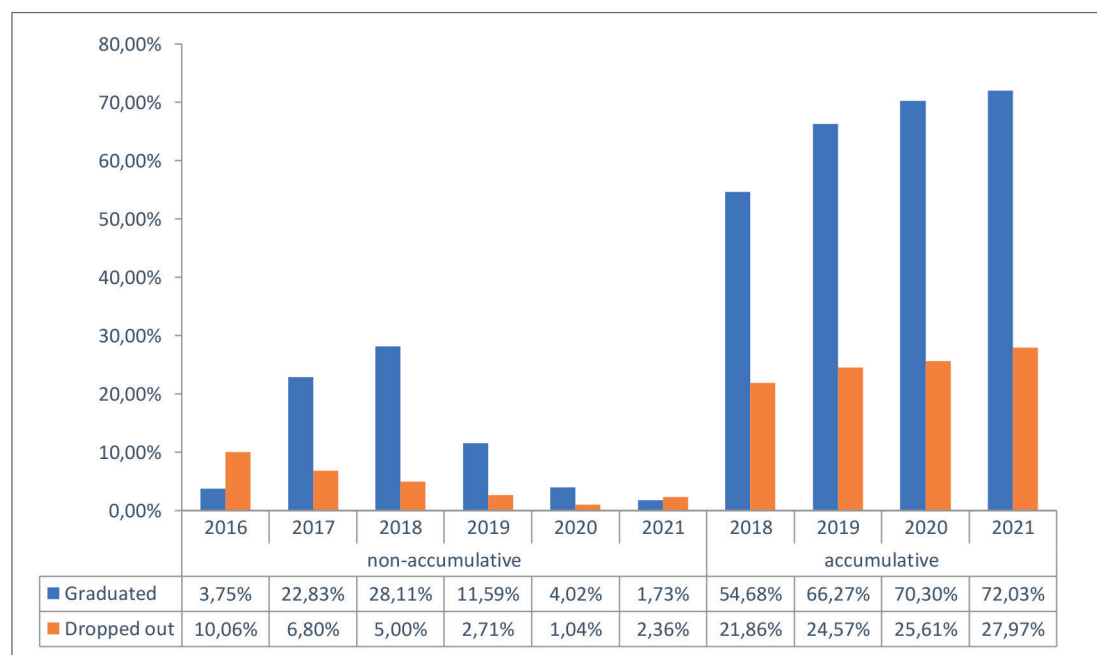


Figure 63: Throughput rates for research Master's with first year of enrolment in 2016 in Engineering (excluding UNISA)

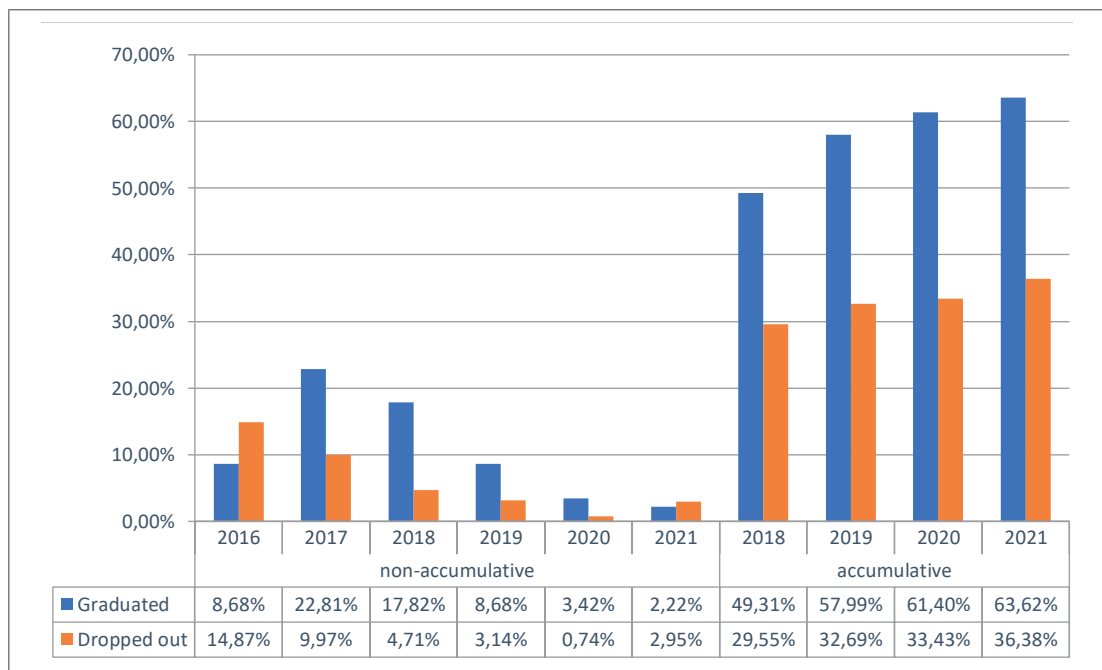


Figure 64: Throughput rates for research Master's with first year of enrolment in 2016 in Business and Management Science and Planning (excluding UNISA)

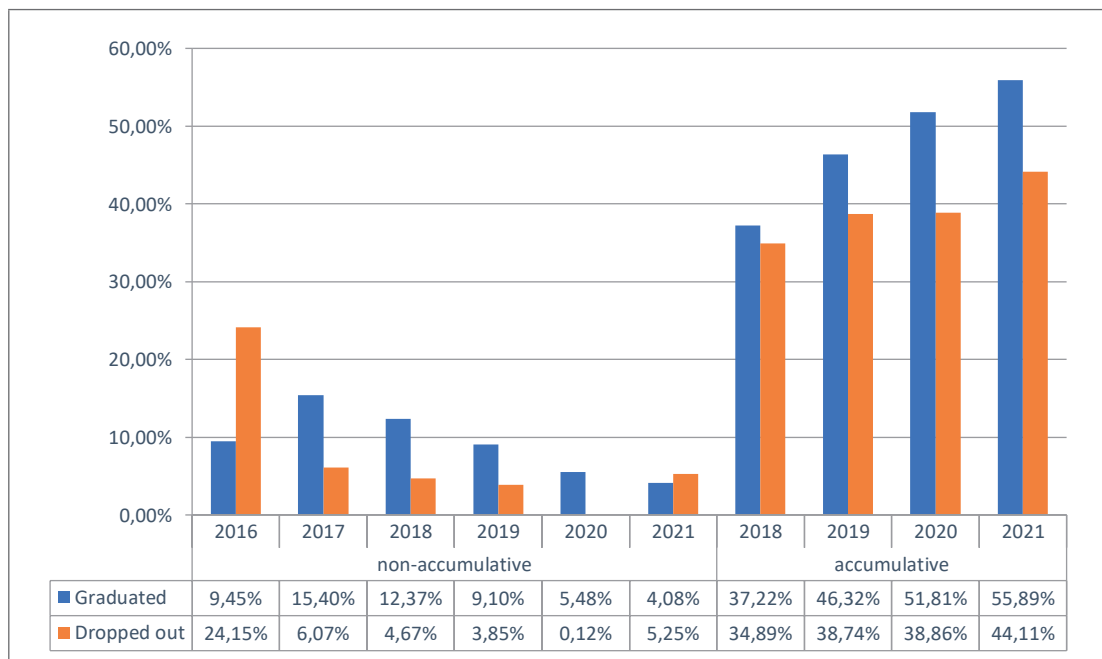


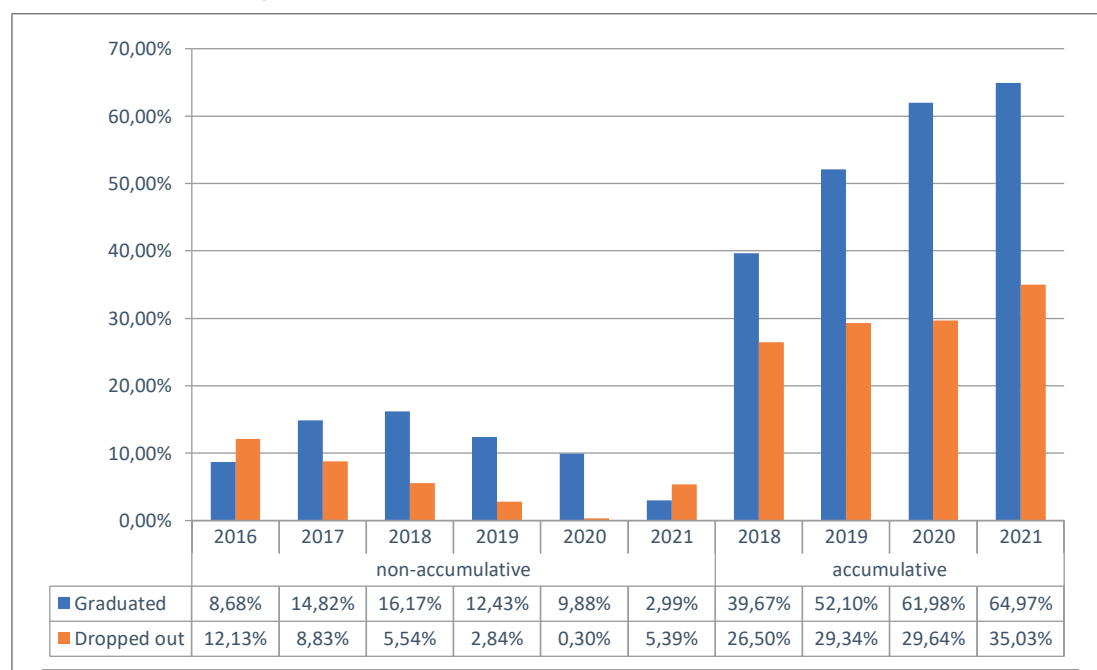
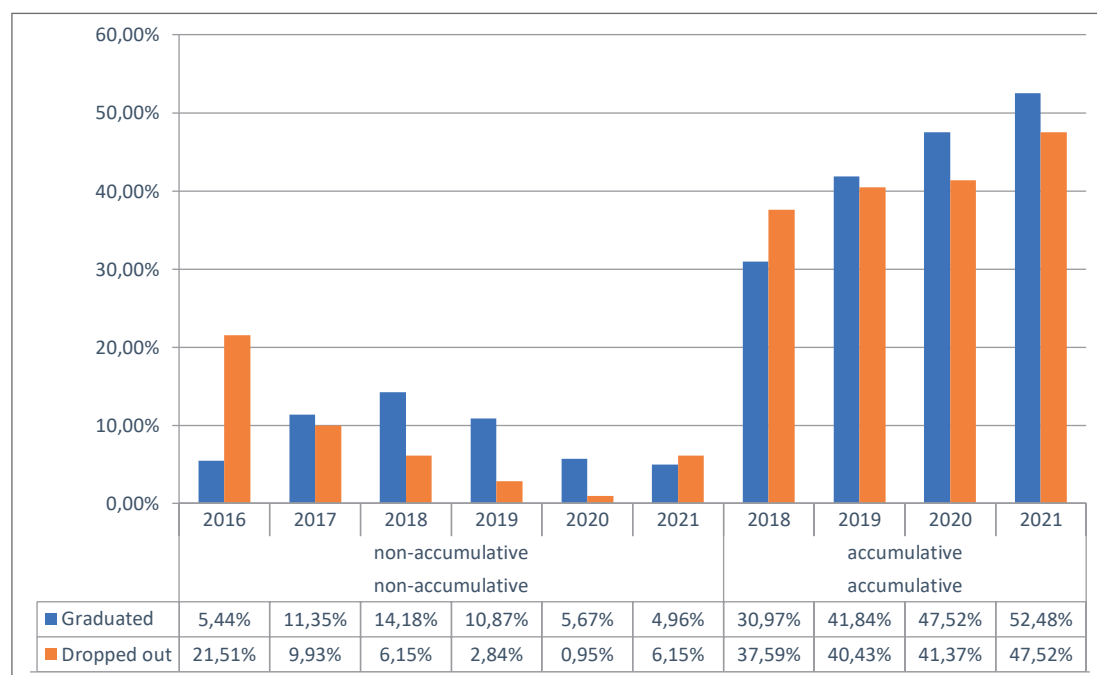
Figure 65: Throughput rates for research Master's with first year of enrolment in 2016 in Health (excluding UNISA)**Figure 66:** Throughput rates for research Master's with first year of enrolment in 2016 in Education (excluding UNISA)

Figure 67: 156 Throughput rates for research Master's with first year of enrolment in 2016 in Agriculture (excluding UNISA)

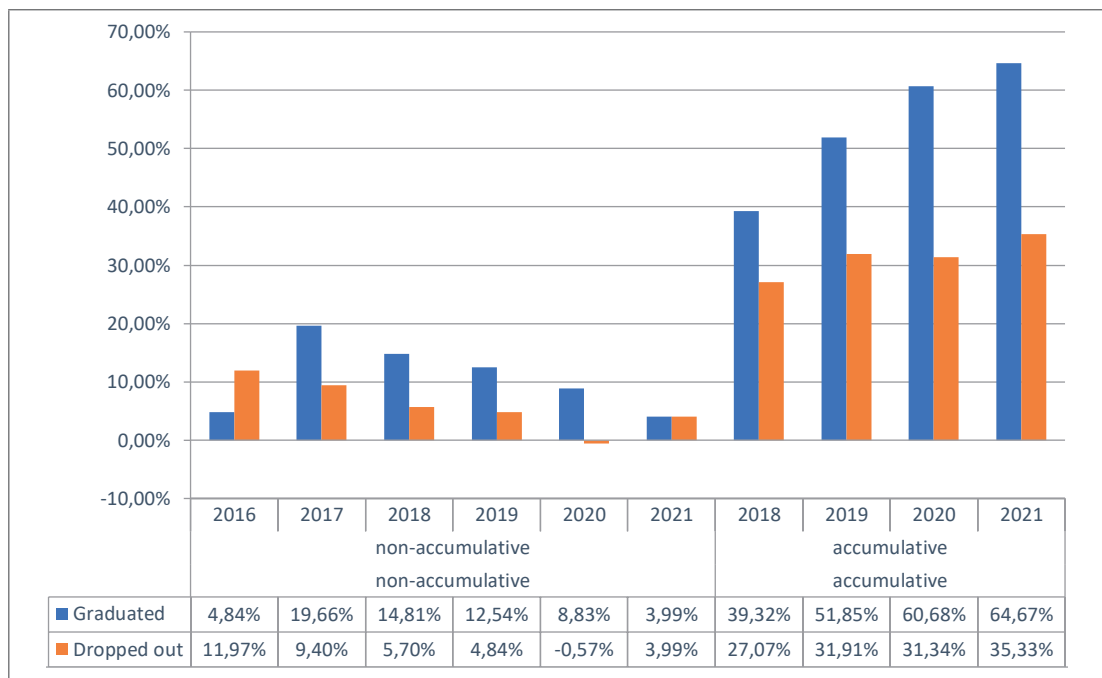


Figure 68: Percentage of the 2016 cohort doing research Master's that graduated in 5 years (by 2021)

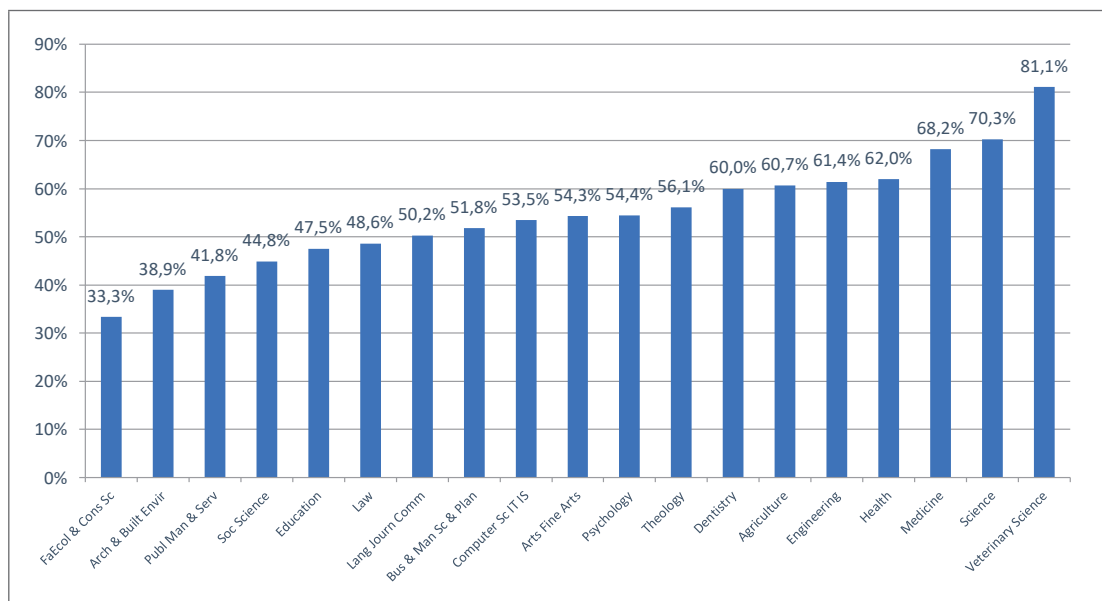


Figure 69: Headcount of the 2016 cohort doing research Master’s that graduated in 5 years (by 2021)

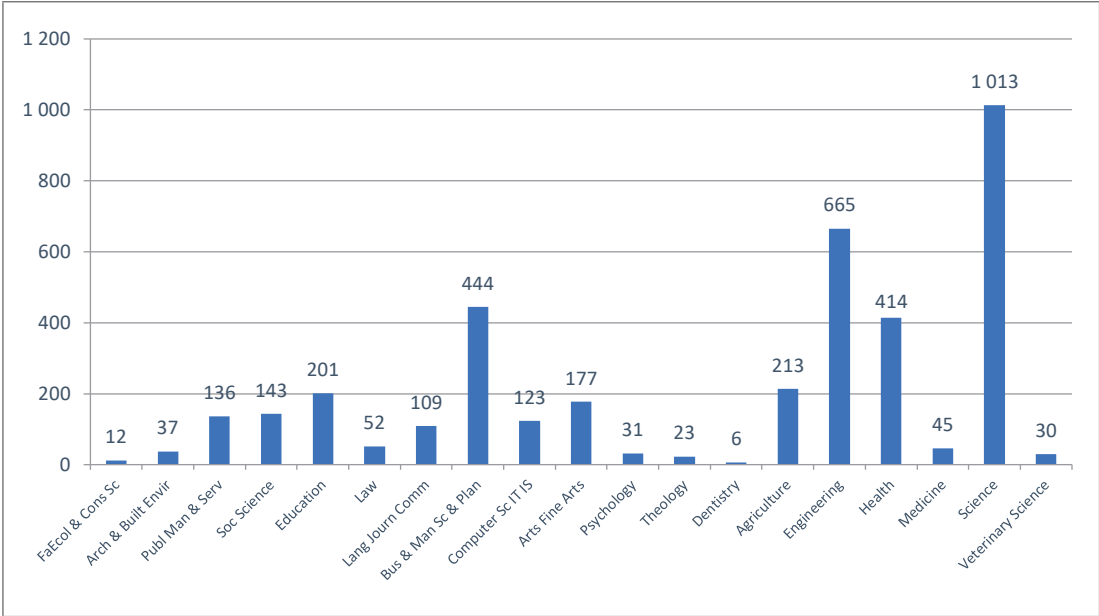


Figure 70: Throughput rates by race for Master’s degrees with first year of enrolment in 2016 (excluding UNISA) non-accumulative

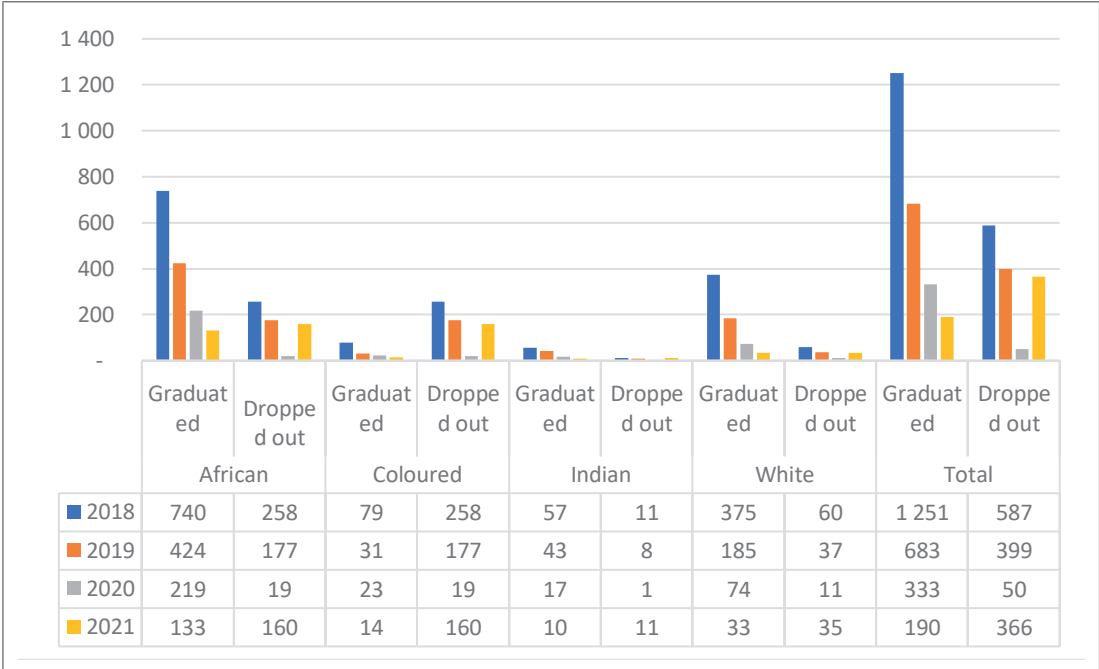


Figure 71: Throughput rates by race for Master's degrees with first year of enrolment in 2016 (excluding UNISA) – accumulative

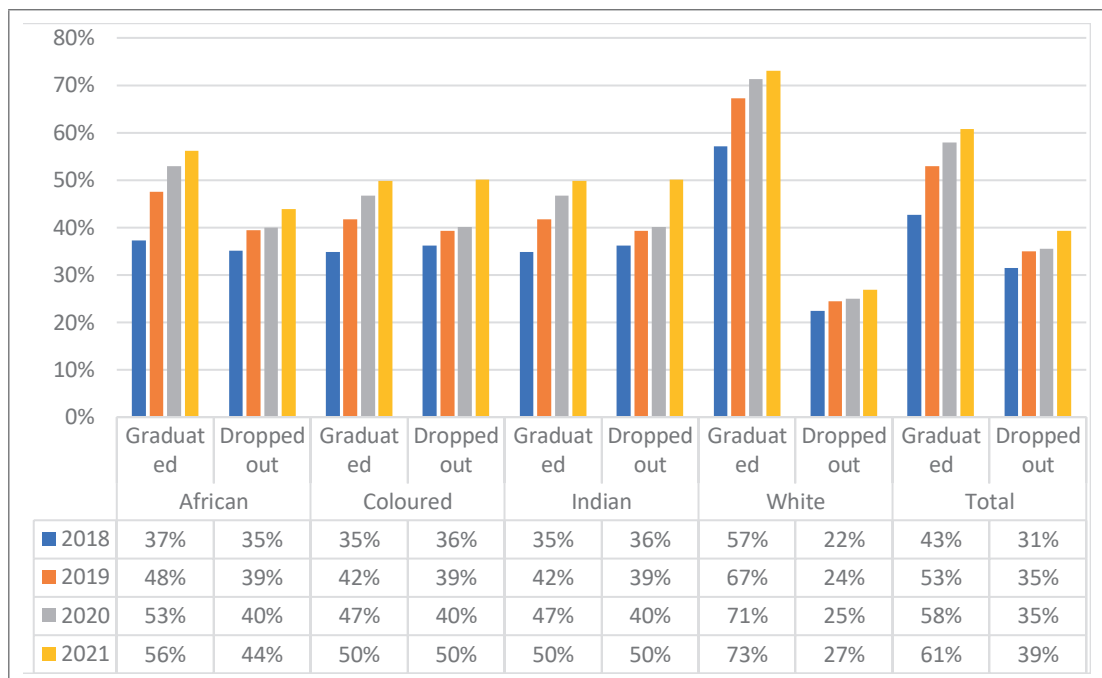


Figure 72: Throughput rates by gender for Master's degrees with first year of enrolment in 2016 (excluding UNISA) non-accumulative

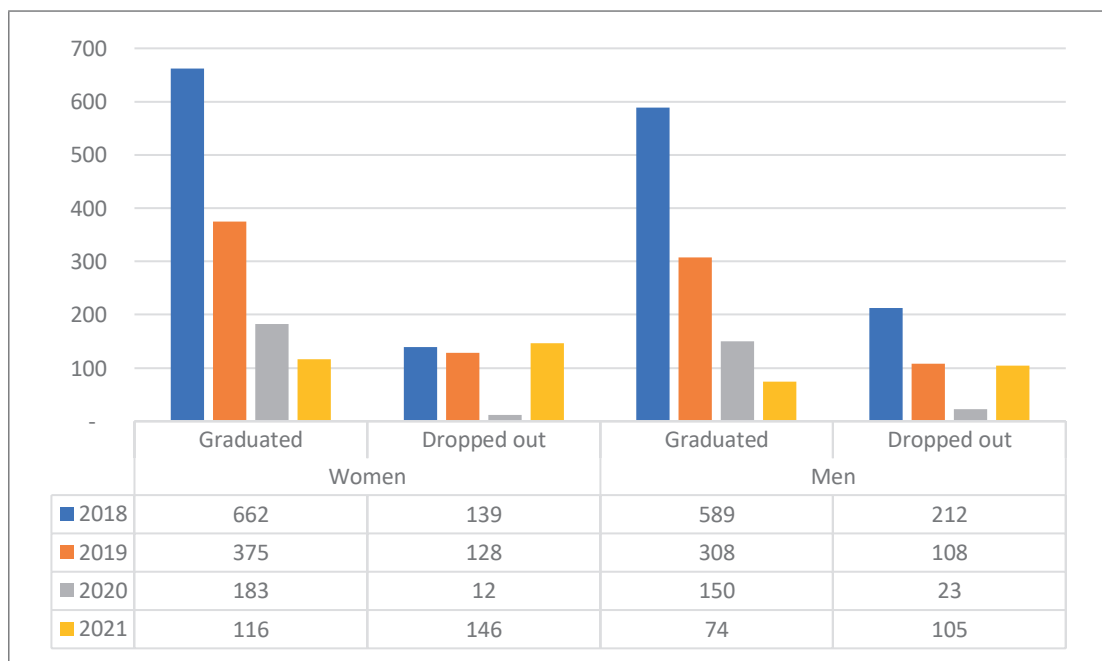


Figure 73: Throughput rates by gender for Master's degrees with first year of enrolment in 2016 (excluding UNISA) - accumulative

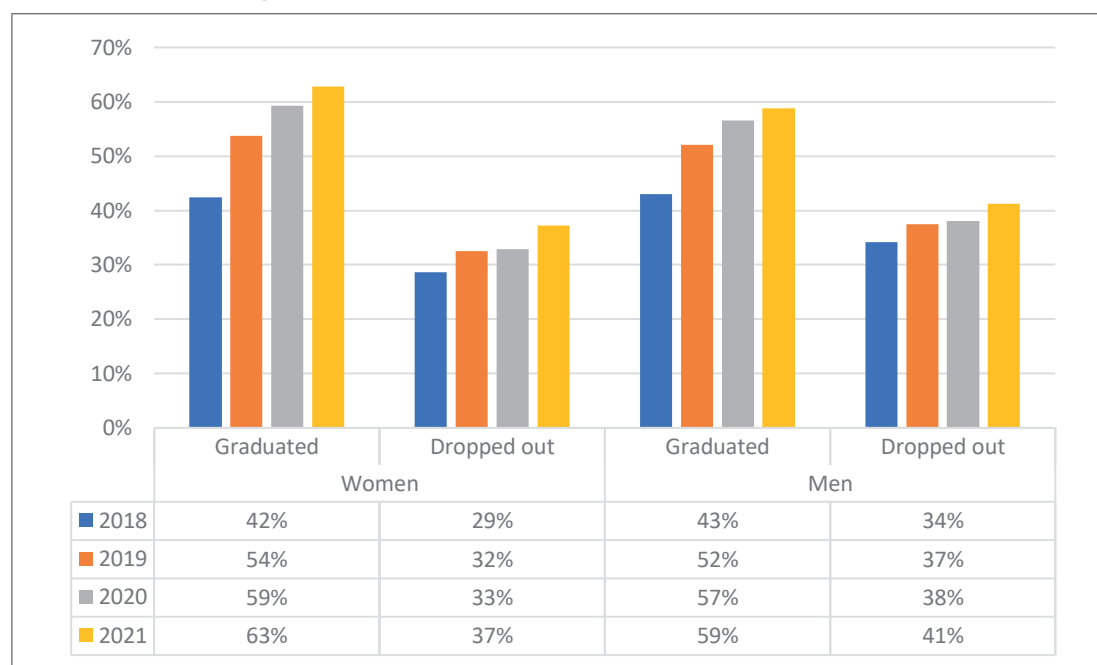
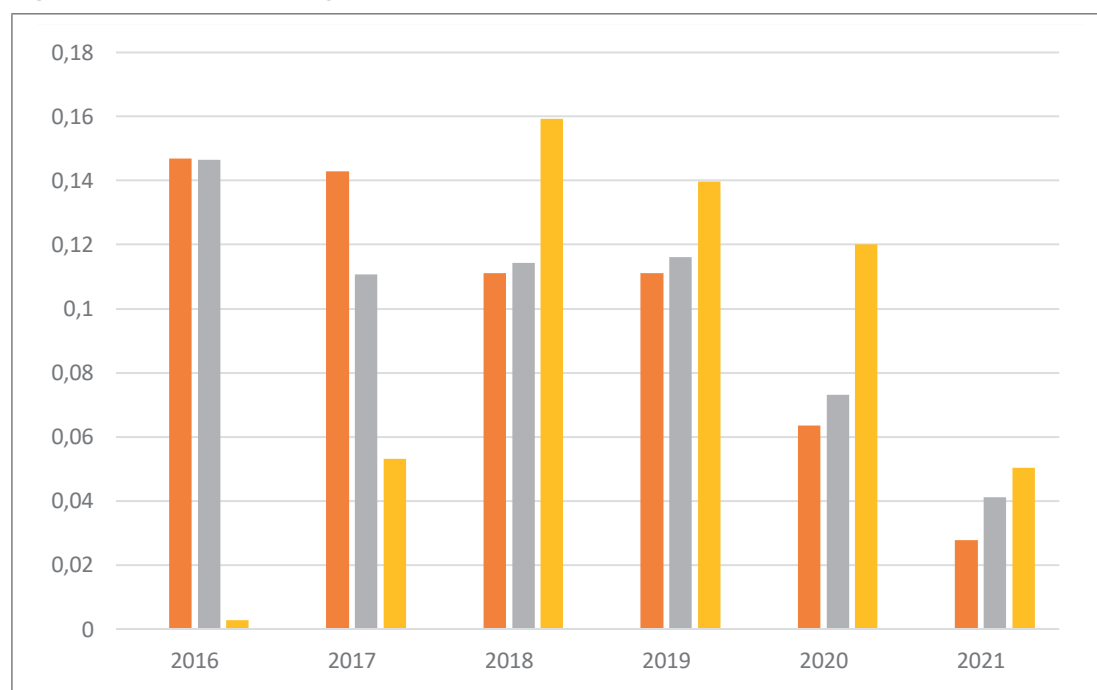


Figure 74: Master's Throughput per UoT, non-accumulative



**Master's Cohort: Only these three UoTs are recorded: CPUT, DUT & TUT*

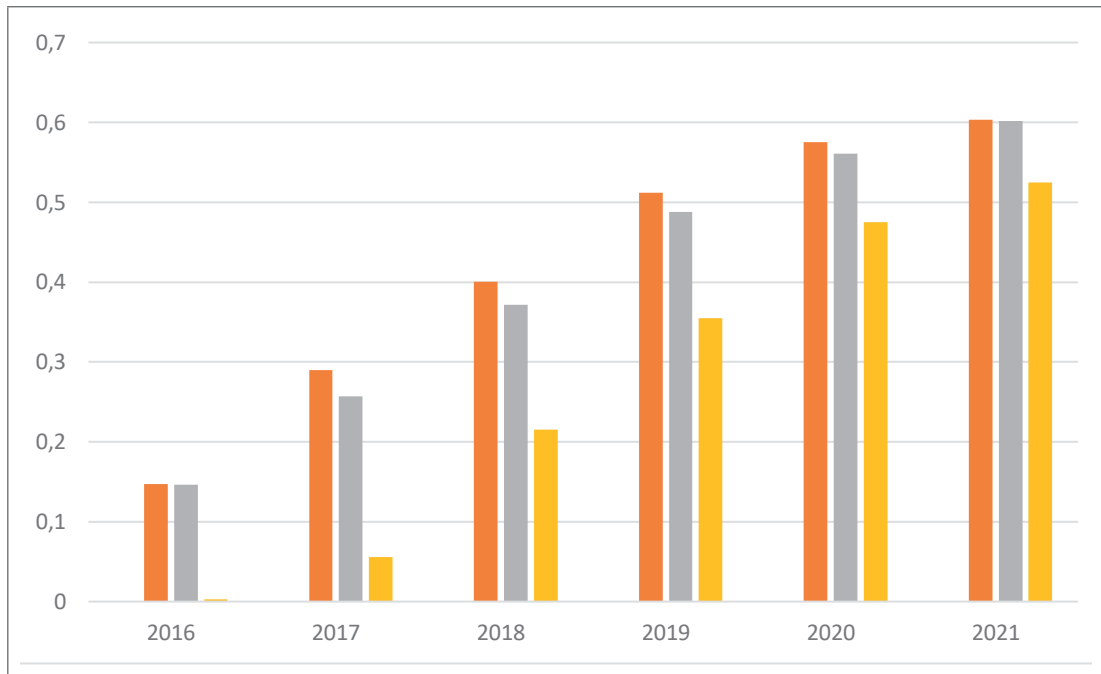
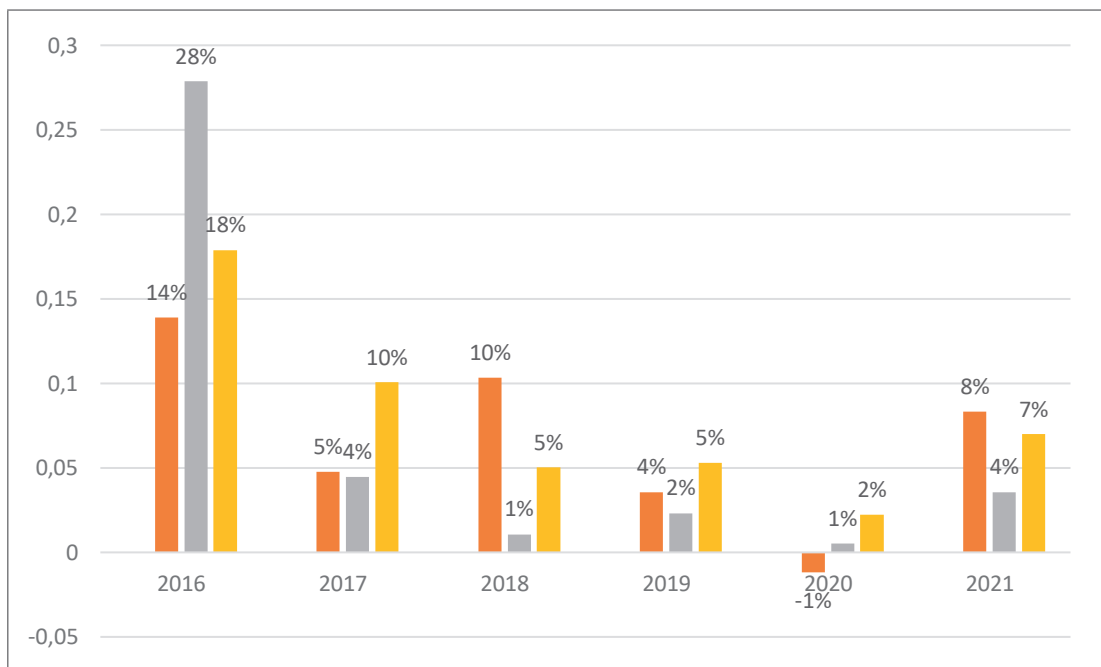
Figure 75: Master's Throughput per UoT, accumulative**Figure 76:** Master's Dropouts per UoT, non-accumulative

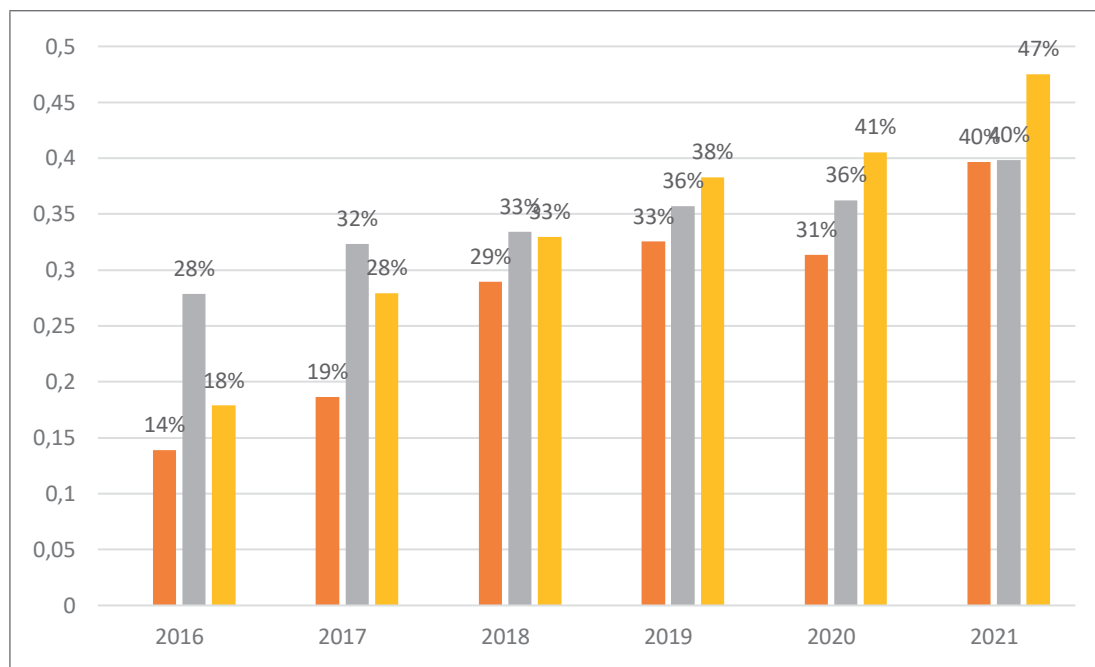
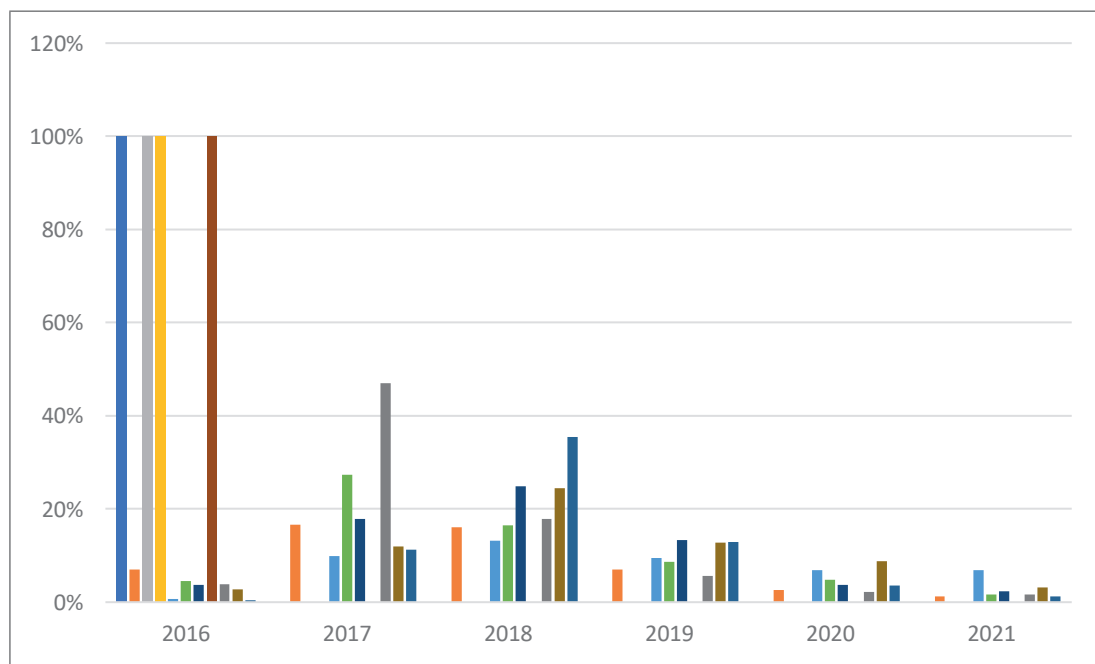
Figure 77: Master's Dropouts per UoT, accumulative**Figure 78:** Master's Throughput per Traditional University, non-accumulative

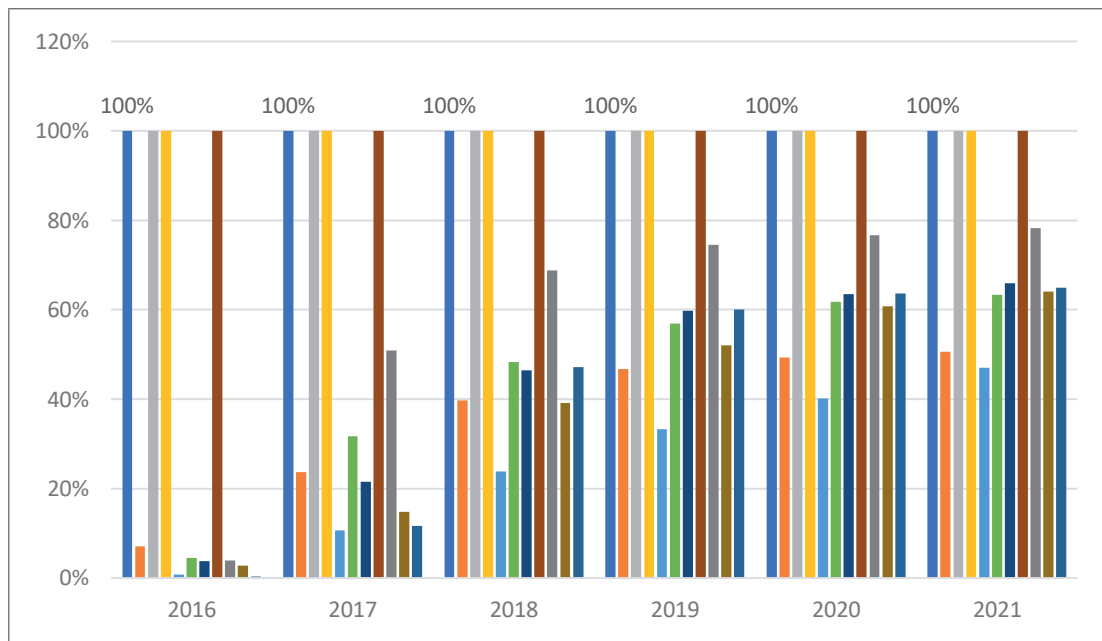
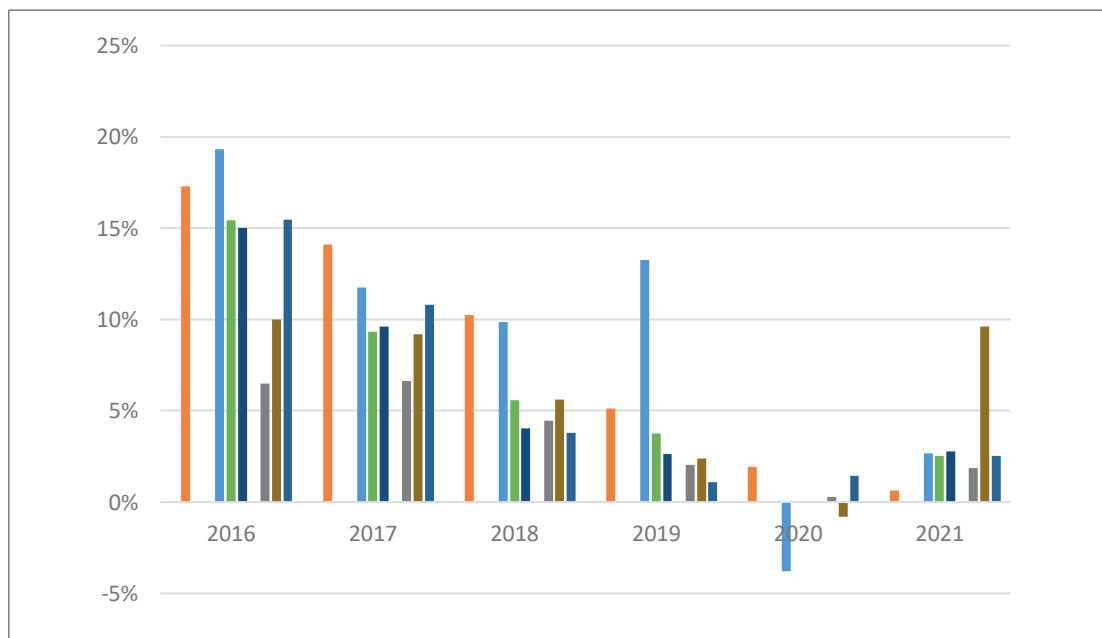
Figure 79: Master's Throughput per Traditional University, accumulative**Figure 80:** Master's Dropouts per Traditional University, non-accumulative

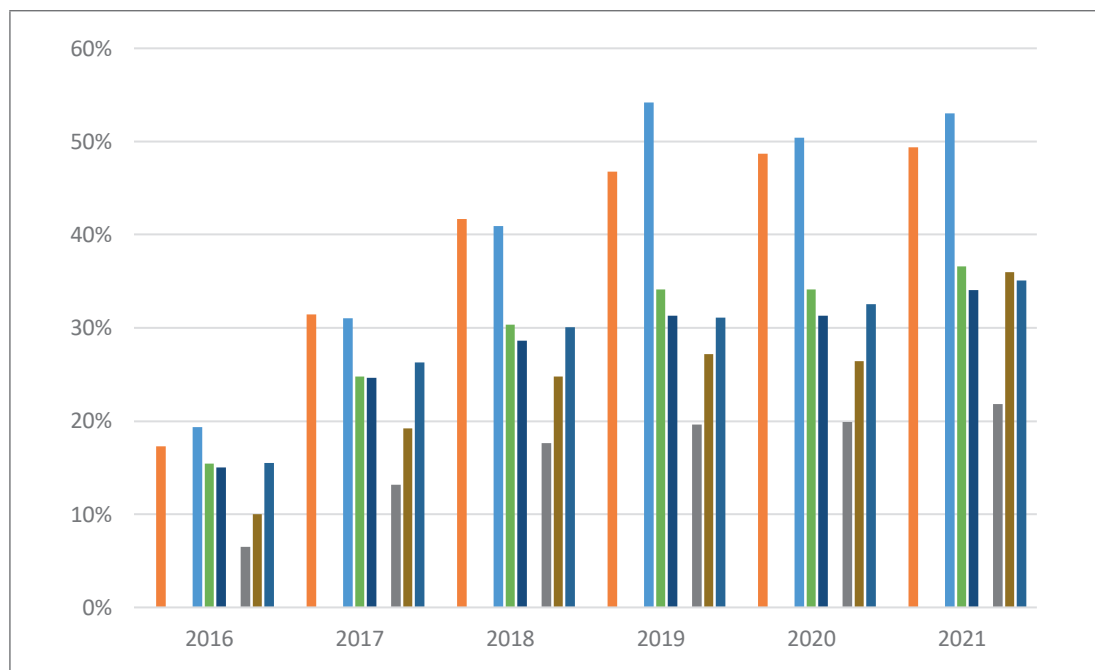
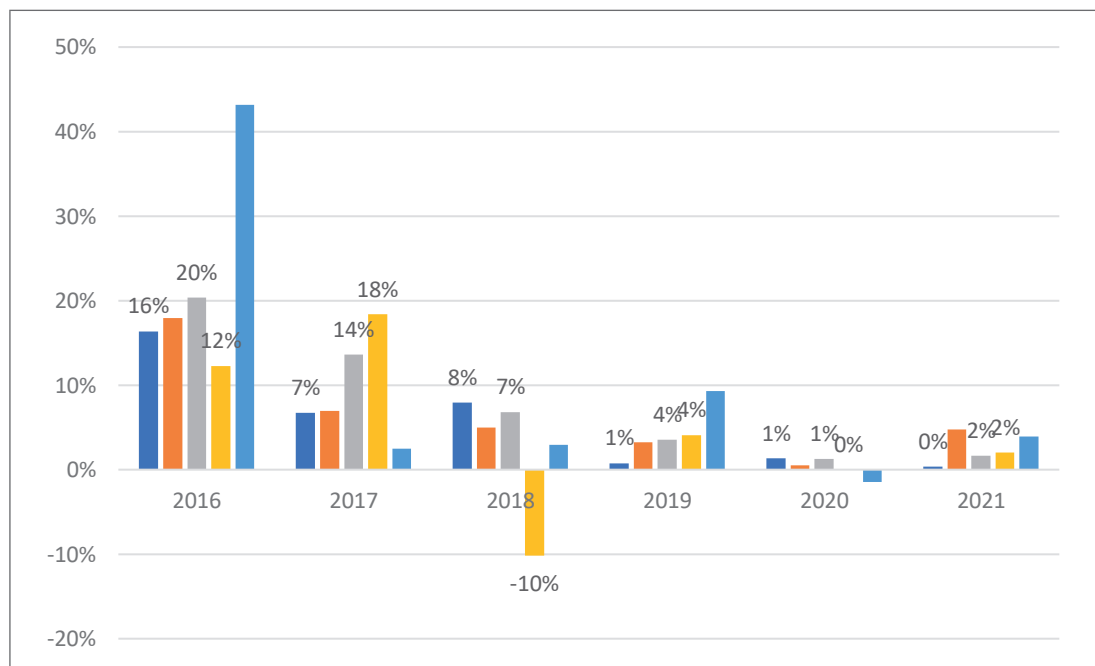
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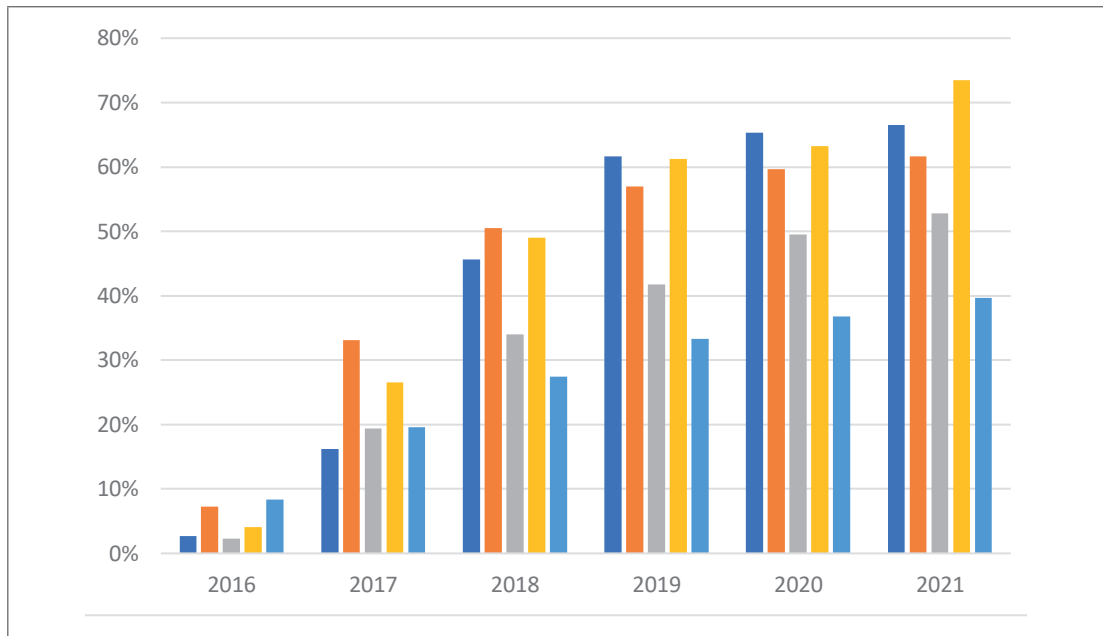
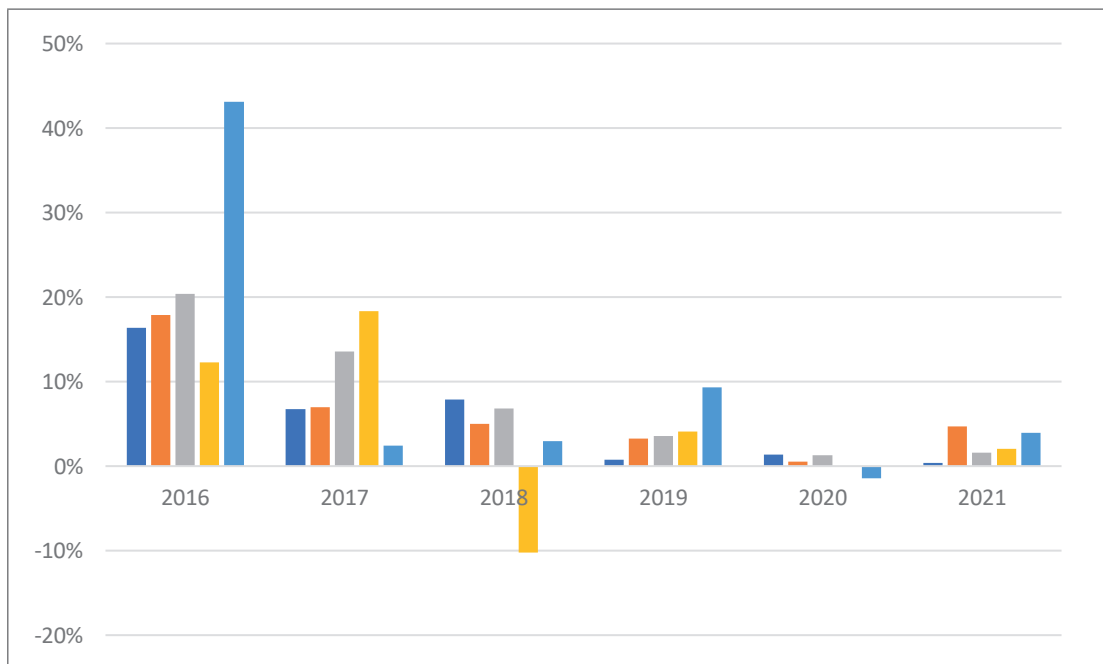
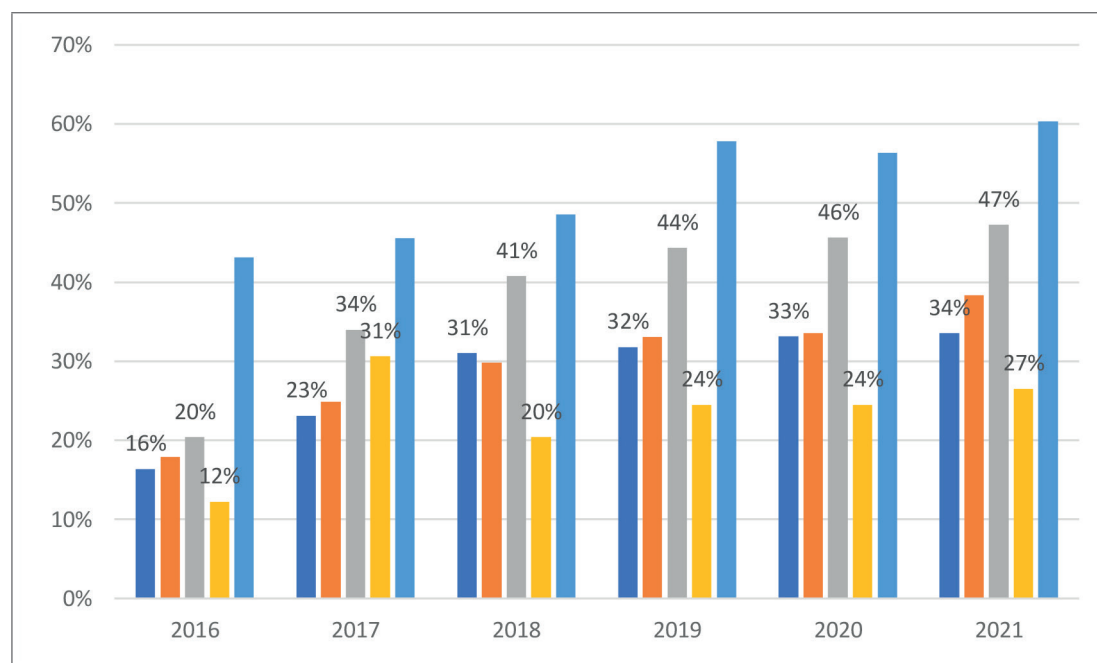
Figure 83: Master's Throughput per Comprehensive University, accumulative**Figure 84:** Master's Dropouts per Comprehensive University, non-accumulative

Figure 85: Master's Dropouts per Comprehensive University, accumulative

Doctoral Cohort Analysis

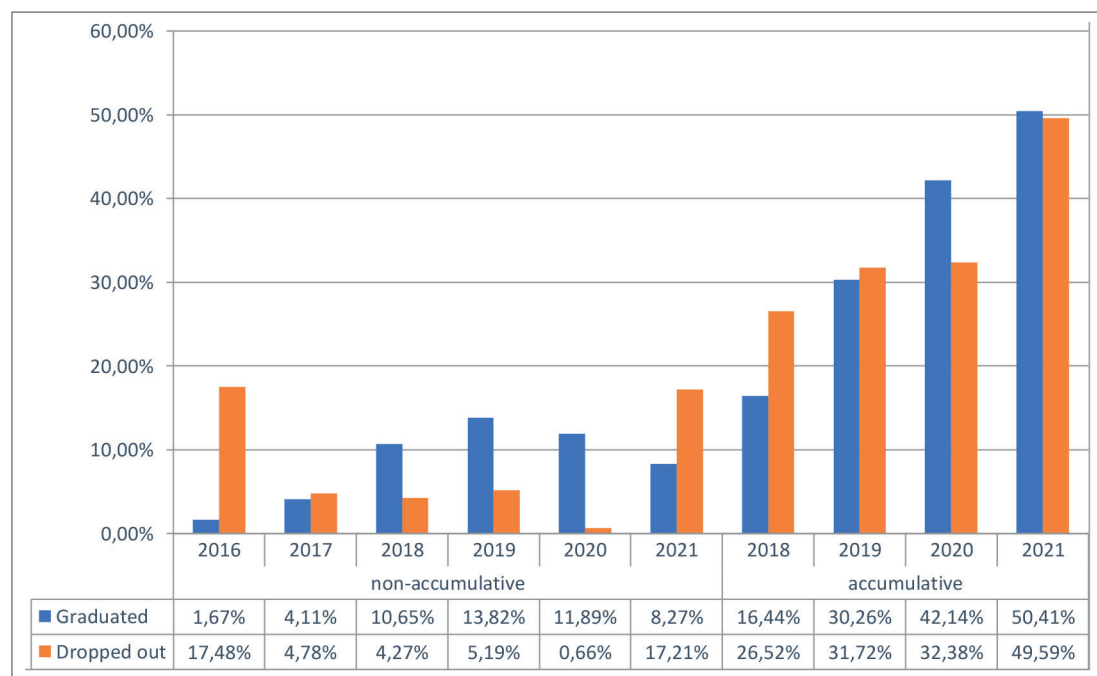
Figure 86: Throughput rates for Doctoral degrees with first year of enrolment in 2016 (excluding UNISA)

Figure 87: Throughput rates for Doctoral degrees with first year of enrolment in 2016 in Science (excluding UNISA)

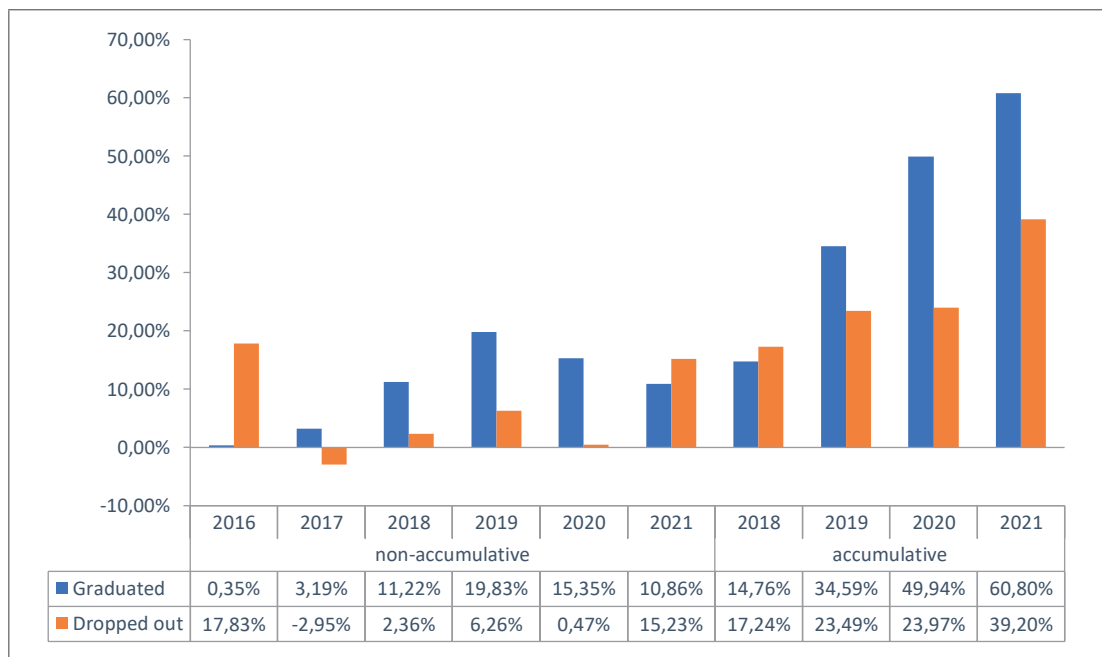


Figure 88: Throughput rates for Doctoral degrees with first year of enrolment in 2016 in Engineering (excluding UNISA)

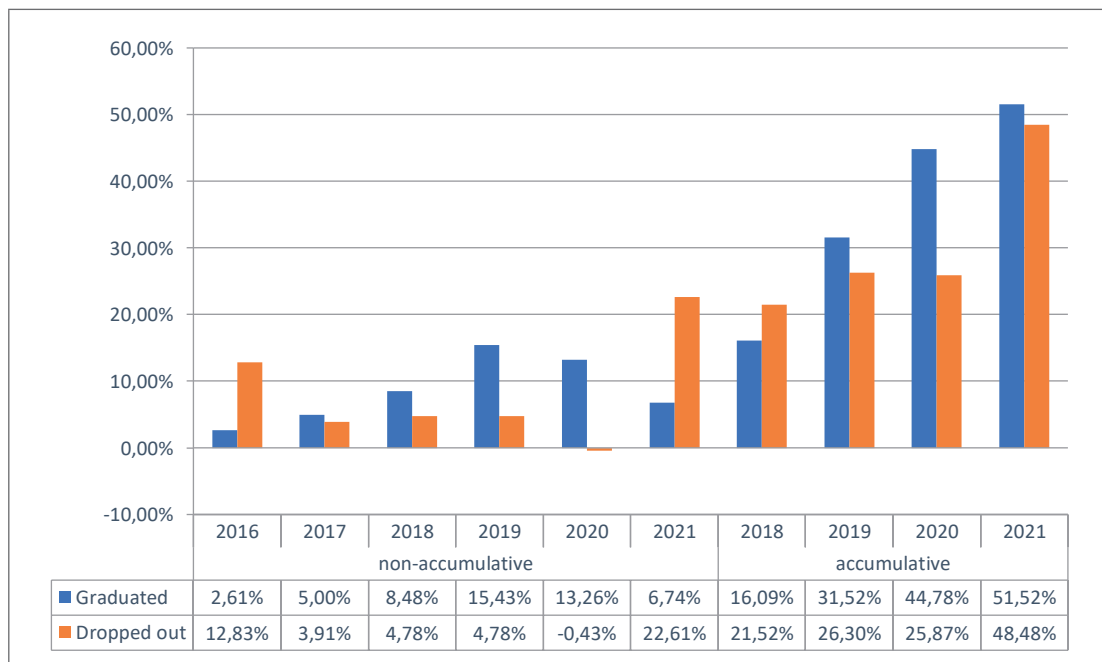


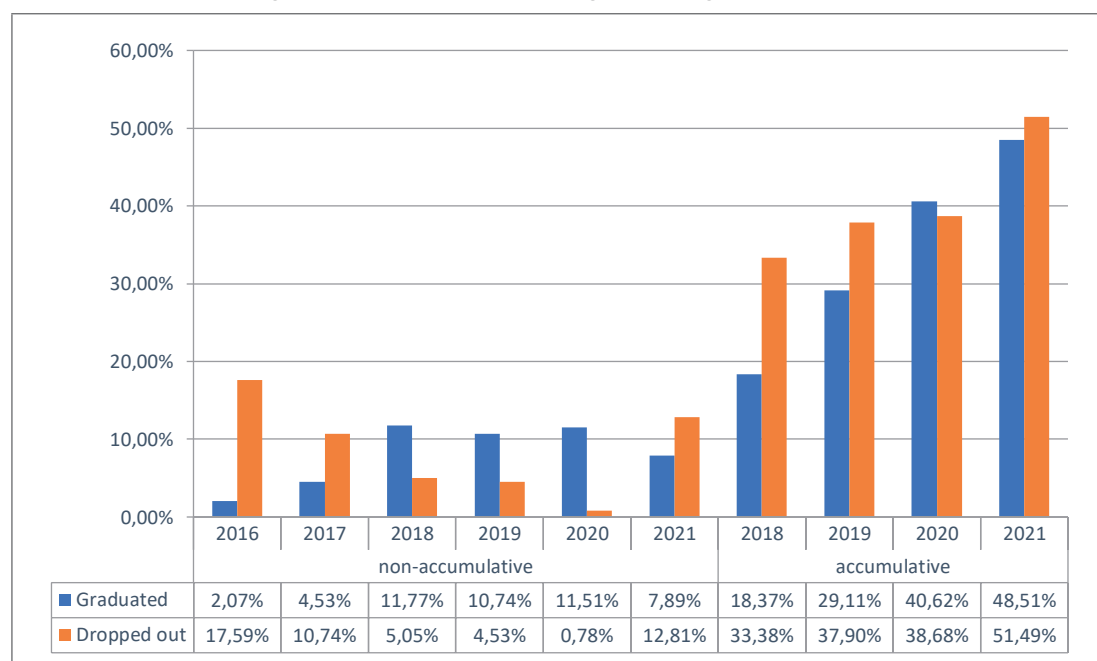
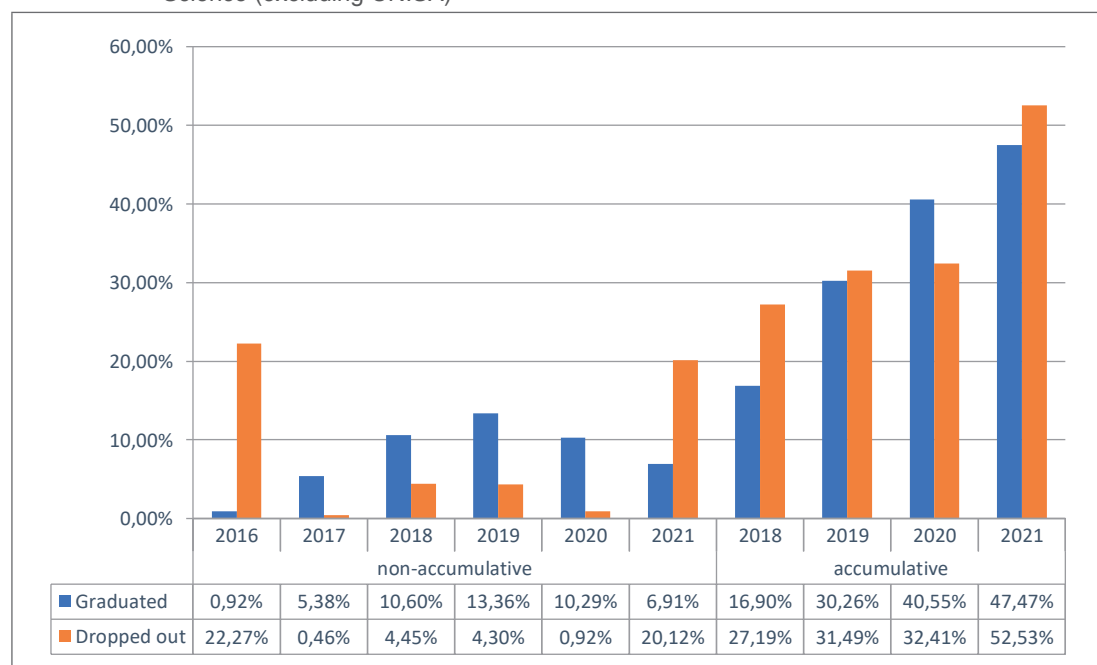
Figure 89: Throughput rates for Doctoral degrees with first year of enrolment in 2016 in Business and Management Sciences and Planning (excluding UNISA)**Figure 90:** Throughput rates for Doctoral degrees with first year of enrolment in 2016 in Social Science (excluding UNISA)

Figure 91: Throughput rates for Doctoral degrees with first year of enrolment in 2016 in Education (excluding UNISA)

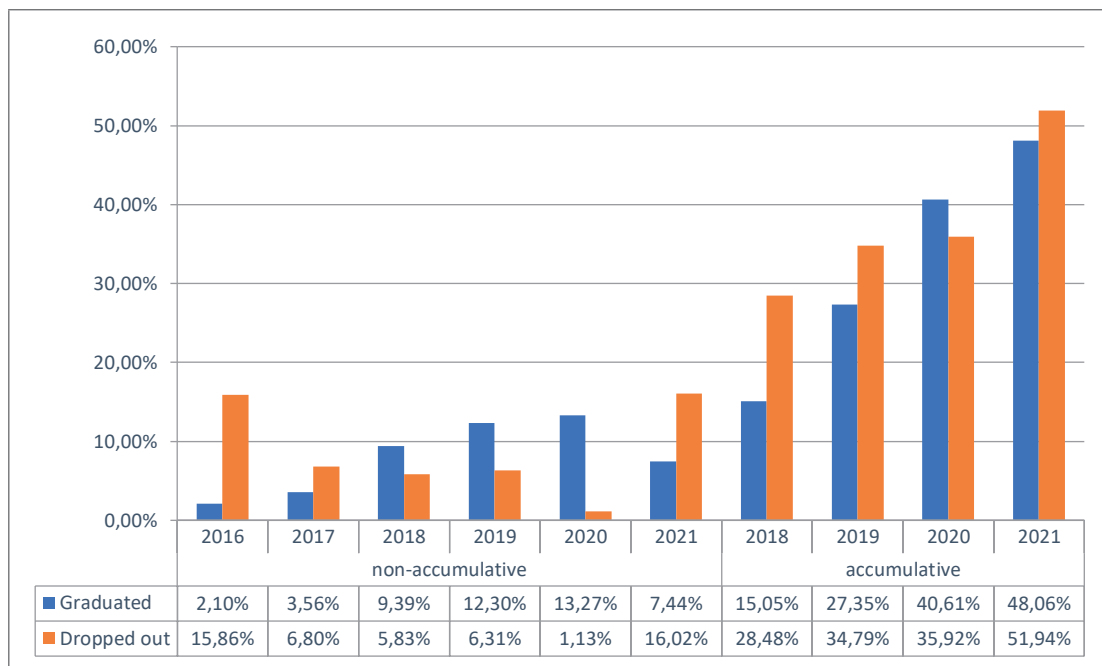


Figure 92: Throughput rates for Doctoral degrees with first year of enrolment in 2016 in Fine Arts (excluding UNISA)

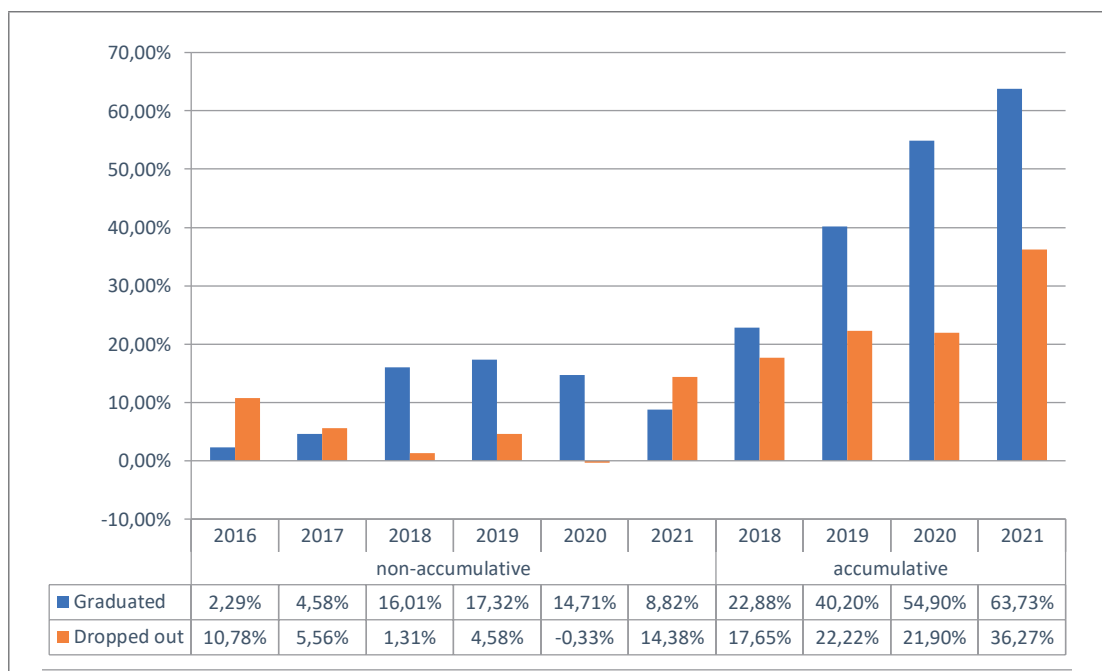


Figure 93: Percentage of the 2016 cohort doing Doctoral degrees that graduated in 5 years (by 2021)

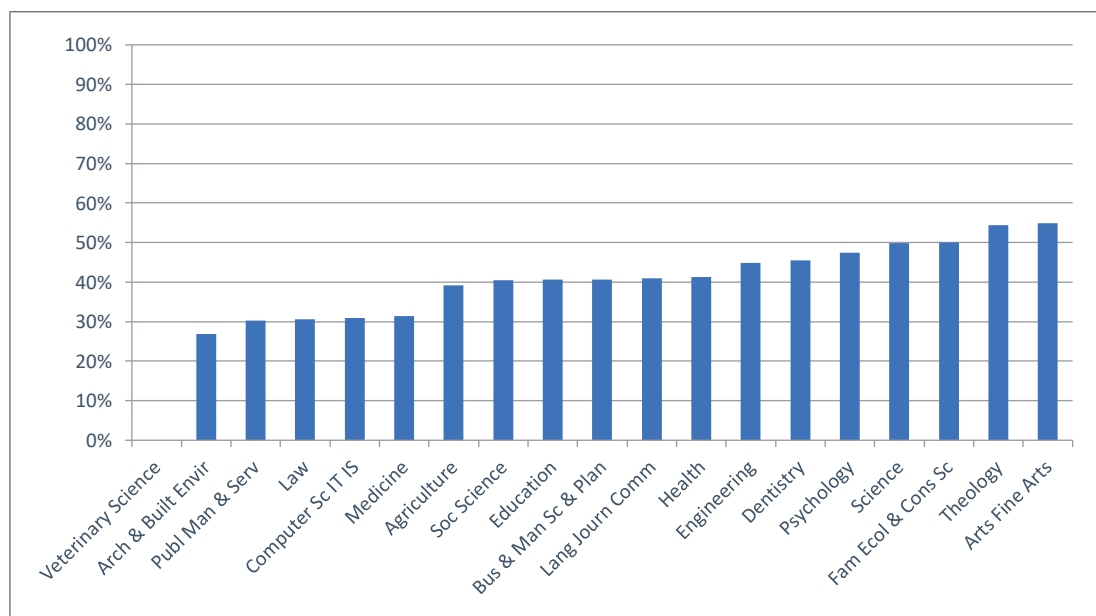


Figure 94: Headcount of the 2016 cohort doing Doctoral degrees that graduated in 5 years (by 2021)

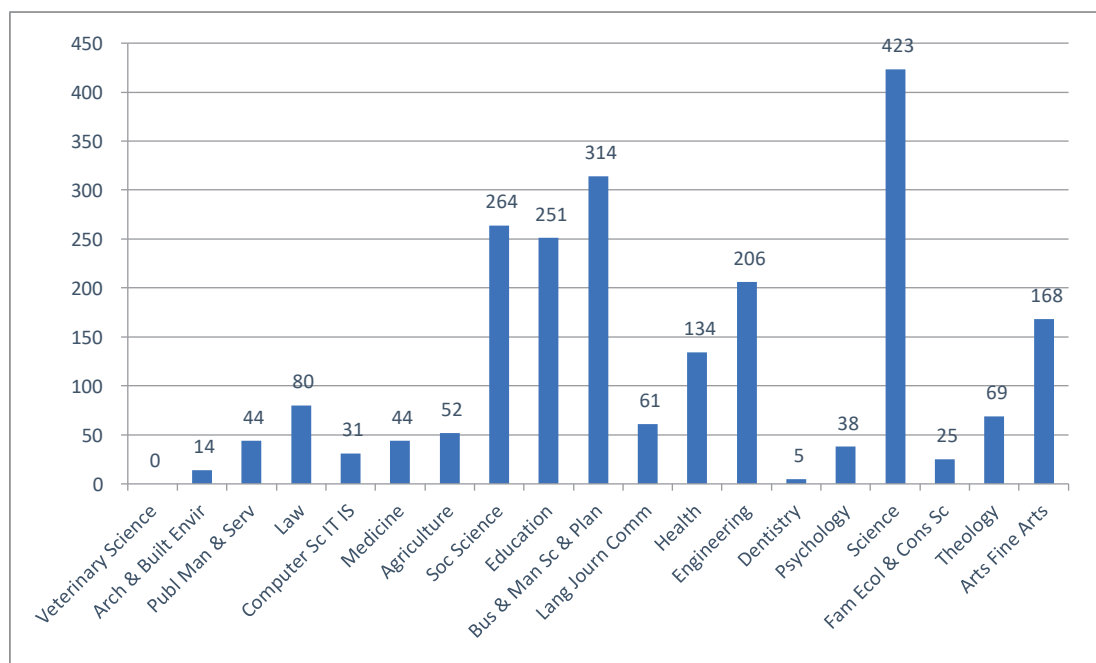


Figure 95: Percentage of the 2016 cohort doing Doctoral degrees that dropped out in 5 years(by 2020)

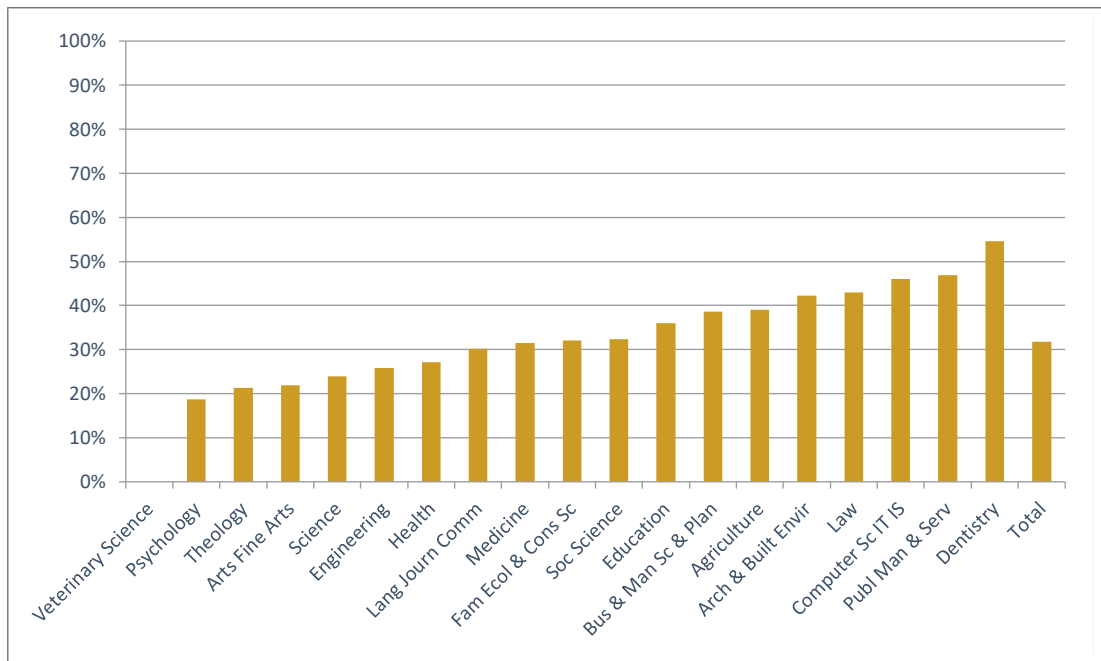


Figure 96: Headcount of the 2016 cohort doing Doctoral degrees that dropped out in 5 years (by 2020)

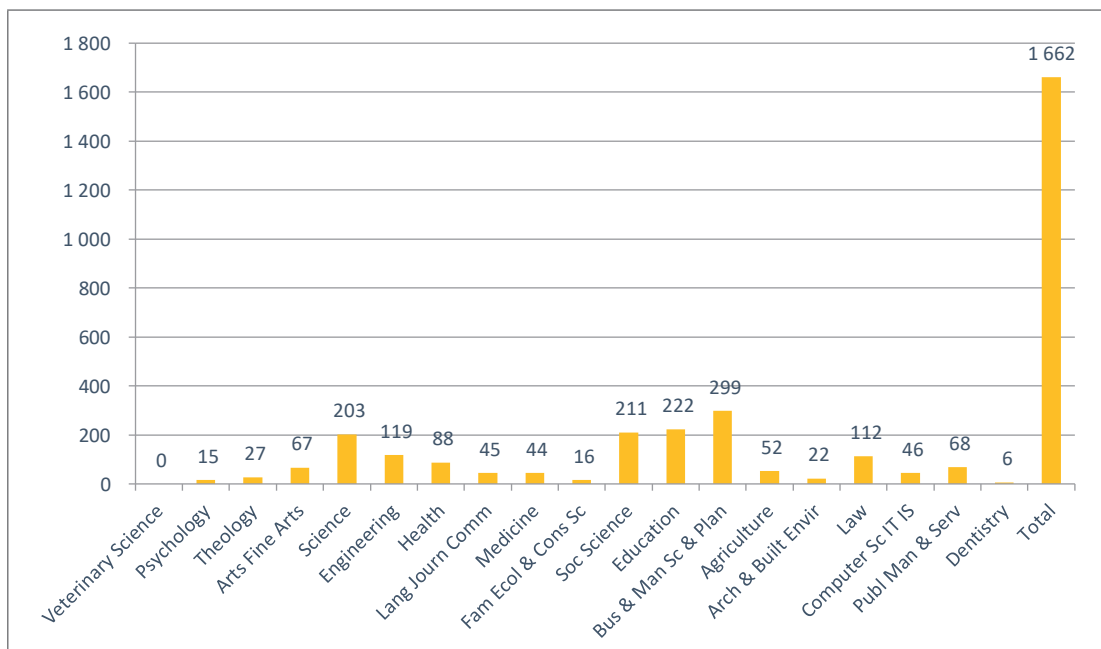


Figure 97: Throughput rates by race for Doctoral degrees with first year of enrolment in 2016 (excluding UNISA) – non-accumulative.

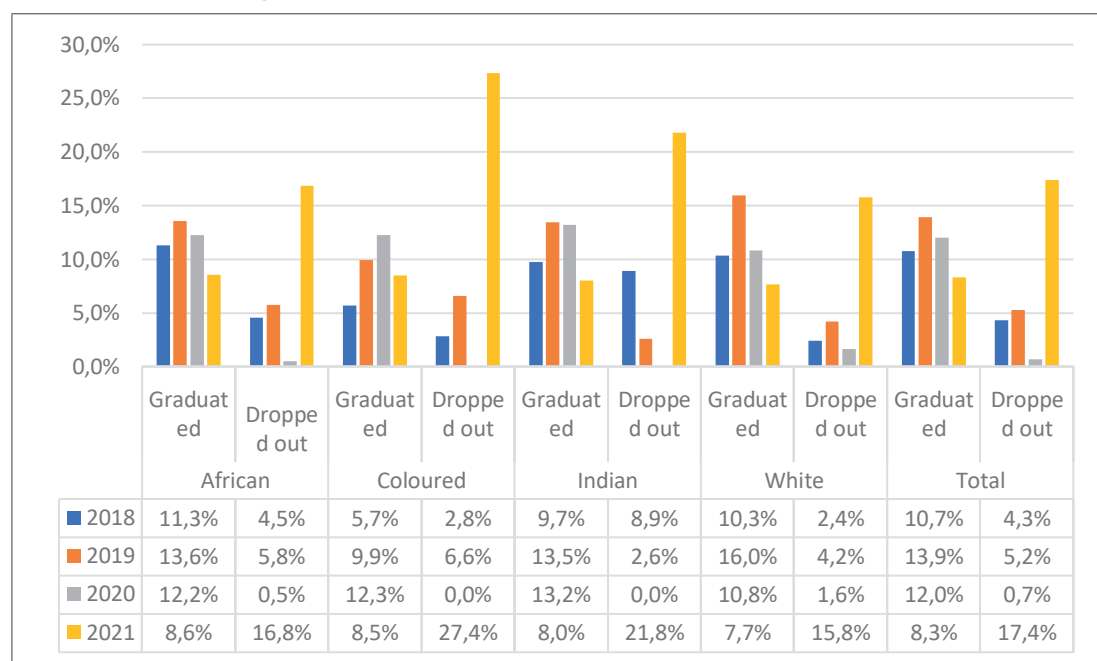


Figure 98: Throughput rates by race for Doctoral degrees with first year of enrolment in 2016 (excluding UNISA) – accumulative.

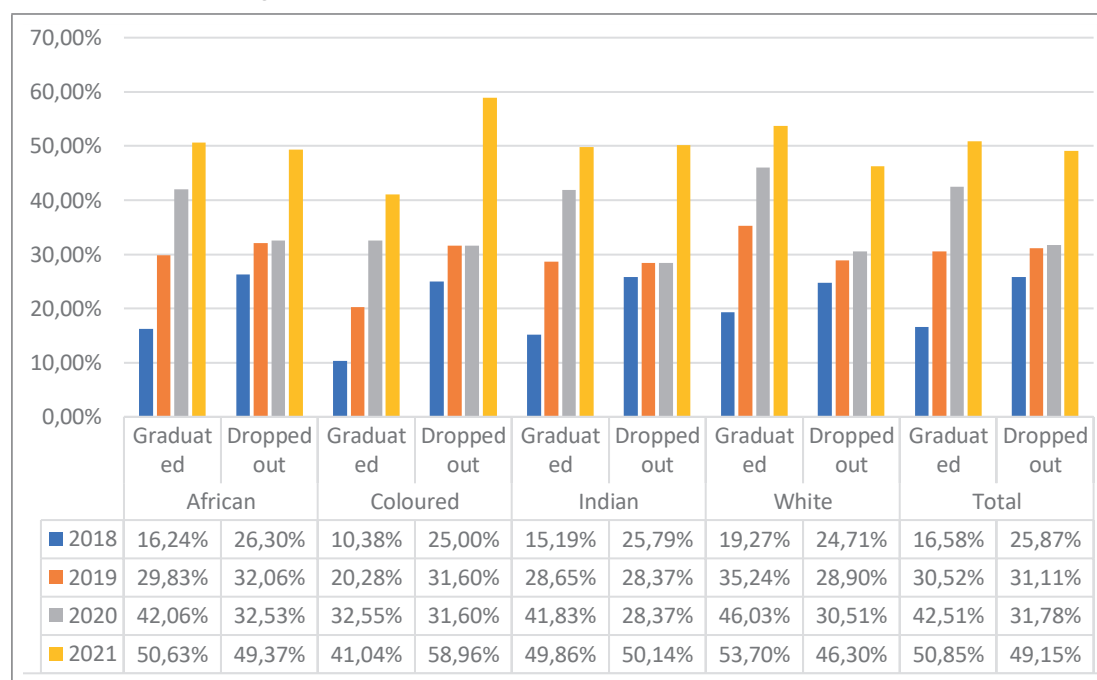


Figure 99: Throughput rates by gender for Doctoral degrees with first year of enrolment in 2016 (excluding UNISA) non-accumulative

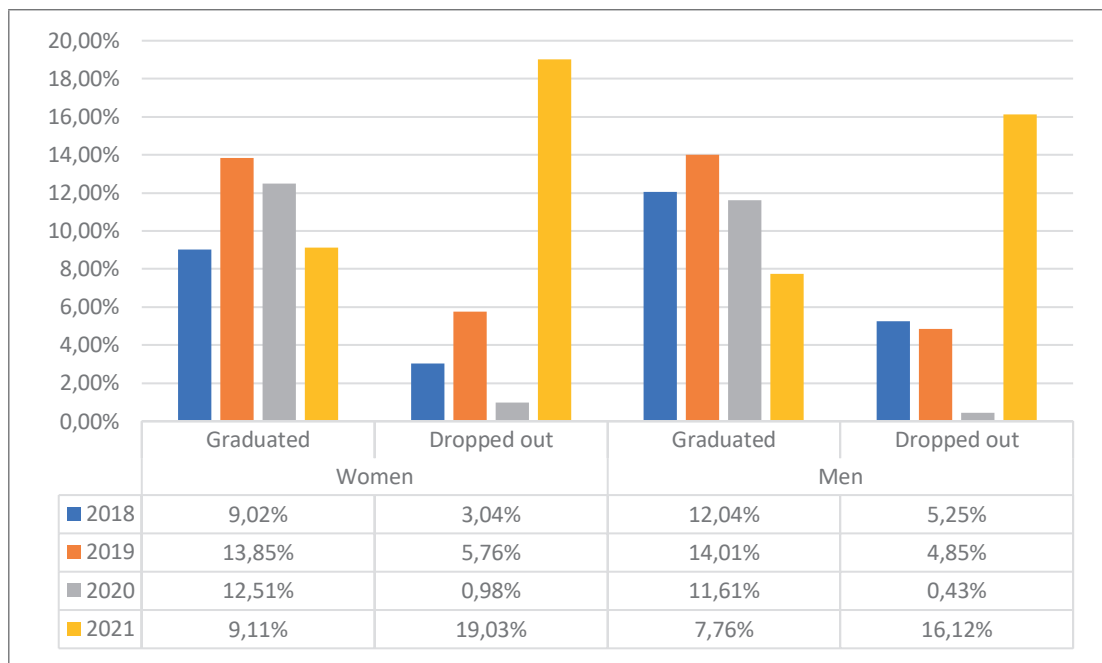


Figure 100: Throughput rates by gender for Doctoral degrees with first year of enrolment in 2016 (excluding UNISA) - accumulative

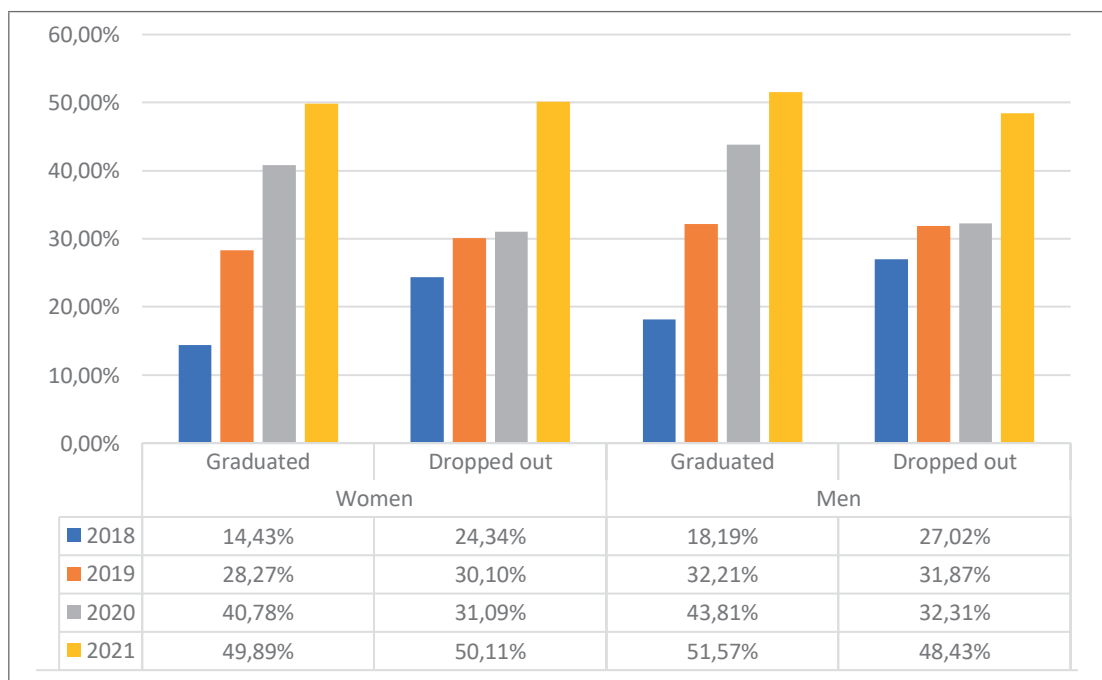


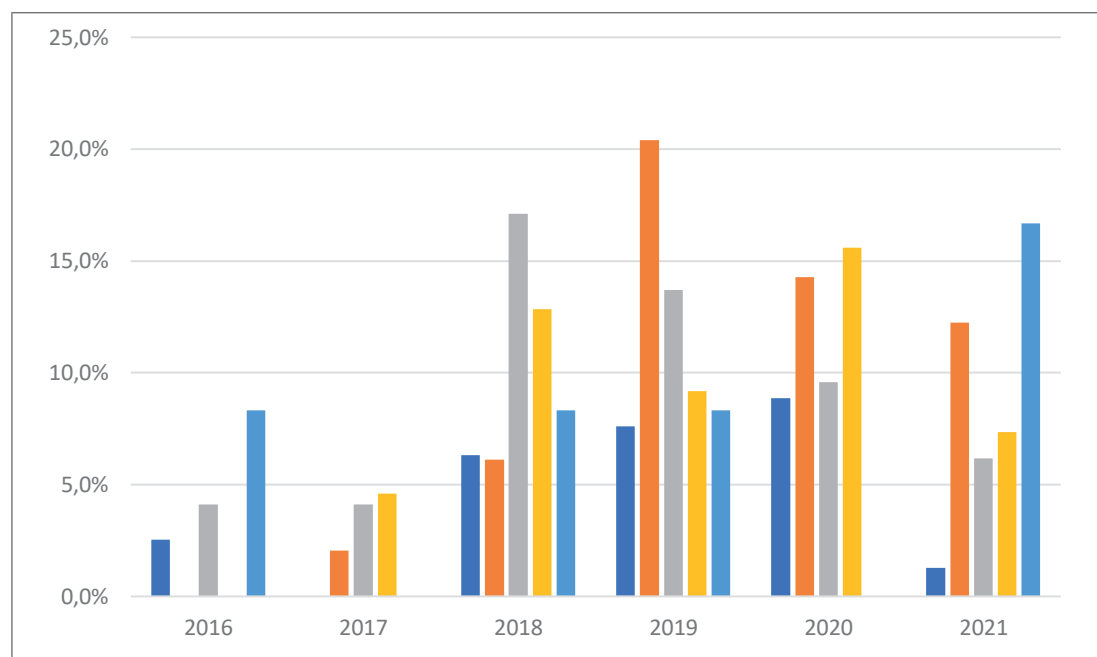
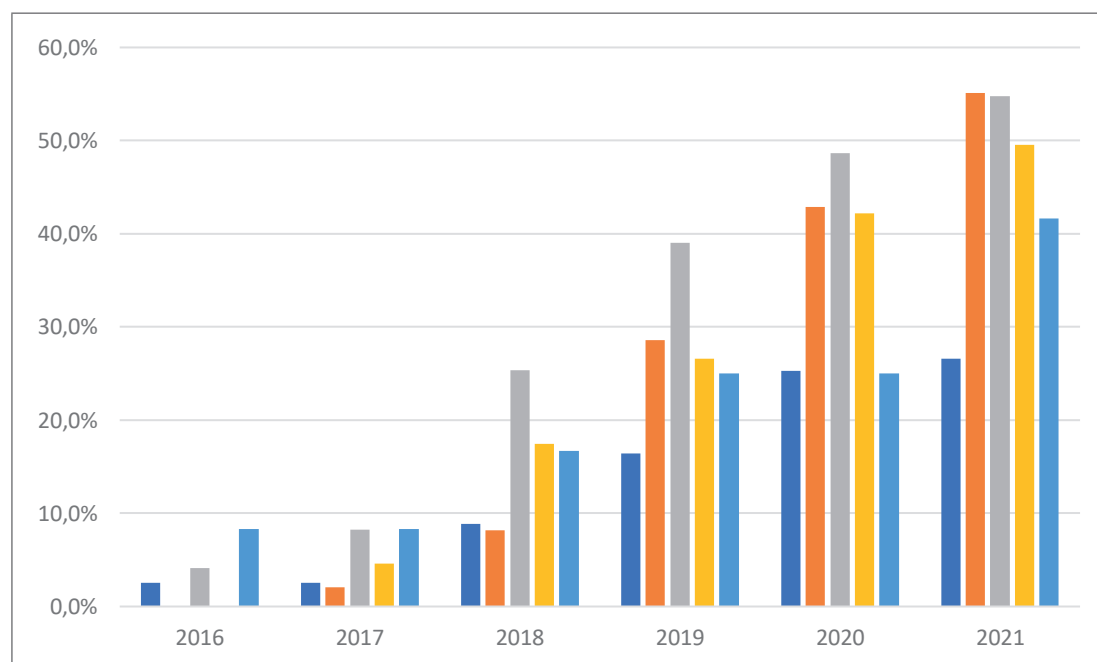
Figure 101: Doctoral Throughput per UoT, non-accumulative**Figure 102:** Doctoral Throughput per UoT, accumulative

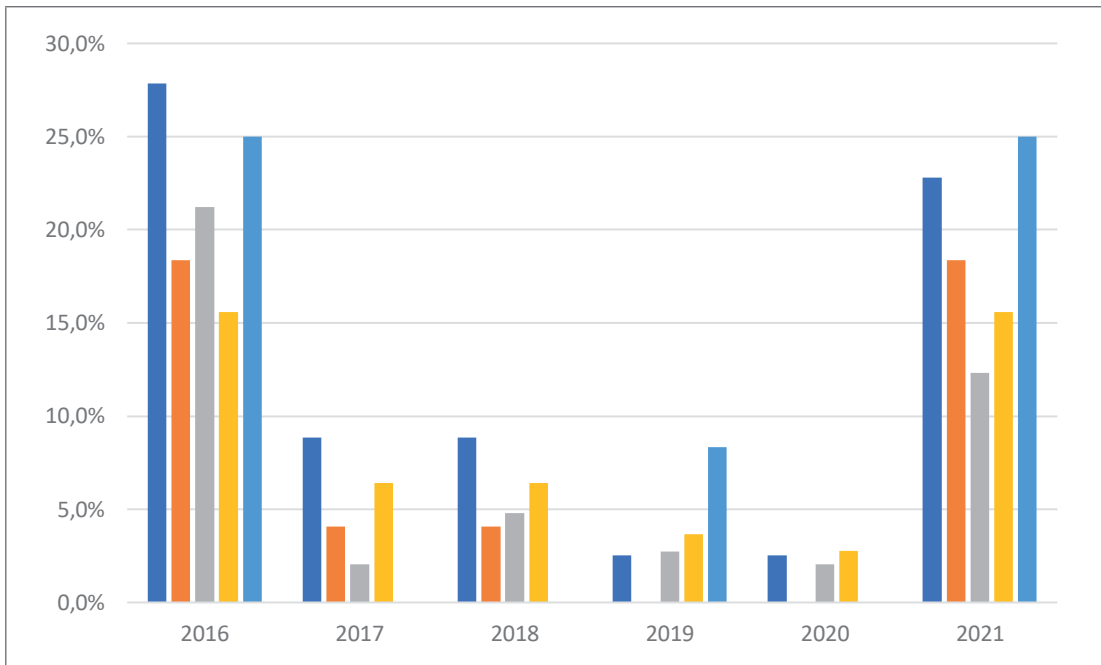
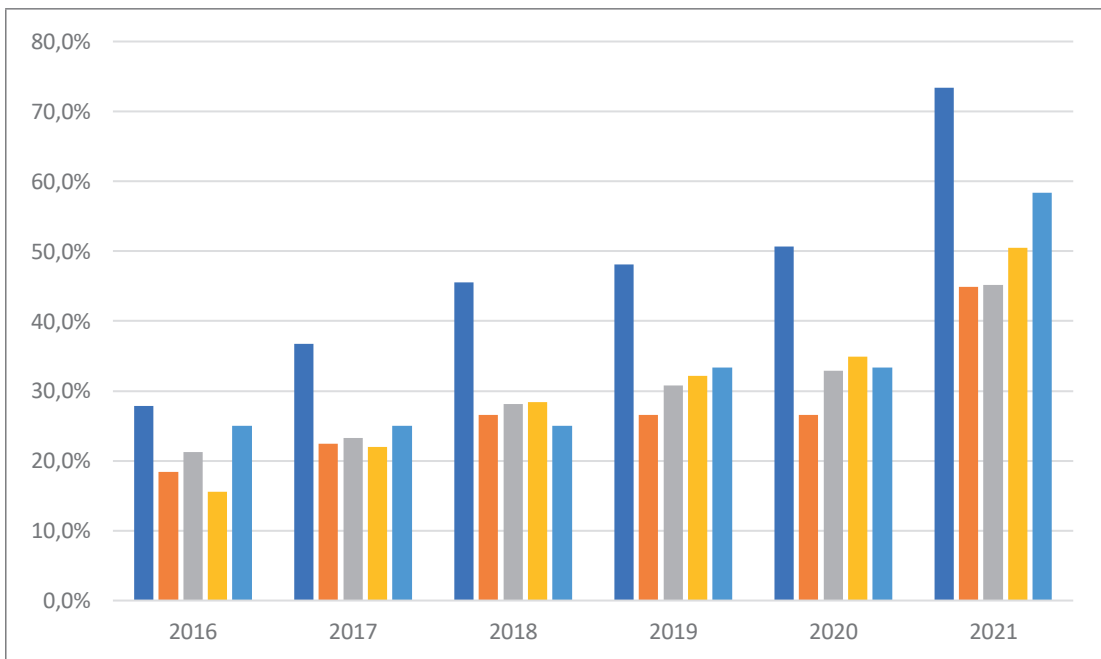
Figure 103: Doctoral Dropouts per UoT, non-accumulative**Figure 104:** Doctoral Dropouts per UoT, accumulative

Figure 105: Doctoral Throughput per Traditional University, non-accumulative

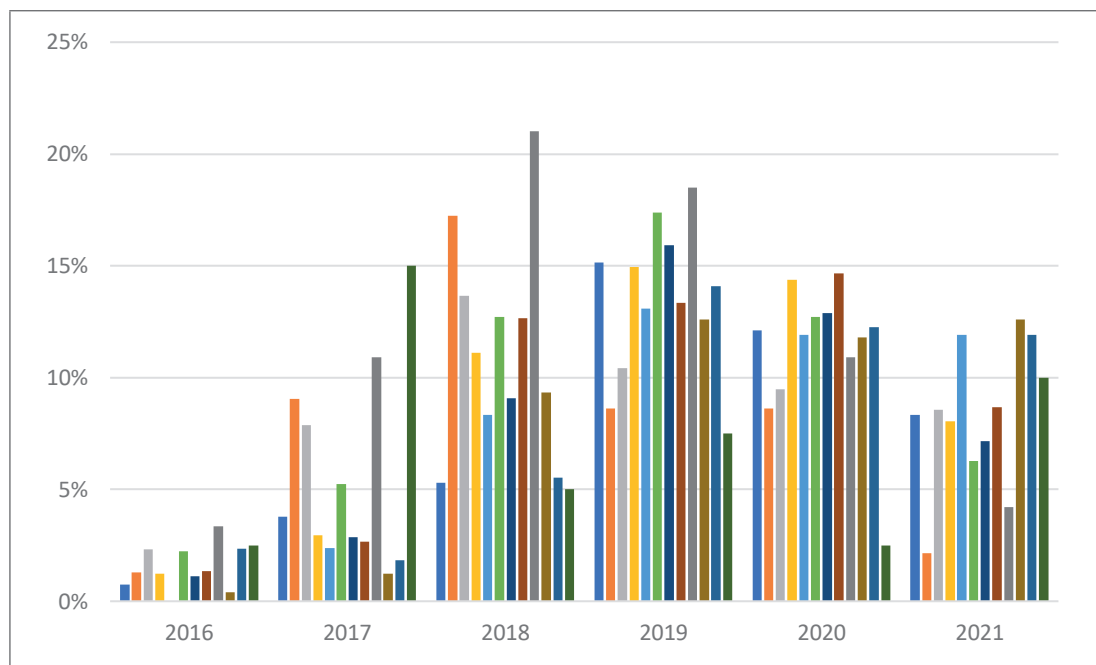


Figure 106: Doctoral Throughput per Traditional University, accumulative

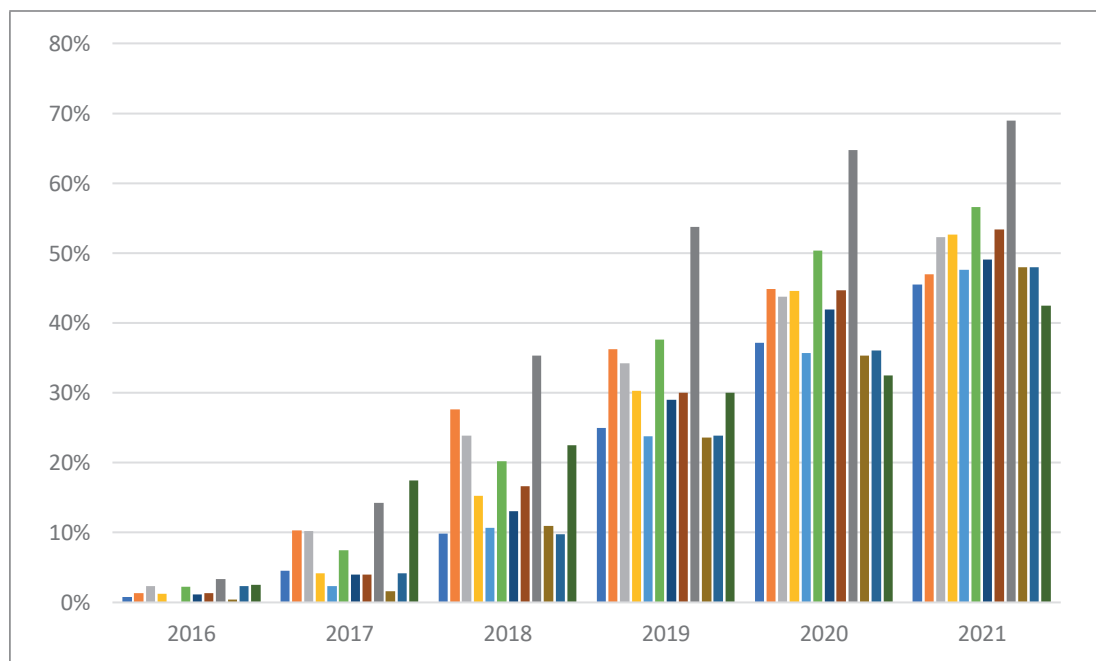


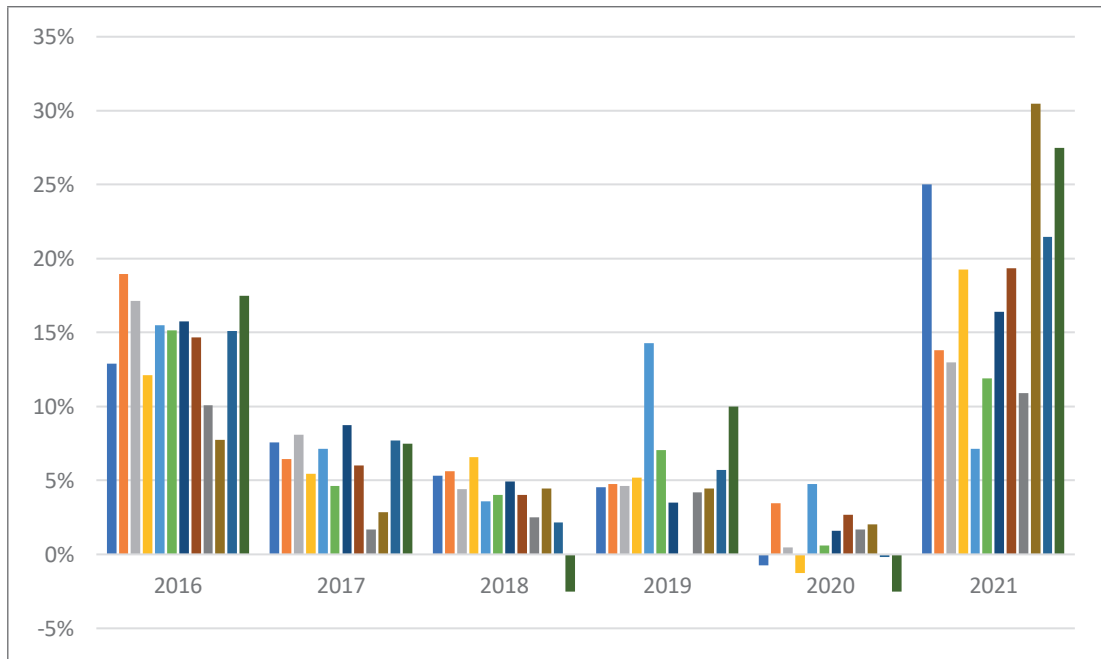
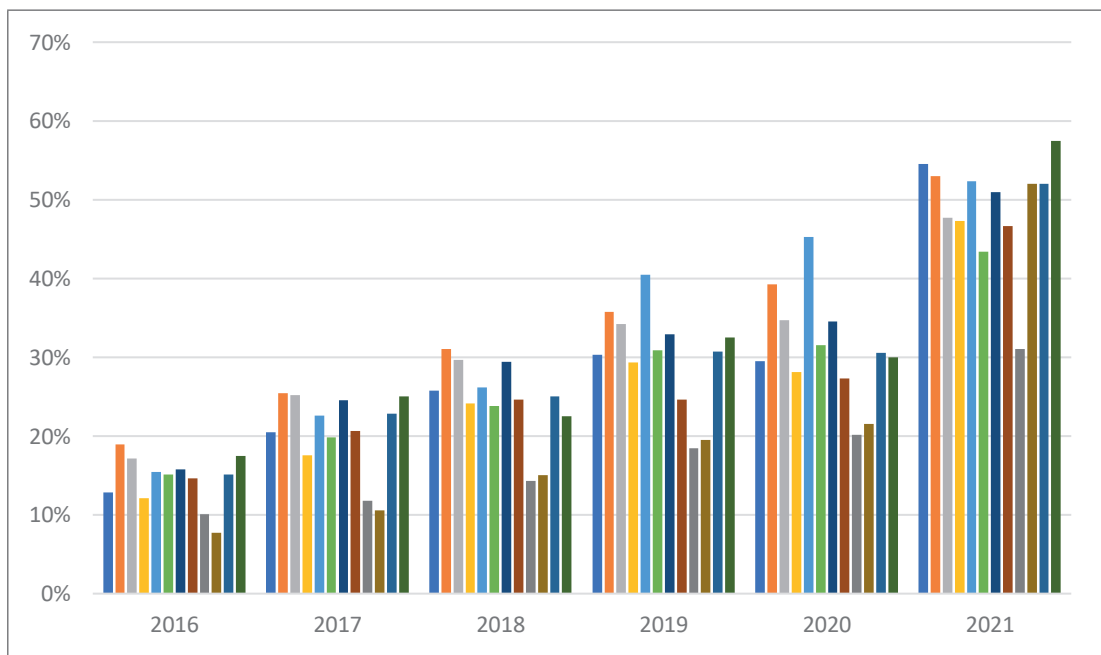
Figure 107: Doctoral Dropouts per Traditional University, non-accumulative**Figure 108:** Doctoral Dropouts per Traditional University, accumulative

Figure 109: Doctoral Throughput per Comprehensive University, non-accumulative

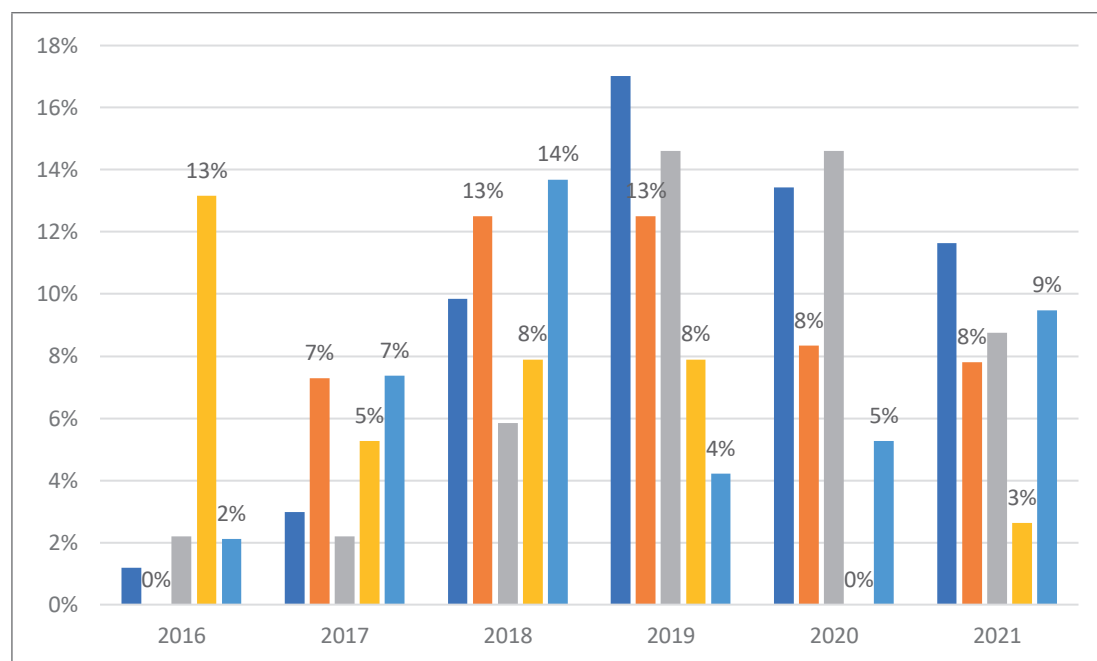


Figure 110: Doctoral Throughput per Comprehensive University, accumulative

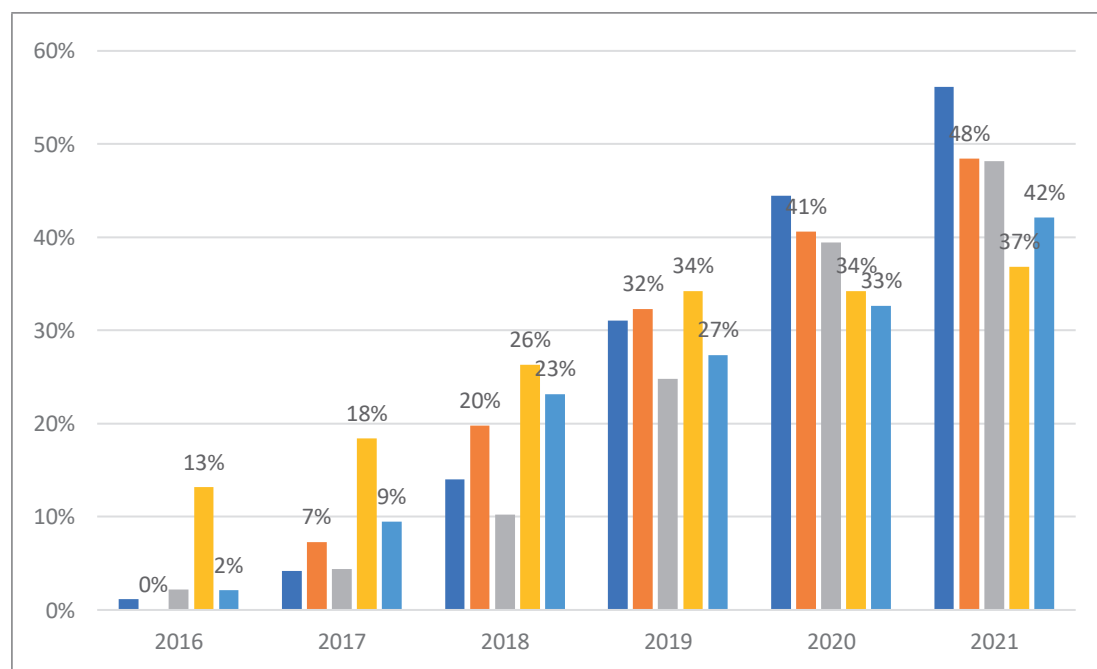
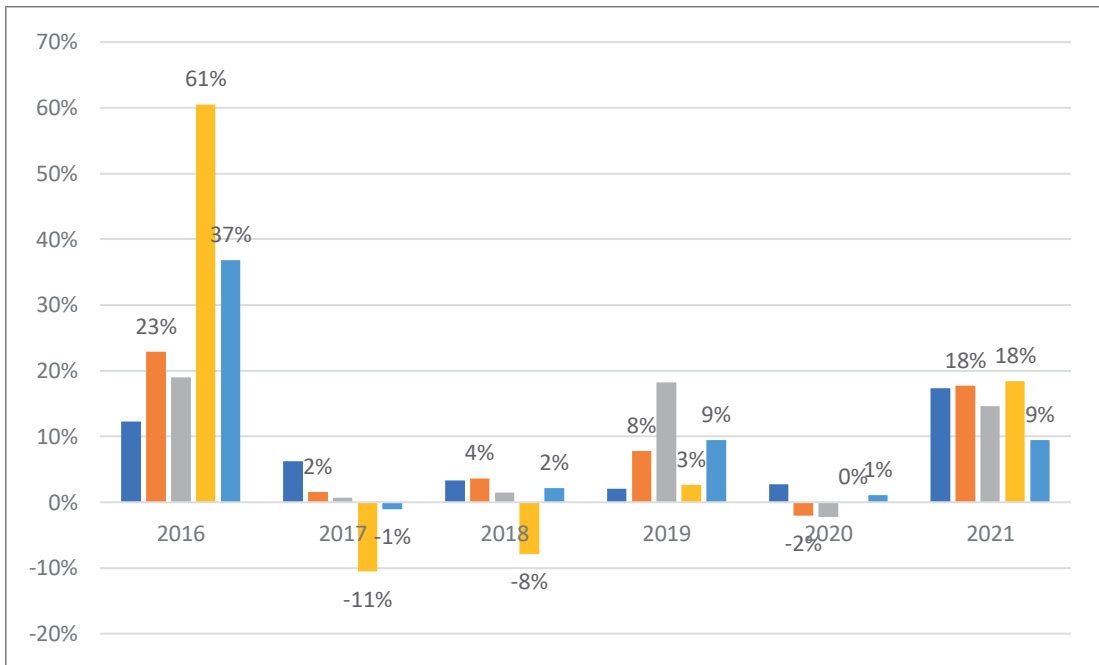
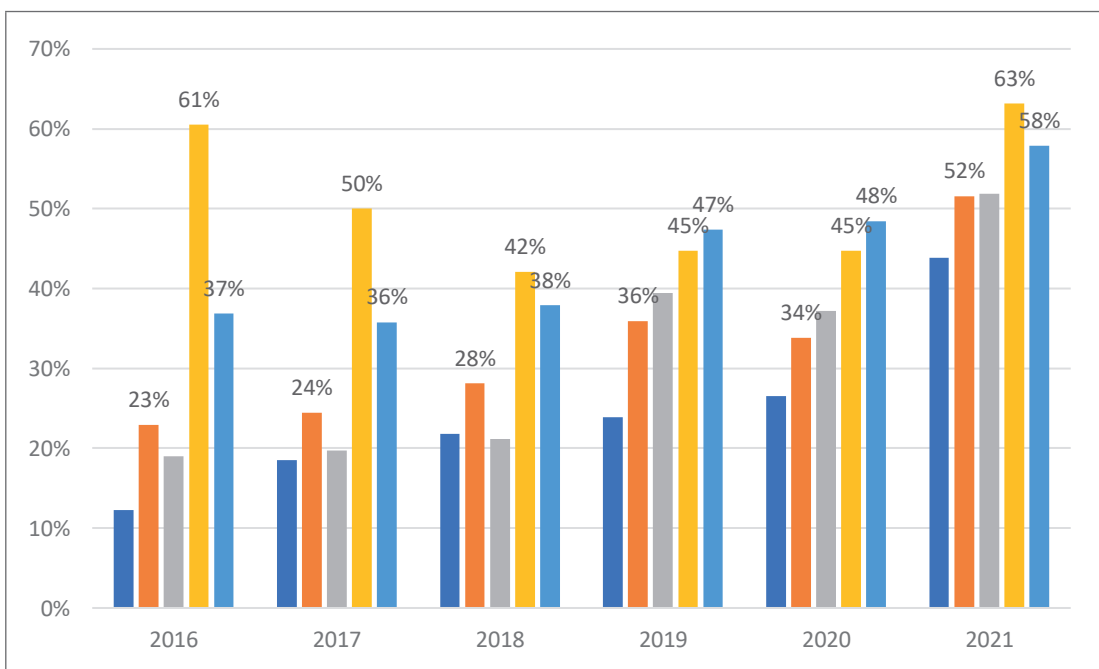


Figure 111: Doctoral Dropouts per Comprehensive University, non-accumulative**Figure 112:** Doctoral Dropouts per Comprehensive University, accumulative

Research Funding and Output

Research Funding and Output

Figure 113: Research output units by publication type from 2016 to 2021

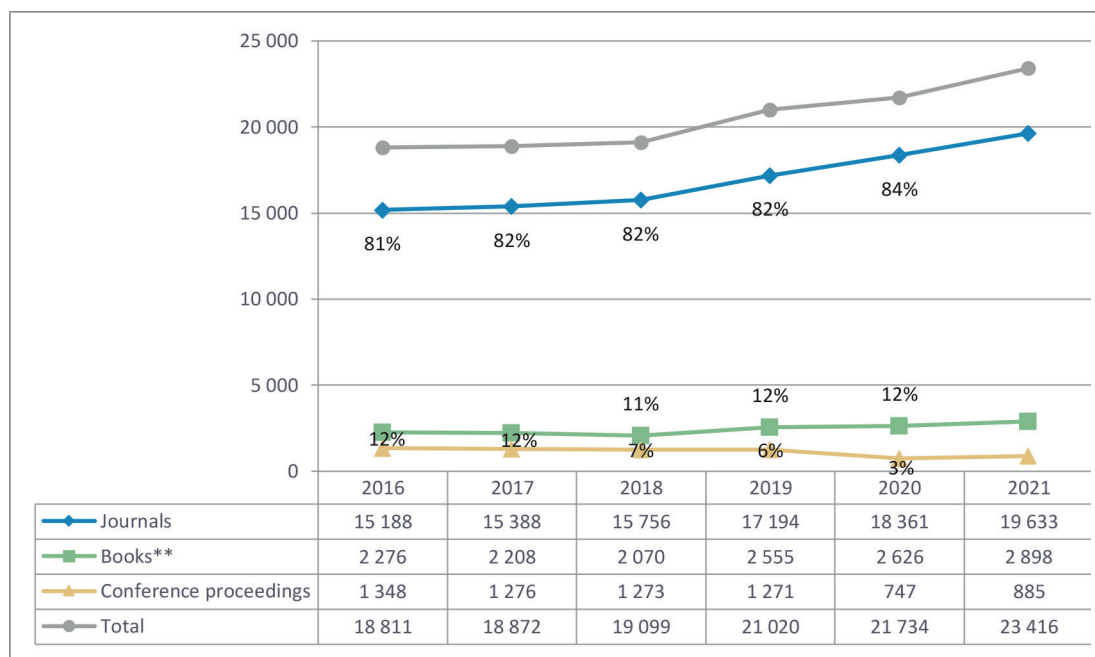


Figure 114: Percentage research output units (all publication types) by broad field from 2016 to 2021

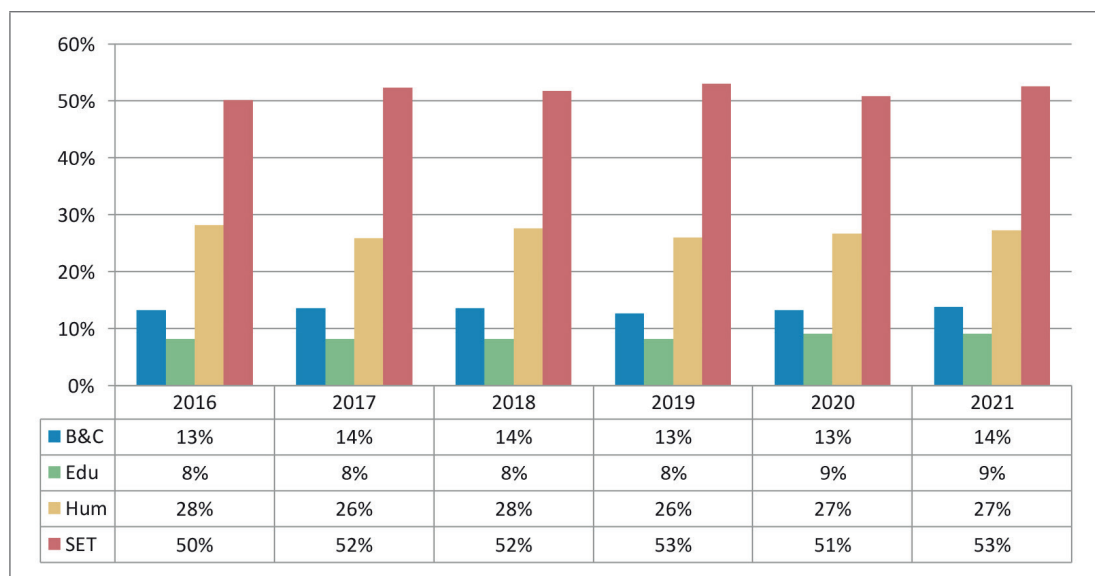
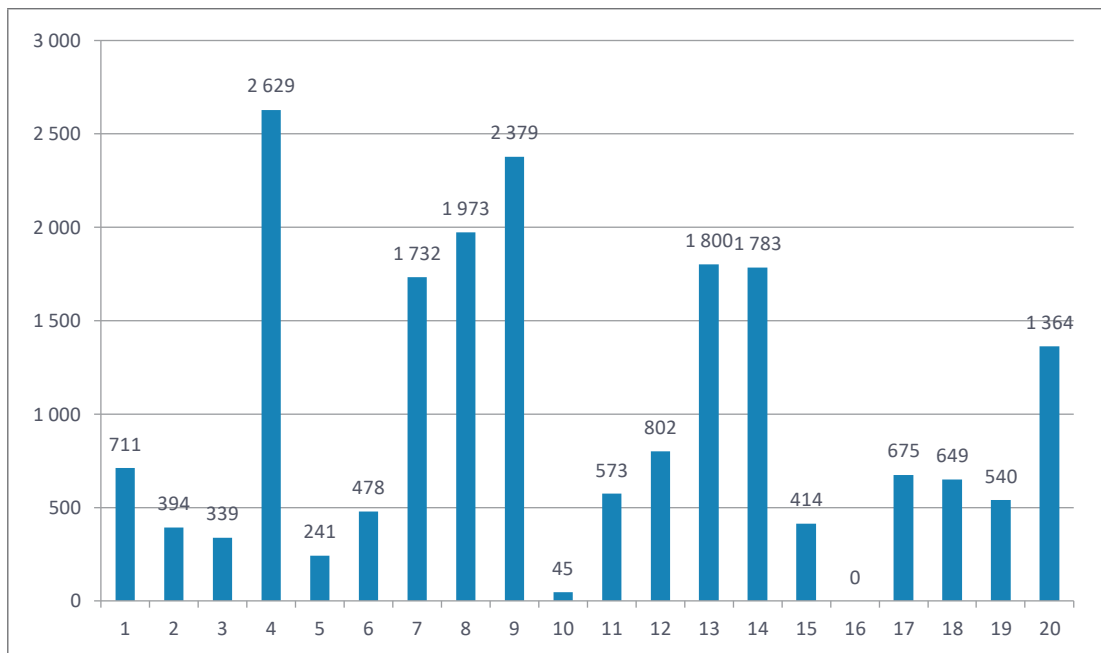
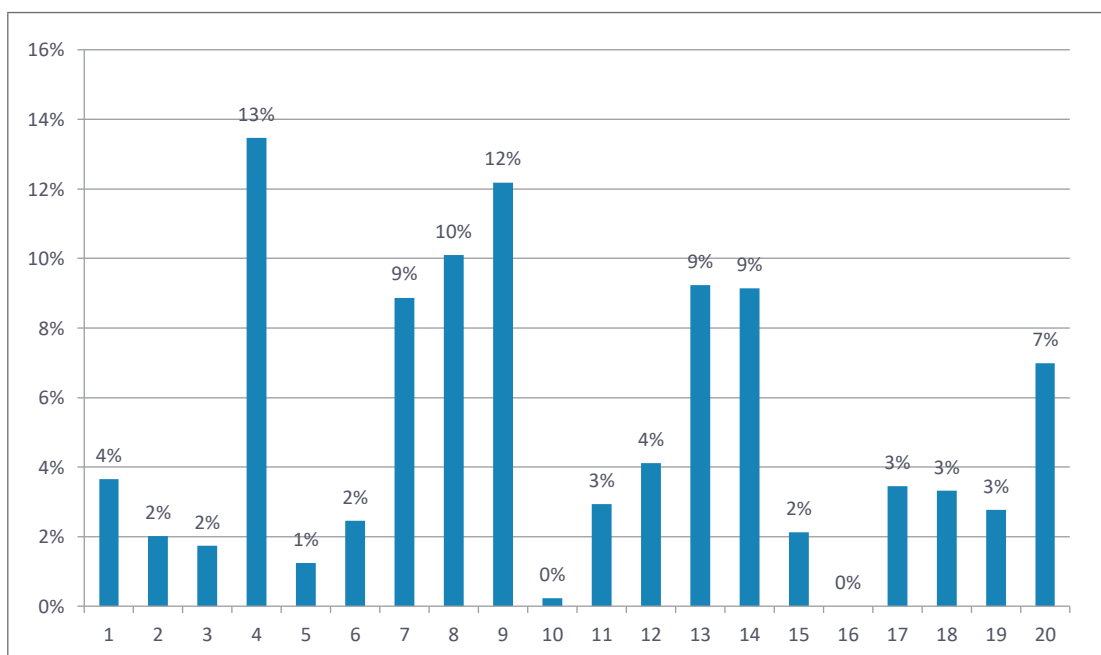


Figure 115: Per capita research output units (all publication types) by CESC for 2021

The CESC categories are listed in Appendix 2.

Figure 116: Percentage research output units (all publication types) by CESC for 2021

The CESC categories are listed in Appendix 2.

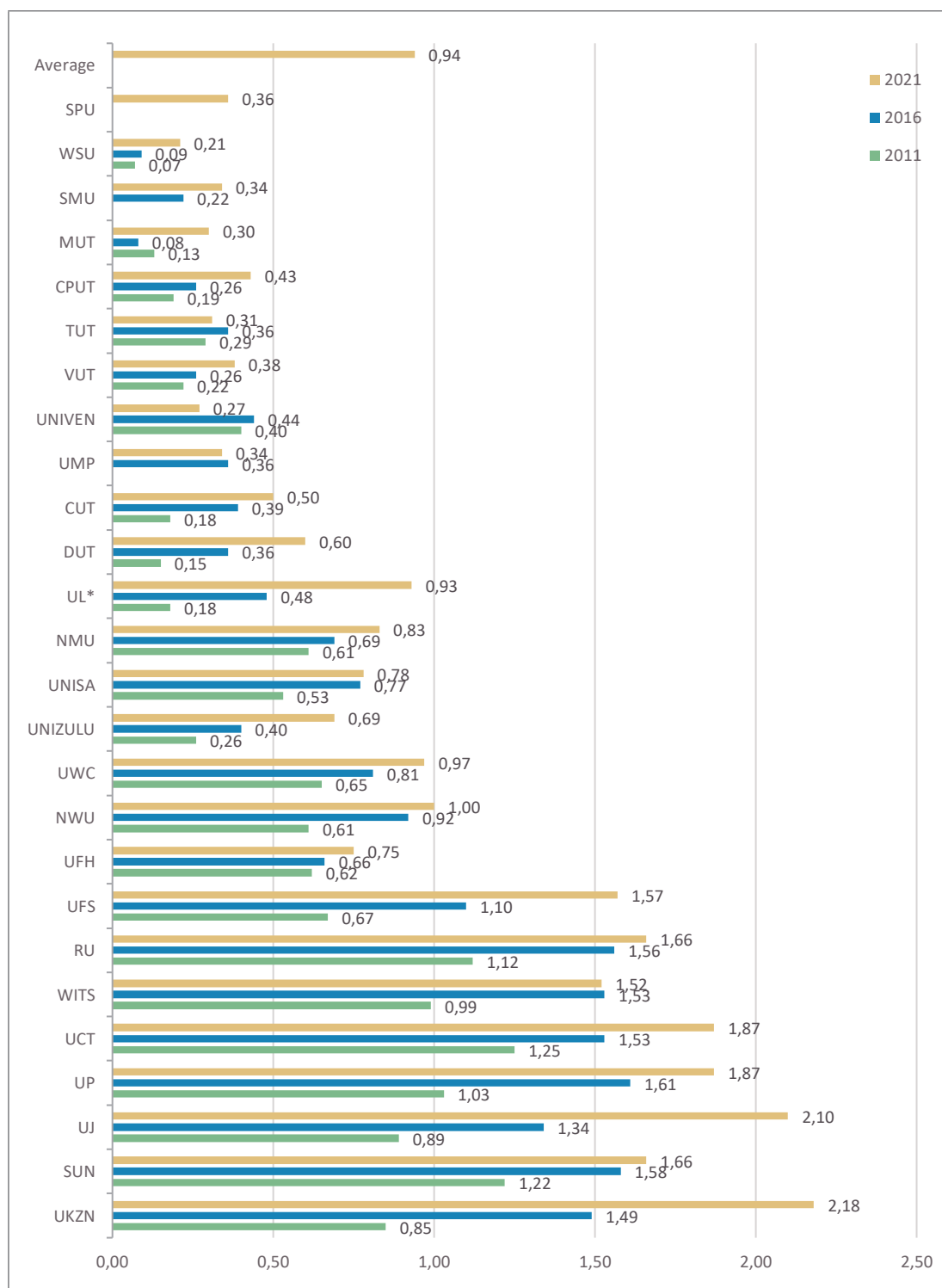
Figure 117: Research output units per capita by institution for 2011, 2016 and 2021.

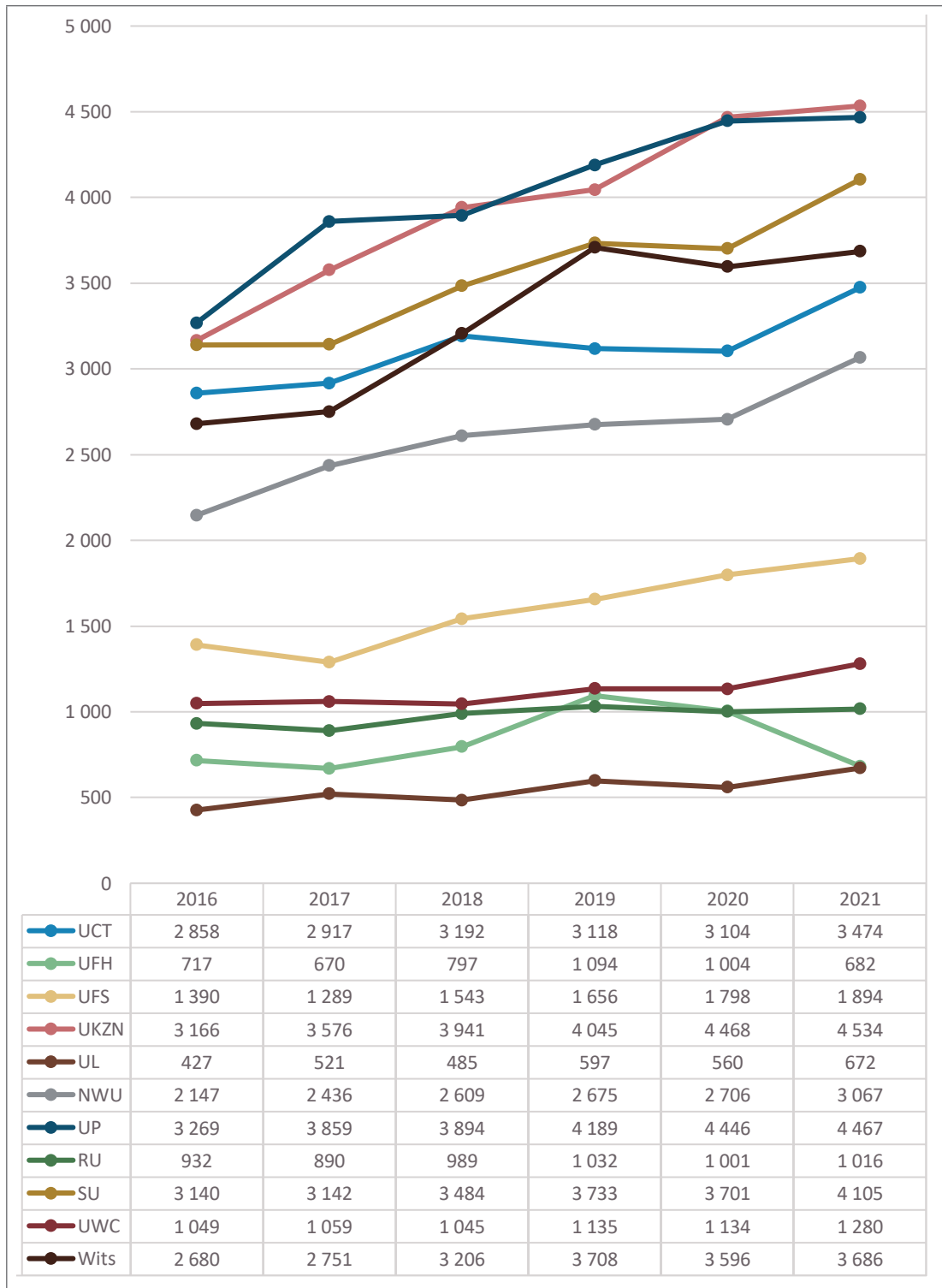
Figure 118: Weighted Actual Research Output Units: Trads

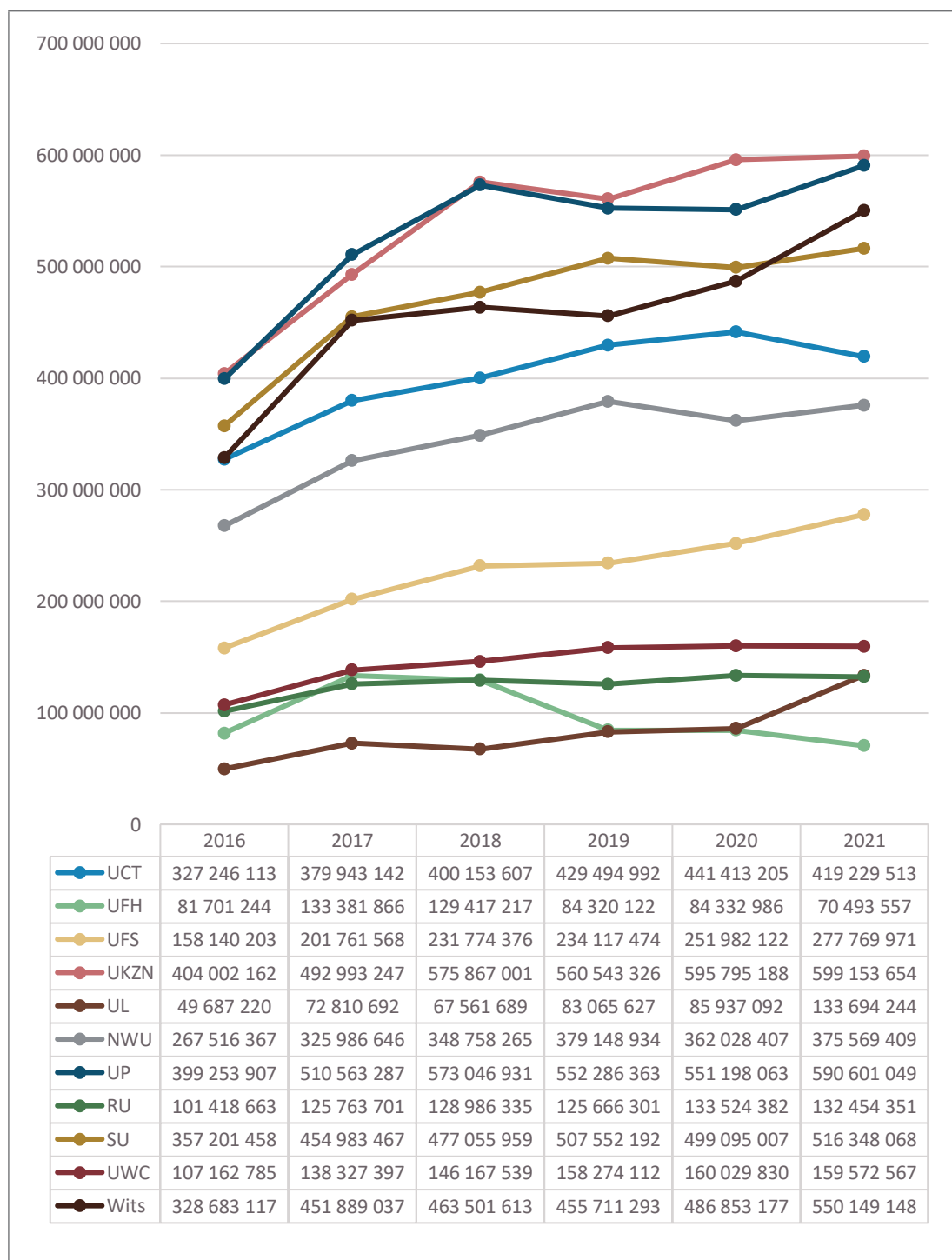
Figure 119: Actual Research Output Grants: Trads

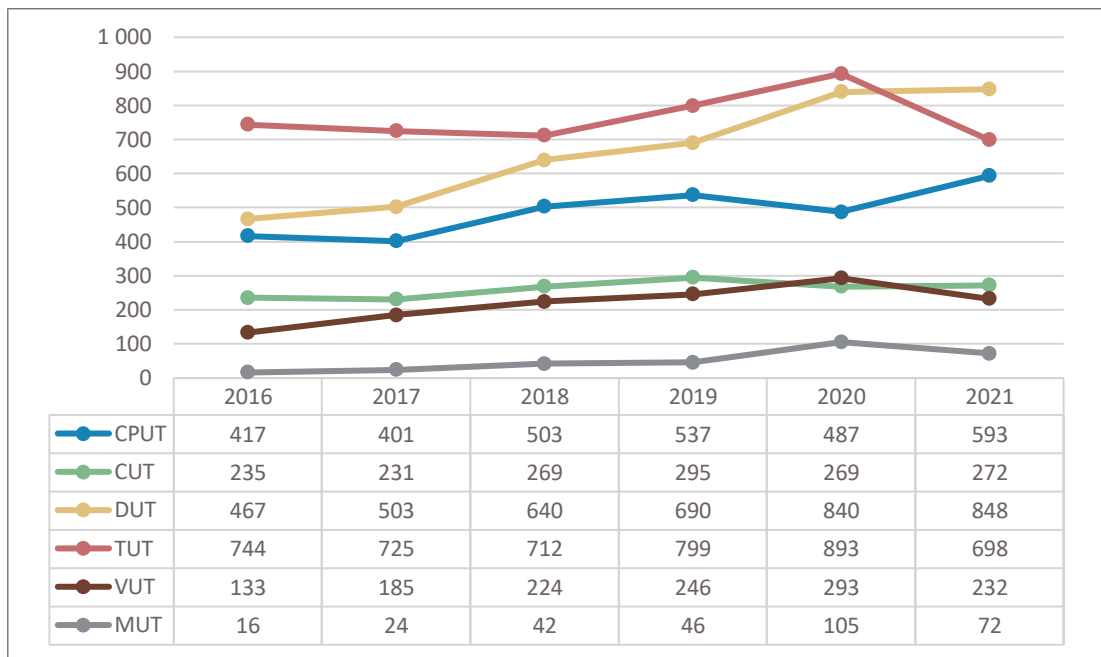
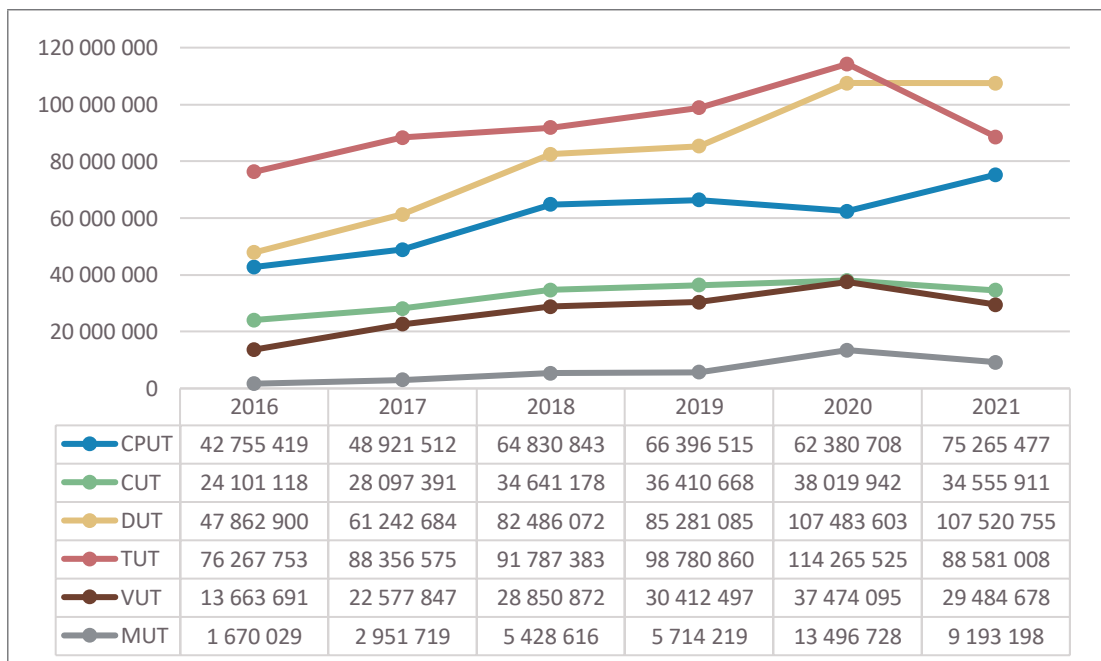
Figure 120: Weighted Actual Research Output Units: UoTs**Figure 121:** Actual Research Output Grants: UoTs

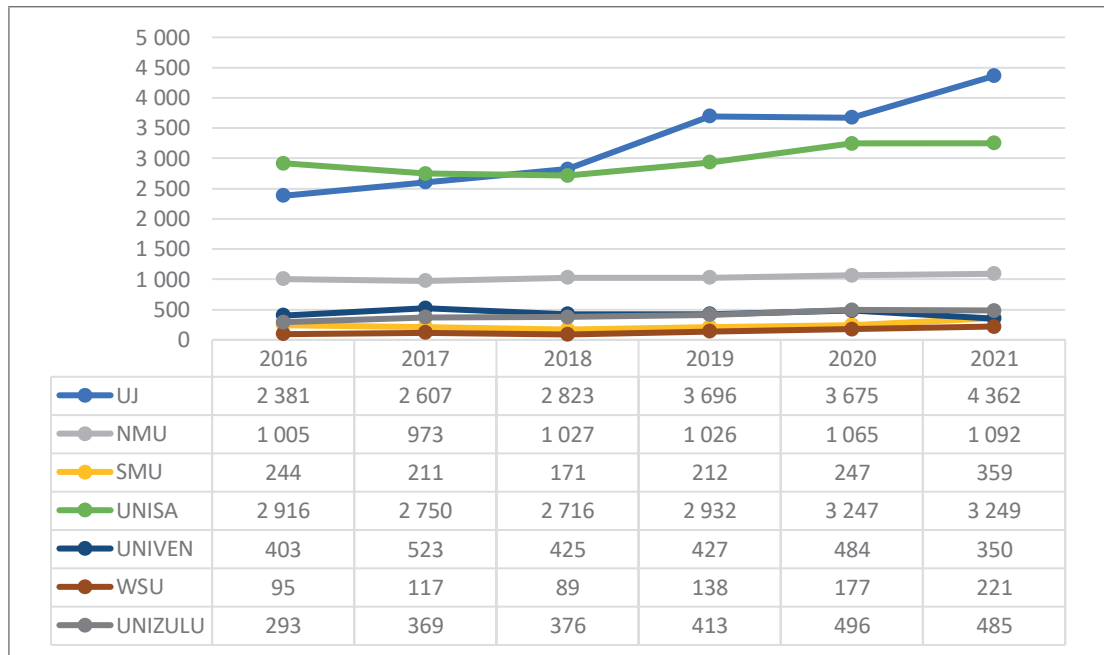
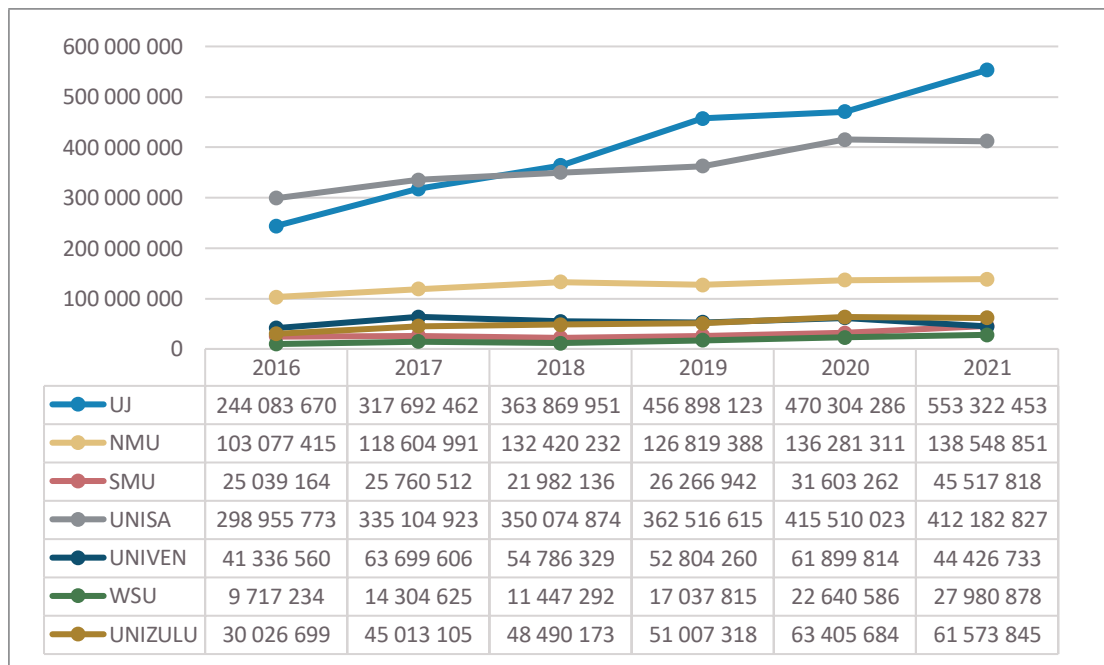
Figure 122: Weighted Actual Research Output Units: Comps**Figure 123:** Actual Research Output Grants: Comps

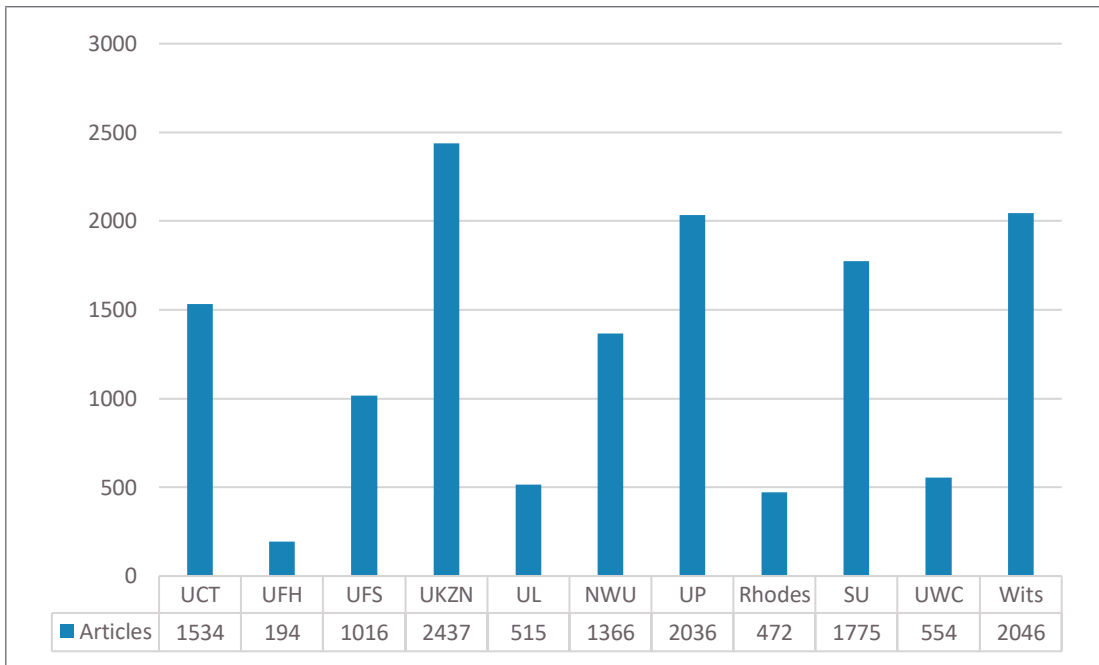
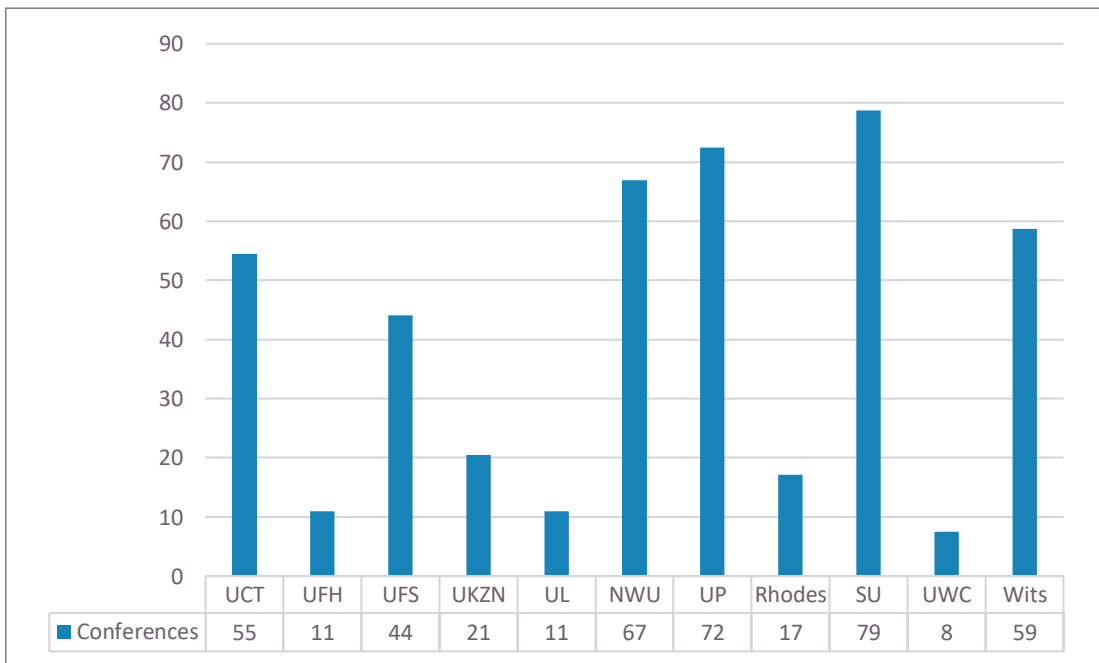
Figure 124: Journal article outputs per Trad**Figure 125:** Conference outputs per Trad

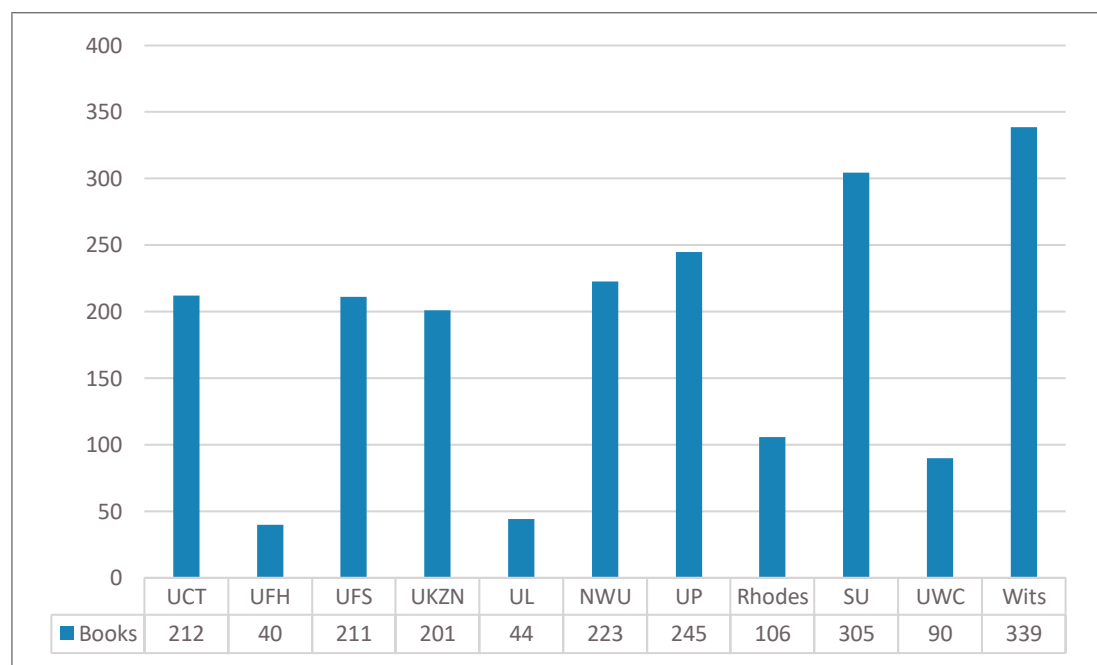
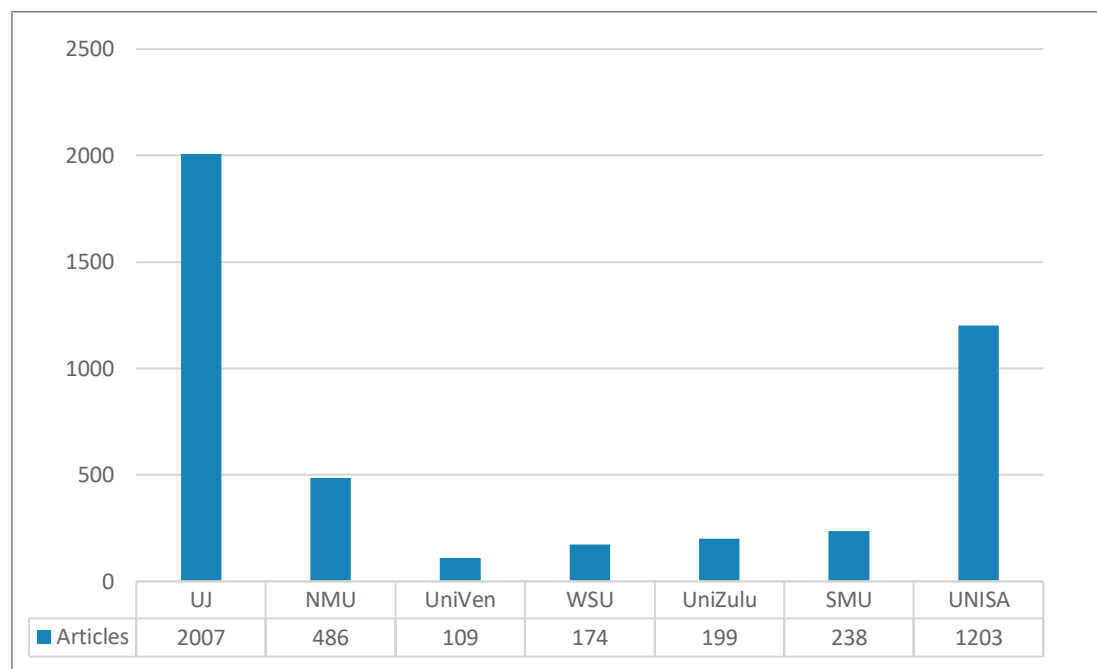
Figure 126: Book and book sections outputs per Trad**Figure 127:** Journal article outputs per Comps

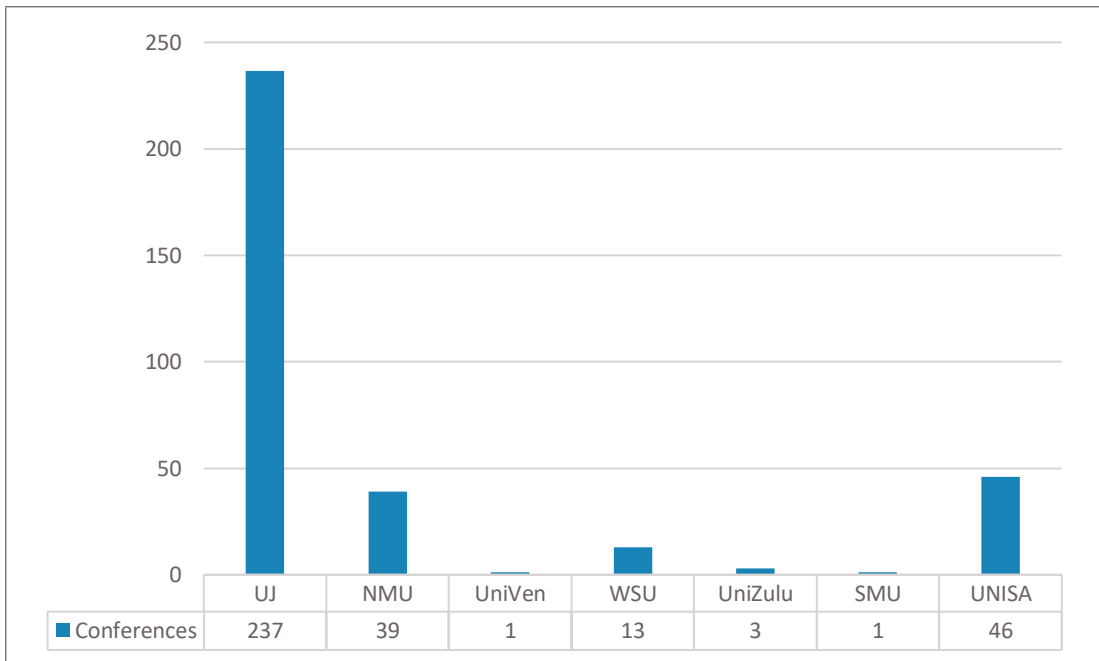
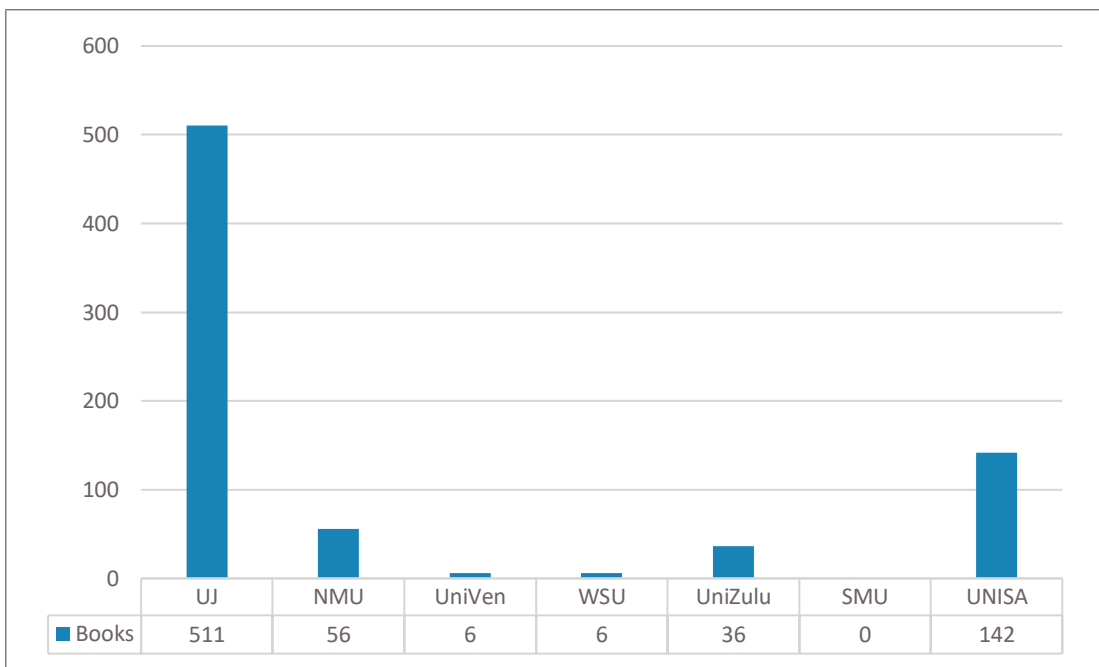
Figure 128: Conference outputs per Comps**Figure 129:** Book and book sections outputs per Comp

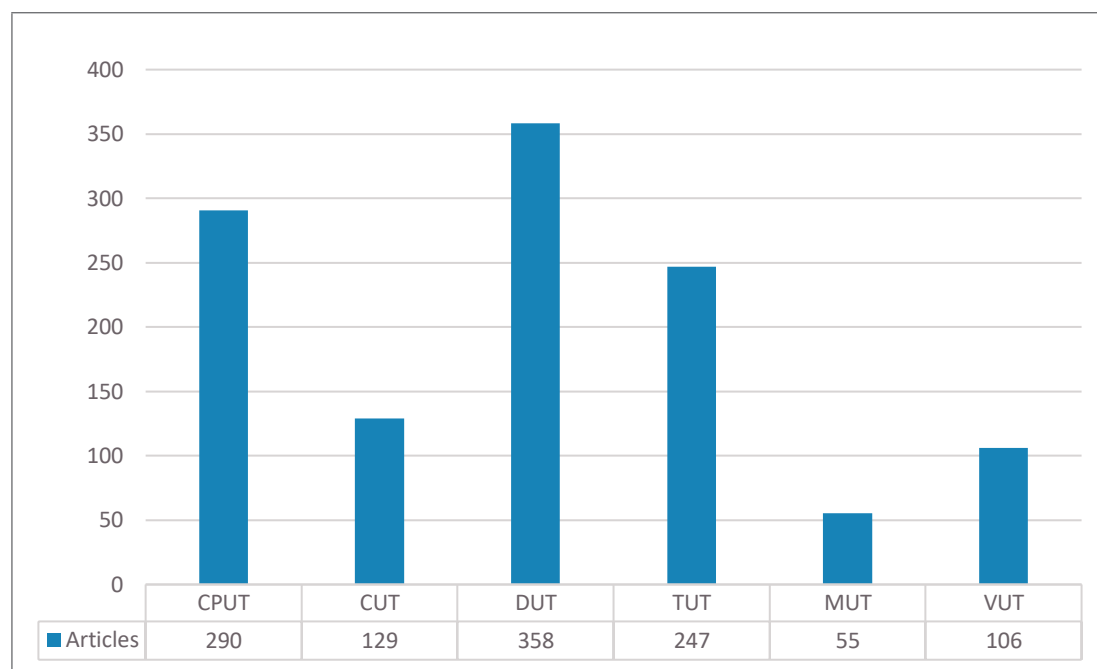
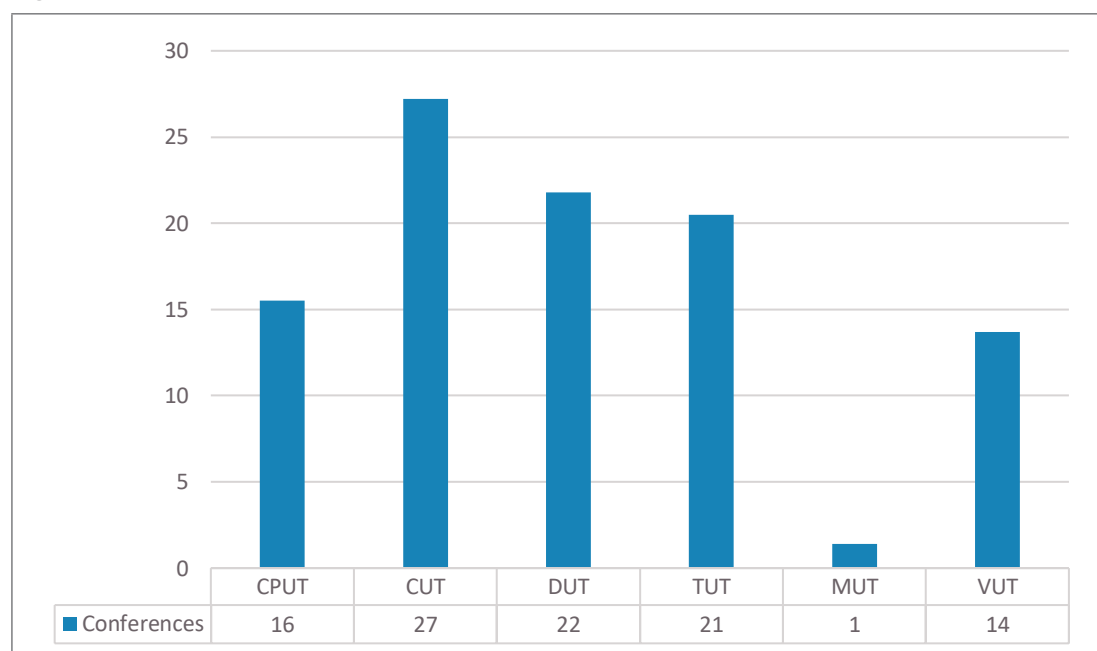
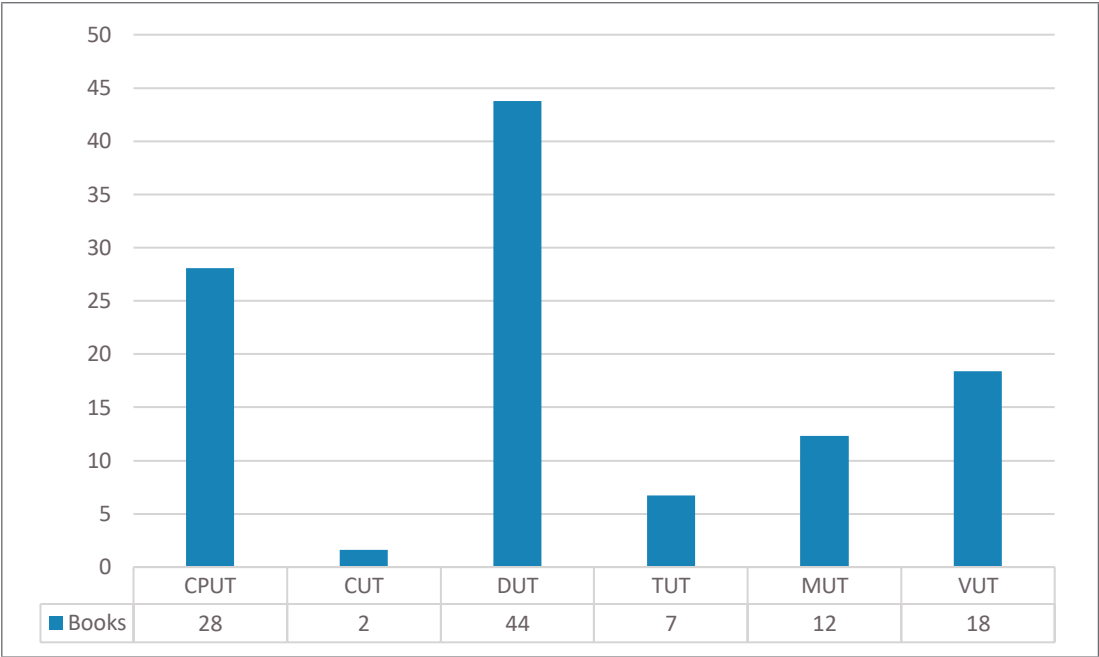
Figure 130: Journal article outputs per UoT**Figure 131:** Conference outputs per UoT

Figure 132: Book and book sections outputs per UoT



Appendix 1:

Public institutions by institutional type

Traditional Universities

North-West University (NWU)
Rhodes University (RU)
University of Cape Town (UCT)
University of Fort Hare (UFH)
University of the Free State (UFS)
University of KwaZulu-Natal (UKZN)
University of Limpopo (UL)
University of Pretoria (UP)
University of Stellenbosch (SU)
University of the Western Cape (UWC)
University of the Witwatersrand (Wits)
Sefako Makgatho Health Sciences University (SMU)
University of Mpumalanga (UMP)

Comprehensive Universities

Nelson Mandela University (NMU)
Sol Plaatje University (SPU)
University of Johannesburg (UJ)
University of South Africa (UNISA)
University of Venda (UNIVEN)
University of Zululand (UZ)
Walter Sisulu University (WSU)

Universities of Technology

Cape Peninsula University of Technology (CPUT)
Central University of Technology (CUT)
Durban University of Technology (DUT)
Mangosuthu University of Technology (MUT)
Tshwane University of Technology (TUT)
Vaal University of Technology (VUT)

Appendix 2:

Classification of Educational Subject Matter (CESM) categories

CESM 01:	Agriculture, Agricultural Operations and Related Sciences
CESM 02:	Architecture and the Built Environment
CESM 03:	Visual and Performing Arts
CESM 04:	Business, Economics and Management Studies
CESM 05:	Communication, Journalism and Related Studies
CESM 06:	Computer and Information Sciences
CESM 07:	Education
CESM 08:	Engineering
CESM 09:	Health Professions and Related Clinical Sciences
CESM 10:	Family Ecology and Consumer Sciences
CESM 11:	Languages, Linguistics and Literature
CESM 12:	Law
CESM 13:	Life Sciences
CESM 14:	Physical Sciences
CESM 15:	Mathematics and Statistics
CESM 16:	Military Sciences
CESM 17:	Philosophy, Religion and Theology
CESM 18:	Psychology
CESM 19:	Public Management and Services
CESM 20:	Social Sciences

Appendix 3:

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