



Care and Public Health Research Institute



A Healthy Society for Everyone

Self Evaluation Report

Part A: Documentation at the level of the Research Institute



Contents Self-Evaluation Report

Preface	03
1 Introduction	04
1.1 Main characteristics of CAPHRI	04
1.2 Positioning of CAPHRI within Maastricht University	04
1.3 CAPHRI Organisation	04
1.3.1 Research Lines (RLs) and Living Labs	04
1.3.2 CAPHRI Governance and staff	05
2 Mission, ambitions and strategic aims of the past six years	07
2.1 Vision, mission and values	07
2.2 CAPHRI overall strategic aims	07
2.3 PhD Policy and Training, Human Resource Policy, Open Science and Academic Culture	07
3 CAPHRI's strategic process of the past six years	08
3.1 Scientists reaching their highest ambition	08
3.1.1 Interdisciplinary and transdisciplinary research	08
3.1.2 Infrastructure facilitating high-quality research	08
3.1.3 Societal relevance, media attention and impact	08
3.2 Collaborations and strategic partnerships	09
3.2.1 Collaboration between CAPHRI Research Lines	09
3.2.2 Maastricht University and MUMC+ partnership and collaboration	09
3.2.3 Regional and national partnership and collaboration	10
3.2.4 International partnership and collaboration	10
3.2.5 CAPHRI visibility	11
3.3 PhD Policy and Training	12
3.4 Human Resource Policy	13
3.4.1 Human resource policy	13
3.4.2 Talent policy	13
3.5 Open Science	14
3.6 Academic Culture	15
4 Follow up on the recommendations from the assessment committee	16
4.1 Research quality	16
4.2 Relevance to society	17
4.3 Viability	17
5 CAPHRI's accomplishments during the past six years	19
5.1 CAPHRI's research, COVID-19, and case studies	19
5.1.1 Focus of CAPHRI's research	19
5.1.2 CAPHRI's response to the COVID-19 pandemic	19
5.1.3 Case studies	20
5.2 Research Quality	22
5.2.1 Research products for peers	22
5.2.2 Use of research products by peers	22
5.2.3 Marks of recognition from peers	22
5.3 Relevance to society	23
5.4 Trends regarding research staff, funding and success rates of the PhD programme	23
6 CAPHRI's strategy for the next six years	25
6.1 SWOT analysis	25
6.2 Strategic plans for the next six years	26
6.3 Viability	28
Summary	29
Acknowledgement	30
Annexes	31
Contents Part B and Case Studies	78

Preface

We are proud to present the Self-Evaluation Report of the Care and Public Health Research Institute (CAPHRI) over the period 2017-2022. CAPHRI is one of the leading research institutes of the Faculty of Health Medicine and Life Sciences of Maastricht University. Academic research of research institutes in the Netherlands, such as CAPHRI, is evaluated every six years on a rolling basis. The main objective of this self-evaluation is therefore to assess the research of CAPHRI in light of its own aims and strategy, in order to promote quality and societal relevance of research.

The self-reflection, mission, vision, and strategy reflected in this Self-Evaluation Report is a joint effort of the CAPHRI community, its (inter)national contacts, and its advisors (see acknowledgments). To ensure that this report reflects the ideas of the CAPHRI community, three strategic meetings were organised over the course of 6 months to allow CAPHRI staff (Research Line (RL) Leaders, department heads, PhD representatives, researchers, and management staff) to share their thoughts and perspectives, and give input on CAPHRI's Self-Evaluation Report. More than 50 staff members, ranging from junior to senior, were actively involved in these strategic meetings, in conducting a SWOT analysis (first meeting); discussing CAPHRI's position in the world surrounding us, at the regional, national, and international level (second meeting), and setting strategic plans for the future, as well as reflecting on this report (third meeting).

The focus of this Self-Evaluation Report is on the achievements and developments of CAPHRI during the past six years. Next to that, CAPHRI's research quality, societal relevance, and viability are qualitatively described, and illustrated in line with the SEP 2021-2027 guidelines. In the appendices, more detailed quantitative information is provided about various aspects. In addition, special attention is paid to four relevant aspects of CAPHRI: i.e. PhD policy and training, Human Resource Policy, Open Science, and Academic Culture.



We hope that this Self-Evaluation Report provides transparent insight into the position of CAPHRI in the Care and Public Health research field.

CAPHRI research is thematically embedded in six research lines (RLs). Together, the RLs have provided the base input for this self-evaluation and both the individual RLs as well as the overarching collaborations and themes between RLs are highlighted in this Self-Evaluation Report. All CAPHRI research lines share the joint CAPHRI vision, mission. Therefore, the core of the self-assessment report is based on the Research Institute level and shows relevant accomplishments on the Research Institute level (part A). A RL specific self-assessment can be found in part B.

On behalf of the CAPHRI community,

Silvia Evers

Scientific Director of the Care and Public Health Research Institute

May 2023



1 Introduction

Our self-evaluation starts with a brief presentation of the main characteristics of the **Care and Public Health Research Institute (CAPHRI)**, CAPHRI's position within Maastricht University (UM), and CAPHRI's important organisational features.

1.1 Main characteristics of CAPHRI

CAPHRI has a passion for **care and public health research**. We aim to foster a culture of **collaboration, creativity, and excellence** in research that promotes **health equity**, enhances **patient-centred care**, and improves **population health outcomes**.

We develop solutions to complex health challenges, promote **evidence-based practices**, and translate research into action. We strive to be at the forefront of advancing health and health care worldwide, ultimately contributing to a **healthier and more equitable society**. We endeavour to train the **next generation** of public health and health care researchers, providing opportunities for students and early-career researchers to develop the expertise necessary to conduct impactful research. We aim to build partnerships and **collaborations** with stakeholders across the public and private sectors, including health care providers, policymakers, and community organisations, to ensure that our research is relevant and applicable to the needs of society.

CAPHRI research concerns the broad range of **multi-, inter-, and transdisciplinary (applied) research and health science methodological research** with a strong emphasis on improving health for individuals and populations, across all health care settings, and in society.

CAPHRI works towards a **'healthy society for everyone'** through developing and investigating innovative solutions for care and public health. CAPHRI builds bridges between science and society by conducting high-quality research with a focus on inclusiveness and participatory approaches. The innovative research focuses on prevention, prognostic studies, and intervention research ranging from public and primary health care to person-oriented, long-term care. Our research pays attention to **local, regional, national, European, and global topics** and is thematically embedded in **six research lines (RLs)**. Together, the RLs have provided the base input for this self-evaluation and both the individual RLs as well as the **overarching collaborations** and themes between RLs are highlighted in this report. These six RLs are the principal elements considered for this self-evaluation. A further description of the research area and strategy of CAPHRI and the RLs is provided in Chapter 2, whereas detailed information per RL can be found in Part B.

Within CAPHRI, researchers have joined forces from **13 departments**: Clinical Epidemiology & Medical Technology Assessment; Epidemiology; Family Medicine; Health, Ethics & Society; Health Promotion; Health Services Research; Internal Medicine (mainly Rheumatology), International Health; Medical Microbiology, Infectious Disease & Infection Prevention; Methodology & Statistics; Orthopaedic Surgery; Rehabilitation, and Social Medicine (see Figure 1.1 and the organisational chart in Annex 3).

CAPHRI researchers believe that innovations take place when people with **different backgrounds**, perspectives, and capabilities meet, to interact in an open, safe, and transparent **academic culture**. CAPHRI is known for its comprehensive doctoral (PhD) **training programme** for young talented scientists. CAPHRI values the quality and transparency of its research, and has invested in the development of its own quality assurance system (see § 1.3.1).

1.2 Positioning of CAPHRI within Maastricht University

CAPHRI is part of the **Faculty of Health, Medicine, and Life Sciences (FHML)** of Maastricht University (UM) and Maastricht University Medical Centre (MUMC+) (see Annex 4 and 5). The FHML is UM's largest faculty, comprising 65% of the total staff and budget of UM. **MUMC+** is a partnership between Maastricht Academic Hospital and FHML. MUMC+ provides basic and top-clinical health care for the city of Maastricht and its surroundings. The mission of MUMC+ is 'To provide the best possible care and improve health in the region by integrating patient care, research and education' under the motto **'Healthy Living'**. This mission includes a strong focus on integrated care and prevention of disease. **UM** is recognised as the most international university in the Netherlands, with half of its students and one-third of its academic staff coming from abroad. UM distinguishes itself with its innovative education model, international character, and interdisciplinary approach to research and education.

Today, UM is considered one of the best young universities in the world. UM research is centred on four themes: Quality of Life, Learning and Innovation, Europe in a Globalising World, and Sustainability and Circularity. CAPHRI's research is largely in line with the characteristics and research themes identified by the UM/MUMC+ (see Chapter 2).

In terms of its **institutional positioning**, CAPHRI researchers are generally employed by UM/FHML (98% of full-time equivalents (FTEs)), or by the Maastricht Academic Hospital (2% of our FTEs). CAPHRI also has a close collaboration with the other research institutes and faculties of UM, with this collaboration reflected in our joint publications, projects, and PhD dissertations (see § 3.2).

1.3 CAPHRI Organisation

1.3.1 Research Lines (RLs) and Living Labs

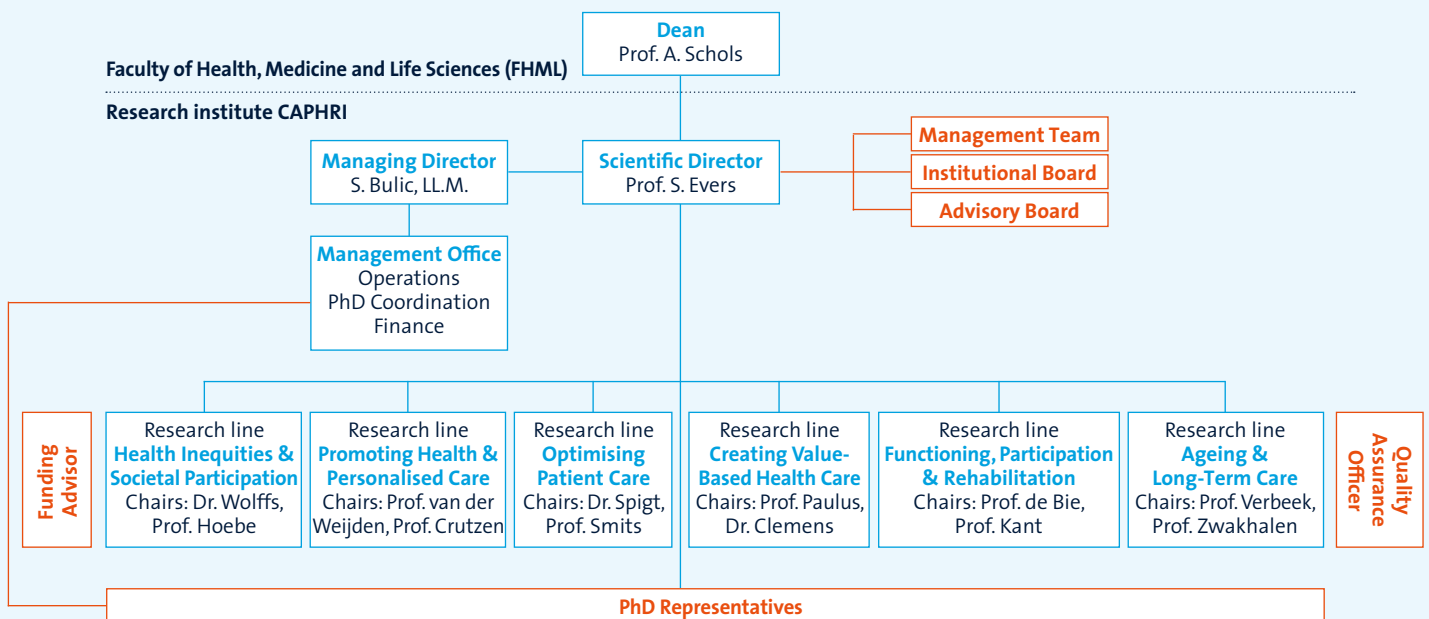
CAPHRI's research is organised along six thematic RLs, in which researchers from different discipline-oriented departments come together to work in multidisciplinary teams: **Ageing and Long-Term Care (ALTC⁰¹)**, **Creating Value-Based Health Care (VHC⁰²)**, **Functioning, Participation and Rehabilitation (FPR⁰³)**, **Health Inequities and Societal Participation (HISP⁰⁴)**, **Optimising Patient Care (OPC⁰⁵)**, **Promoting Health and Personalised Care (PHPC⁰⁶)**.

Each RL is led by two RL leaders: the Chair and the Vice-Chair, and includes researchers from various departments. The RLs are the lifeblood of CAPHRI in terms of their output and activities. Each RL has developed its own mission statement that aligns to the CAPHRI's statement (see Part B for all mission statements).

Furthermore, CAPHRI has established long-term partnerships with local public health and health care institutes in the so-called **Living Labs and Centres**. In these labs CAPHRI researchers work together with care organisations, knowledge institutes, governments, local health councils, and citizen representatives in research projects with a joint responsibility for the health and wellbeing of the citizens in our own Meuse-Rhine Euroregion (with 3.9 million inhabitants around the city corridor of Aachen-Maastricht-Hasselt-Liège). The main Living Labs are **Ageing and Long-Term Care Limburg⁰⁷**, **Public Health Limburg⁰⁸**, **Rehabilitation⁰⁹**, **Research Network Family Medicine Maastricht¹⁰**, **Sustainable Care Limburg¹¹**, and centres such as the **Maastricht Health Economics and Technology Assessment Center¹²**.

1.3.2 CAPHRI Governance and staff

The **CAPHRI Management Board** consists of the scientific director and the managing director (see Figure 1). The **Scientific Director** has the final responsibility for the Institute and reports



Core Departments

- Epidemiology
- Family Medicine
- Health Promotion
- Health Services Research
- Health, Ethics and Society
- International Health
- Methodology and Statistics
- Orthopaedic Surgery
- Rehabilitation
- Social Medicine
- Clinical Epidemiology and Medical Technology Assessment

Associated Departments

- Internal Medicine / Rheumatology
- Medical Microbiology, Infectious Diseases & Infection Prevention

Living Labs and Centers

Commissions

- Science Commission est. 2023
- Communication Commission est. 2023
- International Collaboration Commission
- Quality Assurance Committee

Figure 1.1: CAPHRI Organisational Chart

1 Introduction

to the Board of FHML. The Scientific Director's appointment corresponds to 0.5 FTE. As of November 2021, Professor Silvia Evers holds the position of Scientific Director, succeeding Professor Maurice Zeegers. The **Managing Director** (1.0 FTE) is responsible for the operational aspects within the Institute and oversees the CAPHRI Management Office. As of February 2023, Sabina Bulic, LL.M., holds this position, succeeding Martijn Streefkerk, MSc. The **CAPHRI Management Team**, which was formerly known as the RL-leaders meeting, was established in early 2022 to provide additional emphasis to team management and to emphasise the equal roles of all its members.

The Management Team comprises the six RL Chairs and the Management Board, ensuring short communication lines between the RLs and the Management Board.

The Management Team provides input, maintains oversight across activities, develops policies, etc. The individual RL Chairs hold the responsibility for the scientific and financial management of their respective RL, while ensuring accountability to the Management Board. The **Institutional Board** (formerly known as the School Council) consists of the Management Board and the Management Team, further complemented by the RL Vice-Chairs and the Heads of Departments. In the Institutional Board, members are informed of decisions and actions made by the Management Board and the Management Team, receive (content-) specific presentations, actively monitor proposed policy and financial accountability, and are also involved in large strategic decisions. Finally, the **CAPHRI Advisory Board** (consisting of external experts) meets twice a year and acts as a sounding board for major CAPHRI decisions and strategy, offering advice and external monitoring. In addition, further input may exceptionally be requested from this Board, as for example in the context of a preparation for an external visitation. At the end of 2022, a new **CAPHRI Advisory Board**¹³ was installed consisting of experts from health care, science, and governmental organisations.

The **CAPHRI Management Office** supports the daily management of the Institute, the CAPHRI community of individual researchers, departments, and RLs on practical, administrative, legal, and financial matters regarding all aspects of the research enterprise. These activities include staff management (tenured, non-tenured, and support staff), accounting, project acquisition, financial project management, and marketing and

communication. The **CAPHRI PhD Graduate School** is committed to supporting PhD candidates throughout their PhD journey using a strong support system. The CAPHRI Management Office, therefore, also takes care of the overall PhD coordination, and includes a **PhD Administrative Coordinator** (0.4 FTE), who acts as the principal point of contact for all CAPHRI PhD candidates and handles most PhD-related administrative tasks, and a **PhD Community Coordinator** (0.2 FTE), whose principal tasks are to enhance the PhD community; to coordinate the development of the CAPHRI PhD programme, of the PhD policy, and of the PhD course portfolio; and to monitor the quality and progress of the PhD projects, and the quality of supervision. Six **PhD representatives** (one per RL) represent the voice of the PhD candidates, ensure the dissemination of important information to the PhD community, and organise both formal and informal meetings. They regularly meet with the two PhD Coordinators (monthly) and with the Management Board (quarterly). Finally, a **Funding Advisor** from the Faculty Research Office provides information on grant opportunities; offers support in developing, writing, and editing grant proposals; and facilitates public affairs and lobbying in the areas of emerging trends, agenda setting and regulations. Four commissions also support the CAPHRI organisation. CAPHRI values the quality of its research and has therefore established a quality assurance system, with a **Quality Assurance Committee**, a dedicated Quality Assurance Officer, and guidelines for research conduct and auditing. Second, to build sustainable, effective, and efficient international research collaborations, CAPHRI has established an **Internationalisation Commission** that is committed to explore and support the development of new collaborations while strengthening the existing, promising (bottom-up) research partnerships with universities, universities of applied sciences and public health institutes, according to the principle of "growing in mutual trust". Third, the **Science Commission** is tasked to provide, both requested and volunteered, advice to support the Management Board in the development of research policy and strategy, to provide constructive feedback on prestigious (individual) research proposals and to select candidates for talent programmes and awards. Finally, the recently established **Communication Commission** (2023) supports and enhances our internal and external science communication, as well as our alumni policy.

⁰¹ | www.maastrichtuniversity.nl/research/school-caphri-care-and-public-health-research-institute/our-research/ageing-and-long-term
⁰² | www.maastrichtuniversity.nl/research/school-caphri-care-and-public-health-research-institute/our-research/creating-value-based
⁰³ | www.maastrichtuniversity.nl/research/school-caphri-care-and-public-health-research-institute/our-research/functioning
⁰⁴ | www.maastrichtuniversity.nl/research/school-caphri-care-and-public-health-research-institute/our-research/health-inequities-and
⁰⁵ | www.maastrichtuniversity.nl/research/caphri/our-research/optimising-patient-care
⁰⁶ | www.maastrichtuniversity.nl/research/caphri/our-research/promoting-health-and-personalised-care
⁰⁷ | www.awolimb.org.nl
⁰⁸ | www.academischewerkplaatslimburg.nl
⁰⁹ | www.maastrichtuniversity.nl/nl/onderzoek/de-academische-werkplaats-revalidatie-limburg
¹⁰ | www.huisartsgeneeskundemaastricht.nl/onderzoek/rnfm
¹¹ | www.maastrichtuniversity.nl/nl/onderzoek/academische-werkplaats-duurzame-zorg-limburg
¹² | www.maastrichtuniversity.nl/maastrichteta
¹³ | www.maastrichtuniversity.nl/research/caphri/about-caphri/organisational-structure#advisory-board

2. Mission, ambitions and strategic aims of the past six years

Chapter 2 describes the vision, mission, and values looking back over the past 6 years, examines CAPHRI's strategic aims, also in relation to four specific aspects mentioned in the Standard Evaluation Protocol (SEP): PhD Policy and Training, Human Resource Policy, Open Science and Academic Culture.

2.1 Vision, mission and values

Our **vision** is “*A healthy society for everyone*” and our **mission** is “*We conduct high-quality research in care and public health with societal relevance*”. In our work, we foster the following core values:

1. *We care for health and wellbeing.* (Public) Health, care and wellbeing are crucial elements of resilient individuals and successful societies.
2. *We value cooperation and inclusion.* It is our conviction that innovations take place when people from different backgrounds, perspectives and capabilities meet and converge.
3. *Our research has societal relevance.* Although generating new knowledge is important, we are particularly mindful of the importance of this knowledge to generate societal impact. In other words, we highly value knowledge as a means to an end. Therefore, we foster dissemination of knowledge to the wider public through publications, public education, and outreach initiatives and by translating it into practice.

2.2 CAPHRI overall strategic aims

At the Institute level, CAPHRI guides and supports individual researchers and RLs to develop their own interests keeping the Institute's vision, mission and values in mind. Our support objectives are organised around **two overall strategic aims**, specifically:

1. We help our scientists to reach their highest ambition in care and public health research.
 - Our research is interdisciplinary and focused (see § 3.1.1 and § 3.2.1);
 - Our infrastructure facilitates high-quality research (see § 3.1.2);
 - Our research is driven by society (see § 3.1.3);
 - We take care of our staff (see § 3.3 and § 3.4);
 - We provide high-quality training for our researchers (see § 3.3).
2. We are the most obvious academic partner for care and public health challenges in our region and beyond (see § 3.2)

- We connect to other groups within UM and MUMC+ (see § 3.2.1 and § 3.2.2);
- We contribute to a healthy society in the region of Limburg and across the Netherlands (see § 3.2.3);
- We are a globally connected European research institute that is anchored in the European Union (EU)-region (see § 3.2.3 and § 3.2.4);
- We are visible and attractive (see § 3.2.5).

All CAPHRI RLs share the joint CAPHRI vision, mission, overall objectives, and strategy to create optimal synergy and efficiency. In addition, **each RL has developed its own mission statement** that aligns to the Institute's mission and is updated when needed. These current full statements can be found in part B; in brief, they are:

1. ALTC aims to promote resilience in daily functioning of older people, irrespective of their living situation, abilities and place of residence;
2. VHC aims to contribute to the improvement of population health and wellbeing through better health systems, services and products in all areas of the health care chain;
3. FPR aims to optimise functioning and participation of patients and healthy individuals in their context throughout their lifespan;
4. HISP aims to reduce health inequities and to increase societal participation in public health to strengthen local and global biosocial ecologies of health;
5. OPC aims to conduct research that enables doctors and public health workers to deliver care and care-related prevention that is optimally suited to every individual; and
6. PHPC aims to develop new theories, interventions and research methods to promote health and to promote personalised care involving shared decision-making principles.

2.3 PhD Policy and Training, Human Resource Policy, Open Science and Academic Culture

CAPHRI pays attention to its **Human Resource Policy** (see § 3.4), both for **doctoral researchers (PhD candidates)** (see § 3.3 on PhD Policy), as well as for middle- and advanced-level career researchers. In the last 2 years, CAPHRI staff has been very active in the **Recognition and Rewards programme**⁰¹, aiming to better value everyone's talent within CAPHRI. Like the MUMC+, CAPHRI actively supports the implementation and practice of **Open Science** (see § 3.5), **Social Safety, Diversity and Inclusivity**, leading to an open **Academic Culture** (see § 3.6).

⁰¹ | www.universiteitenvannederland.nl/recognitionandrewards/recognition-and-rewards

3 CAPHRI's strategic process of the past six years

This chapter describes our actions to achieve the overall strategic aims, our collaboration with other partners, and the activities embarked upon regarding PhD Policy and Training, Human Resource Policy, Open Science, and Academic Culture.

3.1 Scientists reaching their highest ambition

3.1.1 Interdisciplinary and transdisciplinary research

CAPHRI research concerns **multi-, inter- and transdisciplinary (applied) research and health science methodological research**, with a strong emphasis on improving health for individuals and populations, largely outside the hospital setting. Via **Team Science** activities, for instance through meet-and-greet sessions, journal clubs, lectures, and research days, CAPHRI has been stimulating collaborative efforts and addressing scientific challenges while leveraging the strengths and expertise of researchers trained in different fields. CAPHRI researchers have been frontrunners in interdisciplinary research, which created a base for our leading position in transdisciplinary research. The essence of transdisciplinary science in the context of CAPHRI activities means that researchers engage non-academic stakeholders in significant ways and throughout the research process (citizen science), rather than simply collecting data, informing stakeholders without establishing dialogue or without ensuring dissemination of knowledge afterwards; indeed, knowledge dissemination is pursued systematically, as demonstrated by the case study on citizen science below (see Case Study in Box 1).

Box 1 Case study on citizen science:

[www.maastrichtuniversity.nl/research/school-caphri-care-and-public-health-research-institute/our-research/"it-leads-different](http://www.maastrichtuniversity.nl/research/school-caphri-care-and-public-health-research-institute/our-research/)

The overall aim of CAPHRI researchers embarking on **citizen science** initiatives is to create an independent forum in which various researchers and stakeholders with different backgrounds and of heterogeneous views can come together to discuss each other's ideas in order to facilitate transdisciplinary research to generate societal impact and to deliberate in terms of establishing priorities.

3.1.2 Infrastructure facilitating high-quality research

CAPHRI values the quality of its research and has therefore established an **Institute-wide Quality Assurance System** (see the [website](#)⁰¹ and Case Study in Box 2), which offers guidelines for research conduct and auditing as a practical translation of the institutional guidelines. To facilitate researchers in delivering high-quality research, CAPHRI has a **Quality Assurance Officer** and **Quality Assurance Committee** establishing procedures to ensure that CAPHRI adheres to the institutional, national, and European codes of Research Integrity.

Box 2 Case study on Quality Assurance:

www.maastrichtuniversity.nl/research/school-caphri-care-and-public-health-research-institute/our-research/quality-assurance-6

At CAPHRI, almost all studies involve human subjects and should therefore be performed in line with national and EU regulations and the revised version of the **Declaration of Helsinki (2013)**. CAPHRI medical scientific research involving human subjects which falls under the Medical Research Involving Human Subjects Act (*Wet medisch-wetenschappelijk onderzoek met mensen*, WMO) of the Netherlands, in which people are being subjected to actions (rules of behaviour) imposed on them must be approved by the **independent Medical Ethics Committee**. In general, most CAPHRI research did not fall under this act and therefore previously many projects were not ethically reviewed. To overcome this gap CAPHRI researchers, under the lead of Professor David Townend, have been actively involved in setting up the FHML Research and Ethics Committee (FHML-REC) resulting in the fact that since 2018 all research within FHML is assessed in terms of ethics, instead of only being labelled as falling outside the scope of the WMO (as was done by Medical Ethics Committees).

3.1.3 Societal relevance, media attention and impact

Societal relevance is one of our core values and we often state that research without societal relevance does not belong to CAPHRI. We therefore use Altmetric explorer to analyse and report on the societal media attention surrounding CAPHRI's research. The tool uses our output (from the UM PURE database), with an identifier (DOI, etc.) and connects the identifier used in various sources. Based on the most recent information (generated 21 -04-2023; see Figure 3.1), the Altmetric analysis shows that CAPHRI research is frequently mentioned on **social media** (>100,000 mentions) and in **news and blogs** (>5,000 mentions). Moreover, while this output does not show the **patents** and **policy papers** that we have written ourselves, it tracks the policy papers and patents (>500) that mention our research.

Attention breakdown

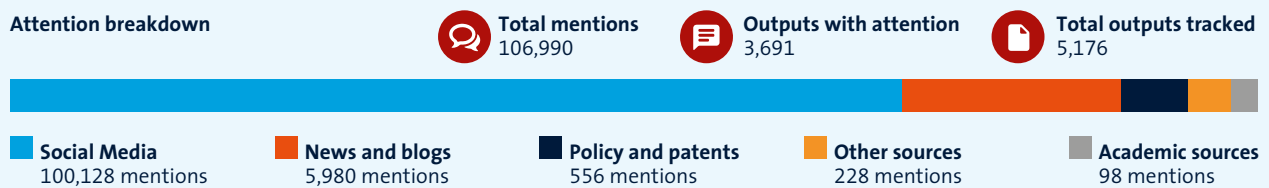


Figure 3.1: CAPHRI output Altmetric Analysis.

CAPHRI's strong societal relevance also clearly shows in the examples of our research that are highlighted in the case studies. An overview of the case studies and their relevance can be found in chapter 5.1.3.

3.2 Collaborations and strategic partnerships

Collaborations and partnerships are key to our mission to create a healthy society for everyone. It is our conviction that innovations take place when people from different backgrounds, perspectives and capabilities meet and converge. In the past six years, we have proactively invested in strengthening our collaborations at local, national, and international levels.

3.2.1 Collaboration between CAPHRI Research Lines

We foster and stimulate the **collaboration between the RIs** for cross-fertilisation and in order to reach our joint goals. This collaboration applies to all our researchers, as we believe that the answers to the problems of today's health care lie in the joint research between experts from diverse backgrounds and through engagement of all key stakeholders.

This internal collaboration within CAPHRI is productive, as measured by the **joint number of publications** across RIs since 2017 (Figure 9 in Annex 6). The figure also shows that most publications are written within each RI, indicating that a degree of uniqueness and focus has been established. At the same time, a considerable amount of the publications is resulting from joint efforts between RIs. We feel that this represents an optimal **balance** between **RI focus** while stimulating **collaboration**. Among RIs, PHPC and OPC collaborate most frequently with each other (216 publications), followed by OPC and VHC (175 publications). An illustrative example of collaboration between different RIs is the DARTBAC project in which FPR, PHPC and HISP work together (see the Case Study in Box 3).

Box 3 Case study on RI collaboration, the DARTBAC project:
www.maastrichtuniversity.nl/research/caphri/our-research/functioning-participation-and-rehabilitation/technology-weapon-against

3.2.2 Maastricht University and MUMC+ partnership and collaboration

CAPHRI values the partnership and collaboration with other research institutes within the MUMC+. Looking back at the last six years, **one-fifth of PhD trajectories are conducted jointly** with (an)other research institute(s). This collaboration is prominent with the **methodological experts** (Clinical Epidemiology & Medical Technology Assessment; Epidemiology; Health, Ethics & Society; Health Services Research and Methodology & Statistics), who work together with clinical and health care experts on different projects. In this collaboration, CAPHRI overall has an **inclusive model**, i.e., support is given regardless of university, faculty or research institute, leading to high demand. As CAPHRI themes are more and more taken up by other institutes within UM, there is a growing need for CAPHRI expertise, as for example from Health Promotion for the Prevention Agenda of the MUMC+.

In this continuous policy, we have **joint appointments** with other research institutes. Of all dual appointments involving two or more institutes (62 FHML employees) approximately 55% involves CAPHRI researchers. Some of them are **shared professors with other research institutes**, for instance with SHE, School for Health Professions Education⁰² (Professor Kasia Czabanowska, Professor Anja Krumeich, and Professor Aggie Paulus), NUTRIM, research institute for Nutrition and Translational Research in Metabolism (Professor Paul Savelkoul, Professor Nanne de Vries, and Professor Maurice Zeegers), and GROW, research institute for Oncology and Reproduction (Professor Guido de Wert).

The strong collaboration with other research institutes is also shown in Figure 10 in Annex 6, where the joint publications of CAPHRI and other FHML research institutes are illustrated. This collaboration is a logical choice due to the positioning of CAPHRI as being focused on extramural care and health sciences, topics that are relevant to all diseases including cancer (GROW⁰³), mental health (MHeNs⁰⁴), metabolic (NUTRIM⁰⁵) and cardiovascular diseases (CARIM⁰⁶). NUTRIM is our most frequent collaborator (938 publications), followed by GROW (692 publications).

CAPHRI also has joint projects and PhDs **with other UM faculties**, including the School of Business and Economics, the Faculty of Psychology and Neuroscience, the Faculty of Arts and Social Science, the Faculty of Law, and the Faculty of Science and Engineering.

3 CAPHRI's strategic process of the past six years

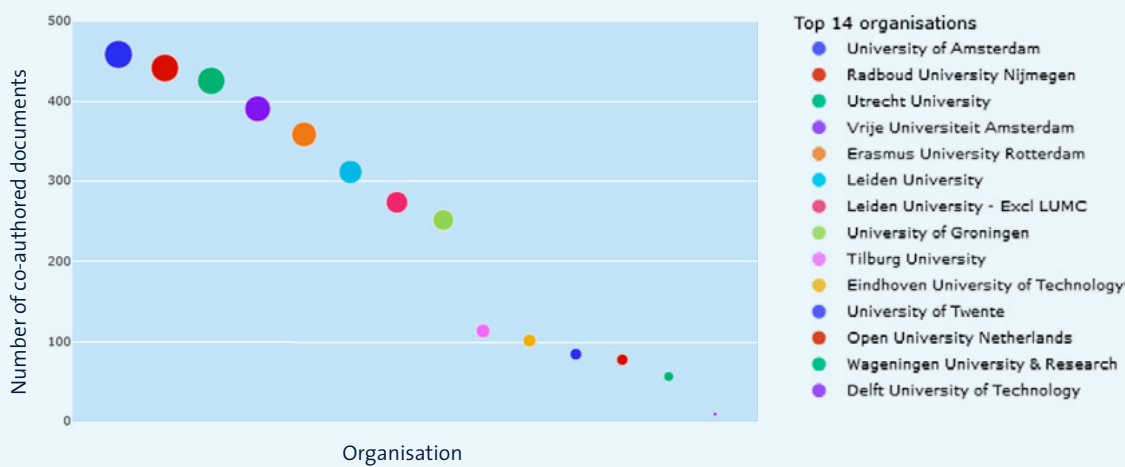


Figure 3.2: Number of shared publications for CAPHRI's most frequent academic national collaborators (2017-2022).

3.2.3 Regional and national partnership and collaboration

CAPHRI is traditionally very well connected in the region. The Institute functions as a dedicated and innovative interface between regional stakeholders, such as care organisations, knowledge institutes, governments and local health councils, citizen representatives and researchers who work with CAPHRI. Together with our regional partners, we are jointly responsible for the health of the citizens in Limburg and deploy initiatives to stimulate this interaction. Examples are our 'Kennis-as/ Provincie Limburg', large-scale projects on healthy schools (Movare project), healthy workplaces (4Limburg project) and health measurements (LIME-project).

Additionally, we have renewed the formal collaboration with **Zuyd University of Applied Sciences**, which is aimed at acquiring science-based knowledge important for the development of innovative concepts that contribute to the preservation or improvement of the vitality of citizens and neighbourhoods. Using the CAPHRI Living Lab infrastructure to share knowledge and expertise, both organisations aim to strengthen their knowledge position in this field and to realise their common objectives.

On the **national level**, CAPHRI is founding member (and holds the Secretariat) of the **Netherlands School of Public Health and Care Research (CaRe)**, that includes Radboud Institute for Health Sciences (RIHS) (now Nijmegen Health Domain), Amsterdam Public Health research institute (APH), and Netherlands Institute for Health Services Research (NIVEL). Since its establishment in 1995, CaRe's mission is to contribute to better health and health care through high-quality training of young researchers and multidisciplinary cooperation between the four research institutes (see Annex 7). The overall result of this collaboration is demonstrated via the output in the form of **joint activities, joint projects and systematic knowledge exchange through well-established mechanisms and channels**, leading to a high societal impact. CAPHRI has

joint projects, and PhDs trajectories, with almost all Dutch universities. In the past 6 years, CAPHRI has the highest shared publications with the University of Amsterdam (458 publications), Radboud University Nijmegen (441 publications) and Utrecht University (425 publications) (Figure 3.2).

Finally, our staff is also appointed at other universities, including Zuyd University of Applied Sciences; multiple research institutes (Trimbos, National Institute of Mental Health and Addiction; IVO Foundation Institute for Research into Lifestyles & Addiction); Municipal Health Services, and other health care institutions, sometimes as linchpins (see § 5.2.3).

3.2.4 International partnership and collaboration

To further enhance existing international research collaborations (mostly initiated in a bottom-up manner), to support the development of new ones, and to facilitate contacts and networking with established collaborations or institutions, we have installed a **CAPHRI Internationalisation Commission** (see Annex 8). The Commission aims to bring together the University's diverse communities, with interdisciplinary leadership and longstanding international research partnerships, with diversity, inclusion, and societal relevance as our core guiding values. CAPHRI's internationalisation activities further support PhD development and capacity building in low- and middle-income countries (LMICs), through education, training, and research. This aim has resulted in collaborative projects, and **joint/double PhD** trajectories with international universities (such as Birmingham, Dusseldorf, etc.).

Successful research in care and public health often has an **international perspective**, also as a mean of capacity building with LMICs (see § 4.2, recommendation 4). CAPHRI looks to establish and maintain strong research connections with our partners throughout the world. Since CAPHRI offers an excellent infrastructure to support care and public health research, our researchers are internationally acknowledged.

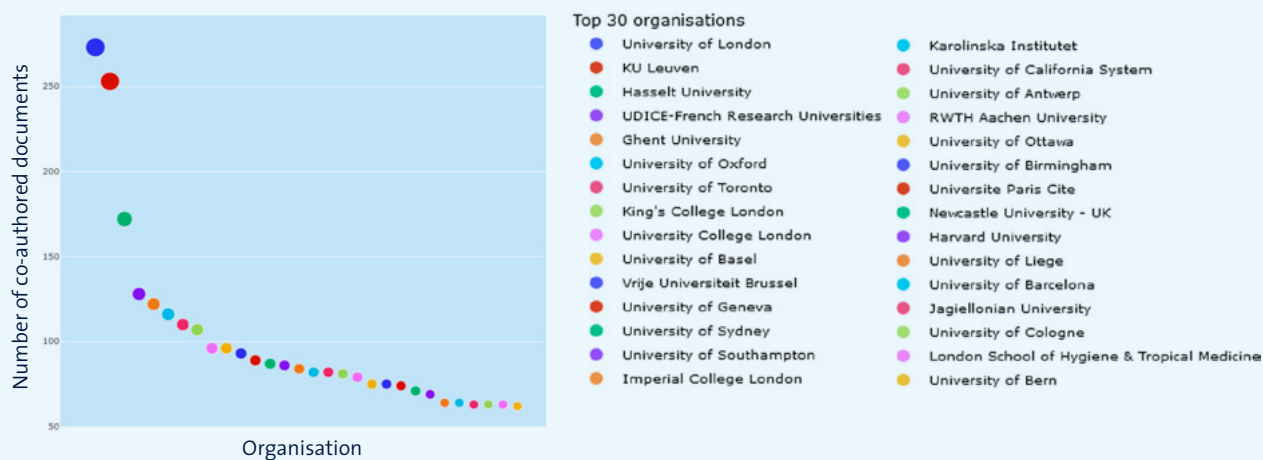


Figure 3.3: Number of documents for CAPHRI's most frequent academic international collaborators (2017-2022)

As a result, we are able to attract international partners who wish to collaborate for greater impact, synergies and knowledge sharing. Strengthened by our geographical location, CAPHRI has a close collaboration with **partners in the Meuse-Rhine Euroregion**. We have initiated a formal collaboration with the **Centre for Health and Society** (Heinrich-Heine-University, Düsseldorf, Germany), the **CCC⁰⁷** collaboration. CAPHRI is a partner of **euPrevent** a non-profit, Euroregional network that promotes the quality of life of citizens in the border regions of the Netherlands, Germany and Belgium and of **EuroHealthNet** a Partnership of public health bodies working on public health, including preventing disease, promoting health and wellbeing, and reducing inequalities. CAPHRI also participates in the **Association of Schools of Public Health in the European Region (ASPHER)**, a membership organisation of public health educational institutions, spread across the European Region (World Health Organisation EURO), which are collectively concerned with the education, training, and professionalism, of those entering and working within the public health workforce. Existing research collaborations of CAPHRI researchers within international research organisations will be extended, consolidated, and promoted as an example of good international research practice. We have over 30 **non-academic international partners**, with the most collaborations with Institut National de la Sante et de la Recherche Medicale (Inserm), the University Hospital Leuven, and the Assistance Publique Hopitaux Paris (APHP) (see Figure 15, Annex 6).

Regarding output resulting our **international academic collaborations**, joint publications are most frequent with the University of London, the KU Leuven, and Hasselt University (see Figure 3.3), whereas collaborations with the University of Verona, the Karolinska University Hospital, and the University of Erlangen-Nuremberg have the highest scholarly impact (see Figure 12, Annex 6). Among the 20 most frequent international collaborators (for 2017-2020), co-publications with the University of London and KU Leuven have the most citations (see Figure 13, Annex 6).

3.2.5 CAPHRI visibility

CAPHRI conducts high-quality research in an area that touches the lives of many people. The research spans the care spectrum, from prevention through after-care and rehabilitation and looks at public health and health care delivery from the perspective of patients, professionals and the society, meaning that **CAPHRI works with people and for people**. Its success is dependent on a positive image among its key stakeholders (interest groups as broad as general practitioners, talented researchers, health insurance companies, educators, research networks, industry and funding agencies) and the public. Therefore, a sound communication strategy that enhances the visibility of CAPHRI is crucial to inform people about CAPHRI's work. This communication should reach the 'outside world' at large, but also our collaborating partners and researchers, as well as the internal FHML/MUMC+ staff. Therefore, CAPHRI has developed both an internal and external communication strategy. Furthermore, CAPHRI has a dedicated Communications Officer (0.6 FTE), a Communication Commission and strong ties with colleagues from Marketing and Communication at the Faculty and University levels. The following CAPHRI communication activities all contribute to the visibility of CAPHRI: website (www.caphri.nl⁰⁸); newsletters (CAPHRI Newsletter, PhD Post, Supervisor Post, Funding Alert); community events (annual CAPHRI research day); PhD events (formal (hybrid) events & informal/social events); social media (Twitter (@CAPHRI_UM), LinkedIn (Care and Public Health Research Institute (CAPHRI)) and Instagram (@CAPHRI_UM)). We also actively stimulate CAPHRI researchers to be visible in the media.

3 CAPHRI's strategic process of the past six years

3.3 PhD Policy and Training

CAPHRI PhD candidates work alongside research staff. As researchers under supervision, they progressively gain more independence during their trajectories, following the well-established paradigm of developing researchers in the Netherlands. They are trained to look across traditional boundaries and to make use of various scientific perspectives by learning from researchers from other departments, disciplines, institutes, universities and, indeed, from international scholars.

Our CAPHRI **PhD Programme** aims to develop PhD candidates into well-equipped, well-prepared, and capable independent researchers, who will act as our future ambassadors at the national, regional and international levels. CAPHRI has 491 PhD candidates [as per December 31, 2022]. The **CAPHRI policy** is active for several types of PhD candidates:

1. **internal PhD candidates** with a standard 4-year employment contract (n=70);
2. **staff candidates** appointed as researcher or health professional at UM or MUMC+;
3. **contract PhD candidates**, who are external PhD candidates with either a scholarship (e.g. NFP, MUNDO, China Scholarship Council) or employment at an organisation in the Netherlands or abroad (e.g. a university or university of applied sciences, regional hospital, health organisation) who are supported (in time and/or finances) to do the PhD trajectory; and
4. **external PhD candidates** with personal funding who are based in the Netherlands or abroad. The last 3 categories represent a total of 421 candidates [as per December 31, 2022].

Within our Institute, we aim at optimising the development of PhD candidates by investing in **training, support, and supervision**. We **train** highly employable and skilled PhD candidates for independent research positions in the academic, industrial, and governmental labour market and systematically contribute to workforce capacity building of professionals. In the first three months, all PhD candidates together with their supervisory team compose a **Personal Research Plan (PRP)** and a **Training and Supervision Plan (TSP)**. Each training trajectory is tailored to the individual's personal ambitions, project, and career path. The only obligatory courses (for all new PhD candidates starting as of November 2021) are those offered at the university level in the PhD Graduate School training programme. These courses pertain to (1) *Research Ethics and Integrity*; (2) *Open Science*; and to (3) *Impact and Science Communication*. For other courses, training opportunities and (conference) visits, each research team retains its autonomy in terms of selecting high-quality courses for personal and/or professional development in line with the needs of the PhD candidate and her/his/their project. These options can either pertain to *internal* (mostly paid for) courses organised by the Faculty, UM Staff Career Centre, Language Centre, University

Library and the national research School CaRe (Annex 7) or to *external* courses, which can either be paid from the PhD incentive payments that the supervisory teams receive for each successful PhD defence or by (personal) grants received.

CAPHRI invests in a strong **support system** for PhD candidates. As of 2021, in addition to a PhD Community Coordinator, a **PhD Administrative Coordinator** has been appointed as well, to further improve the administrative process, to strengthen our community and to bring internal as well as external PhDs together to learn from and with each other and to exchange experience, knowledge, and expertise. In order to welcome new PhD candidates, we have started organising twice per year online 'CAPHRI First Year's' meetings, where we present the team and CAPHRI organisation, provide all necessary information to allow for a good start of the PhD trajectory and offer opportunities for networking. Furthermore, we have invested in the (digital) accessibility of our events, allowing PhD candidates from all over the world to join. Not only are all CAPHRI-specific meetings for PhD candidates currently also digitally accessible, we are also developing webinars for PhD candidates on important topics, such as research quality, funding, and well-being. These webinars also demonstrate further strengthening of the collaboration between the PhD coordinators and the CAPHRI Quality Officer and Funding Advisor. Finally, competence development for PhD supervisors has been emphasised, e.g., by stimulating supervisors to take part in the **FHML training trajectory**. The training 'Basic Qualification Supervision of PhD-candidates' is a 4-day course, intended for early and middle-career PhD supervisors. The course helps PhD supervisors to develop their competences and make their role as a supervisor easier and more effective. Until 2022, 28 CAPHRI PhD supervisors have participated in this course.

The PhD Administrative Coordinator and PhD Community Coordinator closely collaborate with **PhD representatives** (1 per RL). Their main tasks are to represent the PhD candidates in the Institute, to communicate important information to the PhD community and to the Management Board in regular meetings, and to organise formal and informal events for PhD candidates (e.g., a 1-years' welcome meeting, a Spring meeting, and a Winter meeting). The representation is further expanded at the Faculty level (representing CAPHRI in the Faculty PhD Committee (FPC) of the 8 FHML research institutes), at the University level (representing CAPHRI in the Central PhD Candidates Platform (CPCP), and at the CaRe level). CAPHRI also has **two confidential advisors**, who can be consulted in case of undesirable or unacceptable behaviour like sexual harassment, bullying, aggression or discrimination, inequitable behaviour or a work-related conflict. PhD candidates can contact the PhD Coordinator, HR or a confidential advisor any time for advice or help. Finally, the [online PhD Guide](#)⁰⁹ provides complete and easily accessible information tailored to every phase of the PhD journey.

Professors, and since 2019 also associate professors, have the *ius promovendi* that gives them the ability to act as **supervisors** (main supervisor, or first ‘promotor’) leading a PhD candidate to a successful defence. Each **supervisory team** consists of at least two supervisors, as laid down in the UM Doctoral Regulations governing the attainment of doctoral degrees (2023). The majority of CAPHRI PhD candidates has more than two supervisors (with 3 being the official maximum and by exception 4), due to the interdisciplinary character of CAPHRI. Supervisors have a PhD degree and come from different departments, research institutes, faculties, MUMC+ or regional hospitals, and institutes in the Netherlands or abroad. Supervisors have a key role in **coaching and supporting** PhD candidates. Therefore, high-quality supervision and support are high on the agenda of CAPHRI. Several initiatives are in place to continuously monitor and improve the quality of supervision. Firstly, the PhD representatives and PhD Coordinators **continuously discuss new initiatives** at CAPHRI and the Faculty level to contribute to an increased awareness of the mutual needs and expectations of PhD candidates and supervisors. Secondly, since 2017, FHML offers the four-day course ‘Competence development for supervisors of PhD candidates’, in which CAPHRI supervisors are invited to participate. Finally, the **quality of the supervision is monitored** by the online **PhD-TRACK**¹⁰ system. The PhD coordinators receive a notification in case the supervisory performance warrants further action. The PhD coordinators receive a notification in case the supervisory performance warrants further action. The progress of PhD candidates is discussed in the regular annual appraisal meetings with a go/no go moment after the first year of the PhD trajectory. In addition to the annual appraisal meetings, the PhD candidate is assessed every 6 months in the PhD-TRACK system, which further monitors the workload and training, and provides a tool for having appraisals.

3.4 Human Resource Policy

3.4.1 Human resource policy

At CAPHRI, overall human resource (HR) policy and career development planning is being discussed as a recurring topic during the planning and control meetings with the Chairs of the departments, as well as in the planning and control meetings with the RL leaders. The main HR focus in these meetings is on strategy relating to **vitality, team science and performance, (natural) staff turn-over, and talent-policy**, with the aim to have a good balance between young-, middle and advanced career positions within the teams.

An important part of CAPHRI’s mission is to mentor scientists in different stages of their careers to ensure scientific and personal development. Our aim is to provide a **stimulating environment** where talent can grow and flourish and to use a **lean methodology and place accountability, responsibility, and authority across all levels** (individual, team, department,

Research Line, Institute, Faculty). Employees work smarter and better when they feel competent, experience autonomy, and believe that their colleagues are committed to their success. The CAPHRI Management Board has a monthly meeting with the HR consultants of UM to discuss current affairs with relevance to CAPHRI as a research institute, in particular HR Planning themes relevant to several departments. Additionally, new developments are discussed, such as the implementation of Recognition & Rewards within CAPHRI. Based on the national position paper ‘Room for Everyone’s Talent’¹¹, UM created a document for the **Recognition & Rewards programme**, sharing its vision on the modernisation of recognising and rewarding academic staff. To facilitate the diversification of career paths and talent development, the steering committee and the HR working group have developed new academic profiles for academic positions, which are currently being implemented across FHML. We believe that with a well-differentiated HR policy, all community members should be able to flourish and work to their highest potential. As of January 2023, FHML/MUMC+ has implemented **Development Boards** for scientific staff. Development boards consist of multiple colleagues of the academic concerned, with whom the academic has annual dialogues on his/her development. In these dialogues, which replace the annual appraisals from 2023 onwards, a personalised approach (diversification) and a constructive dialogue on options and recommendations for further development are being discussed. With the implementation of the new academic profiles and the process related to development and assessment, colleagues engage in continuous dialogue about their development. The academics take ownership of their own development and thus take on an active role in reflecting on their performance, gathering feedback and discussing this with their development board. The development board has a motivating role and gives honest and open feedback in order to be able to facilitate the academic career path.

In line with the UM Strategic Programme ‘The European university of the Netherlands’¹² (2022-2026) having **Diversity and Inclusivity** as an important ambition, CAPHRI continuously strives to increase diversity in terms of gender, age and ethnicity representation in its PhD candidates and staff, ultimately aiming to contribute towards addressing issues of equality. Currently, over 55 foreign nationalities are represented in >50% of our PhD candidates and >20% of our academic staff. Thus, **Diversity and Inclusivity** are high on the agendas of UM, FHML and our Institute. In 2022, the annual CAPHRI Research Day was dedicated to these important topics.

3.4.2. Talent policy

MUMC+/FHML aims to create an environment that enables talented individuals to excel, implementing an overall talent policy to **identify and to support talented junior (PhD), middle-career and senior staff**. A specific programme example is the internal **MUMC+ Kootstra Talent Fellowship for final-year PhD candidates** to facilitate the transition to postdoctoral

3 CAPHRI's strategic process of the past six years

Open access status of publications

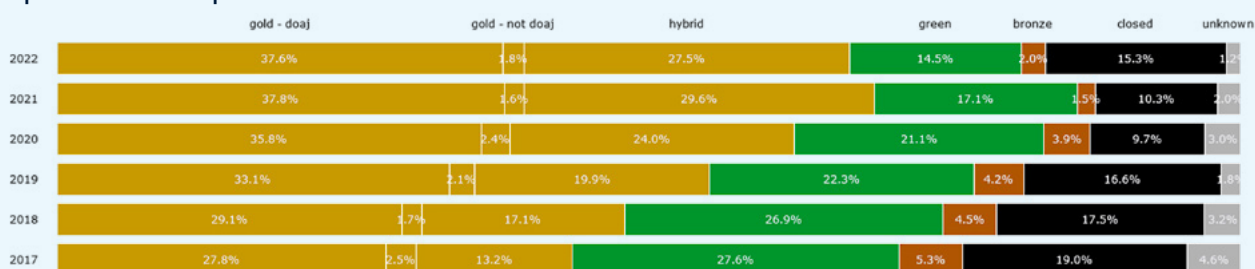


Figure 3.4: Open Access (OA) status of peer-reviewed publications of CAPHRI 2017–2022*

*Please note that the percentage of green OA for 2022 will likely become larger and the percentage for closed publications will become smaller as green open access embargos are lifted during 2023 (e.g., after six months for publications made available through the Taverne Agreement).

positions, to develop their own research ideas, and to increase their chances of obtaining prestigious national and international personal grants. In addition, talented **postdoctoral researchers** have been offered positions in the **Tenure-Track Programme** (which ended in 2022, and was replaced in 2023 by the FHML Recognition and Rewards programme), by which they are given the opportunity for an 'Assistant Professor' position when meeting certain criteria based on output, independence, acquired funding, impact, personal development and leadership, and scientific recognition. Candidates, supported by their Department Head, RL Chair, and the CAPHRI Scientific Director, are assessed by an independent committee. In the period 2017-2022, several talented postdocs were offered tenure-track positions, five of whom attained assistant professorships. Furthermore, the **MUMC+ based Top Talent Programme** (recently ended, and now also part of FHML Recognition and Rewards programme) is aimed at scouting potential professors and to offer them a professorship with a specialised remit ('Profilering/sleerstoel'), with the prospect of moving on to a Structural Chair after assessment of their performance and professional growth potential. The track towards a professorship includes agreements on scientific and personal development and leadership potential, as well as an accompanying course on the latter two aspects. Six CAPHRI senior scientists have participated in the Top Talent Programme between 2017-2022, five of whom are now full professors. Finally, UM offers **management development programmes** for future leaders and those who have recently started in a management position.

At the end of 2020, the Research Talent programme has been implemented (together with the research institute NUTRIM) for high-potential junior (PhD) researchers to strengthen their academic CV and grant proposal writing skills, and to further develop their own research ideas to increase their chances of obtaining personal grants. For middle-career level researchers, the **Public Health and Care Research Leadership Programme**¹³ was designed to support future leaders in the field of public health and care research to become excellent leaders with a mission. Thus far, six CAPHRI researchers have been selected for this programme. Finally, talent development for early,

middle-, and advanced level career researchers has been structurally included in formal meetings between the Management Board and the different RL leaders.

3.5 Open Science

CAPHRI strives to ensure our research adheres to **Open Science** principles as outlined by UM's Open Science policies, which was formalised in 2019 to endorse making science 'as open as possible, as closed as necessary'. This is promoted by an **Open Science Ambassador and the Open Science Community (OSC)**. Open Science has a high priority within CAPHRI.

To further ensure high-quality research, we also consider it is important to manage data with care and to ensure reuse and verification of research data following the principles of FAIR and Open Science, and the key points defined in the **UM Research Data Management Code of Conduct**¹⁴. Submitting a Data Management Plan (DMP) is a prerequisite for obtaining consent for human studies. Data management is supported by the Clinical Trial Centre Maastricht, the FHML 'Centre for Data and Information Management' MEMIC and the MUMC+ 'DataHub'. In the recent period, we try to ensure that our research data is **FAIR**, openly available whenever possible to foster collaboration, offer transparency and improve trustworthiness of our research, also by preregistering our research. Additionally, we strive to ensure most research is published in **open-access journals**. As a result, CAPHRI **Open Access publications have** increased from 43.5% (2017) to 66.1% (2022), see Figure 3.4. Considering green Open Access as well, 81.4% of CAPHRI's 2022 publications are available for everyone to read. Furthermore, many CAPHRI researchers are **editors** of (open access) journals (see Table 1.5 in Appendix 1). Furthermore, we foster an open culture to discuss research findings, research quality and research integrity. Regarding data sharing, omics datasets are generally deposited in public databases. For more sensitive data, CAPHRI is open for requests and collaborations in line with the General Data Protection Regulation (GDPR) of the European Union, and upon approval being obtained. The **University Library**¹⁵ has developed tools

for UM and Maastricht UMC+ researchers to further stimulate open science and to assist them in doing this, such as an [Open Access guide](#)¹⁶, an [Open Access publishing checklist](#)¹⁷, the service “[You share, we take care](#)¹⁸!”. By signing up for this service, the UL will share and make the pay walled publications findable and accessible to the world.

3.6 Academic Culture

At CAPHRI, we pursue the highest academic standard for **research integrity**, in line with the national, UM, and MUMC+ Codes of Conduct. For the Maastricht UMC+ Research Code the guidelines of the national code were translated into guidelines that are applicable to the specific MUMC+ situation and system. The Maastricht UMC+ Research Code provides everybody who is involved in research with a clear description of the rules for ethically and socially responsible conduct in scientific research. Every new researcher (including PhD candidates), who receive his/her/their contract from the HR Department of MUMC+/FHML, is informed about the existence of the Maastricht UMC+ Research Code. New PhD candidates receive relevant information regarding this topic when entering our Institute (e.g., during our online CAPHRI PhD First Year’s Meeting) and have to sign a declaration of research integrity. Additionally, as of 2020, every PhD candidate must complete a statement on research integrity by taking a public oath as part of their PhD defence. Furthermore, our University has developed a Graduate School Training Programme to prepare young researchers for a future in science. The programme consists of courses on three highly relevant themes, namely: Research Ethics & Integrity, Open Science, and Impact & Science Communication. Due to the academic importance of these topics, as of November 2021, CAPHRI expects all PhD candidates to engage in this programme in their first year. Finally, we inform PhD candidates about the CAPHRI Quality Assurance

system on a regular basis, e.g., via newsletters and webinars. In 2018, the MUMC+/FHML Platform Scientific Integrity (PSI) was installed to create awareness and a safe and approachable environment to discuss the topic of scientific integrity. (For CAPHRI the contact person in PSI is Bart Penders). PSI launched three [roadmaps for scientific integrity and social safety in 2022](#)¹⁹: one for PhD candidates, one for Bachelor and Master students, and one for staff members. Each roadmap provides directions on how to act and who to turn to in case of questions related to potential data breaches, scientific integrity, impartiality, and social safety. Furthermore, the PSI developed an online course on scientific integrity for PhD candidates, as an in-depth follow-up course to the basic UM Graduate School course ‘Research Ethics and Integrity’; and in 2023 the PSI will set up a course for staff. At the Institute level, we have further expanded our information provision by updating our CAPHRI Quality Assurance [website](#)²⁰. A broad range of information can be found (e.g., information about ethics approval, participant information and consent, protocol registration, data protection and storage, analysis, and publication) on this website. In addition, the CAPHRI research quality audit is designed to ensure that all research conducted within the Institute adheres to quality standards and to help researchers achieve these standards. The UM Confidential Counsellor for Scientific Integrity can be contacted for questions or complaints concerning suspected scientific misconduct and will try to mediate. If mediation is not possible, a complaint can be filed with the Committee for Scientific Integrity, who will advise the UM Executive Board of Maastricht University. In addition, CAPHRI prioritizes scientific integrity as a recurring topic in CAPHRI Research Days and CaRe days (citizen science) for research meetings. CAPHRI staff hold positions in in the **UM Platform Research Ethics and Integrity** (Professor Maurice Zeegers, Chair), and the Universities of The Netherlands (UNL) **Committee Responsible Management of Research Information and Data** (Professor Nanne de Vries).

⁰¹ | www.maastrichtuniversity.nl/research/school-caphri-care-and-public-health-research-institute/our-research/quality-assurance
⁰² | www.maastrichtuniversity.nl/research/school-health-professions-education-o
⁰³ | www.maastrichtuniversity.nl/research/grow-school-oncology-and-reproduction
⁰⁴ | www.maastrichtuniversity.nl/research/school-mental-health-and-neuroscience
⁰⁵ | www.maastrichtuniversity.nl/research/school-nutrition-and-translational-research-metabolism
⁰⁶ | www.carimmaastricht.nl
⁰⁷ | www.maastrichtuniversity.nl/research/caphri/about-caphri/collaboration-caphri-and-chs
⁰⁸ | www.maastrichtuniversity.nl/research/care-and-public-health-research-institute
⁰⁹ | www.maastrichtuniversity.nl/research/caphri/phd-graduate-school/caphri-phd-guide
¹⁰ | www.maastrichtuniversity.nl/phd-track-system-fhmlmumc
¹¹ | www.nwo.nl/en/position-paper-room-everyones-talent
¹² | www.maastrichtuniversity.nl/file/umstrategicprogramme2022-2026a4engpdf
¹³ | www.umio.nl/programmes/public-health-and-care-research-leadership-programme
¹⁴ | <https://library.maastrichtuniversity.nl/research/sharing-output>
¹⁵ | <https://www.maastrichtuniversity.nl/file/researchdatamanagementcodeofconductnlennpdf>
¹⁶ | <https://library.maastrichtuniversity.nl/research/sharing-output/guide>
¹⁷ | <https://library.maastrichtuniversity.nl/news/oa-publishing-checklist-open-access-tip>
¹⁸ | <https://library.maastrichtuniversity.nl/news/share-your-articles-you-share-we-take-care-open-access>
¹⁹ | www.maastrichtuniversity.nl/about-um/faculties/health-medicine-and-life-sciences/scientific-integrity/roadmaps-scientific
²⁰ | www.maastrichtuniversity.nl/research/school-caphri-care-and-public-health-research-institute/our-research/quality-assurance

4 Follow up on the recommendations from the assessment committee

In 2017, an assessment committee reviewed CAPHRI as part of the six-year review cycle. That assessment was based upon the report “Self-Evaluation School CAPHRI 2010-2016” and a 3-day site visit in Maastricht. The assessment committee had several general recommendations, which are briefly outlined in this chapter along with the respective follow-up actions on these recommendations by CAPHRI. Furthermore, the assessment committee has provided some specific recommendations for each RL. The follow-up of RL-specific recommendations is described in Annex 9.

4.1 Research quality

The assessment committee deemed the quality of the research carried out in all six RLs of CAPHRI to be of high quality scoring this aspect as ‘very good’. Regarding the research quality, the assessment committee had three recommendations.

Recommendation 1

Although the transition from 18 to 6 RLs has brought more focus in the research activities of CAPHRI, the assessment committee noticed that the themes of various RLs are still very broad, and they advised us to have **more focus in the content of the programmes**.

Based on this recommendation, CAPHRI formulated a modified strategy entitled **our research is interdisciplinary and focused**. Although this can be interpreted as a contradiction in terms, CAPHRI’s strength is encapsulated in our diverse approach to societal questions. It is our underlying value. To facilitate **alignment** and strengthen focus, CAPHRI has had several institute-level **strategic meetings** over the past 6 years. Next to that, each RL has organised meetings with their own researchers to work on **joint RL aims** and to **increase internal collaboration** within the RL (see Part B). All CAPHRI RLs share the joint CAPHRI vision, mission, overall objectives, and strategy to create **optimal synergy and efficiency**. In addition, each RL has developed its own mission statement that aligns to that of the research institute, which is periodically re-evaluated (see § 2.2 and Part B). Although CAPHRI is already strong in interdisciplinary research (i.e., by tackling new problems using different disciplinary approaches) and transdisciplinary research (i.e., by translating our findings to societal stakeholders for practical applications), we have strengthened our focus on interdisciplinary research (i.e., by integrating disciplines). As a result, CAPHRI researchers also **cherish collaboration between the RLs** as well as with external partners (see § 3.2.1 and the Case Study in Box 3).

Recommendation 2

The assessment committee noted that CAPHRI has projects that address issues on several levels, but within a project mostly only one level is addressed. Focus, where relevant, in **public health research on the micro, meso, and macro level** at the same time and on the interaction between these three levels, which will enhance both the scientific quality and the societal relevance.

In concurrence with the recommendation of the assessment committee, research within CAPHRI has been structured with overall targets (when relevant) across all three levels. This recommendation was taken up by all RLs, and the RL VHC incorporated in its mission statement that research addresses “**health systems and policies (macro), healthcare organisations and networks (meso), and individuals (micro), while focussing on the interaction between these different levels**” (see part B). Within CAPHRI research, the **involvement and interaction** between these three levels is often tangible, through the involvement of different **stakeholders** from the conceptualisation of the research idea (by involving **citizens, patients, caregivers, and healthcare professionals**) to the implementation in practice (by involving **policymakers and funders**). The different Living Labs can also be viewed as best-practice examples of the involvement of these different stakeholders (see § 3.1.1. and the Case Study in Box 1).

Recommendation 3

The assessment committee concluded that expertise on **methodology and statistics is quite dispersed** over the RLs and that relatively few FTEs are allotted for methodology and statistics. The advice was to explore the possibility of establishing a **RL dedicated to methodology** to facilitate new methodology suited to address important health issues in the fields CAPHRI covers.

Although **all CAPHRI researchers focus on the development of methodology** in their own field, the expertise on methodology and statistics is **concentrated** within the departments of Clinical Epidemiology and Medical Technology Assessment; Epidemiology; Health Services Research (section of Health Economics and Health Technology Assessment); and Methodology and Statistics. We explored if there was adequate support for this recommendation **to create a new research line focusing on methodology** (in order to facilitate collaboration between these methodological experts). Based on several discussions in the Institutional Board, the Management Team and with the individual researchers, we concluded there is no desire to form such an RL. An important reason is that CAPHRI researchers value the **current matrix structure**, in which they have both a home to discuss methodologies within their departments and opportunities to interact with other researchers who apply their methodology

within the RLs. The consensus among the methodology and statistics researchers is that their **expertise is not dispersed**. Furthermore, to **focus on the expertise on Health Economics/ Health Technology Assessment**, the Maastricht Health Economics and Technology Assessment Centre (MaastrichtHETA) was established in 2022. MaastrichtHETA unites researchers across UM, mostly from the Health Economics and Health Technology Assessment section of the Department of Health Services Research and from the Department of Clinical Epidemiology and Medical Technology Assessment of University Hospital Maastricht (see Part B). To address the FTE allocation, a financial regulation was put in place in early 2021 for the department of **Methodology and Statistics** to provide compensation of an additional 0.3 FTE for their consultancy from the CAPHRI central reserves.

4.2 Relevance to society

The assessment committee complimented the societal impact of CAPHRI's research and awarded this with the highest score 'excellent'. Regarding the relevance to society, the assessment committee had one recommendation.

Recommendation 4

The assessment committee noticed that the collaboration with groups from other parts of the world is quite dispersed. It might be more profitable both for CAPHRI and for the international partners to **focus on a limited number of international partners, based on joint interests, and intensify the collaboration with those partners in a more strategic way**.

To **build sustainable, effective and efficient international research collaborations**, CAPHRI has established an **Internationalisation Commission** that is committed to explore and support the development of new collaborations, while strengthening the existing promising research partnerships with universities, universities of applied sciences and public health institutes, according to the principle of "growing in mutual trust" (see Annex 8). Existing research collaborations of CAPHRI researchers within international context that are successful regarding the research output and have the potential to be of interest to CAPHRI researchers beyond their own team are discussed in this commission **extended, consolidated, and promoted**, often with a **memorandum of understanding**. For two partners the collaboration is **intensified at the level of CAPHRI**, involving almost all CAPHRI RLs. This concerns at an international level the Centre for Health and Society (Heinrich-Heine-University, Düsseldorf, Germany) Collaboration (CCC), and at a national level Zuyd University of Applied Sciences (see § 2.3). As mentioned in the section on diversity, our research staff (looking at permanent staff and PhD candidates) comes from all over the globe. In alignment to the UM's overall strategy and outlook, CAPHRI is a European network organisation with a **global outlook** and a solid base

in our Euroregion. CAPHRI researchers firmly advocate the internationalisation of research, as a **means of capacity building** with researchers from LMICs, and, therefore, CAPHRI researchers **cherish the different international collaborations**, which is also often the focus of their research work; this is well reflected to the current themes when looking at the different CAPHRI Chairs (**Translational Ethnographies in Global Health and Education; Health Economics and Equity; and European Public Health** (see Annex 10), and especially for those also lecturing in the **Bachelor's programme in European Public Health** and the **Master's programmes in Global Health and in Governance and Leadership in European Public Health**.

4.3 Viability

The Assessment Committee praised the viability of CAPHRI's research, mainly due to the new structure, and awarded this with the score 'very good'. The Assessment Committee had three recommendations concerning the viability of CAPHRI.

Recommendation 5

The cohorts of CAPHRI are a strong asset. CAPHRI should develop a clear strategy to ensure the **prolongation of their cohorts** on the long term.

CAPHRI agrees with the assessment committee that the cohorts are a strong asset. We are involved in more than **20 major cohort studies**. Because maintaining and sustaining cohorts goes beyond the Institute, an interinstitutional **working group** initiated by CAPHRI was set up to issue **policy advice**. To the extent it falls within the jurisdiction of CAPHRI, this advice has been adopted. To increase the visibility, a webpage **was built on the CAPHRI website**, listing the cohorts by name, aim, short description and contact information, link to websites of cohort or department. Moreover, CAPHRI has **invested** in support staff, which can be employed within the cohort studies. Furthermore, CAPHRI has increased its support staff to 1:3 compared to scientific staff. The policy advice on cohorts **has been brought to the attention of the Faculty Board**. The last time was last year, when the Netherlands Federation of Academic Medical Centres launched the **Sector plan Medical and Health Sciences**, which includes the ambition on fostering data-driven innovation with a focus on population and patient cohorts.

Recommendation 6

The **organisational and financial structure of CAPHRI is still very complicated**. There is a definite tension between Departments counting in FTEs and CAPHRI counting in euros. CAPHRI should strive to clear this tension. To continue stimulating transparency and a responsible financial governance at all levels in the organisation, the assessment committee advises both the FHML and CAPHRI to provide maximal openness about the

4 Follow up on the recommendations from the assessment committee

financial distribution models they employ. CAPHRI should also be very clear about the responsibilities of department heads on the one side and RL leaders on the other side, and there should be no doubt about who decides on which issues.

CAPHRI is part of a **matrix organisation** (see Annex 5). As a result, individual researchers are part of different organisational groups and have different organisational and financial responsibilities. In 2017, several policy documents were developed to clarify tasks and the organisational responsibility for centralised and decentralised resources within the Institute (see Annex 11a: Tasks and Responsibilities of the CAPHRI RL management and Annex 11b Human Resource Management in euros). We agree with the assessment committee that transparency and responsibility on the financial governance at all levels in CAPHRI should be provided with maximal openness, especially when looking at the history of CAPHRI's finances. Since 2012, CAPHRI has a **debt on the central level**, which has been reduced from € 2.5 M to € 486 K in 2022 (see § 6.3). To reduce the debts, two tranches (€ 492 K (2021) and € 324 K (2022)) of **contributions from decentralised funds** have been transferred to the central funds to relieve the central deficit.

Next to that, for each vacancy funded by direct funds a **vacancy stop for 6 months until 2023** was issued. To regain its elasticity, CAPHRI has also started a number of initiatives, such as an active strategy by the **funding advisor**, which included a regular **funding alert**. Furthermore, other strategies have been put in place to guarantee transparency and responsibility, namely;

- **Transparent planning and control cycles have started**, at the level of the subgroups within each RL (named units or in Dutch 'Budget Beheerders', in short BBs) and Institute, with retrospective reviews, future strategies, and substantive prioritisation, based on clear overview. These internal planning and control cycles are also useful to gain information relevant to set up budgets and financial reports to be handed in to the Faculty Board. Since 2022, a risk assessment (focussing on the percentage of tenured staff on soft money (non-direct funding)) is also part of these planning and control cycles.
- Starting in October 2023, an annual CAPHRI-wide **budget meeting** will occur, in which the Managing Director and Scientific Director will present a 5-year strategic budget for CAPHRI. This meeting is open to all CAPHRI staff following registration via the BBs.
- Starting in April 2023, an annual **meeting for the final financial statements** will occur, in which the Managing Director and the Scientific Director will present the CAPHRI financial statement of the previous year. This meeting will provide a snapshot of CAPHRI's financial health, giving insight into its performance and viability.



All the above actions have been implemented to provide openness, transparency, and responsibility, but also to provide insight into the internal resource allocation, within UM, FHML, and CAPHRI. Based on the current interventions mentioned above, we strive for **repayment of the debt in 2025**, which is deemed feasible according to the current financial forecast.

Recommendation 7

The assessment committee advises to **reconsider the composition and role of CAPHRI's Advisory Board**. At the moment it seems rather peripheral to the Institute's activities. Creating a stronger and more mixed Board, reflecting a more diverse range of stakeholders from the Limburg and national levels would be a sensible step to take, especially as the RLs consolidate over the few years ahead.

In response to the advice issued by the assessment committee, changes have been made to the composition of CAPHRI's Advisory Board to include representation by **academic and non-academic stakeholders**. This new CAPHRI Advisory Board⁰¹ was installed in 2023, and consists of a diverse mix of members across sectors, i.e., from academia, the healthcare sector, from the Ministry of Health, and from the European Commission. We established new expectations for this Board upon its installation, with the aim that it will be more proactive, more formal, and more involved, and more frequently consulted.

⁰¹ | www.maastrichtuniversity.nl/research/caphri/about-caphri/organisational-structure#advisory-board

5 CAPHRI's accomplishments during the past six years

Chapter 5 provides a narrative description of CAPHRI's accomplishments during the assessment period. The highlights that we describe below are not meant to be comprehensive but provide insight into the breadth and depth of CAPHRI's activities. This narrative is supported by quantitative evidence presented in this chapter, as well as in Annexes 1 and 2. Further evidence for research output can be found in Annex 6. An RL-specific assessment of the accomplishments is given in part B.

5.1 CAPHRI's research, COVID-19, and case studies

5.1.1 Focus of CAPHRI's research

The research work of CAPHRI ranges from **multidisciplinary to interdisciplinary, to transdisciplinary** (see § 3.1.1). The research covers several disciplines, covering different subjects. Figure 5.1 shows the top 20 authors' keywords that appear in CAPHRI publications, providing an insight on the main subjects studied over the past 6 years.

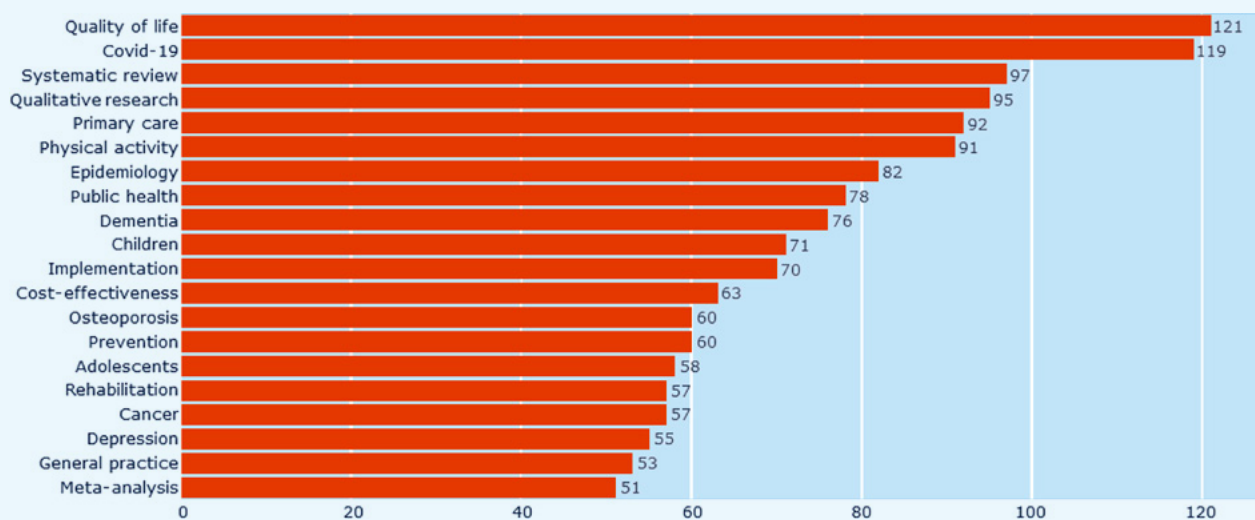


Figure 5.1: Top-20 authors' keywords for CAPHRI

5.1.2 CAPHRI's response to the COVID-19 pandemic

At the beginning of 2020, unexpectedly, the coronavirus (COVID-19) pandemic hit the world. The ensuing crisis had a huge impact to our communities and society across the world, and, of course, on academia too. CAPHRI staff and researchers showed a huge resilience during this difficult period, going above and beyond and demonstrating great flexibility and the ability to shift focus to this critical societal problem. Due to CAPHRI's focus on care and public health, our CAPHRI researchers have initiated and are involved in many different aspects of COVID-19 research (see our [website](#)⁰¹). From the

beginning CAPHRI researchers from the department of Medical Microbiology, Infectious Diseases & Infection Prevention (RL HISP) worked overtime⁰² during COVID-19, also **focusing on COVID-19 diagnostics**. Next to that, leading CAPHRI experts have been members of the national **COVID-19 Outbreak Management Team and of the Scientific Advisory Board of the Corona Behavioural Unit**, as well as chair of the **Taskforce Behavioural Science** of the Ministry of Health. Not only were CAPHRI experts requested to comment on the current situation in the media⁰³ and contributed through columns and blogs⁰⁴, but more importantly, CAPHRI research had a **major impact on the Dutch and international society**.

The latter is illustrated, by the fact that **nursing homes** have partially reopened due to the COVID-19 monitor⁰⁵ led by Professor Jan Hamers (RL ALT-C). Furthermore, research by Professor Jochem Cals (RL OPC) and colleagues made it clear that **not all corona deaths were being registered** because many people died at home under the supervision of general

practitioners. A separate registration for the "hidden dead⁰⁶" was set up, the **COVID-19 Reporting system for Dutch General Practitioners**. Research by Laure Wynants PhD (RL OPC), made it clear that **COVID-19 prediction models** inadequately addressed key challenges, initiating COVID PRECISE⁰⁷, a large international consortium of experts performing research on COVID-19-related diagnostic, prognostic, and general population prediction models, including accuracy, quality (risk of bias), and applicability assessment. Professor Christian Hoebe (RL HISP) and colleagues investigated what the effects of the national prevention measures were and are on the occurrence

5 CAPHRI's accomplishments during the past six years

of COVID-19 in the population of the Meuse-Rhine Euroregion. Furthermore, to understand how hospitals can adapt flexibly to the crisis and which factors promote the sustainable employability of staff during a crisis, Professor Dirk Ruwaard and Daan Westra, PhD (both RL VHC) started a study that contributes to an agile and COVID-19-resistant health care system. All these research contributions by CAPHRI researchers contributed to the societal relevance of CAPHRI during these difficult times. Finally, Ilse Mesters PhD (RL OPC) and Francine Schneider PhD (RL PHPC) were, together with a team of researchers for the Faculty of Psychology and Neuroscience,

invited to advise the university board regarding different COVID related measures for students and staff (i.e., a taking appropriate hygiene measures, stimulating vaccination decision making and safely returning to campus).

5.1.3 Case studies

For this SEP, 3 general and 18 RL specific case studies (see Table 5.1) were selected representing different topics and illustrating the substantial societal impact of CAPHRI. For all details regarding the selected case studies see Case Studies booklet.

Table 5.1: Case studies selected for this SEP demonstrating representing different aspects and topics

RL	Title case study	Reason(s) for selection in keywords, exemplifying amongst others
ALTC	<u>"The ban on visitors really had a negative impact on the well-being of nursing home residents"; COVID-19 monitor in nursing homes</u> ⁰⁸	The pandemic has had a huge impact on the work of our Research Line, as the long-term care sector was hit hard: nursing homes were closed, home care was scaled down; the majority of deaths was in older people aged 65 and older. We have set up international leading research into the impact of COVID-19 in nursing homes, on request of the Ministry of Health, Welfare and Sports. We were the first research group worldwide to present empirical evidence that it was safe to open nursing homes for visitors during the COVID-19 pandemic. Positive results from this study of the safety and impact of following national guidelines for nursing home visitors during COVID-19 led the Dutch national government to permit all nursing homes to cautiously allow visitors. Furthermore, it was used in international guideline development for nursing home policy. Our paper has won the Morley Impact award, being the paper with most citations and downloads of the journal in the year 2020. In addition, several scientific papers were written in collaboration with national and international collaborators. The evidence was presented in podcasts, webinars, scientific congresses, used in Dutch policy development and a variety of societal partners.
ALTC	<u>"We can be proud of the fact that Connecting Conversations is still of interest"; Method to assess experienced quality of care continues to generate enthusiasm among organisations</u> ⁰⁹	This project was a great example of creating scientific and societal impact through research. The research team was interdisciplinary, using both experts from within health related disciplines (nursing science, health sciences and old age medicine) and outside health, including customer centred service science, data science and educational science. Furthermore, it was a transdisciplinary project in which scientists co-created knowledge together with important societal partners throughout the whole research project (e.g. developing the research questions, writing the grant application, developing methodology, collecting data, analysing and interpreting data, dissemination). It has won several prizes (e.g. UM impact prize, nominee for the value-based health care award) and resulted in a method (training, tablet-based application and assessment instrument) to assess quality of care from a client perspective. Finally, we initiated a national consortium of research partners working on narrative methods (including Erasmus University, TRANZO University of Tilburg, Technical University Enschede, Leiden Academy of Vitality and Ageing and Maastricht University).
ALTC	<u>"It's so important to involve patients in this type of research"; I-HARP adapted for COPD</u> ¹⁰	I-HARP is an initiative of the Maastricht University Medical Centre+ (Expertise Centre of Palliative Care) in collaboration with the Radboud University Medical Centre and Maastricht University. I-HARP strongly illustrates the multidisciplinary collaboration within ALTC as it involves all parties in palliative care, including patients, relatives, relatives of deceased patients, nurses, general practice assistants, cardiologists, general practitioners, elderly care physicians, and palliative care specialists. The collaboration between the RL ALTC of Maastricht University and the Maastricht University Medical Center (MUMC+) is a valuable partnership that bridges academic research and medical expertise for older people. The cocreation and patient preferences that are central elements of this study strengthen the network of partnerships.
VHC	<u>Better economic evaluations of European health care systems through a standardised methodology: The Pecunia Project</u> ¹¹	Case selected as it showcases the importance of international collaboration, the scientific value of VHC research and the development of innovative methodologies. Exemplifying amongst others the creation of (methodological) value through exchange of methodological expertise with different partners and countries and the value of research in the field of health economics and health technology.



VHC	<u>Improved patient care and increased job satisfaction among GPs: The TARGET integrated care programme</u> ¹²	Case selected as it showcases the societal value of VHC research and the importance of National/Regional collaboration. Exemplifying amongst others the improvement in health care through VHC-research that creates societal impact and value and the importance of research as part of science-practice-policy partnerships
VHC	<u>“Real World Data helps to improve patient care, decision-making and health policy”</u> ¹³	Case selected as it showcases the value of VHC research for policy-making and the value of system wide perspectives Exemplifying amongst others how VHC research can support (European) health policy making and how VHC research can contribute to achieving sustainable, efficient and equitable health care system
FPR	<u>Personal health information made accessible, complete, neutral and comprehensible; 360°CHILDoc</u> ¹⁴	Good example of an evidence based innovative tool that can facilitate youth health care workers in social medical counseling
FPR	<u>“It’s about how people deal with their pain”; Researchers and practitioners in rehabilitation care working closely together</u> ¹⁵	Good example how collaboration of research and health practitioners can lead to innovate treatments on dealing with pain
FPR	<u>200,000 people sitting on the sidelines in Limburg; Towards a strong, sustainable and inclusive labour market. The 4Limburg project</u> ¹⁶	Good example of collaboration between UM, Province of Limburg, companies, organisations and municipalities on improving labour participation
HISP	<u>“The future of research is transdisciplinary”; Fruitful collaboration across national and disciplinary boundaries</u> ¹⁷	This case study was selected because it showcases the transdisciplinary work within HISP very well.
HISP	<u>The challenge of growing social health inequalities in the era of participation; ‘Life at the bottom’</u> ¹⁸	Health inequity is one of the key topics within HISP and this case study demonstrates part of this important line of research.
HISP	<u>Involving employees in creating a healthy workplace; Health at the workplace for and with everyone?</u> ¹⁹	This case study highlights an important topic within our research line that uses participatory approaches to generate a high societal impact.
OPC	<u>KOALA study and LucKi Gut study: Complementary feeding during the first six months of life. Yes or no?</u> ²⁰	Good example of research coming from our cohorts. It also shows the impact epidemiological observational studies can have.
OPC	<u>Studying the Healthy Primary School of the Future; “Children have more energy and behave more socially”</u> ²¹	Example of research in very close collaboration with societal partners, with a huge regional and national societal impact.
OPC	<u>COVID precise: Living systematic review of diagnostic and prognostic prediction and machine learning models for COVID-19; the COVID PRECISE consortium</u> ²²	This work had, and still has, huge scientific impact. It was published in BMJ, and very highly cited.
PHPC	<u>The OPEN project: Online access to medical information in primary care: the patient’s perspective</u> ²³	Introduction of new technological possibilities is investigated together with multiple partners, combining perspectives of patients, professionals, and data from the Dutch GP Information System (HIS)
PHPC	<u>SCALA: Prevention of heavy drinking in Latin America</u> ²⁴	Scaling up a screening and intervention programme that proved successful in the past and adapting it to the local context in three countries
PHPC	<u>Shared Decision-Making benefits all patients</u> ²⁵	Implementation of personalised care, including innovative co-creation or design-based strategies

5 CAPHRI's accomplishments during the past six years

Document types over the years

Figure 5.2a

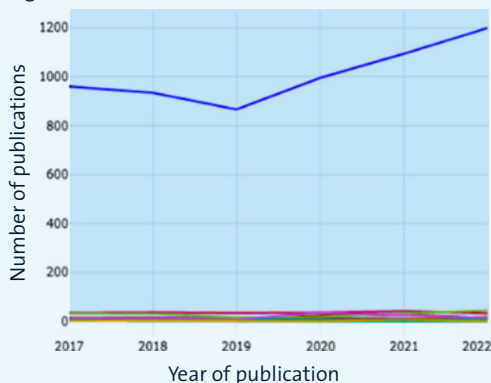


Figure 5.2b

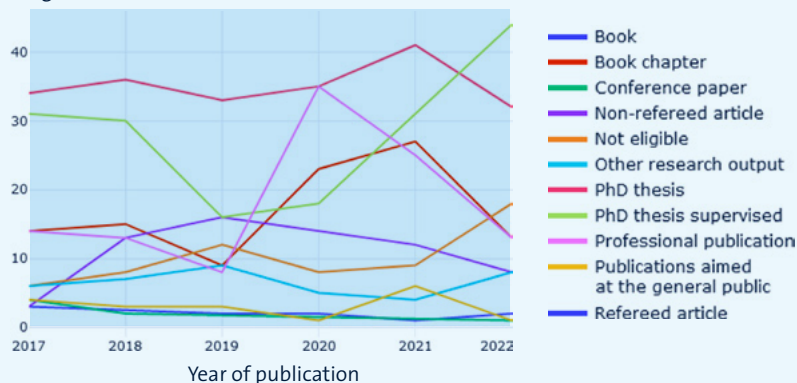


Figure 5.2a and figure 5.2b (Zoomed in): Document types (SEP) of CAPHRI 2017-2022 by year.

The number of publications of each type plotted by year. This figure is also [available in the Dashboard](#)⁰⁹. Include E-publications, select the period of time and choose the SEP classification to reproduce this result. Deselect 'refereed articles' if you want to zoom in on the non-dominant output types (see: Appendix Figure 1 for this zoomed-in version).

5.2 Research Quality

5.2.1 Research products for peers

Looking at the research products for peers, various **cohort studies are available** to other researchers, leading to (inter) national collaborations. CAPHRI has a long tradition of cohort studies and owns or participates in numerous cohorts, in the field of cancer, diabetes, influenza, asthma/COPD, physiotherapy, musculoskeletal diseases, lifestyle and genetic constitution, diabetes mellitus, and quality of care. An indexed (in alphabetical order) overview can be found on our [website](#)²⁶. CAPHRI publishes **~1,000-refereed articles** and **~60 PhD theses** per year. In Figure 5.2, we visualise this output (further detail per year is provided in Table 1.1 of Annex 1).

5.2.2 Use of research products by peers

In this self-evaluation report, we illustrate the use of research products by peers through the citation impact of CAPHRI's scholarly work. In this report, we use two indicators to demonstrate research impact: the Category Normalised Citation Impact (CNCI) and the Percentile in the subject area. These indicators complement each other; the CNCI is useful when benchmarking output against the world, and the Percentile in a subject area is useful when demonstrating the impact of publications at the top-end of the citation distribution (see Annex 6). Data are most reliable at least 24 months after publication, so we excluded 2021 and 2022 from any analyses. The average normalised citation impact for CAPHRI 2017-2020 **is well above the world average** (1.6 time the expected citations). A considerable number of CAPHRI's publications have CNCI above average, and 96.1% of CAPHRI's research output has already been cited. Moreover, 2.2% of CAPHRI's output belongs to the top percentile in terms of citation impact, and 13.9% of publications belong to the top 10% (see Figure 5,

Annex 6). As mentioned earlier, the research field of CAPHRI covers a **wide range of subjects**. The most important scientific publications per RL, which content-wise give a good reflection of the research work of the RL and have a high impact, are mentioned in Table 1.2 in Annex 1.

5.2.3 Marks of recognition from peers

CAPHRI researchers are highly recognised by their peers. Peers have awarded **prizes** to individual researchers as well as to teams for both young and established researchers (see Table 1.3 in Annex 1 and Table 2.8 in Annex 2). Other examples are **personal grants** obtained by individual researchers, such as VENI (2 grants), VIDJ (1 grant), ERC Starting Grant (1 grant), Marie Curie Fellowship (2 grants), Niels Stensen Fellowship (1 grant), and the ZonMw personal research grant for talented nurses (1 grant) (see Table 2.8, Annex 2). In Table 2.7 (see Annex 2) **23 major grants with contracts above € 500 k** are visible, illustrating that all the research lines have received major grants. The fact that CAPHRI researchers have joint **appointments with national and international leading organisations**, i.e. Municipal Health Department (GGD) (Professor Christian Hoebe, Nicole Dukers PhD), Trimbos Institute, National Institute of Mental Health and Addiction (Professor Silvia Evers, Professor Marc Willemsen), NIVEL, The Netherlands Institute for Health Services Research (Professor Judith de Jong, Professor Jany Rademakers), IVO, the Institute for Lifestyles and Addiction (Professor Gera Nagelhout), Corvinus University of Budapest (Professor Milena Pavlova), Mekelle University (Mark Spigt PhD), University of Melbourne (Professor Rik Crutzen), University of Seville (Professor Hein de Vries) also illustrates their recognition by peers. Experts within CAPHRI are also members of **prestigious scientific committees or councils** (see Table 1.5, Annex 1) i.e., VENI, VIDJ, and VICI committees, and several committees of ZonMw.



5.3 Relevance to society

CAPHRI has established long-term partnerships with public health and health care institutes in the region, as well as (inter)nationally. CAPHRI researchers strive to involve different stakeholders and inform them about our research through **non-refereed articles, policy briefs, and advisory reports** (see Table 1.9, Annex 1), and **involvement in major public events** (see Table 1.7, Annex 1).

As mentioned in the case of citizen science (see Box 1), the involvement of CAPHRI researchers is highly appreciated by societal target groups and their research is highly recognised by these groups (see § 3.2). CAPHRI researchers **collaborate in projects with professionals, non-scientific organisations, companies or public entities** (see Table 1.8, Annex 1). Next to that, CAPHRI researchers are involved in **clinical guidelines, training and courses, the development of application and decision aids for patients and health care professionals alike** (see several tables in annex 1). We are present in several (governmental) **advisory bodies and committees**, both nationally and internationally, as for example in the Dutch Health Council, the National Institute of Public Health and Environment, the National Health Care Institute, the Ministry of Health, etc. (see table 1.10, Annex 1). For more insight into CAPHRI's societal relevance, media attention and impact (see § 3.1.3).

5.4 Trends regarding research staff, funding and success rates of the PhD programme

At the end of December 2022, CAPHRI was responsible for a total of **335 employees**, equalling 193.1 FTEs (Table 2.1, Annex 2) consisting of 51.7 FTEs corresponding to scientific staff

(university and academic hospital staff), 43.6 FTEs corresponding to postdocs, 64.5 FTEs corresponding to (internal) PhD candidates and 33.4 FTEs corresponding to support staff. In addition, CAPHRI had **421 external PhD candidates** (registered as CAPHRI PhD candidates but not officially employed by CAPHRI/UM), and hosted 12 visiting professors/researchers. Over the recent years (after a reduction of CAPHRI staff in 2011 (of 10%) and 2013 (of 10%), the **CAPHRI staff has been stable in terms of number of FTEs.**

Looking at the **funding**, Figure 8 in Annex 6, provides a brief capture of the most frequent funders to have supported the research published in CAPHRI's publications, based on Altmetric analysis. The 'Netherlands Organisation for Health Research and Development, Netherlands' is most prominent, followed by the 'European Commission, Belgium'. The Tables 2.3 to 2.5 in Annex 2 provide information concerning funding and expenditures of the research institute. The research institute depends financially on (1) direct governmental funding as well as on the acquisition of (2) research funds (obtained in national scientific competitions within NWO, ZonMw and KNAW), (3) contract research (obtained in national and international scientific competitions such as: the EU framework, INTERREG, foundations etc.) and (4) other funds from sources such as sponsorships, revenues from course fees, workshops, training programmes and other industry-related revenues.

The direct governmental funding is calculated based on the 'Performance funding model research' of the FHML, in which successfully defended PhD theses play a big part. This funding has slightly increased since 2017, this translates to the increased number of promotions. However, mainly due to retirement/departure of staff and the decision to not fully fill in these FTEs due to the debt on the central reserve of CAPHRI,

5 CAPHRI's accomplishments during the past six years

the number of FTEs on the direct governmental funding has shown a decrease (see table 2.3 Annex 2). On average, the research funds have been around 2 million per year, with a few outliers, mostly in 2018 and 2021 due to the award of several larger grants (see table 2.6 and table 2.7 Annex 2). This is also demonstrated in table 2.3 Annex 2, which shows an increase in research staff appointed on research funds since 2018. The average yearly award of contract research has been around 5 million, except for a slight decrease in 2021, where we see a larger shift from contract research to research funds (see table 2.6 Annex 2).

Table 2.9 in Annex 2 shows the **duration and the success rate of the CAPHRI's Standard PhD candidates** (with employee status and conducting research with the primary aim and an obligation to graduate). The table concerns the cohorts of internal PhD candidates that started in the 2013-2018 period. The influx of internal PhD candidates varies to approximately 21 PhD candidates per year (minimum of 11 PhD candidates in 2014 and a maximum of 26 PhD candidates in 2017).

The majority is female. Of this, 68% have graduated; 21% corresponds to ongoing work, whereas 11% of the PhD projects have been discontinued. **Most PhD candidates graduate in year 5.** Traditionally delay occurs when PhD candidates have already accepted a job elsewhere at the end stage of their PhD trajectory. Changes in the context of family planning (pregnancy and parental leave) may also result to delay, and there are cases where the nature of the research results in delays.

Additionally, due to COVID-19, several PhDs trajectories were further extended due to, for example, patient recruitment, i.e., many studies experienced protracted delays in recruitment/overall conduct because of the pandemic. Since 2014, the FHML has granted an additional incentive for the supervisors of all types of (internal and external) PhD candidates who graduate within 48 months (until approval of the manuscript). Several CAPHRI teams have received this incentive, i.e., 15 incentives in 2017; 15.7 in 2018; 7.7 in 2019; 14 in 2020; 7 in 2021 and 2.5 in 2022.

The dropout rates have been a point of concern to CAPHRI for several years now. CAPHRI steers towards supervisors becoming more aware of a **good selection before the start and during the first 12 months.** For this reason, in September 2016, CAPHRI and HR had initiated a project to improve the selection of internal PhD candidates, aiming at a more deliberate decision process to recruit PhD candidates. The improved selection procedure consisted of a clearer description of CAPHRI and of the desired PhD profile, a manual for supervisors for selection interviews, implementation of an e-assessment tool, to assess the candidate before the final selection, and an assessment matrix for supervisors to fill out for gaining an overall view on the candidate, leading to a better motivation for the candidate of their choice. The matrix and the e-assessment report are stored in the personnel file of the candidate once hired. In addition, CAPHRI has stressed to supervisors that **the first year is a probation year with a formal go/no-go decision in the 10th month.**

- 01 | www.maastrichtuniversity.nl/research/caphri/covid-19-related-research-initiatives
- 02 | [www.maastrichtuniversity.nl/news/"we-immediately-stepped-and-focused-covid-diagnostics"-o](http://www.maastrichtuniversity.nl/news/)
- 03 | www.rivm.nl/gedragsonderzoek/over-corona-gedragsonderzoek
- 04 | www.maastrichtuniversity.nl/research/caphri/columns-and-blogs
- 05 | [www.maastrichtuniversity.nl/research/caphri/our-research/ageing-and-long-term-care/"-ban-visitors-really-had-negative-impact](http://www.maastrichtuniversity.nl/research/caphri/our-research/ageing-and-long-term-care/)
- 06 | <https://nos.nl/artikel/2330364-huisartsen-gaan-verborgen-coronadoden-registreren>
- 07 | www.covprecise.org
- 08 | [https://www.maastrichtuniversity.nl/research/caphri/our-research/ageing-and-long-term-care/"-ban-visitors-really-had-negative-impact](https://www.maastrichtuniversity.nl/research/caphri/our-research/ageing-and-long-term-care/)
- 09 | [www.maastrichtuniversity.nl/research/caphri/our-research/ageing-and-long-term-care/"we-can-be-proud-fact-connecting](http://www.maastrichtuniversity.nl/research/caphri/our-research/ageing-and-long-term-care/)
- 10 | [www.maastrichtuniversity.nl/research/caphri/our-research/ageing-and-long-term-care/"it's-so-important-involve-patients-type](http://www.maastrichtuniversity.nl/research/caphri/our-research/ageing-and-long-term-care/)
- 11 | www.maastrichtuniversity.nl/research/caphri/our-research/creating-value-based-health-care/better-evaluations-european-health
- 12 | www.maastrichtuniversity.nl/research/school-caphri-care-and-public-health-research-institute/our-research/creating-value-o
- 13 | www.maastrichtuniversity.nl/research/school-caphri-care-and-public-health-research-institute/our-research/creating-value-1
- 14 | www.maastrichtuniversity.nl/research/360childoc
- 15 | [www.maastrichtuniversity.nl/research/caphri/our-research/functioning-participation-and-rehabilitation/"it's-about-how-people](http://www.maastrichtuniversity.nl/research/caphri/our-research/functioning-participation-and-rehabilitation/)
- 16 | www.maastrichtuniversity.nl/research/caphri/our-research/functioning-participation-and-rehabilitation/200000-people-sitting
- 17 | www.maastrichtuniversity.nl/research/school-caphri-care-and-public-health-research-institute/our-research/health-inequities-3
- 18 | www.maastrichtuniversity.nl/research/school-caphri-care-and-public-health-research-institute/our-research/health-inequities-4
- 19 | www.maastrichtuniversity.nl/research/school-caphri-care-and-public-health-research-institute/our-research/health-inequities-5
- 20 | www.maastrichtuniversity.nl/research/caphri/our-research/optimising-patient-care/complementary-feeding-during-first-six-months
- 21 | www.maastrichtuniversity.nl/research/studying-healthy-primary-school-future
- 22 | www.maastrichtuniversity.nl/research/caphri/our-research/optimising-patient-care/covid-precise-living-systematic-review
- 23 | www.maastrichtuniversity.nl/research/caphri/our-research/promoting-health-and-personalised-care/online-access-medical
- 24 | www.maastrichtuniversity.nl/research/learning-talk-about-alcohol-consumption
- 25 | www.maastrichtuniversity.nl/research/caphri/our-research/promoting-health-and-personalised-care/shared-decision-making-benefits
- 26 | www.maastrichtuniversity.nl/research/caphri/our-research/cohorts

6 CAPHRI's strategy for the next six years

CAPHRI's current mission, vision, values and strategic aims, as described in Chapter 2, are the result of careful deliberations over the years, involving our most important stakeholders. It is built on the work that has been done by CAPHRI researchers on the work floor and the impact and recognition CAPHRI had over the years. Overall, as a research institute that is centred around research in care and public health with societal relevance, we remain strong and committed, and feel that we are well on track. For the future, it is important to stay on track and **continue our strategy in general** (as mentioned in chapter 3), and more specifically in the areas of **PhD policy and training, Human Resource policy, Open Science and Academic Culture**. We also realise that there is always room for improvement. Therefore, we have jointly identified possible areas for (further) improvement, based on a SWOT analysis, and have identified some objectives for the coming years. As **openness in the academic culture and a sense of community** are important core-values for the Management Board, it was a logical choice to involve researchers from all levels in the CAPHRI strategic planning. Thus, to ensure that the CAPHRI community would support the strategy for the next 6 years, the CAPHRI Scientific Director, after her taking office in November 2021, organised several meetings to retrieve information from as many CAPHRI stakeholders and key CAPHRI staff as possible. Firstly, she organised **"coffee-moments"** with the CAPHRI RL leaders, heads of departments, and other important stakeholders, such as the PhD representatives, the coordinator of the CAPHRI cohorts, the former CAPHRI scientific directors and former members of the Advisory Board. The informal conversations allowed the CAPHRI staff to get to know their new scientific director and in turn provided the new scientific director with a myriad of important pieces of information and ideas. As a second step, **three strategy meetings were organised** over the course of 6

months to allow CAPHRI staff (RL leaders, department heads, PhD representatives, researchers, and management staff) to share their thoughts and perspectives and give input to **CAPHRI's strategic planning**. In the first meeting (October 2022), CAPHRI staff, divided by RL, **conducted a SWOT analysis** for CAPHRI as a whole and a separate one for their own RL. As a next step they used the SWOT information to make a so-called **'confrontation matrix'**, allowing to 'confront' the strong and weak points of the SWOT analysis with the opportunities and threats, with the aim of developing a good strategy. The second meeting (January 2023) was used to discuss **CAPHRI's position in the world surrounding us**, at the regional, national and international levels, attended by more than 50 staff members, ranging from junior to senior. **Current trends and developments that could impact CAPHRI's strategic plans** were considered. This discussion involved examining regional, national, and global trends in health care, changes in funding models, and shifts in political priorities. The strategy meetings provided valuable input and insights, which were synthesised into a **strategic plan that reflects the collective vision and priorities of CAPHRI staff**. In the third strategy meeting (April 2023) the strategic plan, and CAPHRI mission and vision were discussed with the CAPHRI community and adjusted as needed.

6.1 SWOT analysis

The final SWOT-analysis (see Table 6.1) was a carefully constructed summary of the CAPHRI SWOT-analyses conducted during the first strategy meeting, taking into account the information retrieved in the "coffee-moments" and insights that emerged as a result of the 'confrontation matrices' that were made to define strategic choices.

Table 6.1 CAPHRI SWOT-analysis

Strengths

- CAPHRI is strong in multi-, inter-, and transdisciplinary research across multiple fields
- CAPHRI researchers are accessible and focused on collaboration, participation and networking, with regional, national and international partners and the target population
- CAPHRI is a flexible, creative, and resilient Research Institute proven by the leading research, which was initiated during the COVID-19 pandemic
- CAPHRI covers the entire health (care) and prevention chain
- High societal impact of CAPHRI research
- Important methodological know-how and expertise across multiple fields
- Strong and well-equipped infrastructure, including > 20 major cohorts

Weaknesses

- Researchers indicate that there is some fragmentation in the existing research lines and in some areas a certain lack of cohesion and joint focus
- Not distinctive and visible enough as an institute
- As a result of an unfavourable financial situation in the past, there is a continuous concern about the financial stability of the research institute among CAPHRI staff
- Relative small amount of prestigious (personal) grants and larger grant applications in comparison to other FHML research institutes

Opportunities

- New developments (IZA, GALA, KIA-ZON, WOZO, MUMC+ prevention strategy) fit CAPHRI research like a glove and offer opportunities
- Increased need for CAPHRI-related research, thus potentially more funding available
- Increased collaboration, internally and externally, thus providing opportunities for the establishment of strategic research consortia and larger grant applications
- Recognition and Rewards strategy MUMC+
- Methodological innovation is highly topical and needed, e.g. citizen science, participatory research and social network analysis, etc.
- More focus on integral embedding of lifestyle interventions in clinical care pathways

Threats

- Increased - and still increasing - work pressure, which is especially experienced in the area of education, possibly leading to less innovative initiatives in research.
- Despite of the recently increased funding possibilities, there is still a backlog in funding in the area of Public Health
- Possible changes in the funding model, both on the National level as well as on the UM/FHML level could have negative consequences for CAPHRI

6 CAPHRI's strategy for the next six years

6.2 Strategic plans for the next six years

We realise that we are a versatile, resilient, and open-minded organisation, with a strong and well-equipped infrastructure. Thus, we want to build on the existing mission and vision of CAPHRI, whilst putting new emphasis on some areas that offer new opportunities. Furthermore, we have looked at **current trends and developments** and listened to the **ideas and opinions of CAPHRI staff and stakeholders**. This self-evaluation, looking back over the last 6 years, but also talking to CAPHRI staff, and our joint effort to make a SWOT analysis on the first strategy meeting in October 2022, gave us a good idea of CAPHRI's strengths, weaknesses, opportunities, and threats. Based on the SWOT analysis and the 2023 strategic meetings, we jointly identified possible areas for improvement, and defined the following objectives for the coming years:

1. CAPHRI aims to align its research with the **needs of citizens** (local to global), thus contributing to the **vitality** of the citizens, and the **reduction of inequality** in health with a focused approach to prevention and health, and with due consideration to emerging challenges and opportunities in the fields of health care and public health. To this end CAPHRI wants to:

- Establish itself as a **Centre of Excellence** in the area of public health, in collaboration with MUMC+, with due emphasis to emerging public health priorities at the local, national and international levels, and expand strategic partnerships in terms of capacity-building, curriculum development, research within and beyond the region, ensuring maximum societal relevance for all output and to empower CAPHRI members across levels/career stages.
- Stimulate research **underpinning knowledge** on the relationship between the **socioeconomic position** of people and health, including the physical, cultural, legal, commercial, etc. determinants and activities that affect people's health and wellbeing;
- Promote the active **involvement of citizens** and the engagement of all relevant **stakeholders** in CAPHRI scientific research in a systematic manner with due consideration to local, regional, national and global policies of relevance, including emerging themes in the post-COVID-19 era and due emphasis on the **digital transformations** of our society;
- Maintain and further **stimulate collaboration** with partners, stakeholders and citizens to ensure real **impact** in the community and to meet the objectives set in national policy documents such as IZA, GALA and WOZO.
- Ensure **financial and organisational sustainability** of the CAPHRI interventions in order to ensure access for all citizens;
- **Seize existing opportunities** for funding, collaboration, political embedding and societal impact, which are now becoming apparent in new regional and national **policy-developments**, as identified in the SWOT-analysis (IZA, GALA, KIA-ZON, WOZO, MUMC+ prevention strategy)

2. Building on the **theoretical and methodological excellence** of CAPHRI across multiple fields, and the expertise gained in the region, fostering a culture of collaboration and knowledge sharing, CAPHRI aims to become a national and international leader in methodological innovation in the area of public health and health care research. The focus will be on highly topical and innovative research methods, such as **citizen science, social network analysis, system science** and **Health Technology Assessment research**. Furthermore, deploying its expertise in the area of efficiency studies, CAPHRI could become an important national stakeholder to alleviate the existing pressure on health care.
3. In order to overcome possible fragmentation and to create cohesion and focus, CAPHRI aims to intensify **active participation** of its entire staff (from PhD candidates and other early career staff to our senior staff) in the existing RIs and promote the connection and **cross-pollination** between the RIs. CAPHRI aims to invest in **community-building** initiatives that are appropriate, effective, and inclusive, in order to foster collaboration, engagement, and mutual support among CAPHRI researchers.
4. CAPHRI aims to enhance its **connections within its broader institutional setting**, including all FHML/MUMC+ departments, institutions and UM faculties, as well as to foster **connections with relevant professionals, researchers, policy makers, and stakeholders on the regional, national, and international levels**. CAPHRI aims to strengthen alliances with the following institutions/partners: Radboud UMC Nijmegen, Zuyd University of Applied Sciences, euPrevent, and Centre for Health and Society (Heinrich-Heine-University, Düsseldorf).
5. CAPHRI aims to have a more **pro-active role and impact** on agenda-setting and early development of policies of key organisations. To this end, and in line with the CAPHRI strategies on communication and funding, CAPHRI aims to (on a continuous basis):
 - Influence policies and practice of (**prestigious**) **funding and health care organisations**, such as NWO, KNAW, EU and industry, to ensure that care and public health are on the agenda;
 - Inform funding organisations and industry of the **contribution of evidence-based, well-designed research** programmes from CAPHRI to improving the lives of substantial numbers of people;
 - Inform (**internal, external, national, international**) **key stakeholders** to link interventions, cooperation and complementarity.

To attain the 5 core strategic plans above, we aim to attain 5 additional objectives. These additional objectives can thus be considered a necessary **prerequisite** for achieving the overall CAPHRI strategic goals, as mentioned in chapter 3 and above:

1. Develop an overall **integrative policy document** for CAPHRI, based on a shared perspective on the Strengths, Weaknesses, Opportunities, and Threats of CAPHRI, taking into account current trends and developments. The policy document will look into the vision, mission and strategy of CAPHRI.
2. Foster and support the development of both **early, middle, and advanced career CAPHRI staff** in accordance with the Recognition and Rewards principles. Special attention will be paid to PhD candidates (early), postdoctoral researchers and assistant professors (middle) to optimally guide them along their journey to develop into independent researchers/professionals.
3. **Ensure representation of Early Career Researchers** in CAPHRI's overall management and strategic planning. Therefore, in addition to the PhD Council (PhD representatives), CAPHRI will consider to form a middle-career research council (postdocs, assistant and associate professors).
4. In order to enhance CAPHRI's **visibility and scientific brand**, and to strengthen its **knowledge building** and **publicity** in a responsible and systematic manner, CAPHRI aims to:
 - Further develop a solid (internal and external) **communication strategy**, with the help of the recently installed Communication Commission;
 - Build on the **existing triangular relationship** between the three core tasks of the MUMC+, which are **Research, Education and Care**, to enhance and strengthen responsible knowledge transfer to internal and external target groups;
 - **Seek publicity** at different levels (regional, national and international) to enhance visibility of CAPHRI, carefully targeting certain groups, using clear messages supported

by sound evidence and a variety of appropriate means (blogs, letters, interviews, podcasts, etc.) to make sure that CAPHRI research gets known to a wider public. Thus, people will start to associate high-quality research in the area of care and public health with CAPHRI;

- Stimulate research staff to take **media training**, preferably at an early stage in their career;
 - Take advice from an FHML **'branding specialist'** to become more distinctive and visible.
5. Develop a comprehensive grants and funding policy aiming at acquiring **prestigious (personal) grants** and larger grant applications, and for the establishment of strategic (national and international) research consortia in collaboration with the grants officer, CAPHRI aims to:
 - Keep **track** of grant opportunities for CAPHRI **potential candidates** at early, middle and advanced career levels to apply for prestigious personal grants (for instance NWO Talent Scheme, ERC, etc.). This initiative includes anticipating PhD graduation dates and discussing future possibilities for talented staff in the internal planning and control cycle;
 - **Disseminate information** on funding opportunities at different levels (regional, national and international) at an early stage among the CAPHRI researchers;
 - **Stimulate** the participation in FHML training on CV-building, grant-writing, and proactive funding-planning;
 - Participate in **networking opportunities at all levels** (regional, national and international) and join consortia in prestigious research proposals. Use tools such as 'Eurohealthnet' for matchmaking at the European level.
 - Stimulate the research staff to consult the **FHML grants officer** on a more regular basis. The FHML grants officer is able to advise on new funding opportunities as well as how to incorporate lessons learned from earlier applications. Next to that, engage in content-wise consultations in major grants with the newly installed **Science Commission**.



6 CAPHRI's strategy for the next six years

6.3 Viability

Due to the fact that CAPHRI is **organised in a multi-disciplinary and bottom-up way**, which provides a **strong infrastructure** for efficient planning and control cycles to ensure **high-quality research** and **maximum flexibility to honour innovative ideas**, we believe that CAPHRI is a resilient, viable and vibrant research institute.

As indicated in the SWOT analysis, there is still some concern among CAPHRI staff about the financial stability of the research institute, as a result of an unfavourable financial situation in the past. The CAPHRI Management Board wishes to restore the staff's **confidence in the financial stability** of the Institute. As such, over the past six years, it has taken appropriate measures to ensure **sustainable and sound financial management** at different levels within the organisation. As described in § 4.3, CAPHRI has scrutinised its financial systems and has put several strategies and a **system of checks and balances** in place to maximise financial transparency and to ensure that financial stability remains at a high level. The CAPHRI Management Board wants to continue this policy on **responsible financial governance** and maximum transparency at all levels in the organisation on the long term, including the Planning & Control Cycle and annual meetings to present the budget (looking ahead) and the financial statement (looking back). The aim is to **repay** all remaining debt within the next six years. Based on the current interventions mentioned above, CAPHRI strives for repayment of the debt in 2025, which is deemed feasible according to the current financial forecast. By involving CAPHRI staff at all levels, at certain fixed moments during the year, a **joint feeling of responsibility** is being created, and confidence in the financial stability of the Institute will be restored.

In line with the above, and as described in § 6.2, CAPHRI aims to acquire prestigious (personal) grants and larger grant applications. To make this possible, CAPHRI collaborates with an especially dedicated FHML grants officer who can offer advice on funding opportunities and help researchers to apply for grants. Furthermore, the recently installed Science Commission is an important asset as well, which will stimulate high-quality grant applications.

In response to the explicit wish of CAPHRI staff, the organisational structure has been modified, to allow for **more participation of CAPHRI staff at all levels**. The CAPHRI Management Board installed a Management Team and a new Advisory Board (both described in § 1.3.2). Furthermore, in addition to the existing **Quality Assurance Committee** and **Internationalisation Commission**, the CAPHRI Management Board has recently installed a **Science Commission** and a **Communication Commission**. This carefully designed structure, allowing more involvement of the CAPHRI community in decision-making processes, will benefit the viability of the Institute.

To ensure that CAPHRI researchers open up their work to other researchers and societal stakeholders, CAPHRI will continue its **Open Science** policy. In order to attain Open Science, we will continue to adhere to the **FAIR principles**. This policy means that CAPHRI is committed to reusing data where possible; storing research data according to the FAIR principles; making research data, materials, and methods available; and choosing Open Access for publications.

Vitality, team science, inclusivity, and a stimulating environment for personal development are key words in CAPHRI's HR strategy, now and in the future. A **vital CAPHRI workforce**, embracing a healthy lifestyle in an inclusive and stimulating environment, will not only be able to perform better, but will also be a good example to colleagues and students. This way, CAPHRI will further enhance a culture of wellbeing, equity, and social safety. This HR strategy will add to the viability of the research institute as a whole.

By **monitoring and supporting (natural) staff turn-over**, keeping an eye on the ageing of the workforce and timely succession planning, investing in staff development at all levels, and actively participating in the talent policy established by FHML and MUMC+, CAPHRI wants to establish **vital teams** with a healthy balance between young, middle, and advanced career positions. In a well-balanced team, established (top) researchers can coach young(er) talented staff, who will thus benefit from existing expertise in different areas. CAPHRI feels supported by the wider UM/ **FHML Recognition and Rewards policy** in this endeavor.

For a viable and inclusive PhD programme, especially in a situation where the vast majority of our PhD candidates are external PhD candidates, it is important that PhDs are well informed and supported. Therefore, CAPHRI invests in a strong **support system for all PhD candidates**, with the aim to provide all necessary information to ensure a good learning experience, and to bring people together to strengthen a sense of community. Especially for external PhDs, a lot of effort has been put in creating online opportunities for them to meet people, and join CAPHRI-specific meetings or special webinars and training courses (see § 3.3). This policy will **be continued and expanded** in the next six years, in order to ensure viability.

Summary

The Care and Public Health Research Institute (CAPHRI) has a passion for care and public health research. CAPHRI aims to foster a culture of collaboration, creativity, and excellence in research that promotes health equity, enhances patient-centred care, and improves population health outcomes. CAPHRI develops solutions to complex health challenges, promote evidence-based practices, and translate research into action. CAPHRI strives to be at the forefront of advancing health and health care worldwide, ultimately contributing to a healthier and more equitable society.

CAPHRI endeavours to train the next generation of public health and healthcare researchers, providing opportunities for students and early-career researchers to develop the expertise necessary to conduct impactful research. We aim to build partnerships and collaborations with stakeholders across the public and private sectors, including healthcare providers, policymakers, and community organisations, to ensure that our research is relevant and applicable to the needs of society. CAPHRI research concerns the broad range of multi-, inter-, and transdisciplinary (applied) research and health science methodological research with a strong emphasis on improving health for individuals and populations, across all health care settings, and in society. CAPHRI works towards a 'healthy society for everyone' through developing and investigating innovative solutions for care and public health. CAPHRI builds bridges between science and society by conducting high-quality research with a focus on inclusiveness and participatory approaches. The innovative research focuses on prevention, prognostic studies, and intervention research ranging from public and primary health care to person-oriented, long-term care.

Our research pays attention to local, regional, national, European, and global topics and is thematically embedded in six research lines (RLs). Together, the RLs have provided the base input for this self-evaluation and both the individual RLs as well as the overarching collaborations and themes between RLs are highlighted in this report. CAPHRI is part of the Faculty of Health, Medicine, and Life Sciences (FHML) of Maastricht University (UM) and Maastricht University Medical Centre. On the national level, CAPHRI is founding member of the Netherlands School of Public Health and Care Research (CaRe).

Part A of this Self-Evaluation Report describes the vision, mission, and values looking back over the past 6 years, examines CAPHRI's strategic aims, also in relation to four specific aspects PhD Policy and Training, Human Resource Policy, Open Science and Academic Culture. This report includes a narrative description of CAPHRI's accomplishments during the assessment period, supported by quantitative evidence presented in the annexes. An RL-specific assessment of the accomplishments is given in part B. For the future, it is important to stay on track and continue our current strategy in general, and more specifically in the areas of PhD policy and training, Human Resource policy, Open Science, and

Academic Culture. We also realise that there is always room for improvement. Based on the SWOT analysis and three strategic meetings, we jointly identified possible areas for improvement, which can be summarized as follows:

- CAPHRI aims to align its research with the needs of citizens (local to global), thus contributing to the vitality of the citizens, and the reduction of inequality in health with a focused approach to prevention and health, and with due consideration to emerging challenges and opportunities in the fields of health care and public health.
- Building on the theoretical and methodological excellence of CAPHRI across multiple fields, and the expertise gained in the region, fostering a culture of collaboration and knowledge sharing, CAPHRI aims to become a national and international leader in methodological innovation in the area of public health and health care research.
- In order to overcome possible fragmentation and to create cohesion and focus, CAPHRI aims to intensify active participation of its entire staff in the existing RLs and promote the connection and cross-pollination between the RLs. CAPHRI aims to invest in community-building initiatives that are appropriate, effective, and inclusive, in order to foster collaboration, engagement, and mutual support among CAPHRI researchers.
- CAPHRI aims to enhance its connections within its broader institutional setting, including all FHML/MUMC+ departments, institutions and UM faculties, as well as to foster connections with relevant professionals, researchers, policy makers, and stakeholders on the regional, national, and international levels.
- CAPHRI aims to have a more pro-active role and impact on agenda-setting and early development of policies of key organisations. To this end, CAPHRI aims to inform funding and healthcare organizations, about the impactful research developed by CAPHRI.

Acknowledgement

The Self Evaluation Report of the Care and Public Health Research Institute (CAPHRI) is a joint effort and has benefited from the input of;

Mark Bakker, Rob de Bie, Annelies Boonen, Hans Bosma, Tim Boymans, Vivian Braeken, Floor van den Brand, Helmut Brand, Gerard van Breukelen, Sabina Bulic, Math Candel, Marjolein Caron, Chantal Claessens, Timo Clemens, Rik Crutzen, Kasia Czabanowska, Eline Dekker, Nicole Dukers, Silvia Evers, Annerika Gidding-Slok, Lindsay Groenvynck, Mickaël Hiligsmann, Christian Hoebe, Monique van den Hoed, Klasien Horstman, Rok Hrzic, Jesse Jansen, Maria Jansen, Daisy Janssen, Manuela Joore, Imert Kant, Ingrid Kremer, Ingrid Leijs, Miranda Lemmerling, Judith Meijers, Silke Metzethin, Monique Mommers, Frederike Mulder, Jean Muris, Marloes van Onna, Demi Pagen, Aggie Paulus, Ken Peeters, Bart Penders, Angelique de Rijk, Inez Roosen, Dirk Ruwaard, Paul Savelkoul, Francine Schneider, Martijn Schotanus, Marél Segers, Katya Sion, Luc Smits, Mark Spigt, Marieke Spreeuwenberg, Sarah Stutterheim, Hanneke Trines, Sander van Kuijk, Sophie Vanbelle, Hilde Verbeek, Jeanine Verbunt, Daniëlle Vogt, Lieve Vonken, Adri Voogd, Nanne de Vries, Rob Weijden, Matty Weijenberg, Tim Welting, Guido de Wert, Daan Westra, Marc Willemsen,

Petra Wolffs, Sandra Zwakhalen, Martijn Streefkerk, Maurice Zeegers, Ellen Leers, and other CAPHRI researchers and to Lex Bouter, Roel Goffin, Aura Timen, Stefaan van der Spiegel, Julia van Weert, Patrick Jeurissen, as members of CAPHRI Advisory Board.



Annexes

1	Factual evidence at CAPHRI level	32
2	Research staff, funding, and duration/success rates of the PhD programme	39
3	CAPHRI Factsheet	45
4	General information on FHML/MUMC+	46
5	Matrix and financial organization FHML/MUMC+	51
6	CAPHRI SEP 2017-2022 research output report by the University Library Maastricht	53
7	CaRe Infographics	65
8	CAPHRI Internationalization	66
9	RL recommendations	69
10	CAPHRI Chairs	71
11 A	 Task and responsibilities	73
11 B	 Human resource management in Euros	76
12	Abbreviations	77

1 Factual evidence at CAPHRI level

Table 1.1 Main categories of research output at School level 2017-2022 WI-1

Table 1.2 Most important scientific publications (top 12 2017-2022)

Table 1.3 Most important scientific awards and public societal prizes (top-12 2017-2022)

Table 1.4 Most important invited lectures (Top-12 2017-2022)

Table 1.5 Most important membership's scientific committees, boards, or editorships (Top-12 2017-2022)

Table 1.6 Table Most important societal publications/outputs (Top-12 2017-2022)

Table 1.7 Most important public events: (Top-12 2017-2022)

Table 1.8 Most important Collaborative projects implemented with/for professionals, non-scientific organizations, companies or public entities (Top-12 2017-2022)

Table 1.9 Most important advisory reports (top 12 2017-2022)

Table 1.10 Most important memberships of civil society advisory body's (top-12 2017-2022)

Table 1.1 Main categories of research output at School level 2017-2022 WI-1

CAPHRI	2017	2018	2019	2020	2021	2022	On average
Total refereed articles ¹	960	934	866	995	1094	1199	1008
Books	3	0	2	2	1	2	1,7
Book contribution ²	14	15	9	23	27	13	16,8
PhD thesis	65	66	49	53	72	76	63,5
Non-refereed articles ³	3	13	16	14	12	8	11
Professional publications ⁴	14	13	8	35	25	13	97,2
Publications at the general public	4	3	3	1	6	1	3
Other research output ⁵	13	17	21	13	13	27	17,3
Inaugural lectures	4	3	3	2	1	4	2,8

¹ Scientific publications in an international journal mentioned in (Social) Science Citation Index (SSI or SSCI) (wi-1)

² A book contribution is part of a scientific book (for example introduction and/or chapter(s)). Both the details of the book and the concerning chapter need to be provided.

³ A journal article that has not been subjected to a process of critical evaluation.

⁴ The purpose of a professional publication is to distribute knowledge among professionals in the field. This category of articles is mostly published in a general oriented journal or a non-specialist journal. Reviews of non-specialist books are not included in this category.

⁵ All published research output not classifiable in any of the previous KUOZ types.



Table 1.2 Most important scientific publications (top-12 2017-2022)

Year	Researchline	Publication
2020	VHC	Pokhilenko, I., Janssen, L. M. M., Evers, S. M. A. A., Drost, R. M. W. A., Simon, J., Koenig, H.-H., Brodzsky, V., Salvador-Carulla, L., Park, A.-L., Hollingworth, W. W., Paulus, A.T.G. (2020). Exploring the identification, validation, and categorization of costs and benefits of education in mental health: The PECUNIA project. <i>International Journal of Technology Assessment in Health Care</i> , 36(4), 325-331.
2021	VHC	Smeets RGM, Herttroijs DFL, Mukumbang FC, Kroese MEAL, Ruwaard D, Elissen AMJ. First things first: how to elicit the initial program theory for a realist evaluation of complex integrated care programs. <i>The Milbank Quarterly</i> 2021, 39 (https://doi.org/10.1111/1468-0009.12543).
2018	HISP	The silent burden of stigmatisation: a qualitative study among Dutch people with a low socioeconomic position. Simons AMW, Houkes I, Koster A, Groffen DAI, Bosma H. <i>BMC Public Health</i> . 2018 Apr 3;18(1):443.
2020	HISP	Transdisciplinary work against antimicrobial resistance. Kamenshchikova A, Wolffs PFG, Hoebe CJP, Horstman K. 2020 <i>In: Lancet Infect Dis</i> . 20(5):526-527.
2019	OPC	Randomized Trial of Four Treatment Approaches for Actinic Keratosis. Jansen MHE, Kessels JPHM, Nelemans PJ, Kouloubis N, Arits AHMM, van Pelt HPA, Quaedvlieg PJF, Essers BAB, Steijnen PM, Kelleners-Smeets NWJ, Mosterd K. <i>N Engl J Med</i> . 2019 Mar 7;380(10):935-946. doi: 10.1056/NEJMoa1811850. PMID: 30855743.
2020	OPC	Opportunistic screening versus usual care for detection of atrial fibrillation in primary care: cluster randomised controlled trial. Uittenbogaart SB, Verbiest-van Gorp N, Lucassen WAM, Winkens B, Nielen M, Erkens PMG, Knottnerus JA, van Weert HCPM, Stoffers HEJH. <i>BMJ</i> . 2020 Sep 16;370:m3208. doi: 10.1136/bmj.m3208.PMID: 32938633
2020	PHPC	Ruiter RAC, Crutzen R. Core Processes: How to Use Evidence, Theories, and Research in Planning Behavior Change Interventions. <i>Front Public Health</i> . 2020 Jun 24;8:247. doi: 10.3389/fpubh.2020.00247. PMID: 32671010; PMCID: PMC7326771.
2021	PHPC	Mastenbroek S, de Wert G, Adashi EY. The Imperative of Responsible Innovation in Reproductive Medicine. <i>N Engl J Med</i> . 2021 Nov 25;385(22):2096-2100. doi: 10.1056/NEJMs2101718. PMID: 34818487.
2018	FPR	What low back pain is and why we need to pay attention. Hartvigsen J, Hancock MJ, Kongsted A, Louw Q, Ferreira ML, Genevay S, Hoy D, Karppinen J, Pransky G, Sieper J, Smeets RJ, Underwood M; Lancet Low Back Pain Series Working Group. <i>Lancet</i> . 2018 Jun 9;391(10137):2356-2367. doi: 10.1016/S0140-6736(18)30480-X. Epub 2018 Mar 21. Review
2021	FPR	Boonen A, Putrik P, Marques ML, Alunno A, Abasolo L, Beaton D, Betteridge N, Bjørk M, Boers M, Boteva B, Fautrel B, Guillemin F, Mateus EF, Nikiphorou E, Péntek M, Pimentel Santos F, Severens JL, Verstappen SMM, Walker-Bone K, Wallman JK, Ter Wee MM, Westhovens R, Ramiro S. EULAR Points to Consider (PtC) for designing, analysing and reporting of studies with work participation as an outcome domain in patients with inflammatory arthritis. <i>Ann Rheum Dis</i> . 2021 Sep;80(9):1116-1123. doi: 10.1136/annrheumdis-2020-219523
2019	ALTC	Sarcopenia: revised European consensus on definition and diagnosis. Alfonso J Cruz-Jentoft, Gülistan Bahat, Jürgen Bauer, Yves Boirie, Olivier Bruyère, Tommy Cederholm, Cyrus Cooper, Francesco Landi, Yves Rolland, Avan Aihie Sayer, Stéphane M Schneider, Cornel C Sieber, Eva Topinkova, Maurits Vandewoude, Marjolein Visser, Mauro Zamboni, Writing Group for the European Working Group on Sarcopenia in Older People 2 (EWGSOP2), and the Extended Group for EWGSOP2. <i>Age and Ageing</i> , Volume 48, Issue 1, January 2019, Pages 16-31
2020	ALTC	Verbeek, H., Gerritsen, D. L., Backhaus, R., de Boer, B. S., Koopmans, R. T., & Hamers, J. P. (2020). Allowing visitors back in the nursing home during the COVID-19 crisis: A Dutch national study into first experiences and impact on well-being. <i>Journal of the American Medical Directors Association</i> , 21(7), 900-904

Table 1.3 Most important scientific awards and public societal prizes (top-12 2017-2022)

Year	Name	Researchline	Name award/prize	Which organisation
2017	B. Wijnen	VHC	'Health technology assessment in epilepsy; moving towards patient-centered and efficient care' 5 July 2017: Winner of the Care award for best PhD thesis	CaRe
2018	M. Hilgsmann	VHC	ESCEO Medal of Excellence 2018 prize intended to honor and reward an outstanding contribution to the field of bone, joint and muscle from an established researcher	The European Society for Clinical and Economic Aspects of Osteoporosis, Osteoarthritis and Musculoskeletal Diseases (ESCEO)
2019	F. Feron	HISP	Flora van Laarprijs 2019	AJN Jeugdartsen Nederland
2020	K. Horstman	HISP	Mingler award for "Bacteria and borders"	Academy of Fine Arts
2020	L. Wynants	OPC	Edmond Hustinx Prize 2020,	Stichting Edmond Hustinx
2021	F. van den Brand	OPC	Catharina Pijls Prize	Stichting Catharina Pijls
2017	G. Nagelhout	PHPC	Young Professional Award 2017	European Cancer League (ECL) and European Conference on Tobacco or Health (ECToH)
2020	R. Crutzen	PHPC	Honorary Professorial Fellow within Melbourne School of Psychological Science, University of Melbourne, Australia	Melbourne School of Psychological Science, University of Melbourne, Australia
2019	E. Jacobs	FPR	Dutch Spine Society Award (best international public) + NOV-award for best thesis 2019	Dutch Spine Society
2019	Carin de Brouwer	FPR	Biennial award (citizens medal) for the best dissertation in the field of occupational and insurance medicine	Dutch Society for Occupational and Business Medicine
2018	I. Everink	ALTC	LPZ chosen as one of National Health Services Innovations 2018	NHS UK
2021	K. Sion	ALTC	UM Impact Prize for best PhD thesis	Maastricht University

1 Factual evidence at CAPHRI level

Table 1.4 Most important invited lectures (Top-12 2017-2022)

Year	Name	Researchline	Which organization	Name event and lecture/workshop
2017	D. Ruwaard	VHC	National Conference 'All about Health'. Amersfoort	Lecture "All about Health: End Station or Intermediate Station"
2022	M. Hiligsmann	VHC	WCO-ESCEO-IOF congress	Keynote speaker at the "Health Economics in osteoporosis: which model for which assessment", March 2022
2019	D. Shaw	HISP	European Society for Organ Transplantation Ethics and Law section (ELPAT)	Should we abandon the term brain death?, Annual congress, Krakow
2022	A. de Rijk	HISP	French National Cancer Institute	Keynote: Unity, diversity and uncertainty of societal safety nets for workers with cancer across Europe: implications for comparative studies. International conference of Cancer, work & employment, Paris
2019	E. de Bont	OPC	The North American Primary Care Research Group (NAPCRG), Toronto, Canada	Invited plenary speaker at the annual conference. Booklet for Childhood Fever in Out-of-Hours Primary
2021	J. Cals	OPC	Anna Ziekenhuis Geldrop	Invited lecture for board of directors. Effectieve diagnostiek
2019	T. van der Weijden	PHPC	European Association of Psycho-Somatic Medicine	International EAPM conference 21-06-2019 Rotterdam. Key note Shared Decision Making
2022	R. Crutzen	PHPC	ECO	Invited plenary presentation at European Congress on Obesity. Digital technology approaches to prevention and treatment of obesity.
2018	A. Boonen	FPR	UCB Education in Immunology International Consortium	9 th immunology summit, Pragy. Should work participation be a treatment goal in clinical practice
2020	T. Welting	FPR	Dutch Society for Matrix Biology (NVMB)	When chondrocytes get lost in translation. Keynote lecture
2018	T. Thoma	ALTC	German Society of Nursing Science	1 st International Conference of the German Society of Nursing Science-symposium. The 'Dutch approach' in community-based nursing. Four examples of innovations that aim to facilitate ageing-in-place.
2021	J. Schols	ALTC	Keynote Lecture From scientific discussion on frailty towards a sustainable future-proof long-term care	International Conference Long-Term Care. Netherlands-Caribbean Foundation for Clinical Higher Education.

Table 1.5 Most important membership's scientific committees, boards, or editorships (Top-12 2017-2022)

Year	Name	Researchline	Which organization	Which role
2017-current	D. Ruwaard	VHC	The Netherlands Organisation for Health Research and Development (ZonMw)	Chair
2017-2022	M. Joore	VHC	Dutch Health Care Institute – Zorginstituut Nederland	Member of the Scientific Advisory Board of the Dutch Health Care Institute
2017-2022	P. Wolffs	HISP	Dutch Working group on Molecular Diagnostics of Infectious Diseases	Chair
2017-2021	T. Krafft	HISP	Commission on Health and Environment of the International Geographic Union	Chair
2017	A. Voogd	OPC	Dutch Cancer Society	member scientific board
2020	J. Stoffers	OPC	European Journal of General Practice	Editor in Chief
2017-current	J. Burgers	PHPC	Adviescommissie Kwaliteitsstandaarden (AQUA), Zorginstituut Nederland	Chair
2017-2022	R. Crutzen	PHPC	Health Psychology Bulletin	Editor-in-Chief
2018	Ij. Kant	FPR	Health Council Netherlands	Member of the advisory committee on "extended working careers and Health"
2020	A. Boonen	FPR	European guideline work and rheumatic diseases-Eular	Chair
2018-2021	G. Kempen	ALTC	Dutch Society of Gerontology	President
2019	J. Schols	ALTC	Gezondheidsraad	Member

Table 1.6 Most important societal publications/outputs (Top-12 2017-2022)

Year	Research Line	Publication
2018	VHC	van der Putten IM, Paulus ATG, Hiligsmann M, Hutubessy RCW, Evers SMAA. Evidence-informed vaccine decision making: The introduction of Human Papilloma Virus (HPV) vaccination in the Netherlands. Health Policy. Mar;123(3):260-266. doi: 10.1016/j.healthpol.2018.09.001. Epub 2018 Sep 7. PubMed PMID: 30219371. Motivation: The article examines the actual use of information from economic evaluation research in the final decision-making. Very little is known about this use. Based on an extensive document study, the role of information in the decision-making process regarding the introduction of the HPV vaccine in the national vaccination program in the Netherlands was investigated. The results show that not only many different stakeholders are involved in the decision-making process (all of which have different information needs), but also that the same information is sometimes interpreted in different ways. The research also shows that economic information (in particular that resulting from economic evaluations) has played an important role in this decision-making.
2018	VHC	Tiliouine, Adam; Kosinska, Monika; Schröder-Bäck, Peter (2018) Tool for mapping governance for health and well-being: the organigraph method. World Health Organization, Regional Office for Europe. http://www.euro.who.int/_data/assets/pdf_file/0011/389999/20181218-h1015-toolkit.pdf Motivation: This report was prepared together with and for the WHO.Europe. The co-authors are from the “Governance for Health and Well-being Programme” and here from the “Division of Policy and Governance for Health and Well-being”. The report presents the tools of “organigraphs” to map and analyse governance structure in health across different levels (from supra-national to local) and including all sectors. It draws on the results of our TACTICS project. This report supports WHO.Europ and its member states in improving their governance structures. It has already been widely used by WHO.Europe and has a large impact on public health and health care reforms in the WHO.Europe region (particularly in Eastern member states).
2017	HISP	Socially isolated individuals are more prone to have newly diagnosed and prevalent type 2 diabetes mellitus - the Maastricht study, Stephanie Brinkhues, Nicole H. T. M. Dukers-Muijers, Christian J. P. A. Hoebe, Carla J. H. van der Kallen, Pieter C. Dagnelie, Annemarie Koster, Ronald M. A. Henry, Simone J. S. Sep, Nicolaas C. Schaper, Coen D. A. Stehouwer, Hans Bosma, Paul H. M. Savelkoul, Miranda T. Schram., BMC Public Health
2021	HISP	The European Union and Public Health Emergencies: Expert Opinions on the Management of the First Wave of the COVID-19 Pandemic and Suggestions for Future Emergencies. Gontariuk M, Krafft T, Rehbock C, Townend D, Van der Auwermeulen L, Pilot E. Front Public Health. 2021 Aug 20;9
2017	OPC	Kanker nazorg wijzer (https://www.kanker.nl/bibliotheek/artikelen/11691-de-kanker-nazorg-wijzer)
2020	OPC	Covid-19 death and palliative care by GPs in The Netherlands, nationwide project within 2 weeks with extensive media coverage (NOS 20:00 hour jnews)
2021	PHPC	Baghus A, Timmerman A, Giroldi E, Henselmans I, Muris J, Van der Weijden T. Tips voor aiossen en opleiders over Leren van Samen Beslissen. Huisarts Wet 2021;64:DOI:10.1007/s12445-021-1174-3.
2022	PHPC	Gezondheidsvoorlichting en gedragsverandering: Een planmatige aanpak (Brug, Van Assema, Kremers & Lechner).
2018	FPR	Bevordering arbeidsparticipatie oudere werknemers (1). Overzicht van bevindingen uit de Maastrichtse Cohort Studie
2017	FPR	Reconsideration of the scheme of the international classification of functioning, disability and health: incentives from the Netherlands for a global debate. Yvonne F. Heerkens, Marjolein de Weerd, Machteld Huber, Carin P. M. de Brouwer, Sabina van der Veen, Rom J. M. Perenboom, Coen H. van Gool, Huib ten Napel, Marja van Bon-Martens, Hillegonda A. Stallinga, Nico L. U. van Meeteren. Disability & Rehabilitation, January 2017 10.1080/09638288.2016.1277404
2018	ALTC	20 jaar AWO-ZL Jubileummagazine (https://www.academischewerkplaatsouderenzorg.nl/jubileummagazine-waardevol-ouder)
2022	ALTC	Covid-19 in de Wijkverpleging. TVZ – Verpleegkunde in Praktijk en Wetenschap Uitgave 5. Sandra Zwakhalen en college verplegingswetenschappen

1 Factual evidence at CAPHRI level

Table 1.7 Most important public events: (Top-12 2017- 2022)

Year	Name	Researchline	Type of event
2018	T. Clemens	VHC	Videoconference on 18.07.2018 with NRW Minister of Health K-J Laumann and Minister-President O Paasch of the German-speaking Community of Belgium on E-health opportunities in the care for Rare Diseases
2019	D. Ruwaard	VHC	Deelname aan ronde tafeldiscussie met Koning en minister Bruins over "De Juiste Zorg op de Juiste Plek", met centraal aandacht voor twee projecten uit de Academische Werkplaats Duurzame Zorg
2017	K. Horstman	HISP	Stadronde Gemeente Maastricht. Terugkijken op twee Burgertoppen Maastricht, 14 February 2017, City Hall Maastricht / Invited speaker
2018	N. Engel	HISP	Course director and faculty of an annual, weeklong international workshop on Qualitative Methods in Global Infectious Diseases Research at McGill Summer Institute in Infectious Diseases and Global Health, McGill University.
2017	R. Willemsen	OPC	NHG Kaderopleiding Hart- Vaatziekten
2021	L. Wynants	OPC	AI in tackling Covid 19 crisis: opportunities and challenges, Digital Transition and Single Market Observatory Webinar, European Economic and Social Committee, Brussels, Belgium
2017	J. Kleijnen	PHPC	European Centre for Disease Prevention and Control - Stockholm - 13 - 16 March 2017 4-Day Course: Evidence based methods and tools for decision-making in public health with special emphasis on infectious diseases.
2018	H. De Vries	PHPC	EitHealth Brussels: workshop motivation and health behavior
2021	Various researchers rehabilitation medicine	FPR	Series of webinars: "Ik en mijn gezondheid". : About improving selfmanagement and living with a chronic disease/impairment in functioning
2022	R. Smeets	FPR	Series of 8 podcasts (PIJNCAST)
2018	J. Hamers	ALTC	"20 jaar onderzoek in de Academische Werkplaats Ouderenzorg Zuid-Limburg" Key note op Symposium "Vernieuwing in de Ouderenzorg", Maastricht 14 dec 2018 with 1,050 attendees
2022	D. Janssen	ALTC	Symposium: Ouderengeneeskunde: klaar voor de toekomst. Maastricht

Table 1.8 Most important Collaborative projects implemented with/for professionals, non-scientific organizations, companies or public entities (Top-12 2017-2022)

Year	Researchline	Project	Non-scientific partner organization
2017-2022	VHC	Primary Care Plus	Health insurers CZ and VGZ, Patient organization Burgerkracht, hospitals Maastricht University Medical Center and Zuyderland Medica Center, primary care organizations ZIO, HOZL and MCC Omnes, and the Province of Limburg
2019-2022	VHC	European guideline education and Cost-Conscious Healthcare (CoCoCare) funded by Erasmus+	Academic Center of Epileptology Kempenhaeghe Maastricht UMC+, Maastricht University SHE, Kleijnen Systematic Reviews Ltd (UK), Institute of Biomedical Research Sant Pau, Donau University Krems, European Academy of Neurology, Guideline International Network, Scientific Institute for Research and Health Care, European Academy of Neurology, Vereniging voor Arts-Assistenten in Opleiding tot Neuroloog (VAAN), Kennisinstituut Medisch Specialisten
2017	HISP	Towards an inclusive city. Participation society in action.	Municipality Maastricht, four innovative public-private, citizen-professional care & participation initiatives
2017-2019	HISP	I41Health	i-4-1-Health project , Innovation, Integration, Intelligence, IRIS for One Health. Project granted by Interreg Vlaanderen-Nederland. In the border region of Vlaanderen-Nederland worked 9 Hospitals, 7 public health services (GGDen (NL) en Agentschap Zorg en Welzijn (B)), 7 knowledge institutes and 3 companies.
2017	OPC	De Gezonde Basisschool van de Toekomst	MUMC+, Provincie Limburg, Onderwijsstichting MOVARE, Kinderopvang Humanitas, Kinderopvang Parkstad, The Move Factory, gemeente Landgraaf, Gemeente Brunssum, Stichting Peuterwerk Limburg, GGD Zuid Limburg, Friesland Campina,
2017	OPC	LucKi	GGD Zuid-Limburg, Zuyderland Jeugdgezondheidszorg
2017-2022	PHPC	"SCALA - Scale-up of Prevention and Management of Alcohol Use Disorders and Comorbid Depression in Latin America H2020 Project; Project author and coordinator)	Ministries of health, municipalities and civil society organizations in Colombia, Mexico and Peru.

2018- 2023	PHPC	Financial incentives for successful smoking cessation: An implementation study to increase reach and adoption among companies and their employees with a low socioeconomic status	SineFuma, Pharos, Zuyderland Medisch Centrum, Trimbos-instituut, Long Alliantie Nederland, Centre for Motivation and Change, Heartbeat Ventures, NVAB, HumanCapitalCare, Zilveren Kruis, InGuide, Brandweer Zuid-Limburg, SBCM.
2018	FPR	4Limburg, thema 4.2: Effectiviteit gemeentelijk beleid arbeidsreintegratie	Provincie Limburg, Beesel, Bergen (L.), Gennep, Horst aan de Maas, Peel en Maas, Venlo, Venray.
2022	FPR	Multidisciplinaire Eerstelijns Revalidatie (MER) chronische pijn	CZ, VGZ en Achmea subsidiegevers.
2018	ALTC	Trans senior	AGE-Europ,e MeanderGroep, Curaviva (Switzerland), Wit-Gele Kruis Vlaanderen.
2020	ALTC	Ruimte voor Zorg: verbeteren van kwaliteit vanuit een relatiegerichte benadering.	Centrum Informele Zorgverlening Parkstad Limburg, Cicero Zorggroep, Meanderzorggroep Zuid-Limburg, ROC Gilde Zorgcollege (MBO), Envida, CZ, VWS, LOC, ZiN, IGJ.

Table 1.9 Most important advisory reports (top 12 2017-2022)

Year	Name	Researchline	Advisory report
2020	M. Joore	VHC	Giessen, A. van, Oosterhoff, M., Hoekstra, E., Over, E.A.B., Joore, M.A., Schayck, O.C.P. van, ... Vingerhoeds, M.H. (2020). Gezonder op de basisschool: schoollunches en meer bewegen: een verkenning naar draagvlak, haalbaarheid, betaalbaarheid en impact. Bilthoven: Rijksinstituut voor Volksgezondheid en Milieu (RIVM).
2021	H. Brand, T. Clemens, R. Hrzic & E. Miteniece	VHC	European Commission, Directorate-General for Research and Innovation (2021). Study on the use of real-world data (RWD) for research, clinical care, regulatory decision-making, health technology assessment, and policy-making: final report and recommendations, 2021, https://data.europa.eu/doi/10.2777/340449
2017-2022	C. Hoebe	HISP	13 National Health Council policy advices regarding vaccination 45 National Health Council policy advices regarding COVID19 vaccination
2021-2024	A. de Rijk	HISP	Chair guideline commission Multidisciplinary Guideline Cancer & Work for occupational physicians, insurance physicians and occupational experts
2019	J. Muris	OPC	Dutch College of General Practitioners guidelines: asthma in adults asthma in children Quit Smoking in primary care
2022	J. Cals	OPC	Dutch College for General Practitioners guideline; Acute covid-19
2017	H. Jochemsen, W. Dondorp, G. de Wert.	PHPC	Contributions to European Guidelines/Recommendations: De Wert, Van der Hout over Ethics/Preconception Carrier Screening (on behalf of ESHRE) De Wert et al Germline Genome Editing (on behalf of ESHRE & ESHG)
2019	J. Burgers	PHPC	NHG-Standaard Cardiovasculair risicomanagement
2017	Dr. R.S.G.M. Perez, Drs. A.H. van Dalen-Kok, M.G. Giesberts MHCE, Dr. J.H.C. van den Hout, Nederlands Dr. D. Keizer, Dr. A.J.A. Köke, Koninklijk, Drs. I. van Mansom (tot 9-12-2014, Drs. L. Nitert, Dr. S. Schiere, Prof. Dr. R.J.E.M. Smeets, Drs. I.L. Thomassen-Hilgersom	FPR	Zorgstandaard Chronische Pijn/DPS en Pijnpatienten naar 1 stem
2017	Nicole Jansen and Ijmert Kant, on behalf of project team	FPR	Eindrapportage Onderzoeksprogramma Bevordering van de arbeidsparticipatie van oudere werknemers : Een cohort studie naar de determinanten van (langer) doorwerken op oudere leeftijd (Final report Research program Facilitating labour participation of older workers : a cohort study on the determinants of (prolonged) work careers at older age) Instituut Gak
2018	J. Meijers	ALTC	NZA rapport transmurale financiering Palliatieve Zorg
2020	D. Janssen	ALTC	'Leidraad voor het proces en uniform vastleggen van proactieve zorgplanning (advance care planning, ACP) naar aanleiding van de COVID-19-pandemie.'

1 Factual evidence at CAPHRI level

Table 1.10 Most important memberships of civil society advisory body's (top-12 2017-2022)

Year	Name	Researchline	Which organization	Which role
2017-current	D. Ruwaard	VHC	Advisory Board of the National Healthcare Authority (NZa)	chair of the Advisory Board
2018-2021	K. Czabanowska	VHC	Association of the Schools of Public health in European Region (ASPHER)	President and EB member
2015-current	P. Savelkoul	HISP	Typened, National typing steering group of spread of AMR bacteria	Member of steering group
2017	K. Horstman	HISP	Dutch Health Council. Permanent Committee Ethics and Law	Member
2020-current	C. Hoebe	HISP	Dutch National Outbreak Management Team (regular, vaccination and zoonosis)	Member
2020	O. van Schayck	OPC	Verbindingstafel preventieakkoord	Scientific advisor
2020	J. Cals	OPC	Begeleidingscommissie Digitale ondersteuning Covid-19 ministerie VWS	Member committee
2018	W. Dondorp	PHPC	Gezondheidsraad	Member
2020-current	R. Crutzen	PHPC	Ministry of Health, Welfare and Sport (VWS)	Chair of Task Force Behavioural Sciences
2017	A. Boonen	FPR	KNMG-commissie: Zorg die werkt. Naar een betere arbeidsgerichte medische zorg voor (potentieel) werkenden	Member
2022	J. Verbunt	FPR	Health council of the Netherlands (Gezondheidsraad): Commission fibromyalgia (2022-2023) Commission post COVID syndrome (2021-2022)	Commission Member
2018-2020	G. Kempen	ALTC	Health Council of the Netherlands (Gezondheidsraad)	Member of the Functioning in daily life of older people Committee
2020-2022	J. Hamers	ALTC	Ministry of Health (VWS)	Advisor Covid-19 Nursing Homes



2 Research staff, funding, and duration/ success rates of the PhD programme

Table 2.1 Research staff at CAPHRI level (2017-2022)

Table 2.2 Research staff at RL level (2022)

Table 2.3 Funding CAPHRI level (2017-2022)

Table 2.4 Funding including clinical research MUMC+/CTCM at Research Institute level 2017 -2022

Table 2.5 Funding at RL level (2022)

Table 2.6 Realised funding at Research Institute level

Table 2.7 Major grants (contracts above € 500.000)

Table 2.8 Prestigious personal grants

Table 2.9 Duration and success rate of Standard PhD-candidates (2013-2018)

Table 2.10 Number of graduates and the type of tasks 2017-2022

Table 2.11 Diversity among staff members (M/F and nationality Dutch/Foreign)

Table 2.12 Diversity among PhD students (M/F and nationality Dutch/Foreign)

Table 2.1 Research staff at CAPHRI level

CAPHRI	2017	2018	2019	2020	2021	2022
Scientific staff FHML ¹	46,3 / 121	48,4 / 127	45,4 / 147	46,7/119	46,0 / 124	48,7 / 128
Scientific staff academic hospital	7,0 / 22	7,0 / 22	6,2 / 18	3,6 / 14	3,1 / 13	3 / 13
Post-docs ²	35,7 / 61	33,8 / 59	36,2 / 73	35,3 / 62	44,6 / 81	43,6 / 73
Internal PhD-candidates ³	70,3 / 76	78,0 / 81	77,2 / 84 *(100)	74,7 / 80	71,8 / 79	64,5 / 70
Total research staff	159,3 / 280	167,2 / 289	165,1 / 322	160,6 / 275	165,4 / 297	159,8 / 284
Support staff (research) ⁴	26,7 / 44	28,0 / 46	29,3 / 69	25,0 / 43	25,9 / 42	24,4 / 39
Support staff (managerial) ⁵	10,0 / 12	9,8 / 12	9,7 / 12	9,7 / 12	8,5 / 11	9 / 12
Total staff incl academic hospital	196,0 / 336	205,0 / 347	204,1 / 403	195,0 / 330	199,7 / 350	193,1 / 335
Total staff excl academic hospital	189,0 / 314	198,1 / 325	197,8 / 385	191,4 / 316	196,6 / 337	190,1 / 322
External PhD candidates ⁶	320	310	340*(323)	353	373	421
Honorary professor ⁷	nb	nb	15	11	16	12

FTE: Sum of actual fte-factors (in fulltime equivalents) labelled on the research programme on 31-dec on any year

#: Number of persons active on the research programme on 31-dec of any year

Comparable with WOPI-categories HGL, UHD and UD; tenured and non-tenured staff appointed at the FHML.

Comparable with WOPI-category 'Onderzoeker' ^(1,2,3,4), with completed PhD, not belonging to scientific staff (with WOPI-categories HGL, UHD and UD)

Standard PhD (employed)

All support staff working on research (research assistants, lab technicians, and other support staff not working at the management office)

Support staff working at the School's management office including the scientific director

External PhD (externally or internally funded but not employed)

Scientific Staff, employed_unpaid professor

Visiting fellows are researchers/professors who visit the research programme for a period of typically one week up to three months to work with research programme staff members.

* There were 100 Internal PhD candidates of which 83 still had a paid position, the other 17 internal PhD Candidates 17 were not employed and therefore shown as external PhD Candidate.

2 Research staff, funding, and duration/success rates of the PhD programme

Table 2.2 Research staff at RL level (2017-2022) in FTE/#

Programma	1. Ageing and Long-Term Care		2. Creating Value-Based Health Care		3. Functioning, Participation and Rehabilitation		4. Health Inequities and Societal Participation		5. Optimising Patient Care		6. Promoting Health and Personalised Care	
	1 ^e geld-stroom fte	Overige geld-stromen fte	1 ^e geld-stroom fte	Overige geld-stromen fte	1 ^e geld-stroom fte	Overige geld-stromen fte	1 ^e geld-stroom fte	Overige geld-stromen fte	1 ^e geld-stroom fte	Overige geld-stromen fte	1 ^e geld-stroom fte	Overige geld-stromen fte
2022												
Scientific Staff FHML ¹	4,2/13	4,8/14	6,0/15	2,5/10	5,8/18	2,1/8	6,8/17	2,1/6	6,1/17	1,1/8	6,9/25	0,6/5
Scientific Staff academic hospital	0,0/0,0		0,8/3		1,4/6		0,1/1		0,7/3		0,0/0,0	
Post Docs ²	0,2/1	4,2/7	0,0/0,0	6,9/11	0,9/3	11,2/16	0,4/2	6,1/11	0,9/3	5,3/10	0,3/2	7,2/11
Internal PhD-students ³	0,0/0,0	13,2/14	0,0/0,0	10,0/11	0,2/1	11,1/12	0,0/0	10,4/11	1,0/1	5,5/6	0,0/0	13,1/14
Total Research Staff	4,4/14	22,2/35	6,8/18	19,3/32	8,2/28	24,4/36	7,3/20	18,6/28	8,7/24	11,8/24	7,1/27	20,8/30
Support Staff (research) ⁴	nb	nb	nb	nb	nb	nb	nb	nb	nb	nb	nb	nb
Support Staff (managerial) ⁵	nb	nb	nb	nb	nb	nb	nb	nb	nb	nb	nb	nb
Total Support Staff	nb	nb	nb	nb	nb	nb	nb	nb	nb	nb	nb	nb
Total Staff incl academic hospital	4,4/14	22,2/35	6,8/18	19,3/32	8,2/28	24,4/36	7,3/20	18,6/28	8,7/24	11,8/24	7,1/27	20,8/30
Total Staff excl academic hospital	4,4/14	22,2/35	6,0/15	19,3/32	6,9/22	24,4/36	7,2/17	18,6/28	8,0/21	11,8/24	7,1/27	20,8/30
External PhD students ⁶	34		105		65		63		85		79	
Honorary professor ⁷	nb		nb		nb		nb		nb		nb	
Visiting fellows/professors ⁸	nb		nb		nb		nb		nb		nb	

FTE: Sum of actual fte-factors (in fulltime equivalents) labelled on the research programme on 31-dec on any year

#: Number of persons active on the research programme on 31-dec of any year

¹ Comparable with WOPI-categories HGL, UHD and UD; tenured and non-tenured staff appointed at the FHML.

² Comparable with WOPI-category 'Onderzoeker' (1, 2, 3, 4), with completed PhD, not belonging to scientific staff (with WOPI-categories HGL, UHD and UD)

³ Standard PhD (employed)

⁴ All support staff working on research (research assistants, lab technicians, and other support staff not working at the management office)

⁵ Support staff working at the Research Institute's management office including the scientific director

⁶ External PhD (externally or internally funded but not employed)

⁷ Scientific Staff, employed_unpaid professor

⁸ Visiting fellows are researchers/professors who visit the research programme for a period of typically one week up to three months to work with research programme staff members.

Table 2.3 Funding at CAPHRI level

CAPHRI	2017		2018		2019		2020		2021		2022	
	fte ⁵	% ⁶	fte	%	fte	%	fte	%	fte	%	fte	%
- Direct funding ¹	42,0	28	45,3	28	43	27	44,3	28	41,3	25	40,3	26
- Research funds ²	27,2	18	31,2	19	35,3	22	38,5	25	39,3	24	42,0	27
- Contract research ³	74,7	49	79,8	50	81,3	50	72,5	46	78,7	48	69,5	44
- Other	8,4	5	4,0	2	2,3	1	1,2	1	3,2	2	5,5	3
Total funding (excl. hospital)⁴	152,3	100	160,3	100	161,9	100	156,4	100	162,5	100	157,3	100

Expenditure	k€		K€		K€		K€		K€		K€	
	k€	%	K€	%	K€	%	K€	%	K€	%	K€	%
- Personnel costs	13.164	76	14.273	79	14.780	79	14.792	83	16.162	84	16.032	81
- Other costs	4.181	24	3.706	21	3.851	21	2.995	17	3.008	16	3.851	19
Total expenditure	17.345	100	17.979	100	18.631	100	17.787	100	19.170	100	19.883	100

¹ Direct funding by FHML/ Maastricht University ('basis financiering' / lump sum budget).

² Research grants obtained in national scientific competition (e.g. grants from NWO, ZonMw and KNAW)

³ Research contracts for specific research projects obtained from external organisations, such as industry, governmental ministries, European organisations, including ERC, and charity organisations

⁴ Funds that do not fit the other categories.

⁵ The funding in fte includes the total research staff but excludes the academic hospital-staff

⁶ the funding in % in the research programme should be compared to the total within each research programme

Remark: Funding including clinical research (CTCM/academic hospital or other) is included in table 2.3 (in k€ per year)

Table 2.4 Funding including clinical research (MUMC+/CTCM)

CAPHRI	2017 (k€)		2018 (k€)		2019 (k€)		2020 (k€)		2021 (k€)		2022 (k€)	
	FHML	azM/CTCM	FHML	azM/CTCM	FHML	azM/CTCM	FHML	azM/CTCM	FHML	azM/CTCM	FHML	azM/CTCM
Research funds¹	1.748	525	2.395	161	3.367	522	3.702	695	3.876	924	4.882	998
- personal	-288		9		0		0		0		0	
- general	2.036		2.386		3.367		3.702		3.876		4.882	
Contract research²	5.889	1.489	5.190	1.221	6.220	1.725	4.912	1.481	5.289	1.354	5.187	546
- EU personal	0		0		0		0		0		0	
- EU general	1.250		825		976		1.424		1.363		1.359	
- Charity	796		651		982		682		732		400	
- Other	3.843		3.714		4.262		2.806		3.194		4.428	
Subtotal	7.638	2.014	7.585	1.381	9.587	2.247	8.614	2.176	9.165	2.278	10.069	1.545
Total	9.651		8.967		11.834		10.790		11.443		11.614	

¹ Research grants obtained in national scientific competition (e.g. grants from NWO, ZonMw and KNAW)

² Research contracts for specific research projects obtained from external organisations, such as industry, governmental ministries, European organisations, including ERC, and charity organisations

2 Research staff, funding, and duration/success rates of the PhD programme

Table 2.5 Funding at RL level - 2022

Research line	Ageing and Long-Term care		Creating Value-Based Health Care		Functioning, Participation and Rehabilitation		Health, Inequities and Societal Participation		Optimising Patient Care		Promoting Health & Personalised Care	
	fte	%	fte	%	fte	%	fte	%	fte	%	fte	%
2022												
Funding												
- Direct funding ¹	4,4	17	6,0	24	6,6	21	7,2	28	8,0	40	7,1	25
- Research funds ²	10,0	38	6,2	25	7,4	24	5,1	20	5,0	25	8,3	30
- Contract research ³	8,3	31	12,7	50	17,0	55	13,5	53	6,8	35	11,2	40
- Other	3,9	15	0,4	2	0,0	0,0	0,0	0	0,0	0	1,2	5
Total funding (excl. hospital)⁴	26,6	100	25,2	100	30,9	100	25,8	100	19,8	100	27,9	100
Expenditure												
- Personnel costs	2.570	79	2.323	78	2.832	78	2.288	82	2.186	83	2.238	86
- Other costs	670	21	635	22	796	22	517	18	451	17	364	14
Total expenditure	3.240	100	2.958	100	3.628	100	2.805	100	2.637	100	2.602	100

Table 2.6 Realised funding at School level

CAPHRI excl. MUMC+ & CTCM	2017 (k€)	2018 (k€)	2019 (k€)	2020 (k€)	2021 (k€)	2022 (k€)
Research funds ¹	2.443	9.228	1.966	3.918	11.058	2.067
Contract research ²	4.368	7.714	5.071	4.694	3.647	5.171
Total	6.811	16.942	7.037	8.612	14.705	7.239

¹ Research grants obtained in national scientific competition (e.g. grants from NWO, ZonMw and KNAW)

² Research contracts for specific research projects obtained from external organisations, such as industry, governmental ministries, European organisations, including ERC, and charity organisations

Table 2.7 Major grants (contract above € 500.000) 2017-2022

Researchline	Year	Funding bodies	Department	Project title
ALTC	2017	ZonMw	HSR	Palliatieve Zorg Dementie
ALTC	2018	ZonMw	HSR	AWO Kennis-infrastructuur
ALTC	2018	AWO LP	HSR	AWO LP-UM
ALTC	2018	EU-H2020	HSR	TRANS-SENIOR
ALTC	2022	VWS	HSR	Zorgprofessional aan Zet
VHC	2018	ZonMw	HSR	AIG 2018-2021
VHC	2018	ZonMw	HSR	Doet de gezonde School ertoe?
VHC	2021	ZonMw	HSR	Brede benadering gezondheid
FPR	2017	Weijerhorst	Orthopedie	Bewegen zonder pijn
FPR	2018	InSciTe	Orthopedie	SyCap 2 vervolg
FPR	2019	Provincie Limburg	EPI	4Limburg_4.2
FPR	2019	Health-Holland	Orthopedie	AzM Pepoa
FPR	2021	NWO	Orthopedie	Dartbac
FPR	2021	ZonMw	Orthopedie	TRAM
HISP	2019	EU-H2020	HES	Marie Curie MARKETS
HISP	2021	NWO	SOCMED	INJUST
HISP	2020	EU-ERC	HES	ERC InPart
OPC	2018	ZonMw	HAG	IMDI-E-manager CD
OPC	2018	Provincie Limburg	HAG	Lekker in je vel-2
OPC	2018	Longfonds	AzM	ADEM II
OPC	2018	ZonMw	AzM	ADEM II
OPC	2021	ZonMw	HAG	GRIP3
PHPC	2017	EU-H2020	GB	SCALA

Table 2.8 Prestigious personal grants

Researchline	Year	Name	Department	Grant
PHPC	2018	Kei Long Cheung	GB	Kootstra
HISP	2019	Floortje Moes	HES	Kootstra
PHPC	2019	Latifa Abidi	GB	Kootstra
PHPC	2019	Kei Long Cheung	GB	VENI - grant (not accepted because of transfer to Brunel University London)
FPR	2019	Inge Timmers	REV	Marie-Curie fellowship
ALTC	2020	Hilde Verbeek	HSR	VIDI
HISP	2020	Olga Zvonareva	HES	ERC Starting
HISP	2020	Alena Kamenshchikova	HES	Kootstra
PHPC	2020	Szilvia Zörgő	GB	Marie-Curie Individual Fellowship
VHC	2021	Daan Westra	HSR	VENI
HISP	2021	Alena Kamenshchikova	HES	Niels Stensen Fellowship
ALTC	2021	Judith Meijers	HSR	ZonMW personal research grant for talented nurses with a PhD
FPR	2022	Charlotte van Laake	REV	ZonMw Klinische Fellow
FPR	2022	Casper Webers	INTMED	Kootstra

Figure 2.1: The PhD journey: from selection to successful completion

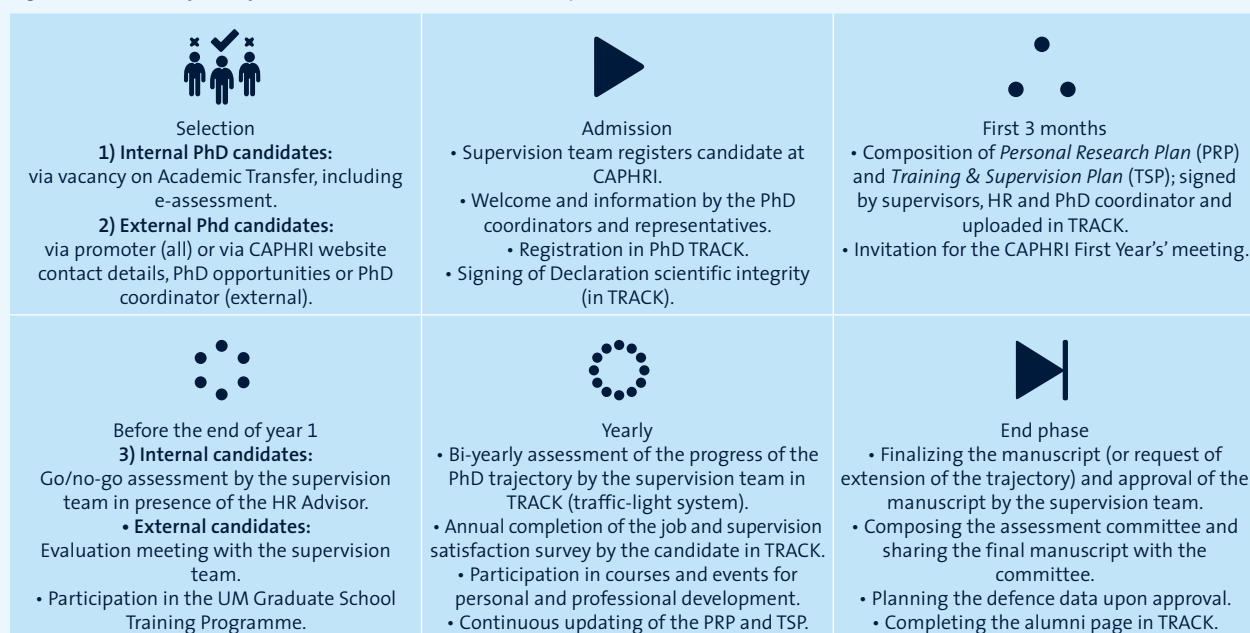


Table 2.9 Duration and success rate of Standard PhD-candidates¹

Enrolment #			Success rate # / %							
Starting year ²	Enrolment (male /female)		Total	Graduated in year 4 or earlier	Graduated in year 5	Graduated in year 6	Graduated in year 7 or later	Total graduated	Not yet finished	Discontinued
	M	F								
2013 (T-9)	6	15	21	0 / 0%	10 / 48%	7 / 33%	2 / 10%	19 / 90%	1 / 5%	1 / 5%
2014 (T-8)	3	8	11	2 / 18%	6 / 55%	2 / 18%	0 / 0%	10 / 91%	1 / 9%	0 / 0%
2015 (T-7)	2	16	18	2 / 11%	11 / 61%	2 / 11%	1 / 6%	16 / 89%	0 / 0%	2 / 11%
2016 (T-6)	10	14	24	4 / 17%	12 / 50%	2 / 8%	0 / 0%	18 / 75%	2 / 8%	4 / 17%
2017 (T-5)	8	18	26	1 / 4%	14 / 54%	2 / 8%	0 / 0%	17 / 65%	5 / 19%	4 / 15%
2018 (T-4)	6	18	24	0 / 0%	3 / 13%	1 / 4%	0 / 0%	4 / 17%	17 / 71%	3 / 12%
Total	35	89	124	9 / 7%	56 / 45%	16 / 13%	3 / 2%	84 / 68%	26 / 21%	14 / 11%

¹ Standard PhD-candidate with employee status and conducting research with primary aim/obligation to graduate; (AiO, promovendus)

² T= last year of the evaluation period

2 Research staff, funding, and duration/success rates of the PhD programme

Table 2.10 Number of graduates and the type of tasks 2017-2022

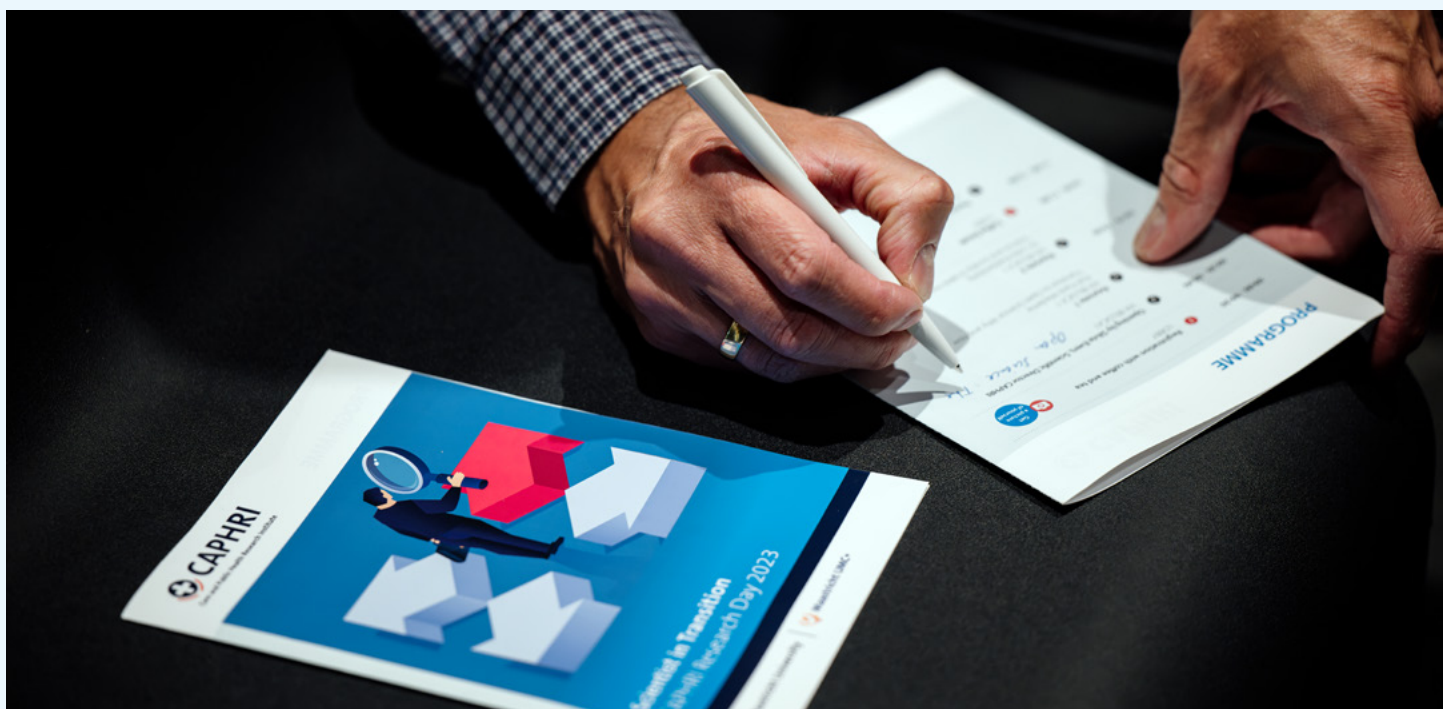
Graduation year	PhD's #	Response rate #	Response rate %	Shared with other Schools or Faculties	Type of tasks (often combined)				
					Research	Teaching	Healthcare	Science & healthcare policy	Other
2017	64	64	100%	12 / 19%	70%	39%	52%	13%	6%
2018	66	65	98%	12 / 18%	88%	27%	39%	3%	2%
2019	51	50	98%	16 / 31%	59%	24%	51%	20%	6%
2020	53	45	85%	9 / 17%	53%	25%	49%	15%	2%
2021	73	48	66%	12 / 16%	30%	11%	36%	4%	10%
2022	76	57	75%	11 / 14%	26%	17%	40%	7%	9%
Total / average	383	329	87%	72 / 19%	54%	24%	45%	10%	6%

Table 2.11 Diversity among staff members on 31-12-2022

Category of staff	N	Female / Male	Dutch / Non-Dutch
Professors	50	40% / 60%	88% / 12%
Assistant & Associate Professors	86	59% / 41%	77% / 23%
Postdocs	45	76% / 24%	67% / 33%
Total/Average	198	58% / 42%	77% / 23%

Table 2.12: Diversity among graduated PhD students per PhD type (2017-2022)

Category of PhD candidate	N	Female / Male	Dutch / Non Dutch
Internal PhD candidate (standard, employed)	117	69% / 31%	78% / 22%
UM/MUMC+ staff doing PhD	53	60% / 40%	89% / 11%
Externally financed PhD candidate	71	52% / 48%	48% / 52%
External PhD candidate (own resources)	142	58% / 42%	51% / 49%
Total/average	383	60% / 40%	67% / 33%



3 CAPHRI Factsheet



Care and Public Health Research Institute

Facts and figures

- + 165 fte scientists, of which 72 fte internal PhD candidates
- + 60 academic promotions per year (2016-2021)
- + €20m annual budget
- + 1.000 refereed articles
- + 34 fte support staff

Education

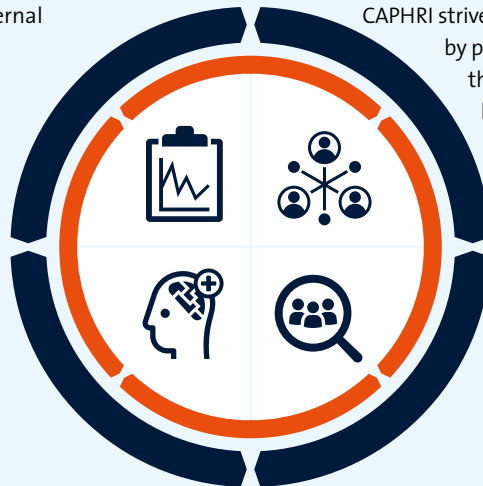
+ Bachelors

Health Sciences, European Public Health, Medicine

+ Masters

Epidemiology, Global Health, Governance and Leadership in European Public Health, Health Care Policy, Innovation and Management, Health Education and Promotion, Medicine, Work, Health and Career, Health and Digital Transformation

+ PhD Programme



CAPHRI strives to create a healthy society for everyone by providing high quality research to improve the individual quality of life and innovate healthcare and public health. Building a bridge between our research and society has our highest priority.

Our Mission

Our values

We care for health and wellbeing

(Public) Health, care and wellbeing are crucial elements of resilient individuals and successful societies

We value cooperation and inclusion

It is our conviction that innovations take place when people from different backgrounds, perspectives and capabilities meet and converge.

Our research has societal relevance

Although generating new knowledge is important in its own right, we foster dissemination to society through publications, public education and applications. Research that has no societal relevance does not belong to CAPHRI.

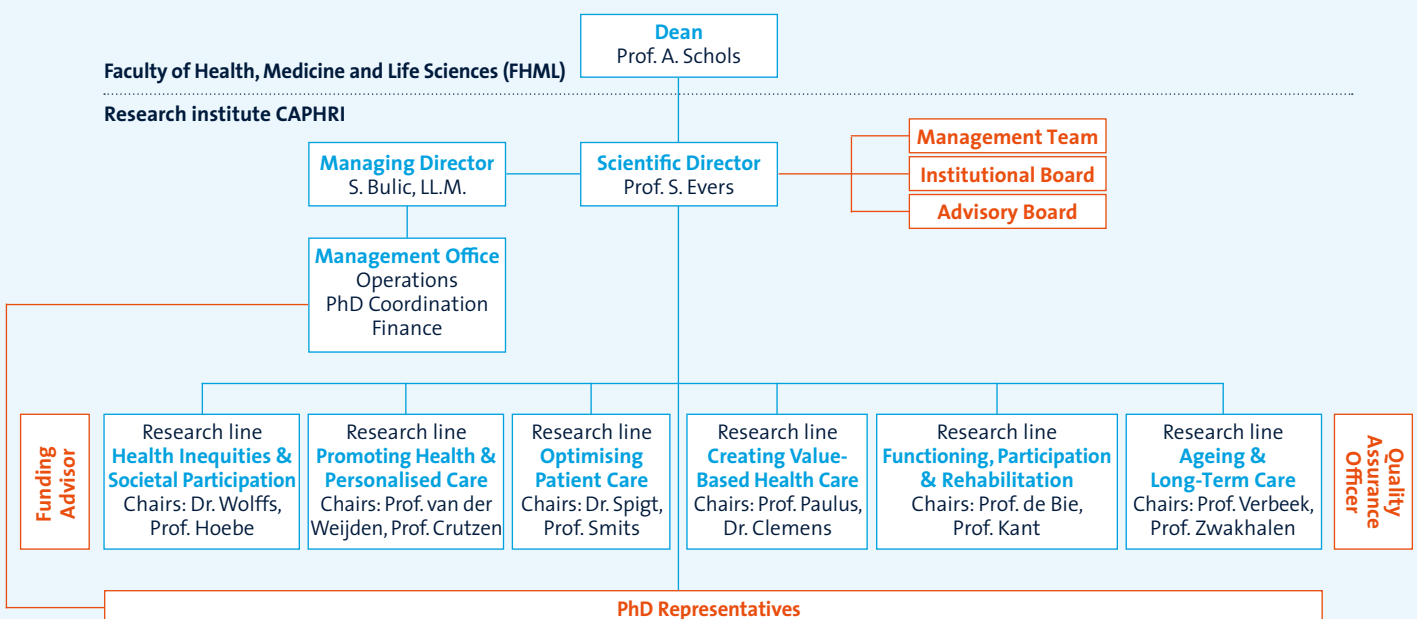


Maastricht University



Maastricht UMC+

More information www.caphri.nl



Core Departments

- Epidemiology
- Family Medicine
- Health Promotion
- Health Services Research
- Health, Ethics and Society
- International Health
- Methodology and Statistics

- Orthopaedic Surgery
- Rehabilitation
- Social Medicine
- Clinical Epidemiology and Medical Technology Assessment

Associated Departments

- Internal Medicine / Rheumatology
- Medical Microbiology, Infectious Diseases & Infection Prevention

Living Labs and Centers

Commissions

- Science Commission est. 2023
- Communication Commission est. 2023
- International Collaboration Commission
- Quality Assurance Committee

4 General information on FHML/MUMC+

1 Information for the self-evaluation

Maastricht University

Maastricht University was founded in 1976 and is the youngest university of the Netherlands. Maastricht University is characterized by its multidisciplinary and thematic approach to research and learning.

Maastricht University was the first Dutch university to set internationalisation as a top priority. More than 50% of the students and more than 40% of the academic staff within Maastricht University come from abroad, making Maastricht University the most international university in the Netherlands. Maastricht University has extensive international partnership networks and the university encourages international research collaborations. Students and researchers have many opportunities to study and work abroad, and graduates are eagerly sought in the international labour market and research community. All of this has earned UM the Certificate for Quality in Internationalisation (CeQuint), awarded by the European Consortium for Accreditation in higher education (ECA). Maastricht University stands out for its innovative approach to learning and international outlook. With almost 16,000 students and 4,000 staff, Maastricht University offers a wide choice of bachelor's, master's and PhD programmes, all of which are designed to bring out the best in its students. Maastricht University is renowned for its problem-based learning (PBL) system based on a small-scale and student-oriented approach.

Education and research at Maastricht University is organised in six faculties:

- Faculty of Health, Medicine and Life Sciences
- Faculty of Law
- School of Business and Economics
- Faculty of Science and Engineering
- Faculty of Arts and Social Sciences
- Faculty of Psychology and Neuroscience

Faculty of Health Medicine and Life Sciences

The Faculty of Health, Medicine and Life Sciences (FHML)⁰¹ is Maastricht University's largest faculty, comprising 65% of the total staff and budget of Maastricht University. The FHML has officially existed since January 1st, 2007, after a merger of the former faculties of Health Sciences and Medicine.

The FHML houses the following Research Institutes:

CAPHRI - Care and Public Health Research Institute⁰²,

CARIM - Cardiovascular Research Institute Maastricht⁰³,

GROW - Institute for Oncology and Reproduction⁰⁴,

MHENS - Mental Health and Neuroscience institute⁰⁵,

NUTRIM - Institute for Nutrition and Translational Research in Metabolism⁰⁶,

SHE - School of Health Professions Education⁰⁷,

M4I - Maastricht MultiModal Molecular Imaging Institute⁰⁸,

MERLN - Institute for Technology-Inspired Regenerative Medicine⁰⁹.

Within the FHML, the Institute for Education is responsible for the organisation of the educational programmes. The education spans the entire continuum from bachelor's and master's programmes to post academic education (e.g. specialist medical training in the hospital) from health and healthcare to medicine and life sciences.

Each Research Institute is managed by a scientific director, who has final responsibility for the overall Research Institute policy. The managing director is responsible for the accounting within the Research Institute and heads up the Research Institutes's management office.

The department chair is responsible for the quality of the discipline related education and research. Moreover, if it concerns a clinical department the chair is also responsible for the quality of the discipline related patient care. In a matrix organisation, departments house the human resources: support staff, PhD students and scientific staff. Tasks are provided through labelling in Research Institutes and educational programs. The department chair has the task of acquiring and distributing the tasks over personnel, in concert with the Research Institutes and the Institute for Education. For the research labelling, the policy is that direct government funding research labelling for all tenured research staff is maximised at 0.5fte.

Maastricht UMC+ (More knowledge, better life)

Maastricht University Medical Centre+ is a partnership between Maastricht University Hospital and Maastricht University's FHML. Maastricht UMC+ focuses not only on restoring people to good health but also on helping them stay healthy and improve their health. In addition to tertiary referral care and top clinical patient care, our core tasks are research, education and training, and valorisation. Maastricht UMC+ also provides basic healthcare services for the city of Maastricht and environs. This means that, in cooperation with our network partners, Maastricht UMC+ is uniquely equipped to deliver healthcare services from baseline to tertiary level and thus offer precisely the right care where it is needed, but also to investigate the effects of new healthcare models.

The mission of Maastricht UMC+ is 'To provide the best possible care and improve health in the region by integrating patient care, research and education' under the motto: Healthy Living. Within this mission, there is a strong focus on integrated care and prevention of disease.

To explain the comprehensive approach and complex interaction between research, healthcare, education and training, and valorisation, the Maastricht UMC+ has developed the 'Circle of Innovation'[®], which basically is a universal visualisation tool that reflects the circular process of knowledge, innovation and societal impact.

The 'Circle of Innovation[®]' shows how our researchers and specialists acquire new knowledge and put it into practice, create value and stimulate healthy living. 'Circles of Innovation[®]' are the foundation for health promotion in the broadest sense of the word. This method also stimulates collaboration between Research Institutes, the hospital, different departments, regional health care and patient organisations and other knowledge institutes, governmental organisations and industry.

Concerning the valorisation process, defined as 'The process of creating value from knowledge by making it applicable and available for utilization for economic or societal purposes, and by translating it into new businesses, products, services, or processes', the Maastricht University and Maastricht UMC+ bring all their business development activities in the field of Health and (Life) Sciences to the Brightlands Maastricht Health Campus¹⁰. As such, the campus is responsible for the entire process, from developing ideas or inventions through financing and guiding new businesses.



Figure 1: Maastricht UMC+ Circle of Innovation[®]

2 Information for the External review Committee if questions arise or as an annex in the self-evaluation

PhD

In most countries, a doctoral candidate is considered a student without an employee status. In the Netherlands, internal PhD candidates are traditionally researchers employed by a university to complete a dissertation. External PhD students are not employed but are registered by the university. To start a PhD, the candidate has to have completed a recognized master's degree.

The aim of the PhD training is to complete a dissertation based on original research. In the Netherlands, this requires about four years fulltime of doing research and writing. PhD research publications and the whole dissertation must be original work as candidates are expected to make an original contribution to the body of knowledge in their field of research. Throughout the entire PhD training, PhD candidates work in close collaboration with their supervisors.

The Maastricht University PhD thesis should comprise either a scholarly thesis on a particular subject or a number of separate scholarly papers, all or some of which have already been published in the form of articles and which demonstrate sufficient mutual coherence.

In general, Dutch dissertations are held in high esteem since they live up to the highest academic standards. Once the research is complete the supervisor judges whether the dissertation is ready for publication and oral defence. Then a committee of professors is appointed to read and approve the dissertation and to question the candidate during the traditional, centuries-old oral defence ceremony.

Internal candidates are selected based on their application for a position that is published on the Dutch main website for academic vacancies. External PhD candidates, which are registered and not employed by the university, are recruited in three different ways: 1. supervisors recruit external PhDs from their national and international networks; 2. potential candidates (with or without an obtained scholarship) contact the institute from all over the world or 3. via the contact details of the researchers and PhD coordinator on the website.

University Job Classification (UFO)

Within the Netherlands there is a system called "University Job Classification (UFO)" which is set up in accordance with an agreement reached between employers' and employees' organisations.

The principle of the Higher Education and Research Act (Wet op het Hoger Onderwijs en Wetenschappelijk Onderzoek, WHW) is the combination of the university's core tasks of teaching, research and valorisation. The members of the academic staff (WP-wetenschappelijk personeel) are assigned with the task

4 General information on FHML/MUMC+

to conducting academic teaching and research independently, but as part of a faculty. Clinical staff also executes clinical tasks in the academic hospital.

The academic staff at the Maastricht University can be roughly categorised into three groups, with differing prospects for each:

- A permanent core group of scientists whose tasks include both education and research. These scientists can be categorised according to the following job profiles: Assistant Professor (UD), Associate Professor (UHD) and Full Professor (HGL).
- Other academic staff, chiefly with the Lecturer and Researcher job profiles. The work of this other academic staff predominantly involves projects with temporary funding (researchers, postdocs), as well as day-to-day educational practice (lecturers). The majority of these employees have a temporary contract.
- PhD candidates are employees at the beginning of their academic career, in a track designed to facilitate the completion of their doctoral degree through the writing and public defence of a PhD dissertation. The temporary nature of the appointment is inherent in the goal of the position.

Incentives

Within the FHML there are two kinds of incentives for PhD defences to teams of promoters. For each promotion within the FHML, an incentive is assigned to the promotion team. The FHML temporarily also pays an additional incentive to the team for promotions which are finished within 4 years.

Professorship and chairs

Professors are appointed as 'vakhoogleraar' (key domain chair), 'persoonlijke leerstoel' (personal chair), 'profileringsleerstoel' (chair with a specialised remit), 'praktijkhoogleraar' (professor of practice), 'affiliatieleerstoel' (affiliated chair) or 'bijzondere leerstoel' (endowed chair). All the chairs within the FHML (except for 'vakhoogleraren') are yearly evaluated on criteria such as scientific quality, earning power, education and societal impact. Before each evaluation period, the ambitions for these criteria are determined. All personnel participate in a yearly job evaluation system.

FHML matrix structure

Process owners within the FHML

The dean of the faculty is legally responsible for all education and research within the FHML. The implementation of this responsibility takes place in a decentralized manner within the Research Institutes and the Institute for Education. The scientific directors of the Research Institutes and the Institute for Education are accountable to the dean. The dean is assisted by the Faculty Board and supported by the Faculty Office, under the direction of the FHML managing director.

Research Institutes

In the Research Institutes, thematically focused research takes place within a number of main lines and researchers (PhD students) are trained.

The scientific director of the School is fully responsible for the School's research programme and the training of researchers. The process owner for research and training of researchers at the Research Institute is the scientific director, which is supported by a structure established within the Institute. The FHML has eight Research Institutes: CARIM, NUTRIM, GROW, MHeNs, CAPHRI, SHE, MERLN and M4I. The Research Institutes themselves are responsible for organising the graduate programme for their PhD students, with the thematic offerings from the Research Institute being supported by a generic course offering from UM/FHML.

Institute for Education

The Institute for Education is responsible for the development, organisation, administration and implementation of all FHML educational (bachelor- and master-) programmes, and has to make sure that a solid internal quality assurance system is in place for these programmes. The scientific director of the Institute for Education bears full responsibility for the FHML's bachelor's and master's programmes. In addition, the scientific director of the Institute for Education is responsible for the internal quality assurance system for the educational programmes within the FHML. The scientific director of the Institute for Education is supported by the educational programme directors, programme coordinators and programme unit coordinators.

Department

The department is responsible for the (quality of the) disciplinary input in education and research and for the development of the discipline. The chair of the department is the process owner for this input and for discipline development. He is assisted in this by the senior staff of the department (professors and associate professors). The FHML currently has 46 departments. As a result of the above defined responsibilities of the various process owners, the roles of department chair and scientific director of a Research Institute are mutually incompatible, as are the roles of department chair and scientific director and/or programme director Education Institute.

The FHML Matrix

The above implies, that the responsibilities for education and research are decentralized within the FHML. A matrix organization fits this approach. The academic staff ('WP - wetenschappelijk personeel'), excluding PhD students, is appointed to the departments. Based on obtained tasks and roles in research and educational programmes, the Research Institute(s) and Institute for Education assign research and education labeling to the academic staff of the department. The chair of the department has the responsibility to obtain tasks and roles (and therefore labeling) and distribute these

among the staff, the latter in coordination with the Research Institute(s) and the Institute for Education.

PhD students, as well as research and educational support staff (*'OBP - onderwijsondersteunend personeel'*), are appointed at the Research Institutes and at the Institute for Education. OBP is being involved in the tasks and roles of the department's WP. For the research support staff, this usually means that the employee has been appointed to the Research Institute, but is being placed at a department. The latter also applies to the majority of PhD students. Most educational support staff is at the same time employed by and placed at the Institute for Education. Contrary to the above, some OBP has been appointed by departments directly, for example the departmental secretariats and ICT support.

The research labeling based on direct funding is capped at 0.5 fte and the basic principle is that academic staff performs educational as well as research tasks. It is possible that individual staff members have a higher research labeling than the maximum 0,5 fte, but only if externally acquired funding is used.

The underlying set of tools

The most important tools for the correct functioning of the FHML matrix organization are the following:

- 1 the tasks and responsibilities of the various process owners as agreed
- 2 the integrated system of decentralized allocation of resources with integral management responsibility for the process owners
- 3 the FHML consultation structure and the planning and control system

Ad 1. The tasks and responsibilities of the process owners have been outlined in one of the previous paragraphs of this memorandum and are anchored in the FHML Faculty Regulations. A system of annual appraisal interviews is linked to these tasks and responsibilities.

Ad 2. The integrated system of decentralized allocation of resources with integral management responsibility is elaborated in the internal budget system and implemented in the faculty budget. The so-called Performance Funding Model Research (*Dutch acronym PBM 'PrestatieBekostigingsModel'*) is used in the internal allocation of resources to Research Institutes. The funding model consists of two parts: a fixed component of resource allocation and a variable component, which is based on the number (and relative share) of PhD graduations per Research Institute I. The internal allocation of resources (*Dutch Acronym IMT 'Interne Middelen Toewijzing'*) is intended for permanent staff, paid by direct funding (*Eerste geldstroom*). The internal allocation of resources for the Institute of Education is determined in such a way that there is systematically and continuously sufficient funding for the regular training programme.

Ad 3. The main focus lines of research and education are determined by the dean/Faculty Board, based on input received from Research Institutes and the Institute of Education. The underlying strategic considerations are discussed bilaterally in the Board's yearly Planning and Control meeting with the Research Institute/Institute for Education and in plenary in the regular (Management) meetings (*'periodiek -management- overleg'*) of the Board with the scientific directors and in the meetings of the Board with the department chairs (*'Overleg Bestuur Vakgroepen'*). In addition, the 6-year quality assurance cycle (according to SEP protocol) where the Research Institutes are reviewed by an external review committee once every 6 years (preceded by an internal mid-term review after 3 years) is an important instrument for further determining and (re)adjusting the Research Institute's strategy. The Faculties' educational programmes are also assessed according to a 6-year cycle by an external committee, managed by the NVAO (*Dutch Flemish Accreditation Organization*).

Within the FHML there are two Planning and Control levels. At the Faculty level agreements are made between the Faculty Board and the scientific director of the Research Institute/ Institute for Education about input of resources and - based on this - the expected output. At the Research Institute's level the planning and control takes place in the regular (in principle annual) meetings between the scientific director and the chair of the department. In these meetings the scientific quality and societal relevance of the discipline is discussed, including the expected outcome to be achieved as a result of the invested input, both in education and research.

How the matrix works; the scientific director and chair of the department meet on the basis of equality

The meeting between Research Institute and Department, as was described in the former paragraph (the second level of planning and control) leads periodically, in principle once a year, to further determination and/or re-assignment of the formative input of each department in the Research Institute/Institute for Education.

Changing the formative input, needs the approval of the Faculty Board. Usually, there will be agreement between the scientific director of the Research Institute and the chair of the department about the way in which formation is to be deployed. In that case, the approval by the Faculty Board is merely a formal confirmation, which is handled by the FHML director on behalf of the Board.

In those cases where there is a difference of opinion between the parties about the deployment of the formation, the Faculty Board will take the final decision, after having taken note of the argumentation from both sides.

4 General information on FHML/MUMC+

An important principle here is, that there will always be an opportunity to change things for the better during a certain period (in principle one year), in case it becomes clear during a Planning and Control meeting that performance is lagging behind in certain areas. In this case, clear agreements will be made about the expected output at the end of this period. Only when these agreements have not been met, there will be reason to proceed with a change in the formative input. A change in the formative input, for example a reduction in number of staff members (FTEs), will consequently be implemented with a delay of one year, unless the mutation has no direct personnel consequences, due to natural progress, the obtaining of alternative labeling, or available vacancies. In that case implementation can be started immediately. The delay factor offers the opportunity to acquire alternative labeling, for example within one of the other Research Institutes, or within the Institute for Education, in a situation that arises in the event of redundancy.

As a lack of alternative labeling during a maximum of one year has a suspensive effect on the employment policy of the department, it is not only the chair of the department, but also the Research Institute director involved, who has an interest in finding alternative labeling. This means, that also the scientific director has an interest in solving a possible problem of redundancy.

The paragraphs above describe extensively how the matrix works when it is necessary to reduce the number of permanent staff in terms of labeling. Obviously, the procedure described above also works when there is an increase in the labeling. In that case, the challenge lies in the search for complementary labeling in the other domain (research versus education), prompted by the aforementioned principle that research labeling on the basis of direct funding is capped.

The bilateral consultation structure described above between the chair of the department and the scientific director about the disciplinary commitment in education and research, and the joint responsibility for the way in which changes are dealt with indicate the equality of those involved within the matrix structure.

This equivalence is furthermore reflected in the fact that the department chair helps determine the content of teaching and research on the basis of his responsibility for the development of his discipline. This responsibility is especially visible in the participation of the chair in the Research Institute's Council. Furthermore, staff members of the department (including the chair), act in various roles in education and research, such as leaders of research lines, project leaders, programme coordinators, or programme unit coordinators. The tasks and responsibilities of the Research Institute's Council are described in the Faculty Regulations and further detailed in the Research Institutes Regulations.



⁰¹ | www.maastrichtuniversity.nl/about-um/faculties/faculty-health-medicine-and-life-sciences

⁰² | www.maastrichtuniversity.nl/research/school-caphri-care-and-public-health-research-institute

⁰³ | www.maastrichtuniversity.nl/research/school-cardiovascular-diseases

⁰⁴ | www.maastrichtuniversity.nl/research/school-oncology-and-developmental-biology

⁰⁵ | www.maastrichtuniversity.nl/research/school-mental-health-and-neuroscience

⁰⁶ | www.maastrichtuniversity.nl/research/school-nutrition-and-translational-research-metabolism

⁰⁷ | www.maastrichtuniversity.nl/research/school-health-professions-education

⁰⁸ | www.maastrichtuniversity.nl/research/maastricht-multimodal-molecular-imaging-institute-o

⁰⁹ | www.maastrichtuniversity.nl/research/institute-technology-inspired-regenerative-medicine

¹⁰ | www.brightlands.com

5 Matrix and financial organization FHML/MUMC+

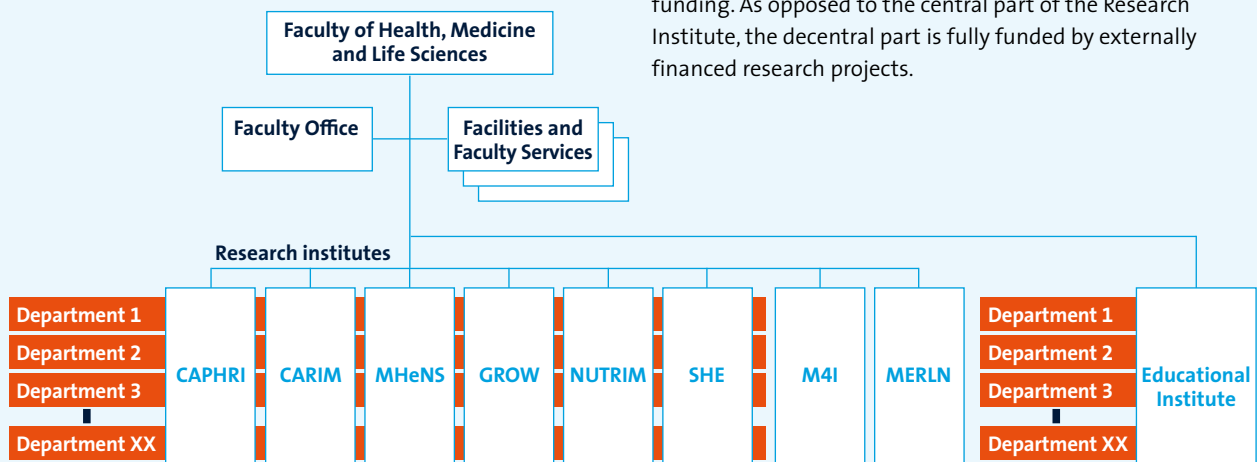
The Faculty of Health, Medicine and Life Sciences (FHML) is Maastricht University's largest faculty. The FHML uses a matrix structure for its core activities research and education. The organisation (and financial) responsibility for research at FHML is assigned to 8 Research Institutes (see below). The Institute for Education is responsible for the organisation of the educational programmes. In this document, we will mainly focus on the financial organisation of research activities.

The FHML houses eight Research Institutes:

- CAPHRI** - Care and Public Health Research Institute,
- CARIM** - Cardiovascular Research Institute Maastricht,
- GROW** - Institute for Oncology and Reproduction,
- MHENS** - Mental Health and Neuroscience institute,
- NUTRIM** - Institute for Nutrition and Translational Research in Metabolism,
- SHE** - School of Health Professions Education,
- M4I** - Maastricht MultiModal Molecular Imaging Institute,
- MERLN** - Institute for Technology-Inspired Regenerative Medicine

The organisational chart below shows the matrix structure of FHML. The lower half of the image (light blue) shows the faculty units that represent the two core activities of FHML, namely research and education. The top half shows the Faculty Office and other Faculty Services that support or facilitate these two core activities (dark blue).

FHML organisational structure



FHML matrix structure

In a matrix organisation, departments house the human resources: support staff, PhD students, postdocs and academic staff. Academic staff (*WP-wetenschappelijk personeel*) are appointed at a department and are assigned with research activities by the Research Institutes and with education activities by the Institute for Education. Theoretically, for academic staff, departments function as a *secondment agency*. They hire the staff and then second them to Research Institutes and the Institute for Education where they carry out their research and teaching activities. The related costs are divided between Research Institutes and the Institute for Education by means of labelling. Research support staff (*OBP-Ondersteunend en beheer personeel*), PhD students and postdocs are being placed at a department but they are appointed at the Research Institute. Some support staff is being appointed by departments directly, for example the secretary(ies) of the department.

Research Institutes

In the Research Institutes, thematic research takes place within a number of research lines/divisions. The scientific director of the Research Institute is fully responsible for the research programme and the training of researchers. From a financial point of view, every Research Institute is divided in a central and a decentral part. The central part is financed with direct government funding, which is a relatively fixed amount of money, partially dependent on realized promotions. The division of full-time equivalents (FTEs) over the departments is a policy decision of the scientific director of the Research Institute. Output and resource planning is discussed by the Research Institute on a yearly basis in a Planning and control meeting with the department. The basic principle is that all tenured academic staff perform research as well as educational tasks. Therefore, the research labeling based on direct funding is capped at 0.5 fte and can be supplemented with acquired funding. As opposed to the central part of the Research Institute, the decentral part is fully funded by externally financed research projects.

5 Matrix and financial organization FHML/MUMC+

Departments

The department is responsible for the (quality of the) disciplinary input in research and education and for the development of the discipline. The chair of the department has the responsibility to manage its (personnel) resources and therefore optimize distribution over research and education tasks and roles to cover the salary costs of all employments. A department has to obtain tasks and roles (and therefore labeling) from the Research Institute and the Institute for Education and distribute these among its staff, in coordination with Research Institutes and Institute for Education. This cooperation is imperative, since the costs for core department staff have to be charged against the research funding from the Research Institutes and educational funding from the Institute for Education.

Every department has a small budget for some administrative matters, but does not have budget for personnel costs (with the exception of secretarial staff).

Financial rewarding of performance of department staff

At the Faculty level agreements are made between the Faculty Board and the scientific director of the Research Institute about input of resources and - based on this - the expected output. Once a year, Planning and Control meetings take place between the Faculty Board and the scientific director to evaluate the agreements. Moreover, Research Institutes evaluate (the academic staff of) a department based upon its performance. Key Performance Indicators (KPIs) are evaluated during regular (in principle bi-annual) planning and control meetings between the scientific director and the chair of the department. In these meetings the scientific quality and societal relevance of the work (such as publications, acquisition of new contract research, educational tasks, leadership, teamwork and societal impact) of the discipline is discussed, including the expected outcome to be achieved because of the invested input, both in education and research.

Allocation of government funding and the FHML performance funding model research

The direct government funding that Maastricht University receives from the Ministry of Education, Culture and Science is divided internally according to the Maastricht University Allocation Model (UMA). Funding according to UMA takes place through different components, of which the first two are directed towards the faculties. The first component concerns the funding of UM faculties and is subdivided into research and education, although the resources are not earmarked for these two core activities. Some of the money is being paid according to a fixed rate, and some of the funding is variable.

This variable funding is based on the performance of the faculty according to the principle 'external = internal'. For education, this concerns the numbers of government-funded enrolments and degrees; for research, the three-year averages of PhD graduations and educational degrees. The second component concerns earmarked funding for the faculties which has to be spent specifically on the improvement of the quality of education.

The internal distribution of the direct government funding within the FHML to the Research Institutes is calculated annually on the basis of an agreed model. The so-called **Performance Funding Model Research** (*Dutch acronym PBM 'Prestatie Bekostigings Model'*) is used in the internal allocation of resources to Research Institutes. The funding model consists of three parts: a fixed component, a variable component and a reallocation component, both the latter based on the 3-year average of the number of PhD graduations per Research Institute. The internal allocation of resources (*Dutch Acronym IMT 'Interne Middelen Toewijzing'*) is primarily intended for permanent staff, paid for by direct government funding. Thus, Research Institutes receive funding for the number of PhD graduations, which is roughly €50 in total per PhD, divided over 3 years. The Research Institute will transfer an incentive of €13 to the PhD supervisory team budget for each awarded PhD degree, which can be spent at the team's own discretion.

Cooperation with the Maastricht University hospital from a financial point of view

Maastricht University Medical Centre+ (Maastricht UMC+) is a partnership between Maastricht University Hospital and Maastricht University's FHML. Although the university hospital and the university remain two separate legal entities, there is a strong collaboration between the FHML and the Maastricht University Hospital. The Maastricht UMC+ Executive Board is a joint Board and consists of members from FHML and the University Hospital, which ensures a close strategic coordination between the University Hospital and the FHML.

Medical staff, appointed at the Maastricht University Hospital, can also be engaged in research and/or education. The hospital has its own research budget and partially funds the appointment of medical staff, through the Research Institutes, as far as their research tasks are concerned. This is called in Dutch '*azM 1^e geldstroom formatie*' (azM direct funding). These staff members are linked to a Research Institute of FHML with which they cooperate. If research is performed at the expense of FHML budget or when medical staff are involved in the teaching of students, FHML restitutes the salary costs to the academic hospital.

6 CAPHRI SEP 2017-2022 research output report by the University Library Maastricht

Data description

The dataset (created on 27-02-2023) used for the bibliometric analysis is based on a download of UM's Current Research Information System PURE covering all publications as registered in PURE over the period 2017-2022. The so-called 'Backend - Restricted to PURE users' publications are not included, as are the non-validated, and the items marked as not (yet) published. As a result of this exclusion rule, 88% of all PURE entries are used for the analysis. Since the analyses will be used for the Strategy Evaluation Protocol (SEP) evaluation, we will use the SEP document types as defined by UNL (Universities of the Netherlands). The SEP uses an evaluation period of 6 years, in this case 2017-2022. This period is used for research output counts. For citation impact analyses, the period 2017-2020 is used. The period for citation impact analyses differs from the evaluation period because citations need time to accumulate and normalized citation counts can therefore only be reliably calculated until 2020.

Table 1a

SEP types	Counts
Refereed article	6048
PhD thesis	211
PhD thesis supervised	170
Professional publication	108
Book chapter	101
Non-refereed article	66
Not eligible	61
Other research output	39
Publications aimed at the general public	18
Book	10
Conference paper	7

Table 1b

SEP types	Counts
Refereed article	3755
PhD thesis	138
PhD thesis supervised	95
Professional publication	70
Book chapter	61
Non-refereed article	46
Not eligible	34
Other research output	27
Publications aimed at the general public	11
Book	7
Conference paper	6

Table 1a and 1b: Research output CAPHRI 2017-2022 (1a) and 2017-2020 (1b) divided by SEP document types.

The type 'not eligible' covers PURE document types that do not match any of the SEP types, namely errata/corrigenda/retractions, farewell speeches, preprints, and working papers. This table is also available in the [UB Research Intelligence dashboard](#). Include online first - ahead of print and select the period of time and scheme (SEP, KUOZ, PURE) to reproduce these results.

CAPHRI's main body of research output consists of refereed articles, taking up 88.4% of the total output in the period 2017-2022 as well as in the period 2017-2020 (see Table 1a and 1b). The number of published refereed articles dropped from 2017 to 2019, and then increased over time with a peak in 2022 (Figure 1; see Appendix Figure 1 for a more detailed breakdown of the other document types).

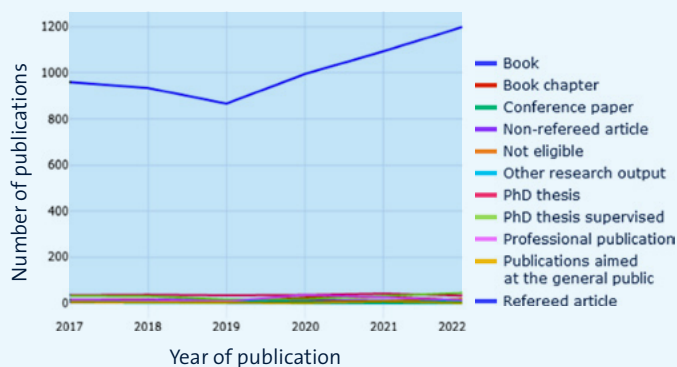


Figure 1: Document types (SEP) of CAPHRI 2017-2022 by year.

The number of publications of each type plotted by year. This figure is also available in the [dashboard](#). Include online first – ahead of print, select the period of time and choose the SEP classification to reproduce this result. Deselect 'refereed article' if you want to zoom in on the non-dominant output types (see: Appendix Figure 1 for this zoomed-in version).

Open Access

Publishing Open Access (OA) provides access to scientific findings to non-academics or institutions that do not have a subscription to a particular journal. Publishing OA can be seen as an indicator of potential societal impact. Figure 2 shows the status of CAPHRI's refereed articles in the period 2017-2022 based on information from Unpaywall. At UM we define seven categories within Open Access publishing:

- Gold-DOAJ: free under an open license on the publisher site, published in a fully-OA journal recognized by the [Directory of Open Access Journals \(DOAJ\)](#)
- Gold- not DOAJ: free under an open license on the publisher site, published in a fully-OA journal that is not (yet) recognized by DOAJ
- Hybrid: free under an open license on the publisher site, published in a toll-access journal
- Green: published in a toll-access journal and the only full text copy openly available is in an OA repository
- Bronze: published in a toll-access journal, openly available on the publisher site, without an OA license. This category of publications might change to closed anytime.
- Unknown: the status of this publication is unknown
- Closed: exclusively available behind a paywall or published under embargo. Publications under embargo will be openly available after a certain time, and these publications are seen as closed until the embargo is lifted.

6 CAPHRI SEP 2017-2022 research output report by the University Library Maastricht

Open access status of publications

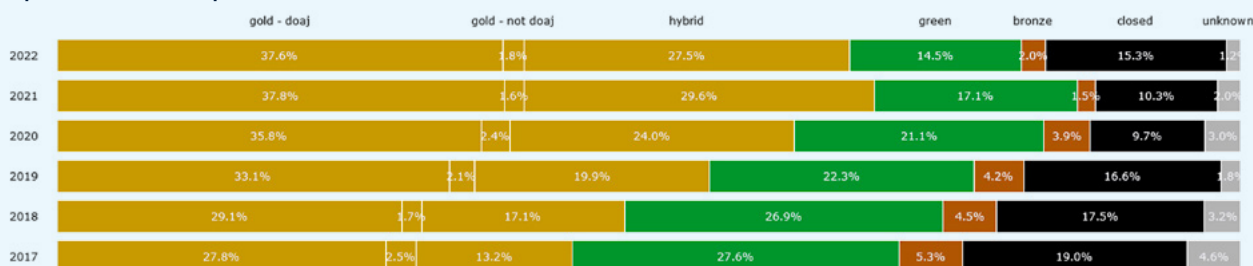


Figure 2: Open Access status of refereed articles of CAPHRI 2017-2022.

The open access status of CAPHRI publications, as defined by the UM definition based on Unpaywall data. Absolute numbers can be found in the 'Open Science' tab of the [dashboard](#). Include online first – ahead of print, select the period of interest and refereed articles to reproduce this result in the dashboard.

The percentage of refereed articles published as Open Access has increased at CAPHRI, with 43.5% of the total output being available under an OA license in 2017, and 66.9% in 2022.

This is higher than the overall percentage for UM, with 61.9% in 2022, and almost equal to the national percentage for 2021 (67%). When taking green OA into account, 81.4% of CAPHRI's publications of 2022 are available as OA. Please note that the percentage of green OA for 2022 will likely become larger and the percentage for closed publications will become smaller as green open access embargos are lifted during 2023 (e.g., after six months for publications made available through the Taverne Agreement). For instance, as you can see in Figure 2, the OA percentage for 2021, 69%, is higher than in 2022 and the national average for 2021.

Scholarly impact analyses

Citation-based indicators

Impact indicators measure the effect of scholarly work on the research community and society. Scholarly impact indicators measure influence on the research community using citations as a proxy for impact. For the analyses in this report, two citation databases are used, the Web of Science (WoS) and InCites. The UM has no full subscription to the WoS but only to the Science, Social Sciences, Arts & Humanities, Emerging Sources and the Conference Proceedings Citation Indexes. The citation indexes of the WoS track raw citation counts for all publications contained in their curated lists of books and journals that have passed the quality marks of Clarivate Analytics, the producer of these citation indexes. InCites does not track raw citation counts but uses the citation counts of the WoS to calculate the so-called 'normalized citation indicators' that can be used to evaluate research output. These normalized indicators take into account that:

- citation frequencies differ per discipline
- older publications generally have more citations, and that
- document types differ in citation frequencies (e.g., reviews get more citations compared to primary research articles)

This normalization makes it possible to compare the citation impact of a document set to other custom document sets, i.e.

to the world average(s) of InCites' complete dataset, or to those of institutes, universities, or countries.

In this report, we use two indicators to demonstrate research impact: the Category Normalized Citation Impact (CNCI) and the Percentile in subject area. These indicators complement each other; the CNCI is useful when benchmarking output against the world, and the Percentile in subject area is useful when demonstrating impact of publications at the top-end of the citation distribution. Both indicators correct for differences in citation frequencies that are attributable to age, document type and subject area. Note that data for the two most recent years are volatile; the results can vary between months. As a rule of thumb, data are most reliable 24 months after publication. Therefore, we exclude 2021 and 2022 from any analyses that use these indicators. Secondly, both indicators correct for document type. The document type is assigned to a publication by InCites. Some document types - such as book reviews - are rarely cited, but when one item of this type is, it can get an extremely high CNCI that can skew impact analyses. Therefore, we only include articles and reviews. Lastly, the subject area of a scholarly work can be determined in different ways:

Journal classification (e.g., WoS subject areas)

The WoS and InCites both use approximately 250 subject areas to categorize documents in all sciences. It is the most detailed categorization in the Web of Science and it is used to calculate the expected average citation rates per subject area, year, and document type in InCites. The journal in which a document is published determines the WoS category of that document. Please note that journals are often assigned to more than one category in the WoS. Publications in multidisciplinary journals are reassigned to their most relevant Web of Science subject categories annually.

Citation Relationships (e.g., Citation Topics)

Recently, the Centre of Science and Technology Studies (CWTS) has developed a citation-based classification algorithm that clusters publications based on their cited and citing relationships. The resulting clusters are named 'Citation Topics'. The clustering is independent of a document's subject matter

and acknowledges the dynamics of science - allowing new citation topics to arise. It does not force documents into predetermined (journal-based) categories that may seem less relevant from a researcher's perspective. InCites provides normalized impact metrics for citation topics as of December 2020. Clustering is performed at three levels: macro level (10 topics), meso level (326 topics) and micro level (2444 topics). Normalized citation indicators can be calculated using these different classification schemes. Although the journal classification schemes have been the golden standard for a long time, the citation topics have taken over this position recently: CWTS uses micro citation topic normalization for all their reports, and citation indexes such as InCites and Scival have also adopted these schemes in their normalized indicators. The main reason for this is that the citation topics do justice to the dynamics of science, and are often more recognizable to researchers. *It is therefore that we will use the micro citation topics for the normalization of the citation indicators.*

Included in the scholarly impact analysis

As seen in Table 2, the scholarly impact analysis includes 3140 articles and reviews for 2017-2020 (73.9% of total output). This suffices to get a reliable general idea of CAPHRI's citation impact.

Total output all document types	All document types indexed in Incites		Indexed in Incites as articles and reviews	
Count	Count	% of total output	Count	% of total output
4250	3553	83.6%	3140	73.9%

Table 2. Documents indexed in Incites for 2017-2020.

Table shows the number of documents indexed in incites and their share of the total output.

Category normalized citation impact (CNCI)

The CNCI is the ratio of citations received by an output against the average for other outputs of the same age, document type and subject area. A CNCI equal to 1 means that a publication is cited as frequently as the world average. So, this indicator allows benchmarking of a scholarly work against its peers in the literature. A downside of the CNCI is that it uses the mean to characterize heavily skewed citation distributions. Because of these heavily skewed citation distributions - ~20% of outputs receive ~80% of citations - and the CNCI being an average value, we plotted the CNCI in a histogram using bins of unequal size (see Figure 3). The few works that receive a lot of citations (i.e., cited 8 or more times

as much as would be expected based on the average of comparable publications) will end up in the 'fifl8' bin. The CNCI boxplot shows that for the majority of outputs the CNCI lies close to 0 or 1, but a few outputs receive a lot of citations (see Figure 4). We advise to be careful using the average CNCI for small groups of publications, because a few publications can inflate the average. Looking at the results for CAPHRI, one can see that 1.8% of the total output (56 publications) has a CNCI higher than or equal to 8 (see Figure 3). 39.6% of CAPHRI's output receives more citations than expected based on the age, document type and subject area. Furthermore, only 3.9% of CAPHRI's research output is uncited. As a comparison: 9.7% of all articles and reviews (on average) in the fields of Life Sciences and Clinical, Pre-clinical & Health are uncited. The average CNCI of CAPHRI is consistently higher than 1, which indicates that - on average - CAPHRI's publications receive more citations than the world average (see Figure 4 red line and Appendix Figure 2 for a zoomed-in version of Figure 4). Looking at Figure 4, one can see that CAPHRI publications consist of many outliers, many of which have very high CNCIs. Therefore, we can look at the median CNCIs (see horizontal blue lines bisecting the boxes in Figure 2 in the Appendix) - which are less influenced by outliers than the average CNCIs - and recalculate the average CNCIs without the outliers for each year: both the median CNCIs (2017: 0.77; 2018: 0.82; 2019: 0.80; 2020: 0.73) and the average CNCIs without the outliers (2017: 0.91; 2018: 0.95; 2019: 0.93; 2020: 0.83) still range around 1, illustrating that the scholarly impact is around world average. Although outliers have a strong effect on the average, they are also interesting to take a closer look at as they represent the publications with the highest citation impact. Seen over the complete dataset, the three publications with the overall highest CNCI are:

- 1 [Sarcopenia: revised European consensus on definition and diagnosis \(2019\)](#)¹
- 2 [What low back pain is and why we need to pay attention \(2018\)](#)²
- 3 [Sedentary Behavior Research Network \(SBRN\) - Terminology Consensus Project process and outcome \(2017\)](#)³

All of these three publications are articles (instead of reviews), and they have exceptionally high CNCIs. Article (1) from the list above is cited 258.6 times more than would be expected compared to other articles of the same age and subject area. It is followed by (2) with a CNCI of 111.4, and (3) with a CNCI of 81.3. Articles (1) and (3) have in common that in each case an entire working/project group (consisting of 13 and 84 participants, respectively) is listed as a co-author, in which a CAPHRI researcher is listed as participant. Please have a look at the 'Scholarly Impact' tab in the dashboard to find out more about outliers beyond these three articles.

⁰¹ | <https://cris.maastrichtuniversity.nl/en/publications/sarcopenia-revised-european-consensus-on-definition-and-diagnosis>

⁰² | <https://cris.maastrichtuniversity.nl/en/publications/what-low-back-pain-is-and-why-we-need-to-pay-attention>

⁰³ | <https://cris.maastrichtuniversity.nl/en/publications/sedentary-behavior-research-network-sbrn-terminology-consensus-pr>

6 CAPHRI SEP 2017-2022 research output report by the University Library Maastricht

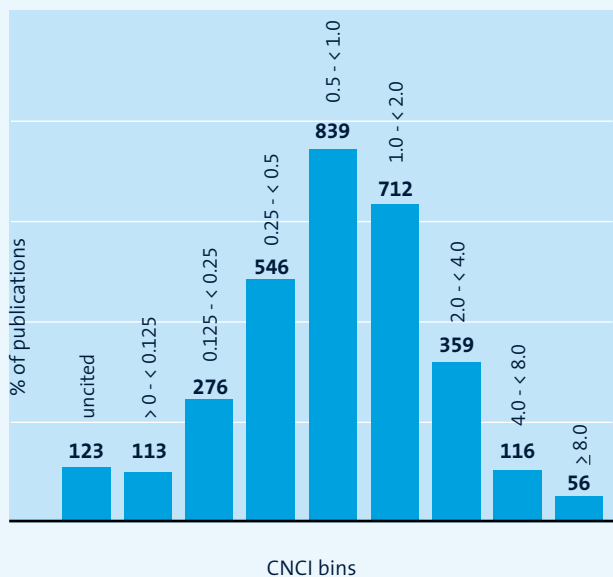


Figure 3: Histogram CNI CAPHRI 2017-2020.

The percentage of total output is plotted against the CNI. The absolute number of publications is plotted at the top of each bin. 1.8% of the output is cited 8 times more than the expected citation average for publications of the same age, document type and subject area. 39.6% of the total output has a CNI of ≤ 1 . This figure is also available in the Dashboard. To reproduce this result, select the normalization scheme, period of time, and document types to be included in the 'Scholarly Impact' tab.

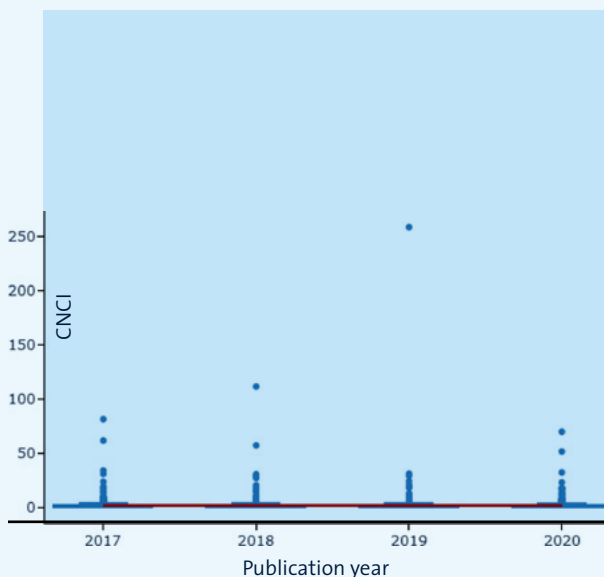


Figure 4: CNI boxplot CAPHRI 2017-2020.

The CNI is plotted against the years. Each publication is shown in the form of a bullet when it resides outside of the whiskers (± 1.5 times the interquartile range). The red line depicts the average CNI per year. A zoomed-in version can be found in the Appendix. This figure is also available in the Dashboard. On the 'Scholarly Impact' tab, select the normalization scheme, period of time and document types to be included to reproduce this result.

Percentile in subject area

The percentile in subject area determines to which percentile an output belongs in terms of received citations. This is corrected for age, subject area and output type. It focuses attention on the top end of the citation distribution, which is favorable when attempting to demonstrate impact. The percentile in subject area is plotted using bins, where one can easily extract the top 1%, top 10% and top 25% of outputs (see Figure 5). For clarification: to have ten percent of the total output in the world's top 10% of documents would be average. The same is true for 1% of total research output in the world's top 1% or top percentile. Adding up the '90-<99' and '100' percentile bins, would give the percentage of total output in the world's top 10% of documents considering citation impact. The results show that 13.9% of the total output (434 publications: 366 + 68) belongs to the world's top 10% documents concerning citation impact. This is 3.9% more than would be expected based on the world average. 2.2% of the total end up in the top percentile (68 publications; 1.2% more than expected). When viewing the percentile in subject area over the years (see Figure 6), one can see that CAPHRI systematically contributes more to the world's top 1% than would be expected. 2.3% in 2017 (18 publications; 1.3% more than expected), 2.5% in 2018 (20 publications; 1.5% more than expected), 2.1% in 2019 (16 publications; 1.1% more than expected), and 1.8% in 2020 (14 publications; 0.8% more than expected).

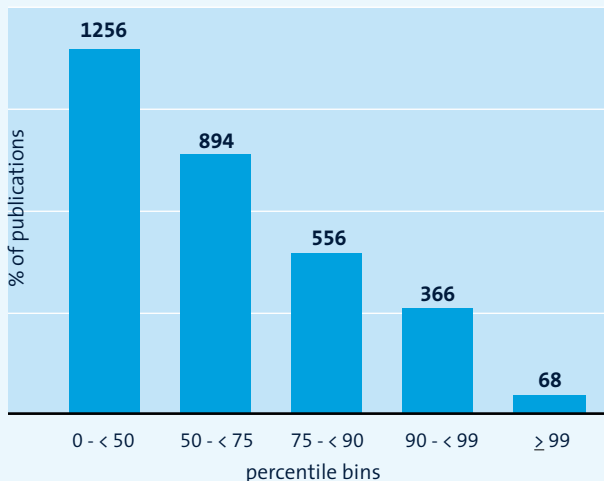


Figure 5: Percentile in subject area CAPHRI 2017-2020.

The top 1 percentile contains 68 publications (2.2% of the output). 13.9% of the output end up in the top 10% of comparable outputs regarding age, document type and subject area. This figure is also available in the Dashboard. To reproduce this result, select the normalization scheme, period of time and document types to be included on the 'Scholarly Impact' tab.

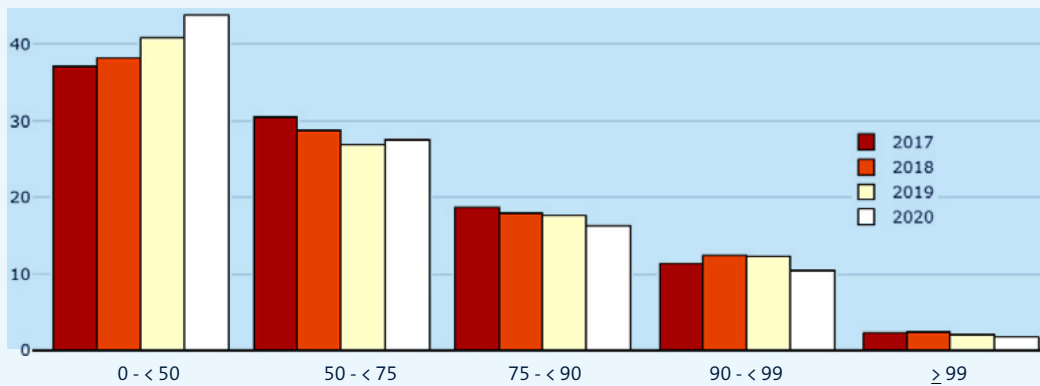


Figure 6: Percentile in subject area over the years.

The % of publications is plotted against the percentile bins. On the right, the percentage of publications falling into the 1% of papers of the same age, document type and subject area is shown. Next to this, the percentage of publications falling into the 1-10th percentile is plotted. The coloured bars show the different years, plotted in chronological order (2017 on the left, 2020 on the right). This figure is also available in the [dashboard](#). To reproduce this result select the normalization scheme, period of time and document types to be included on the 'Scholarly Impact' tab.

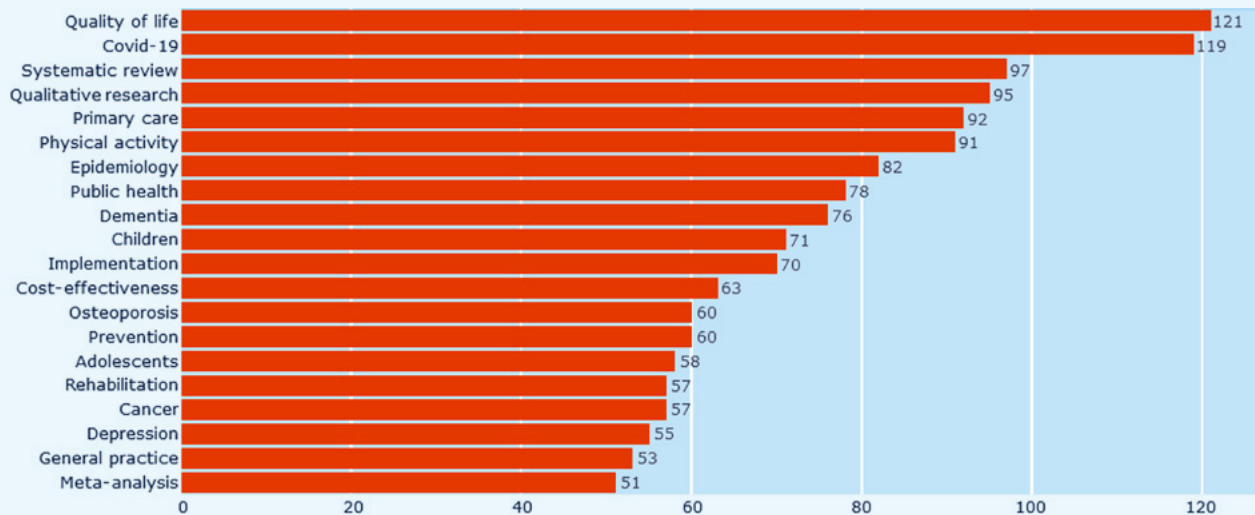


Figure 7: Number of documents by WoS author-supplied keywords.

The number of documents belonging to the top 20 WoS author-supplied keywords. X-axis indicates how many times an author keyword occurs in a publication set. Because multiple keywords may occur in a publication, the x-axis does not represent the total number of publications. Moreover, the keywords are the exact keywords as assigned to publications by the authors themselves (author-supplied keywords). This means that the number of publications for each keyword does not include the number of publications containing keyword synonyms, keywords expressing similar concepts (child / children), or miss-spelled keywords (acces / access).

Research areas as reflected by author-supplied keywords (Multidisciplinarity)

Figure 7 shows the top 20 WoS author-supplied keywords occurring in CAPHRI publications. Author-supplied keywords are the keywords that authors include in their publications to briefly describe their work. Figure 7 shows that CAPHRI publishes on a variety of research areas, illustrating the multidisciplinary nature of CAPHRI's research. Note that the x-axis indicates how many times an author keyword occurs in a publication set. Because multiple keywords may occur in a publication, the x-axis does not represent the total number of publications.

Funding

Figure 8 shows the most frequent funders that have supported the research published in CAPHRI's publications. Please note that funder information is retrieved from Altmetric. Keep in mind that funder information is often lacking; many publications do not include funder information. Figure 8 shows that the "Netherlands Organisation for Health Research and Development, Netherlands" is most prominent (563 publications). It is followed by the "European Commission, Belgium" (388 publications), and the "Department of Health and Social Care", United Kingdom (183 publications).

6 CAPHRI SEP 2017-2022 research output report by the University Library Maastricht



Figure 8: Number of documents by funder.

The number of documents belonging to the 20 most prominent funders using Altmetric information. Figure 8 is based on Altmetric funder information for 32% of CAPHRI publications (i.e., 2210 publications of a total of 6839 publications).

Collaborations

Collaborations within CAPHRI

Collaborations among the 6 CAPHRI research lines can be illustrated using a heat map (Figure 9). Among the research lines, PHPC (“Promoting Health and Personalised Care”) and OPC (“Optimising Patient Care”) collaborate most frequently with each other (216 publications), followed by OPC and VHC (“Creating Value-Based Health Care”) (175 publications). Please note that the sum of publications from all research lines may exceed the total number of publications from CAPHRI, as some collaborations involve more than two research lines.

Collaborations within FHML

Collaborations of CAPHRI with another FHML (“Faculty of Health, Medicine and Life Sciences”) school can be illustrated using a heat map (Figure 10). Looking in detail into the collaborations, NUTRIM is the most frequent collaborator (938 publications), followed by GROW (692 publications). Be aware that the number of co-authored publications between schools other than CAPHRI (e.g., GROW with MHeNs) only represent those publications in which CAPHRI was involved because some collaborations involve more than two research lines.

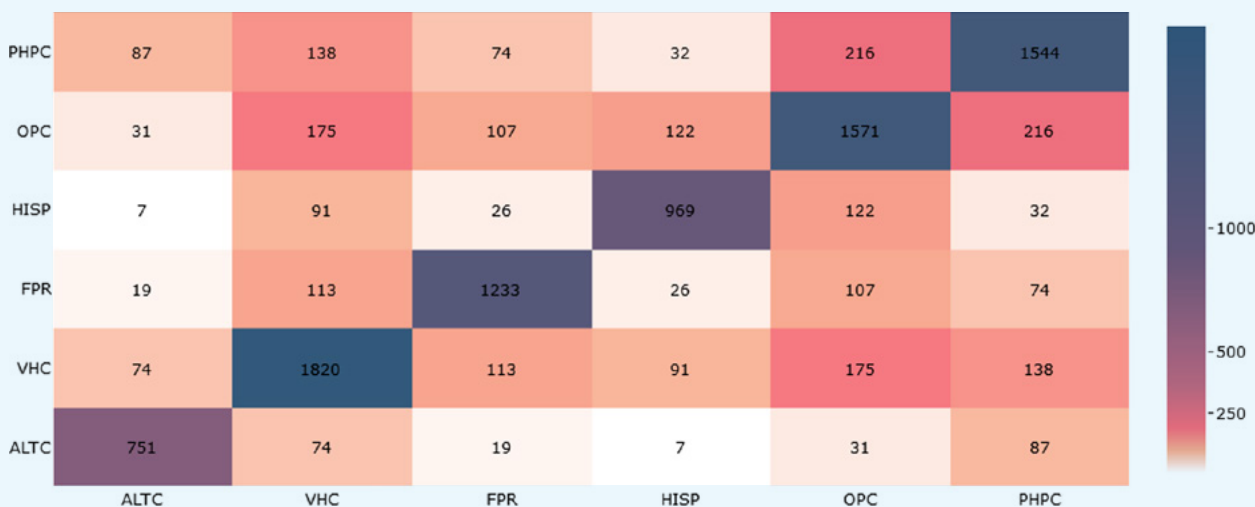


Figure 9. Heat map of collaborations between CAPHRI research programmes 2017-2022.

All documents published by CAPHRI with a research line assigned are included in this heat map. Research lines are plotted against each other, and the numbers as well as the colours reflect the number of documents published. The sum of publications by all research lines can exceed the total number of publications by CAPHRI because some collaborations involve more than two research lines.

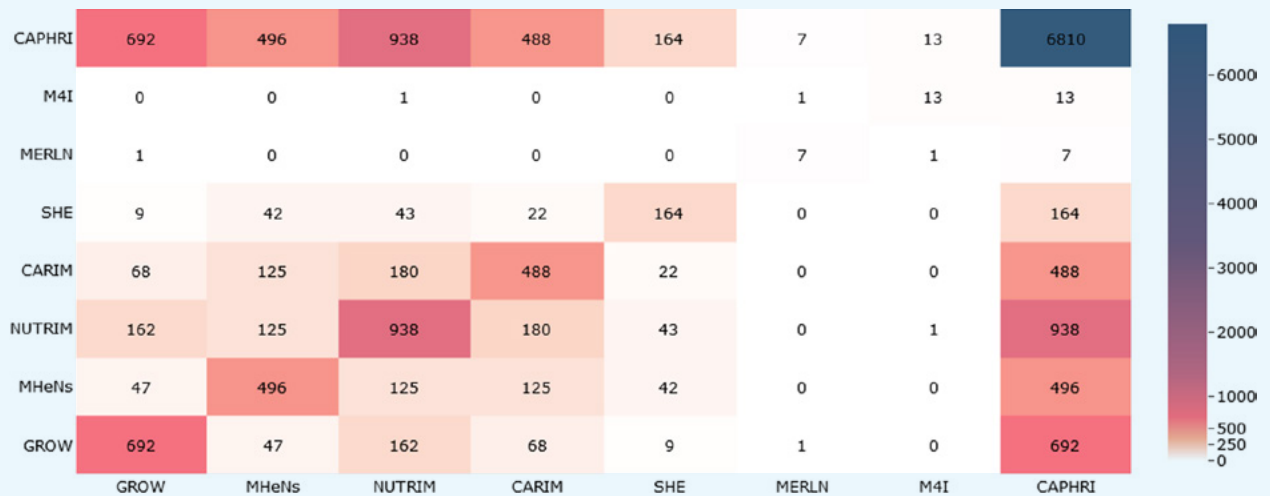


Figure 10. Heat map of collaborations between CAPHRI and FHML schools 2017-2022.

All documents published by CAPHRI in collaboration with one or more FHML schools are included in this heat map. FHML schools are plotted against each other, and the numbers as well as the colours reflect the number of documents published in collaboration with CAPHRI. Please note that the displayed number of co-authored publications between the schools (e.g., GROW with MHeNs) only represents those publications in which CAPHRI was also involved. Please be aware that data on the FHML schools other than CAPHRI was retrieved on 2023-03-28, and that 29 CAPHRI publications are missing from this dataset.

International and national collaborations

In Figures 11-16 CAPHRI's international and national collaborations with academic and non-academic organisations are mapped, using affiliation data of the publications' authors. A CAPHRI publication will be counted as a document of collaboration when at least one of the co-authors is affiliated with an external institution listed in the WoS. Moreover, organisations are only taken into account as collaborators when CAPHRI has co-authored at least 5 publications with a co-author from that organisation. Please note that affiliation data can be incomplete, and the numbers should therefore not be interpreted as exact numbers. Some organisations are not indexed in the WoS and are

therefore missing in the list. Also note that publications can be counted twice in these plots as multiple organisations can be involved in the same publication; all organisations affiliated to one publication will be scored.

Academic collaborations

Considering academic collaborations, only publications in collaboration with authors affiliated with universities and other institutions that combine education and research are taken into account (i.e., filtering for "academic" and "academic system" as organisation types in the Research Intelligence Dashboard). Looking at the 30 most frequent international

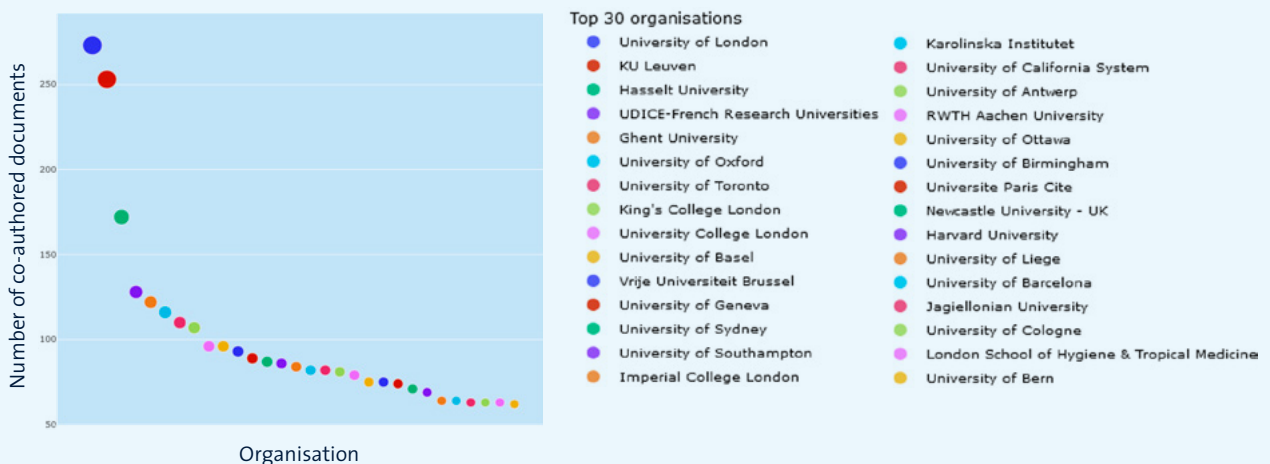


Figure 11: Number of documents for CAPHRI's most frequent academic international collaborators (2017-2022).

The number of documents published in collaboration plotted for the top 30 collaborators of CAPHRI. All document types (according to InCites' document type) are included. The size of the bullets corresponds to the number of documents. This figure is also available in the dashboard. Select the period of interest, organisation types, geographical area, the number of organisations, and the minimum number of documents to reproduce this result on the 'Collaborations' sub-tab of the 'Networks' tab.

6 CAPHRI SEP 2017-2022 research output report by the University Library Maastricht

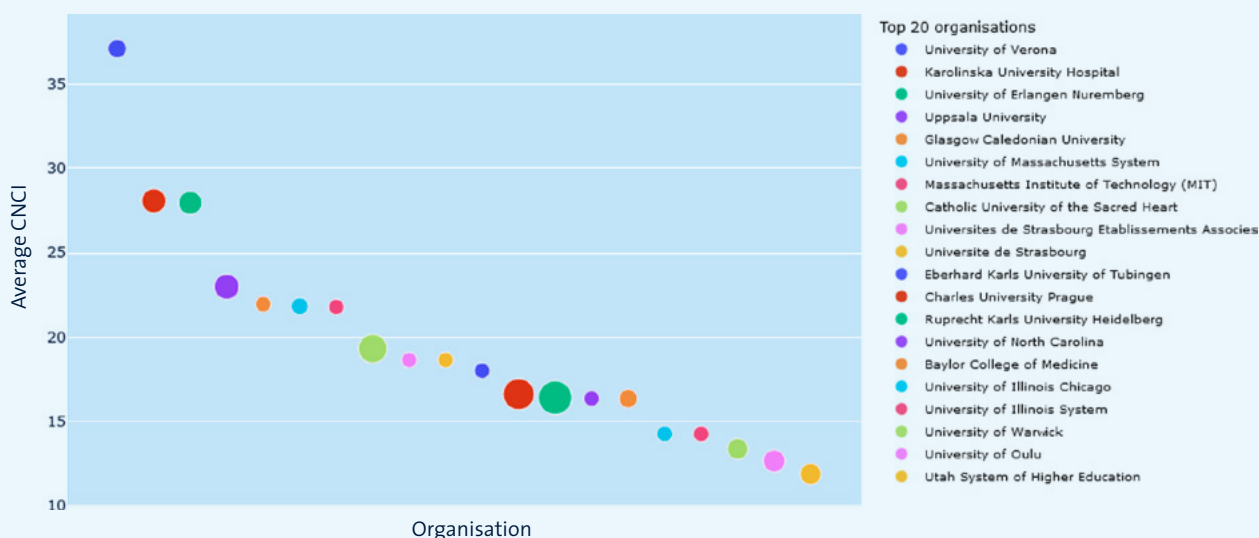


Figure 12: CNCI of CAPHRI’s academic international collaborations with the highest CNCI 2017-2020.

The Category Normalized Citation Impact (CNCI) for the international collaborators of CAPHRI. Only articles and reviews (according to InCites’ document type) are included. The size of the bullets corresponds to the number of documents. The legend is ordered by the size of the CNCI. This figure is also available in the dashboard. Select the period of interest, organisation types, geographical area, the number of organisations, and the minimum number of documents to reproduce this result on the ‘Collaborations’ sub-tab of the ‘Networks’ tab.

academic collaborative partners for CAPHRI in the period of 2017-2022 (Figure 11), CAPHRI co-authored most frequently with the University of London (273 publications). KU Leuven (253 publications) and Hasselt University (172 publications) are the next most frequent.

Looking at the average CNCI of the international academic collaborations, independent of the number of published documents, gives insight into collaborations that are most impactful in terms of citations. In Figure 12, one can find the average CNCI plotted for the 20 collaborations with the highest CNCI. According to the rule of thumb for citation impact analysis, we only use data from 2017-2020 and only

include articles and reviews in Figures 12 and 13. Figure 12 shows that co-publications with the University of Verona have an average CNCI of 37.1 (7 documents). The Karolinska University Hospital is second with a CNCI of 28.1 (12 documents), followed by the University of Erlangen Nuremberg (CNCI 27.96 and 11 documents).

Combining the number of published documents with the Category Normalized Citation Impact (CNCI) gives insight into the citation impact of the most frequent international academic collaborations. In Figure 13, one can find the number of published documents for the 20 most frequent international collaborations plotted against the CNCI. Among the most frequent collaborators, collaborations with the

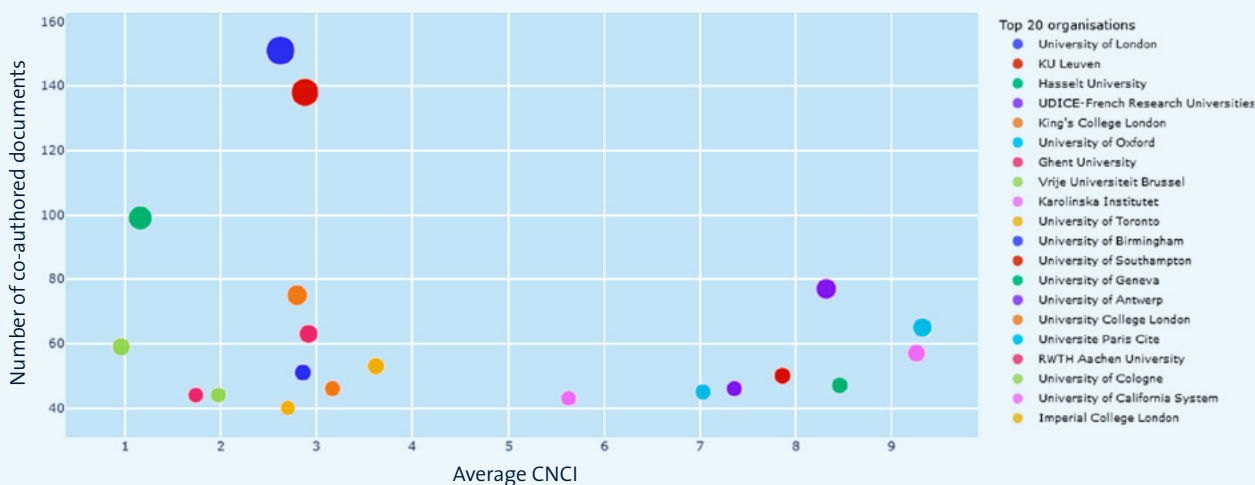


Figure 13: CNCI of CAPHRI’s most frequent academic international collaborations in terms of the number of documents 2017-2020.

The number of documents published in collaboration plotted against the Category Normalized Citation Impact (CNCI) for the international collaborators of CAPHRI. Only articles and reviews (according to InCites’ document type) are included. The size of the bullets corresponds to the number of documents. The legend is ordered by number of documents. This figure is also available in the dashboard. Select the period of interest, organisation types, geographical area, the number of organisations, and the minimum number of documents to reproduce this result on the ‘Collaborations’ sub-tab of the ‘Networks’ tab.

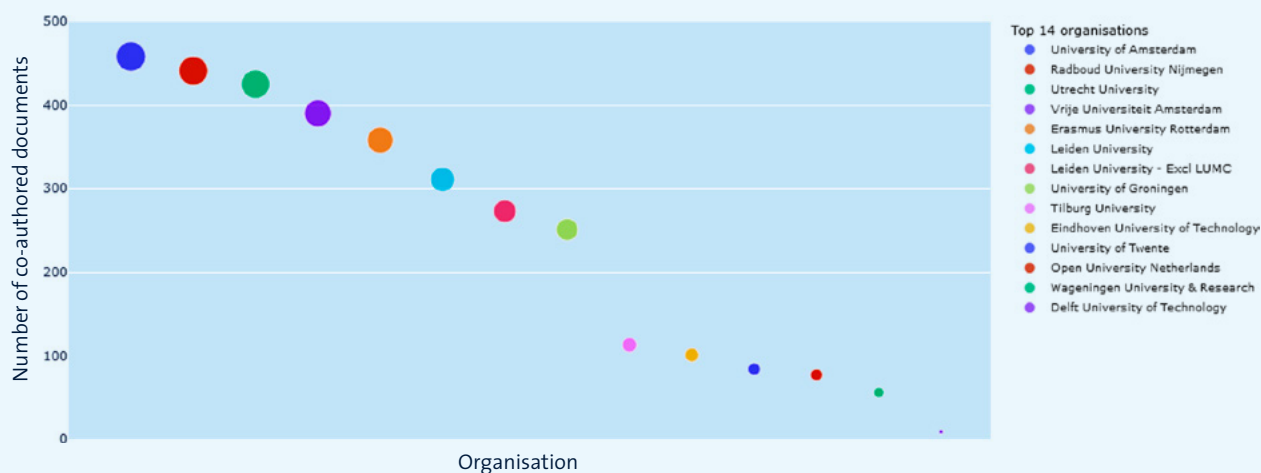


Figure 14: Number of documents for CAPHRI's most frequent academic national collaborators (2017-2022).

The number of documents published in collaboration plotted for 14 collaborators of CAPHRI. All document types (according to InCites' document type) are included. The size of the bullets corresponds to the number of documents. This figure is also available in the dashboard. Select the period of interest, organisation types, geographical area, the number of organisations, and the minimum number of documents to reproduce this result on the 'Collaborations' sub-tab of the 'Networks' tab.

University of London are most impactful in terms of citations, with 151 documents and an average CNCI of 2.6. This is followed by the KU Leuven with an average CNCI of 2.9 and 138 documents published together with CAPHRI. Looking at the most frequent academic collaborative partners for CAPHRI in the period of 2017-2022 at the national level (Figure 14),

there are 14 such collaborators in the dataset. Nationally, CAPHRI shared most publications with the University of Amsterdam (458 publications). Radboud University Nijmegen (441 publications) and Utrecht University (425 publications) are the next most frequent.

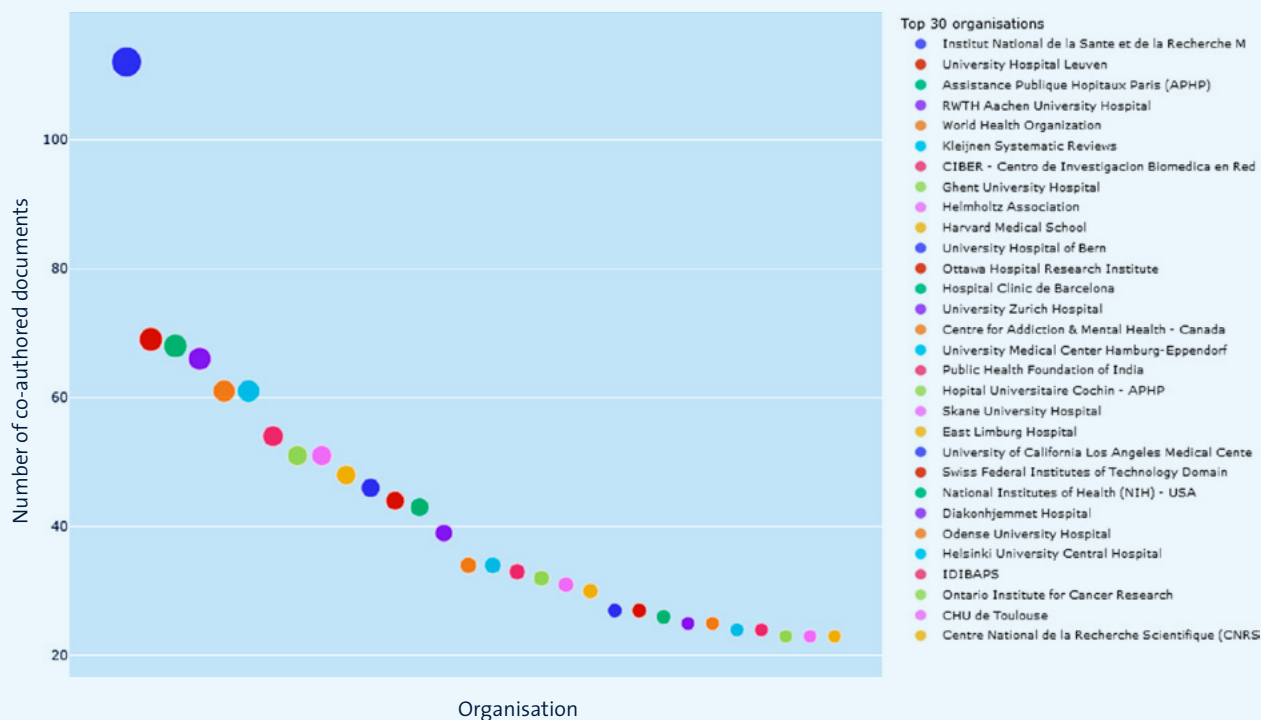


Figure 15: Number of documents for CAPHRI's most frequent non-academic international collaborators (2017-2022).

The number of documents published in collaboration plotted for the top 30 collaborators of CAPHRI. All document types (according to InCites' document type) are included. The size of the bullets corresponds to the number of documents. This figure is also available in the dashboard. Select the period of interest, organisation types, geographical area, the number of organisations, and the minimum number of documents to reproduce this result on the 'Collaborations' sub-tab of the 'Networks' tab. The length of the organisation names in the legend is capped to the first 50 characters. Full organisation names can be found by hovering over the data points in the dashboard.

6 CAPHRI SEP 2017-2022 research output report by the University Library Maastricht

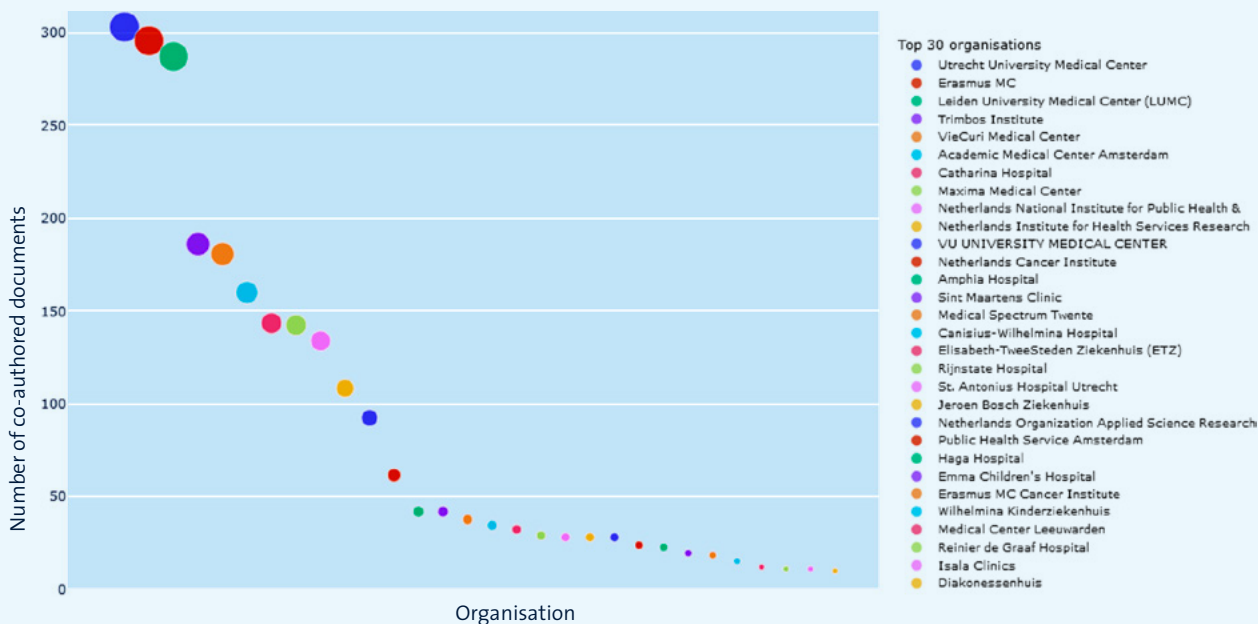


Figure 16: Number of documents for CAPHRI's most frequent non-academic national collaborators (2017-2022).

The number of documents published in collaboration plotted for the top 30 collaborators of CAPHRI. All document types (according to InCites' document type) are included. The size of the bullets corresponds to the number of documents. This figure is also [available in the dashboard](#). Select the period of interest, organisation types, geographical area, the number of organisations, and the minimum number of documents to reproduce this result on the 'Collaborations' sub-tab of the 'Networks' tab. The length of the organisation names in the legend is capped to the first 50 characters. Full organisation names can be found by hovering over the data points in the dashboard.

Please visit the 'Collaborations' sub-tab of the 'Network' tab in the UM Research Intelligence Dashboard to have a look at the CNCI's of the national academic collaborations.

Non-academic collaborations

Considering non-academic collaborations, only publications in collaboration with authors affiliated with non-academic organisations are taken into account (i.e., filtering for "corporate", "global corporate", "government", "health", "nonprofit", "partnership", "research council", "research institute", and "unknown" as organisation type in the Research Intelligence dashboard). These organisation types have been chosen together with CAPHRI to best represent CAPHRI's non-academic collaborators.

Looking at the 30 most frequent non-academic international collaborative partners for CAPHRI in the period of 2017-2022 (Figure 15), the Institut National de la Sante et de la Recherche Medicale (Inserm) shares most publications with CAPHRI (112 publications). University Hospital Leuven (69 publications) and Assistance Publique Hopitaux Paris (APHP) (68 publications) are the next most frequent.

At national level, CAPHRI's 30 most frequent non-academic collaborative partners for the period of 2017-2022 (Figure 16) are the Utrecht University Medical Center (303 publications), Erasmus MC (296 publications), and Leiden University Medical Center LUMC (288 publications).

Please visit the 'Collaborations' sub-tab of the 'Network' tab in the UM Research Intelligence Dashboard to have a look at the CNCI's of the non-academic collaborations.

Summary

The analyses in this report and the way they could be used to support CAPHRI's narrative and/or case studies for the SEP evaluation are summarized here.

We advise to use Table 1a for describing CAPHRI's research output of 2017-2022. Figure 1 could be used to show that the number of refereed articles increased between 2019 and 2022. A cause for this could be the lock-down period with an increased focus on writing.

Figure 2 can be used to show that CAPHRI has increased Open Access publishing of peer-reviewed publications over the years. The percentage of CAPHRI's OA publications has increased from 43.5% (2017) to 66.9% (2022). This is higher than the overall percentage for UM, with 61.9% in 2022, and almost equal to the national percentage for 2021 (67%).

Taking green Open Access into account as well, 81.4% of CAPHRI's 2022 publications are available for everyone to read.

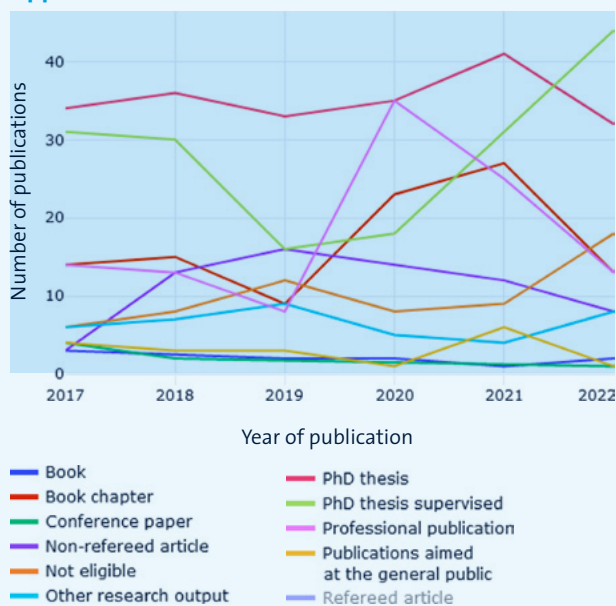
The average normalized citation impact of CAPHRI's articles and reviews for 2017-2020 is above world average (1.6 times the expected citations). Among these publications are many outliers with very high CNCIs (Figure 4). A look at the median CNCI (see Figure 2 in the Appendix) and a re-calculation of the average CNCI without the outliers for each year in the period 2017-2020 shows that CAPHRI's scholarly impact is still around world average. 2.2% of CAPHRI's output belongs to the top percentile in terms of citation impact, and 13.9% of publications belongs to the top 10% (Figure 5).

Figure 7 illustrates that CAPHRI publishes on a variety of research areas, illustrating the multidisciplinary nature of CAPHRI's research, and Figure 8 shows the top 20 funders of

CAPHRI's research that underlies the publications. Figures 9 and 10 show the collaborations among CAPHRI's research lines as well as CAPHRI's collaborations with FHML schools, respectively, for the period 2017-2022. Among the research lines, PHPC and OPC collaborate most frequently with each other, followed by OPC and VHC (Figure 9). Regarding collaborations with other FHML schools, NUTRIM is the most frequent collaborator, followed by GROW (Figure 10). Figures 11-14 illustrate CAPHRI's international and national collaborations with academic organisations. Regarding international academic collaborations in the SEP period 2017-2022, the University of London, the KU Leuven, and Hasselt University stand out in terms of frequency (Figure 11). Looking at the average CNCI of collaborations (for 2017-2020) independent of their frequency, we see that collaborations with the University of Verona, the Karolinska University Hospital, and the University of Erlangen Nuremberg have the highest scholarly impact (Figure 12). Among the 20 most frequent international collaborators (for 2017-2020),

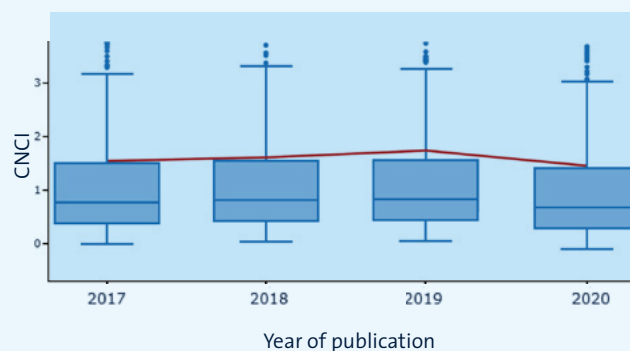
co-publications with the University of London and the KU Leuven are most impactful in terms of citations (Figure 13). Looking at the 30 most frequent academic collaborators at national level in the SEP period 2017-2022, the University of Amsterdam, Radboud University Nijmegen, and Utrecht University stand out in terms of frequency (Figure 14). Figures 15 and 16 illustrate CAPHRI's international and national collaborations with non-academic organisations during the SEP period 2017-2022, respectively. Looking at the 30 most frequent non-academic international collaborative partners, collaborations with the Institut National de la Sante et de la Recherche Medicale (Inserm), the University Hospital Leuven, and the Assistance Publique Hopitaux Paris (APHP) are the most frequent (Figure 15). Focusing on the 30 most frequent non-academic collaborators at national level, collaborations with Utrecht University Medical Center, Erasmus MC, and Leiden University Medical Center LUMC are the most frequent (Figure 16).

Appendix



Appendix Figure 1: Document types CAPHRI (SEP) 2017-2022 by year (zoomed in).

The number of publications plotted by year. Refereed articles are excluded in this figure in order to zoom in more detailed on the other output types. If a line doesn't cover the whole period, it means no data points were available for the blank years. This figure is also available in the Dashboard. To reproduce this result select the period of time, choose the SEP classification, and deselect 'refereed articles' if you want to zoom in on the non-dominant output types.



Appendix Figure 2 (zoomed-in version of Figure 4): CNCI boxplot CAPHRI 2017-2020.

The CNCI is plotted against the years. Each publication is shown by a bullet when it falls outside of the whiskers (+/- 1.5 times the interquartile range). The red line depicts the average CNCI per year. Please note that due to the zooming in the outliers above a CNCI of 3.85 are not visible in this Figure.

6 CAPHRI SEP 2017-2022 research output report by the University Library Maastricht

SEP types	Counts	DOI	DOI (%)	ISBN	ISBN (%)	In WoS	In WoS (%)	In InCites	In InCites (%)
Total	4250	4000	94,1	249	5,9	3555	83,6	3553	83,6
Refereed article	3755	3655	97,3	0	0	3487	92,9	3487	92,9
PhD thesis	138	128	92,8	107	77,5	0	0	0	0
PhD thesis supervised	95	91	95,8	67	70,5	0	0	0	0
Professional publication	70	11	15,7	5	7,1	0	0	0	0
Book chapter	61	37	60,7	52	85,2	11	18	11	18
Non-refereed article	46	16	34,8	5	10,9	3	6,5	2	4,3
Not eligible	34	32	94,1	0	0	31	91,2	30	88,2
Other research output	27	17	63	0	0	17	63	17	63
Publications aimed at the general public	11	4	36,4	1	9,1	0	0	0	0
Book	7	3	42,9	7	100	1	14,3	1	14,3
Conference paper	6	6	100	5	83,3	5	83,3	5	83,3

Appendix Table 1: Presence of unique identifiers and coverage in databases for CAPHRI output in the period of 2017-2020.

Please note that SEP types do not correspond to the InCites document types.

References

- ¹ All publications that are public, validated, internal, published, or online first - ahead of print that belong to CAPHRI in the organisational research structure within the Current Research Information System (CRIS).
- ² Not published can be unpublished, accepted/in press, submitted or in preparation.
- ³ This percentage can be found in the 'availability of items for analysis' pie-chart in the 'Pure Status' tab of the Research Intelligence dashboard.
- ⁴ From 2021 onwards, SEP stands for Strategy (as opposed to Standard) Evaluation Protocol.
- ⁵ https://vsnu.nl/files/documenten/Feiten_en_Cijfers/VSNU_Definitieafspraken_onderzoeksinzet_en_output_KUOZ.PDF
- ⁶ Open Access is a broad international academic movement that seeks free and open online access to academic information. Open Access (OA) means unrestricted online access to your writings.
- ⁷ At UM we handle OA definitions that are designed to be as close as possible to the definition framework of the Association of Universities in the Netherlands (VSNU)
- ⁸ <https://www.openaccess.nl/nl/in-nederland/monitor>
- ⁹ Publications that are made available through the Taverne Agreement are included in the green OA category. For more information on Taverne see the website of the Maastricht University Library.
- ¹⁰ The two Book Citation Indexes (Book Citation Index–Science and Book Citation Index–Social Sciences & Humanities) are not included in UM's WoS subscription.
- ¹¹ Using InCites responsibly: a guide to interpretation and good practice (2020)
- ¹² As defined by InCites. The InCites document type may differ from the type in PURE.
- ¹³ While multidisciplinary journals publish articles on a wide array of topics, individual articles in those journals focus on one area of research. The reclassification process allows these specialized articles to be appropriately compared with articles of similar citation characteristics and topic focus. See: <https://incites.help.clarivate.com/Content/Research-Areas/wos-reclass-papers-multidiscipline-journals.htm>
- ¹⁴ <https://clarivate.com/webofsciencegroup/article/introducing-citation-topics> and <https://incites.help.clarivate.com/Content/Research-Areas/citation-topics.htm?Highlight=citation%20topics>
- ¹⁵ For more information, please visit: <https://clarivate.com/webofsciencegroup/article/introducing-citation-topics>
- ¹⁶ The InCites dataset was updated on 2022-10-28. This includes Web of Science content indexed through 2022-09-30.
- ¹⁷ For an overview of the coverage of CAPHRI's output in databases for 2017-2020 see Table 1 in the Appendix.
- ¹⁸ Please see the Clarivate Analytics (2018) InCites Indicator Handbook for more details and explanations.
- ¹⁹ Fields are determined using GIPP schemes within InCites. These are broader schemes than the subject areas used for normalized citation indicators. Subject areas can be mapped to GIPP schemes.
- ²⁰ Altmetric is a tracking tool that monitors the attention that research outputs get online.
- ²¹ This means, for example, that the 47 publications published jointly by GROW and MHeNs represent only those publications in which CAPHRI was also involved. Thus, the number of publications co-authored by GROW and MHeNs may therefore exceed this figure.
- ²² The Web of Science (WoS) curates a so-called "Organisation-Enhanced" for all the indexed organisations. This Organisation-Enhanced is a label comprising name variants that exist for the organisation. The list of name variants might be incomplete, and not all organisations are indexed by the WoS.
- ²³ According to Incites, "academic" organisations are universities and other institutes combining research and education. "Academic system" organisations are university systems and umbrella organisations. See for an overview and description of some of the Incites organisation types <http://help.prod-incites.com/inCites2Live/8864-TRS/version/6>.
- ²⁴ See for an overview and description of some of the Incites organisation types <http://help.prod-incites.com/inCites2Live/8864-TRS/version/6>.

7 CaRe Infographics

Researchschool CaRe

Researchschool CaRe is a collaboration of four institutes. CaRe has a board of Governors, a board of Directors, a PhD Education Committee and a secretariat.



Netherlands School of Public Health and Care Research



Amsterdam Public Health

Radboudumc

CaRe Days

Every year, the CaRe days are organized. During this conference, researchers from the four institutes have the opportunity to meet each other and exchange knowledge and experience.

CaRe Award

Each year more than 300 theses are defended in the CaRe institutes. The four institutes are asked to nominate three of the best dissertations of the year. The jury, the four members of the Board of Governors, evaluate and discuss these dissertations to award one of these 12 PhD students with the CaRe dissertation prize.

PhD training

Each institute offers courses for their PhD students. These courses can often also be attended by PhD students from the other institutes. CaRe also has a visiting professor to offer additional education. Thus far, Prof. Fiona Godlee, editor of the BMJ, was CaRe professor.

Leadership programme

The Leadership in Public Health and Healthcare Research programme is designed to support future leaders in this field to become excellent leaders with a mission. Not only will you learn a higher level of leadership skills, you will also learn how to apply them in your specific area of research. Being a leader in the field of research requires more than being a good leader, it requires a combination where you have substantive competences, but also knowledge, skills and tools to manage the context. Partners of the programme are CaRe, UMIO, Cambridge Institute of Public Health and Erasmus MC NIHES.

Research

Within the institutes, there are several research projects under way in which the institutes are joining forces. Being part of CaRe facilitates the possibilities of forming partnerships and consortia for future grant applications. CaRe also offers the board of directors a platform to exchange knowledge, experience and ideas.



For more information go to www.researchschoolcare.nl

8 CAPHRI Internationalization

Internationalisation CAPHRI

Successful research in Public Health and Healthcare often depends on crossing disciplinary silos and administrative borders, thus it requires an international perspective. Taking into account concepts and results of international research is essential, also for research focusing on the national or regional level. Most of our CAPHRI research already stems from or is related to internationally oriented research projects and networks and our PhD students represent more than 40 nationalities. CAPHRI Internationalisation aligns with the new strategic program of Maastricht University “The European University of the Netherlands. A caring and sustainable university” (2022-2026) which embraces the values of interdisciplinarity and inclusivity, which strives to play an important role in solving major problems affecting the society through inter and transdisciplinary research, innovative education and professionalism as well as international collaboration with EU region, European and global focus. The profile of CAPHRI fits well with this reality and further ambitions of the university to establish and maintain strong research collaborations in the region and Euregio, Europe, and globally which CAPHRI proudly reflects in its internationalisation vision and goals.

Statement of Vision and Goals

Our ambition for CAPHRI Internationalization is to be recognized as a leader in interdisciplinary Care and Public Health research and practice. CAPHRI’s Internationalization strategy will be central to facilitating this as a visible and enabling presence through enhancing existing international research collaborations, supporting the development of new ones, and facilitating contacts and networking with established collaborations or institutions through multi-cultural, multinational, and multilateral engagements and partnerships. CAPHRI is open to partnering with external stakeholders, including research institutes, professional health care and public health organisations, scientific associations and other cross-faculty UM-based researchers who address health and well-being issues and challenges from a system-wide perspective and strive to advance public health and improve health on local, regional, national, and international levels with a European and global focus thus enriching health care and public health research (such as WHO, ECDC, National Public Health Institutes, ASPHER, OMI and EUPHA).

Our values

Care and Public Health are now all nations’ priorities, with the need for strong internationally oriented and interdisciplinary research evidence for policy and practice.

Structured to shape future directions, support new connections, bringing in wider disciplines and partnerships for better health and well-being, CAPHRI aims at bringing together the University’s diverse communities, with interdisciplinary leadership and longstanding international research partnerships with *diversity, inclusion, and societal relevance as our core values*. CAPHRI Internationalization, through its UM and international presence, supports PhD development and engages in capacity building through education, training, and research. It connects diverse disciplines across our community; strengthens existing partnerships and develops new ones, including externally; supports training and pipelines of future public health researchers and leaders across disciplines in order to increase the profile of CAPHRI as a global player.

Appreciating that universities are part of the society and serve the society, we strive to defend academic freedom at home and abroad and find the appropriate balance between knowledge security and an indispensable open and international science process.

Internationalisation strategy and activity

The research collaboration can be materialized in common grant applications, research projects, collaborative twinings between research centers, staff mobility, mutual part-time appointments and especially collaborative PhD supervision - the latter could be carried out in joint or double PhD programs or in accepting external PhD students who work (also) at our international partner universities.

The CAPHRI Internationalisation Commission (CIE) will support and facilitate the achievement of the internationalization ambition of CAPHRI using the four-pillar structure including: *a) UM presence, b) CAPHRI Presence, c) PhD development, and d) Capacity, Education and Training*. (Figure 1)

UM presence

Making sure that CAPHRI colleagues are aware of the research collaborations, funding opportunities, projects, and activities that constitute a wider UM research agenda. For example, participation in the funding opportunities offered by the Interdisciplinary and interfaculty research laboratory the Studio Europa <https://studioeuropamaastricht.nl/research/research-calls/>, Network of Young Universities (YUFE) collaborations or Worldwide Universities Network (WUN) and CSC-UM PhD Programme which is a collaboration between China Scholarship Council and Maastricht University providing excellent Chinese students to obtain a PhD from UM either as a UM PhD or as a double degree both from UM

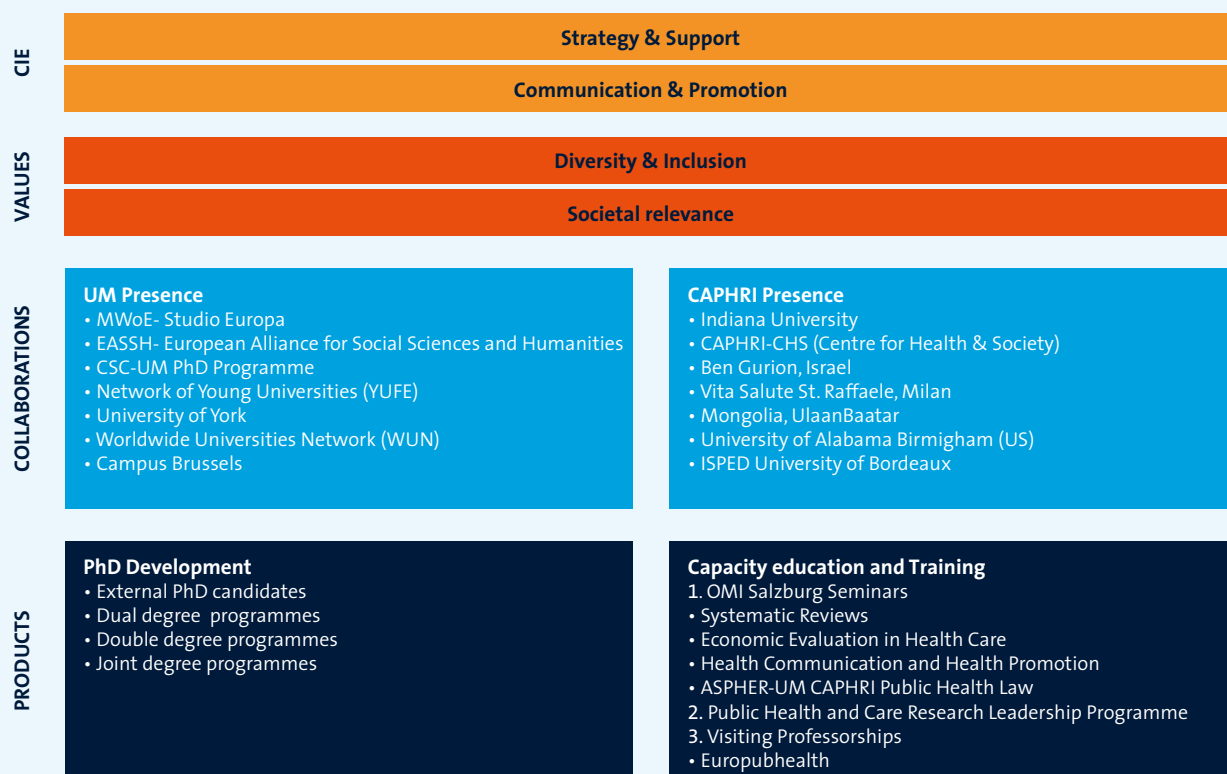


Figure 1 CAPHRI Internationalisation (Some examples of collaborations)

and a Chinese university. Via the China-Link option CSC also provides short-term funding for UM Master students to study at Chinese partner universities. www.maastrichtuniversity.nl/um-china-team

CAPHRI is also represented at the European Alliance for Social Sciences and Humanities (EASSH), the largest advocacy and science policy organisation for the social sciences and humanities in Europe of which UM is a member. www.maastrichtuniversity.nl/european-alliance-social-sciences-and-humanities-eassh

CAPHRI Presence

Supporting the development of collaborations or research twinnings between universities and CAPHRI with a broader purpose (research, education and training, project applications, PhDs etc) bringing together interested colleagues. For example, CAPHRI is proud of the research twinning with the Centre of Health and Society from the University of Dusseldorf, which has similar structure and research interests. Another example is a collaboration with the Richard Fairbanks School of Public Health, Indiana University in the area of the DrPH programme, interested graduates from the DrPH programme can follow PhD track at CAPHRI under joint supervision from both organisations. CAPHRI has also signed MoUs with several partner universities and institutions, opening opportunities for CAPHRI researchers and students to regularly get in contact with researchers there or seek exchange possibilities or placements for thesis writing (these include among others: University of Bremen, University of Coimbra, University of Rennes, Manipal University, University of Brasilia, Chinese

Academy of Sciences). One particular strength of CAPHRI is our well-established close research collaboration with the neighbouring universities in the Euregion Maas-Rhine often funded by Interreg or other European programmes. Currently, CAPHRI is exploring the opportunity of collaboration with the University of Alabama Birmingham (US) in the area of hospital management, quality of care, leadership and workforce.

PhD development

Supporting and promoting international research initiatives of CAPHRI colleagues that result in PhD development including external PhD candidates, dual degree programmes, double degree programmes or joint degree programmes.

Capacity, Education and Training.

Engaging in the promotion and organisation of capacity-building activities such as seminars, short courses or visiting professorships. For example, CAPHRI is an academic partner of the Open Medical Institute in Salzburg and has an opportunity to organize courses for our PhD students. So far, we had courses in Systematic Reviews, Economic Evaluation in Health Care, Health Communication and Health Promotion or ASPHER - UM CAPHRI Public Health Law. Currently, we are preparing Public Health Strategist course. Together with the University of Cambridge and the UM Business School, CAPHRI successfully runs Public Health and Care Research Leadership Programme. CAPHRI has also a possibility to nominate researchers or help them apply for Visiting Professorships at the Joint Diploma Master programme financed by the EU Erasmus Mundus Programme EUROPUBHEALTH of which UM is a partner.

8 CAPHRI Internationalization

Operationalisation and Institutionalisation

International collaborations can be institutionalized through the “Memoranda of Understanding” that are established by the Dean of FHML. Research Line (RL) chairs and researchers and from the different RLs can suggest institutions to build sustainable partnerships. The CAPHRI Management Team, sometimes with input from the Scientific Commission advises on the promising but also ethical character of institutionalisation with certain institutions. CAPHRI’s Management Office and the Internationalisation Commission support the establishment of an MoU by providing drafts of the MoU. The final version of the MoU has to be approved by UM’s “Legal Affairs” office. The Scientific Director of CAPHRI then requests institutionalisation via the MoU from the Dean of FHML. Once the MoU and the following institutionalisation are established, collaborations will be evaluated by CAPHRI’s Management Team and terminated if not sufficiently valuable. It is also possible to start a research collaboration with a Letter of Intent to Collaborate (LoIC) which can mark a start of a promising collaboration to be followed later by the official MoU. CAPHRI can share a template of such a LoIC with interested colleagues. The Scientific Director of CAPHRI will sign a proposed LoIC.

CAPHRI Internationalisation Commission

Role

- 1 Provide expert and strategic advice to support the leadership of CAPHRI in its promotion and development of international research, capacity building and impact in the field of Care Public Health across the University;
- 2 Advise on the strategic development of research partnerships and collaborations with outside bodies and interacting with the UM Knowledge Security Advice Group when assessing potential risks;
- 3 Bring together CAPHRI researchers and scholars in interdisciplinary, international collaboration of interest;
- 4 Support with necessary documentation such as examples of MoUs or LoEC;
- 5 Offer a wider and international perspective

Members

The CAPHRI Internationalisation Commission includes five members. It is open to including interested colleagues to assure diverse and inclusive representation including:

- Prof. Dr. Silvia Evers** (*Scientific Director CAPHRI*)
- Dr. Thomas Krafft** (*CSC PhD Programme, CSC FHML Coordinator*)
- Dr. Francine Schneider** (*CAPHRI PhD Community Coordinator*)
- Ms. Chantal Claessens** (*CAPHRI Management Information Officer*)
- Ms. Sabina Bulic** (*CAPHRI Managing Director*)
- Prof. Dr. Kasia Czabanowska** (*Chair*)

Communication

A short communication leaflet will be developed targeting both internal and external audiences with the intention of raising the visibility of CAPHRI international partnerships and initiatives, research networks, professional and scientific organisations (such as WHO, ASPHER, EUPHA) as well as highlighting their purpose:

- to address large-scale multi-disciplinary research challenges;
- to strengthen research collaborations and knowledge transfer across disciplines and sectors;
- to increase research capacity and profile by providing a platform for large-scale funding applications, recruitments, and international research partnerships; and
- to enhance our ability to influence national and international research, policy and funding schemes.



9 RL recommendations

Researchline	Recommendation for improvement	Action/Status
ALTC	Although the focus on projects relevant for daily practice and on implementation is a strong asset of the RL, it might also prove to be a relative weakness when aiming for scientific quality (as might be reflected in the rather low average IF score of the publications). This RL should try to maintain the balance between implementation focussed projects and projects that generate new knowledge.	The mean IF of the RL is 2.84 and indeed somewhat lower compared to the mean IF of CAPHRI as a whole (IF 3.59). It should, however be noted that studies reporting care research are generally cited in a later stage compared to studies reporting clinical study outcomes. As a result one could propose to include relative impact scores instead of absolute numbers for evaluating the quality of research. The majority of ALTC research focuses on topics related to nursing science, gerontology and geriatrics. Within these fields, the research of ALTC belongs to the top. ALTC research program publishes in high impact journal relative to their field, with many publications belonging to the top 10% or top 25% of all journals in our field. Furthermore, the CNCI scores are overall good and stable over time, which shows that our work is used by others. As a program we aim to balance between more implementation focused projects and projects that generate new knowledge. On the one hand, we aim to invest in curiosity-driven, more fundamental research, for example as shown in a personal Vidi-grant by H. Verbeek. On the other hand, we collaborate in projects where fundamental research and application in practice are combined, using various funding resources. For example the case study of "Connecting Conversations" has various funding streams (i.e. Living Lab partners, health care insurer, national funder ZonMw). The resulting publication by Sion et al. (2020) developed a new conceptual framework advancing theory on quality of care, published in a top 10% journal. Moreover, her overall thesis resulted in a tool used in practice, which is currently being implemented in a new project on a national level. Following the San Francisco Declaration of Research Assessment (DORA), the ALTC outputs from scientific research are many and varied, including: research articles reporting new knowledge, data, tools; intellectual property; and highly trained young scientists. Our evaluation shows a variety of indicators showing the scientific impact.
VHC	It is difficult to make specific recommendations from an external perspective. Clearly, there is still much work to do to achieve a coherent strategy. Contract research forms a higher proportion of the funding than for other RLs, which reflects the demand for health economics in particular in many research organisations. This can prove to distract from the main research strategy, so one suggestion would be to try and concentrate on applying for more research grants, to relieve the burden of short term commercial contracts to some extent.	In the view of the RL members, we do not seem to have more 'contract research' than other RLs. However, the mentioning of the 'main research strategy' is a point of attention and it is agreed that there is a need to further work on a coherent RL focus. In fact, the RL has continuous efforts to enhance the focus and coherence of its research strategy. Several 'match makers' and strategy meetings have taken place in the meantime and will further take place. Furthermore, more efforts have been and will be continued to be taken to improve the common application for research grants (including from public funding agencies, within the Netherlands but also the EU). This is also in line with the recommendations. Our vision and mission document is a 'living document' and we have chosen to maintain in the last 6 years the widest possible backing within the RL involving the three research units. Past collaborations within VHC were mainly dependent on project or research grant calls and less of a structural nature. The integration of staff into the research line is part of an ongoing strategy to create (more) coherence. This process of integration is accommodated with regular meetings. These include RL meetings with the VHC staff on strategic topics (at least twice per year) and 'match maker' meetings in which staff members from the different units get to know each other better (at least twice per year). These meetings are relatively well attended and senior staff members within VHC units certainly know about their colleagues' expertise. (Further) Decisions on the RLs strategic direction are anticipated to follow from the new CAPHRI strategy. In the meantime, an ongoing strategy of the RL is to support the awareness of - and application for - research grants. We try to achieve this by encouraging individual VHC researchers to take on advisory functions at national and international relevant research funding bodies and other institutions and to create or join local, national and international networks that facilitate applications for (inter) national grants.
FPR	The Review Committee recommends to try to get more alignment between the goals of the RL as a whole and the goals of the, as yet, separate units. In addition, it would be wise to make more explicit how the RL can benefit from the existing cohorts and the Living Lab.	The RL has aligned the goals of the separate research units by linking the research areas with an emphasis on functioning and participation. The WHO international classification of functioning and diseases (ICF) will be used as a frame of mind in this alignment. Since cohorts and (fundamental) research facilities are vital to reach this goal, we will, together with CAPHRI, position our cohort studies more visible in order to generate new collaboration opportunities within and across the research line.

9 RL recommendations

Researchline	Recommendation for improvement	Action/Status
HISP	<p>The Review Committee appreciates the strategic plans mentioned in Part B, page 23, but recommends making the strategy for developing the four former research programs into one RL more explicit, and ensuring commitment from all staff. In addition, the leadership may define deadlines for reaching certain goals, and the staff should be committed to these deadlines, for example, by targeting direct funding to such activities. From the SWOT analysis, the Review Committee derived some concern of the RL with the RL's future. Most of the weaknesses and threats are not unique for the IPG RL, such as heavy workload, growing difficulty to obtain ethical clearance, and increased competition for funding. Others seem to reflect concern that calls for a different perspective. For example, given limited resources for all, within reason one should accept a limited senior staff in the absence of vacancies for opportunities for young talents, and an imbalance between permanent and temporary staff. The Review Committee recommends striving for an explicit pyramidal staff composition, with few full professors, et cetera. An acceptance of a particular degree of flow among the senior staff opens new opportunities for the RL rather than is a cause for concern.</p>	<p>Since the review we have indeed further updated the IPG strategy. Three priorities are 1) to strive for few research projects across former research lines to enhance the new IPG approach as well as coherence within IPG. 2) to develop more focus in the extremely multi-disciplinary RL and 3) to invest in individual talents and talent grants. In the context of CAPHRI, IPG is doing relatively well in this respect (2x VIDU, 1x VENI, 1x Marie Curie). In line with these strategic priorities we, after discussing this with the department heads and the CAPHRI leadership, decided to redirect research labeling from medical history to global health research, a decision that was enabled by the retirement of a professor in medical history. We aim to develop the IPG strategy further in the next years. Considering the complex governance structure of a matrix organization such as ours, we liaise closely with department heads, to strive for appointments that fit departmental and IPG strategies. Since the review, HISP has continued to develop its mission and strategies, to where they are today as presented in this report. Progress can be seen on all three defined priorities: Firstly, our top selected papers shown in this report showcase several of the joint projects that are ongoing across the different HISP departments and disciplines. This is directly linked to our second priority where we aimed to establish more focus within our highly multi-disciplinary research line. With more joint projects involving more of the HISP researchers and disciplines, we combine our strengths and naturally gained more focus. Finally, we continuously emphasized the development of individual talents and we are proud that this has resulted in recognition of many HISP talents with awards, ranging from CAPHRI dissertation awards to Kootstra fellowships and a prestigious ERC starting grant. With many talented young researchers as part of our research line, we have embraced the suggestion made in the previous review that a flow in staff members also offers new opportunities.</p>
OPC	<p>The RL is doing well and so should continue in the way it operates. The Living Labs and the different research streams show that it is viable. The threats outlined in the SWOT analysis, namely an increasing workload, which includes teaching and management commitments should be addressed in the strategic plans, possibly with guidelines on numbers of articles. PhD students and grants that can be reasonably expected. The methodological research would appear to be concentrated on a few people and so, given the priority attributed to this in the research strategy, it would be sensible to try and employ some more people in this area in future.</p>	<p>OPC will continue in the way it operates. The increasing workload will be addressed in yearly individual performance appraisals. General guidelines are difficult to set. We will further focus on methodological research amongst others in prediction modelling, publication bias and test-treatment methodology. A first appointment will join the team in early 2019. Every year, the leaders of the research teams and the Research Line hold meetings with all OPC staff to review ongoing projects, workload, and upcoming plans. OPC also organizes brainstorming sessions to promote collaboration within the researchline. We have recruited new staff, including both tenured and postdoctoral candidates with strong methodological backgrounds, to replace retiring personnel.</p>
PHPC	<p>More work will need to be done on the use of e-health systems and on new projects focused on methodological development. There are some very good international links, and formal collaborations but a more strategic focus to strengthen and broaden these (with the advice of the recently established international Collaboration Committee) is to be encouraged.</p>	<p>We agree with the Review Committee that the actual use of e-health systems in practice needs further attention. It is known that e-health systems are often prone to 'designer-bias', meaning that the e-health module is easy for use by 'designerlike' users, being skilled in ICT, but less so by the persons or clients outside the designers' scope. PHPC therefore will enlarge its methodological menu by paying increasingly attention to theories and methods from implementation science. PHPC has emerging and increasing expertise in how to involve all stakeholders in an effective and meaningful manner. PHPC aims for co-creating of user-centered ehealth systems, with in-depth analysis of the needs of all stakeholders, and of the potential conflicts of interest. In these attempts to be as inclusive as possible PHPC also focusses on the needs of people with low literacy. PHPC will further strengthen our international links and formal collaborations, closely working with CAPHRI's International Committee. One example is a close collaboration per 1-1-2019 with the primary care research group of Sydney University, that has a strong record on shared decision making and low literacy. Another example is a formal collaboration with Frankfurt Goethe University around the multimorbidity research agenda to be established in the course of 2019.</p>

10 CAPHRI Chairs

RL	Name	Title	Gender	Type of chair	Chair	Years	Financier
ALTC	Breukelen G.J.P. van	Prof.dr.	Male	Professor	Methodology and Statistics	2014	UM
ALTC	Haak H.R.	Prof.dr.	Male	Professor	Internal Medicine, specialising in the Acute Medicine	2014	UM/Máxima Medisch Centrum
ALTC	Hamers J.P.H.	Prof.dr.	Male	Professor	Care of Older People	2005	UM
ALTC	Janssen, D.J.A.	Prof.dr.	Female	Professor	Old Age Medicine	2022	UM
ALTC	<i>Kempen G.I.J.M.</i>	<i>Prof.dr.</i>	<i>Male</i>	<i>Professor</i>	<i>Social Gerontology</i>	<i>2002</i>	<i>UM</i>
ALTC	Schols J.M.G.A.	Prof.dr.	Male	Professor	Geriatrics	2007	UM
ALTC	Verbeek H.	Prof.dr.	Female	Endowed chair	Long-Term Care Environments	2020	MeanderGroep Zuid-Limburg
ALTC	Zwakhalen S.M.G.	Prof.dr.	Female	Professor	Nursing Science, in particular focused on Geriatric Care at Home	2018	UM
FPR	Bie R.A. de	Prof.dr.	Male	Professor	Research in Physiotherapy	2003	UM
FPR	Boonen A.E.	Prof.dr.	Female	Professor	Rheumatology	2013	UM
FPR	Kant IJ.	Prof.dr.	Male	Professor	Epidemiology, specialising in Occupational Epidemiology	2009	UM
FPR	<i>Lenssen A.F.</i>	<i>Prof.dr.</i>	<i>Male</i>	<i>Professor</i>	<i>Clinical Physiotherapy</i>	<i>2017</i>	<i>UM</i>
FPR	<i>Rhijn L.W. van</i>	<i>Prof.dr.</i>	<i>Male</i>	<i>Professor</i>	<i>Orthopaedics</i>	<i>2008</i>	<i>UM</i>
FPR	Santbrink, H. van	Prof.dr.	Male	Professor	Spinal Neurosurgery	2019	Stichting St. Annadal
FPR	Smeets R.J.E.M.	Prof.dr.	Male	Professor	Rehabilitation Medicine	2009	UM
FPR	Tubergen, A.F. van	Prof.dr.	Female	Professor	Outcomes and innovation in rheumatology practice	2022	UM
FPR	Verbunt. A.M.C.F.	Prof.dr.	Female	Professor	Rehabilitation Medicine	2013	UM
FPR	Welting T.J.M.	Prof.dr.	Male	Professor	Molecular Cartilage Biology	2020	UM
FPR	Willems P.C.	Prof.dr.	Male	Professor	Integrated Spinal Care	2020	UM
HISP	Bosma H.	Prof.dr.	Male	Professor	Social Epidemiology	2014	UM
HISP	Hoebe C.J.P.A.	Prof.dr.	Male	Professor	Social Medicine in particular Infectious Disease Control	2012	GGD Zuid Limburg
HISP	Horstman K.	Prof.dr.	Female	Professor	Philosophy of Public Health	2009	UM
HISP	Krumeich J.S.M.	Prof.dr.	Female	Professor	Translational Ethnographies in Global Health and Education	2017	UM
HISP	Rijk A.E. de	Prof.dr.	Female	Professor	Work and Health, specialising in Re-integration into Work	2017	UM
HISP	Savelkoul P.H.M.	Prof.dr.	Male	Professor	Medical Microbiology	2012	UM
HISP	Townend D.M.R.	Prof.dr.	Male	Professor	Health and Life Sciences Jurisprudence	2014	UM
OPC	<i>Beuken M.H.J. van den</i>	<i>Prof.dr.</i>	<i>Female</i>	<i>Professor</i>	<i>Palliative Medicine</i>	<i>2017</i>	<i>UM</i>
OPC	Brandt P.A. van den	Prof.dr.ir.	Male	Professor	Epidemiology	1997	UM
OPC	Cals J.W.L.	Prof.dr.	Male	Professor	Effective Diagnostics in Primary Care	2018	UM
OPC	<i>Dinant G.J.</i>	<i>Prof.dr.</i>	<i>Male</i>	<i>Professor</i>	<i>Clinical Research in General Practice</i>	<i>1998</i>	<i>UM</i>
OPC	Dompeling E.	Prof.dr.	Male	Professor	Early Diagnosis, specialising in Monitoring and Treatment of Lung Diseases in Childhood	2010	UM
OPC	Muris J.W.M.	Prof.dr.	Male	Professor	Family Medicine	2014	UM
OPC	<i>Prins M.H.</i>	<i>Prof.dr.</i>	<i>Male</i>	<i>Professor</i>	<i>Clinical Epidemiology</i>	<i>2001</i>	<i>UM</i>
OPC	Schayck C.P. van	Prof.dr.	Male	Professor	Prevention in Primary Care	2000	UM
OPC	Smits L.J.M.	Prof.dr.	Male	Professor	Clinical Epidemiology and Risk Based Care	2018	UM
OPC	Tejjink J.A.W.	Prof.dr.	Male	Professor	Integrated Care in Vascular Disease	2012	UM/Catharina Ziekenhuis
OPC	Zeegers M.P.	Prof.dr.	Male	Professor	Complex Genetics and Epidemiology	2012	UM

10 CAPHRI Chairs

RL	Name	Title	Gender	Type of chair	Chair	Years	Financier
PHPC	Beurskens A.J.H.M.	Prof.dr.	Female	Endowed chair	Targeted Measurements in Daily Care	2013	Hogeschool Zuyd
PHPC	Breukelen G.J.P. van	Prof.dr.	Male	Professor	Methodology and Statistics	2014	UM
PHPC	Burgers J.S.	Prof.dr.	Male	Endowed chair	Promoting Personalised Care in Clinical Practice	2016	NHG
PHPC	Crutzen R.M.M.	Prof.dr.	Male	Professor	Behaviour Change & Technology	2018	UM
PHPC	Dondorp W.J.	Prof.dr.	Male	Endowed chair	Respect for Future People; Significance for the Humanistic Perspective for the Ethics of Human Reproductive Genetics	2019	Stichting Socrates
PHPC	Kleijnen J.M.P.	Prof.dr.	Male	Professor	Systematic Reviews in Health Care	2011	UM
PHPC	Nagelhout G.E.	Prof.dr.	Female	Endowed chair	Health and wellbeing of people with a lower socioeconomic position	2019	Stichting IVO
PHPC	Nieuwenhuijze, M.J.	Prof.dr.	Female	Endowed chair	Midwifery	2020	Hogeschool Zuyd
PHPC	Rademakers J.J.D.J.M.	Prof.dr.	Female	Endowed chair	Health Skills and Patient Participation	2015	NIVEL
PHPC	Vries, R.G. de	Prof.dr.	Male	Edowed chair	Midwifery	2010	Hogeschool Zuyd
PHPC	Vries H. de	Prof.dr.	Male	Professor	Health Communication	1998	UM
PHPC	Vries N.K. de	Prof.dr.	Male	Professor	Health Promotion	2000	UM
PHPC	Weijden G.D.E.M. van der	Prof.dr.	Female	Professor	Implementation of Clinical Practice Guidelines	2010	UM
PHPC	Wert G.M.W.R. de	Prof.dr.	Male	Professor	Ethics of Reproductive Medicine and Genetics	2002	UM
PHPC	Willemsen M.C.	Prof.dr.	Male	Endowed chair	Tobacco Control Research	2010	KWF
VHC	Brand H.	Prof.dr.	Male	Professor	European Public Health	2008	UM
VHC	Czabanowska, K.M.	Prof.dr.	Female	Professor	Public Health Leadership and Workforce Development	2022	UM
VHC	Dirksen C.D.	Prof.dr.	Female	Professor	Health Technology Assessment of Clinical Interventions	2012	UM
VHC	Evers S.M.A.A.	Prof.dr.	Female	Professor	Public Health Technology Assessment	2012	UM
VHC	Groot W.N.J.	Prof.dr.	Male	Professor	Health Economics	1998	UM
VHC	Jansen M.W.J.	Prof.dr.ir.	Female	Endowed chair	Population-focused Health Policy	2014	GGD Zuid-Limburg
VHC	Jong J.D. de	Prof.dr.	Female	Endowed chair	Health Care System and Governance	2017	NIVEL
VHC	Joore M.A.	Prof.dr.	Female	Professor	Health Technology Assessment and Decision Making	2016	UM
VHC	Merode G.G. van	Prof.dr.	Male	Professor	Logistics and Operational Management in Healthcare	2001	UM
VHC	Paulus A.T.G.	Prof.dr.	Female	Professor	Economics of Education and Healthcare	2020	UM
VHC	Pavlova M.	Prof.dr.	Female	Professor	Health Economics and Equity	2020	UM
VHC	Ruwaard D.	Prof.dr.	Male	Professor	Public Health and Health Care Innovation	2011	UM
CARE	Godlee F.	Prof.dr.	Female	Honorary professor	Family Medicine	2016	UM/Care Chair
Other	Hofman P.A.M.	Prof.dr.	Male	Professor	Forensic and Postmortal Radiology	2015	UM
Other	Vos R.	Prof.dr.	Male	Professor	Theory of Health Sciences	1998	UM

11 A | Task and responsibilities

Tasks and Powers of Research Line Management 2016

In line with the Maastricht University house style, 'Research line' will replace 'Research programme' from now on.

In the course of the mid-term evaluation, it was revealed that some ambiguity remains with regard to the specific tasks and powers associated with research line management. Based on the points put forward, we have elaborated the tasks and duties below. This list assumes that the financial division based on the former programmes will continue to be observed until at least the end of 2017, in keeping with previous agreements with the school council. In September/October 2017, we will evaluate how we will address this matter from 2018 onwards.

Research line

A research line is an administrative unit of researchers who are focusing on the same theme, which is propagated via a shared mission and vision and which has been organised on the basis of an established strategy. All activities and projects carried out in connection with the theme come under the research line. Each research line is led by a chair and vice-chair, hereafter referred to as 'research line management'. Candidates for these management positions will be put forward by the senior academic staff of the research line in question. After consulting the Executive Committee, the scientific director of the school will appoint the chair and vice-chair of the research line. The term of these positions is three years, after which renewal is possible. Although Department chairs cannot also chair a research line, they may serve as vice-chair.

Chair

The chair of the research line bears final responsibility for substantive, financial and organisational aspects of the research line and is the first point of contact for the board. The vice-chair may serve as acting chair within the research line, carrying out the chair's tasks in their absence.

Vice-chair

The vice-chair will have the same duties as the chair but will bear no integral responsibility and will not serve as first point of contact for the board.

Tasks of research line management

After consultation with other senior academic staff within the research line, research line management will establish its substantive vision.

Periodic consultation will be held with the senior academic staff on matters such as thematic and disciplinary developments. Management will also conduct periodic meetings with the unit leaders (primarily former programme managers or PIs).

The CAPHRI Board will hold a Planning & Control (P&C) meeting with research line management every six months, in order to supervise the substantive aspects of the research. In these P&C meetings, developments and plans - primarily those in connection with the substantive vision, projects, promotions, publications and finances of the research line - will be discussed.

Management will also hold periodic consultation with the project manager (supported by the financial consultant) regarding the current status of and the expectations for the research projects within their portfolio, as well as the corresponding implications for the General Policy Reserve (ABR) of the research line. The most important tasks of research line management are the following.

- Establishing the mission/content/strategy of the research line in cooperation with the senior academic staff of the research line (in keeping with the school's mission)
- Drafting policy with regard to the staffing plan in consultation with unit leaders and in coordination with the board and the section chairs involved
- Monitoring the output of the research line
- Monitoring the research line's finances and bearing responsibility for the establishment of a framework for internal financial policy
- Approving project applications with an internal budgetary deficit (to a potential limit of -€5,000). The party requesting funding must seek approval from the unit leader (and, if desired, from research line management) for this procedure by email, with the project manager included in CC
- Conducting a substantive assessment of grant applications prior to submission
- Allocating or spending the research line's available General Policy Reserve with regard to investments, and furthering or expanding the research line. Within the research line, it may be decided that project leaders should receive drawing rights with regard to the portion of the policy reserve that they themselves have secured. In such cases, the general investments of the research line must be taken into account. The General Policy Reserve must be applied in furtherance of the school's objectives
- Supervising staff in order to achieve the objectives of the research line; for instance, by establishing financial and substantive frameworks for projects

The day-to-day managerial tasks of research line management may be delegated to unit leaders and/or PIs. Drawing up internal governance, however, is the sole provenance of research line management.

11 A | Task and responsibilities

Units (in Dutch Budget Beheer (BB))

The previous programmes that have now been joined to form the new research lines will in the first instance continue to exist as units. At the unit level, the unit leaders have a delegated responsibility for the unit's General Policy Reserve (ABR) and the associated projects, annual orders and allocated policy reserves (BR). The unit leaders answer to research line management. Research line management may assign new project leaders to existing units and submit a request for the formation of new units to the school.

Project leader

The project leader bears final responsibility for individual research projects, both financially and in terms of substance. The project leader must answer to the unit leader regarding the success of projects under their management.

The most important tasks of the project leader in connection with research projects include the following.

- Drafting and submitting research proposals/action plans
- Carrying out project-based research in the context of a research proposal approved by research line management and the institutional manager/project manager
- Supervising researchers as they carry out the project
- Holding periodic progress meetings with the project manager and financial consultant, which focus primarily on the financial realisation and expectations within their projects
- Periodically reporting on the research project's progress to the unit leader, project manager and client or grant provider

In order to submit a project, the Business Office must - at minimum - have drafted an external and internal budget.

If a project is set to begin with an internal budgetary deficit greater than € 5,000, the unit leader (and potentially research line management) must grant the project manager approval for its submission by email; this action indicates the research line's commitment to cover the project's remaining costs.

Other relevant role descriptions

Project manager

Each research line has a designated project manager. The project manager bears primary responsibility for the project control of research projects within the decentralised activities of the school. Meetings will be held periodically (three to four times a year) with the unit leaders to discuss the realisation of the unit in question and future expectations. Topics of such meetings may include applying the General Policy Reserve to new research projects, deploying research staff and earmarking a portion of the General Policy Reserve for anticipated future obligations. At least once per year, the project portfolios within the research line will be discussed with research line management.

More specifically, the tasks of the project manager include the following.

- At least once per year, meeting with research line management to discuss the financial affairs of the research line, consisting of the various unit project portfolios
- Holding periodic consultation with the unit leader, supported by the financial consultant, regarding the realisation and expectations of the project portfolio
- Together with the project leader, drawing up a project budget as part of the research proposal and application process
- Approving invoices in connection with expenditures for research projects
- Periodically inspecting the records of the various project reports within the units and, in consultation with the financial consultant, seeing to it that adjustments are implemented
- Recording agreements and commitments of a financial nature that will impact the unit and/or the school as a whole
- Supporting the monitoring and allocation of capacity within the units and research lines

Financial consultant

The primary task of the financial consultant is to manage administrative aspects (financial records) of the research projects. In doing so, the financial consultant supports the project manager with regard to the financial management of the various research lines.

The financial consultant's primary task consists largely of the registration, inspection and reporting of financial and administrative information. In addition, the financial consultant - together with the project manager - bears responsibility for primary project control (identifying, reporting, forecasting and issuing recommendations).

The financial consultant and the project manager also have a shared task of reporting to the institutional manager whenever projects threaten to exceed the tolerance limits.

With regard to project administration, the financial consultant's tasks include the following.

- Compiling the project file (including the collection of accompanying documentation, invoices, time sheets and salary specifications) and ensuring that it is up to date
- Processing administrative entries in connection with research projects (including internal transfers and corrections)
- Drafting and periodically (three to four times a year) updating the mono-reports within their project portfolios (this task includes adjusting the prognosis of each individual project report)
- Drafting and periodically (three to four times a year) updating the unit portfolios (this task includes determining the current and expected balance of available and allocated reserves that have been earmarked for the unit in question)
- Planning, preparing and supporting the accountancy audit of research projects (this task includes ensuring that the file which the accountant receives is complete, as well as answering or resolving any substantive questions which the accountant may have)

Managing Director / Head of School Office

The institutional manager supports the scientific director and, in doing so, is primarily responsible for supplying management information, keeping management information systems up to date, implementing and monitoring the planning & control cycle of the institution and supervising the Business Officers.

The duties of the institutional manager include the following.

- Carrying out tasks delegated to the institutional manager by the director, such as entering into contracts with third parties on behalf of the institution
- Participating in the Executive Committee of the institution
- Discussing the institution's entire research portfolio
- Drawing up the budget and financial prognoses for the institution, for the benefit of the Faculty Office
- Preparing and supporting policy with regard to financial and operational matters
- Providing management information for the purposes of various P&C meetings and other consultations
- Resolving any financial and operational issues of the institution
- Supervising the School office



11 B | Human resource management in Euros

The graduate schools of FHML receive direct governmental funding for staff. The internal funding for CAPHRI from FHML is based on the number of staff (full-time equivalents, fte's) times the average personnel costs. At the end of 2012 the staffing quantity was roughly the same as the budgeted numbers for CAPHRI, but the actual average personnel costs of the scientific staff were higher, creating a financial problem. Measures had to be taken to get back into financial shape and this particularly had consequences for the directly funded postdoc and assistant professor positions. The difference between the average personnel costs used for the budgets and the actual average had increased to 23%. For the assignment of ftes to the CAPHRI research programmes, we therefore used our average personnel cost instead of the UM average.

In 2015 the 18 programmes were reorganised in 6 research lines (RLs). CAPHRI has succeeded to get back into a healthy financial position, but there is no room for additional tenured staff. New positions are dependent on staff mutations (leave or retirement). Attracting new postdocs and assistant professors has been under pressure and there is a risk that talents could be leaving because of lack of career opportunities. Also the ratio between professor positions and more junior positions is out of balance. To repair the staff structure we introduced a 'euro-formation' system in 2016. This means the RL-leaders have been allocated a staff budget instead of a certain number of staff ftes. RL-leaders e.g. can now choose to appoint two postdocs instead of one professor.

Euro-formation system

The euro-formation system has been introduced to achieve more transparency, opportunities and flexibility in order to be able to manage CAPHRI staff based on capacity. Each research line (RL) has a budgeted number of ftes based on the staffing quantity of the RL at the beginning of 2015. These RL budgets in ftes have been frozen for three years (2015-2017) in order to give the RL room to develop without the threat of new budget cuts. These three years will most likely be extended with 1 year. For the year 2019, new strategic choices will influence the staff budgets of the RLs. In the staff budgets, annual salary increments to the next point of the salary scale are taken into account; until the top of the scale has been

reached. Also, a mark-up of the budget for secondary working conditions is incorporated. Structural increases of salaries based on the Collective Labour Agreement of Dutch Universities will be compensated. Promotions and merit pay are not within the staff budget. The financial budget makes the consequences of promotions and merit payments, more transparent, which hopefully will lead to more balanced human resource management choices.

Within the next 7 years 13 CAPHRI professors and 8 associate professors will retire. This demands flexibility for the human resource management. Succession of most of these positions will need pre-investments, which may lead to overspending. Next to the financial budgets CAPHRI therefore introduces the possibility to save and overspend per RL. Each RL has an own financial reserve position with the possibility to overspend to -/- 100k€ and save to 100k€. Financial budgets are determined for a longer period of time (3 to 5 years) and new strategic decisions regarding the budgets have a minimal adjustment period of one year.

Accountability and management

The RL management will make a proposal in consultation with the involved department chairs for the scientific director. The scientific director is end-responsible and will make the final decision.

Financial room

The bandwidth for the financial reserves of the RL are -/- 100k€ to 100k€ per RL based on the financial reserve ultimo balance year.

Surplus of > 100k€

When the financial reserve reaches > 100k€ at the end of balance year, the RL needs to spend the surplus in the following year. At the end of the following year the surplus of > 100k€ will be drawn into to the general reserves of CAPHRI.

Deficit of < -/- 100k€

When the financial reserves reach a negative balance, new positions won't be filled in. Three-year forecasts showing a deficit of around -/- 100k€ will need a plan proposed by the RL to resolve the deficit. If necessary the management board will step in with a plan in order to resolve the deficit.

12 Abbreviations

ALTC	Ageing and Long-Term Care
BBs	Budget Beheerders (units)
CAPHRI	Care and Public Health Research Institute
CaRe	Netherlands School of Public Health and Care Research
CARIM	School for Cardiovascular Diseases
CNCI	Category Normalized Citation Impact
FAIR	Findable, Accessible, Interoperable, Re-usable
FHML	Faculty of Health, Medicine and Life Sciences
FPR	Functioning, Participation and Rehabilitation
FTE	Full-time Equivalent
GALA	Gezond en Actief Leven Akkoord (<i>Healthy and Active Living Agreement</i>)
GROW	Research Institute for Oncology and Reproduction
HISP	Health Inequities and Societal Participation
HR	Human Resources
IVO	Foundation Institute for Research into Lifestyles & Addiction
IZA	Internationaal Zorg Akkoord (<i>Integrated Care Agreement</i>)
KIA-ZON	Kennis- en Innovatieagenda Zuidoost Nederland (<i>Knowledge and Innovation Agenda Southeast Netherlands</i>)
KNAW	Koninklijke Nederlandse Akademie van Wetenschappen (<i>Royal Netherlands Academy of Arts and Sciences</i>)
LMICs	Low- and Middle-Income Countries
MC	Medical Center
MHeNs	School for Mental Health and Neuroscience
MU	Maastricht University
MUMC+	Maastricht University Medical Centre+
NIVEL	Nederlands Instituut voor Onderzoek van de Gezondheidszorg (<i>Netherlands Institute for Health Services Research</i>)
NUTRIM	Research Institute for Nutrition and Translational Research in Metabolism
NWO	Nederlandse Organisatie voor Wetenschappelijk Onderzoek (<i>Netherlands Organization for Scientific Research</i>)
OPC	Optimising Patient Care
PHPC	Promoting Health and Personalised Care
RL	Research Line
SHE	School for Health Professions Education
SWOT	Strengths, Weaknesses, Opportunities, Threats
TRIMBOS	National Institute of Mental Health and Addiction
UL	University Library
UM	Universiteit Maastricht (<i>University Maastricht</i>)
UMC	University Medical Center
VHC	Creating Value-Based Health Care
WMO	Wet medisch-wetenschappelijk onderzoek met mensen (<i>Medical Research Involving Human Subjects Act</i>)
WOZO	Wonen, Ondersteuning en Zorg voor Ouderen (<i>Program Housing, Support and Care for the Elderly</i>)
ZonMw	The Netherlands Organisation for Health Research and Development

Contents Part B

Part B1: Ageing and Long-Term Care

1 Mission, strategy and ambition	02
2 Description of the Research Line's organisation, composition and financing	04
3 Research Quality and Societal Relevance	06
4 Collaborations, strategic partnerships and infrastructure	13
5 Trends, SWOT, strategic plans and viability	14

Part B2: Creating Value-Based Health Care

1 Mission, strategy and ambition	02
2 Description of the Research Line's organisation, composition and financing	04
3 Research Quality and Societal Relevance	08
4 Collaborations, strategic partnerships and infrastructure	18
5 Trends, SWOT, strategic plans and viability	20

Part B3: Functioning, Participation and Rehabilitation

1 Mission, strategy and ambition	02
2 Description of the Research Line's organisation, composition and financing	04
3 Research Quality and Societal Relevance	07
4 Collaborations, strategic partnerships and infrastructure	14
5 Trends, SWOT, strategic plans and viability	16

Part B4: Health Inequities and Societal Participation

1 Mission, strategy and ambition	02
2 Description of the Research Line's organisation, composition and financing	04
3 Research Quality and Societal Relevance	06
4 Collaborations, strategic partnerships and infrastructure	13
5 Trends, SWOT, strategic plans and viability	16

Part B5: Optimising Patient Care

1 Mission, strategy and ambition	02
2 Description of the Research Line's organisation, composition and financing	04
3 Research Quality and Societal Relevance	07
4 Collaborations, strategic partnerships and infrastructure	13
5 Trends, SWOT, strategic plans and viability	14

Part B6: Promoting Health and Personalised Care

1 Mission, strategy and ambition	02
2 Description of the Research Line's organisation, composition and financing	04
3 Research Quality and Societal Relevance	06
4 Collaborations, strategic partnerships and infrastructure	13
5 Trends, SWOT, strategic plans and viability	14

Contents Case studies

General Case studies

Citizen Science	03
Quality Assurance	05
Research Line Collaboration: the DARTBAC Project	06

Research Line Specific Case Studies

Ageing and Long-Term Care (ALTC)

The ban on visitors really had a negative impact on the well-being of nursing home residents	09
We can be proud of the fact that Connecting Conversations is still of interest	13
It's so important to involve patients in this type of research	16

Creating Value-Based Healthcare (VHC)

Better economic evaluations of European health care systems through a standardised methodology	18
Improved patient care and increased job satisfaction among GPs	22
Real-world data helps to improve patient care, decision-making and health policy	25

Functioning, Participation and Rehabilitation (FPR)

Personal health information made accessible, complete, neutral and comprehensible	27
It's about how people deal with their pain	29
200,000 people sitting on the sidelines in Limburg	33

Health Inequities and Societal Participation (HISP)

The future of research is transdisciplinary	36
The challenge of growing social health inequalities in the era of participation	39
Involving employees in creating a healthy workplace	41

Optimising Patient Care (OPC)

KOALA study and Lucki Gut study: Complementary feeding during the first six months of life. Yes or no?	44
Studying the Healthy Primary School of the Future	47
COVID precise: Living systematic review of diagnostic and prognostic prediction and machine learning models for COVID-19	49

Promoting Health and Personalised Care (PHPC)

The OPEN project: Online access to medical information in primary care: the patient's perspective	52
SCALA: Prevention of heavy drinking in Latin America	54
Shared Decision-Making benefits all patients	57



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We are doing this by providing high quality research to improve the individual quality of life and innovate healthcare and public health. Building a bridge between our research and society has our highest priority.

