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Global Diversity in Higher Education Workforces: Towards Openness

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In this article we discuss the collection and nature of diversity data relating to origin (ethnicity, race, nationality, indigeneity), gender/sex and disability in higher education institutional workforces across 24 locations within Africa, Asia, Europe, Latin America, North America and Oceania. The research emerges from the Curtin Open Knowledge Initiative project (n.d.), in which we analyse data relating to published research literature, its open access status, citations and collaborations for institutions, publishers and research funding bodies. Our project explores demographic data relating to workforce diversity and research production; we examine who creates knowledge and how diversity is transmitted through research. Collecting and analysing higher education workforce demographic diversity data reveals a global datascape with considerable variation in practices and data collected. The data reflect political and social histories, national and international policies and practices, priorities and funding. The presence and absence of public data provide an opportunity to understand differing national situations and priorities beneath the statistics. We open a conversation about how the concepts of equity, diversity and inclusion differ between groups of countries, which makes global comparisons difficult. By identifying higher education data and gaps, we also encourage institutions and countries to review their workforce demographics and their intersection with research production. Awareness of institutional diversity levels through data analysis can guide institutions towards knowledge openness.

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Introduction

Over the last 50 years, globalisation and internationalisation in trade, communication, education and migration have highlighted the concept of population diversity. Peter Hershock (2012: 1) defines diversity as the ‘coexistence of many different kinds of things’ and the current emphasis values differences on the path to equity. While equality focuses on reducing discrimination, it implies the elimination of difference without necessarily recognising that individuals have different starting points and ongoing needs, which ignores the dynamic and distinctive nature of peoples and cultures (Hershock, 2012). By contrast, equity acknowledges and addresses cultural and demographic differences and enhances diversity. The shift in terminology from equality to equity underpins the current ethos of diversity in higher education: policies and frameworks, teaching and research, study options, workforces and student bodies. Proposing a framework for exploring interdisciplinary perspectives of diversity in science and technology policy, Andy Stirling notes that ‘diversity offers a means to promote innovation, hedge ignorance, mitigate lock-in and accommodate pluralism’ (2007: 715). This statement aligns with our project’s approach to diversity in open knowledge institutions: it aims to encourage openness in research through collaboration, diverse areas of knowledge, ideas, languages, cultures and workforces. Diversity is a group characteristic, but the multiple intersecting identities of individuals contribute to workforce diversity (Gibbs, 2014).

The Curtin Open Knowledge Initiative (n.d.) project produces a data warehouse of published research literature and its open access status. It includes analysis of institutional, national and international research output types, citations, social media and collaborations. Analysis is grouped by discipline, topic, publisher, funder, and research funding bodies. In addition, we collect and analyse workforce demographic data in order to explore correlations between institutional diversity and knowledge production. Understanding the transformation of universities into open knowledge institutions involves asking questions about who produces knowledge and how diverse is the knowledge disseminated through research and transmitted in teaching.

In this article, we explore origin (ethnicity, race, nationality, indigeneity), gender/sex and disability data in higher education institutional workforces across 24 countries. In discussing these diversity dimensions, we acknowledge the difficulty of using concepts that are culturally and biologically bound (Stolcke, 2000), and whose meanings differ globally: Western meanings of the dimensions discussed may overlay and differ from concepts held within other societies and epistemologies. Diversity and equality, in other words, are not universal concepts that can be ‘interpreted uniformly across cultures and countries’ (Klarsfeld et al., 2019). Medrano Valdez (2019) explains that in Andean societies, for example, ‘men and women are complementary opposites

and the hierarchical status between them is functional', not exclusive. In Yorubaland (Nigeria), however, the category of 'woman' did not exist before Western influences (Oyěwùmí, 1997).

This article opens a discussion on the variability of higher education workforce diversity data and the limitations of global comparisons. It begins by exploring the background of equality, equity and diversity in higher education. A discussion of our project follows, including the context of this study, the research methodology, results across nations, and finally its challenges and limitations. We then discuss the use of diversity data within our project.

Background

From the mid-20th century, challenges to equality in admissions and employment became part of the higher education landscape, with approximately 25 percent of countries globally introducing affirmative action programmes – many in the 5 years since 1990 (Jenkins and Moses, 2017). Affirmative action and equal opportunity policies in relation to workforce and student bodies focus on age, race, gender, socio-economic status, ethnicity, language, sexual orientation, disability, religion and caste. Some actions were in response to the legacies of imposed historical practices and assumptions of colonialism such as 'patriarchy, racism, heterosexism, capitalism, and ableism' (Senier and Miranda-Galarza, 2016: 393).

Diversity for Whom?

Many equity, diversity and inclusion (EDI) policies and legislative processes address diversifying student enrolment and student cohorts. This focus on student diversity, driven by international marketing and world university rankings, limits attention to the heterogeneity of faculty, academic and administrative staff (Buenestado-Fernández et al., 2019). Systemic cultural barriers and recruitment practices can limit student progression to academic workforces; the existence of international staff and students does not always indicate a diverse campus or educational outcome (Spencer-Oatey and Dauber, 2019).

Sara Ahmed (2012) reflects on the replacement of social justice-oriented equal opportunity and affirmative action policies in higher education, with policies of equity, diversity and inclusion seen as less threatening to reputations than earlier terminology that implied equality deficits. Diversity is 'a conveniently empty word which can conjure up the image of a vibrant international, cultural and ethnic mix while concealing race- and ethnicity-based inequalities' (Bowl, 2018: 685). University policies often act as marketing tools to promote diversity but without necessarily achieving diverse outcomes, and this economic focus can inhibit the resourcing and action of gender and

racial equity policies and outcomes (Blackmore, Sánchez-Moreno and Sawers, 2015; Da Silva, 2016; David, 2015). In other words, the existence of an equality policy can become a proxy for achieving equality, while achieving diversity in institutions can remain elusive (Ahmed, 2012).

The powerful influence of world university rankings leads some universities to employ international academic staff without acknowledging different languages, cultural attitudes and practices, customs and academic traditions. For example, in South Korea, western academics hired to teach in English and build research activities were not aware of and did not fulfill the university's expectations of collaborative research that highlights Korean contributions and learning Korean (Shin and Gress, 2018). Analysis by Buenestado-Fernández et al. (2019) of indicators in 127 higher education institutions in the Academic Ranking of World Universities (ARWU) found limited progress in reaching workforce diversity. Hundle (2019) notes that 'the study of diversity requires serious, thoughtful investigations of global and transnational histories, theories, and practices of decolonization, as well as critical interrogations of key concepts of citizenship, community, and majoritarian and minority difference' (316).

The Curtin Open Knowledge Initiative

Universities exist to support the creation and transfer of knowledge, and efforts by universities towards openness broaden the impact of higher education and research institutions. The Curtin Open Knowledge Initiative project grew from a critique of the limitations of the major commercial world university rankings. We identify and analyse institutional research performance and focus on bringing together open access publishing and open data in open knowledge institutions, building on a commitment to an open society and to open science. Achieving institutional openness involves the coordination and communication of policies and programmes and addressing challenges of diversity in research. This means engaging with diversity in knowledge and research production, and how knowledge is shared within disciplines, scholarly communities, across disciplinary boundaries and between universities and wider communities (Montgomery et al., 2020).

Diversity in Knowledge Production

A diversified workforce contributes to openness through the inclusion of diverse ideas, knowledges and languages in research and teaching. Underpinning this is diversity in leadership, administration and decision-making (Montgomery et al., 2021). Researchers

representing diverse sexes/genders, ages, races and minority voices bring perspectives, knowledges and experiences that enrich and expand research. The *New England Journal of Medicine* recently acknowledged the need for more representative researchers and study populations, requiring the diversity details of participants to be provided for all articles (The Editors, 2021: 1431). The demographics of those producing research shapes knowledge, for example, through the gendered ways in which researchers are perceived in terms of their power and importance (King and Frederickson, 2021). We contend that core to achieving openness in knowledge creation, sharing, research and teaching is the diversity of institutional staff at all levels: academic, executive, professional, administrative and technical.

Ethnic and gender diversity in higher education research workforces produces a strong performance in research output and publication based on citations (Coalition of Urban Serving Universities et al., 2016); however, this varies by discipline. Analysis of research authorship diversity in higher education journals finds a predominance of English-speaking countries and affiliations with a limited representation of countries and institutions from the Global South (Williams et al., 2018; Fitzgerald and Jiang, 2019). Gender-based research output analysis shows global variation with overall higher productivity and quality from men, with only Brazil, Iceland and Kenya achieving gender balance (Opesade et al., 2017). Longitudinal productivity analysis of 1,523,002 Science, Technology, Engineering and Mathematics (STEM) scientists' publication output and citations between 1955 and 2010 by Huang et al. (2020: 4615) identifies 'gender invariants': similar annual productivity and citation numbers for the same amount of work, but 'gender-specific dropout rates' affecting outcomes in the length of publishing careers and productivity.

To understand the progress of open knowledge institutions, the Curtin Open Knowledge Initiative project gathers and analyses publicly available workforce demographic data to build awareness of institutional diversity in research and knowledge production. We explore this data in parallel with analysis of research output, open and closed access publications, citations, institutional collaboration, publication sources, publishers, funders and social media events.

Methodology

To identify higher education workforce demographic diversity data, we searched for publicly available sources of statistical data from national, regional, university and research association websites (to locate institutional academic, professional, administrative and technical workforce demographics). Starting with Aotearoa New

Zealand, Australia, Europe, South Africa and the United Kingdom (selected based on our collective experiences), we extended the search to nominated countries from seven geographic regions (Africa, Asia, Europe, Latin America, North America and Oceania). Google Translate, Microsoft Excel Translate and our crowd-sourced open *Scholarly Communication Multilingual Lexicon* (Lexicon Contributors, 2018) supplemented our language knowledge in translating webpages and files. Manual web-based searching used country names and keywords such as ‘higher education’, ‘university/universities’, ‘ministry, department of education’, ‘statistics’, ‘tertiary’ and specific terms such as ‘gender’, ‘ethnicity’, ‘race’ and ‘disability’. Additional sources emerged from reference lists in research publications and international collections such as the United Nations Educational, Scientific and Cultural Organization (UNESCO), the World Bank (2020) and the Equity Policy Map (World Access to Higher Education Day, 2022). The World Bank (2020) mapping of percentages of female tertiary academic staff uses the UNESCO Institute for Statistics annual education survey data, but at a country level only, and incomplete responses render the figures incomplete.

Data sources include ministries and departments of education, higher education funding bodies and research associations that collect and collate institutional workforce demographic statistics at country and regional levels. The selection is a mix of 24 sources of national and regional data, within the bounds of online data availability, accessibility and language. Countries for which we did not identify detailed statistical collections include those recently completing higher education structural and financial reforms, nations experiencing war and political turmoil or with different priorities and limited funding directed towards higher education and research.

During 2019 and 2020, we downloaded data files that included gender, origin (ethnicity, nationality, race, indigeneity) and disability demographic data. All countries primarily provided binary gender data (women and men); very few shared disability data. Origin data revealed the greatest variation. We grouped the countries into four broad categories based on characteristics of ethnicity, indigeneity, nationality and race data collected: 1) countries which identify and collect data on colonised indigenous groups; 2) nations which track populations from colonised countries and imported enslaved workforces; 3) countries which identify migrant or mobile workforces; 4) countries which do not provide origin data.

In this project, we identify grouping by occupation (academic, non-academic), level, and teaching or research duties (academic). For the purposes of longitudinal analysis to correlate with our research output analysis, we record data file format, availability by year and institutional disaggregation of data. **Figure 1** provides summary characteristics of data obtained from the sources consulted.

Country	Region	Source	Gender M/F	Gender other	Academic non-academic	Staff levels	Teaching/research	Ethnicity/race	Nationality	Age	Disability	Individual years	Year range	Disaggregation	Data available	Format
Aotearoa New Zealand	Oceania	Ministry of Education	Yes	No	Yes	Yes	No	Yes	No	Yes	No	Yes	2012 - 2018	Yes	Yes	xls
Australia	Oceania	Department Education & Training	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	2000 - 2019	Yes	Yes	xls
Canada	North America	Statistics Canada	Yes	Yes	Academic	Yes	No	Yes	No	Yes	No	Yes	1971 - 2019/20	Gender, yes; Ethnicity, no	Yes	csv
Canada	North America	Canadian Association of University Teachers	Yes	No	Academic Librarians	Yes	No	Yes	Yes	No	No	No	2002 - 2017	No	One-off report	pdf
Chile	Latin America	Mi Futuro Ministerio de Educación	Yes	No	Yes	No	No	No	Yes	Yes	No	Yes	2008 - 2019	Yes	Yes	xls
España	Europe	Ministerio de Educación y Formación Profesional	Yes	No	Yes	Yes	Yes	No	Yes	Yes	No	Yes	2004/5-2018/19	Yes	Yes	xls
Europe	Europe	Eurostat	Yes	No	No	No	No	No	No	Yes	No	Yes	2013 - 2017	No	Yes	xls
Europe	Europe	ETER	Yes	Yes	Yes	Yes	No	No	Yes	No	No	Yes	2011 - 2017	Yes	Yes	csv, API
Finland	Europe	Vipunen Finland	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	2010 - 2019	Yes	Yes	xls
Ghana	Africa	National Council for Tertiary Education	Yes	No	Partial	Yes	No	No	No	Yes	No	Yes	2012/13-2016/17	Yes	Yes	pdf
Hong Kong	Asia	UGC Committee	Yes	No	Academic	Yes	Yes	No	No	No	No	Yes	2009/10 - 2019/20	Yes	Yes	pdf, xls
India	Asia	University Grants Committee India	Yes	No	Academic	Yes	no	No	No	no	No	Yes	2017 - 2018	No	Yes	pdf
Ireland	Europe	Higher Education Authority	Yes	No	Yes	Yes	Yes	No	No	No	No	Yes	2015 - 2019	Yes	Yes	pdf
Italy	Europe	Ministero dell'Istruzione dell'Università e della Ricerca	Yes	No	Yes	Yes	No	No	Yes	Yes	No	Yes	1997 - 2019	Yes	Yes	csv tsv json xml
Kenya	Africa	Commission for University Education	Yes	No	Academic	Yes	No	No	No	Yes	No	Yes	2015/16 - 2017/18	No	Yes	pdf
Mexico	Latin America	Estudio Comparativo de las Universidades Mexicanas	Yes	No	Yes	No	No	No	No	Yes	No	Yes	2014-2019	Yes	Yes	html, pdf, xls
Morocco	Africa	Royaume du Maroc Ministère de l'Enseignement Supérieure	Yes	No	Yes	Yes	No	No	No	Yes	No	Yes	2008/09-2019/20	Yes	Yes	pdf
Netherlands	Europe	VSNU, Association of Research Universities	Yes	No	Yes	Yes	No	No	Yes	Yes	No	Yes	2006 - 2019	Yes	Yes	tableau pdf
Rwanda	Africa	Ministry of Education	Yes	No	Yes	No	No	No	No	No	No	Yes	2014/15-2018/19	No	Yes	pdf, xls
South Africa	Africa	Department of Higher Education	Yes	Yes	Academic	Yes	Yes	No	No	Yes	No	Yes	2001 - 2016	Yes	Yes	xls
Sri Lanka	Asia	University Grants Committee	Yes	No	Yes	Yes	Yes	No	No	Yes	No	Yes	2001-2019	Yes	Yes	pdf
Taiwan	Asia	Ministry of Education ROC (Taiwan)	Yes	No	Yes	Yes	No	No	No	50+	No	Yes	2000 - 2019	No	Yes	ods
Tunisia	Africa	Ministry of Higher Education, Scientific Research	Yes	No	Academic	Yes	Yes	No	Yes	No	No	Yes	2011/12-2016/17	Yes	Yes	xls
Uganda	Africa	National Council for Higher Education	Yes	No	Academic	No	No	No	No	No	No	Yes	2013/14; 2015/16	Yes	Yes	pdf
United Kingdom	UK	HESA	Yes	No	Yes	Yes	Yes	Yes	National	Yes	Yes	Yes	1994 - 2018/19	Yes	Yes	xls
USA	North America	IPEDS	Yes	No	Yes	Yes	Yes	Yes	No	No	No	Yes	1987 - 2018/19	Yes	Yes	csv

Figure 1: Summary of institutional staff demographic data dimensions by country, region and source, 2021.

Data Characteristics

What we found

Obtaining publicly accessible data is challenging. Statistical data for university workforces are varied, non-standard and incompatible across countries, regions and continents. Data are disparate in terms of the dimensions recorded, institutional disaggregation, year ranges, terminology and data file format. Problems exist with the continuity of data recorded and changes in collection methods. Institutional name changes and mergers present difficulties for longitudinal analysis, especially in countries with a large number of institutions that have undergone higher education system reform, such as the United Kingdom and South Africa. Casual, sessional,

contract, part-time and atypical academic staff are usually counted separately from full-time or fixed term academic staff. Numerical counts include full-time, part-time, temporary, permanent, contract, full-time equivalent (FTE) or whole-time equivalent (WTE) and headcount per person. These different methods for counting people can mask the actual numbers, as large numbers of sessional or casual academic staff may be collapsed into smaller FTE numbers (Thomas, Forsyth and Bonnell, 2020) or counted separately. Academic and faculty classifications may include deans, heads of school/department, researchers and doctoral students.

Origin data

Origin data (ethnicity, race, minorities, indigeneity, nationality) are varied and contentious. Data collection reflects: historical, colonial practices; geopolitical and economic policies; global population migration and academic workforce mobility over the last five years. To explore these influences, we categorised countries within four classifications based on the characteristics of origin data collected: Colonised, Colonisers, Migrant/mobile workforce and No data. Countries may present more than one classification (**Table 1**).

Country	Region	Workforce ethnicity, race, nationality data	Country, workforce characteristics
Aotearoa New Zealand ¹	Oceania	European, Māori, Pasifika, Asian, Unknown, Other	Colonised/coloniser, migrant/mobile workforce
Australia	Oceania	Indigenous (Aboriginal and Torres Strait Islander)	Colonised
Canada	North America	Visible minorities ² ; First Nations or Indigenous: Registered or Treaty Indians, North American Indian, Métis, Inuk (Inuit)	Colonised, migrant/mobile workforce
Chile	Latin America	Chileño, Extranjero (foreigner)	Colonised, migrant/mobile workforce
España	Europe	España, EU, rest of Europe, US_Canada, Latin America, Caribe, North Africa, rest of Africa, Asia, Oceania	Coloniser, migrant/mobile workforce
EU (ETER)	Europe	National, foreigner, unclassified	Migrant/mobile workforce

¹ University workforce data can be requested from: Tertiary.Information@minedu.govt.nz.

² Defined as “persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour”. The visible minority population consists mainly of the following groups: ‘South Asian, Chinese, Black, Filipino, Arab, Latin American,

Country	Region	Workforce ethnicity, race, nationality data	Country, workforce characteristics
Finland	Europe	Finland, Europe, North America, Latin America/Caribbean, Africa, Asia, Oceania (non-academic staff only)	Migrant/mobile workforce
Ghana	Africa	No data	Colonised
Hong Kong	Asia	No data	Colonised
India	Asia	No data	Colonised
Ireland	Europe	No data ³	Colonised
Italy	Europe	Italiano, Straniero (foreigner)	Migrant/mobile workforce
Kenya	Africa	No data	Colonised
Mexico	Latin America	No data	Colonised
Morocco	Africa	No data	Colonised
Netherlands	Europe	Netherlands, EU/EEA, Other countries, Unknown	Migrant/mobile workforce, coloniser
Rwanda	Africa	Rwandan, foreigner	Colonised, migrant workforce
South Africa	Africa	African, Coloured, Indian, White	Colonised, migrant/mobile workforce
Sri Lanka	Asia	No data	Colonised
Taiwan	Assia	No data	Colonised
Tunisia	Africa	Etrangers (Foreigners)	Migrant/mobile workforce
Uganda	Africa	No data ⁴	Colonised
United Kingdom	Europe	White, Black, Asian, Mixed, Other (institutional); UK, Other EU, non-EU, Not-known, Caribbean, African, Indian, Pakistani, Bangladeshi, Chinese, other Asian; other mixed (national)	Coloniser, migrant/mobile workforce
United States	North America	Hispanic or Latino, not Hispanic or Latino, American Indian or Alaska Native; Asian; Black or African American; Native Hawaiian or Other Pacific Islander; White ⁵ ; Two or more races; Race/ethnicity unknown; non-resident alien	Colonised/coloniser, migrant/mobile workforce

Table 1: Ethnicity, race, indigeneity and nationality data collected by country. Links to sources are provided within the table. See Figure 1 for source names.

³ In December 2020, the Irish Higher Education Authority announced its intention to collect ethnicity data.

⁴ This data is no longer available on the website.

⁵ Defined as 'A person having origins in any of the original peoples of Europe, the Middle East, or North Africa' (National Center for Education Statistics, n.d.).

We expand on the categories in Table 1 as follows:

1. *Colonised*: countries collect ethnicity and indigeneity data to fulfill legislative requirements, acknowledging post-colonial economic and educational impacts on colonised peoples. Australia collects data about Indigenous (Aboriginal and Torres Strait Islander) peoples as a subset of workforce statistics. Aotearoa New Zealand gathers Māori data from universities, polytechnics and wānanga (Māori tertiary institutions). Canada identifies First Nations (North American Indian), Métis or Inuk (Inuit), Registered or Treaty Indians; United States specifies American Indian, Alaska Native, Native Hawaiian or Other Pacific Islander. South Africa identifies White, Coloured, Indian, African.
2. *Colonisers*: countries record specific or broad categories of populations from previous colonies. This recognises workforces from colonised nations and national interest in the employment levels of such peoples. Aotearoa New Zealand includes Pasifika (from protectorate Pacific Island nations); España records North Africa and the rest of Africa, Caribe, Latin America; United Kingdom specifies African, Bangladeshi, Caribbean, Chinese, Indian, Pakistani nationally, but institutionally broad categories of White, Black, Asian, Mixed, Other.
3. *Migrant/mobile workforce*: countries whose data reflect regional networks, international migration and mobile academic workforces. Aotearoa New Zealand records Asian and Other; Canada identifies ‘visible minorities’: non-Caucasian, non-white, non-Indigenous peoples (Statistics Canada, 2020); Chile tracks Extranjero (foreigner); España identifies the EU, Europe, US, Canada, Africa, Asia, Oceania; Finland includes Europe, North America, Latin America/Caribbean, Africa, Asia, Oceania; Italy records Straniera (Foreigner); Rwanda specifies Foreigner; the Netherlands notes Europe (EEA, EU); Tunisia records Etrangers (foreigners); United Kingdom identifies White, Black, Asian, Mixed, Other; United States records Asian and Nonresident alien.
4. *No data*: Ghana, Hong Kong, India, Ireland, Kenya, Mexico, Morocco, Sri Lanka, Taiwan and Uganda do not provide origin data. Possible reasons are: (1) national imperatives or priorities to collect origin data within higher education do not exist, or data are not shared publicly; (2) different understandings and definitions of the concepts of diversity, ethnicity, racism, equity (Mampane, 2019); (3) countries lack structures and resources to import or export workforces internationally (Finkelstein and Sehti, 2014).

The analysis identifies global patterns in higher education workforce origin data, differing data categorisations and mobility across national and regional contexts (Dahinden, 2016). Ethnicity is defined differently across global contexts: by race, language, borders, conflict and history, and shifts over time rather than remaining fixed (Alesina et al., 2003). Histories of colonisation, slavery and indentured labour, migration, wars, border changes and resulting population movements affect how countries enact legislation and policies, and collect demographic data relating to race, ethnicity, indigeneity or nationality.

Collecting origin data is not always possible, nor is it a neutral process. Sensitivities to the collection of ethnic, Indigenous, racial and nationality data exist in locations where such declarations raise memories of persecution, both historical and current, so that individuals may wish not to divulge this information. Persons subjected to discriminatory practices may be reluctant to declare origin status, or may consider the question and the defining categories disrespectful or inappropriate. Furthermore, data and statistics carry implicit values that reflect the perspectives, methodologies and epistemologies of dominant populations: for example, indigenous populations in colonised countries such as Aotearoa New Zealand and Australia (Wilks et al., 2018). To address this, indigenous data sovereignty initiatives in these countries, as well as Canada and the United States, are developing relevant instruments and data collection practices (Ruckstuhl, 2022; Walter and Suina, 2019).

Disability

Recording data and addressing workforce disability is limited, contentious, and numbers are underestimated. Three countries share institutional staff disability data publicly: the United Kingdom, Mexico and Canada. The United Kingdom Higher Education Statistics Agency collects staff disability and illness data as a legal requirement, providing data within the following categories: *Known to be disabled*, *No known disability*, *Unknown* (reported as information refused). This is supplemented with more specific categories of disability (learning, mental health, physical, hearing) at the national level. However, respecting the sensitivities of such data, staff members are not required to report a disability (see Higher Education Statistics Agency, 2021). Thus, percentages of academic and non-academic staff with disabilities are surely underestimated, with more students disclosing than staff, suggesting that career and job security pressures in universities reduce the inclination to declare a disability or health condition (Brown and Leigh, 2018). The current managerial, neoliberal marketing approach to education as a commodity has been found to be more receptive to student than to staff disability needs (Merchant et al., 2020). Mexico shares numbers and percentages of academic

staff with a disability for most institutions and nationally. Canada provides figures on self-reported disability from an occupational survey (Universities Canada, 2019).

The Salamanca Statement and Framework for Action on Special Needs Education (UNESCO, 1994) encouraged governments to establish inclusive education policies and programmes to improve previously fragmented efforts. It identified contributions of higher education staff to promote perspectives and provide role models for students with disabilities (Kiuppis, 2014). Despite inclusive policies that embrace and promote the acceptance of disability, discriminatory practices continue. Higher education institutions need to ‘become disability-inclusive’, taking a holistic view that extends disability as the responsibility of all, not just individuals (Thompson, 2020: 244).

The persistence of ableism as an invisible, unacknowledged and predominant norm in universities reflects scientific practices of classification and subjectification (Dolmage, 2017). Foucault identified and critiqued an essentialist binary of “‘normal’/‘impaired’”; disability, however, is not a fixed state, as ‘...all human bodies differ from each other ... each and every body is in a process of continual change and becoming’ (Feely, 2016: 871). Furthermore, legal definitions of disability vary – differing interpretations in medical and impairment terms affect data collection (Eide and Loeb, 2016). Faculty may, moreover, be reluctant to declare disability because of harassment and discrimination where disabled people are not yet publicly accepted as the ‘largest minority’ (Dolmage, 2017: 178). Italy has legislation to target and to count the employment of people with disabilities, but compliance is low (Sargeant et al., 2018).

Australian universities are required to implement staff disability policies and programmes to meet national and state disability discrimination legislation. Mellifont (2020) identified only seven universities with public disability statistics via websites (some with incomplete and outdated data). The small number of staff identified with disabilities means universities are missing the lived experience and contributions of these staff members to ‘knowledge production’ (Mellifont, 2020: 122).

Gender

Data relating to ‘gender’ or ‘sex’ are available across all statistical sources we analysed, although this variably covers academic and non-academic staff members or only academic staff. While gender equity is improving in higher education workforces, the percentage of women decreases in higher level academic positions across most countries. The option of more than two gender choices is not widespread. We found four data sources addressing nonbinary gender by including an undeclared gender category in addition to women and men or female and male: Unknown (South Africa), Unclassified (Europe-ETER), Unspecified (Australia from 2018), Canada (sex unknown/

other from 2017; gender diverse in 2019). However, often numbers in these categories are small, are not identified for privacy reasons and are excluded from analysis.

Goal five of The UN Sustainable Development Goals (SDG) aims to achieve gender equality and empower all women and girls. The UN 2018 Gender Equality report records some progress, with gaps in policy implementation and resourcing, and inadequate data tracking across nations (United Nations Statistics Division, 2020). While student gender proportions may favour women in many countries, staffing levels do not reflect a concomitant balance, particularly in senior academic, managerial and leadership positions (David, 2015). Growth for women in access to higher education does not necessarily lead to gender equity in higher degree research and higher education employment (UNESCO Institute for Statistics and Fiske, 2012). Institutional ‘structural and cultural barriers’ mean that change remains a challenge to achieving global gender equality (Blackmore, Sánchez-Moreno and Sawers, 2015: iv). Recent initiatives aim to balance gender distribution among university workforces, particularly in the science, technology, engineering, mathematics and medicine (STEMM) disciplines that have lower percentages of women than men. These programmes challenge institutional biases, but gender equity varies at both institutional and national levels as it continues to be impacted by cultural assumptions about women’s ‘capacity and affinity for STEM’ (Richardson et al., 2020: 339).

Discussion

The Open Knowledge Initiative project analyses demographic diversity data to highlight interactions with research performance such as publication, open access output and collaboration. For example, we include gender and origin data analysis where available within our interactive dashboards, providing an opportunity for managers and executives to review their institution’s diversity outcomes. To explore the intersections between diversity and research performance, we develop correlations between the percentages of women in academic and non-academic positions, open access publications, mentions of research in non-academic sources such as social media and institutional revenue or income data in universities. This raises questions about the reasons for different performances among national institutions. For example, wealthier, well-established and prestigious metropolitan institutions with high-ranking research profiles often present lower gender parity than less prestigious, regional universities with lower funding levels (Montgomery et al., 2021, Wilson et al., 2022 in publication).

The variations in workforce diversity data in this article reveal different geopolitical, economic, social and population movements, labour markets, traditions and priorities. Imperatives to collect data about workforces, indigenous populations, ethnic groups, gender and disability depend on the approaches of governments and educational authorities toward research, curriculum, funding and planning. These are counter-balanced by active institutional support for diversity and the individual's decision to declare a disability and to self-identify a gender, ethnicity, race or indigeneity. Further investigation into the presence and absence of public demographic workforce data reveals the differing national priorities and outcomes underpinning the statistics: regional patterns where differences suggest underlying conflicts with systemic colonisation, patriarchy and marginalisation.

The absence of origin data for most African countries reflects complexities in the application and meaning of the concept of diversity. Ghana has over 80 ethnic groups that were forced together during colonisation, and acknowledging and prioritising such population diversity in higher education institutions is a challenge (Marcellus and Christian, 2012). Mamdani (2020) argues that ethnic differences in Rwanda are a construction of 'colonial scholarship' (42). At Makerere University, Uganda, Hundle (2019) notes that 'problems of minority difference (whether racial or ethnic) are framed in both analytical and quotidian ways that emerge from the local and historical context: ethnic affiliation or ethnic politics; tribalism; or antifoignier sentiment, anti-Asian sentiment, and even Aminism' (311). Kenya, a 'multi-ethnic society' (Kisaka, Jansen and Hofman, 2019: 35), has more than 42 major and minor ethnic groups that are not represented equally in public university and college workforces, despite legal requirements for diversity. South Africa introduced the Employment Equity Act (EEA) in 1998 to redress inequities resulting from apartheid and to advance the employment of 'designated groups, namely black people, women and people with disabilities' (Kola and Pretorius, 2014: 1316). The Act requires higher educational institutions to develop employment equity plans. However, barriers to equitable access and participation in higher education persist due to poverty, social inequality and organisational inefficiencies (Pitsoe and Letseka, 2018). Black women, in two of the designated groups, continue to face ongoing gender and racial stereotyping, and encounter challenges with the publication of research and promotion in employment. Despite national mandates, not all individual institutions have equity policies with diversity strategies targeting black women (Ramohai, 2019). The categories 'African', 'Coloured', 'Indian' and 'White' (Table 1) reflect the separate universities for these groups established during apartheid (Mampane, 2019). The large body of migrant workers from across the continent is merged into the undifferentiated

category: ‘African’. The struggle between ‘neoliberalism and managerialism [and] transformation’ after 1996 demonstrates the dangers of ‘decolonial discourse’ becoming rhetoric or metaphor because of systemic and structural blockages in the academy (Keet, Sattarzadeh and Munene, 2017: 4).

Asian countries in our selection provide gender data but none for race, ethnicity or nationality. India was an early adopter, introducing reservation policies, or ‘caste quotas’, aimed to address inequalities in education and employment following independence from the United Kingdom in 1947 (Jenkins, 2003; Robles and Krishna, 2012; Subramanian, 2019: 275). However, data collection has become complex, and colonial legacies such as the use of colonial caste labels persist (Jenkins, 2003). Diversity in Chinese higher education is multifactorial. Some suggest that the expansion and internationalisation of universities along Western and American lines since the 1990s, and the pursuit of higher rankings and educational status, has led to a lack of value placed on diversity and multiculturalism, as well as the displacement of indigenous Chinese knowledge and language diversity (Liu, 2016; Marginson, 2018; Wang and Leong, 2019).

Diversity, equity and inclusion are strategically important to European higher education institutions where cultural, legislative and institutional contexts strategies vary (Nason and Sangiuliano, 2020). Gender equality and gender mainstreaming in academic research are priorities for European research (European Union, 2019). In 2018, the government of the Netherlands sponsored the Westerdijk Talent scheme to appoint 100 women professors in universities. French universities, required to remain neutral because of the country’s secular status, cannot enact inclusive policies or gather racial and religious statistics (Claeys-Kulik, Jørgensen and Stöber, 2019). However, France contributes national gender parity data to the European Union, with gender equality programmes in higher education and research institutions (Ministry of Higher Education, Research and Innovation, 2022; Nason and Sangiuliano, 2020). A large gender imbalance in academic workforces persists (Claeys-Kulik, Jørgensen and Stöber, 2019). In the UK, the Athena Scientific Women’s Academic Network (SWAN) Charter was established in 2005 to increase women’s participation in STEMM fields. In 2015, the Charter expanded to include all disciplines, and professional, support and transgender staff (Advance HE, n.d.).

Most countries in the European Union collect nationality data, tracking international academic workforce mobility patterns, changing levels of global migration and movements of displaced peoples into Europe post World War II (Supik and Spielhaus, 2019). The UK collects racial data institutionally, with specific nationality data only at the national level. The Race Relations Amendment Act (2000) and Equality Act (2010)

led to the Race Equality Charter 2014, which aimed to advance racial equality for Black, Asian and Minority Ethnic students and staff in higher education institutions. Similar to the Athena SWAN Charter for gender, the two charter schemes compete with one another for resourcing and positioning—an example of the challenges for intersectionality when race and gender are regarded as mutually exclusive (Cho, Crenshaw and McCall, 2013). Ireland adopted Athena SWAN in 2015. It has a global education strategy that encourages inward and outward staff mobility, and the Irish Higher Education Authority has recently announced that it will collect staff race and ethnicity data for the first time (Aodha, 2020). However, the comments about ‘toxic identity politics’, quotas and merit appointments that followed Aodha’s article indicate resistance to such moves.

Many Latin American and Caribbean countries aim to achieve diversity in education but with varied implementation by country depending on historical, political and social factors (Buenestado-Fernández et al., 2019). Chile and Mexico provide gender data, but no public ethnicity data.

In the United States, the ground-breaking 1964 Civil Rights Act prohibits discrimination in education by race, colour, sex, religion or origin, voter registration and employment. It aimed to redress the impact of slavery but has since broadened from its original intentions. However, financial factors (‘university capitalism’) and the ‘return of epistemic and political conservatism’ threaten affirmative action processes and studies (Santos, 2019: 232). Following opposition and legal challenges to racial affirmative action programmes and legislation, many have ceased to exist (DiAngelo, 2018). For example, the US Supreme Court upheld a claim of discrimination through the ‘preferential treatment’ of students from minority groups inherent in higher education affirmative action programmes as a violation of the Fourteenth Amendment (Da Silva, 2016: 193). A focus on gender equality programmes includes the National Science Foundation’s (NSF) ADVANCE funding of programmes to increase the numbers of women in STEMM faculties (Yen et al., 2019).

The United States and Canadian population race/ethnicity classifications, corresponding to their statistical agencies, provide detail on colonised peoples within higher education. However, Gasman, Abiola and Travers (2015) note that there are small percentages of diverse population groups employed in senior positions, and a lack of diverse leadership in eight elite United States Ivy League institutions, despite better student diversity figures. American Indians have ‘little to no pipeline into graduate education and thus academic leadership’ (8). The Universities Canada (2015) *Principles of Indigenous Education* meet federal and provincial government legislation

requirements but these strategies are ineffective and ‘non-performative’ in addressing racism (Dua and Bhanji, 2017: 238). Indigenous scholars identify ongoing colonialism and the need for systemic change in Canadian institutions (Cote-Meek and Moeke-Pickering, 2020).

Australian data reflect recent developments. Government guidelines require universities to implement indigenous workforce strategies to increase the number of Aboriginal and Torres Strait Islander staff to ‘3 percent of the total workforce’ (Universities Australia n.d.: 32)—a reflection of parity with the Australian population—with at least one Aboriginal or Torres Strait Islander person employed in a senior executive role. However, strategies amended and adapted by individual institutions meant that baseline targets were not being met. The second report highlights some growth in indigenous staff numbers (Universities Australia, 2020) but Australian universities need to acknowledge systemic inequities to bring about cultural change (O’Sullivan, 2020). Australia adopted the Athena SWAN programme (Science in Australia Gender Equity, 2018), yet disparities persist: gender equality is downplayed within EDI programmes and world university rankings are prioritised both in Australia and in Aotearoa New Zealand (Bönisch-Brednich and White, 2021).

Aotearoa New Zealand tertiary institutions provide ethnicity data for Māori and Pasifika populations. However, despite equity obligations specified in Te Tiriti o Waitangi and policy aspirations to achieve diversity among researchers and across disciplines, the number of Māori and Pasifika scientists in Aotearoa public institutions varies (McAllister et al., 2020). Pihama et al. (2019) identify the importance of non-mainstream epistemological and cultural knowledges in curricula, along with pedagogies, research and methodologies. Public workforce gender statistics, ongoing gender pay gaps and slower progression through academic employment grades for women than men indicate persistent gender disparities (Brower and James, 2020).

Challenges and limitations

Gathering data in this study, we encountered variability in data coverage, terminology, classification, accessibility and formats. For example, academic and research workforces may be combined or separated by teaching and research functions. Furthermore, non-academic staff are described variably as administrative, professional, general, executive, managerial, technical and as librarians. Data are disaggregated by institution for most sources, but not for all data elements. Additionally, time frames vary, with only seven sources sharing data to the year 2000 or earlier. Finally, time periods for data collection differ by source, using individual years or combined years (e.g., 2016–2017).

Frances Henry et al. (2017) discuss similar difficulties with obtaining ethnic, racial and indigenous diversity data for higher education workforces in Canada, the United States, the United Kingdom and Australia because of different time frames, sources and collecting bodies, even at a national census level. Diversity data collected via survey methodology lack comprehensive responses and this issue compounds globally. The World Bank (2020) maps percentages of female tertiary academic staff from the UNESCO Institute for Statistics responses to its annual education survey, but incomplete responses render world and country estimate figures incomplete. *The Times Higher Education* report on gender equality (Bothwell et al., 2022) ranks countries based on data contributed by institutions, but notes that dependence on volunteered data skews results, and that countries with more data score better.

We acknowledge that this collection is selective; our intention is not to produce comparative data or tables. Comparisons of demographic diversity data can be misleading and inaccurate because they do not consider different histories and different understandings of the concepts and applications of diversity and equity. Furthermore, global comparisons mask national and regional differences. Within the higher education marketplace, world university rankings reduce institutions to a homogenous set of standards, disadvantaging the less wealthy and glossing over geopolitical, social and historical variations and distinctiveness (Mäkinen, 2021).

Concluding Remarks

This article opens a conversation on the global variability of higher education demographic data. Our exploration of workforce data characteristics from a selection of countries and regions reveals gaps, variations and limitations of national and institutional data collection practices and priorities. These findings support others regarding the inconsistency of global diversity data (Alesina et al., 2003; Klarsfeld et al., 2019, Patsiurko et al., 2012). In short, when data gathering is influenced by economic and political decisions made by governments, education authorities and institutions it affects the recognition and acknowledgement of educational and employment rights of minority and emerging groups. Decisions taken on whether to collect or to not collect data in certain demographic categories can exclude, ignore and silence those who do not fit or do not wish to be categorised, ultimately compounding ‘inequality and discrimination’ (Desivilya et al., 2017: 92).

We have found, in relation to gender data, an indication that there is global progress towards gender equity in many higher education workforces – but gender cannot be fully accounted for within binaries. Data collected in a few countries recognise diverse gender identities but these small numbers are not reflected in published data, limiting

awareness of gender diversity. Analysis of origin diversity highlights varying attitudes and practices across the world. We find inadequate recognition of different mental and physical abilities within workforces in most countries. Overall, diversity data fails to acknowledge intersectionality within workforces: the ‘multiple “axes” of power and difference that shape individuals’ positionalities’ (Rice, Harrison and Friedman, 2019: 409). Our analysis highlights the need to recognise how power within knowledge production is differentiated by country, and to see the importance of considering context, binaries and hierarchies in the use of data (D’Ignazio and Klein, 2020).

Our interest is to understand workforce diversity as a dimension of research production and knowledge openness within countries, regions and institutions. Together with longitudinal analysis of research output, this contributes to our project’s aims: to build comprehensive data analysis and tools for understanding the role of universities in knowledge-making and sharing; to encourage diversity and openness in research and teaching; and, to move beyond a reliance on incomplete and inadequate metrics employed by the major world university rankings. Through analysis of publicly available demographic data, we bring greater clarity to diversity in higher education workforces and knowledge production as pillars of open knowledge institutions. We encourage universities to examine diversity data in order to understand their own workforces, to promote multiple perspectives in research, teaching and management, as well as opportunities for knowledge sharing and critical thinking within and among institutions and communities. Evaluating diversity data can lead to a critical understanding of the impacts of policy achievements and outcomes on teaching and research practices, and can, therefore, challenge inequalities.

Early research into the COVID-19 pandemic lockdowns and restrictions on academic work practices shows a negative impact on research productivity outcomes for women and early career researchers (Australian Academy of Science, 2020; Esser et al., 2020; King and Frederickson, 2021; Woolston, 2020). Further analysis is needed to highlight global disparities and to reinforce the need for awareness to address higher education workforce diversity and equity. We hope that, by drawing attention to workforce

demographics alongside research output analysis, we can encourage institutions to examine and understand the impacts of their practices and outcomes, to extend and maintain diversity in research and teaching.

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Competing Interests

The authors have no competing interests to declare.

Data Availability

All data are publicly available. Sources are shown in Figure 1.

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