Torres Strait Islander and international First Nations Peoples[1] because their worldviews become marginalised, are not seen as valuable, and are erased (Anderson et al., 2016; Behrendt et al., 2012; Walter, 2016; Walter, Carroll et al., 2021). Further, this marginalisation of Indigenous worldviews also works against majority ethnic group student development because they receive a restricted and narrower educational experience that does not expose them to multiple worldviews (Hart, 2010; Kaomea, 2009).

Within the Anglo-colonised CANZUS countries, the marginalisation of Indigenous worldviews by the state and non-state educational systems is an ongoing issue (Kukutai & Cormack, 2021; Lopez, 2021; Lovett, Jones, & Maher, 2021; Suina & Chosa, 2021). For example, in Australia, scholars have explored how Indigenous worldviews (inclusive of epistemology, ontology, and axiology) can be included within curricula and measures of educational success in primary (Bishop, Vass, & Thompson, 2021; Martin, 2017; Williamson-Kefu, 2022), secondary (Donovan, 2015; Ober et al., 2022), and tertiary education systems (Behrendt et al., 2012; Martin, 2008; Nakata, 2010; Page, Trudgett, & Bodkin-Andrews, 2019; Prehn et al., 2020).

In Australia, over the last two decades, there has been an increasing effort to rectify the shortcomings of the primary, secondary, and tertiary education systems by decolonising and Indigenising curricula and education structures, and the training and employment of Indigenous professional and academic staff (Price, 2012; Trudgett, Page, & Coates, 2022; Universities Australia, 2017). To achieve this, measures have included greater recruitment and retention of Indigenous teachers (Andersen, O'Dowd, & Gower, 2015; Universities Australia, 2017), the employment of Aboriginal Education Workers (AEWs) (Peacock & Prehn, 2019; Price et al., 2017), decolonising and Indigenising the curriculum (Bodkin-Andrews et al., 2021; Hart et al., 2012; Nakata, 2010; Page et al., 2019; Prehn et al., 2020), and Indigenous cultural activities and pro-

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[1]   From this point on, Aboriginal and Torres Strait Islander and Indigenous international First Nations Peoples will be referred to as Indigenous peoples. With the Australian Anglo-colonised context Aboriginal is an aggregated descriptor for many unique Indigenous peoples with their own distinct identity, cultural practices, customs, lore, and histories (Dudgeon et al., 2014). Similarly, the Torres Strait Islander peoples consist of five distinct peoples whose lands range from the top of the mainland Australian content, stretching almost to Papua New Guinea (Dudgeon et al., 2014).

grammes (Bodkin-Andrews et al., 2013; Harwood et al., 2015; Martin, 2017).

As already suggested though, despite efforts to decolonise all levels of education within Australia, representative Indigenous education and Indigenous studies data is still largely absent. The result of this ignorance of Indigenous peoples and our worldviews results in what Palawa sociologist, Distinguished Professor Maggie Walter (2018) describes as the 5Ds of Indigenous data: disparity, deprivation, disadvantage, dysfunction, and difference. For example, within this 5D data narrative, Indigenous peoples are measured against the European majority population, and these simplistic binary measurements generally position Indigenous peoples as being in need of non-Indigenous salvation (Walter & Carroll, 2021).

The aim for Aboriginal and Torres Strait Islander populations to reach the same outcomes as the non-Indigenous population continues to ignore their cultural differences in aspirations and life values, and results in data that are focused on difference, disparity, disadvantage, dysfunction, and deprivation (Lovett, Jones, & Maher, 2021, p. 44).

At present, Australian educational data is largely missing Indigenous worldviews and Indigenous input at each stage of the data lifecycle, instead Anglo-Australians and their cultural norms mostly control the entirety of Indigenous education data systems, including analysis, dissemination, and subsequent policy interpretations thereof (Bodkin-Andrews et al., 2017; Walter & Carroll, 2021). The educational data lifecycle begins at the conceptualisation phase, and includes the 'who, what, when, why, and how' of data. It is at this stage, where Indigenous input is often overlooked, or at best Indigenous advice is saught, but rarely acted upon. Further, the other stages of the data lifecycle such as creation and collection, through to analysis, writing up, dissemination, and ongoing project sustainability are also often missing Indigenous peoples' involvement (Maiam nayri Wingara, 2018; Walter, 2016).

To rectify the issue of missing Indigenous involvement in educational data, we argue that the concepts of Indigenous Data Sovereignty (IDSov) and Indigenous Data Governance (IDGov) are key mechanisms for Indigenous people to attain good education data inclusive of their worldview (Kukutai & Taylor, 2016; Lopez, 2021; Walter, Kukutai et al., 2021). IDSov and IDGov present an opportunity for Indigenous worldviews and educational priorities to be appropriately woven into the composition of educational data, and for Indigenous educational pri-

orities to be recognised alongside the non-Indigenous focus, rather than Indigenous worldviews being assimilated (Kukutai & Cormack, 2021).

ABORIGINAL PEOPLES AND TORRES STRAIT ISLANDER PEOPLES: CONTEXTS

Aboriginal and Torres Strait Islander peoples have lived on what is now known as the Australian continent for time immemorial (e.g., we refuse to submit to ever-changing scientific measurements based on non-Indigenous measures of 'time'), and at the point of British Invasion in 1788, it was estimated that there were over 1,000,000 peoples with up to 250 different language groups and over 800 dialects (AIATSIS, 2022; Dudgeon et al., 2014; Ryan, 2012). With the current Indigenous population estimated to be 984,000 peoples (ABS, 2022), it is important to note these numbers are still not equivalent to those prior to British Invasion. In addition, despite ongoing efforts to revive Indigenous languages, it is estimated that only 120 of these are still spoken today, with 90 per cent being judged as endangered (AIATSIS, 2022). From this, it must be understood that British Invasion and subsequent colonisation, with frontier wars, massacres, disease, destruction, and theft of Countries, enforced poverty, and the Stolen Generations has led many seminal Indigenous scholars to argue that British 'settlement' was, and still is, a blatant act of epistemic, cultural, and physical genocide (Behrendt, 2001; Rigney, 1999). Many more scholars have noted that the forces of colonisation (and even genocide) are still prevalent today in the ongoing marginalisation and oppression of Indigenous peoples through government policies and practices across the likes of health and wellbeing, law, and education (Dudgeon et al., 2014; Martin, 2008; Nakata, 2010; Paradies, 2016; Watson, 2009).

PRIMARY AND SECONDARY EDUCATION IN AUSTRALIA

In Australia, the provision of primary and secondary education (and its funding) is predominantly the constitutional responsibility of nine State and Territory Governments (Australian Government Productivity Commission, 2022). Ideally, the policy orientated decision making of these governments should be evidenced based, but this chapter argues that such 'evidence' is not representative of Indigenous peoples. Data on compulsory schooling is collected though an annual National Schools

Statistics Collection managed by the nine Australian state and territory education departments (Australian Curriculum, Assessment and Reporting Authority, 2020). The data pertain to both government schools (government, education departments) and non-government, and independent/private schooling providers. Schooling census data is held by each of the nine jurisdictions (disaggregated to region and school levels) and submitted to the Australian Curriculum, Assessment and Reporting Authority (ACARA), an independent statutory authority. This is the main architecture for national schooling data and measures the goals and objectives of the Australian Education Ministers' Council (Australian Curriculum, Assessment and Reporting Authority, 2020).

While this data now exists, it was not until the late 1900s that targeted data recognition of Indigenous students began to be collected (e.g., National Aboriginal Education Policy, 1989, 1995). Today, although the more recent Aboriginal and Torres Strait Islander Education Strategy 2015 remains current, it has somewhat been usurped by the education target of the Council of Australian Governments' (COAG) 'Closing the Gap on Indigenous Disadvantage' strategy (2008).

In 2022, the now refreshed and renamed 'Closing the Gap Strategy' still only has two education targets specifically relating to primary and secondary school (National Indigenous Australians Agency, n.d.), and only one involves 'supporting indicators' for school attendance and retention rates, literacy and numeracy results, and PISA (Programme for International Student Assessment) test for 15-year-old students (Australian Government Productivity Commission, 2022). Further, within PISA, the only way to identify Indigenous peoples is through language, however, as detailed above in the Australian context, Indigenous languages are 90 per cent endangered and often not readily spoken, resulting in Indigenous people not being accurately represented within the PISA data.

The implications are that the responsibility for setting and measuring the goals, indicators, and outcomes for the education of Aboriginal and Torres Strait Islander students has the following strong limitations:

• Remains entrusted to jurisdictions (states and territories);
• Remains underpinned by an ideology where there have been no national education policy changes since 2015;
• Does not receive the same attention as other socio-economic indicators in this Closing the Gap Strategy; and

• Is exacerbated by missing educational indicators and so, missing educational data.

Further within the Closing the Gap Strategy, there are four Priority Reforms, of which Priority Reform number four is 'Shared Access to Data and Information at a Regional Level'. The aim of this Priority Reform is that:

> Aboriginal and Torres Strait Islander people have access to, and the capability to use, locally-relevant data and information to set and monitor the implementation of efforts to close the gap, their priorities, and drive their own development. (Closing the Gap, 2022, p. 1)

At present, work is being undertaken by Australian governments and Aboriginal and Torres Strait Islander peoples to achieve this priority reform, so its achievement remains to be seen. Unfortunately, it may be argued that broader government approaches to Indigenous education (e.g., Closing the Gap) have largely failed to acknowledge the potential for 'data' and educational programmes that is not only created from Indigenous epistemic foundations, but also highly valued (and used) by Indigenous students, families, and communities (Martin, 2017). Instead, it has been repeatedly argued that successive governments have committed to a form of ideological settler violence where education has been the tool of Indigenous student, family, and community erasure. Where non-Indigenous and Western educational norms and measures are the dominant, and too often only, visible outcome in the non-Indigenous 'Indigenous' education data. As powerfully argued by Gumbaynggirr scholar Lilly Brown (2019, p. 66), the likes of Closing the Gap narratives are currently little more than 'research and policy premised on the a priori assumption that the problem of Indigenous people is first and foremost disadvantage and deficiency'. That is such conclusions of ongoing 'disadvantage and deficiency' are more reflective of the individual, systemic, and epistemic racisms embedded within government analyses (and subsequent policies) of Australia's education systems than the capabilities and potential of Indigenous students themselves (Bodkin-Andrews et al., 2021; Moodie, Maxwell, & Ruldolf, 2019). Measuring Indigenous children with data that is not necessarily reflective of their Indigenous worldviews is problematic and harmful. Data issues such as missing Indigenous worldviews and priorities within state educational data used in the Closing the Gap Strategy reiterates the importance of IDSov and IDGov to be operationalised (Lovett, Jones, & Maher, 2021).

SUSTAINABILITY DEVELOPMENT GOAL (SDG) 4: QUALITY EDUCATION

At a global level, the sovereignty and rights of Indigenous peoples far exceed the United Nations Sustainability Development Goals (SDGs) such as SDG 4: Quality Education. For example, as stated in the United Nations Declaration on the Rights of Indigenous Peoples (United Nations, 2008), Indigenous peoples ought to:

- Have the right to establish and control their education systems, attain state education without discrimination, and get an education in their own culture and language (Article 14);
- Have the right to dignity and diversity of their cultures, traditions, histories, and aspirations which shall be appropriately reflected in education and public information (Article 15); and
- Have the right to the improvement of their socio-economic conditions inclusive of education (Article 21).

Although SDG target 4.5 aims to 'Eliminate all discrimination in education' by 2030, and identifies Indigenous peoples as a specific marginalised group, several of the current data practices used by nation states to report on the progression of SDG 4 assimilate Indigenous educational outcomes into aggregated nation state data (SDG Tracker, 2022). We argue that IDSov and IDGov are a meaningful and respectful method of appropriately attaining data to measure how Indigenous peoples globally are progressing to achieve SDG 4, a quality education that aligns with their rights as outlined by the UNRDIP (2008).

INDIGENOUS DATA SOVEREIGNTY (IDSOV)

IDSov is a global movement regarding the rights of Indigenous peoples to have ownership, control, access, and possession of data relating to their lives (First Nations Information Governance Centre, 2014). The IDSov movement started in the 1990s with work by the Canadian Steering Committee of the First Nations Regional Longitudinal Health Survey (Schnarch, 2004). Their push to have sovereignty over their data was a 'political response to colonialism and the role of knowledge production in reproducing colonial relations' (Espey, 2002, p. 1). Then, in 1998, the First Nations Information Governance Centre (2014, p. 1) established the

OCAP® Principles which stand for: Ownership, Control, Access, and Possession.

While the OCAP® Principles were conceptualised by Canadian First Nations people, the historical and ongoing experiences of colonisation are similar for other Indigenous peoples across the globe (Anderson et al., 2016). As a result, Australia, Aotearoa (New Zealand), the United States and other Indigenous peoples globally have defined their own IDSov principles and protocols and have progressed work on their operationalisation. In these countries, it is important for non-Indigenous research organisations, researchers, policymakers, and governments to understand how Indigenous peoples are progressing their IDSov movements, and this includes Indigenist and Indigenous education data.

In 2018, the Australian IDSov collective Maiam nayri Wingara (MnW) held their inaugural Indigenous Data summit (Maiam nayri Wingara, 2021). There participants defined Indigenous Data, Indigenous Data Sovereignty, and Indigenous Data Governance in an Australian context (Maiam nayri Wingara, 2018). Additionally, five Indigenous Data Governance principles were developed, to exert the rights of Aboriginal and Torres Strait Islander peoples in relation to their data. The principles are as follows:

- Exercise control of the data ecosystem including creation, development, stewardship, analysis, dissemination and infrastructure;
- Data that is contextual and disaggregated (available and accessible at individual, community and First Nations levels);
- Data that is relevant and empowers sustainable self-determination and effective self-governance;
- Data structures that are accountable to Indigenous peoples and First Nations; and
- Data that is protective and respects our individual and collective interests.

This initiated the Australian IDSov movement, and the process has begun to operationalise IDSov in various contexts (e.g., community and government, non-governmental organisations).

In 2019, collectively Indigenous peoples from the CANZUS countries and other locations around the globe, including Europe, Africa, and Latin America, developed the CARE (Collective Benefit, Authority to Control, Responsibility, and Ethics) Principles for good Indigenous Data Governance (RDA IIDSIG, 2022). The CARE Principles are an

Indigenous global response to the movement towards open data and open sciences. They have been developed to sit alongside the non-Indigenous FAIR (Findable, Accessible, Interoperable, and Reusable) Principles which, by themselves, can contribute to the ongoing marginalisation of Indigenous peoples and their data (Carroll et al., 2020). Together, the Indigenous CARE Principles along with the non-Indigenous FAIR Principles promote more equitable participation in the processes of data governance and reuse for Indigenous peoples.

INDIGENOUS DATA GOVERNANCE (IDGOV)

The concept of IDSov is enacted through IDGov (Lovett et al., 2019; Rainie et al., 2017; Smith, 2016; Walter & Carroll, 2021). The notion of IDGov is Indigenous peoples having power and authority over the ownership, control, access, and possession of their data (i.e., the OCAP® Principles) (First Nations Information Governance Centre, 2014). The concept of IDGov has two key aspects (Carroll, Rodriguez-Lonebear, & Martinez, 2019; Hudson et al., 2017; Walter & Carroll, 2021):

• The governance of data (controlling access and the use of Indigenous data); and
• Data for governance (to achieve Indigenous community aspirations).

To achieve IDGov, strong Indigenous leadership is key because Indigenous led and controlled decision making ensures that Indigenous worldviews (inclusive of epistemology, ontology, and axiology), along with priorities, values, and cultures are embedded within the data (Smith, 2016; Walter & Carroll, 2021). Strong Indigenous leadership is needed throughout the data lifecycle, and the missing data project amongst other projects, entities, and policymakers have a role to play in growing, maintaining, and enhancing the potential for Indigenous leadership to occur.

IDGov needs to occur across the whole Indigenous data lifecycle. This means commencing at the conceptualisation phase and continuing through to development and data collection, to analysis and dissemination (Rainie et al., 2017). Therefore, governance over Indigenous data is not just about stewardship, but collecting data which is relevant and needed by Indigenous peoples to achieve their needs and aspiration. Largely, while Indigenous communities/nations rely on external data collected by government institutions, large philanthropic bodies, and a wide diversity of consultative bodies, these data often fail to reflect community

needs, priorities, and aspirations. This imbalance risks commitment to self-determination, limits informed policymaking decisions, and restricts Indigenous progress. As noted by Smith (2016, p. 130):

> Strong governance creates checks and balances to ensure that data collection supports the priorities of a group or organisation, implements agreed standards for data quality control and works to ensure data are available in a timely way. Ineffective governance of data can lead to uninformed decision-making, low participation by membership, project failures, loss of reputation and credibility, and missed development opportunities.

The second aspect of IDGov is Indigenous peoples having the data they need for self-governance. Data for governance recognises Indigenous community aspirations to aid in nation (re)building. When Indigenous people are the decision makers, Indigenous Nations and community representatives can harness capacity and implement strategic decisions about their own affairs, and make a comprehensive effort to (re)build and enhance their governance structures (Hudson et al., 2017; Smith, 2016). Secondly, by implementing Indigenous data for governance, it empowers the community to support its members' development and aspirations (Hudson et al., 2017; Lovett et al., 2019).

For Indigenous peoples to successfully (re)achieve self-determination and autonomy, having data to support successful governance is crucial. The process of strengthening and rebuilding data for governance is a challenging journey for many Indigenous peoples. However, strong Indigenous leadership and IDSov (Walter & Carroll, 2021) are key components to ensure any priorities and aspirations of the Indigenous peoples are being met and incorporated into the data unlike the current 'missing data' phenomena.

THE UNITED NATIONS DECLARATION ON THE RIGHTS OF INDIGENOUS PEOPLES (UNDRIP)

The IDSov movement uses the UNDRIP as a mechanism for Indigenous peoples to assert their rights to their data and their right to education (United Nations, 2008). The UNDRIP resolution was passed in 2007 after a vast majority of the 159 countries, in total 144 countries, voted in favour, 11 abstained, and 4 voted against. The four states (Canada, Australia, Aotearoa/New Zealand, and the United States) that voted against the resolution were the CANZUS countries, highlighting the ongoing tensions that exist in these Anglo-colonised nations. Over the

following years, due to social pressures, the four CANZUS countries eventually reversed their position on the UNDRIP and now support it.

The UNDRIP contains 46 Articles which articulate individual and collective minimum standards of Indigenous rights, including education, cultural expression, identity, language, employment, health, and other areas (United Nations, 2008). Many of the 46 Articles have some component that is interconnected with education. Articles 18–23: are rights that enable improvement of Indigenous socio-economic conditions in areas such education and training, employment, housing, sanitation, health, and social security (Davis, 2016). For example, Article 21.1 states (United Nations, 2008, p. 17):

> Indigenous peoples have the right, without discrimination, to the improvement of their economic and social conditions, including, inter alia, in the areas of education, employment, vocational training and retraining, housing, sanitation, health and social security.

This Article demonstrates how Indigenous peoples have inherent rights to assert Indigenous interests in relation to Indigenous data and governance of that data, to improve their education and socio-economic positioning. Moreover Article 18 states that (United Nations, 2008, pp. 15–16):

> Indigenous people have the right to participate in decision-making in matters which would affect their rights, through representatives chosen by themselves in accordance with their own procedures, as well as to maintain and develop their own Indigenous decision-making institutions.

At the centre of IDSov is Indigenous decision making, therefore this Article illustrates that Indigenous peoples have a right to participate in *all* matters pertaining to their data at an individual or collective level (Carroll et al., 2020; Lovett et al., 2019). This should also include Australian governments' meaningful commit to educational standards also stipulated within the UNDRIP (Hogarth, 2020), namely:

> Indigenous peoples have the right to establish and control their educational systems and institutions providing education in their own languages, in a manner appropriate to their cultural methods of teaching and learning. (Article 14)

In the CANZUS countries, many measures of Indigenous socio-economic outcomes are considerably behind their equivalent non-Indigenous population (see, e.g., the global snapshot of the world's 300 million Indigenous

peoples by Anderson et al. (2016)). However, for many of the Indigenous peoples within the CANZUS countries (and elsewhere), the ability to improve their socio-economic positioning is reduced because of poor data quality. By operationalising IDSov and IDGov throughout datasets which measure socio-economic outcomes for Indigenous peoples, this will improve the data quality across the data ecosystem leading to better Indigenous outcomes.

OPERATIONALISING INDIGENOUS DATA SOVEREIGNTY (IDSOV) AND INDIGENOUS DATA GOVERNANCE (IDGOV)

Operationalising IDSov and IDGov is key to attain good Indigenous data and overcoming issues such as missing educational data (Kukutai & Taylor, 2016). In research, the notion of operationalisation is the process of defining how concepts work, whether concepts are present or absent, and how you operationalise depends on the type of work you are undertaking (Natalier, 2019). In the CANZUS countries, Indigenous peoples have done the work to define the concepts of IDSov and IDGov. While some work has begun to operationalise IDSov and IDGov in the CANZUS countries, there is still more work needed. SGD 4 ought to consider how it too can operationalise IDSov and IDGov.

Operationalising IDSov is not without challenges, and often there are barriers experienced by both Indigenous and non-Indigenous peoples when enacting IDSov (Walter, Carroll et al., 2021). These challenges occur across the entire data ecosystem, and some specific examples are:

- Tensions between Indigenous data needs and non-Indigenous data wants (Walter, 2018);
- Unaccommodating data structures (Jelfs, 2016);
- A need for greater Indigenous statistical capacity (Lovett, 2016);
- Challenges and fragility when attempting to operationalise IDSov by non-Indigenous peoples (Pool, 2016), organisations (Walter, 2016), and governments (Bishop, 2016; Jelfs, 2016).

To overcome these barriers to operationalise IDSov, a collective effort led by Indigenous peoples with support from non-Indigenous allies is required (Walter, Carroll et al., 2021). Some challenges to operationalise IDSov can be more easily overcome through education on the topic, while others need considerable resources to be specifically allocated

and larger structural changes to occur (Walter & Carroll, 2021; Walter, Carroll et al., 2021).

CONCLUSION

This chapter has argued that the concepts of IDSov and IDGov are key components for Indigenous peoples to attain good education data that reflects their worldview and educational priorities. At present, much education data on Indigenous peoples should be classified as 'missing educational data' because a large amount of the data is missing Indigenous input across each stage of the data lifecycle. To overcome this issue of missing educational data, we suggest nation states need to support calls by Indigenous peoples to operationalise the principles of IDSov and IDGov. The result will be data that appropriately reflects the Indigenous lifeworld, contributing to Indigenous peoples attaining a good education within areas that are important to them in addition to the narrower non-Indigenous measures, ultimately leading to educational outcomes that are more equitable to their non-Indigenous counterparts.

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