

Statistical Innovation in the Global South

Mechanisms of Translation in Censuses of Brazil, Ecuador, Ghana and Sierra Leone

Byron Villacis | ORCID: 0000-0001-6932-3770

University of California, Berkeley, California, USA

byronvillacis@berkeley.edu

Alena Thiel | ORCID: 0000-0002-1092-1140

University of Halle, Halle an der Saale, Germany

alena.thiel@ethnologie.uni-halle.de

Daniel Capistrano | ORCID: 0000-0002-8157-5564

University College Dublin, Dublin, Ireland

daniel.capistrano@ucd.ie

Christyne Carvalho da Silva | ORCID: 0000-0003-1895-004X

National Institute of Educational Studies and Investigations,
Brasília, Brazil

christyne.silva@inep.gov.br

Abstract

This article proposes a comparative socio-economic history of quantification in Ecuador, Brazil, Ghana and Sierra Leone. It narrows in on censuses in the Global South as sites of methodological and infrastructural innovation in the context of global circulations of model population data systems, methodological standards, and material infrastructures. Specifically, the authors ask which arrangements of actors, norms and settings are involved in the reception, translation and adaptation of statistical innovation and how uneven relations and compositions of power between and within these fields shape the process of transmission. Distilling from their explorative, hermeneutic approach, the authors explore the mechanisms that link variously positioned political fields (Bourdieu, 1985) in the production and implementation of statistical innovation in the Global South. Four mechanisms are identified that shape statistical innovation as process of reception of globally circulating models and ideas as well as their

adaptations into specific fields, all of which have differentiated effects and play under certain conditions in parallel or combined ways: 1) interventionist impulses from international organizations, 2) commercial and institutional brokerage, 3) initiatives from local professional communities, and 4) effects of political instabilities.

Keywords

statistical innovation – population censuses – digitalization – translation – Ghana – Sierra Leone – Brazil – Ecuador

1 Introduction

This article proposes a comparative socio-economic history of quantification. In recent years, publications on the quantification of populations have experienced a huge revival following earlier canonical interest by French and American sociologists of quantification (Desrosières, 2010 [1993]; Porter, 1995; Anderson and Fienberg 2000). Focusing on data politics (Bigo, Isin & Ruppert, 2019) and histories (von Oertzen, 2017), material-semiotic glances on data infrastructuring (Pelizza 2021), data practices (Cakici, Ruppert & Scheel, 2020), and data's visual-aesthetic performativity (Ratner & Ruppert, 2019), myriad new conceptualizations have emerged in the social study of statistics. Yet, the debate about population data innovations maintains a clear regional bias with North-Atlantic case studies dominating the field. Szeterer and Breckenridge (2012: 17, see also Bustamante, Giraudo & Mayer, 2014) problematize the failure to represent the “diverse history of community registration”, attributing it to the “profound bias in the documented comparative historical record, which provides us mainly with a history of registration which appears to be strongly tied to those most powerful, persisting state-like forms of government”. This trend appears particularly troubling as census and civil registration systems often originate from colonial histories (Ittman, Cordell & Maddox, 2010), “haunting” contemporary statistical efforts (see Karkazis & Jordan-Young, 2020 on the problem of racist “ghost variables”) and fail to denote diversified socio-economic and ethno-racial conditions (Loveman, 2014).

We subscribe to the recent effort of critically examining the continuities of hegemonic data histories in contemporary population data systems in our effort to narrow in on recent digital innovations in the collection of population data in the so-called Global South (Breckenridge, 2014; Weitzberg, 2020). While conceptual development so far has foregrounded issues of technocolonialism

(Madianou, 2019; Birhane, 2020), the extractive force of postcolonial data politics (Bigo, Isin & Ruppert 2019) or the uneven distribution of digital labour (Amrute, 2019), we here agree with Loukissas' (2019) critique of the predominating "digital universalism" or what Leszczynski (2020: 1199) has coined the "tendencies to deploy the 'totalizing analytics' of capitalism and neoliberalism as entry points for engagements with the digital" which silence the ways in which innovations in (population) data collection are adopted into historically situated data infrastructures, organisational cultures, political fields, and crucially, local statistical practices – thus leading us beyond purely institutionalist approaches.

This article narrows in on population censuses in the Global South as sites of methodological and infrastructural innovation in the context of global circulations of model population data systems, methodological standards, and material infrastructures. Distilling from our explorative, hermeneutic approach, our aim in this article is to identify concrete mechanisms that link variously positioned political fields (Bourdieu, 1985; Schmidt-Wellenburg & Bernhard, 2020) in the production and implementation of statistical innovation in the Global South. Specifically, we ask which arrangements of actors, norms and settings are involved in the reception, translation and adaptation of statistical innovation and how uneven relations and compositions of power between and within these fields shape the process of transmission.

We identify four mechanisms shaping statistical innovation as process of reception of globally circulating models and ideas as well as their adaptations into specific fields, all of which have differentiated effects and play under certain conditions in parallel or combined ways: 1) interventionist impulses from international organizations, 2) commercial and institutional brokerage, 3) initiatives from local professional communities, and 4) effects of political instabilities. We do not suggest that these mechanisms are distinct, but in fact take on various intersecting, possibly even contradicting forms.

The rest of the article is divided into four sections. First, we briefly explain our methodological approach, then we describe the historical backgrounds informing our cases of analysis, based on which we deploy the arguments for the mechanisms of transmission. We conclude with a discussion of the conceptual implications of our findings.

2 Methods and Framework

Combining case studies from Brazil, Ecuador, Ghana and Sierra Leone, this article presents a collaborative, multi-disciplinary contribution that seeks to

critically expose pluriversal dimensions of existence (Restrepo & Rojas, 2010). The four countries were chosen on the basis of providing a broad representation of the diversity of statistical systems in Latin America and West Africa. With populations varying from 7 million in Sierra Leone to 200 million in Brazil, the selected cases offer examples of both established and new statistical systems engaging in several diverse challenges faced by low- and middle-income countries from the Global South.

All four authors of this publication have carried out long-term fieldwork in their respective field sites, enabling hence our “thick” comparative effort (Scheffer & Niewöhner, 2010). Focusing on the contextual and underlying mechanisms in the adoption of model systems, our interest is to gain “holistic insight into how things (ideas, flows, objects) are configured in historically evolving, open configurations” (van der Veer, 2016: 147). In other words, rather than focusing on generalization or causality, comparison here provides the ground for a reflexive, non-essentialist engagement with global and historical diversity while uncovering empirical patterns and core processes in the production of statistical systems that only emerge when contrasting variously positioned fields of relational political practices “within the global political, economic, and cultural power structure” (Fourcade et al., 2016: 16)

Data for this publication were collected carrying out in-depth interviews with officials in the national statistical organisations of our country cases, as well as during online interactions following the global travel restrictions during the Covid-19 pandemic. Additional archival research, documentary and regular media observation in our country cases complemented the data collection. We proceeded in a circular, hermeneutic/interpretive movement of discussing our country cases, identifying comparative categories, collecting additional data and refining our categories through continued exchanges.

In order to integrate our analysis, we drew on Bourdieu's concept of the social space (Bourdieu, 1985), that is, the multi-dimensional, relational and symbolically contested context that gives meaning to collective (political) action, rather than determining it by fixed group association or their assumed inherent qualities (Fourcade et al., 2016: 2). As such, following Fourcade et al. (2016), we focus on a range of techno-political practices that contribute to the production of statistical renewal in our country case studies, and how they relate to each other and to larger national and transnational organisational fields. Adopting the approach developed by Fourcade et al. allows us to focus on relational political spaces through the lens of their specific “sedimented histories” and continuing struggles, which structure and shape “the range and nature of political actions, organizations, and meanings” (Fourcade et al., 2016: 17). In other words, we do not assume “discrete and isolated [institutional]

forms (...) as if their meaning were given and indeed invariable”, but search for relational expressions such as the “emulation of ideas, strategies and practices, via the circulation and interaction of people (activists, organizers) around the world.” (Fourcade et al., 2016: 15, 16) When adopting the lens of the social space, we acknowledge how a range of mechanisms and practices contribute to particular outcomes.

The following sections detail the historically grown arrangements of agents, settings and institutions that have for each of our case studies shaped transnational statistical circulation and innovation.

3 Ecuador: Statistical Development in the Context of Political Instability

Ecuador has one of the youngest statistical systems in Latin America. As a result of reforms promoted by the then President Jose María Velasco Ibarra, and remnants of the “Kemmerer Mission” (Almeida, 1994; Villacis & Thome, 2020), the Direction of Statistics was created in 1944 (Loveman 2013). The first national census, in 1950, was the outcome of a transnational effort promoted by the Inter American Statistical Institute (IASI) and the Organization of American States (OAS) (Keeper, 1982). These organizations created “The Committee of the Census of the Americas”, an initiative that campaigned for a standardized and coordinated census across the continent containing a set of minimum variables that countries should collect in cooperation with international agencies. The committee demanded that the operation and results had to be reported to IASI in harmonization with the United Nations and the technical cooperation of the United States (IASI, 1948). In other words, in significant proportions, the initial efforts of institutionalizing the operation was a consequence of efforts from the Global North.

The second census (1962) incorporated two major changes. First, it was the first operation including collection of data related to the physical conditions of households, such as construction materials and access to basic services. Second, it was the first “de facto” count.¹ The third census, in 1974, maintained the general parameters of the 1962 version; however, it was executed under a military regime. The president Guillermo Rodríguez Lara, a General trained

1 De facto census refers to the enumeration of individuals where they are found in the day of the census, regardless of where they normally reside. On the other hand, the De jure census enumerates individuals where they reside.

at the “School of the Americas”,² achieved power after leading a military coup d’état with the political support of the US (Becker, 2021). The military regime created the National Institute of Statistics and Censuses (INEC) in 1976, making the institution in charge of statistics and censuses embedded in very specific forms of government and foreign intervention.

The census of 1982, the first under the direction of INEC, was executed under tumultuous political conditions. In 1981, following the death of Jaime Roldos Aguilera, Ecuador’s first democratically elected president after the dictatorship, Oswaldo Hurtado took power, embracing a right-wing government along with the ideological intervention of the US, and an agenda based on austerity and an infamous bank bailout (Sarmiento, 2016; Vasquez, 2018; Minteguiaga, 2012). In this context, the 1982 census received intense influence from external expertise, especially in the stage of data processing. The census of 1990 was executed under Rodrigo Borja’s social democrat government (Borja 1985). This census, for the first time, included local academicians and was characterized by the introduction of personal computers in the offices of INEC (Valdivia, 2014).

The census of 2001 was again executed in the middle of a political and economic hurricane: the country was going through the worst economic crisis of its history, provoking the migration of around 10% of its population (Echeverry Hernández, 2011; El Telegrafo, 2016). In political terms, in the period 1997–2003 the country had 5 presidents, including two coups, one interim, and one president that lasted one day (De la Torre 2008). Due to this instability, the 2001 census was delayed for one year. IADB jumped into the escene funding the census and linking its support to administrative and technical conditions (Inter-American Development Bank, 2001), which resulted in the creation of a “parallel” office inside INEC with different salaries and labor conditions, but also decision-making powers in the census.

In 2010 the census was executed under Rafael Correa’s presidency, a left-developmental government that rejected international interventionism (Collins, 2008). This census was funded entirely by the central government, it introduced scanning technology for data processing, and digital census mapping (Valdivia, 2014). The omission was the lowest in history: 3%, and the results were delivered in less than a year (Ruiz, 2016; Valle, 2015). Finally, the 2020 census was suspended due to a new severe political crisis that arrived before the pandemic of COVID-19. Lenin Moreno’s government cut the budget

2 The American center trained Latin American police and army elements with the aim of creating counterinsurgency forces. It has received extensive accusations regarding human right violations committed by former students.

of INEC and changed the legal dependency of the Institute which provoked complaints and criticisms against the explicit intervention in the system (Diario La Hora, 2000). The arrival of the pandemic worsened the conditions and, just like 2001, international organisations such as the World Bank (WB), arrived to offer onerous loans in exchange of technical advice. As we can see, the Ecuadorian case, shows an interplay between IOs, local political forces, and brokers that introduced infrastructural innovations as a function of local or organizational crisis marked by political hierarchies.

4 Brazil: from School Statistics to the Education Census

National demographic statistics in Brazil were produced inconsistently before and in the decades following the country's independence in 1822. However, in 1871, the central government carried out the first population census which can be seen as part of a wider process in Latin America towards the making of modern nations in the region after the independence wars (Loveman, 2013). This was a particularly complex endeavour in Brazil due to the territorial extension as one of the largest countries in the world as well as the ethnic diversity present in the population of around 10 million people at that time. Despite the existence of national educational data in this first census, until the 1930s, educational data was not produced regularly (Gil, 2019). However, since the first systematic data collection on schools, teachers and students published in 1937, the country has established a statistical system for education that is at the forefront of the national official statistics in Brazil. In the same year, the National Institute for Education Research and Studies (INEP) was created with the mission of organising educational data in conjunction with the Ministry of Education as well as conducting research with these data. In the following five decades, the education statistical system built a network of data collection in partnership with municipalities and provincial governments, despite several institutional and political disruptions such as the *coup d'Etat* in 1964 and the changes implemented by the military dictatorship that succeeded it. In fact, it was during the 1960s that the national education statistics began to be published annually, becoming one of the main sources for up-to-date social statistics in the country.

At the end of the 1980s, political re-democratization and neo-managerial initiatives introduced new pressures for the transformation of education statistics. During this period, the institute created processes for large-scale evaluations and statistics at the individual level. The main objective of this movement was to provide support for political decisions through evidence in

the context of decentralization and push for greater accountability by various governmental and non-governmental bodies.

Since 1983, the national legislation determines a minimum proportion of the public budget to be allocated for public education, which is based on the number of students. Therefore, the statistical system had to adapt to provide periodic, precise and reliable data to support this budget allocation, without the risk of double counting or inflated numbers. This political demand resulted in the creation of the new school census within a wider framework of the basic education assessment system (SAEB). This was a signal of how the transformation and emergence of statistical innovation in the country came as a consequence of internal political struggles and professional initiatives in the pursuit of technocratic advances.

Together with the new education census that collected individual information for all students and teachers in the country, the SAEB also implemented a series of learning assessments in order to provide an accountability mechanism for the public investment in education (Rosa Becker & Costa, 2013). With the combination of data from these two sources, the INEP published the Basic Education Development Index (IDEB), calculated for all schools in the country, which became the main indicator for quality of education in Brazil. The government also calculated targets for this Index for each school to achieve in the following decades. These targets had as benchmarks the average performance of countries in the Program for International Student Assessment (PISA) organised by the Organisation for Economic Cooperation and Development (OECD). This has created a direct link between this international organisation and the public education policy in the country (Villani & Oliveira, 2018). In addition, the World Bank provided financial and technical conditional support for these innovative statistical processes within diverse sectors of the Ministry of Education and the INEP from the 1980s until the 1990s.

These innovations in the education statistical system have led it to become one of the main sources of national statistics in the country, providing reliable individual data, updated annually for about a third of the country's population. At the same time, one of the concerns in relation to this Index has been the political use of the performance of each school or region, which has often caused schools and teachers to be held responsible for the poor financial and working conditions provided to them after the decentralization occurred in the 1980s (Damásio, 2011).

In sum, the Brazilian case demonstrates a distinctive dynamic where external forces encounter local initiatives that already institutionalized statistical innovations. The country still received foreign support, but this arrival encountered local forces that shaped how the production was focused on satisfying local demands of statistical information.

5 Ghana: Local Statistical Elites and the Rise of Digital Census Methods

As the case of Ecuador, Ghana's census history is marked by degrees of foreign intervention, while at the same time providing a regional source for travelling models. Census innovations date into precolonial times and the development of indigenous methods of enumeration in the chiefdoms (de Graft-Johnson, 1969: 3). With the Bond of 1844 establishing control of the British over the Gold Coast, the Colonial Office became concerned with counting the local population to consolidate its power, yet struggled with distrust as well as logistical challenges (Serra, 2018). Reliable population censuses can only be considered following Independence in 1957 when, as Serra (2018: 659) underscores, the census came to play a crucial role for Ghana's post-independence nation-building. In view of this, the census of 1960 represented a milestone of statistical independence and professionalization. While technically supported by Dr. Benjamin Gil, an Israeli population expert "on loan" from the United Nations, the 1960 census was by large carried out by African experts. The census itself, in turn, enabled establishment of a range of institutions concerned with demographic data (Gaisie, ca. 1969: v), particularly the Population Council, the Central Bureau of Statistics and in 1966, with support of the Population Council, the Demographic Unit at the Department of Sociology, University of Ghana (Legon). The latter was celebrated as the "most important development to date in Africa in terms of university demographic training" (Gaisie, ca. 1969: v).

Despite these gains, census history cannot be read in isolation from international influences, which travelled along with "new forms of knowledge and governance institutionalized by the United Nations, which emerged as a centre for global dissemination of statistical standards." (Serra, 2018: 666, see also Caldwell, 1969: vii) In its unique post-colonial moment, the 1960 Census, with its commitment to computerization and modernity (Serra 2018: 666), came to stand as a model for the continent (Gaisie, ca. 1969: v) and as Serra (2018: 682) notes: "In 1961 the Ghanaian government, in cooperation with the United Nations Economic Commission for Africa, set up and hosted a West African Training Centre in Population Census Techniques."

The Censuses of 1970 and 1984 directly reflected the political climate of instability and economic distress of their time. Following a series of military interventions, by late-1983, the ruling Provisional National Defence Council (PNDC) military regime needed to reconcile its populist agenda with liberal vectors of force stemming from the World Bank and International Monetary Fund (IMF) (Boafo-Arthur, 2007: 2; Nugent, 1995: 111). These measures, with their focus on rationalisation and expenditure reduction, produced significant data needs "at

all levels of authority (regional, district, local)" (GSS, 1987). The 1984 Census reflected these developments, providing data on the community-level for the purpose of local planning and projection (GSS, 1987). Simultaneous to its focus on decentralisation, association with structural adjustment linked the 1984 census to data needs of international organisations.

In 1985 the Statistical Service Law (PNDCL 135) established statistical independence by setting up the Ghana Statistical Service as part of the public service (GSS, 2020). And following this reorganisation of the GSS, by the 1990s interest in ICT for Development had increasingly gained traction in the professional community (ICT4D 2003). Today, along with the promise of the digital transformation into a knowledge-based economy and data-driven governance, Ghana subscribes to the idea of interoperability-based population registers aimed at integrating previously isolated population data for new statistical purposes. This is an idea actively supported by international consultants from Statistics Denmark, who provide advice on the statistical uses of register-based population data and issues of digitization. In this context, the 2019 review of the Statistical Service Act (Act 1003) equipped the Ghana Statistical Service with further statistics producing and co-ordinating functions. Accordingly, in 2020 Ghana Statistical Service announced the adoption of the first-time use of digital census methods as laid out in the 2020 UN recommendations for population censuses. The 2020 PHC, shifted to June 2021 due to the Covid-19 pandemic, has benefited from this commitment to inter-agency cooperation by promoting interoperability between the recently developed digital address system of the GhanaPost and the census enumerators' digital data collection interfaces. While travelling models have shaped census operations throughout Ghana's entire statistical history, recent developments are indicative of a diversification of (multimodal and multidirectional) exchanges of ideas, methods and technologies.

6 Sierra Leone: Technological Leap from Social Crisis to Economic Development

Sierra Leone's first post-Independence population census was conducted in 1963, it is regarded as the first national census as previous population counts did not cover the entire territory and did not implement a common methodology. The subsequent censuses of 1974 and 1985 consolidated the institutional position of the Central Statistical Office (CSO) within the Ministry of Development. And while previous censuses had secured the financial and technical assistance of the United Nations Population Fund (UNFPA) and the United Nations Development Programme (UNDP), the 1985 census drew

the assistance of several committees composed of members from the United Nations organisations, the Economic Commission for Africa (ECA), the University of Sierra Leone, as well as local chiefs and religious leaders, while the administration also received support such as from the German embassy assisting in printing the questionnaires or the Guinean ambassador facilitating the activities in border provinces (Government of Sierra Leone, 1986).

During the 1990s and 2000s, the civil war and the continued political and social crisis brought a hiatus to the statistical operations. During this period the whole structure of the CSO was dismantled and the international funding was diverted to emergencial activities supporting the victims of the civil war. The essential statistical activities experienced a process of decentralization with various governmental departments generating national statistics without the collaboration of the CSO. In 1998, the International Monetary Fund (IMF) STA macroeconomic statistics mission attributed Sierra Leone a highly disorganised statistical system that hampered the institutional capacity to generate reliable statistics. As a result, the Sierra Leonean government together with the World Bank restructured the national statistical system. Among other measures, the 2002 Statistical Act updated the legislative and regulatory organisation of national statistics, establishing “Statistics Sierra Leone (SSL)” as a more autonomous institution in the implementation of statistical activities.

The newly created Statistics Sierra Leone successfully implemented the 2004 population census. Apart from the UNFPA, this census also received support from the European Union for several activities from data collection to process, analysis and dissemination (Statistics Sierra Leone, 2006). The 2004 census also pioneered the use of Geographical Information Systems (GIS) in Sub-Saharan Africa together with Uganda, South Africa, Namibia, Tanzania and Rwanda (Onsembe & Ntozi, 2009).

The following population census was expected to be carried out in 2014. However, due to the Ebola outbreak that affected several districts in Sierra Leone, the census activities were postponed to the following year. This process led to the inclusion of a special section in the census instruments on public health. This census also implemented advanced digital cartographic mapping that was acknowledged as crucial to the quality of the enumeration phase, despite the difficulties encountered by the SSL staff in relation to skills to work with GIS’ tools (Statistics Sierra Leone, 2017). For this round, the census had the support from UNDP and UNFPA, as well as new collaborators from the United Kingdom Department for International Development (UK DFID) and the Irish Government aid programme (Irish Aid), which were closely involved helping in the management of the Ebola crisis and continued the collaboration in the implementation of the 2015 census.

Apart from supporting the Ghanaian census processes, the World Bank's Harmonizing and Improving Statistics in West Africa Project (HISWA) invested US\$ 30 million to finance Statistics Sierra Leone's activities from 2020 to 2023. The main project funded through this initiative is the support to the administration of the 2021 Mid-Term Population and Housing Census, the first digital census in Sierra Leone. Concretely, at the moment of writing, Statistics SL have been conducting a census cartography using digital tools that will support the administration of the fieldwork and test the new tools for enumeration that have been donated by Kenyan government used in their 2019 census. This cooperation was facilitated by the UN Economic commission for Africa (UNECA). In addition to the UNFPA's expertise that supported the re-design of the census, the World Bank has also played an important role not only in funding part of the activities but also in providing technical support for all processes from the questionnaire design to the technological implementation.

7 Mechanisms of Transmission, Reception and Adaptation

We set out in this article to identify the historically grown, techno-political practices and negotiations that contribute to the production of statistical renewal. In this section, we present the mechanisms we identified as central structuring forces in the circulation of innovation. Following Bourdieu's theory of the transnational circulation of ideas, we explore the standardizing forces that shape relations between fields, but also the different contexts of reception. According to Bourdieu (2002), the circulation of ideas is shaped by a range of forces as objects are disassociated from the specific field of their production and adapted into a necessarily different field of reception (2002: 3). We identify four mechanisms that come to structure the circulation of statistical model systems and innovations and the moment of reception and adaptation.

7.1 *Interventionist Impulses from International Organisations*

International organizations (IOs) have been described as one of the most intense transmission channels of technological and methodological changes in population censuses (e.g. Ventresca 2002). This is because interest in population censuses is, increasingly, focused on obtaining comparative demographic information at the international level.³ The impact of the UN in this

3 While in the 18th and 19th centuries censuses were executed mainly with the objective of commensurating the size and conditions of national populations, this intention mutated due to the growing necessity of comparable data. The dynamic was mostly motivated by

realm usually depended on two factors. The first one is the ability of UN local officials to create local institutional allies in the statistical offices, oftentimes through recruitment of top-level officials into partnering organisations such as UNFPA, which provides regular technical assistance to Ghana's PHC. The second is the type of diplomatic relation that exists between the government in charge and the international community (Interview with head of Census INEC Ecuador, March 2020, see also the role of Ghana's President Nana Akufo Addo as Co-Chair of the Eminent Group of Sustainable Development Goals Advocates). This combination can be interpreted as an overlap between intention and capacity: on the one hand, it is necessary to have the predisposition to work together at an institutional level. On the other hand, there are political and diplomatic channels that allow or block the practicality of the relationship. For example, in the Ecuadorian case, in the year 2001 the relation with UN was somewhat weakened, not so much due to the lack of institutional interest but due to a government priority to strengthen relations with international financial institutions (particularly the WB and the IADB). This condition changed ten years later: the main interest from the government was to obtain technical assistance without financial institutions, which provoked ample influence and support from UN agencies.

The traditional tools for introducing methodological and technological expertise are usually documents such as the "Principles and Recommendations for Population and Housing Censuses" (UN 2017). Reports like this became a kind of "bible" in which the upper and middle managers of statistical institutes use to find out how to carry out censuses. An example for this is when, in anticipation of the 2020 Population and Housing Census, UN recommendations for

United Nations (UN) who embraced an agenda that required global comparisons (Hakim, 1980; Winkle & Anderson, 1989). At first this was stimulated by the concern of overpopulation that peaked in the 1970s (Lam, 2011); however, the interest mutated towards the need of having comparative international data to focus on problems according to national, regional and global realities (Baffour, King, & Valente, 2013). This led to an interest regarding harmonization in methods, which provoked the definition of statistical and procedural standards (Conrad & Couper, 2004). Systematically, the UN and its agencies, both regional and sectoral, became catalysts to standardize methods and good practices in censuses. In the Latin American case, this was materialized through the institutionalization of organisms such as of CELADE (The Latin American and Caribbean Demographic Centre, which has been the Population Division of ECLAC since 1997) and UNFPA (The United Nations Population Fund). In the first case, promoting the collection and analysis of demographic data and, in the second, concerned with issues related to sexual and reproductive health. Similarly, the United Nations Economic Commission for Africa (UNECA) as well as the UNFPA played an important role in the definition of official statistics' methods and instruments in West Africa through consulting and funding projects.

digital data collection were discussed at the level of the African Union, reaching bilateral agreements on sharing tablet computers for the enumeration between countries. Evidently, this type of cooperation is not exclusive of the UN: technical cooperation among statistical agencies is common. Statistics Sierra Leone, for example, relies heavily on bilateral cooperation with other West African countries often enabled by the Economic Community of West African States (ECOWAS), as well as involvement in African Union's programmes such as the "Strategy for the Harmonization of Statistics in Africa".

The second reason why IOs are an intense source of methodological and technological influence is due to increasing financial globalization. The integration of countries as debt subjects in the world capital market implies systematic measurements of risk levels (Fourcade, 2017; Germain, 1997). Although these commensurations tend to focus on the macroeconomic profile of the countries, this causes an increasing demand for information that includes population-related data from censuses. For example, household income levels must be adjusted by the number of inhabitants, or the delivery of a certain subsidy or social program that influences the perception of risk in the country depends on the size of the vulnerable population. At the same time, international financial organizations such as the IADB or the WB have regular contacts with statistical institutes to identify financing needs for census operations. For example, in the Ecuadorian case, the IADB and the WB funding in the 2001 and 2022 censuses are decisive. This apparent financial relationship entails administrative commitments, which in turn, imply methodological modifications and technological introductions: "the INEC of Ecuador received a loan to carry out its 2001 census from the IADB, but subject to the condition of having an entire administrative structure parallel with different salaries and rules. It was like having two institutions under the same roof, one paid with the IADB loan, high salaries and making technical decisions related to the census, the other with low salaries paid by the state and excluded from the census. Similarly, technology purchase decisions were made only if they had the approval of the bank" (Interview to principal advisor INEC, March 2021).

Another example comes from the WB's HISWA project that provides grants to several countries in West Africa, including Ghana and Sierra Leone, aiming to harmonize and enhance economic and social statistics in participating countries. This push for the harmonisation has created divergences in relation to the administration of the 2021 mid-term census, which was confirmed to be held in the first semester but, according to a WB report, "the mission team considers it unlikely that the census could be conducted this soon and in conformity with good quality standards" (Beidou, 2021). This reaffirms that

international financial institutions are a determining force for the introduction of operational practices that end up influencing methodologies and adoption of even basic processes in the execution of censuses. In the same way, these forces are increasingly embedded in financial operations: the relation is tied up with economic obligations that entail administrative dependencies. The importance of statistical processes to global finances has also led other IOs such as the OECD to establish technical cooperation with non-member countries in the Global South (Takala et al., 2018). In the Brazilian case, the push for transformation of the school census as an instrument for accountability and measurement of quality of the educational system was greatly influenced by the statistical cooperation between INEP and the OECD (Silva, 2019).

The third reason why IOs are a mechanism of technological and methodological transfer is due to contemporary logics of public administration. IOs motivate governments to manage their operations through continuous quantifications and measurements of performance (Bartl, Papilloud & Terracher-Lipinski, 2019; Merry, 2011, 2016). Control panels, information systems and interoperable interfaces are increasingly common in the public sector, promoting management through quantifiable results (Besaçon, 2003; Guilhot, 2005). This effect, in turn, is the result of the penetration of economic logics in public management, which promote the use of tools, such as cost-benefit evaluations, to make public policy decisions (Fourcade, 2009, 2017). Contemporary forms of administration usually demand the identification and quantification of multiple segments of population to facilitate the target for differentiated social and economic programs. It is no longer enough to segment the population by income levels, it is now necessary to understand population in terms of increasingly complex and cross-cutting economic, social, political and cultural variables. This creates a double demand over populations censuses: the first one is the need of having more questions, more variables and more segments to understand and target specific populations. The second is related to the efficiency and expediency of the operation: the availability of data has to be faster, cheaper and with high levels of precision.

7.2 *Commercial and Institutional Brokerage*

Our observations of the circulation of census model between IOs and the national statistical organisations in our country cases, do not suggest that these transfers are unilateral and unmediated. On the contrary, we observe how brokers in the various institutions involved seek to establish themselves as gatekeepers. Following Koster and van Leynseele (2018: 803), we here conceive of brokerage relations as those translating between disparate fields, altering in

this course the object of translation as well as the field itself. Brokers, in this sense, are crucial as they can “align with different logics and rationales”, uneven forms of authority, and interests (Koster & van Leynseele, 2018: 803).

For the case of Ecuador, our investigation identified two types of brokers. First, private companies that connect the statistical offices' middle managers with IOs' middle managers (UNFPA). These actors' interest is to “sell the idea” that certain technologies are “good practice” at an international level. In particular, technologies related to scanning and mobile devices were sold as “technological fixes” to complex infrastructural problems. Evidently, the final interest is to sell a particular brand of technology to obtain economic benefits. However, this process is successful only in a few cases. While scanning technology was successfully introduced in 2010, the introduction of mobile devices was attempted in 2022 when the government decided to go into debt with the WB to carry out the census. In other words, the introduction of this last innovation occurred in a process of financial dependency enforced by an IO.

Second, there are official entities in the government with the central mission of regulating the relation between public entities and IOs. In Ecuador this is the case of SETECI (Secretaría Técnica de Cooperación Internacional – Technical Secretary of International Cooperation). In the period 2007–2017, this office actively participated in aligning national interests and international assistance from IOs. In the case of public statistics and censuses they facilitated the connection between INEC and the Korean Cooperation Agency who invested in strengthening INEC through scholarships and specialized training. In the same way it facilitated the organization of workshops to share activities and knowledge from experts in censuses, a process where UNFPA was also part. Similarly, in the Brazilian government, the Ministry of Foreign Affairs acts as a gatekeeper for international cooperation activities of federal agencies in the country. The main objective is to provide a strategic direction to international cooperation following the national foreign policy. According to INEP officials, this also resulted in the emphasis of international cooperation changing often from one IO to another in different years, strengthening and weakening relationships with OECD, BRICS, MERCOSUR, and other IOs. While in our African case studies, there seems to be recent concerted regional efforts to act as brokers between the global organisations (UN, WB) and national governments. The West African statistical harmonisation project (HISWA) is the notable example of a current regional initiative for the adoption of methodological standards within the so-called South as are initial efforts of collaborating at the AU level for the provision of CAPI devices.

We further perceive of foreign development and statistical organisations as brokers of statistical methods. The UK Office for National Statistics (ONS) is

mentioned recurrently by Statistics Sierra Leone officials as partners in their processes of modernization. Our Ghanaian interview partners, in turn, emphasise the influence of the German development agency GIZ on their statistical expertise, especially in the form of exchange visits which expose statistical officers to certain forms of knowledge production. “I went on field trips with the GIZ. We got to see the statistical offices in Germany, Netherlands, ... Here in Ghana, we still meet as a group of GIZ trained experts. And if I have a question, I can call my colleagues in Latin America, everywhere, to share experiences.” (Interview GSS, 2018). Similarly, Statistics Denmark currently acts as key advisor to the ongoing digitalisation process of the census and national statistical system. Yet, this kind of involvement is not always taken on uncritically. As another high-ranking civil servant commented about the funding logic of statistical development projects, with every new funding cycle new ideas and solutions were brought to Ghana, making much of the previous work obsolete and failing to integrate the various efforts in different sectors of the country.

7.3 *Initiatives within Local Professional Communities*

The transnational circulation of model systems, methods and devices, we argue, is not one-directional but follows complex transnational trajectories. Ghana, for example, has historically been a centre for statistical training in West Africa. After Independence, the Demographic Unit at the Department of Sociology, University of Ghana, claims to have trained almost all of West Africa's government statisticians. Today, the university hosts the Regional Institute of Population Studies which was involved in the education and by extension the collective identification of the statistical community we encountered in Ghana. Ghanaian statisticians' sense of professional community constitutes an important resource in inter-agency harmonization and coordination of methods and their accompanying innovations. This professionalisation and immersion into local professional practices is not limited to Ghana, though. Key experts involved in the decision to digitize census taking in Ghana, located in top managerial positions of the Ghana Statistical Service explained the importance of learning from colleagues, both in the Global North and South, as agencies share different experiences. This sense of inter-agency learning was confirmed by our interview partners in statistical offices in Denmark, who noted how engaging with African statistical services was an immense learning opportunity, especially following the local statistical innovation that spear-headed in Sierra Leone in the context of the ebola epidemic. Notably, Statistics Sierra Leone has benefited from rapid technological development such as the early implementation and development of Geographical Information Systems (GIS). The high demand for quality and prompt data collection has further led

to the implementation of innovative processes such as mobile phone health surveys (Etang & Himelein, 2019) and the digitization of civil registration and vital statistics (Zewoldi, 2019).

A similar case of temporal strengthening of the statistical system happened in Ecuador. In the period 2007–2017, INEC, the local statistical agency was legally ascribed to the office of National Planning (SENPLADES). This was the result of the 2008 new Constitution that reinforced the planning system. By default, this provoked that INEC gained relevance and implicit power within the ecosystem of public institutions, which led to the expansion of population census operations. The dynamic allowed local experts the development of local tools for data exploitation as well as the constitution of dispersed teams for innovation, use and dissemination of census data. A cohort of local experts was one of the outcomes of this dynamic which after 2017 lost power and relevance due to the arrival of austerity policies that devitalized the infrastructure of public planning. In Brazil, the diversity of collaboration with different international partners as well as the investment in statistical innovation led to the development of a skilled body of technical specialists. In this sense, instead of an uncritical appropriation of foreign statistical processes, the professional community has transformed locally and improved some of these processes. As a WB publication states, the “composite index of education quality developed by the Ministry of Education’s assessment arm (INEP, Instituto Nacional de estudos e Pesquisas Educacionais Anísio Teixeira) “is superior to current practice in the United States and in many other OECD countries” (Bruns, Evans & Luque, 2011: 7). We emphasize these voices as vectors of local adaptation and creativity in the global circulation of census methods and technologies, which demonstrates international influences and local contingencies.

7.4 *Effects of Political Instabilities*

The last structuring force identified in our case studies is the effect of historically grown political instabilities on the so far described processes of statistical changes. Bourdieu’s concept of the (political) space emphasises the relational and contested context in which collective action and decision making unfold. Our case studies reveal how the local adoption of travelling ideas around statistical innovation is subject to both subtle and transformative changes in the political landscape of the receiving country.

The case of Ghana shows how the succession of various democratic and non-democratic regimes between 1966 and 1992 has imprinted census taking with their respective political agendas (Thiel, 2022). In the moment of regime change, shifting focal areas such as economic hardship, demographics or migration, but also new political paradigms such as decentralisation and

structural adjustment coincided with the adoption of new categories and reporting practices – making the census an integral part of political communication and mobilization (Serra 2018). Ghana's latest census for the first time adopted digital data capture technologies as recommended by the UN. The census therewith fell in line with the country's larger digitization agenda (Thiel, 2020). However, prior to the 2020/2021 PHC, census officials worried about the coinciding registration exercises of Ghana's biometric national ID, as well as the highly contested re-registration of the electoral voter register. Digitizing the census, it was feared would make it hard for the population to distinguish between the exercises and hence could spill over political contestations.

Similarly, several political events led to extreme instability in the short post-colonial history of Sierra Leone. This has directly affected official statistical activity which, for instance, was interrupted for two decades due to the civil war and subsequent dismantling of the national statistical system. The country presents an additional challenging factor due to the fractionalised political organisation across the country (Acemoglu et al., 2014) creating more difficulties for a nationally coordinated statistical system. At the same time, in such environments, the organisation and actors involved in official statistics are easy targets for the promotion of further instability. In fact, the transition of government in 2018 from the All People's Congress (APC) party that governed the country for ten years to the newly elected candidate of the opposition Sierra Leone People's Party (SLPP) exposed the political tensions that also affect the Statistics Sierra Leone's work. The Report of the Governance Transition Team (GTT) stated several "politically motivated" wrongdoings from the previous administration of the SSL "including the creation of new districts and the gerrymandering of new constituencies, mainly in the APC's strongholds" (Government of Sierra Leone, 2018). However, despite the institutional challenges posed by the civil war, the Ebola epidemic, and the political organisation, the national statistical system maintained its relative stability with continuous statistical activities in the past two decades.⁴

4 Similarly, the 2015 round is recognised by the SSL Statistician-General Prof. Osman A. Sankoh as a source "replete with issues that were corrected by the current administration with support from UNFPA consultants" (Sankoh, 2021). In fact, the transition of government in 2018 from the All People's Congress (APC) party that governed the country for ten years to the newly elected candidate of the opposition Sierra Leone People's Party (SLPP) exposed the political tensions that also affect the Statistics Sierra Leone's work. The Report of the Governance Transition Team (GTT) stated several "politically motivated" wrongdoings from the previous administration of the SSL "including the creation of new districts and the gerrymandering of new constituencies, mainly in the APC's strongholds" (Government of Sierra Leone, 2018).

In the case of Ecuador, political instability has been the condition of census execution. The 1982 census was executed in a transition to democracy, in 1990 it was affected by the lack of support from indigenous communities, and in 2001 it was suspended due to a financial crisis that affected the entire institutionalization of the state (more references in the history section of Ecuador). Together, this created a fertile scenario for external interference, loans from IOs and international expertise. The Brazilian, in turn, case could be seen as an outlier in this group as their national statistical system had experienced an unusual stability over the second half of the past century, despite several years of military regimes, re-democratization and presidential impeachments. However, in the past decade, a political turmoil initiated with a parliamentary coup in 2016 leading to the election of an authoritarian right-wing cabinet in 2018 directly impacted the statistical system. The census will be executed in 2022; however it is not liberated from instabilities, budget constraints, and changes in leadership. Independent of the outcome: the political uncertainty, professional local communities, and technocratic efforts transformed the landscape and practices for adopting, adapting and shaping innovations.

8 Conclusion

Through adopting a comparative approach, this article set out to contribute to the development of the contemporary socio-economic history of quantification in non-Western contexts. Our aim was to explore statistical systems both in terms of their global connections and their own professional and creative practices. As the issue of postcolonial data politics is receiving increasing and much deserved attention, we hope herewith to contribute the perspective of institutional arrangements and the statistical practices unfolding in these constellations of norms, regulations, technological infrastructures, funding and of course power. Our thick comparative angle, we hope, allowed us to move beyond the totalizing analytics of data colonialism in that it disentangled these forces and shed light on its constitutive parts. Specifically, we identified four mechanisms at play across our case studies.

First, we observed how competences concentrating in IOs exert influence on statistical offices in the Global South. Usually, these relations are amplified during population censuses because the logistical operation represents a temporal opportunity where, at least, four characteristics overlap: the necessity of external validation to legitimize a national project, the movement of considerable amounts of budget which implies political validations, the necessity of coordination among several local national institutions, and the necessity of

coat the project with labels of technicality and professionalism. IOs thereby reshape the way how censuses are understood, produced, and used. The financialization of capitals, new styles of management and an increasing necessity of having international comparable data reinforced this mechanism which at the same time strengthened the position of these organizations at a regional and global level.

The second mechanism has been identified in the motivation of agents to justify their political-institutional role within local ecosystems of the state (institutional brokers) or to expand their business opportunities (commercial brokers). These actors build bridges between IOs, especially financial institutions with the interest of funding national projects, and local statistical agencies in charge of censuses projects. In some cases, the brokerage has an institutional overtone where the intention is to enhance the role of local organizations in charge of regulating international cooperation, while in other cases, the interest is purely commercial.

Again, specialized projects of organisations, such as the AU's Pan-African Institute for Statistics (STATAFRIC) or the Organization of Ibero-American States (OEI) with their focus education statistics, give space to new narratives and processes. At the same time, both private and public institutions act as intermediaries between IOs and national statistical offices and their staff. These institutions can promote and facilitate cooperation to their benefit but also act as gatekeepers to avoid unwanted collaborations.

The third mechanism comes from local communities of practice that promote innovations using locally developed capabilities. The materialization of this influence depends on the predisposition of the local statistical office and the capacity to dodge international competitive alternatives. We have shown how regional cooperation is a contributing factor for the formation of those communities, while statistical elites can also play a central role in brokerage relations. Our findings emphasise how international statistical cooperation is more nuanced than a naive appropriation of foreign technology and involves complex adaptations and improvements of received methods, models and devices.

The fourth mechanism has been located in political instabilities, which are not necessarily vectors of transmission in and for themselves but exert a strong structuring force on the process of statistical innovation. When a country faces an institutional crisis it usually affects the structure of budgets where strong institutions have priority. Usually statistical offices are not equipped with sufficient political power to defend their economy which leads to an external dependency for funding which in turn provokes "knocking doors" with IOs that fund partial censuses with the condition of applying certain administrative

and technological introductions. We have shown that there is a strong connection between the national political context and the stability of statistical systems and hence its capacity for innovation. In other words, changes in the government have usually led to disruptions in the national statistical offices, affected the provision of adequate resources and prevented the consolidation of the statistical systems. Given the strategic role of the statistical offices, they have not least been used for spurious political interests during times of crisis.

Cutting across these mechanisms, we found that the condition of statistical production in the selected country cases appears to a large extent externally mobilized, rather than demand-driven. Rearticulating Jerven's (2017) call to consider the value generated by heavy investments in statistical circulations, future research should consider how specific mechanisms of technology transmission in national censuses in the Global South are linked to unique statistical histories and to which effect on perpetuating inequalities.

Furthermore, in a more proactive conclusion, our research seeks to understand horizontal collaboration spaces between involved agents. We believe that the first step for this is to identify key mechanisms of transmission of innovation. However, a second step, and one that merits future research, is to study methods of interaction and horizontal dialogue for the ways in which genuine and legitimate external collaborations can be positively exploited by all parties.

Finally, our contribution is an invitation to reflect on the constructive collaboration that agencies such as the United Nations carry out in the process of making (vulnerable) populations visible through the desing and implementation of new statistical processes, while also thinking about the implicit hierarchies that exist in these spaces, including their effects on the competition for talent between IOs and national statistical organisations. In short, we believe that the reflection on the transmission mechanisms of innovation in the Global South reveal complexities at the level of human and economic resources, as well as political influences, organizational, commercial and geopolitical interests that shape the production of statistics to important performative effects on how we understand and intervene in the world. If public statistics are the tools that help us understand our reality, the transparency and comprehension of the contingencies in their production and innovation is urgently necessary.

References

- Acemoglu, Daron, Tristan Reed, And James Robinson. 2014. "Chiefs: Economic Development and Elite Control of Civil Society in Sierra Leone." *Journal of Political Economy* 122 (2): 319–68.

- Almeida, Rebeca. 1994. *Kemmerer En Ecuador*. Facultad Latinoamericana de Ciencias Sociales: Primera Edición.
- Amrute, Sareeta. 2019. "Of Techno-Ethics and Techno-Affects." *Feminist Review* 123 (1): 56–73.
- Anderson, Margo and Stephen Fienberg 2000. *Who Counts?: The Politics of Census-Taking in Contemporary America*.
- Baffour, Bernard, Thomas King, And Paolo Valente. 2013. "The Modern Census: Evolution, Examples and Evaluation." *International Statistical Review / Revue Internationale de Statistique* 81 (3):407–25.
- Bartl, Walter, Christian Papilloud, And Audrey Terracher-Lipinki. 2019. "Governing by Numbers – Key Indicators and the Politics of Expectations. An Introduction." *Historical Social Research / Historische Sozialforschung* 44 (2): 7–43.
- Becker, Marc. 2021. *The CIA in Ecuador*. Durham: Duke University Press.
- Beidou, Abdoullahi. 2021. "Disclosable Version of the ISR – Harmonizing and Improving Statistics in West Africa – P169265 – Sequence No: 02." World Bank Group.
- Besaçon, Marie. 2003. "Good Governance Rankings: The Art of Measurement." Cambridge, MA: World Peace Foundation.
- Bigo, Didier, Engin Isin, And Evelyn Ruppert. 2019. *Data politics: worlds, subjects, rights*. London, New York: Routledge.
- Birhane, Abeba. 2020. "Algorithmic Colonization of Africa." *SCRIPTed. A Journal of Law, Technology & Society* 17 (2): 389–409.
- Borja, Rodrigo. 1985. "Ecuador: Lecciones de Un Proceso Político." *Nueva Sociedad* (78): 8–12.
- Bourdieu, Pierre. 2002. "The Social Conditions of the International Circulation of Ideas." *Actes de La Recherche En Sciences Sociales* 145(5):3–8.
- Bourdieu, Pierre. 2002. "The Social Conditions of the International Circulation of Ideas." *Actes de La Recherche En Sciences Sociales* 145(5):3–8.
- Breckenridge, Keith. 2014. *Biometric State: The Global Politics of Identification and Surveillance in South Africa, 1850 to the Present*. Cambridge: Cambridge University Press.
- Bruns, Barbara, David Evans, And Javier Luque. 2011. *Achieving World-Class Education in Brazil*. Washington: The World Bank.
- Bustamante, J., Giraudo, L., & Mayer, L. (2014). *La novedad estadística. Cuantificar, cualificar y transformar las poblaciones en Europa y América Latina, siglos XIX y XX*. Madrid: Ediciones Polifemo.
- Cakici, Baki, Evelyn Ruppert, And Stephan Scheel. 2020. "Peopling Europe through Data Practices: Introduction to the Special Issue." *Science, Technology, & Human Values* 45(2): 199–211.
- Collins, Jennifer. 2008. "Rafael Correa and the Struggle for a New Ecuador." *Global Dialogue* 10: 37.

- Conrad, Fred, And Mick Couper. 2004. "Usability, Comparability, and Data Quality across Modes and Technologies in Census Data Collection." Federal Committee on Statistical Methodology, June 22. Accessed May 10, 2022, http://websm.org/uploadi/editor/1140639131Conrad_Couper_3_31_04.pdf/.
- Damásio, Leandro. 2011. *Desenvolvimento Institucional do INEP: conjuntura crítica e trajetória*. PhD thesis. Fundação Getúlio Vargas.
- De Graft-Johnson, J. C., 1969. "The Population of Ghana 1846–1967: A Digest and Discussion of the Data in the Official Counts and Censuses." *Transactions of the Historical Society of Ghana* 10: 1–12.
- De La Torre, Carlos. 2008. "Protesta y Democracia En Ecuador: La Caída de Lucio Gutiérrez." *Luchas Contrahegemónicas y Cambios Políticos Recientes de América Latina*: 197–227.
- De La Torre, Carlos. 2008. "Protesta y Democracia En Ecuador: La Caída de Lucio Gutiérrez." *Luchas Contrahegemónicas y Cambios Políticos Recientes de América Latina* 197–227.
- Desrosières, Alain. 2010 [1993]. *La politique des grands nombres, Histoire de la raison statistique*. Paris: La Découverte.
- Drake, Paul. 1984. "La Misión Kemmerer En El Ecuador: Revolución y Regionalismo." *Cultura, Revista Del Banco Central Del Ecuador* 7 (19): 211–76.
- Echeverry Hernández, Ariel Augusto. 2011. "Análisis de La Migración Venezolana a Colombia Durante El Gobierno de Hugo Chávez (1999–2011). Identificación de Capital Social y Compensación Económica." *Revista Análisis Internacional* 4: 11–32.
- El Telegrafo. 2016. "Entre 1999 y 2007, Más de 950 Mil Ecuatorianos Migraron." *Diario El Telegrafo*, June 2.
- Etan, A., & Himelein, K. (2020). Monitoring the Ebola crisis using mobile phone surveys. In *Data collection in fragile states*. Palgrave Macmillan, Cham: 15–31.
- Fourcade, Marion, Brian Lande, And Evan Schofer. 2016. "Political space and the space of politics: Doing politics across nations." *Poetics* 55: 1–18.
- Fourcade, Marion. 2009. *Economists and Societies: Discipline and Profession in the United States, Britain, and France, 1890s to 1990s*. Princeton: Princeton University Press.
- Fourcade, Marion. 2017. "State Metrology: The Rating of Sovereigns and the Judgment of Nations." In *The Many Hands of the State*, edited by K. J. Morgan and A. S. Orloff, 103–28. Cambridge: Cambridge University Press.
- Gaisie, S. K. ca. 1969. "Dynamics of Population Growth in Ghana." *Ghana Population Studies No 1*. Accra: Demographic Unit.
- Germain, Randall. 1997. *The International Organization of Credit: States and Global Finance in the World-Economy*. Cambridge: Cambridge University Press.
- Gil, Natália De Lacerda. 2019. "Estatísticas e Educação: considerações sobre a necessidade de um olhar atento." *Pensar a Educação* 5 (2): 1–29.

- Government of Sierra Leone. 1986. The Preliminary Report on the 1985 National Population Census of Sierra Leone. Accessed May 10, 2022, <https://www.africabib.org/rec.php?RID=W00095173&DB=w/>.
- Government of Sierra Leone. 2018. Report of the Governance Transition Team 2018. Accessed May 10, 2022, http://www.sierra-leone.org/Docs/GTT_Report.pdf/.
- GSS [Ghana Statistical Service]. 1987. 1984 Population Census of Ghana. Demographic and Economic Characteristics. Total Country. Accra: Ghana Statistical Service.
- GSS [Ghana Statistical Service]. 2020. Ghana Statistical Service Corporate Plan 2020–2024. Accra: Ghana Statistical Service.
- Guilhot, Nicolas. 2005. *The Democracy Makers: Human Rights and International Order*. New York: Columbia University Press.
- Hakim, Catherine. 1980. "Census Reports as Documentary Evidence: The Census Commentaries 1801–1951." *The Sociological Review* 28 (3):551–80.
- IASI. 1948. "The 1950 Census of the Americas." *Population Index* 14 (1): 20–22.
- ICT4D. 2003. Ghana Integrated ICT for Accelerated Development (ICT4AD) Policy. Accessed May 10, 2022, <https://www.moc.gov.gh/ghana-integrated-ict-accelerated-development-ict4ad-policy/>.
- INEC. 2015. *Una Mirada Histórica a La Estadística Del Ecuador*. Vol. First. Quito.
- Ittman, Karl, Dennis Cordell, And Gregory Maddox. 2010. *The demographics of empire: the colonial order and the creation of knowledge*. Athens: Ohio University Press.
- Jerven, Morten. 2017. "How much will a Data Revolution in Development Cost?" *Forum for Development Studies* 44 (1): 31–50.
- Karkazis, Katrina, and Rebecca Jordan-Young. 2020. "Sensing Race as a Ghost Variable in Science, Technology, and Medicine." *Science, Technology, & Human Values*. 45 (5): 763–78.
- Keeper, Alice. 1982. "Statistical Activities of the Organization of American States and the Inter-American Statistical Institute." *Government Publications Review* 9 (3):195–203.
- Koster, Martijn, and Yves Van Der Leynseele. 2018. "Brokers as Assemblers: Studying Development Through the Lens of Brokerage." *Ethnos* 83 (5): 803–13.
- La Hora, Diario. 2000. "INEC sin director – La Hora." *La Hora Noticias de Ecuador, sus provincias y el mundo*, May 5.
- Lam, David. 2011. "How the World Survived the Population Bomb: Lessons from 50 Years of Extraordinary Demographic History." *Demography* 48 (4):1231–62.
- Leszczynski, Agnieszka. 2020. "Digital methods III: The digital mundane." *Progress in Human Geography* 44 (6): 1194–1201.
- Loukissas, Yanni. 2019. *All data are local: thinking critically in a data-driven society*. Cambridge, MA: MIT Press.
- Loveman, Mara. 2013. "Census Taking and Nation Making in Nineteenth-Century Latin America." In *State and Nation Making in Latin America and Spain*, edited by M. A. Centeno and A. E. Ferraro, 329–55. New York: Cambridge University Press.

- Loveman, Mara. 2014. *National Colors: Racial Classification and the State in Latin America*. Oxford: Oxford University Press.
- Madianou, Mirca. 2019. "Technocolonialism: Digital Innovation and Data Practices in the Humanitarian Response to Refugee Crises." *Social Media + Society* 5 (3): 1–13.
- Merry, Sally Engle. 2011. "Measuring the World: Indicators, Human Rights, and Global Governance." *Current Anthropology* 52 (S3): S83–95.
- Merry, Sally Engle. 2016. *The Seductions of Quantification: Measuring Human Rights, Gender Violence, and Sex Trafficking*. Chicago: The University of Chicago Press.
- Minteguiga, Analía. 2012. "Política y Políticas Sociales En El Ecuador Reciente: Dificultades Asociadas a La Salida Del Ciclo Neoliberal." *Revista de Ciencias Sociales* 1 (135–136): 45–58.
- Onsembe, Jason, and James Ntozi. 2009. "The 2000 Round of Censuses in Africa: Achievements and Challenges." *African Statistical Journal* 3: 11–28.
- Pelizza, Annalisa. 2021. "Identification as translation: The art of choosing the right spokespersons at the securitized border." *Social Studies of Science* 51 (4): 487–511.
- Porter, Theodore. 1995. *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*. Princeton University Press.
- Ratner, Helene, and Evelyn Ruppert. 2019. "Producing and projecting data: Aesthetic practices of government data portals." *Big Data & Society* 6 (2): 1–16.
- Restrepo, Eduardo, and Axel Rojas. 2010. *Inflexión decolonial: fuentes, conceptos y cuestionamientos*. Colombia: Editorial Universidad del Cauca.
- Rosa Becker, Fernanda, and Luiz Claudio Costa. 2013. "Brazil: Shift of Accountability Incentives." In *Education Policy Reform Trends in G20 Members*, edited by Yan Wang, 173–88. Berlin, Heidelberg: Springer.
- Ruiz, Magda, Magda. 2016. "Estado de Avance de Los Censos de 2020 e Identificación de Las Necesidades Nacionales." Foz de Iguazu: OLAC.
- Sankoh, Osman. 2020. Mid-Term Population and Housing Census discussion on Society for Radio Democracy 98.1 [Video]. Youtube, November 17. Accessed May 10, 2022. https://www.youtube.com/watch?v=Cq_k26I5Kxg/.
- Sarmiento, Manuel. 2016. "El Retorno Democrático Ecuatoriano y El Mito de Una Sociedad Sin Conflicto: Los Modos de Representación de La Muerte de Jaime Roldós." FLACSO, Quito-Ecuador.
- Scheffer, Thomas, and Jörg Niewöhner. 2010. "Thickening Comparison. On the Multiple Facets of Comparability." In *Thick Comparison: Reviving the Ethnographic Aspiration*, edited by Thomas Scheffer and Jörg Niewöhner, 1–15. Leiden: Brill.
- Schmidt-Wellenburg, Christian, And Stefan Bernhard. 2020. *Charting transnational fields: Methodology for a political sociology of knowledge*. Abingdon: Routledge.
- Serra, Gerardo. 2018. "Hail the Census Night": Trust and Political Imagination in the 1960 Population Census of Ghana." *Comparative Studies in Society and History* 60 (3): 659–87.

- Silva, Gabriela Toledo. 2019. "International Cooperation from the Perspective of INEP Agents: The OECD and Brazilian Public Education, 1996–2006." In *The OECD's Historical Rise in Education. The Formation of a Global Governing Complex*, edited by Christian Ydesen, 109–31. New York: Palgrave Macmillan.
- Statistics Sierra Leone. 2006. Executive Summary of the 2004 Population and Housing Census.
- Statistics Sierra Leone. 2017. National Analytical Report of the 2015 Sierra Leone Population and Housing Census.
- Szreter, Simon, and Keith Breckenridge. 2012. "Recognition and Registration: The Infrastructure of Personhood in World History." *Proceedings of the British Academy* 182: 1–36.
- Takala, Tuomas, Johanna Kallo, Jaakko Kauko, and Risto Rinne. 2018. "One Size for All? Policy Advice of the World Bank and the OECD on Quality Assurance and Evaluation of School Education in Russia, Brazil, and China." In *Cross-nationally Comparative, Evidence-based Educational Policymaking and Reform*, edited by A. W. Wiseman and P. M. Davidson, 301–19. Bingley, UK: Emerald Publishing.
- Thiel, Alena. 2020. "Biometric identification technologies and the Ghanaian "data revolution": The Journal of Modern African Studies 58 (1): 115–136.
- Thiel, Alena. 2021. "Ghana upgraded its census to make it more inclusive: but old tensions still surfaced." *The Conversation*, July 22. Accessed May 10, 2022, <https://theconversation.com/ghana-upgraded-its-census-to-make-it-more-inclusive-but-old-tensions-still-surfaced-164654/>.
- Thiel, Alena. 2022. "Une histoire politique du recensement au Ghana aux 20^e et 21^e siècles." *Statistique et Société* 10 (1): 59–78.
- UN. 2017. Principles and Recommendations for Population and Housing Censuses, Revision 3.
- Valdivia, Cecilia. 2014. "Historia de Los Censos." *Ágora Estadística*, June 26. Accessed May 10, 2022, <http://agoraestadistica.blogspot.com/2014/06/historia-de-los-censos.html/>.
- Valle, Catalina. 2015. *Reseña Histórica Cartográfica En El Instituto Nacional de Estadísticas y Censos*. Quito-Ecuador: Instituto Nacional de Estadísticas y Censos.
- Van der Veer, Peter. 2016. *The Value of Comparison*. Durham, London: Duke University Press.
- Vasquez, Jorge Daniel. 2018. "Sobre La Cuestión de La Memoria En Ecuador. La Muerte de Jaime Roldós Ante La Perversión Historiográfica." *Fuera de Campo* 2 (1): 88–103.
- Ventresca, Marc. 2002. "Global policy fields: Conflicts and settlements in the emergence of organized inter-national attention to official statistics, 1853–1947." *Institute for Policy Research Working Papers No 02 (45)*. Accessed May 10, 2022, <https://www.ipr.northwestern.edu/documents/working-papers/2002/IPR-WP-02-45.pdf/>.

- Villacis, Byron, and Debora Thome. 2020. "Gender Politics in Latin American Censuses: The Case of Brazil and Ecuador." In *Gender and Practice: Knowledge, Policy, Organizations*, edited by Marcia Texler Segal, Kristy Kelly and Vasilikie Demos, 119–40. Bingley, UK: Emerald Publishing.
- Villani, Marialuisa, and Dalila Oliveira. 2018. "Avaliação Nacional e Internacional no Brasil: os vínculos entre o PISA e o IDEB." *Educação & Realidade* 43: 1343–62.
- Von Oertzen, Christine. 2017. "Die Historizität der Verdatung. Konzepte, Werkzeuge und Praktiken im 19. Jahrhundert." *NTM Journal of the History of Science, Technology and Medicine* 25: 407–34.
- Weitzberg, Keren. 2020. "Biometrics, Race Making, and White Exceptionalism: The Controversy Over Universal Fingerprinting in Post-World War II Kenya." *The Journal of African History* 61 (1): 23–43.
- Winkle, Kenneth, and Margo Anderson. 1989. "The Census and Society." *Reviews in American History* 17 (3): 341–45.
- Zewoldi, Yacob. 2019. "Snapshot of civil registration and vital statistics systems of Sierra Leone." International Development Research Centre. Accessed May 10, 2022, <https://idl-bnc-idrc.dspacedirect.org/handle/10625/60285/>.