Patterns of Childlessness: A Comparative Study Across Countries, Genders, Time, and Data Sources

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Abstract for the 2025 IPC

Context and objectives

Childlessness has gained increasing significance over the last decades. Recent studies in Europe have shown a striking increase in childlessness among women, with 20 to 25% of the most recent cohorts remaining childless in several countries (Sobotka, 2017). Similar trends have been observed in some other high-income countries, such as Japan and Canada, and to a lesser extent, the USA (Frejka, 2017). This pattern aligns closely with the Second Demographic Transition, marked by changes such as increased individualism, delayed marriage, and greater acceptance of non-traditional family structures (Lesthaeghe et Van de Kaa, 1986; Lesthaeghe, 1995, 2010; Van de Kaa, 1987). It also mirrors the growing challenges in balancing family and work or in securing stable employment, leading to delayed parenthood. Female childlessness has also gained ground in low and medium-fertility countries in the Global South (Pérez, 2021; Spoorenberg, 2024). Spoorenberg (2024) recently demonstrated that permanent childlessness is significantly higher in countries that are well advanced in the fertility transition compared to countries with higher fertility. Childlessness has thus played a role in the transition from high fertility to low fertility, as it did in European history (Sobotka, 2017).

While existing data on female childlessness has allowed for documenting broad trends and patterns in a substantial number of countries, it is far from exhaustive and perfect – as data is missing in some countries, and various data sources can be inconsistent (Sobotka, 2017). Levels and trends in childlessness among men have received even less attention than women's childlessness, partly because the measurement of final childlessness among men is frequently missing or affected by a large uncertainty (2017). Existing evidence suggests that men are more likely to be childless than women, a pattern observed across both developing and industrialised nations (Schoumaker, 2019; Osiewalska, 2017; Parr, 2010; Fieder et al., 2011; Verkroost & Monden, 2022; Kravdal, 2021; Saarela & Skirbekk, 2020; Ronsen & Skrede, 2010; Carmichael & Whittaker, 2007; Nisén et al., 2013, 2014). Male childlessness has been found to be higher than female childless in several high-income countries, such as Norway, Finland, Australia, and the Czech Republic (Kravdal, 2021; Saarela & Skirbekk, 2020; Parr, 2010; Manea & Rabusic, 2013). A study across 38 Sub-Saharan African countries also highlighted that men tend to experience higher levels of childlessness, with greater variability in male childlessness across different contexts compared to females (Verkroost and Monden, 2022).

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While numerous studies have examined specific socio-economic and cultural factors that contribute to childlessness, there remains a significant gap in comprehensive comparative analyses across gender, contexts and over time. This research aims to address this gap through two primary objectives. First, we aim to identify all the data sources, their quality and the possibilities they offer to document patterns of male and female childlessness. Secondly, we seek to enhance the understanding of childlessness patterns by conducting a comprehensive comparative analysis that encompasses various periods, regions, countries, and genders.

Data and Methods

We will use a diverse array of data sources, especially demographic and non-demographic surveys. Our primary focus is to identify all the datasets that contain the relevant questions regarding fatherhood and motherhood, specifically phrased as "Have you ever fathered a child?" or "Have you ever given birth?" or containing information on the number of children ever born. This comprehensive approach will enable us to compare estimation results from each data source to identify which sources yield the most accurate and meaningful insights.

Table 1: Country-Year Entries for Childlessness Analysis by Region and Data Source

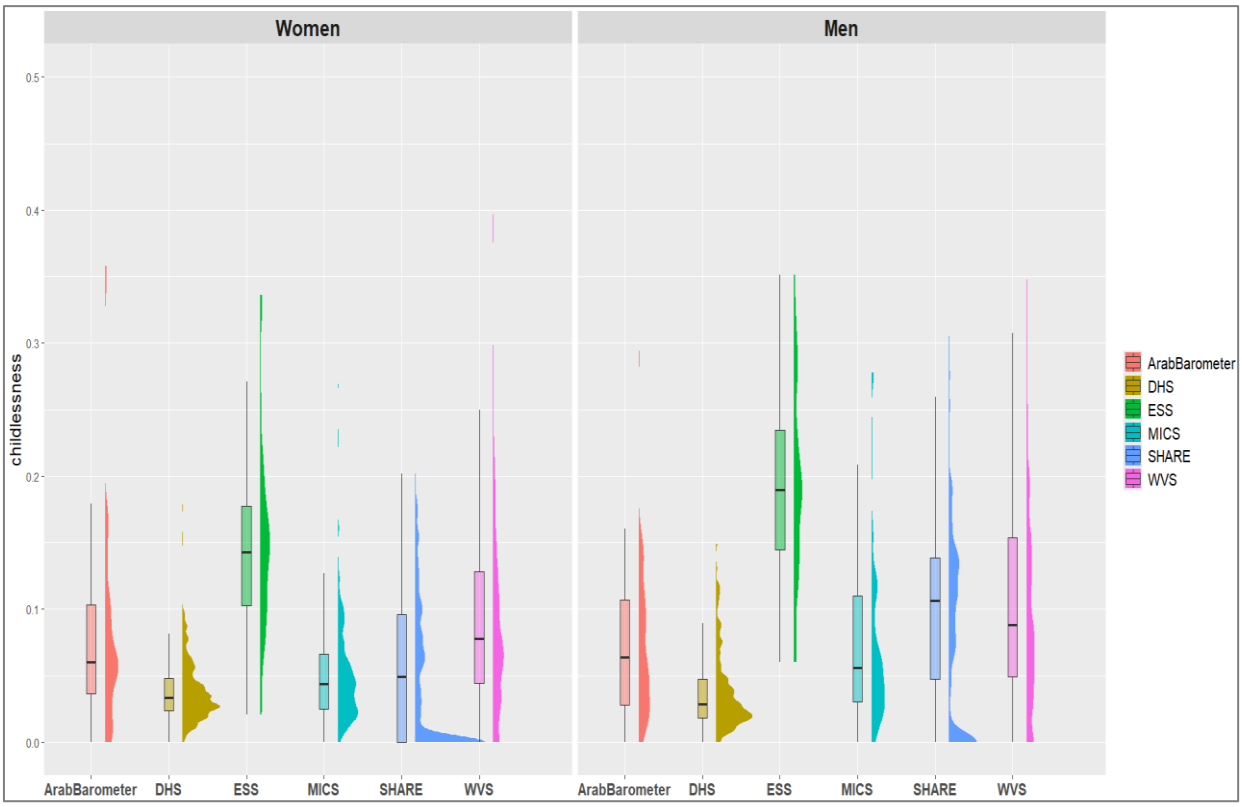
		Data Sources						
		ArabBarometer	DHS	ESS	MICS	SHARE	WVS	Total
Regions	Africa	50	352	0	79	0	78	559
	Americas	0	72	0	35	0	126	233
	Asia	36	119	4	65	20	204	448
	Europe	0	8	100	35	296	166	605
	Oceania	0	2	0	10	0	18	30
	Total	86	553	104	224	316	592	1,875

The datasets we examine include the Demographic and Health Surveys (DHS), Multiple Indicator Cluster Surveys (MICS), European Social Survey (ESS), World Values Survey (WVS), Arab Barometer (ArabBarometer), and Survey of Health, Ageing, and Retirement in Europe (SHARE). These datasets collectively represent a wide geographical scope and diverse population patterns, allowing for a comprehensive analysis of childlessness. The DHS dataset encompasses a substantial amount of data on African countries, with 352 country-year entries, and on Asian countries, with 119 entries (Table 1). Similarly, the Arab Barometer primarily emphasizes these two regions. In contrast, the ESS, SHARE, and WVS datasets include a wide range of European countries. Among them, the WVS stands out for having the highest number of observations, with 126 country-year entries from the Americas and 204 from Asia (Table 1). The MICS provides observations from various regions, with a significant focus on Africa and Asia. In addition, we will compare the new estimates with existing datasets, such as those from the Human Fertility Database, which provides estimates of female cohort childlessness in 26 countries over several decades.

For each data source, we develop a dedicated STATA do-file to compute childlessness by age groups and to estimate final childlessness for men and women. It is important to note that the age groups surveyed vary across data sources. The DHS typically include individuals aged 10 to 85, while the MICS focus on those aged 15 to 55. The ArabBarometer surveys cover a wider range, including ages 15 to 110. In contrast, both the ESS and the WVS encompass participants aged 10 to 100, and the SHARE focuses on individuals between the ages of 45 and 105. To estimate final childlessness, we use the proportion of childless women in the age group 40-44 and childless men in the age group 45-49. For the SHARE dataset, we use the age groups 50-57 for women and 55-59 years for men due to the limited sample sizes of individuals under 50. In later analyses, we will use smoothing techniques to limit random fluctuations in the estimation of final childlessness (Schluter and Alexander, 2024).

To ensure consistency and comparability, we standardised the naming of each country across all datasets. We also included the year of estimation to track trends and changes in childlessness over time. We incorporated regional and subregional classifications in our dataset. This allows us to identify and analyse patterns and disparities in childlessness rates across different geographical areas, providing a richer contextual understanding of the data.

Figure 1: Distribution of Childlessness Across Diverse Data Sources among men and women



Preliminary Results

The preliminary findings indicate notable disparities in data distribution across various sources, as demonstrated by the raincloud plot (Figure 1). Specifically, the DHS and MICS, which predominantly feature data from African countries, show a lower dispersion compared to other

data sources and overall low levels of final childlessness. In contrast, the ESS, WVS, and SHARE — which primarily focus on European countries — demonstrate higher variability in their data distributions. Overall levels of childlessness are highest in ESS data, especially for men, which mainly cover European countries. Some of the variability may also be attributed to variations in sample sizes among the sources, and some estimates appear less trustworthy than others, as reflected by the low childlessness in several SHARE surveys.

Figure 2: Childlessness Rates by Region: Male vs. Female Childlessness Across Different Data Sources

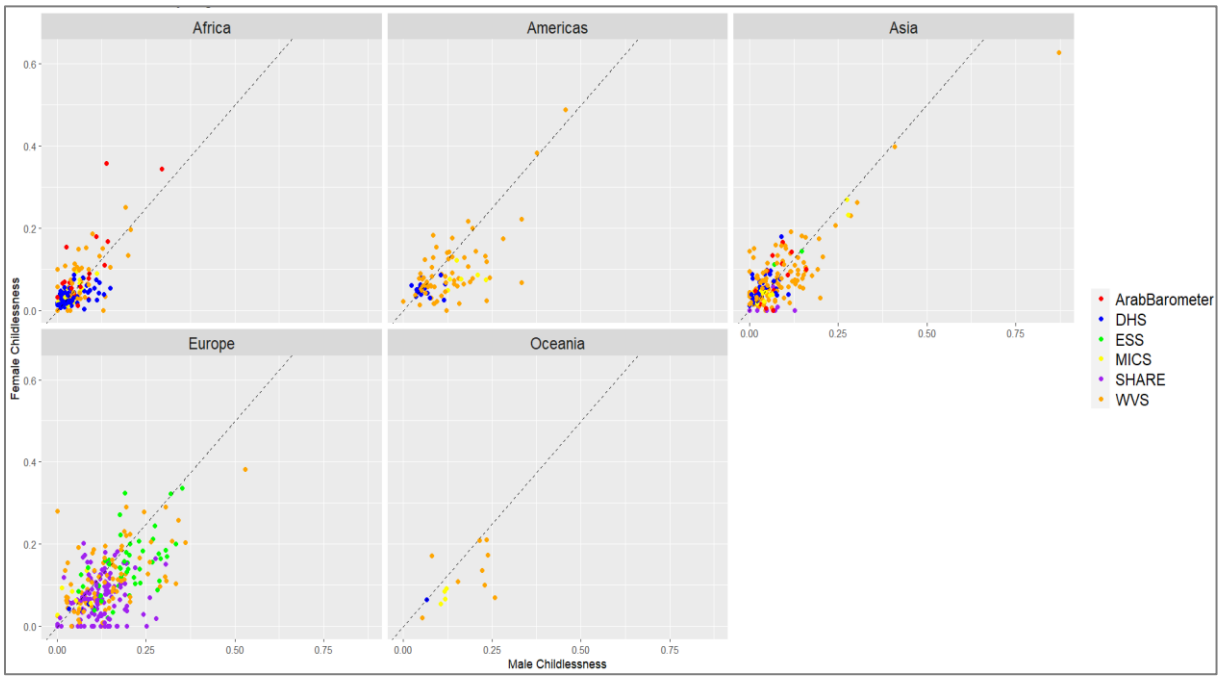
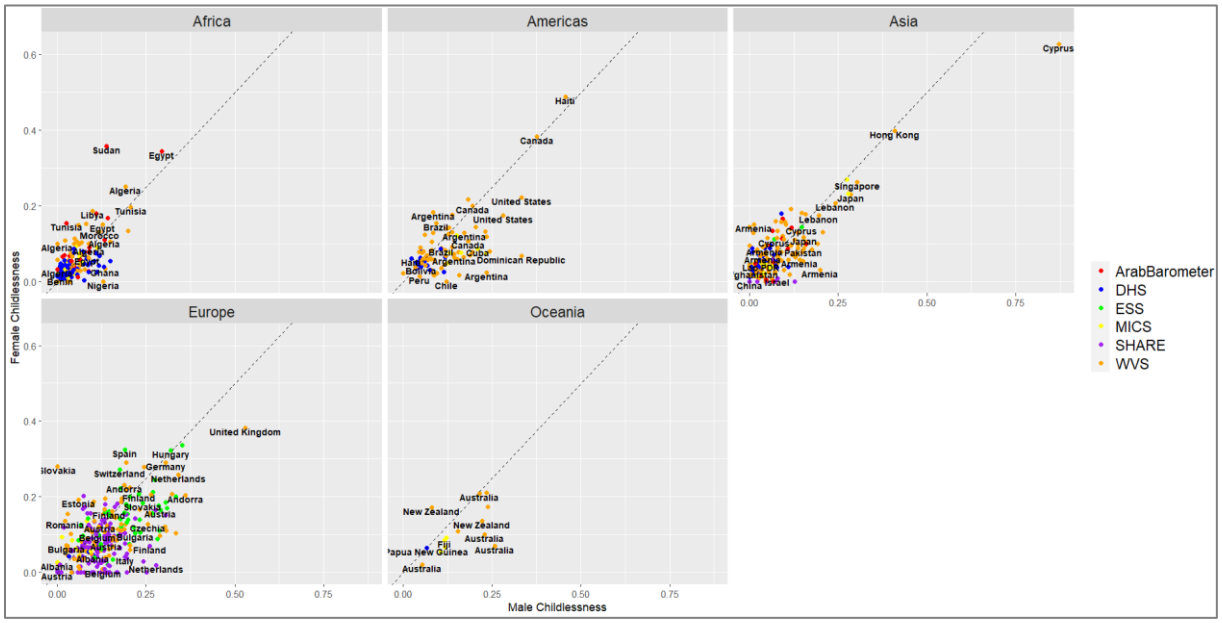


Figure 3: Childlessness Rates by Region: Male vs. Female Childlessness Across Different Data Sources (with country names)



Scatterplots representing the relationship between male and female childlessness (Figures 2 and 3) further illustrate the greater dispersion in childlessness across Europe and the Americas. They also confirm that male childlessness tends to be higher than female childlessness, especially in

Europe, the Americas, and Oceania. However, this finding is not systematic, as a substantial share of observations indicate a higher level of female childlessness, especially in Africa, where high levels of polygyny and remarriage may limit childlessness among men. Even in some high-income countries, we find that male childlessness may be lower than female childlessness. While this may reflect true differences, it may also be due to issues with sample composition or large sampling errors. A thorough analysis of data quality and computation of confidence intervals will be performed for the final paper.

Figure 3 highlights a few countries with notable values, some of which probably also reflect data quality issues and large sampling errors. The case of Cyprus (Asia, WVS data) is probably affected by such issues (male childlessness rate of 87% for the period 2017-2022, and female childlessness at 63%), as is Haiti (Americas, WVS) with female childlessness at 48% and male childlessness at 45% in 2012. Hong Kong also reported high childlessness rates but demonstrated a more balanced distribution between genders, with approximately 40% for both men and women. In comparison, Canada reports roughly 38% childlessness for both sexes from 2017 to 2022. Within Europe, using WVS data, Slovakia stands out for its stark contrast between male (0%) and female (28%) childlessness rates in 1991. Conversely, the United Kingdom recorded higher male childlessness (53%) compared to females (38%) in 1996. These cases suggest some estimates – especially from non-demographic surveys such as WVS – are not trustworthy. In Africa, particularly sub-Saharan Africa, childlessness rates are less varied, typically ranging from 8% to 12%. However, data from the Arab Barometer indicate that Sudan presents higher childlessness rates, especially among women (36%) compared to 14% for men in 2019.

This pattern also varies over time for both men and women, as well as across different data sources. Figure 4 (in appendix) illustrates the evolution of childlessness rates for men and women by subregion and data sources. It is evident that, unlike the DHS and MICS data, the WVS and SHARE datasets exhibit notable fluctuations over the years for certain countries, while the ESS shows this trend to a lesser extent. For instance, significant variability is observed in male childlessness in Pakistan, using WVS data, as well as in countries such as Japan, the United States, and Australia, using the same data source. Additionally, SHARE estimations reveal marked fluctuations in male childlessness rates in the Netherlands and Switzerland.

When comparing male and female childlessness, the graphs illustrate diverse patterns across different subregions, with higher percentages observed in Europe, Asia, and the Americas. At the same time, lower rates are found in Africa, particularly in the sub-Saharan region. In many countries, male childlessness surpasses female childlessness. Furthermore, several countries demonstrate a decline in male childlessness over time, in contrast to a rising trend in female childlessness.

From a methodological perspective, it is noteworthy that discrepancies in childlessness patterns often arise within the same country, depending on the data source used. For example, in the Netherlands, the ESS indicates a decline in female childlessness, whereas the WVS shows an increase. Similarly, in Thailand, MICS reports a rise in female childlessness over time, while

WVS indicates a decline. This underscores the importance of considering data sources and methodologies when interpreting childlessness trends across various regions.

Conclusion

Our preliminary results underscore notable disparities in childlessness rates across different datasets, revealing both regional and contextual variances that highlight the complexities of reproductive behaviours. Furthermore, the discrepancies observed within country-specific estimates based on data sources emphasise the critical need for cautious interpretation and the potential of underutilised datasets. Yet, the large amount of untapped data—used cautiously—has the potential to enhance our understanding of male and female childlessness patterns significantly.

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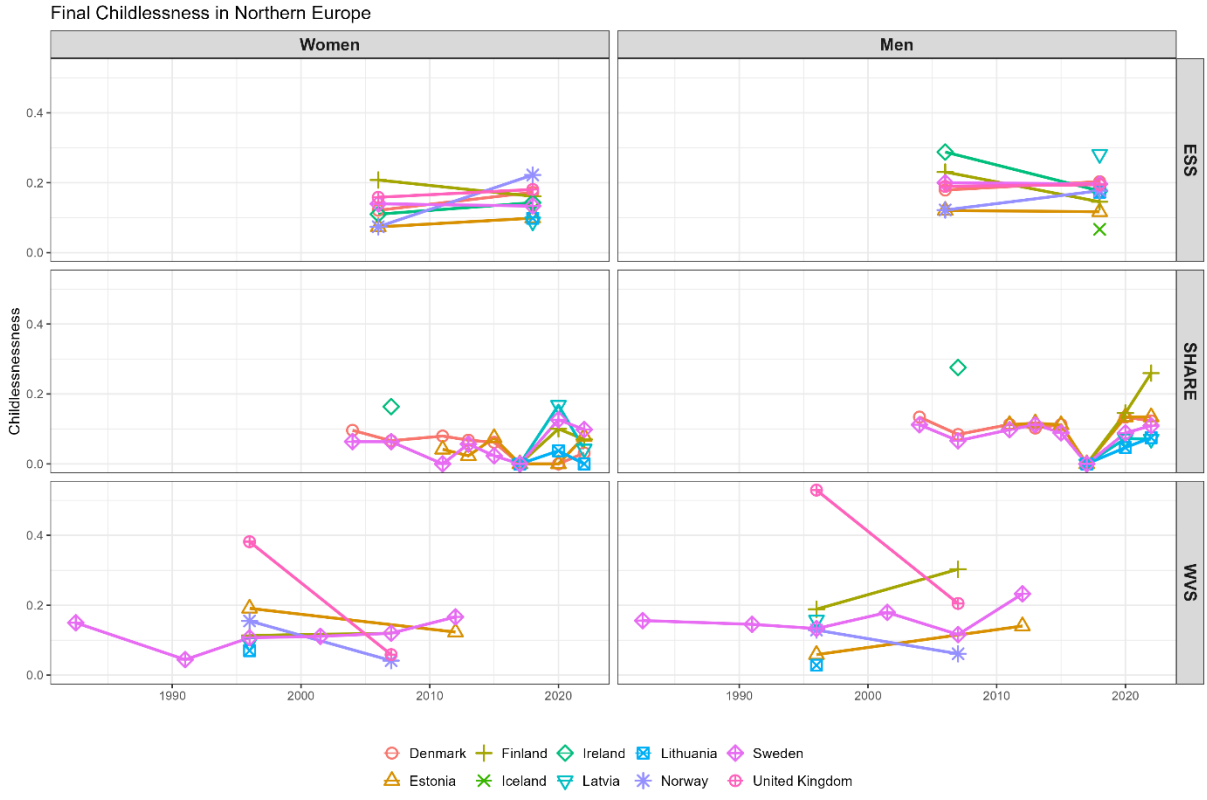
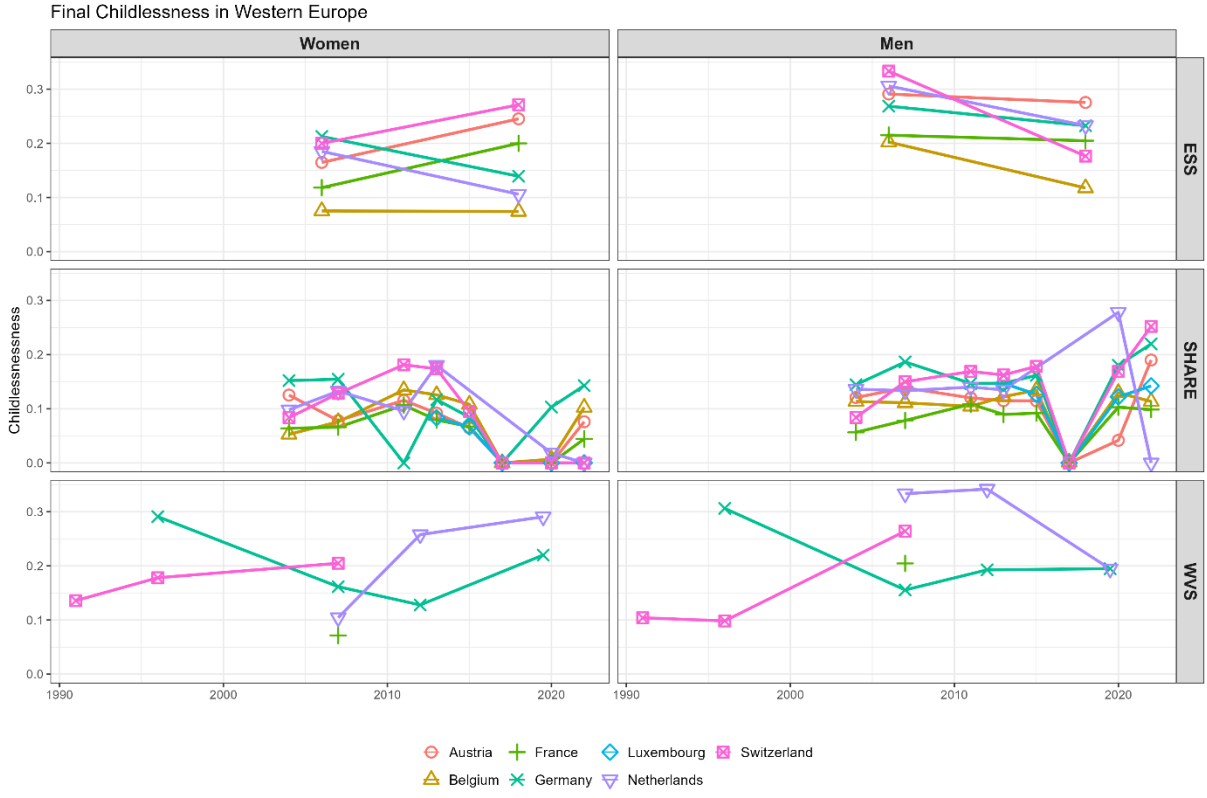
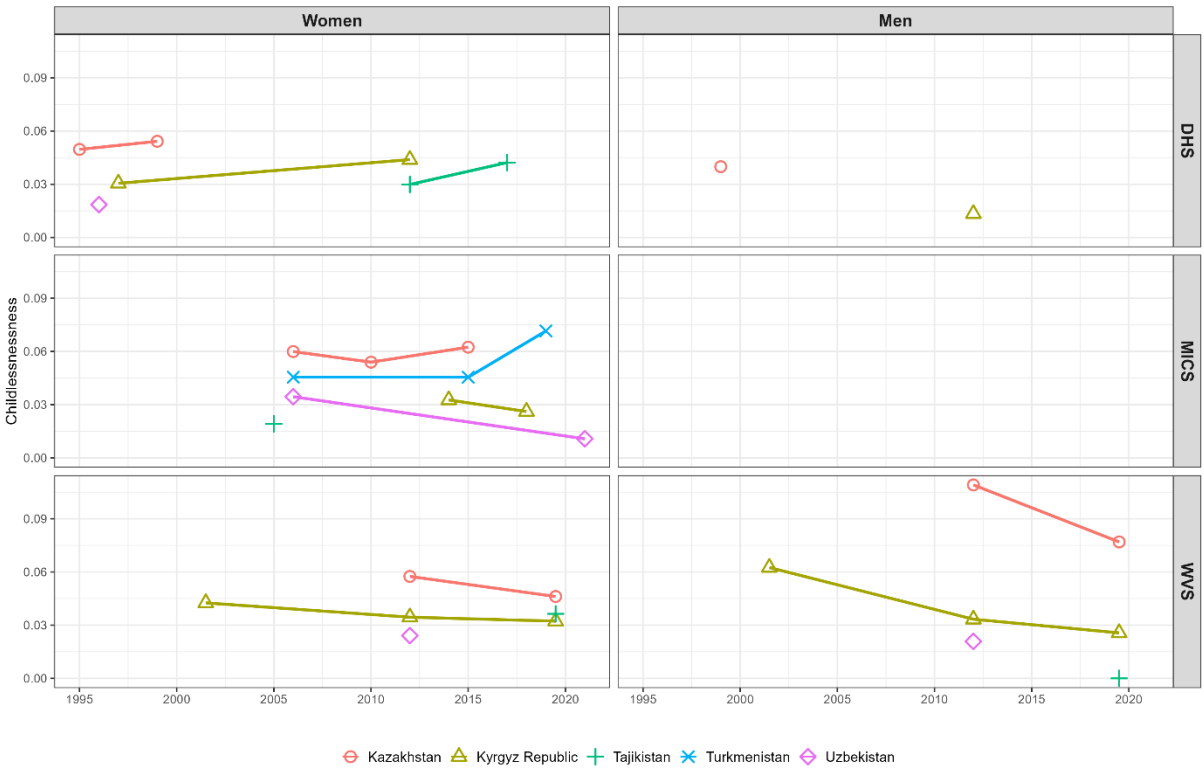
Figure 4: Trends in Childlessness Over Time by Subregion, Gender, and Data Source

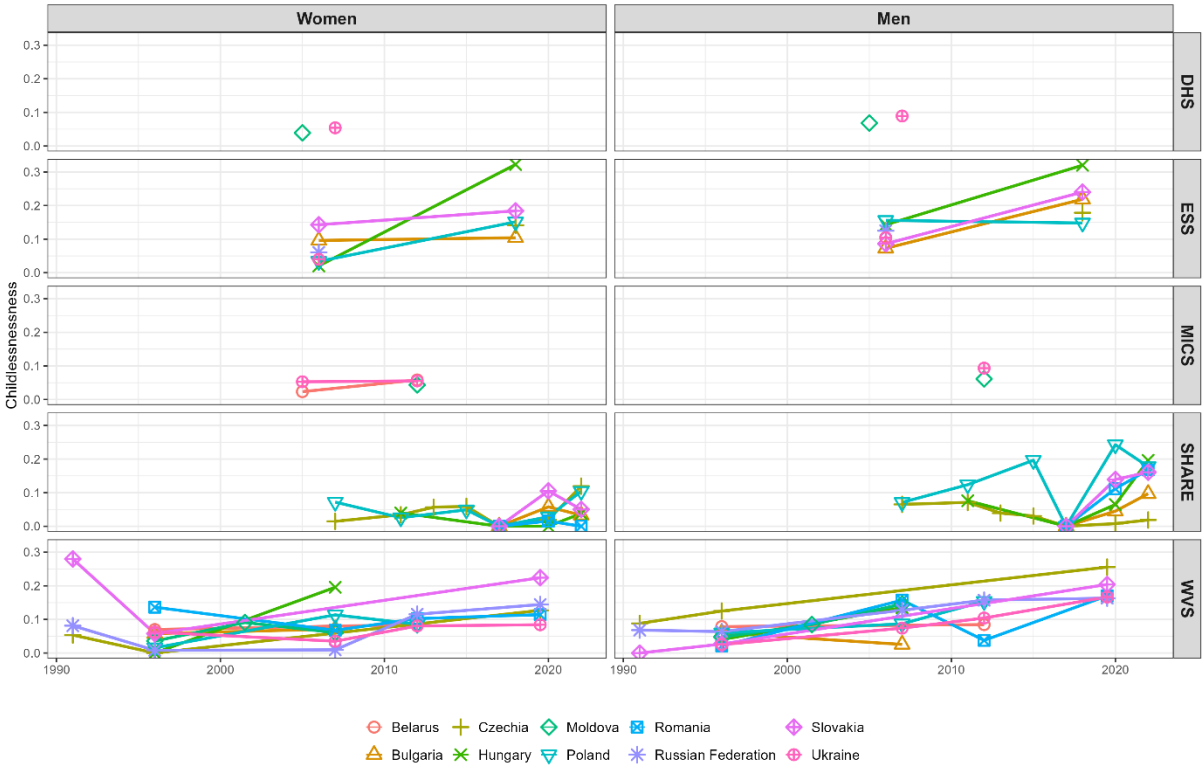




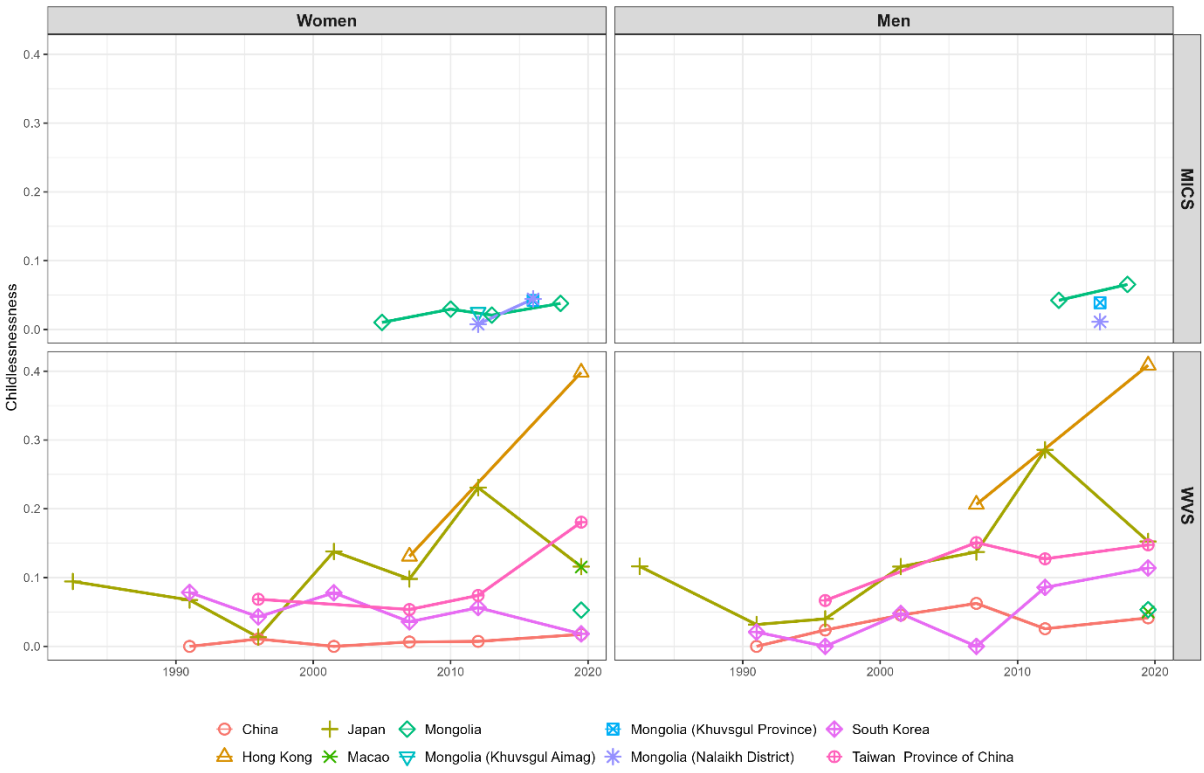
Final Childlessness in Central Asia



Final Childlessness in Eastern Europe

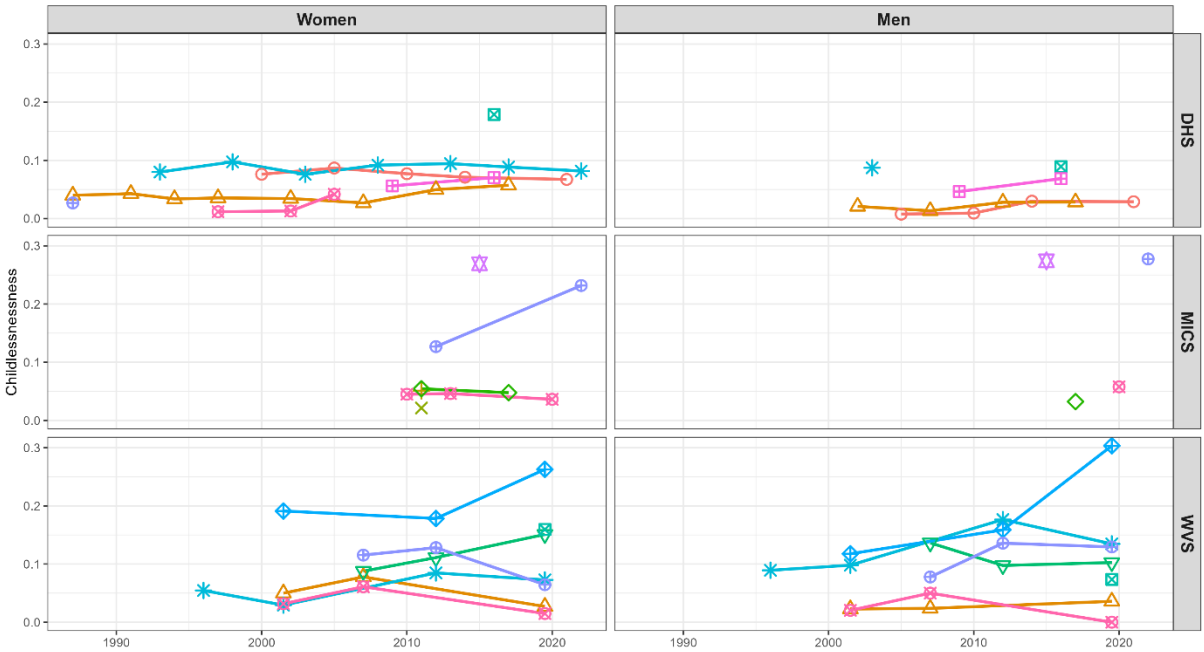


Final Childlessness in Eastern Asia



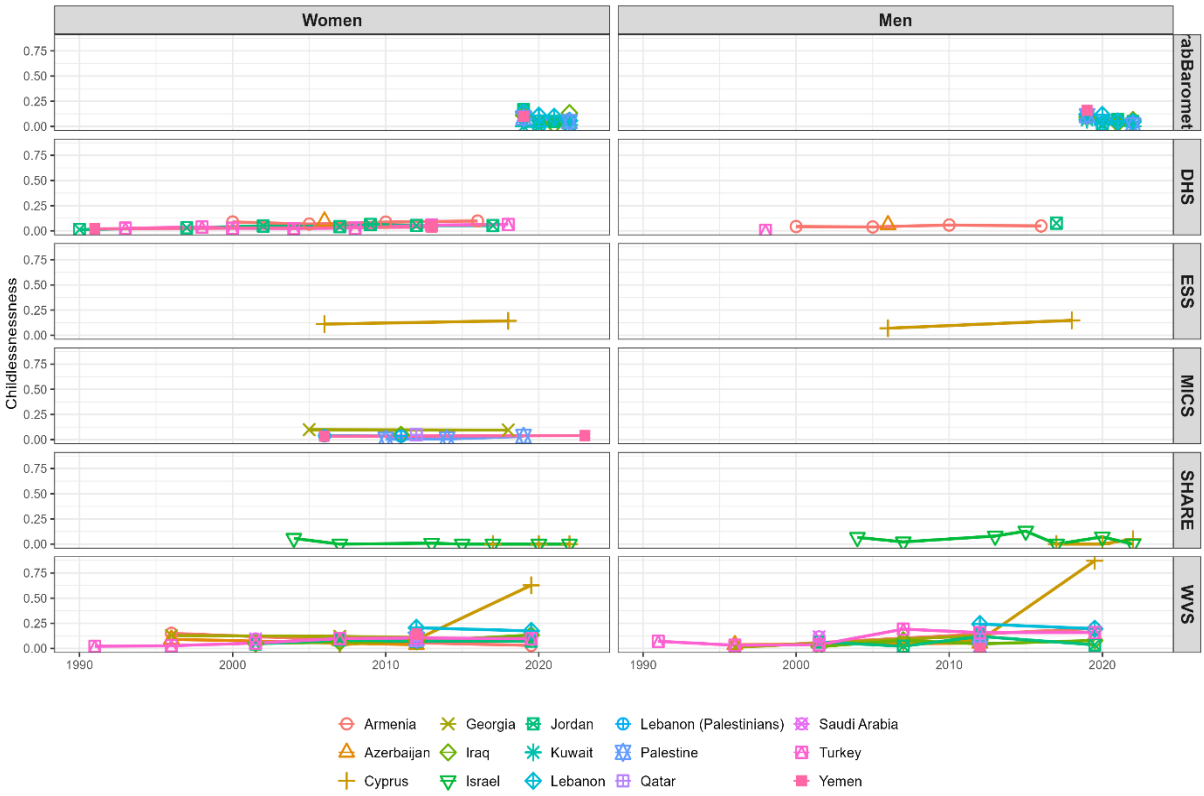
China
Japan
Mongolia
Mongolia (Khuvsgul Province)
South Korea
Hong Kong
Macao
Mongolia (Khuvsgul Aimag)
Mongolia (Nalaikh District)
Taiwan Province of China

Final Childlessness in South-eastern Asia

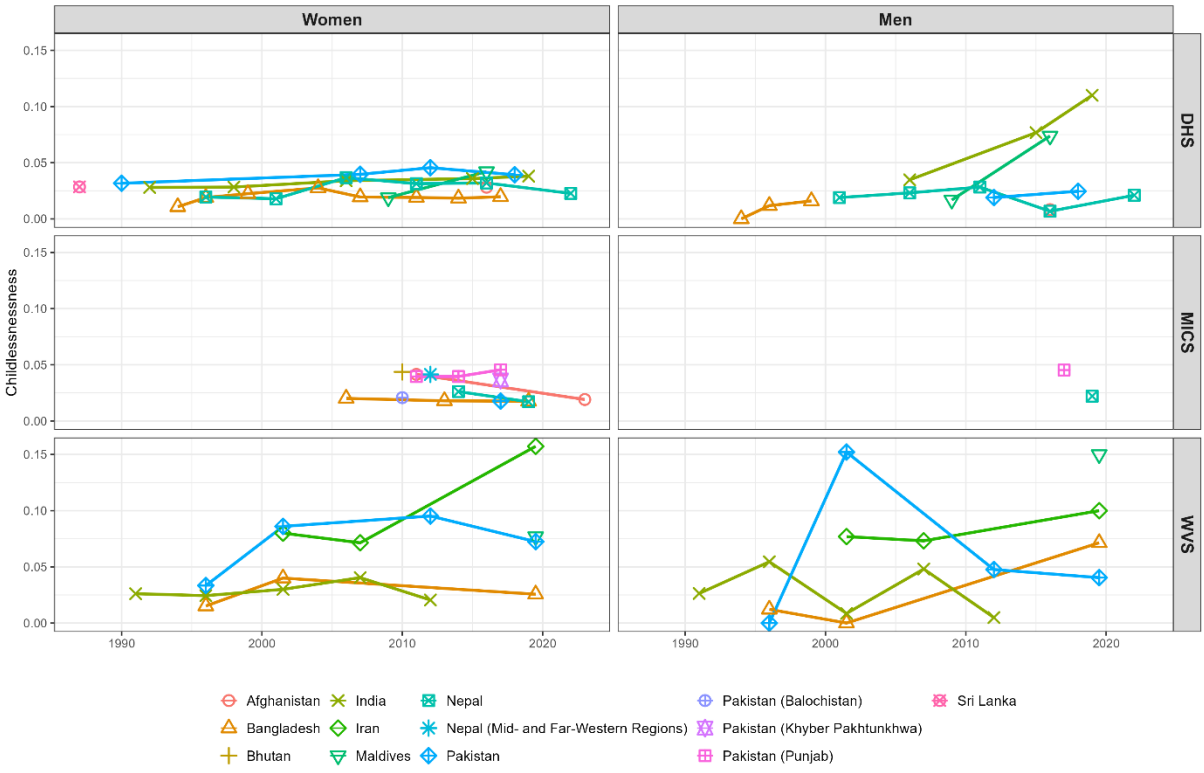


Cambodia
Indonesia
Indonesia (Selected Districts of Papua)
Indonesia (Selected Districts of West Papua)
Lao PDR
Malaysia
Myanmar
Philippines
Singapore
Thailand
Thailand Bangkok
Timor-Leste
Viet Nam

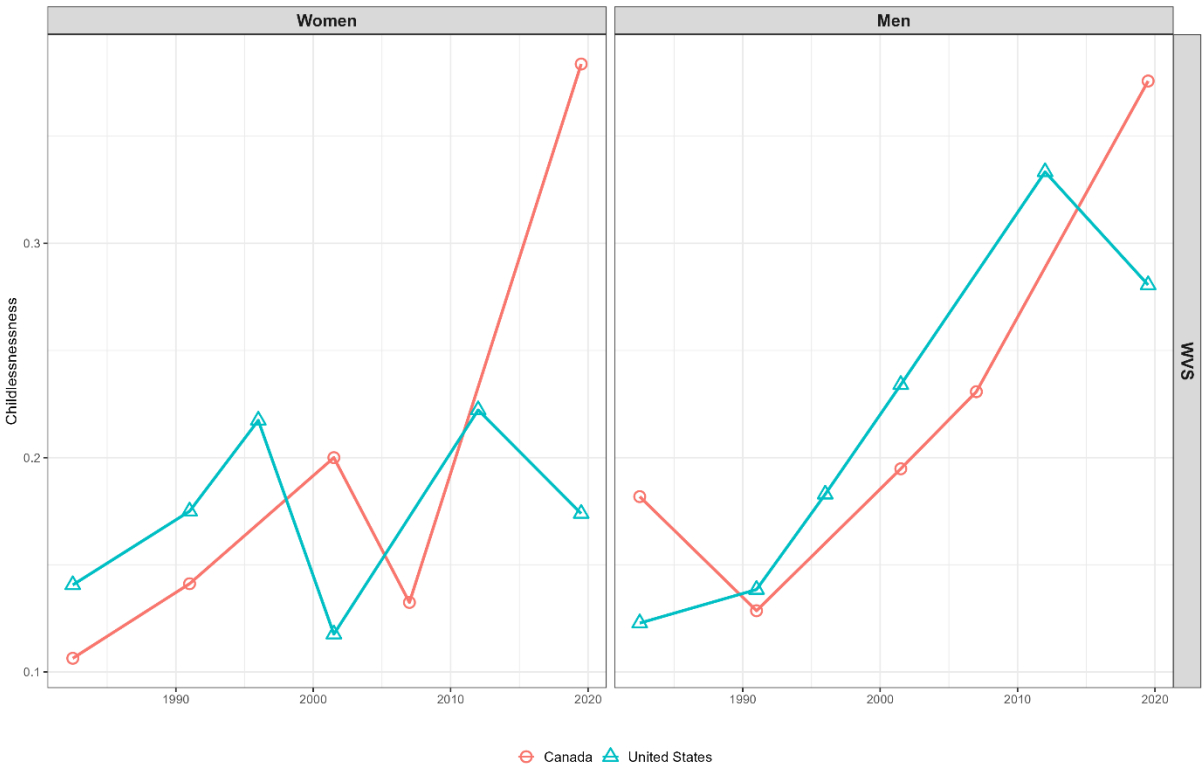
Final Childlessness in Western Asia



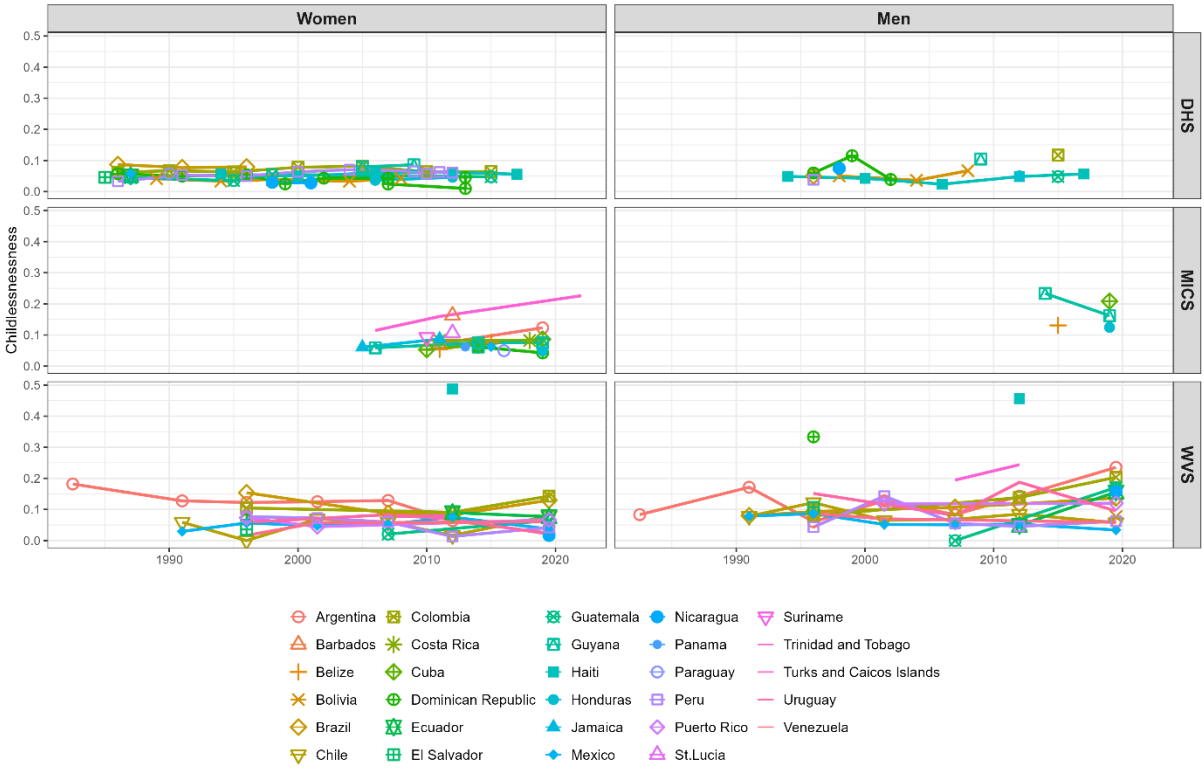
Final Childlessness in Southern Asia



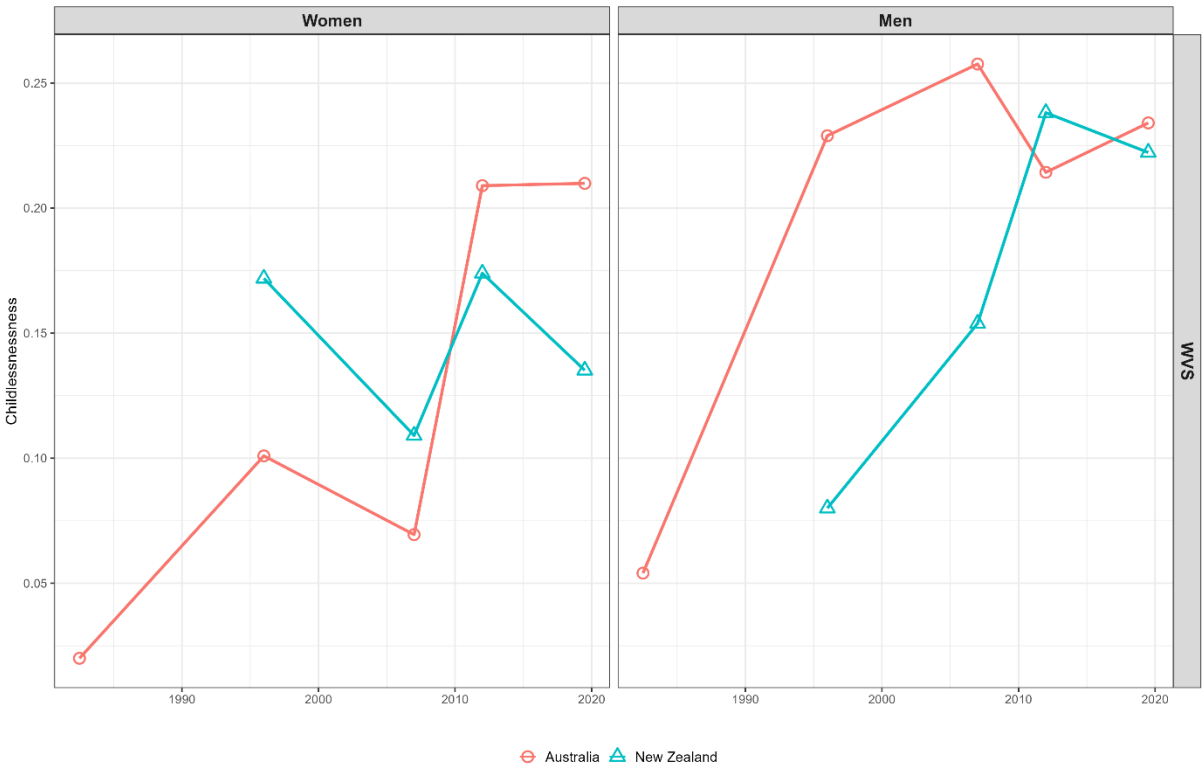
Final Childlessness in Northern America



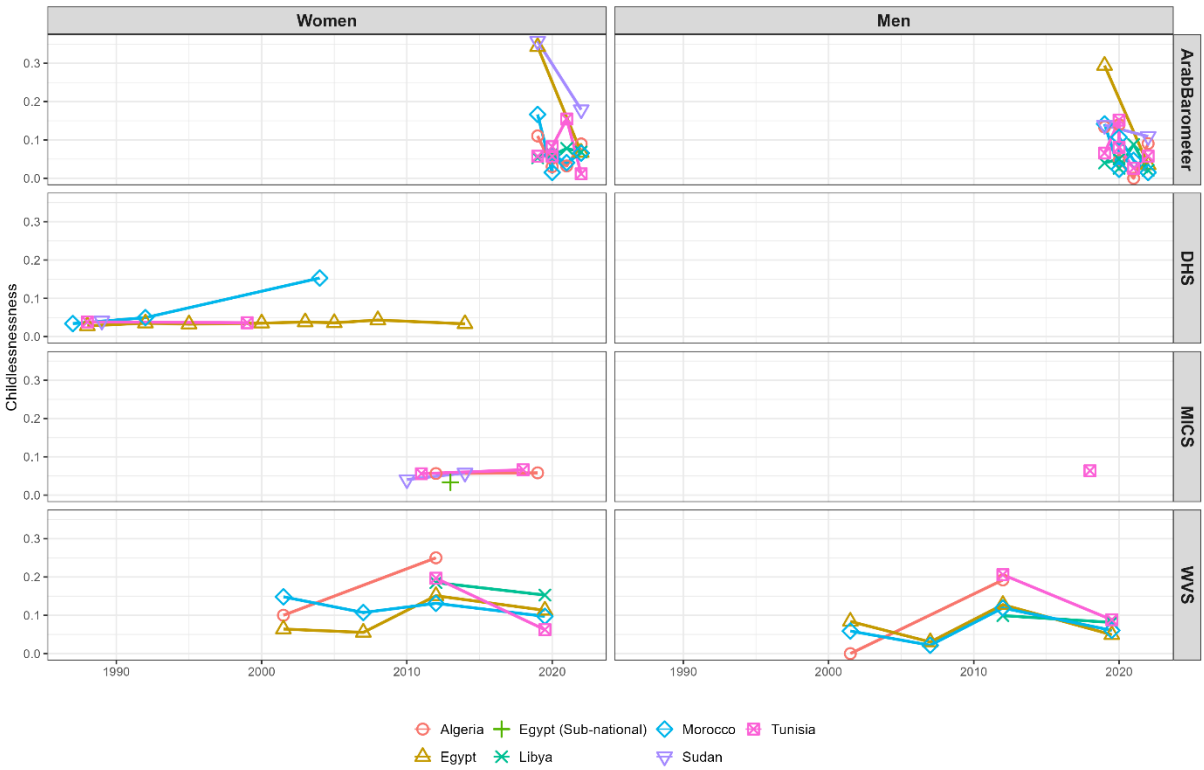
Final Childlessness in Latin America and the Caribbean



Final Childlessness in Australia and New Zealand



Final Childlessness in Northern Africa




Final Childlessness in Sub-Saharan Africa
Women
Men
AfroBarometer
DHS
MICS
WVS
Childlessness
0.00
0.05
0.10
0.15
0.20
1990
2000
2010
2020
Angola
Benin
Burkina Faso
Burundi
Cameroon
Central African Republic
Chad
Comoros
Congo
Democratic Republic of Congo
Djibouti
Eswatini
Ethiopia
Gabon
Gambia
Ghana
Ghana (Accra)
Guinea
Guinea Bissau
Ivory Coast
Kenya
Kenya (Bungoma County)
Kenya (Kakamega County)
Kenya (Mombasa Informal Settlements)
Kenya (Nyanza Province)
Kenya (Turkana County)
Lesotho
Liberia
Madagascar
Madagascar (South)
Malawi
Mali
Mauritania
Mozambique
Namibia
Niger
Nigeria
Nigeria (Ondo State)
Rwanda
Sao Tome and Principe
Senegal
Senegal (Dakar)
Sierra Leone
Somalia
Somalia (Northeast Zone)
Somalia (Somaliland)
South Africa
South Sudan
Tanzania
Togo
Uganda
Zambia
Zimbabwe