

Population dynamics and human capital in Muslim countries

*Mohammad Jalal Abbasi-Shavazi and Gavin W. Jones**

Abstract

Muslim countries have experienced unprecedented demographic and social transitions in recent decades. The population dynamics in most of these countries have led to the emergence of a young age structure. High-fertility countries such as Yemen and Afghanistan have the highest proportions of children in the population; while countries like Indonesia and Bangladesh, where fertility is approaching replacement level, have relatively high proportions of youth (aged 15–29) in the population. In Iran, fertility is below replacement level. Education, as an indicator of human capital, has also been improving in all Muslim countries, albeit with considerable variation. These dynamics are creating opportunities and challenges related to the economy, wealth distribution, health, political governance, and socio-economic structures. National development policies should emphasise human development to enable countries to take advantage of these emerging population trends, and to ensure that sustainable development is achieved at all levels. But given the cultural and socio-economic diversity among Islamic countries, context-specific analysis is needed to provide us with a deeper understanding of these population issues, as well as of the pathways to achieving population policy objectives.

1 Introduction: a demographic perspective

There is enormous international interest in Muslim countries and Muslim populations, stemming in part from the increasing recognition that Muslims make up a substantial part of the world's population. In addition, there are growing

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concerns about the tense international situations in the Middle East, through to Afghanistan, and Pakistan. In recent years, the focus of these concerns has been on the flow of refugees from these areas to other parts of the world; and on the growth of radical groups who espouse terrorism in the name of Islam, and are rejected by the vast majority of Muslims.

At the time Kirk (1966) published his article about the fertility levels of Muslims, there was a widespread “idea of a monolithic, unchanged (perhaps ‘immutable’) Muslim fertility” (Jones and Karim 2005, 3). Today, however, Muslim populations are very diverse, with many reporting declining fertility. Yet the share of Muslims in the populations of Europe is increasing, in part because the age structure of Muslim immigrant populations is young (Hackett 2016), and in part because of recent refugee inflows into Europe from the south and east. Thus, it is now widely recognised that in Europe, Muslim populations are increasing more rapidly than non-Muslim populations. In light of these developments, the need for dispassionate discussion of the demography of Muslim populations has never been greater.

Utilising various published data sources, this paper presents a comparative perspective on demographic trends and the human capital situation of Muslim populations. The main data sources for the figures presented in this chapter are the Wittgenstein Centre Data Explorer (<http://www.wittgensteincentre.org/dataexplorer>); the United Nations *Demographic Yearbooks*; and publications of the International Labour Organization, the Organization of Islamic Cooperation (<http://www.sesric.org/>), the World Economic Forum, and the Pew Research Center. Although these are standard sources of data, the indicators expressed in these publications may not always be accurate. Wherever the data presented differ from the data from national sources, the latter will be used.

The basic statistics on the number of Muslims in the world, and the growth of the Muslim population over time, are presented in Table 1. In 2017, the world’s Muslim population was estimated to number over 1.8 billion, or 24 per cent of the world’s population. Out of all Muslims, 74 per cent live in the 49 Muslim-majority countries, and 64 per cent live in countries where the share of Muslims in the population exceeds 70 per cent. Also in 2017, it was estimated that around 469 million Muslims are living in countries where less than 50 per cent of the population are Muslims; i.e., in Muslim-minority countries (Appendix Table A.1). The largest populations of Muslims living in countries where Muslims are not a majority are found in India (around 193 million Muslims, or 14 per cent of the population), Nigeria (93 million Muslims, or 49 per cent of the population),¹ and Ethiopia (36 million Muslims, or 34 per cent of the population). Other large minority Muslim populations are found in China (25 million), Russia (14.4 million), and Tanzania (20.1 million).

¹ Given the questionable quality of the available data for Nigeria, and estimates indicating that Muslims represent close to 50 per cent of the country’s population, it is impossible to know for certain whether Muslims are in the majority.

While the Islamic heartland is in the Middle East among Arabic populations, Islam has spread widely around the world. Currently, only 13.2 per cent of all Muslims live in Western Asia, and 12.3 per cent live in Northern Africa – which means that only about a quarter of the world’s Muslims are Arabs. Around 39.3 per cent of the world’s Muslims live in South and Central Asia, about 14.5 per cent live in Southeast Asia, and about 17.1 per cent live in Sub-Saharan Africa. Thus, almost 98 per cent of the world’s Muslims live in Asia and Africa. Viewed from a different perspective, these statistics show that Muslims constitute approximately 45 per cent of the population of Africa, and approximately 29 per cent of the population of Asia. The regions of the world where relatively few Muslims live are North and South America, Europe, East Asia, and Oceania.

As the number of Muslim-majority countries is large, we do not attempt in this brief paper to provide a detailed analysis of the demographic trends and characteristics of them all. Instead, we have chosen to focus on six of the seven largest Muslim-majority countries (in order of population: Indonesia, Pakistan, Bangladesh, Iran, Turkey, and Egypt) plus three others to give representation to the Maghreb (Algeria) and to countries with very low levels of economic and human development (Niger and Afghanistan). After presenting estimates of the population sizes in Muslim-majority countries, we analyse the fertility trends and age-structural transitions in the nine selected Muslim countries, and look at the implications of these trends for the demographic dividend. The progress these countries have made in improving the educational levels of their people is discussed in detail, as education plays a crucial role not only in raising levels of human capital, which enables countries to benefit from the demographic dividend; but in lowering levels of mortality and fertility (Lutz 2009). We then look at the question of whether these countries are taking advantage of the demographic dividend. As has been widely noted in the literature, the key prerequisites for benefiting from the demographic dividend are not just raising the educational attainment levels of the cohorts entering the workforce, but providing a growing supply of job opportunities for the burgeoning workforce. In this paper, we pay particular attention to women’s education and gender equality indices in Muslim-majority countries. We conclude by discussing the future of population growth in these countries, and the implications of these growth rates for human capital.

2 The Muslim world: unity and diversity

The two main divisions in Islam are between the Sunni and the Shi’ite. After the death of the Prophet Mohammad (AD 632), those who believed that he had not appointed a successor, and accepted the selection of a successor by his senior companions became the Sunni; whereas those who believed that the Prophet Mohammad had rightfully designated Ali, his cousin and son-in-law, as his successor became the Shi’ite. These sects are further divided into sub-groups. The Sunnis are believed to constitute about 85–90 per cent of all Muslims, while the

Table 1:
Population and percentage of Muslims in countries with Muslim-majority populations in 2017

Country/region	Population in 2017, (m)		Estimated Muslim population in 2017 (m)		Country/region	Population in 2017, (m)		% Muslim		Estimated Muslim population in 2017 (m)
	(1)	(2)	(1)	(2)		(1)	(2)	(1)	(2)	
Africa	367.00		337.24		Asia	1,096.91				1,006.14
Eastern Africa	16.75		16.67		South-Eastern Asia	296.04				250.66
Somalia	14.74	99.8	14.71	99.8	Indonesia	263.99	87.2	230.20	87.2	230.20
Comoro	0.81	98.3	0.80	98.3	Brunei	0.43	75.1	0.32	75.1	0.32
Mayotte	0.25	98.6	0.25	98.6	Malaysia	31.62	63.7	20.14	63.7	20.14
Djibouti	0.95	96.9	0.92	96.9						
Northern Africa	233.57		223.65		South/Central Asia	549.61				518.33
West Sahara	0.55	99.4	0.55	99.4	Maldives	0.43	98.4	0.42	98.4	0.42
Algeria	41.30	97.9	40.43	97.9	Iran (Islamic Republic of)	81.16	99.5	80.75	99.5	80.75
Morocco	35.74	99.9	35.70	99.9	Afghanistan	35.53	99.7	35.42	99.7	35.42
Tunisia	11.53	99.5	11.47	99.5	Pakistan	197.01	96.4	189.92	96.4	189.92
Libya	6.37	96.6	6.15	96.6	Bangladesh	164.66	90.4	148.85	90.4	148.85
Egypt	97.55	94.9	92.57	94.9	Uzbekistan	31.90	96.7	30.85	96.7	30.85
Sudan	40.53	90.7	36.76	90.7	Turkmenistan	5.75	93.0	5.35	93.0	5.35
					Tajikistan	8.92	96.7	8.63	96.7	8.63
Western Africa	116.68		96.92		Kazakhstan	18.20	70.4	12.81	70.4	12.81
Mauritania	4.42	99.1	4.38	99.1	Kyrgyzstan	6.05	88.0	5.32	88.0	5.32
Gambia	2.10	95.1	2.00	95.1						
Senegal	15.80	96.4	15.23	96.4	Western Asia	251.26				237.15
Mali	18.54	94.4	17.50	94.4	Yemen	28.25	99.1	28.00	99.1	28.00
					Turkey	80.74	98.0	79.13	98.0	79.13

Continued.

Table 1:
Continued

Country/region	Population in 2017, (m) (1)	% Muslim (2)	Estimated Muslim population in 2017 (m)	Country/region (3)	Population in 2017, (m) (1)	% Muslim (2)	Estimated Muslim population in 2017 (m)
Niger	21.47	98.4	21.13	Palestine (3)	4.92	97.6	4.80
Guinea	12.72	84.4	10.74	Iraq	38.27	99.0	37.89
Sierra Leone	7.55	78.0	5.89	Saudi Arabia	32.93	93.0	30.62
Chad	14.89	55.3	8.23	Jordan	9.70	97.2	9.43
Burkina Faso	19.19	61.6	11.82	United Arab E	9.40	76.9	7.23
Europe	4.83		4.13	Qatar	2.64	67.7	1.79
Albania	2.93	80.3	2.35	Azerbaijan	9.82	96.9	9.52
Kosovo	1.90	93.8	1.78	Oman	4.63	85.9	3.98
				Syria	18.26	92.8	16.95
				Kuwait	4.13	74.1	3.06
				Bahrain	1.49	70.3	1.05
				Lebanon	6.08	61.3	3.73
Total				Total	1,468.74		1,347.52
				Total in countries with less than 50%			469.50
				Total Muslims			1,817.02

Note: (1) United Nations Population Division, 2017. (2) % Muslims were obtained from Pew Research Center 2010 (http://assets.pewresearch.org/wp-content/uploads/sites/11/2015/03/PF_15.04.02_ProjectionsFullReport.pdf); (3) State of Palestine (Including East Jerusalem).
Source: United Nations Population Division, <https://esa.un.org/unpd/wpp/DataQuery/>

Shi'ite make up about 10–13 per cent of Muslims (PEW 2009). Shi'ites constitute a majority of the population in Iran, Iraq, Azerbaijan, Yemen, and Bahrain. The world at large has become well aware of Sunni–Shi'ite tensions, as the conflicts between these two sects have been highlighted in news reports about Iraq since the overthrow of Saddam Hussein in 2003; the Syrian civil war, which began in 2011 and is still ongoing; protests in Bahrain in 2011, where the Sunni minority control the state; and the civil conflict in Yemen, which began in late 2014 and is still continuing.

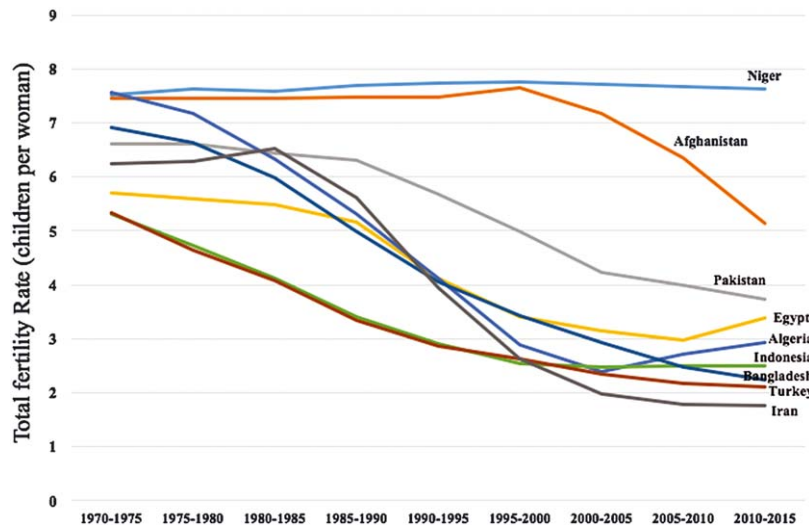
While the Muslim world is a unique *ummah* with a common set of core religious beliefs, Islamic countries have a very wide range of cultural and socio-economic characteristics (Abbasi-Shavazi and Jones 2005). The outside world's reaction to 'Islam' appears to be grounded in stereotypes of the cultural characteristics of particular ethnic groups who follow the Islamic faith. It is important that the diversity of those groups, and the rich tapestry of cultures that have embraced Islam, be recognised.

3 The fertility transition in Muslim-majority countries

Population change in Muslim-majority countries (hereafter referred to as Muslim countries, for the sake of brevity) is mainly the result of differences in birth and death rates, although net migration also affects population growth in some of the West Asian countries and in Malaysia. Moreover, refugee flows have recently had large effects on population trends in several of these countries, including Pakistan, Afghanistan, and Iran. According to the United Nations Population Division, the population growth rate in the world as a whole was 1.18 per cent in the 2010–2015 period. This rate was, however, higher in 42 of the 46 Muslim countries. In the less developed regions of the world (excluding China), the population growth rate over the same period was 1.62 per cent; but again, this rate was higher in 33 of the 46 Muslim countries. These broad comparisons clearly indicate that the Muslim countries have growth rates well above the average. However, if weighted by population, the excess growth rate in Muslim nations becomes smaller, because population growth rates have been relatively low in some of the most populous Muslim nations. For example, the growth rate in the 2010–2015 period was 1.20 per cent in Bangladesh, 1.28 per cent in Indonesia, and 1.27 per cent in Iran.

Both mortality and fertility rates have fallen considerably in most Muslim countries. The mortality transition will not be discussed in detail here, but it should be kept in mind that a declining rate of infant and childhood mortality is generally considered to be an important prerequisite for declining fertility. The infant mortality rate (number of infant deaths per 1,000 live births) has fallen sharply over the past three decades in most of the nine countries this paper will focus on. For example, over this period the infant mortality rate has declined from 80 to 25 in Indonesia, from 126 to 33 in Bangladesh, and from 71 to 15 in Iran. However, the infant mortality rate has remained very high in Afghanistan (71), Pakistan (70), and Niger (60).

Figure 1:
Trends in the total fertility rate in nine Muslim-majority countries, 1970–75 to 2010–15



Source: United Nations Population Division, 2015.

Turning to fertility, we see that the transition to low levels has proceeded remarkably rapidly in some of the main Muslim countries, as shown in Figure 1. The most spectacular case is that of Iran, which experienced one of the most rapid fertility declines ever recorded (Abbasi-Shavazi *et al.* 2009; Hosseini-Chavoshi and Abbasi-Shavazi 2012). Indeed, efforts to reduce fertility have been so successful in Iran that the country has recently shifted its population policy from being anti-natalist to being pro-natalist (McDonald *et al.* 2015; Hosseini-Chavoshi *et al.* 2016). Bangladesh and Indonesia have also recorded very rapid declines; although in Indonesia, fertility decline has stalled over the past 15 years, and currently remains substantially (about 19 per cent) above replacement level. Turkey has experienced a steady fertility decline, and recently reached replacement level. Pakistan’s fertility remained very high until the 1990s. The country’s fertility level has declined substantially since then, but remains far above replacement level. Given the continued pyramidal age structure in Pakistan, massive population increases are projected for the country in the coming decades, even if fertility decreases fairly rapidly from the current point onwards.

In Algeria, fertility fell precipitously over the 1980s and 1990s, and was close to replacement level when, in the early 2000s, it started increasing again. In Egypt, the TFR decreased more gradually, but after reaching a level of just below three, it resumed its upward trend around 2005-2010. This means that three of the major Muslim countries – Indonesia, Algeria, and Egypt – experienced either a stalling

of the fertility decline or an actual increase in fertility around the same period. It has been argued that an increase in religiosity had something to do with the fertility increase in Indonesia (Hull 2016). But in Algeria and Egypt, it seems that high unemployment and the declining labour force participation of women – and particularly of the trend-setting group of women with more education – were the key reasons for the fertility increase (Ouadah-Bedidi and Vallin 2013; Assaad and Kraft 2015).

The final two countries plotted in Figure 1, Afghanistan and Niger, have both had extremely high fertility rates. In Afghanistan, there is some evidence of the beginnings of a decline, although the TFR remains above five; but in Niger, there is no such evidence, and the TFR remains above seven. Niger is representative of a number of Muslim countries in Sub-Saharan Africa (and of a number of Christian-majority countries in the same region) where fertility levels remain extremely high.

Because it concentrates on large countries, Figure 1 does not do full justice to the spectacular declines in fertility recorded by some Muslim countries. A recent study has noted that six of the 10 largest absolute declines in fertility ever recorded in a 20-year period have occurred in Muslim countries (Eberstadt and Shah 2012, 16). But except for Iran and Algeria, these were very small countries: namely, Oman, Maldives, Kuwait, and Libya. Interestingly, four of these countries are in the Arab world; and if we add Iran, five of them are located in the greater Middle East. These spectacular declines in fertility would have come as a surprise to those earlier commentators who believed that there were reasons why ‘Muslim fertility’ would remain higher than elsewhere (e.g., Kirk 1966).

4 Age structural change and the demographic dividend

A history of high fertility leaves a population with an age structure that is highly conducive to further population growth. One reason why so many Muslim countries still have population growth rates above the world average is that even though a number of these countries have experienced major fertility declines, most have experienced them quite recently, and are therefore still experiencing age structure effects; or what is sometimes referred to as demographic momentum.

Table 2 shows the changes in the population age structures of the nine Muslim countries that are the focus of this paper. Three indicators are given: the percentage of children in the population, the median age, and the dependency ratio. Looking at the table, it is apparent that in the 1970s, these indicators were fairly similar across all nine countries. But in the 1980s and in the 1990s in particular, major differences began to emerge as some of these countries experienced major declines in fertility, while others experienced no decline at all. By the 21st century, these differences had widened substantially. For example, in 2015, the proportion of children in the population was, at 50 per cent, twice as high in Niger as it was in Iran or Turkey. Whereas half the population was under age 19 in all of these countries in the 1970s, by 2015, this was still the case in only two of the countries, and the median age

Table 2:
Indicators of age structure change, nine Muslim-majority countries

	1970	1975	1980	1985	1990	1995	2000	2005	2010	2015
Children 0–14 as % of total population										
Indonesia	43.2	42.5	41.1	39.0	36.4	33.7	30.7	29.9	28.9	27.7
Bangladesh	44.9	45.1	44.8	43.8	42.3	39.9	37.1	34.5	32.1	29.4
Pakistan	42.4	43.1	42.9	42.6	43.0	42.7	41.1	38.2	36.2	35.0
Iran	44.1	43.3	43.5	45.4	45.4	42.2	34.9	26.0	23.5	23.6
Turkey	42.1	40.9	40.1	38.5	36.3	33.3	30.7	29.9	28.9	25.7
Egypt	41.3	40.3	40.0	40.3	41.0	39.5	36.3	33.1	31.9	33.2
Algeria	46.9	46.7	46.3	45.4	43.3	39.7	34.3	29.1	27.2	28.5
Afghanistan	44.2	45.2	46.0	47.3	48.1	47.8	48.6	47.6	47.6	44.0
Niger	48.2	47.9	47.5	47.7	47.7	47.4	47.9	49.1	50.0	50.5
Median age of population										
Indonesia	18.6	18.5	19.1	19.9	21.3	22.8	24.4	25.5	26.7	28.0
Bangladesh	17.8	17.6	17.3	17.7	18.6	19.5	20.9	22.4	23.9	25.6
Pakistan	19.3	18.6	18.5	18.6	18.5	18.6	19.2	20.2	21.4	22.5
Iran	17.7	18.1	18.1	17.3	17.2	18.5	20.8	24.1	26.9	29.5
Turkey	19.0	19.6	20.0	21.0	22.1	23.5	24.9	26.6	28.3	29.9
Egypt	19.0	19.2	19.4	19.5	19.6	20.1	21.2	22.6	23.9	24.7
Algeria	16.4	16.5	16.7	17.1	18.0	19.4	21.7	24.1	26.0	27.5
Afghanistan	17.9	17.4	17.0	16.3	15.9	16.0	15.7	16.1	16.0	17.3
Niger	15.6	15.7	16.0	15.7	15.8	15.9	15.9	15.4	15.0	14.9
Dependency ratio (population 0–14 + 65+/population 15–64)										
Indonesia	87.0	85.2	80.7	74.4	67.3	60.8	54.8	53.5	51.1	49.2
Bangladesh	91.0	92.7	91.9	88.0	83.3	76.4	69.2	63.1	58.2	52.6
Pakistan	85.9	88.3	87.8	86.8	88.4	87.6	82.4	73.6	68.4	65.3
Iran	90.1	87.0	86.9	93.6	95.0	84.8	64.3	44.9	39.6	40.2
Turkey	83.5	81.9	79.7	73.9	67.8	61.9	58.0	54.5	51.8	50.1
Egypt	86.0	84.0	82.9	82.7	83.5	79.6	70.8	61.9	58.4	61.8
Algeria	101.5	101.3	98.9	95.1	87.7	76.5	62.9	51.6	48.5	52.7
Afghanistan	88.1	91.3	93.6	97.9	101.0	100.5	103.3	99.0	100.4	88.8
Niger	101.6	101.1	100.2	102.4	103.2	102.0	102.5	106.5	110.2	111.6

Source: United Nations Population Division, 2017.

of the population had risen by more than 10 years in Indonesia, Iran, Turkey, and Algeria. The increases were not as large as they were in the other countries, and in two countries – Afghanistan and Niger – there was no increase at all.

The dependency ratio is only a notional indicator of real dependency for a number of reasons. For example, many young people aged 15–19 are still in education and are not available for work; and many older people continue working beyond age 64. Nonetheless, the dependency ratio remains useful as a rough shorthand indicator of the effect of changing age structures on the ratio of potential dependants to potential producers in the population. It is generally believed that a dependency ratio of below

60 provides a very favourable demographic structure for economic development. Indonesia was the first of the countries in Table 2 to enter this favourable zone around 1995, and was followed shortly thereafter by Turkey. In the early 2000s, a number of other countries moved into this zone as well, including Iran and Algeria, followed by Bangladesh and Egypt. The dependency ratio in Iran fell to a remarkably low level by 2010. However, Pakistan has not yet entered the favourable zone, and Afghanistan and Niger remain far away from the zone, burdened as they are by a large and rapidly growing population of children.

5 Education and human capital in Muslim countries

Education is the main driving force of development, autonomy, and demographic change; as it introduces men and women to modern ways of thinking, and it imbues them with the confidence they need to engage with the modern world. Education is thus known to promote lower infant mortality, higher ages at marriage, and higher levels of gender equity within couple relationships. As women who have attended school are more likely to participate in the cash economy labour force, having an education raises the opportunity costs of having children.

Islam values education for all human beings. This is evident from several Quranic verses (see, for instance, Quran, chapter 2, verses 30–33; chapter 20, verse 114; chapter 39, verse 9; chapter 96, verses 1–5) and from words and acts attributed to Prophet Muhammad (*hadith*) that emphasise the importance of education (Jafri 2011). The well-established *hadith* from Prophet Muhammad, “seeking knowledge is obligatory upon every Muslim” (Al-Kafi), makes it clear that both men and women are expected to pursue an education (Abbasi-Shavazi and Torabi 2012). After the death of the Prophet Muhammad in 632 AD, Islam spread to people with different languages, customs, religions, and legal systems (Makhlouf Obermeyer 1992, 42). Thus, cultural and religious practices vary across Muslim countries. Despite the historical evidence that Islam has always emphasised the importance of education, and that female education has been encouraged in some parts of the Islamic world, levels of education among women have, until recently, been low in some Muslim countries. Studies (Abbasi-Shavazi and Torabi 2012; Torabi and Abbasi-Shavazi 2015; Pew Research Center 2016) have shown that in Muslim-majority countries, educational levels have improved considerably in recent years; although the magnitude of these changes and the overall achievement levels vary across geographic regions, and within each region.

Table 3 shows the levels and trends in mean years of schooling for females aged 20–39 in the nine selected Muslim countries between 2015 and 2050. The countries’ performance on this measure differs considerably. Levels of female education are highest in Algeria, Indonesia, and Iran; and are lowest in Niger and Pakistan. No data exist for Afghanistan, but it is estimated that the level in Afghanistan is somewhere between that of Niger and Pakistan. While the Wittgenstein Centre’s projections show an increasing trend in mean years of schooling for females, the

Table 3:
Trends in mean years of schooling for females (20–39) in selected Muslim countries 2015–2050

Country	2015	2020	2025	2030	2035	2040	2045	2050
Algeria	10.7	11.3	11.9	12.3	12.7	12.9	13.1	13.3
Bangladesh	6.9	7.4	7.9	8.3	8.8	9.2	9.6	10.0
Indonesia	10.0	10.5	10.9	11.3	11.6	11.9	12.2	12.4
Iran (Islamic Republic of)	10.0	10.6	11.2	11.7	12.2	12.5	12.8	13.1
Niger	1.5	1.9	2.3	2.8	3.4	4.0	4.6	5.3
Pakistan	4.8	5.5	6.2	7.0	7.7	8.4	9.1	9.7
Turkey	8.7	9.3	10.0	10.5	11	11.4	11.8	12.1
Egypt	9.7	10.7	11.5	12.1	12.5	12.9	13.1	13.3
Afghanistan	–	–	–	–	–	–	–	–

Source: Wittgenstein Centre, <http://www.wittgensteincentre.org/dataexplorer>

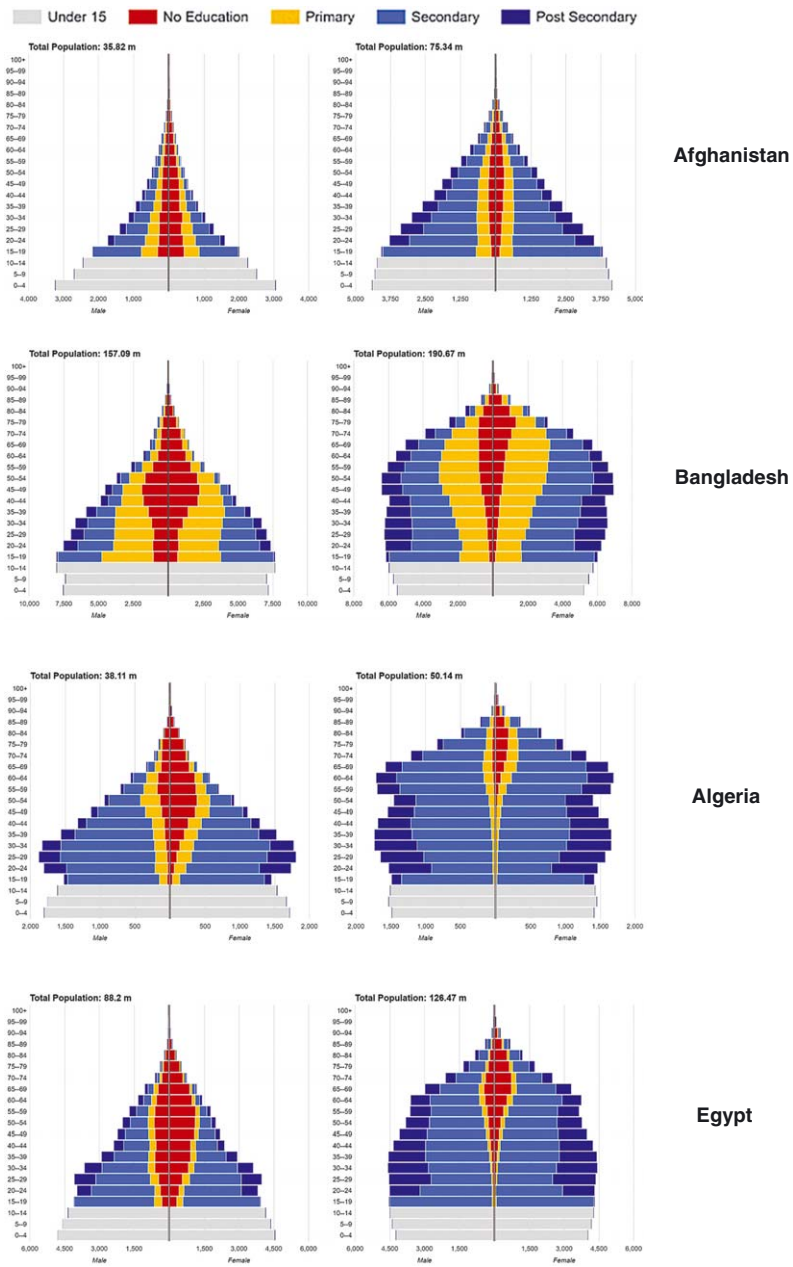
magnitude of this trend differs across the selected countries. The projections indicate that by 2050, the mean years of schooling among females will increase from a relatively high 2015 base by 2.4 years in Indonesia; and will increase from a much lower base by 3.8 years in Pakistan and by 4.9 years in Niger.

Although the numbers of women in Muslim countries who are becoming literate are increasing over time, considerable gender gaps in access to education remain in these countries. The gender differences are generally larger in West Africa, where literacy levels are still much higher among young men than among young women. The educational gender gap in Islamic countries has been attributed to stratified gender roles, which are still in effect in these societies (see Makhlouf Obermeyer 1992; Roudi-Fahimi and Moghadam 2003). Other factors that may contribute to the existing gender gap in education include cultural objections to girls attending school; as well as the absence of or barriers to accessing educational institutions in rural or remote areas, which can make it difficult for girls in particular to attend school. But with rapid urbanisation, women in most of these countries have better access to education now than in the past. In addition, as development levels increase, access to education exists in the majority of rural areas in the Islamic world, although these schools are often of poor quality (Abbasi-Shavazi and Torabi 2012).

In a series of studies, Lutz et al. (2008) reassessed the macro-level returns to education using a newly reconstructed set of data of educational attainment distributions by sex and five-year age groups for 120 countries across the world. Lutz (2009 and 2014) argued that considering education as a source of observed heterogeneity can add greatly to our understanding of the forces driving population change.

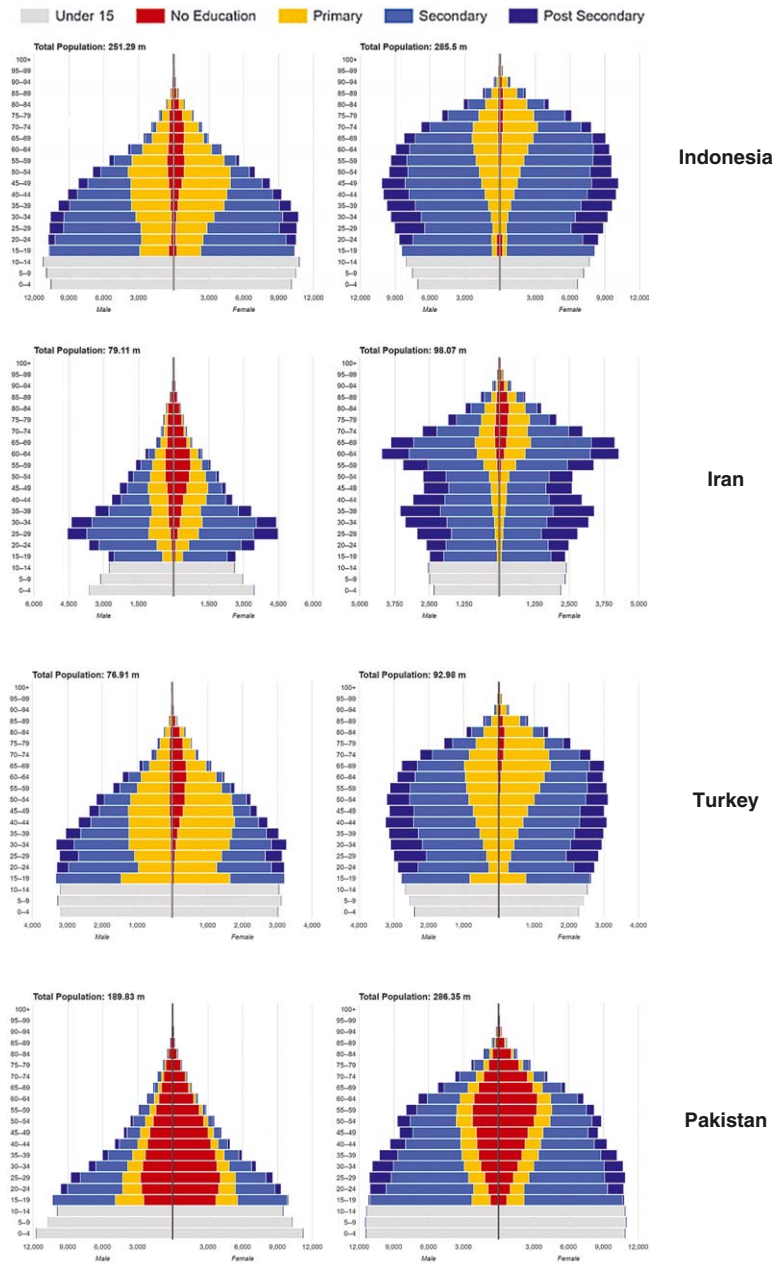
Having shown the substantive importance of education for and the pervasive influence of education on demographic trends, Lutz et al. (1999) suggested in a

Figure 2:
Age and education pyramids of the selected Muslim countries in 2015 and projected to 2050



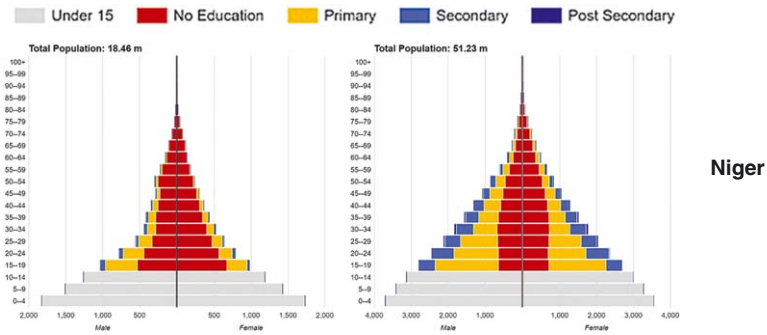
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Continued



Source: Wittgenstein Centre, <http://www.wittgensteincentre.org/dataexplorer>

contribution entitled ‘Demographic dimensions in forecasting: Adding education to age and sex’ that education should be given a status in demography immediately after that of age and sex.

Following this principle, the International Institute for Applied Systems Analysis (IIASA), in collaboration with the Vienna Institute of Demography (VID) of the Austrian Academy of Sciences, has produced a new unique dataset that applies demographic multi-state projection techniques to reconstruct from empirical data the population by age, sex, and four levels of educational attainment. A comprehensive description of the methods and the results of this reconstruction is given in Lutz et al. (2007) and KC et al. (2008).

At any point in time, the distribution of the population by age, sex, and level of educational attainment reflects the history of changes in the proportions of a cohort who attended school and reached certain educational levels. Since formal education typically happens in childhood and youth, the current educational attainment distribution of 50–54-year-old women, for instance, reflects the education conditions and school enrolment levels of more than 30 years ago. This pattern can be observed in Figure 2, which shows the educational age pyramid of the selected Muslim countries in 2015 and 2050. The figure clearly indicates that younger Muslims are not only much more numerous (due to the history of very high fertility), but are, on average, much better educated than the older cohorts. This recent improvement in educational attainment has been particularly pronounced among women. In some Muslim countries, more than two-thirds of the current generation of young women have completed at least junior secondary education, compared with only a tiny fraction of their mothers’ generation. Hence, the historic trend of educational levels increasing over time is reflected in today’s age pattern of education.

high proportions of the population are under age 15; whereas in Iran, Turkey, and Indonesia, which recently underwent fertility transitions, the proportions of the population age under 15 are lower than in the other countries. The other noteworthy feature of these age pyramids is that they reveal wide differences in levels of education in 2015. Large proportions of the populations of Niger, Pakistan, and Afghanistan have no education; while only small proportions of the populations of Indonesia, Iran, and Turkey have no education. The age pyramids clearly show that in Niger and Pakistan, females have lower levels of education than males.

As Lutz (2013) has pointed out, as education advances, all countries will experience a ‘demographic metabolism’ through which the older and illiterate population will be replaced by an educated and younger population. Thus, there is considerable potential for human capital to increase and for educational levels to rise in these countries. It is obvious from the Wittgenstein Projections that by 2050, levels of human capital will have improved even in those Muslim countries that have lagged behind in recent years.

6 Is the demographic dividend being used effectively?

As we have noted, many Muslim countries currently have a demographic structure that is conducive to development. But are they taking effective advantage of this potential demographic dividend? There are a number of elements to take into account in answering this question. For the demographic dividend to be used effectively in raising per capita incomes, and hence in improving the wellbeing of the population, the high proportion of the population of potential working ages needs to be absorbed into productive employment. There are both supply and demand aspects of this need. On the supply side, those entering labour force ages need to be well educated so that they have the capacity to be productively employed, and they need to be available for work. On the demand side, sound economic planning is necessary to ensure that employment opportunities are expanding and unemployment levels are not increasing (Jones 2012).

On both these counts, the picture is a mixed one in Muslim countries. As we discussed above, educational levels are rising among each successive cohort, albeit at varying speeds across countries. But when we apply a simple measure used by the ILO – the employment-to-population ratio – to show the proportion of a country’s working-age population who are employed, we find that many Muslim countries have relatively low ratios (see Table 4). This is because many people are either unemployed or (more commonly) out of the labour force altogether. Unemployment rates are very high in some predominantly Muslim countries, especially in MENA (Middle East and North Africa) countries. In 2014, unemployment among youth in the Arab region was more than twice as high (29.7%) as the global average (14.0%). This situation is projected to worsen in the near future (UNDP 2016). But the more important factor is that in many Muslim countries, the labour force participation

Table 4:
Employment-to-population ratios for a number of Muslim countries and some comparator countries, 2017

Country	Employment-to-population ratio
Afghanistan	48.0
Algeria	38.9
Bangladesh	59.8
Egypt	44.0
Indonesia	63.4
Iran	39.7
Iraq	35.8
Morocco	44.3
Pakistan	51.1
Saudi Arabia	51.2
Turkey	44.8
Yemen	42.0
Comparator Countries	
United Kingdom	59.5
Germany	57.7
USA	58.8
Thailand	70.6
Philippines	61.0
Brazil	58.5

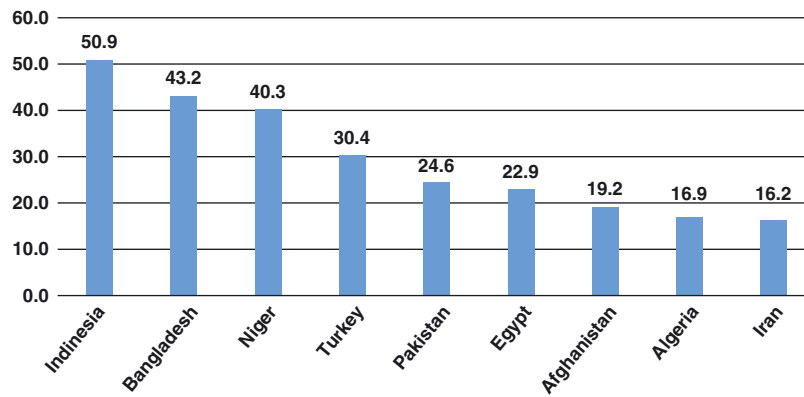
Source: ILOSTAT.

rates of women – including of women with relatively high levels of education – are very low (see Figure 3).

The low proportion of women in the workforce is an important factor holding down the average income levels in many Muslim countries. It is, however, clear from Figure 3 that there is enormous variation in female labour force participation in Muslim countries. The participation rate in Indonesia is twice that in Pakistan and three times that in Egypt and Iran. Similarly large differences can be observed if the comparison is restricted to the well-educated female population.

When data on female labour force participation rates (FLFPRs) are compared across all Muslim countries, enormous variation can be seen, with relatively high rates in some of the African countries and in countries such as Azerbaijan, Tajikistan, Bangladesh, and Indonesia; but extremely low rates in countries such as Algeria, Iraq, Iran, Jordan, and Syria. In many Muslim countries, FLFPRs have been rising over time. But the FLFPRs in these countries are, on average, lower than those in the rest of the world. These low rates represent an obstacle to achieving higher per

Figure 3:
Labour force participation (%) for females aged 15+, 2016



Source: Organization of Islamic Cooperation, <http://www.sesric.org/>

capita income levels, because (assuming roughly similar male participation rates across countries) lower proportions of the working-age (and of the total) population are in the workforce in Muslim-majority than in non-Muslim-majority countries.

We must be cautious in interpreting the FLFPR figures because the measurement of female economic activity can be affected by the content and the sequence of questions on economic activity in censuses and surveys, and by the person who provides the information to the interviewer. There is, for example, a tendency for male respondents to understate the extent of the workforce participation of the females in the household (Verick 2014, 8–9). However, the relatively low FLFPRs observed in the Arab countries in particular appear to be real, and to indicate “entrenched social biases against the employment of women” (*Arab Human Development Report 2009*, 10). Paradoxically, these restrictions on women’s employment remain while educational opportunities for girls are improving, which points to a clear need to give urgent priority to the effective utilisation of the skills of the increasing number of young women receiving education. Making it easier for young women who currently face barriers to employment to participate in the labour market would contribute to economic development, and enhance the well-being of these women.

7 Gender equality indices

There are a number of indexes showing aspects of gender equality in Muslim countries. An index used by UNESCO and other agencies to measure the relative access of males and females to education is the gender parity index. This is a simple

Table 5:
Global Gender Gap Index for Muslim countries, 2016

Country name	Global gender gap index 2016		Country name	Global gender gap index 2016	
	Rank	Score		Rank	Score
Afghanistan	n.a.	n.a.	Maldives	115	0.650
Albania	62	0.704	Mali	138	0.591
Algeria	120	0.642	Mauritania	129	0.624
Azerbaijan	86	0.684	Morocco	137	0.597
Bahrain	131	0.615	Niger	n.a.	n.a.
Bangladesh	72	0.698	Oman	133	0.612
Brunei	103	0.669	Pakistan	143	0.556
Burkina Faso	123	0.640	Palestine	n.a.	n.a.
Chad	140	0.587	Qatar	119	0.643
Comoros	n.a.	n.a.	Saudi Arabia	141	0.583
Djibouti	n.a.	n.a.	Senegal	82	0.685
Egypt	132	0.614	Sierra Leone	n.a.	n.a.
Gambia	104	0.667	Somalia	n.a.	n.a.
Guinea	122	0.640	Sudan	n.a.	n.a.
Indonesia	88	0.682	Syria	142	0.567
Iran	139	0.587	Tajikistan	93	0.679
Iraq	n.a.	n.a.	Tunisia	126	0.636
Jordan	134	0.603	Turkey	130	0.623
Kuwait	128	0.624	Turkmenistan	n.a.	n.a.
Kyrgyzstan	81	0.687	United Arab Emirates	124	0.639
Lebanon	135	0.598	Uzbekistan	n.a.	n.a.
Libya	n.a.	n.a.	Western Sahara	n.a.	n.a.
Malaysia	106	0.666	Yemen	144	0.516

Source: World Economic Forum, <http://reports.weforum.org/global-gender-gap-report-2016/rankings/>.

index that shows the ratio of girls to boys at each level of education: primary, secondary, and tertiary. The index clearly indicates that the situation of girls and women is improving at each level of education and for almost all countries. At the secondary level of education, considerably more Muslim countries show parity or better for females in 2012 than in 1990. Some countries still perform poorly, however, with indices below 0.7: namely, Afghanistan, Chad, Niger, and Yemen. At the tertiary level, there is enormous variation between Muslim countries, with some having indices well above one and others having indices as low as 0.34.

Two other indexes can be mentioned – although like all such indexes, both suffer from certain shortcomings (Klasen 2007; Permanyer 2013). The first is the

Gender Equity Index, which is designed to facilitate international comparisons by ranking countries based on three dimensions of gender inequity: education, economic participation, and empowerment. Of the 154 countries included in this index in 2012 with information on all three dimensions, no Muslim countries were in the top 43, 15 were in the middle 64, and 22 (59 per cent of the Muslim countries) were in the bottom 47.

Another index that measures gender equality is the Global Gender Gap Index, which is updated each year by the World Economic Forum. It scores countries on a number of variables under four headings: economic participation and opportunity, educational attainment, health and survival, and political empowerment. As Table 5 shows, the Muslim countries scored poorly on this index in 2016. Out of the 144 countries covered, only two Muslim-majority countries (Albania and Bangladesh) were in the top half of the rankings, and all but one of the lowest 17 places were held by Muslim countries. Thus, the indicators used in the Global Gender Gap Index clearly show that these countries still have a long way to go in the area of gender equality. While less stark, the findings of the Gender Equity Index are similar.

8 Conclusion

In 2017, the nine Muslim countries that are the main focus of this paper were home to nearly three-quarters (73 per cent) of the population living in all Muslim-majority countries. What are the growth projections for the populations of these countries over the 33-year period between 2017 and the middle of the 21st century? These figures, which are based on the United Nations medium projection, are shown in Table 6.

There are marked differences in the projected rates of population increase over this period. Niger, which is representative of a number of African countries, is on track to have an extraordinarily high level of population growth – the country's projected growth rate is three times as high as that of Afghanistan, which, at 74 per cent, is already very high. By contrast, in Indonesia, Bangladesh, and Turkey, the projected population growth rate over the period is 23 per cent or less. Overall, population in this group of countries is expected to increase by 39 per cent by 2050. This rapid rate of growth makes it very difficult for these countries to plan for the provision of infrastructure and services, notably those needed to further raise their levels of human capital.

In recent decades, levels of education have improved in Muslim countries, particularly for women. It is not surprising that these countries have experienced phenomenal demographic change, including reductions in infant mortality and increases in the average age at marriage – which have in turn led to fertility decline. Formal schooling has provided Muslim women with expanded opportunities for labour force participation. However, the extent to which women's access to schooling and educational attainment levels have improved varies across geographic regions and within each region, mainly due to differences in levels of development

Table 6:
Projected population growth in nine Muslim countries

Country	Population (million)		% increase 2017–2050
	2017	2050	
Niger	21,447	68,453	219.2
Afghanistan	35,530	61,928	74.3
Pakistan	197,015	306,940	55.8
Egypt	97,553	153,433	57.3
Algeria	41,318	57,436	38.8
Indonesia	263,991	321,550	21.8
Bangladesh	164,669	201,926	22.6
Turkey	80,745	95,626	18.4
Iran	81,162	93,553	15.3
Total	983,463	1,360,850	39.3

Source: United Nations Population Division, 2017, medium projection.

and in the specific cultural, economic, and political settings of these countries. Mean years of schooling for females have risen in some of the selected countries, but have lagged behind in others. Lutz (2013) has argued that as educational levels improve in Muslim countries, all of these countries will experience a process of demographic metabolism through which largely illiterate older populations are replaced by educated younger populations. As the new generation of Muslim men and women will have much higher levels of education than their parents and grandparents, there is considerable room for human capital to increase in these countries. Differences in educational levels remain within and between these countries, but the gender gap is narrowing across all measures of human capital.

In this paper, we have shown that many Muslim countries, including the largest, are making very impressive progress on measures of demographic and human development. While our findings provide grounds for considerable optimism about continuing improvements, it must be acknowledged that the demographic and human development situations in some Muslim countries remain very challenging. This is particularly true of the countries that are racked by war and civil conflict, as in those places, the resource base is limited, and fertility rates remain very high. For example, the picture of Yemen painted by Augustin (2012) is troubling, and the situation there has only worsened since she wrote about it. The issues faced by some of the poorest West African countries are also troubling. In Niger, for example, the younger population is growing very rapidly, even as educational and health facilities remain inadequate. Nevertheless, when we look at Muslim countries as a whole, we see the emergence of a young and educated population who have the potential to build a brighter and better future.

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Appendix tables are on the following pages.

Appendix
Table A.1:
Population and percentage of Muslims in Islamic countries in which less than 50% of the population were Muslim in 2017

Country/region	Population in 2017, (m) (1)	% Muslim (2)	Estimated Muslim population in 2017 (m)	Country/region	Population in 2017, (m) (1)	% Muslim (2)	Estimated Muslim population in 2017 (m)
Africa	832.07		196.84	Asia	3,164.14		236.71
Eastern Africa	392.49		77.61	South/Central Asia	1,390.16		196.24
Eritrea	5.07	36.6	1.86	India	1,339.18	14.4	192.84
Tanzania	57.31	35.2	20.17	Sri Lanka	20.87	9.8	2.05
Ethiopia	104.90	34.6	36.30	Bhutan	0.81	0.2	0.00
Mozambique	29.67	18.0	5.34	Nepal	29.30	4.6	1.35
Malawi	18.62	13.0	2.42	Southeast Asia	344.56		13.03
Mauritius	1.26	17.3	0.22	Singapore	5.71	14.3	0.82
Uganda	42.86	11.5	4.93	Philippines	104.91	5.5	5.77
Madagascar	25.57	3.0	0.77	Thailand	69.03	5.5	3.80
Kenya	49.69	9.7	4.82	Myanmar (Burma)	53.37	4.0	2.13
Reunion	0.86	4.2	0.04	Viet Nam	95.54	0.2	0.19
Burundi	10.86	2.8	0.30	Cambodia	16.00	2.0	0.32
Rwanda	12.20	1.8	0.22	Western Asia	9.49		1.84
Zambia	17.10	0.5	0.09	Cyprus	1.17	25.3	0.30
Zimbabwe	16.52	0.87	0.14	Israel	8.32	18.6	1.55
Middle Africa	113.32		6.29	East Asia	1,419.93		25.60
Cameroon	24.06	18.3	4.40	Mongolia	3.07	3.2	0.10
Central African Republic	4.65	8.5	0.40	China	1,409.50	1.8	25.37
Zaire		1.4		Hong Kong	7.36	1.8	0.13
Gabon	2.02	11.2	0.23	Europe	452.78		31.33
Equatorial Guinea	1.26	4.0	0.05	Eastern Europe	170.74		15.43
D. R. of the Congo	81.33	1.5	1.22	Bulgaria	7.08	13.7	0.97

Continued.

Table A.1:
Continued

Country/region	Population in 2017, (m) (1)	% Muslim (2)	Estimated Muslim population in 2017 (m)	Country/region	Population in 2017, (m) (1)	% Muslim (2)	Estimated Muslim population in 2017 (m)
Western Africa	269.55		111.97	Russian Federation	143.99	10.0	14.40
Nigeria	190.88	48.8	93.15	Romania	19.67	0.3	0.06
Cote d'Ivoire	24.29	37.5	9.11	Southern Europe	122.43		6.16
Guinea Bissau	1.86	45.1	0.84	Bosnia & Herzegovina	3.50	45.2	1.58
Liberia	4.73	12.0	0.57	Macedonia	2.08	39.3	0.82
Togo	7.79	14.0	1.09	Greece	11.15	5.3	0.59
Ghana	28.83	15.8	4.56	Italy	59.35	3.7	2.20
Southern Africa	56.71		0.96	Western Europe	76.39		5.55
South Africa	56.71	1.7	0.96	Belgium	11.42	5.9	0.67
North America	361.07		3.69	France	64.97	7.5	4.87
Canada	36.62	2.1	0.77				
United States	324.45	0.9	2.92	Northern Europe	83.22		4.20
Latin America & Caribbean	6.80		0.24	United Kingdom	66.18	4.8	3.18
Central America	4.10		0.03	Netherlands	17.04	6.0	1.02
Panama	4.10	0.7	0.03	Oceania	25.35		0.64
Caribbean	1.37		0.08	Fiji	0.90	6.3	0.06
Trinidad & Tobago	1.37	5.9	0.08	Australia	24.45	2.4	0.59
South America	1.33		0.13				
Suriname	0.56	15.2	0.09				
Guyana	0.77	6.4	0.05	Total	4,842.21		464.95

Note: (1) United Nations Population Division, 2017. (2) % Muslims were obtained from Pew Research Center 2010 (http://assets.pewresearch.org/wp-content/uploads/sites/11/2015/03/PF_15.04.02_ProjectionsFullReport.pdf)