Causes of Urban Migration in Bangladesh: Evidence from the Urban Health Survey

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Abstract

Mass migration is increasing urban populations globally. One country where urban migration is significantly increasing is Bangladesh, where systematic research will explore the reasons for urban migration in order to devise policies in this area, including maintaining the balance of urban–rural developments. This study used the Urban Health Survey (UHS) 2013 to ascertain the reasons for urban migration in large divisional cities in Bangladesh. The 2013 survey examined the differences between male and female migration, alongside any significant sociodemographic factors that might contribute to their motivation for moving to the city. The survey revealed that a majority of women (64.8%) migrated for family purposes, for example, joining husbands or in-laws, or parents/children. However, in recent years, female migrants have been involved in income-generating activities mostly due to a recent garment-making boom in Dhaka and its suburbs. A higher proportion of men (85.3%) moved to urban areas for work-related reasons: searching for new jobs, better income, or transfer in services. Among the sample in this study, 77% of the respondents (79.3% female and 73.5% male) migrated from villages. This migration mostly centered on Dhaka, the capital city of Bangladesh, where 68.1% of the total study sample migrated followed by 15.7% who went to Chittagong. The results indicate that the contemporary urban-centered economic policy in Bangladesh might require revision to accommodate the increased migrants from rural areas.

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Introduction

Bangladesh reached the rank of a low–middle-income country in 2014 (Feldman 2015; World Bank 2016). As the country grew economically, there was a significant increase in urban migration of Bangladesh over the last decade (Hossain 2001; Rouf and Jahan 2007). The urban population exploded from 14.1 million in 1981 to 35 million in 2005 and reached 53.1 million in 2014 (United Nations 2014). Migration is considered a primary contributor to the fast urban growth alongside highly urban-centralized development, rapid urban industrialization, and temporary in-migration during lean seasons (Harpham 2009; Seto et al. 2010; Farhana et al. 2012; Bryan et al. 2014). The scenario in Bangladesh warrants an investigation on the reasons for such rapid urban migration to aid policy makers to balance urban–rural developments. The Urban Health Survey 2013 (Angeles et al. 2013) was used in this study to explore the major causes of rural–urban migration for both males and females in Bangladesh, and assess the significant sociodemographic factors contributing to the causes through inequalities between urban and rural areas. These factors lead to a discussion on how the scarcity of work in rural areas pushes residents to migrate and urban-centered industrialization pulls migrants to metropolitan areas where a greater variety of jobs are regularly generated.

Urban migration is a much-discussed topic in both economics and demography, particularly focusing on the sustainable development of a country (Lall and Selod 2006; Lu 2010). These macro-level affects are results of individual migrations, signifying an urban–rural gap as well as socioeconomic changes for an individual, due to a shift in residence. For example, Young (2013) showed that 40% of the mean country inequality, along with the cross-country variation, could be explained by the urban–rural gap, which reflects the increasing difference in living standards between urban and rural areas (Thu Le and Booth 2014; Brueckner and Lall 2015). In developed countries, internal migration generally determines population growth or decline in cities/towns (Buch et al. 2014). However, developing nations, for example, Bangladesh, experience a lasting change in demography primarily because of the rural-to-urban migration and subsequent shift from an agro-centered rural economy to an industry-based urban economy (Seto 2011; Christiaensen and Todo 2014; Tacoli et al. 2015).

A number of factors such as lack of a social safety net, scarcity of heterogeneous job openings in the traditionally slow rural economy, and/or sudden natural disasters often result in a mass shift in population from rural to urban areas in low- and middle-income countries (Simini et al. 2012; Nguyen et al. 2015). There is no in-depth study of the causes of such migration in Bangladesh, a deficiency that is explored in this paper. For example, rural–urban migration accounted for half of the urban growth in African countries during the 1960s through to the 1990s, with large variations among nations (World Health Organization 2000; Barrios et al. 2006). Rural–urban migration in South-Asia is accounted for the expansion of cities into peripheral areas due to urban focused investment as well as rural poverty, lack of resources for rural entrepreneurs, and substandard village life (Ebrahim et al. 2010). For example, Dhaka city, the capital of Bangladesh, experienced a mass influx of

migrants early 1990s that has quickly populated the city (Mohit 2012; Hossain 2013).

Although there have been several studies on urban migration in Bangladesh, they have rarely focused on the reasons for recent mass urban migration from rural areas. These studies primarily focused on public health aspects, particularly accessibility to health facilities, a comparison between sociodemographic status of the two areas (urban and rural), environmental factors, and changes in the health dynamics of migrants, for example Body Mass Index (BMI) (Mullick and Goodman 2005; Islam and Azad 2008; Streatfield and Karar 2008; Khan et al. 2009). Geographical push-pull factors that balance the attracting and repelling elements of migration and economic models that are driven by financial differences among localities are frequently referred to in order to understand the internal migration system in Bangladesh (Marshall and Rahman 2013). Giani (2006) stated that employment opportunity is one of the main reasons for rural to major city migration in the country (Deshingkar and Grimm 2005) along with 'bright city lights' ("Dhaka means Taka"/money) (Ishtiaque and Ullah 2013; Ullah 2004). Using a data set of 500 residents of Dhaka City, Hossain (2005) listed natural disasters (e.g., river erosion) and accompanying family members as potential reasons for migration. However, these studies were confined to a few cities (mainly Dhaka) with limited samples. A study based on district-wide data from two censuses (1991 and 2011) found three particular causes of migration: economic conditions, quality of public services, and environmental challenges, although they did not investigate the contribution of household factors for these causes (Marshall and Rahman 2013). This study used a nationwide household survey data set to summarize the dominant causes of urban migration and the possible contributions of relevant sociodemographic factors.

Theoretical Framework

The objective of the study was to investigate the reasons for urban migration in Bangladesh. Furthermore, the associations of various sociodemographic factors with these reasons would be analyzed to identify the vulnerable groups who are more likely to migrate than other groups. The hypothesis of the study was that some of these sociodemographic issues induce the residents in rural areas of Bangladesh to migrate to big cities.

There are several working theories to explain migration: Neoclassical Macro theory for labor migration and Network theory for migration due to inter-personal ties (Massey et al. 1993; Boyd and Grieco 2003; Hagen-Zanker 2008). Both labor migration and social ties seem to be an apparent fit to the migrations in Bangladesh as males primarily tend to look for work and females migrate generally with families. These push and pull factors have been discussed in relation to migrations in other countries such as China (Qiang 2003), Lithuania (Kazlauskienė and Rinkevičius 2006), and developing nations (Lall and Selod 2006). Based on these factors and available data indicators, this study has chosen the factors mentioned in Fig. 1 and analyzed the migration scenario in Bangladesh.
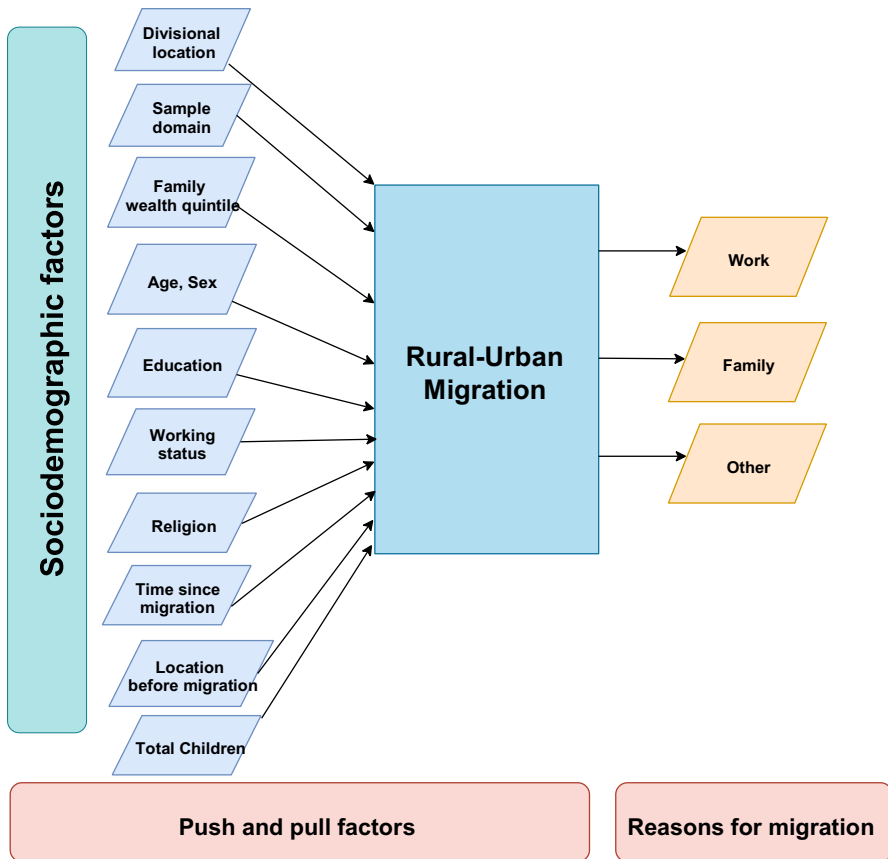
Fig. 1 A theoretical framework of the study: the effect of push and pull factors leading to migrations

Methods

Data Overview

The 2013 Bangladesh Urban Health Survey (UHS) is a national representative survey on urban residents conducted by the National Institute of Population Research and Training (NIPORT), Measure Evaluation, University of North Carolina at Chapel Hill, USA, and the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B). The survey data were collected separately on females, males, households, and communities along with a verbal investigation in 2013, which was a follow-up of a 2006 survey (NIPORT, icddr,b, and UNC-Chapel Hill 2013). The data were collected from three strata: (a) slum areas of city corporations; (b) non-slum areas of city corporations; and (c) other district municipalities or large towns with over 45,000 residents.

A three-stage stratified sampling method was applied for the data collection. Firstly, 450 Mohallas, the smallest administrative areas of Bangladesh, were selected from city corporations and 184 Mohallas selected from other towns. Secondly, two non-slum clusters and one slum cluster were randomly selected from each Mohalla. Thirdly, following household listing, a number of households were randomly sampled from each cluster. All married woman aged between 14 and 49, and all married man aged 15–54 were sampled for the final survey. Please refer to NIPORT, icddr, b, and UNC-Chapel Hill (2013) for detailed survey sampling and definition of key terms like slum, non-slum, and Mohalla.

This study used female and male data sets separately, and then later combined them for an overall analysis. The data of migrants were extracted by omitting those respondents who had lived in the sample (urban) areas since birth. The respondents with missing data were removed as well.

The final sample size was 15,387 (female), 5126 (male), and 20,513 (combined female and male).

Sociodemographic Factors

The socioeconomic factors available in the data sets that were relevant for this study were as follows: divisions—the highest administrative area of Bangladesh; sample domain (city corporation (non-slum area); city corporation (slum area); other urban areas); wealth quintile—five-scale-based index on household assets quantified by principal component approach, age of the respondents; education (none, primary, secondary, higher); working status (yes, no); religion (Islam, others); time since lived in the current urban residence (less than 2 years, 2–4 years, 5+ years); place of previous residence (urban/sub-urban, village); and total number of children. The only author defined category was length of time since moving here, based on the technical report of Jamil et al. (2014). The 'urban/sub-urban' category of the variable 'place of previous residence' included city corporations, district towns, other towns and abroad, and the other category was 'village' that included all the residents from rural areas.

Outcome Variable

As the objective of the study was to assess the various reasons for migration, the reasons for respondents' migration from UHS 2013 were considered as the outcome variable. The specific migration reasons and their subsequent sample size are detailed in Fig. 2. However, for the benefit of the analysis, these reasons were collapsed into three categories: (a) work, (b) family, and (c) other.

Statistical Analysis

Bivariate analysis (Agresti and Kateri 2011) was conducted to provide an overview of the frequency distributions of the sociodemographic factors on the outcome variable: the reasons for migration. A Chi-square test determined the strength of each
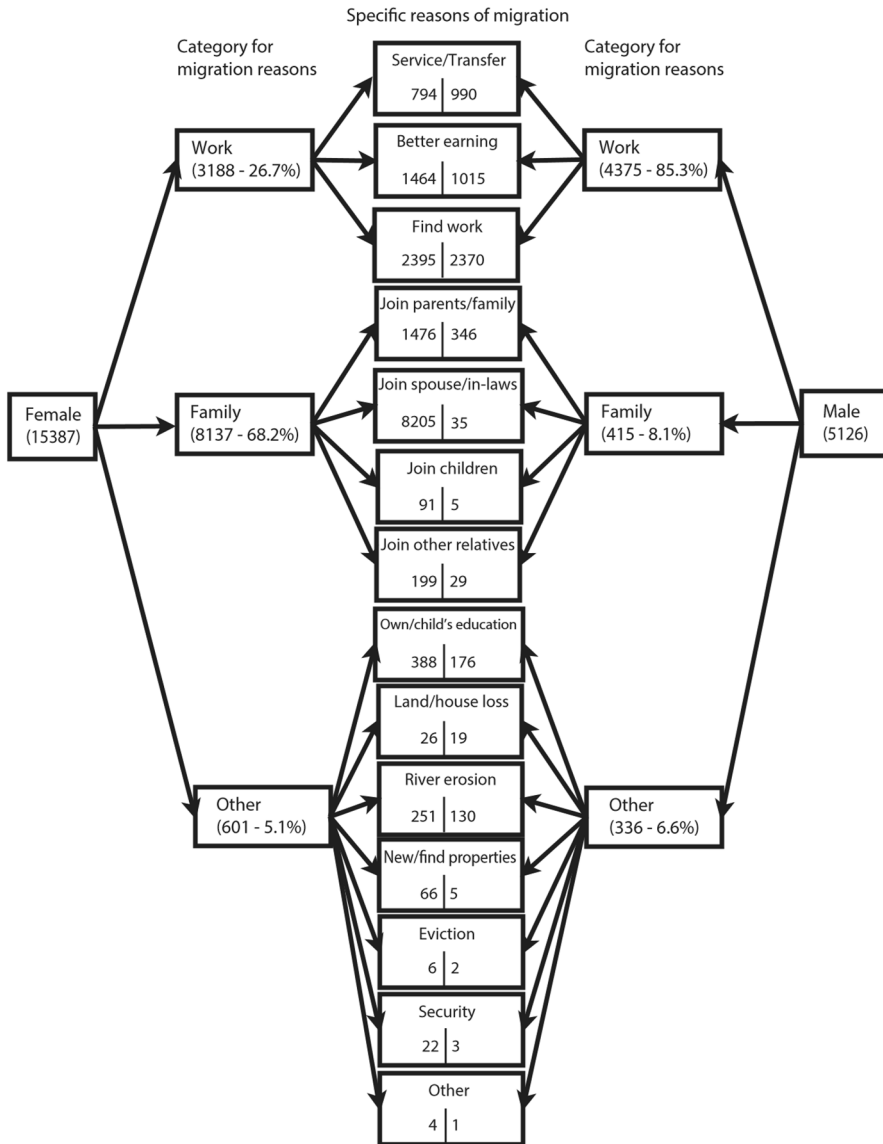
Specific reasons of migration

Fig. 2 The categorization of the various reasons of migration into three levels, and their sample sizes

bivariate dependence. Following these analyses, the Multinomial Logistic regression Model (Upton 2016) was fitted to the three categories of reasons of migration with the sociodemographic factors. It provided the effect size and the direction of associations of the covariates with the migration reasons. Considering the reasons were not ordinal in nature, the multinomial logistic model was a suitable option. The analyses were conducted in *R* (*version* 3.4.1) .
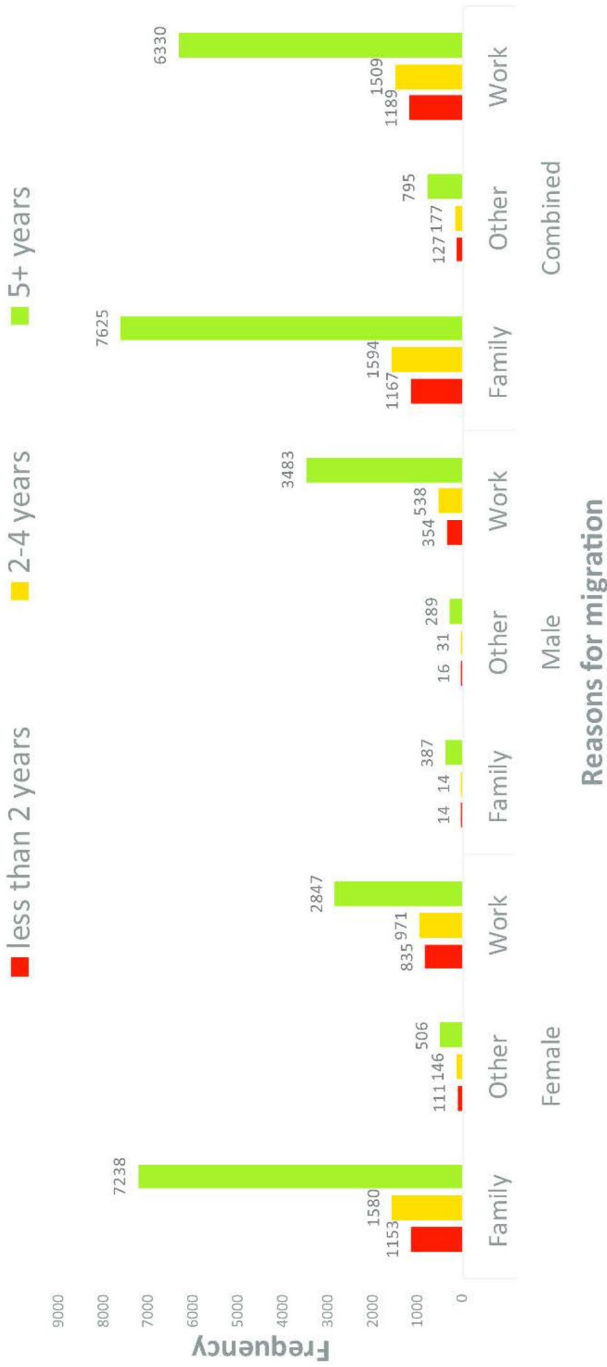
Fig. 3 Grouped bar plots displaying the time the migrants have spent in the urban areas based on their reasons of migration

While generally a *P* value of 0.05 is considered the threshold of significant association, this study followed the recommendation of Benjamin et al. (2017) to use a threshold of 0.005 for new discoveries. Therefore, the covariates were interpreted as significant only when the *P* values were less or equal to 0.005 and consistent with the relevant confidence interval.

Results

In the combined sample, nearly 72% of the respondents migrated more than 5 years ago; of these, 71.8% were female and the rest were male. Most of the women (64.8%) migrated for family purposes, e.g., joining husband or in-laws, or parents/children, whereas a higher proportion of men (85.3%) moved to urban areas for work-related ventures: in search of new jobs, better incomes, or service transfers. Comparatively fewer males migrated for family or other reasons. Around 27% of women living in urban residences for over 5 years reported work as their main reason for migration, whereas of the women who migrated recently (<2 years), around 40% of them moved for work purposes (Fig. 3). This may indicate a change in the migration patterns for women, but year-wise data were required to reach a definite conclusion.

Around 77% of the respondents (79.3% female and 73.5% male) were from villages indicating significant rural–urban migration (Table 1). Migration was mostly centered to Dhaka where 68.1% of the total study sample migrated, followed by 15.7% who went to Chittagong. Most of the males from three sample domains migrated for work (81.5%, 88.7%, and 81.9%), whereas 39.6% of females in slum areas migrated for work, with over 50% of the women moving for/with their families. In all three cases (female, male, and combined), the respondents from lower wealth quintiles had work-related reasons for migration, which was generally replaced by family reasons in richer quintiles. However, such patterns were not noticeable in the bivariate relationship between education and causes of migration. Overall, 26.7% of women migrated for work but 36.6% of all women were currently working. On the other hand, 98.6% of the male migrants had been in income-generating activities over the previous 12 months. The average age of the migrants was 29–35 years for both genders, with men's mean age slightly higher than that of the women, and the average number of children in a family was below three. All the sociodemographic factors, apart from religion and place of previous residence in the male sample, showed significant association (*P* value <0.001) with reasons for migration.

Results from the bivariate analysis were substantiated through the multinomial regression. Compared with family reasons, men were 5.42 times more likely to migrate for other reasons and 10.37 times more likely to migrate (significant at 0.01%) for work-related reasons than women (Combined model in Table 2). In the female sample, compared to Barisal, the likelihood of migrating to any divisional cities was less for work or other causes than for family reasons. Compared to the non-slum areas of city corporations, women were 20% less likely to migrate to districts or large towns for work than for family-related reasons but this was not significant for males. Males were 48% less likely to move to other urban areas than

Table 1 Bivariate analysis of the sociodemographic factors fitted with the reasons for migration based on gender

Sociodemographic factors	Female			Male			Combined		
	Reasons for migration–N (%)								
	Family	Other	Work	Family	Other	Work	Family	Other	Work
Division									
Barisal	217 (67.6%)	35 (10.9%)	69 (21.5%)	14 (17.3%)	4 (4.9%)	63 (77.8%)	231 (57.5%)	39 (9.7%)	132 (32.8%)
Chittagong	1545 (62.7%)	118 (4.8%)	802 (32.5%)	69 (9.2%)	37 (4.9%)	643 (85.8%)	1614 (50.2%)	155 (4.8%)	1445 (45%)
Dhaka	6152 (61.3%)	535 (5.2%)	3513 (34.4%)	245 (6.5%)	254 (6.7%)	3271 (86.8%)	6397 (45.8%)	789 (5.6%)	6784 (48.6%)
Khulna	662 (92.5%)	14 (2%)	40 (5.6%)	45 (21.5%)	16 (7.7%)	148 (70.8%)	707 (76.4%)	30 (3.2%)	188 (20.3%)
Rajshahi	717 (89.1%)	29 (3.6%)	59 (7.3%)	21 (15.8%)	14 (10.5%)	98 (73.7%)	738 (78.7%)	43 (4.6%)	153 (16.7%)
Rangpur	402 (85%)	15 (3.2%)	56 (11.8%)	9 (15.3%)	6 (10.2%)*	44 (74.6%)	411 (77.3%)	21 (3.9%)	100 (18.8%)
Sylhet	276 (67.8%)	17 (4.2%)	114 (28%)	12 (9.6%)	5 (4%)	108 (86.4%)	288 (54.1%)	22 (4.1%)	222 (41.7%)
P value	<0.001			<0.001			<0.001		
Sample domain									
City corporation (non-slum area)	2597 (68.9%)	259 (6.9%)	912 (24.2%)	123 (8%)	160 (10.4%)	1250 (81.5%)	2720 (51.3%)	419 (7.9%)	2162 (40.8%)
City corporation (Slum area)	4110 (56.5%)	281 (3.9%)	2886 (39.6%)	187 (7%)	116 (4.3%)	2380 (88.7%)	4297(43.1%)	397 (4%)	5266 (52.9%)
Other urban areas	3264 (75.2%)	223 (5.1%)	855 (19.7%)	105 (11.5%)	60 (6.6%)	745 (81.9%)	3369 (64.1%)	283 (5.4%)	1600 (30.5%)
P value	<0.001			<0.001			<0.001		
Wealth quintile									
Poorest	2368 (54.9%)	151 (3.5%)	1798 (41.6%)	103 (6.6%)	74 (4.7%)	1381 (88.6%)	2471 (42.1%)	225 (3.8%)	3179 (54.1%)
Poorer	2430 (60.2%)	132 (3.3%)	1473 (36.5%)	112 (8%)	58 (4.2%)	1224 (87.8%)	2542 (46.8%)	190 (3.5%)	2697 (49.7%)
Middle	2116 (71.1%)	130 (4.4%)	728 (24.5%)	86 (8.9%)	49 (5.1%)	829 (86%)	2202 (55.9%)	179 (4.5%)	1557 (39.5%)
Richer	1684 (75.7%)	168 (7.6%)	372 (16.7%)	69 (10.5%)	69 (10.5)	520 (79%)	1753 (60.8%)	237 (8.2%)	892 (31%)
Richest	1373 (74.7%)	182 (9.9%)	282 (15.4%)	45(8.2%)	86 (15.6%)	421 (76.3%)	1418 (59.4%)	268 (11.2%)	703 (29.4%)
P value	<0.001			<0.001			<0.001		
Age in years	29.73	33.77	31.04	35.19	38.47	36.75	29.95	35.21	33.81

Table 1 (continued)

Sociodemographic factors	Female			Male			Combined		
	Reasons for migration–N (%)								
	Family	Other	Work	Family	Other	Work	Family	Other	Work
Education									
None	1834 (53%)	162 (4.7%)	1465 (42.3%)	82 (7.5%)	64 (5.9%)	943 (86.6%)	1916 (42.1%)	226 (5%)	2408 (52.9%)
Primary	2736 (60.1%)	171 (3.8%)	1648 (36.2%)	126 (8.4%)	51 (3.4%)	1321 (88.2%)	2862 (47.3%)	222 (3.7%)	2969 (49.1%)
Secondary	4029 (74%)	225 (4.1%)	1193 (21.9%)	133 (8.7%)	51 (3.4%)	1336 (87.9%)	4162 (59.7%)	276 (4%)	2529 (36.3%)
Higher	1372 (71.3%)	20.5 (10.7%)	347 (18%)	74 (7.3%)	170 (16.7%)	775 (76.1%)	1446 (49.1%)	375 (12.7%)	1122 (38.1%)
P value	<0.001			<0.001			<0.001		
Working status									
No	8156 (74%)	549 (5%)	2317 (21%)	8 (11.4%)*	15 (21.4%)	47 (67.1%)	8164 (73.6%)	564 (5.1%)	2364 (21.3%)
Yes	1815 (41.6%)	214 (4.9%)	2336 (53.5%)	407 (8%)	321 (6.3%)	4328 (85.6%)	2222 (23.6%)	535 (5.7%)	6664 (70.7%)
P value	<0.001			<0.001			<0.001		
Religion									
Islam	9138 (63.8%)	710 (5%)	4469 (31.2%)	394 (8.1%)	311 (6.4%)	4163 (85.5%)	9532 (49.7%)	1021 (5.3%)	8632 (45%)
Others	833 (77.9%)	53 (5%)	184 (17.2%)	21 (8.1%)	25 (9.7%)	212 (82.2%)	854 (64.3%)	78 (5.9%)	396 (29.8%)
P value	<0.001			<0.001			<0.001		
Time since lived here									
Less than 2 years	1153 (54.9%)	111 (5.3%)	835 (39.8%)	14 (3.6%)	16 (4.2%)	354 (92.2%)	1167 (47%)	127 (5.1%)	1189 (47.9%)
2–4 years	1580 (58.6%)	146 (5.4%)	971 (36%)	14 (2.4%)	31 (5.3%)	538 (92.3%)	1594 (48.6%)	177 (5.4%)	1509 (46%)
5+ years	7238 (68.3%)	506 (4.8%)	2847 (26.9%)	387 (9.3%)	289 (6.9%)	3483 (83.7%)	7625 (51.7%)	795 (5.4%)	6330 (42.9%)
P value	<0.001			<0.001			<0.001		
Place of residence before migration									
Urban/sub-urban	2039 (64%)	205 (6.4%)	943 (29.6%)	113 (8.3%)	83 (6.1%)	1162 (85.6%)	2152 (47.3%)	288 (6.3%)	2105 (46.3%)

Table 1 (continued)

Sociodemographic factors	Female			Male			Combined		
	Reasons for migration–N (%)								
	Family	Other	Work	Family	Other	Work	Family	Other	Work
Village	7932 (65%)	558 (4.6%)	3710 (8%)	302 (72.8%)	253 (6.7%)	3213 (85.3%)	8234 (51.6%)	811 (5.1%)	6923 (43.4%)
P value	<0.001			0.712			<0.001		
Total Children[a]	1.86	2.30	2.16	1.76	1.94	2.08	1.86	2.19	2.12
Sex									
Female							9971 (64.8%)	763 (5.0%)	4653 (30.2%)
Male							415 (8.1%)	336 (6.6%)	4375 (85.3%)
P value							<0.001		

[a]Mean of the continuous variables have been tabulated for each reason of migration, *The expected cell size is below 5, which compromises the Chi-square test assumption

Table 2 Multinomial regression fitted to work and other reasons for migration in reference with family reasons for migration to the sociodemographic factors

	Female respondents Covariates				Male respondents				Combined			
	For other reasons		For work		For other reasons		For work		For other reasons		For work	
	Odds (95% CI)	P value	Odds (95% CI)	P value	Odds (95% CI)	P value	Odds (95% CI)	P value	Odds (95% CI)	P value	Odds (95% CI)	P value
Division (ref: Barisal)												
Chittagong	0.51 (0.33, 0.77)	0.002	0.81 (0.56, 1.16)	0.2493	3.30 (0.98, 11.07)	0.054	1.30 (0.36, 4.63)	0.687	0.67 (0.45, 0.99)	0.045	1.36 (1.05, 1.77)	0.021
Dhaka	0.60 (0.41, 0.88)	0.009	0.23 (0.14, 0.39)	<0.001	6.15 (1.94, 19.52)	0.002	2.43 (1.27, 4.66)	0.008	0.81 (0.56, 1.16)	0.249	1.43 (1.11, 1.84)	0.006
Khulna	0.14 (0.07, 0.27)	<0.001	0.32 (0.2, 0.52)	<0.001	1.78 (0.50, 6.41)	0.376	3.86 (2.08, 7.14)	<0.001	0.23 (0.14, 0.39)	<0.001	0.34 (0.25, 0.47)	<0.001
Rajshahi	0.26 (0.15, 0.44)	<0.001	0.30 (0.17, 0.53)	<0.001	2.23 (0.58, 8.52)	0.241	0.88 (0.44, 1.76)	0.716	0.32 (0.2, 0.52)	<0.001	0.41 (0.30, 0.57)	<0.001
Rangpur	0.22 (0.12, 0.43)	<0.001	0.45 (0.26, 0.81)	0.007	2.82 (0.59, 13.53)	0.196	1.41 (0.65, 3.07)	0.385	0.30 (0.17, 0.53)	<0.001	0.43 (0.30, 0.61)	<0.001
Sylhet	0.38 (0.20, 0.71)	0.002	0.67 (0.45, 0.99)	0.0449	2.04 (0.43, 9.71)	0.372	1.36 (0.52, 3.52)	0.529	0.45 (0.26, 0.81)	0.007	1.05 (0.76, 1.46)	0.753
Sample domain (ref: City corporation (non-slum area))												
City corporation (Slum)	1.02 (0.81, 1.29)	0.842	1.00 (0.89, 1.12)	0.974	0.79 (0.52, 1.21)	0.276	1.06 (0.80, 1.41)	0.685	0.89 (0.73, 1.08)	0.226	0.94 (0.85, 1.04)	0.247
Other urban areas	1.05 (0.85, 1.30)	0.620	0.80 (0.70, 0.90)	<0.001	0.52 (0.33, 0.81)	0.004	0.70 (0.51, 0.95)	0.021	0.85 (0.71, 1.02)	0.075	0.74 (0.66, 0.82)	<0.001
Wealth quintile (ref: Poorest)												
Poorer	0.90 (0.70, 1.15)	0.383	0.89 (0.80, 0.98)	0.021	0.63 (0.4, 0.99)	0.045	0.79 (0.59, 1.06)	0.115	0.82 (0.67, 1.01)	0.069	0.87 (0.79, 0.95)	0.003
Middle	1.05 (0.81, 1.36)	0.729	0.63 (0.56, 0.71)	<0.001	0.53 (0.32, 0.88)	0.015	0.70 (0.51, 0.97)	0.032	0.87 (0.69, 1.08)	0.209	0.66 (0.59, 0.73)	<0.001

Table 2 (continued)

	Female respondents Covariates				Male respondents				Combined			
	For other reasons		For work		For other reasons		For work		For other reasons		For work	
	Odds (95% CI)	P value	Odds (95% CI)	P value	Odds (95% CI)	P value	Odds (95% CI)	P value	Odds (95% CI)	P value	Odds (95% CI)	P value
Richer	1.64 (1.23, 2.19)	<0.001	0.53 (0.45, 0.63)	<0.001	0.55 (0.31, 0.99)	0.047	0.51 (0.35, 0.76)	0.001	1.23 (0.96, 1.58)	0.099	0.55 (0.48, 0.63)	<0.001
Richest	1.59 (1.14, 2.22)	0.006	0.41 (0.33, 0.50)	<0.001	0.56 (0.29, 1.09)	0.087	0.49 (0.30, 0.80)	0.004	1.06 (0.80, 1.41)	0.671	0.38 (0.32, 0.45)	<0.001
Age (continuous)	1.06 (1.04, 1.07)	<0.001	1.04 (1.03, 1.04)	<0.001	1.04 (1.02, 1.07)	<0.001	1.03 (1.01, 1.05)	<0.001	1.07 (1.06, 1.08)	<0.001	1.07 (1.06, 1.07)	<0.001
Education (ref: no education)												
Primary	0.95 (0.75, 1.20)	0.675	0.98 (0.89, 1.09)	0.776	0.63 (0.39, 1.01)	0.056	1.10 (0.81, 1.49)	0.548	0.88 (0.72, 1.08)	0.231	1.13 (1.03, 1.25)	0.012
Secondary	0.88 (0.68, 1.14)	0.327	0.74 (0.66, 0.84)	<0.001	0.72 (0.44, 1.20)	0.208	1.36 (0.99, 1.87)	0.061	0.87 (0.70, 1.08)	0.207	1.04 (0.93, 1.15)	0.500
Higher	1.79 (1.31, 2.43)	<0.001	0.86 (0.71, 1.03)	0.104	4.62 (2.62, 8.16)	<0.001	1.89 (1.24, 2.87)	0.003	2.43 (1.88, 3.13)	<0.001	1.36 (1.17, 1.58)	<0.001
Working status (ref: no)												
Yes	2.05 (1.71, 2.45)	<0.001	3.52 (3.24, 3.83)	<0.001	0.58 (0.23, 1.46)	0.243	2.20 (0.99, 4.89)	0.053	3.14 (2.73, 3.61)	<0.001	8.35 (7.76, 8.98)	<0.001
Religion (ref: Islam)												
Others	0.77 (0.57, 1.04)	0.091	0.68 (0.57, 0.81)	<0.001	1.17 (0.62, 2.22)	0.621	1.19 (0.74, 1.93)	0.476	0.76 (0.59, 0.99)	0.039	0.67 (0.57, 0.78)	<0.001
Time since lived here (ref: less than 2 years)												
2–4 years	0.80 (0.61, 1.04)	0.096	0.82 (0.71, 0.93)	0.003	1.82 (0.69, 4.80)	0.228	1.58 (0.74, 3.38)	0.240	0.85 (0.66, 1.09)	0.204	0.83 (0.73, 0.95)	0.006

Table 2 (continued)

Female respondents Covariates	For other reasons Odds (95% CI)	P value	For work Odds (95% CI)	P value	Male respondents For other reasons Odds (95% CI)	P value	For work Odds (95% CI)	P value	Combined For other reasons Odds (95% CI)	P value	For work Odds (95% CI)	P value
5+years	0.36 (0.29, 0.46)	<0.001	0.40 (0.35, 0.45)	<0.001	0.50 (0.23, 1.06)	0.069	0.30 (0.17, 0.52)	<0.001	0.44 (0.35, 0.55)	<0.001	0.41 (0.37, 0.46)	<0.001
Place of residence before migration (ref: Urban/sub-urban)												
Village	0.84 (0.70, 1.00)	0.053	0.83 (0.75, 0.91)	<0.001	1.41 (1.00, 1.99)	0.051	1.01 (0.80, 1.28)	0.926	0.93 (0.80, 1.08)	0.337	0.82 (0.75, 0.89)	<0.001
Total children (continuous)	1.16 (1.09, 1.25)	<0.001	1.08 (1.04, 1.12)	<0.001	1.05 (0.90, 1.22)	0.558	1.14 (1.02, 1.26)	0.019	1.06 (1.00, 1.13)	0.044	1.00 (0.96, 1.03)	0.827
Sex (ref: female)												
Male									5.42 (4.37, 6.72)	<0.001	10.37 (9.12, 11.79)	<0.001

to non-slum areas for reasons other than family related. It is evident that migration for work was common for both males and females from the poorest families. For example, females from the richest households were nearly 60% less likely to migrate for work than family compared to the poorest females. Compared to the illiterate, the more highly educated were 14% less likely (female) and 1.89 times more likely (male) to migrate for work than for family reasons. Working status was only significant for currently working women who were more likely to move for work (3.52 times) or other reasons (2.05 times) than family-related reasons compared to those who were unemployed. Migrants living in their current residences for over 5 years were significantly less likely to have moved for work or other reasons than for family compared to the recent (<2 years) migrants (both male and female in Table 2).

Discussion

According to the results, around 68% of the migrants from rural areas were living in Dhaka City, which is now one of the fastest growing megacities in the world (Islam et al. 2014; Pramanik and Stathakis 2016). Around 75.5% of the total females who migrated for work reasons moved to Dhaka, with 17.2% moving to Chittagong; 61.7% of females migrating for family reasons went to Dhaka and 15.5% to Chittagong. Nearly twice the number of females migrated to Dhaka for family reasons compared to work. 73.5% of males migrated to Dhaka with 86.48% of them moving for work reasons. This mass migration actively contributed to population growth in Dhaka (Debnath and Amin 2016) and gave rise to urban complexities including increased criminal activities, conspicuous drug addiction, heightened sexually transmitted disease rates, and high suicide rates (Jahan 2012; Haque and Rana 2014; Kamruzzaman and Hakim 2015; McClair et al. 2017). The growing work opportunities in Dhaka and Chittagong and in their suburbs are primarily due to industrialization, including the boom of export-oriented garment companies that are attracting both male and female migrants alongside their family members (Muhammad 2011; Muzzini and Aparicio 2013; Ahmed et al. 2014a).

A migrant's economic status is associated with a reason for moving to an urban area, and it adds to the urban economy (Haggblade et al. 2010; Santos 2017). The poor in rural areas, who cannot find work there, tend to search for jobs in urban areas where the economy is dynamic and new jobs are regularly generated. In the study data, 70.3% of poor females (below middle class) migrated for work reasons, 48.1% migrated for family, and 37.1% for other reasons. Only 14.1% of females from rich families (above middle class) migrated for work. However, the difference was not so distinct for men—88.6% of male migrants from the poorest households migrated for work, compared to 76.3% from the richest households. Among the male migrants who came looking for work, 59.6% belonged to poorer (below middle class) families. Given the compromised economic status of the migrants, they tended to live in the budget suburbs or urban slums and so these settlements grew rapidly in Dhaka City (Rahaman and Ahmed 2016; Ishtiaque and Mahmud 2017). This study found that almost half (52.3%) of the men migrated to the slum areas of

the city corporation, of whom 88.7% migrated for work. These align with the global migration trend of the poor moving to a megacity in the hope of a higher standard of living (Rana 2011; Mberu et al. 2017; Randolph and Naik 2017).

Only those respondents with the highest level of education had a significant difference among their reasons for migration compared to the illiterate (Table 2). Among the women who migrated for work, nearly 70% of them had received primary or no education. Only 12.5% of females in the sample were highly educated and 71.3% of these migrated for family reasons, whereas 53% of the uneducated migrated for family reasons; 43.5% of male migrants were either illiterate or had primary education; however, except for highly educated males, 85% or more males from all the educational categories migrated in search of work or higher earnings. The influx of unskilled male laborers joining the urban economy generally took the low-skilled jobs such as construction work, cleaning services of the city corporation, or pulling rickshaws/vans (Ahmed et al. 2014b). The educated and skilled generally found jobs in their locality. Having said that, the tertiary educational institutions are in the major cities with most of the private Universities in Dhaka City (Monem and Muhammad 2010). This would encourage the skilled workforce to migrate to (or never leave) metropolitan areas, where they might find value for their education and expertise (Sharma and Zaman 2013).

Job opportunities are higher in urban areas compared to the slower economies in villages where cash income is mostly seasonal (Berg and Shahe Emran 2017). Although many people migrate for better incomes, only half (50.2%) of the women who migrated for work had been involved in income-generating activities in the previous 12 months. However, 98.6% of male migrants had worked in income-generating activities during the previous 12 months, and among the unemployed, 67.1% had migrated for work. There is a distinctive pattern between men and women looking for work and finding it, one that is rather common in the Bangladeshi patriarchal society where men are the primary earners in the family (Parveen 2007; Karim et al. 2016; Biswas et al. 2017). According to the study data, 18.2% of women who primarily migrated for family purposes were currently working. This illustrates a shift in the social paradigm as women were directly involved in the economy.

This change is further accentuated by the fact that the proportion of females recently (less than 2 years) migrating for work has increased (39.8%) compared to those who migrated 5 years or more ago (26.9%). Despite the timing of migration, most of the male migration is due to work-related reasons. The dynamic urban economy and recent female education stipend programs introduced by the government have encouraged women to join the workforce and change their socioeconomic status (Hahn et al. 2015; VanderEnde et al. 2015). The recent rapid growth in the ready-made garment industry in Bangladesh, located in urban areas or adjacent suburbs, has enabled the employment of over 4 million women. This has helped to delay early marriage and childbirth, and increased school enrollment so ultimately paving the way for women's empowerment (Heath and Mobarak 2015; Rahman and Siddiqui 2015).

The overarching results from this study indicate that male migrants move to Dhaka or other metropolitan areas mainly in search of work, and accompanying females eventually join the workforce unless they initially migrated for work (Akhter

and Bauer 2014). These contribute to urban-centered industrialization, where a significant number of jobs are regularly generated, which are more often filled by the migrants. Unless a decentralized planned economy is put into place, such migration will continue to increase population density in the urban domains. Cities like Dhaka will suffer from this growing population in terms of health concerns in the urban slums, lack of green vegetation across the city, unaffordable housing, and shortage of sanitation services (Al Jaber et al. 2014; Adams et al. 2015; Brueckner and Lall 2015; Morshed et al. 2017). Existing policies do not reflect the changed urban discourses, and this extreme centralization (Dhaka contains 37% of the total urban population) invites more migrants, resulting in extreme inequality within the urban sphere (Rahman 2014; Ahmed et al. 2014b; Ferdaush 2015).

This study was limited to a small number of issues that could pave the way for future studies. Firstly, this study considered migrants from both urban and rural areas that could be refined to rural–urban migration to attain results that are more specific. Secondly, the survey weight or clustering was not accounted for in the multinomial model. Current *R* package *survey* does not have the scope of fitting multinomial models (Lumley 2011). Thirdly, the data did not provide any detail on the type of work migrants seek; that would have aided to better understand their lack of scope for particular professions that were unavailable in rural areas. Finally, year-wise migration could be extracted from the data set to decipher the patterns of migration over the years, which could be preferable for a policy-based study outlet. More importantly, future studies could design experiments based on the sociodemographic factors that were found significant in this study, which might reveal a causal link between rural–urban migration and the relevant vulnerable cohort.

An extension of this current work could be to run a decomposition analysis between the seasonal migrants and permanent migrants. It might provide socioeconomic differences between the two groups and their reasons for migration. Another possible option is to compare the sociodemographic differences between the migrants and permanent residents living there since birth. It might indicate some of the hurdles migrants initially endure. It was quite surprising that the current data set found that only 2% of the migrants moved due to natural calamities, which is lower than expected. However, Bangladesh is not necessarily as environmentally challenged as it was decades ago, and data from only coastal zones or northern Monga-affected areas (seasonal drought leading to multiple years of no agricultural output) place the environment as a major cause of migration (Marshall and Rahman 2013). Other studies that focused on vulnerable cohort theorizing on the push–pull factors found that the environment was a likely cause of migration (Gray and Mueller 2012; Penning-Rowsell et al. 2013). Future studies could compare these results with the country's overall internal migration.

Conclusion

This study conducted an analysis on the recent data set of urban residents in Bangladesh. Current urban growth in this country is supplemented by continuous large migration from rural areas and is one of the primary reasons why Dhaka, the capital

city, is evolving into a megacity. This study found that 77.8% of migrants moved from villages to urban neighborhoods. The majority of women migrated for family reasons, mostly accompanying their husbands or in-laws, whereas male migrants went in search of jobs or better earning sources. However, more recent female migrants are increasingly involved in the workforce due to the increase in the garment sector in Dhaka and its suburbs. Education, economic status of families, religion, and place of previous residence contributed to the causes of migration. The current urban-centered policies in Bangladesh encourage more in-migration due to higher investment in these areas and access to public services. However, it is taking a toll on the urban environment and is increasing the slum areas. A holistic urban strategy is required to address the needs of the migrants and to accommodate them in suitable residences. As environmental causes become less important and most migrants move for a better lifestyle, policymakers in Bangladesh could focus on the proportional distribution of industrial investment and public services that might help alleviate population congestion in its major cities.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no competing interests. All authors read the final manuscript and approved it.

Ethical Approval This article does not contain any studies with human participants performed by any of the authors. The Bangladesh demographic and health Surveys were approved by ICF Macro Institutional Review Board and the National Research Ethics Committee of the Bangladesh Medical Research Council. A written consent about the survey was given by participants before interview. All identification of the respondents was dis-identified before publishing data. The secondary data sets analyzed during the current study are freely available upon request from the DHS website at http://dhsprogram.com/data/available-datasets.com.

References

Adams, A. M., Islam, R., & Ahmed, T. (2015). Who serves the urban poor? A geospatial and descriptive analysis of health services in slum settlements in Dhaka, Bangladesh. *Health Policy and planning, 30*(suppl 1), i32–i45.

Agresti, A., & Kateri, M. (2011). Categorical data analysis. In *International encyclopedia of statistical science*, (pp. 206–208). New York: Springer.

Ahmed, F. Z., Greenleaf, A., & Sacks, A. (2014a). The paradox of export growth in areas of weak governance: The case of the ready made garment sector in Bangladesh. *World Development, 56,* 258–271.

Ahmed, S. J., Nahiduzzaman, K. M., & Bramley, G. (2014b). From a town to a megacity: 400 years of growth. In *Dhaka Megacity*, (pp. 23–43). New York: Springer.

Akhter, S., & Bauer, S. (2014). Household level determinants of rural-urban migration in Bangladesh. *International Journal of Social, Human Science and Engineering, 8*(1), 24–27.

Al Jaber, S., Ghosh, A. K., & Mahmud, M. S. (2014). Using time series of satellite images to detect vegetation cover change in dhaka city. *Journal of Geographic Information System, 6*(06), 653.

Angeles, G., Al-Sabir, A., Lance, P., Buckner, B., Streatfield, P., Karar, Z., et al. (2013). Bangladesh urban health survey (uhs) 2013. *National Institute of Population Research and Training (NIPORT); International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b); MEASURE Evaluation, 2016.* https://doi.org/10.15139/s3/12274, UNC Dataverse, V1.

Barrios, S., Bertinelli, L., & Strobl, E. (2006). Climatic change and rural–urban migration: The case of sub-Saharan Africa. *Journal of Urban Economics, 60*(3), 357–371.

Benjamin, D. J., Berger, J. O., Johannesson, M., Nosek, B. A., Wagenmakers, E.-J., Berk, R., et al. (2017). Redefine statistical significance. *Nature Human Behaviour*, (p. 1).

Berg, C. N., & Shahe Emran, M. (2017). Microfinance and vulnerability to seasonal famine in a rural economy: Evidence from monga in Bangladesh.

Biswas, R. K., Rahman, N., Kabir, E., & Raihan, F. (2017). Women's opinion on the justification of physical spousal violence: A quantitative approach to model the most vulnerable households in Bangladesh. *PLoS ONE, 12*(11), e0187884.

Boyd, M., & Grieco, E. (2003). Women and migration: Incorporating gender into international migration theory. *Migration Information Source, 1*(35), 28.

Brueckner, J. K., & Lall, S. (2015). Cities in developing countries: Fueled by rural-urban migration, lacking in tenure security, and short of affordable housing. *Handbook of Regional and Urban Economics, 5,* 1399–1455.

Bryan, G., Chowdhury, S., & Mobarak, A. M. (2014). Underinvestment in a profitable technology: The case of seasonal migration in Bangladesh. *Econometrica, 82*(5), 1671–1748.

Buch, T., Hamann, S., Niebuhr, A., & Rossen, A. (2014). What makes cities attractive? The determinants of urban labour migration in Germany. *Urban Studies, 51*(9), 1960–1978.

Christiaensen, L., & Todo, Y. (2014). Poverty reduction during the rural–urban transformation–the role of the missing middle. *World Development, 63,* 43–58.

Debnath, R., & Amin, A. N. (2016). A geographic information system-based logical urban growth model for predicting spatial growth of an urban area. *Environment and Planning B: Planning and Design, 43*(3), 580–597.

Deshingkar, P., & Grimm, S. (2005). *Internal migration and development: A global perspective* (Vol. 19). New York: United Nations Publications.

Ebrahim, S., Kinra, S., Bowen, L., Andersen, E., Ben-Shlomo, Y., Lyngdoh, T., et al. (2010). The effect of rural-to-urban migration on obesity and diabetes in India: A cross-sectional study. *PLoS Medicine, 7*(4), e1000268.

Farhana, K. M., Rahman, S. A., & Rahman, M. (2012). Factors of migration in urban Bangladesh: An empirical study of poor migrants in Rajshahi city.

Feldman, S. (2015). Bangladesh in 2014: Illusive democracy. *Asian Survey, 55*(1), 67–74.

Ferdaush, J. (2015). *The Urbanization of Dhaka City and the Sustainable Urban Development in Bangladesh*. PhD thesis, Savannah State University.

Giani, L. (2006). Migration and education: Child migrants in Bangladesh. *Sussex Migration WorkingPaperno*, 33.

Gray, C. L., & Mueller, V. (2012). Natural disasters and population mobility in Bangladesh. *Proceedings of the National Academy of Sciences, 109*(16), 6000–6005.

Hagen-Zanker, J. (2008). Why do people migrate? A review of the theoretical literature.

Haggblade, S., Hazell, P., & Reardon, T. (2010). The rural non-farm economy: Prospects for growth and poverty reduction. *World Development, 38*(10), 1429–1441.

Hahn, Y., Islam, A., Nuzhat, K., Smyth, R., Yang, H.-S., et al. (2015). *Education, marriage and fertility: Long-term evidence from a female stipend program in Bangladesh*. Melbourne: Monash University.

Haque, R., & Rana, E. A. (2014). Urban youth delinquency: Proliferation of criminal gangs and neighbourhood violence in dhaka, Bangladesh.

Harpham, T. (2009). Urban health in developing countries: What do we know and where do we go? *Health & Place, 15*(1), 107–116.

Heath, R., & Mobarak, A. M. (2015). Manufacturing growth and the lives of Bangladeshi women. *Journal of Development Economics, 115,* 1–15.

Hossain, M. (2001). Rural-urban migration in Bangladesh: A micro-level study. In *Brazil IUSSP conference. August*, (pp. 20–24).

Hossain, S. (2005). Poverty, household strategies and coping with urban life: examining livelihood framework in Dhaka city, Bangladesh. *Bangladesh e-Journal of Sociology, 2*(1), 1–8.

Hossain, S. (2013). Migration, urbanization and poverty in Dhaka, Bangladesh. *Journal of the Asiatic Society of Bangladesh (Hum.), 58*(2), 369–382.

Ishtiaque, A., & Mahmud, M. S. (2017). Migration objectives and their fulfillment: A micro study of the rural urban migrants of the slums of dhaka city. *Geografia-Malaysian Journal of Society and Space, 7*(4), 24–29.

Ishtiaque, A., & Ullah, M. S. (2013). The influence of factors of migration on the migration status of rural-urban migrants in Dhaka, Bangladesh. *Human Geographies, 7*(2), 45.

Islam, M. M., & Azad, K. M. A. K. (2008). Rural–urban migration and child survival in urban Bangladesh: Are the urban migrants and poor disadvantaged? *Journal of Biosocial Science, 40*(1), 83–96.

Islam, M. S., Rana, M. M. P., & Ahmed, R. (2014). Environmental perception during rapid population growth and urbanization: A case study of Dhaka city. *Environment, Development and Sustainability, 16*(2), 443–453.

Jahan, M. (2012). Impact of rural urban migration on physical and social environment: The case of dhaka city. *International Journal of Development and Sustainability, 1*(2), 186–194.

Jamil, K., Streatfield, P. K., Arifeen, S., Angeles, G., Rahman, M., Ahsan, K. Z., et al. (2014). Bangladesh urban health survey 2013: Preliminary results. *National Institute of Population Research and Training (NIPORT), MEASURE Evaluation, UNC-Chapel Hill, International Centre for Diarrhoeal Disease Research Bangladesh (ICDDRB).*

Kamruzzaman, M., & Hakim, M. A. (2015). Child criminalization at slum areas in Dhaka city. *American Journal of Psychology and Cognitive Science, 1*(4), 107–111.

Karim, K. R., Emmelin, M., Lindberg, L., & Wamala, S. (2016). Gender and women development initiatives in Bangladesh: A study of rural mother center. *Social Work in Public Health, 31*(5), 369–386.

Kazlauskienė, A., & Rinkevičius, L. (2006). Lithuanian brain drain causes: Push and pull factors. *Engineering Economics, 46*(1), 27–37.

Khan, M. M., Krämer, A., et al. (2009). Factors associated with being underweight, overweight and obese among ever-married non-pregnant urban women in Bangladesh. *Singapore Medical Journal, 50*(8), 804.

Lall, S. V., & Selod, H. (2006). *Rural-urban migration in developing countries: A survey of theoretical predictions and empirical findings* (Vol. 3915). Washington, DC: World Bank Publications.

Lu, Y. (2010). Rural-urban migration and health: Evidence from longitudinal data in indonesia. *Social Science and Medicine, 70*(3), 412–419.

Lumley, T. (2011). *Complex surveys: A guide to analysis using R* (Vol. 565). Hoboken: Wiley.

Marshall, R., & Rahman, S. (2013). Internal migration in Bangladesh: character, drivers and policy issues. *United Nations Development Programme (UNDP), New York.*

Massey, D. S., Arango, J., Hugo, G., Kouaouci, A., Pellegrino, A., & Taylor, J. E. (1993). Theories of international migration: A review and appraisal. *Population and Development Review, 19*(3), 431–466.

Mberu, B., Béguy, D., & Ezeh, A. C. (2017). Internal migration, urbanization and slums in sub-Saharan Africa. In *Africa's Population: In Search of a Demographic Dividend*, (pp. 315–332). New York: Springer.

McClair, T. L., Hossain, T., Sultana, N., Burnett-Zieman, B., Yam, E. A., Hossain, S., et al. (2017). Paying for sex by young men who live on the streets in Dhaka city: Compounded sexual risk in a vulnerable migrant community. *Journal of Adolescent Health, 60*(2), S29–S34.

Mohit, M. A. (2012). Bastee settlements of Dhaka city, Bangladesh: A review of policy approaches and challenges ahead. *Procedia-Social and Behavioral Sciences, 36,* 611–622.

Monem, M., & Muhammad, H. (2010). Higher education in Bangladesh: Status, issues and prospects. *Pakistan Journal of Social Sciences (PJSS), 30*(2), 293–305.

Morshed, N., Yorke, C., & Zhang, Q. (2017). Urban expansion pattern and land use dynamics in Dhaka, 1989–2014. *The Professional Geographer*, (pp. 1–16).

Muhammad, A. (2011). Wealth and deprivation: Ready-made garments industry in Bangladesh. *Economic and Political Weekly*, (pp. 23–27).

Mullick, M. S. I., & Goodman, R. (2005). The prevalence of psychiatric disorders among 5–10 year olds in rural, urban and slum areas in Bangladesh. *Social Psychiatry and Psychiatric Epidemiology, 40*(8), 663–671.

Muzzini, E., & Aparicio, G. (2013). *Urban growth and spatial transition in Nepal: An initial assessment*. Washington, DC: World Bank Publications.

Nguyen, L. D., Raabe, K., & Grote, U. (2015). Rural–urban migration, household vulnerability, and welfare in Vietnam. *World Development, 71*, 79–93.

NIPORT, icddr,b, and UNC-Chapel Hill (2013). Bangladesh urban health survey 2013 final report. https://www.measureevaluation.org/resources/publications/tr-15-117, funded by USAID.

Parveen, S. (2007). Gender awareness of rural women in Bangladesh. *Journal of International Women's Studies, 9*(1), 253.

Penning-Rowsell, E. C., Sultana, P., & Thompson, P. M. (2013). The last resort? Population movement in response to climate-related hazards in Bangladesh. *Environmental Science & Policy, 27*, S44–S59.

Pramanik, M. M. A., & Stathakis, D. (2016). Forecasting urban sprawl in Dhaka city of Bangladesh. *Environment and Planning B: Planning and Design, 43*(4), 756–771.

Qiang, L. (2003). An analysis of push and pull factors in the migration of rural workers in china [j]. *Social Sciences In China, 1*, 125–136.

Rahaman, M. M., & Ahmed, T. S. (2016). Affordable water pricing for slums dwellers in Dhaka metropolitan area: The case of three slums. *Journal of Water Resource Engineering and Management, 3*(1), 15–33.

Rahman, H. Z. (2014). Urbanization in Bangladesh: challenges and priorities. In *Bangladesh Economists Forum. June*, (pp. 21–22).

Rahman, M. H., & Siddiqui, S. A. (2015). Female rmg worker: Economic contribution in Bangladesh. *International Journal of Science and Research Publications, 5*, 9.

Rana, M. M. P. (2011). Urbanization and sustainability: Challenges and strategies for sustainable urban development in Bangladesh. *Environment, Development and Sustainability, 13*(1), 237–256.

Randolph, G. F., & Naik, M. (2017). An analysis of migrant-intensity in India and Indonesia: Seeing internal migration patterns through a place-based lens. *Environment and Urbanization ASIA, 8*(1), 40–58.

Rouf, M. A., & Jahan, S. (2007). Spatial and temporal patterns of urbanization in Bangladesh. *Urbanization in Bangladesh: patterns, issues and approaches to planning. Bangladesh Institute of Planners, Dhaka*, (pp. 1–24).

Santos, M. (2017). *The shared space: The two circuits of the urban economy in underdeveloped countries*. Abingdon: Routledge.

Seto, K. C. (2011). Exploring the dynamics of migration to mega-delta cities in Asia and Africa: Contemporary drivers and future scenarios. *Global Environmental Change, 21*, S94–S107.

Seto, K. C., Sánchez-Rodríguez, R., & Fragkias, M. (2010). The new geography of contemporary urbanization and the environment. *Annual Review of Environment and Resources, 35*, 167–194.

Sharma, M., & Zaman, H. (2013). Who migrates overseas and is it worth their while? An assessment of household survey data from Bangladesh. *The Journal of Developing Areas, 47*(1), 281–302.

Simini, F., González, M. C., Maritan, A., & Barabási, A.-L. (2012). A universal model for mobility and migration patterns. *Nature, 484*(7392), 96–100.

Streatfield, P. K., & Karar, Z. A. (2008). Population challenges for Bangladesh in the coming decades. *Journal of Health, Population, and Nutrition, 26*(3), 261.

Tacoli, C., McGranahan, G., & Satterthwaite, D. (2015). *Urbanisation, rural-urban migration and urban poverty*. London: IIED London.

Thu Le, H., & Booth, A. L. (2014). Inequality in Vietnamese urban–rural living standards, 1993–2006. *Review of Income and Wealth, 60*(4), 862–886.

Ullah, A. A. (2004). Bright city lights and slums of Dhaka city: Determinants of rural-urban migration in Bangladesh. *Migration Letters, 1*(1), 26.

United Nations (2014). World urbanization prospects: The 2014 revision. *Population division, United Nations*. ISBN 978-92-1-151517-6.

Upton, G. J. (2016). *Categorical data analysis by example*. Hoboken: Wiley.

VanderEnde, K. E., Sibley, L. M., Cheong, Y. F., Naved, R. T., & Yount, K. M. (2015). Community economic status and intimate partner violence against women in Bangladesh: Compositional or contextual effects? *Violence Against Women, 21*(6), 679–699.

World Bank (2016). Helping Bangladesh Reach Middle Income Country Status. Retrieved November 28, 2017, from http://www.worldbankorg/en/news/feature/2016/04/07/World_Bank_Group_s_New_Country_Partnership_Framework_helps_Bangladesh_Reach_Middle_Income_Country_Status.

World Health Organization. (2000). *The world health report 2000: Health systems: Improving performance*. Geneva: World Health Organization.

Young, A. (2013). Inequality, the urban-rural gap, and migration. *The Quarterly Journal of Economics, 128*(4), 1727–1785.

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