FUTURE OF WORK IN MALDIVES THROUGH NATIONAL TRANSFER ACCOUNTS

National Bureau of Statistics in Collaboration
with UNFPA

Layout and design by Aminath Musfiqa Ibrahim

CONTENTS

1. INTRODUCTION

Maldives has a young and vibrant population. In 2016, for example, estimates by the National Bureau of Statistics (2018) show that more than half of the population are aged below 40 years. Only about five percent are elderly aged 60 years or over. Population ageing is a distant reality in Maldives. But this is only true for the resident population at large. These estimates include resident foreigners who are largely in prime-working ages. The resident Maldivian population is young, but ageing soon.

In 2016, around 57 percent of the resident Maldivian population are comprised by the young aged 24 years and below. About 40 percent are prime-age adults aged 25 to 64 years. Only 4 percent are elderly aged 65 years and older. If current demographic trends continue, however, by 2030 more than 7percent of the population are projected to be elderly. The resident Maldivian population will officially be an ageing population. And in a span of around twenty years after that, i.e., in less than one generation, the country will transition into an aged society with at least 14 percent of the population being elderly. These projected changes in the population age distribution in Maldives is expected to affect the country's economy in many important ways.

In the early stages of an economy's demographic history, fertility rates are usually high, but mortality among children are high as well. Life spans are short as adults die early from communicable and other diseases. The economy remains a young population. Later in the demographic transition, fertility rates start to decline. Reasons may vary, although the decline is usually accompanied by improved material measures of well-being, including better health and incomes among the population. With declining fertility, parents, who now have less children to take care of compared to earlier generations of parents, tend to invest more heavily on the human capital of their children. This raises their children's productivity when they eventually join the workforce. Eventually, with the sustained reduction in fertility rates, the share of prime-age individuals grows faster than the rest of the population. All things being the same, this raises average incomes per person. As an economy inches into an ageing population, depending on the support system available for the elderly, saving and investments increase with the growing retiring workforce. This boosts the pool of capital available for the economy that raises the average productivity of workers. This is so-called second demographic dividend.

These demographic dividends, however, are not automatic. Neither are they entirely cost-free. Effective and responsive policies are needed in order for the population to fully harness the potentials from these demographic dividends.

In this paper, we attempt to quantify these potentials from the population by using new estimates of National Transfer Accounts (NTA) for Maldives. The NTA is an accounting framework that measures how economic resources are consumed, produced and reallocated among people of different age groups in the population. We use the NTA to describe the economic lifecycle in Maldives, and to provide projections of the likely trajectories of several aggregate accounts in the economy.

The rest of the report is organized as follows. In the next section, we briefly describe the NTA framework and the generational economy. We then present basic NTA estimates in Maldives for 2016 in Section 3. In Section 4, we use NTA to generate insights on current issues in the Maldivian workforce, and simulate the future of work in Maldives. In the last section, we summarize and conclude the paper with some implications for policy.

Figure 1. Population age distribution: Maldives Resident Population, 2016, 2030 and 2050

A. 2016

B. 2030

C. 2050
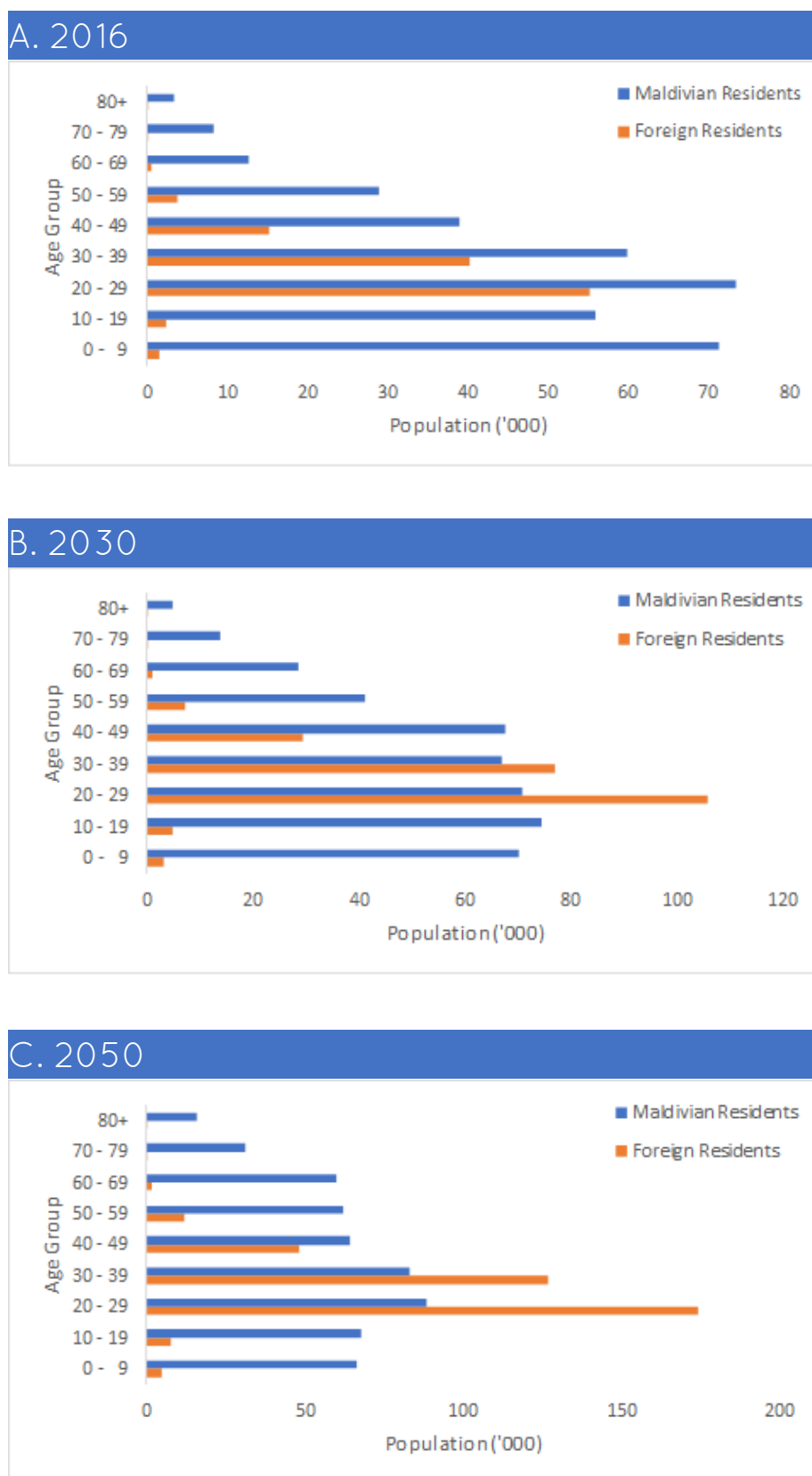
Source: National Bureau of Statistics and UNFPA (2018)

2. GENERATIONAL ECONOMY AND THE NATIONAL TRANSFER ACCOUNTS (NTA) FRAMEWORK

In any modern-day economy, populations are composed of people at different stages of the economic life-cycle with different needs and different resources available to fulfill those needs. Among populations at the beginning or towards the end of their lifetime, their consumption is usually greater than what they earn from their labor. Among those in the middle of their economic lifecycle, their labor incomes are generally higher than what they consume.

Many different factors affect how consumption and labor income vary by age. For example, average labor incomes are affected by hours worked, labor force participation rate, and wage rates among different cohorts of workers, which are, in turn, shaped by many socio-cultural, economic and political factors that influence each of these elements of the labor market. Along the same vein, average consumption is shaped by incomes, prices and preferences that are influenced by many other forces.

Panel A in Figure 2 plots the average consumption and labor income by age in Maldives in 2016. It shows that average labor income in Maldives, like in many other countries, starts zero among children, increases among young adults, peaks at prime age, then eventually declines as people starts to retire from the labor market. Labor income captures the value of earnings by wage workers, as well as the share of the returns to labor for those self-employed. Average consumption also starts relatively low among young children, increases as these children enters the country's education system, declines as children exits formal schooling, then eventually increases again as the consumption of healthcare increases with age. Consumption, in this case, includes both public and private consumption.

This picture of the economic lifecycle of an average resident in Maldives is strikingly different when the population distribution of the country is taken into account. Panel B in Figure 2 shows the aggregate consumption and labor income by age in Maldives in 2016. While children and the elderly consume more on average than prime-age adults, aggregate consumption are highest among those aged 20 to 39 years who comprise almost 40 percent of the population. Further, while average labor incomes by age are somewhat symmetric, the aggregate labor income is skewed towards younger cohorts of workers.

What is evident from these pictures, whether looking at the per capita or the aggregate age profiles, is that there are life stages when consumption exceeds earnings from working, or what is normally referred to as lifecycle deficits. These deficits may be filled-in through a number of different ways, although they may generally be classified under only two schemes: sharing or saving (Mason and Lee, 2011). The most straight-forward may be the transfer of resources from those with labor incomes in surplus of their consumption to those who are with deficits. These transfers may be mediated by the government, such as through taxes that are eventually used to finance public school and health systems, or by the private sectors, such parents sending their children to school, or adult children taking care of their elderly parents. Alternatively, the surplus

labor incomes may be invested or saved which may be drawn at some time in the future when it is needed. This act of saving and investing, in turn, allows other people to borrow and use these resources.

These features of the generational economy are captured by the National Transfer Accounts [NTA] (Lee and Mason, 2011; United Nations, 2013). The NTA is a macroeconomic accounting framework that measures how different generations in an economy consumes and produces resources, and how these gaps in each generation's consumption and production are fulfilled or utilized. It combines information from household surveys, administrative data, national macroeconomic accounts, population censuses and projections, and even household allocation models to provide estimates of a country's economic lifecycle patterns. The NTA is designed in a way that is consistent with the United Nations System of National Accounts. By 2019, NTAs have been estimated in more than 180 countries with the support of more than 80 cooperating research teams around the world.

Figure 2. Consumption and Labor Income by Age: Maldives, 2016

A. PER CAPITA AGE PROFILE ('000 MVR)

B. AGGREGATE AGE PROFILE (BILLION MVR)
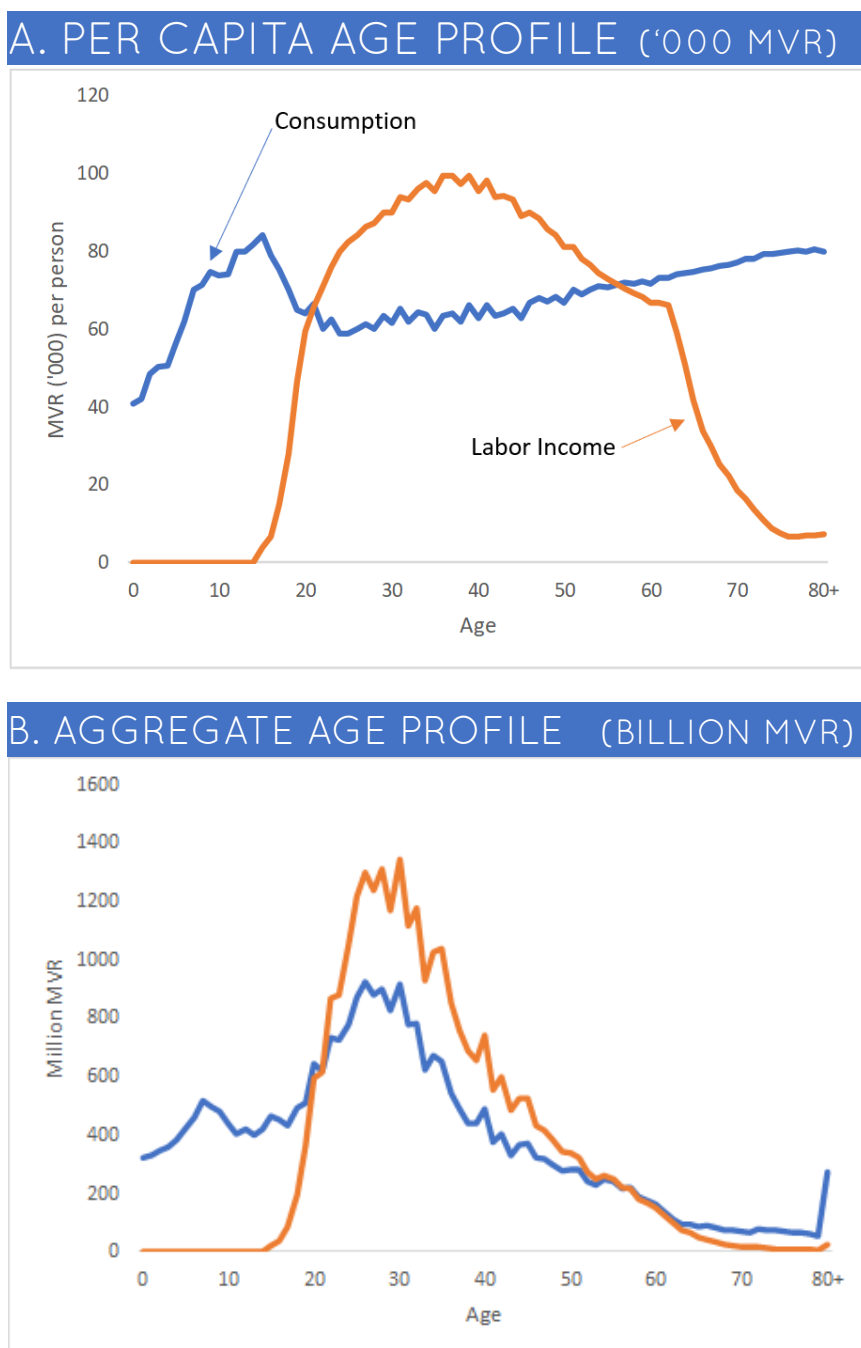
The starting point of NTA is the idea that all incomes in an economy are used in one way or another. This is the same identity that governs national accounting frameworks, i.e., the total income in an economy equals its total expenditures. This is depicted in the equation below:

$$\underbrace{YL_t + YA_t + T_t^+}_{Income} = \underbrace{C_t + T_t^- + S_t}_{Expenditure}. \tag{1}$$

YL_t, YA_t and T_t^+ refer to total labor income, asset income, and transfers received, respectively, in an economy at time t. These incomes are used either as consumption, C_t; transferred outwards, T_t^-; or saved, S_t. The flow of resources in the economy are made by economic agents, including households, governments, corporations, and non-profit organizations.

NTA reworks this identity by equating the lifecycle account, i.e., consumption and labor income, on one side, with the means of how the lifecycle deficit (or surplus) may be filled-in (or used), i.e., through reallocations, on the other side, captured by the following equation:

$$\underbrace{C_t - YL_t}_{Lifecycle\ Account} = \underbrace{\underbrace{[YA_t - S_t]}_{Asset-based\ Reallocations} + \underbrace{[T_t^+ - T_t^-]}_{Transfers}}_{Reallocations\ Account}. \tag{2}$$

Unlike in the UN System of National Accounts, the primary economic agents in NTA through which the resources are reckoned are the different cohorts, i.e., age groups, in an economy. The public sector, represented by the government, and the private sector, represented by households, corporations and non-profit organizations, are also important agents in NTA, but only to the extent that these agents mediate the flow of resources across populations in different age groups. In essence, NTA introduces an age dimension into national accounting by having estimates of the lifecycle and the reallocations accounts by age group, a:

$$\underbrace{C_t(a) - YL_t(a)}_{Lifecycle\ Account} = \underbrace{\underbrace{[YA_t(a) - S_t(a)]}_{Asset-based\ Reallocations} + \underbrace{[T_t^+(a) - T_t^-(a)]}_{Transfers}}_{Reallocations\ Account}. \tag{3}$$

This elaboration by age group of the national accounts is particularly useful as it allows NTA to capture the age dimension of intra-household transfers, i.e., transfers within households, which is an important resource to fulfill the lifecycle deficit among children and the elderly, especially in economies where public transfer systems, including public pension, social health insurance, public school systems, etc., are not very well developed. In a standard national accounting framework, these intra-household transfers are not captured since it nets to zero within an economy by definition.

The development and estimation of NTAs around the world has allowed cross-country comparisons of economic lifecycle age patterns, as well as measure behaviors and empirical examine theories that were not possible using previously available data.

3. MALDIVIAN ECONOMIC LIFECYCLE

Table 1 provides a summary of National Transfer Lifecycle Account estimates for Maldives in 2016. The account items are summarized by broad age groups: young population aged 0 to 24 years, prime-age adults aged 25 to 64 years, and the elderly population aged 65 years or older. With the importance of foreign workers in the Maldivian economy, the National Bureau of Statistics (NBS) decided to disaggregate the Maldivian NTA by type of resident population, i.e., resident Maldivians and resident foreign population. No disaggregation by NTA sub-account is provided for resident foreign population because of limitations in the availability of data on foreign population characteristics.

Table 1. National Transfer Account: Maldives, 2016									
	All Resident Population			Resident Maldivian Population			Resident Foreign Population		
	0 - 24	25 - 64	65+	0 - 24	25 - 64	65+	0 - 24	25 - 64	65+
A. Per capita ('000 MVR)									
Lifecycle Deficit	38.9	-24.7	62.0	48.2	-19.7	62.8	-22.5	-34.0	13.4
Consumption	64.0	63.9	78.2	67.5	74.6	78.8	40.6	44.3	41.9
Private Consumption	32.7	41.5	43.3	34.1	49.3	43.6	…	…	…
Education	4.0	0.5	0.0	4.6	0.8	0.0	…	…	…
Health	2.0	3.6	4.4	2.3	5.5	4.5	…	…	…
Others	26.8	37.4	38.9	27.2	42.9	39.1	…	…	…
Public Consumption	31.2	22.4	34.9	33.4	25.4	35.2	…	…	…
Education	9.7	1.3	0.6	11.2	2.0	0.6	…	…	…
Health	4.5	4.1	17.2	5.2	6.3	17.5	…	…	…
Others	17.0	17.0	17.0	17.0	17.0	17.0	…	…	…
Labor Income	25.0	88.7	16.2	19.3	94.3	16.0	63.1	78.3	28.5
Earnings	22.6	70.8	4.3	16.4	66.6	3.9	…	…	…
Self-employment	2.5	17.9	11.9	2.8	27.7	12.1	…	…	…
B. Aggregate (Billion MVR)									
Lifecycle Deficit	7.3	-6.6	1.1	7.9	-3.4	1.1	-0.6	-3.2	0.0
Consumption	12.0	17.1	1.3	11.0	12.9	1.3	1.0	4.2	0.0
Private Consumption	6.1	11.1	0.7	5.6	8.5	0.7	…	…	…
Education	0.7	0.1	0.0	0.7	0.1	0.0	…	…	…
Health	0.4	1.0	0.1	0.4	1.0	0.1	…	…	…
Others	5.0	10.0	0.7	4.4	7.4	0.7	…	…	…
Public Consumption	5.9	6.0	0.6	5.4	4.4	0.6	…	…	…
Education	1.8	0.3	0.0	1.8	0.3	0.0	…	…	…
Health	0.8	1.1	0.3	0.8	1.1	0.3	…	…	…
Others	3.2	4.6	0.3	2.8	3.0	0.3	…	…	…
Labor Income	4.7	23.7	0.3	3.1	16.3	0.3	1.6	7.4	0.0
Earnings	4.2	18.9	0.1	2.7	11.6	0.1	…	…	…
Self-employment	0.5	4.8	0.2	0.5	4.8	0.2	…	…	…

The Lifecycle Account is composed of consumption and labor income. Consumption is distinguished by type of intermediary, i.e., public (general government) or private (households, corporations and non-profit institutions), and by type of consumption, i.e., education, health, and others. Labor income, on the other hand, is disaggregated by type of worker, i.e., wage employees or self-employed.

In 2016, aggregate consumption in Maldives is estimated at MVR 30.5 billion, of which around 60 percent are public consumption. Indeed, the government plays an important role in Maldivian consumption, particularly on education (71 percent public consumption) and health (61 percent public consumption). When disaggregated by age group, more than half of the consumption are by prime-age adults (MVR 17.1 billion), followed by the young population (MVR 12.0 billion). The consumption by the elderly represents less than 5 percent of total consumption at only MVR 1.3 billion.

To a large extent, these aggregate statistics are conditioned by the population at each age group. As shown in the earlier section, the young and prime-age adults comprise 57- and 40-percent of the population, respectively, while the elderly only comprise less than 4 percent.

When we examine the average consumption per person at each age group, the Maldivian NTA estimates show that the elderly consumes more per person, on average, relative to other age groups. The gap is mainly due to consumption of health care, wherein per capita health consumption is estimated at MVR 21.7 thousand among the elderly, which is roughly two to three times the rate relative to those in other broad age groups.

Labor income is an important resource to finance consumption. In 2016, the Maldives economy generated MVR 28.7 billion in labor income. A large proportion of this (81 percent) was earned through earnings of wage employees. Labor income from self-employment are also substantial at MVR 5.5 billion, but only comprise less than a fifth of all labor incomes for the year. When disaggregated by resident type, around a third of all labor incomes are earned by the resident foreign population.

The difference between consumption and labor income is called the lifecycle deficit (or surplus). It represents the value of consumption that are not financed by labor income, but through other resources, including asset-based reallocations, e.g., dis-savings and capita income, and transfers, e.g. public pensions and gift-giving among families and friends. In Maldives, lifecycle surpluses, i.e., labor income in excess of consumption, are observed between age 23- and 55-years, i.e., 33 years, among resident Maldivians, and between ages 17- and 62-years, i.e., 46 years, among resident foreigners. In per capita terms, the lifecycle deficit of the average elderly (MVR 62.0 thousand) is larger relative to those of the average young (MVR 38.9 thousand). However, when aggregated over the population, the young population is estimated to have incurred a deficit of MVR 7.3 billion, or more than six times the MVR 1.1 billion aggregate lifecycle deficits among the elderly population.

4. HUMAN CAPITAL AND THE FUTURE OF WORK IN MALDIVES

The foreign population plays a very prominent role in the Maldivian economy. Since 2015, for instance, NBS estimates that the tourism sector generated more than MVR 6 billion in revenues, and contributes more than a fifth of the country's gross domestic product each year (NBS, 2018a). In order to ease the shortage in the supply of local labor, the government has allowed the entry of foreign workers. In 2017 alone, the Maldives government issued employment approvals to more than 75,000 foreign workers. In the same year, around 27 percent of the resident population in Maldives are comprised by foreign residents (NBS, 2018a).

On the one hand, the flow of foreign population into Maldives provide several important benefits that comes with greater economic vigor, including higher incomes and better employment opportunities for local resident Maldivians. However, it also poses potential challenges, particularly its impact on commodity prices, land use and valuation, and productivity, among others, that ultimately also impacts the local population[1].

Figure 3. Projected Aggregate Labor Income by Resident Type, 2016-2050
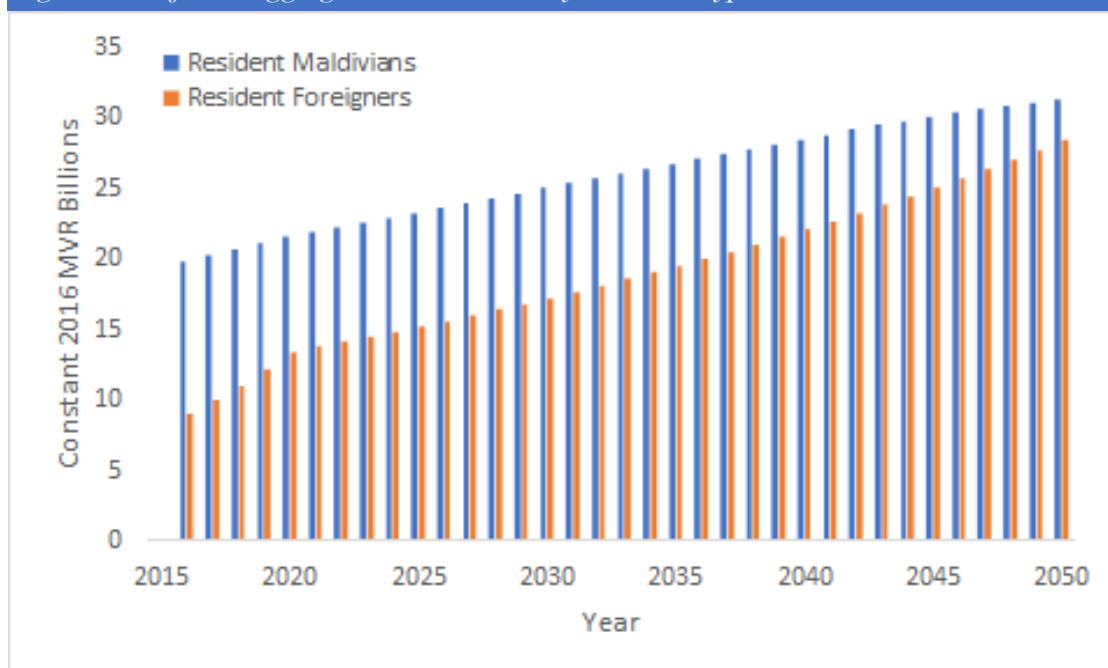
Note: Population projections are from National Bureau of Statistics and UNFPA (2018).

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1   See, for instance, Copeland (1991), Holzner (2011), and Nowak and Sahli (2007) for competing views and reviews of the extant literature on the topic.

Take the case of labor income, for instance. If the present per capita age profile of labor income among resident Maldivians and resident foreigners remain the same into the future, when combined with projected population distribution by age, the contribution of foreign workers is expected to become more significant. As shown in Figure 3, by 2050, with the sheer projected demographic trajectories of the foreign and Maldivian resident populations, all things being the same, the share of aggregate labor income that accrues to the foreign population in Maldives is projected to reach 48 percent – that is, almost half all labor incomes – from only 31 percent in 2016. This may not necessarily be an issue if the expansion in earnings among the foreign population does not crowd out but instead boost economic opportunities for resident Maldivians.

4.1. CURRENT CHALLENGES

But indications from different economic measures show several weaknesses in the domestic economy that may limit the ability of local Maldivians to compete with foreign workers in the labor market.

First, labor productivity in Maldives has stagnated over the last decade. Figure 4 shows the annual growth in output per worker[2] in Maldives between 1996 and 2018. While there had been substantial growth in labor productivity in Maldives in the past, particularly in the economic boom years of 1997, 2003, and 2006, the economic decline in 2001, 2005, and 2009 had practically wiped out much of the previous gains. Indeed, the labor productivity of an average worker in 2016 is roughly only 90 percent of the productivity of an average worker in 1995.

Figure 4. Annual growth (%) in output per worker: Maldives, 1996-2018

Note: Calculated as annual growth in real GDP less the annual growth in number of effective workers. Annual GDP growth rates are from National Bureau of Statistics (2017).

2   Annual labor productivity is calculated as the growth in GDP less the growth in effective number of workers. The effective number of workers is calculated by weighing the population at each single-year age group by the ratio of per capita labor income in each particular age group and the average labor income among those aged 30-49 years. See, for instance, Lee and Mason (2011) and United Nations (2013) for discussions.

Second, human capital spending on children is relatively low in Maldives for its current economic development and fertility level. Figure 5 presents the average human capital spending per person among countries with NTA estimates relative to its GDP per capita and total fertility rate. Human capital, in this case, is a synthetic cohort measure that is calculated as the sum of per capita education consumption between ages 0- to 24-years and per capita health consumption for ages 0- to 16-years. The values are normalized relative to the average labor income of those aged 30 to 49 years. This allows us to compare human capital investments among economies without reference to differences in currency valuations, and the cost of labor, which is an important input to human capital.

Panel A in Figure 5 captures the quantity-quality tradeoff in the number of children[3]. As the number of children per woman (i.e., quantity) declines, there is a tendency for parents to invest more heavily in the human capital of their children (i.e., quality). However, children in Maldives, like its South Asia neighbors India and Bangladesh, are receiving less human capital investments compared to other economies with similar fertility levels. And the gap is quite substantial. Among economies with total fertility rates at about two births per woman, like in Maldives, children receive about four years-worth of prime-age labor income in human capital investments on average. In Maldives, however, average human capital investments on children is only less than two years-worth of prime-age labor income. A similar story may be observed when using GDP per capita (see Panel B, Figure 5).

Figure 5. Human capital spending
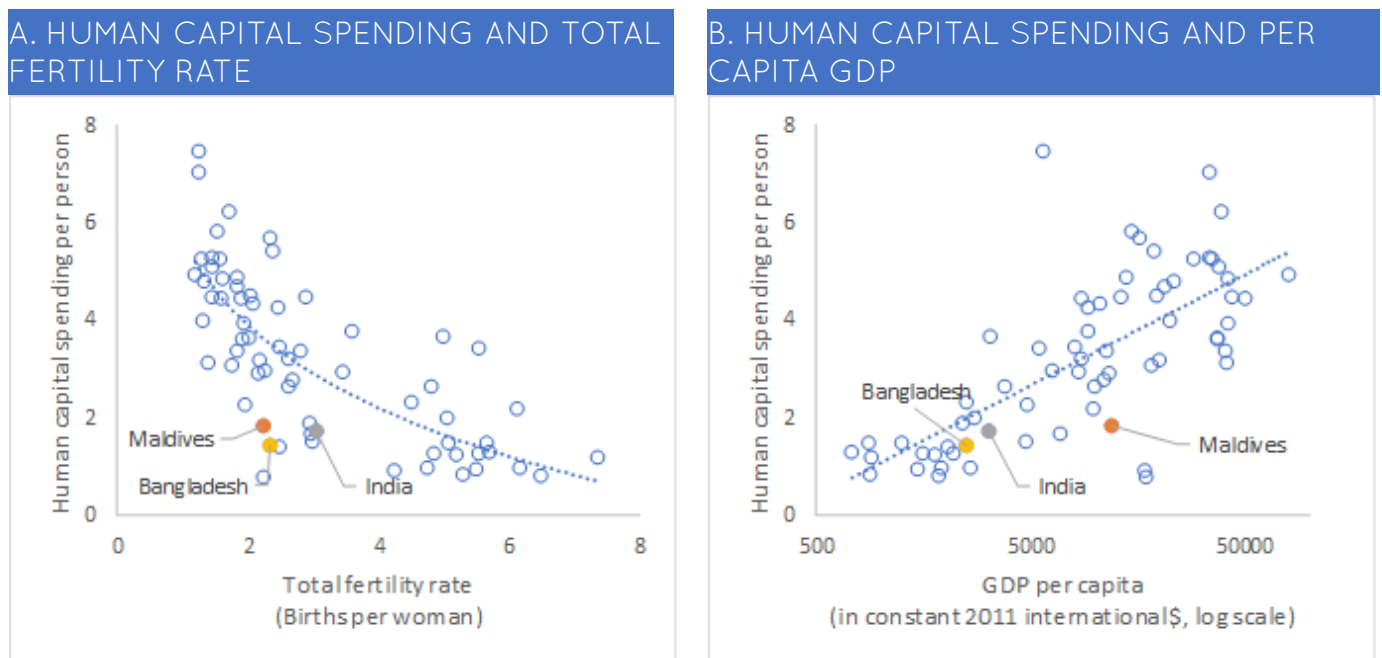
Note: Human capital spending per person is calculated as the sum of per capita health consumption for age 0 to 16 years and of per capita education consumption for age 3 to 24 years. The values are normalized relative to the average labor income of population age 30 to 49 years. Data for other countries are from www.ntaccounts.org. See Lee and Mason (2011) for details.

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3   See Becker (1959), Becker and Lewis (1973) and Willis (1973) for discussions.

Third, there appears to be substantial underutilized Maldivian workforce in the economy. In 2016, for example, the NBS (2018b) estimates that 9.3 percent of the labor force are unemployed (see Table 2). Among those who are employed, 14.3 percent are under-employed. In addition, the potential labor force – i.e., those who are not employed, and are either available but not looking for work or are looking but not available for work – comprise about a tenth of the working age population.

In total, about 48 thousand Maldivians, or about a fifth of the working age population, are not able to completely harness their potential by not being able to fully participate in the labor market. Much of this underutilized workforce is in prime working ages where productivity is highest. While the rate of labor supply underutilization is higher among men (21 percent), the number of underutilized labor supply among women is also significant.

Table 2. Labor Supply: Maldives, 2016						
	Resident Population	By Sex		By Age		
		Male	Female	15 - 17	18 - 64	65+
Population aged 15+ years ('000)	263.3	140.0	123.4	17.5	223.1	18.5
In the Labor Force ('000)	151.7	59.0	92.7	2.0	144.3	2.9
Labor Force Participation Rate (%)	57.6	42.2	75.1	11.3	64.7	15.6
Employed ('000)	142.4	55.7	86.7	1.6	135.6	2.7
Employment Rate (%)	93.9	94.4	93.6	83.0	94.0	95.2
Employed-to-Population Ratio (%)	54.1	39.8	70.3	9.4	60.8	14.8
Underutilized Labor Supply ('000)	47.7	28.9	18.8	2.2	43.7	1.3
Underemployed	14.3	8.0	6.2	0.2	13.9	0.2
Unemployed	9.3	3.3	6.0	0.3	8.7	0.1
Potential labor force	24.1	17.5	6.6	1.7	21.1	0.9
Extended Labor Force ('000)	175.8	76.6	99.3	3.7	165.4	3.8
Extended LFPR (%)	66.8	54.7	80.5	21.3	74.1	20.5

Source: National Bureau of Statistics (2018b)

4.2. FIRST DEMOGRAPHIC DIVIDEND

Unfortunately, Maldives can no longer rely on its first demographic dividends to finance the needed investments to boost productivity through human capital and other investments. That demographic window of opportunity in the country is closing, and towards its waning years.

In Figure 6, we present estimates of support ratios and the implied growth in incomes per person from the first demographic dividend. The support ratio captures the number of workers available to support a consumer in an economy. Two measures are presented. The first measure is based on population headcounts, using those aged between 25- to 64-years as workers, and the rest of the population as consumers. The second measure is based on NTA estimates of labor income and consumption that takes into account differences across age groups. The growth in the support ratio is the first demographic dividend, which measures the accounting effect of demographic change on incomes per person, taking productivity and consumption patterns as constants throughout the projection period[4].

Based on these measures, Figure 6 shows that the support ratio is generally increasing when using population headcounts. In 2016, there is one prime-age person available to support one dependent-age person. This projected to increase to about 1.1 prime-age per dependent-age population by 2050. Using the NTA-based support ratio, however, shows that there are roughly only 6 effective workers for every ten effective consumers in the economy. This ratio is projected to remain relatively the same until 2050.

The first demographic dividend phase for Maldives is ending in 2020, with some rebound, between 2026 and 2044, based on NTA estimates of the support ratio. Even with the rebound however, compared to the estimate of the first demographic dividend using population head counts, the NTA-based growth rates of the support ratio are much more modest.

Figure 6. Support Ratio and First Demographic Dividend: Resident Maldivians, 2015-2050
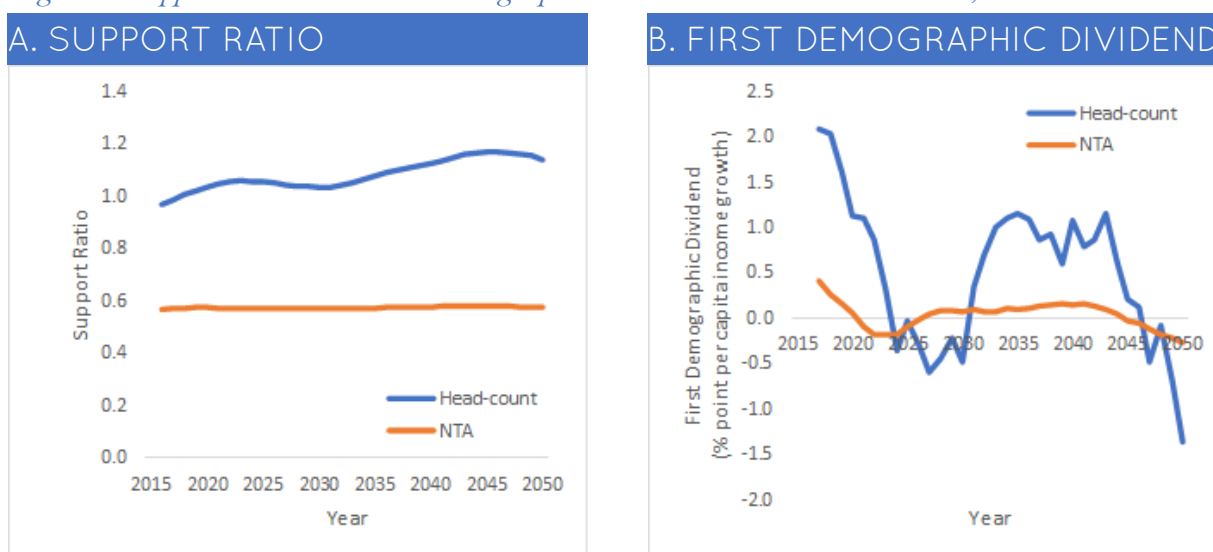
Note: Population projections are from National Bureau of Statistics and UNFPA (2018). The head-count support ratio is calculated as the proportion of population aged 25 to 64 years relative to the population aged <25 and 65+ years. The NTA support ratio is calculated as the proportion of the number of effective workers relative to the number of effective consumers. The effective number of consumers (workers) are calculated by weighing the population at different age groups by the per capita consumption (labor income) at that age relative to the average per capita consumption (labor income) of those aged 30 to 49 years. The first demographic dividend is calculated as the growth rate of the respective support ratio.

4   See Lee and Mason (2011), and United Nations (2013) for discussions.

4.3. SECOND DEMOGRAPHIC DIVIDEND

That being said, Maldives may still benefit from the second demographic dividend. Behavioral changes during the demographic transition, such as greater human capital investments on children, and increased savings among the growing elderly population, when used productively in the economy, may improve standards of living in a way that can be sustained at relatively higher levels than those that may be obtained from the first demographic dividend[5].

In order to provide some indication of the potential benefits from the second demographic dividend, we simulate the contribution of increasing labor productivity by 0.5 percent per year on the aggregate labor income among resident Maldivians. This rate is purposely chosen to be substantially lower compared to estimates of the historical average labor productivity growth around the world[6] in order to provide a low-ball estimate of the potentials from the second demographic dividend. In addition, we also explore the possible contribution of employing the potential workforce in the labor market. In this scenario, we assume that the previously unemployed potential workforce will earn the same rate as the average worker of the same age. We combine these assumed trajectories of per capita labor income age schedules with the projected change in population age distribution to estimate the implied aggregate labor income until 2050.

Table 2 summarizes the results of our simulation. For reference, we include a base scenario where only the population age distribution changes, while the age profile of per capita labor income remains the same in its 2016 level until 2050. With only demographic change, aggregate labor income among the resident Maldivian population is projected to increase to MVR 31.2 billion in 2050 from only MVR 19.8 billion in 2016. Increasing labor productivity and employing potential workforce, on the other hand, are projected to increase aggregate labor income by MVR 5.8- and MVR 7.4-billion, respectively, relative to the aggregate labor income in the demographic change-only scenario in 2050.

The biggest potential, however, comes from together raising both labor productivity and employment among the population. In our simulation, raising labor productivity by 0. 5 percent each year, when coupled with the employment of the potential labor force, raises aggregate labor income by as much as MVR 14.6 billion compared to the base scenario in 2050. This effect is more than MVR 1 billion greater than the combined effects of the two interventions but implemented separately.

Table 3. Simulated Aggregate Labor Income (in 2016 MVR Billions)				
	2020	2030	2040	2050
Demographic change only	21.5	24.9	28.4	31.2
… with labor productivity growth (LPG)	22.3	28.7	36.0	43.8
… with potential labor force (PLF)	26.6	31.0	35.2	38.6
… with both LPG and PLF	27.7	35.6	44.7	54.2

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5   See Lee and Mason (2010), and Mason, et. al. (2016)
6   Based on output per worker growth calculated from the Penn World Tables. See Feenstra, et. al. (2015).

4.4. DEMOGRAPHIC CHANGE AND FISCAL REQUIREMENTS

Raising labor productivity, however, requires resources. Investments on children's human capital, for example, are seldom for free. So does the infrastructure needed to maintain capital markets. With the impending end of the first demographic dividend phase in Maldives, the country must rely on other sources to finance the needed investments necessary to benefit from the second demographic dividend.

Even without these additional investments, the projected change in the population age structure of Maldives is expected to impact household and government budgets alike. In Table 4, we present the implied spending requirement for the government as a result of the projected population age structure change in Maldives between 2020 and 2050. In these projections, the per capita age profiles of public consumption are kept constant at its 2016 level, and only the population at each age group are allowed to change. Abstracting from technological change, the demographic transition requires the almost doubling of the Maldivian government's budget by 2050 just to maintain the same level of services that it provides in 2016.

The growth in fiscal requirement is driven mainly by, first, the growth in the total population, but also, second, the growing share of the elderly in the population. With the importance of the public sector in the provision of healthcare services, aggregate public health consumption needs to grow by more than 2 percent per year until 2050 to maintain the same level of service enjoyed by the 2016 Maldivian population. The growth in aggregate spending requirement to finance public education in this status quo scenario is much more modest at only one percent per year.

All else being the same, any improvements in the quality or in the quantity of public benefits provided to the population necessarily requires higher public spending compared to these baseline estimates.

Table 4. Projected public sector spending requirement (in 2016 MVR Billions), 2020-2050					
	NTA 2016	Projected			
		2020	2030	2040	2050
Public Consumption	12.5	14.5	17.4	20.2	23.5
Education	2.2	2.5	2.8	2.9	3.0
Health	2.2	2.6	3.2	4.0	4.9
Others	8.0	9.5	11.4	13.4	15.6

5. POLICY IMPLICATIONS AND CONCLUSIONS

The demographic transition in Maldives is expected to introduce both opportunities and challenges. Using new National Transfer Account estimates for Maldives, we document some of these challenges, focusing on the Maldivian labor market, and provide some insights on how these challenges may be mitigated.

First, workers in Maldives are faced with stagnant labor productivity growth, relatively low human capital investments, and suboptimal labor force participation rates. This may have dire consequences not only for Maldivian households who rely on labor incomes for sustenance, but for the Maldivian government, as well. While payroll taxes are practically non-existent in Maldives, this may be an important resource for the government to finance its programs and services, particularly in a future where an increasing share of the population are elderly. Increasing household incomes by inducing greater labor productivity or expanding work opportunities may contribute in easing the financial constraints of both households and the government.

Second, the demographic window of opportunity, i.e., the so-called first demographic dividend, is soon ending for Maldives. While a second-wind of the first demographic dividend is coming, its contribution to average incomes are projected to be at best minimal. The country must look forward to other opportunities to improve future Maldivian population's wellbeing.

Third, despite these realities, investing on children's human capital remains an important intervention that may provide more secure future to the Maldivian population. Increasing human capital investments on children not only raises these children's labor productivity in the future, but also raises their chances of being productively employed as documented in other studies. It must be emphasized that human capital investments are most advantageous to the extent these investments are eventually employed productively in the economy. Programs to expand work opportunities are therefore crucial complements to any program expanding human capital investments on children.

That said, a second demographic dividend may be possible for Maldives. This, however, are highly dependent on having government policies, support programs, and related infrastructures that foster greater human capital investments on children, nurture higher savings among the working age population, and facilitate more vibrant economic activity in general. These, together, are expected to raise the productivity of workers that are ultimately employed in the economy.

In this study, we only focused on the labor market and the future of work in Maldives. An equally important concern is the impending ageing of the Maldivian population. As we have presented in our highly stylized simulation, population ageing may pose substantial burden on both households and the government. Measuring and understanding the resources available at their disposal is a necessary first step to design effective policies to minimize the potential negative repercussions from population ageing. This requires measuring and understanding not only the economic lifecycle patterns of consumption and labor income, but of sharing and saving as well.

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APPENDIX A. SUMMARY OF 2016 MALDIVES NATIONAL TRANSFER ACCOUNT ESTIMATION

This Appendix summarizes the major steps employed in estimating the 2016 National Transfer Accounts (NTA) for Maldives. The general steps and concepts, which are followed in estimating the Maldives NTA, are discussed in more detail in United Nations (2013), and in a manual by the Maldives National Bureau of Statistics (NBS). As mentioned in the main text of this report, only the Lifecycle Account is estimated in this round of estimation.

In NTA, all flows are classified in the perspective of age groups or people in these age groups, and not through the institutions that mediates the flow of resources in the economy. This necessarily requires the estimation of consumption and labor income by type at the individual level, and then summarized by age group. However, in many instances, the data are not available at this level of disaggregation.

In order to provide age-specific values, we allocate aggregate level values to individuals within households, if values are at the household level, say in surveys, and to age groups, if values are at the country-level, say as expenditures by government ministries, following the standard procedures outlined in United Nations (2013). A summary of these allocation rules and data sources are provided in Table A.1.

Age-specific per capita values are calculated for each NTA sub-account. Except for education-related variables, all profiles are smoothed to reduce the noise from sampling variation and other sources of error or random variation in the data. Only the lowest level of sub-accounts is smoothed, and never the upper-level accounts. For example, in calculating labor income, only the age profiles of earnings and self-employment labor income are smoothed, and not the total labor income by age.

In order to main aggregate consistency, the age profiles calculated as described in Table A.1 are rescaled to agree with NTA macro-controls calculated from the Maldives System of National Accounts. Calculation of the NTA macro-controls are discussed in-depth in United Nations (2013) and in the Maldives NTA Manual by the NBS.

Table A.1. Summary of procedures estimating basic NTA age profiles

Account	Main Data Sources	Age Profile Calculation
Lifecycle Deficit (LCD)		LCD = C – YL
Consumption (C)		C = CF + CG
Private Consumption (CF)		CF = CFE+CFH+CFX
- Education (CFE)	HIES 2016	School level-specific expenditure allocated equally among those in the household reporting attending school at the same education level
- Health (CFH)	HIES 2016; Aasandha	Allocated to individuals using regression approach and age-specific health facility utilization rates from Aasandha
- Others (CFX)	HIES 2016	Allocated using age-specific weights described in United Nations (2013)
Public Consumption (CG)		CG = CGE + CGH + CGX
- Education (CGE)	HIES 2016; MoE	Enrollment by age level are proxied by enrollment rate by age of general population; Enrollment rate among those aged 5 years and below are from MoE; Non-age-specific spending allocated equally among all individuals
- Health (CGH)	Aasandha; MoH	Public health facility utilization rates are proxied by utilization rates from Aasandha; Aasandha spending by age
- Others (CGX)		Allocated equally across the resident population
Labor Income (YL)		
- Labor earnings (YLE)	HIES 2016	Tabulated directly from individual-level data
- Share of labor in self-employment income (YLS)	HIES 2016	Allocated to those reporting self-employed using average compensation by age of those reporting as wage-earners

National Bureau of Statistics
Ministry of National Planning, Housing &
Infrastructure,
Dharul Eman Building (7, 8, 9th Floor),
Majeedhee Magu,
Male 20345,
Republic of Maldives

info@stats.gov.mv
http://statisticsmaldives.gov.mv

 facebook.com/NBSMaldives

 @statsmaldives

UNFPA Maldives Country Office
3rd Floor,
Shinetree Building,
Boduthakurufaanu Magu,
Maafannu,
Male' 20184,
Republic of Maldives

maldives.office@unfpa.org
http://maldives.unfpa.org

 facebook.com/UNFPAMaldives

 @UNFPAMaldives