MONGOLIA

2020

POVERTY REPORT

A decade of progress and
stagnation in poverty reduction

MONGOLIA

2020

POVERTY
REPORT

A decade of progress and
stagnation in poverty reduction

THE WORLD BANK

- 1818 H Street NW
  Washington DC 20433
- 202-473-1000
- www.worldbank.org

NATIONAL STATISTICS OFFICE OF MONGOLIA

- Government III building, Baga toiruu - 44,
  Ulaanbaatar -11, Mongolia
- (976-11)-326414 | 1900-1212
- www.nso.mn

FOREWORD (NSO)

Mongolia is implementing its national long-term development policy—the Vision 2050—by localizing the Sustainable Development Goals (SDG) to deliver on the commitment, "Leave no one behind", which calls for ending poverty, protecting the planet, and achieving peace and prosperity. The SDG has three pillars that recognize the need to balance economic, social, and environmental growth for sustainable development.

The Vision 2050 was formulated with close consideration of our country's unique characteristics stemming from our roots in the Mongol Empire—such as nomadic civilization and a unique national identity—in combination with global development trends and progressive concepts. Mongolia continues to progress in actualizing this vision which consists of 47 targets for 9 goals through three development stages measured in 10-year terms.

The basis for the above goals is to end poverty and hunger in all their forms and dimensions, respect human rights, and achieve equality. The National Statistics Office of Mongolia (NSO) is dedicated to producing poverty data that are calculated using internationally accepted methodologies and are comparable over time in order to implement these goals, monitor the implementation process, and develop further policies and programs.

The welfare of the population is a multifaceted issue that cannot be measured by poverty indicators alone. The Universal Declaration of Human Rights states that "everyone has the right to a standard of living adequate for the health and well-being of himself and his family, including food, clothing, housing, medical care, and necessary social services". However, hundreds of millions of people around the world still live in extreme poverty and have reduced health outcomes and limited access to education and basic social services such as clean water and sanitation. Poverty may arise due to many reasons, including unemployment, social exclusion, natural disasters, and diseases. Increasing inequality among the population can also negatively affect human perceptions and happiness and in the long run, hinder the social and economic development of the country. Inequality affects us of all irrespective of who we are or where we live.

The NSO conducts a Household Socio-Economic Survey with technical support from the World Bank to estimate poverty indicators based on household consumption data. In 2020, we have carried out the poverty estimation using the SWIFT PLUS approach with technical support from experts at the World Bank to ensure the comparability of changes in poverty and the factors affecting them.

I would like to extend my gratitude to Mr. Andrei Mikhnev, World Bank Country Manager for Mongolia, economists Ms. Ikuko Uochi and Ms. Lydia Kim, poverty experts at the World Bank, and the staff of the World Bank Country Office in Mongolia, for providing support in processing and producing the survey data according to international best practices and collaborating with us on preparing this survey report.

NATIONAL STATISTICS OFFICE CHAIRMAN

B.BATDAVAA

FOREWORD (WORLD BANK)

The World Bank and the National Statistics Office of Mongolia (NSO) have collaborated on poverty measurement and analysis based on household surveys over the last two decades. Since the launch of the 2018 poverty update report, our partnership has been further strengthened by the joint implementation of the COVID-19 household response phone surveys, the 2020 poverty estimation, and analysis for the 2020 poverty report. I would like to express my deep appreciation to Mr B. Batdavaa, Chairperson of the National Statistics Office of Mongolia, for the NSO's continued collaboration and strong support to our poverty and inequality monitoring and analytical activities.

The report shows that robust and inclusive growth in Mongolia contributed to impressive progress in reducing poverty from 2010 to 2014. The economic recession in 2016, however, represented a reversal of fortune which was followed by a significant slowdown in the rate of poverty reduction. The onset of the COVID-19 pandemic presented an additional hurdle, but the 2020 Household Socio-Economic Survey (HSES) reveals that debilitating impacts on employment and household incomes were not widespread in the first year of the pandemic. Despite minimal consumption growth, household incomes grew rapidly between 2018 and 2020, particularly among the poor and vulnerable, leading to a divergence in income and consumption trends. Increased precautionary saving in the face of economic instability may be one contributing factor to this divergence, yet challenges surrounding the accurate measurement of household consumption and income in Mongolia will also deserve further investigation going forward.

After the Delta wave in mid-2021, the economy has started to rebound, but signs of a slow and unequal recovery have emerged. Continued border restrictions with China and recent hikes in the prices of food, commodities, and energy create new risks, particularly for poor, urban households who spend nearly 40 percent of their consumption on food. Moreover, two years of expansionary fiscal support have increased the debt burden, raising questions about the sustainability of continued government support and loosely targeted or universal social transfers to households after the COVID-19 pandemic. Given the limited fiscal space and evolving new challenges facing the economy, shifting the government's support from universal programs to programs that target the poor and vulnerable households is one important consideration to effectively advance poverty reduction going forward. Increasing the resilience of poor and vulnerable households to income shocks will enable a smoother recovery when the country unexpectedly faces negative shocks.

The World Bank team is committed to supporting evidence-based policymaking for fighting poverty and improving people's lives in Mongolia. We hope the 2020 poverty report will support policymakers and stakeholders in recognizing challenges for advancing poverty reduction and identify where policy interventions are most critical.

COUNTRY MANAGER FOR MONGOLIA
THE WORLD BANK

ANDREI MIKHNEV

ACKNOWLEDGMENTS

ABBREVIATIONS

CMP	Child Money Program
CPI	Consumer Price Index
EAP	East Asia and Pacific
GDP	Gross Domestic Product
HRPS	Household Response Phone Survey
HSES	Household Socio-Economic Survey
LFS	Labor Force Survey
MNT	Mongolian tugrug
NSO	National Statistics Office of Mongolia
PPP	Purchasing power parity
SDG	Sustainable Development Goals
SP	Shared Prosperity
UB	Ulaanbaatar
UN	United Nations
WDI	World Development Indicators

CONTENTS

LIST OF FIGURES

LIST OF TABLES

EXECUTIVE SUMMARY

Marked by economic volatility, Mongolia experienced both remarkable progress in poverty reduction between 2010-16, followed by stagnation thereafter.

Mongolia made notable strides in reducing poverty from 2010 to 2014, but the pace of poverty reduction slowed significantly after the 2016 economic recession. Thanks to robust and inclusive growth in household consumption during the economic boom of the early 2010s, poverty declined by 17 percentage points from 38.8 to 21.6 percent between 2010 and 2014. With the onset of the economic recession in 2016, however, consumption growth declined and became more unequal, favoring wealthier households. The economic slowdown of 2016 as well as the COVID-19-induced economic crisis reflected in a smaller decline in poverty from 29.6 percent in 2016 to 27.8 percent in 2020, and Mongolia recorded one of the lowest rates of poverty reduction in the East Asia and Pacific region during this time.

The trend of declining inequality and inclusive growth seen in the first half of the decade changed course in the latter half. Welfare gains were distributed relatively evenly across the distribution between 2010 and 2014. From 2016 to 2020, however, poorer households fell behind, as consumption grew at a slower rate for the bottom 40 percent of the welfare distribution than it did for the total population. Lower and more unequal growth contributed to the slower expansion of Mongolia's economically secure middle-class population during this period.

Greater urbanization and narrowing geographical disparities in poverty have meant that the poor have become increasingly concentrated in urban centers, especially Ulaanbaatar. While poverty in urban areas was significantly lower than in rural areas in 2010 (33.2 versus 49.0 percent), the pace of poverty reduction was much faster in rural areas than in urban cities in the

2010s, reducing the urban-rural poverty gap from 16 percentage points in 2010 to 4 percentage points in 2020. A similar pattern of narrowing spatial poverty gaps can be seen across regions. For example, in 2010, poverty in the poorest region (Western) was 22 percentage points higher than it was in the wealthiest region (Central). Faster poverty reduction in poorer regions, however, reduced the Western-Central gap in poverty to 8 percentage points by 2020. In addition to the stagnation in poverty reduction, an increased urbanization rate in the 2010s (2.6 percent year-on-year) has meant that the share of the poor living in Ulaanbaatar city has increased continuously from 34 percent in 2010 to 42 percent in 2020.

Key non-monetary aspects of household wellbeing have also improved in the past decade, yet significant disparities remain in access to basic infrastructure services among countryside residents and ger dwellers. Mongolia has excelled in education outcomes, with half of the youth (aged 25-34) having a university or equivalent degree. Ownership of electric home amenities has also increased significantly between 2010 and 2020, as reliable electricity sources such as the grid or solar energy have reached almost every household in the country. Yet, challenges remain in access to internet, improved water, proper sanitation, and reliable heating sources among residents of the countryside and gers, and disparities have largely persisted over time. For instance, only six of ten ger dwellers have access to improved drinking water sources, and eight of ten have access to improved sanitation facilities, whereas access to these services is nearly universal among households in Ulaanbaatar. Given the multidimensional nature of household welfare, going forward, greater focus will need to be put on its various non-monetary facets and narrowing geographic disparities to advance poverty reduction in all its dimensions across the country.

Besides slower GDP growth, a divergence in income and consumption growth during 2016-2020 has contributed to the modest reduction in poverty, which in Mongolia is measured using reported consumption. Increased precautionary saving, potential measurement challenges, and targeting inefficiencies may have contributed to the divergence.

Between 2016 and 2020, real household incomes grew rapidly while consumption stagnated. Driven primarily by increasing wages, social assistance, and livestock income, real per capita household incomes increased by on average 23 percent between 2016 and 2020, with the most significant growth (19 percent) occurring between 2018 and 2020. Much of this increase was driven by robust growth in wages during this period: compared to 2018, real wages per worker were 22.6 percent higher in 2020. Growth in real per capita household incomes were greater among poorer households, with the bottom 40 experiencing, on average, a 52 percent increase in real income, and the top 60 experiencing an 8 percent growth in income. Moreover, real per capita social transfers increased by an average of 35 percent, with marginally higher increases for the bottom 40. However, despite significant increases in labor income and social transfers, consumption growth among the bottom 40 and poverty reduction was minimal between 2016 and 2020. Results from a decomposition of consumption by income indicate that if consumption had grown at the same rate as income, poverty would have declined by an additional 9 percentage points from 2016 to 2020.

Economic volatility and uncertainty together with restrictions on face-to-face services may have led to an increase in precautionary saving among households, particularly during the COVID-19 pandemic. Reported data from the 2020 Household Socio-Economic Survey (HSES) show that savings increased substantially in 2020, especially among poorer households: Between 2018 and 2020, the likelihood of saving in the year prior to the survey nearly tripled in the poorest quintile and more than doubled in the second-poorest quintile. Average amounts saved also increased at a faster rate for poorer households. Furthermore, administrative data show that the total balance of household deposits at financial institutions grew throughout 2020, with the quarter-on-quarter change in deposits increasing from 0.4 percent in 2020 Q1 to 11 percent in 2020 Q4. An increase in precautionary savings was observed in many countries during the COVID pandemic, but it is unusual that this increase is more pronounced among poor households, which usually have a higher marginal propensity to consume.

Measurement errors may contribute to the divergence in reported income and consumption growth in the HSES. Analysis of consumption data from the 2016 and 2018 HSES, which employed a one-month diary to collect food consumption data for urban households, shows that respondent fatigue may have led to underreporting: Urban households reported increasingly less food consumption over the reference period, and nearly 30 percent did not record food consumption daily. The widening gap observed between the HSES and the national accounts in household consumption also suggests potential underreporting in the HSES. Consumption as measured by the HSES accounted for 80 percent of private consumption in the national accounts in 2010 but only 51 percent in 2020. Between 2016 and 2020, annualized consumption growth was only 1 percent in the HSES while it was 5.6 percent in the national accounts. These measurement issues deserve further investigation going forward.

An additional issue related to the measurement of consumption in 2020 specifically is the survey-to-survey imputation approach that was used to estimate poverty and the consumption distribution due to changes in the HSES questionnaire. While validation exercises show that the imputation method performs well in predicting the poverty rate and consumption, distributions simulated by imputation methods are generally prone to some inaccuracies. As such, the imputation method may contribute to some of the divergent trends in income and consumption seen in the latter half of the decade. The extent of this contribution, however, can only be assessed once the consumption aggregate and poverty line are updated using the upcoming 2022 HSES.

Finally, despite significant increases, social transfers have had only modest success in reducing poverty due to targeting inefficiencies. For example, Mongolia's largest social protection program, the Child Money Program (CMP) targets households with children, which has meant that wealthier households have been included at the expense of poorer households being left out. In 2020, about 20 percent of households in the bottom 40 did not receive CMP benefits, while nearly half of households in the top 60 did. Moreover, about half of total CMP benefits in 2020 went to households in the top 60. Nevertheless, decomposition analysis shows that between 2010 and 2020, keeping other factors constant, increases in social transfers could have reduced the poverty rate by about 10 percentage points. Declines in households' marginal propensity to consume – particularly in the latter half of the decade – has offset much of this effect. It remains to be further investigated whether the increase in precautionary savings among poor households reflect genuine concerns over the impact of future shocks or whether it indicates that the poverty threshold is set high enough to allow even poor households to set some money aside for a rainy day. In the latter case, tighter eligibility criteria and fewer errors of exclusion could increase the effectiveness of social transfers in poverty reduction going forward.

While Mongolian livelihoods were not severely affected in the first year of the pandemic, worsening conditions in the last quarter of 2020, during which the health crisis began to intensify and more stringent pandemic-related mobility restrictions were imposed, point to stronger impacts in 2021.

While poverty has not increased between 2018 and 2020, evidence suggests that the COVID-19 pandemic prolonged the slowdown in poverty reduction. According to the 2020 HSES, poverty is estimated to be 27.8 percent in 2020, a 0.6 percentage-point decrease from 2018 which is not statistically significant. With a persistently high incidence of vulnerability in the country, negative shocks such as the COVID-19 pandemic have the potential to push many households into poverty. Indeed, simulations of poverty under a counterfactual scenario indicate that poverty would have declined by a further 3.5 percentage points in the absence of the pandemic.

The 2020 HSES shows that impacts to employment in 2020 were not significant until the final quarter, with workers in urban areas and in the service sector more likely to be affected. As a share of the working-age population, employment decreased notably between 2018 and 2020, largely due to a dip in the fourth quarter of 2020. This decline in employment was largely exclusive to urban areas, particularly Ulaanbaatar: Between 2018 and 2020, the employment rate in rural areas declined from 62.7 to 61.6 percent, while it declined from 53.4 to 49.0 percent in urban areas. This differential impact by location can partially be attributed to higher participation in urban areas in services sectors, which were more likely to be affected during the pandemic-induced economic downturn. Greater shares of wealthier workers residing in urban areas and higher participation in service sectors such as retail have also meant that wealthier workers were more likely to experience temporary or permanent job losses in 2020.

Despite considerable growth between 2018 and 2020, labor incomes also began to decline at the end of 2020. Boosted by robust growth in wages, livestock income, and social transfers, average per capita real household income grew by 19 percent between 2018 and 2020. More than half of the growth in income during this period can be attributed to an increase in real wages, which the Mongolian Labor Force Survey shows increased significantly in 2019 and actually stagnated in 2020. However, the increase in wages estimated from the HSES does not solely capture growth in 2020, as the reference period for calculating annual wages extends the past 12 months prior to the survey. Given that the 2020 HSES was a yearlong survey, the 12-month reference period means that for most of the survey sample, wage income in 2020 also captures some earnings from 2019 and thus short-term changes in income could be obscured. Indeed, quarterly trends show that labor incomes declined in the final quarter of 2020, signaling a deterioration of livelihoods due to the pandemic.

While subsequent surveys will provide a clearer picture of the longer-term impacts of the pandemic, signs of potentially lasting and unequalizing effects have emerged after 2020. The Mongolian Labor Force Surveys reveal that the pandemic had yet to take its worst toll on employment until 2021, during which COVID-19 cases, deaths, and related lockdowns were most severe. Employment in the first quarter of 2021 reached the lowest levels that Mongolia had seen in years, while labor underutilization soared, and real wages declined. In addition, in the 2020 HSES, poorer households, particularly those residing in urban areas, were more likely to show signs of being food insecure during times of lockdown. Prolonged food insecurity could potentially have damaging effects for the human capital of children, and thus further research on the pandemic's impacts in 2021 and beyond will be important to assess how the poor and vulnerable were affected at the peak of the pandemic and whether they were able to recover from the economic crisis. Further investigation of the role of social assistance in mitigating the impacts of the pandemic on households and how and when households used this assistance will also be important to draw lessons for future economic crises.

1

POVERTY AND INEQUALITY OVERVIEW: 2010-2020

This chapter examines patterns and trends of poverty and inequality over the past decade using the nationally representative Household Socio-Economic Surveys (HSES). It also presents cross-country comparisons of international poverty indicators, highlighting the progress achieved in the past decade as well as remaining challenges in improving non-monetary aspects of household wellbeing.

1.1. ESTIMATION OF POVERTY USING THE HSES

The Household Socio-Economic Survey (HSES) is the official survey for monitoring household welfare, poverty, inequality, and key socio-economic indicators in Mongolia. The HSES is a nationally representative survey that has been regularly conducted since 2007 and biennially implemented since 2012. Mongolia's current national poverty line[1] was derived from the 2010 HSES using the cost of basic needs approach, which estimates the level of per capita consumption necessary for a household member to meet their "basic needs" in terms of food and non-food consumption. Official poverty rates have been estimated as a share of the population that have levels of per capita consumption below the national poverty line and are reported at the national, urban/rural, and aimag levels. Urban and rural areas can be further divided into four residential locations: Ulaanbaatar and aimag centers comprise urban areas, while soum centers and the countryside comprise rural areas.

In line with international best practices, changes were introduced to the consumption module of the 2020 HSES to improve the measurement of consumption and poverty. Specifically, the reference period for the diary used to measure food consumption for urban households was shortened from one month to one week, and the list of non-food consumption items was condensed.[2] Analysis of consumption data from the 2016 and 2018 HSES suggested that respondent fatigue may have been an issue among urban households when reporting food consumption: In general, households reported increasingly less food consumption over the reference period. However, to the extent that households across the welfare distribution were similarly likely to underreport food consumption, the implication for poverty estimates and welfare rankings may not be problematic. The shorter reporting period in the 2020 HSES showed considerably less evidence of underreporting, both in terms of number of items consumed and calories consumed.

Improvements to the questionnaire, however, mean that the consumption aggregate and poverty for 2020 are not directly comparable to those of previous years, thereby necessitating an alternative method to measure consumption and poverty in 2020. In order to restore comparability of household consumption and poverty rates in 2020 to those of previous survey years, consumption in 2020 was simulated using survey-to-survey imputation methods (see Box 1.1). One caveat of this approach is the inability of the imputation methodology to perfectly simulate the welfare distribution. The imputation could thus have implications for the results using the consumption distribution in 2020 - a caveat that should be taken into consideration when interpreting the results of this report.

---

[1] The poverty line based on the 2010 HSES has only been updated for changes in price levels between surveys by the CPI. A new poverty line is planned to be rebased in the 2022 HSES.
[2] See Annex A for more details on the changes made to the consumption modules of the 2020 HSES.

Box 1.1 Using a survey-to-survey imputation approach to estimate consumption and poverty in 2020

Due to changes in the 2020 HSES questionnaire consumption and poverty in 2020 were estimated using SWIFT Plus (Survey of Well-being via Instant and Frequent Tracking), a survey-to-survey imputation approach (Yoshida et al., 2015; Yoshida et al., 2021). SWIFT Plus involves using correlates of welfare to create a model of consumption in the 2018 HSES, which is then applied to the 2020 HSES to predict consumption and poverty in 2020. To improve the accuracy of estimates at the aimag level, the model was developed individually for groups of aimags that hold similar socio-economic characteristics, resulting in 14 models from 8 urban groups and 6 rural groups. These groupings were then aggregated to estimate poverty at the national, urban/rural, region, and aimag levels, but estimates of poverty in 2020 for the four residential locations was not possible.

While validation exercises confirmed that the imputation approach was able to predict poverty rates and Gini coefficients that were similar to the actual in 2018 and 2016 (see Annex A), perfect simulation of the welfare distribution was not possible. Moreover, survey-to-survey imputation methods rely on the assumption that relationships between variables in the prediction model and household consumption do not change over time. Significant economic shocks such as the COVID-19 pandemic, however, can alter household consumption behavior with nontrivial consequences for the ability of the imputation model to accurately predict consumption. The imputation could thus have implications for results using the consumption distribution in 2020, and this caveat should be taken into consideration when interpreting the results of this report. However, the planned update of the national poverty line and consumption aggregate methodology using the 2022 HSES will mark the beginning of a new poverty series for Mongolia, which can be then used to construct the actual consumption aggregate for 2020. This, in turn, will allow for a more granular analysis of consumption and the welfare distribution in 2020 using the actual consumption data.

Annex A provides further details on the methodology used to estimate consumption and poverty in 2020.

1.2. POVERTY IN 2020

The 2020 national poverty headcount rate is estimated at 27.8 percent, 0.6 percentage points lower than in 2018, though differences are not statistically significant. According to the 2020 Household Socio-Economic Survey (HSES), a person in Mongolia is considered to be poor as of 2020 if her or his monthly consumption is less than 184,747 tugrug. Based on the national official poverty line, 27.8 percent of the population or 903.4 thousand people in Mongolia are estimated to live in poverty in 2020 (Figure 1.1). While there was a slight fall in poverty headcount between 2018 and 2020, the change is not statistically significant at the 5 percent significance level. The poverty gap and poverty severity indices [3], which measure the intensity of poverty, have also barely changed since 2018.

The urban poverty rate dropped by 0.7 percentage points to 26.5 percent in 2020, while the rural poverty rate fell by 0.3 percentage points to 30.5 percent. These changes in urban and rural poverty were also not statistically significant. Among the poor, nearly 2 in 3 of the poor lived in the urban areas in 2020, with 42 percent living in Ulaanbaatar (Figure 1.2).

Figure 1.1 Poverty indicators (2018-2020) at national, urban and rural
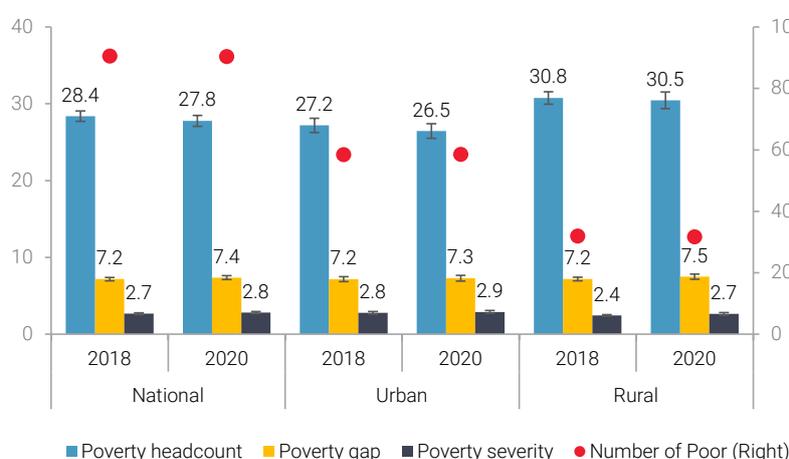
Figure 1.2 Share of the poor (2020)
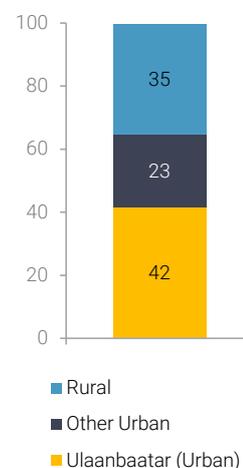
Source: HSES 2018-2020

Source: HSES 2020

While poverty did not increase between 2018 and 2020, simulation results suggest that the COVID-19 pandemic has sharply slowed down the pace of poverty reduction. While it is not possible to actually observe what the poverty rate would have been in the absence of the COVID-19 pandemic, simulation-based pre-COVID estimation results can provide insights into the potential impact of the pandemic on household welfare and poverty[4]. Simulations indicate that had the COVID-19 pandemic not occurred, the national poverty rate may have declined by an additional 3.5 percentage points to 24.3 percent in 2020 (Figure 1.3). At the urban and rural levels, poverty rates would have been 3.0 and 4.6 percentage point lower, respectively, compared to the 2018 results (Figure 1.4). These counterfactual simulation-based estimates indicate that household consumption and employment were tangibly affected by the pandemic and poverty would have substantially declined without the pandemic's adverse impacts on households.

---

[3] The poverty gap index measures the average shortfall of the total population from the poverty line and is computed as a percentage of the poverty line. The poverty severity index is computed by averaging the square of the poverty gap index to put more weight on the poorest individuals.
[4] The method of estimating poverty in the pre-COVID simulation model refers to Yoshida et al., 2021. The simulation model is identical to the 2020 official poverty estimation ("post-COVID model"), but while the post-COVID model includes both time-invariant and time-variant variables to pick up the pandemic impacts in household welfare, the pool of variables considered in the pre-COVID model is limited to time-invariant variables (i.e., household demographics, dwelling characteristics, and asset ownership) that are unlikely to change as a result of the pandemic. Thus, the pre-COVID model can provide counterfactual estimates of consumption and poverty in 2020. For more details, see Annex A.

Figure 1.3 Simulation of the national poverty rate in 2020 in the absence of the pandemic
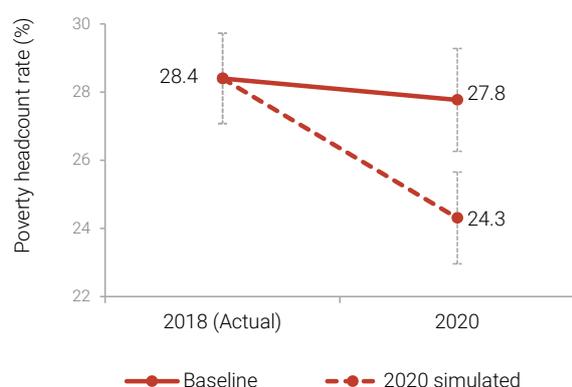
Source: HSES 2018-2020

Figure 1.4 Simulation of the urban and rural poverty rates in 2020 in the absence of the pandemic
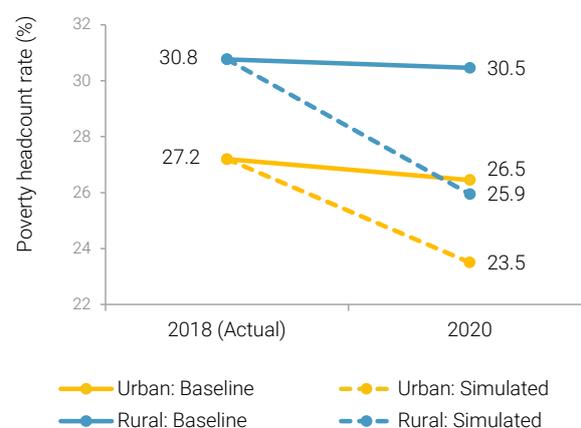
Source: HSES 2018-2020

A substantial share of Mongolians live just above the national poverty line, making them vulnerable to any shocks such as the COVID-19. In 2020, in addition to the poor (27.8 percent or 903 thousand people), a further 14.4 percent of the population or 467 thousand people were living between the poverty line and 1.25 times the poverty line (Figure 1.5). This "near-poor" population faces a risk of slipping into poverty, especially when they are hit by negative shocks such as price inflation, unemployment, illness and natural disasters. In other words, a slightest change in per capita household consumption could easily push these vulnerable population into poverty. For example, a hypothetical consumption shock that reduces per capita household consumption levels by 5 percent could increase the national poverty rate by 3 percentage points to 30.8 percent (Figure 1.6). Moreover, a consumption shock of 10 and 20 percent could lead to a substantial increase of poverty by 6.5 and 14.3 percentage points, respectively. In rural areas, a 20 percent decrease in per capita household consumption would increase poverty by 16.9 percentage points to 47.4 percent. These results indicate that small shocks on household welfare could result in a significant increase of the poverty headcount rate in Mongolia.

Figure 1.5 Distribution of per capita monthly consumption (2020)
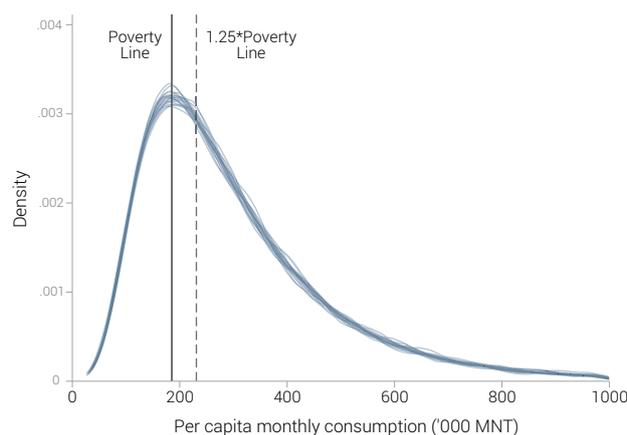
Source: HSES 2020

Note: Figure shows 20 different predictive distributions obtained from 20 imputed values.

Figure 1.6 Sensitivity analysis of consumption shocks on poverty
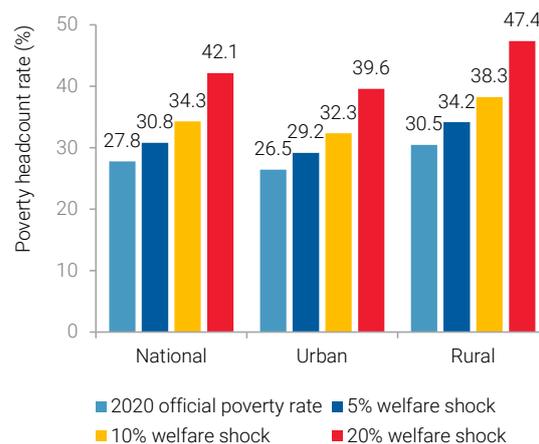
Source: HSES 2020

1.3. POVERTY AND INEQUALITY TRENDS OVER THE LAST DECADE

Mongolia achieved strong poverty reduction in the early 2010s, but progress has stagnated since the 2016 economic recession. Mongolia's poverty rate significantly declined from 38.8 percent to 21.6 percent during the economic boom of 2010-2014. After this remarkable progress, poverty has significantly increased from 21.6 percent to 29.6 percent between 2014 and 2016 due to the economic recession (Figure 1.7). During 2016-2018, while the country achieved a robust macroeconomic recovery with an annualized GDP per capita growth rate of 4.3 percent, the pace of poverty reduction has slowed due to lower household consumption growth and regressive growth patterns across the welfare distribution, especially in urban areas. In addition, the COVID-19 pandemic has stalled the progress of poverty reduction in Mongolia (Figure 1.3). As a result, the country's poverty headcount rate has declined only marginally from 29.6 percent to 27.8 percent during 2016-2020.

The depth of poverty has changed consistently with the pace of poverty rate reduction. In line with the progress of poverty reduction, the poverty gap index fell from 11.5 percent in 2010 to 5.2 percent in 2014, meaning the country halved the average consumption shortfall of each poor person between 2010 and 2014 (Figure 1.8). This decline in the poverty gap also implies that the average per-capita consumption of the poor became closer to the national poverty line, and poverty reduction during 2010-2014 was accomplished not only by lifting the poor to above the poverty line but also by reducing the depth of poverty. In contrast, when the poverty headcount rate increased in 2016, the intensity of poverty, measured by poverty gap and poverty severity indices, also worsened and has barely changed since then, accompanied by stagnation in poverty headcount rates.

Figure 1.7 Poverty headcount rate: 2010-2020
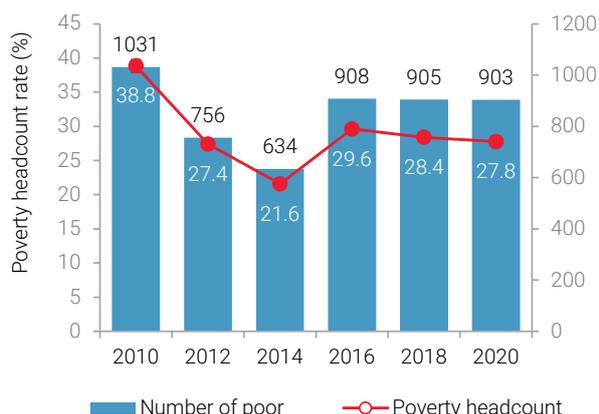
Source: HSES 2010-2020

Figure 1.8 Poverty gap and severity: 2010-2020
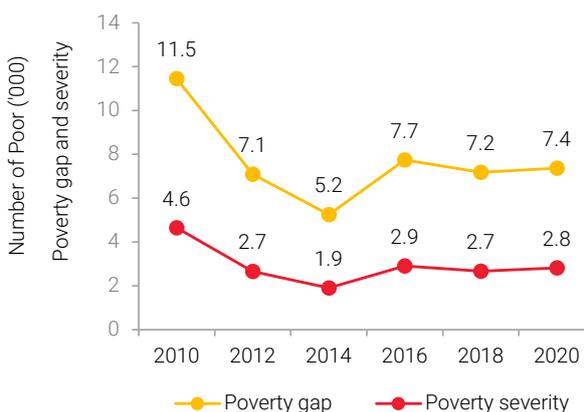
Source: HSES 2010-2020

The urban-rural gap in the poverty headcount rate has narrowed significantly during the 2010s, as poverty has become more concentrated in cities. While poverty rates declined in both urban and rural areas between 2010 and 2020, the speed of poverty reduction was notably slower in urban areas. In 2010, nearly half of the rural population lived in poverty, but this share declined to three out of ten by 2020. Since more than 60 percent of households are engaged in some sort of livestock activities in rural areas, a similar pattern of poverty reduction was also seen among herder households. During 2010-2020, by contrast, urban poverty declined by 6.7 percentage points from 33.2 to 26.5 percent. Similarly, in terms of the number of poor, rural areas reduced by 140 thousand people from poverty over the period of 2010-2020, but reduction in the number of poor in urban areas was relatively minimal. In addition to the slowing pace of poverty reduction, a smaller decline in the number of poor in urban areas can be attributed to an increasing urbanization rate, especially to urban cities, which has led a greater urban population share in Mongolia. In particular, Ulaanbaatar has experienced an average of 2.6 percent year-on-year population growth in the 2010s. As a result, the share of the poor living in urban areas has increased continuously from 55 percent in 2010 to 64 percent in 2020 (Figure 1.10).

**Figure 1.9 Poverty by urban and rural (2010-2020)**
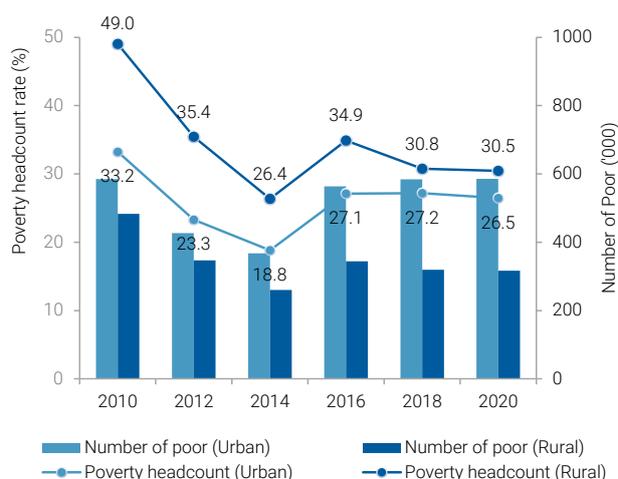
Figure 1.10 Share of the poor (2010-2020)

Source: HSES 2010-2020
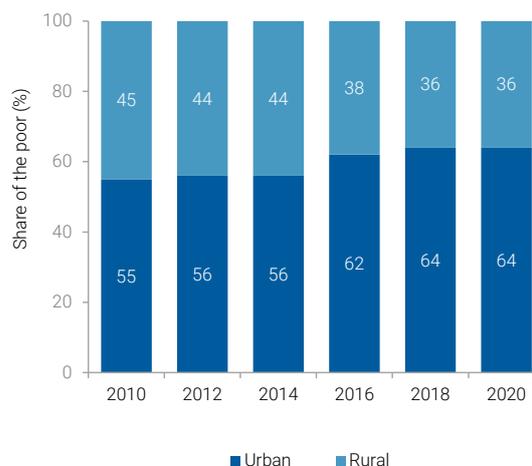
Source: HSES 2010-2020

Overall, household consumption growth was high and pro-poor in the early 2010s, but growth became lower and flatter across the welfare distribution in the latter half of the decade. During 2010-2014, the annualized average consumption growth was high across the consumption distribution, with a national average growth rate of 6.3 percent (Figure 1.11). Furthermore, growth was relatively favorable for the poorest households: consumption grew at an annualized rate of 7.3 percent for the population in the bottom 20 percent of the distribution, while it grew at 5.9 percent for the wealthiest 20 percent of the population. In general, growth has been more pro-poor in rural areas, where annualized growth was nearly 5 percentage-points higher among the poorest 20 percent than among the wealthiest 20 percent. However, from 2016 to 2020, average household consumption growth declined and became flatter, as growth became more regressive. In fact, the lowest rate of consumption growth was observed among the poorest 20 percent (0.3 percent), while households in the top 80 percent of the distribution recorded 0.8-1.7 percent growth.

Figure 1.11 Growth incidence by welfare quintile (2010-2014 and 2016-2020)
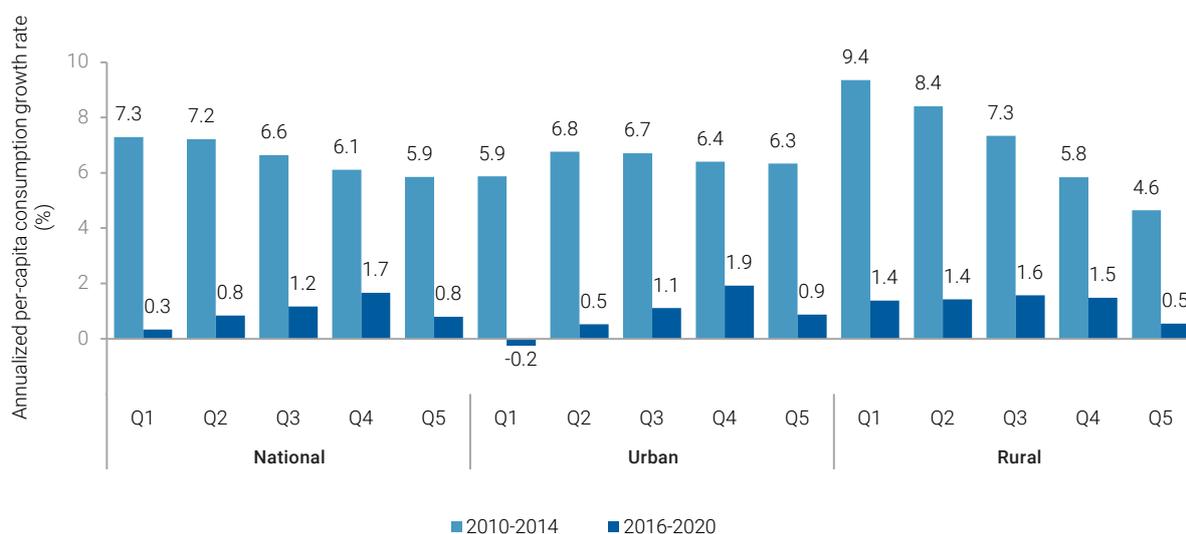
Source: HSES 2010-2020

Note: Q1 indicates the poorest 20 percent of the population while Q5 indicates the richest 20 percent.

The shared prosperity premium, an indicator that measures how much consumption growth has benefited the poor relative to the total population, became negative in the latter half of the decade. The shared prosperity premium is defined as the difference between the annualized average growth rates of the poorest 40 percent and the entire population (World Bank, 2018a) and has been widely used for monitoring how equitable consumption growth is. Mongolia's shared prosperity premium was positive between 2010 and 2014 (Figure 1.12), implying that consumption growth among the bottom 40 percent of the population grew at a faster rate than the total population. However, consistent with the growth incidence analysis (Figure 1.11), during 2016-2020, growth substantially declined and became less inclusive, resulting in a negative shared prosperity premium (-0.4 percentage points).

Figure 1.12 Annualized average growth rate by total and bottom 40 percent of the population and Shared Prosperity Premium

Source: HSES 2010-2020
Note: SP premium = Shared Prosperity Premium

In the developing East Asia and Pacific (EAP) region, many countries had a positive shared prosperity premium in the 2010s. Figure 1.13 presents regional cross-country comparison of the shared prosperity premium between the first half and second half of the 2010s. Out of six economies in the EAP region where frequent household surveys are available, all countries achieved positive mean consumption (income) growth and shared prosperity[5] during the 2010s. In addition, during the first half of the 2010s, all economies had a positive shared prosperity premium, ranging from 0.3 in Indonesia to 4.8 percentage points in China, indicating the welfare growth was favorable to the poor in all countries. In the second half of the 2010s, most countries continued to achieve pro-poor growth, and only Vietnam and Mongolia had a negative shared prosperity premium. Moreover, while the average growth of the bottom 40 percent in other EAP countries was 4.7 percent during this period, in Mongolia, it was 0.6 percent – the lowest bottom 40 growth rate in the region – illustrating the country's stagnation in poverty in recent years.

Figure 1.13 Regional Comparison of the Shared Prosperity Premium
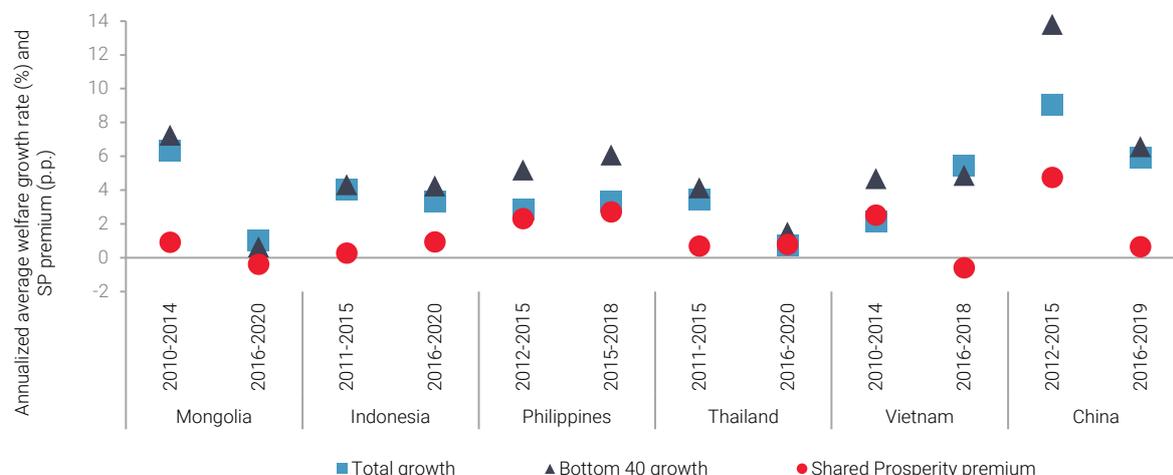
Source: Author's calculations from HSES 2010-2020 and EAP household survey harmonization data

[5] Shared prosperity refers to growth of the bottom 40 percent of the population

A decomposition of poverty changes into growth and inequality components confirms that poverty reduction was mostly driven by growth rather than equitable consumption redistribution. A growth-redistribution decomposition analysis (Datt and Ravallion, 1992) examines whether changes in poverty were driven by growth in mean consumption per capita or a more inclusive distribution of consumption. As illustrated in Figure 1.14, if consumption growth was equally shared across the welfare distribution between 2010-2014, poverty would have declined by more than 15 percentage points. While consumption growth was by far the main driver for poverty reduction, pro-poor growth during this period also led to an additional 1.9 percentage point decline in poverty at the national level and a 4.8 percentage-point decline in rural areas, reflecting higher growth rates for poorer households in rural areas. On the other hand, in 2016-2020, the reduction in poverty was significantly smaller due to lower overall consumption growth and faster growth among wealthier households. Specifically, greater regressive growth trends in urban areas during this period drove the national trend. If growth was distributed equally across the welfare distribution, poverty at the national level would have declined by 2.5 percentage points during 2016-2020. Yet, unequal growth favoring the wealthy meant that 0.7 percentage points of this reduction was lost.

Figure 1.14 Decomposition of poverty changes into growth and distribution effects
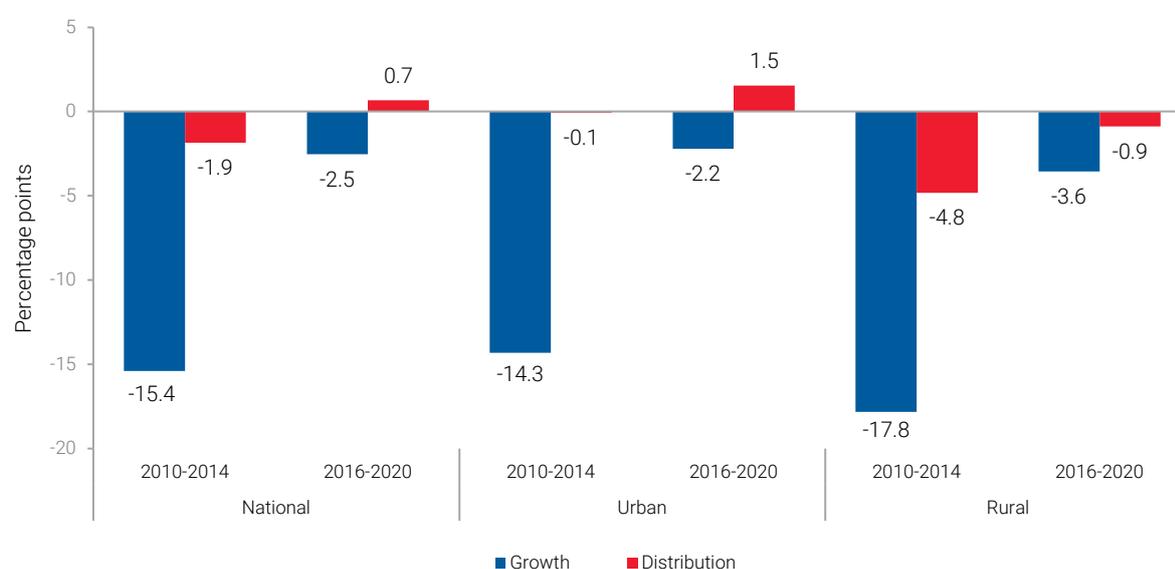
Source: HSES 2010-2020

Another decomposition analysis of poverty changes by income components[6] indicates lower translation of income growth to consumption significantly slowed down poverty reduction in the second half of the 2010s. Between 2010 and 2014, wage and farm income growth and social transfer expansion contributed the most to reducing poverty: these three components of income sources together reduced the poverty rate by 17 percentage points during this period (Figure 1.15). Between 2016 and 2020, social transfer growth through increases in the benefit size of existing social protection programs (Child Money Program and Food Stamps Program) contributed more than 5 percentage points to poverty decline. By contrast, while growth from wage and farm income remained as important drivers for poverty reduction, their contributions in absolute terms became lower and translation from growth of income to consumption became ineffective during this period. The decomposition results suggest that if consumption had grown at the same pace as income, poverty would have been lower by about 9 percentage points between 2016 and 2020.

---

[6] Decomposition analysis of changes in poverty in this report follows the methodology developed by Barros et al (2006) and Azevedo et al. (2013). This method creates entire counterfactual distributions, allowing us to quantify the contributions to poverty reduction from changes in demographics, labor incomes (labor earnings from wage jobs and both farm and non-farm self-employed business) and non-labor incomes (social transfer, remittance, and capital incomes etc.) by changing each of these elements one at a time, while keeping other elements constant. To avoid path dependence, this approach calculates the Shapley-Sharrock's estimates of each component to estimate its contribution to changes in poverty. For further details of the decomposition methodology, see Azevedo et al. (2013) and Inchauste et al. (2014).

Figure 1.15 Decomposition of poverty changes by income components

(a) 2010-2020

(b) 2010-2014, 2016-2020
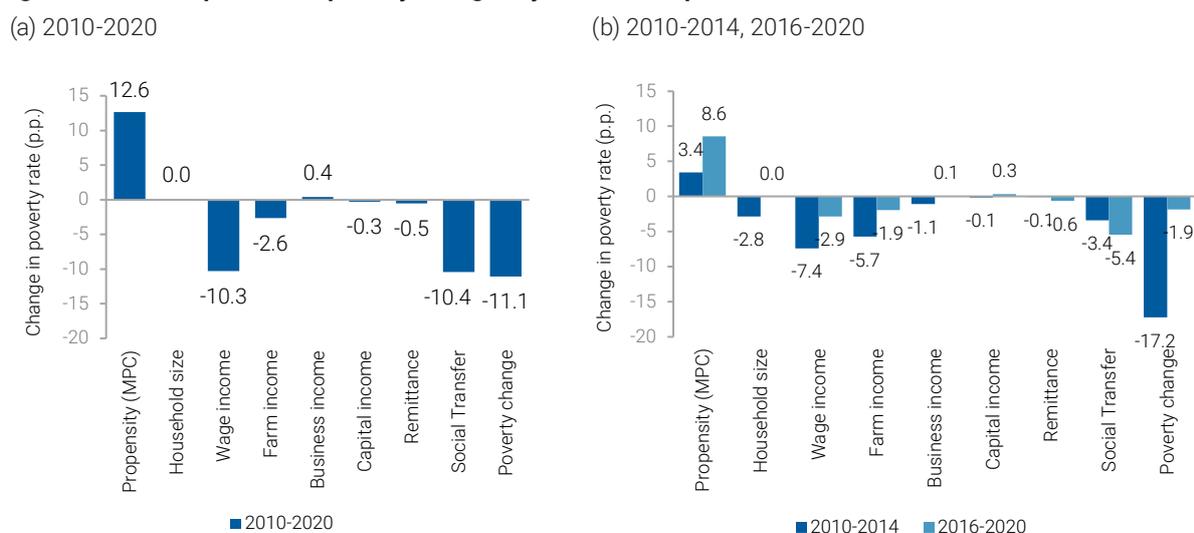
Source: HSES 2010-2020

Note: Propensity (MPC: marginal propensity to consume) indicates residual effects related to the relationship between the consumption and income aggregates. Household size indicates the net effect of the share of the working-age population and the share of employed adults per household on poverty.

While social transfers have played an important role in reducing poverty between 2010 and 2020, improving the targeting efficiency of major transfer programs in Mongolia could have increased their contribution to poverty reduction. Significant progress has been achieved in the past few years in expanding the reach and size of social protection programs that aim to reach the poor and vulnerable: Between 2010 and 2018, per capita benefit amounts increased by 33 percent for the bottom 40 and by 16 percent for the top 60. However, targeting remains an issue, as the categorical or universal methods of targeting used in some existing programs have led to inefficiencies. For example, in 2020, about 20 percent of households in the bottom 40 did not receive benefits from the Child Money Program (CMP), Mongolia's largest social protection program which provides monthly transfers to households with children. Meanwhile, nearly half of households in the top 60 did, and about half of total CMP benefits in 2020 went to households in the top 60. Mechanisms that better target the poor and vulnerable most in need of social transfers could reduce errors of exclusion and increase the effectiveness of social transfers in poverty reduction.

Lower growth from the national accounts was translated to slower poverty reduction in the second half of the late 2010s. The growth elasticity of poverty examines how growth of GDP or GDP private consumption per capita in the national accounts was translated into poverty reduction. Between 2010 and 2014, both GDP and private consumption increased by 10 percent per year and the annualized change in poverty rate was minus 13.7 percent (Figure 1.16). That is, a one percent increase in real per capita GDP and private consumption was associated with a 1.4 and 1.3 percent reduction in the incidence of poverty, respectively. During 2016-2020, in contrast, GDP growth declined sharply (to 1 percent a year), while private final consumption growth was lower but still robust at 5.6 percent in the national accounts. The poverty rate declined by an average of 1.6 percent during this period, leading to a decline in the magnitude of the growth elasticity of poverty, particularly for private consumption: the elasticity was -1.5 and -0.3 percent for GDP and private consumption, respectively. These results indicate that stagnated poverty reduction is linked to both lower growth and a lower responsiveness of poverty to growth during 2016-2020. While faster growth of private consumption compared to GDP has contributed to differences in the growth elasticities of poverty between GDP and private consumption in 2016-2020, as discussed in Section 1.1, challenges in the measurement of consumption using the HSES – specifically, systematic underreporting of consumption and the 2020 imputation of consumption – have also likely played a role[7].

---

[7] In Mongolia, there is a widening gap in household consumption between household survey (HSES) and national accounts (NA). Consumption from the HSES accounted for 80 percent of private consumption in the NA in 2010, but this share declined to 51 percent in 2020. Even though a broadly similar trend was observed between the HSES and NA, the levels and growth rates of household consumption are different. For example, between 2016 and 2020, the annualized consumption growth was only 1.0 percent in the HSES while it was 5.6 percent in the NA.

Figure 1.16 Real annualized average changes in growth and poverty
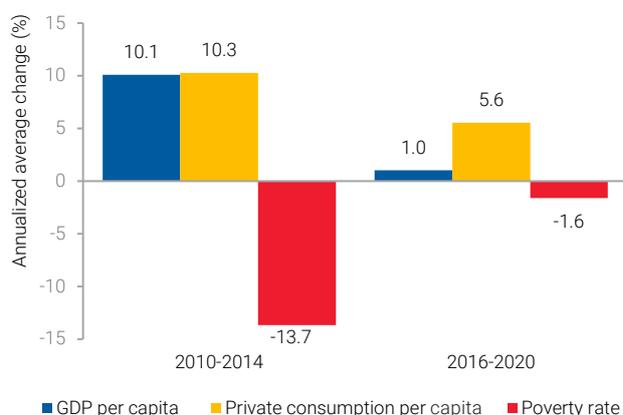
Source: NSO, HSES 2010-2020

Figure 1.17 Growth elasticity of poverty reduction
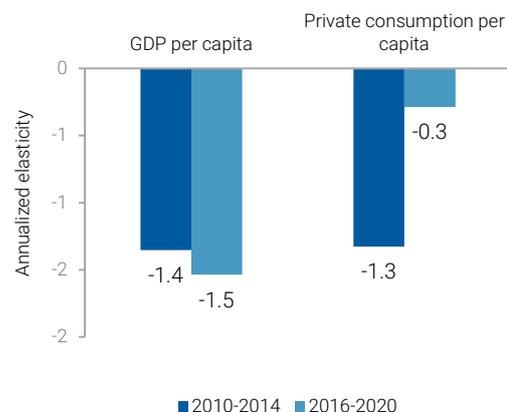
Source: NSO, HSES 2010-2020

Inequality has been relatively stable between 2010 and 2020. As presented in Table 1.1, the less inclusive pattern of growth in urban areas has resulted in a slight increase in the Gini index from 32.9 in 2010 to 33.4 in 2020, whereas inequality in rural areas improved from 31.7 in 2010 to 28.6 in 2020, supported by the robust consumption growth at the bottom of the distribution. The combination of these growth patterns, accompanied by a smaller urban-rural income gap, made the national Gini index remarkably stable around 32 to 33 points over the decade. Overall, Mongolia's inequality indices are relatively lower than that of neighboring countries (Figure 1.18).

Table 1.1 Inequality trends, 2010-2020

	2010	2012	2014	2016	2018	2020
Gini index						
National	33.0	33.8	32.0	32.3	32.7	32.3
Urban	32.9	34.2	32.9	33.1	34.0	33.4
Rural	31.7	30.6	28.3	29.6	29.2	28.6
Theil-1 index of inequality						
National	19.3	20.0	18.6	19.0	19.2	17.4
Urban	19.3	20.6	19.5	20.0	20.6	18.6
Rural	17.5	16.2	14.6	15.4	15.1	13.6

Source: HSES 2020

Figure 1.18 Gini index in neighboring developing countries
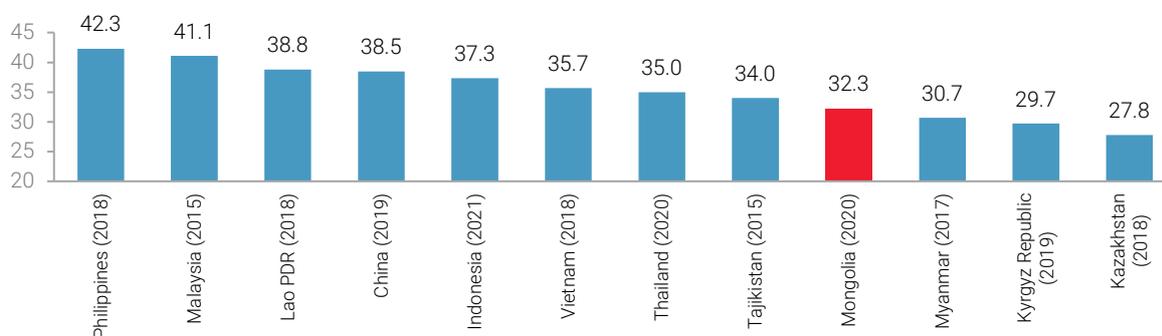
Source: HSES 2020, WDI

Note: For the Philippines and Malaysia, per capita household income was used for calculating Gini index.

1.4. SPATIAL DISPARITIES IN POVERTY

Regional disparities in poverty rates have narrowed over time, as the rate of poverty reduction advanced in poorer regions and stagnated in better-off regions. In all five regions (Western, Khangai, Central, Eastern and Ulaanbaatar), poverty has declined since 2010, but the pace of poverty reduction has differed significantly across regions (Figure 1.19). With more than half of the people living in poverty, the Western region and Khangai were the poorest regions in 2010. Both regions, however, made remarkable progress in reducing poverty in the 2010s, particularly with poverty rates declining to 25-26 percent by 2014. The Eastern region was the third poorest region in 2010 but experienced the worst setback during the 2016 economic recession and became the poorest region in the country. Since 2016, however, poverty reduction in the Eastern region accelerated compared to other regions, and its poverty rate declined from 44 percent in 2016 to 33 percent in 2020. In contrast, the pace of poverty reduction in wealthier and populous regions, namely Ulaanbaatar and the Central region, has stagnated since 2016. As a result, the spatial poverty gap considerably narrowed across regions in the past decade.

The poor population has therefore become increasingly concentrated in Ulaanbaatar (Figure 1.20). The Eastern region, despite having the highest incidence of poverty, constituted only 8 percent share of the total poor population due to its smallest share of the population (7 percent) in the nation. In contrast, the Western and Khangai regions managed to reduce not only the incidence of poverty but shares of the poor over time: the shares of poor for Western and Khangai regions were 18 and 27 percent in 2010, and declined to 14 and 21 percent in 2020, respectably. On the other hand, a high urbanization rate in Ulaanbaatar was accompanied by the marginal progress of poverty reduction, increasing its share of the poor significantly from 35 percent in 2010 to 44 percent in 2020.

Figure 1.19 Poverty trend by region
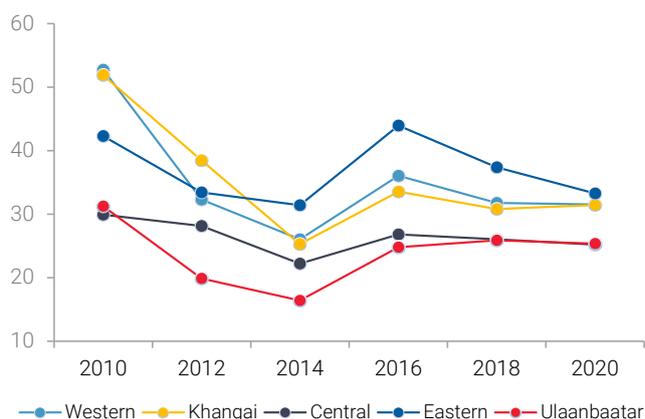
Source: HSES 2010-2020

Figure 1.20 Regional share of the poor
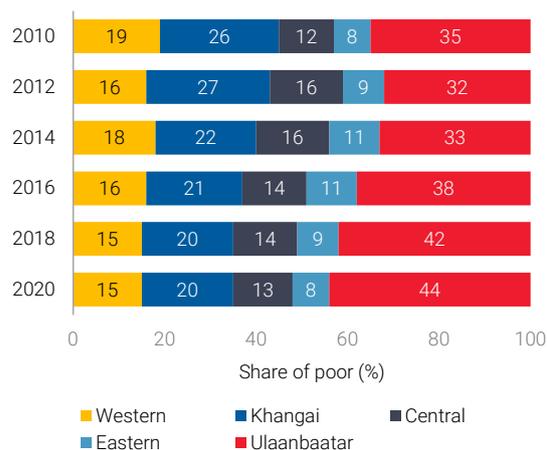
Source: HSES 2010-2020

All locations and regions contributed to poverty reduction in the first half of the 2010s while the capital city's stagnation stands out during the recent years. A geographic decomposition approach (Ravallion and Huppi, 1991) estimates contributions to poverty reduction considering the effect of population shifts between regions. Figure 1.21 presents geographic decomposition results by urban and rural (panel a) and five regions (panel b). Between 2010 and 2014, all geographic locations and regions contributed to total poverty reduction, and Ulaanbaatar (6.4 percentage points) and Khangai (5.2 ppts) made the largest contributions to the total poverty reduction across regions. During 2016-2020, while the overall contribution to poverty reduction was lower across all locations and regions, poverty reduction was driven by the poorest region (Eastern), where contributed to more than 40 percent of the total poverty reduction between 2016 and 2020. On the other hand, Ulaanbaatar is the only region that did not contribute to reducing poverty during this period.

Figure 1.21 Geographic decomposition of poverty

(a) By Urban and Rural
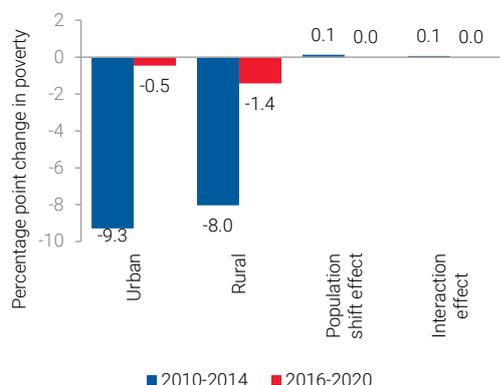
(b) By region
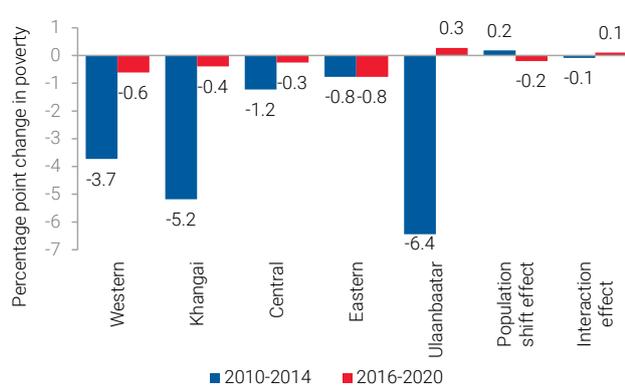
Source: HSES 2010-2020

Substantial heterogeneity in poverty was observed across 22 aimags in Mongolia. Figure 1.22 shows the poverty headcount rate by aimags. Govi-Altai and Govisumber recorded the highest poverty incidence in 2020, with 42.4 and 39.8 percent of the aimag population living in poverty, respectively, while Umnugovi, southern mining resource rich aimag, continued to have the lowest poverty rate (16.4 percent). Aimags located in the Eastern and Western regions are more likely to suffer from high levels of poverty while Ulaanbaatar, its neighboring aimag (Tuv) and several Central aimags (Umnugovi, Dundgovi and Dornogovi) are more likely to be better off. While the differences in poverty between the poorest (Govi-Altai and Govisumber) and richest (Umnugovi) aimags are statistically significant, differences in poverty across many other aimags are not statistically significant, due to limited sample size at the aimag level and significant within-aimag variations. The geographical distribution of the poor was driven not only by the incidence of the poor but by their total population size. For example, while Govi-Altai and Govisumber have the highest poverty headcount rates, given their relatively small population size, only 2.6 and 0.8 percent of the total poor live in Govi-Altai and Govisumber aimag, respectively.

Figure 1.22 Poverty headcount by Aimags (2020)

(a) Poverty headcount rate by Aimag (2020)

(b) Poverty headcount rate (2018 vs 2020)

(c) Share of the poor (2020)
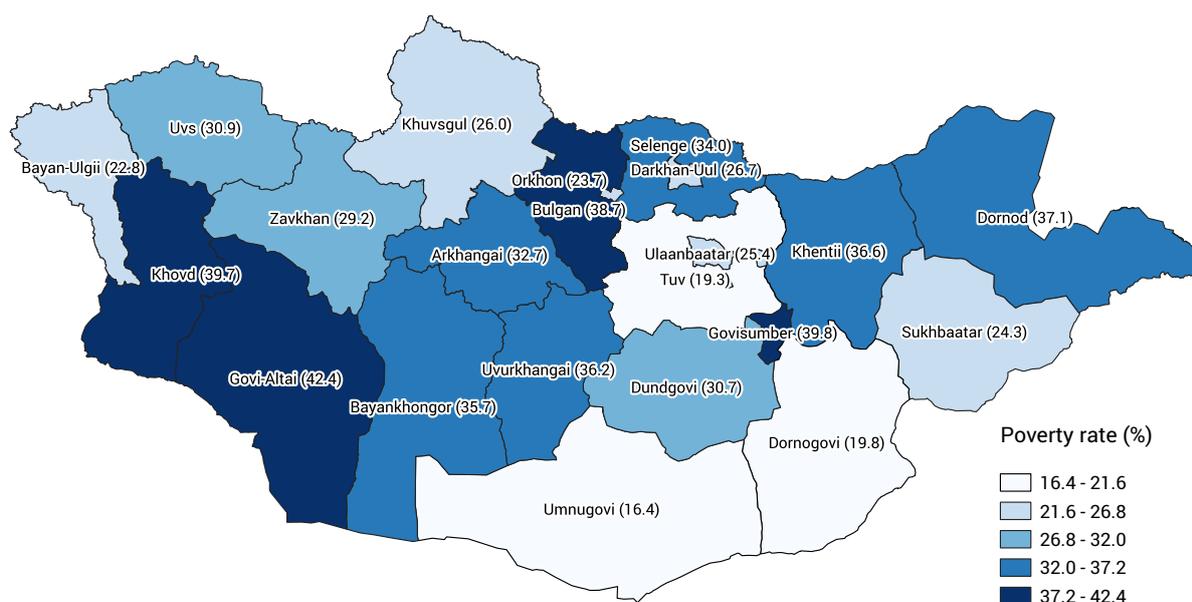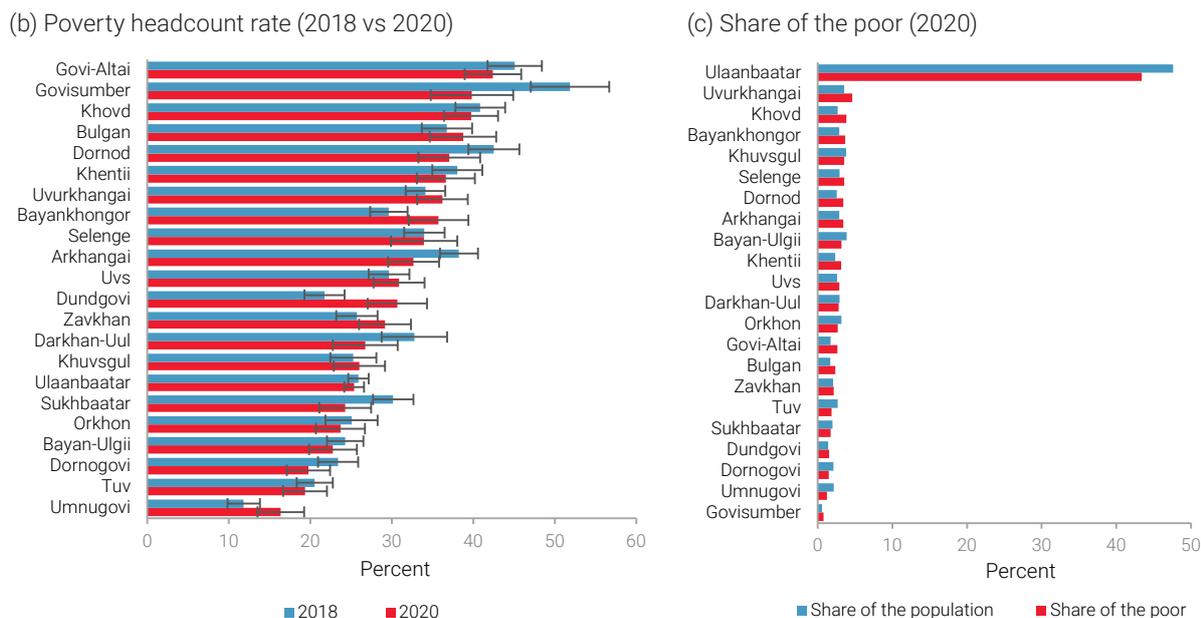
Source: HSES 2018-2020

1.5. MONGOLIA'S INTERNATIONAL POVERTY TREND

Mongolia's poverty rates at the international comparable poverty lines are largely comparable to those of the EAP region, but poverty reduction in Mongolia slowed while other regional neighbors continued to make steady progress in the late 2010s. For cross-country comparisons of poverty levels, three different internationally comparable poverty lines were introduced by the World Bank (see Box 1.2). As shown in Figure 1.23, Mongolia had almost eliminated the extreme poverty (US$1.90 per day in 2011PPPs) and had relatively low levels of poverty at the lower middle income class poverty line (US$3.20 PPPs). While Mongolia is currently at the upper end of lower-middle income economies measured by GNI per capita, with its aspiration to become an upper-middle income country, the upper middle income class poverty line (US$5.50 PPPs), which is very close to Mongolia's national poverty line (US$5.59 PPPs), becomes more relevant to the country[8]. Yet, in 2020, there are still 26.9 percent of the population remained in poverty at US$5.50 PPP poverty line. These poverty estimates based on international comparable poverty lines for Mongolia were largely in line with regional neighbors after considering income levels measured by GDP per capita (Figure 1.24). In the region, all countries, where frequent household surveys are available, achieved robust poverty reduction at both the lower and upper middle income poverty lines during the first half of the 2010s. However, the 2016 economic recession disrupted Mongolia's poverty reduction, while other countries except for Thailand continued to make a steady progress in the latter half of the decade until the COVID-19 pandemic occurred.

Figure 1.23 Mongolia's poverty rates using US$1.90, $3.20 and $5.50 in 2011 PPP poverty lines: 2010-2020
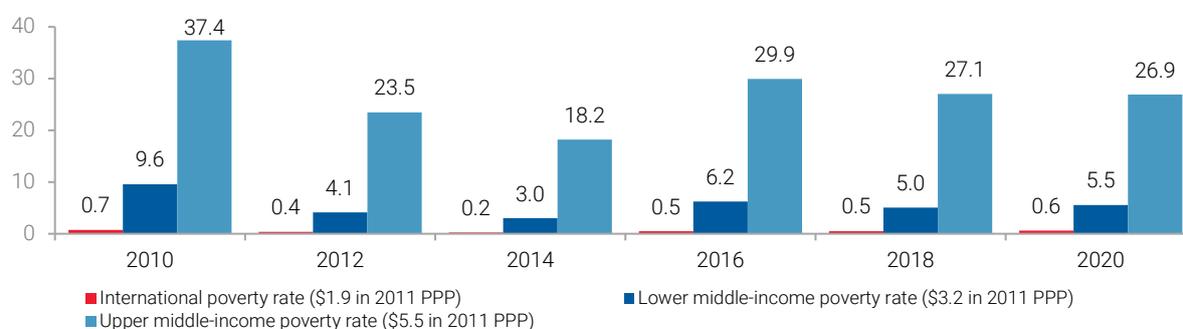
Source: WDI, HSES 2010-2020

---

[8] Mongolia's national poverty line in PPP$ USD terms is relatively higher compared to those in other countries in the region after taking into account levels of GNI or GDP per capita. For instance, Indonesia's national poverty line (2021) was $4.1 in 2011 PPP, and Vietnam's national poverty line (2018) was $3.2 in 2011PPP, while Mongolia's national poverty line (2020) was $5.59 in 2011PPP.

Box 1.2 International poverty measures

The international comparable poverty lines are set for global poverty monitoring by the World Bank, the United Nations and other development partners. To monitor poverty at a global scale, we need a common definition of what it means to be poor across countries. Purchasing Power Parity exchange rates (PPPs) and an international poverty line are used to put consumption estimates into internationally comparable terms. The international extreme poverty line is set at US$1.90 per day in 2011 PPPs, derived as the mean of the national poverty lines of 15 poor countries in the 1990s, expressed in 2011 PPPs. In addition to the international poverty line (US$1.90 2011 PPPs), income-class poverty lines are set to reflect typical national poverty lines of lower- and upper-middle income countries, based on per capita Gross National Income. The benchmarks are $3.20 2011 PPP and $5.50 2011 PPP for lower-

and upper-middle income countries respectively and these income class poverty lines are more relevant to many countries in the East Asia and Pacific region in terms of their economic development levels. In addition, as differences in price levels across the world evolve, the global poverty line has to be periodically updated to reflect price changes. In May 2022, the World Bank announced international poverty lines for all income classes will be updated using the 2017 prices (2017 PPPs) from Fall 2022.

While poverty rates at the international lines are useful for cross-country comparisons and global and regional poverty monitoring, Mongolia's national poverty line, based on the country's basic needs, is more appropriate for national dialogue around policy priorities or targeting resources to the poor within the country.

Figure 1.24 Regional trend of poverty rate at lower and upper middle income poverty lines

(a) Poverty rate at Lower middle income poverty line ($3.20, 2011PPP)
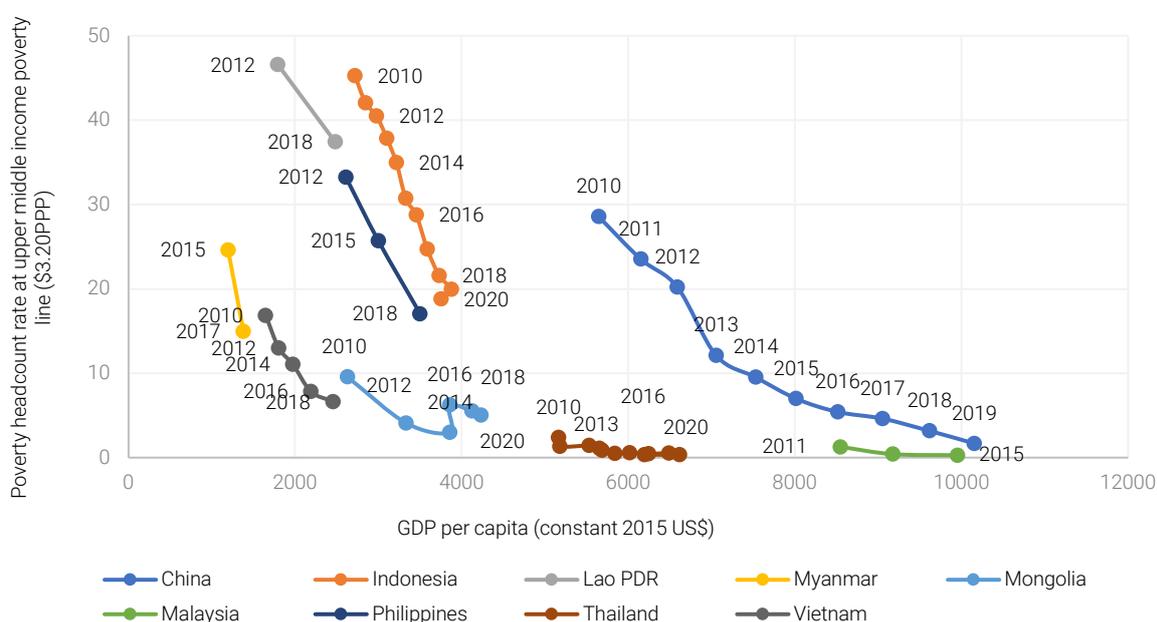
(b) Poverty rate at Upper middle income poverty line ($5.50, 2011PPP)
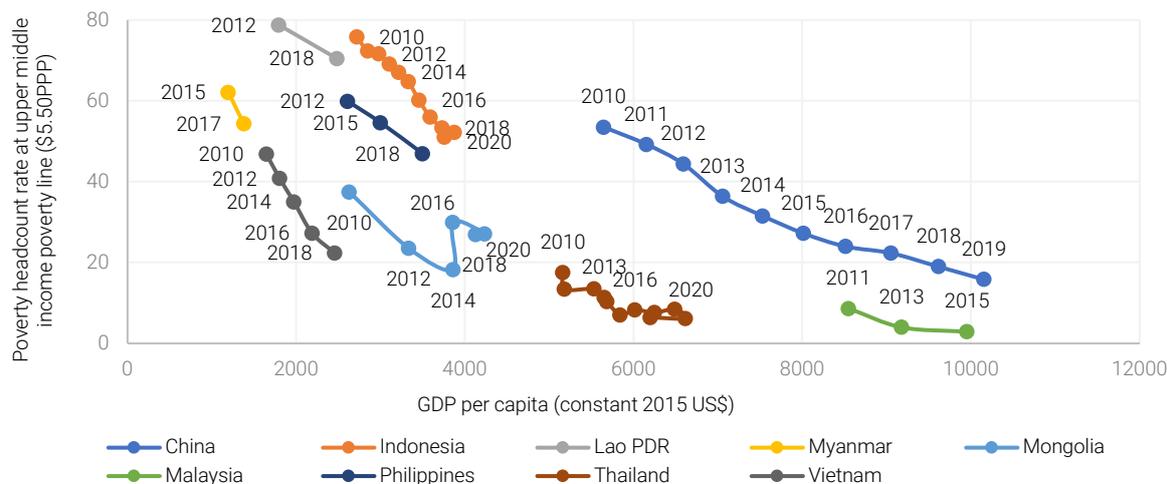
Source: WDI, PovcalNet

Compared to other countries in the region, Mongolia has struggled to increase the economically secure or middle-class population over the decade. Following the definition set by the World Bank (2018b), households can be economically classified by five regional income classes: the extreme poor, moderate poor, vulnerable, economically secure, and middle class[9]. Among the regional peer countries, in 2010, Mongolia's population shares of the economically secure and middle classes were the largest, with almost 2 in 3 people belonging to these income classes. However, over the last decade, many countries in the region significantly advanced in reducing the poor and vulnerable and welcomed a large portion of the emerging economically secure and middle-class population. For instance, China's population share of the economically secure and middle class in 2012 was 56 percent, 7 percentage points lower than that in Mongolia (2010), but China quickly overtook Mongolia and expanded its economically secure and middle class share to 84 percent in 2019. Furthermore, although Mongolia had a 10-percentage point larger economic secure population share than in Vietnam in 2010, Vietnam successfully halved shares of the poor and vulnerable by late 2010s and caught up with Mongolia, with about 59 and 19 percent of the population belonging to the economically secure class and middle class, respectively.

Figure 1.25 Trend of regional income class population shares
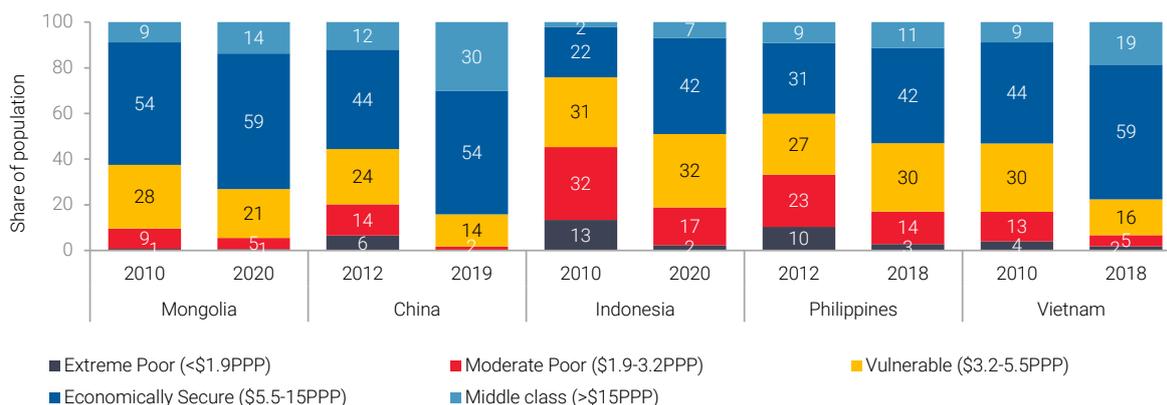
Source: Author's calculations from EAP household survey harmonization data

---

[9] The economic classes are defined (in per capita daily consumption expenditures, in 2011 PPP) as follows: extreme poor—less than US$1.90; moderate poor—between US$1.90 and US$3.20; vulnerable—between US$3.20 and US$5.50; economically secure—between US$5.50 and US$15.00; and middle class— more than US$15.00. These thresholds are estimated using panel data in several countries in the region and represent the moderate poverty line (US$3.20 in 2011PPP) or level at which a household has less than a 10 percent chance of falling to the class below. The vulnerable are above the moderate poverty line (US$3.20) but have a greater than 10 percent chance of falling into poverty in the next period. The economically secure class are safe from poverty (US$3.20) but not from vulnerability, and the middle class is further economically secured, with a low chance of being even vulnerable in the next period.

1.6. NON-MONETARY DIMENSIONS OF POVERTY

Poverty has multiple dimensions that go beyond a single monetary deprivation. The traditional approach to measuring poverty captures welfare in a monetary approach in terms of household consumption or income, but a single monetary poverty measure cannot capture all facets of poverty. Thus, monitoring changes and status of key non-monetary socio-economic indicators, such as human development outcomes and household access to basic services, is important to thoroughly assess household well-being from all forms of deprivations.

Mongolia made remarkable progress in human development outcomes: nearly 60 percent of the youth completed post-secondary education and young children have higher human capital potential. The country has excelled in education attainment compared to regional peer countries. For those aged 55 and older, only about one in five have completed university or equivalent-level education and 17 percent have less than primary education levels (Figure 1.26). On the other hand, for the youth aged 25-35, university education is more prevalent, with nearly 40 and 60 percent of male and female, respectively, having completed university or equivalent education in this age cohort. As a result, the tertiary gross enrollment rate reached 59 percent in 2020 (Figure 1.27) and the country has achieved the highest level of tertiary education attainment (34 percent) for those aged 25 and older in the region (Figure 1.28). Figure 1.29 shows the regional results of the World Bank's Human Capital Index (HCI) relative to GDP per capita. HCI aims to quantify the level of human capital that a child born today can expect to attain if current trends patterns of health and education in a country persist into the future (World Bank, 2019). Mongolia's HCI was estimated at 0.61, translating the future earnings potential of children born today will be 61 percent of what they could have been with complete education and full health. Given its current economic development level, Mongolia's HCI outperformed the peers, ranked the fourth out of 118 lower middle-income countries, followed by Vietnam, Ukraine and Uzbekistan (Figure 1.29). Even compared to upper middle-income countries, Mongolia's HCI exceeded their average rate (0.56). To realize Mongolia's full potential going forward, challenges lie in ensuring quality and equity of education and improving disparities of access to post-secondary education including vocational training in the rural areas and for the poor households.

Figure 1.26 Education attainment by age and gender
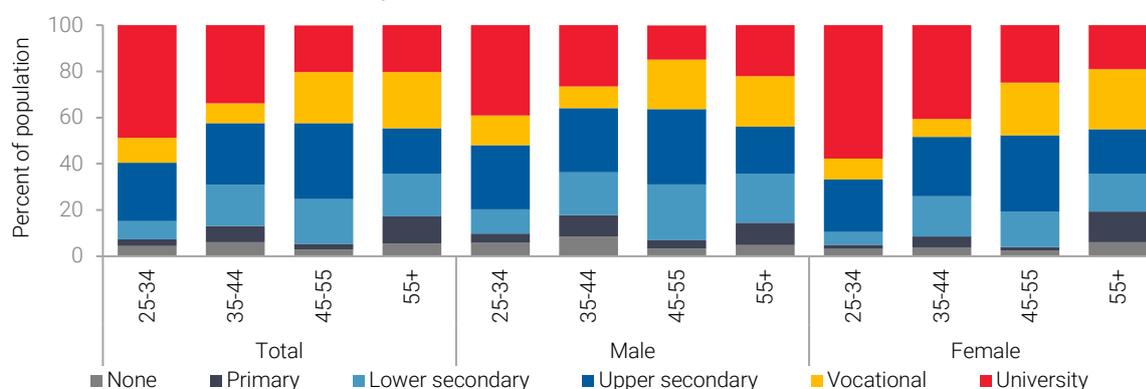
Source: HSES 2020

Figure 1.27 Gross tertiary education enrollment rate
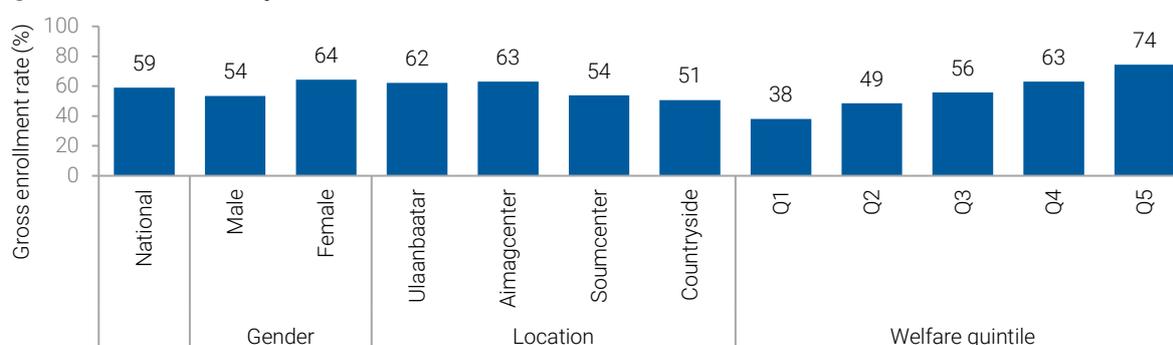
Source: HSES 2020

Figure 1.28 Tertiary education attainment in the region for those aged 25 and older

Share of population aged 25+
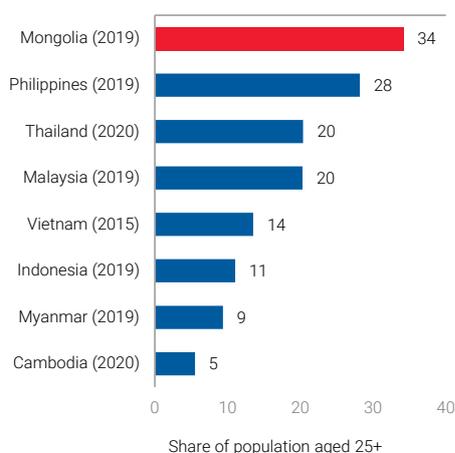
Source: WDI

Figure 1.29 Human Capital Index (2020)
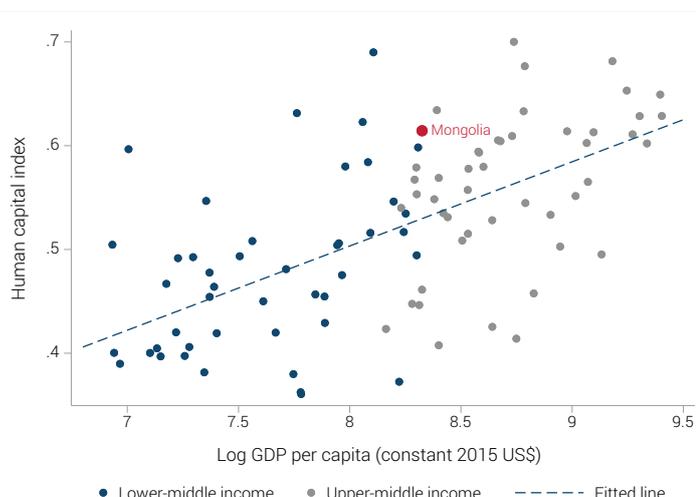
Source: WDI

Box 1.3 Persistent gender gaps in the labor market in Mongolia

While women are more educated than men, there is a persistent and substantial gender gap in labor force participation in Mongolia. In 2020, two in three women aged 25-29 earned a degree from vocational school or university, while it was 52 percent for men. This is partly linked to boys' earlier engagement in the labor market, especially in rural areas where access to post-secondary education is limited and children of herder families are involved in livestock responsibilities from an early age. For women, however, having a higher level of education does not necessarily mean that they have a greater chance of finding a better-paying job in the labor market. According to the labor force survey, Mongolia's female labor force participation has remained around 53-56 percent and barely improved over the last decade, while male's labor force participation rate reached a historical high of 69.5 percent in 2018 (Box Figure 1.1). In 2020, the female labor force participation was 51.8 percent while it was 66.8 percent for men.

Lower rates of female labor force participation are seen across all age groups, reflecting social and economic factors as well as gender norms. While the unemployment rate is slightly higher for men than for women, the gender gap in employment rate is stark, especially among the younger generations. For those aged 25-29, labor force participation for men is 86 percent while it is just 69 percent for women. This is in part because of a trade-off between household and economic work: women in Mongolia are the primary caregiver for children as well as the primary household member responsible for other domestic work. Gender norms related to household work typically reduce the amount of time that women can devote to labor market activities and impact the type of labor market activity that they can be involved in (World Bank, 2018). Female labor force participation is also likely influenced by a variety of other factors, such as the presence of children, residential location, marital status, educational attainment, income, and age, as well as the broader socio-economic environment. (Angrist and Evans, 1998).

Even when women can find a job, they work fewer hours for paid jobs, earn lower wages, and have to devote substantial amounts of time on household chores. On average, urban and rural female workers spent 46 and 56 hours on wage or self-employed jobs in the past 7 days, respectively, while men work more than 50 hours (Box Figure 1.2), contributing to widening the wage gender gap. Besides, women tend to work in the low-paying service sectors, typically in trade and public sectors. The average monthly wage

income that female workers can earn (1,021 thousand tugrug) is 16 percent lower than what the male receives (1,223 thousand tugrug) in 2019. Moreover, women tend to spend substantial time on unpaid household work, particularly, in rural areas: rural female workers spent 33 hours, on average, for unpaid household tasks in the last 7 days, whereas rural men used only 18 hours for household chores. Overall, both urban and rural women spent the majority of their time for cooking, cleaning, and taking care of children.

Box Figure 1.1 Mongolia's labor force participation by gender
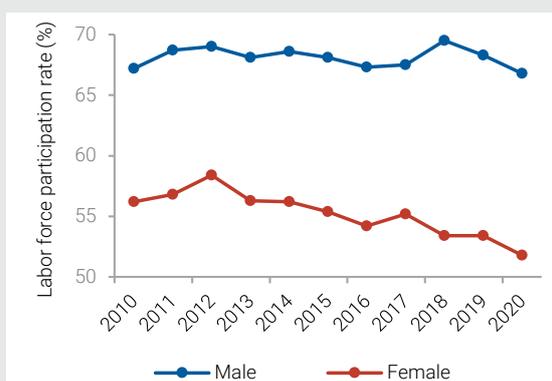
Source: Labor force surveys

Box Figure 1.2 Average hours spent on paid and unpaid work among those employed
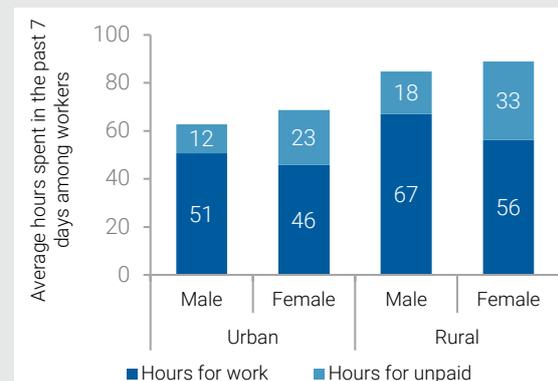
Source: Labor force survey (2019)

Ownership of key home durables has improved over the decade, yet access to internet in the countryside is lagging from other locations. The ownership rate of electric home amenities has increased, accompanied by significant improvement of stable electricity connection by public grid or solar energy in the last decade. In particular, marked progress was observed among the poor. The ownership of refrigerator and washing machine by households in the bottom quintile increased by more than 30 percentage points between 2018 and 2020 (Figure 1.30). While the poorest households lagged others in the access to mobile phone in 2010, almost every poor household has at least one mobile phone at home in 2018. However, access to internet remains spatially unequal: while nearly 80 percent of household in the Ulaanbaatar city are able to use internet, it is only 30 percent in the countryside. Barriers to digital services might prevent the rural children from gaining opportunities for learning, accessing better jobs and enhancing productivity.

Figure 1.30 Access to key durables and internet
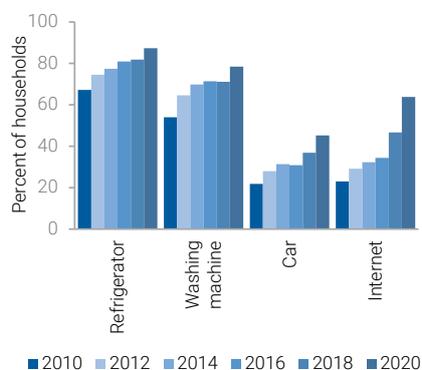
(a) 2010-2020

(b) Durable ownership among the bottom 20 between 2010 and 2018
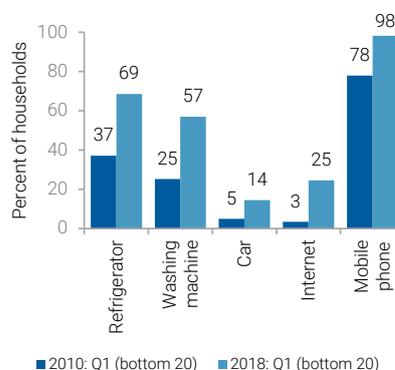
(c) Access to Internet by location (2020)

Source: HSES 2010-2020

Source: HSES 2010, 2018
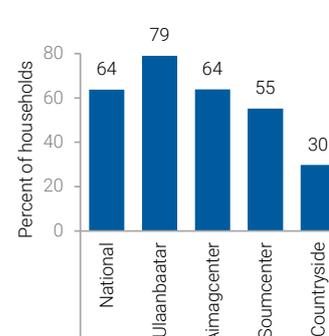
Source: HSES 2020

Herders have substantially increased their livestock holdings and are generating more cash through cashmere production. Livestock plays multiple roles in the livelihood of rural herders. For instance, it could be a source of employment and income and used for their own consumption as well as a buffer or insurance when a household is unexpectedly hit by a shock. Shares of households who owned livestock animals slightly declined at the national level, from 30 percent in 2010 to 27 percent, whereas 90 percent of households in the remote rural areas (countryside) are still engaged in livestock activities in 2020[10]. Over the decade, herders successfully increased their livestock ownership across the welfare distribution including poorer households: in 2010, herder households in the bottom 20 percent, on average, owned 142 livestock animals, while their average livestock herd size increased to 227 by 2020. As a result, poorer herder families are more likely to have access to market sales and resilience against unexpected weather shocks[11]. Moreover, the recent increase of livestock prices significantly contributed to increasing herder's livestock income. Similarly, quantity and sold values of cashmere production have continuously increased in the past decade. On average, herders expanded their annual cashmere production from 25 kg in 2010 to 46kg in 2020. Despite a fluctuation of cashmere prices, herders managed to have increased its average income from cashmere production by 70 percent between 2010 and 2020. Accompanied with better connectivity to markets and expansion of the government subsidies and public transfer, herder's livelihood has significantly improved, and their poverty rate substantially declined from 49 percent in 2010 to 29 percent in 2020[12].

Figure 1.31 Number of livestock ownership (2010 vs 2020)
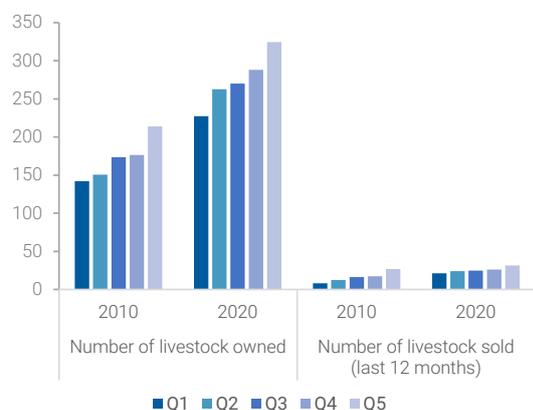
Source: HSES 2010, 2020

Figure 1.32 Cashmere production quantity and values among herder households (2010 vs 2020)

Source: HSES 2010, 2020

Quality of household livelihood has also improved by increasing access to basic infrastructure services over time, but challenges remain among the households living in Gers. Access to stable electricity and heating sources and quality water and sanitation are considered core socio-economic household indicators in Mongolia, as well as key determinants of children's health, family wellbeing, and economic productivity. Over the decade, Mongolia extended the electricity grid to the last mile in the aimag centers and soum (rural) centers and achieved almost universal grid-electricity access in these areas by 2020 (Figure 1.33, panel a). In the countryside, off-grid solar home systems were expanded as a result of which almost all households (98 percent) had access to electricity in 2020. While other service delivery (improved water and sanitation and sustainable heating) has been gradually improved over time, the 2019 new raw coal ban's implementation[13] might have promoted households to switch away from traditional heating sources and contributed to improving the heating source outcome from 2018 to 2020 (Figure 1.33, panel b). Nevertheless, a profound level of deprivation in the access to these services still remains among the ger dwellers and residents in the countryside (Figure 1.33, panel c) and there was little convergence in these disparities, especially between the capital and countryside over time.

---

[10] Households who owned at least one livestock animal at the time of the survey.
[11] According to Mongolia's previous livestock study (World Bank, 2009), herders with 500 or more animals are more integrated in the market and can manage production capacity relatively quickly and easily respond to market needs, whereas herders with fewer than 200 animals have limited access to market sales and are highly vulnerable to harsh winters (dzud).
[12] Poverty rates for herder households that used livestock for their income generation and consumption activities
[13] The Government of Mongolia banned individual and business use of raw coal in six central districts of Ulaanbaatar from 2019 and introduced refined coal briquettes at a subsidized price close to the price of raw coal

Figure 1.33 Access to basic infrastructure services

(a) Access to electricity (2010 vs 2020)
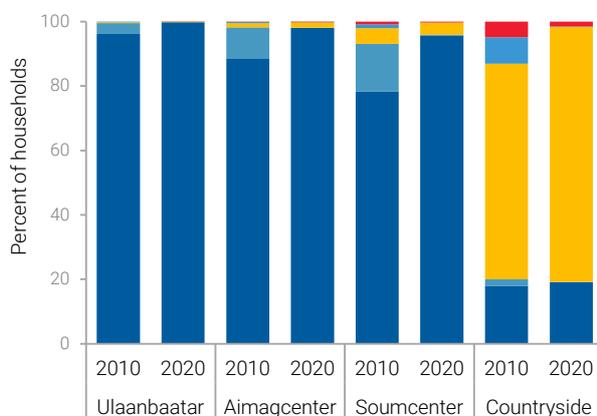
(b) Access to improved drinking water, sanitation and sustainable heating (2010-2020)[14]

grid ■ local system ■ solar ■ candle ■ others

2010 ■ 2012 ■ 2014 ■ 2016 ■ 2018 ■ 2020
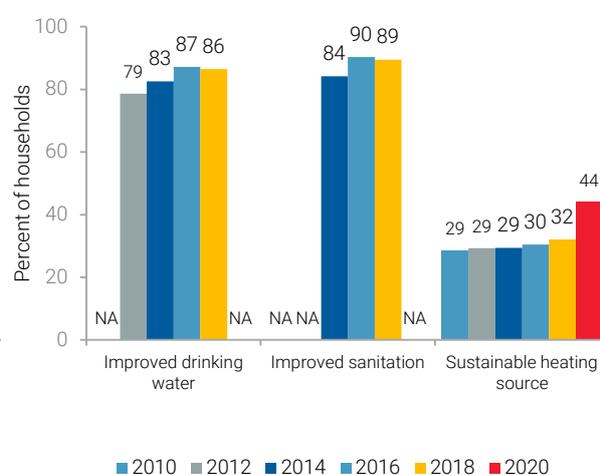
(c) Access to improved drinking water (2020), sanitation (2018) and sustainable heating (2020) by locations, Ger residents, and welfare quintiles

Improved drinking water (2020)

Ulaanbaatar	99
Aimagcenter	88
Soumcenter	64
Countryside	32
Ger	61
Non-Ger	90
Q1	76
Q2	75
Q3	77
Q4	80
Q5	86

Improved sanitation (2018)

Ulaanbaatar	98
Aimagcenter	94
Soumcenter	93
Countryside	56
Ger	79
Non-Ger	96
Q1	86
Q2	89
Q3	89
Q4	90
Q5	93

Sustainable heating (2020)

Ulaanbaatar	71
Aimagcenter	41
Soumcenter	17
Countryside	3
Ger	10
Non-Ger	63
Q1	32
Q2	36
Q3	40
Q4	45
Q5	58

Source: HSES 2010-2020

Note: In the panel (b), due to changes in the survey questionnaires over time, comparable indicators were not able to be constructed for the improved drinking water in 2010 and 2020 and for the improved sanitation in 2010, 2012 and 2020.

[14] Improved drinking water was defined as households who use centralized water system connected to water supply pipelines, protected wells, protected springs, portable water service, rainwater or bottled water. Improved sanitation was defined as households who use toilets connected to sewer systems, improved pit latrine, bio toilet, or septic tank. Sustainable heating source was defined as Households who use heating source from central, private boiler or electrical heater system.

Box 1.4 Multidimensional Poverty Measure

The Multidimensional Poverty Measure (MPM) developed by the World Bank is useful to understand poverty beyond a single monetary deprivation, by considering key non-monetary aspects of household wellbeing. Multidimensional approaches of measuring poverty have gained widespread recognition to assess whether people are deprived in single or multiple dimensions or are free of any deprivations of wellbeing. In fact, the Sustainable Development Goals (SDGs) emphasize the importance of ending "poverty in all its dimensions" (SDG 1) and other SDGs point to a shared concern with deprivations in multiple non-monetary dimensions. In order to understand poverty from multidimensional perspectives across countries, the World Bank's MPM consists of three dimensions of well-being and six indicators[15]. The three dimensions are: (i) monetary poverty at $1.90 PPP poverty line, (ii) access to education, and (iii) access to basic infrastructure. The six indicators are per-capita household consumption or income, educational attainment, educational enrollment, drinking water, sanitation, and electricity[16]. All indicators are aggregated into one composite index by applying equal weight approach[17]. People are considered to be multidimensionally poor if they are deprived in more than one-third (33 percent) of weighted indicators.

In Mongolia, more than one in five people experience at least one deprivation in multidimensional poverty indicators. While Mongolia's multidimensional poverty headcount rate is relatively lower, reflected by almost zero extreme poverty and high human capital development level, moderate to high depreciation rates were observed in access to improved drinking water and sanitation facility, in comparison with regional neighboring countries (Box Table 1.1).

At the national level, 10 and 13 percent of the total population do not have access to improved sanitation and safe drinking water sources, respectively. As a result, at the national level, while 79 percent are free of any deprivation, 21 percent of the total population suffer at least one deprivation in the MPM indicators (Box Figure 1.3).

There are sizeable geographical variations in multidimensional deprivations. While 95 percent of the population in Ulaanbaatar are free of any deprivation, three in four people in the countryside are deprived by at least one indicator (Box Figure 1.3). In particular, multiple deprivations are not uncommon in the countryside: 42 percent of the people in the countryside suffer deprivations in more than 2 indicators. Spatial diversity of deprivations is also found at the region and aimag level: the Western and part of Khangai and Central regions are lagging from Ulaanbaatar and the Eastern region (Box Figure 1.4). Moreover, it appeared that a lower incidence of national monetary poverty rate (Figure 1.22) does not necessarily mean that they are free of multidimensional poverty at the aimag level. This indicates that policymakers need to take into account not only national monetary poverty but other key elements of household wellbeing to advance poverty reduction in all its forms across the country.

---

[15] Similar to the concept of international and national poverty measures, while the World Bank's MPM aims to serve as a benchmark for cross-country comparisons, it does not necessarily cover all of Mongolia's specific needs. On the other hand, the country's own national measures of multidimensional welfare can be developed by applying a range of variations in methodology and selection of dimensions and indicators to reflect country-specific data, needs and policy concerns.

[16] All indicators are defined in binary (0/1) terms. The definitions of six indicators are as follows: (i) monetary poverty: daily per capita consumption is less than $1.90PPP, (ii) education attainment: at least one school-age child (aged 6-14) is not enrolled in school, (iii) education attainment: no adult in the household has completed primary-level education, (iv) drinking water: household lacks access to limited-standard drinking water, (v) sanitation: household lacks access to limited-standard sanitation, and (vi) electricity: household has no access to electricity.

[17] The MPM allocates the same weights across all dimensions; within a dimension, equal weights are assigned across indicators. The indicator level weight is calculated as the dimension-level weight divided by the number of indicators in a given dimension. The sum of weights over all indicators becomes 1. For more details, see World Bank, 2022.

Box Table 1.1 Multidimensional poverty headcount and deprivation rate of indicators

	Survey year	Multidimen-sional poverty (%)	Deprivation rate (share of population)					
			Monetary ($1.90PPP) (%)	Educational attainment (%)	Educational enrollment (%)	Electricity (%)	Sanitation (%)	Drinking water (%)
Myanmar	2017	15.0	1.4	28.0	6.8	50.9	9.7	20.6
Lao PDR	2018	12.8	10.0	12.8	5.7	1.7	23.7	7.8
Philippines	2015	7.9	6.1	7.0	0.0	9.1	16.4	9.7
Indonesia	2018	5.0	3.6	5.0	1.6	1.5	22.9	8.9
Vietnam	2018	3.0	1.8	11.8	1.7	0.4	11.1	4.7
Mongolia	2018	1.7	0.5	2.7	3.2	0.2	10.4	13.0
Malaysia	2015	0.2	0.0	0.7	0.6	0.6	13.2	1.6
Thailand	2019	0.2	0.1	15.0	0.5	0.1	0.2	0.9

Source: WDI, PIP

Box Figure 1.3 Number of deprived MPM indicators by location (2018)
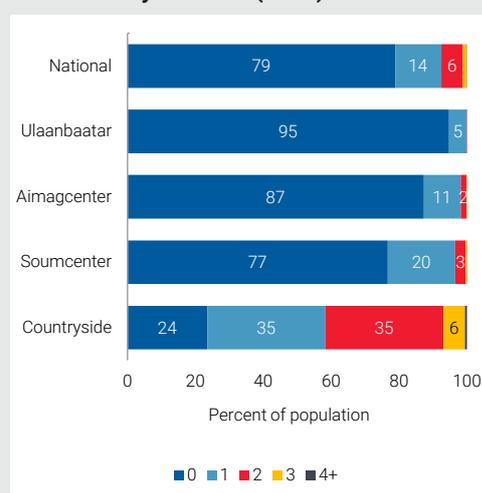
Source: HSES 2018

Box Figure 1.4 Percent of population with at least one deprived indicator by aimag (2018)
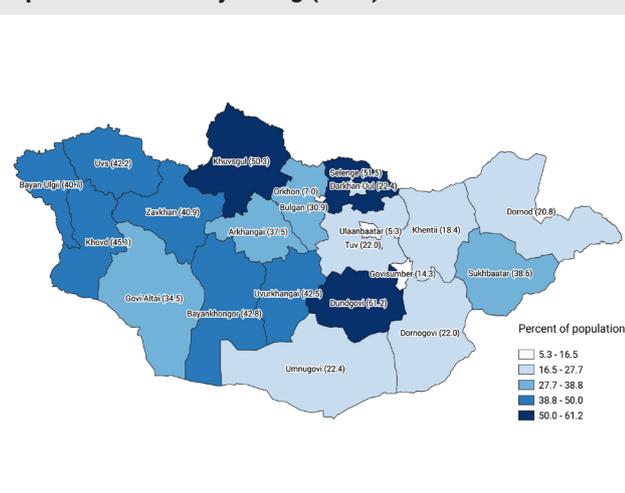
Source: HSES 2018

2

COVID-19 IN 2020: HOUSEHOLD LIVELIHOODS DURING THE FIRST YEAR OF THE PANDEMIC

This chapter explores the potential impacts of the COVID-19 pandemic on household livelihoods and wellbeing using the 2020 HSES. Specifically, it looks at trends over time to identify how the pandemic may have affected employment and household incomes across the welfare distribution. The role of social assistance and coping mechanisms in response to the pandemic is also explored.

2.1. THE EXTENT OF THE COVID-19 PANDEMIC IN MONGOLIA IN 2020

While the COVID-19 outbreak in 2020 led to an economic downturn in Mongolia, the pandemic had yet to take its worst toll until 2021 (Figure 2.1A). At the onset of the pandemic in early 2020, the Mongolian government took swift and effective measures to prevent the spread of COVID-19 within the country. These steps, which included international and domestic travel restrictions, among others, led to an immediate decline in mobility within Mongolia (Figure 2.1B). This decline, however, was short-lived, as the country recorded low numbers of locally transmitted COVID-19 cases and the government loosened restrictions. In fact, for much of 2020, domestic COVID-19 cases in Mongolia remained close to zero (Figure 2.1A), until mid-November when cases started to increase, leading the government to reinstate a stringent lockdown that continued into the first quarter of 2021 (Figure 2.1B). In 2021, COVID-19 cases and related deaths increased rapidly, leading Mongolia to ultimately reach some of the highest number of cases globally relative to its population size. Mobility restrictions in 2021, however, gradually declined after the first quarter, reflecting growing adjustment to life amidst COVID-19.

Figure 2.1 The pandemic in 2020 and 2021

A. COVID-19 cases and deaths
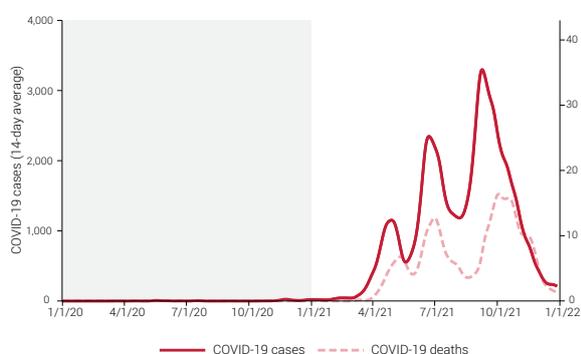
B. Mobility and stringency
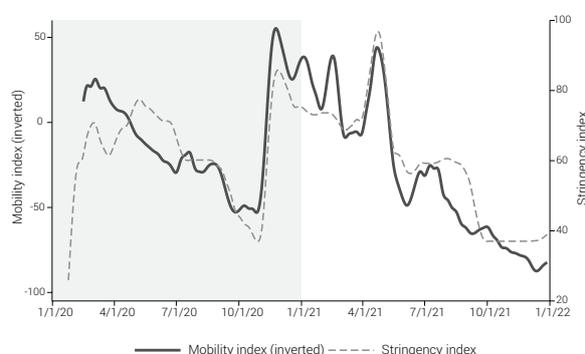
Note: The 14-day rolling average is shown for COVID-19 cases and deaths. The 30-day rolling avearage is shown for mobility and stringency. The mobility index is defined as the average percentage change in time spent on workplaces, retail, transit stations, and parks relative a pre-pandemic baseline, and inverted values are shown (i.e., higher values indicate lower mobility). The stringency index measures the stringency of COVID-19 related government policies.

Source: Our World in Data; Google Mobility Reports; Oxford University

Data from the Labor Force Surveys (LFS) show that the pandemic's impact on employment was marginal for much of 2020 until the last quarter, with the worst dip occurring in early 2021. In the first quarter of 2020, the labor force participation rate dropped below 60 percent and declined to 57.0 percent by the end of 2020, when stringent lockdowns were put in place (Figure 2.2A). As restrictions continued, labor force participation declined even further to 54.9 percent in the first quarter of 2021. Both labor force participation and employment (as a share of the working-age population) in the first quarter of 2021 reached the lowest levels that Mongolia has seen in years. Jobs in services were particularly impacted, and adults aged 20 to 29 faced a steeper drop in employment in early 2021. Ulaanbaatar experienced a 5.7 percentage point drop in employment between the fourth quarter of 2020 and the first quarter of 2021, and the drop in employment was relatively severe in the northern-most aimags close to the Russian border such as Selenge, Darkhan-Uul, and Orkhon, which faced early outbreaks of COVID-19. Labor underutilization also increased in the last quarter of 2020 after significant decline in 2019 and surged in the first quarter of 2021, driven by labor underutilization in Ulaanbaatar and among adults under the age of 30 (Figure 2.2B).

Figure 2.2 Labor force participation, employment, and labor underutilization

A. Labor force participation and employment

B. Labor underutilization rate
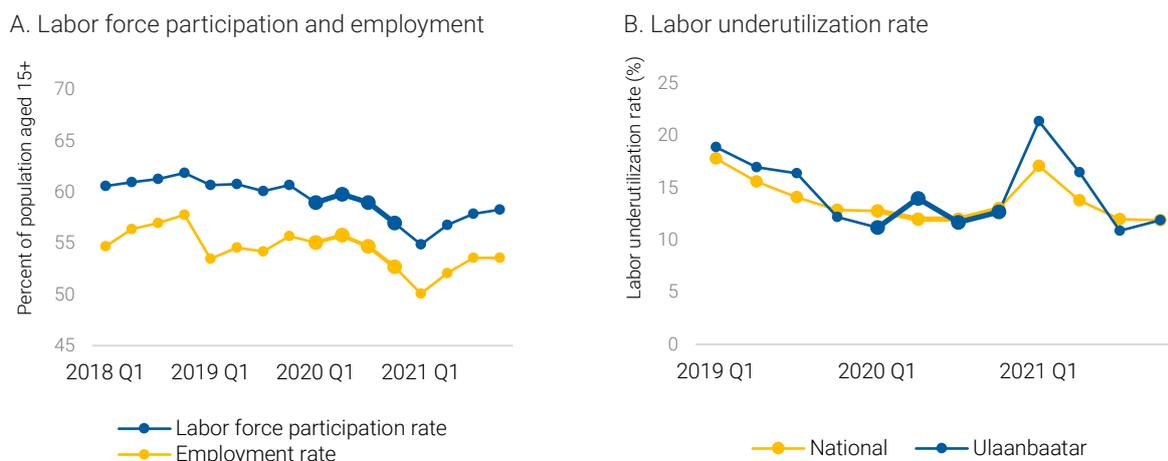
Note: Labor underutilization quantifies the mismatch between labor supply and demand and is the sum of unemployment, time-related underemployment, and the potential labor force.
Source: Mongolia NSO, LFS

2.2. IMPACTS OF THE PANDEMIC ON MONGOLIAN LIVELIHOODS IN 2020

Data from the 2020 HSES show that the decline in employment in 2020 was largely an urban phenomenon. HSES data corroborate findings from the LFS that employment (as a share of the working-age population) declined between 2018 and 2020 and was worse affected in the final quarter of 2020. Employment impacts at the extensive margin were largely exclusive to urban areas, particularly Ulaanbaatar, where lockdowns were most stringent. Between 2018 and 2020, the employment rate[18] in rural areas declined from 62.7 to 61.6 percent, while it declined from 53.4 to 49.0 percent in urban areas (Figure 2.3A). Moreover, urban areas saw a 9.4 percentage point decrease in employment in the fourth quarter of 2020 compared to the same quarter in 2018, while rural areas saw a 3.6 percentage point decline (Figure 2.3B). This differential impact by location can partially be attributed to higher participation in urban areas in services sectors, which were more likely to be affected during the pandemic-induced economic downturn of 2020.

Figure 2.3 Employment to population ratio (among working-age population) by urban/rural
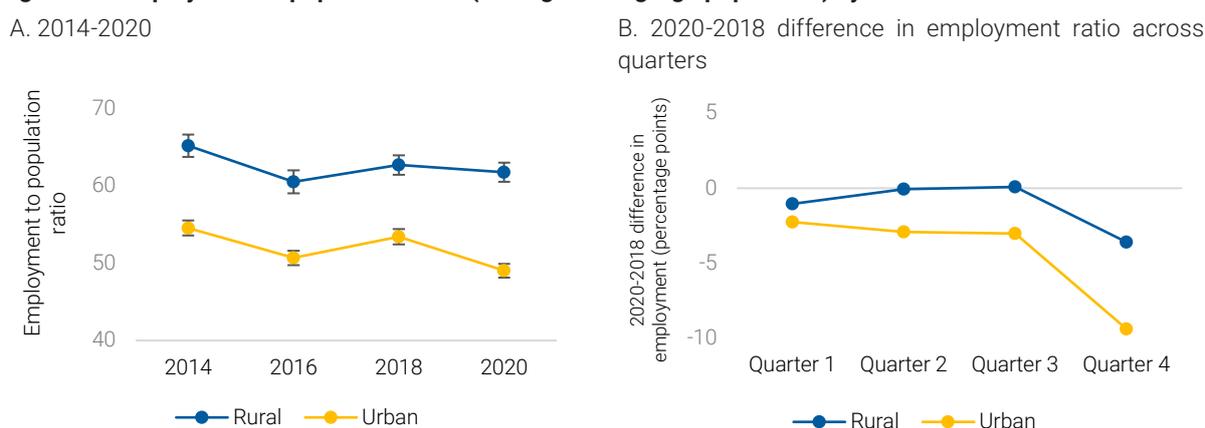
A. 2014-2020

B. 2020-2018 difference in employment ratio across quarters

Note: Employment in 7 days preceding the survey. To ensure comparability over time, individuals who engaged in only own-use production work are considered as employed.
Source: HSES 2014-2020

---

[18] In order to ensure comparability over time, individuals who engaged in only own-use production work are considered as employed.

Higher shares of wealthier workers residing in urban areas and greater participation in services may have led to higher job losses or disruptions among wealthier workers in 2020. Wealthier workers are significantly more likely to reside in urban areas: In 2020, workers in the top 20 percent of the welfare distribution were about 17 percentage points, or 30 percent more likely than those in the bottom 20 to reside in urban areas. Workers in the wealthiest quintile were also about 16 percentage points, or 36 percent more likely than the poorest workers to be employed in the services sector, which faced significant losses during the pandemic. As a result, the decline in employment between 2018 and 2020 was larger among wealthier workers, narrowing the gap in employment across the distribution that persisted in prior years (Figure 2.4A). While employment in the bottom quintile continued to be lower than in wealthier quintiles, workers in the bottom 20 did not exhibit a statistically significant decrease from 2018 to 2020 in employment. Comparisons of quarterly employment trends between 2018 and 2020 show that much of the decline in employment among wealthier (particularly top 20) workers can be attributed to a larger percentage point drop in employment in the final quarter of 2020, during which mobility restrictions were most severe (Figure 2.4B). However, overall, employment across quarters in 2020 among the top 20 appears to be significantly lower than it was in 2018, suggesting that the wealthiest workers may have experienced prolonged employment impacts. This differential effect across quintiles differs starkly from the effects seen during the recession of 2016, during which all quintiles were similarly affected.

Figure 2.4 Employment to population ratio (among working-age population) by quintile

A. 2014-2020
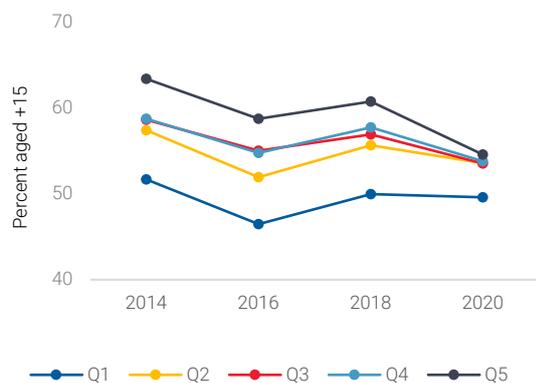
B. 2020-2018 difference in employment ratio across quarters
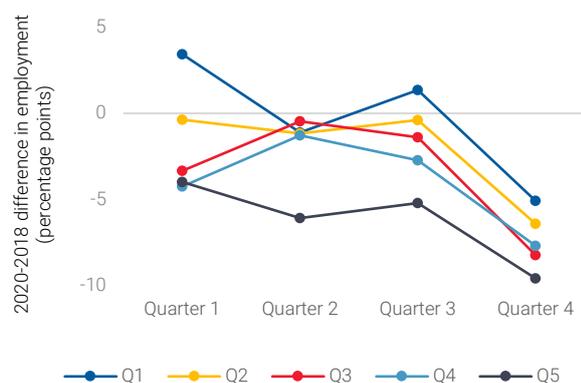
Note: Employment in 7 days preceding the survey. To ensure comparability over time, individuals who engaged in only own-use production work are considered as employed.
Source: HSES 2014-2020

Employment impacts at the extensive margin appear to have had a broad impact, crosscutting gender lines and age groups. HSES data show that female and male workers were similarly likely to be affected, although LFS data suggest that female labor force participation took more time to recover in 2021. Employment effects were also comparable between the youth and other working-age groups.

Trends in the number of hours worked in 2020 suggest that employment impacts at the intensive margin were nontrivial and similar across the consumption distribution. Data from the World Bank Enterprise Surveys show that rather than laying off workers, firms in Mongolia were more likely to make adjustments in response to the economic downturn of 2020 at the intensive margin, for example by reducing the number of hours employees worked or lowering wages (World Bank, forthcoming). Indeed, the 2020 HSES shows that workers, on average, worked about 2.4 hours less in the fourth quarter of 2020 compared to the first three quarters, likely reflecting the impact of the lockdown that occurred in November 2020, adjustments to labor by firms struggling to stay afloat, and overall decreased economic activity. In particular, those employed in service sectors worked about 2.7 hours less in the fourth quarter than in previous quarters (Figure 2.5A). Data from the Labor Force Surveys and the 2020 HSES also suggest that workers in service jobs that may be more amenable to work-from-home arrangements – namely, information, finance, professional, and administrative jobs – were less likely to face reductions in working hours compared to service workers in retail, transport, and hospitality. Additionally, while trends were similar among poor and non-poor workers and among women and men, wage workers were more likely than self-employed workers to experience a reduction in work hours, as were adults aged 25-60 compared to the youth or elderly.

Wages, on the other hand, did not appear to be notably impacted in 2020. While not possible to observe hourly wages earned in the week preceding the survey, information from the 2020 HSES on wages reported in the past month shows that changes in average wages across quarters in 2020 were minimal in the agriculture and service sectors (Figure 2.5B). In the final quarter of 2020, wages in industries declined relative to the third quarter but were still higher compared to the first two quarters of 2020. Decreases in hourly wages in the fourth quarter, however, may be understated if the number of hours worked declined, as shown above. Indeed, LFS data shows that in 2020, wages increased by an average of 5 percent in the fourth quarter, driven primarily by higher wages in service sectors.

Figure 2.5 Employment adjustments at the intensive margin

A. Average hours worked in the past 7 days
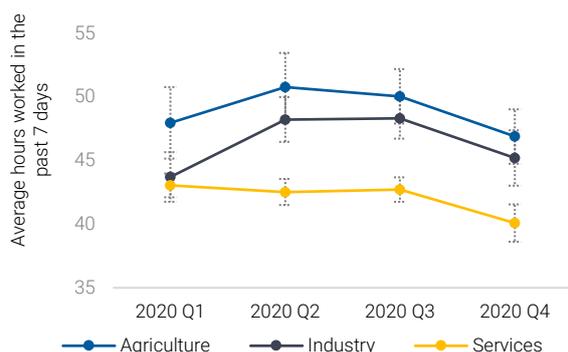
B. Average real wages earned in the month preceding the survey (thousands, 2020 MNT)
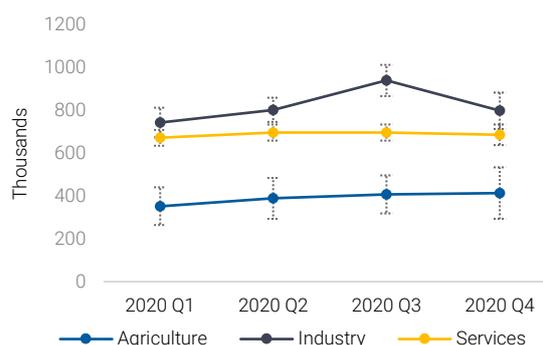
Source: HSES 2020

Overall, HSES data indicate that annual wages increased significantly for the bottom 40 between 2018 and 2020, presenting a puzzle given minimal growth in consumption among poorer households during this time. Wages per worker in real terms increased on average by 22.6% between 2018 and 2020 – the highest two-year percentage growth since 2010 (Figure 2.6A). LFS data corroborate this trend[19] and show that most of the growth in real wages occurred in 2019, with wages stagnating in 2020 (Figure 2.6B). Workers in industry and services, particularly the mining, hospitality, and retail sectors, saw the largest increases in real wages between 2018 and 2020 (Figure 2.6A). Moreover, poorer workers, particularly the bottom 40, experienced larger relative increases in wages (Figure 2.6C). This finding presents a puzzle given low growth in consumption among the bottom 40 between 2018 and 2020.

Figure 2.6 Trends in wage income per worker

A. Average real monthly wages per worker, by sector (2010-2020, in 2020 MNT, thousands)
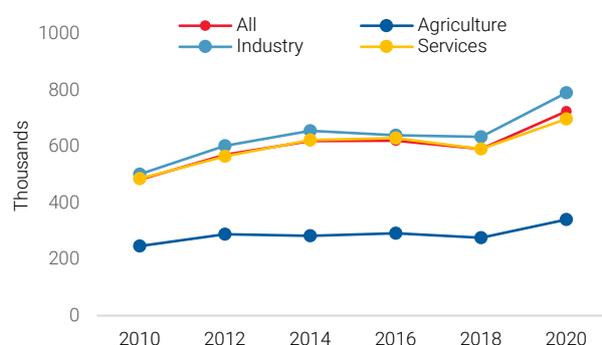
B. Average real hourly wages per worker from primary occupation, Labor Force Surveys (in 2020 MNT)

[19] The LFS indicate a 17.3 percent increase in average real wages between 2018 and 2020. However, changes to the questionnaire in 2019 may have implications for the comparability of hourly wages before and after 2019 (see notes of Figure 2.6).

C. Change in real wages per worker by percentile of consumption (2018-2020)
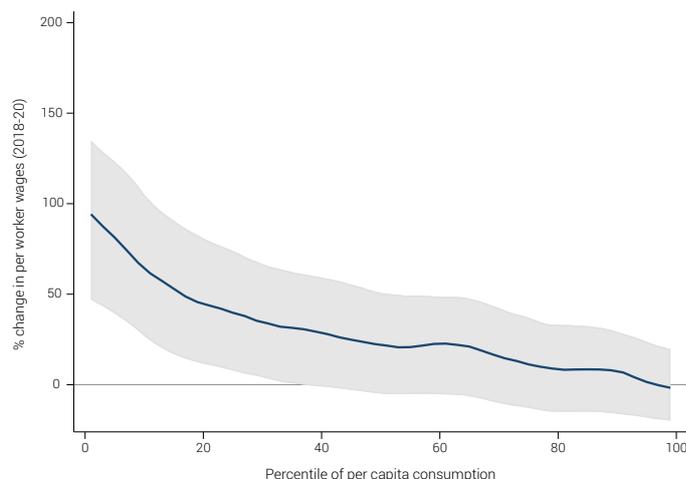
Note: In panel B, the yearly CPI is used to calculate real wages. For the 2014-2018 LFS, hourly wages are defined using wages earned in the past 7 days and the average number of hours worked in a week. For the 2019-2020 LFS, hourly wages are defined using wages earned the last time the respondent was paid and the average number of hours worked during the period that the payment covered. In panel C, the gray area represents the 95% confidence interval.

Source: HSES 2010-2018; Labor Force Surveys 2014-2020; Mongolia NSO

Several caveats in the analysis also should be considered when interpreting trends in income and consumption between 2018 and 2020. First, the estimated increase in wages does not solely capture growth in 2020, as the reference period for calculating annual wages extends the past 12 months prior to the survey. Given that the 2020 HSES was a yearlong survey, the 12-month reference period means that for most of the survey sample, wage income in 2020 also captures some earnings from 2019. This caveat is significant considering findings from the LFS that most of the growth in real wages occurred in 2019. Indeed, findings from the Mongolian Household Response Phone Surveys (HRPS) indicate that short-term impacts may have been more severe in 2020 (see Box 2.1). Second, as outlined in Section 1.1, the imputation of consumption in 2020 may have resulted in some discrepancies in simulating the welfare distribution, which may contribute to some of the divergent trends in income and consumption between 2018 and 2020. The extent of this contribution, however, can only be assessed once the consumption aggregate and poverty line are updated using the upcoming 2022 HSES. Finally, the potential underreporting of consumption described in Section 1.1 may have amplified the observed divergence in income and consumption trends.

Despite a sharp decline in cashmere prices, livestock income grew between 2018 and 2020, especially among poorer households, driven by an increase in livestock prices. Due to decreasing global demand for cashmere during the pandemic, national cashmere prices in Mongolia declined by an average of 35 percent between 2018 and 2020. Consequently, cashmere sales decreased between 2018 and 2020, especially for wealthier herders (Figure 2.7). However, during the same period, prices for livestock such as cattle, sheep, and goats grew by 26-37 percent, and livestock sales increased among herder households. Growth in income from livestock sales was substantial for herders in the bottom 40: Average livestock sales increased by 2.3 times in the bottom quintile and grew by 87 percent for the second quintile (Figure 2.7). On average, herders in the top 60 also experienced increases, although the magnitude was significantly smaller. Greater livestock sales may indicate financial hardship among herding households if the selling of livestock were to be employed as a coping mechanism to deal with effects of the pandemic. However, herder households in the bottom 40 experienced a 15 to 24 percent increase in the number of livestock owned, suggesting that herders may have been less affected during the pandemic.

Figure 2.7 Percentage change in livestock sales, livestock production sales, and number of owned livestock (2018-2020)
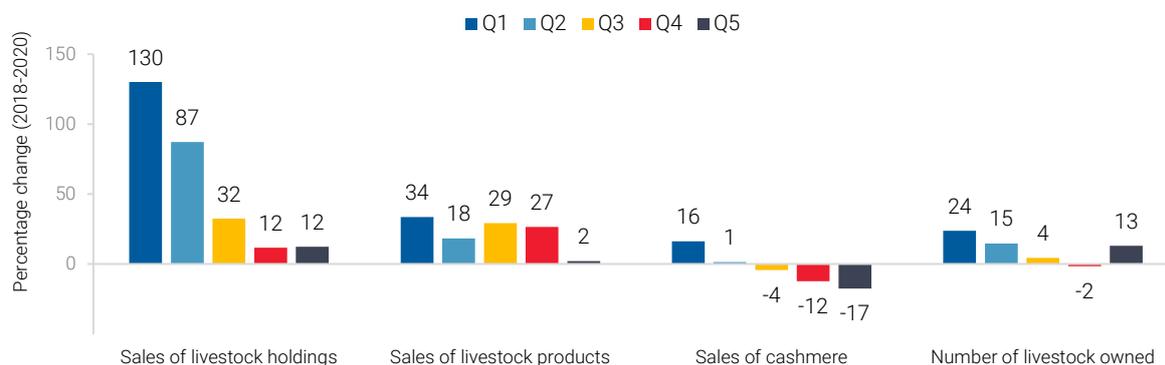
Source: HSES 2018-2020

Due to higher wage and self-employment income, household labor income increased considerably between 2018 and 2020, particularly among poor households. Driven by growth in transfers and labor income, real per capita household incomes increased by on average 19 percent between 2018 and 2020 (Figure 2.8A). While gains in labor income could be seen for both poor and non-poor households, poor households experienced the largest absolute and relative increase in labor income in the decade starting from 2010. Between 2018 and 2020, average per capita labor income grew by 66.4 percent for poor households and 8.8 percent for non-poor households. Sharp increases in labor income have contributed to high growth in overall household income, which increased significantly for poorer households: Households in the bottom 20 experienced a 71.5 percent increase in total household income, while the second poorest quintile experiencing a 39.1 percent increase (Figure 2.8B). On the other hand, total income remained stagnant for the wealthiest households. Increases in labor income account for over 70 percent of the increase in total household income between 2018 and 2020 among the bottom 40. While growth in self-employment income from herding/farming and non-farm activities was notable, large increases in wages for households in the bottom 40 percent of the distribution was the main driving force behind the growth in labor income and total income.

Figure 2.8 Real per capita monthly household labor and total income

A. Real per capita monthly household labor income (2010-2020, in 2020 MNT, thousands)
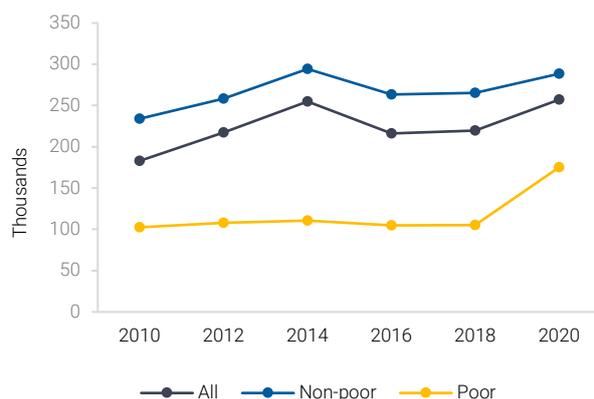
B. Decomposition of change in real per capita household total income (2018-2020)
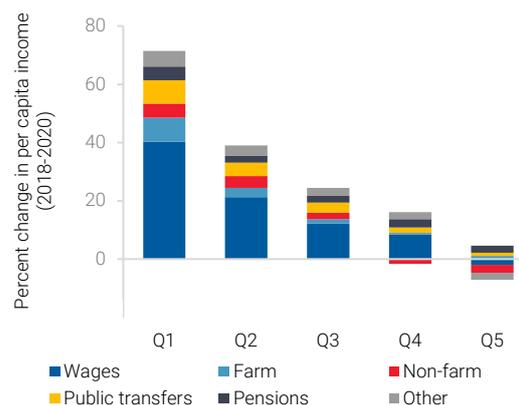
Note: In panel B, pensions include state pensions; public transfers include social insurance benefits, social welfare benefits, disability pensions, social welfare pensions, and employment support (e.g., training, micro loans); other income includes unclassified income other sources.

Source: HSES 2010-2020

While high growth in labor income between 2018 and 2020, particularly among bottom 40 households, presents a puzzle given the marginal decline in poverty over this period, quarterly trends in 2020 suggest that in the short term, households may have faced tangible losses in labor income due to the pandemic. The 2020 HSES shows sizable overall growth in household labor income between 2018 and 2020. However, as mentioned above, the 2020 HSES may underestimate the short-term impacts of the pandemic on wages and household income because the survey captures incomes obtained in the year preceding the survey (See Box 2.1). For households surveyed in the first two quarters of 2020, at least half of the reference period includes 2019, which, overall, was a year of robust economic growth in Mongolia. Indeed, trends across quarters of 2020 show that households surveyed in the final quarter of 2020 had, on average, 9 percent lower labor income than households surveyed in previous quarters (Figure 2.9).

Figure 2.9 Per capita monthly labor income in 2020 MNT by quarter
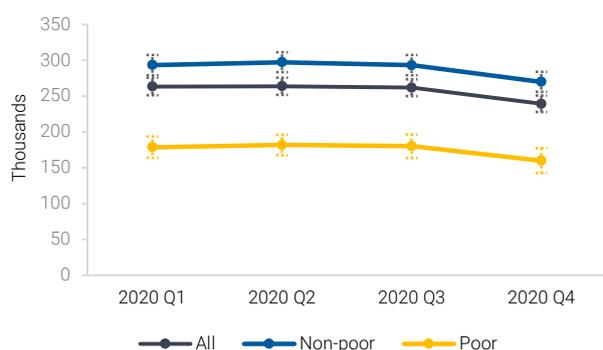
Source: HSES 2020

Figure 2.10 Self-reported labor income losses due to COVID since February 2020
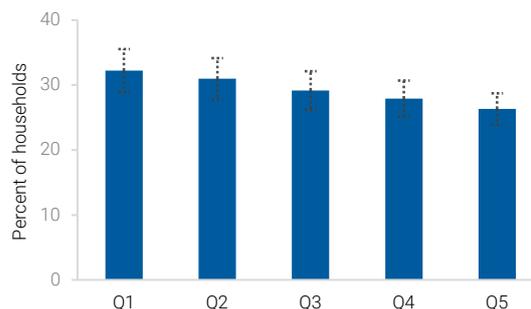
Note: The sample is restricted to households in quarters 2-4 who were administered the COVID-19 module of the 2020 HSES. Source: HSES 2020

Self-reported information by households also provides evidence that while some households faced labor income losses due to the pandemic, overall impacts on livelihoods were not extensive in 2020. The 2020 HSES included a module that covers topics related to the COVID-19 pandemic, such as knowledge of the virus, the economic impact of the pandemic on households, coping mechanisms, among others. The COVID-19 module was incorporated into the 2020 HSES starting from the second quarter of 2020 and thus only 75 percent of households were able to respond to these questions. Among the households for which this information was recorded, about 30 percent of households indicated that they experienced labor income losses due to the pandemic. Moreover, shares were similar across quintiles, with wealthier households being marginally less likely to report being affected (Figure 2.10).

Box 2.1 Real-time monitoring of the pandemic's immediate impacts with the Mongolian high-frequency COVID-19 Household Response Phone Surveys (HRPS)

The COVID-19 Household Response Phone Survey (HRPS) provides better insight into the short-term socioeconomic impacts of the pandemic on households in Mongolia. While the 2020 HSES provides a comprehensive analysis of household livelihoods and potential socioeconomic impacts of the pandemic, granular disaggregation to look at short-term impacts during periods of stringent lockdowns is not feasible. The HRPS, however, provided near-real-time information on household employment, income, access to services, coping mechanisms, and other topics at specific points in time throughout the pandemic. Each HRPS lasted one to two weeks and was administered a total of five times from 2020 to 2021: The first three rounds took place in in May 2020, September 2020, and December 2020, while the remaining two rounds were administered in April 2021 and June 2021. Despite the abbreviated nature of high-frequency phone surveys, the HRPS provides indicative evidence of how the pandemic may have affected households in the immediate term.

The HRPS suggests that the pandemic's impact on households may have been considerable during times of stringent lockdowns in 2020, but overall trends from the HSES indicate these impacts may have been short-lived. In 2020, the HRPS were fielded during periods of strict mobility restrictions: The first round was administered during the first lockdown in May 2020, while the subsequent round with employment/income data was administered in December 2020, amid the second and more severe lockdown. HRPS data thus provide greater insight into how the severity of impacts may have differed during times of strict COVID-19-related restrictions. Indeed, the HRPS shows that impacts were more severe during periods of lockdown, despite a similar general trend to what is observed in the HSES. Work stoppages, or the share of respondents working pre-pandemic who were no longer working at the time of the survey, increased from 19 percent to 52 percent between the first and second lockdown (from May 2020 to December 2020). While indicators are not directly comparable, trends in employment from the HSES indicate significantly lower employment impacts, suggesting that work stoppages during periods of lockdown were temporary.[1]

[1] Additionally, the abbreviated nature of the HRPS did not allow precise definitions of employment, unemployment, and net changes in household labor income, which may have contributed to differences in impact levels, but not trends.

Household income from remittances was also generally unaffected, although self-reported evidence suggests that the pandemic presented obstacles in receiving remittances for some households. Among households in 2020 receiving remittances, 12.5 percent (9.1 percent of all households) reported facing difficulty receiving remittances due to the pandemic. Residents of Ulaanbaatar in particular had trouble receiving remittances, with a fifth of remittance-receiving households reporting difficulties (Figure 2.11A). Moreover, poor households in Ulaanbaatar were 6.8 percentage points more likely to report facing difficulties accessing remittances than non-poor households. In Mongolia, the large majority of household remittance income comes from within the country, which may have contributed to the large share of remittances shared in cash or in kind prior to the pandemic (Figure 2.11B). Social distancing measures and mobility restrictions under the pandemic have likely made it difficult for households to send transfers to other households using these means. Perhaps as a result, the share of households that received remittances via bank account almost doubled between 2018 and 2020, from 22 percent to 42 percent (Figure 2.11B). The increase was especially notable for poor households: among remittance-receiving households, the likelihood of receiving remittances via bank account tripled for the poor (from 14.6 to 43.0 percent), while it increased by 1.8 times for the non-poor (from 23.5 to 41.9 percent).

Figure 2.11 Self-reported difficulty receiving remittances due to the pandemic
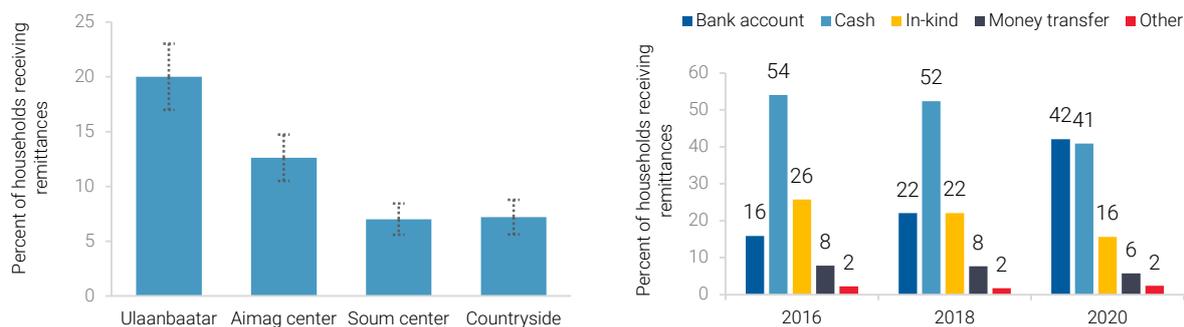
Note: Values in panel B show the share of households with remittances that receive at least one remittance by each method. Sample is restricted to households in quarters 2-4 who were administered the COVID-19 module of the 2020 HSES.

Source: HSES 2020

2.3. POLICY RESPONSES AND HOUSEHOLD COPING STRATEGIES

In response to the pandemic, social assistance increased sharply in 2020, largely due to increased benefits from the Child Money Program (CMP). Compared to 2018, the average per capita transfer amount received in the form of social assistance increased by nearly 40 percent in 2020 (Figure 2.12A). This increase was largely driven by the CMP (Figure 2.12B), which had a five-fold increase in benefit amount per child during the pandemic. Increases in the CMP could be seen across the distribution (Figure 2.12B), although in absolute terms, the expansion in benefits was higher among poorer households, which tend to have more children. In the bottom 20 percent, real per capita household income from the CMP more than doubled between 2018 and 2020 (from a monthly average of 10,100 MNT to 20,600 MNT), making up more than half of total public transfers and 9 percent of total income. In addition to the CMP, food stamps also increased by 69 percent among the 6-7 percent mostly poor/vulnerable households that received it (from 8,090 to 13,600 in real monthly terms).

Figure 2.12 Growth in social assistance

A. Per capita real monthly income from public transfers (2020 MNT)
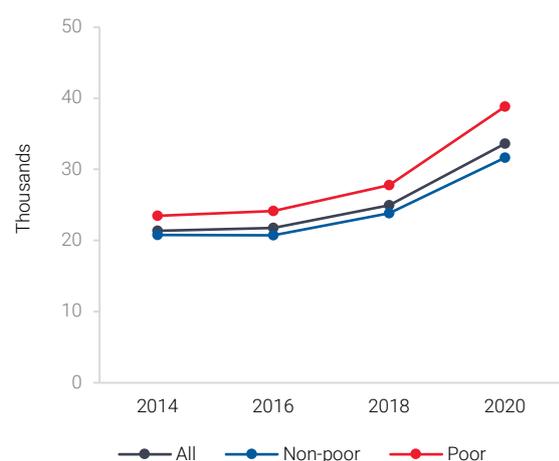
B. Decomposition of average change in per capita real monthly income from public transfers (2018-2020)
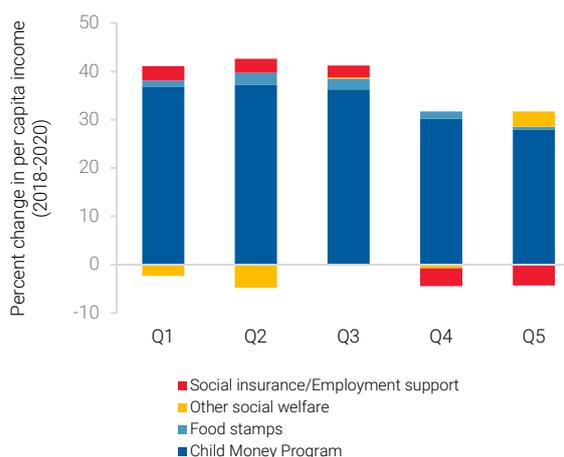
Note: In panel B, other social welfare includes all social welfare benefits besides CMP benefits and food stamps; social insurance/employment support includes social insurance benefits and employment support.

Source: HSES 2014-2020

Despite large increases in social assistance, especially when compared to other countries in the region, evidence suggests that most households may not have used the transfers to smooth consumption or otherwise cope with the effects of the pandemic. Regional comparisons reveal that in 2020, government assistance to Mongolian households as a part of COVID-19 relief measures amounted to more than 6 percent of GDP (Figure 2.14A). As a share of GDP, pandemic-related social assistance to households was by far the largest in the region – more than triple that of most other countries in the region. However, in 2020, less than two percent of households reported relying on unconditional aid from the government, NGOs, or other sources to cope with the pandemic's impacts. Poor households were marginally more likely to rely on social assistance (Figure 2.13), but shares were low for both poor and non-poor households. Moreover, data from the HRPS shows that benefits received from the CMP were more likely to be saved rather than cashed out: In 2020, more than a third of households that received the CMP stated that the transfer was put into a savings account for future use. Given that the CMP aims to improve child education and health, households may be more likely to earmark the transfers for investments into their children's human capital.

In general, reliance on coping mechanisms was low in Mongolia, especially when compared to other countries in the region. In 2020, only one in ten households reported employing any coping strategies to deal with the impacts of the pandemic, and while poorer households were marginally more likely to rely on aid or use other strategies to deal with the consequences of the pandemic, use of coping mechanisms were generally low across poor and non-poor households (Figure 2.13). This finding suggests that coping strategies may not have been widely employed in 2020, even during the lockdown that occurred in the fourth quarter of 2020. While not directly comparable to the 2020 HSES due to differences in reference period and survey timing, data from the high-frequency COVID-19 Household Response Phone Surveys (HRPS) shows that Mongolia had one of the lowest shares of households reporting reliance on any coping mechanism or government assistance in the region[20] (Figure 2.14B). Other neighboring countries which conducted similar high-frequency surveys in 2020 had significantly higher reliance on government assistance, as did they on other coping mechanisms. This finding presents a surprise given marginal consumption growth in Mongolia between 2018 and 2020, even despite substantial increases in labor income and social assistance.

Figure 2.13 Self-reported coping mechanisms employed in response to the COVID-19 pandemic
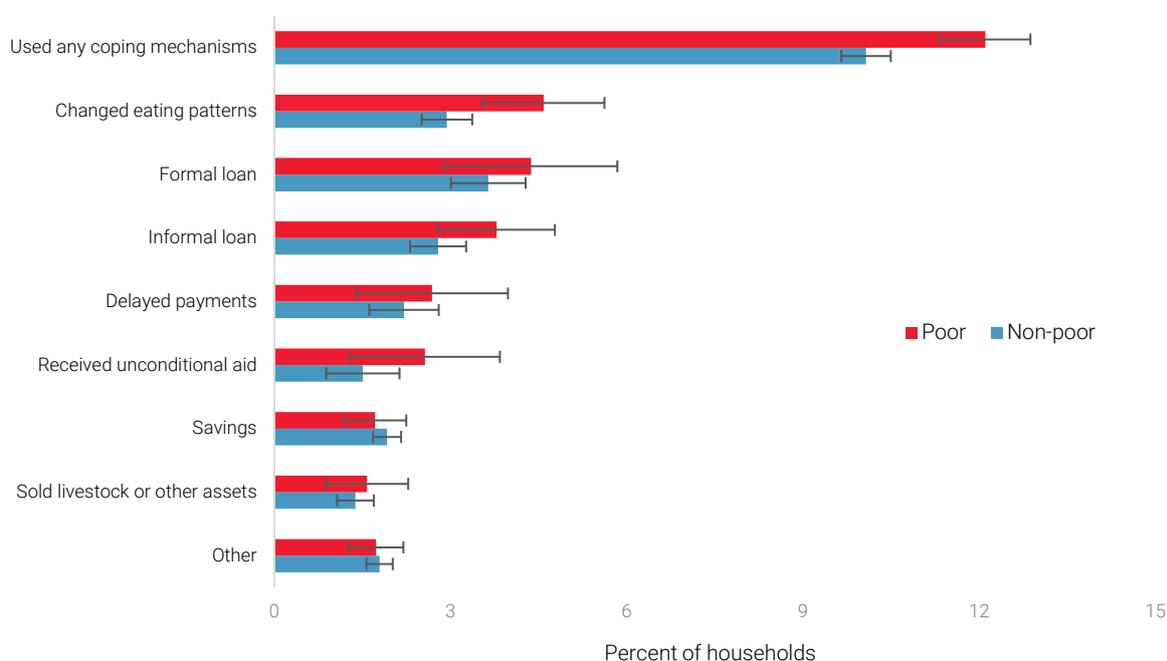
Note: The sample is restricted to households in quarters 2-4 who were administered the COVID-19 module of the 2020 HSES.
Source: HSES 2020

[20] Reliance on coping mechanisms may be larger in the HRPS than suggested in the 2020 HSES due to differences in the questionnaire and the timing of surveys during periods of stringent lockdowns.

Figure 2.14 Regional comparison of C0VID-19-related social assistance and coping mechanisms

A. Social assistance to households for COVID-19 relief in the EAP region, 2020 and 2021 (% of GDP)
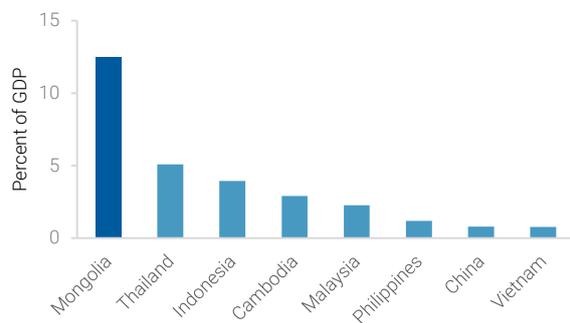
B. Share of households using coping mechanisms in the HRPS

■ Any coping mechanism   ■ Government assistance
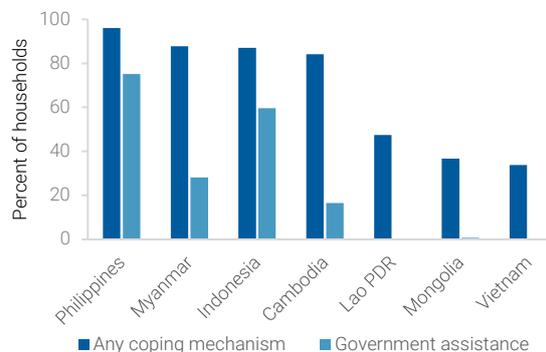
Note: In Panel B, reliance on coping mechanisms may be larger in the HRPS than suggested in the 2020 HSES due to the timing of surveys during periods of stringent lockdowns. For countries that administered more than one round of the High-Frequency Phone Survey during 2020, the average value is taken across rounds.
Source: Panel A) World Bank staff estimates; Panel B) Mongolia Household Response Phone Surveys, rounds 1-3; Author's calculations based on the World Bank High-Frequency Phone Surveys administered in 2020.

An increase in precautionary saving may reconcile the divergent trends in income and consumption among the bottom 40 between 2018 and 2020. As mentioned above, households experienced a substantial increase in real per capita total income between 2018 and 2020, with higher growth rates among poorer households (Figure 2.8B). Despite substantial growth in household income, changes in consumption levels were minimal between 2018 and 2020 across the distribution. This has resulted in a general decline in households' marginal propensity to consume in 2020, with the drop being the largest among households in the bottom 20 (Figure 2.15). While potential measurement errors in consumption and the survey-to-survey imputation approach mentioned in Section 1.1 may overstate the magnitude of this drop in the marginal propensity to consume, trends suggest that poorer households may have been more likely to engage in precautionary saving during the pandemic.

Figure 2.15 Marginal propensity to consume (2014-2020)
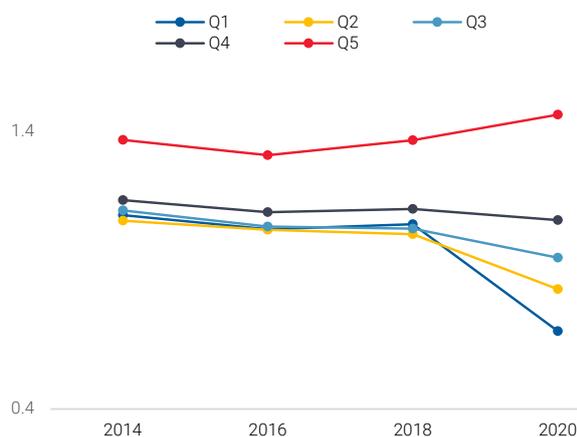
Note: Due to the imputed nature of consumption in 2020, it is not possible to calculate the marginal propensity to consume (MPC) excluding imputed rent values. The MPC shown above is thus higher among wealthier households, who tend to live in higher-value homes.

Source: HSES 2014-2020

Indeed, self-reported savings data from the HSES show that household saving activity has grown between 2018 and 2020, predominantly among poorer households, suggesting greater precautionary saving during the pandemic. From 2018 and 2020, the share of households that saved in the past year grew from 18 to 27 percent. Households in the bottom 40, in particular, experienced large increases in the likelihood of saving: The share of households saving nearly tripled in the poorest quintile and more than doubled in the second-poorest quintile (Figure 2.16A). Average self-reported amounts saved (in real terms) also rose by 17 percent and increased at a faster rate for households in the bottom 40 in 2018-2020 than in 2016-2018 (Figure 2.16B). Furthermore, administrative data show that the total balance of household deposits at financial institutions grew throughout 2020, especially in the second half of 2020 (Figure 2.17). On the other hand, real growth in household deposit balances decreased sharply in 2021 due to impacts of the prolonged pandemic and rising inflation.

Figure 2.16 Savings activity in the past 12 months (2016-2020)

A. Share of households that saved in the past 12 months

B. Total monthly savings amount among saving households (in 2020 MNT, thousands)
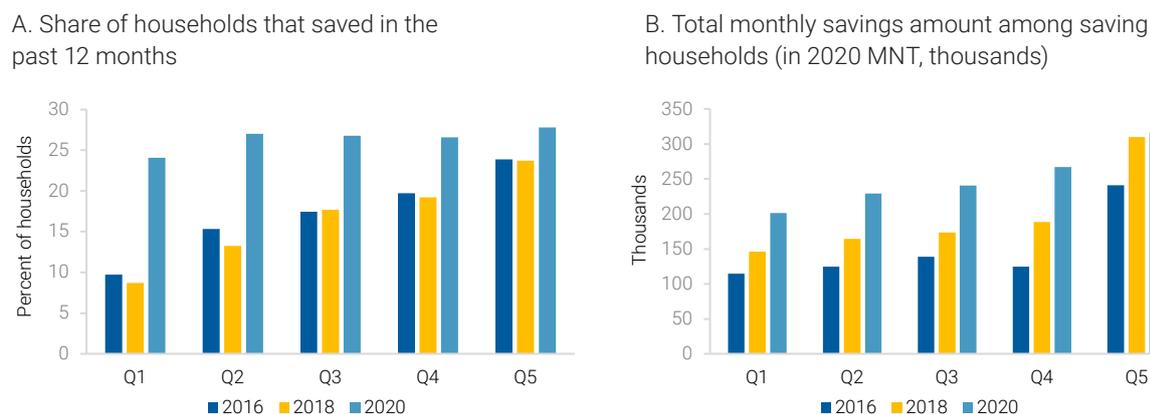
Source: HSES 2016-2020

Figure 2.17 Individual deposit balances at financial institutions (2016-2020)
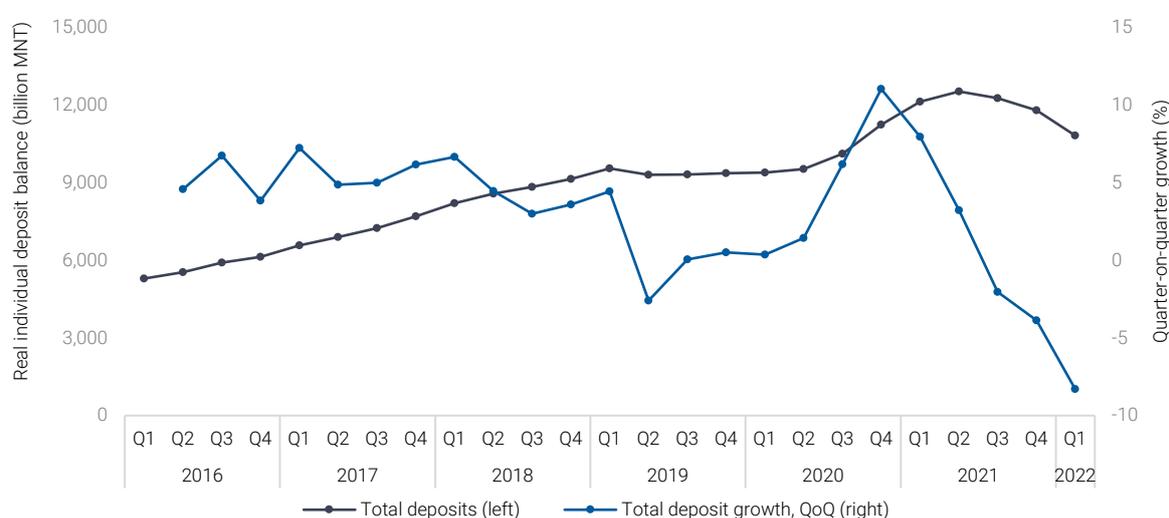
Source: Bank of Mongolia, NSO

Note: Deposit balances were deflated by CPIs (2020=100)

While borrowing activity has declined between 2018 and 2020, evidence suggests that poor households may have been more likely to rely on loans in 2020 to cope with the pandemic. In 2020, the share of households that had taken out a loan in the past 12 months was lower than in 2018 and declined across quarters (Figure 2.18). However, unlike previous years, the share of households that had received a loan was greater for the poor than it was for the non-poor in 2020 (Figure 2.18). Data from the COVID-19 module also show that poorer households were more likely to rely on informal or formal loans to cope with the negative impacts of the pandemic (Figure 2.13). While other loans such as leasing loans and business loans increased, the change in borrowing activity is largely explained by an increase in herder loans among poor households: The share of households that took out a herder loan increased from 8 to 11 percent between 2018 and 2020, and the primary purpose for borrowing was to finance household consumption and private businesses.

Figure 2.18 Borrowing activity in the past 12 months

Percent of households that took out a loan in the past 12 months
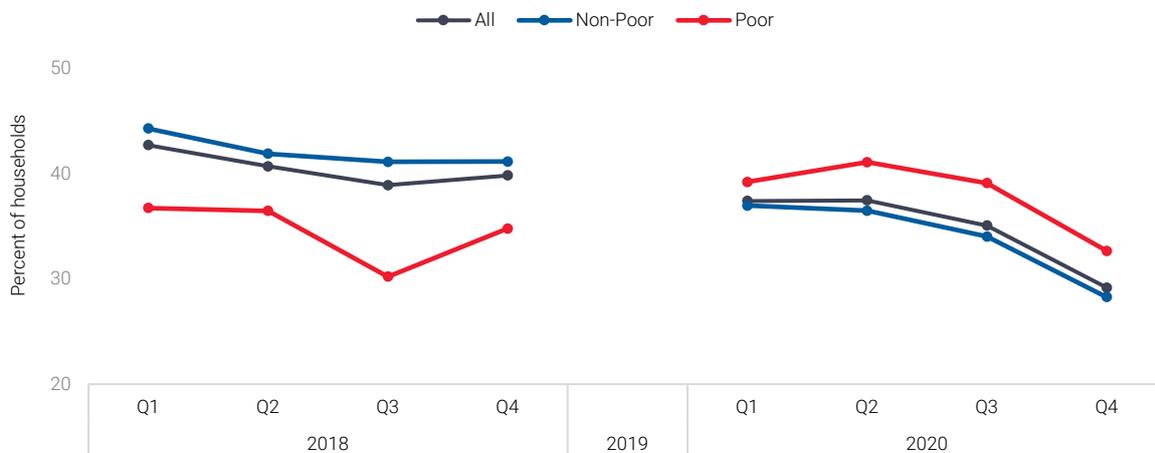
Source: HSES 2018-2020

Although the 2022 HSES will provide a clearer picture of the longer-term impacts of the pandemic, the 2020 HSES as well as suggestive evidence from 2021 indicate that the pandemic may have lasting effects on poorer households, especially those residing in urban areas. Overall, the pandemic does not appear to have debilitated growth in household incomes in 2020, although consumption growth has slowed likely due to increased precautionary saving. Moreover, data suggest that overall, the pandemic's impact on household income may not have been as severe in 2020 as in 2021. However, self-reported information suggests that poorer households may face more lasting consequences due to the pandemic. While the use of coping mechanisms was generally low, the poor were more likely to rely on loans or change eating patterns in response to the pandemic (Figure 2.13). Additionally, evidence from the HRPS shows that rising food prices during the pandemic impacted more than half of households in 2020 and were one of the most common shocks experienced among households. While evidence of food insecurity was generally low, impacts appear to have been highest during periods of strict lockdown in 2020. Poorer households were more likely to be affected: According to the 2020 HSES, poor households were 3.2 percentage points more likely than non-poor to report being unable to access food in the past 30 days and were 4.7 percentage points more likely to be worried about getting enough food (Figure 2.19). Urban households, particularly those in Ulaanbaatar and the Northern Region, were significantly more likely than rural households to face difficulties in buying food: Urban households were over four times more likely than rural households to report that they were not able to buy enough food in the preceding month. Prolonged food insecurity can be particularly detrimental to households with young children, whose health could be tangibly impacted.

Figure 2.19 Concerns about accessing food in the past month
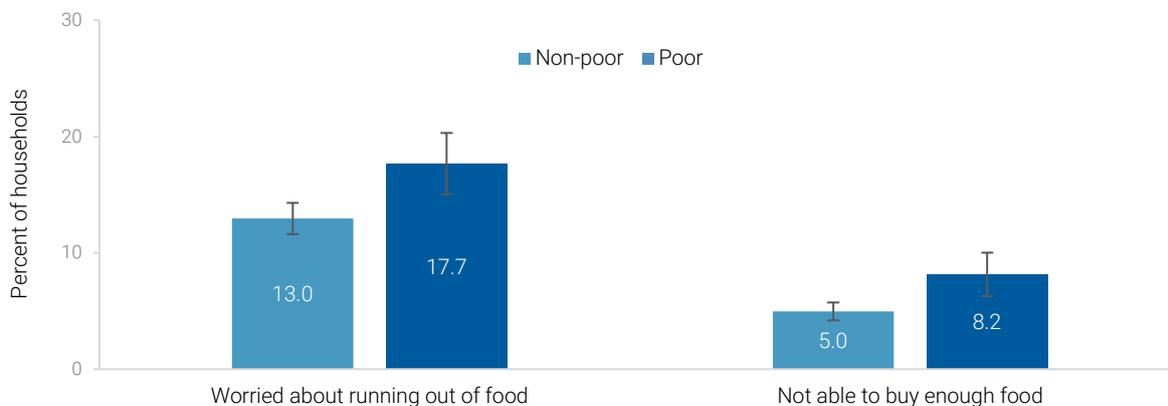

Note: Sample is restricted to households in quarters 2-4 who were administered the COVID-19 module of the 2020 HSES.
Source: HSES 2020

3

## CONCLUSION

Mongolia experienced both remarkable progress and stagnation in poverty reduction between 2010 and 2020. Thanks to robust and inclusive growth in household consumption during the economic boom of the early 2010s, poverty declined by 17 percentage points from 38.8 to 21.6 percent between 2010 and 2014. With the onset of the economic recession in 2016, however, consumption growth declined and became more unequal, favoring wealthier households. The economic slowdown and COVID-19 pandemic resulted in a relatively less impressive decline in poverty in the latter half of the decade from 29.6 percent in 2016 to 27.8 percent in 2020. During this time, Mongolia recorded one of the lowest rates of poverty reduction in the region. While spatial disparities of poverty have narrowed between urban and rural and among regions over the past decade, poverty became more concentrated in urban cities, especially in Ulaanbaatar.

Mongolia has also achieved substantial progress in non-monetary aspects of household welfare between 2010 and 2020. The country outperformed other countries in the region on multiple indicators of human development, and access to basic infrastructure services have steadily improved during this time. Livestock ownership among herders and cashmere production have also increased significantly. However, challenges remain in expanding access of public services to residents living in remote rural areas and ger dwellings and ensuring access to quality education for all Mongolian children including those in the rural areas and poor households.

While household livelihoods were not severely affected in the first year of the pandemic, evidence points to stronger impacts on Mongolian livelihoods in 2021. The 2020 HSES suggests that impacts to employment and household income were not significant for the majority of 2020. In fact, driven by increases in labor income and transfers, average per capita real household income grew by 19 percent between 2018 and 2020. However, quarterly trends show that job losses and disruptions, reductions in hours worked, decreases in real labor income, and food insecurity became more prevalent in the final quarter of 2020. These trends point to deteriorating livelihoods as the country experienced a more severe health crisis accompanied by stringent lockdowns in subsequent years of the pandemic. Future research of the pandemic's impacts in 2021 and beyond will thus be important to assess how the poor and vulnerable were affected at the peak of the pandemic and whether they were able to recover from the economic crisis. Further investigation of the role of social assistance in mitigating the impacts of the pandemic on households and how and when households used this assistance will also be important to draw lessons for future economic crises.

REFERENCES

Adams, Richard Jr. 2004. "Economic Growth, Inequality and Poverty: Estimating the Growth Elasticity of Poverty." World Development, Elsevier, vol. 32(12),1989-2014.

Azevedo, Joao Pedro; Inchauste, Gabriela; Olivieri, Sergio; Saavedra, Jaime; Winkler, Hernan. 2013. "Is labor income responsible for poverty reduction? a decomposition approach". Policy Research working paper; no. WPS 6414. Washington, DC: World Bank.

Angrist, J. and W. Evans. 1998. "Children and their Parents' Labor Supply: Evidence from Exogenous Variation in Family Size," American Economic Review 88(3), 450-477.

Barros, Ricardo Paes, Mirela de Carvalho, Samuel Franco, and Rosane Mendoça. 2006. "Uma Análise das Principais Causas da Queda Recente na Desigualdade de Renda Brasileira." In: Revista Econômica 8 (1): 117–147. Rio de Janeiro: Universidade Federal Fluminense.

Beegle, K., Joachim De Weerdt, J. Friedman, J. Gibson. 2010. "Methods of household consumption measurement through surveys: experimental results from Tanzania." Policy Research Working Paper. No. 5501. Washington, DC: World Bank.

Datt, Gaurav, and Martin Ravallion. 1992. "Growth and Redistribution Components of Changes in Poverty Measures: A Decomposition with Applications to Brazil and India in the 1980s." Journal of Development Economics, 38: 275–296.

Jolliffe, Dean. "Measuring Absolute and Relative Poverty: The Sensitivity of Estimated Household Consumption to Survey Design." Journal of Economic and Social Measurement Volume 27, no. Numbers 1-2 (2001): 1–23.

Foster, Greer and Thorbecke. 1984. "A Class of Decomposable Poverty Measures." Econometrica 52 (3): 761–65.

Inchauste Comboni, Maria Gabriela; João Pedro Azevedo, B. Essama-Nssah, Sergio Olivieri, Trang Van Nguyen, Jaime Saavedra-Chanduvi and Hernan Winkler. 2014. "Understanding changes in poverty". Washington, DC: World Bank Group.

Kolenikov, Stanislav, and Anthony Shorrocks. 2005. "A Decomposition Analysis of Regional Poverty in Russia." Review of Development Economics 9 (1):25–46.

National Statistics Office of Mongolia. 2017. "Poverty Profile 2016".

National Statistics Office of Mongolia and the World Bank. 2018. "Poverty Update 2018". The World Bank.

National Statistics Office of Mongolia and World Bank. 2020. "Results of Mongolia COVID-19 household response phone survey (Rounds 1-5)." The World Bank. https://www.worldbank.org/en/country/mongolia/brief/monitoring-covid-19-impacts-on-households-in-mongolia

Ravallion, Martin, and Monika Huppi. 1991. "Measuring Changes in Poverty: A Methodological Case Study of Indonesia during an Adjustment Period." The World Bank Economic Review 5 (5): 57–82.

Rubin, D. B. 1987. Multiple Imputation for Nonresponse in Surveys. Wiley. New York.

Schafer, J. 1999. "Multiple Imputation: a Primer." Statistical Methods in Medical Research 8: 3-15.

Yoshida, N., R. Munoz, A. Skinner, C. Kyung-eun Lee, M. Brataj, and D. Sharma. 2015. "SWIFT Data Collection Guidelines version 2." The World Bank.

Yoshida, N., X. Chen, S. Takamatsu, K. Yoshimura, S. Malgioglio, S. Shivakumaran, K. Zhang, and D. Aron. 2021. "The Concept and Empirical Evidence of SWIFT Methodology." The World Bank.

World Bank. 2009. "Mongolia: Livestock sector study VOLUME I – SYNTHESIS REPORT", Washington, DC: World Bank.

World Bank. 2016. "Mongolia: Progress in Reducing Poverty and Boosting shared prosperity, 2010-2014?",

Washington, DC: World Bank.

World Bank. 2018a. Poverty and Shared Prosperity 2018 : Piecing Together the Poverty Puzzle. Washington, DC: World Bank.

World Bank. 2018b. Riding the Wave : An East Asian Miracle for the 21st Century. World Bank East Asia and Pacific Regional Report;. Washington, DC: World Bank.

World Bank. 2019. Mongolia Systematic Country Diagnostic. Washington, DC: World Bank.

World Bank. 2020. Poverty and Shared Prosperity 2020 : Reversals of Fortune. Washington, DC: World Bank.

World Bank. 2021. Mongolia Economic Update, February 2021: From Relief to Recovery. World Bank.

World Bank. 2022. Mongolia Economic Update, April 2022: Navigating Stronger Headwinds. World Bank.

ANNEX A: TECHNICAL OVERVIEW OF THE 2020 POVERTY MEASUREMENT

APPLICATION OF IMPUTATION APPROACH FOR THE 2020 POVERTY MEASUREMENT

A survey-to-survey imputation method was used to estimate household welfare and poverty in the 2020 Household Socio-Economic Survey (HSES) to restore comparability of welfares and poverty to previous survey years. This technical annex provides a detailed description of the methodological steps of the imputation model used for the 2020 poverty estimation. The goal of the imputation was to produce national, urban, rural, and aimag-level poverty estimates in 2020 that are comparable to previous years.

MOTIVATION FOR IMPUTATION

The primary basis for imputing poverty in 2020 lies in a number of improvements to the 2020 survey instrument, which were motivated by efforts to adopt international best practices in consumption survey design and reflect changing consumption habits in Mongolia. Specifically, changes were made to reference periods and the number of items included in the consumption modules, which may have rendered the 2020 consumption aggregate incomparable to the 2010 to 2018 aggregates. Several studies suggest that changes in the reference period and the number of commodity items may have nontrivial impacts on the measurement of household consumption[21]. Thus, the imputation exercise may provide insight into how consumption in 2020 compares with those from prior years of the HSES. The changes made to the 2020 HSES survey instrument are described below:

Food - To record consumption of food items, the 2020 HSES adopted a seven-day diary method for urban households, whereas previously, a one-month diary was employed for urban households (no changes were made for rural households which used a one-week recall method). This change was implemented in an effort to adopt international best practices for consumption survey design. Specifically, several studies show that

fatigue is a common issue when using the diary method to collect food consumption data, particularly when the recording period is long[22].

The recording period was thus reduced to seven days in order to prevent potential fatigue which could lead to systematic measurement error in food consumption[23].

Non-food – In the 2020 HSES, the number of non-food items were reduced from 362 to 270, mainly by grouping very specific items into more general categories (for example, separate clothing items for men, women, and children into one clothing item). The degree of detail in the list of commodities consumed may have implications for the overall measurement of consumption. For example, several studies show that more detailed lists of items generally result in higher levels of recorded consumption, creating implications for poverty (Beegle et al.,2010; Jolliffe, 2001).

Food away from home – In light of increasing spending on food eaten out, particularly among urban households, the module documenting food consumption away from home was expanded. Specifically, more detailed questions on how many meals households consumed away from home were included.

An additional motive for imputing poverty in 2020 was due to the nature of the fieldwork of the 2020 HSES, much of which took place during the COVID-19 pandemic. The 2020 HSES was conducted by phone for several months of 2020 when stringent social distancing measures were put in place. In the beginning of 2020 and during the summer, the survey was administered in-person through CAPI (Computer assistance personal interviewing), as it has been since 2014. However, in some relatively large urban areas such as Ulaanbaatar and Orkhon, most data were collected by phone from February to December 2020.

---

[21] See, for example, Beegle, et al., (2010).

[22] Fatigue, recall error, and other factors that lead to measurement error are common concerns when collecting consumption data. See, for example, FAO and World Bank (2018) "Food data collection in household consumption and expenditure surveys" and Beegle, et al., (2010) for limitations surrounding the diary method as well as other methods of collecting food consumption data.

[23] Analysis of food consumption data from the 2018 HSES suggests that fatigue may indeed have been an issue among urban households. Analysis shows that on average, households in the 2018 HSES reported increasingly less items as time progressed, and despite enumerator visits every 10 days, overall reporting did not appreciably improve. However, to the extent that households across the welfare distribution were similarly likely to underreport food consumption, the implications for poverty estimates and welfare rankings may not be problematic. The shorter reporting period in the 2020 HSES showed considerably less evidence of underreporting, both in terms of number of items consumed and calories consumed.

IMPUTATION METHODOLOGY

In order to restore comparability of the 2020 household consumptions and poverty rates to previous survey years, a survey-to-survey imputation approach is employed to estimate poverty in Mongolia in 2020, specifically Survey of Well-being via Instant and Frequent Tracking (SWIFT) Plus[24] (Yoshida et al., 2021). The 2018 HSES is used to develop models to estimate household consumption expenditure from several non-monetary indicators, and these models are then applied to the 2020 HSES data to predict consumption and poverty in 2020. This approach is effective when non-monetary indicators of the 2018 and 2020 HSES are comparable although consumption data are not.

Separate models are created for groups of aimags in order to improve the accuracy of estimates at the aimag level. Specifically, urban and rural areas of aimags are grouped based on characteristics such as geographical location, livelihoods, and monetary and non-monetary welfare. This method was chosen instead of building a separate model for each Aimag due to small sample sizes and wide disparities between urban and rural areas within Aimags. We attempt to reduce bias in estimates by including aimag dummies in the pool of variables. Models are prepared for urban and rural areas separately because the relationship between household consumption and non-monetary indicators is often different between urban and rural areas. This method also allows estimation of poverty rates for urban and rural areas[25]. Several different groupings were considered, and 14 groups were ultimately decided on: 8 urban groups (Ulaanbaatar constituting a single group) and 6 rural groups. Figure A 1 shows the 14 groupings used for the 2020 imputation.

Figure A 1: Urban/Rural-Aimag groupings used for imputation

Urban groups

---

[24] SWIFT Plus is an extension of SWIFT (Yoshida et al., 2015). It aims to capture the effect of economic shocks such as the COVID-19 pandemic on household welfare and poverty.
[25] This method does not, however, allow poverty estimates for aimag centers, soum centers, and the countryside.

Rural groups

Note: In the HSES, Orkhon and Ulaanbaatar are considered fully urban, and thus are not included in any rural groupings.

Box A 1. Examples of SWIFT plus application to estimate household welfare national poverty rates

The SWIFT approach has been widely employed for estimating household welfare and poverty. SWIFT Plus (Yoshida et al., 2021), in particular, has been used to estimate official poverty rates during the COVID-19 pandemic (Box Table 1).

Box Table 1: SWIFT plus application for official poverty estimation and household welfare estimations

Country	Context	Methodology	Status
Democratic Republic of Congo	Official poverty estimation	SWIFT Plus	Ongoing
Botswana	Official poverty estimation	SWIFT Plus	Ongoing
Honduras	Official poverty estimation	SWIFT Plus	Ongoing
Zimbabwe	Official poverty estimation	SWIFT 2.0	Completed
Zimbabwe	COVID-19 High Frequency Phone Survey	SWIFT Plus	Completed
Rwanda	COVID-19 High Frequency Phone Survey	SWIFT Plus	Completed
Somalia	COVID-19 High Frequency Phone Survey	SWIFT Plus	Completed
Malawi	COVID-19 High Frequency Phone Survey	SWIFT Plus	Completed
Ethiopia	COVID-19 High Frequency Phone Survey	SWIFT Plus	Completed
Saint Lucia	COVID-19 High Frequency Phone Survey	SWIFT Plus	Completed
Ethiopia	IFC project target group poverty estimation	SWIFT Plus	Completed
Nigeria	Poverty estimation at $1.9 international poverty line	SWIFT Plus	Completed

Five steps are performed for each of the 14 aimag groups which are explained in greater detail in the subsections that follow:

1. Identification of time-invariant variables
2. Identification of time-variant variables
3. Variable selection and model estimation using 2018 HSES
4. Imputation of household consumption in 2020
5. Validation using 2016 HSES

Step 1: Identification of time-invariant variables

To ensure unbiased estimates, establishing comparability in potential correlates of household consumption across surveys is important. Thus, as a first step, we identify slowly-changing or time-invariant indicators that are available in both the 2018 and 2020 HSES and are comparable across surveys. Five general groups of variables are included as time-invariant variables: aimag dummies, household demographics, household head characteristics, housing conditions, and durables/livestock ownership. These variables are typically very highly correlated with household consumption in low and middle-income countries (see Yoshida et al., 2015). Although these variables cannot change quickly in response to a recent shock or the current economic conditions, they are good predictors of poverty and household consumption in the medium and long term.

Comparability is assessed by checking: i) how the question was asked and fielded; and ii) trends in average values across the 2016, 2018, and 2020 HSES. A few variables listed were excluded for certain aimag groups due to: 1) instability in averages across time; 2) very low (less than 5 percent of population) or very high (greater than 95 percent of population) average values; or 3) multicollinearity.

Step 2: Identification of time-variant variables

In the second step, we identify comparable time-variant correlates of poverty available in both the 2018 and 2020 HSES. Unlike housing conditions, asset ownership, or other correlates of welfare that tend to change at a slower pace (time-invariant variables), consumption variables are more likely to be sensitive to current economic conditions, particularly in times of economic downturn such as during the COVID-19 pandemic. For example, it is unlikely that the education level of the household head or the type of lighting a household uses – both considered time-invariant variables – will change

in the short term as a result of the pandemic. However, it is likely that a household may stop consuming certain items like meat or clothing in the face of a negative income shock. Thus, while time-variant variables may only be moderately correlated with poverty in comparison to time-invariant variables, they are useful to the extent that they pick up short-term changes reflective of fluctuations in household welfare.

In step two, we therefore identify indicators that are more sensitive to current economic conditions – namely, food/non-food consumption and household head employment variables – and are comparable across the 2018 and 2020 surveys. Food variables were only considered for rural households due to changes in the urban food diary between the 2018 and 2020 HSES[26]. Items for which changes in consumption were likely due to COVID-related mobility regulations or safety precautions (e.g., certain leisure activities or consumption of disinfectant and vaccines) rather than welfare changes were excluded, as were variables that were strong proxies for certain assets. As with time-invariant variables, certain time-variant variables were excluded for certain groups due to: 1) instability in averages across time; 2) very low or very high values; or 3) multicollinearity.

Step 3: Variable selection and model estimation using 2018 HSES

Step three involves estimating a model of household consumption in 2018 using the variables identified in steps one and two for each of the 14 aimag groups. The primary model is called a "post-COVID" model, which estimates poverty during the pandemic and includes time-variant (quickly changing) variables, thereby allowing for short-term changes. It also includes only a subset of the time-invariant (slowly-changing) variables – namely, household demographics and household head characteristics – in order to allow the model to be more responsive to the medium- and long-term welfare status of households.

The SWIFT methodology uses a stepwise variable selection approach to build each model. Specifically, it attempts to find the "optimal" set of predictors of log household per capita consumption in 2018 using backwards selection, or by iteratively eliminating predictors from the pool of variables. In order to avoid the issue of overfitting – i.e., to ensure that the model can accurately predict poverty not only in 2018 but over time – a 10-fold cross-validation approach (see Yoshida et al., 2015) is used to determine the significance level (between 5 and 10 percent) that minimizes the absolute-

---

[26] Analysis also shows that urban households were more likely to record a wider variety of food items in the 30-day diary in 2018 compared to the 7-day diary in 2020.

value difference between the actual and projected poverty rates. Using this value as the optimal significance level, a stepwise OLS regression is carried out with the full sample of households in the 2018 HSES (in a given location) to identify predictor variables and estimate the final model.

This model is then used to predict household consumption using a Multiple Imputation (MI) technique developed by Rubin (1987) and Schafer (1999), which helps reduce bias and enable estimation of standard errors. Specifically, for each household, MI introduces into the imputed value of consumption a random component that reflects the uncertainty around the true value. This simulation process is repeated 20 times for all households, resulting in 20 vectors of consumption. The likelihood of being poor is then determined for each household using each of the 20 consumption vectors, and the overall poverty rate is calculated by taking the average across all 20 vectors. This entire process is performed for each aimag group separately, thus resulting in 14 models and estimates of poverty.

Figure A 2. Comparison of 2018 actual and imputed poverty headcount by aimag group

Note: See Figure A 1 for details on which aimags comprise each group.

To assess the performance of the estimated models, predicted values of consumption and poverty in 2018 can be compared with actual values. In general, the simulated estimates are very close to the actual values. Figure A 2 and Table show that the predicted values of per capita consumption and poverty in 2018 are close to the actual values in 2018: Differences between actual and imputed consumption and poverty are statistically insignificant at the 5% level for all aimag groups.

By combining estimates from all groups, national, urban, rural, and aimag-level estimates of consumption and poverty can be calculated. Figure A 3 and Table B2 show that the models perform well in predicting poverty and consumption in 2018 at all geographic levels[27]. For all areas, the imputed poverty rate lies within the 95% confidence interval of the actual values. At the national, urban, and rural levels, the predicted poverty rate is 0.1 to 0.2 percentage points lower than the actual rate (Figure A 3). Percentage point differences in poverty are larger for some aimags such as Umnugovi and Darkhan-Uul, but no differences are statistically significant at the 5% level[28].

---

[27] The exception is Bulgan, for which predicted consumption is outside of the 95% confidence interval of actual consumption. The imputed poverty rate, however, is not statistically different from the actual rate.
[28] Note that this significant test is stricter than it should be because it does not consider the standard errors of poverty rates estimated by MI.

Figure A 3. Comparison of 2018 actual and imputed poverty headcount by national, urban, rural, and aimags
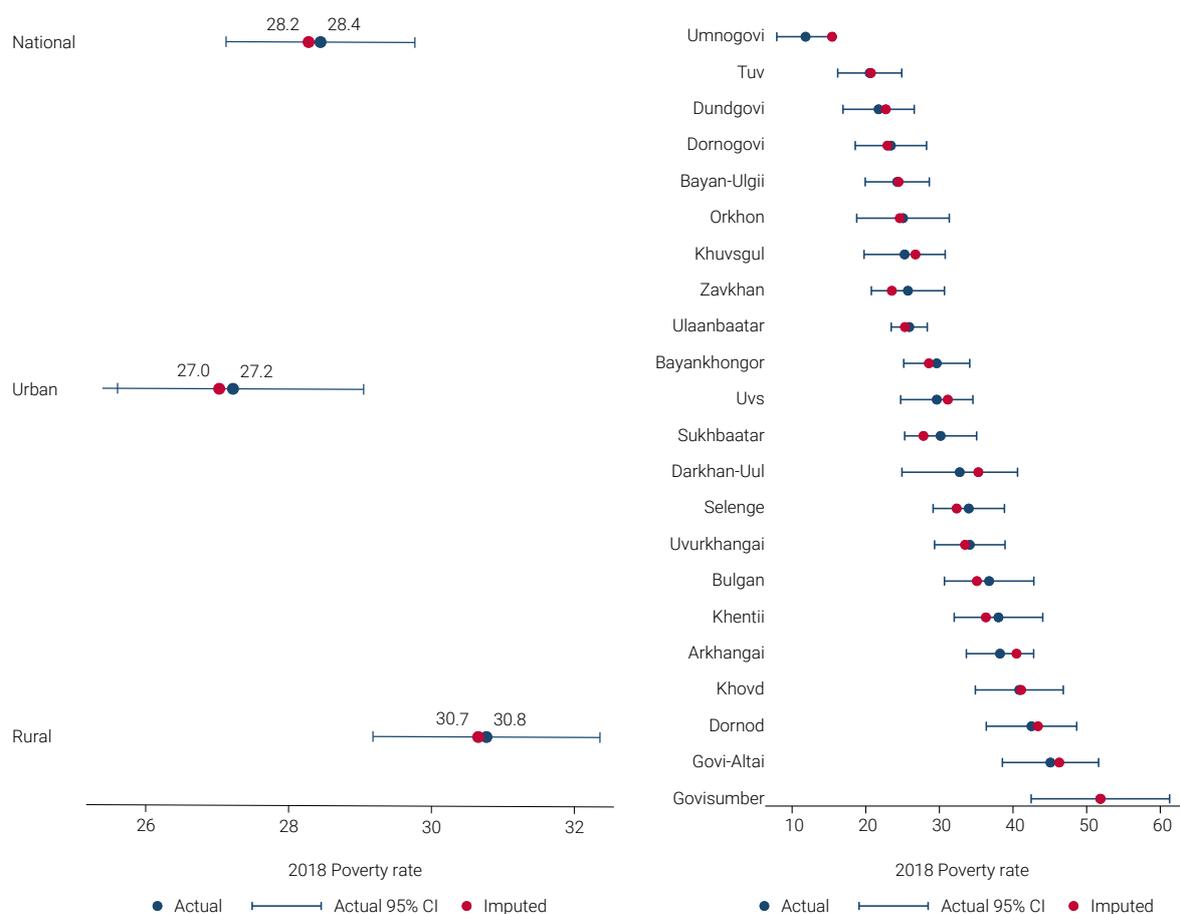
Step 4: Imputation of household consumption in 2020

In step four, the models estimated in the previous step are applied to the 2020 data in order to estimate consumption and poverty using the same MI technique mentioned above. This process results in 20 vectors of consumption and poverty in 2020, over which the average is taken to calculate overall poverty. As in the previous step, national, urban, rural, and aimag estimates can then be estimated by appending aimag groups and taking the average over groups.

Table A 1 provides imputed estimates of consumption and poverty in 2020. The projected poverty rate in 2020 is 27.8 percent, a 0.6 percentage point decline in poverty compared to 2018. Urban and rural poverty also show slight declines between 2018 and 2020, but changes in national, urban, and rural poverty are all not statistically significant at the 5% level. While these estimates indicate no significant changes in poverty between 2018 and 2020, "pre-COVID" models that estimate what poverty may have been in 2020 in the absence of the COVID-19 pandemic suggest that the pandemic may have led to an increase in poverty (Box A 2). Pre-COVID estimates indicate that had the pandemic not occurred, poverty in 2020 would have been 3.5 percentage points lower than it was.

Table A 1. Comparison of 2018 actual and 2020 imputed consumption and poverty headcount by national, urban, rural, and aimags

	Per capita monthly consumption (thousands, 2020 MNT)					Poverty headcount (percent)				
	2018 actual	SE	2020 imputed	SE	2020-2018 difference	2018 actual	SE	2020 imputed	SE	2020-2018 difference
National	310.4	3.8	311.1	3.3	0.7	28.4	0.7	27.8	0.7	-0.6
Urban	326.5	5.6	328.0	4.6	1.5	27.2	0.9	26.5	0.9	-0.7
Rural	278.9	3.0	276.6	3.3	-2.2	30.8	0.8	30.5	1.1	-0.3
Ulaanbaatar	339.8	7.8	339.1	6.4	-0.7	25.9	1.2	25.4	1.2	-0.5
Dornod	241.5	10.3	270.0	12.3	28.4**	42.5	3.1	37.1	3.8	-5.5
Sukhbaatar	321.5	11.0	311.3	11.7	-10.2	30.2	2.5	24.3	3.2	-5.9**
Khentii	274.3	12.6	270.3	11.5	-4.0	38.0	3.1	36.6	3.6	-1.4
Tuv	357.5	10.9	343.8	13.8	-13.7	20.5	2.2	19.3	2.7	-1.2
Govisumber	202.0	8.1	239.6	11.1	37.6**	51.9	4.8	39.8	5.1	-12.0**
Selenge	266.4	8.5	274.0	13.9	7.7	34.0	2.5	34.0	4.1	-0.0
Dornogovi	315.4	9.5	329.2	11.8	13.8	23.4	2.5	19.8	2.7	-3.6
Darkhan-Uul	276.8	14.3	301.1	15.3	24.3	32.8	4.0	26.7	4.0	-6.0
Umnugovi	344.8	10.7	329.9	11.5	-14.9	11.8	2.0	16.4	2.9	4.5**
Dundgovi	336.0	10.6	285.0	11.4	-50.9**	21.7	2.5	30.7	3.7	8.9**
Orkhon	331.9	16.5	332.6	13.6	0.7	25.1	3.2	23.7	3.0	-1.4
Uvurkhangai	262.7	7.1	246.2	7.6	-16.5**	34.1	2.4	36.2	3.1	2.1
Bulgan	234.3	7.7	247.0	9.2	12.7	36.8	3.1	38.7	4.1	2.0
Bayankhongor	284.4	11.3	253.9	10.3	-30.5**	29.6	2.3	35.7	3.7	6.1**
Arkhangai	240.7	7.1	261.1	9.5	20.4**	38.2	2.3	32.7	3.1	-5.6**
Khuvsgul	295.5	10.3	300.0	11.4	4.5	25.3	2.8	26.0	3.1	0.7
Zavkhan	285.6	7.8	270.4	8.2	-15.2	25.7	2.5	29.2	3.2	3.4
Govi-Altai	222.4	8.8	227.4	7.7	5.0	45.1	3.3	42.4	3.5	-2.7
Bayan-Ulgii	315.0	10.2	321.1	12.6	6.1	24.3	2.2	22.8	2.9	-1.5
Khovd	238.1	7.2	244.7	8.9	6.6	40.9	3.0	39.7	3.3	-1.1
Uvs	265.0	7.0	273.5	8.2	8.4	29.6	2.5	30.9	3.1	1.2

Note: ** denotes significance at the 5% level.

Box A 2. Estimating poverty in 2020 in the absence of the pandemic using pre-COVID models

While it is impossible to observe what the poverty rate would have been in the absence of the COVID-19 pandemic, it is possible to simulate this scenario using what is called a "pre-COVID" model (Yoshida et al., 2021). The method of estimating poverty is identical to the post-COVID model, except the pool of variables considered is limited to time-invariant variables. The steps are as follows:

1. Identification of time-invariant variables
2. Variable selection and model estimation using 2018 HSES
3. Imputation of household consumption in 2020
4. Validation using 2016 HSES

Unlike consumption or employment variables, household demographics, dwelling characteristics, and asset ownership – which are highly correlated with household welfare – are unlikely to change quickly, even in the face of an economic shock (Yoshida et al., 2021). For example, households are unlikely to change the type of house they live in or to sell scarce assets due to a sudden shock. Indeed, data from the HRPS show that less than 3 percent of households sold assets in order to cope with the negative effects of the pandemic. Therefore, using only time-invariant or "slowly-changing" variables can provide counterfactual estimates of consumption and poverty in 2020.

Box Table 2. Comparison of 2018 actual, imputed and 2020 imputed poverty headcount by national, urban, rural, and location

	2018 actual	SE	2018 imputed	SE	2020 imputed	SE	2018 imputed - actual difference	2020 - 2018 actual difference
National	28.4	0.7	28.5	0.9	24.3	0.7	0.1	-4.1
Urban	27.2	0.9	27.4	1.1	23.5	0.9	0.2	-3.7
Rural	30.8	0.8	30.5	1.1	25.9	0.9	-0.3	-4.8
Ulaanbaatar	25.9	1.2	26.0	1.4	21.4	1.2	0.1	-4.5
Aimag center	30.1	1.2	30.6	1.3	28.7	1.2	0.5	-1.3
Soum center	28.9	1.0	29.5	1.2	23.7	1.2	0.6	-5.2
Countryside	32.9	1.3	31.7	1.7	28.3	1.5	-1.3	-4.6

In order to estimate this counterfactual, pre-COVID models were estimated for each of four locations: Ulaanbaatar, aimag centers, soum centers, and the countryside.[1] As shown in Box Table 2, the pre-COVID location models that are trained using 2018 data perform well in predicting poverty in 2018: Differences between the actual and imputed 2018 poverty rates are not statistically significant. Followingly, the 2018 pre-COVID and post-COVID poverty rates are also very similar.

On the other hand, differences between the post-COVID and pre-COVID poverty rates are larger in magnitude and statistically significant. Results suggest that in the absence of the pandemic, poverty would have been 3.5 percentage points lower in 2020. This gap in estimates indicates that household consumption and employment were tangibly affected by the pandemic and including time-variant indicators allowed the post-COVID model to pick up the pandemic's adverse impacts on household welfare and poverty.

[1] Sensitivity analysis indicates that both the location and aimag group models produce very similar national, urban, and rural predicted poverty rates.

Imputed values of poverty in 2020 suggest that for more than half of aimags, poverty declined between 2018 and 2020 (Table A 1). However, decreases in poverty were statistically significant at the 5% level for only a few aimags, namely Govisumber, Sukhbaatar, and Arkhangai. On the other hand, results indicate that Umnugovi, Dundgovi, and Bayankhongor experienced a statistically significant increase in poverty.

Step 5: Validation

In the fifth step, we check the stability of the 2018 model. Specifically, to assess whether the 2018 model can produce unbiased estimates of poverty in other years, we apply the aimag group specifications estimated using 2018 data to the 2016 HSES. This exercise allows us to compare the predicted poverty rate to the actual rate in a previous year, thereby providing insight into how accurate the 2018 model might be in predicting poverty in 2020. The year 2016, in particular, is relevant, as Mongolia experienced a severe macroeconomic recession and a severe weather shock that affected many households across the country.

Figure A 4 shows that the 2018 post-COVID aimag group models perform well on the 2016 data. Differences between the imputed and actual poverty rates by aimag groups in 2016 are generally small and statistically insignificant. The exception is urban group 6 and rural group 3, for which the imputed 2016 poverty rate lies just outside the 95% confidence interval of the actual 2016 rate. All differences, however, are insignificant at the 10% level.

Figure A 4 Validation exercise: Comparison of 2016 actual and imputed poverty headcount by aimag group
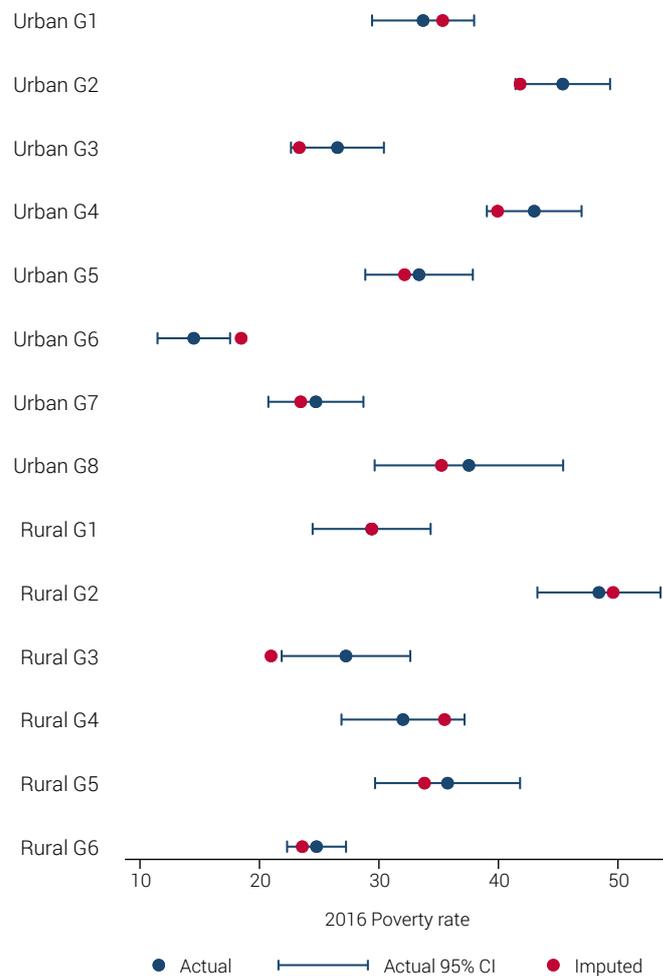
National, urban, and rural predicted values of poverty in 2016 are also close to the actual values and estimated differences are statistically insignificant at the 5% level (Figure A 5). Aimag-level estimates also demonstrate that the 2018 aimag group models generally perform well for predicting aimag-level poverty. All imputed poverty rates lie within the 95% confidence interval of the actual rates with the exception of Zavkhan and Uvs. Both experienced substantial changes in poverty between 2016 and 2018: Zavkhan experienced the largest decline (21.8 percentage points) in poverty from 2016 to 2018, while Uvs experienced the largest increase (5.5 percentage points). It is thus likely that significant changes affecting household welfare took place between the two years, rendering the 2018 model unfit for predicting poverty in 2016 for these two aimags. However, to the extent that trends were stable between 2018 and 2020, the 2018 model may still predict poverty accurately for Zavkhan and Uvs in 2020.

Figure A 5. Validation exercise: Comparison of 2016 actual and imputed poverty headcount by national, urban, rural, and aimags
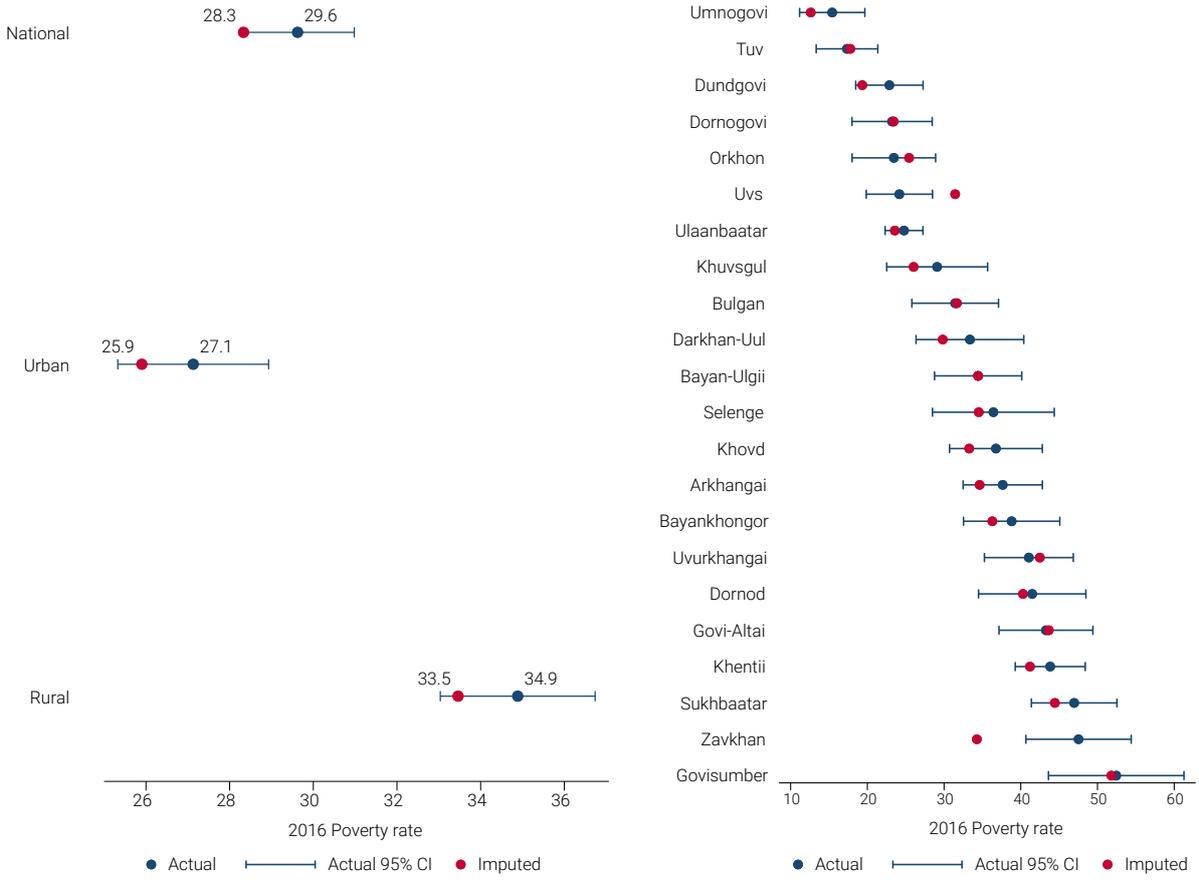
ESTIMATING INEQUALITY

A remaining question is whether the aimag group models can accurately simulate the full distribution of welfare in 2020, thereby allowing for estimations of inequality. Kernel density plots can provide a visual comparison of the distribution of actual log consumption and the 20 imputed vectors: Figure A 6 A shows that the distributions are generally very similar. The distribution of imputed vectors of consumption in 2020 are also visually very similar (Figure A 6 B).

Figure A 6. Distributions in imputed log per capita consumption

A. 2018 actual and imputed log per capita monthly consumption
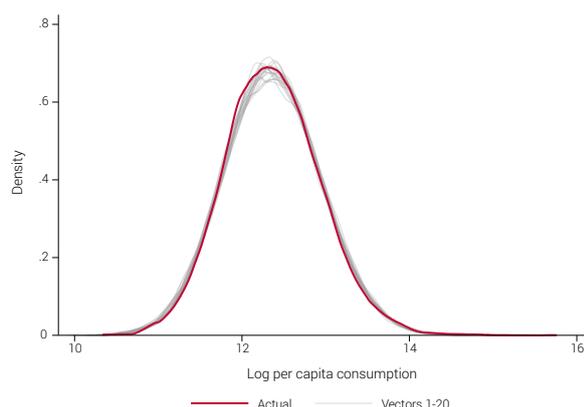
B. 2020 imputed log per capita monthly consumption
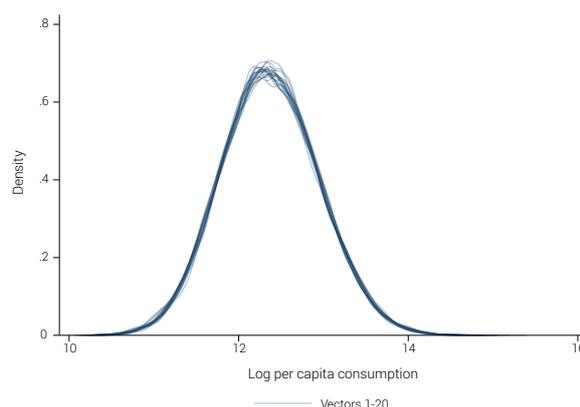
While distributions between imputed and actual consumption in 2018 may look similar, measures of inequality such as the Gini coefficient, can be sensitive to values at the top of the distribution. Gini coefficients calculated from the imputed data are thus compared with the actual values in Table A 2. Results indicate that the aimag group model is very precise in estimating the distribution of consumption at the national, urban, and rural level in both 2016 and 2018: Gini coefficients are almost identical across areas and years, with the predicted Gini in rural areas being slightly lower than the actual. In 2020, the imputations suggest that inequality remained stable at the national level and in urban areasbut may have decreased very slightly in the rural areas.

Table A 2. Actual and imputed Gini coefficients

	2016		2018		2020
	Actual	Imputed	Actual	Imputed	Imputed
National	0.323	0.323	0.323	0.323	0.323
Urban	0.331	0.331	0.331	0.334	0.334
Rural	0.296	0.290	0.296	0.290	0.286

ANNEX B

Table B 1. Comparison of 2018 actual and imputed per capita monthly consumption and poverty headcount by aimag group

	Per capita monthly consumption (thousands, 2018 MNT)					Poverty headcount (percent)				
	Actual	SE	Imputed	SE	Imputed-Actual difference	Actual	SE	Imputed	SE	Imputed-Actual difference
Urban G1	306.4	7.1	303.3	5.3	-3.1	25.9	1.2	25.3	1.3	-0.6
Urban G2	235.9	10.0	235.0	10.5	-0.9	37.3	3.1	39.1	3.1	1.8
Urban G3	275.4	9.3	272.7	9.5	-2.8	28.6	2.3	28.7	2.7	0.1
Urban G4	294.3	10.1	294.3	10.2	0.0	19.6	1.9	21.8	2.5	2.2
Urban G5	224.5	10.7	221.9	10.9	-2.6	46.6	3.0	44.4	3.3	-2.2
Urban G6	262.7	8.1	263.7	10.5	1.1	30.4	2.5	30.9	2.9	0.5
Urban G7	223.4	12.1	223.1	11.0	-0.3	40.8	4.0	39.4	3.4	-1.5
Urban G8	304.8	10.6	304.0	11.2	-0.8	22.3	2.3	22.8	2.3	0.5
Rural G1	279.7	7.6	280.1	8.8	0.4	20.0	2.2	21.1	2.4	1.1
Rural G2	226.4	6.2	226.4	6.2	0.0	35.5	2.1	36.1	2.7	0.6
Rural G3	260.7	7.6	259.6	8.1	-1.1	33.9	2.1	32.7	2.4	-1.2
Rural G4	286.7	6.7	285.4	7.9	-1.4	24.9	1.7	25.0	2.1	0.0
Rural G5	229.6	3.7	228.0	4.2	-1.6	34.4	1.7	33.1	2.2	-1.3
Rural G6	244.9	6.6	243.4	6.6	-1.5	30.8	2.0	31.4	2.6	0.6

Note: ** denotes significance at the 5% level. See Figure A 1 for details on which aimags are in each urban or rural group.

Table B 2. Comparison of 2018 actual and imputed per capita monthly consumption and poverty headcount by national, urban, rural, and aimag

	Per capita monthly consumption (thousands, 2018 MNT)					Poverty headcount (percent)				
	Actual	SE	Imputed	SE	Imputed-Actual difference	Actual	SE	Imputed	SE	Imputed-Actual difference
National	279.9	3.4	278.0	2.8	-1.9	28.4	0.7	28.2	0.7	-0.2
Urban	294.4	5.0	292.0	3.9	-2.4	27.2	0.9	27.0	0.9	-0.2
Rural	251.4	2.7	250.5	3.1	-1.0	30.8	0.8	30.7	1.1	-0.1
Ulaanbaatar	306.4	7.1	303.3	5.3	-3.1	25.9	1.2	25.3	1.3	-0.6
Dornod	217.8	9.3	215.4	9.3	-2.4	42.5	3.1	43.4	3.4	0.9
Sukhbaatar	289.9	9.9	287.4	12.2	-2.5	30.2	2.5	27.8	3.4	-2.3
Khentii	247.3	11.3	243.9	10.0	-3.4	38.0	3.1	36.3	3.0	-1.7
Tuv	322.3	9.8	310.5	11.6	-11.8	20.5	2.2	20.7	2.8	0.2
Govisumber	182.1	7.3	187.0	10.3	4.8	51.9	4.8	51.9	5.7	0.0
Selenge	240.2	7.6	250.0	10.7	9.8	34.0	2.5	32.3	3.5	-1.6
Dornogovi	284.4	8.6	287.1	11.5	2.7	23.4	2.5	22.9	3.0	-0.5
Darkhan-Uul	249.6	12.9	248.2	13.2	-1.4	32.8	4.0	35.3	4.2	2.5
Umnugovi	310.9	9.7	312.8	11.0	1.9	11.8	2.0	15.4	2.6	3.6
Dundgovi	302.9	9.5	297.1	10.8	-5.8	21.7	2.5	22.7	3.0	1.0
Orkhon	299.3	14.9	295.0	14.0	-4.2	25.1	3.2	24.6	2.9	-0.4
Uvurkhangai	236.9	6.4	234.9	7.0	-1.9	34.1	2.4	33.5	2.6	-0.6
Bulgan	211.3	6.9	229.8	7.7	18.6**	36.8	3.1	35.1	3.7	-1.7
Bayankhongor	256.4	10.2	250.3	9.4	-6.2	29.6	2.3	28.6	3.5	-1.1
Arkhangai	217.0	6.4	216.3	7.8	-0.8	38.2	2.3	40.5	3.5	2.2
Khuvsgul	266.4	9.3	263.6	9.2	-2.9	25.3	2.8	26.7	3.1	1.5
Zavkhan	257.5	7.0	262.6	7.3	5.1	25.7	2.5	23.5	2.7	-2.2
Govi-Altai	200.5	8.0	196.1	6.4	-4.4	45.1	3.3	46.3	3.1	1.2
Bayan-Ulgii	284.0	9.2	276.8	9.3	-7.3	24.3	2.2	24.5	2.9	0.2
Khovd	214.7	6.5	216.0	7.7	1.3	40.9	3.0	41.1	3.3	0.2
Uvs	239.0	6.3	246.6	7.2	7.7	29.6	2.5	31.1	2.9	1.5

Note: ** denotes significance at the 5% level.