Transcription – Toward a Demography of Crisis and Resilience
Online (Zoom), Tuesday 3 March 2026

This transcript, based on the recorded webinar, has been lightly edited for clarity. The presenters PowerPoints and the full video of the webinar can be consulted here for more details.

Mary Ellen Zuppan, IUSSP executive director: Welcome to this IUSSP webinar series. Today's webinar Toward a Demography of Crisis and Resilience, is based on a plenary that was organized by the IUSSP Council for the International Population Conference in Brisbane, Australia, last July. It was well received and included a lively discussion, and we thought it worthwhile to repeat it as a webinar for all those who missed the Brisbane Conference.

Before introducing the speakers, I want to remind everybody to address your questions to the speakers via the Q&A function that's in the bottom of your screen. The questions will be read to the speakers after the roundtable presentations by one of our moderators, Nico van Nimwegen.

I now turn this over to the moderator and one of the organizers, Jalal Abbasi-Shavazi. Jalal served on two IUSSP Councils (2018 to 2021 and 2022 to 2025). He was an active member of the IUSSP Panel on the Demography of Refugees and Forced Migration. In 2011, he received the United Nations Population Award. Formerly Professor of Demography at the University of Tehran, he is currently an Academy Fellow at the Vienna Institute of Demography and guest researcher at the International Institute for Applied Systems Analysis (IIASA).

Jalal Abbasi-Shavazi: Thank you. Good afternoon. Good morning, and good evening to colleagues joining us from different parts of the world.

Thank you, Mary Ellen, for that introduction and for reviving the IUSSP webinar series.

Before we begin, let me acknowledge that we meet at a time when violence and conflict are affecting colleagues and communities in several parts of the world. Our thoughts are with all those experiencing insecurity and loss. In many ways, this makes our discussion today both timely and necessary.

It is a great pleasure for me to moderate this session and to welcome you all to today's webinar. We have an excellent program ahead. The title of today's discussion, Toward the Demography of Crisis and Resilience signals movement. It suggests that demography must engage more explicitly with crises as structural conditions of population change, rather than treating them as temporary disruptions.

Crises have long shaped demographic history. What distinguishes our present moment is not their existence, but their simultaneity, interconnection, and persistence. Climate

change, armed conflict, pandemics, and economic and political instability increasingly form the structural environment within which fertility, mortality, migration, and family processes unfold.

This raises a fundamental question. Are our existing conceptual tools and data systems sufficiently equipped for a world in which instability is recurrent rather than exceptional?

Today's panel brings together leading scholars across these crisis domains. Our goal is not to examine each shock in isolation, but to explore how a more integrated and crisis-aware approach to population studies may strengthen demographic analyses across contexts. We will begin with short presentations from each panelist, followed by a moderated discussion among us, and then open the floor to your questions, which will be moderated by our distinguished colleague, Nico van Nimwegen.

Our first speaker is Roman Hoffman, research group leader at IIASA and the Wittgenstein Center in Vienna. His work examines the interface between environmental stress and population dynamics. Roman, we look forward to your insights.

The floor is yours.

Roman Hoffman: Thank you very much, Jalal, for the introduction, and also to all organizers, for this timely session. In my brief talk, I would like to speak about one of the most pressing challenges of our times, which is the climate crisis and its implications for populations. A key message that I would like to highlight in my talk is that social issues and structural inequality is very much shape the extent of the climate crisis, and that the climate crisis ultimately is very much a social crisis, and that acknowledging and addressing these social underpinnings of the crisis is crucial to building resilience in an inclusive, just, and also sustainable way.

Already today, climate change is affecting large parts of the global population in the form of increasing temperatures, rising sea levels, and increasing frequency and intensity of extreme weather events. In a recent report, the World Bank has estimated that 1.8 billion people or one-fifth of the current world's population are currently at a heightened risk of different climatic hazards.

As the map shows, these hazards are truly global in scope, affecting all world regions. However, there are major differences in the way populations are affected. It is not just ultimately about the occurrence of events and hazards, but about populations, exposure and vulnerability to these hazardous events.

For vulnerable populations, climatic hazards can have major negative and partly existential consequences threatening the livelihoods, health, cultural heritage, and overall well-being. This is also visible in numbers. In the period from 2015 to 2024 alone, environmental disasters have caused damages of more than 2 trillion US dollars worldwide. They have triggered nearly 265 million forced displacements and have killed

over 230,000 people, according to the MDOTS disaster database and the Internal Displacement Monitoring Center. These drastic numbers highlight the severity and sheer magnitude of the challenges that lie ahead of us as the climate crisis unfolds.

What ultimately makes climate change a global crisis is the increasing unpredictability and also uncontrollability of its various impacts. In recent years, we have seen an acceleration and intensification of climatic events across the world. Some that have not seen any analogues in our recorded human history. And it is ultimately often this higher frequency of events, and the sequence of multiple events in a short period of time that puts particular pressure on affected populations.

But what is important is that it is not the environment alone that drives the crisis that we observe today. And this is a point that I would like to very much highlight in my talk. Instead, the climate crisis is deeply rooted in existing social issues and challenges related to inequality and deprivation that determine who is exposed to a hazard and vulnerable to its impacts.

In this regard, the term climate crisis may be misleading, as it suggests that the root causes of the crisis lie in the changing climatic conditions alone. Whereas they are also driven by underlying socioeconomic conditions and structural injustices. These make often those most vulnerable to the crisis that have least contributed to it, including marginalized communities and, of course, future generations.

As demographers and population scientists, we have an important role to play in informing policy and building resilience through rigorous data and research on the topic, but also by highlighting these nuanced social underpinnings that make climate change and its impacts, ultimately, the crisis that we face today. Our research is so important because human populations and processes of demographic change are truly at the center for understanding climate change.

I would like to illustrate this with a figure from an article that we published in 2024 in a special issue of the Vienna Yearbook of Population Research on population and climate change. On one side, populations are, as we all know, the main driver of anthropogenic climate change through our emissions depicted here on the left-hand side of the graph. Of course, not all populations and population groups have equally contributed to the climate crisis.

And in this context, it is important to highlight the major differences in responsibilities between countries and wealth levels. In a recent attribution study that we published last year in Nature Climate Change, colleagues and I estimated that two thirds of global warming are attributable only to the wealthiest 10% of the global population, with most of them living in countries of the Global North. Also, when it comes to the impacts of climate change, which are depicted here on the right-hand side of the figure in orange (see PowerPoint presentation), we see major inequalities that are driven by differential

levels of vulnerability and exposure. These differ both between as well in countries and are shaped by demographic characteristics, such as age, sex, health condition, education, and social status of a household.

The impacts of climate change are not only shaped by population characteristics. But also affects demographic outcomes and processes, including through its effects on mortality and morbidity, fertility and reproductive health and migration.

Our research at IIASA shows that these can have lasting consequences. We use a lot of forecasting and projection methods that can be a strong tool to understand future implications of climate change for populations. And I've brought here an example from work that we have done in collaboration with UNICEF two years ago, where we have projected the future children will face and challenges they may encounter in their lives. We projected that up to 2050, children's exposure to climate hazards will rise multifold under different climate scenarios. This highlights the urgency of the challenge that we are facing today and represents a strong call for action.

Much of my work in recent years has focused on the role of climate change in shaping migration, and more broadly, human mobility and immobility, and this topic is also one that is very well suited for illustrating the role that social factors play in shaping population processes and outcomes. In the context of climate change -- And here I would just like to highlight that it is often not simplistic relationships that evolve. When we focus on the impact of climate change on populations, some are deeply shaped by social conditions that determine what a person can do to respond to climatic stress.

Finally, on my last slide, and considering the broader theme of this session, I want to highlight the role of additional risks and interconnected crisis events that can compound the effects of climatic hazards. Of course, where climate change is a major force affecting population dynamics, it rarely acts alone. Other global and local crises, such as conflict, economic shocks or pandemics can interact with climatic hazards, creating compound risks that amplify the impact.

And some of our ongoing research at IIASA focuses precisely on these intersecting risks. For example, in a recent study, we analyzed the interplay between drought risks as a climatic risk, and the occurrence of violent conflicts, and the joint influence on migration decisions.

You can see some results in the map on the screen, where you see the areas of the world highlighted in purple where both conflict and drought risks overlapped in the past decade. We found in our research that it is really this co-occurrence of stressors as opposed to the occurrence of events that strongly influence populations and also migration globally. Ultimately, it is this multiplicity and interconnection of different crises like those that we are discussing today that pose the greatest challenges for populations and their resilience. It is important for us researchers to consider these

interconnections and the deep-rooted injustices inherent to the crisis to better respond to them and address these major challenges that our world is facing today. And with this, I would like to stop, and I thank you very much for the attention.

Jalal: Thank you Roman. If climate change challenges populations gradually, conflict often confronts them abruptly and violently. Our next speaker is Orsola Torrisi, Assistant Professor at McGill University in Canada. Her research investigates the demographic consequences of armed conflict including mortality, lifespan inequality, mobility, and intergenerational effects.

Orsola Torrisi: Thank you Jalal. First, for making this happen, as well as the International Union for the Scientific Study of Population. And thanks to all of you for being here.

As we are currently witnessing, in real time, the large-scale killing of civilians from Gaza to Ukraine, Iran, Myanmar, Sudan, and Yemen, alongside broader escalation of tensions and violence in many parts of the world, including the Americas, enabled by the support of the Trump administration and its allies, talking about war and violence today feels anything but abstract. And at the same time, doing it in a webinar in such conditions feels a bit surreal and perhaps a bit inadequate, but here we are.

I would like to take this opportunity to invite us to reflect on what we as demographers have done so far in understanding conflict and crisis demography. War and conflict-related atrocities are really outcomes that demographers cannot ignore; they are not peripheral to our field, and they should be integrated into a broader thinking about crisis. This is really a moment in which more work on the demographic consequences of conflict and war, particularly the long-term and indirect consequences, is very much needed.

Let me just start by stating the obvious, that war kills people, it harms them directly. Just look at this photo of Khan Yunus, a city in southern Gaza, where Israeli forces told people to go to escape bombardments in the north of the Strip. We don't need to be demographers to know that war kills and hurts people. But also, war and violence harm individuals and communities in less direct and visible ways. Physically, psychologically, economically, and not just in the moment, but across time and generations.

When it comes to our discipline, we demographers, I think, have done relatively well at studying and documenting the immediate and direct consequences of war and violence that impacts on mortality, health, and mostly migration. For example, when it comes to mortality, we've done generally excellent work at quantifying impacts on life expectancy. Here is just an example of one of the most recent attempts, excellent attempts made by demographers and colleagues, who, through very simple, straightforward demographic analysis, have documented the monstrous reduction in life expectancy at birth. A loss of more than 30 years in Gaza within the first year of the Israel's brutal invasion of the Strip. These are the kinds of statistics that make the headlines and represent a clear example

of how demographers can draw global attention to the health impacts of violence, provide evidence for international prosecutions, and inform efforts to achieve transitional justice.

But demographers have also gone beyond these more well-known measures of health and mortality and shown that living under chronic violence makes individual's lifespans more unpredictable and more unequal in their duration. Work that we have done with colleagues in various institutions, show that those living in violent contexts not only experience more death, but also shorter lives, but also it widens inequalities in lifespan survival. And therefore, this means, essentially, that violence is the main driver of one of the most fundamental inequalities that exists, life span inequality. E very other type of inequality that we as social demographers are interested in is deeply conditional on being alive.

Another important contribution of demographers that do research on violence and conflict is being creative with the use of new data sources. We have seen increased use of digital trace data, social media data, and mobile phone data to monitor, for example, population movements in near time, and to use this new data to inform humanitarian operations on the ground. For example, combining social media advertising data with pre-conflict population data has allowed population scientists to track subnational population changes during the Russian invasion of Ukraine, and to support operations on the ground. And I think that when used carefully and ethically, this data can provide timely and actionable insights in rapidly changing contexts.

At the same time, much more remains to be done when it comes to demographic science in armed conflict settings, because we have been generally less attentive, particularly to the indirect and long-term consequences of violence. In part, this is because these outcomes are generally harder to measure, but also because they appear less visible at the start of an episode of violence.

For example, we know still relatively little about how war and violence influences fertility trajectories, desires and preferences, and reproductive health more broadly, including access to and demand for services.

We know little about how violence influences family structures over time, including implication of kin losses and bereavement for population well-being and their contribution to the collective memory of the violence, which in turn can shape and influence social cohesion, identity, and how later generations experience and respond to trauma.

We know little about the interplay of exposure to war stressors, particularly in early life and the rapid aging process that is occurring in formerly conflict-affected countries.

And we still struggle to capture dynamics of mobility, but also the dynamics of immobility, and understand who can leave, who is forced to stay, and with what

consequences. And, as a result, this means that we know much less about particularly vulnerable groups, including women and girls, older populations, and future generations.

A couple of points I would like to emphasize, particularly in this seminar. It is important to understand that conflicts are a particular type of crisis, but that armed violence does not occur in isolation. It intersects with other pressures, including climate change, epidemics, economic shocks, and structural inequalities, and that it is extremely important that we start thinking about these as systemic changes, and that we think not just about the immediate effect but also the long-term and indirect implications of exposure to multiple uncertainties and crisis, or something that we might call "polycrisis".

Second, I want to highlight that ethics and responsible research practices must be our priority, especially when we do research in violent contexts. We need to be particularly attentive to safety, data protection, and the dignity of our participants.

It is also important that we build stronger institutional support for researchers because this work is often emotionally demanding and at times unsafe.

And finally, I want to highlight the need for greater transparency about data, about the limitation and the processes of conducting demographic research in armed conflict settings.

A large share of the world population today lives in areas that are affected by conflict, and many more will experience its consequences indirectly. And if demography really wants to remain relevant, we need to do better to document all of these realities, and especially their long-term consequences and indirect effects.

Violence and war are not marginal topics, and they need to be taken into account with all the other crises that populations are experiencing. All of these crises are central to how populations live, change, and survive.

Thank you very much.

Jalal Abbasi-Shavazi: Thank you, Orsola, for reminding us of our responsibilities in taking into account the impacts that violence and conflicts have on people's lives. While armed conflict reshapes demographic realities through violence and displacement, health crises reveal how vulnerability operates through biological and social pathways. Natalie Nitsches is Associate Professor of Demography at the Australian National University in Canberra. Her work explores how pandemics reshape fertility, caregiving, and health behavior. Natalie, the floor is yours.

Natalie Nitsche: Thank you very much, Jalal. Yes. The first two speakers have addressed topics that are incredibly relevant today as we meet here on this day talking about climate change and wars and moving on to pandemics and health crisis, I guess many of

us in this webinar may have had almost enough of the COVID-19 pandemic , and would perhaps rather prefer to move on to new topics. However, the COVID-19 pandemic not only had a profound impact on societies and disrupted demographic processes. It also reminded us that pandemics too and health crises as well are inevitable parts of the human experience. And although it will hopefully take a while, another global pandemic is very likely to come.

So, in preparation for this webinar, I was thinking from a more personal stance, what I personally have learned from my scientific and editorial work on fertility and the pandemic that could be interesting to share today, also in light of potential future pandemics that are going to come. I have two key insights that I would like to share with you.

The first is to expect, honor, and carefully assess heterogeneity in the impact of pandemics or health crises on societies and demographic processes. At the beginning of the COVID-19 pandemic, many of us, maybe especially the media, asked rather simple questions. For instance, how many years of life would be lost from the virus, or if first lockdowns would be followed by a baby boom or a baby bust. Five years later, we learned that there are no simple answers at all. And quite to the contrary, the pandemic impact on fertility, but also on health or mortality, was widely heterogeneous.

The same will likely be true for coming pandemics. Their transmission routes, affected groups, and demographic impacts will likely be different from those of the COVID-19 pandemic, and it will be crucial to look out for heterogeneous impacts from the get-go much more even more so than we did in the COVID-19 pandemic. For instance, with regards to fertility, we have learned that its response to the COVID-19 pandemic varied widely across societies. Here, you see changes in the number of births in certain pandemic periods compared with the same months in the years prior to the pandemic across all these countries that are listed there. Even without reading the legend, the large variation across countries is quite easy to see.

We also learned that the fertility response to the pandemic changed over time, sometimes even from month to month. What you see here is how widely the observed birth rate varied from the expected birth rate across European subnational regions from November 2020 to January 2022 in three to four months windows.

Such a fine-grained temporal look at fertility changes only became possible due to new data collection efforts that started during the COVID-19 pandemic.

The fertility response to the pandemic also varied by people's age, by their social characteristics, such as education and ethnicity, and by the birth order of the potential child. And this, again, varied across societies. For example, the small baby booms in 2020 and 2021 across some of the European societies you've just seen in the figures in the two slides prior, were often due to increases in second or third or fourth births

among the families. This is, however, different in the United States, where there was a small baby boom in 2021, but it consisted mainly of an increase in first births.

Then there were also subnational differences, especially in health outcomes. Here, you can see that the age standardized years of life lost in response to the pandemic varied widely across subnational regions within countries across Europe in 2020 and 2021. Finally, we try to understand not only which demographic changes happened, but also why. However, during the pandemic, many things occurred and changed all at once. The virus spread, the social distancing measures, other policies, vaccination rollout, they all varied widely across countries and regions. At the same time, there was a global recession unfolding.

While there are multiple studies aiming to isolate the factors that cause the demographic impacts, and many are doing an incredibly good job, maybe we need to start considering that it may be impossible to exactly understand what caused what due to this complexity that is increasingly difficult to disentangle, but also, because we lack precise data. For example, data on covariates measured on the subnational level or a month by month, and we lack sufficiently large case numbers to study all these heterogeneous subgroups and subpopulations that are so differently affected. But let's not end on such a depressing note.

The second lesson that I personally learned from the pandemic, and that will be useful going forward is the incredible value of creating connections in demography and beyond demography across multiple areas. For example, it will be helpful to broaden the concepts of the outcomes we are studying. Instead of focusing on virus impacts on physical health only, it may be beneficial to take a more connected health perspective. For example, one that includes mental health and also preventative health, and from the outset, not only studying them after the pandemic. Instead of studying birth rates only, we can benefit from studying the whole reproductive process, including conceptions, pregnancies, and birth outcomes.

Second, to be able to do this, we need better data. For example, data that integrates various data sources, such as health and birth records or data that offers finer-grained units, such as monthly or subnational data. We can also benefit from streamlining measurements across different societies.

Third, I believe we need more theories and interdisciplinary work, specifically in the face of changing crises today. For example, while we have painstakingly documented birth rate changes in the aftermath of the pandemic, we still struggle to understand why they occurred.

Fourth, I believe we can benefit from studying fertility, health, mortality, and migration processes more often in a connected way, instead of separately, one by one. For instance, migration flows to the United States stopped in 2020 due to the border

closures during the pandemic. This likely contributed to the observed declines in births, but this migration-fertility connection remained unclear for quite some time, because we only focused on studying fertility in isolation first.

Likewise, we can benefit, I believe, from paying greater attention to intersecting crises or multiple crises that occur at the same time, or in short succession, and their links with population dynamics. For example, global warming that Roman just addressed does not only impact population processes potentially directly, but socially stratified at least, but it also contributes to the geographical spread of pathogens via ticks or mosquitoes, and it may therefore contribute to future epidemics or pandemics, creating a unique intersection of climate change and pandemics that probably then also create heterogeneous effects across regions and social groups. So, such compound crises may be important to think through in a more holistic way. And then, finally, and importantly, I suggest we can also benefit from better connectivity between colleagues across centres and across societies, nations and continents, especially a better connectedness between scholars in the Global North and in the Global South.

A lot of COVID data collection efforts and COVID research were conducted by groups in well-established demographic research centers across Europe and the US, and this, paired with a lack of data from nations from the Global South in the Global South led to large differences today in how much we know, actually, about demographic pandemic impacts across the world.

So, it's been obvious from the figures that I've shown you that we know so much more about health, mortality, fertility, family in the aftermath of the pandemic across Europe and the Global North than the Global South. I believe that stronger links between colleagues across the Global North and the South would benefit us all and would be a good strategy to prepare for the next pandemic and analyze its demographic impacts.

Thank you very much.

Jalal Abbasi-Shavazi: Thank you, Natalie. Beyond the environmental, conflict, and health shocks, economic and political instability operate through expectations, institutions, and inequality.

Cassio Turra is Professor of demography at Cedeplar, Universite Federale Minais Geres, in Brazil. His research focuses on economic and political shocks and their demographic consequences. Casio, please go ahead.

Cassio Turra: Thank you so much. Thank you, IUSSP for organizing this webinar. It's great to share the floor with my colleagues again after the great time we had in Australia at the IUSSP conference.

So my sense is that economically, political crises trend across all other types of crises that we have been discussing here, including climate shocks, wars, and epidemics, shaping both their origins and their consequences.

Instead of offering a single theory. I want to propose four analytical lenses, four questions that should go with any analysis or study of shocks and demographic change.

The first one is a temporal lens and asks if we are facing a period effect -- A short-term disruption in the time of events-- or a cohort scar that will shape life trajectories for decades. For example, fertility postponement during recession may be recuperated, but early childhood exposure to deprivation often is not, as the literature has shown.

Distinguishing between tempo and quantum is not just methodological. It defines whether a shock leaves a lasting demographic imprint.

The second lens is scale. National aggregates almost always conceal severe subnational heterogeneity. One good example for that is the Brazilian experience. Across the second half of the 20th century, Brazil underwent a remarkably smooth demographic transition. At the aggregate level, fertility fell, mortality declined, even though we were living through a military dictatorship, hyperinflation and repeated crises. Heterogeneity existed, but it was absorbed and obscured by aggregation, concentrated, in the case of Brazil, in specific micro-regions, cohorts, and social groups.

The third lens that we must use and focus on is stratification. Crises widened gaps. They do not simply lower averages. Pre-existing inequalities in income, race, education, and region defines who bears the deepest and most lasting consequence of political economic crisis.

The fourth is endogeneity. Of course, demographic dynamics can drive prices. It's just not passive. For example, population ageing puts pressure on patient systems. Youth bulges destabilize labor markets. We cannot treat demography as a passive receiver of shocks.

With these 4 lenses, this brings us to the mechanism. The mechanism that ties them together is in my opinion institutions.

States with robust welfare states, with for example, strong unemployment insurance, public health systems, income transfers, can prevent an economic shock from becoming a demographic one. The same recession that produced fertility decline and excess mortality in one country may leave little trace in another one, depending entirely on the institutional response. And this has been validated repeatedly in the analysis of demographic papers. But the reverse is also true. Fiscal austerity deepens and prolongs demographic losses. There's this example, for example, of Greece between 2010 and 2015 that registered for 40,000 fewer births than projected alongside rising infant mortality and deteriorating mental health indicators. That was not simply the recession.

It may be the policy response to the recession. And those responsible responses are not neutral. This is important. Demographic interventions encode values about gender, family, and national belonging. Incentives [to have children], forced sterilizations, restricted migration regimes, reflect normative judgments about whose demographic futures matter. As demographers, we must be clear-eyed about this.

With the four lenses and the institutional context in place, you can now look at how shocks manifest across the three core demographic variables. For fertility, recessions consistently produce delayed childbearing. But the key mechanism is not income loss alone, it's uncertainty. When people cannot form stable expectations about their economic future, they postpone family formation. Strong institutions compress that uncertainty.

For mortality, the picture is counterintuitive in the short run. Minor recessions may briefly reduce, for example, traffic accidents, but prolonged crises and austerity produce mental health deterioration, deaths of despair, weakened health systems and widening life expectancy gaps. The well-known evidence from the United States is the most visible case, but it's far from being unique.

For migration, crises reshape risk strategies. Where formal safety nets are absent, migration becomes an insurance, but severe declines can also trap people producing involuntary immobility. Political instability generates brain drain that further erodes the institutional capacity needed to respond.

Let me close with a reflection on our role as demographers. We bring essential tools to the analysis: mortality, fertility estimates, indirect estimation, data reconstruction for contexts with weak or delayed vital statistics, long-term structural baselines, and the capacity for subnational disaggregation that reveals what national aggregates conceal, but we cannot explain crisis alone. Economists model incentives, sociologists unpack equality, political scientists (analyze?) governance, anthropologists and psychologists explore meaning and behavior. These are not competitors. They are necessary partners of demographers. So, I will end by saying that crises do not respect disciplinary boundaries, and neither should we. Thanks so much, Jalal.

Thank you all.

Jalal Abbasi-Shavazi: Thank you, Cassio, for alluding to the analytical lens that we demographers should have in studying crises. Across all these domains, a common question emerges: how do populations adapt, and under what conditions?

Our final panelist is Arnstein Aassve, Professor of Demography at Bocconi University in Italy. His work centers on conceptualizing demographic resilience and institutional adaptation. Arnie, the floor is yours.

Arnstein Aassve: Thank you very much, and thanks Jalal for organizing this webinar and to my colleagues for the outstanding research that they are doing, and what they have presented here.

I'm going to talk a little bit more about the concept of resilience and how it refers particularly to populations. The first thing I want to say, and even perhaps before the very first sentence is that we should reflect on the fact that the concept of resilience became very popular, or at least we got to know about it, from the COVID pandemic. It is important to take this into account because resilience is naturally connected with the concept of shocks, unexpected events, and so on.

And as we've been hearing in this presentation, COVID was one very big shock. But of course, what has followed is one shock after the other. And in a certain sense, we are now talking about polycrisis. It appears that we have entered a time where shocks and crises are happening ever more frequently. They are more diverse. The areas of the world that are really suffering are those that experience multiple crises.

Now, having said that, I think it's also very important to point out that resilience does not mean bouncing back. You remember from the COVID pandemic, in the media and so on, it was all about how we can get back to where we were as soon as possible. But resilience is not about "bouncing back". It is about adapting, possibly changing, reorganizing, to maintain a certain set of values.

It is important to also take into account that resilience is not necessarily something positive, right? What I mean by that is that you want to be resilient, but yet at the same time you need to be steady and clear about what aims and goals and values you have. You could easily see societies that are resilient, but where inequality, for instance, is very high. Others with less inequality, are resilient as well.

So that's an important thing to think about in all of this, resilience itself is not necessarily positive. It's also important to understand that it's not the same as robustness. Because resilience is about how you cope with something that is truly unexpected. Covid is the perfect example. Nobody could foresee the COVID pandemic happening when it happened.

Now, there are several empirical facts about the drivers behind resilience. What is it that makes people more resilient? Some elements that seem to come up again and again: education, human capital, health, and communities, neighborhoods, and social networks. So that is how you can think about what helps individuals to be resilient when they are facing adverse events or shocks. With more education, it's easier to navigate adverse events. Health matters, and of course the policy response here is the issue of public health provision. Community and neighborhoods, it matters to what extent you can rely on friends and people around you to help you to overcome these adverse events.

But on the right-hand side of the slide, you see the characteristics of resilient institutions. One is public sector effectiveness. The second is to what extent institutions are able and willing to learn. If something happened and there was a negative impact, how can you then change and learn from that to be better prepared if it happens again. And then there is a measure of readiness to transform. Your willingness to actually change when the circumstances change significantly. Response diversity refers to the fact that you need to have more than just one policy lever to overcome the shock.

And the last one, which I'm going to talk about quite a bit, refers to policy cycles. But before I talk more about that, I would like to point out a very important fact, and that is that individual response, individual resilience measured in any kind of survey is highly correlated with any kind of macro measure that you can think of to characterize the resilience of institutions. You can have virtuous cycles in the sense that individuals are becoming more resilient. Since institutions are made up of individuals, then institutions are becoming resilient as well, referring back to Cassio's presentation, and the importance of feedback mechanisms.

When you think about trying to become more resilient, you also need to think about these feedback mechanisms. What makes societies more virtuous? Referring yet again back to Cassio's presentation, I would like to take a step back and think a little bit about welfare states. Cassio made the argument that generous and robust welfare states help societies become more resilient. It also helps individuals to become resilient. But I think we should also reflect on the fact that the welfare state comes in different flavors, shapes and forms.

If you think about Western countries, demography by itself was a major driver behind the welfare state as we see it today. We had high fertility rates, we had the large youth populations, and we were able to implement a welfare state with pay-as-you-go pension systems, public health services, and so forth. We are now coming into a situation because of sustained low fertility and increased life expectancy, where these welfare systems are not sustainable any longer, or at least they're going to struggle in the near future. And just to give you one example here.

This is the graph (see slide 16) you see a simulation of the sustainability of the Italian pension system. If you relied on the line which indicates 1.0, then your system is sustainable, right? You have contributions in equal measures as possible to payments in pensions to the retirees. And if you look at Italy as an example here, we already see that is not sustainable right? Because we are above the line 1.0. And even if you thought about a few policy levers here, the red line is what is going to happen to the sustainability of the Italian pension system, if you maintain the same rates of fertility as you have today. The blue line is where we simply impose the French fertility rate. So you can see what that does to the pension system in Italy. Obviously, it is not going to have any immediate effect. Right? Because if you by magic increase the fertility rate it is going

to take about 25 years before those children become productive workers, though in the long run, it might still matter.

When we look at the situation today, I think the kind of issues that we should then think about is, number one, in many countries, youth are becoming a minority group because of sustained low fertility rates. And there are several policy levers that you might think about. It's not necessarily about the demographic one by itself, like increasing fertility rates. The fact of the matter is that we are now in a situation where we have a lower proportion of young people with education entering our societies.

And so one argument here is that low human capital with smaller youth cohorts might be a particularly bad combination if we think about how we can sustain our welfare system in the future.

There are a few other things to say here as well. Fertility, as I mentioned, is not a viable policy lever for ageing in the short or medium term, but it could matter for the longer term.

And so what is the take-home message on this? If you think about improving resilience, the number one message is that you cannot operate with one factor only. You have to think about the whole range of policy levers that are available to you. And this is also to say that resilience is necessarily multidimensional, and it's also multi-level. So at the institutional level and the personal, individual level, if you prioritize or target only one dimension, it is not going to be sufficient.

And here's my last point, coming back to the idea of the political cycle. And what I mean by that is that we are dealing with long-term challenges: climate change, ageing, geopolitical crises that don't seem to go away.

One important part in all of this is that if you're going to deal with a long-term crisis or long-term challenges, you also need to take them out of the electoral cycle. So think about it. Would a politician who cares for reelection ever reduce benefits to the older population? They would not, insofar as the older population constitutes the majority of the population. One very important fact is that certain things, such as pension reforms, public health, and so on, need to be taken out of these short-term 4- or 5-year political cycles. Otherwise, it's very difficult to address the challenges that we are facing now.

And with that, I'll think I have used my time. But of course, happy to take questions. Thank you very much.

Q & A Discussion

Jalal Abbasi-Shavazi: Thank you, Arnie, for directing us to know how societies should adapt to these major changes, and the role of demographers in these processes. Let us now move to a moderated discussion and reflect on the broader analytical questions that link these domains of crises.

I will start with a question for Natalie Nitsche. Natalie, your comment in the manuscript that we are preparing pushed us to think historically about crisis. If crisis is not exceptional but recurrent in demographic history, what is analytically new about the present moment?

Natalie Nitsche: Thank you for pointing that out. I'll try to be brief. I certainly am no authority on that question, but I'm happy to share a couple of thoughts I have. So first, I think we are coming out of a maybe exceptional time in human history of stability after World War II. The accumulating quantity of crises we are seeing today may not be new in historical times. I don't know. Somebody else needs to do that analysis. But what I wonder, what may not matter so much is the quantity of crisis, or how long they take, but the quality of what's going on. I do believe human societies today are a bit different, or they are emerging in history, and there could be some analytical angles to think through about what could be different. Human societies have immense resources these days that enables them both to deal with crises and to mitigate the impacts – vaccines, antibiotics, etc. On the other hand, we can also create crisis. We have tools at our disposal, weapons, CO2 emissions, etc., and that's something maybe to think through. Then... I don't know, historically, but we have high levels of social inequality, both across societies and within societies, maybe more than ever before in human history. I think the main key topic today is the social stratification of pandemic impacts, or crisis impacts. It certainly is something that may be new, or we should think through more carefully.

Another important point is interconnectedness. We are all sitting on different continents in this webinar, and this wouldn't have been possible 20 years ago. So how we see crises is very immediate, we live in multiple continents at once and may feel more affected by multiple crises than before, because we are closer to them.

On the other hand, I think interconnectedness is real and shapes crises. Think of COVID and the epidemiological consequences of the global flight traffic that has carried the virus within a couple of weeks to all continents. That is certainly enhancing crises. And again, it's tied to the technological resources we have, but also the economic interconnectedness of all societies, and how that affects populations, is huge to consider.

The last point, and then I wrap it up, is that I perceive, but that may be wrong, this is just my own opinion here, there could be globalization of some of the population challenges we're facing. For example, what Arnie (Arnstein Aassve) was just referring to in terms of ageing populations and diminishing young people. It's a new problem. We now have birth anxiety. We are coming out of an era of too many births, now we have too few. What's going on? But it's affecting societies, on almost all continents who see that problem or perceived problem, aside from sub-Saharan Africa, and that is, I think, also a unique new moment in time.

Maybe that is due also to our interconnectedness? I don't know. But I think we need new angles to think about modern crises. Thanks, Jalal

Jalal Abbasi-Shavazi: Now let me go directly to Roman [Hoffmann]. You mentioned that climate change is often described as a slow-moving crisis. How does demography need to adjust when the shock is gradual but cumulative rather than sudden. And what demographic tools do we need to link environmental change to mobility and inequality in real time?

Roman Hoffmann: Thank you, Jalal. Climate change is indeed a slowly unfolding crisis that imposes gradual threats on populations, but also rapid onset threats like disaster events, for example, heat waves and so on. Both gradually unfolding as well as the rapid onset events can impact populations in demographic processes.

And for us as demographers, it's important to look at both. I have the feeling that in research, the focus is often more on the short-term implications of climatic stress and less so on the longer term. And I think this may apply to many of the crises that we're considering here, so I see a need for demography to also take the longer-run perspectives into account. Also, bring in context, which I tried to highlight in my presentation, as an important factor moderating to what extent both gradually unfolding as well as rapid onset events disrupt livelihoods and affect populations. And when we speak about the long-term perspective, I think it's important also for us as population scientists, demographers, to take a future perspective, so to also ask what the future will bring. And this is, of course, something where we know with climate change that the worst impacts are yet to come. It is important to develop methods and approaches that allow us to understand how these future impacts will potentially affect population outcomes. And here projection methods and scenarios are, of course, the tool of choice for us as demographers to use.

To your question about how novel approaches can help us understand some of these processes better, I just would like to reiterate something that Cassio said before. I think really looking beyond disciplinary boundaries and trying to connect with researchers across different fields is really important to understand, on one side, how demographic change intersects with climate change, but also with other crises, and how these together create the challenges of the future, but also to identify solutions that can help us address some of the problems we face today, as well as into the future.

Jalal Abbasi-Shavazi: Thank you, Roman. And let me go to Orsola Torrisi. You mentioned that conflict alters not only mortality levels, but the predictability of life itself and family processes. How does life span uncertainty reshape demographic behavior beyond immediate excess deaths? And what are the biggest blind spots in measuring conflict-related demographic change? Very briefly, if you can address this question.

Orsola Torrisi: Thank you for this question. I think it also touches upon some of the questions that have come in the Q&A. And when we think about the effects of conflict, of course, we think about this big mortality shock, but what we found in some of our research is that indeed, lifespan inequality widens. And what does that mean? That means essentially that timing becomes uncertain, especially when it routinely occurs at young ages and premature ages, people's time origins shift. So, if you're not sure whether you'll be alive in 10 months, in 2 years, then it becomes a rational choice to prioritize the present. We know that at times in conflict settings, or in violent settings more broadly, investments that maybe only pay off in the long term, and are linked to many other demographic outcomes, such as education, savings, or preventative care, are often deprioritized by the individual themselves, and we should not think of this as irrational behavior. It is perhaps as an adaptation to uncertainty itself. But that has, of course, knock-on consequences on many other social aspects that we're interested in. And we see this in very concrete ways. So, for example, young people in violent settings might engage in behavior that really reduces their immediate risk of victimization, but at the same time, the knock-on effects impact their attainments of education and schooling. For example, we know that in very violent contexts, pregnant people wouldn't necessarily seek antenatal care because they fear victimization.

This has knock-on effects on maternal health and infant health, and [therefore] intergenerational effects. Early marriage is also another example. It might serve an economic and household need for protection in the moment but has significant consequences. When we think about these direct consequences and how individuals make their decisions in times of uncertainty, we should be thinking along all of these other dimensions.

Your second question, about blind spots, is very broad. First of all, I just want to make it clear, I think, a crucial epistemological tenant in researching armed conflict and demographic outcomes is that numbers don’t often objectively measure social phenomena. They are socially and politically constructed. They're co-produced through political, institutional methodological processes, especially in armed conflict. Governments might underreport, manipulate, or restrict access to information, while perhaps humanitarian and research organizations face big limitations on what they can collect and how they can disseminate their information. So, I think perhaps the biggest blind spot is that we need to think about the data that we work with as political and socially constructed. And then we have a lot of other big blind spots, but we can discuss maybe this, afterwards.

Jalal Abbasi-Shavazi: Thank you and now let me go directly to Cassio Turra and raise one question only. Cassio, how should demographers think about expectations, fear, and institutional trust as demographic drivers?

Cassio Turra: Thank you so much, Jalal, for the question. We need to think about expectations and institutions both as the cause of demographic shocks and also their possible role reducing shocks. That is why I emphasize institutions in my presentation.

It's institutions that, and here I mean not only governments, but also the whole society, the private markets, companies, families, friends, community. So, depending on the degree of mobilization in the society, we can reduce... we can improve expectations, we can reduce fears.

In times of crisis, we can limit the impact of a shock to a period effect, so that is does not become a cohort scar. That's very important. It's the mobilization in the short term that can help buffer the period effects on the life trajectories of people. And the same thing for typical cohort events. So, for example, adverse early life conditions have typical cohort effects. These are not short-term effects. These are structural problems. Again, it is through institutions that we can reduce the scar. For example, through public education and public health systems, but also helping people whose lives started in worse conditions, so they can move through the life stages, making the transition smoothly competing with people that have more or were born in better conditions. Society is the answer to your question. How we organize society, to reduce fear and improve the quality of life for all people.

Jalal Abbasi-Shavazi: Thank you. And my final question is for Arnie (Arnstein Aassve). Arnie resilience, as we know, is widely invoked. What makes demographic resilience analytically distinct from general resilience? If you can briefly answer.

Arnstein Aassve: Yeah, I will try. Let me try to be very quick on this. So there are resiliencies invoked in so many ways. Think about the financial crisis in 2008. The institutions were improved. Safeguards were made [to avoid future crises] - liquidity checks on the performance of banks and so on. Now, this is one particular kind or measure of resilience. We can think also from psychology, where everything is focused on the individual. But I think for demography, what matters here is the multi-level relationship between individuals and their well-being and their lives and how it is interacting with the resilience measure at the institutional level. And I want to also add here, echoing Roman on these long-term perspectives that, I think, really sets apart the concept of resilience for demography.

Jalal Abbasi-Shavazi: Thank you all. We now turn to our audience. Nico van Nimwegen will guide us through the questions submitted in the chat. We are still a little bit behind. Nico, the floor is yours.

Nico van Nimwegen: Thank you, Jalal. We've heard a lot about the views of our panelists, but now it's indeed time for the audience. We have lots of questions in the Q&A. We'll focus on the big ones. There is some overlap, and we have chosen for this

model to answer them in plenary and not in the chat to allow everybody to hear the responses of the panelists.

The first question that popped up already during the registration is "*How do we take into account the impacts of crisis and shocks on population projections*?"

This question overlaps a bit with the question in the chat from Rolando Gonzalez-Martinez.

"*What models or data sets exist that explicitly account for the impacts of, for instance, multiple climate change-related disruptions*?" This question is for Cassio or Roman and I'm sure that the concept of "scenarios" will pop up in that discussion.

The second question that was addressed is an important one *"How does international migration fit into the discussion on resilience?"*. And of course, that goes to Arnie.

Then we go to a question by Jan van Bavel for Orsola "*Is it adequate to calculate a measure like life expectancy at birth in times of war? Or is it one of the ethical questions that we should ask ourselves?*" Maybe Jan is asking if such a measure is hiding more than it shows.

Another question that comes up for Natalie. "*What specific tools can we use to link crisis types? Because we have heard a lot about interconnected crisis, but what tools can be used to link those*?" Jan van Bavel also has a question for Natalie. "*What are the short and the longer-term impacts of the budget cuts of USAID on the research program that you are proposing*?" For instance, a more concerted, connected kind of global data collection. "*What are the impacts of the budget cuts there? And what are realistic options to find alternative sources of funding*?" This is also a nice question to address in view of the time.

And a question for Arnie again. I keep hearing calls from demographers that we should try to raise fertility to save the welfare state. The question is "*shouldn't we as demographers indeed point out that solutions will not come from demography, but that we should rather fundamentally adjust our social welfare state to new demographic realities?"*

For Roman, "*How are you measuring conflict frequency? Because in the graphs that you're showing it says that several countries that are globally recognized as conflict-affected appear to show comparatively fewer conflict zones in your visualization.*"

And for Cassio, regarding the feedback loops between demography and policy. *"How can middle income countries like Brazil build demographic resilience when the aging process itself is already straining the fiscal buffers for pensions and healthcare needed to mitigate future crisis?*"

These are some of the questions. I think each of the panelists should address one or two but be very brief. We have about 15 minutes to do so. The floor is yours, and maybe Arnie, we start with you.

Arnstein Aassve: Thank you. I'll try to be brief, although the question about the welfare state is a big one. You are spot on. As I just showed in that little agent-based model there. Just by increasing fertility rates, it is not going to solve the problem the way we are used to thinking about the welfare state. I think one very big question that we need to address now, is what is the welfare state going to look like in the near future? Let's say 10, 20 years, depending on what kind of actions we may want to take or no action. In fact, the suspicion is that we are going towards more inequality, if you think about these little examples with the sustainability of the public pension system in Italy.

What is most likely going to happen here is that those with a lot of resources, they are going to understand that this public sector system is not going to be upheld. They're going to go private. And we might end up having a big bifurcation in terms of how public services are provided, private as opposed to public. Resilience is one thing. That is incredibly important, of course, but you still need to be very clear about what kind of society you want to have in the next 10 to 20 years? Do you want to have more inequality? Are you willing to let that happen. If not, what are the policy levers that you need to think about?

Orsola Torrisi: Thanks for this really important question. I think life expectancy as an indicator is both adequate and insufficient. Life expectancy at birth, we know generally is a synthetic period measure. So as such, it has a big assumption underneath it of a stable mortality regime. We know this kind of assumption is totally invalid during war. Mortality spikes can occur. A sudden increase in death can occur and might generate a dramatic drop in life expectancy, even if conditions change the following year. If we interpret this naively, this can mislead individuals or the general public because no actual cohort is expected to live under those extreme rates for an entire lifetime.

However, I think precisely because it is a synthetic summary indicator, life expectancy can be very powerful in the context of war and violence. Because we lack data most of the time, it translates complex age-specific mortality patterns into f a single globally intelligible metric. In moments of crisis, this can be helpful to draw international attention. A five- or ten-year decline communicates quite strongly the scale of the mortality shocks, perhaps more forcefully than general counts alone.

I think here the ethical question, is not so much whether we should calculate life expectancy during war, or situations of heightened violence, but perhaps how as demographers we present and interpret these metrics. So, I feel like demographers have a responsibility to convey the gravity of the violence, while also clearly explaining the assumptions underlying the measures we are using. We should be transparent about our measures and clear about what we are measuring and what type of indicator we are providing to the general public.

Then, of course, when it comes more to academic publishing, there are certainly better indicators, more important indicators, that convey gravity, and groups that particularly suffer, for example, maternal mortality ratios in the context of armed conflict is much more indicative of the indirect consequences of war. But I think the balance is really to be able to convey those messages quickly, and at the same time convey what the measures that we talk about in general discourses actually represent.

Nico van Nimwegen: Thank you, Orsola. So, Natalie, would you go next and try to keep it short?

Nathalie Nitsche: So the question on tools to link crises. I think we can start with the concept. If we had a conceptual paper that would make that more transparent and conceptualize both where current societies are coming from in terms of their past effectiveness, but also where today's societies are affected and maybe going, too, that would be immensely helpful. For example, we theorize fertility to look broadly different, even though some societies are coming out of decades of multiple crises like Sub-Saharan Africa, and maybe we need to rethink that. Second, maybe there is a database that is country level or subnational regional level, year by year, that lists crises that happen in different regions or countries in different areas, geography, political science. I don't know. I think there's a lot of data. And we just need to find it or create it. I think something like that would be very useful. Then the question on the funding of the data collection. I know I've been giving a broad vision here, which is a wish list that is unrealistic, but maybe not so much. USAID is not the only funder of data collections on the planet. And there are so many administrative data sources. The Scandinavian countries are leading the crowd. They are showing us it can be done. We all have the data in our countries. Maybe we need more activism coming from the demographers to go to the governments and really bug them to develop these databases in better ways, because they don't know how to, but we know what we would need. But advocacy, I think, could be much stronger in the demographic field. Lots of funding exists. We have it in our research accounts. Institutions have it. The question is, how do we prioritize spending it? We could write grant proposals that propose big data collections.

Nico van Nimwegen: Thank you, and it's always good to keep your wish list and try to get the funding that we need. Cassio, can I go to you next with the question about the resilience in Brazil, for instance?

Cassio Turra: you mentioned two questions, one about population projections. So just a short note. I think demographers incorporate past trends and shocks into the population projections because you're looking at trends and using historical data to project for the future. And we are very good at looking at patterns and everything that goes outside these patterns. We can analyze and estimate, for example, the excess mortality during the COVID pandemic.

Regarding Brazil, Latin America, the Caribbean, some African countries, we need to think about many, many parts of the world. Well, first of all of population... let's not romanticize population ageing. It's a challenge. In many parts of the world, including Latin America, the Caribbean, African countries, and some Asian countries, population ageing is a stronger challenge, because of the structure of society, because of inequality. We will not solve our issues if we do not incorporate everyone in society. When I say incorporate, I mean giving to everyone a good education, decent work, and providing the same early conditions.

If we do not change this, we are going to face almost permanent crisis, in my opinion. I mean, the economy is growing very slowly, and we're facing overlapping challenges, crises.

Nico van Nimwegen: Thank you for your advocacy. I return to our final presenter, Roman.

Roman Hoffman: Thank you. I will try to keep it short. I would like to first respond to the question on the projections. There were two. So often projections abstract from short-term disruptions. So rather than looking at the longer-term patterns there are scenarios that can be developed to better reflect stressful events and how they can impact different population outcomes. They can be a very useful tool to showcase, for example, to decision makers how different disruptive events can affect long-term developments.

There was a question on climate change impacts and how they are reflected in projections and examples. There are, in fact, very few forecasts and projections that explicitly take climate into account. Also, the more general, widely used population projections, including our Wittgenstein Center population projections do not look at the impact of climate change on population developments, but rather the opposite. They look at how future population developments through population growth is driving climate change. There is more work being done on different components of demographic change in behaviors, including, for example, mortality.

So there are projections looking into mortality risks in the future under different climate change scenarios, as well as migration. And I'd be happy to share these with you if you send me an email, I can forward those to you and also put you in touch with colleagues.

And on the second question, very briefly on the conflict. In our paper where I showed this graph, we looked at fatalities due to conflict as a very manifest reflection of conflict risks. That is, of course, just one way. There are multiple ways conflict can be measured.

Orsola would be in a much better place to comment on that. I just wanted to highlight that it is important to look at different ways of capturing these phenomena and crises. And I would like to also highlight that it's not only about the manifestations of crisis in forms of actual impact, but also about the perceptions.

Nico van Nimwegen: Thank you all for reacting very, very quickly and very clearly to the questions by the audience. I think we have to leave it at this, and I would like to end, if I may, by coming back to what Cassio said.

Crises, and I think the same goes for resilience, do not respect disciplinary boundaries, which means that, as demographers, we should collaborate with other disciplines. We can bring a lot to the table as demographers, and the panelists have shown today what that includes, but we will need to be open to other disciplines as well.

I give the floor back to Jalal and thank you all. Thanks to the audience for your questions that were really to the point and thank you to the panelists and moderator!

Jalal Abbasi-Shavazi: Thank you, Nico, and thanks to everyone who contributed thoughtful questions. Let me close by briefly drawing together a few themes from our discussion.

Today's discussion makes clear that crisis is not peripheral to demography. It is deeply embedded in the context within which population processes unfold. Climate change, conflict, pandemics, and economic shocks differ in origin, but converge in their demographic consequences: increasing uncertainty, amplifying inequality, and testing institutional capacity.

We've heard that crisis impacts depend critically on life course timing, stratification and feedback loops between individuals and institutions.

Methodologically, this requires continued innovation, including indirect estimation, triangulation across heterogeneous data sources, interdisciplinary collaboration, and careful engagement in politically sensitive and data-scarce context.

Conceptually, resilience cannot be reduced to recovery. It includes adaptation and transformation. But resilience is not inherently progressive. It can also reproduce or even deepen inequality if institutions are not inclusive.

Moving toward the demography of crisis and resilience is therefore not about adding another subfield. It is about ensuring that demographic research remains responsive to the conditions that structure population dynamics.

These reflections are informing a manuscript currently in preparation for a journal submission, and we look forward to developing these ideas further in print.

I'd like to thank our panelists for their thoughtful contributions. Mary Ellen, Paul Monet, and the IUSSP Bureau for organizing this webinar, and Nico for moderating the discussion, and all of you for participating from across the globe.

We look forward to continuing this conversation in future IUSSP events. Thank you all for joining us today.