

Population dynamics, sustainable development, and the digital revolution
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Good afternoon. I am delighted to speak today on this panel together with distinguished colleagues on the theme of Sustainable Development and Population Dynamics in the context of the 30th anniversary regional review of the International Conference on Population and Development.

The Cairo conference of 1994 presented a landmark moment that articulated a vision for a rights-based and inclusive approach for sustainable development. Thirty years on several of the core principles that were at the heart of the Cairo programme of action – a call for inclusive, sustainable development that puts individual well-being at its centre and a prioritization of gender equality and the empowerment of women – remain as salient today. However, there are some ways in which the world has changed significantly since Cairo – which is that the technological landscape and the digital revolution that has swept the world over the past 25 years. The graph on the slide shows what I mean by the digital revolution – the spread of the internet and mobile technologies since the turn of the new millennium. The digital revolution has been a global revolution, and as the next slide shows, it is one that has left no region of the world unaffected; but if we look at the European and North American region, it has been a leader in the spread of these technologies at the population level.

In my remarks today, I would like to focus on the digital revolution, and its implications for populations dynamics and sustainable development, which is also a key area of my research.

Digital technologies have transformed the ways in which we access information, connect with each other, access vital goods and services linked to health, economy, or education. Within the context of the global sustainable development agenda, the potential for technologies to empower marginalized populations has been recognized across different Sustainable Development Goals. SDG 5 seeks to promote the use of information and communication technology to promote the empowerment of women; SDG 4 calls for improvements in digital skills, especially among the youth, as a part of the right to education. Implicit in both these goals is the idea that digital technologies have potential to reduce inequalities and promote social inclusion. But, has this potential being realized?

In my research, my colleagues and I have found that the diffusion of mobile phones over the last 20 years is associated with reduced gender inequalities, improved contraceptive uptake, and reduced maternal mortality. The figures on the slide illustrate these correlations on the left side of the panel, whereas the right side of the panel shows how these payoffs are larger among lower- and middle-income countries. The associations hold across all regions in the world, and persist even after we control for educational expansion, GDP per capita, and population density. In other words, this empirical evidence at a global scale shows that technologies have helped to spur sustainable development.

A growing body of demographic research more broadly has highlighted how the use of internet and mobile technologies can directly impact on demographic outcomes linked to health, marriage and family formation, fertility and migration intentions and integration processes, by enabling access to information, promoting new paths for social learning and interaction, and providing flexibility in reconciling work and family, such as through remote working. This research suggests that access to digital resources, such as through broadband connectivity or mobile apps may, for example, enhance the health, wellbeing and quality of life in sparsely populated areas, by enabling better connectivity, access to services and economic opportunities in those regions. This may contribute to reduce depopulation in certain rural areas of Europe, by making them more attractive places to live and work.

At the same time, not everyone may have the same level of access or skills necessary to take full advantage of the digital revolution; these digital divides, in infrastructure, access and skills, map onto existing regional inequalities, such as between the South and North of Europe or East and West; as well as socio-demographic inequalities, by gender, age or migration status. Within a digitalizing world these can further exacerbate and exclude populations. Take for example online banking – the shift to online services, on the one hand, has meant that for many, financial transactions are easily accessed. This has also occurred alongside the closure of many brick and mortar buildings. For those without the skills to access online banking, such as many among older populations, this creates reduced access over time to a vital service. The graphs on the slide show an increasing proportion of non- internet users are over the age of

65 in England and Wales based on data from the Office of National Statistics, a pattern which echoes the rest of the European region.

Digital information and capabilities, which enable for example flexible work, may benefit educated groups more, and increase disparities in family formation. For example, demographic research indicates that flexible working may provide a means to reconcile professional and family aspirations for women, which stand to benefit higher skilled workers more with positive impacts on their fertility. But for others economic uncertainty and unstable work has been amplified by wider trends of digitalization and globalization, including with the shift to the gig economy. Moreover, these flexible tools can continue to reinforce gender inequalities and biases, especially if wider gender norms do not shift. For example, in our research examining the use of online professional networking on LinkedIn – which arguably offers more flexible form of online networking – still shows that women are much less connected to higher-status users than men. These gaps widen among women around the ages of parenthood, as shown on this graph. Overall, these findings underscore how gender norms, which make the reconciliation of work and family life challenging for women in the offline world also persist in the online one.

As digital technologies diversify, with growing applications of algorithmic decision-making and AI, once again, the question of how these tools will reshape inequalities remains ever present. On one hand, these tools offer ways to potentially detect vulnerable population sub-groups and help streamline the targeting and delivery of public services and social policies. The deployment of algorithmic decision-making processes however also raises significant social and ethical challenges, such as those about bias and discrimination. Algorithms can improve efficiency, but can also amplify existing patterns of social disadvantage when the data they are trained on are biased. Algorithms are also often complex or opaque, which raises important questions about transparency and accountability when deploying them. Emerging insights from the computational social sciences further emphasize the importance of proceeding carefully when deploying these tools – particularly as, this research suggests, individual-level social outcomes are often extremely hard to predict – individuals are multidimensional and hard to put in a box.

From a policy perspective, all this suggests that the impacts of digital technologies are often context dependent. While offering many opportunities, digital technologies are also not a panacea – to leverage their positive impacts, investments in equalizing infrastructure for access and promoting digital skills across the life course through educational, work and community pathways is important. Understanding population-level heterogeneity in digital access and skills, as well as identifying pathways through which digital tools can empower – but also exclude – marginalized populations, e.g. women and girls, rural populations, older populations, is crucial for addressing population inequalities and fostering sustainable development.

To answer these questions, we need good data – the topic that I want to conclude on today. Much has been heralded about the digital revolution also being a data revolution, through the growing data streams generated by new technologies and improved computational power. But much of this potential is not fully realized because either: 1) data are often not disaggregated by socio-demographic characteristics. For example, socio-demographically disaggregated data on the use of digital goods and services in admin datasets, or ways in which technologies are used in peoples everyday lives are often missing; 2) data are proprietary and held by platforms or companies. Here, policy makers have an important role to play. Policy efforts that push for frameworks for data sharing and access between researchers and proprietary datasets – but also admin datasets – to facilitate their scientific use are crucial for realizing the opportunities offered by new and diverse types of data. But ultimately, it is useful to remember that while better data when used in an ethical way can provide better images of our societies, data itself can only help us identify problems, but does not solve them.