



[\*\*CLICK TO KNOW MORE\*\*](#)



UNIVERSITY OF MINNESOTA

**Driven to Discover<sup>®</sup>**





# University of Minnesota System



## Crookston

Ag Innovation campus; NXT GEN AG;  
NW Rsrch & Outreach Ctr.



## Duluth

Natural resource and water research;  
Outdoor recreation hub



## Morris

Top public liberal arts campus;  
Innovative wind energy research;  
NASNTI



## Twin Cities

Largest campus; AAU, APLU, R1, AANAPISI  
18 Fortune 500 Companies



## Rochester

Innovative health-focused undergrad program, NXT GEN MED  
Partnership with Mayo Clinic

# 42,212

undergraduate students

# 16,780

graduate & professional  
students

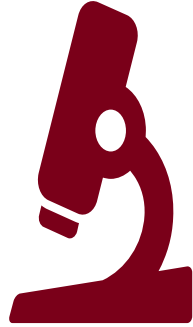
# 26,000

employees

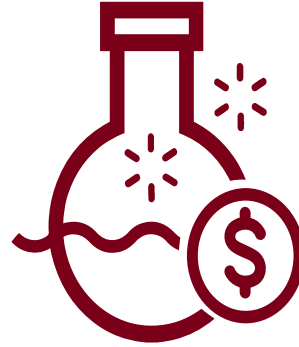
# World Class Research



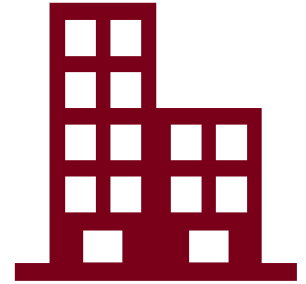
**14,500+**  
RESEARCHERS



**70+**  
LABS & FACILITIES



**\$1.1B+**  
RESEARCH EXPENDITURES



**300+**  
CENTERS & INSTITUTES



Steven M. Manson  
Len Kne  
Brittany Krzyzanowski  
Jane Lindelof *Editors*

# Building the Spatial University

Spatial Thinking, Learning, and Service  
Throughout the System

 Springer



# SUSTAINABLE DEVELOPMENT GOALS

**1** NO POVERTY

**2** ZERO HUNGER

**3** GOOD HEALTH AND WELL-BEING

**4** QUALITY EDUCATION

**5** GENDER EQUALITY

**6** CLEAN WATER AND SANITATION

**7** AFFORDABLE AND CLEAN ENERGY

**8** DECENT WORK AND ECONOMIC GROWTH

**9** INDUSTRY, INNOVATION AND INFRASTRUCTURE

**10** REDUCED INEQUALITIES

**11** SUSTAINABLE CITIES AND COMMUNITIES

**12** RESPONSIBLE CONSUMPTION AND PRODUCTION

**13** CLIMATE ACTION

**14** LIFE BELOW WATER

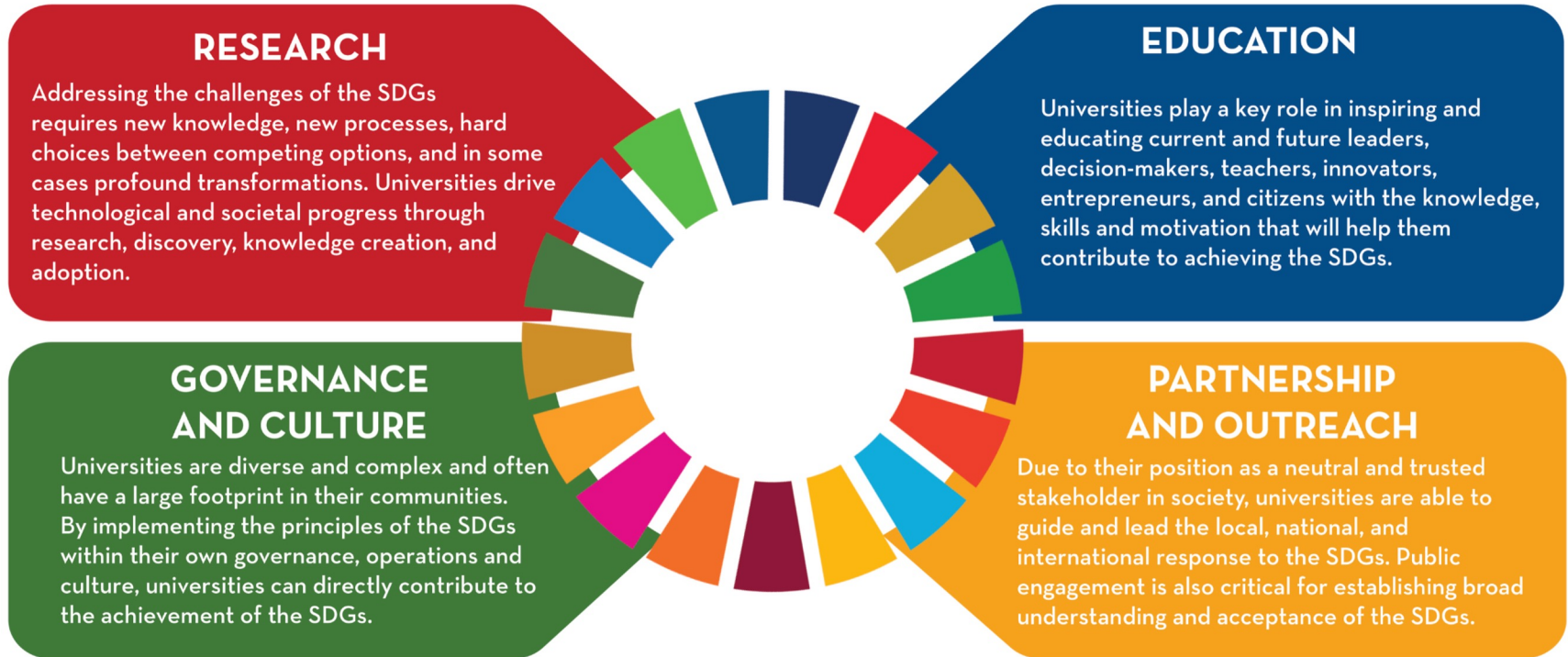
**15** LIFE ON LAND

**16** PEACE, JUSTICE AND STRONG INSTITUTIONS

**17** PARTNERSHIPS FOR THE GOALS

**SUSTAINABLE DEVELOPMENT GOALS**

# UMN SDG Initiative: Mobilizing the University





# Research 2030 – Geographic Approach

## Fourteen High Impact Research Themes



Sustainable  
Technology and  
Systems



Society,  
Environment and  
our Changing  
Health



AI-Enabled  
Science and  
Innovation



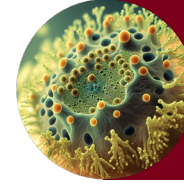
All Hazard  
Preparedness,  
Resilience and  
Recovery



Creating an  
Equitable and  
Inclusive Society  
at all Levels



Biotechnology  
and  
Biomanufacturing  
Innovation



Biological  
Interactions  
at all Levels



Data, Sensing  
and Managing  
Complexity



Human-centered  
Technology:  
Design,  
Development,  
and Deployment



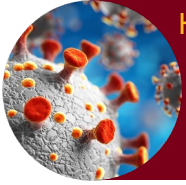
The Future  
of Healthcare



The Future of  
Education  
and Work



Food and  
Agriculture at the  
Energy-Water-  
Society Interface



Health Promotion  
and Disease  
Prevention,  
Treatment and  
Cures



Climate  
Resilience  
and Action

# Developing a hub that can be used for SDG-centered community sustainability



Navigation bar for the SDG hub. It includes a hamburger menu icon, the text "MN SDGs", a search icon, a "New" dropdown menu, a "9+" notification badge, a user profile icon labeled "Len", and a Twitter icon. A dark red banner below the navigation bar contains the text: "\*\*\*Please note that this site is a work in progress. Links may not be fully functional, and the dashboards presenting SDG data are not yet complete and should not be used for decision-making at this time. Comment or Questions? Email uspatial@umn.edu\*\*\*"

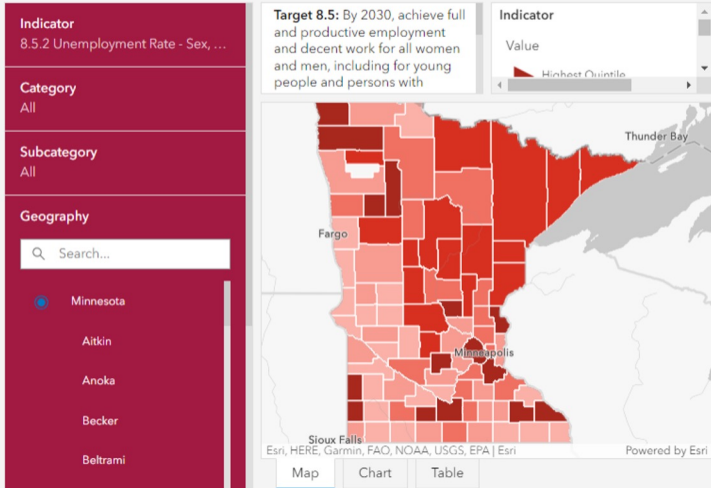
## SDGs in Minnesota

17 goals to transform our state



Open and transparent progress towards the United Nations Sustainable Development Goals.

### Decent Work And Economic Growth



# Sustainable GeoCommunities

## Local Problems, Global Impacts

Transforming a community into a Sustainable GeoCommunity requires thinking that is local but incorporates a global perspective.

This involves invoking principles of geodesign that consider geographic information, information technology (i.e. AI, real-time data, etc), culture, demographics, natural resources, and climate in informing the potential solution.



Indian Institute of Technology Kanpur (IITK)

IIT Bombay (IITB)

Amrita Vishwa Vidyapeetham

University of Buffalo

University of Minnesota



---

INSTITUTE FOR  
SOCIAL RESEARCH & DATA INNOVATION

---

CELEBRATING  
**30** YEARS **IPUMS**

# Population-related SDGs

110 of 169 Targets for 11 of the 17 Goals

Multidimensional crosstabulation and investigation

## Household

- Household composition
- Dwelling ownership
- Household amenities
- Access to utilities
- Group quarters
- Subnational geography

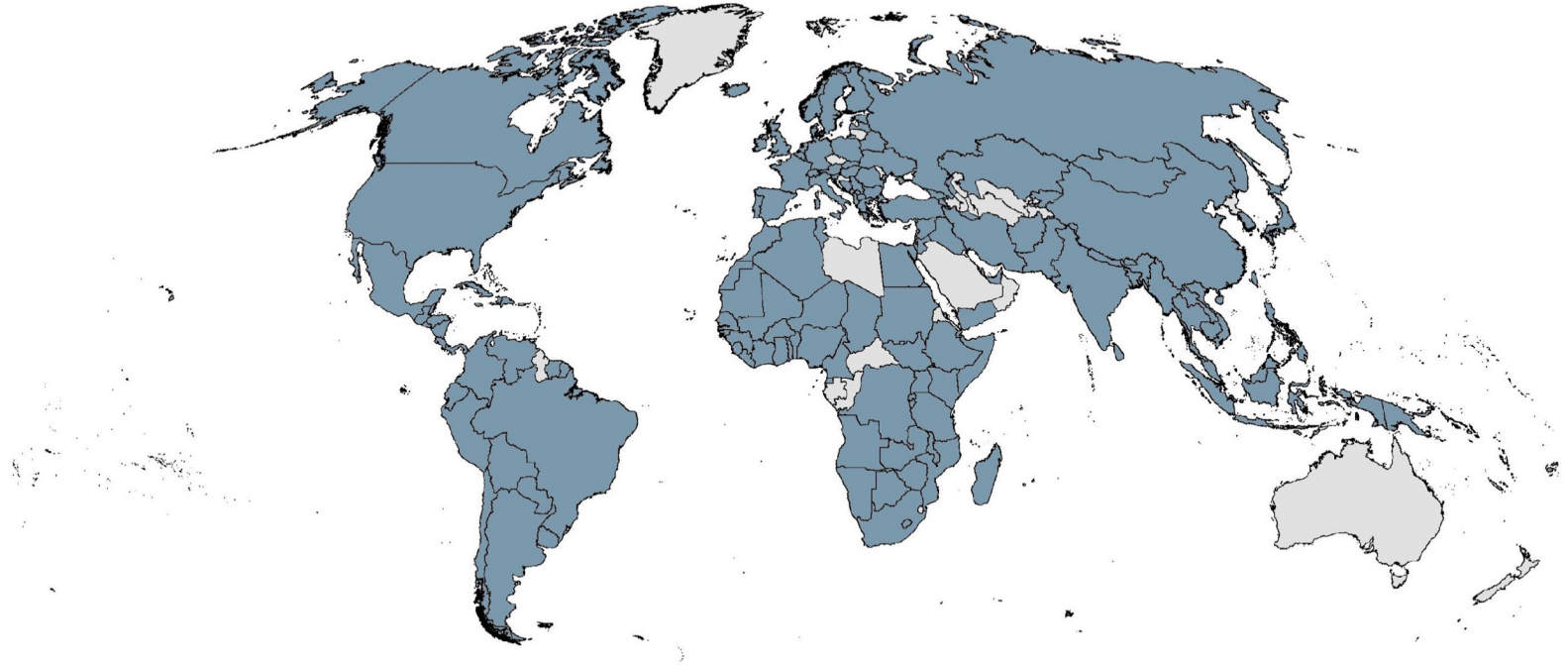
## Person

- Fertility
- Mortality
- Migration
- Education
- Labor-force participation
- Occupational structure
- Ethnicity
- Disability



IPUMS supports the  
Sustainable Development Goals

# Countries participating in IPUMS\*



\* IPUMS International, DHS, PMA and MICS



# Data Preservation



**KHARTOUM, CBS-  
SUDAN**



**DHAKA, BANGLADESH  
BUREAU OF STATISTICS**

# Census and survey microdata

**Age Sex Educ Occ**

```
00110131207101110000254100001621210010100203100001001101004100000110010.  
00110227206101220210194100001333010010020203100001001101002100000400101.  
0011030110111031100100110000100001001010101010100001010101010100001010010.  
0011041820410572100100400284000010010020210100001010020210100000310010.  
00210146210104120230253100001914110010020203100001001101002100000400301.  
002102111031103210010030016200001001010101010100001010101010100001010010.  
0021031720410531100100400231000010010020210100001010020210100000110010.  
00310126206105121001005002630411110000020103041110403101004100000400010.  
00410177215102121000383100001000009910010210100001010020210100000210010.  
00410281215102721000333100001531010010020210100001003020210100000210010.  
00510189215105121001003100001000009910010210100001010020210100000210010.  
0061017121510512100100310000100000210010210100001010020210100000210010.  
00610276215105721001003100001743200110010203100001003101001100000210010.  
006103081021107210010020011900001001010101010100001010101010100001010010.  
006104121031107210010040023100001001010101010100001010101010100001010010.  
00710183215105121001003100001122810010020210100001002020208100000210010.  
00710224205105821001001100001913110010020203100001003101001100000400010.  
00810156212105120180203100001000000110010210100001010020310100000400501.  
00810226206105311001003100001712110010020210100001003021010071210110010.  
00810317204105311001003100001000010010020210100001010020210091510110010.  
008104111031107110010030022500001001010101010100001010101010100001010010.  
00910185215105111001003100001744210010020207100001003101001100000110010.
```

# Published Data Tables

Zimbabwe Chapter 1 Population s

**Table 1.8: Total Population by Broad Age Groups and Ethnicity, Zimbabwe 2012 Census**

Ethnic Origin	Age Group				Not Stated	Total
	0 - 14	15 - 49	50-64	65+		
African	5351019	6239820	848450	522376	18355	12980020
European	4452	10994	6424	6521	341	28732
Asiatic	1857	5330	1865	977	126	10155
Mixed Race	5375	8745	2469	1300	34	17923
Other	222	524	197	134		
Not Stated	9356	4263	510	396		880
<b>Total</b>	<b>5372281</b>	<b>6269676</b>	<b>859915</b>	<b>531704</b>		<b>2766</b>

**Table 1.9: Urban Population by Broad Age Groups and Ethnicity, Zimbabwe 2012 Census**

Ethnicity	0 - 14	15 - 49	50-64	65+	Not Stated	Total
African	34.2	62.3	5.3	2.0	0.1	98.6
European	0.1	0.3	0.1	0.1	*	0.6
Asiatic	*	0.2	*	*	*	0.2
Mixed Race	0.1	0.2	0.1	*	*	0.4
Other	*	*	*	*	*	*
Not Stated	0.1	*	*	*	0.1	0.2
<b>Total</b>	<b>34.5</b>	<b>63.0</b>	<b>5.5</b>	<b>2.2</b>	<b>0.2</b>	<b>100.0</b>

**Table 1.10: Rural Population by Broad Age Groups and Ethnicity, Zimbabwe 2012 Census**

Ethnicity	0 - 14	15 - 49	50-64	65+	Not Stated	Total	Num
African	44.4	50.5	7.1	5	0.1	100	8752
European	23	62.2	21.7	14.4	0.4	100	4
Asiatic	19.6	76.6	16.3	3.6	0.2	100	
Mixed Race	40.9	52.9	11.2	6.1	0.1	100	2
Other	23.5	58.6	16.4	17.2	0.7	100	
Not Stated	42.4	19.1	2.2	1.9	36.6	100	15
<b>Total</b>	<b>44.4</b>	<b>50.5</b>	<b>7.1</b>	<b>5</b>	<b>0.2</b>	<b>100</b>	<b>8775</b>

**Table 4.5  
Highest Level of Education Completed by Province (Aged 6 years and above)**

Province/ Urban/Rural	Population aged 6+	Basic education							
		None		Primary		Lower secondary		Upper secondary	
		Completed	Not completed	Completed	Not completed	Completed	Not completed	Completed	Not completed
Vientiane Capital	626 952	8.9	15.4	20.1	10.3	10.2	15.1	5.3	
Phongsaly	139 245	52.1	8.0	26.6	2.9	4.4	1.3	1.5	
Luangnamtha	123 061	44.5	10.6	25.5	4.2	5.3	2.5	2.7	
Oudomxay	218 922	41.5	11.0	31.7	3.7	5.2	1.8	1.9	
Bokeo	121 699	38.6	12.4	29.9	4.6	5.5	2.6	2.5	
Luangprabang	339 260	30.3	13.8	34.4	4.6	6.1	4.1	2.5	
Huaphanh	231 778	32.1	13.2	36.5	3.9	7.5	1.2	2.1	
Xayabury	293 120	18.1	30.5	26.9	7.2	7.2	2.9	2.8	
Xiengkhuang	191 340	25.1	14.8	31.2	7.4	10.2	2.6	3.6	
Vientiane	333 471	19.2	18.6	27.2	8.7	9.8	6.6	4.4	

**Cuadro 2: PARAGUAY. PUEBLOS INDÍGENAS**

Población por departamento, según familia lingüística y pueblo indígena, 2012

Familia lingüística	Pueblo Indígena	TOTAL	Concepción	San Pedro	Guaíra	Caaguazú	Caazapá	Itapúa	Alto Paraná	Asunción y Central	Amambay	Canindeyú	Presidente Hayes	Boquerón	Alto Paraguay
	<b>TOTAL</b>	<b>112.848</b>	<b>3.998</b>	<b>3.572</b>	<b>1.221</b>	<b>9.425</b>	<b>3.547</b>	<b>2.370</b>	<b>7.042</b>	<b>2.458</b>	<b>11.852</b>	<b>13.484</b>	<b>25.789</b>	<b>23.950</b>	<b>4.140</b>
1. GUARANÍ	Guaraní Occidental	2.379	0	167	0	0	0	0	0	0	0	0	0	2.212	0
	Aché	1.942	0	0	0	269	450	0	172	0	0	1.051	0	0	0
	Ava Guaraní	17.697	142	1.524	0	946	0	5.061	379	197	9.448	0	0	0	0
	Mbya	21.422	1.507	1.273	1.221	8.210	3.097	2.338	1.642	331	0	1.803	0	0	0
	Pai Tavyterá	15.097	1.869	391	0	0	0	0	0	0	11.655	1.182	0	0	0
	Guaraní Nandéva	2.393	0	0	0	0	0	0	0	0	0	0	0	2.393	0
2. LENGUA MASKOY	Toba Maskoy	2.817	0	0	0	0	0	0	0	0	0	0	1.406	0	1.411
	Enlhet Norte	8.632	0	0	0	0	0	0	0	0	0	0	4.289	4.343	0
	Enket Sur	5.740	381	0	0	0	0	0	0	0	0	0	5.359	0	0
	Sanapaná	2.833	0	0	0	0	0	0	0	0	0	0	2.833	0	0
	Angaité	6.638	13	0	0	0	0	0	0	0	0	0	6.350	275	0
	Guaná	86	86	0	0	0	0	0	0	0	0	0	0	0	0
3. MATACO MATAGUAYO	Nivaclé	16.350	0	0	0	0	0	0	0	122	0	0	3.302	12.829	97
	Maká	1.892	0	0	0	0	0	32	167	1.283	0	0	410	0	0
	Manjui	385	0	0	0	0	0	0	0	0	0	0	0	385	0
4. ZAMUCO	Ayoreo	2.481	0	0	0	0	0	0	0	0	0	0	0	1.513	968
	Ybytosó	1.824	0	0	0	0	0	0	0	343	0	0	0	0	1.481
	Tomáráho	183	0	0	0	0	0	0	0	0	0	0	0	0	183
5. GUAICURU	Qom	2.057	0	217	0	0	0	0	0	0	0	0	1.840	0	0

Fuente: STP/DGEEC. III Censo Nacional de Población y Viviendas para Pueblos Indígenas 2012.



# Analysis-ready Data Tables

Sri Lanka 2001

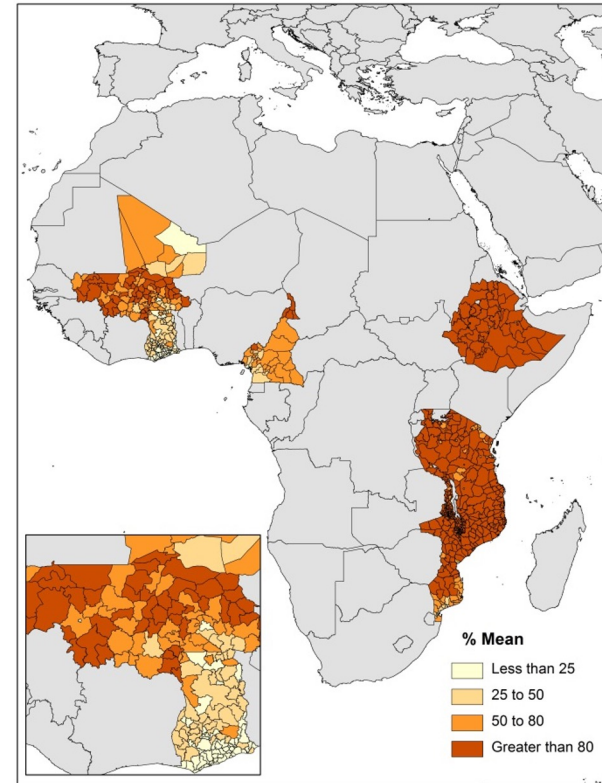
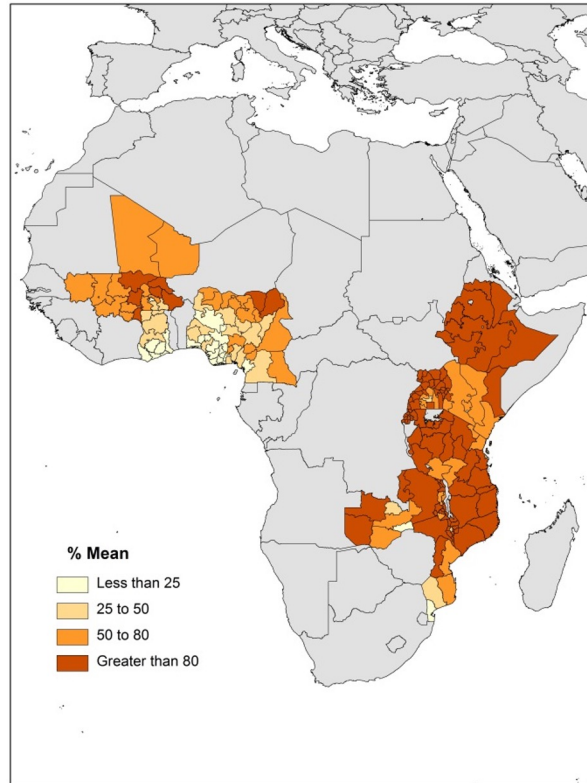
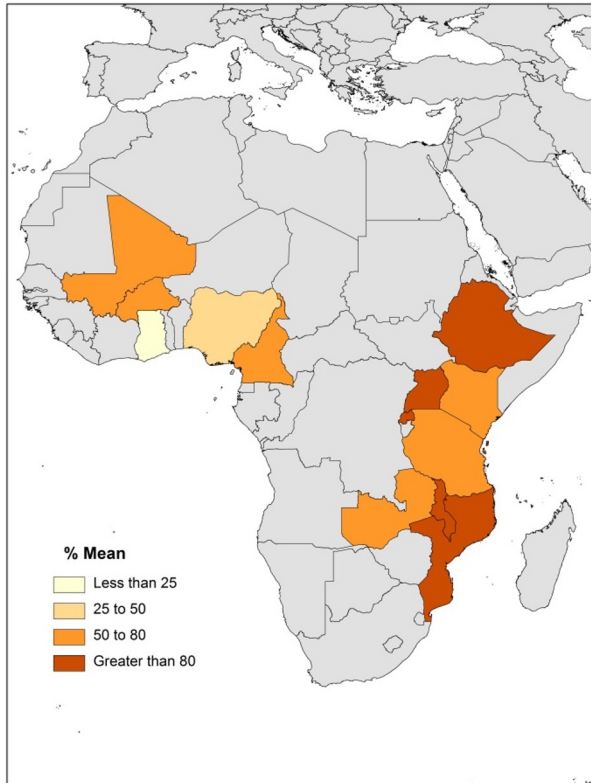
GISJOIN	g0	g1	AAG001	AAG002	AAG003	AAG004	AAG005	AAG006	AAG007	AAG008	AAG009	AAG010	AAG011	AAG012
LK05	Sri Lanka	Colombo	855142	3.8	7.4	11.6	8.2	10.2	1.8	15.1	10.9	6	19.8	5.3
LK07	Sri Lanka	Gampaha	756186	2	5.2	9	6.7	7.7	4.3	20.4	14.6	6.3	19.3	4.6
LK10	Sri Lanka	Kalutara	356837	1.5	5.7	8.2	5.8	7.7	13.4	16.8	10.3	6.4	19.3	4.9
LK11	Sri Lanka	Kandy	407554	1.5	7.3	7.5	4.5	8	18.3	13.2	7.2	7.2	20.3	5
LK16	Sri Lanka	Matale	156179	1.1	5.1	5.3	2.9	6	37.2	10.7	5.1	5.5	17.6	3.4
LK20	Sri Lanka	Nuwara Eliya	281546	0.7	3.3	2.6	2.2	5	47.7	5.2	3.6	3.5	21	5.2
LK06	Sri Lanka	Galle	318680	1.5	6	6.8	4.2	5.8	25.9	14.6	6.6	5	19.5	4.2
LK17	Sri Lanka	Matara	242175	1.4	6.4	4.9	3.8	5.2	32.8	13.7	6.1	5.9	17	2.8
LK08	Sri Lanka	Hambantota	164923	0.9	5.4	5.5	2.7	3.7	40	15	6	4.6	12.7	3.4
LK01	Sri Lanka	Ampara	162322	0.9	5.9	3.8	3	7.8	35.5	8.5	4.2	6	19.1	5.3
LK14	Sri Lanka	Kurunegala	514553	1.3	5.5	5.4	3.1	4.8	31.2	15.4	6.5	6.1	16.8	3.9
LK22	Sri Lanka	Puttalam	229425	1.2	4	3.9	2.8	5.6	20.9	17.1	6.9	7.2	25.9	4.3
LK02	Sri Lanka	Anuradhapura	285806	0.8	4.5	3.3	2.5	6.4	51.6	7.2	3.5	4	9.3	6.8
LK21	Sri Lanka	Polonnaruwa	137078	0.9	3.6	3	2	5.8	49.8	6.8	3.8	4.1	11.6	8.6
LK03	Sri Lanka	Badulla	294223	1	5	4.1	2.7	4.3	48.8	5.9	3.4	3.7	15.8	5.4
LK18	Sri Lanka	Moneragala	144600	0.7	3.9	3.2	2	3.8	59.1	5.7	3.4	4.1	10.1	4
LK23	Sri Lanka	Ratnapura	375365	0.9	3.9	5.6	2.3	3.8	38.2	10.6	5.6	3.8	22	3.4
LK12	Sri Lanka	Kegalle	258980	1.1	5.7	5.3	3.7							

Uganda 2002

GISJOIN	g0	g1	g2	AAL001	AAL002	AAL003	AAL004	AAL005	AAL006	AAL007
UG101	Uganda	uganda central	kalangala	3508	274	7.81	367	195	172	0
UG102	Uganda	uganda central	kampala	17560	293	1.67	681	396	248	37
UG103	Uganda	uganda central	kiboga	42265	2514	5.95	3198	1999	1181	18
UG104	Uganda	uganda central	luwero	82491	4235	5.13	7494	3720	3774	0
UG105	Uganda	uganda central	masaka	131565	23762	18.06	32927	18742	14029	156
UG106	Uganda	uganda central	mpigi	69893	4576	6.55	6445	3188	3245	12
UG107	Uganda	uganda central	mubende	123265	3849	3.12	4908	2904	2004	0
UG108	Uganda	uganda central	mukono	113041	5019	4.44	6532	2800	3714	18
UG109	Uganda	uganda central	nakasongola	22000	352	1.60	1325	501	824	0
UG110	Uganda	uganda central	rakai	72484	11495	15.86	14186	8602	5564	20

# Importance of Subnational Geographies

Percent of children under 5 living in housing unit with dirt floor



**Gender equity in the health workforce:  
Analysis of 104 countries**

Mathieu Boniss, Michelle Mabaac, Linxi Xia, Tara Wally, IPHS  
Health Workforce Working Party  
March 2019

**SUSTAINABLE DEVELOPMENT GOALS**

UNFPA Strategy for the 2020 Round of Population & Housing Censuses (2015-2024)

UNFPA

**Global strategy on human resources for health:  
Workforce 2030**

**BECAUSE EVERYONE COUNTS**

**TURNING PROMISES INTO ACTION:  
GENDER EQUALITY IN THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT**

UN WOMEN

**ILO global estimates on migrant workers  
Results and methodology**

Special focus on migrant domestic workers

ILO

**A pilot study on disaggregating SDG indicators by migratory status**

IOM UN MIGRATION

International Organization for Migration

**IPUMS provides demographic data for international COVID-19 research**

September 15, 2020 by mpc30j

By Lara Cleveland

Since the onset of the COVID-19 outbreak, researchers across the globe have been accessing census microdata from IPUMS International for COVID-19-related research. Scholars at universities from the U.S. to Nepal, Columbia to Belgium, Nigeria to China, and elsewhere have used IPUMS data to assess population dynamics contributing to COVID-19 vulnerability or spread. Divisions of the United Nations, World Bank, and other policy research institutes have similarly accessed IPUMS census data for COVID response and relief efforts.

IPUMS International harmonizes and disseminates household-level microdata census samples from more than 100 countries across the globe.

**COVID-19 Population Vulnerability Dashboard**

How to use the dashboard: Select Census Data or Population Estimates tab and use drop-down menu on upper right to choose a country or sub-national administrative unit. Click Legend icon in the upper right corner of the map to view the map legend. To switch indicators, click Layer icon in the upper right corner of the map. Zooming in on the map will gradually turn on sub-national level indicators. Data might take some seconds to load. Note that indicator values on bottom panel are always shown for the country or sub-national admin unit selected on the map.

Argentina - Census 2010


Persons Per Household	3.3
Persons Per Room	1.2
Persons 65+	4M
Persons 80+	933k
Persons 65+ Living Alone	21.2%
Households With Access To or Own (%)	67

# Better individual-level risk models can improve the targeting and life-saving potential of early-mortality interventions

[Chad Hazlett](#), [Antonio P. Ramos](#)  & [Stephen Smith](#)

[Scientific Reports](#) **13**, Article number: 21706 (2023) | [Cite this article](#)

# PLOS ONE

 OPEN ACCESS  PEER-REVIEWED

RESEARCH ARTICLE

## An introduction to DUIA: The database on urban inequality and amenities

[Frederico Roman Ramos](#)  [Justus Uitermark](#)

Published: June 25, 2021 • <https://doi.org/10.1371/journal.pone.0253824>



Global Environmental Change

Volume 71, November 2021, 102414



## Climate change, social vulnerability and child nutrition in South Asia

[Kathryn McMahon](#) <sup>a</sup>  , [Clark Gray](#) <sup>b</sup>

## POPULATION AND DEVELOPMENT REVIEW

Original Article |  Full Access

## The Childhood Origins of Climate-Induced Mobility and Immobility

[Brian C. Thiede](#) , [Heather Randell](#), [Clark Gray](#)



World Development Sustainability

Volume 2, June 2023, 100072



## Intergenerational educational mobility in Sub-Saharan Africa

[Seife Dendir](#) 

## Heat and drought reduce subnational population growth in the global tropics

Original Paper | Published: 24 April 2023

Volume 45, article number 6, (2023) | [Cite this article](#)

[Download PDF](#) 

 Access provided by University of Minnesota Twin Cities Wilson Library

[Clark Gray](#)  & [Maia Call](#)



# Capacity-building Outreach







# UNIVERSITY OF MINNESOTA

## Driven to Discover<sup>®</sup>

We are advancing spatial science  
and the workforce of tomorrow

### Centers

