A Framework for the Assessment of Population Risk and Resilience to Climate Change
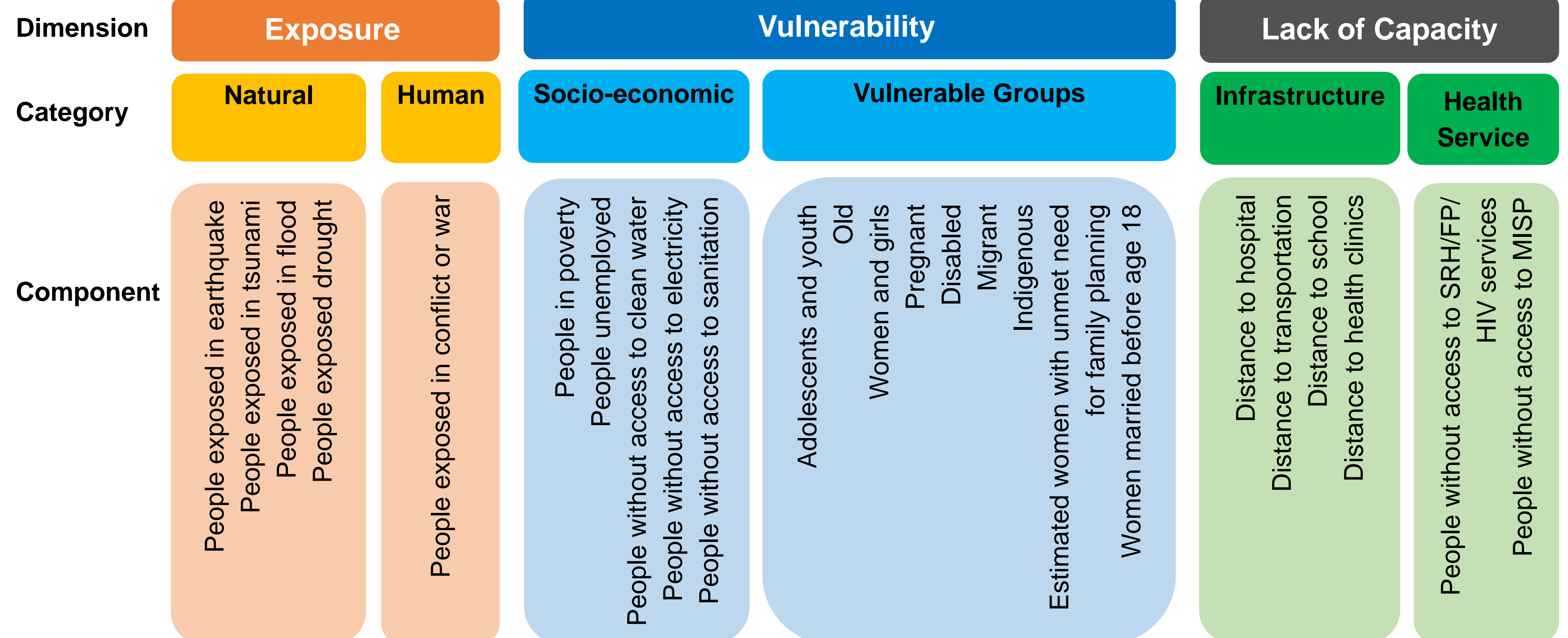
UNFPA

* Population and Development Branch | Technical Division, United Nations Population Fund | 2016

Objective

Building on the INFORM framework and index, UNFPA developed a Population Risk and Resilience Assessment Framework, and a tool (DECA) to consolidate information essential for building resilience and sustainability in communities, and particularly among women and girls. The framework aligns UNFPA's targeted vulnerable population with disaster risk reduction and climate change adaptation, and complements INFORM by adding a demographic perspective. This approach has been applied in a range of countries including Malawi and Indonesia.

Population-Oriented Climate Change Risk Framework (adjusted from INFORM)[1]

Dimension	Exposure		Vulnerability		Lack of Capacity	
Category	Natural	Human	Socio-economic	Vulnerable Groups	Infrastructure	Health Service
Component	People exposed in earthquake / People exposed in tsunami / People exposed in flood / People exposed in drought	People exposed in conflict or war	People in poverty / People unemployed / People without access to clean water / People without access to electricity / People without access to sanitation	Adolescents and youth / Old / Women and girls / Pregnant / Disabled / Migrant / Indigenous / Estimated women with unmet need for family planning / Women married before age 18	Distance to hospital / Distance to transportation / Distance to school / Distance to health clinics	People without access to SRH/FP/ HIV services / People without access to MISP

[1] INFORM: http://www.inform-index.org

Three Dimensions

Exposure

Most hazards or threats have a geographic focus – an expected impact area. This is primarily true for natural hazards like floods, droughts or storm surges, but is also true for conflict settings where hotspots for violence are known.

Vulnerability

The impact of a hazard on the population depends not only on exposure, or where the hazard will hit, but on the unique vulnerabilities of subsets of the population.
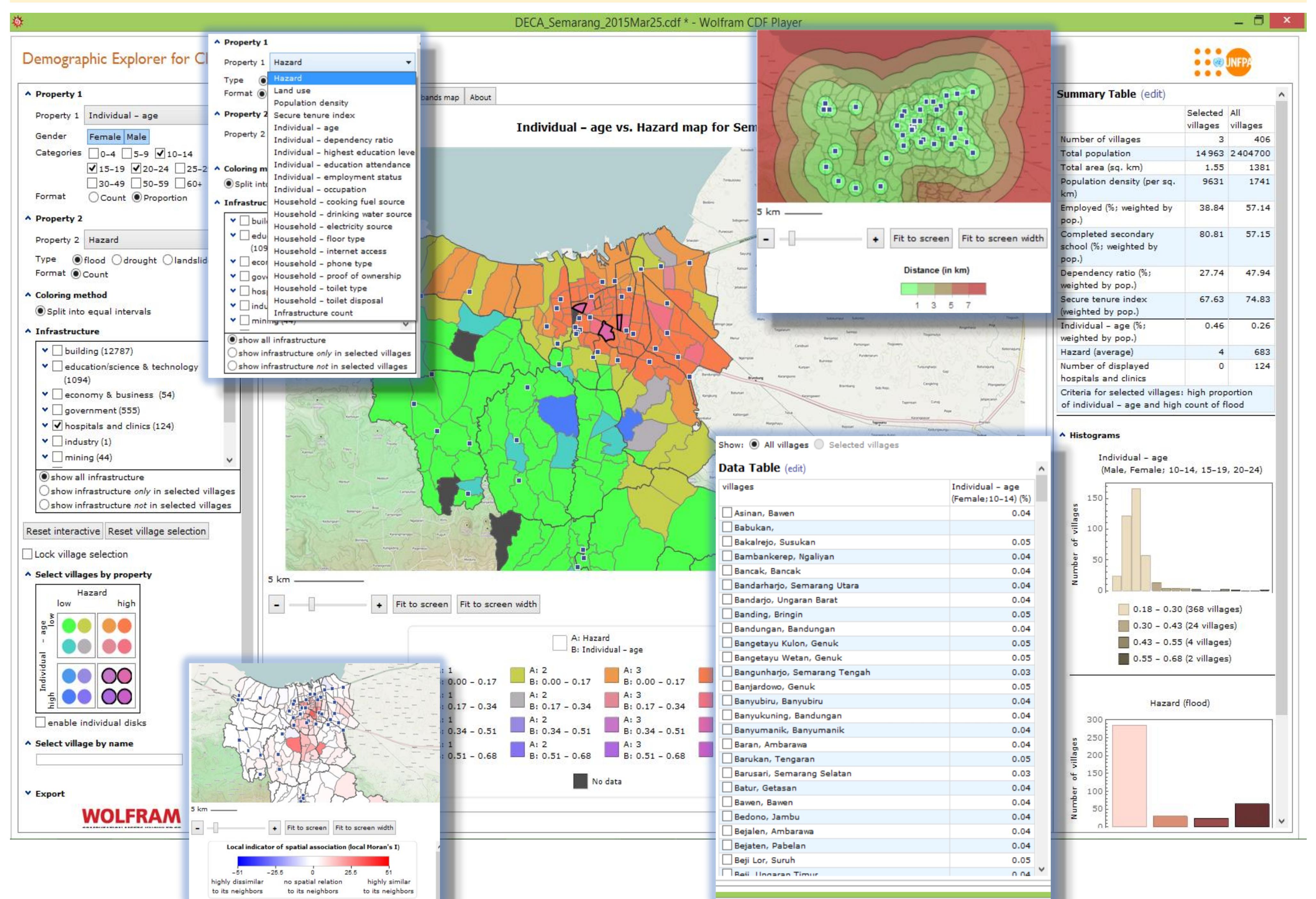
Lack of capacity

Health conditions can deteriorate rapidly under climate change events such as heat waves. Access to transportation and health services affect the vulnerability of key populations, including pregnant women, young and old people. Assuring health service access during such events can reduce vulnerability reduction and build resilience.

Population-oriented Climate Change Risk Framework (adjusted from INFORM)

Dimensions	Categories	Components/Indicators (data source) National level	Sub-national/Local level (examples)
Hazard & Exposure	Natural	Natural hazard exposure level (INFORM)*	Flood/Drought/Landslide/Soil erosion level (SSBN*, NSO) / People exposed in hazard areas (Census)
	Human	Human-made disaster exposure level (INFORM)*	
Vulnerability	Socio-economic	Socio-Economic Vulnerability Level (INFORM)*, which include: Poverty & Development, Inequality, and Aid Dependency	Poverty Index (WB) / Secure Tenure Index (Census) / % total HH with access to improved water source (Census) / % of HH with access to electricity (Census) (SDG 7.1.1) / % of HH with improved sanitation facilities ((Census) / % of HH with improved housing material (Census) / % Agriculture occupation (Census) / (same indicators with absolute numbers)
	Vulnerable groups	Dependency ratio (WPP)* / % of women (WPP)* / % of the young age 0-14 (WPP)* / % of the old age 65+ (WPP)* / % of adolescents age 10-19 (WPP)* / % of youth age 15-24 (WPP)* / % of pregnant women (DHS)* / Maternal mortality ratio (WB)* / (indicators with absolute numbers)	Population density / % of women (census) / % of the young age 0-14 (Census) / % of the old age 65+ (Census) / % of adolescents age 10-19 (Census) / % of youth age 15-24 (Census) / % of pregnant women (Census) / Estimated % of women with unmet need for family planning / % of women married before age of 18 / (same indicators with absolute numbers)
Lack of Capacity	Infrastructure	% of people with access to transportation (SDG 11.2.1)	Distance to transportation/school/hospital (NSO)
	Health Service	% of households with access to health services (DHS)*	% of households with access to health services (combing DHS* & Census)

* Open data

Data and Methods

The primary population data are census and household surveys. Spatial analysis and Small Area Estimation (SAE) are applied for sub-national analysis to estimate variables at small area level where decisions are made.

National Risk Analysis steps

(1) Indicator analysis. Analyze the key "National level" indicators for year 2015.
(2) Projection of targets. Use the most recent census data and UN World Population Prospects to project the population risk distribution to 2030. Explore how the risk changes along with the demographic transition (e.g. change of age structure, change of number of people exposed in hazard zones).
(3) Review policy implications.

Sub-National Risk Analysis steps

(1) Data and policy scoping.
(2) Context-specific indicators. Ensure that indicators particularly related to climate change in that country can be included, working closely with national and local government or experts.
(3) – (4) Apply national risk analysis steps (1) – (2).
(5) Extraction of the climate change hazard zones. Identify the vulnerable people within the hazard zones and map the geographical variances of population vulnerability.
(6) Review policy implications.

DECA – Demographic Explorer for Climate Adaptation

DECA - Demographic Exploration for Climate Adaptation (http://www.popclimate.net/DECA) is a tool developed by UNFPA in partnership with the International Institute for Environment and Development and Wolfram Research. It illuminates linkages between population dynamics and adaptation to global climate change through automated integration and analysis of census and other spatial data.

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