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How Open Science, Data Science, and Scientific Computing Revitalize and Make Hard-to-reach Population Visible: A Two-decade Research on Taiwan Indigenous Peoples

Tuesday, 17 March 2026 15:00 (30 minutes)

Taiwan indigenous peoples (TIPs) are a branch of Austronesians or Polynesians. Persistent lack of data on TIPs made TIPs become isolated, marginalized, underdeveloped, and thus "invisible" hard-to-reach populations in the real world. I will address how scientific computing, data science, and open science are applied to build TIPD (https://osf.io/e4rvz) big data based on Taiwan's household register. Scientific computing methods and technologies, data science, and open science are three crucial dimensions that are utilized to overcome the aforementioned challenges. My talks will highlight theoretical foundation, implementation process, challenges, and ways to overcome research barriers in synthesizing, processing, enriching, managing, and sharing big data. The efforts in building open data not only enable us to access HRPs and build insights into various issues they encounter, but also allow us to design effective policy measures to empower and revitalize HRPs. The contributions of my research on TIPs and HRPs are as follows. First, a contribution of moving from "closed" to "open" data access. Second, a contribution of moving research from "the elite" to "the ordinary" people. Third, a contribution of moving from "local" to "global" perspective. Fourth, a contribution of enabling TIPs research from "macro and static" to "micro and dynamic" data (https://doi.org/10.1007/s43545-025-01049-1).

Keywords: data science, hard-to-reach population, open science, open data, scientific computing, Taiwan indigenous peoples

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