# Pitfalls of the Geographic Population Structure (GPS) Approach Applied to Human Genetic History: A Case Study of Ashkenazi Jews

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#### Abstract

In a recent interdisciplinary study, Das et al. have attempted to trace the homeland of Ashkenazi Jews and of their historical language, Yiddish (Das et al. 2016. Localizing Ashkenazic Jews to Primeval Villages in the Ancient Iranian Lands of Ashkenazi. Genome Biol Evol. 8:1132–1149). Das et al. applied the geographic population structure (GPS) method to autosomal genotyping data and inferred geographic coordinates of populations supposedly ancestral to Ashkenazi Jews, placing them in Eastern Turkey. They argued that this unexpected genetic result goes against the widely accepted notion of Ashkenazi origin in the Levant, and speculated that Yiddish was originally a Slavic language strongly influenced by Iranian and Turkic languages, and later remodeled completely under Germanic influence. In our view, there are major conceptual problems with both the genetic and linguistic parts of the work. We argue that GPS is a provenancing tool suited to inferring the geographic region where a modern and recently unadmixed genome is most likely to arise, but is hardly suitable for admixed populations and for tracing ancestry up to 1,000 years before present, as its authors have previously claimed. Moreover, all methods of historical linguistics concur that Yiddish is a Germanic language, with no reliable evidence for Slavic, Iranian, or Turkic substrata.

Key words: population genetics, Ashkenazi Jews, Yiddish, geographic population structure, relexification.

Das et al. (2016) have recently presented an unorthodox interpretation of the history of Ashkenazi Jews, suggesting that they originated from a "Slavo-Iranian confederation". This claim is essentially based on application of the geographic population structure (GPS) approach (Elhaik et al. 2014) to high-density autosomal single nucleotide polymorphism (SNP) data. GPS was used to infer geographic coordinates of populations supposedly ancestral to Ashkenazi Jews"primeval villages" (Das et al. 2016)—which were then interpreted at great length to support the Yiddish relevification hypothesis advanced earlier by one of the coauthors (Wexier 1991, 2002, 2010); an hypothesis that Yiddish was originally a Slavic language later remodeled completely under Germanic influence. In our view, there are major conceptual problems with both the genetic and linguistic components of the work. Below we argue that GPS is a provenancing tool, at best suited

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# **Study Of Population A Geographic Approach**

**Michael Pacione** 

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An Introduction to Population Geographies Holly R. Barcus, Keith Halfacree, 2017-09-01 An Introduction to Population Geographies provides a foundation to the incredibly diverse topical and interesting field of twenty first century population geography It establishes the substantive concerns of the subdiscipline acknowledges the sheer diversity of its approaches key concepts and theories and engages with the resulting major areas of academic debate that stem from this richness Written in an accessible style and assuming little prior knowledge of topics covered yet drawing on a wide range of diverse academic literature the book s particular originality comes from its extended definition of population geography that locates it firmly within the multiple geographies of the life course Consequently issues such as childhood and adulthood family dynamics ageing everyday mobilities morbidity and differential ability assume a prominent place alongside the classic population geography triumvirate of births migrations and deaths This broader framing of the field allows the book to address more holistically aspects of lives across space often provided little attention in current textbooks Particular note is given to how these lives are shaped though hybrid social biological and individual arenas of differential life course experience By engaging with traditional quantitative perspectives and newer qualitative insights the authors engage students from the quantitative macro scale of population to the micro individual scale Aimed at higher level undergraduate and graduate students this introductory text provides a well developed pedagogy including case studies that illustrate theory concepts and issues

Population Geography: Progress & Prospect (Routledge Revivals) Michael Pacione, 2013-10-14 First published in 1986 this book presents a comprehensive overview of the contemporary state of knowledge in the field of population geography It discusses the contemporary state of the art and surveys new research developments and new thinking in the major branches of the subject It thereby provides an introductory guide to contemporary trends and forms a reference point for future development in the subject NEP Population Geography (with Practical) B.A. 4th Sem (MIC-4) Dr. Chaturbhuj Mamoriya, Dr. H. S. Garq, 2025-02-09 1 Population Geography Meaning Nature and Scope 2 Types and Sources of Population data 3 Population Studies and Demography 4 Population Dynamics Fertility 5 Mortality 6 Migration 7 Composition of Population 8 Composition of Population Occupational Structure and Literacy 9 Contemporary Population Issues 10 Population Policies Practical 1 Population Distributions Making Population Geography Adrian Bailey, 2014-05-01 Making Population Geography is a lively account of the intellectual history of population geography arguing that while population geography may drift in and out of fashion it must continue to supplement its demographic approach with a renewed emphasis on cultural and political accounts of compelling population topics such as HIV AIDS sex trafficking teen pregnancy citizenship and global ageing in order for it to shed light on contemporary society Making Population Geography draws both on the writings of those like Wilbur Zelinsky and Pat Gober who were at the very epicentre of spatial science in the 1960s and those like Michael Brown and Yvonne Underhill Sem whose post punk introspections of method content and

purpose now push the field in new directions Using a wide range of case studies contemporary examples and current research the book links the rise and fall of the key concepts in population geography to the changing social and economic context and to geographys turn towards social theory Referencing the authors classroom experiences both in the US and the UK Making Population Geography will appeal to students studying geography population issues and the development of critical scholarship *Population Geography* K. Bruce Newbold,2017-02-15 This text provides a comprehensive introduction to population geography grounding students in the tools and techniques that are commonly used to describe and understand population concepts Arguing that an understanding of population is essential to prepare for the future Newbold provides undergraduates with a thorough grasp of the field **Geographic Approaches to Democratization**, 1995

Demography at the Edge Rasmus Ole Rasmussen, Prescott Ensign, Lee Huskey, 2016-05-23 Addressing the methodological and topical challenges facing demographers working in remote regions this book compares and contrasts the research methods and models and policy applications from peripheral regions in developed nations With the emphasis on human populations as dynamic adaptive evolving systems it explores how populations respond in different ways to changing environmental cultural and economic conditions and how effectively they manage these change processes Theoretical understandings and policy issues arising from demographic modelling are tackled including competition for skilled workers urbanisation and ruralisation population ageing the impacts of climate change the life outcomes of Indigenous peoples globalisation and international migration Based on a strong theoretical framework around issues of heterogeneity generational change temporariness and the relative strength of internal and external ties Demography at the Edge provides a common set of approaches and issues that benefit both researchers and practitioners Geographical Thought Mr. Rohit Manglik, 2024-07-28 EduGorilla Publication is a trusted name in the education sector committed to empowering learners with high quality study materials and resources Specializing in competitive exams and academic support EduGorilla provides comprehensive and well structured content tailored to meet the needs of students across various streams and levels

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Geographic Approaches to Climate Change and Mitigation: Urban and Rural Perspectives (Volume 2) Shahfahad, Pir Mohammad, Abraham R. Matamanda, Jesús Rodrigo-Comino, 2025-09-26 This book provides an exploration of innovative geographic approaches to address the challenges posed by climate change focusing on solutions

across urban and rural contexts Offering actionable insights it bridges diverse disciplines to highlight practical strategies and evidence based policies for a more sustainable and resilient future The volume is organized into key themes that address global issues sustainable governmental policies urban planning rural land use practices transportation systems food security heritage conservation and the socio environmental impacts of climate change From implementing nature based solutions in African cities to reforestation practices in rural landscapes and from reducing meat consumption to preserving cultural heritage at risk from rising sea levels each chapter provides real world case studies and forward thinking strategies The book addresses the importance of integrating diverse perspectives emphasizing the need for cohesive policies and innovative solutions to mitigate climate impacts while fostering sustainable development Topics like participatory democracy in climate action the nexus between tourism and the environment and leveraging shared electric vehicles for transit sustainability illustrate the multifaceted approach required to tackle global challenges By examining methodologies such as fuzzy logic for territorial planning innovative urban design for sustainable education environments and advanced logistics for freight transportation the book sets out to solve complex problems related to resource management community resilience and climate adaptation It also sheds light on the socioeconomic and cultural dimensions of climate change underscoring the importance of interdisciplinary collaboration and global action *Ouantitative and Statistical Approaches to Geography* John A. Matthews, 2013-10-22 Quantitative and Statistical Approaches to Geography A Practical Manual is a practical introduction to some quantitative and statistical techniques of use to geographers and related scientists This book is composed of 15 chapters each begins with an outline of the purpose and necessary mechanics of a technique or group of techniques and is concluded with exercises and the particular approach adopted These exercises aim to enhance student s ability to use the techniques as part of the process by which sound judgments are made according to scientific standards while tackling complex problems After a brief introduction to the principles of quantitative and statistical geography this book goes on dealing with the topics of measures of central tendency probability statements and maps the problem of time dependence time series analysis non normality and data transformations and the elements of sampling methodology Other chapters cover the confidence intervals and estimation from samples statistical hypothesis testing analysis of contingency tests and non parametric tests for independent and dependent samples The final chapters consider the evaluation of correlation coefficients regression prediction and choice and limitations of statistical techniques This book is of value to undergraduate geography students UPSC NCERT GIST - 32 Books Summary Notes [Class 6-12, 32 books, 314 Chapters] for UPSC IAS and State PSC Exams Mocktime Publication, 2023-01-28 32 Books Classwise Subjectwise and Chapterwise Organised 32 Books NCERT Summary Notes UPSC IAS Civil Services Exam Search Words UPSC IAS prelims UPSC previous papers GIST of NCERT NCERT Summary NCERT Books for UPSC

Research on the American Republics, Excluding the United States, Completed and in Progress United States. Department of State. External Research Division, 1968

The Changing Nature of Geography (RLE Social & Cultural Geography) Roger Minshull, 2014-01-23 This book is an introduction to the nature of geography There are detailed sections on content methods and purposes and an attempt is made to distinguish progress from those changes which are merely fashion and those which result in genuine progress One of these resulting partly from the adoption of quantitative techniques is the improvement in the accuracy and the type of explanation which the geographer is now able to give The new techniques have also helped in the bringing about of profound changes in geographical laws the use of models and even the relevance of determinism Geographical Approaches to Global Sustainable Development Goals (SDGs) Arnakim, Lili Yulyadi, Tahalele, Miranda P., Anshari, Muhammad, 2025-09-19 Regions are adapting and innovating planning mechanisms to meet sustainability challenges Through the geographical approach different regions can tailor their strategies to achieve environmental sustainability that takes into account their unique geographical factors Emphasizing cross jurisdictional cooperation and institutional arrangements regions may better align their initiatives with the United Nations Sustainable Development Goals SDGs The paradigms surrounding the complex interaction between regional development planning and global sustainability contribute valuable insights to the evolving field of development planning theory Geographical Approaches to Global Sustainable Development Goals SDGs examines how different regions across the globe are implementing development planning strategies to achieve the United Nations SDGs By analyzing diverse regional approaches it provides crucial insights into effective localization of global sustainability targets while acknowledging unique geographical contexts Covering topics such as politics social commerce and intellectual property regime this book is an excellent resource for regional planners project managers corporate sustainability consultants sustainability coordinators environmental impact assessors civil society organizations development project investors professionals researchers scholars academicians and more Unpublished Research on American Republics, **Excluding the United States, Completed and in Progress** United States Department of State. External Research Division, Beginning in 1954 Apr issue lists studies in progress Oct issue completed studies Geography Textbook D R Khullar, A text book on Geography **Research on the American Republics** ,1963 *International Encyclopedia of* Human Geography, 2009-07-16 The International Encyclopedia of Human Geography provides an authoritative and comprehensive source of information on the discipline of human geography and its constituent and related subject areas The encyclopedia includes over 1 000 detailed entries on philosophy and theory key concepts methods and practices biographies of notable geographers and geographical thought and praxis in different parts of the world This groundbreaking project covers every field of human geography and the discipline s relationships to other disciplines and is global in scope involving an international set of contributors Given its broad inclusive scope and unique online accessibility it is anticipated that the International Encyclopedia of Human Geography will become the major reference work for the discipline over the coming decades The Encyclopedia will be available in both limited edition print and online via ScienceDirect featuring extensive

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