VOLUME 30 - ARTICLE 56 | PAGES 1561-1570

Is the fraction of people ever born who are currently alive rising or falling?

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DATE RECEIVED: 14 Dec 2013
DATE PUBLISHED: 16 May 2014
WORD COUNT: 2266
KEYWORDS: exponential, historical demography, people ever born, people ever lived, super-exponential
DOI: 10.4054/DemRes.2014.30.56
WEBLINK: All publications in the ongoing Special Collection 8 "Formal Relationships" can be found at http://www.demographic-research.org/special/8/

Abstract

Background: Some journalists and demographers have asked: How many people have ever been born? What is the fraction F(t) of those ever born up to calendar year t who are alive at t? The conditions under which F(t) rises or falls appear never to have been analyzed.

Objective: We determine under what conditions F(t) rises or falls.

Methods: We analyze this question in the model-free context of current vital statistics and demographic estimates and in the context of several demographic models.

Results: At present F(t) is very probably increasing. Stationary, declining, and exponentially growing population models are incapable of increasing F(t), but a doomsday model and a super-exponential model generate both increasing and decreasing F(t).

Conclusions: If the world's human population reaches stationarity or declines, as many people expect within a century, the presently rising fraction of people ever born who are now alive will begin to fall.

Comments: It is curious that nearly all empirical estimates of the number of people ever born assume exponential population growth, which cannot explain increasing F(t).

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