

Humans are Not Fish: Moving Away from the Salmon Bias Hypothesis

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Abstract

An ill-informed salmon analogy spurred over three decades of a catchy, yet fundamentally flawed migration theory. Even in 2026, peer-reviewed articles assessing the Salmon Bias Hypothesis in the US, UK, and Scandinavia, as well as empirical tests of the phenomenon in demography conferences suggests its persistence. But humans are clearly not fish. The salmon that return from the ocean to their freshwater place of birth are the fittest of their species. Most importantly, salmon return to spawn before dying; humans differ on this feature. The Salmon Bias Hypothesis has only been briefly challenged as a concept—not whether results of a study align with it—in 2015 and 2016. We conduct an analysis of the scientific literature, to see how geographically- and disciplinarily- widespread the Salmon Bias Hypothesis has been used and if its usage has peaked. Our results will inform a course-correction of decades of migration research.

Introduction

On April 27, 1994, in a letter to the editor of the *Journal of the American Medical Association*, the term “salmon bias” was born (Pablos-Méndez, 1994). Pablos-Méndez, a physician at Columbia University, succinctly explained that the lower rate of mortality among Hispanic residents in the US—identified in a *JAMA* article by Sorlie and colleagues a year earlier might be a statistical artifact instead of solely a health selection paradox (Sorlie et al., 1993). Pablos-Méndez believed that these results were in-part due to many Hispanics returning “to their country of birth when they retire, become severely ill, or simply after a temporary job”. Consequently, Pablos-Méndez correctly pointed out that “under registration of deaths occurring abroad may be a major flaw in the mortality studies of Hispanic Americans to date.” Had Pablos-Méndez stopped there in the letter, the field of demography undoubtedly would have benefited from this important point. Instead, an ill-informed salmon analogy about the “compulsion to die in one’s birthplace” spurred over three decades of a catchy, yet fundamentally flawed complementary theory and interpretations of robust empirical evidence to the healthy immigrant paradox. Even in 2026, peer-reviewed articles assessing the Salmon Bias Hypothesis in the US, UK, and Scandinavia show its persistence (Goldman and Pebley, 2026; Cederström et al.,

2026; Taylor et al., 2026). Research recently presented in migration-related sessions at the 2026 Population Association of America annual meetings routinely invoked the Salmon Bias Hypothesis, suggesting that it will continue to be an important part of framing migration-health scholarship.

At its core, the Salmon Bias Hypothesis was put forth as a provocative concept to spur further investigation of why Hispanic migrants to US had better health outcomes than African Americans and nearly-as-good health outcomes as non-Hispanic White Americans, despite experiencing many structural inequalities and discrimination in the US (Markides and Coreil, 1986). But humans are clearly not fish. Salmon spawn in lakes and streams and migrate to the ocean. The exact point in which salmon stop feeding, undergo physiological changes, and begin their return migration is not well defined, and it is an arduous journey which only the most fit can accomplish (Quinn, 2005; Foldvik et al., 2024); the chance of any given salmon returning to its origin freshwater depends on commercial fishing patterns at sea, warming waters, the presence of dams, and their sheer ability to endure the journey (Jonsson et al., 2003; Hinch et al., 2012; Perry et al., 2010). The distinction becomes even sharper when considering what the return journey actually selects for. The fish that complete that journey are therefore not simply those closest to death, but those still capable of overcoming the physical barriers between the ocean and their natal waters. The return itself reflects reproductive timing and physical capacity rather than a response to impending death. But the reason why salmon turn around is not because of a compulsion to die—which is part of the life cycle—but rather to spawn the next generation of salmon; human migrants differ on this last feature.

There has only been one concerted effort—over 10 years ago—led by a core of Tulane University public health scholars—over the course of an article in *Demography* (Nauman et al., 2015) and a book chapter (Nauman et al., 2016) in Mike White’s *International Handbook of Migration and Population Distribution* (White, 2016). Nauman and colleagues correctly noted that “...empirical literature on this phenomenon finds that it is often the more compromised or disillusioned migrants who return to origin—in contrast with salmon, among which only the most fit make the return trip...”; they posited calling this the “Midnight Train effect” in reference to a song from a popular 1973 song about “...a musician who moved from his native Georgia to Los Angeles to become a ‘superstar, but he didn’t get far.’ He decides to give up, and ‘go back to the life he once knew’” (Gladys Knight & the Pips, 1973; Nauman et al., 2015). Though the Midnight Train analogy was a vast

improvement on the salmon analogy, it has only been applied in migration research once since (Ginsburg et al., 2016); perhaps this is the case because the analogy still implies return migration as a result of failure in the migrant’s destination.

However, it is unclear how geographically- and disciplinarily- widespread the Salmon Bias Hypothesis has been used and if its usage has peaked (perhaps the analogy is still used but its appearances are declining peer-reviewed publications), and whether any scholarship has uncovered evidence of adults returning to their birthplace to have children as one of their last act before dying—even as unlikely as that sounds—or if research on returning home to start a family is well-defined. This paper conducts an empirical analysis of literature to course-correct decades of demographic research to address the state of the Salmon Bias Hypothesis and propose a new theoretical framework to replace the Salmon Bias.

Proposed Data and Methods

Our inclusion criteria for this study consists of academic, peer-reviewed manuscripts only. For the very preliminary analyses presented below, Google Scholar searches were used to create the data set. Future analyses will use multiple scholarly search engines and identify articles actively testing the salmon bias hypothesis, substantively referring to the salmon bias hypothesis as part of their overall argument, or merely citing the salmon bias hypothesis; each article will be checked and coded “by hand”. Articles will also be categorized by type of migration—international or internal—and geographic region(s).

Preliminary Results and Next Steps

Since 1994, when Pablos-Méndez coined the term, the exact phrase “Salmon Bias” appears in academic work approximately 3,000 times but it is only employed in a title 15 times (see Figure 1 below). In 2017, a peak of three articles included Salmon Bias in their titles. Comparatively, “healthy migrant” appears as an academic title 132 times since 1994 ($\approx 9,700$ times anywhere in an a published manuscript) and “Hispanic health paradox” appears 42 times ($\approx 1,400$ times anywhere in an a published manuscript).

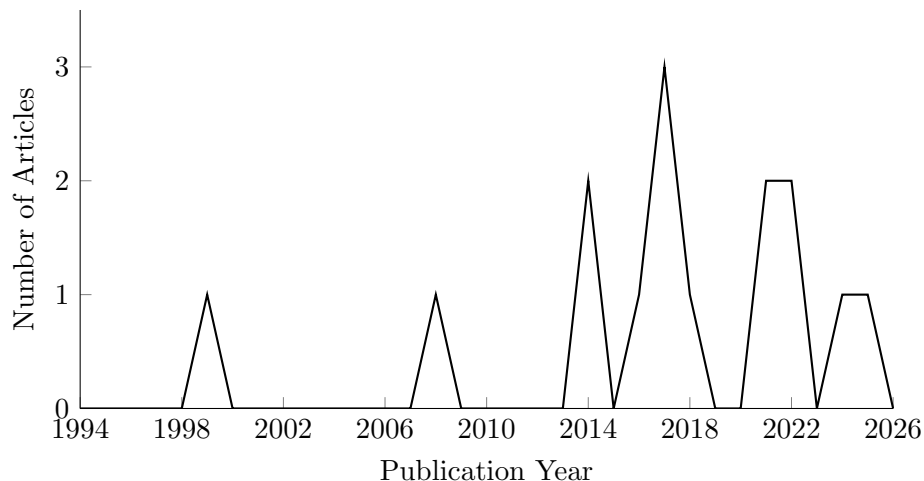


Figure 1: Frequency of academic journal articles with “Salmon Bias” in the title, by publication year, 1994–2026. Years without identified publications are coded as zero.

In *Demography*, the use of “Salmon Bias” in the text (aside from references) or title, peaked in 2011 and again in 2015 and 2016 (see Figure 2 below).

The Salmon Bias Hypothesis was designed as a complement to the Hispanic health paradox and more generally, the healthy migrant theory. However, the term is rarely used in a title of a peer-reviewed manuscript and has not appeared prominently in the text of *Demography*, the Population Association of America’s flagship journal. Given that the “Salmon Bias” has declined in its appearances in *Demography* since 2016, it is possible that the call to rename the phenomenon to the “Midnight Train” was too late. In subsequent analyses, we are going to examine its usage across all journals and major disciplinary journals—as the research pertains to migration and whether the Salmon Bias Hypothesis has become *passé* in scholarly publishing. It is possible that key papers on the Salmon Bias hypothesis are cited out of convention and expectation of reviewers (or even request of reviewers—a colleague noted they were recently asked to shoe-horn a statement on the Salmon Bias Hypothesis despite its seeming irrelevance to the migration study). Migration research more broadly treats home as something migrants can attach to multiple places, including the places where they settle (Ralph and Staeheli, 2011; Romoli et al., 2022). Research on Igbo migrants from Nigeria, for instance,

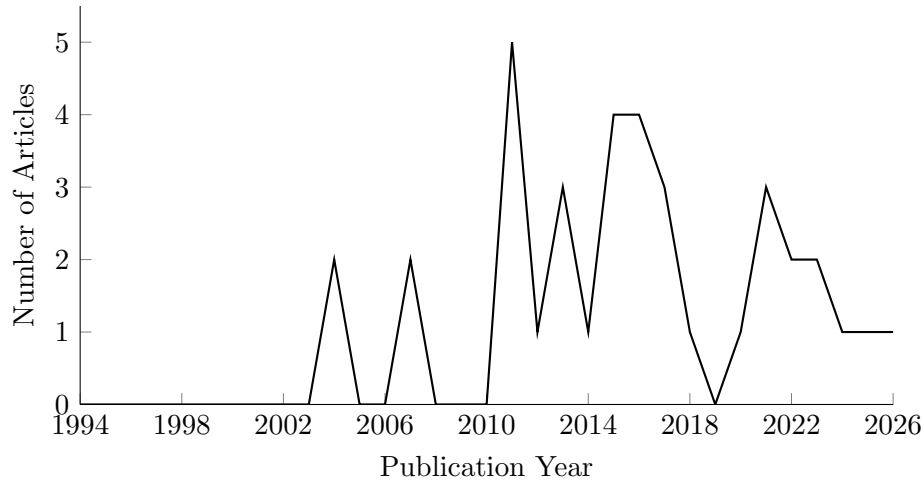


Figure 2: Frequency of *Demography* articles mentioning “Salmon Bias” in the title or text (excluding references), 1994–2026. Years without identified mentions are coded as zero.

shows that “home” may refer to an ancestral village or community rather than a person’s birthplace (Adebayo and Omololu, 2020; Smith, 2004). Once borders, physical decline, and competing meanings of home enter the picture, the idea that sick migrants simply return to their birthplace (let alone to die) makes less sense as an explanation for migration. By the Population Association of America meetings in 2027, and upon viewing the scope of the field, we will propose a new terminology or suggest that the Salmon Bias is subsumed under the healthy migrant theory.

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