

Neural Plasticity and Brain Development

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Introduction

In our research, we analyzed data on articles about neural plasticity and brain development. Upon further data extraction, we discovered relations between socioeconomic status and scientific production in this field. Children from low income families often lack resources for nutrition, access to natural spaces(gardens, greenland, parks, etc), and adequate healthcare. All of these conditions lead to worsened mental health and issues with brain development. Thus, in our research, we had objectives involving understanding relations between research in the field of brain development and socioeconomic status.

Objectives

The objective of our research was to develop a deeper understanding of trends regarding articles on Neural Plasticity and Brain Development. As past research and studies have shown, socioeconomic status can have a great effect on neural plasticity. Our hope was to understand these effects by focusing on trends in plasticity research are correlated with socioeconomic status. We believe that the speed in which a child develops is directly affected by the socioeconomic status of their family. By analyzing data on articles about neural plasticity, we hope to illuminated how to better improve diversity in research, and to better understand how the effects of socioeconomic welfare can impact development.

Methods

We extracted information regarding the top 100 most-cited articles on our topic, utilizing R-studio and biblioshiny to analyze and develop complex figures enveloping various aspects of this research. Our source for these articles was Web of Science and our analysis was based upon figures that displayed trends and inequalities regarding these articles

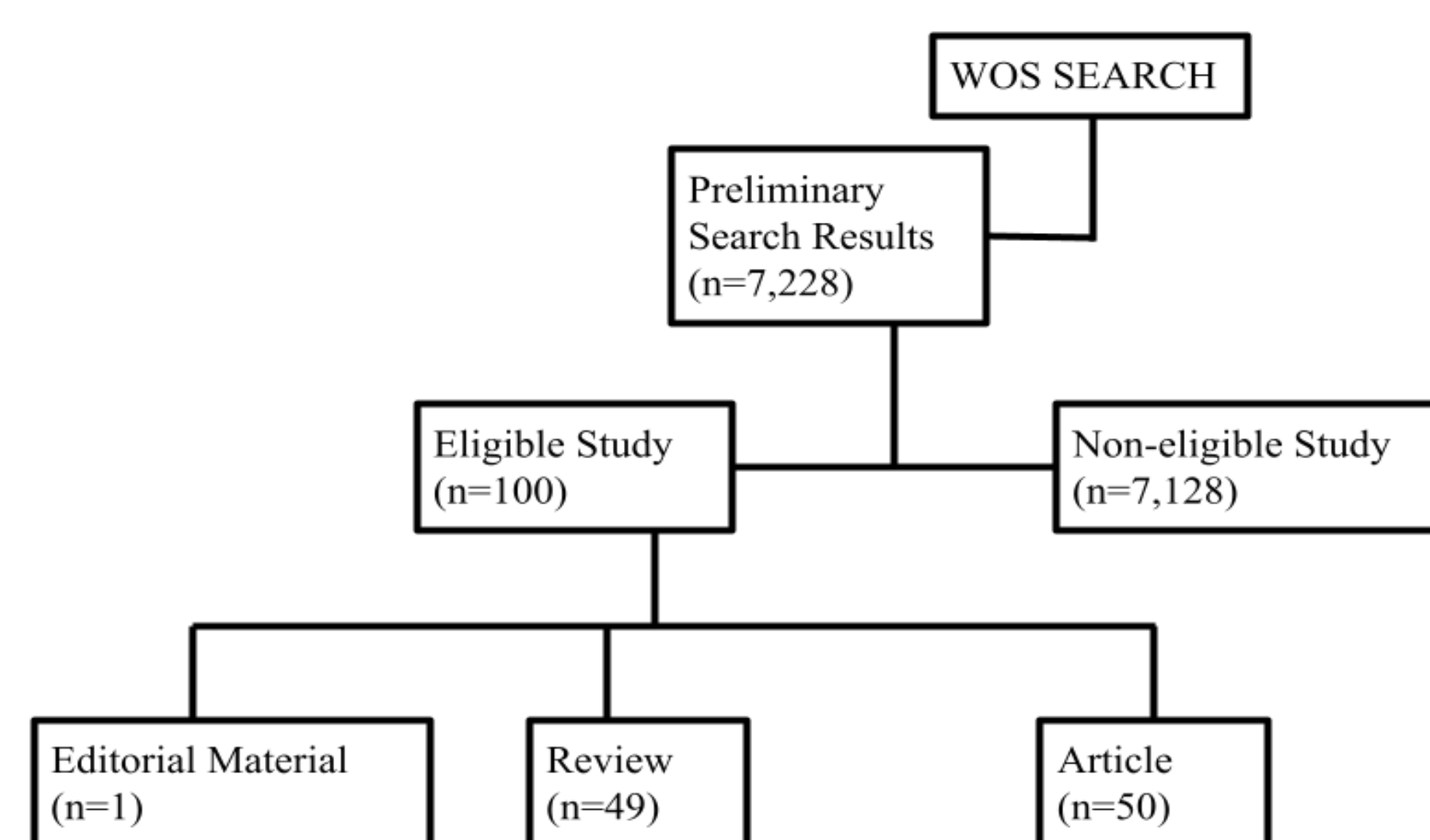
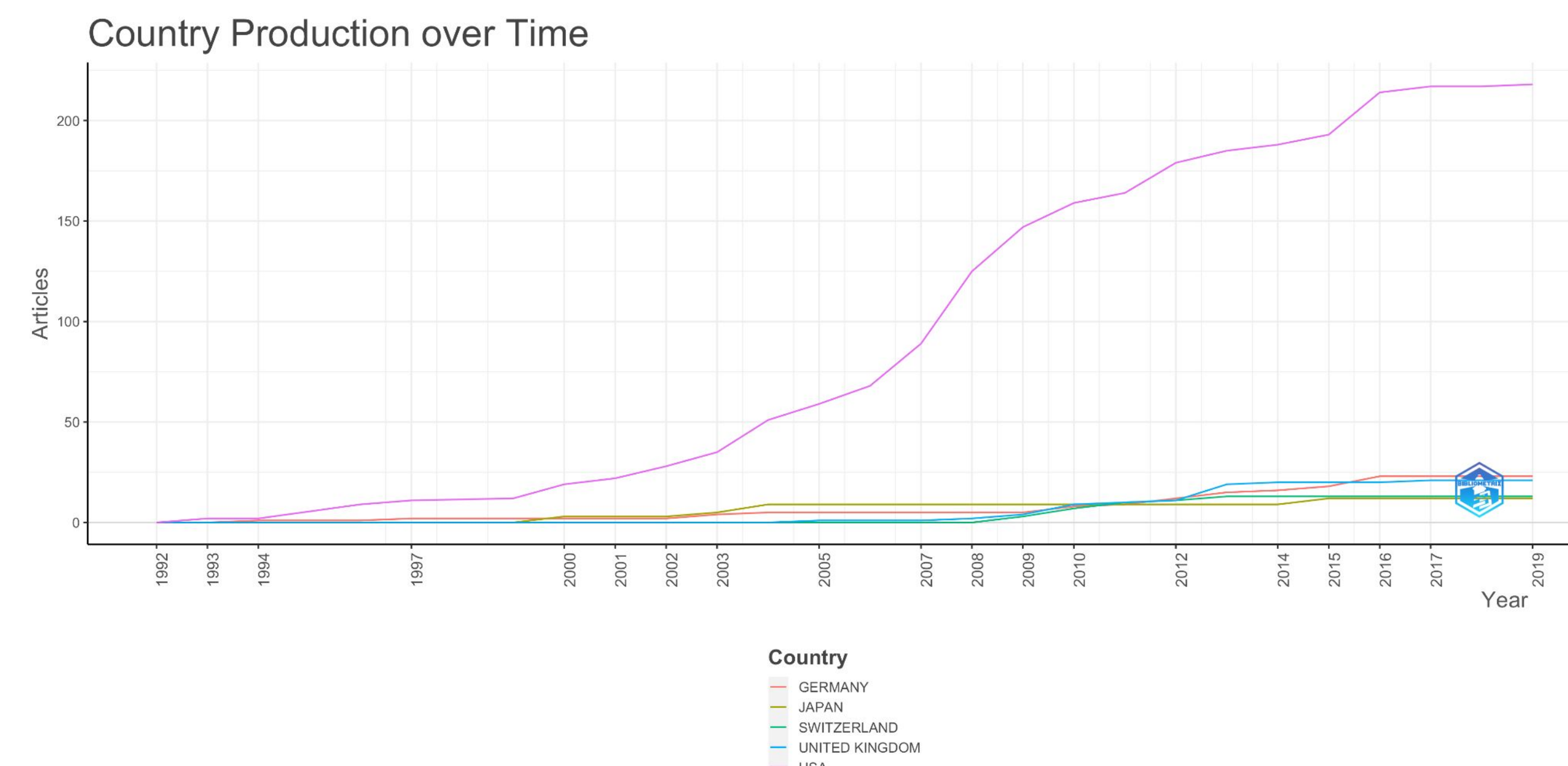


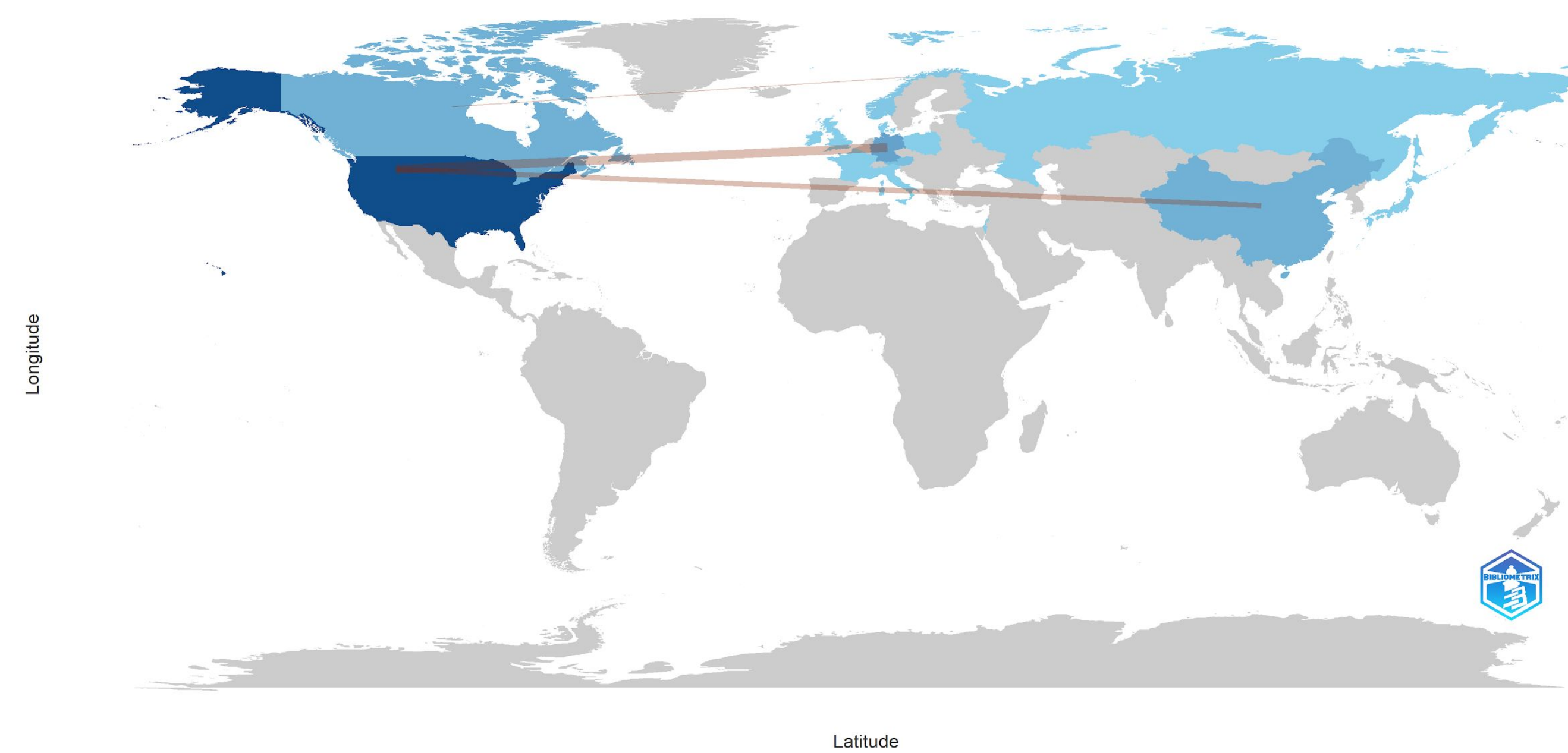
Figure 1. Flow Diagram of literature search showing studies identified, included, and excluded at each stage.

Results

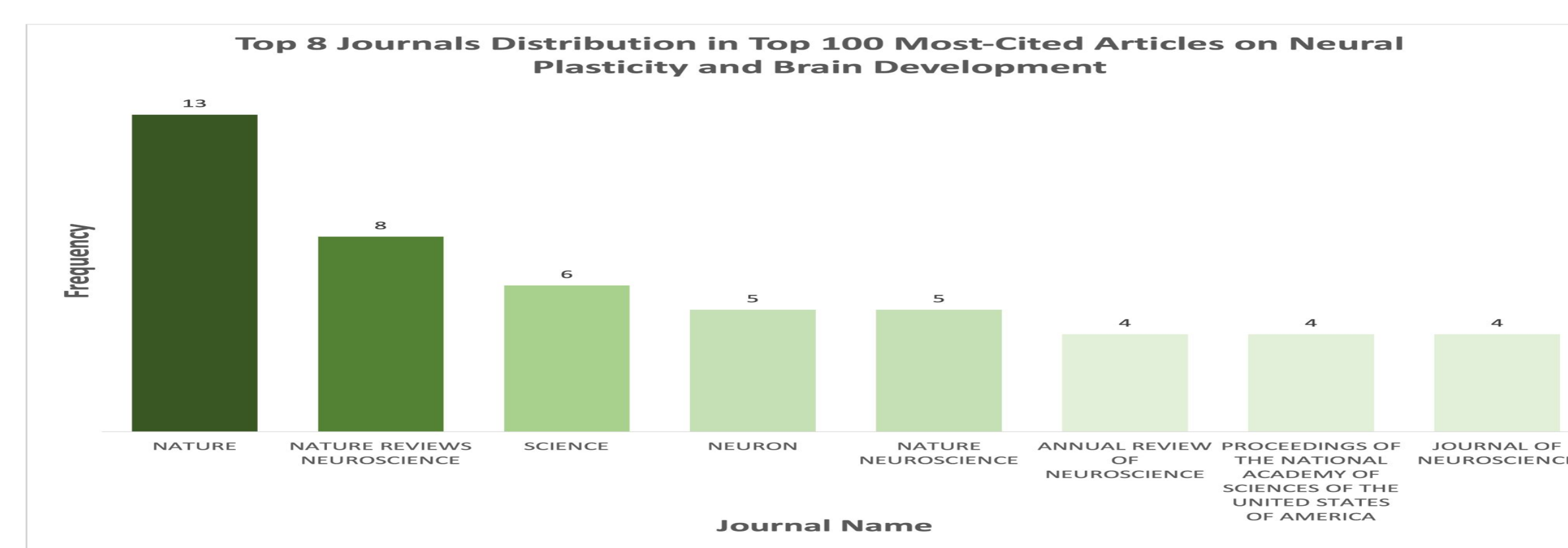
The top 100 articles originated from a total of ten different countries. The United States of America had the largest number of published articles (n = 47,877) in the field of Neuroplasticity; followed by United Kingdom (n = 5898); and then, Germany contributed 4,253 papers. Judging by the results, most of our cited sources came from developed countries in Europe and the United States.



Country Collaboration Map



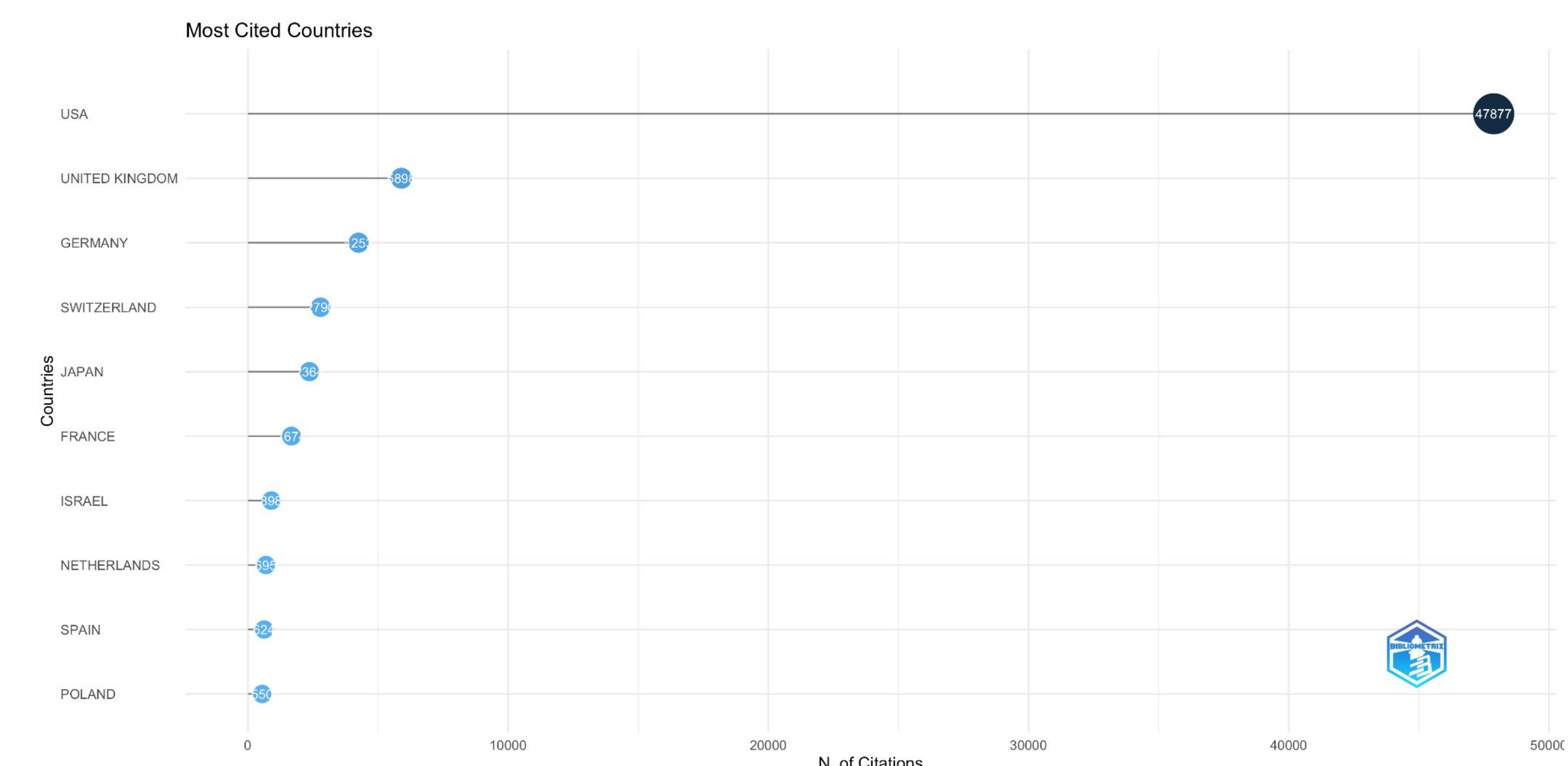
The top 100 most-cited articles were collected in 50 different journals, with at least 14 studies published in six of them. Nature was the most contributed journal, publishing 13 of the article. Nature Reviews Neuroscience (n = 8) was the second most popular journal, followed by Science (n = 6). All these journals are US based publications.



Conclusions

Between 1992 to 2019, the U.S. produced the most articles on neural plasticity and brain development. However, there has been a notable decline in global scientific production since reaching a maxpoint in 2008. Additionally, a possible drawback for the study is the data collection time frame, which provides a limited network of sources. The U.S. was the most cited country, followed by the U.K and Germany. First world countries have consistently demonstrated a higher contribution to neural plasticity research, while only small pool of underdeveloped nations have participated. This has caused undeveloped countries to be severely underrepresented in the field. This underrepresentation could lead to issues in results of studies run in the field as well as disproportionately representing communities around the world.

Neural plasticity results from developed and underdeveloped countries can differ as they often have differing socioeconomic statuses. Socioeconomic factors can influence brain development, as affluent families often have greater access to many resources such as quality healthcare, learning opportunities, and a safe, healthy environment to live in. To foster diversity within the field and broaden our perception of neural plasticity, future research can focus on studies conducted by underdeveloped countries and compare results to studies from developed nations. This approach will encourage a more comprehensive and globally representative understanding of brain development.



References

1. Web of Science Database
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4. National Library of Medicine