Geographical Bias in Preclinical Medical Education: An Analysis of USMLE Step 1 Review Materials

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Introduction

Medical programs attempt to educate students about implicit and explicit bias to improve patient care and minimize health disparities.[1-3]

These efforts are contradicted by biases perpetuated in the hidden curriculum, including the frequent pairing of race and geography with infectious disease (ID) diagnoses in study materials.

It is hypothesized that when geographical locations outside the U.S. are specified in United States Medical Licensing Examination (USMLE) Step 1 board review materials, it is done to indicate an ID diagnosis, which perpetuates cultural bias.

Aims and Objectives

This study seeks to explore the correlations between geographical information and ID diagnoses in case-based questions by:
- Quantifying the number of ID diagnoses when a geographical location is specified.
- Quantifying the number of geographical locations specified when ID is the diagnosis.
- Quantifying the number of ID diagnoses when geographical location is within and outside the U.S.
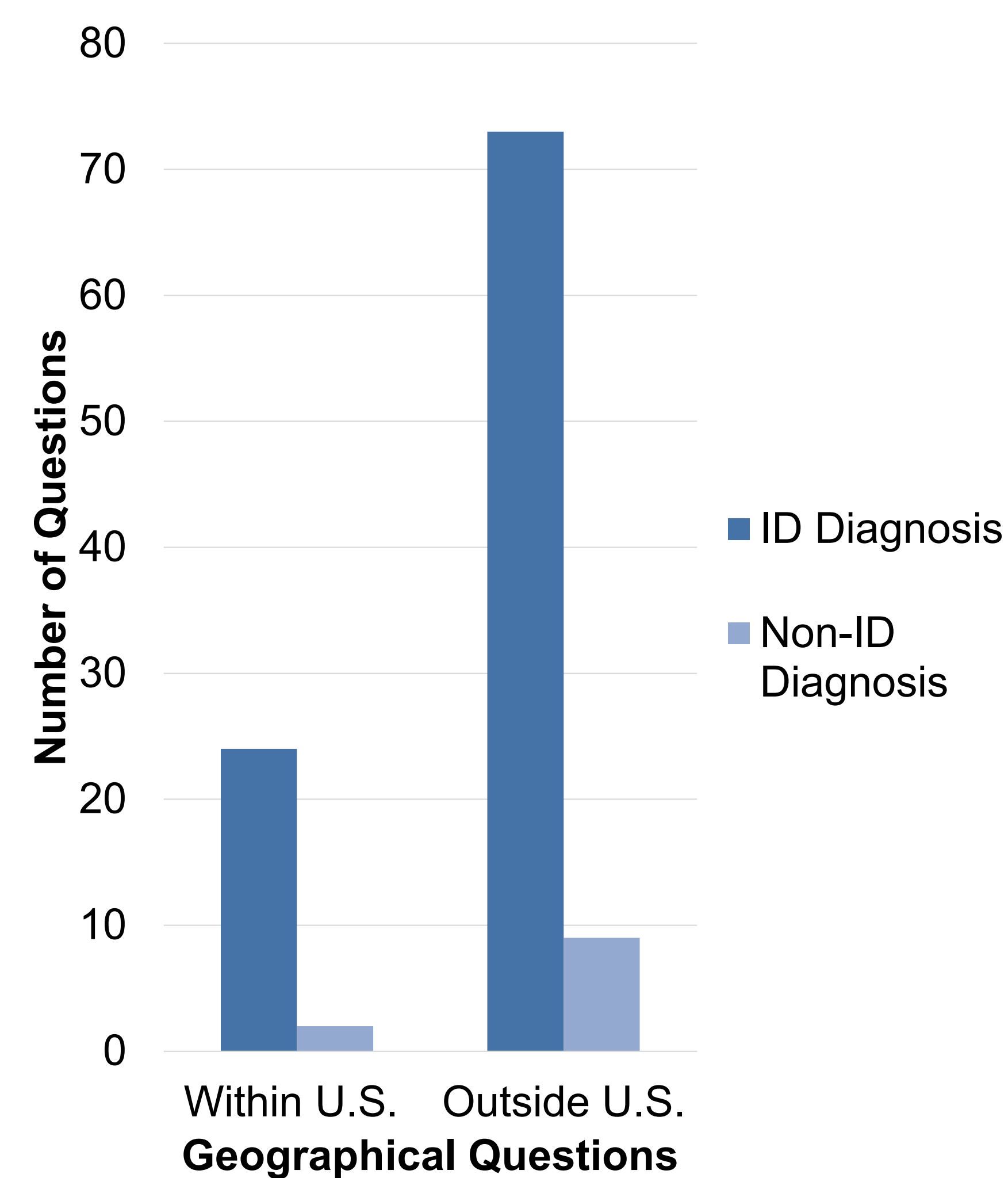
Methods

A search for case-based questions that included a geographical region or an ID diagnosis was conducted among USMLE Step 1 review books. The correlation between the stated question components was calculated using Chi-square tests.

Results
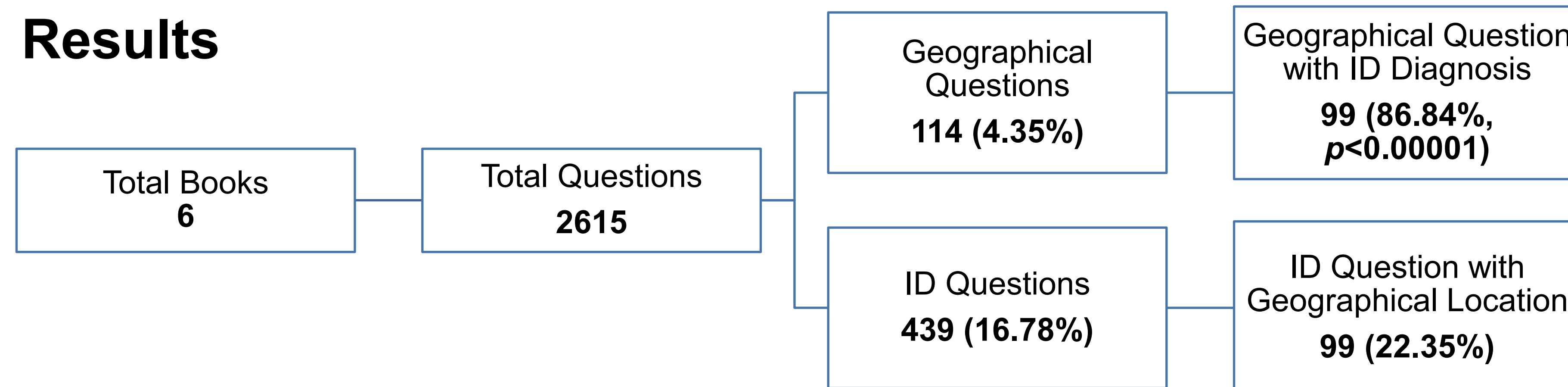
Figure 1: Question Quantification and Categorization. The number of questions analyzed in total and by category.

Total Books **6** — Total Questions **2615**

Geographical Questions **114 (4.35%)** — Geographical Question with ID Diagnosis **99 (86.84%, $p<0.00001$)**

ID Questions **439 (16.78%)** — ID Question with Geographical Location **99 (22.35%)**

Figure 2: Geographical Questions Within and Outside U.S. with and without ID Diagnoses. There was a significantly higher number of geographical questions that included an ID diagnosis vs. non-ID.
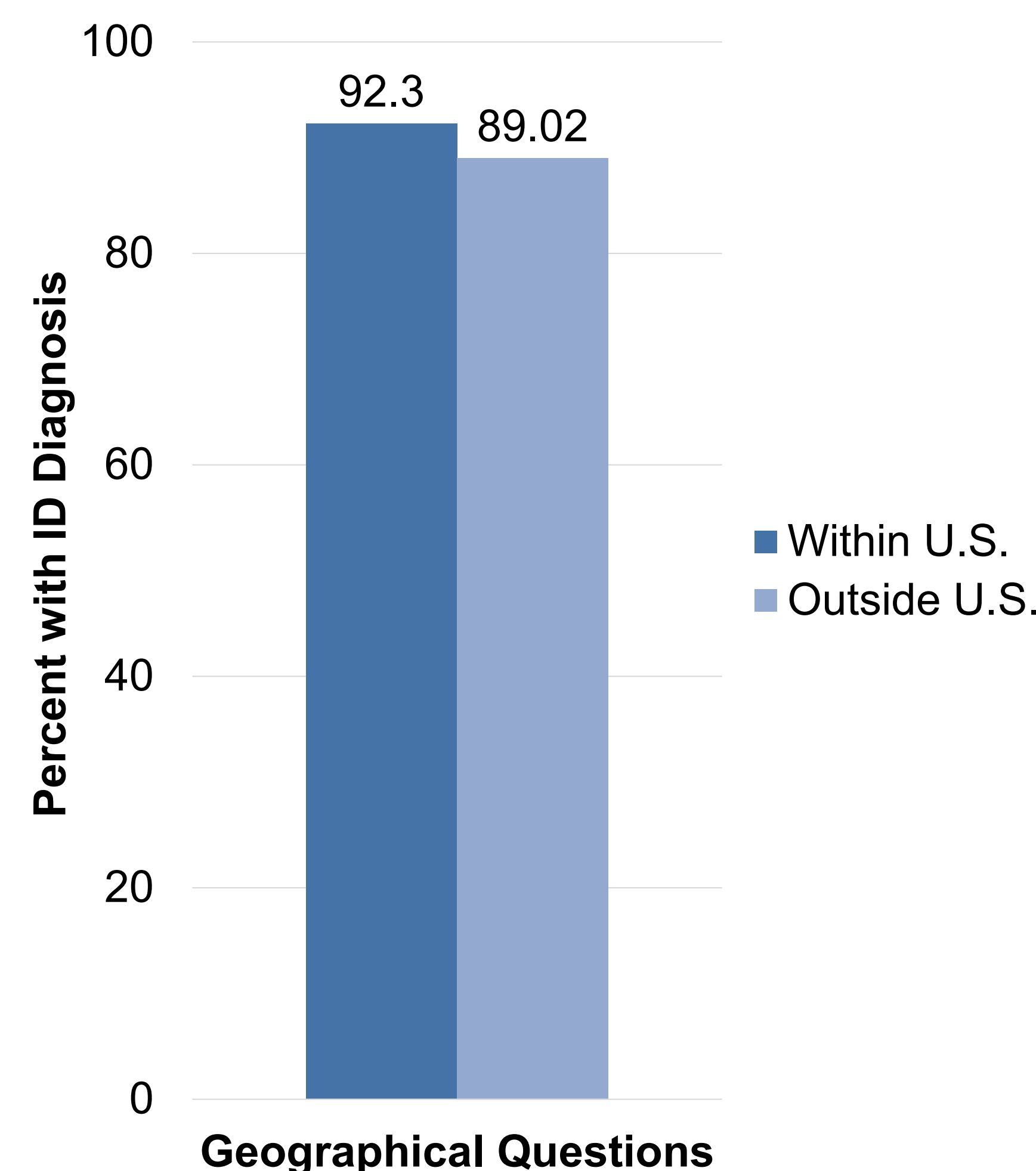
Figure 3: Geographical Questions Within and Outside U.S. with ID Diagnoses. The proportion of geographical questions with an ID diagnosis was similar between locations within the U.S. and outside the U.S. ($p<0.629$).

Conclusions

Geographical locations are included in USMLE Step 1 review questions almost exclusively in relation to ID diagnoses. This bias applies similarly to locations both within and outside the U.S.

Discussion

When USMLE Step 1 review materials mention geography nearly exclusively in the context of ID, students become biased to prioritize an ID diagnosis with little consideration for other clinical factors. Thus, geography becomes a "buzz word" that is useful for test taking but less applicable in a clinical setting. Geography is one important factor to consider in the development of a differential diagnosis, but board review materials oversimplify this association. Conditioning medical students to drastically narrow their differential diagnoses in the context of geography may ultimately lead to suboptimal clinical outcomes in their future practice. Review materials could reduce bias by providing geographical information in question stems more frequently, regardless of the ultimate diagnosis.

References

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