

# Readability and quality of online information in Spanish regarding varicose vein treatment

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## Introduction

- Varicose veins is a medical condition influencing teenagers, adults, and elders around the globe.
- About 33% of the general population aged between 18 and 64 years are affected by varicose veins.
- The San Diego population-based investigation evaluated a higher prevalence of varicose veins in Hispanics (26%)
- Understanding the procedure, risks, and benefits contributes to informed decision making from the patient.
- The most accessible way to obtain healthcare information is a search of key words through a popular search engine, such as Google.
- The quality of results may vary as it lacks regulation, leading to inaccurate, non-specific, biased, or even harmful information.

## Objective

- To evaluate the readability and quality of information regarding varicose vein treatments in Spanish using a popular search engine.

## Materials and Methods

- A Google© search was performed using the key phrase “venas varicosas,” meaning “varicose veins” in Spanish.
- The 75 top ranked sites were analyzed by a native Spanish speaking surgeon.
- Each site was assessed independently for readability using the Fernández-Huerta Formula (FH, a Spanish adaptation of the Flesch Reading Ease score).
- Thirty-seven websites with bilingual pages were used to compare the readability of both Spanish and English information.
- Web site quality was assessed using the DISCERN instrument.
- The country of origin, page source, and issuance of Health on the Net (HoN) Certification was recorded. Statistical analyses were performed using unpaired t-tests and ANOVA variance.

## Results

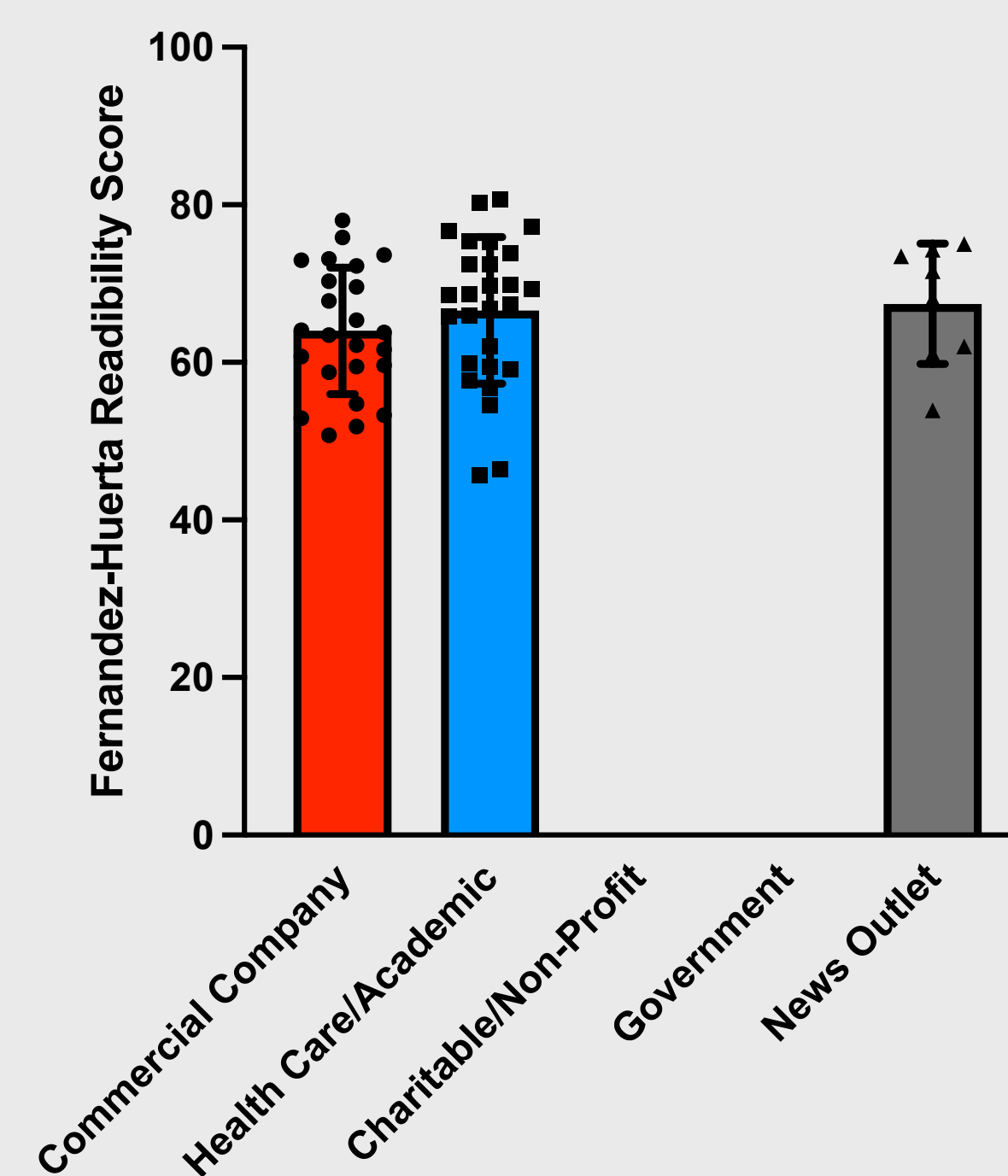
- The cohort consisted of 59 websites, most of the entire cohort (46%) and the top 15 sites (60%) were Healthcare/Academic sites with 47% having a HoN Certification.
- The average FH score was 65.6, corresponding to the 8<sup>th</sup> to 9<sup>th</sup> grade level.
- There was no significant difference in FH scores across the entire cohort ( $p=0.4675$ ) or the top 15 sites ( $p=0.2196$ ) [Figure 1 and 3, respectively].
- There was a significant difference in DISCERN scores within the entire cohort ( $p=0.0160$ ) but not in the top 15 sites ( $p=0.0615$ ) [Figure 2 and 4, respectively].
- There was a significant difference ( $p=0.0068$ ) in FH scores between USA, Europe, Canada and other regions [Figure 5].
- There was no significant difference ( $p=0.1263$ ) in DISCERN scores between these regions [Figure 6].
- Bilingual websites had an average 8-9<sup>th</sup> grade reading level (FH score 66.1) in Spanish and 10-12<sup>th</sup> grade in English (FRES score 57.7).

## Discussion

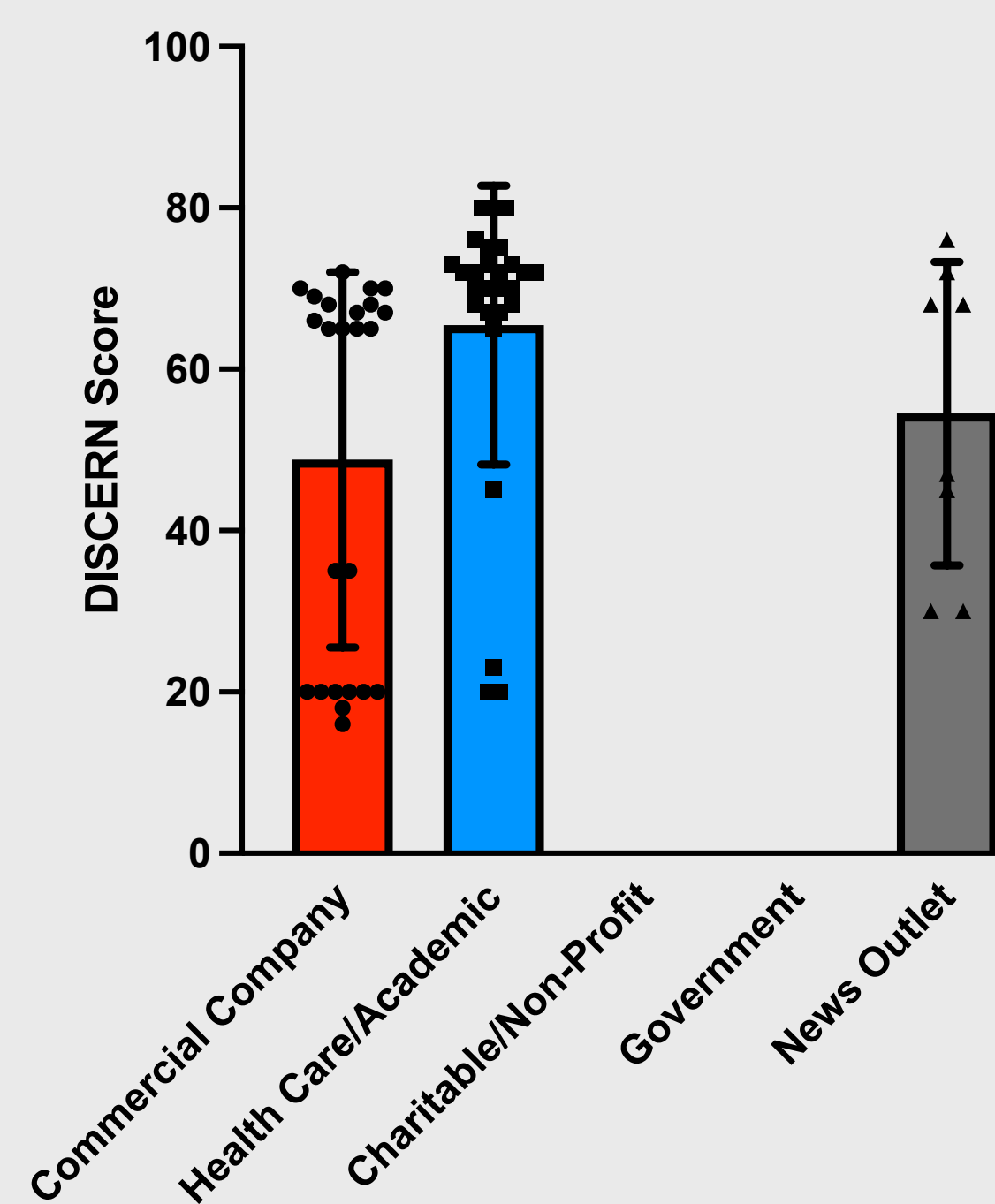
- The Hispanic population is the largest minority group in the US, making Spanish the most common non-English language spoken in US homes.
- Low levels of literacy are a major public health challenge and health care education must cater to these patients.
- As the internet becomes a major source of health information, material targeting patients with modest reading abilities, must now be comprehensible via electronic sources.

## Conclusions

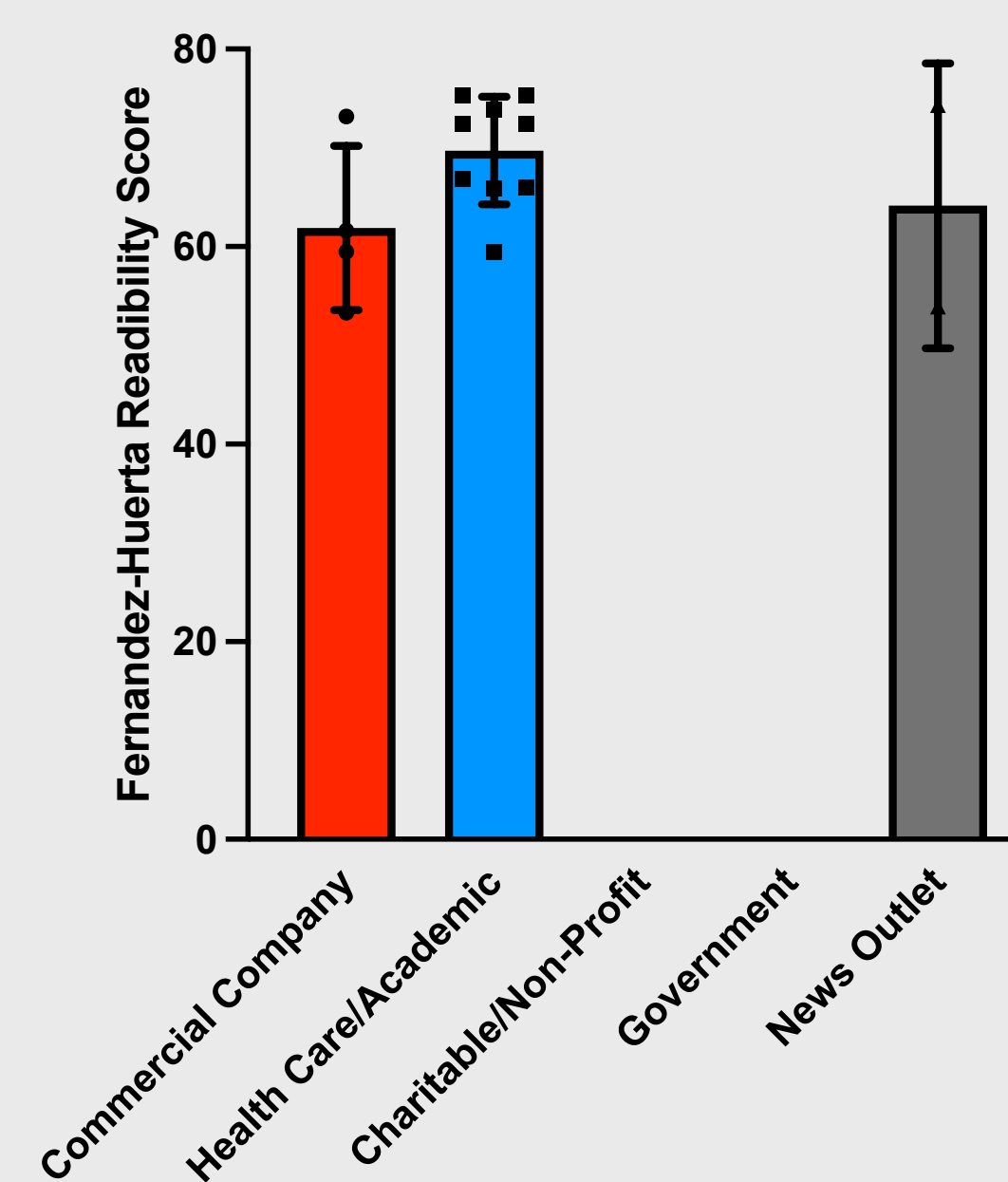
- The access of Spanish-speaking patients to understandable information regarding varicose veins is limited due to the advanced grade level seen on all types of websites.
- The quality of the information significantly declines in 41% of websites catered to commercializing venous disease.
- Healthcare/academic sites made up the majority of the top 15 sites and provided quality information without sacrificing readability.
- Bilingual websites, comprising 93% of the top 15 sites, contain information that is more readable in Spanish than English.
- It is imperative that vascular surgeons create understandable educational content to cater to our patient population and improve their experience.



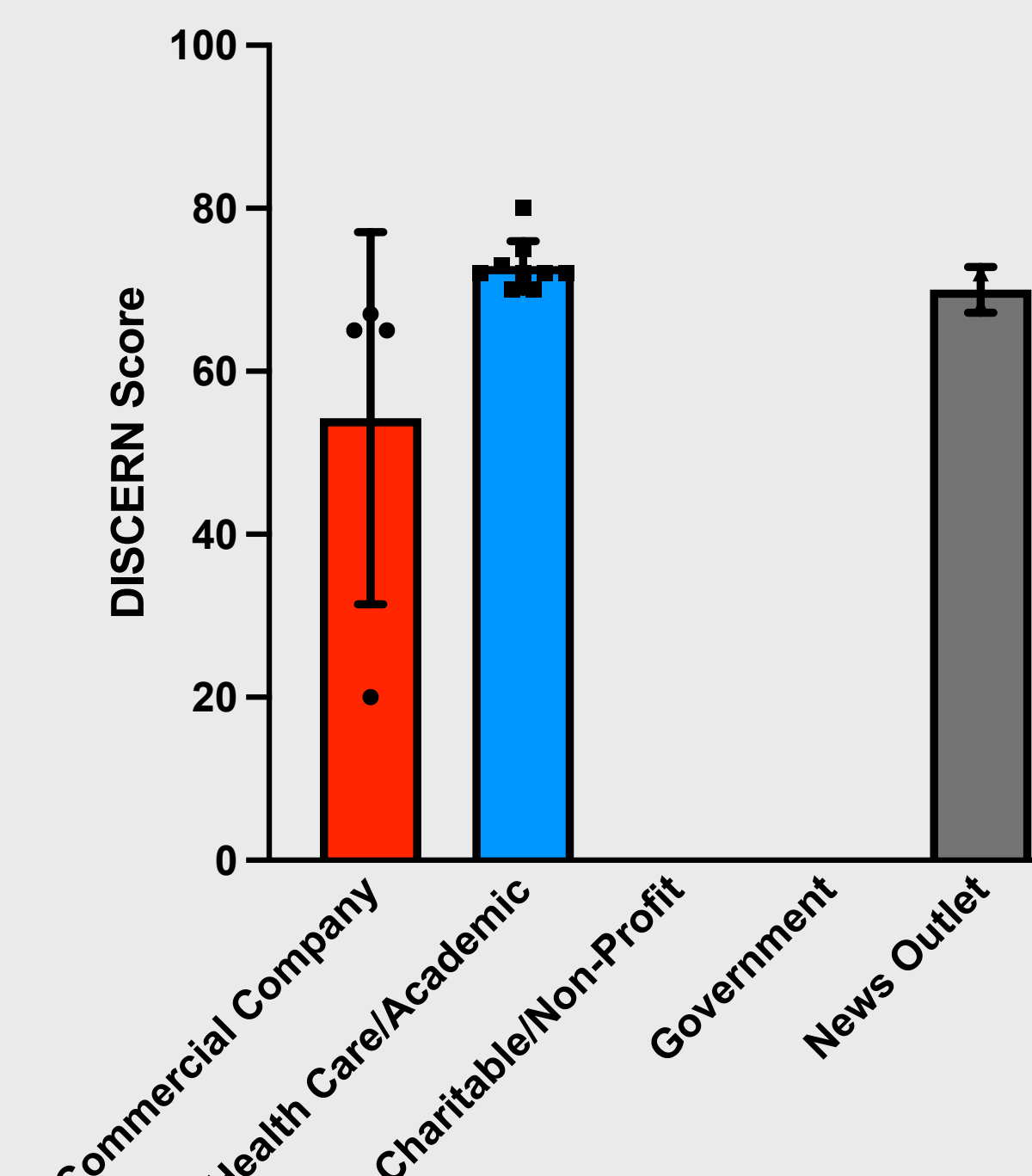
**Figure 1:** Fernández-Huerta score amongst organizations in Google searches in our study cohort



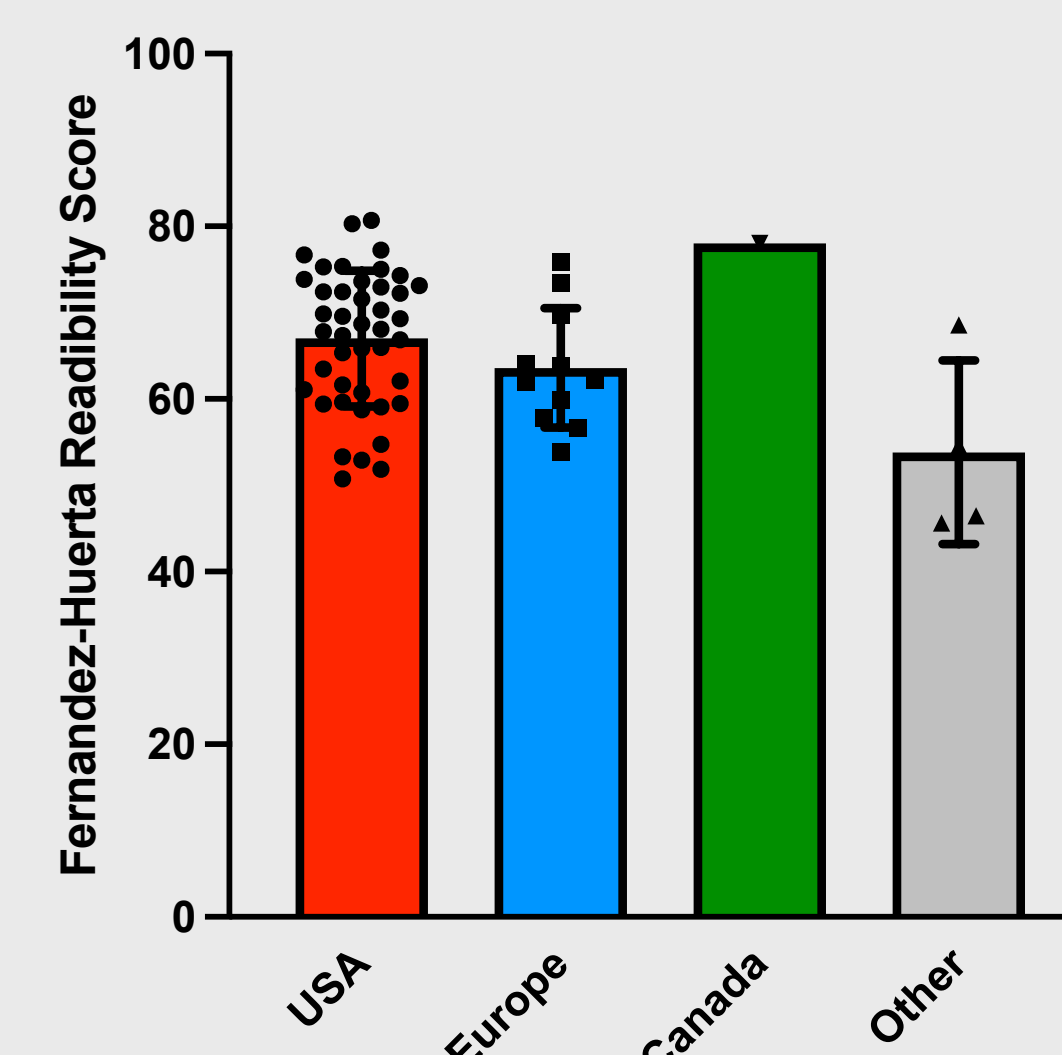
**Figure 2:** DISCERN score amongst organizations in Google searches in our study cohort



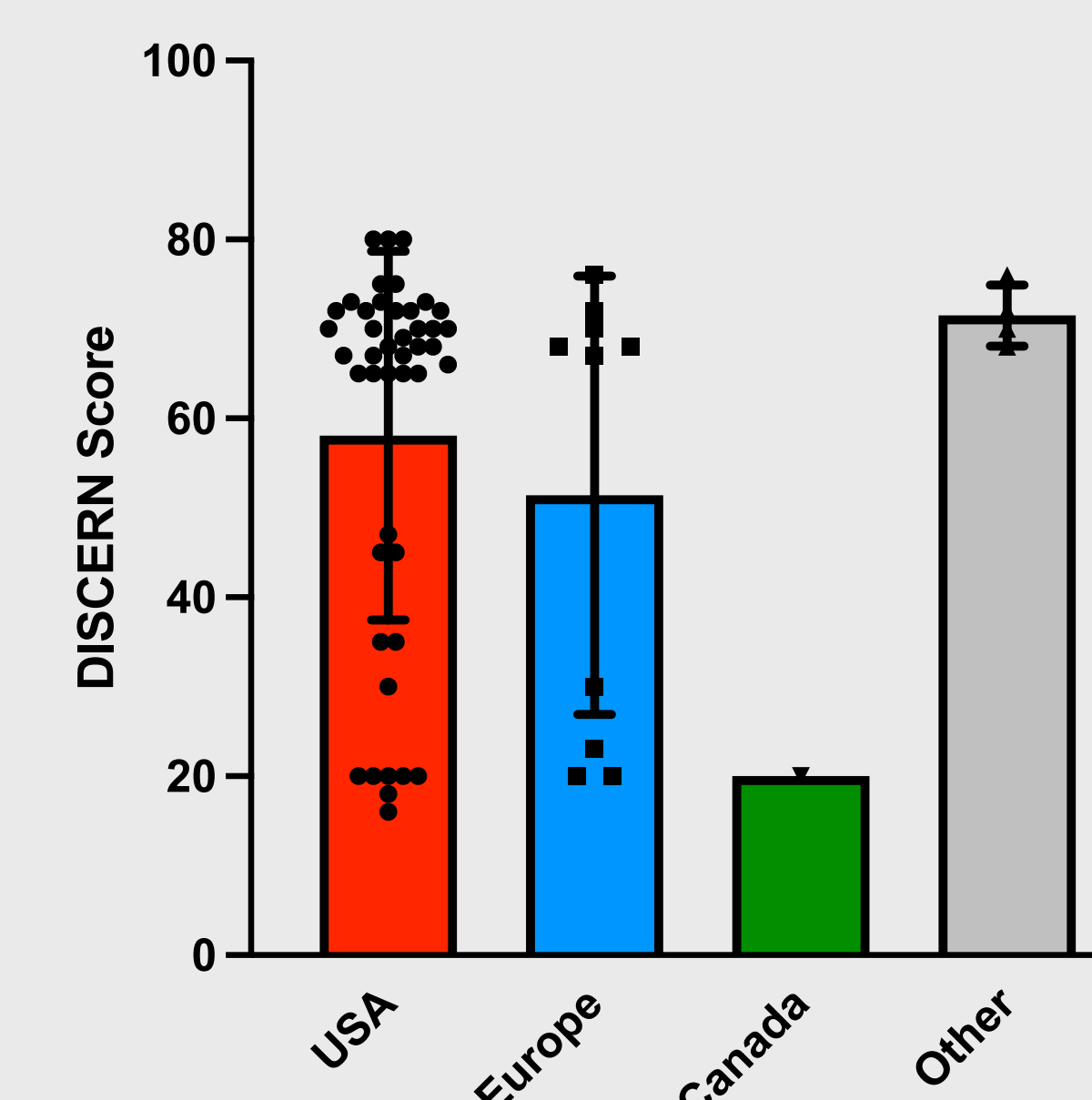
**Figure 3:** Fernández-Huerta score amongst organizations in the top 15 Google searches



**Figure 4:** DISCERN score amongst organizations in the top 15 Google searches



**Figure 5:** Fernández-Huerta score amongst geographical regions in Google searches in our study cohort



**Figure 6:** DISCERN score amongst geographical regions in Google searches in our study cohort