

## Introduction

- Patients are increasingly relying on online patient education material to learn about individual physicians.
- There is little research that characterizes the online presences of neurosurgeons throughout the country.
- This study aims to describe and outline the scope of neurosurgeons' digital identities.

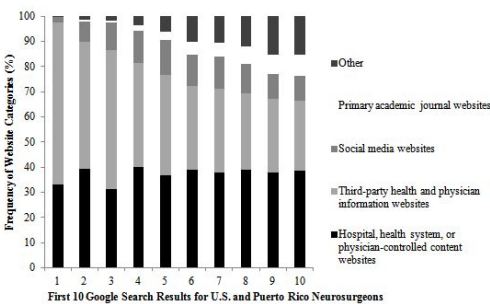
### Table 1. Website Categories With Examples

Type	Category	Examples
1	Hospital, health system, or physician-controlled content websites	Hospital or healthcare network sites, university sites, physician websites on provider domains (upmc.com, hopkins.com, hopkinsmedicine.org, medstarhealth.com)
2	Third-party health and physician information websites	Healthgrades.com, vitals.com, webmd.com
3	Social media websites	Twitter.com, Doximity.com, LinkedIn.com, Youtube.com, Facebook.com,
4	Primary academic journal websites	thejns.org, academic.oup.com/neurosurgery
5	Other	Blogs, Obituary sites, Article Repository Websites (pubmed.com), Meeting programs, Legal sites

## Methods

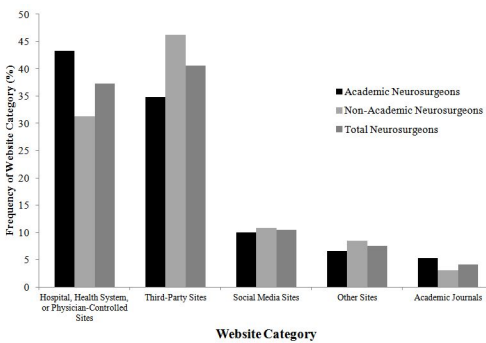
- Medicare-participating neurological surgeons from the U.S. and Puerto Rico were identified using the Centers for Medicare and Medicaid Services (CMS) Physician Comparable Downloadable File.
- Each physician was characterized by their medical education, graduation year, city of practice, gender, and affiliation to an academic institution.
- Using a Google-based custom search tool, the top ten search results for each physician were extracted and categorized (Table 1).

### Figure 1



## Website Types Categorized by Position Within Top 10 Google Search Results for U.S. and Puerto Rico Neurosurgeons

## Figure 2



Frequency of website types in top 10 search results for U.S. and Puerto Rico neurosurgeons

## Conclusions

- Third-party physician rating websites and hospital or health system-controlled websites dominated neurosurgeon's Google search results, and a relative lack of social media websites was seen.
- Nonacademic neurosurgeons had a larger frequency of third-party websites than those of academics, suggesting that these physicians have a more controllable digital presence than their academic counterparts.
- Neurosurgeons should aim to increase and maintain the quality of their online visibility by maintaining personal social media platforms or curating their profiles on third-party physician rating websites.

## Results

- 4,751 self-identified as neurosurgeons, yielding a total of 45,875 search results.
- 2317 (48.8%) and 2434 (51.2%) were classified as academic and nonacademic neurosurgeons, respectively.
- Hospital, health system, or physician-controlled websites (18,206; 39.7%) and third-party websites (17,122; 37.3%) were the two most commonly observed domain types.
- Websites belonging to social media platforms accounted for 4,843 (10.6%) search hits
- Websites belonging to peer-reviewed academic journals accounted for 1,888 (4.1%) results (Figure 1).
- The frequency with which a third-party domain appeared within the top search results was higher for nonacademic neurosurgeons as compared to academic neurosurgeons (Figure 2).