(iPC) or no cancer (159/254; 63%), PLB detected 9/159 cases (6%) of csPC1 ($p = 0.004$) and 3/159 (2%) of csPC2 ($p = 0.248$; Fig. 1). In 21/254 cases (8%), PLB identified PC with a higher GGG than TB ($p < 0.001$; yellow in Fig. 1).

For PI-RADS 4 and 5 lesions only, TB of the lesion revealed 90/185 cases (49%) of csPC1 and 41/185 (22%) of csPC2. When TB identified iPC or no cancer in PI-RADS 4 and 5 lesions only (95/185; 51%), PLB detected 9/95 cases (9%) of csPC1 ($p = 0.003$) and 3/95 (3%) of csPC2 ($p = 0.246$). TB of PI-RADS 4 and 5 lesions did not detect any cancer in 68/185 cases (37%), while PLB detected an extra 8/185 cases (4%) of iPC ($p = 0.481$). All cancers detected by PLB for PI-RADS 3 lesions were iPC (6/254, 2%).

Our results indicate that for PI-RADS 4 and 5 lesions, PLB in addition to TB will detect an extra 9% csPC1, at the cost of an increased 4% iPC; for PI-RADS 3 lesions, PLB biopsies do not increase the csPC detection rate. Our findings validate the recommendation of the PI-RADS Steering Committee to perform these extra biopsies of the “penumbra” region for PI-RADS 4 and 5 lesions. We propose routine PLB in addition to TB for PI-RADS 4 and 5 lesions to provide a higher likelihood of detecting csPC.

Conflicts of interest: The authors have nothing to disclose.

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Growth of the Twitter Presence of Academic Urology Training Programs and Its Catalysis by the COVID-19 Pandemic

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While the COVID-19 pandemic has limited face-to-face interactions, social media has proven valuable in fostering and maintaining relationships. Academic urology has embraced Twitter to enhance communication and program reputation [1–3]. With the isolating events of the pandemic, the aim of this study was to re-examine the presence of urology programs on Twitter. We hypothesized that engagement with urology residency programs would increase during 2020 compared to previous years (2009–2019).

We identified Twitter handles for 113/131 US academic urology programs listed on the American Urological Association website, and extracted 83 000 tweets from 2009–2020 through the application programming interface on April 2, 2021 using Python. Natural language processing (NLP) was used for sentiment analysis, and classified as positive, negative, or neutral. Metrics such as number of tweets, hashtags, @mentions, and account creations including timing were compared.

Figure 1 displays trends and characteristics of the academic urology programs. When assessing temporal trends, 2020 represented a significant increase in both program tweets and account creation. Compared to prior years, the number of tweets increased (from 62 in 2009 to 18 397 in 2019 and 22 544 in 2020). Furthermore, 23 urology programs created accounts in 2020, representing the single largest increase since 2009. Most programs (13/23, 57%) joined Twitter between May and June, with additional 7/23 (30%) between July and August 2020 (Supplementary material).

Sentiment analysis in 2020 revealed 43% positive, 49% neutral, and 8% negative sentiments across tweets. Interestingly, the positive sentiment percentage increased in 2020 (41% to 43%). Word cloud analysis, a visual representation of word frequency, revealed “urology” and “resident” as the most frequently utilized in 2020, compared to “urology” and “cancer” before 2020. While @americanurological remained the most frequently utilized mention in 2020, @uro_res surpassed @umichurology, as well as the recently introduced @uroresidency.

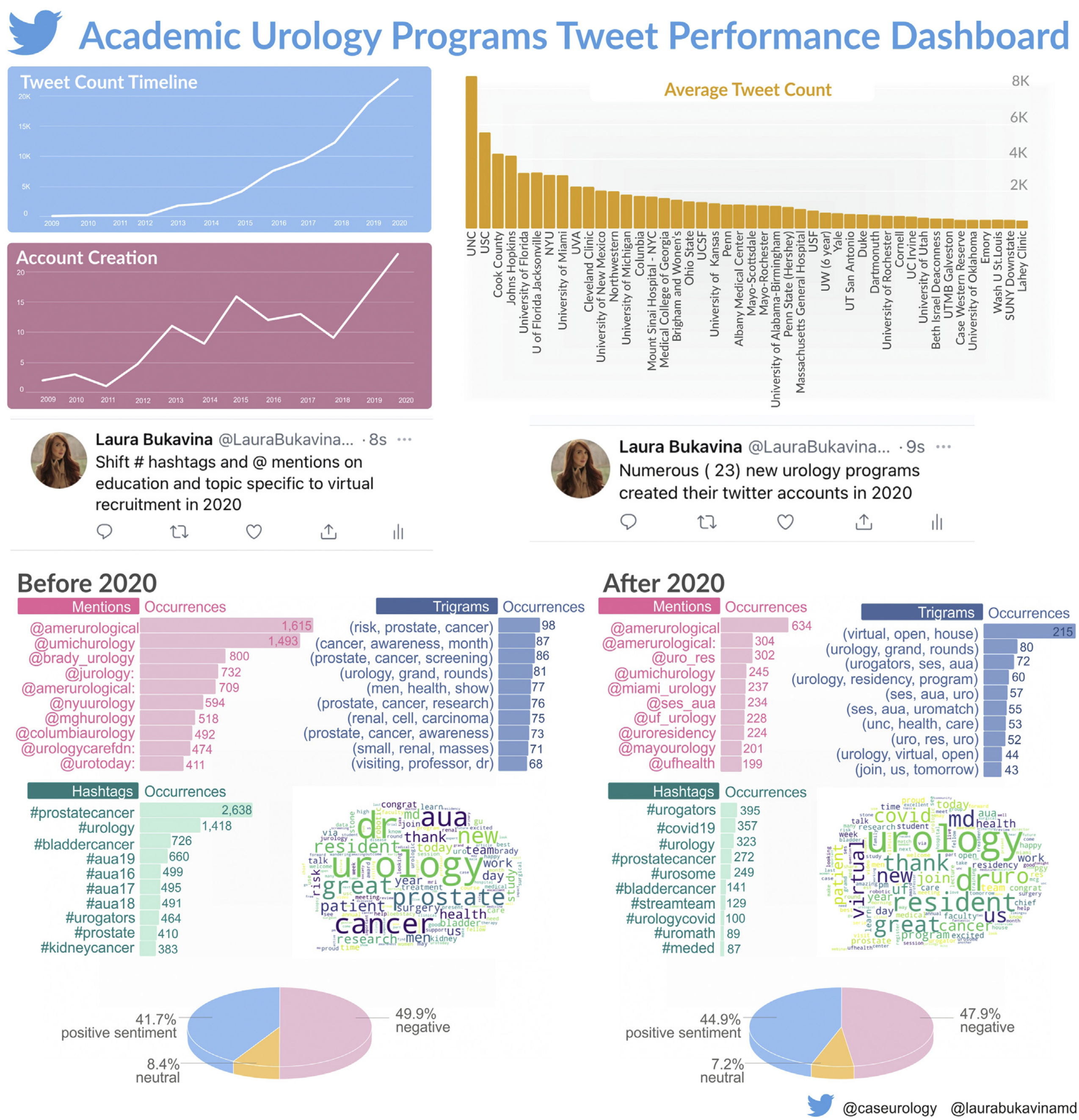

Fig. 1 – Tweet performance dashboard for academic urology programs and analysis before and after 2020.

Trigram (three-word combination) analysis for 2020 revealed a shift from a primary focus on oncology ("risk, prostate, cancer" and "cancer, awareness, month") to recruitment and education ("virtual, open, house" and "urology, grand, rounds") in 2020.

Across all programs, the median (interquartile range) number of tweets, followers, following, and likes was 1748 (872–3051), 2201 (1509–3956), 801 (307–1198), and 3 (0–3), respectively. University of North Carolina (n = 8707), University of Southern California (n = 5480), and Cook County (n = 4299) had the highest average number of tweets. Academic accounts with the most followers were Johns Hopkins (n = 5365), New York University (n = 4882), and University of Michigan (n = 4396).

Our comprehensive, novel analysis convincingly demonstrates that academic urology is expanding Twitter use in response to COVID-19. Twitter has become the academic marketing strategy, boosting conversations and distributing program-specific content globally. Twitter has allowed urology applicants to converse with program directors, residents, and educators when many classically in-person events such as away rotations and residency interviews were paused. Programs and trainees have successfully established their own personal brands, building name recognition. Our findings depict 2020 as a unique crisis shaping social media use. For most urology programs, it was marked by an increase in tweets and virtual recruitment efforts. COVID-19 has altered the landscape of academic urology, with Twitter spearheading an expansion that will permeate all aspects of the field.

Conflicts of interest: The authors have nothing to disclose.

Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.eururo.2021.05.002.

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Mapping Contemporary Biopsy Zones to Traditional Prostatic Anatomy: The Key to Understanding Relationships Between Prostate Cancer Topography, Magnetic Resonance Imaging Conspicuity, and Clinical Risk

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The traditional zonal approach to prostate anatomy devised by McNeal in 1981 [1] was based on dividing the prostate into four histologically and anatomically distinct zones. Clinically, this zonal approach has proved to have utility in both benign and cancer urology, guiding diagnostic and treatment decisions. However, this simplistic zonal approach risks conveying an overly reductive representation of prostate anatomy and may be partly responsible for the paucity of data examining differences in subzonal prostate cancer risk and prognosis, compared to the relative abundance of data comparing these features between simple tumour zones [2,3]. Furthermore, classical transrectal ultrasound-guided biopsy may have contributed to the lack of detailed understanding regarding the influence of tumour zone of origin owing to well-acknowledged undersampling of the mid and anterior prostate [4].

In the PROMIS and PICTURE trials [5,6], a transperineal template mapping (TPM) biopsy technique was used as the diagnostic reference standard, in which prostate tissue was exhaustively interrogated at 5-mm intervals, providing a unique opportunity for subzonal analysis of prostate cancer topography.

The aim of our study was to map intricate biopsy information provided by modern transperineal biopsy protocols (eg, Barzell [7], Ginsburg [8]) to the traditional McNeal anatomical zones to create a bespoke tool designed to reveal important relationships between zones of tumour origin for a wealth of other potential outcomes, including tumour conspicuity on magnetic resonance imaging (MRI) and clinical risk, as derived from histopathological, genomic, and longitudinal correlates.

We used the traditional McNeal anatomical prostate zones as our ground truth, to which we mapped Barzell and