

Measuring Security Advice Quality: First Steps

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Abstract

Users conduct internet searches or consult websites they trust to obtain advice on many topics, including security. While prior work has examined how they seek out and evaluate advice, there has been little examination of the *quality* of the advice users receive. In this poster we present a first step toward measuring the quality of security advice. To do so, we collected and cleaned a corpus of 1878 internet security advice documents drawn from crowdsourced search queries and expert recommendations. We analyzed the readability of these documents via multiple metrics, finding that less than 25% of security advice meets or exceeds the “Standard” (e.g., Reader’s Digest) reading level. Additionally, we provide a descriptive analysis of the topics most prevalent in online security advice and explore how those topics interconnect.

I. SUMMARY

Users often rely on security advice – typically, text-based articles or instructions – in order to learn new security behaviors and stay safe online. While there is a vast array of security advice available online, our prior work shows that over 50% of consumers report a serious security or privacy incident, despite reporting taking advice [7]. Further, we have also observed a “digital divide” – a skill- or socioeconomic-based gap – in who is taking advice from which sources [6]: lower-skill and lower-education users tend to rely on less authoritative advice sources, and taking advice from those sources is also correlated with a higher rate of security incidents [7]. Thus, security advice may be falling short of effectively imparting consumers with security knowledge, and certain advice sources such as workplace advice and advice distributed in the media may be especially inaccessible for lower-skill or lower-literacy users. One potential reason for this failing may be incomprehensibility (or high reading level) of security advice, relative to the reading level of general consumers. While prior work has examined the readability of warning messages [4] and privacy policies [1], [5], [8], no similar analysis, to our knowledge, has been conducted on security advice.

As a first step at evaluating and potentially improving text-based security advice, we have collected a corpus of 1878 unique security advice articles collected based on user-generated search queries (*search*, 989 documents) as well as recommendations from experts (*expert*, 889 documents). We cleaned this corpus, finding that about a quarter of the advice articles that were in the top 20 search results for users queries, or were on pages recommended by experts, had nothing to do with online security, privacy, or safety. Using this cleaned corpus, we measured the reading level of this advice using multiple metrics, including the Flesch Reading Ease score (FRES), a standard measure of text readability [2].

Our preliminary results indicate that less than a quarter of security advice is at the “Standard” (e.g., similar to Readers Digest) to “Very Easy” (e.g., similar to newspaper comics) reading level. Further, our initial results show that advice from expert sources is very slightly, but statistically significantly easier to read than the collection of search results generated by user queries. Based on our analysis of the reading ease scores of the security advice documents, we find that articles hosted by .gov and .edu have lower average readability scores than those from other domains (e.g., .com, .org, .net).

In our poster we also present a descriptive analysis illustrating the prevalence of different security and privacy topics contained in the advice articles and an initial clustering of documents by “security comprehensibility” – a custom metric we define based on more advanced comprehensibility metrics, which take into account document cohesion, word difficulty (e.g., average age at which words in the advice article are learned), word abstractness, and other features that have been found to influence comprehension of complex texts [3].

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