A Supply and Demand Framework for YouTube Politics

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Abstract

Youtube is the most used social network in the United States. However, for a combination of sociological and technical reasons, there exist little quantitative social science research on the political content on Youtube, in spite of widespread concern about the growth of extremist YouTube content. An emerging journalistic consensus theorizes the central role played by the video "recommendation engine," but we believe that this is premature. Instead, we propose the "Supply and Demand" framework for analyzing politics on YouTube. We discuss a number of novel technological affordances of YouTube as a platform and as a collection of videos, and how each might drive supply of or demand for extreme content. We then provide large-scale longitudinal descriptive information about the supply of and demand for alternative political content on YouTube. We demonstrate that viewership of far-right videos peaked in 2017.

1 Introduction to Political Media on YouTube

YouTube represents the true democratization of political media in the medium that has consistently proven the most popular and most powerful. Human beings are designed to communicate audiovisually; in the long run, we may find that societies with a broad

emphasis on the written word are a historical artifact, that written communication is a specialized technology.

YouTube is the largest social networking site in the US, according to Pew (Smith and Anderson, 2018). This may be something of a surprise, both that YouTube is more popular than Facebook and that it is even considered a social network. While many people (including, anecdotally, most academics) use YouTube primarily to watch music videos or clips from other "traditionally" produced and broadcast video, the marketplace for original content on YouTube is large, growing, young, and communal.[1] In a 2018 interview, Google CEO Eric Schmidt said that "today we have quite a powerful social network embedded inside of YouTube" (Podcast, 2018).

The disproportionate (to its influence among the general population) amount of research using Twitter data has been well-noted, and is often ascribed to their open API from which researchers can scrape tweets (Tufekci, 2014). YouTube, however, also has an open API,[2] which is in some ways even more generous than Twitter's. Researchers can easily query search results from the first day that YouTube went live, and scrape the entirety of a given user's history.[3]

With access to data, models and methods already developed to study other social networks, and attention to the specific affordances of YouTube and video media, scholars of political communication have all the tools they need to delve into this new topic. All that we needed was a reason to think that YouTube is politically relevant.

Over the past two years, a small amount of scholarship and a tidal wave of media attention has given us that reason: there exist many alternative media clusters on YouTube that explicitly define themselves in opposition to mainstream structures of knowledge production, they are remarkably popular, and they tend to skew to the right. Qualitative media scholar Becca Lewis provided a detailed description of the existence and importance of the what she deems the "Alternative Influence Network" (AIN), which we analyze in quantitative detail in this article (Lewis, 2018). With the rise of white nationalism and the Alt-Right in North America and Europe has come fears among journalists and scholars alike that these alternative media outlets have

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[1]A recent survey of members of Generation Z (who Pew defines as those born after 1997) by a branding agency found that respondents rated YouTube their number one favorite brand—just ahead of teen stalwarts Doritos, Oreos and Netflix. More academically prominent social networks fared much worse, with #23 Instagram, # 39 Facebook, and #87 Twitter (Premack, 2018).

[2]In contrast to Facebook, which does not, and which has been restricting access to data collection that was once opt-in in the wake of the misuse of that data access

[3]The recently-deployed python package 'youtube-data-api' is optimized for academic use, lowering barriers to entry to using the API (Yin and Brown, 2018).

radicalized a generation of Internet natives towards the far right.

A prominent theme in theories claiming YouTube is a radicalizing agent is the *recommendation engine* ("the algorithm"), coupled with the default option to "auto-play" the top recommended video after the current one finishes playing.[4]

The algorithm tends to recommend alternative media (the theory goes), leading users down a "rabbit hole" into which they become trapped, watching countless hours of alternative media content and becoming hardened opponents of liberal democratic values and mainstream knowledge production institutions. Even if we accept the premise that YouTube is an important space for radical politics, we argue that a model of YouTube media effects that centers the recommendation engine is implausible, an unfortunate update of the "hypodermic needle" model of media effects that enjoyed some prominence in the 1930s and 1940s but which has been consistently discredited ever since (Lasswell, 1927).
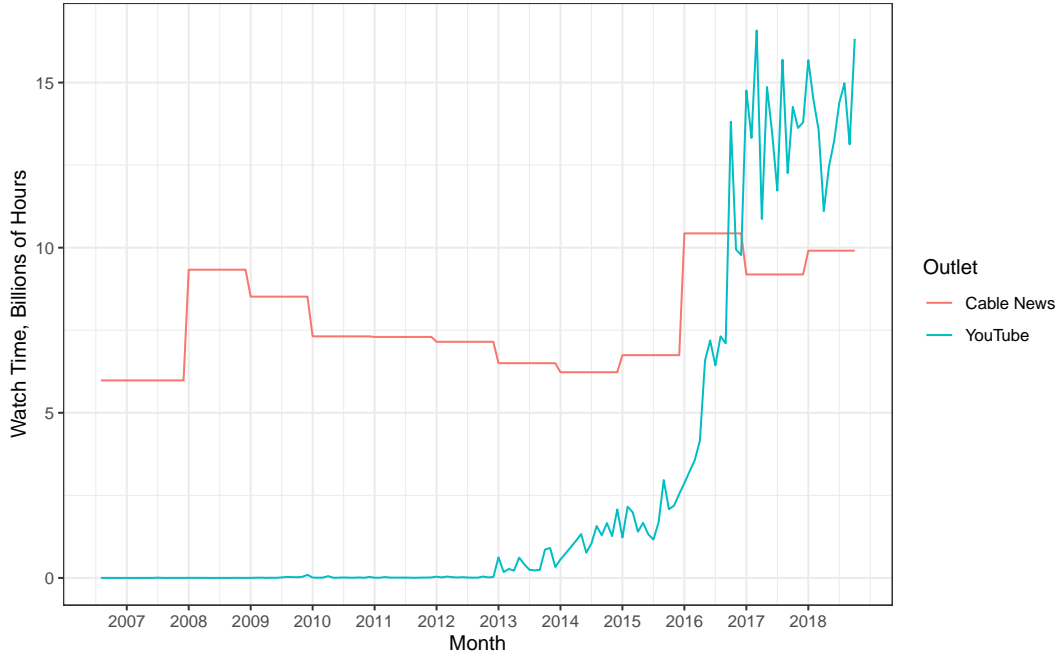
New cultural contexts demand new metaphors, so in place of the hypodermic needle, we call this the "Zombie Bite" model of YouTube radicalization. The reference is to Ribeiro et al. (2019)'s working paper (the most comprehensive quantitative analysis of YouTube politics to date) which deems people who comment on videos produced by figures associated with the "Alt-Right" as "infected," and that this "infection" spreads.

We think this theory is incomplete, and potentially misleading. And we think that it has rapidly gained a place in the center of the study of media and politics on YouTube because it implies an obvious policy solution—one which is flattering to the journalists and academics studying the phenomenon. If only Google (which owns YouTube) would accept lower profits by changing the algorithm governing the recommendation engine, the alternative media would diminish in power and we would regain our place as the gatekeepers of knowledge. This is wishful thinking that undersells the importance of YouTube politics as a whole.

The rollout of cable television and the development of partisan television media was the most politically important development in communication technology in the second half of the 20th century (Arceneaux and Johnson, 2013; DellaVigna and Kaplan, 2006; Martin and Yurukoglu, 2014; Prior, 2007). The primary reason is that there were *more*

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[4]Lewis (2018), however, is agnostic about the importance of the recommendation system, the discussion of which is a minor portion of her theoretical work. The bulk of her work, in fact, is devoted to explaining how cross-talk between YouTubers in different ideological spheres influences ideological viewership patterns. She concludes that when more mainstream members of the alternative media sphere host far-right members, they generally fail to criticize far-right ideologies sufficiently, and end up winning some of their audience over to far-right ideas.

Figure 1: Total Video Hours of Political Media Viewed Per Month

channels and thus *more partisan news* consumed in the aggregate.

We believe that any theory of the impact of YouTube politics should take this as its starting point, as the specific subset of YouTube we study has already surpassed cable news in viewership.

To illustrate this, Figure 1 displays our rough estimate of monthly total view time on the three major cable news channels (Fox News, CNN, and MSNBC), using viewership numbers from Pew. We compare these with estimates of just the 54 YouTube channels comprising the AIN. For cable, we assumed that each viewer watched all three networks 24 hours a day. From 2006-2018, such a consumption pattern fluctuated between 5 and 12 billion human hours of watch time. Conversely, we assumed that each recorded YouTube "view" of an AIN video lasted 10 minutes, a conservative estimate given that many of these videos are 2 or 3 hours long. One notable limitation is that the Pew data is for people in the US while YouTube views can come from anywhere in the English-speaking world. With this caveat, we can still say that global hourly viewership of the AIN has consistently eclipsed the "Big Three" cable news channels since 2017—and that the rise of the former has been precipitous.

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Consequently, we propose an alternative "Supply and Demand" framework of YouTube politics. Note that this is not what we would call a *theory*; rather, the purpose of this manuscript is to present a qualitative and quantitative overview of political media on YouTube. This descriptive knowledge of *what it is* is a necessary precondition for credible causal theorizing. Online political communication is a rapidly-changing field, increasing the importance of pure description (Munger, 2018).

Inspired by Settle (2018)'s theory of Facebook interaction that insists on beginning with the reason why people use the platform, we prefer to emphasize two non-recommendation algorithm affordances that are novel to YouTube.

1) **Media on YouTube is videos**. Videos are different from text or still images in a variety of ways that affects who consumes them, in what contexts they are consumed, and the effects of their consumption.

This is uncontroversial, even obvious. We do not mean to imply that other commentators on YouTube politics have ignored the fact that the media content is video. However, this point *has* been insufficiently central to these analyses. The spread of film and television necessitated a robust literature that centered the medium itself. The technological limitations of the early internet have prevented this literature from being fully integrated into the study of social media, and doing so represents a potential theoretical windfall. However, some of the specific affordances of broadcast or cable television are absent in the context of video on YouTube (consider the temporal linearity of the former, or the capacity for real-time audience participation of the latter), and significant work must be done to apply earlier theory to the YouTube context.

2) **YouTube is a media company**. While Facebook has steadfastly refused to define itself as a media company, YouTube has been paying "creators" directly for years. Producers create videos to make money.

A political economy of the production of political YouTube videos is essential for understanding why these videos exist. The platform has blown past the model where people simply upload videos that had been produced for other purposes; the current concern about YouTube extremism deals almost exclusively with videos produced explicitly to be shared on YouTube. "Creators" upload videos to their "channel" with the hopes of developing a devoted fanbase that they can use to "monetize" their videos.

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YouTube pays people directly, and many creators aim to make their channel a primary source of income. Some are wildly successful.[5] YouTube's monetization process has changed dramatically and often, as we document below, giving us analytical leverage into understanding its relationship with political videos but making a unified political economy of YouTube production impossible. Again, there exists a fruitful literature on media economics that has not been fully integrated into studies of politics on social media because previous social media platforms do not operate explicitly as media companies.

Both of these affordances make the costs of starting a channel and uploading videos low, and content creation incredibly efficient. They also make forming communities around shared ideas and affinity for creators easier than on other websites. We contend that these aspects of YouTube allow new communities that cater increasingly well to audiences' ideas to form. Instead of "radicalization by algorithm," we argue that the true threat posed by YouTube is the capacity to create radical alternative political canons and interpretive communities to match. Below, we explain the applicability of the theory of parasocial relationships to political YouTube content. There is a cap on how much news media a person can consume in a given day; YouTube has dramatically increased then number of distinct political communities which are able to hit that content cap.

We expand on our Supply and Demand framework below, then offer some novel descriptive analysis of the evolution of YouTube political media from 2008 to 2018. Several basic facts are at odds with the premises of other accounts of YouTube politics:

- The most extreme branches of the AIN (the Alt-Right and Alt-Lite) have been in decline since mid-2017.

- However, the Alt-Right's remaining audience is more engaged than any other audience, in terms of likes and comments per view on their videos.

- The bulk of the growth in terms of both video production and viewership over the past two years has come from the entry of mainstream conservatives into the YouTube marketplace.

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[5]To illustrate the cultural power of these creators—in realms of less immediate interest to scholars of political communication—the highest paid YouTube channel in 2018 was "Ryan ToysReview" (revenue: $22 million). Ryan is a seven year-old who plays with toys. The channel's most popular video has been viewed over one billion times.

These descriptive facts are an essential starting place for developing a theory of YouTube politics.

To be clear, the recommendation engine is both powerful and novel, and it may well be the case that scholarship establishes it as the central force explaining the rise of alternative media on YouTube. Our hope with this paper is to encourage a broader scholarly analysis by pointing out that the algorithm is just one affordance of YouTube.

2   The "Zombie Bite" Theory of YouTube

Beginning with Bridle (2017)'s viral essay about horrifying content auto-recommended to children and extended to the realm of adult politics with journalistic enterprises like Nicas (2018) and Tufekci (2018), a single narrative has emerged: YouTube audiences are at risk of far-right radicalization *and* this is because the YouTube algorithm that was designed to maximize the company's profits via increased audience time on the platform has learned to show people far-right videos.[6]

A working paper published online by Ribeiro et al. (2019) in August 2019 is by far the most rigorous and comprehensive analysis of YouTube radicalization to date. They find compelling evidence of commenter overlap between videos uploaded by the three ideological communities: the "Alt-Lite," the "Intellectual Dark Web," and the "Alt-Right" (we discuss this typology and propose an alternative typology below). The paper demonstrates that many of the commenters on "Alt-Right" videos had previously commented on videos from the other camps. This is valuable descriptive information, and it enables the scholarly community to better theorize about causal relationships of interest. However, this is not itself evidence in favor of any given theory of the underlying causal process that explains Alt-Right viewership.

Ribeiro et al. (2019)'s conclusion admits as much: "Our work resonates with the narrative that there is a radicalization pipeline...Indeed, we manage to measure traces of this phenomenon using commenting users."

The status of the "radicalization pipeline" is indeed best characterized as a "narrative," rather than a theory. The chronological fact of people watching and commenting

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[6]Even the most sober and detailed investigation of this phenomenon to date, involving many interviews and detailed reporting, claims that "the common thread in many of these stories is YouTube and its recommendation algorithm." (Roose, 2019). More emblematic of the genre in its tolerance for question-begging is Weill (2018), titled "How YouTube Built a Radicalization Machine for the Far-Right: Former extremists say they were sucked in by propaganda as teenagers, thanks to an algorithm's dark side."

on Alt-Lite videos before moving onto Alt-Right videos is undeniable. But what model of the world does this call into question? Presented with the descriptive fact of "Alt-Right" creators with sizeable audiences on YouTube, did any theorize the existence of some kind of ideological *discontinuity* in the media that audience had previously consumed?

Indeed, the most plausible mechanism by which a viewership discontinuity might occur is the recommendation engine. But despite considerable energy, Ribeiro et al. (2019) fail to demonstrate that the algorithm has a noteworthy effect on the audience for Alt-Right content. A random walk algorithm beginning at an Alt-Lite video and taking 5 steps randomly selecting one of the ten recommended videos will only be recommended a video from the Alt-Right approximately one out every 1,700 trips. For a random walker beginning at a "control" video from the mainstream media, the probability is so small that it is difficult to see on the graph, but it is certainly no more common than one out of every 10,000 trips.[7]

In short, the best quantitative evidence available demonstrates that any "radicalization" that occurs on YouTube happens according to the standard model of persuasion: people adopt new beliefs about the world by combining their prior beliefs with new information (Guess and Coppock, 2018). People select information about topics that interest them; if political, they prefer information that is at least some what congenial to their prior beliefs (Stroud, 2017). Persuasion happens at the margins when it does happen.

The "Zombie Bite" theory is, of course, something of a straw man; no one has fully articulated and defended it. However, some form of the model is implicit much of the discussion about the growth of the far right on YouTube. Our purpose here is to encourage scholars and journalists interested in studying the effects of the recommendation engine to be much more explicit in deploying research designs that are capable of falsifying the strong Zombie Bite theory in favor of model more in line with the standard

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[7]The paper in fact analyzes two different recommendation engines. These results come from the "recommended videos" feature, which is what suggests a video to auto-play after a given video is finished. Equal attention is given to the "related channels" feature, a small box on a channel homepage that lists channels that an algorithm evaluates as similar to that channel. According to YouTube, "Related channels weren't frequently used, and we removed them in May 2019 to focus on other features." There is very little discussion of the related channels feature in either the media concern over YouTube radicalization, and received scant discussion among YouTube users. The most-watched video and first YouTube search result for "Related Channels" is from 2014 and has fewer than 50,000 views as of September 2019; it features a YouTube Creator explaining how the feature functions and concluding that its effect is "not a whole lot." The analysis in Ribeiro et al. (2019) is presented with none of this context. It is our view that the channel recommendations are trivial and uninformative.

literature on media effects.

Normatively, we desperately hope the strong version of the theory is false. If far-right content on YouTube is uniquely powerful, zombifying people after a single exposure, liberal democracy is in a very dark place indeed. As we demonstrate below, however, viewership of Alt-Right videos has been in decline since mid-2017. This is not dispositive evidence, but it *is* a necessary starting place for future theories of YouTube politics.

To reaffirm the broader facts of the matter, it is absolutely true that a variety of right-wing ideologies, some of them abhorrent and many of them explicitly opposed to mainstream knowledge production, have flourished on YouTube. Moving beyond vulgar technological determinism allows us to pose what we see as the essential research question:

Why are videos from these ideological niches so common and so popular on YouTube?

Our "Supply and Demand" framework provides a wealth of descriptive information that we hope will be useful to answer this question.

3   A Supply and Demand Framework

YouTube has a number of affordances that make it attractive for both alternative content creators and their prospective audience members. Understanding the market dynamics for this content, considering supply and demand separately as well as their interaction, is necessary for understanding the rise of alternative ideological communities, mainly on the right.

3.1   Supply

YouTube as a platform makes content creation easy and efficient for fringe political content creators. These "supply" variables can help explain why political content creators gravitated to YouTube as a social networking site in the first place.

The recommendation system discussed above is part of this picture. When watching a video, a viewer can browse a list of videos that are similar to the previous video or which comport with their viewing history. By *tagging* (providing specific keywords seen only by the search and recommendation algorithms) and *titling* videos (providing "clickbait" titles that entice viewers to select that video once recommended by the

algorithm), creators can increase the likelihood their videos are seen. This feature evens the playing field between alternative and mainstream creators, giving each the same capacity to "target" their videos to the recommendation system.

Other affordances bear mention. One of these is *monetization.* YouTube provides a number of avenues for content creators to make money, in contrast to Facebook and Twitter, which are largely volunteer labor. One method is through the YouTube partner program, which gives participating content creators a percentage of advertising revenues creators generate (Google, n.d). In recent years, YouTube has increasingly demonetized political videos to minimize the risk advertisers get associated with political extremists (YouTube, 2019), so revenue from this method has decreased.

However, alternative content creators have two other methods of raising revenues. One is through receiving "super-chats" on live-streams, donations from fans with optional messages attached that they have to read on stream. The second is through establishing a crowdfunding page on Patreon or an alternative website, giving perks to "patrons" in exchange for monthly donations. YouTube's demonitization strategy encouraged the adoption of these two fundraising methods.

One of the structural challenges of online media is the weakness of the viewership-based advertising model. Hindman (2018) shows that the centralizing tendencies of the internet have led to an increasing concentration of ad revenue between the major platforms and the most successful media companies, squeezing out local news and many of the once-vaunted online media startups. The alternative revenue strategies of "pay-for-recognition" on super chats and monthly donations from Patreon are a potentially revolutionary solution to this problem. Unlike ads, they incentivize the creation of a devoted fanbase and transform the revenue process into a two-way communication between creator and audience.

A third and final major affordance of YouTube is that unlike Facebook and Twitter, which feature video but primarily use text as a communication tool, the primary medium for YouTube is video. The startup costs to creating YouTube videos are minimal. Though some creators invest in studios and expensive sound and video equipment, most make use of cameras and microphones built into their computers or smartphones. Creators can use free software to edit their videos, or if they stream live, make use of Google Hangouts, which is connected to the YouTube platform.

Videos are also incredibly efficient to create. It can take days or weeks to produce one hour's worth of text content on Facebook or Twitter, but in some cases, creating one hour's worth of video content takes *exactly one hour.* It requires large teams of

cameramen, editors, makeup artists, writers and producers to create high-production-quality traditional broadcast television, but in most cases, the total number of people required to create a political YouTube video is *one*.

This is attractive for a lone, fringe political commentator, who can produce enough video content to establish themselves as a major source of media for a fanbase of any size, without needing to acquire power or legitimacy by working their way up a corporate media ladder. It also makes possible the "fan service" revenue stream from "super chats." It is even more attractive for groups of ideologues like the ones we analyze below. Video monologues are harder to maintain and are often boring without significant post-production. Dialogues—often stylized as "debates" or even "Internet bloodsports" (Daro and Silverman, 2018)—borrow from the popular cable news "talking heads" format that is a very efficient strategy for producing hours of dramatic, engaging content. The fanbases of different YouTube creators can get involved in the debates (if they pay), serving the dual purposes of revenue generation and community building.

Furthermore, video, relative to text, affords people increased accuracy in detecting the emotions of the content creator (Houwer and Hermans, 1994) and increases their propensity to respond emotionally to the content creator (Paivio, 1990). This is because video takes advantage of both cognitive systems that separately process verbal and visual information, whereas text only provides verbal information. Although less information dense than text (in terms of the words consumed per minute), video is better able to create a parasocial connection between video and audience, leading to increased audience retention (Hu, Zhang, and Wang, 2017).

The specifics of the YouTube interface amplify this tendency. On other social media platforms, the only branding on posts are the poster's avatar and name, which show up on feeds filled with other posts with other avatars and names. Even videos posted to, say, Facebook tend to take up a small percentage of the screen.

YouTube videos take up nearly the whole page, meaning creators can command more undivided attention. Furthermore, creators show their faces (or if not their faces, vivid avatars) and have identifiable voices, which more closely mimic a conversation. These features can help a fringe content creator elicit an attachment among the audience to the content and to the creator that might not otherwise be there.

Diana Mutz demonstrates the polarizing power of the combination of political incivility and video close-ups in Mutz (2015). The motivation for that investigation came from the novel realization that cable talking heads are shown at a size that would imply

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that they were literally *in your face*, increasing physical arousal and amplifying the effect of incivility. For people sitting at a desktop computer with a standard monitor, the faces on YouTube appear *even larger* than for televisions viewed from a couch.

These features also allow communities to form around creators more easily. Each video has a dedicated comments section on the page a person can scroll down to view, which allow both messages to the content creator as well as dialogue with other viewers.

In short, the structure of YouTube encourages a dramatically more diverse political media environment. Because of the *discoverability* of YouTube videos, the enhanced *monetization* opportunities from both YouTube itself and technologies that have developed in parallel, and the efficiency and affective power of *video* in creating parasocial relationships, YouTube has the capacity to support a huge number of distinct media personalities promoting views that need not be tethered to the mainstream knowledge production process.

3.2 Demand

Regardless of the ease, efficiency and potency of the supply of alternative political content, a necessary condition for it to impact the world is that people decide to watch it. The far right can tag their videos so that they end up in recommendations and title them to attract clicks, but people will stop watching if they feel deceived or uninterested.

The straw man "Zombie Bite" theory requires an audience that is both pliable and passive, but the history of media theory in the context of the expansion of video content suggests that they are anything but. In response to what was then plausibly called the "hyperchoice" cable news context, Arceneaux and Johnson (2013) develop the *active audience theory*. They argue against a supply-centric model of the effect of cable television on politics, highlighting instead the fact that many people made an active choice in their viewing habits that resulted in dramatically lower news consumption (also demonstrated by Prior (2007)).

We believe that the novel and disturbing fact of people consuming white nationalist video media was not caused by the supply of this media "radicalizing" an otherwise moderate audience. Rather, *the audience already existed*, but they were constrained by the scope of the ideology of extant media. The expanded supply allowed them to switch into consuming media more consistent with their ideal points.

This analytical approach gives us purchase on the question of why the far right has prospered more than the far left. We don't deny that the audience for far-right content

has expanded in the past decade—but we think the rest of the world explains more of this variance than does fringe YouTube media.

First, there is a well-documented decline in trust in government, mainstream media, and academia since the 1960s (Hetherington, 2005; Ladd, 2011). In the same period, social capital—real-world social connections and access to community—also declined (Putnam et al., 2000). Another aspect of this trend is the movement of the American economy away from manufacturing, leaving many in the white working class, especially young men, notably worse off than their parents and without access to the stabilizing force of full-time employment (McDowell, 2011). Changing economic conditions that lower the power of White Protestants in the US have certainly created a backlash even in the absence of YouTube; McVeigh and Estep (2019) draw a compelling parallel between the the rise of the Ku Klux Klan in the 1920s and white nationalism in the 2010s.

Additionally, the delivery mechanisms for YouTube videos entails a *distinct* and *expanded* demand. Although this has not been demonstrated empirically, there is anecdotal evidence that "preference for video" varies widely within the audience: there exists some portion of the audience who might never consume written news but do consume video news. The first decade of the 21st century saw an explosion of written political content on the internet, expanding the knowledge gap between political interested people who like to read and everyone else (Bennett and Iyengar, 2008). YouTube politics could lower that gap.

Many people spend hours a day in contexts in which watching videos is simply easier than reading. Many people spend hours a day driving a truck or another vehicle, and they obviously cannot read while driving. The practice of white-collar workers performing their jobs while wearing headphones is increasingly accepted. The number of working-age men who are out of the labor force is also at an all-time high (Abraham and Kearney, 2018); they have a huge amount of time to consume media and play video games.[8] In general, the collective number of hours a day in which at least some portions of the US population could be consuming YouTube videos has generally been

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[8]The impact of video gaming culture on far-right politics has been frequently noted in the press. In particular, the "Gamergate" controversy—in which gaming enthusiasts aggressively harassed female gaming journalists (Massanari, 2017)—may have permanently politicized this community, which certainly shares a number of demographic characteristics with the audience for the far right. Average weekly time spent playing video games nearly tripled from 2005 to 2015 among 21-30 year old men living with their parents but barely increased for men of the same age living on their own (Kimbrough, 2019)

increasing.

Although causally interrelated, the confluence of the effects of these trends has created a cohort of people with a litany of grievances and a lot of free time. Some of these people may be ideologically amenable to mainstream media, but feel alienated from them either due to the mainstream's framing of the issues at hand or to the overall political culture. Others may view the entire system as corrupt and irredeemable, preferring chaos to the status quo (Petersen, Osmundsen, and Arceneaux, 2018). The fringe ideologies available on Youtube offer validation to this audience's frustration and disaffection, bundled with a seemingly coherent worldview that explains everything about contemporary politics.

The size of this cohort, all consuming large quantities of YouTube politics for similar reasons, enables the the creation of the community they lack, amplifying any straightforward media effects. The shared technosocial environment of this audience and the content creators enables multi-platform communication, and the formation of a complex alternative media ecosystem.

Creators can have dedicated subreddits and Discord servers, platforms for their their fans to discuss the latest videos and give feedback to the creator. Akin to the parallel fundraising services like Patreon, these parallel forums are part of the overall media package experienced by the audience of these fringe creators. These opt-in forums represent the realization of the media echo chambers that have proven rarer than expected on more mainstream social media (Guess et al., 2018). Here, fringe audiences discuss the news only with others like themselves—and "the news" is the extreme video content from the focal creator.

These YouTube communities are thus ripe for the creation of parasocial relationships, a facsimile of the traditional sociality this audience lacks. The capacity of broadcast television to promote parasocial relationships between an audience and a performer was proposed in an influential article by Horton and Richard Wohl (1956), in which they define the term as a "simulacrum of conversational give and take," with the crucial distinction from a social relationship in the "lack of effective reciprocity." This theory generated a thriving literature, largely within psychology, communication and entertainment studies (Hartmann and Goldhoorn, 2011). Very recently, the application of parasocial relationships with YouTube creators has attracted the attention of scholars of computer-mediated communication (de Bérail, Guillon, and Bungener, 2019; Ferchaud et al., 2018; Munnukka et al., 2019). This literature is ripe for extension to the realm of political communication and media effects, as suggested by Klimmt, Hartmann, and

Schramm (2006).

Donald Horton, in the next year, contrasted parasocial relationships with those developed in what was then a niche form of media: "Audience-Participation Shows" (Horton and Strauss, 1957). The structure of these shows, sixty years later, has been rendered commonplace by the affordances of YouTube discussed above. Streaming chat, especially with payment-based "super chat," makes the process of selecting audience members to become active participants more fluid and accessible to all, eliding some (but never all) of the distance between performer and audience. We believe that an extension of this strand of theory to the context of YouTube politics would be invaluable. In particular, Horton and Strauss (1957)'s description of training the audience through repetitive audiovisual stimuli to perform various roles in the collectively constructed drama seems a remarkably prescient description of strategies used by today's YouTube creators.

These trends in specific and aggregate demand for YouTube politics can explain, even in the absence of radicalization or even persuasion, the bulk of the Alt-Right's audience. To flesh out this claim, the next section presents a qualitative description of the specific history of the larger Alternative Influence Network.

4   Describing the Alternative Influence Network

Lewis (2018) describes the AIN as a collective of *political influencers* who have made a name and in some cases a career for themselves by cultivating a community of viewers who tune in to their daily uploads or livestreams. The "Network" component comes from the way that these political influencers are frequent guests on each other's videos, encouraging their followers to become more invested in both the ideas of the AIN and their interactions as personalities. These apparently authentic interactions, highlighting interpersonal "drama" between creators, both keeps the attention of their audience and acts as a subversive vector for their political agenda (Abidin, 2016).

The politics of the AIN vary considerably, and can be productively divided into five sections. The follow typology is the result of hundreds of hours spent watching AIN videos, but we acknowledge that these categorizations are ultimately subjective and that other observers might produce alternative categories. The leftmost flank of the AIN are best termed Liberals: Joe Rogan, host of the *Joe Rogan Experience*, has been a friendly host to presidential candidates including Bernie Sanders, Tulsi Gabbard, and

Andrew Yang; Steven Bonnell II, ("Destiny"), routinely argues against conservative and Alt-Right talking points, often with more right-wing members of the AIN present.

The second segment of the AIN include people in what we describe as the "Skeptic" community. These include people like Carl Benjamin ("Sargon of Akkad"), former candidate for European Parliament; Jordan Peterson, known for his opposition to a bill adding gender expression and identity as protected under the Canadian Human Rights Act; and Dave Rubin, a former affiliate of the progressive Young Turks. This segment of the AIN agrees, in principle, with most liberal values, and often "Skeptics" say they used to consider themselves part of the mainstream left. Where Skeptics define themselves in contrast to the mainstream left is through opposition to certain practices, namely explicit appeals to marginalized racial and gender identities and the use of no-platforming against far-right speakers. However, unlike further-right segments of the AIN, they also strongly criticize the far-right for its own use of identity politics to bolster white supremacy.

The third segment of the AIN are Conservatives who, in another media era, may have started conservative talk radio shows or hosted a show on Fox News. These include Steven Crowder, famous for setting up booths at college campuses challenging people to "change his mind" about a conservative/pro-Trump belief; Ben Shapiro, a former Breitbart reporter known for criticizing the left for their use of "feelings over facts"; and Dennis Prager, host of "PragerU," a channel that expresses conservative viewpoints with an educational motif. Like the Skeptics, they often lampoon the use of identity politics and de-platforming by mainstream progressive social movements, but unlike skeptics, they also disagree with mainstream liberals in principle. They tend to have more traditional pro-market and socially conservative beliefs. They are different from further-right segments of the AIN, however, in that they explicitly oppose anti-semitism and open appeals to race.

The fourth and fifth groups are the Alt-Lite and Alt-Right, which are often conflated with one another. However, there are key distinctions in how they appeal to their audiences. The Alt-Lite is a mixed bag ideologically. Some, like Paul Joseph Watson, an *InfoWars* affiliate, argue for mainstream conservatism. Others, like Stefan Molyneux and Lauren Southern, espouse more explicitly white nationalist messages. However, they all enjoy antagonizing and upsetting ("triggering") liberals and leftists, and use racist and otherwise offensive humor as a means to transgress what they describe as authoritarian boundaries set by the left-of-center. The Alt-Lite is also strongly pro-Trump.

In contrast, the Alt-Right is firmly committed to a far-right ideology. Common features include strong anti-semitism and the belief that white people are are genetically superior ("race realism"). They advocate for an all-white ethnostate and an end to all (or at the very least, all non-white) immigration. Well-known YouTubers in the Alt-Right include Richard Spencer, coiner of the term; Red Ice TV, an alien conspiracy-turned-Alt-Right talk show; and Jean-Francois Gariepy, a former neuroscientist who is virulently anti-feminist and uses his scientific background to increase the perceived credibility of race realism. Unlike the Alt-Lite, these YouTubers are not concerned with transgressing perceived social boundaries set by mainstream progressives, and do not disagree in principle with identity politics or deplatforming. They argue instead that mainstream progressives are bolstering the *wrong* identities and deplatforming the *wrong* people. They also tend not to support Trump, believing he has been compromised by an international Jewish conspiracy due to Trump's pro-Israel sentiment and closeness to his Jewish son-in-law, Jared Kushner.

Despite the ideological diversity of the AIN, certain patterns emerge. The first is that they define themselves in opposition to mainstream media and mainstream politics. Some disagree on mainstream tactics or mainstream ideology, but all consider the mainstream corrupt and censorious. The second is that many of these YouTubers have undergone ideological transformations. Dave Rubin, Carl Benjamin, and Jordan Peterson all used to consider themselves left-wing or at least mainstream liberals, but have since felt alienated from the left. The Alt-Right also has its share of converts. Popular Alt-Right show hosts Andy Warski and Christopher Cantwell began as libertarians or skeptics and transitioned slowly into antisemitism and white nationalism. Red Ice TV began as a narrowly-tailored alien conspiracy channel, but also became more explicitly white nationalist.

Despite widespread support for Trump among the Conservative and Alt-Lite segments of the AIN, much of the AIN is not American. Skeptic Jordan Peterson, Conservative Steven Crowder, the Alt-Lite Stefan Molyneux, Faith Goldy, Lauren Southern, and Gavin McInnes, and the Alt-Right Jean-Francois Gariepy and Andy Warski are all Canadian.[9] Skeptic Carl Benjamin, Alt-Lite figures Paul Joseph Watson and Milo Yiannopoulos, and the Alt-Right Millennial Woes live in the United Kingdom. The Skeptic Vee lives in Romania. Martin Sellner and Brittany Pettibone both live in Austria (though Pettibone is originally American). Alt-Righters "The Golden One"

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[9]Stefan Molyneux and Steven Crowder both emigrated to Canada, Molyneux from Ireland, Crowder from the United States.

and Red Ice TV operate from Sweden. Much of the AIN broadcasts in English, so the majority are located in Anglophone countries, but even so, the AIN represents a cross-national phenomenon.

These ideological distinctions have largely been ignored by a mainstream discourse that (rightly) sees many of these views as abhorrent. Our goal in describing these ideologies and individuals is not to legitimize any of them. We believe that modelling the internecine disputes among the AIN is essential for understand the various factors underlying their growth.[10]

To that end, our quantitative approach is purely descriptive. Scholars of political communication simply lack sufficient knowledge about *what the AIN is.* While we believe that the Supply and Demand framework described above can be fruitfully connected to the data we analyze below, we do not claim to offer an explicit test of any theory.

5   Quantitative Trends

5.1   Comparing the AIN and MSM

Before we turn to our supply and demand framework, we will describe key differences between the AIN and mainstream media (MSM). The channels that comprise the AIN are taken from Lewis (2018). To take the usernames that these figures adopt and query the YouTube API requires finding each account's "channel_id"

We identified 54 of these channel id's, 48 of which had accessible videos on the YouTube API (Table 1 displays descriptive statistics). These videos were queried by searching for each channel's "playlist," the record of the videos they've uploaded. With this list of each video's "video_id," the API can be queried to provide "video metadata" on each video, including: video publish date; video title; video category (YouTube encourages creators to give each video one of 32 categories); view count; comment count; like count; and dislike count. These figures are current as of November 2018, when the API was queried.

To serve as a comparison group, we used a list of 219 channels associated with "mainstream" media accounts (Eady et al., 2019). This group had four times as many

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[10]Of particular concern might be the way that we delineate the Alt-Right and Alt-Lite, but in the empirical analysis below, we find that the same general trends describe both of these farthest-right groups.

Table 1: Descriptive Statistics for AIN and MSM Accounts

	AIN	MSM
Unique Channels	54	219
Channels w Videos	48	157
Unique Videos w Metadata	34,383	821,840
% Videos in "News and Politics"	47%	82%

channels and nearly 24 times as many total videos, reflecting the fact that the MSM video content consisted almost entirely of re-broadcasts of videos from news channels or other outlets. Another helpful reference point is the percentage of videos in each group that were labeled (by their creators) as belonging to the "News and Politics" category. 82% of the MSM videos fell in this category compared to just 47% for the AIN. The latter group tended to also label their videos as "Entertainment," "People and Blogs," or "Education."

Figure 2 plots the rate at which the two groups uploaded videos. Note that the y-axes are different, with the MSM putting out at least 20 times as many videos as the AIN at each month in the graph. The comparison is useful, however, because it highlights two discontinuities in the AIN trend that do not appear in the MSM trend: there are serious jumps in January 2013 and May 2016.
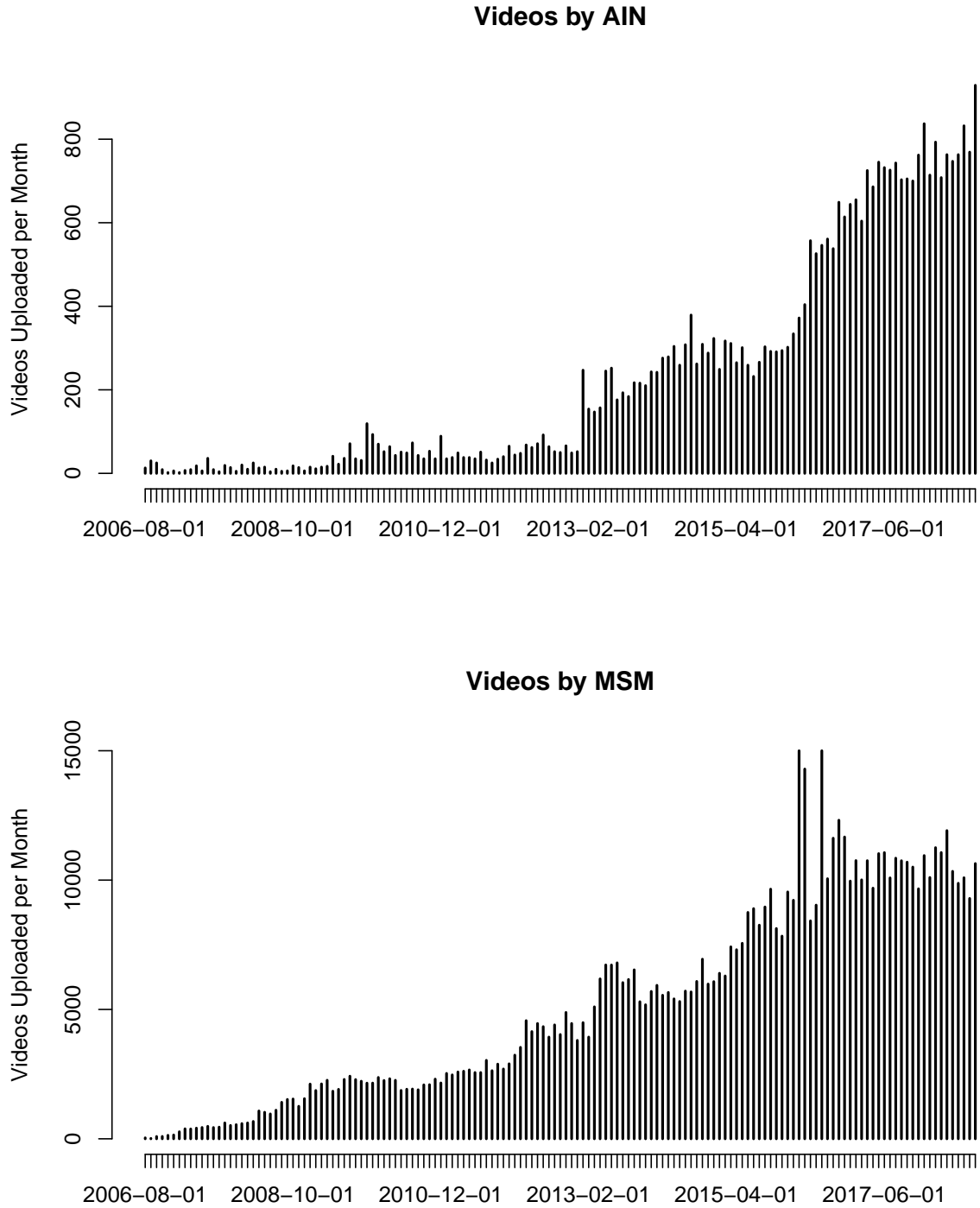
In addition to video metadata from the channels identified as belonging to these two groups, we performed a historical analysis of the "search" functionality of YouTube. The search bar is for many people the gateway to YouTube videos.

The YouTube API allows a researcher to specify a search query (a word or phrase, like a Google search) for a given date range (going back to 2006) and a number of other parameters. Possibly relevant options (left unspecified in our analysis) include searching by location, the language of the video, the topic (from YouTube's pre-specified list of 32 topics), video duration (short, long, or medium).

The parameter that we did specify was "order_by," which is crucial for determining which videos end up in the "top 100" (the admittedly arbitrary standard we adopted for this exploratory analysis). Options (with the official definitions from the YouTube V3 API documentation, which refers to videos as "Resources") include:

- relevance : Resources are sorted based on their relevance to the search query. This is the default value for this parameter.

- viewCount : Resources are sorted from highest to lowest number of views. For

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Figure 2: Timeline of posted videos: AIN and MSM

Videos by AIN

Videos by MSM

Note that the y-axes are different. The first jump in the AIN trend is January 2013; the second jump is May 2016.

live broadcasts, videos are sorted by number of concurrent viewers while the broadcasts are ongoing.

The below results are based on the "viewCount" option; we opted to go for the most popular videos rather than rely on YouTube's black box "relevance" criterion.

One important caveat is that these searches do not exactly mirror user experiences due to the use of personalized recommendations. However, through our queries, we can assess what the average user may see if they typed a given phrase into the YouTube search bar on a certain date. Unfortunately, precise the mapping from the data provided from the YouTube API to this quantity is unknown.Regardless, we can at least use a difference-in-differences approach to see how the relative prominence of the MSM and AIN in popularity-based search results changed over time, holding this search paramter constant.

We queried the search function of the API each month from January 2008 to October 2018, returning the top 100 results per month for two sets of search terms. The first, what we call mainstream topics, are generic terms: "economy," "news," and "politics."
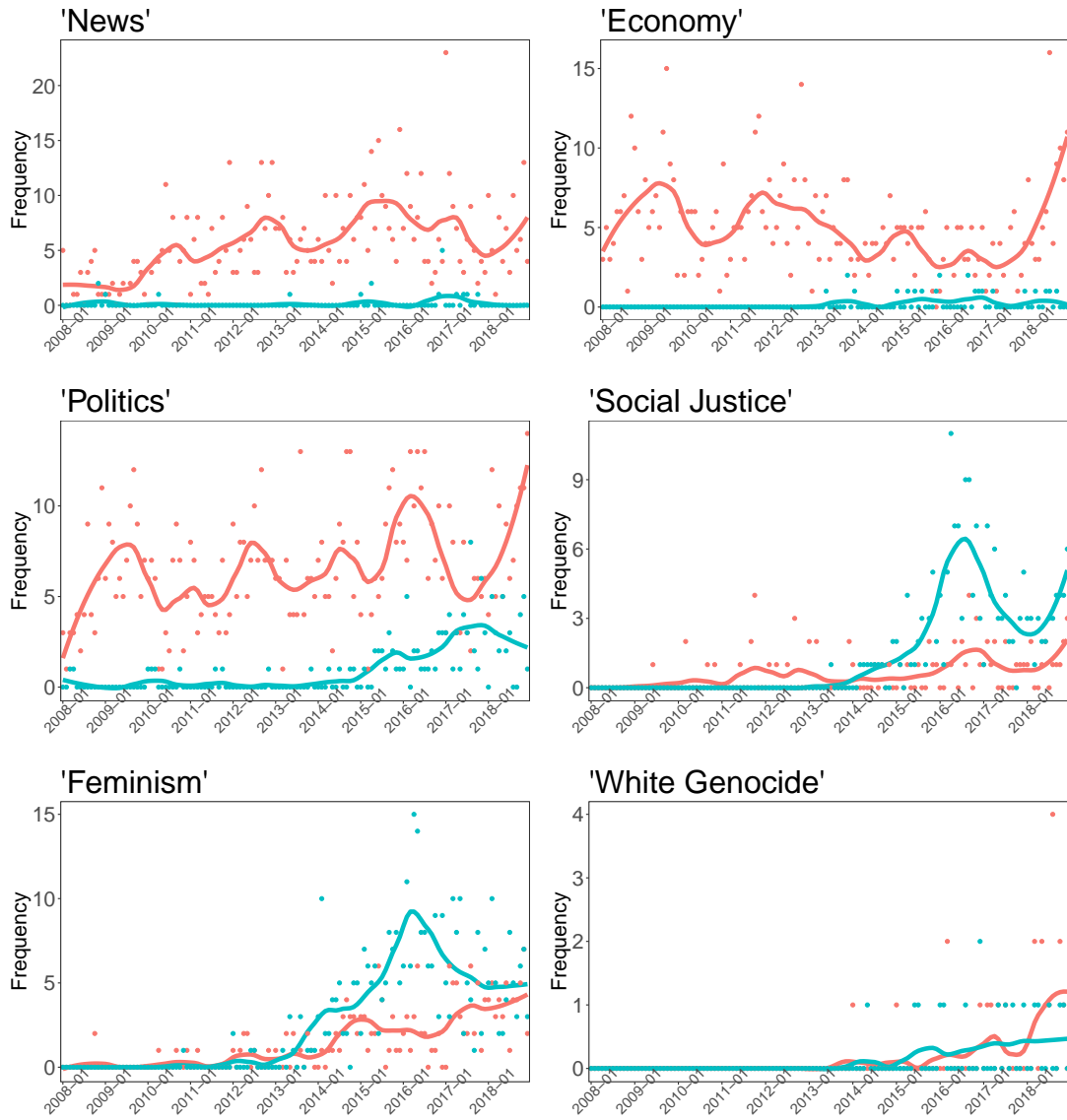
The second, what we call niche topics, are terms that have been specifically identified as areas of focus for the AIN: "feminism," "social justice," and "white genocide." These topics are not explicitly related to partisan issues or electoral politics, but they are relevant to broad cultural conversations that may be upstream of contentious issues like abortion and immigration.

With these monthly lists, we simply compared the channel_id's of the videos provided by the API to those identified above as pertaining to either of the two groups.

Figure 3 displays the results returned by the search function. Each month, out of the top 100 videos returned from a given search term, Figure 3 plots the number of videos put out by a channel in either the MSM (in orange) or the AIN (in blue). The first three plots are the Major Topics, "economy," "news," and "politics." We can see that the MSM has consistently made up 5-15% of the results for all three terms, and the AIN has generally never cracked the top 100 for "economy" or "news." For "politics," however, they have made inroads since mid-2014. The other notable trend is the huge spike in "news" matches for the MSM at the end of the graph, but we believe this may be an artifact of the system.[11]
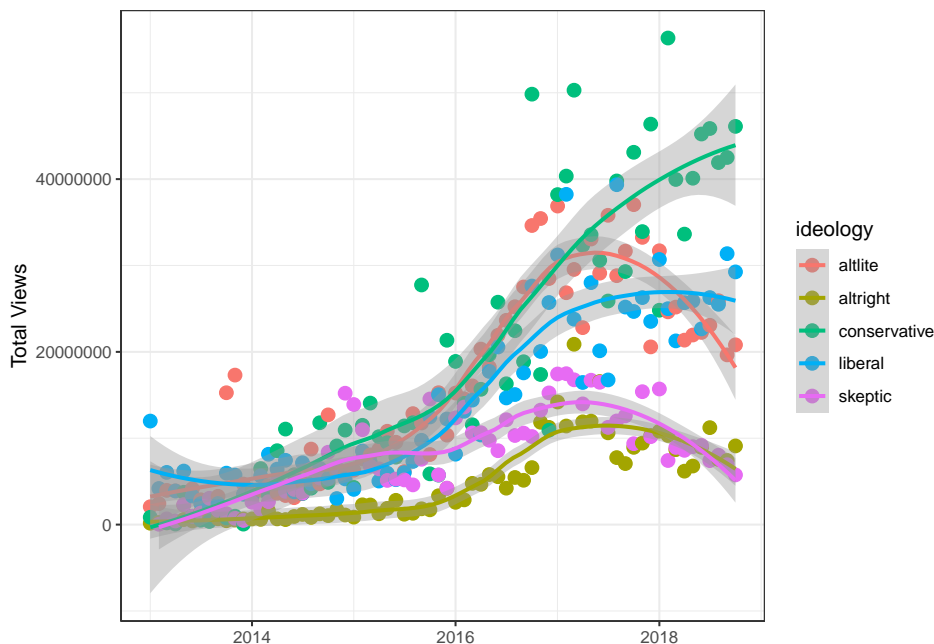
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[11]The API appears to function different for search queries that go less than a month into the past. There is no discussion of this point in the API documentation, and despite multiple efforts to contact YouTube about this question, we have not gotten a response.

Figure 3: Results of Search: Major and Niche Terms

The first three plots show that the MSM (in orange) has consistent and broad representation in search terms corresponding to Major Topics. The next three plots show that the AIN (in blue) has dominated the terms corresponding to the Niche Topics they emphasize in their narrative.

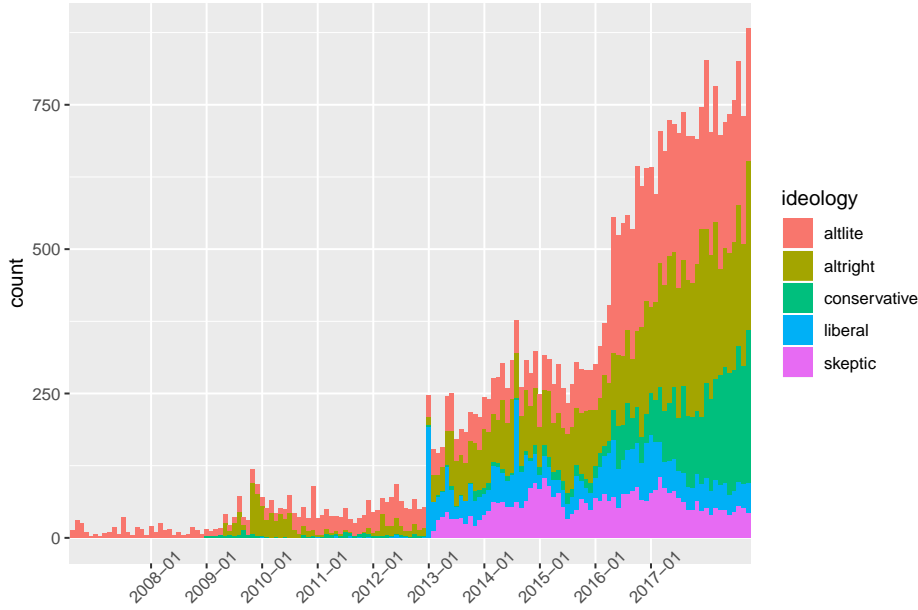Figure 4: Trends in Monthly Viewership Among the AIN

The next three plots paint a very different picture. The AIN dominates these Niche Topics, beginning mid-2013 (although the "white genocide" topic, by far the most intrinsically extreme, never returns more than 1 match from either group.) "Social Justice," a term that originated in progressive circles but is central to the far-right's narrative of Western decline, jumps up for the AIN at the beginning of 2016, which also sees a small bump for the MSM. The most mainstream term on this list, "feminism," is even further dominated by the AIN: they have more videos in the top 100 for this topic than does the MSM in every month since 2013. At their peak, in 2016, they had 10 videos in the top 100, to the MSM's 3. The bottom panel does, however, indicate that the AIN are past their prime, at least in terms of thse search results.

5.2 Describing the AIN

In this section, we examine descriptive trends of YouTube video production and consumption over time. We begin with trends in monthly viewership between January 2013 and November 2018, as depicted in Figure 4. Between 2013 and 2016, all segments of the AIN, including the Alt-Lite and Alt-Right, rose in viewership. However,

Figure 5: Timeline of posted videos: AIN breakdown

since the middle of 2017, both of these ideological segments of the AIN have seen a steep decline in viewership. By contrast, Conservative and Liberal content creators—who have much more in common with mainstream discourse than other segments of the AIN—have either continued to grow or plateaued in viewership. These patterns are inconsistent with radicalization happening at a major scale; indeed, from these data alone, *de-radicalization* seems a more plausible baseline hypothesis. This does not rule out the possibility that some people are making the ideological journey from Liberals to Skeptics to the far-right, but this is certainly not the dominant trend.

View counts speak to trends in the *demand* for ideological content. To study *supply*, Figure 5 plots the number of videos uploaded by each ideological group, by month. Right around the time viewership of Conservative content started skyrocketing, Conservative content creation also rose dramatically. Conversely, despite the Alt-Lite and Alt-Right stepping up its content creation activity in 2017-2018, viewership of such content has been declining.

Our preferred explanation for these trends are as follows: Previous increases in viewership of Alt-Lite, and to a lesser extent, Alt-Right content reflected such content being

the most ideologically adjacent to conservative users. This content did not align with most users' views, however, and increased competition from traditional Conservative and Liberal viewpoints enticed large portions of the this audience to abandon what was once the only game in town.

Next, we consider *intense* engagement, by calculating the the comments-to-views ratio. (Similar analysis involving the likes-to-views ratio can be found in the Appendix; the results are broadly similar.) Models of YouTube politics that focus on the recommendation engine do not assign much weight comment patterns, relying as they do on a passive audience.
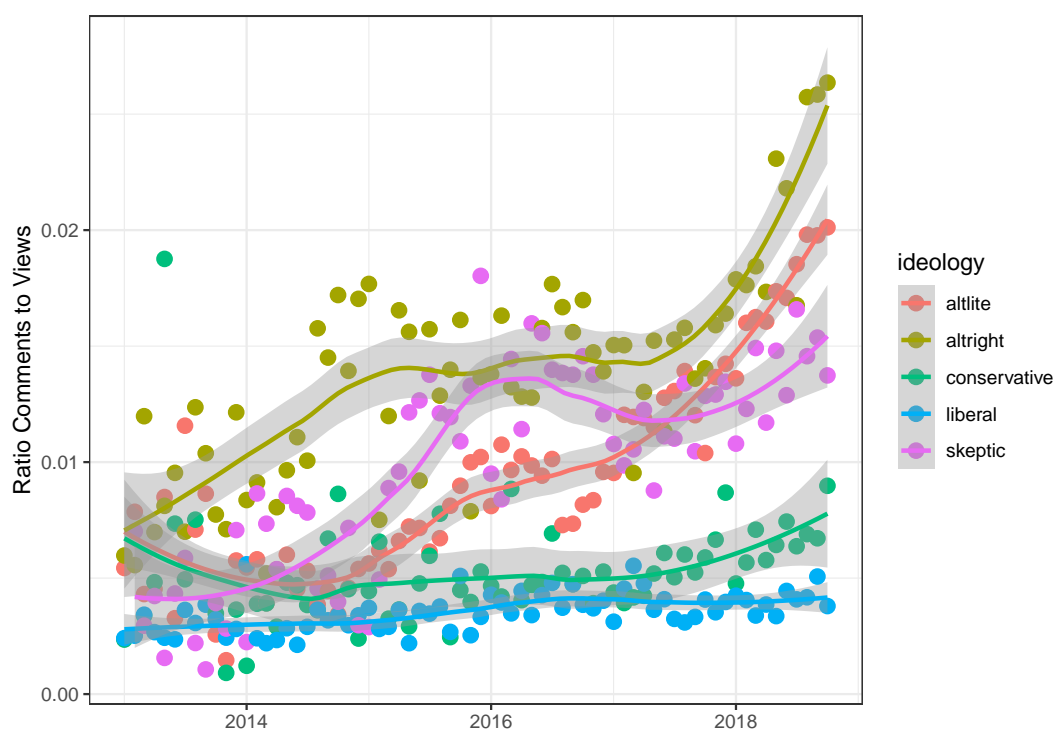
We argue a robust comments section indicates higher communal activity on the part of the viewership. More comments mean a higher percentage of users wishing to interact with the creator or address other comments. Additionally, more comments can also mean a higher proportion of people are conversing with each other in the comments section. When a user comments, another user replies and they start discussing back and forth, each new message counts as a comment. These interactions, even if contentious, are social, reinforcing the parasocial relationships between audience and creator.

As we see in Figure 6, despite stagnation and decline in viewership among Alt-Lite and Alt-Right channels, the content these channels produce feature popular comment sections, signalling that interaction between the viewers that remain is robust. Alt-Lite and Alt-Right channels are likely to have the most atomized, socially disaffected viewership out of any channel in the AIN. Those who have remained watching Alt-Right content are likely the ones who engage the most intensely - the ones who are invested into the online community.

6   Discussion

In this paper, we provide a short introduction to quantitative political analysis of YouTube and briefly advance a "supply-and-demand framework" to understand the proliferation of alternative media on the platform. To date, journalistic and scholarly work has argued YouTube's recommendation algorithm has led viewers to extremist content, radicalizing them to further-right views. We argue instead that YouTube has affordances that make content creation easy for fringe political actors who tap into an existing base of disaffected individuals alienated from the mainstream, encouraging parasocial relationships that serve as a stand-ins for real sociality.

Figure 6: Intensity of Engagement: Ratio of Comments to Views

We also contribute some of the first longitudinal descriptive analyses of the production and consumption of extreme content. Indeed, alternative voices on YouTube discuss topics mainstream media fails to touch, which may help them feature more prominently in search results and recommendations. However, since 2017, viewership of the furthest-right content has declined despite increases in the supply of such content. In its place has been the rise of more mainstream-adjacent conservative and liberal creators, consistent with a large share of users finding ideological communities that best fit their ideal points. We also find that the remaining Alt-Lite and Alt-Right audiences are more likely to be active in comments sections than those who frequent other channels, reflecting the community-building potential of these channels.

These descriptive trends still allow for a large role of the recommendation system, and it is still very possible that far-right content may radicalize (at least some) of its viewership. However, the descriptive facts we bring to bear give us cause to question why these theories—which have not been quantitatively demonstrated—currently enjoy their status as dominant hypotheses.

Future empirical work is necessary to fully evaluate claims about the power of the recommendation algorithm. The scope of analyses of YouTube politics must be expanded; in particular, comparative analysis between the AIN and the small but growing collective of left-wing YouTubers (self-identified as "BreadTube") can help illuminate the role of YouTube as a platform in oppositional ideological communities. Another empirical angle on YouTube is the way that it is inherently international; political video content has historically been country-specific, and the novel way that narratives and ideologies evolve when divorced from these specific contexts is not well understood.

Theoretically, we encourage scholars to pay attention to the various novel affordances of YouTube, either idenpendently or as a bundle, other than the recommendation engine. Although we have not done so here, we believe that applying the robust literature on parasocial relationships to the current context will prove particularly fruitful.

A broader approach is important for the standard practice of political communication scholarship, but we also encourage more reflexivity: we do not have the luxury of an objective vantage point from which to study alternative media.

These actors are keenly aware of our work and use discrepancies between our analyses and their lived experience as evidence for the superiority of their interpretive communities; the success of these communities may be due to their audience's disenchantment with mainstream knowledge production as much as it is with that audience's appreciation for the quality of their alternative analysis.

There is no easy solution here, but a necessary first step is to recognize the scope of the challenge. YouTube politics and alternative media are here to stay; no algorithmic tweak will put the rest of the YouTube's powerful affordances back in the box. We urge scholars of political communication to use the descriptive information presented here as a jumping off point for more empirical and theoretical analysis of YouTube politics.

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   https://youtube.googleblog.com/2019/06/our-ongoing-work-to-tackle-hate.html .
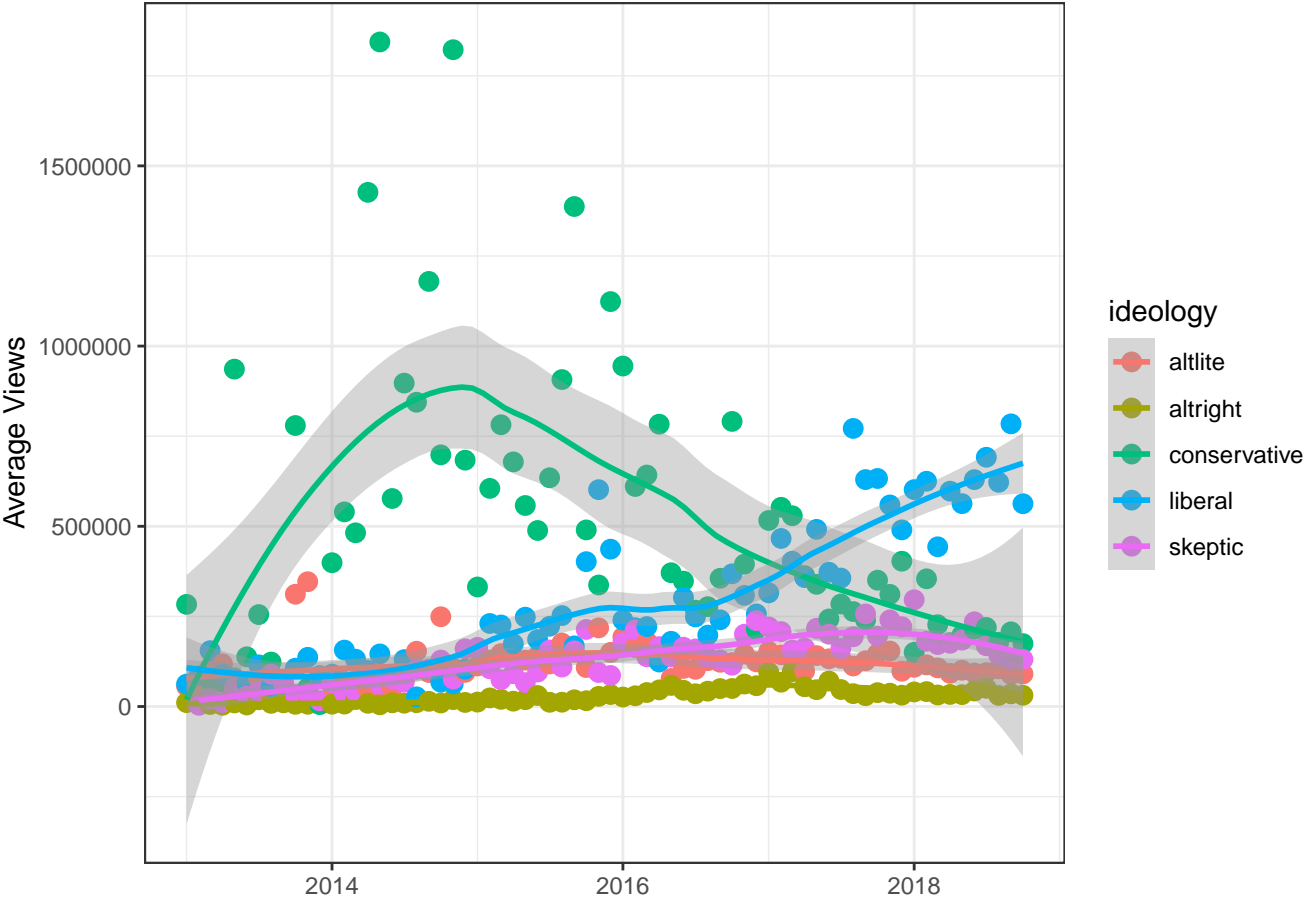
A Alternative Graphs

Figure 7: Trends in **Average** Viewership Among the AIN
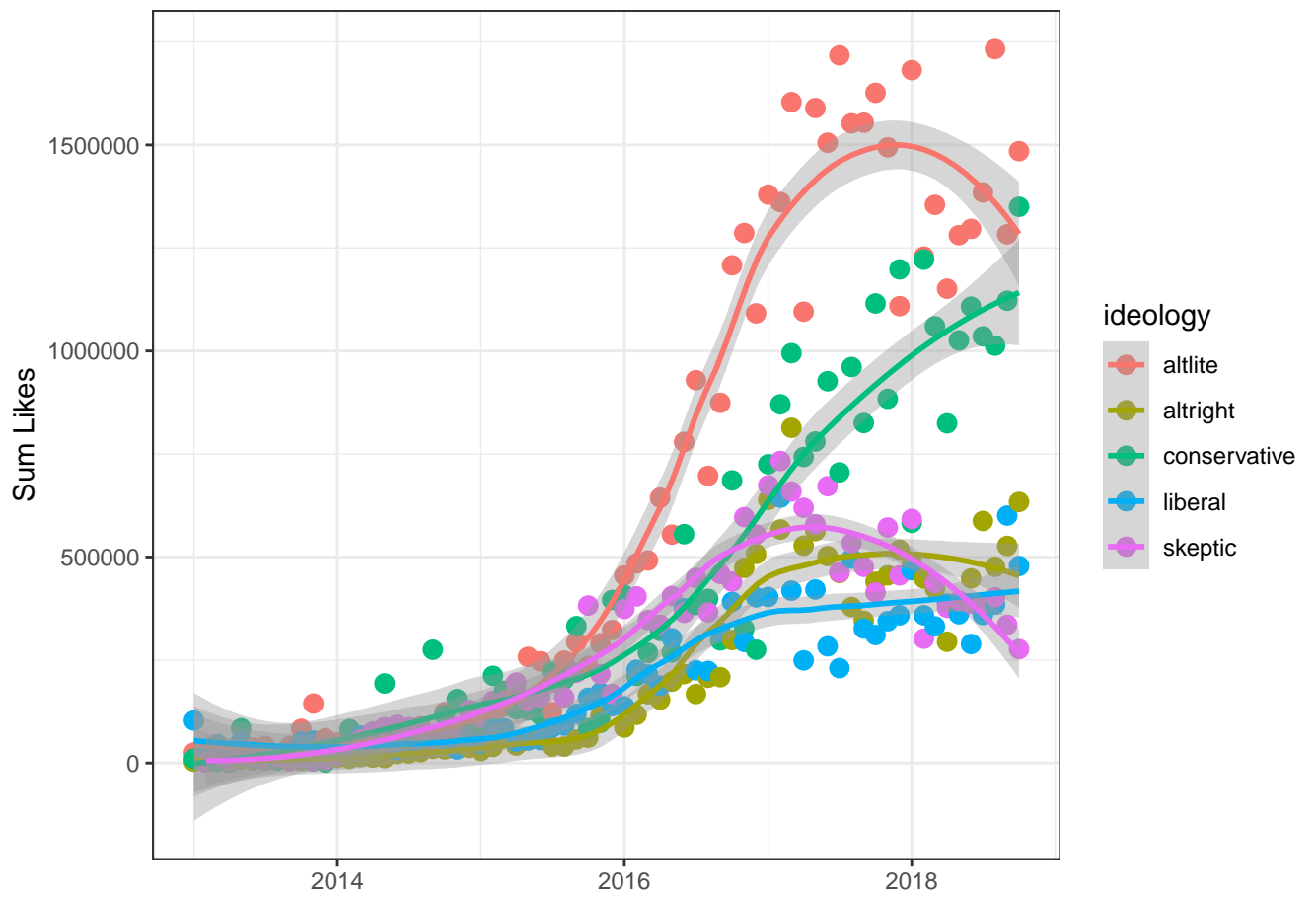
Figure 8: Trends in Total Likes Among the AIN
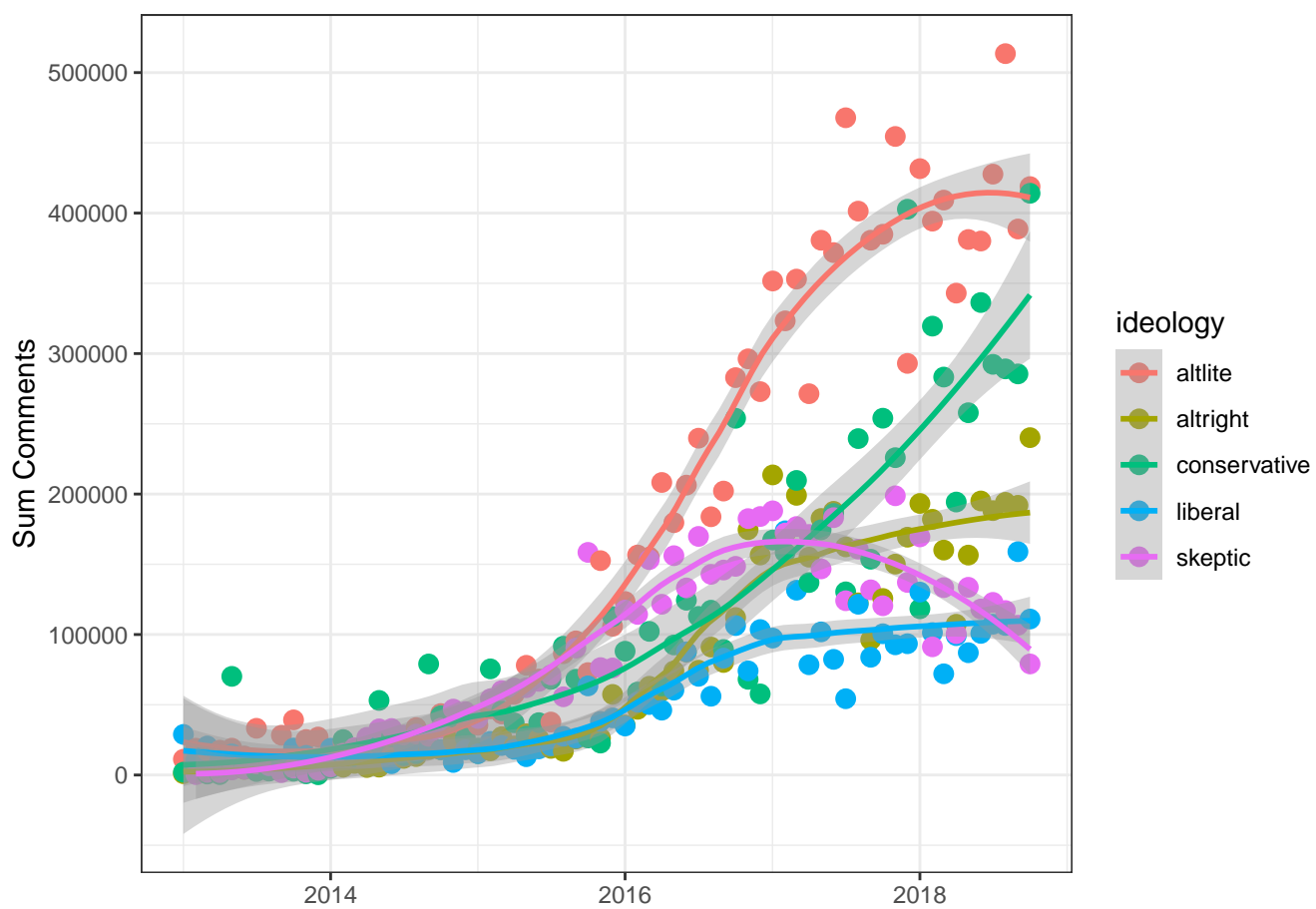
Figure 9: Trends in Total Comments Among the AIN

Figure 10: Trends in Ratio of Likes to Dislikes