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ABSTRACT

Persuasive Agenda-Setting: Rodrigo Duterte's Inauguration Speech and Drugs in the Philippines*

Can democratically elected politicians persuade their constituents to alter policy priorities? With little empirical support for this hypothesis to date, we propose that Rodrigo Duterte's inauguration speech on June 30, 2016 systematically shifted the Filipinos' policy agenda toward prioritizing illegal drugs. We first study day-to-day variation in national and sub-national Google searches over six months, identifying a strong and persistent increase in drug-related searches right after the speech. Placebo tests rule out potentially confounding topics, such as pharmaceutical drugs, Duterte's 'War on Drugs', or common time trends with neighboring countries. Next, to better identify causality, we exploit the exogenous timing of traditional local festivals, which we argue resulted in some of the Philippines' 81 provinces being less exposed to Duterte's speech. The corresponding results are consistent with our hypothesis: less exposed provinces had smaller increases in drug-related Google searches. Finally, we examine individual-level survey responses that more directly capture policy priorities and uncover similar results: crime has moved to the top of the Filipinos' policy agenda. Results that exploit the same identication strategy based on local festivals hint at a causal effect of the speech on these policy priorities.

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"No leader, however strong, can succeed at anything of national importance or significance unless he has the support and cooperation of the people he is tasked to lead and sworn to serve."

Rodrigo Duterte in his inauguration speech on June 30, 2016 (Inquirer.net, 2016)

1 Introduction

Do democratically elected politicians focus on the policy priorities of their constituents or can they change the agenda? This question, addressing the core nature of how democracies operate, remains contested empirically. Understanding which policy matters are prioritized is of fundamental importance to explaining the allocation of scarce government resources – which problems are tackled first and which are set aside for the time being. Although considered the "prime instrument of power" (Schattschneider, 1975; Butler and Hassell, 2018), political agenda setting has received relatively limited empirical attention to date. For example, Butler and Hassell (2018) point out that "[s]cholars have not studied elected officials' ability to shape their constituents' priorities."

In theory, traditional political economy concepts nested in rationality leave little room for politicians to actively modify the public's policy priorities and the few existing empirical studies largely confirm that understanding. For instance, Butler and Hassell (2018) find elected officials unable to influence US voters' political priorities and Barberá et al. (2019) reach similar conclusions analyzing Twitter posts by legislators and the US public.[1] Even the speeches of Adolf Hitler that have long been considered quintessential to the Nazis' electoral success in 1933 appear to have carried little-to-no effect in driving voters (Selb and Munzert, 2018).

Two main obstacles usually prevent empirical researchers from studying politicians' agenda setting: first, data availability remains limited. Researchers would need detailed information on the electorate's policy preferences immediately before and immediately after an elected official's

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[1]In turn, Broockman and Butler (2017) suggest that the *position* on a particular policy topic can be malleable, conducting a field experiment with US state legislators who send out differential communications to their constituents. Our study is concerned with *what* is salient, as opposed to *how* a particular issue is framed (e.g., see Weaver, 2007, for a detailed distinction between agenda setting, framing, and priming). A related literature focuses on whether party elites can change attitudes and beliefs of party members (e.g., see Bullock, 2011, Minozzi et al., 2015, and Grewenig et al., 2019).

'intervention', such as one or a series of powerful speeches or other messages. And second, endogeneity concerns stemming from unobservable confounders and reverse causality remain a pesky problem.

In the following pages, we propose and test the hypothesis that President Rodrigo Duterte's inauguration speech on June 30, 2016 systematically changed the Filipinos' policy priorities. Duterte's speech focused on the detrimental effects of drugs, drug users, and drug dealers to the Philippines. As early as two minutes in, he laments "the rampant sale of illegal drugs in all strata of Philippine society and the breakdown of law and order" and then states how illegal drugs "destroyed individuals and ruined family relationships" (Inquirer.net, 2016). We hypothesize that this speech moved drugs further to the forefront of the Filipinos' policy priorities, fundamentally changing how they prioritize the 'drug problem'.

First, we exploit daily variation in *Google* searches related to "drug" topics around the speech, both on the national level and within the 17 regions of the Philippines. Testing for a trend break within a six month time window around the speech, we identify a substantial rise in drug-related *Google* searches right after June 30 but not before, making it unlikely that Duterte's speech simply responded to changed policy priorities of the populace. Notably, these patterns (i) also exist in variables that measure online searches for "drug" relative to other prominent policy topics like "education," "health," and "job"; (ii) are not driven by online interest in extrajudicial killings, the war on drugs, or pharmaceutical drugs; and (iii) do not emerge in placebo locations, i.e., in surrounding countries or worldwide.

Nevertheless, omitted variables may confound our analysis, as unobserved contemporaneous developments could have impacted both Duterte's speech and popular sentiment pertaining to the importance of drugs. To address these concerns, we explore the quasi-exogenous timing of local festivals that made it less likely for some Filipinos to have seen the speech on television or listened to it on the radio. Many towns celebrate an annual festival to commemorate their patron saints or some other local religious icon on the feast day of this religious figure. For example, the municipality of Apalit in the province of Pampanga celebrates the feast day of Saint Peter the Apostle on June 29, while nearby Angeles City celebrates the Feast of the Holy Guardian

Angels in the first week of October (Pampanga Directory, 2015; Pavia, 2015). Importantly, each town's adoption of its religious icon usually dates back decades or even centuries and is often the result of a historical event (from the Spanish colonial period) or an arbitrary decision made by community leaders (Aluit, 1969; Hornedo, 2000; Reyes-Tinagan, 2001). As locals are closely involved with their particular festival each year, we argue that, everything else equal, exposure to Duterte's speech was weaker in regions that happened to celebrate a festival on June 30, 2016. We then use this to test whether regions with less exposure to Duterte's speech demonstrated smaller changes in online search activity. Indeed, we find that the increase in online interest in drug topics is substantially weaker in regions where a larger share of the population was celebrating a festival on inauguration day. For the average region that had at least one festival on June 30, the increase in drug topic interest was 17-26% smaller than in other regions.

We then examine individual-level responses to nine opinion poll surveys administered between September 2014 and January 2017, including one survey a few months before the speech (in January 2016) and one immediately after (in July 2016). Exploiting the same identification strategy based on local festivals, we find results consistent with those from analyzing *Google* searches. Specifically, surveys administered after Duterte's inauguration exhibit much higher shares of respondents who prioritize crime as the most urgent national concern – but this increase is less than half as large in provinces where a festival happened to take place on June 30. Taken together, these findings are consistent with the hypothesis that it was Duterte's speech that systematically affected the political priorities of Filipinos. To our knowledge, this constitutes one of the first pieces of real-life evidence to suggest that democratically elected leaders can impose their political agenda on the electorate.

In the next section, we provide background on the 2016 elections in the Philippines and Duterte's inauguration speech, a review of the relevant literature, and some preliminary descriptive evidence. Section 3 describes our data. We outline the empirical strategy and findings of the trend break analysis in section 4, followed by the strategy and findings of the festival analysis in section 5. Finally, section 6 concludes.

2 Background and Theoretical Considerations

2.1 2016 Elections, Duterte's Campaign, and Inauguration Speech

Since 1987, the Philippines has been rated democratic with a score of eight out of ten on the Polity IV democracy indicator (Marshall et al., 2002). Five candidates vied to become president in the 2016 elections: Rodrigo Duterte (then-mayor of Davao City), Mar Roxas, Grace Poe, Jejomar Binay, and Miriam Defensor Santiago. Positioning himself as a "self-proclaimed leftist" (Curato, 2017, p.146), Duterte's campaign featured four main slogans: (*i*) *Tapang at Malasakit* (Courage and Compassion); (*ii*) *Matapang na solusyon*, *Mabilis na aksyon* (Fearless Solutions, Fast Action); (*iii*) *Change is Coming*; and (*iv*) *Atin 'to P're!* (This is ours, pal!).

The 'Dutertismo' style has been described as "a sensual experience rather than the rational application of ideas to society's problems" (David, 2016; Curato, 2017; also see Teehankee, 2016, and Thompson, 2017), and Duterte himself is described as having a "reputation for toughness and honesty" (Holmes, 2016, and Thompson, 2017, p.5). On May 9, 2016, 16 million Filipinos – equivalent to over 39% of all votes – elected Duterte to become the next president in a turnout of 81.62%, one of the highest in decades. His administration follows that of Benigno Aquino *III* (Curato, 2017).

After a campaign centered on promises to fight crime, in general, and illegal drugs in particular, Duterte commenced his six-year term on June 30, 2016, becoming the 16th president of the Philippines. His primary policy focus became clear early on in his inauguration speech of 1,354 words. After removing stop words, a simple word count shows the terms *drugs*, *criminality*, *illegal*, and *law* to be among the ninth most used words with three mentions each. The first eight words, in turn, are rather general and not topic-specific: *government* (eight mentions), *people* (six), *serve* (five), *department*, *erosion*, *faith*, *members*, and *president* (each mentioned four times).

2.2 Theoretical Background

We identify two branches of literature that are directly related to our investigation: *agenda setting* and *persuasion*. First, the concept of agenda setting has been introduced from a mass media perspective, largely beginning with the work of McCombs and Shaw (1972). The corresponding idea ascribes the media influence in determining their readers' and viewers' policy *priorities* – a hypothesis that is distinct from that studying *views* on a particular policy issue. Recently, several empirical studies have explored the media's agenda-setting power in politics in the US (DellaVigna and Kaplan, 2007; Larcinese et al., 2011; Clinton and Enamorado, 2014; King et al., 2017; Martin and Yurukoglu, 2017).

The concept of agenda setting has since been extended to politics: can democratically elected politicians alter the public's policy priorities or do they follow the electorate's agenda? Traditional theories assuming rational voters imply governance that addresses the political agenda of its constituents. The few existing empirical studies largely confirm this idea as political leaders have rarely been found able to shape their voters' political agenda. Notable examples constitute Hitler in democratic Germany before 1933 (Selb and Munzert, 2018), as well as local elected officials and legislators in the US (Butler and Hassell, 2018; Barberá et al., 2019). In all three cases, the authors find little-to-no success in politicians' attempts to sway the public's policy priorities.

Nevertheless, some descriptive case studies suggest politicians might be able to fundamentally alter the public's policy priorities. Examples come from Jacobs and Shapiro (2000), who explore then-President Clinton's efforts on health care reform and Newt Gingrich's "Contract with America," and Canes-Wrone (2010), who asks '[w]ho leads whom' in studying the actions of various US Presidents. Analyzing monthly survey data, Jones and Baumgartner (2004) identify a stark positive correlation between the priorities of US Congress and the public (also see Barberá et al., 2019, for an up-to-date summary of that literature). Unfortunately, these results remain correlational – isolating causal effects from the confounding dynamics associated with potential reverse causality and omitted variables constitutes the major empirical obstacle.

Second, and closely related, modelling *persuasion* has become a growing field of research (e.g., see Murphy and Shleifer, 2004, Mullainathan et al., 2008, Gentzkow and Kamenica, 2014, and Galperti, 2019; also see DellaVigna and Gentzkow, 2010, for a summary of the empirical evidence). Community leaders in general, not just democratically elected politicians, may be able to deliver powerful messages to change beliefs and preferences. Pope John Paul II's speeches in Brazil in 1991 constitute a powerful example, as documented by Bassi and Rasul (2017). Highlighting the Church's positions towards contraception and fertility, the Pope brought the corresponding dogmas to the forefront of Catholic Brazilians. Notably, even though Catholics have long been aware of the Church's stance on these issues, the Pope's forceful verbal reminders appeared to have affected Brazilians' beliefs (elicited through surveys) and even fertility outcomes. Analogous to this mechanism, we propose that even though Duterte's policy priorities with respect to drugs were known before June 30 (just as the Church's stance on contraception and fertility), his inauguration speech catapulted drugs to the top of the Filipinos' policy agenda.

Our analysis differs from the study of the Pope's speeches in that we examine policy *priorities* (consistent with the literature concerned with agenda setting), rather than attitudes to a particular topic. The evidence we present in the following pages is consistent with the hypothesis that a democratically elected leader can persuade their constituents to move a particular policy issue (in this case the drug problem) to the top of their policy agenda.

2.3 Motivating Evidence

Before discussing our main analysis, we present motivating evidence from the Annual Poverty Indicators Survey (APIS), a nationally representative income and expenditures survey that also asks questions about how respondents perceive drug abuse in their communities. Specifically, the survey asks "[i]n your community, do you think drug abuse is a problem?" and "[h]ow would you rate the drug abuse problem in your community?" Respondents can choose from the following response options: "[n]o drug-related problem," "a little bit," and "serious."

Figure 1 shows a substantial shift in Filipinos' perceptions about drug abuse over the two year period from July 2014 (during the presidency of Duterte's predecessor, Aquino) to July 2016 (the

month immediately following Duterte's inauguration). We present the distribution of responses to the survey question on drug perceptions, separately for 2014 and 2016. The distributions differ drastically across the two years. In July 2014, the majority of individuals (over 60%) responded that there was no drug abuse problem in their community, but this fraction dropped to 35% only two years later. There was also a drastic change in the fraction of individuals who viewed the drug abuse problem as "serious," which more than doubled from 11% to 26%. In Appendix Figure A1, we show that this drastic increase was not driven by one particular type of household. The increases in perceived drug severity were fairly similar across sub-groups defined by household income levels, household head gender, household head education level, and household head age.[2]

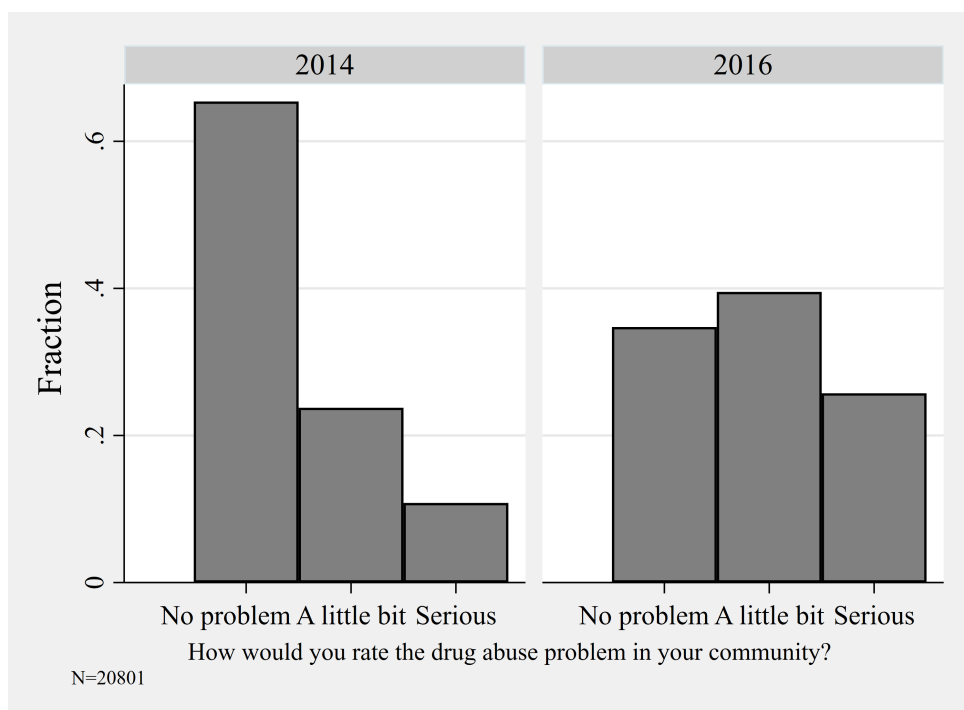**Figure 1:** Perceptions of drug abuse problem in household surveys, using data from the 2014 and 2016 APIS.

However, given the long gap between surveys in 2014 and 2016, a number of factors likely contributed to this change. The goal of this paper is not to document all possible reasons

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[2]Unfortunately, the data does not provide characteristics on the survey respondent, who may not be the same as the household head.

for this long-run shift in perceptions. Instead, we focus on the time period around Duterte's inauguration and ask whether his inauguration speech significantly changed the public's interest in and prioritization of drug abuse as a societal issue.

3 Data

3.1 *Google Trends*

3.1.1 Overview

We obtain internet search data from *Google Trends*, which provides a scaled measure of the number of *Google* searches conducted for a specified term or topic over a particular time interval. Recently, empirical studies exploiting day-to-day data from *Google Trends* have been able to shed light on a number of societal developments that have been difficult to study before. For example, Stephens-Davidowitz (2014) studies racism in the context of Barack Obama's election in 2008; Kearney and Levine (2015) explore the link between the US television show "16 and pregnant" and teenage fertility decisions; Baker and Fradkin (2017) study job search behavior via *Google* search data; Jetter (2019) and Mahmood and Jetter (2019) proxy radicalization in the US and Pakistan with particular *Google* searches (also see Stephens-Davidowitz, 2017, for further applications). The Philippines may provide an especially appropriate setting to study *Google Trends* because (*i*) the country tops internet usage worldwide (Lamb, 2019), (*ii*) 64% of the population used the internet in 2017 (Statista.com, 2020), and (*iii*) 97% of all online searches were conducted via *Google* (Statcounter.com, 2020).

A search *term* query on *Google Trends* returns searches for an exact search term, while a *topic* query includes related search terms (in any language). For time frames up to six months, *Google Trends* provides daily measures, provided a sufficient number of searches are conducted on each particular day. For anything longer than six months, measures are aggregated to the weekly level. Queries can be restricted to specific countries, as well as regions or even cities within a country in some cases. Our main analysis relies on searches conducted in the Philippines as

a whole, as well as within each of the country's 17 regions (smaller geographic levels are not available in this case).

Search interest values are generated using a random sample of searches from the specified time period. For each day, *Google Trends* first calculates the number of searches for the specified term (or topic) divided by the total number of all *Google* searches in the same area. *Google* then scales this to a value from zero to 100 across the time period selected. A value of 100 represents the maximum search popularity in the specified time frame, whereas zero indicates days (or weeks) without sufficient search volume for the specific term. A value of 25, for example, would represent a search volume proportion that is 25% of the highest proportion in the time frame.

Users can request data for one search term or topic at a time, or conduct a comparative search, which compares multiple terms or topics to each other. When comparisons are conducted, values are calculated relative to the maximum search popularity across all terms. Here, a value of 25 would represent a search proportion that is 25% of the highest proportion in the time frame, across all days (or weeks) and selected terms (or topics).

Because the search interest values are generated using a *random* sample of searches, there can be variation across queries. We therefore use multiple queries for each series of *Google Trends* data used in this study. Specifically, we download each set of values (at least) five times and calculate the average across all five queries. The variation across queries is small for national queries where search volumes are naturally more sizeable but larger for the region-specific ones, where total search volumes are lower. For regional data, the correlation between values across different drug topic queries ranges between 0.48 and 0.59. However, the correlation between two sets of average values, each calculated by averaging across a different combination of five queries, is 0.95.

3.1.2 Drug-Related *Google* Searches

We use *Google Trends* to explore a number of different search terms, topics, time frames, and geographic regions, but we first provide a simple example of this data in Figure 2. Here, we plot weekly search interest in the Philippines for the topic "drug" from September 2014 to

January 2017 (the same period for which we also have Pulse Asia opinion poll data, which we describe below). Before Duterte's inauguration (marked by the vertical line), search interest values fluctuate between about 30 and 60. After the speech, however, we see a sudden jump and a continued increase.
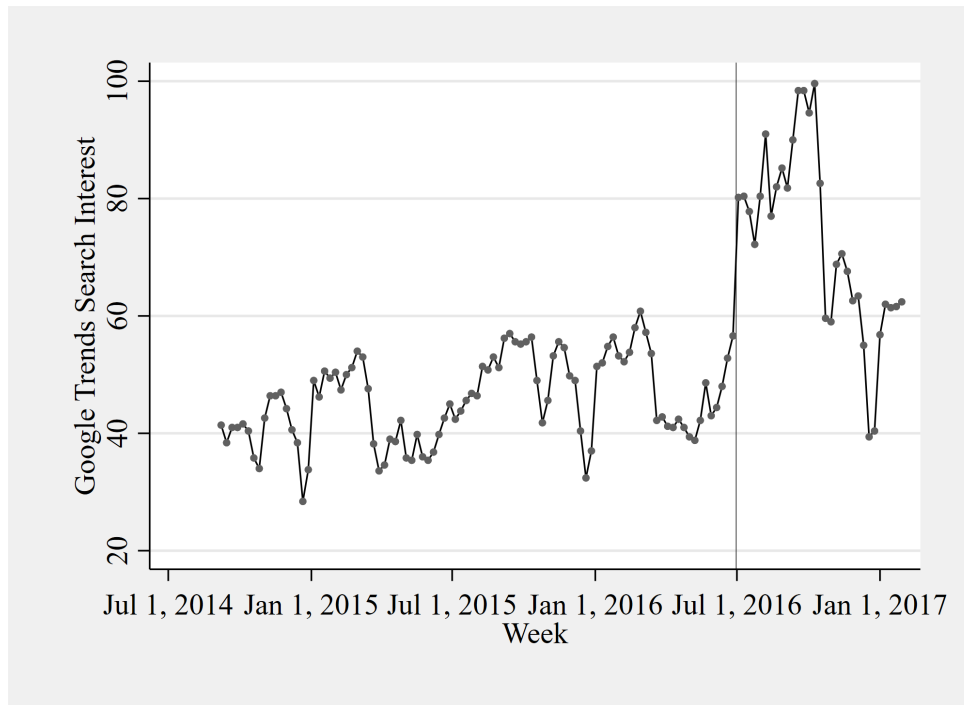
Figure 2: Weekly *Google Trends* for "drug", September 2014 to January 2017

Our main analysis uses daily data from the three months before and after Duterte's inauguration (April 1 to September 30, 2016), both at the national and regional level. Our main focus is a topic search for "drug", but we also study the search term "shabu," the word for crystal meth in the Philippines. In addition, we use a number of other searches as placebo tests: (*i*) the topic "drug" in other countries; (*ii*) the topic "pharmaceutical drugs" in the Philippines, (*iii*) the search term "war on drugs" in the Philippines, and (*iv*) the topic "extrajudicial killing" in the Philippines.

Finally, we conduct comparative searches for the following four topics: "drug," "health," "education," and "job." This allows us to investigate how the public's interest in drugs is changing, not only in absolute terms but also relative to other major policy topics. A simple

graphical representation of this comparative search data provides interesting insights. In Figure 3, we plot daily search interest (at the national level) for each of these search topics, focusing on the 6 months centered on the inauguration date. The "job" topic is by far the most popular search topic, while values for the "drug," "health," and "education" topics are slightly more comparable, especially at the beginning of the six month period. Although there appears to be some seasonality in the search interest for these topics ("job" searches fall on weekends, and both "health" and "education" searches jump up at the beginning of the school year in early June), there are some important overall trends to note. First, "drug" topic search interest starts increasing around the inauguration date and continues to increase in the months after the speech. In contrast, after the initial jump at the beginning of the school year, search interest in "health" and "education" declines over the following months. "Job" topic searches also show a downward trend after the speech. As a result, there is a stark difference in the relative positions of each line at the beginning and the end of the series. By the end of September, "drug" topic search interest has pulled away from the "health" and "education" series and lies much closer to the "job" topic series than at the beginning of the period. Although this exercise is purely descriptive, these patterns are suggestive of a change in priorities before and after Duterte's inauguration.

When we use this data in the main analysis of this paper, we calculate the ratio of the "drug" topic search value to the search values of each of the other topics.[3] Each of these ratios can be interpreted as the priority of the "drug" topic relative to the other topics. We also calculate the average across the health, education, and job ratios.

In addition to providing us with a measure for online interest that is relative to other broad policy-relevant topics, these comparative searches are useful for dealing with low search volumes in some regions. As mentioned above, all search interest values are scaled to the period with the highest popularity in the specified time frame. In regions with low search volume or low popularity, this means that there can be large fluctuations that do not represent meaningful

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[3]When calculating these ratios, we replace all values of 0 with 2, the minimum non-zero value across all queries, search topics, dates, and regions.
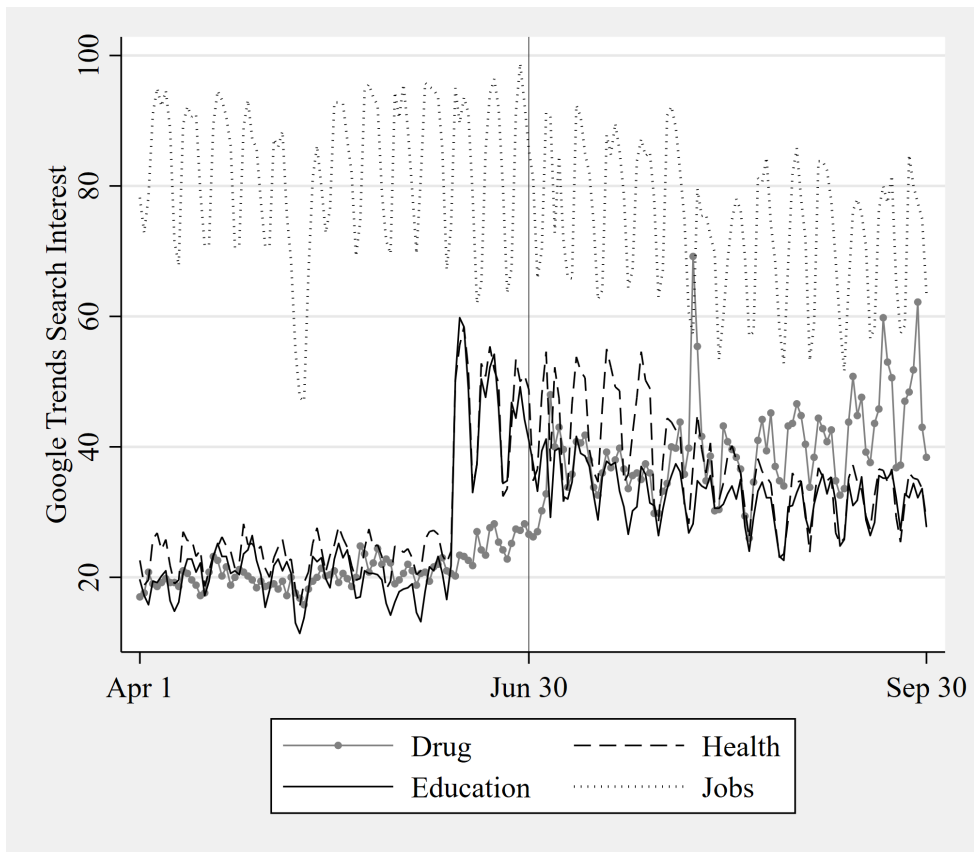
Figure 3: Daily *Google Trends* for "Drug," "Health," "Education," and "Job" Topics

changes in terms of actual search volume. Using a comparative search helps alleviate this issue by ensuring that all values are calculated relative to other topics with substantial average popularity. Averaging over five separate queries (as discussed above) also helps smooth out some of these fluctuations.

3.2 Opinion Poll Data

To explore individual-level outcomes related to policy priorities, we use opinion poll surveys conducted by Pulse Asia Research, Inc. These surveys, which were designed to be nationally representative of the Filipino population aged 18 and above, ask respondents to list what they consider to be the top three most urgent national concerns. The English translation of the question of interest is the following:

> *Among the following national issues, please mention up to three issues which the administration of President [Name of President] must act on immediately. You may mention others not included in this list. Which issue should be acted on first by the current administration? The second? The third?*

The possible answers are: (i) fighting criminality; (ii) enforcing the law on all, whether influential or ordinary people; (iii) improving/increasing the pay of workers; (iv) controlling inflation; (v) reducing poverty of many Filipinos; (vi) stopping the destruction and abuse of our environment; (vi) increasing peace in the country; (vii) fighting graft and corruption in government; ($viii$) creating more jobs; (ix) controlling fast population growth.[4] Though not its own separate category, illegal drug use is a crime and would therefore fall under the umbrella of "fighting criminality."

We have access to nine surveys conducted from September 2014 to January 2017. Figure 4 reports the share of Pulse Asia respondents in each survey wave who report each of the following issues as the most urgent national concern: crime, pay, inflation, poverty, graft, or

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[4]The options listed above were available in all six waves used. The following options were included in later waves only: changing the constitution; defending the integrity of Philippine territory against foreigners; preparing to successfully face any kind of terrorism; reducing the amount of taxes paid; and protecting the welfare of overseas Filipino workers.

jobs.[5] Between January 2016 and July 2016, there is a large increase in the share of respondents reporting crime as the most urgent national concern. The share more than doubles, from 0.1 in January to 0.25 in July, after hovering between 0.06 and 0.12 for the two years prior. In Appendix Figure A2, we show that trends in the share of individuals who report crime as their first priority are very similar across various characteristics: age, gender, socioeconomic class, and education levels. In short, like *Google Trends* search interest, the prioritization of crime as a policy issue jumps substantially around the time of Duterte's inauguration.

Unfortunately, this data lacks the high-frequency nature of the *Google Trends* data, which means we do not know whether the increase from January to July was a gradual one or a sudden jump around the time of Duterte's inauguration. However, an important advantage of this data is that it provides a more direct measure of priorities. In addition, this survey provides individual-level data with province identifiers (as opposed to aggregated region-level data).
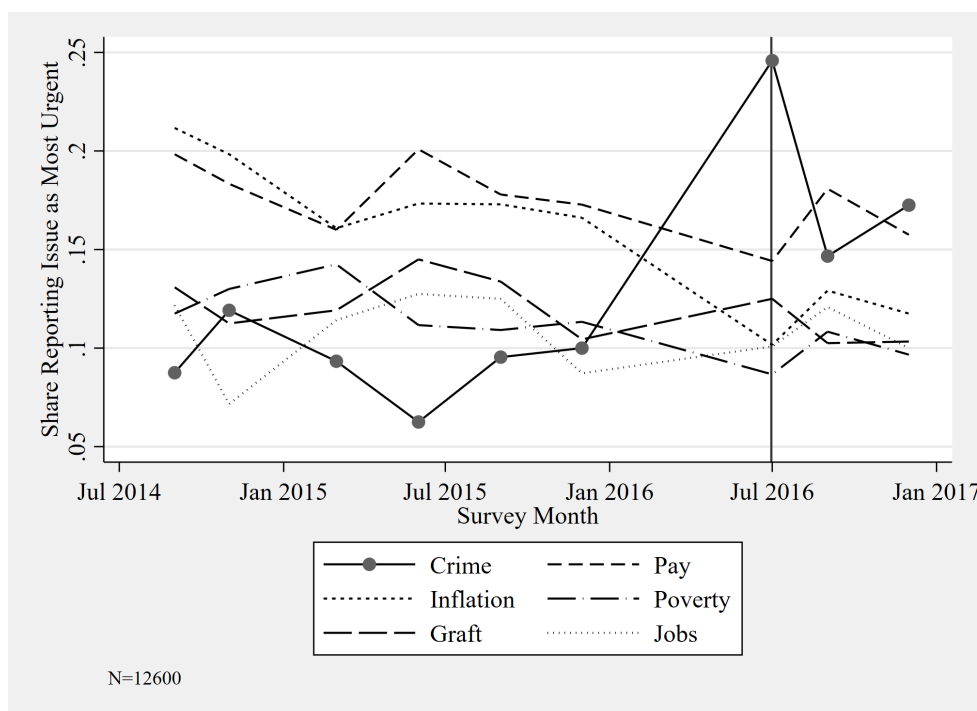

Figure 4: Most Urgent National Concerns, using data from the September 2014 to January 2017 Pulse Asia surveys.

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[5]In each survey wave, approximately 80% of individuals listed one of these six options as their first national concern.

4 Trend Break Analysis

In this section, we formally test for structural breaks in the time series data for various *Google Trends* terms. This allows us to identify if and when there was a significant change in the public's interest in drugs and related topics. We begin with a description of the estimation strategy, followed by the results.

4.1 Trend Break Estimation Strategy

Using national-level daily *Google Trends* data for the 6-month period centered on Duterte's inauguration (April 1 to September 30, 2016), we first test for trend breaks in the time series of *Google* searches for "drug" (topic) and "shabu" (search term). For a given day τ, we test for a trend break at τ using three different models:

$$Y_t = \alpha_0 + \alpha_1 1(t \geq \tau) + \epsilon_t \tag{1}$$

$$Y_t = \alpha_0 + \alpha_1 1(t \geq \tau) + \alpha_2 Y_{t-1} + \alpha_3 Y_{t-1} 1(t \geq \tau) + \epsilon_t \tag{2}$$

$$Y_t = \alpha_0 + \alpha_1 1(t \geq \tau) + \alpha_2 Y_{t-1} + \alpha_3 Y_{t-1} 1(t \geq \tau) + \alpha_4 t + \alpha_5 t 1(t \geq \tau) + \epsilon_t, \tag{3}$$

where Y_t constitutes the *Google Trends* value for date t. We run each specification multiple times, allowing τ to equal every date from April 29 to September 3 (this drops 15% of the data on either end of the 6-month interval in order to leave sufficient data on either side of the break point). For each τ, we test the null hypothesis of no trend break: $\alpha_1 = 0$ for equation (1), $\alpha_1 = \alpha_3 = 0$ for equation (2), and $\alpha_1 = \alpha_3 = \alpha_5 = 0$ for equation (3). The largest F-statistic from these regressions is then used to determine whether there is a statistically significant trend break, and if so, the date of this trend break. Similar to the empirical strategy used in Jayachandran et al. (2010), these methods rely on work by Quandt (1960), ANDREWS (1993), and Hansen (1997).

We then conduct a number of placebo tests to help rule out other explanations for the increase. Specifically, we analyze *Google* searches for drugs as a topic in Malaysia, Vietnam, Indonesia, and worldwide. We also explore *Google* topic searches for pharmaceutical drugs.

Finally, we investigate whether the trend break that we find in the "drug" and "shabu" searches are driven by interest in the drug-related killings that became more prevalent around the time of Duterte's inauguration. We analyze *Google* searches for the search term "war on drugs" and the topic "extra-judicial killing" and compare the trend break dates to the ones for "drug" and "shabu" alone. Taken together, these placebo tests explore alternative explanations for our findings associated with surging online interest in "drug" topics in the Philippines.

4.2 Trend Break Results

We begin our presentation of the trend break results with a graphical illustration for each outcome in Figures 5 to 7, as well as the results of the formal trend break test in Table 1. We begin with *Google* searches for "drug" (as a topic) and "shabu" (as a search term) Figure 5 shows large increases in both searches immediately after Duterte's inauguration. Consistent with this visual representation, the results in columns (1) and (2) of Table 1 reveal a significant trend break on July 3-4 (for "drug") and July 3 (for "shabu"). The estimated trend break dates are fairly consistent across the three specifications, which correspond to equation (1) in Panel A, equation (2) in Panel B, and equation (3) in Panel C.
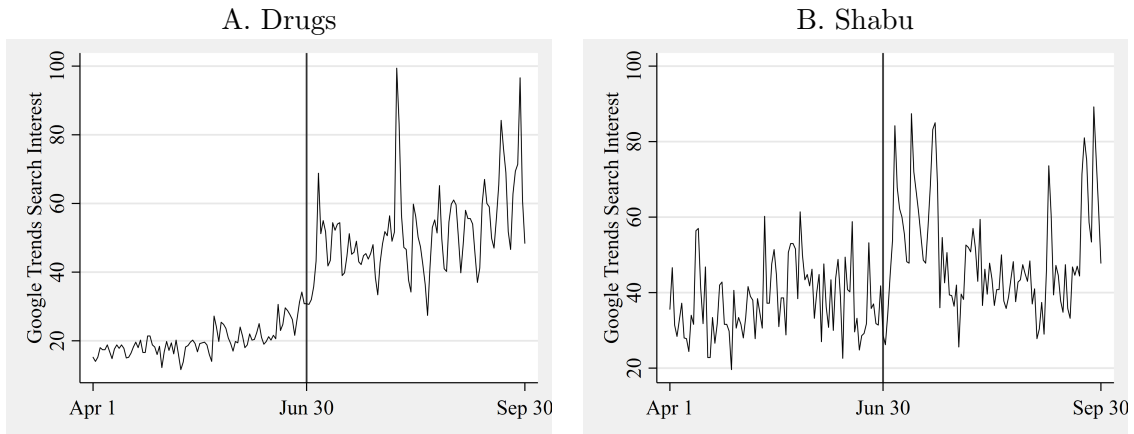

Figure 5: Daily *Google Trends* national data, Philippines.

This pattern is specific to the Philippines. In Figure 6, we see that the patterns for other Southeast Asian countries, as well as worldwide, look remarkably different. The identified trend

Table 1: Trend Break Dates for *Google Trends* Data

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) War on Drugs	(9) Extra-judicial
	Drug	Shabu	Malaysia	Vietnam	Indonesia	Worldwide	Pharm		
A. Constant									
Break Date	Jul. 4	Jul. 3	Apr. 29	May. 17	May. 20	May. 21	Jun. 21	Aug. 22	Aug. 21
Test Statistic	522.4	50.4	57.2	153.6	103.4	40.6	174.3	437.1	399.7
B. Constant, Lagged Value									
Break Date	Jul. 3	Jul. 3	Sep. 3	May. 17	Jul. 6	Apr. 30	Jun. 19	Aug. 22	Aug. 21
Test Statistic	35.1	21.5	15.4	44.7	25.6	9.91	41.1	37.7	46.8
C. Constant, Lagged Value, Linear Time Trend									
Break Date	Jul. 3	Jul. 3	Jul. 7	May. 17	Jul. 6	Jun. 30	Jun. 19	Jul. 12	Aug. 24
Test Statistic	13.4	15.0	27.5	78.3	57.6	18.5	8.00	52.0	34.3

Notes: Results obtained by testing for trend breaks on each date from April 29 to September 3, 2016. Each cell reports the trend break date and the χ^2 statistic associated with the identified date. Panel A uses specification (1), panel B uses specification (2), and panel C uses specification (3).

break dates are generally much earlier than Duterte's inauguration date (see Table 1) and are estimated less consistently across specifications. In Malaysia, trend break dates are not consistent across specifications (April, September, and July). In Vietnam, the trend break is identified to be May 17, much earlier than June 30, in all specifications. Worldwide, there are also inconsistencies across specifications. Panel C reveals a trend break on June 30, but Panel D of Figure 6 reveals a negative movement on this date. In two out of the three specifications, Indonesia's identified trend break date also falls in the week after Duterte's inauguration, yet the graphical representation shows a very different pattern from that of the Philippines.

The fact that the trends for "shabu" roughly correspond to the trends for "drug" suggests that we are indeed picking up interest in illegal drugs. Nevertheless, we verify in column (7) of Table 1 and in Panel E of Figure 6 that the trends are not simply reflecting interest in pharmaceutical drugs.

We argue that these search variables are capturing concern about drugs as a societal problem rather than just curiosity or interest in the large number of drug-related killings, which were on the rise around the same time, as Duterte was beginning to wage his "war on drugs." In Figure
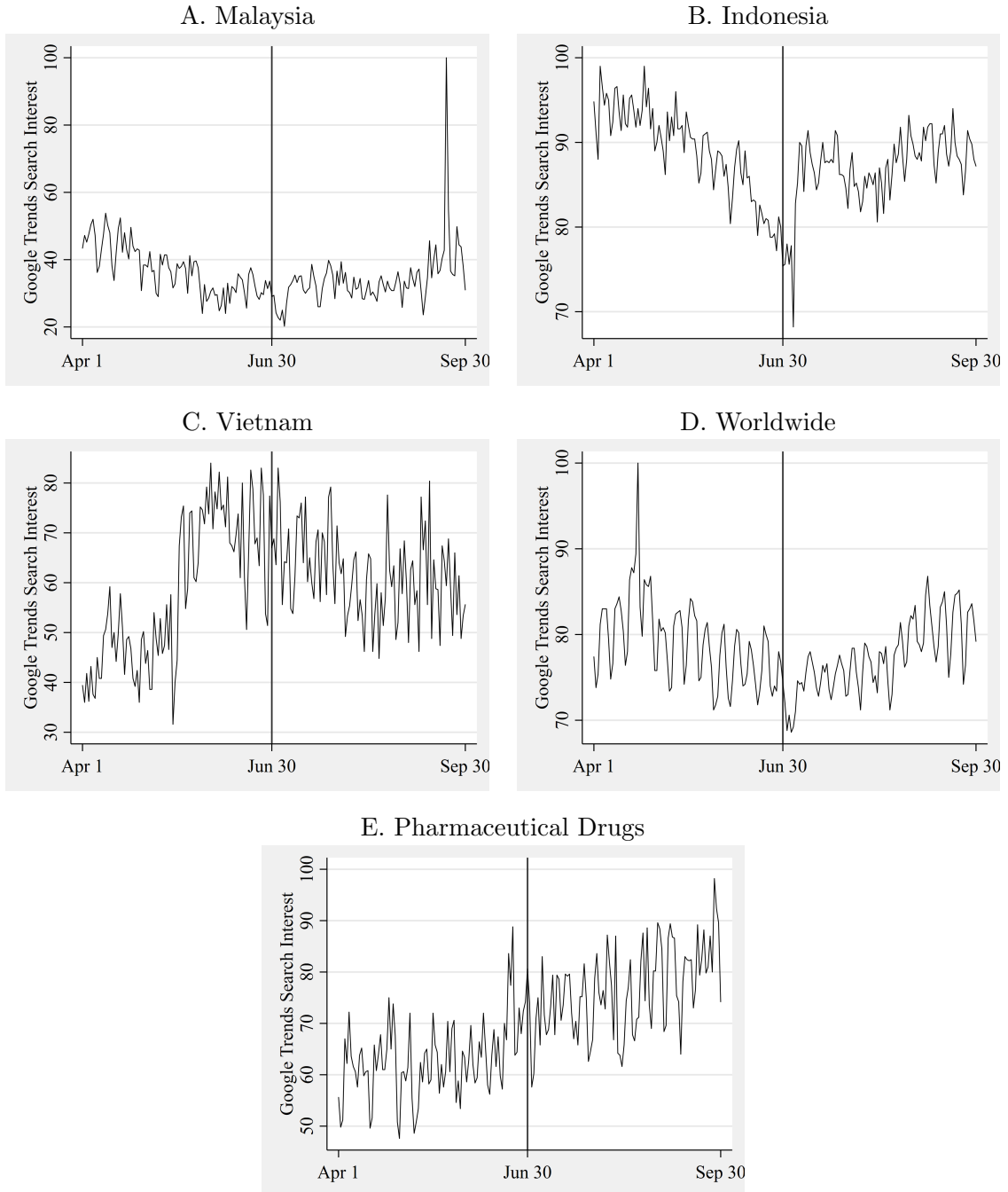
Figure 6: Daily *Google Trends*: Placebo Tests

[7](#) and the final two columns of Table [1](#), we show that searches for the phrase "war on drugs" and for the topic of extrajudicial killings did not start increasing until much later – the end of August or beginning of September. In other words, the large increase in "drug" and "shabu" searches that took place immediately after the inauguration were not driven by curiosity about the war on drugs or drug-related killings.
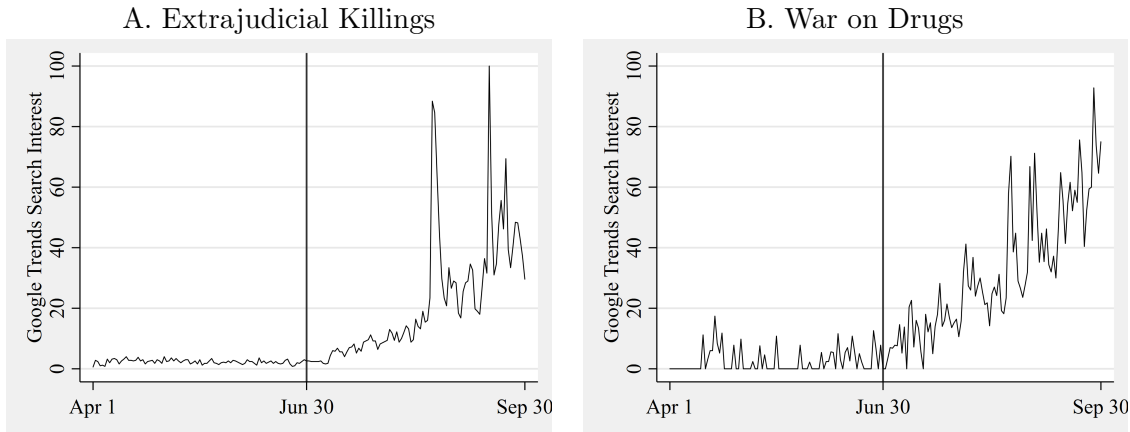
Figure 7: Daily *Google Trends* data from the Philippines, investigating searches for "extrajudicial killings" and the "war on drugs."

5   Festival Analysis

The results described above provide strong evidence that internet search interest in illegal drugs changed substantially in the days following Duterte's inauguration speech. However, whether Duterte's inauguration speech is what caused this change is much less clear. There are a number of possible explanations for the heightened interest in illegal drugs. Given that the analysis in section [4.2](#) identified trend break dates a few days after June 30, it is possible that these trend breaks were driven by other actions taken by Duterte and his administration in the first week of his presidency. Alternatively, search interest could have jumped simply because Duterte was known to have campaigned on fighting criminality (illegal drugs in particular) and the official shift to the Duterte presidency made these issues more salient.

To help rule out alternative explanations for the trend breaks identified in the previous section, we test whether regions that were less exposed to Duterte's speech also demonstrated smaller increases in search interest. An ideal experiment would randomly determine which individuals were exposed to the inauguration speech and compare their trends in search behavior. In lieu of this experiment, we take advantage of exogenous regional variation in the occurrence of local festivals, which we argue preoccupy the attention of residents and should have reduced their likelihood of watching or listening to the speech.

5.1 Festivals As Exogenous Distracters From Duterte's Speech

For centuries, local festivals have played an important role in Filipino society. Although the Philippine festival (or "fiesta") is rooted in ancient indigenous tradition, the fiesta that exists today was shaped in large part by Spanish influence during the colonial period (Wendt, 1998; Hornedo, 2000). Today, over one thousand festivals take place in the Philippines every year and vary widely in terms of their scale, main purpose, and activities involved. Most festivals, however, are celebrated locally and for religious reasons. For example, each individual town usually has an annual festival to commemorate its patron saint (or some other religious icon adopted by the community) on the feast day of this religious figure. Notably, each town's adoption of a particular religious icon was usually the result of some unique event or arbitrary decision that often dates back to Spanish colonial rule.[6] This makes the date on which a community celebrates a festival plausibly exogenous, which is important for our empirical strategy.

Festivals will often include some combination of the following: a mass, a parade, an artistic performance, and a feast. The local population is usually highly involved, either cooking food or preparing for and attending other events. As we discuss in section 5.3, we use the occurrence of a festival as a source of variation in a region's "exposure" to Duterte's speech, as we posit that

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[6]For example, the island of Cebu honors the Santo Niño, or Holy Child, because of the 16th century discovery of an unburned statue of the Santo Niño after a fire, believed to have been given as a gift by Magellan over 40 years earlier (Aluit, 1969; Reyes-Tinagan, 2001). In more recent times, Hornedo (2000) describes that, as villages expand into cities, and as small communities form from these large metropolitan areas, "a Patron Saint is designated, sometimes spontaneously by the community, and sometimes with the suggestion of the parish clergy in the adjoining parish... Once there is a Patron Saint, the community fiesta is a natural result – the date of the fiesta is never a problem because each Saint in the Catholic martyrology has a designated feastday" (p. 11-12).

individuals preoccupied with a festival should have been less likely to have seen or heard the speech. This part of our analysis requires identifying which regions were celebrating festivals on June 30, 2016.

5.2 Festival Data

To do this, we began with the Philippine Information Agency website, which (until March 2019) contained province-specific lists of festivals for 52 out of the country's 81 provinces. Rough dates were included for the majority of provinces, but for the festivals without any date information we conducted separate *Google* searches in order to find a date. For the provinces without festival lists, we visited the official province websites. We obtained festival lists for an additional 11 provinces in this way. An additional 17 province lists were constructed from various tourism websites and travel blogs.

This resulted in lists of festivals for all but one province (Cotobato). In total, over 1,000 festivals were found, and fewer than 20 were completely missing date information. However, for many festivals with non-missing date information, the date information available was quite general (for example, "late July" or "mid-March"). We therefore focused our attention on the 165 festivals held in either June or July and conducted more detailed searches for each of these to find precise date information for the year 2016. A total of six festivals in five provinces across four regions were found to have taken place on the inauguration date.

In province-level analyses, we use the number of inauguration day festivals per province. To aggregate up to the region level, we sum all festivals in a region, weighted by each province's population share. The resulting variable can be interpreted as the population-weighted number of festivals per province in a region.

Table 2 reports summary statistics for various demographic and socioeconomic characteristics, aggregated to the region level (in columns 1 and 2) and to the province level (in columns 3 to 6). Columns (1) through (4) use data from the whole country, while columns (5) and (6) are restricted to regions in which at least one festival took place on inauguration day. Our later analysis will rely on both region-level and province-level variation, and the province-level

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analysis will be conducted for both the full and restricted sample of regions. This table explores

Table 2: Region-Level and Province-Level Characteristics

	Regions (All)		Provinces (All)		Provinces (in Festival Regions)	
	(1)	(2)	(3)	(4)	(5)	(6)
	Average	Festivals Coefficient	Average	Festivals Coefficient	Average	Festivals Coefficient
Completed Primary	0.682	-0.019	0.677	0.018	0.701	-0.001
	(0.086)	(0.097)	(0.089)	(0.032)	(0.062)	(0.025)
Completed Secondary	0.421	-0.073	0.407	0.003	0.408	0.003
	(0.100)	(0.112)	(0.099)	(0.036)	(0.083)	(0.033)
Some Post-Secondary	0.219	-0.037	0.212	-0.001	0.204	0.006
	(0.055)	(0.062)	(0.054)	(0.020)	(0.037)	(0.015)
Literate	0.948	0.010	0.947	0.009	0.960	-0.002
	(0.033)	(0.038)	(0.038)	(0.014)	(0.016)	(0.006)
Has Electricity	0.862	0.034	0.860	0.024	0.897	-0.007
	(0.088)	(0.099)	(0.108)	(0.040)	(0.075)	(0.030)
Has Piped Water	0.810	0.101	0.795	0.066	0.862	0.015
	(0.123)	(0.136)	(0.156)	(0.057)	(0.107)	(0.043)
Male	0.507	0.008	0.508	0.001	0.509	-0.001
	(0.006)	(0.006)	(0.007)	(0.002)	(0.004)	(0.002)
Aged Younger than 20	0.432	0.006	0.435	-0.008	0.435	-0.010
	(0.038)	(0.043)	(0.040)	(0.014)	(0.035)	(0.014)
Aged 60 and Above	0.075	0.018	0.079	0.005	0.083	0.002
	(0.015)	(0.017)	(0.020)	(0.007)	(0.009)	(0.003)
Catholic	0.742	0.264	0.733	0.129	0.851	0.041
	(0.213)	(0.231)	(0.230)	(0.083)	(0.112)	(0.044)
Muslim	0.088	-0.167	0.089	-0.070	0.002	-0.000
	(0.223)	(0.250)	(0.241)	(0.088)	(0.001)	(0.001)
Observations	17		80		24	

Notes: Standard deviations (in odd-numbered columns) and standard errors (in even-numbered columns) in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. "Festivals Coefficient" is obtained by regressing the specified variable on the number of festivals in that region/province on inauguration day. Columns (1) and (2) use region-level data from all regions. Columns (3) and (4) use province-level data from all provinces. Columns (5) and (6) use province-level data from provinces in regions where at least one festival took place on inauguration day.

whether areas that celebrated festivals on June 30, 2016 are indeed similar to those that did not, as we argue they should be. To do this, we regress each region-level variable on our region-level festival count and report the coefficients in column (2). Columns (4) and (6) report the results of regressions of each province-level variable on the number of inauguration day festivals

in the province. None of the coefficients are statistically significant at conventional levels, which supports the argument that whether an area had a festival on June 30 is indeed largely random.

While the small sample sizes could mean that we simply do not have the statistical power to detect significant relationships, almost all coefficients are small in magnitude relative to the sample averages. One exception is religion – in columns (2) and (4), there are larger positive coefficients in the regressions on Catholic shares and larger negative coefficients in the regressions on Muslim shares. It is important to note, however, that the magnitudes of these coefficients drop substantially in column (6), suggesting that most of this is driven by variation across regions. This means that the analysis we conduct using the restricted sample of regions will be particularly important, as it will rely on variation across provinces within these regions, rather than across regions.

5.3 Festival Estimation Strategy

We test the hypothesis that regions which happened to be celebrating a festival on the day of the inauguration saw smaller increases in drug search interest than regions that were less preoccupied. We regress *Google* search interest on a linear or quadratic function of time t, allowing for a discontinuity on the date of the inauguration, accounting for different trends before and after the inauguration, and interacting these trends and discontinuities with the number of festivals in region r, as shown in the following specification:

$$Y_{rt} = \delta_1 \text{After}_t \times \text{Festivals}_r + \delta_2 \text{After}_t$$
$$+ g(t) + f(t) \times \text{After}_t + h(t) \times \text{Festivals}_r + k(t) \times \text{After}_t \times \text{Festivals}_r + \mu_r + \epsilon_{rt}. \quad (4)$$

Y_{rt} represents various drug-related *Google Trends* variables for region r at date t, After_t is an indicator equal to one for dates on or after June 30. $g(t)$ and $f(t)$ represent either linear or quadratic functions of t. Region fixed effects (μ_r) control for time-invariant region-specific unobservables. Festivals_r is the population-weighted number of festivals per province that took place in region r on June 30, 2016.

We explore several different outcome variables. First, we use the raw search interest variable for the topic "drug." Next, we calculate the log of the ratio of the "drug" search interest value to the search interest value for various other topics: "health," "education," and "jobs." The ratio represents the relative popularity of the "drug" topic search to the other variables of interest. Finally, we calculate the average across all three ratios. These comparative measures are aimed at capturing people's priorities in online searches.

δ_1 constitutes our coefficient of interest. A negative δ_1, with a positive δ_2, would indicate that regions with more festivals on the inauguration date saw significantly smaller increases in their drug-related *Google* search activity. This would be consistent with our hypothesis that the inauguration speech was partially responsible for the trend break in drug-related *Google* search interest at the beginning of July, documented in Section 4.2.

In addition, to investigate whether the speech affected more than just internet search interest, we use the same strategy to estimate the effect of Duterte's speech on policy priorities, as measured by the Pulse Asia opinion poll surveys. Specifically, we estimate the following regression

$$Y_{ipt} = \delta_1 \text{After}_t \times \text{Festivals}_p + \delta_2 \text{After}_t$$
$$+ g(t) + f(t) \times \text{After}_t + h(t) \times \text{Festivals}_p + k(t) \times \text{After}_t \times \text{Festivals}_p + \mu_p + \epsilon_{pt}, \quad (5)$$

where Y_{ipt} is the outcome for individual i (in province p and survey wave t, numbered from 1 to 9), an indicator equal to one for those who considered "fighting criminality" to be the most urgent national concern. We also use dummy variables for those listing criminality as one of the top two or top three concerns. The results reported in this paper use a linear probability model, although we obtain similar marginal effects when we use a probit model (results available upon request).

Because we now have province-level instead of just region-level variation, we use Festivals_p, a count of the number of festivals that took place in province p on June 30. As in equation (4), a negative δ_1 and a positive δ_2 would be consistent with the hypothesis that Duterte's

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speech increased the prioritization of crime as a policy issue. In this specification, $g(t)$ and $f(t)$ represent linear functions of t (which we chose for parsimony due to the limited number of time periods) and we cluster standard errors at the province level.

Although we lose the high-frequency time variation of the *Google Trends* data, the province-level variation means that we are able to compare provinces within the same region. Therefore, in addition to estimating equation (5) for the full sample, we also restrict to individuals living in regions with at least one festival. The latter restriction helps ensure that the effects we find are not being driven by large unobserved differences across regions.

5.4 Festival Analysis of *Google Trends*

We begin with graphical illustrations of the region-level data before moving to the regression specifications discussed in Section 5.3. In Figure 8, we employ local polynomial smoothing to illustrate trends in various search interest variables over the 6-month period from April to September, allowing for a discontinuity at the inauguration date. In Panel A, consistent with the national data above, we document a large jump in search interest related to "drug" at the inauguration date. This jump also becomes apparent in the remaining panels, which focus on the popularity of "drug" *relative* to other topics. These figures show that the regional data follows a similar pattern as the national data.

Table 3 confirms this impression, where we test for a significant discontinuity in *Google* search interest trends on June 30. Across all specifications and outcome variables, there is a statistically significant increase in "drug" search interest after June 30, with magnitudes ranging from 20 to 60%. Importantly, we find in Table 4, where we report the regression results from specification (4), that this increase in search interest was significantly smaller for regions less exposed to Duterte's speech. Here, the *After* coefficient, which represents the increase in search interest on June 30 for regions without any festivals, is statistically significant across specifications and similar (but slightly larger) in magnitude to the coefficients in Table 3. More importantly, the *After × Festivals* coefficient remains negative across all specifications, with magnitudes that are
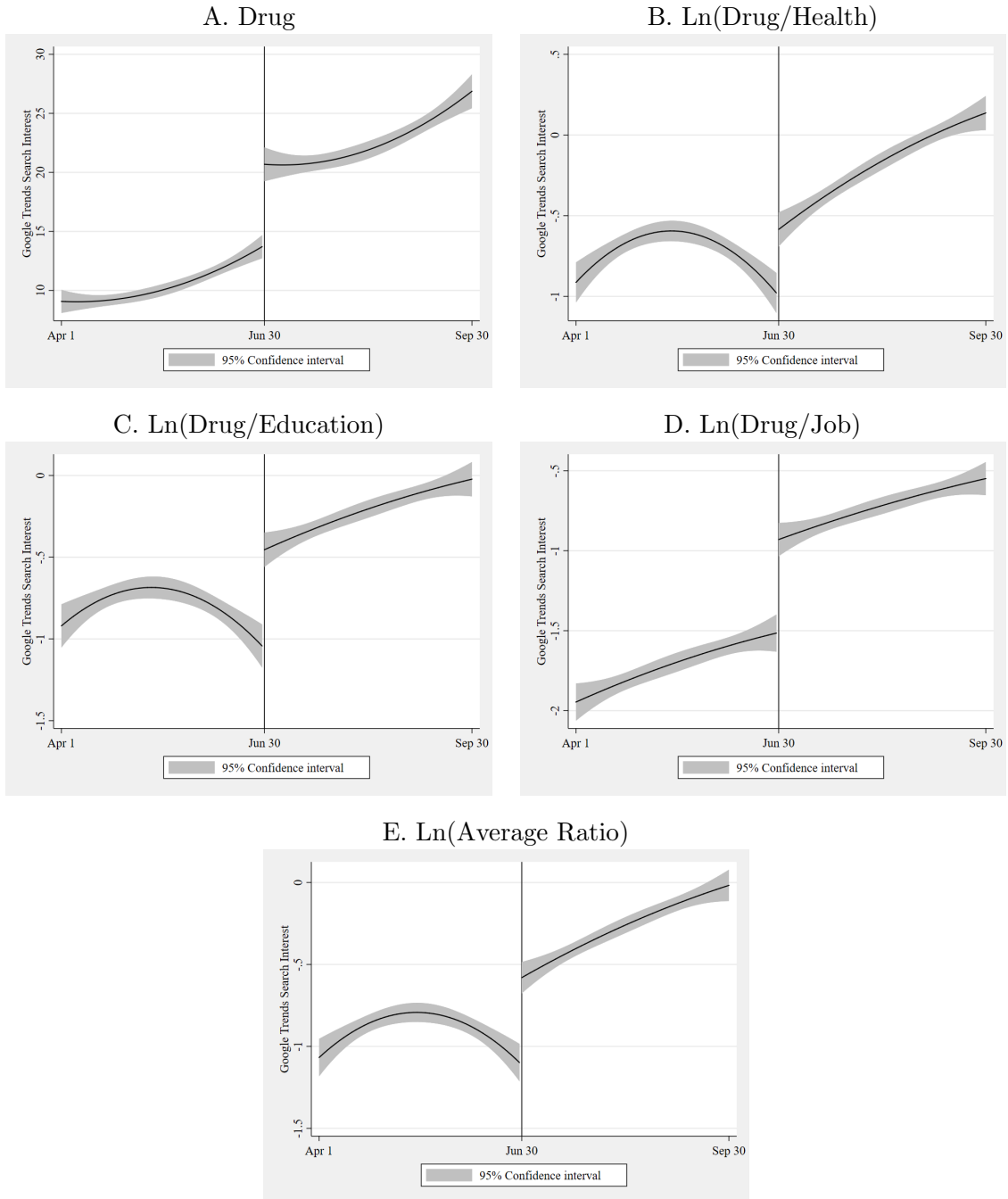
A. Drug

B. Ln(Drug/Health)

C. Ln(Drug/Education)

D. Ln(Drug/Job)

E. Ln(Average Ratio)

Figure 8: Daily *Google Trends* data from the Philippines on the regional level.

Table 3: "Drug" topic search interest over time from regional data.

	(1) Drug	(2) Drug	(3) ln(Average Ratio)	(4) ln(Average Ratio)	(5) ln(Drug: Health)	(6) ln(Drug: Health)	(7) ln(Drug: Education)	(8) ln(Drug: Education)	(9) ln(Drug: Jobs)	(10) ln(Drug: Jobs)
After	6.57***	6.65***	0.35***	0.55***	0.21***	0.43***	0.42***	0.61***	0.57***	0.58***
	(0.61)	(1.08)	(0.061)	(0.15)	(0.060)	(0.14)	(0.051)	(0.14)	(0.067)	(0.14)
Polynomial Order	1	2	1	2	1	2	1	2	1	2
Mean of Dep. Var.	16.34	16.34	-0.561	-0.561	-0.430	-0.430	-0.491	-0.491	-1.186	-1.186
N	3111	3111	3111	3111	3111	3111	3111	3111	3111	3111

Notes: Standard errors clustered at the regional level are displayed in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All regressions control for a date polynomial (of the specified order), this date polynomial interacted with the *After* dummy, and region fixed effects.

sizeable relative to the main *After* coefficient. In columns (1) – (7), the corresponding coefficients are significant at varying conventional levels.

Beyond statistical significance, how quantitatively relevant are our findings? The average number of festivals per province in regions with at least one festival is 0.4. Multiplying the interaction coefficients (in columns 1 and 2) by 0.4, and comparing this to the main effect of the *After* coefficient, reveals that regions with festivals saw an average increase in "drug" search interest that was 17-26% smaller than the increase experienced by regions without any festivals. In terms of the popularity of "drug" searches relative to all other topics (in columns 3 and 4, where coefficients can already be interpreted in percentage terms), the increase experienced by the average region with at least one festival was 20-30% smaller than for those without. In short, these estimates provide evidence that regions that were preoccupied with festivals on the day of the inauguration showed significantly smaller increases in drug topic search interest on this date. This is consistent with our hypothesis that Duterte's inauguration speech played an important role in the sharp increase in "drug" search interest that we have documented.

5.5   Festival Analysis of Opinion Poll Data

Although the above analysis provides strong evidence that Duterte's speech had a causal effect on internet search behavior, it is not clear that these *Google Trends* variables capture the policy priorities of the Filipino population. We therefore turn to data from opinion poll surveys conducted by Pulse Asia. We focus on the prioritization of criminality, the category most likely to be capturing concern about illegal drugs. In Table 5, we report the results of regression (5), which explores whether the prioritization of criminality increased after Duterte's speech, and whether it did so to a lesser extent among individuals living in provinces that celebrated a festival on June 30.

We use three dependent variables: an indicator for respondents who placed fighting criminality at the top of their list (columns 1 and 2), in the top two priorities of their list (columns 3 and 4), and in the top three priorities in their list (columns 5 and 6). There are similar patterns across all outcome variables, as well as in specifications with and without controls for education,

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Table 4: "Drug" topic search interest over time, by number of festivals

	(1) Drug	(2) Drug	(3) ln(Average Ratio)	(4) ln(Average Ratio)	(5) ln(Drug: Health)	(6) ln(Drug: Health)	(7) ln(Drug: Education)	(8) ln(Drug: Education)	(9) ln(Drug: Jobs)	(10) ln(Drug: Jobs)
After x Festivals	-3.00**	-4.59**	-0.51**	-0.68*	-0.58***	-0.87**	-0.21*	-0.46	-0.29	-0.23
	(1.17)	(2.07)	(0.18)	(0.36)	(0.19)	(0.34)	(0.10)	(0.33)	(0.20)	(0.31)
After	6.86***	7.08***	0.40***	0.61***	0.26***	0.51***	0.44***	0.66***	0.60***	0.60***
	(0.69)	(1.24)	(0.061)	(0.17)	(0.057)	(0.16)	(0.058)	(0.16)	(0.074)	(0.16)
Polynomial Order	1	2	1	2	1	2	1	2	1	2
Mean of Dep. Var.	16.34	16.34	-0.561	-0.561	-0.430	-0.430	-0.491	-0.491	-1.186	-1.186
N	3111	3111	3111	3111	3111	3111	3111	3111	3111	3111

Notes: Standard errors clustered at the regional level are displayed in parentheses. * p< 0.1, ** p< 0.05, *** p< 0.01. All regressions control for a date polynomial (of the specified order), this date polynomial interacted with the *After* dummy, both of these terms interacted with the *Festivals* variable, and region fixed effects.

age, and income categories. First, we identify a positive and significant coefficient on the *After* dummy, indicating what was apparent in Figure 4 – that the share of respondents prioritizing crime substantially increased after Duterte's inauguration. Strikingly, the coefficient of 0.13 (in columns 1 and 2) reveals that the share of respondents putting crime first on their list more than doubled. Second, we derive a negative and statistically significant coefficient on the *After* $\times$ *Festivals* interaction, which indicates that this increase was significantly smaller for provinces that celebrated a festival on June 30. Specifically, the increase in the share of respondents prioritizing crime first, for a province that celebrated one festival, was 7.4 percentage points smaller than (less than half the size of) the increase experienced by a province with no festivals.

Because there is a 6-month gap between the two surveys conducted before and after Duterte's inauguration, it is possible that a number of factors – unrelated to the inauguration speech – contributed to the positive coefficient on the *After* dummy. However, the negative and significant interaction coefficient provides evidence consistent with the idea that the inauguration speech had at least some effect on these priorities. Under the assumption that the priorities of people in festival provinces would have changed similarly to the priorities of those in non-festival provinces (if these festivals had not taken place), the negative and significant interaction coefficient indicates that the occurrence of festivals mitigated the increase in the prioritization of crime. Given that the number of inauguration day festivals does not appear to be systematically correlated with socioeconomic or demographic characteristics (see Table 2), we argue that the only explanation for the differential jump in July 2016 is that festivals reduced the probability of residents watching Duterte's speech. In short, our coefficient estimates are consistent with the hypothesis that Duterte's speech affected priorities.

Because only four provinces celebrated a festival on June 30, only a small fraction of the sample (less than 7%) in Table 5 has a nonzero *Festivals* variable. This means that the identification of the interaction coefficient is based on comparing the trends of a small group of people to the rest of the sample, which includes people in geographically distant regions who may differ in meaningful ways from people living in the festival provinces. We therefore repeat the analysis in Table 5, this time restricting to people in regions where at least one festival

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took place. The results of this exercise, reported in Table 6, reveal very similar patterns – large and significant increases in crime prioritization after the inauguration and significantly smaller increases (around half the magnitude) among provinces with festivals on June 30.

Table 5: Prioritization of crime over time, by number of festivals

	Listed *Fighting Criminality*					
	(1) as Top Priority	(2) as Top Priority	(3) in Top 2 Priorities	(4) in Top 2 Priorities	(5) in Top 3 Priorities	(6) in Top 3 Priorities
After × Festivals	-0.074**	-0.073*	-0.093***	-0.095***	-0.069***	-0.070***
	(0.037)	(0.037)	(0.024)	(0.025)	(0.020)	(0.020)
After	0.13***	0.13***	0.20***	0.20***	0.21***	0.21***
	(0.018)	(0.018)	(0.026)	(0.025)	(0.026)	(0.026)
Polynomial Order	1	1	1	1	1	1
Mean of Dep. Var.	0.121	0.121	0.200	0.200	0.283	0.283
N	12600	12600	12600	12600	12600	12600
Additional Controls	No	Yes	No	Yes	No	Yes

Notes: Standard errors clustered at the province level are displayed in parentheses. * p< 0.1, ** p< 0.05, *** p< 0.01. The dependent variables are indicator variables equal to 1 if the respondent listed crime as the first (in columns 1-2), second (in columns 3-4), or third (in columns 5-6) most urgent national concern. All regressions control for survey wave (linear), survey wave interacted with the *After* dummy, both of these terms interacted with the *Festivals* variable, and province fixed effects. "Additional Controls" include education, income category, and age category fixed effects.

6 Conclusion

Are democratically-elected politicians destined to follow the public's policy priorities or can they alter their constituents' policy agenda? Although some qualitative studies point to politicians' agenda setting powers (Jacobs and Shapiro, 2000; Canes-Wrone, 2010), systematic empirical evidence has remained scarce. In fact, studies of elected officials in the US or of Adolf Hitler's speeches failed to identify agenda setting effects (Butler and Hassell, 2018; Selb and Munzert, 2018; Barberá et al., 2019).

This paper studies the extraordinary case of Rodrigo Duterte's inauguration speech on June 30, 2016. In his speech, Duterte emphasized illegal drugs as a major concern for the Philippines

Table 6: Prioritization of crime over time, by number of festivals, restricting to festival regions

	Listed *Fighting Criminality*					
	(1) as Top Priority	(2) as Top Priority	(3) in Top 2 Priorities	(4) in Top 2 Priorities	(5) in Top 3 Priorities	(6) in Top 3 Priorities
After × Festivals	-0.12***	-0.12***	-0.15***	-0.16***	-0.12***	-0.13***
	(0.036)	(0.036)	(0.036)	(0.036)	(0.038)	(0.038)
After	0.20***	0.21***	0.29***	0.30***	0.31***	0.32***
	(0.038)	(0.038)	(0.057)	(0.056)	(0.060)	(0.059)
Polynomial Order	1	1	1	1	1	1
Mean of Dep. Var.	0.126	0.126	0.205	0.205	0.292	0.292
N	2340	2340	2340	2340	2340	2340
Additional Controls	No	Yes	No	Yes	No	Yes

Notes: Standard errors clustered at the province level are displayed in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. The dependent variables are indicator variables equal to 1 if the respondent listed crime as the first (in columns 1-2), second (in columns 3-4), or third (in columns 5-6) most urgent national concern. All regressions control for survey wave (linear), survey wave interacted with the *After* dummy, both of these terms interacted with the *Festivals* variable, and province fixed effects. "Additional Controls" include education, income category, and age category fixed effects.

that he aims to make a priority during his tenure. We hypothesize that Duterte's speech significantly changed the policy priorities of the Filipino populace, solidifying their perception of illegal drugs as one of the primary, most pressing issues of the nation. To test this hypothesis, we first examine day-to-day online search data for drug-related topics, both independently and relative to other main public policy categories like "health," "education," and "job." Studying national, as well as regional search behavior, we identify a substantial rise in drug-related searches beginning in the days after Duterte's speech. Placebo tests reveal these dynamics remain unique to drug-related searches in the Philippines and did not occur in neighboring countries or for closely-related search topics, such as extrajudicial killings, pharmaceutical drugs, or the "war on drugs".

To better identify causal relationships, we then exploit the exogenous timing of traditional local festivals. Historically, communities in the Philippines celebrate local festivals at different times throughout the year – an artefact that dates back to Spanish colonial rule. Thus, some

provinces happened to be celebrating a festival on June 30, 2016, and we argue that their constituents were less likely to have watched or heard Duterte's speech, everything else equal. Indeed, our estimations document much smaller increases in drug-related searches in regions that happened to celebrate a local festival on June 30.

Finally, we compare individual-level survey responses related to policy priorities from July 2016 to those elicited in January 2016, finding consistent results. After the speech, a much higher share of respondents prioritize "crime" over other policy topics, such as "pay", "inflation", "poverty", "graft," or "jobs." Using local identifiers on the province level, we again take advantage of the fact that some of the 81 Filipino provinces happened to celebrate a festival on June 30. Indeed, the surge of "crime" to the top of the Filipinos' policy priorities is less than half as large in provinces that happened to celebrate a festival on June 30. Taken together, these results are consistent with the hypothesis that Duterte's speech was able to fundamentally affect policy priorities in the Philippines.

Of course, our study is not without limitations, and we want to briefly highlight what we believe are two of the main ones. First, our outcome variables related to online searches and survey responses measure attitudes and beliefs – rather than explicit actions, such as voting – that we take as an indication for how salient a public policy issue is in people's minds. Naturally, these data are not without flaws. Nevertheless, a fundamental advantage of aggregated search data is a representative degree of general interest, especially in the country that tops internet usage worldwide (Lamb, 2019), where more than 64% of the population used the internet in 2017 (Statista.com, 2020), and 97% of all online searches employed *Google* (Statcounter.com, 2020).[7] Analyzing individual, nationally representative survey responses provides an additional dimension to capture beliefs about the most pressing political issues of Filipinos. Second, it remains difficult to fully identify causal relationships in real-life settings. However, we hope that data from the 17 subnational regions and 81 provinces, combined with an identification strategy that exploits exogenous differences in exposure to Duterte's speech, provides a useful step to

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[7]We also refer to Stephens-Davidowitz (2017) for a detailed discussion of *Google* searches and what they reveal about a population.

alleviate endogeneity concerns. We hope that future research can further explore whether, when, and how political leaders are able to fundamentally change the policy priorities of their people.

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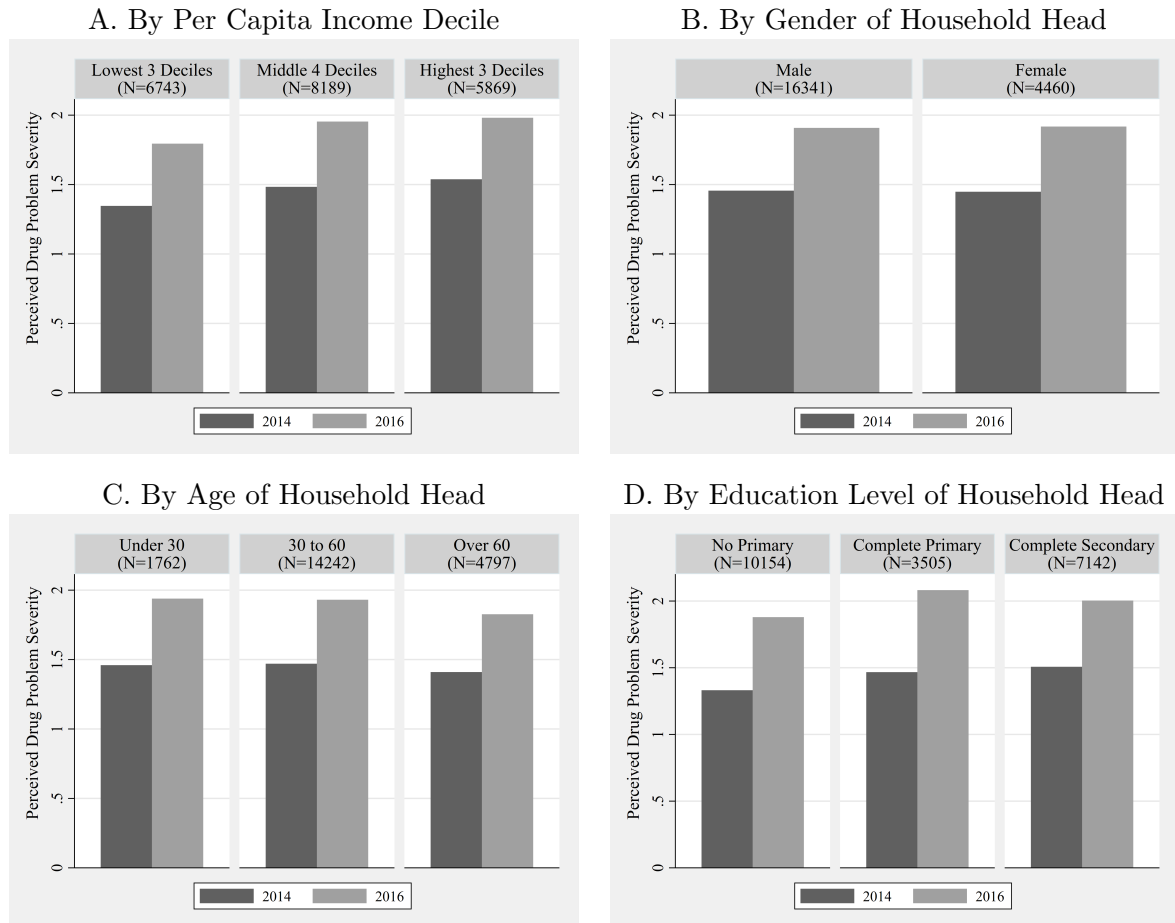
Appendix

Figure A1: Perceptions of drug abuse problem and household characteristics

Notes: Data from the 2014 and 2016 APIS. Bars report the average perceived drug severity for each sub-group and year, where perceived drug severity is coded as 1 for the answer "no problem," 2 for "a little bit," and 3 for "serious," in response to the question, "How would you rate the drug abuse problem in your community?" The respondent is not necessarily the same as the household head.
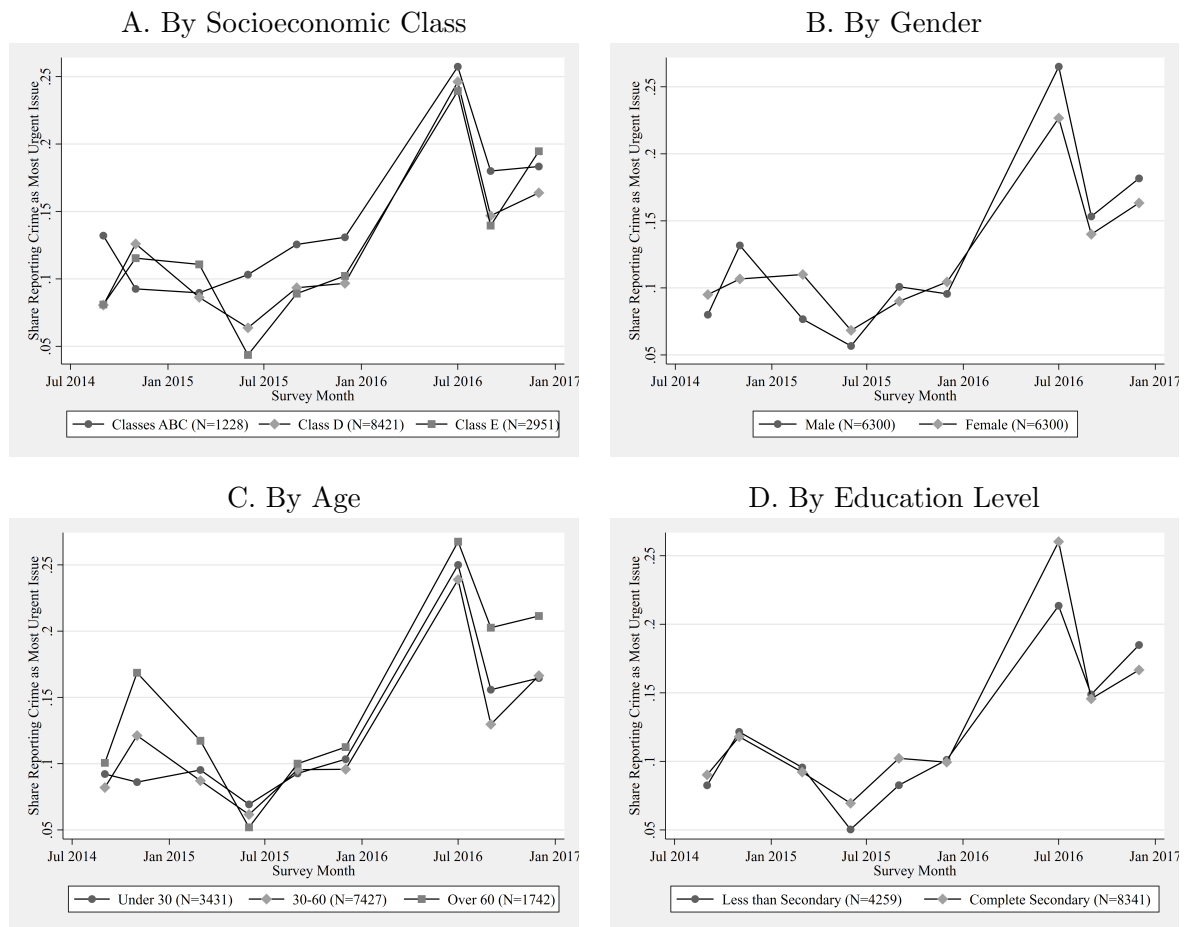
A. By Socioeconomic Class

B. By Gender

C. By Age

D. By Education Level

Figure A2: Most Urgent National Concerns and demographic characteristics

Notes: Data from 2014-2016 Pulse Asia surveys. Classes ABC make up the richest 10% of the sample, Class D to the next 60%, and Class E the poorest 30%.