



"Pornography and Rapes: Evidence from Major YouTube Outage"

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Abstract

The increase in accessibility to pornographic material raised an important debate on whether there is a connection between pornography and rapes. We exploit an unusual natural experiment that provides a source of exogenous variation to pornographic viewing. On Tuesday October 16th, 2018, YouTube experienced a major and rare global service outage. This YouTube's disruption was associated with an important increase in traffic on the online adult video site Pornhub, the world's biggest pornography site. Using high-frequency crime data from the U.S., we document that in the 24-hour period following the outage, rapes increased by 30 percent. We interpret our findings as evidence of a positive link between pornography viewing and rapes. The underlying identification assumption for this interpretation is that there is no direct link between YouTube outage and rapes. To validate our empirical strategy we document that other crimes (non-sexual related) were not affected by the outage.

Keywords: Sexual crime; sexual offenses, event study.

JEL classification: K42.

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I. Introduction

Commercial pornography in the United States has existed since the country's origins and has become more readily accessible since the late 1990s with the proliferation of the internet.¹ These increase in accessibility to pornographic material raised an important debate in the public sphere on whether there is a connection between pornography and rapes. The question is: does pornography cause rape? Even though there has been a lot of research involved, a rigorous answer to this question has proved to be elusive since pornography is potentially endogenous in a model for rapes.

This paper exploits an unusual natural experiment that provides a source of exogenous variation to pornography viewing. On Tuesday October 16th, 2018, between 9pm and 11pm Eastern time, YouTube experienced a major and rare global service outage. The YouTube's disruption was associated with an important increase in traffic on the online adult video site Pornhub, the world's biggest pornography site. This increase in traffic implied millions of additional viewers during Pornhub's peak hours. We exploit this exogenous increase in pornography viewing to identify the link between pornography viewing and rapes. Using high-frequency crime data from 320 police departments and sheriffs' offices (encompassing more than 2,000 U.S. cities) we document that in the 24-hour period following the outage rapes increased by approximately 30 percent.

We interpret our findings as evidence of a positive link between pornography viewing and rapes. The underlying identification assumption for this interpretation is that there is no direct link between YouTube outage and rapes. To validate our empirical strategy, we document that the total number of non-sexual crime was not affected by the outage, and neither were any of the most relevant categories of crime (theft, assault, robbery, disorder, and break & entry). These findings suggest that crime was not directly

¹ According to statistics on the Internet Filter Review site, 40 million Americans visit internet pornography sites at least once a month. In every second, 28,258 users are watching pornography on the internet.

affected by the YouTube outage and that the observed link between YouTube outage and rapes operates through the increase in pornographic viewing.

Having established a causal link between YouTube outage and the subsequent increase in rapes, we report that other sexual offenses decreased during the same period while the total number of sexual offenses (including rapes) were not significantly affected by the outage. These findings suggest a substitution between less violent sexual offenses and rapes.

Our findings add to a long standing debate in the U.S. regarding the effects of pornography. As far as in 1968, President Lyndon B. Johnson sets up the President's Commission on Obscenity and Pornography to study the effects of pornography on crime and other antisocial conducts. The Commission concludes there is insufficient evidence on a relationship between exposure to pornography and subsequent aggression, particularly in sexual crime. The report was widely criticized and triggered an important amount of research (mainly in the fields of criminology, experimental psychology, and sociology) on the effects of pornography on sexual aggression.² Ferguson and Hartley (2009) provide a review of this research and, in line with the report, conclude that pornography is not associated with increased sexual assault behavior. Some research after the publication of the review reports similar evidence. Diamond, Jozifkova, and Weiss (2011), for example, analyze the effects of a new law in the Czech Republic that allowed pornography to a society in which pornography was previously forbidden, and find that rape and other sex crimes did not increase. Some authors go a step further and argue that pornography actually decreases sexual crime. For example, D'Amato (2006) correlates

² In the 1980s some writers led anti-pornography movements. Robin Morgan summarizes the idea behind these movements with her often-quoted statement, "Pornography is the theory, and rape is the practice." In 1983, the Minneapolis city government hired MacKinnon and Dworkin to draft an anti-pornography civil rights ordinance as an amendment to the Minneapolis city human rights ordinance. Under President Reagan, in 1985, a commission was set up to continue the discussion, with the majority of its members with established records as anti-pornography crusaders. They argued that "although the evidence may be slim" they knew enough to conclude that pornography does present a clear and present danger to American public health (Koop 1987).

pornography access and rapes in the U.S. and concludes that the decrease in the number of rapes per capita in the U.S. since the 1970s can be explained by the rise in access to pornography. This evidence is interpreted as pornography acting as a societal “safety valve” for otherwise aggressive energy. In the Economics literature, Wongsurawat (2006) uses P.O. Box availability in the early 1990s as an instrumental variable for pornography consumption (measured as the circulation of sex magazines across U.S. markets) and finds a negative link between the consumption of adult magazines and rapes. Even though the overall review of the research available finds no positive link between accessibility and viewing of pornographic material and an increase in sexual crime, some authors have challenged these findings providing evidence that pornography is associated with an increase in violent sexual behavior (for a review of this literature, see Foubert 2017).

Given that most of the evidence available comes from correlational studies that link pornography to sex crimes, it is difficult to interpret evidence from previous literature in a causal way.³ Thus, the question of whether pornography actually increases or reduces rapes is still open. Our paper provides evidence that an increase in pornography viewing is associated with an increase in rapes.

It is useful to combine two specialized literatures to understand how pornography can affect rapes: a psychology literature on how pornography can affect the development of individual and social norms that lead to sexual violence and rape (Burt 1980), and a behavioral economics literature on how individuals make decisions under the influence of visceral factors (Loewenstein 1996).⁴ The probability of raping depends on sexual

³ Aside from correlational studies, research on pornography has generally been of three types (Tovar, Elias, and Chang 1999). Experimental studies expose subjects (in general, students) to pornographic material, and measure some hypothetical behaviors. A second type of research involves interviewing sex offenders and asking them of their experiences with sexually explicit material. A third type of research involves interviewing victims of sex abuse, and trying to evaluate if pornography was involved in the assault (Tovar, Elias, and Chang 1999).

⁴ Visceral factors can be negative emotions (i.e., anger, fear), drive states (i.e., hunger, sexual desire), and feeling states (i.e., pain). They determine the trade-off between different goods and activities; thirst, for

arousal or sexual desire (a visceral factor), individual norms (such as adversarial sexual beliefs and acceptance of interpersonal sexual violence),⁵ and/or social norms (such as sex role stereotyping and society's sexual conservatism).⁶ The nature of our natural experiment allows us to identify the short-term impact of pornography viewing on rapes, conditional on individual and social norms.

Our findings tie in with a small literature in economics that studies the impact of internet availability and sexual crime. Bhuller et al. (2013) exploit spatial and temporal variation in the availability of broadband internet across Norwegian municipalities to study the impact of internet use on rates of an overall sex crime, rape, and child sex abuse. They find that internet use is associated with a substantial increase in reported sex crime. They explore mechanisms and conclude that the effect is possibly caused by an increased consumption of pornography, though they cannot rule out matching effects (that is, the possibility that sex crime increases because it is easier for sex offenders to meet their potential victims via chat rooms or other internet sites than through alternative activities). In contrast to findings for Norway, Nolte (2019) explores internet expansion in Germany and finds no effect on rape incidences.

Finally, our paper contributes to the literature on crime decision making. The rational choice theory postulates that rational agents decide whether to engage in criminal activities by comparing the benefits and costs of committing a crime (Becker 1968). A recent literature shows that emotional cues or visceral factors (i.e., frustration and euphoria) also affect crime decisions, such as the decisions to engage in domestic

example, increases one's preference for water, and sexual arousal increases one's preference for having sex (Lowenstein 2000).

⁵ Adversarial sexual beliefs refer to the expectation that sexual relationships are fundamentally exploitative. To a person who holds this view, rape might seem the extreme on a continuum of exploitation, but not an occurrence justifying sympathy or support. Acceptance of interpersonal violence refers to the notion that force and coercion are legitimate in intimate and sexual relationships (Burt 1980).

⁶ Sexual conservatism refers to restrictions on the appropriateness of sexual partners, sexual acts, conditions or circumstances under which sex should occur, and so on. It differs from sex role stereotyping in that it focuses solely on sexual behavior rather than familial, work, or social roles (Burt 1980).

violence (Card and Dahl 2011), violent crime (Munyo and Rossi 2013), and sexual crime (Lindo, Siminski, and Swensen 2018). In line with this literature, our results indicate that the decision to rape is influenced by the emotional state of the individual (being sexually aroused), and suggest that a fraction of sexual crime can be better characterized as a breakdown of control rather than a behavior driven by rational choice.⁷

The organization of the paper is as follows. Section II presents the natural experiment. Section III provides a theoretical framework on how pornography can affect rapes. Section IV describes the data. Section V presents the empirical strategy and reports the results. Section VI concludes.

II. Natural experiment

YouTube experienced a major and rare global service outage on October 16th, 2018, between 9pm and 11pm Eastern time.⁸ The outage received extensive coverage in the media.⁹ Figure 1 displays the evolution of daily reported problems in the YouTube site for the period June to November 2018.¹⁰ There is a clear and unusual spike in reported problems on October 16th.

The top panel of Figure 2 displays hourly data on YouTube reported problems. The bottom panel of Figure 2 displays hourly data on Pornhub's traffic from noon October 16th until 2am October 17th. The Pornhub site saw a surge in traffic during YouTube's outage: traffic increased to 12 percent above average at around 9pm Eastern time, when the outage was reported, climbing to 21 percent increase over average traffic one hour

⁷ Our paper is also related to the literature on the impact of sexual arousal on economic decision making, such as risk-taking behavior (McAlvanah 2009; Jahedi et al. 2018) and impatience (Van den Bergh et al. 2008; Wilson and Daly 2004; Jahedi et al. 2018).

⁸ Users who tried to access the website during this period were greeted with a blank page that showed no videos. On the app, an error message read which said, 'There was a problem with the network [503].'

⁹ See, for example, www.msn.com/en-gb/money/technology/googles-youtube-suffers-a-major-outage/; www.cnbc.com/2018/10/17/googles-youtube-outage-affected-users-in-us-australia-asia-europe.html; www.usatoday.com/story/tech/talkingtech/2018/10/16/youtube-offline-worldwide-social-media-internet/.

¹⁰ We obtain YouTube reports data from Downtdetector, who collects status reports from a series of sources (mainly Twitter). Through a real-time analysis of this data, Downtdetector automatically detect outages and service interruptions at a very early stage. An outage exists when the number of reports shows a significant jump relative to the baseline.

later. According to information provided by Pornhub site, this increase in traffic implies millions of additional viewers during Pornhub's peak hours. Traffic dropped rapidly once YouTube's service was restored, dropping to slightly below average numbers around midnight Eastern time.

Even though we do not have information on YouTube searches around the outage, there is evidence that Autonomous Sensory Meridian Response (ASMR) searches are very popular on YouTube.¹¹ ASMR is an experience or feeling triggered by specific auditory or visual stimuli, such as quiet and whispery noises, usually accompanied by feelings of relaxation and well-being. According to BBC news, there are over 13 million videos of people trying to trigger that feeling on YouTube.¹² Even though people do not usually search ASMR for sexual purposes (Barrat and Davis 2015), during YouTube outage ASMR searches in Pornhub increased by 201% compared to the October 16th hourly average.¹³ ASMR was the word with the highest search growth during YouTube outage.

Important for our empirical strategy is that YouTube outage on October 16th, 2018, was not originated by an event that could also be potentially correlated with rapes in the U.S. Thus, YouTube outage provides a credible source of exogenous variation to pornography viewing in a model to explain rapes.

We have identified 3 other events in the period January 2018 to January 2019 that also led to important variations in Pornhub's traffic (higher than 20%). However, these 3 events may have a direct impact on criminal behavior in general, and rapes in particular, and therefore they are not suitable instruments for pornography viewing.

¹¹ ASMR refers to the feeling some people get when they hear quiet whispery noises.

¹² <https://www.bbc.com/news/av/newsbeat-45957504/asmr-i-can-make-your-brain-tingle>.

¹³ In Pornhub, searching for ASMR leads to hardcore material that combines the sound effects of ASMR with explicit sexual content.

The first event was on Saturday January 13, 2018, when residents in Hawaii received a text message around 8 am stating that a ballistic missile was on its way to their island and advised they should take shelter immediately. Compared to levels on a typical Saturday, Pornhub's experienced a drop of 77% in traffic immediately after the warning was sent out. As residents were notified 40 minutes later that the initial warning was sent in error, traffic sharply increased to 48% above typical levels at 9am.¹⁴ This event may be directly link to criminal behavior for two reasons. First, the expectation that a missile may kill you in the next few hours can have a sizeable effect on behavior. Second, the euphoria associated to the relief that such bad outcome is not going to happen can have a direct impact on violent crime, as documented in Munyo and Rossi (2013).

The second event is the Super Bowl LII between New England Patriots and Philadelphia Eagles, on Sunday February 4, 2018. Pornhub's traffic decreased up to 58% in Philadelphia and 54% in Boston during the game. Pornhub's traffic surged 28% above normal in Boston in the hours following Patriots' defeat.¹⁵ The defeat of football team in an important game can have a direct effect on crime. As documented in Card and Dahl (2011), losses by the home professional football team lead to an increase in police reports of male-on-female intimate partner violence.

The third event is the polar vortex, when temperatures dropped to record lows across the Midwest on January 30th and 31st, 2019. Pornhub traffic showed an important increase in the region. Record highs happened in Minnesota where traffic to Pornhub increased by 22% above average.¹⁶ Again, extreme low temperatures can have a direct impact on criminal behavior. Indeed, the relationship between weather and crime has

¹⁴ <https://www.pornhub.com/insights/hawaii-alert>.

¹⁵ Pornhub's traffic increased 13% above normal in Philadelphia in the hours following the end of the game. <https://www.pornhub.com/insights/2018-super-bowl-52>.

¹⁶ Traffic to Pornhub increased 12% above normal in Wisconsin and 9% in both Indiana and Illinois. <https://www.pornhub.com/insights/polar-vortexxx>.

been investigated extensively in the criminology literature, with many studies reporting that crime levels tend to increase with temperature (see, for example, Cohn 1990).

III. Theoretical framework

In this section we provide a theoretical framework on how pornography viewing can affect rapes. We focus on the behavior of potential male sexual offenders.¹⁷ Our model has 2 stages. In the first stage, the agent decides how much pornography to consume subject to his time constraint. In the second stage, the agent decides whether or not to rape taking into account the costs and benefits associated to raping. Important to our setting is that in the first stage the agent is unable to predict his future behavior if he were sexually aroused in the second stage. The behavioral economics literature names this as the hot-cold empathy gap, a cognitive bias in which individuals underestimate the influences of visceral factors on their own future behavior (Lowenstein 2000).

Formally, sexual arousal (v_i , a visceral factor) depends on the consumption of pornography, or pornography viewing, X_{iP} . We assume that sexual arousal increases with the consumption of pornography, $v_i'(X_{iP}) > 0$. Being or not sexually aroused depends on whether sexual arousal is above or below a personal threshold (\bar{v}_i). An agent is sexually aroused or in “hot” mode if $v_i(X_{iP}) \geq \bar{v}_i$, and he is not sexually aroused or in “cold” mode if $v_i(X_{iP}) < \bar{v}_i$.

We assume that in the first stage, being in cold mode, the agent naively predicts that in the second stage his sexual arousal will always be below his personal threshold (i.e., that in the second stage he will always be in cold mode). Under this assumption, in the first stage the agent solves the following maximization problem:

$$\max U(X_{iP}; X_{iY}; X_{iO}), \text{ s.t. } X_{iP} + X_{iY} + X_{iO} \leq L_i, \text{ for } i = 1, \dots, N$$

¹⁷ Since males are by far the predominant perpetrators of rapes as well as the biggest consumers of pornography (see, for example, Russell 1984), we assume that all sexual offenders are men.

where X_{iP} is the consumption of pornography by individual i , X_{iY} is YouTube consumption, X_{iO} is the consumption of all other leisure activities, and L_i is leisure endowment (X_{iP} , X_{iY} , X_{iO} , and L_i are measured in hours). We assume local non-satiation so that the time constraint will hold with equality. The agent solves this problem and chooses the optimal bundle of leisure consumption, including the optimal consumption of pornography (X_{iP}^*).

In the second stage the agent decides whether or not to rape conditional on the amount of pornography viewing chosen in the previous stage. According to the rational crime model (Becker 1968), the agent decides whether or not to rape by comparing the costs and benefits of raping. In our model we follow the behavioral economics literature and we assume that being sexually aroused affects both costs and benefits of raping: it decreases the perceived cost of being caught (see Nagin 2008; Van Winden and Ash (2012) and increases the utility from raping (Loewenstein 2000).¹⁸

For simplicity, we normalize the utility of not raping at zero. Thus, the agent rapes if the utility from raping is greater than zero. Formally, the agent rapes if

$$U(\text{Rape}) = \alpha + \beta \mathbf{1}(v_i(X_{iP}^*) \geq \bar{v}_i) - (c - \delta \mathbf{1}(v_i(X_{iP}^*) \geq \bar{v}_i)) > 0,$$

where $\mathbf{1}(v_i(X_{iP}^*) \geq \bar{v}_i)$ is an indicator that takes the value one if the agent is sexually aroused, α , β , and δ are parameters greater than zero, c is the agent's expected cost of being caught (includes the probability of being caught and the length of the sentence), and $(c - \delta \mathbf{1}(v_i(X_{iP}^*) \geq \bar{v}_i))$ is the agent's perceived cost of being caught. We assume $\alpha < c$ and $\alpha + \beta + \delta > c$.

¹⁸ In general, visceral factors determine the trade-off between different goods and activities; thirst, for example, increases one's preference for water, and sexual arousal increases one's preference for having sex (Loewenstein 2000).

In the cold mode, $v_i(X_{iP}^*) < \bar{v}_i$, and $U(Rape) = \alpha - c$. Since $\alpha < c$, in the cold mode the agent decides not to rape. In the hot mode the agent rapes since $v_i(X_{iP}^*) \geq \bar{v}_i$, and $U(Rape) = \alpha + \beta - c + \delta > 0$.

In our model, YouTube outage implies an additional restriction to the optimization problem: $X_{iY} = 0$. This implies that, in equilibrium, some agents end up consuming more pornography thus increasing the probability of being sexually aroused.

To round off, YouTube outage decreases the opportunity cost of pornography viewing relative to alternative activities, thus increasing the equilibrium level of pornography viewing. The increase in pornography viewing leads to some agents crossing their sexual arousal threshold. Those agents that cross the threshold end up raping.

IV. Data

We have hourly data on the universe of criminal incidents reported at 320 police departments and sheriffs' offices (encompassing more than 2,000 U.S. cities) for the period September 1st, 2018, to December 1st, 2018. These data come from Socrata.¹⁹ Socrata provides a data-as-a-service platform bringing together existing government data. There are 428 datasets publicly available from police offices that are willing to share the information at no cost. We only use the 320 departments and sheriffs' offices that reported crimes for the period September 1st, 2018, to December 1st, 2018.

To generate a daily dataset we normalize the data so that all "days" start at the time of the outage (9pm Eastern time). For example, October 1st, 2018, corresponds to the 24hs period that starts at 9pm Eastern time on October 1st and ends up at 9pm Eastern time on October 2nd. That is, we end up with 91 "daily" observations.

¹⁹ <https://moto.data.socrata.com/browse?limitTo=datasets>.

In our sample, there is an average of around 9,900 offenses per day. On average there are approximately 63 sexual offenses per day, including 9 rapes. We define an incident as a rape if the record has the word “rape” in the primary incident type column or in the incident description.²⁰ We define that an incidence is a sexual offense if the incident is categorized under “Sexual Assault” or “Other Sexual Offense” in the parent incident type column, and we include rapes that were not under those categories.

The dataset also includes all non-sexual offenses. Among them, the 5 most relevant categories are theft (taking property without person to person interaction), robbery (taking property with person to person interaction), assault (any offensive physical contact without sexual content), break & entry (entering a property with the intention to commit a crime), and disorder (crime that interfere with the operation of society). Theft is the sum of the incidences that are under the category “Theft” or “Property Crime” in the parent incident type column. Assault, Break & Entry, Robbery, and Disorder, are defined as in the parent incident type column. Table 1 reports summary statistics of crime data.

V. Empirical strategy and results

We are first interested in estimating the impact of YouTube outage on rapes during the 24hs following the outage. Figure 3 anticipates the main results. This figure displays the evolution of the total number of rapes for all Tuesdays between September and November 2018. Figure 3 shows that on Tuesday October 16th the total number of rapes is the highest in the period, 18 percent higher than the second highest one.

Formally, we want to estimate the following equation:

$$\ln(Rapes)_t = \alpha + \beta YouTube\ outage_t + \varphi X_t + \varepsilon_t \quad (1)$$

²⁰ In the case of California, a record that includes the code PC261 or PC262 in either primary incident type column or in the incident description is considered a rape. A police code is a numerical brevity code for a crime, incident, or instructions for police officers. https://en.wikipedia.org/wiki/Police_code and <https://web.stanford.edu/~renee/b/bill/n.radio.code.html>.

where $\ln(Rapes)_t$ is natural logarithm of the total number of rapes on day t , $YouTube\ outage_t$ is a dummy variable that takes the value one for October 16th and zero otherwise, β is the parameter of interest, and ε_t is the error term. Depending on the particular specification the set of controls, X_t , includes day of the week dummies, a holiday dummy, month dummies, and a linear time trend. To deal with potential heteroskedasticity and serial correlation we follow the standard approach of reporting Newey-West robust standard errors.

We estimate Equation (1) using Ordinary Least Squares (OLS). In column (1) of Table 2 we report estimates of Equation (1) without controls. The coefficient on *YouTube outage* is positive and statistically significant at the 1 percent level. The value of the coefficient implies a 45 percent increase in rapes in the 24hs period following the outage.

In the remaining columns in Table 2 we show the results are robust to alternative specifications. The coefficient decreases from 0.45 to 0.44 when we include day of the week dummies, a holiday dummy, and a linear daily time trend. The coefficient further decreases to 0.30 when we also control for month dummies, but in all cases it remains statistically significant at the 1 percent level.

Table 3 reports results for alternative time windows. We consider three symmetric periods around October 16th, 2018: September 16th to November 15th (61 days), September 24th to November 7th (45 days) and October 1st to October 31st (31 days). In all cases the coefficient on *YouTube outage* is positive and statistically significant, with similar estimated values to the ones reported in Table 2.

A potential identification concern is that the YouTube outage may have a direct effect on criminal activities (for example, because of boredom). To address this concern we estimate Equation (1) including the natural logarithm of other crimes (not sexual related) on the left-hand side. We report results for the total number of other crimes, and

for the 5 most relevant categories of other crime. These categories are Theft, Robbery, Assault, Break & entry, and Disorder. As reported in Table 4, we find no significant association between *YouTube outage* and non-sexual crimes. These results suggest there is no direct effect of YouTube outage on crime thus validating our empirical strategy.²¹

To further validate the causal interpretation of the results, we run a series of placebo regressions. We generate four fake treatments: one week before, two weeks before, one week after, and two weeks after the outage (that is, October 9th, October 2nd, October 23rd, and October 30th). Given that there was no YouTube outage on those dates, we should not observe any impact on rapes. As observed in Table 5, this is exactly what we find.

Overall, these exercises corroborate the empirical validity and the robustness of our results.

In Table 6 we report further results. In column (1) we report the impact of the YouTube outage on other sexual offenses. As reported in column (1) in Table 6, other sexual offenses decreased during the 24-hour period following the outage, suggesting a substitution between other sexual offenses and rapes. Indeed, as shown in column (2), there is no significant association between YouTube outage and the total number of sexual offenses.²²

VI. Final remarks

YouTube experienced a major global interruption on October 16th, 2018. This interruption was associated with an important increase in traffic on the world's biggest pornography site, Pornhub. Using high-frequency crime data from the U.S. we document

²¹ The only remaining concern would be that only rapists (and not other criminals) decided to engage in criminal activities for not being able to tube. Our identification assumption is that this is not the case.

²² We also explore the effect of the YouTube outage on pornography-related searches in Google. We focus on 3 words: "Pornhub", "porn", and "sex." Results from this exercise indicate that the outage did not increase pornography-related searches and suggest that people moving from YouTube to Pornhub were previous consumers of pornography sites.

that in the 24-hour period following the outage, rapes increased by approximately 30 percent.

Our paper contributes to a long standing debate on the effects of pornography on sexual crime. The overall evidence presented in this paper suggests that an exogenous shock to pornography viewing is associated with an increase in rapes in the following 24 hours. Our findings can be rationalized by combining previous research in psychology and behavioral economics. Research in psychology indicates that an important fraction of male students in the U.S. (25 to 30%) admit to some likelihood of raping or forcing sex acts on a woman if they could get away with it (Malamuth 1984; Edwards, Bradshaw, and Hinsz 2014). The behavioral economics literature indicates that under the influence of visceral factors (such as being sexually aroused) individuals decide without fully taking into account the consequences of their acts. In a nutshell, our framework postulates that pornography viewing increases sexual arousal, which in turn increases the utility from raping and decreases the perceived cost of being caught, thus increasing the probability of raping.

Our findings have important policy implications. For example, the prevalence of rapes at college in the U.S. is high. According to the 2015 Campus Climate Survey Validation Study, about one in five women are victims of sexual assault while in college. Our results suggest that restricting access to pornography sites in college campus and college accommodations could be a sound policy to reduce sexual offenses.

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Table 1. Summary statistics

	Mean	St. deviation	Min.	Max.
Rape	8.89	2.91	1	17
Total sexual offenses	62.43	14.07	27	93
Other crime (non-sexual)	9,897.66	660.80	7,614	11,140
Theft	1,575.91	183.23	1,006	1,898
Assault	418.71	47.17	322	517
Robbery	50.58	7.56	33	73
Break & Entry	216.80	30.56	158	301
Disorder	1,155.56	119.89	931	1,467
Observations	91			

Table 2. The impact of YouTube outage on subsequent rapes

	(1)	(2)	(3)	(4)	(5)
	ln(Rapes)	ln(Rapes)	ln(Rapes)	ln(Rapes)	ln(Rapes)
YouTube outage	0.4489*** (0.0625)	0.4370*** (0.0692)	0.4370*** (0.0697)	0.4370*** (0.0566)	0.2961*** (0.0609)
Day of the week	No	Yes	Yes	Yes	Yes
Holiday	No	No	Yes	Yes	Yes
Linear trend	No	No	No	Yes	Yes
Month	No	No	No	No	Yes
Observations	91	91	91	91	91

Notes: Newey–West heteroskedasticity- and autocorrelation-consistent standard errors (7 lags) are in parentheses. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 3. Robustness checks: alternative time windows

	(1) ln(Rapes)	(2) ln(Rapes)	(3) ln(Rapes)
YouTube outage	0.2799*** (0.0570)	0.2529*** (0.0566)	0.2912*** (0.0523)
Day of the week	Yes	Yes	Yes
Holiday	Yes	Yes	Yes
Linear trend	Yes	Yes	Yes
Month	Yes	Yes	Yes
Observations	61	45	31

Notes: Newey–West heteroskedasticity- and autocorrelation-consistent standard errors (7 lags) are in parentheses. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 4. Other crime

	(1) ln(Other crime)	(2) Ln(Theft)	(3) Ln(Assault)	(4) Ln(Robbery)	(5) Ln(Break & Entry)	(6) Ln(Disorder)
YouTube outage	-0.0020 (0.0103)	0.0029 (0.0105)	-0.0050 (0.0183)	-0.0379 (0.0444)	0.0068 (0.0338)	0.0045 (0.0182)
Day of the week	Yes	Yes	Yes	Yes	Yes	Yes
Holiday	Yes	Yes	Yes	Yes	Yes	Yes
Linear trend	Yes	Yes	Yes	Yes	Yes	Yes
Month	Yes	Yes	Yes	Yes	Yes	Yes
Observations	91	91	91	91	91	91

Notes: Newey–West heteroskedasticity- and autocorrelation-consistent standard errors (7 lags) are in parentheses. *Significant at the 10% level.
Significant at the 5% level. *Significant at the 1% level.

Table 5. Placebo exercise

	(1)	(2)	(3)	(4)
	ln(Rapes)	ln(Rapes)	ln(Rapes)	ln(Rapes)
	1 week before	2 weeks before	1 week after	2 weeks after
YouTube outage	0.1101 (0.0701)	-0.1185 (0.0919)	0.0082 (0.0706)	-0.1098 (0.0872)
Day of the week	Yes	Yes	Yes	Yes
Holiday	Yes	Yes	Yes	Yes
Linear trend	Yes	Yes	Yes	Yes
Month	Yes	Yes	Yes	Yes
Observations	91	91	91	91

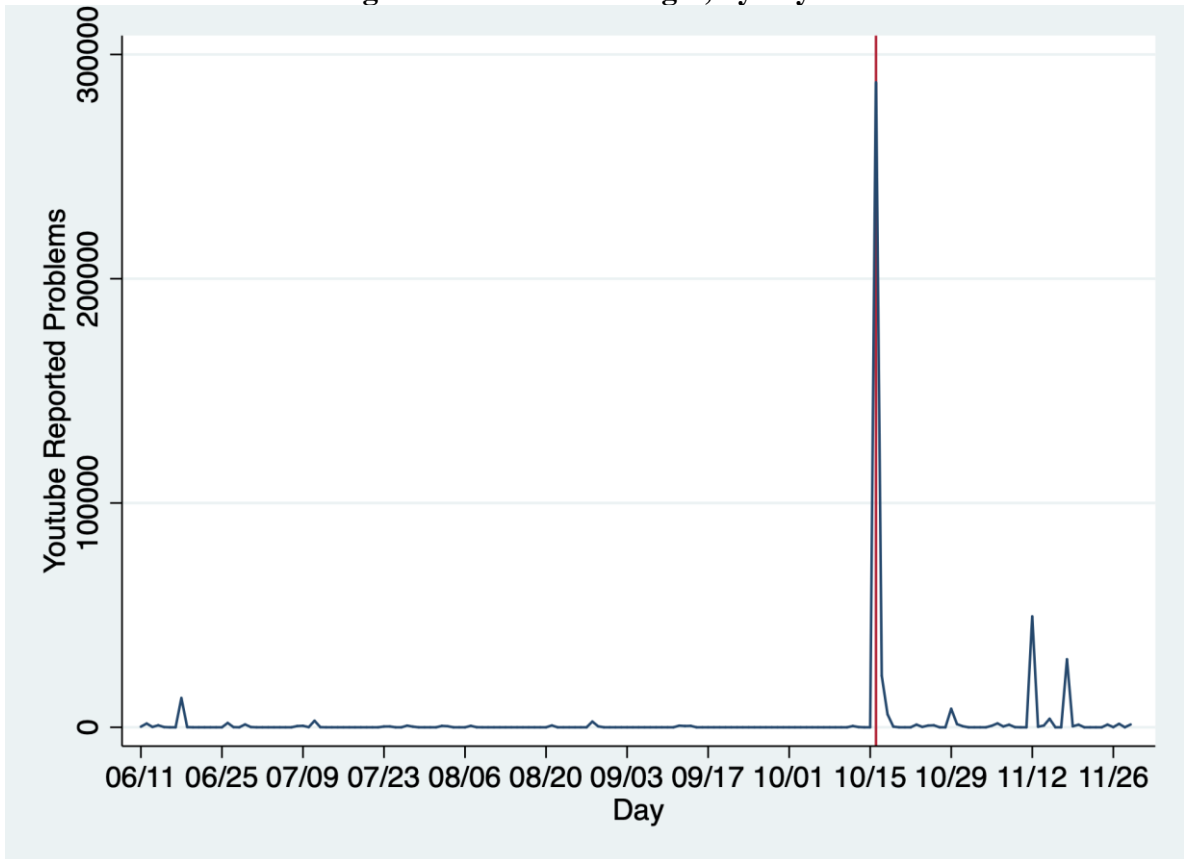
Notes: Newey–West heteroskedasticity- and autocorrelation-consistent standard errors (7 lags) are in parentheses. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 6. Mechanisms: other sexual crime

	(1) ln(Sexual offenses w/o rapes)	(2) ln(Total sexual offenses)
YouTube outage	-0.1212** (0.0477)	-0.0622 (0.0413)
Day of the week	Yes	Yes
Holiday	Yes	Yes
Linear trend	Yes	Yes
Month	Yes	Yes
Observations	91	91

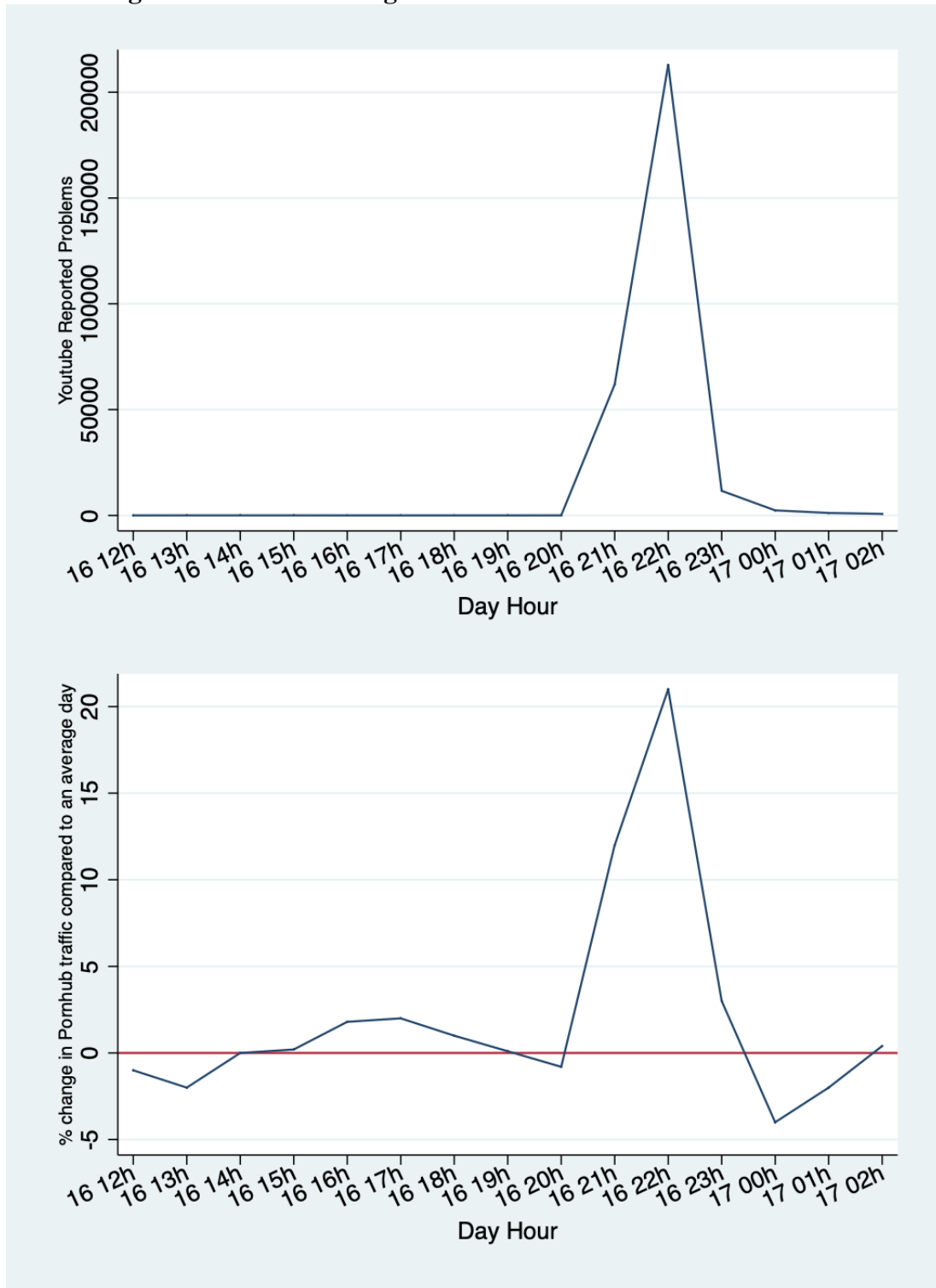
Notes: Newey–West heteroskedasticity- and autocorrelation-consistent standard errors (7 lags) are in parentheses. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Figure 1. YouTube outages, by day



Source: Own elaboration, based upon data obtained from Downtdetector. Downloaded on December 22nd, 2018.

Figure 2. YouTube outage and the increase in Pornhub's traffic



Source: Own elaboration, based upon data obtained from Downtdetector and Pornhub (www.pornhub.com/insights/youtube-outage). Downloaded on December 22nd, 2018.

Figure 3. Increase in rapes during the YouTube outage

