

# Printed Drug: Banned Books and Political Change in Eighteenth-Century France<sup>\*</sup>

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March 27, 2021

## Abstract

This article explores the diffusion of illegal literature and its impact on the French Revolution. Extant literature focuses on the role of modern communications technologies in understanding authoritarian longevity. I argue that pre-modern print media can be a powerful tool to generate support for political change. I construct a new data set by drawing on a corpus of more than 600 illegal books circulated in the eighteenth century. Using the number of émigrés and death sentences as my proxies for the revolution, I show that the diffusion of illicit literature has a positive and significant impact on nobles and clergymen who fled from France but not those who received death sentences. My analysis provides evidence that foreign publishers play a crucial role in the growth of the clandestine market and suggests that technological progress strengthens contemporary authoritarian survival by controlling the flow of information in society.

<sup>\*</sup>I thank Yutaka Arimoto, Taylor Jaworski, Chiaki Moriguchi, and participants at the seminar at Hitotsubashi University and the for their constructive feedback to the previous drafts. I thank Takayuki Kubouchi for his able research assistance. Financial support from the Joint Usage and Research Center Programs, Institute of Economic Research, Hitotsubashi University (IERPK1917) is gratefully acknowledged. All errors are mine.

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# Introduction

Do communications media play an important role in mobilizing popular support for political change? The literature has addressed this question largely in the affirmative by investigating a range of recent major events, such as internet-enabled social-networking services in the Arab Spring of 2011 (Howard and Hussain 2013) and the radio in the Rwandan genocide in 1994 (Bernstein 2013; Yanagizawa-Drott 2014). More broadly, the state's control of mass media is crucial for not just strengthening its capacity but also maintaining political stability especially in authoritarian regimes (Gehlbach and Sonin 2014; Howard 2010; Kendall-Taylor, Frantz, and Wright 2020).<sup>1</sup> Recent scholarship highlights how the reduced cost of access to information and of information dissemination raises the cost of outright repression by authoritarian states, pushing them to resort to more subtle ways to achieve stability such as manipulating the flow of information within society (Guriev and Treisman 2019).

In this paper, I investigate the diffusion of print media in eighteenth-century France as a pre-modern case study. More specifically, I study how illegal books generated support among governing elites of the *ancien régime* for revolutionary political change. While the literature typically draws evidence from cheap and mobile technologies that are invented recently, I argue that printed books can be as powerful as these in shaping public opinion and disseminating anti-regime (i.e., anti-monarchical) ideas. The market of illicit books, which undercut the authority of the reigning institutions including monarchy and the church, was widespread before the revolution, and these books were popular especially among political and social elites who constituted the principal readership. The monarchy used a variety of censorship methods, including bans on what it perceived as subversive, but it could neither reduce the amount of illicit literature substantially nor prevent it from being circulated or imported from abroad (Doyle 2018, ch. 2).<sup>2</sup> When the regime was about

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<sup>1</sup>This is a growing literature. On China, see King, Pan, and Roberts (2013, 2017), Lorentzen (2014), Mattingly (2019), Qin, Strömberg, and Wu (2017), Roberts (2018), and Stockmann and Gallagher (2011). On Russia, see Rozenas and Stukal (2019). On Nazi Germany, see Adena et al. (2015).

<sup>2</sup>Burrows (2015, 78) points out that around 1780, one in ten individuals owned a book while one in 600 subscribed to a newspaper.

to collapse, those disaffected elite-readers who were the ones to benefit the most from it did not actively come to its preservation.

The key mechanism is the environment in which the book trade operated in pre-revolutionary France. Although the state had centralized the business in the late seventeenth century by creating a system of pre-publication inspections, a heavy-handed institution was never in place. At the same time, French booksellers long relied on foreign publishers for printing Enlightenment ideas whose publication might not be approved within France. These cities include Geneva, Neuchâtel, Bouillon, Amsterdam, and London. These imports reflect the demand for Enlightenment works that can be regarded as anti-monarchical and anti-clerical. As the historian Robert Darnton (1995b, 193–94) points out, intellectual gatherings such as salons, literary societies, and provincial academies were popular among noblemen, professionals, and royal administrators alike. Given the institutional restrictions on the book trade, French bookdealers responded to the strong consumer demand through foreign actors for profit (Darnton 1979; cf. Gentzkow and Shapiro 2010).

I test the extent to which the diffusion of illegal literature facilitated the French Revolution by constructing a new data set. It draws on Darnton's seminal work on the corpus of 720 illegal books (Darnton 1995a). It argues that forbidden books sowed the progressive idea for polity as it won support from governing elites. These books were printed at, and smuggled from, the Société Typographique de Neuchâtel (STN), a prominent printer-wholesaler located in Neuchâtel, Switzerland. Darnton (1995a) is representative of the latest generation of the French-Revolution historiography and has spawned a cottage industry in the history of the book and print that focuses on the political dimensions of social and cultural conflicts.<sup>3</sup> I start by digitizing all 720 illegal books recorded in Darnton (1995a) with respect to the date of publication and the number of copies as well as orders. Then, to construct a measure on the diffusion of these books, I use the known location of twenty cities housing major booksellers and exploit the variation in the geographical distance between these cities and recipient cities. For the outcome variable on the revolution, I employ two

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<sup>3</sup>Darnton's work is identified with the "post-revisionist" historiography, which highlights social and cultural themes and their political implications. See Clay (2015) and Appendix 3 of Doyle (2018) for overviews. See also Doyle (1999), Kaiser and Kley (2011), and Popkin (2002) for historiographical debates. Finally, see Mason (1998) for the impact of Darnton (1995b) in the scholarship of pre-modern French history and the history of the French Revolution.

measures that provide insights on elites whose life course dramatically altered in the wake of the French Revolution. The first is the number of people who emigrated from France. Those who expected their post-revolutionary life to be worse off and believed that they would be victimized, including ancien-régime elites such as nobles and clergymen, left the country *en masse*. The second is the number of people who received death sentences in the post-revolutionary tribunals. These targeted primarily pro-monarchy individuals to persecute their past actions in the “Reign of Terror” (*la Terreur*). Donald Greer documents these incidents in great details in separate volumes (Greer 1951, 1935). Scholars have already taken advantage of the émigré data to address whether the flight of these elites affected economic performance (Franck and Michalopoulos 2017). The “terror” data has yet to be quantified and used in an empirical analysis for the first time.

I lay out a framework first by defining legal and illegal books in early-modern France. I then discuss how Paris tried to reign in on the book trade by centralizing the authority of publication rights as well as by strengthening the institutions of censorship. The clandestine market developed necessarily in response to the consolidation of state capacity on the book business. Second, I describe in detail a new data set with a focus on the construction of the outcome and main explanatory variables. Since much of the data on the diffusion of illegal books and its impact has not been quantified, I document the breadth of the data from chronological and geographical perspectives. Descriptive data indicate that the underground market flourished especially in the late eighteenth century in terms of the number of titles, their orders, and their volume. Third, statistical analyses find that the diffusion of illegal books is positively and significantly associated with the emigration of the nobility and clergy. Other categories, such as the upper middle class and all-inclusive groups, give no systematic results. By contrast, illegal works have a positive but not significant impact on death sentences across different categories when covariates are included. My analysis provides statistical evidence that main customers of the clandestine market are those elites who supposedly work to preserve the ancien régime. This evidence is robust to inclusion of a host of covariates, such as the geographical distance to Paris, literacy rates, and economic growth measures.

My selection of covariates mitigates major threats to identification. One concern is whether

readers who reside close to the publisher have a disproportionate advantage over those who do not in the access to illegal books. It predicts that the spread of illegal books depends on the geographical proximity to the STN, the publisher. I address this concern first by presenting in exploratory data analysis a relationship between the number of copies ordered from twenty “major” bookdealer cities that Darnton identifies and the distance to the STN. I show that the two highest-ranking cities are among the most distant from the STN (see Figure 3). I also include the distance to Neuchâtel in my regression analysis, which does not alter positive effects of illegal books’ diffusion. Another endogeneity concern is how the French state’s inability to exercise authority in pre-modern times jointly determines diffusion and the French Revolution outcomes. This problem comes from French political history, in which the state had difficulty projecting power far afield Paris and parts of today’s territory became under French control at varying points. My analysis controls for the geographical distance from Paris, other proxies for regional autonomy, and indicators on the timing of inclusion into French territory after 1700 to address joint determination. My findings hold after the inclusion of these geographical and political factors that could drive the development of the underground market and its potential consumers.

I make two contributions in this paper. First, I provides quantitative evidence on the market of illicit literature in pre-revolutionary France. Historical scholarship recognizes the role of the clandestine market in spreading anti-monarchical ideas below the circles of “High” Enlightenment (Doyle 2018, 448). It has yielded little empirical evidence until recently when scholars on the social history of books started the project on the French book trade in the early-modern period. I document the extent to which forbidden books spread at the city level and the role they play in the French Revolution. Second, I suggest that authoritarian survival may in part be dependent on the unfettered access to information. Given that the state control over the clandestine market grew more heavy-handed in the eighteenth century, French booksellers and publishers relied in turn on foreign publishers to satisfy the domestic demand. They could do so, because the state’s border control was not tight enough to permit smuggling on the regular basis. Yet although the cost of access to information has become cheaper and the cost of sharing information has become easier today,

authoritarian states may take advantage of this to *strengthen* authority by keeping the barriers to entry by foreign actors. My analysis highlights the link between state capacity on information and authoritarian resilience.

## Conceptual Framework

“Illegal” books are the subject of this study. The market of illegal books flourished in pre-revolutionary France necessarily as a consequence of the legal one, so it is imperative to establish the reference category first.

In pre-modern France, the *legal* books are the ones approved by the state before publication. The third-party approvals bear the name “permission.” Two major categories constitute the legal type. The first is the *permission publiques*. These are the books “processed formally through the state’s censoring and bureaucratic machinery” (Darnton 1982, 174). It is further divided into two subtypes. One is the royal privilege (*priviège*), the category which started as an approval by the monarch that represented his personal grace and functioned as an early-modern copyright.<sup>4</sup> Another is the sealed permission (*permission de sceau*), where the body of specialized censors within the state, called the keepers of the seals, censored manuscripts for a sealed approval on behalf of the king. The *permission publiques* indicate that books meet the “official” standard and that the state endorses them. Moreover, as in the modern copyright, this approval grants the authors the exclusive right to reproduce their own works, typically for a limited period. The second category is the *permission tacites*. In contrast to the sealed approval, it refers to books which censors would not actively endorse and books which did not enjoy the exclusive right of publication (Darnton 2014, 32). These are the ones whose content and style may not be on par with those in the first category but may be published anyway upon inspection and put in a registry (hence “tacit” approval). In addition to these two categories, several others co-existed for legal publication.<sup>5</sup>

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<sup>4</sup>For the development of the *priviège*, see Armstrong (1990) most notably, Birn (1971), and Pottinger (1958, ch. 6).

<sup>5</sup>These include, *inter alia*, permissions of the police (*permissions de police*), simple permissions (*permissions simples*), and “simple tolerances” (*simples tolérances*), and books published by the Royal Print Shop *Imprimerie royale*. See

*Illegal* books are harder to define. While they may simply refer to the residual category, which means books that fall outside the legal realm, they could come in different ways. Pirated editions of legal books (called *contrefaçons*), for instance, were considered illegal as they violated the privilege. So were imported books that did not go through the state-sanctioned booksellers. Books that the state deemed would cause offense also fit this category. Typically called “bad books” (*mauvais livres*) by the police, they challenged the authority of the monarchy or the church, or they were considered to undermine the prevailing morality of the day, including obscene and *ad hominem* content (i.e., directed to the king) (Darnton 1995b, 4). Given that judgment entailed subjectivity, authors and publishers often relied on direct negotiations with the censorship office to fudge the boundaries of the law (Darnton 1989).

As mentioned earlier, legal publications typically require approval from official censors. In early-modern France, the state began to centralize the authority over the publication business in the 1650s by establishing a board of censors (Pottinger 1958, 64). The main purpose of the office, the *Direction de la librairie* (Office of the book trade), was to inspect manuscripts and ascertain that they were of certain standard—primarily free of heretical speech or subversive ideas.<sup>6</sup> The office functioned much like the editorial board of modern-day academic journals. Upon receiving a manuscript, the director (the editor) assigned censors (referees) who in turn reviewed it in a single-blind manner by which they knew the identity of the author but not *vice versa* (Darnton 2014, 45). These censors were composed of not just intellectuals but also clergymen, lawyers, and medical doctors and were to write the director a “referee report” with recommendations (Roche 1989, 14–6). Yet, unlike academic journals, censors would often correspond and meet with the author (Darnton 2014, 46). Authors, including prominent ones such as Voltaire, Diderot, and Rousseau, would visit the office of the director to increase the chances of approval, because the royal approbation amounted to high honor (Roche 1989, 9).<sup>7</sup> The number of censors grew over time, from less than

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Darnton (2014, 32–3, 251) and Birn (2012, 23).

<sup>6</sup>In the 1660s, the office also began actively to crack down on what it considered to be illicit and controversial publications and periodicals from abroad (Roche 1989, 5).

<sup>7</sup>Honor also was a key motive for censors. As Darnton (2014, 36) notes, “[t]o be listed as ‘Censeur du Roi’ in the *Almanach royal* was to occupy a prominent place among the servants of the crown.

ten before 1660 to 178 by the Revolution (Doyle 2018, 46; Roche 1989, 9).

Bookdealers who would like to sell forbidden or unfiltered books had to avoid interacting with royal censors. By Darnton's count, there were 42 "major" individual dealers and 21 "minor" ones across the country defined by the volume of orders, who altogether requested 28,212 books in 3,266 orders in the last two decades prior to the revolution (Darnton 1995*b*, 60–2). A brief illustration of one dealer epitomizes clandestine book dealership.<sup>8</sup> In the early 1780s, a man claiming to be "De Mauvelain" wrote to the STN. He said he came to know the publisher by word of mouth—a friend's recommendation. In the letter he introduced himself as an armor-bearing knight (*écuyer*) from Troyes, although he in fact belonged to a noble family of the robe from the Burgundy region and works in the legal profession. Mauvelain initially asked the STN to help publish his own work, but he soon began to place orders on forbidden books in the "favor" of his friends. His orders included *Les Fastes de Louis XV* ("The pomps of Louis XV") and *L'Espion dévalisé* ("The robbed spy"). As time went by, his orders on banned books increased and he acted more like a dealer.

The clandestine market used varying levels of caution in production and shipping. On printing, booksellers and publishers used the tactic called "larding" to evade detection. It refers to a simple technique in which publishers stuff the sheets of a forbidden work into an unbound book whose cover bears a mundane or inoffensive title (Darnton 1995*b*, 17). It seems that this little trick was effective, as rarely did inspectors open book covers to ascertain that the titles and content match. By contrast, shipping involved far more risks and required greater precaution. Booksellers typically hired smugglers who were organized in a team of "captains" and "porters" to carry clandestine publications (Darnton 1982, 128). They would operate after nightfall. They bypassed official customs houses and inspections stations and instead went on secret trails (Darnton 1995*b*, 18). Arrest typically means that books will be confiscated and porters imprisoned—perhaps for life, so shipping would take a long time from printing to arrival. Bookdealers preferred this method as it provided security and paid for the transportation cost upon delivery (Darnton 1995*b*, 18). As a result, sellers on average charged higher prices for forbidden books (Darnton 1995*b*, 14).

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<sup>8</sup>This story draws from Darnton (1982, ch. 4).



The development of the underground market coincided the increasing interest in print material, in particular books. One of the factors distinguishing from the earlier period is that the literature on political libel in the last few pre-revolutionary decades became richer in text, tone, distribution, and the amount of attack (Darnton 1995b, 211–3). It was certainly long part of the political discourse in ancien-régime France. In the 1610s, more than a thousand opposition papers were believed to be issued over the royal feud between advisors of King Louis XIII and those of Marie de Médicis, his mother. The political pamphleteering over who should be in charge, often written anonymously, undermined state authority. In response, Cardinal Richelieu used the 1626 decree, originally designed to expand royal authority over publishing trade, to clamp down on pamphleteering (Sawyer 1990, 138–9).<sup>9</sup> In the late eighteenth century, *libellistes*, or anti-monarchical critics, tended to write much longer in the book form, in which they leveled *ad hominem* attacks on the monarchy and criticized patrimonial rule in harsher tone.

More generally, books became more affordable toward the end of the eighteenth century. During the 1750s, 13 percent of wage laborers owned books, as did 20 percent of domestic servants. By 1780s, the figure increased by a double or even a triple—35 percent for laborers and 40 percent for domestic servants (Burrows 2015, 78–9). Literacy also increased toward the end of the early-modern period. On the *département* level, average literacy rates in French nearly doubled for male pupils and increased by almost 2.5 times for female pupils between 1686 and 1786 (Furet and Ozouf 1977). It is important to mention that growth in book purchasing was largely confined to urban areas; in rural towns and villages, where literacy rates were lower, the main readings tended to be devotional chapbooks and other pamphlet-size materials. In this environment, a number of genres exist in the illegal market. According to Darnton (1995b, 69), high-demand categories include religion (29.4 percent), philosophy (25.1 percent), politics and current events (29.5 percent), and sex (12.9 percent), combining to constitute up to 97 percent of the 457 titles in more than 28,000 copies.

I have thus far outlined the contour of the reading market in late-eighteenth-century France: how the legal and illegal book markets function, who orders, publishes, and delivers, how the “read-

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<sup>9</sup>See Kettering (2011) for a recent article-length examination of this event.

ing public” evolved in pre-revolutionary society, and how the clandestine literature is received in public. The specialized literature in history has focused more on generating knowledge about how the clandestine market works than on establishing a mechanism that connects the public reception of the illegal literature to mass support for the revolutionary idea. One reason is that in pre-revolutionary France, being publicly sincere about one’s political opinion would be highly risky given state-led restrictions on the number of printing presses and the state control over the provision of *privilèges* in publishing, both of which function as censorship. In this environment, Darnton highlights that readers regard the clandestine literature as more than gossip and take it seriously. People had been aware of the market by 1760s and the demand was high. As one peddler noted (Darnton 1995b, 223–4):

People are bent on getting [forbidden books], no matter what the price. And who are these people? Precisely those who by their birth, their position, their knowledge, and their attachment to religion should be the first to condemn them. But on the contrary, if they merely hear something mentioned in a hushed tone about a new work of this kind, they run after it....

At the same time, these intellectuals and those from the nobility find it virtually impossible to express support for the antimonarchical and anticlerical opinions contained in forbidden books. As Louis-Sébastien Mercier, a reputable dramatist and writer, confided (Darnton 1995b, 230–1):

Anyone who had seen me reading would have compared me to a man dying of thirst who was gulping down some fresh, pure water. ... Lighting my lamp with extraordinary caution, I threw myself hungrily into the reading. An easy eloquence, effortless and animated, carried me from one page to the next without noticing it. [...] How those new ideas rushed into my brain! How my intelligence adopted them!

Even though these writers and intellectuals like anti-monarchical literature and may prefer regime change, mass mobilization suffers from the collective action problem as each participant has the incentive to free-ride on others dislodging the monarchy (Kuran 1998, 48–9). There is a discrepancy between a shared desire for a new regime and individual incentives for not mobilizing. The key

insight of Timur Kuran's model is that it explains the conditions under which a "tipping point" in favor of mass mobilization can occur. It is likely to take place when a broad cross-section of individuals share low opinions toward the regime so that the threshold for collective action is low (Kuran 1998, ch. 4). Yet this is not a predictive model. Because of preference falsification, it is very difficult *ex ante* to determine the expected level of threshold. Regardless, the first movers who protest against the government and call for broader participation among the population have to take risks of no mass mobilization (Kuran 1998, 48). This is why the incidence of revolution tends to catch observants by surprise, as "seemingly unshakable regimes saw public sentiment turn against them with astonishing rapidity" when it did happen (Kuran 1991, 13).

This model provides one mechanism through which the diffusion of the clandestine literature captures public preferences. The expressed preference for the monarchy by intellectuals and members of the nobility masks their sincere preference for regime change. Their readership of the literature plays the role of lowering the threshold for mass support when first movers begin to take action.

## Empirical Strategy

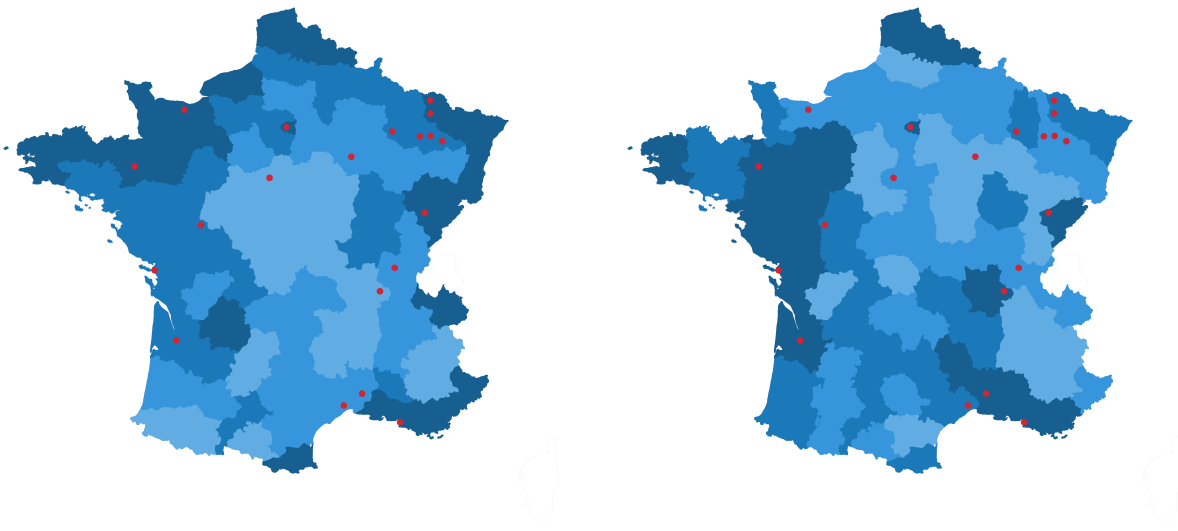
I construct a new data set to assess the diffusion of illegal literature and provide evidence on its impact on the French Revolution. I employ two measures on the outcome. Since scholars typically consider "revolution" to be conceptually a single event, observations that yield numerical variation are required for quantitative analysis. The first is the number of émigrés. Following 1789, more than 130,000 individuals left France for neighboring countries including Britain, Germany, and Belgium, and the United States. Of these, wealthy and literate groups such as the nobility, the clergy, and the upper middle class constitute the majority. The second is the number of people who received death sentences in the post-revolutionary regime. The French experienced the so-called "Reign of Terror" (*la Terreur*) during the First Republic of 1792–1804, in which a series of massacres and public executions took place. Similar to those fled from France, the Terror targeted more than 16,000

clergymen, nobles, and the wealthy who were meted out “justice” in the Revolutionary Tribunal. These are appropriate measures for this study, because intellectuals and other elites are believed to comprise primary consumers of forbidden books. These two outcomes inform the variation in the geographical distribution and density of the readership of illegal books. The data on the émigré draw from Greer (1951) which documents the incidents of emigration on the *département* level in various categories, including the breakdown of social groups. The data on the Terror come from Greer (1935) which collects similar data on those who received death sentences recorded on the *département* level. Figure 1 shows the geographical distribution of the two variables.<sup>10</sup>

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<sup>10</sup>Figures for the individual categories in the nobility, clergy, and upper middle class are available in the Appendix.

**Figure 1: Outcome variables: Number of émigrés and death sentences following the French Revolution.**



**(a) Number of émigrés**

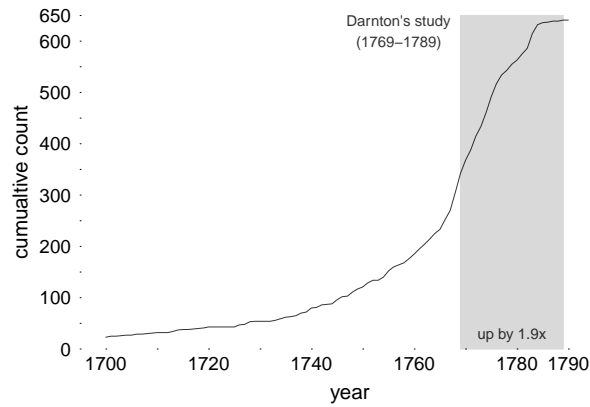
**(b) Number of death sentences**

*Note:* Darker colors indicate higher rates. Red dots denote the location of twenty major bookdealer cities identified in [Darnton \(1995b\)](#).

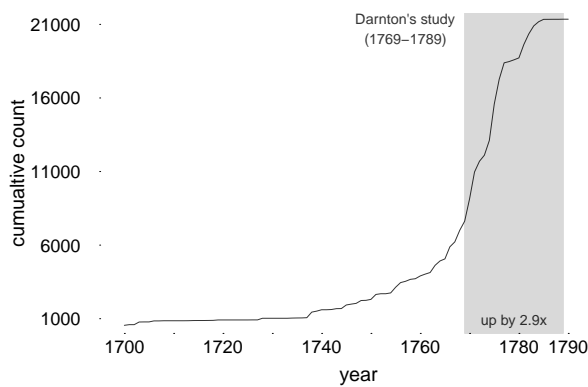
*Source:* [Greer \(1951\)](#) for the émigrés and [Greer \(1935\)](#) for the death sentences.

My main explanatory variable is the diffusion of banned books. In the monograph, [Darnton \(1995b\)](#) identifies “major” bookdealers located in twenty cities and “minor” ones in fifteen cities across France, in which the location of major dealers were shown in Figure 1. Bookleaders function as conduits who place orders to the STN located in Neuchâtel and then distribute their orders to customers. This variable draws on the corpus of 720 illegal books recorded in the STN registry as documented in ([Darnton 1995a](#)). For each entry, this database offers information not only about the title, the author, and the date as well as place of publication, but also about the name of bookdealers, their location, the number of copies, and the number of orders.

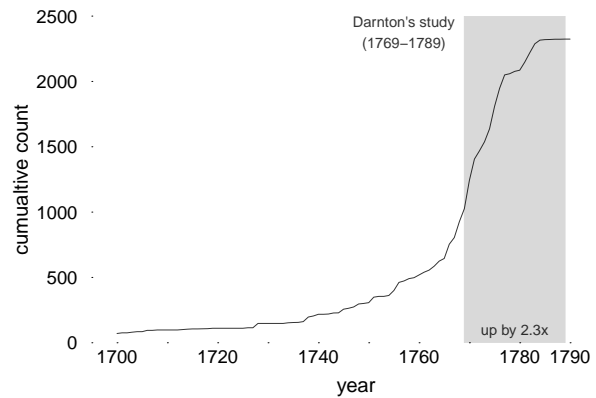
**Figure 2: Cumulative count of illegal books published in the eighteenth century in Darnton (1995b).**



**(a) Number of publications**



**(b) Number of copies**



**(c) Number of orders**

*Note:* The data covers the eighteenth century. The prior observations are dropped. The gray shaded area indicates the twenty-year period of analysis in [Darnton \(1995a\)](#), 1769–89.

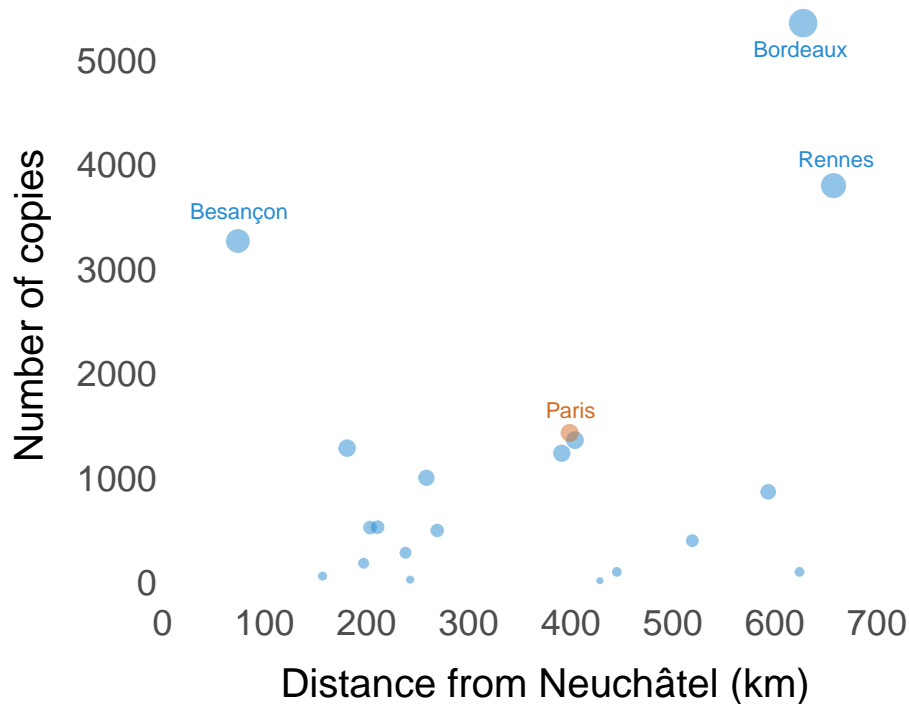
*Source:* [Darnton \(1995a\)](#).

Figure 2 displays the cumulative sum of illegal works published over the eighteenth century. Of the 720 books, 641 (89 percent) have the publication date. These contain one published as early as 1202, but only 23 were dated before the eighteenth century. Panel (a) shows 618 books released in the eighteenth century whose pace remains slow by mid-century yet increased in a burst toward the end of the century. I highlight the period under study in [Darnton \(1995b\)](#), 1769–1789, to assess the level of activity in the underground market. The total of new publications increased approximately 1.9 times during the twenty years in Panel (a). Similar data are shown for the number of copies

and orders in Panels (b) and (c), respectively. There were over 21,000 copies of the 720 forbidden books, of which nearly 97.5 percent was published in the eighteenth century. Similar to Panel (a), the number of copies substantially increased in the 1760s forward; there is more than a 2.9-times increase in the number of copies over the period of the Darnton study. In Panel (c), 97 percent of 2,300 orders was made in the eighteenth century, which follows the same trend.

I integrate the geographical dimension in the clandestine market. Given that these books were published in Neuchâtel in Switzerland, it is easy to imagine that dealers closer to it would be more active. Figure 3 explores this possibility. It displays the number of copies received for the twenty major bookdealers as a function of the geographical distance from Neuchâtel. Each point denotes the location of the cities, while the size of the bubble indicates the proportion of copies. The three cities with the greatest numbers are Besançon, Bordeaux, and Rennes, in which only Besançon is close to the STN—indeed the closest city of all twenty. By contrast, Bordeaux and Rennes received more books despite the fact that they are among the most distant major dealers. Paris, doubtless the intellectual capital, is an “ordinary” city as a bookdealer. Although located much closer to the STN than Bordeaux or Rennes, it did not serve as a magnet of illegal books.

**Figure 3: Bubble chart on the proportion of copies among major bookdealer cities in terms of the relationship between the number of copies and the distance from Neuchâtel.**



*Note:* The size of the bubble indicates the proportion of copies for each city among all twenty major bookdealers. The three highest-proportion cities, Besançon, Bordeaux, and Rennes, are labeled. Paris gets a different color for comparison.

*Source:* Darnton (1995a).

I exploit this geographical variation in the data to construct measures on the diffusion of illegal books in three steps. First, I compute travel time from the major bookdealer cities whose data draws from [Arbellot and Lepetit \(1987\)](#). It offers estimated travel days around the time of the French Revolution from hub cities such as Paris, Lyon, and Bordeaux. The city-level information comes from [Nüssli \(2011\)](#), which contains historically relevant cities nested in layers of state- and substate-administrative units at the end of each century for the past two millennia. I include all 214 cities under the French territory by the nineteenth century to collect information on the city level and add three cities identified as housing “minor” bookdealers in [Darnton \(1995b\)](#). [Arbellot and Lepetit \(1987\)](#) offers estimated travel time, in days, from five of the twenty major bookdealer cities: Paris, Lyon, Bordeaux, Nancy, and Rennes. This piece of information allows me to compute travel time for all 217 cities, which indicates that it would take a maximum of thirteen days of travel across



continental France between a given pair of cities. For the rest of the major bookdealers, I calculate the average travel distance for each day from these five cities to estimate time. Each of the 217 cities now has travel time from the twenty major bookdealers and gets the minimum time to receive banned books.

The second step involves the calculation of *intensity* in the impact of the clandestine market. For this purpose, I adopt the formula in the Inverse Square Law (ISL). It computes how strong (or intensive) a substance has an effect over a distance. It represents the rate of exposure ranging from 0 to 1 and is used typically for how an individual is exposed, from a point source, to substances such as radiation, heat, gravity, sound, and light. The formula is:

$$I_1(d_1)^2 = I_2(d_2)^2 \Rightarrow I_2 = I_1(d_1/d_2)^2, \quad (1)$$

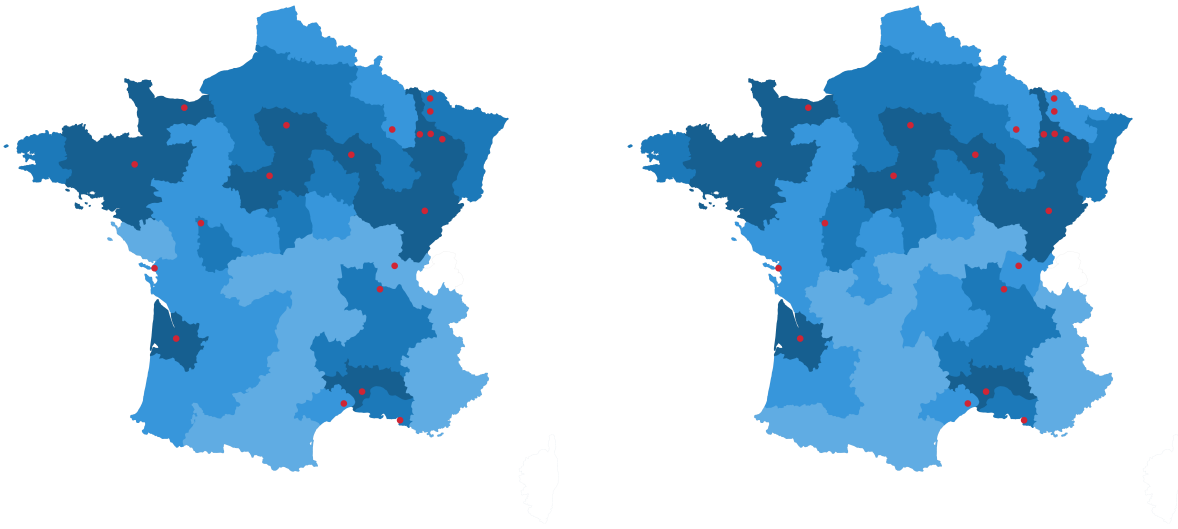
where  $I$  denotes intensity and  $d$  the geographical distance. Intensity rates are greater if a recipient city ( $I_2$ ) is located closer to a major bookdealer ( $I_1$ ).  $d_1$  refers to the distance in a single-day travel and  $d_2$  the distance between a given  $I_1$  and a given  $I_2$ . The ISL is appropriate largely because of the way ideas spread in the pre-modern era. In a time when there was no telephone, radio, automobile, or television, ideas should travel at a rate not much faster than that of the mail or newspaper delivered by couriers on horseback. To underscore this point, ideas subversive to the French authorities would diffuse primarily in the form of books sold through major bookdealers. Thus it is reasonable to assume that ideas contained in books spread as mechanically as heat or radiation. One of the limitations of this approach is the failure to account for the reader-to-reader diffusion. This is virtually impossible to monitor for two reasons. One is the absence of documentary evidence. The goal of [Darnton \(1995b\)](#) is to assess the extent to which the underground book market had an impact on the French Revolution, wherein protagonists include the bookseller (the STN) and bookdealers. The market demand is captured by the number of publications, copies, and orders summarized in [Figure 2](#). Another reason is that readers have an incentive not to disclose their behavior in a way that leaves a written record. If they feel excited about what they read, they would be more likely to

resort to the word of mouth than to pen letters which would leave records. In short, my approach captures the impact of the major bookdealers and their proximity to other cities.

In this computation, the only assumption I introduce is that there is the 100-percent intensity for the travel time of one day from a major bookdealer (i.e., an  $I_1$  in Eq. 1). The values for the rest vary across cities. In calculating the intensity from every major bookdealer for every city, I identify two types: one is the intensity for the nearest distance to a bookdealer and the other is the highest intensity regardless of the distance. These may not necessarily coincide with each other, because travel distance may vary between cities. Thus intensity from the nearest bookdealer city can be low if it offers a weak infrastructure.

Finally, in the third step, I multiply the intensity rate by the number of copies from every major bookdealer to obtain the *diffusion* of illegal books. Given the two types of intensity, there are two measures of diffusion: one by the shortest distance to a major bookdealer and the other through the highest intensity regardless of distance. Since the outcome variables are observed on the *département* level, I aggregate the city-level values by taking the average diffusion in the number of books for each *département* as shown in Figure 4. I use these two measures as proxy for Darnton's diffusion thesis.

**Figure 4: Diffusion of illegal books by the *département*.**



**(a) Diffusion by nearest dealer**

**(b) Diffusion by dealer with highest intensity**

*Note:* Darker colors indicate higher intensity. Red dots denote the location of twenty major bookdealer cities identified in Darnton (1995b).

*Source:* Darnton (1995b,a).

Several factors may confound the relationship between illicit books and the French Revolution. The first is the state's control over political information by monopolizing the postal service. An early adopter of the institution in Europe in the mid-fifteenth century, France invested a lot on building permanent relay stations and expanding its authority over time while making the system exclusively royal for a long time (Allen 1972; Schobesberger et al. 2016). The ancien régime took advantage of it by suppressing political pamphleteering and forms of political dissent using written communications. To account for this effect, I include an indicator taking the value of one if a city had an access to the post office in a given *département* by the turn of the eighteenth century. I first calculate the geographical distance from each city to those cities that had the post by 1690 (the last date available prior to 1789) and make the indicator at the *département* level. The source for the 1690 postal network comes from Jaillot (1690).

For geographical determinants, I control for the distance from Paris and from Neuchâtel. The distance to Paris is intended to capture the extent of authority centralization from the capital. Re-

cent economics research on political development suggests that the state exerts stronger authority over locales closer to the capital than those far afield (Michalopoulos and Papaioannou 2014; Olsson and Hansson 2011). Although the expansion of the post would facilitate authority consolidation by bringing the state closer to local communities (Sasaki 2020), the distance variable may capture centralization effects other than through post offices. The distance to Neuchâtel is designed to control for a similar impact. All books examined in the Darnton thesis come from Neuchâtel where the STN is located, yet this variable captures book delivery not recorded in Darnton's database. In addition, I include indices on land elevation above the sea level and on terrain roughness. Each could mediate the diffusion of illegal books, especially when such commodities need to be transported secretly and often at night. The data is drawn from the GLOBE (Global Land One-kilometer Base Elevation project) database (GLOBE Task Team and others 1999).<sup>11</sup> It is a 1 km-by-1 km gridded data on land terrain that covers the entire world. Each of the geography variables is observed at the city level; I aggregate the average values at the *département* level.

I introduce three economic factors. The first is economic growth, in which population size is typically used as the conventional proxy in pre-modern times. I draw on Bairoch, Batou, and Chèvre (1988), which enumerates population at the city level in the pre-modern period, but follow Bosker, Buringh, and van Zanden (2013) that corrects the Bairoch data. Then I summarize the values for the *département* level. To account for fluctuations over time, I construct a measure on population growth by making population size in 1750, the latest pre-revolutionary date, divided by that in 1400, the earliest period in the early-modern period. Given that the Bairoch database has the minimum threshold of five thousand inhabitants to appear and that fewer French towns met it by 1400, I imputed the value of one (i.e., a thousand inhabitants) to enable computation. Besides the growth variable, I include an indicator for whether cities have an easy access to canals or commercial fairs. Canals played a crucial role in French history, particularly for those living inland as an alternative mode of transportation when the overland method remained unreliable. I draw on a public report compiled in Becquey (1820) to identify the canals that were in service by

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<sup>11</sup>The terrain ruggedness index (TRI) is originally proposed by Riley, DeGloria, and Elliot (1999).

the early nineteenth century. I then georeference 37 of them and count the number of canals within the 50 km for each city. Commercial fairs were annual exhibits that attracted armies of merchants who traded textiles, spices, and books. In France, the Champagne trade fairs were well-known and, once they declined in significance in the fourteenth century, Lyon took over as a hub in France. To account for this dimension of economic activity, I identify the location of eleven commercial fairs in France based on [Raj \(2018\)](#).<sup>12</sup> Similar to the access to canals, I calculate the geographical distance and count the number of fairs-holding cities within 50 km.<sup>13</sup> For these two factors, I take the average at the *département* level.

Finally, I include male literacy rates by 1786 for social determinants. Literacy in France grew throughout the early-modern period, which may nurture literates' interest in reading banned books. [Furet and Ozouf \(1977\)](#) offers *département*-level literacy rates for 1686, 1786, 1816, and 1866 sorted by male and female pupils. For this analysis I use male literacy rates for the last observed date, 1786, prior to the Revolution. Table 1 provides the summary statistics of these variables in my data set.

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<sup>12</sup>The eleven cities that hold commercial fairs are Angers, Bordeaux, Caen, Lille, Lyon, Orleans, Paris, Rennes, Rouen, Toulouse, and Tours.

<sup>13</sup>I use 50 km as a reasonable cutoff as overland transportation in Europe remained unreliable throughout the pre-modern period.

**Table 1: Summary statistics.**

	N	mean	median	sd	min	max
<i>Outcome variables*</i>						
Émigrés	87	1,505	1,052	811	105	20,510
Nobility	87	210	142	276	0	2,119
Clergy	87	283	238	259	0	1,033
Upper middle class	87	124	49	275	0	2,049
Death sentences	87	192	13	818	0	3,548
Nobility	87	13	0	73	0	666
Clergy	87	11	2	32	0	246
Upper middle class	87	23	1	94	0	746
<i>Explanatory variables*</i>						
Book diffusion through						
nearest major bookdealer	87	626	306	2,307	2	3,797
highest-impact bookdealer	87	612	284	566	2	3,797
<i>Political institutions variables</i>						
Access to post office by 1690	87	0.74	1	0.44	0	1
<i>Geography variables*</i>						
Distance to Paris (km)	87	359	356	178	0	692
Distance to Neuchâtel (km)	87	421	412	175	57	846
Elevation (m)	87	190	116	189	16	1,088
Terrain ruggedness (m)	87	66	43	73	2	408
<i>Economic variables</i>						
Population size in 1750 (in thousands)*	87	16	6	62	0	570
Population growth by 1750, weighed by population in 1400*	87	3.3	2.1	5.1	0	40
Number of cities holding commercial fairs within 50km*	87	0.14	0	0.3	0	1
Number of canals within 50km*	87	0.48	0	0.77	0	3.67
<i>Cultural variables</i>						
Male literacy rate in 1786	87	35	30	26	0	90

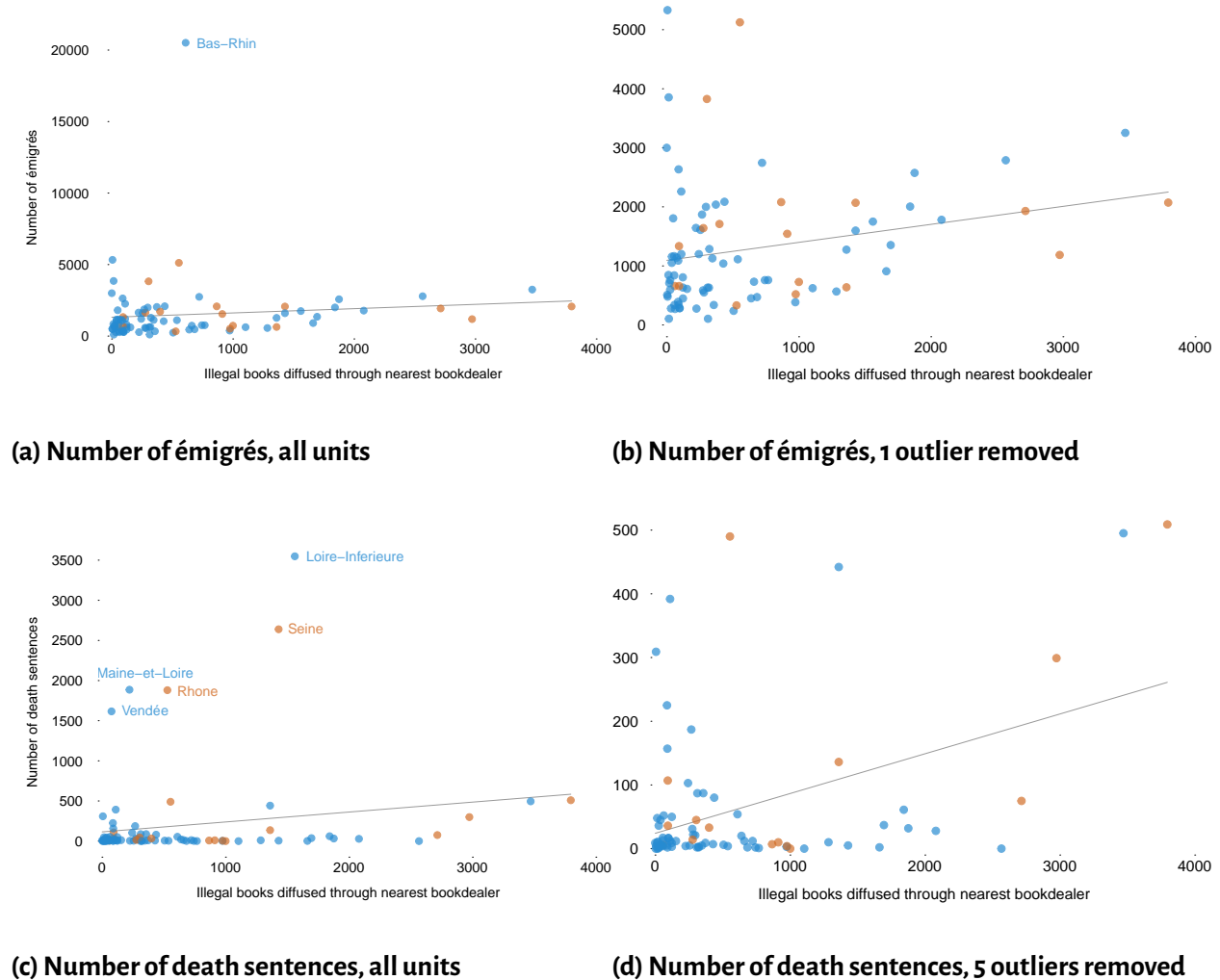
Notes: \* placed at the end of variable description denotes that data is observed at the level of the city whose mean values are used at the level of the *département*.

Source: See the Empirical Strategy section.

# Estimation Results

Before running regressions, it is of use to inspect bivariate relationships between outcome variables and the diffusion of illegal books. Figure 5 displays scatter plots for each of the two outcomes.

**Figure 5: Bivariate relations between outcome variables and the diffusion of illegal books.**



*Note:* Orange represents *départements* that house a major bookdealer city; blue does not. Outlying observations are identified on the left, which are dropped on the right. The y-axis scales are different in each panel.

*Source:* See Empirical Strategy section.

The top row shows the number of émigrés and the bottom row shows that of death sentences. In each panel, orange denotes those *départements* that house at least one major bookdealer city within

and a fitted linear line is displayed. The left panels include all observations while naming some *départements* whose values on the outcome variables appear to lie beyond the others. Panel (a), for instance, points out that Bas-Rhin, the easternmost *département* within which Strasbourg is located, has more than 20,000 individuals who emigrated from France and is obviously an outlier. Panel (c) does the same for the number of death sentences. The right panels re-displays the same relationships without those outliers, while adjusting the scale on the  $y$ -axis. Panels (b) and (d) indicate that the diffusion of illicit books has a positive relationship with both outcomes.

**Table 2: Bivariate relationships on the diffusion of illegal books.**

Dependent variable	Émigrés after the Revolution							
	All categories		Nobility		Clergy		Upper middle class	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Illegal books diffused by	0.300		0.132***		0.069**		-0.002	
– nearest bookdealer	(0.307)		(0.034)		(0.034)		(0.037)	
– highest-impact bookdealer		0.308		0.132***		0.071**		-0.00003
		(0.304)		(0.034)		(0.033)		(0.036)
Dependent variable	Death sentences after the Revolution							
	All categories		Nobility		Clergy		Upper middle class	
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Illegal books diffused by	0.124		0.013		0.007		0.015	
– nearest bookdealer	(0.075)		(0.010)		(0.004)		(0.012)	
– highest-impact bookdealer		0.124*		0.013		0.007		0.015
		(0.074)		(0.010)		(0.004)		(0.012)
Observations	87	87	87	87	87	87	87	87

Notes: “All categories” go beyond the nobility, clergy, and upper middle class to include others, such as the lower middle class, working class, peasants, and the unclassified. Intercept is dropped. \*\*\* denote  $p < 0.01$ , \*\*  $p < 0.05$ , and \*  $p < 0.1$ .

Table 2 documents the bivariate relations between the diffusion of illegal books and émigrés or death sentences.<sup>14</sup> When the number of émigrés is considered, illegal books in both measures are positively associated with three of the four outcomes but not with the upper middle class. Of the three, the nobility and clergy have a significant impact. By contrast, there seems to be positive but

<sup>14</sup>The full results are available in the Appendix.



virtually no significant associations with the number of death sentences. The only exception is the impact of illegal books spread by highest-intensity bookdealers on categories that include all social statuses (Model 10).

To estimate this relationship more systematically, I use the following equation:

$$\text{French Revolution}_i = \alpha + \beta \text{Diffusion of illegal books}_i + \gamma X_i + \epsilon_i. \quad (2)$$

French Revolution<sub>*i*</sub> here refers to either the number of émigrés or death sentences at the level of *département i*,  $\beta$  contains two types of diffusion and is my main parameter of interest, and  $\gamma$  represents a vector of covariates.

**Table 3: Impact of illegal-bestsellers diffusion on the number of émigrés.**

Dependent variable	Émigrés after the Revolution							
	All categories		Nobility		Clergy		Upper middle class	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Illegal books diffused by	0.234		0.102***		0.060		-0.016	
– nearest bookdealer	(0.335)		(0.037)		(0.038)		(0.039)	
– highest-impact bookdealer		0.264		0.102***		0.064*		-0.011
		(0.333)		(0.037)		(0.038)		(0.038)
Male literacy rate in 1786	-15.099	-15.344	-0.557	-0.591	-0.191	-0.228	-0.074	-0.099
	(10.627)	(10.633)	(1.177)	(1.178)	(1.207)	(1.206)	(1.221)	(1.224)
Access to post offices by 1690	263.616	259.917	-87.209	-89.639	-5.261	-6.509	81.381	82.096
	(626.237)	(625.321)	(69.387)	(69.273)	(71.142)	(70.955)	(71.981)	(71.985)
Log distance to Paris	367.339	374.152	-42.353	-40.301	34.123	35.560	94.836**	94.897**
	(355.806)	(355.862)	(39.423)	(39.422)	(40.420)	(40.380)	(40.897)	(40.966)
Log distance to Neuchâtel	-913.589	-898.442	-170.210***	-168.520**	-76.737	-74.561	-99.078	-97.310
	(577.011)	(577.391)	(63.933)	(63.963)	(65.550)	(65.516)	(66.323)	(66.467)
Elevation	-2.913	-2.882	-0.154	-0.157	-0.270	-0.267	-0.328	-0.320
	(2.164)	(2.159)	(0.240)	(0.239)	(0.246)	(0.245)	(0.249)	(0.248)
Terrain ruggedness	2.209	2.210	-0.092	-0.085	0.748	0.751	0.442	0.439
	(5.072)	(5.066)	(0.562)	(0.561)	(0.576)	(0.575)	(0.583)	(0.583)
Weighted log population growth by 1750	36.642	37.380	-0.887	-0.835	-0.148	-0.053	4.518	4.621
	(51.343)	(51.308)	(5.689)	(5.684)	(5.833)	(5.822)	(5.901)	(5.906)
Number of canals	590.178	597.762	6.169	9.291	40.462	42.359	123.615***	123.207***
within 50 km	(372.268)	(371.920)	(41.248)	(41.201)	(42.291)	(42.202)	(42.789)	(42.814)
Number of commercial fairs	-563.049	-575.053	23.950	22.551	-21.032	-22.777	-73.595	-74.962
within 50 km	(940.892)	(940.392)	(104.251)	(104.176)	(106.888)	(106.706)	(108.148)	(108.255)
Observations	87	87	87	87	87	87	87	87

Notes: “All categories” go beyond the nobility, clergy, and upper middle class to include others, such as the lower middle class, working class, peasants, and the unclassified. Intercept is dropped. \*\*\* denote  $p < 0.01$ , \*\*  $p < 0.05$ , and \*  $p < 0.1$ .

Table 3 introduces covariates on social, political, geographical, and economic dimensions. I present the results of fully-specified models for each social category, while those that estimate each of these dimensions in a step-wise fashion are available in the Appendix. When covariates are included, the direction of the impact of illicit books remains the same across all social groups. No covariates seem to explain the number of émigrés consistently. The illegal-books variables remain positively and significantly linked to nobles and clergymen, although the magnitude drops for one measure on the clergy (Model 5).

These also have substantive effects. To use the nearest bookdealer as the mode of illegal-book diffusion, 249 noblemen are estimated to be émigrés when a given city is exposed to a thousand illegal books. Similarly, 306 clergymen are expected to flee from France at the same number of books. When twice the number of books is circulated, the estimated effects become 351 nobles and 366 clergymen. Plots on the estimated substantive effects are available in the Appendix.

**Table 4: Impact of illegal-best sellers diffusion on the number of death sentences.**

Dependent variable	Death sentences after the Revolution							
	All categories		Nobility		Clergy		Upper middle class	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Illegal books diffused by	0.116		0.006		0.004		0.005	
– nearest bookdealer	(0.077)		(0.007)		(0.004)		(0.011)	
– highest-impact bookdealer	0.117		0.005		0.004		0.005	
	(0.076)		(0.007)		(0.004)		(0.011)	
Male literacy rate in 1786	–6.121**	–6.166**	–0.928***	–0.927***	–0.367***	–0.368***	–1.039***	–1.037***
	(2.427)	(2.429)	(0.235)	(0.235)	(0.120)	(0.120)	(0.345)	(0.346)
Access to post offices by 1690	3.057	0.376	–8.880	–9.047	–0.085	–0.196	–5.942	–6.123
	(143.013)	(142.844)	(13.833)	(13.833)	(7.059)	(7.058)	(20.333)	(20.330)
Log distance to Paris	–153.457*	–151.045*	–58.117***	–58.033***	–16.358***	–16.284***	–53.601***	–53.547***
	(81.255)	(81.291)	(7.859)	(7.872)	(4.011)	(4.017)	(11.552)	(11.570)
Log distance to Neuchâtel	76.938	79.309	–1.763	–1.843	–1.908	–1.900	–12.225	–12.435
	(131.772)	(131.895)	(12.746)	(12.772)	(6.504)	(6.517)	(18.735)	(18.772)
Elevation	0.118	0.116	0.041	0.040	0.019	0.019	0.047	0.046
	(0.494)	(0.493)	(0.048)	(0.048)	(0.024)	(0.024)	(0.070)	(0.070)
Terrain ruggedness	–0.744	–0.737	–0.012	–0.012	–0.032	–0.031	–0.090	–0.090
	(1.158)	(1.157)	(0.112)	(0.112)	(0.057)	(0.057)	(0.165)	(0.165)
Weighted log population growth by 1750	1.494	1.578	–0.204	–0.211	–0.048	–0.049	0.175	0.162
	(11.725)	(11.720)	(1.134)	(1.135)	(0.579)	(0.579)	(1.667)	(1.668)
Number of canals within 50 km	1.963	5.522	2.496	2.668	1.650	1.778	4.449	4.606
	(85.015)	(84.959)	(8.223)	(8.227)	(4.196)	(4.198)	(12.087)	(12.092)
Number of commercial fairs within 50 km	345.514	343.572	34.725*	34.782*	28.386***	28.376***	80.149**	80.309**
	(214.871)	(214.816)	(20.783)	(20.802)	(10.606)	(10.614)	(30.549)	(30.574)
Observations	87	87	87	87	87	87	87	87

Notes: “All categories” go beyond the nobility, clergy, and upper middle class to include others, such as the lower middle class, working class, peasants, and the unclassified. Intercept is dropped. Full results are available in the Appendix. \*\*\* denote  $p < 0.01$ , \*\*  $p < 0.05$ , and \*  $p < 0.1$ .

I undertake a similar exercise for the number of death sentences and present the results in Table 4. In contrast to emigration, they indicate that distance to Paris and male literacy rates are consistently associated with death sentences across all models. The distance variable suggests that *départements* closer to the capital tend to see greater numbers of capital punishments meted out. This is not surprising in that newly-installed revolutionary leaders would have an easier time finding supporters of ancien régime living in and around Paris. In addition, average literacy has negative and significant effects on death sentences. Its magnitude is pronounced in the all-inclusive category but substantially shrinks in individual categories. Negative coefficients suggest that literates tend to support the revolutionary regime or are opposed to ancien-régime elites. They also seem to suggest that those with average literacy tend not to be main consumers of the clandestine book market. If so, this finding supporting evidence that socially well-to-do folks are primary readers of the illegal books.<sup>15</sup>

The statistical analysis has thus far found that the diffusion of illegal books has the strongest effect on the nobility and clergy, particularly in those *départements* that experience a number of emigrations. The illicit book market, by contrast, does not seem to influence those nobles and clergymen who remained in France, got arrested, and received capital punishment. This exercise provides confirming evidence on the readership of this market, although the hypothesized effects appear to vary on the level of the *département*.

In the final analysis, I introduce a few indicator variables to account for unobserved factors that could determine the appetite for the clandestine book market. The first is whether the regional assembly was held. Given that French territorial expansion of territory occurred in a piecemeal fashion and that the state was unable to consolidate authority far afield, the monarchy allowed regional

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<sup>15</sup>This finding provides additional evidence for the argument by Joel Mokyr that it is important to distinguish between average literacy as explored in this paper and what he calls “upper-tail knowledge” whose density in the population may matter to welcome, adopt, and promote technological innovations (Mokyr 2016). For greater analyses providing quantitative evidence, see, for instance, Squicciarini and Voigtländer (2015).

powerholders seeking autonomy to hold provincial estates, i.e., regional assemblies, in exchange for collaboration in revenue generation (Beik 2005; Campbell 2012). Such self-rule could nurture a demand for illicit books. I draw on Kiser and Linton (2002), Blockmans (1976), and Swann (2012) to construct an indicator on whether a *département* held the assembly. Second, I create a similar indicator for whether a *département* was incorporated into France after the eighteenth century. Despite an early state-builder in European history, France fits well with the description of “composite states” where a state’s disparate units are held together by a mosaic of treaties, alliances, and marriages (Elliott 1992; Koenigsberger 1987). Parts of what is the French territory today, especially in the west, remained outside the French authority into the eighteenth century. This controls for unobserved developments that took place before incorporation, which could shape a demand for banned books. Third, I include an indicator for the *pays d’élection*. It is one of the three designations for the pre-revolutionary French provinces and constitutes the geographical center through the southwest. The *pays d’élection* is the longest-held domain of the crown and it is this province where the king reigned in more directly on fiscal matters (Mousnier 1979). A greater penetration of French authorities may reduce an incentive for receiving and circulating forbidden books. In short, the three indicators are designed to account for unobserved factors on political history, political institutions, and cultural and other developments prior to inclusion in French authority.

**Table 5: Impact of illegal-book diffusion on the nobility and clergy.**

Dependent variable	Émigrés				Death sentences			
	Nobility		Clergy		Nobility		Clergy	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Illegal books diffused by	0.090**		0.041		-0.0001		0.003	
-nearest bookdealer	(0.040)		(0.039)		(0.007)		(0.004)	
-highest-impact bookdealer		0.090**		0.090**		-0.001		0.003
		(0.040)		(0.040)		(0.007)		(0.004)
Covariates	✓	✓	✓	✓	✓	✓	✓	✓
Regional assembly indicator	✓	✓	✓	✓	✓	✓	✓	✓
<i>Pays d’élection</i> indicator	✓	✓	✓	✓	✓	✓	✓	✓
French rule after 1700 indicator	✓	✓	✓	✓	✓	✓	✓	✓
Observations	87	87	87	87	87	87	87	87

Notes: “All categories” go beyond the nobility, clergy, and upper middle class to include others, such as the lower middle class, working class, peasants, and the unclassified. \*\*\* denote  $p < 0.01$ , \*\*  $p < 0.05$ , and \*  $p < 0.1$ .

Table 5 documents the findings of models including these indicators. It focuses on the nobility and clergy for the outcome variables as these are the two social groups on which illicit books have had the strongest impact. The impact of illegal books remains positive and largely significant, which is reassuring in that the diffusion of these books is not determined by historical and institutional trends. By contrast, their effects on the nobles receiving death sentences seem to be affected by the provincial estates indicator, as the direction of the coefficient flips while the indicator is positive and significant. This suggests that capital punishments occur in a greater number where the assemblies used to be held.

A main finding of the statistical analysis is that the diffusion of illegal works has the strongest impact of those who fled from France, particularly the nobility and clergy. The effect is robust to inclusion of a host of covariates and a variety of indicators. At the same time, the impact on the same social categories with death sentences is largely positive but not significant. My analysis suggests that the distance to Paris plays a greater role than forbidden books in explaining the occurrences of the post-revolutionary justice. My evidence provides support for the idea that illegal books are more popular among the “upper tail” knowledge elites of pre-revolutionary France.

## Conclusion

This paper examines the extent to which print media play a role in major political change by focusing on the diffusion of illegal literature with respect to the French Revolution. Drawing primarily on [Darnton \(1995a\)](#), I construct a new data set to quantify the diffusion of forbidden books and assess its impact on the number of émigrés and the number of death sentences as proxies for the revolution. My statistical analysis indicates that illegal books have a positive impact on those who emigrated from France after 1789 and that their effect is significant on nobles and clergymen. This finding is consistent with Darnton’s argument that they were among the main consumers of the clandestine market. The effect is not found for the upper middle class, another socioeconomic group that may read these books, and for the all-inclusive category. Thus my second contribution is to specify social

groups over which the underground market would have had influence.

This paper draws an implication for understanding authoritarian survival in the contemporary context. I highlighted how print media channeling the unvarnished information and description of the sitting government play a crucial role in understanding political change. Given the growing restrictions on speech, booksellers and publishers turned to foreign printers whose profit motive helped shape the reader slant about the government. Despite stringent policies against smuggling, the state's border control remained ineffective and, as a result, more than 20,000 copies of subversive literature were distributed across the country. In today's authoritarian regimes, dissidents ignore state-owned media and bypass media restrictions by turning to foreign sources for "unfiltered" information. It can be argued that today the access cost is cheaper and the ability to share such information is easier thanks to mobile technologies. At the same time, countries such as China invest significant resources in their capacity to control the flow of information while disallowing foreign media services to provide service (Roberts 2018). How states cultivate their capacity to manage information flow could provide a framework for understanding authoritarian resilience.

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# Appendix for “Printed Drug”

March 27, 2021

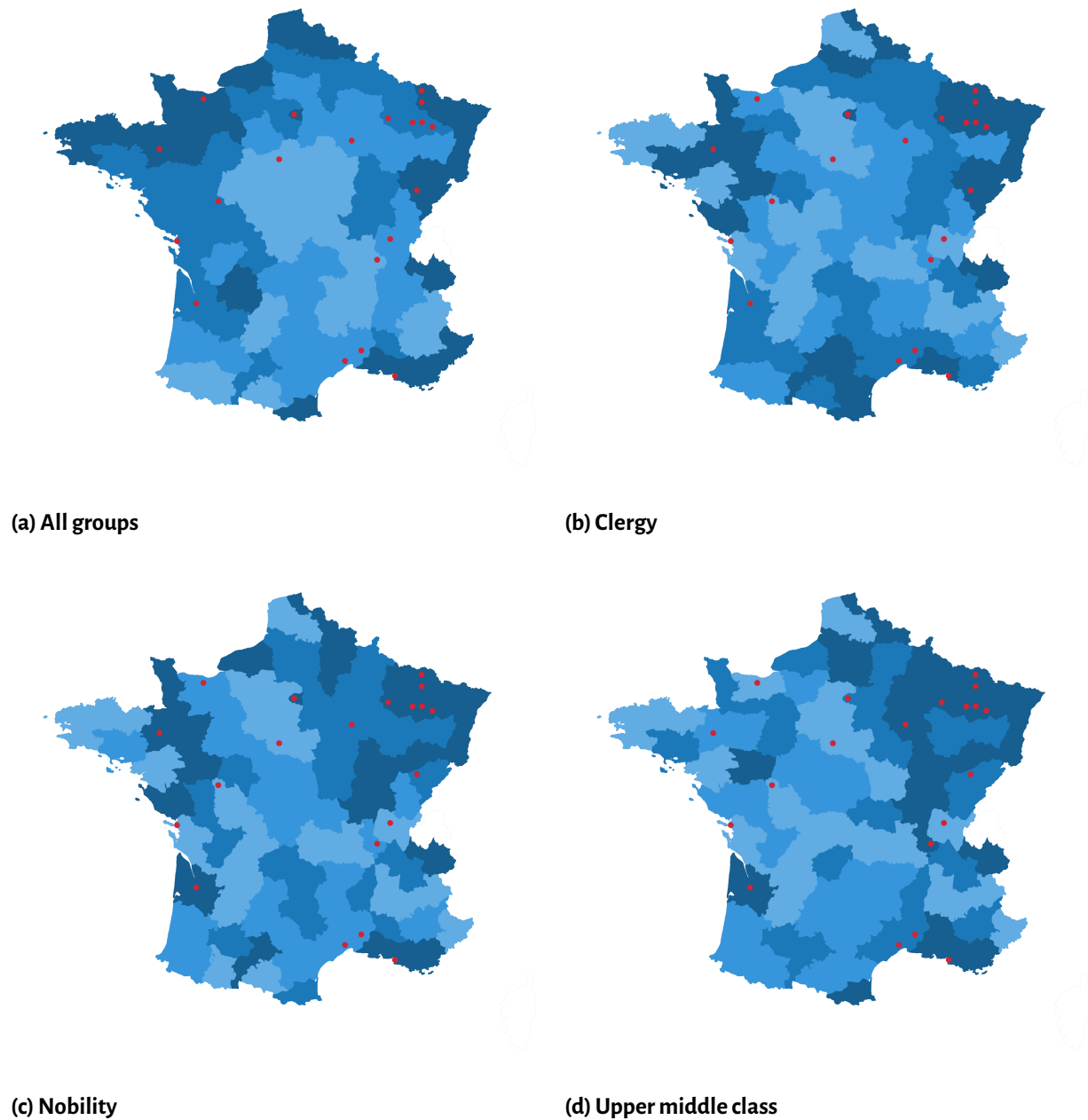
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# 1 Geographical Distribution of Émigrés by Social Status

These maps show the geographical distribution of émigrés by social category drawn from Donald Greer (1951). Panel (a) is used as Figure 1 (a) in the body.

**Figure A1**

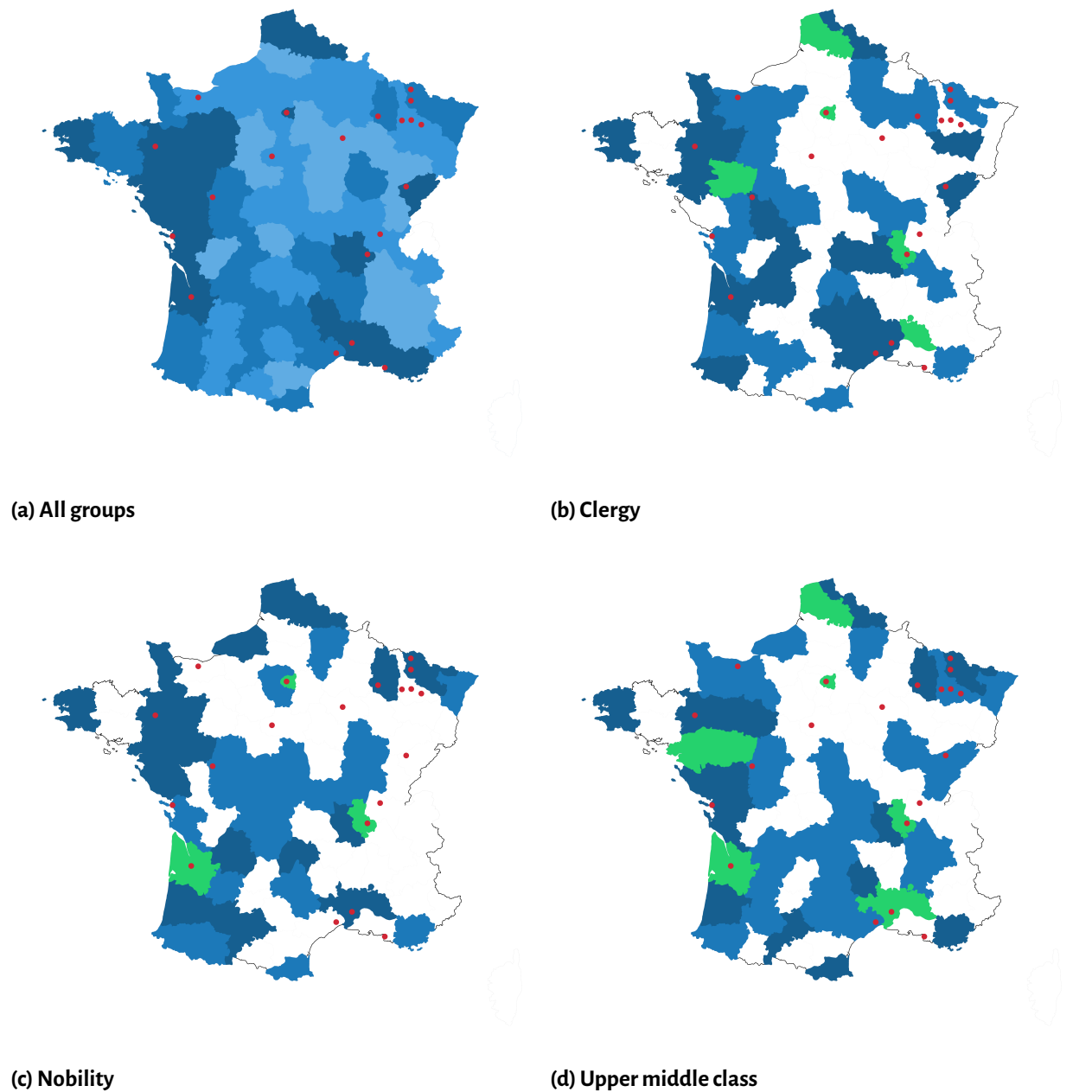


*Note:* Darker colors indicate higher intensity. Red dots denote the location of twenty major bookdealer cities identified in Darnton (1995b).

## 2 Geographical Distribution of Death Sentences by Social Status

These maps show the geographical distribution of death sentences by social category drawn from Donald Greer (1935). Panel (a) is used as Figure 1 (b) in the body. In Panels (b) through (d), the median is up to two incidents and the value of the first quantile is a zero. The white areas indicate the values below the median. I also highlight *départements* with more than fifty individuals with capital punishments in green.

Figure A2



Note: Darker colors indicate higher intensity. Red dots denote the location of twenty major bookdealer cities identified in Darnton (1995b).

### 3 Estimation Results

#### 3.1 Bivariate Estimates

Table A1 reports the full result of Table 2 of the main text.

**Table A1: Bivariate relationship between postrevolutionary émigrés and the diffusion of illegal books.**

Dependent variable	All categories		Nobility		Clergy		Upper middle class	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Illegal books diffused by nearest bookdealer	0.300 (0.307)		0.132*** (0.034)		0.069** (0.034)		-0.002 (0.037)	
highest-impact bookdealer		0.308 (0.304)		0.132*** (0.034)		0.071** (0.033)		-0.00003 (0.036)
Intercept	1,317.550*** (313.175)	1,316.495*** (309.531)	127.961*** (34.718)	129.427*** (34.251)	239.295*** (34.453)	239.384*** (34.017)	125.158*** (37.529)	123.994*** (37.109)
Observations	87	87	87	87	87	87	87	87

Notes: “All categories” go beyond the nobility, clergy, and upper middle class to include others, such as the lower middle class, working class, peasants, and the unclassified. \*\*\* denote  $p < 0.01$ , \*\*  $p < 0.05$ , and \*  $p < 0.1$ .

Table A2 reports the full result of Table 3 of the main text.

**Table A2: Bivariate relationship between death sentences and the diffusion of illegal books.**

Dependent variable	All categories		Nobility		Clergy		Upper middle class	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Illegal books diffused by nearest bookdealer	0.124 (0.075)		0.013 (0.010)		0.007 (0.004)		0.015 (0.012)	
highest-impact bookdealer		0.124* (0.074)		0.013 (0.010)		0.007 (0.004)		0.015 (0.012)
Intercept	114.595 (76.025)	116.046 (75.144)	5.261 (9.911)	5.459 (9.799)	6.191 (4.319)	6.310 (4.270)	12.958 (12.739)	13.337 (12.599)
Observations	87	87	87	87	87	87	87	87

Notes: “All categories” go beyond the nobility, clergy, and upper middle class to include others, such as the lower middle class, working class, peasants, and the unclassified. \*\*\* denote  $p < 0.01$ , \*\*  $p < 0.05$ , and \*  $p < 0.1$ .

### 3.2 Covariates Included, Émigrés

**Table A3: Impact of illegal-book diffusion on postrevolutionary émigrés, all groups.**

Dependent variable	All categories							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Illegal books diffused by nearest bookdealer	0.381 (0.312)		0.356 (0.312)		0.201 (0.329)		0.234 (0.335)	
highest-impact bookdealer		0.395 (0.309)		0.366 (0.311)		0.217 (0.327)		0.264 (0.333)
Male literacy rate in 1786	-12.930 (9.856)	-13.197 (9.874)	-12.629 (9.852)	-12.862 (9.874)	-13.824 (10.303)	-13.960 (10.313)	-15.099 (10.627)	-15.344 (10.633)
Access to post offices by 1690			595.233 (559.882)	584.671 (560.188)	302.204 (620.164)	298.722 (619.610)	263.616 (626.237)	259.917 (625.321)
Log distance to Paris					223.545 (307.177)	227.274 (307.403)	367.339 (355.806)	374.152 (355.862)
Log distance to Neuchâtel					-993.748* (565.616)	-985.601* (566.000)	-913.589 (577.011)	-898.442 (577.391)
Elevation					-3.109 (2.146)	-3.097 (2.140)	-2.913 (2.164)	-2.882 (2.159)
Terrain ruggedness					1.762 (5.039)	1.762 (5.036)	2.209 (5.072)	2.210 (5.066)
Weighted log population growth by 1750							36.642 (51.343)	37.380 (51.308)
Number of canals within 50 km							590.178 (372.268)	597.762 (371.920)
Number of commercial fairs within 50 km							-563.049 (940.892)	-575.053 (940.392)
Intercept	1,720.210*** (437.564)	1,725.903*** (434.473)	1,287.507** (597.343)	1,301.732** (594.756)	6,738.823 (4,160.783)	6,667.700 (4,164.125)	5,104.329 (4,325.028)	4,961.379 (4,333.946)
Observations	87	87	87	87	87	87	87	87

Notes: "All categories" go beyond the nobility, clergy, and upper middle class to include others, such as the lower middle class, working class, peasants, and the unclassified. \*\*\* denote  $p < 0.01$ , \*\*  $p < 0.05$ , and \*  $p < 0.1$ .



**Table A4: Impact of illegal-book diffusion on postrevolutionary émigrés, nobility.**

Dependent variable	Nobility							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Illegal books diffused by nearest bookdealer	0.130*** (0.035)		0.131*** (0.035)		0.104*** (0.036)		0.102*** (0.037)	
highest-impact bookdealer		0.131*** (0.035)		0.132*** (0.035)		0.104*** (0.036)		0.102*** (0.037)
Male literacy rate in 1786	0.287 (1.103)	0.223 (1.104)	0.275 (1.109)	0.208 (1.110)	-0.626 (1.121)	-0.661 (1.121)	-0.557 (1.177)	-0.591 (1.178)
Access to post offices by 1690			-23.398 (63.047)	-26.843 (62.968)	-85.774 (67.472)	-88.070 (67.376)	-87.209 (69.387)	-89.639 (69.273)
Log distance to Paris					-47.616 (33.420)	-46.512 (33.427)	-42.353 (39.423)	-40.301 (39.422)
Log distance to Neuchâtel					-169.299*** (61.537)	-168.085*** (61.547)	-170.210*** (63.933)	-168.520** (63.963)
Elevation					-0.163 (0.233)	-0.168 (0.233)	-0.154 (0.240)	-0.157 (0.239)
Terrain ruggedness					-0.075 (0.548)	-0.069 (0.548)	-0.092 (0.562)	-0.085 (0.561)
Weighted log population growth by 1750							-0.887 (5.689)	-0.835 (5.684)
Number of canals within 50 km							6.169 (41.248)	9.291 (41.201)
Number of commercial fairs within 50 km							23.950 (104.251)	22.551 (104.176)
Intercept	119.018** (48.982)	122.496** (48.572)	136.027** (67.265)	141.970** (66.853)	1,540.587*** (452.681)	1,531.741*** (452.806)	1,512.153*** (479.215)	1,493.133*** (480.113)
Observations	87	87	87	87	87	87	87	87

Notes: "All categories" go beyond the nobility, clergy, and upper middle class to include others, such as the lower middle class, working class, peasants, and the unclassified. \*\*\* denote  $p < 0.01$ , \*\*  $p < 0.05$ , and \*  $p < 0.1$ .

**Table A5: Impact of illegal-book diffusion on postrevolutionary émigrés, clergy.**

Dependent variable	Clergy							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Illegal books diffused by nearest bookdealer	0.069** (0.035)		0.070** (0.035)		0.062* (0.037)		0.060 (0.038)	
highest-impact bookdealer		0.071** (0.034)		0.072** (0.035)		0.064* (0.037)		0.064* (0.038)
Male literacy rate in 1786	-0.006 (1.095)	-0.048 (1.097)	-0.011 (1.102)	-0.055 (1.104)	-0.249 (1.156)	-0.279 (1.155)	-0.191 (1.207)	-0.228 (1.206)
Access to post offices by 1690			-9.509 (62.635)	-11.539 (62.608)	-3.585 (69.562)	-4.814 (69.424)	-5.261 (71.142)	-6.509 (70.955)
Log distance to Paris					22.485 (34.455)	23.355 (34.443)	34.123 (40.420)	35.560 (40.380)
Log distance to Neuchâtel					-83.034 (63.443)	-81.529 (63.417)	-76.737 (65.550)	-74.561 (65.516)
Elevation					-0.287 (0.241)	-0.288 (0.240)	-0.270 (0.246)	-0.267 (0.245)
Terrain ruggedness					0.736 (0.565)	0.738 (0.564)	0.748 (0.576)	0.751 (0.575)
Weighted log population growth by 1750							-0.148 (5.833)	-0.053 (5.822)
Number of canals within 50 km							40.462 (42.291)	42.359 (42.202)
Number of commercial fairs within 50 km							-21.032 (106.888)	-22.777 (106.706)
Intercept	239.485*** (48.628)	240.882*** (48.252)	246.397*** (66.825)	249.253*** (66.471)	626.394 (466.700)	613.826 (466.569)	502.597 (491.334)	480.969 (491.772)
Observations	87	87	87	87	87	87	87	87

Notes: "All categories" go beyond the nobility, clergy, and upper middle class to include others, such as the lower middle class, working class, peasants, and the unclassified. \*\*\* denote  $p < 0.01$ , \*\*  $p < 0.05$ , and \*  $p < 0.1$ .

**Table A6: Impact of illegal-book diffusion on postrevolutionary émigrés, upper middle class.**

Dependent variable	Upper middle class							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Illegal books diffused by nearest bookdealer	-0.002 (0.038)		-0.006 (0.038)		-0.018 (0.039)		-0.016 (0.039)	
highest-impact bookdealer		0.0004 (0.037)		-0.005 (0.037)		-0.016 (0.039)		-0.011 (0.038)
Male literacy rate in 1786	-0.053 (1.193)	-0.066 (1.196)	-0.001 (1.184)	-0.007 (1.187)	0.007 (1.226)	0.003 (1.228)	-0.074 (1.221)	-0.099 (1.224)
Access to post offices by 1690			103.225 (67.289)	103.175 (67.367)	89.950 (73.800)	90.476 (73.783)	81.381 (71.981)	82.096 (71.985)
Log distance to Paris					59.418 (36.554)	59.454 (36.606)	94.836** (40.897)	94.897** (40.966)
Log distance to Neuchâtel					-114.485* (67.309)	-113.875* (67.400)	-99.078 (66.323)	-97.310 (66.467)
Elevation					-0.379 (0.255)	-0.375 (0.255)	-0.328 (0.249)	-0.320 (0.248)
Terrain ruggedness					0.385 (0.600)	0.382 (0.600)	0.442 (0.583)	0.439 (0.583)
Weighted log population growth by 1750							4.518 (5.901)	4.621 (5.906)
Number of canals within 50 km							123.615*** (42.789)	123.207*** (42.814)
Number of commercial fairs within 50 km							-73.595 (108.148)	-74.962 (108.255)
Intercept	126.818** (52.969)	126.033** (52.638)	51.779 (71.792)	51.181 (71.525)	456.677 (495.135)	450.581 (495.866)	94.103 (497.129)	79.164 (498.911)
Observations	87	87	87	87	87	87	87	87

Notes: "All categories" go beyond the nobility, clergy, and upper middle class to include others, such as the lower middle class, working class, peasants, and the unclassified. \*\*\* denote  $p < 0.01$ , \*\*  $p < 0.05$ , and \*  $p < 0.1$ .

### 3.3 Covariates Included, Death Sentences

**Table A7: Impact of illegal-book diffusion on postrevolutionary death sentences, all groups.**

Dependent variable	All categories							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Illegal books diffused by nearest bookdealer	0.160** (0.074)		0.156** (0.074)		0.128* (0.075)		0.116 (0.077)	
highest-impact bookdealer		0.163** (0.073)		0.158** (0.074)		0.130* (0.075)		0.117 (0.076)
Male literacy rate in 1786	-5.898** (2.330)	-5.990** (2.333)	-5.839** (2.334)	-5.925** (2.338)	-6.255*** (2.348)	-6.304*** (2.349)	-6.121** (2.427)	-6.166** (2.429)
Access to post offices by 1690			116.565 (132.626)	112.328 (132.631)	28.528 (141.322)	25.785 (141.152)	3.057 (143.013)	0.376 (142.844)
Log distance to Paris					-201.395*** (69.999)	-199.888*** (70.029)	-153.457* (81.255)	-151.045* (81.291)
Log distance to Neuchâtel					112.520 (128.892)	114.544 (128.939)	76.938 (131.772)	79.309 (131.895)
Elevation					0.043 (0.489)	0.039 (0.488)	0.118 (0.494)	0.116 (0.493)
Terrain ruggedness					-0.551 (1.148)	-0.545 (1.147)	-0.744 (1.158)	-0.737 (1.157)
Weighted log population growth by 1750							1.494 (11.725)	1.578 (11.720)
Number of canals within 50 km within 50 km							1.963 (85.015)	5.522 (84.959)
Number of commercial fairs within 50 km within 50 km							345.514 (214.871)	343.572 (214.816)
Intercept	298.282*** (103.430)	301.868*** (102.639)	213.545 (141.500)	220.376 (140.815)	814.570 (948.155)	798.756 (948.622)	719.738 (987.703)	694.159 (990.016)
Observations	87	87	87	87	87	87	87	87

Notes: "All categories" go beyond the nobility, clergy, and upper middle class to include others, such as the lower middle class, working class, peasants, and the unclassified. \*\*\* denote  $p < 0.01$ , \*\*  $p < 0.05$ , and \*  $p < 0.1$ .

**Table A8: Impact of illegal-book diffusion on postrevolutionary death sentences, nobility.**

Dependent variable	Nobility							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Illegal books diffused by nearest bookdealer	0.017*		0.016		0.008		0.006	
	(0.010)		(0.010)		(0.007)		(0.007)	
highest-impact bookdealer		0.017*		0.016		0.007		0.005
		(0.010)		(0.010)		(0.007)		(0.007)
Male literacy rate in 1786	-0.597*	-0.606*	-0.590*	-0.598*	-0.963***	-0.963***	-0.928***	-0.927***
	(0.308)	(0.309)	(0.309)	(0.310)	(0.228)	(0.228)	(0.235)	(0.235)
Access to post offices by 1690			13.871	13.450	-6.427	-6.625	-8.880	-9.047
			(17.566)	(17.578)	(13.711)	(13.715)	(13.833)	(13.833)
Log distance to Paris					-63.680***	-63.652***	-58.117***	-58.033***
					(6.791)	(6.804)	(7.859)	(7.872)
Log distance to Neuchâtel					1.242	1.138	-1.763	-1.843
					(12.505)	(12.528)	(12.746)	(12.772)
Elevation					0.032	0.031	0.041	0.040
					(0.047)	(0.047)	(0.048)	(0.048)
Terrain ruggedness					0.008	0.009	-0.012	-0.012
					(0.111)	(0.111)	(0.112)	(0.112)
Weighted log population growth by 1750							-0.204	-0.211
							(1.134)	(1.135)
Number of canals within 50 km within 50 km							2.496	2.668
							(8.223)	(8.227)
Number of commercial fairs within 50 km within 50 km							34.725*	34.782*
							(20.783)	(20.802)
Intercept	23.856*	24.259*	13.772	14.501	394.809***	395.953***	377.009***	377.470***
	(13.687)	(13.592)	(18.741)	(18.662)	(91.991)	(92.170)	(95.536)	(95.871)
Observations	87	87	87	87	87	87	87	87

Notes: "All categories" go beyond the nobility, clergy, and upper middle class to include others, such as the lower middle class, working class, peasants, and the unclassified. \*\*\* denote  $p < 0.01$ , \*\*  $p < 0.05$ , and \*  $p < 0.1$ .

**Table A9: Impact of illegal-book diffusion on postrevolutionary death sentences, clergy.**

Dependent variable	Clergy							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Illegal books diffused by nearest bookdealer	0.009** (0.004)		0.008* (0.004)		0.006 (0.004)		0.004 (0.004)	
highest-impact bookdealer		0.009** (0.004)		0.008* (0.004)		0.005 (0.004)		0.004 (0.004)
Male literacy rate in 1786	-0.278** (0.134)	-0.282** (0.134)	-0.273** (0.134)	-0.277** (0.134)	-0.389*** (0.120)	-0.390*** (0.120)	-0.367*** (0.120)	-0.368*** (0.120)
Access to post offices by 1690			9.341 (7.590)	9.129 (7.596)	1.987 (7.195)	1.853 (7.196)	-0.085 (7.059)	-0.196 (7.058)
Log distance to Paris					-20.792*** (3.564)	-20.753*** (3.570)	-16.358*** (4.011)	-16.284*** (4.017)
Log distance to Neuchâtel					0.702 (6.562)	0.693 (6.573)	-1.908 (6.504)	-1.900 (6.517)
Elevation					0.012 (0.025)	0.012 (0.025)	0.019 (0.024)	0.019 (0.024)
Terrain ruggedness					-0.015 (0.058)	-0.015 (0.058)	-0.032 (0.057)	-0.031 (0.057)
Weighted log population growth by 1750							-0.048 (0.579)	-0.049 (0.579)
Number of canals within 50 km within 50 km							1.650 (4.196)	1.778 (4.198)
Number of commercial fairs within 50 km within 50 km							28.386*** (10.606)	28.376*** (10.614)
Intercept	14.837** (5.946)	15.062** (5.904)	8.047 (8.098)	8.438 (8.065)	131.907*** (48.270)	132.118*** (48.360)	118.917** (48.752)	118.672** (48.919)
Observations	87	87	87	87	87	87	87	87

Notes: "All categories" go beyond the nobility, clergy, and upper middle class to include others, such as the lower middle class, working class, peasants, and the unclassified. \*\*\* denote  $p < 0.01$ , \*\*  $p < 0.05$ , and \*  $p < 0.1$ .

**Table A10: Impact of illegal-book diffusion on postrevolutionary death sentences, upper middle class.**

Dependent variable	Upper middle class							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Illegal books diffused by nearest bookdealer	0.020 (0.013)		0.019 (0.013)		0.009 (0.011)		0.005 (0.011)	
highest-impact bookdealer		0.020 (0.012)		0.019 (0.013)		0.008 (0.011)		0.005 (0.011)
Male literacy rate in 1786	-0.705* (0.398)	-0.714* (0.399)	-0.692* (0.397)	-0.699* (0.398)	-1.085*** (0.343)	-1.084*** (0.344)	-1.039*** (0.345)	-1.037*** (0.346)
Access to post offices by 1690			25.500 (22.569)	25.058 (22.596)	0.147 (20.675)	-0.101 (20.679)	-5.942 (20.333)	-6.123 (20.330)
Log distance to Paris					-66.116*** (10.241)	-66.113*** (10.259)	-53.601*** (11.552)	-53.547*** (11.570)
Log distance to Neuchâtel					-4.536 (18.856)	-4.761 (18.889)	-12.225 (18.735)	-12.435 (18.772)
Elevation					0.028 (0.072)	0.026 (0.071)	0.047 (0.070)	0.046 (0.070)
Terrain ruggedness					-0.045 (0.168)	-0.044 (0.168)	-0.090 (0.165)	-0.090 (0.165)
Weighted log population growth by 1750							0.175 (1.667)	0.162 (1.668)
Number of canals within 50 km within 50 km							4.449 (12.087)	4.606 (12.092)
Number of commercial fairs within 50 km within 50 km							80.149** (30.549)	80.309** (30.574)
Intercept	34.906* (17.654)	35.479** (17.540)	16.369 (24.079)	17.299 (23.990)	455.155*** (138.711)	457.454*** (138.972)	419.967*** (140.427)	421.595*** (140.903)
Observations	87	87	87	87	87	87	87	87

Notes: "All categories" go beyond the nobility, clergy, and upper middle class to include others, such as the lower middle class, working class, peasants, and the unclassified. \*\*\* denote  $p < 0.01$ , \*\*  $p < 0.05$ , and \*  $p < 0.1$ .

### 3.4 Historical Indicators Included

**Table A11: Impact of illegal-book diffusion on the nobility and clergy.**

Dependent variable	Émigrés				Death sentences			
	Nobility		Clergy		Nobility		Clergy	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Illegal books diffused by	0.090**		0.041		-0.0001		0.003	
-nearest bookdealer	(0.040)		(0.039)		(0.007)		(0.004)	
-highest-impact bookdealer		0.090**		0.090**		-0.001		0.003
		(0.040)		(0.040)		(0.007)		(0.004)
Male literacy rate in 1786	-0.502	-0.520	-0.495	-0.520	-0.821***	-0.818***	-0.337***	-0.336***
	(1.243)	(1.243)	(1.228)	(1.243)	(0.234)	(0.234)	(0.122)	(0.123)
Access to post offices by 1690	-93.814	-95.740	-22.033	-95.740	-13.055	-13.105	-1.393	-1.474
	(70.823)	(70.694)	(69.962)	(70.694)	(13.314)	(13.301)	(6.979)	(6.975)
Log distance to Paris	-42.490	-40.354	28.363	-40.354	-54.600***	-54.630***	-15.019***	-14.963***
	(41.248)	(41.258)	(40.746)	(41.258)	(7.754)	(7.763)	(4.065)	(4.070)
Log distance to Neuchâtel	-169.024**	-168.260**	-17.075	-168.260**	6.770	6.646	2.773	2.748
	(69.699)	(69.671)	(68.851)	(69.671)	(13.103)	(13.108)	(6.868)	(6.874)
Elevation	-0.134	-0.138	-0.217	-0.138	0.046	0.046	0.020	0.020
	(0.245)	(0.244)	(0.242)	(0.244)	(0.046)	(0.046)	(0.024)	(0.024)
Terrain ruggedness	-0.207	-0.194	0.391	-0.194	-0.057	-0.057	-0.044	-0.044
	(0.593)	(0.592)	(0.585)	(0.592)	(0.111)	(0.111)	(0.058)	(0.058)
Weighted log population growth	-0.738	-0.730	2.128	-0.730	-0.018	-0.025	0.061	0.059
by 1750	(5.846)	(5.840)	(5.775)	(5.840)	(1.099)	(1.099)	(0.576)	(0.576)
Number of canals	-1.145	1.805	38.630	1.805	2.863	2.830	2.623	2.705
within 50 km	(42.927)	(42.950)	(42.405)	(42.950)	(8.070)	(8.081)	(4.230)	(4.237)
Number of commercial fairs	23.769	21.747	-0.502	21.747	28.306	28.425	26.214**	26.196**
within 50 km	(108.016)	(107.996)	(106.702)	(107.996)	(20.306)	(20.319)	(10.644)	(10.655)
Regional assembly indicator	104.499	103.751	157.659	103.751	75.093***	75.526***	22.060	22.207*
	(135.131)	(134.968)	(133.486)	(134.968)	(25.404)	(25.394)	(13.316)	(13.316)
<i>Pays d'élection</i> indicator	-35.502	-32.941	-71.775	-32.941	7.555	7.435	5.725	5.759
	(68.562)	(68.653)	(67.728)	(68.653)	(12.889)	(12.917)	(6.756)	(6.773)
French rule after 1700 indicator	-25.385	-27.604	188.073*	-27.604	18.837	18.836	14.870	14.798
	(97.627)	(97.534)	(96.439)	(97.534)	(18.353)	(18.351)	(9.620)	(9.623)
Intercept	1,531.115***	1,515.530***	209.471	1,515.530***	302.525***	303.780***	79.586	79.583
	(517.149)	(517.883)	(510.856)	(517.883)	(97.221)	(97.439)	(50.960)	(51.094)
Observations	87	87	87	87	87	87	87	87

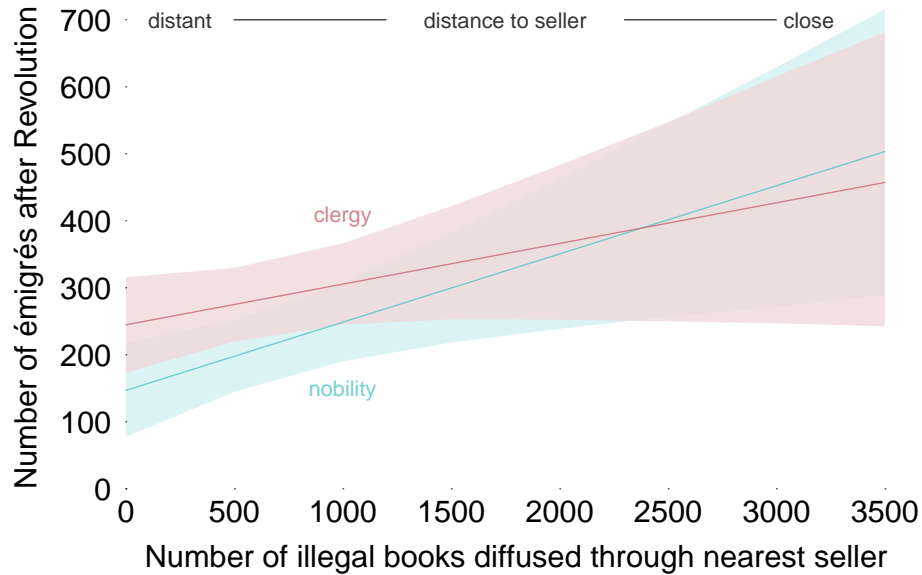
Notes: "All categories" go beyond the nobility, clergy, and upper middle class to include others, such as the lower middle class, working class, peasants, and the unclassified. \*\*\* denote  $p < 0.01$ , \*\*  $p < 0.05$ , and \*  $p < 0.1$ .



### 3.5 Plots on Substantive Effects

These plots graphically show substantive effects of nobles and clergymen who emigrated from France, in Figure A3, or received death sentences in the Post-revolutionary Tribunal, in Figure A4. In Figure A3, the nobility estimates come from Model 7 of Table A4 and the clergymen estimates come from Model 7 of Table A5. Similarly, in Figure A4, the nobility estimates come from Model 7 of Table A8 and the clergymen estimates come from Model 7 of Table A9.

**Figure A3: Outcome variable: Number of émigrés after the French Revolution.**



**Figure A4: Outcome variables: Number of death sentences after the French Revolution.**

