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Mapping the Grandes Gabelles in Early Modern France*

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Abstract

The *gabelle* salt tax system was a cornerstone of the fiscal apparatus of the early modern French state. This article introduces a novel historical geographic information system (GIS) of this institution's spatial organization as of the seventeenth century, drawing on an original 1665 manuscript map collection: Sanson's *Atlas des gabelles*. Beyond presenting the dataset and documenting its construction methodology, we provide a detailed account of the functioning of the gabelle, situate the French case in comparative perspective, and illustrate how the availability of this fine-grained dataset expands the possibilities of empirical research in economic history, historical demography, and historical political economy of early modern France.

JEL codes N01, N43, H22, C82

Keywords Administrative Boundary, Historical Geographic Information System, Gabelle, Taxation, Ancien Régime, France

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1. Introduction

Applied economic history of early modern France is a dynamic and growing field, in part because the fragmented nature of Ancien Régime's institutions creates rich sources of quasi-experimental variation. This makes France an ideal setting for identifying the consequences of state-building across a wide range of outcomes, from national identity formation (Johnson, 2019) to contemporary living standards (Degrave, 2023), demographic dynamics (Gay, Gobbi, and Goñi, 2025), social conflict (Albertus and Gay, 2025; Davoine, Enguehard, and Kolesnikov, 2025; Giommoni, Loumeau, and Tabellini, 2026), and long-run development (Giommoni and Loumeau, 2026). Yet the unavailability of fine-grained spatial data on these institutions has largely constrained existing work to exploiting variation across relatively broad administrative entities—for instance between areas inside versus outside the *Cinq Grosses Fermes* or the *Grandes Gabelles*, or between *pays d'élection* and *pays d'état*. Such comparisons, however, warrant caution because these broad jurisdictions bundled multiple institutional differences. More broadly, the lack of fine-grained data has led the literature to overlook the substantial institutional heterogeneity *within* these areas, even though it was at the core of the state-building logic of the early modern French state.

We address these limitations by introducing a novel historical geographic information system (GIS) of the *gabelle du sel* (salt tax, henceforth gabelle) in early modern France. A cornerstone of the monarchy's finances from the mid-thirteenth century onward, the gabelle provides an insightful setting for understanding the expansion of fiscal capacity in a consolidating state (Touzery, 2024). Our focus is especially relevant because salt taxation accounted for a substantial share of government revenue in early modern France and served as a common fiscal instrument across Europe as well as major empires, including Qing China, Imperial Russia, Habsburg Austria, and the Ottoman Empire (Hocquet, 1985, 1987; Adshead, 1992). Importantly, a defining feature of the French system was its pronounced spatial heterogeneity—both across and within gabelle areas—reflecting the institutional complexity of the Ancien Régime. By relying on parish-level information, our GIS makes it possible to exploit the substantial institutional variation within the main gabelle area and uncover differences that are generally concealed at a broader scale.

We draw on a rich but hitherto seldom used administrative archival source: Sanson's (1665) *Atlas des gabelles*. This atlas contains maps that precisely delineate the boundaries of the 249 gabelle jurisdictions of the *Pays de Grandes Gabelles* (henceforth, Grandes Gabelles area) with parish-level precision, together with quantitative information on populations, salt prices, and salt sales—this area encompassed the northern half of France and generated

most gabelle revenues. Drawing on this unique archival source, we provide researchers with a fine-grained spatial representation of the main area of the gabelle fiscal system together with quantitative information on the salt tax.

Contributions Our first contribution is to construct and make available a historical GIS derived from an exceptionally early and detailed cartographic source. We build on a small but growing body of research that reconstructs historical administrative geographies using GIS techniques (e.g., Castro Redondo, 2019; Ostafin et al., 2020; Stapel, 2023; Gay, Gobbi, and Goñi, 2024*a*, 2024*b*; Oto-Peralías, 2025). Yet few historical GISs predate the eighteenth century—one exception for early modern Europe is Stapel's (2023) GIS of the Low Countries. To our knowledge, our dataset is the first to provide internal administrative boundaries for such a large area of France's territory at such an early date, let alone with parish-level precision.[1]

A second distinctive feature of our work is its focus on a *fiscal* institution. By reconstructing the geography of gabelle jurisdictions, we provide one of the earliest historical GISs on fiscal institutions for early modern Europe, enabling a deeper understanding of the gabelle tax system. While earlier scholars have drawn on Sanson's (1665) atlas, they did so primarily to document demographic and salt consumption dynamics rather than to exploit the spatial granularity of its maps (Cabourdin, 1969; Le Roy Ladurie and Recurat, 1972; Dupâquier, 1979). By contrast, we disseminate shapefiles and datasets that provide jurisdiction-level information and are readily usable for empirical research. Although this administrative layer is coarser than the parish level with 249 units, it offers unique and rich data on local taxation and populations (including by social groups) more than a century before the first population census conducted in 1793. Our data therefore make it possible to study the gabelle tax system in depth and to leverage spatial variation in local taxation, whether as an object of interest or as a control variable.

Our third contribution is to facilitate causal inference by addressing the identification challenges posed by overlapping administrative boundaries. Existing research routinely implements regression discontinuity designs leveraging boundaries of broad administrative entities of early modern France, including the Grandes Gabelles area (e.g., Giommoni and Loumeau, 2026). Yet these often overlapped with other institutional boundaries, turning the discontinuity of interest into a bundled treatment—for instance, stretches of

[1]Several historical atlases of France provide GISs for a range of early modern institutions. For instance, Zadora-Rio's (2014) *Archaeological Atlas of Touraine* includes a GIS of gabelle jurisdictions (Gorry, 2014), but its scope is limited to the *département* of Indre-et-Loire. Likewise, other historical (print) atlases such as Vallez, Gouhier, and Vallez's (1993) *Historical Atlas of Normandy* or Pélaquier's (2009) *Historical Atlas of the Languedoc Province* are confined to a single province. By contrast, our dataset spans more than one third of the territory of France.

the Grandes Gabelles boundary also marked the limits of several *bailliages* jurisdictions and *généralités*, as well as parts of the Parliament of Paris. As a result, discontinuities in outcomes observed at the Grandes Gabelles boundary may not always be credibly attributed to changes in the salt tax alone. By contrast, our GIS enables research designs to rely on discontinuities between more granular and single-purpose administrative units rather than on overlapping boundaries that may conflate multiple jurisdictions. Our work thereby expands the scope for empirical research in economic history, historical demography, and historical political economy of early modern France.

This article is organized as follows. Section 2 provides an overview of the gabelle tax system, with particular attention to its administration in the Grandes Gabelles area. Section 3 details the construction methodology of our historical GIS, and Section 4, the contents of the data files we distribute. Finally, Section 5 presents potential applications of our data and highlights empirical questions they can address.

2. The Gabelle Tax System

Taxation in Ancien Régime France The fiscal system of Ancien Régime France combined direct and indirect taxes (Touzery, 2024). Direct taxes included the *taille* (a levy borne primarily by commoners), the *capitation* (a head tax introduced in 1695), and the *vingtième* (an additional levy on income and property established in the early eighteenth century as the *dixième*). Indirect taxes included various *aides* (consumption taxes, mostly on alcoholic beverages), *traites* (internal customs duties), and the gabelle. In addition to these taxes, various duties had to be paid to the king, such as duties on tobacco, over which the state had a monopoly. The gabelle was among the state's most lucrative revenue sources as it accounted for as much as 25 percent of total tax revenue (Panel a of Appendix Figure A.1), making it the most substantial indirect tax in early modern France (Panel b).

The gabelle The term *gabelle* referred both to the fiscal system of salt taxation and to the broader state monopoly over salt distribution.[2,3] In the High Middle Ages, it denoted a class of indirect taxes on various agricultural and industrial products—including wine,

[2]For a general account of the history and functioning of the gabelle tax system, see, e.g., Cochois (1902), Beaulieu (1903), Pasquier (1905), Sands and Higby (1949), and Touzery (2024, pp. 686–733).

[3]Salt played a vital role in everyday life as the indispensable preservative for curing meats and for salting and drying fish and other foods (Audouy, 1968). It also served as a key dietary supplement for livestock. In some places, salt formed part of in-kind wages—the French term *salaire* derives from the Latin *salarium*, itself a derivative of *sal* ("salt"). The original meaning likely referred either to payment in salt or to a monetary payment intended for its purchase.

cloth, and wheat. From 1342 onward and Philippe VI's letters patent, together with Charles V's 1366 ordinance, the term became associated specifically with salt taxation, although the system was not comprehensively codified until Louis XIV's 1680 ordinance.[4] A further series of edicts in 1726–27 consolidated the structure of the gabelle administration by reorganizing its jurisdictions, a structure that remained largely intact until the gabelle was abolished during the Revolution.[5]

Over the early modern period, the gabelle fiscal system was divided into six taxation regions, each governed by distinct regulations (Figure 1): the Grandes Gabelles, the Petites Gabelles, the Salterns areas (*pays de salines*), the Quarter-Boiling areas (*pays de quart-bouillon*), the redeemed areas, and the gabelle-exempt areas.[6] In the Grandes Gabelles, the monarchy enforced a strict monopoly with compulsory purchase requirements; in the Petites Gabelles, a monopoly was also enforced but with lower prices and no compulsory purchases; the Salterns areas benefited from local salt production with regulated prices; in the Quarter-Boiling areas, reduced rates were also tied to nearby salt works; the redeemed areas had bought tax exemption through lump-sum payments; and the gabelle-exempt areas paid no gabelle at all. These institutional disparities translated into large and persistent differences in the price of salt across the kingdom. For instance, in the late eighteenth century, salt was sold for about 60 *livres tournois* per *minot* in the Grandes Gabelles area, but only for 2 livres in Brittany, a gabelle-exempt province.[7,8]

These price differentials created strong incentives for salt smuggling across gabelle

[4] Appendix Table A.1 provides a list of the edicts, letters patents, ordinances, and laws relative to the gabelle from 1342 to 1794.

[5] For an account of the debates and reform initiatives during the Revolution that ultimately led to the abolition of the gabelle, see Karmin (1912). Subsequent regimes reintroduced a salt tax in various forms—notably in 1806 under Napoléon I—until its final repeal under the Fourth Republic (Chazelas, 1968).

[6] This six-region system lasted from the mid-sixteenth century to the Revolution. It emerged in the wake of the union with Brittany in 1532 and the Southwest's exemption in 1549, following the Revolt of the Pitauds. Subsequent territorial gains—most notably Artois in the north with the 1659 Treaty of the Pyrenees and Franche-Comté in the east with the 1678 Treaties of Nijmegen—ultimately left the Grandes Gabelles area entirely embedded within the French territory.

[7] The minot was the standard unit for measuring salt, equivalent to about 50 liters, weighing 100 livres (about 49 kilograms) by the Paris measure—though the actual weight of a minot of salt varied according to the season and the type of salt (Legay, 2023*b*).

[8] Appendix Table A.2 reports average salt prices across gabelle areas based on Necker's (1781) *Carte des gabelles*, also shown in Figure 1. Our comparative account relies on late eighteenth-century prices because no single source reports salt prices for all gabelle areas in the late seventeenth century. Crucially, the 1781 relative price structure within the Grandes Gabelles was broadly comparable to that in 1665: base salt prices were fixed soon thereafter by the 1680 ordinance and subsequent increases were driven primarily by surcharges applied uniformly across the Grandes Gabelles—a combination of *droits manuels* and *sols pour livres* (Touzery, 2024, p. 689). As a result, relative prices across gabelle areas remained largely stable over time, even as absolute price levels rose. The main exception is Burgundy, where prices increased more than elsewhere because the Estates of Burgundy levied an exceptionally large surcharge on salt to finance public works—the *crues locales*, amounting to 10 pound per minot by the late eighteenth century (Jalley, 1958, pp. 74–80).

frontiers (Durand, 1974; Huvet-Martinet, 1978*a*, 1978*b*; Collas, 2000). In high-tax areas—especially in the Grandes Gabelles—households frequently purchased illicit salt supplied by salt smugglers (*faux-sauniers*) from lower-tax or exempt regions in order to circumvent the prohibitively high official prices. In response, the state sought to suppress this illicit trade by strengthening law enforcement and, from the mid-eighteenth century onward, by establishing specialized courts devoted to prosecuting salt smugglers (Huvet-Martinet, 1977; Kwass, 2013; Evrard, 2024).[9] As a result, the Grandes Gabelles frontiers were zones of persistent contention, marked by recurrent confrontations between salt smugglers and *gabelous*, the tax-collection agents of the gabelle administration (Nicolas, 2002, pp. 56–67).[10] More broadly, this tax system produced exceptionally high levels of popular hostility, as the gabelle was the tax most frequently cited in the 1789 *cahiers de doléances*, with grievances disproportionately concentrated in the Grandes Gabelles area (Shapiro and Markoff, 1998, pp. 270–74; Davoine, Enguehard, and Kolesnikov, 2025, Figure 6, p. 23).[11]

The Grandes Gabelles area was the largest and most heavily taxed region, providing the central state with the bulk of its salt-tax revenues.[12,13] Within this region, the monarchy held an exclusive monopoly over salt as its consumption was legally mandatory and its distribution was restricted to designated outlets: salt granaries (*greniers à sel*).[14] Each salt granary operated under the authority of a president and was administered by a *grenetier*, responsible for purchasing salt from producers, inspecting its quality, and retailing it to

[9]The 1680 ordinance prescribed nine years in the galleys and a 500-livre fine—equivalent to two years of wages—for armed salt smugglers operating in groups and imposed the death penalty for repeat offenders. In 1704, new provisions further hardened these sanctions, making armed smugglers liable to execution from the first offense (Nicolas, 2002, p. 41).

[10]Indeed, Jean Nicolas's (2002) survey of social conflicts in early modern France records 2,191 salt-smuggling related events between 1661 and 1789—26 percent of all entries in the database (Gay, 2025).

[11]Instances of such grievances abound. Among others, inhabitants of the parish of Moulignon in the Enghien valley stated: "The gabelle, this utterly iniquitous tax, must be abolished [. . .]; it is appalling that Brittany and other provinces pay only 2 *liards* per pound of salt, while we are compelled to pay 14 *sous*, and often, through the retailer's greed, it is even filled with dirt and ashes" [La gabelle, cet impôt si inique, doit être proscrit [. . .]; il est affreux que la Bretagne et d'autres provinces payent le sel 2 liards la livre et que nous soyons obligés de le payer 14 sous, et souvent même par la cupidité des débitants se trouve-t-il rempli de terre et de cendres] (*Cahier des plaintes, doléances et remontrances des habitants de la paroisse de Moulignon*, art. 7, available at https://sul-philologic.stanford.edu/philologic/archparl/navigate/4/2/19/268/, accessed February 2026).

[12]The Grandes Gabelles comprised the following regions, depicted by the white central area in Figure 1: Île-de-France, Soissonnais, Picardy, Champagne, Orléanais, Touraine, Bourbonnais, Berry, Normandy, Burgundy, Nivernais, and Anjou.

[13]Necker's (1784, pp. 6–13) estimates imply that the Grandes Gabelles generated 78.5 percent of total salt-tax receipts in the late eighteenth century.

[14]The term *grenier à sel* referred both to gabelle jurisdictions and to salt storage and distribution outlets. For clarity, we use the term *greniers à sel* to refer to gabelle jurisdictions and the term *salt granaries* to refer to salt storage and distribution outlets.

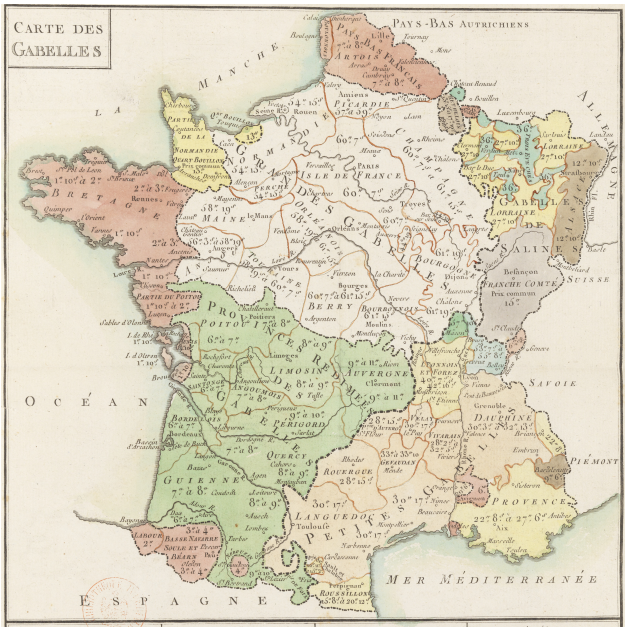

Figure 1. Map of Gabelle Areas in 1781

Notes. This figure displays the spatial distribution of gabelle taxation areas based on Necker's (1781) *Carte des gabelles* available at https://gallica.bnf.fr/ark:/12148/bpt6k851249h/f131.

the public. He was supported by a staff of gabelle agents, including a comptroller, a clerk, a prosecutor, and a measurer (Legay, 2023*a*).[15] Although salt consumption was compulsory throughout the Grandes Gabelles area, enforcement operated through two salt-taxation regimes: voluntary-sale granaries (*greniers de vente volontaire*) and compulsory-sale granaries (*greniers à sel d'impôt*).[16] Under the voluntary-sale regime, *gabelants*—individuals liable to the salt tax—were required to annually purchase one minot of salt per fourteen individuals over eight years old. This mandated quantity (*devoir de gabelle*) was limited to immediate household consumption (*pour pot et salière*). These granaries were termed "voluntary" because gabelants could buy salt there at any time. In addition, voluntary-sale granaries in Burgundy—essentially, the généralité of Dijon—operated under a more flexible regime, termed free-sale granaries (*greniers de vente libre*).[17] Therein, individuals could provision salt freely at any time and were not subject to mandatory consumption

[15] Bonhoure, Musy, and Tallec's (2024) database provides detailed information on the venality of administrative positions in the mid-seventeenth century, including those held by gabelle agents.

[16] Throughout the Grandes Gabelles area, several categories of individuals were exempt from the salt tax under the *privilège de franc-salé*, including members of sovereign courts, royal officers, holders of certain lordships, the indigent, and soldiers. Members of the nobility and the clergy were generally not exempt, unlike their treatment under most other taxes (Pasquier, 1905, pp. 52–55).

[17] This privilege had been in place at least since the March 4, 1663 royal declaration and was reaffirmed by the July 13, 1700 ruling of the Council of State (Jalley, 1958, pp. 67–73). It remained in place until the salt tax was abolished during the French Revolution.

requirements (Pasquier, 1905, pp. 14–15; Jalley, 1958, pp. 67–73; Touzery, 2024, p. 709). By contrast, under the compulsory-sale regime, gabelants had to accept delivery from gabelous on a fixed date and to pay the required charge. In these granaries, the mandated quantity of salt (*sel d'impôt*) was set by apportionment and could thus be even larger, while also being enforced more strictly.[18] Therein, the gabelle thus effectively functioned as a direct tax. This stricter system was designed to limit fraud and to deter smuggling from neighboring exempt or lower-tax regions, as this setting reduced both the incentives and opportunities to obtain salt illegally. In all granaries, additional salt—especially for preserving foodstuffs—could be purchased beyond the mandated quantity, with the gabelle similarly incorporated into the administered retail price of salt.

The right to distribute salt was itself delegated to private tax farmers under multi-year leases in exchange for substantial fees paid to the king (Bayard, 1987).[19] The absence of competition enabled them to charge consumers high prices in order to maximize rent extraction, thereby generating substantial private profits while securing significant revenues for the state (White, 2004; Johnson and Koyama, 2014).

3. A Historical GIS of Seventeenth-Century Grandes Gabelles

Sanson's (1665) *Atlas des gabelles* Our historical GIS of the Grandes Gabelles area draws on Sanson's (1665) *Atlas des gabelles*.[20] This atlas constitutes a synthesis of the answers to gabelle-related questions by local administrators collected through the inquiry ordered by the chief minister of France Jean-Baptiste Colbert in April–May 1664 (Dainville, 1968, pp. 27–28; Cabourdin, 1969, p. 294).[21] It comprises 21 maps—each covering a *généralité* or gabelle *département*—that precisely delineate the boundaries of gabelle jurisdictions. These jurisdictions were characterized by the type of outlet through which salt was distributed: most commonly salt granaries (*greniers à sel*), but also salt chambers (*chambres à sel*)

[18] In compulsory-sale granaries, privileged groups—nobles, clergy, and certain privileged farmers and bourgeois—were exempt from apportionment and instead purchased salt at the voluntary-sale price.

[19] For instance, at the time of the publication of Sanson's (1665) atlas, the lease was sold for 13.8 million livres per year over a nine-year period running from 1663 to 1672 (Moreau de Beaumont, 1768, p. 45).

[20] A digital copy of this manuscript atlas is available at the Bibliothèque nationale de France: https://gallica.bnf.fr/ark:/12148/btv1b525091213. We work from a higher-resolution TIFF version that we scanned at the University of Chicago Library.

[21] For further details on Colbert's 1664 inquiry (the *Enquête Colbert*), see Gille (1964, pp. 24–26). Nicolas Sanson, then royal geographer and himself from a long line of administrative cartographers (Pastoureau, 1982; Pelletier, 2007), was appointed by Colbert to draw maps based on the responses to this inquiry (Pelletier, 2007, p. 1497). The atlas itself, however, is signed "Sanson le fils," which suggests that its actual author was one of Nicolas Sanson's sons (Adrien or Guillaume), both of whom also served as royal geographers (Cabourdin, 1969, pp. 293–94).

and salt depots (*magasins à sel*), which operated in the same way as salt granaries.[22] In addition, several jurisdictions on the southwestern periphery of the Grandes Gabelles—within 5 *lieues* (about 20 kilometers) of the frontier with redeemed areas—were designated as control zones (*contrôles*) by Louis XIV's 1660 edict and placed under heightened surveillance to curb salt smuggling. The map of the généralité of Bourges is reproduced in Figure 2. Appendix Table A.3 lists all the maps and jurisdictions included in the atlas.[23]

Figure 2. Gabelle jurisdictions of the Généralité of Bourges

Notes. This figure reproduces the map of the généralité of Bourges from Sanson's (1665) *Atlas des gabelles*.

Each map is followed by a statistical table that reports, for each jurisdiction, the number of parishes and fiscal fires (*feux fiscaux*, i.e., households liable to the salt tax), population counts (gabelants, laborers, nobles, and clergy members), and salt consumption, along with the administered price of salt under various modalities. The statistical table associated with the map of the généralité of Bourges is reproduced in Appendix Figure A.2.

[22] Salt chambers and depots were established in cities and major towns within certain greniers à sel whose jurisdictions were especially extensive. While they formed distinct gabelle jurisdictions, they remained under the administrative authority of the parent grenier from which they had been created.

[23] Sanson's (1665) atlas also includes a map of the entire Grandes Gabelles area. Although less detailed than regional maps, it locates brigades that policed the boundaries of the Grandes Gabelles against smuggling by salt smugglers. These brigades were typically stationed in control zones.

Mapping methodology To construct a spatial representation of seventeenth-century gabelle jurisdictions, we develop a methodology that addresses the technical limitations of Sanson's (1665) atlas—its lack of a coordinate reference system (CRS) and the uncertainty associated with parish toponyms written on the maps.[24] First, we manually assign each parish to a specific gabelle jurisdiction by visually matching each map to a point layer of early modern parishes. This point layer draws on Cristofoli et al.'s (2021) tabular dataset, which provides the spatial coordinates of the 44 thousand parishes that appear on Cassini's *Carte générale de la France* surveyed between 1756 and 1789 (Dainville, 1955; Pelletier, 1990).[25] Specifically, we label each parish point with its toponym and assign it to a gabelle jurisdiction, using SANDRE's (2017) hydrographic-network shapefile to assist us in locating parishes on Sanson's (1665) maps (Appendix Figure A.3).[26] This procedure yields a point-layer shapefile of 15,829 parishes tagged with a gabelle-jurisdiction attribute. In a second step, we construct the polygon-layer shapefile of the Grandes Gabelles area by spatially joining the 15,829 parish points to IGN's (2021) *commune* polygons, matching jurisdiction attributes to these polygons, and dissolving polygons by that attribute.[27]

The resulting shapefile of gabelle jurisdictions may exhibit (limited) inaccuracies because contemporaneous communes do not align with early modern parishes, as there were nearly 44 thousand parishes in 1789 but only 35 thousand communes in 2021.[28] Although commune boundaries have been relatively stable over time, many were shaped by post-Revolutionary mergers of former parishes (Bideau and Verdier, 2024). As a result, some commune polygons may straddle multiple gabelle jurisdictions, creating local boundary inaccuracies in the dissolved polygon layer.[29] To mitigate this issue, we also distribute

[24] We follow Gay, Gobbi, and Goñi's (2024*a*) methodology for bailliage jurisdictions and refrain from vectorizing the boundaries of gabelle jurisdictions—a common practice when constructing GISs based on historical maps, e.g., Perret, Gribaudi, and Barthélemy (2015) for eighteenth-century French roads or Ostafin et al. (2020) for nineteenth-century Austrian Silesia. Given the absence of a proper CRS and the fragmented nature of these jurisdictions, such vectorization would introduce substantial inaccuracies. For a discussion on these issues, see Arnaud and Suarez (2023).

[25] We provide additional details on the geolocalization of parishes that appear on Cassini's map in Appendix B.

[26] Each parish point is associated with multiple toponyms: the one that appears on Cassini's map (variable `nom_cassini`), in the 1793 census (`nom_an_3`), in the 1801 census (`nom_1801`), and in the 1999 census (`nom_1999`). We take the `nom_cassini` toponym as the default and supplement it with other names when it is missing (1,596 of 43,792 parishes).

[27] We use IGN's (2021) commune polygon layer instead of its 2025 version so as to make our shapefile interoperable with Gay, Gobbi, and Goñi's (2024*a*) historical GIS of bailliage jurisdictions. In addition, we rely on contemporaneous commune polygons because early-modern parish shapefiles are not available for this area—Blanchard and Pélaquier's (1989) parish shapefile focuses on Languedoc, Gorry's (2008) on Touraine, Chadeyron and Langlois's (2022) on Auvergne, and Hautefeuille's (2022) on the South-West. In addition, the COMMUNE HIS-DBD project is not scheduled to release a shapefile of 1790 *municipalités* until September 2026.

[28] On methodological issues with using contemporaneous units to build historical GISs, see Gay (2021, p. 192), Gay, Gobbi, and Goñi (2024*a*, p. 54), and Stapel (2023, pp. 8–9).

[29] Of the 12,460 commune polygons matched to the 15,829 parish points falling into the Grandes Gabelles

the underlying parish point layer so users can project these points onto any commune- or parish-level polygon layer suited to their purpose and aggregate them into gabelle jurisdiction polygons.

4. Content of the Grandes Gabelles Historical GIS

Our historical GIS of the Grandes Gabelles comprises a shapefile (Section 4.1) and a tabular dataset (Section 4.2).[30] We describe their content below in detail. They are distributed through the Harvard Dataverse at https://doi.org/10.57745/DO39SH.[31]

4.1. The Grandes Gabelles Shapefile

The polygon-layer shapefile of our historical GIS is shown in Figure 3—the corresponding point layer is shown in Appendix Figure A.4. It represents 249 gabelle jurisdictions covering 34 percent of the territory of the Kingdom of France. These jurisdictions formed a relatively tight mesh of the Grandes Gabelles area, facilitating the territorial control of the gabelle administration—therein, each parish was on average 13 kilometers from the salt granary of its jurisdiction. For each jurisdiction, the underlying attribute table of this shapefile records its identifier, name, type, the identifier and title of its associated statistical table, its reference map in Sanson's (1665) atlas, and the name of its GIS coder—Table 1 lists these variables.

Gabelle jurisdiction identifiers Each gabelle jurisdiction is assigned a unique five-digit identifier under the variable `grenier`.[32] This identifier is constructed by concatenating three components: (1) a two-digit identifier for the statistical table associated with the map on which the jurisdiction appears, (2) a one-digit identifier for the jurisdiction type (see

area, 642 (5 percent) straddle two gabelle jurisdictions, 54 (0.4 percent) straddle three jurisdictions, and 8 (0.06 percent) straddle four jurisdictions. In these cases, we assign the commune to the gabelle jurisdiction of the parish located closest to its *chef-lieu*.

[30] As noted above, the shapefile is provided in both polygon and point formats. The attribute table of the point layer reproduces that of the polygon layer and further includes parish-level information from Cristofoli et al. (2021): the Cassini parish identifier, its toponym as it appears on Cassini's map and as recorded in the 1793, 1801, and 1999 censuses, and its spatial coordinates in RGF93 and WGS84 projections. It also includes two flag variables: one indicating the parishes that we could not find in Sanson's (1665) atlas and for which we inferred gabelle jurisdictions from surrounding parishes, and another marking cases in which the attribution of a gabelle jurisdiction to a parish was uncertain due to inaccuracies on the manuscript map. Appendix Table A.4 lists these additional variables.

[31] The repository will be made publicly available upon publication of this article. Until then, access to the repository is available upon request to the authors.

[32] Variable names are given as they appear in the associated `.dta` and `.txt` files. The corresponding variable names in the shapefile's attribute table can be found in Table 1. They differ slightly due to QGIS field-name constraints.

Figure 3. Grandes Gabelles Jurisdictions in 1665

Notes. This figure displays gabelle jurisdictions based on Sanson's (1665) *Atlas des gabelles*. The underlying shapefile of the Kingdom of France in gray is from Gay, Gobbi, and Goñi (2023).

below), and (3) a two-digit identifier for the jurisdiction's position in its reference table. For instance, the gabelle jurisdiction of Dun-le-Roi in the généralité of Bourges (Appendix Figure A.3) has identifier `04103`: it belongs to reference table `04`, is of type `1` (salt granary), and is entry `03` in that reference table.

Gabelle jurisdiction names Gabelle jurisdiction names correspond to the town that hosted the jurisdiction's salt storage and distribution outlet. We provide these names in two forms: a short form that corresponds to the most representative name of the jurisdiction (`grenier_name`), typically the name of the city where its salt outlet was located (e.g., `Dun-le-Roi`), and a long form (`grenier_name_long`) that also includes the jurisdiction type (e.g., `Grenier à sel de Dun-le-Roi`).[33]

Gabelle jurisdiction types There were several types of gabelle jurisdictions (`grenier_type`) depending on the terminology of its salt storage and distribution out-

[33] We normalize place names to their 1793 census toponymy, effectively the first nomenclature of place names in France. For instance, we use the name `Grenier à sel de Buzançais` rather than `Grenier à sel de Buzançois`—the spelling found in Sanson's (1665) atlas. It remains uncertain whether jurisdiction `14103` in the département of Troyes had its salt granary in Beaufort or in Rosnay. We therefore denominate it `Grenier de Beaufort [Rosnay]`.

Table 1. Variables in the Grandes Gabelles Shapefile

Variable		
dta / txt	dbf	Description
grenier	GRENIER	Grenier à sel identifier
grenier_name	GRE_NS	Grenier à sel name (short, upper case)
grenier_name_prop		Grenier à sel name (short, proper case)
grenier_name_long	GRE_NL	Grenier à sel name (long, upper case)
grenier_name_long_prop		Grenier à sel name (long, proper case)
grenier_type	GRE_TYP	Grenier à sel type
grenier_flag	GRE_FLG	Grenier à sel flag
grenier_regime	GRE_REG	Grenier à sel taxation regime
grenier_free	GRE_FR	Free-sale grenier indicator
table	TAB	Table identifier
table_type	TAB_TYP	Table constituency type
table_name	TAB_NS	Table constituency name (short, upper case)
table_name_prop		Table constituency name (short, proper case)
table_name_long	TAB_NL	Table constituency name (long, upper case)
table_name_long_prop		Table constituency name (long, proper case)
map		Map file name
coder		GIS coder

Notes. This table lists the variables included in the dbf attribute table of the polygon-form Grandes Gabelles shapefile, as well as in the associated dta and txt tabular data files. See the main text for variable definitions and typologies.

let: most commonly salt granaries, but also salt chambers and salt depots—in addition to peripheral control zones.[34] In some cases, a salt granary and a salt chamber appear together in the atlas (e.g., the salt granary of Mondoubleau and the salt chamber of Saint-Calais in the généralité of Orléans). We therefore classify jurisdictions into five categories, each identified by a one-digit code: salt granaries (1, 185 jurisdictions), salt chambers (2, 26 jurisdictions), combined salt granaries and chambers (3, 11 jurisdictions), salt depots (4, 3 jurisdictions), and control zones (5, 24 jurisdictions). We map the spatial distribution of these jurisdiction types in Appendix Figure A.5.

We also provide a variable (grenier_flag) that indicates the availability of jurisdiction-level statistics. While 221 of the 249 jurisdictions have statistical information available, the 3 salt depots and 24 control zones do not.[35] In the cases where a salt granary and chamber are reported together, only a combined statistical entry is available.

Gabelle taxation regimes Mandatory salt purchases were enforced under two salt-taxation regimes: compulsory-sale granaries (1, 108 jurisdictions) and voluntary-sale gra-

[34]Salt chambers and depots operated in the same way as salt granaries, but were under the administrative authority of the parent grenier à sel from which they had been created (see Footnote 22).

[35]The salt chamber of Montfaucon (04210) in the généralité of Bourges does not appear in its reference table.

naries (2, 114 jurisdictions).[36] We also flag the 28 voluntary-sale granaries of the généralité of Dijon operating as free-sale granaries (`grenier_free`). Appendix Figure A.6 maps the spatial distribution of these regimes. Voluntary-sale granaries were concentrated in the interior of the Grandes Gabelles area, where the risks of salt smuggling were comparatively low. They also extended along the frontier with the Petites Gabelles in southern Bourbonnais, where the price differential was relatively small.[37] This limited price gap substantially reduced the profitability of salt smuggling, making it possible to establish this regime even at the frontier. By contrast, compulsory-sale granaries were strategically concentrated along borders where price differentials were largest, notably those with Brittany and Artois.[38]

Reference tables To link each gabelle jurisdiction to its reference table, we include a two-digit identifier (`table`) from `01` to `15` following the tables' order of appearance in the atlas, the table's short and long titles as they appear in the atlas (`table_name` and `table_name_long`, e.g., `Bourges` and `Généralité de Bourges`), and the type of the administrative area of the table (`table_type`), coded as `Généralité` (`1`) or `Département` (`2`).

Reference map We also provide, for each jurisdiction, the atlas map on which it appears (`map`). The complete list of maps is provided in Appendix Table A.3.

GIS coder Finally, we provide the name of the coder who manually entered each parish's jurisdiction into the historical GIS (`coder`).

Gabelle jurisdiction seats We further provide an auxiliary tabular dataset and associated point-form shapefile that includes information on the seat (*chef-lieu*) of each gabelle jurisdiction, that is, the location of its salt storage and distribution outlet.[39] For each seat,

[36] We define taxation regimes using Sanson's (1665) statistical tables, based on whether a granary records distinct types of salt sales. Specifically, we classify a granary as a compulsory-sale granary when the tables report compulsory salt sales. Salt depots and control zones were not characterized by a salt-taxation regime.

[37] Along this border, the late eighteenth-century salt price was about 62 livres per minot in the Grandes Gabelles (Bourbonnais and Burgundy) versus about 51 livres in the Petites Gabelles (Lyonnais, Forez, Beaujolais, Mâconnais, Bresse, and Bugey). See Figure 1 and Appendix Table A.2.

[38] For instance, along the border with Brittany, late eighteenth-century salt prices were about 58 livres per minot in Anjou and Maine versus 2 livres across the frontier. See Figure 1 and Appendix Table A.2.

[39] Because the polygon shapefile is constructed from contemporaneous communes, two jurisdiction seats lie outside their corresponding jurisdiction polygons as a result of recent mergers of communes into larger units: those of the jurisdictions of Exmes (`09108`) and Saint-Rémy (`06209`). In addition, the parish of Montfaucon, seat of the jurisdiction of Montfaucon (`04210`), does not appear on Cassini's map. We therefore attribute this jurisdiction's seat to the nearby parish of Berry. We display the distribution of gabelle jurisdiction chef-lieux in Appendix Figure A.7.

we report its Cassini (`cl_noacass`) and INSEE (`cl_insee`) identifiers, its name on Cassini's map (`cl_name_cassini`), its name in the 1793 (`cl_name_1793`), 1801 (`cl_name_1801`), 1999 (`cl_name_1999`), and 2021 (`cl_name_2021`) censuses, as well as its spatial coordinates in both RGF93 (`cl_x` and `cl_y`) and WGS84 (`cl_x_wgs` and `cl_y_wgs`) projections. Where a salt granary and a chamber are reported together, the tabular file associated with this shapefile also provides the seat of the corresponding salt chamber using variables prefixed with `cl2`. The presence of a second seat is flagged by the `cl_flag` variable. We report the list of variables available in this shapefile in Appendix Table A.5.

4.2. The Grandes Gabelles Dataset

The tabular dataset associated with the Grandes Gabelles shapefile draws on the statistical tables in Sanson's (1665) *Atlas des gabelles*. These tables report detailed demographic and fiscal information for each gabelle jurisdiction, organized by généralité (see, e.g., Appendix Figure A.2). In addition, a separate table provides the salt purchase costs faced by tax-farming agents in each jurisdiction. We report the list of variables available in this dataset in Table 2 and summary statistics for key variables in Appendix Table A.6.[40]

Table 2. Variables in the Grandes Gabelles Dataset

Variable	Description
`grenier`	Grenier à sel identifier
`grenier_flag`	Grenier à sel flag
`table`	Table identifier
`parishes`	Number of parishes
`fires`	Number of fiscal fires (households)
`gabelants`	Number of gabelants (taxpayers)
`farmers`	Number of wealthy farmers
`nobles`	Number of nobles
`clergy`	Number of clergy members
`salt_sales_comp`	Volume of compulsory salt sales (decimal minots)
`salt_sales_vol`	Volume of voluntary salt sales (decimal minots)
`salt_sales`	Total volume of salt sales (decimal minots)
`salt_price_comp_king`	King's duty on compulsory salt sales (livres tournois per minot)
`salt_price_comp_off`	Officer's duty on compulsory salt sales (livres tournois per minot)
`salt_price_comp`	Salt price on compulsory salt sales (livres tournois per minot)
`salt_price_vol_king`	King's duty on voluntary salt sales (livres tournois per minot)
`salt_price_vol_off`	Officer's duty on voluntary salt sales (livres tournois per minot)
`salt_price_vol`	Salt price on voluntary salt sales (livres tournois per minot)
`salt_price`	Weighted average salt price (livres tournois per minot)
`salt_cost`	Salt cost for retailer (livres tournois per minot)

Notes. This table lists the variables included in the Grandes Gabelles dataset. See the main text for variable definitions and typologies.

[40]This dataset further contains the variables listed in Table 1, which we do not all repeat in Table 2.

Units of observation Each gabelle jurisdiction is assigned a unique identifier (`grenier`) that matches the one used in the Grandes Gabelles shapefile. In addition, the variable `table` links each record to its source table in Sanson (1665) atlas.

All salt granaries and chambers (but one) appear in Sanson's (1665) statistical tables.[41] Moreover, although the salt granary of Chalon and the salt chamber of Louhans appear separately on the atlas's maps, they are combined in the statistical tables.[42] Finally, the 3 salt depots and 24 control zones do not appear in the atlas's statistical tables. As a result, of the 249 gabelle jurisdictions in Sanson's (1665) atlas, the Grandes Gabelles dataset includes 221 observations with statistical information. This coverage is documented in the `grenier_flag` variable.

Demographic variables The atlas reports the following demographic information for nearly all salt granaries and chambers: their number of parishes (`parishes`), fiscal fires (`fires`), and gabelants (`gabelants`).[43,44] For about half of salt granaries, it further reports counts for exempt social groups: wealthy peasants (`farmers`), nobles (`nobles`), and clergy members (`clergy`).

Salt sales The atlas reports two measures of salt sales, which we express in decimal minots.[45] The first—compulsory salt sales (`salt_sales_comp`)—is positive in compulsory-sale granaries and equals zero in voluntary-sale granaries. The second—voluntary salt sales (`salt_sales_vol`)—is observed under both regimes: in compulsory-sale granaries, households could purchase salt for personal consumption beyond the mandatory quantity,

[41] The salt chamber of Montfaucon (`04210`) in the généralité of Bourges does not appear in its reference table.

[42] For simplicity, we combine these two jurisdictions in the Grandes Gabelles shapefile. Note that the four sets of jurisdictions that are grouped on the atlas's maps are reported with distinct statistical information. In these cases, we report them together in our dataset, summing their quantitative variables—their salt prices and costs are similar. This applies to the salt granaries and chambers of Rouen and La Bouille in the généralité of Rouen (`10301`), and of Autun and Montcenis (`15305`), Charolles and Perrecy (`15312`), and Semur and Marcigny (`15325`) in the généralité of Dijon.

[43] The number of parishes per gabelle jurisdiction reported in Sanson's (1665) statistical tables broadly matches the number of parishes on Cassini's map, confirming that the gabelle applied to all parishes within each jurisdiction (Appendix Figure A.8).

[44] In most cases, the reported number of taxpayers appears to be extrapolated from the number of fiscal fires by applying a multiplier of three or four, and should therefore be treated with caution. See Appendix Figure A.9 and Dupâquier (1979, pp. 140–41). Moreover, the count of gabelants likely includes children under eight years old (Beaulieu, 1903, pp. 33–34; Le Roy Ladurie and Recurat, 1969, p. 1006; Dupâquier, 1979, p. 140). Finally, note that large cities are generally not included in these statistics (Cabourdin, 1969, p. 295; Dupâquier, 1979, p. 142).

[45] In Sanson's (1665) statistical tables, salt sale volumes are expressed in units that combine *muids*, *setiers*, *minots* and *boisseaux*—a muid was equivalent to 12 setiers, a setier, to 4 minots, and a minot, to 4 boisseaux. We convert these quantities into decimal minots using the following conversion formula: $\text{minot}_{\text{decimal}} = 48 \times \text{muids} + 4 \times \text{setiers} + \text{minots} + 0.25 \times \text{boisseaux}$.

whereas in voluntary-sale granaries, all purchases were voluntary.[46] Accordingly, total salt consumption (`salt_sales`) is the sum of compulsory and voluntary sales in compulsory-sale granaries and simply voluntary sales in voluntary-sale granaries.

Salt prices The atlas reports salt prices separately for compulsory and voluntary sales, which we express in decimal livre tournois per minot (respectively, `salt_price_comp` and `salt_price_vol`).[47,48] In addition, each price is split between two components: a royal duty and a fee retained by local gabelle agents as compensation for their collection services.[49] We also compute an overall average salt price (`salt_price`) as a sales-weighted mean of compulsory and voluntary prices—by construction, its value coincides with the price of voluntary salt sales in voluntary-sale granaries. We map the spatial distribution of these prices in Figure 4. Consistent with the purpose of gabelle taxation regimes, salt prices were highest in compulsory-sale granaries, lower in voluntary-sale granaries, and lowest in free-sale granaries.[50]

Salt costs The atlas also reports the purchase cost of salt in each jurisdiction, reflecting the commodity cost borne by the gabelle administration.[51] We express these costs in decimal livres tournois per minot and map their spatial distribution in Appendix Figure A.10. Although purchase costs were not tied to gabelle taxation regimes, we show below that they varied systematically with transportation costs from salt-producing sites.

Consistency checks To ensure the accuracy of the data reported in Sanson's (1665) atlas, we conducted a series of consistency checks using totals reported in the tables.[52] In particular, we verified that, for each généralité, reported totals equal the sum of the corresponding granary-level entries. We also implemented granary-level consistency checks on salt sales and prices. These consistency checks are documented in Appendix C.

[46] Voluntary salt sales in compulsory-sale granaries represented on average 23 percent of total salt consumption.

[47] In Sanson's (1665) statistical tables, salt prices are expressed in units that combine *livres*, *sols* and *deniers*—a livre was equivalent to 12 sols, and a sol, to 20 deniers. We convert these prices into decimal livres using the following conversion formula: $\text{livre}_{\text{decimal}} = \text{livre} + \text{sols}/12 + \text{deniers}/240$.

[48] In compulsory-sale granaries, voluntary sales were priced slightly lower (41 livres tournois per minot on average) than compulsory salt sales (43 livres tournois per minot).

[49] The royal duty accounts for about 95 percent of the total salt price in both taxation regimes.

[50] As Figure 1 and Appendix Table A.2 show, by 1781, salt prices were no longer lowest in the free-sale granaries of the généralité of Dijon. This was due to the exceptionally large surcharge on salt levied by the Estates of Burgundy to finance public works (Jalley, 1958, pp. 74–80). See also Footnote 8.

[51] Salt costs represented about 10 percent of salt prices on average (Appendix Table A.6).

[52] For an assessment of the quality of the demographic data reported in Sanson's (1665) *Atlas des gabelles*, see Dupâquier (1979, pp. 139–42).

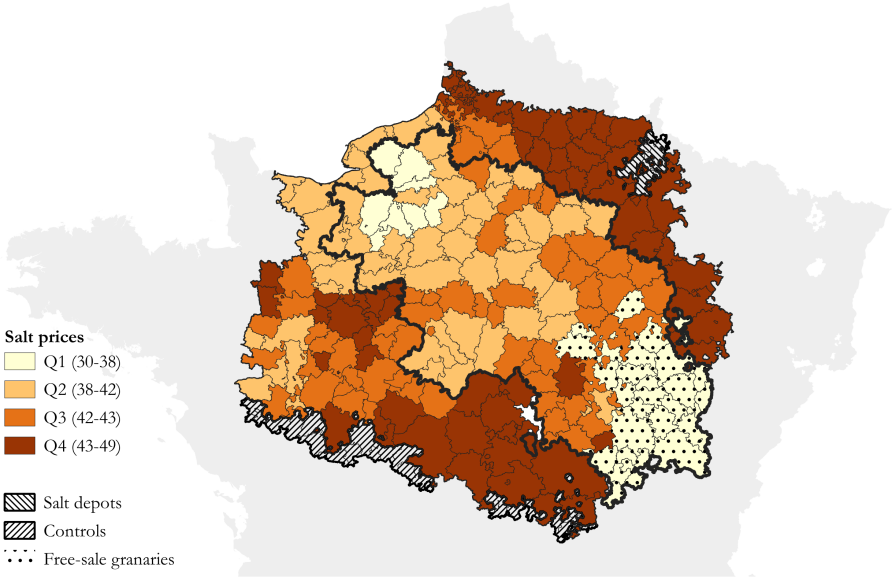

Figure 4. Spatial Distribution of Salt Prices in 1665

Notes. This figure maps the spatial distribution of salt prices in decimal livre tournois per minot drawn from Sanson's (1665) *Atlas des gabelles*. The thick black line separates compulsory-sale and voluntary-sale granaries. In compulsory-sale areas, prices refer to those on compulsory salt sales. The underlying shapefile of the Kingdom of France in gray is from Gay, Gobbi, and Goñi (2023).

5. Applications

The historical GIS we propose lends itself to a wide range of applications. We illustrate its potential with several examples: the overlap with other institutional boundaries, the determinants of local salt prices, the fiscal burden the gabelle imposed on households, the potential for creating a panel of gabelle jurisdictions over time, and the causal effect of the gabelle on social conflict. More broadly, the availability of this fine-grained dataset expands the scope for quantitative research in economic history, historical demography, and historical political economy of early modern France.

Overlap with other institutional boundaries In a first application, we examine how the boundaries of the Grandes Gabelles area related to other Ancien Régime institutions. We focus on bailliage jurisdictions, which we map in Appendix Figure A.11 (Gay, Gobbi, and Goñi, 2024*a*). Appendix Figure A.12 overlays gabelle and bailliage jurisdiction boundaries for the interior of the Grandes Gabelles area (Panel a) and for its outer boundary (Panel b). Only 6 percent of these boundaries coincide—though allowing a 500-meter buffer to account for local mapping inaccuracies raises the overlap to 46 percent for the interior

and 66 percent for the outer boundary.[53] This institutional variation may prove useful for future empirical work aimed at disentangling the implications of heterogeneous fiscal and judicial institutions.

Determinants of local salt prices In a second application, we analyze the determinants of local salt prices across gabelle jurisdictions. Here, we focus on one in particular: salt transportation costs. We do so for two main reasons. First, Sanson's (1665) statistical tables report transportation costs separately from final salt retail prices—they typically accounted for 5–20 percent of those prices. Second, all salt consumed in the Grandes Gabelles area originated from a small number of salt production sites on the Atlantic coast (Touzery, 2024, Map 65, p. 694, shown in Appendix Figure A.13). Specifically, each salt granary was supplied by designated production site through state-controlled distribution networks. Because salt was produced using similar techniques across France and was essentially a homogeneous good, production costs were likely comparable across sites. As a result, spatial variation in final salt costs should have reflected differences in transport costs, which relied predominantly on waterways (e.g., Jalley, 1958, pp. 43–53). Proximity to navigable rivers thus made some locations substantially easier and cheaper to supply.

Appendix Figure A.14 suggests that this logic held. Overlaying major waterways on the map of salt costs across gabelle jurisdictions reveals a clear pattern: salt costs were systematically lower near navigable rivers and increased gradually with distance from them. This visual relationship is corroborated by the binned-scatter evidence reported in Appendix Figure A.15 and by the regression results reported in Appendix Table A.7. Taken together, these results imply that geography—operating through transportation costs—was an important determinant of salt prices.

Fiscal burden of the gabelle In a third application, we quantify the fiscal burden that the gabelle imposed on households. Appendix D describes our methodology and presents our results in detail. We estimate that, on average, mandatory salt purchases imposed a tax burden of 6.4 percent on annual wages—an order of magnitude comparable to the contemporaneous share of household expenditure devoted to gasoline in the United States. We also report tax burdens across taxation regimes and occupational categories, which are consistent with one of the few available benchmarks—Morineau's (1972, p. 232) estimate for Picard weavers—as well as with contemporary Normand ecclesiastical accounts (Chambru and Maneuvrier-Hervieu, 2023, Appendix, pp. 35–36).

[53] This comparison should be interpreted with caution. Indeed, although both historical GISs rely on the same underlying commune polygons (IGN, 2021), Gay, Gobbi, and Goñi (2024*a*) report the geography of bailliages as of 1789, which may differ from those in 1665.

Local populations and salt sales over time A fourth application would make it possible to study local population dynamics in early modern France at a broader scale than previous research (Bouloiseau, 1962; Cabourdin, 1969; Le Roy Ladurie and Recurat, 1972). Pre-revolutionary population estimates are relatively scarce, since the first nationwide census dates to 1793. By combining our 1665 population data with later sources—such as Dupâquier's (1979) estimates for 1722 and the 1793 census provided by Cristofoli et al. (2021)—one can trace the evolution of population patterns across gabelle jurisdictions over more than a century.

Importantly, a consistent analysis of population dynamics requires accounting for changes in the boundaries of gabelle jurisdictions. Our cross-sectional GIS could be extended into a panel by first matching the 1665 structure to that provided in the 1725–26 gabelle returns, and then incorporating subsequent boundary changes specified in royal edicts—listed in Appendix Table A.1.[54] Such a panel would also support the study of long-run changes in salt sales, for which comparable data are available for 1774 (Panckoucke and Agasse, 1782, pp. 413–24).[55]

Causal inference Finally, our historical GIS of the Grandes Gabelles provides sound foundations for causal empirical analyses as it offers a representation of the external frontier of the Grandes Gabelles area with parish-level precision, while also documenting internal administrative boundaries within this area.

First, the precise delineation of the outer frontier of the Grandes Gabelles will help improve the accuracy of analyses that conceptually exploit this sharp fiscal discontinuity but have been constrained to effectively approximate its location using coarser administrative units, such as bailliages (Gay, Gobbi, and Goñi, 2024*a*). This refined boundary has already proven valuable in recent work. For instance, Davoine, Enguehard, and Kolesnikov (2025) exploit our data to compare parishes on either side of the Grandes Gabelles frontier, showing that tax enforcement generated political backlash.[56] Likewise, Giommoni, Loumeau, and Tabellini (2026) exploit a comparable boundary to assess how the salt tax—alongside other fiscal instruments—fueled revolutionary unrest in the late eighteenth century.[57]

[54] The 1725–26 *États de dénombrement des ressorts des gabelles* is available at the Bibliothèque nationale de France under shelfmark Français 23917–23925 (https://archivesetmanuscrits.bnf.fr/ark:/12148/cc52830x).

[55] Comparable data also exist for 1625 (Le Roy Ladurie and Recurat, 1969), but, to our knowledge, changes in gabelle jurisdiction boundaries between 1625 and 1665 have not been documented.

[56] Indeed, based on Jean Nicolas's (2002) survey (Gay, 2025), we show in Appendix Figure A.16 that gabelle-related rebellions in early modern France clustered along the frontiers of the Grandes Gabelles.

[57] More specifically, Giommoni, Loumeau, and Tabellini (2026) trace the boundary of the Grandes Gabelles using the 1781 map reproduced in Figure 1 while "refin[ing] the placement of local salt-tax borders using the geo-referenced maps of *Ancien Régime* institutions from Gay, Gobbi, and Goñi (2024*a*)" (pp. 14–15). "As a robustness check, [they] also [. . .] rely on the *Atlas des gabelles* from Sanson (1665)" (p. 14, Footnote 13).

Second, our GIS opens new avenues for future research by enabling designs to move beyond the external frontier of the Grandes Gabelles and instead exploit its internal boundaries. For instance, scholars could study the implications of alternative gabelle taxation regimes by examining discontinuities at the boundary between compulsory-sale and voluntary-sale granaries shown in Appendix Figure A.6. Another possibility would be to exploit the substantial salt-price differentials across gabelle jurisdictions highlighted in Figure 4. Focusing on these internal boundaries offers a key identification advantage: they are much less likely to overlap with other institutional boundaries and would thus yield more credible estimates of the causal effects of alternative gabelle taxation regimes and salt-price differentials.

6. Conclusion

Salt taxation was a common fiscal instrument in early modern states—Appendix E provides a comparative overview of the use of salt taxation as a fiscal instrument. This article introduces a novel historical GIS and dataset of salt taxation in early modern France. Together, they provide a foundation for fine-grained analyses of the administration of one of the French monarchy's main revenue sources during a pivotal period in the construction of the modern French state.

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Mapping the Grandes Gabelles in Early Modern France

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Igor Kolesnikov§

February 2026

Supplementary Online Appendix

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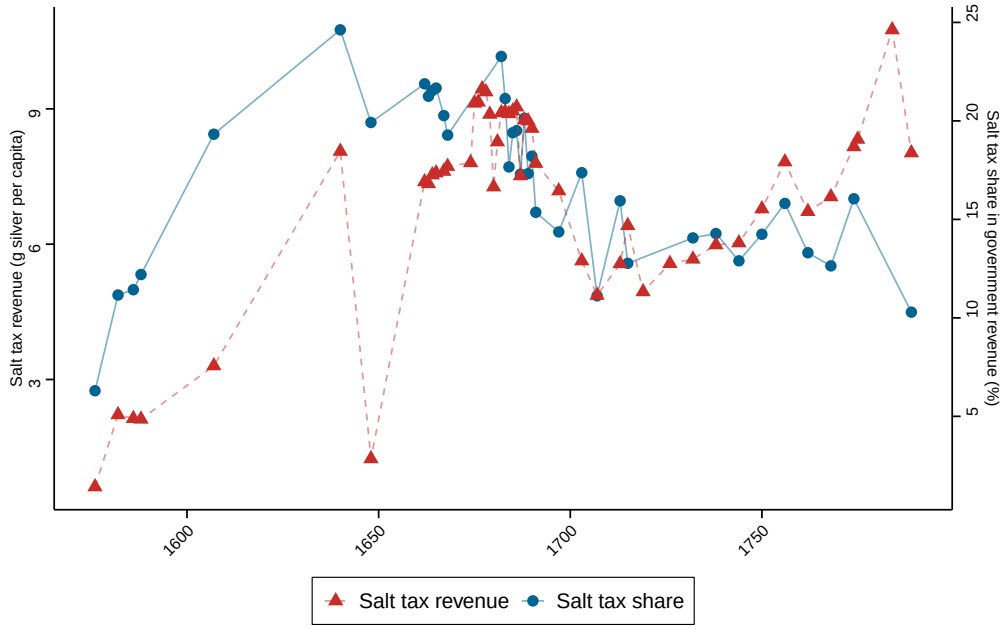
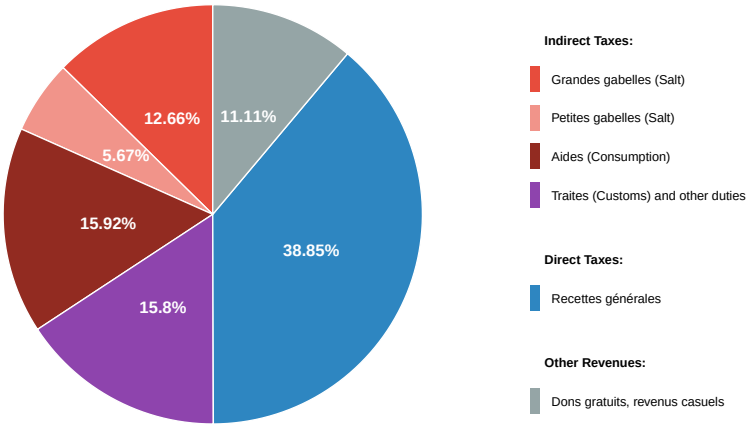
A. Appendix Figures and Tables



(a) Trends in Salt Tax Revenues



(b) Government Revenues by Tax Type in 1789

Figure A.1. The Salt Tax in Total Government Revenues

Notes. Panel (a) plots the share of salt taxation in total government revenues from 1660 to 1790. Data are from the 1701 *Divers tableaux de recettes et de dépenses*, Mathon de la Cour (1788), Mallet (1789), Clamageran (1876), de la Rochefoucauld d'Enville (1887), Guéry (1978), and Enguehard (2020). Panel (b) shows the shares of the main taxes in French state revenues in 1789, the last year in which the Ancien Régime tax system operated. Data are from de la Rochefoucauld d'Enville (1887).

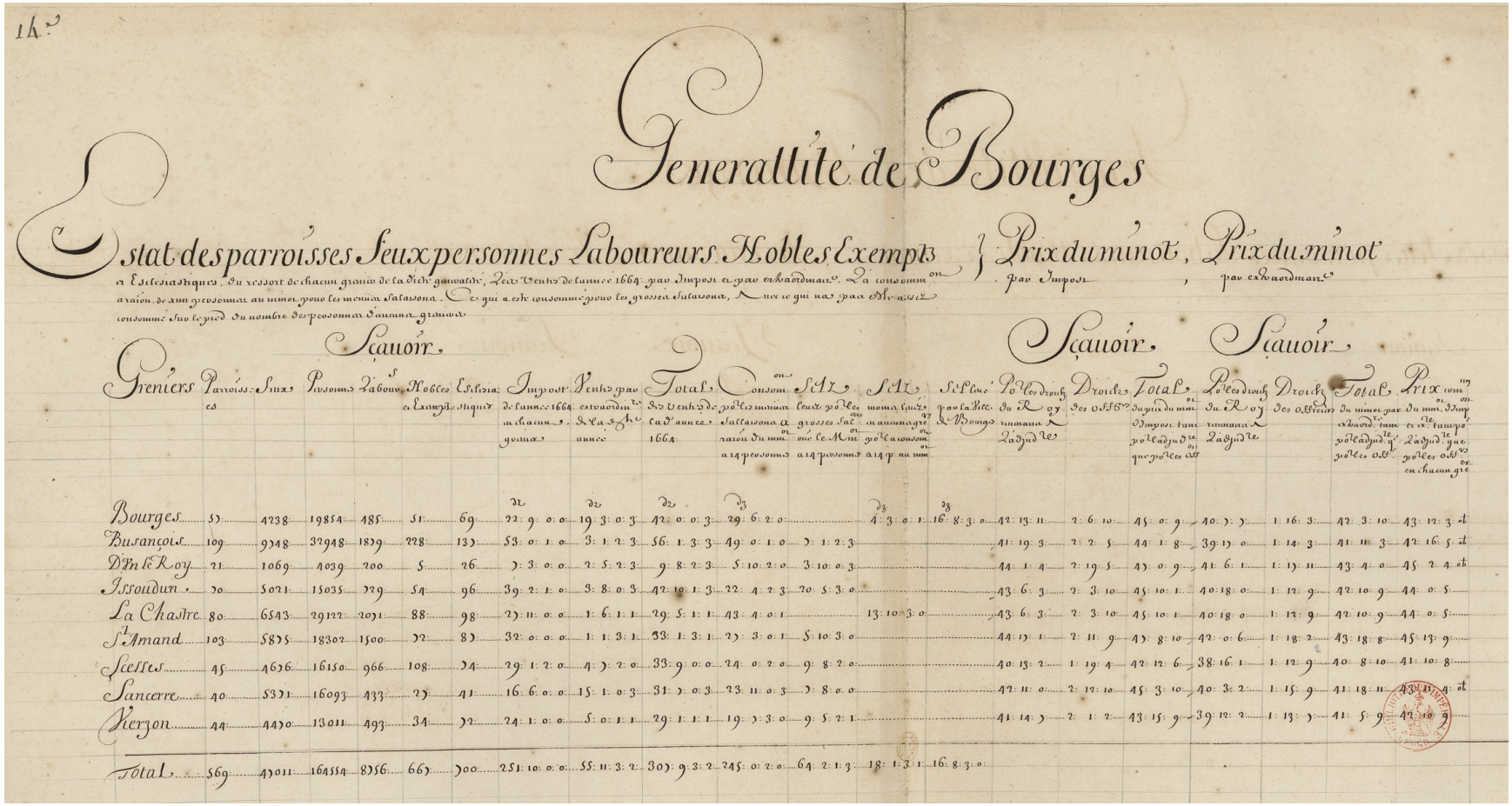


Figure A.2. Statistical Table associated with the Map of the Généralité of Bourges

Notes. This figure reproduces the statistical table associated with the map of the généralité of Bourges from Sanson's (1665) *Atlas des gabelles*.

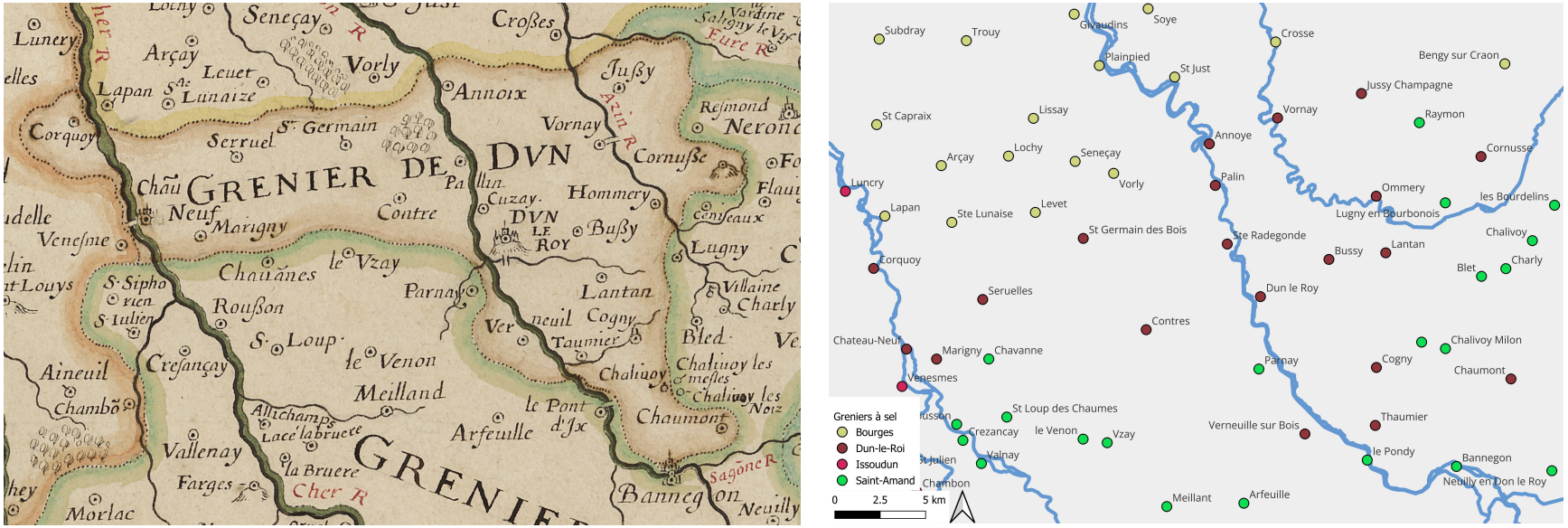


Figure A.3. Grenier à Sel of Dun-le-Roi in the Généralité of Bourges

Notes. This figure provides an example of our methodology to construct the historical GIS of the Grandes Gabelles—specifically, for the grenier à sel of Dun-le-Roi in the généralité of Bourges. The left panel represents an extract from Sanson's (1665) *Atlas des gabelles*, and the right panel, a screen capture from our QGIS working file.

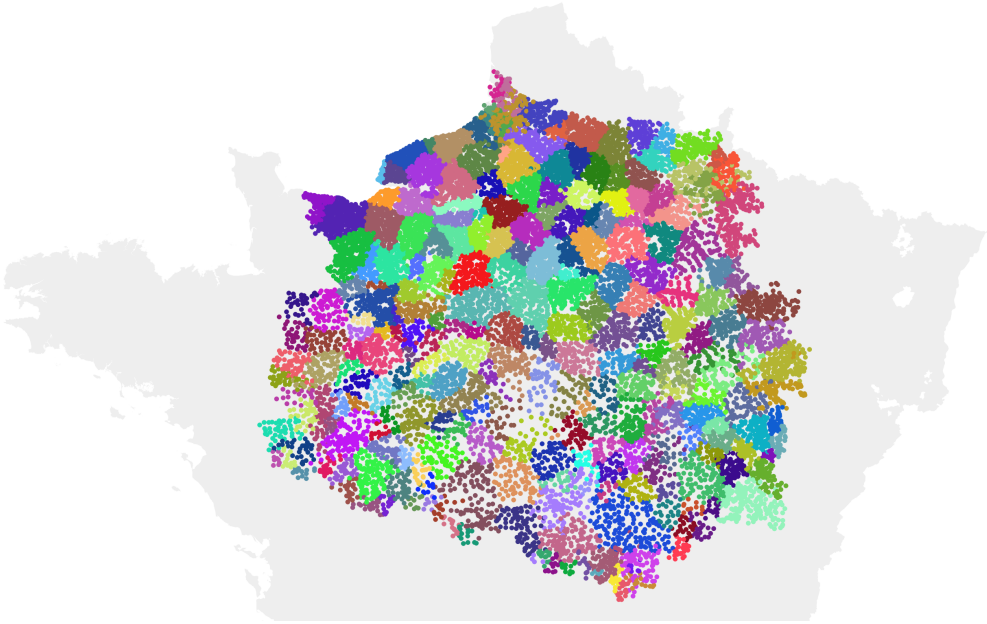


Figure A.4. Grandes Gabelles Jurisdictions in 1665

Notes. This figure displays gabelle jurisdictions based on Sanson's (1665) *Atlas des gabelles*. Each point represents a parish based on Cristofoli et al.'s (2021) dataset. The underlying shapefile of the Kingdom of France in gray is from Gay, Gobbi, and Goñi (2023).

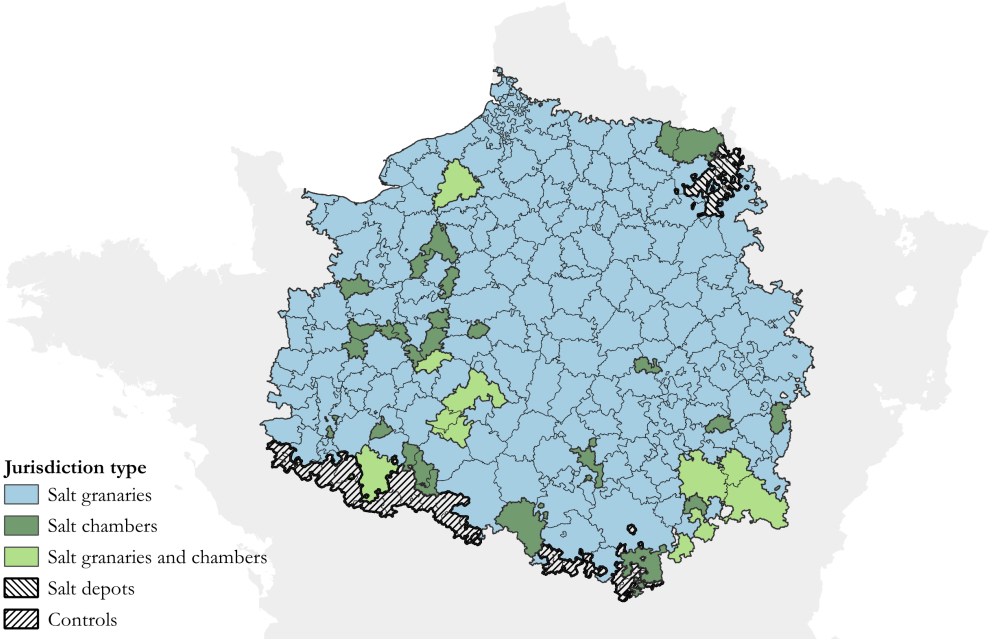


Figure A.5. Grandes Gabelles Jurisdiction Types in 1665

Notes. This figure displays gabelle jurisdiction types based on Sanson's (1665) *Atlas des gabelles*. The underlying shapefile of the Kingdom of France in gray is from Gay, Gobbi, and Goñi (2023).

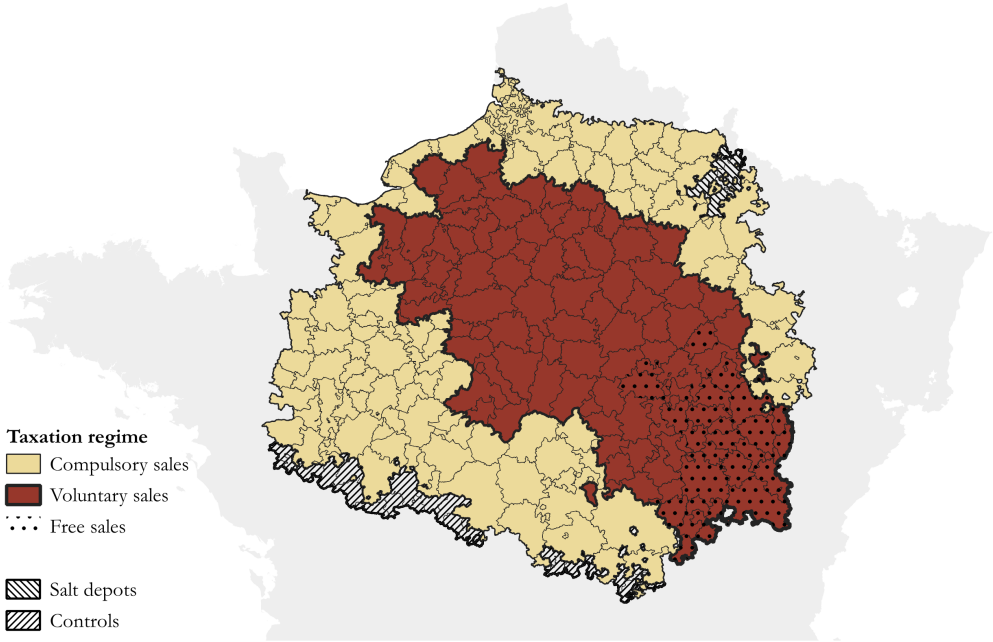


Figure A.6. Grandes Gabelles Taxation Regimes in 1665

Notes. This figure displays gabelle taxation regimes based on Sanson's (1665) *Atlas des gabelles*. The underlying shapefile of the Kingdom of France in gray is from Gay, Gobbi, and Goñi (2023).

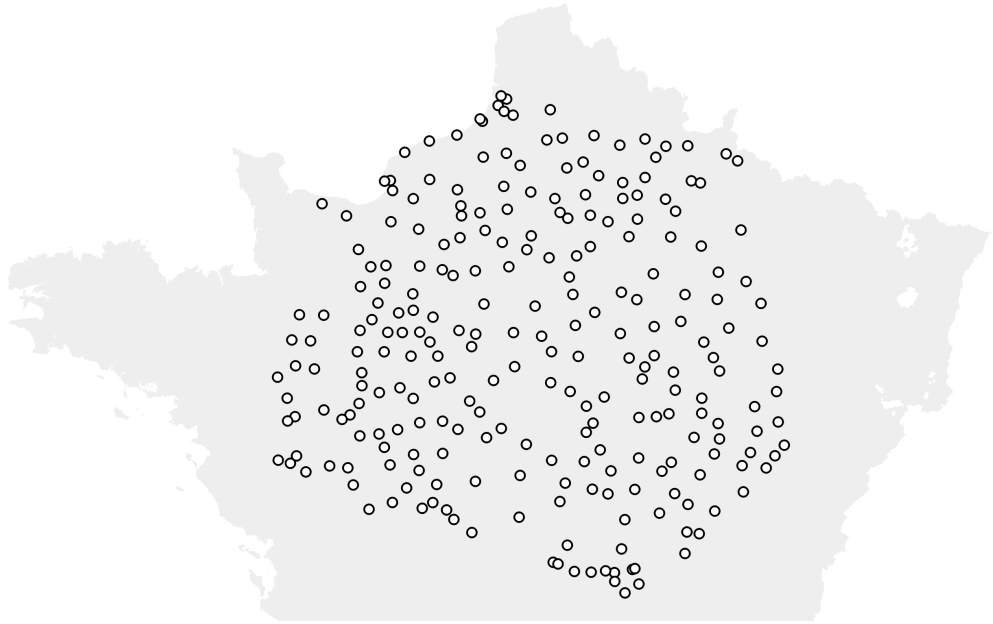


Figure A.7. Grandes Gabelles Jurisdictions Chef-Lieux in 1665

Notes. This figure displays gabelle jurisdiction chef-lieux based on Sanson's (1665) *Atlas des gabelles*. The underlying shapefile of the Kingdom of France in gray is from Gay, Gobbi, and Goñi (2023).

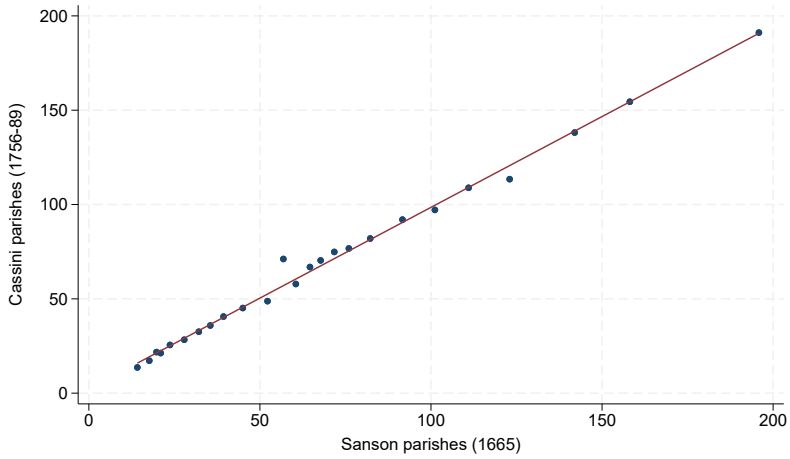


Figure A.8. Parishes per Gabelle Jurisdiction

Notes. This figure plots the number of parishes per gabelle jurisdiction reported in Sanson's (1665) statistical tables against the corresponding parish counts derived from the Grandes Gabelles shapefile and Cassini's (1756–89) map of France. The plot is generated using Stepner's (2013) `binscatter` Stata command. Parish counts for Cassini's map are based on Cristofoli et al.'s (2021) tabular dataset.

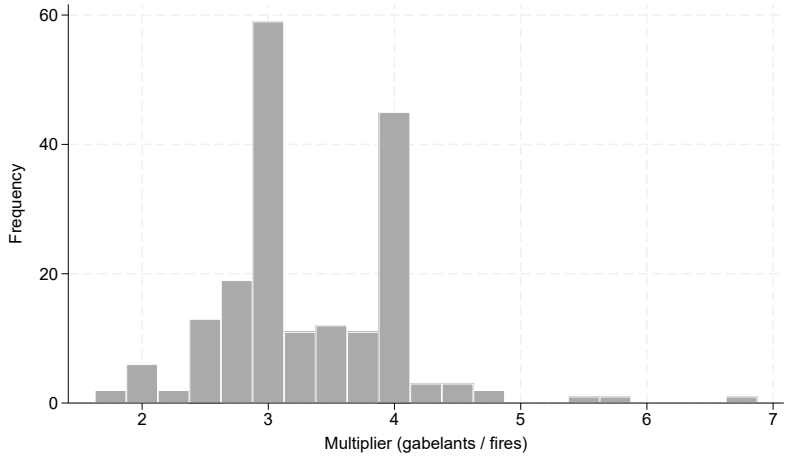


Figure A.9. Gabelants to Fires Multiplier

Notes. This figure plots the distribution of the multiplier between gabelants and fiscal fires in Sanson's (1665) statistical tables.

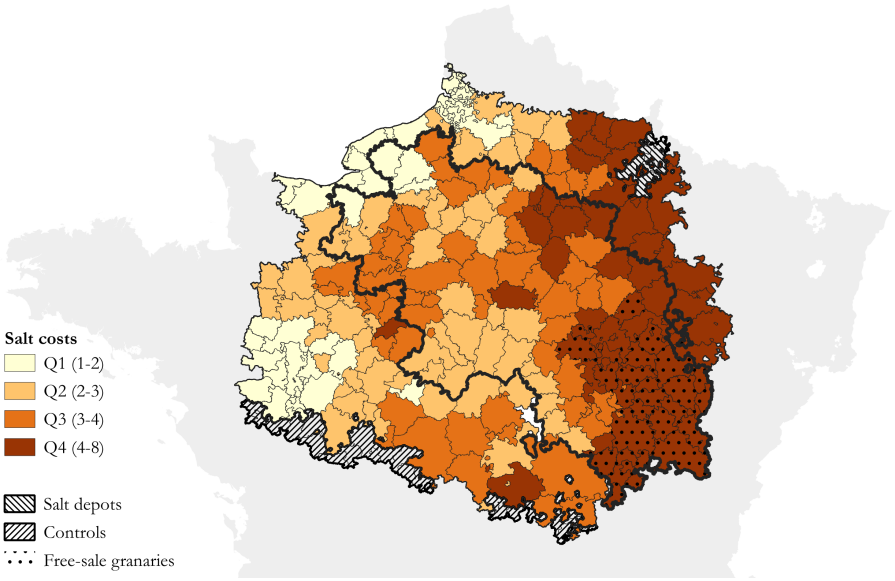


Figure A.10. Spatial Distribution of Salt Costs in 1665

Notes. This figure maps the spatial distribution of salt costs in decimal livre tournois per minot drawn from Sanson's (1665) *Atlas des gabelles*. The thick black line separates compulsory-sale and voluntary-sale granaries, while dotted areas indicate free-sale granaries. The underlying shapefile of the Kingdom of France in gray is from Gay, Gobbi, and Goñi (2023).

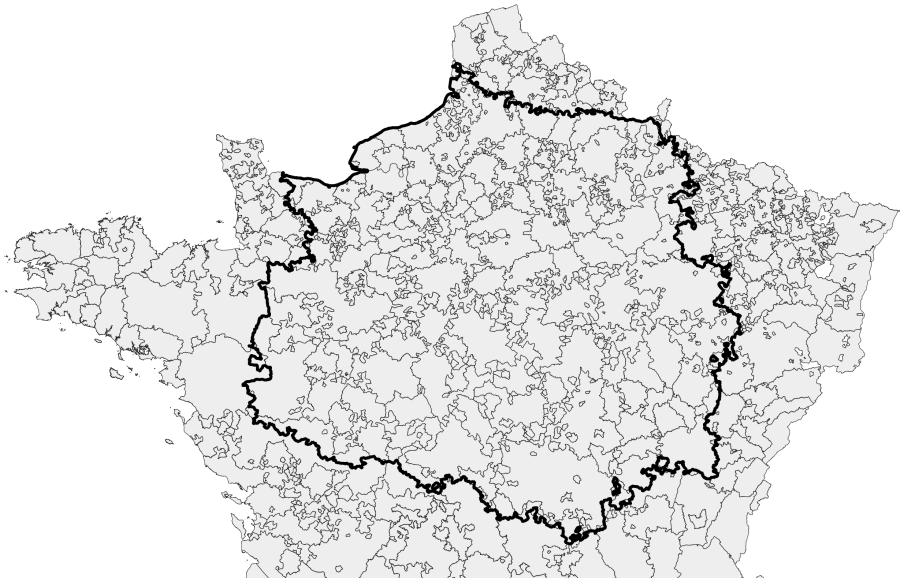
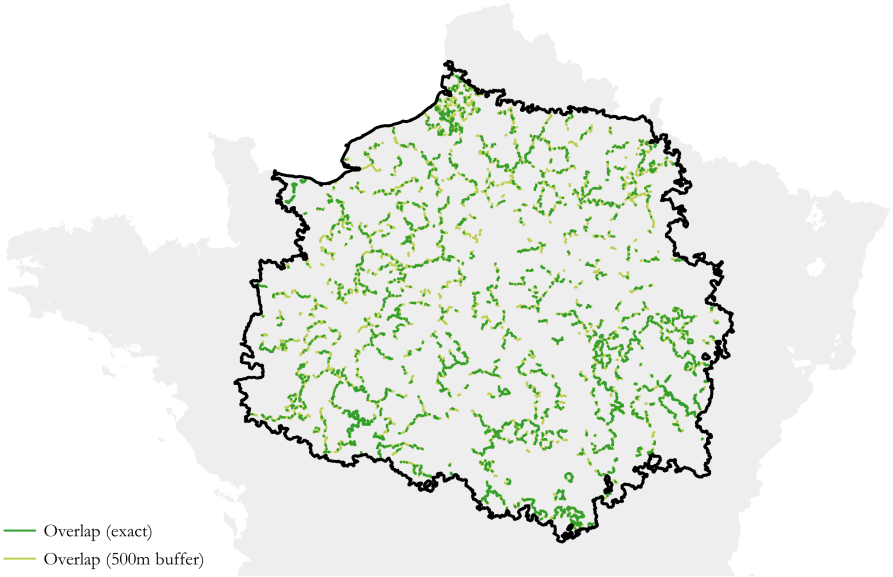
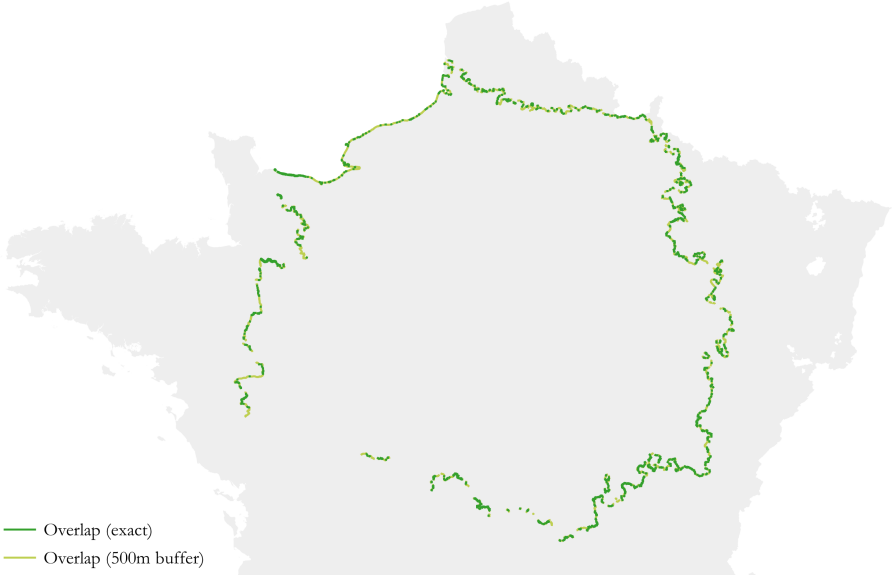


Figure A.11. Bailliage Jurisdictions in 1789

Notes. This figure displays bailliage jurisdictions in 1789 using data from Gay, Gobbi, and Goñi (2023). The outer boundary of the Grandes Gabelles is overlaid as a thick black line. The underlying shapefile of the Kingdom of France in gray is from Gay, Gobbi, and Goñi (2023).



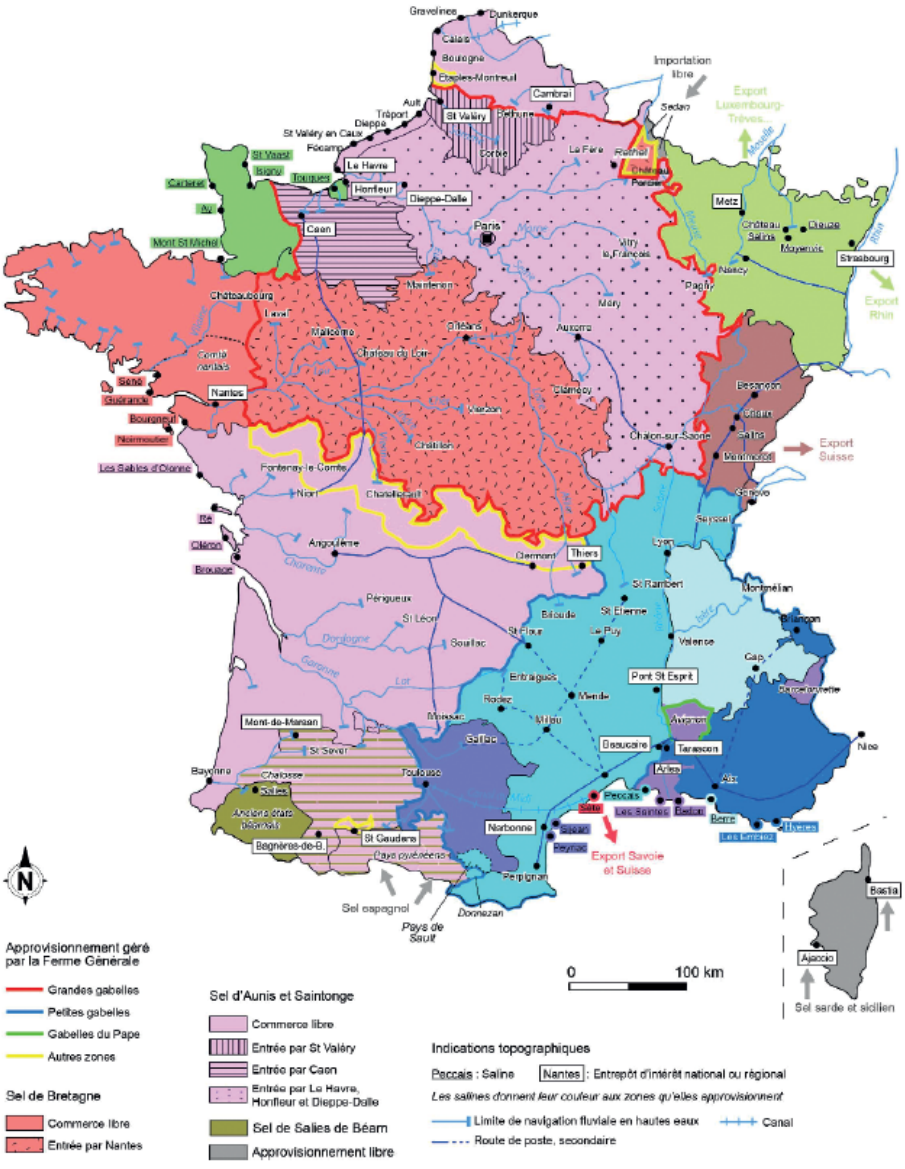
(a) Interior Boundaries



(b) Outer Boundary

Figure A.12. Overlap Between Gabelle and Bailliage Jurisdictions

Notes. This figure displays the overlapping boundaries between gabelle and bailliage jurisdictions. Panel a focuses on interior boundaries of gabelle jurisdictions, while Panel b, on the outer boundary of the Grandes Gabelles area. Dark green lines correspond to exact overlaps, while light green lines correspond to overlaps with a 500 meter buffer. Bailliage jurisdictions boundaries are based on Gay, Gobbi, and Goñi (2023).



Carte 65. Les routes du sel.

Figure A.13. Salt Roads and Salt Production Sites

Notes. This figure reproduces Touzery's (2024, p. 694) map of salt roads and salt production sites.

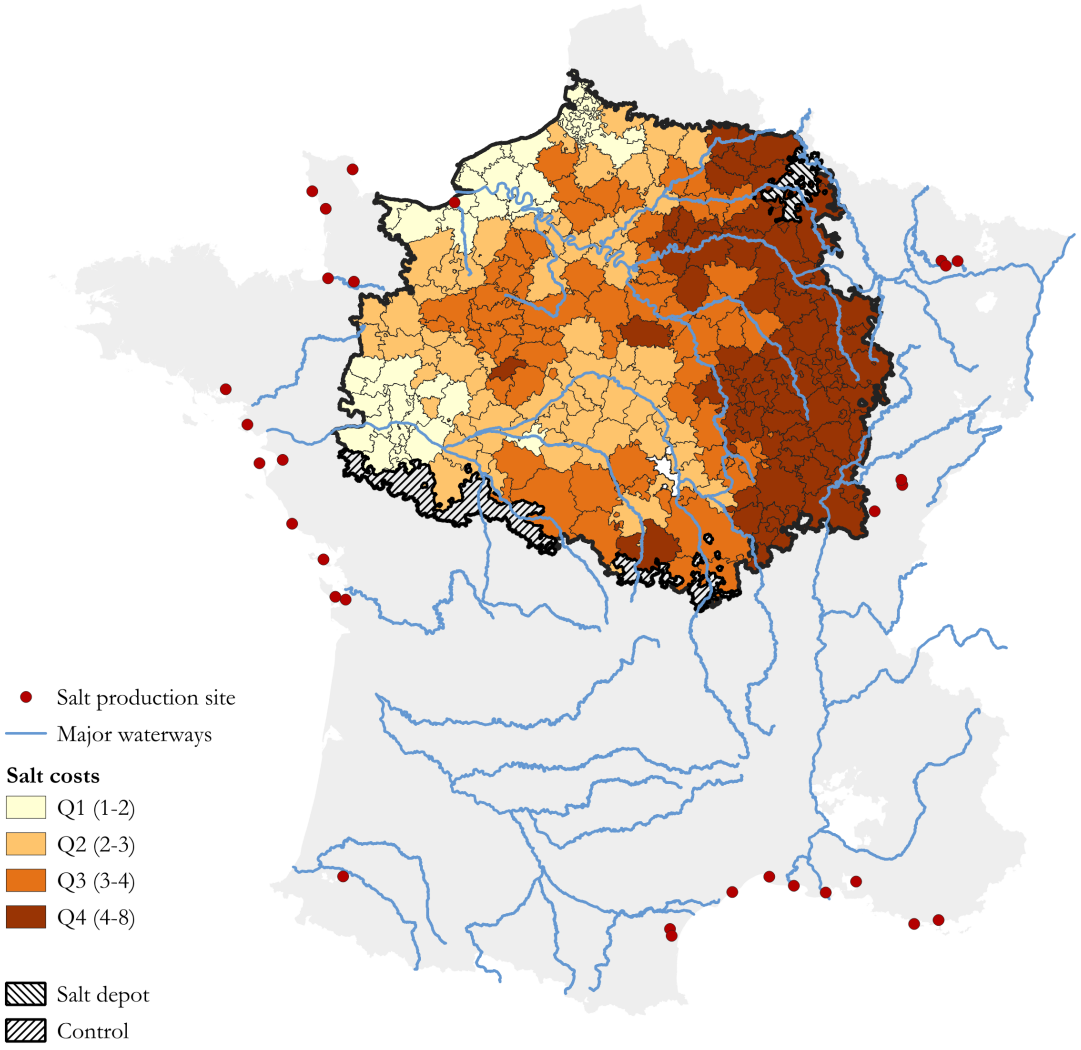
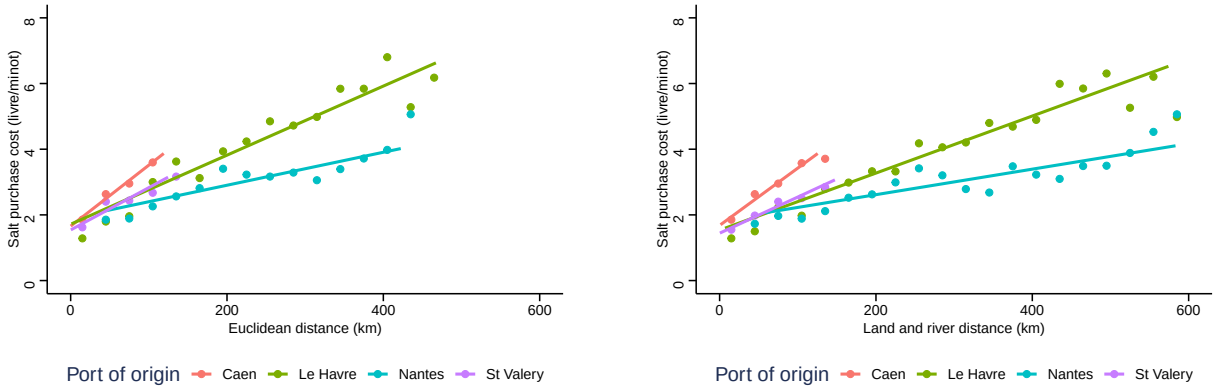


Figure A.14. Salt Purchase Costs, Salt Production Sites, and Waterways

Notes. This map shows the 1665 salt price across gabelle jurisdictions in livres per minot together with major waterways and salt production sites. Salt production sites correspond to the salt mines and salines recorded by Touzery (2024). The navigable-river network corresponds to the period 1780–1812 and is drawn from the digitized version of Arbellot, Lepetit, and Bertrand (1987, Map 7, p. 25), available at https://nakala.fr/10.34847/nkl.61724zp0#2e6c0860e1a727abe3dec001128268a6ed4cf0e2.



(a) Euclidean Distance to Port

(b) Land-and-River Distance to Port

Figure A.15. Distance to Port and Salt Purchase Costs

Notes. This figure presents binned scatter plots relating salt purchase costs to distance from port of origin. Panel (a) uses Euclidean distance, while panel (b) uses land-and-river distance, which better reflects historical transport routes. Each color corresponds to a different port of origin (Caen, Le Havre, Nantes, and Saint-Valery). Points represent binned averages and solid lines indicate linear fits within each port of origin.

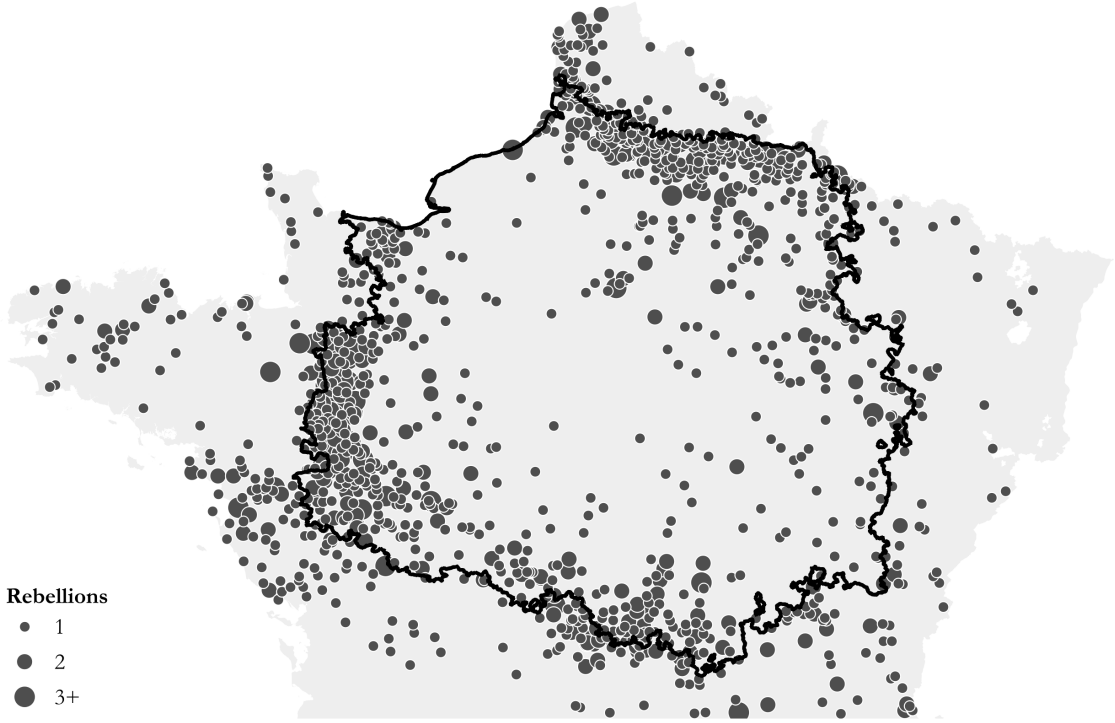


Figure A.16. Salt-Smuggling Rebellions and the Grandes Gabelles Frontier

Notes. This map displays the distribution of the 2,191 rebellions related to salt smuggling that occurred between 1661 and 1789 available in the Jean Nicolas database (Nicolas, 2002; Gay, 2025). The outer boundary of the Grandes Gabelles is overlaid as a thick black line. The underlying shapefile of the Kingdom of France in gray is from Gay, Gobbi, and Goñi (2023).

Table A.1. Edicts, Letters Patent, Ordinances, and Laws Relative to the Gabelle

Date	Regime	Item	Source (Gallica ark)
1342 (March 20)	Philippe VI	Lettres patentes portant établissement de greniers à sel et de gabelles	12148/bpt6k118158p/f204
1366 (December 7)	Charles V	Règlement sur la vente de sel qui sera faite dans les greniers à sel	12148/bpt6k118972k/f705
1628 (May)	Louis XIII	Édit [. . .] portant érection et établissement d'un grenier à sel [. . .]	12148/bpt6k9651249w
1660 (June)	Louis XIV	Édit [. . .] portant règlement [. . .] pour la Ferme générale des gabelles [. . .]	12148/btv1b86223972
1680 (May 11, June 21)	Louis XIV	Ordonnances [. . .] sur le fait des gabelles et des aides	12148/bpt6k3043941n
1700 (July 13)	Louis XIV	Arrêt [qui] ordonne l'exécution de la Déclaration du 4 mars 1663 [. . .]	12148/bpt6k9610997z/f110
1724 (May)	Louis XV	Édit [. . .] portant établissement d'un grenier à sel [. . .]	12148/btv1b86086715
1725 (March)	Louis XV	Édit [. . .] portant règlement pour l'arrondissement des greniers à sel [. . .]	12148/btv1b8624692n
1725 (October)	Louis XV	Édit [. . .] portant établissement d'un grenier à sel [. . .]	12148/btv1b8624741p
1726 (May)	Louis XV	Édit [. . .] portant suppression des greniers à sel [. . .]	12148/btv1b8624787p/f1
1726 (June)	Louis XV	Édit [. . .] portant suppression du grenier à sel [. . .]	12148/btv1b86247957
1727 (June)	Louis XV	Édit [. . .] portant suppression des greniers à sel [. . .]	12148/btv1b86009405
1743 (January)	Louis XV	Édit [. . .] pour l'établissement d'un grenier à sel [. . .]	12148/btv1b86172295
1747 (June)	Louis XV	Édit [. . .] portant établissement d'un grenier à sel [. . .]	12148/btv1b86050448
1761 (August)	Louis XV	Édit [. . .] portant établissement de deux greniers à sel [. . .]	12148/btv1b8613580h
1767 (December)	Louis XV	Édit [. . .] portant établissement d'un grenier à sel [. . .]	12148/btv1b8614052s
1772 (March)	Louis XV	Lettres patentes [. . .] qui ordonnent que le grenier à sel [. . .]	12148/btv1b86182267
1772 (December)	Louis XV	Édit [. . .] portant établissement d'un grenier à sel [. . .]	12148/btv1b8618365p
1780 (October)	Louis XVI	Édit [. . .] portant établissement d'un grenier à sel [. . .]	12148/btv1b8619373j
1790 (March 30)	Louis XVI	Lettres patentes [. . .] concernant la suppression de la gabelle [. . .]	12148/bpt6k3071986f
1794 (June 13)	Ist Republic	Loi abolissant l'impôt de remplacement des droits supprimés sur les sels [. . .]	12148/bpt6k56373g/f19

Table A.2. Salt Prices in the Late Eighteenth Century

Gabelle area	Region	Salt price
Grandes Gabelles	Île-de-France	60.4
	Maine	59.0
	Anjou	57.6
	Touraine	59.7
	Orléanais	60.4
	Berry	61.1
	Bourbonnais	61.8
	Burgundy	62.0
	Champagne	61.1
	South Picardy	58.0
	East Normandy	54.8
	Perche	54.8
	Mean	59.2
Petites Gabelles	Mâconnais	57.5
	Bresse and Bugey	54.4
	Lyonnais, Forez, Beaujolais	41.6
	Dauphiné	31.4
	Briançonnais	22.4
	Barcelonnette valley	9.3
	Provence	24.9
	Velay and Vivarais	30.2
	South Auvergne and Rouergue	28.8
	Gévaudan	33.3
	Languedoc	30.9
	Sault and Chalabre	12.8
	Roussillon	18.0
	Mean	30.4
Saltern areas	Lorraine and Clermontois	27.5
	Three Bishoprics	36.0
	Franche-Comté	15.0
	Alsace	12.5
	Mean	22.8
Quarter-Boiling areas	East Normandy	13.0
Redeemed areas	Poitou, Aunis, Saintonge	7.0
	Angoumois	7.5
	Limousin	8.5
	North Auvergne	10.0
	Périgord, Quercy, Guyenne	8.5
	Bordelais	6.5
	Bigorre, Cominges, Foix	9.5
	Mean	8.8
Exempt areas	Brittany	2.3
	Boulonnais and Calaisis	7.5
	Hainault	7.5
	Sedan and Raucourt	6.0
	Gex	6.0
	Comtat Venaissin	6.0
	Arles territory	4.0
	Nébouzan	4.0
	Béarn, Soule, Navarre, Labourd	3.0
	Ré and Oléron islands	1.5
	Saintonge, Aunis, Poitou	1.8
	Mean	4.8

Notes. This table reports average salt prices in decimal livres tournois per minot based on Necker's (1781) *Carte des gabelles* available at https://gallica.bnf.fr/ark:/12148/btv1b8445425x.

Table A.3. Maps and Greniers in Sanson's (1665) Atlas des Gabelles

Map			Gabelle jurisdictions	
Identifier	**Type**	**Area**	**Type**	**Name (identifier)**
01	Généralité	Paris (North)	Greniers	Paris (01101), Brie-Comte-Robert (01102), Beauvais (01103), Compiègne (01104), Creil (01105), Dreux (01106), Étampes (01107), Lagny (01109), Mantes (01110), Meaux (01111), Melun (01112), Montfort (01113), Poissy (01116), Pontoise (01117), Provins (01118), Senlis (01119).
02	Généralité	Paris (South)	Greniers	Joigny (01108), Montereau (01114), Nemours (01115), Sens (01120), Tonnerre (01121), Vézelay (01122).
03	Généralité	Orléans (North)	Greniers	Orléans (02101), Beaugency (02102), Châteaudun (02104), Brou (02105), Cheverny (02109), Chartres (02110), Janville (02114), Vendôme (02116), Montoire (02117), Pithiviers (02120), Romorantin (02121), Sully (02122).
			Greniers et chambres	Blois et Mer (02303), Mondoubleau et Saint-Calais (02318).
			Chambre	Bonneval (02206).
04	Généralité	Orléans (South)	Greniers	Boiscommun (02107), Bonny (02108), Cosne (02111), Clamecy (02112), Gien (02113), La Charité (02115), Montargis (02119), Saint-Fargeau (02123).
05	Généralité	Moulins (South)	Greniers	Moulins (03101), Montluçon (03102), Gannat (03103).
			Chambre	Vichy (03204).
			Contrôles	Aigueperse (03580), Chambon (03581), Cusset (03582), Ébreuil (03583), Évaux (03584), Maringues (03585), Menat (03586), Pionsat (03587), Ris (03588), Saint-Pourçain (03589).

Table A.3 —continued on next page

Table A.3 —Continued

Map			Gabelle jurisdictions	
Identifier	**Type**	**Area**	**Type**	**Name (identifier)**
06	Généralité	Moulins (North)	Greniers	Decize (03105), Château-Chinon (03106), Moulins-Engilbert (03107), Luzy (03108), Saint-Pierre-le-Moûtier (03109), Nevers (03110), Saint-Saulge (03111), Sancoins (03112).
07	Généralité	Bourges	Greniers	Bourges (04101), Buzançais (04102), Dun-le-Roi (04103), Issoudun (04104), Saint-Amand (04106), Selles (04107), Sancerre (04108), Vierzon (04109).
			Chambres	La Châtre (04205), Montfaucon (04210).
			Contrôles	Angles (04580), Bélâbre (04581), Le Blanc (04582), Saint-Benoît (04584).
08	Département	Tours	Greniers	Tours (05101), Chinon (05103), Château-du-Loir (05106), Loches (05107), Langeais (05110), Le Lude (05111), Neuvy (05113), Saumur (05115).
			Greniers et chambres	Amboise et Chaumont (05302), Montrichard et Bléré (05312), Richelieu et Loudun (05314).
			Chambres	Bourgueil (05204), Sainte-Maure (05205), Preuilly (05208), La Haye (05209).
			Contrôles	Airvault (05580), Argenton-le-Château (05581), Châtellerault (05582), Jaulnay (05583), Latillé (05584), La Puye (05585), Thouars (05586).
09	Département	Angers	Greniers	Angers (06101), Candé (06102), Ingrandes (06103), Saint-Florent (06104), Cholet (06105), La Flèche (06106), Baugé (06107), Beaufort (06108).
			Chambre	Saint-Rémy (06209).
			Contrôles	Mauléon (06580), Mortagne (Anjou) (06581), Tiffauges (06582).
10	Département	Le Mans	Greniers	Le Mans (07101), La Ferté-Bernard (07105), Mayenne (07110), Ernée (07111), Laval (07112), La Gravelle (07113), Château-Gontier (07114), Craon (07115), Pouancé (07116), Malicorne (07117).

Table A.3 —continued on next page

Table A.3 —Continued

Map			Gabelle jurisdictions	
Identifier	**Type**	**Area**	**Type**	**Name (identifier)**
			Chambres	Ballon (07202), Loué (07203), Sillé (07204), Nogent-le-Rotrou (07206), Montmirail (07207), Bonnétable (07208), Bouloire (07209).
11	Généralité	Caen	Greniers	Caen (08101), Bayeux (08102).
12	Généralité	Alençon	Greniers	Alençon (09101), Fresnay (09103), Falaise (09104), Sées (09105), Argentan (09106), Bellême (09107), Exmes (09108), Mamers (09109), Mortagne (Alençon) (09110).
			Chambre	Carrouges (09202).
13	Généralité	Rouen (South)	Greniers	Andely (10110), Bernay (10111), Caudebec (10114), Évreux (10115), Gournay (10116), Gisors (10117), Louviers (10120), Neufchâtel (10121), Pont-de-l'Arche (10122), Vernon (10123), Verneuil (10124).
			Grenier et chambre	Rouen et La Bouille (10301).
			Chambres	Brezolles (10212), Conches (10213), L'Aigle (10219).
14	Généralité	Rouen (North)	Greniers	Dieppe (10102), Eu et Le Tréport (10103), Fécamp (10104), Honfleur (10105), Harfleur (10106), Le Havre (10107), Pont-Audemer (10108), Saint-Valery-en-Caux (10109), Lisieux (10118).
15	Généralité	Amiens	Greniers	Amiens (11101), Abbeville (11102), Aumale (11103), Corbie (11104), Doullens (11105), Forest-Montiers (11106), Grandvilliers (11107), Mers (11108), Montdidier (11109), Péronne (11110), Roye (11111), Rue (11112), Saint-Quentin (11113), Saint-Vallery (11114), Sainneville (11115).

Table A.3 —continued on next page

Table A.3 —Continued

Map			Gabelle jurisdictions	
Identifier	**Type**	**Area**	**Type**	**Name (identifier)**
16	Généralité	Soissons	Greniers	Soissons (12101), Cormicy (12103), Coucy (12104), Guise (12105), Laon (12106), Marle (12107), Noyon (12108), Vailly (12109), Château-Thierry (12111), Clermont (12112), Crépy (12113), Fère-en-Tardenois (12114), La Ferté-Milon (12115).
			Chambres	Aubenton (12202), Vervins (12210).
17	Généralité	Châlons	Greniers	Châlons (13101), Château-Porcien (13102), Joinville (13103), Reims (13104), Saint-Dizier (13105), Sainte-Menehould (13106), Vitry (13107), Épernay (13108), Sézanne (13109).
			Magasins	Donchery (13490), Mézières (13491), Rethel (13492).
18	Généralité	Troyes (East)	Greniers	Troyes (14101), Arcis-sur-Aube (14102), Beaufort [Rosnay] (14103), Bar-sur-Aube (14104), Mussy (14108), Nogent (14109), Saint-Florentin (14110), Villemaur (14111).
19	Généralité	Troyes (West)	Greniers	Chaumont (14105), Langres (14106), Montsaugeon (14107).
20	Généralité	Bourgogne	Greniers	Dijon (15101), Arnay-le-Duc (15102), Avallon (15103), Auxerre (15104), Bar-sur-Seine (15108), Châtillon (15111), Montbard (15114), Nuits (15117), Noyers (15118), Pouilly (15119), Saulx-le-Duc (15121), Saulieu (15122), Semur-en-Auxois (15123).
			Grenier et chambre	Beaune et Chagny (15307).
			Chambres	Seignelay (15224), Vitteaux (15228).

Table A.3 —continued on next page

Table A.3 —Continued

Map			Gabelle jurisdictions	
Identifier	**Type**	**Area**	**Type**	**Name (identifier)**
21	Département	Chalon-sur-Saône	Greniers	Auxonne (15106), Bourbon-Lancy (15109), Seurre (15110), Mont-Saint-Vincent (15115), Paray (15120), Saint-Jean-de-Losne (15126).
			Greniers et chambres	Autun et Montcenis (15305), Charolles et Perrecy (15312), Chalon-sur-Saône et Louhans (15313), Semur-en-Brionnais et Marcigny (15325).
			Chambres	Mirebeau (15216), Toulon (15227).

Table A.4. Additional Variables in the Grandes Gabelles Point-Form Shapefile

Variable		
dta / txt	dbf	Description
noacass	noacass	Cassini identifier
nom_cassini	NC	Parish cassini name (proper case)
nom_1793	N1793	Municipality 1793 name (proper case)
nom_1801	N1801	Commune 1801 name (proper case)
nom_1999	N1999	Commune 1999 name (proper case)
x	X	Longitude in RGF93
y	Y	Latitude in RGF93
cassini_abs	ABS	Cassini location absent from Sanson (1665)
uncertain	UNCERT	Cassini location uncertain in Sanson (1665)

Notes. This table lists the additional variables included in the dbf attribute table of the point-form Grandes Gabelles shapefile, as well as in the associated dta and txt tabular data files. These files include all the variables available in the polygon-form Grandes Gabelles shapefile and their associated tabular data files as listed in Table 1. See the main text for variable definitions and typologies.

Table A.5. Variables in the Grandes Gabelles Jurisdiction Seats Shapefile

Variable		
dta / txt	dbf	Description
grenier	GRENIER	Grenier à sel identifier
cl_flag	CL_FLG	Grenier à sel chef-lieu flag
cl_noacass	CL_CASS	Grenier à sel chef-lieu cassini identifier
cl_insee	CL_INSEE	Grenier à sel chef-lieu INSEE 2021 identifier
cl_nom_cassini	CL_NC	Grenier à sel chef-lieu cassini name (proper case)
cl_nom_1793	CL_N1793	Grenier à sel chef-lieu 1793 name (proper case)
cl_nom_1801	CL_N1801	Grenier à sel chef-lieu 1801 name (proper case)
cl_nom_1999	CL_N1999	Grenier à sel chef-lieu 1999 name (proper case)
cl_nom_2021	CL_N2021	Grenier à sel chef-lieu 2021 name (proper case)
cl_x	CL_X	Grenier à sel chef-lieu longitude in RGF93
cl_y	CL_Y	Grenier à sel chef-lieu latitude in RGF93
cl_x_wgs	CL_X_WGS	Grenier à sel chef-lieu longitude in WGS84
cl_y_wgs	CL_Y_WGS	Grenier à sel chef-lieu latitude in WGS84

Notes. This table lists the variables included in the dbf attribute table of the point-form jurisdiction seats shapefile, as well as in the associated dta and txt tabular data files. These files further contain a set of seat variables, starting with cl2, for gabelle jurisdictions that combine a salt granary and a chamber. See the main text for variable definitions and typologies.

Table A.6. Summary Statistics

	Mean			Total			
Salt granaries:	All	CS	VS	All	CS	VS	Granaries
Parishes	68	70	66	13,466	7,503	5,963	197
Fiscal fires	5,764	5,734	5,798	1,100,916	590,651	510,265	191
Gabelants	19,005	16,745	21,650	3,629,992	1,724,768	1,905,224	191
Salt sales	2,055	1,863	2,234	454,045	199,358	254,687	221
Voluntary sales		472	2,234		50,533	254,687	221
Compulsory sales		1,391			148,825		107
Salt price							
Voluntary sales		40.7	39.3				221
Compulsory sales		43.4					107
Salt Cost	3.7	3.1	4.4				221

Notes: This table provides summary statistics for key variables in Sanson's (1665) statistical tables. In the variable names, *CS* refers to compulsory-sale granaries and *VS*, to voluntary-sale granaries. Salt sales and prices are provided separately for sales and prices on voluntary and compulsory sales—voluntary sales were possible in both compulsory- and voluntary-sales granaries. Salt sales are expressed in minots, and salt prices and costs in decimal livres tournois per minot (see Footnotes 42 and 44 in the main text).

Table A.7. Salt Purchase Cost and Distance to Port

Outcome:	Salt cost		
	(1)	(2)	(3)
Distance to port	0.957***		
	[0.135]		
Land-and-river distance		0.750***	
		[0.118]	
Distance to river			1.635***
			[0.222]
Distance along river			0.619***
			[0.132]
Port of origin fixed effects	Yes	Yes	Yes
Salt granaries	221	221	221
R^2	0.747	0.740	0.770
Within R^2	0.626	0.615	0.660

Notes. This table reports regressions of salt purchase costs on alternative measures of distance to ports of origin. In Column 1, distance is the Euclidean distance to the nearest port, Column 2 uses the total land-and-river route distance, and Column 3 decomposes this measure into (i) overland distance to the river network and (ii) distance traveled along rivers to the port. All distance variables are expressed in 100-kilometer units. All specifications include port-of-origin fixed effects. Standard errors, clustered at the intersection of généralité/département and port-of-origin level, are reported in brackets.
*** p<0.01, ** p<0.05, * p<0.1.

B. Geolocalization of Cassini Parishes

To construct our historical GIS of the Grandes Gabelles, we draw on Cristofoli et al.'s (2021) tabular dataset, which provides the coordinates of the 44 thousand parishes that appear on Cassini's *Carte générale de la France* surveyed between 1756 and 1789 (Dainville, 1955; Pelletier, 1990). Specifically, we use the 43,792 observations of the file `lieux_cassini_devenus_communes.csv`. This file provides two RGF93 coordinate fields: (1) `position_cassini`, derived directly from the georeferenced Cassini maps, and (2) `position_1999`, corresponding to the chef-lieu of parishes that later became communes, and manually adjusted using the 1999 BD TOPO (Dekeyne, 1998; IGN, 1999).[1] Note that this information is missing for 7,215 parishes.

To decide which coordinates to adopt, we project both sets onto IGN's (2021) commune polygon shapefile, append the corresponding INSEE commune identifier, and compare it to the identifier in Cristofoli et al.'s (2021) variable `commune_mars_2021`. Using the `position_cassini` coordinates yields 1,669 misallocations, while using the `position_1999` coordinates results in only 19 misallocations, mostly due to points falling in water bodies. We therefore adopt the `position_1999` variable to build our parish point layer and manually correct the remaining misallocations.

C. Data Consistency Checks

We conducted the following consistency checks to validate the accuracy and internal consistency of the data extracted from Sanson's (1665) statistical tables.[2]

1. **Aggregation check for généralités and gabelle départements**
   For each demographic count (number of parishes, fiscal fires, gabelants, etc.) and each salt quantity category (voluntary sales and compulsory sales), the reported total (T) for généralité or département (G) must equal the sum of the corresponding values across all its subordinate granaries:

$$T_G = \sum_{i \in G} v_i$$

   where T_G is the reported total and v_i the value for granary i.

[1] Cristofoli et al.'s (2021) codebook defines the `position_1999` variable as the "[p]osition du lieu tel qu'indiquée dans la BD-Topo IGN 1999 (position du chef lieu de commune) ou, si ce lieu n'est pas une commune en 1999, position approximative calculée pour un préplacement du lieu sur la carte (cas des communes ayant un jour existé mais non existante en 1999)."

[2] For an assessment of the quality of the demographic data reported in Sanson's (1665) *Atlas des gabelles*, see Dupâquier (1979, pp. 139–42).

2. **Granary-level total sales**
   The sum of voluntary (V) and compulsory (C) salt sales must equal the reported total salt sales (S) in every granary i:

$$V_i + C_i = S_i$$

3. **Theoretical basic consumption**
   The reported theoretical consumption for basic needs (*menues salaisons*, B) must equal the number of gabelants (N) multiplied by $\frac{1}{14}$ minot per individual in every granary i:

$$B_i = N_i \times \frac{1}{14}$$

4. **Reconciliation of theoretical and actual total consumption**
   The sum of theoretical basic consumption (B) and theoretical extra consumption (E, either positive or zero), net of missing basic consumption M (either positive, if E is zero, or zero if E is positive), must equal the actual total salt sales (S) net of any extra salt levies (L) in every granary i:

$$B_i + E_i - M_i = S_i - L_i$$

5. **Price decomposition**
   For both regimes of sales, indexed by $j \in \{\text{voluntary}, \text{compulsory}\}$, the reported total price (P) must equal the sum of the royal duty (K) and the officers' duty (O) in every granary i:

$$P_i^j = K_i^j + O_i^j$$

6. **Common price as arithmetic average**
   The reported common price for all sales types (P^{c}) must equal the simple average of the voluntary price and compulsory price in every granary i, where $j \in \{\text{voluntary}, \text{compulsory}\}$:

$$P_i^{\text{c}} = \frac{1}{2} \sum_{j \in J} P_i^j$$

These equations were systematically applied to detect and flag any discrepancies in Sanson's (1665) statistical table. We found nearly no discrepancies (or minor discrepancies due to rounding) in our final dataset.

D. The Gabelle Tax Burden

In this section, we draw on data from Sanson's (1665) statistical tables to quantify the gabelle tax burden on household budgets circa 1665. We begin by outlining a simple model of tax burden (Section D.1), then specify the parameter values we use for the estimation (Section D.2), and conclude with a rough estimate of the tax burden implied by the gabelle (Section D.3).

D.1. Assessment of the Tax Burden

To quantify the burden of the gabelle on household budgets, we define the tax burden (B) as the ratio of the total salt tax collected (T) to the total income of gabelants (Y). This tax burden can be defined over any set I of salt granaries indexed by i:

$$B_I = \frac{\sum_{i \in I} T_i}{\sum_{i \in I} Y_i}. \tag{1}$$

First, to estimate T_i, we need a measure of the total amount of salt tax collected in each granary, taking into account the two different regimes of salt sales, denoted by $k \in \{\text{voluntary}; \text{compulsory}\}$. Sanson's (1665) statistical tables report, for each granary i, both the legal final price of salt (p_{ik}) for each type of sales and the purchase cost of salt (c_i). They do not separately document the tax component of the price. We therefore assume that the tax corresponds to the difference between the legal final price and the purchase cost ($p - c$). This implicitly assumes that, in the absence of the gabelle, households would face the competitive-market price of salt—its marginal production cost.

To recover the total amount of salt tax collected in a granary, we multiply this difference by the total quantity of salt sold (S) in that granary for both types of sales (k):

$$T_i = \sum_k S_{ik}(p_{ik} - c_i) \tag{2}$$

Second, estimating Y_i requires a measure of total household income in each granary. Although not all gabelants were wage earners, the only systematically available data is wages. We therefore anchor income estimates on wages and adjust them to account for the higher incomes of non-wage earners. We define household income as the product of the average daily wage rate (w), the number of days worked per year (d), and the number of income earners per household (n). Multiplying by the number of taxpaying households

in a granary (H) yields total household income:

$$Y_i = H_i w d n. \tag{3}$$

The total tax burden on (taxpaying) households in the set of granaries I thus writes:

$$B_I = \frac{\sum_{i \in I} T_i}{\sum_{i \in I} Y_i} = \frac{\sum_{i \in I} \sum_k S_{ik}(p_{ik} - c_i)}{w d n \sum_{i \in I} H_i}. \tag{4}$$

This framework enables us to compute the gabelle tax burden for different types of granaries and workers by introducing group-specific wage rates.

D.2. Parameter Values

While Sanson's (1665) statistical tables provide granary-specific information for some parameters—summarized in Table A.6—we also rely on more general information from other sources, which are detailed in Table D.1.

Table D.1. Parameters for Assessing the Salt Tax Burden

Parameter		Value	Source
Days worked per year	d	275	MHC (2024) & Ridolfi (2019)
Wage earners per household	n	1	Cabourdin (1969)
Daily household wage rate	w	Table D.2.	See text.

Notes. This table provides the numerical values assigned to the parameters to estimate the salt tax burden. £ denotes *livres tournois*. *MS (2000)* denotes Morrisson and Snyder (2000) and *MHC (2024)*, Maneuvrier-Hervieu and Chambru (2024).

Salt sales, prices, and costs, and number of households Information on salt sales (S), prices (p), and costs (c), and on the number of households (H) are provided in Sanson's (1665) statistical tables at the granary level.[3] As discussed in Section 4.1, this information is available for all (but one) gabelle jurisdictions, except for salt depots and control zones, i.e., 221 gabelle jurisdictions. Table A.6 provides their average values across granaries of both taxation regimes.

Wages and income distribution To estimate wages and the income distribution in the seventeenth century, we combine two sources: Ridolfi (2019) and Morrisson and Snyder

[3]We assume that the marginal cost of salt corresponds to the reported price of salt paid by gabelle officers to supply their granary.

(2000). Ridolfi (2019) reports national average daily wages in 1665 for three occupational groups: agricultural laborers (0.48 livres tournois), building laborers (0.53 livres tournois), and building craftsmen (0.99 livres tournois).[4] This source, however, has two limitations. First, it covers only three occupations, two of which lie toward the lower end of the income distribution. Relying exclusively on these wages would therefore understate average income at the time. Second, it provides no information on the relative size of these occupational groups in the population. To address these limitations, we turn to a second source, Morrisson and Snyder (2000, Table 3, p. 66), which provides a comprehensive breakdown of occupational categories and their population shares for 1788.

Assuming that the overall structure of the income distribution in 1788 is broadly representative of that in 1665, we combine information from Morrisson and Snyder (2000) and Ridolfi (2019) to reconstruct the full wage distribution in 1665. We proceed as follows:

1. As shown in Table D.2, we start from the occupational categories reported in Morrisson and Snyder (2000) for 1788. For each category, we compute average income per household (the relevant unit for the tax burden in Equation 4), the number of households, and the corresponding household share. We then map each of the three occupational groups in Ridolfi (2019) to the relevant occupational categories in Morrisson and Snyder (2000) and assign the observed daily wages in 1665, which appear in non-italicized text in Column 6.

2. Because wages are observed in both 1665 and 1788 for three matched occupational categories, we estimate the linear relationship between wages in both years as shown in Figure D.1. We use this relationship to interpolate 1665 wages for the remaining occupational categories, for which income is observed only in 1788 in Morrisson and Snyder (2000). These imputed values are reported in italic in Column 6 of Table D.2.

3. Using the full set of occupational incomes and household shares in 1788, we then compute a weighted average income per household for that year, yielding 510 livres tournois.[5] Applying the same linear mapping yields the corresponding weighted average income in 1665, equal to 0.88 livres tournois per day. To assess the plausibility of this estimate, we convert it into an annual income per capita, obtaining 82 livres tournois.[6] This figure is close to existing estimates in the literature: Riley (1986,

[4]These estimates incorporate both monetary and in-kind payments.
[5]Weights are given by the household shares reported in Column 4 of Table D.2.
[6]We convert the daily household income of 0.88 livres tournois into an annual figure by multiplying it by 275 days. To obtain annual income per capita instead of household, we then divide household income by household size. Following Morrisson and Snyder (2000), household size is assumed to be 1.08 persons for servants, 3 persons for non-agricultural workers, and 4 persons for all other occupational categories. We

Footnote 24, p. 249) reports an annual average income per capita of about 100 livres tournois circa 1660.

4. We then use this weighted average income to estimate the tax burden faced by the average individual in 1665. Because the income distribution was highly skewed—and tax liabilities therefore differed substantially across occupations—we also compute tax burdens separately for key occupational groups: agricultural laborers, building laborers, building craftsmen, and the combined group of nobles, clergy, and bourgeois.

Table D.2. Constructing the 1665 income distribution from Morrisson and Snyder (2000) and Ridolfi (2019)

Morrisson and Snyder (2000)				Ridolfi (2019)	
(1)	(2)	(3)	(4)	(5)	(6)
Occupational category	Income per household	Households (thousands)	Household share (%)	Occupational category	Daily wage (w)
(1)/(2) Nobles and clergy / Bourgeois	*2,900*[a]	*675*[a]	8.6	-	*3.64*
(3) Shopkeepers and artisans	600	810	10.3	Building craftsmen	0.99
(4) Workers (outside agriculture)	200	500	6.4	Building laborers	0.53
(5) Servants (outside agriculture)	100	1,000	12.7	-	*0.41*
(6a) Small scale farmers	250	1,312.5	16.7	-	*0.58*
(6b) Large scale farmers	880	562.5	7.2	-	*1.31*
(7) Agriculture: day laborers and servants	160	2,537.5	32.3	Agricultural laborers	0.48
(8) Mixed workers (agriculture and industry)	300	450	5.7	-	*0.64*
Weighted Average	*510*	-	-	-	*0.88*

Notes. This table illustrates how we combine information from Morrisson and Snyder (2000) and Ridolfi (2019) to estimate wages and the income distribution in 1665. Columns 1 and 2 reproduce Columns 1 and 3 of Morrisson and Snyder's (2000, p. 66) Table 3. Column 3 reports the number of households in each occupational category in 1788, computed by dividing the population counts in Morrisson and Snyder (2000) by the assumed number of individuals per household: 3 for "Workers (outside agriculture)," 1.08 for "Servants (outside agriculture)," and 4 for all other categories. Column 4 reports the corresponding household shares, defined as the ratio of households in each category to the total number of households. These shares are used as weights to compute the weighted average income reported in the last row. Column 5 maps each occupational category in Ridolfi (2019) to the corresponding categories in Morrisson and Snyder (2000). Column 6 reports daily wages in 1665. Italicized values are linearly interpolated using the relationship shown in Figure D.1, as wages for these categories are documented only in Morrisson and Snyder (2000) and not in Ridolfi (2019).

[a]These figures are not reported in Morrisson and Snyder's (2000) original table. We construct them by aggregating the "Nobles and clergy" and "Bourgeois" categories, yielding a combined population of 2.7 million individuals. Dividing by 4 individuals per household yields 675 households. We then divide the authors' preferred high total income estimate (1,955 million livres) by this number to obtain the average income per household for the combined category.

decompose total household income into contributions from these three groups (30.7, 15.5, and 195.8 livres tournois, respectively) and divide each component by the corresponding household size.

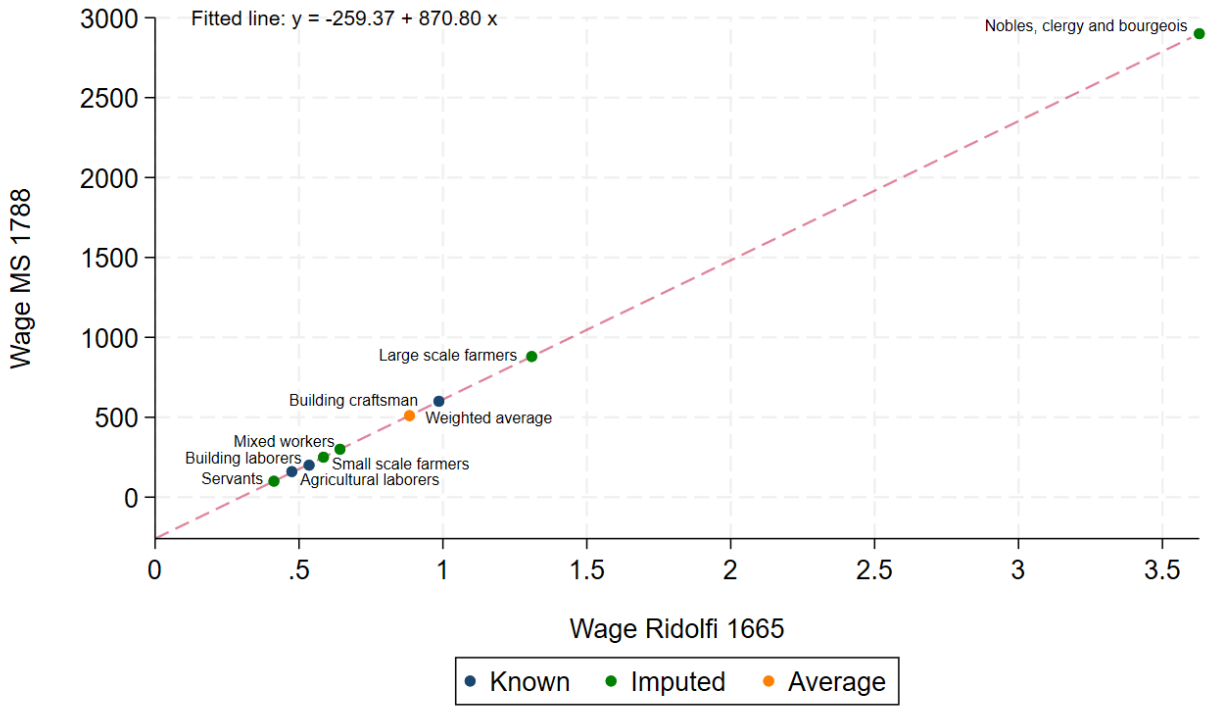


Figure D.1. Mapping 1788 Wages to 1665 Wages Using a Linear Relationship

Notes. This figure plots wages reported in Morrisson and Snyder (2000) against wages reported in Ridolfi (2019) for the three occupational categories observed in both sources (blue dots). The fitted linear relationship is used to impute 1665 wages for occupational categories observed only in 1788 (green dots). The orange dot shows the implied weighted average wage in 1665.

Days worked per year Consistent with the literature on early modern living standards, Ridolfi (2019, p. 597) assumes 250 working days per year. But more recent evidence for Normandy suggests that annual days worked may have increased to as many as 300 by the eighteenth century (Maneuvrier-Hervieu and Chambru, 2024, pp. 16–18). We therefore adopt an intermediate value of 275 days, which aligns with the limited observations Maneuvrier-Hervieu and Chambru (2024) report for the second half of the seventeenth century (270–85 days).

Wage earners per household To pin down the number of wage earners per household, we draw on three complementary inputs: the average number of gabelants per household, total household size, and real household incomes. Sanson's (1665) statistical tables imply an average of 3.3 gabelants per household. In addition, Cabourdin (1969, e.g., p. 297) infers total household size (including children) by applying a multiplier of 4/3 to the number of gabelants—a plausible adjustment given the age structure—implying about 4.4 persons per household. This figure is close to the conventional benchmark in the living-standards

literature of four adult-equivalent consumption units per wage earner (e.g., Ridolfi, 2019, p. 602). We therefore assume one wage earner per household in 1665.

D.3. Tax Burden Estimate

We now estimate the gabelle tax burden using our framework and the parameter values reported in Tables A.6, D.2, and D.1. Table D.3 reports the resulting tax burden for four of the eight occupational groups listed in Table D.2, as well as for the weighted average income. It first presents average burdens across all granaries, then reports separate estimates under each taxation regime.

Table D.3. The Salt Tax and Cost Burdens
(Percent of Income)

	All granaries		CS granaries		VS granaries	
	Tax	Cost	Tax	Cost	Tax	Cost
Agricultural laborers	11.9	1.1	13.8	1.5	10.2	0.8
Building laborers	10.5	1.0	12.2	1.3	9.1	0.7
Building craftsmen	5.7	0.5	6.6	0.7	4.9	0.4
Nobles, clergy, and bourgeois	1.6	0.1	1.8	0.2	1.3	0.1
Weighted average	**6.4**	0.6	7.4	0.8	5.5	0.4

Notes. This table shows the percentage of household income paid in salt tax in the Grandes Gabelles area by occupational group and taxation regime. The columns *Tax* are based on Equation 4. The columns *Cost* show the cost of salt as a percentage of household income. *CS* denotes compulsory-sales granaries and *VS* denotes voluntary-sales granaries.

On average, households in the Grandes Gabelles area devoted 6.4 percent of their income to the salt tax.[7] However, the tax burden varied substantially across regimes: in compulsory-sales granaries, it reached 7.4 percent of income, compared with only 5.5 percent in voluntary-sales granaries. As a result, the burden ranged from 1.3 percent for nobles, clergy members, and bourgeois households in voluntary-sales granaries to 13.8 percent for agricultural laborers in compulsory-sales granaries. We can compare our estimates with the 13 percent of income paid for salt proposed by Morineau (1972, p. 232) for a household of weavers in Abbeville circa 1700. This figure is consistent with our estimate for a building laborer in granaries with compulsory sales (as Abbeville was), i.e., 12.2 percent. Budgetary records from Normandy provide additional points of comparison (Chambru and Maneuvrier-Hervieu, 2023, Appendix, pp. 35–36). Convent accounts from

[7] Total salt expenditures amounted to about 7 percent of income, as the retail price of salt included both the tax and the procurement cost paid by the administration to production sites.

Rouen in 1645 indicate that salt and spices accounted for 3.2 percent of monthly expenditures—a relatively modest budget share that is consistent with the community's affluent consumption patterns, as suggested by their high meat expenditure share (31 percent). By contrast, at the Abbey of Notre-Dame d'Aunay, located just outside the Grandes Gabelles area, salt represented only 0.9 percent of expenses in 1644, in line with substantially lower salt taxation (Le Hardy, 1897, p. 167).[8]

In the Grandes Gabelles area, the order of magnitude of the salt tax burden was substantial. As shown in the *Cost* columns of Table D.3, absent taxation, households would have devoted on average only about 0.6 percent of their income to salt purchases. Therein, the gabelle therefore increased salt expenditures by a factor of ten. Importantly, a burden of about 0.6 percent provides a plausible benchmark for what households in gabelle-exempt areas were paying.

In addition, many households then lived close to subsistence. Ridolfi (2019, p. 602) shows that agricultural and building laborers often fell below this threshold, with welfare ratios between 0.6 and 0.9 over the period 1660–1790. At such income levels, the salt tax necessarily displaced essential expenditures. Even for more advantaged groups, such as building craftsmen, the salt tax absorbed most of the resources available for non-essential consumption.

D.4. The Tax Burden in Comparative Perspectives

How does this compare with a major modern indirect tax levied on an essential good, such as gasoline taxes? In the United States, household gasoline expenditures accounted for about 4 percent of pre-tax income in 2013.[9] In France—where the Yellow Vest movement took place—spending on gasoline represented about 5 percent of total household expenditures in 2022, with about half of that amount in taxes.[10] The implied budget shares are therefore of comparable magnitudes.

But what made the gabelle distinctive is that its retail price was overwhelmingly composed of a tax. Combined with mandatory consumption rules, this feature blurred the boundary between indirect and direct taxation. Moreover, the burden likely intensified over the eighteenth century for agricultural workers in the high-tax region. Indeed, real wages trended downward across France (Ridolfi, 2019, p. 615), while gabelle tax rates

[8] We thank Cédric Chambru for pointing us toward these references.
[9] Source: https://www.eia.gov/todayinenergy/detail.php?id=9831 (accessed January 2026).
[10] Figures from the then Ministry of Sustainable Development: https://www.statistiques.developpement-durable.gouv.fr/edition-numerique/chiffres-cles-energie-2024/4-depenses-en-energie (accessed January 2026).

increased.[11] At the same time, overall taxation rose even more, which mechanically reduced the salt tax's share in government revenues in the final decades of the Ancien Régime.

E. The Gabelle in Comparative Perspectives

In this section, we provide a detailed comparison of the French gabelle with other historical systems of salt taxation. We focus in particular on seventeenth- to nineteenth-century Qing China, eighteenth-century Russian Empire, the Ottoman Empire prior to 1861, and the Habsburg Empire prior to 1815. We compare these regimes along three dimensions: (i) their spatial and administrative organization, (ii) price regulations and tax designs, and (iii) their contributions to government revenue.

Spatial coverage As outlined in Section 2, the administration of salt taxation in France exhibited substantial regional variation. Similarly, Qing China, Russia, and the Ottoman Empire implemented heterogeneous salt tax systems across their territories, reflecting diverse administrative structures and economic conditions. By contrast, the Habsburg Empire was the only state among them to successfully standardize the administration of salt taxation across its domain. Specifically, the Qing Empire was divided into 11 salt districts, within which all government-licensed salt trade was confined (Wang, 2022). The transportation of salt between these districts was strictly prohibited. Exemptions from salt taxation were granted primarily in areas where high monitoring costs or active resistance from the local population made enforcement difficult. In the Russian Empire, the salt administration was organized at the provincial level (LeDonne, 1975). Each province had a designated list of mines it could ship its salt from. In addition, the state allowed for some regional heterogeneity in setting the prices. The Ottoman Empire maintained a fragmented salt taxation system until 1861, administered through five regional authorities (Adshead, 1992, pp. 260–63) . The central government directly controlled certain regions, such as the Intendancy of Salt in Constantinople and former Venetian territories. By contrast, other regions—including Egypt, Azerbaijan, and Crimea—possessed autonomy in the collection and assessment of salt taxes. This decentralized structure reflected the empire's diverse administrative practices and varying degrees of central oversight across its territories. In comparison, the Habsburg administration of salt taxation was more homogeneous. Salt production was largely an imperial domain, with key sites such as the Salzkammergut directly controlled by the state (Adshead, 1992, pp. 230–36). Each

[11] Data on trends in the salt tax rate, revenue, and burden up to the Revolution are presented in Davoine, Enguehard, and Kolesnikov (2025, Appendix, p. 9).

territorial holding licensed its own traders and the tax was levied on sales rather than on individuals and traders had to acquire salt from a pre-defined saline as in the Russian case (Adshead, 1992, pp. 249–50). All regions of the empire were subject to the licensing system and the sales tax, though tax-free zones existed but only in the immediate vicinity of the state-controlled salt chamber estates.

Price regulation and tax policy This section compares how early modern states set salt prices and taxed consumption. Unlike in France, where the state mandated the compulsory purchase of salt in certain regions, most states sought to monopolize salt production and distribution. China employed a diverse set of pricing regimes for salt. While some counties operated without price regulation, others implemented fixed prices or maintained a regulated price range (Zelin, 2005; Wang, 2022). Price adjustments were administered directly by the imperial government, and there was no policy of mandatory salt consumption. After the salt monopoly was introduced in 1705 in Russia, the government imposed a price floor on salt, but it did not establish an upper limit (PSZ, 1727; Troitskii, 1966). The exact price regime was set by the provincial governor. Before 1861, the Ottoman Empire had no unified pricing system. Rather, different jurisdictions used a combination of fiscal tools such as tolls, state rights (Azerbaijan), or sales tax (Egypt). In some other instances such as the Crimean khanate, rulers owned salines and controlled the trade directly (Adshead, 1992, pp. 261–62). The Habsburgs sold salt to licensed traders (Keckowa, 1981). Certain groups, such as nobles, enjoyed privileges in the form of lower prices and could re-sell salt for profit. Generally speaking, the monarchy supervised state rights—licenses to sell in specific areas—through the Hofkammer, later the finance ministry (Bérenger, 1975).

Contribution to government revenue As in France, revenues from salt taxation represented a significant share of government income in China, Russia, and the Habsburg Empire. In each of these states, salt tax revenues accounted for about 10 percent of total government revenue, albeit at different periods—circa 1850 in China and during the eighteenth century for both Russia and the Habsburg Empire. However, obtaining a similar estimate for the Ottoman Empire is more challenging due to the absence of a unified system of salt taxation.

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