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EHES Working Paper | No. 195 | September 2020

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Abstract

This paper provides the first estimates of the number of days worked per year in the construction sector in Madrid between 1740 and 1810. Using a database of 389,000 observations with over 2.15 million paid days, we demonstrate how the length of the working year in the second half of eighteenth century was very close to the modern standard of 300 days, and that, by the end of the century, building workers—both skilled and unskilled—actually worked around 280 days, a far higher number than suggested by the current estimates for Spain or the figures proposed recently for northern Europe.

JEL Codes: J3, J49, N33, N63

Keywords: Spain, pre-industrial labour market, 18th century, working year, construction history

* The financial support provided by the Ministerio de Economía, Industria y Competitividad (Agencia Estatal de Investigación)/Fondo Europeo de Desarrollo Regional (FEDER), project HAR 2016-78026-P, and the Basque Government (Consolidated Group IT897-16 UPV-EHU), is gratefully acknowledged. I would like to thank Ernesto López-Losa for his valuable comments and suggestions.
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Working time is a major topic in research into pre-industrial living standards, in the related discussions regarding the Great and Little Divergence and the industrious revolution, and in studies using real wages as a proxy for the retrospective reconstruction of the macro-magnitudes or GDP. When calculating workers' earnings, it is not only the daily wage rates that are important but also the number of days worked (Schwartz 2007; Broadberry et al. 2015, p. xxxiii; Hatcher 2018, p. 42).

Little information has come to light about the length of the working year in pre-industrial times, as it is rarely touched on in the surviving documentation. More than 60 years ago, Phelps Brown and Hopkins (1956, p. 296) pointed out that insufficient knowledge of the number of days worked in a year meant they were unable "to construct any measure of real wages in the modern sense." The difficulty of estimating annual earnings continues to be stressed in working time studies (Woodward 1995, p. 34; Mocarelli and Ongaro, 2020, pp. 84–85).[1] Until very recently, little progress had been made and just a few years had been reconstructed, mostly for the construction sector or, to a lesser extent, for industry and mining (Barkan 1962; Baulant 1971; Beutler 1971; Blanchard 1978; Gibson 1990; Rosenband 2000; Maite 2014). This prompted the use of indirect methods to produce estimates of the working year, based on four different kinds of information: evidence from witness accounts and court records (Voth 2000, 2001); the number of working days implicit in the GDP calculations (Malanima 2010; Palma and Reis 2019); religious and civil regulations on feast days (García-Zúñiga 2014; Ewert, Gräfenber and Klages 2015; Ridolfi 2016, pp. 88-96); and the days of work required to achieve a basket of basic consumption goods (Allen and Weisdorf 2011; Humphries and Weisdorf 2019).

The lack of empirical data led scholars to propose different estimates, all of which included the implicit assumption of a working year that did not vary over time. Since Allen's seminal work (2001), a working year of 250 days (a five-day working week for 50 weeks) has become a common standard. However, more recent research has questioned this assumption, suggesting that the number of days in a year when work was carried out on a construction site is not the same as the number of days that individual workers actually

[1] In order to overcome the problem of the lack of information on the number of working days, series based on the payments made to workers employed on an annual basis have begun to be built. Gary and Olsson (2019); Humphries and Weisdorf (2015, 2019). Other scholars make no assumptions about the number of days worked, and calculate real wages by dividing the nominal daily wage rate by an index of consumer prices. Malanima (2013); Pamuk (2007); Pfister (2017); Rota and Weisdorf (2020).

worked. Seasonal labour, a preference for leisure, and frictional unemployment linked to high labour turnover mean that casual workers would have worked fewer days than Allen suggested. According to Stephenson (2020), Jensen, Radu and Sharp (2019) and Gary (2019), building workers rarely worked more than 180 days per year in early eighteenth century London and in eighteenth century rural Denmark, and 140 days in early modern Malmö.

The Spanish case suffers from an additional problem: the credibility given to the number of working days stated by a fiscal source, the *Ensenada Cadastre* (Álvarez-Nogal and Prados de la Escosura 2007, p. 327, and 2013, p. 7). In order to calculate workers' annual income for tax purposes, the Cadastre used a multiplying factor for the daily wage rate (120 days for rural labourers, 180 for artisans and urban trades, and 250 days for domestic servants and lackeys), which was criticized many years ago by Vilar (1970, p. 19) as an "annoyingly" uniform criterion for the whole of the Crown of Castile. As Camarero Bullón (2004, pp. 78–79) points out, this multiplier, whose sole purpose was "more or less tax according to non-tax criteria", continues to be confused with the days actually worked. The *Respuestas particulares* (Particular answers) of the Cadastre show the unrealistic nature of these figures, which were often adjusted later. Higher numbers of working days can even be found in the *Respuestas Generales* (General answers) themselves. The Cadastre figures are, furthermore, hardly original. Although the census was carried out in the mid-eighteenth century, its figures are similar to those in the Catalan cadastre and the *Equivalente* for Valencia in around 1715, despite the reduction in the number of holy days that took place in the first half of this century.[2] On the other hand, the 180 working days attributed to the artisans and urban workers in those three sources were in turn taken from Vauban's *Project d'une dixme royale* (1707).[3]

Yet again, the problem is the lack of empirical data. The only available evidence for the eighteenth century continues to be that which Nieto (2006, p. 428) reconstructed for four weeks at the end of 1773 and the beginning of 1774, one week in 1783 and seven weeks in 1788. Based on the fragmented data on repair works, and implicitly assuming that whoever did not appear in the accounts was not working elsewhere, he argues that in the building

[2] For the Ensenada Cadastre, Ringrose (1983, p. 73). The Catalan cadastre calculates a 100-day working year for rural laborers and 180 for all other workers (Camarero Bullón and Faci Lacasta 2006, p. 95). The Valencian Equivalent maintains the same figure for the urban trades, increasing the number of working days of rural laborers to 120. Ruiz Torres (1988, p. 52).

[3] Assuming the seasonality of work and underemployment, Mocarelli (2008, pp. 107–08) estimates that the maximum number of days worked in the construction sector in Milan was 180, thus accepting Vauban's figure.

sector the working week ranged from half a day to six days, which he attributes to variable weather.

This paper provides the first estimates of the number of days worked per year in the construction sector in Madrid between 1740 and 1810, and is organised as follows. Firstly, we describe the suppression, at least partially, of the religious restrictions regarding how time was used in eighteenth century Catholic Europe, i.e. the reduction in the number of traditional holy days when, effectively, no work was done. The increase in the maximum length of the working year in Madrid was quite small, from 279 to 295 days, but therefore brought it close to the modern standard of 300 days. It is obvious that reducing the number of holy days will not necessarily make workers more industrious, however, secondly, and based on a database of 389,000 observations with over 2.15 million paid days, I have reconstructed the working year at the Royal Palace of Madrid and other construction projects for the monarchy. As is demonstrated in this section, the average number of days worked at those sites from the 1760s onwards (292.6) is practically the same as the number of potential working days. The gap opened by the Protestant reforms in the sixteenth century had closed, and no differences were observed in the length of the working year between southern and northern Europe. Thirdly, I have estimated the number of days actually worked per year. Our data contain total numbers of working days much higher than current Spanish guesses and the recent figures of Stephenson (2020), Gary (2019), and Jensen, Radu and Sharp (2019), and lend support to the common assumption of a 250-day working year (Allen, 2001).

I. REDUCING THE NUMBER OF FEAST DAYS: THE LEGISLATIVE FRAMEWORK

In the wake of the Weberian Protestant work ethic, the plethora of feast days in the Catholic world, which reduced the potential number of working days, has been invoked as one of the factors behind the Little Divergence (Gorski 2005) and the industrious revolution (de Vries 1994a, 2008).

In early modern Europe there was an increase in working days with a different chronology, and no agreement among historians regarding the causes—was the change driven by necessity or by consumerism?—(Angeles 2008; Allen and Weisdorf 2011; de Vries 1994a, 2008; Malanima and Pinchera 2012; van Zanden 1999). This process first took place in the sixteenth century, when the Protestant reformation led to a drastic reduction in the

number of feast days. At the end of that century, the maximum working year in Westphalia, Denmark and the Netherlands would be close to the modern standard of 300 working days (Jensen 2004, p. 92; Riis 1990, pp. 75–76; Sauerman 1988, pp. 276–79; de Vries 2008, pp. 55–56, 88–89). In other Protestant countries the impact was not quite so great. In Sweden between 1571 and 1722, there still 32 feast days (Malmstedt 2014), meaning around 280 potential working days, and in England there is no agreement among scholars on the effects of 1536 Reform in terms of increasing laboursupply. While Voth (1994) suggested there was some extension of the working year before the outbreak of the Civil War, Woodward (1995, pp. 131–32) and Boulton (1996, p. 273) argued that the Reform did not have a great impact. Thus, the Protestant reform opened a gap of up to 25–35 workdays with Catholic countries, where the maximum working year would range between 265 and 275 day.[4] This gap would not close until the Enlightenment.

In the seventeenth century, there were also attempts to reduce the number of feast days in Catholic Europe, following the example of the Protestant countries. In 1642, Pope Urban VIII issued a papal bull limiting the number of holy days that all Catholics had to observe to 36 (two of which were compulsory fell on Sunday); suppressed those kept by devotion, vows or local customs; reduced local festivals to only two; and, theoretically, limited the right of bishops to institute new feast days. However, the real impact of the papal bull was very small. In the second half of the seventeenth century, the potential number of working days per year in the Catholic world can be estimated at around 275.

The gap closed in the eighteenth century, after a long and uneven process that began in Catalonia in 1727. At the request of the Provincial Council of Tarragona, Pope Benedict XIII authorised work, after people had heard Mass, on 22 feast days.[5] This was the model applied in the rest of Catholic Europe between the 1740s and 1775. No holy day was completely suppressed; reforms were limited to a papal indult allowing people to work after hearing Mass on certain feast days (the so-called half-holidays). The process is well known (Venturi 1969, pp. 131-61; Marino 1977; Marino 1981; Petruci 1982). In 1742, following the many requests he had received since the beginning of his pontificate, Benedict XIV sent a letter to different Church dignitaries in which he asked for their opinions regarding how, and to what extent, the number of holy days could be reduced. There was no unanimity in the responses

[4] All the estimates on the potential working days, both for Spain and for Europe, in García–Zúñiga (2014).
[5] *Constituciones Sacri Provincialis Concilii Tarraconensis*, pp. 22–24; *Raccolta di scritture*, pp. 10–14.

and, as a consequence, Rome did not lead another general reform for the whole Catholic world like that of 1642. The bishops in their respective dioceses would be responsible for the suppression of several feasts, which did not imply that the initiative was driven by them or that some monarchies were prevented from directly negotiating with Rome. Requests to diminish the number of holy days became more frequent. In the 1640s, 50s and 60s, certain dioceses of the Papal States, Tuscany, Sardinia, Sicily, Poland, and Germany, the kingdoms of Naples, Prussia, and Austria, the Austrian Lombardy, the Austrian Netherlands, and the Habsburg hereditary lands, and the cities of Nice, Prague and Ypres obtained Papal authorisation to reduce the number of feast days (Cattaneo 1984, p. 419; Hersche 1990, pp. 104–06; Marchetti 2003, pp. 28–35; Grenier 2012, pp. 621–24). In France it was Gallican bishops who continued the reforms that had begun in the previous century, and which were generally more drastic than those undertaken in the rest of Catholic Europe (Shusterman 2010, pp. 76–81, 252, 258–64).

In Spain, the Catalan example was followed by other kingdoms and provinces in the 1740s. At the instance of civil society or encouraged by the bishops, reforms in more than half of Spain's dioceses had already been undertaken by the middle of the century. These were continued during the following decades. Also, even if in the mid-1780s the process had not yet concluded, with the so-called half-holidays counted as 0.5, the net number of holy days fell to 24–25.5 (plus Sundays) in most of the bishoprics.

In the Archbishopric of Toledo, to which the city of Madrid belonged, the number of feast days at the end of the sixteenth century and beginning of the seventeenth came to 43 (see Appendix 5), to which the local ones would have to be added (between four and five at most), which meant a total of 47-48 feast days. The theoretical working year was slightly longer than the total number of holy days (plus Sundays) included in the lists of the synodal statutes, because some of them could fall on a Sunday or coincide with one of the moveable feasts of the Catholic liturgical cycle in any given year (Easter Monday and Tuesday, Ascension, Whit Monday and Tuesday, and Corpus Christi). From the empirical evidence provided by the available calendars, the probability of a holy day falling on Sundays or on a moveable feast is one-in-eight or nine. The maximum length of the working year can therefore be estimated at 273–275 days.

In 1743, after the publication of Pope Urban VIII's *Universa per orbem* bull, the number of

feasts fell from 43 to 38 (two of which had to fall on a Sunday). That number increased a year later when the suppressed festivity of the Conception of Mary—not included in the bull—was restored, and later in the 1670s, when the recently introduced feasts of Saint Ferdinand (1673) and Saint Augustine (1677) were added. The number of holy days remained at 40–42, including the local ones, from 1677 until 1745.[6] Therefore, the increase in the number of potential working days was very small, from 273–275 days to 278–279 – a difference of only four or five.

In the eighteenth century, the demands to reduce the number of feast days in the Archbishopric of Toledo date back to 1740. Larruga (1792, vol. XV, pp. 164–65) pointed out in his *Memorias* that, after the complaints of the workers at the Royal Cloth Factory in Guadalajara about the "many free days on which they had to keep their families without earning anything", the *Junta de Comercio y Moneda* (the Board of Trade and Currency) submitted a request to the King on 20 February regarding the need to address the issue of feast days, "so that people are allowed to work on them provided they complied with the obligation to hear Mass." Two years later, the Council of Castile, "to comply with a Royal Decree of H. M.", requested from the Royal Court of Catalonia a copy of the Provincial Council of Tarragona of 1727.[7] Larruga does not refer to the result of the consultations, but we do know that in the Archbishopric of Toledo the number of holy days was reduced in 1745. The papal brief authorising work on 22 feast days was published on 25 April of that year. The payrolls of the Royal Palace of Madrid show that the reform was effective from when the edict was enacted. A few years later, in 1758, the number of feast days was increased, after papal authorisation for the archbishopric to have two patron saints (Saint Ildefonsus and Saint Eugene) and the conversion of Saint Joseph into a feast of double precept. The number of feast days was then set at 21 feasts of double precept (hearing Mass and resting from work) and 19 half-holidays, when people could work after hearing Mass.[8]

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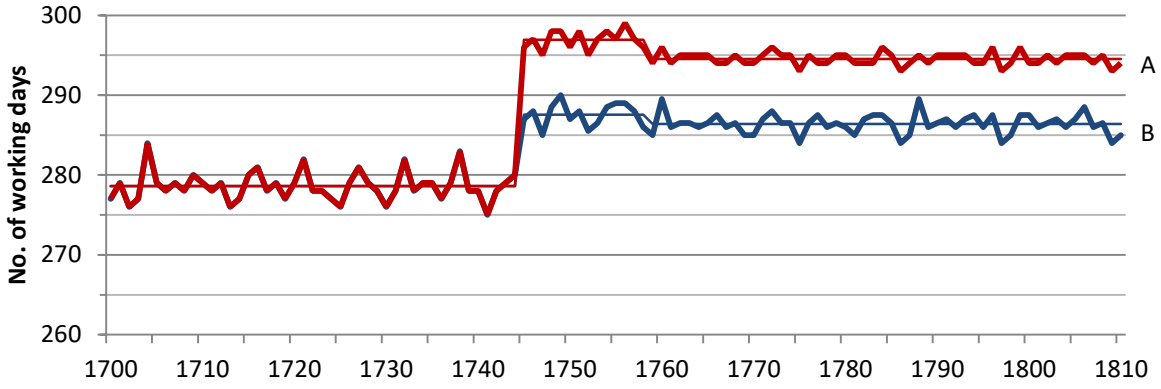
[6] *Constituciones synodales del Arçobispado de Toledo....*, 1601, fos. 27r-28v; *Constituciones sinodales … de Toledo…,* 1622, fo. 24v; *Constituciones synodales … de Toledo*, 1660, pp. 57–59; *Synodo Diocesana del Arzobispado de Toledo,* 1682, pp. 115–17, and reprint 1849, pp. 83–85.

[7] Miguel Fernández Munilla to Pedro Colón y Larreategui. Madrid, 13 January 1742. Archivo de la Corona de Aragón, Real Audiencia, Registros, 20, f. 132r.

[8] The number of feast days provided by the synodal statutes is sometimes wrongly increased by adding the so-called Court or Council holy days. See, for example, Nieto (2006, p. 429) and Agua de la Roza y Nieto (2015) for Madrid and, for seventeenth-century Catalonia, Kamen (1998, pp. 162, 185). According to the *Diccionario de Autoridades* (1732, vol. 3), those terms were used for those days "on which the Courts were closed and legal proceedings stopped", both in the ecclesiastical and civil courts. Due to the great backlog of legal cases, their

To what extent the potential working year really lengthened after the papal brief is subject to discussion. According to Campomanes (1975, p. 52) and Gorosábel (1967, vol. II, p. 471), the obligation to hear Mass meant losing part of the morning, as the church "was usually some distance from the farms and villages, and Mass was said near to noon."[9] Even though that was true in rural areas with a dispersed population, that was not the case in urban centres, where, due to it being easier to hear Mass, people also worked on half-holidays. Using the synodal statutes and the *Calendario manual y guía de forasteros de Madrid,* I have reconstructed the working year in the capital in the eighteenth century (Figure 1).

FIGURE 1
POTENTIAL WORKING YEAR IN MADRID, 1700–1810



Notes:
Red line (A): potential working days based on the assumption, from 1745, that people worked all day on half-holidays.
Blue line (B): potential working days based on the assumption that people only worked half a day.
Sources: see note 5; *Calendario,* years 1744–1745, and 1749–1810.

I have made two estimates of the maximum number of working days in the year after the reduction in the number of feast days that took place in 1745. Under scenario B (half-holidays are counted as half-days of work), the average of 278.6 potential working days prior to the reform would have risen to 287.6 between 1747 and 1758, then fallen to 286.4 from 1759 onwards after the archbishop's edict of the previous year. Under scenario A (half-holidays counted as full days of work), the working year would have lengthened to 296.4 days, then 294.5 from 1759 onwards. Even in the latter case, the gains (16 working days) would have been much more modest than the defenders of the "industrious revolution"

number was cut in 1747 (Cabrera Bosch 1993, p. 75), but that did not have the expected result as the number rose in 1749, being set at 32. A list of Court feast days in Archivo Histórico Nacional, Consejos, lib. 1.337, ff. 9r–11r. After the failed attempt of the Campomanes reform in the 1770s, a decree on 29 March 1789 cut the number again. Vallejo (1997, pp. 70–71).

[9] For Austria, Komlos and Ritschl (1995, p. 58) lowered the number of days gained for this reason to 14.

argued, as the potential number of working days was already very high prior to the reform.

Obviously, the synodal statutes are normative and provide only information on which days no work could be done— which is to say, days on which work was banned by canonical laws. They do not tell us whether work did indeed take place on the other days. However, the Royal Palace accounts clearly show that the reduction in the number of holy days had an immediate impact on the number of days worked.

II. FROM THE LEGISLATIVE FRAMEWORK TO THE WORKING YEAR: THE PAYROLLS OF THE ROYAL PALACE OF MADRID

When a fire destroyed the Royal Alcázar of Madrid on Christmas Eve 1734, Philip V decided that a new royal palace should rise from the ruins and that it would adopt the new architectural style visible in Italy. Demolition work began on 7 January 1737 and the cornerstone was laid on 7 April the following year. The main construction work was virtually complete by 1755, although Charles III would not move in until 1764. The final stages of the work, both on the exterior and interior of the palace, would continue all the way to the end of the century (Plaza 1975, p. 96).

The building works have bequeathed documents that are rich—both in quantity and quality—and well preserved. There are copious data on the number of days worked. There are three types of working records. The most detailed accounts include the names of the workers—who were categorised by occupation and then listed in descending order of the pay they received, which depended on their 'class' ('clase') or 'ability' ('havilidad')—along with their attendance (vertical stroke if present, zero if absent), day by day and with a horizontal line between the morning and afternoon sessions, and the total wages paid each week. Those particular documents are very scarce, however; they were probably used to prepare the weekly payrolls and then destroyed afterwards. In the payrolls, which could be classified as second-level records, the daily attendance of workers is not registered as accurately, being replaced by the number of days worked during the week, and the total weekly pay is added. More than 50 years of weekly payrolls are available, and those are the documents I used in order to build the database.[10] For some years, there is a third type of documents—the weekly reports, probably produced for accounting purposes, which only

[10] The workers do not appear recorded in a single payroll, but rather in different lists according to the gate used to access their work or workshop where they worked (wheelwrights, forge and locksmiths, joiners…). Both the number of gates and of the workshops varied over time.

contain the number of workers by occupation and wage level, the total daily wages for that group, and the total amount of their remuneration.

The sheer volume of information makes it impractical to process every year of data. Therefore, I have anonymously computed all the information on wages and working days for every five years between 1740 and 1810 (Table 1 and Appendix 1). The database contains nearly 377,000 observations—one observation equals the number of days worked by the same worker during the week—with almost 2.1 million days paid. The weekly average number of men working on site, which varied according to the stage of the construction project, ranged from a minimum of 98 in 1780 to a maximum of 1,337 in 1750. Our database remains, to this day, the biggest existing sample of this kind for any country.

TABLE 1
ROYAL PALACE OF MADRID: NUMBER OF WORKERS AND DAYS WORKED, 1740–1810

	No. of observations	No. of days worked	No. of workers			
			Weekly average	Min	Max	St. dev.
1740	60,032	332,461.5	1,250.7	403	1,607	241.6
1745	27,082	150,116.5	520.8	105	800	239.4
1750	69,561	379,762.0	1,336.7	466	1,826	416.9
1755	59,600	310,279.0	1,148.8	383	1,333	208.1
1760	12,204	68,668.5	234.7	28	461	130.5
1765	45,469	268,727.5	808.5	374	1,423	358.1
1770	8,948	49,111.0	172.1	114	328	48.6
1775	10,131	56,513.5	194.8	126	293	54.5
1780	5,094	28,597.5	98.0	86	114	6.4
1785	14,319	81,563.0	275.4	210	317	25.9
1790	22,856	129,340.5	439.5	357	635	74.2
1795	16,682	91,249.0	316.7	276	363	23.2
1800	11,819	65,866.5	231.8	216	248	10.0
1805	10,765	59,902.5	207.0	159	240	20.6
1810	2,971	17,012.5	57.1	43	70	6.5
Total	377,533	2,089,171.0				

Sources: see Appendix 1.

I have completed this information with the accounts of the work carried out at the San Gil Cavalry Barracks for 1791–1805; the smaller number of workers allowed me to process nominally all the data. I have also used the records of the paid days of the work at the Royal Walloon Guard Barracks in Leganés, after the fire on 14 June 1789, which extend from 27 July 1789 to 10 September 1791. In total, there are 389,000 observations with over 2.15 million days paid (see Appendix 1).

After computing all the data, I have proceeded to standardise the series. It was not uncommon for some workers to be paid for a higher number of days than the maximum number, and there are three basic reasons for this: back wages, payment for work on

Sundays and feast days, which were paid at the same rate as normal working days, and, very rarely, remunerating extra hours worked at night.

Generally, if the number of days actually paid was greater than the maximum number of regular working days, this was due to work carried out on Sundays and/or feasts. In Spain, as in other Catholic countries, it was in fact not rare to work on Sundays and on holy days of obligation.[11] In 1743, permission was requested from the ecclesiastical authorities not to rest on Sundays and on holy days at the Royal Palace, except on the six most solemn feast days, in order for the work to proceed at a faster rate. From 1745 onwards, even the Mass was held on site, meaning the men did not have to leave (Plaza 1975, p. 58).

In the case of unskilled labourers, different entries in the payrolls make it clear that if they were paid on Sundays and/or holidays, this was because they worked on those days.[12] It is more difficult to know if some workers employed in 'administrative' tasks (overseers, material handlers, etc.) were paid for seven days because they had worked on each of those days or because they were paid for feast days even though they did not work on them. Obviously, if unskilled labourers worked on holy days and Sundays in order for the project to advance at the required speed, individuals with higher-level jobs were also required to be present. Furthermore, we know that overseers, payers and enlistors, in charge of paying the wages, worked at least part of Sunday because that was pay day.[13] Moreover, the accounts clearly differentiate between those who received a weekly salary ("List of salaries"), who were recorded in a separate list, and those who were paid by the day ("List of paid days"), but there is always the question of whether the weekly payrolls include some "white collar" workers who were regularly paid on Sundays and feasts. This is no obstacle as regards the Royal Palace. The high number of men and the few who received a daily wage did not affect the calculating of the mean (the median and mode were not affected), but it did in the case of the San Gil Barracks accounts. In 1801–1802, the average, median and modal values were

[11] There are numerous examples. Activity never stopped at the Almadén mines after its workers received dispensation from the archbishop in 1699. Larruga (1995, vol. XVII, pp. 206–07). Work was authorised in 1738 on all feast days at the Jarama Royal Canal, "except on Sundays, those of Our Lady and Apostles", and "on each and every one of the holy days of obligation" in 1766 to build the Madrid General Hospital. Archivo General de Palacio (hereafter AGP), Administración General (hereafter AG), Obras de Palacio (hereafter OP), caja 879; Archivo Regional de la Comunidad de Madrid, Hospital General, leg. 5156, c. 11.

[12] As explained in the final observations of the 1740s–1750s payrolls. To avoid these entries, the laborers worked every day of the week were classified as *diarios (*day laborers). Treasury Gate payroll from 19 to 26 January 1755. AGP, AG, OP, caja 320.

[13] 1742 Regulation. AGP, AG, OP, caja 1030, exp. 5.

greatly affected by the small number of workers at that site and the increasing proportion who were regularly paid seven days a week. When in doubt about whether or not they worked on feasts, I have always eliminated the "white collar" workers who were paid on a daily basis.

Overtime payments—and various other bonuses to which workers were entitled—usually appear aggregated at the end of the payrolls, without detailing how much was paid or to whom. One such example is the payroll from 20 to 26 February 1785, in which 1,230.25 rs. vn. is noted for the extraordinary amount "of one hour more the carpenters, bricklayers, and labourers have worked entering all at six [...], of one who stayed overnight to guard the timber, and four who were sweeping on Monday morning."[14] Sometimes, however, night work was paid by increasing the number of paid days. For example, in all the 1775 payrolls, the labourers Lucas Molina and Sebastián Móstoles were paid 3.5 days more "for the seven nights that they were watching the Park."[15] The payroll from 21 to 28 September 1765 specified that one of the days paid to seven labourers was in fact for night work, and the same comment was made the following week with respect to 16 plumbers.[16] Not all the clerks were so meticulous in their accounts, however, and we find workers who were paid for more than seven days without any reason being given. The labourers Tomás and Francisco Colmenar were paid nine days in the payroll from 23 to 29 November 1755, 14 in the one from 30 November to 6 December, and 12 in the one from 7 to 13 December: a total of 35 days' pay for a maximum of 21 days worked (including two Sundays and a feast day).[17] In the payroll from 17 to 23 June 1770, 143 workers were paid between 7.5 and 9.5 days. By checking the workers' names it can be verified that these were not wages paid in arrears, as in the previous weeks these particular workers had received their full pay, so this larger number of days must have been be due to work at night and/or during feasts.[18] Because of this lack of consistency in registering payments for night work—sometimes as separate entries at the end of the payroll, sometimes by increasing the number of days the worker was recorded as having worked—I have reduced their number when it is indicated, or I

[14] AGP, AG, OP, caja 505. The documents served to justify those extraordinary payments have been kept for some years. rs.vn. = *reales de vellón*.
[15] AGP, AG, OP, cajas 320–327, and 669–673.
[16] AGP, AG, OP, caja 407.
[17] AGP, AG, OP, caja 673.
[18] There were two weeks when the number of workers also increased significantly: 300 and 328, respectively, compared to 261 in the previous week and 154 in the first week of July. AGP, AG, OP, caja 436.

suspect, that night work is the reason for workers being paid for more than seven days.

TABLE 2
PERCENTAGE OF WORKERS WITH RESPECT TO THE MODAL NUMBER OF DAYS WORKED PER WEEK

	Percentage of workers						Percentage of workers					
	90 ≥ 100	80 ≥ 90	75 ≥ 80	50 ≥ 75	< 50		90 ≥ 100	80 ≥ 90	75 ≥ 80	50 ≥ 75	< 50	≥ 75
	No. of weeks					Total	No. of weeks (percentage)					
1740[a]	18	2	7	15	6	[d] 48	37.5	4.2	14.6	31.3	12.5	56.3
1745[a]	41	3	2	6	0	52	78.8	5.8	3.8	11.5	0.0	88.5
1750[a]	33	10	2	4	3	52	63.5	19.2	3.8	7.7	5.8	86.5
1755[a]	22	20	4	4	2	52	42.3	38.5	7.7	7.7	3.8	88.5
1760[a]	27	10	2	11	2	52	51.9	19.2	3.8	21.2	3.8	75.0
1765[a]	16	29	2	5	0	52	30.8	55.8	3.8	9.6	0.0	90.4
1770[a]	37	12	2	0	1	52	71.2	23.1	3.8	0.0	1.9	98.1
1775[a]	34	15	2	1	0	52	65.4	28.8	3.8	1.9	0.0	98.1
1780[a]	45	5	1	1	0	52	86.5	9.6	1.9	1.9	0.0	98.1
1785[a]	33	13	0	6	0	52	63.5	25.0	0.0	11.5	0.0	88.5
1790[a]	30	20	0	2	0	52	57.7	38.5	0.0	3.8	0.0	96.2
1790[c]	37	12	2	1	0	52	71.2	23.1	3.8	1.9	0.0	98.1
1791[b]	23	17	6	5	1	52	44.2	32.7	11.5	9.6	1.9	88.5
1792[b]	31	11	2	7	1	52	59.6	21.2	3.8	13.5	1.9	84.6
1793[b]	27	17	2	6	0	52	51.9	32.7	3.8	11.5	0.0	88.5
1794[b]	34	10	5	2	1	52	65.4	19.2	9.6	3.8	1.9	94.2
1795[a]	10	40	2	0	0	52	19.2	76.9	3.8	0.0	0.0	100.0
1795[b]	21	17	7	7	0	52	40.4	32.7	13.5	13.5	0.0	86.5
1796[b]	30	13	2	7	0	52	57.7	25.0	3.8	13.5	0.0	86.5
1797[b]	28	20	1	2	1	52	53.8	38.5	1.9	3.8	1.9	94.2
1798[b]	32	17	0	3	0	52	61.5	32.7	0.0	5.8	0.0	94.2
1799[b]	46	5	1	0	0	52	88.5	9.6	1.9	0.0	0.0	100.0
1800[a]	39	8	1	3	0	[e] 51	76.5	15.7	2.0	5.9	0.0	94.1
1800[b]	52	0	0	0	0	52	100.0	0.0	0.0	0.0	0.0	100.0
……												
1803[b]	22	19	5	6	0	52	42.3	36.5	9.6	11.5	0.0	88.5
1804[b]	13	16	15	8	0	52	25.0	30.8	28.8	15.4	0.0	84.6
1805[a]	34	18	0	0	0	52	65.4	34.6	0.0	0.0	0.0	100.0
1805[b]	35	12	0	5	0	52	67.3	23.1	0.0	9.6	0.0	90.4
1810[a]	43	8	0	1	0	52	82.7	15.4	0.0	1.9	0.0	98.1
Total	893	399	75	118	18	1,503	59.4	26.5	5.0	7.9	1.2	91.0

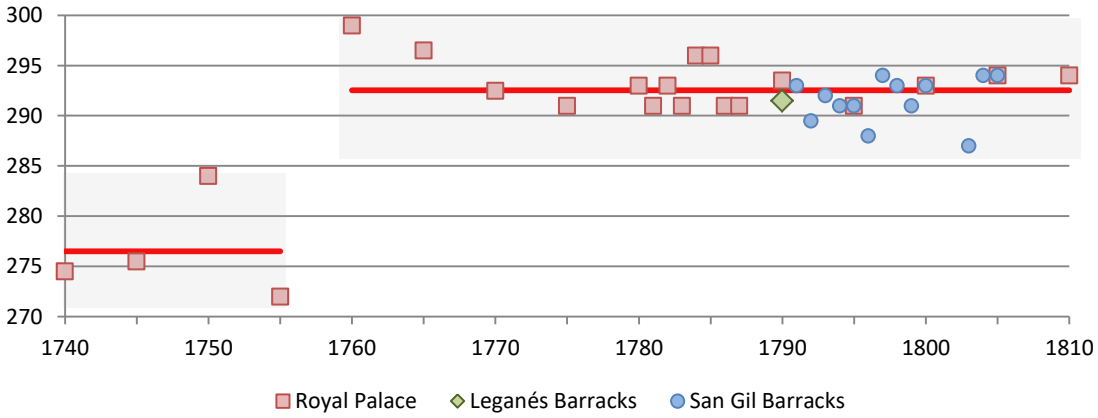
Notes: a: Royal Palace; b: San Gil Barracks; c: Leganés Barracks; d: No data for February; e: No data for the week 6-12 April.
Sources: see Appendix 1.

Once the series had been standardised, I first calculated the weekly mean, median and mode and then added their results in order to estimate the annual number of days worked. I always opted for the lower figure in the cases of bimodal distributions. The median, always close to the modal value, corroborates that the latter is the parameter from which the variable is best synthesized (see Appendix 1). Furthermore, the difference between the mean and modal number of days worked is never very important in the case of the building work at the Royal Palace; it only exceeded six days in two of the 14 years. The gap between the mean and the modal number of days worked is greater at the Leganés and San Gil Barracks (between 7 and 13 days for 11 out of the 14 years). Because of the small number of men working on those sites (the weekly average ranged from five to 26), the mean figure for

the number of days worked is greatly affected by outliers; the standard deviation reflects the great dispersion of data and, consequently, the lack of significance of the mean.

Table 2 shows the weekly percentage of workers with respect to modal values and reflects their high degree of representativeness. In 893 of the 1,503 weekly payrolls in our sample (59 percent), the proportion of men working a number of days equal to or greater than the mode is at least 90 percent, it is more than 80 percent in 1,292 payrolls (86 percent), and it is more than 75 percent in 1,267 payrolls (91 percent). In 118 weeks (8 percent), the percentage ranges between 50 and 75 percent, and the mode would not be significant (values under 50 percent) in just 18 weeks (1 percent). One-third of those 18 payrolls were for 1740, but the difference between mode and mean for that year is just 1.3 days.

FIGURE 2
BUILDERS' WORKING YEAR, 1740–1810



Sources: see Appendix 1.

Figure 2 plots the number of working days estimated from the modal values and clearly reflects that in 1760–1810 the working year ranged between 287 and 299 days (the mean figure is 292.6). Therefore, more than 98 percent of possible working days—according to the Church calendars—would have been worked.

Workers at the Royal Palace went from an average number of working days per year of 276.4 in 1740–1755 (with a high volatility) to 292.6 from 1760 onwards, an increase of 16 days. Our data are in line with those that López-Losa and Piquero (2018) have reconstructed for Madrid and for Seville. The working year at the *Colegio de San Telmo* in Seville was 286 days in 1770, and ranged between 290 and 296 days at the *Real Seminario de Nobles* of Madrid in 1770, 1777 and 1785. This increase was not exclusive to Spain and could also be

seen in other Catholic countries. According to Zucca Micheletto (2014, pp. 89–90), the number of days worked at the *Albergo della Virtù* in Turin rose from an average of 279 in 1747–1785 to 291.3 between 1786 and 1800. Ridolfi (2019, Online Appendix S.1) estimates a working year of around 290 days in France during the second half of the eighteenth century.

Bad weather is usually the reason given to justify conservative estimates of the number of working days. However, bad weather would not have affected all stages of a construction project. Even given the limitations imposed by the records, in which the reason for a lower number of days having been worked was rarely noted, the payrolls show that the days lost due to adverse weather (rain, ice, wind, snow) were more numerous before 1755 than after—a fact well documented in the daily reports available for those years. Yet the total number of working days was more than 272 even in those years when the weather seems to have had more of a negative impact.

TABLE 3
NUMBER OF DAYS WORKED BY NINE GANGS AT THE COCHERAS GATE, 1740

	January	All year
1st gang	15.1	287.6
2nd gang	22.5	321.5
3rd gang	17.5	304.4
4th gang	21.4	314.6
5th gang	14.8	289.1
6th gang	18.4	261.7
7th gang	8.4	246.6
8th gang	8.5	247.3
9th gang	8.3	250.2

Sources: AGP, AG, OP, cajas 68-69, 72–76, 78–79, 83–84, 87, and 91. No data for February.

Nor did poor weather hinder all outdoor tasks to the same extent. There are differences in this respect between the various categories of outdoor worker, and therefore differences in the degree to which their earnings were affected. For example, in 1740, the workforce who entered at the Royal Palace construction site through the *Cocheras* Gate—mainly unskilled labourers—were divided into nine gangs of different sizes, which increased to 11 from 3 April, 12 from 17 July, and 13 from 7 August (Table 3). The data on the nine gangs who worked throughout the year show that in January—when the weather was particularly adverse—the second and fourth gangs were barely affected by the heavy rain (they were paid an average of 22.5 and 21.4 days) while the labourers in the seventh, eighth and ninth gangs were paid only for eight days on average (36 percent). Those differences result in a range from over 300 days worked by the second, third and fourth gangs (without data for February, when the accounting either was not done or has not been found) to the roughly

250 paid to the seventh to ninth gangs (a variation of 17 percent).

For those tasks carried out in the workshops—where there was no work on Sundays or holy days, except in few rare occasions, and the weather outside did not matter—the mode is around 290 working days (Table 4).

TABLE 4
NUMBER OF DAYS WORKED IN DIFFERENT ACTIVITIES, 1750–1755

	All works			Forges			Wheelwrights Workshop		
	Mean	Mode	[a] No. of workers	Mean	Mode	[a] No. of workers	Mean	Mode	[a] No. of workers
1750	282.2	284.0	1,372.1	288.8	289.5	52.1	276.6	288.5	9.3
1755	271.0	272.0	1,148.8	286.7	290.0	122.9	283.7	290.0	5.3

Sources: AGP, AG, OP, cajas 245–246, 249–250, 252, 254, 256, 258, 260–261, 263 320–327, and 669–673.

The annual data and the weekly averages—between 5.60 and 5.78 days as a median in 1760–1810—clearly show that there were no long weekends, 'Saint Monday' was not an off-day, and work was done on feast days and pilgrimages that were deeply entrenched in popular culture but did not appear in the Church calendars. Let us take the example of Carnival Week, whose date varied according to Easter, and which always had six working days.

TABLE 5
WORK DURING CARNIVAL WEEK, 1740–1810

	Week	Days worked														Mean	Mode	No. of workers
		7.0	6.5	6.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.0	0.5			
1740	28/2–6/3	189	8	447	12	362	6	56	13	5	6	4	2	3	0	5.64	6.00	1,113
1745	28/2–5/3	0	2	0	0	1	19	0	2	38	3	98	0	1	0	2.81	1.50	191
1750	8–14/2	32	0	7	10	358	24	594	47	37	10	8	3	6	1	4.33	4.00	1,137
1755	9–15/2	38	1	465	104	75	44	48	26	17	9	6	3	1	1	5.47	6.00	838
1760	17–23/2	83	0	123	5	19	1	119	4	43	6	5	0	0	0	5.12	6.00	408
1765	17–23/2	511	558	145	42	8	9	5	2	11	3	7	6	9	8	6.41	6.50	1,324
1770	25/2–3/3	5	1	81	7	0	1	19	0	0	0	0	0	0	0	5.67	6.00	114
1775	26/2–4/3	8	1	82	3	26	4	1	0	1	1	0	0	0	0	5.74	6.00	127
1780	6-12/2	2	1	87	2	0	0	0	0	1	0	1	2	0	0	5.85	6.00	96
1785	6–12/2	8	2	219	18	6	1	1	0	2	0	0	0	0	0	5.94	6.00	257
1790	14–20/2	31	3	225	61	18	6	9	1	3	0	0	0	0	0	5.85	6.00	357
1795	15–21/2	12	0	227	22	20	2	16	0	4	1	2	2	0	0	5.72	6.00	308
1800	23/2–1/3	12	0	196	13	3	0	2	0	1	0	2	0	0	0	5.95	6.00	229
1805	24/2–2/3	13	1	198	0	5	1	0	0	0	0	0	5	0	0	5.93	6.00	223
1810	4–10/3	6	0	42	2	0	0	2	0	0	0	0	0	0	0	6.02	6.00	52

Sources: see Appendix 1.

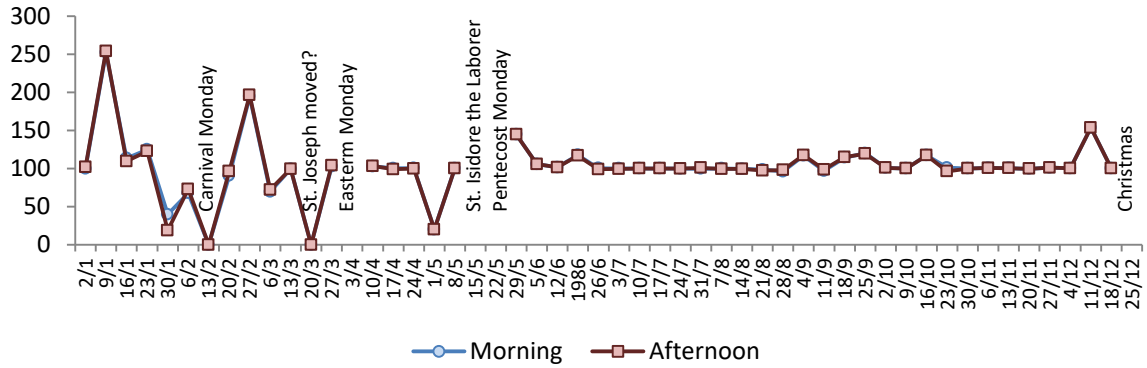
Only in 1745 and 1750 did a high percentage of the workforce work fewer than those six days, but it is not straightforward to attribute this to festive reasons, as it could also have been due to bad weather. For example, in Carnival Week of 1745, half of all men only worked on the Wednesday, Thursday morning and another unspecified half day. Absenteeism during Carnival Week decreased over time: from 1765 onwards, more than 70

percent of men worked six or even seven days, and the figure was more than 90 percent in some years (1765, 1780 and 1800–1810).

Maundy Thursday and Good Friday were the only feast days not envisaged in the synodal statutes and ecclesiastical calendars that were widely observed. In 1760, 44 percent of workers had one day off work during Holy Week, and 30 percent had two; a modal value of four days worked between 1765 and 1795 suggests that the majority of workers did not go to the site on either Maundy Thursday or Good Friday. However, as with Carnival, the trend was for these days off to disappear; the mean and the modal values for days worked during Holy Week in the period 1800-1810 reflect general attendance.

Widespread observance of 'Saint Monday' is one of the elements in the literature on pre-industrial working time that our data reject. For example, the detailed accounts covering the workers who entered the Royal Place site through the Treasury Gate in 1747 show the daily attendance of each worker, differentiating between the morning and afternoon shifts.

FIGURE 3
TREASURY GATE. MONDAY ATTENDANCE, 1747 (PERCENTAGE ON THE WEEKLY AVERAGE)



Source: AGP, AG, OP, caja 644.

Due to the workforce fluctuations during the week, I have first calculated the weekly average of all men present at the site, after eliminating the holy days with 0 or very low attendance, and then the daily percentage. This method is not free of risks, as the percentages are biased up or down in those weeks when there were sharp increases or drops in the workload (for example, the weeks beginning 9 January and 27 February). On 31 of the 48 working Mondays (in addition to the Easter and Whit Mondays, Saint Isidore and Christmas fell on a Monday), attendance was equal to or over 100 percent and was 95 percent on 41, and no significant differences can be noted between the morning and afternoon shifts. The figures for the following day suggest that on 30 January and 1 May bad

weather was the reason for low attendance, and the low percentage on 6 February is explained statistically: the increased workload throughout the week.[19] Only the Monday of Carnival and 20 March (St. Joseph's Day moved?) were days taken off. There is little evidence, therefore, of widespread absenteeism.

The source is not very explicit regarding hours of work. Thanks to the different entries in the records, we know that work in the winter season it began at 7 a.m. and lasted until noon, when it stopped for lunch, after which it continued until sunset. According to the information provided by the *Calendario y guía de forasteros de Madrid,* the earliest sunset in the winter season was 4.33 p.m. (December) and the latest at 6.39 p.m. (April), so the average working day can be estimated at around ten hours, not including lunch.[20] During the summer season (from the May Cross to the September Cross, 3 May–14 September) workmen were supposed to be on site from 6 a.m. to midday and from 3 p.m. to sunset (between 6.58 and 7.09 p.m). With a three-hour break for a meal and siesta, the hours worked were the same as in the winter season.[21] The ten-hour day, therefore, would have been standard in the building sector in eighteenth century Madrid, close to the 9.5 hours calculated by Monasterio (1867, p. 44) in the mid-nineteenth century. This would be the net hours actually worked, to which must be added travel time and the obligation to be present at the site half an hour early in order to be enlisted.

III. FROM THE WORKING YEAR TO THE DAYS ACTUALLY WORKED

As has been demonstrated in the previous section, an average of 292 days were worked at the Royal Palace from 1750 onwards, a figure that was very close to the modern standard of 300 working days. Obviously not all the men were present at the site for all that time. Seasonality, an alleged preference for leisure—the never proven back-bending curve—or the frictional unemployment linked to a very high turnover rate are factors that reduce the number of days worked. The main problem in calculating the days actually worked is the huge volume of data. With a database of just over two million days paid and a weekly

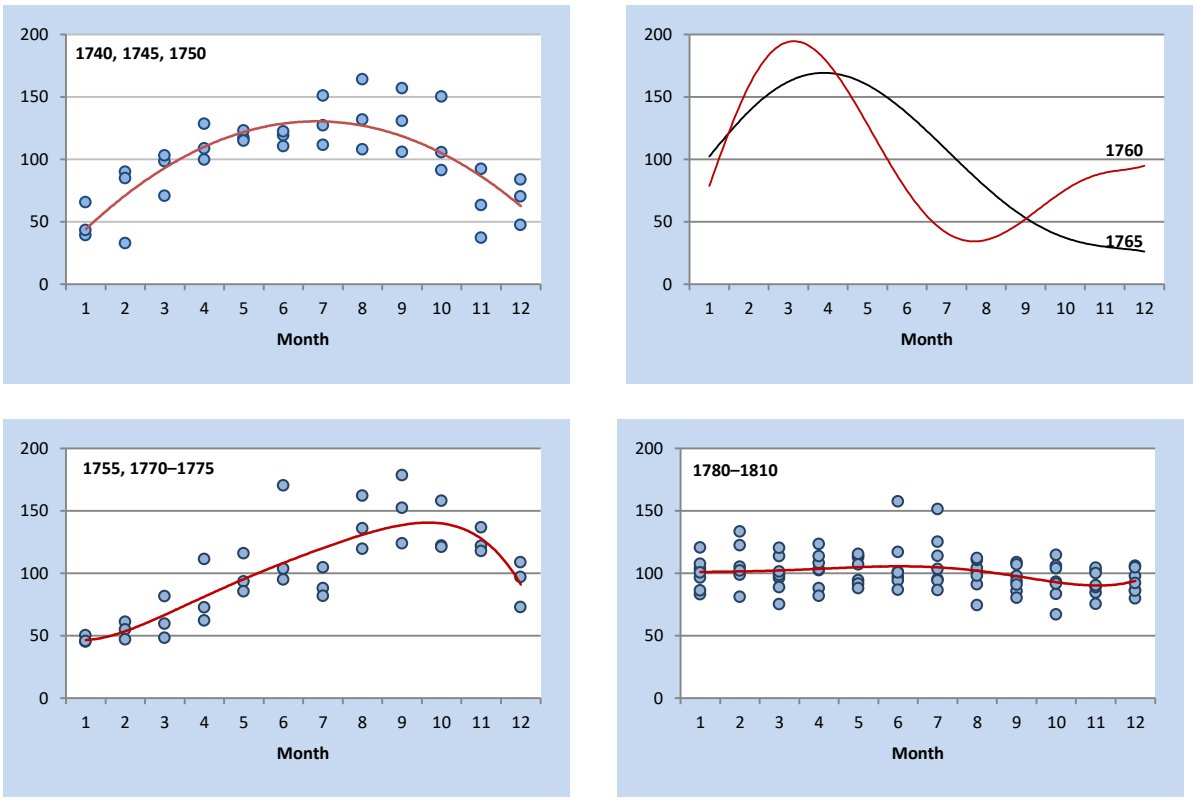
[19] The figures rose from 65 men present on Friday 4th (there was hardly any work on the Saturday; Candlemas moved?) to the 77 on Monday morning and 83 in that afternoon, 89 on the Tuesday and between 141 and 145 on the Friday and on the Saturday.

[20] Different entries show that in the winter season extra hours were being paid to men working until 8 p.m. and an extra half-day to those who worked until 9 or 9.30 p.m. AGP, AG, OP, caja 1351.

[21] AGP, AG, OP, cajas 505, and 1030, exp. 5 and 8. Mocarelli (2008, p. 220) provides a similar time schedule for Milan. From 7.30 a.m. to 5 p.m. in winter season (November-April) and from 6 a.m. to 7 p.m. in summer (May-October), including breaks.

number of workers that stood at 1,800 in some years, nominally processing every man recorded in the payrolls—week after week, month after month, year after year—is an impossible task.

FIGURES 4A, 4B, 4C, 4D
PATTERNS OF SEASONAL INTENSITY OF WORK, 1740–1810



Sources: see Appendix 1.

Graphs 4a, 4b, 4c and 4d show that labour demand had a seasonal trend, but also that there was no single pattern; seasonality varies according to the work being carried out. An 'expected' pattern was only found in the first decade (1740–1750): minimums in November–February, an increasing amount of work from March and maximums in April–October.[22] In 1755, 1770 and 1775, the seasonal pattern reflects a labour demand under the annual average in the first quarter of the year and an increase in the remaining months, while the opposite pattern can be seen for 1760 and 1765, when there was a larger workload in the first months. From 1780 onwards, the fluctuations in the workforce employed during the year fell significantly and hardly any seasonality can be seen. However, as we will later see, that does not exclude a high turnover rate, both for skilled and unskilled workers. In comparative terms, on the other hand, the seasonal differences observed in Madrid are

[22] The figures for 1740–1750 are similar to those of Woodward (1995, p. 135) for northern English towns.

lower than those in London or Malmö (López Losa et al. 2019).

Table 6 provides a quarterly summary of the seasonality of employment and clearly shows how it drops off in the second half of the eighteenth century.

TABLE 6
THE SEASONALITY OF EMPLOYMENT AT THE ROYAL PALACE OF MADRID, 1740–1810

	1740–1750	1755, 1770–1775	1780–1810
	%	%	%
December-February	13.7	17.8	23.9
March-May	26.5	23.0	25.1
June-August	33.4	27.7	27.8
September-November	26.4	31.5	23.2

Sources: see Appendix 1.

In order to estimate the number of days actually worked, I have nominally processed all the carpentry and bricklaying workers listed in the payrolls in the 1790s (Table 7).[23] The sample—38,400 observations with just over 211,000 paid days—has a total of 1,106 workers. As some men appear in more than one year, we have 359 different names. Nearly half of them (165) were only present in one year, a quarter (88) were recorded in more than five years, and only 23 (6.4 percent) throughout the whole decade. This is not surprising. However, the conclusions on working time differ depending on whether all the workers are considered or just those who were present on site for at least 20 weeks (just over 100 days). This is a really prudent minimum, as it is unrealistic to assume that this was the only source of income for the workers with a lower number of days.[24] If we consider all the carpenters and bricklayers, the average number of weeks worked is 35 and the median 43. The average number of days worked is 191 and the median 233. Even so, our figures are higher than the 180 days stated by the Ensenada Cadastre. If we only consider those who were present for at least 20 weeks, the average number of weeks worked rises to 45 and the median to 51. And the average and median number of days worked increases to 248 and 277 days. These are high figures, much higher than current estimates.

[23] Masters, journeymen, helpers and apprentices. For the sake of simplicity, from now on I will refer only to carpenters and bricklayers.
[24] See Ridolfi's estimates (2019, Online Appendix S.1, section Working days) with 130 and 150 days worked.

TABLE 7
DAYS AND WEEKS WORKED BY CARPENTRY AND BRICKLAYING WORKERS, 1790–1799

	All workers	Over 20 weeks
No. of workers	1,106	792
No. of observations	38,394	35,608
Total days worked	211,350.5	196,406.5
Days worked		
Min	1.0	90.5
Max	345.0	345.0
Average	191.1	248.0
Median	232.8	277.0
St. dev.	103.4	56.5
Percentage of workers ≥ 290 days	18.4	25.8
Percentage of workers ≥ 275 days	37.4	52.3
Percentage of workers ≥ 250 days	47.0	65.7
Percentage of workers ≤ 150 days	35.4	9.8
Weeks worked		
Min	1.0	20.0
Max	52.0	52.0
Average	34.7	45.0
Median	43.5	51.0
St. dev.	18.5	9.7
Days worked per week		
Min	0.75	4.25
Max	7.00	6.63
Mean	5.44	5.50
Median	5.52	5.54
St. dev.	0.46	0.22

Sources: see Appendix 2.

Can those values be extrapolated to all workers? Was the behaviour of the unskilled workforce different? Given the difficulties in undertaking the same exercise for all the labourers because the volume of information available, I have only made the comparison for 1790 (Table 8). I had to disregard nearly 10 percent of the observations due to homonymy problems. The final sample—10,287 observations and 58,038 paid days—has 607 different names, with a weekly average of 198 men (a minimum of 149 and a maximum of 359). The mean number of days worked by the unskilled labourers falls to 96 and, as the median shows, half of them would have worked fewer days (41). The standard deviation yet again reflects the great dispersion of data and, consequently, the lack of significance of the mean. These values contrast with those obtained for carpenters and bricklayers. However, the differences are only due to the high turnover rates among the unskilled workforce. Those disappear if we discount the men who appear in the payrolls for less than 20 weeks. In 1790, the average number of days worked by carpenters and bricklayers was 257, and 250 days by

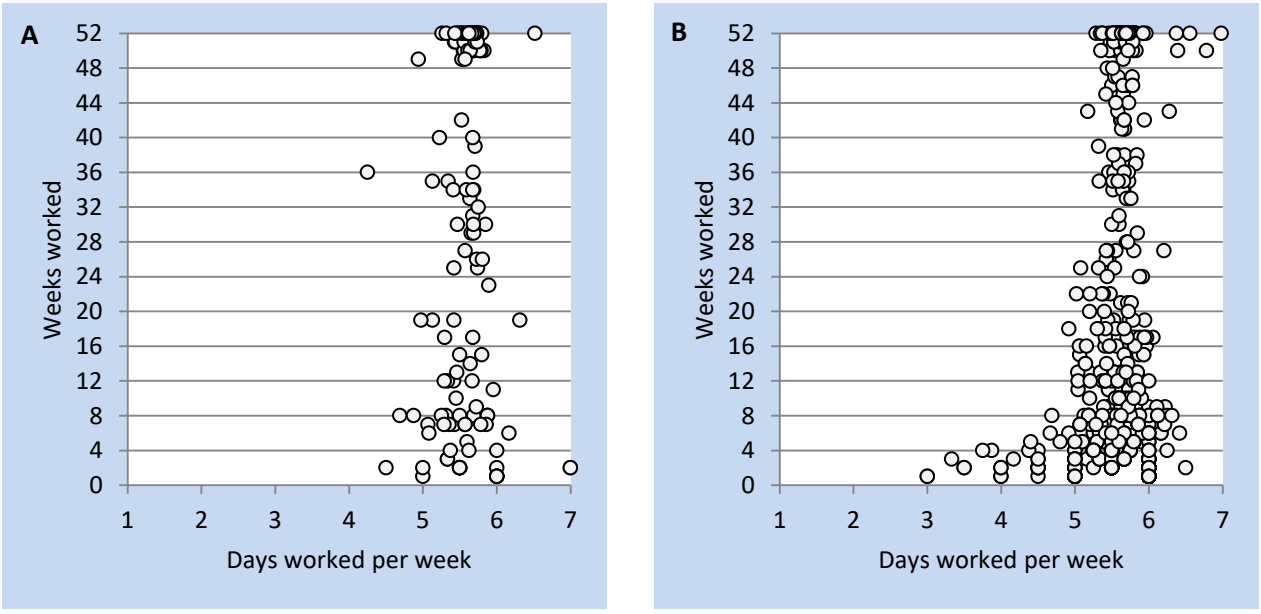
the labourers; the median was 284.5 and 284.3 days respectively. If we extrapolate those results to the whole decade of the 1790s, *half of the workers—both skilled and unskilled—who were present on site for at least 20 weeks would have worked 275-280 days or more,* figures that were much higher than current estimates for Spain or the most recent proposals for northern Europe (Stephenson 2020; Jensen, Radu and Sharp 2019; Gary 2019). The data from the Royal Palace show that *Allen's assumption of 250 working days is perfectly acceptable.*

TABLE 8
DAYS AND WEEKS WORKED BY LABOURERS *vs* CARPENTERS AND BRICKLAYERS, 1790

All workers	Labourers (*N* = 607)		Carpenters and bricklayers (*N* = 147)	
	Days	Weeks	Days	Weeks
Mean	95.6	16.9	170.2	30.4
Median	41.0	7.0	184.0	34.0
Min	3.0	1.0	5.0	1.0
Max	363.0	52.0	339.0	52.0
St. dev.	107.8	18.9	114.9	20.3
Workers over 20 weeks	Labourers (*N* = 178)		Carpenters and bricklayers (*N* = 88)	
Mean	251.0	44.3	256.6	45.7
Median	284.3	51.0	284.5	51.0
Min	104.0	20.0	135.5	23.0
Max	363.0	52.0	339.0	52.0
St. dev.	60.5	10.2	53.8	9.2

Sources: AGP, AG, OP, cajas 528–531.

FIGURES 5A, 5B
AVERAGE NO. OF DAYS WORKED PER WEEK, 1790



Notes:
A. Bricklayers and carpenters (*N* = 147). Average: 5.60; median: 5.64. St. dev.: 0.34.
B. Labourers (*N* = 608). Average: 5.58; median: 5.64. St. dev.: 0.45.
Sources: see Table 8.

Graphs 5a and 5b plot the number of days worked per week in 1790 by bricklayers and carpenters (A) and unskilled labourers (B). The mean (5.6 days worked per week), which is very close to the maximum possible number of working days (5.64), reflects the great intensity of the working week. As in the case of London, "men worked hard when they were employed" (Stephenson 2020, p. 421). If we use this indicator as a proxy for industriousness, the alleged differences between the Catholic and Protestant countries, or between northern and southern Europe, disappear. As explained in the above section, the empirical evidence rejects the notion that Monday was taken as a voluntary day off and the *cliché* of the lazy Spaniard.

Any conclusion regarding working time depends on a common assumption—implicit or explicit—that is difficult to embrace: that workers worked only at the site on whose payroll they appear. Can we consider that, "if a man worked a low number of days per week but was present on site the whole year", was that their only source of income, as Stephenson (2020, p. 418) suggests? How many days per week? And what do we consider a regular worker? The frequent presence of a worker does not guarantee that was his only employment. For example, in 1805 the labourers Juan Lérida and Juan Cano were recorded in the Royal Palace payrolls as working 192.5 and 230 days respectively. From those figures it might be assumed that they worked exclusively on that site. But the wealth of documentation has allowed us to find them in the San Gil Barracks and the Joiners Workshop accounts for that same year. In total, they would have worked 289.5 and 285.0 days respectively. In other words, Juan Lérida in fact worked 50 percent more than the number of days registered on the Royal Palace payrolls and Juan Cano almost 25 percent more. The case of Gregorio Pantoja is similar. From 15 April 1795 onwards, he worked as a porter at the San Gil Barracks, but he was listed earlier as a labourer for 84.5 days at the Royal Palace site. It seems rather obvious that working for the monarchy at nearby sites reduced frictional unemployment, but that the same observation can also be made in the case of private contractors that had more than one site.

On the other hand, caution is always needed, as our conclusions depend on chance—that of the documents originally having been kept, and also that of their being found. Let us start with the example of the San Gil Barracks, the first accounts I found (Table 9). In 1805, the mean number of days worked on the site was 286.5 and the mode was 294. The payrolls

contain a total of 773 weekly observations corresponding to 4,647 days paid to 57 different workers. Only seven of those men (12 percent) were present on as many or more days than the modal number, and most of them were workers who could be classified as "white collar." As for the other men, four were present on 265–294 days (between 90 percent of the maximum number of working days and the mode), one on 204 days, and the remaining 45 (77 percent) on a significantly lower number of days (seven between 25 and 50 days; 37 on fewer than 25 days). If I had located only this working time records, the conclusion would have been the standard one: there was a small group of permanent workers and a huge majority of casual workers, with a very high turnover rate.

TABLE 9
TOTAL DAYS WORKED BY ALL MEN PRESENT ON THE PAYROLLS OF THE SAN GIL BARRACKS, 1805

No. of days worked		San Gil Barracks			All works		
		No. of workers	%	Cumulative percentage	No. of workers	%	Cumulative percentage
294-364	(≥ 100)	7	12.3	12.3	13	22.8	22.8
280-293.5	(95 ≥ 99)	4	7.0	19.3	12	21.1	43.9
265-279	(90 ≥ 94)	1	1.8	21.1	5	8.8	52.6
220-264	(75 ≥ 89)	0	0.0	21.1	9	15.8	68.4
150-219	(50 ≥ 74)	1	1.8	22.8	6	10.5	78.9
< 149	(< 50)	44	77.2	100.0	12	21.1	100.0
	Total	57	100.0		57	100.0	

Note: The figures within brackets are percentages over the potential working days.
Sources: Appendix 4.

The wealth of the documentation has allowed us to cross-reference the payrolls of San Gil Barracks with those of the Royal Palace, the Joiners Workshop and the works in the sewer. Once the data are aggregated, the percentages vary substantially. Those who worked on a number of days equal to or greater than the maximum working year (294 days) now account for 23 percent; 44 percent worked on more than 280 days (95 percent of the potential working days); and half of all the men were present for more than 265 days (over 90 percent of the maximum working days).[25] The data also reveal 19 cases of workers employed at two different sites in the same week, and 11 cases when the worker was recorded as absent at one site but appears to be working in another. On the other hand, two clerks present in the accounts, Antonio Anel and Manuel Mújica, worked part-time, outside their working hours at the Royal Palace. They received an extra payment of 2 rs. vn. per day until 20 April and 2.5

[25] By eliminating the five men paid a daily wage on a regular basis, this percentage falls to 48 percent, but all the calculations include a tiler master, his journeymen, laborers and a boy, whose presence in the site is very occasional. If we remove them, the percentage of workers present more than 265 days rises to 55.6 percent.

rs. vn. thereafter. On the Royal Palace payrolls, their daily wage rates were 12 and 10.5 rs. vn. respectively, increasing by half a real from 1 December. This example can obviously not be extrapolated, but, if we had not located the Royal Palace accounts, we would have estimated their annual income to be 854 rs. vn. In fact, however, their earnings were 4,231 rs. vn. in Anel's case and 3,364 in Mújica's, respectively five and four times more.

CONCLUSIONS

Recent estimates have questioned the 250-day working year, common in the literature on living standards since Allen's seminal work (2001), and have instead proposed much lower figures (Stephenson 2020; Jensen, Radu and Sharp 2019; Gary 2019). If the number of days worked was indeed smaller, there are obvious implications for the calculations of the annual income of workers. However, using a database of 389,000 observations with over 2.15 million paid days, we demonstrate that Allen's assumption can be accepted.

After the reduction in the number of holy days that took place in 1745, the maximum working year increased in Madrid from an average of 278.6 days to 294.5, a figure very close to the modern standard of 300 working days. This modest increase casts doubt on the existence of any industrious revolution, which could hardly have taken place as the number of working days had already been very high.

The detailed weekly payrolls of the Royal Palace of Madrid show that between 1760 and 1810 the site was operational for an average of 292.6 days a year, a figure in line with those found in northern Europe. It is obvious that seasonality, a never-verified preference for leisure, or the frictional unemployment linked to the high workforce turnover are factors that would reduce the number of days actually worked. However, it is not possible to justify the usual assumption—implicit or explicit—that whoever did not appear in the records did not work. If we only consider workers present on site for a minimum of 20 weeks (just over 100 days)—a very conservative assumption, as it is difficult to conceive that this was the only source of income of those listed in the accounts for less time—at the end of the eighteenth century, half of all men—both skilled and unskilled—worked around 280 days or more. This is a figure much higher than current estimates for Spain and the recent figures proposed for northern Europe.

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APPENDIX 1. BUILDERS' WORKING YEAR, 1740–1810. STATISTICAL SUMMARY

	Potential working days [d]		Days worked						No. of observations	No. of working days	No. of workers			
	1	2	Mean	Median	Mode	Mean/ 2 (%)	Median/ 2 (%)	Mode/ 2 (%)			Weekly average	Min	Max	St. dev.
1740 [a e]	278.0		[e] 275.8	[e] 275.5	[e] 274.5	99.2	99.1	98.7	59,629	331,135.5	1,256.2	531	1,607	224.5
1745 [a]	285.0	293.0	279.8	275.5	275.5	95.5	94.0	94.0	27,082	150,116.5	520.8	105	800	239.4
1750 [a f]	286.5	295.0	281.9	283.5	284.0	95.5	96.1	96.3	69,561	379,762.0	1,336.7	466	1,826	416.9
1755 [a]	288.0	296.0	271.0	270.5	272.0	91.6	91.4	91.9	59,600	310,279.0	1,148.8	383	1,333	208.1
1760 [a]	290.0	294.0	294.2	297.2	299.0	100.0	101.0	101.7	12,204	68,668.5	234.7	28	461	130.5
1765 [a]	285.5	294.0	293.1	300.5	296.5	100.0	102.2	100.9	45,469	268,727.5	808.5	374	1,423	358.1
1770 [a]	284.5	293.0	286.1	291.0	292.5	97.6	99.3	99.8	8,948	49,111.0	172.1	114	328	48.6
1775 [a]	284.0	293.0	290.2	291.0	291.0	98.0	99.3	98.3	10,131	56,513.5	194.8	126	293	54.5
1780 [a]	286.0	295.0	291.6	293.0	293.0	98.9	99.3	99.3	5,094	28,597.5	98.0	86	114	6.4
1785 [a]	286.5	295.0	295.8	296.0	296.0	100.3	100.3	100.3	14,319	81,563.0	275.4	210	317	25.9
1790 [a]	285.5	294.0	294.0	293.0	293.5	100.0	99.7	99.8	22,856	129,340.5	439.5	357	635	74.2
1790 [c]			291.5	291.5	291.5	99.1	99.1	99.1	1,366	7,632.8	26.3	21	31	2.9
1791 [b]	287.0	295.0	281.9	292.5	293.0	95.6	99.2	99.3	598	3,237.0	11.5	10	14	1.1
1792 [b]	285.5	294.0	276.6	289.0	289.5	94.1	98.3	98.5	839	4,425.0	16.1	10	25	4.1
1793 [b]	286.0	294.0	279.6	292.0	292.0	95.1	99.3	99.3	661	3,545.0	12.7	8	17	2.6
1794 [b]	285.5	293.0	279.0	290.0	291.0	95.2	99.3	99.3	797	4,247.5	15.3	8	34	5.8
1795 [a]	285.5	293.0	283.4	291.0	291.0	96.7	99.3	99.3	16,682	91,249.0	316.7	276	363	23.2
1795 [b]			275.8	285.0	288.0	93.8	96.9	98.0	1,352	7,097.5	26.0	10	61	15.9
1796 [b]	289.5	299.0	285.9	294.0	294.0	95.6	98.3	98.3	872	4,757.0	16.8	13	30	3.5
1797 [b]	284.0	293.0	286.3	292.0	293.0	97.7	99.7	100.0	1,035	5,699.5	19.9	17	27	2.7
1798 [b]	284.5	293.0	284.0	291.0	291.0	96.9	99.3	99.3	979	5,331.0	18.8	16	29	2.8
1799 [b]	286.5	295.0	290.1	293.0	293.0	98.3	99.3	99.3	643	3,583.0	12.4	11	16	1.3
1800 [a g]	286.5	293.0	288.1	293.3	293.0	98.3	100.0	100.0	11,819	65,866.5	231.8	216	248	10
1800 [b]			293.0	293.0	293.0	100.0	100.0	100.0	254	1,408.0	4.8	3	13	2.7
…….														
1803 [b]	287.0	295.0	278.5	287.0	287.0	94.0	97.3	97.3	906	5,031.0	18.0	6	28	3.9
1804 [b]	285.5	294.0	280.6	293.8	294.0	95.4	99.9	100,0	875	4,725.0	16.8	10	23	3.6
1805 [a]	286.0	294.0	286.7	294.0	294.0	97.5	100.0	100.0	10,765	59,902.5	207.0	159	240	20.6
1805 [b]			286.5	293.5	294.0	97.4	99.8	100.0	513	2,827.0	9.8	7	23	3.6
…….														
1810 [a]	284.5	293.0	298.1	294.0	294.0	101.7	100.3	100.0	2,971	17,012.50	57.1	43	70	6.5

Notes:

a: Royal Palace; b: San Gil Barracks; c: Leganés Barracks; d: Adjusted to the 52 weeks of the payrolls. Since the reform of 1745, half holidays count as 0.5 (column 1) and as 1 (column 2); e: Only the Gates of *San Gil, Cocheras, Picadero* and *San Vicente de la Florida*. No data for February. It is estimated the working days at 14.5 from the daily reports—AGP, AG, OP, caja 1290; f: No data for the Gates of *María de Aragón* and *Tesoro* (1–7 March), *San Gil* (24–30 March), and *Tesoro* (13–19 September); g: No data for payroll 6–12 April.

Sources: AGP, AG, OP, cajas 68–69, 72–76, 78–79, 83–84, 87, 91, 168–171, 173–175, 177, 180, 182, 245–246, 249–250, 252, 254, 256, 258, 260–263, 320–327, 379–381, 402–408, 434–439, 460–465, 487–490, 505–508, 528–531, 548–551, 564–565, 578–579, 642, 651–652, 669–673, 885, 989, 992–993, 997–999, and 1280.

APPENDIX 2. BRICKLAYING AND CARPENTRY WORKERS AT THE ROYAL PALACE, 1790–99. STATISTICAL SUMMARY.

ALL WORKERS	1790	1791	1792	1793	1794	1795	1796	1797	1798	1799	1790–99
No. of observations	4,462	3,667	4,569	5,353	5,193	3,716	3,384	3,252	2,813	1,985	38,394
Total days worked	25,023.5	20,331.0	25,248.5	29,500	28,686	20,301.5	18,496	17,680.5	15,227.0	10,856.5	211,350.5
Number of workers	147	96	142	148	155	92	86	88	86	66	1,106
Days worked											
Min	5.0	17.0	6.0	1.0	5.5	21.0	4.0	5.0	1.5	6.0	1.0
Max	339.0	344.0	323.0	345.0	309.0	293.0	295.5	304.0	301.0	309.0	345.0
Mean	170.2	211.8	177.8	199.3	185.1	220.7	215.1	200.9	177.1	164.5	191.1
Median	184.0	274.8	162.5	258.3	220.5	266.5	270.8	242.8	196.0	165.5	232.8
St. dev.	114.9	100.7	100.2	109.2	103.4	81.5	94.5	97.2	96.6	102.6	103.4
Percentage of workers ≥290 days	23.8	27.1	18.3	18.9	14.8	19.6	22.1	14.8	7.0	15.2	18.4
Percentage of workers ≥ 275 days	39.5	50.0	33.1	42.6	32.9	43.5	47.7	37.5	18.6	25.8	37.4
Percentage of workers ≥250 days	41.5	59.4	39.4	55.4	42.6	56.5	60.5	46.6	38.4	30.3	47.0
Weeks worked											
Min	1.0	3.0	1.0	1.0	1.0	4.0	1.0	1.0	1.0	1.0	1.0
Max	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0
Mean	30.4	38.2	32.2	36.2	33.5	40.4	39.3	37.0	32.7	30.1	34.7
Median	34.0	51.0	29.0	48.0	41.0	48.5	50.0	45.0	37.0	32.5	43.5
St. dev.	20.3	18.0	17.7	19.4	18.4	14.5	16.8	17.5	17.6	18.2	18.5
Potential working year (days)	294	295	294	294	293	294	294	293	293	295	294
Potential working days per week	5.65	5.67	5.65	5.65	5.63	5.65	5.65	5.63	5.63	5.67	5.65
Days worked per week											
Min	4.25	4.90	3.75	1.00	3.83	4.13	4.00	4.67	0.75	4.44	0.75
Max	7.00	6.62	7.00	6.63	6.06	6.00	5.70	6.00	6.19	6.00	7.00
Mean	5.60	5.54	5.45	5.35	5.47	5.43	5.40	5.40	5.22	5.41	5.44
Median	5.65	5.56	5.52	5.52	5.55	5.52	5.48	5.46	5.44	5.50	5.52
St. dev.	0.34	0.20	0.38	0.63	0.32	0.28	0.30	0.25	0.98	0.30	0.46
Mean/potential working days per week	99%	98%	96%	95%	97%	96%	96%	96%	93%	95%	96%
Median/potential working days per week	100%	98%	98%	98%	99%	98%	97%	97%	97%	97%	98%

WORKERS OVER 20 WEEKS	1790	1791	1792	1793	1794	1795	1796	1797	1798	1799	1790–1799
No. of observations	4,020	3,436	4,015	5,104	4,776	3,632	3,221	3,054	2.565	1,785	35,608
Total days worked	22,581.0	19,053.0	22,289.0	28,204.0	26,456.0	19,857.5	17,650.5	16,632.0	13,900.5	9,783.0	196,406.5
Number of workers	88	72	95	109	107	83	69	67	60	42	792
Days worked											
Min	135.5	110.5	108.0	101.0	105.5	90.5	114.5	118.0	109.5	111.0	90.5
Max	339.0	344.0	323.0	345.0	309.0	293.0	295.5	304.0	301.0	309.0	345.0
Mean	256.6	264.6	234.6	258.8	247.3	239.2	255.8	248.2	231.7	232.9	248.0
Median	284.5	286.3	274.5	282.0	273.0	271.5	278.0	270.5	259.0	236.3	277.0
St. dev.	53.8	47.9	68.9	50.4	51.9	61.1	51.4	52.2	55.0	58.3	56.5
Percentage of workers ≥290 days	39.8	36.1	27.4	25.7	21.5	21.7	27.5	19.4	10.0	23.8	25.8
Percentage of workers ≥ 275 days	65.9	66.7	49.5	57.8	47.7	48.2	59.4	49.3	26.7	40.5	52.3
Percentage of workers ≥250 days	69.3	79.2	58.9	75.2	61.7	62.7	75.4	61.2	55.0	47.6	65.7
Weeks worked											
Min	23.0	21.0	20.0	20.0	21.0	20.0	21.0	22.0	20.0	20.0	20.0
Max	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0
Mean	45.7	47.7	42.3	46.8	44.6	43.8	46.7	45.6	42.8	42.5	45.0
Median	51.0	52.0	50.0	51.0	50.0	50.0	51.0	51.0	47.5	44.0	51.0
St. dev.	9.2	8.2	12.1	8.4	9.1	10.7	8.8	8.9	9.9	9.5	9.7
Days worked per week											
Min	4.25	5.08	4.91	4.48	4.80	4.52	5.02	4.71	4.85	4.75	4.25
Max	6.52	6.62	6.44	6.63	5.94	5.75	5.68	5.85	5.98	5.94	6.63
Mean	5.61	5.54	5.54	5.51	5.53	5.45	5.46	5.43	5.42	5.45	5.50
Median	5.66	5.56	5.55	5.55	5.56	5.53	5.48	5.50	5.43	5.50	5.54
St. dev.	0.23	0.18	0.20	0.26	0.16	0.22	0.16	0.22	0.19	0.24	0.22

Sources: AGP, AG, OP, cajas 528–563.

APPENDIX 3. ROYAL PALACE OF MADRID. BRICKLAYING AND CARPENTRY WORKERS PRESENT ALL YEARS, 1790–1799 (DAYS WORKED)

		Daily wage rate	1790	1791	1792	1793	1794	1795	1796	1797	1798	1799
Alcántara, Pedro	Carpenter	11.0–8.0 [a]	296.0	295.5	323.0	340.0	309.0	281.5	287.0	301.0	295.0	293.0
Ballina, Joaquín	Carpenter	13.0–14.0	298.0	293.0	293.0	290.5	294.5	292.5	284.0	292.0	292.0	294.0
Catalán, Valero	Carpenter	13.0	298.5	286.5	290.0	211.0	208.0	249.0	273.5	289.5	267.0	71.0
Colmenar, Francisco	Bricklayer	9.0–11.0	286.0	297.0	298.0	272.0	295.0	284.5	243.5	287.5	213.0	287.0
Colmenar, Manuel	Bricklayer	10.0–12.0	294.5	288.5	286.0	290.5	292.5	281.0	273.5	260.5	275.0	142.5
Duanido, Damián	Carpenter (helper)	6.6–7.5	339.0	344.0	309.0	345.0	309.0	293.0	287.5	301.0	295.0	294.0
García, Juan	Bricklayer	12.0–13.0	299.5	278.5	294.0	286.5	282.0	291.0	280.0	288.5	153.5	111.0
García, Pedro	Bricklayer (apprentice → helper)	3.0–9.0	165.0	291.0	288.5	281.5	288.0	271.5	280.0	288.5	179.5	162.5
Heras, Benito	Carpenter	10.0–12.0	299.0	289.5	288.0	292.0	290.0	290.0	275.0	280.5	259.0	39.0
López, Manuel	Carpenter	12.0–8.0 [b]	295.5	290.0	288.0	288.0	286.5	288.0	282.0	289.5	274.0	25.5
Martín, Pablo	Carpenter	10.0–11.0	164.0	158.5	77.0	282.0	272.0	278.5	257.0	259.5	220.0	232.0
Martínez, Blas	Bricklayer	10.0–11.0	289.0	282.5	299.5	295.0	284.5	187.5	275.5	283.5	196.5	233.0
Merced, José	Bricklayer (helper → journeyman)	6.0–10.0	79.0	287.0	290.5	243.0	214.0	153.5	265.5	283.0	272.5	235.5
Monti, Bartolomé	Bricklayer	12.0–13.0	232.0	289.5	293.0	292.0	285.5	163.5	135.5	267.0	277.5	64.0
Muñoz, Manuel	Carpenter	11.0–13.0	293.0	273.0	294.0	289.5	285.5	282.5	228.0	138.0	275.0	57.0
Orbera, Bernardo	Bricklayer (apprentice → helper)	3.0–6.5	294.5	286.0	261.0	286.5	242.5	220.0	271.5	189.5	232.5	197.5
Ortiz, Francisco	Carpenter	13.0	301.5	291.5	293.0	282.5	295.5	290.0	286.0	292.0	292.0	294.0
Pérez, Antonio	Carpenter	12.0	294.0	292.5	291.0	253.5	229.0	281.0	281.0	210.0	253.5	253.0
Reyes, Miguel	Bricklayer (apprentice → helper)	4.7–11.0	290.5	291.0	289.5	290.5	290.0	250.0	234.0	291.0	168.0	293.0
Sánchez, Manuel	Carpenter	12.0–13.0	292.5	292.5	291.0	291.5	295.5	290.5	286.0	292.0	243.0	198.0
Sánchez, Matías	Carpenter	11.0–12.0	296.5	290.5	253.0	292.0	291.0	247.0	206.5	206.0	169.0	206.5
Sedano, Blas	Bricklayer	10.0–12.0	297.0	276.5	225.0	281.5	283.0	270.0	136.5	196.5	162.0	153.5
Trompeta, Antonio	Bricklayer, helper	6.0–11.0	170.5	283.5	286.5	297.0	282.0	284.0	271.0	202.5	265.5	275.5

Notes: a: From the payroll of 17-23/2/1799 he is recorded as retired with a wage of 8 rs. vn., one third less than the one he was receiving; b: From the payroll of 14-20/10/1798 he appears as an assistant with a daily wage of 8 rs. vn. He appears for the last time in the payroll of 27/1–3/2/1799.
Sources: as Appendix 2.

APPENDIX 4. TOTAL DAYS WORKED BY ALL MEN PRESENT IN THE PAYROLLS OF THE BARRACKS OF SAN GIL, 1805

		Days worked					Weeks worked	Days worked per week
		San Gil Barracks	Royal Palace	Joiners Workshop	Sewer	Total		
Álvarez, Andrés	Labourer	12	87		118.5	217.5	43	5.06
Ancos, Mariano	Bricklayer (apprentice)	15.5	267.0			282.5	51	5.54
Anel, Antonio	Clerk	364.0	362.0			364.0	52	7.00
Antón, Venancio	Boy	6.0	26.0			32.0	6	5.33
Ballesteros, Carlos	Carpenter	2.0	112.0		117.0	231.0	46	5.02
Bartolomé, Vicente	Labourer	289.0				289.0	52	5.56
Calzada, Pedro	Paver's labourer	12.0	282.0			294.0	52	5.65
Cano, Juan	Labourer	26.0	230.0	29.0		285.0	52	5.48
Carmona, José	Carpenter	287.0				287.0	52	5.52
Carrera, Andrés	Labourer	11	53		113	177.0	31	5.71
Cecilia, Antonio	Carpenter	10.5	283.0			293.5	52	5.64
Colmenar, Agustín	Bricklayer	29.5	83.5		153.0	266.0	50	5.32
Cuadrado, Gaspar	Labourer	27.5	91			118.5	21	5.64
Entrealgo, José	Stonemason	17.0	183.5		29.0	229.5	48	4.78
Fernández, Lorenzo	Labourer	12.0	195.0	29.0		236.0	42	5.62
Fernández, Manuel	Tiler's labourer	6.0				6.0	1	6.00
Fraga, Pedro	Foremen	364.0				364.0	52	7.00
Frutos, Diego	Carpenter	203.5				203.5	38	5.36
García, Antonio	Labourer	28	77.5		112.5	218.0	39	5.59
García, Félix	Carpenter (helper)	3.5	49.0			52.5	14	3.75
García, José	Carpenter	282.0				282.0	50	5.64
García, José	Bricklayer (apprentice)	26.0	268.0			294.0	52	5.65
García, Manuel	Tiler	3.0				3.0	1	3.00
Guadalupe, Felix	Carpenter (apprentice)	11.0	283.0			294.0	52	5.65
Jordán, Miguel	Carpenter	11.0	5.0		162.0	178.0	32	5.56
Lara, Manuel	Paver	18.0	276.0			294.0	52	5.65
Lérida, Juan	Labourer	20.0	192.5	77.0		289.5	52	5.57
López, Manuel	Bricklayer (apprentice)	16.0	246.5			262.5	48	5.47
López, Paulino	Paver (master)	18.0	276.0			294.0	52	5.65
Martínez, Guillermo	Bricklayer	12.0	264.0		10.0	286.0	52	5.50
Martínez, Manuel	*Pisador* (?)	10.0	270.5			280.5	51	5.50
Merced, José	Bricklayer	49.0	89.0			138.0	24	5.75
Molina, José	Tiler (master)	6.0	51.0			57.0	11	5.18
Mújica, Manuel	Clerk	364.0	302.0			364.0	52	7.00
Neé, José	Carpenter (helper)	11.0	283.0			294.0	52	5.65
Paralela, José	Bricklayer	16.0	269.5			285.5	52	5.49
Parra, Tomás	Labourer	293.5				293.5	52	5.64
Pérez, Antonio	Carpenter (retired)	9.0	240.0			249.0	45	5.53

		Days worked					Weeks worked	Days worked per week
		Cuartel de San Gil	Royal Palace	Joiners Workshop	Sewer	Total		
Prieto, José	Bricklayer	4	172.00			176.0	42	4.19
Puerta, Dámaso	Labourer	22.5	251.5			274.0	52	5.27
Ramiro, Julián	Labourer → Bricklayer apprentice	28	93.5			121.5	22	5.52
Rodríguez, Bernardo	Labourer → Bricklayer apprentice	19.0	253.5			272.5	49	5.56
Rodríguez, Diego	Labourer	299.5				299.5	52	5.76
Salaices, Antonio	Labourer	20.5	226			246.5	44	5.60
Salanova, Domingo	Labourer	4	106			110.0	32	3.44
Salgado, Melchor	Labourer	13	183	67		263.0	52	5.06
Sánchez, Matías	Carpenter	13.0	211.5			224.5	46	4.88
Sanjurjo, Andrés	Labourer	4	262.5			266.5	48	5.55
Santacruz, Francisco	Labourer	4	47		72	123.0	25	4.92
Santos, Francisco	Tiler's labourer	3.0				3.0	1	3.00
Trigo, Ventura	Labourer	267.0				267.0	48	5.56
Trompeta, Valentín	Carpenter (helper)	10.0	283.0			293.0	52	5.63
Valdecabra, Domingo	Tiler	6.0	22.5			28.5	6	4.75
Villanueva, José	Clerk	294.0				294.0	52	5.65
Villanueva, Juan	Appointed	364.0				364.0	52	7.00
Zaldivar, Miguel	Foremen (Carpentry Workshop)	364.0				364.0	52	7.00
Zoya, Pascasio	Labourer	6	221.5			227.5	43	5.29

Sources: AGP, AG, OP, cajas 578–579, and 998–999.

APPENDIX 5. HOLY DAYS IN MADRID, 1680–1867

			1680–1721	1722–1744	1745–1758		1759–1867	
			DP	DP	DP	HH	DP	HH
FIXED FEASTS								
January	1	Circumcision of Christ	X	X	X		X	
	6	Epiphany	X	X	X		X	
	23	St. Ildephonsus, Archbishop of Toledo	X	X		X	X	
February	2	Purification of the Virgin Mary (Candlemas)	X	X	X		X	
	24	St. Matthias [a]	X	X		X		X
March	19	St. Joseph	X	X		X	X	
	25	Annunciation of the Lord	X	X	X		X	
May	1	Saints Philip and James	X	X		X		X
	3	Invention of the Holy Cross	X	X		X		X
	15	St. Isidore the Labourer	X	X	X		X	
	30	St. Ferdinand, King of Spain	X	X		X		X
June	13	St. Anthony of Padua		X		X		X
	24	Nativity of St. John the Baptist	X	X	X		X	
	29	Saints Peter and Paul	X	X	X		X	
July	25	St. James	X	X	X		X	
	26	Saint Anne	X	X		X		X
August	10	St. Lawrence	X	X		X		X
	15	Assumption of Mary	X	X	X		X	
	24	St. Bartholomew	X	X		X		X
	28	St. Augustine of Hippo	X	X		X		X
September	8	Nativity of the Blessed Virgin Mary	X	X	X		X	
	21	St. Matthew	X	X		X		X
	29	St. Michael	X	X		X		X
October	28	Saints Simon and Jude	X	X		X		X
November	1	All Saints' Day	X	X	X		X	
	15	St. Eugene, Archbishop of Toledo	X	X		X	X	
	30	St. Andrew	X	X		X		X
December	8	Immaculate Conception	X	X	X		X	
	21	St. Thomas	X	X		X		X
	25	Nativity of the Lord (Christmas)	X	X	X		X	
	26	St. Stephen	X	X	X		X	
	27	St. John the Apostle	X	X		X		X
	28	Holy Innocents	X	X		X		X
	31	St. Sylvester Pope	X	X		X		X
MOVEABLE FEASTS								
		Easter (Resurrection Sunday) [b]	X	X	X		X	
		Easter Monday	X	X	X		X	
		Easter Tuesday	X	X		X		X
		Ascension of Jesus	X	X	X		X	
		Pentecost Sunday [b]	X	X	X		X	
		Pentecost Monday	X	X	X		X	
		Pentecost Tuesday	X	X		X		X
		Trinity Sunday [b]	X	X	X		X	
		Corpus Christi	X	X	X		X	
		TOTAL	39	40	18	22	21	19

Notes:
DP: Double precept feast (i.e. hearing Mass, and rest from work). HH: Half Holidays (work is allowed after hearing Mass); a: February 25 in leap years; b: No take into account in the total.
Sources: Synodo Diocesana del Arzobispado de Toledo .... 1682, pp. 115–17; and 1849 [reprint], pp. 83–85. *Calendario manual...*, years 1744–1745, and 1749–1872.

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