

Patterns in Sex Ratios from Villeneuve-sur-Lot, 1610-1711

by

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Submitted in partial fulfillment of the requirements
for the degree of Master of Arts

at

Dalhousie University

Halifax, Nova Scotia

March 2014

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Abstract

This study analyzes sex ratios garnered from one hundred and one years of baptismal records from the south-western French town of Villeneuve-sur-Lot, between 1610 and 1711. It is the continuation of a larger project attempting to divine infanticide among married couples in early modern Western Europe. By comparing observed sex ratios (OSRs) in baptisms with the Universal Sex Ratio at Birth (USR) established by Visaria (1967) it has been suggested a number of times that significant and patterned deviations represent sex-selective infanticide. In the case of Villeneuve, swift shifts between preponderances of girl children and boy children during crises suggest compensatory practice, purposefully engaged in to even out potentially imbalanced sex ratios among adults later. In this way it may be suggested that the preference for boys or girls in Villeneuve over time was balanced, based on circumstance, rather than some inherent perceived value of boys over girls.

List of Abbreviations Used

USRB: Universal Sex Ratio at Birth

OSR: Observed Sex Ratio

SRB: Sex Ratio at Birth

Acknowledgements

First, I would like to thank Dr. Hanlon for his direction throughout this project. His understanding of the subject was invaluable in the examination of a massive body of scholarship and primary data unlike any I had ever seen before, or likely will again.

This project took long hours to complete, and I would like to thank my friends and family for sticking with me in my absence from the light of day. Without the support and confidence of my parents I may well have given up; and, indeed, in a more general subsistence sense, I would not have survived to finish. I would also like to thank my nonna and tata for their love and support through two more long years away from them at school.

Affectionate thanks to the archivists in Villeneuve-sur-Lot, who made this “espion du Canada” feel very welcome. I would also like to thank the Family History Project for their help in finding sometimes elusive records. Their service is exemplary, and their delivery of resources timely.

Many thanks to Valerie Peck, Graduate Secretary of the History Department, for keeping me on track with the administrative and logistical complexities of the MA process.

I would finally like to acknowledge my cat Mr. Spats, whose fuzzy companionship tended to outweigh the unpleasantness of the subject matter which I am about to discuss.

Chapter I: Introduction

I. A Matter of Life or Death

The grim subject of infanticide, although alive in the public consciousness, is still not widely understood (or accepted) by historians or demographers. Defined as the killing of an infant, dependent and defenseless, infanticide is a subject fraught with moral and emotional connotations. Even in the modern day, “family planning” at the reproductive level is often controversial. Modern birth control methods are far safer for the mother and less wasteful in terms of parental investment than infanticide, but all of these “reproductive checks” are based in choosing not to raise a child. In many parts of the world it is possible that the shift to the modern era rendered infanticide as a reproductive check obsolete, but the desire not to have a child, especially when that child may become an insurmountable economic burden or threaten existing children, or future potential children, is not limited to a specific time or place.

The majority of this thesis investigates the practice or suspicion of the practice of infanticide by married couples in early modern France, after the infant had been born, and before its existence had been recorded. It is a very specific kind of infanticide. A great deal of literature and importance has been devoted to the practice of infanticide among desperate unmarried women, largely in the form of case studies which tear at the heartstrings of a sympathetic audience. There are also studies of criminal cases, largely surrounding the prosecution of the said desperate single mothers. Horribly tragic though these instances of infanticide are, they are circumstantial. These recorded incidents do not represent the most probable majority of cases of infanticide. They do not represent the incidence of infanticide as a reproductive behaviour of evolving humankind.

“Survival of the fittest” is not necessarily the most appropriate phrase to describe human evolution. It suggests passivity, that to survive it is merely necessary to be fit. Only those who can muster sufficient resources to support their children to adulthood are those who experience reproductive success. The decision to keep a child is a difficult one, and carries with it responsibilities, costs and potential benefits important to the success of a family. The Trivers-Willard hypothesis¹ states that parents will invest differentially in offspring based on their likelihood to succeed, that is, survive to adulthood and reproduce in their turn. In fact, after a first child is born, further children could actually threaten the first, or those which came before, in whom the parents had already invested much. Recourse to infanticide is not necessarily indicative of moral decay or the undervaluation of women in every case, as is often presumed and asserted; rather, it can be a rational response to economic circumstances.

Sex-selective abortion based on modern detection techniques has become common in both of the world's most populous countries, clearly visible with modern data and methods for tracking it. A clear understanding of the demographic impact of the subject in history, however, has been obfuscated by a body of research plagued by bias, assumptions and an overemphasis on case studies. There is a popular idea that suggests that only girls would be the target of infanticide, governed by modern data and modern feelings. Recent high profile reports of a widespread dearth of women in China and India fuel a not unreasonable attention to the undervaluation of women in those societies, and the sort of imbalance that cultural norms and governmental statute can create. But if infanticide, including sex-selective infanticide, existed in history as a social reproductive behaviour,

¹ R.L. Trivers and D.E. Willard, D.E. “Natural Selection of Parental Ability to Vary the Sex Ratio of Offspring.” *Science, New Series*, 179, 4068 (Jan. 5, 1973): 91.

the motivations for practising it must have also been governed by biology, psychology and economic realities.

The relative value of one or another sex at birth is only the cause of infanticide when that valuation is so skewed in the favour of one or the other that it actually incites the procreators to kill the infant. If we accept the premise that infanticide has existed in parts of the world other than China and India, throughout history, and also that the relative value of male or female children was fluid and based in socio-economics as well as cultural inculcation, it must be maintained that boys could also be the target of infanticide.

That infanticide was theoretically predominantly levelled against one sex or the other, however, is necessary if it is to be seen in records. If infanticide existed in exactly equal numbers between male and female it would not affect the natural ratio. It would also have to be relatively consistent and indeed fairly frequent to skew the ratio. Furthermore, inferring infanticide from sex ratios is not a concrete explanation of short term changes in sex ratios in all cases. The real point of interest in this project is not simply seeing how overall observed sex ratios (OSRs) relate or contrast with the “Universal Sex Ratio at Birth” (USRB), but how the OSRs shift over time, year by year, and then seeing if we might account for factors that could be causing these shifts.

II. This Project

This thesis will investigate patterns in the frequency of baptisms over the course of the seventeenth century in Villeneuve-sur-Lot, a bastide town in Aquitaine.² This project examines discrepancies between OSRs in Villeneuve and the USRB, tracing patterns in the

² A bastide is a medieval town planned out on a grid before being built and fortified; they were built as growing population centres, centralizing political influence and economic activity.

population as a whole and subdividing it into distinguishable social and locational groups. Tracing the changes in the sex ratios over time can establish patterns of reproductive behaviour, and the impact of various social, economic and biological influences on that behaviour can be inferred with informed supposition. In this way, this project brings together biology, human ethology, history, and demography.

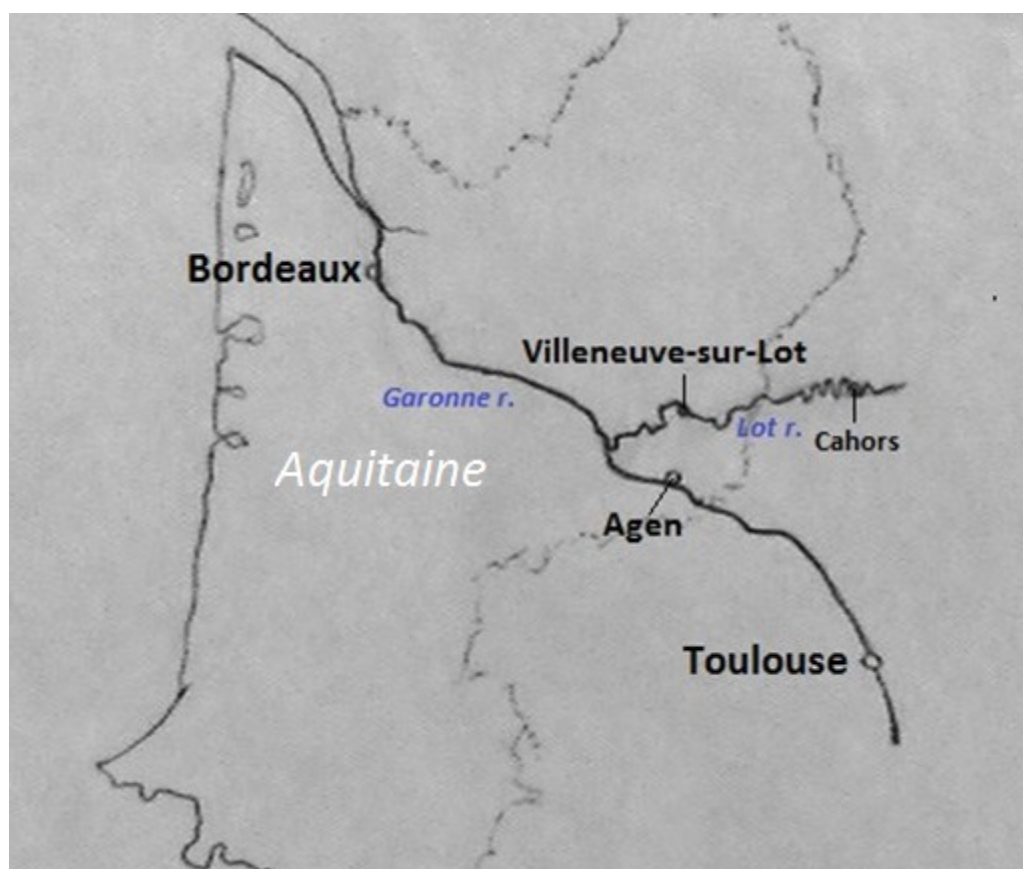
Demographic surveys based on statistics gathered from primary sources face three immediate problems. The first is the difficulty of collection, the second is that of sample size, and the third is the degree to which that sample size may be taken as representative for anything other than the sample. The difficulty of collection falls into two parts. The first is the completeness of available historical records, which could have been damaged or kept intermittently. The second is the time and energy required to transform or quantify the available information into a demographically workable format. Sample size is another barrier to the reliability of demographic surveys of this type. Without sufficient data any graph portraying shifts in birth frequency, sex ratio or anything else would be hopelessly jagged and impossible to interpret. Besides, obviously, too low a sample size undermines the degree to which the sample could be set as representative. Even with a large enough sample, an isolated study of a single place and time could only offer isolated data; such an examination would only be a cold case study without context and parallel investigations in other places. To this end, this thesis forms a part of a larger infanticide project spanning several towns and cities across Europe, with the overarching goal of finding discernible, widespread and durable patterns in sex ratios over time and place, which will be described later.

The reproductive behaviour of the people of Villeneuve-sur-Lot will be examined in several ways. Other than analyzing the shifting sex ratio, the sample size of

approximately 18,000 baptisms over a hundred years allows for an attempt at family reconstruction. The idiosyncratic parish records do not easily lend themselves to the creation of complete family reconstructions, but a sample of 105 families was selected from the longest consistent period of the records of the larger of two urban parishes, to see whether any patterns in birth order, or suspicious delays between children of the same sex, could be detected.

III. History and Geography

Figure 1: Villeneuve-sur-Lot in Aquitaine



Source: Image drawn by the author.

Why Villeneuve

Villeneuve-sur-Lot was selected for this project for two main reasons. First, the town offers relatively complete continuous baptismal records. The resulting sample is small

enough to allow for a fairly detailed investigation and large enough to provide workable demographic data. Second, Villeneuve was chosen for its representation of a wider region. Villeneuve-sur-Lot, founded in 1264, was one of some 109 bastide towns built before the turn of the fourteenth century in the Agenais region alone. It was built as part of a massive urbanization project to populate the frontiers of the French nation, and that it should still exist indicates that this “reproductive experiment” was a success. Villeneuve was one of the largest throughout the early modern period, remains inhabited, and continues to be one of the most populous bastides. The four bells on the facade of the oldest church still standing can be found across Aquitaine. No two places are exactly alike, of course. Villeneuve was a walled town, with a navigable river, the Lot, running through it, bringing goods down from the Quercy and Auvergne regions. To this day the Villeneuvois³ is the prune capital of Europe, and maybe the world.

The streets of Villeneuve fall into ordered rectangular blocks broken up by a grand church plaza, an arcaded marketplace and narrow alleyways. As a living, populous town, Villeneuve received major improvements in the early nineteenth century including the Hospital Saint-Cyr, a large indoor marketplace known as La Halle, and a prison which was later converted into a theatre that still hosts performances today.⁴ The *Moulin de Gajac*, a tall stone mill built on the edge of the river and built out into the water, is now the *musée de Gajac*, and also hosts the municipal archives. Although the walls of the town have been

³ The “Villeneuvois” is simply the area around Villeneuve. The “Agenais” is the region around Agen, a larger political and economic centre than Villeneuve, and is correspondently a larger area, which includes the Villeneuvois.

⁴ Jean Goasguen. “Villeneuve-sur-Lot au milieu du XVIIe siècle,” *Revue de L’Agenais* (1964): 18.

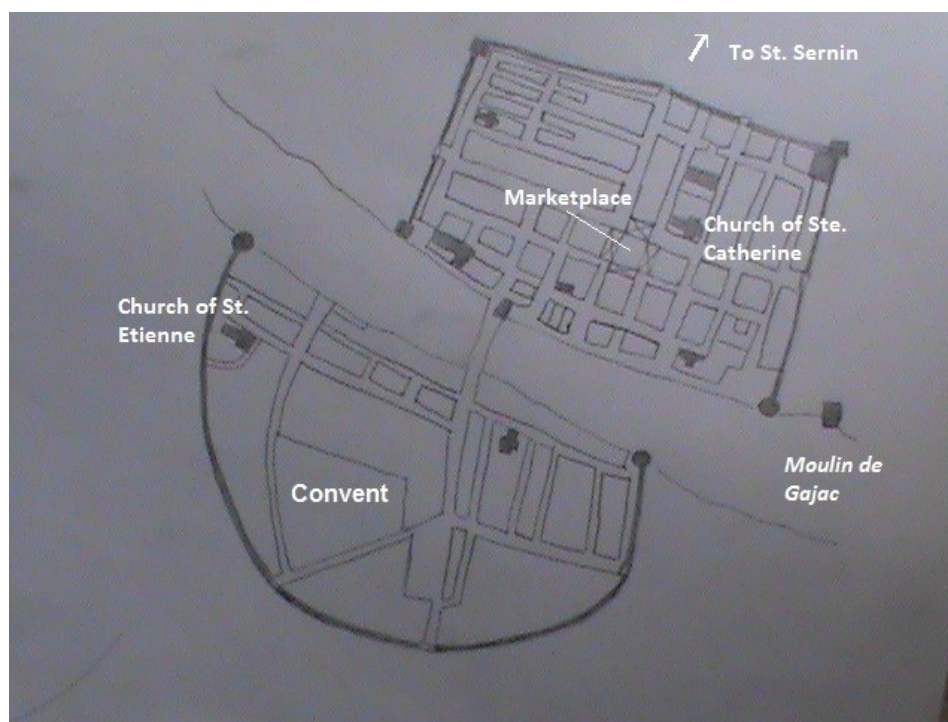
replaced by a road, there is still a feeling of ordered enclosure, and efficient and practical use of available space.

Jean Goasguen, a local demographic historian, has written several articles focussing on Villeneuve in the 17th century and earlier. With the exception of the absence of the town walls, and more recently the complete re-orientation and reconstruction of the largest church, Villeneuve, according to Goasguen in 1964, keeps “encore aujourd'hui le plan que lui donnerent ses fondateurs du XIII^e siècle.”⁵ Goasguen draws part of his data from “l'Arpentement général de 1647, lequel donne de Villeneuve la description la plus ancienne que nous connaissions.”⁶ Unfortunately, a map which would have represented the neighbourhoods of Villeneuve in 1647 has been lost; but this does not stop Goasguen from being able to reconstruct several town plans from this written source. From this, in turn, I have produced the map on the following page.

⁵ Goasguen, “Villeneuve,” 17.

⁶ *ibid*, 18.

Figure 2: Map of Villeneuve-sur-Lot for the 17th Century



Source: *Image drawn by the author.*

Although built on the site of more ancient villages, the town was a practical experiment in urbanization; the old made way for the new in the 13th century in Villeneuve. Nearby cities have more often been examined archaeologically, for their existence extends into the Roman period, and “les petits villages qui ont pu exister là avant le XIIIe siècle -- et probablement depuis l'époque romaine -- ne presentent évidemment pas un intérêt archeologique comparable à celui d'*Aginnum* ou de *Mirmanda*.”⁷ Villeneuve, not quite old or apparently interesting enough for archeological enquiry, neither big and sprawling nor small and irrelevant, is just right for a demographic survey.

The Parishes of Villeneuve

The town itself consists of only two parishes, and records from a small “suburban”

⁷ Goasguen, “Villeneuve,” 18.

parish just outside the city are extant from the second half of the 17th century. The larger of the two urban parishes is Ste. Catherine, the bigger half of the city on the north bank of the Lot (see Figure 2). Built on the ruins of the old church, and oriented perpendicularly to the original, the modern church towers over the tallest town buildings, to this day no more than three stories tall.⁸ The smaller urban parish is St. Etienne, the half of the town south of the river. The third parish included in this study is that of St. Sernin, located a short distance to the north east, outside the walls. The records for this tiny parish are mixed in with those of Ste. Catherine.

Goasguen chronicles the history of the records as well as the town. The baptism records commence in 1559 for the parish of Ste. Catherine, and 1607 from the parish of St. Etienne. He laments the fact that many of the records for the important Fronde period (1648-53) are absent for Ste. Catherine, but he takes all he can from those of St. Etienne, where they were better preserved. Important for this project is that his work also includes an examination of several years' death records, further indicating periods of stress where he includes them. These periods of stress punctuate the seventeenth century in Villeneuve, a century which saw growth overall, but underwent times of economic stability and instability unevenly but traceably throughout.

⁸ By comparison, the city and diocesan seat of Agen, located about forty kilometres south, offers up towering buildings of four storeys and a massively steepled collegiate church by the train station, built on the former site of a pagan temple.

Figure 3: The Church of St. Etienne



Source: *Photograph taken by the author, October 2013.* Built on the ruins of the old church in the 16th century, the structure remains complete – although the bell tower was rebuilt in 1775 after the former tower was destroyed by lightning.

Villeneuve and the Agenais

The Agenais region was contested territory throughout the Hundred Years' War, but also changed hands several times between the French and the English between the twelfth and fourteenth centuries. The region was inherited by Henry, then duke of Normandy *and* Aquitaine, in 1150. He shortly ascended the English throne, thus making the region the property of the English crown.⁹ In 1196 the region was given to the count of Toulouse,

⁹ R. Cassany de Mazet, *Histoire du Villeneuve-sur-Lot*. Chabrie ED., 1879, 18.

along with all of Aquitaine, returning it to French control. A peace treaty of 1259 then put the Agenais into the possession of Henry III.¹⁰ The few actually English occupiers lived as congenially as possible with the locals, particularly in Villeneuve, where they built, traded, traced real roads and made the river navigable around the town.¹¹ In 1282, they built the bridge in Villeneuve, five mighty arches joining the two halves of the city. The bridge was heavily fortified, and three heavy towers were erected, one on either side of the river and one in the middle, similar to the bridge still standing upstream in Cahors. In 1292, the town experienced a long siege, but remained in the hands of the English until 1337,¹² when it was taken back by the French. The victory of the English at Crécy returned it to English authority in 1347.¹³ In 1357 the walls of Villeneuve were restored and enlarged by the English. In 1360, Charles V signed the peace of Brétigny, but engaged secret agents to stir up unrest in Aquitaine.¹⁴ In 1369, he returned to war against the English on the pretext of abuses of power in the face of the Treaty, and that same year the Agenais and Villeneuve were back firmly under the jurisdiction of the French crown, where they would remain until today, except for the interruption starting in 1789.¹⁵ Internal conflict, however, civil and religious strife, would continue in the region into the seventeenth century. Villeneuve, as a

¹⁰ Cassany de Mazet, *Histoire*, 39.

¹¹ *ibid*, 40.

¹² *ibid*, 53.

¹³ *ibid*, 55.

¹⁴ *ibid*, 55.

¹⁵ *ibid*, 56.

fortified town with an important bridge, was a valuable strategic target in this long and bitter conflict. Additional to this unfortunate fact, the whole region was regularly beset by famine and plague, the latter of which was felt hard in Villeneuve, as an economic and transportational hub.

War, Famine, Pestilence and Death

A chronology for Villeneuve for the duration of the seventeenth century is dense with calamity in the first half and relatively peaceful and quiet in the second. Dr. Louis Couyba, another Villeneuvois historian, has written several books chronicling disaster and privation in the region. Famine was a recurrent problem throughout the sixteenth century. In 1532, two separate accounts state that a hundred thousand people lay dead in the streets and alleys of the Agenais, dead of hunger and homelessness, though of course this number is surely exaggerated (since the whole region numbered fewer than 200,000 inhabitants).¹⁶ In 1572, there was another great famine. Further misery, says Couyba, in 1577, accompanying the wars of religion, in which Aquitaine was the region hardest hit. In 1595, according to an ordinance of Henri IV, the situation was so desperate that the Agenais “était presque sa dernière minute.”¹⁷ The suffering but hardworking people of the Agenais, “vétus de toile, comme un Moulin à vent,”¹⁸ did not profit much by this empty acknowledgement of their plight.

Little changed with the turning of the seventeenth century, as if anything the

¹⁶ Louis Couyba, *La Misère en Agenais*. Imprimerie Renauld Leygues, Villeneuve-sur-Lot 1902, 8.

¹⁷ Couyba, *Misère*, 15.

¹⁸ *ibid*, 8.

frequency of disasters increased. For the first thirty years of the seventeenth century, the Agenais region was particularly vulnerable to famines, epidemics and armies weaving through it. Between 1600 and 1602, consistent food shortage generated plague, in a regional epidemic. By the end of 1602, vagabonds, bandits and highwaymen roved everywhere. The ears of the consuls of Monflanquin, closer to Villeneuve than Agen, rang everywhere they walked with the sound of complaint.¹⁹ We may assume the situation did not improve much over the next decade, as at the États généraux of 1614, the representative of the third estate perhaps hyperbolically stated that the people were forced to graze alongside the beasts.²⁰ The following year, *la Révolte des Grands* against the crown ravaged the countryside. In 1617 there was another food shortage. In 1620, another revolt broke out, orchestrated by Marie de Medici against her young son Louis XIII. That year Henri de Mayenne, Baron of Monpayzat, marched an army 22,000 strong to Agen from Bordeaux in August 1620, and afterwards to Puy-L'Evêque, upstream from Villeneuve in Quercy, carrying plague as well as pikes.²¹ 1621 saw an uprising of Huguenots, densely concentrated downstream around heavily fortified Clairac; more bitter fighting, more filthy soldiers. The year 1622 seems to have been alright, but the following winter all the rivers froze solid. When they eventually thawed, in February 1624, frost killed the dormant vines and fruit trees.²² Another brief respite followed, until January 1627 brought terrible rains, which caused the rivers to flood.

¹⁹ Couyba, *Misère*, 10.

²⁰ *ibid*, 10.

²¹ *ibid*, 10.

²² *ibid*, 10.

It rained unseasonably heavily until the following winter.²³ Food shortages were endemic through 1628, 1629 and 1630, and culminated in a most terrible famine in 1630-31, likened to that of a hundred years prior (though this time on a continental scale). That winter was “un tueur de pauvres gens.”²⁴ Once again the roads were thick with vagabonds, but the severity of the famine in towns was sufficient that “les cadavres des faméliques jochaient littéralement les champs et les rues” in the Agenais.²⁵ The period between 1638 and 1645 was relatively quiet politically, however a national plague passed through Agen on its way from Marseille and Toulouse to Bordeaux, where it raged between 1646 and 1647.²⁶ The largest and most singularly calamitous event for Villeneuve, however, had yet to occur.

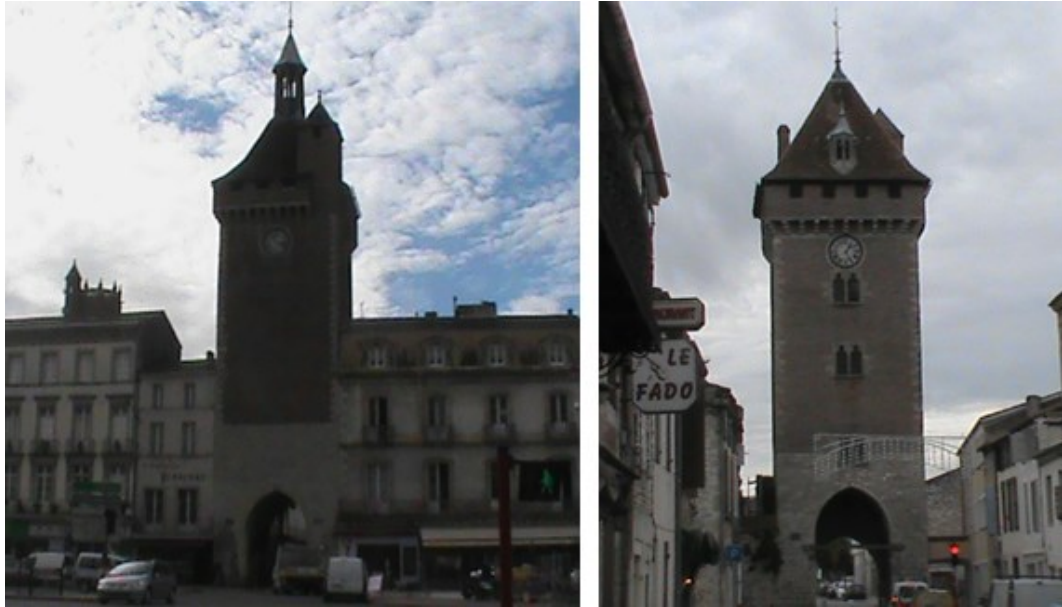
²³ Couyba, *Misère*, 11.

²⁴ *ibid*, 13.

²⁵ *ibid*, 13.

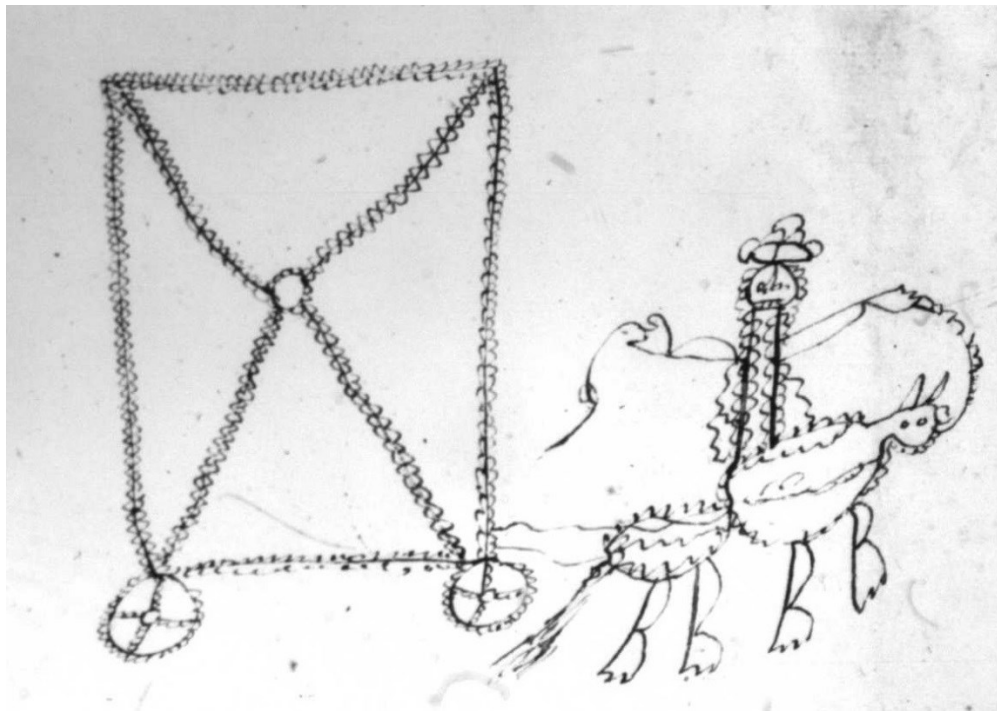
²⁶ Couyba, L. *La Peste en Agenais*. Imprimerie Renaud Leygues, Villeneuve-sur-Lot, 1905, 117.

Figure 4: The Gate Towers of Paris and Pujols



Source: Photographs taken by the author, October 2013.

Figure 5: Fortified house and Cavalier, 1692



Source: Ste. Catherine parish register, 1692.

The Siege

The political and strategic importance of the town returned to haunt its inhabitants with the coming of the Fronde. On the fifteenth of June, 1652, Villeneuve-sur-Lot was put to siege by an army loyal to the young king Louis XIV and Cardinal Mazarin, having been occupied by an army of *Frondeurs*. Dr. Couyba sets the crowded scene:

A l'intérieur, la ville était pleine de troupes: les régiments de cavalerie et d'infanterie de Théobon, commandant de la place, les troupes Irlandaises, les milices bourgeoises et une population affamée; à l'extérieur, le camp de d'Harcourt, décimé moins par les combats et les balles des assiégés que par la peste d'un camp, où les quatorze mille hommes du début avaient pour ainsi dire fondu.²⁷

Of the fourteen thousand soldiers sent to besiege the town, only three thousand remained by the time of capitulation in August 1653, most of the rest having melted away from disease and desertion.²⁸ Almost a third of the townsfolk died as a result of the lack of food, gradually worsening hygienic conditions, and resultant plague behind the closed gates and four metre high walls. The number of deaths in the town spiked in September of 1652, with over 120 in the parish of St. Etienne alone, when the figure in May of the same year was around ten. Winter followed. The active siege operations against the town did not occur until the following March, both for military reasons and in order to fight a starved and demoralized opponent. The resulting plague and political isolation did not quicken recovery. Immediately after the town's capitulation, the deaths rose to levels that Goasguen can only estimate, as plague was spreading virulently across Aquitaine. The baptisms from the whole harvest year, from that July until the following, for the lower class in St. Etienne

²⁷ Couyba, *La Peste*, 136.

²⁸ Cassany de Mazet, *Histoire*, 116.

number only 17, when the year before, fraught with travails all its own, had 40, and even that was only half of the figure from 1644-5.²⁹

The Winter of 1708-9

Yet another noteworthy calamity was the brutal winter of 1708-9. Joseph François Ignace Labat de Savignac, an illustrious chronicler from Bordeaux, reported on the 12th December 1708 that it had been so cold for the past five days that in order to heat his mother's eating room in time for dinner the fire had to be started at noon.³⁰ By mid-January, the temperature had declined to around fifteen degrees Celsius below zero, where it remained for about a week. This was enough to freeze the Garonne in Bordeaux, and the same was undoubtedly the case for the Lot.³¹ On March 17th, 1709, Savignac reported that food shortage in the Agenais was so grave that the *Intendant* of Bordeaux sent them a boatload of grain.³² The sample drawn for this project ends in 1711, but the impact of the renewed privation and bitter cold is clear in the final years.

The first half of the seventeenth century was politically and demographically turbulent for France, although smaller towns and villages often escaped the brunt of unrest, disease and famine felt at a national level. The town of Villeneuve-sur-Lot faced several serious crises over the course of the century, including subsistence crisis continuing from the sixteenth century, as well as new political and climatic disasters. The most consistent

²⁹ Jean Goasguen, "Démographie et histoire de Villeneuve d'Agenais de 1560 a 1791 (d'après les registres paroissiaux)," *Revue de L'Agenais* (1964), 122.

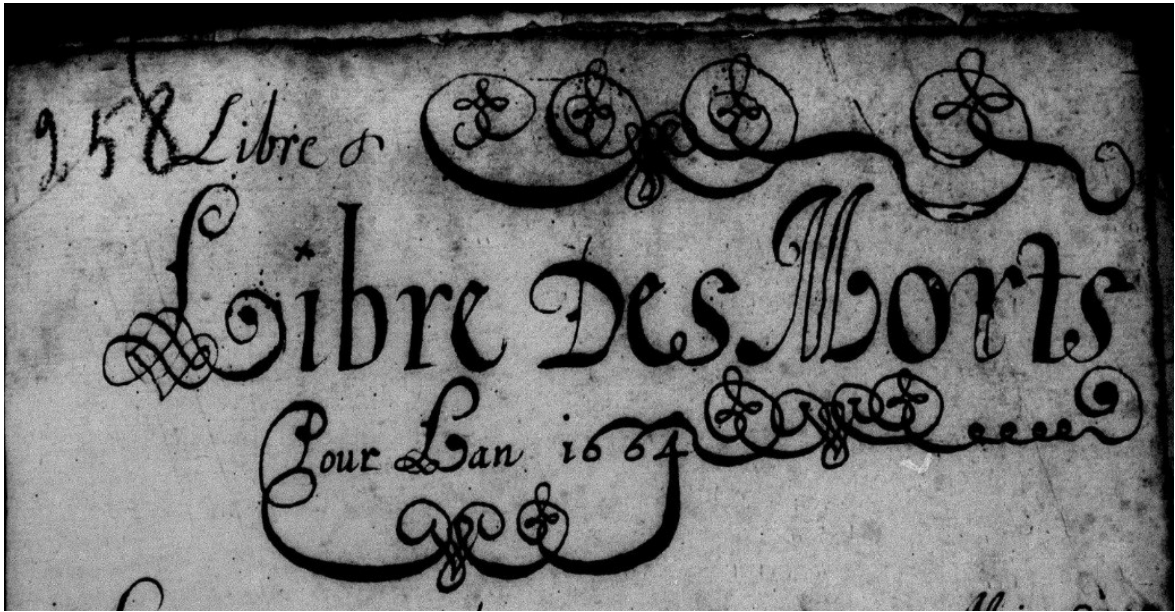
³⁰ Caroline Le Mao, *Chronique du Bordelais au crépuscule du Grand Siècle: le Mémorial de Savignac*. Bordeaux, Presses Universitaires de Bordeaux, 2004, 42.

³¹ *ibid*, 60.

³² *ibid*, 84.

problem, though only dramatic in times of serious crisis, was want of food. It is possible to arrive at a more nuanced appreciation of the impact of all these calamities on the lives of the inhabitants of Villeneuve by looking at the price of grain across the century.

Figure 6: Title page for death records, 1664



Source: Ste. Catherine parish register, 1664. Note that the writer started a much simpler title top left, before devoting a much more formal, respectful and beautiful title.

IV. Grain Prices and Economics

Pain is Life

Grain prices have often been used to infer the standard of living in early-modern societies, and while this practice has its detractors it is a quantifiably valid method for the purposes of this thesis. In respect to their meaning for people on the ground, high grain prices do not necessarily indicate lack of food, but merely local reaction to heightened prices in national markets.³³ But rises in price do indeed limit the availability of food to

³³ David R. Weir, “Markets and mortality in France, 1600-1789,” *Famine, disease and the social order in early modern society*, J. Walter & R. Schofield eds, Cambridge, 1991, 204.

those without money or occupational food access. Furthermore, more of any household's income being devoted to food acquisition means less for manufactured goods, with less money being distributed among craftsmen and artisans (who need to eat also). Wheat prices are used in this study because that grain offered the most calories for the least money of any available food, and so was central to the diet of the subject population. While other grains such as rye and oats were eaten also, their prices followed the general trend. Meat and vegetables would have formed a much smaller portion of the lower class diet.

The use of grain prices is sometimes contested as the be all and end all of standard of living factors. In his article about the markets of *ancien régime* France, David R. Weir identifies other factors that influence mortality and a dearth of births. As he says, "Omitted variables like weather conditions, mobilisation for war, or disruptive epidemics could create 'spurious' correlations."³⁴ Besides, "high prices never directly 'cause' deaths."³⁵ Not having enough to eat does. The death records were not collected for this project, and so a mortality figure cannot be arrived at to compare with the observed rate of birth, both because the death data only becomes available part way into the survey, and because it would be part of a different investigation. But those who have undertaken such an investigation do help in the identification of crises.

Jacques Dupâquier, examining demographic crises in France between 1650 and 1725, noted that scattered early statistics indicate crises in 1652 and 1661-2. Later more reliable information suggests that there was still another more serious crisis in 1674 and another between 1691 and 1694. Minor crises with less widespread effects geographically

³⁴ Weir, "Markets," 203.

³⁵ *ibid*, 203.

he observes in 1676, 1680, 1705, and 1707. We might expect to see the impact of some or all of the national crises at least on the grain prices. In France, according to Dupâquier, “all grain rose in price simultaneously, leaving the poor with no affordable substitute grain when the wheat and rye harvests failed.”³⁶ It was grain which formed the backbone of the Early Modern French diet, and “[d]emand for grain was traditionally inelastic,” such that “total expenditures on grain rose when the size of harvest fell.”³⁷

Figure 7: The arcaded marketplace of Villeneuve-sur-Lot



Source: *Photograph taken by the author, October 2013*

³⁶ Jacques Dupâquier, “Demographic crises and subsistence crises in France, 1630-1725,” *Famine, disease and the social order in early modern society*, J. Walter & R. Schofield eds, Cambridge, 1991, 189.

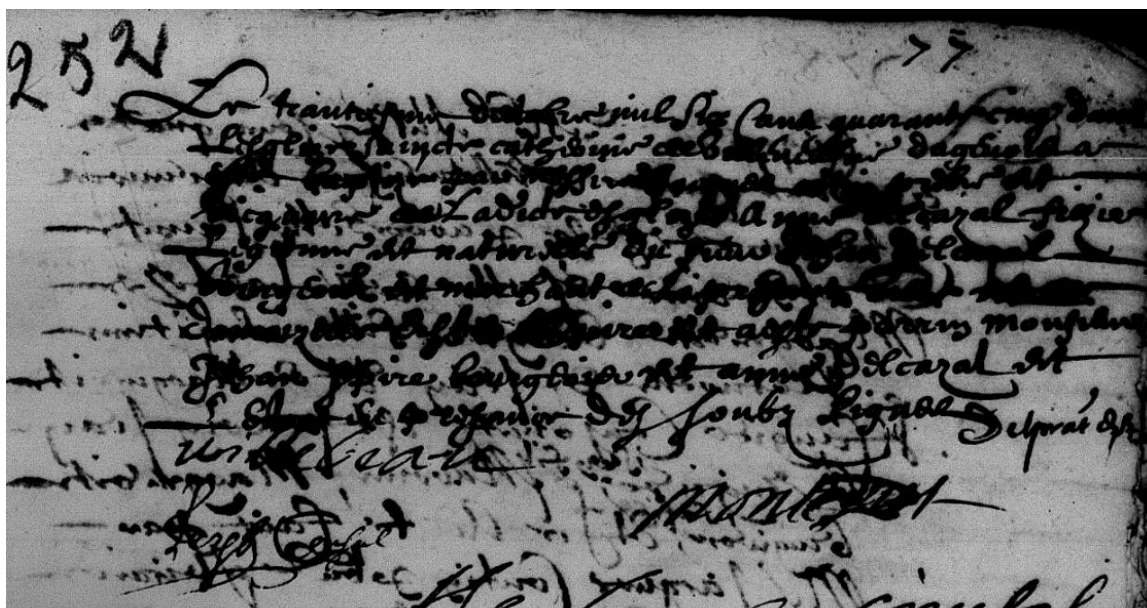
³⁷ Weir, “Markets,” 205.

Social Orders

While the reproductive habits of the three levels of society may differ for cultural reasons, the divisions can be measured by a more practical yardstick - the accessibility of food. Nobles, it is assumed, were able to access food consistently throughout crises, for they owned good land, and the crops grown on it. The lower class, it is assumed, would be more directly affected by price inflation or scarcity. The middle group is more complicated. It is assumed here that despite the difference in social class, an artisan or a keeper of a store would have no greater access to limited resources than those of the lower class, but that a baker, miller or butcher would. Those most likely to maintain a high standard of living in the face of lower local accessibility to food include jewellers, masters of boats, innkeepers, doctors, surgeons, bakers, butchers, and millers. This group, when combined with the nobles and landholding elite,³⁸ forms between 12 and 14 percent of the overall population, a sample large enough to isolate and examine.

³⁸ Those with enough money to own land got at least a share of any crops grown there, or at least had enough assets to buy more expensive food in times of crisis.

Figure 8: Below-average baptism record of a *Sieur* of Villeneuve's daughter, 1646



Source: Ste. Catherine parish register, 1646. Note photographer's page numbering top left and priest's numbering top right.

V. Baptism Records

The practice of baptism was universal in France for the period of this study.³⁹ Every Catholic child who survived birth (and the first days of life) was baptized. Even children in imminent danger of death would be baptized in a common emergency fashion by the midwives or “sage femmes”. Illegitimate children were no exception. There are cases of children abandoned at church doors left with a note to indicate their name and say that they had been baptized.⁴⁰ Furthermore, it was done quickly; the overwhelming majority of baptisms in the surveyed sample occurred within about forty-eight hours of birth, assuming that the priest recorded the birth date at all. Some families waited, probably to organize a

³⁹ With the exception of Jews, in France in tiny numbers, who obviously do not appear in these records.

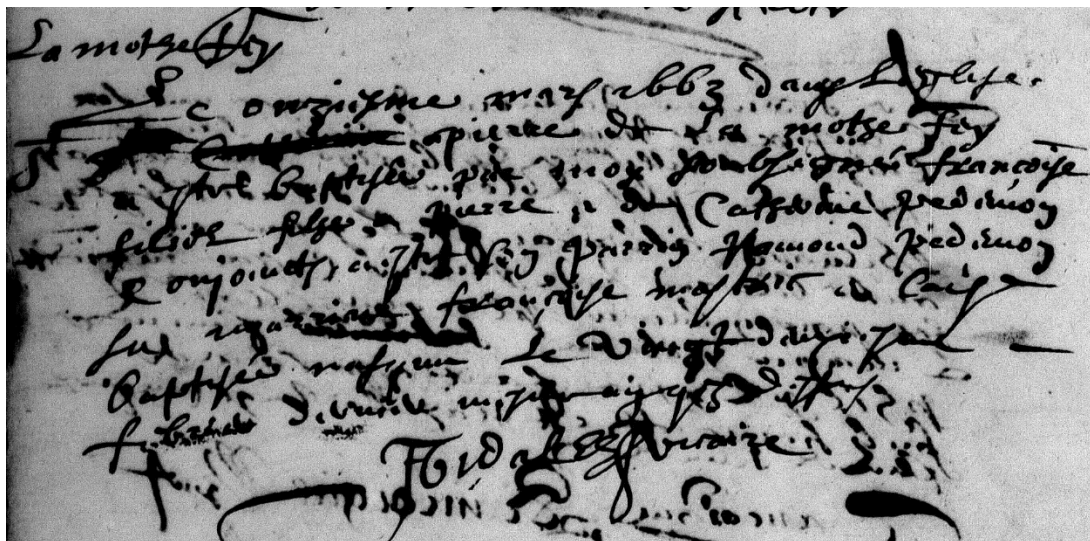
⁴⁰ T.B. Brissaud. “L’infanticide à la fin du moyen age, ses motivations psychologiques et sa répression,” *Revue d’Histoire du Droit Française et Etranger* (1972), 241.

large party for the baptism, and did not have their child baptized for perhaps three weeks, and this too can be taken into account. But there were irregularities.

The parish records available from the two main churches of Ste. Catherine and St. Etienne have several gaps, the largest gap being of three years, but the majority of the century is complete. Sixty-nine of the hundred and one years represented in this project are complete for both urban churches concurrently. The existing records are compromised only lightly by the ravages of time; the specifics of their condition and the circumstances of their retrieval will be described later.

Baptismal records are not scientific data by themselves as such but rather paragraphs for each child written without a standard formula, different for each priest and cleric. They are not gathered for demographic purposes; while the potential legal purpose of proving legitimacy or birth order for inheritance purposes makes them official-looking, they are really “just” records of entry into the Catholic community. Several different priests, clerks, notaries and volunteering literate notables wrote the records over the course of the survey, and most chose to approach the task in their own way. The handwriting of the record keepers is of diverse quality across the century. Some records are magnificently written and are easy as print to read. Others stretch the bounds of intelligibility. While most are legible, the majority are difficult to read. But I have read them, and categorized them, and made numbers out of them; and the results contain peaks, valleys, patterns and trends.

Figure 9: An average baptism record



Source: Ste. Catherine parish register, 1663.

VI. Structure of Thesis

Chapter 2 examines multidisciplinary attempts to approach an understanding of infanticide. Scientists and social scientists ranging from demographers and historians to biologists and ethicists have examined the subject, and this chapter will not attempt to present a comprehensive overview of this mass of writing. Rather, the chapter will focus on conflicting interpretations and viewpoints concerning the study of infanticide, in an attempt to build on what research exists, and to avoid certain methodological pitfalls and uninformed assumptions in some prior research. Of central importance is discussion relating to the universality of one natural sex ratio across place and time, and this too will be discussed in the second chapter.

Chapter 3, Methods, will present the way that this project was done, from the collection of primary resources to the manipulation of idiosyncratic data into a scientifically dissectable form. In addition, problems and the limitations of the accuracy of the sample will be discussed.

Chapter 4, Statistics and Sex Ratios, is a presentation of the primary data collected for this project, including charts and graphs to put the data into visual context. This chapter will also present interpretations of the collected data, as well as discussing certain factors specific to the situation of Villeneuve which must be taken into account.

Finally, the thesis will conclude with a summation of the findings, and assess the degree to which the data as collected adds to the theory of routine infanticide, in other contexts than that which can easily be traced in China and India, and will also show that the data indicates that certain suppositions, such as timeless, universal femicide, do not hold true.

Chapter II: Contention and Secondary Scholarship

I. The Broad Study of Infanticide

We begin with the premise that humans are rational and adaptive creatures who modify their behaviour to better suit the conditions in which they live, in order to best ensure continued reproductive success.⁴¹ Although understood to be the case, the way that this success or failure comes about, the *act* of adaptation which leads to and is the product of evolution, is only rarely explained. In both modern day and historical contexts, it is entirely possible that infanticide has played a role in this evolution. The study of infanticide, properly understood, would have a widely felt impact in the study of historical demography, insofar as demography is a study of “the parameters that determine the success or failure of populations to keep in balance with the economic space they inhabit.”⁴²

This chapter aims to give an overview of several of the conflicting interpretations observed in infanticide literature. The historiography is widely varied, and conflicts in approach for both the purpose and result of a comprehensive study. The amount of material in some way devoted to the subject of infanticide, to begin with, is staggering. According to Brigitte Bechtold, co-author of “Killing Infants: Studies in the Worldwide Practice of Infanticide,” as of 2006 there were “well over five hundred publications dealing with infanticide, almost 90 percent of those appearing since 1976.”⁴³ Of these, however, it must

⁴¹ Reproductive success here meaning reproductive succession.

⁴² Roger Schofield, “Family structure, demographic behaviour, and economic growth,” *Famine, disease and the social order in early modern society*, J. Walter & R. Schofield eds., Cambridge, 1989, 279.

⁴³ Brigitte H. Bechtold and Donna Cooper Graves, ed., *Killing infants: Studies in the worldwide practice of infanticide*, Lewiston New York: 2006., 9.

be noted that far fewer “treat infanticide as the main subject under investigation”, only 65 of Bechtold's 515, and there are reasons for that.⁴⁴ Case studies of infanticide, which are the most common type, have a tendency to sensationalize the behaviour. The subject of a behavioural case study is the individual, rather than the behaviour in question. The whole body of case-study literature, for this reason, offers big feelings and little data. I assert that it is possible to *measure* infanticide in a *population*, using statistics.

A statistical study in search infanticide relies on the reality of a natural expected ratio of sex at birth, and the possibility that infanticide could be so prevalent as to have an impact on the observed sex ratios. The base line for the study of infanticide demographically is the Universal Sex Ratio at Birth, gauged to be the natural ratio of boys and girls to be expected when viewed over long periods which include economic stability. The matter of possibility hinges on the acceptability of infanticide in a broader historical period and area, that is, the degree to which we can suspend our disbelief that it occurs. As Sarah Blaffer Hrdy, author of *Mother Nature*, states, “[e]ven those who accept that infanticide takes place—among heathens, somewhere else—are often reluctant to accept its natural occurrence among civilized or Christian people.”⁴⁵ If we can accept that infanticide is a human universal, practised worldwide in diverse circumstances, then we may have a way to compare the practice among different groups, and perhaps even be able to propose means to mitigate its potentially destabilizing effects in the modern day.

The type of infanticide that this study explores is the killing of a newborn infant before it was baptised, so removing it from the record. If practised frequently enough, and

⁴⁴ Beyond the fact that she seems only to read studies published in English.

⁴⁵ Sarah B. Hrdy, *Mother Nature*. Ballantine Publishing Company, New York: 1999, 290.

in a pattern, this killing would create a gap in the observed data, in the form of discrepancy from the USRB. This search hinges on two main tenets; first, that the practice would be predominantly against boys or girls, sex-selective and not general. Second, there must be a means to discover whether such a gap in the data was abnormal in the more general sense of natural human reproduction.

The first tenet grows in complexity when it is supposed that the predominance of boys or girls baptised was the result of a *shifting* valuation of boys and girls acute enough to create baby-murderous behaviour in a statistically visible number of individuals. The second tenet is a matter of a more conceptual statistical debate, although when actual numbers of boys and girls are compared in millions a natural "yardstick" can be found and maintained. This can be refined for specific times and places, and so deviations from this norm can and do prove suggestive. There is a problem with any general statistical formula however, when taken and applied to specific circumstances. One may flip a coin fifty times and get tails every time; but if there is a noticeable trend, if the coin comes up heads more and more frequently, someone is cheating.

Each author has a different approach to the infanticide subject, and often that approach is shaped by ideology or agenda rather than the pure pursuit of understanding. Assumption and biased interpretations can and might confer misunderstanding or unwarranted inferences as a result. The following chapter will first briefly examine the science of human reproduction, and establish parameters of expected reproductive results in different societies and contexts. After that, historical explorations specific to infanticide will be discussed, and the success and failure of past investigations will be considered. These will lead into a discussion of the model for this project, based most directly upon the model of Hanlon, modified and expanded by Hynes.

II. USRB and the Science of Reproduction

In order to determine infanticide statistically, it is first necessary that a base line be established, from which to chart significant and reliable deviations. The USRB, or universal sex ratio at birth, attempts to give this base reference for the relative number of boys to girls that a reproductive group should be naturally producing. Initially proposed by Praven Visaria in 1967 and then expanded upon by Parazzini et al. in 1998 with data from 29 countries over five continents, a “consistent and reliable SRB for European or American Societies”⁴⁶ was established. The number of boys and girls naturally produced by human beings is not exactly equal. Visaria postulated a natural Caucasian sex ratio at birth of approximately 105 boys to every 100 girls. Bechtold summarizes the cause of the difference to be “nature's attempt to equalize the number of males and females at adulthood, compensating for the fact that males are less robust at all ages (including prior to actual birth) than females.”⁴⁷ This is extremely important, and will be returned to later: from this we should gather that in periods of crisis more males would die, and fewer male children would be born, despite nature’s attempt to equalize the numbers.

The bald assertion of a USRB has a few charges levelled against it. The main points of contention involve differences in time, race and location which could render unexpected results. It might be expected that different societies and different situations would produce different sex ratios, but as will be shown, for the purposes of this project, most objections against the USRB's applicability are inconsequential.

Visaria's dataset rendered an approximate ratio of 105, but it was a “modern”

⁴⁶ Laura Hynes. “Infanticide by Married Couples in Early Modern Italy, The City of Parma, 1609-1637.” Master’s thesis, Dalhousie University, 2008, 29.

⁴⁷ Bechtold, *Killing Infants*, 316.

dataset. Although the USRB was not designed to be applied throughout time, subsequent historical research has shown that periods of economic stability do give similar results in the recent past. Put simply, the sort of evolutionary change which would be required to shift the ratio of boys and girls would take much longer than the few hundred years since the early modern period, since while we “are evolving creatures whose genetic make-up should change over time, evolution is a slow and laborious process that can, for the human example, only be seen when viewed over many centuries.”⁴⁸

The above is not to say that there are never natural variations from the USRB, but rather that it is possible to recognize those variations which may be the product of routine infanticide. In addition to objections to the USRB in concept, however, there are further objections to using the USRB for the purpose of suggesting sex-selective infanticide in specific circumstances. William H. James, a social scientist who has written widely on the use of sex ratios for various demographic and scientific purposes, specifically addresses this issue.

For James, while “Visaria's (1967) estimates are applicable to all large human societies for which official records exist,” it is important to recognize that “small human societies - especially those beyond the reach of regular bureaucratic processes - may have birth sex ratios outside the range suggested by Visaria.”⁴⁹ For this reason, James takes issue with a paper of Clark et al. (1995) attempting to surmise infanticide from a deviation in sex ratio in a Zambian community. Using Visaria's proposed “black” sex ratio of 102 boys to

⁴⁸ Hynes, “Infanticide,” 29.

⁴⁹ William H. James, “The Validity of Inferences of Sex-Selective Infanticide, Abortion and Neglect from Unusual Reported Sex Ratios at Birth,” *European Journal of Population*, 13, 2 (June 1997), 214.

100 girls against a sample of just over 5000 reported births, and “[w]ithout further evidence or analysis, these authors calculate that ‘this means that 250 boys were not reported.’”⁵⁰ But this is one small sample at one short moment. James states that in contrast to the “real problem” of the “missing girls” in east Asian countries, “an analogous argument in respect of ‘missing boys’ in Zambia [is] spurious.”⁵¹ Simply lining up two numbers and then calculating the difference from a third is neither science nor history, as not only must there be qualifying variables, there must also be a reasonable motive for the expectation of infanticide.

For these reasons, while it is true that the “Tonga-speakers” who make up Clark et al.’s sample would have reason to prefer girls over boys, in that it is a matrilineal society, James disagrees that the small deviation suggests infanticide. Sex-preference, an inference of the relative perceived reproductive value of a boy or a girl over the other, can be shown to provide adequate motivation for infanticide, or other prejudicial behaviours. However, James believes that “sex prejudice” does not necessarily mean altered biological sex ratios. Though it can result in neglect and a lower share of consumables and health care in comparison with other “biological investments,” for James, “it is preferable to suppose there is an actual excess of daughters born to the Tonga.”⁵²

A further problem in divining infanticide from such small numbers is purely statistical. The degree to which OSRs may be regarded as within the natural range can be calculated based on sample size. While Clark et. al.’s ratio of just 92.4 boys for every 100

⁵⁰ James, “Validity”, 213.

⁵¹ *ibid*, 213.

⁵² *ibid*, 215.

girls may seem very low, it is much less dramatic when exposed to even elemental statistical scrutiny. Gérard Delille presents a chart of sample sizes and their appropriate “marges de fluctuation”: For 1000 infants, it might be as much as 13 above or below the USRB; for a sample of 30000 (as was the case in Hynes' thesis), it is suggested to be 2.4.⁵³ Five thousand is simply not enough.

As this project consists of around 18,000 subjects, a range of between 102 and 108 boys to each 100 girls would be “natural” for Delille. In fact, the hundred and one years of this study resulted in an overall OSR of 105.47.⁵⁴ This is well within the USRB range. Case closed, according to the method of Clark et al. What is actually significant, however, is the highly irregular curve which produces this figure, and this will be discussed in the chapter about numbers. For larger sample sizes, such as one million infants, Delille's margin drops to just 0.4, that is, a ratio between 104.6 and 105.4.

These margins however are purely mathematical. Visaria's and Parazzini's datasets are numbered in the millions, and are based on actual figures. The causes of variation in the sex ratios, over time periods too short to be reliably chalked up to evolution, can be many. James takes a hard line here. According to him, “it is impossible to infer present-day sex-related infanticide or induced abortion from present unanalysed reported birth sex ratios in any society.”⁵⁵ James states that SRBs “are parameters which move in accordance

⁵³ Gérard Delille. “Un problème de démographie historique : hommes et femmes face à la mort,” *Mélanges de l'École Française de Rome ; Moyen Age – Temps modernes* 86 (1974), 419.

⁵⁴ Where it is not indicated, numbers given for sex ratios are always the number of boys per 100 girls.

⁵⁵ James, “Validity,” 216.

with variables which are not well understood,”⁵⁶ but where patterns can be found surely some of those variables, both biological and cultural, can become better understood.

Traceable Abnormality

According to Swapan Seth, an Indian biologist, there are more than thirty known determinants for SRB. Seth takes issue with the application of the USRB in modern India (where there is an increasing numerical imbalance of men over women in the adult population) as used to estimate relative mortality in boy and girl infants. He asserts that the SRB in India is natural for that country, despite being “strikingly high, even prior to the time of inception of prenatal sex identification technologies.”⁵⁷ In his article, Seth wholly disregards infanticide and does not even mention the practice. Sex-selective abortion he does mention, such that Indian data from the mid-1980s onward cannot be considered natural.⁵⁸ Seth estimates a figure of one million female and four hundred twenty thousand male abortions each year.⁵⁹ He says that “the country is characterized by high SRBs” and that the broader ramification that is the skewed sex ratio of living persons in India is not necessarily the result of “excess female mortality.”⁶⁰

⁵⁶James, “Validity,” 214.

⁵⁷ Swapan Seth. “Skewed sex ratio at birth in India,” *Journal of Biosocial Science*, 42, 2010, 83.

⁵⁸ Sex detection in the womb having been impossible until very recently, abortion would not affect the sex ratio in any way in the 17th century, although it can be shown that people were aware of (very dangerous) abortion techniques by then. See, among many others: Susan Broomhall, “Understanding household limitation strategies among the 16th-century urban poor.” *French History*, 20, 2 (June 2006), 127.

⁵⁹ Figure cited by Seth, “Skewed,” 91.

⁶⁰ *ibid*, 84.

Seth proposes that parental preference influences the sex of the child right from conception. The way that that preference actually manifests itself biologically is not discussed, but it must be mentioned that there is no empirical evidence to suggest that a couple can “will” their child into being born a desired sex. James asserts that “present sex ratios are almost certainly dependent on past sex prejudice - and that is unquantifiable,”⁶¹ but this is not necessarily consistent with changes over shorter yet significant periods of time. Furthermore, theoretical biologist Magnus Nordborg identifies that not only may sex preference push sex ratios up or down, it is not necessarily consistent, and “cultural changes in sex preferences would occur on a much faster time scale than changes in the genetics of sex ratio control.”⁶² Natural, genetic forces work too slowly to be traceable, where the sex ratio can be shown to change in a pattern towards one sex or the other within a very small bracket of generations. As such, according to Nordborg, “even if a sex preference has been consistently expressed, there is little evidence for genetic variation of the sex ratio in humans.”⁶³ If not genetic variation, what else might cause shifts in the short term?

Lesser influences that Seth mentions are war,⁶⁴ the habit of smoking, hepatitis B, and industrial and cookfire smoke, hazardous in India for the use of “primitive sources of energy.”⁶⁵ Since male foetuses are less likely to survive the neonatal and infant periods, it

⁶¹ James, “Validity”, 216.

⁶² Nordborg, Magnus. “Female infanticide and human sex ratio evolution.” *Journal of Theoretical Biology*, 21:158(2) (September 1992), 197.

⁶³ *ibid*, 197.

⁶⁴ It is often suggested that periods of war generate more boys, perhaps as a biological reaction to the loss of males fighting in conflicts.

⁶⁵ Seth, “Skewed,” 90.

would follow that there would be fewer boys in such “primitive” conditions. Seth identifies the increasing SRB as an indicator of a rising standard of living in India, that “[i]t is plausible that populations with a low health standard have... relatively low SRBs due to, among other things, the aforesaid relative loss of male fetuses.”⁶⁶ While the idea that overall health standards would affect the sex ratio does ring true, the actual effect of lesser influences do not necessarily add up to enough to be expected to statistically challenge the USRB, especially when “James' overview of the relevant literature makes clear the stability of this estimation over time and space and the negligible impact on offspring sex of such things as pollution, parental age and condition, season of conception, and nutrition.”⁶⁷ It is widely assumed that female infanticide is prevalent in India, today as in history, and Seth’s numbers and suggestions do little to negate this assumption.

An analysis of the possibility of infanticide must additionally rest on potential motive, rather than mere numerical result. If infanticide is to be found as sex-selective, furthermore, there must be a difference in the valuation of boys and girls for different parents. This valuation is the product of cultural preference, but also economic (and demographic) practicality. Fundamental to an assertion that practical or economic differences in the valuation of male or female offspring might lead to sex-selective infanticide is the Trivers-Willard hypothesis, that “sex ratio at birth in mammals is a measure of tendency to invest in one sex more than in the other.”⁶⁸ Specifically to humans, the Trivers-Willard hypothesis proposes that parents of high status would be “predicted to

⁶⁶ Seth, “Skewed,” 91.

⁶⁷ Hynes, “Infanticide,” 31.

⁶⁸ Trivers, “Natural Selection,” 91.

invest more in sons and low-status parents more in daughters.”⁶⁹ Put simply, higher-status families need boys to continue the family line and inherit (in patrilinear societies). Lower-status families need girls to facilitate their social movement upwards through marriage. Biologist John Lazarus agrees, and acknowledges the mutability of the social construct when he says that “parental manipulation of offspring sex ratio as a function of the parents’ social status (rank, condition) will be favoured by selection if status enhances reproductive success (RS) differently for sons and daughters.”⁷⁰ This is by and large a social construct, insofar as girls generally tend to marry up in human societies, which almost universally have marriage, and less commonly separation and divorce.⁷¹ The idea that the benefit of having a child of one sex outweighs the other has a natural complementary alternative, which Lazarus calls the “Cost of reproduction” hypothesis. If males are more costly to raise, then lower status parents with fewer resources will also be driven towards investing more in girls, who are more likely to survive and reproduce.⁷²

Lazarus does not quibble about viewing human populations of the recent past through the same lens as those of the modern day; indeed, he refers to “modern” as being “in contrast to the ancestral hunter-gatherer phase of human evolution.”⁷³ As reproductive organisms within a social framework, offspring of either sex can be detrimental not only to

⁶⁹ Lazarus, J. “Human sex ratios : adaptations and mechanisms, problems and prospects”, Hardy, I.C.W. ed., *Sex ratios: Concepts and research methods*, Cambridge, 2002, 292.

⁷⁰ Lazarus, “Human sex ratios,” 289.

⁷¹ Trivers, “Natural Selection,” 91.

⁷² Lazarus, “Human sex ratios,” 291.

⁷³ *ibid*, 288.

the parental couple but also to society at large, if competition for mates or resources is heightened by an over-abundance of either sex. This can be seen to go both ways, however, as “[b]y cooperating or competing with its parent or other kin, [any] offspring can enhance or depress its parents' inclusive fitness.”⁷⁴

As we shall see in the following section, it can be shown that societies and couples understood the effect that a child of one or the other sex would have on their own chances of reproductive success. It is natural, and a product of evolution, that parents should invest more in children who will likely produce grandchildren. For this reason, although “sexual biasing of postnatal investment is an increasingly complex one of parental responses to [Trivers-Willard] effects, local factors and other social influences,”⁷⁵ this biasing is “broadly comprehensible within an adaptive framework.”⁷⁶

III. Historical Examination

Infanticide and the Nature of Nurture

Citing the loss of the neonatal resources inherent in killing an infant after birth, Nicky Hart states that infanticide is “the least rational means of family limitation.”⁷⁷ Randolph Roth presents a starkly different interpretation, drawing a great deal from Hrdy’s *Mother Nature*. In his article “Biology and the Deep History of Homicide,” Roth discusses at some length the reproductive rationale of infanticide from its deepest evolutionary roots.

⁷⁴ Lazarus, “Human sex ratios,” 294.

⁷⁵ *ibid*, 294.

⁷⁶ *ibid*, 294.

⁷⁷ Nicky Hart. “Beyond infant mortality: Gender and stillbirth in reproductive mortality before the twentieth century,” *Population Studies*, 52 (1998), 221.

According to Roth, “natural selection favours organisms that can sense changes in their environment and respond to them behaviourally to maximize their reproductive fitness.”⁷⁸ Human beings reproduce in a very particular way, with social support deeply involved in the raising of offspring. Roth qualifies humans as cooperative breeders, that is, organisms whose offspring “are raised not only by mothers, but by fathers and a wide range of 'alloparents' which can, if necessary, shoulder all or part of the parental role - grandparents, older siblings, step-relatives, neighbours, guardians and others.”⁷⁹ Cooperative breeding, according to Roth, “works effectively when children are born in the right numbers, at the right time and with the right qualities into a world of abundance, strong families and strong social support.”⁸⁰ As Roth notes, “[m]aternal neonaticide and infanticide, which are rare in nature, are common among cooperative breeders, including not only humans, but a number of other primates.”⁸¹

The actual brain chemistry surrounding birth can be connected to the behaviours and attitudes which combine into caring for, or neglecting, a child. Roth states that “[m]others experience surges after birth in prolactin, oxytocin and estradiol - hormones that help them bond with their infants by reducing anxiety, elevating mood and activating neural circuits associated with romantic love, empathetic social relationships, pain suppression and physical pleasure.”⁸² While this neural “switch” provides a great deal of protection for

⁷⁸ Randolph Roth, “Biology and the Deep History of Homicide,” *British Journal of Criminology*, 51 (2011), 536.

⁷⁹ *ibid*, 537.

⁸⁰ *ibid*, 538.

⁸¹ *ibid*, 538.

⁸² *ibid*, 538.

infants chemically, circumstances can cause such switches to turn off, either giving way as a response to conditions, or even to rational strategy.⁸³ “Parental instinct,” the combination of all of these physical reactions and more as well as experience, cultural inculcation, individuality and desire, could generate enough motivation for infanticide. Like other thoughts and feelings instinct is changeable, and is at least in part influenced by cultural inculcation. As Hrdy identifies, “[c]ultures can change much faster than bodies evolve.”⁸⁴

The "Missing Females" of the Modern World

In their article “Sex-selective infanticide and the “Missing Females” in China and India”, den Boer and Hudson present the modern case of infanticide driven by cultural factors. They make the case that girls in both countries “suffer a marked disadvantage because of their gender in terms of food allocation, access to medical treatment, or other forms of neglect in addition to direct infanticide.”⁸⁵ The two countries do not have the same socio-cultural or economic incentives to commit infanticide, however, despite the fact that there can be no question that very recently a massive discrepancy between the number of boys and girls in both countries has become evident. That the two countries are the largest in population on earth, and that they both have cultural factors in the modern day and throughout history which have created an overwhelming preference for boys make them an

⁸³ Post-partum depression is sometimes shown to result in tragic cases of irrational infanticide, however it is not the type of infanticide this paper is concerned with, and the complexity of the biological phenomenon is too great to describe it in length here.

⁸⁴ Hrdy, *Mother Nature*, 106

⁸⁵ A.M. den Boer and V.M. Hudson, “Sex-selective infanticide and the “Missing Females” in China and India,” in Bechtold, Brigitte H. and Cooper Graves, D. ed., *Killing Infants: Studies in the worldwide practice of infanticide*, Lewiston New York: 2006., 338.

easy target for assertions of widespread infanticide. But to focus too strongly on ideological bases ignores the possibility that there could be other causes besides a cultural devaluation of women which could lead to infanticide. Also, it cannot be ignored that the value of boys and girls at birth is not everywhere steady or unchanging, and reacts to short term social situations, as well as long term preferences. For this reason, the value of using abnormal sex ratios to detect infanticide depends not only on large numbers, but regional variation, and variation in reproductive behaviours among people of different social and occupational status.

Infanticide in Historical China

Lee and Feng offer a forthright examination of infanticide in China, accepting its existence and listing the motivations for its practice. Cultural factors contributing to historical infanticide in China relate to peoples' valuation of boys and girls, but practical factors do also. Historically, "[o]nly sons could sacrifice to the family spirits. Only sons could carry the family name. Only sons, with rare exceptions, could inherit the family patrimony."⁸⁶ On the other hand, girls "were not only culturally considered inferior; they were also perceived by most families as a net economic and emotional loss."⁸⁷ This said, in terms of offspring as reproductive investments, "[e]ven sons were neither a sure nor a slight investment. Most sons required not only brides and a bride price but often other investments as well. Sons were therefore only potential productive assets."⁸⁸ Social status

⁸⁶ Lee, J.Z. and W. Feng. *One quarter of humanity: Malthusian mythology and Chinese realities 1700-2000*, Harvard: 2001, 47.

⁸⁷ *ibid*, 48.

⁸⁸ *ibid*, 61.

had a strong impact as well, as heads of families and those in line to inherit that position were “under far greater pressure than other married men to produce male heirs,”⁸⁹ while those who were not in such a privileged position, such as nephews, “unlikely ever to achieve headship,” were more likely to prefer daughters.⁹⁰ It is important to further note that “marriage was virtually universal for females regardless of economic class.”⁹¹ The relative available number of potential husbands in appropriate social classes was a determinant of the number of girls which were kept, and the ancient Chinese practice of infanticide was an acute application of social group interaction, modified by material and economic resources.

In the modern day, an unforeseen side-effect of the attempt at population limitation of the one child policy was the increase of female-specific infanticide; it was not apparently anticipated that if couples were only allowed one child, most of them would want boys. However, the historical incidence of infanticide in China, as opposed perhaps to the historical situation of India, “was a highly rational decision based on social and economic resources as well as the number and sex of existing and anticipated children.”⁹² If infanticide is to be found elsewhere, especially in places without an inherent expected reproductive value of boys over girls strong enough to cause actual infanticide, influences on this rational decision-making process add yet more factors which would affect SRB over time. These influences are numerous, and very dependent on social and geographical

⁸⁹ Lee, *One Quarter*, 59.

⁹⁰ *ibid*, 59.

⁹¹ *ibid*, 62.

⁹² *ibid*, 58.

circumstances.

French Femicide?

Brigitte H. Bechtold uses sex ratios to in order to find “non-random variations across *départements* [which] over time reflect changes in the relative *valuation* of male and female offspring.”⁹³ The largest number of studies in Bechtold's bibliography come from the 19th century, which she accounts for by saying that “the socio-economic environments most likely to place women and their offspring at risk arise in that period.”⁹⁴ She examines data from the whole nineteenth century across all the departments of France, drawn from one published source, the *Annuaire Statistique* (Paris, 1878-1901 Ministère de l'Intérieur, Statistique générale de la France). She finds that for legitimate births “the ratio of male to female births exceeds the European average of 106 in the beginning, while it significantly drops below 105... towards the end of the century.”⁹⁵ She also finds that the illegitimate births are consistently of a low sex ratio. For her, this is representative of widespread female infanticide at the outset of the 19th century, and only moderate female infanticide by the end. Importantly, agricultural departments Bechtold identifies as having a higher sex ratio than industrial departments, given that industry created economic opportunities for girls, making them a more viable investment.⁹⁶

⁹³ Brigitte H. Bechtold, “The Relative Economic Valuation of Female and Male Offspring in Nineteenth-Century France,” *Killing infants: studies in the worldwide practice of infanticide*, Lewiston & Queenston, 2006, 316.

⁹⁴ Bechtold, *Killing Infants*, 13.

⁹⁵ Bechtold, “Relative Valuation,” 316.

⁹⁶ *ibid*, 325-6.

Bechtold gives three shaded maps of the French *départements*, indicating industrial *départements* in 1884, then those where the sex ratio was over 108 between 1880-7, and finally those in which more than five instances of infanticide were recorded in 1875. Perhaps unsurprisingly, in the 14 industrial *départements* which she indicates, none have ratios higher than 108 (as 92 percent of the textile industry workforce in France consisted of women).⁹⁷ Interestingly, the 20 *départements* with ratios exceeding 108 only overlap 3 of those 11 departments which had reported more than 5 infanticides, and the only industrial department which overlapped was the Seine, which includes Paris.⁹⁸ This stands to reason when it is understood that the type of infanticide which was discovered and reported was mainly among desperate single women. That so much of agricultural France should have unnaturally high ratios, and not one industrial *département*, clearly speaks of parental preferences in the industrial era. It is also noteworthy that the Lot-et-Garonne *département* is not characterised by high ratios (over 108), although the Gironde, which is right next door and includes Bordeaux, is.

The advent of the industrial era did not only add to the economic value of girl children; mass production increased the overall capability of human beings living in industrial societies to reproduce. With the availability of more resources, and a net relative increase in the economic capabilities of all different classes in industrializing countries, people may have started to be able to support more children, or, more commonly, to increase the likelihood of the survival of fewer. Parental preference then has become more

⁹⁷ Bechtold, "Relative Valuation," 334.

⁹⁸ *ibid*, 327-329.

and more influential in regard to family size, and likely family composition as well, than mere subsistence concerns.⁹⁹ We now move away from the ordered and well documented societies of the “Modern” era, and turn to an examination of infanticide in pre-industrial, ancient and “marginal” societies.

Infanticide in Early History (and "marginal" societies)

Walter Scheidel, in his article “Greco-Roman sex ratios and femicide in comparative perspective”, examines evidence of infanticide in the ancient and medieval world, and also presents conditions that he believes might lead to female-specific infanticide throughout time. Scheidel examines practices of family limitation in order to attempt to isolate “the practise of infanticide as opposed to other forms of what one might somewhat paradoxically label 'post-partum birth control', such as sale, exposure, and fatal neglect, not all of which necessarily resulted in death.”¹⁰⁰ Harder still is to isolate female-specific infanticide, while wading through anecdotal evidence, and shaky datasets built on dilapidated sources. He cites a dataset which he says “has repeatedly been used to argue for massive femicide in an ancient civilization,”¹⁰¹ an “epigraphic record of about 1,000 mercenaries who had been enfranchised by the Aegean city of Miletus, mostly in the late third century BCE.”¹⁰² Among the families of these 1000 soldiers, there is a noticeable

⁹⁹ Myriam Klat, “Sex of Children and Family Size: A Decision Model.” *Mathematical Biosciences*, 65 (1983), 171.

¹⁰⁰ Walter Scheidel, “Greco-Roman sex ratios and femicide in comparative perspective, v. 2.0.” Stanford University: 2010, 2.

¹⁰¹ Scheidel, *Greco-Roman*, 2.

¹⁰² *ibid*, 2.

preponderance of male children reported. This, he says, is not in fact femicide at all, but rather relates to the underreporting of female children,¹⁰³ such that when “daughters approach the age of marriage, they gradually become visible in the census records until a fully balanced sex ratio is attained in early adulthood.”¹⁰⁴

Scheidel presents two contexts in which femicide might actually occur, being “high attrition” and “persistent imbalance” scenarios. The high attrition context refers to those in which males die in greater numbers than females in their life cycles, meaning that female-infanticide would occur “in order to offset male excess mortality at later ages in order to produce a more balanced adult sex ratio that is conducive to (monogynous) family formation.”¹⁰⁵ Scheidel uses the examples of various small societies in which he finds evidence of this sort of scenario. Among the Inuit, Scheidel identifies high rates of climate and hunting-accident related death among males as leading to female infanticide at birth.¹⁰⁶ In a study of Eipo, “a typical remote mountain Papua group in West Irian”, Scheidel finds that the deaths of “28 percent of all adult males were violent, compared to 11 per cent of female deaths.”¹⁰⁷ Studying the Tikopia found similarly high sex ratios in the young which even out over time, for whom “hazardous sea voyages of young men restored the balance, the functional equivalent of violent death in other societies.”¹⁰⁸

¹⁰³ Scheidel, *Greco-Roman*, 3.

¹⁰⁴ *ibid*, 4.

¹⁰⁵ *ibid*, 5.

¹⁰⁶ *ibid*, 6.

¹⁰⁷ *ibid*, 6.

¹⁰⁸ *ibid*, 6.

Scheidel's alternate context does lie closer to the propositions of Bechtold, “persistent imbalance,” where “sex ratio imbalances caused by femicide or benign neglect are maintained across the life cycle, leading to high sex ratios overall.”¹⁰⁹ Scheidel cites the example of the Jhareja Rajputs of Gujarat who in accordance with the Trivers-Willard hypothesis (although to an extreme) “in the early nineteenth century killed almost all of their female newborns because hypergamous marriage practices ensured that their sons attracted lower-status brides with substantial dowries but discouraged investment in their own daughters.”¹¹⁰ Scheidel also shows a similarly extreme situation in the ancient world among Greek settlers in Ptolemaic Egypt.¹¹¹ It is this persistent imbalance scenario which Scheidel associates with “less extraordinary circumstances and in much larger populations, most notably in historical as well as present-day India, Pakistan, Bangladesh, China, and Japan.”¹¹² John Lazarus points out that “[s]imilar patterns are found in Imperial China and mediaeval Europe, where convent life replaced infanticide as the fate of many noble-born women (Dickemann 1979, Boone 1986).”¹¹³ This practice of sending noble girls to convents did continue into the early modern period, and certainly occurred in Villeneuve, however it was a very expensive practice.¹¹⁴

¹⁰⁹ Scheidel, *Greco-Roman*, 7.

¹¹⁰ *ibid*, 7.

¹¹¹ *ibid*, 7.

¹¹² *ibid*, 8.

¹¹³ Lazarus, “Human Sex Ratios,” 293.

¹¹⁴ The daughters of young aristocrats were accompanied by great sums of money, in donations to the convent as well as for the girls’ dowry, clothes, accoutrements, and to equip their retinues. For nobles in Villeneuve, the princely sum of three thousand *livres tournois* was sent with each girl. By comparison, a surgeon sent the sum of 800 *lt.* with

While this evidence does seem to suggest the chronic and worldwide devaluation of women which Bechtold and other feminist historians would take for granted, an assumed greater reproductive value is not always to be found in male children over female. In their article “Female-Biased Reproductive Strategies in a Hungarian Gypsy Population,” Bereczkei and Dunbar identify that “Hungarian Gypsy populations invest more heavily in daughters than in sons compared to co-resident Hungarians.”¹¹⁵ In their “detailed field study of parental investment patterns in two native Hungarian and two sympatric¹¹⁶ Gypsy populations,”¹¹⁷ Bereczkei and Dunbar found that “[b]ecause Gypsies are of generally lower socio-economic status than Hungarians”¹¹⁸ Gypsies show “preference for investing in daughters while the Hungarians invest disproportionately in their sons.”¹¹⁹ This conforms directly to the Trivers-Willard hypothesis, that girls or boys are more valuable in different social classes, as “Gypsies prefer daughters because they have a greater chance of marrying up the socio-economic scale... thus having more surviving children compared to sons.”¹²⁰

his daughter. The convent in the parish of St. Etienne did not only house the daughters of Villeneuve itself, but also those of elites from away. *Drawn from: Archives Communales d’Agen, 36J 16: Couvent de Notre-Dame de Villeneuve, 1642-1671.*

¹¹⁵ T. Bereczkei and R.I.M. Dunbar. “Female-biased reproductive strategies in a Hungarian gypsy population,” *Proceedings of the Royal Society of London*, B264, (1997), 17.

¹¹⁶ The OED defines “sympatry” as “(of animals or plant species or populations) occurring within the same or overlapping geographical areas.”

¹¹⁷ Bereczkei, “Female-biased,” 17.

¹¹⁸ *ibid*, 17.

¹¹⁹ *ibid*, 17.

¹²⁰ *ibid*, 17.

Berezkei and Dunbar identify another modifier of the relative value of boys and girls when they point out that “daughters provide a valuable service as 'helpers-at-the-nest'.”¹²¹ In this way, daughters (or at least the first-born daughter) had real value at home for their ability to “increase the mother's reproductive success significantly because she can transfer the resulting spare time and energy to producing and raising additional children.”¹²²

Marriage Markets

Jan Beise and Eckart Voland discuss another factor influencing the relative value of males and females, relating to mate competition. Their article examines “natal dispersal”, that is, “the permanent dispersal from the place of origin to the place where the individual starts to reproduce (or could have started to reproduce).”¹²³ If there are not enough people of reproductive age in both sexes, the alternatives are to leave, which is expensive, or stay, in an increasingly limited and expensive marriage market for all involved.

The body of historical examinations of human reproductive behaviour clearly indicates that throughout history and in many societies people “have repeatedly sought to influence their reproduction, both to assure having offspring or to increase their numbers, or, conversely, to avoid procreation or to keep the number of their children low.”¹²⁴ Collectively, this evidence suggests that there might be motivations to kill male children as

¹²¹ Berezkei, “Female-biased,” 21.

¹²² *ibid*, 21.

¹²³ Jan Beise and Eckart Voland. “Intrafamilial resource competition and mate competition shaped social-group-specific natal dispersal in the 18th and 19th century Krummhorn population,” *American Journal of Human Biology*, 20 (2008), 327.

¹²⁴ Ehmer, Josef. “The Significance of looking back: Fertility before the “Fertility Decline.” *Historical Social Research*, 36, 2 (2011), 12.

well as female, and that the predominance of infanticide targeting either sex may have occurred the same way among social groups with similar goals, resources, and motivations. This understood, acknowledging the potential existence of infanticide but without laying down unwarranted assumptions, we may now move on to the model for this project.

IV. Hanlon's Model and Hynes' refinements

This project most directly stems from the model established by Hanlon and developed in Laura Hynes' 2008 thesis "Infanticide by Married Couples in Early Modern Italy, The City of Parma, 1609-1637."¹²⁵ Hynes works with civil records as well as parish registers for this period, but she is able to draw on sex ratios for a total of three hundred years from other studies of the city. Hynes' own count of 30,000 infants, more than a quarter century of records for the city of Parma, is the largest and most recent addition to this very specific kind of survey, and her results are dramatic and provocative.

Hynes uses the baptismal and civil records to "chart the occurrence of sex-specific infanticide among married couples in 17th century Parma,"¹²⁶ specifically to "analyse any visible parental preference for male or female offspring amongst the entire population and within socio-economic groups."¹²⁷ Hynes maintains an even theory of the social and biological influences on sex-selection. She asserts that workable families are the outcome of decisions based on family size.

Hynes found that "[w]hether analysing the population as a whole, or by segmenting

¹²⁵ Hynes went on to publish an article of her findings in the *Journal of Early Modern History* (see Bibliography).

¹²⁶ Hynes, "Infanticide," 3.

¹²⁷ *ibid*, 3.

it into urban and rural, or wealthy and working class categories, evidence of parental infanticide is clear."¹²⁸ The thirty thousand baptisms which she focusses on render an overall sex ratio of 98.9, which even through a conservative lens does indeed suggest the practice of predominantly male infanticide in Parma in the seventeenth century. Furthermore, Hynes' "low ratio of masculinity was only exacerbated by separating rural and urban baptisms and [the] wealthy and working class."¹²⁹ Hynes found a sex ratio at baptism consistently, significantly and reliably below the USRB for nearly the complete duration of the 28 years of her study.

Hanlon found that observed sex ratios from early modern Montefollonico "[correlate] with the USRB during stable economic years."¹³⁰ Stable economic conditions, however, do not necessarily denote prosperity, nor the conditions conducive to successfully producing a child. Even in practice, consisting of millions of recorded baptisms drawn from around the world, the USRB only represents collected data from the modern day, or, an expanding dataset created in 1967. As we have shown, the factors which may have caused national or community variation in sex ratios over time, besides simple evolution, are also contentious.

The USRB is a yardstick; the ratio 105 to 100 is an empirically gathered hypothesis. That Villeneuve's OSR should be so close to this yardstick, considering the array of tribulations the town suffered, and the data so changeable, is very interesting. Initially only examining the period between 1649 and 1711, consisting of some 11,811 baptisms, the OSR

¹²⁸ Hynes, "Infanticide," 129.

¹²⁹ *ibid*, 129.

¹³⁰ *ibid*, 30.

was seen to be somewhat low, at 103.7. After finding more of the records in a countable state I counted the baptisms for the period between 1610 and 1649, and the results of that were high. High enough, despite being a smaller portion of the whole, that it swayed the century's balance to the suggested yardstick parity.

For Hynes, it was by “noting massive deviations from the natural SRB [that] it was possible to detect selective infanticide by married couples.”¹³¹ Taking up this model, we now turn to the examination of Villeneuve-sur-Lot, using the techniques of Hanlon and Hynes first to present different ways of looking at a population's births over time, and then to compare those results to scientifically rendered averages and the historical precedents that they created. There are many studies which touch on infanticide, some which skirt it and others that hold it up like a cross. The attempt at quantifying numbers of boys and girls that follows has been done with every effort made to avoid any preconceived assumption or supposition, using the USRB as the indicator of expected natural births, nuanced by appreciating the context of Villeneuve-sur-Lot in the seventeenth century.

¹³¹ Hynes, “Infanticide,” 33.

Chapter III: Methods

The Methods section of this essay will first explain the process of gathering data from baptismal records which was undertaken for this project, before listing the problems specific to my experience working with those records. Analysis of the parish records was the most time consuming element of this project, and would be for any project of the same type. "Data gathering" fell into three phases, the first being acquisition of records, followed by facsimilation and finally transcription. We stand on the shore of a sea of unexamined primary data in the form of parish records. Even where the records are complete, the procedure of converting them into manipulable data is time-consuming and fiddly. But the difficulty of collecting the data and the great care required in its subsequent digestion do not make it less worthwhile.

The records were ordered from the Mormon Family History Project in microfilm form, delivered to Toronto from Salt Lake City, and then carefully scanned and converted into .pdf format. As they consisted of more than eight thousand pages, I broke the records into hundred-page segments to make the whole more manageable. This was also partially necessitated by the high resolution of the scans, which quickly overwhelmed even the state of the art machines at the Toronto Reference Library, where the scanning took place. Once the primary records had been electronically compiled, I transcribed the rough and often idiosyncratic baptisms of the sixty years between 1649 and 1711 into a more manageable data format. The new format included all information relevant to the project: date of baptism, child's name, name and occupation of the father, name of the mother, social status of the family and birthdate where available. The result was more than four hundred hand-written pages of data.

This accomplished, the second phase entailed counting parts of the data I had transcribed and categorizing them. To this end I created format sheets listing the months of the harvest year on the y axis and noble status, notable status, illegitimacy and overall totals separated into columns for boys and girls on the x axis. The data was categorized into columns of boys, girls, noble boys and girls, notable boys and girls, lower class boys and girls, and illegitimate boys and girls. These last were further subdivided into foundlings and bastards.

Initially I planned only to count the aforementioned latter sixty years of the century, due in part to the time available to complete this project but also for the cleaner and more complete records available for the second half of the seventeenth century. Upon visiting the town's archives however, I found the earlier forty years of baptisms for the church of St. Etienne already transcribed by an archivist.¹³² These I counted, and the complementary records from Ste. Catherine, which I had in microfilm, when I returned to Canada. It was obviously far less time consuming merely to count the data directly from the records, while resulting in the same format sheets as the transcriptions, but transcribing the data proved very useful in both familiarizing myself with the inhabitants of the town and in learning to read the writing. The originals of all of the records I used were available in the municipal archives in Villeneuve, in the repurposed Mill of Gajac, and have recently been lovingly restored.

The third primary research phase was analysis of the resultant data. The

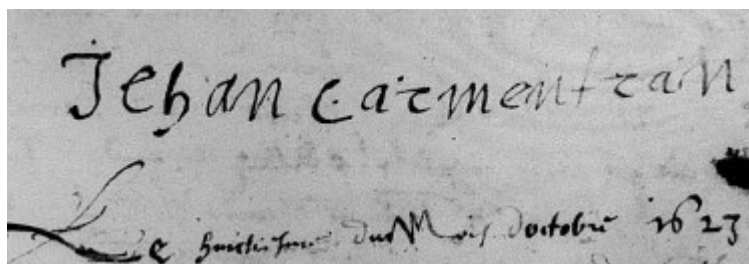
¹³² The "short counting" of the first 40 years of St. Etienne's records that I performed while in Villeneuve was somewhat marred by the limited time that I spent there; while the overall numbers are assuredly accurate, because I do not have a hard copy of the primary source, I am unable to check the accuracy of social statuses. I did not include notaries as notable at that time; for St. Etienne in the subsequent sixty years there were four.

transcriptions and "short counting" represent the most accurate birth frequency I could make using the baptisms, and the data was then divided to represent the birthrate by social class, and the sex ratios at baptism for the overall total and each social class. Before exhibiting these statistics and grappling with their interpretation, however, I should discuss the problems encountered in using the records, which made the process not nearly so straightforward as suggested above.

Problems Encountered in Method

The problems encountered in this research gathering were varied and so I cannot say that they would be reproduced in other records of the same type. First, baptism records are idiosyncratic, as while there was a relative formula, the facts were often presented in an unusual order. There were no particular rules governing their composition, and changing priests did not necessarily write them the same way as their predecessors or contemporaries. I started with the most easily-read records to become familiar with the seventeenth century handwriting, developing a familiarity with the style of a particular priest, Jean Carmentran, who is the longest serving priest in my period. Being the churches of large urban parishes, both Ste. Catherine and St. Etienne employed several priests, curates and vicars, who were of a range of writing ability. Most wrote just the facts, and some others wrote elaborate paeans praising God for delivering the new infant into the Catholic fold. The handwriting seemed to depend marginally on the status of the one (or parents of the one) baptised (or buried). Signatures, sometimes used to detect literacy, came in waves throughout the century. Baptisms which were well-attended by literate individuals were generally written in a much neater hand. The priests twice re-wrote entire sections of the records (probably at the firm request of the bishop) and only identified that they were going to do so after the rough section, with an insert which could have just as well been placed before.

Figure 10: The signature of Carmentran, at 10 or 15 years of age, in 1623



Source: Ste. Catherine parish register, 1623. *Carmentran's handwriting became much better later in the century.*

The reporting of notables, distinguished by a title before the father's name or occupation thereafter, or both, is of variable accuracy across the century of collected data, and the records for this sample break into two fairly distinct periods in terms of their reliability. Apart from missing data, which is distributed fairly evenly throughout, there was a clear increase in the reportage of notables in the second half of the century. In Ste. Catherine, starting in the 1660s, not only are more occupations seen fit to be recorded, social status on the whole is recorded more accurately. For St. Etienne, this shift begins in the mid-1670s. Initially the parameters of my search included only those records between 1649 and 1711, for both churches, for this reason and that they were markedly easier to read. The records between 1649 and 1711 should therefore be considered more accurate than those which came before, when it comes to social distinction. In terms of absolute numbers of baptisms, they add significantly to the total sample size, and are therefore included to round out a century of records.

There were further problems with the photographer, who would regularly repeat identical pages. There were no marked differences between the pages, so they were likely purposeful repetitions of pages the photographer thought he might have missed. This is likely a common problem for records microfilmed before the era of digital cameras. There

were a few occurrences when the photographer marked the page numbers for his own purpose over top of actual data on the page. The pages were often numbered by the priests, which helped to see if there were pages missing, but these page numbers were often casualties of the thick wax pencil of the photographer. Periodic but sporadic indexes would occasionally come up for calendar years, as did pages of marginalia, artwork and musical notes.

Learning to read the handwriting is probably something only a master's student would have the time to do. Bechtold wrote that most of the primary data collection work in this sphere is done by untrained volunteers, and that as such it is perhaps suspect. It is likely that the only means to collect data from parish records both in terms of breadth of focused research and the skills required to collect it falls to MA students and professional genealogists, given the time and motivation required. It took about three months of practice to be able to properly read the writing. These data problems were compounded by missing years, but the number of years fully accounted for are still representative of the parishes their books are titled for. We now turn from problems to results.

Chapter IV: Statistics and Sex Ratios

I. Statistics

The statistics gathered for this project consist of 18,036 baptisms total. This sample size, the entire hundred years of available data between July 1610 and June 1711, is sufficiently large to offer an overall picture of Villeneuve's reproductive population. Several divisions break up this total to offer a more nuanced picture of reproductive behaviour. The river Lot divides the two parishes of Ste. Catherine and St. Etienne physically, and social status, as indicated in the records, divides the numbers again.

At the top of society sat the titled hereditary nobles, in the upper middle rested non-hereditary notables and local elites identified by certain specialized and lucrative occupations, and at the bottom lay the working and lower classes which form the largest body of the population, largely identified only by name in the baptism register. Notables had to be subdivided for the purposes of this project, while maintaining only three social groups numerous enough to be analyzed convincingly. For statistical purposes these notables and nobles will at one point be converged into a total elite category, although nobles and notables probably felt different pressures to maintain and to advance their families' standing and wealth with their children.

There is a further ladder of status and responsibility within the lower class, but even stable occupations do not necessarily provide access to food resources during times of want. As a result of this fact the concepts of "elite" and "common" must be mutated. I have found that couples practising certain occupations among the lower class behave very differently in their reproduction than others, but my numbers are too small to make generalities about behaviour, and this will be discussed later.

Absolute Numbers from the Parishes

Ste. Catherine, the largest of the three parishes under investigation, produced 11,677 recorded baptisms over the course of the sample period. Of this total, 5,976 were of boys and 5,701 were of girls. The observed sex ratio of these figures is a very reasonable 104.8. Some 82.95 percent of these overall baptisms represent those of the lower class, a total of 9,687, being 4969 boys and 4,718 girls. The lower class observed sex ratio of Ste. Catherine is therefore 105.32, also well within the acceptable natural range.

St. Etienne, the smaller and less affluent of Villeneuve's two urban parishes, rendered 5,943 baptisms in the study period, of which 3,096 were male and 2,847 were female. These numbers render the somewhat higher sex ratio of 108.75, but sample size being what it is this figure still fits at the top of an acceptable natural range. Some 92.7 percent of the children baptised in St. Etienne were among the lower class, totalling 5,508 baptisms, 2,873 male and 2,635 female, with an observed sex ratio of 109. These are certainly higher than Ste. Catherine's ratios, which might be considered unusual considering that both parishes were within the same walls, only separated by a bridge, but different parishes are known to produce differences far more dramatic than this. It is clear from Goasguen that the two parishes had quite different degrees of socio-economic standing; most specialists lived in Ste. Catherine, while St. Etienne was much more exclusively residential and lower-income.

St. Sernin has a much smaller overall sample size of 416, a figure too low to be statistically convincing. But it is interesting in its constituent 182 boys to 234 girls, insofar as such a predominance would be economically beneficial to "suburban" peasants - girls could find jobs in town, whereas boys would be a much more difficult investment in the

long term, unless a dearth of male labourers was apparent. As Antoinette Fauve-Chamoux identifies, the practice of girls finding work in town also allowed them to raise money for their own dowries, as well as establishing their reputation and marriage prospects, and was very common in *ancien régime* France.¹³³ As we might assume that these suburban inhabitants were of a lower socio-economic status than people in town, it is quite possible that like the Hungarian Gypsies, marriage into the urban parishes would represent social movement upwards.

So, for the largest parish the ratios are spot on a suggested natural range. For the smaller urban parish they are slightly higher. But this ratio is hardly uniform across the seventeenth century, and that it should result in these overall numbers is something of a surprise given the wide variations which were found throughout, as we shall see in graphical representation of the data.

II. Graphs and Tables

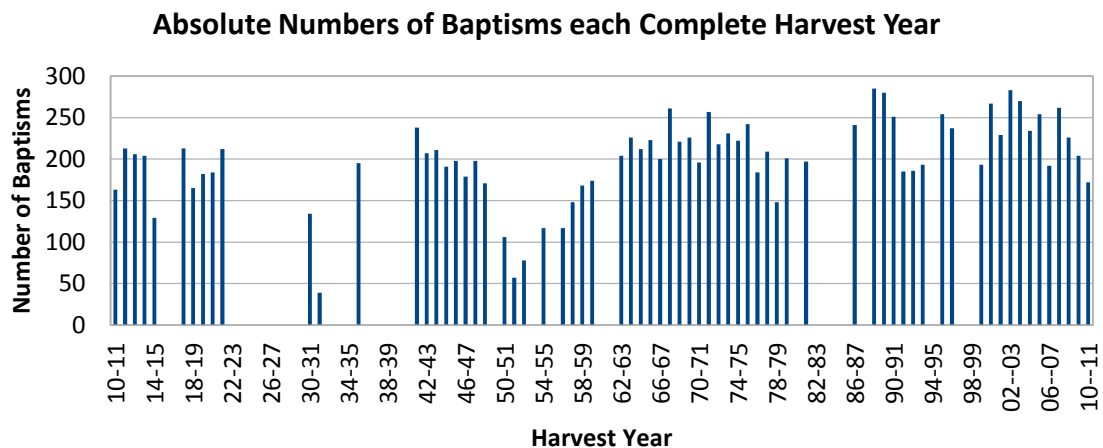
The following series of graphs presents the findings of this project, exhibiting the absolute numbers in different ways from the highest available sample size to the smaller divisions of social status. First, a yearly graph of the absolute numbers of baptisms for complete years will trace the general movement of the births over the century. Next, the overall recorded baptisms will be put against harvest-yearly grain prices from the regional market of Toulouse. This will be followed by a comparison of the two parishes, and a discussion of the periods of data most complete and reliable. Also shown will be the

¹³³ Antoinette Fauve-Chamoux, "Le surplus urbain des femmes en France préindustrielle et le rôle de la domesticité." *Population* (French Edition), 53, 1/2, Population et histoire (Jan. - Apr., 1998), 368.

numbers for the "Notable" and "Noble" classes, as well as divisions of decades, and periods of particular stress.

It should be noted at the outset that the years in this project are harvest years, rather than calendar years. The purpose of this is to show responses to specific harvests, which were good and bad throughout the period. Calendar years would less accurately represent the pressures that one harvest laid on the people - the expected time of harvest falls between June and July, and so a calendar year would cut the impacts of the previous year's harvest against the potentially different effects of the current year's. For this reason, the harvest year starting in July 1610, for example, is represented as 1610-11.

Figure 11: Baptisms each Harvest Year

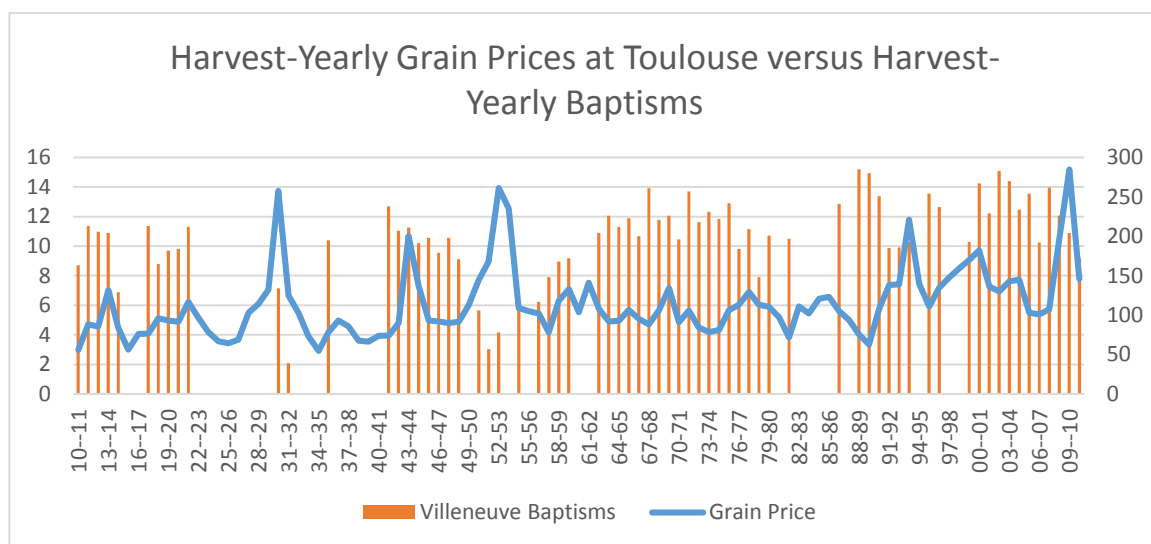


This graph shows the number of baptisms each harvest year, where the baptism records were complete for both urban parishes. St. Sernin is excluded from this graph (and all of the following graphs) for consistency, both because the sample was so small and because the peasants living there might have different motivations for having children than those in town. Despite the holes in the data, the population trend is fairly clear. We can identify several hard times: the food shortage and famine between 1627 and 1632, the events of the Fronde between 1649 and 1654, a seeming downturn from 1675-80, the

famine in the early nineties, and the winter of 1708-09. We can also see a large economically stable period, between about 1660-1675, and another between 1700 and 1709. The data between 1678 and 1687 is more consistent in the parish of St. Etienne, as will be shown, and from that data we can extend the period of assumed stability into the blank space.

The early fifties were the most consistently disastrous years for Villeneuve in terms of population loss in the whole century, but the recovery from that disaster led to stable and elevated numbers of baptisms broken up slightly by missing years. The famine of 1692-4 offers a clear drop in baptisms akin to those of the Fronde, but with a similar period before recovery, which is much less dramatic than that of the late 50's. Although that famine affected much of Europe, its impact in Villeneuve was moderate. The negative trend in the last three columns of this graph show the effect of the great winter of 1708-09, the full impact of which is beyond the scope of this study. As we shall show next, while periods of instability and stability are indicated from the isolated numbers of baptisms, the application of grain prices offers further insight into the state of affairs in Villeneuve.

Figure 12: Grain Prices versus Baptisms



This graph shows the number of baptisms in Villeneuve each year laid under the average yearly grain prices in *livres tournois* per *Toulouse setier*¹³⁴ at the market of Toulouse.¹³⁵ That market was the largest in southwestern France, and the data is complete month by month for the duration of this project. Once again, the baptisms from St. Sermin have been removed from this sample. Even a casual glance at this graph shows that the grain prices clearly relate to the baptisms each harvest year. This suggests two things; first, that the grain prices reflect price variations that were widely spread geographically, and second that there is a clear inverse correlation between grain prices and birthrate.

If the grain prices are accepted as an indicator of quality of living, then several periods would have been markedly unpleasant. In the period of this study, the first rise in grain prices worth noting is the harvest year of 1613-14, where the price rose from 4.55, a

¹³⁴ A unit of volume corresponding to approximately 93 litres, and about 73.47 kilograms of grain. Found at <http://sizes.com/units/setier.htm>, accessed March 2014.

¹³⁵ Georges Frèche et Geneviève Frèche. *Les Prix des Grains des vins et des légumes à Toulouse, 1486-1868*. Paris, Presses Universitaires de France, 1967, 50-64.

stable price for several years, to 7.02. The price subsequently fell to a very low 2.99 in 1615-16. The much larger spike in grain prices began to climb in 1627-28, rising from 3.68 to 7.05 in 1629-30 and peaking at 13.73 the next year, almost doubling in twelve months. This last increase, reflective of a widespread famine in 1632, can be seen to influence the recorded baptisms negatively in Villeneuve, but only for a short time. By 1634-35, the price had dropped to only 2.91. Another notable jump was that of 1643-44, more than doubling the cost in the year before, from 4.8 to 10.68.

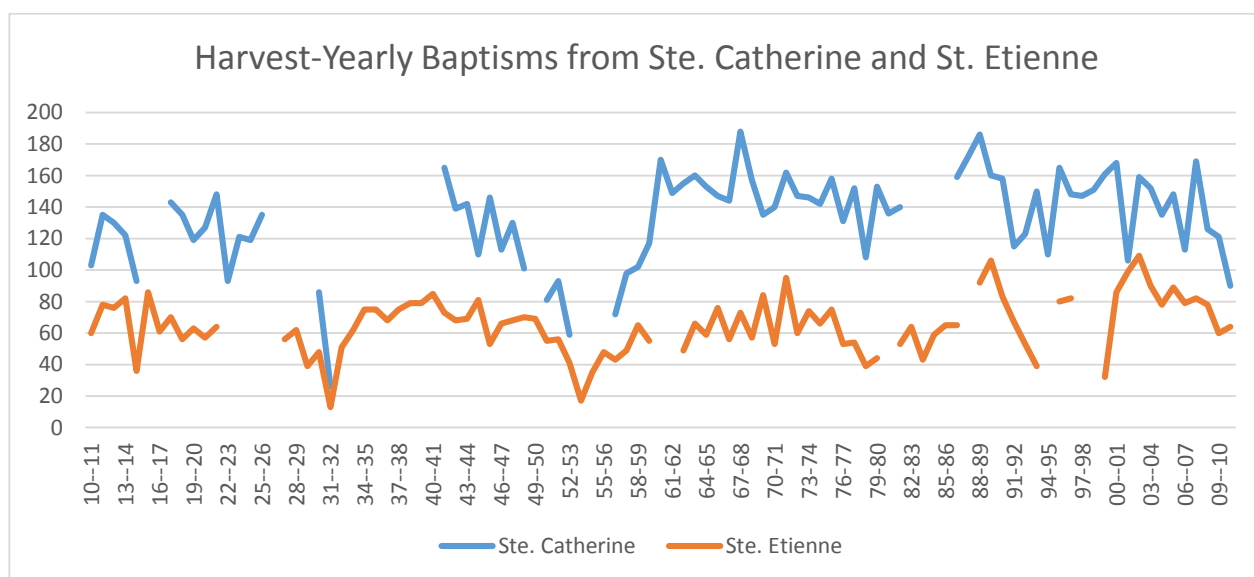
The lengthiest period of high grain prices surveyed corresponds temporally with the events of the Fronde, with a steady increase from 1649-50's 6 to 1652-53's 13.94. Unlike the other periods, the grain prices here were not marked with a return to lower prices the very next year. The high cost of grain continued the next year at 12.51, before dropping down to 5.81 the year after that. The price of grain, year by year, shifted constantly, but it is important to note that every decade preceding and including the Fronde experienced a massive spike, whereas the period following the Fronde offers much more stable prices.

This price of grain was relatively uniform from 1655-1691,¹³⁶ where the yearly average prices range between about 4 and 7 *livres* per *setier*. It then rose to a moderate spike in 1693-94 to 11.78, as a result of heavy rains destroying crops across France, before levelling out at a higher end range of between 6 and 9 until 1704-05, spiking from 1699-1701 at about 9.5. At the end of the surveyed period comes the greatest spike in grain prices, from 5.73 in 1707-08 to 15.18 in 1709-10, the result of the coldest winter in France's living memory at the time.

¹³⁶ Stability brought by the golden years of Louis XIV.

Then, judging by the relative prices of grain, we might expect more economic instability and therefore fewer children in several periods throughout the sample. The main spikes of note occurred from 1629-33, 1643-44, 1652-54, 1693-94, and 1709-10, but the prices for the first half of the century in general are more erratic than the early second half. It stands to reason that there would be a delay between grain price increases and baptism decreases of about nine months or a year, and by and large that is what we can see, though not in every case. To truly demonstrate the impact of these grain prices, both urban parishes must be examined individually, as the impact of missing data surrounding the crises can be partially ameliorated by using the most complete records in each circumstance.

Figure 13: Comparison of yearly baptisms of the two urban parishes



The period from 1662 to 1680 offers very consistent absolute numbers of baptisms for both parishes. The grain prices did not significantly spike in this period and the price was never high. In fact, it is probable that a lengthier period than that can be counted as being economically stable, as we have established given the lack of historical disaster, and the relative stability of the grain prices.

Baptisms from Ste. Catherine

For the first half of the century, the records from Ste. Catherine were not as complete as the second half, but the deep dive in the middle of the graph corresponds without doubt to the worst of Villeneuve's economic crises. The much more complete second half indicates a period of some stability and of some length, after a smooth recovery into the most stable economic years in the sample. Interestingly, the drop-off in the wake of the winter of 1708-9, which began with a serious food shortage in 1708, seems to have been much greater in Ste. Catherine than St. Etienne, and the recovery slower in coming.

Baptisms from St. Etienne

Being the smaller urban parish, the numbers of children baptised are more erratic than those of Ste. Catherine. The same deep valley is plain to see in the middle of the graph, but the seeming aftershock recovery starting in 1660 is not apparent in the records of Ste. Catherine, and the low numbers do not line up with the representatively average numbers for that immediate neighbour, in the town's recovery after the mid-century. There appear to be two relatively stable periods, the first between the increase after 1631-2 and the aftermath of the crisis of 1652-3, and the second being the period about eight years later around 1660, another approximately twenty years of relative stability (and good record keeping). So, the number of baptisms in one parish should reflect of the environment of the whole town in distinct periods. The exceptions are explained by missing data. The holes in data should not affect patterns in the sex ratios, however.

Table 1: Total Urban Boys and Girls Baptised in Villeneuve, 1610-1710

Decade	Boys	Girls	Sex Ratios
1610--20	906	822	110.2
1620--30	621	619	100.3
1630--40	673	602	111.8
1640--50	960	853	112.5
1650--60	636	601	105.8
1660--70	1088	1003	108.5
1670--80	1007	1045	96.4
1680--90	941	929	101.3
1690--1700	983	930	105.7
1700--10	1184	1063	111.4

This chart shows the number of boys and girls baptised in the two urban parishes each decade, alongside the sex ratios of each “harvest decade;” so, the first decade starts at July 1610, and ends in June 1620. This is everyone, including nobles and notables, who is written into the records of Ste. Catherine and St. Etienne, with the resultant sex ratios thereafter coloured green where high and red where low. This breakdown does suggest that troubled times generated a predominance of boys, or, rather, an unnaturally low number of girls, though there are exceptions. The first forty years of the survey may be choppy graphically, but there is a good amount of data with a reasonable degree of accuracy. With a few notable exceptions, the graph indicates a predominance of boys. There were 2200 fils and 2043 *filles* baptisms in the first forty years, leaving an OSR of 107.7. This figure,

however, which is not unreasonably high considering the sample size, belies the complexity of the thirty years of ups and downs which arrived at that eventual figure.

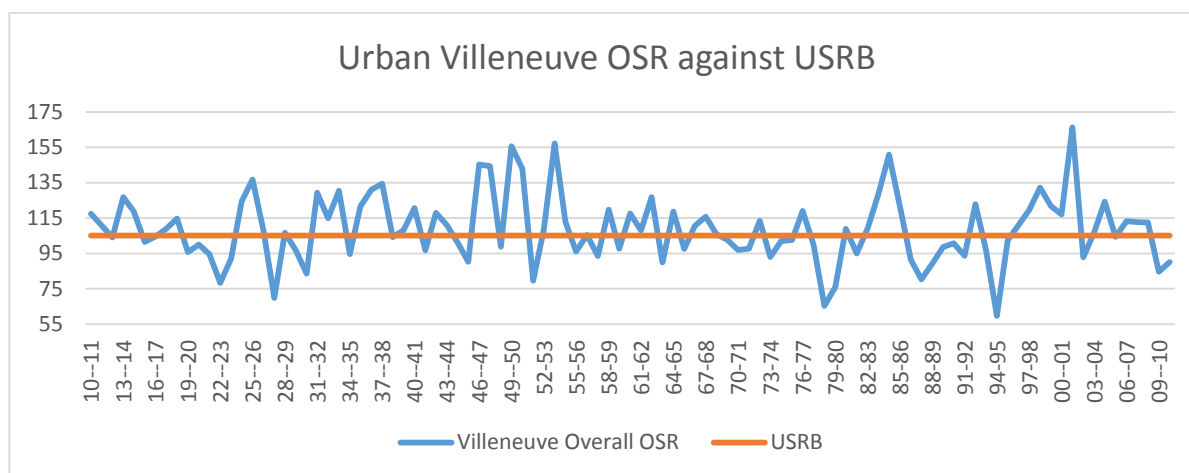
The first ten years produced 906 boys and 822 girls, an OSR of 110.2. The following ten, including periods with little data, produced 621 boys and 619 girls; the resultant ratio of 100.3 does break the trend of more boys, produced in a decade of *relative* stability (in spite of revolts and the passing-by of armies). The following ten years, which were marked by low data correspondent to food shortage and eventually famine, contained 673 boys and 602 girls, an OSR of 111.8.

Over the three years between 1635 and 1638 there is a consistently high number of boys to girls. It is a declining figure, but there is a good amount of data for those years. The harvest year of 1635-36 contains the most data (107 boys and 88 girls) making an OSR of 121.6. When tallied together the 222 boys and 175 girls born in those three years renders an OSR of 126.9. Counterbalancing these weighty outliers, the harvest years between 1619 and 1624 never rose above parity. Consisting of some 396 boys and 429 girls, the sex ratio for those five years was 92.3. Between 1637 and 1641, a total of 177 boys and 199 girls are recorded. The whole last decade of 1610-1640, containing 734 boys and 665 girls, proffers an OSR of 110.4.

The early 1650s were a very bad time for the people of Villeneuve, and the number of baptisms shows that. Even with the holes in the data, the reproductive impact of the Fronde is evident. Until 1649 the data is quite stable, and the decade between the harvest years of 1641 and 1649 produced 835 male and 758 female records (an OSR of 110.2). From 1649 to 1654, the hardest years of the century for Villeneuve, we have only 186 recorded boys and 152 recorded girls, and a very high OSR of 122.4. In the whole decade

between 1649-50 and 1659-60, however, there are 636 boys and 601 girls, and an OSR of 105.8. It is important to note that within the short periods described we see regular counterbalancing highs and lows, suggesting that husbandry may have evened out the numbers after the relative glut of boys during disasters. From 1660 onwards there was a grand recovery, and between 1660 and 1670 there were 1088 boys and 1003 girls, and an OSR of 108.5.

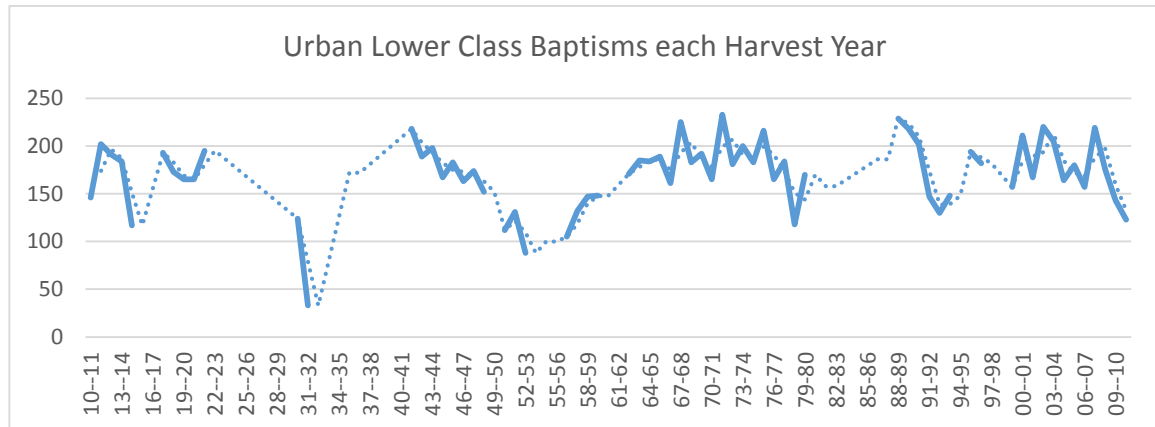
The inclusion of the nobles and notables brings the numbers of boys and girls in the 1670s, 80s and 90s closer to the expected ratio than the lower class alone, as might be expected according to the Trivers-Willard hypothesis. The fluctuation in the ratio in these thirty years is between 97.4 in the 1670s, 101.3 in the 1680s, and 105.7 in the 1690s. The first decade of the eighteenth century begins with a predominance of boys observed between 1696 and 1702, oscillates to between 103 and 113 between 1703 and 1709, and then drops to significantly below parity in the final years of the sample. Counterbalancing high ratios during and after the winter of 1708-9 (110-112), in the harvest year of 1710-11 there were 73 boys and 81 girls born within the walls of Villeneuve. It is very interesting that every decade containing serious tribulation renders a “natural” or high ratio, considering how much relatively weaker male embryos are, and also that these decades should be broken up by almost thirty years of prosperity, which should allow more male infants to survive, but renders higher numbers of girls over time.

Figure 14: Urban observed sex ratio

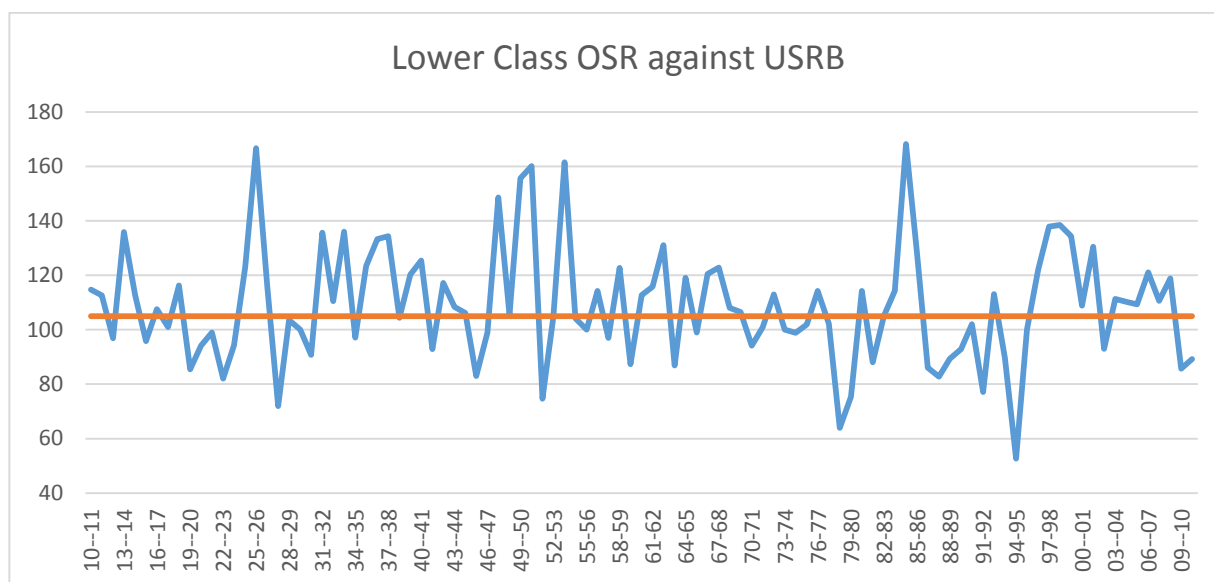
This graph shows the sex ratio at baptism for each complete harvest year, for all urban baptisms of Villeneuve-sur-Lot, against the USRB of 105. The erratic movement of the curve is only partly the result of sample size, as the highest and lowest values correspond for the most part with years of calamity, being high in the famine years of 1632 and 1692, and of incredibly varied and swift variation during the albeit more poorly recorded Fronde period. In theory, the relative weakness of males to females suggests that we should see fewer boys baptised during times of crisis, though we do not. The sex ratios leading into the Fronde oscillate significantly above and less significantly below the USRB, alternating almost yearly. Overall there seems to be a tendency of a glut of boys followed by a glut of girls, and that there would be such a strong yearly shift in the middle of the century almost might suggest a conscious compensatory practice. With the patterns beginning to be made clear, we will now isolate the lower class, where past investigations have suggested the greatest likelihood of sex-selective infanticide might appear.

The Lower Class

Figure 15: Absolute Numbers of Urban Lower Class Baptisms



This graph represents the number of baptisms each harvest year among the lower classes of the two urban parishes, including a trend line to show the impact of individual complete years which would otherwise not appear on the graph, and to offer a sliding average over time. The lower classes are more susceptible to demographic disaster, and this is well represented in the significant oscillation of the chart. Overall the curve shows a turbulent first half century, followed by the disaster of the Fronde, followed by smooth recovery into a far more stable period economically. It was not until the famine of 1692-3 that the period ended, at which point the number of baptisms fall and then recovered, giving about another fifteen years until the dropping off of baptisms surrounding the Winter of 1709.

Figure 16: Lower class observed sex ratios

This graph shows the sex ratio at baptism each year for the lower class of Villeneuve-sur-Lot. It is worth noting that the spikes representing very high sex ratios are in general higher than the valleys representing low sex ratios, though there is still a clear back and forth movement almost yearly. The ratio was consistently high from 1624-27, and then low from 1627-31. It was high from 1635 to 1638, began to lower, and then was high from 1646 to 1650. It was quite low between 1651 and 1652, although that year gave very low numbers of baptisms, before returning to an unnatural high between 1652 and 1653. The ratio is slightly high from 1660-63, and also 1666-69. The oscillations of the lower class graph trend downwards in the second half of the century, bizarrely correspondent to improved standard of living suggested by the consistent grain prices following the Fronde. In the lower class of Ste. Catherine, this tendency is even more specifically pronounced, but first, let us look at the actual numbers which lead to these ratios.

Table 2: Lower Class Boys and Girls Baptised by Decade in Urban Parishes

Decade	LC Boys	LC Girls	Sex Ratio
1610--20	824	769	107.2
1620--30	562	543	103.5
1630--40	629	546	115.2
1640--50	878	777	113
1650--60	557	528	105.5
1660--70	911	819	111.2
1670--80	893	922	96.9
1680--90	774	774	100
1690--1700	784	741	105.8
1700--10	974	867	112.3

Here we have the number of lower class boy baptisms against the number of lower class girl baptisms. Accurate lows in the number of baptisms are represented in the 1630s, 50s and 90s. The gap left by two missing calendar years from Ste. Catherine in the 1680s belies what should be closer to the stable highs of the 1660s and 70s. Additionally, the 1620s, despite being very productive according to the records from Ste. Catherine, are missing from St. Etienne; however in theory any group large enough to be analysed statistically should conform to the USRB of 105 year by year.

Several decades offer unusually high sex ratios. In the 1630s 629 lower class boys and 546 girls were recorded in Villeneuve. This renders a sex ratio of 115.2, which when combined with the volatile price of grain in that period is suggestive. The decade before the events of the Fronde produced a healthy 878 boys and 777 girls, almost reaching the

levels experienced later once stability had returned and population re-growth began to boom. There is a predominance of boys in this decade as well, forming a ratio of 113.

The records for the 1650s are incomplete, and the reasonably minuscule numbers during the actual disaster and exacerbating problem of loss of life early in the decade offer the lowest numbers in the century. They are not numerically insignificant, however, being 557 boys and 528 girls, as the decade also includes the earliest recovery. The resultant sex ratio of 105.5 is well within the accepted natural range once again, and this despite missing data, though again this should not affect the ratio.

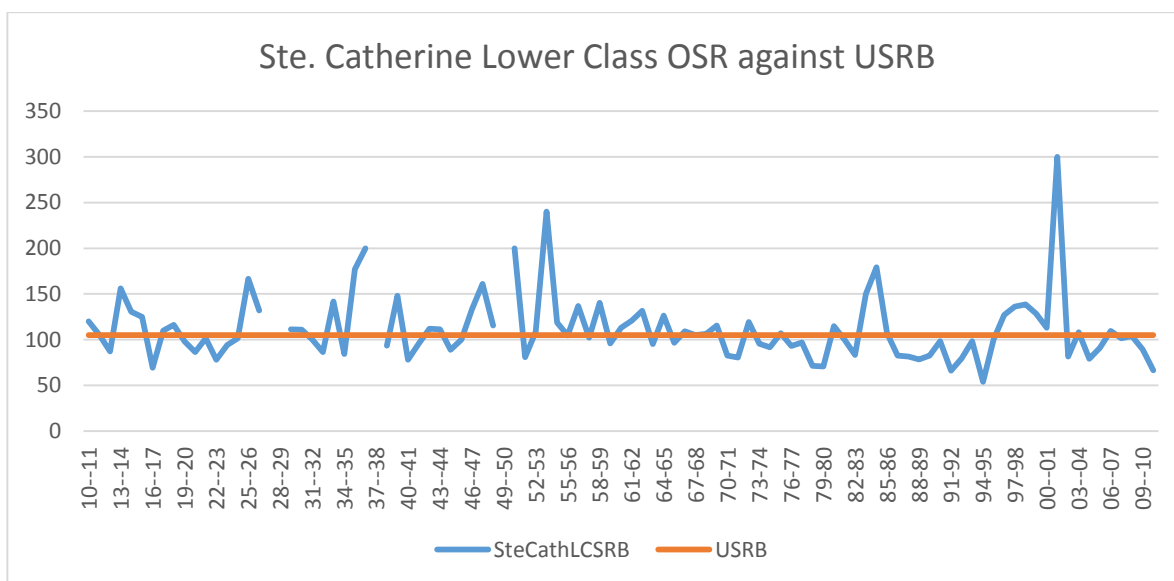
The 1660s included 911 boys and 819 girls among the lower class, the highest measured to that point, and it likely represents both conscious population re-growth and the return of those couples who would have fled the city before the siege began. This latter factor, as will be shown, is more easily traceable in higher social groups, because to have moved away before the siege would require money, as well as property to flee to. More specifically, refugees of the lower class may have returned home at this time, however the spike in 1661 is only really apparent in the notables. This may also represent a decision of notables and nobles to move into town, which would explain the general increase in their numbers in the latter half of the century.

The 1670s produced more girls than boys in the lower class of Villeneuve, and the 1680s produced equal numbers. This is interesting considering the theories presented in the historiography relating to the biological effects of the improvement of economic conditions on sex ratios. It does however fall in line with the Trivers-Willard hypothesis, as it would presumably have been a good time for the lower class to marry up, as lower relative grain prices made the having of children more immediately practical.

The 1690s include a great famine, which reduced the number of baptisms among the lower class by more than ten percent even with two missing calendar years. This is a significant dip, though mild in comparison with the 1650s, and shows the vulnerability of the lower class to famines. The 1690s also have an OSR within the accepted natural range, of 105.8. There is a possibility that proto-industry had begun actively to employ girls, making them yet more economically viable, but no study of proto-industry focusses on Villeneuve in this period.

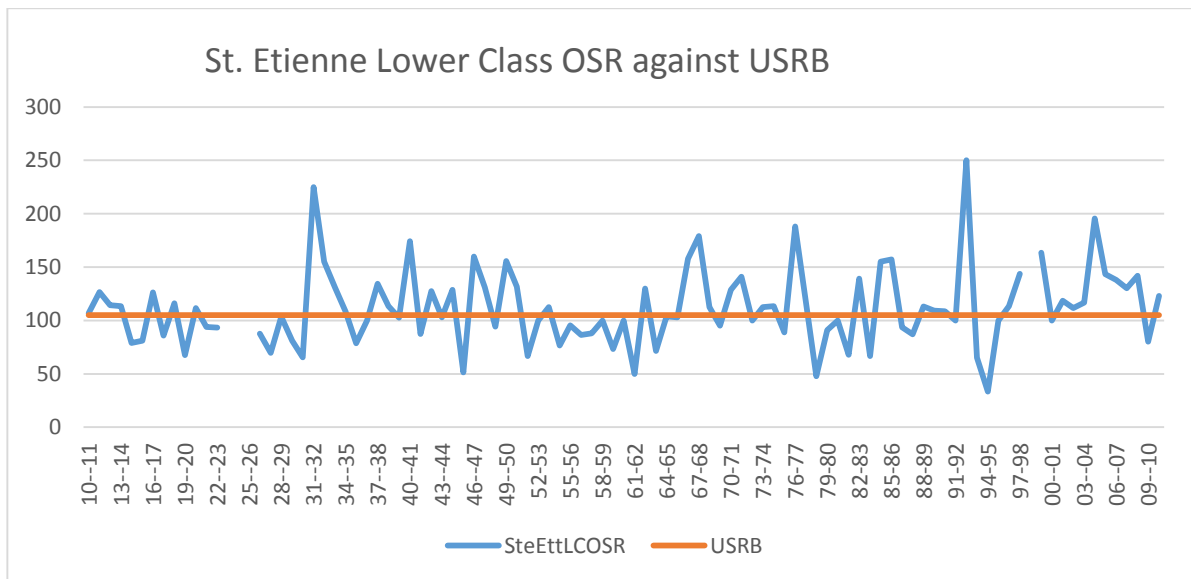
The decade after 1700, containing the most baptisms of any decade in the sample, has a higher sex ratio of 112.3, however in the wake of the harsh winter of 1709, a relative predominance of girls is apparent. The final year in this study, 1711, contained 58 male and 65 female lower class baptisms. We will now break the urban lower class into the two parishes which constitute it.

Figure 17: Ste. Catherine lower class observed sex ratios



Once more, in crisis years we have sex ratios which are exceedingly higher than surrounding norms. Correspondently, the ratio is lower during periods of stability. From 1686-7 to 1694-5 we see a strong predominance of girls in the lower class of Ste. Catherine, with a good amount of data to show it. There is a clear and consistent trend towards more girls over time after the siege. After the famine in the earlier half of the 1690s however there is a clear increase in the sex ratio, showing more boys being baptised in the wake of disaster. According to the theory of Seth, improving economic conditions should result in reduced male mortality, as the greater needs of relatively weaker male foetuses would be met. Instead, the thirty most stable years create the opposite trend. Although the presence of war in the earlier half of the century might conceivably be connected to higher sex ratios in that period, as we shall see in the following graph, such an influence can hardly be presented as consistent for all of the recorded data.

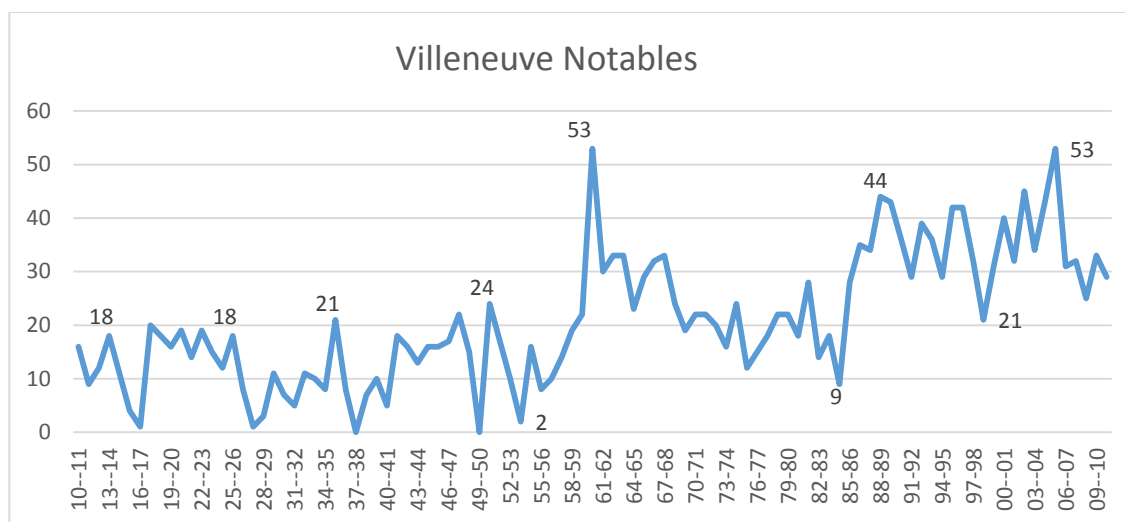
Figure 18: St. Etienne lower class observed sex ratios



The records for the Fronde period being more complete for St. Etienne, it is interesting to note that the whole turbulent decade including famine war and slow recovery renders a predominantly female-weighted OSR of 92. While in 1649-50 42 boys and 27 girls are recorded, and in 1650-51 29 boys and 22 girls, the year leading into the siege saw 22 boys and 33 girls recorded, and equal numbers of boys and girls in the year of the siege itself. In the period of the second great famine in 1692-3, although there is not as much available data, again a prevalence of recorded girls is recognizable, though more brief, interrupting and then returning to a spike in boys at the outset of the disaster.

The Elite

Figure 19: Notable baptisms



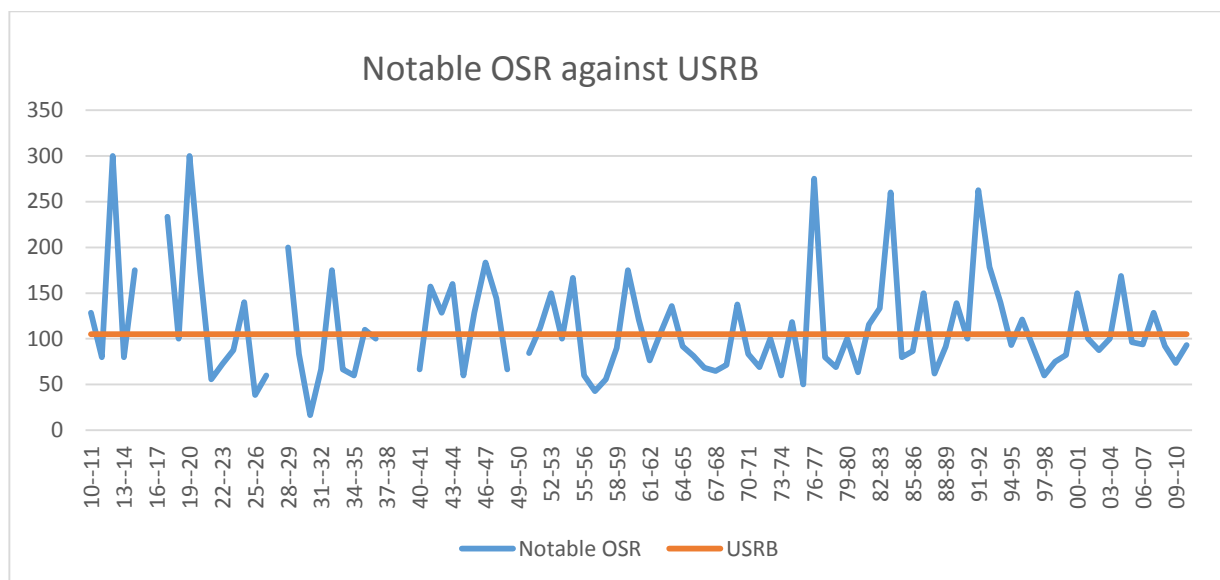
This graph represents the number of baptisms each year of the "Notable" category. Despite being made up of significantly smaller numbers the curve of the notable category is more stable than the others. The giant spike in the middle was a curiosity, as a great number of notable children were baptised in March of 1661, and despite the available birthdates removing a number of the erroneous outliers the spike remains. This may be the result of these more affluent individuals returning to town, and baptising their children in their home church, though that it should be almost ten years after the siege makes this very puzzling. The graph shows a positive, increasing tendency, to the end that by the end of the century and before the impact of the calamity in 1709 the numbers of baptised children per year have increased significantly among those with a more reliable availability of food.

That said, the notables did not escape the various earlier disasters unscathed. The middle of the century lowered the number to nothing, and in spite of missing records there was an evident lack of notables where records did exist. Several were found in the mass baptism month of March '61, having returned to town, and have been placed where they

belong, but there is still a noticeable gap which cannot fully be outweighed by the remaining spike in baptisms.

After 1661, there is a period of decline which goes counter to what one might expect in a period of economic growth and recovery. While the records are imperfect there is still a significant downwards trend, which only reverses after the two missing calendar years of 1683 and 1685.

Figure 20: Villeneuve notable observed sex ratios

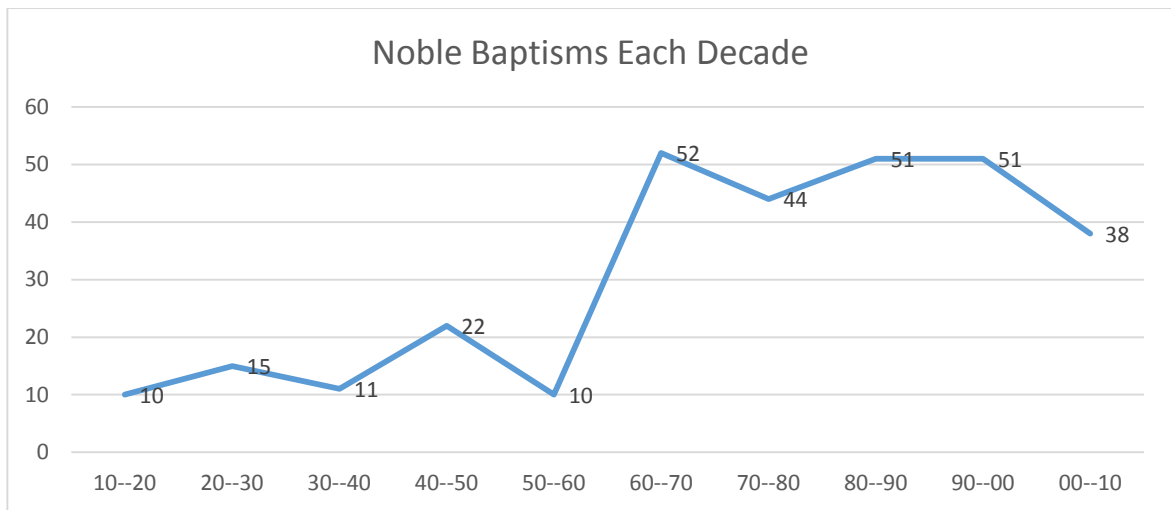


Although the notable sex ratio spends most of the century at or below parity, where the ratio exceeds the USRB it does so dramatically. Indeed, virtually every spike in all social groups is higher than almost any valley is low. In a general sense, this is the cause of the overall total baptisms rendering a natural OSR, particularly in the latter half of the century, and this pattern is suggestive. An examination of how the numbers even out over the course of a decade is expressed in the following chart.

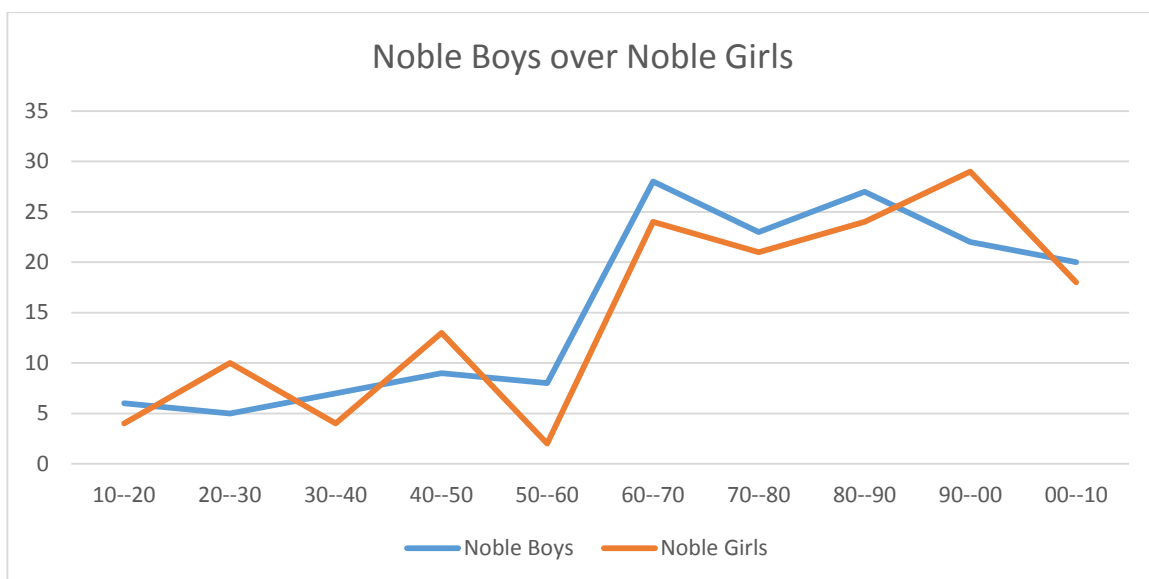
Table 3: Villeneuve notable births by decade

Decade	Boys	Girls	Sex Ratios
10--20	76	49	155.1
20--30	54	66	81.8
30--40	37	50	74
40--50	75	63	119
50--60	71	71	100
60--70	149	160	93.1
70--80	91	102	89.2
80--90	140	142	98.6
90--00	177	160	110.6
00--10	190	178	106.7

As we can see, the massive spikes in sex ratio in the second half of the 17th century do not cause the sex ratios of each decade even to reach parity from 1660 to 1690. The sample starts off exceedingly high throughout the 1610s. It might prove interesting to extend the sample further into the past, to see the years which led up to this imbalance, but as the sample stands this anomaly is inexplicable. Despite generally small numbers we see a back and forth ebb and flow, with reduced sex ratios in the 1620s and 30s, before going up again, and then down again.

Figure 21: Noble Baptisms

This graph shows the number of noble baptisms over time. Because of the low numbers, particularly in the earlier half of the sample, these were divided into groups of decades. While there are very few nobles represented consistently in the first half of the century, after the central point their numbers quadruple, and become more stable before the last two decades, at which point they dip.

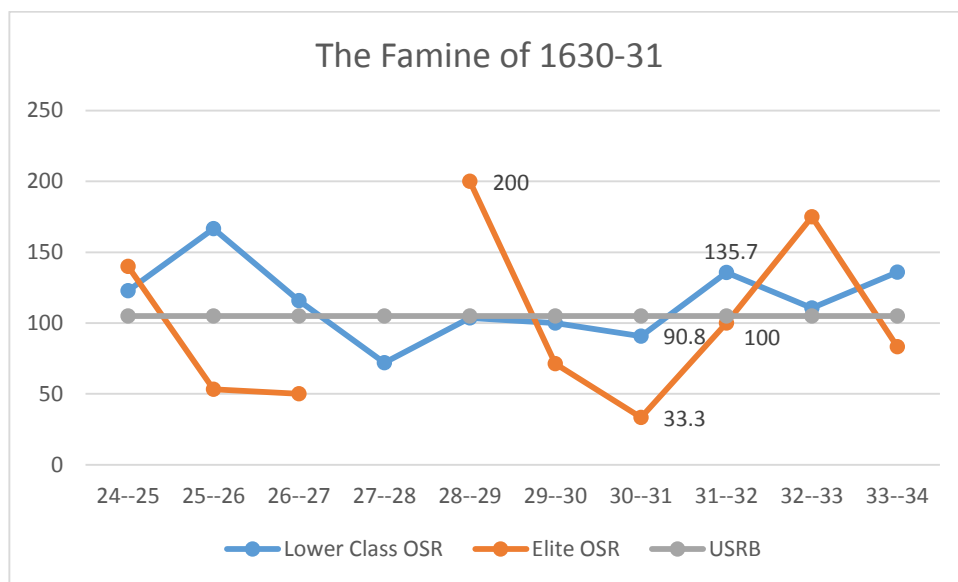
Figure 22: Villeneuve noble boys against girls

Noble baptisms are represented here by the absolute numbers of boys, in blue, over girls, in orange, each decade. The numbers of noble baptisms being so small, and therefore so liable to produce unreadable spikes and valleys, necessitates a different means for presenting their relative frequency. Although the number of girls does surpass the number of boys at points, the two numbers do cling together in a reasonable way, which does not necessarily lend itself to inferences of infanticide. This is to be expected according to the work of Hynes, who in spite of finding unnaturally low ratios for the lower class found a more natural figure for the upper class. Nobles did not have to worry about being able to feed their offspring, and their daughters could marry other notables or, just as likely, be sent to a convent.

Crisis Periods

We now briefly focus in on the three most traceable disasters in the 17th century for Villeneuve, being the famine of 1631-32, the siege of 1652, and the national famine of 1692-4. As we shall see, in each case, the ratio of boys is incredibly high either just before, during, or just after these periods of crisis.

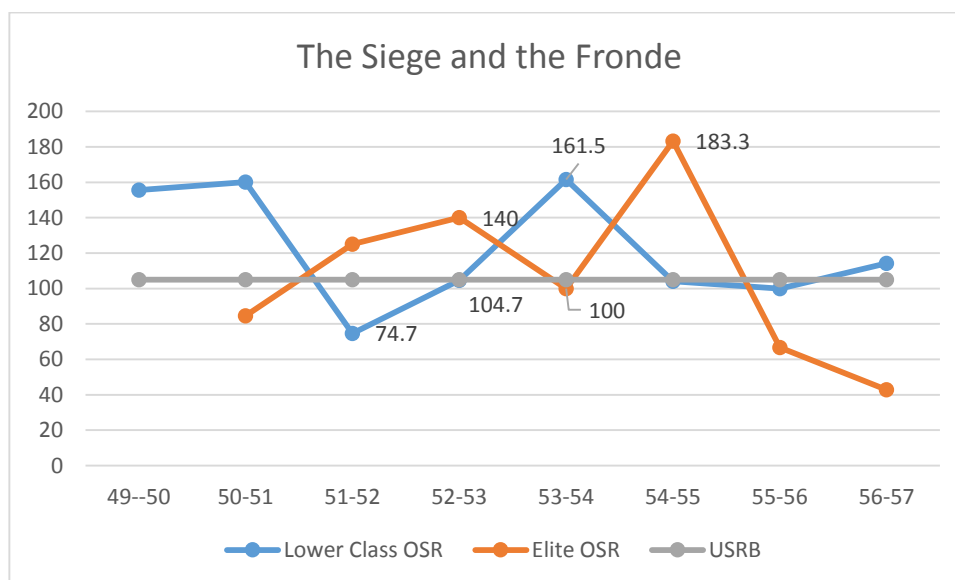
Figure 23: The Famine of 1630-31



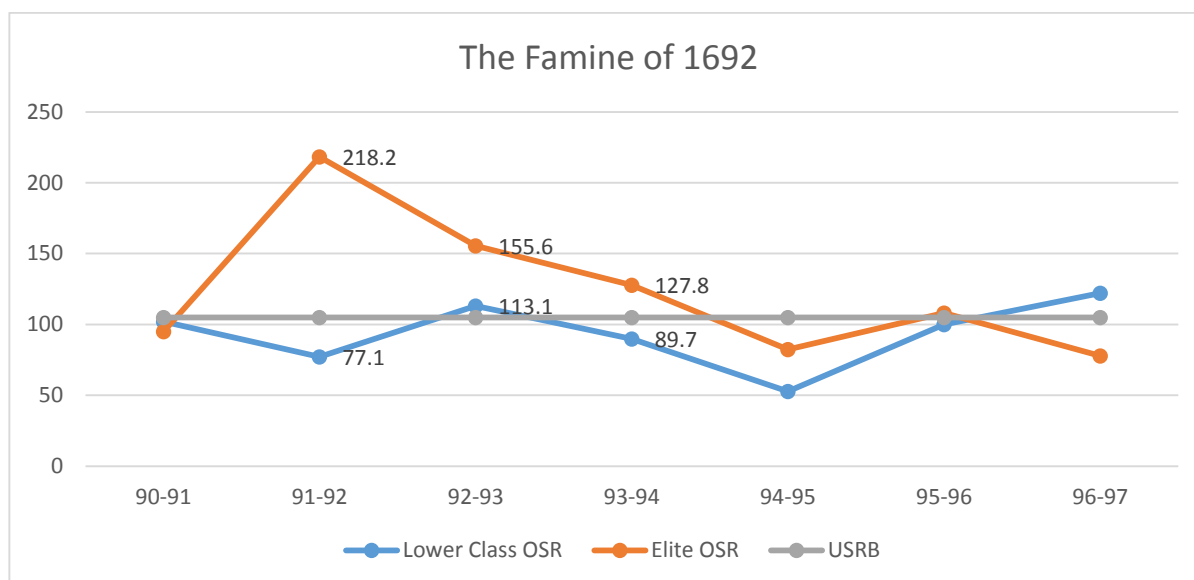
Although the height of the famine occurred in the harvest year of 1630-31, earlier years have been included in this graph to show a progressively more beleaguered populace, beginning with when the rivers froze solid in 1624, and all the fruit trees, vines and early crops were destroyed by frost. Just before the harshest famine, we see a predominance of girls. In the immediate fallout of the famine, we see a predominance of boys among the lower class, and an increase, though not quite reaching parity, of the sex ratio among elites. The greater number of boys among the lower class then returns to the natural range, while

for elites the return to a lower sex ratio is delayed by another year, before a low ratio counterbalancing the high ratios of the famine year, in 1633-4.

Figure 24: The Siege and the Fronde



Once again, as was the case during the earlier famine, the lower class arrives at the impending disaster of the siege with a sex ratio below parity, before increasing during the actual disaster, and then returning to a natural range soon after. The elite sex ratio was increasing before the Fronde, and seems to be interrupted the year after the siege, before becoming exceedingly high the following year, and then dropping significantly again quite possibly in compensation for the glut of baptised boys. It is quite possible that an anticipation of the loss of more males in this and the previous crisis caused the preference for male children to be kept.

Figure 25: The Famine of 1692

Although the famine of 1692 was not as dramatic in effect than the other two disasters in terms of deaths and disruption, again we see a low ratio just before the disaster, which increases to an above-natural ratio during the disaster among the lower class, before returning to a lower ratio more consistent with the rest of the second half of the century. The elite baptism ratio becomes exceedingly high at the outset of the crisis and throughout it, although it too reaches and goes below parity by the end of the crisis.

The same is the case in the years around the cold winter of 1708-9. Although the decrease in the sex ratio in the stable time between 1660 and 1690 could be attributed to, for example, the removal of the influence of war, there is no known biological reason for the OSR to increase in crisis periods; especially not to a degree which exceeds any low ratio in the sample in deviation from the USRB. That there should be significantly more boys baptised in times when male fetuses and males of all stages of life are more likely to die than females could well liken 17th century Villeneuve to Scheidel's Inuit, Tikopia and

Papua groups, who practise female infanticide to equalize the future adult sex ratio in his “high attrition” scenario.

III. Illegitimate Children

A search through the records to find illegitimate children, both bastards and foundlings, rendered resoundingly few. Josef Ehmer, in his article “The Significance of Looking Back: Fertility before the ‘Fertility Decline,’” identifies that “in most regions of pre-industrial Europe, the rate of out-of-wedlock births was extraordinarily low,”¹³⁷ and such was presumably the case in Villeneuve. Though few in number, the reported illegitimates presented a challenge twice in the coincidence of names. The sole illegitimate child with a father’s name attached, Pierre Meja, baptised in 1689, was born to an unmarried woman named Anne Meja and a butcher named Pierre Fontes. Four years later, Anne Meja had another illegitimate child, a boy, fathered by a man identified by her as Pierre, also a butcher. Pierre Vignial, also a butcher, had nothing to do with this woman, except that his wife's name was also Anne Meja. A third Anne Meja, titled Demoiselle, happened to be married to an important nobleman, Pierre Gabriel de Neymet, adding to the confusion.

In Ste. Catherine there were 25 recorded male illegitimates and 21 illegitimate girls, making up 0.4 percent of the sample. Of the males, 9 were recorded as illegitimate with an unknown father, 15 were foundlings and had no recorded parentage, and one was identified as a bastard. Of the females, 10 were illegitimate and 11 were foundlings. St. Etienne had a greater imbalance of illegitimates' sexes, with 16 illegitimate boys and 7 illegitimate girls, totalling 0.39 percent of the sample. The males consisted of 9 illegitimates and 7 foundlings, and the girls of five illegitimates and two foundlings. St. Sernin, as the smallest

¹³⁷ Ehmer, Josef. “The Significance,” 21.

sample, rendered two illegitimate boys and one illegitimate girl. Of these, there was one illegitimate boy and one foundling boy, and one foundling girl.

The foundlings represent only 0.2 percent of the total sample. They contain an interesting pattern, in that there were only 13 female foundlings baptised in urban parishes against 22 males. Then, among the children who were abandoned within the town, the sex ratio is 169. In St. Etienne however the number of girl foundlings is dwarfed by the number of boys, a mere 2 to 11 in a century, suggesting that in this less affluent parish boys were much more likely to be considered unviable, and were therefore abandoned. By comparison, Ste. Catherine's 15 boys to 11 girls seems more even, although again the prevalence for male abandonment is clear.

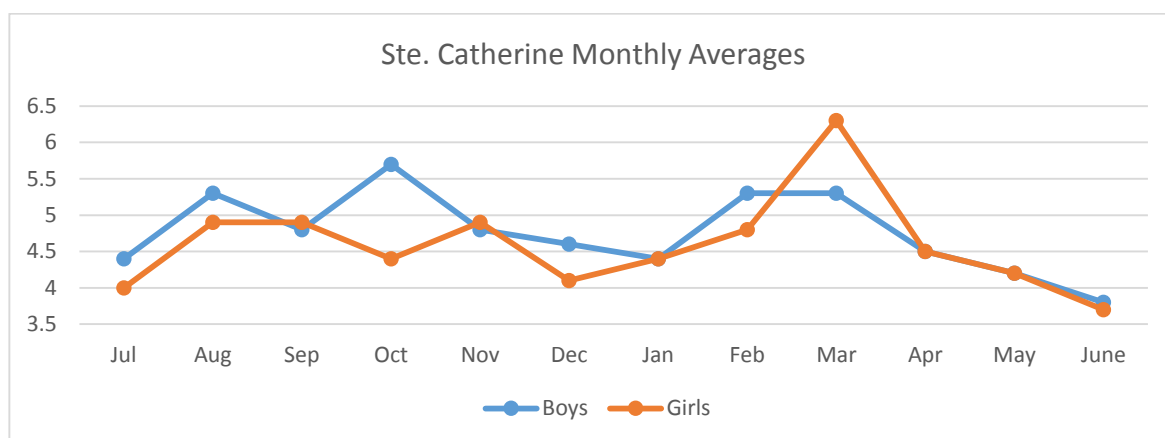
The two urban parishes produced illegitimates differently according to the records, but several problems as to their accuracy might be levelled against these small numbers. Firstly, it is quite possible that a child would not be abandoned at the door of its mother's own church, but at a different church distant from those who would recognize that a pregnancy had come to term without fanfare and a baby had been left at the church door. If this supposition is accurate, despite the logic of abandoning children based on economic status and the Trivers-Willard hypothesis, it is unlikely that the foundling children represented in Villeneuve are all or even consistent with the actual illegitimates born in Villeneuve. The overall sex ratio of all illegitimates collected for this project is 148.3.

IV. Average Years

Dividing all of the baptisms up by month offers not only a way to see if more children were conceived at certain times of the year, but also in what sexes and what numbers. The process for calculating these averages involved removing months for which

there was no data, so that each was divided on equal footing, in order to make the averages representative. So, the following graphs are the depiction of a calculated "average year" of monthly averages for each urban parish, drawn from the numbers of children each month for the whole sample.

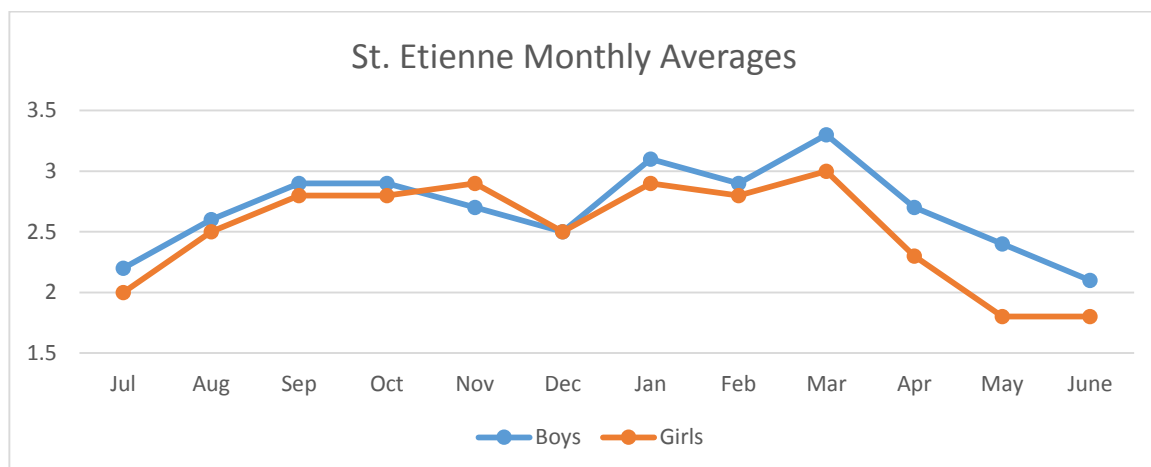
Figure 26: "Average Year" for Ste. Catherine



The average year of births shows a significant discrepancy in the months of October and March, and an intriguing trend towards the end of the year towards parity between the numbers of boys and girls. The discrepancy in October might derive from parents' understanding of the strength of the recent harvest, combined with a projection of the likelihood of that harvest's crop lasting through the winter, resulting in choosing to keep more boys relating to the likelihood of more males dying in hard times. In March, the winter having passed, and with a new harvest just around the corner, girls may have become a more reasonable investment, or may have counterbalanced a glut of males if too few died. July and August of the average year show both an increase in the number of baptisms and a correspondent increase of the numbers of children of both sexes. In September, the number of girls surpasses boys by a small margin. It does the same in November. There are

fewer girls baptised in December. The whole year alternates between near parity and a surplus of boys.

Figure 27: “Average Year” for St. Etienne



For St. Etienne, the averages are much closer to parity across the year than those from Ste. Catherine. The number of girls clings to the number of boys in the harvest year until November when it actually surpasses it, though slightly. From March to May, however, the number of boys to girls increases, while the number of girls decreases to a much lower proportion than at any other point, likely because the fruit of the year’s harvest had all but been exhausted.

V. Family Reconstruction

Transcribing names and dates from old to new paper allowed for a very substantial database of names well recognized and recognizable, which allowed for a more micro-analytical approach to be taken to set a lens on reproductive behaviour at the family level. Family composition for the purpose of this project is the process of aligning all available data for the reproductive behaviour of one couple, ideally accompanied by marriage records. Considering that the first marriage record in the books in Villeneuve was 1669,

and that the sample ends in 1711, the number of available couples was limited. I was able to designate 105 for which I have all the available information, with a total of 217 boys and 187 girls as their children. They were also selected to be representative of relative numbers among different social groups, without a significant preference for notables or nobles whose records were generally better kept.

The diversity of occupation among the lower and notable class was found to correspond to the diversity of the numbers of children among couples. Certain occupations lend themselves to children of a specific sex. Most businesses were operated from or in the home, so people such as shoemakers for example would have in any child a potential worker and apprentice. Furthermore, a child of either sex could acquire the skills of their parents, increasing their personal value, whether it became their profession or not. Besides differing the valuation of the sexes, occupations could also set a limit on family size - those with no recorded occupation generally have few children, while those with social distinction or profitable employment produced many, as one would expect.

The reconstructions, the 105 families most easily and reliably compiled, proffer an interesting snapshot into different couples' reproductive behaviour. There was no significant difference in the sex ratio at first birth, as 53 of the reconstituted families had a boy first, and 52 had a girl. When the first child was a boy, the second child was exactly as likely to be a boy or a girl (20/20). When the first child was a girl, there was a greater prevalence of boys among the second children, totalling 23 boys and 17 girls. Twenty-five couples had only one child, 13 of which were boys and 12 of which were girls. The figure that sticks out the most, however, is the sex of the last child, that is, the last child before the couple decided not to have another, or one of them dies, or they move away; 58 of the 105 couples stopped with a boy, and only 47 with a girl.

A search for suspicious gaps between children, of birth intervals of between 30-36 months, rendered inconclusive results. This division is proposed to indicate the time period required to successfully bear a child, decide against keeping it, dispose of it, and then recover before trying again. Hanlon's study of Montefollonico rendered an unbalanced result, highlighting the likelihood of infanticide. In my own sample, only 19 gaps were present among 18 of the 105 families, and the distribution of the children before and after the gaps was relatively even. Six of the gaps were between a girl first and then a boy, five were between a boy first and a girl, 4 were between two girls, 3 were between two boys, and one was a gap between a boy and a set of twins (boy/girl).

Chapter V: Conclusion

Although the spikey graphs do not offer one clean curve of the demographic data of Villeneuve, certain patterns do establish themselves when comparing the first and second halves of the century. After the incredible devastation of the Fronde, stable grain prices and a reproductive boom did allow a tremendous recovery. The town had a reprieve of almost thirty years, and certainly a whole generation, before once again being hit by demographic crisis. Despite missing years and spotty reportage, the baptism records of Villeneuve did allow for the creation of almost a hundred years of representative data.

And that data contains several interesting patterns. That the total sex ratio at baptism should be 105.47, for example, is somewhat surprising. Insignificantly higher than the absolute bull's eye USRB, it is well within an acceptably “natural” range, but what makes it interesting is the way that the century shifted around the central crisis to result in this range. The data suggests that the first half of the recorded time period saw a predominance of boys, and that the second saw a predominance of girls. Taken by themselves, either half of the data set would render an observed sex ratio only tenuously fitting the natural range.

The long and fairly regular period between 1660 and 1690 presents a singularity for the data: one complete reproductive generation living in economically stable times. It is this generation that I have gathered families from, because it also includes the inception of marriage records. Recovery after the Fronde and uncommonly stable grain prices had produced a manageable sufficiency. That said, crisis struck with a reliable irregularity throughout the century. Although the central period seems to have entirely changed reproductive behaviour in the town, other shifts caused there to be fewer children reported, and a whole lot of people to die. Perhaps importantly, every person who had reached

reproductive age would have experienced at least one crisis. They all would have experienced lean years, and many died in them.

A comparison with the findings of Hynes' examination of the city of Parma yields several similarities and certain deviations from expectation. Hynes found that the ratio of masculinity among the elites of Parma fell within the natural range, and postulated that their position in society rendered infanticide as a form of family planning unnecessary. In comparison, there was a clear preference for girls over the course of her study significantly below parity to varying degrees for almost all of her sample inside the city. Hynes also found that there was a strong predominance of boys in the rural parishes around Parma, probably reflecting the agricultural work available there.

The Villeneuve data offers several provocative results, when examined under the same lens. Unlike Hynes' Parma, Villeneuve's urban sex ratio of 106.1 is very slightly higher than the expectation for early modern France, but well within the range established by Visaria and Parrazini *et al.* Several decades deviate significantly from the expectation. Because each of the three main crises rendered divergent results however, especially among the elites, it is difficult to establish a single pattern. In general, it seems that the advent of disaster produced more boys than girls, unnaturally more, quite possible a result of parents choosing to keep sons, or, rather, replacements for members of the sex more likely to die in crisis. The two famines share the characteristic of an increasing tendency towards girls broken by the negative event to produce more boys. In the Fronde and siege period at the middle of the century, the lower and upper class diverge significantly, though both classes show an increasing tendency toward having boys between 1651 and 1653, which seems to end immediately after the siege year for the upper class, and the year after for the lower class. The back-and-forth frequency of the oscillation during this and other crisis periods

may suggest husbandry, as a tendency to balance out the ratio over very short periods of time cannot be ascribed to biology. In theory, each calamity and subsistence crisis should generate more girls, as they are generally more likely to survive, but as we see, this is not the case in this sample.

There is a clear pattern in the lower class of the urban parish of Ste. Catherine, with a movement towards a greater number of girls throughout the second half of the century. Although less clearly apparent, the same movement can be traced in the urban poor of St. Etienne. This falls in line with the Trivers-Willard hypothesis, insofar as the families of lower-status would want to marry their daughters up, at the same time as economic conditions allowed them to make long-term plans for social movement. One assumes that the same improvement in the general state of economic affairs would lead "notable" families to prefer boys in hopes of profitable marriages with the said lower status daughters, but the numbers are too small to make such a claim accurately for my sample.

The suburban parish of St. Sernin gives very different results from the rural parishes which Hynes examined, and despite a very small sample size seems to very directly correspond with the Trivers-Willard hypothesis. With work available within walking distance in town, daughters would be able not only to earn wages as domestic servants, supporting their families and themselves, but also be a part of the marriage market, offering hypergamous prospects to these families on the cusp of town living. There may also have been a degree of proto-industry that employed female hands in Villeneuve, although it is impossible to tell from the lack of studies.

The family reconstructions undertaken for this project were too few to render any conclusive results beyond the mildest suspicions of infanticide. But there are clear patterns to be found none the less. Lower-class families had fewer children, as a rule, though several

occupations lent themselves to more children. Among surgeons, bourgeois, merchants and butchers, the family sizes were much larger, and one might say much less "limited". It would require another investigation to extend the sample used for family reconstruction into the 18th century, as it could not be pushed earlier in time due to the late advent of marriage records.

Either infanticide was taking place in Villeneuve-sur-Lot in the 17th century, or the people were very lucky in the unnatural numbers of boys and girls they bore. The dense chronicle of disaster in the century, however, does not suggest luck. The greater level of prenatal hardness of female embryos should in theory render more girls in times of crisis, and it does not. The period of greatest economic stability after the Fronde, and the stability of France under the rule of the Sun King, corresponding to a reliable availability of food by price, engendered a rise in the number of girls versus over time, even though we should expect to see more boys given the improved standard of living. That "cultural trends" should have an impact on birth sex ratios in a quicker time scale than biological trends begs the question of how the impact would manifest itself. For the first fifty years of the sample, we see an unnatural predominance of boys. Thereafter, we see a gradual decline in the sex ratio, particularly in Ste. Catherine, ending in an unnatural predominance of girls before being broken up by further crisis. If there was no infanticide, there was a swift and responsive biological evolution in fifty years, with a recognizable beginning and end, mainly experienced by the lower class in one parish. Alternatively, the absence of warfare in the region could be argued to have caused decreased sex ratios in the second half of the century; however, the impact of this factor does not account for the inconsistencies between parishes and between the elites and lower classes, nor the high ratios which bookend the stable, war-free time.

This thesis addresses a small part of a big problem. The data presented here suggests that infanticide could be and was practised reflecting the likelihood of reproductive success of different children. Additionally, it is shown that times of crisis brought on a clear preference for boys, quite possibly to maintain a relative sex equivalence in numbers of prospective adults. By comparison, the infanticide which takes place today in China and India is motivated almost exclusively by cultural and social imbalances favouring males; there is, resultantly, no compensation to equalize the numbers.

When applied to the massive populations of the modern day, the imbalance of the cultural valuation of boys and girls is potentially destabilizing, but it is the cultural factor which is most difficult to change. In *Mother Nature*, Hrdy exhibits a sheet-metal sign from urban China which she translates as “Little Boy, Little Girl, Both Okay.”¹³⁸ In China, the days of the one child policy are over, but the preference for keeping more boys continues to skew the sex ratio in adults, and it is only getting worse. In India, the increasing scarcity of unmarried women seems to have done nothing to increase their perceived value, and indeed has decreased their economic standing, since the overabundance of men have taken even the lowly jobs once occupied by women.¹³⁹ Propaganda campaigns attempting to change this fact have been largely ineffective. Drawing from the case in Villeneuve, perhaps propaganda campaigns are attempting to chip away at the wrong block. While it goes well beyond the purview of this thesis to dictate conditions which might ameliorate the situation, if girls were somehow made to be more *economically* valuable than boys, this might put the adult sex ratios back into a more natural, and more sustainable state. The

¹³⁸ Hrdy, *Mother Nature*, 320.

¹³⁹ *ibid*, 347.

advent of industrialization in France, as described by Bechtold, certainly seems to have effected such a change in the recent past. The alternative seems to be the establishment of Scheidel's "high attrition" scenario: send all the excess males on hazardous sea voyages at a young age. A darker alternative still is prolonged warfare.

In the case of Villeneuve, between 1610 and 1710, we see husbandry. This husbandry is driven less by parental preference based on a consistent supposed inherent value of boys over girls, but rather by compensation for the loss of males during crises, economic realities, and the likelihood of one sex or the other to succeed at any given time. Both factors, culture and economics, can cause real people to kill their children. This project only adds another sentence to the worldwide study of infanticide. It will take much more research to flesh out what are only theories of statistical significance at present, if that study is to result in an understanding of how and why the whole world has committed and continues to commit infanticide.

Figure 28: A little bird, 1688



Source: Ste. Catherine parish register, 1688. *This bird is the size of the end of my thumb, and was likely drawn by one LaFaurie, whose last name appears several times on the page.*

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