

THE DEMOGRAPHY OF THE INDUSTRIALIZED PROVINCE OF BISCAY IN NORTHERN SPAIN

Spatial Differences and Long-Term Changes

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ABSTRACT: *This article examines the profound social and demographic effects of industrialization and modernization on the province of Biscay in northern Spain. Careful analysis of household listings and census results for the years (1825), 1900, and 1930 for three representative regions of the province—the capital Bilbao, the new industrial center of Baracaldo, and a selection of rural communities—shows the profound effects of industrial immigration to the area on fertility and mortality patterns, nuptiality behaviors, and household structures. In addition, the accumulated changes left a socio-cultural division in the province between a modernized urban-industrial and a traditional rural region—a division that was strongly felt well into the twentieth century.*

INTRODUCTION

The province of Biscay, located in northern Spain near France, is an excellent laboratory for analyzing the changes brought about by the industrialization process. This area, together with Catalonia, belonged within the Spanish framework of discussion of this subject; and even nowadays they are the two principal industrializing and pioneer centers in the country.

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There were, however, substantial differences between these two industrialized areas. While in Catalonia the modernization process was based on the textile sector, began early in time and developed gradually, in the province of Biscay industrialization was based on the iron and steel industry and started later in time (in the final decade of the nineteenth century). The process in Biscay was initiated by coal extraction and trade with English industry. From this, there grew a local industry of steel manufacture that since the beginning of the twentieth century has become very diversified (González Portilla 1981; González Portilla 1995; Montero 1990; Montero 1994; Montero 1995).

This industrialization process in the province of Biscay had no historical precedent. Still, there were some signs of proto-industrialization, with some iron being produced and, in a semi-finished state, used internally and exported abroad. In reality, this province was a poor area in terms of the economy of the *ancien régime*. It was mountainous, and had an agrarian economy; the capital, Bilbao, was, however, very important because of its commerce with Europe, the rest of Spain, and the Americas (Zabala 1994; Gutiérrez Muñoz 1994). It was, in fact, a province with a demographic system that always had to export men to the outside (Fernández de Pinedo 1993, 1994; Arbaiza Villalonga 1994).

The coming of industrialization to Biscay created not only great changes in economic terms but also a new territorial profile. A new industrial space emerged; its engine was located in the capital Bilbao, and it extended from all the municipalities along both shores of the Nervión River to the new international port exit. Before, all that had existed in this new space were small agricultural and fishing settlements. As for the rest of the province, the traditional rural areas and the small regional urban centers remained on the margin of this process. This newly created industrial space became, in the context of Spain as a whole, economically the most important in the northern half of the country.

There is no doubt that this process of economic change in Biscay had enormous demographic consequences. The most important of these was that instead of exporting men as it had done for centuries, the region began to exhibit an increase in demand for a labor force in its new factories. But these demographic changes appeared not only in the capital, Bilbao. They were also significant for the existing population of the new industrial area as well as for that of the rural regions that did not directly participate in the process. This is the reason why in the present article we will observe the demographic changes that operated in these three areas. The industrialization process in the province of Biscay constituted an authentic systems change in demographic terms, with substantial social, familial, and political implications for the future.

THE SOURCES AND THE SAMPLE

The sources used in the present article consist basically of nominative listings of inhabitants, because they are the only sources that permit investigation at a local level and at the same time help us to avoid the limitations that aggregate statistical

TABLE 1
Total Population and Proportion of Sample: Rural Biscay, Baracaldo, and Bilbao,
1787–1930

	1787	1860	1877	1887	1900	1910	1920	1930
Rur. Biscay	5,970	8,404	8,323	8,999	9,595	9,470	9,827	10,566
%	5.20	4.98	4.38	3.82	2.99	2.70	2.39	2.18
Baracaldo	1,924	2,688	4,710	8,868	15,013	19,429	26,906	34,209
%	1.68	1.59	2.48	3.76	4.82	5.53	6.55	7.05
Bilbao	15,516	29,436	39,695	60,421	93,250	106,592	131,827	161,987
%	13.51	17.45	20.90	25.64	29.95	30.34	32.09	33.39
Biscay	114,863	168,705	189,954	235,659	311,361	351,328	410,844	485,168
% Sample	20.38	18.09	27.58	33.22	37.85	38.56	41.02	42.61

Source: Census Statistics and Municipal Lists of Inhabitants.

sources create.¹ For some measures, census statistics and parish and civil registers have been used to calculate birth and mortality rates.

With respect to coverage in time, we use population cross-sections at three points that are illustrative of the changes that occurred in the province. First, the year 1825 represents in all cases the *ancien régime*. The source here is the *Censo de Policía* (Police Census) carried out in that year although with great unevenness of quality at the territorial level. For the localities where it is available, however, it has shown itself to be a valuable pre-statistical source.² However, we do not have this source for all the municipalities of Biscay, nor did the authorities produce a summary of provincial population totals. That is the reason why this date is never used in studies of population aggregates. The next date to be used is 1900. By that year, industrialization had achieved full momentum as a process of economic growth, and therefore, 1900 is a suitable date for observing changes from the previous era. Finally, we use the year 1930 when the industrialization process had reached a certain maturity and stability.

With respect to the geographical area as a whole, we have chosen a representative sample of the principal socio-economic and demographic regions for the province. First, there is the capital, Bilbao. Second, we have the municipality of Baracaldo, the largest population concentration representative of the new industrial space. Baracaldo was located 10 kilometers from Bilbao on the left bank of the Nervión River. In this locality there was built the emblematic *Altos Hornos de Vizcaya* factory that grew to have more than 4,000 workers during the first half of the twentieth century. And, finally, we have constituted a sample of rural Biscay by choosing several representative rural communities within four different rural areas.³

As can be seen in Table 1, we will be working in this article with a sample of the provincial population that fluctuates between 20 and 40 percent of the total. From the viewpoint of the territory as a whole, each one of four units of analysis do not have the same weight in the total sample, because their importance in terms of population growth changed over time. Bilbao increased its weight within the province until it reached a third of the total population in 1930. The industrial town of Baracaldo, existing in the future metropolitan urban area, increased its size substantially by comparison with the *ancien régime*, because this area was at the

TABLE 2

Proportion of Population % (Age 15–59) by Economic Activity in Bilbao, Baracaldo, and Rural Biscay, 1825–1930

	<i>Bilbao</i>			<i>Baracaldo</i>			<i>Rural Biscay</i>		
	1	2	3	1	2	3	1	2	3
1825	5,60	34,10	60,30	76,14	10,60	13,25	71,41	23,22	5,36
1900	4,70	58,00	37,30	11,23	81,57	7,19	79,30	11,20	9,60
1930	2,20	50,50	47,30	0,61	84,55	14,83	71,60	16,54	11,12

Source: Municipal Lists of Inhabitants.

1 = Agriculture.

2 = Industry.

3 = Services.

start basically rural. The rural areas we examine will continually diminish both with respect to their weight and total population in the province in the twentieth century.

ECONOMIC GROWTH, DEMOGRAPHIC GROWTH AND MIGRATIONS

The industrialization process created large economic changes in the province of Biscay. These are reflected well in the occupational structure of the active population.

In Table 2 we can observe the magnitude of the socio-economic changes that took place over the period, and especially toward the end of the nineteenth century. In the *ancien régime*, the capital Bilbao, never had an important agrarian role, being more a commercial center, and, to a lesser extent, having the craft industry as the driving force of its economy. This contrasted greatly with what occurred in Baracaldo and in rural Biscay, where the agricultural sector occupied about two-thirds of the population.

It is in the beginning of the twentieth century that we can perceive the changes that were triggered by industrial growth. In 1900, we can see that in Bilbao the service sector has diminished and the industrial sector now occupied more than half of the active population. It was in Baracaldo, however, where the changes can be seen as spectacular: in 1900 altogether 81.57 percent of its population was working in the industrial sector. By contrast, in the agricultural areas nothing had changed except the expansion of economic and social ruralization. In other words, while in some areas affected by industrialization the population had become mostly wage-earners and had experienced the cessation of the old artisan system, in other areas the change brought regression. Without doubt, when we speak of industrialization it is necessary to underline that the modernization process had an unequal impact in territorial terms and benefited some areas while harming others.

Finally, in the decade of the 1930s, we can observe the consolidation of the processes already visible at the beginning of the century, as well as some additional changes. For example, Bilbao, which earlier was more industrial, now has begun to show growth in the service sector, which is consistent with the emergence of its greater presence not only at the provincial level but also regionally. At the same time, the segmentation of the territory according to occupational type continued,

TABLE 3

Natural Increase (C.N), Actual Increase (r), and Net Migration (S.M.) in Spanish Provincial Capitals and Different Areas of Biscay, 1860–1930

	C.N.	r	S.M.	C.N.	r	S.M.	C.N.	r	S.M.
	1860–1877			1877–1887			1887–1900		
Spa. Caps.	—	—	—	0.78*	1.2*	0.93*	0.03	1.2	1.17
Bilbao	0.67	1.77	1.10	0.51	4.29	3.79	0.63	3.23	2.60
Baracaldo	0.91	3.35	2.44	0.69	6.53	5.84	0.88	4.13	3.25
Rur. Bisc.	0.86	−0.06	−0.92	0.80	0.78	−0.02	0.84	0.25	−0.59
	1900–1910			1910–1920			1920–1930		
Spa. Caps.	0.21	1.2	0.99	0.29	1.3	1.02	0.50	1.7	1.21
Bilbao	0.66	1.56	0.90	0.80	2.15	1.35	0.76	2.08	1.32
Baracaldo	1.82	2.61	0.79	1.81	3.31	1.50	1.35	2.43	1.08
Rur. Bisc.	0.91	0.19	−0.72	0.99	0.37	−0.62	0.90	0.73	−0.17

* Results from the period 1860–1887.

Sources: Spanish capitals of province: Reher (1990, p. 285); Bilbao: Pareja Alonso (1997, p. 40); Baracaldo and Rural Biscay: Arbaiza Vilallonga (1994, p. 120).

because in Baracaldo the wage-earning population involved in industry was still increasing. In rural Biscay, the primary economic sector—agriculture—remained the main occupation of the population, which can only be interpreted as a social and economic lag.

One of the first and more meaningful effects of these economic change was demographic growth.⁴ In Table 3 we can see that from 1860 until 1930 the population of Biscay was growing more in relation to the other Spanish provinces.

The first thing that can be underlined in Table 3 is that the demographic growth of the industrial areas was substantial throughout the entire period. It was always greater than that of the capital of the province and than the average of the capitals of the Spanish provinces, especially so between 1877 and 1887 when actual growth reached 6.53 percent. The growth was equally impressive in the newly created industrial area. Bilbao never had the high growth rates of the adjacent industrial areas, but it can be seen that its growth rates were always higher than in the rest of urban Spain which had moderate rates during the entire period. This contrasts sharply with the slow growth rates of the rural areas of Biscay, which, as in the nineteenth century, never exceeded one percent. With respect to socio-demographic effects, the most interesting thing to underline is the nature of this growth. The urbanization process, a by-product of industrialization, was created through migratory movements that implied a shift of the population from some regions to others. This can be observed in the industrial as well as in the urban areas, where a large part of growth can be explained by highly net migration rates precisely at the moment when the new industrial areas were growing. It was only in the period 1900–1910 that we find that natural growth replaced net migration as a source of expansion, certainly due to the high fertility rates characteristic of the first generation of immigrants.

What occurred in the new urban and industrial areas of Biscay contrasted sharply with what was going on in the adjacent countryside. Real growth there was scanty

TABLE 4

Proportion of Natives and Outside-Born in Bilbao, Baracaldo, and Rural Biscay, 1825–1930

	Bilbao			Baracaldo			Rural Biscay		
	1825	1900	1930	1825	1900	1930	1825	1900	1930
Natives	63.74	38.81	49.20	91.28	40.81	36.80	81.72	71.51	82.98
Rest. Bisc.	22.08	17.47	15.62	7.38	15.74	25.97	15.27	24.49	13.95
Rest. B. C.	8.29	9.21	6.14	0.09	7.19	3.55	2.62	1.39	0.84
Rest. Spain	5.88	34.50	29.02	1.23	36.24	33.66	0.37	2.60	2.21
n	2,907	6,055	5,778	2,099	4,337	4,524	2,665	7,796	8,729

Source: Municipal lists of inhabitants.

in comparison with other zones, but as always—and this should be noted—because of the continuing loss of population to other areas. Without doubt, there was taking place a labor transfer from the rural zones toward the emerging industrial zones. The excess rural population, however, did not have to be very large, because as we will see later, the emerging iron and steel industry in Biscay drew people from a range industry as far away as 400 kilometers in the northern part of the Spanish peninsula.

Industrialization and the subsequent migratory flows of arrival to the area changed the composition of the population, affecting the distribution of the origin of the inhabitants and, therefore, the social structure (Table 4). In the *ancien régime*, except for Bilbao, which was accustomed to foreigners, the rest of the population were shaped by the fact that some 80–90 percent of it was native to the area. By contrast, in 1900 in Bilbao as well as in industrial Baracaldo, the proportion of natives had been reduced to a half by immigrants. One should observe, however, that among these immigrants there was a substantial number of persons born in the province of Biscay. At the same time, it is also interesting to note that relatively few immigrants came from the nearby Basque Country provinces, where industrialization did not have an effect until the 1920s and 1930s. By contrast, people born in the more distant Castilian *meseta* were numerous and constituted a percentage as important as that of the native born, thus helping to re-shape the cultural mores of the arrival zone. In the 1930s, the immigration process ceased. The duality of Biscayans and Castilians, however, continued and became even more important in the industrial cities.

Once again, it is obvious that the statements made about urban Biscay cannot be applied to rural Biscay. The proportion of native-born there remain almost unchanged during almost 100 years, thus remaining excluded from the process of change evidence elsewhere. This meant the emergence of a social polarization in the province of Biscay that had long-lasting effects. On the one hand, there was the industrial and urban zone characterized by modern behaviors and having to assimilate with difficulty a large number of new persons in a limited amount of time. On the other hand, there was the rural zone that stayed on the margin. Without progress but without problems, it was reduced to the status of guardian of the ancient cultural values of Basque pre-industrial society that would be used later by the nationalists political parties and their ideology.

TABLE 5
Age Structure in 1825, 1900 and 1935 in Bilbao, Baracaldo, and Rural Biscay

	1825		1900		1935	
	%		%		%	
Bilbao						
0-14	865	29.78	1,884	31.42	1,588	26.97
15-59	1,830	63.01	3,800	63.37	3,747	64.87
>60	209	9.98	312	5.20	441	7.63
n	2,904		5,996		5,776	
Baracaldo						
0-14	714	34.01	1,663	38.62	1,507	33.32
15-59	1,202	57.26	2,471	57.39	2,759	61.01
>60	183	8.71	171	3.97	256	5.66
n	2,099		4,305		4,522	
Rural Biscay						
0-14	1,374	31.19	867	24.94	1,921	32.14
15-59	2,557	58.04	1,971	56.70	3,156	52.81
>60	474	10.76	638	18.35	899	15.04
n	4,405		3,476		5,976	

Source: Municipal lists of inhabitants.

THE EFFECTS IN DEMOGRAPHIC STRUCTURES

One of the clearest consequences of the industrialization process in Biscay was the modification of the demographic structures that normally do not change very quickly: the age structure and the balance between sexes.

As it is well known, the age structure of a population depends to a large extent on the interaction of nuptiality-fertility, mortality and migration. Despite the changing values of these variables or in the way they combine, it is actually very difficult to alter the age structure significantly in the long run.

As can be seen in Table 5, in the *ancien régime* the urban and rural areas had slightly differing age structures. In essence, however, they were very similar. It was the industrialization process that produced dramatic changes. By 1900 in Bilbao, but especially in Baracaldo, the proportion of the infant and child age groups had increased, while those of the older people had decreased. In sum, industrialization had produced a rejuvenation of these urban populations (Pareja and Pérez-Fuentes 1997). This result can be explained only through the effects of migratory flows, in combination with the higher fertility of the immigrants and by a general fall in life expectancy. It is known that in Biscay immigrants arrived with children and with higher fertility than existed at the point of arrival.⁵ Thirty years afterwards, in Bilbao as well as in Baracaldo, the size of the infant and juvenile age groups had been reduced, increasing the proportion of the aged population by comparison with what had existed in 1900. The resulting structure in the 1930s, however, never returned to the structure that had existed just before the start of industrialization.

By contrast, rural Biscay, which was untouched by the modernization, had felt the consequences of the opposite process, namely, out-migration. We can see there a decrease in the proportion of the younger age groups and a substantial increase

TABLE 6
Sex Ratio in Bilbao, Baracaldo, and Rural Biscay, 1825–1930

	<i>Bilbao</i>		<i>Baracaldo</i>		<i>Rural Biscay</i>	
	<i>Tot.</i>	<i>20–29</i>	<i>Tot.</i>	<i>20–29</i>	<i>Tot.</i>	<i>20–29</i>
1825	85.04	65.95	102.80	98.90	97.50	91.38
1900	86.19	67.61	113.12	104.57	101.34	94.17
1930	85.37	76.84	101.78	98.23	95.04	89.17

Source: Municipal lists of inhabitants.

of the groups over 60. The growth of the older groups contrasts sharply with that had been the case in rural Biscay before. This was an aging population in which persons in the active ages were leaving while natural growth was unable to counter-balance the trend. Industrialization thus produced a rejuvenation of the population it affected, but produced aging in those populations that were marginal to it. This meant that the urban and industrial populations gained some population assets for the future, while the rural populations confronted a great handicap to be overcome.

Industrialization, however, affected more than to the structure by age. It also made a difference in the balance between the sexes. In the *ancien régime*, the balance between the sexes tended toward an equilibrium or toward complementarity between the rural and urban areas. For example, in 1825, Bilbao had an imbalance in favor of women as a result of people engaged in domestic labor in the age group 20 to 29 (Table 6). However, in Baracaldo and in rural Biscay, a balance was maintained in both groups.

The coming of industrialization to the province of Biscay, based on heavy industry, meant an increase in labor demand that heavily favored the males. By contrast, industrialization based on textile production, employed mainly females. Thus, we can see that Bilbao, when life cycle servitude for females ceased to operate, became in the decades from 1900 to 1930 a city that was most feminine in this sense but still more balanced than it had been in the previous era. However, the greater shift took place in the industrial area, where the arrival of single men in the ages around 20 years strongly altered the older rural patterns. The arrival of many such immigrants with their families, or with the subsequent arrival of their spouses, colored much of the process in the industrial city of Baracaldo. The absence of women in the beginning years of industrialization was especially dramatic in the mining zone during the last third of the nineteenth century. Then, immigration was individual and masculine to a greater extent than we are describing here. But in rural Biscay, almost nothing changed in these hundred years. The population maintained a balance between the sexes over the whole period.

The sex imbalance in the industrial zones had certain implications for the marriage market, because the age groups in question are the same or similar. Our hypothesis, however, is that the implication was not negative for two reasons. In the first place, urban and industrial areas were near to each other and the distance of a few kilometers could be covered by train or streetcar.⁶ This facilitated contact between marriageable youths. Second, immigration from distant regions meant the

TABLE 7
I_g Values for Spanish Capitals of Province and Areas of Biscay, 1825–1930

	1825	1900	1930
Spa. Caps.	0,574*	0,604	0,502
Bilbao	0,684	0,625	0,407
Baracaldo	0,642	0,685	0,498
Rur. Bisc.	0,650	0,694	0,641

* Data corresponding to 1860.

Source: Spanish capitals of province: Reher (1990, p. 289); Baracaldo: Arbaiza Vilallonga (1994, p. 257); Bilbao and Rural Biscay: Pareja Alonso (1997, p. 47).

possibility that the marriage market was segmented by geographic origins, so that, for example, Castilian immigrants often took brides who were born in the same place as they were from.⁷

THE DEMOGRAPHIC SYSTEM AND THE DEMOGRAPHIC TRANSITION

The Familial and Nuptiality Systems

In terms of demographic shifts, one of the generally expected effects flowing from industrialization and urbanization is that usually termed the demographic transition. This consists of a decline of fertility at the personal level and a decline in mortality at the social level.⁸ The new socio-economic environment would yield a change in the demographic systems from an earlier high-pressure regime to a modern low-pressure regime.

In the Spanish context, it has always been surprising that the two large areas that pioneered industrialization—Catalonia and the Basque Country—showed such different responses in terms of the fertility transition. While in Catalonia the fertility decline began very early, in the Basque Country the fertility decline awaited the decade of the 1920s, when it coincided with the decline in the rest of the urban Spain, barely industrialized.⁹

With respect to fertility behavior in the different areas of Biscay, we can see in Table 7 that the Basque values of I_g in the *ancien régime* were very high, in line with the period of time being considered. With the arrival of industrialization, and contrary to expectations, not only in the province of Biscay but also in the Spanish provincial capitals the value continued to increase, though in Bilbao it fell slightly by comparison with the previous period. This outcome in Bilbao can be explained by the smaller impact of immigrants and the greater urban social complexity, which means that some groups were reduced their fertility while others increased it. The highest value of I_g in 1900 existed in rural Biscay followed by the value found for Baracaldo.

In fact, industrialization had as its first consequence a substantial increase of fertility in the directly affected populations as well as in the marginal ones. This can be explained by patterns of fertility that immigrants born elsewhere brought to their place of arrival, and by the deplorable conditions of everyday life that kept mortality

TABLE 8
 I_m Values for Spanish Provincial Capitals and Areas of Biscay, 1825–1930

	1825	1900	1930
Spa. Caps.	0,464*	0,476	0,455
Bilbao	0,388	0,459	0,407
Baracaldo	0,547	0,740	0,547
Rur. Bisc.	0,548	0,446	0,375

* Data corresponding to 1787.

Source: Spanish capitals of province: Reher (1989, p. 201); Baracaldo: Arbaiza Vilallonga (1994, p. 261); Bilbao and Rural Biscay: Pareja Alonso (1997, p. 49).

high and were not an inducement to the immigrants to reduce their marital fertility. This reason, and a slowing down of the industrialization process in the province of Biscay, by comparison with the maintained pace in Catalonia, is the explanation of the fact that in 1930 we can see a fertility decrease mainly in urban Biscay but less so in the industrial area, which contrasts with urban Spain and rural Biscay. Nonetheless, in the decade of the 1930s, these I_g values should be considered to be still very high if we compare them with Catalonia or other areas of northern Europe.

It is well known that I_g values are influenced by nuptial intensity and by the age of marriage, both of these being within the framework of the familial system. One of the most important effects of industrialization, by comparison with the old regime, is that the new industrial population depended on a salary and not so much on the availability of land, on inheritance from parents, or on the artisan guilds. This had, as a first consequence, an increasingly larger proportion of the wage-earning population now accessing to marriage at an earlier age, which could produce a temporary increase in marital fertility in the absence of restrictive patterns.

In fact, the old regime was very restrictive with respect to access to marriage. Table 8 shows that the restrictive effects were somewhat higher in the cities than in rural areas, the latter showed less definitive celibacy levels and lower age of first marriage than the former (Table 9). Still, the city-country differences were not so substantial. In the countryside, unmarried people, especially women, did not find a useful place in this impoverished rural world, and their presence suggested more performance of duty than something else.¹⁰

The effects on nuptiality of working in a factory or depending on a salary can be seen very clearly in 1900 in the cities, but much more impressively in the industrial zones, where the intensity of nuptiality was the highest and where a greater proportion of the wage-earning population existed. Paralleling this phenomenon of a drop in celibacy was a considerable reduction in the age at marriage, as in Baracaldo where the mean age at first marriage for women fell by 5 years. This trend is especially notable in the first phase of industrialization, precisely when fertility was increasing. Thirty years afterwards the urban areas would return to earlier levels and almost recover their standard patterns.

By contrast, the rural areas produced the opposite phenomenon. The process of ruralization entailed a greater restriction on nuptiality and the appearance of patterns unknown before in these areas. The intensity of the nuptiality reached in 1930

TABLE 9
 Mean Age at Marriage (SMAM) and Definitive Celibacy in Bilbao, Baracaldo, and Rural Biscay, 1825–1930

	Bilbao*			Baracaldo			Rural Biscay					
	Women		Men	Women		Men	Women		Men			
	SMAM	Def. Cel.	SMAM	Def. Cel.	SMAM	Def. Cel.	SMAM	Def. Cel.	SMAM	Def. Cel.		
1825	28.20	10.14	25.22	16.66	25.39	5.12	26.96	2.17	25.16	5.38	26.48	4.58
1900	26.60	11.45	27.37	8.66	20.50	2.00	27.00	2.80	27.06	6.87	29.75	3.78
1930	26.69	21.11	29.20	11.80	25.20	3.90	25.20	8.80	28.00	14.76	31.03	10.31

* Mean age at marriage of Bilbao 1900 and 1930 come from Civil Register of Nuptiality.
 Source: Municipal lists of inhabitants.

levels lower than the other zones. The age of marriage rose progressively which also translated in an increase of definitive celibacy. Both behaviors were unknown in this rural world before and revealed the difficulties that young people were facing in with respect to household formation if they did not emigrate.

Even though these changes in nuptiality and fertility were remarkable, taking place within the framework of a familial systems that changed imperceptibly over the time. We can speak of an adjustment by the nuclear and the complex family to the new circumstances and in some ways of an accentuation of earlier patterns.¹¹

In the province of Biscay, as a rule in the Basque Country, and in some parts of Catalonia nuclear and complex forms of the family coexisted. As can be seen in Table 10, the simple family comprised the majority in the urban zone of Bilbao and in the rural region of Baracaldo in the old regime. The complex households we can find in these societies in the period mainly had the form of an extended family.¹² By contrast, much of family complexity in the rural area of Biscay was consisted in equal parts of extended and multiple families. This complexity transcended questions of socio-economic limitations, and was seen by its participants as a culture, as a form of a very particular rural way of life that ought to be preserved.¹³

The industrialization process produced the need for adapting these familial systems to the new circumstances, producing different results in each area (González Portilla and Pareja 2000). In the urban zones, even though the nuclear form continued to prevail, there was a progressive increase of extended families that reduced the nuclearity of the overall society, above all in Bilbao. This fact has to be understood as an adjustment strategy on the part of the families and a reaction to the precarious existence in urban settlements. This situation was very common, and could be found all in the industrial zones that accepted immigrants in large quantities. Familial solidarity meant that families received their incoming relatives in already constituted households. The problem of insufficient housing for workers, especially in Bilbao, meant that this situation lasted for a long time, until well into the 1930s.¹⁴

By contrast, in rural Biscay, which was untouched by industrialization and anchored in the past, older familiar patterns were accentuated. The modernization process did not arrive in these zones even in the form of the extension of new behaviors. What can be seen in Table 10 is that the rural zones, where the earlier economic system was now in crisis, increased the number of familial components. The trend here was to expand familial complexity by enlarging of the components of multiple families to higher levels than had existed in the old regime. This contributed to the social and cultural polarization that was progressively radicalizing the province of Biscay since the start of the industrialization process.

Mortality Behavior

According to the theory of the demographic transition, mortality is a very important variable within the set of changes leading to a decrease of fertility. In fact, the theory holds that the two variables are related, insofar as a significant decrease of infant mortality level is necessary for married couples to begin to consider limitation of their family size.¹⁵

In fact, in the province of Biscay, a general decrease of infant and child mortality became visible from the mid-eighteenth century onward in urban as well as in rural

TABLE 10
 Mean Size of the Family and Types of Familial Correspondence in Bilbao, Baracaldo, and Rural Biscay (%)

	Bilbao					Baracaldo					Rural Biscay							
	Mean	I	II	III	IV	V	Mean	I	II	III	IV	V	Mean	I	II	III	IV	V
1825	4.86	5.16	69.10	15.41	10.31	25.72	4.66	5.99	70.44	14.44	9.11	23.55	4.65	2.14	62.18	18.00	17.67	35.67
1900	4.41	5.40	69.19	20.03	5.36	25.39	4.63	2.88	78.73	13.78	4.16	17.94	4.92	2.29	63.14	18.21	16.34	34.55
1930	4.52	4.39	65.31	23.65	6.62	30.27	4.67	3.72	79.00	16.23	1.03	17.26	5.37	3.08	59.80	18.64	18.46	37.10

Source: Municipal lists of inhabitants.

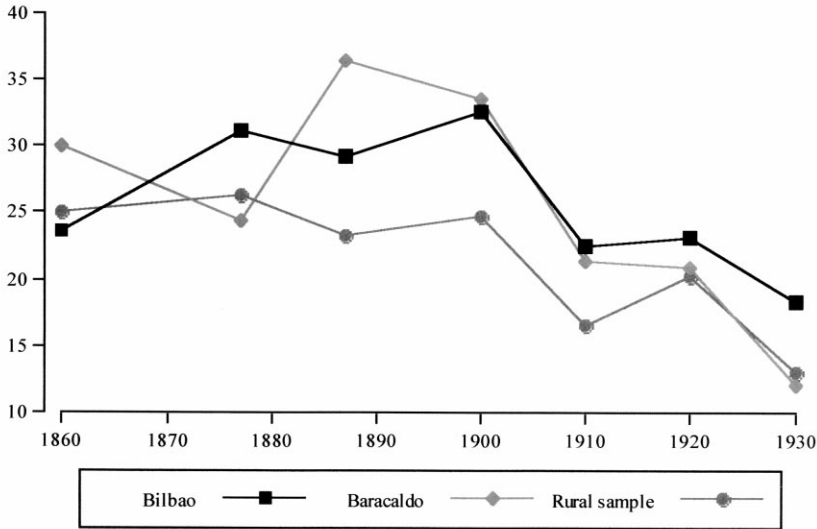
I = Solitaries and without family ties.

II = Nuclear family.

III = Extended family.

IV = Multiple family.

V = Complex family (III + IV).



Source: Bilbao: Pareja Alonso (1997, p. 54); Baracaldo and rural Biscay sample: Arbaiza Vilallonga (1994, p. 368).

FIGURE 1
Crude Death Rate in Bilbao, Baracaldo, and Rural Biscay, 1860–1930

areas.¹⁶ This may have been due to the fact that the province of Biscay always had moderate mortality rates that were even lower than the rates for Spain as a whole. The province benefited from being in the north which was little affected by epidemics and by gastrointestinal accidents due to problems with water. High temperatures elsewhere were deadly for the lives of children in the summertime. Also, this province enjoyed a golden eighteenth century which meant that good economic conditions permitted local authorities to undertake hygienic and sanitary improvements that brought about an increase in life expectancy.

In Figure 1 we can see that the different areas of Biscay province had very moderate rates of mortality by the middle of the nineteenth century (1860). Industrialization broke this trend. The increase in general mortality was very high in the industrial zone in the 1880s, and this trend in mortality rise was notably in the case of Bilbao until 1900.¹⁷ The decrease of life expectancy in these populations at this time can be termed as unusual because this situation was unprecedented.¹⁸ This outcome stemmed from the fact that due to the rapidity with which immigrants began to arrive left little time for authorities to guarantee proper housing conditions for all newcomers. The lack of living space rooms and poor sanitary infrastructures produced overcrowding. The lack of urban hygiene and the insufficient nourishment brought about by the precarious wages of these first families became the deadly triangle that was costing human lives, especially those of innocent children, in excessively high numbers (González Portilla and Pareja, 2000).

By comparison, rural Biscay was not affected by these processes and maintained moderate rates. In any event, for both the rural zones and the industrial and urban areas the critical moment of the mortality transition can be located in first decade of the twentieth century. Reductions in mortality during this decade came about due to joint efforts of the State and of entrepreneurs (González Portilla et al. 1998). Real wages had begun to rise by this era. There was extensive building of worker's housing (Beascochea et al. 2000). And the increased sensitivity of the State and local authorities to health and social hygiene began to yield fruit. Because of these changes, the irreversible process of secular decrease of mortality could continue and this process produced a reduction in the general levels of fertility.

SOME CONCLUSIONS

The kind of industrialization that appeared in the province of Biscay—based on iron and steel production—as well as the quick and accelerated pace at which the changes arrived, combined to produce very important changes that were not only demographic in nature. The large immigrant flows affected the old economic structures and the demographic system. Population growth produced a new spatial order in which the weight of the population in the province, now centered in a new densely populated area of almost 40 square kilometers, in effect moved the old rural zones to the margin of progress. The province was segmented into an industrial Biscay with a high immigrants presence and changed cultural values, and a rural Biscay cohering around old values. The two Biscays became antagonistic as a result of industrialization.

The rejuvenation of the population, the modification of the marriage system, and the worsening of life conditions in terms of mortality were the most evident consequences of the demographic effects of industrialization. By contrast, in rural Biscay economic bankruptcy and social crisis accentuated the older patterns. In this sense, the growth of the population halted the previous trends of fertility and mortality decline.

The price of progress in these new areas was substantial, above all in terms of human lives, mainly of children. There would have to be a wait of some 30 years from the time industrialization began before the beneficial effects of economic growth were felt in urban as well as rural parts of the province of Biscay.

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NOTES

1. In the data base, the variables for each individual are: number of the family, address, mean size of the family, family type, kinship, civil status, sex, age, occupation, literacy, and years of residence. In populations greater than 4,000 inhabitants a sample has been made at the ± 2 level with an error of 99.9 percent.
2. For criticism of the quality of this source in different municipalities of Biscay, see

Arbaiza Vilallonga 1996, pp. 283–291; and in the case of Bilbao, see Pareja Alonso 1997, pp. 339–345.

3. The number of municipalities in each cross-sectional analysis is different, depending on the quality of the source. In 1825, Ceánuri, Plencia, and Jemein are included. In 1900, Arteaga, Ceánuri, Lezama, Munitibar, Trucios, and Jemein are part of the sample. And in 1930 there are Arteaga, Ceanuri, Plencia, Lezama, Arbácegui Guerricaiz, Trucíos, and Jemein.

4. Between the years 1887 and 1900, the province of Biscay experienced more actual growth from than all of Spain: see Mikelarena 1993, p. 37.

5. Concerning family migration in Bilbao, see Pareja Alonso 1996, 1997; in the industrial village of Baracaldo, see Arbaiza Vilallonga 1998.

6. The province of Biscay had the earliest and most dense railway system in Spain: see González Portilla et al. 1993.

7. This has been demonstrated in the study made by the author in Bilbao. The results confirm the propensity by men to seek brides born in the same places of origin as them; see Pareja Alonso 1997.

8. There is an extensive literature about the demographic transition both at the national or local levels. As basic texts see Coale and Watkins 1986, Chesnais 1986, and more recently, Gillis et al. 1992.

9. This lag in the fertility trend in the province of Biscay had a strong connection with women's opportunities for entering the labor market: Anderson 1988 expresses this idea. The fact that in Biscay the industrial labor market drew most on men for its main labor force is relevant to this point. For example, in the main iron-steel mill in Baracaldo, only 5 percent of employees were women (Pérez Castroviejo 1992).

10. Several sources pertaining to the Basque rural world of complex families can be found in Urrutikoetxea 1992.

11. The adaptive strategy concept in reference to the nuclear family was first outlined by Wall 1990.

12. This situation is common in newly industrializing areas; for another example, see Janssens 1993.

13. This point of view has been reflected in two Spanish studies about the regions where the extended family was of great importance: see Urrutikoetxea 1992 for the Basque Country and Barrera 1990 for Catalonia.

14. About housing problems in Bilbao and the Biscayan industrialized area in general see Chapter 4 in González Portilla 1995.

15. This assumption has long been a matter of controversy. For a recently confirmation of the relationship between these two variables in Spain, see Reher 1999; Pareja Alonso 1997, pp. 37–59.

16. This has been demonstrated in the q_0 and $4q_1$ annual series (1730–1930) for the province of Biscay; see Arbaiza et al. 1996.

17. An increase in mortality levels since industrialization has been general in all the industrializing areas in Europe: see, for example, Leboutte 1988, Oris 1993, and Bourdelais and Demonet 1994.

18. In fact, around 1887, life expectancy in the industrialized and mining areas of Biscay was about 25 years: see González Portilla 1995. In the case of Bilbao, life expectancy in worker's districts in 1900 was an incredible 21 years: see Pareja Alonso 1997, p. 330.

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