Not Only the Private: School Choice and Segregation in Catalan Municipalities (2000-2007)

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ABSTRACT: The paper analyses social and ethnic school segregation in Catalan primary education. Following Goldstein and Noden (2003) seminal proposal, it applies a multilevel modelling approach to measure and explain between school segregation. Social and ethnic school segregation decreased slightly in a context of sharp increase of foreign-born students enrolments (2000-07). Available evidence shows that private choice cannot entirely between school segregation in Catalan municipalities. The analysis of area characteristics suggests that restricting school choice options, by means of zonification policies, it reduces between school segregation in small school districts.

INTRODUCTION

The paper aims to contribute empirically to the current debate on school segregation in a not very well known context of choice. Most of the academic research on school choice and segregation focuses on the case of Anglo-Saxon education systems (mainly England and the US). But the reality of choice varies largely from one country to another. It is specially salient the lack of research on the specificities, and it's consequences on segregation, of choice policies in Continental Europe.

The paper begins with a brief summary of the substantive and methodological debates on school segregation. It presents the modelling approach to segregation, justified by its potential to make probabilistic estimations of the evolution and causes of school segregation. The modelling approach it's applied to the analysis of social and ethnic school segregation in Catalonia (Spain). Two different analyses are carried out. First, it shows an assessment of the evolution of school segregation in a context of increased enrolment of non-native students. The results indicate that the Catalan educational system "deals well" with the first arrivals of non-native students inasmuch as school segregation decreased during the first years of the period. Second, it considers the influence of different area characteristics on school segregation. The enrolment in private-dependent schools explains partially school segregation in Catalan municipalities. The local catchment area design is considered as a predictor of within districts (localities) between schools segregation. The results suggest that catchment area design can be a useful policy tool to fight against school segregation in a context of choice. The paper concludes with a brief discussion of the implications of the findings.

THE CHOICE AND SEGREGATION DEBATE

Quasi-market reforms implemented during the 80s and 90s in the UK (and lately in other countries as New Zealand and Chile), amplified the political and academic concern about the consequences of school choice on school segregation. The British experience was understood as the first case of the neoliberal agenda in education. Probably because of this, most of the academic research linked the concept of school choice to the introduction of market mechanisms in education. The neoliberal rhetoric argued that free choice and school autonomy would lead to more competition between schools and higher quality of educational services (Chubb and Moe, 1990). The critics to this agenda focused on trying to prove that the introduction of choice would lead to an increase of school segregation.

Twenty years later, international evidence shows that, while school choice policies became widespread all over the world, quasi-market reforms didn't become. Even in the US, where neoliberal polices had great acceptance, the reality of school choice was far from being linked to the introduction of quasi-market reforms (Henig, 1994). The recognition of this fact has increased the interest for the national and local specificities of school choice policies. If the design of school choice policies varies from one country to another, its consequences on school segregation can do it too. Traditionally, pro-choice literature argued that more choice would reduce the influence of residential sorting on school segregation (Friedman, 1955). Anti-choice authors argued that the strategic logics of choice of middle class families would lead to a rise of school segregation (Whitty *et al.*, 1991). Both hypotheses, in principle, make a lot of sense. The main point of this debate is to identify in which contexts one mechanism prevails over the other. And it seems difficult to identify these "contexts" without an appropriate knowledge about the national regulation of choice and the local conditions in which operates. In the US, for example, it has been argued that residential sorting and district fragmentation can be the main cause of school segregation (Reardon *et al.*, 2000; Reardon, 2008). In this context, it seems reasonable to think that the introduction of some kind of regulated forms of school choice could reduce school segregation. But, what will be the consequence of choice in contexts with lower residential sorting? In English localities, school choice seems to increase post-residential school segregation (Allen, 2007).

It is specially interesting the case of choice in Continental Europe. Although not having been of big interest for anglo-saxon research, school choice policies are present in several European countries sharing common characteristics that, in my opinion, could permit us to talk about a "Continental mode of school choice"[1]. School choice in countries such as Denmark, Belgium, France, The Netherlands or Spain is characterized by the high enrolment in public funded but private-dependent schools[2], and some kind of bureaucratic restriction of choice to the schools of a given area (Butler and Van Zanten, 2007). These choice policies have their historical roots in the political conflict and bargaining between the States

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[1] I would leave Sweden out of this category because it shares more commonanilities with the British case than with those European countries I'm going to refer to.

[2] These schools are called private-dependent because receiving public funding usually implies some kind of public control over the way are runned. This public control can apply to curriculum considerations, pupils selection or the amount of fees.

and the religious communities for the control of education (Glenn, 1989). Nowadays, a lot of these private-dependent schools are not religious oriented nor the families' logics of choice are based in religious aims (Dronkers, 1995); but the institutional framework where school choice is embedded maintains its fundamental characteristics.

The Catalan school system is a paradigmatic example of the 'Continental mode of school choice" inasmuch as around 40% of pupils are enrolled in private dependent schools. All families can opt for these private schools and "voluntary" fees are permitted. Two main policy arrangements deserve to be outlined in this paper.

- First, there is a national policy against segregation that obliges all schools to enrol at least two students with Specific Educational Needs (SEN) per group[3]. These educational needs can be permanent (physical disabilities) or social (low income families), and a lot of non-native students are considered SEN because of their difficulties in understanding Catalan or their social conditions.
- And, secondly, each local authority decides what kind of catchment area design they apply to their district. Four main catchment area designs are identified in Catalan school districts.
    - Type A: Single school area of influence. This model has a single area of influence that includes all the schools in the district, both public and private-dependent ones. This model is common in small districts, with a reduced number of schools. (*High choice*)
    - Type B: An area of school influence for each public school and alternative zoning for private-dependent schools. This is the very common situation in medium-sized municipalities. The advantage of this model is that it favors both municipal planning and families being able to foresee and plan, besides adapting well to the criterion of proximity of the school to the family's address. (*Low choice*)
    - Type C: Areas of school influence with more than one public and alternative zoning for private-dependent schools*.* This model is applied in some of the largest municipalities. It is halfway between the two previous models. (*Medium choice*)
    - Type D: Areas of school influence with more than one public or private-dependent school. This is more common in the largest districts. These districts have designed areas of influence with different schools, integrating the private-dependent schools within them. (*High choice*)

Type A and D are the most choice-friendly catchment area designs. Type A being more common in small districts and type D in large districts. Type B and C are the most restrictive in choice terms. Type B is more common in small districts and Type C in the large ones. Catchment areas permit local authorities to balance the importance of family choices and the proximity criteria. Those families

[3] Class groups use to include 25 students.

choosing a school within their catchment area will have priority over the rest of families in case of over-demand. The different catchment area design among Catalan school districts permits to test the well-known Gorard's hypothesis on choice and segregation. Stephen Gorard (2000) analysed the evolution of school segregation after the introduction of free choice policies in England and Wales. His conclusion was that free choice reduced school segregation because weakened the influence of residential sorting on schooling. Following Gorard's hypothesis, between school segregation should be larger in type B and C than in type A and D school districts.

In order to analyse the evolution of between schools segregation, a multilevel modelling approach will be adopted. The measure of school segregation has been a very contested domain. The traditional debates about the measure of school segregation have been about what indices of segregation are the most appropriate in education. Nowadays, it seems there is a wide consensus about the superiority of some indices over the others in terms of desirable properties as "composition invariance" and "decomposability between levels" (Hutchens, 2004; Allen and Vingoles, 2006; Reardon and Firebough, 2002). Harvey Goldstein and Phillip Noden (2003) proposed an alternative approach to the use of indices of segregation, based on the modelling of between school segregation. They argued that while the indices approach typically uses observed proportions, it does not take into account the role of random variability. Multilevel modelling involves probabilistic estimations of the underlying variation between schools, making possible significance testing of each measure. Moreover, the modelling approach allows us to obtain random coefficients of predictor variables of segregation that vary across areas. This is especially interesting in a research like this one, where we want to assess the influence of district characteristics on between school segregation.

EVOLUTION OF SOCIAL AND ETHNIC SEGREGATION IN CATALONIA (2000-2007)

The sharp increase of the enrolment of foreign-born students in the Catalan education system has been quite often related to the growing concern of native middle class families for the social and ethnic composition of schools. The high concentration in some schools of foreign-born students it is socially perceived as a potential threat for the educational opportunities of the rest of the students. It's reasonable to expect that those social groups interested in taking structural advantage from the educational system will try to avoid new immigration by means of strategic logics of school choice (Ball, 2002).

This section analyses the evolution of social (NotSEN) and ethnic (Spain, Magreb, Central & South America) school segregation in the 50 most populated Catalan school districts[4], in a period of rising ethnic diversity in primary education

[4] Barcelona was excluded of the sample because its specific characteristics. The selected school districts satisfied the condition of including at least 5 primary schools for all the years and at least a 3% enrolment of non-spanish students in

(Table 1 in the appendix). The dataset consists of school level figures for some 850 schools in 50 school districts from 2000 to 2007. Model 1 is a simple variance components model (Goldstein, 1995) with the response being the proportion of the selected group (Spain; Magreb; CSAmerica or NotSEN), understood as the probability that a chosen pupil in school *i* in district *j* belongs to this ethnic or social group.

Model 1

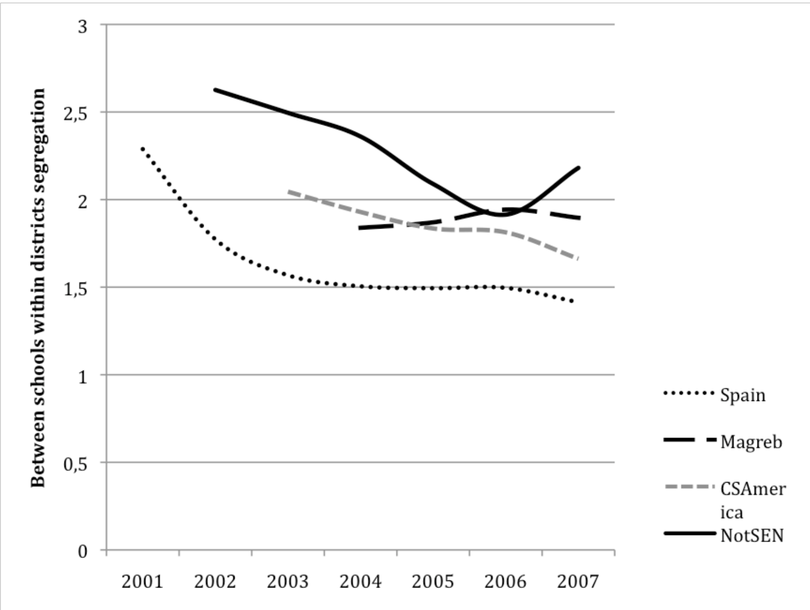
$$\operatorname{logit}(\pi_{ij}) = \beta_1 + v_{1j} + u_{1ij}$$

$$p_{ij} \sim bin(n_{ij}, \pi_{ij})$$

$$v_j \sim N(0, \sigma_v^2), u \sim N(0, \sigma_u^2)$$

The model is estimated for each year and each social and ethnic group. The district and school variances σ_v^2 , σ_u^2 are measures of between district and between schools within districts segregation. The results are showed in the Table 2 of the Appendix for all the years[5]. Graph 1 shows the results of between schools within districts segregation for those years with more than a 3% of the minority group.

Graph 1. Evolution of social and ethnic segregation between primary schools.



2006 (the year that is going to be used in the cross sectional analysis of the next section).

[5] Last colum of Table 2 includes the results for the same model considering not school but school dependency as level 1, and school districts as level 2. This model provides estimations over time of between sectors (public or private) within districts segregation.

Between schools within districts is the most interesting level of analysis of school segregation. Educational authorities can do nothing in order to fight against between districts segregation. It's not reasonable to think about a desegregation policy consisting in pupils having to travel each day from one city to another to assist to school.

Graph 1 shows that between schools segregation declined for students from Spain, Central and South America, and students NotSEN. This reduction it is more important for the years with fewer enrolments of the minority groups. Students from the Magreb show a slight rise of school segregation. Between schools segregation is higher when is considered each minority group than when Spanish/NotSpanish grouping is considered. These results are reasonable because of the low socioeconomic background of the selected minority groups. "NotSpanish" includes other national origins, as pupils from Communitarian Europe who are expected to be more evenly distributed.

Model 2 in the Appendix estimates simultaneously segregation for the first and the last year of the period in order to test the significance of changes of segregation over time. Table 3 in the Appendix displays the estimates and significance tests. The decline of between schools segregation of Spanish, SEN (1%) and Latin American pupils (5%) shows to be significant for the period. Between schools segregation of pupils from the Magreb remains stable with not significant changes all along these years.

Last column of Table 2 presents the estimates of between sectors within districts segregation for each ethnic group. Between sectors segregation is around 65% of the total within districts segregation for all the groups. Between sectors segregation decreased during all the period consistently with the general trend. Between sectors segregation is higher for pupils from the Magreb than for the other groups. It would be reasonable to think that these differences can be related to the catholic orientation of part of the private sector in Catalonia.

AREA CHARACTERISTICS: THE IMPACT OF CATCHMENT AREA DESIGN

This section introduces district level predictors of between schools within districts segregation of Spanish students in 2006[6]. As it was showed previously (Valiente 2008), the social role of private-dependent schools varies largely from one district to another. The proportion of enrolments in the private sector explains just 15% of the differential segregation among Catalan municipalities (Graph 2 in the appendix). Other area characteristics need to be taken into account in order to understand these differences.

Model 3 includes a categorical predictor (catchment area design) at district level. As catchment area design can change from one year to another, only school intakes for year 2006 were considered in the analysis. School intakes include all the 3 or 4 year old students that in 2006 enrolled in the first course of primary

[6] 2006 it's the last year available with information for catchment area design.

education in the 50 districts of the sample. School catchment design has four valid values (A, B, C and D) that correspond to four different local regulations of school choice. Table 4 in the appendix shows some descriptive data for each type of district. As it is showed, some other area characteristics as the residential segregation, the proportion of foreign pupils and the proportion of enrolments in the private sector are very similar across the four types of districts.

Model 3 it's the same as model 1 (simple variance components) with four terms in the fixed part and eight terms in the random (four at school level and four at district level), corresponding to the four types of districts. The model estimates between schools within districts segregation for: type A σ^2_{u0}, type B σ^2_{u1} , type C σ_{u2} and type D σ_{u3} districts. Results and significance testing are displayed in Table 5 of the Appendix.

Segregation under Type B regulation shows to be significantly (1%) lower than under Type C and D, but only modestly lower (10%) than under Type A. Type B regulation is strongly restrictive with choice as it defines one catchment area for each public school. Gorard's hypothesis it is refused for ethnic segregation in Catalan school districts in 2006. Those local districts restricting families' choice options get more mixed schools than not restricting districts. Taking into account the differences of district size across types of zonification, it would reasonable to limit these results to small districts.

A MODE OF CONCLUSIONS

The analysis carried out shown that the Catalan education system reduced social and ethnic school segregation in a period of sharp growth of the enrolment of new immigrants at Catalan schools. This reduction happened at the beginnings of the period, what suggests that the mandatory policy of redistribution of students with Specific Educational Needs could be one of the causes of this initial decline. Between sectors within districts segregation is higher than within sectors segregation, and it is especially high for pupils coming from countries with a Muslim background (Magreb). Differential segregation among Catalan localities cannot be explained uniquely by the enrolment in the private sector. Other area characteristics, as the local governance of schooling, need to be taken into account. The analysis of school segregation across districts suggests that restricting school choice options can reduce school segregation in small school districts.

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APPENDIX

Table 1. Descriptive statistics for each social and ethnic group in primary schools. 2000-2007 (n=50)

	Total	Prop Spain	Prop Magreb	Prop CSAmerica	Prop NotSEN
2000	249349	0,977	0,012	0,005	0,979
2001	251443	0,964	0,015	0,013	0,972
2002	257525	0,941	0,019	0,026	0,960
2003	265437	0,912	0,028	0,042	0,951
2004	270769	0,893	0,035	0,048	0,942
2005	277140	0,877	0,040	0,053	0,933
2006	286182	0,866	0,044	0,057	0,927
2007	296946	0,856	0,046	0,059	0,931

Table 2. Variance estimates (& standard errors) for each year.

	Intercept	S.E.	b/District	S.E.	b/School	S.E.	b/Sector	S.E.
Spain								
2000	*3,544*	*0,111*	*0,384*	*0,121*	*2,467*	*0,136*	*1,753*	*0,2*
2001	3,082	0,087	0,181	0,073	2,288	0,124	1,404	0,158
2002	2,595	0,077	0,146	0,057	1,773	0,095	1,083	0,121
2003	2,192	0,072	0,128	0,05	1,568	0,083	1,006	0,111
2004	1,984	0,077	0,167	0,057	1,505	0,079	0,961	0,106
2005	1,837	0,084	0,229	0,07	1,494	0,077	1,022	0,112
2006	1,77	0,083	0,226	0,068	1,496	0,076	1,01	0,111
2007	1,706	0,082	0,227	0,067	1,414	0,071	1,025	0,112
Magreb								
	Intercept	S.E.	b/District	S.E.	b/School	S.E.	b/Sector	S.E.
2000	*-4,143*	*0,153*	*0,865*	*0,23*	*2,911*	*0,165*	*2,444*	*0,283*
2001	*-3,883*	*0,147*	*0,763*	*0,212*	*3,189*	*0,177*	*2,109*	*0,243*
2002	*-3,658*	*0,136*	*0,688*	*0,182*	*2,311*	*0,128*	*1,41*	*0,164*
2003	*-3,347*	*0,12*	*0,529*	*0,143*	*2,071*	*0,113*	*1,565*	*0,177*
2004	-3,136	0,12	0,544	0,142	1,839	0,099	1,279	0,145
2005	-2,999	0,125	0,617	0,156	1,87	0,099	1,268	0,145
2006	-2,956	0,119	0,539	0,14	1,943	0,101	1,278	0,144
2007	-2,904	0,116	0,508	0,133	1,896	0,098	1,203	0,135
Central & South America								
	Intercept	S.E.	b/District	S.E.	b/School	S.E.	b/Sector	S.E.
2000	*-5,134*	*0,13*	*0,399*	*0,161*	*4,624*	*0,275*	*2,506*	*0,308*
2001	*-4,224*	*0,102*	*0,234*	*0,099*	*3,156*	*0,178*	*1,794*	*0,209*
2002	*-3,49*	*0,098*	*0,252*	*0,092*	*2,5*	*0,137*	*1,404*	*0,16*
2003	-3,067	0,092	0,248	0,083	2,045	0,11	1,175	0,132
2004	-2,942	0,087	0,214	0,074	1,929	0,103	1,053	0,119
2005	-2,85	0,084	0,198	0,068	1,835	0,097	1,055	0,118
2006	-2,81	0,086	0,223	0,073	1,813	0,094	0,998	0,112
2007	-2,794	0,086	0,231	0,072	1,662	0,086	0,965	0,108
Not Specific Educational Needs								
	Intercept	S.E.	b/District	S.E.	b/School	S.E.	b/Sector	S.E.
2000	*3,623*	*0,115*	*0,372*	*0,129*	*3,204*	*0,175*	*1,497*	*0,173*
2001	*3,382*	*0,115*	*0,439*	*0,131*	*2,38*	*0,131*	*1,165*	*0,135*
2002	3,013	0,109	0,36	0,117	2,626	0,141	0,987	0,113
2003	2,865	0,113	0,415	0,125	2,495	0,133	0,879	0,1
2004	2,683	0,121	0,526	0,146	2,36	0,124	1,112	0,125
2005	2,509	0,122	0,559	0,147	2,089	0,109	0,748	0,085
2006	2,433	0,123	0,59	0,15	1,914	0,098	0,788	0,089
2007	2,524	0,126	0,618	0,159	2,181	0,111	0,952	0,107

**Data in italics refer to years with less than 3% of the minority group*

Model 2:

$$\log it(\pi_{ij}) = \beta_1 + \beta_2 + v_{1j} + v_{2j} + u_{1ij} + u_{2ij}$$

$$p_{hij} \sim bin(n_{hij}, \pi_{hij})[h = 1,2]$$

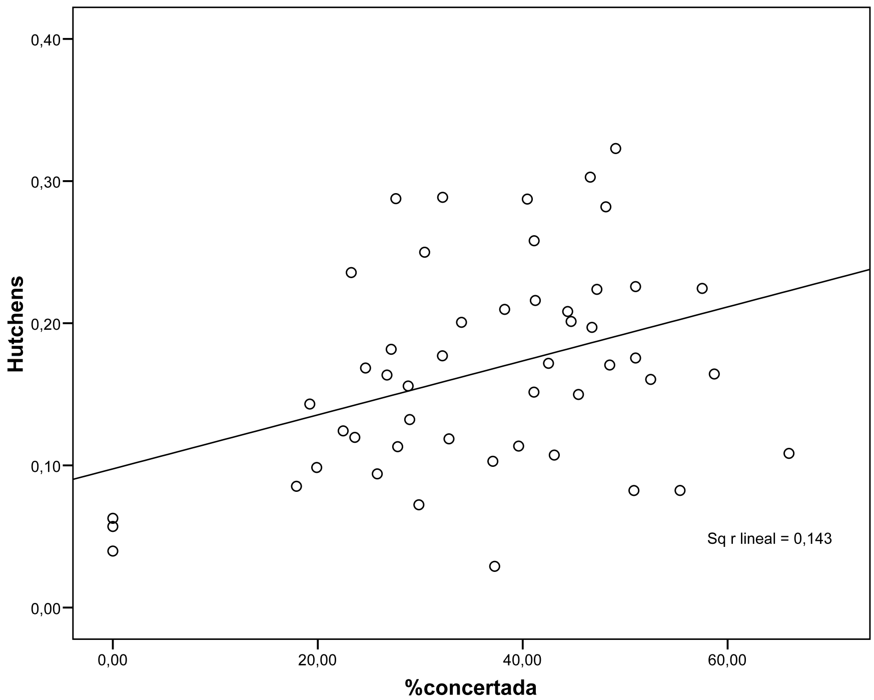
$$\begin{pmatrix} v_1 \\ v_2 \end{pmatrix} \sim N\begin{pmatrix} \sigma^2_{v1} & \\ \sigma_{v12} & \sigma^2_{v2} \end{pmatrix}$$

$$\begin{pmatrix} u_1 \\ u_2 \end{pmatrix} \sim N\begin{pmatrix} \sigma^2_{u1} & \\ \sigma_{u12} & \sigma^2_{u2} \end{pmatrix}$$

Table 3. Variance estimates (& standard errors) simultaneously for the first and last year.

	Spain		Magreb		CSAmerica		NotSEN	
1st year	2001		2004		2003		2002	
last year	2007		2007		2007		2007	
Fixed	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.
Intercept 1st year	3,067	0,1	3,136	0,12	3,074	0,09	3,036	0,11
Intercept last year	1,693	0,08	2,872	0,12	-2,79	0,08	2,512	0,13
Random								
School variance 1st	2,131	0,11	1,8	0,09	1,978	0,10	2,682	0,14
School variance last	1,409	0,07	1,875	0,09	1,654	0,08	2,149	0,10
School covariance	1,218	0,77	1,746	0,09	1,686	0,08	1,419	0,10
District variance 1st	0,315	0,09	0,654	0,16	0,258	0,08	0,428	0,12
District variance last	0,253	0,07	0,595	0,14	0,236	0,07	0,669	0,16
District covariance	0,247	0,07	0,614	0,15	0,224	0,07	0,442	0,10
School variance, difference between 1st and last year (Chi Square Test, 1df)								
	47,9	p<,001	1,8	p>,010	26,3	p<,001	12,66	p<,001

Graph 2. Between school segregation (H) of foreign born pupils by proportion of enrolments in private-dependent schools (*concertada*) in Catalan municipalities. 2006 (n=50)



Source: Valiente (2008).

Table 4. Descriptive statistics by type of zonification. 2006

	A (11)			B (10)			C (13)			D (15)		
	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
N_pupils	3585,3636	2141	5864	3730,9	2186	8065	5388,4615	2179	17589	9130	2736	19000
N_schools	11,45	7	17	9,9	5	17	16,69	7	50	27,07	7	58
Prop_Spain	0,8437	0,5	0,92	0,8875	0,73	0,95	0,8753	0,74	0,96	0,864	0,78	0,95
Prop_Private	0,3885	0,17	0,66	0,3366	0,19	0,52	0,3611	0,22	0,58	0,4088	0,19	0,58
Residential Segregation (H)	0,077536818	0,031984	0,137613	0,0450306	0,01872	0,10045	0,061773923	0,014299	0,104782	0,0694724	0,015121	0,153521

*One district of the sample had not specified response for type of zonification in 2006, so n=49.

Table 5. School segregation of Spanish/NotSpanish pupils by type of zonfication . 2006

	Estimate	S.E.
Fixed		
Intercept Type A	1,97	0,33
Intercept Type B	2,47	0,3
Intercept Type C	2,41	0,25
Intercept Type D	2,16	0,11
Random		
School level variance, Type A	2,01	0,31
School level variance, Type B	1,05	0,21
School level variance, Type C	2,91	0,33
School level variance, Type D	2,2	0,18
District level variance, Type A	0,98	0,51
District level variance, Type B	0,74	0,4
District level variance, Type C	0,55	0,31
District level variance, Type D	0,06	0,06
Joint Chi Square Test (1df)		
School level variance, difference between A_B	6,84	p>,005
School level variance, difference between A_C	4,05	p>,010
School level variance, difference between A_D	0,29	p>,010
School level variance, difference between B_C	23,27	P<,001
School level variance, difference between B_D	17,65	P<,001
School level variance, difference between C_D	3,39	p>,010