

Does Sex affect Intergenerational Education Transmission in the Spanish Roma Population?

Rosa Aísa, raisa@unizar.es, Universidad de Zaragoza, Gran Vía 2, 50005 Zaragoza
<https://orcid.org/0000-0003-4368-2294>

Corresponding author: Gemma Larramona, gemmalar@unizar.es, Universidad de Zaragoza, Gran Vía 2, 50005 Zaragoza <https://orcid.org/0000-0001-5858-4975>

Abstract

The Spanish Roma population have shown strong group cohesion and have maintained distinctive characteristics for more than five hundred years in Spain. However, this cohesion does not guarantee the homogeneity of the group. The aim of this paper is to determine the diverse effects of the transmission of education to children by parents in all the subgroups of the Spanish Roma population. We analyze the outcome of gender roles for both parents as education transmitters and the recipients (their offspring) while allowing for the heterogeneity in the Spanish Roma population. Our analysis reveals the existence of a clear influence of the parents' education level, with mothers being more influential than fathers. We also find disparities in education-level attained, with females receiving less. This analysis should help to identify the most successful policies to increase the education level of the Spanish Roma population.

Keywords: Spanish Roma population; level of education reached; intergenerational transmission, gender gap.

1. Introduction

Most of the literature on the topic finds that more educated parents have more educated offspring, (see Holmlund., 2011) but there is no consensus on whether the effect is different between mothers and fathers. Behrman and Rosenzweig (2002) conclude that raising women's education may lower the education level of the next generation. However, Antonovics and Goldberger (2005) remark on the problems of selection in the data from which these conclusions were drawn. Across the literature, answers about the effect of paternal and maternal education levels on offspring are mixed. In Sweden, Björklund et al., (2006) found similar effects for mothers and fathers with mothers slightly more influential. Donga et al., (2019) discovered that paternal education had a greater effect in rural China, when considering different models for paternal and maternal education. This result is the most common outcome; a strong positive paternal effect was found usually with a smaller or negligible maternal effect. However, Pronzato (2012) concluded that results concerning the effect of mother's education are very sensitive to sample selection; that is, the effect of the paternal and maternal education on their offspring depends on the population selected.

The Roma population is Europe's largest ethnic minority (between 1.2 and 1.5% of the Spanish population depending on the methodology used to estimate, approximately, (Hernández-Pedreño, 2019). However, they still face severe poverty and deep social exclusion. These problems affect their access to quality education, which can determine their integration in the labor market and their income, see Morgan and David (1963). In Spain, the Compulsory Education Act was established in August 1970, and henceforth every child has been required to complete school at least until the age of 14. In 1990, this was increased to 16 years. However, Fundación Secretariado Gitano notes that, although the enrolment of Spanish Roma children in primary school is practically 100%, a serious deficit still exists in compulsory secondary education and post compulsory studies. At 15 years old, 86.3% of Roma students are enrolled and at 16 this figure drops to 55.5%, both data represent greater than 90% of the whole population. Furthermore, FRA (2016) shows that Spanish Roma children not attending school in 2010-2011 numbered 6%. This percentage is greater than in Hungary (5%) although lower than in Bulgaria, the Czech Republic, France, Greece, Italy, Poland, Portugal, Romania and Slovakia for their Roma populations.

The Spanish Roma population's differences make necessary a differentiated study. To our knowledge, there are no papers considering the different effects of intergenerational education transmission in the Spanish Roma population.

Section 2 presents a literature review concerning the Spanish Roma population, while Section 3 briefly explains the database used in the article. In the remaining sections, we present some stylized facts in section 4 and the results of the estimation models in section 5. Finally, section 6 concludes with the main findings and discusses some policies.

2. Spanish Roma Population education

The FOESSA 2018 report does not show a favourable trend in the Spanish Roma population compared to 2013. Although the percentage of illiterate Roma individuals is decreasing and those with higher education is increasing, the proportion of those who have not completed compulsory Secondary Education is extremely high. Regarding sex, ethnic differences or gaps are more pronounced at the extremes of the educational levels. In the compulsory Secondary Education level, men and women, regardless of ethnicity, present values between 22-28%. However, at levels below compulsory Secondary Education, the gap between Roma and non-Roma men is very high, with 65.1% of Roma men compared to 19.5% of non-Roma men. The difference for women is significantly lower. Considering tertiary levels of education, the distances are also very large by ethnicity and gender, with the gap being greater for men.

Behind these data are the higher levels of failure and school dropout. This report concludes that the Roma respondents, who were in education but stopped before the age of 16 are 72% male and 83% female. The report explains that this higher school absenteeism is caused by the lower involvement of parents, who have low educational levels, by the low expectations of teachers for this student population, the lower participation in extracurricular activities, the limited involvement of Roma institutions in this area, the limited functionality that the community assigns to studies, given the expected low employability resulting from perceived anti-Roma attitudes or a combination of these factors.

Márquez M et al. (2017) note the early drop-out rates in secondary education, especially for women, which is also the conclusion of studies providing average data of Roma in eleven Member States, see FRA (2016). However, as Klesment, and Bavel (2017) remark, this gender gap has reversed in many countries although historically men attained more education than women. We need to know if this has been the case in the Spanish Roma population because it has been shown that education is a prophylactic against social exclusion, see Hernández Pedreño (2010).

Abajo and Carrasco (2004) found differences between men and women, while young females perceived academic continuity as connected to the broader emancipation of both Roma men and women, their male counterparts did not share this perspective. For young Roma men, advancement in education meant delaying marriage and confronting accusations of neglecting anticipated family responsibilities within the ethnic community. Conversely, for young Roma women, achieving and maintaining educational progress presented a different set of challenges.

Beremenyui and Carrasco (2017) highlight the importance of social capital in education including several factors on this concept: family support, moral values, motivation, upbringing and so on. They conclude that from a social capital perspective, the parents' and wider family's most active roles must be defined as supportive or protective agents against withdrawal from education. Roma parents with academic aspirations for their children often provide them with cultural capital elements unavailable at home. Apart from family and teachers, they also identified a wide range of non-school-based institutional agents in Roma youth's personal stories that may trigger life-altering changes: from a trade union activist to a domestic cleaner mother's middle class employer, an NGO mentor or a father's politically active colleagues.

The literature review has established variances in educational achievements between men and women, emphasizing the influence of various actors within social capital. This study specifically aims to assess the impact of the family role on the education of Roma children. The rationale behind this focus lies in the disparities in the effect observed across different populations, as indicated by existing literature. Additionally, the lack of measurement for the Spanish Roma population, whose data has become recently available, underscores the significance of exploring this aspect. The first aim of this paper is to study the effect of parental education on the education level reached by their children considering that the Spanish Roma population could be a non-homogeneous group and

the different roles of father and mother. The second objective of the paper is to demonstrate if there is a gender gap in the Spanish Roma population.

3. Database

Spanish laws covering the protection of data¹ prohibit the incorporation of ethnic variables in the census, and knowledge about their social reality is very recent. From the beginning of the 21st century, various surveys and monographic studies on the social situation of the Roma people began to be conducted, especially in the areas of employment, health, and education, with the majority of them being promoted by the intercultural, social non-profit organization Fundación Secretariado Gitano² (FSG). In particular, reports were produced from the surveys of 2007 and 2013 and 2018. This last database has been used in this paper. The methodology to identify the population based on its ethnic origin has changed in the 2018 survey, which applies the criterion of self-identification, compared to previous waves in which the option of hetero-identification was followed. The main limitations of the configuration of the sample are that population can have false auto perception and that it over-represents the most disadvantaged population groups. This database considers the labor situation of the Spanish Roma population and comprises, apart from income and education, other demographic, sociological, and economic information. The Spanish Roma Population Survey (SRPS) survey is based on the same indicators and methodology as Spain's Economically Active Population Survey (EAPS). The survey also includes some specific questions about reasons of the Roma population for leaving education, although it does not include racism or bullying among them, which is a limitation of survey. The sample size is 1,492 interviews of Spanish Roma residents. The field work comprised a single interview per household, incorporating questions for all members of the household.

4. Some stylized facts

Despite the fact that regulations have been the same for the whole Spanish population, and that education is free or complimented by a grant system that does not demand extra payments from a family³, we observe different patterns between Roma and the overall population. We have considered the entire sample of the Spanish Roma population in the

descriptive statistics. Table 1 presents percentages of the population over 16 years old in the different levels of education reached by sex. Figures show a lower level of education for the Roma population and more differences by sex. Salinas (2009) showed that across Spain in 2004-2005, only 200 university students were Roma from a population of almost 1.5 million. If their percentage were not underrepresented, we would expect to see almost 30,000.

[Table 1 about here]

However, Table 1 includes those older than 48 years old in 2018, born before Spanish compulsory education. If we consider only those under 49 years old in the Roma population, the illiterate percentage falls to 1.6%, and those without school but with writing and reading abilities to 1.9%, and those with incomplete primary education to 17.8%.

Roma culture has the special characteristic of survival despite being a minority in most societies, and of key importance is their cultural focus on the family institution. As has been revealed in the literature review, there are many articles that measure the importance of parents' education in children's education. Among Spanish Roma populations this education is not very high and the mean years of qualification reached are 14% greater for males than for females. Table 2 presents the percentage of children that reach an equal level of education to their parents and we can see that the children of illiterate mothers do not leave the category more than 23% of the time, and 27% of the time in the case of illiterate fathers. However, children with parents that have writing and reading abilities are much more likely to get more education. Mothers appear more influential here than fathers. This trend holds also for Incomplete and Full Primary education, although by a decreasing percentage the higher the education level is.

[Table 2 about here]

Nevertheless, the motivation and the impulse to study is not only enhanced by parents or institutions (proxied by regulations), an intrinsic motivation is necessary to successfully complete an education level at primary, secondary or tertiary. Table 3 presents the reasons to reach every education level.

The illiterate Roma population claim sibling responsibilities as a reason for their status, while the other categories, except tertiary education (who reach the wanted level), show as main motivation the desire to work, although boredom with study is prominent in importance for those with incomplete secondary and full primary. Incomplete primary education claims marriage as the main impediment to education for almost 19% of respondents.

[Table 3 about here]

This last finding makes us to consider another differentiated characteristic of Roma population, that is the early age of marriage.

Figure 1 shows the age of marriage by sex and shows that most Roma are married before the age of 18, skewing younger in the case of females.

[Figure 1 about here]

Family structure and family economic conditions are also key points that facilitate education. For the Spanish Roma population sample, in families formed of more than six members, there are no people that have reached tertiary studies and less than a 10% get the Grade Vocational Training (Middle or Superior).

The economic conditions seem to also affect the education level reached as Figure 2 displays. The concentration of the population in Full secondary and higher is greater for those Spanish Roma families with a good economic situation.

[Figure 2 about here]

In order to isolate the effect of gender and parents' education on the children's education level reached we are going to develop a regression model. As it would be a strong assumption to consider that all the Spanish Roma population are homogeneous, the possibility of unobserved subpopulations is considered by estimating the finite mixture models.

5. Estimation model: Finite Mixture Model

We have considered Poisson regression because our endogenous variable is a non-negative count variable. This count variable is the transformation of the categorical variable of education reached. The transformation of the variable assigns 0 years to Illiterate, 2 years to no school but writing a reading abilities, 4 years to Incomplete Primary, 6 to Full primary, 8 to Incomplete secondary, 10 to Full Secondary, 9 to Middle Grade Vocational Training, 12 to Superior Grade, 13 to Conservatory 10 years, and 15 to University. These cardinal numbers reflect the median number of years required to attain the educational level or a mean between the inferior and superior category when the upper level is not reached.

A finite mixture model is used to consider the possibility of latent subgroups in the Spanish Roma population with different effects in each of them. Although the Spanish Roma population have shown strong group cohesion and have maintained distinctive characteristics in Spain, this cohesion does not guarantee the homogeneity of the group. Therefore, a methodology that considers the possibility of different effects between groups should be used. This technique investigates the possibilities of several groups with different behaviors. In order to choose the right number of subgroups, we have compared the Akaike's and Bayesian information criterion of one, two and three latent subgroups, and the best model has two unobserved subgroups, as Table 4 indicates. In the two subgroups, the first one shows lower education levels than the second. This model is used to model unobserved heterogeneity through the classification of observations and the adjustment of clusters. The unobserved subpopulations are called classes, and class membership probability will be predicted for every observation.

The model is only for the non-immigrant Roma population, which allows a uniform education system, and includes only the population over 22 years old, to give each individual the opportunity to finish all the education levels. Age, reasons to leave education, number of family members and a categorical variable which classifies family by income are included as control variables. As Abajo and Carrasco (2004) have remarked on the effect of marriage, we have considered the marriage age, but it was not significant and decreased the goodness-of-fit of the model, and has thus been eliminated from the analysis.

[Table 4 about here]

The model we have chosen has two subgroups: the first one with less mean years of education, its confidence interval is from 2.5 years to 4.6, while the second subgroup includes those around 6 years of education in a 95% confidence interval, as Table 5 displays.

[Table 5 about here]

Results of the coefficients, the significance and the effect on the endogenous variable are presented in Table 6 for the two subgroups considered. The effect of parental education and sex in every subgroup is different, with the latent class probability 16% for subgroup 1 and 84% for subgroup 2.

Subgroup 1 does not show an effect for father's education on the qualification reached by children while the increase of a year of education in mother increases by 30% the number of years of education of their children. Subgroup 2 present a more homogeneous effect between parental education, both present a positive and significant effect, but it's less powerful due to the fact that the education that suffers the increase is greater. A year increase in the education of the father increases the education of children by 1.5%, and this value is more than 3% when the same is considered of mothers. The most plausible explanation is the role of mothers in Roma culture; they are the caregivers of children and

their influence on their progenies education is greater. Another relevant fact is the negative effect of being women in subgroup 2 for those with more education. The explanation is the low additional value given to greater qualifications when we consider the role played by women in Roma societies.

The control variables have the expected significance or do not have influence. More age decreases education, showing that policies to enhance the education of Roma in Spain have had positive results. Those who were bored at and by school do not present any effect over the education level reached, but those that consider education useless decrease (by 73%) the years of education reached, but only for the first group. The number of family members does not have any effect on the education level reached. Finally, the economic characteristics of family has the expected significance for subgroup 2, that is, the more income, the greater education level reached, while for subgroup 1 the effect is not monotonous, indicating the unobserved characteristics that define this group.

[Table 6 about here]

6. Conclusion

Literature indicates that the effect of a parent's education on their children depends on the sample selected. Conclusions are very different when Swedish or Chinese populations are analyzed. To our knowledge, there are no articles that have revised this effect in the Spanish Roma population. This population is unique in two aspects: The Spanish education system, and the Roma population culture, the main minority in Spain.

Descriptive statistics show the persistence of lower education levels for Roma populations in Spain, more so for females, and the persistence of illiteracy between children with illiterate parents, around 25%, and with fathers more influential here than mothers.

Several motivations could explain these data: subjects need to work (out of home or in children care), boredom with education and early marriage. Moreover, there are family circumstances (size and economic conditions) that also affect the education level reached.

The regression models qualify the stylized facts presented. A finite mixture model is used to consider the possibility of latent subgroups in the Spanish Roma population with different effects in each of them. Two subgroups emerge from the data, the first one with lower education levels than the second. Subgroup 1 do not present an effect of paternal education on the qualification reached by children, while the increase of a year of education of the mother increases the education level of descendants more than in the second subgroup. Subgroup 2 presents a more homogeneous effect between parental education, although the effect is greater for mothers. Another relevant fact is the negative effect of being a woman in subgroup 2.

The greatest effect on offspring education levels are maternal qualifications, and the negative effect of being female on reaching higher education levels produces a vicious cycle, because mothers are less educated and their education level has more influence on their children's attainment.

Therefore, the analysis indicates two main points that should condition future policies: the low education level and the intergenerational education transmission in Roma population. An increase in the education level today will raise the education level of the next generation. Thus, policies should take into account the long-term effects for the accumulation of learning in each household because low qualification households can fall into a poverty trap. Furthermore, policies should also consider the female gap, whose influence in the children education as a whole is greater.

In addition, policy maker should take into account that compulsory education has been determined by the dominant non-Roma population, without consulting Roma opinions on what affects the level of education reached by this population. The Roma population needs to see education as a space for the development of community-based knowledge, equality and the recognition of diversity as an asset. Laws should favor the development of emancipated personal and collective identities and avoid colonialist logic.

Table 1. Education in overall and Roma population over 16 years.

	Overall Population		Roma Population	
	Man	Women	Man	Women
Illiterate	1.48	3.00	5.58	13.81
No school, can read or write	7.11	9.52	25.80	27.36
Incomplete Primary				
Full Primary	19.23	20.69	49.23	43.35
Incomplete Secondary				
Full Secondary	47.94	42.49	15.34	13.17
Middle Grade Vocational Training				
Superior Grade Vocational Training	24.24	24.31	4.05	2.33
Other tertiary, conservatory 10 years				
University				

Source. INE 2010 and SRPS 2018.

Table 2. Comparison with Parents Education.

	Equal Father	Greater Father	Equal Mother	Greater Mother
Illiterate	26.99	73.01	23.32	76.68
No school, can read or write	4.27	93.84	3.52	95.31
Incomplete Primary	13.56	85.59	13.33	86.38
Full Primary	23.16	72.63	18.89	76.67
Incomplete Secondary	50.00	40.00	51.61	38.71
Full Secondary	30.43	21.74	37.04	29.63
Middle Grade Vocational Training	0.00	50.00	0.00	100.00
Superior Grade Vocational Training	0.00	0.00	0.00	33.33
Other tertiary, conservatory 10 years	0.00	20.00	0.00	0.00

Source. SRPS 2018.

Table 3. Motivation by education level reached, 2018.

	Illiterate	No school, can read or write	Incompleted Primary	Full Primary	Incompleted Secondary	Full Secondary	Middle Grade Vocational Training	Superior Grade Vocational Training	Other tertiary, conservator y 10 years	University
I have reached the level I wanted	0.00	0.00	0.66	2.78	1.78	15.76	40.00	30.77	80.00	85.71
I wanted to work	10.49	20.00	20.39	31.02	31.85	38.04	40.00	61.54	20.00	14.29
I got married	13.29	11.11	18.75	12.04	14.25	12.50	20.00	3.85	0.00	0.00
My parents want me to work	10.49	14.44	16.12	10.65	4.68	3.26	0.00	0.00	0.00	0.00
I have to take care of siblings	24.48	15.56	12.83	11.11	7.80	5.98	0.00	0.00	0.00	0.00
I have to take care of my parents	8.39	7.78	3.62	0.93	0.45	1.09	0.00	0.00	0.00	0.00
I cannot pay for it	0.70	1.11	1.32	0.46	0.45	0.54	0.00	0.00	0.00	0.00
I do not like studying	2.80	4.44	16.78	21.76	27.39	14.67	0.00	3.85	0.00	0.00
I don't think education useful	2.10	2.22	2.96	2.31	2.45	1.63	0.00	0.00	0.00	0.00
Ohters	8.39	5.56	3.95	5.56	7.35	3.80	0.00	0.00	0.00	0.00
I do not know	18.88	17.78	2.63	1.39	1.56	2.72	0.00	0.00	0.00	0.00

Source. SRPS 2018.

Table 4. Akaike's and Bayesian information criterion of the models with 1, 2 and 3 classes

Model	Obs	Ll (model)	df	AIC	BIC
Fmm 1 class	1,072	-2602.59	15	5235.179	5309.838
Fmm 2 class	1,072	-2448.247	31	4958.493	5112.789
Fmm 3 class	1,072	-2439.79	46	4971.579	5200.534

Table 5. Latent class marginal mean

Delta-method

	Margin	Std. Err.	z	P>z	[95% Conf.	Interval]
Subgroup 1	3.571247	0.5304673	6.73	0	2.53155	4.610943
Subgroup 2	6.178457	0.0835432	73.96	0	6.014715	6.342198

Table 6. Finite mixture model explaining years of education for Spanish Roma population with two latent subgroups, 2018.

	Coef. (group1)	P>z	% of change		Coef.(group 2)	P>z	% of change	
Paternal education	-0.0084065	0.935	-0.84		0.0144983	0.017	1.46	***
Maternal education	0.2628609	0.07	30.06	*	0.0318342	0	3.23	***
Age	-0.1375023	0	-12.85	***	-0.0128467	0	-1.28	***
Sex								
Female	-0.3237193	0.321	-27.65		-0.0582077	0.021	-5.65	**
Bored in education	-0.0853639	0.787	-8.18		-0.0400398	0.208	-3.92	
Education is useless	-1.33734	0	-73.75	***	-0.0675312	0.403	-6.53	
Number of family members	0.00601	0.963	0.60		-0.0082274	0.279	-0.82	
Type of family income (ref. marginal)								
Very poor	-0.9288214	0.038	-60.50	**	0.0953801	0.067	10.01	*
Poor	-0.8260858	0.112	-56.22		0.1581562	0.001	17.13	***
Managing	-0.4576976	0.209	-36.73		0.206192	0	22.90	***
Comfortable living	-1.150394	0	-68.35	***	0.3056091	0	35.75	***
Wealthy	0.9642584	0.008	162.28	***	0.5096867	0	66.48	***
Don't know	-0.7353706	0.01	-52.07	**	0.0001593	0.999	0.02	
Didn't answer	1.466457	0	333.39	***	0.1300985	0.154	13.89	
_cons	5.944897	0		***	2.191362	0		***
Latent class marginal prob	0.1633131				0.8366869			
Finite mixture model	Number of obs = 1072							
Log pseudolikelihood = -2448.2466								

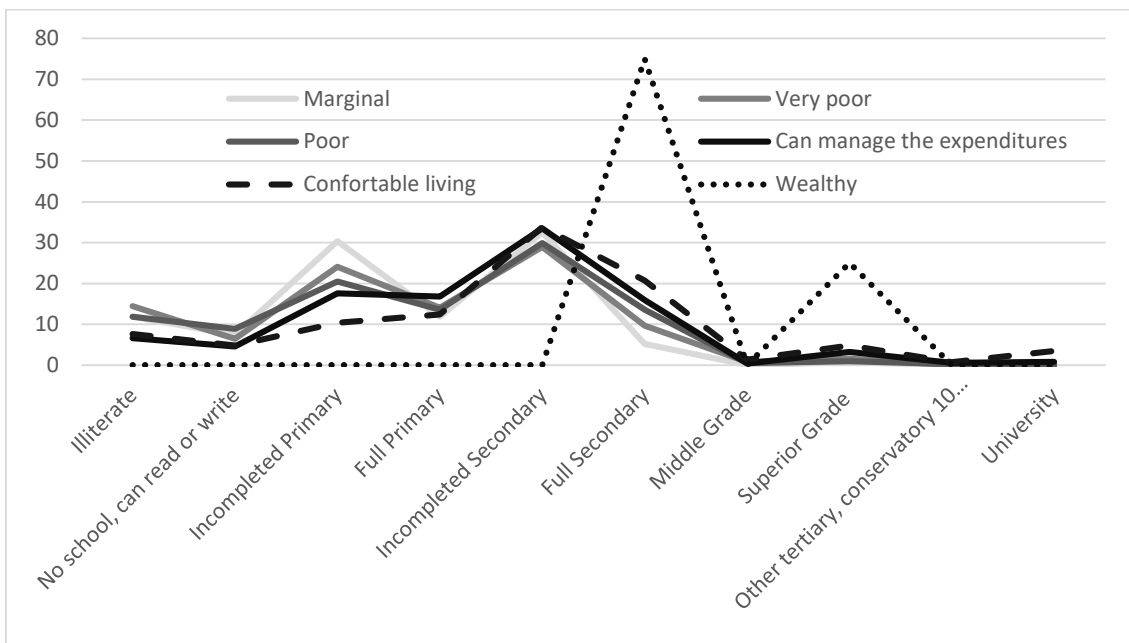
*** z<0.01, ** z<0.05, *z>0.1

Figure 1. Age of marriage by sex, 2018.



Source. SRPS 2018.

Figure 2. Percentage of every education level reached by economic conditions, 2018.



Source. SRPS 2018.

Statements and declarations

No conflicts of interest. All authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript. The authors did not receive support from any organization for the submitted work.

Research involve Human participants that give the informed consent to the foundation that conducted the survey.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Notes

1. Ley Orgánica 15/1999, de 13 de diciembre de Protección de Datos de Carácter Personal. See Appendix III of the report "Ethnic statistics and data protection in the Council of Europe countries" elaborated by Simon (2007)
2. For more details, [Fundación Secretariado Gitano \(gitanos.org\)](http://gitanos.org)
3. There exists an opportunity cost of education that we assume is similar for all the Spanish population.

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