

**DO POOR HOUSING CONDITIONS AFFECT EDUCATIONAL ATTAINMENT?
AN ANALYSIS OF THE IMPACT OF POOR HOUSING ON EDUCATIONAL ACHIEVEMENT.
A STUDY BASED IN BUENOS AIRES, ARGENTINA.**

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By

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ABSTRACT

For several decades there have been important discussions about how to improve educational attainment. Most of those discussions have focused their attention on in-school factors such as improving the quality of the teachers, reducing class sizes, and improving schools' facilities. Recent research has shown that there are many out-of-school factors, such as family background, neighborhood characteristics or peer composition which can have significant effects on educational attainment. However, the effects of poor housing conditions on educational Achievement have received little attention. This study analyzes the effect that overcrowded housing has on educational attainment and attendance. Using a linear probability model, we find that, in the metropolitan Buenos Aires area in Argentina there is a strong negative relationship between living in a house with more than two people and the probability of completing secondary education and high school attendance. The findings, together with the fact that in Argentina 20% of households lack adequate housing,

support the hypothesis that there is a strong need to include housing conditions in the discussion of how to improve human capital and get people out of the poverty trap.

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I. Introduction

Human capital is critical for a country's competitiveness. Developed countries have been working on improving their human capital through better education for a long time, while developing countries are lagging well behind in this field. For several decades there have been significant discussions about how to improve educational achievement. It has been said that better educational attainment can be obtained through in-school factors (better teachers, better schools, pedagogical improvements, etc.), or out-of-school factors (such as peer effect, neighborhood, housing or family characteristics). Recent research has shown that there are many out-of-school factors, such as family background, neighborhood characteristics or peer composition that can have substantial effects on educational attainment. However, little attention was put on the effects that inferior housing conditions can have on educational outcomes. This thesis sets out to analyze the effects that some housing characteristics can have on educational outcomes in the context of the urban areas of Buenos Aires, Argentina. The main hypothesis is that there is a statistically significant association between poor quality housing and poor educational attainment.

Scholars' and politicians' lack of attention to the potential effect that inferior housing can have on educational outcomes is particularly disturbing in a country like Argentina where there is an enormous housing deficit. According to the National

Census carried out by the *Instituto Nacional de Estadísticas y Censos* (INDEC) in 2001, 20% of all households lack adequate housing. There have been efforts by the public sector trying to address this issue but many times policymakers responded by means of big housing projects that provided a uniform response to very different kinds of families. It didn't take long to realize that public housing projects were often unable to get people out of the poverty trap.

This study, based on the *Encuesta Permanente de Hogares* (EPH or Permanent Survey of Households) carried out by INDEC, is an attempt to detect the housing characteristics that have stronger relationships with positive educational achievement. These results may shed some light on the current policy discussion which is trying to define those aspects of a shelter that are critical in improving the educational levels of its inhabitants. This analysis acknowledges the difficulties in distinguishing causal relationships from mere associations. It can be hypothesized that it is not the lack of adequate housing that causes the hypothetical detrimental effect on educational attainment but rather unobservable factors that influence both educational outcomes and housing characteristics. As stated by Bart (2002) "research that attempt to ascribe causality to particular housing conditions struggles with the question of how to disentangle the host of variable that may be responsible for observed outcomes. Clearly, it is never possible to isolate the specific housing condition or to fully control

for the characteristics of the occupants.” In econometric terms, the independent variables –i.e. measures of housing quality- would be correlated with the error term. This would lead to biased estimates of the regression coefficients.

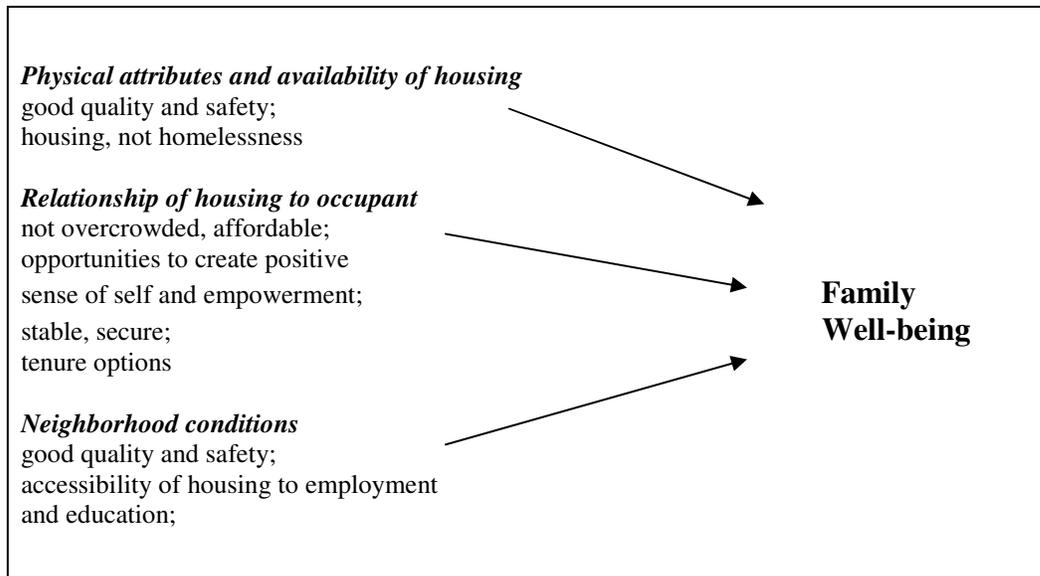
Accounting for observed household characteristics such as income should help to reduce the extent of any bias when estimating the relationship between housing quality and educational outcomes. If we subsequently find evidence that better physical dwelling characteristics are associated with better educational outcomes, policy makers would then have information relevant for deciding where to allocate public resources devoted to improve human capital.

As stated by Goux and Maurin (2003), the purpose of these analyses is to “to understand whether public policies favoring quality housing for low-income families could also serve as a vehicle for improving the performances of their children and equal opportunities at school.”

II. Literature Review

As clearly set out by Bratt in his work called “Housing and Family Well-being,” and quoted by Dumas (2007), there are three main ways in which housing may impact family well-being. Through the physical attributes of the house, through the way in which this relates to its occupants; and thirdly through neighborhood conditions, including quality and safety of the neighborhood in which the house is located (see Figure 1).

Figure 1. Relationship Between Housing and Family Well-being



Source: Bratt, Rachel G. Housing and Family Well-being. *Housing Studies*, Vol. 17, No. 1, page 15, 2001. Also in Dumas, V.A. *Is Housing a Sound Educational Policy? Evidence from Chile*. Georgetown University, 2007.

The first of the factors is the most direct of the three, and relates to the physical attributes of the house. “If housing is... ..inadequate... ..it is difficult, if not impossible, for family life to function smoothly” (Bratt, 2001). The research on this issue has prioritized the implications of housing characteristics on health. Harker (2006) found that, in the UK, “poor housing conditions increase the risk of severe ill-health or disability by up to 25 per cent during childhood and early adulthood.” She also notes that “almost half of all childhood accidents are associated with physical conditions in the home”. This also affects educational achievement since youths with precarious health conditions are more likely to be absent from school more often than youths with better health conditions.

The second implication that housing has on family well-being, as described by Bratt, relates to the fact housing impacts “families differentially depending on the relationship between the size and cost of the unit, the size and income of the family, the family’s perception of their housing and the relative security the housing provides.” As stated by the National Housing Task Force in 1988, a “decent place for a family becomes a platform for dignity and self-respect and a base for hope and improvement.” Schorr addresses this idea in a similar fashion by saying that “the evidence makes it clear that housing affects perception of one’s self, contributes to or relieve stress, and affects health” (1996, quoted by Bratt).

The implications of housing characteristics are not only relevant for family well-being in general but especially for children. Marsh (2000), using longitudinal data, found that past or present poor housing conditions significantly increase the chances of ill health. Also, Harker (2006) stated that “homeless children are more likely to show signs of behavioral problems such as aggression, hyperactivity and impulsivity. Poor housing conditions and overcrowding may also contribute to the emergence of problem behavior.”

The ‘housing effect’ on children has been extensively analyzed with respect to health, but only recently has been studied on its educational consequences. Harkness and Newman (2003) found that homeownership has a positive effect on educational outcomes, measured by years of schooling, chances of attending high school and a negative effect on the probability of being a welfare recipient. Additionally, Ionides (2002) found that homeownership is strongly related to home maintenance and better neighborhood and housing quality.

Neighborhood effects, according to Dietz (2002) are “a social interaction that influences the behavior or socioeconomic outcome of an individual.” This interaction has both a geographic and a time dimension. Currie and Yelowitz (2000) addressed the issue of how participation in public housing projects affects educational attainment. Contrary to popular belief, the authors found that participation in public housing

projects does have significant positive effects on educational outcomes. Currie and Yelowitz, Newman and Harkness (2000) as well as Dumas (2007), suggested that it is neighborhood characteristics (high levels of poverty) that have negative effects on educational outcomes, and not participation in public housing projects per se.. Harker also found that “children in overcrowded homes miss more school for medical reason than other children”. She also stresses the fact that overcrowded houses often lack a suitable place for children to study, influencing student achievement.

One study done in France shows that one in five 15 year olds live in a home with at least two children per bedroom, and more than 60% of these adolescents have been held back in primary or middle school, a proportion that is more than 20 points higher than the average for the same age group. The authors in this study suggest a causal relation between living in an overcrowded home and falling behind at school (Goux, Maurin, 2003).

Some of the explanations on the detrimental effects that overcrowded houses can have relied on the fact that: “Living in an overcrowded space is a source of stress and favors illnesses linked to anxiety. The members of a family living in a crowded space also transmit their infections to one another more easily, weakening their immune systems. Living in an overcrowded space puts people at greater risk to

problems linked to poor ventilation and hygiene conditions, such as poisoning caused by the smoking of one or more family members” (Goux, Maurin, 2003).

The third way in which housing conditions can influence family well-being according to Bratt is through the neighborhood effects. Some studies have shown that children’s educational achievements are strongly correlated with those of their neighbors. The extent to which this is causal is the subject of an extensive literature. An identification problem exists because people with similar characteristics are observed to live in close proximity (Goux, Maurin, 2006). “The problems poor households are generally vulnerable to are amplified through the concentration of poverty in the neighborhood.” (Taylor, Yu, 2009). In this same paper, Taylor and Yu asserted that the “social composition of the school is in fact more important than even the student’s own background, although of course the student’s own socio-economic status is the major factor in determining which school they attend.”

Recently, there have been several studies based on the Moving To Opportunity (MTO) program to investigate neighborhood effects. MTO was a randomized experiment, in which participants were assigned to different kinds of housing assistance by lottery, removing the problem of omitted variables bias (endogeneity) from impact estimates. Based on the MTO program implemented in Baltimore, Ludwig et al. (2001) found that standardized test scores of those who received housing

assistance were higher than those of the control group that didn't receive any housing assistance (Dumas, 2007).

In Argentina there has been growing interest in the out-of-school factors that may affect educational attainment, specifically the housing environment. Most recently, the City of Buenos Aires released research based on the Annual Household Survey of the City of Buenos Aires that focuses on the enrollment of inhabitants in the education system within the City of Buenos Aires. Specifically, one of the sections of the study analyzed how enrollment is associated with the characteristics of the house where students live. In any case this recent interest has not yet translated yet into extensive research and most analysis has relied only on descriptive statistics that do not distinguish the effects of the physical characteristics of the house from other factors that can simultaneously influence educational achievement.

The literature on the relationship between housing conditions and educational achievement is also “plagued by the inability to distinguish causal mechanisms from mere associations” (Levine and Schanzenbach, 2009). This thesis is not an exception to the difficulty in making strong causal inferences about the effects of poor quality housing on educational attainment because of possible omitted variable bias and the potential endogeneity of housing choice with respect to school quality. However, a more precise description of the housing conditions of those students that drop-out of

the system may allow policy makers take note of the problem and the possible association between educational attainment and the lack of adequate housing.

III. Methodology

In this analysis a linear probability model (LPM) is being used to estimate the changes in the following that are associated with poor quality housing conditions: (i) the probability of attending school for a youth between 13 and 17 years old; and, (ii) the probability of having completed a secondary education for the cohort of youths between 18 and 26 years old. Specifically this thesis is going to test whether overcrowding, the location of the house in a slum, close to a dump, or in a flood area, has a statistically significant association with our two dependent variables (school attendance and completed secondary education). In order to account for observed differences between students, we will control for the age of the youth, total family income, ownership status of the house, and education of the parents. Unfortunately, due to limitations of the data set that is being used, it won't be possible to control for all aspects of school quality and peer or neighborhood effects.

$$\text{School Attendance} = f(\text{housing characteristics, age, income quintile}) + u$$

$$\text{Completed Secondary} = f(\text{housing characteristics, age, income quintile}) + u$$

A different and valid dependent variable would have been standardized test scores which would allow for much more variation and detail description of the impicance that our independent variables may have on educational outcomes. Using attendance or completed secondary education ignores the differences within and across

schools in the quality of the education that children are receiving. Unfortunately, due to the lack of standardized test scores in Argentina, this model does not capture the difference between the top and the worst performing graduate in a specific school or the difference between a graduate's affluent private school and poorer public school. This wouldn't be too big of a problem in countries in which there is a strong enforcement of standards and curriculums. In Argentina, however, that is not the case.

Each of the regression models contains four different specifications. The first one only includes age indicator variables. In the second specification model we added income quintile indicator variables. The third model includes both the age and income indicator variables and an indicator variable of whether the household is overcrowded. For this purpose we defined "overcrowded" as having more than 2 people per sleeping room. The fourth specification model includes not only age and income control variables and the "overcrowded" indicator variable but also different housing characteristics. These characteristics include quality of the material used in the house, whether the house is located close to a dump or a slum or in a flood area, and another indicator variable on the ownership status of the house. In the fourth specification model we also included a control variable for the average level of education of the adults living in the household (in the regression model, this variable is coded as "m_ad_comp_sec," see Table 5 and 6 for more information).

This analysis interprets “overcrowded” as a house in which there are more than two people per bedroom. This is also the parameter used by the *Dirección Nacional de Políticas Habitacionales de la Subsecretaría de Desarrollo Urbano y Vivienda* in Argentina. Another alternative would have been to use the conceptualization of an overcrowded house as it was proposed by Harker. Harker understand ‘overcrowded’ conditions where different sexes aged 10 years or over have to share a bedroom; where parents have to share a bedroom with a child or children; where there are more than two children in a bedroom; and where rooms such as kitchens and living rooms are used as bedrooms. This is clearly a more precise definition of what ‘overcrowding’ means but the data used to run the regression does not allow for such a level of detail. In any case, more than two people per bedroom captures a substantial part of the problem. The underlying assumption to study the effect of “overcrowded” houses on educational achievement is that children do better at school if they have adequate space for studying (Goux, Maurin, 2003).

IV. Data Description

This analysis is carried out using the Permanent Household Survey (EPH or *Encuesta Permanente de Hogares*), fourth quarter, year 2006, by INDEC.

The EPH includes information on poverty, inequality, demographics, housing, education and the labor market between 1973 and 2008. The survey went through significant changes in its questionnaire and methodology in 2003. Since 2003, the information is being gathered throughout the year with the results being distributed in each quarter of the year allowing for inter year comparisons.

The EPH covers 31 urban regions and one rural-urban region, covering most of the country. The EPH is a sampling of all the representative population in each of the urban conglomerates, covering 25,000 households per quarter and 100,000 households per year. The survey consists of a fairly exhaustive questionnaire that includes detailed questions about housing conditions, income, occupation, working condition, social insurance and educational attainment. The question about the housing conditions includes information such as the number of people living in the house, the number of rooms and other specific questions about the characteristics of the house: What raw materials were used, if it is a house or an apartment, whether they have public services available –such as water and sewage-, if it has a bathroom and it's characteristics, homeownership, etc. Variables measuring educational status include last year of school

attended, whether they receive or received public or private education, and what is the maximum level of education completed. The survey also includes family income and occupation status of the respondents.

Since there are many important contextual difference between Argentina's main metropolitan area and the rest of the country, the sample is restricted to households located in the Greater Buenos Aires area. In this area, during the last quarter of year 2006, 9,183 persons living in 2,888 households were surveyed. The Greater Buenos Aires Area is an urban conglomerate that includes the city of Buenos Aires, Argentina's capital district, and its suburbs.

From the total sample of 9,183 people that participated in the survey, there are 6,621 that are more than 17 years old. From those, only 50.46% have completed secondary education. However, the most salient aspect of this situation is that only 21.75% of those from the first income quintile completed secondary education compared to 78.16% of those in the fifth quintile.

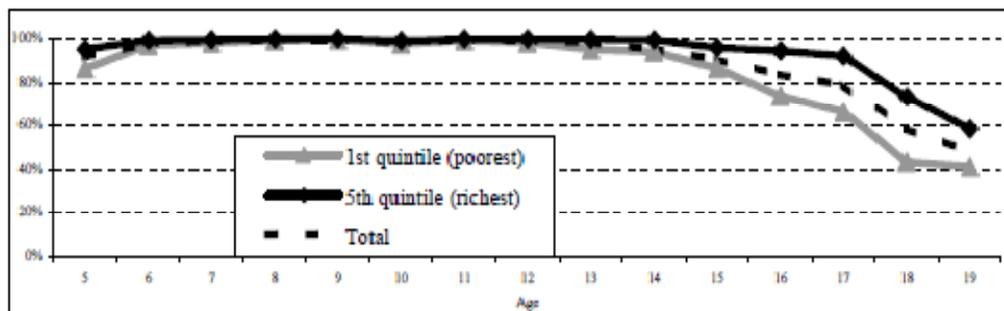
Table 1. Completed Secondary Education by Income Quintile (Age>17)

Completed Secondary	Income Quintile					Total
	1	2	3	4	5	
No	644	639	577	471	240	2,571
	78.25%	70.30%	57.24%	43.69%	21.84%	52.29%
Yes	179	270	431	607	859	2,346
	21.75%	29.70%	42.76%	56.31%	78.16%	47.71%
Total	823	909	1,008	1,078	1,099	4,917

Source: Own based on the EPH, 4th Quarter, 2006.

Another important factor to have in mind when looking at the education system in Argentina is that, irrespective of family income, there is almost universal enrollment up to the age of 13. This has been the case for decades. However, there are important disparities in access and performance in secondary education, especially for the last three years of schooling and for the lowest socioeconomic levels.

Table 2. Percentage of children and adolescents attending school by age and income, 2006



Source: AR-L1038 : Program to Support a Policy on Improving Equity in Education, Inter-American Development Bank (<http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=1823492>)

Not only is access a problem, but the education that young people are receiving is producing very poor results. As shown by the Program for International Student

Assessment (PISA), in 2006 Argentina performed well below the OECD average. In sciences, Argentina obtained 391.2 points compared to the 500 points obtained, on average, by the OECD's countries. In reading the results were very similar: Argentina obtained an average of 374 points compared to the 492 points obtained by the OECD average. In mathematics, Argentina scored 381 points well below the 498 points for the OECD average. As a reference, Chile obtained 438.2 points in sciences, 442 points in reading and 411 points in mathematics.

As stated above, according to the 2001 National Census almost 20% of the households are defined as being inadequate. 40% of these inadequate houses are defined as recuperable precarious houses and a further 33% are defined as recuperable but overcrowded non-precarious houses.

Table 3. Percentage of Households with Inadequate Housing, 2001

Total Households	8,958,122	100.00%
Households With Inadequate Housing	1,770,376	19.80%
Non-recuperable Precarious Houses	267,978	3.00%
Recuperable Precarious Houses	679,730	7.60%
Overcrowded Houses (more than 2 persons per room) in non-precarious houses	589,014	6.60%
Households Suffering Overcrowding (more than one household per house)	233,654	2.60%
Households with Adequate Housing	7,187,746	80.20%

Source: Diagnóstico de la Situación Habitacional Urbana, Dirección Nacional de Políticas Habitacionales de la Subsecretaría de Desarrollo Urbano y Vivienda (<http://www.vivienda.gov.ar/docestadisticas.php>)

Table 4. Relative Importance of Each Housing Deficit Over Total Households With Deficit

Non-recuperable Precarious Houses	15.10%
Recuperable Precarious Houses	38.40%
Overcrowded Houses (more than 2 persons per room) in non-precarious houses	33.30%
Households Suffering Overcrowding (more than one household per house)	13.20%
Households with Inadequate Housing	100.00%

Source: Diagnóstico de la Situación Habitacional Urbana, Dirección Nacional de Políticas Habitacionales de la Subsecretaría de Desarrollo Urbano y Vivienda (<http://www.vivienda.gov.ar/docestadisticas.php>)

These statistics give the reader an idea of not only the overall picture of the education system in Argentina but also the magnitude of the housing deficit. This is why we believe that analyzing the hypothetical effects that housing characteristics can have on educational attainment is a relevant discussion that deserves more attention from politicians and scholars.

V. Results

In this chapter you will find the empirical findings according to the methodology described above. First there are the results of the linear probability model using school attendance as the dependent variable, with its four different specifications. Then, the results of the similar analysis using completed secondary education as the dependent variable will be presented. For reference, the reader will find in Tables 5 and 6 the summary tables containing the relevant results.

As shown in Table 5, in the four different specifications, as age goes up, school attendance goes down. A 17 year old is around 17% less likely to attend school than a 13 year old, in the four different models. Age coefficients remain pretty consistent along the four different specifications, being highly statistically significant in most cases except for the difference between 13 and 14 year olds. This relationship is reasonable since as young people get older they are less likely to remain in school as they move into the work force or just “drop-out”.

Likewise, there is a strong positive relationship between school attendance and income in the three different models in which income was included as a control variable. Being in the fourth quintile compared to the base line (first, or lowest, quintile) increases the likelihood of school attendance by approximately 10%. These results are consistent with the information provided in Table 2 in which there is a positive correlation between income and school attendance.

The most interesting finding of the regression results is the strong, negative and highly statistically significant association between school attendance and overcrowded houses (more than two people per bedroom). Living in an overcrowded house decreases on average between 11% and 13% the chances of remaining in school. This is a similar effect to that of the difference in likelihood in attending classes between 13 year olds compared to 16 year olds. As mentioned above, the estimated coefficient is significant even at the 1% confidence level. The coefficients on overcrowded houses do not suffer significant changes after including all the other housing variables (location in a slum, in a dump, or in a flood area; and the ownership status of the house).

It is also worth to mentioning the lack of statistical significance of all the other variables included in the last specification. These variables are not even jointly statistically significant. Even more, the third and four specifications with the full set of variable increase almost nothing the explanatory power of the regression model. Adjusted R^2 went from 0.11 in the third model to 0.112 in the last one. In any case, the model explains 11% of the variation in school attendance, quite an interesting percentage.

The second regression was done using completed secondary education as the dependent variable. This thesis attempts to analyze youths between 18 and 26 years of

age, using 18 year olds as the base line. The reason for restricting the sample to this age cohort is because, for the purpose of our study, it doesn't make any sense to look at whether somebody in his mid forties completed secondary education or not and the characteristics of the house in which he is living. It is very likely that such a person will be living in a different house to the one he was living when he decided to remain in school or not. This thesis attempts to associate the characteristics of the house in which these people were living at the time they decided to keep going to school and finish secondary education or not. It is important to have in mind that contrary to what would be the case for the United States, in countries like Argentina it is very likely that somebody in his mid twenties is still living with their parents. This is why in these cases it does make sense to look at the house in which they are living.

As expected, the probability of completing secondary education increases as age goes up. However, there are not many differences between people of 20 years of age and those of 25 years of age (only 1.1% more likely to finish secondary education). There is an enormous difference between those with 18 years of age and those of 20 years of age. 20 year olds are 36.8% more likely to finish school than 18 year olds. In the four different specifications of the model, age coefficients remain highly statistically significant without substantial differences among them (no more than 4 percentage points of difference).

Similarly to what we were able to detect in the model using school attendance, there is a strong positive association between income quintile and completion of secondary education. However, there are important differences among the three different models in which income quintile was included. This difference is especially important in the last model that includes age, income, overcrowding, and all the other housing characteristics.

When we include “overcrowded” as an independent variable there is a substantial increase in the explanatory power of the regression model (Adjusted R^2 went up from 0.11 to 0.18). The coefficient of the “overcrowded” variable is also important. Someone between 18 and 26 years of age living in a house with more than two people per bedroom has on average 33.2% less of a chance of completing secondary education (this coefficient estimate is highly statistically significant), compared to someone who lives in a house with two or less than two people per bedroom. After including the variables on whether youth have water availability inside or outside the house, whether the house is located close to a dump, a slum or in a flood area, and whether the members of the households are owners of the house or not, the coefficient for the overcrowding variable drops substantially but remains statistically significant. In this last model, living in an overcrowded house is associated with 16.4% less chances of having completed the secondary education. As expected, in the full

model living in a slum is associated with 17.6% less of a chance of completing secondary education.

The explanatory power of the four different specifications is particularly high. The Adjusted R^2 from the model that includes just age as an independent variable is 7% compared to more than 25% in for the model with age, income, overcrowding and the other housing characteristics.

Looking at the data on its entirety, the results of this research show a statistically significant detrimental effect on both school attendance and secondary school completion for people living in a house with more than two people per bedroom. The empirical evidence provides consistent support for the argument that, if we want to improve school performance we must also address the housing deficit. In particular the issue of overcrowded housing needs to be part of the discussion.

Table 5. Effect of Overcrowding and Housing Characteristics on School Attendance

	Reg 1	Reg 2	Reg 3	Reg 4
Age 14	-0.012 (0.016)	-0.013 (0.017)	-0.015 (0.017)	-0.013 (0.017)
Age 15	-0.067*** (0.024)	-0.063*** (0.024)	-0.071*** (0.025)	-0.069*** (0.026)
Age 16	-0.135*** (0.030)	-0.133*** (0.030)	-0.140*** (0.029)	-0.138*** (0.029)
Age 17	-0.175*** (0.035)	-0.174*** (0.035)	-0.178*** (0.034)	-0.174*** (0.035)
Quintile2		0.044 (0.032)	0.057* (0.033)	0.063* (0.034)
Quintile3		-0.009 (0.034)	0.002 (0.032)	0.005 (0.033)
Quintile4		0.105*** (0.023)	0.107*** (0.023)	0.096*** (0.025)
Quintile5		0.087*** (0.028)	0.073*** (0.027)	0.047* (0.028)
Overcrowd			-0.134*** (0.028)	-0.110*** (0.031)
Water outside				-0.063 (0.049)
Good floor				0.017 (0.033)
Dump				0.066* (0.036)
Flood Area				-0.023 (0.035)
Slum				-0.038 (0.090)
Owner				0.002 (0.024)
m_ad_comp_sec				0.025 (0.025)
_cons	0.987*** (0.009)	0.951*** (0.020)	0.987*** (0.019)	0.966*** (0.041)
# Observations	741	741	741	728
Adjusted R2	0.050	0.070	0.110	0.112

Note: *** p<0.01, ** p<0.05, * p<0.01. Robust standard errors in parenthesis.

Table 6. Effect of Overcrowding and Housing Characteristics on Completion of Secondary Education

	Reg 1	Reg 2	Reg 3	Reg 4
Age 19	0.178*** (0.054)	0.169*** (0.054)	0.169*** (0.051)	0.165*** (0.051)
Age 20	0.368*** (0.050)	0.355*** (0.049)	0.334*** (0.048)	0.310*** (0.048)
Age 21	0.361*** (0.051)	0.363*** (0.050)	0.345*** (0.049)	0.348*** (0.051)
Age 22	0.383*** (0.051)	0.376*** (0.050)	0.367*** (0.048)	0.353*** (0.050)
Age 23	0.397*** (0.050)	0.388*** (0.050)	0.345*** (0.049)	0.368*** (0.051)
Age 24	0.316*** (0.051)	0.309*** (0.049)	0.302*** (0.048)	0.332*** (0.048)
Age 25	0.379*** (0.053)	0.380*** (0.050)	0.356*** (0.050)	0.363*** (0.052)
Age 26	0.370*** (0.050)	0.358*** (0.048)	0.322*** (0.048)	0.331*** (0.048)
Quintile2		-0.185*** (0.042)	-0.154*** (0.041)	-0.067 (0.046)
Quintile3		-0.051 (0.041)	-0.031 (0.039)	0.010 (0.042)
Quintile4		0.076** (0.035)	0.095*** (0.033)	0.061* (0.037)
Quintile5		0.159*** (0.032)	0.132*** (0.031)	0.057* (0.032)
Overcrowd			-0.332*** (0.034)	-0.164*** (0.040)
Water outside				-0.066 (0.057)
Good floor				0.102** (0.045)
Dump				0.021 (0.048)
Flood Area				-0.043 (0.039)
Slum				-0.176* (0.098)
Owner				0.063* (0.034)
m_ad_comp_sec				0.267*** (0.032)
_cons	0.356*** (0.035)	0.351*** (0.038)	0.421*** (0.038)	0.152** (0.061)
# Observations	1,372	1,372	1,372	1,151
Adjusted R2	0.073	0.114	0.181	0.256

Note: *** p<0.01, ** p<0.05, * p<0.01. Robust standard errors in parenthesis.

VI. Conclusions

As stated by Bart in her comprehensive review of the literature and existing research regarding the interconnections between housing and family well-being, “housing, as the physical space that is most intimately associated with one’s identity, has a great deal to do with how one feels about oneself and how that personal space reflects either positive or negative images” (2002). The profound effect that our house has on our lives is extremely relevant when discussing how to improve educational attainment. This analysis shows the substantial negative effect that living on an overcrowded house has on both school attendance and on completion of secondary education. These results support our hypothesis that there is a strong need to include housing conditions in the discussion of how to improve human capital and get people out of the poverty trap. Any initiative that overlooks this reality will come short in fulfilling its objectives.

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