The role of amenities in the life satisfaction level in Ecuador

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Abstract

The aim of this study is to determine the role of amenities at the cantonal level in the subjective welfare of the population in Ecuador. In this developing country with an unequal distribution of amenities across its territory, the access to amenities can be crucial for the individual welfare improvement. To estimate the effect of different types of amenities in the level of welfare, a Generalized Ordered Logit model, after verifying the parallel lines assumption, is employed using pooled data for 2014 and 2015 at the individual and cantonal levels. The individual data is obtained from the Survey of Employment and Unemployment (ENEMDU, acronym in spanish) and the cantonal data of amenities is obtained from the Directory of firms and establishments (DIEE, acronym in spanish). Two binary logistic models contrasting categories low level of life satisfaction vs. medium level of life satisfaction and high level of life satisfaction and contrasting categories low level of life satisfaction vs. medium level of life satisfaction and high level of life satisfaction are estimated. The analyzed amenities are recreation, accommodation, industrial trade, retail trade, basic education, higher education, ground and air transport and waste management. In general, the effects corresponding to the amenities are as important as the effects of the individual characteristics in determining the level of welfare. The positive amenities are those related to recreation, accommodation, industrial trade and basic education. For instance, an increase of 4.82 establishments dedicated to accommodation leads to an increment of 3.84% in the likelihood or reporting a high level of satisfaction with life. The negative amenities are those related to retail trade and higher education. For instance, an increase of 1% in education establishments diminishes the probability of reporting a high level of life satisfaction in 0.6%.

Key words: Amenities, subjective welfare, ordered logit, regional data, Latin America, Ecuador.

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1. Introducción

As every society aims to increase the welfare status of its population (Kumar, 2014), a wide range of literature has focused on answering one of the most ancient questions about what makes human beings happy. Initially, the determinants of welfare that have been identified are related to individuals' characteristics such as the age, the civil status, the ethnic auto-identification, the use of time (Camfield, 2012), and social characteristics such as the level of education, the laboral status, among others. Little attention has been paid to the external characteristics of the individuals such as the economic and political environment (Dolan, Peasgood, & White, 2008) even though the area where an individual lives is very likely to affect his/her level of welfare (Brereton et al., 2008). The effects on welfare not only come from the individual level but also from the regional and the national level (Novak & Pahor, 2017). Only in the 90s, scholars shown interest in studying the spatial aspect of welfare. The results show that the physic and social external aspects are important determinants of individuals' welfare. Therefore, one aspect that results to have a great importance to better-off the emotional and physical welfare of individuals is the investment in amenities, which are goods and services that make a place attractive to live and work, is crucial to (Mulligan & Carruthers, 2011). In this line, international organisms such as UNDP, UNESCAP, UN-HABITAT, ADB, the World Bank, among others, and have considered the access to basic amenities for establishing the Millennium Development Goals (Kumar, 2014).

The amenities can be classified in physical amenities and social amenities. The first group includes public services such as water supply, sewerage and waste management, electricity and highways. The latter related to infrastr has also been called as speed amenities because they facilitate mobility in less time. The second group of social amenities are related to health, education, museums, libraries and recreative activities (Ghosh & De, 1998). These amenities facilitate the development of human capabilities (Haque, 2016). The existence of both types of amenities boosts the urban growth because they reduce transaction costs and dinamize the economies.

The main objective of this study is to identify the role of amenities in the subjective welfare of the population in Ecuador. The study of developing countries such as Ecuador is particularly pertinent due to the implications that amenities have for the local and regional development (Mulligan & Carruthers, 2011; (Adekunle & Aina, 2011)). In general, developing countries have an unequal distribution of wealth not only across individuals but also across regions. Such inequality is related to the unequal distribution of amenities endownments (Power, 2005). In fact, in Latin America, some regions have null or very difficult access to education, health, security and other services (OECD, 2013). This spatial variation in the availability and access to amenities leads to different levels of life quality between localities (Madu, 2007). For instance, in most developing countries, urban areas have higher levels of income than rural areas (Gollin, Kirchberger, & Lagakos, 2017). Many studies relating the environmental aspects with welfare have been conducted for the cases of developed countries such as OCDE countries (Helliwell, 2003), Italy (Balducci & Checchi, 2009), Great Britain (Ballas & Tranmer, 2012). In developing countries, the welfare has been studied, but without considering the role of amenities (Ravallion & Lokshin, 2001 for Rusia, Kingdon & Knight (2006) for Sudafrica, Graham & Pettinato (2006) for Peru and Rusia, and Knight, Song & Gunatilaka (2009) for rural China.

When analyzing the relation between welfare and amenities, the effects vary depending on the nature of the amenity. For instance, the access to transport roads may produce opposite effects:

on the one hand, it may positively influence on the level of welfare by reducing the time of traveling and by improving the connectivity (Balducci & Checchi, 2009); on the other hand, it may act as a disamenity due to the pollution and noise generated (Brereton et al., 2008). Likewise, the presence of waste management facilities, althought positive due to its contribution to a clean environment, its presence produces noise and bad smells in surrounding places, causing a negative effect on welfare (Brereton et al., 2008). Despite that retail trade establishments increase the range of varieties of consumption, they can be considered as a desamenity due to the fact that individuals cannot reach a high level of consumption restricted by their wages, which increases their discomfort (Winters & Li, 2016).

To estimate the effect of different types of amenities in the level of welfare, a Generalized Ordered Logit model, after verifying the parallel lines assumption, is employed using pooled data for 2014 and 2015 at the individual and cantonal levels. The individual data is obtained from the Survey of Employment and Unemployment (ENEMDU, acronym in spanish) and the cantonal data of amenities is obtained from the Directory of firms and establishments (DIEE, acronym in spanish). Two binary logistic models contrasting categories low level of life satisfaction vs. medium level of life satisfaction and high level of life satisfaction and contrasting categories low level of life satisfaction vs. medium level of life satisfaction and high level of life satisfaction are estimated. The analyzed amenities are recreation, accommodation, industrial trade, retail trade, basic education, higher education, ground and air transport and waste management. In general, the effects corresponding to the amenities are higher in terms of dimension than the effects of the individual characteristics of the people themselves. The positive amenities are those related to recreation, accommodation and basic education. For instance, an increase of 4.82 establishments dedicated to accommodation leads to an increment of 3.84% in the likelihood or reporting a high level of satisfaction with life. The negative amenities are those related to retail trade, industrial trade and higher education. For instance, an increase of 1% in the number of higher education establishments diminishes the probability of reporting a high level of life satisfaction in 0.6%. This result shows the effect of inter-personal comparison, that is, as the opportunities of an individual increase at the same pace as those of others, the level of life satisfaction remains constant. Nevertheless, if the opportunities of others are higher than a given individual, his/her welfare level would be lower.

The remainder of this article is organized as follows. Section 2 describes the geographical distribution of welfare and amenities in Ecuador. Section 3 explains the data and the modelling strategy. Section 4 discuses the results and section 5 concludes.

## 2. Subjective welfare and amenities in Ecuador

The Ecuadorian cities as the majority of Latin American cities face a disorganized expansion that entails urban issues such as an insufficient or inadequate infrastructure especially in peripheries of big metropolis or small cities that remain lagged.

At the national level, more than the 70% of the population reports having a medium level of life satisfaction (MLS) between 5 and 8 in a 0-10 scale. A 25% reports to have higher level of life satisfaction (HLS) between 9 and 10 and only a 3.9% reports a low level of life satisfaction (LLS) between 0 and 4. At the regional level, the distribution of the population in terms of welfare varies across cantons. Figures 1 (2) shows the proportion of people that report a low (high) level of life

satisfaction: the darker zones correspond to higher proportions either low or high. Regarding the low level of life satisfaction, there are 18 cantons that have more than 50% of their population unsatisfied with their lives. Some of them are Cevallos (Tungurahua province) and Cuyabeno (Sucumbios province) with 83% of their population reporting a LLS. The zones with more unsatisfied people are located in the eastern part of the country. With respect to the high level of life satisfaction, there are only 12 cantons that have at least 50% of their population reporting HLS. The cantons with the highest proportions are Junin (Manabi province) and Yaguachi (Guayas province) with 81% and 75%, respectively.

In general, welfare is not uniformly distributed across the territory. One of the reasons can be attributed to the unequal provision of services and amenities. Only few cities primate in the territory and benefit from more and better public services and other urban amenities privately provided. The existence of a wide range of amenities boosts the positive effects of agglomeration economies in those cities. Such effects emerge from the physical concentration of economic agents, allowing to have access to a wider variety of inputs and suppliers, a high availability of labor and a high diffusion of ideas and knowledge (Overman, Gibbons, & Tucci, 2009). Those positive effects derived from agglomeration take place given that there is a good provision of amenities, which in turn, increase the level of welfare of individuals (Lenzi & Perucca, 2016). By contrast, other cities remain lagged with limited benefits from agglomeration economies due to the lack of access to public services and amenities, which diminishes the level of life quality and welfare of the citizens.

Figure 1. Proportion of population reporting a low level of life satisfaction
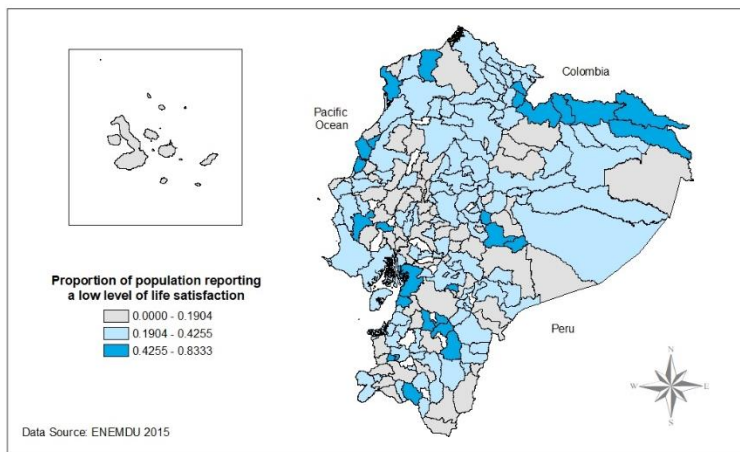
Elaboration: authors

Figure 2. Proportion of population reporting a high level of life satisfaction
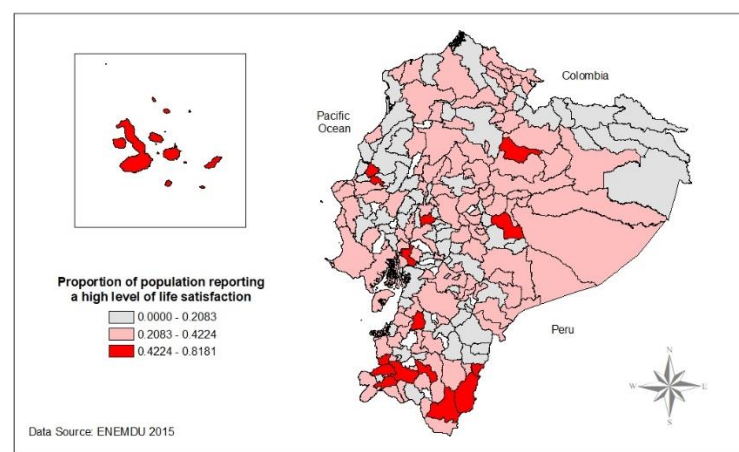
Elaboration: authors

In general, as the number of establishments of any type of amenity increases, the proportion of people moderately satisfied with their own life increases as well. (see Table 1.). Consequently, the number of establishments in any amenity is negatively, but not significantly, correlated with the proportion of people with low level of life satisfaction. This means that a higher quantity of establishments is related with less people with low level of life satisfaction. By contrast, cantons

with high provision levels of each amenity have lower proportions of people with a high level of life satisfaction. This might indicate that a high level of life satisfaction can be achieved taking into consideration other aspects rather than the number of amenities in the residence place.

Table 1. Correlation between the proportion of people with low and high life satisfaction level and the number of establishments of each type of amenity in each canton.

	LLS	MLS	HLS
Entertainment	-0.0637	0.1009*	-0.0257
Accommodation	-0.0654	0.1033*	-0.0260
Industrial trade	-0.0671	0.1091*	-0.0297
Retail trade	-0.0666	0.1085*	-0.0297
Basic education	-0.0610	0.1062*	-0.0334
Higher education	-0.0661	0.1005*	-0.0228
Ground transportation	-0.0718	0.1116*	-0.0271
Air transport	-0.0594	0.0874	-0.0179
Waste management	-0.0609	0.1096*	-0.0366

As the proportions of inhabitants with a given level of life satisfaction differs across regions, the proportions of a given amenity also vary across regions. Thus, the share of entertainment activities is higher than 1% in only 31 cantons out of 221. Looking at the geographical distribution in map 5, we observe that the cantons located in the center towards south of the country (Bolivar, Canar and Azuay provinces) have lower proportions of this amenity.

Figure 3. Proportion of entertainment establishments in each canton, 2015
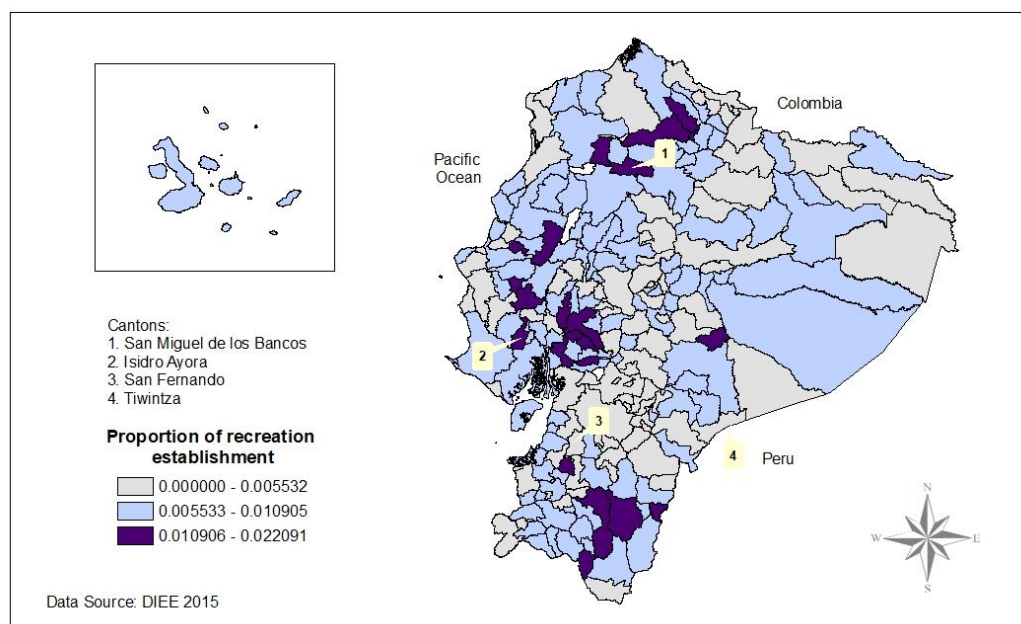
Regarding, the accommodation amenities, most of cantons account with establishments related to this amenity: 117 cantons have higher proportions than the average of 7%. The cantons with the

highest proportions are Isabela (27.7%) and San Cristobal (19%) located in Galapagos: Atacames (19.9%) and Playas (19.6%) located in the Coast and Banos (16%) located in Tungurahua. The high proportions of this amenity in these cantons are related to their natural amenities, which attracts tourism and direct and indirect benefits with it (Bohdanowicz & Zientara, 2009).

Figure 4. *Proportion of accommodation establishments in each canton, 2015*
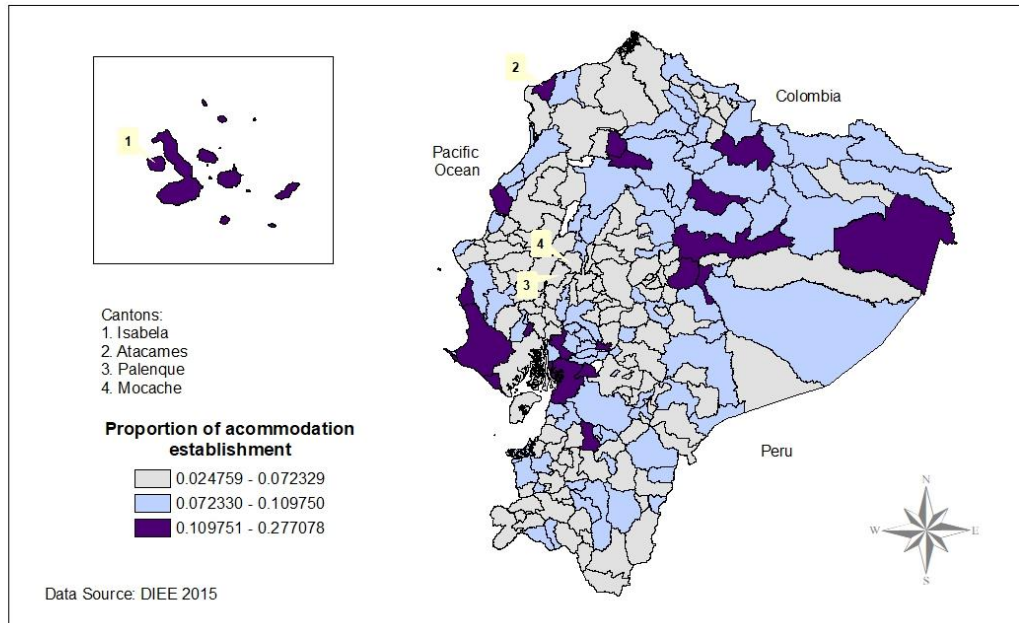
In basic education, there are 76 cantons that have more than 1% of these establishments. The cantons that registered the highest proportions, in spite of being small cantons, are Colta (8.2%), Eloy Alfaro (3.1%), Aguarico (2.5%), Saquisilí (2.3%) and Guamote (2.2%). This could be the result of the universalization of education policy that increased the investment, especially in rural areas.

Figure 5. *Proportion of basic education establishments in each canton, 2015*
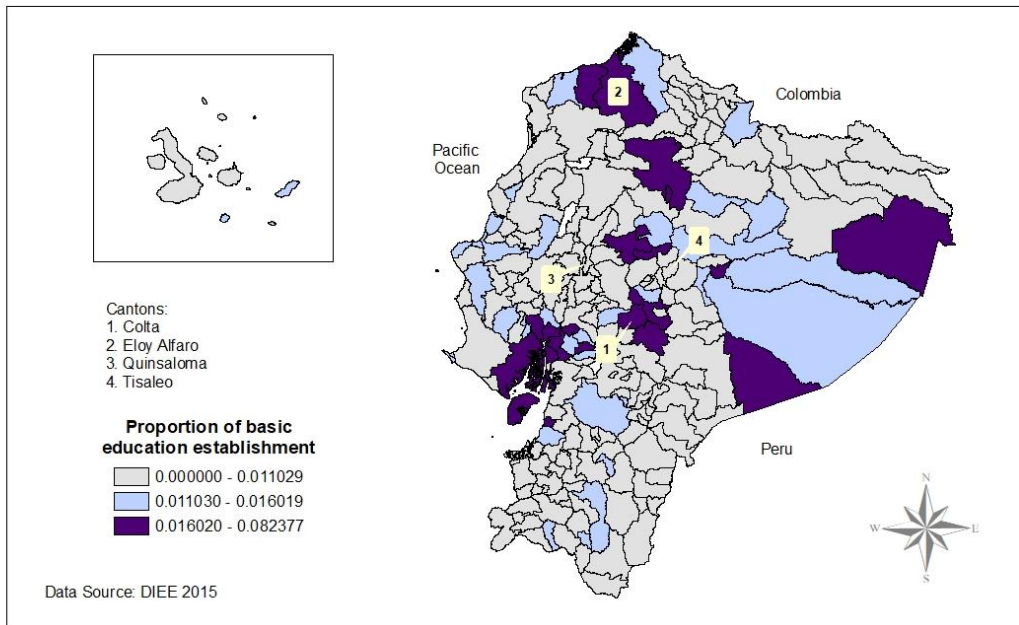
Interestingly, any canton accounts for more than 1% of higher education establishments, as shown in Figure 5. In fact, 102 cantons do not account for any of these establishments, evidencing that there is high inequality across regions in the distribution of this amenity.

Figure 5. *Proportion of higher education establishments in each canton, 2015*
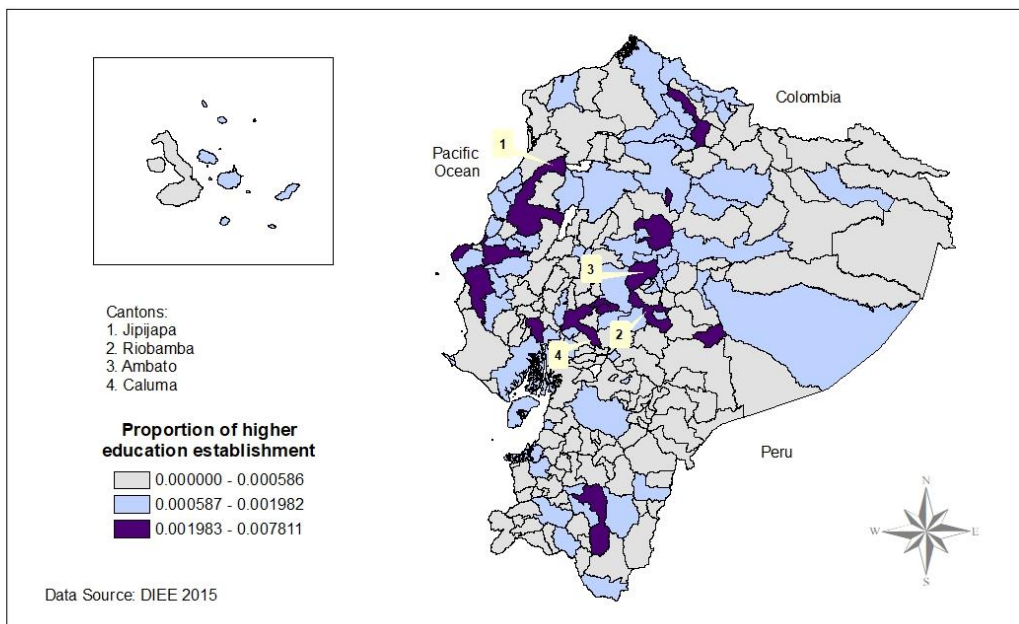
Only once the basic needs are met, a city can ensure the welfare of its population. The basic needs include the amenities such as residence, green areas, good quality education, clean air and food (Hancock, 2017). Nevertheless, the executed investment, public and private, in Ecuador has not been enough for all people to enjoy from an equal access to all amenities (BTI, 2016).

3. Data

To determine the role of amenities in the subjective welfare, several data sources are used: the National Survey of Employment, Unemployment and Underemployment of 2014 and 2015 (ENEMDU, Spanish acronym), the Directory of firms of 2014 and 2015 (DIEE, Spanish acronym), the National Census of Population and Dwelling of 2010 and the Regional Accounts from the Central Bank of Ecuador. Specifically, information on the level of life satisfaction, at the householder level, is recovered from the perception module of the ENEMDU which is available only for 2014 (30 365 observations) and 2015 (29 921 observations). The variables about amenities are calculated as the sum of establishments in each type of amenity using the Directory of firms. The Population Census and the Regional Accounts are used to calculate the population and the gross value added by cantons. These cantonal aggregated variables are merged to individuals that live in a given canton. As the observations from 2014 and 2015 are independent over time, the estimations will not present autocorrelation in the error term.

3.1. Dependent variable

The dependent variable is the level of life satisfaction which is a subjective measure of welfare that refers to the assessment that individuals do about their satisfaction with life (Diener & Ryan, 2009; Alatartseva & Barysheva, 2015). In contrast, the objective approach of welfare neglects the differences across people, imposing a universal and homogeneous vision to everyone. (Diener, Suh, Lucas, & Smith, 1999).

The information of this variable is obtained from the perception module of the ENEMDU survey. Specifically, the question is: How do you feel about the general satisfaction with your life, that is, taking into account every aspect of your life?. The individuals answer using a scale between 0 and 10, in which 0 means totally unhappy and 10 means totally happy. For parsimony reasons and the modeling assumption of proportionality, this variable is re-scaled into three categories such that each category accounts for at least a 20%. The categories of life satisfaction are: low, medium and high as detailed in Table 1. It is observed that the population more commonly report high levels of life satisfaction from 7 to 10 than low levels of life satisfaction.

Table 1. Distribution of the level of life satisfaction

Escale	Cumulative percentage	Categories
0	0,07	
1	0,25	
2	0,67	
3	1,58	1: Low
4	3,91	
5	12,24	
6	24,15	
7	45,19	2: Medium
8	74,16	
9	89,14	3: High
10	100,00	

3.2. Independent variables

3.2.1. Amenities

To measure the amenities, the establishments dedicated to entertainment activities, industrial trade, retail trade, accommodation, basic education, higher education, ground and air transportation and waste management are considered. The number of establishments in each type of amenity at the cantonal level is used to capture their influence on the welfare of people. The cantonal level is the highest level of disaggregation that we can use given that the life satisfaction data from the ENEMDU records the location of the individual at this level (Brereton et al., 2008).

3.2.2. Control variables

The determinants of welfare have been classified in individual characteristics and external conditions. The characteristics of individuals that affect their welfare are gender, age, marital status, education level, ethnic self-identification, income, labor status, recreational activities, crime, and insurance. A summary of the expected sign and the corresponding literature is shown in Appendix 2. Men are expected to be less happy than women (Blanchflower & Oswald, 2011; Dolan et al., 2008). Regarding the effect of age, some authors obtain a U-shaped relationship between age and welfare, in which the minimum is reached at middle ages (Dolan et al., 2008; Ferrer-i-Carbonell & Gowdy, 2007; Knight et al., 2009; Helliwell, 2003; Morrison, 2007; Blanchflower & Oswald, 2011) Other authors assert that life satisfaction increases until a given threshold and then decreases with age, showing an inverted-U shape (Easterlin, 2006). The level of education and income positively influence on the level of welfare (Helliwell, 2003; Blanchflower & Oswald, 2004; Blanchflower & Oswald, 2011; Novak & Pahor, 2017). Conditions as having a job, having insurance and practicing sports increase the level of welfare of individuals (Frey & Stutzer, 2000; Helliwell, 2003; Dolan et al., 2008; Fang & Sakellariou, 2016; Ferrer-i-Carbonell & Gowdy, 2007). In this study, practicing sports proxies leisure. By including both components, work and leisure, the present model specification is in line with the theoretical model that analyzes the work-leisure trade off (Clark et al., 2008).

Furthermore, the general perception of life has to be explained by the perception of individuals with respect to other aspects of their lives (Dolan et al., 2008). In our model, perception variables are then included: satisfaction with the family, satisfaction with the government and satisfaction with social relations. As the dependent variable, they have a 0-10 scale which is re-grouped in three categories: low, medium and high satisfaction as shown in Table 2.

Tabla 2. Distribution of perception variables

Scale	Satisfaction with the family % Cumulative	Categories	Satisfaction with the government % Cumulative	Categories	Satisfaction with social relations % Cumulative	Categories
0	0.11		3.26		0.29	
1	0.32	Low	5.61	Low	0.66	Low
2	0.75		8.74		1.62	
3	1.58		13.00		3.72	

4	3.17		19.36		7.89
5	7.43		36.82		18.86
6	12.87		49.63		31.51
7	22.52	Medium	65.49	Medium	50.62	Medium
8	40.49		82.83		75.09
9	60.17	High	91.71	High	87.81	High
10	100.00		100		100

4. Metodology

4.1. Especification of the model

The empirical model to retain follows Blanchflower & Oswald (2004) y Fleche, Smith, & Sorsa (2011) by proposing the following base relation between variables:

$$LS_{ic} = \alpha_0 + \alpha_1 \, individual_{ic} + \alpha_2 \, contextual_c + \varepsilon_i$$

Where:

LS_{ic}, is the self-reported life satisfaction of individual i in canton c. This is an ordinal categorical variable.

$individual_{ic}$, is a vector containing individual characteristics including gender, age, work status, income, insurance, education level, self-declared race, marital status and perception variables.

$contextual_c$, represents a set of variables regarding territorial aspects: amenities, production, área and density.

ε_i, is the error term.

4.2. Estimation strategy

As the dependent variable, namely, the self-reported life satisfaction level, is an ordinal variable, the modeling strategy consists in estimating an ordered logit (ologit) model. In formal terms, the observed ordinal variable is denoted as Y and it is a function of an unobserved continuous latent variable, Y^*: the assessment of an individual with respect to his/her life satisfaction can be defined as a latent variable, Y^*, which is a function of a set of explanatory variables, Xs (the retained explanatory variables are described in Subsection 3.3.3). The range of Y^* can be subdivided into ordered intervals for obtaining Y. The ordered relationship can be described for an ordinal outcome variable with M categories as in relation (1).

$$Y = \begin{cases} 0, & if \; Y^* \leq 0 \\ 1, & if \; 0 < Y^* \leq \mu_1 \\ 2, & if \; \mu_1 < Y^* \leq \mu_2 \\ \vdots & \vdots \\ M, & if \; \mu_{M-1} < Y^* \end{cases} \qquad (1)$$

So, Y depends on whether or not Y^* have crossed a particular threshold, μ_j. These thresholds, unknown a priori, must be such that $\mu_1 \leq \mu_2 \leq \cdots \leq \mu_{M-1}$. The distribution function that relates the dependent variable to the explanatory variables, Xs, can be written as in equation (2).

$$Prob(Y_i < j) = g(X\beta) = \frac{\exp(\mu_j + X_i\beta)}{1 + \{\exp(\mu_j + X_i\beta)\}}, \quad j = 1, 2, \dots, M-1 \qquad (2)$$

In order for the use of the ologit model to be valid, the proportional odds/parallel lines assumption must hold. This assumption is tested by running a series of *cumulative logit models* which consist in collapsing the original ordinal variable into two categories and running a series of binary logistic regressions. If the assumption of the parallel lines holds, the coefficients (other than the constants) should be the same across the binary logistic regressions and the odds ratios should also be the same for each of the ordered dichotomizations of the outcome variable (Williams 2016). To test this condition, the Brant test – which is a proportionality likelihood ratio test – is performed (Brant 2006). The result of the Brant test, shown in Table 3, demonstrates that such an assumption is not met meaning that the estimation of a ologit will fail to accurately reflect the nature of the influence of the provision of amenities on the individuals life satisfaction: as the coefficients of the binary logistic regressions, and the resulted odd ratios, are not the same, the coefficients of the ologit regression might over or underestimate the impact of the provision of amenities. As explained by Williams (2016), a more flexible model for dealing with the no satisfaction of the proportional odds assumption is the so-called generalized ordered logit (gologit) model.

Tabla 3. Proportionality test

Ho: the assumption of proportionality holds true
chi2(40) = 2183.42
Prob>chi2= 0.000

The gologit model allows to measure the differentiated effect of explanatory variables on the dependent variable across its levels. This cannot be identified in ologit models which do not consider asymmetric effects between variables: the ologit model assumes that, for each cumulative logit model that can be estimated, the effect of X on Y is the same (Williams 2016). So, the retained modelling strategy for estimating the influence of international immigration in the reported life satisfaction level is a gologit/partial proportional odds (PPO) whose assumptions are not violated and does not include many extraneous and unnecessary parameters. In fact, for the Brant test to conclude that the proportional odds assumption is not met, it is enough that only one of the explanatory variables violates the assumption. So, gologit PPO model allows to relax the proportional odds assumption only for those variables where it is violated while constraining the other ones (Williams 2016).

The gologit model relates the endogenous variable Y to the explanatory variables Xs through the relation (3).

$$Prob(Y_i < j) = g(X\beta_j) = \frac{\exp(\mu_j + X_i\beta_j)}{1 + \{\exp(\mu_j + X_i\beta_j)\}}, \quad j = 1, 2, \dots, M-1 \qquad (3)$$

where M is the number of categories of the ordinal variable, three in this case. The included categories are: high life satisfaction (HLS), medium life satisfaction (MLS) and low life satisfaction (LLS). As the outcome variable has three categories, there are two unknown thresholds, so the the gologit model will have two sets of coefficients.

The gologit model is estimated by running a series of binary logistic regressions. The first binary regression contrasts LLS category versus MLS and HLS categories taken as a whole. The second binary regression contrasts LLS and MLS categories versus HLS category. In each regression, the lower values are recoded to zero (base category) and higher values are recoded to one. Thus, a positive (negative) coefficient means that an increase in the explanatory variable leads to higher (lower) levels of life satisfaction.

4.3. Model Validation

As affirmed by Wooldridge (2010), by nature, discrete choice models present heteroskedasticity problems, so, the model coefficients' standard errors were estimated and adjusted to be robust to the presence of heteroskedasticity.

In addition, as a sensibility analysis, four alternative specifications of the model were estimated and validated: (i) a base model containing exclusively the control variables, (ii) the models 1 and 2 using two different disaggregation proposals of the interest variable, and (iii) the final specification which is reported in detail in Section 5.

5. Results

The results of the binary logistic models contrasting categories LLS vs. MLS and HLS and contrasting categories LLS and MLS vs. HLS are presented in column (1) and (2), respectively, of Table 4. The marginal effects corresponding to the LLS, MLS and HLS are shown in columns (a), (b) and (c), respectively. For the interpretation, the sign and the magnitude of marginal effects are considered. A positive (negative) sign indicates that an increase in an independent continuous variable positively (negatively) influences in the probability of reporting a given result of satisfaction (high, medium or low level of life satisfaction). For instance, an increment of 1% in income decreases the probability of having a low level of life satisfaction in 2.26%. In consequence, the same increment of 1% in income increases the probability of having a HLS (MLS) in 1.65% (0.06%). It is worth noting that the sum of the marginal effects is zero because as some responses become more likely, other answers become less likely,

Concerning our variables of interest corresponding to the amenities, the effects are different according to the type of amenity. The analyzed amenities are recreation, accommodation, industrial trade, retail trade, basic education, higher education, ground and air transport and waste management. In general, the effects corresponding to these environmental variables are higher in terms of dimension than the effects of the individual characteristics of the people themselves.

The positive amenities are those related to recreation, accommodation and basic education. The negative amenities are those related to industrial trade, retail trade, higher education and waste management.

Regarding the establishments devoted to recreation, namely, entertainment centers, museums, libraries, cultural, sport and artistic centers and green areas, an increase of 2.06% in the likelihood of reporting a HLS is produced when the proportion of those establishments increase in 1%. To illustrate the marginal effects of amenities in terms of number of establishments, the interpretations consider a specific canton which has the average number of a given amenity (see Table 5). In this case, in the canton La Libertad, located in the province of Santa Elena, an increase of 0.46 establishments of recreation corresponding to 1%, increases in 2.06% the likelihood of reporting a HLS of the inhabitants in this canton. This positive effect takes place due to the fact that green areas and recreation places might facilitate social connections that increase the level of welfare (Larson et al., 2016).

The accommodation amenities positively impact on the life satisfaction level. For instance, in the canton Morona, located in Morona Santiago province, an increase of 4.82 establishments (1%) dedicated to accommodation (4.82 establishments) leads to an increment of 3.84% in the likelihood of reporting a HLS. The positive effect can be derived from the relationship of this

amenity with tourism which generates direct and indirect benefits. The income from touristic activity can be reinvested in the local economy and generate new jobs for the inhabitants (Bohdanowicz & Zientara, 2009). In addition, the presence of the accommodation activity is related to the presence of other amenities, mainly natural ones (Lee, Kang, Terry, & Schuett, 2018). Therefore, the individuals would have a higher life satisfaction due to the proximity to those related amenities which offer more opportunities of leisure.

The amenities related to basic education, which includes elementary, primary and secondary school, increase the probability of reporting a MLS. In Salcedo, the canton with the average number, an increase of 0.82 establishments of basic education (corresponding to 1%) increases the probability of reporting a MLS in 1.55% and only in 0.08% the probability of reporting a HLS. These positive effects in the subjective welfare of individuals might be the result of a high level of investment in education universalization conducted during the 2010 decade, specifically, in rural areas (Cardona, 2010 and BTI, 2016),

On the contrary, the increase of establishments of higher education negatively influences on the level of life satisfaction. For instance, in Duran (Guayas province), an increase of 1% corresponding to 0.09 establishments diminishes the probability of reporting a HLS in 0.6% and consequently, increases de probability of reporting a LLS in 0.55%. Two factors might explain this negative effect. On the one side, it is important to have in mind that the life satisfaction has an implicit component of inter-personal comparison. Hence, as the opportunities of an individual increase at the same pace as those of others, the level of life satisfaction remains constant. Nevertheless, if the opportunities of others are higher than a given individual, his/her welfare level would be lower (Balducci & Checchi, 2009). On the other hand, the access to higher education establishments is unequal across regions in Ecuador. The largest cantons account for more universities than the small ones. Thus, the inhabitants of the small cantons would feel unhappy due to the limited access to this amenity. Moreover, in big cantons, the inhabitants with limited economic resources cannot access to the higher education either, and in turn, would report a lower level of satisfaction with life.

Regarding the retail trade, it produces a negative effect on welfare. This result is surprising since a higher number of these establishments would increase the level of consumption and in turn, the utility and welfare of individuals. However, the result shows that an increase of a 1% of retail trade establishments decreases the probability of reporting a HLS in 3.49%. In the canton Buena Fe, which is the canton with the average number, a one porcentual point increase represents an increase of 16.66 establishments. The negative result could be explained by the fact that even when big cities provide a wider range of possibilities of consumption, many individuals cannot pay for them. Thus, living in a big city increases the aspirations of income and consumption that are not reachable for many people, augmenting their degree of unhappiness (Winters & Li, 2016). Additionally, the presence of retail trade establishments is related to massive flows of people and congestion, which causes discomfort for the population.

The establishments related to ground transportation have a positive effect on the MLS. For instance, an increase of 4.73 establishments in Quinindé, the average canton, increases the probability of reporting a MLS in 0.996%. This implies that the probabilities of reporting a low level of satisfaction and a high level of satisfaction decrease in 0.14% and 0.85%, respectively. These results are somehow ambiguous. The result of decreasing the likelihood of LLS reflects the benefits of having more ground transportation establishments in terms of access and connectivity (Balducci & Checchi, 2009). The second of decreasing the likelihood of HLS indicates the presence of congestion effects accompanied by pollution and noise (Brereton et al., 2008). The

effect of air transport is not significative due to the fact that only 15 cantons (221 in total) account for establishments dedicated to this activity.

The presence of establishments of waste management does not matter for the life satisfaction level of Ecuadorian residents. This could be explained by the fact that the population is not aware of the presence of these facilities around them (Brereton et al., 2008). Then, the negative effect is not significant.

Finally, the results of control variables are consistent with the existent literature. The effects of individual characteristics on the level of life satisfaction are significant. An increase of 1% of the level of income decreases the likelihood of reporting a LLS in 2.26% and increases the likelihood of reporting a HLS in 1.65%. This evidences that the paradox of Easterlin does not hold, which is in concordance with the expected effect of income in developing countries where the income still improves the level of welfare of population (Novak & Pahor, 2017). Likewise, the fact of having a job, having insurance and practicing sports increases the probability of reporting a HLS in around 2% compared to the opposite situations (Frey & Stutzer, 2000; Helliwell, 2003; Graham & Pettinato, 2006; Dolan et al., 2008).

The level of education has an increasing relationship with welfare: as the level of education increases, the likelihood to report a HLS also increases from 1% if the individual has a basic level of education to 6% if the individual has attended to the university (Helliwell, 2003; Blanchflower y Oswald, 2004). In Ecuador, this result can be attributed to the augmentation of public expenditure in higher education from 0,7% of GDP in 2006 to 2,1% in 2016, the highest ratios in Latin America (Weisbrot, Johnston, & Merling, 2017). The population belonging to an ethnic minority are more likely to report a LLS in 1.4% than a mestizo (Shams, 2016; Ramírez, 2009). The age has a U-shaped relationship with life satisfaction (Ferrer-i-Carbonell & Gowdy, 2007; Knight et al., 2009; Helliwell, 2003 y Morrison, 2007). The minimum is reached around the age of 47 years old. As expectes, the individuals that had suffered an experience related with crime are more likely to report a LLS in 1.3% with respect to those who have not had an experience of crime.

Interestingly, the perception variables have a higher effect than other individual characteristics and such an effect increases as the level of satisfaction with family, government and social relations increases. For instance, the probability of reporting a HLS increases from 4.25% if an individual is moderately satisfied with government to 29.7% if he/she is highly satisfied with the government compared to an individual who is poorly satisfied with the government. Those individuals who trust in governmental institutions, have confidence that their own situations will improve (Helliwell, 2003; Dolan et al., 2008). This finding is in line with the results of the World Happiness Report 2017 which shows a negative effect of perceptions of corruption (Helliwell, Huang, & Wang, 2017). Similarly, the likelihood of reporting a HLS increases as the percpetion with family and social relations increases from low to high levels (Frey & Stutzer ,2000; Dolan et al., 2008). In the familiar aspect, the probability of reporting a HLS increases from 9.3% to 33.4% compared to those who are poorly satisfied with family. Having good familiar bonds and social connections is beneficial for the individual welfare (Margolis & Myrskylä, 2013).

Regarding the contextual variables, in line with Glaeser et al. (2014), the individuals that live in urban areas are 1.26% less likely to report a LLS, compared to those who live in rural areas. This is expected in developing countries because urbanization contributes to the access to a wider range of amenities and employment (Knight et al., 2009). La inseguridad es un factor importante que afecta negativamente al bienestar, como lo menciona Lora (2008) casi el 60% de los

latinoamericanos y caribeños se siente inseguro en las calles de sus vecindarios. Resolver este problema podría mejorar la calidad de vida en las ciudades.

Table 4. Generalized Ordered Logit Model estimations

Variables	(1) LLS vs MLS&HLS	(2) LLS&MLS vs HLS	a Marginal Effect LLS	b Marginal Effect MLS	c Marginal Effect HLS
Entertainment	0.036	0,130***	-0.00526	-0,0153	0,0206
	(1,25)	(4,53)			
Accommodation	-0.016	0,242***	0.00234	-0,0408	0,0384
	(-0,36)	(5,52)			
Industrial Trade	0,105**	-0.0355	-0,0154	0,0210	-0.00562
	(2,91)	(-0,98)			
Retail Trade	-0,220***	-0,220***	0,0322	0,00273	-0,0349
	(-4,61)	(-4,61)			
Basic Education	0,112***	0.00518	-0,0163	0,0155	0.000821
	(3,75)	(0,17)			
Higher Education	-0,0375*	-0,0375*	0,00549	0,000465	-0,00595
	(-2,37)	(-2,37)			
Ground Transportation	0.00986	-0,0538*	-0.00144	0,00996	-0,00852
	(0,39)	(-2,11)			
Air transportation	0,127***	-0.0181	-0,0186	0,0215	-0.00287
	(4,9)	(-0,72)			
Waste management	-0.0153	-0.0153	0.00224	0.00019	-0.00243
	(-1,03)	(-1,03)			
Male	0,0958***	0,0958***	-0,0142	-0,000768	0,0150
	(3,51)	(3,51)			
Age	-0,00684*	-0,00684*	0,001000	0.0000847	-0,00108
	(-2,02)	(-2,02)			
Squared Age	0,0000724*	0,0000724*	-0,0000106	-0,000000896	0,0000115
	(2,24)	(2,24)			
Worked	0,137***	0,137***	-0,0206	-0,000572	0,0212
	(5,18)	(5,18)			
ln(Income)	0,155***	0,104***	-0,0226	0,00613	0,0165
	(11,03)	(7,46)			
Insurance	0,111***	0,111***	-0,0161	-0,00149	0,0176
	(5,72)	(5,72)			
Recreational activities	0,150***	0,150***	-0,0214	-0,00286	0,0242
	(6,98)	(6,98)			
Crime	-0,0878*	-0,0878*	0,0132	0,000423	-0,0136
	(-2,12)	(-2,12)			
Alphabetization	0.0362	0.0362	-0.00523	-0.000571	0.0058
	(0,36)	(0,36)			
Basic school	0,207*	0,207*	-0,0283	-0.00649	0,0348
	(2,34)	(2,34)			

Secondary education	0.0735	0.0735	-0.0109	-0,000664	0.0115
	(1,76)	(1,76)			
Middle education	0,326***	0,326***	-0,0430	-0,0136	0,0567
	(4,27)	(4,27)			
Superior education	0,412***	0,310***	-0,0548	0.00235	0,0524
	(7,13)	(5,9)			
Post-grade	0,429***	0,429***	-0,0546	-0,0220	0,0765
	(4,89)	(4,89)			
Gross value added	-1,72e-08***	-1,72e-08***	2,51e-09	2,13e-10	-2,72e-09
	(-3,77)	(-3,77)			
Urban area	0,0859***	0,0859***	-0,0126	-0,000907	0,0135
	(3,94)	(3,94)			
Population density	0.0000152	0.0000152	-0.00000221	-1.88E-07	0.0000024
	(0,75)	(0,75)			
Goverment_middle	1,072***	0,261***	-0,140	0,0978	0,0425
	(40,19)	(10,17)			
Goverment_high	1,307***	1,484***	-0,145	-0,152	0,297
	(31,93)	(51,5)			
Social_middle	1,303***	0,575***	-0,182	0,0890	0,0932
	(52,69)	(20,11)			
Social relations_high	1,721***	1,721***	-0,193	-0,141	0,334
	(61,7)	(61,7)			
Family satisfaction middle	0,892***	0,195***	-0,115	0,0831	0,0317
	(27,15)	(3,65)			
Family satisfaction high	1,385***	1,233***	-0,220	0,0369	0,183
	(43,52)	(25,32)			
Indigenous	-0,0966**	-0,0966**	0,0145	0,000514	-0,0150
	(-3,09)	(-3,09)			
White	0,178*	0,178*	-0,0246	-0.00509	0,0297
	(2,55)	(2,55)			
Other	0.0416	0.0416	-0.00601	-0.000655	0.00666
	(1,18)	(1,18)			
Married	-0.0293	-0.0293	0.00428	0.000356	-0.00464
	(-0,85)	(-0,85)			
Separated	-0,120**	-0,120**	0,0181	0.000367	-0,0184
	(-2,97)	(-2,97)			
Divorced	-0.0483	-0.0483	0.00716	0.000395	-0.00755
	(-0,94)	(-0,94)			
Widowed	-0,155***	-0,155***	0,0236	0.0000418	-0,0236
	(-3,62)	(-3,62)			
Free union	-0,0911*	-0,0911*	0,0135	0,000680	-0,0142
	(-2,51)	(-2,51)			
Constant	-1,667***	-3,797***			
	(-8,06)	(-17,89)			

Test LR (likelihood ratio)		-47327.709
LR chi2(53)		25783.069

p-value	0.000
R2 McFadden	0.2141
Correct classification	62.0%
AIC	94765.418
BIC	95258.599
N	57926

Nota: Errores estándar en paréntesis
* p<0.05, ** p<0.01, *** p<0.001

Tabla 5. Cantons with the average proportions in amenities

Canton with the average number of establishments	Type of amenity	Average number of establisments
La Libertad	Entertainment	46
Morona	Accommodation	482
Salcedo	Basic education	82
Duran	Higher education	9
Buena Fe	Retail trade	1666
Guaranda	Industrial trade	410
Quininde	Ground transportation	473
Latacunga	Air transport	0.51
Cayambe	Waste management	2

6. Conclusions

This study shows that the amenities that are part of the geographical context where individuals live explain in great part the level of life satisfaction of individuals in a developing country. Those aspects are as important as the socioeconomic and sociodemographic factors. Unexpectedly, not all the amenities increase the likelihood of having a high level of life satisfaction. The amenities related entertainment, accommodation, industrial trade and basic education positively impact on the level of welfare. Other amenities such as higher education and retail trade reduce the probability of reporting a high level of life satisfaction. One explanation of the negative effect of higher education is the inexistence of such establishments in most of cantons, which make their inhabitants unhappy with the fact of lacking the opportunity to access to such amenity.

These findings highlight the necessity of establishing public policies in terms of amenities to improve the level of welfare in a society. Those policies should aim to improve the infrastructure in cities related to higher education. A better access of those deprived cantons would increase the level of welfare of their citizens and in turn, the general social welfare. Likewise, the amenities related to retail trade have to be improved by promoting organized places that reduce congestion effects. The amenities that already produce positive effects have to be enhanced. For those amenities that do not have a significant effect on welfare such as waste management, it is important to increase their quality, not necessarily their number, to give benefits for welfare.

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Anexos

Anexo 1. Numeración de provincias dentro de Ecuador

Provincia	Código
Azuay	01
Bolívar	02
Cañar	03
Carchi	04
Cotopaxi	05
Chimborazo	06
El Oro	07
Esmeraldas	08
Guayas	09
Imbabura	10
Loja	11
Los Ríos	12
Manabí	13
Morona Santiago	14
Napo	15
Pastaza	16
Pichincha	17
Tungurahua	18
Zamora Chinchipe	19
Galápagos	20
Sucumbíos	21
Orellana	22
Santo Domingo	23
Santa Elena	24
Zonas No Delimitadas	90

Elaboración: Autoras

Anexo 2. Variables, fuente de información y signo esperado

Variable	Descripción	Signo Esperado	Estudios
Fuente: Directorio de Empresas y Establecimientos			
Esparcimiento	Variable continua medida como la proporción de empresas que se dedican a actividades recreacionales dentro de cada cantón	(+)	Larson, Jennings & Cloutier (2016)
Comercio	Variable continua medida como la proporción de empresas que se dedican al comercio al por menor y mayor dentro de cada cantón	(+)	Balducci & Checchi (2009)
Alojamiento	Variable continua medida como la proporción de empresas que se dedican a actividades de alojamiento dentro de cada cantón	(+)	Lee, Kang, Terry & Schuett (2018)
Enseñanza	Variable continua medida como la proporción de empresas que se dedican a actividades de enseñanza dentro de cada cantón	(+)	Bertram & Rehdanz (2015)
Transporte	Variable continua medida como la proporción de empresas que se dedican a actividades de transporte aéreo o terrestre dentro de cada cantón	(+) (-)	Balducci & Checchi (2009) Brereton et al. (2008)
Desechos	Variable continua medida como la proporción de empresas que se dedican al manejo de desechos dentro de cada cantón	(-)	Brereton et al. (2008)
Fuente: Censo de Población y Vivienda (2010)			
Densidad	Representa el total de población dividido por la extensión en km2 del cantón	n/a	Lenzi & Perucca (2016); Rehdanz & Maddison (2005)
Fuente: Banco Central del Ecuador			
Valor Agregado Bruto	Variable continua medida en miles de dólares	(+)	Glaeser et al. (2001); Winters & Li (2016)
Fuente: Encuesta Nacional de Empleo, Desempleo y Subempleo (2014-2015)			
Sexo	Variable dicotómica: hombre, mujer Categoría de referencia: mujer	Hombre (-)	Blanchflower & Oswald (2011); Dolan et al. (2008)
Edad	Edad del jefe de hogar medida en número de años	Ambiguo	Forma de U: Dolan et al. (2008); Ferrer-i-Carbonell & Gowdy (2007); Knight et al. (2009); Helliwell (2003); Morrison (2007); Blanchflower & Oswald (2011)

Edad al cuadrado	Edad al cuadrado	Ambiguo	Forma de U invertida: Easterlin (2006)
Estado civil	Variable categórica: soltero, casado, viudo, unión libre, divorciado, separado Categoría de referencia: soltero	Soltero/Viudo (-)	Helliwell (2003); Blanchflower & Oswald (2011)
Autoidentificación étnica	Variable categórica: mestizo, indígena, blanco y otros (afroecuatoriano, negro, mulato y montuvio) Categoría de referencia: mestizo	Indígena (-)	Ramírez (2009); Shams (2016)
Nivel de educación	Variable categórica: sin educación, centro de alfabetización, educación básica, educación primaria y secundaria, educación media, educación superior, posgrado Categoría de referencia: sin educación	(+)	Helliwell (2003); Blanchflower & Oswald (2004); Blanchflower & Oswald (2011)
Ingresos	Logaritmo de los ingresos familiares medida en dólares.	(+)	Novak & Pahor (2017)
Área de residencia	Variable dicotómica: urbano, rural Categoría de referencia: rural	Urbana (+)	Glaeser et al. (2014)
Trabajo	Variable dicotómica: trabajó la semana pasada, no trabajó la semana pasada Categoría de referencia: no trabajó la semana pasada	(+)	Frey & Stutzer (2000); Helliwell (2003)
Seguro	Variable dicotómica: tiene seguro, no tiene seguro Categoría de referencia: no tiene seguro	(+)	Dolan et al. (2008); Fang & Sakellariou (2016)
Deporte	Variable dicotómica: practicó deporte la semana pasada, no practicó deporte la semana pasada Categoría de referencia: no practicó deporte la semana pasada	(+)	Ferrer-i-Carbonell & Gowdy (2007)
Crimen	Variable dicotómica: ha sido víctima de un crimen, no ha sido víctima de un crimen Categoría de referencia: no ha sido víctima de un crimen	(-)	Ferrer-i-Carbonell & Gowdy (2007)
Satisfacción con la familia	Variable categórica: bajo, medio o alto nivel de satisfacción con la familia. Categoría de referencia: bajo nivel de satisfacción con la familia	(+)	Dolan et al. (2008); Frey & Stutzer (2000)
Satisfacción con el gobierno	Variable categórica: bajo, medio o alto nivel de satisfacción con el gobierno Categoría de referencia: bajo nivel de satisfacción con el gobierno	(+)	Helliwell (2003); Dolan et al. (2008)
Satisfacción con la vida social	Variable categórica: bajo, medio o alto nivel de satisfacción con las relaciones sociales	(+)	Dolan et al. (2008); Frey & Stutzer (2000)

Categoría de referencia: bajo nivel de
satisfacción con las relaciones sociales

Elaboración: Autoras

Anexo 3. Estimación de resultados del Logit Ordenado Generalizado para varios modelos

Variables	Modelo Base			Modelo 1			Modelo 2		
	S. Baja (1)	S. Media (2)	S. Alta (3)	S. Baja (1)	S. Media (2)	S. Alta (3)	S. Baja (1)	S. Media (2)	S. Alta (3)
Esparcimiento				-0.256	-2.920***	3.176***	-0.516	-2.874***	3.390***
				(-0.40)	(-3.67)	(4.79)	(-0.80)	(-3.60)	(5.05)
Alojamiento				-0.192*	-0.306***	0.499***	-0.159*	-0.307***	0.466***
				(-2.55)	(-3.47)	(6.58)	(-2.14)	(-3.47)	(6.20)
Comercio							0.0791**	0.00660**	-0.0857**
							(2.90)	(2.66)	(-2.90)
Comercio industrial				-0.108	-0.00901	0.117			
				(-0.54)	(-0.54)	(0.54)			
Comercio al por menor				0.112***	0.00932**	-0.121***			
				(3.68)	(3.23)	(-3.68)			
Enseñanza				-1.174***	0.860*	0.314			
				(-3.84)	(2.15)	(0.90)			
Enseñanza básica							-1.423***	0.938*	0.485
							(-4.22)	(2.19)	(1.27)
Enseñanza superior							1.844	0.154	-1.998
							(1.20)	(1.19)	(-1.20)
Transporte terrestre				-0.0740	0.203***	-0.129*	-0.102*	0.208***	-0.106*
				(-1.49)	(3.54)	(-2.40)	(-2.16)	(3.64)	(-2.09)
Transporte aéreo				-3.097	-0.258	3.354	-3.007	-0.251	3.258
				(-1.14)	(-1.12)	(1.14)	(-1.11)	(-1.09)	(1.11)
Manejo de desechos				2.146	0.179	-2.325	3.526	0.294	-3.819
				(0.53)	(0.53)	(-0.53)	(0.89)	(0.88)	(-0.89)

Hombre	-0.00735	-0.000367*	0.00772	-0.0144***	-0.000753***	0.0151***	-0.0143***	-0.000752***	0.0151***
	(-1.66)	(-1.98)	(1.67)	(-3.50)	(-3.80)	(3.61)	(-3.48)	(-3.80)	(3.59)
Edad	0.00235***	0.000143***	-0.00249***	0.000973*	0.0000810	-0.00105*	0.000962	0.0000802	-0.00104
	(4.32)	(3.68)	(-4.32)	(1.96)	(1.88)	(-1.96)	(1.94)	(1.86)	(-1.94)
Edad al	-0.000018***	-0.0000011**	0.000018***	-0.0000102*	-0.00000085*	0.000011*	-0.0000102*	-0.00000085*	0.000011*
cuadrado	(-3.40)	(-3.06)	(3.40)	(-2.16)	(-2.05)	(2.16)	(-2.15)	(-2.04)	(2.15)
Trabajo	-0.0298***	0.0141*	0.0157**	-0.0207***	-0.000545*	0.0212***	-0.0205***	-0.000549*	0.0211***
	(-5.83)	(2.57)	(2.97)	(-5.05)	(-1.97)	(5.33)	(-5.02)	(-2.01)	(5.29)
ln (ingreso)	-0.0448***	0.00936***	0.0354***	-0.0228***	0.00695**	0.0159***	-0.0230***	0.00700**	0.0160***
	(-20.65)	(3.69)	(14.78)	(-11.18)	(2.84)	(7.20)	(-11.28)	(2.86)	(7.27)
Seguro	-0.0330***	-0.00237***	0.0354***	-0.0159***	-0.00145***	0.0173***	-0.0159***	-0.00145***	0.0174***
	(-10.71)	(-6.17)	(10.61)	(-5.65)	(-4.23)	(5.61)	(-5.66)	(-4.24)	(5.62)
Deporte	-0.0533***	-0.00778***	0.0610***	-0.0205***	-0.00267***	0.0232***	-0.0208***	-0.00272***	0.0235***
	(-16.95)	(-8.75)	(15.70)	(-6.85)	(-4.44)	(6.55)	(-6.94)	(-4.48)	(6.64)
Crimen	0.00766	0.000303*	-0.00796	0.0139*	0.000390	-0.0143*	0.0134*	0.000400	-0.0138*
	(1.13)	(2.12)	(-1.15)	(2.17)	(1.70)	(-2.28)	(2.10)	(1.88)	(-2.21)
Alfabetización	-0.0385**	-0.00746	0.0459*	-0.00356	-0.000354	0.00391	-0.00336	-0.000332	0.00369
	(-2.72)	(-1.53)	(2.42)	(-0.24)	(-0.21)	(0.24)	(-0.23)	(-0.20)	(0.23)
Educación	-0.0672***	-0.0211**	0.0884***	-0.0287*	-0.00662	0.0354*	-0.0289*	-0.00668	0.0355*
Básica	(-6.16)	(-3.07)	(4.98)	(-2.55)	(-1.47)	(2.24)	(-2.56)	(-1.48)	(2.25)
Educación	-0.0386***	-0.000231	0.0388***	-0.0108	-0.000646*	0.0114	-0.0108	-0.000648*	0.0115
Secundaria	(-5.55)	(-0.50)	(5.86)	(-1.73)	(-2.45)	(1.77)	(-1.73)	(-2.46)	(1.77)
Educación	-0.0751***	-0.0261***	0.101***	-0.0434***	-0.0138*	0.0572***	-0.0434***	-0.0138*	0.0572***
Media	(-7.99)	(-3.89)	(6.30)	(-4.83)	(-2.54)	(3.97)	(-4.83)	(-2.54)	(3.98)
Educación	-0.110***	0.00233	0.107***	-0.0542***	0.00242	0.0517***	-0.0545***	0.00244	0.0521***
Superior	(-16.33)	(0.32)	(10.52)	(-7.79)	(0.35)	(5.50)	(-7.86)	(0.35)	(5.54)
Posgrado	-0.132***	-0.00585	0.137***	-0.0542***	-0.0216**	0.0757***	-0.0547***	-0.0220**	0.0767***
	(-10.37)	(-0.30)	(6.85)	(-5.62)	(-2.78)	(4.36)	(-5.71)	(-2.81)	(4.42)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VAB				-4.36e-10	3.60e-09***	-3.16e-09***	-5.37e-10	3.57e-09***	-3.04e-09***
				(-1.33)	(9.15)	(-9.50)	(-1.71)	(9.07)	(-9.59)
Área urbana	-0.0120**	0.0142**	-0.00226	-0.0120***	-0.000854***	0.0129***	-0.0126***	-0.000887***	0.0135***
	(-2.99)	(2.99)	(-0.53)	(-3.74)	(-3.55)	(3.78)	(-3.93)	(-3.67)	(3.98)
Densidad				0.00000528	-0.0000117**	0.0000063	0.00000583	-0.0000115**	0.0000056
				(1.48)	(-2.86)	(1.75)	(1.63)	(-2.81)	(1.55)
Gobierno medio				-0.141***	0.0982***	0.0428***	-0.141***	0.0982***	0.0427***
				(-45.16)	(20.54)	(10.01)	(-45.11)	(20.54)	(9.98)
Gobierno alto				-0.145***	-0.152***	0.297***	-0.145***	-0.151***	0.297***
				(-44.60)	(-23.41)	(45.06)	(-44.52)	(-23.38)	(44.99)
Relaciones sociales_medio				-0.182***	0.0891***	0.0933***	-0.182***	0.0891***	0.0933***
				(-52.54)	(17.62)	(19.79)	(-52.55)	(17.62)	(19.79)
Relaciones sociales_alto				-0.193***	-0.141***	0.335***	-0.193***	-0.141***	0.335***
				(-70.88)	(-31.56)	(55.47)	(-70.87)	(-31.56)	(55.47)
Satisfacción familiar_medio				-0.115***	0.0833***	0.0316***	-0.115***	0.0832***	0.0317***
				(-29.91)	(9.49)	(3.56)	(-29.91)	(9.48)	(3.56)
Satisfacción familiar_alto				-0.220***	0.0373***	0.183***	-0.220***	0.0373***	0.183***
				(-40.19)	(5.18)	(27.68)	(-40.21)	(5.18)	(27.71)
Indígena	0.0275***	-0.0152*	-0.0124*	0.0167***	0.000452	-0.0171***	0.0176***	0.000426	-0.0180***
	(4.59)	(-2.18)	(-1.98)	(3.47)	(1.88)	(-3.66)	(3.68)	(1.61)	(-3.89)
Blanco	-0.0335**	-0.00578	0.0392**	-0.0248**	-0.00512	0.0299*	-0.0248**	-0.00514	0.0299*
	(-3.21)	(-1.86)	(2.90)	(-2.73)	(-1.63)	(2.45)	(-2.73)	(-1.63)	(2.45)
Otros	-0.00797	-0.0206*	0.0286***	-0.00519	-0.000541	0.00573	-0.00495	-0.000511	0.00546
	(-1.22)	(-2.55)	(3.83)	(-1.03)	(-0.85)	(1.01)	(-0.98)	(-0.81)	(0.96)
Casado	-0.0239***	-0.00160***	0.0255***	0.00429	0.000350	-0.00464	0.00435	0.000355	-0.00470
	(-4.32)	(-3.53)	(4.30)	(0.85)	(0.86)	(-0.85)	(0.86)	(0.87)	(-0.86)
Separado	0.0174*	0.000315	-0.0177**	0.0181**	0.000343	-0.0184**	0.0181**	0.000344	-0.0184**
	(2.56)	(1.48)	(-2.67)	(2.88)	(1.01)	(-3.06)	(2.88)	(1.01)	(-3.06)

Divorciado	-0.00448	-0.000330	0.00481	0.00753	0.000394*	-0.00792	0.00723	0.000388	-0.00762
	(-0.56)	(-0.47)	(0.55)	(0.98)	(2.02)	(-1.01)	(0.94)	(1.85)	(-0.97)
Viudo	0.0148*	0.000358*	-0.0151*	0.0236***	0.00000985	-0.0236***	0.0237***	0.00000553	-0.0237***
	(2.06)	(2.40)	(-2.14)	(3.48)	(0.02)	(-3.77)	(3.49)	(0.01)	(-3.78)
Unión Libre	-0.00567	-0.000402	0.00607	0.0131*	0.000654***	-0.0137*	0.0131*	0.000655***	-0.0137*
	(-0.98)	(-0.85)	(0.97)	(2.38)	(3.48)	(-2.46)	(2.38)	(3.48)	(-2.46)

Pruebas de Significancia Estadística	M. Base	M. 1	M. 2
Prueba LR (likelihood ratio)	-58438.799	-47314.780	-47315.171
LR chi2 (df)	3417.377	20365.316	20363.775
p-value	0.000	0.000	0.000
R^2 McFadden	0.030	0.214	0.213
Porcentaje de correcta especificación	50.2%	62.1%	62.1%
AIC	116941.598	94737.560	94738.341
BIC	117228.540	95221.773	95222.555
N	57926	57926	57926

Nota: Errores estándar en paréntesis
* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Elaboración: Autoras