



**AIQUAV - CONFERENZA 2017**  
**Qualità della vita e Sostenibilità**  
30 Novembre, 1 e 2 dicembre 2017

**Titolo<sup>1</sup>:** Looking beyond averages: quantile regression approach to model older-adult Europeans' quality of life

**Gruppo tematico<sup>2</sup>:** LoLa

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<sup>1</sup> Si prega cortesemente di rispettare il formato proposto compilando tutti i dati necessari

<sup>2</sup> Fare riferimento al sito <http://www.aiquav.it/index.php/associazione/gruppi-tematici>

<sup>3</sup> Aggiungere altri se necessario



## **Abstract<sup>4</sup> :**

Starting from cross-sectional European data coming from the Survey on Health, Ageing and Retirement (SHARE), the present study aims to investigate whether and how several older-adult (50+) individuals' characteristics are associated with reported Quality of Life (QoL). In particular, we analyze the variation in the associations between QoL and older-adults' characteristics taking into consideration the full QoL distribution. In doing so, we propose the use of quantile regression as alternative method of analysis compared to standard Ordinary Least Squares linear regression models (OLS).

To examine individuals' quality of life we use the SHARE CASP-12 scale, a measurement based on 12 Likert scaled items crossing four theoretically derived dimensions of QoL that are particularly important in early old age: (C)ontrol, (A)utonomy, (S)elf-realization and (P)leasure. Each Likert scale question (three for each dimension) was recoded so that the most positive response scores 4 and the most negative 1. Further, some of the items were reverse coded so that all responses are in the same direction. Following a non-hierarchical approach, the CASP-12 final score is the arithmetic sum of the scores of each item, thus ranking from 12 to 48. High values indicates higher QoL. In our models, the 10 percent quantile estimates correspond to the lowest life quality 10 percent of the sample (conditional on the explanatory variables), the 25 percent quantile to the life quality of the lower 25 percent of the sample, and so on. Hence, analysis investigate possible heterogeneous associations between dependent and independent variables at different segments of the conditional QoL distribution. The underling hypothesis is that the common left skewed distribution of QoL might be better analyzed through a semi-parametric model that focuses on the entire outcome distribution, while mean-based models could hide potential specific associations.

We fit multiple quantile regression models with CASP-12 score as dependent variable. Overall models for the entire sample are run, followed by separated estimation by gender and age specific groups. Results are compared with OLS estimates. Variables related to health, functioning, social relations and material circumstances are considered as predictor variable. Quantile regression are applied as cross-sectional estimators. Consequently, results cannot be interpreted as causal effects in any strict sense.

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<sup>4</sup> Rimanere su un max di 4.000 caratteri (due-tre pagine, bibliografia compresa)

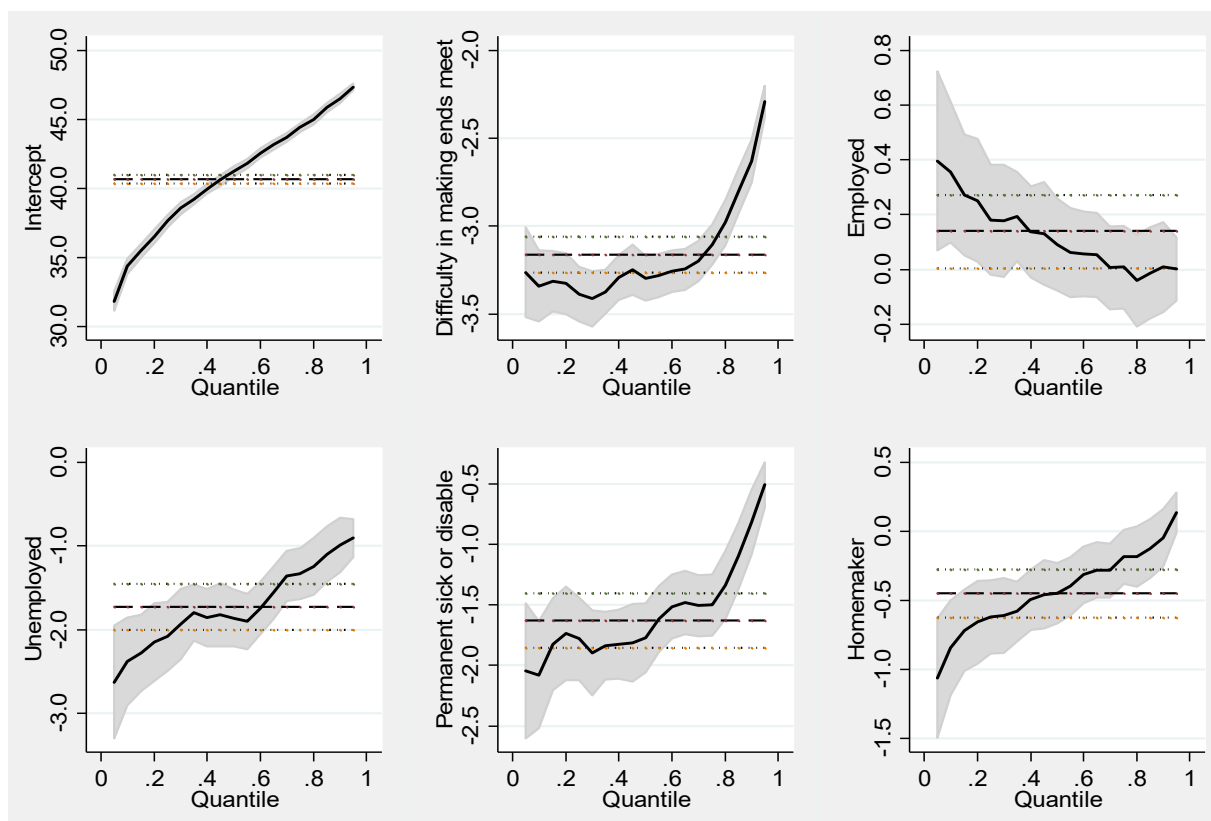


Statistical analysis testing linearity and normality assumptions about OLS estimates explain that, generally, mean-average coefficients are reliable and give a good approximation of the overall associations. However, quantile regression estimates demonstrate significant variation over quantiles and significant differences emerge with regard to material circumstances and social relationships. In many cases, reported associations lose their statistical significance, or come closer to zero, for individuals reporting high QoL.

The associations between QoL and perceived income adequacy, working conditions, as well as education level lose magnitude over quantiles, or even their statistical significance. Moreover, even if for some variables the estimates across quantiles remain statistically significant, they do often change their magnitude and the differences between coefficients are also statistically significant. As an example, while unemployment is associated with nearly 2.5 points of decrease in QoL for the 10th quantile, this negative association do not exceed value 1 for the 90th quantile. The declining relationship can be clearly seen in Figure 1, where coefficients for the whole QoL distribution are plotted: the grey-shaded area depicts the 95 percent confidence bands of the estimated quantile regression coefficients, while the horizontal line depicts the OLS coefficients estimates and dotted black lines OLS 95 percent confidence intervals. From the graphs one can observe if the quantile regression estimates lie outside the confidence intervals of the OLS regression, this shows that associations with this variable are not constant across the conditional distribution of the independent variable. Similar decreasing coefficients estimates over the conditional QoL distribution emerge for variables related to family structures, country of residence, social participation, home ownership and neighborhood quality. Moreover, in all models the pseudo R-squared estimates, whose interpretation is similar to the R-squared in regular regressions (Hao and Naiman 2007), decrease with increasing quantiles. In order to test the robustness of results we repeated the analysis on subsamples disaggregated by gender and age groups. In most cases, similar results emerge.



**Figure 1. Point estimates and 95% confidence intervals from quantile regression of the QoL distribution, overall sample: perceived income adequacy and working conditions variables**



## References

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