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Argentine Valuation of the EQ-5D Health States

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Abstract

Objective—To develop a set of EQ-5D health state values for the Argentine general population.

Methods—Consecutive subjects attending six primary care centers in Argentina were selected based on quota sampling and interviewed using the EuroQol Group protocol for measurement and valuation of health studies. Initially respondents were randomly assigned a unique card set; however, to improve efficiency, subjects were later randomly assigned to one of three fixed sets of EQ-5D states. Using the VAS and TTO responses for these states, we estimated a valuation model using ordinary least squares regression clustered by respondent. Predicted values for EQ-5D health states are compared to published values for the United States.

Results—Six hundred eleven subjects were interviewed by 14 trained interviewers, rendering 6,887 TTO and 6,892 VAS responses. The model had an R^2 of 0.897 and 0.928 for TTO and VAS respectively. The mean absolute difference between observed and predicted values was 0.039 for TTO and 0.020 for VAS, each showing a Lin's concordance coefficient above 0.98. United States and Argentine TTO predicted values were highly correlated (Pearson's rho=0.963), though the average absolute difference was clinically meaningful (0.06), rejecting the US values for nearly two thirds of the states (62.8%). The Argentine population placed lower values on mild states and higher values on severe states.

Conclusion—This study provides an Argentine value set that could be used locally or regionally, with meaningful and significant differences with that of the US. Health policy in Latin America must incorporate local values for sovereignty and validity.

Keywords

utility measurement; HRQOL; patient preference; cost effectiveness analysis

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INTRODUCTION

The measurement of country-specific health state values is necessary for evidence-based policy making. Valuing health states is analogous to voting over political candidates. While the primary purpose of studies, like this one, is to collect population values from a representative sample, these responses represent more than intellectual endpoints. They are votes for and against potential health states, and their tallies inform policy makers which health states the public prefers over others.

In practice, value sets translate health into utilities for use in economic evaluations. Through their tabulations of cost and quality of life outcomes, cost-utility analyses are widely used in developed countries to aid in the decision making process between new and existing health technologies and to determine coverage of health technologies where budget constraints impede equal access to all alternatives [1–4].

Until this study, Latin American countries had little option but to base their health policies on value sets taken from the developed world (e.g., US, UK and Spain). In response to this paucity, the values set put forth in this paper will better calibrate health policy toward Argentine population preferences. Our study demonstrates that valuation studies may be conducted on a smaller scale that is feasible for a developing country and can better inform country-specific policies.

More research on the value of health is needed, particularly in the developing world. Latin America is an increasingly important market for drugs and other health technologies. The eight top Latin American countries represent a market of 468 million people with a GDP of US$2.7 trillion in 2007, and an expected market value of US$63 billion at retail prices by 2012 [5]. As the market of pharmaceuticals is growing in Latin America, formal economic evaluations are slowly, but increasingly, being conducted and applied [6]. However, better understanding of these emerging markets requires the advancement of primary research [7].

In addition to private and governmental institutions, local values are also important for not-for-profit organizations. To be culturally competent, first-world charities, such as those that engage in infectious disease control, may wish to acknowledge and consider local values. This is particularly important in the cases of health and natural resources, where the decisions directly affect the lives of the local population. Simply asking the values of a population grants a degree of local control and demonstrates a respect for autonomy, which is typically in the mission of these organizations.

The primary aim of this study was to produce a country-specific value set for EQ-5D health states representing the preferences of the Argentine general population. Additionally, Argentine values were then compared to US values based on statistical and clinical significance.

METHODS

The EQ-5D descriptive system classifies a health state by combining a set of scores on five dimensions: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. The scores on the dimensions are ‘1’ for the best level and ‘3’ for the worst level. These scores are used to abbreviate the health states. For instance: a health state with some problems in walking, no problems with self-care, no problems with performing usual activities, moderate pain and moderate anxiety is abbreviated to 21122 [8]. The primary objective of the Measurement and Value of Health studies, like this one, is to collect societal values for the 243 EQ-5D states to inform country-specific health policy decisions.

Due to budget constraints, the sampling frame was the list of consecutive patients and their accompanying family member attending six primary care centers: two in Buenos Aires, two in Rosario City, and two in smaller urban areas. Insufficient funds were available to apply standard sampling techniques, such as multi-stage sampling, which is a limitation of this study. From these lists, subjects were selected and recruited from October 2003 to July 2004 based on age and sex using a quota system rendering an initial sample demographically proportional to the Argentine adult population [9]. Interviews took place at the primary care centers.

To further reduce study costs, advanced students from medicine and social sciences were recruited and trained for the field work. Three training workshops for the interviewers were conducted by two study investigators (AV, VI). Each lasted three hours and included a detailed review of interview tasks using specifically designed audiovisual materials: a brief introduction to health preference elicitation methods, specifically based on TTO and VAS; TTO and VAS theoretical background and rationale and EQ-5D specific interviewer's tasks. Simulated interviews were held to reduce errors and evaluate interviewers' skills.

The interview protocol replicated the original Measurement and Value of Health study conducted in the University of York and has already been described in detail elsewhere [10–12] . Consented respondents completed an EQ-5D questionnaire describing their own health using the EQ-5D descriptive system and the EQ-VAS, a vertical "feeling thermometer" with anchors on the worst imaginable health state and best imaginable health state. Afterwards, the subjects were randomly assigned a set of health states and, with the assistance of a trained interviewer, completed the ranking exercise, the VAS exercise and the TTO exercise developed by the EuroQol group. The TTO exercise excluded optimal health and death, which anchor the TTO scale at zero and one, respectively. Lastly, participants completed a personal characteristics survey, including sociodemographic variables such as age, sex, educational status, living conditions, working status, smoking status, and disease history.

During the first portion of the study period (October to December 2003), subjects were asked to consider optimal health"immediate death," 22222, and five to ten randomly assigned states from the UK original set. To improve study efficiency, later respondents were provided one of three fixed set of states, each of which was composed of mild, moderate and severe states based on the New Zealand EQ-5D protocol (e.g., Group A, B or C; See table 1) [13]. Set assignment improved the efficiency of the study design by assuring that each third of the remaining respondents would evaluate the same states. All three sets shared a core of seven states, and included eight additional partially shared or unique states, totaling 15 states valued by each subject. From the 243 possible EQ-5D health states, the study included 22 of the 43 states used in the original United Kingdom protocol as well as "immediate death" and unconscious states.

The TTO responses were measured in six month increments, allowing a range from 1 to -19, and the VAS responses were measured on a 101 point scale. Dolan [10] replaced the negative TTO values with (10/x) –1, where×represents the number of years spent in the best health state (11111). For consistency and comparison across measures, all worse than death TTO values were transformed using Dolan's transformation; therefore the adjusted TTO values ranged from -1 to 1. The VAS responses were transformed to the common scale by subtracting the VAS response for "Immediate Death" and dividing it by the difference between responses of optimal health and "Immediate Death." The adjusted VAS and TTO values shared anchor points where one represents optimal health (11111) and zero represent "immediate death." For the statistical analysis, the adjusted VAS and TTO values were linearly transformed by subtracting their value from one (1-anchored response), so that all

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predicted values were positive and represented deviations from optimal health, where one is the value of "immediate death."

Statistical analysis included a description of the interview and respondent characteristics. For the VAS and TTO responses, a valuation model was estimated using ordinary least squares (OLS) linear regression with adjusted standard errors for individual-specific correlation using the Huber-White method. Without adjustment, the OLS standard errors misrepresent the amount of data. By accounting for clustering, the standard errors are larger, but this change does not affect the coefficient estimates. No individual-specific intercept shifts (i.e., random or fixed effects) were included in this analysis for theoretical and analytical reasons: 1) the scale is anchored at the individual level making individual-specific shifts unnecessary; 2) accounting for individual-specific effects is contrary to the objective of societal valuation, because the resulting predictions would be homogenized to a non-representative population by construction; 3) fixed effects cost one response per subject in terms of degrees of freedom, which can not be afforded in this sample; and 4) random effects require strong parametric assumption, and their inclusion does not influence predictions, if symmetric.

The original United Kingdom valuation study estimated the "N3" regression model, which included a constant and eleven variables: two level indicators for each of the five dimensions and an indicator of any 3s[10]. The N3 model is a restricted form of the "D1" model used in the United States valuation study by Shaw and colleagues [10, 14]. While capturing the same variation as the N3 model, the original D1 model also included two additional variables: a squared count of 2's that is shifted one unit if there were any twos (i.e., (number of 2's)*(number of 2's) + (number of 2's > 0)) and a squared count of 3's (i.e., (number of 3's)*(number of 3's)). Instead of the shifted variable, we include a squared count of 2's (i.e., (number of 2's)*(number of 2's)) and an indicator of any 2's (i.e., (number of 2's > 0)), which is a relaxed form the D1 model that was also proposed in the US valuation study [14].

In the regression model, the inclusion of a constant, an indicator of any 3's and an indicator of any 2's, is equivalent to the inclusion of the three disjoint category-specific indicators included in our sixteen-variable model: (No 3's), (at least one 3, but no 2's), (at least one 3 and at least one 2). In the N3 model, the coefficients for the latter two indicators are assumed to be equal, and the coefficients for the count of 2's when 3's are present and the two squared counts are zero. In the D1 model, the difference between the latter two category-specific indicators equals the coefficient for the squared count of twos, and the coefficient for the count of 2's when 3's are present is zero. Because the N3 and D1 models are nested within our sixteen-variable model, we performed simple Wald tests for linear hypotheses to assess the restrictions posed by the nested models.

After estimating the sixteen regression coefficients, we predict the values for 242 EQ-5D health states, excluding 11111, of which only 22 states were directly assessed in the study. These predicted values represent the Argentine value set (see Appendix). Confidence intervals around the predicted values are estimated by percentile bootstrap, an empirical technique that does not require parametric assumption over the full probability distribution [15]. By re-sampling respondents with replacement and re-estimating the sixteen-variable model, we produce a set of one thousand estimates of each coefficient and predicted value. Once ranked, the 25^{th} and 975^{th} estimates describe the 95% confidence interval around the point estimates.

To illustrate similarities and differences in country-specific values, the relationship between Argentine and United States values was graphically shown and assessed by linear correlation using a Pearson's rho. We further examined the average absolute difference, the number of states with a clinically meaningful difference (greater than 0.05), and the statistical significance of the differences in country-specific predicted values by comparing the 95% confidence intervals of the Argentine predicted values to the predictions from the United States [14]. All statistical analyses were conducted using STATA MP 9.2.

RESULTS

Between October 2003 to July 2004, 611 subjects out of 679 (90%) were successfully recruited to participate in Argentina's first Measurement and Value of Health study. Through quota sampling, the sample maintained age, sex and education status characteristics that represented the Argentine population (see Table 2). Among the respondents, 53% were female. Age ranged from 18 to 83 years and the average age was 43.5 years.

Among the 611 respondents, 141 received a non-standardized set of EQ-5D health states, 180 received set A, 179 received set B and the remaining 111 respondents received set C (See table 1). About half of the respondents (47%) were randomly selected to complete the TTO task first followed by the VAS exercise, while the other 53% completed the valuation tasks in the reverse order.

The interviews, including the three valuation tasks, took 23 to 120 minutes, with an average of 53 minutes. When the respondents were asked which task they believed best represents their preferences over the states, 30% chose the ranking task, 40% chose the VAS task, 24% chose the TTO task, and 6% did not know or were not sure. Self-reported accuracy of the tasks was unrelated to the order of the tasks, but significantly related to the length of the interview (chi-squared p-value < 0.05). Respondents whose interviews took over an hour were 44% more likely to report that the ranking task best represented their preference and 30% were less likely to choose the TTO task.

The average number of minutes for the rank, VAS and TTO tasks were 6.5, 6.1 and 29.4, respectively. Among the respondents, 61% reported difficulty with the TTO task, which was significantly greater than 21.1% and 12.7% who reported difficulty with rank and VAS tasks, respectively. Respondents who completed the TTO task first reported greater difficulty with the VAS and TTO task (9.7% and 9.3%, respectively) than respondents who completed the VAS task first, which suggested that task order may influence respondent perceptions of task difficulty. In summary, respondents took more time with the TTO task, reported that it was the least representative of their preferences, and had the greatest difficulty with its completion.

VAS and TTO Response

Adjusted TTO responses were bounded between -1 and 1 by construction; however, the adjusted VAS values ranged from -3 to 1. Under closer inspection, six adjusted VAS responses were less than -1, representing the preferences of four respondents. These four respondents were not removed from the VAS analytical sample; however, one respondent, who equated "immediate death" and optimal health, was removed, because his/her remaining VAS responses could not be rescaled. As a result, only one respondent was removed on the basis of logical consistency in VAS responses; however we retain the respondent's TTO values. Two hundred and fifty seven patients (42.6%) had at least one inconsistency (range 0 to 7), and only 5% of patients had 5 inconsistencies or more. They were all included in the TTO analysis.

As in previous studies, responses relating to unconsciousness were excluded from the analysis, because the state was not part of the EQ-5D descriptive system. Also, the initial non-standardized sets included a handful of states that were not found in the standardized sets, shown in Table 1, and responses for these states were excluded from the analysis due to the low number of observations. While in the standardized set the average numbers of response per state was 313 (range 143–609), in the other states that were excluded from the analysis there was an average of 12 (range 3 to 26) responses by state. As a result, the average number of complete responses contributed by the respondents who received non-standardized sets were around seven compared to twelve responses from standardized respondents. The final analytical samples included 611 TTO respondents with a total 6,887 state responses and 610 VAS respondents with a total of 6,892 responses.

Argentine Values for EQ-5D Health States

The linear regression coefficients and R-squares from the VAS and TTO valuation models were shown in Table 3. Based on the Wald test results, we rejected the linear constraints imposed by the N3 and D1 models in favor of the more flexible sixteen-variable model. In addition, the coefficient on the count of 2’s when at least one 3 is present was significant and suggested that the detrimental effects of 2’s lessens when the state contained one or more 3’s.

The level-specific coefficients were significant, and suggested that the presence of a 2 or 3, instead of a 1, on any domain lowered health state value. Reduced mobility was associated with the largest decreases in value and anxiety/depression was associated with the smallest decreases, except in one case: unable to perform usual activities appeared less detrimental than extreme anxiety and depression in the TTO values.

The category-specific coefficient for only 1’s and 2’s is not significant in the TTO and VAS models, which demonstrated the importance of domain and the number of 2’s. The category-specific coefficient for only 1’s and 3’s was significant and substantial (>0.35), which suggested the contrary, that the presence of at least one three was more important than which domain had a 3 and the number of threes. The category-specific coefficient for at least one 2 and one 3 was also significant, and differentiated TTO and VAS values by 0.18: states in this category had a lower predicted TTO value than VAS value. Lastly, the negative coefficients for the squared variables suggested that increasing the number of 2’s or 3’s had a decreasing detrimental effect on health state value.

These coefficient estimates allowed for the prediction of the full set of EQ-5D health state values for the Argentine general population for both the VAS and TTO models (see Appendix). Figure 1 compared the predicted VAS and TTO values of Argentina. The VAS values ranged from -0.023 to 0.841, narrower than the TTO range from -0.3759 to 0.931. Only one state had a significantly negative VAS values, 33333, and twenty one states had significantly negative TTO values, possibly due to the 0.18 difference in the category specific indicator. Over the 243 states, the VAS and TTO values were highly correlated (Pearson’s rho=0.943).

By comparing the predicted values to the mean responses for each hypothetical health state, we examined goodness of fit based on absolute difference for each health state and overall. For all health states, except 11312, the absolute difference in TTO value is less than 0.1 and mean absolute difference was 0.039. The percentile bootstrap confidence intervals for these differences rejected 0.1 for 18 out of the 22 states, suggesting that most differences are small. Similar results are found in the VAS values. In terms of agreement, Lin’s coefficient of agreement between the means and the predicted values is above 0.98 for the TTO and VAS, suggesting strong concordance. In table 4 we show both descriptive statistics of the 22 directly elicited states as were as their comparison with those predicted by the model.

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The TTO values of Argentina and the United States were also highly correlated (Pearson's rho=0.963). The average absolute difference between the two countries' values was 0.06 and this difference was greater than 0.05 for over half of the states (51.6%). Based on the bootstrap evidence on the 95% confidence intervals of the Argentine TTO values (see Appendix), we rejected the US TTO values for 152 of the 242 states (62.8%), which suggested that Argentine values differed from US values for nearly two thirds of the EQ-5D descriptive system. Figure 2 further showed that the Argentine population placed lower values on mild states and higher values on severe health states, leading to greater compression between state values.

CONCLUSION

This is the first study to provide a population-based value set for health states in Latin America and the second study in the Western hemisphere. Though our predictions may not be fully representative of the entire Argentine adult population, due to the inherent budget and sampling limitations, the sample was composed of both urban and non-urban populations and respected Argentine sociodemographic characteristics. Additionally, they had a broadly similar level of self-reported health, which gives more confidence regarding the local generalizability of our results. Given that each country in Latin American is distinctive, it may seem inappropriate to generalize Argentine values to the rest of Latin America; however, it also does not seem appropriate to apply the recently published United States weights from the subgroup of 500 Spanish speaking Hispanics [16] or the pioneering United Kingdom values [10] for health policy decisions in these developing countries.

In terms of external validity, additional Argentine responses were not collected to compare the predicted values; however, the predicted values show high correlation with those of the United States general population main analysis [14]. Though the choice of the value set to which to be compared is a matter of judgment, the absence of other studies in America, the importance of its Spanish speaking population, the large sample, and the similarity of the modeling approach made as choose the US general population values and not that of its Spanish speaking subgroup analysis as a comparator. While the sets from both countries are highly correlated in rank or after linear adjustment, the Argentine set exhibits greater compression between health state values compared to the United States set. This compression suggests that the Argentine population doesn't value changes in health as much as the United States population; therefore, treatments considered cost-effective in the United States may not be considered cost-effective in Argentina. Differences between the Argentine and US value sets, which were significant for over two thirds of the EQ-5D descriptive system, may be explained by differences in the rescaling of negative values and the relaxed form of the sixteen-variable model, as well as selection of sampling frame, differences in language, set of states considered, and population preferences. The exploration and explanation of these differences are an interesting topic for further research. Although national valuations offer the benefit of local sovereignty, at the same time they hinder the potential for transnational comparisons of results from population utility studies performed in different countries. Nevertheless they are more relevant for local decision-making and health economic evaluations.

With the high response rate, high R^2, and low number of missing responses, internal validity is unlikely to be a significant concern. Based on the Wald test results, the sixteen-variable model was shown to provide a better fit than both the N3 and the D1 models for both the VAS and TTO values. In addition, we find evidence that moderate conditions are considered less harmful when coping with more severe problems and those additional problems are less detrimental as they accumulate. Further research may address the relative merits of descriptive capacity and parsimony in health states valuation studies.

Though TTO and VAS estimations produced correlated predictions, TTO is generally favored over VAS, because it accounts for time spent in the different health states [17]. Based on the papers presented at the 2007 EuroQol Meeting in The Hague, the Netherlands, the debate over whether to use the more psychometric VAS values over the more econometric TTO values continues within the valuation research community [18]. While the VAS has potentially interesting properties and is preferred by respondents, we favor that local and regional economic evaluations that continue to apply on choice-based values, such at the Argentine TTO set.

In summary, this study provides necessary estimates for cost-utility analyses in Argentina. In addition, we believe that the results will assist researchers and decision makers in other parts of Latin America. Regional researchers concerned with local validity have now the option of using the recently published United States weights from the subgroup of Spanish speaking Hispanics [16] or otherwise the currently presented set. Again, the Argentine data were collected through quota sampling of subjects from six primary care centers, and while the sample's sociodemographic and self-reported health characteristics reflect national estimates, future work may afford a random sample of the Argentine population and improve upon the estimates. The evidence suggests that Argentine values are different from United States values, and motivates further research in country-specific health preferences in the developing world. For reasons of sovereignty and validity, policymakers should incorporate local preferences into societal decisions rather than those derived from other countries.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

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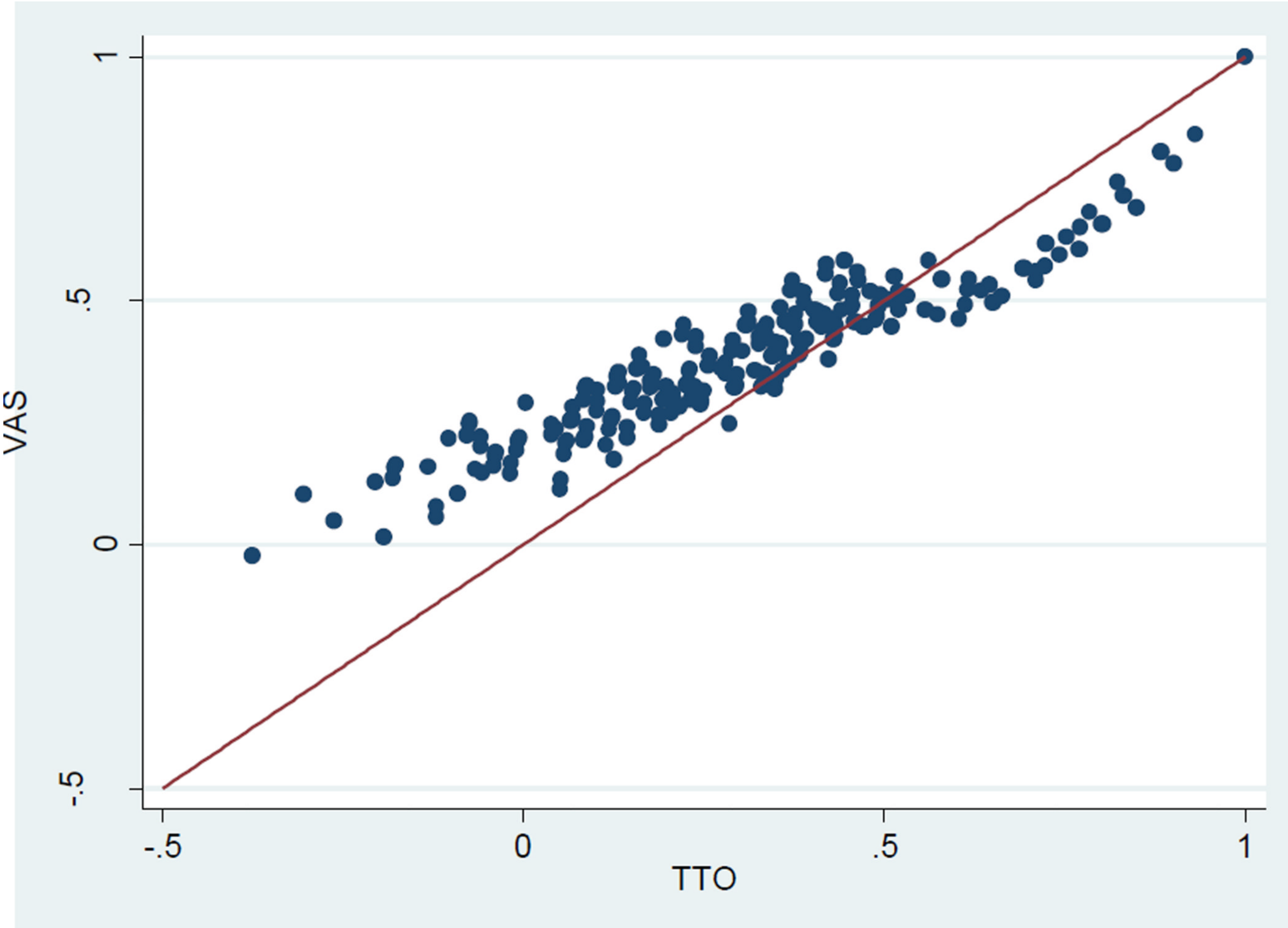

Figure 1.
Comparison of Predicted Argentine VAS and TTO Values*
* The value scale is anchored at zero by immediate death and at one by optimal health (11111).

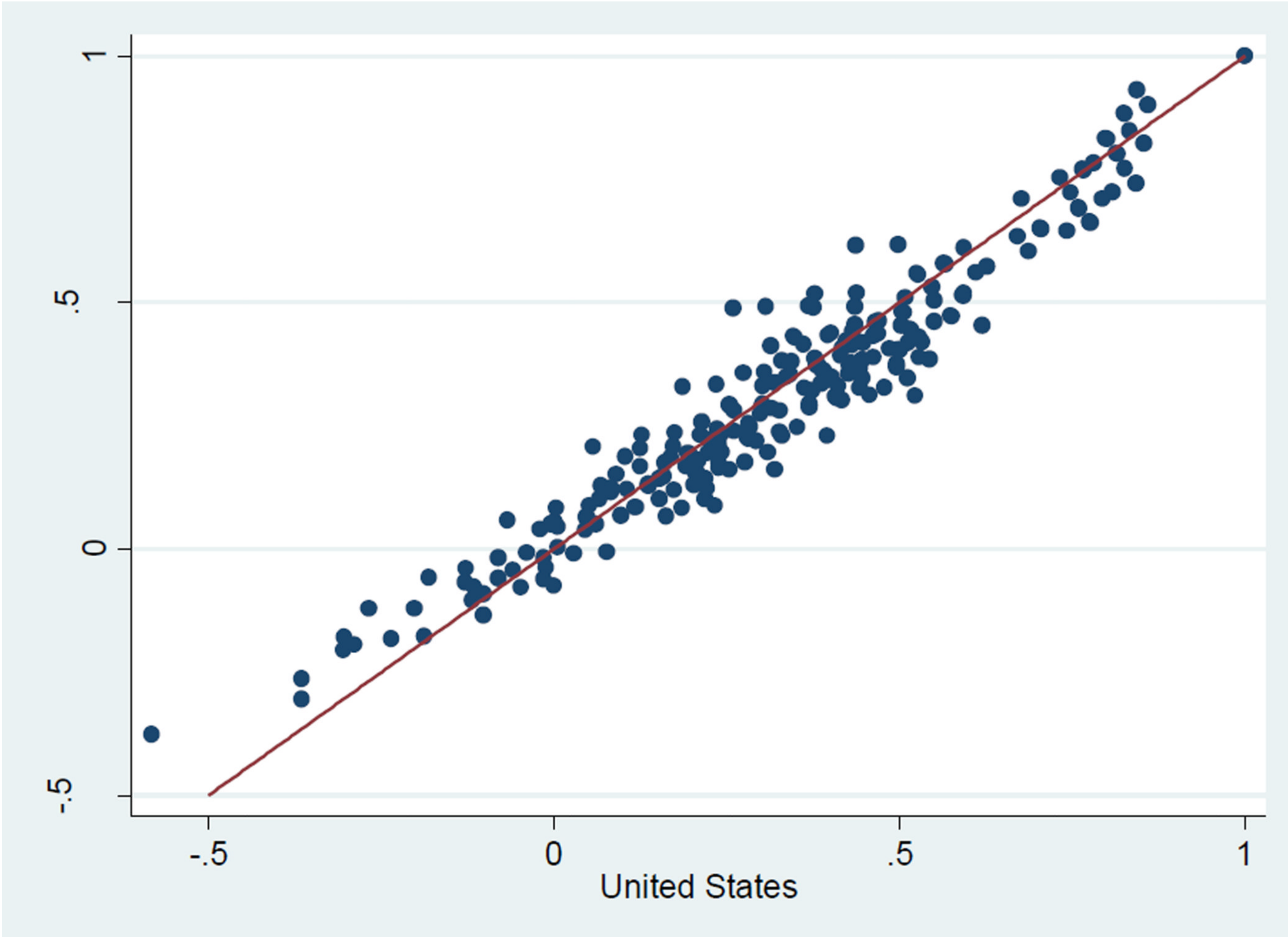

Figure 2.
Comparison of Predicted TTO Values for the Argentina and the United States*
* The value scale is anchored at zero by immediate death and at one by optimal health (11111).

Table 1

Standardized Sets of Fifteen EQ-5D Health States

EQ-5D State Grouping	Set A	Set B	Set C
Common to all Sets	11111	11111	11111
	11112	11112	11112
	11121	11121	11121
	11211	11211	11211
	21111	21111	21111
	33333	33333	33333
	Immediate Death	Immediate Death	Immediate Death
Partially Shared	12111		12111
		11133	11133
		22222	22222
		23232	23232
		33323	33323
	32211	32211	
Set-specific	11122	11131	11113
	21232	13311	11312
	22233	32313	32223
	22323		
	33321		
	Unconscious		

Table 2

Study sample characteristics and its comparison with Argentine general population data

	Study Sample		Argentine Population
Socio-demographic variables	**n/N**	**%**	**%**
Age group			
18 – 39 years	275/611	45.0	45 *
40 – 59 years	227/611	37.1	34 *
60 – 79 years	104/611	17.0	18 *
80 + years	5/611	0.8	0.18 *
Female	320/611	52.3	52.5 *
Educational status			
Elementary school uncompleted	73/592	12.3	14.2 *
Elementary school completed	172/592	29.0	27.9 *
High school uncompleted or completed	220/592	37.3	37.1 *
Tertiary level uncompleted or completed	126/592	21.2	17.0 *
Self-reported Health Status			
Excellent	61/609	10	9.2 †
Very good	242/609	39.7	25.3 †
Good	212/609	34.8	45.5 †
Regular	60/609	10	17.3 †
Bad	34/609	5.6	2.6 †

*National Institute of Statistics and Census (INDEC), National Census 2001. accessible at http://www.indec.mecon.ar/webcenso/index.asp

†National Risk Factor Survey, Ministry of Health 2005, accesible at http://www.msal.gov.ar/htm/Site/enfr/index.asp

Table 3

Model Estimation

	Visual Analogue Scale			Time Trade-off		
State Attribute	**Coefficient**	**S.E.**	**p-value**	**Coefficient**	**S.E.**	**p-value**
Mobility, 2	0.248	0.025	0.000	0.189	0.021	0.000
Self-Care, 2	0.184	0.026	0.000	0.128	0.022	0.000
Usual Activity, 2	0.209	0.024	0.000	0.111	0.020	0.000
Pain/Discomfort, 2	0.185	0.024	0.000	0.130	0.018	0.000
Anxiety/Depression, 2	0.150	0.022	0.000	0.082	0.015	0.000
Mobility, 3	0.247	0.020	0.000	0.272	0.030	0.000
Self-Care, 3	0.178	0.012	0.000	0.209	0.019	0.000
Usual Activity, 3	0.148	0.021	0.000	0.067	0.031	0.033
Pain/Discomfort, 3	0.157	0.019	0.000	0.209	0.030	0.000
Anxiety/Depression, 3	0.116	0.010	0.000	0.135	0.015	0.000
Only 1's and 2's	0.028	0.020	0.154	−0.003	0.016	0.857
Only 1's and 3's	0.388	0.017	0.000	0.355	0.025	0.000
At least one 2 and at least one 3	0.232	0.031	0.000	0.413	0.042	0.000
Number of 2's given at least one 3	−0.086	0.010	0.000	−0.117	0.011	0.000
Number of 2's squared	−0.020	0.004	0.000	−0.010	0.003	0.003
Number of 3's squared	−0.008	0.002	0.000	0.005	0.003	0.127
R-squared	0.928			0.897		
Wald Test of N3 Model	260.22		0.000	75.25		0.000
Wald Test of D1 Model	76.57		0.000	56.08		0.000

Table 4

Mean Adjusted Responses and Mean Absolute Difference Between Predicted Values and Mean Adjusted Responses by EQ-5D Health State

EQ-5D State	Visual Analogue Scale				Time Trade-off			
	Mean	Mean Absolute Difference	95% Confidence Interval		Mean	Mean Absolute Difference	95% Confidence Interval	
			Lower	Upper			Lower	Upper
11112	0.851	0.011	0.005	0.017	0.913	0.018	0.008	0.027
11113	0.526	0.022	0.005	0.041	0.517	0.012	0.001	0.042
11121	0.787	0.020	0.014	0.026	0.887	0.004	0.000	0.012
11122	0.720	0.004	0.000	0.009	0.834	0.003	0.000	0.009
11131	0.459	0.004	0.000	0.015	0.355	0.077	0.061	0.093
11133	0.371	0.002	0.000	0.010	0.311	0.030	0.018	0.045
11211	0.785	0.003	0.000	0.007	0.892	0.009	0.006	0.013
11312	0.627	0.043	0.027	0.059	0.721	0.160	0.139	0.184
12111	0.807	0.000	0.000	0.008	0.886	0.002	0.000	0.010
13311	0.294	0.024	0.014	0.035	0.316	0.032	0.021	0.044
21111	0.749	0.005	0.001	0.009	0.846	0.022	0.016	0.028
21232	0.411	0.039	0.024	0.053	0.345	0.088	0.070	0.107
22222	0.491	0.001	0.000	0.001	0.612	0.000	0.000	0.001
22233	0.374	0.049	0.032	0.065	0.280	0.044	0.024	0.064
22323	0.357	0.000	0.000	0.013	0.333	0.027	0.013	0.039
23232	0.282	0.014	0.004	0.025	0.220	0.011	0.001	0.025
32211	0.381	0.007	0.001	0.014	0.341	0.005	0.000	0.014
32223	0.324	0.026	0.005	0.044	0.315	0.083	0.055	0.108
32313	0.206	0.049	0.034	0.063	0.003	0.063	0.043	0.088
33321	0.265	0.072	0.053	0.092	0.068	0.078	0.051	0.109
33323	0.108	0.029	0.020	0.038	−0.259	0.078	0.065	0.090
33333	−0.015	0.007	0.005	0.009	−0.356	0.020	0.016	0.021
All	0.487	0.020	0.016	0.024	0.453	0.039	0.036	0.044
Lin's Rho		0.990	0.993	0.990		0.995	0.988	0.985