Maths in Health

EQ-5D Excel Suite: a toolkit to estimate utility values and analyse and report EQ-5D data

User guide

EQ-5D

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1. Introduction

The EQ-5D Suite toolkit has been created to make it easy for users to calculate EQ-5D utility values and analyse and report EQ-5D data. To accommodate different users' needs, the tools are available in Excel, Stata, and R, ensuring maximum flexibility and user-friendliness, regardless of their experience or software preference. Stata and R programs are available from the developers and reported in detail elsewhere.

This user guide will walk the user through using the EQ-5D Suite toolkit in Excel. This tool allows users to compute EQ-5D direct utility values using either the default value sets (35 for EQ-5D-3L, 29 for EQ-5D-5L, and 4 for EQ-5D-Y) or their own custom value sets. Additionally, users can calculate crosswalk utilities using the original crosswalk [1] (which converts EQ-5D-5L responses to EQ-5D-3L index values) or the recently developed reverse crosswalk [2] (which converts EQ-5D-3L responses to EQ-5D-5L index values).

Users can also employ the EQ-5D Suite Excel tool to analyse cross-sectional and longitudinal EQ-5D data following examples from the textbook "Methods for analysing and reporting EQ-5D data" [3]. This tool enables them to examine three types of data generated by the EQ-5D questionnaire: the EQ-5D profile, the EQ Visual Analogue Scale (VAS), and the EQ-5D utility index values.

2. App overview

The EQ-5D Suite Excel Tool features an easy-to-use interface. Upon opening the tool, users will see two sheets: the "Welcome" sheet, which serves as the tool's main screen, and an empty "Data" sheet. The Welcome sheet instructs users to copy and paste their data into the "Data" sheet and click on the "EQ-5D Suite" tab to begin.

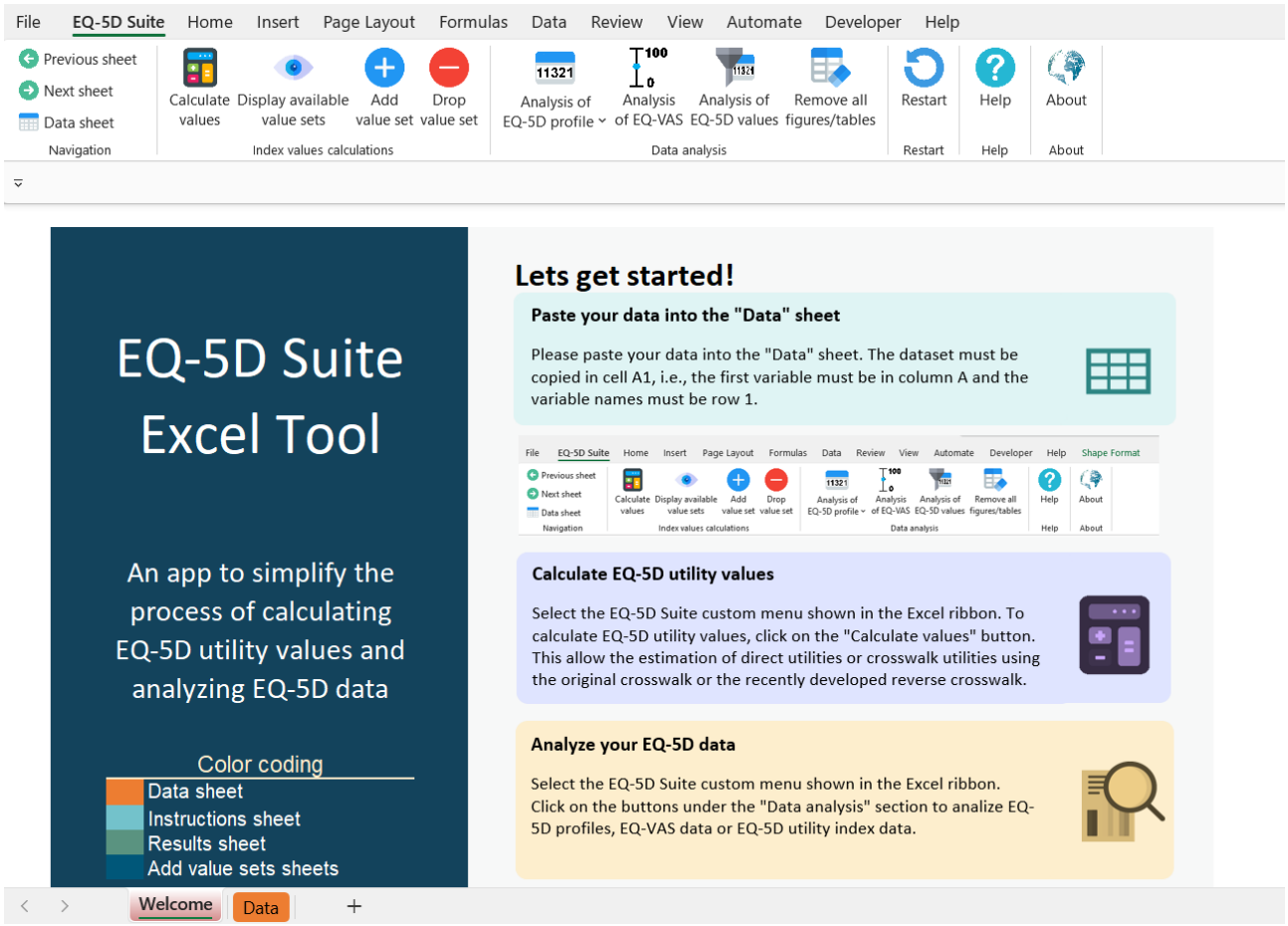


Figure 1. Welcome screen.

The EQ-5D Suite Excel Tool comes with a custom menu of buttons called "EQ-5D Suite" that is integrated into the Excel workbook's existing ribbon.

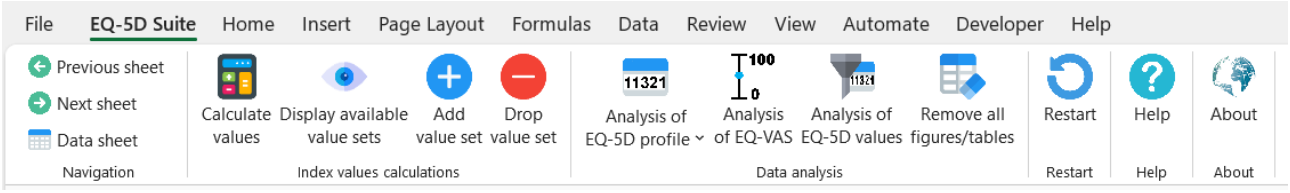


Figure 2. The EQ-5D Suite custom menu.

The EQ-5D Suite custom menu is organized into the following sections:

- Navigation: The "previous sheet" and "next sheet" buttons help users navigate between sheets, while the "Data sheet" button directs users back to their data.
- Index values calculations: This section contains buttons for calculating EQ-5D utility values. Section 3 offers comprehensive guidance on using these features.
- Data Analysis: Users can analyse EQ-5D data with the buttons in this section. Section 4 provides in-depth instructions on these features.
- Restart: By clicking the "Restart" button, users can remove spreadsheets containing figures and tables, and clear the "Data" sheet.
- Help: Clicking the "Help" button opens a new sheet called "Instructions" that contains detailed guidance for each button in the EQ-5D Suite custom menu. The "Instructions" sheet has a menu that lets users choose which button they need help with.

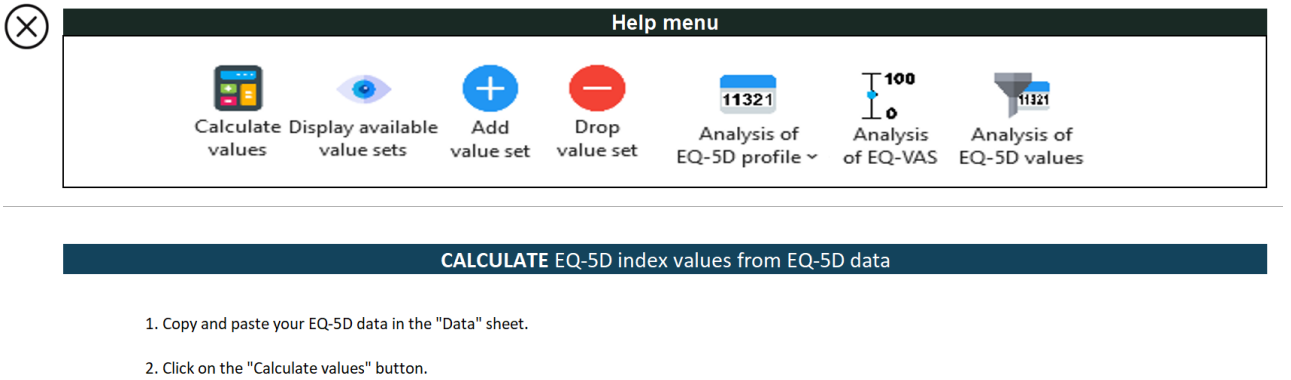


Figure 3. The "Instructions" sheet.

- About. When users click on the "About" button, a pop-up window appears, providing information about the tool's main functionalities, acknowledgments, and references.

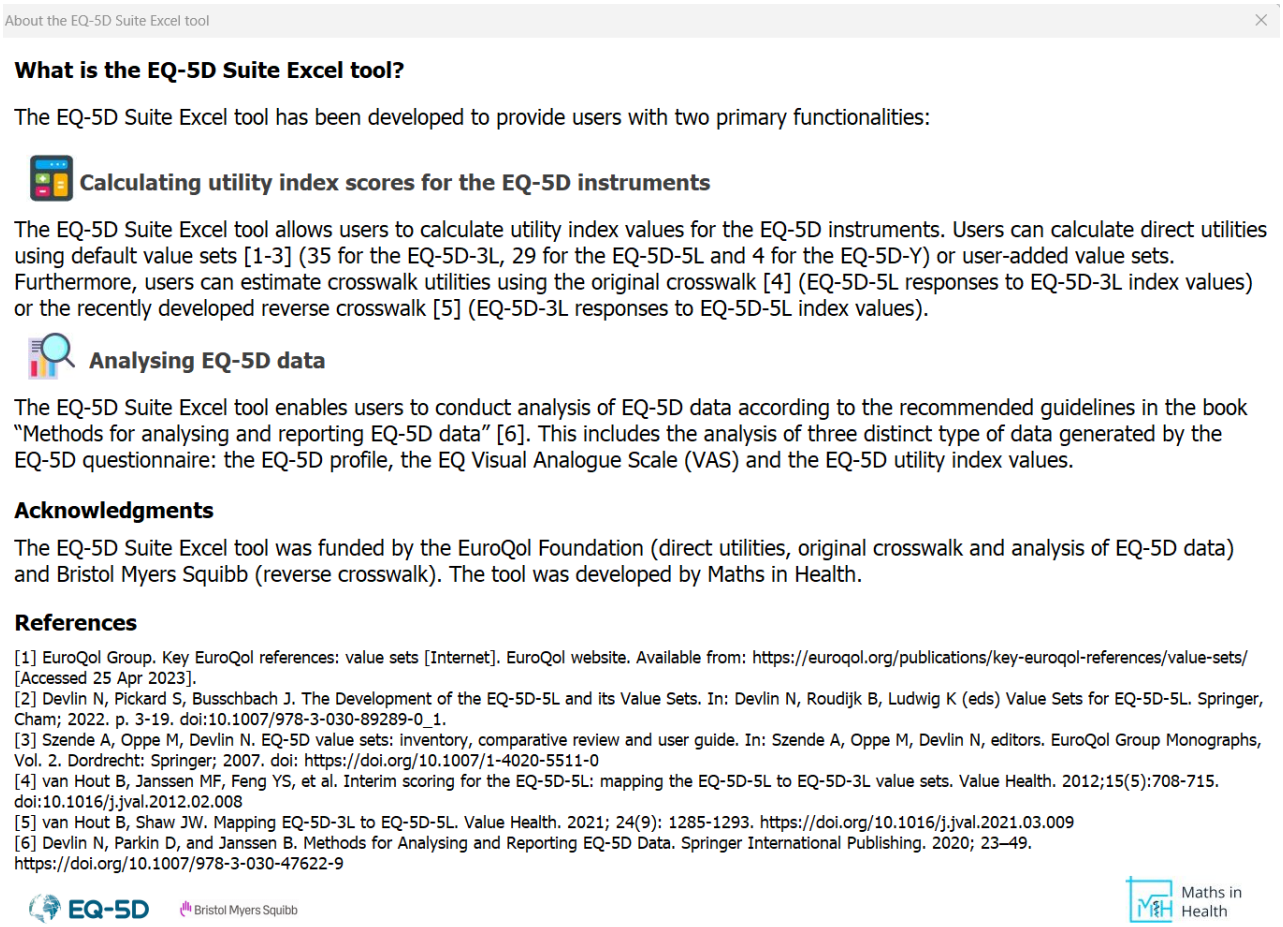


Figure 4. The pop-up window displayed when users click on the “About” button in the EQ-5D-Suite custom menu.

3. Estimation of EQ-5D values

This section offers guidance on estimating index values for the EQ-5D instruments using the EQ-5D Suite Excel Toolkit. The tool comes with default country-specific value sets: 35 for EQ-5D-3L, 29 for EQ-5D-5L, and 4 for EQ-5D-Y. Users can calculate direct utilities or crosswalk utilities with the original crosswalk [1], which converts EQ-5D-5L responses to EQ-5D-3L index values, or the reverse crosswalk [2], which converts EQ-5D-3L responses to EQ-5D-5L index values. Moreover, users can add new value sets to the tool using advanced options. These features can be found in the "Index values calculation" section of the EQ-5D Suite custom menu.

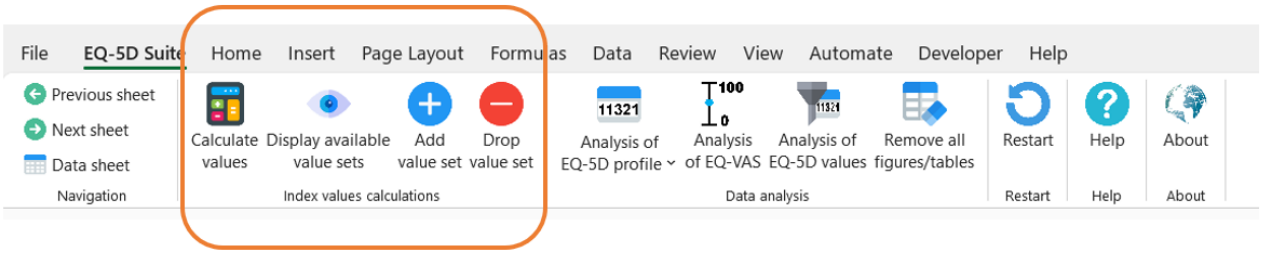


Figure 5. The "Index values calculations" section in the EQ-5D Suite custom menu.

3.1 Value sets

The EQ-5D Suite Excel tool enables users to calculate direct EQ-5D values using published value sets. To use this feature, users must click on the “Calculate values” button. If the “Data” sheet is empty, a pop-up window will remind users to paste their data into the “Data” sheet.

In the following subsections, we will illustrate how to obtain EQ-5D-3L, EQ-5D-5L and EQ-5D-Y direct utilities using examples.

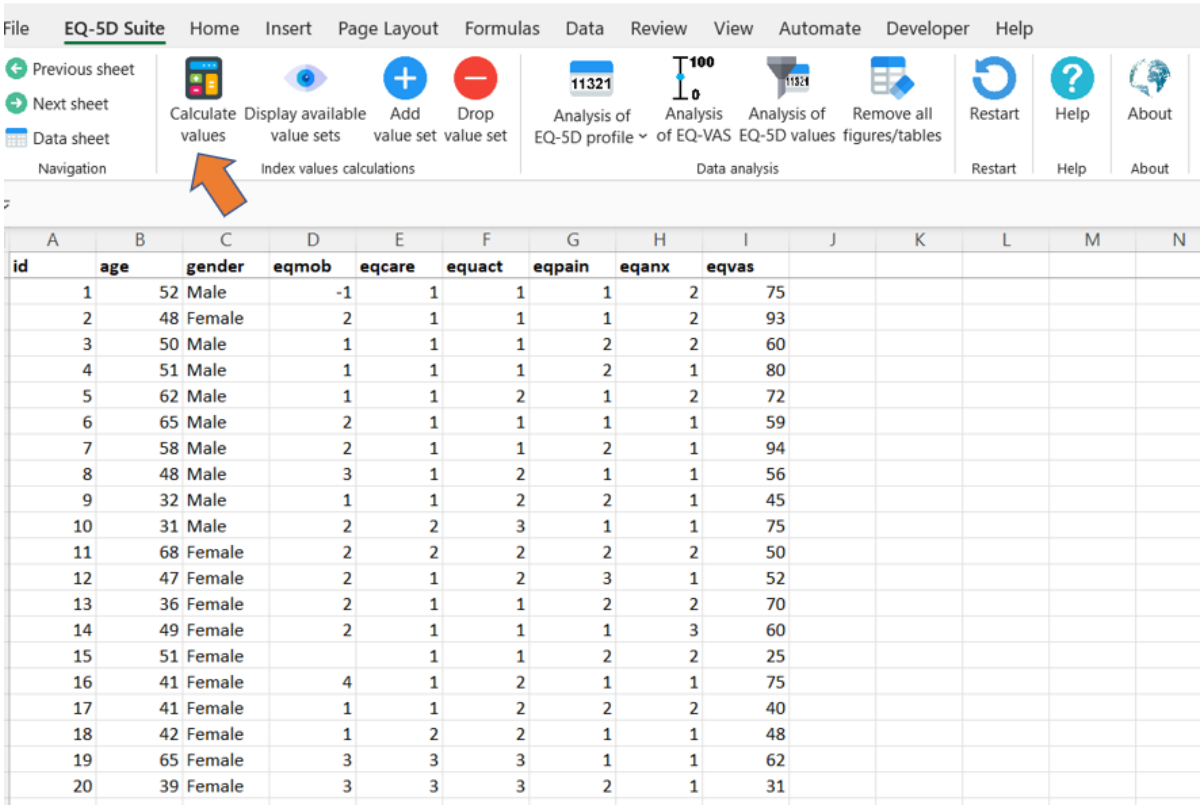
3.1.1 EQ-5D-3L

This section provides an example of how to compute EQ-5D-3L index values from individual responses to the five dimensions of the EQ-5D-3L quality of life instrument: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression.

There are 35 default value sets to allow the estimation of EQ-5D-3L index values. The available countries and their respective codes are: the United Kingdom (GB), the United States (US), Canada (CA), Argentina (AR), Argentina VAS (AR_VAS), Australia (AU), Belgium VAS (BE_VAS),Chile (CL), China (CN), Denmark (DK), Finland VAS (FI_VAS), France (FR), Germany (DE), Germany VAS (DE_VAS), Hungary (HU), Iran (IR), Italy (IT), Japan (JP), Malaysia VAS (MY_VAS), New Zealand

VAS (NZ_VAS), Poland (PL), Singapore (SG), Slovenia (SI), Slovenia (SI_VAS), South Korea (KR), Spain (ES), Sri Lanka (LK), Sweden (SE), Taiwan (TW), Thailand (TH), the Netherlands (NL), Trinidad and Tobago (TT), Tunisia (TN), Portugal (PT) and Zimbabwe (ZW). The default value set is United Kingdom (GB).

To demonstrate how to obtain direct EQ-5D-3L utility values, we use a hypothetical dataset of 20 individuals with data on the five EQ-5D-3L dimensions, gender and age. This dataset is pasted into the “Data” sheet.



id	age	gender	eqmob	eqcare	equact	eqpain	eqanx	eqvas
1	52	Male	-1	1	1	1	2	75
2	48	Female	2	1	1	1	2	93
3	50	Male	1	1	1	2	2	60
4	51	Male	1	1	1	2	1	80
5	62	Male	1	1	2	1	2	72
6	65	Male	2	1	1	1	1	59
7	58	Male	2	1	1	2	1	94
8	48	Male	3	1	2	1	1	56
9	32	Male	1	1	2	2	1	45
10	31	Male	2	2	3	1	1	75
11	68	Female	2	2	2	2	2	50
12	47	Female	2	1	2	3	1	52
13	36	Female	2	1	1	2	2	70
14	49	Female	2	1	1	1	3	60
15	51	Female		1	1	2	2	25
16	41	Female	4	1	2	1	1	75
17	41	Female	1	1	2	2	2	40
18	42	Female	1	2	2	1	1	48
19	65	Female	3	3	3	1	1	62
20	39	Female	3	3	3	2	1	31

Figure 6. Simulated EQ-5D-3L dataset before estimating index values.

When users click on the "Calculate values" button, a pop-up window appears asking them to select the EQ-5D version in their dataset (EQ-5D-3L, EQ-5D-5L, or EQ-5D-Y). In this particular case, users should choose the EQ-5D-3L version.

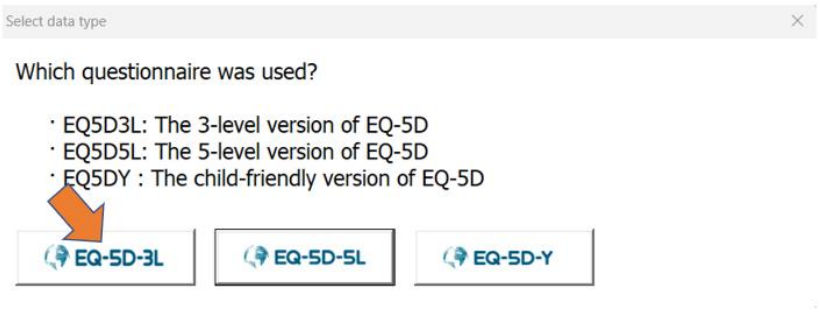


Figure 7. Pop-up window to select the EQ-5D version in the data sheet.

A second pop-up window will appear, asking users to select the EQ-5D index values they wish to calculate (EQ-5D-3L for direct estimation, EQ-5D-5L for reverse crosswalk). In this example, users must choose the EQ-5D-3L version.

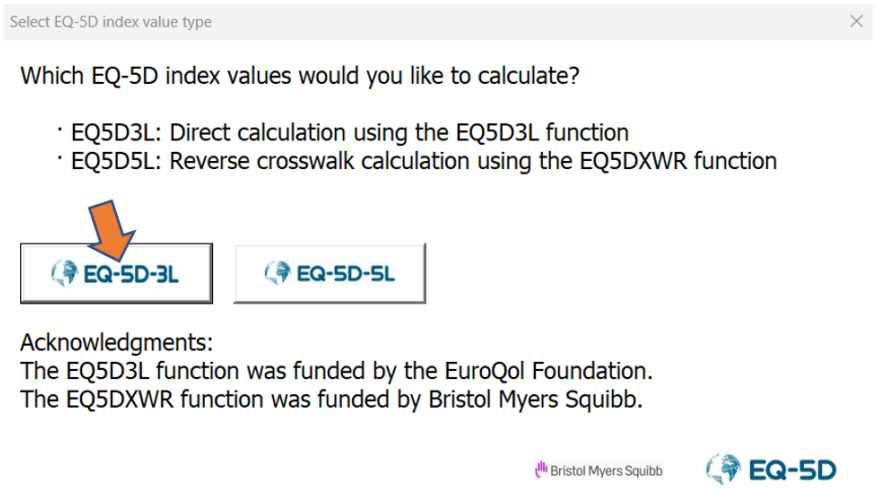


Figure 8. Pop-up window to select the EQ-5D version to obtain index values.

Finally, users will be presented with the “Calculate values form”, where they can input the necessary information to calculate EQ-5D values. To complete this form, users must follow these steps:

- First, select the variable names for the five EQ-5D dimensions from the dropdown menu, which displays the list of variable names in the “Data” sheet.
- Next, choose the desired value set. This option is pre-filled with the default value set (the EQ-5D-3L default is the United Kingdom (GB)). Users can select from the list of available EQ-5D-3L value sets in the dropdown menu. Each value set is identified by the country name and country code in brackets.
- Finally, enter the index values variable name. By default, the variable name will be "index_" concatenated with the country code of the selected value set.

Optionally, users can select the error value on the estimated index value variable, which represents the index value output for observations with missing or invalid values in any of the EQ-5D dimensions. The error value is blank by default but users can choose common missing/invalid indicators (e.g, NA, error).

In addition, users can choose the summary statistics option to obtain summary statistics for the EQ-5D-3L index values, including the number of observations with missing or invalid values in any of the EQ-5D dimensions.

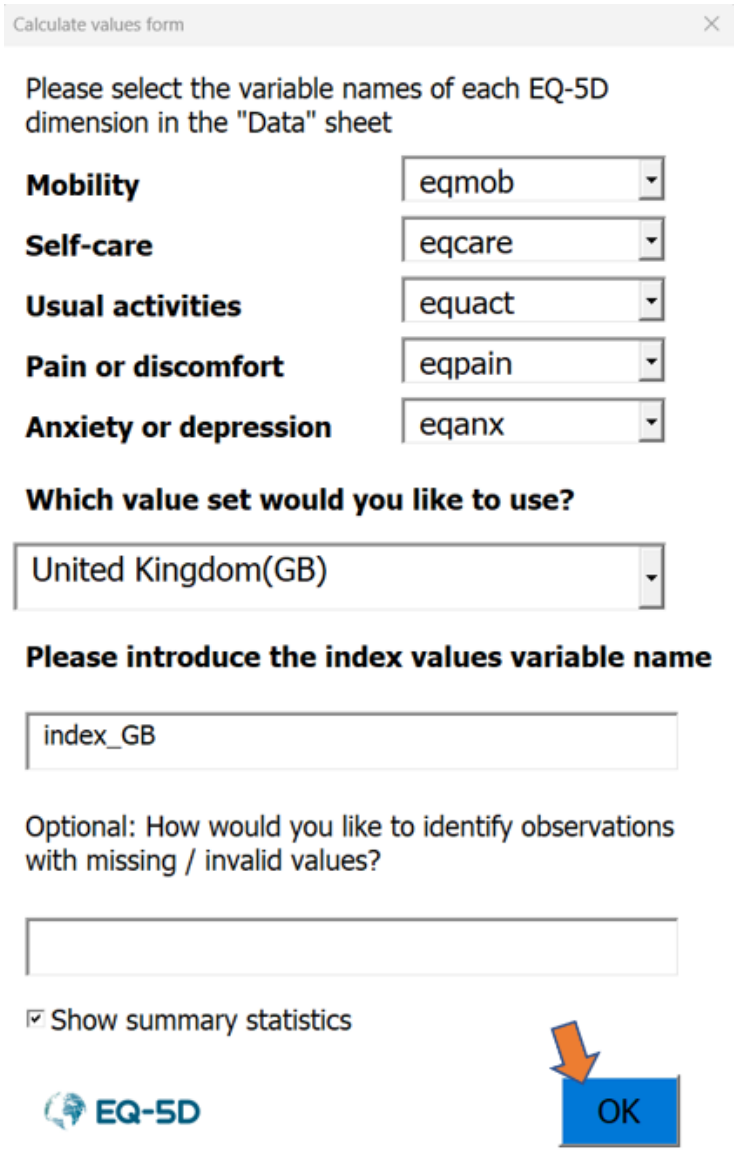
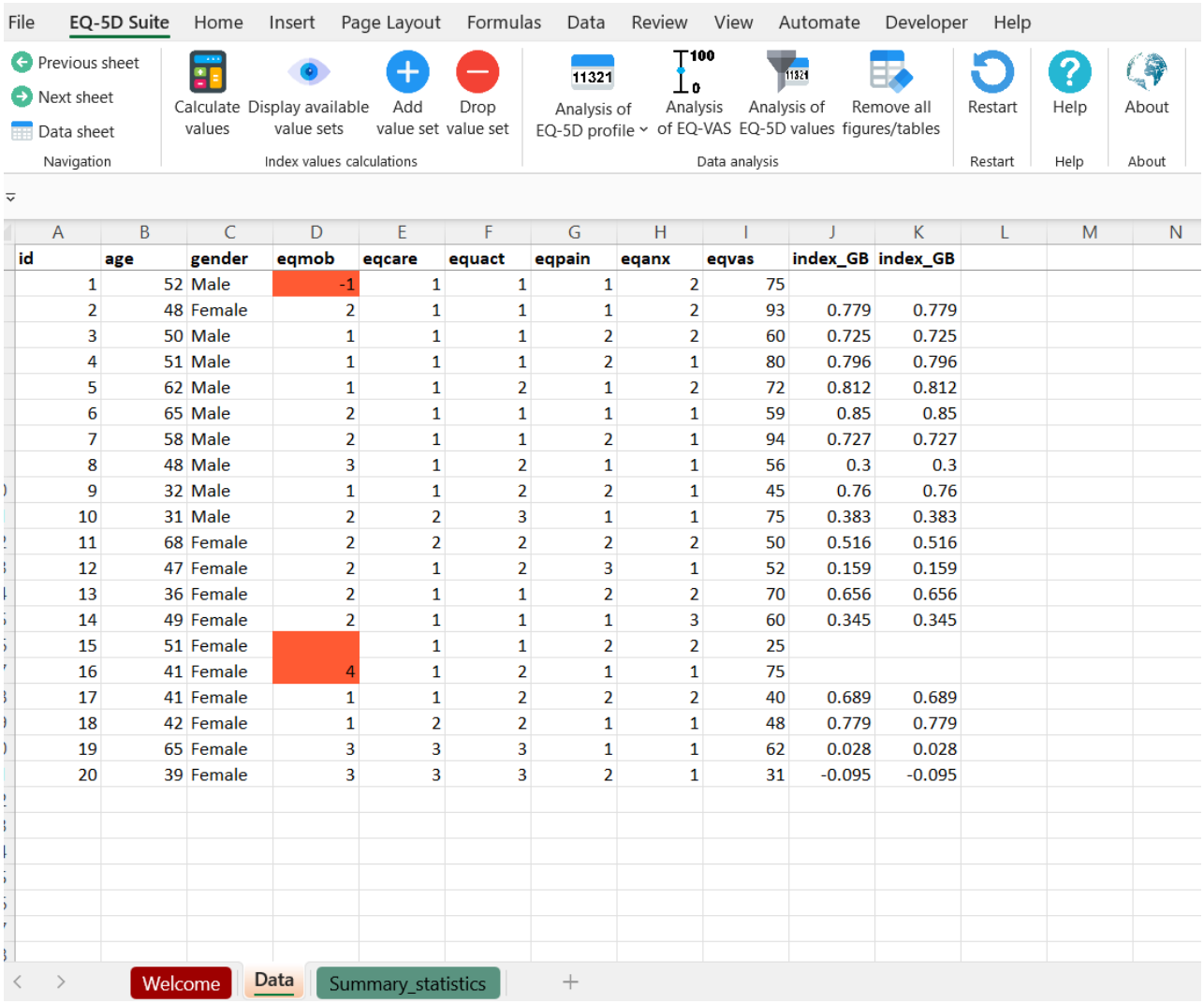


Figure 9. Calculate values form.

Once the "Calculate values form" is completed, users should click on the OK button. A new column will appear in the data sheet, displaying the EQ-5D-3L index values for the 20 individuals. Our simulated dataset includes two observations with invalid values (participants with ID 1 and 17) and

one observation with a missing value (participant with ID 16). These cells are highlighted in red, and the EQ-5D-3L index value is blank for these participants.



id	age	gender	eqmob	eqcare	equact	eqpain	eqanx	eqvas	index_GB	index_GB
1	52	Male	-1	1	1	1	2	75		
2	48	Female	2	1	1	1	2	93	0.779	0.779
3	50	Male	1	1	1	2	2	60	0.725	0.725
4	51	Male	1	1	1	2	1	80	0.796	0.796
5	62	Male	1	1	2	1	2	72	0.812	0.812
6	65	Male	2	1	1	1	1	59	0.85	0.85
7	58	Male	2	1	1	2	1	94	0.727	0.727
8	48	Male	3	1	2	1	1	56	0.3	0.3
9	32	Male	1	1	2	2	1	45	0.76	0.76
10	31	Male	2	2	3	1	1	75	0.383	0.383
11	68	Female	2	2	2	2	2	50	0.516	0.516
12	47	Female	2	1	2	3	1	52	0.159	0.159
13	36	Female	2	1	1	2	2	70	0.656	0.656
14	49	Female	2	1	1	1	3	60	0.345	0.345
15	51	Female		1	1	2	2	25		
16	41	Female	4	1	2	1	1	75		
17	41	Female	1	1	2	2	2	40	0.689	0.689
18	42	Female	1	2	2	1	1	48	0.779	0.779
19	65	Female	3	3	3	1	1	62	0.028	0.028
20	39	Female	3	3	3	2	1	31	-0.095	-0.095

Figure 10. Simulated EQ-5D-3L dataset after estimating index values.

The "Summary statistics" sheet provides information about the simulated dataset, which comprises 20 observations, including 17 valid, 2 invalid, and 1 missing. Users can refer to this sheet to review

the mean, standard deviation, minimum, and maximum EQ-5D-3L index values for the 17 valid observations.

Obs:	20
Obs valid:	17
Obs invalid:	2
Obs missing:	1

Variable	Obs	Mean	Std.dev	Min	Max
index_GB	17	0.541706	0.299421	-0.095	0.85

Figure 11. Summary statistics for the EQ-5D-3L index values.

3.1.2 EQ-5D-5L

This section explains how to compute EQ-5D-5L index values from the individual responses to the five dimensions of the EQ-5D-5L quality of life instrument: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression.

There are 29 default value sets to allow the estimation of EQ-5D-5L index values. The available countries and their respective codes are: the United States (US), Canada (CA), Belgium (BE), China (CN), Denmark (DK), Egypt (EG), Ethiopia (ET), France (FR), Germany (DE), Hong Kong (HK), Hungary (HU), India (IN), Indonesia (ID), Ireland (IE), Italy (IT), Japan (JP), Malaysia (MY), Mexico (MX), Peru (PE), Poland (PL), Portugal (PT), South Korea (KR), Spain (ES), Taiwan (TW), Thailand (TH), the Netherlands (NL), Uganda (UG), Uruguay (UY), and Vietnam (VN). The default value set is United States (US).

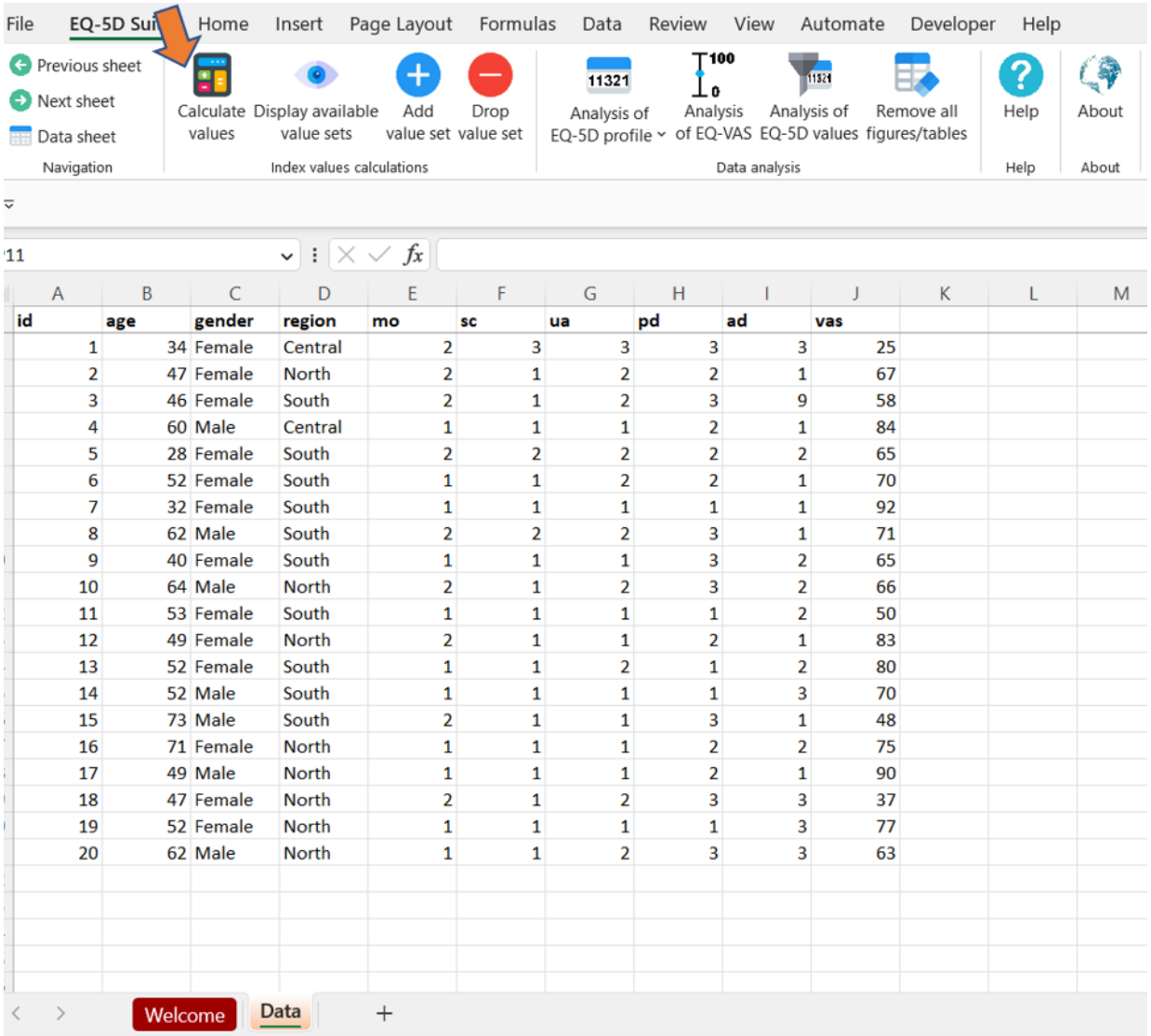
The steps for calculating EQ-5D-5L index values are identical to those for EQ-5D-3L index values, as described in section 3.1.1. Users should select the EQ-5D-5L version on the pop-up window for selecting the EQ-5D version in the data sheet (Figure 7) and the pop-up window for choosing the EQ-5D version EQ-5D version to obtain index values (Figure 8).

3.1.3 EQ-5D-Y

In this section, we will illustrate how to compute EQ-5D-Y index values from the individual responses of the EQ-5D-Y quality of life instrument: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression.

There are 4 default value sets for estimating EQ-5D-Y index values. The countries and their respective codes include: Germany (DE), Japan (JP), Slovenia (SI), and Spain (ES). The default value set is Spain (ES).

The steps to obtain EQ-5D-Y index values are similar to those for calculating EQ-5D-3L index values, as described in section 3.1.1. To illustrate this process, we have created a hypothetical dataset of 20 individuals with data on the five domains of the EQ-5D-Y, along with gender, age and region. This dataset is pasted in the “Data” sheet.



id	age	gender	region	mo	sc	ua	pd	ad	vas
1	34	Female	Central	2	3	3	3	3	25
2	47	Female	North	2	1	2	2	1	67
3	46	Female	South	2	1	2	3	9	58
4	60	Male	Central	1	1	1	2	1	84
5	28	Female	South	2	2	2	2	2	65
6	52	Female	South	1	1	2	2	1	70
7	32	Female	South	1	1	1	1	1	92
8	62	Male	South	2	2	2	3	1	71
9	40	Female	South	1	1	1	3	2	65
10	64	Male	North	2	1	2	3	2	66
11	53	Female	South	1	1	1	1	2	50
12	49	Female	North	2	1	1	2	1	83
13	52	Female	South	1	1	2	1	2	80
14	52	Male	South	1	1	1	1	3	70
15	73	Male	South	2	1	1	3	1	48
16	71	Female	North	1	1	1	2	2	75
17	49	Male	North	1	1	1	2	1	90
18	47	Female	North	2	1	2	3	3	37
19	52	Female	North	1	1	1	1	3	77
20	62	Male	North	1	1	2	3	3	63

Figure 12. Simulated EQ-5D-Y dataset before estimating index values.

When users click on the "Calculate values" button, a pop-up window will appear asking them to select the EQ-5D version in their dataset (EQ-5D-3L, EQ-5D-5L or EQ-5D-Y). In this example, users must choose the EQ-5D-Y version.

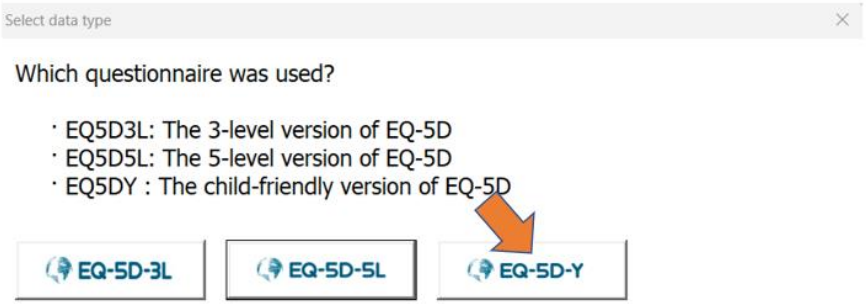


Figure 13. Pop-up window to select the EQ-5D version in the data sheet.

After selecting the EQ-5D version in the dataset, users will see the “Calculate values” form. The pop-up window to select the EQ-5D version to obtain index values (Figure 8) is not displayed, as only direct estimation is available. Users must complete the “Calculate values” form following the instructions provided in section 3.1.1.

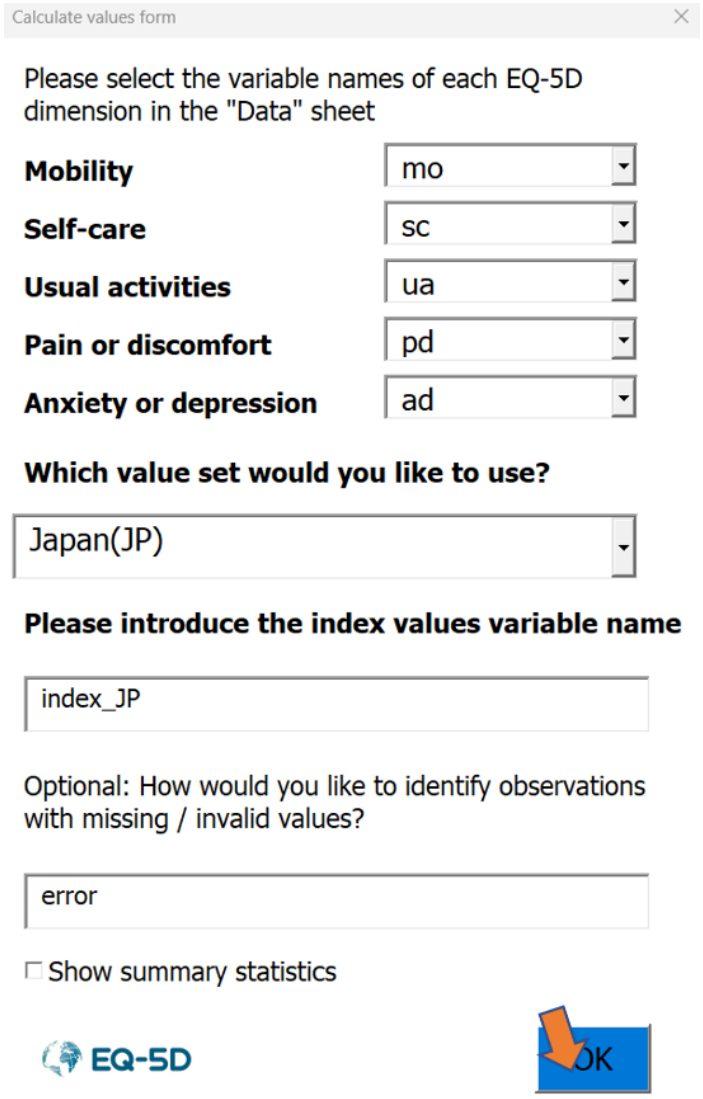
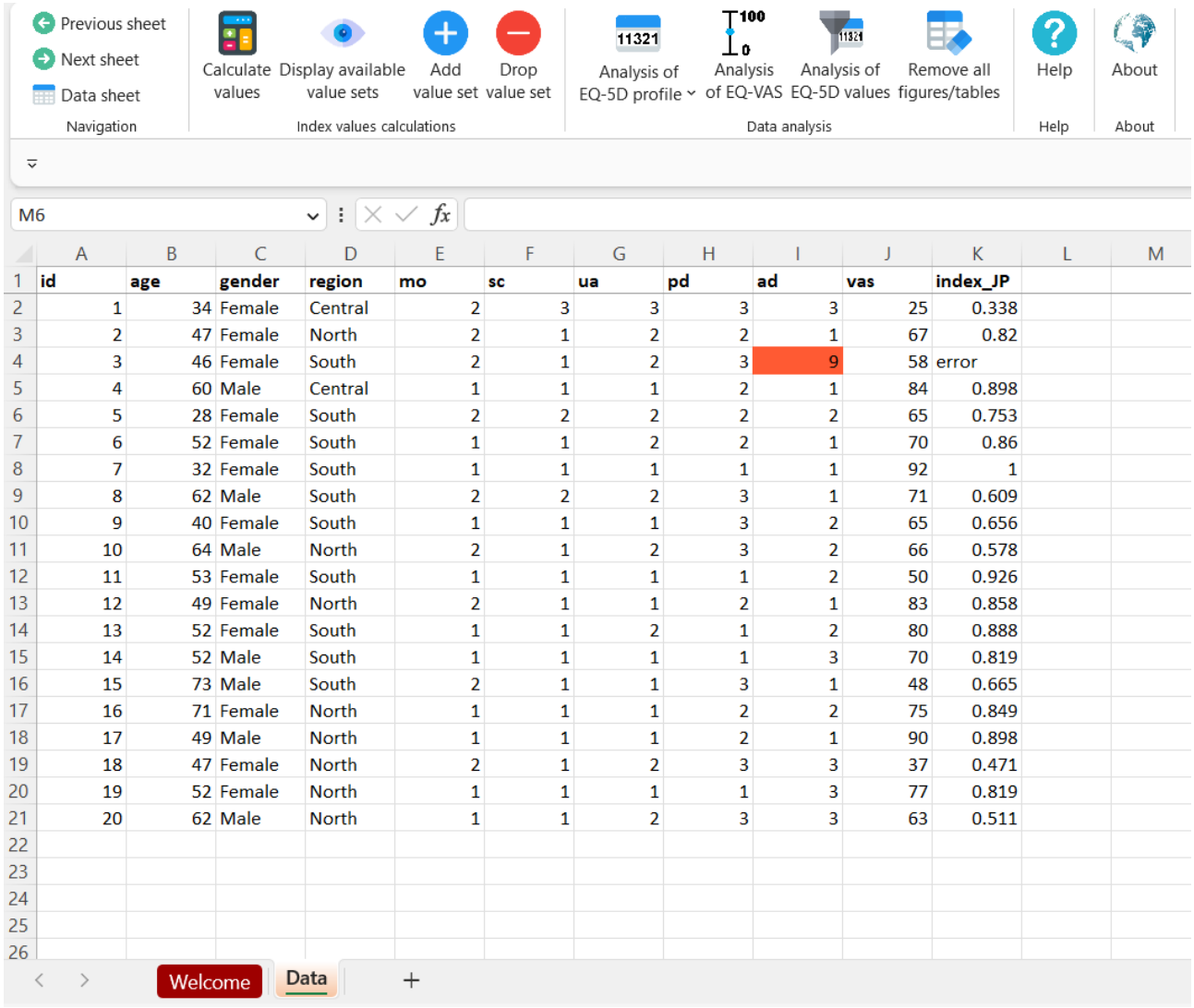


Figure 14. Calculate EQ-5D-Y values form.

Once users have completed the “Calculate values form”, they must click on the OK button. A new column will be added in the data sheet, including the EQ-5D-Y index values for the 20 individuals. In this simulated dataset, there is one observation with invalid values (participant ID 3). This cell is highlighted in red, and the EQ-5D-Y index value is marked as “error” for this participant.



	A	B	C	D	E	F	G	H	I	J	K	L	M
1	id	age	gender	region	mo	sc	ua	pd	ad	vas	index_JP		
2	1	34	Female	Central	2	3	3	3	3	25	0.338		
3	2	47	Female	North	2	1	2	2	1	67	0.82		
4	3	46	Female	South	2	1	2	3	9	58	error		
5	4	60	Male	Central	1	1	1	2	1	84	0.898		
6	5	28	Female	South	2	2	2	2	2	65	0.753		
7	6	52	Female	South	1	1	2	2	1	70	0.86		
8	7	32	Female	South	1	1	1	1	1	92	1		
9	8	62	Male	South	2	2	2	3	1	71	0.609		
10	9	40	Female	South	1	1	1	3	2	65	0.656		
11	10	64	Male	North	2	1	2	3	2	66	0.578		
12	11	53	Female	South	1	1	1	1	2	50	0.926		
13	12	49	Female	North	2	1	1	2	1	83	0.858		
14	13	52	Female	South	1	1	2	1	2	80	0.888		
15	14	52	Male	South	1	1	1	1	3	70	0.819		
16	15	73	Male	South	2	1	1	3	1	48	0.665		
17	16	71	Female	North	1	1	1	2	2	75	0.849		
18	17	49	Male	North	1	1	1	2	1	90	0.898		
19	18	47	Female	North	2	1	2	3	3	37	0.471		
20	19	52	Female	North	1	1	1	1	3	77	0.819		
21	20	62	Male	North	1	1	2	3	3	63	0.511		
22													
23													
24													
25													
26													

Figure 15. Simulated EQ-5D-Y dataset after estimating index values.

3.2 Crosswalks EQ-5D-5L responses to EQ-5D-3L values

This section explains how to compute EQ-5D-3L index values from the individual responses of the EQ-5D-5L quality of life instrument dimensions: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression.

To estimate crosswalk EQ-5D-3L index values from EQ-5D-5L responses, there are 35 default EQ-5D-3L value sets available for different countries. These value sets their codes are: the United Kingdom (GB), the United States (US), Canada (CA), Argentina (AR), Argentina VAS (AR_VAS), Australia (AU), Belgium VAS (BE_VAS),Chile (CL), China (CN), Denmark (DK), Finland VAS (FI_VAS), France (FR), Germany (DE), Germany VAS (DE_VAS), Hungary (HU), Iran (IR), Italy (IT), Japan (JP), Malaysia VAS (MY_VAS), New Zealand VAS (NZ_VAS), Poland (PL), Singapore (SG), Slovenia (SI), Slovenia (SI_VAS), South Korea (KR), Spain (ES), Sri Lanka (LK), Sweden (SE), Taiwan (TW), Thailand (TH), the Netherlands (NL), Trinidad and Tobago (TT), Tunisia (TN), Portugal (PT) and Zimbabwe (ZW). The default value set is the United Kingdom (GB).

To demonstrate how to obtain crosswalk EQ-5D-3L values, we have simulated a hypothetical dataset of 20 individuals with their gender, age, and responses on the five domains of the EQ-5D-5L. The simulated dataset is provided in the “Data” sheet.

	A	B	C	D	E	F	G	H	I
1	**id**	**age**	**gender**	**eqmob**	**eqcare**	**equact**	**eqpain**	**eqanx**	**eqvas**
2	14	49	Female	2		4	2	2	64
3	11	68	Female	5	5	1	4	4	75
4	18	42	Female	2	2	3	1	1	62
5	19	65	Female	1	2	4	1	1	60
6	16	41	Female		1	1	2	2	78
7	12	47	Female	5	1	2	4	4	73
8	15	51	Female	3	1	5	2	2	63
9	2	48	Female	2	2	2	1	1	83
10	13	36	Female	5	3	3	5	5	70
11	20	39	Female	1	2	5	1	1	50
12	17	41	Female	1	6	2	1	1	83
13	9	32	Male	4	3	4	5	5	65
14	10	31	Male	5	3	5	4	4	69
15	6	65	Male	2	2	1	1	1	81
16	8	48	Male	3	3	3	5	5	68
17	3	50	Male	1	2	3	1	1	75
18	5	62	Male	1	2	5	1	1	76
19	7	58	Male	3	3	2	5	5	66
20	1	52	Male	0	2	1	1	1	90
21	4	51	Male	2	2	4	1	1	70

Figure 16. Simulated EQ-5D-5L dataset before estimating crosswalk EQ-5D-3L index values.

Users must click on the "Calculate values" button, which will display a pop-up window asking them to select the EQ-5D version that was used in the data collection (EQ-5D-3L, EQ-5D-5L or EQ-5D-Y). In this example, users must choose the EQ-5D-5L version.

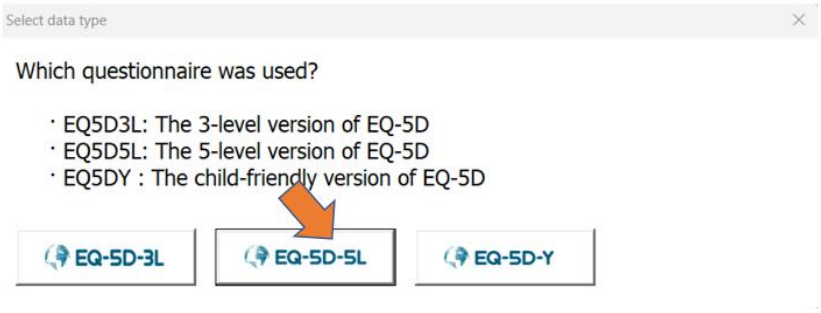


Figure 17. Pop-up window to select the EQ-5D version used in the data collection.

The second pop-up window enables users to select which EQ-5D index values they wish to calculate (EQ-5D-5L for direct estimation or EQ-5D-3L for crosswalk). In this case, users must choose the EQ-5D-3L version.

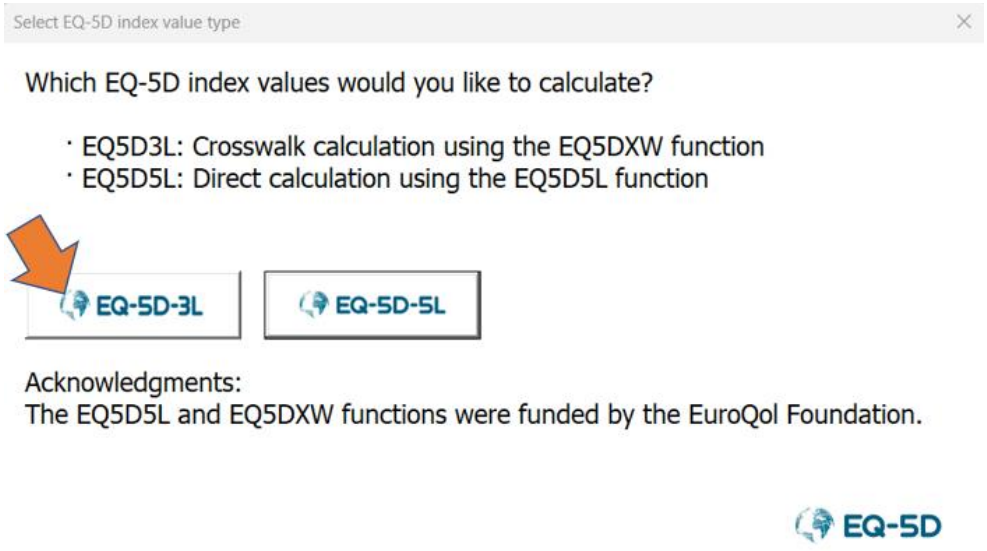


Figure 18. Pop-up window to select the EQ-5D version to obtain index values.

Next, users will see the “Calculate values” form, which they must complete following the instructions provided in section 3.1.1.

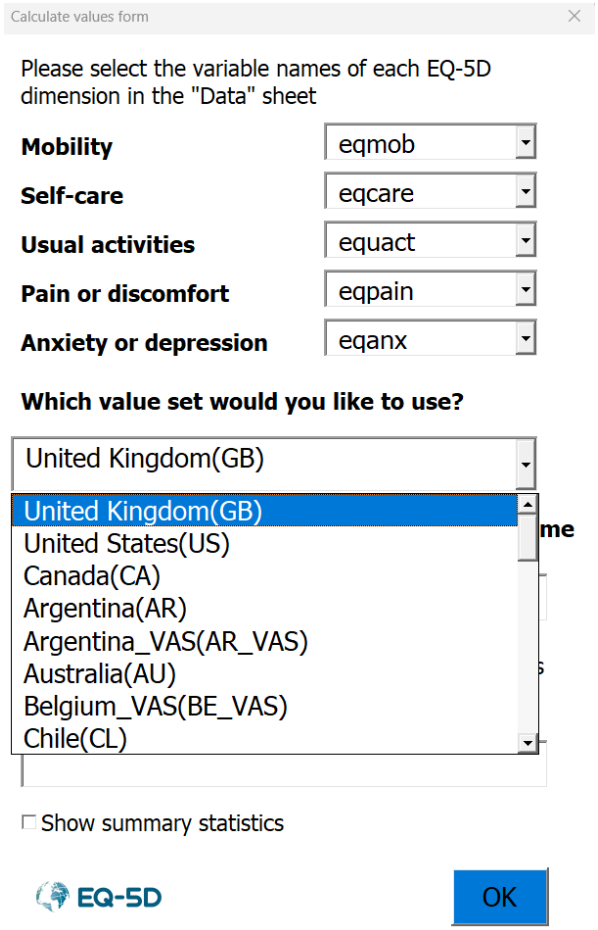


Figure 19. Calculate values form.

After users complete the "Calculate values" form, they must click on the OK button. A new column will be added to the data sheet, which includes the crosswalk EQ-5D-3L index values for the 20 individuals. In this simulated dataset, there are two observations with invalid values and two observations with missing values. These cells are highlighted in red, and the crosswalk EQ-5D-3L index value is empty for these participants.

	A	B	C	D	E	F	G	H	I	J
1	id	age	gender	eqmob	eqcare	equact	eqpain	eqanx	eqvas	index_GB
2	14	49	Female	2		4	2	2	64	
3	11	68	Female	5	5	1	4	4	75	-0.25803
4	18	42	Female	2	2	3	1	1	62	0.739641
5	19	65	Female	1	2	4	1	1	60	0.689007
6	16	41	Female		1	1	2	2	78	
7	12	47	Female	5	1	2	4	4	73	-0.07291
8	15	51	Female	3	1	5	2	2	63	0.33213
9	2	48	Female	2	2	2	1	1	83	0.747238
10	13	36	Female	5	3	3	5	5	70	-0.426
11	20	39	Female	1	2	5	1	1	50	0.469404
12	17	41	Female	1	6	2	1	1	83	
13	9	32	Male	4	3	4	5	5	65	-0.21772
14	10	31	Male	5	3	5	4	4	69	-0.24203
15	6	65	Male	2	2	1	1	1	81	0.778045
16	8	48	Male	3	3	3	5	5	68	-0.181
17	3	50	Male	1	2	3	1	1	75	0.796404
18	5	62	Male	1	2	5	1	1	76	0.469404
19	7	58	Male	3	3	2	5	5	66	-0.17388
20	1	52	Male	0	2	1	1	1	90	
21	4	51	Male	2	2	4	1	1	70	0.632244

Figure 20. Simulated EQ-5D-5L dataset after estimating crosswalk EQ-5D-3L index values.

3.3 Reverse crosswalks EQ-5D-3L responses to EQ-5D-5L values

This section explains how to calculate EQ-5D-5L index values from the individual responses of the EQ-5D-3L quality of life instrument: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression.

To estimate reverse crosswalk EQ-5D-5L index values from EQ-5D-3L responses, there are 29 default EQ-5D-5L value sets available for different countries. These value sets and their codes are: United States (US), Canada (CA), Belgium (BE), China (CN), Denmark (DK), Egypt (EG), Ethiopia (ET), France (FR), Germany (DE), Hong Kong (HK), Hungary (HU), India (IN), Indonesia (ID), Ireland (IE), Italy (IT), Japan (JP), Malaysia (MY), Mexico (MX), Peru (PE), Poland (PL), Portugal (PT), South Korea (KR), Spain (ES), Taiwan (TW), Thailand (TH), the Netherlands (NL), Uganda (UG), Uruguay (UY), and Vietnam (VN). The default value set is United States (US).

To illustrate how to obtain reverse crosswalk EQ-5D-5L values, we have simulated a hypothetical dataset of 20 individuals with their gender, age and responses on the five domains of the EQ-5D-3L. The simulated dataset is provided in the “Data” sheet.

	A	B	C	D	E	F	G	H	I
1	**id**	**age**	**gender**	**eqmob**	**eqcare**	**equact**	**eqpain**	**eqanx**	**eqvas**
2	1	52	Male	-1	1	1	1	2	75
3	2	48	Female	2	1	1	1	2	93
4	3	50	Male	1	1	1	2	2	60
5	4	51	Male	1	1	1	2	1	80
6	5	62	Male	1	1	2	1	2	72
7	6	65	Male	2	1	1	1	1	59
8	7	58	Male	2	1	1	2	1	94
9	8	48	Male	3	1	2	1	1	56
10	9	32	Male	1	1	2	2	1	45
11	10	31	Male	2	2	3	1	1	75
12	11	68	Female	2	2	2	2	2	50
13	12	47	Female	2	1	2	3	1	52
14	13	36	Female	2	1	1	2	2	70
15	14	49	Female	2	1	1	1	3	60
16	15	51	Female		1	1	2	2	25
17	16	41	Female	4	1	2	1	1	75
18	17	41	Female	1	1	2	2	2	40
19	18	42	Female	1	2	2	1	1	48
20	19	65	Female	3	3	3	1	1	62
21	20	39	Female	3	3	3	2	1	31

Figure 21. Simulated EQ-5D-3L dataset before estimating reverse crosswalk EQ-5D-5L index values.

Users must click on the "Calculate values" button, which will display a pop-up window asking them to select the EQ-5D version that was used in the data collection (EQ-5D-3L, EQ-5D-5L or EQ-5D-Y). In this example, users must choose the EQ-5D-3L version.

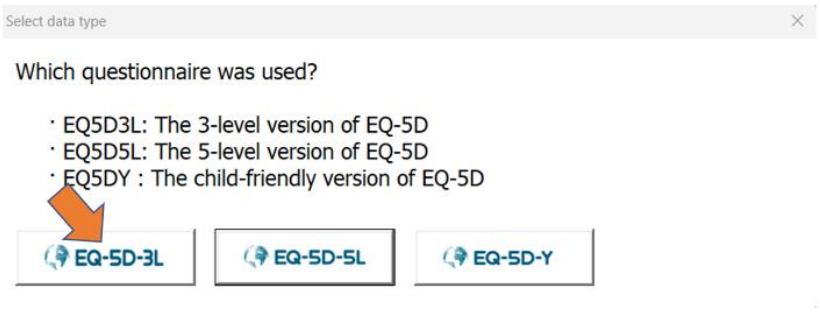


Figure 22. Pop-up window to select the EQ-5D version used in the data collection.

A second pop-up window will appear, enabling users to select which EQ-5D index values they wish to calculate (EQ-5D-3L for direct estimation, EQ-5D-5L for reverse crosswalk). In this case, users must choose the EQ-5D-5L version.

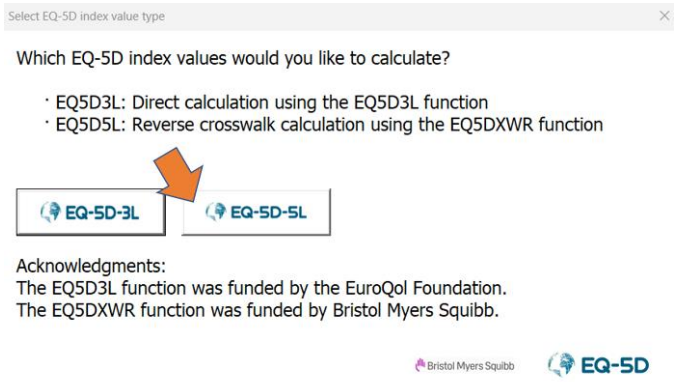


Figure 23. Pop-up window to select the EQ-5D version to obtain index values.

Next, users see the “Calculate values” form, which they must complete following the instructions provided in section 3.1.1. Once the “Calculate values form” is complete, users must click on the “Ok” button.

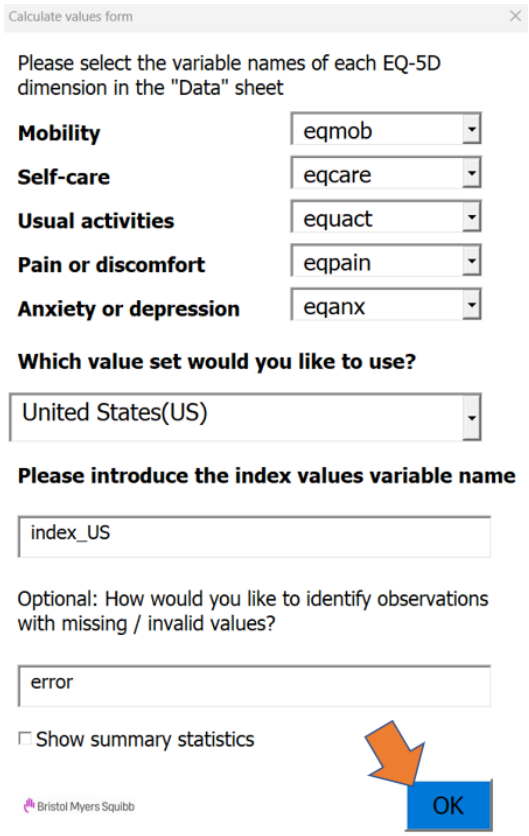


Figure 24. Calculate values form.

The data sheet will include a new column with the reverse crosswalk EQ-5D-5L index values for the 20 individuals.

	A	B	C	D	E	F	G	H	I	J
1	**id**	**age**	**gender**	**eqmob**	**eqcare**	**equact**	**eqpain**	**eqanx**	**eqvas**	**index_US**
2	1	52	Male	-1	1	1	1	2	75	error
3	2	48	Female	2	1	1	1	2	93	0.787398
4	3	50	Male	1	1	1	2	2	60	0.825821
5	4	51	Male	1	1	1	2	1	80	0.915061
6	5	62	Male	1	1	2	1	2	72	0.795116
7	6	65	Male	2	1	1	1	1	59	0.874447
8	7	58	Male	2	1	1	2	1	94	0.797289
9	8	48	Male	3	1	2	1	1	56	0.58076
10	9	32	Male	1	1	2	2	1	45	0.821439
11	10	31	Male	2	2	3	1	1	75	0.415274
12	11	68	Female	2	2	2	2	2	50	0.388845
13	12	47	Female	2	1	2	3	1	52	0.427884
14	13	36	Female	2	1	1	2	2	70	0.708017
15	14	49	Female	2	1	1	1	3	60	0.570614
16	15	51	Female		1	1	2	2	25	error
17	16	41	Female	4	1	2	1	1	75	error
18	17	41	Female	1	1	2	2	2	40	0.716172
19	18	42	Female	1	2	2	1	1	48	0.773046
20	19	65	Female	3	3	3	1	1	62	0.121819
21	20	39	Female	3	3	3	2	1	31	-0.0034

Figure 25. Simulated EQ-5D-5L dataset after estimating crosswalk EQ-5D-3L index values.

3.4 Advanced options

3.4.1 Display available value sets

To display the available EQ-5D value sets, users must click on the "Display available value sets" button in the EQ-5D Suite menu.

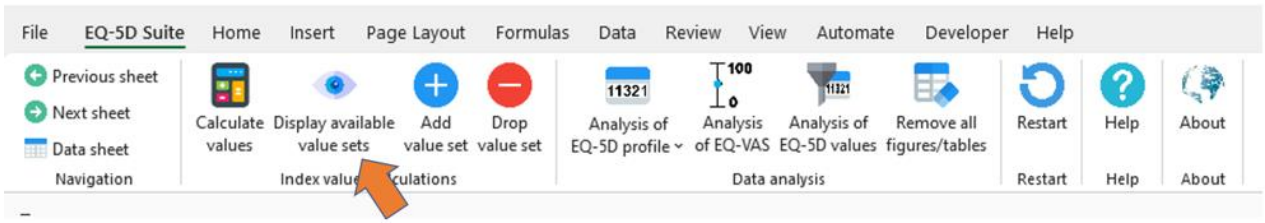


Figure 26. The “Display available value sets” button in the EQ-5D Suite menu.

When users click on this button, a pop-up window will appear asking them to select which EQ-5D version value sets they would like to display. For example, we will select the EQ-5D-5L value sets.

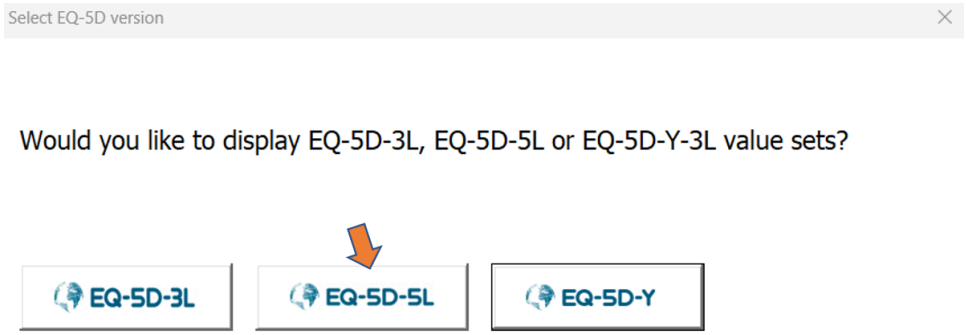


Figure 27. The pop-up window to select which EQ-5D version value sets to display.

Next, users will see the list of available EQ-5D-5L value sets, each identified with the country name and the country code in brackets. The list includes both default value sets and user-added value sets.

Figure 28. List of available EQ-5D-5L value sets.

3.4.2 Add value sets

To add value sets that are not included as default, users must click on the "Add value sets" button in the EQ-5D Suite menu.

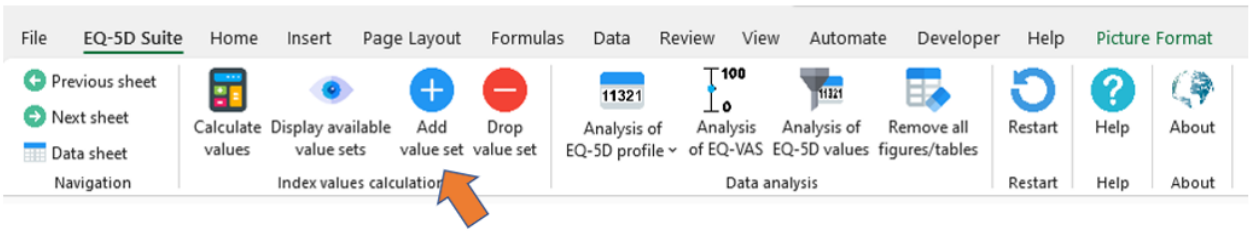


Figure 29. The “Add value set” button in the EQ-5D Suite menu.

When users click on this button, a pop-up window will appear asking them to select which EQ-5D version value sets they would like to add. For example, we will add an EQ-5D-3L value set.

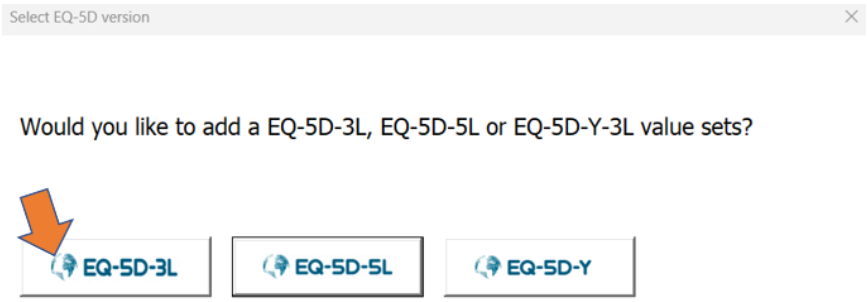


Figure 30. The pop-up window to select the EQ-5D value sets to display.

Next, the "Add_Value_Set_3L" sheet will appear. Users must first specify a unique name and code for the new value set. Then, users must assign an index value to each of the 243 health states described by the EQ-5D-3L. Initially, input cells are highlighted with an orange background, and once they are completed correctly, they will turn green. Cells with errors are highlighted in red.

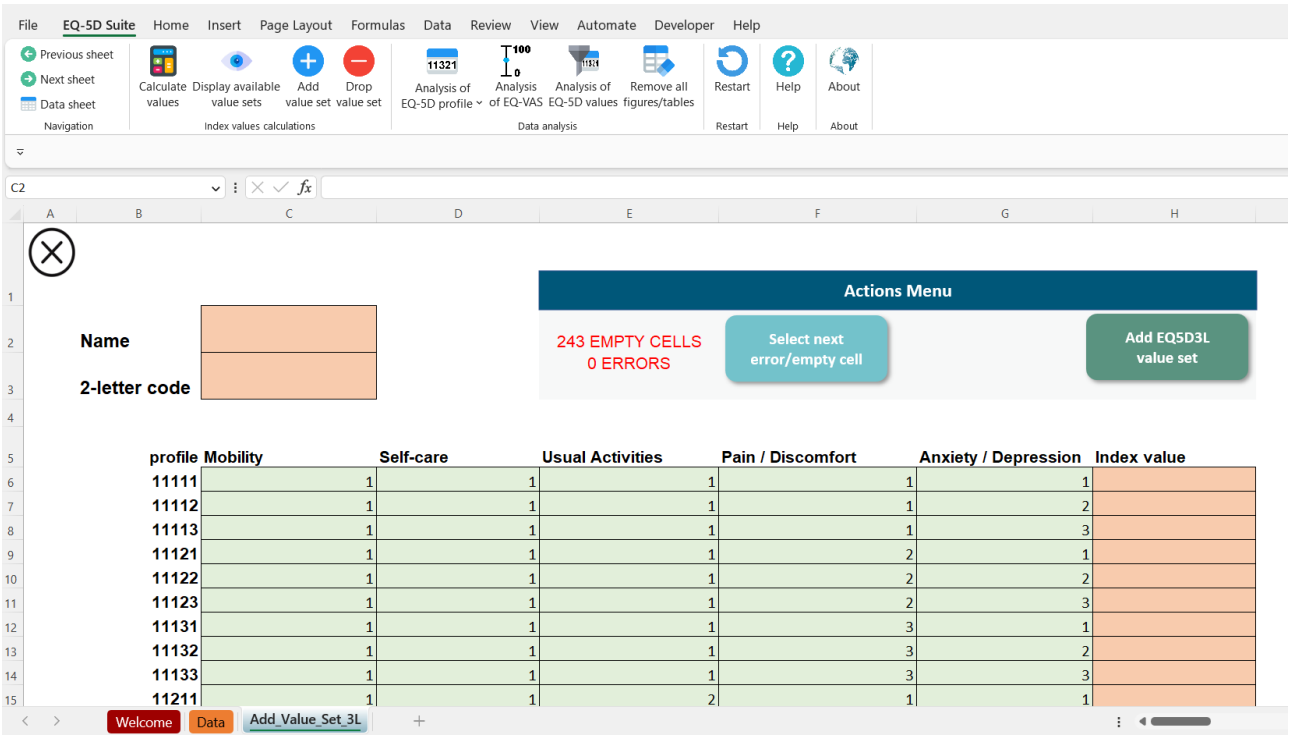
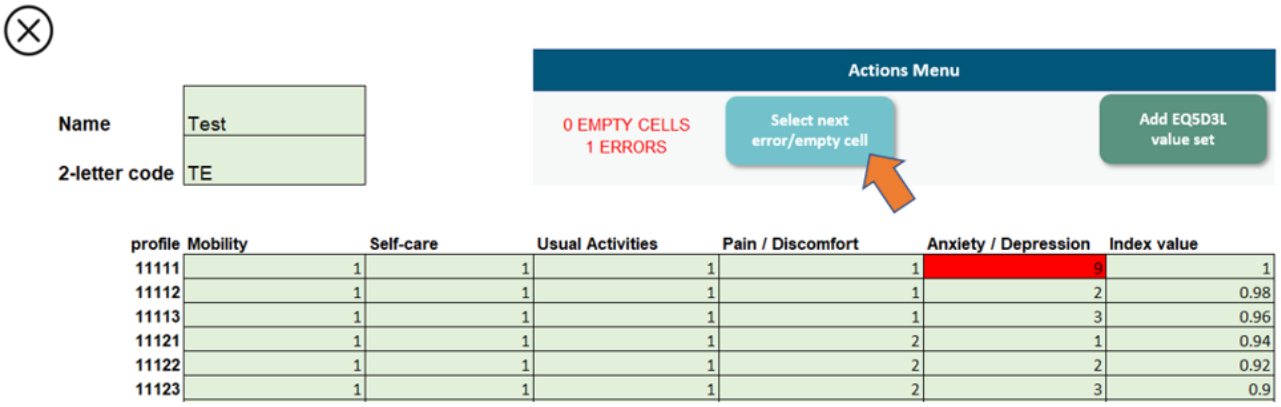


Figure 31. The "Add_Value_Set_3L" sheet.

To check the number of errors and empty cells, users can check the "Actions" menu. Users can click on the "Select next error/empty cell" button to identify and correct any errors or empty cells. Figure 31 shows an example of a value set with one error. Clicking the "Select next error/empty cells" button will indicate the location of the error, selecting the cell that corresponds to the "anxiety/depression" value for the EQ-5D-3L profile 11111.



profile	Mobility	Self-care	Usual Activities	Pain / Discomfort	Anxiety / Depression	Index value
11111	1	1	1	1	9	1
11112	1	1	1	1	2	0.98
11113	1	1	1	1	3	0.96
11121	1	1	1	2	1	0.94
11122	1	1	1	2	2	0.92
11123	1	1	1	2	3	0.9

Figure 32. The "Select next error/empty cell" button.

Once all errors are corrected, users must click on the "Add EQ-5D-3L value set" button.

profile	Mobility	Self-care	Usual Activities	Pain / Discomfort	Anxiety / Depression	Index value
11111	1	1	1	1	1	1
11112	1	1	1	1	2	0.98
11113	1	1	1	1	3	0.96
11121	1	1	1	2	1	0.94
11122	1	1	1	2	2	0.92

Figure 33. The "Add EQ-5D-3L value set" button.

If the value set name and code are unique and there are no errors or empty cells, a pop-up window will appear to show the updated list of available EQ-5D-3L value sets. The new value set will be listed in the user-added value sets section, and users can use it to calculate utilities as shown in section 3.1.1.

Figure 34. The updated value sets list.

To add EQ-5D-5L or EQ-5D-Y value sets users need to follow the steps just described. Users can estimate both direct and crosswalk EQ-5D index values using user-added EQ-5D-3L and EQ-5D-5L value sets. User-added value sets will be available for future analysis, even if the EQ-5D Excel Suite Tool is closed, so users will not need to repeat these steps.

3.4.3 Drop value sets

To remove a user-added value set, users can click on the “Drop value set” button located in the EQ-5D Suite menu. This functionality will only be available if user-added value sets are present in the tool, default value sets cannot be dropped.

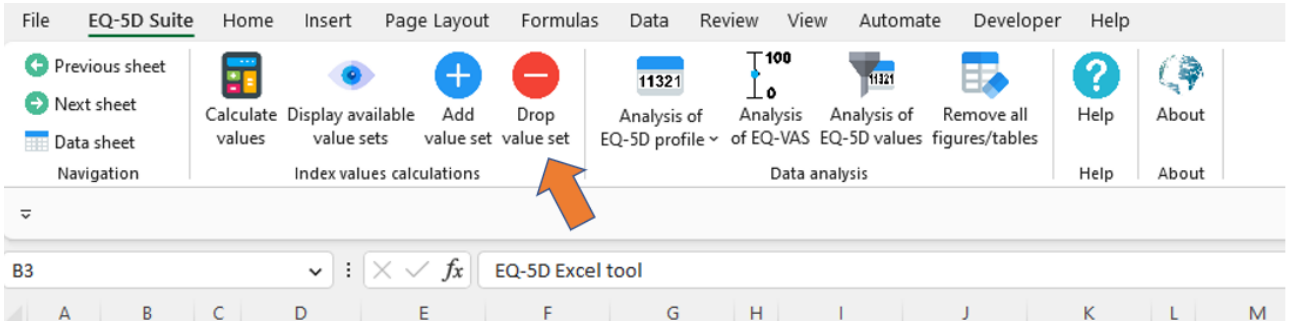


Figure 35. The “Drop value set” button in the EQ-5D Suite menu.

After clicking the “Drop value set” button, a pop-up window will appear asking users to select the EQ-5D version value set they would like to drop. The pop-up will only display EQ-5D versions with user-added value sets.

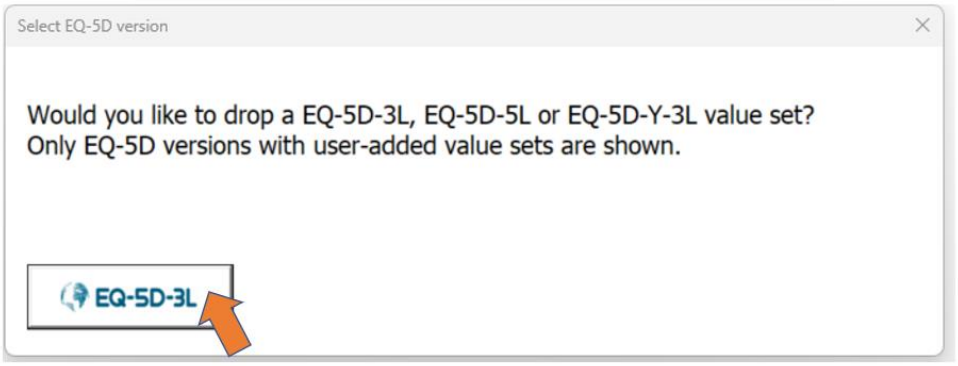


Figure 36. The pop-up window to select the EQ-5D version to drop.

Next, users must select the user-added value set they would like to remove from the drop-down menu, and click on the “Drop value set” button highlighted in red.

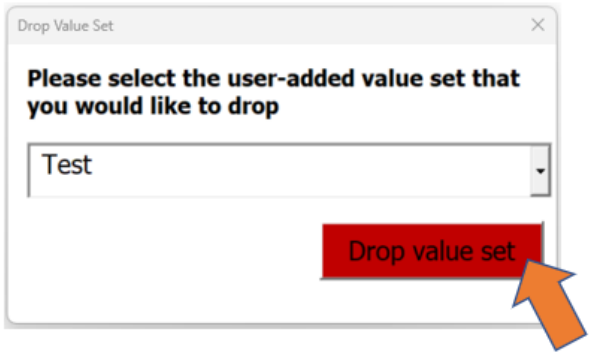


Figure 37. The pop-up window to select the EQ-5D value set to drop.

The user-added value set will be removed from the available value-sets list, and the updated list of available EQ-5D value sets will be displayed.

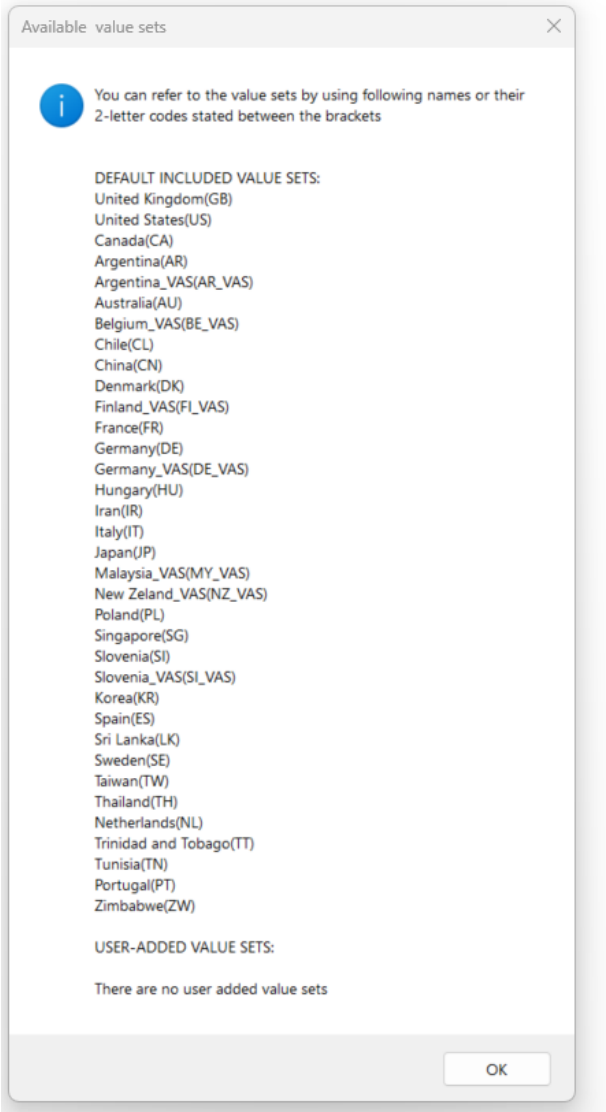


Figure 38. The updated list of available value sets.

4. Data Analysis of EQ-5D Data

This section provides instructions on how to analyse EQ-5D data using the EQ-5D Suite Excel Toolkit, following common cross-sectional and longitudinal analysis of EQ-5D responses and values described in the recent textbook and Devlin and colleagues [3]. The chapter is organized into three sections to illustrate how to analyse and report three different type of data: EQ-5D profile (e.g. EQ-5D responses), EQ VAS and EQ-5D values.

The data analysis functionalities are located in the "Data analysis" section of the EQ-5D Suite custom ribbon menu.

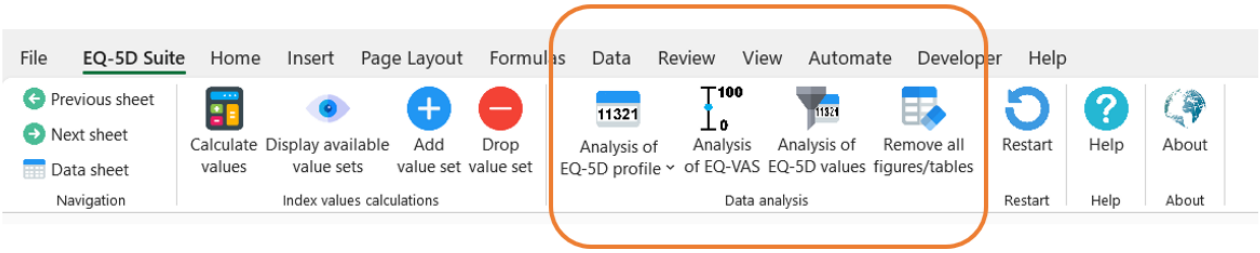


Figure 39. The "Data analysis" section in the EQ-5D Suite custom menu.

To demonstrate how to analyse and report EQ-5D data, we will use a subsample of 5000 individuals from the data collected from patients who underwent hip replacement, knee replacement, groin hernia, or varicose vein surgery between 2013 and 2017 in the English National Health Service (NHS) as part of a Patient Reported Outcome Measures (PROMs) program. The dataset includes the EQ-5D-3L profile, EQ-VAS, and additional variables such as a unique identifier (ID), pre-op and post-op status (time), the type of surgery (procedure), the year in which the surgery was performed (year), gender, and age range (ageband).

	A	B	C	D	E	F	G	H	I	J	K	L
1	id	time	mo	sc	ua	pd	ad	vas	procedure	year	ageband	gender
2	86	Pre-op	2	2	3	3	1	85	Hip Replacement	2013/14	*	*
3	86	Post-op	1	1	1	1	1	88	Hip Replacement	2013/14	*	*
4	121	Pre-op	2	2	2	2	2	85	Hip Replacement	2013/14	*	*
5	121	Post-op	1	1	2	2	2	70	Hip Replacement	2013/14	*	*
6	123	Pre-op	2	2	2	2	1	35	Hip Replacement	2013/14	*	*
7	123	Post-op	2	2	2	2	2	65	Hip Replacement	2013/14	*	*
8	188	Pre-op	2	2	2	3	1	50	Hip Replacement	2013/14	*	*
9	188	Post-op	1	1	1	1	1	65	Hip Replacement	2013/14	*	*
10	274	Pre-op	2	2	2	2	2	80	Hip Replacement	2013/14	*	*
11	274	Post-op	1	1	1	1	2	80	Hip Replacement	2013/14	*	*
12	366	Pre-op	2	2	3	3	2	50	Hip Replacement	2013/14	*	*
13	366	Post-op	1	1	1	1	1	86	Hip Replacement	2013/14	*	*
14	373	Pre-op	2	2	2	3	1	90	Hip Replacement	2013/14	*	*
15	373	Post-op	1	1	1	1	1	95	Hip Replacement	2013/14	*	*
16	414	Pre-op	2	2	3	3	2	30	Hip Replacement	2013/14	*	*
17	414	Post-op	1	1	1	1	1	80	Hip Replacement	2013/14	*	*
18	462	Pre-op	1	2	1	2	1	75	Hip Replacement	2013/14	*	*
19	462	Post-op	1	1	1	1	1	85	Hip Replacement	2013/14	*	*
20	546	Pre-op	1	1	1	2	1	97	Hip Replacement	2013/14	*	*
21	546	Post-op	1	1	1	1	1	88	Hip Replacement	2013/14	*	*
22	787	Pre-op	2	2	3	3	2	999	Hip Replacement	2013/14	*	*
23	787	Post-op	2	2	2	2	2	40	Hip Replacement	2013/14	*	*
24	795	Pre-op	2	1	2	2	1	60	Hip Replacement	2013/14	*	*

Figure 40. The testing dataset.

4.1 Analysis of EQ-5D Profiles

In this section, we will provide a guide on how to analyse profile data generated from the EQ-5D instruments using the EQ-5D Suite Excel Toolkit. To get started, users can access the EQ-5D Suite custom menu and click on the “Analysis of the EQ-5D profiles” button, which will display a menu with four possible analysis options:

1. Cross-sectional analysis: This analysis describes the health status at a particular point in time based on the dimensions and levels of the EQ-5D profiles.
2. Longitudinal analysis: This analysis describes changes in health status between two or more time points using EQ-5D profiles.
3. Summarizing the severity of EQ-5D profiles.
4. Analysing the informativity of EQ-5D profile data.

In the following subsections, we will provide detailed explanations of each analysis.

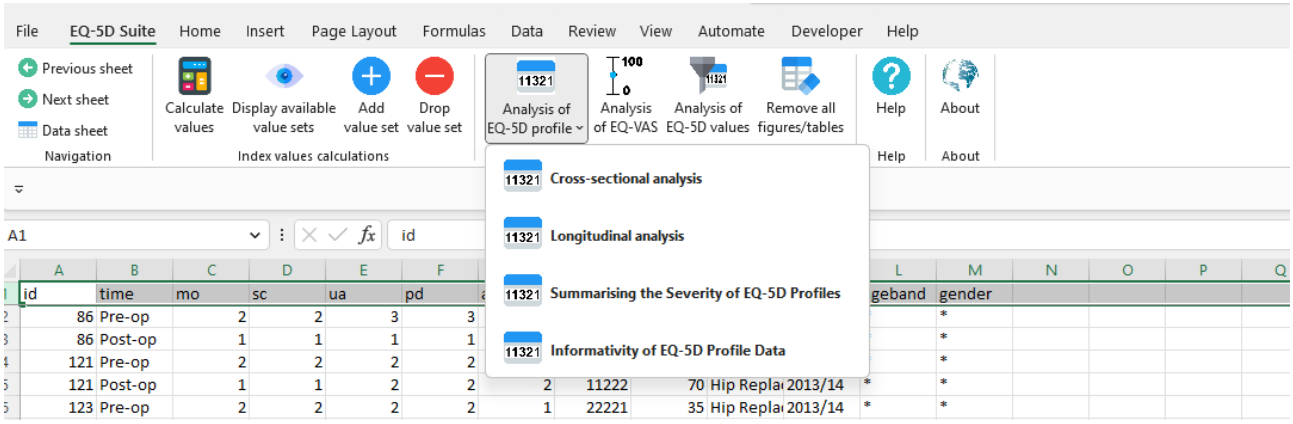


Figure 41. The "Analysis of EQ-5D profile" button.

4.1.1 Cross-sectional analysis: Describing health at a point in time.

This section shows how to analyse and report health status at one point in time using simple descriptive analysis. For this analysis, our testing data will include only one point in time per individual, which will be the pre-operation record.

To begin, users must click on the “Cross-sectional analysis” button found under the “Analysis of EQ-5D profile” menu.

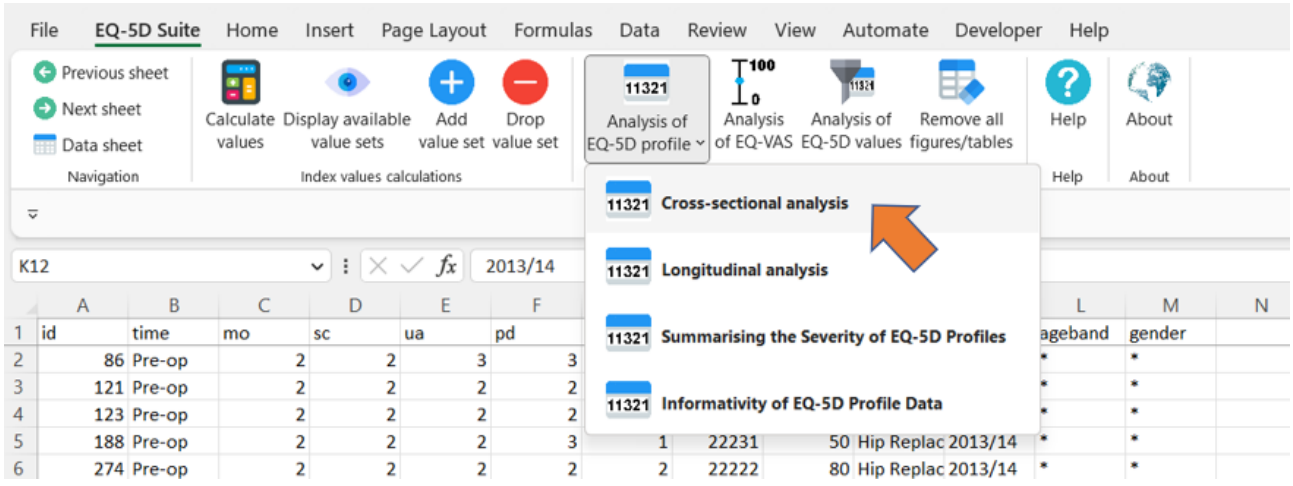


Figure 42. The "Cross-sectional analysis" button.

This will display the “Select variable names form” where users can input the variable names required for the analysis by selecting the appropriate name from the list shown in the drop-down box. It is essential to carefully complete this form carefully since the tables and figures available will depend on the variables specified in it. If users need help identifying which tables and figures are pertinent

for a particular analysis, they can click on the question mark button, which will redirect them to the instructions sheet.

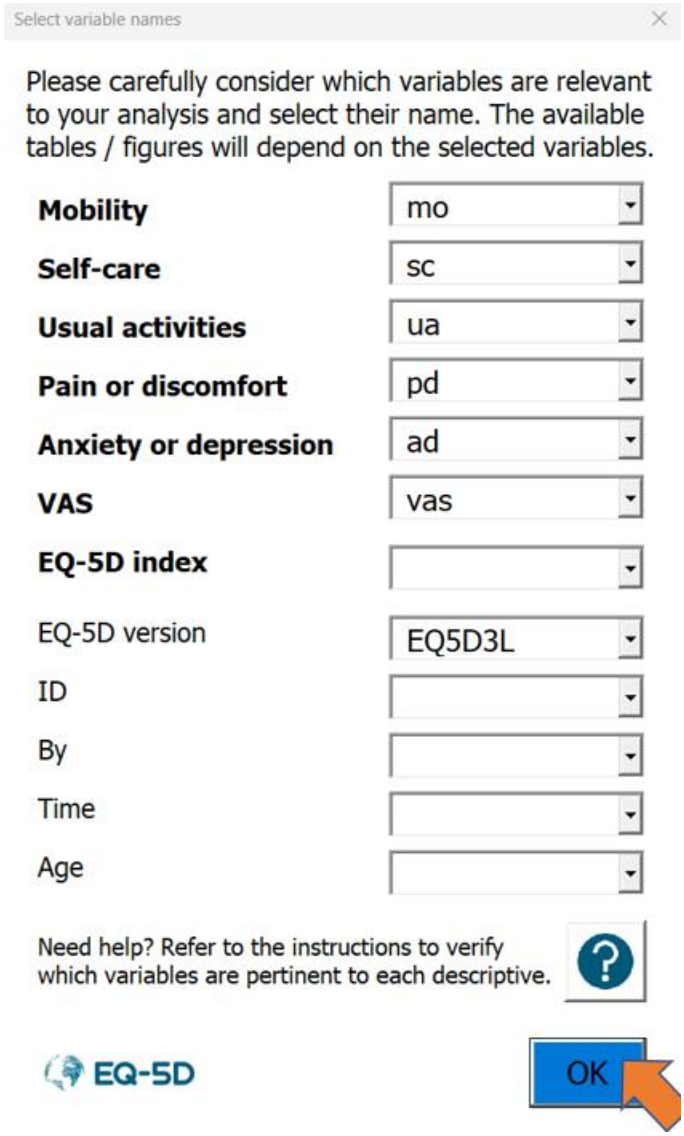


Figure 43. The “Select variable names” form.

After completing the “Select variable names form”, users must click on the “OK” button to access a new user form that displays a list of tables and figures. If a necessary variable is missing for a table or figure, that particular item will be disabled and appear in grey text. Users will not be able to select the disabled item checkbox. For instance, in the figure below, tables 1.1.2 and 1.1.4 are disabled because the groupvar variable name was not specified in the previous “Select variable names form”.

To get more information about the listed tables and figures, users can hover their mouse over the information icon associated with each of them. This will display a brief description of the table or figure, along with a list of the variables required to generate it. Furthermore, users can view an example of the output table or figure.

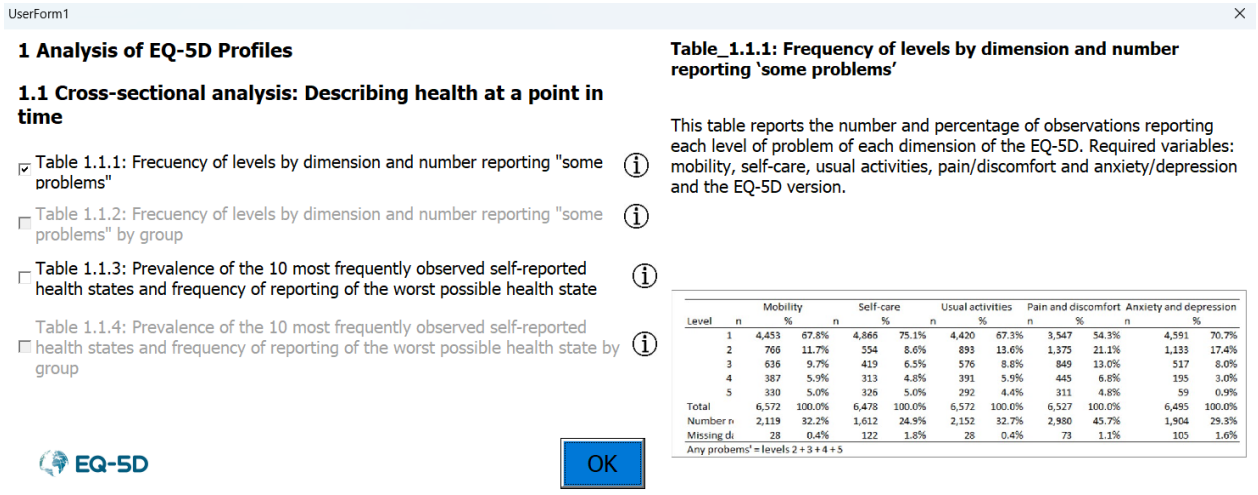


Figure 44. The cross-sectional analysis "Select descriptive" form.

Once users have selected the tables and figures they want to include in their report, they should click the "OK" button. This will start the analysis process in the EQ-5D Suite Excel Toolkit, and users can track the progress through a status bar. This process may take some time, especially for larger datasets.

Table 1.1.1: Frequency of levels by dimension and number reporting ‘some problems’

This table reports the number and percentage of observations reporting each level of problem of each dimension of the EQ-5D. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Table 2.1 on page 25.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression and EQ-5D version.

Next, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will then create a new sheet named "Table_1.1.1” that displays the table.

	Mobility		Self-care		Usual activities		Pain/Discomfort		Anxiety/Depression	
Level	n	%	n	%	n	%	n	%	n	%
1	1,183	24.3%	3,286	67.8%	1,114	23.0%	384	8.0%	3,239	67.1%
2	3,658	75.2%	1,518	31.3%	3,150	65.0%	2,880	59.8%	1,405	29.1%
3	23	0.5%	41	0.8%	584	12.0%	1,554	32.3%	185	3.8%
Total	4,864	100.0%	4,845	100.0%	4,848	100.0%	4,818	100.0%	4,829	100.0%
Number reporting any problems	3,681	75.7%	1,559	32.2%	3,734	77.0%	4,434	92.0%	1,590	32.9%
Missing data	136	2.7%	155	3.1%	152	3.0%	182	3.6%	171	3.4%

Any probems' = levels 2 + 3

Figure 45. Frequency of levels by dimension and number reporting ‘some problems’.

Table 1.1.2: Frequency of levels by dimension and number reporting ‘some problems’ by group

This table reports the number and percentage of observations reporting each level of problem of each dimension of the EQ-5D-3L by group. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Table 2.1 on page 25.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ-5D version and by.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will create a new sheet named "Table_1.1.2", which will contain the desired table.

	Mobility								Self-care							
	Hip Replacement		Knee Replacement		Groin Hernia		Varicose Vein		Hip Replacement		Knee Replacement		Groin Hernia		Varicose Vein	
Level	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
1	158	8.7%	133	6.9%	735	82.3%	157	70.4%	870	48.1%	1,353	70.2%	853	96.1%	210	94.2%
2	1,646	90.6%	1,789	92.6%	158	17.7%	65	29.1%	915	50.6%	559	29.0%	32	3.6%	12	5.4%
3	13	0.7%	9	0.5%	0	0.0%	1	0.4%	23	1.3%	14	0.7%	3	0.3%	1	0.4%
Total	1,817	100.0%	1,931	100.0%	893	100.0%	223	100.0%	1,808	100.0%	1,926	100.0%	888	100.0%	223	100.0%
Number reporting any problems	1,659	91.3%	1,798	93.1%	158	17.7%	66	29.6%	938	51.9%	573	29.8%	35	3.9%	13	5.8%
Missing data	61	3.2%	65	3.3%	6	0.7%	4	1.8%	70	3.7%	70	3.5%	11	1.2%	4	1.8%

Any probems' = levels 2 + 3

Change is calculated with respect to previous time point

Figure 46. Frequency of levels by dimension and number reporting ‘some problems’ by group (only part of the table is shown in this figure).

Table 1.1.3: Prevalence of the 10 most frequently observed self-reported health states and frequency of reporting of the worst possible health state in EQ-5D-xL

This table reports the cumulative frequency of EQ-5D profiles. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Table 2.2 on page 27.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression and EQ-5D version.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will then create a new sheet named "Table_1.1.3", which will contain the desired table.

Profile	Frequency	Percentage	Cumulative percentage
21221	855	18.10%	18.10%
11121	438	9.27%	27.37%
22221	346	7.32%	34.70%
21231	324	6.86%	41.55%
11111	300	6.35%	47.90%
21222	289	6.12%	54.02%
22232	242	5.12%	59.14%
22231	223	4.72%	63.87%
22222	211	4.47%	68.33%
11221	183	3.87%	72.21%
...			
33333	4	0.08%	100.00%
Missing	276	5.52%	

Figure 47. Prevalence of the 10 most frequently observed self-reported health states and frequency of reporting of the worst possible health state in EQ-5D-xL (in this case the -3L).

Table 1.1.4: Prevalence of the 10 most frequently observed self-reported health states and frequency of reporting of the worst possible health state in EQ-5D-xL by group

This table reports the cumulative frequency of EQ-5D profiles by group. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Table 2.2 on page 27.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ-5D version and by.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Table_1.1.4", which will contain the desired table.

	Hip Replacement				Knee Replacement		
Profile	Frequency	Percentage	Cumulative percentage	Profile	Frequency	Percentage	Cumulative percentage
21221	325	18.40%	18.40%	21221	472	25.29%	25.29%
22221	221	12.51%	30.92%	21231	214	11.47%	36.76%
22231	144	8.15%	39.07%	21222	171	9.16%	45.93%
22232	138	7.81%	46.89%	22221	118	6.32%	52.25%
22222	116	6.57%	53.45%	21232	114	6.11%	58.36%
21231	100	5.66%	59.12%	22232	102	5.47%	63.83%
21222	95	5.38%	64.50%	22222	86	4.61%	68.44%
22332	93	5.27%	69.76%	22231	74	3.97%	72.40%
21232	54	3.06%	72.82%	21121	59	3.16%	75.56%
22331	52	2.94%	75.76%	22332	48	2.57%	78.14%
...				...			
33333	3	0.17%	100.00%	33333	1	0.05%	100.00%
Missing	112	5.96%		Missing	130	6.51%	

Figure 48. Prevalence of the 10 most frequently observed self-reported health states and frequency of reporting of the worst possible health state in EQ-5D-xL (in this case the -3L) by group (only part of the table is shown in this figure).

4.1.2 Longitudinal analysis: Describing changes in health between two or more time points

In this section, we will explain how to analyse changes in profile data between two time points using the EQ-5D Suite Excel tool. To follow along with this guide, users must ensure their data is in the long format, where each row represents one time point per individual.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	id	time	mo	sc	ua	pd	ad	profile	vas	procedure	year	ageband	gender	index_GB
78	3195	Pre-op	2	1	2	2	1	21221	60	Hip Replacement	2013/14	70 to 79	Male	0.691
79	3195	Post-op	1	1	1	1	1	11111	80	Hip Replacement	2013/14	70 to 79	Male	1
80	3275	Pre-op	2	1	2	2	1	21221	40	Hip Replacement	2013/14	50 to 59	Female	0.691
81	3275	Post-op	2	1	1	2	1	21121	80	Hip Replacement	2013/14	50 to 59	Female	0.727
82	3437	Pre-op	2	2	2	2	1	22221	85	Hip Replacement	2013/14	60 to 69	Female	0.587
83	3437	Post-op	1	1	1	1	1	11111	90	Hip Replacement	2013/14	60 to 69	Female	1
84	3450	Pre-op	2	1	2	3	2	21232	80	Hip Replacement	2013/14	70 to 79	Female	0.088
85	3450	Post-op	2	1	2	2	2	21222	80	Hip Replacement	2013/14	70 to 79	Female	0.62
86	3639	Pre-op	2	1	2	2	1	21221	85	Hip Replacement	2013/14	70 to 79	Male	0.691
87	3639	Post-op	1	1	2	1	1	11211	85	Hip Replacement	2013/14	70 to 79	Male	0.883
88	3643	Pre-op	2	2	2	3	2	22232	75	Hip Replacement	2013/14	70 to 79	Female	-0.016
89	3643	Post-op	2	1	2	2	2	21222	74	Hip Replacement	2013/14	70 to 79	Female	0.62
90	3688	Pre-op	2	1	3	2	1	21321	50	Hip Replacement	2013/14	70 to 79	Female	0.364
91	3688	Post-op	2	1	2	1	1	21211	999	Hip Replacement	2013/14	70 to 79	Female	0.814
92	3838	Pre-op	2	1	2	2	1	21221	90	Hip Replacement	2013/14	70 to 79	Female	0.691
93	3838	Post-op	1	1	1	1	1	11111	95	Hip Replacement	2013/14	70 to 79	Female	1
94	3879	Pre-op	2	1	1	2	1	21121	86	Hip Replacement	2013/14	60 to 69	Male	0.727
95	3879	Post-op	1	1	2	2	1	11221	90	Hip Replacement	2013/14	60 to 69	Male	0.76
96	4068	Pre-op	2	2	2	2	1	22221	60	Hip Replacement	2013/14	50 to 59	Male	0.587
97	4068	Post-op	1	2	2	2	1	12221	70	Hip Replacement	2013/14	50 to 59	Male	0.656
98	4159	Pre-op	2	2	2	2	2	22222	60	Hip Replacement	2013/14	60 to 69	Female	0.516
99	4159	Post-op	1	2	2	2	1	12221	95	Hip Replacement	2013/14	60 to 69	Female	0.656
100	4188	Pre-op	2	2	2	3	2	22232	70	Hip Replacement	2013/14	70 to 79	Female	-0.016

To begin the analysis, users must click on the “Longitudinal analysis” button located in the “Analysis of EQ-5D profile” menu.

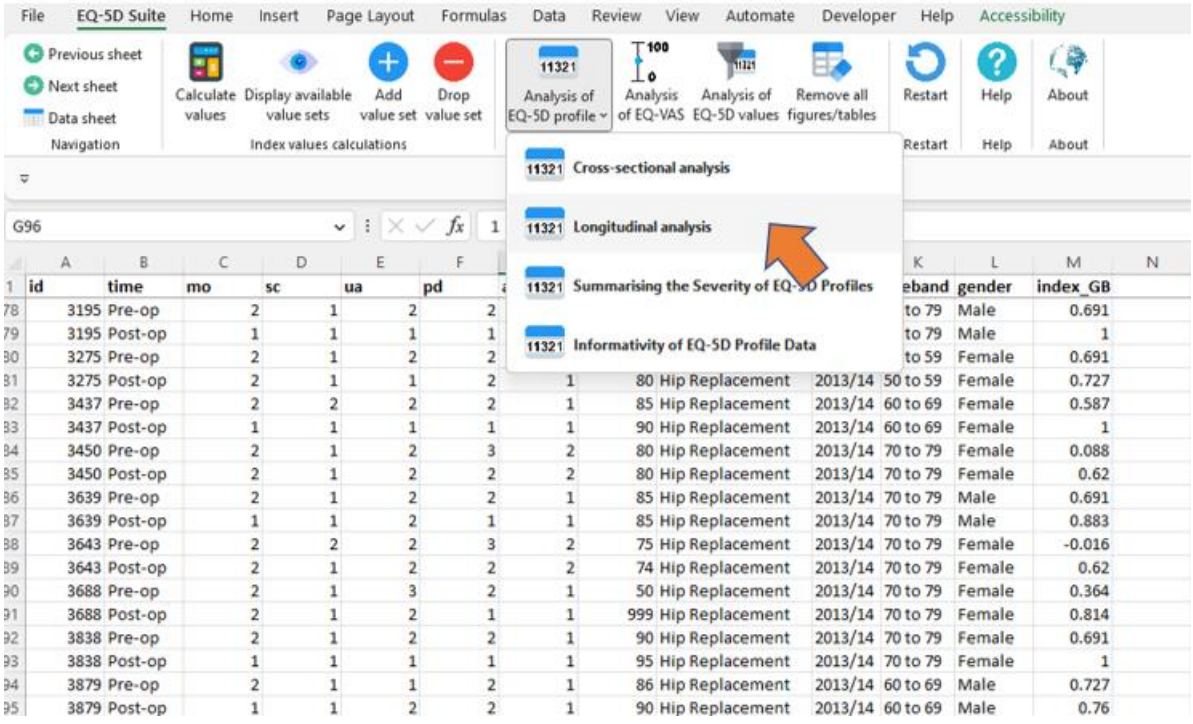


Figure 49. The "Longitudinal analysis" button.

This will display the “Select variable names form” where users can input the variable names required for the analysis by selecting the appropriate name from the list shown in the drop-down box.

Next, users will see the “Select descriptive form.” This form includes a list of all available tables and figures for reporting, and users must check the checkbox next to each table and figure they would like to include in their report. It is important to note that the tables and figures available for reporting depend on the variables specified in the previous form, so users must carefully complete the “Select variable names form.” Further details regarding each table and figure are provided below.

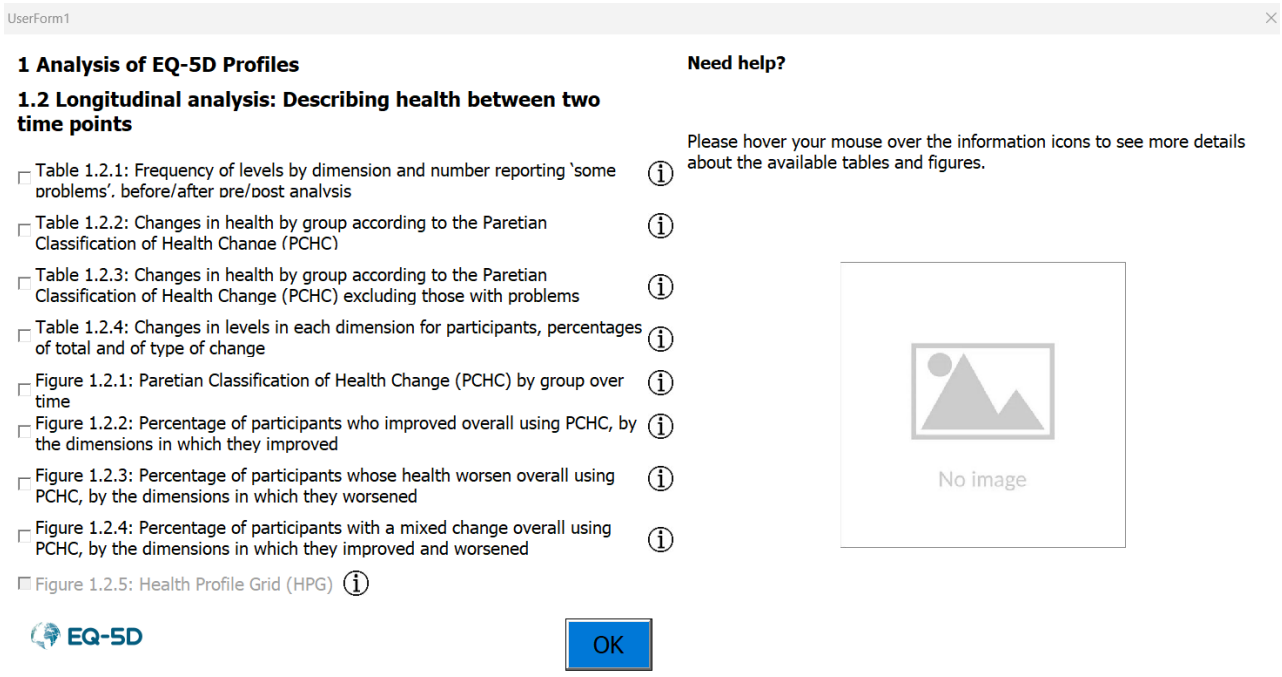


Figure 50. The longitudinal analysis select descriptive form.

Table 1.2.1: Frequency of levels by dimension and number reporting ‘some problems’, before/after pre/post analysis

This table reports the number and percentage of observations reporting each level of problem of each dimension of the EQ-5D by timepoints. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Table 2.1 on page 25.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ-5D version and time.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Table_1.2.1", which will contain the desired table.

	Mobility				Self-care				Usual activities				Pain/Discomfort				Anxiety/Depression			
	Pre-op		Post-op		Pre-op		Post-op		Pre-op		Post-op		Pre-op		Post-op		Pre-op		Post-op	
Level	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
1	1,183	24.3%	3,006	61.6%	3,286	67.8%	4,129	84.4%	1,114	23.0%	2,825	57.5%	384	8.0%	2,502	51.2%	3,239	67.1%	3,971	81.0%
2	3,658	75.2%	1,873	38.4%	1,518	31.3%	737	15.1%	3,150	65.0%	1,936	39.4%	2,880	59.8%	2,186	44.7%	1,405	29.1%	819	16.7%
3	23	0.5%	3	0.1%	41	0.8%	24	0.5%	584	12.0%	148	3.0%	1,554	32.3%	201	4.1%	185	3.8%	113	2.3%
Total	4,864	100.0%	4,882	100.0%	4,845	100.0%	4,890	100.0%	4,848	100.0%	4,909	100.0%	4,818	100.0%	4,889	100.0%	4,829	100.0%	4,903	100.0%
Number re	3,681	75.7%	1,876	38.4%	1,559	32.2%	761	15.6%	3,734	77.0%	2,084	42.5%	4,434	92.0%	2,387	48.8%	1,590	32.9%	932	19.0%
Change in numbers reporting prc			-1,805	-49.0%			-798	-51.2%			-1,650	-44.2%			-2,047	-46.2%			-658	-41.4%
Rank of dimensions in terms of '			2				1				4				3				5	
Missing da	136	2.7%	118	2.4%	155	3.1%	110	2.2%	152	3.0%	91	1.8%	182	3.6%	111	2.2%	171	3.4%	97	1.9%

Any probems' = levels 2 + 3

Change is calculated with respect to previous time point

Figure 51. Frequency of levels by dimension and number reporting ‘some problems’, before/after pre/post analysis.

Table 1.2.2: Changes in health by group according to the Paretian Classification of Health Change (PCHC)

This table reports the PCHC used to compare changes in invididuals' health state over time. PCHC classifies the change as better, worse, mixed or no change. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Table 2.4 on page 30.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ-5D version, time, by and ID.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Table_1.2.2", which will contain the desired table.

	Hip Replacement		Knee Replacement		Groin Hernia		Varicose Vein	
	n	%	n	%	n	%	n	%
No change	109	6.4%	171	9.6%	255	30.5%	87	41.0%
Improve	1407	82.8%	1316	74.1%	391	46.7%	81	38.2%
Worsen	81	4.8%	138	7.8%	133	15.9%	31	14.6%
Mixed cha	103	6.1%	152	8.6%	58	6.9%	13	6.1%
Total*	1700	100.0%	1777	100.0%	837	100.0%	212	100.0%
Missing	178	9.5%	219	11.0%	62	6.9%	15	6.6%

* Excluding missing

Figure 52. Changes in health by group according to the Paretian Classification of Health Change (PCHC).

Table 1.2.3: Changes in health by group according to the Paretian Classification of Health Change (PCHC) excluding those with problems

This table is a modified version of Table 1.2.2. It specifically separates individuals in the “No change” group with a health state of 11111 into a new group called "No problems”. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Table 2.5 on page 30.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ-5D version, time, by and ID.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Table_1.2.3", which will contain the desired table.

	Hip Replacement		Knee Replacement		Groin Hernia		Varicose Vein	
	n	%	n	%	n	%	n	%
Number with problems (% of those with problems)								
No change	103	6.1%	168	9.5%	69	10.6%	47	27.3%
Improve	1407	83.1%	1316	74.2%	391	60.1%	81	47.1%
Worsen	81	4.8%	138	7.8%	133	20.4%	31	18.0%
Mixed cha	103	6.1%	152	8.6%	58	8.9%	13	7.6%
Total with	1694	100.0%	1774	100.0%	651	100.0%	172	100.0%
No Proble	6	0.4%	3	0.2%	186	22.2%	40	18.9%
Total with	1694	99.6%	1774	99.8%	651	77.8%	172	81.1%
Grand Tot	1700	100.0%	1777	100.0%	837	100.0%	212	100.0%
Missing	178	9.5%	219	11.0%	62	6.9%	15	6.6%

*Excluding missing

Figure 53. Changes in health by group according to the Paretian Classification of Health Change (PCHC) excluding those with problems.

Table 1.2.4: Changes in levels in each dimension for participants, percentages of total and of type of change

This table displays all possible changes in each dimension of health and classifies them into one of three types: no change, improvement or worsening. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Table 2.6 on page 34.

To generate this table, users must fill in the “Select variable names form” with the following variables:mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ-5D version, time, by and ID.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Table_1.2.4", which will contain the desired table.

	Mobility		Self-care		Usual activities		Pain/Discomfort		Anxiety/Depression	
Change ty	% total	% type	% total	% type	% total	% type	% total	% type	% total	% type
No Change										
1-1	57.1%	57.1%	84.9%	84.9%	56.6%	56.6%	39.7%	39.7%	83.6%	83.6%
2-2	42.9%	42.9%	14.8%	14.8%	41.2%	41.2%	54.5%	54.5%	15.0%	15.0%
3-3	0.0%	0.0%	0.3%	0.3%	2.3%	2.3%	5.8%	5.8%	1.4%	1.4%
Better										
2-1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3-1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3-2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Worse										
1-2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1-3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2-3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

% total= % of all in the relevant dimension

% type= % of all in the change type in the relevant dimension (excluding missing)

Figure 54. Changes in levels in each dimension for participants, percentages of total and of type of change.

Figure 1.2.1: Paretian Classification of Health Change (PCHC) by group over time

This figure shows the PCHC by group in graphical form. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Figure 2.1 on page 31.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ-5D version, time, by and ID.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Figure_1.2.1", which will contain the desired table.

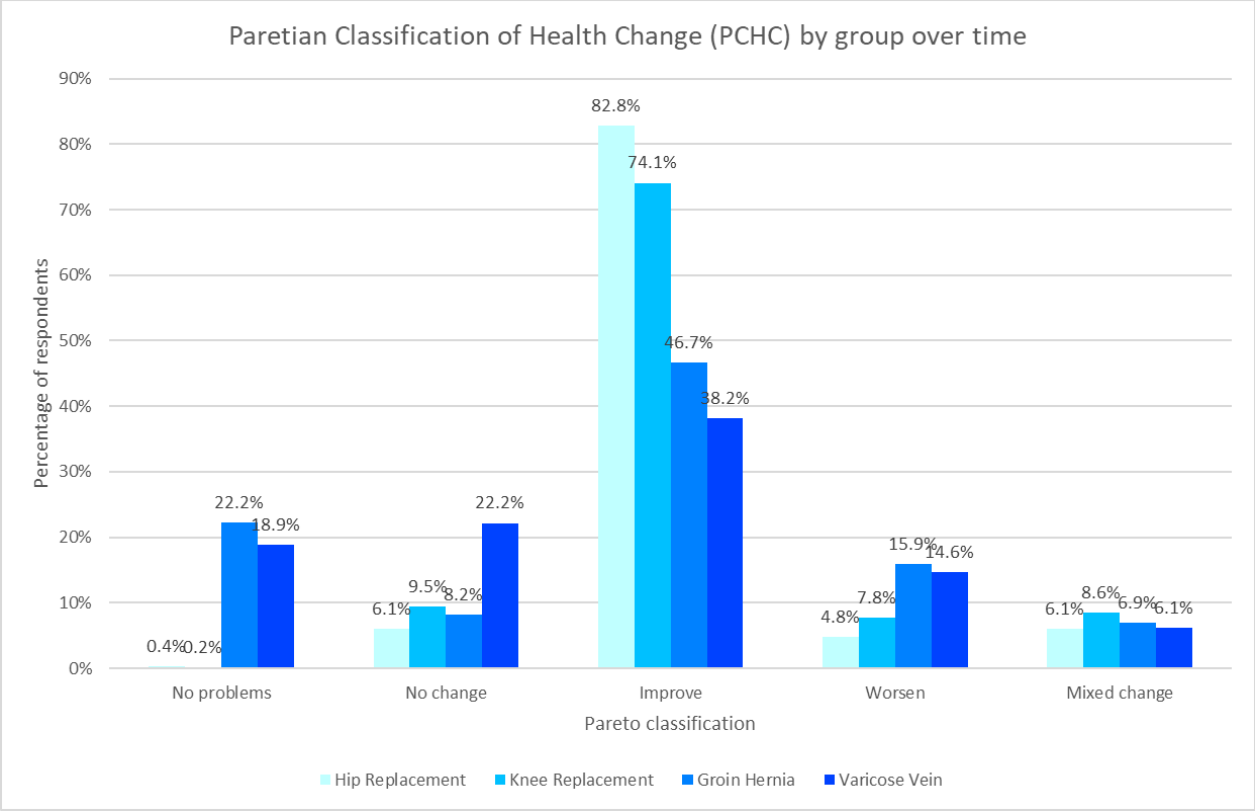


Figure 55. Paretian Classification of Health Change (PCHC) by group over time

Figure 1.2.2: Percentage of participants who improved overall using PCHC, by the dimensions in which they improved

This figure shows which dimensions were improved for those individuals whose PCHC category was ‘Improved’. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Figure 2.2 on page 32.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ-5D version, time, by and ID.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Figure_1.2.2", which will contain the desired table.

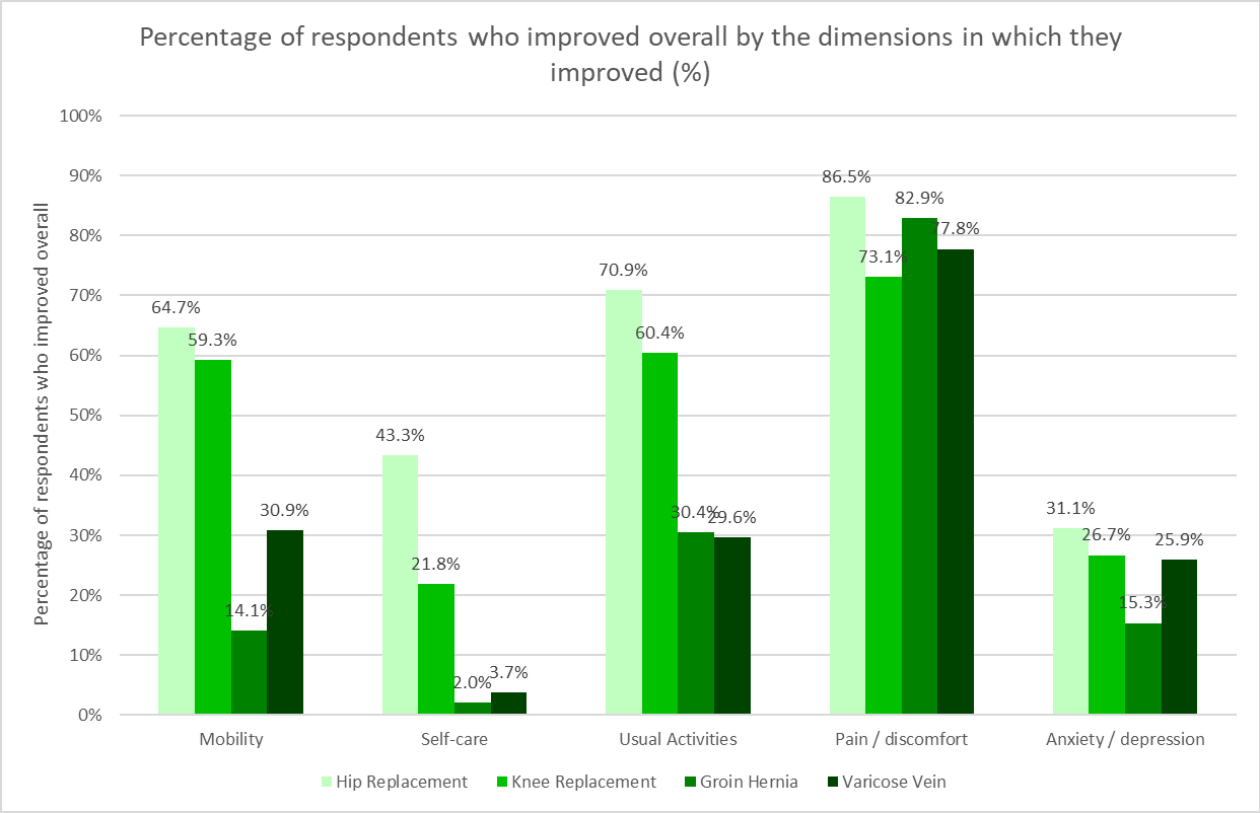


Figure 56. Percentage of participants who improved overall using PCHC, by the dimensions in which they improved.

Figure 1.2.3: Percentage of participants whose health worsen overall using PCHC, by the dimensions in which they worsened

This figure shows which dimensions were worsened for those patients whose PCHC category was 'Worsened'. Users can find it in the book "Methods for Analysing and Reporting EQ-5D Data" [3] as Figure 2.3 on page 33.

To generate this table, users must fill in the "Select variable names form" with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ-5D version, time, by and ID.

Then, users must check the checkbox associated with this table in the "Select descriptive form". The EQ-5D Suite will add a new sheet named "Figure_1.2.3", which will contain the desired table.

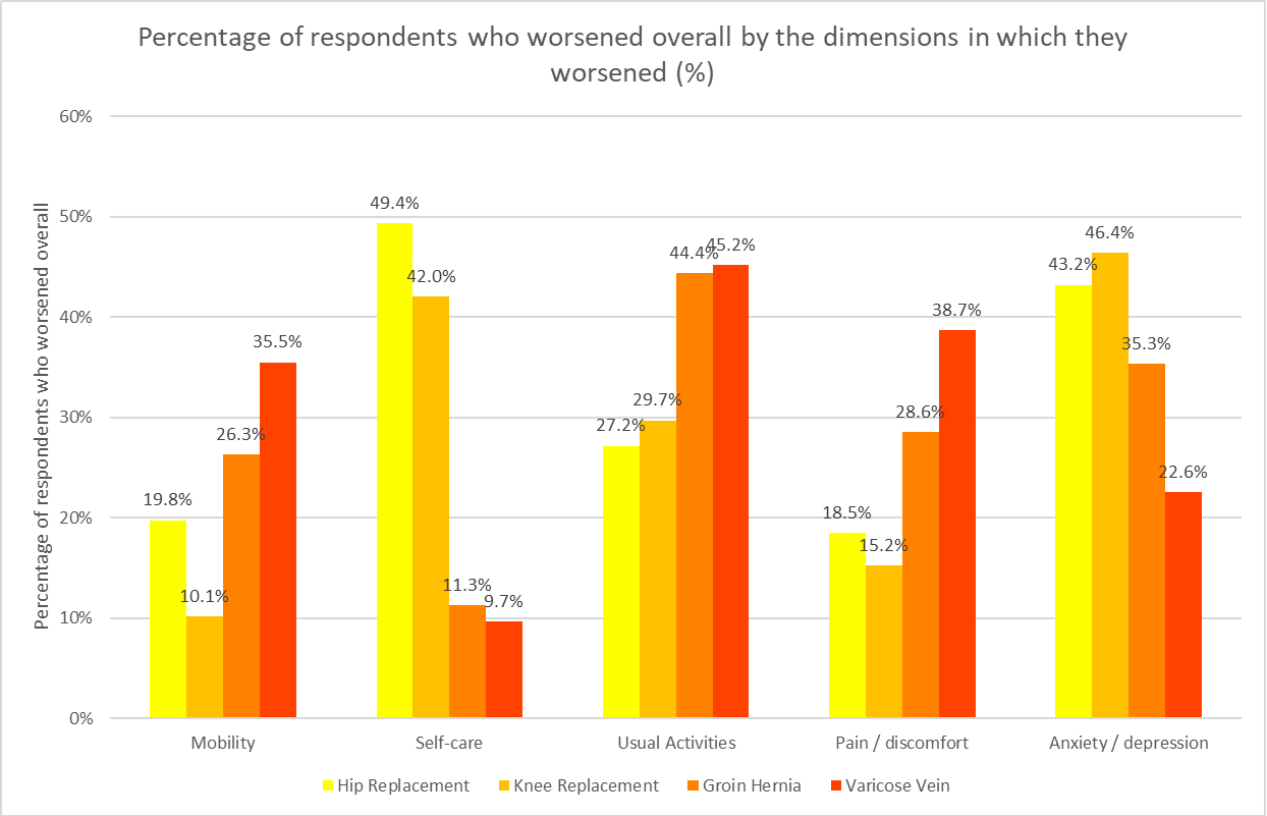


Figure 57. Percentage of participants whose health worsen overall using PCHC, by the dimensions in which they worsened.

Figure 1.2.4: Percentage of participants with a mixed change overall using PCHC, by the dimensions in which they improved and worsened

This figure shows a comparison of PCHC 'Mixed' patients, which involves both worsening and improving in different dimensions. Users can find it in the book "Methods for Analysing and Reporting EQ-5D Data" [3] as Figure 2.4 on page 33.

To generate this table, users must fill in the "Select variable names form" with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ-5D version, time, by and ID.

Then, users must check the checkbox associated with this table in the "Select descriptive form". The EQ-5D Suite will add a new sheet named "Figure_1.2.4", which will contain the desired table.

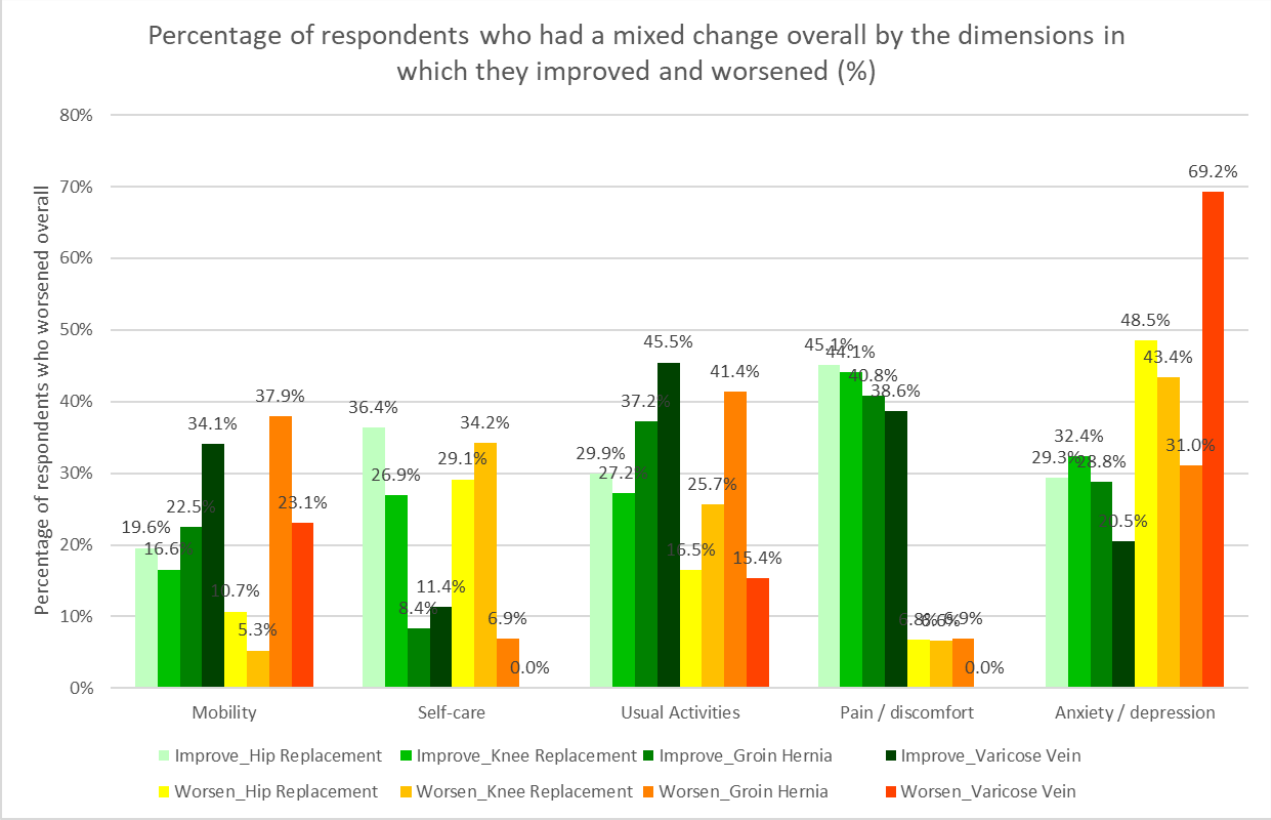


Figure 58. Percentage of participants with a mixed change overall using PCHC, by the dimensions in which they improved and worsened.

Figure 1.2.5: Health Profile Grid (HPG)

The Health Profile Grid (HPG) plots the profiles between any two points in time. The HPG relies on profiles being ordered from best to worst using a value set (the value set used to calculate the EQ-5D values). Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Figure 2.4 on page 33.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ-5D index, EQ-5D version, time, by and ID.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Figure_1.2.5", which will contain the desired table.

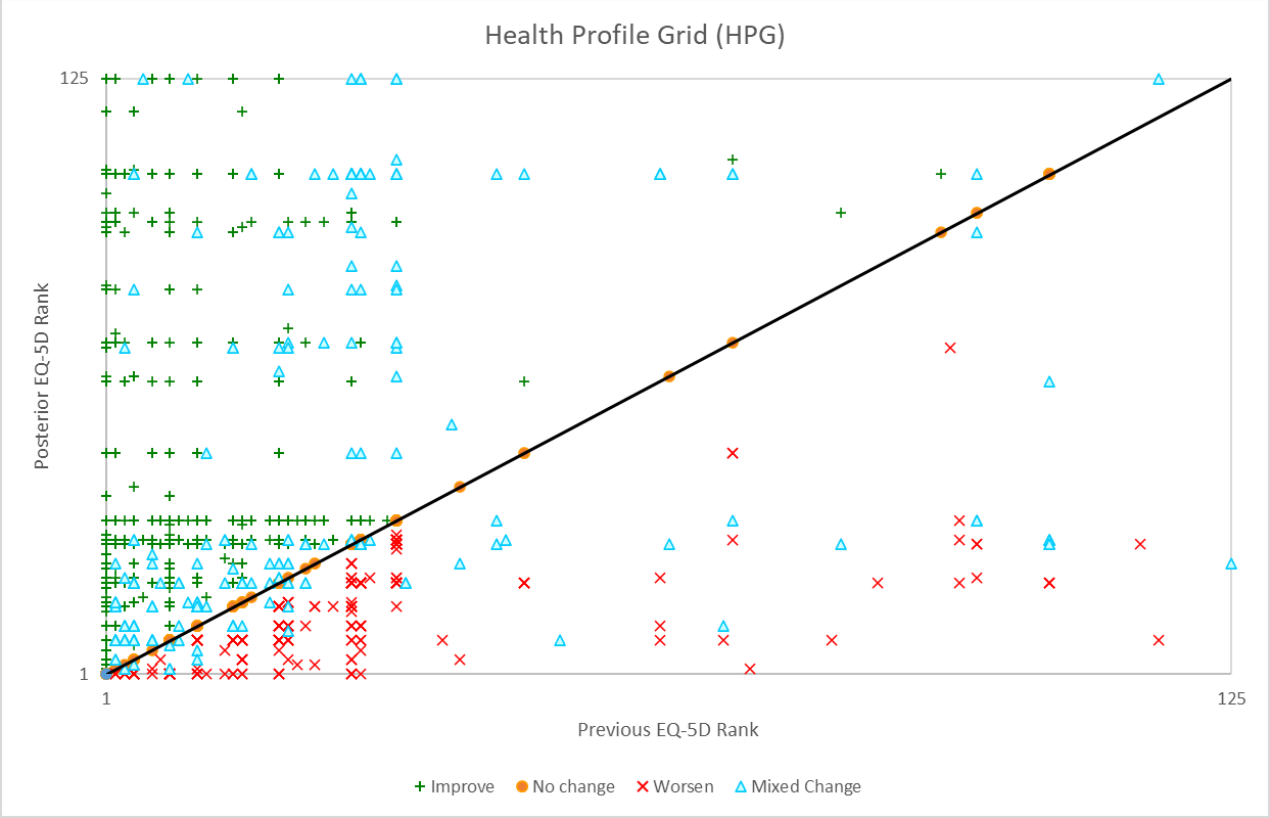


Figure 59. Health Profile Grid (HPG)

4.1.3 Summarising the Severity of EQ-5D Profiles

This section explains how to summarise the overall severity of EQ-5D health states using methods other than calculating EQ-5D index values. Two common methods are the Level Sum Score (LSS), which adds up the levels for each dimension, and the Level Frequency Score (LFS), which characterizes each health state by the frequency of levels. It is important to note that both the LSS and LFS involve information loss and hidden assumptions about the aggregation of dimensions and levels, so they should be used with caution.

To access these methods, users must click on the “Summarizing the severity of EQ-5D profiles” button in the “Analysis of EQ-5D profile” menu.

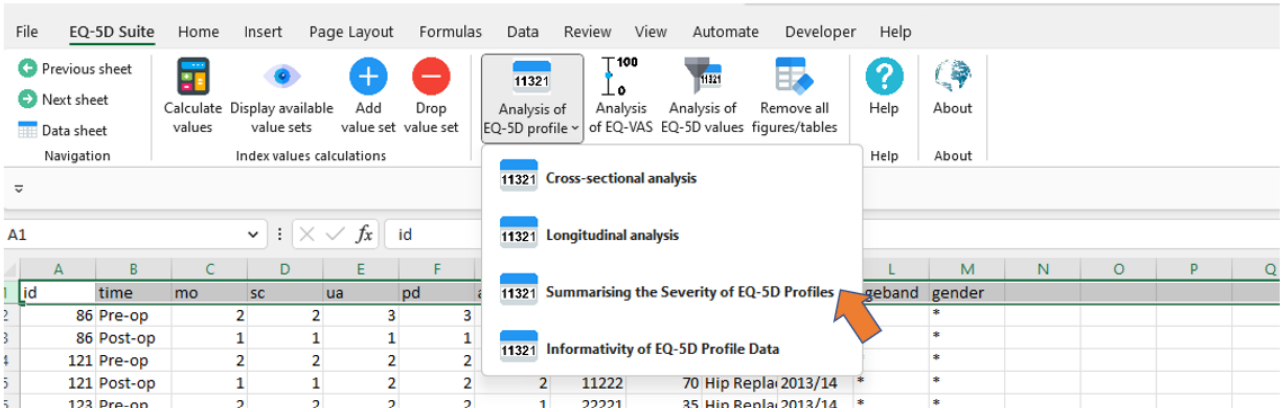


Figure 60. The " Summarising the severity of EQ-5D profiles " button.

After clicking the "Summarising the severity of EQ-5D profiles" button, the "Select variable names form" will appear. This form allows users to input the required variable names for analysis by selecting them from a drop-down box. To generate the tables and figures in this section, users will need to input the names of the five EQ-5D dimensions, the EQ-5D version, and the EQ-5D index (except for Table 1.3.2).

Once the variables have been selected, the "Select descriptive form" will appear. This form lists all available tables and figures for reporting. Users must check the checkboxes associated with each table and figure that they would like to include in their report. Further details about each table and figure are provided below.

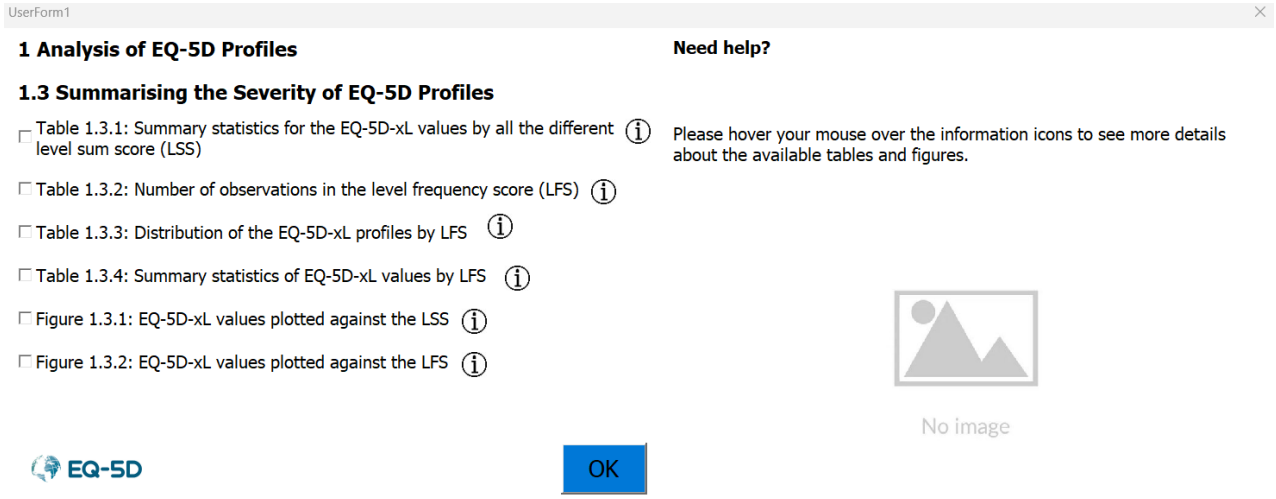


Figure 61. The summarising the severity of EQ-5D profiles "Select descriptive" form.

Table 1.3.1: Summary statistics for the EQ-5D-xL values by all the different level sum score (LSS)

This table shows descriptive statistics for the EQ-5D values for all the diferent LSSs. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Figure 2.7 on page 40.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ-5D index, EQ-5D version.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Table_1.3.1", which will contain the desired table.

LSS	Number	Mean	Standard D	Median	Minimum	Maximum	Range
5	2142	1.000	0.000	1.000	1.000	1.000	0.000
6	1278	0.816	0.031	0.796	0.796	0.883	0.087
7	1017	0.744	0.077	0.760	0.264	0.814	0.550
8	1653	0.670	0.090	0.691	0.160	0.743	0.583
9	1469	0.480	0.194	0.587	0.028	0.639	0.611
10	1064	0.269	0.208	0.186	-0.008	0.516	0.524
11	526	0.013	0.064	-0.016	-0.112	0.189	0.301
12	259	-0.095	0.062	-0.074	-0.261	0.079	0.340
13	72	-0.232	0.031	-0.239	-0.319	-0.086	0.233
14	19	-0.398	0.056	-0.349	-0.484	-0.331	0.153
15	4	-0.594	0.000	-0.594	-0.594	-0.594	0.000
Missing	497						

Figure 62. Summary statistics for the EQ-5D-xL (in this case the -3L) values by all the different level sum score (LSS).

Table 1.3.2: Number of observations in the level frequency score (LFS)

This table reports the number and percentage of observations reporting each value of LFS. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Figure 2.9 on page 45.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, and EQ-5D version.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Table_1.3.2", which will contain the desired table.

LFS	Frequency	%	Cum (%)
500	2142	22.54%	22.54%
230	1578	16.61%	39.15%
410	1278	13.45%	52.59%
140	1034	10.88%	63.47%
320	991	10.43%	73.90%
131	573	6.03%	79.93%
221	432	4.55%	84.48%
050	421	4.43%	88.91%
041	353	3.71%	92.62%
032	244	2.57%	95.19%
122	173	1.82%	97.01%
311	75	0.79%	97.80%
023	72	0.76%	98.56%
212	70	0.74%	99.29%
401	26	0.27%	99.57%
014	19	0.20%	99.77%
113	15	0.16%	99.93%
005	4	0.04%	99.97%
302	3	0.03%	100.00%
Missing	497		

Figure 63. Number of observations in the level frequency score (LFS).

Table 1.3.3: Distribution of the EQ-5D-xL profiles by LFS

This table reports the way in which the EQ-5D values data observed in the dataset are distributed over the various EQ-5D profiles. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Figure 2.8 on page 41.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ-5D index, and EQ-5D version.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Table_1.3.3", which will contain the desired table.

	00	01	02	03	04	05	11	12	13	14	21	22	23	30	31	32	40	41	50	
EQ-5D Value	5	4	3	2	1	0	3	2	1	0	2	1	0	2	1	0	1	0	0	Grand Total
-0.593999982	4																			4
-0.483999997		4																		4
-0.42900002		5																		5
-0.348999977		9																		9
-0.331		1																		1
-0.319000006			2																	2
-0.291000009			1																	1
-0.261000007				2																2
-0.247999996							2													2
-0.238999963			58																	58
-0.183999971			9																	9
-0.180999994				58																58
-0.169999957							1													1
-0.165999994			1																	1
-0.13499999							8													8
-0.126000002				1																1
-0.112999983							4													4
-0.111999996								1												1
-0.086000003			1																	1
-0.077								26												26

Figure 64. Distribution of the EQ-5D-xL (in this case the -3L) profiles by LFS.

Table 1.3.4: Summary statistics of EQ-5D-xL values by LFS

This table reports descriptive statistics for the EQ-5D values for all the LFSs. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Figure 2.10 on page 46.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ-5D index, and EQ-5D version.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Table_1.3.4", which will contain the desired table.

LSS	Frequency	Mean	Standard D	Median	Minimum	Maximum	Range
005	4	-0.594	0	-0.594	-0.594	-0.594	0
014	19	-0.39753	0.056421	-0.349	-0.484	-0.331	0.153
023	72	-0.23193	0.030702	-0.239	-0.319	-0.086	0.233
113	15	-0.14653	0.042193	-0.135	-0.248	-0.113	0.135
032	244	-0.092	0.062	-0.074	-0.261	0.079	0.340
122	173	-0.002	0.043	-0.003	-0.112	0.150	0.262
041	353	0.019833	0.070337	-0.016	-0.016	0.189	0.205
212	70	0.097886	0.018159	0.101	-0.008	0.101	0.109
131	573	0.108	0.077	0.088	0.020	0.312	0.292
302	3	0.122667	0.066939	0.17	0.028	0.17	0.142
221	432	0.188	0.072	0.159	0.124	0.416	0.292
311	75	0.2716	0.095917	0.228	0.16	0.487	0.327
401	26	0.318	0.090	0.264	0.264	0.556	0.292
050	421	0.516	0.000	0.516	0.516	0.516	0.000
140	1034	0.602	0.017	0.587	0.552	0.639	0.087
230	1578	0.689	0.012	0.691	0.621	0.743	0.122
320	991	0.755	0.031	0.760	0.692	0.814	0.122
410	1278	0.816	0.031	0.796	0.796	0.883	0.087
500	2142	1.000	0.000	1.000	1.000	1.000	0.000

Figure 65. Summary statistics of EQ-5D-xL (in this case the -3L) values by LFS

Figure 1.3.1: EQ-5D-xL values plotted against the LSS

This figure shows the mean, minimum and maximum EQ-5D index values for all the LSSs. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Figure 2.8 on page 39.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ-5D index, and EQ-5D version.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Figure_1.3.1", which will contain the desired figure.

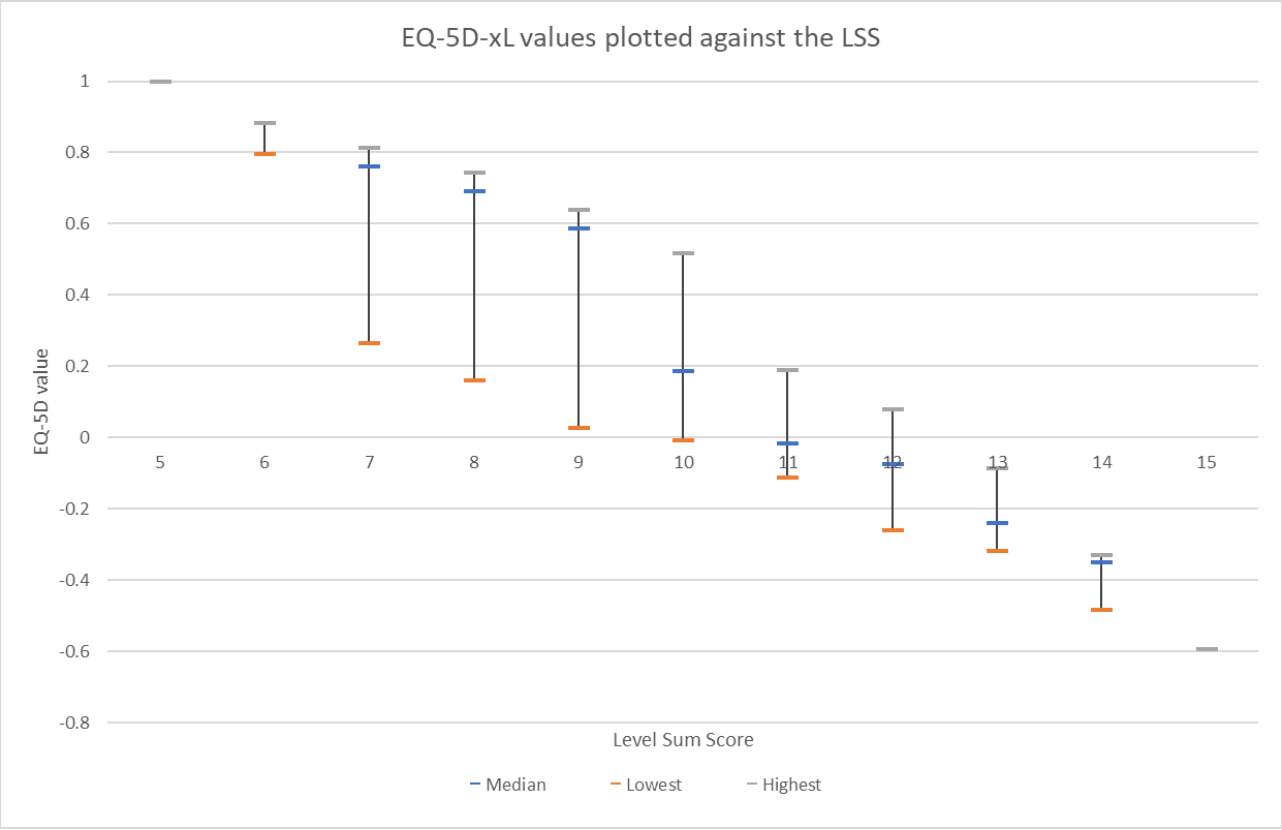


Figure 66. EQ-5D-xL (in this case the -3L) values plotted against the LSS.

Figure 1.3.2: EQ-5D-xL values plotted against the LFS

This figure shows the mean, minimum and maximum EQ-5D index values for all the LFSs. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Figure 2.10 on page 48.

To generate this table, users must fill in the “Select variable names form” with the following variables:mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ-5D index, and EQ-5D version.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Figure_1.3.2", which will contain the desired figure.

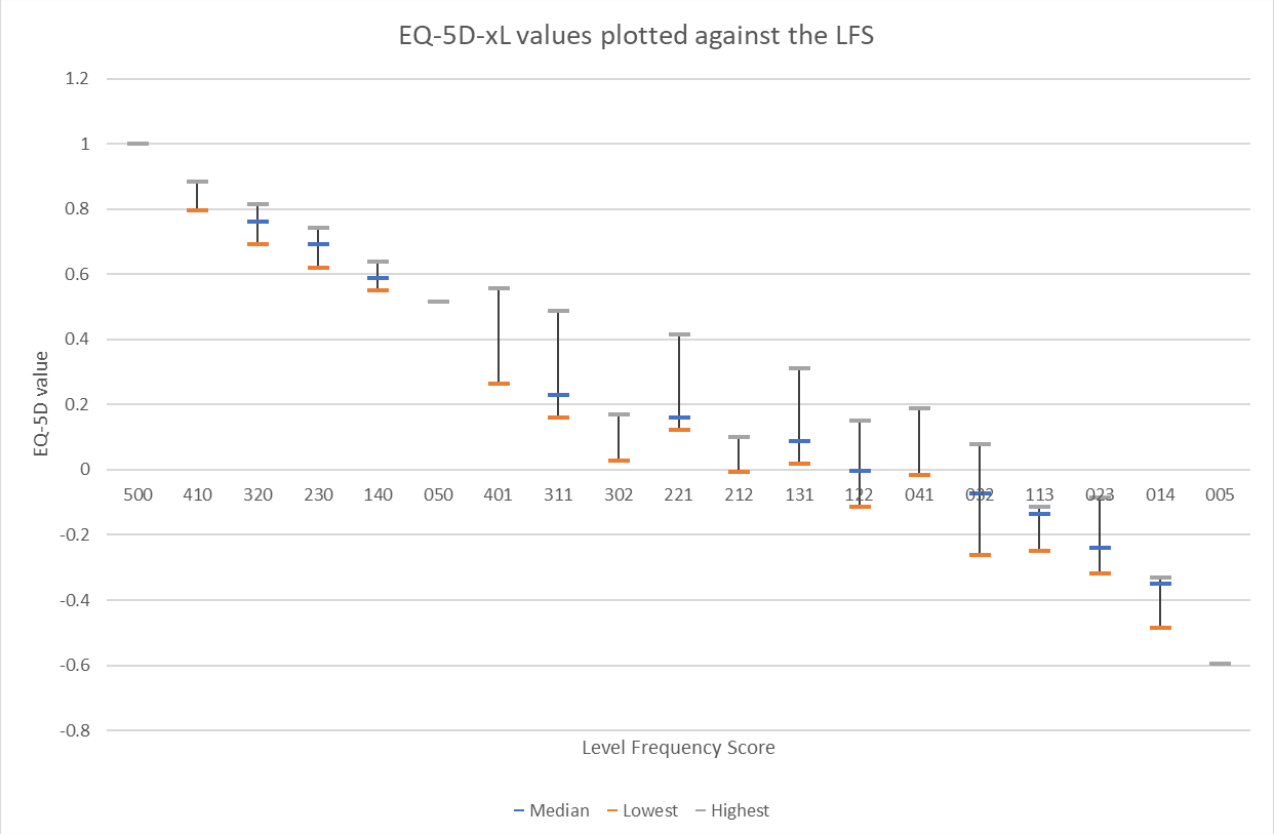


Figure 67. EQ-5D-xL (in this case the -3L) values plotted against the LFS.

4.1.4 Informativity of EQ-5D Profile Data

This section explains how to analyse the informativity of EQ-5D profile data using the Health State Density Curve (HSDC). To access this feature, users must click on the “Informativity of EQ-5D Profile Data” button in the “Analysis of EQ-5D profile” menu.

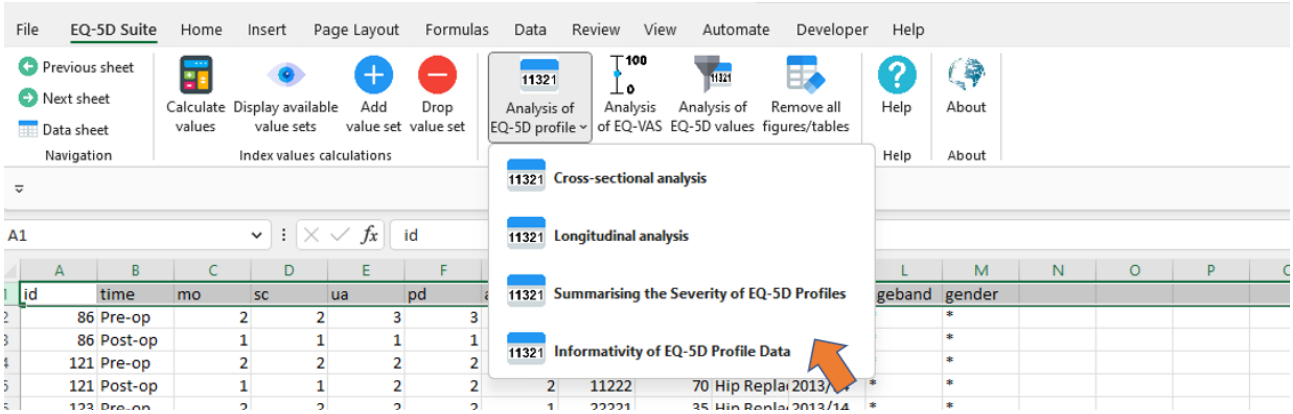


Figure 68. The " Informativity of EQ-5D Profile Data" button.

After clicking the button, the “Select variable names form” will appear. This form allows users to input the required variable names for analysis by selecting them from a drop-down box. To generate the HSDC, users will need to input the names of the five EQ-5D dimensions and the EQ-5D version.

Once the variables have been selected, the "Select descriptive form" will appear.

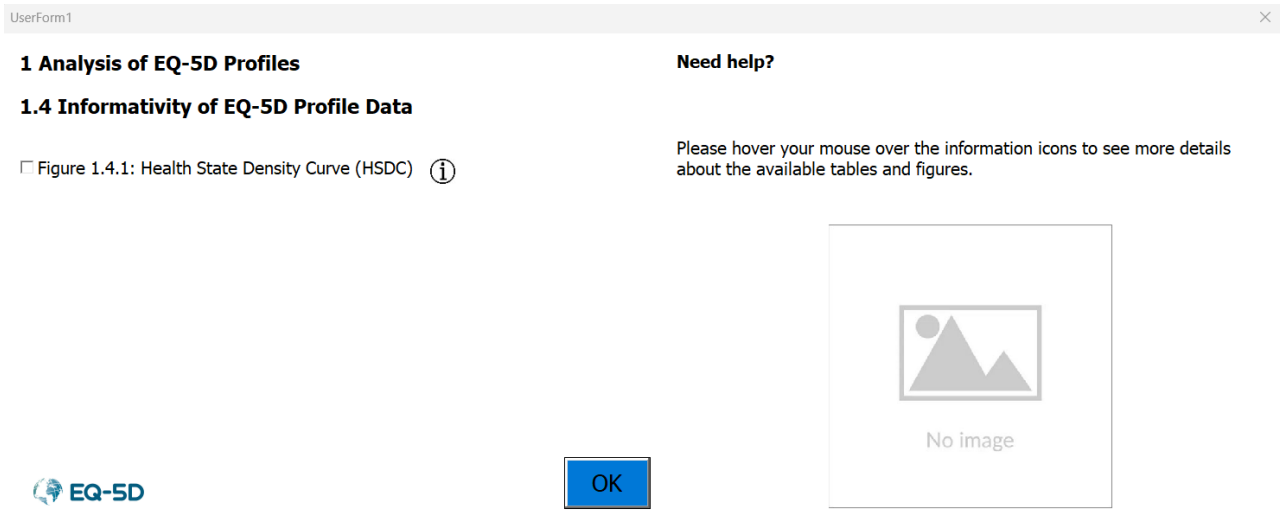


Figure 69. The informativity of EQ-5D Profile Data “Select descriptive form”.

Figure 1.4.1: Health State Density Curve (HSDC)

The Health State Density Curve (HSDC) shows the cumulative frequency of health states compared against the cumulative frequency of the sample or population. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Figure 2.9 on page 43.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, and EQ-5D version.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Figure_1.4.1", which will contain the desired figure.

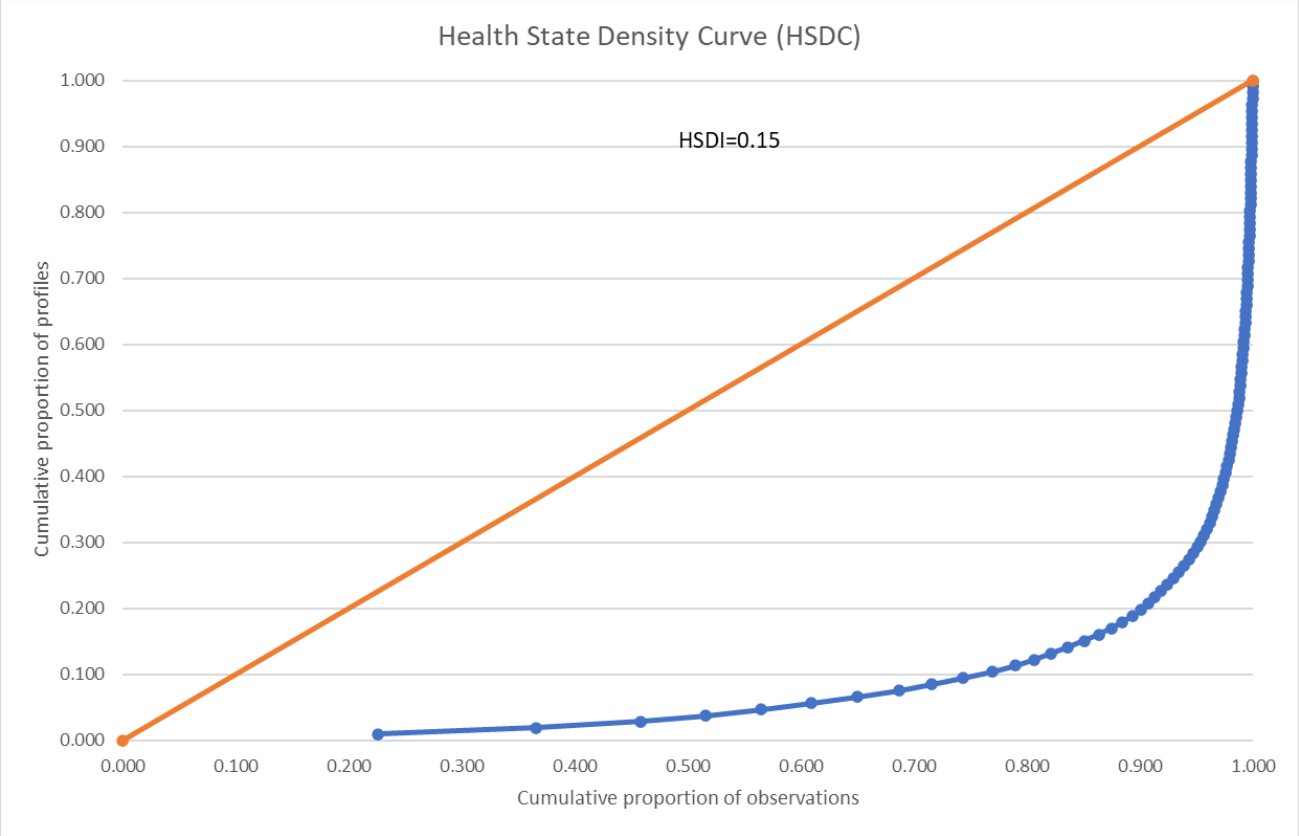


Figure 70. Health State Density Curve (HSDC).

4.2 Analysis of EQ-VAS data

This section provides a guide on how to analyse and report EQ VAS data using the EQ-5D Suite Excel Toolkit. To access this feature, users must click on the "Analysis of EQ-VAS" button.

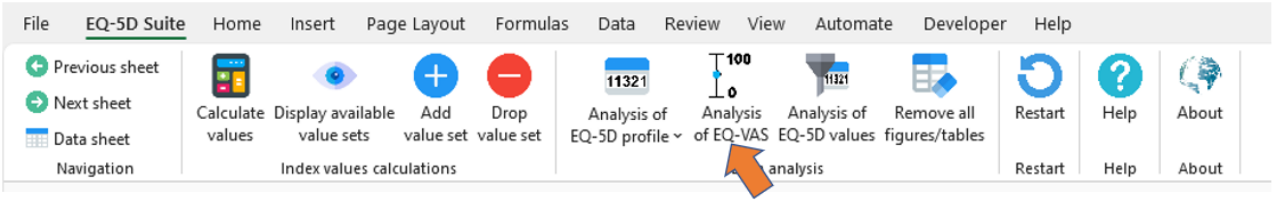


Figure 71. The “Analysis of EQ-VAS" button.

After clicking the button, the "Select variable names form" will appear. This form allows users to input the required variable names for analysis by selecting them from a drop-down box. To generate the tables and figures in this section, users will need to input the EQ-VAS variable name (and the group variable for table 2.1).

Once the variables have been selected, the "Select descriptive form" will appear. This form lists all available tables and figures for reporting. Users must check the checkboxes associated with each table and figure that they would like to include in their report. Further details about each table and figure are provided below.

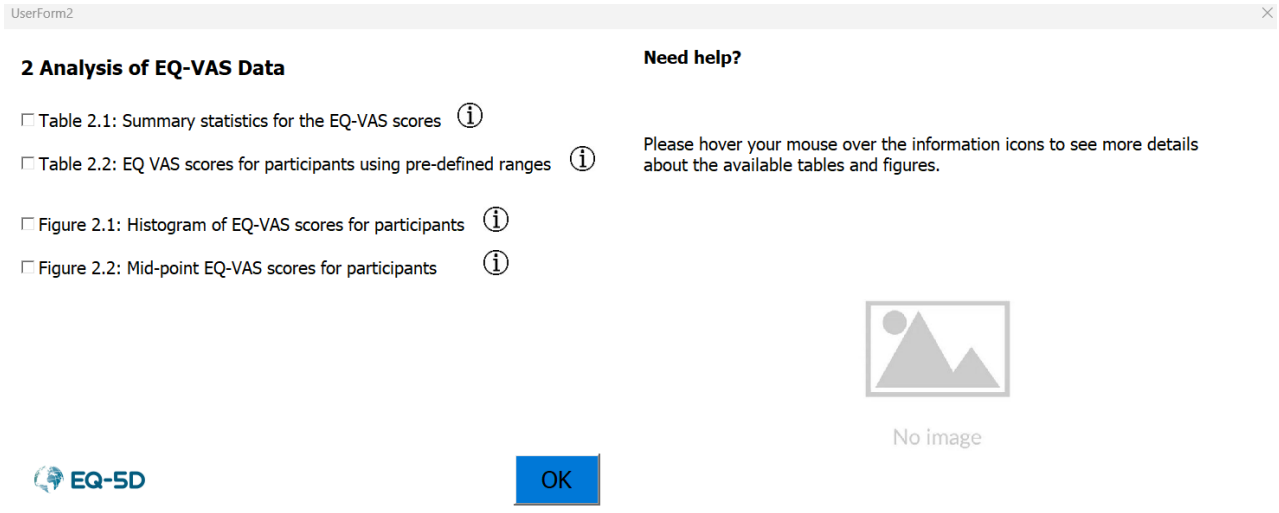


Figure 72. The analysis of EQ-VAS “Select descriptive form.”

Table 2.1: Summary statistics for the EQ-VAS scores

This table shows descriptive statistics for the EQ VAS scores by group. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Table 3.1 on page 53.

To generate this table, users must fill in the “Select variable names form” with the following variables: EQ-VAS and by.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Table_2.1", which will contain the desired table.

	Hip Replacement	Knee Replacement	Groin Hernia	Varicose Vein
Mean	71.471	70.912	80.250	76.903
Standard error	0.353	0.330	0.365	0.885
Median	75	75	84	80
Mode	80	80	90	90
Standard deviation	20.801	19.971	15.282	18.443
Kurtosis	3.600	3.399	6.052	4.526
Skewness	-1.013	-0.906	-1.483	-1.249
Minimum	0	0	0	0
Maximum	100	100	100	100
Range	100	100	100	100
Observations	3473	3669	1753	434
Missing (n)	283	323	45	20
Total sample	3756	3992	1798	454
Missing (%)	0.075	0.081	0.025	0.044

Figure 73. Summary statistics for the EQ-VAS scores.

Table 2.2: EQ VAS scores for participants using pre-defined ranges

This table reports the frequency of observations in each EQ-VAS pre-defined range. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Table 3.2 on page 55.

To generate this table, users must fill in the “Select variable names form” with the following variables: EQ-VAS.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Table_2.2", which will contain the desired table.

Range	Mid-point	Frecuency
0	0	31
1	1	0
2	2	1
3-7	5	11
8-12	10	47
13-17	15	32
18-22	20	92
23-27	25	71
28-32	30	206
33-37	35	90
38-42	40	321
43-47	45	81
48-52	50	643
53-57	55	151
58-62	60	577
63-67	65	293
68-72	70	1075
73-77	75	724
78-82	80	1466
83-87	85	782
88-92	90	1519
93-97	95	675
98	98	64
99	99	57
100	100	320
Total observed		9329
Missing		671
Total sample		10000

Figure 74. EQ VAS scores for participants using pre-defined ranges.

Figure 2.1: Histogram of EQ-VAS scores for participants

This figure shows the frequency of observations taking values from the full range of possible EQ-VAS scores (0-100). Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Figure 3.1 on page 54.

To generate this table, users must fill in the “Select variable names form” with the following variables: EQ-VAS.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Figure_2.1", which will contain the desired figure.

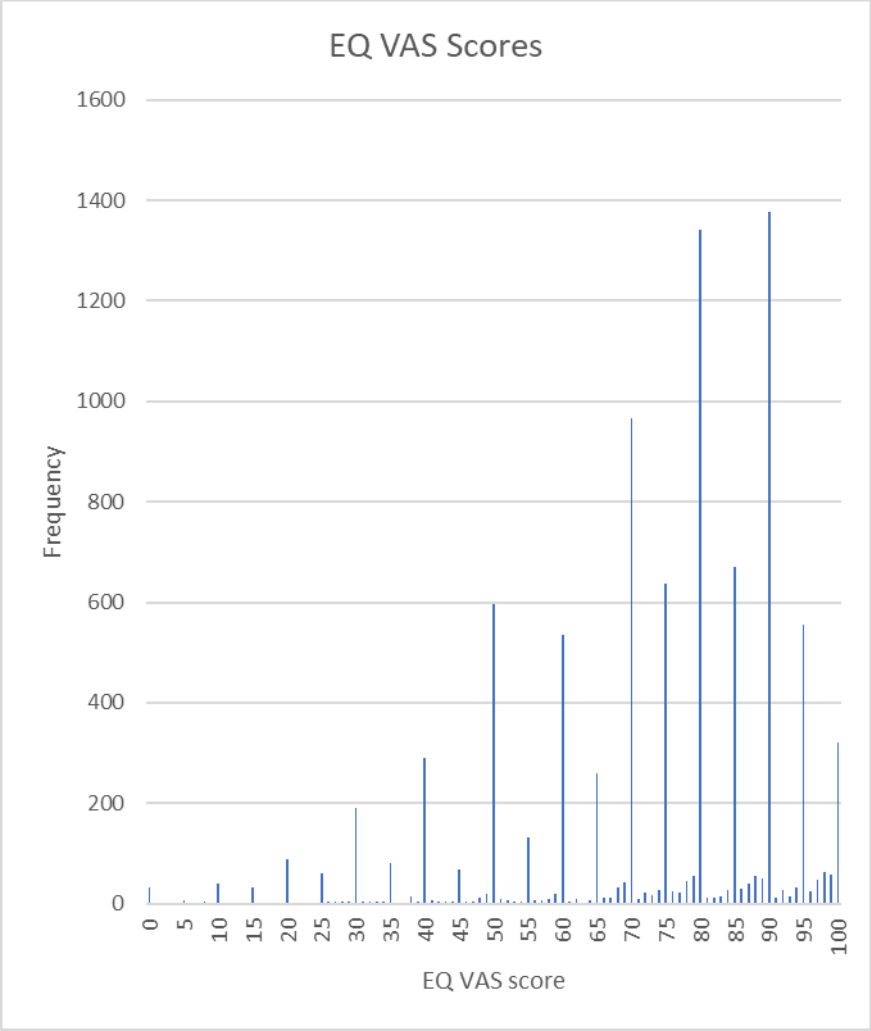


Figure 75. Histogram of EQ-VAS scores for participants.

Figure 2.2: Mid-point EQ-VAS scores for participants

This figure shows the frequency of observations in each EQ-VAS pre-defined range. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Figure 3.2 on page 55.

To generate this table, users must fill in the “Select variable names form” with the following variables: EQ-VAS.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Figure_2.2", which will contain the desired figure.

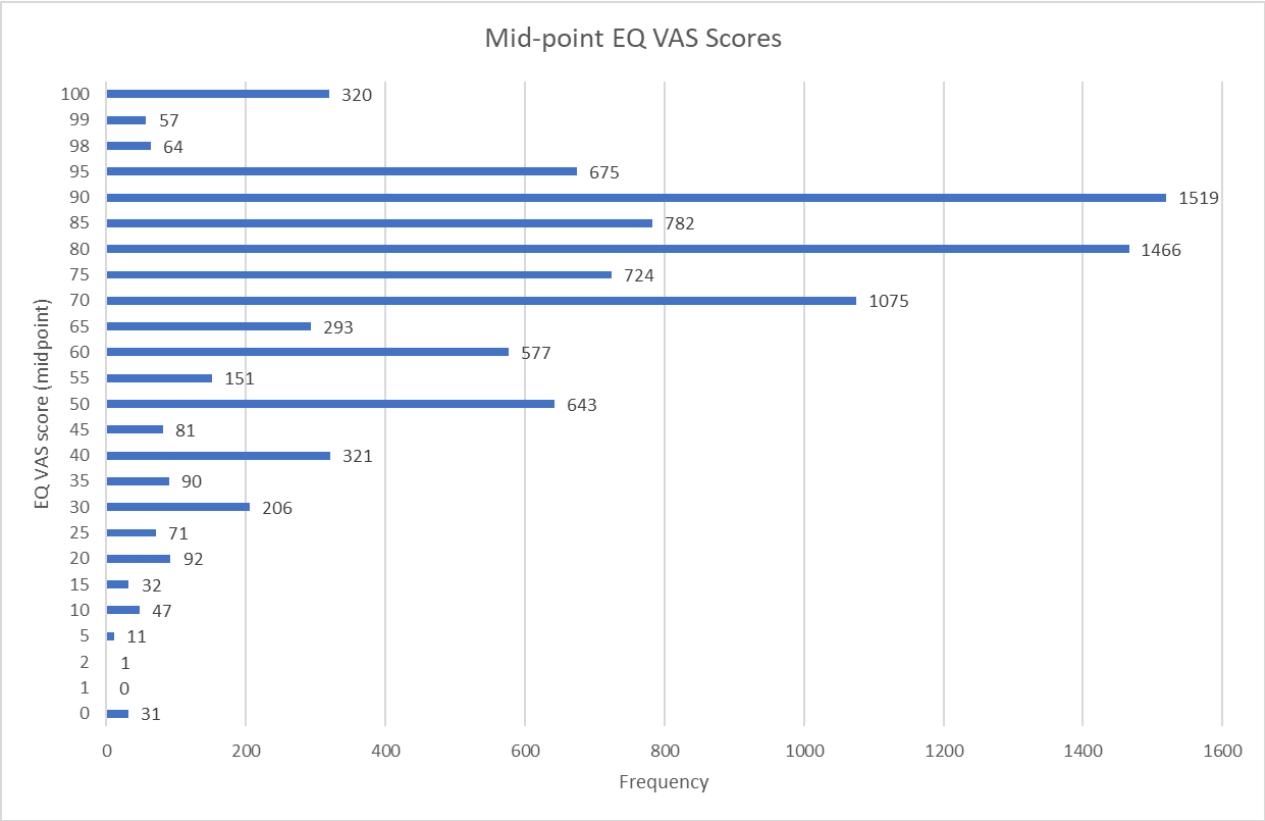


Figure 76. Mid-point EQ-VAS scores for participants.

4.3 Analysis of EQ-5D utility values

This section offers a guide on how to analyse and report EQ-5D values data. To do so, the dataset must include a variable with the EQ-5D utility value assigned to each individual. If needed, users can calculate this variable using the "Calculate values" button detailed in Section 3.

To access the analysis feature, users must click on the "Analysis of EQ-5D values" button in the EQ-5D Suite custom menu.

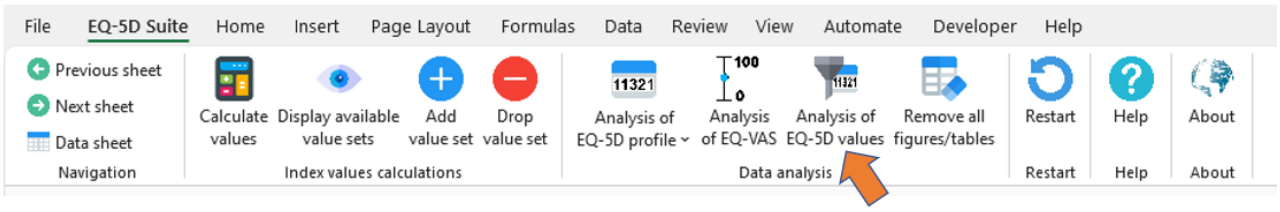


Figure 77. The "Analysis of EQ-5D values" button.

After clicking the "Analysis of EQ-5D values" button, the "Select variable names form" will appear. This form allows users to input the required variable names for analysis by selecting them from a drop-down box.

Once the variables have been selected, the "Select descriptive form" will appear. This form lists all available tables and figures for reporting. Users must check the checkboxes associated with each table and figure that they would like to include in their report. Further details about each table and figure are provided below.

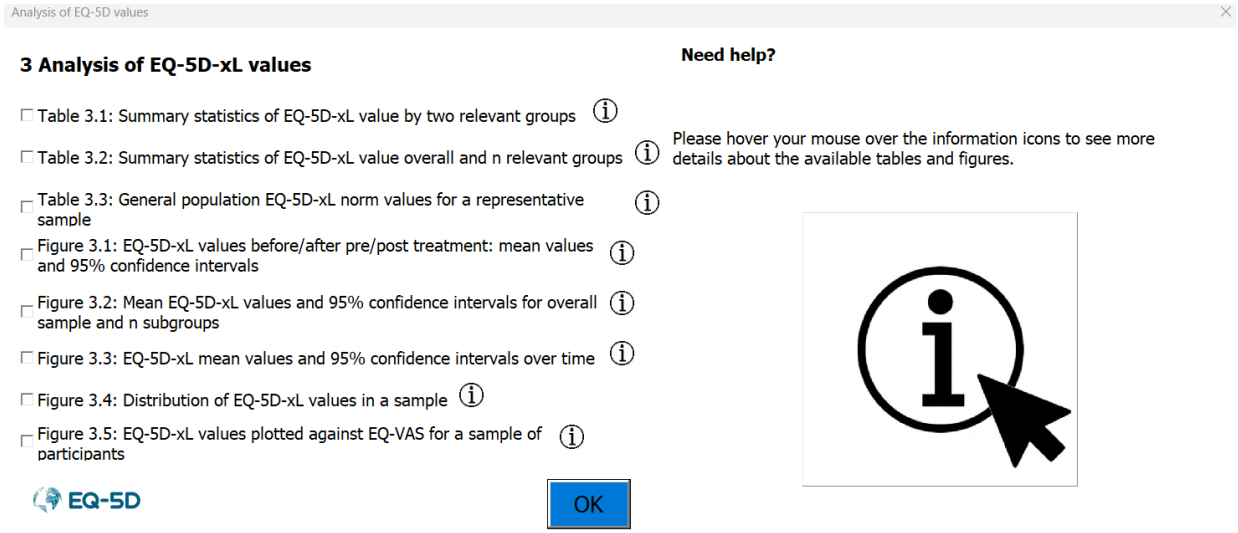


Figure 78. The analysis of EQ-5D utility values "Select descriptive form".

Table 3.1: Summary statistics of EQ-5D-xL value by two relevant groups

This table shows descriptive statistics for the EQ-5D values by pre and post operative time points. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Table 4.2 on page 69.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ-5D index, time and EQ-5D version.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Table_3.1", which will contain the desired table.

NOTE: *The table will report descriptive statistics for the entire dataset (without grouping) if the time variable has only one value.*

	Pre-op	Post-op
Mean	0.477	0.783
Standard error	0.005	0.0036
Median	0.62	0.796
Mode	0.691	1
Standard deviation	0.341	0.248855
Kurtosis	1.953	6.286385
Skewness	-0.472	-1.65775
Minimum	-0.594	-0.349
Maximum	1	1
Range	1.594	1.349
Observations	4724	4779
Missing (n)	276	221
Total sample	5000	5000
Missing (%)	0.0552	0.0442

Figure 79. Summary statistics of EQ-5D-xL (in this case the -3L) value by two relevant groups

Table 3.2: Summary statistics of EQ-5D-xL value overall and n relevant groups

This table shows descriptive statistics for the EQ-5D values by group. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Table 4.3 on page 70.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ-5D index, by and EQ-5D version.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Table_3.2", which will contain the desired table.

	Hip Replacement	Knee Replacement	Groin Hernia	Varicose Vein	All groups
Mean	0.581	0.565	0.834	0.795	0.631
Standard error	0.006	0.005	0.005	0.010	0.003
Median	0.691	0.691	0.796	0.796	0.691
25th	0.260	0.260	0.760	0.725	0.516
75th	0.848	0.760	1.000	1.000	0.850
N	3569	3764	1732	438	9503
Missing	187	228	66	16	497

Figure 80. Summary statistics of EQ-5D-xL (in this case the -3L) value overall and n relevant groups

Table 3.3: General population EQ-5D-xL norm values for a representative sample

This table shows a comprehensive overview of EQ-5D population norm values, stratified by group and age (using pre-defined age ranges). Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Table 4.4 on page 71.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ-5D index, by, age and EQ-5D version.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Table_3.3", which will contain the desired table.

		20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 79	80 to 89	Total
Male									
	Mean	1.000	0.861	0.781	0.714	0.689	0.678	0.636	0.688
	Standard error	0.000	0.023	0.020	0.013	0.008	0.008	0.015	0.005
	Median	1.000	0.796	0.796	0.779	0.746	0.727	0.691	0.743
	25th	1.000	0.778	0.725	0.621	0.587	0.587	0.516	0.587
	75th	1.000	1.000	1.000	1.000	1.000	1.000	0.814	1.000
	N	1	23	178	578	1563	1567	431	4341
	Missing	1	1	8	14	43	99	25	191
Female									
	Mean	-	0.759	0.691	0.516	0.561	0.561	0.553	0.558
	Standard error	-	0.042	0.033	0.017	0.009	0.009	0.016	0.005
	Median	-	0.796	0.727	0.620	0.691	0.691	0.691	0.691
	25th	-	0.691	0.587	0.159	0.159	0.189	0.189	0.186
	75th	-	0.848	0.848	0.796	0.796	0.796	0.796	0.796
	N	-	22	77	486	1509	1630	509	4233
	Missing	0	0	1	34	75	116	37	263
Not specified									
	Mean	-	-	-	-	-	0.863	-	0.863
	Standard error	-	-	-	-	-	0.097	-	0.097
	Median	-	-	-	-	-	0.863	-	0.863
	25th	-	-	-	-	-	0.795	-	0.795
	75th	-	-	-	-	-	0.932	-	0.932
	N	-	-	-	-	-	2	-	2
	Missing	0	0	0	0	0	0	0	0
Total									
	Mean	1.000	0.811	0.754	0.624	0.626	0.619	0.591	0.631
	Standard error	0.354	0.030	0.018	0.011	0.006	0.006	0.011	0.003
	Median	0.500	0.796	0.796	0.691	0.691	0.691	0.691	0.691
	25th	0.250	0.760	0.689	0.260	0.516	0.195	0.189	0.516
	75th	0.750	1.000	1.000	0.850	0.848	0.814	0.796	0.850
	N	2	46	264	1112	3190	3414	1002	9503
	Missing	1	1	9	48	118	215	62	497

Figure 81. General population EQ-5D-xL (in this case the -3L) norm values for a representative sample.

Figure 3.1: EQ-5D-xL values before/after pre/post treatment: mean values and 95% confidence intervals

This figure shows the mean and 95% confidence intervals for the EQ-5D values by pre and post operative time points. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Figure 4.2 on page 70.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ-5D index, time and EQ-5D version.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Figure_3.1", which will contain the desired figure.

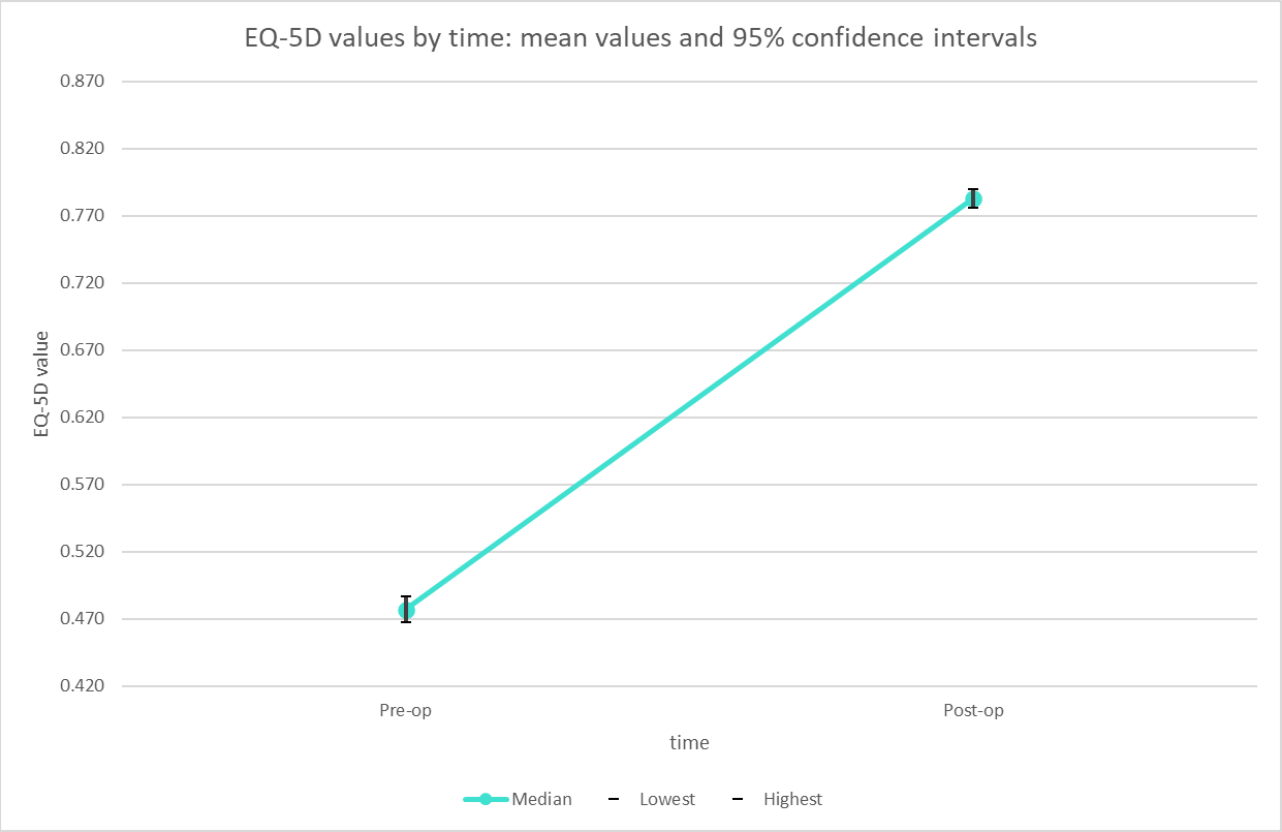


Figure 82. EQ-5D-xL (in this case the -3L) values before/after pre/post treatment: mean values and 95% confidence intervals

Figure 3.2: Mean EQ-5D-xL values and 95% confidence intervals for overall sample and n subgroups

This figure shows the mean and 95% confidence intervals for the EQ-5D values by group. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Figure 4.3 on page 71.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ-5D index, by and EQ-5D version.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Figure_3.2", which will contain the desired figure.

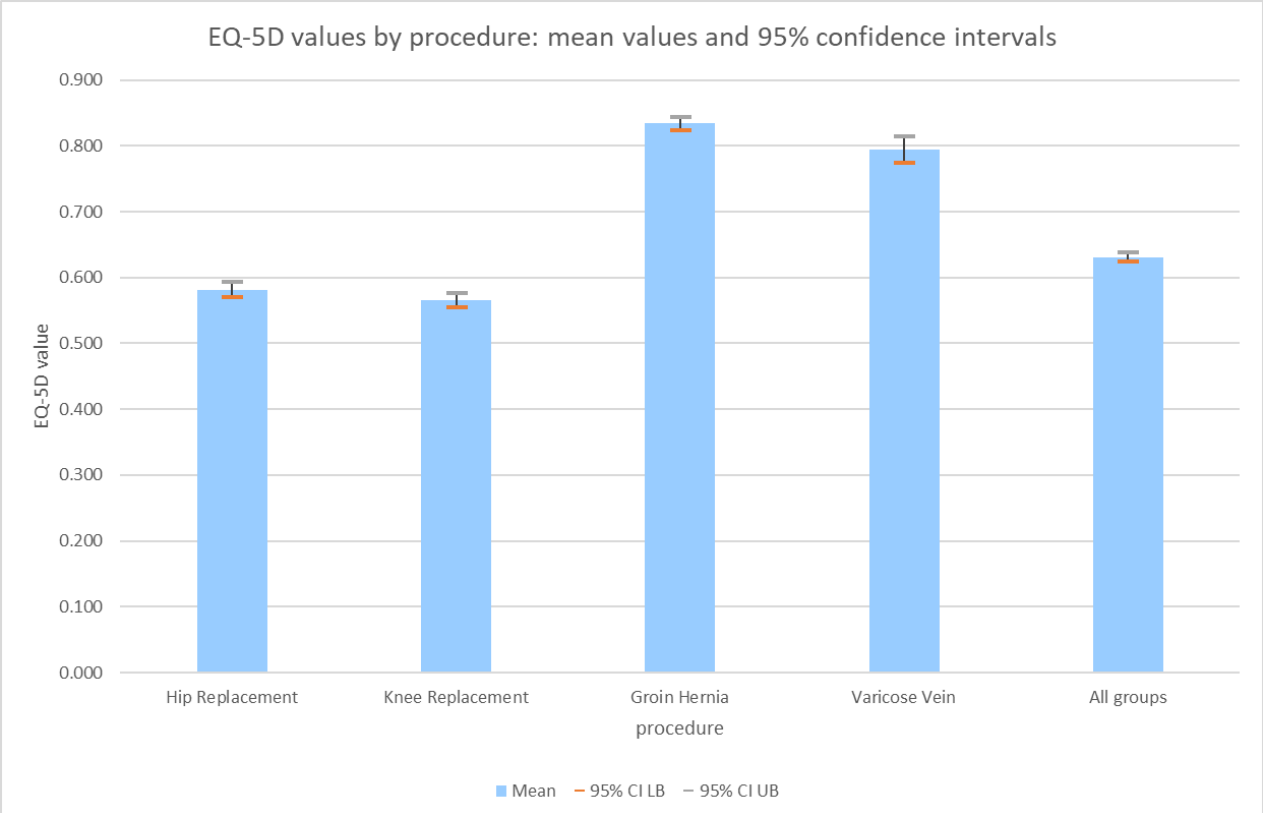


Figure 83. Mean EQ-5D-xL (in this case the -3L) values and 95% confidence intervals for overall sample and n subgroups

Figure 3.3: EQ-5D-xL mean values and 95% confidence intervals over time

This figure shows the mean and 95% confidence intervals for the EQ-5D values by group over time. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Figure 4.4 on page 72.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ-5D index, by, time, and EQ-5D version.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Figure_3.3", which will contain the desired figure.

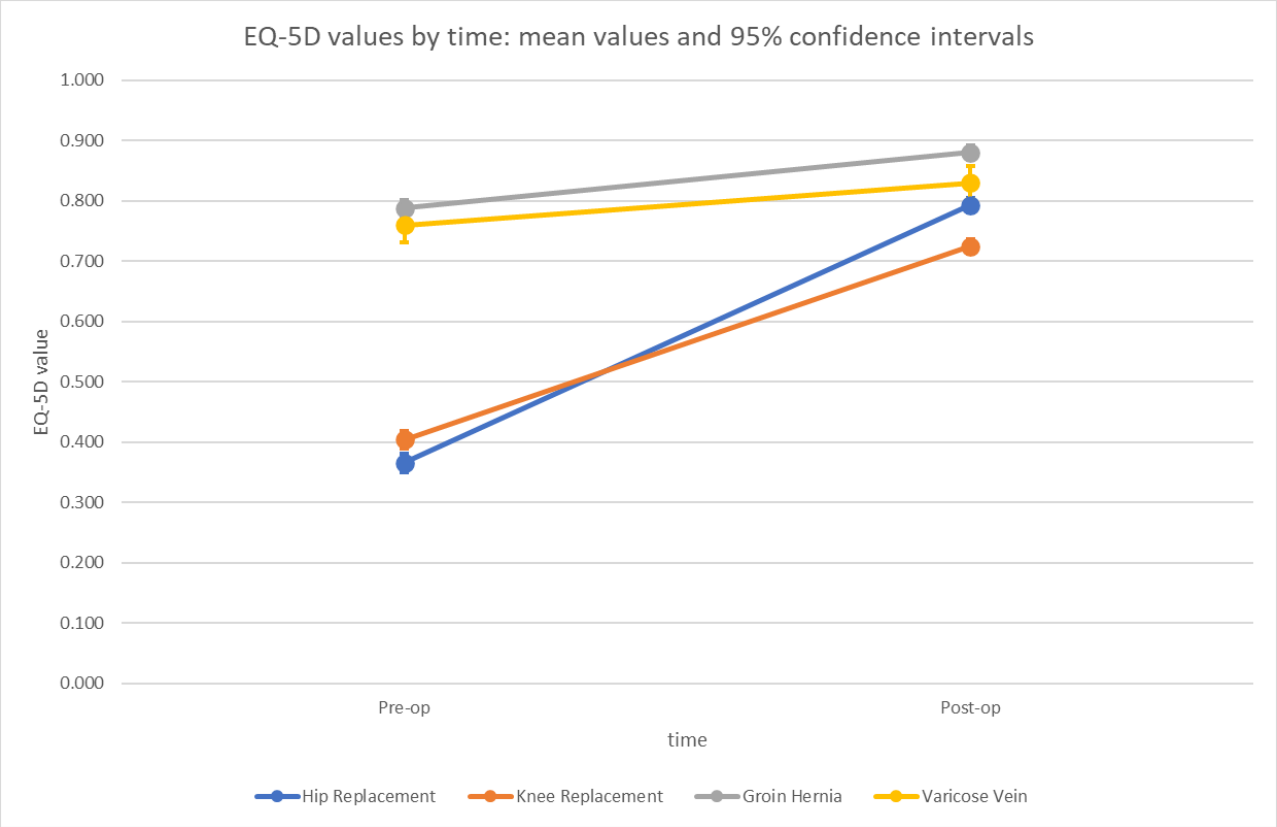


Figure 84. EQ-5D-xL (in this case the -3L) mean values and 95% confidence intervals over time.

Figure 3.4: Distribution of EQ-5D-xL values in a sample

This figure shows the EQ-5D values distribution. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Figure 4.6 on page 73.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ-5D index and EQ-5D version.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Figure_3.4", which will contain the desired figure.

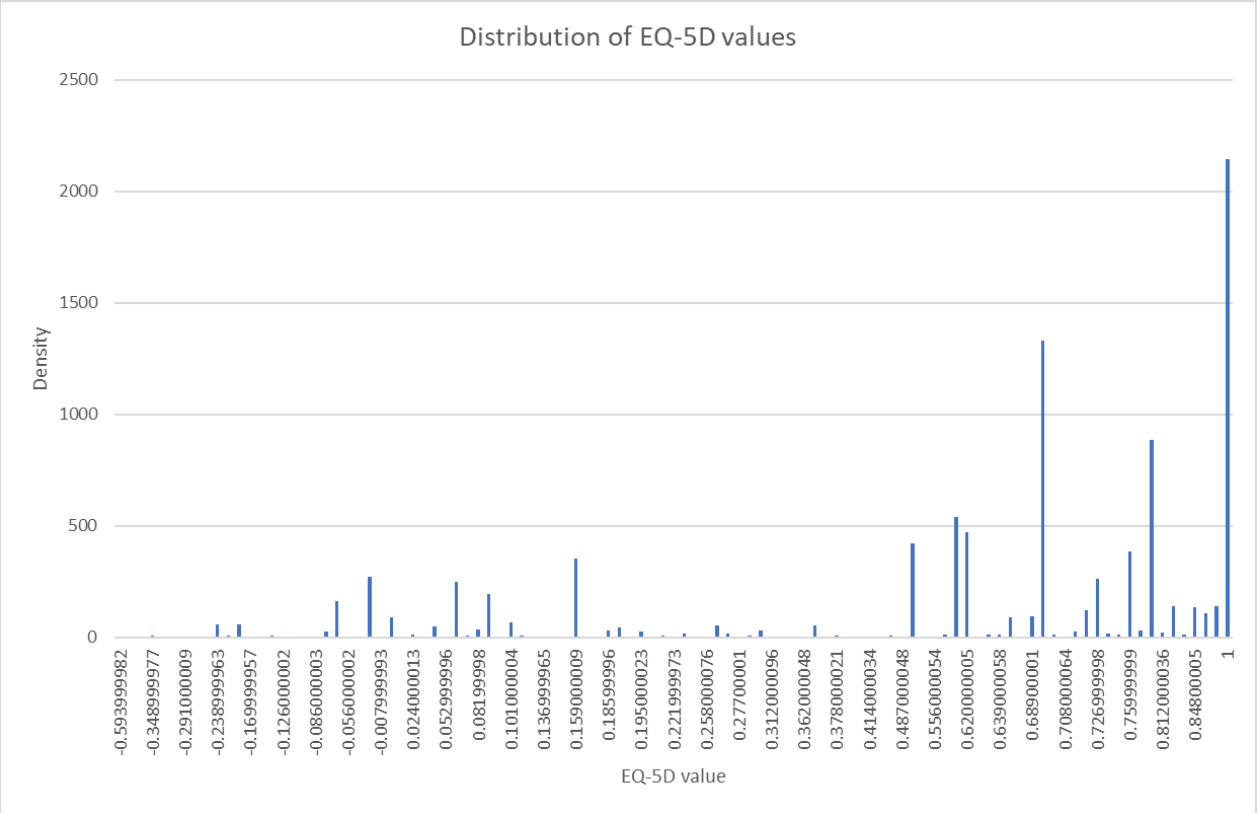


Figure 85. Distribution of EQ-5D-xL (in this case the -3L) values in a sample

Figure 3.5: EQ-5D-xL values plotted against EQ-VAS for a sample of participants.

This figure shows observed EQ-5D values paired with self-reported EQ VAS ratings. Users can find it in the book “Methods for Analysing and Reporting EQ-5D Data” [3] as Figure 4.11 on page 78.

To generate this table, users must fill in the “Select variable names form” with the following variables: mobility, self-care, usual activities, pain/discomfort and anxiety/depression, EQ VAS, EQ-5D index and EQ-5D version.

Then, users must check the checkbox associated with this table in the “Select descriptive form”. The EQ-5D Suite will add a new sheet named "Figure_3.5", which will contain the desired figure.

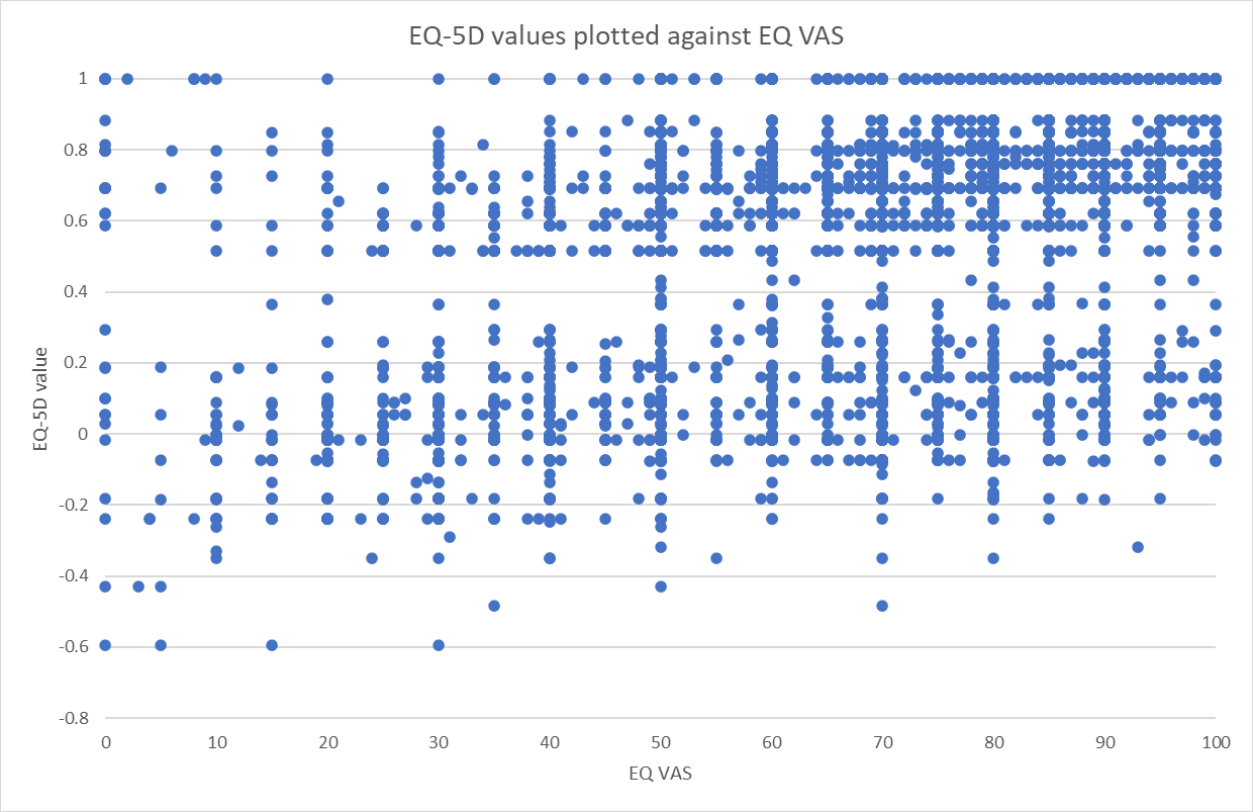


Figure 86. EQ-5D-xL (in this case the -3L) values plotted against EQ-VAS for a sample of participants

5. References

[1] van Hout B, Janssen MF, Feng YS, et al. Interim scoring for the EQ-5D-5L: mapping the EQ-5D-5L to EQ-5D-3L value sets. Value Health. 2012;15(5):708-715. doi:10.1016/j.jval.2012.02.008

[2] van Hout B, Shaw JW. Mapping EQ-5D-3L to EQ-5D-5L. Value Health. 2021; 24(9): 1285-1293. https://doi.org/10.1016/j.jval.2021.03.009

[3] Devlin N, Parkin D, and Janssen B. Methods for Analysing and Reporting EQ-5D Data. Springer International Publishing. 2020; 23–49. https://doi.org/10.1007/978-3-030-47622-9