# Methodology of Willingness to Pay

## 2.1 Stated Preference Approach

The project aims to:

A. estimate the economic value of the pain and suffering caused by food hypersensitivity in the UK. This encompasses food allergies, food intolerances and coeliac disease.
B. estimate the relative importance of the different impacts of food hypersensitivity on people's quality of life

### 2.1.1 Willingness to Pay (WTP)

The economic values were identified using a stated preference (SP) approach to identify people's Willingness to Pay (WTP) to remove the symptoms and limitations of food hypersensitivity.

A Discrete Choice Experiment (DCE) was designed in which people made choices between their current situation and temporary removal of their condition – for varying durations and at varying cost.

Food allergies, food intolerances and Coeliac coeliac disease are experienced by adults and children, but WTP values could not be sought from children directly and hence WTP values were sought for two distinct groups:

- Adults' WTP regarding their own food hypersensitivity
- Parents' WTP regarding their children's food hypersensitivity

These WTP values (for adult FHS, child FHS) for the three conditions (food allergy, food intolerance and Coeliac coeliac disease) were designed to be incorporated into the FSA's Cost of Illness (CoI) model (see Section 1.1)

The gain delivered from removal of the food hypersensitivity, and hence the gain being valued, was captured at the individual-level in 3 ways:

**1. EQ-5D**

Respondents scored their health at the time of the survey using the EQ-5D-5L (see Appendix I). They were also asked to score (using EQ-5D-5L) how they imagined their health would be if their FHS was removed. The difference in those two scores is a measure of the improvement delivered by removal of the FHS. The same difference measure was generated for the sample of parents using the EQ-5D-3L (proxy) for children.

**2. Visual Analogue Scale (VAS)**

An equivalent process – scoring health today and if the FHS was removed, was undertaken using the EuroQol Visual Analogue Scale (hereafter referred to as 'VAS' see Appendix A), thus providing another measure of the gain delivered by removal of FHS. This was done for adults and parents regarding their child.

**3. Condition-specific measures (FAQLQ, FIQLQ, or CDQ) for adults and children**

Adults completed one of three health-related quality of life instruments appropriate to their food hypersensitivity:

- Food Allergy Quality of Life Questionnaire (FAQLQ)
- Food Intolerance Quality of Life Questionnaire (FIQLQ)
- Coeliac Disease Quality of Life scale (CDQ)

Parents responding regarding their children's FHS, completed an age-appropriate version of these instruments (FAQLQ, FIQLQ, CCDUX).

See Appendices A and B for a fuller explanation of these scales and the variants used for children of different ages. Respondents reporting multiple different hypersensitivities completed the scale relevant to the condition they reported as affecting them most.

### 2.1.2 Relative Importance of food hypersensitivity Impacts

The importance of the many and diverse impacts of food hypersensitivity (as measured by the quality of life instruments) on quality of life were analysed to:

- investigate their relative importance (currently each is given equal weight in FAQLQ, FIQLQ and CDQ measures)
- aid identification of impacts which are most important to people, and/or within the FSA's power to affect.

To estimate the relative importance of the different impacts of food hypersensitivity on people's quality of life the Best Worst Scaling (BWS, see Section 4 for details of the method) technique was employed – as this method is designed to elicit the relative importance of items. The 'items' in this case are impacts of food hypersensitivities on people's quality of life. These were taken from the FAQLQ, FIQLQ and CDQ instruments.

Each of these QoL measures comprise multiple statements of the different ways in which the food hypersensitivity affects people with the condition. The impacts are scored by respondents, and the scores aggregated to produce the relevant QoL measure. The items which comprise the FAQLQ, FIQLQ and CDQ instruments were converted into statements that could be placed alongside each other in BWS sets, and respondents asked which had the (a) greatest, and (b) least, impact on their quality of life (see Section 4 and Appendix E).

## 2.2 Survey Design

The survey was designed in Sawtooth Software's Lighthouse Studio. It included two choice-based exercises: a Discrete Choice Experiment and a Best Worst Scaling Exercise. In addition, questions were designed to elicit information about their food hypersensitivity, overall health status, health related quality of life and perceptions of the severity of their food hypersensitivity.

## 2.3 Focus Groups

Five online focus groups (Adults and Parents, separately) were conducted, with 4-5 attendees on each occasion, to test the survey

In broad terms the focus groups were used to test whether the DCE and BWS exercises 'worked' – did people understand the choices they were being asked to make and, in the case of the DCE, were they prepared and able to make the trade-offs involved (money versus period of food hypersensitivity removal).

## 2.4 Recruitment

The sample for the online surveys (see Table 2.1) were recruited via contacting of people who had previously taken part in the project, advertising material distributed by support/patient groups (for example, Allergy UK, Coeliac UK, etc) and a sample purchased from a market research company (see Section 8).

The sample size (post data cleaning) was 2142: split between 1426 adults, 716 parents.

| Adults | N |
|---|---|
| Food Allergy | 385 |
| Coeliac Disease | 601 |
| Food Intolerance | 440 |
| Total | 1426 |

| Parents | N |
|---|---|
| Food Allergy | 496 |
| Coeliac Disease | 73 |
| Food Intolerance | 147 |
| Total | 716 |

## 2.5 Analysis

The Adult and Child DCE data were analysed via estimation of mixed logit choice models (see Appendix C for more details). Each of the two datasets are analysed in aggregate (considering all conditions) and disaggregated by the 3 conditions. This analysis yields WTP / year estimates – what people would pay to remove the symptoms and limitations of their conditions for a year.

The BWS choice data were also analysed via estimation of logit choice models. The resulting logit coefficients are transformed into ‘Importance Scores’ which allow the relative importance of the items which comprises the FAQLQ, FIQLQ and CDQ instruments to be investigated – that is, as well as a ranking of the impacts we derive estimates of how much more (or less) important an impact of food hypersensitivity is compared to another (see BWS results in Section 10).