Appendix 2

1. Index of Inconsistency

The index of inconsistency are the principal measures of response variance for a particular response category. Random errors of measurement in the survey process (non-sampling error) add variability to the data we collect from respondents. When the errors are not correlated with the answers or with each other, we call this variability, simple response variance."

The **index of inconsistency** estimates the ratio of response variance to total variance for a question answer. It is a relative measure of response variance.

If the estimate of the index is:

- less than 20, response variance is low.
- between 20 and 50, response variance is moderate.
- greater than 50, response variance is high.

Any of these factors may cause high response variance:

- The methods used to collect the data need improvements. For example, the question may be unclear.
- The concept itself may not be measurable.
- Respondents may not provide reliable information to the level of detail asked.

2. Formula:

Number of responses to the same question by category

Second interview	First interview						Total
	1	2	.	i	...	n	
1	X_{11}	X_{12}	.	X_{1i}	...	X_{1n}	T_{21}
2	X_{21}	X_{22}	.	X_{2i}	...	X_{2n}	T_{22}
...	...	...	.	...	...	...	...
i	X_{i1}	X_{i2}	.	X_{ii}	...	X_{in}	T_{2i}
...	...	...	.	...	...	...	...
N	X_{n1}	X_{n2}	.	X_{ni}	...	X_{nn}	T_{2n}
Total	T_{11}	T_{12}	.	T_{1i}	...	T_{1n}	T

```
Index of Inconsistency for Answer i
        T₂ᵢ + T₁ᵢ - 2 Xᵢᵢ
IOIᵢ= ------------------------------------------ x 100
   (1/T)(T₁ᵢ(T-T₂ᵢ)+T₂ᵢ(T-T₁ᵢ))


Aggregate Index of Inconsistency
```

$$IOI= \frac{T - \sum_{i=1}^{n} X_{ii}}{T- (1/T) \times \sum_{i=1}^{n} T_{1i}T_{2i}} \times 100$$