

Statistical Summary

StatisticalSummary provides a set of summary statistics calculated for the variables in a data set and is located in PhysicalInstance as it reflects the contents of a specific data file. The summary statistics may be provided in one of three ways; in-line using the VariableStatistics, by referencing a related PhysicalInstance containing the VariableStatistics for the same data file content, or by referencing a related PhysicalInstance for a data file that contains the summary statistics as a separate object set. The second two options use the structure StatisticalDataLocation which is a reference to the PhysicalInstance plus a Boolean attribute "isInline". If set to "true" this indicates that the summary statistics are contained in the data file associated with the referenced PhysicalInstance.

VariableStatistics supports the following information for any variable: the total responses, a choice of weights applied when calculating the summary statistics, identification of missing values, the summary statistics for the variable, and category statistics with an optional filter. Category statistics may be filtered by a single variable (i.e., filtering the category statistics in a multinational data file by country) using FilteredCategoryStatistics. Expressing statistics that require the use of multiple filters should be handled as a cross-tabulation and captured in an NCube structure.

Note that while a number of statistical summaries may be included within a single VariableStatistics object, you cannot use more than a single weight (either a standard weight or a weight variable). However you are able to provide both weighted and unweighted values for each statistic. If a complex weighting structure is used based on multiple weights, a virtual variable should be created that expresses the combined use of the weights involved. The virtual variable would reference a generation instruction containing the process.

```
StatisticalSummaryType
    StatisticalDataLocation                (0..n)
        r:PhysicalInstanceReference        (1..1)
        @isInline
    VariableStatistics                    (0..n)
        Extension base: Identifiable
        VariableReference                  (1..1)
        TotalResponses                    (0..1)
        CHOICE                            (0..1)
            StandardWeightReference
            WeightVariableReference
        ENDCHOICE
        MissingValuesReference            (0..1)
        SummaryStatistic                  (0..n)
            TypeOfStatistic                (1..1)
            Statistic                      (0..1)
                @isWeighted
                @includesMissing
        UnfilteredCategoryStatistics        (0..n)
            VariableCategory                (0..n)
```

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CategoryValue (1..1)
CategoryStatistic (0..n)
  TypeOfCategoryStatistic (1..1)
  Statistic (0..1)
    @isWeighted
    @includesMissing
FilteredCategoryStatistics (0..n)
  FilterVariableReference (0..1)
  FilterVariableCategory (0..n)
    FilterCategoryValue (1..1)
  VariableCategory (0..n)
    CategoryValue (1..1)
    CategoryStatistic (0..n)
      TypeOfCategoryStatistic (1..1)
      Statistic (0..1)
        @isWeighted
        @includesMissing

```

The example is for the following summary and category statistics. The general contents of the referenced items are provided.

Summary Statistics					Standard Weight
V1	count = 100				ID=SW
	weighted count = 1000				Value = 10
Unfiltered Category Statistics					Variable Gender
	wtCount	weighted %			ID=V1
Male	450	0.45			1=Male
Female	550	0.55			2=Female
V2	count = 100				
	weighted count = 1000				
Unfiltered Category Statistics					Variable Region
	wtCount	weighted %			ID=V2
North	500	0.5			a=North
South	500	0.5			b=South
Gender (V1) Filtered by Region (V2)					
	North		South		
	count	col %	count	col %	
Male	20	0.4	25	0.5	
Female	30	0.6	25	0.5	

EXAMPLE:

```
<StatisticalSummary>
  <VariableStatistics isIdentifiable="true" typeOfIdentifier="Canonical"
scopeOfUniqueness="Agency">
    <r:URN>urn:ddi:us.mpc:VS_2:1</r:URN>
    <r:VariableReference>
      <r:URN>urn:ddi:us.mpc:V1:1</URN>
      <r:TypeOfObject>Variable</r:TypeOfObject>
    </r:VariableReference>
    <StandardWeightReference>
      <r:URN>urn:ddi:us.mpc:SW:1</r:URN>
      <r:TypeOfObject>StandardWeight</r:TypeOfObject>
    </StandardWeightReference>
    <MissingValuesReference>
      <r:URN>urn:ddi:us.mpc:MV_1:1</r:URN>
      <r:TypeOfObject>MissingValuesDelineation</r:TypeOfObject>
    </MissingValuesReference>
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      <Statistic isWeighted="true"
includesMissing="false">1000</Statistic>
    </SummaryStatistic>
    <UnfilteredCategoryStatistics>
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includesMissing="false">450</Statistic>
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        <CategoryStatistic>
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includesMissing="false">0.45</Statistic>
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includesMissing="false">0.55</Statistic>
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```

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<FilteredCategoryStatistics>
  <FilterVariableReference>
    <r:URN>urn:ddi:us.mpc:V2:1</URN>
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    <FilterCategoryValue>a</FilterCategoryValue>
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includesMissing="false">20</Statistic>
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      <CategoryStatistic>

```

```

        <TypeOfCategoryStatistic>Count</TypeOfCategoryStatistic>
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scopeOfUniqueness="Agency">
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        <r:TypeOfObject>Variable</r:TypeOfObject>
    </r:VariableReference>
    <StandardWeightReference>
        <r:URN>urn:ddi:us.mpc:SW:1</r:URN>
        <r:TypeOfObject>StandardWeight</r:TypeOfObject>
    </StandardWeightReference>
    <MissingValuesReference>
        <r:URN>urn:ddi:us.mpc:MV_1:1</r:URN>
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    </MissingValuesReference>
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        <Statistic isWeighted="true"
includesMissing="false">1000</Statistic>
    </SummaryStatistic>
    <UnfilteredCategoryStatistics>
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            </CategoryStatistic>
        </VariableCategory>
        <VariableCategory>
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            <CategoryStatistic>
                <TypeOfCategoryStatistic>wtCount</TypeOfCategoryStatistic>

```

```
        <Statistic isWeighted="true"
includesMissing="false">500</Statistic>
    </CategoryStatistic>
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        <TypeOfCategoryStatistic>weightedPct</TypeOfCategoryStatistic>
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includesMissing="false">0.50</Statistic>
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</UnfilteredCategoryStatistics>
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</StatisticalSummary>
```