Burn's Taxonomy

Level	**Tasks**
Knowledge	• *retrieve points* • *locate value* • *identify axis labels*
Comprehension	• *summarize main message/take away* • *describe content of visualization* • *explain the topic of the visualization*
Application	• *use a percentage and total population to calculate a number* • *calculate the difference between two points* • *translate the data in a chart to a table*
Analysis	• *describe a trend* • *describe the relationship between two variables* • *identify what data was used to come to a conclusion*
Synthesis	• *predict a future value* • *generate a new visual representation*
Evaluation	• *justify a conclusion based on data* • *judge which design is more appropriate*

Revisions:

Revision	**Justification**
Renamed *retrieve points* to *retrieve value*	For clarity.
Renamed *identify axis labels* to *identify labels of scales*	"Scales" is broader and includes color legend.
Added make comparisons	It is a common visualization task from other task taxonomies and it is not in Burn's taxonomy.
Added identify range	It is a common visualization task from other task taxonomies and it is not in Burn's taxonomy.
Combined *summarize main message/take away*, *describe content of visualization,*	All three are very similar to each other. Early experiments also showed that our pipeline

explain the topic of the visualization into *describe the topic of the visualization*	made very similar items for these tasks.
Renamed *use a percentage and total population to calculate a number* to *estimate the ratio of one value to another value of the same type*	For clarity and naming consistency with other "estimate value" tasks.
Renamed *calculate the difference between two points* to *estimate the difference between two values of the same type*	For clarity and naming consistency with other "estimate value" tasks.
Added estimate the average of multiple values of the same type	It is a common visualization task and it is not in Burn's taxonomy.
Removed *translate the data in a chart to a table*	It is not suitable for the multiple-choice format.
Combined *describe a trend* and *describe the relationship* between two variables into *describe trend or correlation*	They are very similar to each other. Early experiments also showed that our pipeline made very similar items for these tasks.
Removed *identify what data was used to come to a conclusion*	This task is too vague and the items we and our (early stage) pipeline produced were similar to items with other tasks.
Removed *predict a future value*	The multiple-choice format requires an unambiguous correct answer, but making predictions involves uncertainty, so it is difficult to have one correct answer.
Changed *generate a new visual representation* to *describe the characteristics of an alternative chart type*	The multiple-choice format is not appropriate for asking people to generate a new visualization from scratch. Therefore, we modified the original task so that it suits the multiple-choice format. Describing what an alternative chart type looks like requires similar skills as the reader needs to generate a visual representation in their head and choose the corresponding answer.
Removed *justify a conclusion based on data*	This task is too vague and the items we and the (early stage) pipeline produced were similar to items with other tasks.
Split *judge which design is more appropriate* into *judge which visualization design is more appropriate for a task* and *judge which task this visualization design best supports*	They are sufficiently different.