1. **READ THIS: WHY ALTAIR?**

**Reading - no submission required**

1. **Options**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Name** | **Data** | **Derived Data** | **Mark** | **Channels** | **Task** | **Scalability** |
| Scatter Plot | 2 quantity attributes | **-** | Points | Horizontal and Vertical Positions, Colour, Size, Shape | Finding trends, outliers, distribution, correlation, clusters | Hundreds of items |
| Bar Chart | 1 category attribute, 1 quantity attribute | **-** | Lines | Length to express quantity Value, Spatial Regions | Compare, Lookup values | Dozens to hundreds of levels for the attribute, Hundreds for values |
| Stacked Bar Chart | 2 category attributes,  1 quantity attribute | **-** | Vertical stack of line marks | Length and colour hue,  Spatial regions (one per glyph) | Part to whole relationship | Asymmetric (stacked attributes: 10-12, main key attribute: dozens to hundreds of levels) |
| Stream-graph | 1 category key attribute, 1 ordered key attribute,  1 quantity value attribute | Geometry,  1 quantity attribute | Streams | Area, Colour |  | Hundreds of times, |
| Dot / Line Chart | 2 quantity attributes | **-** | Points (and line connect-ions between them) | Aligned lengths | Finding trends | Hundreds of both key and value levels. |
| Indexed Line Charts | 2 quantity attributes (1 key and 1 value) | New quantity value attribute: index value, plot value | Points (and line connect-ions between them) | Aligned lengths | Showing change over time | Hundreds of both key and value levels. |
| Gnatt Charts | 1 category attribute, 2 quantity attributes | **-** | Line | Horizontal Position | emphasize temporal overlaps & start/end dependenc-ies  between items | Dozens of key levels,  Hundreds of value levels |
| Slope-graphs | 2 quantity value attributes | Change magni-tude | Points (and line connect-ions between them) | 2 vertical positions (express attribute value), linewidth / size, colour | Emphasize change in rank / value | Hundreds of value items, dozens of items |
| Heat-map | 2 category attributes, 1 quantity attribute | **-** | Points (separate and aligned) | Colour by quantity attribute | Find clusters, outliers | 1 million items, hundreds of categories, approxima-tely 10 quantity attributes |
| Cluster Heat-map | 2 category attributes, 1 quantity attribute | 2 cluster hierarchies | Points (separate and aligned),  Line (parent-child relationships in tree) | Colour by quantity attribute | Assess the quality of clusters found by automatic methods | 1 million items, hundreds of categories, approxima-tely 10 quantity attributes |
| Radial Bar Chart | 1 category attribute, 1 quantity attribute | **-** | Line | Length to express quantity (less accurately perceived than rectilinear aligned) | Compare | Not very scalable |
| Star Plot | 1 category attribute, 1 quantity attribute | **-** | Line | Length to express quantity (less accurately perceived than rectilinear aligned) | Compare | Not very scalable |
| Radar Plot | Multiple quantitative variables | **-** | Points (and line connect-ions between them) | Position, Length / Distance, Colour, Shape | Compare | Not very scalable |
| Pie Charts | 1 category key attribute, 1 quantitative value attribute | **-** | Interlocking area | Angle | Part-to-Whole judgement | 2 to a few levels |
| Coxcomb Chart | 1 category key attribute, 1 quantitative value attribute | **-** | Line | Length | Part-to-Whole judgement | 2 to a few levels |
| Normalised Stacked Bar Chart | 2 category attributes,  1 quantity attribute | **-** | Line | Length and colour hue | Part-to-Whole judgement | stacked attributes: 10-12, main key attribute: dozens to hundreds of levels |
| SPLOM | 2 quantity attributes | **-** | Point | Position, Colour, Size, Shape | Compare, pattern detection | One dozen attributes, dozens to hundreds of items |
| Parallel Coordinates | 1 quantity attribute, multiple category attributes | **-** | Point | Position, Colour, Size, Shape | To show 2 attributes | Dozens of attributes, hundreds of items |

1. **Chart Types**
2. Bar:

Unit:

Stacked Area:  
Stacked Bar:  
Slope:  
Scatter Plot:

Line:

2x2 Matrix:

Dot Plot:

1. **Chart Selection**

The biggest issue with the diagram provided is that for the reader to be able to understand the diagram, the reader needs to be well informed in the topic related to the diagram. It also requires high levels of understanding to be able to understand what is going, as there are many arrows going from one place to another without any explanation. On the other hand, if the reader is educated enough to be able to read the diagram, it offers a lot of details in the chart, using size, colour, and numbers with some information.