Data Viz. Tableau Week Sum up

Visual Analytics

- is Viz + Data Analytic to Make informed decision (from insights)
  - is raw data to charts/Graphs.
  - to explore dataset, [2] Analyze, & [3] derive insights.

Data types

- classified based on purpose
- [1] Dimension, [2] measure, [3] Date & Time, [4] lati. & Long., [5] String, [6] Attribute,
  - with Geo. role (auto. by tableau)
- [7] Hierarchical.

- Dimension
  - Qualitative & Categorical
  - define the structure (for measure)
  - Independently exists.
- Measure
  - Quantitative
  - Math. operations (eg. Agg.) performed on it.
  - Dependent on Dimension (for exists)
- Attribute → To provide Additional info. to the dimension.
  - e.g. year → Quater → Month
- Hierarchical → Hierarchical related set of Dimensions.
  - e.g. State → district → City

Charts broadly classified based on purpose

C C M / D D R / P S

- [1] Change over time => A measure how it changes with time/date/datetime
- [2] Correlation b/w Variables
- [3] Magnitude => Relative size w.r.t other measure/value.
- [4] Dispersion => how far from baseline (e.g. mean)
- [5] Distribution => freq. of values within each given range/bin.
- [6] Ranking => how values/measures are relatively ranked w.r.t each other.
- [7] part-to-whole => how much of whole is taken by part.
- [8] Spatial => Geo. pattern.

Calculation types

- Mainly 4 types
  - Row level => with 'Numeric, logical, String, Date
    - Calculate w.r.t row level.
  - Aggregation => calculate based on the dimensions included in the view. (i.e. on top of row level)
    - e.g. sum, count, max, etc.
  - Table Calculation => inbuilt function simplified some complex calculation.
    - Spl. type of is window function.
    - is agg. on agg. data (i.e. on top of Aggregation)
  - Level of Details (LOD) expression
    - specifies the level of granularity for agg. calculation, regardless of viz./view.

Numeric Cal.

- To analyse, manipulate, find insight of numeric data.
- 3 Main things
  - Basic Math. op. (+ - * / , etc)
  - Aggregation (e.g. Sum, etc)
  - parenthesis (Mention/Ctrl the order of cal.)

Date Cal.

- To Analyse, Manipulate the date time data.
- function like
  - Date part → extract specified datepart (e.g. M/Y/@)
  - Date Trunc → reduce/Trunc. to the specified datepart.
  - Date Diff (—, start, end) → Gap in terms of specified datepart.
  - Date add → add/sub specified datepart units.
  - Now(), TODAY()
- Relative date handling
  - method 1 → use relative date filter
  - method 2 → date func. with Today/Now.
- Special → Timezone, Null Value handling.

String

- To analyze, Manipulate, find insights from text data.
- function like
  - remove space → rtrim, Ltrim, trim
  - extract text → left, right, mid
  - Replace → replace
  - pattern
    - ¹ existence → Startswith, endswith, Contains.
    - ² position → find, findnth

Logical

- with logical op. (And/OR/NOT) + logical func.
  (If then else end; case when then else end, iff, if null, is null) to => evaluate condition
  ⇓
  Make decision based on Boolen (True/False)

	If	Case	iFF
Data type	any	only string	any
field	Multiple	only one	multiple ~~only one~~
condition	Multiple	Multiple	only one

Window func.

- Special type of table calculation, but need to be Manually typed in calculated field.
- helps to control the window → data.
- is agg. on agg.ed data.

Table Cal.

- 2 Main things
  - Scope : Table, pane, cell
    
  - Direction : Down, Across, Down then Across, Across then down.
- e.g. Running total, percent of total, Diff., percent Diff., Rank, etc.

Order of operation

- operation/action are Calculation/filters, etc. (mostly)
- order of op. => is the order in which tableau executes the operations/actions.

Extract filter (Static; redo for update each time)
↓ then
Datasource filter (Dynamic; no redo needed)
↓ then
Context filter (apply to the sheet) ----> {Fixed LOD, Top N, Conditional filter}
↓ then
Dimension filter ----> {Excluded/include LOD, Data blends}
↓ then
Measure filter
↓ then
Table Cal. filter ----> {reference & trend line}

Granularity v/s aggregation

- # of dimension (in view/viz. level) $\propto$ Granularity $\propto \frac{1}{\text{Agg.}}$
- 'Include achieves Granularity
- 'Exclude achieves agg.

LOD

- Syntax : { fixed / include / exclude [Dimension] : Agg. }
  - fixed: specifies fixed level of agg. regardless of view; fixed dim.
  - include: includes dimension for agg. regardless of view (present/absent of that dimension in view)
  - exclude: exclude dimension for agg. regardless of view

Data condition

* To Get specific / relevant data for analysis, viz, reporting based on specified condition.

→ With use of

1. Filter => include/exclude ; 2 sorting ; 3 Top N
2. parameter => dynamic input decides relevant data to be presented.
3. Set => custom Subset of data based on specified condition.
   - → Static / dynamic / Combined.
   - uses include/exclude ; emphasis by color ; interactive
4. Calculated field => using function & logical op. to specify the condition
   - ↓ is new data (dim./measure) from existing data
   - ↓ for Calculated field to include/exclude data points.
5. Tableau prep. => @ Data cleaning & reshaping phase. (Before data to tableau)

Joins & Blend

Joins	Blend
1 Combined / unified dataset from various datasources (often same database)	1 Combined / unified dataset from various datasources (often different databases)
2 * Row level * Data source filter time * physically merge	2 * @ aggregation level / viz. level / view * Measure filter time * physically not merged.

Dashboard & Story

- Dashboard : Collection of Sheets to present insights.
- Story : Collection of Sheet(s) and Dashboard(s) in a logical Manner to narrative the specific insight
  - contains
    - 1 Story point (Dashboard / Sheet)
    - 2 logical order
    - 3 Caption (explain / insight / context) ; annotation (highlight specific insight)
    - 4 Custom layout
    - • Title & Des. (intro & Summary of the entire Story)
    - 6 Filter and action (interactive)

what-if analysis

- evaluate different possible Scenarios / cases
  - by → Changing Variables to see → what it impacts in the data Viz. outcome.
  - All done by help of parameters.

Hierachical set.

Special charts

- To present specific insight in a unique and specilized manner.
- are advanced / non-std. charts.

Distr.
- 1 Box and whisker plot : Distrubution & key Stats.
- 2 Bullet Graph : primary measure V/s target / benchmark measure.

C
- 3 Gantt. chart : events & each event Start & end time.

C
- 4 waterfall chart : Intival value → Δ by → intermidate value → lead to → final value

M
- 5 Tree Map : [Hierachical data] Nested rectangle
  - each □ is → category
  - Size is → Measure

M
- 6 Sunburst Chart : [Hierachical data] circular layout with Multiple layers
  - [akin radial tree Map]

M
- 7 Packed bubble chart : [Hierachical data] Circular layout
  - each ○ is → category : Size is → Measure

M
- 8 Heat Map : Color intensity ∝ occurence

M
- 9 word cloud : size ∝ occurence
- 10 N/w Graph : entities relationship

" Radarchart ←