FIT3179 DATA VISUALISATION 2

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LINK TO GITHUB PAGE: https://komalgx.github.io/DataVis2Assignment/

The domain of this project is the Australian **forestry industry**, focusing on the **economic** and **environmental** aspects across different states.

- **Why**: These visualizations aim to provide insights into forest growth, log harvesting, and economic value, helping users identify trends and understand regional differences. By making the data visual, it aids policymakers, economists, and environmentalists in decision-making processes.

- **Who**: The target audience includes government officials, forestry companies, environmental advocates, and the general public. The visualizations also serve as educational tools for students and researchers in forestry, economics, and environmental sciences.
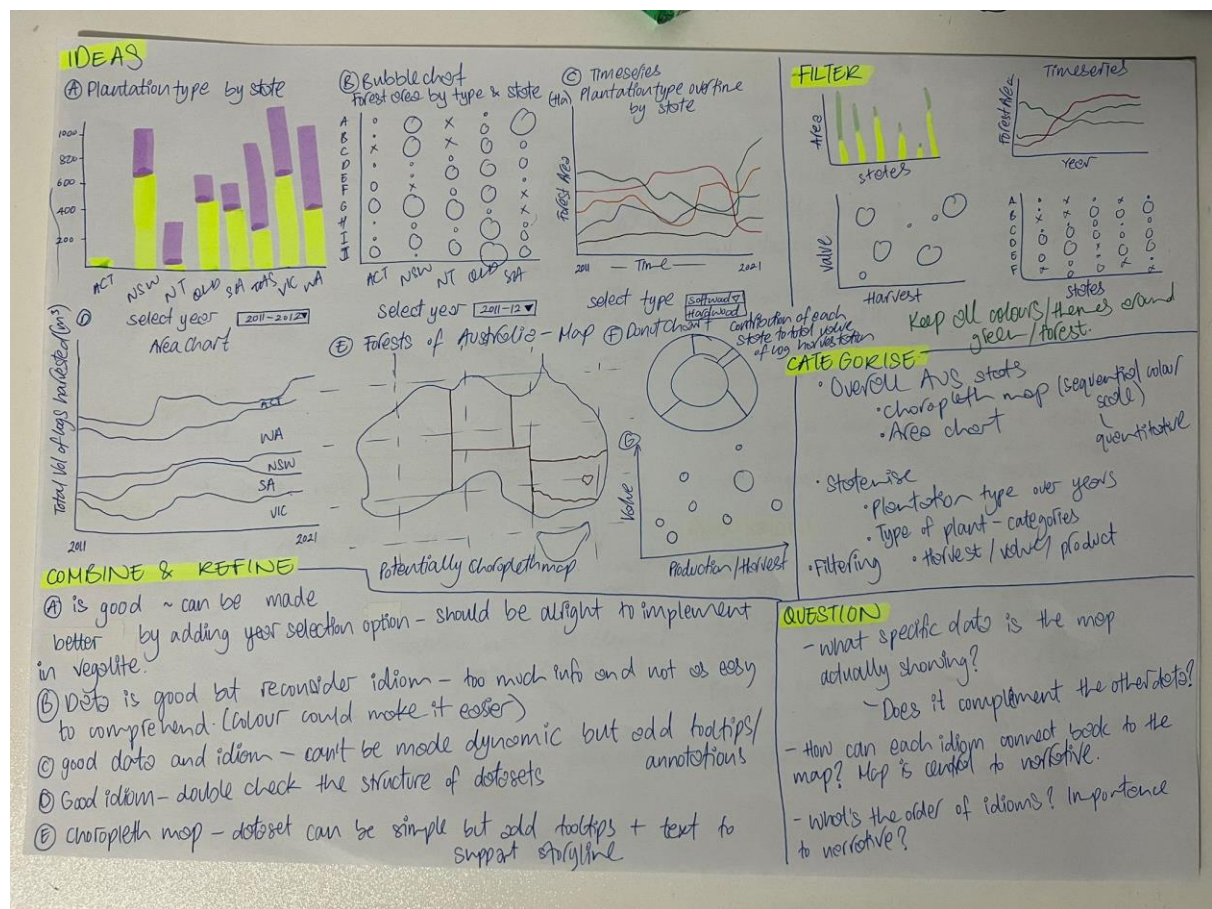
The data comes from the **Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES)**. It includes information on forest areas (softwood and hardwood), log volumes, log values, and sales income by state.

- **Sources**: The ABARES website provides reliable, up-to-date data, relevant for understanding the current and historical state of forestry in Australia.

- **Relevance**: This data reveals regional and national trends in forest management, crucial for economic and environmental planning.

- **Creation Process**: The visualizations were created using **Vega-Lite**, with pre-processed CSV files.
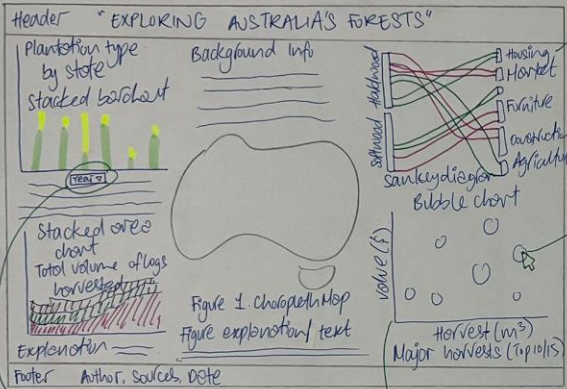
- **Author**: Komal Gupta

Each visualization idiom was selected to clearly communicate relevant data:

1. **Choropleth Map**: Shows the sales income by state, making regional economic differences easy to understand.

2. **Time Series Chart**: Tracks the growth of softwood and hardwood plantations over time, illustrating long-term trends and regional differences.

3. **Stacked Area Chart**: Displays how much each state contributes to total log harvests, offering a complete picture of the forestry industry's production.

4. **Bubble Chart**: Compares log volume, value, and forest area across states, showing how states balance forest size and economic output.

5. **Donut Chart**: Visualizes each state's contribution to the total log value, showing their role in the overall forestry economy.

5 DESIGN SHEETS

IDEAS

A Plantation type by state
(bar chart with y-axis: 1000, 820, 600, 400, 200; x-axis: ACT, NSW, NT, QLD, SA, TAS, VIC, WA)
select year [2011–2012 ▼]

B Bubble chart
Forest area by type & state
(rows A–J, columns ACT, NSW, NT, QLD, SA)
select year [2011–12 ▼]

C Timeseries
(H/w) Plantation type over time by state
(y-axis: Forest Area; x-axis: 2011 — Time — 2021)
select type [Softwood ▼ / Hardwood]

FILTER
(bar chart: y-axis: Area; x-axis: states)
Timeseries (y-axis: Forest Area; x-axis: Year)
(bubble chart: y-axis: value; x-axis: Harvest)
(rows A–F, columns: states)
Keep all colours / themes around green / forest.

D Area chart
(y-axis: Total Vol of logs harvested (m³); lines: ACT, WA, NSW, SA, VIC; x-axis: 2011 to 2021)

E Forests of Australia – Map
Potentially choropleth map

F Donut chart
Contribution of each state to total value of log harvestation

(bubble chart: y-axis: Value; x-axis: Production/Harvest)

CATEGORISE
• Overall AUS stats
  • choropleth map (sequential colour scale)
  • Area chart   quantitative
• Statewise
  • Plantation type over years
  • Type of plant – categories
• Filtering   • harvest / value / product

COMBINE & REFINE

A is good ~ can be made better by adding year selection option – should be alright to implement in vegalite.

B Data is good but reconsider idiom – too much info and not as easy to comprehend. (Colour could make it easier)

C good data and idiom – can't be made dynamic but add tooltips/ annotations

D Good idiom – double check the structure of datasets

E Choropleth map – dataset can be simple but add tooltips + text to support storyline

QUESTION
- what specific data is the map actually showing?
  - Does it complement the other data?
- How can each idiom connect back to the map? Map is central to narrative.
- what's the order of idioms? Importance to narrative?

Dashboard Option 1

LAYOUT

Header "EXPLORING AUSTRALIA'S FORESTS"

Plantation type by state stacked bar chart

Background Info

Year ▽

Stacked area chart
Total volume of logs harvested

Figure 1 Choropleth Map
Figure explanation text

Explanation ___

Footer   Author, sources, Date

sankey diagram
Bubble chart

Softwood / Hardwood → Housing / Market / Furniture / Construction / Agriculture

Volume ($)

Harvest (m³)
Major harvests (Top 10/15)

Tooltip
- state
- year
- value
- volume

FOCUS

sankey diagram shows how much of each plantation type contributes to different uses connected uses

Viewers can also see how much each plantation is valued at, once harvested.

stacked area chart shows distribution of log harvest volume by state.

quantities will be normalised (% each year)

OPERATION

clicking year selection will open a dropdown box.
clicking on year will show values on graph from that period.

Year ▽
2011-12
2012-13
2013-14
2014-15
2015-16

Hovering will open/show tooltip box
- clicking won't allow for any additional functionality

Add an interactive filtration for the map.
↳ or at least tooltips/ annotations

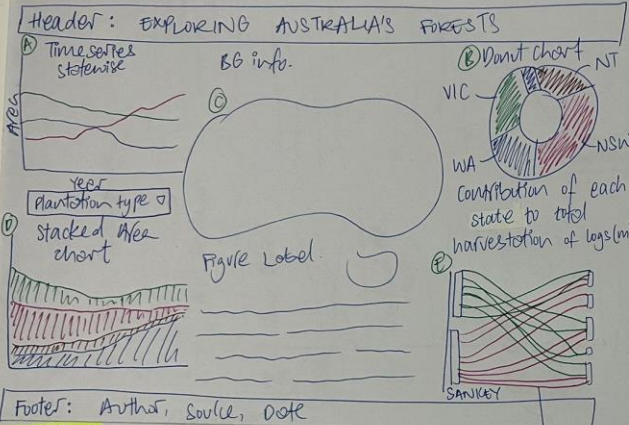Q: How to add annotations in Vegalite?

DISCUSSION

Pros
- Good mix of idioms
- Complexity level is decent
- Idioms provide comparison over time
- Can select/ filter by year

Cons
- Little interactivity w/ choropleth map
- Limited plantation types/ tree types explored.

→ Will interactivity/ filtering be challenging to include in vegolite?

Dashboard Option 2

LAYOUT

Header: EXPLORING AUSTRALIA'S FORESTS

Ⓐ Time series statewise

BG info.

Ⓒ

Ⓑ Donut chart
NT / VIC / WA / NSW
Contribution of each state to total harvestation of logs (m³)

Area

Year

Plantation type ▽

Ⓓ Stacked Area chart

Figure Label

Ⓔ
SANKEY

Footer: Author, Source, Date

FOCUS

- Should map be the focus?
- Map is focus b/c aesthetically pleasing but actually it may not provide as much crucial info?
- The focus is then split off to Ⓐ & Ⓑ as they're at the top - b/c of the layout
But I want the focus to be equal on all idioms except the map
↳ They'll be the same size so it will be implied equal importance.

- All idioms are related so perhaps the focus should aid the reader's journey to make comprehension the easiest.

OPERATION

Select / filter by plantation type

Softwood ▽
Hardwood

Tooltips
- Add key information.
Include stats that support the narrative.

→ vertical scrolling only

Tooltips - annotations perhaps?

Hovering over the elements will provide tooltips ↑

Filtering
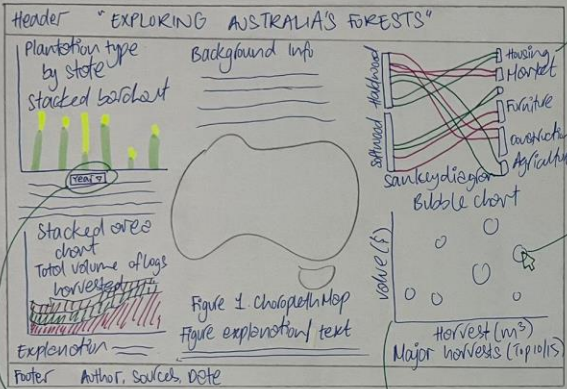↳ Include some manual filtering that the user is able to interact with.

DISCUSSION

PROS
- Interesting trends
- clear connections b/w idioms
- Easy to operate for viewer
- complexity is okay

CONS
- Could be more interactive
- No filteration options for user
↳ maybe not enough information.

Dashboard Option 1

LAYOUT

Header "EXPLORING AUSTRALIA'S FORESTS"

Plantation type by state stacked bar chart

Background Info

Figure 1 Choropleth Map
Figure explanation text

Softwood / Hardwood — sankey diagram
- Housing
- Market
- Furniture
- Construction
- Agriculture

sankey diagram
Bubble chart

Volume ($)
Harvest (m³)
Major harvests (Top 10/15)

Stacked area chart
Total volume of logs harvested

Explanation —

Footer — Author, Sources, Date

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sankey diagram shows how much of each plantation type contributes to different uses/commercial uses

Tooltip
- state
- year
- value
- volume

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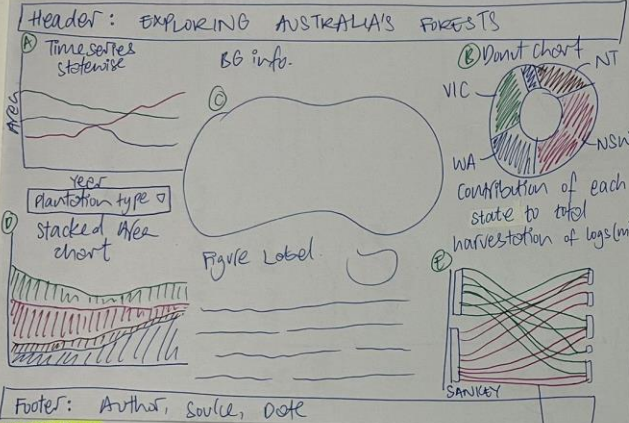Q: How to add annotations in Vegalite?

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Dashboard Option 2

LAYOUT

Header: EXPLORING AUSTRALIA'S FORESTS

(A) Time series statewise — Area / Year

BG info.
(C)

(B) Donut chart
NT / VIC / NSW / WA
Contribution of each state to total harvestation of logs (m³)

Figure Label

(D) Plantation type ▽
stacked area chart

(E) SANKEY

Footer: Author, Source, Date

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