FOSS4GUK 2023

Tree Rings

Visualising forest plan data with R/Plotly
May 2021

University of Edinburgh: Data visualisation for professionals
(online 12-week course)

- Opportunity to learn more about data visualisation design process
- Opportunity to use R
- Opportunity to explore how forestry spatial data is presented / used
- Opportunity to dodge bedtime story routine for 12 weeks
Spatial Data

- Long term forest plan (20-year plan)
- Current species distribution of forest
- Planned felling phases, phase = 5 years, long term retentions
- Restocking species distribution
Visualisation
Design Concept

Summarise forest inventory and long term forest plan (LTFP) data in a concise, useful and (hopefully) interactive way

Explore change in forest composition over 20 years, and help explain rationale behind LTFP
Data preparation

Exploratory Data Analysis (EDA)

Input Layers
- LTFP - Felling phase polygons
- LTFP - Restocking species polygons
- Forestry DB - Current forest polygons

Stage A
- Intersected & cleaned LTFP polygons
- QGIS

Stage B
- Forest.csv for EDA and input to RStudio:
  - Columns: Current species, Felling phase, Restocking species, Area
- Excel
- R

EDA and Visualisation
- Selected forest area to analyse
- Grouped species

Visualisation Data
EDA and Initial Design

sunburstR
Stackexchange win - User defined segment colours


Question: indigofera suffruticosa
Answer: Gilean0709
User Evaluation...
Stackexchange win No. 2 – Plotly zoomable sunburst


Question: mtreg
Answer: ismirsehregal
Final Design

R Studio, ggplot, sunbursts, user evaluation, legend colours, Plotly, user evaluation, design evolution
First Tree Ring – User evaluation feedback

Current species at centre, final species in outer ring.
Felling phase is focus, current and restock species in outer rings.
Future Thoughts...

- Use R for more processing
- Deal with species mixes
- Aggregate outer ring to show species before and after
- Automate extraction from QGIS spatial layer
- Link geom in...?

Achieve & Automate – used for data formatting and to create the sunburst graphic from exported LTFP data.

Design & Create – zoomable sunburst in final graphic is a plotly function run in R.

Data Processing – Used regularly in LTFP production so some processing steps were already in place. As future work wish to replace all of these steps with R functions.

EDA – used for initial data exploration.

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Thanks to:

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