Using Shiny as a teaching tool? Construction of the GBCS, NS-SEC, and Wright's Neo-Marxian Schema as an open-source class calculator application

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https://eosscc.shinyapps.io/Class_Calculator/

Project Overview

- Lost Sociology (Data Decay)

- Replication and Expansion of Existing Class Calculator

- Teaching Tools & Pedagogy

Great British Class Survey (Savage et al 2013)

Important period of social stratification history

Excellent display of ''public sociology''

Prompted a lot of debate and critique (Mills 2014)

British class calculator

ial divisions of upper, middle and working class seem out of date in the 21st Century, no longer reflecting ...es.

h sociologists from leading universities to analyse the modern British class system. They surveyed more than 161,0 del made up of seven groups. To find out where you fit in use this calculator below.

Take the test

The results from BBC Lab UK's Great British Class a brand new class system of seven groups.

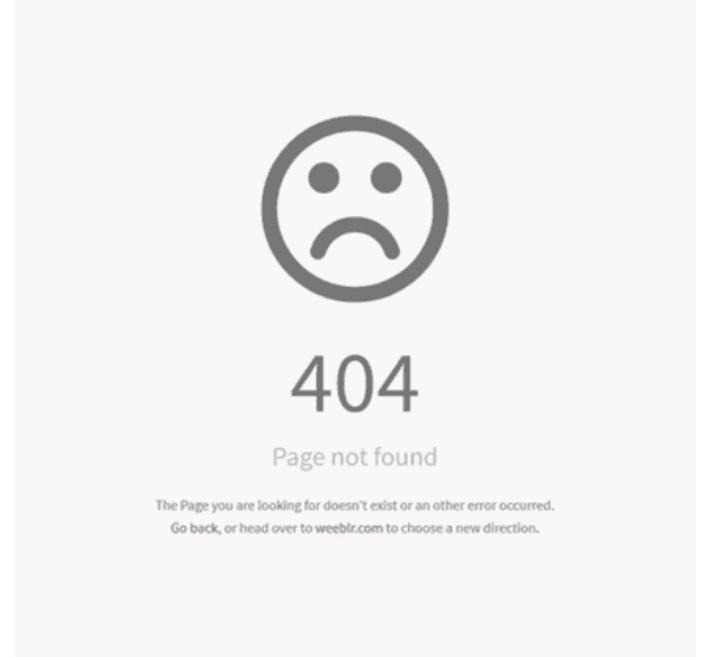Answer five questions to see where you fit in:

Tell us about you

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Great British Class Survey

Data Decay is a real issue

Not Open Source

Valuable Teaching Resource… But Limited in Scope

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https://eossc.shinyapps.io/Class_Calculator/

In Comes Shiny

An R package that allows for the development and deployment of ''applets''

Open Source

Valuable Teaching Resource

https://eosscc.shinyapps.io/Class_Calculator/

Initial Project

- (Somehow) Replicate the Original GBCS

- Improve if and where feasible

- Open Source in mind

https://eosscc.shinyapps.io/Class_Calculator/

Replication of GBCS

Problem: No Open-Source Logic Tree

Solution: Partial Information and user-testing

Took up significant portion of project


Main point   Branches   Supporting points

https://eosscc.shinyapps.io/Class_Calculator/
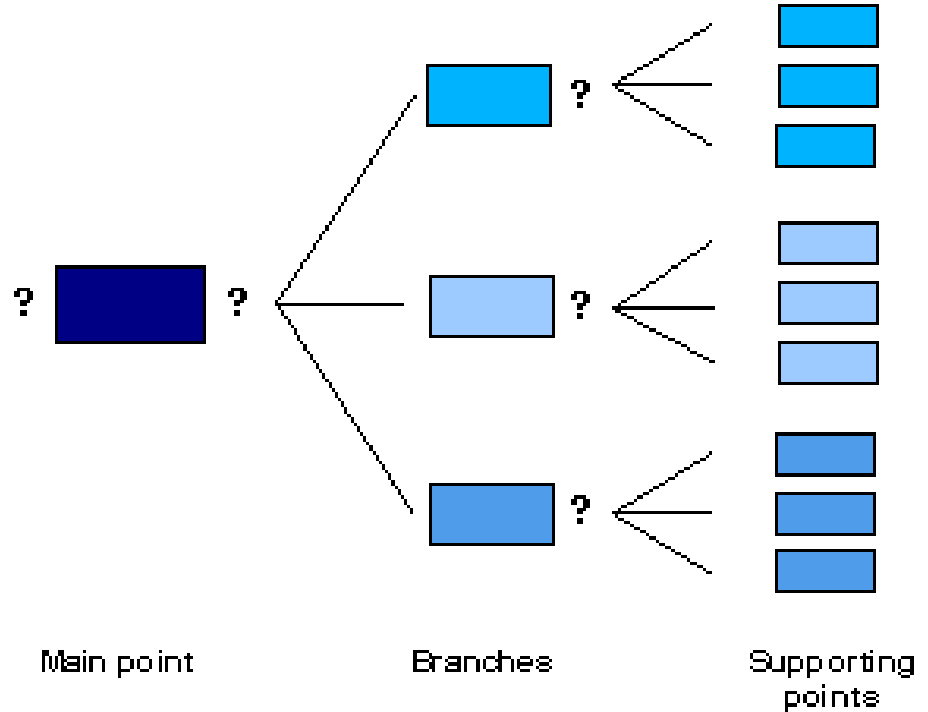
GBCS Schema

	% GfK	% GBCS	Description
Elite	6	22	Very high economic capital (especially savings), high social capital, very high highbrow cultural capital
Established middle class	25	43	High economic capital, high status of mean contacts, high highbrow and emerging cultural capital
Technical middle class	6	10	High economic capital, very high mean social contacts, but relatively few contacts reported, moderate cultural capital
New affluent workers	15	6	Moderately good economic capital, moderately poor mean score of social contacts, though high range, moderate highbrow but good emerging cultural capital
Traditional working class	14	2	Moderately poor economic capital, though with reasonable house price, few social contacts, low highbrow and emerging cultural capital
Emergent service workers	19	17	Moderately poor economic capital, though with reasonable household income, moderate social contacts, high emerging (but low highbrow) cultural capital
Precariat	15	<1	Poor economic capital, and the lowest scores on every other criterion

https://eosscc.shinyapps.io/Class_Calculator/

Replication of GBCS

GBSC logic tree very simple

Some questions missing in the logic tree that appear in the GBCS
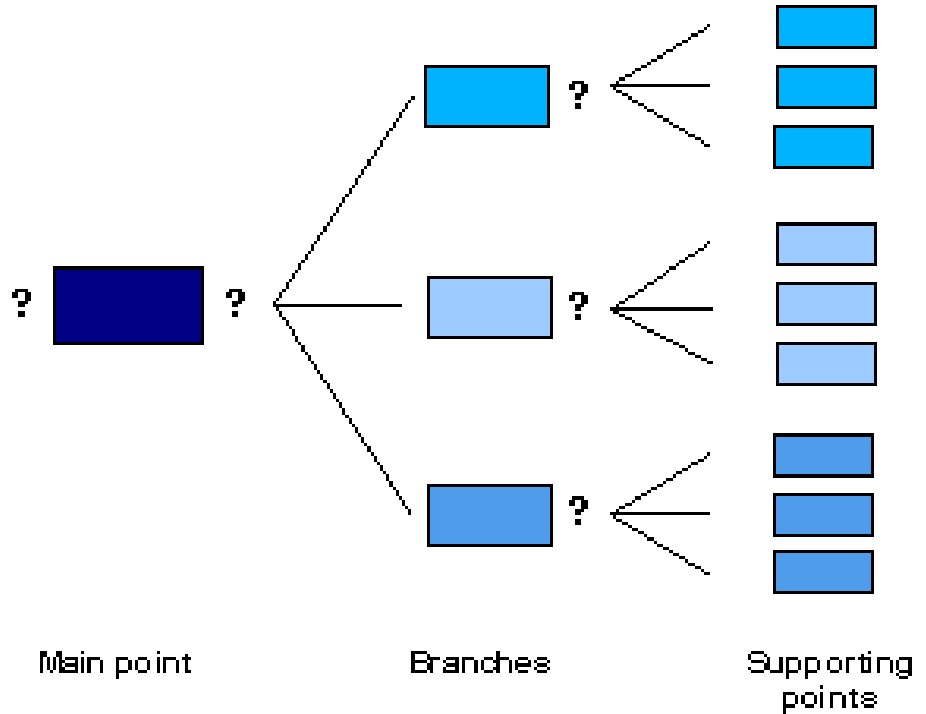

https://eosscc.shinyapps.io/Class_Calculator/
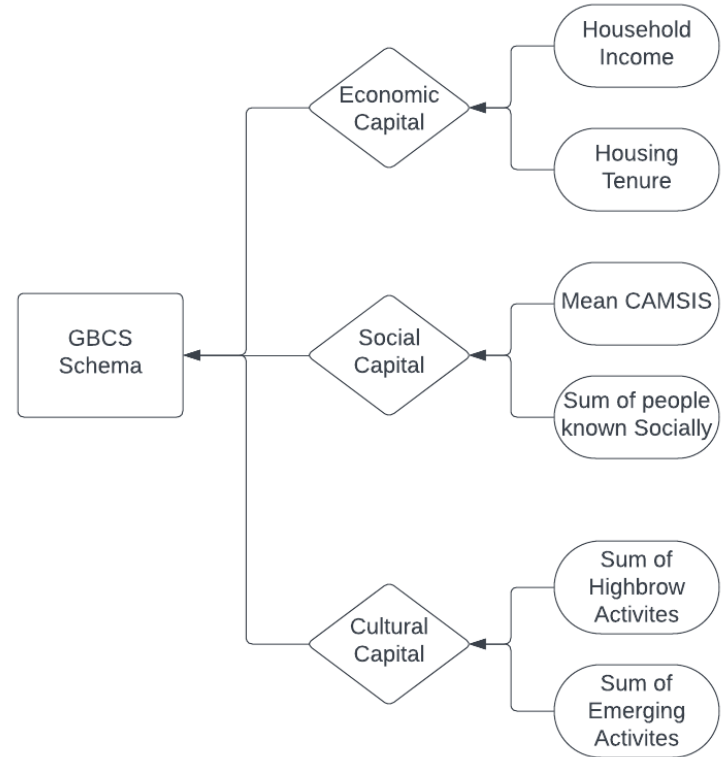
Replication of Wright

Logic tree firmly established in (Wright 1985)

Problem: Far too long

Solution: Produced a 'streamlined' Wright Schema

Main point   Branches   Supporting points

https://eosscc.shinyapps.io/Class_Calculator/

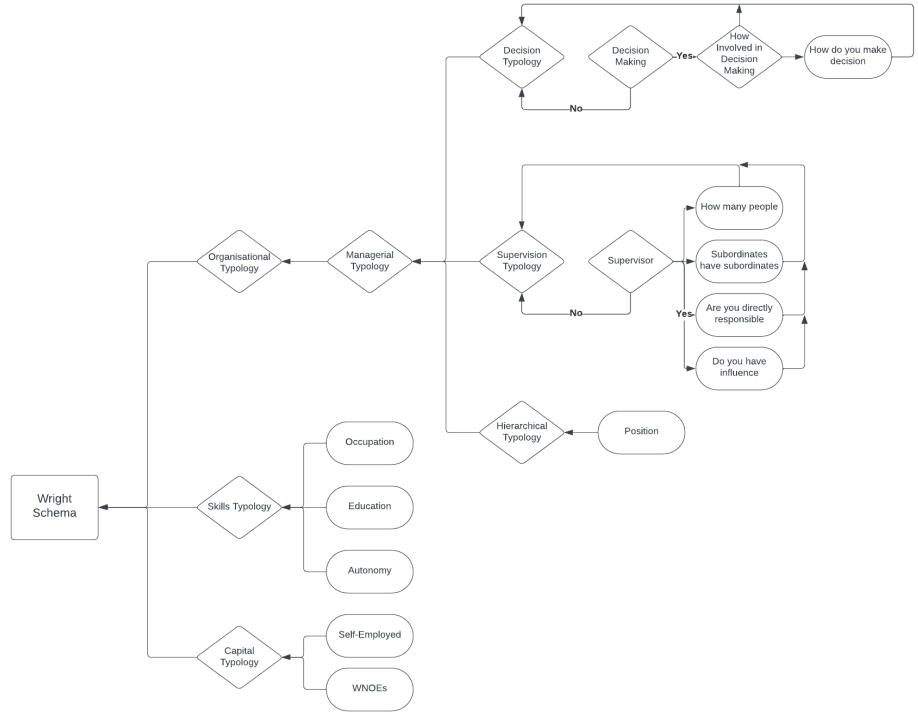# Replication of Wright

Streamlined logic tree

Trimmed some 'organisational fat'

Everything else kept the same

Owners	Wage laborers			
1 Capitalists (10 or more employees)	4 Managers experts	7 Managers semi-skilled	10 Managers "unskilled"	+
2 Small employers (2–9 employees)	5 Supervisors experts	8 Supervisors semi-skilled	11 Supervisors "unskilled"	Organization assets 0
3 Petit bourgeoisie (no more than 1 employee)	6 Workers skilled	9 Workers semi-skilled	12 Workers "unskilled"	–
	+	0	–	
	Possession of skill or credential assets			

https://eosscc.shinyapps.io/Class_Calculator/

Replication of Wright

Streamlined logic tree

Trimmed some 'organisational fat'

Everything else kept the same

https://eosscc.shinyapps.io/Class_Calculator/

Replication of NS-SEC

Problem: Integrating Soc Codes into calculator

Solution: Create own Soc lookup within app

Main point   Branches   Supporting points
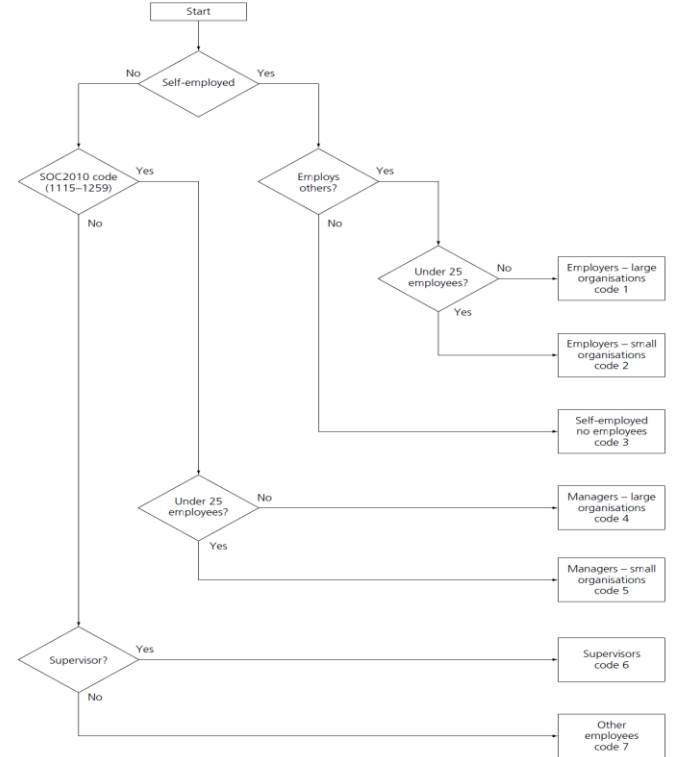
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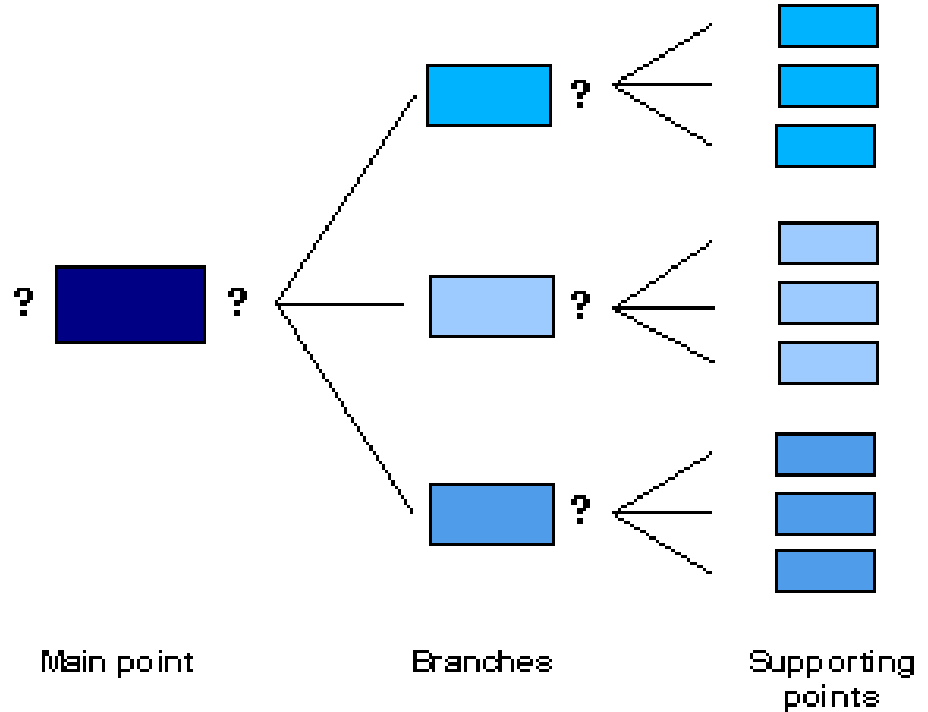
Replication of NS-SEC

All documentation readily available

Inspired by the ONS NS-SEC Coding Tool

Deriving the employment status/size of organisation variable, full method

https://eosscc.shinyapps.io/Class_Calculator/

NS-SEC Schema

Operational categories		Analytic variables			
		Nine classes	Eight classes	Five classes	Three classes
L1	Employers in large establishments	1.1 Large employers and higher managerial occupations	1 Higher managerial and professional occupations	1 Managerial and professional occupations	1 Managerial and professional occupations
L2	Higher managerial occupations				
L3	Higher professional occupations	1.2 Higher professional occupations			
L4	Lower professional and higher technical occupations	2 Lower managerial and professional occupations	2 Lower managerial and professional occupations		
L5	Lower managerial occupations				
L6	Higher supervisory occupations				
L7	Intermediate occupations	3 Intermediate occupations	3 Intermediate occupations	2 Intermediate occupations	2 Intermediate occupations
L8	Employers in small establishments	4 Small employers and own account workers	4 Small employers and own account workers	3 Small employers and own account workers	
L9	Own account workers				
L10	Lower supervisory occupations	5 Lower supervisory and technical occupations	5 Lower supervisory and technical occupations	4 Lower supervisory and technical occupations	3 Routine and manual occupations
L11	Lower technical occupations				
L12	Semi-routine occupations	6 Semi-routine occupations	6 Semi-routine occupations	5 Semi-routine and routine occupations	
L13	Routine occupations	7 Routine occupations	7 Routine occupations		
L14	Never worked and long-term unemployed	8 Never worked and long-term unemployed	8 Never worked and long-term unemployed	Never worked and long-term unemployed	Never worked and long-term unemployed

Replication of RGSC and CAMSIS

Problem: Finding matching up-to-date SOC codes

Solution: Paul Lamberts resources…

Main point   Branches   Supporting points

https://eosscc.shinyapps.io/Class_Calculator/
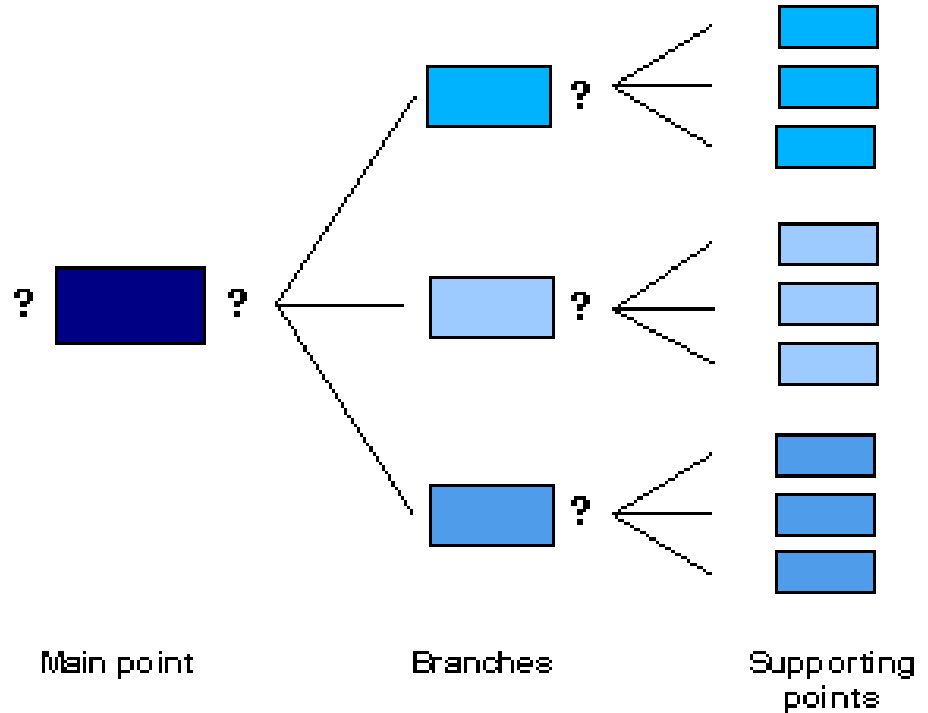
Replication of RGSC & CAMSIS

All documentation readily available from Lambert's website

RGSC Schema

	Class	Occupations	Example Occupations
Non-Manual	I	Professional Occupations	Accountant
	II	Intermediate Occupations	Police Officer
	IIIN	Skilled Non-Manual Occupations	Clerical Worker
Manual	IIIM	Skilled Manual Occupations	Butcher
	IV	Partly Skilled Occupations	Postal Worker
	V	Unskilled Occupations	Labourer

CAMSIS Schema

- Scale measure of social distance*

- Typically mean of 50 and std. of 15

Replication of original GBCS (2013) analysis

Problem 1: replicating original latent trait analysis

Problem 2: integrating user inputs within shiny into said analysis

Problem 3: running latent trait analysis in a Shiny environment

Problem 4: Displaying a user's individual class location based on maximum probabilities

Problem 5: How to know which classes lined up with which original GBCS classes?
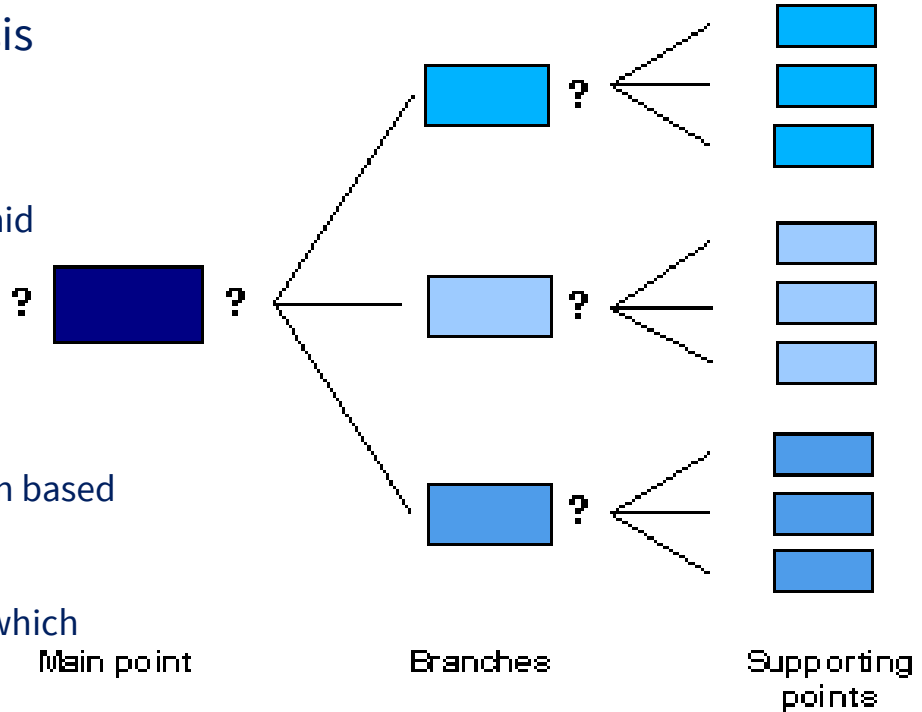
Main point   Branches   Supporting points

https://eosscc.shinyapps.io/Class_Calculator/

Replication of original GBCS (2013) analysis

Problem 1: replicating original latent trait analysis

Solution 1: Whilst code for analysis isn't readily available, detailed methodological documentation is found within UKDataService data

Latent trait analysis going forward is not identical, but as close as possible

https://eosscc.shinyapps.io/Class_Calculator/

Replication of original GBCS (2013) analysis

Problem 2: integrating user inputs within shiny into said analysis

Solution 2: Simple matter of translating user inputs into a temporary data frame and merging that with original GfK data

This also allowed for appropriate transformation and normalisation of variables following original methodological notes

https://eosscc.shinyapps.io/Class_Calculator/

Replication of original GBCS (2013) analysis

Problem 3: running latent trait analysis in a Shiny
environment

Solution 3: Using the tidyLPA package made this rather easy

Replication of original GBCS (2013) analysis

Problem 4: Displaying a user's individual class location based on maximum probabilities

Solution 4: tidyLPA package provides statistics on the probabilities of each individual observation being located in each latent class

The maximum probability was selected for the 1027th observation (user input observation) and the relevant probability was printed alongside the latent class it belonged

https://eosscc.shinyapps.io/Class_Calculator/

Replication of original GBCS (2013) analysis

Problem 5: How to know which classes lined up with which original GBCS classes?

Solution 4: Use the original 2013 paper in its latent definitions of classes to designate descriptors to current latent classes

This was aided by graphing the latent classes onto the original variables used for latent trait analysis

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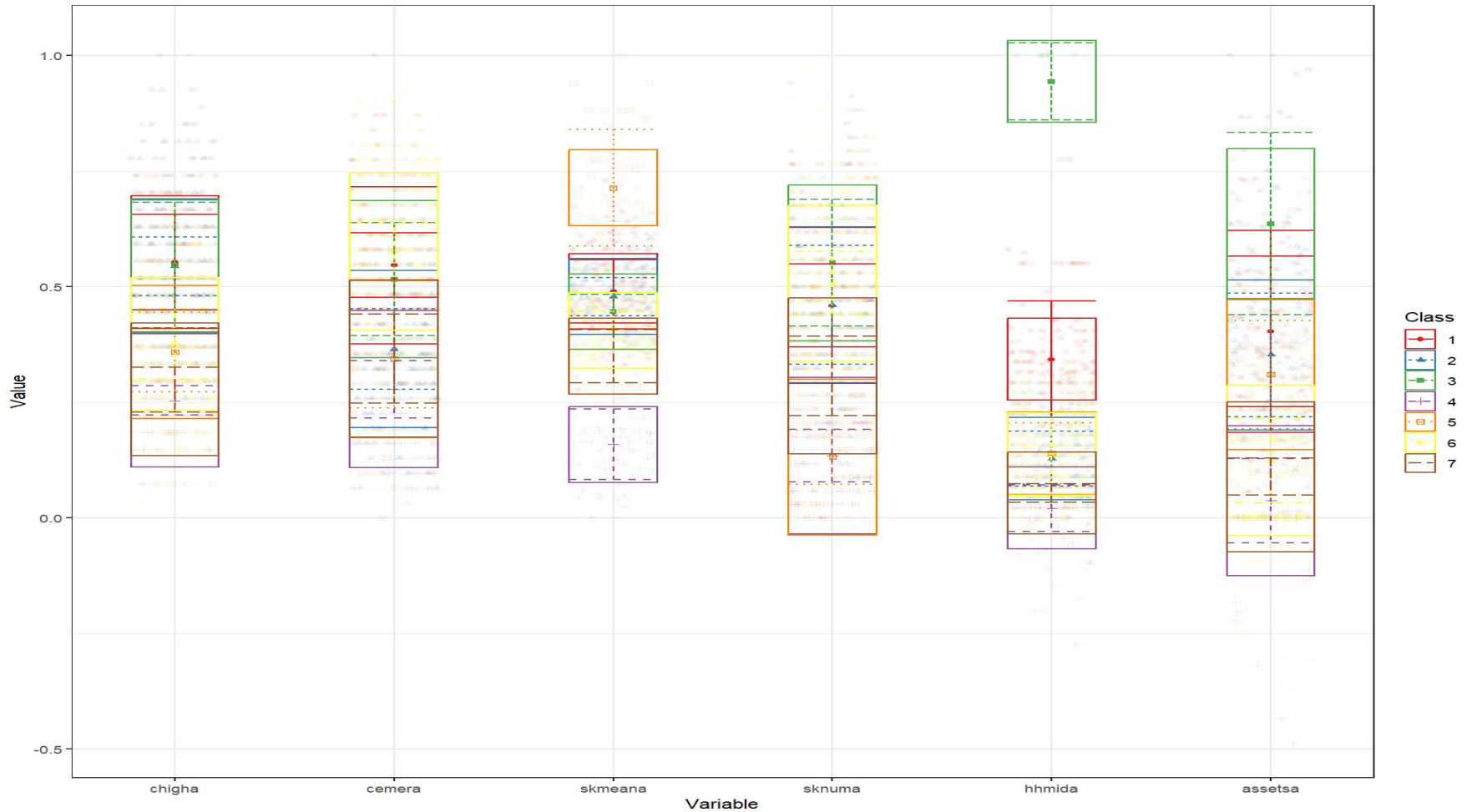
Class 1 = New Affluent Worker
Class 2 = Emergent Service Worker
Class 3 = Elite
Class 4 = Precariat
Class 5 = Traditional Middle Class
Class 6 = Emergent Service Worker
Class 7 = Traditional Working Class

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https://eosscc.shinyapps.io/Class_Calculator/

End Result:

THE UNIVERSITY *of* EDINBURGH

Trial Run Example (me)

https://eosscc.shinyapps.io/Class_Calculator/

Social Class Schema	Result	Description
GBCS (BBC)	Precariat	This is the poorest and most deprived class group. People in this group score low for economic, social and cultural factors.
NS-SEC	Higher professional occupations	Positions, whether occupied by employers, the self-employed or employees, that cover all types of higher professional work.
RGSC	Professional Occupations	Near top of non-manual hierarchy.
CAMSIS	77.36	greater than average compared to the rest of the population
Wright (Simplified)	Expert Non-Managers	Does not own sufficient capital, has low organisational assets and high skill/credential assets.
Wright (Full)	Expert Non-Managers	Does not own sufficient capital, has low organisational assets and high skill/credential assets.
GBCS (2013)	Class: 6 (Emergent Service Worker), Probability: 0.83693615607348	Moderately poor economic capital, though with reasonable household income, moderate social contacts, high emerging (but low highbrow) cultural capital

Reproducing was step one

- Two issues still needed to be addressed:
  - Being used as a teaching tool
  - Being able to be replicated, manipulated, and used by others

Teaching Tool

- Need a way to host the app in a way that academics and students alike can use it

- Shinyapps.io
  - Free
  - No unwanted data collection
  - HOWEVER: Latent Trait Analysis does not work well with Shinyapps (low GB allowance)

https://eosscc.shinyapps.io/Class_Calculator/

Open Source

- Need a way to host the code

- Github: https://github.com/EOSSCC/Class-Calculator
  - Each class schema is isolated within its own function
    - Hosted outside the UI/master file
    - Enables recoding, removal and addition of academics schemas of choice

https://eosscc.shinyapps.io/Class_Calculator/

Any Questions?

- Desire to turn this into a paper – advice very welcome