Proposed strategies for online data dissemination, presentation, storage and monetisation.

The following proposals as presented as part of DCS's website revamp; in order to ensure that the updated DCS website is able to provide the end user a far more efficient user experience

1. Integrating interactive Data Visualisation Tools for Quick and Easy access, clarity and a more compelling user experience

2. Value addition through customised dashboards and objective driven presentation of data

3. Setting up centralised databases and APIs to distribute, update and manage mass data dissemination

4. A payment portal for paid-for articles and data (Unit sale and subscription models)

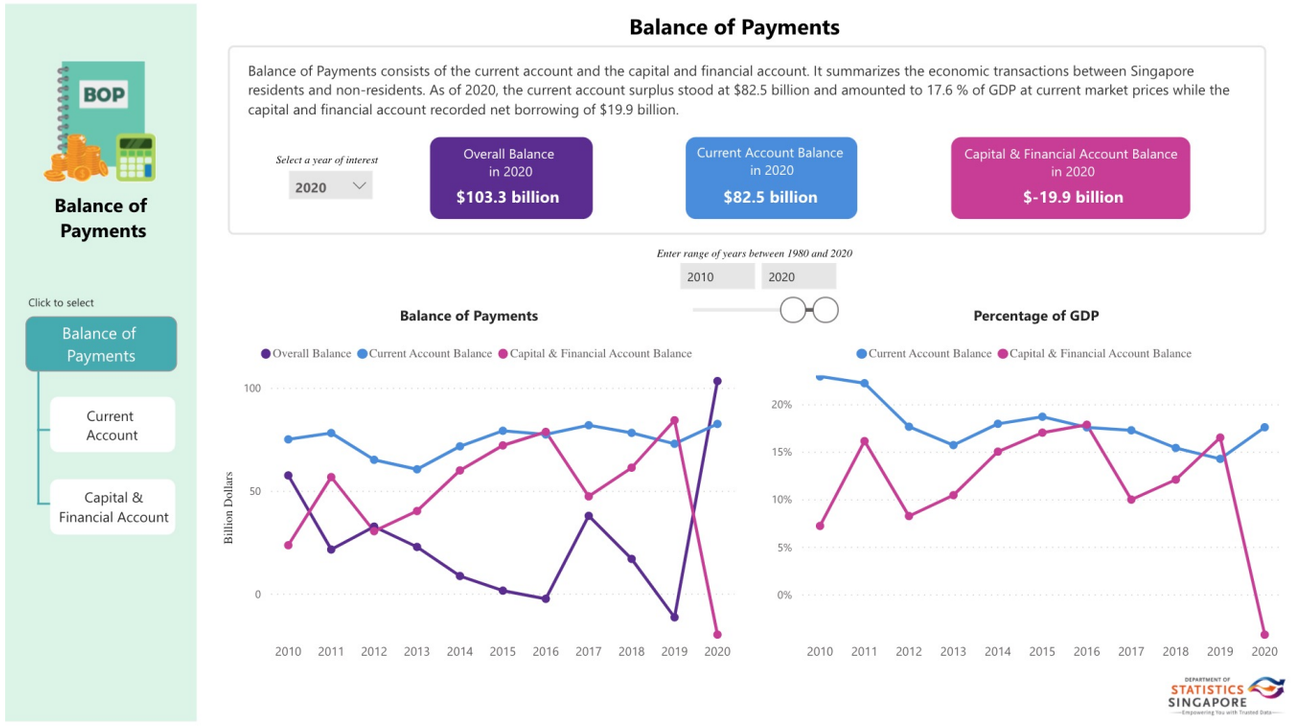
5. Decluttering, editorial and online archival management for DCS

1 Integrating interactive Data Visualisation Tools for Quick and Easy access, clarity and a more compelling user experience

Why embedded interactive DV tools in the new website?

- Appeals new, younger audiences that we are attempting to reach.
- Can be regarded as a value-addition stage which directly enhances the communicative impact of the data,
- Enables users to immediately grasp significant statistics without needing to download and skim through reports
- It is an industry standard, used by most other statistical data dissemination bodies
- In contrast with the old website, the new one must aim for a more dynamic, interactive user experience where data has to be presented to the visitor with a significant visual impact
- Switching to dynamic data visualisation applications from image or PDF based static ones enables DCS to perform quicker updates and use centralised databases to automate DV elements

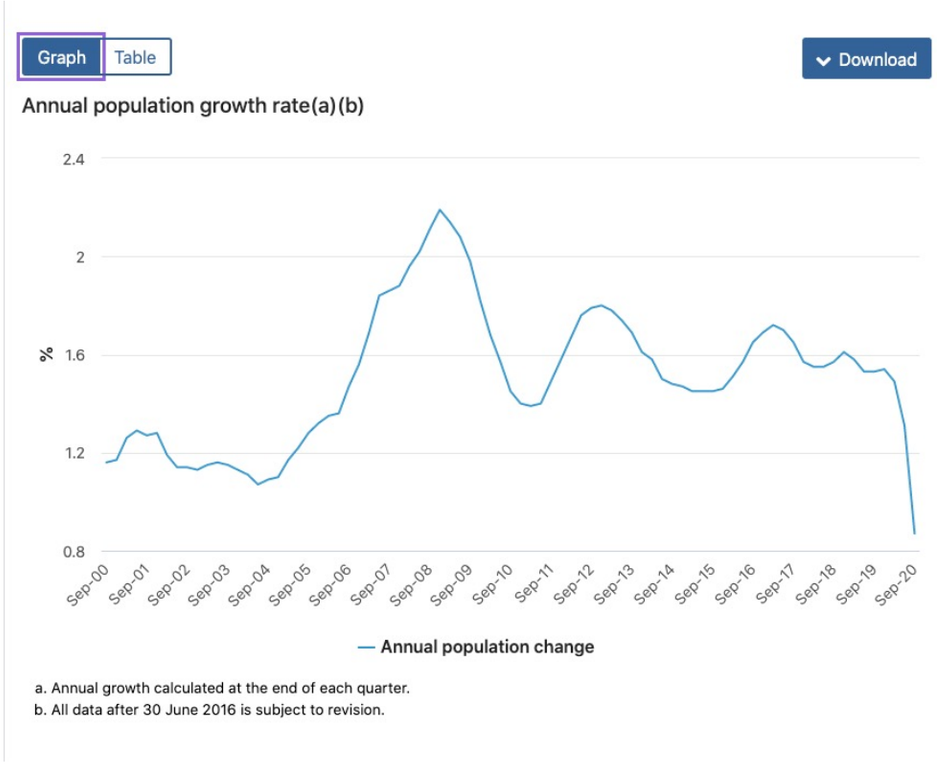
Example 1: Balance of Payments Dashboard : singstat.gov.sg/find-data/search-by-theme/economy/balance-of-payments/visualising-data/balance-of-payments-dashboard



Example 2:

Key economic indicators, Australian Bureau of Statistics offers data as both graphs and tables with a number of downloadable options

abs.gov.au/statistics/economy/key-indicators



2 Value addition through custom dashboards and objective driven data presentation

Processed and Finalised Data

Basic presentation and dissemination

Value addition

Context specific research, discussion and analysis

- Needs to occur at an organisational level beyond the immediate scope of the current intervention
- The ICT department can lend a great deal of support by liaising with research staff on cross tabulations, predictive modelling etc

Advanced online data visualisation and dashboards

- Data visualisation which goes beyond the simple presentation of data and incorporates learning tools, additional information and aesthetic elements to enhance the viewing experience, therefore increasing DCS's reach to newer and younger audiences.
- Interactive dashboards that enable the users to engage in self-learning and obtain deeper insights by visually guided access to time-based, geographical and cross-survey information.

Infographics and animations for social media and online distribution

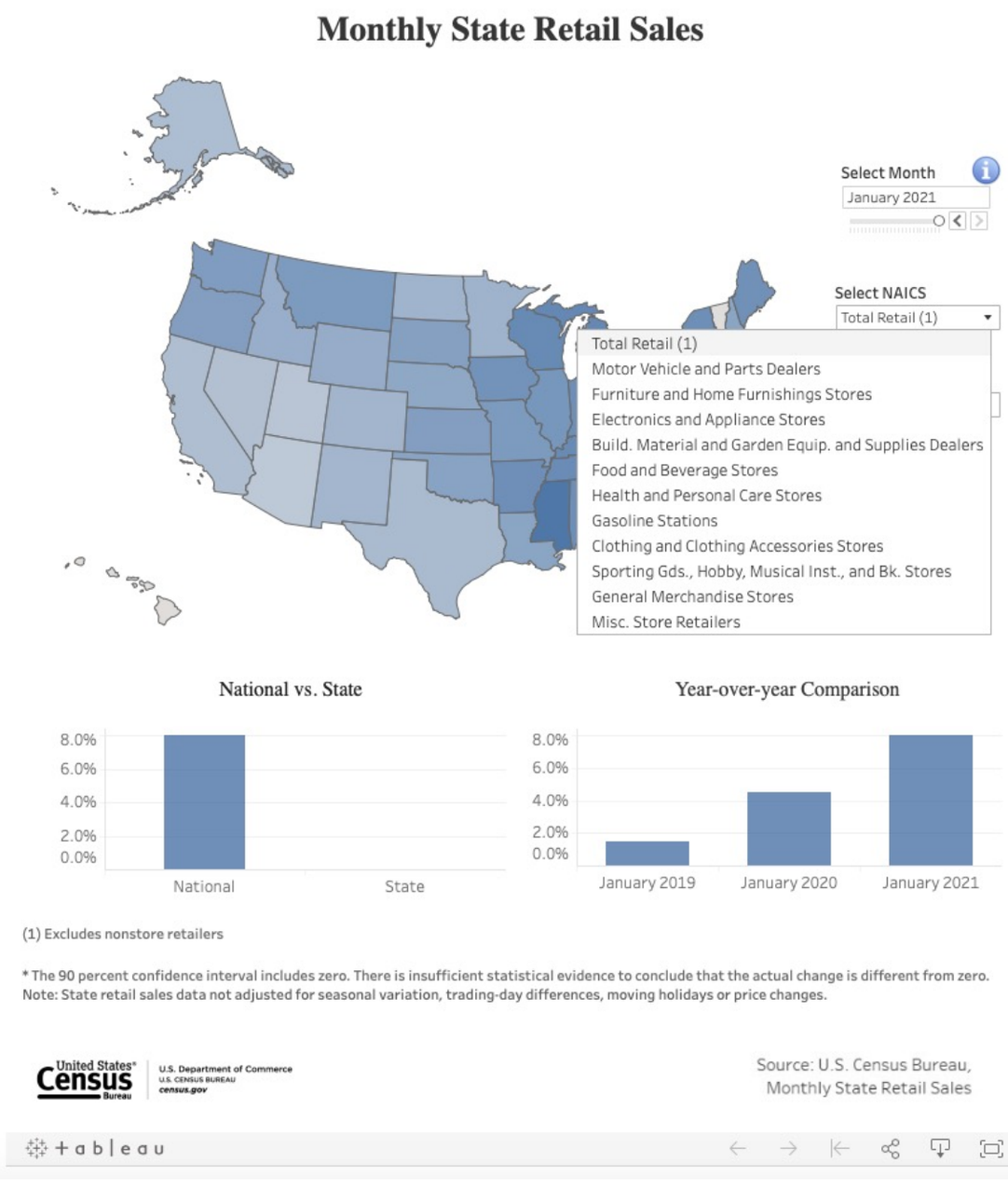
- Reflects some of the work already undertaken as part of the consultancy; by packaging statistics in timely, relevant, bite sized visually appealing snippets to increase DCS's reach and potentially drive more traffic into the DCS website; it is therefore crucial that the website captures the core aesthetic and communication elements highlighted in the new brand strategy.
- Making still visualisations interactive, creating animated infographics, and voiceovers for extensive online presentations are some of the avenues that the ICT department could help explore.

Area of specialisation highly reliant on dedicated programmers to develop and maintain custom DV tools and dashboards.

Example: Tableau based visualisations by the US Census Bureau available at : census.gov/library/visualizations.html

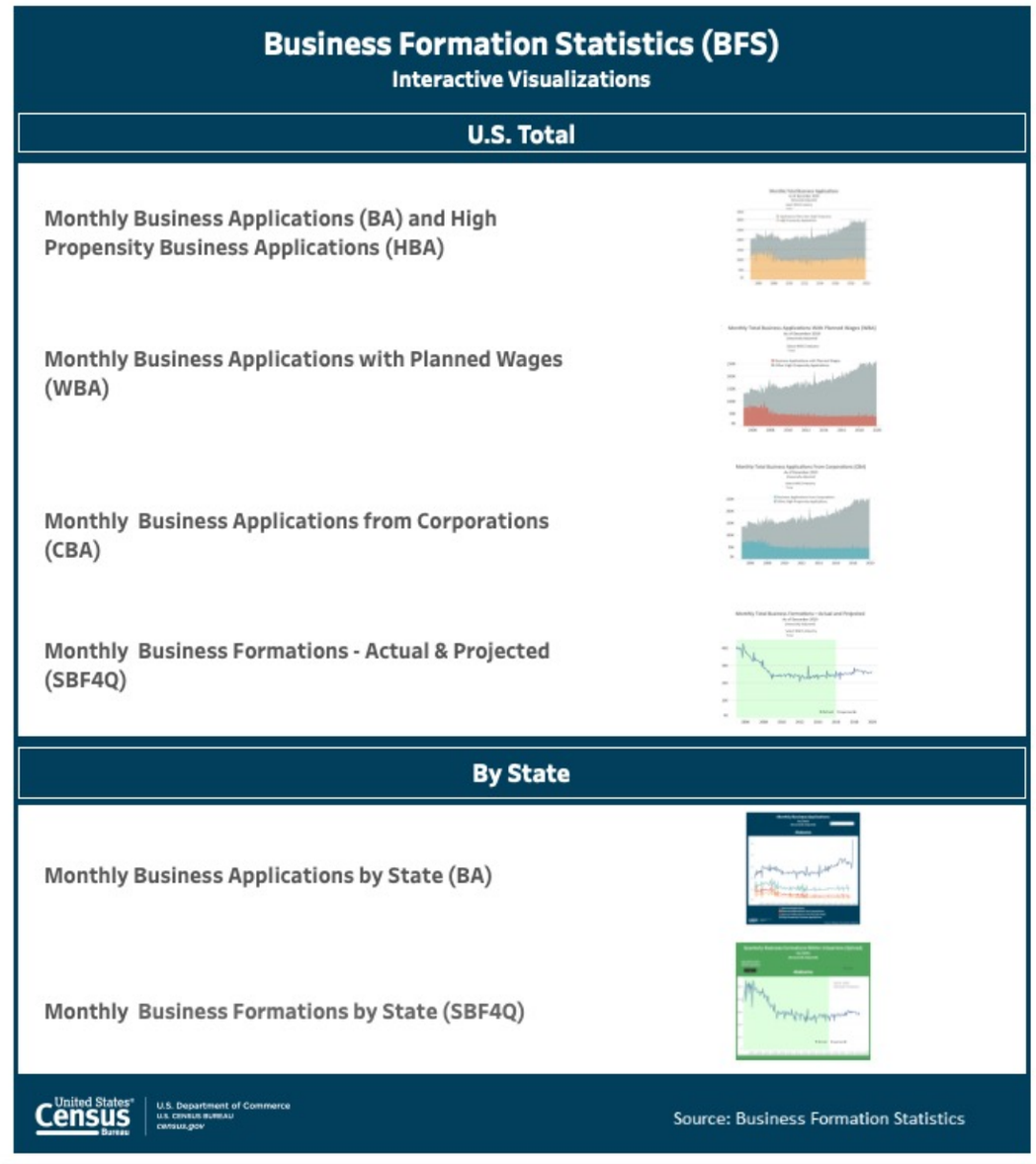
Monthly State Retail Sales

APRIL 29, 2021



Business Formation Statistics (BFS)

APRIL 14, 2021

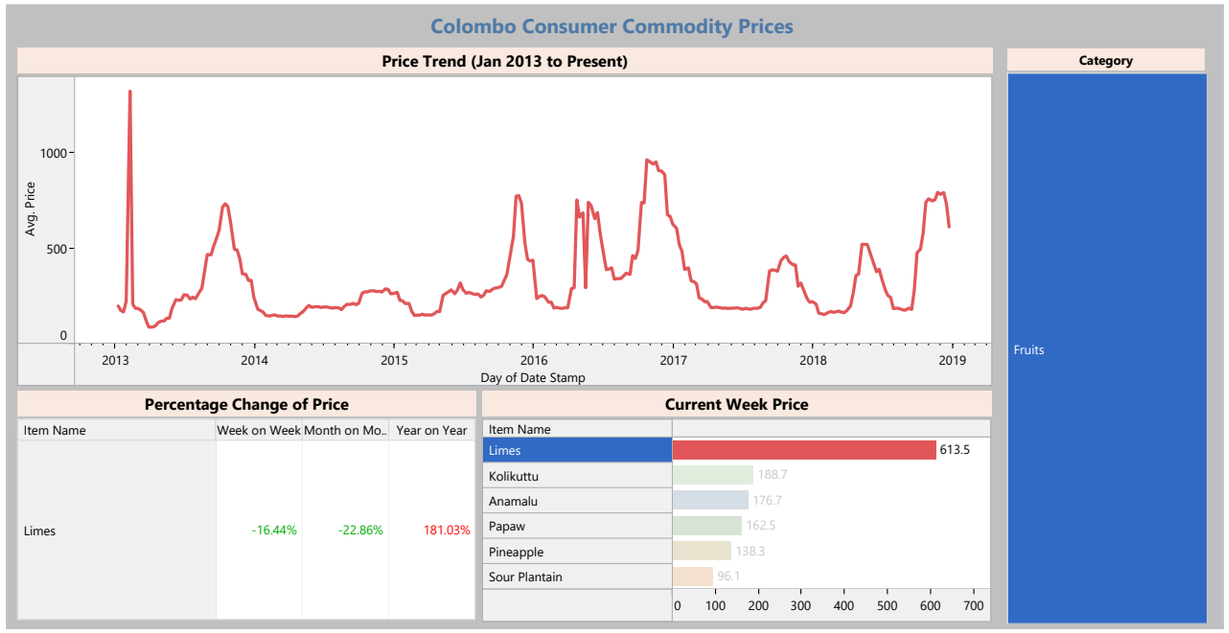


Value addition through custom dashboards and objective driven data presentation

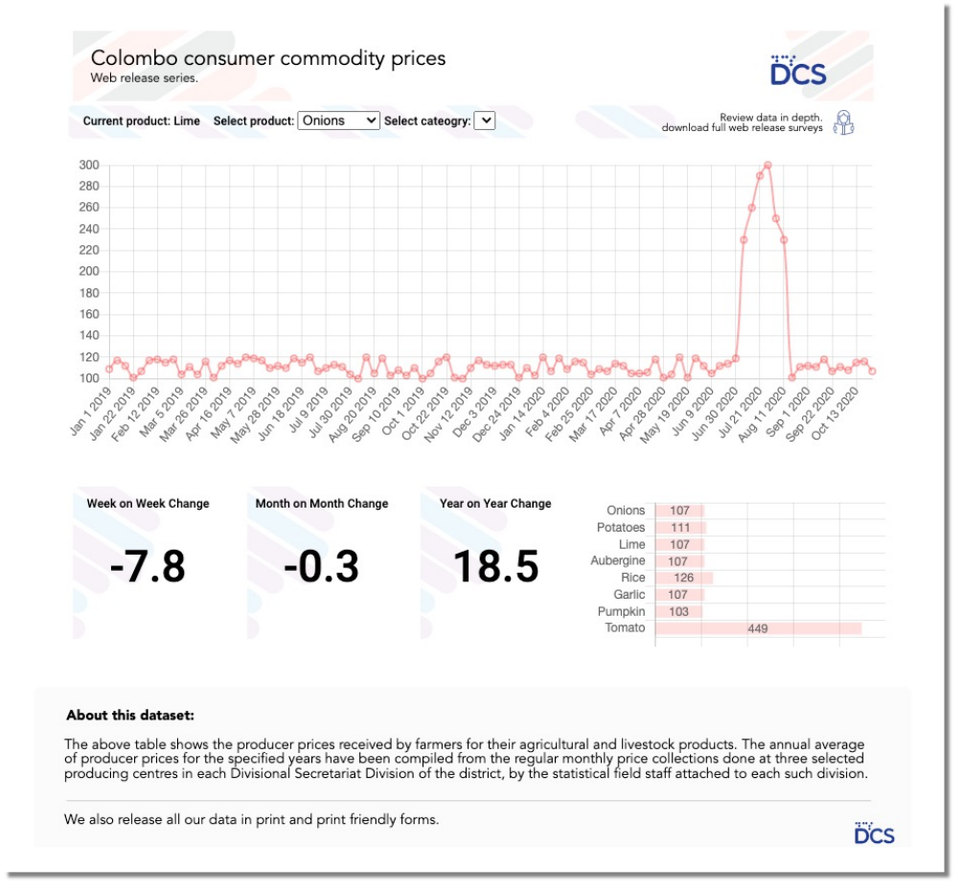
Example: Substitute for Tableau based solution based on Chart.JS and Jquery

Following a discussion with the prices and wages division of DCS, The data visualisation consultant was informed that the below dashboard (left) , made with Tableau was no longer functional due to license expiration, to find an immediate solution to resolve the issue as well as to canvass the importance and the appeal of in house DV tools; the web based dashboard on the right was developed.

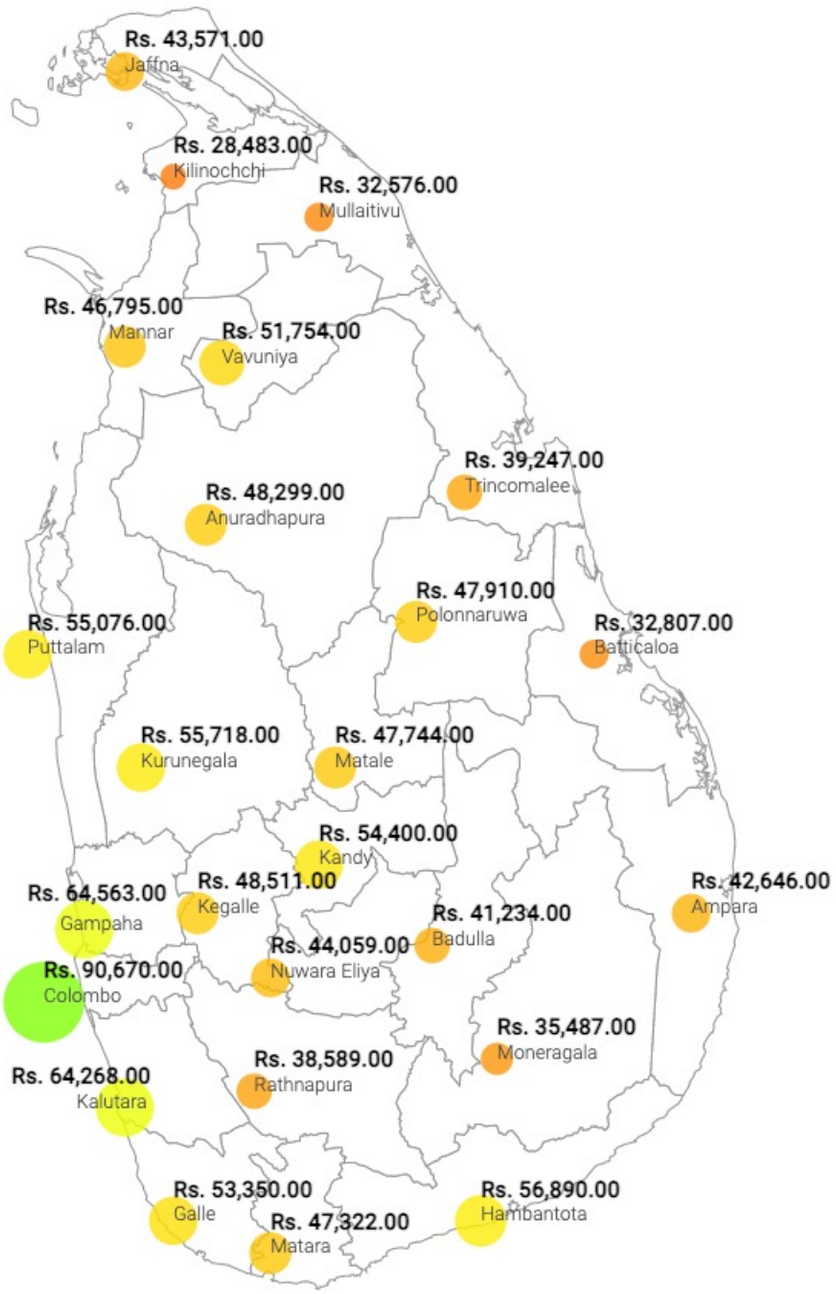
Tableau Based Solution

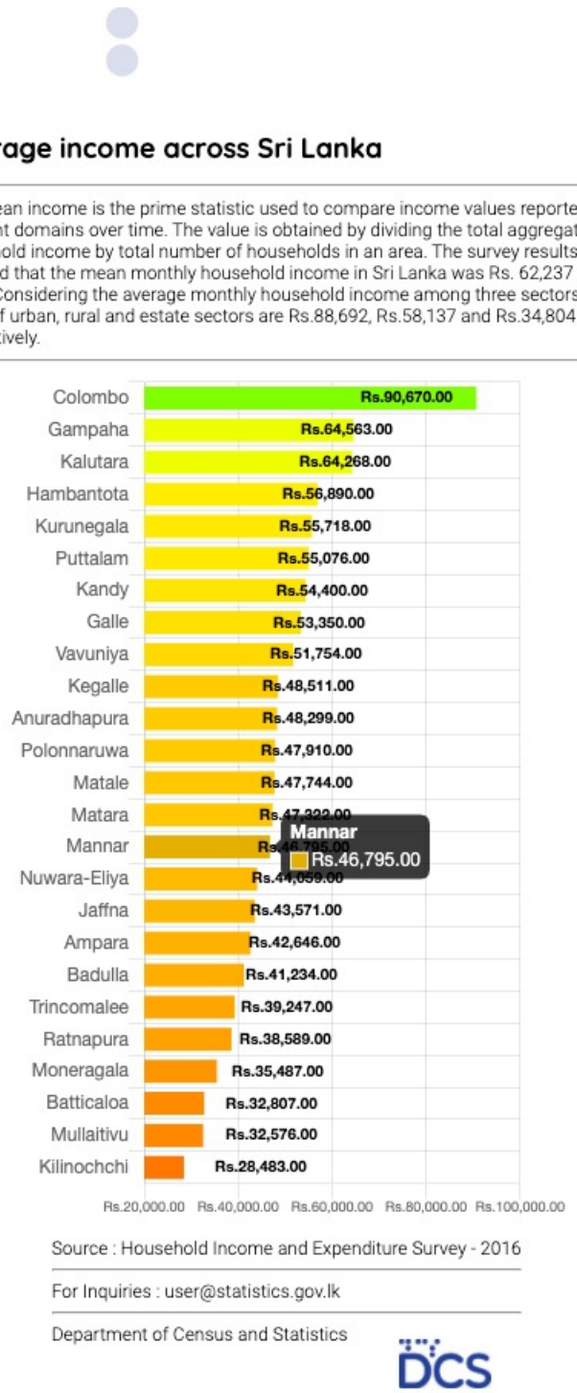


Custom Made Solution



Example: Chart.JS based custom solution being integrated with interactive maps to provide the user at a glace information.





programmers, programmers, programmers...

Even in the Sri Lankan context, as the internet slowly becomes the primary source of information for new data users, replacing traditional print media; The future public appeal and quality of output of a major statistical organisation such as DCS is heavily reliant not only on capable statisticians but also capable programmers.

Programmers, statisticians and communications strategists must play a synergetic role to add value to data and present data to the public in innovative, entertaining and intuitive ways.

DCS will significantly increase its reach, capacity and quality of data dissemination by modernising its DV capabilities by utilising the many free and open source tools available at its disposal.

This effort places a heavy emphasis on DCS recruiting and retaining capable programmers.

We have observed that the addition of several capable programmers to the DCS staff, specialising in web development and integrated data visualisation renders a far greater benefit to the organisation for a fraction of the cost of servicing a proprietary solution such as the Tableau suite.

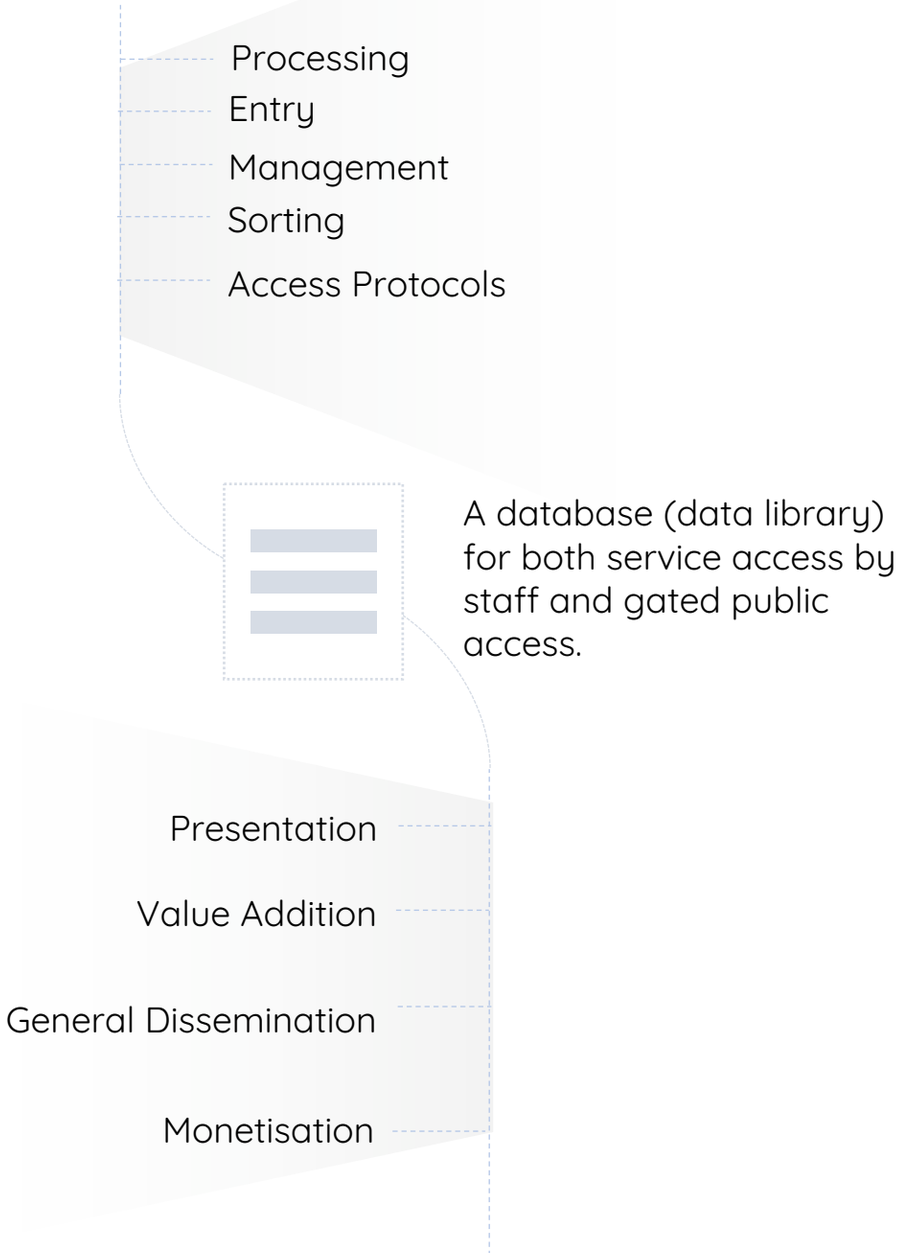
Tableau is not a viable solution for mass deployment of custom dashboards

Tableau is not a financially viable solution for DCS in the immediate future, but there are ample resources and opportunities to use free and open source resources paired with DCS's own databases to replicate and even exceed the functionality that Tableau offers.

An in house solution can have numerous advantages over paid-proprietary solutions

- Free and open source toolkit proposed involves zero additional upfront costs
- The toolkit, based on a PHP and JavaScript backend takes away the risk of version obsolescence and repeating subscription payments; our data and work will be retrievable regardless of version upgrades or license expiration.
- The proposed DV toolkit has minimal ICT resource overheads, requiring no installations, no setting up of new, specialised server controllers.
- Endlessly customisable according to our specific needs
- An in house solution can be set up in a way that statisticians will not be required to spend additional time developing dashboards and databases; they can instead communicate their specific requirements to the ICT division; ensuring that this clear division of labour leads to optimal efficiency in different roles.
- Unlike Tableau, our solution does not need to rely on a proprietary server, which enables staff to work independently and even embed their work into a specific webpage solely as a client end program.

3 Setting up centralised databases and APIs to distribute, update and manage mass data dissemination



The current solution which provides the public direct access to data is LANKASIS, http://sis.statistics.gov.lk/.

The limitations with the current solution are as follows

- The built in Data Visualisation system for LankaSIS is deprecated (Uses Flash, which is no longer supported by major browsers)
- The databases do not appear to have been consistently updated
- The search feature is keyword based and does not offer the user the ability to perform advanced, multi parameter searches
- The current arrangement does not allow the user to perform side by side analysis or over-time analysis of already available datasets
- It would be a far more effective and multi-purpose arrangement to make the data available throughout the website, thereby enabling staff to integrate visualisations into custom dashboards and visualisations throughout the website.
- Rather than making data tables and visualisations available in a separate part of the website, it would be much more effective if tabulations and visualisations can be embedded within online articles themselves.

Example: Office for National Statistics, UK uses a central database to which cleared staff members can access to make tables and interactive graphs available to the end user.

[ons.gov.uk/economy/inflationandpriceindices/bulletins/consumerpriceinflation/latest]

2. Annual CPIH inflation rate

Table 1: CPIH, OOH component and CPI index values, and 12-month and 1-month rates
UK, March 2020 to March 2021

		CPIH Index (UK, 2015 = 100)	CPIH 12-month rate	CPIH 1-month rate	CPI Index (UK, 2015 =100)	CPI 12-month rate	CPI 1-month rate	OOH Index (UK, 2015 =100)	OOH 12-month rate
2020	Mar	108.6	1.5	0.0	108.6	1.5	0.0	107.7	1.3
	Apr	108.6	0.9	0.0	108.5	0.8	-0.2	107.7	1.1
	May	108.6	0.7	0.0	108.5	0.5	0.0	107.8	1.1
	Jun	108.8	0.8	0.1	108.6	0.6	0.1	107.9	1.2
	Jul	109.2	1.1	0.4	109.1	1.0	0.4	108.0	1.1
	Aug	108.8	0.5	-0.3	108.6	0.2	-0.4	108.1	1.1
	Sep	109.2	0.7	0.4	109.1	0.5	0.4	108.3	1.2
	Oct	109.2	0.9	0.0	109.1	0.7	0.0	108.4	1.2
	Nov	109.1	0.6	-0.1	108.9	0.3	-0.1	108.6	1.2
	Dec	109.4	0.8	0.2	109.2	0.6	0.3	108.8	1.3
2021	Jan	109.3	0.9	-0.1	109.0	0.7	-0.2	109.0	1.3
	Feb	109.4	0.7	0.1	109.1	0.4	0.1	109.1	1.4
	Mar	109.7	1.0	0.2	109.4	0.7	0.3	109.1	1.3

Source: Office for National Statistics - Consumer price inflation

Download this table

.xls .csv

Figure 1: Annual CPIH inflation rate was highest since July 2020

CPIH, OOH component and CPI 12-month inflation rates for the last 10 years, UK, March 2011 to March 2021

Source: Office for National Statistics – Consumer price inflation

Download this chart

Image .csv .xls

3 Setting up centralised databases and APIs to distribute, update and manage mass data dissemination

Suggested toolkit : The consultant - data visualisation officer has provided a set of Chart.js based free and open source data visualisation tools that can either be implemented as part of a database connected solution or a standalone solution where the data is baked into the visualisation.

DCS brand specific data visualisation tools: Sample Showcase

Following are several reference samples for training on interactive data visualisation tools on the web

DCS specific brand guidelines still apply; styling of graphs and charts must refer back to the most recent iteration of brand guidelines

Chart Type: Horizontal Bar
Configuration File : horizontal_bar_graph.js

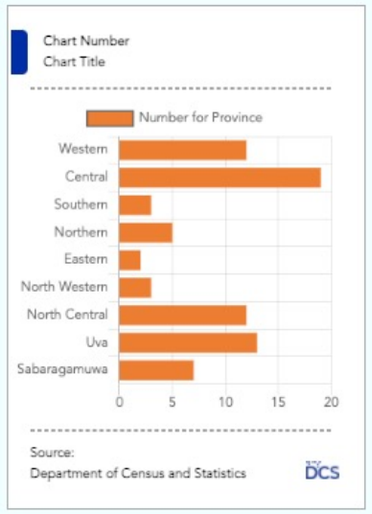


Chart Type: Stacked Horizontal Line Graph
Configuration File : line_graph.js

Chart Type: Radar Graph
Configuration File : radar_graph.js

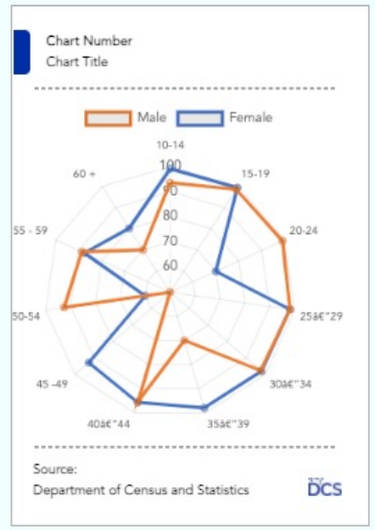


Chart Type: Butterfly Graph
Configuration File : radar_graph.js

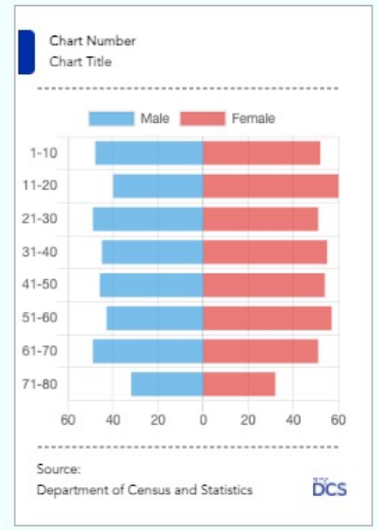


Chart Type: Pie Chart
Configuration File : pie_chart.js

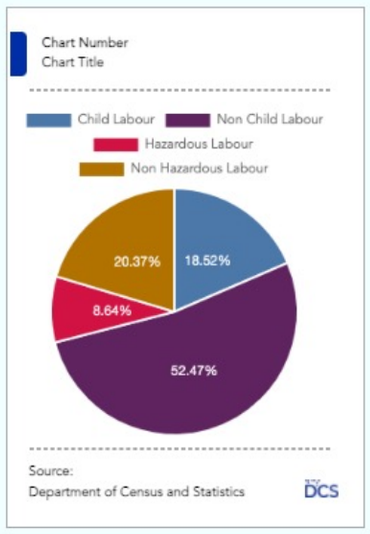
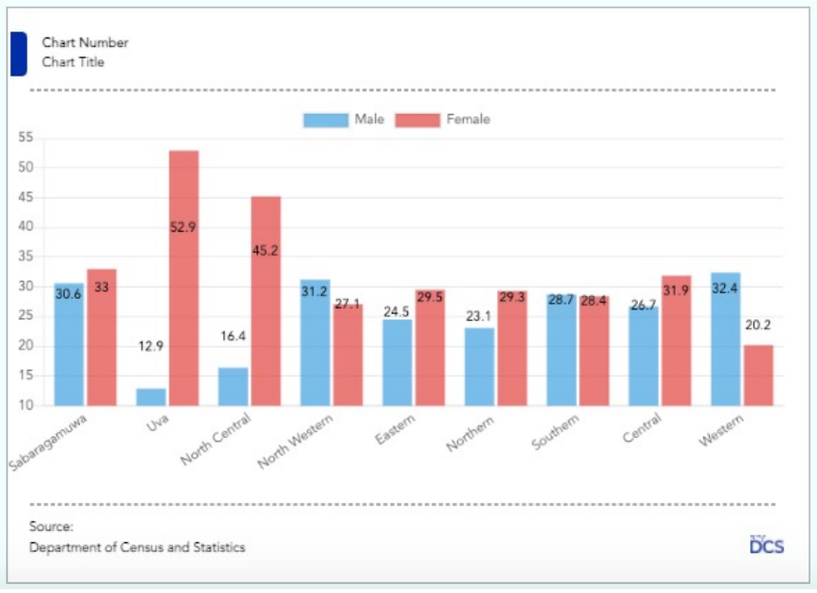


Chart Type: grouped_vertical_bar_graph
Configuration File : grouped_vertical_bar_graph.js



4

A payment portal for paid-for articles and data (Unit sale and subscription models)

Key dissemination targets

Level 0 — Mass dissemination of data and publications online for free and open public use

Key monetisation Targets

Level 1 — Single purchase online vending of print publications and digital publications for individual use

Level 2 — Subscription based access to articles , publications and compilations for individual use

Level 3 — Subscription based access to data APIs for individual use

Level 4 — Subscription based mass access to articles, publications and compulations for institutions and business users

Level 5 — Subscription based access to data APIs for commercial and institutional use

This service which is is currently provided by DCS, would benefit greatly from a payment portal attached to the website.

The suggested payment portal and a gated API for data access will open up the opportunity to monetise access to both publications and data if required.

Negotiated with the relevant institutions on a case by case basis

The large number of satellite sites, seemingly fragmented organisation of the current website and the density of content of the current website might hinder clarity and ease of navigation and will discourage some users from making full use of what the website has to offer.

Rathe than the users having to access satellite sites for various representations of data, we recommended that integrating these various satellite solutions into the content of the main website would be a rather more elegant solution which is in keeping with the industry best practices

A content audit and full site tree of the main DCS website and its satellite sites

A site review and editorial review to determine what should be offered as first order access in the new site

- Determining the types of new content
- Determining a new site tree and navigation options to suite the reviewed site presentation
- Determining the integration of satellite sites into the main DCS site, and any design changes to be applied to satellite sites

Determine the degrees of archival moving forward

- Archival of all historical data in a centralised database for easy DV and analytical access
- Retention of past documentation, publications, press releases up to a given publication year in the main website
- Archival of historic data and publications in a keyword organised library (can be integrated with DCS's readily available e library)