Team A Project Presentation: Regional Economic Dashboard

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Project Motivation

- Crichton Institute is a focal point of data for Dumfries & Galloway
- Runs the only exclusively rural data observatory in UK
- Vital to provide individuals, businesses, and potential investors access to important datasets and reports to benefit the region
- No intuitive visualisations or public access to an overview of this data

Solution:

A dashboard displaying key regional information

Key Features

- Instant access to headline information on the current key economic indicators of Dumfries and Galloway
- Link to relevant, reputable sources (NOMIS, Scot Stats, etc)
- Comparison to current and historic figures in Scotland, and if possible the UK
- Build a cheat sheet (a summary of the indicators important to the user)
- Download this as a printable PDF document

Target Users and their Priorities

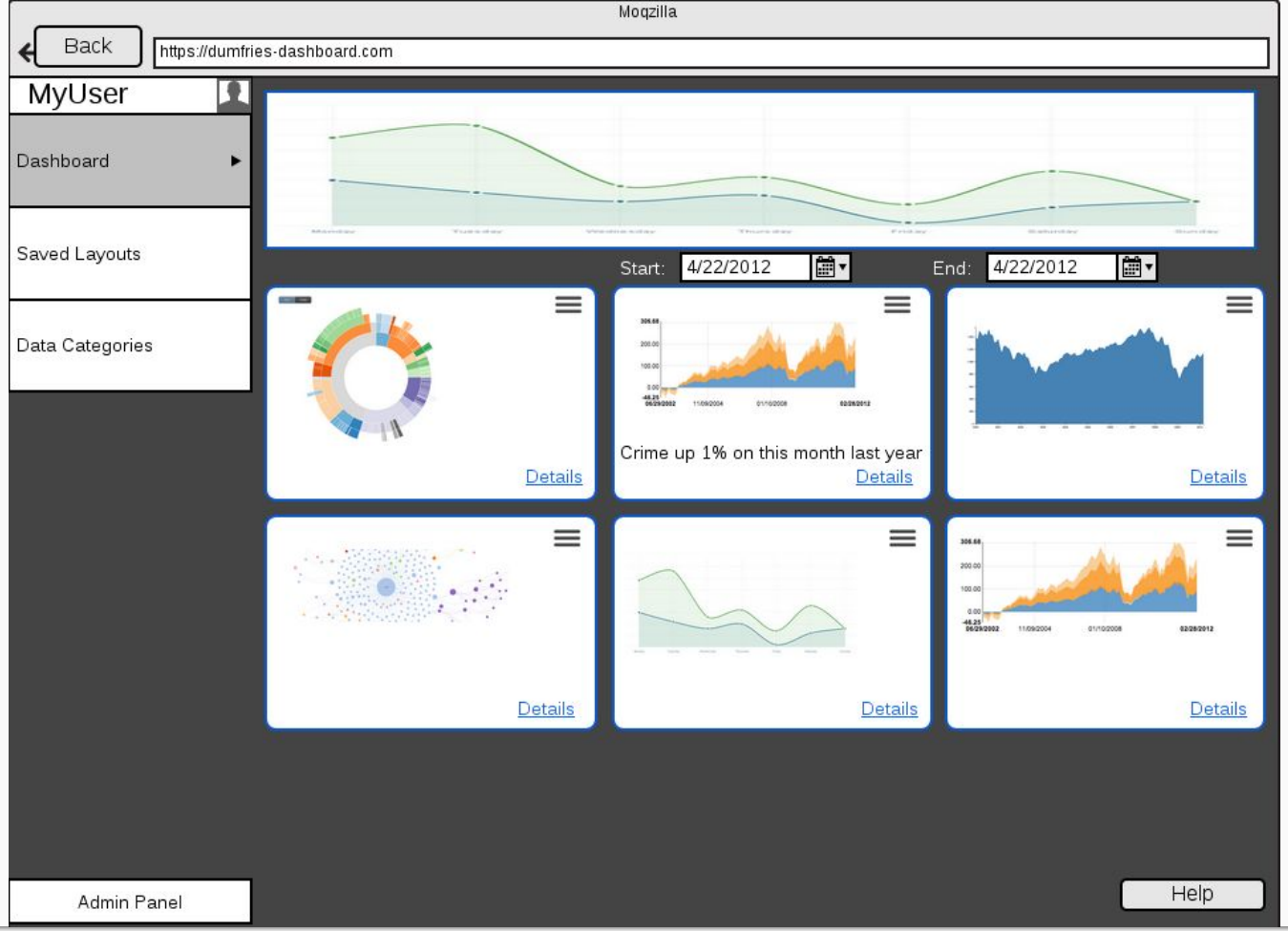
- Business owners - is Dumfries & Galloway a good location for a new business?
- Researchers/Students - reputable sources and original data to be used in reports
- Investors - is the region improving over time and stable for future development?

Initial Design

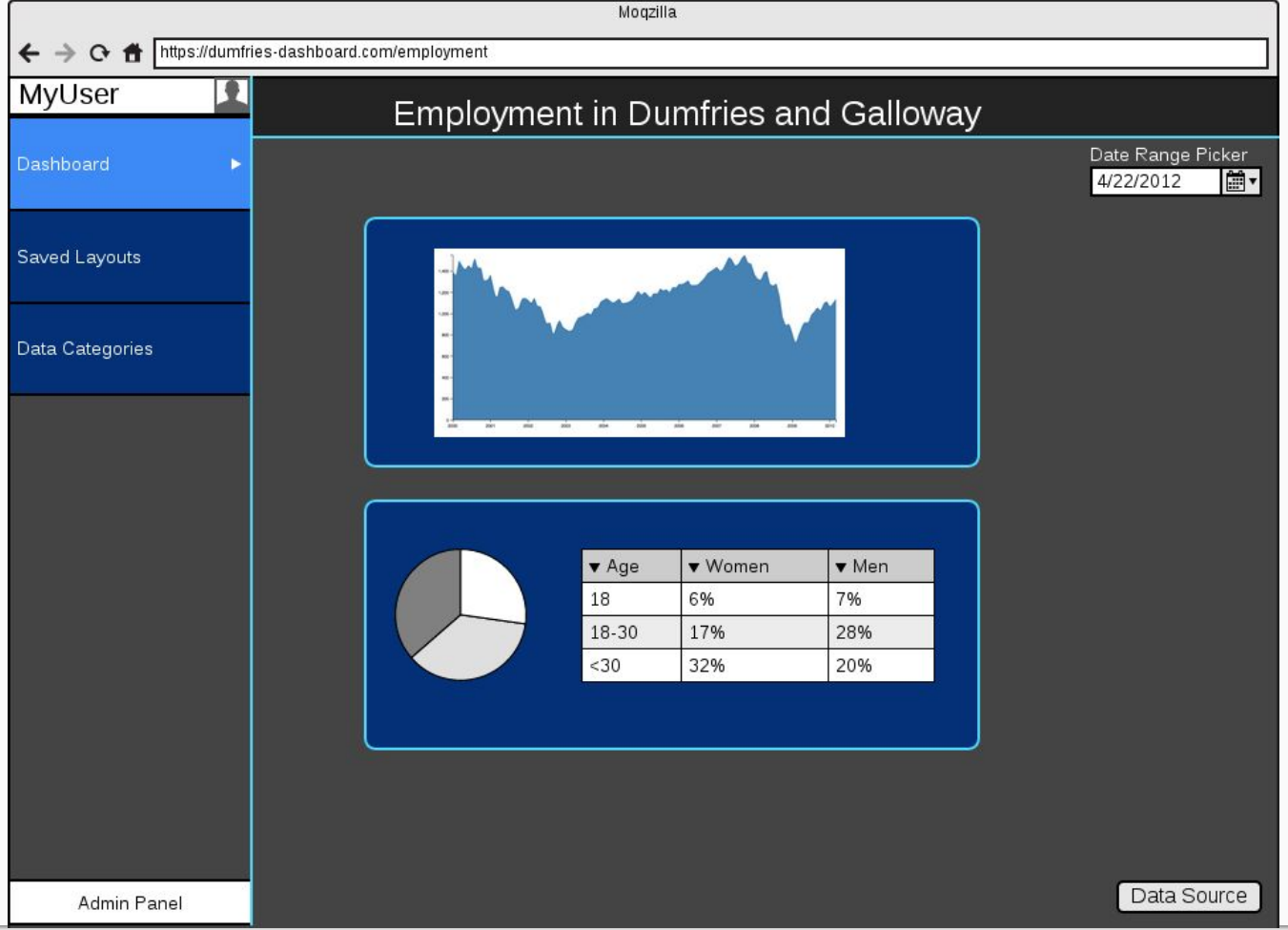
- Built high fidelity (interactive) wireframes
- Very useful so that all team members and customers are on same page

Key Points:

- Modular widgets containing graphs with hidden further information
- Constantly visible sidebar
- Links to more detailed pages



Main Homepage (Dashboard)



Category Detail Page - Employment

Data Categories Overview

Technical Decisions - Software Platform

- Python + Django backend - All team members reasonably familiar due to Web Apps course last year
- AngularJS used for advanced front-end capability
  - Allows dynamic loading of specific sections (we can change dashboard without loading scripts, images, and sidebar code)
  - Provides an MVC framework - very useful for organising code in controllers

Technical Decisions - Process

- Live server always shows latest version - useful for demonstrations
- Well-defined workflow
  - Work locally until feature is relatively working
  - Run test cases locally
  - Commit using informative message and reference relevant tickets
  - Check all tests passed on server
  - Check live version of site has been updated and is working as intended
- Slack was an extremely useful organisational tool. Automatic notifications of new builds with commit messages to keep team updated.

Final Product Demonstration

Key Technical Features

- Multi-layered systems design - two MVC frameworks working together
  - Django backend is mostly used as a RESTful service to the Angular controllers
- Resizable and draggable widgets using Angular-Gridster
- Flexible and dynamic graphs using d3.js
- Persistent storage of user customised dashboard with authentication
- Clear workflow for Administrators to add new data
- On-demand PDF generation of the current dashboard
- Statistical analysis of data trends
- Text-search for graphs

Technical Challenges

- Automatic publication to live server on build - several issues along the way
  - 5+ min build times reduced to ~45 seconds for full deployment
- Needed to handle a wide variety of CSV formats and styles
  - Resulted in creation of a CSV Importing module
- Planned to add in API Importing - major issues with sourcing APIs
  - Created a modular design that treated all data in a consistent format no matter where it came from, what format it was originally in, and how it was retrieved
  - Largely unused due to only CSV Importing being implemented in time
- Data in general was out of date
  - Lack of centralised source of latest information

Project Achievements

- Majority of initially agreed requirements successfully implemented
- Easy-to-use for admins and public users
- Project is highly maintainable due to modular code structure
- Team grew more productive over time as we worked together
- Everyone honed or learned new programming skills and technologies

Future Improvements

- Implement API Importer - would allow for automated updating of data
- Compare different datasets on one graph (such as UK-wide)
- Variety of visualisations - pie charts, and overlaying graphs
- More responsive - small screens are supported, but lose out on customisability, and performance can be a problem
- Enhance PDF Exporter - doesn’t handle differing graph sizes or bar charts well
- Deploy to a real production server such as NGINX
- Improved search results (e.g. sorting, create saved configuration)

Any Questions?

Crichton Institute
Regional Observatory

- Dashboard
- Saved Configurations
- Data Categories
- Crichton Institute
- Help / Documentation

Dumfries & Galloway Dashboard

This is the Crichton Institute economic dashboard for the area of Dumfries and Galloway.

This dashboard aims to provide a comprehensive and easy-to-use overview of the economic situation in Dumfries and Galloway.

Admin Panel

Blue | Purple | Large |

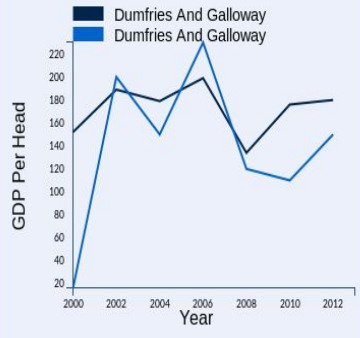
In order new style to be loaded click refresh button

Search

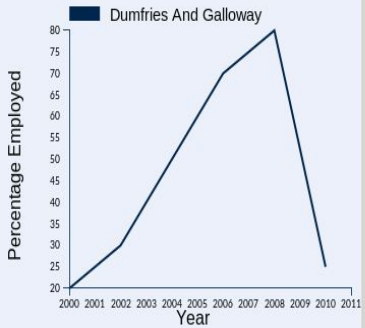
Save | Clear | Export To PDF | Add Graph | Login

Jan, 1990 - Mar, 2016

GDP Per Head (Pounds)

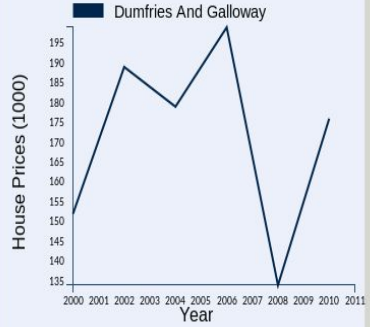


Employment Rate

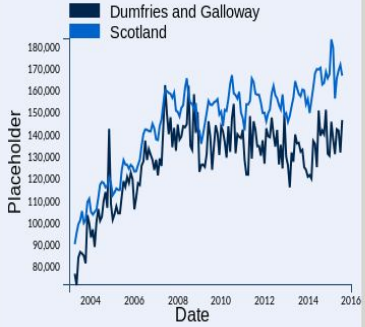


Claimant Count Numbers

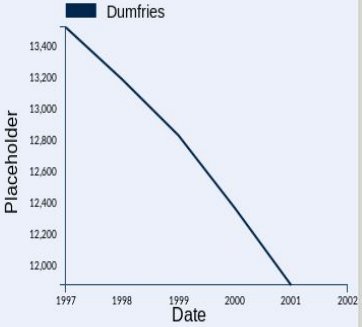
House Price



Monthly House Pricing Sept 2



Council Stock



Crichton Institute
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Dumfries & Galloway Dashboard

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This dashboard aims to provide a comprehensive and easy-to-use overview of the economic situation in Dumfries and Galloway.

Admin Panel

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In order new style to be loaded click refresh button

First Made

Load Download as PDF

Another

Load Download as PDF

Another

Load Download as PDF

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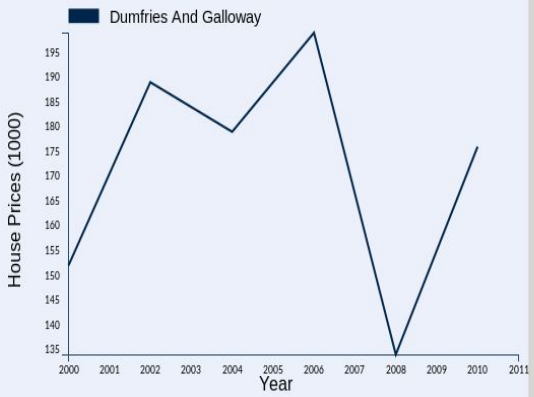
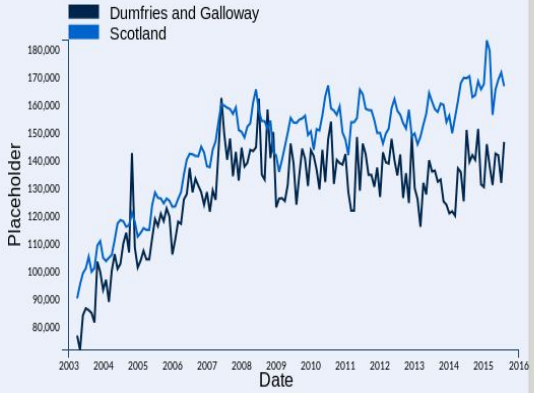


Maximum: 199 at 01 Jan 2006

Minimum: 134 at 01 Jan 2008

Dumfries And Galloway Line Statistics

Monthly House Pricing Sept 2015



Monthly House Pricing Sept 2015 Statistics

Maximum: 183,523 at 01 Feb 2015

Minimum: 90,631 at 01 Apr 2003

Dumfries and Galloway Line Statistics

Change on last month: ▲ 11.2%

Change on last 3 months: ▲ 11.8%

Change on last 6 months: ▼ -3.1%

Change on last year: ▲ 20.5%

Scotland Line Statistics

Change on last month: ▼ -2.9%

Change on last 3 months: ▲ 6.6%

Change on last 6 months: ▼ -1.0%

Change on last year: ▲ 11.3%

Dashboard Help Documentation

This page acts as a user guide. It should list all available features of the website, and how they may be used.

It is currently a work-in-progress.

Topics

Dashboard

What Is It?

This dashboard aims to provide quick, virtually instant access to headline information on the current key economic indicators that are of importance to Dumfries and Galloway.

How Do I Use It?

The dashboard is automatically displayed when you load in the home page.

You can remove graphs by clicking the "X" symbol in the top left of any graph. You can also rearrange the layout of the graphs by clicking and dragging. Graphs can be resized by mousing over the edge of the widget until the arrow symbol appears. You can then click and drag to resize that graph.

Statistical information about a graph can be retrieved by clicking the cog icon, and clicking "Add Trend". This will add a new widget to the dashboard with the statistical data. This widget can be moved around, removed, and resized in the same fashion as the graphs.

The source of a graph can be retrieved by clicking the "i" icon. This will display links to the original data source, as well as to the specific dataset (where available).

Removed graphs can be added back to the dashboard by clicking the "Add Graph" button. This will display a dropdown list of all available graphs. Graphs that are already visible will be greyed out, and graphs that are removed will be clickable. Clicking on the name of a removed graph will add it back to the top of the dashboard at the default size.

When changing the layout of the dashboard all graphs in the dashboard will move around to make the layout work and fit in the current screen space. On slower computers, this may cause some noticeable lag. On very slow machines or mobile devices, this can make the dashboard difficult to use.

This lag is something that may be improved in the future.

Saved Configurations

Add csv file

Name:

DataJson:

Visualisation Name:

Category: ---------

DataSource: ---------

Upload: Browse... No file selected.

Source:

Dimensions

Dimension: #1

Data Label:

The label that appears for this data series in the CSV file.

Label Index:

The row or column index that the label appears in. If blank, you must specify 'index'. This is orthogonal to the type. E.g. If type is 'Row', then this field is the column index that the label appears in.

Label Type: Row

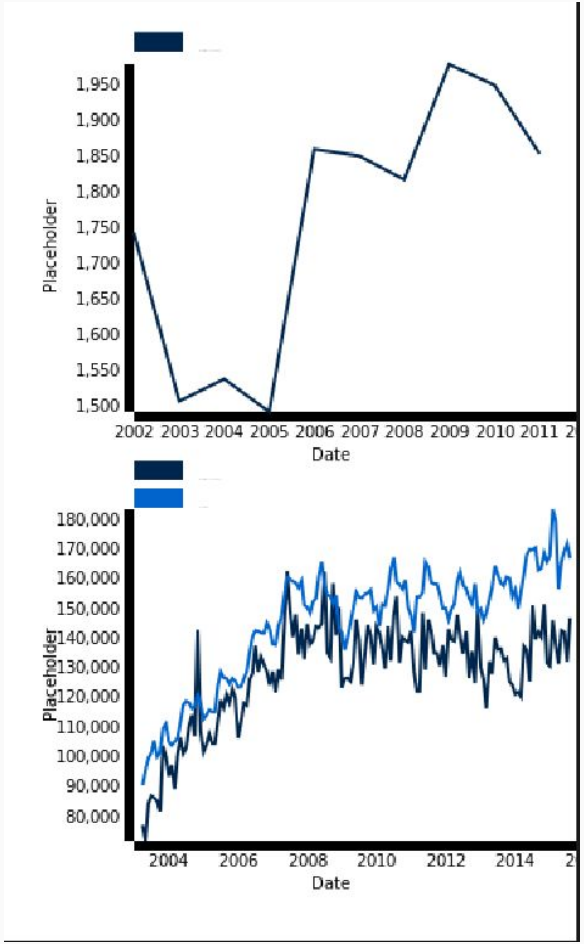
Whether these indices should be taken as row or column values.

Override label with index:

If data series has no label, this field can specify the index.

Data Start:

The index of the first cell of interest for this data series.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