

D10 Group Dashboard Project: Public Health Priorities for Scotland

D10 group members

Derek Hoodless, John Paul Docherty, Jonathan Parker, Paddy Hudson, Prathiba Ratnasabesan.

Roles & responsibilities of each member

Derek worked on Data Cleaning, Data Wrangling, Shiny App

John Paul worked on Data Cleaning, Documentation

Jonathan worked on Project Managing, Wireframing, Data Wrangling & Analysis

Paddy worked on Wireframing, Mapping, Shiny App

Prathiba worked on Requirements, Data Cleaning & Wrangling, Shiny App

Everyone worked on Planning, Data Selection

Brief description of dashboard topic

Our dashboard contains an overview of Scottish public health over the past 5-10 years through the lens of life expectancy.

We then took a closer look at the subjects of drug misuse among young people and smoking across all age groups. We looked at these topics from three perspectives:

- **Temporal:** How has this issue changed over time? Is it getting better or worse?
- **Geographic:** Does this issue differ between areas? Where should efforts be focused?
- **Demographic:** Who is most affected by this issue? Who should be targeted with efforts?

Stages of the project

- Project planning
- Data selection and cleaning
- Design and dashboard wireframing
- Git branching and version control
- Data analysis
- Dashboard build
- Integration of analysis and dashboard
- Testing, Quality Control/Assurance (ongoing)
- Delivery / Presentation

Which tools were used in the project?

- Zoom (daily stand-ups and occasional mob programming)
- Trello (project management and task allocation)
- Git/GitHub (collaboration and version control)

- Slack for informal communication
- MS Office packages
- RStudio
- Excalidraw (for wireframing)

How did you gather and synthesise requirements for the project?

We reviewed the project brief and individually explored the available data sets and finalised on the topics of interest. We split the tasks into Minimum Viable Product (MVP) for features that were critical to the brief and Extensions for extra, “nice to have” features that would only be included if there was enough time.

A brief overview of the wireframe proposal and a sample prototype of the dashboard was reviewed and agreed at the initial stage. A project breakdown structure was discussed and captured via a Kanban-style Trello board showing the detail, status and people assigned to each task. This Trello board was updated individually by all team members but review together at daily stand-ups.

Motivations for using the data you have chosen

We chose to use life expectancy data as it gives the ultimate overview on public health. Beneath that we looked at drug misuse among young people and smoking as these have a direct impact on life expectancy and not only the duration of life, but the quality of those lives. Drug misuse and smoking were also named as public health priorities by the Scottish Government in 2018.

Data quality and potential bias, including a summary of data cleaning and transformations

According to the Trend tab for the life expectancy data in the dashboard, the data quality is set to a 95% confidence interval, which account for the varying designs of constituent surveys. Confidence intervals provide a measure of the accuracy of point estimates.

As the data used in this project was sourced directly from statistics.gov.scot and/or the NHS the quality is high and the risk of potential bias low. All data is publicly available and anonymised.

Each of the datasets were cleaned using the `clean_names()` function from the janitor package to conform with the Tidyverse style guide (snake case). They were then joined with the Data Zone Lookup Codes provided alongside the data to map the corresponding geographical locations and zones.

For life expectancy, the age is restricted from birth and the overlapping year ranges were removed. In each of the data sets various changes were made to variable names as well as some recoding to make the data easier to understand.

How is the data on statistics.gov.scot stored and structured?

The data on statistics.gov.scot is in the form of Linked Data. This means that the structure of the database is contained within the data. Benefits of storing the data like this are there is no need for complex database schema.

Ethical and legal considerations of the data

There are no ethical considerations because the data is depersonalised, publicly available data from the Scottish Government.

The datasets are covered by the Open Government License v3.0, which means we can use the Information that is available under this licence freely & flexibly, with only a few conditions. Further details can be found at [Open Government Licence \(nationalarchives.gov.uk\)](https://open.gov.uk/open-government-licence-nationalarchives.gov.uk)

Addendum

Indicators, Data Sources and Methods

Life Expectancy

<https://statistics.gov.scot/resource?uri=http%3A%2F%2Fstatistics.gov.scot%2Fdata%2FLife-Expectancy>

Life expectancy refers to the number of years that a person could expect to survive if the current mortality rates for each age group, sex and geographic area remain constant throughout their life. This is referred to as 'period life expectancy' and does not usually reflect the actual number of years that a person will survive. This is because it does not take into account changes in health care and other social factors that may occur through someone's lifetime. However, life expectancy is a useful statistic as it provides a snapshot of the health of a population and allows the identification of inequalities between populations.

The data published by the Scottish Government contains information on life expectancy, at birth and for age groups.

- **Age** - From birth and in age groups of 4 years until 90 years.
- **Measure Type** - Percent, 95% lower confidence limit percent, 95% upper confidence limit percent.
- **Reference Period** - 1991-1993 to 2017-2019.
- **Sex** - Female and male.
- **SIMD Quantiles** - All, 1 (most deprived) to 5 (least deprived)
- **Urban Rural Classification** - All, accessible rural, accessible small towns, large urban areas, other urban areas, remote rural and remote small towns.
- **Reference Areas** - Country, council areas, Scottish parliamentary constituencies and health board areas.

Scottish Drugs Misuse Database

<https://www.opendata.nhs.scot/dataset/scottish-drug-misuse-database>

Harm from the use of alcohol and drugs is a major public health problem in Scotland. Such harm, from both ill health and early death, is disproportionately experienced by the most vulnerable in our communities. Access to timely, compassionate, person centred services saves lives.

The data published by Public Health Scotland contains information on the number of individuals presenting for assessment at specialist drug treatment services in Scotland at health board level, broken down by age and sex.

- **FinancialYear** - Data is for financial years (1st April to 31st March).
- **CA** - 9-digit code for the council area of residence, based on the boundaries as at the time of the event.
- **CAQF** - Qualifier for CA.
- **AgeGroup** - The age group of the patient in 5-year age brackets. Also includes people of unknown age.
- **AgeGroupQF** - Qualifier for AgeGroup.
- **Sex** - The sex of the patient.
- **SexQF** - Qualifier for sex.
- **NumberAssessed** - The number of individuals being assessed for treatment.
- **NumberAssessedQF** - Qualifier for NumberAssessed.
- **PercentAssessed** - The percentage of people in age and sex categories. The denominator is the number of individuals assessed for treatment with location.
- **PercentAssessedQF** - Qualifier for PercentAssessed.

Smoking - Scottish Survey Core Questions

<https://statistics.gov.scot/resource?uri=http%3A%2F%2Fstatistics.gov.scot%2Fdata%2Fsmoking-sscq>

Two of the Scottish Government's National Performance Framework (NPF) National Indicators are relevant to smoking. There is a specific indicator on reducing the proportion of adults who are current smokers, as well as a more general indicator on reducing premature mortality (deaths from all causes in those aged under 75), for which smoking is a significant contributory factor.

The data published by the Scottish Government contains information on current smokers by current smokers by tenure, household type, age, sex and disability.

- **Age** - All, 16-34 years, 35-64 years, 16-64 years and 65 years and over.
- **Currently Smokes Cigarettes** - Yes or No.
- **Gender** - All, female and male.
- **Household Type** - All, adults, pensioners and with children.
- **Limiting Long Term Physical or Mental Health Condition** - All, limiting condition and no limiting condition.
- **Measure Type** - Percent, 95% lower confidence limit percent, 95% upper confidence limit percent.
- **Reference Period** - 2012-2013 to 2019.
- **Type of Tenure** - All, owned mortgage/loan, owned outright and rented.
- **Reference Area** - Country, council areas, Scottish parliamentary constituencies, health board areas, electoral wards and Westminster parliamentary constituencies.