

Title Placeholder

Load in Specific Packages

```
library(readr)
library(tidyr)
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
## The following objects are masked from 'package:stats':
##
##   filter, lag
## The following objects are masked from 'package:base':
##
##   intersect, setdiff, setequal, union
```

```
library(here)
```

```
## here() starts at C:/Users/romin/ToyRepo
```

```
library(lemon)
```

```
## Warning: package 'lemon' was built under R version 4.4.2
```

```
library(kableExtra)
```

```
## Warning: package 'kableExtra' was built under R version 4.4.2
```

```
##
## Attaching package: 'kableExtra'
## The following object is masked from 'package:dplyr':
##
##   group_rows
```

```
library(ggplot2)
```

```
## Warning: package 'ggplot2' was built under R version 4.4.2
```

```
library(reshape())
```

```
## Warning: package 'reshape' was built under R version 4.4.2
```

```
##
## Attaching package: 'reshape'
## The following object is masked from 'package:dplyr':
##
##   rename
## The following objects are masked from 'package:tidyr':
##
##   expand, smiths
```

Load in the data

```
cancerReg <- read.csv("C:\\Users\\romin\\ToyRepo\\Models\\cancerReg.csv")
```

Remove Unecessary Data for Analysis

```
cancerReg <- cancerReg %>% select(-area_type,-period,-type_definition,-indicator, -upper_confidence_int,
cancerReg
```

##	area_code	area_name	year	numerator	measure
## 1	S08000015	NHS Ayrshire & Arran	2003	2122.7	649.7
## 2	S08000016	NHS Borders	2003	650.0	614.6
## 3	S08000017	NHS Dumfries & Galloway	2003	916.0	620.5
## 4	S08000019	NHS Forth Valley	2003	1504.7	651.8
## 5	S08000020	NHS Grampian	2003	2651.7	617.8
## 6	S08000022	NHS Highland	2003	1661.7	602.9
## 7	S08000024	NHS Lothian	2003	3986.0	655.1
## 8	S08000025	NHS Orkney	2003	105.0	589.0
## 9	S08000026	NHS Shetland	2003	109.0	616.0
## 10	S08000028	NHS Western Isles	2003	167.7	652.0
## 11	S08000029	NHS Fife	2003	1832.3	611.4
## 12	S08000030	NHS Tayside	2003	2197.3	611.2
## 13	S08000031	NHS Greater Glasgow & Clyde	2003	6229.3	697.3
## 14	S08000032	NHS Lanarkshire	2003	3118.0	633.7
## 15	S08000015	NHS Ayrshire & Arran	2004	2150.0	642.8
## 16	S08000016	NHS Borders	2004	662.7	616.8
## 17	S08000017	NHS Dumfries & Galloway	2004	964.3	645.2
## 18	S08000019	NHS Forth Valley	2004	1520.7	648.2
## 19	S08000020	NHS Grampian	2004	2625.0	601.5
## 20	S08000022	NHS Highland	2004	1687.3	594.5
## 21	S08000024	NHS Lothian	2004	4059.0	660.8
## 22	S08000025	NHS Orkney	2004	107.3	582.4
## 23	S08000026	NHS Shetland	2004	116.0	636.7
## 24	S08000028	NHS Western Isles	2004	165.3	628.1
## 25	S08000029	NHS Fife	2004	1862.3	614.0
## 26	S08000030	NHS Tayside	2004	2209.0	607.3
## 27	S08000031	NHS Greater Glasgow & Clyde	2004	6212.0	693.9
## 28	S08000032	NHS Lanarkshire	2004	3166.3	632.7
## 29	S08000015	NHS Ayrshire & Arran	2005	2140.0	631.6
## 30	S08000016	NHS Borders	2005	694.3	632.7
## 31	S08000017	NHS Dumfries & Galloway	2005	967.7	639.4
## 32	S08000019	NHS Forth Valley	2005	1532.7	642.8
## 33	S08000020	NHS Grampian	2005	2614.7	589.7
## 34	S08000022	NHS Highland	2005	1731.7	598.9
## 35	S08000024	NHS Lothian	2005	4102.0	659.4
## 36	S08000025	NHS Orkney	2005	110.0	587.1
## 37	S08000026	NHS Shetland	2005	105.0	571.8
## 38	S08000028	NHS Western Isles	2005	164.7	610.3
## 39	S08000029	NHS Fife	2005	1938.7	630.7
## 40	S08000030	NHS Tayside	2005	2207.0	600.6
## 41	S08000031	NHS Greater Glasgow & Clyde	2005	6252.7	695.0
## 42	S08000032	NHS Lanarkshire	2005	3264.7	643.5
## 43	S08000015	NHS Ayrshire & Arran	2006	2143.7	626.1
## 44	S08000016	NHS Borders	2006	715.7	641.5

## 45	S08000017	NHS Dumfries & Galloway	2006	990.7	642.1
## 46	S08000019	NHS Forth Valley	2006	1497.7	618.3
## 47	S08000020	NHS Grampian	2006	2653.7	586.6
## 48	S08000022	NHS Highland	2006	1812.3	613.3
## 49	S08000024	NHS Lothian	2006	4211.3	666.1
## 50	S08000025	NHS Orkney	2006	113.7	598.1
## 51	S08000026	NHS Shetland	2006	107.3	574.3
## 52	S08000028	NHS Western Isles	2006	182.3	664.4
## 53	S08000029	NHS Fife	2006	2001.3	641.7
## 54	S08000030	NHS Tayside	2006	2223.7	596.0
## 55	S08000031	NHS Greater Glasgow & Clyde	2006	6233.7	687.6
## 56	S08000032	NHS Lanarkshire	2006	3301.0	637.3
## 57	S08000015	NHS Ayrshire & Arran	2007	2204.7	636.4
## 58	S08000016	NHS Borders	2007	730.0	643.5
## 59	S08000017	NHS Dumfries & Galloway	2007	963.7	613.4
## 60	S08000019	NHS Forth Valley	2007	1552.3	633.2
## 61	S08000020	NHS Grampian	2007	2745.7	595.9
## 62	S08000022	NHS Highland	2007	1897.7	627.4
## 63	S08000024	NHS Lothian	2007	4291.0	668.7
## 64	S08000025	NHS Orkney	2007	113.3	587.4
## 65	S08000026	NHS Shetland	2007	106.7	562.6
## 66	S08000028	NHS Western Isles	2007	199.0	707.2
## 67	S08000029	NHS Fife	2007	2057.3	648.9
## 68	S08000030	NHS Tayside	2007	2340.7	617.6
## 69	S08000031	NHS Greater Glasgow & Clyde	2007	6377.3	698.1
## 70	S08000032	NHS Lanarkshire	2007	3378.3	640.5
## 71	S08000015	NHS Ayrshire & Arran	2008	2283.0	648.2
## 72	S08000016	NHS Borders	2008	725.0	627.5
## 73	S08000017	NHS Dumfries & Galloway	2008	994.3	619.8
## 74	S08000019	NHS Forth Valley	2008	1592.0	638.9
## 75	S08000020	NHS Grampian	2008	2847.0	605.0
## 76	S08000022	NHS Highland	2008	1951.3	627.6
## 77	S08000024	NHS Lothian	2008	4451.3	683.4
## 78	S08000025	NHS Orkney	2008	119.0	589.3
## 79	S08000026	NHS Shetland	2008	117.3	594.9
## 80	S08000028	NHS Western Isles	2008	209.3	726.0
## 81	S08000029	NHS Fife	2008	2074.0	643.9
## 82	S08000030	NHS Tayside	2008	2400.7	621.1
## 83	S08000031	NHS Greater Glasgow & Clyde	2008	6556.0	710.9
## 84	S08000032	NHS Lanarkshire	2008	3491.7	649.8
## 85	S08000015	NHS Ayrshire & Arran	2009	2346.0	652.2
## 86	S08000016	NHS Borders	2009	751.3	633.8
## 87	S08000017	NHS Dumfries & Galloway	2009	993.3	609.1
## 88	S08000019	NHS Forth Valley	2009	1644.3	649.8
## 89	S08000020	NHS Grampian	2009	2891.7	605.4
## 90	S08000022	NHS Highland	2009	1986.0	625.8
## 91	S08000024	NHS Lothian	2009	4508.3	681.6
## 92	S08000025	NHS Orkney	2009	114.7	543.0
## 93	S08000026	NHS Shetland	2009	119.3	596.0
## 94	S08000028	NHS Western Isles	2009	210.0	715.0
## 95	S08000029	NHS Fife	2009	2108.0	640.4
## 96	S08000030	NHS Tayside	2009	2400.0	613.7
## 97	S08000031	NHS Greater Glasgow & Clyde	2009	6678.3	715.4
## 98	S08000032	NHS Lanarkshire	2009	3629.0	665.6

## 99	S08000015	NHS Ayrshire & Arran	2010	2352.7	643.8
## 100	S08000016	NHS Borders	2010	745.7	614.8
## 101	S08000017	NHS Dumfries & Galloway	2010	1035.3	628.9
## 102	S08000019	NHS Forth Valley	2010	1648.0	634.1
## 103	S08000020	NHS Grampian	2010	2948.3	608.5
## 104	S08000022	NHS Highland	2010	2020.7	625.4
## 105	S08000024	NHS Lothian	2010	4648.7	691.8
## 106	S08000025	NHS Orkney	2010	122.0	569.2
## 107	S08000026	NHS Shetland	2010	134.7	663.4
## 108	S08000028	NHS Western Isles	2010	201.3	674.4
## 109	S08000029	NHS Fife	2010	2164.7	650.0
## 110	S08000030	NHS Tayside	2010	2391.7	603.1
## 111	S08000031	NHS Greater Glasgow & Clyde	2010	6744.3	714.4
## 112	S08000032	NHS Lanarkshire	2010	3728.7	675.0
## 113	S08000015	NHS Ayrshire & Arran	2011	2386.7	643.2
## 114	S08000016	NHS Borders	2011	760.3	614.5
## 115	S08000017	NHS Dumfries & Galloway	2011	1027.3	617.6
## 116	S08000019	NHS Forth Valley	2011	1649.0	620.3
## 117	S08000020	NHS Grampian	2011	2987.3	606.2
## 118	S08000022	NHS Highland	2011	2023.3	616.8
## 119	S08000024	NHS Lothian	2011	4682.3	684.3
## 120	S08000025	NHS Orkney	2011	114.7	531.3
## 121	S08000026	NHS Shetland	2011	140.0	685.6
## 122	S08000028	NHS Western Isles	2011	194.0	646.0
## 123	S08000029	NHS Fife	2011	2211.7	651.3
## 124	S08000030	NHS Tayside	2011	2428.7	606.9
## 125	S08000031	NHS Greater Glasgow & Clyde	2011	6818.0	712.3
## 126	S08000032	NHS Lanarkshire	2011	3815.7	677.5
## 127	S08000015	NHS Ayrshire & Arran	2012	2459.7	654.3
## 128	S08000016	NHS Borders	2012	763.7	608.5
## 129	S08000017	NHS Dumfries & Galloway	2012	1016.0	602.7
## 130	S08000019	NHS Forth Valley	2012	1671.7	617.3
## 131	S08000020	NHS Grampian	2012	3045.0	606.8
## 132	S08000022	NHS Highland	2012	2053.0	614.3
## 133	S08000024	NHS Lothian	2012	4817.3	691.6
## 134	S08000025	NHS Orkney	2012	121.3	549.1
## 135	S08000026	NHS Shetland	2012	154.0	731.7
## 136	S08000028	NHS Western Isles	2012	200.7	651.6
## 137	S08000029	NHS Fife	2012	2273.3	659.4
## 138	S08000030	NHS Tayside	2012	2504.3	616.1
## 139	S08000031	NHS Greater Glasgow & Clyde	2012	6891.0	713.3
## 140	S08000032	NHS Lanarkshire	2012	3849.0	672.7
## 141	S08000015	NHS Ayrshire & Arran	2013	2524.0	659.6
## 142	S08000016	NHS Borders	2013	791.7	621.2
## 143	S08000017	NHS Dumfries & Galloway	2013	1064.7	619.9
## 144	S08000019	NHS Forth Valley	2013	1725.0	626.7
## 145	S08000020	NHS Grampian	2013	3104.7	607.1
## 146	S08000022	NHS Highland	2013	2057.7	604.8
## 147	S08000024	NHS Lothian	2013	4873.3	686.7
## 148	S08000025	NHS Orkney	2013	114.7	496.1
## 149	S08000026	NHS Shetland	2013	148.0	689.3
## 150	S08000028	NHS Western Isles	2013	194.7	626.6
## 151	S08000029	NHS Fife	2013	2301.3	654.5
## 152	S08000030	NHS Tayside	2013	2563.0	622.6

## 153	S08000031	NHS Greater Glasgow & Clyde	2013	7021.3	718.2
## 154	S08000032	NHS Lanarkshire	2013	3881.7	666.5
## 155	S08000015	NHS Ayrshire & Arran	2014	2571.0	662.1
## 156	S08000016	NHS Borders	2014	810.0	625.5
## 157	S08000017	NHS Dumfries & Galloway	2014	1073.0	616.1
## 158	S08000019	NHS Forth Valley	2014	1758.3	630.4
## 159	S08000020	NHS Grampian	2014	3170.7	610.3
## 160	S08000022	NHS Highland	2014	2106.7	612.2
## 161	S08000024	NHS Lothian	2014	4948.7	684.5
## 162	S08000025	NHS Orkney	2014	124.7	529.1
## 163	S08000026	NHS Shetland	2014	149.7	683.1
## 164	S08000028	NHS Western Isles	2014	202.7	641.8
## 165	S08000029	NHS Fife	2014	2281.3	638.3
## 166	S08000030	NHS Tayside	2014	2626.3	627.8
## 167	S08000031	NHS Greater Glasgow & Clyde	2014	7034.3	712.0
## 168	S08000032	NHS Lanarkshire	2014	3878.3	654.8
## 169	S08000015	NHS Ayrshire & Arran	2015	2531.0	643.4
## 170	S08000016	NHS Borders	2015	816.0	618.9
## 171	S08000017	NHS Dumfries & Galloway	2015	1088.7	617.9
## 172	S08000019	NHS Forth Valley	2015	1775.0	628.9
## 173	S08000020	NHS Grampian	2015	3251.3	617.1
## 174	S08000022	NHS Highland	2015	2097.0	602.4
## 175	S08000024	NHS Lothian	2015	4850.0	659.9
## 176	S08000025	NHS Orkney	2015	122.3	508.0
## 177	S08000026	NHS Shetland	2015	155.3	693.4
## 178	S08000028	NHS Western Isles	2015	194.7	614.6
## 179	S08000029	NHS Fife	2015	2288.3	628.3
## 180	S08000030	NHS Tayside	2015	2678.3	632.1
## 181	S08000031	NHS Greater Glasgow & Clyde	2015	7129.7	711.5
## 182	S08000032	NHS Lanarkshire	2015	3914.0	649.1
## 183	S08000015	NHS Ayrshire & Arran	2016	2529.0	633.9
## 184	S08000016	NHS Borders	2016	842.3	628.1
## 185	S08000017	NHS Dumfries & Galloway	2016	1030.7	580.9
## 186	S08000019	NHS Forth Valley	2016	1830.7	638.2
## 187	S08000020	NHS Grampian	2016	3289.0	614.8
## 188	S08000022	NHS Highland	2016	2108.7	597.5
## 189	S08000024	NHS Lothian	2016	4793.0	641.4
## 190	S08000025	NHS Orkney	2016	127.7	521.7
## 191	S08000026	NHS Shetland	2016	158.0	697.4
## 192	S08000028	NHS Western Isles	2016	191.3	598.1
## 193	S08000029	NHS Fife	2016	2281.7	617.1
## 194	S08000030	NHS Tayside	2016	2711.7	631.2
## 195	S08000031	NHS Greater Glasgow & Clyde	2016	7088.7	699.3
## 196	S08000032	NHS Lanarkshire	2016	3979.3	650.3
## 197	S08000015	NHS Ayrshire & Arran	2017	2537.3	627.2
## 198	S08000016	NHS Borders	2017	867.0	638.1
## 199	S08000017	NHS Dumfries & Galloway	2017	1057.0	588.7
## 200	S08000019	NHS Forth Valley	2017	1918.0	657.4
## 201	S08000020	NHS Grampian	2017	3456.0	637.4
## 202	S08000022	NHS Highland	2017	2150.0	598.8
## 203	S08000024	NHS Lothian	2017	4811.3	632.7
## 204	S08000025	NHS Orkney	2017	129.7	516.3
## 205	S08000026	NHS Shetland	2017	160.3	696.2
## 206	S08000028	NHS Western Isles	2017	185.7	573.3

##	207	S08000029	NHS Fife	2017	2391.3	637.5
##	208	S08000030	NHS Tayside	2017	2744.3	632.1
##	209	S08000031	NHS Greater Glasgow & Clyde	2017	7196.7	700.2
##	210	S08000032	NHS Lanarkshire	2017	4096.7	659.8
##	211	S08000015	NHS Ayrshire & Arran	2018	2598.7	632.8
##	212	S08000016	NHS Borders	2018	869.3	629.3
##	213	S08000017	NHS Dumfries & Galloway	2018	1123.0	618.5
##	214	S08000019	NHS Forth Valley	2018	1978.7	664.7
##	215	S08000020	NHS Grampian	2018	3592.3	651.1
##	216	S08000022	NHS Highland	2018	2245.0	613.4
##	217	S08000024	NHS Lothian	2018	4919.0	635.3
##	218	S08000025	NHS Orkney	2018	139.7	550.7
##	219	S08000026	NHS Shetland	2018	141.0	610.8
##	220	S08000028	NHS Western Isles	2018	193.7	588.7
##	221	S08000029	NHS Fife	2018	2455.7	645.9
##	222	S08000030	NHS Tayside	2018	2737.3	623.9
##	223	S08000031	NHS Greater Glasgow & Clyde	2018	7317.0	702.0
##	224	S08000032	NHS Lanarkshire	2018	4174.3	661.0
##	225	S08000015	NHS Ayrshire & Arran	2019	2552.7	616.0
##	226	S08000016	NHS Borders	2019	807.0	575.6
##	227	S08000017	NHS Dumfries & Galloway	2019	1126.3	611.7
##	228	S08000019	NHS Forth Valley	2019	1939.0	643.7
##	229	S08000020	NHS Grampian	2019	3490.3	623.3
##	230	S08000022	NHS Highland	2019	2229.3	600.8
##	231	S08000024	NHS Lothian	2019	4866.0	617.5
##	232	S08000025	NHS Orkney	2019	148.3	575.9
##	233	S08000026	NHS Shetland	2019	130.3	548.4
##	234	S08000028	NHS Western Isles	2019	202.0	609.0
##	235	S08000029	NHS Fife	2019	2402.3	623.1
##	236	S08000030	NHS Tayside	2019	2621.3	592.0
##	237	S08000031	NHS Greater Glasgow & Clyde	2019	7125.3	674.8
##	238	S08000032	NHS Lanarkshire	2019	4073.3	635.4
##	239	S08000015	NHS Ayrshire & Arran	2020	2619.0	625.5
##	240	S08000016	NHS Borders	2020	803.3	560.1
##	241	S08000017	NHS Dumfries & Galloway	2020	1154.7	621.7
##	242	S08000019	NHS Forth Valley	2020	1958.7	642.4
##	243	S08000020	NHS Grampian	2020	3501.3	614.9
##	244	S08000022	NHS Highland	2020	2285.7	604.9
##	245	S08000024	NHS Lothian	2020	5030.7	628.9
##	246	S08000025	NHS Orkney	2020	152.3	586.6
##	247	S08000026	NHS Shetland	2020	133.7	551.9
##	248	S08000028	NHS Western Isles	2020	223.0	665.8
##	249	S08000029	NHS Fife	2020	2350.3	602.0
##	250	S08000030	NHS Tayside	2020	2649.0	590.5
##	251	S08000031	NHS Greater Glasgow & Clyde	2020	7178.7	673.5
##	252	S08000032	NHS Lanarkshire	2020	4052.3	624.1

Display Data as Bubble Plot

```
head(cancerReg)
```

##	area_code	area_name	year	numerator	measure
##	1	S08000015	NHS Ayrshire & Arran	2003	2122.7 649.7
##	2	S08000016	NHS Borders	2003	650.0 614.6

```
## 3 S08000017 NHS Dumfries & Galloway 2003 916.0 620.5
## 4 S08000019 NHS Forth Valley 2003 1504.7 651.8
## 5 S08000020 NHS Grampian 2003 2651.7 617.8
## 6 S08000022 NHS Highland 2003 1661.7 602.9
```

```
ggplot(cancerReg, aes(x=year, y=area_name, size=measure)) + geom_point(alpha=0.5) + scale_size(range=c(1
```

