

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
```

```
library(hexbin)
```

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

```
library(data.table)
```

```
##
```

```
## Attaching package: 'data.table'
```

```
## The following object is masked from 'package:reshape':
```

```
##
```

```
##      melt
```

```
## The following objects are masked from 'package:dplyr':
```

```
##
```

```
##      between, first, last
```

```
library(GGally)
```

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

```
## Registered S3 method overwritten by 'GGally':
```

```
##      method from
```

```
##      +.gg      ggplot2
```

```
library(formattable)
```

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

```
library(viridis)
```

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

```
## Loading required package: viridisLite
```

Load in the data

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

Remove Unecessary Data for Analysis

```
cancerReg <- cancerReg %>% select(-area_type,-type_definition,-indicator, -upper_confidence_interval, -lower_confidence_interval)
```

```
##      area_code      area_name year
## 1 S08000015 NHS Ayrshire & Arran 2003
## 2 S08000016 NHS Borders 2003
## 3 S08000017 NHS Dumfries & Galloway 2003
## 4 S08000019 NHS Forth Valley 2003
## 5 S08000020 NHS Grampian 2003
## 6 S08000022 NHS Highland 2003
## 7 S08000024 NHS Lothian 2003
## 8 S08000025 NHS Orkney 2003
## 9 S08000026 NHS Shetland 2003
## 10 S08000028 NHS Western Isles 2003
## 11 S08000029 NHS Fife 2003
## 12 S08000030 NHS Tayside 2003
## 13 S08000031 NHS Greater Glasgow & Clyde 2003
```

## 14	S08000032	NHS Lanarkshire	2003
## 15	S08000015	NHS Ayrshire & Arran	2004
## 16	S08000016	NHS Borders	2004
## 17	S08000017	NHS Dumfries & Galloway	2004
## 18	S08000019	NHS Forth Valley	2004
## 19	S08000020	NHS Grampian	2004
## 20	S08000022	NHS Highland	2004
## 21	S08000024	NHS Lothian	2004
## 22	S08000025	NHS Orkney	2004
## 23	S08000026	NHS Shetland	2004
## 24	S08000028	NHS Western Isles	2004
## 25	S08000029	NHS Fife	2004
## 26	S08000030	NHS Tayside	2004
## 27	S08000031	NHS Greater Glasgow & Clyde	2004
## 28	S08000032	NHS Lanarkshire	2004
## 29	S08000015	NHS Ayrshire & Arran	2005
## 30	S08000016	NHS Borders	2005
## 31	S08000017	NHS Dumfries & Galloway	2005
## 32	S08000019	NHS Forth Valley	2005
## 33	S08000020	NHS Grampian	2005
## 34	S08000022	NHS Highland	2005
## 35	S08000024	NHS Lothian	2005
## 36	S08000025	NHS Orkney	2005
## 37	S08000026	NHS Shetland	2005
## 38	S08000028	NHS Western Isles	2005
## 39	S08000029	NHS Fife	2005
## 40	S08000030	NHS Tayside	2005
## 41	S08000031	NHS Greater Glasgow & Clyde	2005
## 42	S08000032	NHS Lanarkshire	2005
## 43	S08000015	NHS Ayrshire & Arran	2006
## 44	S08000016	NHS Borders	2006
## 45	S08000017	NHS Dumfries & Galloway	2006
## 46	S08000019	NHS Forth Valley	2006
## 47	S08000020	NHS Grampian	2006
## 48	S08000022	NHS Highland	2006
## 49	S08000024	NHS Lothian	2006
## 50	S08000025	NHS Orkney	2006
## 51	S08000026	NHS Shetland	2006
## 52	S08000028	NHS Western Isles	2006
## 53	S08000029	NHS Fife	2006
## 54	S08000030	NHS Tayside	2006
## 55	S08000031	NHS Greater Glasgow & Clyde	2006
## 56	S08000032	NHS Lanarkshire	2006
## 57	S08000015	NHS Ayrshire & Arran	2007
## 58	S08000016	NHS Borders	2007
## 59	S08000017	NHS Dumfries & Galloway	2007
## 60	S08000019	NHS Forth Valley	2007
## 61	S08000020	NHS Grampian	2007
## 62	S08000022	NHS Highland	2007
## 63	S08000024	NHS Lothian	2007
## 64	S08000025	NHS Orkney	2007
## 65	S08000026	NHS Shetland	2007
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## 67	S08000029	NHS Fife	2007

## 68	S08000030	NHS Tayside	2007
## 69	S08000031	NHS Greater Glasgow & Clyde	2007
## 70	S08000032	NHS Lanarkshire	2007
## 71	S08000015	NHS Ayrshire & Arran	2008
## 72	S08000016	NHS Borders	2008
## 73	S08000017	NHS Dumfries & Galloway	2008
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## 76	S08000022	NHS Highland	2008
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## 83	S08000031	NHS Greater Glasgow & Clyde	2008
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## 92	S08000025	NHS Orkney	2009
## 93	S08000026	NHS Shetland	2009
## 94	S08000028	NHS Western Isles	2009
## 95	S08000029	NHS Fife	2009
## 96	S08000030	NHS Tayside	2009
## 97	S08000031	NHS Greater Glasgow & Clyde	2009
## 98	S08000032	NHS Lanarkshire	2009
## 99	S08000015	NHS Ayrshire & Arran	2010
## 100	S08000016	NHS Borders	2010
## 101	S08000017	NHS Dumfries & Galloway	2010
## 102	S08000019	NHS Forth Valley	2010
## 103	S08000020	NHS Grampian	2010
## 104	S08000022	NHS Highland	2010
## 105	S08000024	NHS Lothian	2010
## 106	S08000025	NHS Orkney	2010
## 107	S08000026	NHS Shetland	2010
## 108	S08000028	NHS Western Isles	2010
## 109	S08000029	NHS Fife	2010
## 110	S08000030	NHS Tayside	2010
## 111	S08000031	NHS Greater Glasgow & Clyde	2010
## 112	S08000032	NHS Lanarkshire	2010
## 113	S08000015	NHS Ayrshire & Arran	2011
## 114	S08000016	NHS Borders	2011
## 115	S08000017	NHS Dumfries & Galloway	2011
## 116	S08000019	NHS Forth Valley	2011
## 117	S08000020	NHS Grampian	2011
## 118	S08000022	NHS Highland	2011
## 119	S08000024	NHS Lothian	2011
## 120	S08000025	NHS Orkney	2011
## 121	S08000026	NHS Shetland	2011

## 122	S08000028	NHS Western Isles	2011
## 123	S08000029	NHS Fife	2011
## 124	S08000030	NHS Tayside	2011
## 125	S08000031	NHS Greater Glasgow & Clyde	2011
## 126	S08000032	NHS Lanarkshire	2011
## 127	S08000015	NHS Ayrshire & Arran	2012
## 128	S08000016	NHS Borders	2012
## 129	S08000017	NHS Dumfries & Galloway	2012
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## 137	S08000029	NHS Fife	2012
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## 140	S08000032	NHS Lanarkshire	2012
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## 152	S08000030	NHS Tayside	2013
## 153	S08000031	NHS Greater Glasgow & Clyde	2013
## 154	S08000032	NHS Lanarkshire	2013
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## 164	S08000028	NHS Western Isles	2014
## 165	S08000029	NHS Fife	2014
## 166	S08000030	NHS Tayside	2014
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## 188	S08000022	NHS Highland	2016
## 189	S08000024	NHS Lothian	2016
## 190	S08000025	NHS Orkney	2016
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## 217	S08000024	NHS Lothian	2018
## 218	S08000025	NHS Orkney	2018
## 219	S08000026	NHS Shetland	2018
## 220	S08000028	NHS Western Isles	2018
## 221	S08000029	NHS Fife	2018
## 222	S08000030	NHS Tayside	2018
## 223	S08000031	NHS Greater Glasgow & Clyde	2018
## 224	S08000032	NHS Lanarkshire	2018
## 225	S08000015	NHS Ayrshire & Arran	2019
## 226	S08000016	NHS Borders	2019
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## 228	S08000019	NHS Forth Valley	2019
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## 230	S08000022	NHS Highland	2019
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## 232	S08000025	NHS Orkney	2019
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## 240	S08000016	NHS Borders	2020
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## 244	S08000022	NHS Highland	2020
## 245	S08000024	NHS Lothian	2020
## 246	S08000025	NHS Orkney	2020
## 247	S08000026	NHS Shetland	2020
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## 249	S08000029	NHS Fife	2020
## 250	S08000030	NHS Tayside	2020
## 251	S08000031	NHS Greater Glasgow & Clyde	2020
## 252	S08000032	NHS Lanarkshire	2020
## 253	S08000015	NHS Ayrshire & Arran	2021
## 254	S08000016	NHS Borders	2021
## 255	S08000017	NHS Dumfries & Galloway	2021
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## 257	S08000020	NHS Grampian	2021
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## 259	S08000024	NHS Lothian	2021
## 260	S08000025	NHS Orkney	2021
## 261	S08000026	NHS Shetland	2021
## 262	S08000028	NHS Western Isles	2021
## 263	S08000029	NHS Fife	2021
## 264	S08000030	NHS Tayside	2021
## 265	S08000031	NHS Greater Glasgow & Clyde	2021
## 266	S08000032	NHS Lanarkshire	2021
##		period measure	
## 1	2002 to 2004	calendar years; 3-year aggregates	649.7
## 2	2002 to 2004	calendar years; 3-year aggregates	614.6
## 3	2002 to 2004	calendar years; 3-year aggregates	620.5
## 4	2002 to 2004	calendar years; 3-year aggregates	651.8
## 5	2002 to 2004	calendar years; 3-year aggregates	617.8
## 6	2002 to 2004	calendar years; 3-year aggregates	602.9
## 7	2002 to 2004	calendar years; 3-year aggregates	655.1
## 8	2002 to 2004	calendar years; 3-year aggregates	589.0
## 9	2002 to 2004	calendar years; 3-year aggregates	616.0
## 10	2002 to 2004	calendar years; 3-year aggregates	652.0
## 11	2002 to 2004	calendar years; 3-year aggregates	611.4
## 12	2002 to 2004	calendar years; 3-year aggregates	611.2
## 13	2002 to 2004	calendar years; 3-year aggregates	697.3
## 14	2002 to 2004	calendar years; 3-year aggregates	633.7
## 15	2003 to 2005	calendar years; 3-year aggregates	642.8
## 16	2003 to 2005	calendar years; 3-year aggregates	616.8

## 17	2003 to 2005	calendar years; 3-year aggregates	645.2
## 18	2003 to 2005	calendar years; 3-year aggregates	648.2
## 19	2003 to 2005	calendar years; 3-year aggregates	601.5
## 20	2003 to 2005	calendar years; 3-year aggregates	594.5
## 21	2003 to 2005	calendar years; 3-year aggregates	660.8
## 22	2003 to 2005	calendar years; 3-year aggregates	582.4
## 23	2003 to 2005	calendar years; 3-year aggregates	636.7
## 24	2003 to 2005	calendar years; 3-year aggregates	628.1
## 25	2003 to 2005	calendar years; 3-year aggregates	614.0
## 26	2003 to 2005	calendar years; 3-year aggregates	607.3
## 27	2003 to 2005	calendar years; 3-year aggregates	693.9
## 28	2003 to 2005	calendar years; 3-year aggregates	632.7
## 29	2004 to 2006	calendar years; 3-year aggregates	631.6
## 30	2004 to 2006	calendar years; 3-year aggregates	632.7
## 31	2004 to 2006	calendar years; 3-year aggregates	639.4
## 32	2004 to 2006	calendar years; 3-year aggregates	642.8
## 33	2004 to 2006	calendar years; 3-year aggregates	589.7
## 34	2004 to 2006	calendar years; 3-year aggregates	598.9
## 35	2004 to 2006	calendar years; 3-year aggregates	659.4
## 36	2004 to 2006	calendar years; 3-year aggregates	587.1
## 37	2004 to 2006	calendar years; 3-year aggregates	571.8
## 38	2004 to 2006	calendar years; 3-year aggregates	610.3
## 39	2004 to 2006	calendar years; 3-year aggregates	630.7
## 40	2004 to 2006	calendar years; 3-year aggregates	600.6
## 41	2004 to 2006	calendar years; 3-year aggregates	695.0
## 42	2004 to 2006	calendar years; 3-year aggregates	643.5
## 43	2005 to 2007	calendar years; 3-year aggregates	626.1
## 44	2005 to 2007	calendar years; 3-year aggregates	641.5
## 45	2005 to 2007	calendar years; 3-year aggregates	642.1
## 46	2005 to 2007	calendar years; 3-year aggregates	618.3
## 47	2005 to 2007	calendar years; 3-year aggregates	586.6
## 48	2005 to 2007	calendar years; 3-year aggregates	613.3
## 49	2005 to 2007	calendar years; 3-year aggregates	666.1
## 50	2005 to 2007	calendar years; 3-year aggregates	598.1
## 51	2005 to 2007	calendar years; 3-year aggregates	574.3
## 52	2005 to 2007	calendar years; 3-year aggregates	664.4
## 53	2005 to 2007	calendar years; 3-year aggregates	641.7
## 54	2005 to 2007	calendar years; 3-year aggregates	596.0
## 55	2005 to 2007	calendar years; 3-year aggregates	687.6
## 56	2005 to 2007	calendar years; 3-year aggregates	637.3
## 57	2006 to 2008	calendar years; 3-year aggregates	636.4
## 58	2006 to 2008	calendar years; 3-year aggregates	643.5
## 59	2006 to 2008	calendar years; 3-year aggregates	613.4
## 60	2006 to 2008	calendar years; 3-year aggregates	633.2
## 61	2006 to 2008	calendar years; 3-year aggregates	595.9
## 62	2006 to 2008	calendar years; 3-year aggregates	627.4
## 63	2006 to 2008	calendar years; 3-year aggregates	668.7
## 64	2006 to 2008	calendar years; 3-year aggregates	587.4
## 65	2006 to 2008	calendar years; 3-year aggregates	562.6
## 66	2006 to 2008	calendar years; 3-year aggregates	707.2
## 67	2006 to 2008	calendar years; 3-year aggregates	648.9
## 68	2006 to 2008	calendar years; 3-year aggregates	617.6
## 69	2006 to 2008	calendar years; 3-year aggregates	698.1
## 70	2006 to 2008	calendar years; 3-year aggregates	640.5

## 71	2007 to 2009	calendar years; 3-year aggregates	648.2
## 72	2007 to 2009	calendar years; 3-year aggregates	627.5
## 73	2007 to 2009	calendar years; 3-year aggregates	619.8
## 74	2007 to 2009	calendar years; 3-year aggregates	638.9
## 75	2007 to 2009	calendar years; 3-year aggregates	605.0
## 76	2007 to 2009	calendar years; 3-year aggregates	627.6
## 77	2007 to 2009	calendar years; 3-year aggregates	683.4
## 78	2007 to 2009	calendar years; 3-year aggregates	589.3
## 79	2007 to 2009	calendar years; 3-year aggregates	594.9
## 80	2007 to 2009	calendar years; 3-year aggregates	726.0
## 81	2007 to 2009	calendar years; 3-year aggregates	643.9
## 82	2007 to 2009	calendar years; 3-year aggregates	621.1
## 83	2007 to 2009	calendar years; 3-year aggregates	710.9
## 84	2007 to 2009	calendar years; 3-year aggregates	649.8
## 85	2008 to 2010	calendar years; 3-year aggregates	652.2
## 86	2008 to 2010	calendar years; 3-year aggregates	633.8
## 87	2008 to 2010	calendar years; 3-year aggregates	609.1
## 88	2008 to 2010	calendar years; 3-year aggregates	649.8
## 89	2008 to 2010	calendar years; 3-year aggregates	605.4
## 90	2008 to 2010	calendar years; 3-year aggregates	625.8
## 91	2008 to 2010	calendar years; 3-year aggregates	681.6
## 92	2008 to 2010	calendar years; 3-year aggregates	543.0
## 93	2008 to 2010	calendar years; 3-year aggregates	596.0
## 94	2008 to 2010	calendar years; 3-year aggregates	715.0
## 95	2008 to 2010	calendar years; 3-year aggregates	640.4
## 96	2008 to 2010	calendar years; 3-year aggregates	613.7
## 97	2008 to 2010	calendar years; 3-year aggregates	715.4
## 98	2008 to 2010	calendar years; 3-year aggregates	665.6
## 99	2009 to 2011	calendar years; 3-year aggregates	643.8
## 100	2009 to 2011	calendar years; 3-year aggregates	614.8
## 101	2009 to 2011	calendar years; 3-year aggregates	628.9
## 102	2009 to 2011	calendar years; 3-year aggregates	634.1
## 103	2009 to 2011	calendar years; 3-year aggregates	608.5
## 104	2009 to 2011	calendar years; 3-year aggregates	625.4
## 105	2009 to 2011	calendar years; 3-year aggregates	691.8
## 106	2009 to 2011	calendar years; 3-year aggregates	569.2
## 107	2009 to 2011	calendar years; 3-year aggregates	663.4
## 108	2009 to 2011	calendar years; 3-year aggregates	674.4
## 109	2009 to 2011	calendar years; 3-year aggregates	650.0
## 110	2009 to 2011	calendar years; 3-year aggregates	603.1
## 111	2009 to 2011	calendar years; 3-year aggregates	714.4
## 112	2009 to 2011	calendar years; 3-year aggregates	675.0
## 113	2010 to 2012	calendar years; 3-year aggregates	643.2
## 114	2010 to 2012	calendar years; 3-year aggregates	614.5
## 115	2010 to 2012	calendar years; 3-year aggregates	617.6
## 116	2010 to 2012	calendar years; 3-year aggregates	620.3
## 117	2010 to 2012	calendar years; 3-year aggregates	606.2
## 118	2010 to 2012	calendar years; 3-year aggregates	616.8
## 119	2010 to 2012	calendar years; 3-year aggregates	684.3
## 120	2010 to 2012	calendar years; 3-year aggregates	531.3
## 121	2010 to 2012	calendar years; 3-year aggregates	685.6
## 122	2010 to 2012	calendar years; 3-year aggregates	646.0
## 123	2010 to 2012	calendar years; 3-year aggregates	651.3
## 124	2010 to 2012	calendar years; 3-year aggregates	606.9

## 125	2010 to 2012	calendar years; 3-year aggregates	712.3
## 126	2010 to 2012	calendar years; 3-year aggregates	677.5
## 127	2011 to 2013	calendar years; 3-year aggregates	654.3
## 128	2011 to 2013	calendar years; 3-year aggregates	608.5
## 129	2011 to 2013	calendar years; 3-year aggregates	602.7
## 130	2011 to 2013	calendar years; 3-year aggregates	617.3
## 131	2011 to 2013	calendar years; 3-year aggregates	606.8
## 132	2011 to 2013	calendar years; 3-year aggregates	614.3
## 133	2011 to 2013	calendar years; 3-year aggregates	691.6
## 134	2011 to 2013	calendar years; 3-year aggregates	549.1
## 135	2011 to 2013	calendar years; 3-year aggregates	731.7
## 136	2011 to 2013	calendar years; 3-year aggregates	651.6
## 137	2011 to 2013	calendar years; 3-year aggregates	659.4
## 138	2011 to 2013	calendar years; 3-year aggregates	616.1
## 139	2011 to 2013	calendar years; 3-year aggregates	713.3
## 140	2011 to 2013	calendar years; 3-year aggregates	672.7
## 141	2012 to 2014	calendar years; 3-year aggregates	659.6
## 142	2012 to 2014	calendar years; 3-year aggregates	621.2
## 143	2012 to 2014	calendar years; 3-year aggregates	619.9
## 144	2012 to 2014	calendar years; 3-year aggregates	626.7
## 145	2012 to 2014	calendar years; 3-year aggregates	607.1
## 146	2012 to 2014	calendar years; 3-year aggregates	604.8
## 147	2012 to 2014	calendar years; 3-year aggregates	686.7
## 148	2012 to 2014	calendar years; 3-year aggregates	496.1
## 149	2012 to 2014	calendar years; 3-year aggregates	689.3
## 150	2012 to 2014	calendar years; 3-year aggregates	626.6
## 151	2012 to 2014	calendar years; 3-year aggregates	654.5
## 152	2012 to 2014	calendar years; 3-year aggregates	622.6
## 153	2012 to 2014	calendar years; 3-year aggregates	718.2
## 154	2012 to 2014	calendar years; 3-year aggregates	666.5
## 155	2013 to 2015	calendar years; 3-year aggregates	662.1
## 156	2013 to 2015	calendar years; 3-year aggregates	625.5
## 157	2013 to 2015	calendar years; 3-year aggregates	616.1
## 158	2013 to 2015	calendar years; 3-year aggregates	630.4
## 159	2013 to 2015	calendar years; 3-year aggregates	610.3
## 160	2013 to 2015	calendar years; 3-year aggregates	612.2
## 161	2013 to 2015	calendar years; 3-year aggregates	684.5
## 162	2013 to 2015	calendar years; 3-year aggregates	529.1
## 163	2013 to 2015	calendar years; 3-year aggregates	683.1
## 164	2013 to 2015	calendar years; 3-year aggregates	641.8
## 165	2013 to 2015	calendar years; 3-year aggregates	638.3
## 166	2013 to 2015	calendar years; 3-year aggregates	627.8
## 167	2013 to 2015	calendar years; 3-year aggregates	712.0
## 168	2013 to 2015	calendar years; 3-year aggregates	654.8
## 169	2014 to 2016	calendar years; 3-year aggregates	643.4
## 170	2014 to 2016	calendar years; 3-year aggregates	618.9
## 171	2014 to 2016	calendar years; 3-year aggregates	617.9
## 172	2014 to 2016	calendar years; 3-year aggregates	628.9
## 173	2014 to 2016	calendar years; 3-year aggregates	617.1
## 174	2014 to 2016	calendar years; 3-year aggregates	602.4
## 175	2014 to 2016	calendar years; 3-year aggregates	659.9
## 176	2014 to 2016	calendar years; 3-year aggregates	508.0
## 177	2014 to 2016	calendar years; 3-year aggregates	693.4
## 178	2014 to 2016	calendar years; 3-year aggregates	614.6

## 179	2014 to 2016	calendar years; 3-year aggregates	628.3
## 180	2014 to 2016	calendar years; 3-year aggregates	632.1
## 181	2014 to 2016	calendar years; 3-year aggregates	711.5
## 182	2014 to 2016	calendar years; 3-year aggregates	649.1
## 183	2015 to 2017	calendar years; 3-year aggregates	633.9
## 184	2015 to 2017	calendar years; 3-year aggregates	628.1
## 185	2015 to 2017	calendar years; 3-year aggregates	580.9
## 186	2015 to 2017	calendar years; 3-year aggregates	638.2
## 187	2015 to 2017	calendar years; 3-year aggregates	614.8
## 188	2015 to 2017	calendar years; 3-year aggregates	597.5
## 189	2015 to 2017	calendar years; 3-year aggregates	641.4
## 190	2015 to 2017	calendar years; 3-year aggregates	521.7
## 191	2015 to 2017	calendar years; 3-year aggregates	697.4
## 192	2015 to 2017	calendar years; 3-year aggregates	598.1
## 193	2015 to 2017	calendar years; 3-year aggregates	617.1
## 194	2015 to 2017	calendar years; 3-year aggregates	631.2
## 195	2015 to 2017	calendar years; 3-year aggregates	699.3
## 196	2015 to 2017	calendar years; 3-year aggregates	650.3
## 197	2016 to 2018	calendar years; 3-year aggregates	627.2
## 198	2016 to 2018	calendar years; 3-year aggregates	638.1
## 199	2016 to 2018	calendar years; 3-year aggregates	588.7
## 200	2016 to 2018	calendar years; 3-year aggregates	657.4
## 201	2016 to 2018	calendar years; 3-year aggregates	637.4
## 202	2016 to 2018	calendar years; 3-year aggregates	598.8
## 203	2016 to 2018	calendar years; 3-year aggregates	632.7
## 204	2016 to 2018	calendar years; 3-year aggregates	516.3
## 205	2016 to 2018	calendar years; 3-year aggregates	696.2
## 206	2016 to 2018	calendar years; 3-year aggregates	573.3
## 207	2016 to 2018	calendar years; 3-year aggregates	637.5
## 208	2016 to 2018	calendar years; 3-year aggregates	632.1
## 209	2016 to 2018	calendar years; 3-year aggregates	700.2
## 210	2016 to 2018	calendar years; 3-year aggregates	659.8
## 211	2017 to 2019	calendar years; 3-year aggregates	632.8
## 212	2017 to 2019	calendar years; 3-year aggregates	629.3
## 213	2017 to 2019	calendar years; 3-year aggregates	618.5
## 214	2017 to 2019	calendar years; 3-year aggregates	664.7
## 215	2017 to 2019	calendar years; 3-year aggregates	651.1
## 216	2017 to 2019	calendar years; 3-year aggregates	613.4
## 217	2017 to 2019	calendar years; 3-year aggregates	635.3
## 218	2017 to 2019	calendar years; 3-year aggregates	550.7
## 219	2017 to 2019	calendar years; 3-year aggregates	610.8
## 220	2017 to 2019	calendar years; 3-year aggregates	588.7
## 221	2017 to 2019	calendar years; 3-year aggregates	645.9
## 222	2017 to 2019	calendar years; 3-year aggregates	623.9
## 223	2017 to 2019	calendar years; 3-year aggregates	702.0
## 224	2017 to 2019	calendar years; 3-year aggregates	661.0
## 225	2018 to 2020	calendar years; 3-year aggregates	616.0
## 226	2018 to 2020	calendar years; 3-year aggregates	575.6
## 227	2018 to 2020	calendar years; 3-year aggregates	611.7
## 228	2018 to 2020	calendar years; 3-year aggregates	643.7
## 229	2018 to 2020	calendar years; 3-year aggregates	623.3
## 230	2018 to 2020	calendar years; 3-year aggregates	600.8
## 231	2018 to 2020	calendar years; 3-year aggregates	617.5
## 232	2018 to 2020	calendar years; 3-year aggregates	575.9

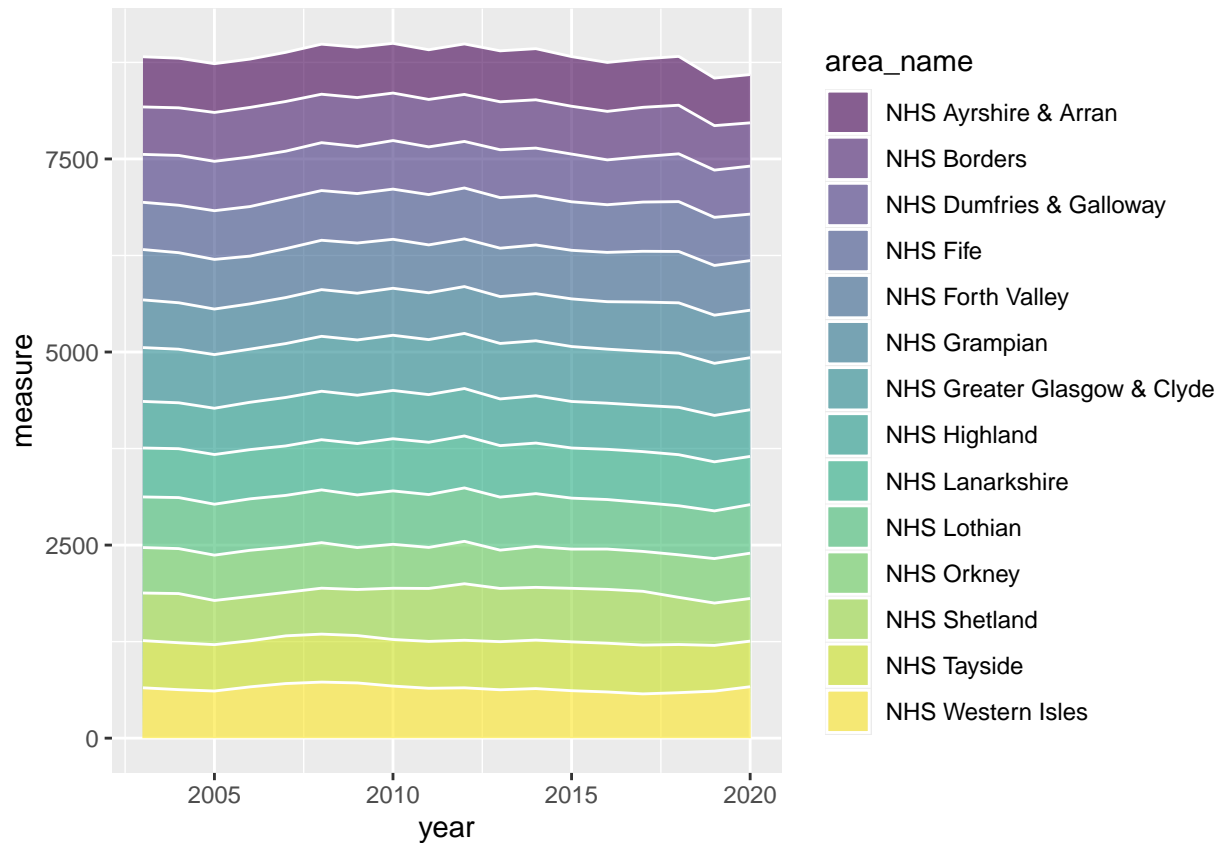
```
## 233 2018 to 2020 calendar years; 3-year aggregates 548.4
## 234 2018 to 2020 calendar years; 3-year aggregates 609.0
## 235 2018 to 2020 calendar years; 3-year aggregates 623.1
## 236 2018 to 2020 calendar years; 3-year aggregates 592.0
## 237 2018 to 2020 calendar years; 3-year aggregates 674.8
## 238 2018 to 2020 calendar years; 3-year aggregates 635.4
## 239 2019 to 2021 calendar years; 3-year aggregates 625.5
## 240 2019 to 2021 calendar years; 3-year aggregates 560.1
## 241 2019 to 2021 calendar years; 3-year aggregates 621.7
## 242 2019 to 2021 calendar years; 3-year aggregates 642.4
## 243 2019 to 2021 calendar years; 3-year aggregates 614.9
## 244 2019 to 2021 calendar years; 3-year aggregates 604.9
## 245 2019 to 2021 calendar years; 3-year aggregates 628.9
## 246 2019 to 2021 calendar years; 3-year aggregates 586.6
## 247 2019 to 2021 calendar years; 3-year aggregates 551.9
## 248 2019 to 2021 calendar years; 3-year aggregates 665.8
## 249 2019 to 2021 calendar years; 3-year aggregates 602.0
## 250 2019 to 2021 calendar years; 3-year aggregates 590.5
## 251 2019 to 2021 calendar years; 3-year aggregates 673.5
## 252 2019 to 2021 calendar years; 3-year aggregates 624.1
## 253 NA
## 254 NA
## 255 NA
## 256 NA
## 257 NA
## 258 NA
## 259 NA
## 260 NA
## 261 NA
## 262 NA
## 263 NA
## 264 NA
## 265 NA
## 266 NA
```

Display Summary of All Data

```
# ggplot(cancerReg, aes(x=year, y=measure, col=area_name)) + geom_line() + geom_point()
# ggplot(cancerReg, aes(x=area_name, y=measure, fill=area_name)) + geom_violin()
# ggparcoord(data= cancerReg, columns = c(), groupColumn = "area_name")
# ggplot(cancerReg, aes(fill=year, y=measure, x=area_name)) + geom_bar(position = "stack", stat = "identity")
ggplot(cancerReg, aes(x = year, y = measure, fill = area_name)) + geom_area(alpha=0.6, size=.5, colour="black")
  scale_fill_viridis(discrete = T)
```

```
## Warning: Using `size` aesthetic for lines was deprecated in ggplot2 3.4.0.
## i Please use `linewidth` instead.
## This warning is displayed once every 8 hours.
## Call `lifecycle::last_lifecycle_warnings()` to see where this warning was
## generated.

## Warning: Removed 14 rows containing non-finite outside the scale range
## (`stat_align()`).
```



Summary Table of Data Within Graph

```
customGreen0 = "#DeF7E9"
customGreen = "#71CA97"
customRed = "#ff7f7f"

healthBoardData <- reshape(cancerReg, idvar = "area_name", timevar = "year", v.names = "measure", direction = "w")

## Warning in reshapeWide(data, idvar = idvar, timevar = timevar, varying = 
## varying, : some constant variables (period) are really varying

colnames(healthBoardData)

## [1] "area_code"      "area_name"      "period"          "measure.2003"   "measure.2004"
## [6] "measure.2005"   "measure.2006"   "measure.2007"   "measure.2008"   "measure.2009"
## [11] "measure.2010"   "measure.2011"   "measure.2012"   "measure.2013"   "measure.2014"
## [16] "measure.2015"   "measure.2016"   "measure.2017"   "measure.2018"   "measure.2019"
## [21] "measure.2020"   "measure.2021"

healthBoardData <- healthBoardData %>%
  mutate(
    Average = round(rowMeans(select(., starts_with("measure.")), na.rm = TRUE), 2),
  )
#Calculate the difference in all the values from 2003- 2021
healthBoardData
```

##	area_code	area_name			
## 1	S08000015	NHS Ayrshire & Arran			
## 2	S08000016	NHS Borders			
## 3	S08000017	NHS Dumfries & Galloway			
## 4	S08000019	NHS Forth Valley			
## 5	S08000020	NHS Grampian			
## 6	S08000022	NHS Highland			
## 7	S08000024	NHS Lothian			
## 8	S08000025	NHS Orkney			
## 9	S08000026	NHS Shetland			
## 10	S08000028	NHS Western Isles			
## 11	S08000029	NHS Fife			
## 12	S08000030	NHS Tayside			
## 13	S08000031	NHS Greater Glasgow & Clyde			
## 14	S08000032	NHS Lanarkshire			
##			period	measure.2003	measure.2004
## 1	2002 to 2004	calendar years; 3-year aggregates		649.7	642.8
## 2	2002 to 2004	calendar years; 3-year aggregates		614.6	616.8
## 3	2002 to 2004	calendar years; 3-year aggregates		620.5	645.2
## 4	2002 to 2004	calendar years; 3-year aggregates		651.8	648.2
## 5	2002 to 2004	calendar years; 3-year aggregates		617.8	601.5
## 6	2002 to 2004	calendar years; 3-year aggregates		602.9	594.5
## 7	2002 to 2004	calendar years; 3-year aggregates		655.1	660.8
## 8	2002 to 2004	calendar years; 3-year aggregates		589.0	582.4
## 9	2002 to 2004	calendar years; 3-year aggregates		616.0	636.7
## 10	2002 to 2004	calendar years; 3-year aggregates		652.0	628.1
## 11	2002 to 2004	calendar years; 3-year aggregates		611.4	614.0
## 12	2002 to 2004	calendar years; 3-year aggregates		611.2	607.3
## 13	2002 to 2004	calendar years; 3-year aggregates		697.3	693.9
## 14	2002 to 2004	calendar years; 3-year aggregates		633.7	632.7
##	measure.2005	measure.2006	measure.2007	measure.2008	measure.2009
## 1	631.6	626.1	636.4	648.2	652.2
## 2	632.7	641.5	643.5	627.5	633.8
## 3	639.4	642.1	613.4	619.8	609.1
## 4	642.8	618.3	633.2	638.9	649.8
## 5	589.7	586.6	595.9	605.0	605.4
## 6	598.9	613.3	627.4	627.6	625.8
## 7	659.4	666.1	668.7	683.4	681.6
## 8	587.1	598.1	587.4	589.3	543.0
## 9	571.8	574.3	562.6	594.9	596.0
## 10	610.3	664.4	707.2	726.0	715.0
## 11	630.7	641.7	648.9	643.9	640.4
## 12	600.6	596.0	617.6	621.1	613.7
## 13	695.0	687.6	698.1	710.9	715.4
## 14	643.5	637.3	640.5	649.8	665.6
##	measure.2010	measure.2011	measure.2012	measure.2013	measure.2014
## 1	643.8	643.2	654.3	659.6	662.1
## 2	614.8	614.5	608.5	621.2	625.5
## 3	628.9	617.6	602.7	619.9	616.1
## 4	634.1	620.3	617.3	626.7	630.4
## 5	608.5	606.2	606.8	607.1	610.3
## 6	625.4	616.8	614.3	604.8	612.2
## 7	691.8	684.3	691.6	686.7	684.5
## 8	569.2	531.3	549.1	496.1	529.1

## 9	663.4	685.6	731.7	689.3	683.1
## 10	674.4	646.0	651.6	626.6	641.8
## 11	650.0	651.3	659.4	654.5	638.3
## 12	603.1	606.9	616.1	622.6	627.8
## 13	714.4	712.3	713.3	718.2	712.0
## 14	675.0	677.5	672.7	666.5	654.8
##	measure.2015	measure.2016	measure.2017	measure.2018	measure.2019
## 1	643.4	633.9	627.2	632.8	616.0
## 2	618.9	628.1	638.1	629.3	575.6
## 3	617.9	580.9	588.7	618.5	611.7
## 4	628.9	638.2	657.4	664.7	643.7
## 5	617.1	614.8	637.4	651.1	623.3
## 6	602.4	597.5	598.8	613.4	600.8
## 7	659.9	641.4	632.7	635.3	617.5
## 8	508.0	521.7	516.3	550.7	575.9
## 9	693.4	697.4	696.2	610.8	548.4
## 10	614.6	598.1	573.3	588.7	609.0
## 11	628.3	617.1	637.5	645.9	623.1
## 12	632.1	631.2	632.1	623.9	592.0
## 13	711.5	699.3	700.2	702.0	674.8
## 14	649.1	650.3	659.8	661.0	635.4
##	measure.2020	measure.2021	Average		
## 1	625.5	NA	640.49		
## 2	560.1	NA	619.17		
## 3	621.7	NA	617.45		
## 4	642.4	NA	638.17		
## 5	614.9	NA	611.08		
## 6	604.9	NA	610.09		
## 7	628.9	NA	662.76		
## 8	586.6	NA	556.13		
## 9	551.9	NA	633.53		
## 10	665.8	NA	644.05		
## 11	602.0	NA	635.47		
## 12	590.5	NA	613.66		
## 13	673.5	NA	701.65		
## 14	624.1	NA	651.63		