

Data Analysis using R Programming - BUS4028

Group 08

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Introduction

In this document, we will be working on Data Analysis Assignment for BUS4028. This report performs data analysis using R programming on a climate change dataset. The analysis includes data manipulation, statistical functions, and plotting.

Data Loading

Read CSV file climate_change_indicators.csv

```
df <- read.csv("climate_change_indicators.csv")
```

Data Exploration

Print structure of df

```
str(df)
```

```
## 'data.frame':      225 obs. of  72 variables:
## $ ObjectId          : int  1 2 3 4 5 6 7 8 9 10 ...
## $ Country           : chr  "Afghanistan, Islamic Rep. of" "Albania" "Algeria" "American Samoa" ...
## $ ISO2              : chr  "AF" "AL" "DZ" "AS" ...
## $ ISO3              : chr  "AFG" "ALB" "DZA" "ASM" ...
## $ Indicator         : chr  "Temperature change with respect to a baseline climatology, corresponding to the year 1961-1990"
## $ Unit              : chr  "Degree Celsius" "Degree Celsius" "Degree Celsius" "Degree Celsius" ...
## $ Source             : chr  "Food and Agriculture Organization of the United Nations (FAO). 2022. Food Security and Nutrition Indicators Database."
## $ CTS_Code           : chr  "ECCS" "ECCS" "ECCS" "ECCS" ...
## $ CTS_Name           : chr  "Surface Temperature Change" "Surface Temperature Change" "Surface Temperature Change" ...
## $ CTS_Full_Descriptor: chr  "Environment, Climate Change, Climate Indicators, Surface Temperature Change"
## $ F1961             : num  -0.113 0.627 0.164 0.079 0.736 0.041 0.086 0.09 0.122 NA ...
## $ F1962             : num  -0.164 0.326 0.114 -0.042 0.112 -0.152 -0.024 0.031 -0.046 NA ...
## $ F1963             : num   0.847 0.075 0.077 0.169 -0.752 -0.19 0.234 0.288 0.162 NA ...
## $ F1964             : num  -0.764 -0.166 0.25 -0.14 0.308 -0.229 0.189 0.214 -0.343 NA ...
## $ F1965             : num  -0.244 -0.388 -0.1 -0.562 -0.49 -0.196 -0.365 -0.385 0.09 NA ...
## $ F1966             : num   0.226 0.559 0.433 0.181 0.415 0.175 -0.001 0.097 -0.163 NA ...
## $ F1967             : num  -0.371 -0.074 -0.026 -0.368 0.637 -0.081 -0.257 -0.192 0 NA ...
## $ F1968             : num  -0.423 0.081 -0.067 -0.187 0.018 -0.193 -0.2 -0.225 0.472 NA ...
```

## \$ F1969	: num	-0.539	-0.013	0.291	0.132	-0.137	0.188	0.317	0.271	0.292	NA	...
## \$ F1970	: num	0.813	-0.106	0.116	-0.047	0.121	0.248	0.082	0.109	0.438	NA	...
## \$ F1971	: num	0.619	-0.195	-0.385	-0.477	-0.326	-0.097	-0.269	-0.233	-0.26	NA	...
## \$ F1972	: num	-1.124	-0.069	-0.348	-0.067	-0.499	...					
## \$ F1973	: num	0.232	-0.288	-0.015	0.33	0.025	0.475	0.17	0.164	-0.139	NA	...
## \$ F1974	: num	-0.489	-0.139	-0.503	-0.308	-0.371	-0.158	-0.37	-0.377	-0.106	NA	...
## \$ F1975	: num	-0.445	-0.211	-0.539	-0.118	0.246	-0.029	-0.334	-0.419	-0.021	NA	...
## \$ F1976	: num	-0.286	-0.683	-0.782	-0.177	-0.045	-0.313	-0.426	-0.467	-0.321	NA	...
## \$ F1977	: num	0.513	0.545	0.504	0.156	-0.093	0.272	0.096	0.076	0.432	NA	...
## \$ F1978	: num	0.129	-0.814	0.012	0.092	-0.163	0.037	0.13	0.161	0.362	NA	...
## \$ F1979	: num	0.361	0.203	0.654	0.341	0.058	0.291	0.034	0.16	0.266	NA	...
## \$ F1980	: num	0.6	-0.414	0.232	0.35	-0.188	0.279	0.698	0.646	0.373	NA	...
## \$ F1981	: num	0.483	-0.351	0.215	0.179	0.178	-0.071	0.532	0.564	0.378	NA	...
## \$ F1982	: num	-0.346	0.173	0.399	0.28	1.044	...					
## \$ F1983	: num	0.164	-0.128	0.56	0.313	0.859	0.487	0.524	0.489	0.046	NA	...
## \$ F1984	: num	0.145	-0.27	-0.004	0.277	-0.157	0.631	0.105	0.009	-0.1	NA	...
## \$ F1985	: num	0.283	-0.103	0.508	0.256	0.059	0.694	0.006	-0.051	0.308	NA	...
## \$ F1986	: num	-0.141	0.569	0.296	0.394	0.387	0.176	0.013	-0.023	0.46	NA	...
## \$ F1987	: num	0.391	-0.106	0.975	0.354	0.397	0.689	0.569	0.649	0.446	NA	...
## \$ F1988	: num	0.919	0.37	1.304	0.509	0.883	...					
## \$ F1989	: num	-0.205	-0.066	0.386	0.143	1.162	...					
## \$ F1990	: num	0.73	0.795	1.266	0.497	1.736	...					
## \$ F1991	: num	-0.168	-0.269	0.031	0.641	0.231	0.341	0.441	0.459	0.261	NA	...
## \$ F1992	: num	-0.294	0.106	-0.312	0.344	0.386	0.466	0.365	0.445	-0.261	-1.31	...
## \$ F1993	: num	0.22	0.076	0.552	-0.069	0.174	0.256	0.535	0.528	0.086	-0.932	...
## \$ F1994	: num	0.43	1.33	0.732	0.189	1.508	...					
## \$ F1995	: num	0.359	-0.172	0.595	0.755	1.279	...					
## \$ F1996	: num	-0.116	-0.038	0.846	0.784	0.57	0.37	0.35	0.377	0.512	0.47	...
## \$ F1997	: num	0.471	0.075	1.059	NA	1.788	...					
## \$ F1998	: num	0.675	0.795	1.109	NA	1.018	...					
## \$ F1999	: num	1.198	0.67	1.476	0.242	1.055	...					
## \$ F2000	: num	0.993	1.065	0.82	0.626	1.05	...					
## \$ F2001	: num	1.311	1.532	1.856	0.904	1.48	...					
## \$ F2002	: num	1.365	0.492	1.258	1.152	0.835	...					
## \$ F2003	: num	0.587	0.97	1.585	0.716	1.949	...					
## \$ F2004	: num	1.373	0.444	0.988	0.191	0.936	...					
## \$ F2005	: num	0.401	0.189	1.264	0.801	0.851	...					
## \$ F2006	: num	1.72	0.345	1.395	0.403	1.485	...					
## \$ F2007	: num	0.675	1.316	1.22	1.032	1.024	...					
## \$ F2008	: num	0.704	0.978	1.185	0.67	0.946	...					
## \$ F2009	: num	0.895	0.91	0.945	NA	1.413	...					
## \$ F2010	: num	1.613	1.191	2.265	1.311	0.471	...					
## \$ F2011	: num	1.397	1.055	1.398	0.854	1.677	...					
## \$ F2012	: num	0.223	1.487	1.147	0.924	1.265	...					
## \$ F2013	: num	1.281	1.333	1.192	1.257	0.831	...					
## \$ F2014	: num	0.456	1.198	1.69	1.17	1.946	...					
## \$ F2015	: num	1.09	1.57	1.12	1.01	1.69	...					
## \$ F2016	: num	1.55	1.46	1.76	1.54	1.99	...					
## \$ F2017	: num	1.54	1.12	1.51	1.44	1.92	...					
## \$ F2018	: num	1.54	2.03	1.21	1.19	1.92	...					
## \$ F2019	: num	0.91	1.68	1.11	1.54	1.96	...					
## \$ F2020	: num	0.498	1.498	1.926	1.43	2.562	...					
## \$ F2021	: num	1.33	1.54	2.33	1.27	1.53	...					
## \$ F2022	: num	2.01	1.52	1.69	1.26	3.24	...					

List variables in dataset

```
ls(df)
```

```
## [1] "Country"          "CTS_Code"          "CTS_Full_Descriptor"
## [4] "CTS_Name"         "F1961"             "F1962"
## [7] "F1963"            "F1964"             "F1965"
## [10] "F1966"            "F1967"             "F1968"
## [13] "F1969"            "F1970"             "F1971"
## [16] "F1972"            "F1973"             "F1974"
## [19] "F1975"            "F1976"             "F1977"
## [22] "F1978"            "F1979"             "F1980"
## [25] "F1981"            "F1982"             "F1983"
## [28] "F1984"            "F1985"             "F1986"
## [31] "F1987"            "F1988"             "F1989"
## [34] "F1990"            "F1991"             "F1992"
## [37] "F1993"            "F1994"             "F1995"
## [40] "F1996"            "F1997"             "F1998"
## [43] "F1999"            "F2000"             "F2001"
## [46] "F2002"            "F2003"             "F2004"
## [49] "F2005"            "F2006"             "F2007"
## [52] "F2008"            "F2009"             "F2010"
## [55] "F2011"            "F2012"             "F2013"
## [58] "F2014"            "F2015"             "F2016"
## [61] "F2017"            "F2018"             "F2019"
## [64] "F2020"            "F2021"             "F2022"
## [67] "Indicator"        "IS02"              "IS03"
## [70] "ObjectId"         "Source"            "Unit"
```

Print Top 15 Rows of Dataset

```
head(df, 15)
```

```
##      ObjectId      Country IS02 IS03
## 1          1 Afghanistan, Islamic Rep. of AF AFG
## 2          2      Albania AL ALB
## 3          3      Algeria DZ DZA
## 4          4      American Samoa AS ASM
## 5          5 Andorra, Principality of AD AND
## 6          6      Angola AO AGO
## 7          7      Anguilla AI AIA
## 8          8      Antigua and Barbuda AG ATG
## 9          9      Argentina AR ARG
## 10         10      Armenia, Rep. of AM ARM
## 11         11 Aruba, Kingdom of the Netherlands AW ABW
## 12         12      Australia AU AUS
## 13         13      Austria AT AUT
## 14         14      Azerbaijan, Rep. of AZ AZE
## 15         15      Bahamas, The BS BHS
##
```

Indicator

```

## 1 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 2 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 3 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 4 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 5 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 6 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 7 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 8 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 9 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 10 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 11 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 12 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 13 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 14 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 15 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
##          Unit
## 1 Degree Celsius
## 2 Degree Celsius
## 3 Degree Celsius
## 4 Degree Celsius
## 5 Degree Celsius
## 6 Degree Celsius
## 7 Degree Celsius
## 8 Degree Celsius
## 9 Degree Celsius
## 10 Degree Celsius
## 11 Degree Celsius
## 12 Degree Celsius
## 13 Degree Celsius
## 14 Degree Celsius
## 15 Degree Celsius
##
## 1 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Change
## 2 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Change
## 3 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Change
## 4 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Change
## 5 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Change
## 6 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Change
## 7 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Change
## 8 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Change
## 9 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Change
## 10 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Change
## 11 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Change
## 12 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Change
## 13 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Change
## 14 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Change
## 15 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Change
##      CTS_Code      CTS_Name
## 1      ECCS Surface Temperature Change
## 2      ECCS Surface Temperature Change
## 3      ECCS Surface Temperature Change
## 4      ECCS Surface Temperature Change
## 5      ECCS Surface Temperature Change
## 6      ECCS Surface Temperature Change

```

```

## 7      ECCS Surface Temperature Change
## 8      ECCS Surface Temperature Change
## 9      ECCS Surface Temperature Change
## 10     ECCS Surface Temperature Change
## 11     ECCS Surface Temperature Change
## 12     ECCS Surface Temperature Change
## 13     ECCS Surface Temperature Change
## 14     ECCS Surface Temperature Change
## 15     ECCS Surface Temperature Change
##
##                                     CTS_Full_Descriptor
## 1 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 2 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 3 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 4 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 5 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 6 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 7 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 8 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 9 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 10 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 11 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 12 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 13 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 14 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 15 Environment, Climate Change, Climate Indicators, Surface Temperature Change
##      F1961 F1962 F1963 F1964 F1965 F1966 F1967 F1968 F1969 F1970 F1971
## 1 -0.113 -0.164 0.847 -0.764 -0.244 0.226 -0.371 -0.423 -0.539 0.813 0.619
## 2 0.627 0.326 0.075 -0.166 -0.388 0.559 -0.074 0.081 -0.013 -0.106 -0.195
## 3 0.164 0.114 0.077 0.250 -0.100 0.433 -0.026 -0.067 0.291 0.116 -0.385
## 4 0.079 -0.042 0.169 -0.140 -0.562 0.181 -0.368 -0.187 0.132 -0.047 -0.477
## 5 0.736 0.112 -0.752 0.308 -0.490 0.415 0.637 0.018 -0.137 0.121 -0.326
## 6 0.041 -0.152 -0.190 -0.229 -0.196 0.175 -0.081 -0.193 0.188 0.248 -0.097
## 7 0.086 -0.024 0.234 0.189 -0.365 -0.001 -0.257 -0.200 0.317 0.082 -0.269
## 8 0.090 0.031 0.288 0.214 -0.385 0.097 -0.192 -0.225 0.271 0.109 -0.233
## 9 0.122 -0.046 0.162 -0.343 0.090 -0.163 0.000 0.472 0.292 0.438 -0.260
## 10 NA NA NA NA NA NA NA NA NA NA NA
## 11 -0.100 0.138 0.084 0.271 -0.180 0.122 -0.258 0.055 0.476 0.354 -0.349
## 12 0.157 0.126 -0.096 -0.012 0.140 -0.230 -0.093 -0.203 0.103 -0.007 -0.044
## 13 1.031 -0.621 -0.727 -0.371 -0.883 0.602 0.676 0.211 -0.126 -0.550 -0.060
## 14 NA NA NA NA NA NA NA NA NA NA NA
## 15 0.073 -0.062 -0.097 0.192 0.054 -0.172 -0.146 -0.324 -0.065 -0.469 -0.055
##      F1972 F1973 F1974 F1975 F1976 F1977 F1978 F1979 F1980 F1981 F1982
## 1 -1.124 0.232 -0.489 -0.445 -0.286 0.513 0.129 0.361 0.600 0.483 -0.346
## 2 -0.069 -0.288 -0.139 -0.211 -0.683 0.545 -0.814 0.203 -0.414 -0.351 0.173
## 3 -0.348 -0.015 -0.503 -0.539 -0.782 0.504 0.012 0.654 0.232 0.215 0.399
## 4 -0.067 0.330 -0.308 -0.118 -0.177 0.156 0.092 0.341 0.350 0.179 0.280
## 5 -0.499 0.025 -0.371 0.246 -0.045 -0.093 -0.163 0.058 -0.188 0.178 1.044
## 6 -0.035 0.475 -0.158 -0.029 -0.313 0.272 0.037 0.291 0.279 -0.071 0.164
## 7 -0.179 0.170 -0.370 -0.334 -0.426 0.096 0.130 0.034 0.698 0.532 0.097
## 8 -0.214 0.164 -0.377 -0.419 -0.467 0.076 0.161 0.160 0.646 0.564 0.162
## 9 -0.008 -0.139 -0.106 -0.021 -0.321 0.432 0.362 0.266 0.373 0.378 0.359
## 10 NA NA NA NA NA NA NA NA NA NA NA
## 11 -0.020 0.149 -0.448 -0.253 -0.518 0.182 NA NA 0.452 0.469 0.309
## 12 0.091 0.831 -0.354 0.048 -0.522 0.176 0.062 0.375 0.887 0.495 0.186

```

## 13	0.103	-0.033	0.314	0.860	0.216	0.499	-0.476	-0.112	-0.274	0.277	0.384	
## 14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
## 15	0.301	0.166	-0.058	0.334	-0.241	-0.040	0.040	0.133	0.377	-0.030	0.531	
##	F1983	F1984	F1985	F1986	F1987	F1988	F1989	F1990	F1991	F1992	F1993	
## 1	0.164	0.145	0.283	-0.141	0.391	0.919	-0.205	0.730	-0.168	-0.294	0.220	
## 2	-0.128	-0.270	-0.103	0.569	-0.106	0.370	-0.066	0.795	-0.269	0.106	0.076	
## 3	0.560	-0.004	0.508	0.296	0.975	1.304	0.386	1.266	0.031	-0.312	0.552	
## 4	0.313	0.277	0.256	0.394	0.354	0.509	0.143	0.497	0.641	0.344	-0.069	
## 5	0.859	-0.157	0.059	0.387	0.397	0.883	1.162	1.736	0.231	0.386	0.174	
## 6	0.487	0.631	0.694	0.176	0.689	0.572	-0.055	0.687	0.341	0.466	0.256	
## 7	0.524	0.105	0.006	0.013	0.569	0.457	-0.002	0.432	0.441	0.365	0.535	
## 8	0.489	0.009	-0.051	-0.023	0.649	0.395	-0.077	0.417	0.459	0.445	0.528	
## 9	0.046	-0.100	0.308	0.460	0.446	-0.192	0.611	0.436	0.261	-0.261	0.086	
## 10	NA	NA	NA	NA	NA	NA	NA	NA	NA	-1.310	-0.932	
## 11	0.602	-0.020	-0.076	0.040	0.806	0.388	-0.066	0.279	0.331	NA	NA	
## 12	0.633	-0.157	0.349	0.388	0.363	0.960	0.153	0.549	0.820	0.281	0.484	
## 13	1.062	-0.249	-0.568	0.319	-0.263	0.820	1.104	1.262	0.125	1.248	0.527	
## 14	NA	NA	NA	NA	NA	NA	NA	NA	NA	-0.839	-1.009	
## 15	0.155	0.020	0.242	0.230	0.466	0.426	0.672	0.764	0.788	0.286	0.378	
##	F1994	F1995	F1996	F1997	F1998	F1999	F2000	F2001	F2002	F2003	F2004	F2005
## 1	0.430	0.359	-0.116	0.471	0.675	1.198	0.993	1.311	1.365	0.587	1.373	0.401
## 2	1.330	-0.172	-0.038	0.075	0.795	0.670	1.065	1.532	0.492	0.970	0.444	0.189
## 3	0.732	0.595	0.846	1.059	1.109	1.476	0.820	1.856	1.258	1.585	0.988	1.264
## 4	0.189	0.755	0.784	NA	NA	0.242	0.626	0.904	1.152	0.716	0.191	0.801
## 5	1.508	1.279	0.570	1.788	1.018	1.055	1.050	1.480	0.835	1.949	0.936	0.851
## 6	0.212	0.753	0.370	0.107	1.064	0.417	0.169	0.295	0.735	0.889	0.414	1.021
## 7	0.575	0.651	0.350	0.459	1.060	0.532	0.264	0.587	0.706	0.816	0.521	0.828
## 8	0.493	0.677	0.377	0.455	1.046	0.541	0.335	NA	0.634	0.783	0.501	0.843
## 9	0.487	0.259	0.512	0.759	0.351	0.160	-0.186	0.425	0.278	0.635	0.470	0.281
## 10	0.481	0.697	0.470	0.599	1.316	1.488	1.031	1.395	1.194	0.141	1.162	0.480
## 11	0.528	0.802	NA	NA	NA	NA	NA	NA	NA	1.067	0.661	0.836
## 12	0.221	0.413	0.604	0.383	1.092	0.580	0.148	0.336	0.736	0.835	0.723	1.211
## 13	1.958	0.939	-0.203	0.514	1.343	0.986	1.769	1.501	1.531	1.464	0.829	0.628
## 14	0.098	1.012	0.244	0.582	1.184	1.224	1.098	1.401	1.432	-0.147	1.303	0.814
## 15	0.801	0.671	0.008	0.787	0.924	0.619	0.163	0.135	0.856	0.989	0.311	0.455
##	F2006	F2007	F2008	F2009	F2010	F2011	F2012	F2013	F2014	F2015	F2016	F2017
## 1	1.720	0.675	0.704	0.895	1.613	1.397	0.223	1.281	0.456	1.093	1.555	1.540
## 2	0.345	1.316	0.978	0.910	1.191	1.055	1.487	1.333	1.198	1.569	1.464	1.121
## 3	1.395	1.220	1.185	0.945	2.265	1.398	1.147	1.192	1.690	1.121	1.757	1.512
## 4	0.403	1.032	0.670	NA	1.311	0.854	0.924	1.257	1.170	1.009	1.539	1.435
## 5	1.485	1.024	0.946	1.413	0.471	1.677	1.265	0.831	1.946	1.690	1.990	1.925
## 6	0.561	0.885	0.501	0.708	1.194	0.880	0.552	1.044	0.828	1.331	1.609	0.870
## 7	0.691	0.957	0.411	0.566	1.090	0.489	0.640	0.770	0.814	1.051	1.125	0.960
## 8	0.659	0.934	0.394	0.498	1.153	0.586	0.696	0.783	0.744	1.035	1.097	0.958
## 9	0.596	-0.169	0.601	0.857	0.135	0.386	0.798	0.442	0.951	0.957	0.488	1.095
## 10	1.621	0.706	0.861	0.706	2.775	0.650	1.247	1.407	1.283	1.931	1.356	0.889
## 11	0.510	0.935	NA	NA	1.309	0.509	0.580	1.094	0.986	1.149	NA	1.303
## 12	0.721	0.929	0.625	1.030	0.673	0.208	0.308	1.499	1.198	1.087	1.172	1.141
## 13	0.907	2.137	1.582	1.544	0.656	1.373	1.783	1.098	2.409	2.167	2.096	1.741
## 14	1.488	0.958	0.883	0.780	2.327	0.766	1.474	1.574	1.252	1.672	1.530	1.308
## 15	0.385	0.937	0.842	0.410	0.314	0.363	0.344	0.565	0.883	1.114	1.042	1.331
##	F2018	F2019	F2020	F2021	F2022							
## 1	1.544	0.910	0.498	1.327	2.012							
## 2	2.028	1.675	1.498	1.536	1.518							

```
## 3  1.210 1.115 1.926 2.330 1.688
## 4  1.189 1.539 1.430 1.268 1.256
## 5  1.919 1.964 2.562 1.533 3.243
## 6  1.395 1.752 1.162 1.553 1.212
## 7  0.664 0.843 1.224 0.893 0.839
## 8  0.627 0.797 1.131 0.862 0.770
## 9  0.878 0.760 1.123 1.031 0.643
## 10 2.772 1.859 1.954 2.087 1.707
## 11 0.698 1.007 1.281    NA    NA
## 12 1.129 1.422 1.416 0.629 0.754
## 13 2.524 2.370 2.315 1.395 2.498
## 14 2.240 1.997 2.015 2.061 2.080
## 15 1.023 1.443 1.611 0.879 1.480
```

User-Defined Function

Create a User Defined Function

```
celsius_to_fahreheit <- function(temp) { return ((temp * 9/5) + 32)}
df$F2022_Fahrenheit <- celsius_to_fahreheit(df$F2022)
print(df$F2022_Fahrenheit)
```

```
## [1] 35.6216 34.7324 35.0384 34.2608 37.8374 34.1816 33.5102 33.3860 33.1574
## [10] 35.0726    NA 33.3572 36.4964 35.7440 34.6640 35.6306 34.1888    NA
## [19] 35.4596 37.0526 33.8558 33.5912 34.7414 33.1592 35.7638 29.6510 33.6668
## [28] 33.5750 34.6028 35.2958 33.4436    NA 35.3354 33.7064 33.8792 34.2824
## [37] 33.7532 33.8576 33.3284 32.7326 34.5776 34.5776 35.4308 33.5732 32.9378
## [46] 34.6640 34.2410 32.8622    NA 35.9762 34.5866 34.2266 36.3092 35.9942
## [55] 34.7846 33.2384 33.7676 33.3248 33.1790 33.1844 34.2446 32.9540 35.5298
## [64] 34.4678 34.6190    NA 34.5128 34.4228 35.7116 37.2722 32.6462 33.7892
## [73] 34.3814 34.7180 36.6728 33.7928 36.0104 33.8720 34.5434 33.2564 33.3914
## [82] 33.6488 34.1510 34.3310 33.9188 33.9710 35.6504 33.3014 35.8556 34.1618
## [91] 33.4220 33.9530 36.2660 35.8646 35.1752 35.3120 33.9422 35.8430 34.0520
## [100] 34.4030 34.4444 36.8816 34.3040    NA 34.8980 34.9862 36.0950 36.7142
## [109] 34.0016 35.5154 34.3220 34.4696 34.8008 33.0062 36.5612 35.5280 37.2668
## [118] 33.5480 33.4688 34.4606 33.4112 33.5966 35.5190 32.0126 33.2312 35.0798
## [127] 33.0710 33.2204 34.2482 33.1286 35.8574 36.9266 35.9546 35.3570 33.3860
## [136] 36.1454 33.5012 34.5848 32.4302    NA 34.0376 36.6818 36.3578 34.3742
## [145] 33.5156 32.7704 33.4238    NA 34.2050 34.5272 35.4524 33.8990 34.5002
## [154] 35.0096 33.3104 34.1978 33.1682 33.5804 34.5290    NA 35.7008 36.1724
## [163] 33.5264 35.3390 35.5082 36.0698    NA 35.0348 35.4992 34.0808 35.8070
## [172] 34.3778 35.1410 34.5290 35.4884 33.5696 34.3904 34.3598 35.6324 36.3830
## [181] 33.8684 34.6082 33.9692 33.7694 36.4802 33.8072 33.3860 33.2402 33.2564
## [190] 33.3914 34.3328 35.7980 37.0364 34.7630 34.4894 35.7332 33.6398 33.8252
## [199] 34.3670 33.7550    NA 33.5228 33.2852 36.1238 36.5504 33.6992 33.1934
## [208] 34.5488 35.4758 34.6676 35.4398 34.1906 33.6092 32.6876 36.6926 34.6622
## [217] 32.9594 33.8594 33.7118 33.9332 35.5460 34.5092    NA 33.2348 31.1180
```

Data Manipulation

Filtering Rows using `subset()` where `Country = Canada`

```
canada_df <- subset(df, IS03 == "CAN")
head(canada_df)
```

```
##      ObjectId Country IS02 IS03
## 36          36  Canada  CA  CAN
##
##                                     Indicator
## 36 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
##          Unit
## 36 Degree Celsius
##
## 36 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Clim
##      CTS_Code          CTS_Name
## 36      ECCS Surface Temperature Change
##
##                                     CTS_Full_Descriptor
## 36 Environment, Climate Change, Climate Indicators, Surface Temperature Change
##      F1961 F1962 F1963 F1964 F1965 F1966 F1967 F1968 F1969 F1970 F1971
## 36 0.057 -0.118 0.335 -0.299 -0.867 -0.152 -0.452 0.476 -0.003 0.426 -0.023
##      F1972 F1973 F1974 F1975 F1976 F1977 F1978 F1979 F1980 F1981 F1982 F1983
## 36 -1.796 0.306 -0.846 0.225 0.083 1.079 -0.605 -0.214 0.917 1.562 -0.673 0.488
##      F1984 F1985 F1986 F1987 F1988 F1989 F1990 F1991 F1992 F1993 F1994 F1995
## 36 0.337 -0.311 0.011 1.34 1.204 0.017 0.078 0.336 0.1 0.342 0.467 0.938
##      F1996 F1997 F1998 F1999 F2000 F2001 F2002 F2003 F2004 F2005 F2006 F2007
## 36 -0.125 0.426 2.47 1.694 1.291 1.421 0.54 1.24 0.485 1.282 2.343 1.333
##      F2008 F2009 F2010 F2011 F2012 F2013 F2014 F2015 F2016 F2017 F2018 F2019
## 36 0.851 0.539 2.915 1.438 2.144 1.182 0.288 1.231 2.373 1.48 0.477 1.311
##      F2020 F2021 F2022 F2022_Fahrenheit
## 36 1.128 2.515 1.268          34.2824
```

Identify dependent and Independent Variables and Reshape the data

```
#selected two columns for reshaping i.e. Country and F2022
selected_data <- df[, c("Country", "F2022")]
library(reshape2)
melted_data <- melt(selected_data, id.vars = "Country",
                    variable.name = "Year", value.name = "TemperatureChange")
print(melted_data)
```

```
##          Country Year TemperatureChange
## 1 Afghanistan, Islamic Rep. of F2022      2.012
## 2 Albania F2022      1.518
## 3 Algeria F2022      1.688
## 4 American Samoa F2022      1.256
## 5 Andorra, Principality of F2022      3.243
## 6 Angola F2022      1.212
## 7 Anguilla F2022      0.839
## 8 Antigua and Barbuda F2022      0.770
```


## 9	Argentina F2022	0.643
## 10	Armenia, Rep. of F2022	1.707
## 11	Aruba, Kingdom of the Netherlands F2022	NA
## 12	Australia F2022	0.754
## 13	Austria F2022	2.498
## 14	Azerbaijan, Rep. of F2022	2.080
## 15	Bahamas, The F2022	1.480
## 16	Bahrain, Kingdom of F2022	2.017
## 17	Bangladesh F2022	1.216
## 18	Barbados F2022	NA
## 19	Belarus, Rep. of F2022	1.922
## 20	Belgium F2022	2.807
## 21	Belize F2022	1.031
## 22	Benin F2022	0.884
## 23	Bhutan F2022	1.523
## 24	Bolivia F2022	0.644
## 25	Bosnia and Herzegovina F2022	2.091
## 26	Botswana F2022	-1.305
## 27	Brazil F2022	0.926
## 28	British Virgin Islands F2022	0.875
## 29	Brunei Darussalam F2022	1.446
## 30	Bulgaria F2022	1.831
## 31	Burkina Faso F2022	0.802
## 32	Burundi F2022	NA
## 33	Cabo Verde F2022	1.853
## 34	Cambodia F2022	0.948
## 35	Cameroon F2022	1.044
## 36	Canada F2022	1.268
## 37	Cayman Islands F2022	0.974
## 38	Central African Rep. F2022	1.032
## 39	Chad F2022	0.738
## 40	Chile F2022	0.407
## 41	China, P.R.: Hong Kong F2022	1.432
## 42	China, P.R.: Macao F2022	1.432
## 43	China, P.R.: Mainland F2022	1.906
## 44	Colombia F2022	0.874
## 45	Comoros, Union of the F2022	0.521
## 46	Congo, Dem. Rep. of the F2022	1.480
## 47	Congo, Rep. of F2022	1.245
## 48	Cook Islands F2022	0.479
## 49	Costa Rica F2022	NA
## 50	Croatia, Rep. of F2022	2.209
## 51	Cuba F2022	1.437
## 52	Cyprus F2022	1.237
## 53	Czech Rep. F2022	2.394
## 54	Denmark F2022	2.219
## 55	Djibouti F2022	1.547
## 56	Dominica F2022	0.688
## 57	Dominican Rep. F2022	0.982
## 58	Ecuador F2022	0.736
## 59	Egypt, Arab Rep. of F2022	0.655
## 60	El Salvador F2022	0.658
## 61	Equatorial Guinea, Rep. of F2022	1.247
## 62	Eritrea, The State of F2022	0.530

## 63	Estonia, Rep. of F2022	1.961
## 64	Eswatini, Kingdom of F2022	1.371
## 65	Ethiopia, The Federal Dem. Rep. of F2022	1.455
## 66	Falkland Islands (Malvinas) F2022	NA
## 67	Faroe Islands F2022	1.396
## 68	Fiji, Rep. of F2022	1.346
## 69	Finland F2022	2.062
## 70	France F2022	2.929
## 71	French Polynesia F2022	0.359
## 72	Gabon F2022	0.994
## 73	Gambia, The F2022	1.323
## 74	Georgia F2022	1.510
## 75	Germany F2022	2.596
## 76	Ghana F2022	0.996
## 77	Gibraltar F2022	2.228
## 78	Greece F2022	1.040
## 79	Greenland F2022	1.413
## 80	Grenada F2022	0.698
## 81	Guadeloupe F2022	0.773
## 82	Guatemala F2022	0.916
## 83	Guinea F2022	1.195
## 84	Guinea-Bissau F2022	1.295
## 85	Guyana F2022	1.066
## 86	Haiti F2022	1.095
## 87	Holy See F2022	2.028
## 88	Honduras F2022	0.723
## 89	Hungary F2022	2.142
## 90	Iceland F2022	1.201
## 91	India F2022	0.790
## 92	Indonesia F2022	1.085
## 93	Iran, Islamic Rep. of F2022	2.370
## 94	Iraq F2022	2.147
## 95	Ireland F2022	1.764
## 96	Isle of Man F2022	1.840
## 97	Israel F2022	1.079
## 98	Italy F2022	2.135
## 99	Jamaica F2022	1.140
## 100	Japan F2022	1.335
## 101	Jordan F2022	1.358
## 102	Kazakhstan, Rep. of F2022	2.712
## 103	Kenya F2022	1.280
## 104	Kiribati F2022	NA
## 105	Korea, Dem. People's Rep. of F2022	1.610
## 106	Korea, Rep. of F2022	1.659
## 107	Kuwait F2022	2.275
## 108	Kyrgyz Rep. F2022	2.619
## 109	Lao People's Dem. Rep. F2022	1.112
## 110	Latvia F2022	1.953
## 111	Lebanon F2022	1.290
## 112	Lesotho, Kingdom of F2022	1.372
## 113	Liberia F2022	1.556
## 114	Libya F2022	0.559
## 115	Liechtenstein F2022	2.534
## 116	Lithuania F2022	1.960

## 117	Luxembourg F2022	2.926
## 118	Madagascar, Rep. of F2022	0.860
## 119	Malawi F2022	0.816
## 120	Malaysia F2022	1.367
## 121	Maldives F2022	0.784
## 122	Mali F2022	0.887
## 123	Malta F2022	1.955
## 124	Marshall Islands, Rep. of the F2022	0.007
## 125	Martinique F2022	0.684
## 126	Mauritania, Islamic Rep. of F2022	1.711
## 127	Mauritius F2022	0.595
## 128	Mayotte F2022	0.678
## 129	Mexico F2022	1.249
## 130	Micronesia, Federated States of F2022	0.627
## 131	Moldova, Rep. of F2022	2.143
## 132	Monaco F2022	2.737
## 133	Mongolia F2022	2.197
## 134	Montenegro F2022	1.865
## 135	Montserrat F2022	0.770
## 136	Morocco F2022	2.303
## 137	Mozambique, Rep. of F2022	0.834
## 138	Myanmar F2022	1.436
## 139	Namibia F2022	0.239
## 140	Nauru, Rep. of F2022	NA
## 141	Nepal F2022	1.132
## 142	Netherlands, The F2022	2.601
## 143	New Caledonia F2022	2.421
## 144	New Zealand F2022	1.319
## 145	Nicaragua F2022	0.842
## 146	Niger F2022	0.428
## 147	Nigeria F2022	0.791
## 148	Niue F2022	NA
## 149	Norfolk Island F2022	1.225
## 150	North Macedonia, Republic of F2022	1.404
## 151	Norway F2022	1.918
## 152	Oman F2022	1.055
## 153	Pakistan F2022	1.389
## 154	Palau, Rep. of F2022	1.672
## 155	Panama F2022	0.728
## 156	Papua New Guinea F2022	1.221
## 157	Paraguay F2022	0.649
## 158	Peru F2022	0.878
## 159	Philippines F2022	1.405
## 160	Pitcairn Islands F2022	NA
## 161	Poland, Rep. of F2022	2.056
## 162	Portugal F2022	2.318
## 163	Puerto Rico F2022	0.848
## 164	Qatar F2022	1.855
## 165	Romania F2022	1.949
## 166	Russian Federation F2022	2.261
## 167	Rwanda F2022	NA
## 168	Saint Helena F2022	1.686
## 169	Saint Pierre and Miquelon F2022	1.944
## 170	Samoa F2022	1.156

## 171	San Marino, Rep. of F2022	2.115
## 172	São Tomé and Príncipe, Dem. Rep. of F2022	1.321
## 173	Saudi Arabia F2022	1.745
## 174	Senegal F2022	1.405
## 175	Serbia, Rep. of F2022	1.938
## 176	Seychelles F2022	0.872
## 177	Sierra Leone F2022	1.328
## 178	Singapore F2022	1.311
## 179	Slovak Rep. F2022	2.018
## 180	Slovenia, Rep. of F2022	2.435
## 181	Solomon Islands F2022	1.038
## 182	Somalia F2022	1.449
## 183	South Africa F2022	1.094
## 184	South Sudan, Rep. of F2022	0.983
## 185	Spain F2022	2.489
## 186	Sri Lanka F2022	1.004
## 187	St. Kitts and Nevis F2022	0.770
## 188	St. Lucia F2022	0.689
## 189	St. Vincent and the Grenadines F2022	0.698
## 190	Sudan F2022	0.773
## 191	Suriname F2022	1.296
## 192	Sweden F2022	2.110
## 193	Switzerland F2022	2.798
## 194	Syrian Arab Rep. F2022	1.535
## 195	Taiwan Province of China F2022	1.383
## 196	Tajikistan, Rep. of F2022	2.074
## 197	Tanzania, United Rep. of F2022	0.911
## 198	Thailand F2022	1.014
## 199	Timor-Leste, Dem. Rep. of F2022	1.315
## 200	Togo F2022	0.975
## 201	Tokelau F2022	NA
## 202	Tonga F2022	0.846
## 203	Trinidad and Tobago F2022	0.714
## 204	Tunisia F2022	2.291
## 205	Turkmenistan F2022	2.528
## 206	Turks and Caicos Islands F2022	0.944
## 207	Tuvalu F2022	0.663
## 208	Uganda F2022	1.416
## 209	Ukraine F2022	1.931
## 210	United Arab Emirates F2022	1.482
## 211	United Kingdom F2022	1.911
## 212	United States F2022	1.217
## 213	United States Virgin Islands F2022	0.894
## 214	Uruguay F2022	0.382
## 215	Uzbekistan, Rep. of F2022	2.607
## 216	Vanuatu F2022	1.479
## 217	Venezuela, Rep. Bolivariana de F2022	0.533
## 218	Vietnam F2022	1.033
## 219	Wallis and Futuna Islands F2022	0.951
## 220	West Bank and Gaza F2022	1.074
## 221	Western Sahara F2022	1.970
## 222	World F2022	1.394
## 223	Yemen, Rep. of F2022	NA
## 224	Zambia F2022	0.686

```
## 225
```

Zimbabwe F2022

-0.490

Remove Missing Values from Data Frame

```
df <- na.omit(df)
```

Identify and Remove Duplicated Data

```
#identify duplicate rows  
duplicate_rows <- duplicated(df)  
print("Duplicate Rows:")
```

```
## [1] "Duplicate Rows:"
```

```
print(duplicate_rows)
```

```
## [1] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE  
## [13] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE  
## [25] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE  
## [37] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE  
## [49] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE  
## [61] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE  
## [73] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE  
## [85] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE  
## [97] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE  
## [109] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE  
## [121] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE  
## [133] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE  
## [145] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE  
## [157] FALSE
```

```
#Remove duplicate rows  
unique_df <- unique(df)  
print("DataFrame after removing duplicates:")
```

```
## [1] "DataFrame after removing duplicates:"
```

```
print(unique_df)
```

```
##      ObjectId      Country ISO2 ISO3  
## 1           1 Afghanistan, Islamic Rep. of AF AFG  
## 2           2      Albania AL ALB  
## 3           3      Algeria DZ DZA  
## 5           5 Andorra, Principality of AD AND  
## 6           6      Angola AO AGO  
## 7           7    Anguilla AI AIA  
## 9           9    Argentina AR ARG
```

## 12	12	Australia	AU	AUS
## 13	13	Austria	AT	AUT
## 15	15	Bahamas, The	BS	BHS
## 16	16	Bahrain, Kingdom of	BH	BHR
## 17	17	Bangladesh	BD	BGD
## 21	21	Belize	BZ	BLZ
## 22	22	Benin	BJ	BEN
## 23	23	Bhutan	BT	BTN
## 24	24	Bolivia	BO	BOL
## 26	26	Botswana	BW	BWA
## 27	27	Brazil	BR	BRA
## 28	28	British Virgin Islands	VG	VGB
## 29	29	Brunei Darussalam	BN	BRN
## 30	30	Bulgaria	BG	BGR
## 31	31	Burkina Faso	BF	BFA
## 34	34	Cambodia	KH	KHM
## 35	35	Cameroon	CM	CMR
## 36	36	Canada	CA	CAN
## 38	38	Central African Rep.	CF	CAF
## 39	39	Chad	TD	TCD
## 40	40	Chile	CL	CHL
## 41	41	China, P.R.: Hong Kong	HK	HKG
## 42	42	China, P.R.: Macao	MO	MAC
## 43	43	China, P.R.: Mainland	CN	CHN
## 44	44	Colombia	CO	COL
## 46	46	Congo, Dem. Rep. of the	CD	COD
## 48	48	Cook Islands	CK	COK
## 51	51	Cuba	CU	CUB
## 52	52	Cyprus	CY	CYP
## 54	54	Denmark	DK	DNK
## 56	56	Dominica	DM	DMA
## 57	57	Dominican Rep.	DO	DOM
## 58	58	Ecuador	EC	ECU
## 59	59	Egypt, Arab Rep. of	EG	EGY
## 60	60	El Salvador	SV	SLV
## 64	64	Eswatini, Kingdom of	SZ	SWZ
## 67	67	Faroe Islands	FO	FRO
## 68	68	Fiji, Rep. of	FJ	FJI
## 69	69	Finland	FI	FIN
## 70	70	France	FR	FRA
## 71	71	French Polynesia	PF	PYF
## 72	72	Gabon	GA	GAB
## 73	73	Gambia, The	GM	GMB
## 75	75	Germany	DE	DEU
## 76	76	Ghana	GH	GHA
## 77	77	Gibraltar	GI	GIB
## 78	78	Greece	GR	GRC
## 79	79	Greenland	GL	GRL
## 80	80	Grenada	GD	GRD
## 81	81	Guadeloupe	GP	GLP
## 82	82	Guatemala	GT	GTM
## 83	83	Guinea	GN	GIN
## 84	84	Guinea-Bissau	GW	GNB
## 85	85	Guyana	GY	GUY

## 86	86	Haiti	HT	HTI
## 87	87	Holy See	VA	VAT
## 88	88	Honduras	HN	HND
## 89	89	Hungary	HU	HUN
## 90	90	Iceland	IS	ISL
## 91	91	India	IN	IND
## 92	92	Indonesia	ID	IDN
## 93	93	Iran, Islamic Rep. of	IR	IRN
## 94	94	Iraq	IQ	IRQ
## 95	95	Ireland	IE	IRL
## 96	96	Isle of Man	IM	IMN
## 97	97	Israel	IL	ISR
## 98	98	Italy	IT	ITA
## 100	100	Japan	JP	JPN
## 101	101	Jordan	JO	JOR
## 103	103	Kenya	KE	KEN
## 105	105	Korea, Dem. People's Rep. of	KP	PRK
## 106	106	Korea, Rep. of	KR	KOR
## 107	107	Kuwait	KW	KWT
## 109	109	Lao People's Dem. Rep.	LA	LAO
## 111	111	Lebanon	LB	LBN
## 112	112	Lesotho, Kingdom of	LS	LSO
## 113	113	Liberia	LR	LBR
## 114	114	Libya	LY	LBY
## 115	115	Liechtenstein	LI	LIE
## 118	118	Madagascar, Rep. of	MG	MDG
## 119	119	Malawi	MW	MWI
## 120	120	Malaysia	MY	MYS
## 122	122	Mali	ML	MLI
## 123	123	Malta	MT	MLT
## 125	125	Martinique	MQ	MTQ
## 126	126	Mauritania, Islamic Rep. of	MR	MRT
## 127	127	Mauritius	MU	MUS
## 129	129	Mexico	MX	MEX
## 132	132	Monaco	MC	MCO
## 133	133	Mongolia	MN	MNG
## 136	136	Morocco	MA	MAR
## 137	137	Mozambique, Rep. of	MZ	MOZ
## 138	138	Myanmar	MM	MMR
## 141	141	Nepal	NP	NPL
## 142	142	Netherlands, The	NL	NLD
## 143	143	New Caledonia	NC	NCL
## 144	144	New Zealand	NZ	NZL
## 145	145	Nicaragua	NI	NIC
## 146	146	Niger	NE	NER
## 147	147	Nigeria	NG	NGA
## 151	151	Norway	NO	NOR
## 152	152	Oman	OM	OMN
## 153	153	Pakistan	PK	PAK
## 156	156	Papua New Guinea	PG	PNG
## 157	157	Paraguay	PY	PRY
## 158	158	Peru	PE	PER
## 159	159	Philippines	PH	PHL
## 161	161	Poland, Rep. of	PL	POL

## 162	162	Portugal	PT	PRT
## 163	163	Puerto Rico	PR	PRI
## 164	164	Qatar	QA	QAT
## 165	165	Romania	RO	ROU
## 168	168	Saint Helena	SH	SHN
## 169	169	Saint Pierre and Miquelon	PM	SPM
## 171	171	San Marino, Rep. of	SM	SMR
## 173	173	Saudi Arabia	SA	SAU
## 174	174	Senegal	SN	SEN
## 176	176	Seychelles	SC	SYC
## 182	182	Somalia	SO	SOM
## 183	183	South Africa	ZA	ZAF
## 185	185	Spain	ES	ESP
## 186	186	Sri Lanka	LK	LKA
## 188	188	St. Lucia	LC	LCA
## 189	189	St. Vincent and the Grenadines	VC	VCT
## 191	191	Suriname	SR	SUR
## 192	192	Sweden	SE	SWE
## 193	193	Switzerland	CH	CHE
## 194	194	Syrian Arab Rep.	SY	SYR
## 195	195	Taiwan Province of China	TW	TWN
## 197	197	Tanzania, United Rep. of	TZ	TZA
## 198	198	Thailand	TH	THA
## 200	200	Togo	TG	TGO
## 202	202	Tonga	TO	TON
## 203	203	Trinidad and Tobago	TT	TTO
## 204	204	Tunisia	TN	TUN
## 208	208	Uganda	UG	UGA
## 210	210	United Arab Emirates	AE	ARE
## 211	211	United Kingdom	GB	GBR
## 212	212	United States	US	USA
## 213	213	United States Virgin Islands	VI	VIR
## 214	214	Uruguay	UY	URY
## 216	216	Vanuatu	VU	VUT
## 217	217	Venezuela, Rep. Bolivariana de	VE	VEN
## 218	218	Vietnam	VN	VNM
## 219	219	Wallis and Futuna Islands	WF	WLF
## 220	220	West Bank and Gaza	PS	PSE
## 221	221	Western Sahara	EH	ESH
## 222	222	World		WLD
## 224	224	Zambia	ZM	ZMB
## 225	225	Zimbabwe	ZW	ZWE

##		Indicator
## 1	Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980	
## 2	Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980	
## 3	Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980	
## 5	Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980	
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## 7	Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980	
## 9	Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980	
## 12	Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980	
## 13	Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980	
## 15	Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980	
## 16	Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980	

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1 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Change
 ## 2 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Change
 ## 3 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Change
 ## 5 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Change
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 ## 28 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Change

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## 195 Environment, Climate Change, Climate Indicators, Surface Temperature Change
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##      F1961 F1962 F1963 F1964 F1965 F1966 F1967 F1968 F1969 F1970
## 1  -0.113 -0.164 0.847 -0.764 -0.244 0.226 -0.371 -0.423 -0.539 0.813
## 2   0.627 0.326 0.075 -0.166 -0.388 0.559 -0.074 0.081 -0.013 -0.106
## 3   0.164 0.114 0.077 0.250 -0.100 0.433 -0.026 -0.067 0.291 0.116
## 5   0.736 0.112 -0.752 0.308 -0.490 0.415 0.637 0.018 -0.137 0.121
## 6   0.041 -0.152 -0.190 -0.229 -0.196 0.175 -0.081 -0.193 0.188 0.248
## 7   0.086 -0.024 0.234 0.189 -0.365 -0.001 -0.257 -0.200 0.317 0.082
## 9   0.122 -0.046 0.162 -0.343 0.090 -0.163 0.000 0.472 0.292 0.438
## 12  0.157 0.126 -0.096 -0.012 0.140 -0.230 -0.093 -0.203 0.103 -0.007
## 13  1.031 -0.621 -0.727 -0.371 -0.883 0.602 0.676 0.211 -0.126 -0.550
## 15  0.073 -0.062 -0.097 0.192 0.054 -0.172 -0.146 -0.324 -0.065 -0.469
## 16 -0.471 0.397 0.635 -0.561 0.234 0.535 -0.362 -0.446 0.567 0.247
## 17  0.152 -0.265 -0.090 0.107 -0.195 0.308 -0.226 -0.236 -0.007 -0.021
## 21 -0.001 -0.137 -0.060 -0.055 -0.105 -0.195 -0.297 -0.205 0.260 -0.210
## 22 -0.137 -0.240 0.152 -0.218 -0.094 -0.007 -0.252 -0.129 0.303 0.305
## 23  0.213 -0.292 -0.220 0.065 -0.565 0.140 -0.378 -0.478 0.102 -0.027
## 24  0.247 0.012 0.409 -0.123 0.220 -0.083 0.332 -0.162 0.522 0.173
## 26  0.151 0.262 -0.472 -0.057 0.098 0.436 -0.458 -0.195 0.197 0.598
## 27  0.167 -0.184 0.158 -0.213 -0.075 0.044 0.073 -0.409 0.331 0.130
## 28  0.093 -0.072 0.189 0.184 -0.338 -0.110 -0.321 -0.145 0.356 0.051
## 29  0.062 -0.017 -0.165 0.054 -0.235 0.183 -0.093 -0.177 0.227 0.086
## 30  0.903 0.488 -0.248 -0.528 -0.456 1.151 0.027 0.421 -0.485 0.205
## 31 -0.285 -0.208 0.168 -0.218 -0.141 -0.147 -0.174 -0.209 0.543 0.359
## 34 -0.035 -0.134 -0.309 0.156 -0.196 0.433 -0.089 -0.124 0.478 0.069
## 35 -0.117 -0.218 0.126 -0.157 -0.110 -0.010 -0.107 -0.122 0.225 0.175
## 36  0.057 -0.118 0.335 -0.299 -0.867 -0.152 -0.452 0.476 -0.003 0.426
## 38 -0.003 -0.306 0.037 -0.136 -0.050 0.064 -0.229 -0.168 0.143 0.245
## 39 -0.409 -0.260 0.291 -0.176 -0.092 -0.007 -0.377 -0.155 0.553 0.163
## 40 -0.301 0.249 0.054 -0.220 0.115 -0.169 -0.142 0.366 0.155 0.205
## 41  0.055 -0.056 0.330 0.117 0.151 0.652 0.044 -0.654 -0.009 -0.398
## 42  0.055 -0.056 0.330 0.117 0.151 0.652 0.044 -0.654 -0.009 -0.398
## 43  0.259 -0.141 0.289 -0.026 0.078 0.181 -0.282 -0.408 -0.211 -0.300

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## 44	0.090	-0.133	-0.058	0.117	-0.217	0.117	-0.274	-0.238	0.363	0.052
## 46	-0.030	-0.172	-0.038	-0.112	-0.193	0.109	-0.119	-0.158	0.139	0.218
## 48	0.148	-0.064	-0.099	0.163	-0.373	0.035	-0.352	-0.387	-0.009	0.249
## 51	-0.084	-0.070	-0.127	0.102	0.023	-0.325	-0.234	-0.339	0.024	-0.349
## 52	0.039	0.789	0.691	-0.612	-0.208	0.637	-0.774	-0.031	0.165	0.495
## 54	1.117	-0.641	-1.019	-0.274	-0.603	-0.500	0.831	0.277	-0.135	-1.204
## 56	-0.033	0.146	0.256	0.081	-0.297	0.104	-0.230	-0.222	0.382	0.181
## 57	-0.009	-0.070	-0.017	0.167	-0.314	-0.028	-0.202	-0.154	0.310	-0.052
## 58	-0.108	-0.218	-0.062	-0.239	0.111	0.042	-0.422	-0.346	0.442	-0.131
## 59	-0.241	0.640	0.628	-0.373	-0.104	0.447	-0.678	-0.126	0.451	-0.114
## 60	-0.073	-0.248	-0.157	-0.026	-0.074	0.115	-0.423	-0.319	0.280	-0.031
## 64	0.268	0.433	-0.210	0.022	-0.224	0.295	-0.274	-0.431	0.346	0.500
## 67	0.630	-0.480	-0.056	0.478	-0.354	-0.393	-0.120	-0.250	-0.344	-0.510
## 68	0.219	-0.083	-0.046	0.185	-0.643	-0.293	-0.286	-0.103	-0.075	0.118
## 69	1.892	-0.339	-0.401	0.338	-0.263	-1.801	1.088	-1.634	-0.478	-0.629
## 70	0.827	-0.301	-0.955	0.025	-0.625	0.421	0.494	-0.073	0.024	-0.092
## 71	0.207	-0.046	0.037	-0.137	-0.083	0.081	-0.274	-0.516	0.301	0.182
## 72	-0.139	-0.063	0.232	-0.148	-0.164	0.140	-0.127	-0.138	0.110	0.142
## 73	-0.138	-0.047	0.130	-0.192	-0.463	-0.086	-0.381	-0.547	0.832	0.399
## 75	0.990	-0.750	-1.084	-0.328	-0.814	0.407	0.868	0.204	-0.111	-0.832
## 76	-0.070	-0.154	0.141	-0.233	-0.170	0.068	-0.232	-0.170	0.266	0.302
## 77	0.595	0.536	0.022	0.483	-0.087	0.228	-0.125	0.016	-0.310	-0.048
## 78	0.479	0.619	0.305	-0.301	-0.322	0.790	-0.194	0.182	-0.090	0.269
## 79	-0.295	0.842	0.308	0.257	0.800	-0.212	-0.371	-0.260	-0.252	-0.224
## 80	0.114	0.053	0.309	-0.052	-0.196	0.065	-0.233	-0.139	0.504	0.299
## 81	0.041	0.048	0.249	0.150	-0.341	0.051	-0.238	-0.211	0.337	0.123
## 82	-0.045	-0.131	-0.096	-0.052	-0.066	-0.057	-0.366	-0.337	0.413	-0.106
## 83	-0.145	-0.137	0.160	-0.180	-0.095	-0.003	-0.237	-0.151	0.459	0.345
## 84	-0.130	-0.071	0.157	-0.227	-0.383	-0.046	-0.269	-0.432	0.723	0.345
## 85	0.043	-0.009	-0.188	0.320	-0.065	0.212	-0.083	-0.274	0.439	0.489
## 86	-0.012	-0.049	-0.111	0.223	-0.310	-0.025	-0.209	-0.272	0.174	-0.123
## 87	0.735	0.079	-0.137	0.199	-0.415	0.264	0.169	0.036	0.002	-0.130
## 88	-0.058	-0.162	-0.229	-0.029	-0.055	0.006	-0.286	-0.319	0.243	-0.124
## 89	1.176	-0.419	-0.463	-0.877	-0.883	0.755	0.594	0.383	-0.276	-0.508
## 90	0.547	-0.270	-0.091	1.097	-0.131	-0.498	-0.597	-0.635	-0.900	-0.617
## 91	-0.208	-0.479	-0.030	-0.030	-0.072	0.290	-0.210	-0.234	0.303	0.033
## 92	-0.096	-0.030	-0.134	-0.036	-0.257	0.025	-0.163	-0.069	0.151	0.129
## 93	-0.068	0.263	0.755	-0.667	-0.280	0.748	-0.271	-0.246	-0.342	0.978
## 94	-0.189	0.885	0.433	-0.810	-0.134	0.964	-0.843	-0.275	0.241	0.661
## 95	0.264	-0.688	-0.773	0.158	-0.554	-0.033	-0.009	0.072	-0.265	0.060
## 96	0.358	-0.746	-0.820	0.095	-0.579	-0.100	0.105	0.035	-0.287	0.049
## 97	-0.106	0.826	0.842	-0.622	-0.031	0.610	-0.928	-0.118	0.238	0.184
## 98	0.805	0.025	-0.365	0.131	-0.431	0.307	0.301	0.011	-0.107	-0.153
## 100	0.668	0.125	-0.053	0.266	-0.519	0.019	0.034	-0.498	-0.049	-0.381
## 101	-0.189	0.983	0.784	-0.655	-0.005	0.742	-1.048	-0.129	0.383	0.196
## 103	0.258	-0.242	-0.191	-0.442	-0.299	0.062	-0.064	-0.641	0.086	0.181
## 105	0.495	-0.055	-0.105	0.238	-0.208	-0.065	0.165	-0.467	-0.455	-0.379
## 106	0.637	-0.094	-0.472	0.608	-0.178	0.099	0.170	-0.678	-0.288	-0.491
## 107	-0.225	0.800	0.485	-0.781	0.051	0.776	-0.621	-0.253	0.375	0.514
## 109	0.049	-0.271	-0.412	-0.077	-0.176	0.453	-0.123	-0.128	0.514	-0.021
## 111	0.002	0.852	0.749	-0.719	-0.090	0.683	-0.944	-0.089	0.223	0.389
## 112	0.371	0.272	0.026	0.007	-0.078	0.237	-0.106	-0.366	0.505	0.502
## 113	-0.095	-0.074	0.154	-0.133	-0.259	0.050	-0.149	-0.076	0.147	0.272
## 114	-0.473	0.208	0.230	-0.051	-0.077	0.251	-0.557	0.008	0.815	-0.223


```

## 115  1.052 -0.483 -0.775  0.058 -0.840  0.407  0.545  0.013 -0.015 -0.553
## 118  0.522 -0.117 -0.310 -0.397 -0.588 -0.060  0.308 -0.418  0.406  0.228
## 119  0.314 -0.149 -0.427 -0.267 -0.572  0.149  0.090 -0.271  0.290  0.164
## 120 -0.070 -0.085 -0.107  0.036 -0.231  0.131 -0.134 -0.108  0.225  0.115
## 122 -0.301 -0.145  0.213 -0.130 -0.299  0.005 -0.124 -0.287  0.665  0.365
## 123  0.551  0.350 -0.204  0.260 -0.218  0.149  0.131 -0.033 -0.129 -0.144
## 125 -0.040  0.151  0.243  0.062 -0.283  0.067 -0.246 -0.213  0.403  0.186
## 126 -0.047  0.140  0.103  0.057 -0.530  0.112 -0.248 -0.481  0.612  0.701
## 127  0.524 -0.111 -0.155 -0.246 -0.208 -0.019  0.120 -0.213  0.296  0.333
## 129 -0.145  0.190  0.230 -0.284 -0.057 -0.238 -0.098 -0.414  0.179 -0.300
## 132  0.739 -0.048 -0.631  0.408 -0.464  0.210  0.432  0.013 -0.228 -0.017
## 133  0.170 -0.106  1.202 -0.174  0.857  0.371 -0.458 -0.813 -0.861 -0.306
## 136  0.570  0.401  0.179  0.486 -0.286  0.433 -0.032 -0.151  0.030  0.108
## 137  0.391  0.031 -0.435 -0.180 -0.596  0.143  0.120 -0.373  0.289  0.228
## 138 -0.024 -0.112 -0.169  0.036 -0.315  0.377 -0.058 -0.170  0.187 -0.044
## 141  0.130 -0.448 -0.184  0.177 -0.356  0.247 -0.254 -0.394  0.119  0.128
## 142  0.852 -0.908 -1.270 -0.337 -0.728  0.273  0.757  0.156 -0.007 -0.590
## 143 -0.248  0.081 -0.211  0.164 -0.806 -0.638  0.032 -0.429 -0.167  0.454
## 144 -0.282  0.581 -0.356 -0.455 -0.451 -0.233 -0.184 -0.086 -0.374  0.596
## 145 -0.089 -0.329 -0.203 -0.107  0.041  0.185 -0.269 -0.235  0.291 -0.206
## 146 -0.694 -0.135  0.434 -0.261 -0.007 -0.092 -0.364  0.080  0.766  0.051
## 147 -0.241 -0.247  0.271 -0.257 -0.037 -0.063 -0.317 -0.035  0.393  0.218
## 151  1.239 -0.776 -0.130  0.373 -0.264 -1.642  0.558 -0.937 -0.173 -0.695
## 152 -0.274  0.338  0.393 -0.478 -0.315  0.180  0.034 -0.614  0.247  0.855
## 153 -0.272 -0.242  0.422 -0.379 -0.279 -0.142 -0.319 -0.470  0.247  0.556
## 156 -0.162  0.241  0.009  0.105 -0.493 -0.070 -0.220 -0.037  0.123  0.201
## 157  0.563 -0.663  0.903 -0.238 -0.079 -0.088  0.481 -0.041  0.384  0.261
## 158  0.001 -0.116  0.085 -0.203  0.200  0.095 -0.250 -0.312  0.509  0.002
## 159 -0.143 -0.113 -0.357 -0.040 -0.290  0.165 -0.148 -0.115  0.132  0.203
## 161  1.397 -0.515 -0.885 -0.720 -1.064  0.554  1.134  0.458 -0.493 -1.288
## 162  0.815  0.524 -0.086  0.519 -0.230  0.280 -0.041  0.033 -0.342  0.071
## 163 -0.011 -0.098  0.129  0.106 -0.384 -0.044 -0.241 -0.252  0.383  0.021
## 164 -0.542  0.518  0.449 -0.400  0.386  0.439 -0.252 -0.536  0.668  0.267
## 165  1.075  0.169 -0.301 -0.791 -0.674  1.053  0.284  0.432 -0.589 -0.053
## 168  0.144 -0.070  0.040 -0.026 -0.145  0.055 -0.306  0.195  0.045 -0.258
## 169 -0.040 -0.121 -0.190 -0.529 -0.510  0.099  0.183  0.053  0.562  0.953
## 171  0.925 -0.116 -0.388 -0.098 -0.406  0.403  0.385 -0.028 -0.103 -0.096
## 173 -0.157  0.688  0.488 -0.470  0.160  0.650 -0.690 -0.391  0.529  0.363
## 174 -0.185 -0.023  0.082 -0.212 -0.449 -0.079 -0.433 -0.520  0.763  0.557
## 176  0.317  0.088 -0.077 -0.164 -0.531  0.070  0.032 -0.148  0.209  0.320
## 182  0.333 -0.028 -0.211  0.027 -0.388  0.173 -0.090 -0.591  0.018  0.079
## 183  0.251  0.215  0.185 -0.072 -0.025  0.246 -0.073 -0.376  0.287  0.365
## 185  0.728  0.411 -0.233  0.486 -0.200  0.392  0.146  0.093 -0.285  0.131
## 186 -0.105 -0.092 -0.029  0.070 -0.145  0.213 -0.082 -0.066  0.229  0.125
## 188  0.049  0.111  0.258  0.003 -0.245  0.025 -0.249 -0.201  0.436  0.216
## 189  0.108  0.063  0.307 -0.051 -0.197  0.062 -0.238 -0.139  0.504  0.297
## 191 -0.067 -0.046 -0.055  0.047  0.001  0.242 -0.092 -0.277  0.507  0.220
## 192  1.563 -0.690 -0.458  0.393 -0.223 -1.672  0.830 -0.929 -0.207 -1.098
## 193  0.988 -0.357 -0.870  0.137 -0.791  0.466  0.554 -0.062 -0.079 -0.486
## 194 -0.025  0.998  0.543 -0.709 -0.183  0.923 -1.028 -0.187  0.154  0.637
## 195  0.158 -0.160 -0.211  0.251 -0.144  0.288  0.088 -0.935  0.010 -0.336
## 197  0.334 -0.260 -0.270 -0.397 -0.242  0.050  0.027 -0.474  0.350  0.193
## 198 -0.176 -0.164 -0.328 -0.041 -0.228  0.406 -0.058 -0.128  0.464  0.015
## 200 -0.066 -0.156  0.101 -0.145 -0.074  0.121 -0.231 -0.142  0.261  0.305

```

##	202	0.333	-0.183	-0.283	0.239	-0.606	-0.411	-0.210	0.007	-0.203	0.409
##	203	0.188	-0.139	0.299	-0.068	-0.151	0.151	-0.107	-0.171	0.508	0.339
##	204	0.274	0.152	-0.075	0.347	-0.127	0.535	0.023	0.078	0.058	-0.200
##	208	-0.032	-0.295	-0.183	-0.236	-0.117	-0.007	-0.090	-0.268	0.122	0.037
##	210	-0.285	0.538	0.369	-0.287	0.211	0.276	-0.057	-0.616	0.574	0.422
##	211	0.491	-0.734	-0.868	0.025	-0.575	-0.137	0.220	-0.070	-0.213	-0.076
##	212	0.003	-0.026	0.418	-0.282	-0.362	-0.214	0.076	-0.073	-0.267	-0.030
##	213	0.069	-0.082	0.172	0.154	-0.352	-0.089	-0.307	-0.191	0.369	0.051
##	214	0.398	-0.473	0.330	-0.762	0.180	-0.421	0.019	0.385	0.149	0.374
##	216	0.168	0.092	-0.165	0.220	-0.569	-0.270	-0.144	-0.288	0.013	0.299
##	217	0.072	-0.113	-0.012	0.097	-0.096	0.189	-0.199	-0.173	0.514	0.217
##	218	0.014	-0.240	-0.302	0.082	-0.017	0.488	-0.129	-0.304	0.535	-0.062
##	219	0.323	-0.051	0.125	0.187	-0.410	0.048	-0.255	-0.096	-0.210	0.053
##	220	-0.110	0.822	0.848	-0.626	-0.031	0.604	-0.934	-0.110	0.230	0.187
##	221	0.632	0.576	0.333	0.819	-0.337	0.284	-0.026	-0.368	0.383	0.543
##	222	0.211	0.038	0.168	-0.246	-0.223	0.201	-0.117	-0.126	-0.092	0.150
##	224	0.228	-0.168	-0.390	-0.279	-0.418	0.300	-0.014	-0.130	0.243	0.351
##	225	0.267	0.237	-0.458	-0.097	-0.480	0.215	-0.043	0.093	0.215	0.421
##		F1971	F1972	F1973	F1974	F1975	F1976	F1977	F1978	F1979	F1980
##	1	0.619	-1.124	0.232	-0.489	-0.445	-0.286	0.513	0.129	0.361	0.600
##	2	-0.195	-0.069	-0.288	-0.139	-0.211	-0.683	0.545	-0.814	0.203	-0.414
##	3	-0.385	-0.348	-0.015	-0.503	-0.539	-0.782	0.504	0.012	0.654	0.232
##	5	-0.326	-0.499	0.025	-0.371	0.246	-0.045	-0.093	-0.163	0.058	-0.188
##	6	-0.097	-0.035	0.475	-0.158	-0.029	-0.313	0.272	0.037	0.291	0.279
##	7	-0.269	-0.179	0.170	-0.370	-0.334	-0.426	0.096	0.130	0.034	0.698
##	9	-0.260	-0.008	-0.139	-0.106	-0.021	-0.321	0.432	0.362	0.266	0.373
##	12	-0.044	0.091	0.831	-0.354	0.048	-0.522	0.176	0.062	0.375	0.887
##	13	-0.060	0.103	-0.033	0.314	0.860	0.216	0.499	-0.476	-0.112	-0.274
##	15	-0.055	0.301	0.166	-0.058	0.334	-0.241	-0.040	0.040	0.133	0.377
##	16	-0.248	-0.613	-0.273	-0.256	-0.217	-0.501	0.332	0.099	0.856	0.351
##	17	-0.579	-0.012	0.168	-0.125	-0.102	-0.104	-0.275	-0.216	0.495	0.128
##	21	-0.275	0.442	0.347	0.101	-0.059	-0.416	0.134	-0.025	0.524	0.576
##	22	-0.183	0.080	0.627	0.089	-0.274	-0.194	0.357	-0.045	0.499	0.425
##	23	-0.227	-0.014	0.310	0.188	0.103	-0.042	-0.059	-0.213	0.414	0.081
##	24	-0.583	0.130	0.227	-0.154	-0.087	-0.249	0.276	0.270	0.181	0.176
##	26	-0.126	-0.475	0.602	-0.746	-0.225	-0.717	0.300	-0.065	0.543	-0.038
##	27	-0.134	0.114	0.443	-0.179	-0.140	-0.185	0.252	0.030	0.017	0.313
##	28	-0.274	-0.136	0.214	-0.353	-0.218	-0.368	0.123	0.109	-0.050	0.750
##	29	-0.248	0.018	0.255	-0.151	0.004	-0.337	-0.075	0.123	0.275	0.185
##	30	-0.139	0.136	-0.426	-0.198	0.390	-0.838	0.563	-0.710	0.165	-0.448
##	31	-0.019	0.135	0.671	-0.056	-0.311	-0.316	0.267	0.212	0.434	0.805
##	34	-0.468	0.007	0.360	-0.343	-0.019	-0.485	0.104	0.290	0.479	0.417
##	35	-0.132	0.055	0.566	-0.076	-0.207	-0.163	0.304	0.056	0.400	0.350
##	36	-0.023	-1.796	0.306	-0.846	0.225	0.083	1.079	-0.605	-0.214	0.917
##	38	-0.055	0.064	0.545	-0.058	-0.049	-0.117	0.203	0.044	0.380	0.439
##	39	-0.241	0.206	0.719	-0.032	-0.172	0.232	-0.048	-0.132	0.459	0.337
##	40	-0.364	-0.130	-0.058	-0.180	-0.127	-0.262	0.370	0.366	0.286	0.342
##	41	-0.187	-0.141	0.426	-0.342	0.161	-0.769	0.167	0.016	0.029	0.244
##	42	-0.187	-0.141	0.426	-0.342	0.161	-0.769	0.167	0.016	0.029	0.244
##	43	0.038	0.012	0.412	-0.008	0.278	-0.396	-0.057	0.242	0.299	0.251
##	44	-0.431	-0.022	0.349	-0.306	-0.304	-0.240	0.214	0.109	0.191	0.446
##	46	-0.141	0.074	0.458	-0.077	-0.103	-0.185	0.259	0.141	0.400	0.311
##	48	-0.079	-0.030	0.508	-0.129	-0.167	-0.269	0.057	-0.006	-0.050	0.138
##	51	0.067	0.433	0.403	0.087	0.528	-0.194	0.131	0.034	0.349	0.490

## 52	-0.256	-0.625	-0.379	-0.177	-0.225	-0.713	0.150	-0.028	0.607	-0.295
## 54	0.261	0.289	0.670	0.580	1.335	0.301	-0.014	0.145	-1.191	-0.441
## 56	-0.218	-0.083	0.163	-0.396	-0.392	-0.434	0.045	0.086	0.163	0.430
## 57	-0.318	-0.103	0.364	-0.438	-0.026	-0.337	0.405	0.330	0.181	0.692
## 58	-0.569	0.550	0.124	-0.246	-0.314	0.320	0.341	0.237	0.514	0.496
## 59	-0.257	-0.049	-0.304	-0.120	-0.482	-0.299	-0.119	-0.273	0.585	-0.080
## 60	-0.270	0.395	0.402	-0.311	0.057	-0.212	0.451	0.157	0.462	0.395
## 64	-0.002	-0.395	0.112	-0.233	-0.353	-0.436	0.305	0.188	0.234	-0.130
## 67	0.245	0.672	-0.049	0.501	-0.024	0.508	-0.311	-0.110	-0.873	0.041
## 68	0.157	-0.208	0.446	0.221	0.227	-0.004	-0.079	-0.002	0.154	0.195
## 69	-0.452	0.933	1.138	1.121	1.893	-0.877	-0.227	-0.526	-0.755	-0.380
## 70	-0.161	-0.325	0.059	-0.081	0.483	0.368	0.015	-0.216	-0.187	-0.217
## 71	-0.342	0.119	0.325	-0.342	-0.247	-0.250	0.243	-0.074	0.105	0.225
## 72	-0.053	-0.064	0.468	-0.084	-0.126	-0.335	0.185	0.069	0.385	0.307
## 73	-0.054	0.311	0.685	-0.212	-0.164	-0.057	0.489	0.422	0.630	0.820
## 75	0.032	-0.014	0.188	0.318	1.099	0.470	0.283	-0.173	-0.640	-0.186
## 76	-0.145	0.024	0.564	0.011	-0.228	-0.353	0.296	0.067	0.561	0.446
## 77	-0.810	-0.865	-0.157	-0.369	-0.177	-0.469	-0.144	0.213	0.396	0.312
## 78	-0.222	-0.177	-0.357	-0.193	-0.250	-0.916	0.330	-0.555	0.179	-0.379
## 79	-0.784	-0.841	-0.987	0.306	-1.093	-0.259	0.760	-0.682	0.498	0.919
## 80	-0.303	-0.117	0.073	-0.447	-0.396	-0.240	-0.127	0.067	0.274	0.212
## 81	-0.245	-0.147	0.167	-0.381	-0.366	-0.434	0.074	0.117	0.099	0.590
## 82	-0.141	0.429	0.458	-0.281	0.137	-0.392	0.225	0.128	0.332	0.432
## 83	-0.131	0.203	0.579	-0.063	-0.248	-0.242	0.203	0.192	0.491	0.636
## 84	-0.059	0.263	0.579	-0.150	-0.195	-0.109	0.358	0.294	0.487	0.645
## 85	-0.486	-0.024	0.084	-0.462	-0.301	-0.354	0.083	-0.028	0.341	0.322
## 86	-0.170	0.015	0.356	-0.342	0.220	-0.431	0.353	0.191	0.219	0.637
## 87	-0.258	-0.165	0.020	-0.213	-0.133	-0.412	0.317	-0.585	0.115	-0.530
## 88	-0.161	0.269	0.507	-0.327	0.068	-0.248	0.337	0.250	0.407	0.434
## 89	-0.063	0.390	-0.033	0.263	0.857	-0.274	0.549	-0.871	0.047	-0.620
## 90	-0.005	0.777	-0.099	0.522	-0.420	0.377	-0.258	0.054	-1.239	0.407
## 91	-0.519	0.012	0.332	0.034	-0.308	0.003	0.155	-0.150	0.305	0.401
## 92	-0.150	-0.054	0.264	-0.111	-0.131	-0.012	0.118	0.176	0.235	0.290
## 93	0.097	-0.959	-0.199	-0.677	-0.218	-0.555	0.394	0.274	0.684	0.540
## 94	-0.178	-0.731	-0.245	-0.434	-0.239	-0.777	0.313	0.162	1.264	0.058
## 95	0.342	-0.268	0.362	-0.211	0.701	0.561	-0.279	0.257	-0.687	-0.057
## 96	0.316	-0.190	0.297	-0.200	0.697	0.661	-0.339	0.209	-0.777	-0.031
## 97	-0.353	-0.513	-0.481	-0.260	-0.414	-0.577	0.005	-0.079	0.607	-0.202
## 98	-0.149	-0.132	0.034	-0.115	0.075	-0.320	0.283	-0.537	0.022	-0.421
## 100	-0.334	0.227	0.325	-0.488	0.041	-0.506	-0.154	0.232	0.458	-0.206
## 101	-0.405	-0.626	-0.491	-0.334	-0.507	-0.726	-0.001	-0.005	0.770	-0.113
## 103	-0.272	0.216	0.535	-0.069	-0.067	0.229	0.216	-0.023	0.055	0.561
## 105	-0.282	-0.171	0.614	-0.486	0.909	-0.343	0.168	0.665	0.619	0.004
## 106	-0.193	-0.080	0.516	-0.808	0.571	-0.493	0.121	0.788	0.596	-0.465
## 107	-0.178	-0.766	-0.274	-0.341	-0.254	-0.649	0.366	0.036	1.291	0.497
## 109	-0.442	-0.002	0.480	-0.405	0.265	-0.490	0.018	0.193	0.538	0.512
## 111	-0.306	-0.675	-0.535	-0.226	-0.253	-0.667	0.094	0.019	0.693	-0.229
## 112	-0.015	-0.110	0.119	-0.108	-0.153	-0.422	0.295	0.125	0.326	0.190
## 113	-0.131	0.025	0.504	0.023	-0.121	-0.193	0.237	0.246	0.550	0.417
## 114	-0.195	0.179	-0.188	-0.132	-0.449	-0.550	0.246	-0.260	0.302	-0.051
## 115	-0.078	0.077	-0.024	0.177	0.680	0.293	0.272	-0.354	-0.081	-0.159
## 118	-0.244	-0.064	0.161	-0.291	-0.249	0.004	0.356	0.515	0.260	0.319
## 119	-0.270	-0.008	0.300	-0.325	-0.147	-0.085	0.504	0.265	0.131	0.231
## 120	-0.243	0.049	0.262	-0.193	-0.029	-0.239	0.073	0.249	0.379	0.292

##	122	-0.007	0.278	0.508	-0.435	-0.471	-0.374	0.362	0.360	0.646	0.970
##	123	-0.272	-0.294	-0.003	-0.251	-0.383	-0.706	0.304	-0.602	0.036	-0.504
##	125	-0.193	-0.047	0.158	-0.395	-0.394	-0.415	0.020	0.082	0.166	0.401
##	126	-0.311	-0.052	0.496	-0.679	-0.314	-0.556	0.654	0.569	0.987	0.911
##	127	-0.320	0.133	-0.075	-0.686	-0.105	0.018	0.556	0.345	0.369	0.411
##	129	-0.066	0.304	-0.167	-0.088	-0.332	-0.495	-0.012	0.166	-0.080	0.380
##	132	0.002	-0.114	0.288	-0.086	0.195	0.044	-0.039	-0.403	-0.018	-0.353
##	133	-0.038	0.234	0.689	0.193	0.490	-0.200	0.065	0.908	0.951	0.473
##	136	-0.775	-1.303	0.062	-0.402	-0.221	-0.819	0.041	0.316	0.438	0.548
##	137	-0.142	-0.222	0.262	-0.295	-0.163	-0.142	0.468	0.364	0.129	0.093
##	138	-0.414	-0.013	0.263	-0.252	0.183	-0.391	-0.117	0.076	0.516	0.298
##	141	-0.561	0.024	0.161	0.150	-0.128	-0.035	-0.022	-0.410	0.318	0.121
##	142	0.045	-0.116	0.290	0.230	1.035	0.709	0.159	-0.068	-0.902	0.010
##	143	0.128	-0.207	0.799	0.293	0.230	0.155	0.159	0.292	0.208	0.421
##	144	0.684	0.119	0.196	0.363	0.588	-0.510	-0.388	0.387	0.316	0.007
##	145	-0.293	0.163	0.434	-0.252	0.061	-0.072	0.269	0.205	0.177	0.511
##	146	-0.092	0.334	0.445	0.008	-0.409	0.288	-0.357	0.192	0.714	0.518
##	147	-0.053	0.074	0.791	0.135	-0.278	0.038	0.286	0.004	0.508	0.375
##	151	-0.079	0.931	0.918	0.969	1.058	-0.041	-0.552	-0.101	-1.070	-0.313
##	152	0.080	-0.100	-0.172	-0.137	-0.225	0.221	0.575	0.138	0.138	-0.020
##	153	0.198	-0.476	0.117	-0.176	-0.584	-0.271	0.352	-0.006	-0.005	0.485
##	156	0.005	-0.344	0.153	0.022	0.016	-0.296	-0.086	0.212	0.117	0.207
##	157	-0.385	0.420	0.094	-0.265	-0.121	-0.435	0.700	0.658	0.096	0.187
##	158	-0.454	0.190	0.128	-0.281	-0.280	-0.111	0.282	0.075	0.241	0.361
##	159	-0.324	0.026	0.319	-0.050	0.083	-0.141	0.288	0.181	0.355	0.136
##	161	0.133	0.477	0.419	0.488	1.485	-0.295	0.424	-0.233	-0.774	-0.760
##	162	-0.870	-0.906	-0.063	-0.439	-0.090	-0.357	-0.272	0.167	0.169	0.282
##	163	-0.325	-0.071	0.255	-0.367	-0.177	-0.391	0.202	0.306	0.092	0.582
##	164	-0.152	-0.731	-0.255	-0.336	-0.281	-0.556	0.274	0.149	0.765	0.389
##	165	-0.021	0.382	-0.220	-0.097	0.806	-0.806	0.536	-0.828	0.156	-0.639
##	168	-0.206	0.546	-0.143	0.249	0.379	0.353	-0.046	0.093	0.032	0.279
##	169	0.268	-1.278	-0.809	-0.982	-0.731	-0.149	-0.148	-0.343	0.429	-0.236
##	171	-0.132	-0.043	0.003	-0.038	0.254	-0.425	0.337	-0.585	0.028	-0.454
##	173	-0.428	-0.559	-0.234	-0.241	-0.316	-0.405	0.139	-0.220	0.873	0.047
##	174	-0.036	0.380	0.713	-0.432	-0.235	-0.063	0.552	0.506	0.809	0.943
##	176	-0.435	-0.372	0.181	-0.471	-0.274	-0.205	0.236	0.355	0.226	0.258
##	182	-0.245	0.298	0.571	-0.027	0.128	0.264	0.493	0.249	0.070	0.651
##	183	-0.153	0.106	0.350	-0.245	-0.132	-0.504	0.171	0.059	0.317	0.237
##	185	-0.741	-0.825	-0.164	-0.434	-0.091	-0.367	-0.160	0.101	0.276	0.186
##	186	-0.334	-0.103	0.413	-0.245	-0.183	-0.117	0.038	0.091	0.327	0.419
##	188	-0.225	-0.058	0.104	-0.408	-0.417	-0.344	-0.055	0.096	0.194	0.329
##	189	-0.301	-0.117	0.072	-0.451	-0.397	-0.239	-0.130	0.066	0.276	0.211
##	191	-0.429	-0.077	0.120	-0.348	-0.364	-0.050	0.128	0.073	0.299	0.280
##	192	0.030	0.791	1.145	0.935	1.574	-0.110	-0.466	-0.075	-1.091	-0.569
##	193	-0.069	-0.061	-0.056	0.089	0.622	0.367	0.172	-0.362	-0.063	-0.194
##	194	-0.182	-0.928	-0.410	-0.180	-0.182	-0.845	0.191	0.170	0.921	-0.174
##	195	-0.235	-0.164	0.484	-0.364	0.231	-0.549	0.223	0.029	0.059	0.222
##	197	-0.286	0.024	0.335	-0.122	-0.040	0.015	0.352	0.118	-0.090	0.410
##	198	-0.469	0.043	0.361	-0.453	0.095	-0.501	0.109	0.306	0.617	0.536
##	200	-0.193	0.118	0.541	-0.027	-0.260	-0.295	0.387	-0.040	0.447	0.418
##	202	0.202	0.012	0.451	0.108	0.085	-0.161	0.053	0.221	0.271	0.238
##	203	-0.343	-0.155	0.078	-0.376	-0.387	-0.266	-0.065	0.099	0.249	0.248
##	204	-0.225	-0.340	-0.122	-0.332	-0.350	-0.731	0.598	-0.392	0.426	-0.197
##	208	-0.158	0.093	0.374	-0.109	-0.036	0.070	0.215	0.156	0.330	0.626

## 210	-0.151	-0.801	-0.329	-0.460	-0.332	-0.562	0.391	0.037	0.445	0.372
## 211	0.254	-0.055	0.203	-0.062	0.604	0.729	-0.323	0.070	-0.781	-0.022
## 212	-0.415	-0.252	-0.013	0.081	-0.389	-0.124	0.397	0.035	-0.306	0.412
## 213	-0.307	-0.130	0.189	-0.362	-0.240	-0.387	0.129	0.137	-0.062	0.718
## 214	-0.345	0.250	-0.124	-0.048	0.031	-0.334	0.502	0.116	0.128	0.571
## 216	0.016	-0.321	0.558	0.378	0.239	0.041	-0.047	0.114	0.103	0.147
## 217	-0.365	-0.029	0.313	-0.295	-0.300	-0.409	0.168	0.095	0.202	0.346
## 218	-0.438	-0.008	0.468	-0.387	0.199	-0.551	-0.029	0.112	0.416	0.368
## 219	-0.042	-0.117	0.363	0.127	-0.022	-0.119	-0.140	-0.043	0.117	0.194
## 220	-0.351	-0.505	-0.479	-0.256	-0.409	-0.573	0.003	-0.077	0.606	-0.204
## 221	-0.637	-1.096	-0.014	-0.589	-0.266	-0.959	0.119	0.403	0.537	0.497
## 222	-0.093	-0.199	0.269	-0.181	0.088	-0.314	0.269	0.001	0.226	0.332
## 224	-0.249	-0.139	0.383	-0.405	-0.127	-0.314	0.510	0.087	0.249	0.138
## 225	-0.052	-0.397	0.601	-0.485	-0.262	-0.436	0.433	-0.016	0.189	-0.024
##	F1981	F1982	F1983	F1984	F1985	F1986	F1987	F1988	F1989	F1990
## 1	0.483	-0.346	0.164	0.145	0.283	-0.141	0.391	0.919	-0.205	0.730
## 2	-0.351	0.173	-0.128	-0.270	-0.103	0.569	-0.106	0.370	-0.066	0.795
## 3	0.215	0.399	0.560	-0.004	0.508	0.296	0.975	1.304	0.386	1.266
## 5	0.178	1.044	0.859	-0.157	0.059	0.387	0.397	0.883	1.162	1.736
## 6	-0.071	0.164	0.487	0.631	0.694	0.176	0.689	0.572	-0.055	0.687
## 7	0.532	0.097	0.524	0.105	0.006	0.013	0.569	0.457	-0.002	0.432
## 9	0.378	0.359	0.046	-0.100	0.308	0.460	0.446	-0.192	0.611	0.436
## 12	0.495	0.186	0.633	-0.157	0.349	0.388	0.363	0.960	0.153	0.549
## 13	0.277	0.384	1.062	-0.249	-0.568	0.319	-0.263	0.820	1.104	1.262
## 15	-0.030	0.531	0.155	0.020	0.242	0.230	0.466	0.426	0.672	0.764
## 16	0.408	-0.086	-0.834	0.039	0.367	0.668	0.548	0.633	0.047	0.455
## 17	-0.170	-0.041	-0.132	-0.322	0.050	0.026	0.341	0.341	0.064	-0.149
## 21	-0.068	0.526	0.685	0.254	0.455	0.135	0.350	0.460	0.173	0.339
## 22	0.161	0.211	0.548	0.542	0.411	0.307	0.977	0.631	-0.052	0.580
## 23	0.212	-0.111	-0.286	-0.055	0.113	-0.068	0.256	0.567	0.220	-0.087
## 24	0.167	0.324	0.537	0.289	0.330	0.437	0.692	0.334	0.129	0.183
## 26	-0.441	0.310	1.012	0.442	0.293	0.278	1.270	0.287	-0.306	0.738
## 27	0.191	0.277	0.471	0.294	0.092	0.285	0.722	0.461	0.130	0.435
## 28	0.512	0.099	0.533	0.211	0.088	0.040	0.514	0.512	0.054	0.446
## 29	0.122	0.186	0.563	0.021	0.181	0.156	0.498	0.471	0.057	0.381
## 30	-0.043	-0.130	0.389	-0.022	-0.605	0.360	-0.484	0.128	0.405	0.797
## 31	0.282	0.180	0.724	0.799	0.472	0.356	1.011	0.593	0.009	0.603
## 34	0.389	0.150	0.537	0.194	0.348	0.128	0.694	0.415	0.324	0.674
## 35	0.045	0.061	0.164	0.196	0.025	0.084	0.487	0.290	-0.384	0.651
## 36	1.562	-0.673	0.488	0.337	-0.311	0.011	1.340	1.204	0.017	0.078
## 38	0.003	0.229	0.425	0.125	0.156	0.478	0.504	0.265	-0.148	0.347
## 39	0.037	0.306	-0.047	0.508	0.172	0.630	0.344	0.133	-0.271	0.416
## 40	0.373	0.397	0.574	-0.122	0.328	0.080	0.616	0.080	0.327	0.214
## 41	0.370	0.057	-0.193	-0.528	-0.294	0.012	0.831	-0.139	0.257	0.271
## 42	0.370	0.057	-0.193	-0.528	-0.294	0.012	0.831	-0.139	0.257	0.271
## 43	0.219	0.379	0.122	-0.148	-0.127	-0.043	0.430	0.398	0.428	0.852
## 44	0.129	0.192	0.636	-0.233	-0.015	0.017	0.573	0.312	-0.091	0.310
## 46	0.150	0.143	0.506	0.282	0.159	0.307	0.600	0.488	-0.144	0.082
## 48	0.036	-0.061	0.060	-0.043	0.050	0.264	-0.021	0.340	0.130	0.190
## 51	-0.016	0.591	0.303	0.287	0.235	0.357	0.736	0.603	0.680	0.836
## 52	0.088	-0.337	-0.805	0.013	-0.068	0.249	-0.260	0.044	0.085	0.069
## 54	0.300	0.002	1.060	0.379	-1.004	-0.444	-0.985	0.925	1.803	1.843
## 56	0.438	0.080	0.457	-0.039	-0.062	0.015	0.596	0.394	-0.056	0.436
## 57	0.499	0.419	0.631	0.265	0.099	0.255	0.737	0.603	0.251	0.554

## 58	0.028	0.595	1.176	0.024	-0.070	0.194	1.074	0.425	-0.003	0.503
## 59	-0.259	-0.413	-1.123	-0.228	0.243	0.118	-0.317	0.211	-0.216	-0.082
## 60	0.046	0.372	0.716	0.062	0.158	0.222	0.627	0.596	0.237	0.492
## 64	-0.429	0.170	0.915	-0.040	0.571	0.321	0.567	0.608	0.142	0.281
## 67	-0.364	0.223	-0.266	0.489	-0.118	-0.119	0.221	0.303	0.530	0.801
## 68	0.161	0.151	0.111	0.358	0.317	-0.103	0.206	0.846	0.247	0.348
## 69	-0.240	-0.155	0.964	0.757	-1.177	-0.181	-1.652	0.579	2.179	1.249
## 70	0.097	0.812	0.721	-0.082	-0.338	-0.003	0.001	0.773	1.278	1.591
## 71	0.132	0.323	0.189	0.412	0.154	0.278	0.478	0.356	0.159	0.397
## 72	-0.176	-0.374	0.174	0.204	-0.219	-0.126	0.272	0.232	-0.023	0.124
## 73	0.622	0.326	1.131	0.636	0.384	0.665	1.068	0.829	0.609	1.139
## 75	0.296	0.439	1.071	-0.110	-0.800	-0.007	-0.561	0.893	1.491	1.571
## 76	0.181	0.177	0.691	0.665	0.357	0.294	0.985	0.645	0.237	0.526
## 77	0.358	0.481	0.382	-0.150	0.592	0.227	0.497	0.782	0.908	1.202
## 78	-0.191	-0.243	-0.493	-0.123	-0.063	0.312	-0.395	0.129	-0.204	0.368
## 79	-0.360	-0.642	-2.062	-1.455	0.891	0.381	-0.121	0.513	-1.537	-0.348
## 80	0.331	0.085	0.360	-0.048	-0.429	-0.192	0.442	0.446	-0.169	0.203
## 81	0.500	0.099	0.494	0.038	-0.026	0.010	0.589	0.426	-0.032	0.432
## 82	-0.016	0.457	0.649	0.116	0.164	0.125	0.310	0.481	0.132	0.309
## 83	0.337	0.215	0.635	0.380	0.382	0.077	0.810	0.610	0.116	0.653
## 84	0.473	0.282	0.902	0.516	0.361	0.495	0.828	0.669	0.441	0.960
## 85	0.185	0.410	0.539	-0.351	-0.329	0.015	0.495	0.400	-0.044	0.527
## 86	0.444	0.571	0.622	0.305	0.163	0.282	0.842	0.721	0.396	0.694
## 87	-0.446	0.594	0.274	-0.571	0.286	0.550	0.195	0.755	0.148	1.125
## 88	0.108	0.449	0.581	0.073	0.140	0.138	0.391	0.621	0.191	0.258
## 89	0.146	0.105	0.997	-0.129	-1.068	0.356	-0.547	0.385	0.864	1.070
## 90	-0.909	-0.258	-0.863	0.204	0.164	-0.077	0.685	-0.088	-0.174	0.169
## 91	0.072	-0.017	-0.135	-0.107	0.211	0.190	0.578	0.504	-0.018	-0.081
## 92	0.200	0.036	0.405	-0.110	0.151	0.138	0.514	0.437	0.130	0.089
## 93	0.677	-0.120	-0.111	0.151	0.243	0.207	0.536	0.706	0.220	0.727
## 94	0.257	-0.406	-0.802	0.036	0.021	0.370	0.368	0.106	0.176	0.356
## 95	0.377	0.154	0.408	0.336	-0.439	-0.726	-0.143	0.246	1.054	0.829
## 96	0.292	0.076	0.381	0.356	-0.489	-0.684	-0.222	0.270	1.105	0.913
## 97	-0.213	-0.564	-1.066	-0.209	0.010	0.056	-0.283	0.037	-0.174	-0.112
## 98	-0.279	0.511	0.384	-0.468	0.117	0.436	0.192	0.842	0.417	1.132
## 100	-0.631	-0.041	0.107	-0.605	0.130	-0.686	0.326	-0.154	0.556	1.132
## 101	-0.158	-0.682	-1.071	-0.227	-0.009	0.069	-0.122	0.030	-0.065	-0.030
## 103	0.183	0.297	0.609	0.173	-0.057	0.133	0.730	0.589	-0.208	-0.050
## 105	-0.597	0.911	0.598	-0.145	0.152	-0.702	0.231	0.562	1.235	1.329
## 106	-0.767	0.420	0.456	-0.282	0.262	-0.765	0.374	0.255	0.780	1.229
## 107	0.418	-0.142	-0.622	0.256	0.003	0.467	0.723	0.449	0.141	0.396
## 109	0.486	0.217	0.321	0.129	0.321	0.079	0.982	0.361	0.299	0.487
## 111	0.017	-0.496	-0.958	-0.081	-0.015	0.233	-0.229	0.019	0.129	0.059
## 112	-0.262	0.300	1.007	0.351	0.812	0.513	0.606	0.484	0.017	0.358
## 113	0.171	0.249	0.536	0.388	0.282	0.173	0.951	0.824	0.364	0.581
## 114	0.022	0.136	-0.332	-0.076	0.099	0.236	0.060	1.051	-0.006	0.557
## 115	0.045	0.544	0.942	-0.371	-0.336	0.383	-0.045	0.929	1.089	1.308
## 118	0.117	0.293	0.430	-0.100	0.088	-0.041	0.534	0.572	0.061	0.108
## 119	-0.191	0.000	1.038	0.363	0.016	0.162	0.679	0.693	0.174	0.616
## 120	0.256	0.270	0.689	0.052	0.244	0.281	0.590	0.525	0.181	0.548
## 122	0.395	0.264	0.830	0.609	0.512	0.304	1.081	0.784	0.107	0.903
## 123	-0.344	0.623	0.037	-0.267	0.426	0.400	0.525	1.194	0.206	1.235
## 125	0.406	0.074	0.433	-0.029	-0.060	0.017	0.591	0.404	-0.001	0.424
## 126	0.910	0.593	1.623	0.571	0.592	0.293	1.562	0.875	0.737	1.481

## 127	0.199	0.316	0.286	-0.210	-0.060	0.181	0.656	0.443	0.063	0.220
## 129	0.162	0.573	0.024	-0.102	0.097	0.298	-0.119	0.174	0.493	0.274
## 132	-0.083	0.550	0.494	-0.603	-0.106	0.433	0.196	0.758	0.908	1.284
## 133	0.217	1.135	0.601	-0.353	-0.444	0.361	0.166	0.630	1.334	1.530
## 136	0.414	0.431	0.724	0.208	0.797	0.190	0.993	0.837	0.665	1.409
## 137	-0.188	-0.040	0.918	0.263	-0.008	0.103	0.679	0.588	0.092	0.368
## 138	0.299	0.080	0.156	0.086	0.190	0.091	0.569	0.408	0.338	0.215
## 141	-0.087	-0.164	-0.423	-0.079	0.324	-0.063	0.349	0.595	0.079	-0.035
## 142	0.339	0.470	0.870	0.062	-0.851	-0.197	-0.503	0.796	1.541	1.567
## 143	0.377	0.194	0.692	0.328	0.509	0.366	0.069	1.050	0.479	0.764
## 144	0.427	-0.062	-0.294	0.174	0.398	0.382	0.397	0.488	0.736	0.572
## 145	0.255	0.659	0.786	0.040	0.107	0.171	0.422	0.505	0.158	0.350
## 146	0.040	0.371	0.029	0.607	0.284	0.733	0.655	0.587	-0.384	0.480
## 147	0.155	0.360	0.238	0.794	0.389	0.544	0.823	0.501	-0.412	0.582
## 151	-0.494	-0.054	0.633	0.532	-0.594	-0.430	-0.830	0.476	1.741	1.517
## 152	0.223	-0.418	-0.698	-0.706	-0.104	-0.042	0.070	0.201	-0.347	0.061
## 153	0.310	-0.370	-0.399	-0.206	0.221	-0.288	0.161	0.720	-0.313	0.339
## 156	0.293	-0.091	0.367	0.307	0.222	0.341	0.380	0.666	0.424	0.413
## 157	0.387	0.356	-0.312	0.482	0.370	0.835	0.173	-0.073	-0.109	0.016
## 158	0.059	0.183	1.303	0.228	0.115	0.154	0.884	0.511	0.056	0.359
## 159	0.228	0.154	0.602	0.148	0.345	0.266	0.563	0.799	0.281	0.412
## 161	0.436	0.324	1.452	0.238	-1.046	0.015	-1.081	0.681	1.695	1.709
## 162	0.546	0.560	0.286	-0.120	0.528	0.094	0.752	0.637	1.117	1.401
## 163	0.568	0.155	0.543	0.146	-0.049	0.105	0.597	0.528	0.081	0.522
## 164	0.417	-0.130	-0.826	0.039	0.357	0.510	0.385	0.494	-0.069	0.406
## 165	0.043	-0.058	0.837	-0.129	-1.193	0.431	-0.724	0.092	0.752	1.100
## 168	0.105	0.107	0.454	0.678	0.398	0.789	0.327	0.527	0.200	0.752
## 169	0.971	-0.502	0.743	0.119	-1.048	-0.735	-0.073	0.197	-0.408	-0.739
## 171	-0.328	0.407	0.426	-0.580	0.178	0.338	0.103	0.771	0.278	1.001
## 173	0.077	-0.397	-0.847	-0.309	-0.019	0.190	0.532	0.452	-0.112	0.095
## 174	0.767	0.339	1.250	0.661	0.526	0.483	1.022	0.874	0.575	1.193
## 176	0.170	0.433	0.503	-0.294	-0.114	0.250	0.505	0.418	-0.112	0.239
## 182	0.121	0.336	0.454	-0.001	0.007	0.097	0.869	0.719	-0.101	0.108
## 183	-0.328	0.212	0.707	0.535	0.663	0.463	0.743	0.338	-0.034	0.324
## 185	0.344	0.709	0.550	-0.163	0.484	0.259	0.724	0.796	1.039	1.446
## 186	0.151	0.137	0.637	-0.020	0.077	0.158	0.685	0.704	0.219	0.569
## 188	0.354	0.089	0.379	-0.039	-0.228	-0.076	0.525	0.424	-0.025	0.318
## 189	0.331	0.087	0.364	-0.047	-0.426	-0.185	0.444	0.453	-0.164	0.204
## 191	0.219	0.228	0.453	-0.252	0.001	0.126	0.734	0.561	0.069	0.310
## 192	-0.228	-0.134	0.911	0.583	-1.036	-0.493	-1.201	0.726	1.998	1.692
## 193	-0.016	0.579	0.869	-0.330	-0.328	0.242	-0.010	0.916	1.142	1.417
## 194	0.146	-0.536	-0.851	0.004	-0.028	0.402	-0.174	-0.203	0.366	0.181
## 195	0.118	-0.139	0.259	-0.553	-0.059	-0.233	0.352	0.299	0.062	0.349
## 197	0.387	0.437	0.724	0.125	0.094	0.174	0.598	0.657	-0.083	0.190
## 198	0.346	0.182	0.495	0.158	0.359	0.137	0.815	0.354	0.384	0.592
## 200	0.164	0.173	0.677	0.550	0.369	0.212	0.964	0.608	0.080	0.597
## 202	0.186	0.238	0.142	0.376	0.290	0.082	0.049	0.857	0.487	0.419
## 203	0.325	0.082	0.292	-0.101	-0.534	-0.336	0.422	0.303	-0.263	0.167
## 204	0.094	0.821	0.226	-0.112	0.407	0.447	0.610	1.336	0.481	1.418
## 208	0.448	0.385	0.664	0.279	0.098	0.237	0.605	0.433	-0.103	0.264
## 210	0.225	-0.325	-0.697	-0.187	0.138	0.191	0.162	0.191	-0.310	0.241
## 211	0.176	0.118	0.348	0.337	-0.522	-0.594	-0.283	0.307	1.145	1.016
## 212	0.871	-0.343	0.540	-0.233	-0.025	0.584	0.913	0.471	0.324	0.674
## 213	0.514	0.052	0.552	0.189	0.041	0.057	0.506	0.523	0.073	0.461

## 214	0.500	0.574	-0.052	0.103	0.431	0.770	0.336	-0.504	0.740	0.575
## 216	0.099	0.072	0.215	0.034	0.603	-0.068	-0.166	0.689	0.122	0.357
## 217	0.134	0.116	0.469	-0.107	-0.295	-0.163	0.415	0.161	-0.098	0.356
## 218	0.490	0.196	0.082	-0.126	-0.028	0.088	1.048	0.181	0.034	0.402
## 219	0.153	0.131	0.109	0.077	0.158	0.110	0.264	0.600	0.203	0.315
## 220	-0.215	-0.562	-1.068	-0.201	0.017	0.055	-0.294	0.033	-0.173	-0.113
## 221	0.621	0.418	0.837	0.432	0.759	0.294	1.109	0.384	0.691	1.367
## 222	0.443	0.086	0.460	0.127	-0.031	0.242	0.403	0.558	0.331	0.639
## 224	-0.158	0.340	1.064	0.575	0.206	0.061	0.958	0.627	0.139	0.772
## 225	-0.360	0.170	1.223	0.483	0.027	0.025	1.070	0.447	0.181	0.567
##	F1991	F1992	F1993	F1994	F1995	F1996	F1997	F1998	F1999	F2000
## 1	-0.168	-0.294	0.220	0.430	0.359	-0.116	0.471	0.675	1.198	0.993
## 2	-0.269	0.106	0.076	1.330	-0.172	-0.038	0.075	0.795	0.670	1.065
## 3	0.031	-0.312	0.552	0.732	0.595	0.846	1.059	1.109	1.476	0.820
## 5	0.231	0.386	0.174	1.508	1.279	0.570	1.788	1.018	1.055	1.050
## 6	0.341	0.466	0.256	0.212	0.753	0.370	0.107	1.064	0.417	0.169
## 7	0.441	0.365	0.535	0.575	0.651	0.350	0.459	1.060	0.532	0.264
## 9	0.261	-0.261	0.086	0.487	0.259	0.512	0.759	0.351	0.160	-0.186
## 12	0.820	0.281	0.484	0.221	0.413	0.604	0.383	1.092	0.580	0.148
## 13	0.125	1.248	0.527	1.958	0.939	-0.203	0.514	1.343	0.986	1.769
## 15	0.788	0.286	0.378	0.801	0.671	0.008	0.787	0.924	0.619	0.163
## 16	-0.243	-0.544	0.127	0.998	0.251	0.695	0.376	1.435	2.055	1.119
## 17	-0.024	-0.146	-0.446	0.175	0.173	0.137	-0.173	0.504	0.780	0.226
## 21	0.542	0.311	0.447	0.756	0.759	0.210	0.866	0.904	0.422	0.175
## 22	0.302	-0.027	0.531	0.439	0.406	0.736	0.557	1.042	0.621	0.449
## 23	0.081	-0.229	-0.248	0.315	0.518	0.307	-0.300	0.825	1.022	0.214
## 24	0.603	0.031	0.404	0.883	0.770	0.290	0.825	0.926	0.337	0.403
## 26	0.062	0.813	0.512	-0.123	1.141	-0.319	-0.096	0.857	0.552	-0.718
## 27	0.468	0.403	0.495	0.608	0.799	0.504	0.671	1.234	0.523	0.495
## 28	0.439	0.333	0.541	0.666	0.613	0.337	0.459	1.091	0.525	0.192
## 29	0.384	0.326	0.228	0.453	0.471	0.429	0.671	1.296	0.575	0.485
## 30	-0.161	0.149	-0.322	1.583	0.221	-0.360	-0.336	0.775	0.696	1.184
## 31	0.527	0.004	0.725	0.311	0.401	0.917	0.621	1.006	0.548	0.537
## 34	0.597	0.556	0.425	0.496	0.738	0.357	0.393	1.414	0.409	0.296
## 35	0.563	-0.205	0.247	0.305	0.280	0.335	0.547	1.082	0.604	0.319
## 36	0.336	0.100	0.342	0.467	0.938	-0.125	0.426	2.470	1.694	1.291
## 38	0.612	-0.457	0.329	0.562	0.187	0.047	0.458	1.195	0.502	0.683
## 39	0.649	-0.279	0.275	0.381	0.175	0.586	0.485	0.841	0.569	0.281
## 40	0.108	-0.116	0.235	0.279	-0.004	0.276	0.716	0.721	0.251	-0.179
## 41	0.726	-0.232	0.300	0.338	-0.028	0.028	0.293	0.940	0.964	0.298
## 42	0.726	-0.232	0.300	0.338	-0.028	0.028	0.293	0.940	0.964	0.298
## 43	0.520	0.130	0.281	0.733	0.577	0.210	0.733	1.264	1.231	0.572
## 44	0.449	0.606	0.263	0.245	0.517	0.143	0.504	0.901	-0.010	-0.009
## 46	0.293	-0.213	0.100	0.293	0.387	-0.077	0.627	0.937	0.455	0.537
## 48	0.197	0.210	-0.069	0.186	0.455	0.247	-0.108	-0.258	0.625	0.303
## 51	0.899	0.608	0.639	1.016	1.222	0.627	1.031	1.191	0.806	0.508
## 52	0.379	-0.928	-0.421	1.047	0.058	0.253	0.008	0.961	1.079	0.618
## 54	0.616	1.452	0.235	0.967	1.304	-0.753	0.651	0.869	1.334	1.719
## 56	0.453	0.433	0.510	0.572	0.695	0.434	0.595	0.999	0.486	0.282
## 57	0.424	0.505	0.474	0.877	0.950	0.664	0.988	1.371	0.900	0.629
## 58	0.536	0.873	0.571	0.363	0.738	0.053	1.240	1.311	0.202	0.244
## 59	0.384	-0.611	0.014	0.611	0.151	0.381	0.009	0.744	0.828	0.054
## 60	0.584	0.583	0.331	0.641	0.556	0.078	0.752	0.847	0.301	0.318
## 64	0.530	1.147	0.733	-0.006	0.585	-0.042	0.235	0.991	0.505	-0.061

## 67	1.113	0.812	-0.053	-0.172	-0.310	0.202	0.755	0.553	0.469	0.188
## 68	0.090	0.039	-0.319	-0.133	0.385	0.445	0.152	0.765	0.538	0.706
## 69	1.138	1.165	0.937	0.146	1.701	0.137	0.783	0.071	1.159	2.024
## 70	0.257	0.659	0.325	1.547	1.326	0.188	1.240	0.947	1.199	1.175
## 71	0.341	0.352	0.141	0.543	0.582	0.188	0.335	0.633	0.456	0.329
## 72	0.081	-0.166	0.190	0.187	0.582	0.104	0.292	1.119	0.589	0.307
## 73	0.810	0.852	1.045	0.814	0.878	1.122	1.323	1.555	0.750	0.958
## 75	0.286	1.228	0.310	1.625	1.307	-0.699	0.558	1.153	1.367	1.764
## 76	0.394	0.153	0.473	0.564	0.695	0.657	0.502	1.140	0.564	0.430
## 77	0.111	0.176	-0.128	0.736	1.315	0.747	1.470	1.109	0.715	0.829
## 78	-0.197	-0.528	-0.328	1.060	-0.043	-0.161	-0.195	0.632	0.800	0.679
## 79	-0.291	-1.228	-1.355	-0.425	-0.328	0.667	0.391	1.269	0.522	0.839
## 80	0.398	0.388	0.431	0.456	0.710	0.471	0.630	1.187	0.617	0.462
## 81	0.448	0.401	0.524	0.564	0.671	0.386	0.510	1.035	0.515	0.279
## 82	0.624	0.445	0.346	0.592	0.595	0.090	0.710	0.867	0.558	0.310
## 83	0.679	0.330	0.702	0.471	0.486	0.791	0.785	1.194	0.512	0.651
## 84	0.786	0.710	0.893	0.744	0.798	0.955	1.129	1.560	0.746	0.996
## 85	0.286	0.131	0.178	0.482	0.988	0.610	0.884	1.287	0.405	0.658
## 86	0.775	0.590	0.450	1.198	1.188	0.685	1.099	1.244	1.147	0.858
## 87	-0.017	0.533	0.480	1.474	0.200	0.361	0.857	0.944	0.790	1.177
## 88	0.493	0.481	0.203	0.774	0.876	0.075	0.797	1.018	0.384	0.128
## 89	-0.058	0.911	0.069	1.755	0.631	-0.340	-0.148	1.081	0.603	1.733
## 90	0.766	0.231	0.225	-0.108	-0.330	0.562	0.436	0.238	0.471	0.274
## 91	0.190	0.035	0.223	0.107	0.238	0.339	-0.064	0.614	0.468	0.350
## 92	0.273	0.341	0.289	0.343	0.382	0.428	0.463	1.050	0.282	0.275
## 93	0.389	-0.757	-0.017	0.802	0.698	0.239	0.644	1.165	1.658	1.215
## 94	0.608	-1.169	-0.469	1.009	0.366	0.798	0.305	1.295	1.917	0.995
## 95	0.199	0.446	0.064	0.282	1.198	-0.006	0.977	0.937	1.077	0.577
## 96	0.178	0.462	-0.037	0.269	1.164	-0.112	0.924	0.928	1.112	0.636
## 97	0.393	-1.037	-0.368	0.796	-0.153	0.342	-0.118	0.892	0.894	0.250
## 98	0.029	0.542	0.527	1.513	0.418	0.233	0.931	0.969	0.918	1.243
## 100	0.726	0.333	0.012	0.965	0.348	-0.127	0.454	1.199	0.948	0.636
## 101	0.521	-1.110	-0.503	0.941	-0.047	0.487	-0.176	1.023	1.052	0.375
## 103	0.258	0.406	0.048	0.488	0.356	0.366	0.415	0.250	0.240	0.521
## 105	0.604	0.778	0.577	1.355	0.694	0.276	0.991	1.776	1.382	0.594
## 106	0.280	0.621	0.040	1.249	0.418	-0.019	0.737	1.470	1.032	0.414
## 107	0.535	-0.523	-0.095	0.993	0.217	0.929	0.528	1.346	2.064	1.280
## 109	0.757	0.259	0.338	0.464	0.692	0.198	0.384	1.485	0.721	0.094
## 111	0.411	-1.017	-0.433	1.048	0.044	0.390	-0.103	1.001	1.100	0.544
## 112	0.538	0.988	1.042	0.114	0.732	-0.212	0.243	0.930	1.243	0.326
## 113	0.520	0.246	0.529	0.533	0.653	0.587	0.972	1.297	0.781	0.560
## 114	0.231	-0.404	0.306	0.470	0.344	0.541	0.472	0.760	1.248	0.306
## 115	0.184	1.090	0.635	1.925	0.900	-0.033	0.942	1.208	0.979	1.464
## 118	0.384	0.386	0.380	0.319	0.405	0.198	0.653	0.821	0.440	0.451
## 119	0.150	0.749	0.153	0.270	0.794	0.189	0.626	1.031	0.349	0.797
## 120	0.464	0.429	0.278	0.420	0.544	0.481	0.690	1.279	0.483	0.449
## 122	0.685	0.194	1.026	0.206	0.570	1.161	0.870	1.214	0.375	0.647
## 123	0.147	0.275	0.625	1.421	0.461	0.639	1.054	0.876	1.268	1.055
## 125	0.445	0.405	0.487	0.565	0.670	0.433	0.591	1.003	0.477	0.262
## 126	0.870	0.890	0.990	0.673	1.222	1.555	1.321	1.801	0.539	1.200
## 127	0.492	0.157	0.179	0.466	0.314	0.042	0.585	0.827	0.211	0.173
## 129	0.268	0.086	0.327	0.711	0.810	0.567	0.500	0.736	0.642	0.634
## 132	0.107	0.651	0.461	1.302	0.672	0.211	1.297	0.922	0.924	1.112
## 133	1.080	0.810	0.454	1.329	1.268	0.410	1.933	2.117	1.764	0.980

## 136	0.133	0.246	0.222	1.019	1.174	0.936	1.271	1.483	0.976	0.845
## 137	0.125	0.759	0.299	0.087	0.555	0.111	0.209	0.949	0.288	0.375
## 138	0.509	0.101	0.126	0.494	0.654	0.439	0.272	1.192	0.926	0.223
## 141	0.075	-0.073	-0.177	0.158	0.305	0.208	-0.413	0.313	0.640	0.082
## 142	0.265	1.184	0.250	1.367	1.542	-0.779	0.611	1.068	1.574	1.595
## 143	0.350	0.467	0.270	0.228	1.010	1.204	0.549	2.002	1.229	0.759
## 144	-0.028	-0.716	-0.380	-0.077	0.108	0.244	-0.128	0.981	1.009	0.265
## 145	0.497	0.487	0.317	0.707	0.898	0.077	0.808	1.087	0.169	0.142
## 146	0.862	-0.286	0.403	0.205	0.373	1.054	0.688	0.652	0.549	0.677
## 147	0.621	-0.122	0.497	0.424	0.380	0.748	0.646	1.034	0.766	0.526
## 151	0.977	1.121	0.697	0.065	0.944	-0.060	0.761	0.383	1.257	1.427
## 152	-0.304	-0.550	0.247	0.126	-0.018	-0.114	-0.227	0.745	0.578	0.554
## 153	-0.306	-0.413	0.415	0.162	-0.116	-0.152	-0.386	0.436	0.823	0.668
## 156	0.281	0.542	0.364	0.356	0.654	0.551	0.079	1.012	0.311	0.377
## 157	0.648	-0.390	0.208	0.865	0.542	0.095	0.869	0.176	0.004	0.101
## 158	0.501	0.816	0.494	0.511	0.798	0.158	0.855	1.290	0.232	0.325
## 159	0.359	0.379	0.385	0.501	0.528	0.427	0.489	1.322	0.561	0.673
## 161	0.407	1.142	0.065	1.371	1.110	-0.787	0.011	0.947	1.203	1.887
## 162	0.440	0.434	-0.199	0.684	1.663	0.756	1.601	1.212	0.634	0.665
## 163	0.411	0.302	0.512	0.710	0.730	0.444	0.654	1.243	0.672	0.273
## 164	-0.151	-0.519	0.031	0.666	0.064	0.496	0.066	1.174	1.735	0.944
## 165	0.033	0.364	-0.428	1.720	0.409	-0.424	-0.422	0.785	0.620	1.338
## 168	0.643	0.245	0.736	0.986	0.658	0.451	0.895	1.220	1.390	1.465
## 169	-0.700	-1.344	-1.061	-0.297	-0.276	0.114	-0.370	0.736	1.663	1.095
## 171	-0.085	0.508	0.546	1.516	0.288	0.199	0.919	1.113	0.846	1.403
## 173	0.376	-0.985	-0.186	0.655	0.193	0.580	0.010	1.035	1.489	0.787
## 174	0.800	0.875	1.097	0.634	0.938	1.219	1.370	1.574	0.581	0.918
## 176	0.439	0.179	0.230	0.507	0.432	0.114	0.598	0.968	0.295	0.406
## 182	0.228	0.531	0.162	0.499	0.461	0.619	0.423	0.617	0.388	0.421
## 183	0.367	0.807	0.836	0.208	0.633	-0.150	0.219	0.825	1.096	0.271
## 185	0.209	0.305	-0.059	1.044	1.444	0.722	1.535	1.189	0.814	0.810
## 186	0.516	0.214	0.217	0.305	0.575	0.402	0.559	1.187	0.355	0.462
## 188	0.422	0.382	0.444	0.499	0.650	0.431	0.565	1.085	0.526	0.337
## 189	0.401	0.394	0.426	0.459	0.709	0.469	0.626	1.186	0.614	0.459
## 191	0.337	0.579	0.286	0.305	0.827	0.922	0.775	1.357	0.614	0.657
## 192	1.025	1.374	0.806	0.195	1.263	-0.164	0.981	0.561	1.362	1.721
## 193	0.328	0.969	0.562	1.859	1.001	0.029	1.063	1.111	0.980	1.420
## 194	0.481	-1.120	-0.568	1.274	0.153	0.443	-0.126	1.147	1.282	0.668
## 195	0.575	-0.077	0.363	0.398	0.190	0.015	0.142	1.200	0.727	0.427
## 197	0.332	0.338	0.029	0.428	0.347	0.217	0.586	0.499	-0.232	0.530
## 198	0.729	0.455	0.389	0.438	0.769	0.319	0.480	1.529	0.504	0.140
## 200	0.245	0.046	0.468	0.454	0.493	0.627	0.554	1.088	0.575	0.523
## 202	0.390	0.268	0.001	0.301	0.471	0.282	0.170	0.201	0.119	0.272
## 203	0.319	0.261	0.490	0.354	0.715	0.520	0.681	1.208	0.687	0.512
## 204	-0.041	0.000	0.635	1.328	0.659	0.633	1.252	0.987	1.747	1.014
## 208	0.207	0.248	0.176	0.269	0.431	0.299	0.542	0.411	0.072	0.273
## 210	-0.282	-0.667	-0.038	0.381	-0.198	0.306	-0.342	0.968	1.293	0.681
## 211	0.210	0.522	-0.015	0.413	1.119	-0.142	0.882	0.860	1.133	0.724
## 212	0.527	0.395	0.004	0.466	0.630	-0.011	0.384	1.272	0.758	1.000
## 213	0.422	0.286	0.535	0.666	0.642	0.342	0.493	1.101	0.548	0.202
## 214	0.309	0.146	0.280	0.450	0.277	0.478	1.099	0.102	0.065	0.333
## 216	0.066	0.055	-0.281	-0.074	0.439	0.474	0.245	0.757	0.883	0.777
## 217	0.460	0.454	0.525	0.320	0.770	0.545	0.609	1.039	0.339	0.298
## 218	0.616	0.101	0.332	0.329	0.377	0.001	0.310	1.307	0.740	0.129

## 219	0.075	-0.061	-0.307	-0.148	0.400	0.336	0.097	0.369	0.238	0.425	
## 220	0.396	-1.045	-0.368	0.800	-0.166	0.338	-0.121	0.894	0.900	0.249	
## 221	0.550	0.529	0.315	0.903	1.356	1.353	1.536	1.415	0.935	0.874	
## 222	0.468	0.184	0.348	0.507	0.835	0.355	0.656	0.993	0.783	0.728	
## 224	0.166	0.544	-0.117	0.362	0.761	0.393	0.339	0.876	0.064	-0.040	
## 225	0.192	1.010	0.300	-0.085	0.685	-0.247	-0.025	0.801	0.030	-0.417	
##	F2001	F2002	F2003	F2004	F2005	F2006	F2007	F2008	F2009	F2010	F2011
## 1	1.311	1.365	0.587	1.373	0.401	1.720	0.675	0.704	0.895	1.613	1.397
## 2	1.532	0.492	0.970	0.444	0.189	0.345	1.316	0.978	0.910	1.191	1.055
## 3	1.856	1.258	1.585	0.988	1.264	1.395	1.220	1.185	0.945	2.265	1.398
## 5	1.480	0.835	1.949	0.936	0.851	1.485	1.024	0.946	1.413	0.471	1.677
## 6	0.295	0.735	0.889	0.414	1.021	0.561	0.885	0.501	0.708	1.194	0.880
## 7	0.587	0.706	0.816	0.521	0.828	0.691	0.957	0.411	0.566	1.090	0.489
## 9	0.425	0.278	0.635	0.470	0.281	0.596	-0.169	0.601	0.857	0.135	0.386
## 12	0.336	0.736	0.835	0.723	1.211	0.721	0.929	0.625	1.030	0.673	0.208
## 13	1.501	1.531	1.464	0.829	0.628	0.907	2.137	1.582	1.544	0.656	1.373
## 15	0.135	0.856	0.989	0.311	0.455	0.385	0.937	0.842	0.410	0.314	0.363
## 16	1.216	1.552	1.256	1.385	1.065	1.823	1.080	1.329	1.224	2.286	1.431
## 17	0.316	0.398	0.239	0.269	0.592	0.814	0.266	0.093	0.844	0.768	0.144
## 21	0.445	0.733	0.948	0.701	0.849	0.655	0.850	0.579	0.922	0.843	0.724
## 22	0.517	0.721	0.936	0.706	1.105	1.035	0.806	0.632	0.950	1.230	0.949
## 23	0.720	0.492	0.498	0.476	0.745	0.955	0.978	0.555	1.394	1.202	0.534
## 24	0.653	1.016	0.641	0.846	0.764	0.935	0.537	0.396	0.658	0.680	1.165
## 26	-0.186	0.359	0.740	-0.133	1.039	-0.505	0.230	0.153	-0.319	0.936	-0.048
## 27	0.746	1.052	0.927	0.768	1.085	0.770	0.969	0.731	0.969	1.112	0.814
## 28	0.570	0.741	0.843	0.548	0.825	0.760	1.007	0.406	0.621	1.053	0.393
## 29	0.602	0.669	0.735	0.673	0.893	0.718	0.743	0.511	0.875	1.012	0.725
## 30	1.648	0.854	0.181	0.533	0.215	0.571	1.883	1.177	1.291	1.361	0.422
## 31	0.502	1.015	0.986	0.867	1.449	1.162	0.867	0.297	0.942	1.250	1.001
## 34	0.571	0.836	0.711	0.594	0.781	0.767	0.604	0.430	0.453	1.225	0.424
## 35	0.198	0.770	0.707	0.779	1.004	0.983	0.626	0.653	1.047	1.181	0.655
## 36	1.421	0.540	1.240	0.485	1.282	2.343	1.333	0.851	0.539	2.915	1.438
## 38	0.400	0.745	0.845	0.957	0.983	0.967	0.537	0.682	1.119	1.162	0.763
## 39	0.291	0.797	0.838	0.831	1.148	1.368	0.605	0.466	1.236	1.181	0.969
## 40	0.054	0.140	0.312	0.563	0.275	0.575	-0.219	0.502	0.520	-0.015	0.206
## 41	0.854	0.961	0.990	0.701	0.733	0.897	1.008	0.415	0.910	0.367	0.333
## 42	0.854	0.961	0.990	0.701	0.733	0.897	1.008	0.415	0.910	0.367	0.333
## 43	1.038	1.131	0.822	1.112	1.048	1.232	1.538	1.090	1.336	0.968	0.792
## 44	0.438	0.675	0.693	0.585	0.681	0.531	0.641	0.385	0.856	1.037	0.467
## 46	0.393	0.872	0.961	0.913	1.014	0.844	0.768	0.664	0.928	1.347	0.844
## 48	0.402	0.292	0.262	0.257	0.115	0.314	0.344	0.208	0.077	0.604	0.548
## 51	0.535	0.945	1.089	0.872	0.787	0.914	0.902	0.642	0.930	0.957	0.538
## 52	1.161	0.836	0.585	0.614	0.335	0.622	0.814	1.031	0.983	2.030	0.715
## 54	1.044	1.652	0.707	1.032	1.282	1.349	2.136	1.853	1.320	-0.199	0.677
## 56	0.518	0.684	0.782	0.491	0.819	0.718	0.871	0.401	0.539	1.193	0.591
## 57	0.909	0.960	1.235	0.806	0.967	1.003	1.260	0.667	0.710	1.222	0.543
## 58	0.478	0.777	0.830	0.835	0.837	0.808	0.818	0.702	0.961	1.087	0.783
## 59	0.656	0.827	0.730	0.647	0.511	0.726	0.602	0.937	0.921	2.325	0.629
## 60	0.572	0.690	0.878	0.639	0.513	0.495	0.430	0.199	0.788	0.496	0.508
## 64	0.517	0.601	0.715	0.525	1.153	0.365	1.133	0.640	0.383	1.287	0.897
## 67	0.461	1.034	1.604	1.019	0.487	1.136	0.952	0.890	1.441	0.260	1.055
## 68	0.728	0.720	0.581	0.526	0.698	0.636	1.032	0.584	0.409	0.978	0.898
## 69	1.365	1.171	0.713	1.233	2.201	1.204	1.946	2.130	1.695	0.242	1.354
## 70	1.391	1.054	1.800	0.969	1.020	1.306	1.407	0.992	1.212	0.395	1.534

## 71	0.502	0.796	0.703	0.531	0.672	0.841	0.850	0.357	0.800	0.760	0.214
## 72	0.286	0.662	0.893	0.831	0.808	0.737	0.926	0.782	0.824	1.080	0.657
## 73	1.316	1.380	1.103	1.188	1.498	1.221	1.090	1.376	0.688	1.324	1.060
## 75	1.292	1.491	1.258	0.998	1.025	1.254	2.088	1.542	1.282	0.196	1.121
## 76	0.565	0.825	0.988	0.739	0.967	0.991	0.946	0.698	0.884	1.276	0.883
## 77	1.280	0.862	1.400	1.027	0.841	1.425	0.830	0.982	1.283	1.318	1.618
## 78	1.314	0.435	0.385	0.337	0.213	0.254	1.080	0.881	0.771	1.584	0.394
## 79	0.831	1.186	2.328	1.469	1.878	1.717	1.363	0.959	0.851	3.058	1.684
## 80	0.691	0.627	0.905	0.433	1.004	0.739	0.678	0.502	0.507	1.201	0.677
## 81	0.557	0.695	0.816	0.507	0.827	0.698	0.921	0.405	0.547	1.137	0.539
## 82	0.344	0.556	0.990	0.611	0.801	0.612	0.597	0.213	0.692	0.685	0.429
## 83	0.792	1.130	0.979	1.040	1.190	1.117	0.974	1.113	0.931	1.321	1.095
## 84	1.244	1.281	1.040	1.171	1.401	1.186	1.034	1.362	0.811	1.328	1.092
## 85	0.825	1.074	0.948	0.942	1.321	1.003	1.025	0.558	1.162	1.115	0.968
## 86	0.758	0.953	1.240	0.888	1.042	0.935	1.151	0.624	0.806	1.206	0.489
## 87	1.487	0.716	1.501	0.478	0.479	0.609	1.305	0.958	1.042	0.774	1.047
## 88	0.396	0.776	0.672	0.491	0.956	0.621	0.769	0.566	0.811	0.806	0.730
## 89	1.391	1.423	0.710	0.543	0.236	0.699	2.142	1.495	1.613	0.806	0.891
## 90	0.584	0.784	1.784	1.235	0.448	1.032	1.101	0.753	0.907	1.147	0.959
## 91	0.473	0.827	0.665	0.545	0.567	0.638	0.607	0.263	1.134	1.129	0.365
## 92	0.530	0.607	0.594	0.540	0.710	0.422	0.464	0.223	0.563	0.766	0.306
## 93	1.525	1.716	0.943	1.528	0.828	1.847	0.874	1.136	1.177	2.214	1.345
## 94	1.289	1.168	0.960	1.084	0.526	1.621	0.935	1.155	0.881	2.712	0.910
## 95	0.551	0.830	1.024	0.900	1.175	1.159	1.345	0.836	0.804	-0.104	0.559
## 96	0.516	0.891	1.049	0.952	1.165	1.229	1.321	0.829	0.874	-0.111	0.681
## 97	0.855	0.729	0.559	0.556	0.199	0.593	0.521	0.724	0.824	2.321	0.578
## 98	1.533	0.913	1.526	0.746	0.563	0.840	1.552	1.133	1.234	0.755	1.253
## 100	0.418	0.630	0.326	1.116	0.737	0.390	1.004	0.671	0.801	0.922	0.596
## 101	0.983	0.666	0.498	0.620	0.103	0.752	0.516	0.732	0.549	2.625	0.506
## 103	0.602	0.734	0.879	0.648	0.762	0.890	0.634	0.824	1.293	1.106	1.137
## 105	0.859	0.844	0.926	1.576	0.847	0.694	1.605	1.525	1.064	0.384	0.523
## 106	0.893	0.650	0.618	1.185	0.918	0.478	1.237	0.946	0.950	0.498	0.310
## 107	1.270	1.604	1.564	1.519	0.724	1.911	1.085	1.434	1.323	2.602	1.373
## 109	0.766	0.664	1.037	0.480	0.961	0.929	0.649	0.334	0.696	1.431	0.214
## 111	1.146	0.833	0.626	0.647	0.280	0.720	0.728	0.989	0.844	2.353	0.663
## 112	0.594	0.621	0.775	0.829	0.891	0.358	0.664	0.355	0.417	1.025	0.331
## 113	0.513	0.875	0.938	0.911	1.108	1.119	1.041	1.131	1.365	1.420	1.102
## 114	1.291	0.905	0.950	0.745	0.717	0.810	0.860	0.879	0.764	2.074	0.819
## 115	1.440	1.382	1.670	0.899	0.663	0.955	1.931	1.385	1.405	0.480	1.657
## 118	0.640	0.580	0.682	0.505	0.599	0.838	0.735	0.559	0.900	1.188	1.132
## 119	0.592	0.963	0.982	0.879	1.366	0.997	0.904	0.512	0.648	1.030	0.771
## 120	0.689	0.785	0.781	0.755	0.938	0.707	0.763	0.628	0.865	1.111	0.754
## 122	0.583	1.246	1.238	1.214	1.396	1.097	0.933	0.548	0.960	1.630	1.207
## 123	1.669	0.942	1.401	0.699	0.670	0.996	1.398	1.271	1.080	1.243	1.013
## 125	0.506	0.681	0.802	0.515	0.834	0.736	0.846	0.407	0.553	1.177	0.596
## 126	1.360	1.353	1.360	1.490	1.389	1.444	1.060	1.321	0.968	2.020	1.671
## 127	0.499	0.401	0.690	0.313	0.381	0.312	0.537	0.294	0.797	1.076	0.865
## 129	0.549	0.730	0.894	0.365	0.806	0.930	0.503	0.558	1.053	0.306	1.026
## 132	1.381	0.916	1.645	0.851	0.806	1.183	1.643	1.103	1.468	0.452	1.403
## 133	1.684	1.786	0.490	1.760	0.923	1.221	2.729	1.759	1.397	0.306	0.757
## 136	1.745	1.108	1.593	1.029	1.188	1.389	0.930	1.069	1.160	2.020	1.698
## 137	0.481	0.683	0.589	0.437	1.045	0.581	0.647	0.384	0.585	1.105	0.812
## 138	0.634	0.676	0.653	0.600	0.932	0.855	0.507	0.495	0.918	1.203	0.510
## 141	0.448	0.551	0.306	0.351	0.678	0.796	0.727	0.347	1.119	1.138	0.231

## 142	1.266	1.526	1.207	1.160	1.252	1.507	2.074	1.432	1.223	0.100	1.071
## 143	1.027	1.030	0.788	0.913	0.762	0.683	1.146	1.129	0.909	1.254	1.022
## 144	0.572	0.420	0.238	0.033	0.443	0.391	0.237	0.564	0.059	0.598	0.673
## 145	0.502	0.790	0.738	0.576	0.841	0.707	0.844	0.567	0.821	0.868	0.695
## 146	0.165	0.542	0.778	0.545	1.169	1.179	0.872	0.283	1.313	1.557	0.956
## 147	0.225	0.776	0.776	0.698	1.182	1.204	0.816	0.585	1.301	1.426	0.852
## 151	0.613	1.386	1.089	1.300	1.759	1.504	1.702	1.619	1.393	-0.341	1.398
## 152	0.661	0.891	0.838	0.778	0.814	0.838	0.652	0.537	0.728	1.104	0.840
## 153	0.762	1.021	0.527	1.006	0.211	1.023	0.650	0.362	1.034	1.290	0.833
## 156	0.496	0.671	0.519	0.234	0.658	0.252	0.438	0.342	0.317	1.007	0.388
## 157	0.609	1.074	0.721	0.394	0.511	0.915	0.252	0.259	0.897	0.326	0.601
## 158	0.490	0.754	0.769	0.682	0.813	0.809	0.555	0.604	0.869	1.063	0.791
## 159	0.825	0.733	0.795	0.687	0.782	0.831	0.875	0.574	0.718	1.065	0.620
## 161	1.285	1.700	0.366	0.781	0.881	0.835	2.147	1.752	1.274	0.403	0.765
## 162	1.165	0.681	1.458	1.062	1.032	1.561	0.775	0.649	1.423	1.122	1.615
## 163	0.743	0.893	1.060	0.567	0.865	0.821	1.071	0.520	0.651	1.177	0.531
## 164	0.970	1.436	1.179	1.228	0.842	1.652	0.989	1.162	1.114	2.001	1.444
## 165	1.537	1.220	0.145	0.556	0.298	0.514	2.126	1.335	1.617	1.167	0.497
## 168	1.074	1.167	1.385	1.430	1.321	1.595	1.021	1.099	1.668	1.135	1.447
## 169	0.522	0.009	0.166	0.562	0.898	1.813	0.385	0.444	0.690	1.311	1.147
## 171	1.684	1.135	1.636	0.852	0.408	0.832	1.808	1.260	1.362	0.696	1.280
## 173	0.884	1.092	0.981	0.975	0.542	1.202	0.706	0.906	1.028	2.180	0.893
## 174	1.168	1.425	1.150	1.157	1.366	1.370	1.202	1.294	0.703	1.432	1.187
## 176	0.734	0.518	0.719	0.304	0.513	0.537	0.813	0.500	0.820	1.019	0.927
## 182	0.830	0.820	1.047	0.465	1.070	0.845	0.958	0.677	1.290	1.091	1.057
## 183	0.516	0.453	0.791	0.874	1.031	0.361	0.721	0.575	0.662	1.083	0.446
## 185	1.406	0.812	1.598	1.004	0.902	1.526	0.835	0.864	1.360	0.908	1.613
## 186	0.698	0.852	0.759	0.673	0.722	0.496	0.496	0.421	0.783	1.105	0.739
## 188	0.573	0.643	0.864	0.517	0.941	0.758	0.752	0.436	0.523	1.177	0.642
## 189	0.689	0.627	0.910	0.438	1.000	0.739	0.681	0.505	0.504	1.200	0.684
## 191	0.781	1.010	1.069	1.097	1.426	1.003	0.980	1.076	1.414	1.509	1.074
## 192	1.071	1.566	0.914	1.198	1.825	1.485	1.938	1.954	1.432	-0.279	1.267
## 193	1.450	1.258	1.848	0.974	0.808	1.091	1.804	1.195	1.371	0.459	1.667
## 194	1.163	0.872	0.542	0.644	0.226	1.017	0.786	1.033	0.635	2.475	0.656
## 195	0.784	0.922	0.871	0.442	0.662	0.720	0.790	0.593	0.789	0.535	0.086
## 197	0.433	0.646	1.010	0.899	1.035	0.836	0.770	0.462	0.892	1.013	0.723
## 198	0.733	0.734	0.869	0.625	0.974	0.773	0.638	0.496	0.605	1.405	0.360
## 200	0.641	0.732	0.973	0.703	0.932	0.968	0.847	0.711	0.876	1.249	0.866
## 202	0.564	0.780	0.455	0.632	0.769	0.550	0.821	0.292	0.356	0.869	0.602
## 203	0.715	0.603	0.818	0.379	1.145	0.731	0.627	0.463	0.573	1.247	0.577
## 204	1.992	1.250	1.697	0.916	1.047	1.271	1.388	1.374	0.865	1.752	1.038
## 208	0.183	0.675	0.908	0.681	1.232	0.967	0.455	0.774	1.295	1.425	1.099
## 210	0.560	1.123	1.052	1.052	0.725	1.255	0.802	0.777	0.896	1.482	1.121
## 211	0.631	1.011	1.194	1.035	1.116	1.250	1.332	0.838	0.948	-0.050	0.851
## 212	0.786	0.951	0.990	0.863	1.153	1.026	1.143	0.212	0.398	0.695	0.537
## 213	0.616	0.782	0.887	0.541	0.821	0.739	0.994	0.444	0.637	1.054	0.419
## 214	1.226	0.610	0.324	0.458	0.802	0.586	0.131	0.719	0.508	0.261	0.447
## 216	0.401	0.452	0.360	0.462	0.536	0.394	0.921	0.712	0.438	0.878	0.669
## 217	0.626	0.864	0.912	0.676	0.933	0.674	0.760	0.518	0.816	1.227	0.601
## 218	0.693	0.722	1.043	0.385	0.838	0.892	0.506	0.199	0.671	1.092	0.118
## 219	0.689	0.827	0.518	0.640	0.820	0.607	0.882	0.331	0.361	0.930	0.730
## 220	0.855	0.728	0.559	0.554	0.196	0.587	0.519	0.722	0.831	2.326	0.581
## 221	1.296	1.249	1.387	1.550	1.210	1.406	0.903	1.351	0.938	1.898	1.579
## 222	0.834	1.021	0.893	0.913	1.095	0.998	1.195	0.935	0.957	1.219	0.921

## 224	0.263	0.711	0.871	0.606	0.948	0.623	0.780	0.438	0.306	1.210	0.956
## 225	0.004	0.487	0.355	-0.004	0.945	-0.260	0.127	0.078	-0.226	0.935	0.232
##	F2012	F2013	F2014	F2015	F2016	F2017	F2018	F2019	F2020	F2021	F2022
## 1	0.223	1.281	0.456	1.093	1.555	1.540	1.544	0.910	0.498	1.327	2.012
## 2	1.487	1.333	1.198	1.569	1.464	1.121	2.028	1.675	1.498	1.536	1.518
## 3	1.147	1.192	1.690	1.121	1.757	1.512	1.210	1.115	1.926	2.330	1.688
## 5	1.265	0.831	1.946	1.690	1.990	1.925	1.919	1.964	2.562	1.533	3.243
## 6	0.552	1.044	0.828	1.331	1.609	0.870	1.395	1.752	1.162	1.553	1.212
## 7	0.640	0.770	0.814	1.051	1.125	0.960	0.664	0.843	1.224	0.893	0.839
## 9	0.798	0.442	0.951	0.957	0.488	1.095	0.878	0.760	1.123	1.031	0.643
## 12	0.308	1.499	1.198	1.087	1.172	1.141	1.129	1.422	1.416	0.629	0.754
## 13	1.783	1.098	2.409	2.167	2.096	1.741	2.524	2.370	2.315	1.395	2.498
## 15	0.344	0.565	0.883	1.114	1.042	1.331	1.023	1.443	1.611	0.879	1.480
## 16	1.385	1.403	1.694	2.240	1.598	2.080	2.247	2.108	2.027	2.464	2.017
## 17	0.235	0.230	0.482	0.722	1.337	1.124	0.881	1.136	0.898	1.300	1.216
## 21	0.644	0.785	0.697	1.502	1.446	1.342	0.850	1.556	1.716	1.286	1.031
## 22	0.595	0.853	0.940	1.111	1.025	1.160	1.056	1.147	1.031	1.522	0.884
## 23	0.512	0.742	0.860	1.068	1.487	1.457	1.346	1.329	1.090	1.707	1.523
## 24	0.831	0.507	0.955	1.533	0.824	0.981	0.562	0.921	1.315	0.738	0.644
## 26	0.473	0.770	-0.092	1.546	1.469	0.017	0.734	1.525	0.493	-0.425	-1.305
## 27	1.023	0.922	1.153	1.516	1.457	1.363	1.148	1.517	1.477	1.154	0.926
## 28	0.610	0.782	0.878	1.065	1.204	0.971	0.703	0.915	1.317	0.956	0.875
## 29	0.912	1.195	1.028	1.281	1.740	1.468	1.410	1.624	1.783	1.458	1.446
## 30	1.678	1.476	1.196	1.438	1.899	0.954	2.192	2.112	2.037	1.629	1.831
## 31	0.492	0.849	0.888	1.111	1.075	1.212	1.156	1.065	1.044	1.624	0.802
## 34	0.875	1.005	0.614	1.081	1.473	1.095	0.787	1.552	1.401	0.912	0.948
## 35	0.416	0.707	0.882	1.160	1.213	1.165	1.156	1.450	1.281	1.470	1.044
## 36	2.144	1.182	0.288	1.231	2.373	1.480	0.477	1.311	1.128	2.515	1.268
## 38	0.491	0.865	0.697	0.983	1.222	1.224	1.145	1.264	1.140	1.268	1.032
## 39	0.553	1.013	0.856	1.294	0.939	1.026	1.527	1.306	1.192	1.146	0.738
## 40	0.699	0.434	0.488	0.848	1.022	0.873	0.538	0.683	0.947	0.877	0.407
## 41	0.530	0.763	0.703	1.175	0.770	1.338	1.183	1.776	1.882	2.017	1.432
## 42	0.530	0.763	0.703	1.175	0.770	1.338	1.183	1.776	1.882	2.017	1.432
## 43	0.626	1.073	1.062	1.297	1.319	1.573	1.361	1.422	1.620	1.701	1.906
## 44	0.668	0.834	0.854	1.249	1.080	0.820	1.137	1.397	1.583	1.073	0.874
## 46	0.523	1.003	0.976	1.053	1.546	1.320	1.450	1.483	1.692	1.658	1.480
## 48	0.258	0.455	0.158	-0.430	0.310	0.675	0.238	0.220	0.274	0.568	0.479
## 51	0.611	0.885	1.144	1.439	1.370	1.275	1.177	1.634	1.722	1.304	1.437
## 52	0.970	1.238	1.048	1.139	1.493	0.776	2.119	1.524	1.668	1.994	1.237
## 54	1.139	0.397	2.677	1.516	1.852	1.619	2.109	2.180	2.633	1.690	2.219
## 56	0.703	0.715	0.704	0.918	1.057	0.821	0.561	0.752	1.087	0.727	0.688
## 57	0.746	1.208	1.106	1.339	1.016	1.032	1.158	1.266	1.488	0.995	0.982
## 58	0.663	0.491	1.011	1.393	1.550	1.155	0.967	1.279	1.509	1.032	0.736
## 59	0.939	1.049	1.254	1.211	1.396	0.616	2.049	1.040	1.117	1.727	0.655
## 60	0.634	0.619	0.654	1.285	1.260	0.723	0.774	0.972	1.484	0.999	0.658
## 64	0.696	0.566	0.781	1.235	1.216	0.688	1.064	1.623	0.770	0.669	1.371
## 67	0.359	0.597	1.764	0.813	0.803	1.490	0.831	0.877	0.839	1.012	1.396
## 68	0.589	0.916	0.646	0.517	0.970	1.127	0.953	1.065	1.237	1.075	1.346
## 69	1.540	1.424	2.591	2.613	2.151	1.487	2.157	1.452	3.317	1.938	2.062
## 70	1.220	0.714	2.049	1.612	1.794	1.796	2.060	2.023	2.551	1.337	2.929
## 71	0.722	0.536	0.616	0.681	1.127	0.901	0.631	0.857	0.829	0.791	0.359
## 72	0.615	0.794	0.805	1.024	1.505	1.353	1.026	1.534	1.377	1.063	0.994
## 73	0.890	1.001	1.188	1.200	1.635	1.741	1.028	1.349	1.770	1.675	1.323
## 75	1.349	0.583	2.519	1.674	1.988	1.653	2.393	2.332	2.516	1.325	2.596

## 76	0.614	0.841	0.887	1.132	1.217	1.292	1.081	1.320	1.284	1.494	0.996
## 77	0.924	0.869	1.417	1.382	1.726	2.005	0.739	1.300	1.923	1.504	2.228
## 78	1.235	1.317	1.060	0.904	1.561	0.642	1.905	1.381	1.307	1.655	1.040
## 79	1.625	1.381	1.447	0.205	2.381	1.210	0.934	2.206	1.274	2.482	1.413
## 80	0.584	0.776	0.641	0.837	0.945	0.920	0.543	1.169	1.235	0.767	0.698
## 81	0.671	0.750	0.763	0.998	1.095	0.907	0.620	0.803	1.160	0.826	0.773
## 82	0.520	0.624	0.638	1.143	1.425	1.069	0.884	1.418	1.728	1.406	0.916
## 83	0.556	1.068	0.857	1.155	1.167	1.522	1.188	1.408	1.260	1.559	1.195
## 84	0.795	1.055	1.168	1.192	1.572	1.674	1.125	1.419	1.663	1.660	1.295
## 85	0.958	0.894	1.071	1.352	1.506	1.149	1.137	1.178	1.400	0.875	1.066
## 86	0.759	1.133	1.306	1.384	1.164	1.061	1.277	1.507	1.537	0.883	1.095
## 87	1.492	0.866	1.370	1.518	1.598	1.318	1.837	1.591	1.734	1.546	2.028
## 88	0.639	0.915	0.666	1.126	1.368	1.034	0.804	1.233	1.813	1.098	0.723
## 89	1.727	1.159	2.229	2.067	1.890	1.336	2.524	2.353	1.990	1.430	2.142
## 90	0.667	0.687	1.660	0.419	1.411	1.694	0.820	1.339	0.786	0.921	1.201
## 91	0.516	0.451	0.530	0.711	1.088	0.966	0.874	0.802	0.520	0.733	0.790
## 92	0.459	0.799	0.812	0.841	1.488	1.055	0.973	1.118	1.322	1.110	1.085
## 93	1.090	1.642	1.079	1.856	1.669	1.737	2.044	1.597	1.346	2.176	2.370
## 94	1.293	1.263	1.175	1.940	1.672	1.572	2.406	1.626	1.857	2.644	2.147
## 95	0.705	0.568	1.357	0.449	1.040	1.264	0.783	1.201	1.075	1.019	1.764
## 96	0.610	0.428	1.515	0.441	1.118	1.367	0.881	1.175	1.199	1.020	1.840
## 97	1.035	1.108	0.871	1.331	1.607	0.735	2.003	1.212	1.451	1.786	1.079
## 98	1.543	1.006	1.638	1.704	1.716	1.606	1.834	1.698	1.902	1.569	2.135
## 100	0.395	0.628	0.560	0.833	1.323	0.796	0.926	1.272	1.437	1.270	1.335
## 101	1.067	1.002	0.787	1.429	1.641	0.920	1.972	1.281	1.617	1.923	1.358
## 103	1.026	0.930	1.024	1.164	1.237	1.500	0.675	1.624	1.344	1.421	1.280
## 105	0.419	0.304	1.518	1.217	1.419	1.593	0.863	1.826	1.864	1.857	1.610
## 106	0.402	0.519	0.987	0.944	1.637	1.459	0.966	1.485	1.551	1.762	1.659
## 107	1.562	1.349	1.451	2.104	1.695	1.962	2.358	1.895	1.975	2.676	2.275
## 109	1.048	1.220	0.837	1.497	1.519	1.243	0.955	2.200	1.719	1.287	1.112
## 111	1.045	1.260	1.051	1.383	1.629	1.023	2.154	1.412	1.623	2.039	1.290
## 112	0.660	0.867	1.091	1.529	2.015	1.215	1.101	1.668	0.791	1.204	1.372
## 113	0.869	0.983	0.934	1.288	1.412	1.539	1.306	1.494	1.593	1.474	1.556
## 114	0.770	1.240	1.237	0.711	1.587	0.525	1.737	0.920	1.174	1.924	0.559
## 115	1.611	0.927	2.232	2.046	2.028	1.795	2.260	2.079	2.367	1.232	2.534
## 118	0.880	0.749	0.777	1.134	1.147	1.379	0.983	1.438	1.137	1.194	0.860
## 119	0.925	0.676	1.129	1.141	1.361	1.016	1.022	1.220	1.306	0.762	0.816
## 120	0.901	1.121	1.199	1.372	1.836	1.419	1.443	1.700	1.688	1.473	1.367
## 122	0.426	0.969	0.787	1.017	1.089	1.347	1.040	1.089	1.010	1.687	0.887
## 123	1.440	1.343	1.507	1.403	1.748	1.224	1.441	1.290	1.643	2.123	1.955
## 125	0.699	0.714	0.674	0.892	1.034	0.800	0.540	0.752	1.092	0.716	0.684
## 126	0.942	1.588	1.480	1.563	1.825	2.141	1.086	1.435	1.919	1.855	1.711
## 127	0.665	0.797	0.905	1.158	1.084	1.319	1.051	1.462	1.109	0.987	0.595
## 129	0.948	0.798	0.911	1.141	1.346	1.629	1.240	1.378	1.726	1.163	1.249
## 132	1.396	0.724	1.811	1.902	1.773	1.962	1.940	1.919	2.200	1.500	2.737
## 133	0.230	1.024	1.879	2.131	1.391	2.493	2.207	1.847	2.353	1.994	2.197
## 136	1.299	1.233	1.603	1.115	1.840	2.131	0.597	1.466	2.107	1.798	2.303
## 137	0.746	0.479	0.716	1.034	1.262	0.837	0.810	1.209	1.026	0.687	0.834
## 138	0.915	0.986	0.902	1.245	1.443	1.328	1.064	1.726	1.669	1.656	1.436
## 141	0.402	0.189	0.337	0.654	1.169	1.071	0.627	0.854	0.229	0.632	1.132
## 142	1.149	0.427	2.564	1.290	1.936	1.731	2.135	2.142	2.483	1.316	2.601
## 143	0.870	1.026	1.005	1.215	2.026	1.768	1.384	1.303	1.764	1.689	2.421
## 144	0.125	0.999	0.544	0.568	1.214	0.627	1.173	1.118	0.912	0.982	1.319
## 145	0.683	1.201	0.802	1.018	1.315	1.025	0.900	1.161	1.526	1.026	0.842

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## 146 0.588 0.809 0.987 0.832 0.933 0.843 1.065 0.943 0.776 1.425 0.428
## 147 0.526 0.922 1.012 1.187 1.168 1.170 1.093 1.229 1.127 1.559 0.791
## 151 1.063 0.791 2.412 1.781 1.718 1.551 1.485 1.208 2.389 1.499 1.918
## 152 0.754 0.473 0.485 1.213 0.933 1.421 1.121 0.890 0.496 1.329 1.055
## 153 0.263 0.778 0.358 0.529 1.233 1.252 1.359 0.566 0.394 1.121 1.389
## 156 0.295 0.800 0.393 0.160 1.129 0.790 0.662 0.695 1.082 1.180 1.221
## 157 0.825 0.327 1.119 1.493 0.250 1.150 0.539 1.276 1.369 0.696 0.649
## 158 0.808 0.647 0.883 1.256 1.454 0.978 0.734 1.048 1.778 1.287 0.878
## 159 0.912 1.057 0.960 1.155 1.603 1.300 1.329 1.407 1.560 1.431 1.405
## 161 1.383 0.651 2.380 2.013 2.056 1.475 2.434 2.652 2.677 1.466 2.056
## 162 0.797 0.941 1.349 1.405 1.682 2.109 0.906 1.291 1.990 1.251 2.318
## 163 0.762 0.774 0.869 1.093 1.203 0.967 0.848 0.950 1.349 0.922 0.848
## 164 1.376 1.212 1.541 1.971 1.515 1.893 2.004 1.840 1.734 2.165 1.855
## 165 1.828 1.370 1.552 1.799 1.876 1.153 2.266 2.241 2.256 1.447 1.949
## 168 1.255 1.218 1.322 1.902 1.647 1.370 1.609 1.645 1.407 1.747 1.686
## 169 1.992 1.292 0.375 0.106 0.854 0.360 0.682 0.050 0.742 2.320 1.944
## 171 1.687 0.992 1.607 1.833 1.768 1.700 1.971 1.822 1.995 1.529 2.115
## 173 1.241 1.204 1.249 1.867 1.533 1.780 1.887 1.690 1.488 2.203 1.745
## 174 0.834 1.180 1.105 1.212 1.542 1.744 0.964 1.396 1.665 1.782 1.405
## 176 0.922 0.749 0.863 1.169 1.100 1.184 0.917 1.377 1.434 1.032 0.872
## 182 0.976 1.089 1.121 1.467 1.267 1.623 0.709 1.528 1.724 1.532 1.449
## 183 0.508 0.655 0.838 1.300 1.562 1.103 1.016 1.811 0.890 0.809 1.094
## 185 1.043 0.906 1.603 1.533 1.714 2.036 1.149 1.534 2.083 1.431 2.489
## 186 0.977 0.862 0.997 1.006 1.369 1.095 0.823 1.275 1.315 1.034 1.004
## 188 0.625 0.744 0.619 0.861 0.999 0.844 0.532 0.967 1.161 0.732 0.689
## 189 0.581 0.773 0.642 0.839 0.949 0.911 0.539 1.169 1.229 0.761 0.698
## 191 0.986 1.118 1.136 1.309 1.790 1.439 1.250 1.530 1.682 1.277 1.296
## 192 1.313 0.857 2.704 2.069 1.841 1.588 1.844 1.568 2.943 1.846 2.110
## 193 1.512 0.782 2.169 1.972 1.859 1.837 2.343 2.096 2.514 1.181 2.798
## 194 1.044 1.383 1.213 1.319 1.796 1.142 2.389 1.562 1.868 2.238 1.535
## 195 0.376 0.685 0.704 0.718 1.010 1.351 1.108 1.304 1.728 1.898 1.383
## 197 0.820 0.885 0.935 1.102 0.995 1.450 1.055 1.399 1.091 1.126 0.911
## 198 1.023 1.234 0.845 1.392 1.659 1.202 0.954 1.857 1.596 1.112 1.014
## 200 0.571 0.754 0.923 1.096 1.125 1.243 1.123 1.273 1.134 1.554 0.975
## 202 0.671 0.807 0.713 0.759 1.284 1.077 1.021 1.599 1.398 1.190 0.846
## 203 0.626 0.792 0.692 0.824 0.925 1.177 0.667 1.191 1.395 0.952 0.714
## 204 1.607 1.470 1.879 1.192 1.896 1.377 1.507 1.340 2.015 2.555 2.291
## 208 1.117 1.060 1.136 1.159 1.262 1.735 1.102 1.616 1.236 1.499 1.416
## 210 1.086 0.739 0.909 1.556 1.059 1.632 1.498 1.204 1.210 1.699 1.482
## 211 0.576 0.364 1.718 0.614 1.161 1.424 0.998 1.231 1.373 0.929 1.911
## 212 1.448 0.614 0.501 1.531 2.224 1.433 1.276 1.034 1.324 1.144 1.217
## 213 0.619 0.755 0.882 1.071 1.162 0.964 0.722 0.898 1.320 0.922 0.894
## 214 0.836 0.149 1.162 1.048 0.301 1.546 1.196 0.766 0.890 0.790 0.382
## 216 0.402 0.706 0.585 0.573 1.146 1.131 0.613 0.897 1.226 1.147 1.479
## 217 0.513 0.941 0.865 1.094 1.098 0.726 0.843 1.235 1.350 0.734 0.533
## 218 0.736 0.895 0.540 1.222 1.191 1.121 0.817 1.811 1.477 1.114 1.033
## 219 0.701 0.773 0.686 0.724 1.267 1.062 0.920 1.379 1.274 1.029 0.951
## 220 1.043 1.114 0.863 1.326 1.615 0.735 2.007 1.204 1.455 1.787 1.074
## 221 1.344 1.423 1.401 1.510 1.732 2.204 0.942 1.477 2.069 1.593 1.970
## 222 1.074 1.016 1.053 1.412 1.660 1.429 1.290 1.444 1.711 1.447 1.394
## 224 0.972 0.790 0.917 1.450 1.401 0.105 0.648 0.855 0.891 0.822 0.686
## 225 0.334 0.118 0.025 0.970 1.270 0.088 0.453 0.925 0.389 -0.125 -0.490
##      F2022_Fahrenheit
## 1          35.6216

```


## 2	34.7324
## 3	35.0384
## 5	37.8374
## 6	34.1816
## 7	33.5102
## 9	33.1574
## 12	33.3572
## 13	36.4964
## 15	34.6640
## 16	35.6306
## 17	34.1888
## 21	33.8558
## 22	33.5912
## 23	34.7414
## 24	33.1592
## 26	29.6510
## 27	33.6668
## 28	33.5750
## 29	34.6028
## 30	35.2958
## 31	33.4436
## 34	33.7064
## 35	33.8792
## 36	34.2824
## 38	33.8576
## 39	33.3284
## 40	32.7326
## 41	34.5776
## 42	34.5776
## 43	35.4308
## 44	33.5732
## 46	34.6640
## 48	32.8622
## 51	34.5866
## 52	34.2266
## 54	35.9942
## 56	33.2384
## 57	33.7676
## 58	33.3248
## 59	33.1790
## 60	33.1844
## 64	34.4678
## 67	34.5128
## 68	34.4228
## 69	35.7116
## 70	37.2722
## 71	32.6462
## 72	33.7892
## 73	34.3814
## 75	36.6728
## 76	33.7928
## 77	36.0104
## 78	33.8720
## 79	34.5434

## 80	33.2564
## 81	33.3914
## 82	33.6488
## 83	34.1510
## 84	34.3310
## 85	33.9188
## 86	33.9710
## 87	35.6504
## 88	33.3014
## 89	35.8556
## 90	34.1618
## 91	33.4220
## 92	33.9530
## 93	36.2660
## 94	35.8646
## 95	35.1752
## 96	35.3120
## 97	33.9422
## 98	35.8430
## 100	34.4030
## 101	34.4444
## 103	34.3040
## 105	34.8980
## 106	34.9862
## 107	36.0950
## 109	34.0016
## 111	34.3220
## 112	34.4696
## 113	34.8008
## 114	33.0062
## 115	36.5612
## 118	33.5480
## 119	33.4688
## 120	34.4606
## 122	33.5966
## 123	35.5190
## 125	33.2312
## 126	35.0798
## 127	33.0710
## 129	34.2482
## 132	36.9266
## 133	35.9546
## 136	36.1454
## 137	33.5012
## 138	34.5848
## 141	34.0376
## 142	36.6818
## 143	36.3578
## 144	34.3742
## 145	33.5156
## 146	32.7704
## 147	33.4238
## 151	35.4524
## 152	33.8990

## 153	34.5002
## 156	34.1978
## 157	33.1682
## 158	33.5804
## 159	34.5290
## 161	35.7008
## 162	36.1724
## 163	33.5264
## 164	35.3390
## 165	35.5082
## 168	35.0348
## 169	35.4992
## 171	35.8070
## 173	35.1410
## 174	34.5290
## 176	33.5696
## 182	34.6082
## 183	33.9692
## 185	36.4802
## 186	33.8072
## 188	33.2402
## 189	33.2564
## 191	34.3328
## 192	35.7980
## 193	37.0364
## 194	34.7630
## 195	34.4894
## 197	33.6398
## 198	33.8252
## 200	33.7550
## 202	33.5228
## 203	33.2852
## 204	36.1238
## 208	34.5488
## 210	34.6676
## 211	35.4398
## 212	34.1906
## 213	33.6092
## 214	32.6876
## 216	34.6622
## 217	32.9594
## 218	33.8594
## 219	33.7118
## 220	33.9332
## 221	35.5460
## 222	34.5092
## 224	33.2348
## 225	31.1180

Reorder Multiple Rows in Descending Order

```
ordered_df <- df[order(df$Country, -df$F2022), ]
print("Ordered by Country, then F2022 (descending):")
```

```
## [1] "Ordered by Country, then F2022 (descending):"
```

```
head(ordered_df)
```

```
##      ObjectId      Country ISO2 ISO3
## 1          1 Afghanistan, Islamic Rep. of AF AFG
## 2          2      Albania AL ALB
## 3          3      Algeria DZ DZA
## 5          5 Andorra, Principality of AD AND
## 6          6      Angola AO AGO
## 7          7 Anguilla AI AIA
##
##                                     Indicator
## 1 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 2 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 3 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 5 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 6 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 7 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
##      Unit
## 1 Degree Celsius
## 2 Degree Celsius
## 3 Degree Celsius
## 5 Degree Celsius
## 6 Degree Celsius
## 7 Degree Celsius
##
## 1 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate
## 2 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate
## 3 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate
## 5 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate
## 6 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate
## 7 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate
##      CTS_Code      CTS_Name
## 1      ECCS Surface Temperature Change
## 2      ECCS Surface Temperature Change
## 3      ECCS Surface Temperature Change
## 5      ECCS Surface Temperature Change
## 6      ECCS Surface Temperature Change
## 7      ECCS Surface Temperature Change
##
##                                     CTS_Full_Descriptor
## 1 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 2 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 3 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 5 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 6 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 7 Environment, Climate Change, Climate Indicators, Surface Temperature Change
##      F1961 F1962 F1963 F1964 F1965 F1966 F1967 F1968 F1969 F1970 F1971
## 1 -0.113 -0.164 0.847 -0.764 -0.244 0.226 -0.371 -0.423 -0.539 0.813 0.619
## 2 0.627 0.326 0.075 -0.166 -0.388 0.559 -0.074 0.081 -0.013 -0.106 -0.195
```

```
## 3 0.164 0.114 0.077 0.250 -0.100 0.433 -0.026 -0.067 0.291 0.116 -0.385
## 5 0.736 0.112 -0.752 0.308 -0.490 0.415 0.637 0.018 -0.137 0.121 -0.326
## 6 0.041 -0.152 -0.190 -0.229 -0.196 0.175 -0.081 -0.193 0.188 0.248 -0.097
## 7 0.086 -0.024 0.234 0.189 -0.365 -0.001 -0.257 -0.200 0.317 0.082 -0.269
## F1972 F1973 F1974 F1975 F1976 F1977 F1978 F1979 F1980 F1981 F1982
## 1 -1.124 0.232 -0.489 -0.445 -0.286 0.513 0.129 0.361 0.600 0.483 -0.346
## 2 -0.069 -0.288 -0.139 -0.211 -0.683 0.545 -0.814 0.203 -0.414 -0.351 0.173
## 3 -0.348 -0.015 -0.503 -0.539 -0.782 0.504 0.012 0.654 0.232 0.215 0.399
## 5 -0.499 0.025 -0.371 0.246 -0.045 -0.093 -0.163 0.058 -0.188 0.178 1.044
## 6 -0.035 0.475 -0.158 -0.029 -0.313 0.272 0.037 0.291 0.279 -0.071 0.164
## 7 -0.179 0.170 -0.370 -0.334 -0.426 0.096 0.130 0.034 0.698 0.532 0.097
## F1983 F1984 F1985 F1986 F1987 F1988 F1989 F1990 F1991 F1992 F1993
## 1 0.164 0.145 0.283 -0.141 0.391 0.919 -0.205 0.730 -0.168 -0.294 0.220
## 2 -0.128 -0.270 -0.103 0.569 -0.106 0.370 -0.066 0.795 -0.269 0.106 0.076
## 3 0.560 -0.004 0.508 0.296 0.975 1.304 0.386 1.266 0.031 -0.312 0.552
## 5 0.859 -0.157 0.059 0.387 0.397 0.883 1.162 1.736 0.231 0.386 0.174
## 6 0.487 0.631 0.694 0.176 0.689 0.572 -0.055 0.687 0.341 0.466 0.256
## 7 0.524 0.105 0.006 0.013 0.569 0.457 -0.002 0.432 0.441 0.365 0.535
## F1994 F1995 F1996 F1997 F1998 F1999 F2000 F2001 F2002 F2003 F2004 F2005
## 1 0.430 0.359 -0.116 0.471 0.675 1.198 0.993 1.311 1.365 0.587 1.373 0.401
## 2 1.330 -0.172 -0.038 0.075 0.795 0.670 1.065 1.532 0.492 0.970 0.444 0.189
## 3 0.732 0.595 0.846 1.059 1.109 1.476 0.820 1.856 1.258 1.585 0.988 1.264
## 5 1.508 1.279 0.570 1.788 1.018 1.055 1.050 1.480 0.835 1.949 0.936 0.851
## 6 0.212 0.753 0.370 0.107 1.064 0.417 0.169 0.295 0.735 0.889 0.414 1.021
## 7 0.575 0.651 0.350 0.459 1.060 0.532 0.264 0.587 0.706 0.816 0.521 0.828
## F2006 F2007 F2008 F2009 F2010 F2011 F2012 F2013 F2014 F2015 F2016 F2017 F2018
## 1 1.720 0.675 0.704 0.895 1.613 1.397 0.223 1.281 0.456 1.093 1.555 1.540 1.544
## 2 0.345 1.316 0.978 0.910 1.191 1.055 1.487 1.333 1.198 1.569 1.464 1.121 2.028
## 3 1.395 1.220 1.185 0.945 2.265 1.398 1.147 1.192 1.690 1.121 1.757 1.512 1.210
## 5 1.485 1.024 0.946 1.413 0.471 1.677 1.265 0.831 1.946 1.690 1.990 1.925 1.919
## 6 0.561 0.885 0.501 0.708 1.194 0.880 0.552 1.044 0.828 1.331 1.609 0.870 1.395
## 7 0.691 0.957 0.411 0.566 1.090 0.489 0.640 0.770 0.814 1.051 1.125 0.960 0.664
## F2019 F2020 F2021 F2022 F2022_Fahrenheit
## 1 0.910 0.498 1.327 2.012 35.6216
## 2 1.675 1.498 1.536 1.518 34.7324
## 3 1.115 1.926 2.330 1.688 35.0384
## 5 1.964 2.562 1.533 3.243 37.8374
## 6 1.752 1.162 1.553 1.212 34.1816
## 7 0.843 1.224 0.893 0.839 33.5102
```

Renaming Columns

```
colnames(df)[colnames(df) == "F2022"] <- "Temperature_2022"
colnames(df)[colnames(df) == "F2021"] <- "Temperature_2021"
ls(df)
```

```
## [1] "Country" "CTS_Code" "CTS_Full_Descriptor"
## [4] "CTS_Name" "F1961" "F1962"
## [7] "F1963" "F1964" "F1965"
## [10] "F1966" "F1967" "F1968"
## [13] "F1969" "F1970" "F1971"
## [16] "F1972" "F1973" "F1974"
```

```
## [19] "F1975"          "F1976"          "F1977"
## [22] "F1978"          "F1979"          "F1980"
## [25] "F1981"          "F1982"          "F1983"
## [28] "F1984"          "F1985"          "F1986"
## [31] "F1987"          "F1988"          "F1989"
## [34] "F1990"          "F1991"          "F1992"
## [37] "F1993"          "F1994"          "F1995"
## [40] "F1996"          "F1997"          "F1998"
## [43] "F1999"          "F2000"          "F2001"
## [46] "F2002"          "F2003"          "F2004"
## [49] "F2005"          "F2006"          "F2007"
## [52] "F2008"          "F2009"          "F2010"
## [55] "F2011"          "F2012"          "F2013"
## [58] "F2014"          "F2015"          "F2016"
## [61] "F2017"          "F2018"          "F2019"
## [64] "F2020"          "F2022_Fahrenheit" "Indicator"
## [67] "IS02"           "IS03"           "ObjectId"
## [70] "Source"         "Temperature_2021" "Temperature_2022"
## [73] "Unit"
```

Adding New Variables

```
#adding new column F2022_x_2 which is F2022 multiplied by 2
df$F2022_x_2 <- df$Temperature_2022 * 2
ls(df)
```

```
## [1] "Country"          "CTS_Code"          "CTS_Full_Descriptor"
## [4] "CTS_Name"         "F1961"             "F1962"
## [7] "F1963"            "F1964"             "F1965"
## [10] "F1966"            "F1967"             "F1968"
## [13] "F1969"            "F1970"             "F1971"
## [16] "F1972"            "F1973"             "F1974"
## [19] "F1975"            "F1976"             "F1977"
## [22] "F1978"            "F1979"             "F1980"
## [25] "F1981"            "F1982"             "F1983"
## [28] "F1984"            "F1985"             "F1986"
## [31] "F1987"            "F1988"             "F1989"
## [34] "F1990"            "F1991"             "F1992"
## [37] "F1993"            "F1994"             "F1995"
## [40] "F1996"            "F1997"             "F1998"
## [43] "F1999"            "F2000"             "F2001"
## [46] "F2002"            "F2003"             "F2004"
## [49] "F2005"            "F2006"             "F2007"
## [52] "F2008"            "F2009"             "F2010"
## [55] "F2011"            "F2012"             "F2013"
## [58] "F2014"            "F2015"             "F2016"
## [61] "F2017"            "F2018"             "F2019"
## [64] "F2020"            "F2022_Fahrenheit" "F2022_x_2"
## [67] "Indicator"         "IS02"              "IS03"
## [70] "ObjectId"          "Source"             "Temperature_2021"
## [73] "Temperature_2022" "Unit"
```

Creating a Training Set

```
#setting seed for reproducibility
set.seed(123)
#creating a vector of random numbers
train_index <- sample(seq_len(nrow(df)), 0.8 * nrow(df))
#create training set
train_set <- df[train_index, ]
#display top 15 rows of train dataset
head(train_set, 15)
```

```
##      ObjectId      Country ISO2 ISO3
## 22         22      Benin    BJ  BEN
## 73         73  Gambia, The  GM  GMB
## 164        164      Qatar   QA  QAT
## 64         64  Eswatini, Kingdom of  SZ  SWZ
## 225        225    Zimbabwe   ZW  ZWE
## 222        222      World      WLD
## 122        122      Mali    ML  MLI
## 123        123      Malta    MT  MLT
## 217        217 Venezuela, Rep. Bolivariana de  VE  VEN
## 125        125      Martinique  MQ  MTQ
## 197        197  Tanzania, United Rep. of  TZ  TZA
## 137        137  Mozambique, Rep. of  MZ  MOZ
## 96         96      Isle of Man  IM  IMN
## 38         38  Central African Rep.  CF  CAF
## 9          9      Argentina  AR  ARG
##
##                                     Indicator
## 22  Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 73  Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 164 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 64  Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 225 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 222 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 122 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 123 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 217 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 125 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 197 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 137 Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 96  Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 38  Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
## 9   Temperature change with respect to a baseline climatology, corresponding to the period 1951-1980
##
##      Unit
## 22  Degree Celsius
## 73  Degree Celsius
## 164 Degree Celsius
## 64  Degree Celsius
## 225 Degree Celsius
## 222 Degree Celsius
## 122 Degree Celsius
## 123 Degree Celsius
## 217 Degree Celsius
```

```

## 125 Degree Celsius
## 197 Degree Celsius
## 137 Degree Celsius
## 96 Degree Celsius
## 38 Degree Celsius
## 9 Degree Celsius
##
## 22 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Indicators, Surface Temperature Change
## 73 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Indicators, Surface Temperature Change
## 164 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Indicators, Surface Temperature Change
## 64 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Indicators, Surface Temperature Change
## 225 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Indicators, Surface Temperature Change
## 222 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Indicators, Surface Temperature Change
## 122 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Indicators, Surface Temperature Change
## 123 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Indicators, Surface Temperature Change
## 217 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Indicators, Surface Temperature Change
## 125 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Indicators, Surface Temperature Change
## 197 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Indicators, Surface Temperature Change
## 137 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Indicators, Surface Temperature Change
## 96 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Indicators, Surface Temperature Change
## 38 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Indicators, Surface Temperature Change
## 9 Food and Agriculture Organization of the United Nations (FAO). 2022. FAOSTAT Climate Change, Climate Indicators, Surface Temperature Change
## CTS_Code CTS_Name
## 22 ECCS Surface Temperature Change
## 73 ECCS Surface Temperature Change
## 164 ECCS Surface Temperature Change
## 64 ECCS Surface Temperature Change
## 225 ECCS Surface Temperature Change
## 222 ECCS Surface Temperature Change
## 122 ECCS Surface Temperature Change
## 123 ECCS Surface Temperature Change
## 217 ECCS Surface Temperature Change
## 125 ECCS Surface Temperature Change
## 197 ECCS Surface Temperature Change
## 137 ECCS Surface Temperature Change
## 96 ECCS Surface Temperature Change
## 38 ECCS Surface Temperature Change
## 9 ECCS Surface Temperature Change
## CTS_Full_Descriptor
## 22 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 73 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 164 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 64 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 225 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 222 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 122 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 123 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 217 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 125 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 197 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 137 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 96 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 38 Environment, Climate Change, Climate Indicators, Surface Temperature Change
## 9 Environment, Climate Change, Climate Indicators, Surface Temperature Change

```


##	F1961	F1962	F1963	F1964	F1965	F1966	F1967	F1968	F1969	F1970	
## 22	-0.137	-0.240	0.152	-0.218	-0.094	-0.007	-0.252	-0.129	0.303	0.305	
## 73	-0.138	-0.047	0.130	-0.192	-0.463	-0.086	-0.381	-0.547	0.832	0.399	
## 164	-0.542	0.518	0.449	-0.400	0.386	0.439	-0.252	-0.536	0.668	0.267	
## 64	0.268	0.433	-0.210	0.022	-0.224	0.295	-0.274	-0.431	0.346	0.500	
## 225	0.267	0.237	-0.458	-0.097	-0.480	0.215	-0.043	0.093	0.215	0.421	
## 222	0.211	0.038	0.168	-0.246	-0.223	0.201	-0.117	-0.126	-0.092	0.150	
## 122	-0.301	-0.145	0.213	-0.130	-0.299	0.005	-0.124	-0.287	0.665	0.365	
## 123	0.551	0.350	-0.204	0.260	-0.218	0.149	0.131	-0.033	-0.129	-0.144	
## 217	0.072	-0.113	-0.012	0.097	-0.096	0.189	-0.199	-0.173	0.514	0.217	
## 125	-0.040	0.151	0.243	0.062	-0.283	0.067	-0.246	-0.213	0.403	0.186	
## 197	0.334	-0.260	-0.270	-0.397	-0.242	0.050	0.027	-0.474	0.350	0.193	
## 137	0.391	0.031	-0.435	-0.180	-0.596	0.143	0.120	-0.373	0.289	0.228	
## 96	0.358	-0.746	-0.820	0.095	-0.579	-0.100	0.105	0.035	-0.287	0.049	
## 38	-0.003	-0.306	0.037	-0.136	-0.050	0.064	-0.229	-0.168	0.143	0.245	
## 9	0.122	-0.046	0.162	-0.343	0.090	-0.163	0.000	0.472	0.292	0.438	
##	F1971	F1972	F1973	F1974	F1975	F1976	F1977	F1978	F1979	F1980	
## 22	-0.183	0.080	0.627	0.089	-0.274	-0.194	0.357	-0.045	0.499	0.425	
## 73	-0.054	0.311	0.685	-0.212	-0.164	-0.057	0.489	0.422	0.630	0.820	
## 164	-0.152	-0.731	-0.255	-0.336	-0.281	-0.556	0.274	0.149	0.765	0.389	
## 64	-0.002	-0.395	0.112	-0.233	-0.353	-0.436	0.305	0.188	0.234	-0.130	
## 225	-0.052	-0.397	0.601	-0.485	-0.262	-0.436	0.433	-0.016	0.189	-0.024	
## 222	-0.093	-0.199	0.269	-0.181	0.088	-0.314	0.269	0.001	0.226	0.332	
## 122	-0.007	0.278	0.508	-0.435	-0.471	-0.374	0.362	0.360	0.646	0.970	
## 123	-0.272	-0.294	-0.003	-0.251	-0.383	-0.706	0.304	-0.602	0.036	-0.504	
## 217	-0.365	-0.029	0.313	-0.295	-0.300	-0.409	0.168	0.095	0.202	0.346	
## 125	-0.193	-0.047	0.158	-0.395	-0.394	-0.415	0.020	0.082	0.166	0.401	
## 197	-0.286	0.024	0.335	-0.122	-0.040	0.015	0.352	0.118	-0.090	0.410	
## 137	-0.142	-0.222	0.262	-0.295	-0.163	-0.142	0.468	0.364	0.129	0.093	
## 96	0.316	-0.190	0.297	-0.200	0.697	0.661	-0.339	0.209	-0.777	-0.031	
## 38	-0.055	0.064	0.545	-0.058	-0.049	-0.117	0.203	0.044	0.380	0.439	
## 9	-0.260	-0.008	-0.139	-0.106	-0.021	-0.321	0.432	0.362	0.266	0.373	
##	F1981	F1982	F1983	F1984	F1985	F1986	F1987	F1988	F1989	F1990	F1991
## 22	0.161	0.211	0.548	0.542	0.411	0.307	0.977	0.631	-0.052	0.580	0.302
## 73	0.622	0.326	1.131	0.636	0.384	0.665	1.068	0.829	0.609	1.139	0.810
## 164	0.417	-0.130	-0.826	0.039	0.357	0.510	0.385	0.494	-0.069	0.406	-0.151
## 64	-0.429	0.170	0.915	-0.040	0.571	0.321	0.567	0.608	0.142	0.281	0.530
## 225	-0.360	0.170	1.223	0.483	0.027	0.025	1.070	0.447	0.181	0.567	0.192
## 222	0.443	0.086	0.460	0.127	-0.031	0.242	0.403	0.558	0.331	0.639	0.468
## 122	0.395	0.264	0.830	0.609	0.512	0.304	1.081	0.784	0.107	0.903	0.685
## 123	-0.344	0.623	0.037	-0.267	0.426	0.400	0.525	1.194	0.206	1.235	0.147
## 217	0.134	0.116	0.469	-0.107	-0.295	-0.163	0.415	0.161	-0.098	0.356	0.460
## 125	0.406	0.074	0.433	-0.029	-0.060	0.017	0.591	0.404	-0.001	0.424	0.445
## 197	0.387	0.437	0.724	0.125	0.094	0.174	0.598	0.657	-0.083	0.190	0.332
## 137	-0.188	-0.040	0.918	0.263	-0.008	0.103	0.679	0.588	0.092	0.368	0.125
## 96	0.292	0.076	0.381	0.356	-0.489	-0.684	-0.222	0.270	1.105	0.913	0.178
## 38	0.003	0.229	0.425	0.125	0.156	0.478	0.504	0.265	-0.148	0.347	0.612
## 9	0.378	0.359	0.046	-0.100	0.308	0.460	0.446	-0.192	0.611	0.436	0.261
##	F1992	F1993	F1994	F1995	F1996	F1997	F1998	F1999	F2000	F2001	F2002
## 22	-0.027	0.531	0.439	0.406	0.736	0.557	1.042	0.621	0.449	0.517	0.721
## 73	0.852	1.045	0.814	0.878	1.122	1.323	1.555	0.750	0.958	1.316	1.380
## 164	-0.519	0.031	0.666	0.064	0.496	0.066	1.174	1.735	0.944	0.970	1.436
## 64	1.147	0.733	-0.006	0.585	-0.042	0.235	0.991	0.505	-0.061	0.517	0.601
## 225	1.010	0.300	-0.085	0.685	-0.247	-0.025	0.801	0.030	-0.417	0.004	0.487

##	222	0.184	0.348	0.507	0.835	0.355	0.656	0.993	0.783	0.728	0.834	1.021
##	122	0.194	1.026	0.206	0.570	1.161	0.870	1.214	0.375	0.647	0.583	1.246
##	123	0.275	0.625	1.421	0.461	0.639	1.054	0.876	1.268	1.055	1.669	0.942
##	217	0.454	0.525	0.320	0.770	0.545	0.609	1.039	0.339	0.298	0.626	0.864
##	125	0.405	0.487	0.565	0.670	0.433	0.591	1.003	0.477	0.262	0.506	0.681
##	197	0.338	0.029	0.428	0.347	0.217	0.586	0.499	-0.232	0.530	0.433	0.646
##	137	0.759	0.299	0.087	0.555	0.111	0.209	0.949	0.288	0.375	0.481	0.683
##	96	0.462	-0.037	0.269	1.164	-0.112	0.924	0.928	1.112	0.636	0.516	0.891
##	38	-0.457	0.329	0.562	0.187	0.047	0.458	1.195	0.502	0.683	0.400	0.745
##	9	-0.261	0.086	0.487	0.259	0.512	0.759	0.351	0.160	-0.186	0.425	0.278
##		F2003	F2004	F2005	F2006	F2007	F2008	F2009	F2010	F2011	F2012	F2013
##	22	0.936	0.706	1.105	1.035	0.806	0.632	0.950	1.230	0.949	0.595	0.853
##	73	1.103	1.188	1.498	1.221	1.090	1.376	0.688	1.324	1.060	0.890	1.001
##	164	1.179	1.228	0.842	1.652	0.989	1.162	1.114	2.001	1.444	1.376	1.212
##	64	0.715	0.525	1.153	0.365	1.133	0.640	0.383	1.287	0.897	0.696	0.566
##	225	0.355	-0.004	0.945	-0.260	0.127	0.078	-0.226	0.935	0.232	0.334	0.118
##	222	0.893	0.913	1.095	0.998	1.195	0.935	0.957	1.219	0.921	1.074	1.016
##	122	1.238	1.214	1.396	1.097	0.933	0.548	0.960	1.630	1.207	0.426	0.969
##	123	1.401	0.699	0.670	0.996	1.398	1.271	1.080	1.243	1.013	1.440	1.343
##	217	0.912	0.676	0.933	0.674	0.760	0.518	0.816	1.227	0.601	0.513	0.941
##	125	0.802	0.515	0.834	0.736	0.846	0.407	0.553	1.177	0.596	0.699	0.714
##	197	1.010	0.899	1.035	0.836	0.770	0.462	0.892	1.013	0.723	0.820	0.885
##	137	0.589	0.437	1.045	0.581	0.647	0.384	0.585	1.105	0.812	0.746	0.479
##	96	1.049	0.952	1.165	1.229	1.321	0.829	0.874	-0.111	0.681	0.610	0.428
##	38	0.845	0.957	0.983	0.967	0.537	0.682	1.119	1.162	0.763	0.491	0.865
##	9	0.635	0.470	0.281	0.596	-0.169	0.601	0.857	0.135	0.386	0.798	0.442
##		F2014	F2015	F2016	F2017	F2018	F2019	F2020	Temperature_2021	Temperature_2022		
##	22	0.940	1.111	1.025	1.160	1.056	1.147	1.031	1.522		0.884	
##	73	1.188	1.200	1.635	1.741	1.028	1.349	1.770	1.675		1.323	
##	164	1.541	1.971	1.515	1.893	2.004	1.840	1.734	2.165		1.855	
##	64	0.781	1.235	1.216	0.688	1.064	1.623	0.770	0.669		1.371	
##	225	0.025	0.970	1.270	0.088	0.453	0.925	0.389	-0.125		-0.490	
##	222	1.053	1.412	1.660	1.429	1.290	1.444	1.711	1.447		1.394	
##	122	0.787	1.017	1.089	1.347	1.040	1.089	1.010	1.687		0.887	
##	123	1.507	1.403	1.748	1.224	1.441	1.290	1.643	2.123		1.955	
##	217	0.865	1.094	1.098	0.726	0.843	1.235	1.350	0.734		0.533	
##	125	0.674	0.892	1.034	0.800	0.540	0.752	1.092	0.716		0.684	
##	197	0.935	1.102	0.995	1.450	1.055	1.399	1.091	1.126		0.911	
##	137	0.716	1.034	1.262	0.837	0.810	1.209	1.026	0.687		0.834	
##	96	1.515	0.441	1.118	1.367	0.881	1.175	1.199	1.020		1.840	
##	38	0.697	0.983	1.222	1.224	1.145	1.264	1.140	1.268		1.032	
##	9	0.951	0.957	0.488	1.095	0.878	0.760	1.123	1.031		0.643	
##		F2022_Fahrenheit	F2022_x_2									
##	22		33.5912		1.768							
##	73		34.3814		2.646							
##	164		35.3390		3.710							
##	64		34.4678		2.742							
##	225		31.1180		-0.980							
##	222		34.5092		2.788							
##	122		33.5966		1.774							
##	123		35.5190		3.910							
##	217		32.9594		1.066							
##	125		33.2312		1.368							
##	197		33.6398		1.822							

```
## 137      33.5012      1.668
## 96       35.3120      3.680
## 38       33.8576      2.064
## 9        33.1574      1.286
```

Summary Statistics and Statistical Functions

Summary Statistics

```
print(summary(df))
```

```
##      ObjectId      Country      IS02      IS03
## Min.   : 1.0   Length:157   Length:157   Length:157
## 1st Qu.: 58.0   Class :character Class :character Class :character
## Median :106.0   Mode  :character Mode  :character Mode  :character
## Mean   :111.4
## 3rd Qu.:164.0
## Max.   :225.0
##      Indicator      Unit      Source      CTS_Code
## Length:157   Length:157   Length:157   Length:157
## Class :character Class :character Class :character Class :character
## Mode  :character Mode  :character Mode  :character Mode  :character
##
##
##      CTS_Name      CTS_Full_Descriptor      F1961      F1962
## Length:157   Length:157   Min.   :-0.6940   Min.   :-0.90800
## Class :character Class :character   1st Qu.: -0.0890   1st Qu.: -0.18300
## Mode  :character Mode  :character   Median : 0.0720   Median : -0.07000
##                                     Mean   : 0.1912   Mean   : -0.01311
##                                     3rd Qu.: 0.3580   3rd Qu.: 0.14000
##                                     Max.   : 1.8920   Max.   : 0.99800
##
##      F1963      F1964      F1965      F1966
## Min.   :-1.27000   Min.   :-0.87700   Min.   :-1.0640   Min.   :-1.8010
## 1st Qu.: -0.21100   1st Qu.: -0.25700   1st Qu.: -0.3880   1st Qu.: -0.0440
## Median : -0.03800   Median : -0.05200   Median : -0.2230   Median : 0.1170
## Mean   : -0.01506   Mean   : -0.07865   Mean   : -0.2391   Mean   : 0.1309
## 3rd Qu.: 0.23400   3rd Qu.: 0.13100   3rd Qu.: -0.0780   3rd Qu.: 0.3080
## Max.   : 1.20200   Max.   : 1.09700   Max.   : 0.8570   Max.   : 1.1510
##
##      F1967      F1968      F1969      F1970
## Min.   :-1.0480   Min.   :-1.6340   Min.   : -0.9000   Min.   : -1.28800
## 1st Qu.: -0.2710   1st Qu.: -0.3460   1st Qu.: -0.0650   1st Qu.: -0.09600
## Median : -0.1290   Median : -0.1730   Median : 0.1970   Median : 0.12800
## Mean   : -0.1027   Mean   : -0.2014   Mean   : 0.1499   Mean   : 0.07806
## 3rd Qu.: 0.0320   3rd Qu.: -0.0670   3rd Qu.: 0.3820   3rd Qu.: 0.29900
## Max.   : 1.1340   Max.   : 0.4760   Max.   : 0.8320   Max.   : 0.97800
##
##      F1971      F1972      F1973      F1974
## Min.   : -0.8700   Min.   : -1.79600   Min.   : -0.9870   Min.   : -0.9820
## 1st Qu.: -0.3200   1st Qu.: -0.19900   1st Qu.: -0.0140   1st Qu.: -0.3620
## Median : -0.1930   Median : -0.04300   Median : 0.2550   Median : -0.1980
## Mean   : -0.1917   Mean   : -0.08836   Mean   : 0.2094   Mean   : -0.1637
## 3rd Qu.: -0.0550   3rd Qu.: 0.11900   3rd Qu.: 0.4460   3rd Qu.: -0.0480
```

##	Max. : 0.6840	Max. : 0.93300	Max. : 1.1450	Max. : 1.1210
##	F1975	F1976	F1977	F1978
##	Min. : -1.093000	Min. : -0.9590	Min. : -0.5520	Min. : -0.87100
##	1st Qu.: -0.274000	1st Qu.: -0.4360	1st Qu.: 0.0030	1st Qu.: -0.04300
##	Median : -0.128000	Median : -0.2950	Median : 0.1910	Median : 0.08600
##	Mean : -0.008567	Mean : -0.2568	Mean : 0.1775	Mean : 0.04388
##	3rd Qu.: 0.137000	3rd Qu.: -0.0850	3rd Qu.: 0.3410	3rd Qu.: 0.20500
##	Max. : 1.893000	Max. : 0.7290	Max. : 1.0790	Max. : 0.90800
##	F1979	F1980	F1981	F1982
##	Min. : -1.2390	Min. : -0.7600	Min. : -0.9090	Min. : -0.6820
##	1st Qu.: 0.0960	1st Qu.: -0.0200	1st Qu.: 0.0170	1st Qu.: 0.0000
##	Median : 0.2740	Median : 0.2820	Median : 0.1760	Median : 0.1800
##	Mean : 0.2282	Mean : 0.2201	Mean : 0.1612	Mean : 0.1674
##	3rd Qu.: 0.4590	3rd Qu.: 0.4320	3rd Qu.: 0.3730	3rd Qu.: 0.3790
##	Max. : 1.2910	Max. : 0.9700	Max. : 1.5620	Max. : 1.1350
##	F1983	F1984	F1985	F1986
##	Min. : -2.0620	Min. : -1.45500	Min. : -1.19300	Min. : -0.7650
##	1st Qu.: 0.1090	1st Qu.: -0.12600	1st Qu.: -0.06000	1st Qu.: 0.0150
##	Median : 0.4570	Median : 0.04000	Median : 0.11300	Median : 0.1760
##	Mean : 0.3336	Mean : 0.07001	Mean : 0.06246	Mean : 0.1538
##	3rd Qu.: 0.6770	3rd Qu.: 0.29400	3rd Qu.: 0.32400	3rd Qu.: 0.3380
##	Max. : 1.6230	Max. : 0.79900	Max. : 0.89100	Max. : 0.8350
##	F1987	F1988	F1989	F1990
##	Min. : -1.6520	Min. : -0.5040	Min. : -1.5370	Min. : -0.7390
##	1st Qu.: 0.1730	1st Qu.: 0.3380	1st Qu.: -0.0250	1st Qu.: 0.2740
##	Median : 0.4950	Median : 0.5010	Median : 0.1530	Median : 0.4800
##	Mean : 0.3927	Mean : 0.4979	Mean : 0.2901	Mean : 0.5932
##	3rd Qu.: 0.6920	3rd Qu.: 0.6810	3rd Qu.: 0.4790	3rd Qu.: 0.8290
##	Max. : 1.5620	Max. : 1.3360	Max. : 2.1790	Max. : 1.8430
##	F1991	F1992	F1993	F1994
##	Min. : -0.7000	Min. : -1.3440	Min. : -1.3550	Min. : -0.4250
##	1st Qu.: 0.1920	1st Qu.: -0.0610	1st Qu.: 0.0640	1st Qu.: 0.3050
##	Median : 0.3900	Median : 0.3050	Median : 0.2990	Median : 0.4990
##	Mean : 0.3682	Mean : 0.2231	Mean : 0.2507	Mean : 0.6148
##	3rd Qu.: 0.5380	3rd Qu.: 0.5330	3rd Qu.: 0.4870	3rd Qu.: 0.8650
##	Max. : 1.1380	Max. : 1.4520	Max. : 1.0970	Max. : 1.9580
##	F1995	F1996	F1997	F1998
##	Min. : -0.3300	Min. : -0.787	Min. : -0.4220	Min. : -0.258
##	1st Qu.: 0.3480	1st Qu.: 0.077	1st Qu.: 0.2920	1st Qu.: 0.841
##	Median : 0.5820	Median : 0.337	Median : 0.5580	Median : 1.018
##	Mean : 0.5814	Mean : 0.317	Mean : 0.5492	Mean : 1.007
##	3rd Qu.: 0.7940	3rd Qu.: 0.545	3rd Qu.: 0.8080	3rd Qu.: 1.200
##	Max. : 1.7010	Max. : 1.555	Max. : 1.9330	Max. : 2.470
##	F1999	F2000	F2001	F2002
##	Min. : -0.232	Min. : -0.7180	Min. : -0.1860	Min. : 0.0090
##	1st Qu.: 0.483	1st Qu.: 0.2810	1st Qu.: 0.5160	1st Qu.: 0.6810
##	Median : 0.642	Median : 0.5230	Median : 0.6910	Median : 0.8270
##	Mean : 0.761	Mean : 0.6106	Mean : 0.8095	Mean : 0.8783
##	3rd Qu.: 1.022	3rd Qu.: 0.8450	3rd Qu.: 1.1630	3rd Qu.: 1.0340
##	Max. : 2.064	Max. : 2.0240	Max. : 1.9920	Max. : 1.7860
##	F2003	F2004	F2005	F2006
##	Min. : 0.1450	Min. : -0.133	Min. : 0.1030	Min. : -0.5050
##	1st Qu.: 0.7030	1st Qu.: 0.533	1st Qu.: 0.6720	1st Qu.: 0.6740
##	Median : 0.8790	Median : 0.701	Median : 0.8410	Median : 0.8410

```
## Mean :0.9138 Mean : 0.764 Mean :0.8612 Mean : 0.9116
## 3rd Qu.:1.0490 3rd Qu.: 0.969 3rd Qu.:1.0470 3rd Qu.: 1.1620
## Max. :2.3280 Max. : 1.760 Max. :2.2010 Max. : 2.3430
## F2007 F2008 F2009 F2010
## Min. :-0.2190 Min. :0.0780 Min. :-0.3190 Min. :-0.341
## 1st Qu.: 0.6640 1st Qu.:0.4630 1st Qu.: 0.6900 1st Qu.: 0.766
## Median : 0.8750 Median :0.6670 Median : 0.8920 Median : 1.111
## Mean : 0.9552 Mean :0.7675 Mean : 0.8991 Mean : 1.108
## 3rd Qu.: 1.0900 3rd Qu.:1.0310 3rd Qu.: 1.1340 3rd Qu.: 1.311
## Max. : 2.7290 Max. :2.1300 Max. : 1.6950 Max. : 3.058
## F2011 F2012 F2013 F2014
## Min. :-0.0480 Min. :0.1250 Min. :0.1180 Min. :-0.092
## 1st Qu.: 0.5380 1st Qu.:0.5880 1st Qu.:0.7150 1st Qu.: 0.777
## Median : 0.7710 Median :0.7970 Median :0.8650 Median : 0.960
## Mean : 0.8256 Mean :0.8684 Mean :0.8899 Mean : 1.090
## 3rd Qu.: 1.0710 3rd Qu.:1.0670 3rd Qu.:1.0980 3rd Qu.: 1.306
## Max. : 1.6980 Max. :2.1440 Max. :1.6420 Max. : 2.704
## F2015 F2016 F2017 F2018
## Min. :-0.430 Min. :0.250 Min. :0.017 Min. :0.238
## 1st Qu.: 1.018 1st Qu.:1.129 1st Qu.:1.023 1st Qu.:0.850
## Median : 1.192 Median :1.411 Median :1.252 Median :1.101
## Mean : 1.225 Mean :1.403 Mean :1.271 Mean :1.237
## 3rd Qu.: 1.450 3rd Qu.:1.660 3rd Qu.:1.539 3rd Qu.:1.498
## Max. : 2.613 Max. :2.381 Max. :2.493 Max. :2.524
## F2019 F2020 Temperature_2021 Temperature_2022
## Min. :0.050 Min. :0.229 Min. :-0.425 Min. :-1.305
## 1st Qu.:1.161 1st Qu.:1.160 1st Qu.: 1.019 1st Qu.: 0.875
## Median :1.379 Median :1.434 Median : 1.327 Median : 1.280
## Mean :1.385 Mean :1.483 Mean : 1.361 Mean : 1.334
## 3rd Qu.:1.616 3rd Qu.:1.734 3rd Qu.: 1.660 3rd Qu.: 1.745
## Max. :2.652 Max. :3.317 Max. : 2.676 Max. : 3.243
## F2022_Fahrenheit F2022_x_2
## Min. :29.65 Min. :-2.610
## 1st Qu.:33.58 1st Qu.: 1.750
## Median :34.30 Median : 2.560
## Mean :34.40 Mean : 2.668
## 3rd Qu.:35.14 3rd Qu.: 3.490
## Max. :37.84 Max. : 6.486
```

Statistical Functions

```
#Mean of F2022
mean_F2022 <- mean(df$Temperature_2022) # nolint
print(paste("Mean of Temperature_2022:", mean_F2022))
```

```
## [1] "Mean of Temperature_2022: 1.33417197452229"
```

```
#Median of F2022
median_F2022 <- median(df$Temperature_2022) # nolint
print(paste("Median of Temperature_2022:", median_F2022))
```

```
## [1] "Median of Temperature_2022: 1.28"
```

```
#Mode of F2022
get_mode <- function(v) {
  unique_val <- unique(v)
  unique_val[which.max(tabulate(match(v, unique_val)))]
}
mode_F2022 <- get_mode(df$Temperature_2022) # nolint
print(paste("Mode of Temperature_2022:", mode_F2022))
```

```
## [1] "Mode of Temperature_2022: 1.48"
```

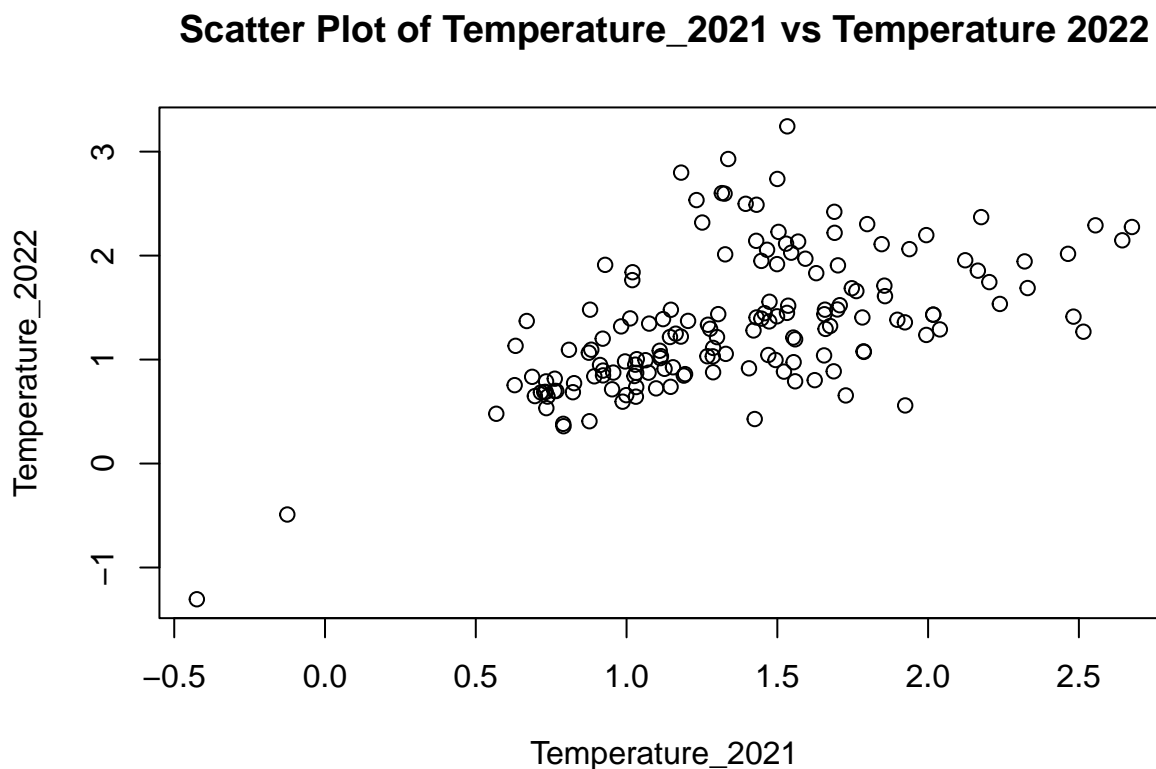
```
#Range of F2022
range_F2022 <- range(df$Temperature_2022) # nolint
print(paste("Range of Temperature_2022:", range_F2022))
```

```
## [1] "Range of Temperature_2022: -1.305" "Range of Temperature_2022: 3.243"
```

Plots and Correlation

Scatter Plot

```
plot(df$Temperature_2021, df$Temperature_2022,
     main = "Scatter Plot of Temperature_2021 vs Temperature 2022",
     xlab = "Temperature_2021", ylab = "Temperature_2022")
```



Bar Plot

```
library(ggplot2)
library(dplyr)

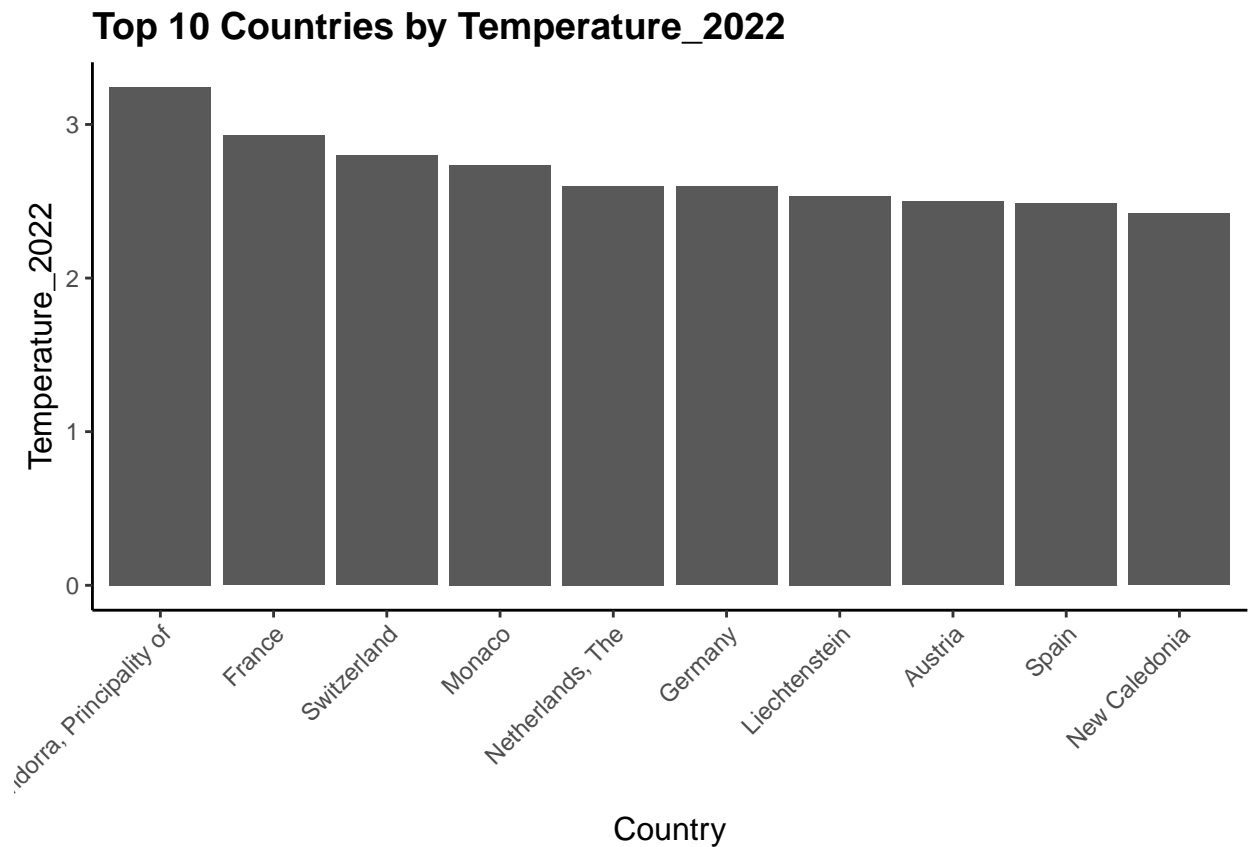
##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##   filter, lag

## The following objects are masked from 'package:base':
##
##   intersect, setdiff, setequal, union

# Getting the top 10 countries by Temperature_2022
top_10_countries <- df %>%
  arrange(desc(Temperature_2022)) %>%
  head(10)

# Creating the bar plot with only the top 10
ggplot(top_10_countries, aes(x = factor(Country, levels = Country),
                             y = Temperature_2022)) +
  geom_bar(stat = "identity") +
  labs(title = "Top 10 Countries by Temperature_2022",
       x = "Country",
       y = "Temperature_2022") +
  theme(axis.text.x = element_text(angle = 45, hjust = 1),
        plot.title = element_text(size = 14, face = "bold"),
        axis.title.x = element_text(size = 12),
        axis.title.y = element_text(size = 12),
        panel.background = element_blank(),
        axis.line = element_line(colour = "black"))
```



Correlation

```
correlation_F2021_F2022 <- cor(df$Temperature_2021, df$Temperature_2022) # nolint
print(paste("Correlation between Temperature_2021 and Temperature_2022:",
            correlation_F2021_F2022))
```

```
## [1] "Correlation between Temperature_2021 and Temperature_2022: 0.57464402453213"
```