Road to Orodruin

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Contents

Quest "Village1"

Build in Datasets. We can cast this ability to look up for interesting packages 'data()'. Importing 2 build in datasets:

```
# quest1.1
Numenor <- islands
Angmar <- volcano
head(Numenor)
```

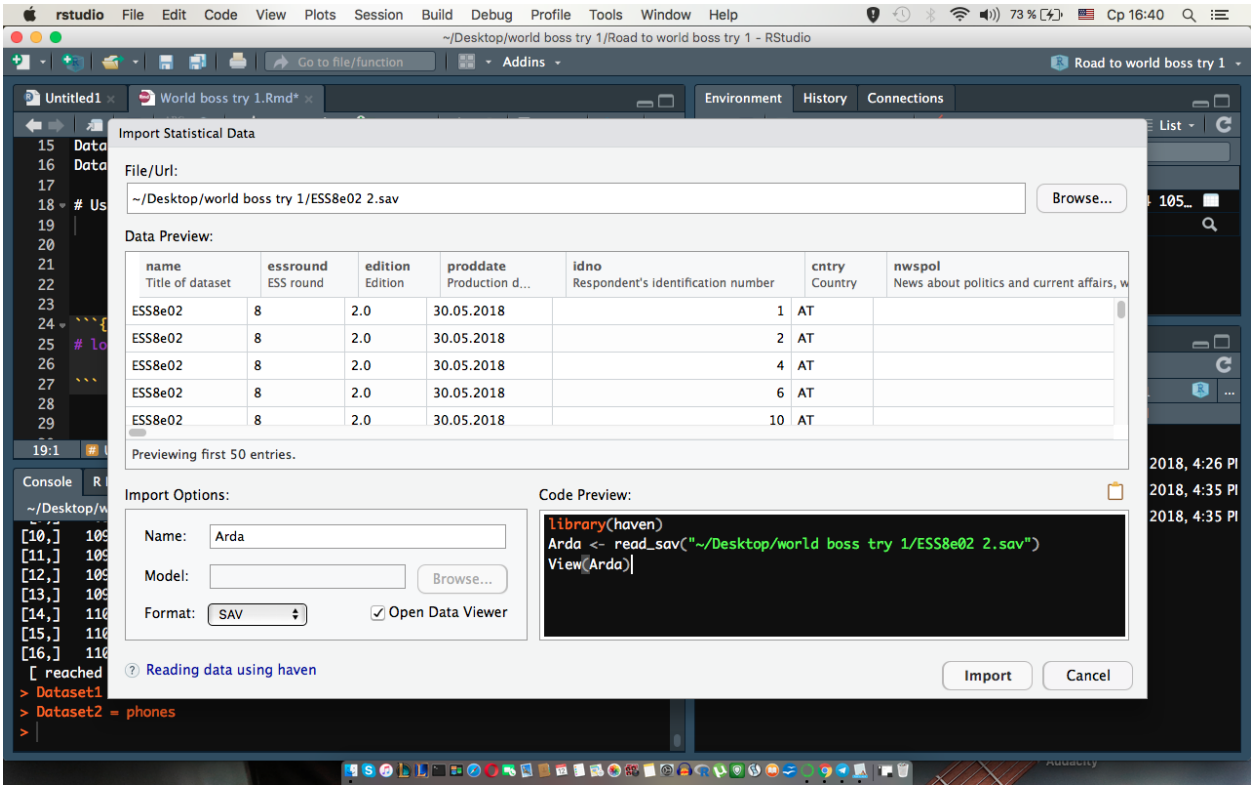
```
##       Africa   Antarctica         Asia    Australia Axel Heiberg
##        11506         5500        16988         2968           16
##       Baffin
##          184
```

```
head(Angmar)
```

```
##      [,1] [,2] [,3] [,4] [,5] [,6] [,7] [,8] [,9] [,10] [,11] [,12] [,13]
## [1,]  100  100  101  101  101  101  101  100  100   100   101   101   102
## [2,]  101  101  102  102  102  102  102  101  101   101   102   102   103
## [3,]  102  102  103  103  103  103  103  102  102   102   103   103   104
## [4,]  103  103  104  104  104  104  104  103  103   103   103   104   104
## [5,]  104  104  105  105  105  105  105  104  104   103   104   104   105
## [6,]  105  105  105  106  106  106  106  105  105   104   104   105   105
##      [,14] [,15] [,16] [,17] [,18] [,19] [,20] [,21] [,22] [,23] [,24]
## [1,]   102   102   102   103   104   103   102   101   101   102   103
## [2,]   103   103   103   104   105   104   103   102   102   103   105
## [3,]   104   104   104   105   106   105   104   104   105   106   107
## [4,]   104   105   105   106   107   106   106   106   107   108   110
## [5,]   105   105   106   107   108   108   108   109   110   112   114
## [6,]   106   106   107   109   110   110   112   113   115   116   118
##      [,25] [,26] [,27] [,28] [,29] [,30] [,31] [,32] [,33] [,34] [,35]
## [1,]   104   104   105   107   107   107   108   108   110   110   110
## [2,]   106   106   107   109   110   110   110   110   111   112   113
## [3,]   108   110   111   113   114   115   114   115   116   118   119
## [4,]   111   114   117   118   117   119   120   121   122   124   125
## [5,]   115   118   121   122   121   123   128   131   129   130   131
```

```
## [6,]   119   121   124   126   126   129   134   137   137   136   136
##      [,36] [,37] [,38] [,39] [,40] [,41] [,42] [,43] [,44] [,45] [,46]
## [1,]   110   110   110   110   110   108   108   108   107   107   108
## [2,]   114   116   115   114   112   110   110   110   109   108   109
## [3,]   119   121   121   120   118   116   114   112   111   110   110
## [4,]   126   127   127   126   124   122   120   117   116   113   111
## [5,]   131   132   132   131   130   128   126   122   119   115   114
## [6,]   135   136   136   136   135   133   129   126   122   118   116
##      [,47] [,48] [,49] [,50] [,51] [,52] [,53] [,54] [,55] [,56] [,57]
## [1,]   108   108   108   108   107   107   107   107   106   106   105
## [2,]   109   109   109   108   108   108   108   107   107   106   106
## [3,]   110   110   109   109   109   109   108   108   107   107   106
## [4,]   110   110   110   109   109   109   109   108   108   107   107
## [5,]   112   110   110   110   110   110   109   109   108   107   107
## [6,]   115   113   111   110   110   110   110   109   108   108   108
##      [,58] [,59] [,60] [,61]
## [1,]   105   104   104   103
## [2,]   105   105   104   104
## [3,]   106   105   105   104
## [4,]   106   106   105   105
## [5,]   107   106   106   105
## [6,]   107   107   106   106
```

Now we need to import our dataset and insert screenshot. quest1.2


Import Statistical Data
File/Url:
~/Desktop/world boss try 1/ESS8e02 2.sav
Browse...
Data Preview:
name Title of dataset
essround ESS round
edition Edition
proddate Production d...
idno Respondent's identification number
cntry Country
nwspol News about politics and current affairs, w
ESS8e02 8 2.0 30.05.2018 1 AT
ESS8e02 8 2.0 30.05.2018 2 AT
ESS8e02 8 2.0 30.05.2018 4 AT
ESS8e02 8 2.0 30.05.2018 6 AT
ESS8e02 8 2.0 30.05.2018 10 AT
Previewing first 50 entries.
Import Options:
Name: Arda
Model:
Browse...
Format: SAV
Open Data Viewer
Code Preview:
library(haven)
Arda <- read_sav("~/Desktop/world boss try 1/ESS8e02 2.sav")
View(Arda)
Reading data using haven
Import
Cancel

And this is how we import Dataset manually.

```
# quest1.3
Eriador <- as.data.frame(foreign::read.spss(file = 'ESS8e02 2.sav'))
```

```
## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 19, 20, 22,
## 23, 25, 26, 27, 28, 29, 30, 33, 34, 35, 36, 37, 38, 39, 40, 44, 45, 47, 49,
## 50, 51, 55, 58, 59, 60, 61, 62, 63, 65, 66, 67, 68, 70, 72, 75, 78, 80, 83,
## 85, 90, 92, 95, 100, 103, 105, 110, 115, 120, 121, 122, 123, 125, 129, 130,
## 132, 135, 140, 143, 145, 150, 153, 155, 159, 160, 165, 170, 180, 181, 182,
## 183, 185, 190, 195, 200, 205, 210, 215, 219, 220, 225, 229, 230, 240, 242,
## 245, 250, 252, 255, 260, 265, 270, 280, 285, 290, 295, 300, 302, 304, 315,
## 320, 330, 340, 360, 370, 375, 390, 405, 420, 422, 425, 450, 465, 480, 483,
## 490, 497, 501, 505, 506, 509, 510, 517, 519, 520, 522, 524, 525, 530, 533,
## 534, 535, 538, 540, 543, 544, 545, 547, 549, 550, 551, 552, 555, 560, 561,
## 562, 563, 565, 566, 569, 570, 572, 573, 574, 575, 576, 578, 580, 583, 584,
## 585, 586, 587, 589, 590, 591, 594, 595, 596, 597, 598, 599, 600, 601, 602,
## 604, 605, 606, 607, 608, 609, 610, 611, 612, 614, 615, 616, 618, 620, 621,
## 623, 625, 626, 627, 629, 630, 631, 633, 634, 635, 636, 637, 638, 640, 641,
## 643, 644, 645, 646, 647, 648, 650, 651, 655, 656, 657, 658, 660, 663, 664,
## 667, 670, 672, 674, 675, 676, 677, 680, 681, 682, 683, 685, 687, 689, 690,
## 691, 692, 694, 695, 696, 697, 698, 700, 702, 703, 704, 705, 706, 708, 710,
## 711, 712, 715, 719, 720, 722, 723, 725, 726, 728, 730, 731, 735, 736, 737,
## 739, 740, 743, 744, 746, 748, 750, 752, 754, 755, 758, 760, 761, 762, 765,
## 766, 768, 769, 773, 775, 780, 785, 787, 788, 789, 790, 791, 792, 795, 800,
## 805, 808, 810, 811, 812, 813, 814, 815, 817, 820, 830, 834, 835, 839, 840,
## 841, 842, 843, 845, 846, 847, 848, 849, 850, 851, 852, 853, 855, 856, 857,
## 858, 860, 861, 862, 863, 864, 865, 867, 870, 872, 875, 877, 879, 880, 882,
## 884, 885, 887, 888, 890, 891, 892, 893, 894, 895, 897, 899, 900, 901, 902,
## 903, 904, 905, 906, 907, 909, 910, 912, 914, 915, 916, 917, 918, 919, 920,
## 922, 923, 924, 926, 927, 928, 929, 930, 931, 935, 936, 937, 938, 940, 943,
## 944, 945, 950, 953, 954, 955, 956, 960, 961, 962, 963, 964, 965, 966, 967,
## 968, 969, 970, 971, 972, 973, 975, 977, 980, 982, 983, 984, 985, 986, 988,
## 990, 991, 992, 995, 997, 999, 1000, 1002, 1003, 1005, 1008, 1009, 1010,
## 1012, 1014, 1015, 1016, 1017, 1020, 1021, 1022, 1023, 1024, 1026, 1027,
## 1028, 1030, 1032, 1034, 1035, 1036, 1037, 1038, 1039, 1040, 1042, 1043,
## 1045, 1047, 1048, 1049, 1050, 1052, 1055, 1057, 1058, 1059, 1060, 1062,
## 1064, 1065, 1066, 1069, 1070, 1071, 1072, 1073, 1075, 1076, 1077, 1080,
## 1081, 1082, 1084, 1085, 1086, 1087, 1089, 1090, 1092, 1093, 1095, 1097,
## 1098, 1100, 1102, 1105, 1107, 1110, 1111, 1115, 1116, 1118, 1119, 1120,
## 1121, 1125, 1130, 1135, 1138, 1139, 1140, 1144, 1148, 1150, 1151, 1152,
## 1153, 1154, 1155, 1158, 1160, 1162, 1165, 1168, 1170, 1172, 1173, 1174,
## 1175, 1176, 1178, 1180, 1185, 1186, 1187, 1193, 1200, 1203, 1204, 1205,
## 1209, 1211, 1215, 1222, 1223, 1235, 1238, 1246, 1262, 1273, 1276, 1285,
## 1380, 1410, 1428 added in variable: nwspol
```

```
## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 0, 1, 2, 3, 4, 5, 7, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 25, 28, 30,
## 34, 35, 39, 40, 43, 45, 46, 49, 50, 55, 59, 60, 61, 62, 63, 65, 68, 69, 70,
## 75, 80, 85, 90, 91, 92, 95, 98, 99, 100, 105, 110, 115, 120, 121, 122, 123,
## 125, 128, 130, 135, 140, 145, 150, 153, 155, 158, 160, 165, 168, 170, 175,
## 180, 181, 183, 185, 190, 194, 195, 200, 202, 203, 204, 205, 210, 215, 219,
## 220, 225, 230, 235, 239, 240, 241, 243, 245, 248, 249, 250, 255, 260, 263,
## 265, 270, 280, 285, 290, 295, 300, 302, 305, 310, 315, 316, 320, 325, 330,
```

```
## 340, 345, 350, 360, 361, 363, 365, 370, 372, 375, 380, 385, 390, 400, 405,
## 410, 420, 430, 435, 445, 450, 460, 470, 480, 485, 490, 495, 500, 510, 525,
## 530, 539, 540, 542, 545, 555, 570, 590, 600, 601, 602, 604, 605, 610, 612,
## 614, 615, 630, 659, 660, 690, 719, 720, 725, 727, 750, 770, 775, 777, 780,
## 810, 813, 818, 828, 831, 840, 841, 847, 848, 870, 880, 895, 899, 900, 939,
## 957, 960, 972, 975, 976, 980, 1020, 1080, 1115, 1119, 1140, 1141, 1145,
## 1150, 1167, 1170, 1179, 1200, 1205, 1230, 1231, 1232, 1234, 1260, 1320,
## 1430, 1440 added in variable: netustm
```

```
## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 1914, 1925, 1926, 1927, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1937,
## 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949,
## 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961,
## 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973,
## 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985,
## 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997,
## 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009,
## 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017 added in variable: livecnta
```

```
## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 20 added in variable: hhmmb
```

```
## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33,
## 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52,
## 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71,
## 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90,
## 91, 92, 93, 94, 95, 96, 97, 98, 99, 100 added in variable: agea
```

```
## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 1916, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928,
## 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940,
## 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952,
## 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964,
## 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976,
## 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988,
## 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000,
## 2001, 2002 added in variable: yrbrn
```

```
## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 1908, 1914, 1915, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925,
## 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937,
## 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949,
## 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961,
## 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973,
## 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985,
## 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997,
## 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009,
## 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017 added in variable: yrbrn2
```

```
## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 1914, 1919, 1920, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930,
## 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942,
## 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954,
## 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966,
## 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978,
## 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990,
```

```
## 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002,
## 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014,
## 2015, 2016, 2017 added in variable: yrbrn3

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 1919, 1924, 1925, 1926, 1928, 1930, 1931, 1932, 1933, 1934, 1937, 1938,
## 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950,
## 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962,
## 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974,
## 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986,
## 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998,
## 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010,
## 2011, 2012, 2013, 2014, 2015, 2016, 2017 added in variable: yrbrn4

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 1902, 1925, 1929, 1931, 1932, 1933, 1935, 1937, 1938, 1940, 1942, 1943,
## 1944, 1945, 1946, 1948, 1949, 1951, 1954, 1955, 1957, 1958, 1960, 1961,
## 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973,
## 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985,
## 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997,
## 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009,
## 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017 added in variable: yrbrn5

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 1923, 1927, 1933, 1934, 1939, 1940, 1941, 1942, 1946, 1947, 1953, 1955,
## 1956, 1957, 1959, 1960, 1962, 1966, 1967, 1968, 1970, 1971, 1972, 1973,
## 1974, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986,
## 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998,
## 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010,
## 2011, 2012, 2013, 2014, 2015, 2016, 2017 added in variable: yrbrn6

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 1931, 1939, 1940, 1942, 1943, 1946, 1950, 1960, 1969, 1972, 1973, 1976,
## 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000,
## 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012,
## 2013, 2014, 2015, 2016, 2017 added in variable: yrbrn7

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 1940, 1971, 1983, 1989, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1999,
## 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011,
## 2012, 2013, 2014, 2015, 2016 added in variable: yrbrn8

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 1991, 1995, 1996, 1998, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007,
## 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016 added in variable:
## yrbrn9

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 1966, 1994, 1996, 2000, 2001, 2002, 2004, 2007, 2008, 2009, 2010, 2011,
## 2012, 2013, 2014, 2015 added in variable: yrbrn10

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 1996, 2006, 2008, 2009, 2011, 2014, 2016, 2017 added in variable: yrbrn11

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 1998, 2007, 2012, 2015 added in variable: yrbrn12

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,
```

```
## 30, 31, 32, 33, 37, 39, 40 added in variable: edagegb

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20,
## 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 33, 34, 35, 36, 38, 39, 40, 48,
## 50, 54 added in variable: eduyrs

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 1914, 1916, 1940, 1943, 1944, 1946, 1947, 1948, 1949, 1950, 1951, 1952,
## 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964,
## 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976,
## 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988,
## 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000,
## 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012,
## 2013, 2014, 2015, 2016, 2017 added in variable: pdjobyr

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20,
## 21, 22, 23, 24, 25, 26, 27, 30, 31, 32, 33, 34, 35, 36, 40, 42, 43, 44,
## 45, 50, 54, 55, 56, 58, 59, 60, 65, 70, 73, 75, 80, 85, 100, 134, 150, 200,
## 220, 230, 246, 250, 300, 400, 550, 600, 7777 added in variable: emplno

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20,
## 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39,
## 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58,
## 59, 60, 61, 62, 63, 64, 65, 68, 69, 70, 72, 73, 75, 80, 84, 85, 90, 95, 96,
## 97, 99, 100, 110, 112, 113, 115, 120, 121, 125, 130, 135, 140, 144, 150,
## 160, 170, 175, 180, 185, 187, 190, 200, 210, 220, 230, 246, 250, 255, 260,
## 300, 320, 350, 363, 365, 370, 380, 400, 433, 498, 500, 525, 600, 650, 680,
## 700, 750, 792, 800, 840, 900, 960, 980, 1000, 1200, 1500, 2000, 2500, 2700,
## 3000, 4000, 4500, 7000, 9999, 10000, 15000, 18000 added in variable: njbspv

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20,
## 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38,
## 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57,
## 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 70, 72, 74, 75, 76, 77, 78, 80,
## 82, 84, 85, 90, 93, 94, 95, 96, 98, 100, 102, 104, 112, 120, 125, 126, 128,
## 130, 140, 150, 156, 160, 165, 168, 555 added in variable: wkhct

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20,
## 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39,
## 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58,
## 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 72, 73, 74, 75, 76, 77, 78,
## 79, 80, 82, 83, 84, 85, 86, 88, 89, 90, 91, 92, 94, 95, 96, 98, 99, 100,
## 102, 103, 104, 105, 108, 110, 112, 119, 120, 126, 128, 130, 133, 137, 140,
## 144, 150, 155, 156, 158, 160, 164, 165, 167, 168 added in variable: wkhtot

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Duplicated levels in
## factor isco08: Commissioned armed forces officers, Non-commissioned armed
## forces officers, Armed forces occupations, other ranks, Police inspectors
## and detectives, Other clerical support workers, Protective services
## workers, Assemblers, Agricultural, forestry and fishery labourers, Food
## preparation assistants

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
```

```
## 2, 11, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 30,
## 35, 60 added in variable: edagepgb

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Duplicated levels in
## factor isco08p: Commissioned armed forces officers, Non-commissioned armed
## forces officers, Armed forces occupations, other ranks, Police inspectors
## and detectives, Other clerical support workers, Protective services
## workers, Assemblers, Agricultural, forestry and fishery labourers, Food
## preparation assistants

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20,
## 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38,
## 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57,
## 58, 60, 62, 63, 64, 65, 66, 68, 70, 72, 74, 75, 76, 77, 78, 80, 82, 84, 85,
## 86, 90, 91, 94, 95, 96, 98, 99, 100, 108, 110, 120, 130, 140, 150, 160, 168
## added in variable: wkhtotp

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 1, 5, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25,
## 26, 27, 28, 29, 30, 33 added in variable: edagefgb

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 1, 2, 5, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25,
## 26, 27, 28, 29, 50, 70 added in variable: edagemgb

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21,
## 22, 23, 24, 25, 26, 27, 28, 29, 30, 31 added in variable: inwdds

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 added in variable: inwmms

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 2016, 2017 added in variable: inwyys

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 0, 1, 2, 3, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22,
## 23 added in variable: inwshh

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20,
## 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39,
## 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58,
## 59 added in variable: inwsmm

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21,
## 22, 23, 24, 25, 26, 27, 28, 29, 30, 31 added in variable: inwdde

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 added in variable: inwmme

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 2016, 2017 added in variable: inwyye

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
## 0, 1, 2, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22,
## 23 added in variable: inwehh

## Warning in foreign::read.spss(file = "ESS8e02 2.sav"): Undeclared level(s)
```

```
## 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20,
## 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39,
## 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58,
## 59 added in variable: inwemm
```

And external link.

```
# quest1.4
Valinor <- readr::read_csv('http://rgho.st/download/
8hw7SjjfZ/cb9b4192f006768324e
969f0047b25160398868a/
cb9b4192f006768324e969f0047b25160398868a/
LOTR_characters_data.csv')
```

Quest "Village2"

Filtering data and choosing country. We are going to work with good old Britain.

```
# quest2
Arda <- haven::read_sav("ESS8e02 2.sav")
filter <- Arda$cntry == "GB"
MiddleEarth <- Arda[filter,]
```

Exploring Data (4 methods), build-in set.

```
# quest 2.1
str(Numenor)
```

```
##  Named num [1:48] 11506 5500 16988 2968 16 ...
##  - attr(*, "names")= chr [1:48] "Africa" "Antarctica" "Asia" "Australia" ...
```

```
summary(Numenor)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##    12.0    20.5    41.0  1252.7   183.2 16988.0
```

```
Hmisc::describe(Numenor)
```

```
## Numenor
##        n  missing distinct     Info     Mean      Gmd      .05      .10
##       48        0       38    0.999     1253     2229     13.0     14.0
##      .25      .50      .75      .90      .95
##     20.5     41.0    183.2   4271.5   8481.7
##
## Value          0    50   100   200   250   300   850  2950  3750  5500
## Frequency     15    16     4     2     1     2     1     1     1     1
## Proportion 0.312 0.333 0.083 0.042 0.021 0.042 0.021 0.021 0.021 0.021
##
## Value       6800  9400 11500 17000
## Frequency      1     1     1     1
## Proportion 0.021 0.021 0.021 0.021
```

```
skimr::skim(Numenor)
```

```
##
## Skim summary statistics
##
```

```
## -- Variable type:numeric -------------------------------------------------------------------
##  variable missing complete  n    mean      sd p0  p25 p50    p75  p100
##   Numenor       0       48 48 1252.73 3371.15 12 20.5  41 183.25 16988
##      hist
##
```

Numenor is not very interesting for exploring (Furthermore it sank). It simply gives the lengths (in miles) of 141 "major" rivers in North America, as compiled by the US Geological Survey with no missings/NAs'. Now lets explore the MiddleEarth! (We will not copy previous code because it will "destroy" our output file (too huge). Let's use only 1 variable to see how it works.

```
# quest2.2
str(MiddleEarth$wkhtot)
```

```
## Class 'labelled'  atomic [1:1959] 38 46 40 40 50 40 40 32 38 36 ...
##   ..- attr(*, "labels")= Named num [1:4] 666 777 888 999
##   .. ..- attr(*, "names")= chr [1:4] "Not applicable" "Refusal" "Don't know" "No answer"
```

```
summary(MiddleEarth$wkhtot)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's
##    1.00   28.00   40.00   36.77   45.00  128.00     142
```

```
Hmisc::describe(MiddleEarth$wkhtot)
```

```
## MiddleEarth$wkhtot : 666 MiddleEarth$wkhtot : 777 MiddleEarth$wkhtot : 888 MiddleEarth$wkhtot : 999
##        n  missing distinct     Info     Mean      Gmd      .05      .10
##     1817      142       71    0.993    36.77    16.23     10.0     16.0
##      .25      .50      .75      .90      .95
##     28.0     40.0     45.0     53.4     60.0
##
## lowest :   1   2   3   4   5, highest:  90 100 119 120 128
```

```
skimr::skim(MiddleEarth$wkhtot)
```

```
## Warning: No summary functions for vectors of class: labelled.
## Coercing to character
```

```
##
## Skim summary statistics
##
## -- Variable type:character -----------------------------------------------------------------
##            variable missing complete    n min max empty n_unique
##  MiddleEarth$wkhtot     142     1817 1959   1   3     0       71
```

If we explore our MiddleEarth var we can see lot's of missings.This is common for huge survey's with a good amount of variables. We can also notice that nearly 200 variables are all missings. So we can make them zeros There are also variables wich correspond with exect countries, so because of filtering our data some variables are all NAs.

```
# We can try to get zeros isntead of NA
MiddleEarth[is.na(MiddleEarth)] = 0
# Check for NA
# is.na(MiddleEarth)
```

Quest "Village3"

```
# quest3, build in data
# As we saw there are no missing so we can just calculate stats:
mean(Numenor)
```

```
## [1] 1252.729
```

```
sd(Numenor)
```

```
## [1] 3371.146
```

```
var(Numenor)
```

```
## [1] 11364624
```

```
# quest3, Main data
MiddleEarth <- Arda[filter,]
MiddleEarth[is.na(MiddleEarth)] = 0
Shire <- MiddleEarth[colSums(!is.na(MiddleEarth)) > 0]
# To calculate any statistics we should again check for NA
# is.na(Shire)
```

Now we need to perform some statistics. For that lets chose a variable. Let it be "wkhtot" which we can also use for some operations in future. So, about NA…. We can substitute them to 0 like we did and them calculate statistics like mean, and we can also exclude them manually inside a function.

```
# quest3.1
mean(Shire$wkhtot)
```

```
## [1] 34.10158
```

```
sd(Shire$wkhtot)
```

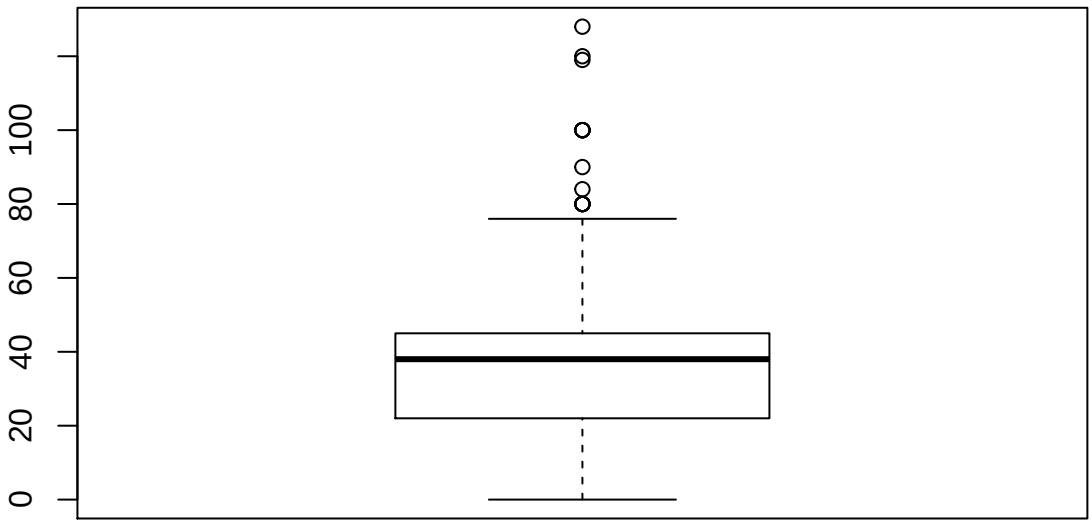
```
## [1] 17.3405
```

```
var(Shire$wkhtot)
```

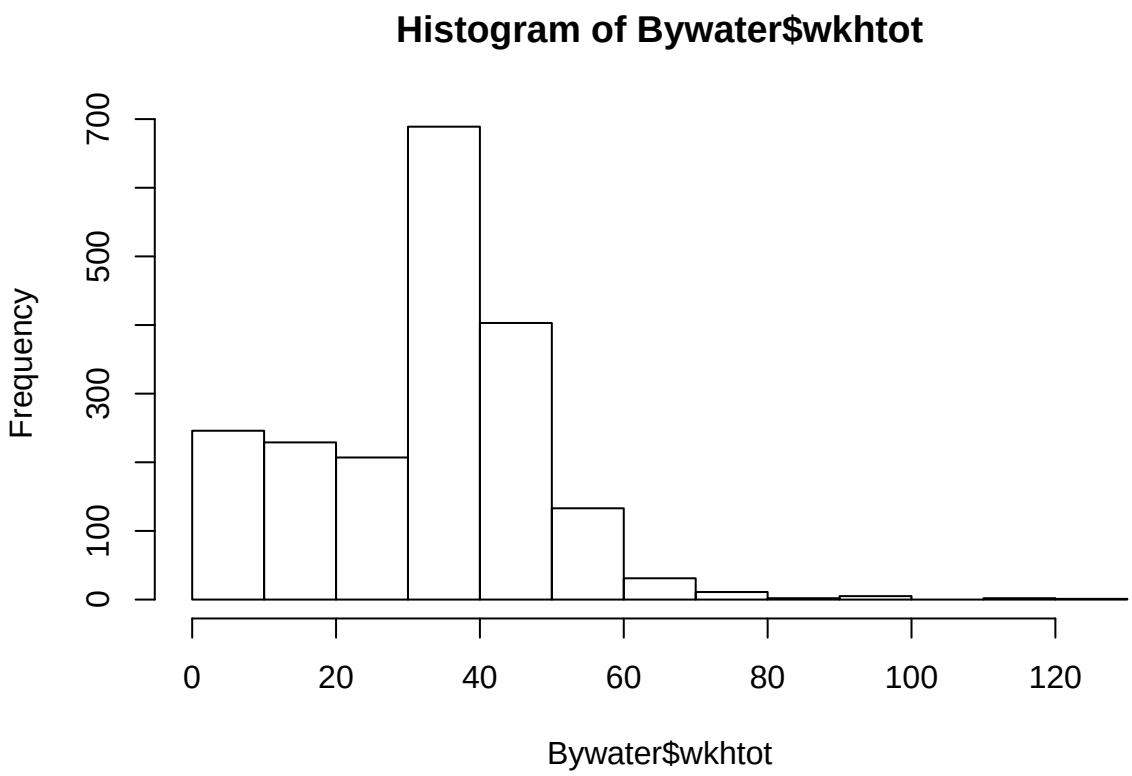
```
## [1] 300.6929
```

Then outliers… For exploring outliers we need some plots to be able to explore our variable:

```
Bywater <- data.frame(Shire[!is.na(Shire$wkhtot), ])
Bywater <- lapply(Bywater, unclass)
# Comment for this command: As stackoverflow told me i faced
# some kind of a bug. I got this error sever times
# 'Error: `x` and `labels` must be the same type' which crushed
# everything after itself. To be honest i didn't get why it occured
# but looks like it may happen with a confcict of Hmisc and haven
# (according to Stackoverflow atleast).
# Or maybe i simply use them wrong. Anyway i need this command
# in order to get any positive result futher.
boxplot(Bywater$wkhtot)
```

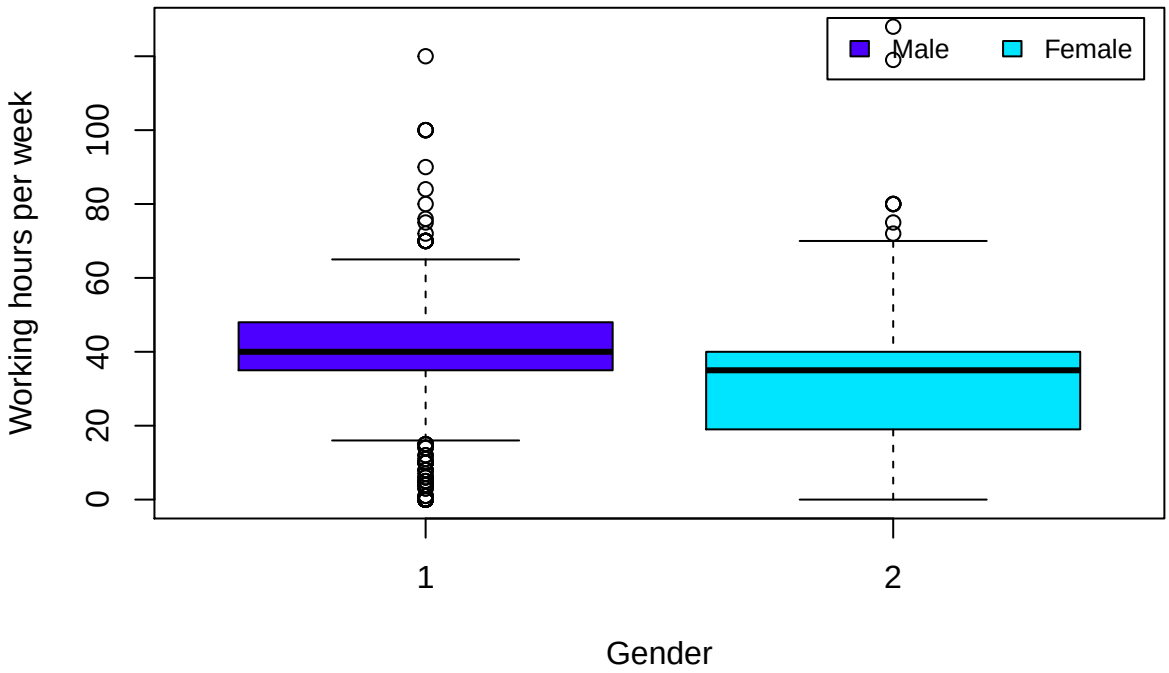



```
hist(Bywater$wkhtot)
```



So we see outliers of those who are not working and their working time is 0. Also there are observations with more then 80 working hours per week (an even around 120 hours per week). Moving to the next quest we need to perform some profound statistics. Our variable wkhtot which we used in previous tests is measured in working hours so we can perform one way Anova test with wkhtot as dependent variable. Now let's look for independent which is ment to be categorical. As ind we can take gender variable "gndr". Lets check it.

```
# quest3.2
boxplot(Bywater$wkhtot ~  Bywater$gndr,
xlab = 'Gender', ylab = 'Working hours per week', col=topo.colors(2))
legend("topright", inset=.02, c("Male","Female"),
fill=topo.colors(2), horiz=TRUE, cex=0.8)
```




```
#is.na(Bywater$gndr)
#is.na(Bywater$wkhtot)
Hobbiton <- aov(Bywater$gndr ~ Bywater$wkhtot)
summary(Hobbiton)
```

```
##                   Df Sum Sq Mean Sq F value Pr(>F)
## Bywater$wkhtot     1   20.4  20.386   86.08 <2e-16 ***
## Residuals       1957  463.5   0.237
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Our model shows that we should reject our 0 hypothesis, so there is a difference between groups(gender) and working hours. Next we need to perform some correlation. Lets pick years of education and try to use it with working hours to explore is there any relation between years spent on education and working hours.

```
# quest3.2
Bree <- cor.test(Bywater$eduyrs, Bywater$wkhtot, method = "pearson")
Bree
```

```
##
##  Pearson's product-moment correlation
##
## data:  Bywater$eduyrs and Bywater$wkhtot
## t = 5.8429, df = 1957, p-value = 5.993e-09
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.08716078 0.17421967
## sample estimates:
##       cor
## 0.1309427
```

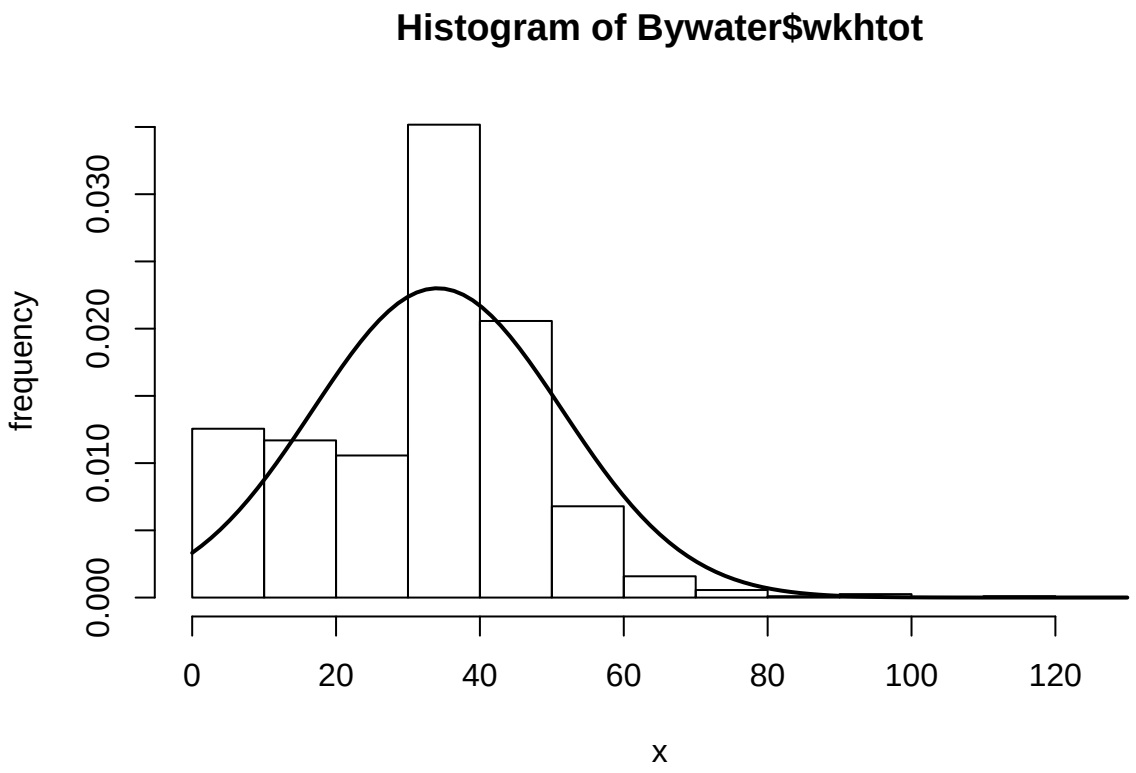
According to the results we see there is no huge correlation (0.13) between years of education and working hours.

Quest "Village4"

Now let's move to The Power of Statistics. We are going to cast some regressions using variables from previous chapter. Firsltly we need to look up for assumptions to regression. Let's firslty draw a pictute to look at wkhtot

```
# Bywater = Shire[!is.na(Shire$wkhtot), ]
Tuckborough1 <- mean(Bywater$wkhtot, na.rm = TRUE)
Tuckborough2 <- sd(Bywater$wkhtot, na.rm = TRUE)

hist(Bywater$wkhtot,
freq = FALSE,
xlab = 'x',
ylab = 'frequency')
curve(dnorm(x, mean = Tuckborough1, sd = Tuckborough2), add = TRUE,
      lwd = 2)
```



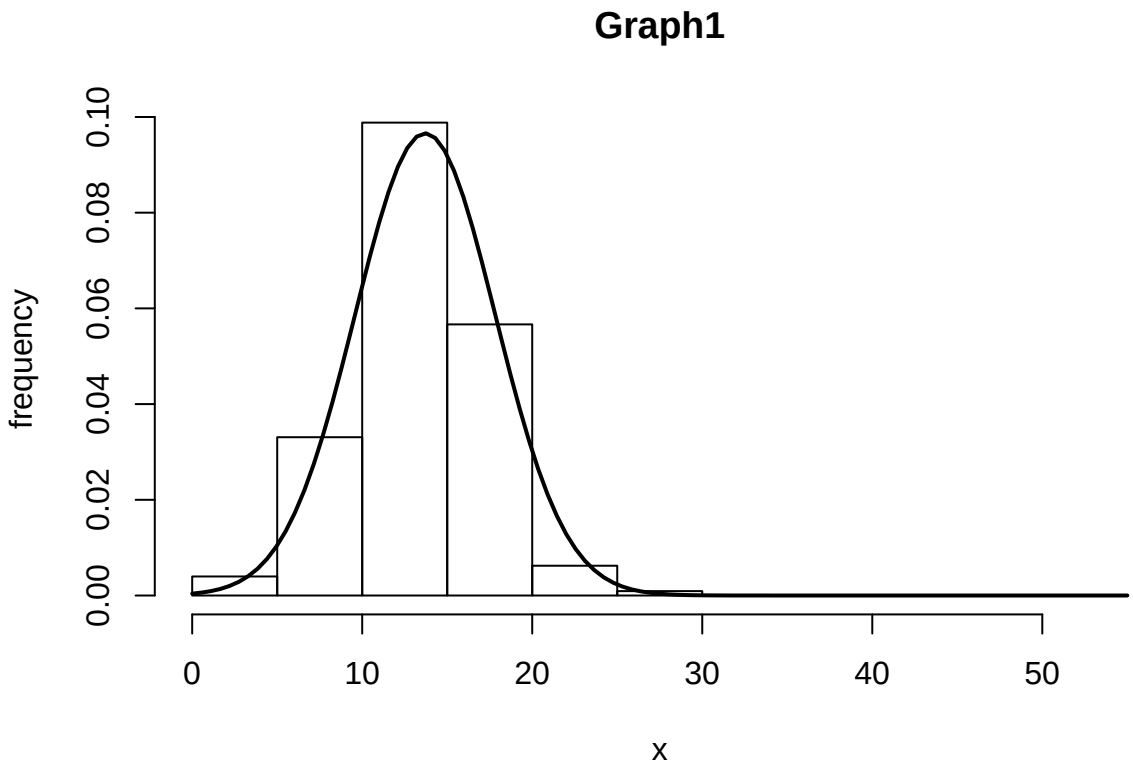

```
# And try model:
Green_dragon <-lm(data = Bywater, wkhtot ~  mbtru + gndr + njbspv)
summary(Green_dragon)
```

```
##
## Call:
## lm(formula = wkhtot ~ mbtru + gndr + njbspv, data = Bywater)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -47.155 -10.256   2.185  10.105  90.624
##
## Coefficients:
```

```
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept) 50.17364    1.72605  29.068  < 2e-16 ***
## mbtru       -2.91989    0.50632  -5.767 9.37e-09 ***
## gndr        -6.51881    0.75267  -8.661  < 2e-16 ***
## njbspv       0.49041    0.05784   8.479  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 16.5 on 1955 degrees of freedom
## Multiple R-squared:  0.09564,    Adjusted R-squared:  0.09425
## F-statistic: 68.91 on 3 and 1955 DF,  p-value: < 2.2e-16
```

```
# Model is not very good. Our variables are significant
# but r squared is not good enough. So we can try to
# change variable. Let's pick eduyrs
```

```
Tuckborough1 <- mean(Bywater$eduyrs, na.rm = TRUE)
Tuckborough2 <- sd(Bywater$eduyrs, na.rm = TRUE)
hist(Bywater$eduyrs,
main = 'Graph1',
freq = FALSE,
xlab = 'x',
ylab = 'frequency')
curve(dnorm(x, mean = Tuckborough1, sd = Tuckborough2),
add = TRUE, lwd = 2)
```




```
Green_dragon <- lm(data = Bywater, eduyrs ~ netusoft )
summary(Green_dragon)
```

```
##
## Call:
```

```
## lm(formula = eduyrs ~ netusoft, data = Bywater)
##
## Residuals:
##    Min     1Q Median     3Q    Max
## -14.63  -2.63  -0.63   2.37  40.31
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  9.90313    0.24921   39.74   <2e-16 ***
## netusoft     0.94535    0.05806   16.28   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 3.876 on 1957 degrees of freedom
## Multiple R-squared:  0.1193, Adjusted R-squared:  0.1189
## F-statistic: 265.1 on 1 and 1957 DF,  p-value: < 2.2e-16
```

So this model is better because of the higher R squared. Variable netusoft is significant. However, this model does not provide any valuable information. Our model is telling us that as education increases by 1 year time spent on Internet increases by 0.94535, andthe regression equation is: `eduyrs = 9.90313 + 0.94535*netusoft`

```
# And finaly we should import our models to csv/excel

library(devtools)
library(broom)
Greendragon <- tidy(Green_dragon)
write.csv(Greendragon, "regression.csv")
library(xlsx)
write.xlsx(Greendragon, "regression1.xlsx")
```