Khai phá dữ liệu

2022-04-21

# ẢNH HƯỞNG CỦA CÁC NHÂN TỐ TỚI SỨC KHỎE CON NGƯỜI

## Giới thiệu bộ dữ liệu

Bộ số liệu gồm 162 quan sát tương ứng với các nước trên thế giới và 27 biến thể hiện các góc độ của trạng thái dân số theo các nước/khu vực hoặc phân loại theo nhóm thu nhập.

## ï..MemberState Class Rg  
## 1 Afghanistan Low income South Asia  
## 2 Albania Upper middle income Europe & Central Asia  
## 3 Algeria Lower middle income Middle East & North Africa  
## 4 Andorra High income Europe & Central Asia  
## 5 Angola Lower middle income SubSaharan Africa  
## 6 Antigua and Barbuda High income Latin America & Caribbean  
## 7 Argentina Upper middle income Latin America & Caribbean  
## 8 Armenia Upper middle income Europe & Central Asia  
## 9 Australia High income East Asia & Pacific  
## 10 Austria High income Europe & Central Asia  
## 11 Azerbaijan Upper middle income Europe & Central Asia  
## 12 Bahrain High income Middle East & North Africa  
## 13 Bangladesh Lower middle income South Asia  
## 14 Barbados High income Latin America & Caribbean  
## 15 Belarus Upper middle income Europe & Central Asia  
## 16 Belgium High income Europe & Central Asia  
## 17 Belize Lower middle income Latin America & Caribbean  
## 18 Benin Lower middle income SubSaharan Africa  
## 19 Bhutan Lower middle income South Asia  
## 20 Bosnia and Herzegovina Upper middle income Europe & Central Asia  
## 21 Botswana Upper middle income SubSaharan Africa  
## 22 Brazil Upper middle income Latin America & Caribbean  
## 23 Bulgaria Upper middle income Europe & Central Asia  
## 24 Burkina Faso Low income SubSaharan Africa  
## 25 Burundi Low income SubSaharan Africa  
## 26 Cabo Verde Lower middle income SubSaharan Africa  
## 27 Cambodia Lower middle income East Asia & Pacific  
## 28 Cameroon Lower middle income SubSaharan Africa  
## 29 Canada High income North America  
## 30 Chad Low income SubSaharan Africa  
## 31 Chile High income Latin America & Caribbean  
## 32 China Upper middle income East Asia & Pacific  
## 33 Colombia Upper middle income Latin America & Caribbean  
## 34 Comoros Lower middle income SubSaharan Africa  
## 35 Costa Rica Upper middle income Latin America & Caribbean  
## 36 Croatia High income Europe & Central Asia  
## 37 Cuba Upper middle income Latin America & Caribbean  
## 38 Cyprus High income Europe & Central Asia  
## 39 Denmark High income Europe & Central Asia  
## 40 Djibouti Lower middle income Middle East & North Africa  
## 41 Dominica Upper middle income Latin America & Caribbean  
## 42 Dominican Republic Upper middle income Latin America & Caribbean  
## 43 Ecuador Upper middle income Latin America & Caribbean  
## 44 El Salvador Lower middle income Latin America & Caribbean  
## 45 Equatorial Guinea Upper middle income SubSaharan Africa  
## 46 Eritrea Low income SubSaharan Africa  
## 47 Estonia High income Europe & Central Asia  
## 48 Eswatini Lower middle income SubSaharan Africa  
## 49 Ethiopia Low income SubSaharan Africa  
## 50 Fiji Upper middle income East Asia & Pacific  
## 51 Finland High income Europe & Central Asia  
## 52 France High income Europe & Central Asia  
## 53 Gabon Upper middle income SubSaharan Africa  
## 54 Georgia Upper middle income Europe & Central Asia  
## 55 Germany High income Europe & Central Asia  
## 56 Ghana Lower middle income SubSaharan Africa  
## 57 Greece High income Europe & Central Asia  
## 58 Grenada Upper middle income Latin America & Caribbean  
## 59 Guatemala Upper middle income Latin America & Caribbean  
## 60 Guinea Low income SubSaharan Africa  
## 61 Guyana Upper middle income Latin America & Caribbean  
## 62 Haiti Lower middle income Latin America & Caribbean  
## 63 Honduras Lower middle income Latin America & Caribbean  
## 64 Hungary High income Europe & Central Asia  
## 65 Iceland High income Europe & Central Asia  
## 66 India Lower middle income South Asia  
## 67 Indonesia Lower middle income East Asia & Pacific  
## 68 Iraq Upper middle income Middle East & North Africa  
## 69 Ireland High income Europe & Central Asia  
## 70 Israel High income Middle East & North Africa  
## 71 Italy High income Europe & Central Asia  
## 72 Jamaica Upper middle income Latin America & Caribbean  
## 73 Japan High income East Asia & Pacific  
## 74 Jordan Upper middle income Middle East & North Africa  
## 75 Kazakhstan Upper middle income Europe & Central Asia  
## 76 Kenya Lower middle income SubSaharan Africa  
## 77 Kiribati Lower middle income East Asia & Pacific  
## 78 Kuwait High income Middle East & North Africa  
## 79 Latvia High income Europe & Central Asia  
## 80 Lebanon Upper middle income Middle East & North Africa  
## 81 Lesotho Lower middle income SubSaharan Africa  
## 82 Liberia Low income SubSaharan Africa  
## 83 Libya Upper middle income Middle East & North Africa  
## 84 Lithuania High income Europe & Central Asia  
## 85 Luxembourg High income Europe & Central Asia  
## 86 Madagascar Low income SubSaharan Africa  
## 87 Malawi Low income SubSaharan Africa  
## 88 Malaysia Upper middle income East Asia & Pacific  
## 89 Maldives Upper middle income South Asia  
## 90 Mali Low income SubSaharan Africa  
## 91 Malta High income Middle East & North Africa  
## 92 Mauritania Lower middle income SubSaharan Africa  
## 93 Mauritius Upper middle income SubSaharan Africa  
## 94 Mexico Upper middle income Latin America & Caribbean  
## 95 Monaco High income Europe & Central Asia  
## 96 Mongolia Lower middle income East Asia & Pacific  
## 97 Montenegro Upper middle income Europe & Central Asia  
## 98 Morocco Lower middle income Middle East & North Africa  
## 99 Mozambique Low income SubSaharan Africa  
## 100 Myanmar Lower middle income East Asia & Pacific  
## 101 Namibia Upper middle income SubSaharan Africa  
## 102 Nepal Lower middle income South Asia  
## 103 Netherlands High income Europe & Central Asia  
## 104 New Zealand High income East Asia & Pacific  
## 105 Nicaragua Lower middle income Latin America & Caribbean  
## 106 Niger Low income SubSaharan Africa  
## 107 Nigeria Lower middle income SubSaharan Africa  
## 108 North Macedonia Upper middle income Europe & Central Asia  
## 109 Norway High income Europe & Central Asia  
## 110 Oman High income Middle East & North Africa  
## 111 Pakistan Lower middle income South Asia  
## 112 Palau High income East Asia & Pacific  
## 113 Panama Upper middle income Latin America & Caribbean  
## 114 Papua New Guinea Lower middle income East Asia & Pacific  
## 115 Paraguay Upper middle income Latin America & Caribbean  
## 116 Peru Upper middle income Latin America & Caribbean  
## 117 Philippines Lower middle income East Asia & Pacific  
## 118 Poland High income Europe & Central Asia  
## 119 Portugal High income Europe & Central Asia  
## 120 Qatar High income Middle East & North Africa  
## 121 Romania Upper middle income Europe & Central Asia  
## 122 Russian Federation Upper middle income Europe & Central Asia  
## 123 Rwanda Low income SubSaharan Africa  
## 124 Samoa Lower middle income East Asia & Pacific  
## 125 San Marino High income Europe & Central Asia  
## 126 Saudi Arabia High income Middle East & North Africa  
## 127 Senegal Lower middle income SubSaharan Africa  
## 128 Serbia Upper middle income Europe & Central Asia  
## 129 Seychelles High income SubSaharan Africa  
## 130 Sierra Leone Low income SubSaharan Africa  
## 131 Singapore High income East Asia & Pacific  
## 132 Slovenia High income Europe & Central Asia  
## 133 Solomon Islands Lower middle income East Asia & Pacific  
## 134 Somalia Low income SubSaharan Africa  
## 135 South Africa Upper middle income SubSaharan Africa  
## 136 South Sudan Low income SubSaharan Africa  
## 137 Spain High income Europe & Central Asia  
## 138 Sri Lanka Lower middle income South Asia  
## 139 Sudan Low income SubSaharan Africa  
## 140 Suriname Upper middle income Latin America & Caribbean  
## 141 Sweden High income Europe & Central Asia  
## 142 Switzerland High income Europe & Central Asia  
## 143 Tajikistan Lower middle income Europe & Central Asia  
## 144 Thailand Upper middle income East Asia & Pacific  
## 145 Togo Low income SubSaharan Africa  
## 146 Tonga Upper middle income East Asia & Pacific  
## 147 Trinidad and Tobago High income Latin America & Caribbean  
## 148 Tunisia Lower middle income Middle East & North Africa  
## 149 Turkey Upper middle income Europe & Central Asia  
## 150 USA High income North America  
## 151 Uganda Low income SubSaharan Africa  
## 152 Ukraine Lower middle income Europe & Central Asia  
## 153 United Arab Emirates High income Middle East & North Africa  
## 154 United Kingdom High income Europe & Central Asia  
## 155 Uruguay High income Latin America & Caribbean  
## 156 Uzbekistan Lower middle income Europe & Central Asia  
## 157 Vietnam Lower middle income East Asia & Pacific  
## 158 Vanuatu Lower middle income East Asia & Pacific  
## 159 Zambia Lower middle income SubSaharan Africa  
## 160 Zimbabwe Lower middle income SubSaharan Africa  
## 161 GuineaBissau Low income SubSaharan Africa  
## 162 TimorLeste Lower middle income East Asia & Pacific  
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## 6 97.115 7535 18901 1358 75824 135 76.5 67.0 17.5  
## 7 44780.676 9059944 35707307 2794 197233 128327 76.6 67.1 15.7  
## 8 2957.728 422747 3013643 2900 142190 8621 76.0 67.1 19.9  
## 9 25203.199 5351477 68228047 260 205609 6762 83.0 70.9 8.6  
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## 11 10047.719 792320 6759211 942 76908 9705 71.4 63.6 27.2  
## 12 1641.164 562399 9669842 815 311243 1473 75.8 65.9 16.1  
## 13 163046.172 1952224 13916558 174 11647 29124 74.3 64.3 18.9  
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## 15 9452.409 973206 13013839 730 103053 6894 74.8 66.0 23.8  
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## 20 3300.998 376437 1748585 4854 116026 15749 76.8 67.2 18.7  
## 21 2303.703 305859 2026898 1103 125544 2688 62.2 53.9 27.0  
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## 24 20321.383 20853 248995 17 951 382 62.7 54.9 23.9  
## 25 11530.577 38722 345742 3 3092 38 63.8 55.6 25.0  
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## 28 25876.387 119780 1751774 70 4321 1927 62.4 54.5 23.9  
## 29 37411.039 3623785 60149136 999 94536 38288 82.2 71.3 9.6  
## 30 15946.882 7378 191341 11 427 192 59.6 52.0 22.7  
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## 62 11263.079 30594 132422 72 2626 835 64.1 55.8 31.3  
## 63 9746.115 421268 1263329 1069 41360 10888 71.9 63.0 18.7  
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## 67 270625.562 6038664 93900348 559 21669 155820 71.3 62.8 24.8  
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## 69 4882.498 1498834 11962495 1376 297616 6932 81.8 71.1 9.7  
## 70 8519.373 4025950 41373364 1138 431691 10612 82.6 72.4 8.8  
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## 72 2948.277 129168 961699 980 43284 2924 76.0 66.6 16.9  
## 73 126860.297 7287343 45528128 230 57934 28945 84.3 74.1 8.3  
## 74 10101.697 1694216 16670254 1353 163160 14048 77.9 67.6 15.3  
## 75 18551.428 1305375 11575012 712 68069 13660 74.0 65.0 22.4  
## 76 52573.969 323605 3562960 101 5791 5649 66.1 57.7 21.0  
## 77 117.608 3071 NA 106 25025 13 59.4 52.6 50.8  
## 78 4207.077 630641 7948416 583 143878 2555 81.0 70.1 11.9  
## 79 1906.740 812686 7123503 3089 439523 5711 75.4 66.2 21.6  
## 80 6855.709 1095406 4795578 1529 161780 10355 76.4 66.0 19.9  
## 81 2125.267 32910 431221 321 15148 697 50.7 44.2 42.7  
## 82 4937.374 7402 139824 56 1405 294 64.1 54.9 17.8  
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## 105 6545.503 18491 NA 33 2733 225 75.0 65.5 15.3  
## 106 23310.719 8866 246455 12 344 308 63.3 55.5 21.0  
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## 109 5378.859 1419096 11002430 506 258166 2783 82.6 71.4 8.7  
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## 112 18.001 4190 42790 329 229614 6 NA NA NA  
## 113 4246.440 768470 5783875 1844 173240 8178 79.3 68.7 10.7  
## 114 8776.119 43660 249149 70 4720 649 65.3 57.1 36.0  
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## 1 4.1 15.9 1.0 8.5 <0.1 42.2  
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## 3 2.5 20.9 0.7 1.7 0.6 77.2  
## 4 NA NA NA NA 12.3 NA  
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## 10 14.6 4.9 0.2 0.5 11.9 NA  
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## 12 8.9 5.2 0.3 0.3 1.1 NA  
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## 18 7.8 26.8 2.6 6.2 2.2 28.0  
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## 21 16.1 26.4 1.8 16.9 6.6 NA  
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## 23 9.7 9.2 0.5 1.2 12.5 NA  
## 24 7.5 31.0 3.1 9.6 11 52.6  
## 25 6.2 35.5 3.2 6.6 7.5 39.6  
## 26 12.9 26.8 0.4 13.4 6.4 NA  
## 27 4.9 19.6 0.5 2.1 7.8 56.5  
## 28 9.0 30.2 2.6 6.4 5.5 44.9  
## 29 11.8 5.3 0.3 1.6 8.8 NA  
## 30 6.4 32.4 3.5 9.0 1.3 17.5  
## 31 9.0 14.9 0.4 3.9 8.9 NA  
## 32 8.1 17.4 1.8 0.8 6 NA  
## 33 3.9 15.4 0.1 38.3 5.5 86.6  
## 34 5.4 26.6 2.4 7.4 1.1 28.8  
## 35 8.1 14.8 0.1 12.6 4.1 80.8  
## 36 16.4 7.9 0.4 1.1 8.7 NA  
## 37 14.5 8.9 0.2 5.1 6.3 86.9  
## 38 3.6 5.8 0.3 1.3 10.8 NA  
## 39 10.7 3.7 0.1 1.1 10.1 NA  
## 40 9.6 23.5 2.5 6.6 0.4 NA  
## 41 NA NA NA NA 7.2 NA  
## 42 4.9 64.6 0.4 17.8 6.7 81.7  
## 43 7.6 20.1 0.3 7.0 3.3 79.4  
## 44 6.1 20.9 0.2 85.0 4.1 80.0  
## 45 7.9 27.2 1.6 3.3 6.9 20.7  
## 46 10.9 37.9 3.3 11.0 2.1 NA  
## 47 14.9 4.5 0.6 2.1 10.8 NA  
## 48 29.4 33.5 3.3 18.5 8.8 82.9  
## 49 5.4 28.2 3.3 7.2 2.2 63.6  
## 50 9.0 13.5 0.3 2.2 3.7 NA  
## 51 15.3 3.9 0.4 1.2 10.7 NA  
## 52 13.8 5.1 0.3 0.8 12.2 NA  
## 53 8.4 23.9 1.3 8.5 8.1 44.0  
## 54 9.2 12.4 0.6 2.3 9.5 50.5  
## 55 12.3 3.8 0.3 0.9 12.8 NA  
## 56 6.6 25.7 1.7 6.1 2.8 40.4  
## 57 5.1 8.3 0.2 1.0 10.5 NA  
## 58 0.7 8.0 0.1 6.6 9 NA  
## 59 5.9 22.9 1.6 25.1 1.6 66.1  
## 60 7.0 29.7 2.3 8.8 1.1 37.7  
## 61 40.3 22.3 0.1 24.7 5.3 51.5  
## 62 9.6 18.8 1.4 20.7 3 45.4  
## 63 2.1 16.1 0.5 66.9 3.9 76.0  
## 64 16.6 7.7 0.5 1.4 11.1 NA  
## 65 11.9 2.0 1.0 1.2 9.2 NA  
## 66 12.7 15.6 0.3 3.8 5.6 72.8  
## 67 2.4 11.3 0.3 4.3 0.2 77.0  
## 68 3.6 27.3 0.2 14.4 0.4 53.7  
## 69 9.6 3.1 0.3 0.8 12.7 NA  
## 70 5.3 3.9 0.0 1.2 4.4 NA  
## 71 6.7 5.3 0.3 0.7 8 NA  
## 72 2.4 15.1 0.1 50.3 4.2 NA  
## 73 15.3 3.6 0.2 0.2 10.1 NA  
## 74 1.6 17.0 0.5 2.7 0.5 56.7  
## 75 17.6 12.7 1.9 5.1 5 73.2  
## 76 6.1 28.3 2.4 5.6 2.1 74.4  
## 77 28.3 1.9 2.6 4.8 2.3 53.1  
## 78 2.9 15.4 0.4 1.8 0 NA  
## 79 20.1 8.1 1.2 5.0 13.2 NA  
## 80 2.8 16.4 0.6 4.2 1.5 NA  
## 81 72.4 31.9 5.2 43.5 5.1 82.8  
## 82 4.4 38.9 1.7 9.7 5.4 41.0  
## 83 4.5 21.3 0.8 2.1 <0.1 24.0  
## 84 26.1 8.1 1.7 4.8 12.8 NA  
## 85 11.3 4.1 0.2 0.5 12.4 NA  
## 86 5.5 29.2 2.1 6.5 2 65.9  
## 87 5.4 33.4 1.7 2.2 4.1 73.9  
## 88 5.7 22.5 0.7 2.7 0.9 NA  
## 89 2.7 1.6 0.0 1.9 2.8 29.2  
## 90 4.1 22.7 2.9 10.7 1.3 41.2  
## 91 6.1 4.1 0.1 1.0 8.3 NA  
## 92 3.1 25.6 1.5 10.9 0 30.4  
## 93 9.5 12.2 0.8 2.3 4.8 40.8  
## 94 5.3 12.8 0.4 25.4 5 79.8  
## 95 NA NA NA NA <NA> NA  
## 96 17.9 21.0 2.8 6.1 5.9 63.6  
## 97 21.0 7.6 0.6 2.8 12.2 32.9  
## 98 7.2 17.0 0.7 1.7 0.5 72.0  
## 99 13.6 30.0 3.7 3.7 2.7 55.5  
## 100 2.9 20.4 1.3 3.9 2.1 74.9  
## 101 9.7 34.8 1.9 18.0 3.1 80.4  
## 102 9.0 16.3 1.7 2.5 0.6 61.9  
## 103 11.8 4.0 0.1 0.6 9.7 NA  
## 104 11.0 9.6 0.2 1.2 10.7 NA  
## 105 4.3 16.9 0.3 9.4 5.1 89.8  
## 106 5.3 25.5 3.3 9.6 0.5 45.5  
## 107 3.5 20.7 3.3 9.2 6.2 35.6  
## 108 9.4 5.1 0.5 1.5 6.4 29.6  
## 109 11.8 2.1 0.3 0.6 7.1 NA  
## 110 4.9 10.6 0.9 0.7 0.9 39.6  
## 111 8.9 13.0 1.6 6.0 0.3 48.6  
## 112 NA NA NA NA <NA> NA  
## 113 2.9 13.9 0.1 17.2 7.8 65.2  
## 114 2.9 12.6 1.4 11.0 2.1 49.2  
## 115 6.0 22.0 0.2 8.0 7 78.9  
## 116 2.8 13.6 0.4 9.3 6.8 66.6  
## 117 2.2 12.0 0.2 13.7 7 56.0  
## 118 11.3 9.4 0.5 0.8 11.9 NA  
## 119 11.5 8.2 0.3 0.9 12.1 NA  
## 120 5.8 7.3 0.3 0.5 1.5 68.9  
## 121 9.7 10.3 1.9 1.3 12.3 NA  
## 122 25.1 12.0 3.8 7.8 10.5 72.4  
## 123 5.6 29.4 1.7 4.3 8 62.9  
## 124 12.6 13.0 0.4 2.8 2.8 39.4  
## 125 NA NA NA NA <NA> NA  
## 126 6.0 35.9 0.8 1.9 0 NA  
## 127 6.0 23.5 1.9 7.6 0.7 53.2  
## 128 11.4 7.5 0.3 1.2 8.9 38.4  
## 129 8.1 11.3 0.5 14.8 8.8 NA  
## 130 6.7 33.0 2.8 7.9 5.3 53.0  
## 131 11.2 2.1 0.0 0.3 2 NA  
## 132 19.8 5.1 0.2 0.9 12.1 NA  
## 133 14.7 16.5 2.3 3.9 1.7 38.0  
## 134 7.9 27.4 4.9 5.4 0 2.1  
## 135 23.5 22.2 1.7 35.9 9.5 79.7  
## 136 3.8 36.7 2.3 14.3 <NA> NA  
## 137 7.7 3.9 0.4 0.6 12.7 NA  
## 138 14.0 19.7 0.4 2.3 2.9 74.3  
## 139 3.8 26.8 1.7 5.8 <NA> 30.1  
## 140 25.4 15.3 0.3 5.8 7.4 57.5  
## 141 14.7 3.1 0.2 1.1 9 86.7  
## 142 14.5 2.2 0.2 0.5 11.2 NA  
## 143 4.3 15.7 0.4 1.8 0.9 52.1  
## 144 8.8 32.2 0.2 4.3 8.5 88.2  
## 145 8.8 28.7 1.9 8.9 2.7 39.6  
## 146 3.8 33.0 1.1 3.4 0.4 49.9  
## 147 8.7 9.3 0.1 39.4 6.5 58.2  
## 148 3.3 16.5 0.7 3.5 2 62.7  
## 149 2.4 6.7 0.4 4.8 1.8 60.1  
## 150 16.1 12.7 0.5 5.8 10 78.4  
## 151 4.6 29.4 1.7 13.9 12.5 55.1  
## 152 21.6 10.2 2.5 6.3 8.3 68.0  
## 153 6.4 8.9 0.4 0.7 3.8 NA  
## 154 7.9 3.2 0.3 1.3 11.4 86.5  
## 155 21.2 14.8 0.5 8.5 6.9 NA  
## 156 8.0 11.7 0.8 1.5 2.6 NA  
## 157 7.5 30.6 0.9 1.9 7.9 69.6  
## 158 18.0 14.9 0.7 2.3 2.1 50.7  
## 159 7.3 20.5 2.6 6.5 4.5 65.9  
## 160 14.1 41.2 3.5 13.1 4.5 84.8  
## 161 7.0 32.2 2.3 9.0 5.5 60.0  
## 162 3.7 11.9 0.4 4.7 0.5 45.9  
## UHC PWE.10 PWE.25 AmbSt UWMortal TobacooSt HIV Tuberculosis Malaria  
## 1 37 14.6 2 211.1 13.9 NA 0.04 189.0 14.5  
## 2 59 16.7 5 68.0 0.2 29.2 0.03 16.0 <NA>  
## 3 78 NA <NA> 49.7 1.9 18.8 0.05 61.0 0  
## 4 NA NA <NA> NA <NA> 33.8 <NA> 7.5 <NA>  
## 5 40 NA <NA> 118.5 48.8 NA 0.84 351.0 235.2  
## 6 73 NA <NA> 29.9 0.1 NA <NA> 0.0 <NA>  
## 7 76 NA <NA> 26.6 0.4 21.8 0.13 29.0 0  
## 8 69 16.1 4.9 54.8 0.2 26.7 0.05 26.0 0  
## 9 87 NA <NA> 8.4 0.1 16.2 0.03 6.9 <NA>  
## 10 79 NA <NA> 15.3 0.1 29.1 <NA> 6.2 <NA>  
## 11 65 NA <NA> 63.9 1.1 19.6 0.06 60.0 0  
## 12 77 NA <NA> 40.1 <0.1 25.1 <NA> 12.0 <NA>  
## 13 48 24.7 9.5 149.0 11.9 39.1 <NA> 221.0 1.2  
## 14 77 16.4 3.8 31.1 0.2 8.7 0.18 0.0 <NA>  
## 15 76 9.2 0.7 60.7 0.1 26.6 0.2 29.0 <NA>  
## 16 84 NA <NA> 15.7 0.3 25.0 <NA> 8.9 <NA>  
## 17 64 NA <NA> 68.6 1 NA <NA> 27.0 0  
## 18 40 10.9 5.4 205.0 59.7 7.2 0.31 55.0 406.7  
## 19 62 1.8 0.4 124.5 3.9 NA <NA> 165.0 <0.1  
## 20 61 8.2 1.4 79.8 0.1 38.3 <NA> 27.0 <NA>  
## 21 61 NA <NA> 101.3 11.8 23.7 4.78 253.0 0.2  
## 22 79 NA <NA> 29.9 1 16.5 0.23 46.0 4.2  
## 23 66 NA <NA> 61.8 0.1 38.9 0.04 21.0 <NA>  
## 24 40 3.1 0.4 206.2 49.6 16.0 0.14 47.0 386.7  
## 25 42 3.3 0.4 179.9 65.4 12.6 0.17 107.0 296  
## 26 69 NA <NA> 99.5 4.1 NA 0.19 46.0 0  
## 27 60 15.3 5.2 149.8 6.5 21.8 0.05 287.0 12  
## 28 46 10.8 3 208.1 45.2 9.3 0.69 179.0 243.1  
## 29 89 NA <NA> 7.0 0.4 17.5 <NA> 5.5 <NA>  
## 30 28 NA <NA> 280.1 101 11.8 0.34 142.0 202.1  
## 31 70 14.6 2.1 25.3 0.2 44.7 0.27 18.0 <NA>  
## 32 79 19.7 5.4 112.7 0.6 24.7 <NA> 58.0 0  
## 33 76 8.2 2.2 37.0 0.8 7.9 0.25 35.0 10.7  
## 34 52 8.8 1.6 172.4 50.7 19.5 <0.01 35.0 20.7  
## 35 77 9.8 1.7 23.3 0.9 9.8 0.19 10.0 0.1  
## 36 71 NA <NA> 35.5 0.1 36.6 0.02 8.0 <NA>  
## 37 83 NA <NA> 49.5 1 27.1 0.14 6.5 <NA>  
## 38 78 NA <NA> 20.1 0.3 36.7 <NA> 5.3 <NA>  
## 39 81 NA <NA> 13.2 0.3 18.6 <NA> 5.0 <NA>  
## 40 47 NA <NA> 159.0 31.3 NA 0.14 234.0 67.7  
## 41 NA NA <NA> NA <NA> NA <NA> 16.0 <NA>  
## 42 74 NA <NA> 43.0 2.2 9.4 0.27 42.0 0.3  
## 43 77 10.3 2.4 24.5 0.6 NA 0.14 46.0 3.6  
## 44 76 1.7 0.3 41.9 2 12.7 0.14 58.0 0  
## 45 45 NA <NA> 177.7 22.3 NA 4.06 181.0 237.1  
## 46 38 NA <NA> 173.7 45.6 7.2 0.11 86.0 57.3  
## 47 75 NA <NA> 25.0 <0.1 30.5 <NA> 13.0 <NA>  
## 48 63 NA <NA> 137.0 27.9 10.7 4.9 363.0 0.7  
## 49 39 4.9 1.4 144.4 43.7 4.6 0.16 140.0 34.3  
## 50 64 NA <NA> 99.0 2.9 26.7 0.14 66.0 <NA>  
## 51 78 NA <NA> 7.2 <0.1 19.7 <NA> 4.7 <NA>  
## 52 78 NA <NA> 9.7 0.3 34.6 <NA> 8.7 <NA>  
## 53 49 NA <NA> 76.0 20.6 NA 0.74 521.0 211.9  
## 54 66 29.2 9 101.8 0.2 29.7 <NA> 74.0 0  
## 55 83 NA <NA> 16.0 0.6 28.0 <NA> 5.8 <NA>  
## 56 47 1.1 0.1 203.8 18.8 3.7 0.7 144.0 161.5  
## 57 75 16.9 1.6 27.6 <0.1 39.1 <NA> 4.3 <NA>  
## 58 72 NA <NA> 45.3 0.3 NA <NA> 3.1 <NA>  
## 59 55 1.4 <0.1 73.8 6.3 NA 0.07 26.0 0.2  
## 60 37 7.0 1.3 243.3 44.6 NA 0.39 176.0 296.9  
## 61 72 NA <NA> 107.8 3.6 12.2 0.42 79.0 33.7  
## 62 49 11.5 4 184.3 23.8 8.3 0.52 170.0 1.4  
## 63 65 NA <NA> 60.7 3.6 NA 0.11 31.0 0.1  
## 64 74 NA <NA> 38.8 0.2 30.6 <NA> 6.3 <NA>  
## 65 84 NA <NA> 8.7 0.1 13.8 <NA> 4.4 <NA>  
## 66 55 17.3 3.9 184.3 18.6 27.0 <NA> 193.0 4.3  
## 67 57 2.7 0.5 112.4 7.1 37.9 <NA> 312.0 2.4  
## 68 61 3.3 0.4 75.1 3 22.2 <NA> 41.0 0  
## 69 76 NA <NA> 11.9 0.1 23.6 <NA> 5.8 <NA>  
## 70 82 6.7 1 15.4 0.2 25.5 <NA> 2.9 <NA>  
## 71 82 NA <NA> 15.0 0.1 23.4 0.04 7.1 <NA>  
## 72 65 NA <NA> 25.4 0.6 11.0 0.58 3.2 <NA>  
## 73 83 4.4 0.6 11.9 0.2 21.9 <NA> 13.0 <NA>  
## 74 76 NA <NA> 51.2 0.6 NA <NA> 5.5 <NA>  
## 75 76 2.6 0.1 62.7 0.4 24.4 0.2 68.0 0  
## 76 55 5.4 1.5 78.1 51.2 11.8 0.92 267.0 57  
## 77 41 NA <NA> 140.2 16.7 52.0 <NA> 436.0 <NA>  
## 78 76 NA <NA> 103.8 <0.1 22.1 <NA> 22.0 <NA>  
## 79 71 NA <NA> 41.3 <0.1 36.7 0.19 26.0 <NA>  
## 80 73 NA <NA> 51.4 0.8 42.6 0.03 13.0 <NA>  
## 81 48 NA <NA> 177.6 44.4 29.7 6.43 654.0 <NA>  
## 82 39 NA <NA> 170.2 41.5 8.4 0.46 308.0 366.6  
## 83 64 NA <NA> 71.9 0.6 NA 0.07 59.0 <NA>  
## 84 73 NA <NA> 34.0 0.1 27.1 0.09 42.0 <NA>  
## 85 83 NA <NA> 11.6 <0.1 21.7 <NA> 9.0 <NA>  
## 86 28 NA <NA> 159.6 30.2 28.9 0.23 233.0 76.1  
## 87 46 4.2 0.9 115.0 28.3 12.8 1.94 146.0 207.7  
## 88 73 2.0 0.2 47.4 0.4 21.8 0.2 92.0 0  
## 89 62 10.3 4.1 25.6 0.3 NA <NA> 36.0 <NA>  
## 90 38 6.5 1.1 209.1 70.7 12.0 <NA> 52.0 333.7  
## 91 82 NA <NA> 20.2 <0.1 25.1 <NA> 14.0 <NA>  
## 92 41 11.7 3 169.5 38.6 NA <NA> 89.0 43.4  
## 93 63 8.9 1.8 38.3 0.6 26.9 0.57 12.0 <NA>  
## 94 76 1.6 0.2 36.7 1.1 13.9 <NA> 23.0 0.2  
## 95 NA NA <NA> NA <NA> NA <NA> 0.0 <NA>  
## 96 62 2.4 0.5 155.9 1.3 27.6 0.01 428.0 <NA>  
## 97 68 10.3 0.8 78.6 <0.1 NA 0.05 15.0 <NA>  
## 98 70 NA <NA> 49.1 1.9 14.7 0.02 97.0 0  
## 99 46 1.6 0.4 110.0 27.6 14.4 4.68 361.0 308.4  
## 100 61 14.4 2.8 156.4 12.6 45.5 0.19 322.0 2.3  
## 101 62 NA <NA> 145.0 18.3 17.9 3.1 486.0 2.8  
## 102 48 10.7 2.4 193.8 19.8 31.9 0.03 238.0 0.1  
## 103 86 NA <NA> 13.7 0.2 23.4 0.02 5.0 <NA>  
## 104 87 NA <NA> 7.2 0.1 14.8 0.03 7.5 <NA>  
## 105 73 14.8 3 55.7 2.2 NA 0.06 43.0 5.9  
## 106 37 6.6 1.9 251.8 70.8 8.6 0.06 84.0 343.2  
## 107 42 15.1 4.1 307.4 68.6 4.8 0.52 219.0 303.3  
## 108 72 NA <NA> 82.2 0.1 NA <NA> 12.0 <NA>  
## 109 87 NA <NA> 8.6 0.2 18.4 <NA> 3.3 <NA>  
## 110 69 NA <NA> 53.9 <0.1 9.6 0.04 8.5 0  
## 111 45 4.5 0.5 173.6 19.6 20.0 0.12 263.0 3.3  
## 112 NA NA <NA> NA <NA> 23.7 <NA> 38.0 <NA>  
## 113 79 NA <NA> 25.8 1.9 6.9 <NA> 37.0 0.4  
## 114 40 NA <NA> 152.0 16.3 NA 0.38 432.0 156.4  
## 115 69 7.1 1.9 57.5 1.5 12.8 0.16 46.0 0  
## 116 77 9.2 1.3 63.9 1.3 9.6 0.1 119.0 3.6  
## 117 61 6.3 1.4 185.2 4.2 24.3 0.14 554.0 0.7  
## 118 75 14.1 1.3 37.9 0.1 26.0 <NA> 15.0 <NA>  
## 119 82 NA <NA> 9.8 0.2 27.9 <NA> 19.0 <NA>  
## 120 68 NA <NA> 47.4 <0.1 14.0 <NA> 35.0 <NA>  
## 121 74 13.4 2.2 59.3 0.4 25.5 0.04 66.0 <NA>  
## 122 75 4.9 0.6 49.4 0.1 28.3 <NA> 50.0 <NA>  
## 123 57 1.2 0.1 121.4 19.3 13.3 0.44 57.0 366.1  
## 124 58 NA <NA> 85.0 1.5 28.9 <NA> 11.0 <NA>  
## 125 NA NA <NA> NA <NA> NA <NA> 0.0 <NA>  
## 126 74 NA <NA> 83.7 0.1 16.6 <NA> 9.9 <0.1  
## 127 45 3.3 0.2 160.7 23.9 9.1 0.09 117.0 50.5  
## 128 65 8.1 0.5 62.5 0.7 40.6 0.02 14.0 <NA>  
## 129 71 3.5 1.6 49.3 0.2 21.1 <NA> 16.0 <NA>  
## 130 39 54.2 22.2 324.1 81.3 19.8 0.65 295.0 334.8  
## 131 86 9.0 1.5 25.9 0.1 16.5 0.03 41.0 <NA>  
## 132 79 2.9 0.3 22.6 <0.1 22.7 <NA> 5.4 <NA>  
## 133 47 NA <NA> 137.0 6.2 37.9 <NA> 66.0 247.9  
## 134 25 NA <NA> 212.8 86.6 NA 0.03 258.0 49.1  
## 135 69 NA <NA> 86.7 13.7 31.4 3.98 615.0 0.5  
## 136 31 NA <NA> 165.1 63.3 NA 1.5 227.0 272  
## 137 83 NA <NA> 9.9 0.2 27.9 0.06 9.3 <NA>  
## 138 66 5.4 0.9 79.8 1.2 22.9 <0.01 64.0 0  
## 139 44 NA <NA> 184.9 17.3 NA 0.08 67.0 55.4  
## 140 71 4.9 1.4 56.7 2 NA 0.45 29.0 1.1  
## 141 86 NA <NA> 7.2 0.2 28.8 <NA> 5.5 <NA>  
## 142 83 NA <NA> 10.1 0.1 25.1 0.03 5.4 <NA>  
## 143 68 NA <NA> 129.3 2.7 NA 0.17 83.0 0  
## 144 80 2.2 0.4 61.5 3.5 22.8 0.08 150.0 0.3  
## 145 43 NA <NA> 249.6 41.6 7.6 0.59 37.0 225  
## 146 58 NA <NA> 73.3 1.4 30.2 <NA> 11.0 <NA>  
## 147 74 3.9 1.9 38.6 0.1 NA 0.07 18.0 <NA>  
## 148 70 18.4 2.7 56.1 1 26.0 0.05 35.0 <NA>  
## 149 74 3.2 0.4 46.6 0.3 29.3 <NA> 16.0 0  
## 150 84 4.8 0.8 13.3 0.2 25.1 <NA> 3.0 <NA>  
## 151 45 15.3 3.8 155.7 31.6 9.8 1.38 200.0 262.7  
## 152 68 7.8 0.9 70.7 0.3 25.5 0.28 77.0 <NA>  
## 153 76 NA <NA> 54.7 <0.1 18.2 <NA> 1.0 0  
## 154 87 1.6 0.5 13.8 0.2 19.2 <NA> 8.0 <NA>  
## 155 80 NA <NA> 17.5 0.4 21.8 <NA> 35.0 <NA>  
## 156 73 NA <NA> 81.1 0.4 12.3 0.13 67.0 0  
## 157 75 9.4 1.9 64.5 1.6 NA 0.05 176.0 0.1  
## 158 48 NA <NA> 135.6 10.4 24.1 <NA> 41.0 3.5  
## 159 53 NA <NA> 127.2 34.9 14.7 3.17 333.0 147.7  
## 160 54 NA <NA> 133.0 24.6 13.9 2.81 199.0 67.9  
## 161 40 NA <NA> 214.7 35.3 NA 1.15 361.0 86.9  
## 162 52 2.9 0.5 139.8 9.9 38.2 0.15 498.0 0

## Kiểm tra dữ liệu khuyết thiếu

#### Kiểm tra có không

anyNA(dataset)

## [1] TRUE

#### Kiểm tra số lượng khuyếtở từng cột

colSums(is.na(dataset))

## ï..MemberState Class Rg SumP SumC   
## 0 0 0 0 1   
## SumT D.1M C.1M SumD Age\_exp   
## 6 1 1 1 5   
## Age\_ht Drate SuicideMortal RoadMortal PoisonMortal   
## 5 5 5 5 5   
## HomiMortal Alcohol\_use SatisfiyWrate UHC PWE.10   
## 5 5 62 5 87   
## PWE.25 AmbSt UWMortal TobacooSt HIV   
## 87 5 5 33 61   
## Tuberculosis Malaria   
## 0 73

#### Kiểm tra tổng số lượng khuyết

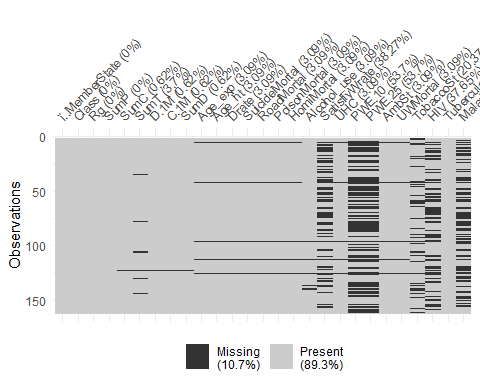
sum(is.na(dataset))

## [1] 468

#### Xem dữ liệu khuyết thiếu dưới dạng biểu đồ (pack visdat)

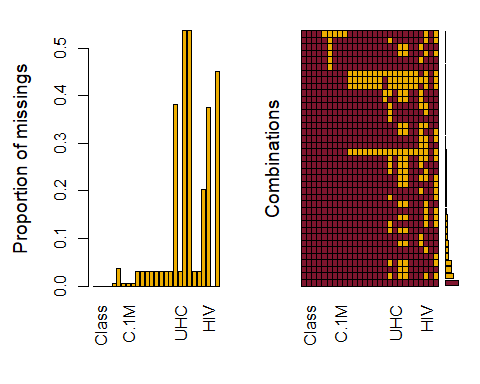
vis\_miss(dataset)

## Warning: `gather\_()` was deprecated in tidyr 1.2.0.  
## Please use `gather()` instead.  
## This warning is displayed once every 8 hours.  
## Call `lifecycle::last\_lifecycle\_warnings()` to see where this warning was generated.



+Có 10.7% dữ liệu là Missing và ta thấy 2 biến PWE.10 và PWE.25 có sự tương quan của biến missing gần nhau ( cứ là missing của PWE.10 thì PWE.25 cũng là missing). --+PWE.10(53.7%) có nghĩa là tỉ lệ xuất hiện biến missing trong biến PWE.10 là 53,7% - lớn nhất trong số các biến

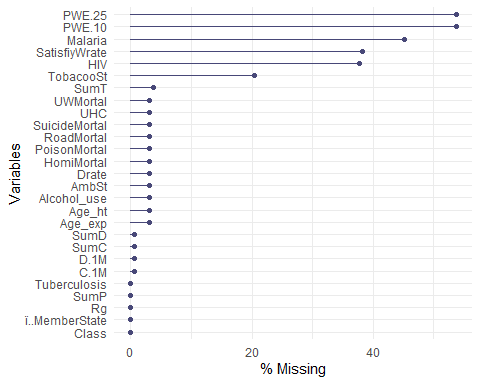
aggr(dataset, col = c('#7F152E', '#EDAE01'))

 Đồ thị bên trái cho ta biến có 3 dữ liệu bị chống : C.1M ;UHC và HIV.

Còn đồ thị bên phải cho t a biết UHC và HIV có xác gặp gặp giá trị đột xuất lớn nhất

gg\_miss\_var(dataset, show\_pct = TRUE)

## Warning: It is deprecated to specify `guide = FALSE` to remove a guide. Please  
## use `guide = "none"` instead.



Biến PWE.25 và PWE.10 là 2 biến có %Missing cao nhất còn các biến như Class, Ĩ.MemberState, Rg, Sump, Tuberculosis thì không có giá trị khuyết thiếu

### Hiệu chỉnh Thay các giá trị lỗi

dataset$Alcohol\_use[dataset$Alcohol\_use == "<0.1"] = 0  
 dataset$UWMortal[dataset$UWMortal== "<0.1"] = 0  
 dataset$PWE.25[dataset$PWE.25 == "<0.1"] = 0  
 dataset$Malaria[dataset$Malaria == "<0.1"] =0  
 dataset$HIV[dataset$HIV == "<0.01"] =0

Đưa biến trong Class về numeric type

dataset$Class[dataset$Class == "High income"] = 4  
 dataset$Class[dataset$Class == "Upper middle income"] = 3  
 dataset$Class[dataset$Class == "Lower middle income"] = 2  
 dataset$Class[dataset$Class == "Low income"] = 1

## Xử lý khuyết thiếu và kiểm tra lại

pre\_param <- prelim.norm(as.matrix(dataset))

## Warning in storage.mode(x) <- "double": NAs introduced by coercion

thetahat <- em.norm(pre\_param)

## Iterations of EM:   
## 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...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...101...102...103...104...105...106...107...108...109...110...111...112...113...114...115...116...117...118...119...120...121...122...123...124...125...126...127...128...129...130...131...132...133...134...135...136...137...138...139...140...141...142...143...144...145...146...147...148...149...150...151...152...153...154...155...156...157...158...159...160...

estimate <- getparam.norm(pre\_param, thetahat)  
estimate$mu

## [1] 0.000000e+00 2.777778e+00 0.000000e+00 4.386549e+04 2.752547e+06  
## [6] 3.537650e+07 1.166086e+03 1.308861e+05 3.447772e+04 7.305988e+01  
## [11] 6.376833e+01 1.930825e+01 9.745292e+00 1.641886e+01 1.086179e+00  
## [16] 7.808524e+00 5.876436e+00 5.806112e+01 6.490544e+01 8.384018e+00  
## [21] 1.963059e+00 8.728770e+01 1.184288e+01 2.175617e+01 3.550435e-01  
## [26] 1.022494e+02 4.290506e+01

estimate$sigma

## [,1] [,2] [,3] [,4] [,5] [,6]  
## [1,] 1 0.000000e+00 0 0.000000e+00 0.000000e+00 0.000000e+00  
## [2,] 0 1.049383e+00 0 -7.791946e+03 1.773362e+06 2.400822e+07  
## [3,] 0 0.000000e+00 1 0.000000e+00 0.000000e+00 0.000000e+00  
## [4,] 0 -7.791946e+03 0 2.557191e+10 5.524271e+11 9.933384e+12  
## [5,] 0 1.773362e+06 0 5.524271e+11 7.053065e+13 8.732873e+14  
## [6,] 0 2.400822e+07 0 9.933384e+12 8.732873e+14 1.381377e+16  
## [7,] 0 6.544079e+02 0 -1.602221e+07 2.353280e+09 2.152984e+10  
## [8,] 0 1.070955e+05 0 -2.808010e+09 2.146264e+11 2.783124e+12  
## [9,] 0 1.449556e+04 0 7.254784e+09 8.479453e+11 9.843745e+12  
## [10,] 0 5.918854e+00 0 2.364147e+04 1.352321e+07 1.782704e+08  
## [11,] 0 5.112753e+00 0 1.116847e+04 9.768641e+06 1.296358e+08  
## [12,] 0 -4.556893e+00 0 -2.456328e+04 -1.255440e+07 -1.627696e+08  
## [13,] 0 1.205858e+00 0 -1.974606e+04 4.013414e+06 4.172140e+07  
## [14,] 0 -7.514034e+00 0 -6.024025e+03 -1.564847e+07 -2.183403e+08  
## [15,] 0 -7.094742e-01 0 7.898607e+02 -1.696100e+06 -2.081845e+07  
## [16,] 0 -2.534331e+00 0 -8.149456e+04 -3.381623e+06 -1.437919e+08  
## [17,] 0 2.180274e+00 0 -6.008846e+03 7.231025e+06 9.495800e+07  
## [18,] 0 3.683461e+00 0 6.084364e+05 2.875532e+07 4.517900e+08  
## [19,] 0 1.344529e+01 0 4.672213e+04 3.156998e+07 3.976875e+08  
## [20,] 0 -8.144389e-02 0 1.533214e+05 -3.623520e+05 8.447813e+06  
## [21,] 0 -2.615152e-01 0 4.114238e+04 -7.984462e+05 -6.362794e+06  
## [22,] 0 -5.944541e+01 0 1.222998e+06 -1.137775e+08 -1.235411e+09  
## [23,] 0 -1.474575e+01 0 -1.312436e+04 -2.456945e+07 -3.010637e+08  
## [24,] 0 2.778727e+00 0 8.054725e+04 8.624243e+06 1.226147e+08  
## [25,] 0 -2.456146e-01 0 3.297808e+03 1.475470e+06 1.794980e+07  
## [26,] 0 -7.188224e+01 0 1.197704e+06 -1.305177e+08 -1.618156e+09  
## [27,] 0 -5.967771e+01 0 -7.850763e+05 -1.154753e+08 -8.987141e+08  
## [,7] [,8] [,9] [,10] [,11]  
## [1,] 0.000000e+00 0.000000e+00 0.000000e+00 0.000000e+00 0.000000e+00  
## [2,] 6.544079e+02 1.070955e+05 1.449556e+04 5.918854e+00 5.112753e+00  
## [3,] 0.000000e+00 0.000000e+00 0.000000e+00 0.000000e+00 0.000000e+00  
## [4,] -1.602221e+07 -2.808010e+09 7.254784e+09 2.364147e+04 1.116847e+04  
## [5,] 2.353280e+09 2.146264e+11 8.479453e+11 1.352321e+07 9.768641e+06  
## [6,] 2.152984e+10 2.783124e+12 9.843745e+12 1.782704e+08 1.296358e+08  
## [7,] 1.613922e+06 9.490014e+07 4.049937e+07 4.327740e+03 3.810494e+03  
## [8,] 9.490014e+07 2.004553e+10 1.093617e+09 6.969967e+05 6.096187e+05  
## [9,] 4.049937e+07 1.093617e+09 1.205969e+10 1.242623e+05 8.368918e+04  
## [10,] 4.327740e+03 6.969967e+05 1.242623e+05 5.229093e+01 4.538130e+01  
## [11,] 3.810494e+03 6.096187e+05 8.368918e+04 4.538130e+01 3.980661e+01  
## [12,] -2.709117e+03 -5.624186e+05 -1.163278e+05 -4.484051e+01 -3.780893e+01  
## [13,] 1.680325e+03 2.247393e+05 2.055069e+04 -8.518396e+00 -7.238950e+00  
## [14,] -5.733968e+03 -9.803825e+05 -1.274280e+05 -5.441340e+01 -4.773029e+01  
## [15,] -5.241965e+02 -7.037335e+04 -1.937193e+04 -6.293752e+00 -5.438293e+00  
## [16,] -3.901124e+02 -4.266966e+05 9.498618e+04 -2.054798e+01 -1.884342e+01  
## [17,] 2.745957e+03 3.608033e+05 6.482679e+04 1.323786e+01 1.162821e+01  
## [18,] -7.866350e+02 1.616450e+05 4.331696e+05 3.960568e+01 3.257733e+01  
## [19,] 9.601743e+03 1.438404e+06 3.336777e+05 9.862629e+01 8.593575e+01  
## [20,] 1.466195e+03 8.250553e+04 -1.787839e+04 2.077057e+00 2.204701e+00  
## [21,] -3.136004e+00 -4.351393e+03 -1.353870e+04 -1.973908e+00 -1.669310e+00  
## [22,] -4.449254e+04 -6.567390e+06 -1.153578e+06 -4.359965e+02 -3.795099e+02  
## [23,] -1.189196e+04 -1.451409e+06 -2.907492e+05 -1.127459e+02 -9.962235e+01  
## [24,] 3.819686e+03 4.414047e+05 5.733210e+04 1.693797e+01 1.585251e+01  
## [25,] -1.326232e+02 -3.813314e+04 1.787144e+04 -4.435098e+00 -4.016757e+00  
## [26,] -6.121426e+04 -8.993054e+06 -9.338214e+05 -6.786586e+02 -5.921527e+02  
## [27,] -4.690590e+04 -5.677910e+06 -1.437703e+06 -4.251469e+02 -3.782911e+02  
## [,12] [,13] [,14] [,15] [,16]  
## [1,] 0.000000e+00 0.000000e+00 0.000000e+00 0.000000e+00 0.000000e+00  
## [2,] -4.556893e+00 1.205858e+00 -7.514034e+00 -7.094742e-01 -2.534331e+00  
## [3,] 0.000000e+00 0.000000e+00 0.000000e+00 0.000000e+00 0.000000e+00  
## [4,] -2.456328e+04 -1.974606e+04 -6.024025e+03 7.898607e+02 -8.149456e+04  
## [5,] -1.255440e+07 4.013414e+06 -1.564847e+07 -1.696100e+06 -3.381623e+06  
## [6,] -1.627696e+08 4.172140e+07 -2.183403e+08 -2.081845e+07 -1.437919e+08  
## [7,] -2.709117e+03 1.680325e+03 -5.733968e+03 -5.241965e+02 -3.901124e+02  
## [8,] -5.624186e+05 2.247393e+05 -9.803825e+05 -7.037335e+04 -4.266966e+05  
## [9,] -1.163278e+05 2.055069e+04 -1.274280e+05 -1.937193e+04 9.498618e+04  
## [10,] -4.484051e+01 -8.518396e+00 -5.441340e+01 -6.293752e+00 -2.054798e+01  
## [11,] -3.780893e+01 -7.238950e+00 -4.773029e+01 -5.438293e+00 -1.884342e+01  
## [12,] 5.966529e+01 1.889889e+01 3.225475e+01 4.831636e+00 8.661105e+00  
## [13,] 1.889889e+01 6.571515e+01 -6.980371e+00 2.387562e+00 8.970865e+00  
## [14,] 3.225475e+01 -6.980371e+00 1.159951e+02 6.591256e+00 3.510925e+01  
## [15,] 4.831636e+00 2.387562e+00 6.591256e+00 1.221015e+00 1.080469e+00  
## [16,] 8.661105e+00 8.970865e+00 3.510925e+01 1.080469e+00 1.384767e+02  
## [17,] -1.171871e+01 9.999995e+00 -1.764201e+01 -1.040551e+00 -5.223630e+00  
## [18,] -3.710019e+01 2.055191e+01 -9.595783e+00 -4.151678e+00 4.273983e+01  
## [19,] -7.563529e+01 1.515819e+01 -1.049618e+02 -1.199875e+01 -2.027714e+01  
## [20,] -2.960766e+00 -8.938847e+00 -7.586188e+00 -2.421152e-01 -1.388078e+01  
## [21,] 5.259976e-01 -1.740113e+00 1.841240e+00 1.878825e-01 -1.403312e+00  
## [22,] 3.255263e+02 -4.212358e+01 4.717510e+02 5.379727e+01 6.930684e+01  
## [23,] 5.481497e+01 -9.261901e+00 1.328465e+02 1.752172e+01 2.271910e+01  
## [24,] 9.087285e+00 1.594264e+01 -4.407344e+01 -2.373584e+00 -3.497275e+01  
## [25,] 3.358382e+00 4.127345e+00 4.784481e+00 5.929719e-01 3.417621e+00  
## [26,] 5.779164e+02 2.171825e+02 6.200201e+02 7.632623e+01 3.042182e+02  
## [27,] 1.618148e+02 -2.162711e+02 5.173819e+02 5.552355e+01 5.985586e+00  
## [,17] [,18] [,19] [,20] [,21]  
## [1,] 0.000000e+00 0.000000e+00 0.000000e+00 0.000000e+00 0.000000e+00  
## [2,] 2.180274e+00 3.683461e+00 1.344529e+01 -8.144389e-02 -2.615152e-01  
## [3,] 0.000000e+00 0.000000e+00 0.000000e+00 0.000000e+00 0.000000e+00  
## [4,] -6.008846e+03 6.084364e+05 4.672213e+04 1.533214e+05 4.114238e+04  
## [5,] 7.231025e+06 2.875532e+07 3.156998e+07 -3.623520e+05 -7.984462e+05  
## [6,] 9.495800e+07 4.517900e+08 3.976875e+08 8.447813e+06 -6.362794e+06  
## [7,] 2.745957e+03 -7.866350e+02 9.601743e+03 1.466195e+03 -3.136004e+00  
## [8,] 3.608033e+05 1.616450e+05 1.438404e+06 8.250553e+04 -4.351393e+03  
## [9,] 6.482679e+04 4.331696e+05 3.336777e+05 -1.787839e+04 -1.353870e+04  
## [10,] 1.323786e+01 3.960568e+01 9.862629e+01 2.077057e+00 -1.973908e+00  
## [11,] 1.162821e+01 3.257733e+01 8.593575e+01 2.204701e+00 -1.669310e+00  
## [12,] -1.171871e+01 -3.710019e+01 -7.563529e+01 -2.960766e+00 5.259976e-01  
## [13,] 9.999995e+00 2.055191e+01 1.515819e+01 -8.938847e+00 -1.740113e+00  
## [14,] -1.764201e+01 -9.595783e+00 -1.049618e+02 -7.586188e+00 1.841240e+00  
## [15,] -1.040551e+00 -4.151678e+00 -1.199875e+01 -2.421152e-01 1.878825e-01  
## [16,] -5.223630e+00 4.273983e+01 -2.027714e+01 -1.388078e+01 -1.403312e+00  
## [17,] 1.619815e+01 9.651079e+00 3.260955e+01 3.600076e+00 2.362503e-01  
## [18,] 9.651079e+00 3.613847e+02 1.413426e+02 -5.373627e+00 -9.824950e-01  
## [19,] 3.260955e+01 1.413426e+02 2.453826e+02 -1.855883e+00 -5.706308e+00  
## [20,] 3.600076e+00 -5.373627e+00 -1.855883e+00 6.550530e+01 2.128325e+01  
## [21,] 2.362503e-01 -9.824950e-01 -5.706308e+00 2.128325e+01 8.376619e+00  
## [22,] -1.396865e+02 -4.794927e+02 -9.811474e+02 9.346511e+01 5.371634e+01  
## [23,] -2.674444e+01 -1.352239e+02 -2.605041e+02 1.609969e+01 1.269498e+01  
## [24,] 7.120824e+00 -1.813693e+01 2.604652e+01 1.404790e+01 2.178416e+00  
## [25,] 1.036179e-01 2.194776e+00 -4.350155e+00 6.447309e-01 3.266263e-01  
## [26,] -1.397220e+02 7.548549e+00 -1.176296e+03 -6.993973e+01 3.158351e+01  
## [27,] -2.878587e+01 -6.986281e+02 -1.046107e+03 -4.412134e+01 3.945961e+01  
## [,22] [,23] [,24] [,25] [,26]  
## [1,] 0.000000e+00 0.000000e+00 0.000000e+00 0.000000e+00 0.000000e+00  
## [2,] -5.944541e+01 -1.474575e+01 2.778727e+00 -2.456146e-01 -7.188224e+01  
## [3,] 0.000000e+00 0.000000e+00 0.000000e+00 0.000000e+00 0.000000e+00  
## [4,] 1.222998e+06 -1.312436e+04 8.054725e+04 3.297808e+03 1.197704e+06  
## [5,] -1.137775e+08 -2.456945e+07 8.624243e+06 1.475470e+06 -1.305177e+08  
## [6,] -1.235411e+09 -3.010637e+08 1.226147e+08 1.794980e+07 -1.618156e+09  
## [7,] -4.449254e+04 -1.189196e+04 3.819686e+03 -1.326232e+02 -6.121426e+04  
## [8,] -6.567390e+06 -1.451409e+06 4.414047e+05 -3.813314e+04 -8.993054e+06  
## [9,] -1.153578e+06 -2.907492e+05 5.733210e+04 1.787144e+04 -9.338214e+05  
## [10,] -4.359965e+02 -1.127459e+02 1.693797e+01 -4.435098e+00 -6.786586e+02  
## [11,] -3.795099e+02 -9.962235e+01 1.585251e+01 -4.016757e+00 -5.921527e+02  
## [12,] 3.255263e+02 5.481497e+01 9.087285e+00 3.358382e+00 5.779164e+02  
## [13,] -4.212358e+01 -9.261901e+00 1.594264e+01 4.127345e+00 2.171825e+02  
## [14,] 4.717510e+02 1.328465e+02 -4.407344e+01 4.784481e+00 6.200201e+02  
## [15,] 5.379727e+01 1.752172e+01 -2.373584e+00 5.929719e-01 7.632623e+01  
## [16,] 6.930684e+01 2.271910e+01 -3.497275e+01 3.417621e+00 3.042182e+02  
## [17,] -1.396865e+02 -2.674444e+01 7.120824e+00 1.036179e-01 -1.397220e+02  
## [18,] -4.794927e+02 -1.352239e+02 -1.813693e+01 2.194776e+00 7.548549e+00  
## [19,] -9.811474e+02 -2.605041e+02 2.604652e+01 -4.350155e+00 -1.176296e+03  
## [20,] 9.346511e+01 1.609969e+01 1.404790e+01 6.447309e-01 -6.993973e+01  
## [21,] 5.371634e+01 1.269498e+01 2.178416e+00 3.266263e-01 3.158351e+01  
## [22,] 5.046646e+03 1.191639e+03 -1.649521e+02 1.955713e+01 5.475992e+03  
## [23,] 1.191639e+03 4.263747e+02 -7.464464e+01 6.362033e+00 1.214595e+03  
## [24,] -1.649521e+02 -7.464464e+01 9.732489e+01 -1.475097e+00 8.366169e+01  
## [25,] 1.955713e+01 6.362033e+00 -1.475097e+00 1.334634e+00 8.346073e+01  
## [26,] 5.475992e+03 1.214595e+03 8.366169e+01 8.346073e+01 1.889995e+04  
## [27,] 4.490248e+03 1.539770e+03 -3.782758e+02 1.968036e+01 2.813646e+03  
## [,27]  
## [1,] 0.000000e+00  
## [2,] -5.967771e+01  
## [3,] 0.000000e+00  
## [4,] -7.850763e+05  
## [5,] -1.154753e+08  
## [6,] -8.987141e+08  
## [7,] -4.690590e+04  
## [8,] -5.677910e+06  
## [9,] -1.437703e+06  
## [10,] -4.251469e+02  
## [11,] -3.782911e+02  
## [12,] 1.618148e+02  
## [13,] -2.162711e+02  
## [14,] 5.173819e+02  
## [15,] 5.552355e+01  
## [16,] 5.985586e+00  
## [17,] -2.878587e+01  
## [18,] -6.986281e+02  
## [19,] -1.046107e+03  
## [20,] -4.412134e+01  
## [21,] 3.945961e+01  
## [22,] 4.490248e+03  
## [23,] 1.539770e+03  
## [24,] -3.782758e+02  
## [25,] 1.968036e+01  
## [26,] 2.813646e+03  
## [27,] 1.398830e+04

rngseed(1e5)  
dataset1 <- imp.norm(pre\_param, thetahat, dataset)

Kiểm tra lại dữ liệu

anyNA(dataset1)

## [1] FALSE

dataset1 <- edit(dataset1)

### Thống kê mô tả

Hình dung chung

summary(dataset1)

## ï..MemberState Class Rg SumP   
## Length:162 Min. :1.000 Length:162 Min. : 18   
## Class :character 1st Qu.:2.000 Class :character 1st Qu.: 2205   
## Mode :character Median :3.000 Mode :character Median : 9568   
## Mean :2.778 Mean : 43866   
## 3rd Qu.:4.000 3rd Qu.: 30405   
## Max. :4.000 Max. :1441860   
## SumC SumT D.1M C.1M   
## Min. : 3071 Min. :-36696294 Min. : 3.0 Min. : 124   
## 1st Qu.: 57668 1st Qu.: 588001 1st Qu.: 131.0 1st Qu.: 11749   
## Median : 405032 Median : 3408566 Median : 741.5 Median : 80936   
## Mean : 2771547 Mean : 35238087 Mean :1165.2 Mean :131036   
## 3rd Qu.: 1621484 3rd Qu.: 18131896 3rd Qu.:1814.5 3rd Qu.:196785   
## Max. :82295768 Max. :995576382 Max. :6292.0 Max. :532961   
## SumD Age\_exp Age\_ht Drate   
## Min. : 6.0 Min. :50.70 Min. :44.20 Min. : 7.338   
## 1st Qu.: 673.2 1st Qu.:66.88 1st Qu.:58.38 1st Qu.:12.200   
## Median : 4073.5 Median :74.35 Median :65.10 Median :19.200   
## Mean : 34673.5 Mean :73.06 Mean :63.76 Mean :19.268   
## 3rd Qu.: 17263.8 3rd Qu.:78.47 3rd Qu.:68.58 3rd Qu.:23.548   
## Max. :1015357.0 Max. :85.30 Max. :74.88 Max. :50.800   
## SuicideMortal RoadMortal PoisonMortal HomiMortal   
## Min. :-11.188 Min. :-1.532 Min. :-0.4557 Min. :-3.139   
## 1st Qu.: 4.675 1st Qu.: 8.025 1st Qu.: 0.3000 1st Qu.: 1.525   
## Median : 7.900 Median :15.000 Median : 0.5000 Median : 4.300   
## Mean : 9.555 Mean :16.473 Mean : 1.0893 Mean : 8.033   
## 3rd Qu.: 12.200 3rd Qu.:23.500 3rd Qu.: 1.7000 3rd Qu.: 9.000   
## Max. : 72.400 Max. :64.600 Max. : 5.2000 Max. :85.000   
## Alcohol\_use SatisfiyWrate UHC PWE.10   
## Min. :-4.051 Min. : 2.10 Min. :25.00 Min. :-12.44   
## 1st Qu.: 2.100 1st Qu.: 45.42 1st Qu.:52.25 1st Qu.: 3.30   
## Median : 5.950 Median : 59.92 Median :69.00 Median : 8.20   
## Mean : 5.886 Mean : 59.12 Mean :64.90 Mean : 8.74   
## 3rd Qu.: 9.000 3rd Qu.: 73.15 3rd Qu.:76.75 3rd Qu.: 14.12   
## Max. :15.491 Max. :117.46 Max. :90.19 Max. : 54.20   
## PWE.25 AmbSt UWMortal TobacooSt   
## Min. :-3.3615 Min. :-57.54 Min. :-19.42 Min. : 2.864   
## 1st Qu.: 0.4795 1st Qu.: 29.90 1st Qu.: 0.20 1st Qu.:13.825   
## Median : 1.6000 Median : 63.30 Median : 1.05 Median :21.212   
## Mean : 2.1487 Mean : 87.12 Mean : 11.85 Mean :21.500   
## 3rd Qu.: 3.5705 3rd Qu.:139.10 3rd Qu.: 17.15 3rd Qu.:27.100   
## Max. :22.2000 Max. :324.10 Max. :101.00 Max. :52.000   
## HIV Tuberculosis Malaria   
## Min. :-1.9194 Min. : 0.00 Min. :-214.61   
## 1st Qu.: 0.0300 1st Qu.: 11.25 1st Qu.: 0.00   
## Median : 0.1400 Median : 41.00 Median : 3.40   
## Mean : 0.3844 Mean :102.25 Mean : 42.57   
## 3rd Qu.: 0.4941 3rd Qu.:145.50 3rd Qu.: 66.61   
## Max. : 6.4300 Max. :654.00 Max. : 406.70

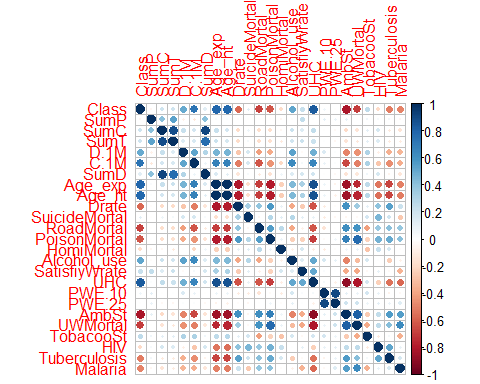
Ma trận tương quan giữa các biến

datacorr <- dataset1[, c(2:27)]  
datacorr <- datacorr[-2]  
datacorr

## Class SumP SumC SumT D.1M C.1M SumD  
## 1 1 38041.758 178373 933957.0 190.000 4405.0 7676.00  
## 2 3 2880.913 274429 1791315.0 1217.000 95547.0 3495.00  
## 3 2 43053.055 265738 230861.0 152.000 5871.0 6874.00  
## 4 4 77.146 40709 249838.0 1975.000 525379.0 153.00  
## 5 2 31825.299 99194 1499795.0 55.000 2860.0 1900.00  
## 6 4 97.115 7535 18901.0 1358.000 75824.0 135.00  
## 7 3 44780.676 9059944 35707307.0 2794.000 197233.0 128327.00  
## 8 3 2957.728 422747 3013643.0 2900.000 142190.0 8621.00  
## 9 4 25203.199 5351477 68228047.0 260.000 205609.0 6762.00  
## 10 4 8955.108 4036813 180245342.0 1801.000 443701.0 16390.00  
## 11 3 10047.719 792320 6759211.0 942.000 76908.0 9705.00  
## 12 4 1641.164 562399 9669842.0 815.000 311243.0 1473.00  
## 13 2 163046.172 1952224 13916558.0 174.000 11647.0 29124.00  
## 14 4 287.021 64177 630706.0 1323.000 222835.0 381.00  
## 15 3 9452.409 973206 13013839.0 730.000 103053.0 6894.00  
## 16 4 11539.326 3972963 33313880.0 2668.000 340163.0 31165.00  
## 17 2 390.351 57331 529581.0 1637.000 139662.0 672.00  
## 18 2 11801.151 26952 604310.0 13.000 2124.0 163.00  
## 19 2 763.094 50433 2223194.0 20.000 64102.0 16.00  
## 20 3 3300.998 376437 1748585.0 4854.000 116026.0 15749.00  
## 21 3 2303.703 305859 2026898.0 1103.000 125544.0 2688.00  
## 22 3 211049.516 30247302 63776166.0 3075.000 140519.0 661960.00  
## 23 3 7000.117 1148971 9741861.0 5365.000 167606.0 36781.00  
## 24 1 20321.383 20853 248995.0 17.000 951.0 382.00  
## 25 1 11530.577 38722 345742.0 3.000 3092.0 38.00  
## 26 2 549.936 55986 400982.0 708.000 98783.0 401.00  
## 27 2 16486.543 136032 2942234.0 178.000 7940.0 3055.00  
## 28 2 25876.387 119780 1751774.0 70.000 4321.0 1927.00  
## 29 4 37411.039 3623785 60149136.0 999.000 94536.0 38288.00  
## 30 1 15946.882 7378 191341.0 11.000 427.0 192.00  
## 31 4 18952.035 3525845 36365786.0 2947.000 181662.0 57205.00  
## 32 3 1441860.250 178764 160000000.0 3.000 124.0 4638.00  
## 33 3 50339.441 6089381 34236252.0 2695.000 117442.0 139741.00  
## 34 2 850.891 8100 -5832078.6 177.000 8974.0 160.00  
## 35 3 5047.561 844892 4163300.0 1614.000 163199.0 8357.00  
## 36 4 4130.299 1112491 4738252.0 3872.000 274004.0 15720.00  
## 37 3 11333.484 1099042 12920253.0 753.000 97138.0 8519.00  
## 38 4 1198.574 464366 9477138.0 812.000 379684.0 993.00  
## 39 4 5771.877 2946592 127045638.0 1025.000 505542.0 5974.00  
## 40 2 973.557 15598 302030.0 186.000 15388.0 189.00  
## 41 3 71.808 11988 187337.0 871.000 165798.0 63.00  
## 42 3 10738.957 578626 3251191.0 396.000 52403.0 4375.00  
## 43 3 17373.656 865585 2470170.0 1960.000 47768.0 35513.00  
## 44 2 6453.550 162089 1950448.0 630.000 24767.0 4125.00  
## 45 3 1355.982 15906 307847.0 123.000 10710.0 183.00  
## 46 1 3497.117 9733 23693.0 28.000 2678.0 103.00  
## 47 4 1325.649 566923 3290288.0 1888.000 426859.0 2508.00  
## 48 2 1148.133 70097 1009214.0 1181.000 59325.0 1395.00  
## 49 1 112078.727 470232 4728446.0 63.000 3917.0 7509.00  
## 50 3 889.955 64509 506199.0 949.000 71043.0 862.00  
## 51 4 5532.159 949583 10591416.0 633.000 170909.0 3517.00  
## 52 4 65129.730 27572791 260504402.0 2198.000 420759.0 144061.00  
## 53 3 2172.578 47588 1589113.0 131.000 20518.0 303.00  
## 54 3 3996.762 1652929 16693631.0 4223.000 415778.0 16789.00  
## 55 4 83517.047 23365504 122332384.0 1582.000 277297.0 133306.00  
## 56 2 30417.857 161101 2430490.0 45.000 4999.0 1445.00  
## 57 4 10473.452 3224479 77606878.0 2757.000 312078.0 28488.00  
## 58 3 112.002 14165 146475.0 1930.000 124853.0 219.00  
## 59 3 17581.477 837377 4350058.0 941.000 45248.0 17422.00  
## 60 1 12771.246 36459 660107.0 32.000 2648.0 440.00  
## 61 3 782.775 63364 582565.0 1548.000 79872.0 1228.00  
## 62 2 11263.079 30594 132422.0 72.000 2626.0 835.00  
## 63 2 9746.115 421268 1263329.0 1069.000 41360.0 10888.00  
## 64 4 9684.680 1879480 11244573.0 4769.000 195441.0 45865.00  
## 65 4 339.037 183974 1953616.0 319.000 532961.0 110.00  
## 66 2 1366417.750 43040947 794525202.0 372.000 30652.0 521776.00  
## 67 2 270625.562 6038664 93900348.0 559.000 21669.0 155820.00  
## 68 3 39309.789 2322938 18418937.0 602.000 55531.0 25197.00  
## 69 4 4882.498 1498834 11962495.0 1376.000 297616.0 6932.00  
## 70 4 8519.373 4025950 41373364.0 1138.000 431691.0 10612.00  
## 71 4 60550.094 15595302 208411581.0 2678.000 258614.0 161469.00  
## 72 3 2948.277 129168 961699.0 980.000 43284.0 2924.00  
## 73 4 126860.297 7287343 45528128.0 230.000 57934.0 28945.00  
## 74 3 10101.697 1694216 16670254.0 1353.000 163160.0 14048.00  
## 75 3 18551.428 1305375 11575012.0 712.000 68069.0 13660.00  
## 76 2 52573.969 323605 3562960.0 101.000 5791.0 5649.00  
## 77 2 117.608 3071 -32474545.1 106.000 25025.0 13.00  
## 78 4 4207.077 630641 7948416.0 583.000 143878.0 2555.00  
## 79 4 1906.740 812686 7123503.0 3089.000 439523.0 5711.00  
## 80 3 6855.709 1095406 4795578.0 1529.000 161780.0 10355.00  
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## 82 1 4937.374 7402 139824.0 56.000 1405.0 294.00  
## 83 3 6777.453 501834 2475203.0 913.000 71305.0 6429.00  
## 84 4 2759.631 1048704 8177249.0 3395.000 395055.0 9011.00  
## 85 4 615.730 229311 4200517.0 1636.000 355998.0 1054.00  
## 86 1 26969.307 64089 415532.0 48.000 2213.0 1390.00  
## 87 1 18628.748 85723 568432.0 131.000 4284.0 2630.00  
## 88 3 31949.789 4372697 57867837.0 1069.000 132084.0 35397.00  
## 89 3 530.957 178313 2213831.0 535.000 319834.0 298.00  
## 90 1 19658.023 30633 658466.0 34.000 1439.0 729.00  
## 91 4 440.377 88244 1853069.0 1515.000 198909.0 672.00  
## 92 2 4525.698 58681 793466.0 202.000 12056.0 982.00  
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## 110 4 4974.992 388795 25000000.0 797.000 72834.0 4257.00  
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## 114 2 8776.119 43660 249149.0 70.000 4720.0 649.00  
## 115 3 7044.639 648446 2615453.0 2570.000 88965.0 18734.00  
## 116 3 32510.463 3554669 29371506.0 6292.000 105196.0 212596.00  
## 117 2 108116.625 3682623 29242796.0 534.000 32827.0 59956.00  
## 118 4 37887.770 5983864 35924946.0 3066.000 158418.0 115809.00  
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## 120 4 2832.071 363345 3420543.0 241.000 129405.0 677.00  
## 121 3 19364.559 2880276 22396439.0 3436.000 151523.0 65310.00  
## 122 3 145872.266 8038140 85979747.1 1687.176 246892.4 89767.11  
## 123 1 12626.938 129756 5188208.0 108.000 9594.0 1458.00  
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## 125 4 33.864 15683 147532.0 3347.000 460479.0 114.00  
## 126 4 34268.527 752396 41727951.0 253.000 21028.0 9066.00  
## 127 2 16296.362 85965 1058790.0 112.000 4904.0 1965.00  
## 128 3 8772.228 1994623 9359560.0 1835.000 229938.0 15916.00  
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## 130 1 7813.207 7681 259958.0 15.000 929.0 125.00  
## 131 4 5804.343 1155581 23611604.0 221.000 194792.0 1310.00  
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## 157 2 96462.000 1046387 85684619.0 434.000 105794.0 42944.00  
## 158 2 299.882 6109 24976.0 22.000 19094.0 7.00  
## 159 2 17861.033 318404 3396590.0 206.000 16496.0 3970.00  
## 160 2 14645.473 247237 2226058.0 358.000 16214.0 5462.00  
## 161 1 1920.917 8176 131519.0 83.000 3987.0 170.00  
## 162 2 1293.120 22853 260165.0 95.000 16764.0 130.00  
## Age\_exp Age\_ht Drate SuicideMortal RoadMortal PoisonMortal  
## 1 63.20000 53.90000 35.300000 4.100000 15.900000 1.0000000  
## 2 78.00000 69.10000 11.400000 4.300000 11.700000 0.3000000  
## 3 77.10000 66.40000 13.900000 2.500000 20.900000 0.7000000  
## 4 84.84052 74.19069 9.147975 10.477199 11.535769 -0.0830398  
## 5 63.10000 54.80000 22.200000 6.100000 26.100000 2.0000000  
## 6 76.50000 67.00000 17.500000 0.400000 0.000000 0.7000000  
## 7 76.60000 67.10000 15.700000 8.400000 14.100000 0.4000000  
## 8 76.00000 67.10000 19.900000 3.300000 20.000000 0.7000000  
## 9 83.00000 70.90000 8.600000 12.500000 4.900000 0.1000000  
## 10 81.60000 70.90000 10.400000 14.600000 4.900000 0.2000000  
## 11 71.40000 63.60000 27.200000 4.100000 6.700000 0.9000000  
## 12 75.80000 65.90000 16.100000 8.900000 5.200000 0.3000000  
## 13 74.30000 64.30000 18.900000 3.700000 15.300000 0.3000000  
## 14 76.00000 67.00000 16.000000 0.600000 8.200000 0.7000000  
## 15 74.80000 66.00000 23.800000 21.200000 7.600000 3.3000000  
## 16 81.40000 70.60000 10.600000 18.300000 5.800000 0.4000000  
## 17 74.40000 65.30000 16.500000 7.100000 22.600000 0.4000000  
## 18 63.40000 55.50000 22.600000 7.800000 26.800000 2.6000000  
## 19 73.10000 63.40000 18.500000 4.600000 16.200000 0.2000000  
## 20 76.80000 67.20000 18.700000 10.900000 13.500000 0.4000000  
## 21 62.20000 53.90000 27.000000 16.100000 26.400000 1.8000000  
## 22 75.90000 65.40000 15.500000 6.900000 16.000000 0.1000000  
## 23 75.10000 66.30000 24.200000 9.700000 9.200000 0.5000000  
## 24 62.70000 54.90000 23.900000 7.500000 31.000000 3.1000000  
## 25 63.80000 55.60000 25.000000 6.200000 35.500000 3.2000000  
## 26 74.00000 64.80000 17.400000 12.900000 26.800000 0.4000000  
## 27 70.10000 61.50000 22.500000 4.900000 19.600000 0.5000000  
## 28 62.40000 54.50000 23.900000 9.000000 30.200000 2.6000000  
## 29 82.20000 71.30000 9.600000 11.800000 5.300000 0.3000000  
## 30 59.60000 52.00000 22.700000 6.400000 32.400000 3.5000000  
## 31 80.70000 70.00000 10.000000 9.000000 14.900000 0.4000000  
## 32 77.40000 68.50000 15.900000 8.100000 17.400000 1.8000000  
## 33 79.30000 69.00000 9.700000 3.900000 15.400000 0.1000000  
## 34 67.40000 58.90000 20.600000 5.400000 26.600000 2.4000000  
## 35 80.80000 70.00000 9.500000 8.100000 14.800000 0.1000000  
## 36 78.60000 68.60000 16.100000 16.400000 7.900000 0.4000000  
## 37 77.80000 67.80000 16.600000 14.500000 8.900000 0.2000000  
## 38 83.10000 72.40000 8.200000 3.600000 5.800000 0.3000000  
## 39 81.30000 71.00000 10.800000 10.700000 3.700000 0.1000000  
## 40 65.80000 58.00000 22.000000 9.600000 23.500000 2.5000000  
## 41 77.87206 68.41145 11.896226 -1.258275 15.918669 0.9800902  
## 42 72.80000 64.00000 19.100000 4.900000 64.600000 0.4000000  
## 43 78.40000 68.50000 11.000000 7.600000 20.100000 0.3000000  
## 44 75.00000 64.90000 10.700000 6.100000 20.900000 0.2000000  
## 45 62.20000 53.90000 22.100000 7.900000 27.200000 1.6000000  
## 46 64.10000 55.70000 26.800000 10.900000 37.900000 3.3000000  
## 47 78.90000 69.20000 14.900000 14.900000 4.500000 0.6000000  
## 48 57.70000 50.10000 35.200000 29.400000 33.500000 3.3000000  
## 49 68.70000 59.90000 17.100000 5.400000 28.200000 3.3000000  
## 50 68.00000 59.60000 37.700000 9.000000 13.500000 0.3000000  
## 51 81.60000 71.00000 9.600000 15.300000 3.900000 0.4000000  
## 52 82.50000 72.10000 10.600000 13.800000 5.100000 0.3000000  
## 53 66.50000 57.60000 21.300000 8.400000 23.900000 1.3000000  
## 54 73.30000 64.70000 24.900000 9.200000 12.400000 0.6000000  
## 55 81.70000 70.90000 12.100000 12.300000 3.800000 0.3000000  
## 56 66.30000 58.00000 22.500000 6.600000 25.700000 1.7000000  
## 57 81.10000 70.90000 12.500000 5.100000 8.300000 0.2000000  
## 58 72.90000 63.90000 23.300000 0.700000 8.000000 0.1000000  
## 59 72.00000 62.30000 16.500000 5.900000 22.900000 1.6000000  
## 60 61.00000 53.30000 24.900000 7.000000 29.700000 2.3000000  
## 61 65.70000 57.20000 29.200000 40.300000 22.300000 0.1000000  
## 62 64.10000 55.80000 31.300000 9.600000 18.800000 1.4000000  
## 63 71.90000 63.00000 18.700000 2.100000 16.100000 0.5000000  
## 64 76.40000 67.20000 22.100000 16.600000 7.700000 0.5000000  
## 65 82.30000 72.00000 8.700000 11.900000 2.000000 1.0000000  
## 66 70.80000 60.30000 21.900000 12.700000 15.600000 0.3000000  
## 67 71.30000 62.80000 24.800000 2.400000 11.300000 0.3000000  
## 68 72.40000 62.70000 23.500000 3.600000 27.300000 0.2000000  
## 69 81.80000 71.10000 9.700000 9.600000 3.100000 0.3000000  
## 70 82.60000 72.40000 8.800000 5.300000 3.900000 0.0000000  
## 71 83.00000 71.90000 9.000000 6.700000 5.300000 0.3000000  
## 72 76.00000 66.60000 16.900000 2.400000 15.100000 0.1000000  
## 73 84.30000 74.10000 8.300000 15.300000 3.600000 0.2000000  
## 74 77.90000 67.60000 15.300000 1.600000 17.000000 0.5000000  
## 75 74.00000 65.00000 22.400000 17.600000 12.700000 1.9000000  
## 76 66.10000 57.70000 21.000000 6.100000 28.300000 2.4000000  
## 77 59.40000 52.60000 50.800000 28.300000 1.900000 2.6000000  
## 78 81.00000 70.10000 11.900000 2.900000 15.400000 0.4000000  
## 79 75.40000 66.20000 21.600000 20.100000 8.100000 1.2000000  
## 80 76.40000 66.00000 19.900000 2.800000 16.400000 0.6000000  
## 81 50.70000 44.20000 42.700000 72.400000 31.900000 5.2000000  
## 82 64.10000 54.90000 17.800000 4.400000 38.900000 1.7000000  
## 83 75.80000 65.20000 18.600000 4.500000 21.300000 0.8000000  
## 84 76.00000 66.70000 19.300000 26.100000 8.100000 1.7000000  
## 85 82.40000 71.60000 9.700000 11.300000 4.100000 0.2000000  
## 86 65.30000 57.30000 26.000000 5.500000 29.200000 2.1000000  
## 87 65.60000 57.10000 22.600000 5.400000 33.400000 1.7000000  
## 88 74.70000 65.70000 18.400000 5.700000 22.500000 0.7000000  
## 89 79.60000 70.00000 11.600000 2.700000 1.600000 0.0000000  
## 90 62.80000 54.60000 22.300000 4.100000 22.700000 2.9000000  
## 91 81.90000 71.50000 10.500000 6.100000 4.100000 0.1000000  
## 92 68.40000 59.80000 16.100000 3.100000 25.600000 1.5000000  
## 93 74.10000 63.90000 23.200000 9.500000 12.200000 0.8000000  
## 94 76.00000 65.80000 15.600000 5.300000 12.800000 0.4000000  
## 95 69.96779 60.89888 23.564572 13.759136 7.504413 1.7834521  
## 96 68.10000 60.30000 35.000000 17.900000 21.000000 2.8000000  
## 97 75.90000 67.00000 22.300000 21.000000 7.600000 0.6000000  
## 98 73.00000 63.70000 24.100000 7.200000 17.000000 0.7000000  
## 99 58.10000 50.40000 30.600000 13.600000 30.000000 3.7000000  
## 100 69.10000 60.90000 24.900000 2.900000 20.400000 1.3000000  
## 101 64.60000 56.10000 22.600000 9.700000 34.800000 1.9000000  
## 102 70.90000 61.30000 21.500000 9.000000 16.300000 1.7000000  
## 103 81.80000 71.40000 10.300000 11.800000 4.000000 0.1000000  
## 104 82.00000 70.20000 10.300000 11.000000 9.600000 0.2000000  
## 105 75.00000 65.50000 15.300000 4.300000 16.900000 0.3000000  
## 106 63.30000 55.50000 21.000000 5.300000 25.500000 3.3000000  
## 107 62.60000 54.40000 16.900000 3.500000 20.700000 3.3000000  
## 108 74.80000 66.10000 22.700000 9.400000 5.100000 0.5000000  
## 109 82.60000 71.40000 8.700000 11.800000 2.100000 0.3000000  
## 110 73.90000 64.70000 21.500000 4.900000 10.600000 0.9000000  
## 111 65.60000 56.90000 29.400000 8.900000 13.000000 1.6000000  
## 112 85.29919 74.88148 7.337717 -11.187691 -1.532351 -0.4556703  
## 113 79.30000 68.70000 10.700000 2.900000 13.900000 0.1000000  
## 114 65.30000 57.10000 36.000000 2.900000 12.600000 1.4000000  
## 115 75.80000 65.80000 16.000000 6.000000 22.000000 0.2000000  
## 116 79.90000 69.50000 9.700000 2.800000 13.600000 0.4000000  
## 117 70.40000 62.00000 24.500000 2.200000 12.000000 0.2000000  
## 118 78.30000 68.70000 17.000000 11.300000 9.400000 0.5000000  
## 119 81.60000 71.00000 11.000000 11.500000 8.200000 0.3000000  
## 120 77.20000 67.10000 10.700000 5.800000 7.300000 0.3000000  
## 121 75.60000 66.80000 21.000000 9.700000 10.300000 1.9000000  
## 122 73.20000 64.20000 24.200000 25.100000 12.000000 3.8000000  
## 123 69.10000 60.20000 20.200000 5.600000 29.400000 1.7000000  
## 124 70.50000 62.10000 31.200000 12.600000 13.000000 0.4000000  
## 125 80.53480 70.12703 10.581591 14.370061 8.238221 0.4380398  
## 126 74.30000 64.00000 20.900000 6.000000 35.900000 0.8000000  
## 127 68.60000 59.40000 19.500000 6.000000 23.500000 1.9000000  
## 128 75.90000 66.90000 22.000000 11.400000 7.500000 0.3000000  
## 129 73.30000 64.00000 21.100000 8.100000 11.300000 0.5000000  
## 130 60.80000 52.90000 23.500000 6.700000 33.000000 2.8000000  
## 131 83.20000 73.60000 9.500000 11.200000 2.100000 0.0000000  
## 132 81.30000 70.70000 11.400000 19.800000 5.100000 0.2000000  
## 133 65.20000 57.80000 39.200000 14.700000 16.500000 2.3000000  
## 134 56.50000 49.70000 30.400000 7.900000 27.400000 4.9000000  
## 135 65.30000 56.20000 24.100000 23.500000 22.200000 1.7000000  
## 136 62.80000 53.70000 16.800000 3.800000 36.700000 2.3000000  
## 137 83.20000 72.10000 9.600000 7.700000 3.900000 0.4000000  
## 138 76.90000 67.00000 13.200000 14.000000 19.700000 0.4000000  
## 139 69.10000 59.90000 22.800000 3.800000 26.800000 1.7000000  
## 140 71.50000 62.40000 22.700000 25.400000 15.300000 0.3000000  
## 141 82.40000 71.90000 8.400000 14.700000 3.100000 0.2000000  
## 142 83.40000 72.50000 7.900000 14.500000 2.200000 0.2000000  
## 143 69.50000 62.00000 28.300000 4.300000 15.700000 0.4000000  
## 144 77.70000 68.30000 13.700000 8.800000 32.200000 0.2000000  
## 145 64.30000 56.20000 23.900000 8.800000 28.700000 1.9000000  
## 146 72.60000 64.00000 24.800000 3.800000 33.000000 1.1000000  
## 147 76.10000 66.20000 17.100000 8.700000 9.300000 0.1000000  
## 148 77.00000 66.90000 15.700000 3.300000 16.500000 0.7000000  
## 149 78.60000 68.40000 15.600000 2.400000 6.700000 0.4000000  
## 150 78.50000 66.10000 13.600000 16.100000 12.700000 0.5000000  
## 151 66.70000 58.20000 21.200000 4.600000 29.400000 1.7000000  
## 152 73.00000 64.30000 25.500000 21.600000 10.200000 2.5000000  
## 153 76.10000 66.00000 18.500000 6.400000 8.900000 0.4000000  
## 154 81.40000 70.10000 10.300000 7.900000 3.200000 0.3000000  
## 155 77.10000 67.50000 16.500000 21.200000 14.800000 0.5000000  
## 156 73.00000 64.70000 25.300000 8.000000 11.700000 0.8000000  
## 157 73.70000 68.30000 21.200000 7.500000 30.600000 0.9000000  
## 158 65.30000 57.80000 39.700000 18.000000 14.900000 0.7000000  
## 159 62.50000 54.40000 24.600000 7.300000 20.500000 2.6000000  
## 160 60.70000 53.10000 28.400000 14.100000 41.200000 3.5000000  
## 161 60.20000 52.60000 24.900000 7.000000 32.200000 2.3000000  
## 162 69.60000 60.90000 19.900000 3.700000 11.900000 0.4000000  
## HomiMortal Alcohol\_use SatisfiyWrate UHC PWE.10 PWE.25  
## 1 8.500000 0.000000 42.20000 37.00000 14.6000000 2.00000000  
## 2 3.600000 6.800000 6.30000 59.00000 16.7000000 5.00000000  
## 3 1.700000 0.600000 77.20000 78.00000 6.6649045 0.58192009  
## 4 7.205157 12.300000 75.45998 90.19373 8.5668268 0.89172663  
## 5 9.200000 7.800000 29.80000 40.00000 -3.7156536 -1.13497220  
## 6 2.400000 9.400000 61.94902 73.00000 14.6818782 4.38002486  
## 7 6.100000 9.500000 61.78994 76.00000 7.5400491 1.46824354  
## 8 3.800000 4.700000 40.20000 69.00000 16.1000000 4.90000000  
## 9 1.000000 10.400000 74.03421 87.00000 19.0994637 5.85003443  
## 10 0.500000 11.900000 64.81460 79.00000 5.2003215 0.85613513  
## 11 2.500000 1.000000 36.50167 65.00000 1.5764828 -2.28939005  
## 12 0.300000 1.100000 45.87416 77.00000 -1.3276962 -1.04413929  
## 13 2.800000 0.000000 77.40000 48.00000 24.7000000 9.50000000  
## 14 11.300000 10.400000 69.90000 77.00000 16.4000000 3.80000000  
## 15 2.700000 11.000000 73.00000 76.00000 9.2000000 0.70000000  
## 16 1.300000 10.800000 62.48701 84.00000 15.7616754 4.04352249  
## 17 37.300000 6.400000 64.90000 64.00000 9.5108953 2.87899605  
## 18 6.200000 2.200000 28.00000 40.00000 10.9000000 5.40000000  
## 19 2.400000 0.200000 59.29137 62.00000 1.8000000 0.40000000  
## 20 1.500000 7.800000 21.90000 61.00000 8.2000000 1.40000000  
## 21 16.900000 6.600000 61.62658 61.00000 26.1211404 6.82847141  
## 22 32.600000 7.300000 71.09847 79.00000 8.0412117 2.89074239  
## 23 1.200000 12.500000 39.69698 66.00000 17.2929289 3.75415125  
## 24 9.600000 11.000000 52.60000 40.00000 3.1000000 0.40000000  
## 25 6.600000 7.500000 39.60000 42.00000 3.3000000 0.40000000  
## 26 13.400000 6.400000 78.49710 69.00000 10.0107579 3.02629259  
## 27 2.100000 7.800000 56.50000 60.00000 15.3000000 5.20000000  
## 28 6.400000 5.500000 44.90000 46.00000 10.8000000 3.00000000  
## 29 1.600000 8.800000 91.07628 89.00000 12.6211871 3.86522742  
## 30 9.000000 1.300000 17.50000 28.00000 20.7140620 5.68733867  
## 31 3.900000 8.900000 39.96625 70.00000 14.6000000 2.10000000  
## 32 0.800000 6.000000 117.45637 79.00000 19.7000000 5.40000000  
## 33 38.300000 5.500000 86.60000 76.00000 8.2000000 2.20000000  
## 34 7.400000 1.100000 28.80000 52.00000 8.8000000 1.60000000  
## 35 12.600000 4.100000 80.80000 77.00000 9.8000000 1.70000000  
## 36 1.100000 8.700000 56.97811 71.00000 19.6936402 4.72182992  
## 37 5.100000 6.300000 86.90000 83.00000 15.2036909 3.21294698  
## 38 1.300000 10.800000 70.90125 78.00000 18.3650984 6.42911521  
## 39 1.100000 10.100000 64.13664 81.00000 -3.2580969 -2.55838826  
## 40 6.600000 0.400000 51.31561 47.00000 1.8060538 1.69221277  
## 41 2.348855 7.200000 30.09077 65.08267 -5.2786694 -2.40936208  
## 42 17.800000 6.700000 81.70000 74.00000 -3.7004536 -0.10545134  
## 43 7.000000 3.300000 79.40000 77.00000 10.3000000 2.40000000  
## 44 85.000000 4.100000 80.00000 76.00000 1.7000000 0.30000000  
## 45 3.300000 6.900000 20.70000 45.00000 25.5145272 8.13165559  
## 46 11.000000 2.100000 51.69394 38.00000 16.4629536 5.89030559  
## 47 2.100000 10.800000 56.75055 75.00000 7.8245235 2.05268054  
## 48 18.500000 8.800000 82.90000 63.00000 11.8964630 2.24884042  
## 49 7.200000 2.200000 63.60000 39.00000 4.9000000 1.40000000  
## 50 2.200000 3.700000 50.46969 64.00000 5.8863459 3.42356153  
## 51 1.200000 10.700000 56.49731 78.00000 5.6041250 -1.59747276  
## 52 0.800000 12.200000 51.19325 78.00000 1.0038288 -1.78161220  
## 53 8.500000 8.100000 44.00000 49.00000 -12.4423039 -2.03202073  
## 54 2.300000 9.500000 50.50000 66.00000 29.2000000 9.00000000  
## 55 0.900000 12.800000 38.71299 83.00000 21.2493376 5.58400652  
## 56 6.100000 2.800000 40.40000 47.00000 1.1000000 0.10000000  
## 57 1.000000 10.500000 51.35435 75.00000 16.9000000 1.60000000  
## 58 6.600000 9.000000 59.10013 72.00000 11.9533487 1.51402926  
## 59 25.100000 1.600000 66.10000 55.00000 1.4000000 0.00000000  
## 60 8.800000 1.100000 37.70000 37.00000 7.0000000 1.30000000  
## 61 24.700000 5.300000 51.50000 72.00000 -12.0025479 -3.00053886  
## 62 20.700000 3.000000 45.40000 49.00000 11.5000000 4.00000000  
## 63 66.900000 3.900000 76.00000 65.00000 8.8086458 0.65832152  
## 64 1.400000 11.100000 43.62979 74.00000 8.1259920 0.61198504  
## 65 1.200000 9.200000 61.42445 84.00000 7.9760438 1.99300328  
## 66 3.800000 5.600000 72.80000 55.00000 17.3000000 3.90000000  
## 67 4.300000 0.200000 77.00000 57.00000 2.7000000 0.50000000  
## 68 14.400000 0.400000 53.70000 61.00000 3.3000000 0.40000000  
## 69 0.800000 12.700000 63.46724 76.00000 19.4538154 5.93670967  
## 70 1.200000 4.400000 59.84077 82.00000 6.7000000 1.00000000  
## 71 0.700000 8.000000 50.64555 82.00000 14.2664471 4.34969431  
## 72 50.300000 4.200000 85.35769 65.00000 7.8475339 1.87158040  
## 73 0.200000 10.100000 70.85278 83.00000 4.4000000 0.60000000  
## 74 2.700000 0.500000 56.70000 76.00000 7.2014856 -0.10573083  
## 75 5.100000 5.000000 73.20000 76.00000 2.6000000 0.10000000  
## 76 5.600000 2.100000 74.40000 55.00000 5.4000000 1.50000000  
## 77 4.800000 2.300000 53.10000 41.00000 6.5851917 2.34297093  
## 78 1.800000 0.000000 62.30860 76.00000 16.2009381 5.31001306  
## 79 5.000000 13.200000 42.06724 71.00000 15.4795399 5.48827696  
## 80 4.200000 1.500000 83.36018 73.00000 18.0739738 4.42048545  
## 81 43.500000 5.100000 82.80000 48.00000 0.4441218 1.39924686  
## 82 9.700000 5.400000 41.00000 39.00000 -6.1830840 0.73526526  
## 83 2.100000 0.000000 24.00000 64.00000 -6.0515930 -2.02052882  
## 84 4.800000 12.800000 51.30341 73.00000 2.8871812 -0.16972917  
## 85 0.500000 12.400000 67.12245 83.00000 8.4846733 3.16541937  
## 86 6.500000 2.000000 65.90000 28.00000 4.6143891 0.80749623  
## 87 2.200000 4.100000 73.90000 46.00000 4.2000000 0.90000000  
## 88 2.700000 0.900000 67.82607 73.00000 2.0000000 0.20000000  
## 89 1.900000 2.800000 29.20000 62.00000 10.3000000 4.10000000  
## 90 10.700000 1.300000 41.20000 38.00000 6.5000000 1.10000000  
## 91 1.000000 8.300000 69.00071 82.00000 21.7613067 6.20869314  
## 92 10.900000 0.000000 30.40000 41.00000 11.7000000 3.00000000  
## 93 2.300000 4.800000 40.80000 63.00000 8.9000000 1.80000000  
## 94 25.400000 5.000000 79.80000 76.00000 1.6000000 0.20000000  
## 95 19.181035 4.871258 39.05658 68.17795 18.4691444 8.14896555  
## 96 6.100000 5.900000 63.60000 62.00000 2.4000000 0.50000000  
## 97 2.800000 12.200000 32.90000 68.00000 10.3000000 0.80000000  
## 98 1.700000 0.500000 72.00000 70.00000 -4.3131617 -3.36145498  
## 99 3.700000 2.700000 55.50000 46.00000 1.6000000 0.40000000  
## 100 3.900000 2.100000 74.90000 61.00000 14.4000000 2.80000000  
## 101 18.000000 3.100000 80.40000 62.00000 2.7221432 0.27789155  
## 102 2.500000 0.600000 61.90000 48.00000 10.7000000 2.40000000  
## 103 0.600000 9.700000 58.61412 86.00000 8.4622941 1.71971726  
## 104 1.200000 10.700000 105.17442 87.00000 11.7646611 4.53346254  
## 105 9.400000 5.100000 89.80000 73.00000 14.8000000 3.00000000  
## 106 9.600000 0.500000 45.50000 37.00000 6.6000000 1.90000000  
## 107 9.200000 6.200000 35.60000 42.00000 15.1000000 4.10000000  
## 108 1.500000 6.400000 29.60000 72.00000 14.1280199 1.02742960  
## 109 0.600000 7.100000 88.09413 87.00000 8.4720240 1.84650536  
## 110 0.700000 0.900000 39.60000 69.00000 4.1736681 0.83709996  
## 111 6.000000 0.300000 48.60000 45.00000 4.5000000 0.50000000  
## 112 -3.139235 7.162005 72.59612 83.33632 3.4339772 -1.10059798  
## 113 17.200000 7.800000 65.20000 79.00000 10.9751296 2.84708150  
## 114 11.000000 2.100000 49.20000 40.00000 16.1520776 6.65386789  
## 115 8.000000 7.000000 78.90000 69.00000 7.1000000 1.90000000  
## 116 9.300000 6.800000 66.60000 77.00000 9.2000000 1.30000000  
## 117 13.700000 7.000000 56.00000 61.00000 6.3000000 1.40000000  
## 118 0.800000 11.900000 46.09585 75.00000 14.1000000 1.30000000  
## 119 0.900000 12.100000 31.31753 82.00000 6.6612550 1.11605222  
## 120 0.500000 1.500000 68.90000 68.00000 2.5886710 -0.50856611  
## 121 1.300000 12.300000 77.18025 74.00000 13.4000000 2.20000000  
## 122 7.800000 10.500000 72.40000 75.00000 4.9000000 0.60000000  
## 123 4.300000 8.000000 62.90000 57.00000 1.2000000 0.10000000  
## 124 2.800000 2.800000 39.40000 58.00000 0.2201076 0.03565705  
## 125 26.820765 15.490546 62.27466 85.73044 13.7122434 4.65389250  
## 126 1.900000 0.000000 90.53229 74.00000 9.6205528 4.55670714  
## 127 7.600000 0.700000 53.20000 45.00000 3.3000000 0.20000000  
## 128 1.200000 8.900000 38.40000 65.00000 8.1000000 0.50000000  
## 129 14.800000 8.800000 54.55887 71.00000 3.5000000 1.60000000  
## 130 7.900000 5.300000 53.00000 39.00000 54.2000000 22.20000000  
## 131 0.300000 2.000000 92.58773 86.00000 9.0000000 1.50000000  
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## 133 3.900000 1.700000 38.00000 47.00000 -2.1037726 0.07483933  
## 134 5.400000 0.000000 2.10000 25.00000 8.6657242 3.27351508  
## 135 35.900000 9.500000 79.70000 69.00000 15.2238488 6.18840593  
## 136 14.300000 8.093705 26.35374 31.00000 9.0331403 2.88673948  
## 137 0.600000 12.700000 100.07987 83.00000 10.0829936 0.47261761  
## 138 2.300000 2.900000 74.30000 66.00000 5.4000000 0.90000000  
## 139 5.800000 -4.051467 30.10000 44.00000 5.0744568 0.01673038  
## 140 5.800000 7.400000 57.50000 71.00000 4.9000000 1.40000000  
## 141 1.100000 9.000000 86.70000 86.00000 17.3865101 3.61944019  
## 142 0.500000 11.200000 62.20442 83.00000 8.3208119 2.74689356  
## 143 1.800000 0.900000 52.10000 68.00000 11.4855876 2.25820491  
## 144 4.300000 8.500000 88.20000 80.00000 2.2000000 0.40000000  
## 145 8.900000 2.700000 39.60000 43.00000 6.5541284 0.85525101  
## 146 3.400000 0.400000 49.90000 58.00000 4.3386021 -1.22606077  
## 147 39.400000 6.500000 58.20000 74.00000 3.9000000 1.90000000  
## 148 3.500000 2.000000 62.70000 70.00000 18.4000000 2.70000000  
## 149 4.800000 1.800000 60.10000 74.00000 3.2000000 0.40000000  
## 150 5.800000 10.000000 78.40000 84.00000 4.8000000 0.80000000  
## 151 13.900000 12.500000 55.10000 45.00000 15.3000000 3.80000000  
## 152 6.300000 8.300000 68.00000 68.00000 7.8000000 0.90000000  
## 153 0.700000 3.800000 57.26627 76.00000 8.4952378 2.01452349  
## 154 1.300000 11.400000 86.50000 87.00000 1.6000000 0.50000000  
## 155 8.500000 6.900000 70.84108 80.00000 10.5491448 4.84917113  
## 156 1.500000 2.600000 94.26825 73.00000 12.1060222 2.86810884  
## 157 1.900000 7.900000 69.60000 75.00000 9.4000000 1.90000000  
## 158 2.300000 2.100000 50.70000 48.00000 0.4842677 -0.10717154  
## 159 6.500000 4.500000 65.90000 53.00000 22.5619771 8.11691941  
## 160 13.100000 4.500000 84.80000 54.00000 -4.1314544 -3.10967671  
## 161 9.000000 5.500000 60.00000 40.00000 3.1676888 -0.04305241  
## 162 4.700000 0.500000 45.90000 52.00000 2.9000000 0.50000000  
## AmbSt UWMortal TobacooSt HIV Tuberculosis Malaria  
## 1 211.10000 13.900000 39.886289 0.04000000 189.0 14.500000  
## 2 68.00000 0.200000 29.200000 0.03000000 16.0 43.727065  
## 3 49.70000 1.900000 18.800000 0.05000000 61.0 0.000000  
## 4 -57.54265 -19.421369 33.800000 -0.16282623 7.5 -208.306564  
## 5 118.50000 48.800000 12.376994 0.84000000 351.0 235.200000  
## 6 29.90000 0.100000 21.053018 0.70724079 0.0 157.557897  
## 7 26.60000 0.400000 21.800000 0.13000000 29.0 0.000000  
## 8 54.80000 0.200000 26.700000 0.05000000 26.0 0.000000  
## 9 8.40000 0.100000 16.200000 0.03000000 6.9 -65.254523  
## 10 15.30000 0.100000 29.100000 -0.69065780 6.2 32.148948  
## 11 63.90000 1.100000 19.600000 0.06000000 60.0 0.000000  
## 12 40.10000 0.000000 25.100000 -0.43321395 12.0 -0.972701  
## 13 149.00000 11.900000 39.100000 -0.47467289 221.0 1.200000  
## 14 31.10000 0.200000 8.700000 0.18000000 0.0 -13.152146  
## 15 60.70000 0.100000 26.600000 0.20000000 29.0 -39.194829  
## 16 15.70000 0.300000 25.000000 0.36315980 8.9 -80.916630  
## 17 68.60000 1.000000 16.626576 -0.04762319 27.0 0.000000  
## 18 205.00000 59.700000 7.200000 0.31000000 55.0 406.700000  
## 19 124.50000 3.900000 10.368431 0.13143861 165.0 0.000000  
## 20 79.80000 0.100000 38.300000 -1.03802315 27.0 4.915591  
## 21 101.30000 11.800000 23.700000 4.78000000 253.0 0.200000  
## 22 29.90000 1.000000 16.500000 0.23000000 46.0 4.200000  
## 23 61.80000 0.100000 38.900000 0.04000000 21.0 60.988479  
## 24 206.20000 49.600000 16.000000 0.14000000 47.0 386.700000  
## 25 179.90000 65.400000 12.600000 0.17000000 107.0 296.000000  
## 26 99.50000 4.100000 10.410599 0.19000000 46.0 0.000000  
## 27 149.80000 6.500000 21.800000 0.05000000 287.0 12.000000  
## 28 208.10000 45.200000 9.300000 0.69000000 179.0 243.100000  
## 29 7.00000 0.400000 17.500000 -0.05264918 5.5 16.396179  
## 30 280.10000 101.000000 11.800000 0.34000000 142.0 202.100000  
## 31 25.30000 0.200000 44.700000 0.27000000 18.0 -30.475784  
## 32 112.70000 0.600000 24.700000 -0.25397548 58.0 0.000000  
## 33 37.00000 0.800000 7.900000 0.25000000 35.0 10.700000  
## 34 172.40000 50.700000 19.500000 0.00000000 35.0 20.700000  
## 35 23.30000 0.900000 9.800000 0.19000000 10.0 0.100000  
## 36 35.50000 0.100000 36.600000 0.02000000 8.0 -108.106301  
## 37 49.50000 1.000000 27.100000 0.14000000 6.5 51.697326  
## 38 20.10000 0.300000 36.700000 -1.70489581 5.3 87.961122  
## 39 13.20000 0.300000 18.600000 -1.54706778 5.0 3.934826  
## 40 159.00000 31.300000 15.150633 0.14000000 234.0 67.700000  
## 41 34.69336 11.714173 17.499587 -1.52323209 16.0 139.188196  
## 42 43.00000 2.200000 9.400000 0.27000000 42.0 0.300000  
## 43 24.50000 0.600000 24.364368 0.14000000 46.0 3.600000  
## 44 41.90000 2.000000 12.700000 0.14000000 58.0 0.000000  
## 45 177.70000 22.300000 2.864139 4.06000000 181.0 237.100000  
## 46 173.70000 45.600000 7.200000 0.11000000 86.0 57.300000  
## 47 25.00000 0.000000 30.500000 -0.33393274 13.0 10.201184  
## 48 137.00000 27.900000 10.700000 4.90000000 363.0 0.700000  
## 49 144.40000 43.700000 4.600000 0.16000000 140.0 34.300000  
## 50 99.00000 2.900000 26.700000 0.14000000 66.0 195.528075  
## 51 7.20000 0.000000 19.700000 0.72581125 4.7 -131.507534  
## 52 9.70000 0.300000 34.600000 0.30635540 8.7 -31.953889  
## 53 76.00000 20.600000 20.284506 0.74000000 521.0 211.900000  
## 54 101.80000 0.200000 29.700000 0.76131625 74.0 0.000000  
## 55 16.00000 0.600000 28.000000 0.55554048 5.8 -58.396990  
## 56 203.80000 18.800000 3.700000 0.70000000 144.0 161.500000  
## 57 27.60000 0.000000 39.100000 1.14971271 4.3 12.633881  
## 58 45.30000 0.300000 23.945694 1.05051430 3.1 157.469659  
## 59 73.80000 6.300000 13.232562 0.07000000 26.0 0.200000  
## 60 243.30000 44.600000 6.606580 0.39000000 176.0 296.900000  
## 61 107.80000 3.600000 12.200000 0.42000000 79.0 33.700000  
## 62 184.30000 23.800000 8.300000 0.52000000 170.0 1.400000  
## 63 60.70000 3.600000 15.656136 0.11000000 31.0 0.100000  
## 64 38.80000 0.200000 30.600000 0.55534570 6.3 7.348689  
## 65 8.70000 0.100000 13.800000 -0.54559267 4.4 -31.585954  
## 66 184.30000 18.600000 27.000000 1.40901789 193.0 4.300000  
## 67 112.40000 7.100000 37.900000 -1.00347714 312.0 2.400000  
## 68 75.10000 3.000000 22.200000 -0.14986906 41.0 0.000000  
## 69 11.90000 0.100000 23.600000 -0.38557325 5.8 -16.083976  
## 70 15.40000 0.200000 25.500000 -1.20247182 2.9 -129.527772  
## 71 15.00000 0.100000 23.400000 0.04000000 7.1 20.827249  
## 72 25.40000 0.600000 11.000000 0.58000000 3.2 -43.206030  
## 73 11.90000 0.200000 21.900000 -0.35324062 13.0 41.432137  
## 74 51.20000 0.600000 25.558667 -0.23882041 5.5 -145.551825  
## 75 62.70000 0.400000 24.400000 0.20000000 68.0 0.000000  
## 76 78.10000 51.200000 11.800000 0.92000000 267.0 57.000000  
## 77 140.20000 16.700000 52.000000 1.84957783 436.0 37.221953  
## 78 103.80000 0.000000 22.100000 -0.31642866 22.0 -8.023751  
## 79 41.30000 0.000000 36.700000 0.19000000 26.0 104.666186  
## 80 51.40000 0.800000 42.600000 0.03000000 13.0 -25.134910  
## 81 177.60000 44.400000 29.700000 6.43000000 654.0 -214.605358  
## 82 170.20000 41.500000 8.400000 0.46000000 308.0 366.600000  
## 83 71.90000 0.600000 21.299733 0.07000000 59.0 7.083024  
## 84 34.00000 0.100000 27.100000 0.09000000 42.0 -7.310436  
## 85 11.60000 0.000000 21.700000 -0.65064761 9.0 72.101913  
## 86 159.60000 30.200000 28.900000 0.23000000 233.0 76.100000  
## 87 115.00000 28.300000 12.800000 1.94000000 146.0 207.700000  
## 88 47.40000 0.400000 21.800000 0.20000000 92.0 0.000000  
## 89 25.60000 0.300000 29.370505 -1.91938192 36.0 -10.951559  
## 90 209.10000 70.700000 12.000000 -0.11749649 52.0 333.700000  
## 91 20.20000 0.000000 25.100000 0.55005434 14.0 -4.710852  
## 92 169.50000 38.600000 16.464822 0.34410875 89.0 43.400000  
## 93 38.30000 0.600000 26.900000 0.57000000 12.0 -40.031755  
## 94 36.70000 1.100000 13.900000 -0.58912435 23.0 0.200000  
## 95 65.23102 16.136409 15.631905 0.48781817 0.0 31.281999  
## 96 155.90000 1.300000 27.600000 0.01000000 428.0 -159.853048  
## 97 78.60000 0.000000 40.722102 0.05000000 15.0 7.477627  
## 98 49.10000 1.900000 14.700000 0.02000000 97.0 0.000000  
## 99 110.00000 27.600000 14.400000 4.68000000 361.0 308.400000  
## 100 156.40000 12.600000 45.500000 0.19000000 322.0 2.300000  
## 101 145.00000 18.300000 17.900000 3.10000000 486.0 2.800000  
## 102 193.80000 19.800000 31.900000 0.03000000 238.0 0.100000  
## 103 13.70000 0.200000 23.400000 0.02000000 5.0 -69.632046  
## 104 7.20000 0.100000 14.800000 0.03000000 7.5 103.246703  
## 105 55.70000 2.200000 18.559948 0.06000000 43.0 5.900000  
## 106 251.80000 70.800000 8.600000 0.06000000 84.0 343.200000  
## 107 307.40000 68.600000 4.800000 0.52000000 219.0 303.300000  
## 108 82.20000 0.100000 21.124076 0.43708735 12.0 -38.752438  
## 109 8.60000 0.200000 18.400000 -0.34206011 3.3 -61.291616  
## 110 53.90000 0.000000 9.600000 0.04000000 8.5 0.000000  
## 111 173.60000 19.600000 20.000000 0.12000000 263.0 3.300000  
## 112 25.35382 -11.216069 23.700000 -0.83592252 38.0 152.818733  
## 113 25.80000 1.900000 6.900000 -0.36643371 37.0 0.400000  
## 114 152.00000 16.300000 43.812549 0.38000000 432.0 156.400000  
## 115 57.50000 1.500000 12.800000 0.16000000 46.0 0.000000  
## 116 63.90000 1.300000 9.600000 0.10000000 119.0 3.600000  
## 117 185.20000 4.200000 24.300000 0.14000000 554.0 0.700000  
## 118 37.90000 0.100000 26.000000 0.49618050 15.0 -115.832754  
## 119 9.80000 0.200000 27.900000 -0.02343553 19.0 37.505396  
## 120 47.40000 0.000000 14.000000 0.75696888 35.0 51.804440  
## 121 59.30000 0.400000 25.500000 0.04000000 66.0 -7.427693  
## 122 49.40000 0.100000 28.300000 1.63375447 50.0 25.823457  
## 123 121.40000 19.300000 13.300000 0.44000000 57.0 366.100000  
## 124 85.00000 1.500000 28.900000 -0.97278838 11.0 95.542766  
## 125 22.02645 -7.306126 18.472282 -0.90874874 0.0 14.205873  
## 126 83.70000 0.100000 16.600000 0.59095816 9.9 0.000000  
## 127 160.70000 23.900000 9.100000 0.09000000 117.0 50.500000  
## 128 62.50000 0.700000 40.600000 0.02000000 14.0 46.154264  
## 129 49.30000 0.200000 21.100000 0.15811707 16.0 126.592144  
## 130 324.10000 81.300000 19.800000 0.65000000 295.0 334.800000  
## 131 25.90000 0.100000 16.500000 0.03000000 41.0 -147.031244  
## 132 22.60000 0.000000 22.700000 -0.75521426 5.4 -56.871569  
## 133 137.00000 6.200000 37.900000 0.38312823 66.0 247.900000  
## 134 212.80000 86.600000 19.706160 0.03000000 258.0 49.100000  
## 135 86.70000 13.700000 31.400000 3.98000000 615.0 0.500000  
## 136 165.10000 63.300000 19.007023 1.50000000 227.0 272.000000  
## 137 9.90000 0.200000 27.900000 0.06000000 9.3 -46.926532  
## 138 79.80000 1.200000 22.900000 0.00000000 64.0 0.000000  
## 139 184.90000 17.300000 13.046420 0.08000000 67.0 55.400000  
## 140 56.70000 2.000000 19.823983 0.45000000 29.0 1.100000  
## 141 7.20000 0.200000 28.800000 0.58967362 5.5 -117.553328  
## 142 10.10000 0.100000 25.100000 0.03000000 5.4 63.323989  
## 143 129.30000 2.700000 18.510755 0.17000000 83.0 0.000000  
## 144 61.50000 3.500000 22.800000 0.08000000 150.0 0.300000  
## 145 249.60000 41.600000 7.600000 0.59000000 37.0 225.000000  
## 146 73.30000 1.400000 30.200000 0.32795479 11.0 -153.314473  
## 147 38.60000 0.100000 8.456515 0.07000000 18.0 71.024636  
## 148 56.10000 1.000000 26.000000 0.05000000 35.0 -133.744493  
## 149 46.60000 0.300000 29.300000 0.14636389 16.0 0.000000  
## 150 13.30000 0.200000 25.100000 4.00305534 3.0 -40.721018  
## 151 155.70000 31.600000 9.800000 1.38000000 200.0 262.700000  
## 152 70.70000 0.300000 25.500000 0.28000000 77.0 -87.145370  
## 153 54.70000 0.000000 18.200000 -0.06801390 1.0 0.000000  
## 154 13.80000 0.200000 19.200000 0.09228529 8.0 156.086678  
## 155 17.50000 0.400000 21.800000 0.59163474 35.0 -4.120940  
## 156 81.10000 0.400000 12.300000 0.13000000 67.0 0.000000  
## 157 64.50000 1.600000 33.080096 0.05000000 176.0 0.100000  
## 158 135.60000 10.400000 24.100000 -0.45192341 41.0 3.500000  
## 159 127.20000 34.900000 14.700000 3.17000000 333.0 147.700000  
## 160 133.00000 24.600000 13.900000 2.81000000 199.0 67.900000  
## 161 214.70000 35.300000 7.332304 1.15000000 361.0 86.900000  
## 162 139.80000 9.900000 38.200000 0.15000000 498.0 0.000000

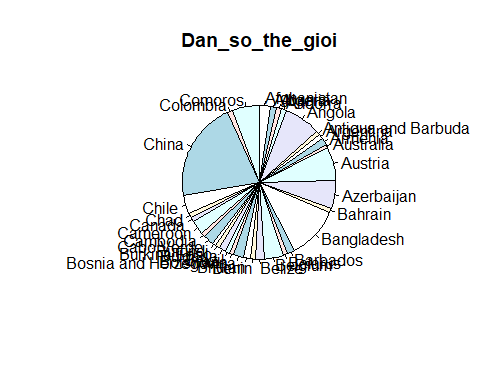
Biểu đồ tương quan

corrplot(cor, method="circle")



### Ảnh hưởng do dịch COVID 19

#### Biểu đồ về nước có tỉ lệ chết/ sống trên giá trị trung vị

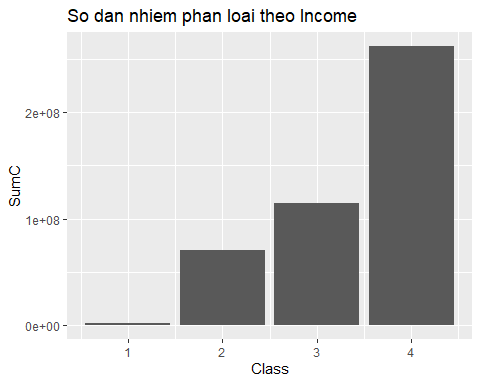
dataset1$SumC <- abs(dataset1$SumC)  
dataset1$SumD <- abs(dataset1$SumD)  
y <- dataset1 %>%  
 filter(SumC > 2776769 )  
y <- y$SumC  
labels <- dataset1$ï..MemberState   
pie(y, labels, main = "Dan\_so\_the\_gioi",clockwise = TRU

Nhìn vào biểu đồ có thể thấy Trung Quốc và Bangladesh là 2 nước có tỉ lệ dân bị nhiễm cao nhất với khoảng 25% và khoảng 12%.

### Biểu đồ tỉ lệ nhiễm theo nhóm nước

#### Chia theo nhóm thu nhập

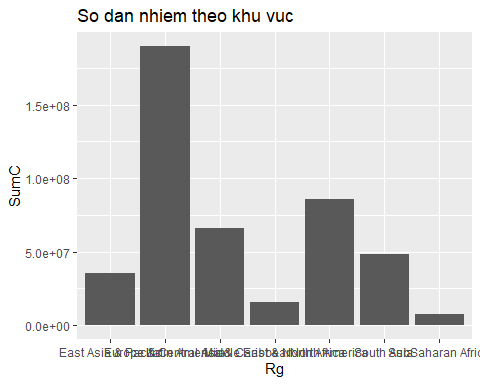
dataset1 %>%   
 ggplot(aes(Class,SumC))+  
 geom\_col() +  
 labs(title="So dan nhiem phan loai theo Income")



Trong số 4 nhóm nước phân loại theo thu nhập, số lượng người bị nhiễm ở khu vực cao khoảng 1.5e +08 (đơn vị /100000 dân) so với các khu vực còn lại, chiếm khoảng 50% số lượng bị nhiễm bệnh.

#### Chia theo khu vực

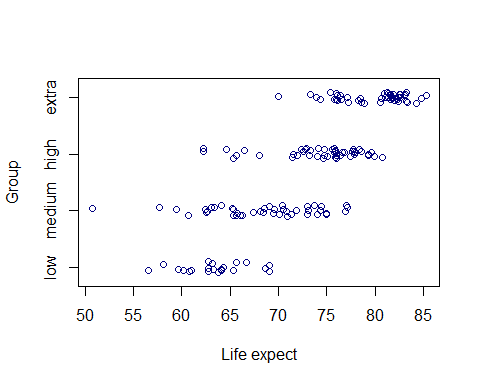
dataset1 %>%   
 ggplot(aes(Rg,SumC))+  
 geom\_col() +  
 labs(title="So dan nhiem theo khu vuc")



Số dân nhiễm ở Châu âu và khu vực trung tâm châu á với hơn 1,25e+08 số lượng dân chiếm cao nhất trong các khu vực và thấp nhất là Châu Phi

### Khu vực được cho là healthy life

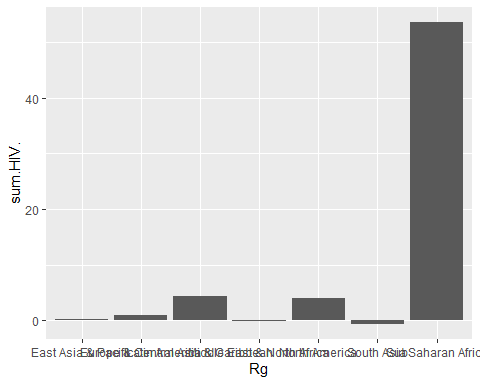
stripchart(tot,  
 main="",  
 xlab="Life expect",  
 ylab="Group",  
 method="jitter",  
 col=c("navy blue"),  
 pch= 1)



Với extra – high – medium – low tương đương với các loại Income theo khu vực từ cao về thấp, có thể dễ thấy rằng, càng những nước có thu nhập cao thì, độ tuổi kỳ vọng sống càng tăng và ngược lại với những nước thu nhập thấp

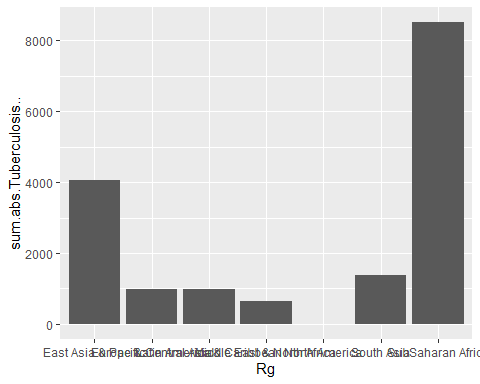
### Tỉ lệ mắc các bệnh truyền nhiễm trên thế giới

#### Do HIV



Châu Phi là nước có tỉ lệ nhiễm HIV cao nhất với tỉ lệ hơn 50%, trong khi các khu vực khác đều ghi nhận số lượng dưới 5%

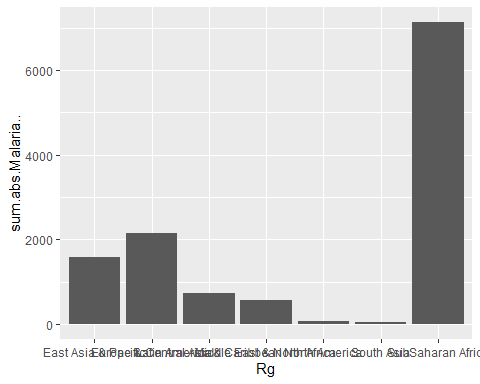
#### Do lao phổi



Số lượng lao phổi của khu vực Châu Phi cao nhất với số lượng /100.000 khoảng hơn 8000.

Đứng thứ 2 là Đông Nam Á với số lượng/100.000 bằng một nửa so với khu vực Châu phi.

### *Do sốt rét*



Đặc điểm tương tự cũng được thấy ở bệnh sốt rét, với số lượng/100.000 khoảng hơn 7000 đối với khu vực Châu Phi

### Đồ thị xem sự ảnh hưởng của UHC tới HALE

p <- ggplot(dt, aes(UHC, HALE, size = HALE, colour = ï..Location)) +

geom\_point(alpha = 0.7, show.legend = FALSE) +

scale\_size(range = c(2, 12)) +

scale\_x\_log10() +

facet\_wrap(~ Rg) +

theme(plot.title = element\_text(size= 12, face ="bold", colour = "black"),

axis.title.x = element\_text(size=10, face ="bold", colour = "black"),

axis.title.y = element\_text(size=10, face ="bold", colour = "black"),

axis.text.x = element\_text(size=8, face ="bold", colour = "black"),

axis.text.y = element\_text(size=8, face ="bold", colour = "black"),

strip.text.x = element\_text(size=8, face ="bold", colour = "black"),

plot.margin = unit(c(0.5,0.5,0.5,0.5), "cm")

) +

labs(title = 'Year: {frame\_time}', x= 'UHC', y = 'HALE') +

transition\_time(Year) +

ease\_aes('linear')

p1 <- animate(p)

animate(p, duration =3, fps= 20,width = 1000, height = 1000, renderer = gifski\_renderer())

Chart, scatter chart, bubble chart

Description automatically generated

# Phân tích EFA

## Tương quan giữa các biến

## Class SumP SumC SumT D.1M  
## Class 1.000000000 -0.047566080 0.206806420 0.2003255816 0.503632683  
## SumP -0.047566080 1.000000000 0.413157023 0.5310216137 -0.079469970  
## SumC 0.206806420 0.413157023 1.000000000 0.8868784861 0.221330458  
## SumT 0.200325582 0.531021614 0.886878486 1.0000000000 0.145439354  
## D.1M 0.503632683 -0.079469970 0.221330458 0.1454393544 1.000000000  
## C.1M 0.738722016 -0.123366264 0.182619882 0.1680265929 0.528400384  
## SumD 0.129420290 0.414829406 0.919618410 0.7650079258 0.290555197  
## Age\_exp 0.793759472 0.020564314 0.222448684 0.2117334042 0.464793768  
## Age\_ht 0.785240016 0.011236734 0.184317320 0.1768459215 0.467579886  
## Drate -0.576334337 -0.018390406 -0.189835032 -0.1824743019 -0.275030162  
## SuicideMortal 0.122983616 -0.008695973 0.070089299 0.0474641595 0.170627296  
## RoadMortal -0.682836168 -0.004914612 -0.177552131 -0.1731747953 -0.410466214  
## PoisonMortal -0.625540883 0.003711675 -0.178775287 -0.1610582492 -0.373339517  
## HomiMortal -0.185593808 -0.048639767 -0.040591442 -0.1108834153 0.002732453  
## Alcohol\_use 0.522585002 -0.011112161 0.212603520 0.1974399228 0.535292171  
## SatisfiyWrate 0.221598506 0.249309120 0.148478903 0.2106282055 -0.021941268  
## UHC 0.838791445 0.018656548 0.241514662 0.2182656638 0.485629163  
## PWE.10 0.068036947 0.116914139 -0.002518465 0.0002452798 0.156485688  
## PWE.25 -0.001867733 0.082222584 -0.036781521 -0.0455216194 0.015208284  
## AmbSt -0.815946874 0.108169827 -0.191060207 -0.1466162731 -0.492955095  
## UWMortal -0.698753401 -0.004053480 -0.143465804 -0.1234480417 -0.455247772  
## TobacooSt 0.259314701 0.060721806 0.115529175 0.1128731403 0.303033092  
## HIV -0.198777533 0.038656833 0.178319784 0.1408749056 -0.081259838  
## Tuberculosis -0.510416061 0.054480063 -0.114006806 -0.1046363659 -0.350874986  
## Malaria -0.493875485 -0.044764941 -0.146594336 -0.1074472393 -0.337941809  
## C.1M SumD Age\_exp Age\_ht Drate  
## Class 0.73872202 0.129420290 0.79375947 0.78524002 -0.57633434  
## SumP -0.12336626 0.414829406 0.02056431 0.01123673 -0.01839041  
## SumC 0.18261988 0.919618410 0.22244868 0.18431732 -0.18983503  
## SumT 0.16802659 0.765007926 0.21173340 0.17684592 -0.18247430  
## D.1M 0.52840038 0.290555197 0.46479377 0.46757989 -0.27503016  
## C.1M 1.00000000 0.072085519 0.67643698 0.67650987 -0.51861667  
## SumD 0.07208552 1.000000000 0.15645217 0.12091111 -0.13404165  
## Age\_exp 0.67643698 0.156452175 1.00000000 0.99483428 -0.80904778  
## Age\_ht 0.67650987 0.120911110 0.99483428 1.00000000 -0.78327631  
## Drate -0.51861667 -0.134041653 -0.80904778 -0.78327631 1.00000000  
## SuicideMortal 0.17762654 0.033462426 -0.17484747 -0.17337779 0.32248369  
## RoadMortal -0.62772403 -0.111346380 -0.69424159 -0.69730107 0.39080920  
## PoisonMortal -0.44748803 -0.156781250 -0.79262663 -0.78527427 0.57515812  
## HomiMortal -0.20901188 0.067714655 -0.23143891 -0.24400679 0.09095043  
## Alcohol\_use 0.63230194 0.145628425 0.44826484 0.44942533 -0.38876367  
## SatisfiyWrate 0.04660308 0.171328492 0.32219568 0.31051882 -0.25112086  
## UHC 0.65673995 0.195279535 0.87092393 0.86912825 -0.63162915  
## PWE.10 0.08339046 -0.008196392 0.07595608 0.07343091 -0.10303518  
## PWE.25 0.01015230 -0.030819783 -0.06439625 -0.07339245 -0.01384330  
## AmbSt -0.66060798 -0.148075337 -0.84905704 -0.84678516 0.60083043  
## UWMortal -0.50460338 -0.129743242 -0.75993475 -0.76900372 0.35817483  
## TobacooSt 0.31542110 0.065104395 0.25218850 0.27216710 0.11594466  
## HIV -0.27666548 0.170811123 -0.53260039 -0.55286041 0.40608220  
## Tuberculosis -0.46248296 -0.062617726 -0.67827540 -0.67796815 0.54391917  
## Malaria -0.36767677 -0.135575230 -0.50953900 -0.51633836 0.21767340  
## SuicideMortal RoadMortal PoisonMortal HomiMortal Alcohol\_use  
## Class 0.122983616 -0.682836168 -0.625540883 -0.185593808 0.522585002  
## SumP -0.008695973 -0.004914612 0.003711675 -0.048639767 -0.011112161  
## SumC 0.070089299 -0.177552131 -0.178775287 -0.040591442 0.212603520  
## SumT 0.047464160 -0.173174795 -0.161058249 -0.110883415 0.197439923  
## D.1M 0.170627296 -0.410466214 -0.373339517 0.002732453 0.535292171  
## C.1M 0.177626544 -0.627724033 -0.447488029 -0.209011884 0.632301936  
## SumD 0.033462426 -0.111346380 -0.156781250 0.067714655 0.145628425  
## Age\_exp -0.174847469 -0.694241594 -0.792626627 -0.231438911 0.448264844  
## Age\_ht -0.173377785 -0.697301066 -0.785274272 -0.244006785 0.449425327  
## Drate 0.322483687 0.390809204 0.575158120 0.090950427 -0.388763666  
## SuicideMortal 1.000000000 -0.049420198 0.282121886 0.121035696 0.285624976  
## RoadMortal -0.049420198 1.000000000 0.555762433 0.261176513 -0.386035390  
## PoisonMortal 0.282121886 0.555762433 1.000000000 0.083765599 -0.235420640  
## HomiMortal 0.121035696 0.261176513 0.083765599 1.000000000 -0.072523446  
## Alcohol\_use 0.285624976 -0.386035390 -0.235420640 -0.072523446 1.000000000  
## SatisfiyWrate 0.110125759 -0.074628312 -0.225585168 0.170229538 0.131791541  
## UHC 0.096949059 -0.622461919 -0.697236756 -0.092730673 0.513894944  
## PWE.10 -0.108136724 -0.146445970 -0.024496447 -0.100075619 0.175906940  
## PWE.25 -0.047793266 -0.009732732 0.066775094 -0.010566517 0.100776482  
## AmbSt -0.050073173 0.612230743 0.687189845 0.069926232 -0.491097348  
## UWMortal -0.035032692 0.597858062 0.771937776 0.084799508 -0.313806908  
## TobacooSt 0.183673891 -0.413255990 -0.229635789 -0.283171131 0.178564223  
## HIV 0.456299724 0.376768678 0.470370713 0.229809436 0.009503083  
## Tuberculosis 0.204258763 0.418268139 0.500430457 0.173137798 -0.241698587  
## Malaria -0.262702279 0.388562593 0.414043828 -0.019083148 -0.074224367  
## SatisfiyWrate UHC PWE.10 PWE.25 AmbSt  
## Class 0.221598506 0.83879145 0.0680369470 -0.001867733 -0.81594687  
## SumP 0.249309120 0.01865655 0.1169141390 0.082222584 0.10816983  
## SumC 0.148478903 0.24151466 -0.0025184647 -0.036781521 -0.19106021  
## SumT 0.210628206 0.21826566 0.0002452798 -0.045521619 -0.14661627  
## D.1M -0.021941268 0.48562916 0.1564856881 0.015208284 -0.49295509  
## C.1M 0.046603081 0.65673995 0.0833904590 0.010152296 -0.66060798  
## SumD 0.171328492 0.19527953 -0.0081963923 -0.030819783 -0.14807534  
## Age\_exp 0.322195678 0.87092393 0.0759560760 -0.064396253 -0.84905704  
## Age\_ht 0.310518816 0.86912825 0.0734309100 -0.073392453 -0.84678516  
## Drate -0.251120857 -0.63162915 -0.1030351802 -0.013843305 0.60083043  
## SuicideMortal 0.110125759 0.09694906 -0.1081367242 -0.047793266 -0.05007317  
## RoadMortal -0.074628312 -0.62246192 -0.1464459702 -0.009732732 0.61223074  
## PoisonMortal -0.225585168 -0.69723676 -0.0244964468 0.066775094 0.68718985  
## HomiMortal 0.170229538 -0.09273067 -0.1000756187 -0.010566517 0.06992623  
## Alcohol\_use 0.131791541 0.51389494 0.1759069399 0.100776482 -0.49109735  
## SatisfiyWrate 1.000000000 0.51055503 0.0287159293 0.003732775 -0.37269127  
## UHC 0.510555035 1.00000000 0.0406653316 -0.076126578 -0.88223017  
## PWE.10 0.028715929 0.04066533 1.0000000000 0.905765545 0.10555282  
## PWE.25 0.003732775 -0.07612658 0.9057655454 1.000000000 0.20555632  
## AmbSt -0.372691267 -0.88223017 0.1055528194 0.205556322 1.00000000  
## UWMortal -0.386150704 -0.80953829 0.0891362778 0.209857381 0.81432738  
## TobacooSt -0.034954981 0.18755596 0.1856371076 0.078533721 -0.25632549  
## HIV 0.100518980 -0.23907093 0.0970350153 0.113928796 0.24770095  
## Tuberculosis -0.029322285 -0.54533145 -0.0626756414 0.080612553 0.56118780  
## Malaria -0.341671146 -0.57606197 -0.0396751761 0.134039252 0.55793673  
## UWMortal TobacooSt HIV Tuberculosis Malaria  
## Class -0.69875340 0.25931470 -0.198777533 -0.51041606 -0.49387548  
## SumP -0.00405348 0.06072181 0.038656833 0.05448006 -0.04476494  
## SumC -0.14346580 0.11552918 0.178319784 -0.11400681 -0.14659434  
## SumT -0.12344804 0.11287314 0.140874906 -0.10463637 -0.10744724  
## D.1M -0.45524777 0.30303309 -0.081259838 -0.35087499 -0.33794181  
## C.1M -0.50460338 0.31542110 -0.276665483 -0.46248296 -0.36767677  
## SumD -0.12974324 0.06510440 0.170811123 -0.06261773 -0.13557523  
## Age\_exp -0.75993475 0.25218850 -0.532600393 -0.67827540 -0.50953900  
## Age\_ht -0.76900372 0.27216710 -0.552860409 -0.67796815 -0.51633836  
## Drate 0.35817483 0.11594466 0.406082200 0.54391917 0.21767340  
## SuicideMortal -0.03503269 0.18367389 0.456299724 0.20425876 -0.26270228  
## RoadMortal 0.59785806 -0.41325599 0.376768678 0.41826814 0.38856259  
## PoisonMortal 0.77193778 -0.22963579 0.470370713 0.50043046 0.41404383  
## HomiMortal 0.08479951 -0.28317113 0.229809436 0.17313780 -0.01908315  
## Alcohol\_use -0.31380691 0.17856422 0.009503083 -0.24169859 -0.07422437  
## SatisfiyWrate -0.38615070 -0.03495498 0.100518980 -0.02932229 -0.34167115  
## UHC -0.80953829 0.18755596 -0.239070933 -0.54533145 -0.57606197  
## PWE.10 0.08913628 0.18563711 0.097035015 -0.06267564 -0.03967518  
## PWE.25 0.20985738 0.07853372 0.113928796 0.08061255 0.13403925  
## AmbSt 0.81432738 -0.25632549 0.247700954 0.56118780 0.55793673  
## UWMortal 1.00000000 -0.37497971 0.255903488 0.42771049 0.63386653  
## TobacooSt -0.37497971 1.00000000 -0.111315621 0.04473059 -0.35108211  
## HIV 0.25590349 -0.11131562 1.000000000 0.52937984 0.09351956  
## Tuberculosis 0.42771049 0.04473059 0.529379837 1.00000000 0.17392906  
## Malaria 0.63386653 -0.35108211 0.093519562 0.17392906 1.00000000

## Kiểm định bartlet và KMO

KMO(datacorr)

## Kaiser-Meyer-Olkin factor adequacy  
## Call: KMO(r = datacorr)  
## Overall MSA = 0.63  
## MSA for each item =   
## Class SumP SumC SumT D.1M   
## 0.79 0.64 0.57 0.72 0.79   
## C.1M SumD Age\_exp Age\_ht Drate   
## 0.89 0.62 0.84 0.89 0.74   
## SuicideMortal RoadMortal PoisonMortal HomiMortal Alcohol\_use   
## 0.18 0.61 0.90 0.42 0.47   
## SatisfiyWrate UHC PWE.10 PWE.25 AmbSt   
## 0.61 0.87 0.16 0.17 0.74   
## UWMortal TobacooSt HIV Tuberculosis Malaria   
## 0.82 0.34 0.38 0.45 0.40

cortest.bartlett(co)

## Warning in cortest.bartlett(co): n not specified, 100 used

## $chisq  
## [1] 2845.532  
##   
## $p.value  
## [1] 0  
##   
## $df  
## [1] 300

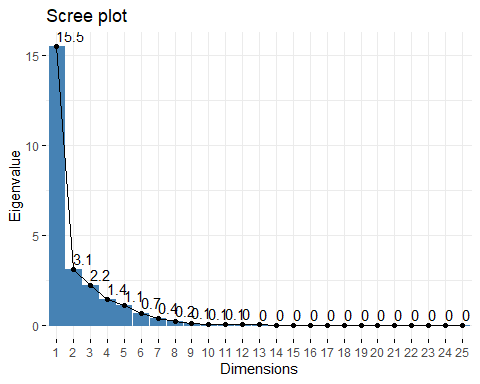
## Xác định các nhân tố ảnh hưởng

### Xác định các nhân tố chính ảnh hưởng theo tiêu chuẩn Kaiser

pca <- prcomp(co, scale = TRUE)  
 eigen(co)

## eigen() decomposition  
## $values  
## [1] 9.266295378 3.107786290 2.165134601 2.120326944 1.559227831 1.404656339  
## [7] 0.951809400 0.663263691 0.618555156 0.522366201 0.470195492 0.418381647  
## [13] 0.330862710 0.279317871 0.236599749 0.220361444 0.191869047 0.154260933  
## [19] 0.098986933 0.087197184 0.066531399 0.033082858 0.020161938 0.010012789  
## [25] 0.002756175  
##   
## $vectors  
## [,1] [,2] [,3] [,4] [,5]  
## [1,] 0.286104731 0.01315895 0.11148952 0.05827007 0.0003620679  
## [2,] 0.009906978 -0.33720072 -0.12619821 -0.17916869 -0.0680767460  
## [3,] 0.101367195 -0.48611376 -0.13671714 -0.09081813 0.1363821491  
## [4,] 0.094174724 -0.47105233 -0.15384219 -0.11771216 0.1257662015  
## [5,] 0.191721218 -0.06682177 0.22342181 0.05554031 0.1445256711  
## [6,] 0.250586071 0.03349309 0.19074604 0.02180806 0.1750465467  
## [7,] 0.080876454 -0.47671246 -0.14958443 -0.07393715 0.0752240435  
## [8,] 0.316036764 0.07051846 -0.08229060 -0.08424511 -0.0426326713  
## [9,] 0.314756048 0.08979499 -0.07265178 -0.07556888 -0.0304447567  
## [10,] -0.231519842 -0.06615475 0.16626595 0.21366729 0.1821706137  
## [11,] -0.005618842 -0.17112278 0.35386709 0.42054911 0.0430387772  
## [12,] -0.246110205 -0.03554637 -0.11905750 0.04124160 -0.1905697815  
## [13,] -0.259850900 -0.07540134 0.14226575 0.06499448 0.0629099181  
## [14,] -0.064735850 -0.06056291 -0.03390889 0.21151071 -0.4371139060  
## [15,] 0.179009015 -0.08378132 0.27694371 0.01437745 0.0460383920  
## [16,] 0.107952842 -0.14496416 -0.07019346 0.13773727 -0.5505011299  
## [17,] 0.302563029 -0.01310367 0.01384298 0.09808177 -0.1814324194  
## [18,] 0.022661810 -0.03879693 0.42850615 -0.45837481 -0.2298000681  
## [19,] -0.025415367 -0.03742344 0.42045269 -0.44697584 -0.2647110490  
## [20,] -0.296258122 -0.03949987 0.01925077 -0.16559085 0.0738232384  
## [21,] -0.271115612 -0.02907990 0.02155808 -0.19575063 0.0613141992  
## [22,] 0.108067536 -0.05045861 0.28981301 0.04571767 0.3378681699  
## [23,] -0.134283549 -0.28729313 0.25030163 0.22176002 -0.1780013066  
## [24,] -0.211749539 -0.13054770 0.15446031 0.16557962 -0.0497042929  
## [25,] -0.188998057 0.04613415 -0.08110186 -0.25351718 0.1270695476  
## [,6] [,7] [,8] [,9] [,10]  
## [1,] -0.07657178 -0.098553459 -0.149273341 0.090899837 0.13333868  
## [2,] 0.27014762 -0.255654557 0.622631890 0.036832509 -0.13087869  
## [3,] -0.07733519 0.099755035 -0.184564845 0.049106164 0.12385070  
## [4,] -0.01205007 -0.085840862 -0.060307802 0.021869423 0.10331857  
## [5,] -0.21828511 0.425344007 0.183018045 -0.037148993 -0.52475341  
## [6,] -0.21094429 -0.124017506 0.067873618 0.046010440 0.28512693  
## [7,] -0.07035604 0.257297869 -0.106530328 0.010884967 -0.01881675  
## [8,] 0.02042369 -0.043469285 -0.001845784 -0.003153289 0.01640928  
## [9,] 0.03815383 -0.046635578 0.024550209 -0.007735827 -0.01025696  
## [10,] 0.24691286 0.120167739 0.054724444 0.044237423 -0.16567355  
## [11,] -0.07775389 -0.215736257 0.197831364 0.347957993 0.08778242  
## [12,] -0.12142834 0.024296627 -0.071513060 -0.025917699 -0.42446611  
## [13,] -0.14386160 -0.248404136 0.092487202 0.234428544 -0.02939408  
## [14,] -0.21198721 0.538028024 0.386224621 -0.080215036 0.40504793  
## [15,] -0.41000351 -0.219394448 0.233963585 -0.402229479 -0.10214823  
## [16,] 0.18347938 -0.304170001 0.013018971 -0.180597527 -0.15852118  
## [17,] -0.01613840 -0.106238147 -0.065621076 0.022316081 -0.07031148  
## [18,] 0.10766079 0.099989221 -0.063040829 0.123863171 -0.07583825  
## [19,] 0.05107854 0.068100221 -0.063957105 0.059846199 0.10867385  
## [20,] 0.04579516 0.007480019 0.124421002 0.058235597 0.04141207  
## [21,] -0.23514657 -0.118667984 0.059093855 0.130681838 0.18105069  
## [22,] 0.46340488 0.115459128 0.081607078 -0.326651426 0.03555107  
## [23,] -0.12610631 -0.063743463 -0.431029196 -0.045771903 -0.13431050  
## [24,] 0.19464438 -0.046178357 -0.127873310 -0.507779533 0.29544088  
## [25,] -0.35569495 -0.167488358 0.047641152 -0.444724526 -0.04776825  
## [,11] [,12] [,13] [,14] [,15]  
## [1,] -0.169344971 -0.29343859 0.117380730 0.08041231 0.149927113  
## [2,] -0.072756640 -0.45584738 0.114645127 0.09656445 0.026373259  
## [3,] 0.017820970 0.14690102 0.035800572 -0.06924543 -0.063664971  
## [4,] -0.029109953 0.06708681 0.135922165 -0.01305148 0.167297490  
## [5,] 0.157729582 -0.12573483 -0.339315268 0.07967978 0.161361297  
## [6,] 0.181913390 0.01963878 0.168809247 -0.06285110 0.669265914  
## [7,] 0.031516015 0.13403573 -0.206374209 -0.07775953 -0.072316816  
## [8,] 0.113282488 0.02703914 -0.003193678 0.03093211 -0.168652046  
## [9,] 0.112473333 0.03550962 -0.007365268 0.03113491 -0.155790674  
## [10,] -0.438762581 0.16423057 -0.022395287 -0.13259991 0.333670252  
## [11,] -0.086712325 0.14541776 0.008881457 -0.34127790 -0.360333610  
## [12,] 0.382542043 0.04239106 0.595219334 -0.30055499 0.105397091  
## [13,] 0.233525795 0.17845316 -0.145404348 0.51631598 0.105461318  
## [14,] -0.080185489 0.05912206 0.183836062 0.18138547 0.003666011  
## [15,] 0.042995467 0.04132018 0.032710824 -0.17072011 -0.197637751  
## [16,] 0.027447579 0.45049159 -0.247020699 0.06973250 0.237981892  
## [17,] -0.090544590 0.01017321 -0.045047656 -0.04421610 0.024689280  
## [18,] 0.005453825 0.01235512 -0.009862504 0.08351137 -0.052238437  
## [19,] -0.100730995 0.07081507 0.055359577 -0.23264450 0.057662706  
## [20,] 0.064023856 -0.02003547 -0.161188144 -0.23217946 0.060358759  
## [21,] 0.284432478 0.09933160 -0.084050431 0.14780539 -0.095150072  
## [22,] 0.158420998 0.30518232 0.360106519 0.29353253 -0.151045809  
## [23,] -0.143308851 -0.33632958 0.176002085 0.35638911 -0.088363368  
## [24,] 0.316566481 -0.32930300 -0.307506756 -0.20726532 0.061514619  
## [25,] -0.470378084 0.15402743 0.041116406 0.09030327 -0.001720624  
## [,16] [,17] [,18] [,19] [,20]  
## [1,] 0.351704390 0.212874805 0.5431870252 -0.3561083356 -0.107190967  
## [2,] 0.062787950 0.123262666 -0.1427302438 -0.0118416017 0.079980955  
## [3,] -0.062294315 0.094525318 -0.0560271538 -0.0004050409 -0.084672395  
## [4,] -0.115883345 -0.518454398 0.4102675923 0.2889538521 0.048926927  
## [5,] 0.263070338 -0.230722594 0.0714434880 0.0907535535 0.062660548  
## [6,] -0.014894656 -0.023051864 -0.4439243980 -0.0445529987 0.007475340  
## [7,] 0.113110470 0.453960801 -0.2070668608 -0.1879516413 -0.005610471  
## [8,] 0.044224150 -0.025864258 -0.0181448180 0.1472316123 -0.140953929  
## [9,] 0.002047863 0.003814028 -0.0058034766 0.1662694949 -0.176777094  
## [10,] -0.230944042 0.189607159 0.1825757345 -0.0317772544 0.084779466  
## [11,] 0.288806847 -0.148672559 -0.1190799831 0.0962610825 0.010648752  
## [12,] 0.140545911 0.131875092 0.0940998964 0.0287471704 -0.077371063  
## [13,] -0.067122997 0.328858201 0.1681166510 0.3488536045 -0.304476017  
## [14,] -0.029539089 -0.032898245 0.0742617714 0.0166832026 -0.103726140  
## [15,] -0.503043396 0.139873540 0.1856224585 -0.1660363728 0.022946620  
## [16,] 0.116765946 -0.133745829 -0.0112963373 -0.2133750431 0.092493662  
## [17,] 0.066594457 0.122441799 0.0482223366 0.0163729573 -0.289189710  
## [18,] -0.233560995 -0.100749572 -0.0534251262 -0.1438442681 -0.056281926  
## [19,] 0.207028222 0.176111033 0.0676541968 0.3307111279 0.104543101  
## [20,] 0.017292833 -0.276428440 0.0034000305 -0.3653340573 -0.698239644  
## [21,] 0.192169849 -0.076046766 0.1529556314 -0.3729936134 0.430853628  
## [22,] 0.191713171 -0.024610799 0.0009593201 -0.1399667148 -0.067193482  
## [23,] -0.063580173 -0.181667323 -0.2885400154 -0.0790055181 -0.042089131  
## [24,] 0.101952543 0.075660143 0.0855127740 0.2064319411 -0.007989369  
## [25,] 0.389926182 -0.037654756 -0.1387165716 0.1309079812 -0.119720811  
## [,21] [,22] [,23] [,24] [,25]  
## [1,] -0.236501443 0.0365625240 0.007354938 0.144426287 -0.013742135  
## [2,] 0.039839459 0.0696414768 0.006632439 -0.014552256 0.006946174  
## [3,] 0.054462601 0.6888706847 0.300870094 0.127517887 -0.026228216  
## [4,] 0.024555210 -0.3125495690 -0.081775900 -0.013644339 -0.004396399  
## [5,] 0.006560430 0.1194742024 0.056120267 -0.025887948 -0.005377776  
## [6,] 0.005244989 -0.0198499200 -0.072270982 0.035465909 0.008811430  
## [7,] -0.108402846 -0.4706503012 -0.214903602 -0.017862240 0.005536307  
## [8,] -0.061233493 0.1702575396 -0.403477677 -0.012987431 0.770518209  
## [9,] 0.009376444 0.1952783555 -0.587818871 0.063834594 -0.624956180  
## [10,] 0.168574039 0.1989231652 -0.411330631 0.045458691 0.093613691  
## [11,] -0.049591475 -0.0513850512 -0.015437258 0.191769120 -0.001702676  
## [12,] 0.032403182 -0.0004471959 -0.075399419 0.143985934 0.023219757  
## [13,] -0.076891304 -0.0297540025 0.053074371 0.033654261 0.017342125  
## [14,] 0.031334662 0.0199589546 -0.058466445 0.033287730 0.007556155  
## [15,] -0.087537576 -0.0120744837 0.024265740 -0.149352814 0.003244031  
## [16,] -0.186251175 0.0913434527 0.030083254 -0.008648212 -0.017982978  
## [17,] 0.813406845 -0.1457340832 0.158700056 -0.131632282 0.018196278  
## [18,] 0.091464333 -0.1148629348 0.005691466 0.616741084 0.037864205  
## [19,] -0.099913377 0.0741471798 0.023898010 -0.482322074 -0.038369129  
## [20,] -0.075551269 0.0369116566 -0.070683108 -0.238446019 0.001874255  
## [21,] 0.375904581 0.1319217380 -0.265546618 -0.105222107 0.022108912  
## [22,] 0.043885890 -0.0589295698 0.080309667 -0.111903793 -0.010760893  
## [23,] -0.013489486 0.0570526643 -0.204382316 -0.238845890 -0.002733974  
## [24,] 0.102169085 0.0295035359 -0.071827925 0.222944272 0.025273545  
## [25,] 0.050406430 -0.0020717146 -0.047788559 0.232943672 0.012697950

### Minh họa



\*\* Xác định các nhân tố chính rút ra Trong phân tích EFA, căn cứ để xác định các nhân tố chính được rút ra là sử dụng giá trị của Eigenvalue. Theo tiêu chuẩn của Kaiser thì số lượng nhân tố chính được rút ra phải có > 50% (3)

pc2 <- principal(co, nfactors = 3, rotate = "varimax")  
 print.psych(pc2, cut = 0.1, sort = TRUE)

## Principal Components Analysis  
## Call: principal(r = co, nfactors = 5, rotate = "varimax")  
## Standardized loadings (pattern matrix) based upon correlation matrix  
## item RC1 RC2 RC3 RC4 RC5 h2 u2 com  
## UHC 17 0.93 0.11 0.19 0.92 0.079 1.1  
## AmbSt 20 -0.92 0.15 0.89 0.114 1.1  
## Age\_ht 9 0.91 -0.38 0.97 0.032 1.4  
## Age\_exp 8 0.90 -0.38 0.97 0.026 1.4  
## Class 1 0.88 0.79 0.207 1.0  
## UWMortal 21 -0.85 0.19 0.77 0.228 1.1  
## C.1M 6 0.78 -0.32 0.71 0.287 1.4  
## PoisonMortal 13 -0.73 0.39 0.70 0.298 1.6  
## RoadMortal 12 -0.73 0.33 0.66 0.344 1.5  
## Malaria 25 -0.64 -0.23 0.11 -0.18 0.51 0.487 1.5  
## Drate 10 -0.61 -0.12 0.54 -0.12 -0.13 0.72 0.281 2.3  
## D.1M 5 0.61 0.11 0.21 0.11 -0.25 0.50 0.498 1.8  
## Alcohol\_use 15 0.58 0.11 0.24 0.24 -0.17 0.49 0.511 2.0  
## Tuberculosis 24 -0.56 0.50 0.13 0.58 0.418 2.1  
## SumC 3 0.17 0.94 0.92 0.083 1.1  
## SumT 4 0.14 0.92 0.88 0.123 1.1  
## SumD 7 0.12 0.90 0.84 0.164 1.1  
## SumP 2 0.65 0.12 0.12 0.46 0.536 1.2  
## SuicideMortal 11 0.14 0.85 0.74 0.260 1.1  
## HIV 23 -0.31 0.20 0.70 0.13 0.28 0.71 0.287 2.0  
## PWE.10 18 0.96 0.93 0.065 1.0  
## PWE.25 19 0.96 0.93 0.074 1.0  
## SatisfiyWrate 16 0.36 0.19 0.72 0.70 0.303 1.7  
## HomiMortal 14 -0.12 0.21 0.62 0.45 0.555 1.3  
## TobacooSt 22 0.36 0.32 -0.49 0.48 0.520 2.7  
##   
## RC1 RC2 RC3 RC4 RC5  
## SS loadings 8.82 3.13 2.52 2.08 1.68  
## Proportion Var 0.35 0.13 0.10 0.08 0.07  
## Cumulative Var 0.35 0.48 0.58 0.66 0.73  
## Proportion Explained 0.48 0.17 0.14 0.11 0.09  
## Cumulative Proportion 0.48 0.66 0.79 0.91 1.00  
##   
## Mean item complexity = 1.5  
## Test of the hypothesis that 5 components are sufficient.  
##   
## The root mean square of the residuals (RMSR) is 0.06   
##   
## Fit based upon off diagonal values = 0.97

### Kiểm định hệ số Chronback Alpha

**Cho biến RC1**

psych::alpha(datacorr[, c(17,09,08,01,06])

## Number of categories should be increased in order to count frequencies.

## Warning in rbind(items, dummy): number of columns of result is not a multiple of  
## vector length (arg 1)

##   
## Reliability analysis

## Call: psych::alpha(x = datacorr[, c(8, 9, 17, 1, 6)])

## raw\_alpha std.alpha G6(smc) average\_r S/N ase mean sd median\_r

## 0.00036 0.95 0.96 0.79 19 2.9e-05 26248 28405 0.79

## 95% confidence boundaries

## lower alpha upper

## Feldt -0.27 0 0.22

## Duhachek 0.00 0 0.00

## Reliability if an item is dropped:

## raw\_alpha std.alpha G6(smc) average\_r S/N alpha se var.r med.r

## Age\_exp 0.00029 0.93 0.92 0.76 13 2.4e-05 0.0074 0.76

## Age\_ht 0.00030 0.93 0.92 0.76 13 2.5e-05 0.0075 0.77

## UHC 0.00019 0.93 0.94 0.78 14 1.5e-05 0.0139 0.76

## Class 0.00037 0.94 0.94 0.79 15 3.0e-05 0.0197 0.77

## C.1M 0.80103 0.96 0.97 0.86 24 9.3e-03 0.0058 0.85

## Item statistics

## n raw.r std.r r.cor r.drop mean sd

## Age\_exp 162 0.68 0.95 0.97 0.68 7.3e+01 7.3e+00

## Age\_ht 162 0.68 0.95 0.97 0.68 6.4e+01 6.3e+00

## UHC 162 0.66 0.93 0.91 0.66 6.5e+01 1.6e+01

## Class 162 0.74 0.91 0.88 0.74 2.8e+00 1.0e+00

## C.1M 162 1.00 0.82 0.74 0.69 1.3e+05 1.4e+05

## Non missing response frequency for each item

## 1 2 3 4 miss

## [1,] 1 0 0 0 0.99

**Nhận xét**:

Nhân tố RC1 ảnh hưởng bởi 4 biến Q8,Q9, Q17, Q1, Q6. Các biến này đều liên quan tuổi và và thu nhập -> có thể đặt tên cho nhân tố này là “ CHẤT LƯỢNG SỐNG “

**Cho biến RC2**

psych::alpha(datacorr[, c(03,04,07,02)])

## Number of categories should be increased in order to count frequencies.

##   
## Reliability analysis

## Call: psych::alpha(x = datacorr[, c(3, 7, 4, 2)])

## raw\_alpha std.alpha G6(smc) average\_r S/N ase mean sd median\_r

0.15 0.88 0.91 0.66 7.6 0.0054 9522043 3.1e+07 0.65

## 95% confidence boundaries

lower alpha upper

## Feldt -0.08 0.15 0.35

## Duhachek 0.14 0.15 0.16

## Reliability if an item is dropped:

## raw\_alpha std.alpha G6(smc) average\_r S/N alpha se var.r med.r

## SumC 0.0043 0.80 0.77 0.57 4.0 0.00031 0.0318 0.53

## SumD 0.1701 0.82 0.84 0.61 4.7 0.00602 0.0608 0.53

## SumT 0.0577 0.81 0.83 0.58 4.2 0.00409 0.0852 0.41

## SumP 0.1701 0.95 0.95 0.86 18.0 0.00615 0.0066 0.89

## Item statistics

## n raw.r std.r r.cor r.drop mean sd

## SumC 162 0.90 0.93 0.96 0.89 2.8e+06 8.4e+06

## SumD 162 0.78 0.90 0.90 0.78 3.5e+04 1.1e+05

## SumT 162 1.00 0.92 0.92 0.89 3.5e+07 1.2e+08

## SumP 162 0.53 0.68 0.51 0.53 4.4e+04 1.6e+05

**Nhận xét**:

Nhân tố RC2 ảnh hưởng bởi 4 biến Q3 ,Q4 , Q7, Q2 Các biến này đều liên quan số lượng dân sống/chết do ảnh hưởng của dịch bệnh COVID -> có thể đặt tên cho nhân tố này là “ Ảnh hưởng do Covid19 “

**Cho biến RC3**

Reliability analysis

Call: psych::alpha(x = datacorr[, c(18, 19, 11, 22)])

raw\_alpha std.alpha G6(smc) average\_r S/N ase mean sd median\_r

0.36 0.5 0.67 0.2 1 0.079 10 4.5 0.13

95% confidence boundaries

lower alpha upper

Feldt 0.19 0.36 0.51

Duhachek 0.21 0.36 0.52

Reliability if an item is dropped:

raw\_alpha std.alpha G6(smc) average\_r S/N alpha se var.r med.r

PWE.10 0.23 0.19 0.15 0.071 0.23 0.086 0.013 0.079

PWE.25 0.25 0.22 0.20 0.087 0.29 0.099 0.029 0.184

SuicideMortal 0.46 0.66 0.76 0.390 1.92 0.070 0.202 0.186

TobacooSt 0.23 0.50 0.71 0.250 1.00 0.109 0.323 -0.048

Item statistics

n raw.r std.r r.cor r.drop mean sd

PWE.10 162 0.64 0.78 0.881 0.249 8.7 8.0

PWE.25 162 0.58 0.77 0.855 0.462 2.1 2.9

SuicideMortal 162 0.50 0.41 0.053 0.051 9.6 8.2

TobacooSt 162 0.72 0.57 0.281 0.251 21.5 9.9

Tương tự giải thích cho nhân tố 3, có thể đặt tên là “Đầu tư chất lượng sống”