Practica - Recodificacion variables

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Activar el directorio de trabajo:

getwd()

## [1] "D:/Beatriz/Ciclo II 2023/Analisis Estadistico con el Paquete R/PracticaRecodificacionVariables"

setwd("D:/Beatriz/Ciclo II 2023/Analisis Estadistico con el Paquete R/PracticaRecodificacionVariables")

Recupera desde el archivo la hoja de datos

library(readxl)  
  
Densidad\_Poblacional = read\_excel("Densidad\_Poblacional.xlsx",   
 sheet = "Municipios",skip=8)  
  
  
Densidad\_Poblacional

## # A tibble: 277 × 6  
## MUNICIPIO AREA `POBLACION TOTAL` HOMBRES MUJERES `DENSIDAD POBLACIONAL`  
## <chr> <dbl> <dbl> <dbl> <dbl> <dbl>  
## 1 01-AHUACHAPÁN 1240. 319503 155159 164344 258.  
## 2 Ahuachapán 245. 110511 52808 57703 451.  
## 3 Apaneca 45.1 8383 4088 4295 186.  
## 4 Atiquizaya 66.6 33587 16238 17349 504.  
## 5 Concepción d… 61.0 12786 6276 6510 210.  
## 6 El Refugio 11.0 8171 3896 4275 742.  
## 7 Guaymango 60.2 19037 9487 9550 316.  
## 8 Jujutla 264. 28599 13981 14618 108.  
## 9 San Francisc… 226. 42607 20769 21838 188.  
## 10 San Lorenzo 48.3 9194 4657 4537 190.  
## # ℹ 267 more rows

Cargar el paquete car:

library(carData)  
library(car)

Recodificar variable:

Densidad\_Poblacional$MUNIC = recode(Densidad\_Poblacional$MUNICIPIO,  
 "1:13='Ahuachapan';14:27='Santa Ana';  
 28:44='Sonsonate';45:78='Chalatenango';  
 79:101='La Libertad';102:121='San Sanvador';  
 122:138='Cuscatlan';139:161='La Paz';  
 162:171='Caba~nas';172:185='San Vicente';  
 186:197='Usulutan';198:218='San Miguel';  
 219:245='Morazan';246:264='La Unión'")  
  
names(Densidad\_Poblacional)

## [1] "MUNICIPIO" "AREA" "POBLACION TOTAL"   
## [4] "HOMBRES" "MUJERES" "DENSIDAD POBLACIONAL"  
## [7] "MUNIC"

Cambio de nombre a la tercera columna:

names(Densidad\_Poblacional)[3]<-'Pob\_Total'  
print(head(Densidad\_Poblacional))

## # A tibble: 6 × 7  
## MUNICIPIO AREA Pob\_Total HOMBRES MUJERES `DENSIDAD POBLACIONAL` MUNIC  
## <chr> <dbl> <dbl> <dbl> <dbl> <dbl> <chr>  
## 1 01-AHUACHAPÁN 1240. 319503 155159 164344 258. 01-A…  
## 2 Ahuachapán 245. 110511 52808 57703 451. Ahua…  
## 3 Apaneca 45.1 8383 4088 4295 186. Apan…  
## 4 Atiquizaya 66.6 33587 16238 17349 504. Atiq…  
## 5 Concepción de A… 61.0 12786 6276 6510 210. Conc…  
## 6 El Refugio 11.0 8171 3896 4275 742. El R…

Ahora se pasa a factor la variable “MUNIC” :

Densidad\_Poblacional$MUNIC = as.factor(Densidad\_Poblacional$MUNIC)  
levels(Densidad\_Poblacional$MUNIC)

## [1] "01-AHUACHAPÁN"   
## [2] "02-SANTA ANA"   
## [3] "03-SONSONATE"   
## [4] "04-CHALATENANGO"   
## [5] "05-LA LIBERTAD"   
## [6] "06-SAN SALVADOR"   
## [7] "07-CUSCATLÁN"   
## [8] "08-LA PAZ"   
## [9] "09-CABAÑAS"   
## [10] "Acajutla"   
## [11] "Agua Caliente"   
## [12] "Aguilares"   
## [13] "Ahuachapan"   
## [14] "Ahuachapán"   
## [15] "Alegría"   
## [16] "Anamoros"   
## [17] "Antiguo Cuscatlán"   
## [18] "Apaneca"   
## [19] "Apastepeque"   
## [20] "Apopa"   
## [21] "Arambala"   
## [22] "Arcatao"   
## [23] "Armenia"   
## [24] "Atiquizaya"   
## [25] "Ayutuxtepeque"   
## [26] "Azacualpa"   
## [27] "Berlín"   
## [28] "Bolívar"   
## [29] "Cacaopera"   
## [30] "California"   
## [31] "Caluco"   
## [32] "Cancasque"   
## [33] "Candelaria"   
## [34] "Candelaria de la Frontera"   
## [35] "Carolina"   
## [36] "Chalatenango"   
## [37] "Chalchuapa"   
## [38] "Chapeltique"   
## [39] "Chilanga"   
## [40] "Chiltiupán"   
## [41] "Chinameca"   
## [42] "Chirilagua"   
## [43] "Cinquera"   
## [44] "Citalá"   
## [45] "Ciudad Arce"   
## [46] "Ciudad Barrios"   
## [47] "Coatepeque"   
## [48] "Cojutepeque"   
## [49] "Colón"   
## [50] "Comacarán"   
## [51] "Comalapa"   
## [52] "Comasagua"   
## [53] "Concepción Batres"   
## [54] "Concepción de Ataco"   
## [55] "Concepción de Oriente"   
## [56] "Concepción Quezaltepeque"   
## [57] "Conchagua"   
## [58] "Corinto"   
## [59] "Cuisnahuat"   
## [60] "Cuscatancingo"   
## [61] "Cuscatlan"   
## [62] "Cuyultitán"   
## [63] "Delgado"   
## [64] "Delicias de Concepción"   
## [65] "Dolores"   
## [66] "Dulce Nombre de Maria"   
## [67] "El Carmen"   
## [68] "El Carrizal"   
## [69] "El Congo"   
## [70] "El Divisadero"   
## [71] "El Paisnal"   
## [72] "El Paraíso"   
## [73] "El Porvenir"   
## [74] "El Refugio"   
## [75] "El Rosario"   
## [76] "El Sauce"   
## [77] "El Transito"   
## [78] "El Triunfo"   
## [79] "Ereguayquin"   
## [80] "Estanzuelas"   
## [81] "FUENTE: DIGESTYC - VI CENSO DE POBLACIÓN Y V DE VIVIENDA"  
## [82] "Guacotecti"   
## [83] "Guadalupe"   
## [84] "Gualococti"   
## [85] "Guatajiagua"   
## [86] "Guaymango"   
## [87] "Guazapa"   
## [88] "Huizucar"   
## [89] "Ilobasco"   
## [90] "Ilopango"   
## [91] "Intipucá"   
## [92] "Izalco"   
## [93] "Jayaque"   
## [94] "Jerusalen"   
## [95] "Jicalápa"   
## [96] "Jiquilisco"   
## [97] "Joateca"   
## [98] "Jocoaitique"   
## [99] "Jocoro"   
## [100] "Juayúa"   
## [101] "Jucuapa"   
## [102] "Jucuarán"   
## [103] "Jujutla"   
## [104] "Jutiapa"   
## [105] "La Laguna"   
## [106] "La Libertad"   
## [107] "La Palma"   
## [108] "La Reina"   
## [109] "La Unión"   
## [110] "Las Flores"   
## [111] "Las Vueltas"   
## [112] "Lislique"   
## [113] "Lolotique"   
## [114] "Lolotiquillo"   
## [115] "Masahuat"   
## [116] "Meanguera"   
## [117] "Meanguera del Golfo"   
## [118] "Mejicanos"   
## [119] "Mercedes la Ceiba"   
## [120] "Mercedes Umaña"   
## [121] "Metapán"   
## [122] "Moncagua"   
## [123] "Monte San Juán"   
## [124] "Nahuizalco"   
## [125] "Nahulingo"   
## [126] "Nejapa"   
## [127] "Nombre de Jesús"   
## [128] "Nueva Concepción"   
## [129] "Nueva Esparta"   
## [130] "Nueva Granada"   
## [131] "Nueva Guadalupe"   
## [132] "Nueva Trinidad"   
## [133] "Nuevo Cuscatlán"   
## [134] "Nuevo Edén de San Juan"   
## [135] "Ojos de Agua"   
## [136] "Olocuilta"   
## [137] "Oratorio de Concepción"   
## [138] "Osicala"   
## [139] "Ozatlán"   
## [140] "Panchimalco"   
## [141] "Paraíso de Osorio"   
## [142] "Pasaquina"   
## [143] "Perquín"   
## [144] "Polorós"   
## [145] "Potonico"   
## [146] "Puerto El Triunfo"   
## [147] "Quelepa"   
## [148] "Quezaltepeque"   
## [149] "Rosario de Mora"   
## [150] "Sacacoyo"   
## [151] "Salcoatitán"   
## [152] "San Agustín"   
## [153] "San Alejo"   
## [154] "San Antonio"   
## [155] "San Antonio de la Cruz"   
## [156] "San Antonio del Monte"   
## [157] "San Antonio los Ranchos"   
## [158] "San Antonio Masahuat"   
## [159] "San Antonio Pajonal"   
## [160] "San Bartolomé Perulapía"   
## [161] "San Buena Ventura"   
## [162] "San Carlos"   
## [163] "San Cayetano Istepeque"   
## [164] "San Cristóbal"   
## [165] "San Dionisio"   
## [166] "San Emigdio"   
## [167] "San Esteban Catarina"   
## [168] "San Fernando"   
## [169] "San Francisco Chinameca"   
## [170] "San Francisco Gotera"   
## [171] "San Francisco Javier"   
## [172] "San Francisco Lempa"   
## [173] "San Francisco Menéndez"   
## [174] "San Francisco Morazán"   
## [175] "San Gerardo"   
## [176] "San Ignacio"   
## [177] "San Ildefonso"   
## [178] "San Isidro"   
## [179] "San Isidro Labrador"   
## [180] "San Jorge"   
## [181] "San José"   
## [182] "San José Guayabal"   
## [183] "San José Villanueva"   
## [184] "San Juan Nonualco"   
## [185] "San Juán Opico"   
## [186] "San Juan Talpa"   
## [187] "San Juan Tepezontes"   
## [188] "San Julián"   
## [189] "San Lorenzo"   
## [190] "San Luís de La Reina"   
## [191] "San Luís del Carmen"   
## [192] "San Luís La Herradura"   
## [193] "San Luís Talpa"   
## [194] "San Marcos"   
## [195] "San Martín"   
## [196] "San Matías"   
## [197] "San Miguel"   
## [198] "San Miguel de Mercedes"   
## [199] "San Miguel Tepezontes"   
## [200] "San Pablo Tacachico"   
## [201] "San Pedro Masahuat"   
## [202] "San Pedro Nonualco"   
## [203] "San Pedro Perulapán"   
## [204] "San Pedro Puxtla"   
## [205] "San Rafael"   
## [206] "San Rafael Cedros"   
## [207] "San Rafael Obrajuelo"   
## [208] "San Rafael Oriente"   
## [209] "San Ramón"   
## [210] "San Salvador"   
## [211] "San Sebastián"   
## [212] "San Sebastián Salitrillo"   
## [213] "San Simón"   
## [214] "San Vicente"   
## [215] "Santa Ana"   
## [216] "Santa Catarina Masahuat"   
## [217] "Santa Clara"   
## [218] "Santa Cruz Analquito"   
## [219] "Santa Cruz Michapa"   
## [220] "Santa Elena"   
## [221] "Santa Isabel Ishuatán"   
## [222] "Santa Maria"   
## [223] "Santa Maria Ostuma"   
## [224] "Santa Rita"   
## [225] "Santa Rosa de Lima"   
## [226] "Santa Rosa Guachipilín"   
## [227] "Santa Tecla"   
## [228] "Santiago de la Frontera"   
## [229] "Santiago de Maria"   
## [230] "Santiago Nonualco"   
## [231] "Santiago Texacuangos"   
## [232] "Santo Domingo"   
## [233] "Santo Domingo de Guzmán"   
## [234] "Santo Tomas"   
## [235] "Sensembra"   
## [236] "Sensuntepeque"   
## [237] "Sesori"   
## [238] "Sociedad"   
## [239] "Sonsonate"   
## [240] "Sonzacate"   
## [241] "Soyapango"   
## [242] "Suchitoto"   
## [243] "Tacuba"   
## [244] "Talnique"   
## [245] "Tamanique"   
## [246] "Tapalhuaca"   
## [247] "Tecapán"   
## [248] "Tecoluca"   
## [249] "Tejutepeque"   
## [250] "Tejutla"   
## [251] "Tenancingo"   
## [252] "Teotepeque"   
## [253] "Tepecoyo"   
## [254] "Tepetitán"   
## [255] "Texistepeque"   
## [256] "Tonacatepeque"   
## [257] "Torola"   
## [258] "Turín"   
## [259] "Uluazapa"   
## [260] "Usulután"   
## [261] "Verapaz"   
## [262] "Victoria"   
## [263] "Yamabal"   
## [264] "Yayantique"   
## [265] "Yoloaiquín"   
## [266] "Yucuaiquín"   
## [267] "Zacatecoluca"   
## [268] "Zaragoza"

## CALCULO DE NUEVAS VARIABLES

Ahora se calculará la densidad poblacional de cada uno de los municipios, para esto se creará la nueva variable llamada Densidad:

Densidad\_Poblacional$Densidad=Densidad\_Poblacional$Pob\_Total/  
+ Densidad\_Poblacional$AREA  
Densidad\_Poblacional$Densidad

## [1] 257.74685 451.36007 185.75227 504.00660 209.50352 742.14351  
## [7] 316.07173 108.35007 188.41817 190.23381 189.03210 199.07988  
## [13] 430.27260 258.82897 248.94107 446.65782 289.85416 264.89117  
## [19] 156.74029 47.63442 88.28176 63.15485 438.70510 613.47582  
## [25] 128.35199 117.50339 100.14528 358.10960 314.29858 531.87081  
## [31] 177.69784 173.57250 403.40534 237.38599 1430.09907 294.09938  
## [37] 294.68028 1071.36599 228.41744 325.87322 107.51706 252.68625  
## [43] 307.66353 2976.78571 95.60146 42.20394 44.06881 113.48651  
## [49] 49.43535 222.08649 52.46976 106.16584 122.89684 93.46780  
## [55] 97.31438 201.05485 151.93648 90.22861 71.34831 60.37376  
## [61] 25.52267 110.90774 111.16937 36.11051 107.47362 42.03552  
## [67] 74.01198 144.42462 58.89166 78.29246 40.33138 124.52639  
## [73] 91.84975 55.04458 126.82305 179.76391 112.62702 126.60960  
## [79] 399.69750 1736.11540 112.73536 695.18211 1153.94408 158.16123  
## [85] 326.30273 232.65306 119.17074 222.20370 133.63689 419.86760  
## [91] 487.66852 417.46617 339.27103 139.23472 157.29070 1086.52406  
## [97] 139.80352 455.72005 112.33701 234.24926 991.85381 1768.49969  
## [103] 630.69395 2532.52315 4127.22949 12296.29630 3596.64871 115.95346  
## [109] 359.87431 2999.19145 6363.06510 353.38292 458.59731 290.00765  
## [115] 4297.00884 1302.97278 4374.94810 636.56619 1042.10526 8122.57739  
## [121] 1345.61066 306.11354 274.70732 1600.85905 2187.70492 296.97396  
## [127] 384.07213 147.12171 654.58976 456.42151 217.59476 494.36340  
## [133] 583.95484 400.50923 218.88230 411.80580 75.26418 176.93712  
## [139] 251.78529 649.24506 1581.90386 56.31025 98.00000 329.27074  
## [145] 378.22469 147.69337 284.35923 182.21510 289.28751 189.17526  
## [151] 202.56696 195.46891 328.60825 109.94810 209.62188 335.94771  
## [157] 891.91644 248.34163 328.26105 266.17750 204.87395 135.31912  
## [163] 42.50942 42.58303 264.15992 246.34547 98.09297 99.52764  
## [169] 131.66193 140.81552 85.92038 136.52219 152.14001 255.04417  
## [175] 300.00000 302.56547 126.13618 48.65017 878.18403 199.11319  
## [181] 68.45406 47.26113 83.93817 283.45043 257.38379 161.57930  
## [187] 289.82925 121.03293 107.66079 102.45275 174.36414 218.45769  
## [193] 125.67963 111.12817 510.71725 56.00567 213.15532 83.03800  
## [199] 247.76981 98.31634 63.01237 169.32999 43.01870 119.35128  
## [205] 315.76839 901.76471 482.65712 158.96324 522.81932 208.94661  
## [211] 155.70673 103.60212 288.47944 96.58772 364.25950 92.40324  
## [217] 420.01372 157.92483 220.09713 390.39895 63.89989 182.30527  
## [223] 313.66056 72.25978 241.64899 33.51766 367.70598 295.20213  
## [229] 52.65617 92.00988 120.49356 15.94431 80.62330 282.55170  
## [235] 162.22760 251.03858 124.13625 70.03138 196.02578 165.62103  
## [241] 63.52799 55.48698 158.27565 217.28559 165.46032 189.35175  
## [247] 28.96982 112.93990 63.42369 352.22557 243.61425 258.09913  
## [253] 133.51499 96.39959 52.21421 51.68887 267.43153 114.83990  
## [259] 134.73148 81.70188 118.93267 186.21411 116.94819 44.61864  
## [265] 80.08255 235.71973 135.44829 95.42380 111.85005 55.46523  
## [271] 76.62717 69.93324 65.78831 215.40915 164.14238 123.21493  
## [277] NA

Ahora se calculará el indice de masculinidad en cada uno de los municipios, el cual se define como el numero de hombres entre el numero de mujeres (multilicada por 100 para mejores interpretaciones).

Para esto se creará la nueva variable llamada IND.MASCULINIDAD:

Densidad\_Poblacional$IND.MASCULINIDAD=Densidad\_Poblacional$HOMBRES/  
+ Densidad\_Poblacional$MUJERES\*100  
  
Densidad\_Poblacional$IND.MASCULINIDAD

## [1] 94.41111 91.51691 95.18044 93.59617 96.40553 91.13450 99.34031  
## [8] 95.64236 95.10486 102.64492 99.66607 98.49754 90.05070 92.03589  
## [15] 94.56261 92.29151 95.25251 90.23643 98.45709 95.56196 89.27918  
## [22] 96.11244 88.77478 91.95110 89.17882 93.73602 93.67841 93.62352  
## [29] 95.38398 92.73490 105.83333 101.84713 94.20072 93.73614 93.34646  
## [36] 96.36192 95.64752 87.65346 98.74241 96.41326 99.94143 92.91769  
## [43] 91.16342 87.10715 91.61341 86.01666 101.64271 93.85666 102.42775  
## [50] 93.70657 89.27273 86.55044 89.46596 88.89304 87.80488 93.73498  
## [57] 95.66085 89.57236 89.66547 104.52196 93.01848 89.51817 89.14365  
## [64] 105.27607 81.17589 91.54589 97.23404 95.76784 96.29069 97.70642  
## [71] 102.84679 89.00351 92.14233 94.85050 98.80096 88.00705 92.81572  
## [78] 93.21312 90.61705 82.92259 101.31166 93.06040 89.40205 101.05014  
## [85] 94.50047 95.75146 98.83405 93.55307 90.68289 89.85502 94.45059  
## [92] 94.13699 91.78931 95.30040 95.11401 84.35156 97.18108 98.62150  
## [99] 96.99392 95.20240 90.22887 86.93137 86.17701 87.24648 96.83566  
## [106] 86.42260 88.09759 94.87076 94.28329 85.01853 84.61084 94.21150  
## [113] 93.68164 95.11233 88.16683 87.96631 83.90905 92.79547 92.10187  
## [120] 85.45353 88.90228 92.28469 93.18399 88.13566 92.54076 90.26150  
## [127] 91.49653 96.80968 93.79509 94.75410 99.05822 93.04303 88.35798  
## [134] 90.95599 98.54071 89.97744 97.19946 99.11920 92.44492 93.49256  
## [141] 91.59817 93.66993 104.16667 91.47322 98.32727 96.04052 94.47895  
## [148] 96.67199 90.02313 89.50086 98.14410 95.95698 91.78022 93.97177  
## [155] 93.35866 95.27227 85.91443 100.06680 92.59778 95.73484 90.89406  
## [162] 88.72880 104.31755 93.32927 87.62677 89.06375 90.45415 93.59325  
## [169] 86.41154 88.40042 87.52413 92.53079 94.17743 90.15598 89.77315  
## [176] 93.07640 91.38650 90.10989 92.71196 92.27823 98.33148 86.64929  
## [183] 93.70085 86.01434 98.25729 90.52192 93.65079 96.80239 89.06475  
## [190] 88.77883 90.01098 87.46936 89.66968 92.32070 93.73884 97.26672  
## [197] 93.66864 90.75781 89.47769 93.30924 94.27720 93.60918 91.36997  
## [204] 94.35861 88.31578 84.15995 87.83282 90.47266 86.53051 86.80615  
## [211] 89.94929 86.37943 89.50990 90.88738 98.55188 92.94331 87.77994  
## [218] 91.74701 88.90371 87.78996 90.28302 90.18318 93.93053 78.42027  
## [225] 88.79453 85.79433 83.94280 85.45911 90.14210 85.65097 89.66864  
## [232] 90.08351 91.91512 83.50359 89.03337 90.54054 88.30655 96.04685  
## [239] 98.15418 88.28916 93.29660 95.18318 86.50352 85.12241 91.42997  
## [246] 90.60762 84.67836 90.15497 89.77778 89.03458 90.87815 93.82195  
## [253] 84.09518 91.15133 102.39521 90.36356 83.68073 87.67588 86.55128  
## [260] 85.03073 79.28540 93.17512 91.24767 83.51556 92.59354 89.64461  
## [267] 89.45506 88.22606 85.86307 85.78398 80.55090 85.67208 89.11521  
## [274] 86.50997 85.25209 81.79144 NA

print(head(Densidad\_Poblacional))

## # A tibble: 6 × 9  
## MUNICIPIO AREA Pob\_Total HOMBRES MUJERES `DENSIDAD POBLACIONAL` MUNIC  
## <chr> <dbl> <dbl> <dbl> <dbl> <dbl> <fct>  
## 1 01-AHUACHAPÁN 1240. 319503 155159 164344 258. 01-A…  
## 2 Ahuachapán 245. 110511 52808 57703 451. Ahua…  
## 3 Apaneca 45.1 8383 4088 4295 186. Apan…  
## 4 Atiquizaya 66.6 33587 16238 17349 504. Atiq…  
## 5 Concepción de A… 61.0 12786 6276 6510 210. Conc…  
## 6 El Refugio 11.0 8171 3896 4275 742. El R…  
## # ℹ 2 more variables: Densidad <dbl>, IND.MASCULINIDAD <dbl>