

Datos climaticos por unidades

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Objetivo del reporte

Se busca encontrar algún patrón en los datos faltantes para las variables indicadoras de sequía en los datos a nivel de unidades administrativas y de delimitación de cuenca. Se utilizan datos a mensuales de 1979 a 2019, por lo que, cada unidad debería tener $12 * 41 = 492$ observaciones.

Resumen por indicador y unidad

```
tapply(resumen$por.sin.obs.spei_1, resumen$unit, summary)
```

```
## $comunas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   1.829  1.829   1.829   2.880   2.642   29.472
##
## $cuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   1.829  1.829   2.033   4.644   5.488   36.789
##
## $distrito_censal
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   1.829  1.829   1.829   2.235   2.236   28.455
##
## $provincias
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   1.829  1.829   2.846   5.436   4.167   38.211
##
## $regiones
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   1.829  1.829   4.573  10.518  10.976   42.480
##
## $subcuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   1.829  1.829   1.829   3.265   2.439  100.000
##
## $subsubcuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   1.829  1.829   1.829   2.372   1.829  100.000
```

```
tapply(resumen$por.sin.obs.spei_3, resumen$unit, summary)
```

```
## $comunas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.236  2.236   2.236   2.699   2.236   22.561
```

```

##
## $cuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.236  2.236  2.236   3.776   3.303  20.122
##
## $distrito_censal
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.236  2.236  2.236   2.389   2.236  15.244
##
## $provincias
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.236  2.236  2.236   4.021   2.642  30.488
##
## $regiones
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.236  2.236  2.337   6.618   5.589  32.927
##
## $subcuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.236  2.236  2.236   3.274   2.439  100.000
##
## $subsubcuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.236  2.236  2.236   2.609   2.236  100.000

```

```

tapply(resumen$por.sin.obs.spei_6, resumen$unit, summary)

```

```

## $comunas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.846  2.846  2.846   3.148   2.846  18.089
##
## $cuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.846  2.846  2.846   3.888   3.455  15.447
##
## $distrito_censal
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.846  2.846  2.846   2.935   2.846  13.821
##
## $provincias
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.846  2.846  2.846   4.047   3.252  25.407
##
## $regiones
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.846  3.049  3.150   6.009   4.624  27.033
##
## $subcuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.846  2.846  2.846   3.706   2.846  100.000
##
## $subsubcuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.846  2.846  2.846   3.149   2.846  100.000

```

```
tapply(resumen$por.sin.obs.spei_12, resumen$unit, summary)
```

```
## $comunas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   4.065  4.065  4.065  4.123  4.065  10.976
##
## $cuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   4.065  4.065  4.065  4.252  4.065  10.976
##
## $distrito_censal
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   4.065  4.065  4.065  4.077  4.065  10.569
##
## $provincias
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   4.065  4.065  4.065  4.324  4.065  13.008
##
## $regiones
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   4.065  4.065  4.065  4.789  4.065  13.008
##
## $subcuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   4.065  4.065  4.065  4.548  4.065 100.000
##
## $subsubcuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   4.065  4.065  4.065  4.215  4.065 100.000
```

```
tapply(resumen$por.sin.obs.spei_24, resumen$unit, summary)
```

```
## $comunas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   6.504  6.504  6.504  6.517  6.504  8.537
##
## $cuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   6.504  6.504  6.504  6.533  6.504  8.740
##
## $distrito_censal
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   6.504  6.504  6.504  6.506  6.504  8.537
##
## $provincias
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   6.504  6.504  6.504  6.567  6.504  8.537
##
## $regiones
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   6.504  6.504  6.504  6.669  6.504  8.943
##
## $subcuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
```

```
## 6.504 6.504 6.504 6.917 6.504 100.000
##
## $subsubcuencas
## Min. 1st Qu. Median Mean 3rd Qu. Max.
## 6.504 6.504 6.504 6.633 6.504 100.000
```

```
tapply(resumen$por.sin.obs.spi_1, resumen$unit, summary)
```

```
## $comunas
## Min. 1st Qu. Median Mean 3rd Qu. Max.
## 1.22 1.22 1.22 1.22 1.22 1.22
##
## $cuencas
## Min. 1st Qu. Median Mean 3rd Qu. Max.
## 1.22 1.22 1.22 1.22 1.22 1.22
##
## $distrito_censal
## Min. 1st Qu. Median Mean 3rd Qu. Max.
## 1.22 1.22 1.22 1.22 1.22 1.22
##
## $provincias
## Min. 1st Qu. Median Mean 3rd Qu. Max.
## 1.22 1.22 1.22 1.22 1.22 1.22
##
## $regiones
## Min. 1st Qu. Median Mean 3rd Qu. Max.
## 1.22 1.22 1.22 1.22 1.22 1.22
##
## $subcuencas
## Min. 1st Qu. Median Mean 3rd Qu. Max.
## 1.22 1.22 1.22 1.22 1.22 1.22
##
## $subsubcuencas
## Min. 1st Qu. Median Mean 3rd Qu. Max.
## 1.22 1.22 1.22 1.22 1.22 1.22
```

```
tapply(resumen$por.sin.obs.spi_3, resumen$unit, summary)
```

```
## $comunas
## Min. 1st Qu. Median Mean 3rd Qu. Max.
## 1.626 1.626 1.626 1.626 1.626 1.626
##
## $cuencas
## Min. 1st Qu. Median Mean 3rd Qu. Max.
## 1.626 1.626 1.626 1.626 1.626 1.626
##
## $distrito_censal
## Min. 1st Qu. Median Mean 3rd Qu. Max.
## 1.626 1.626 1.626 1.626 1.626 1.626
##
## $provincias
## Min. 1st Qu. Median Mean 3rd Qu. Max.
## 1.626 1.626 1.626 1.626 1.626 1.626
##
## $regiones
```

```
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   1.626  1.626   1.626   1.626  1.626   1.626
##
## $subcuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   1.626  1.626   1.626   1.626  1.626   1.626
##
## $subsubcuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   1.626  1.626   1.626   1.626  1.626   1.626
```

```
tapply(resumen$por.sin.obs.spi_6, resumen$unit, summary)
```

```
## $comunas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.236  2.236   2.236   2.236  2.236   2.236
##
## $cuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.236  2.236   2.236   2.236  2.236   2.236
##
## $distrito_censal
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.236  2.236   2.236   2.236  2.236   2.236
##
## $provincias
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.236  2.236   2.236   2.236  2.236   2.236
##
## $regiones
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.236  2.236   2.236   2.236  2.236   2.236
##
## $subcuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.236  2.236   2.236   2.236  2.236   2.236
##
## $subsubcuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.236  2.236   2.236   2.236  2.236   2.236
```

```
tapply(resumen$por.sin.obs.spi_12, resumen$unit, summary)
```

```
## $comunas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   3.455  3.455   3.455   3.455  3.455   3.455
##
## $cuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   3.455  3.455   3.455   3.455  3.455   3.455
##
## $distrito_censal
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   3.455  3.455   3.455   3.455  3.455   3.455
##
```

```

## $provincias
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   3.455  3.455  3.455  3.455  3.455  3.455
##
## $regiones
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   3.455  3.455  3.455  3.455  3.455  3.455
##
## $subcuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   3.455  3.455  3.455  3.455  3.455  3.455
##
## $subsubcuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   3.455  3.455  3.455  3.455  3.455  3.455

```

```

tapply(resumen$por.sin.obs.spi_24, resumen$unit, summary)

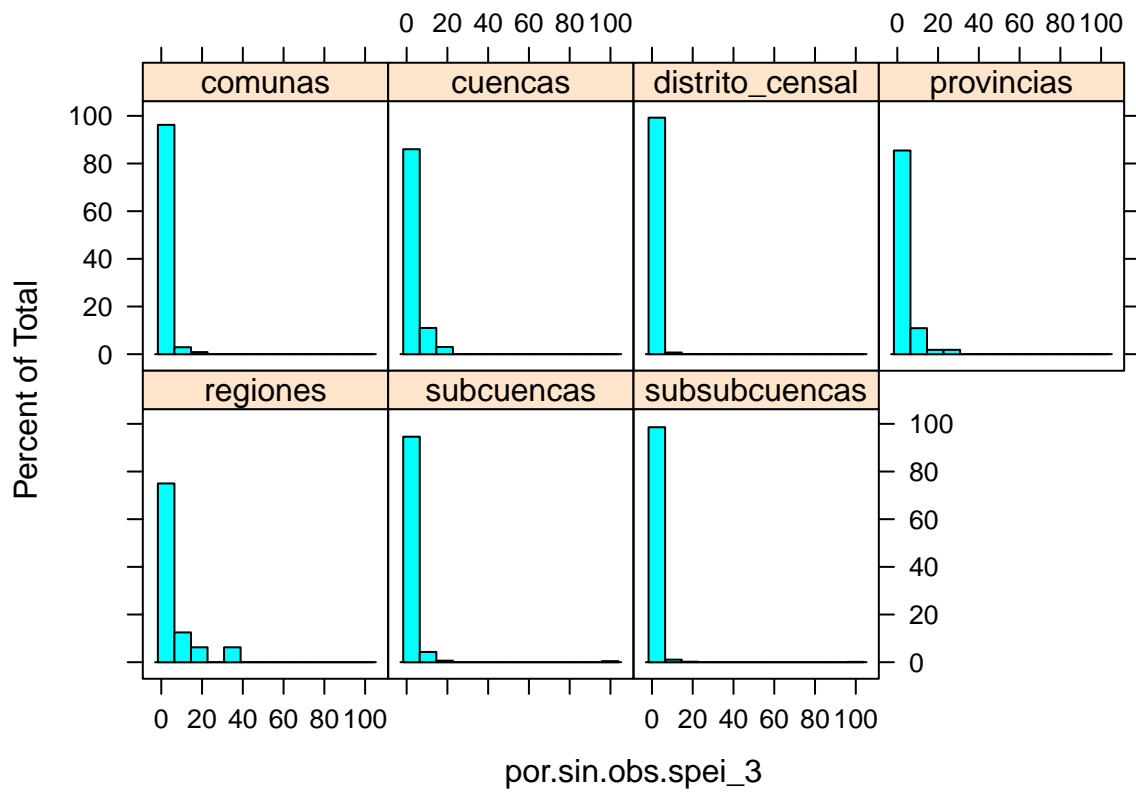
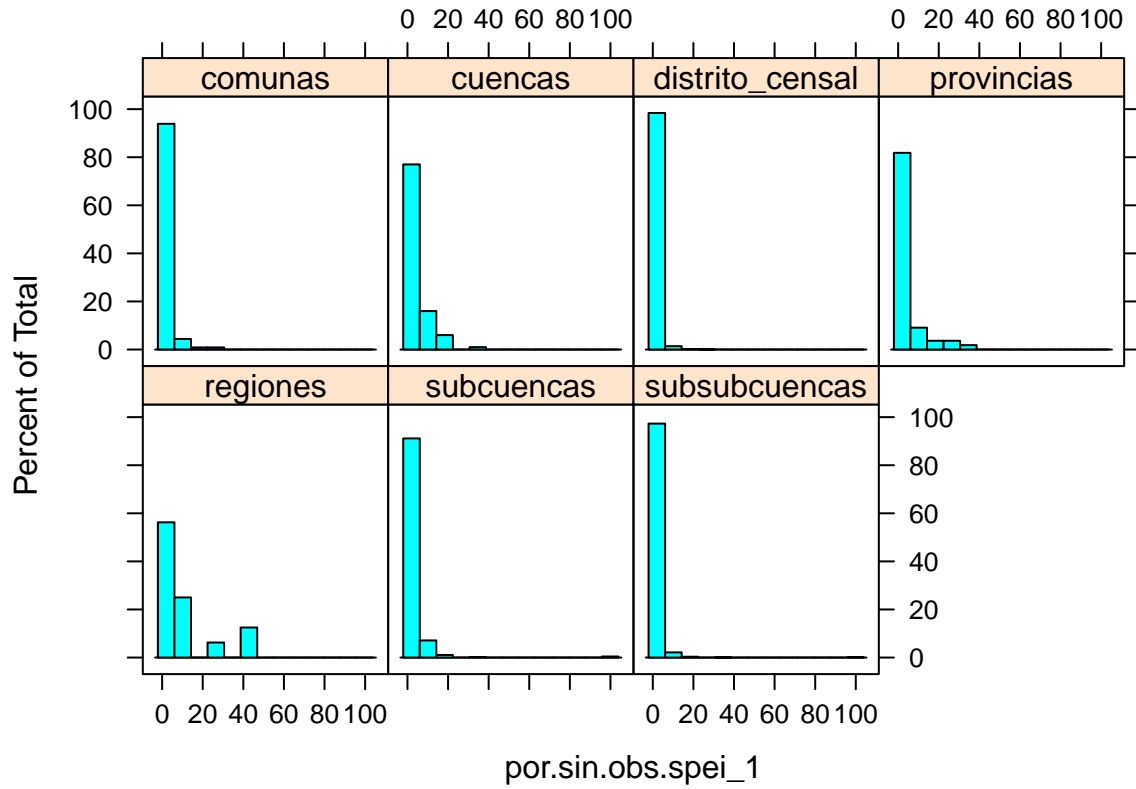
```

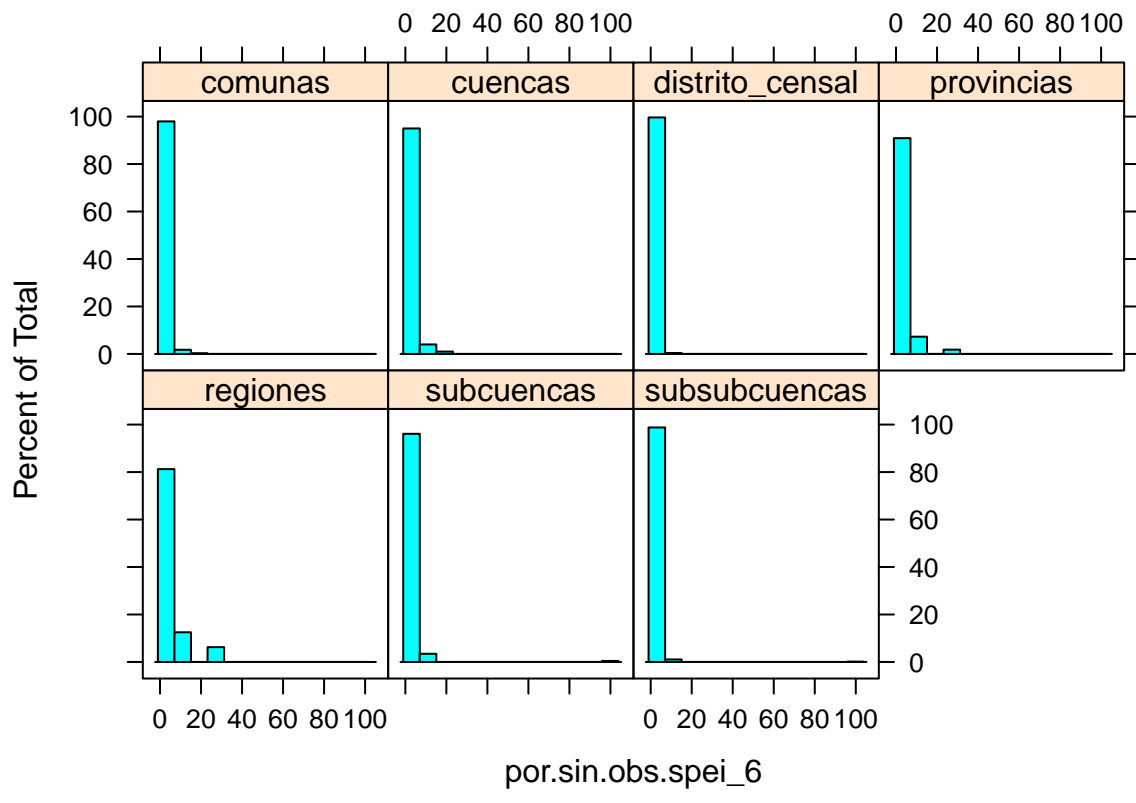
```

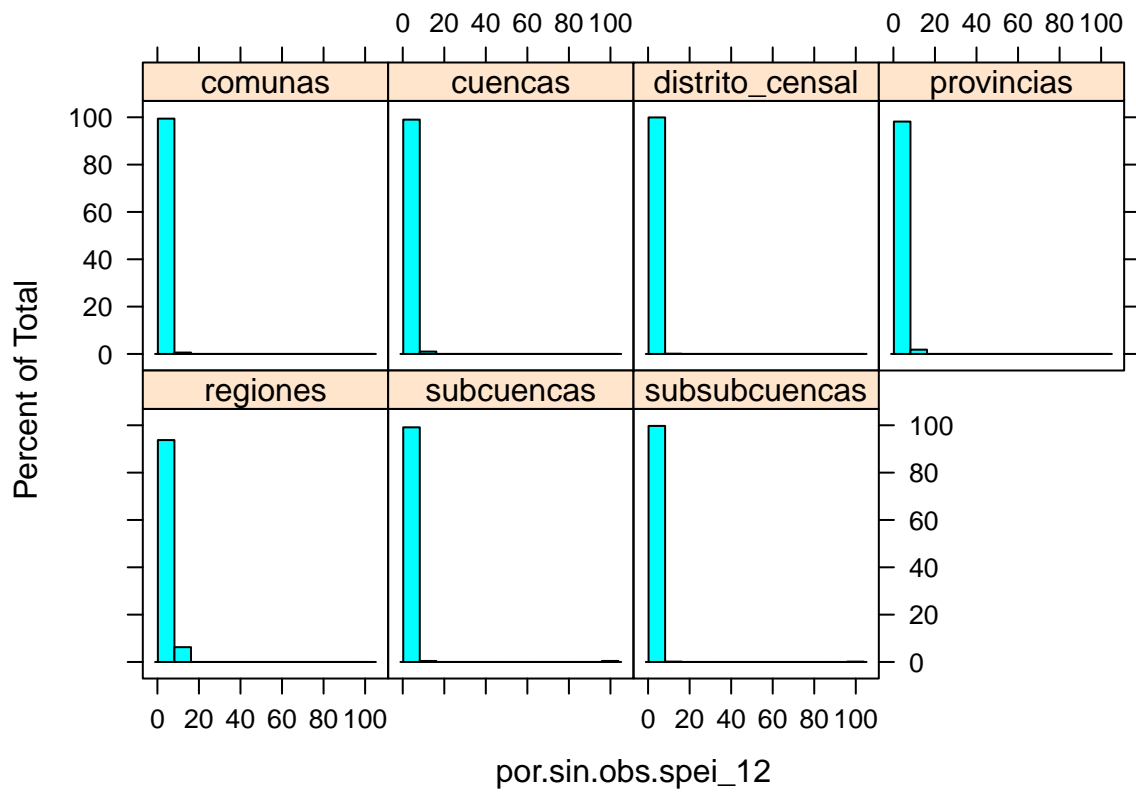
## $comunas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   5.894  5.894  5.894  5.894  5.894  5.894
##
## $cuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   5.894  5.894  5.894  5.894  5.894  5.894
##
## $distrito_censal
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   5.894  5.894  5.894  5.894  5.894  5.894
##
## $provincias
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   5.894  5.894  5.894  5.894  5.894  5.894
##
## $regiones
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   5.894  5.894  5.894  5.894  5.894  5.894
##
## $subcuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   5.894  5.894  5.894  5.894  5.894  5.894
##
## $subsubcuencas
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   5.894  5.894  5.894  5.894  5.894  5.894

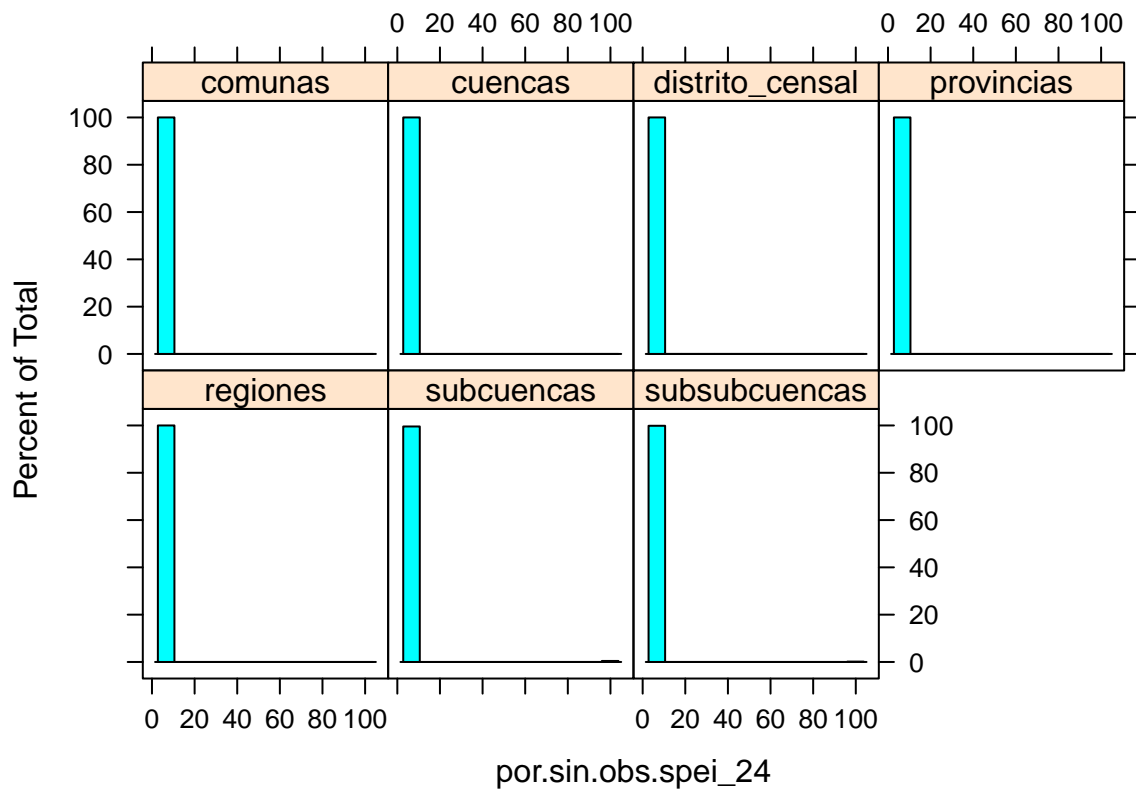
```

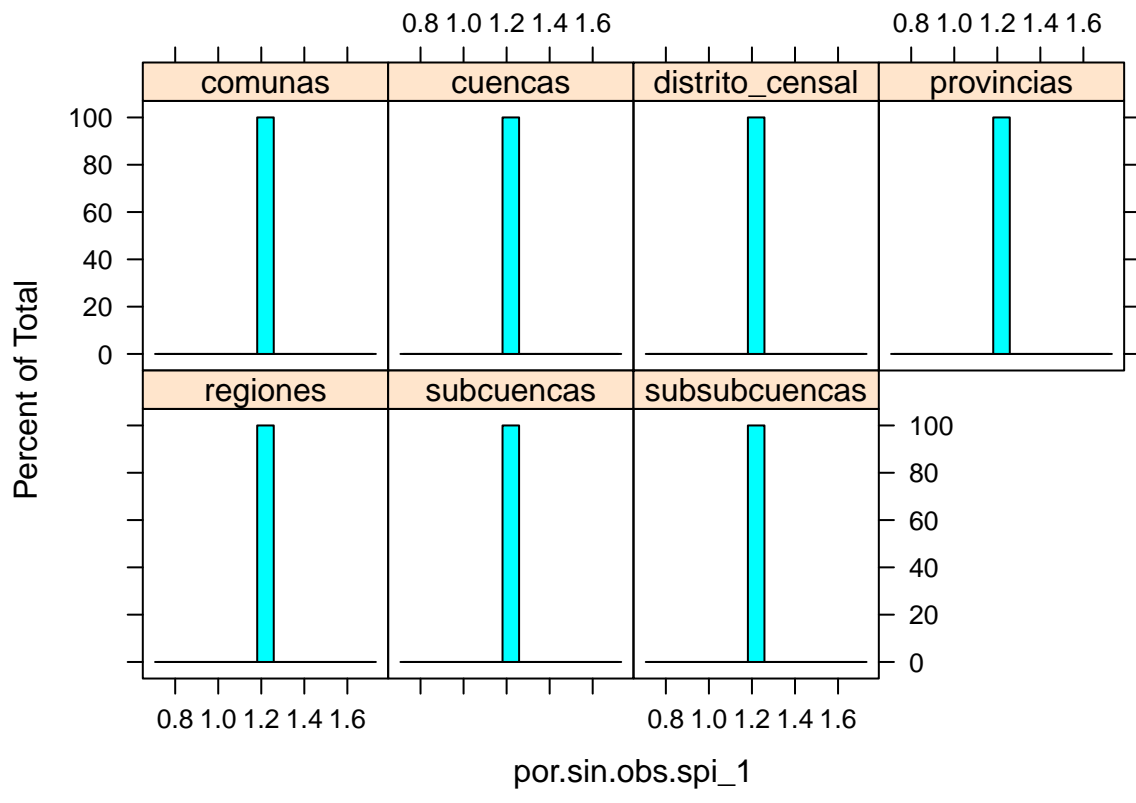
Histogramas por indicador y unidad

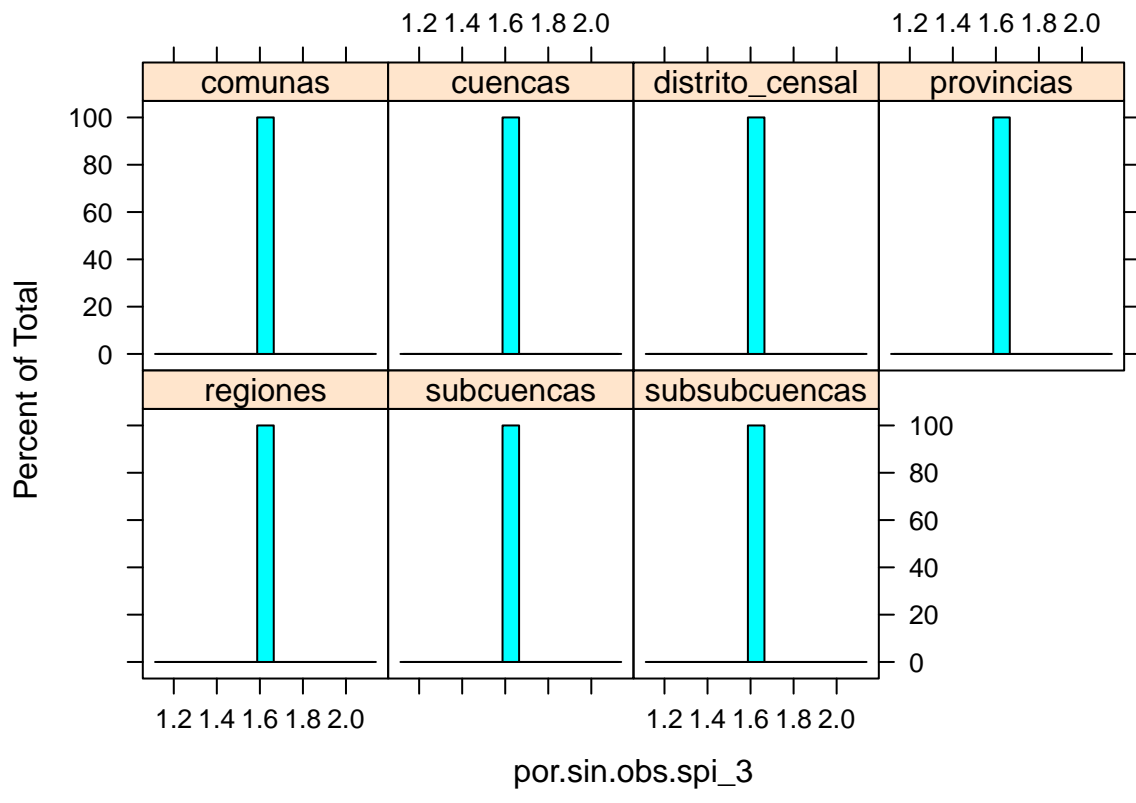


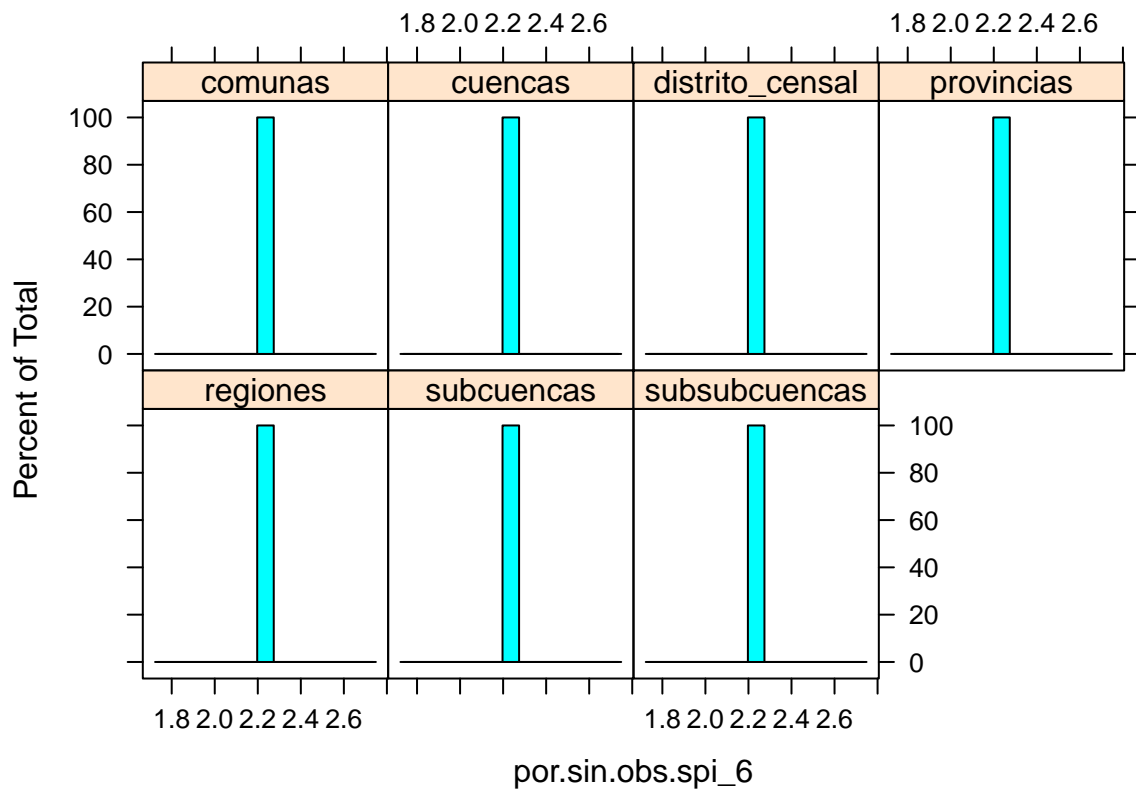


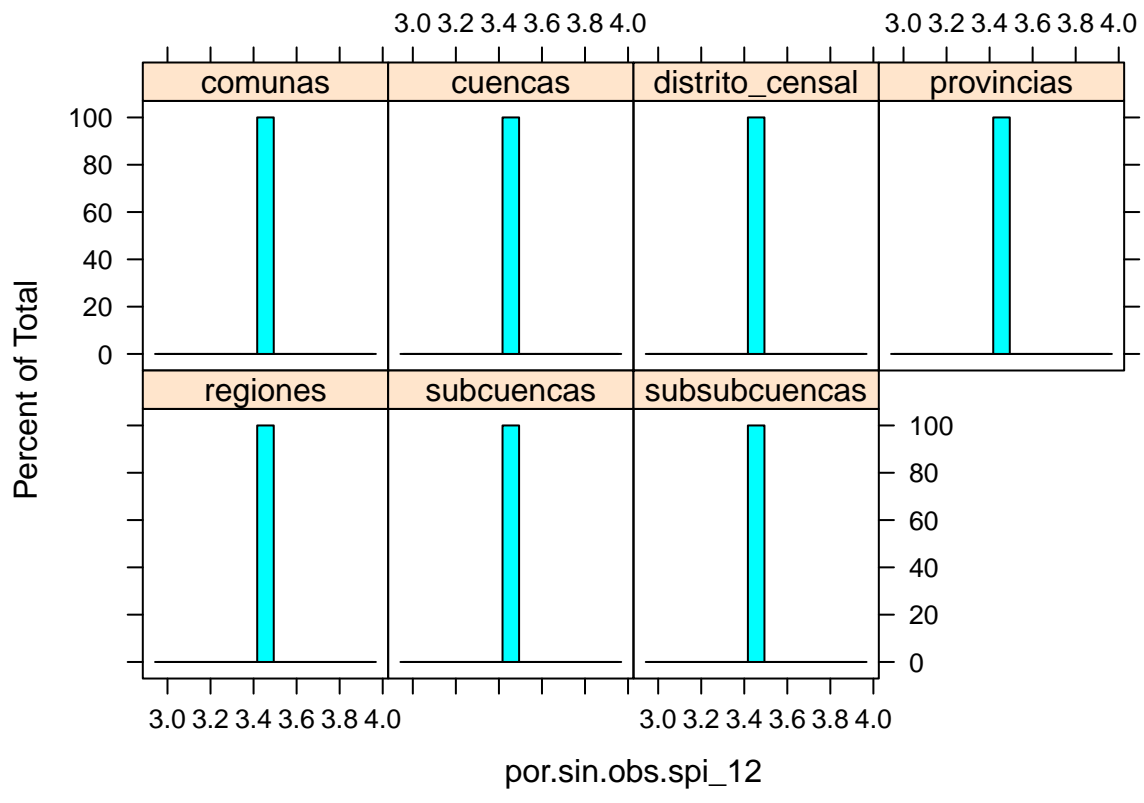


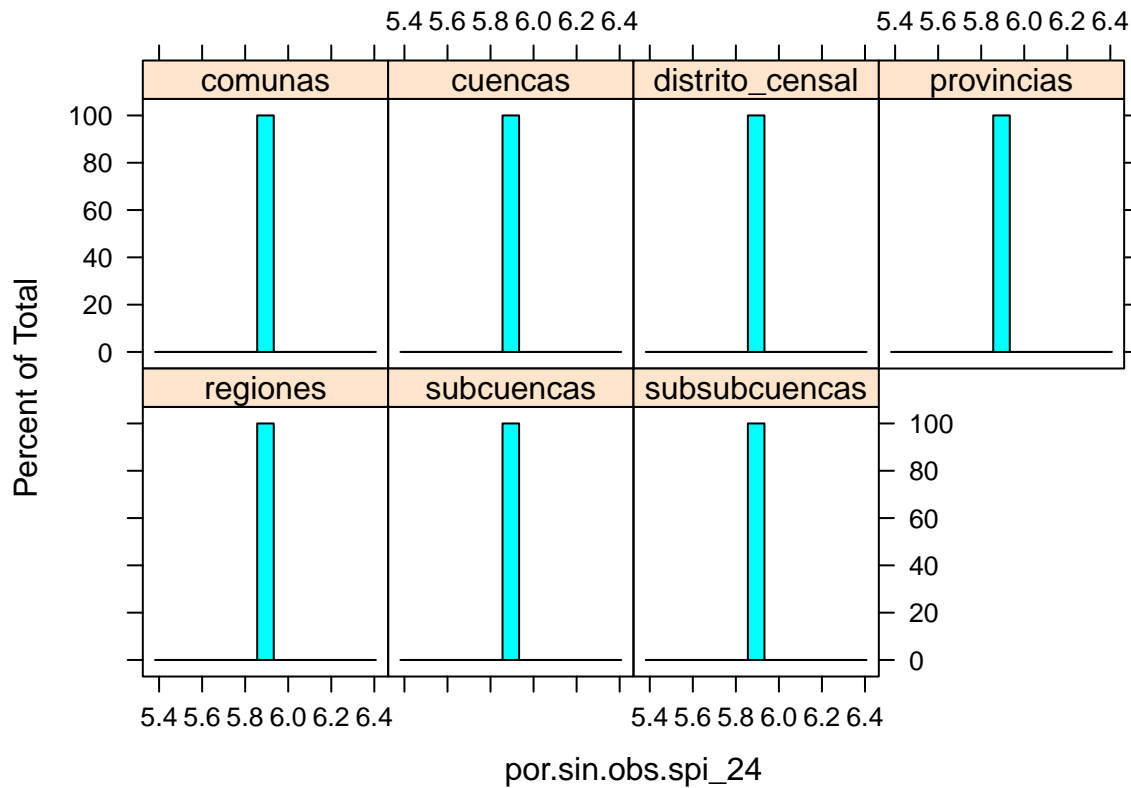












Comentarios

Se observa que la mayor cantidad de datos faltantes son de las variables SPEI por sobre las SPI. Mientras más corto es el periodo de evaluación mayor es la falta de datos (más falta de datos en SPEI 1,3 que en 12,24).

La falta de datos esta presente en todas las clases de unidades administrativas y de cuencas. Las regiones con menor cantidad de datos al parecer son las más al norte. La mayor cantidad de datos faltantes estan a nivel de cuencas y subcuencas.