

econgeo_full

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```
Hecho con gusto por Luz Yolanda Rivera UAEH Econgeo_full #####  
install.packages(#####) #####  
install.packages(#####) #install.packages("visNetwork") #install.packages("htmlwidgets") #install.packages("igraph")  
#install.packages("reshape") #install.packages("Matrix") #install.packages("RSiena") #install.packages("networkD3") #install.packages("curl")  
#install.packages("devtools")
```

```
library(devtools)
```

```
## Loading required package: usethis
```

```
devtools::install_github("PABalland/EconGeo", force = T)
```

```
## Downloading GitHub repo PABalland/EconGeo@HEAD
```

```
##  
##  
  checking for file '/private/var/folders/p7/10p1j7797yq3d9k82cnccpt00000gn/T/Rtmp6MVH9L/remotes125e94fb9a38/PAB  
alland-EconGeo-cb75c0d/DESCRIPTION' ...  
  
✓ checking for file '/private/var/folders/p7/10p1j7797yq3d9k82cnccpt00000gn/T/Rtmp6MVH9L/remotes125e94fb9a38/PAB  
alland-EconGeo-cb75c0d/DESCRIPTION' (341ms)  
##  
  
- preparing 'EconGeo':  
##  
  
  checking DESCRIPTION meta-information ...  
  
✓ checking DESCRIPTION meta-information  
##  
  
- checking for LF line-endings in source and make files and shell scripts  
##  
  
- checking for empty or unneeded directories  
##  
  
- building 'EconGeo_1.3.tar.gz'  
##  
  
##
```

```
#####  
##### 0. Load packages #####
```

<http://econ.geo.uu.nl/peeg/peeg1709.pdf>
(<http://econ.geo.uu.nl/peeg/peeg1709.pdf>)

```
library (EconGeo)
```

```
##  
## Please cite EconGeo in publications as:
```

```
## Balland, P.A. (2017) Economic Geography in R: Introduction to the EconGeo Package, Papers in Evolutionary Eco  
nomic Geography, 17 (09): 1-75
```

```
library (igraph)
```

```
##  
## Attaching package: 'igraph'
```

```
## The following object is masked from 'package:EconGeo':
##
##     diversity
```

```
## The following objects are masked from 'package:stats':
##
##     decompose, spectrum
```

```
## The following object is masked from 'package:base':
##
##     union
```

###-----### ### 1. The economy as a matrix (2-mode) ### ###-----###

data from ?RCA

?RCA

ingresar el dataframe original

#file.choose()

```
m = read.csv("/Users/luz/Documents/GitHub/Temas selectos3/LYRA_LAB45 ECON GEO EN R /coop_2019.csv")
class(m)
```

```
## [1] "data.frame"
```

```
names(m)
```

```
## [1] "state" "sec"   "Count"
```

obtener la matriz original # convertir un dataframe(lista) en matriz

```
mat = get.matrix(m)
head(mat)
```

```
##
##          SECTOR 11 SECTOR 21 SECTOR 22 SECTOR 23 SECTOR 31-33
## AGUASCALIENTES      23        1        0        0        6
## BAJA CALIFORNIA      57        2        1        0       14
## BAJA CALIFORNIA SUR  292        2        0        0        6
## CAMPECHE            304        0        0        0        8
## CHIAPAS             183        0        0        1       37
## CHIHUAHUA           9         0        0        0       20
##
##          SECTOR 43 SECTOR 46 SECTOR 48-49 SECTOR 51 SECTOR 52
## AGUASCALIENTES      6         2         6         0       20
## BAJA CALIFORNIA     14        24        15         0        4
## BAJA CALIFORNIA SUR  5         8        22         0        1
## CAMPECHE            6        12         4         0       10
## CHIAPAS             26        51       295         0       32
## CHIHUAHUA           23        18        19         0       25
##
##          SECTOR 53 SECTOR 54 SECTOR 55 SECTOR 56 SECTOR 61 SECTOR 62
## AGUASCALIENTES      0         3         0         1         0         0
## BAJA CALIFORNIA      2        10         0         8         3         3
## BAJA CALIFORNIA SUR  2         3         0         4         0         1
## CAMPECHE            1         1         0         0         0         1
## CHIAPAS             3         8         0        11         0         2
## CHIHUAHUA           3         4         0         5         2         5
##
##          SECTOR 71 SECTOR 72 SECTOR 81
## AGUASCALIENTES      0         5         2
## BAJA CALIFORNIA      2        11        13
## BAJA CALIFORNIA SUR  1         5         6
## CAMPECHE            2         5        13
## CHIAPAS             6        13        60
## CHIHUAHUA           1        11        12
```

```
mat #matriz de incidencias (original)
```

	SECTOR 11	SECTOR 21	SECTOR 22	SECTOR 23	SECTOR 31-33	
## AGUASCALIENTES	23	1	0	0	6	
## BAJA CALIFORNIA	57	2	1	0	14	
## BAJA CALIFORNIA SUR	292	2	0	0	6	
## CAMPECHE	304	0	0	0	8	
## CHIAPAS	183	0	0	1	37	
## CHIHUAHUA	9	0	0	0	20	
## CIUDAD DE MEXICO	2	1	0	0	50	
## COAHUILA	6	0	1	0	16	
## COLIMA	41	9	0	0	2	
## DURANGO	8	2	0	0	9	
## GUANAJUATO	39	0	0	1	22	
## GUERRERO	435	3	0	0	10	
## HIDALGO	48	11	0	0	24	
## JALISCO	252	2	0	0	51	
## MEXICO	10	2	1	0	28	
## MICHOACAN	168	4	0	0	17	
## MORELOS	0	0	3	0	7	
## NAYARIT	105	1	1	0	10	
## NUEVO LEON	0	0	0	3	19	
## OAXACA	177	2	0	0	19	
## PUEBLA	21	6	0	1	35	
## QUERETARO	10	2	0	0	19	
## QUINTANA ROO	29	0	0	0	4	
## SAN LUIS POTOSI	21	2	0	0	5	
## SINALOA	543	2	0	0	9	
## SONORA	411	0	0	0	10	
## TABASCO	357	2	0	0	10	
## TAMAULIPAS	71	2	0	0	15	
## TLAXCALA	13	0	0	0	3	
## VERACRUZ	418	0	0	0	29	
## YUCATAN	115	10	0	1	22	
## ZACATECAS	57	2	0	0	4	
	SECTOR 43	SECTOR 46	SECTOR 48-49	SECTOR 51	SECTOR 52	
## AGUASCALIENTES	6	2	6	0	20	
## BAJA CALIFORNIA	14	24	15	0	4	
## BAJA CALIFORNIA SUR	5	8	22	0	1	
## CAMPECHE	6	12	4	0	10	
## CHIAPAS	26	51	295	0	32	
## CHIHUAHUA	23	18	19	0	25	
## CIUDAD DE MEXICO	39	84	15	2	18	
## COAHUILA	7	17	8	0	33	
## COLIMA	4	2	13	1	33	
## DURANGO	12	10	13	0	59	
## GUANAJUATO	26	32	9	1	331	
## GUERRERO	11	25	17	0	43	
## HIDALGO	13	21	14	1	43	
## JALISCO	41	55	27	1	425	
## MEXICO	27	53	15	2	57	
## MICHOACAN	12	25	19	1	194	
## MORELOS	10	16	3	0	40	
## NAYARIT	7	15	9	0	83	
## NUEVO LEON	15	27	7	0	109	
## OAXACA	15	26	40	0	209	
## PUEBLA	18	47	15	1	92	
## QUERETARO	8	24	8	0	154	
## QUINTANA ROO	2	11	27	0	18	
## SAN LUIS POTOSI	14	14	7	1	81	
## SINALOA	11	25	9	0	23	
## SONORA	17	32	13	1	12	
## TABASCO	41	12	68	0	11	
## TAMAULIPAS	9	20	26	1	29	
## TLAXCALA	4	0	2	0	11	
## VERACRUZ	25	35	54	1	125	
## YUCATAN	8	13	34	0	93	
## ZACATECAS	16	12	3	0	50	
	SECTOR 53	SECTOR 54	SECTOR 55	SECTOR 56	SECTOR 61	SECTOR 62
## AGUASCALIENTES	0	3	0	1	0	0
## BAJA CALIFORNIA	2	10	0	8	3	3
## BAJA CALIFORNIA SUR	2	3	0	4	0	1
## CAMPECHE	1	1	0	0	0	1
## CHIAPAS	3	8	0	11	0	2
## CHIHUAHUA	3	4	0	5	2	5
## CIUDAD DE MEXICO	37	38	0	26	16	17
## COAHUILA	0	1	0	7	3	2
## COLIMA	1	2	0	2	0	0
## DURANGO	0	2	0	1	0	1
## GUANAJUATO	3	3	0	8	2	4
## GUERRERO	1	0	0	4	0	3

## HIDALGO	4	4	0	4	0	2
## JALISCO	16	19	0	14	7	6
## MEXICO	12	7	0	8	13	22
## MICHOACAN	3	5	0	3	4	6
## MORELOS	2	1	0	0	1	4
## NAYARIT	0	3	0	3	0	0
## NUEVO LEON	5	2	0	18	6	1
## OAXACA	3	13	0	5	4	2
## PUEBLA	6	6	0	4	6	6
## QUERETARO	7	8	0	6	2	3
## QUINTANA ROO	5	5	0	10	0	4
## SAN LUIS POTOSI	1	2	0	3	2	3
## SINALOA	2	5	0	3	1	0
## SONORA	1	6	0	4	2	0
## TABASCO	1	4	0	2	5	0
## TAMAULIPAS	3	2	0	5	0	1
## TLAXCALA	1	0	0	1	1	0
## VERACRUZ	6	6	0	7	7	13
## YUCATAN	6	7	0	3	4	3
## ZACATECAS	0	3	0	1	0	0
##	SECTOR 71	SECTOR 72	SECTOR 81			
## AGUASCALIENTES	0	5	2			
## BAJA CALIFORNIA	2	11	13			
## BAJA CALIFORNIA SUR	1	5	6			
## CAMPECHE	2	5	13			
## CHIAPAS	6	13	60			
## CHIHUAHUA	1	11	12			
## CIUDAD DE MEXICO	10	65	38			
## COAHUILA	0	6	9			
## COLIMA	0	2	5			
## DURANGO	1	3	8			
## GUANAJUATO	3	8	14			
## GUERRERO	5	24	13			
## HIDALGO	1	8	12			
## JALISCO	8	25	41			
## MEXICO	10	31	33			
## MICHOACAN	6	12	40			
## MORELOS	4	12	8			
## NAYARIT	3	6	10			
## NUEVO LEON	5	14	7			
## OAXACA	4	17	24			
## PUEBLA	4	16	11			
## QUERETARO	2	6	2			
## QUINTANA ROO	3	19	14			
## SAN LUIS POTOSI	3	5	16			
## SINALOA	2	19	20			
## SONORA	1	9	20			
## TABASCO	1	11	30			
## TAMAULIPAS	2	8	12			
## TLAXCALA	1	0	7			
## VERACRUZ	1	20	72			
## YUCATAN	3	10	19			
## ZACATECAS	2	7	4			

practice

transpose of the matrix

from matrix to data frame

back to matrix format

solution

```
t(mat) #transpose of the matrix
```

##	AGUASCALIENTES	BAJA CALIFORNIA	BAJA CALIFORNIA SUR	CAMPECHE
## SECTOR 11	23	57	292	304
## SECTOR 21	1	2	2	0
## SECTOR 22	0	1	0	0
## SECTOR 23	0	0	0	0

## SECTOR 31-33	6	14	6	8			
## SECTOR 43	6	14	5	6			
## SECTOR 46	2	24	8	12			
## SECTOR 48-49	6	15	22	4			
## SECTOR 51	0	0	0	0			
## SECTOR 52	20	4	1	10			
## SECTOR 53	0	2	2	1			
## SECTOR 54	3	10	3	1			
## SECTOR 55	0	0	0	0			
## SECTOR 56	1	8	4	0			
## SECTOR 61	0	3	0	0			
## SECTOR 62	0	3	1	1			
## SECTOR 71	0	2	1	2			
## SECTOR 72	5	11	5	5			
## SECTOR 81	2	13	6	13			
##	CHIAPAS	CHIHUAHUA	CIUDAD DE MEXICO	COAHUILA	COLIMA	DURANGO	
## SECTOR 11	183	9	2	6	41	8	
## SECTOR 21	0	0	1	0	9	2	
## SECTOR 22	0	0	0	1	0	0	
## SECTOR 23	1	0	0	0	0	0	
## SECTOR 31-33	37	20	50	16	2	9	
## SECTOR 43	26	23	39	7	4	12	
## SECTOR 46	51	18	84	17	2	10	
## SECTOR 48-49	295	19	15	8	13	13	
## SECTOR 51	0	0	2	0	1	0	
## SECTOR 52	32	25	18	33	33	59	
## SECTOR 53	3	3	37	0	1	0	
## SECTOR 54	8	4	38	1	2	2	
## SECTOR 55	0	0	0	0	0	0	
## SECTOR 56	11	5	26	7	2	1	
## SECTOR 61	0	2	16	3	0	0	
## SECTOR 62	2	5	17	2	0	1	
## SECTOR 71	6	1	10	0	0	1	
## SECTOR 72	13	11	65	6	2	3	
## SECTOR 81	60	12	38	9	5	8	
##	GUANAJUATO	GUERRERO	HIDALGO	JALISCO	MEXICO	MICHOACAN	MORELOS
## SECTOR 11	39	435	48	252	10	168	0
## SECTOR 21	0	3	11	2	2	4	0
## SECTOR 22	0	0	0	0	1	0	3
## SECTOR 23	1	0	0	0	0	0	0
## SECTOR 31-33	22	10	24	51	28	17	7
## SECTOR 43	26	11	13	41	27	12	10
## SECTOR 46	32	25	21	55	53	25	16
## SECTOR 48-49	9	17	14	27	15	19	3
## SECTOR 51	1	0	1	1	2	1	0
## SECTOR 52	331	43	43	425	57	194	40
## SECTOR 53	3	1	4	16	12	3	2
## SECTOR 54	3	0	4	19	7	5	1
## SECTOR 55	0	0	0	0	0	0	0
## SECTOR 56	8	4	4	14	8	3	0
## SECTOR 61	2	0	0	7	13	4	1
## SECTOR 62	4	3	2	6	22	6	4
## SECTOR 71	3	5	1	8	10	6	4
## SECTOR 72	8	24	8	25	31	12	12
## SECTOR 81	14	13	12	41	33	40	8
##	NAYARIT	NEW LEON	OAXACA	PUEBLA	QUERETARO	QUINTANA ROO	
## SECTOR 11	105	0	177	21	10	29	
## SECTOR 21	1	0	2	6	2	0	
## SECTOR 22	1	0	0	0	0	0	
## SECTOR 23	0	3	0	1	0	0	
## SECTOR 31-33	10	19	19	35	19	4	
## SECTOR 43	7	15	15	18	8	2	
## SECTOR 46	15	27	26	47	24	11	
## SECTOR 48-49	9	7	40	15	8	27	
## SECTOR 51	0	0	0	1	0	0	
## SECTOR 52	83	109	209	92	154	18	
## SECTOR 53	0	5	3	6	7	5	
## SECTOR 54	3	2	13	6	8	5	
## SECTOR 55	0	0	0	0	0	0	
## SECTOR 56	3	18	5	4	6	10	
## SECTOR 61	0	6	4	6	2	0	
## SECTOR 62	0	1	2	6	3	4	
## SECTOR 71	3	5	4	4	2	3	
## SECTOR 72	6	14	17	16	6	19	
## SECTOR 81	10	7	24	11	2	14	
##	SAN LUIS	POTOSI	SINALOA	SONORA	TABASCO	TAMAULIPAS	TLAXCALA
## SECTOR 11	21	543	411	357	71	13	
## SECTOR 21	2	2	0	2	2	0	
## SECTOR 22	0	0	0	0	0	0	

```
## SECTOR 23      0      0      0      0      0      0
## SECTOR 31-33   5      9     10     10     15     3
## SECTOR 43     14     11     17     41      9     4
## SECTOR 46     14     25     32     12     20     0
## SECTOR 48-49   7      9     13     68     26     2
## SECTOR 51      1      0      1      0      1      0
## SECTOR 52     81     23     12     11     29     11
## SECTOR 53      1      2      1      1      3      1
## SECTOR 54      2      5      6      4      2      0
## SECTOR 55      0      0      0      0      0      0
## SECTOR 56      3      3      4      2      5      1
## SECTOR 61      2      1      2      5      0      1
## SECTOR 62      3      0      0      0      1      0
## SECTOR 71      3      2      1      1      2      1
## SECTOR 72      5     19      9     11      8      0
## SECTOR 81     16     20     20     30     12      7
##
## VERACRUZ YUCATAN ZACATECAS
## SECTOR 11     418     115      57
## SECTOR 21      0      10       2
## SECTOR 22      0      0       0
## SECTOR 23      0      1       0
## SECTOR 31-33   29     22       4
## SECTOR 43     25      8      16
## SECTOR 46     35     13      12
## SECTOR 48-49   54     34       3
## SECTOR 51      1      0       0
## SECTOR 52    125     93      50
## SECTOR 53      6      6       0
## SECTOR 54      6      7       3
## SECTOR 55      0      0       0
## SECTOR 56      7      3       1
## SECTOR 61      7      4       0
## SECTOR 62     13      3       0
## SECTOR 71      1      3       2
## SECTOR 72     20     10       7
## SECTOR 81     72     19       4
```

```
data = get.list (mat) #from matrix to data frame
```

```
##
## Attaching package: 'reshape'
```

```
## The following object is masked from 'package:Matrix':
##
## expand
```

```
data
```

```
##           Region      Industry Count
## 1    AGUASCALIENTES SECTOR 11     23
## 2    BAJA CALIFORNIA SECTOR 11     57
## 3    BAJA CALIFORNIA SUR SECTOR 11    292
## 4           CAMPECHE SECTOR 11   304
## 5           CHIAPAS SECTOR 11   183
## 6    CHIHUAHUA SECTOR 11      9
## 7    CIUDAD DE MEXICO SECTOR 11      2
## 8           COAHUILA SECTOR 11      6
## 9           COLIMA SECTOR 11     41
## 10          DURANGO SECTOR 11      8
## 11          GUANAJUATO SECTOR 11     39
## 12          GUERRERO SECTOR 11   435
## 13          HIDALGO SECTOR 11     48
## 14          JALISCO SECTOR 11   252
## 15          MEXICO SECTOR 11     10
## 16          MICHOACAN SECTOR 11   168
## 17          MORELOS SECTOR 11      0
## 18          NAYARIT SECTOR 11   105
## 19          NUEVO LEON SECTOR 11      0
## 20          OAXACA SECTOR 11   177
## 21          PUEBLA SECTOR 11     21
## 22          QUERETARO SECTOR 11     10
## 23          QUINTANA ROO SECTOR 11     29
## 24          SAN LUIS POTOSI SECTOR 11     21
## 25          SINALOA SECTOR 11   543
## 26          SONORA SECTOR 11   411
```

## 27	TABASCO	SECTOR 11	357
## 28	TAMAULIPAS	SECTOR 11	71
## 29	TLAXCALA	SECTOR 11	13
## 30	VERACRUZ	SECTOR 11	418
## 31	YUCATAN	SECTOR 11	115
## 32	ZACATECAS	SECTOR 11	57
## 33	AGUASCALIENTES	SECTOR 21	1
## 34	BAJA CALIFORNIA	SECTOR 21	2
## 35	BAJA CALIFORNIA SUR	SECTOR 21	2
## 36	CAMPECHE	SECTOR 21	0
## 37	CHIAPAS	SECTOR 21	0
## 38	CHIHUAHUA	SECTOR 21	0
## 39	CIUDAD DE MEXICO	SECTOR 21	1
## 40	COAHUILA	SECTOR 21	0
## 41	COLIMA	SECTOR 21	9
## 42	DURANGO	SECTOR 21	2
## 43	GUANAJUATO	SECTOR 21	0
## 44	GUERRERO	SECTOR 21	3
## 45	HIDALGO	SECTOR 21	11
## 46	JALISCO	SECTOR 21	2
## 47	MEXICO	SECTOR 21	2
## 48	MICHOACAN	SECTOR 21	4
## 49	MORELOS	SECTOR 21	0
## 50	NAYARIT	SECTOR 21	1
## 51	NUEVO LEON	SECTOR 21	0
## 52	OAXACA	SECTOR 21	2
## 53	PUEBLA	SECTOR 21	6
## 54	QUERETARO	SECTOR 21	2
## 55	QUINTANA ROO	SECTOR 21	0
## 56	SAN LUIS POTOSI	SECTOR 21	2
## 57	SINALOA	SECTOR 21	2
## 58	SONORA	SECTOR 21	0
## 59	TABASCO	SECTOR 21	2
## 60	TAMAULIPAS	SECTOR 21	2
## 61	TLAXCALA	SECTOR 21	0
## 62	VERACRUZ	SECTOR 21	0
## 63	YUCATAN	SECTOR 21	10
## 64	ZACATECAS	SECTOR 21	2
## 65	AGUASCALIENTES	SECTOR 22	0
## 66	BAJA CALIFORNIA	SECTOR 22	1
## 67	BAJA CALIFORNIA SUR	SECTOR 22	0
## 68	CAMPECHE	SECTOR 22	0
## 69	CHIAPAS	SECTOR 22	0
## 70	CHIHUAHUA	SECTOR 22	0
## 71	CIUDAD DE MEXICO	SECTOR 22	0
## 72	COAHUILA	SECTOR 22	1
## 73	COLIMA	SECTOR 22	0
## 74	DURANGO	SECTOR 22	0
## 75	GUANAJUATO	SECTOR 22	0
## 76	GUERRERO	SECTOR 22	0
## 77	HIDALGO	SECTOR 22	0
## 78	JALISCO	SECTOR 22	0
## 79	MEXICO	SECTOR 22	1
## 80	MICHOACAN	SECTOR 22	0
## 81	MORELOS	SECTOR 22	3
## 82	NAYARIT	SECTOR 22	1
## 83	NUEVO LEON	SECTOR 22	0
## 84	OAXACA	SECTOR 22	0
## 85	PUEBLA	SECTOR 22	0
## 86	QUERETARO	SECTOR 22	0
## 87	QUINTANA ROO	SECTOR 22	0
## 88	SAN LUIS POTOSI	SECTOR 22	0
## 89	SINALOA	SECTOR 22	0
## 90	SONORA	SECTOR 22	0
## 91	TABASCO	SECTOR 22	0
## 92	TAMAULIPAS	SECTOR 22	0
## 93	TLAXCALA	SECTOR 22	0
## 94	VERACRUZ	SECTOR 22	0
## 95	YUCATAN	SECTOR 22	0
## 96	ZACATECAS	SECTOR 22	0
## 97	AGUASCALIENTES	SECTOR 23	0
## 98	BAJA CALIFORNIA	SECTOR 23	0
## 99	BAJA CALIFORNIA SUR	SECTOR 23	0
## 100	CAMPECHE	SECTOR 23	0
## 101	CHIAPAS	SECTOR 23	1
## 102	CHIHUAHUA	SECTOR 23	0
## 103	CIUDAD DE MEXICO	SECTOR 23	0
## 104	COAHUILA	SECTOR 23	0
## 105	COLIMA	SECTOR 23	0

## 106	DURANGO	SECTOR 23	0
## 107	GUANAJUATO	SECTOR 23	1
## 108	GUERRERO	SECTOR 23	0
## 109	HIDALGO	SECTOR 23	0
## 110	JALISCO	SECTOR 23	0
## 111	MEXICO	SECTOR 23	0
## 112	MICHOACAN	SECTOR 23	0
## 113	MORELOS	SECTOR 23	0
## 114	NAYARIT	SECTOR 23	0
## 115	NUEVO LEON	SECTOR 23	3
## 116	OAXACA	SECTOR 23	0
## 117	PUEBLA	SECTOR 23	1
## 118	QUERETARO	SECTOR 23	0
## 119	QUINTANA ROO	SECTOR 23	0
## 120	SAN LUIS POTOSI	SECTOR 23	0
## 121	SINALOA	SECTOR 23	0
## 122	SONORA	SECTOR 23	0
## 123	TABASCO	SECTOR 23	0
## 124	TAMAULIPAS	SECTOR 23	0
## 125	TLAXCALA	SECTOR 23	0
## 126	VERACRUZ	SECTOR 23	0
## 127	YUCATAN	SECTOR 23	1
## 128	ZACATECAS	SECTOR 23	0
## 129	AGUASCALIENTES	SECTOR 31-33	6
## 130	BAJA CALIFORNIA	SECTOR 31-33	14
## 131	BAJA CALIFORNIA SUR	SECTOR 31-33	6
## 132	CAMPECHE	SECTOR 31-33	8
## 133	CHIAPAS	SECTOR 31-33	37
## 134	CHIHUAHUA	SECTOR 31-33	20
## 135	CIUDAD DE MEXICO	SECTOR 31-33	50
## 136	COAHUILA	SECTOR 31-33	16
## 137	COLIMA	SECTOR 31-33	2
## 138	DURANGO	SECTOR 31-33	9
## 139	GUANAJUATO	SECTOR 31-33	22
## 140	GUERRERO	SECTOR 31-33	10
## 141	HIDALGO	SECTOR 31-33	24
## 142	JALISCO	SECTOR 31-33	51
## 143	MEXICO	SECTOR 31-33	28
## 144	MICHOACAN	SECTOR 31-33	17
## 145	MORELOS	SECTOR 31-33	7
## 146	NAYARIT	SECTOR 31-33	10
## 147	NUEVO LEON	SECTOR 31-33	19
## 148	OAXACA	SECTOR 31-33	19
## 149	PUEBLA	SECTOR 31-33	35
## 150	QUERETARO	SECTOR 31-33	19
## 151	QUINTANA ROO	SECTOR 31-33	4
## 152	SAN LUIS POTOSI	SECTOR 31-33	5
## 153	SINALOA	SECTOR 31-33	9
## 154	SONORA	SECTOR 31-33	10
## 155	TABASCO	SECTOR 31-33	10
## 156	TAMAULIPAS	SECTOR 31-33	15
## 157	TLAXCALA	SECTOR 31-33	3
## 158	VERACRUZ	SECTOR 31-33	29
## 159	YUCATAN	SECTOR 31-33	22
## 160	ZACATECAS	SECTOR 31-33	4
## 161	AGUASCALIENTES	SECTOR 43	6
## 162	BAJA CALIFORNIA	SECTOR 43	14
## 163	BAJA CALIFORNIA SUR	SECTOR 43	5
## 164	CAMPECHE	SECTOR 43	6
## 165	CHIAPAS	SECTOR 43	26
## 166	CHIHUAHUA	SECTOR 43	23
## 167	CIUDAD DE MEXICO	SECTOR 43	39
## 168	COAHUILA	SECTOR 43	7
## 169	COLIMA	SECTOR 43	4
## 170	DURANGO	SECTOR 43	12
## 171	GUANAJUATO	SECTOR 43	26
## 172	GUERRERO	SECTOR 43	11
## 173	HIDALGO	SECTOR 43	13
## 174	JALISCO	SECTOR 43	41
## 175	MEXICO	SECTOR 43	27
## 176	MICHOACAN	SECTOR 43	12
## 177	MORELOS	SECTOR 43	10
## 178	NAYARIT	SECTOR 43	7
## 179	NUEVO LEON	SECTOR 43	15
## 180	OAXACA	SECTOR 43	15
## 181	PUEBLA	SECTOR 43	18
## 182	QUERETARO	SECTOR 43	8
## 183	QUINTANA ROO	SECTOR 43	2
## 184	SAN LUIS POTOSI	SECTOR 43	14

## 185	SINALOA	SECTOR 43	11
## 186	SONORA	SECTOR 43	17
## 187	TABASCO	SECTOR 43	41
## 188	TAMAULIPAS	SECTOR 43	9
## 189	TLAXCALA	SECTOR 43	4
## 190	VERACRUZ	SECTOR 43	25
## 191	YUCATAN	SECTOR 43	8
## 192	ZACATECAS	SECTOR 43	16
## 193	AGUASCALIENTES	SECTOR 46	2
## 194	BAJA CALIFORNIA	SECTOR 46	24
## 195	BAJA CALIFORNIA SUR	SECTOR 46	8
## 196	CAMPECHE	SECTOR 46	12
## 197	CHIAPAS	SECTOR 46	51
## 198	CHIHUAHUA	SECTOR 46	18
## 199	CIUDAD DE MEXICO	SECTOR 46	84
## 200	COAHUILA	SECTOR 46	17
## 201	COLIMA	SECTOR 46	2
## 202	DURANGO	SECTOR 46	10
## 203	GUANAJUATO	SECTOR 46	32
## 204	GUERRERO	SECTOR 46	25
## 205	HIDALGO	SECTOR 46	21
## 206	JALISCO	SECTOR 46	55
## 207	MEXICO	SECTOR 46	53
## 208	MICHOACAN	SECTOR 46	25
## 209	MORELOS	SECTOR 46	16
## 210	NAYARIT	SECTOR 46	15
## 211	NUEVO LEON	SECTOR 46	27
## 212	OAXACA	SECTOR 46	26
## 213	PUEBLA	SECTOR 46	47
## 214	QUERETARO	SECTOR 46	24
## 215	QUINTANA ROO	SECTOR 46	11
## 216	SAN LUIS POTOSI	SECTOR 46	14
## 217	SINALOA	SECTOR 46	25
## 218	SONORA	SECTOR 46	32
## 219	TABASCO	SECTOR 46	12
## 220	TAMAULIPAS	SECTOR 46	20
## 221	TLAXCALA	SECTOR 46	0
## 222	VERACRUZ	SECTOR 46	35
## 223	YUCATAN	SECTOR 46	13
## 224	ZACATECAS	SECTOR 46	12
## 225	AGUASCALIENTES	SECTOR 48-49	6
## 226	BAJA CALIFORNIA	SECTOR 48-49	15
## 227	BAJA CALIFORNIA SUR	SECTOR 48-49	22
## 228	CAMPECHE	SECTOR 48-49	4
## 229	CHIAPAS	SECTOR 48-49	295
## 230	CHIHUAHUA	SECTOR 48-49	19
## 231	CIUDAD DE MEXICO	SECTOR 48-49	15
## 232	COAHUILA	SECTOR 48-49	8
## 233	COLIMA	SECTOR 48-49	13
## 234	DURANGO	SECTOR 48-49	13
## 235	GUANAJUATO	SECTOR 48-49	9
## 236	GUERRERO	SECTOR 48-49	17
## 237	HIDALGO	SECTOR 48-49	14
## 238	JALISCO	SECTOR 48-49	27
## 239	MEXICO	SECTOR 48-49	15
## 240	MICHOACAN	SECTOR 48-49	19
## 241	MORELOS	SECTOR 48-49	3
## 242	NAYARIT	SECTOR 48-49	9
## 243	NUEVO LEON	SECTOR 48-49	7
## 244	OAXACA	SECTOR 48-49	40
## 245	PUEBLA	SECTOR 48-49	15
## 246	QUERETARO	SECTOR 48-49	8
## 247	QUINTANA ROO	SECTOR 48-49	27
## 248	SAN LUIS POTOSI	SECTOR 48-49	7
## 249	SINALOA	SECTOR 48-49	9
## 250	SONORA	SECTOR 48-49	13
## 251	TABASCO	SECTOR 48-49	68
## 252	TAMAULIPAS	SECTOR 48-49	26
## 253	TLAXCALA	SECTOR 48-49	2
## 254	VERACRUZ	SECTOR 48-49	54
## 255	YUCATAN	SECTOR 48-49	34
## 256	ZACATECAS	SECTOR 48-49	3
## 257	AGUASCALIENTES	SECTOR 51	0
## 258	BAJA CALIFORNIA	SECTOR 51	0
## 259	BAJA CALIFORNIA SUR	SECTOR 51	0
## 260	CAMPECHE	SECTOR 51	0
## 261	CHIAPAS	SECTOR 51	0
## 262	CHIHUAHUA	SECTOR 51	0
## 263	CIUDAD DE MEXICO	SECTOR 51	2

## 264	COAHUILA	SECTOR 51	0
## 265	COLIMA	SECTOR 51	1
## 266	DURANGO	SECTOR 51	0
## 267	GUANAJUATO	SECTOR 51	1
## 268	GUERRERO	SECTOR 51	0
## 269	HIDALGO	SECTOR 51	1
## 270	JALISCO	SECTOR 51	1
## 271	MEXICO	SECTOR 51	2
## 272	MICHOACAN	SECTOR 51	1
## 273	MORELOS	SECTOR 51	0
## 274	NAYARIT	SECTOR 51	0
## 275	NUEVO LEON	SECTOR 51	0
## 276	OAXACA	SECTOR 51	0
## 277	PUEBLA	SECTOR 51	1
## 278	QUERETARO	SECTOR 51	0
## 279	QUINTANA ROO	SECTOR 51	0
## 280	SAN LUIS POTOSI	SECTOR 51	1
## 281	SINALOA	SECTOR 51	0
## 282	SONORA	SECTOR 51	1
## 283	TABASCO	SECTOR 51	0
## 284	TAMAULIPAS	SECTOR 51	1
## 285	TLAXCALA	SECTOR 51	0
## 286	VERACRUZ	SECTOR 51	1
## 287	YUCATAN	SECTOR 51	0
## 288	ZACATECAS	SECTOR 51	0
## 289	AGUASCALIENTES	SECTOR 52	20
## 290	BAJA CALIFORNIA	SECTOR 52	4
## 291	BAJA CALIFORNIA SUR	SECTOR 52	1
## 292	CAMPECHE	SECTOR 52	10
## 293	CHIAPAS	SECTOR 52	32
## 294	CHIHUAHUA	SECTOR 52	25
## 295	CIUDAD DE MEXICO	SECTOR 52	18
## 296	COAHUILA	SECTOR 52	33
## 297	COLIMA	SECTOR 52	33
## 298	DURANGO	SECTOR 52	59
## 299	GUANAJUATO	SECTOR 52	331
## 300	GUERRERO	SECTOR 52	43
## 301	HIDALGO	SECTOR 52	43
## 302	JALISCO	SECTOR 52	425
## 303	MEXICO	SECTOR 52	57
## 304	MICHOACAN	SECTOR 52	194
## 305	MORELOS	SECTOR 52	40
## 306	NAYARIT	SECTOR 52	83
## 307	NUEVO LEON	SECTOR 52	109
## 308	OAXACA	SECTOR 52	209
## 309	PUEBLA	SECTOR 52	92
## 310	QUERETARO	SECTOR 52	154
## 311	QUINTANA ROO	SECTOR 52	18
## 312	SAN LUIS POTOSI	SECTOR 52	81
## 313	SINALOA	SECTOR 52	23
## 314	SONORA	SECTOR 52	12
## 315	TABASCO	SECTOR 52	11
## 316	TAMAULIPAS	SECTOR 52	29
## 317	TLAXCALA	SECTOR 52	11
## 318	VERACRUZ	SECTOR 52	125
## 319	YUCATAN	SECTOR 52	93
## 320	ZACATECAS	SECTOR 52	50
## 321	AGUASCALIENTES	SECTOR 53	0
## 322	BAJA CALIFORNIA	SECTOR 53	2
## 323	BAJA CALIFORNIA SUR	SECTOR 53	2
## 324	CAMPECHE	SECTOR 53	1
## 325	CHIAPAS	SECTOR 53	3
## 326	CHIHUAHUA	SECTOR 53	3
## 327	CIUDAD DE MEXICO	SECTOR 53	37
## 328	COAHUILA	SECTOR 53	0
## 329	COLIMA	SECTOR 53	1
## 330	DURANGO	SECTOR 53	0
## 331	GUANAJUATO	SECTOR 53	3
## 332	GUERRERO	SECTOR 53	1
## 333	HIDALGO	SECTOR 53	4
## 334	JALISCO	SECTOR 53	16
## 335	MEXICO	SECTOR 53	12
## 336	MICHOACAN	SECTOR 53	3
## 337	MORELOS	SECTOR 53	2
## 338	NAYARIT	SECTOR 53	0
## 339	NUEVO LEON	SECTOR 53	5
## 340	OAXACA	SECTOR 53	3
## 341	PUEBLA	SECTOR 53	6
## 342	QUERETARO	SECTOR 53	7

## 343	QUINTANA ROO	SECTOR 53	5
## 344	SAN LUIS POTOSI	SECTOR 53	1
## 345	SINALOA	SECTOR 53	2
## 346	SONORA	SECTOR 53	1
## 347	TABASCO	SECTOR 53	1
## 348	TAMAULIPAS	SECTOR 53	3
## 349	TLAXCALA	SECTOR 53	1
## 350	VERACRUZ	SECTOR 53	6
## 351	YUCATAN	SECTOR 53	6
## 352	ZACATECAS	SECTOR 53	0
## 353	AGUASCALIENTES	SECTOR 54	3
## 354	BAJA CALIFORNIA	SECTOR 54	10
## 355	BAJA CALIFORNIA SUR	SECTOR 54	3
## 356	CAMPECHE	SECTOR 54	1
## 357	CHIAPAS	SECTOR 54	8
## 358	CHIHUAHUA	SECTOR 54	4
## 359	CIUDAD DE MEXICO	SECTOR 54	38
## 360	COAHUILA	SECTOR 54	1
## 361	COLIMA	SECTOR 54	2
## 362	DURANGO	SECTOR 54	2
## 363	GUANAJUATO	SECTOR 54	3
## 364	GUERRERO	SECTOR 54	0
## 365	HIDALGO	SECTOR 54	4
## 366	JALISCO	SECTOR 54	19
## 367	MEXICO	SECTOR 54	7
## 368	MICHOACAN	SECTOR 54	5
## 369	MORELOS	SECTOR 54	1
## 370	NAYARIT	SECTOR 54	3
## 371	NUEVO LEON	SECTOR 54	2
## 372	OAXACA	SECTOR 54	13
## 373	PUEBLA	SECTOR 54	6
## 374	QUERETARO	SECTOR 54	8
## 375	QUINTANA ROO	SECTOR 54	5
## 376	SAN LUIS POTOSI	SECTOR 54	2
## 377	SINALOA	SECTOR 54	5
## 378	SONORA	SECTOR 54	6
## 379	TABASCO	SECTOR 54	4
## 380	TAMAULIPAS	SECTOR 54	2
## 381	TLAXCALA	SECTOR 54	0
## 382	VERACRUZ	SECTOR 54	6
## 383	YUCATAN	SECTOR 54	7
## 384	ZACATECAS	SECTOR 54	3
## 385	AGUASCALIENTES	SECTOR 55	0
## 386	BAJA CALIFORNIA	SECTOR 55	0
## 387	BAJA CALIFORNIA SUR	SECTOR 55	0
## 388	CAMPECHE	SECTOR 55	0
## 389	CHIAPAS	SECTOR 55	0
## 390	CHIHUAHUA	SECTOR 55	0
## 391	CIUDAD DE MEXICO	SECTOR 55	0
## 392	COAHUILA	SECTOR 55	0
## 393	COLIMA	SECTOR 55	0
## 394	DURANGO	SECTOR 55	0
## 395	GUANAJUATO	SECTOR 55	0
## 396	GUERRERO	SECTOR 55	0
## 397	HIDALGO	SECTOR 55	0
## 398	JALISCO	SECTOR 55	0
## 399	MEXICO	SECTOR 55	0
## 400	MICHOACAN	SECTOR 55	0
## 401	MORELOS	SECTOR 55	0
## 402	NAYARIT	SECTOR 55	0
## 403	NUEVO LEON	SECTOR 55	0
## 404	OAXACA	SECTOR 55	0
## 405	PUEBLA	SECTOR 55	0
## 406	QUERETARO	SECTOR 55	0
## 407	QUINTANA ROO	SECTOR 55	0
## 408	SAN LUIS POTOSI	SECTOR 55	0
## 409	SINALOA	SECTOR 55	0
## 410	SONORA	SECTOR 55	0
## 411	TABASCO	SECTOR 55	0
## 412	TAMAULIPAS	SECTOR 55	0
## 413	TLAXCALA	SECTOR 55	0
## 414	VERACRUZ	SECTOR 55	0
## 415	YUCATAN	SECTOR 55	0
## 416	ZACATECAS	SECTOR 55	0
## 417	AGUASCALIENTES	SECTOR 56	1
## 418	BAJA CALIFORNIA	SECTOR 56	8
## 419	BAJA CALIFORNIA SUR	SECTOR 56	4
## 420	CAMPECHE	SECTOR 56	0
## 421	CHIAPAS	SECTOR 56	11

## 422	CHIHUAHUA	SECTOR 56	5
## 423	CIUDAD DE MEXICO	SECTOR 56	26
## 424	COAHUILA	SECTOR 56	7
## 425	COLIMA	SECTOR 56	2
## 426	DURANGO	SECTOR 56	1
## 427	GUANAJUATO	SECTOR 56	8
## 428	GUERRERO	SECTOR 56	4
## 429	HIDALGO	SECTOR 56	4
## 430	JALISCO	SECTOR 56	14
## 431	MEXICO	SECTOR 56	8
## 432	MICHOACAN	SECTOR 56	3
## 433	MORELOS	SECTOR 56	0
## 434	NAYARIT	SECTOR 56	3
## 435	NUEVO LEON	SECTOR 56	18
## 436	OAXACA	SECTOR 56	5
## 437	PUEBLA	SECTOR 56	4
## 438	QUERETARO	SECTOR 56	6
## 439	QUINTANA ROO	SECTOR 56	10
## 440	SAN LUIS POTOSI	SECTOR 56	3
## 441	SINALOA	SECTOR 56	3
## 442	SONORA	SECTOR 56	4
## 443	TABASCO	SECTOR 56	2
## 444	TAMAULIPAS	SECTOR 56	5
## 445	TLAXCALA	SECTOR 56	1
## 446	VERACRUZ	SECTOR 56	7
## 447	YUCATAN	SECTOR 56	3
## 448	ZACATECAS	SECTOR 56	1
## 449	AGUASCALIENTES	SECTOR 61	0
## 450	BAJA CALIFORNIA	SECTOR 61	3
## 451	BAJA CALIFORNIA SUR	SECTOR 61	0
## 452	CAMPECHE	SECTOR 61	0
## 453	CHIAPAS	SECTOR 61	0
## 454	CHIHUAHUA	SECTOR 61	2
## 455	CIUDAD DE MEXICO	SECTOR 61	16
## 456	COAHUILA	SECTOR 61	3
## 457	COLIMA	SECTOR 61	0
## 458	DURANGO	SECTOR 61	0
## 459	GUANAJUATO	SECTOR 61	2
## 460	GUERRERO	SECTOR 61	0
## 461	HIDALGO	SECTOR 61	0
## 462	JALISCO	SECTOR 61	7
## 463	MEXICO	SECTOR 61	13
## 464	MICHOACAN	SECTOR 61	4
## 465	MORELOS	SECTOR 61	1
## 466	NAYARIT	SECTOR 61	0
## 467	NUEVO LEON	SECTOR 61	6
## 468	OAXACA	SECTOR 61	4
## 469	PUEBLA	SECTOR 61	6
## 470	QUERETARO	SECTOR 61	2
## 471	QUINTANA ROO	SECTOR 61	0
## 472	SAN LUIS POTOSI	SECTOR 61	2
## 473	SINALOA	SECTOR 61	1
## 474	SONORA	SECTOR 61	2
## 475	TABASCO	SECTOR 61	5
## 476	TAMAULIPAS	SECTOR 61	0
## 477	TLAXCALA	SECTOR 61	1
## 478	VERACRUZ	SECTOR 61	7
## 479	YUCATAN	SECTOR 61	4
## 480	ZACATECAS	SECTOR 61	0
## 481	AGUASCALIENTES	SECTOR 62	0
## 482	BAJA CALIFORNIA	SECTOR 62	3
## 483	BAJA CALIFORNIA SUR	SECTOR 62	1
## 484	CAMPECHE	SECTOR 62	1
## 485	CHIAPAS	SECTOR 62	2
## 486	CHIHUAHUA	SECTOR 62	5
## 487	CIUDAD DE MEXICO	SECTOR 62	17
## 488	COAHUILA	SECTOR 62	2
## 489	COLIMA	SECTOR 62	0
## 490	DURANGO	SECTOR 62	1
## 491	GUANAJUATO	SECTOR 62	4
## 492	GUERRERO	SECTOR 62	3
## 493	HIDALGO	SECTOR 62	2
## 494	JALISCO	SECTOR 62	6
## 495	MEXICO	SECTOR 62	22
## 496	MICHOACAN	SECTOR 62	6
## 497	MORELOS	SECTOR 62	4
## 498	NAYARIT	SECTOR 62	0
## 499	NUEVO LEON	SECTOR 62	1
## 500	OAXACA	SECTOR 62	2

## 501	PUEBLA	SECTOR 62	6
## 502	QUERETARO	SECTOR 62	3
## 503	QUINTANA ROO	SECTOR 62	4
## 504	SAN LUIS POTOSI	SECTOR 62	3
## 505	SINALOA	SECTOR 62	0
## 506	SONORA	SECTOR 62	0
## 507	TABASCO	SECTOR 62	0
## 508	TAMAULIPAS	SECTOR 62	1
## 509	TLAXCALA	SECTOR 62	0
## 510	VERACRUZ	SECTOR 62	13
## 511	YUCATAN	SECTOR 62	3
## 512	ZACATECAS	SECTOR 62	0
## 513	AGUASCALIENTES	SECTOR 71	0
## 514	BAJA CALIFORNIA	SECTOR 71	2
## 515	BAJA CALIFORNIA SUR	SECTOR 71	1
## 516	CAMPECHE	SECTOR 71	2
## 517	CHIAPAS	SECTOR 71	6
## 518	CHIHUAHUA	SECTOR 71	1
## 519	CIUDAD DE MEXICO	SECTOR 71	10
## 520	COAHUILA	SECTOR 71	0
## 521	COLIMA	SECTOR 71	0
## 522	DURANGO	SECTOR 71	1
## 523	GUANAJUATO	SECTOR 71	3
## 524	GUERRERO	SECTOR 71	5
## 525	HIDALGO	SECTOR 71	1
## 526	JALISCO	SECTOR 71	8
## 527	MEXICO	SECTOR 71	10
## 528	MICHOACAN	SECTOR 71	6
## 529	MORELOS	SECTOR 71	4
## 530	NAYARIT	SECTOR 71	3
## 531	NUEVO LEON	SECTOR 71	5
## 532	OAXACA	SECTOR 71	4
## 533	PUEBLA	SECTOR 71	4
## 534	QUERETARO	SECTOR 71	2
## 535	QUINTANA ROO	SECTOR 71	3
## 536	SAN LUIS POTOSI	SECTOR 71	3
## 537	SINALOA	SECTOR 71	2
## 538	SONORA	SECTOR 71	1
## 539	TABASCO	SECTOR 71	1
## 540	TAMAULIPAS	SECTOR 71	2
## 541	TLAXCALA	SECTOR 71	1
## 542	VERACRUZ	SECTOR 71	1
## 543	YUCATAN	SECTOR 71	3
## 544	ZACATECAS	SECTOR 71	2
## 545	AGUASCALIENTES	SECTOR 72	5
## 546	BAJA CALIFORNIA	SECTOR 72	11
## 547	BAJA CALIFORNIA SUR	SECTOR 72	5
## 548	CAMPECHE	SECTOR 72	5
## 549	CHIAPAS	SECTOR 72	13
## 550	CHIHUAHUA	SECTOR 72	11
## 551	CIUDAD DE MEXICO	SECTOR 72	65
## 552	COAHUILA	SECTOR 72	6
## 553	COLIMA	SECTOR 72	2
## 554	DURANGO	SECTOR 72	3
## 555	GUANAJUATO	SECTOR 72	8
## 556	GUERRERO	SECTOR 72	24
## 557	HIDALGO	SECTOR 72	8
## 558	JALISCO	SECTOR 72	25
## 559	MEXICO	SECTOR 72	31
## 560	MICHOACAN	SECTOR 72	12
## 561	MORELOS	SECTOR 72	12
## 562	NAYARIT	SECTOR 72	6
## 563	NUEVO LEON	SECTOR 72	14
## 564	OAXACA	SECTOR 72	17
## 565	PUEBLA	SECTOR 72	16
## 566	QUERETARO	SECTOR 72	6
## 567	QUINTANA ROO	SECTOR 72	19
## 568	SAN LUIS POTOSI	SECTOR 72	5
## 569	SINALOA	SECTOR 72	19
## 570	SONORA	SECTOR 72	9
## 571	TABASCO	SECTOR 72	11
## 572	TAMAULIPAS	SECTOR 72	8
## 573	TLAXCALA	SECTOR 72	0
## 574	VERACRUZ	SECTOR 72	20
## 575	YUCATAN	SECTOR 72	10
## 576	ZACATECAS	SECTOR 72	7
## 577	AGUASCALIENTES	SECTOR 81	2
## 578	BAJA CALIFORNIA	SECTOR 81	13
## 579	BAJA CALIFORNIA SUR	SECTOR 81	6

## 580	CAMPECHE	SECTOR 81	13
## 581	CHIAPAS	SECTOR 81	60
## 582	CHIHUAHUA	SECTOR 81	12
## 583	CIUDAD DE MEXICO	SECTOR 81	38
## 584	COAHUILA	SECTOR 81	9
## 585	COLIMA	SECTOR 81	5
## 586	DURANGO	SECTOR 81	8
## 587	GUANAJUATO	SECTOR 81	14
## 588	GUERRERO	SECTOR 81	13
## 589	HIDALGO	SECTOR 81	12
## 590	JALISCO	SECTOR 81	41
## 591	MEXICO	SECTOR 81	33
## 592	MICHOACAN	SECTOR 81	40
## 593	MORELOS	SECTOR 81	8
## 594	NAYARIT	SECTOR 81	10
## 595	NUEVO LEON	SECTOR 81	7
## 596	OAXACA	SECTOR 81	24
## 597	PUEBLA	SECTOR 81	11
## 598	QUERETARO	SECTOR 81	2
## 599	QUINTANA ROO	SECTOR 81	14
## 600	SAN LUIS POTOSI	SECTOR 81	16
## 601	SINALOA	SECTOR 81	20
## 602	SONORA	SECTOR 81	20
## 603	TABASCO	SECTOR 81	30
## 604	TAMAULIPAS	SECTOR 81	12
## 605	TLAXCALA	SECTOR 81	7
## 606	VERACRUZ	SECTOR 81	72
## 607	YUCATAN	SECTOR 81	19
## 608	ZACATECAS	SECTOR 81	4

```
mat = get.matrix (data) #back to matrix format
mat
```

##	SECTOR 11	SECTOR 21	SECTOR 22	SECTOR 23	SECTOR 31-33
## AGUASCALIENTES	23	1	0	0	6
## BAJA CALIFORNIA	57	2	1	0	14
## BAJA CALIFORNIA SUR	292	2	0	0	6
## CAMPECHE	304	0	0	0	8
## CHIAPAS	183	0	0	1	37
## CHIHUAHUA	9	0	0	0	20
## CIUDAD DE MEXICO	2	1	0	0	50
## COAHUILA	6	0	1	0	16
## COLIMA	41	9	0	0	2
## DURANGO	8	2	0	0	9
## GUANAJUATO	39	0	0	1	22
## GUERRERO	435	3	0	0	10
## HIDALGO	48	11	0	0	24
## JALISCO	252	2	0	0	51
## MEXICO	10	2	1	0	28
## MICHOACAN	168	4	0	0	17
## MORELOS	0	0	3	0	7
## NAYARIT	105	1	1	0	10
## NUEVO LEON	0	0	0	3	19
## OAXACA	177	2	0	0	19
## PUEBLA	21	6	0	1	35
## QUERETARO	10	2	0	0	19
## QUINTANA ROO	29	0	0	0	4
## SAN LUIS POTOSI	21	2	0	0	5
## SINALOA	543	2	0	0	9
## SONORA	411	0	0	0	10
## TABASCO	357	2	0	0	10
## TAMAULIPAS	71	2	0	0	15
## TLAXCALA	13	0	0	0	3
## VERACRUZ	418	0	0	0	29
## YUCATAN	115	10	0	1	22
## ZACATECAS	57	2	0	0	4
##	SECTOR 43	SECTOR 46	SECTOR 48-49	SECTOR 51	SECTOR 52
## AGUASCALIENTES	6	2	6	0	20
## BAJA CALIFORNIA	14	24	15	0	4
## BAJA CALIFORNIA SUR	5	8	22	0	1
## CAMPECHE	6	12	4	0	10
## CHIAPAS	26	51	295	0	32
## CHIHUAHUA	23	18	19	0	25
## CIUDAD DE MEXICO	39	84	15	2	18
## COAHUILA	7	17	8	0	33
## COLIMA	4	2	13	1	33
## DURANGO	12	10	13	0	59

## GUANAJUATO	26	32	9	1	331	
## GUERRERO	11	25	17	0	43	
## HIDALGO	13	21	14	1	43	
## JALISCO	41	55	27	1	425	
## MEXICO	27	53	15	2	57	
## MICHOACAN	12	25	19	1	194	
## MORELOS	10	16	3	0	40	
## NAYARIT	7	15	9	0	83	
## NUEVO LEON	15	27	7	0	109	
## OAXACA	15	26	40	0	209	
## PUEBLA	18	47	15	1	92	
## QUERETARO	8	24	8	0	154	
## QUINTANA ROO	2	11	27	0	18	
## SAN LUIS POTOSI	14	14	7	1	81	
## SINALOA	11	25	9	0	23	
## SONORA	17	32	13	1	12	
## TABASCO	41	12	68	0	11	
## TAMAULIPAS	9	20	26	1	29	
## TLAXCALA	4	0	2	0	11	
## VERACRUZ	25	35	54	1	125	
## YUCATAN	8	13	34	0	93	
## ZACATECAS	16	12	3	0	50	
##	SECTOR 53	SECTOR 54	SECTOR 55	SECTOR 56	SECTOR 61	SECTOR 62
## AGUASCALIENTES	0	3	0	1	0	0
## BAJA CALIFORNIA	2	10	0	8	3	3
## BAJA CALIFORNIA SUR	2	3	0	4	0	1
## CAMPECHE	1	1	0	0	0	1
## CHIAPAS	3	8	0	11	0	2
## CHIHUAHUA	3	4	0	5	2	5
## CIUDAD DE MEXICO	37	38	0	26	16	17
## COAHUILA	0	1	0	7	3	2
## COLIMA	1	2	0	2	0	0
## DURANGO	0	2	0	1	0	1
## GUANAJUATO	3	3	0	8	2	4
## GUERRERO	1	0	0	4	0	3
## HIDALGO	4	4	0	4	0	2
## JALISCO	16	19	0	14	7	6
## MEXICO	12	7	0	8	13	22
## MICHOACAN	3	5	0	3	4	6
## MORELOS	2	1	0	0	1	4
## NAYARIT	0	3	0	3	0	0
## NUEVO LEON	5	2	0	18	6	1
## OAXACA	3	13	0	5	4	2
## PUEBLA	6	6	0	4	6	6
## QUERETARO	7	8	0	6	2	3
## QUINTANA ROO	5	5	0	10	0	4
## SAN LUIS POTOSI	1	2	0	3	2	3
## SINALOA	2	5	0	3	1	0
## SONORA	1	6	0	4	2	0
## TABASCO	1	4	0	2	5	0
## TAMAULIPAS	3	2	0	5	0	1
## TLAXCALA	1	0	0	1	1	0
## VERACRUZ	6	6	0	7	7	13
## YUCATAN	6	7	0	3	4	3
## ZACATECAS	0	3	0	1	0	0
##	SECTOR 71	SECTOR 72	SECTOR 81			
## AGUASCALIENTES	0	5	2			
## BAJA CALIFORNIA	2	11	13			
## BAJA CALIFORNIA SUR	1	5	6			
## CAMPECHE	2	5	13			
## CHIAPAS	6	13	60			
## CHIHUAHUA	1	11	12			
## CIUDAD DE MEXICO	10	65	38			
## COAHUILA	0	6	9			
## COLIMA	0	2	5			
## DURANGO	1	3	8			
## GUANAJUATO	3	8	14			
## GUERRERO	5	24	13			
## HIDALGO	1	8	12			
## JALISCO	8	25	41			
## MEXICO	10	31	33			
## MICHOACAN	6	12	40			
## MORELOS	4	12	8			
## NAYARIT	3	6	10			
## NUEVO LEON	5	14	7			
## OAXACA	4	17	24			
## PUEBLA	4	16	11			
## QUERETARO	2	6	2			
## QUINTANA ROO	3	19	14			

## SAN LUIS POTOSI	3	5	16
## SINALOA	2	19	20
## SONORA	1	9	20
## TABASCO	1	11	30
## TAMAULIPAS	2	8	12
## TLAXCALA	1	0	7
## VERACRUZ	1	20	72
## YUCATAN	3	10	19
## ZACATECAS	2	7	4

###-----### ### 2. Spatial concentration indicators ### ###-----###

?RCA RCA

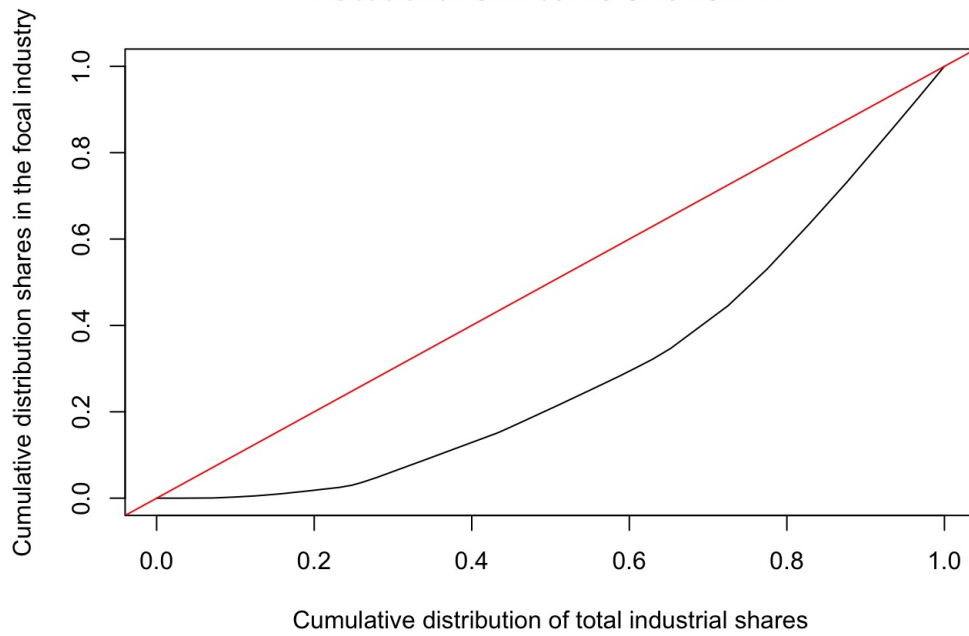
#location.quotient

```
RCANOBIN <- as.data.frame(RCA (mat))
RCABIN <- as.data.frame(RCA (mat, binary = TRUE))
```

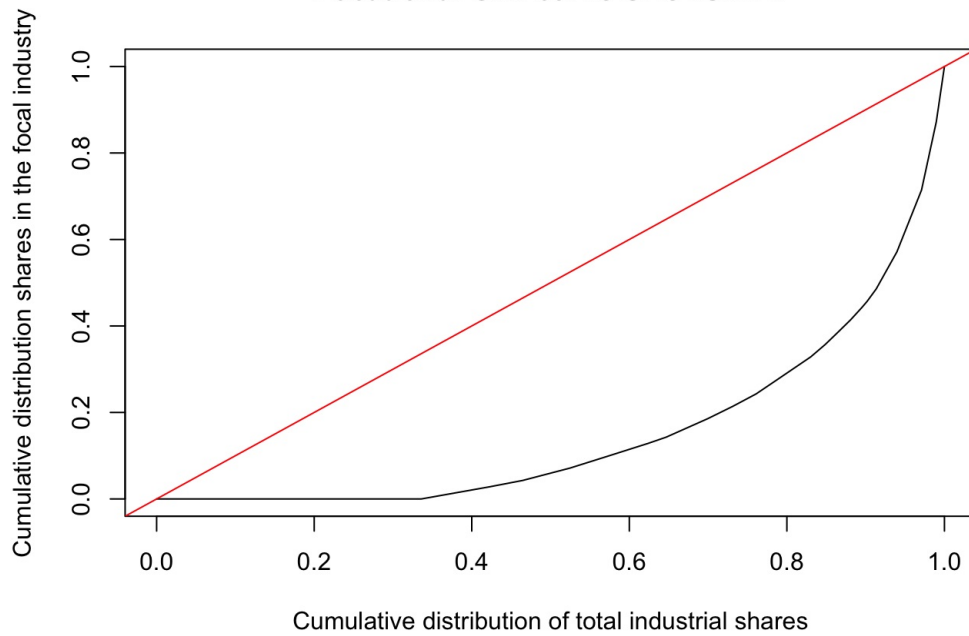
#concentraci?n, RCA PROM EN LOS ESTADOS #concentraci?n, GINI EN LOS SECTORES #concentraci?n/desigualdad

```
BALASSA_PROM <- as.data.frame(location.quotient.avg (mat))
LOCAT_GINI <- as.data.frame(locational.Gini (mat))
locational.Gini.curve (mat)
```

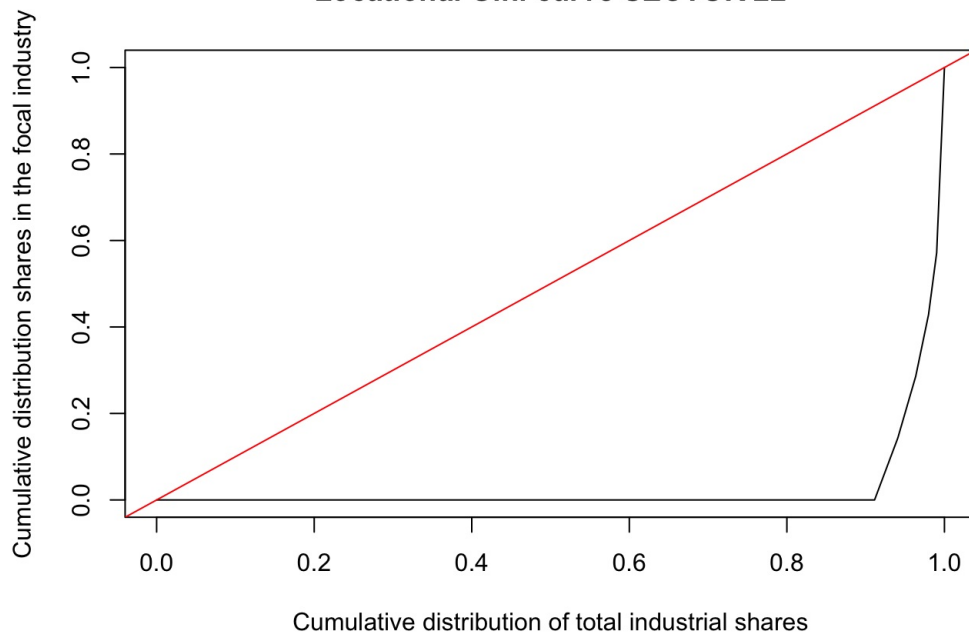

Locational Gini curve SECTOR 11



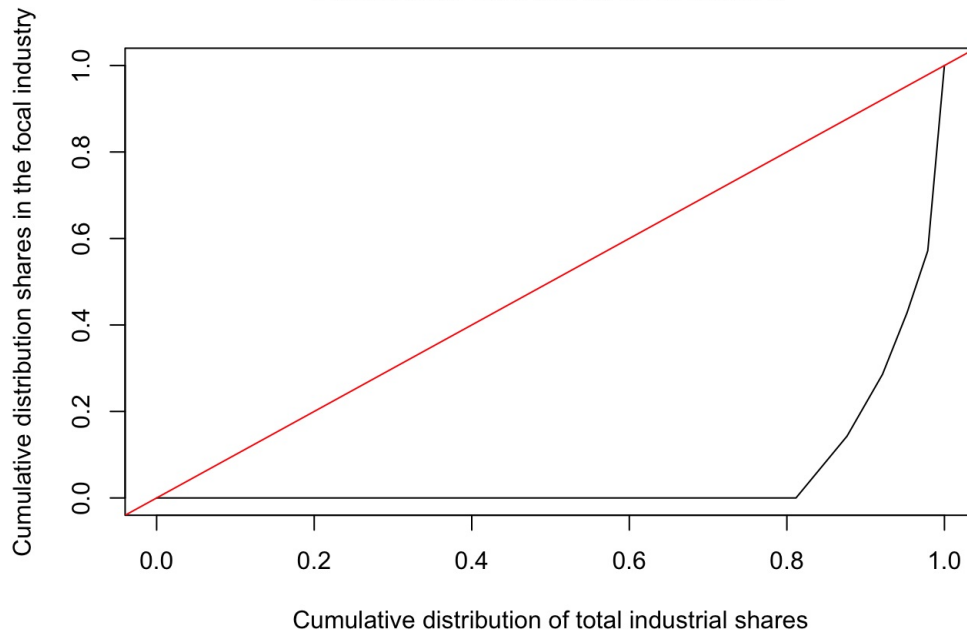
Locational Gini curve SECTOR 21



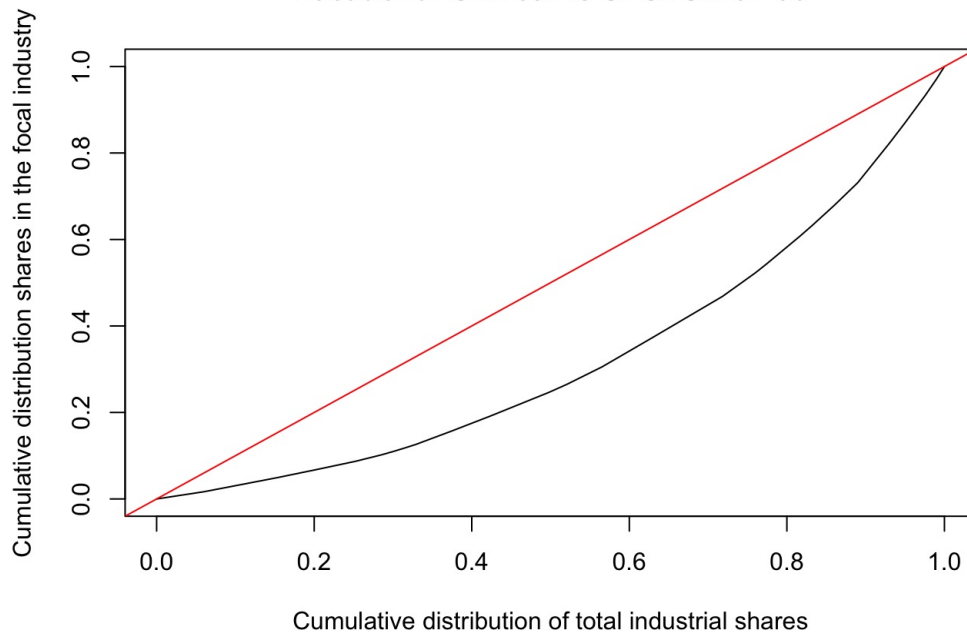
Locational Gini curve SECTOR 22



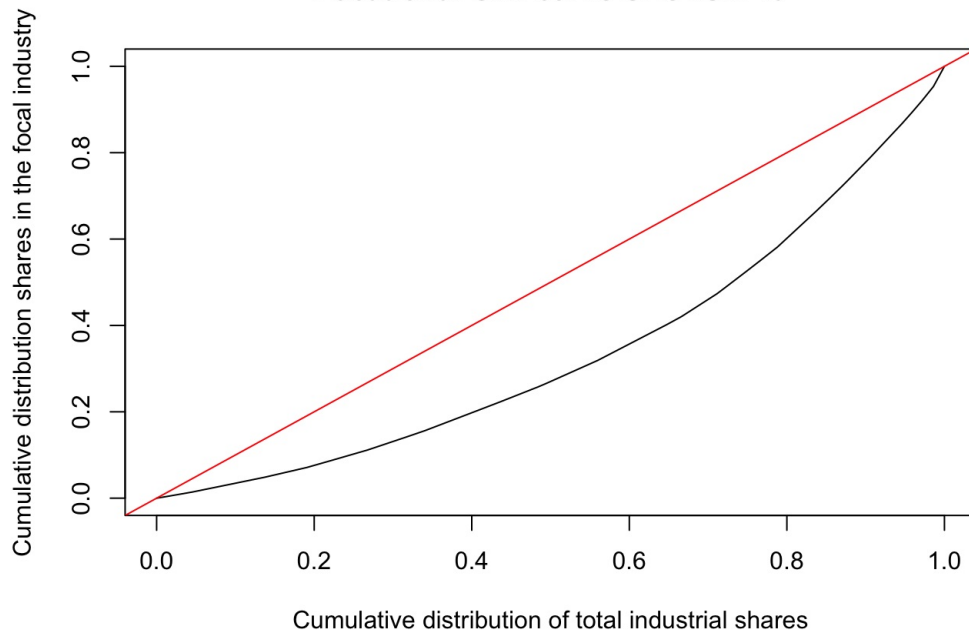
Locational Gini curve SECTOR 23



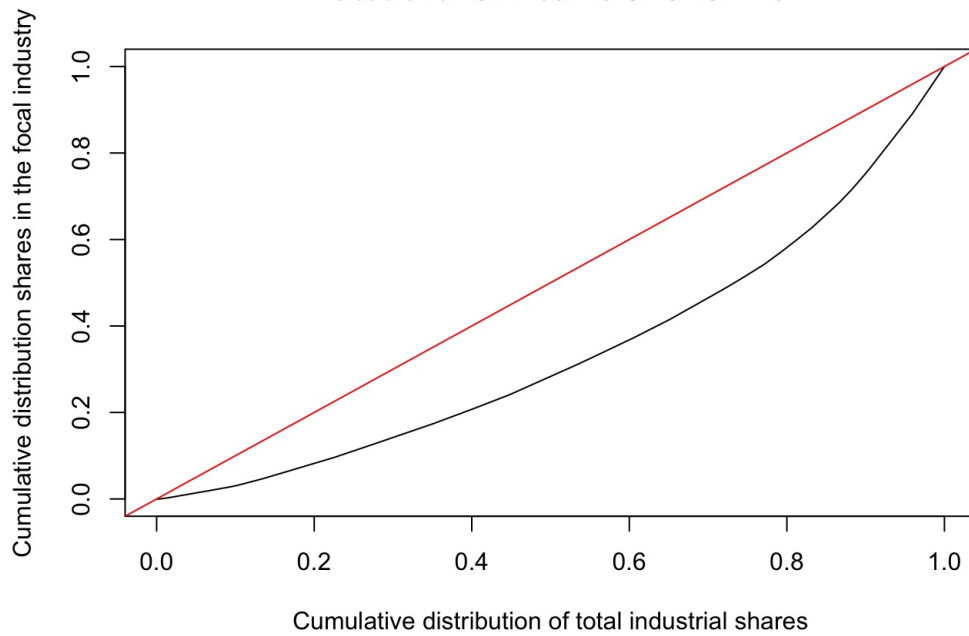
Locational Gini curve SECTOR 31-33



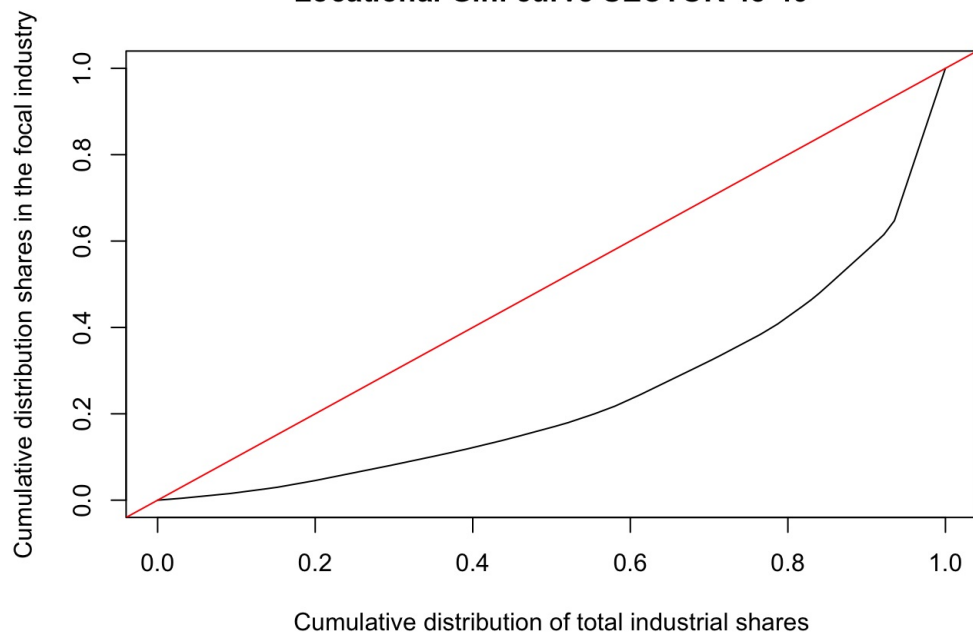
Locational Gini curve SECTOR 43



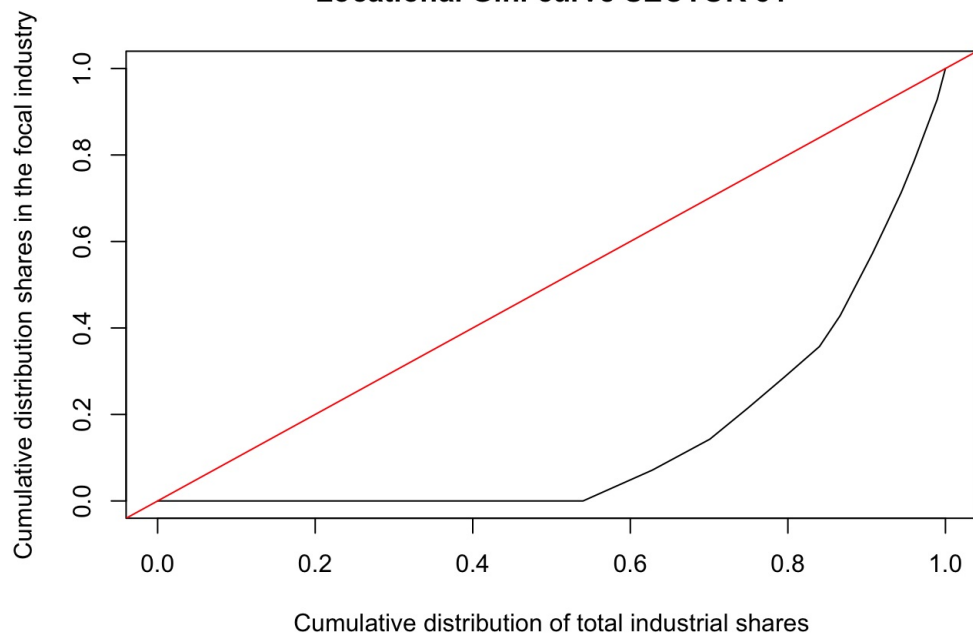
Locational Gini curve SECTOR 46



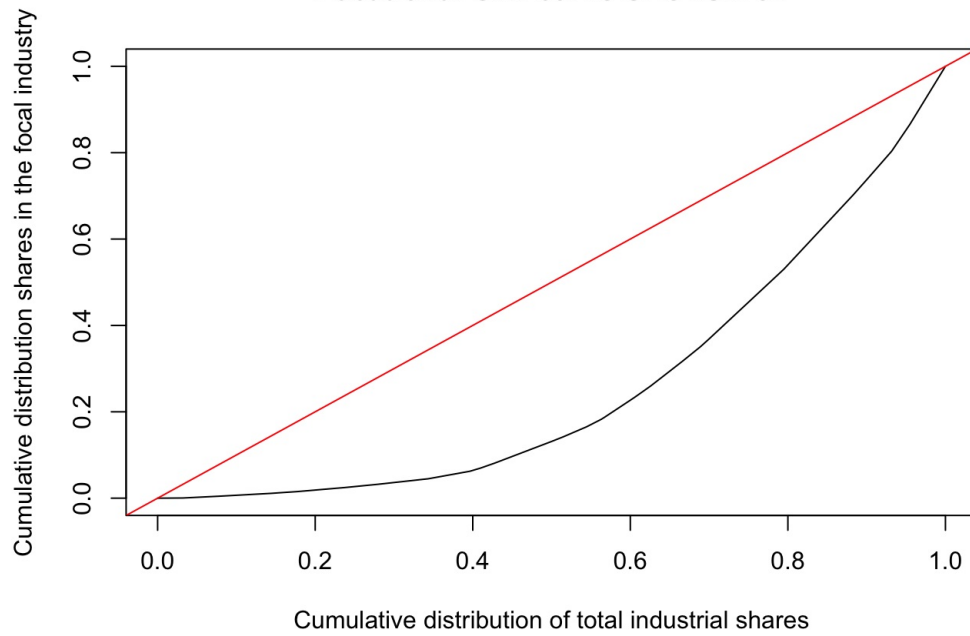
Locational Gini curve SECTOR 48-49



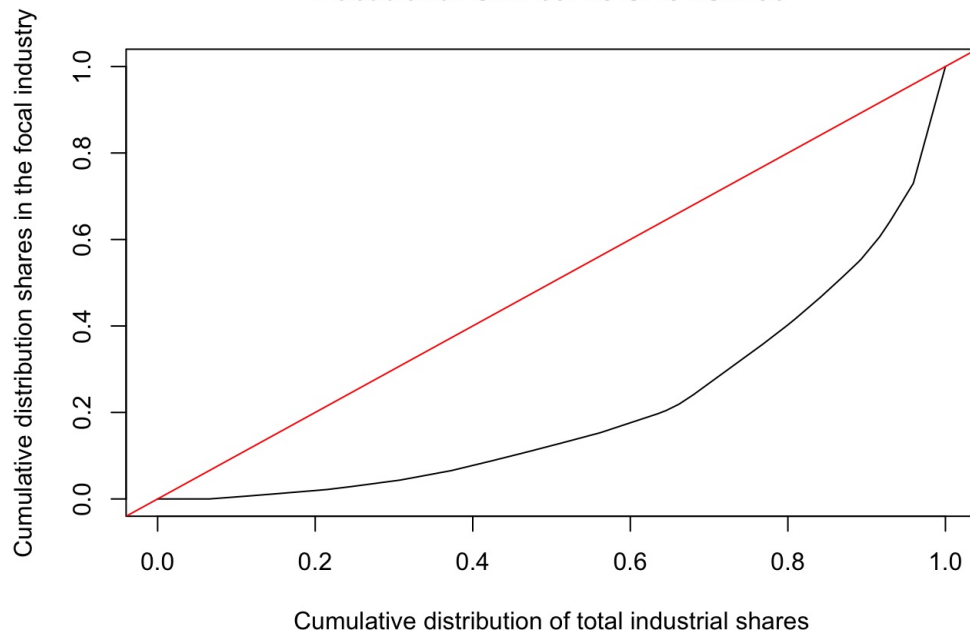
Locational Gini curve SECTOR 51



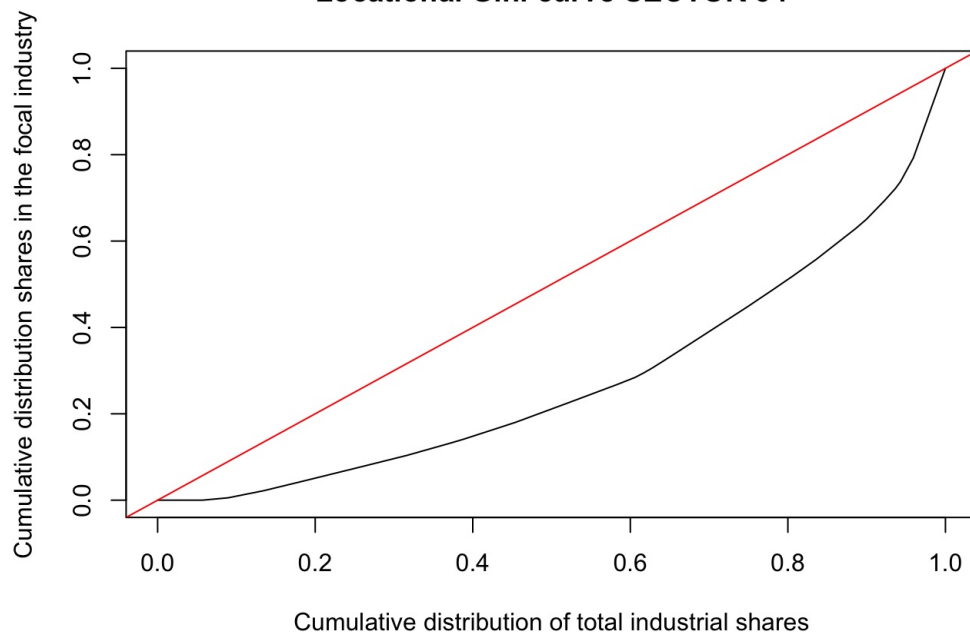
Locational Gini curve SECTOR 52



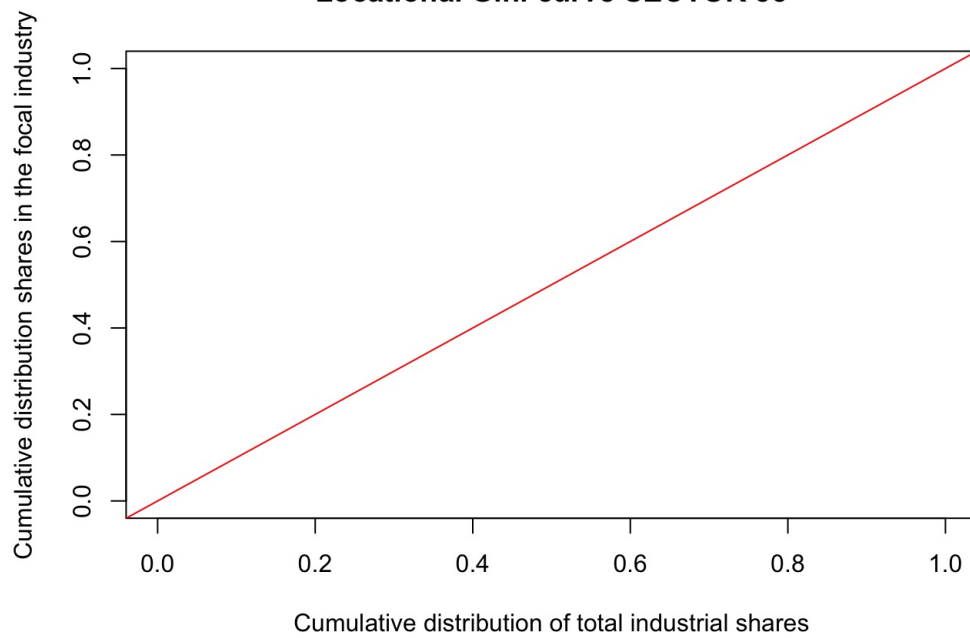
Locational Gini curve SECTOR 53



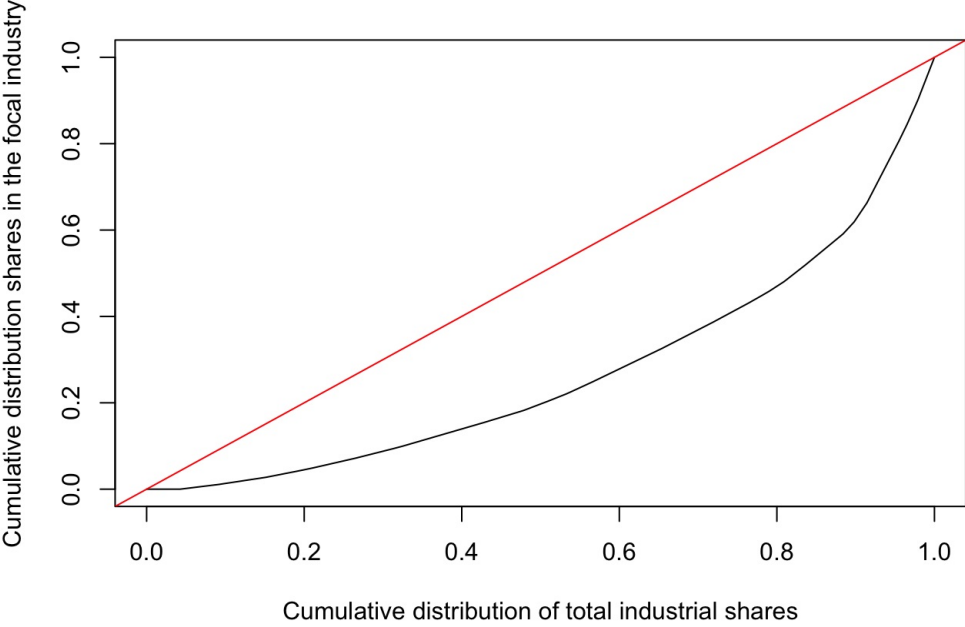
Locational Gini curve SECTOR 54



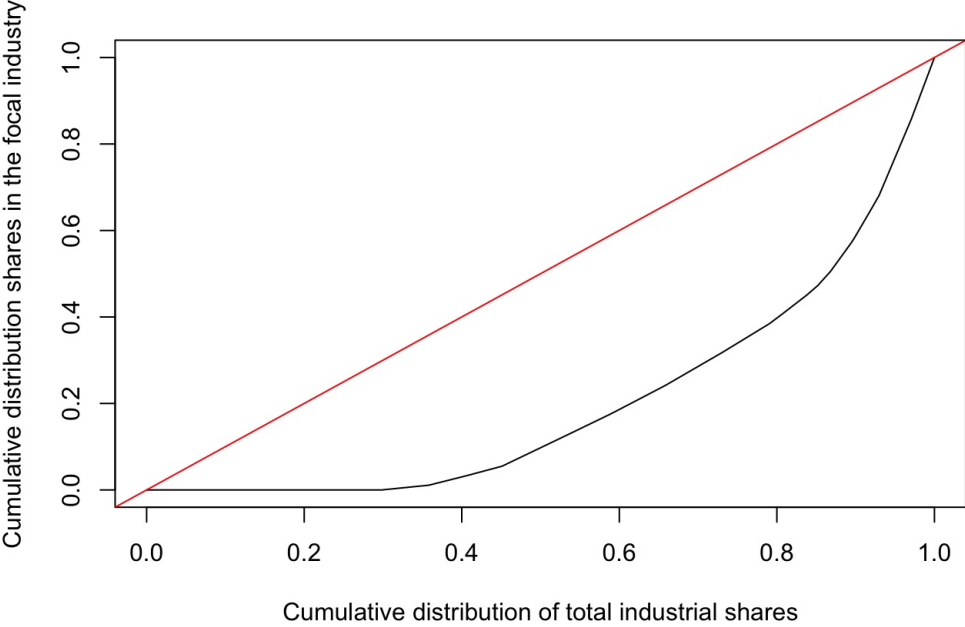
Locational Gini curve SECTOR 55



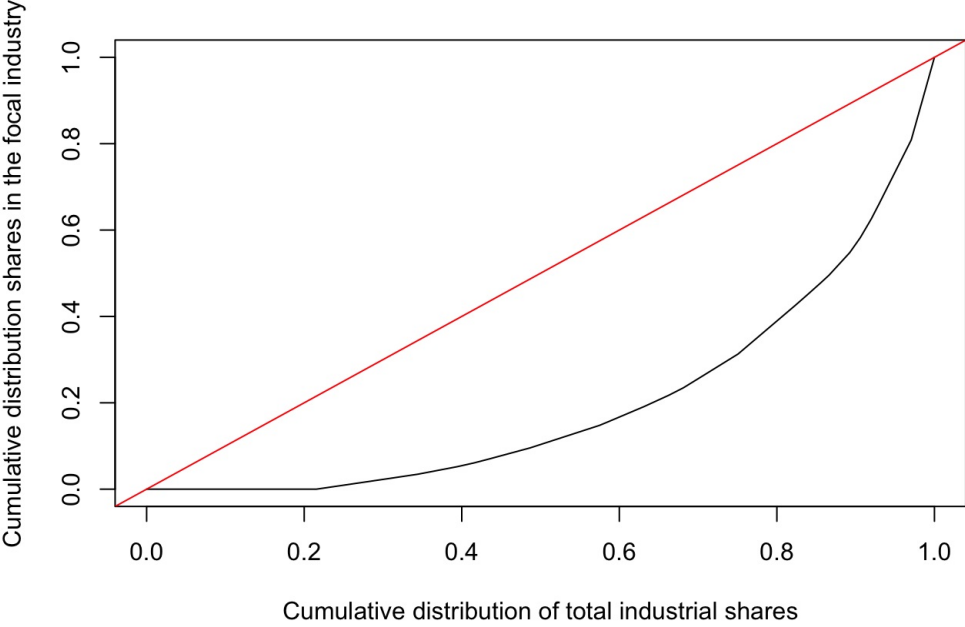
Locational Gini curve SECTOR 56



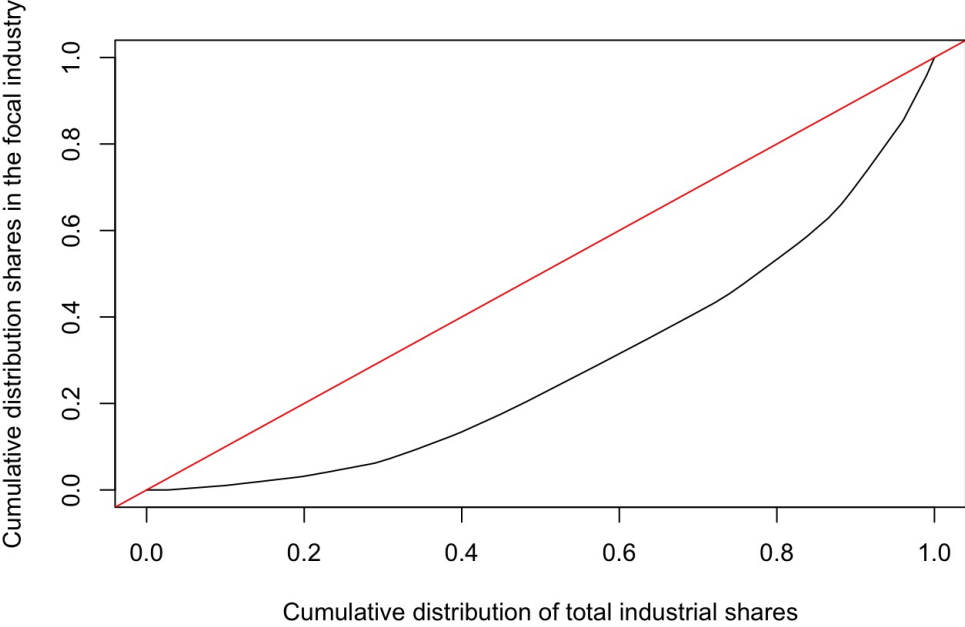
Locational Gini curve SECTOR 61



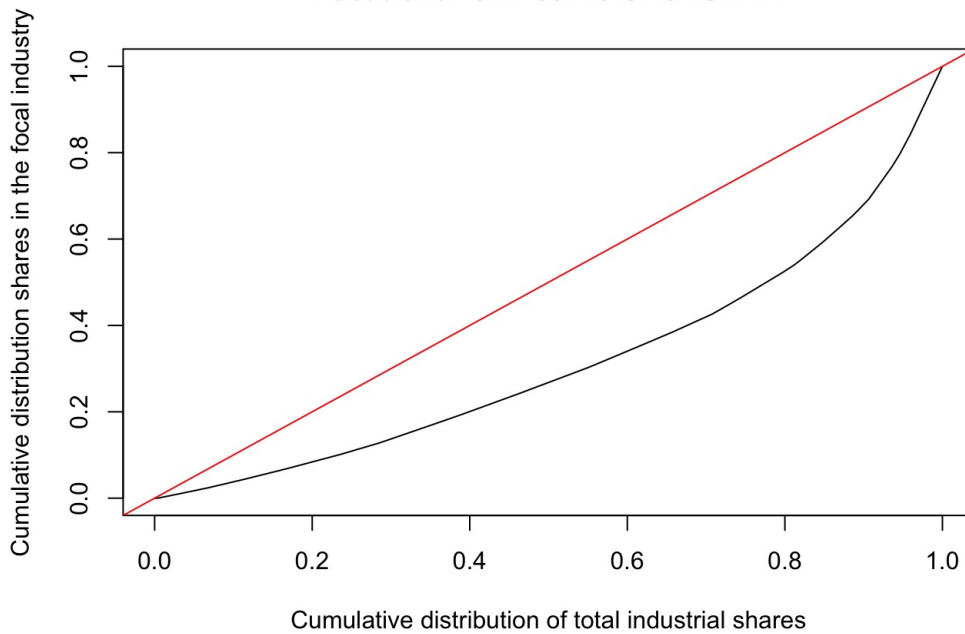
Locational Gini curve SECTOR 62



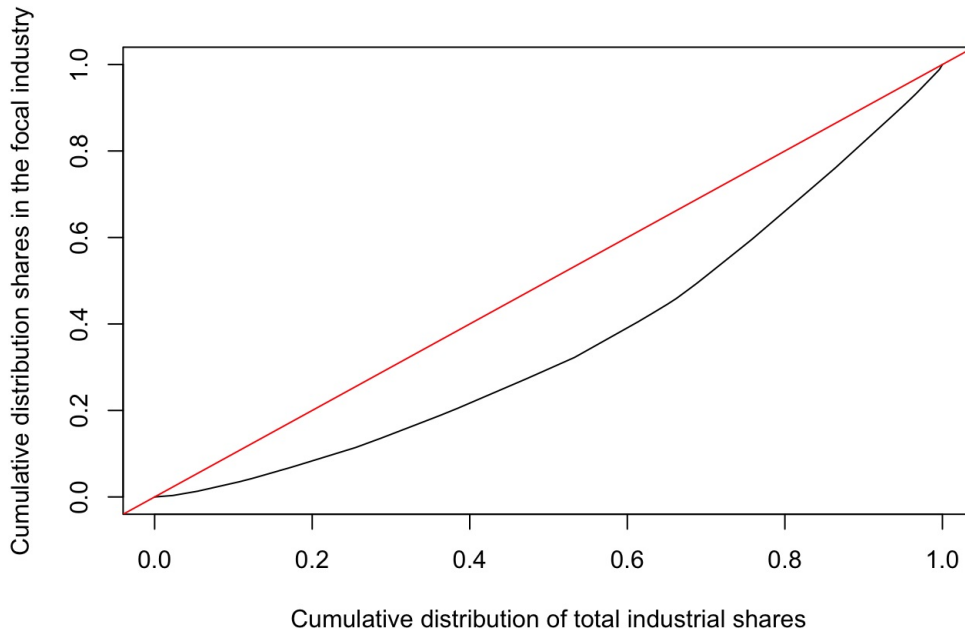
Locational Gini curve SECTOR 71



Locational Gini curve SECTOR 72



Locational Gini curve SECTOR 81



in-put incidence matrix

```
HACHMAN <- as.data.frame(Hachman(mat)) #especializaci?n por estado
HERFINDAHL <- as.data.frame(Herfindahl(mat)) #especializaci?n por estado
INV_UBICUIDY <- as.data.frame(inv.norm.ubiquity(mat)) #ubicuidad-como medida de diversidad por sectores cooper
ativos
KRUGMAN <- as.data.frame(Krugman.index(mat)) #especializaci?n por estado
ENTROPIA <- as.data.frame(entropy(mat)) #diversidad por estado
DIVERSITY <- as.data.frame(EconGeo::diversity(mat, RCA = TRUE)) #diversidad por estados
DIVERSIDAD <- as.data.frame(MORc(mat, RCA = T, steps = 0))
UBICUIDAD_PROMEDIO <- as.data.frame(MORc(mat, RCA = T, steps = 1))
```

#concentraci?n, GINI EN LOS SECTORES

```
GINI <- as.data.frame(Gini(mat))
Gini(rowSums(mat))
```

```
## [1] 0.366
```

run the function for industry #1 only

```
Gini (mat[,1])
```

```
## [1] 0.609
```

run the function for industry #2 only

```
Gini (mat[,2])
```

```
## [1] 0.603
```

run the function for industry #3 only

```
Gini (mat[,3])
```

```
## [1] 0.879
```

run the function for industry #4 only

```
Gini (mat[,4])
```

```
## [1] 0.879
```

```
#exportar en formato de excel #write.csv (RCABIN, file="RCABIN.csv") #write.csv (BALASSA_PROM, file="BALASSA_PROM.csv") #write.csv  
(LOCAT_GINI, file="LOCAT_GINI.csv") #write.csv (HACHMAN, file="HACHMAN.csv") #write.csv (HERFINDAHL, file="HERFINDAHL.csv")  
#write.csv (INV_UBICUITY, file="INV_UBICUITY.csv") #write.csv (KRUGMAN, file="KRUGMAN.csv") #write.csv (ENTROPIA,  
file="ENTROPIA.csv") #write.csv (DIVERSITY, file="DIVERSITY.csv") #write.csv (UBICUIDAD_PROMEDIO, file="UBICUIDAD_PROMEDIO.csv")  
#write.csv (GINI, file="GINI.csv")
```

```
#Ver la ruta en donde se guardo #getwd()
```

SACAR HEATMAP DE LA MATRIZ RCA BINARIA

```
#install.packages("pheatmap")
```

```
library(pheatmap)
```

viridis, magma, plasma, cividis, inferno

```
#install.packages("viridisLite")
```

```
library(viridis)
```

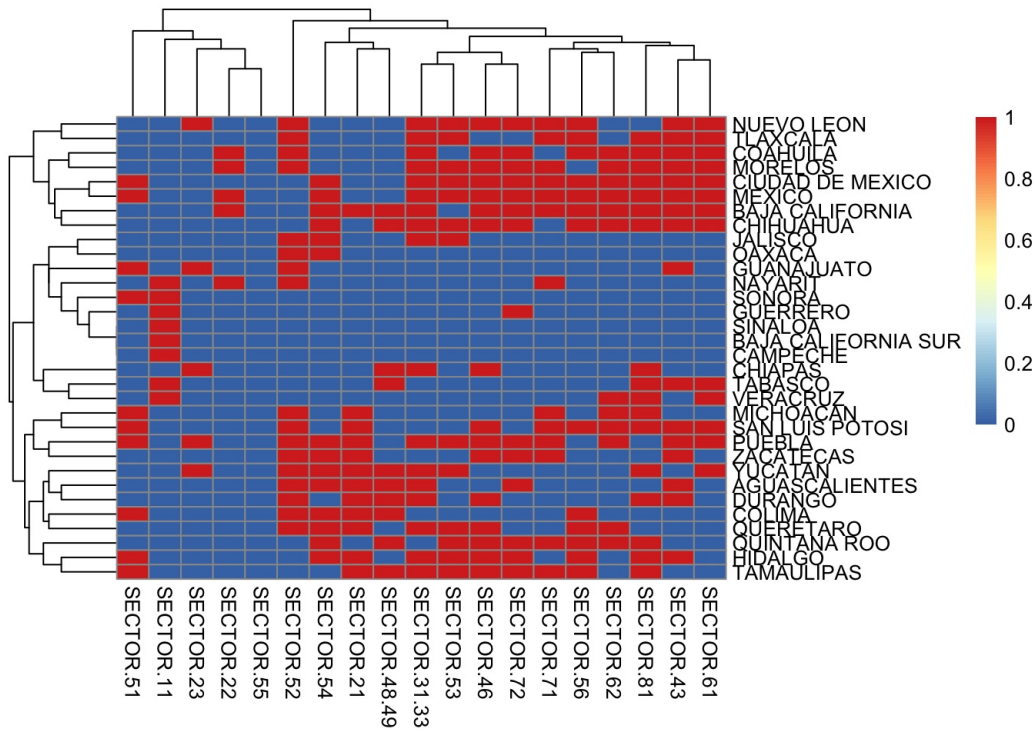
```
## Loading required package: viridisLite
```

```
#file.choose()
```

```
heatmap_1 <- as.matrix(  
  read.csv("/Users/luz/Documents/Rstudio/ECONGEO_FULL/RCABIN.csv",  
    sep = ",",  
    header = T,  
    row.names = 1))
```

```
#Plotting with pheatmap!
```

```
pheatmap(heatmap_1)
```

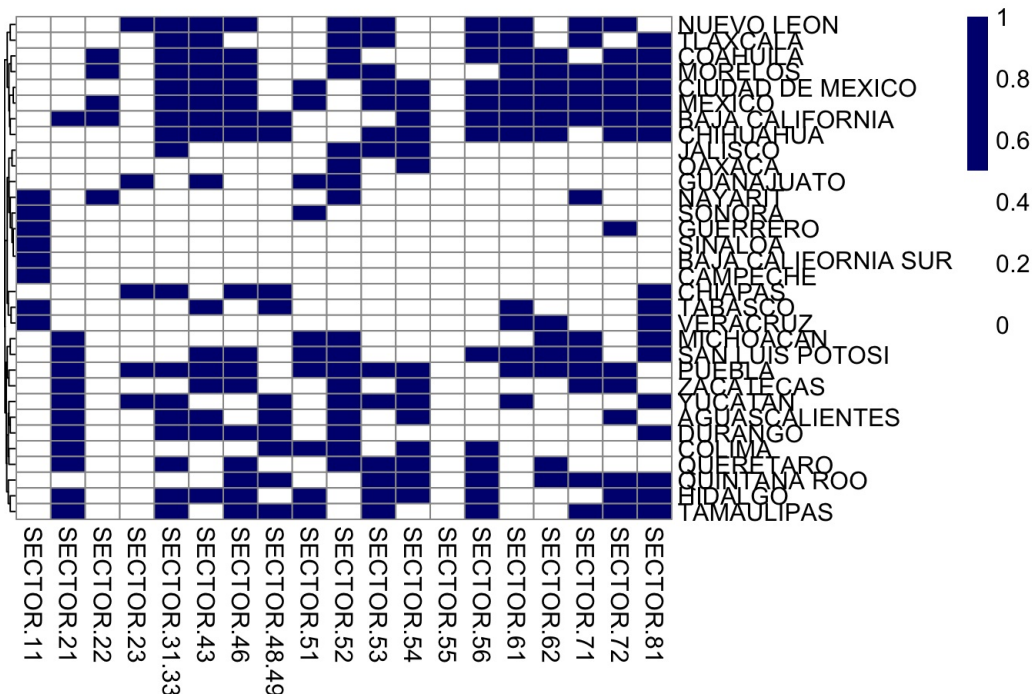


```
colorz <- c('white', 'navyblue')
```

```
#llamar a la librería viridis
```

```
library(viridis)
```

```
pheatmap(heatmap_1, fontsize = 6, cluster_rows = T, cluster_cols = F, treeheight_row = 1, treeheight_col = 0,
  main = "", fontsize = 12, annotation_legend = FALSE, display_numbers = FALSE,
  fontsize_number = 6, col = colorz)
```



```
### ##### 3. Measuring relatedness ### #####
```

Counting & Normalizing Co-Occurrences

remember

```
RCABIN <- as.data.frame(RCA (mat, binary = TRUE)) #location.quotient
```

```
#CONTINUA
```

	AGUASCALIENTES	BAJA CALIFORNIA	BAJA CALIFORNIA SUR	CAMPECHE		
## AGUASCALIENTES	0	6	0	0		
## BAJA CALIFORNIA	6	0	0	0		
## BAJA CALIFORNIA SUR	0	0	0	1		
## CAMPECHE	0	0	1	0		
## CHIAPAS	2	4	0	0		
## CHIHUAHUA	5	10	0	0		
## CIUDAD DE MEXICO	4	10	0	0		
## COAHUILA	4	9	0	0		
## COLIMA	4	4	0	0		
## DURANGO	5	6	0	0		
## GUANAJUATO	2	1	0	0		
## GUERRERO	1	1	1	1		
## HIDALGO	5	8	0	0		
## JALISCO	3	2	0	0		
## MEXICO	4	11	0	0		
## MICHOACAN	2	4	0	0		
## MORELOS	4	9	0	0		
## NAYARIT	1	2	1	1		
## NUEVO LEON	4	7	0	0		
## OAXACA	2	1	0	0		
## PUEBLA	6	9	0	0		
## QUERETARO	4	6	0	0		
## QUINTANA ROO	3	8	0	0		
## SAN LUIS POTOSI	3	8	0	0		
## SINALOA	0	0	1	1		
## SONORA	0	0	1	1		
## TABASCO	2	4	1	1		
## TAMAULIPAS	4	8	0	0		
## TLAXCALA	3	6	0	0		
## VERACRUZ	0	3	1	1		
## YUCATAN	5	6	0	0		
## ZACATECAS	5	6	0	0		
##	CHIAPAS	CHIHUAHUA	CIUDAD DE MEXICO	COAHUILA	COLIMA	DURANGO
## AGUASCALIENTES	2	5	4	4	4	5
## BAJA CALIFORNIA	4	10	10	9	4	6
## BAJA CALIFORNIA SUR	0	0	0	0	0	0
## CAMPECHE	0	0	0	0	0	0
## CHIAPAS	0	4	3	3	1	4
## CHIHUAHUA	4	0	10	8	3	5
## CIUDAD DE MEXICO	3	10	0	8	3	4
## COAHUILA	3	8	8	0	2	5
## COLIMA	1	3	3	2	0	3
## DURANGO	4	5	4	5	3	0
## GUANAJUATO	1	1	2	2	2	2
## GUERRERO	0	1	1	1	0	0
## HIDALGO	3	8	9	6	4	5
## JALISCO	1	3	3	2	2	2
## MEXICO	3	10	12	9	3	4
## MICHOACAN	1	2	4	3	3	3
## MORELOS	3	8	9	9	1	5
## NAYARIT	0	0	1	2	1	1
## NUEVO LEON	3	7	8	7	2	4
## OAXACA	0	1	1	1	2	1
## PUEBLA	3	8	10	7	4	5
## QUERETARO	2	6	6	5	4	4
## QUINTANA ROO	3	8	8	5	3	3
## SAN LUIS POTOSI	2	6	8	7	4	5
## SINALOA	0	0	0	0	0	0
## SONORA	0	0	1	0	1	0
## TABASCO	2	4	3	3	1	3
## TAMAULIPAS	4	7	8	5	4	5
## TLAXCALA	2	6	7	6	2	4
## VERACRUZ	1	3	3	3	0	1
## YUCATAN	4	6	5	4	4	5
## ZACATECAS	1	4	5	4	3	4
##	GUANAJUATO	GUERRERO	HIDALGO	JALISCO	MEXICO	MICHOACAN
## AGUASCALIENTES	2	1	5	3	4	2
## BAJA CALIFORNIA	1	1	8	2	11	4
## BAJA CALIFORNIA SUR	0	1	0	0	0	0
## CAMPECHE	0	1	0	0	0	0
## CHIAPAS	1	0	3	1	3	1
## CHIHUAHUA	1	1	8	3	10	2
## CIUDAD DE MEXICO	2	1	9	3	12	4
## COAHUILA	2	1	6	2	9	3

## COLIMA	2	0	4	2	3	3
## DURANGO	2	0	5	2	4	3
## GUANAJUATO	0	0	2	1	2	2
## GUERRERO	0	0	1	0	1	0
## HIDALGO	2	1	0	3	9	3
## JALISCO	1	0	3	0	3	1
## MEXICO	2	1	9	3	0	4
## MICHOACAN	2	0	3	1	4	0
## MORELOS	2	1	6	3	10	4
## NAYARIT	1	1	0	1	2	2
## NUEVO LEON	3	1	6	3	8	2
## OAXACA	1	0	1	2	1	1
## PUEBLA	4	1	8	4	10	5
## QUERETARO	1	0	6	4	6	3
## QUINTANA ROO	0	1	6	2	8	3
## SAN LUIS POTOSI	3	0	6	1	8	6
## SINALOA	0	1	0	0	0	0
## SONORA	1	1	1	0	1	1
## TABASCO	1	1	2	0	3	1
## TAMAULIPAS	1	1	8	2	8	4
## TLAXCALA	2	0	5	3	7	3
## VERACRUZ	0	1	1	0	3	2
## YUCATAN	2	0	5	4	5	3
## ZACATECAS	2	1	5	2	5	3
##	MORELOS	NAYARIT	NUEVO LEON	OAXACA	PUEBLA	QUERETARO
## AGUASCALIENTES	4	1	4	2	6	4
## BAJA CALIFORNIA	9	2	7	1	9	6
## BAJA CALIFORNIA SUR	0	1	0	0	0	0
## CAMPECHE	0	1	0	0	0	0
## CHIAPAS	3	0	3	0	3	2
## CHIHUAHUA	8	0	7	1	8	6
## CIUDAD DE MEXICO	9	1	8	1	10	6
## COAHUILA	9	2	7	1	7	5
## COLIMA	1	1	2	2	4	4
## DURANGO	5	1	4	1	5	4
## GUANAJUATO	2	1	3	1	4	1
## GUERRERO	1	1	1	0	1	0
## HIDALGO	6	0	6	1	8	6
## JALISCO	3	1	3	2	4	4
## MEXICO	10	2	8	1	10	6
## MICHOACAN	4	2	2	1	5	3
## MORELOS	0	3	8	1	9	5
## NAYARIT	3	0	2	1	2	1
## NUEVO LEON	8	2	0	1	9	5
## OAXACA	1	1	1	0	2	2
## PUEBLA	9	2	9	2	0	7
## QUERETARO	5	1	5	2	7	0
## QUINTANA ROO	6	1	5	1	6	5
## SAN LUIS POTOSI	7	2	6	1	8	5
## SINALOA	0	1	0	0	0	0
## SONORA	0	1	0	0	1	0
## TABASCO	3	1	2	0	2	0
## TAMAULIPAS	6	1	6	0	7	5
## TLAXCALA	7	2	7	1	6	4
## VERACRUZ	3	1	1	0	2	1
## YUCATAN	5	1	5	2	7	5
## ZACATECAS	5	2	5	2	7	4
##	QUINTANA ROO	SAN LUIS POTOSI	SINALOA	SONORA	TABASCO	
## AGUASCALIENTES	3		3	0	0	2
## BAJA CALIFORNIA	8		8	0	0	4
## BAJA CALIFORNIA SUR	0		0	1	1	1
## CAMPECHE	0		0	1	1	1
## CHIAPAS	3		2	0	0	2
## CHIHUAHUA	8		6	0	0	4
## CIUDAD DE MEXICO	8		8	0	1	3
## COAHUILA	5		7	0	0	3
## COLIMA	3		4	0	1	1
## DURANGO	3		5	0	0	3
## GUANAJUATO	0		3	0	1	1
## GUERRERO	1		0	1	1	1
## HIDALGO	6		6	0	1	2
## JALISCO	2		1	0	0	0
## MEXICO	8		8	0	1	3
## MICHOACAN	3		6	0	1	1
## MORELOS	6		7	0	0	3
## NAYARIT	1		2	1	1	1
## NUEVO LEON	5		6	0	0	2
## OAXACA	1		1	0	0	0
## PUEBLA	6		8	0	1	2

## QUERETARO	5	5	0	0	0
## QUINTANA ROO	0	5	0	0	2
## SAN LUIS POTOSI	5	0	0	1	3
## SINALOA	0	0	0	1	1
## SONORA	0	1	1	0	1
## TABASCO	2	3	1	1	0
## TAMAULIPAS	7	6	0	1	2
## TLAXCALA	4	6	0	0	3
## VERACRUZ	2	3	1	1	3
## YUCATAN	4	4	0	0	3
## ZACATECAS	4	5	0	0	1
##	TAMAULIPAS	TLAXCALA	VERACRUZ	YUCATAN	ZACATECAS
## AGUASCALIENTES	4	3	0	5	5
## BAJA CALIFORNIA	8	6	3	6	6
## BAJA CALIFORNIA SUR	0	0	1	0	0
## CAMPECHE	0	0	1	0	0
## CHIAPAS	4	2	1	4	1
## CHIHUAHUA	7	6	3	6	4
## CIUDAD DE MEXICO	8	7	3	5	5
## COAHUILA	5	6	3	4	4
## COLIMA	4	2	0	4	3
## DURANGO	5	4	1	5	4
## GUANAJUATO	1	2	0	2	2
## GUERRERO	1	0	1	0	1
## HIDALGO	8	5	1	5	5
## JALISCO	2	3	0	4	2
## MEXICO	8	7	3	5	5
## MICHOACAN	4	3	2	3	3
## MORELOS	6	7	3	5	5
## NAYARIT	1	2	1	1	2
## NUEVO LEON	6	7	1	5	5
## OAXACA	0	1	0	2	2
## PUEBLA	7	6	2	7	7
## QUERETARO	5	4	1	5	4
## QUINTANA ROO	7	4	2	4	4
## SAN LUIS POTOSI	6	6	3	4	5
## SINALOA	0	0	1	0	0
## SONORA	1	0	1	0	0
## TABASCO	2	3	3	3	1
## TAMAULIPAS	0	5	1	5	4
## TLAXCALA	5	0	2	5	3
## VERACRUZ	1	2	0	2	0
## YUCATAN	5	5	2	0	3
## ZACATECAS	4	3	0	3	0

```
c = co.occurrence (t(RCABIN))
```

```
#matriz de adyacencias 1 (relacionamiento con co-ocurrencias)
```

```
r1 <- relatedness(c)
R1 <- as.data.frame(r1)
```

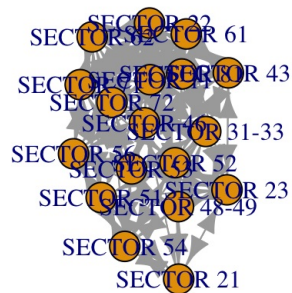
```
###-----### ### 4. Plotting the product space ### ###-----###
```

g1, g2 y g5

graficar con r1*****

```
g1 = graph_from_adjacency_matrix(r1)
plot(g1)
```

SECTOR 55



```
#MATRIZ DE ADYACENCIA NO BINANRIA CON R1 #write.csv (r1, file="relatedness_nobin_R1.csv") #write.graph(g1, file="g1.gml", format="gml")  
#Ver la ruta en donde se guardo getwd()
```

```
#opcional (s?lo para trabajar con datos binarios) # RELACIONAMIENTO BINARIO CON CO OCURRENCIAS
```

```
r2 = relatedness(c)  
  
r2[r2<1] = 0  
r2[r2>1] = 1
```

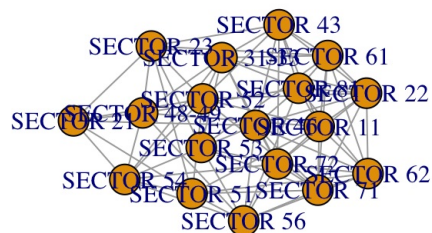
```
#matriz de adyacencias binarias con relacionamiento de co-ocurrencias
```

```
R2 <- as.data.frame(r2)
```

PRE VIEW DE LA RED ### VER LA ESTRUCTURA DE LA RED DENTRO DE R

```
g2 = graph_from_adjacency_matrix (r2, mode = "undirected")  
plot(g2)
```

SECTOR 55



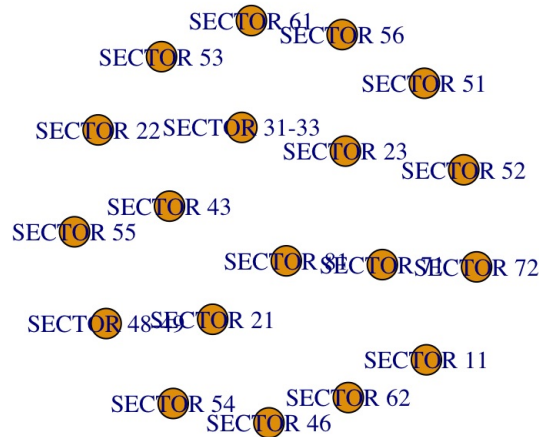
#MATRIZ DE RELACIONAMIENTO BINARIA #write.csv (r2, file="relatedness_bin_R2.csv") #aqui se guarda la red para exportarla en un segundo momento en CYTOSCAPE***** #write.graph(g2, file="g2.gml", format="gml")

3. PROXIMIDAD CON RELACIONAMIENTO DE COSINE

```
r3 = relatedness (c, method = "cosine")
```

write.csv (r3, file="relatedness_R3.csv") # PRE VIEW DE LA RED ### VER LA ESTRUCTURA DE LA RED DENTRO DE R

```
g3 = graph_from_adjacency_matrix (r3, mode = "undirected")  
plot(g3)
```



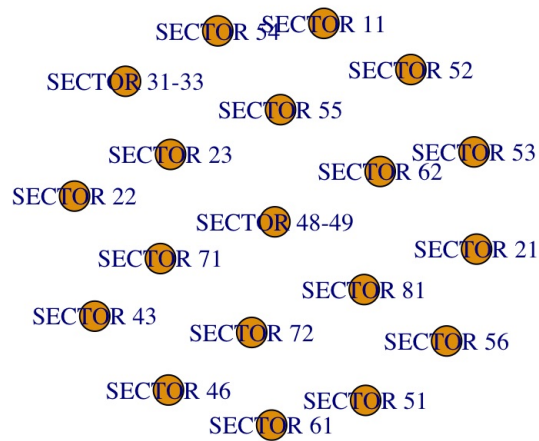
```
getwd()
```

4. PROXIMIDAD CON RELACIONAMIENTO DE JACARD

```
r4 = relatedness (c, method = "Jaccard")
```

#write.csv (r4, file="relatedness_R4.csv") # PRE VIEW DE LA RED ### VER LA ESTRUCTURA DE LA RED DENTRO DE R

```
g4 = graph_from_adjacency_matrix (r4, mode = "undirected")  
plot(g4)
```

```
getwd()
```

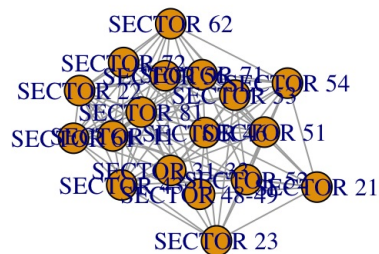
5. PROXIMIDAD CON RELACIONAMIENTO DE ASSOCIATION *****

```
r5 = relatedness (c, method = "association")
```

```
#write.csv (r5, file="relatedness_R5.csv") # PRE VIEW DE LA RED ### VER LA ESTRUCTURA DE LA RED DENTRO DE R
```

```
g5 = graph_from_adjacency_matrix (r5, mode = "undirected")  
plot(g5)
```

SECTOR 55



```
getwd()
```