ggplot.R

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2024-12-10

```
# Ggplot: crear visualizaciones gráficas con los datos

# https://www.econjournals.com/index.php/ijeep/article/view/8037/4503

# Tengo que tener instalado y habilitado tidyverse
# install.packages("tidyverse")
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
## v dplyr     1.1.4     v readr     2.1.5
## v forcats   1.0.0     v stringr   1.5.1
## v ggplot2   3.5.1     v tibble    3.2.1
## v lubridate 1.9.3     v tidyr     1.3.1
## v purrr     1.0.2
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```
# cargar base de datos
data <- read_csv("https://raw.githubusercontent.com/Lufesc/ggplot/refs/heads/main/DatosSectorialesDptos
```

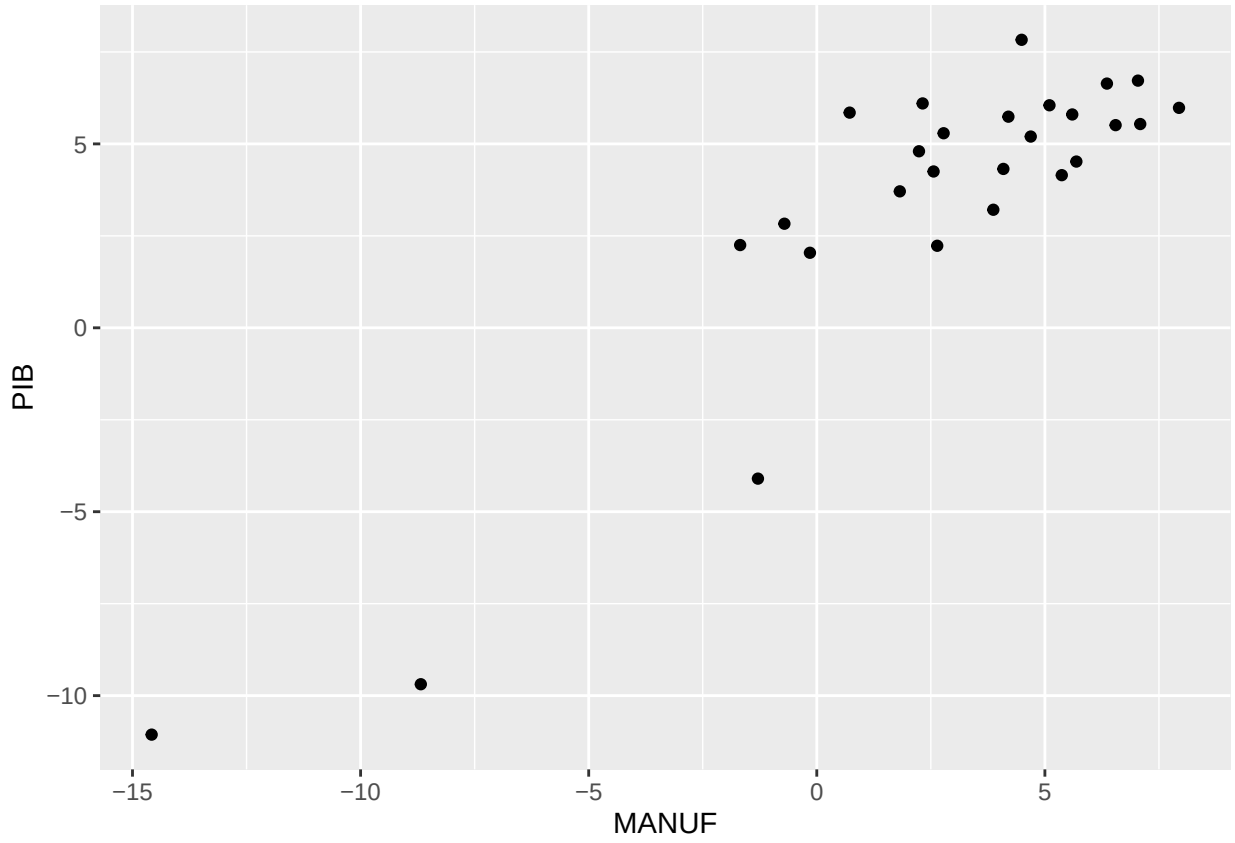
```
## Rows: 27 Columns: 9
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (1): DEPTO
## dbl (8): PERIODO, PIB, AGRI, PetrMinas, MANUF, ELEC, CONSTR, COMER
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
data
```

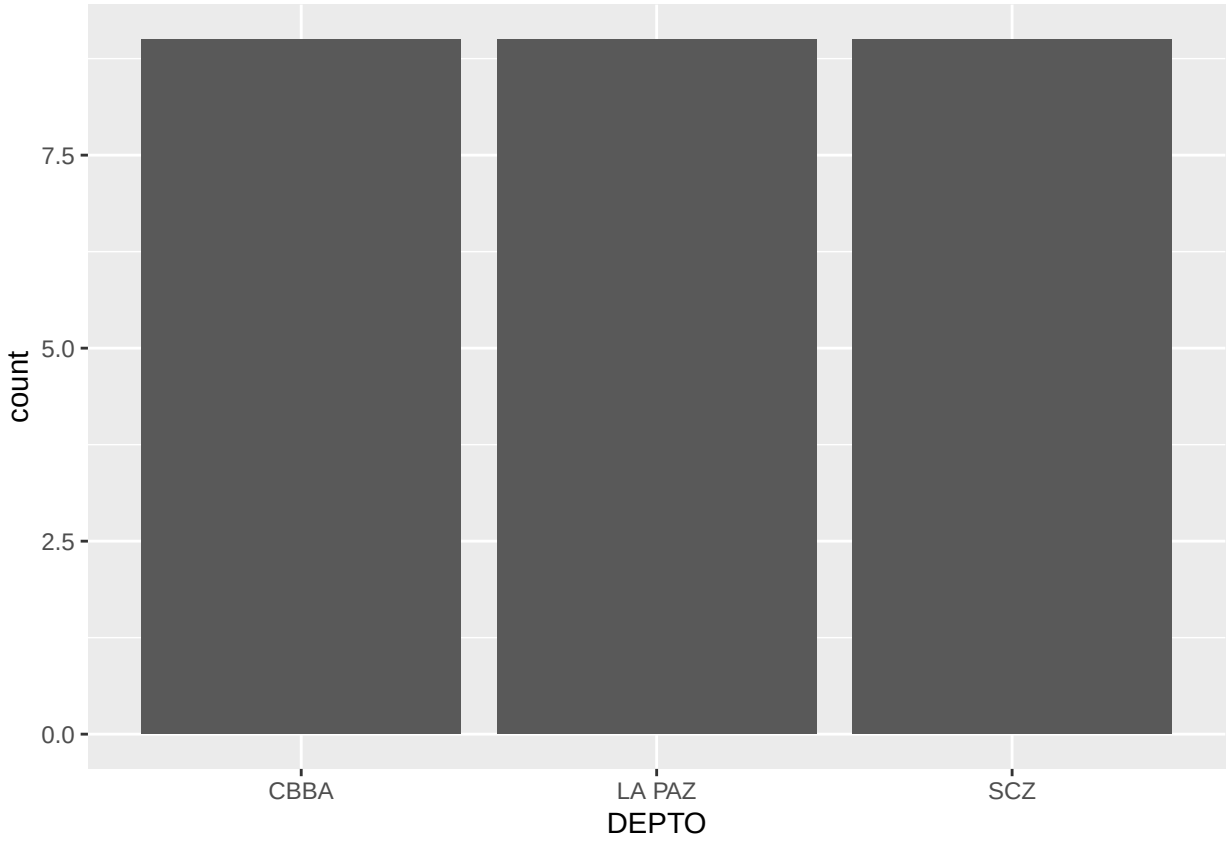
```
## # A tibble: 27 x 9
##    DEPTO  PERIODO    PIB  AGRI PetrMinas  MANUF  ELEC CONSTR COMER
##    <chr>    <dbl>  <dbl> <dbl>     <dbl>  <dbl> <dbl>  <dbl> <dbl>
##  1 LA PAZ    2015   7.83  2.28      10.3    4.49  5.68   6.97  4.47
##  2 LA PAZ    2016   5.51  2.39      -0.49   6.55  4.85   6.81  4.82
##  3 LA PAZ    2017   6.1   3.76      29.5    2.32  3.75   8.16  7.26
##  4 LA PAZ    2018   4.52  3.74      -0.32   5.69  3.11   3.27  4.08
```

```
##  5 LA PAZ    2019   3.21  4.09      5.36   3.87  3.5   -2.76  3.21
##  6 LA PAZ    2020 -11.1   3.09    -24.3  -14.6  -4.73  -6.83 -9.08
##  7 LA PAZ    2021   5.29 -3.35     38.9    2.78  8.24  19.8   8.32
##  8 LA PAZ    2022   4.8   2.34      7.72   2.24  4.33   4.71  5.48
##  9 LA PAZ    2023   2.23 -4.84    -10.8    2.64  6.17   1.22  1.45
## 10 CBBA      2015   6.05  4.37     -6.3    5.1   7.01   4.75  4.57
## # i 17 more rows
```

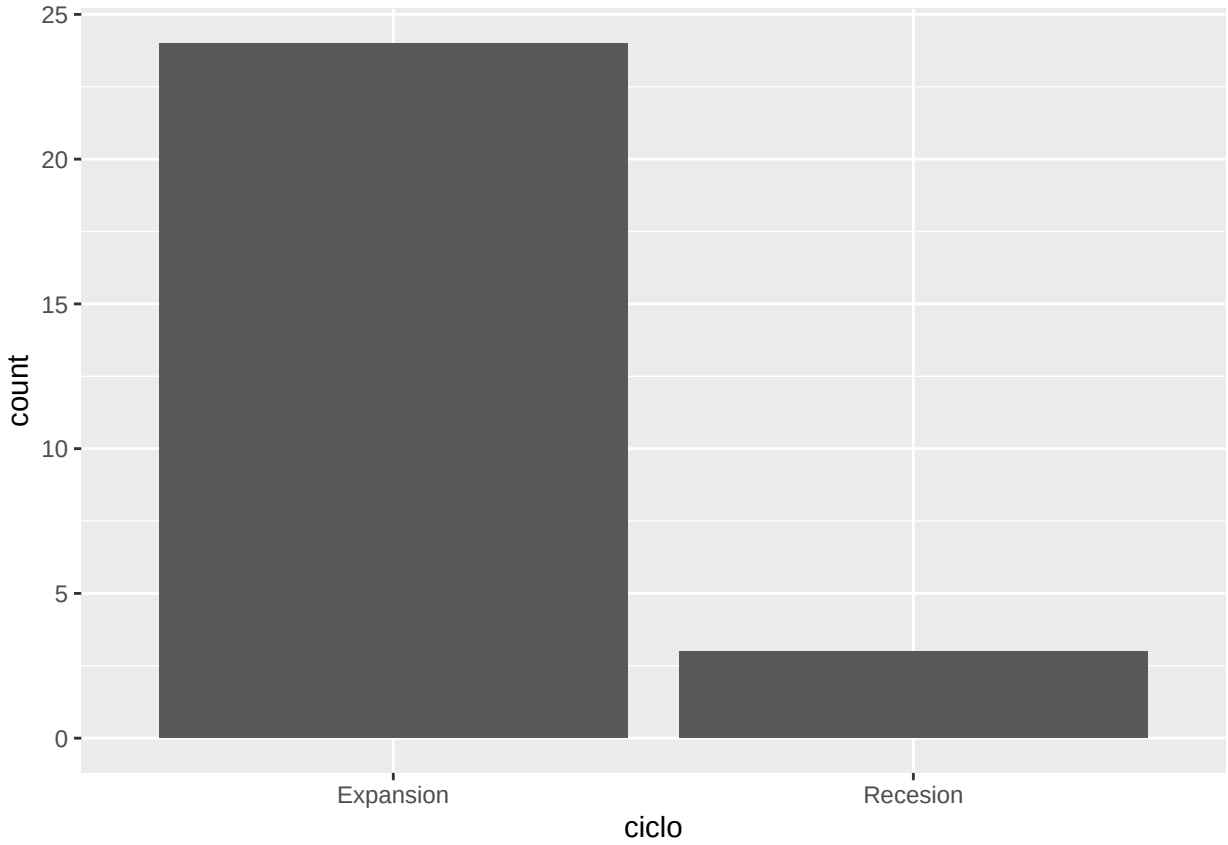
```r
# Exploración inicial gráfico de dispersión
data %>%
  ggplot(aes(x=MANUF, y=PIB)) +
  geom_point()
```



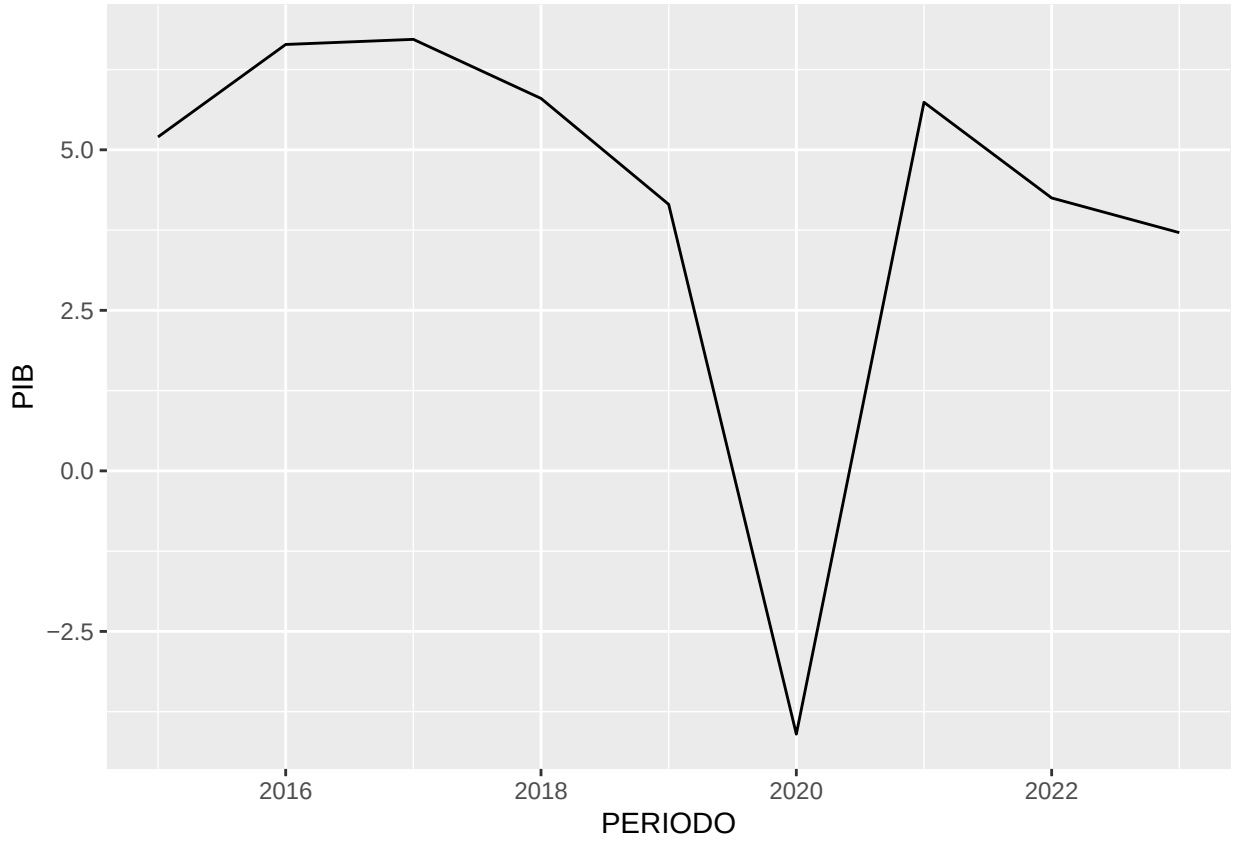

```r
# Gráfico de una variable
# Gráfico de barras
data %>%
  ggplot(aes(x=DEPTO)) +
  geom_bar()
```



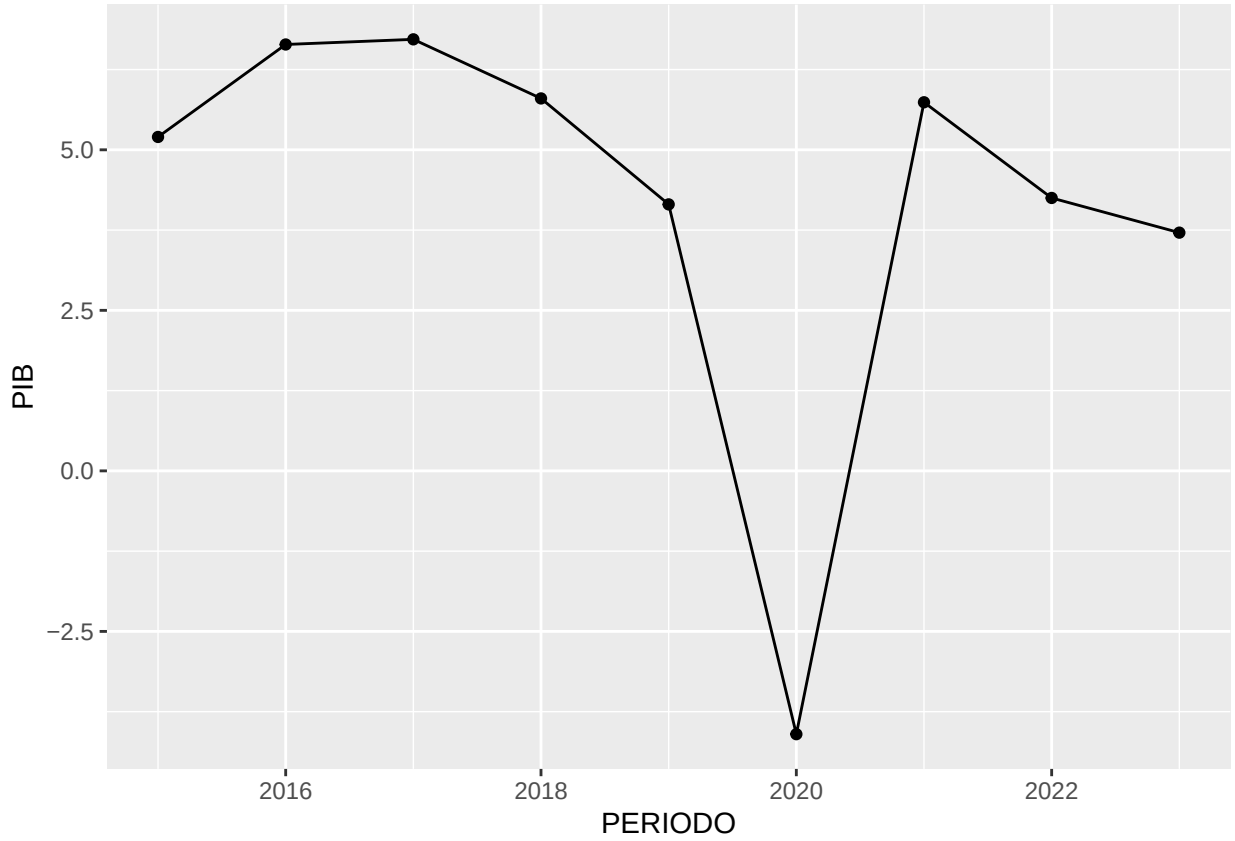

```
data <- data %>%
  mutate(ciclo = if_else(PIB <= 2.0,
                                    "Recesion",
                                    "Expansion"))

data %>%
  ggplot(aes(x=ciclo)) +
  geom_bar()
```




```
# Gráfico de líneas y puntos

data %>%
  filter(`DEPTO` == "SCZ") %>%
  ggplot(aes(x = PERIODO, y = PIB))+
  geom_line()
```

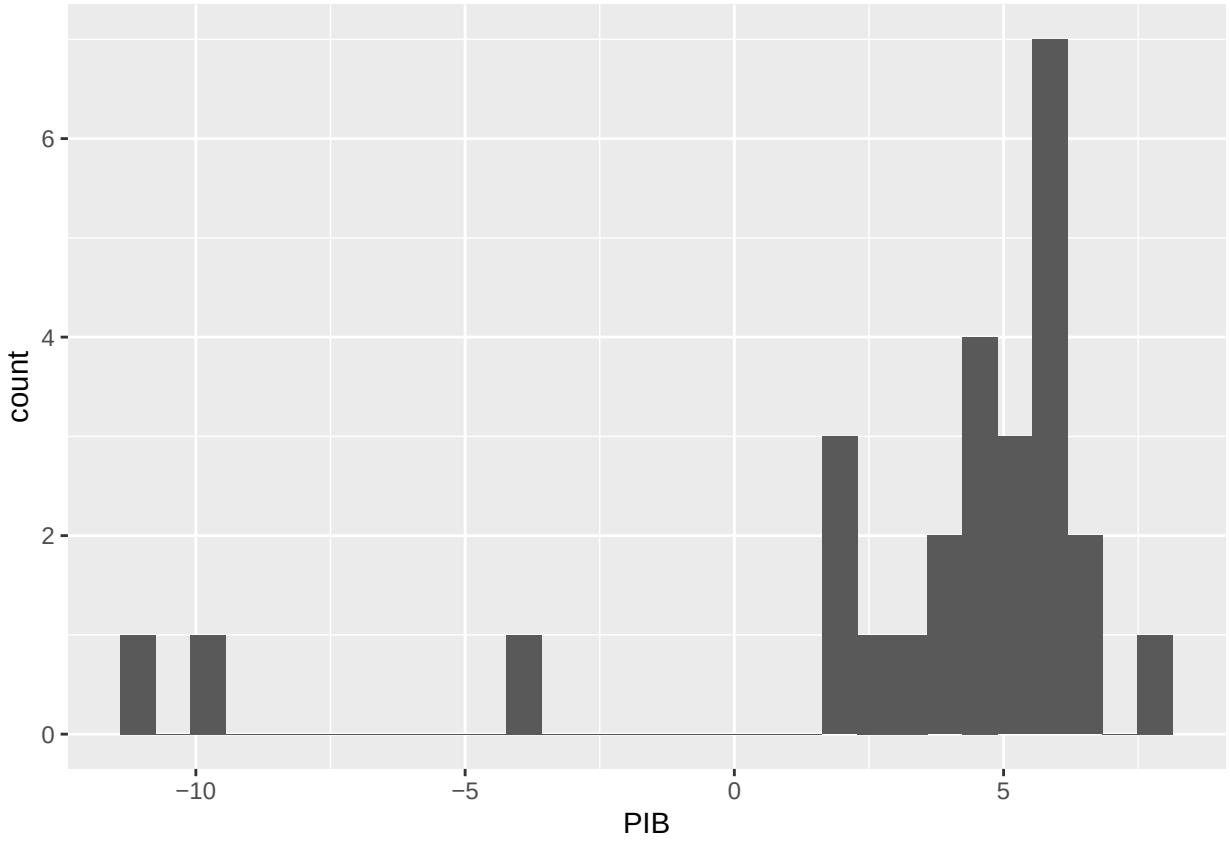



```
data %>%
  filter(`DEPTO` == "SCZ") %>%
  ggplot(aes(x = PERIODO, y = PIB))+
  geom_line() +
  geom_point()
```

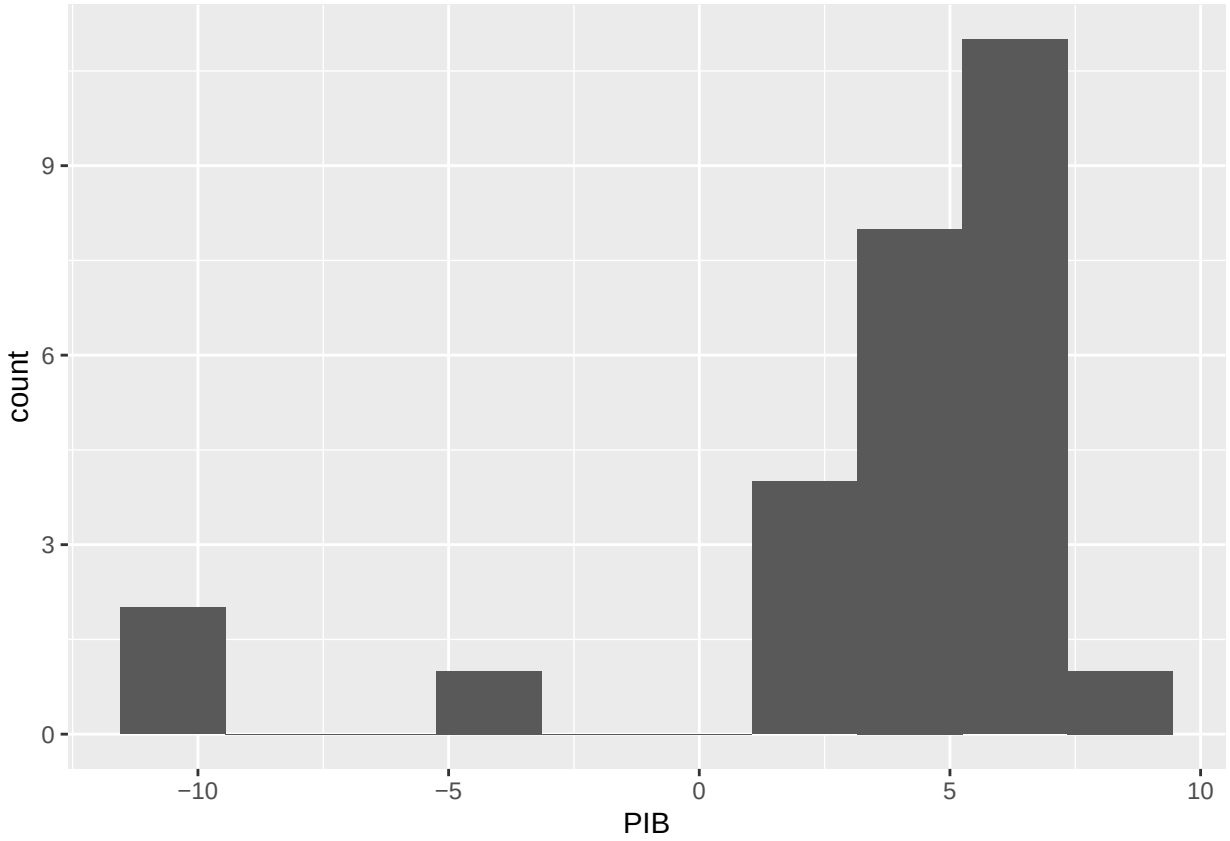



```
# Histograma
data %>%
  ggplot(aes(x = PIB)) +
  geom_histogram()
```

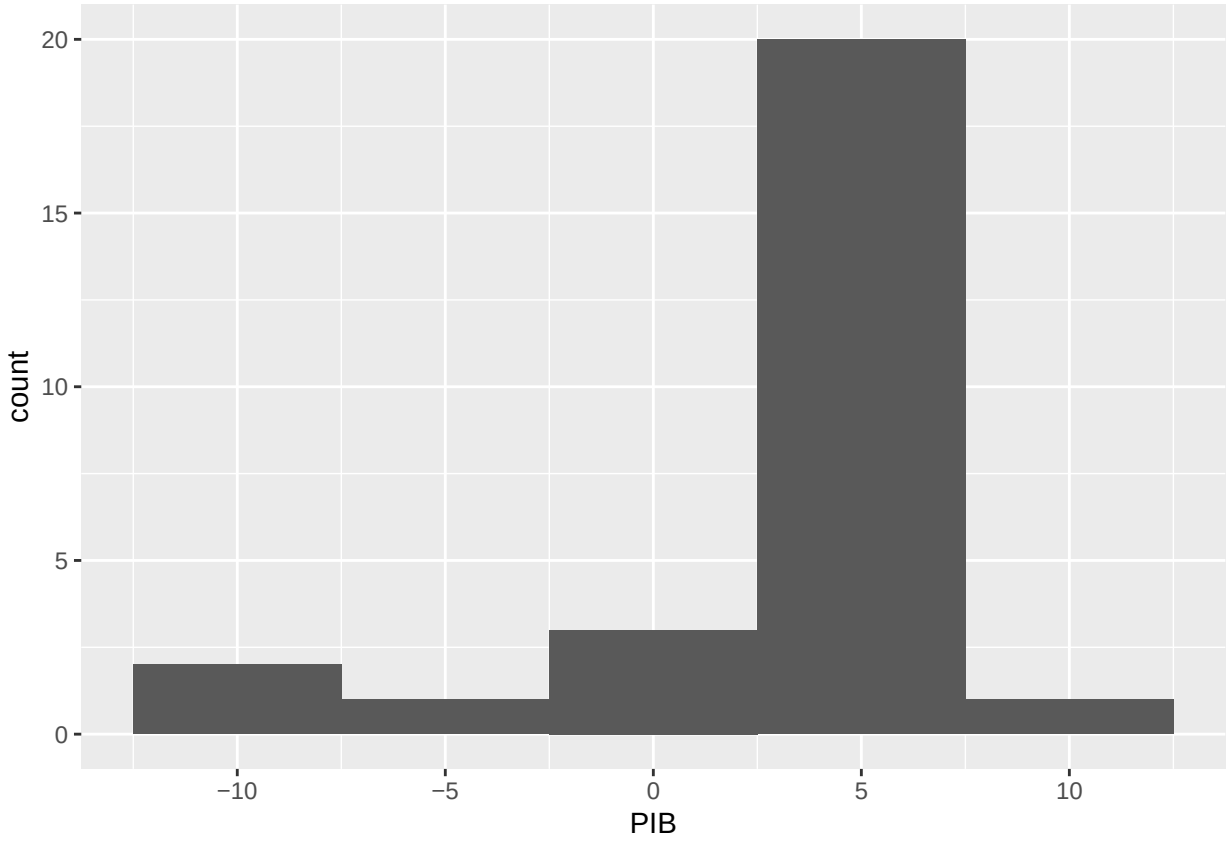
```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```



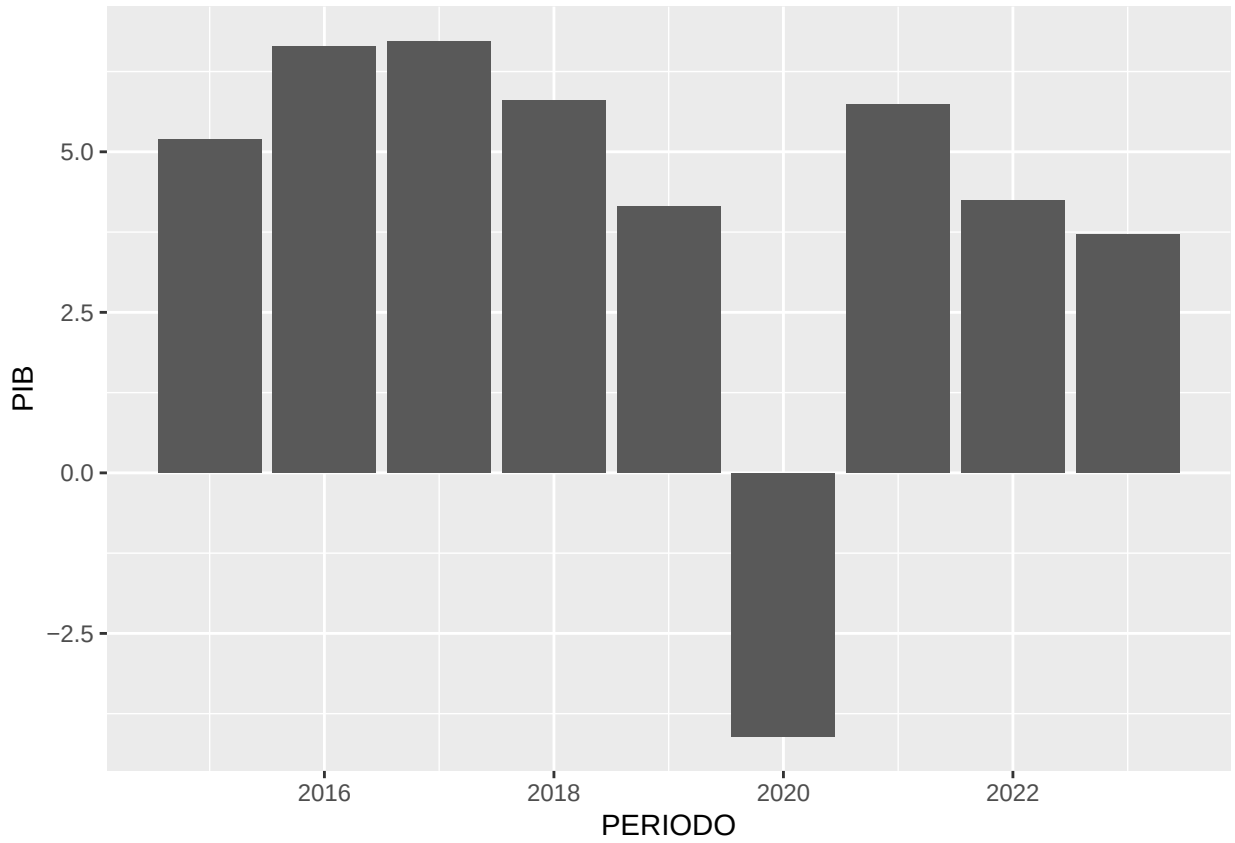

```
# Personalización del histograma
# Cambiar el número de bins o el ancho de las barras:

data %>% ggplot(aes(x = PIB)) + geom_histogram(bins = 10)
```



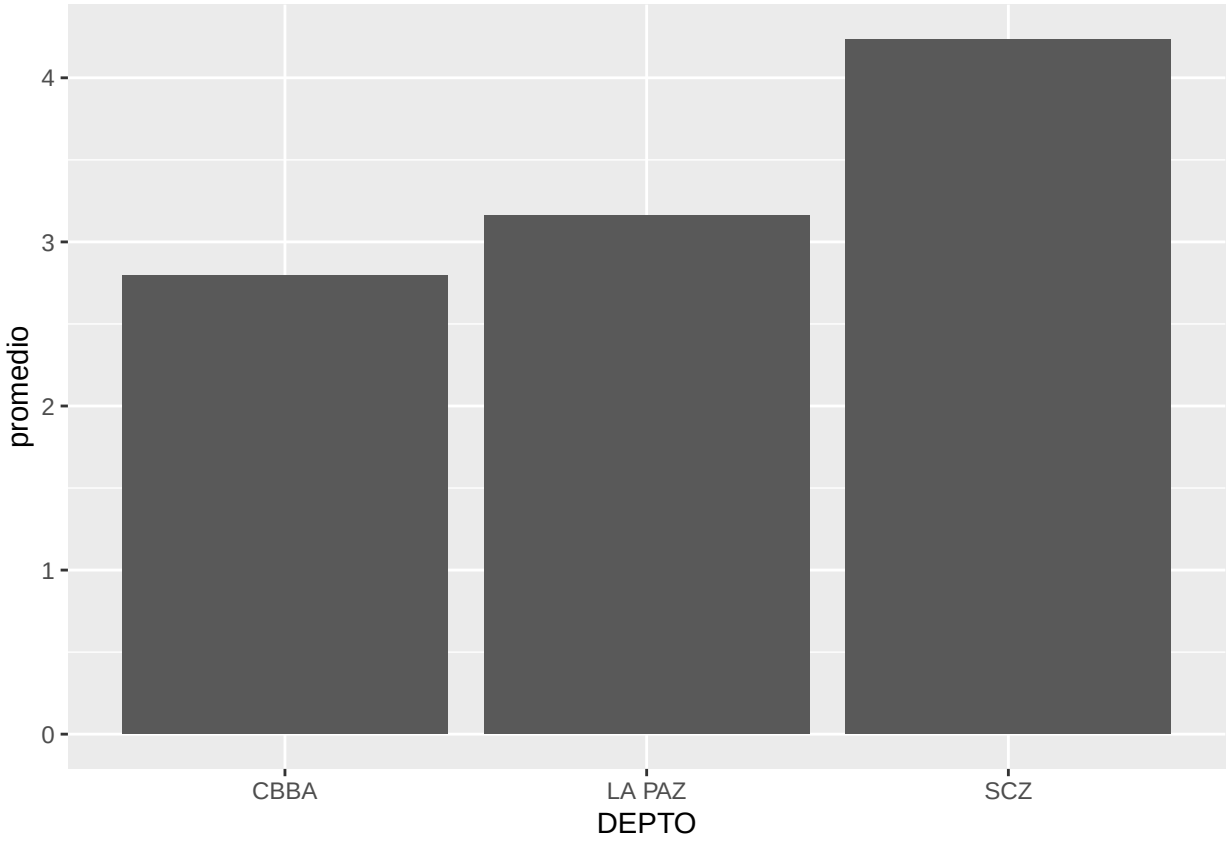

```
data %>% ggplot(aes(x = PIB)) + geom_histogram(binwidth = 5) # especificar el ancho de los bins
```




```
# Gráfico de columnas

data %>%
  filter(`DEPTO` == "SCZ") %>%
  ggplot(aes(x = PERIODO, y = PIB))+
  geom_col()
```

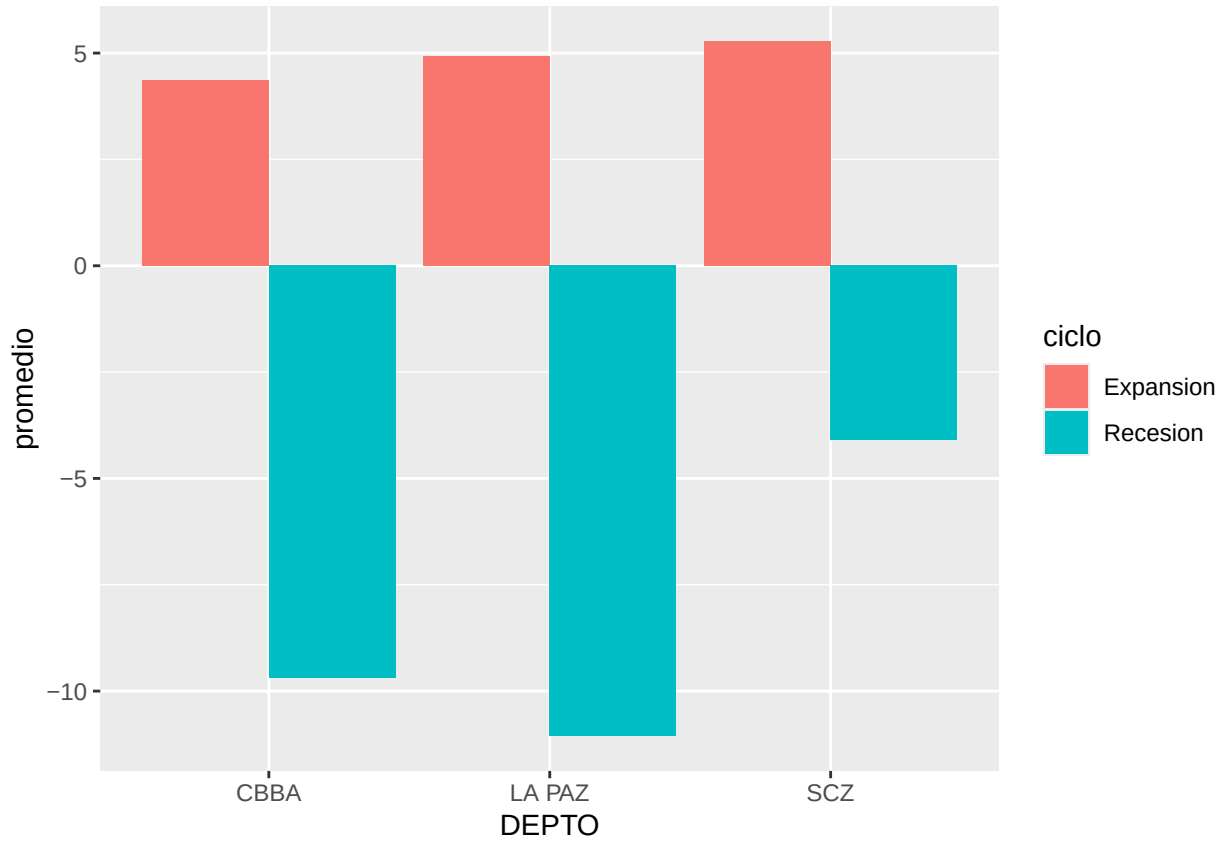



```
data %>%
  group_by(DEPTO) %>%
  summarise(promedio = mean(PIB)) %>%
  ggplot(aes(x = DEPTO, y = promedio)) +
  geom_col()
```



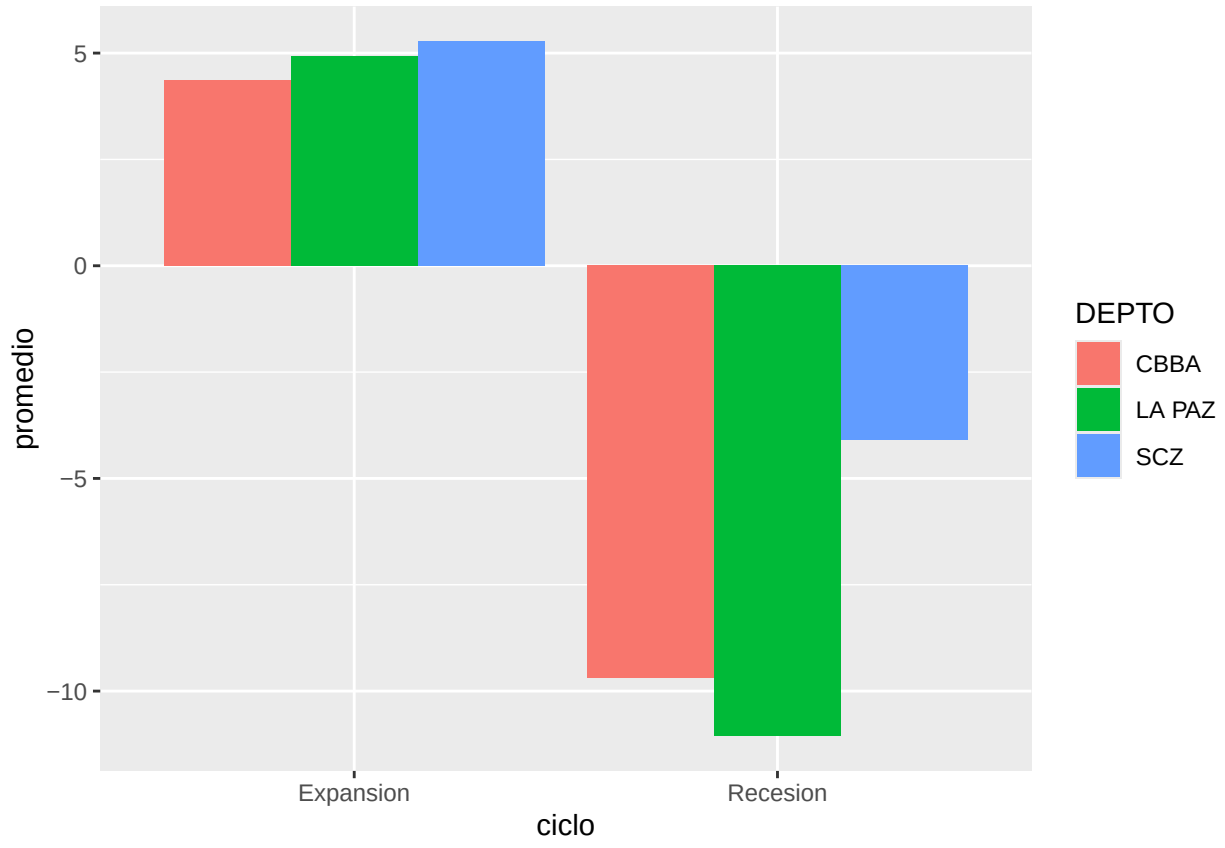

```
# Gráfico de barras apiladas y proporciones

data %>%
  group_by(DEPTO, ciclo) %>%
  summarise(promedio = mean(PIB)) %>%
  ggplot(aes(x = DEPTO, y = promedio, fill = ciclo)) +
  geom_col(position = "dodge")
```

```
## `summarise()` has grouped output by 'DEPTO'. You can override using the
## `.groups` argument.
```



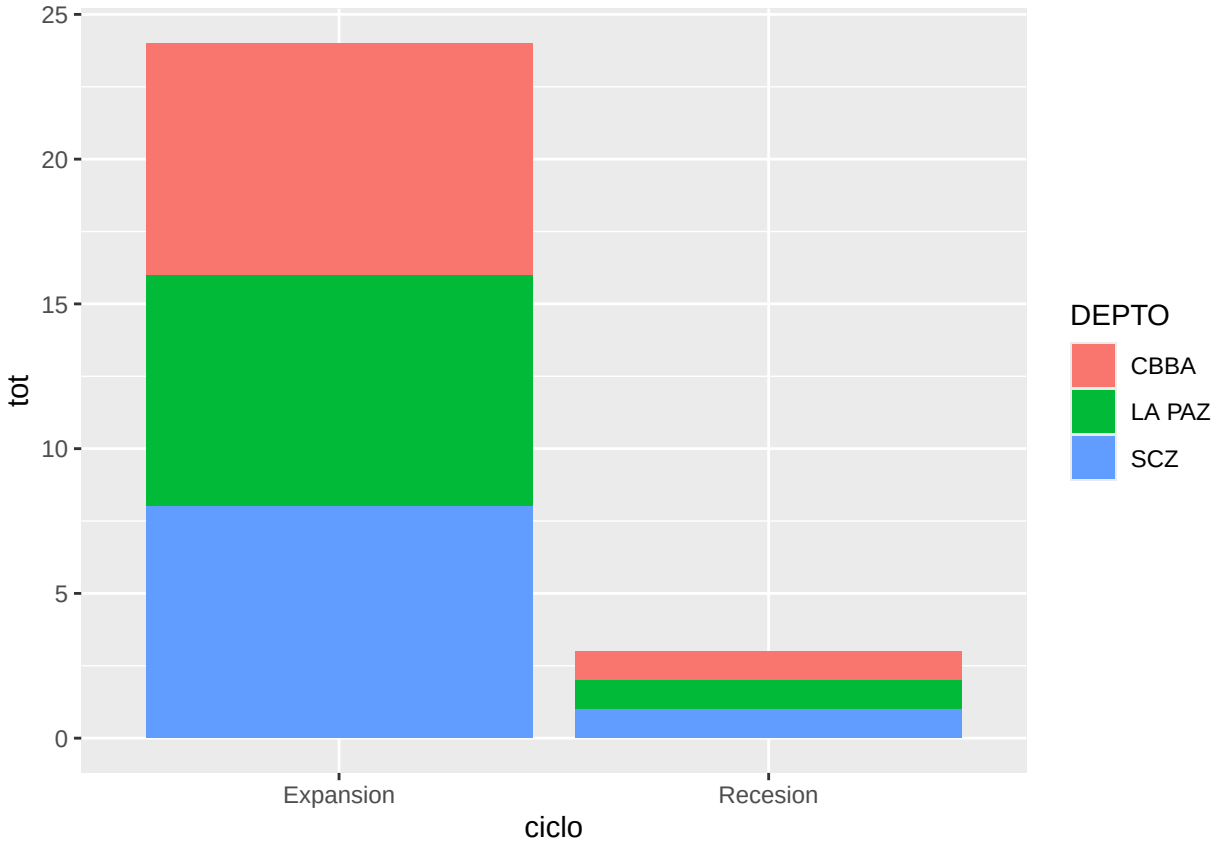

```
data %>%
  group_by(DEPTO, ciclo) %>%
  summarise(promedio = mean(PIB)) %>%
  ggplot(aes(x = ciclo, y = promedio, fill = DEPTO)) +
  geom_col(position = "dodge")
```

```
## `summarise()` has grouped output by 'DEPTO'. You can override using the
## `.groups` argument.
```



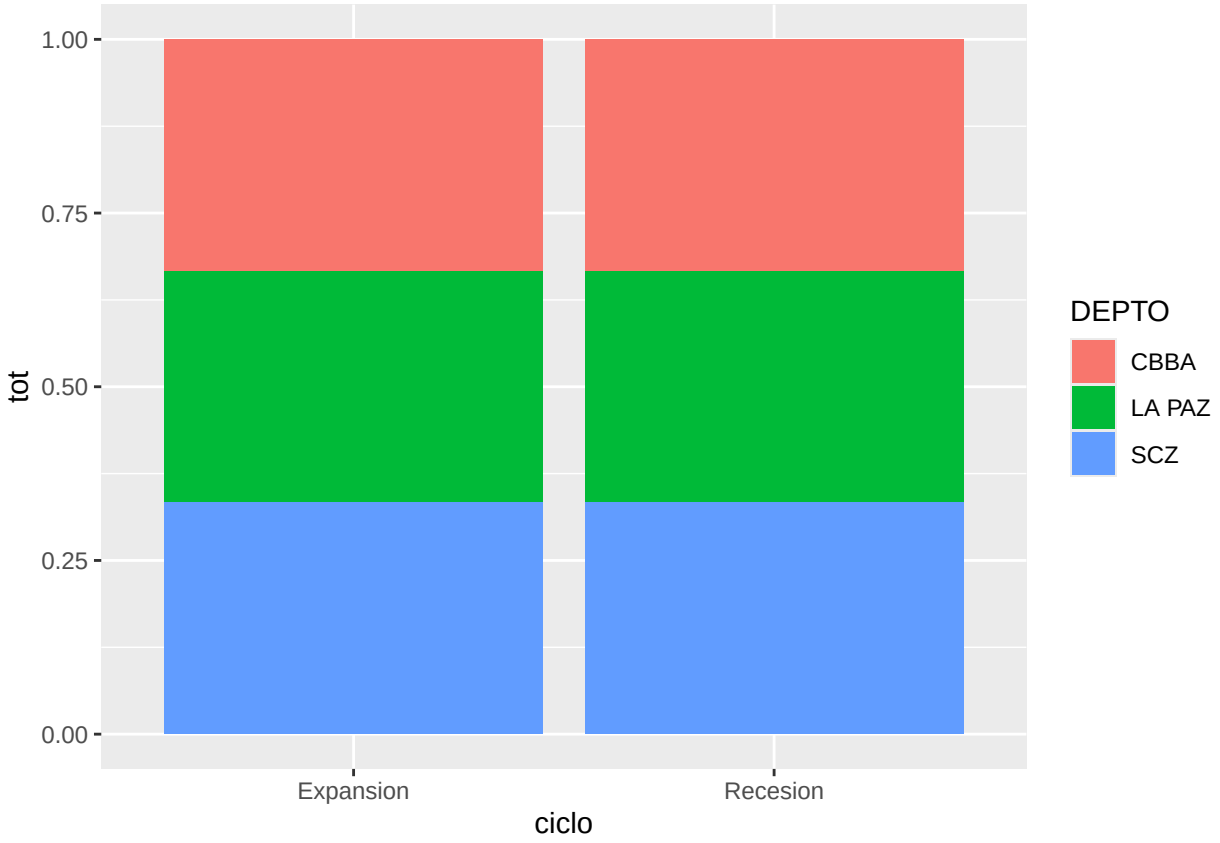

```
data %>%
  group_by(DEPTO, ciclo) %>%
  summarise(tot = n()) %>%
  ggplot(aes(x = ciclo, y = tot, fill = DEPTO)) +
  geom_col(position = "stack")
```

```
## `summarise()` has grouped output by 'DEPTO'. You can override using the
## `.groups` argument.
```

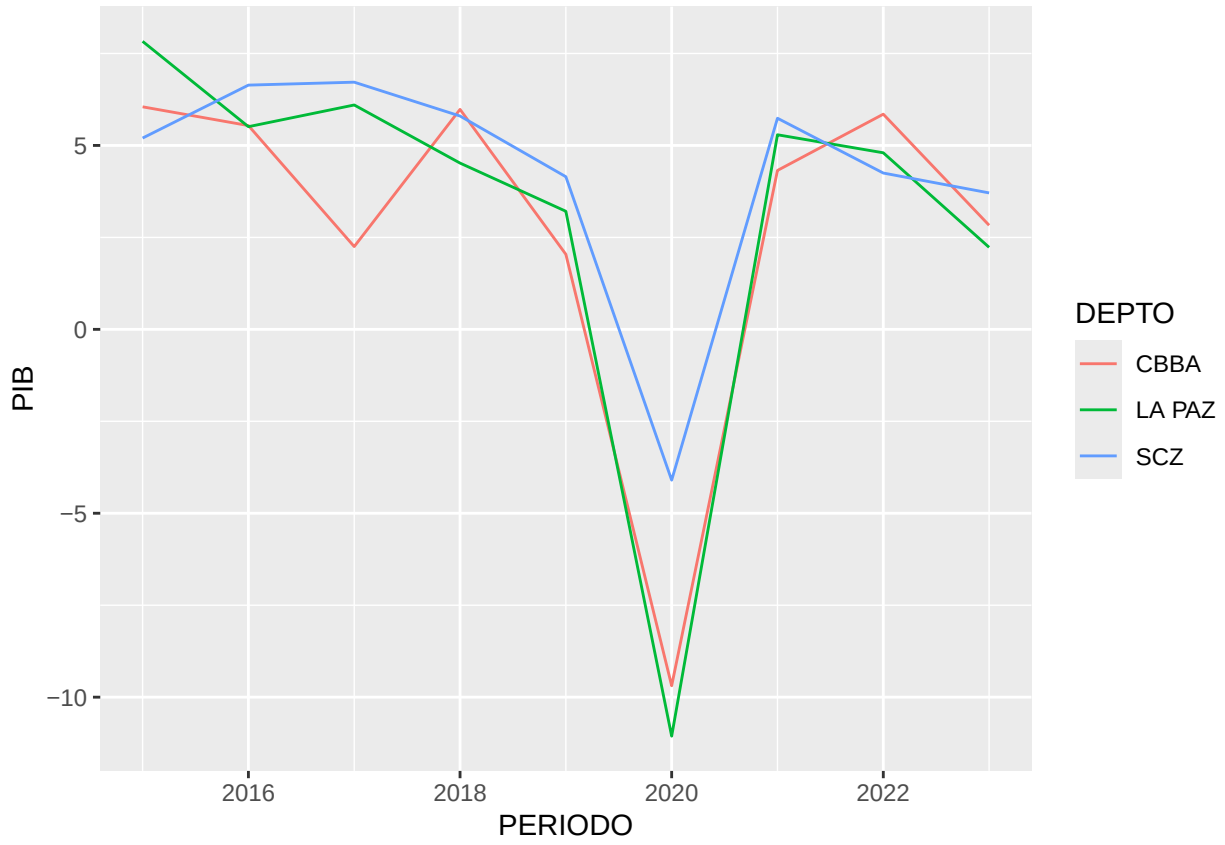



```
data %>%
  group_by(DEPTO, ciclo) %>%
  summarise(tot = n()) %>%
  ggplot(aes(x = ciclo, y = tot, fill = DEPTO)) +
  geom_col(position = "fill")
```

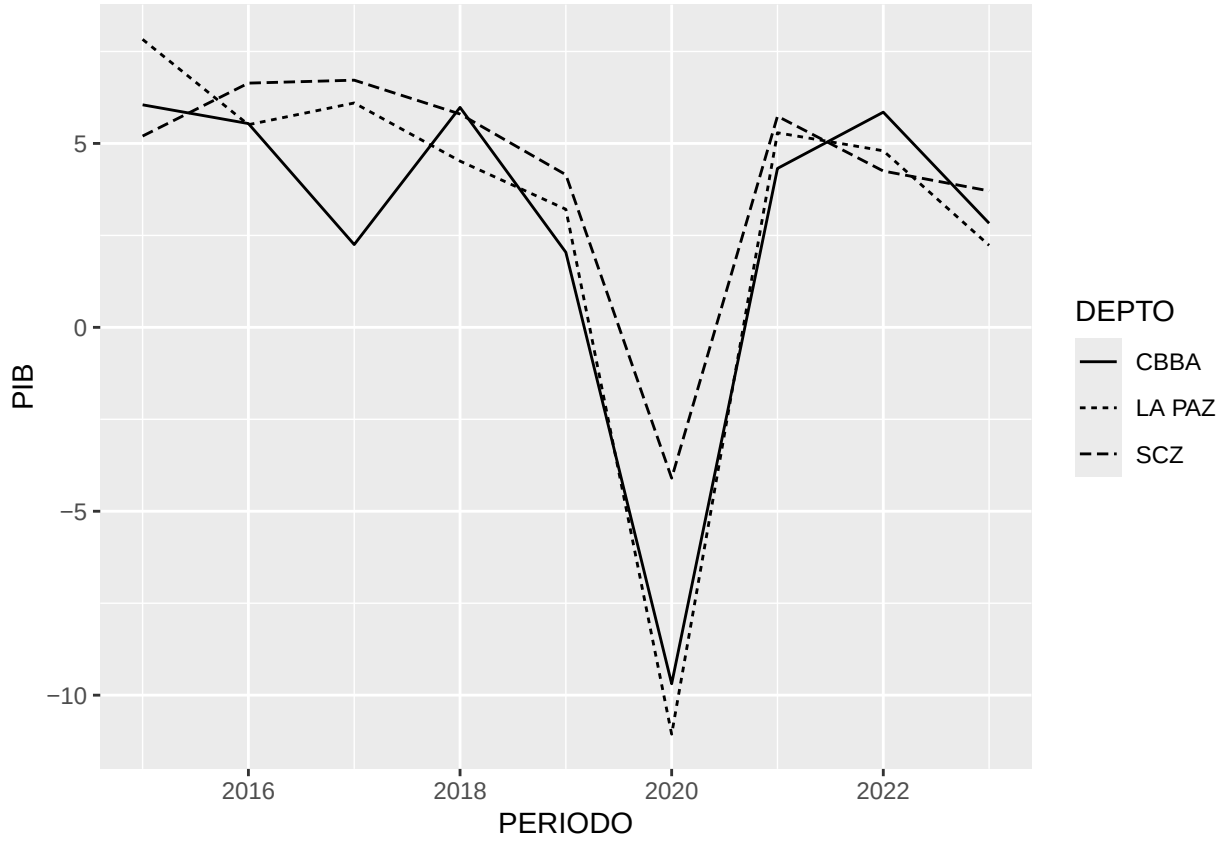
```
## `summarise()` has grouped output by 'DEPTO'. You can override using the
## `.groups` argument.
```




```
# Gráficos de línea combinando diferentes atributos

data %>%
  filter(`DEPTO` %in% c("LA PAZ", "CBBA", "SCZ")) %>%
  ggplot(aes(x = PERIODO, y = PIB, color = `DEPTO`)) +
  geom_line()
```

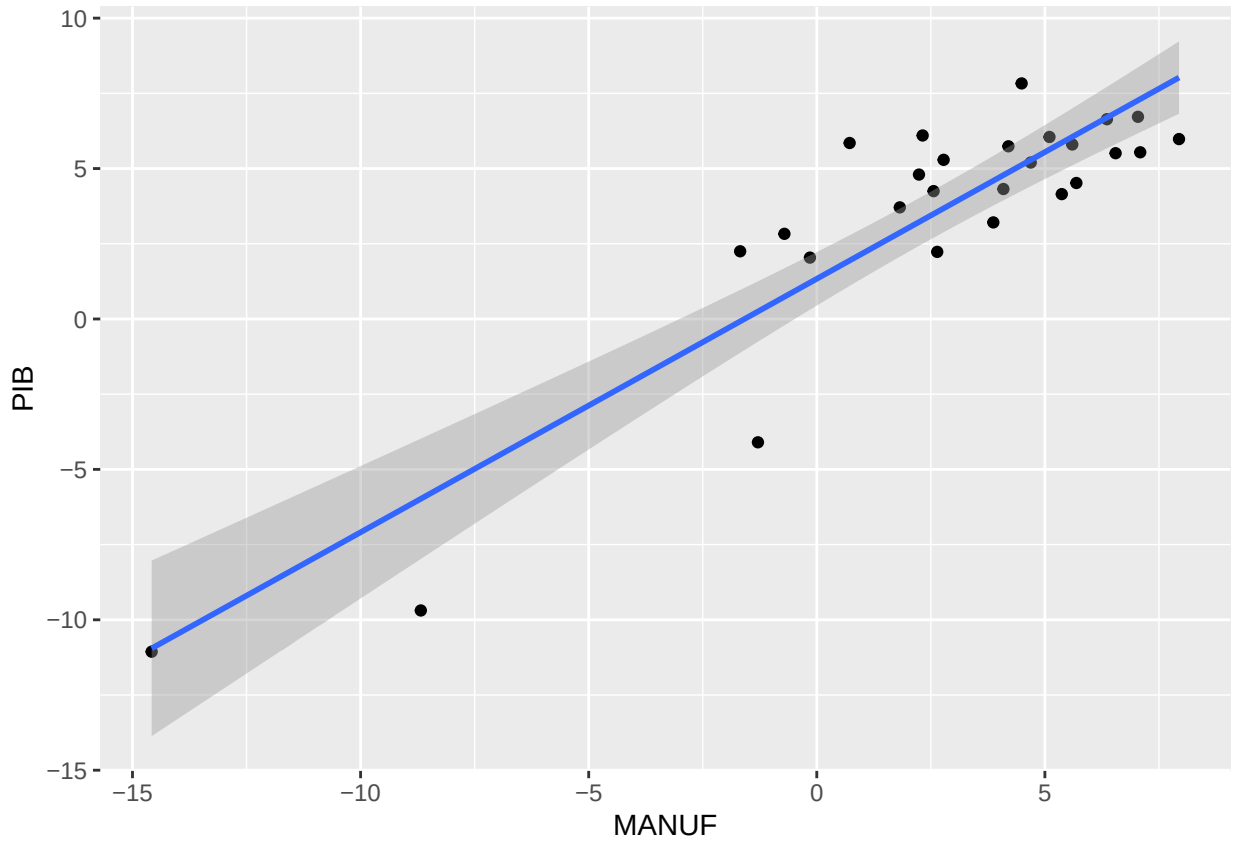



```
data %>%
  filter(`DEPTO` %in% c("LA PAZ", "CBBA", "SCZ")) %>%
  ggplot(aes(x = PERIODO, y = PIB, linetype = `DEPTO`)) +
  geom_line()
```



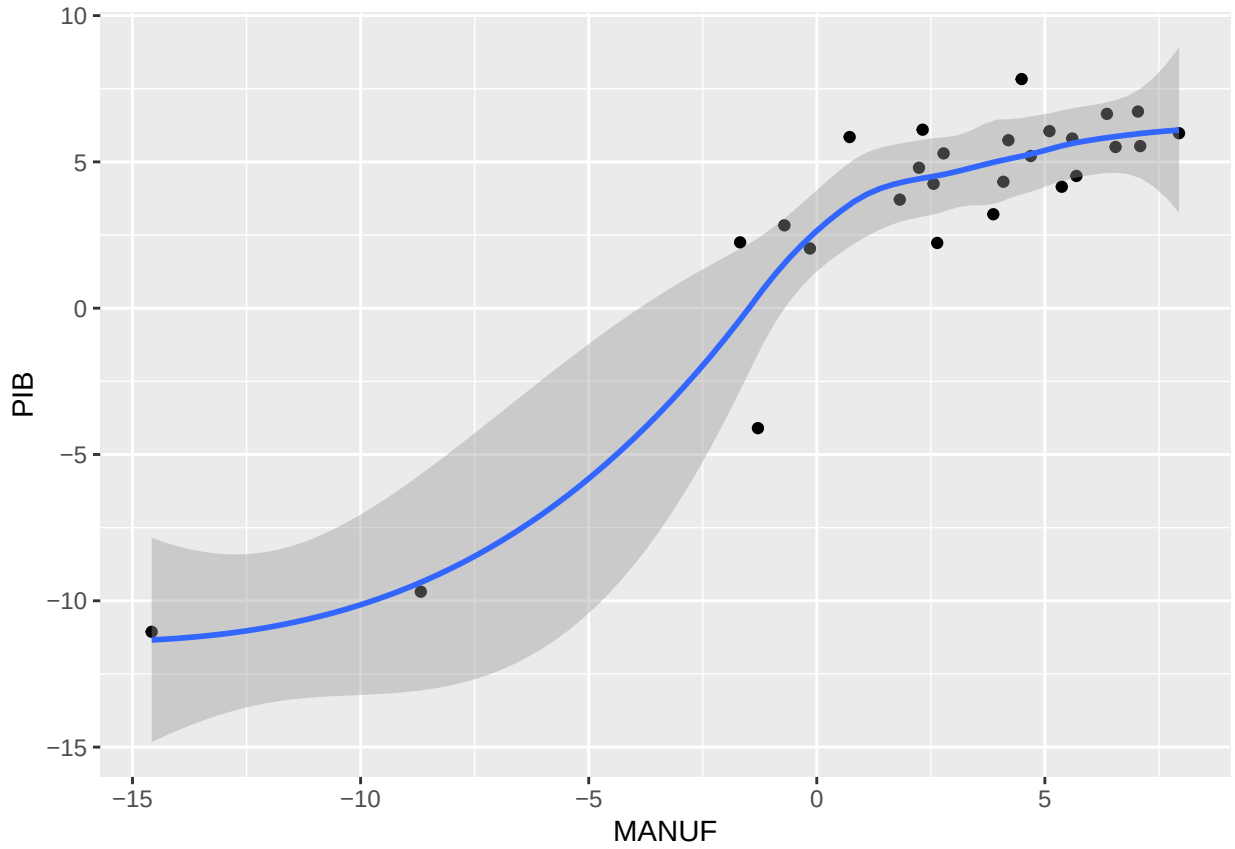

```
# Gráficos de dispersión

data %>%
  ggplot(aes(x=MANUF, y=PIB)) +
  geom_point() +
  geom_smooth(method = "lm")
```

```
## `geom_smooth()` using formula = 'y ~ x'
```

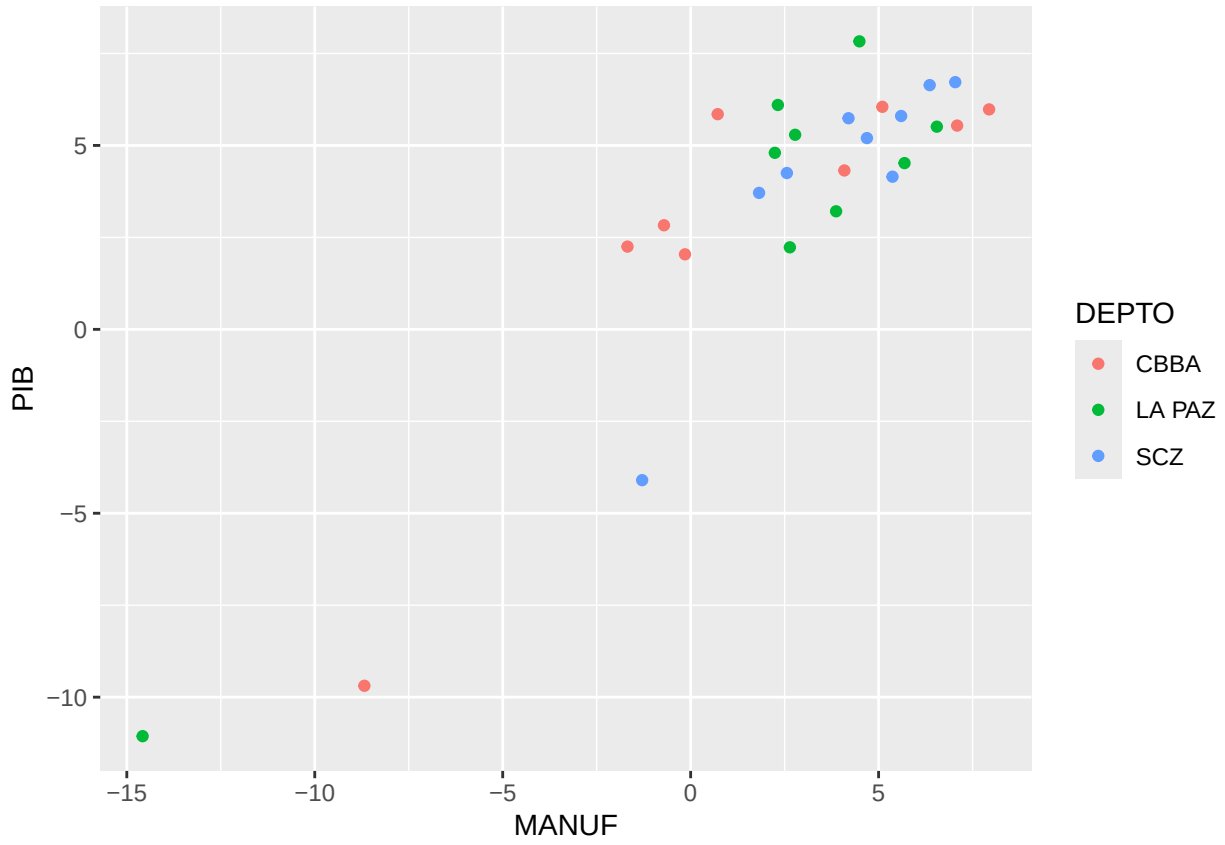



```
data %>%
  ggplot(aes(x=MANUF, y=PIB)) +
  geom_point() +
  geom_smooth()
```

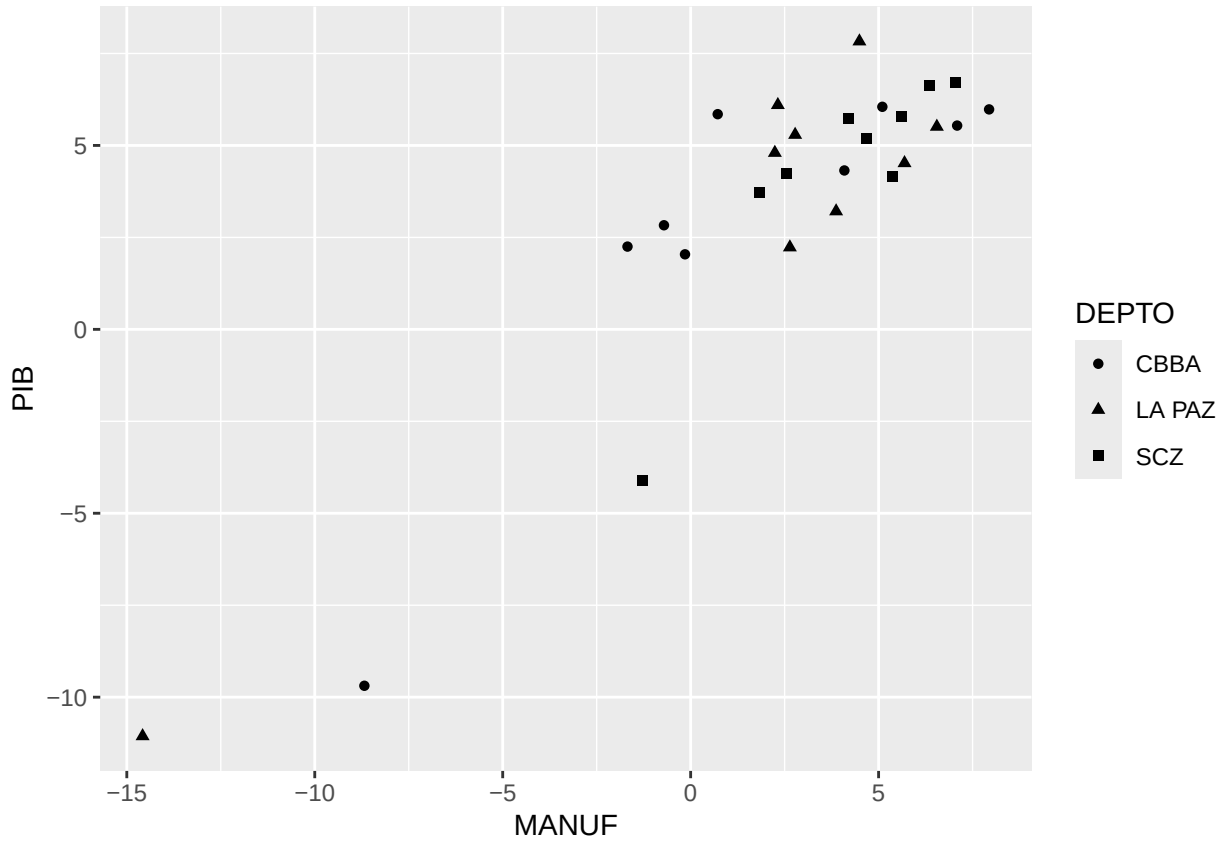
```
## `geom_smooth()` using method = 'loess' and formula = 'y ~ x'
```




```
data %>%
  ggplot(aes(x=MANUF, y=PIB, color = DEPTO)) +
  geom_point()
```

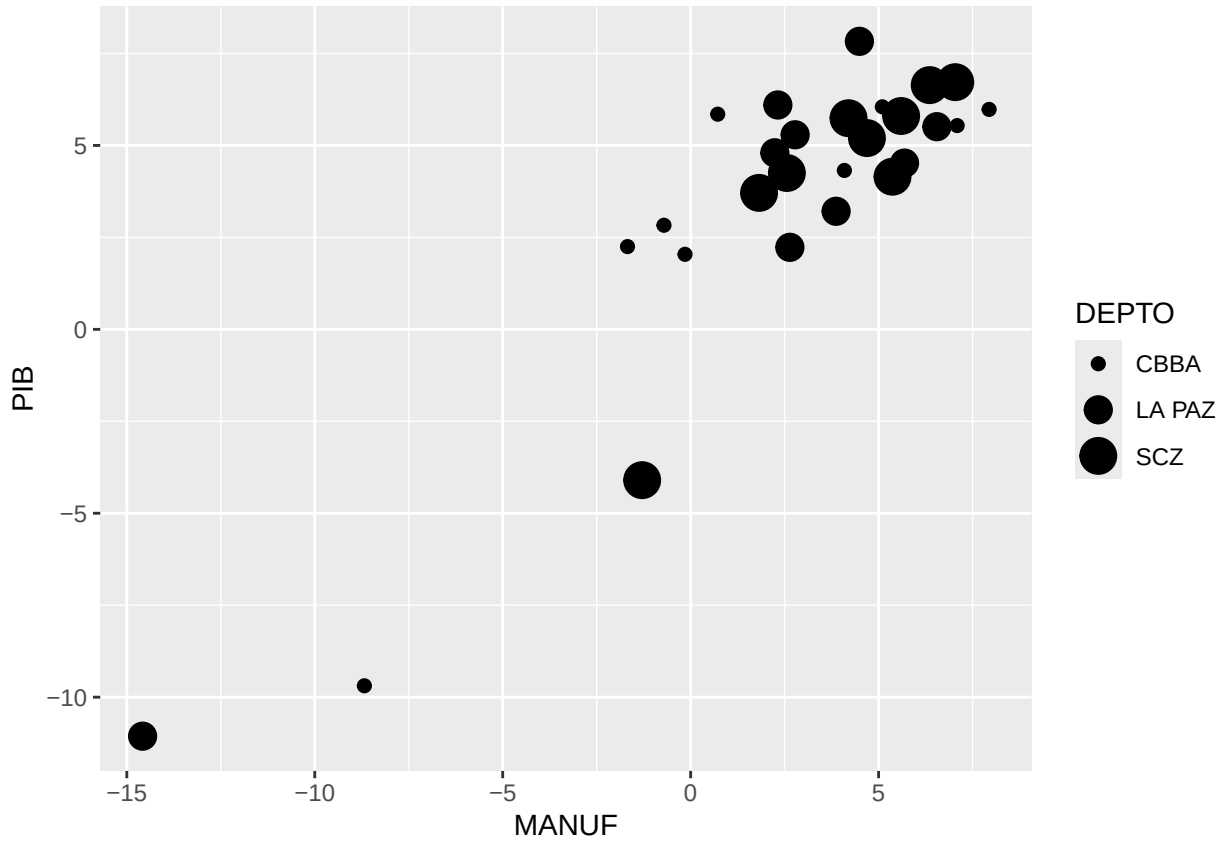



```
data %>%
  ggplot(aes(x=MANUF, y=PIB, shape = DEPTO)) +
  geom_point()
```

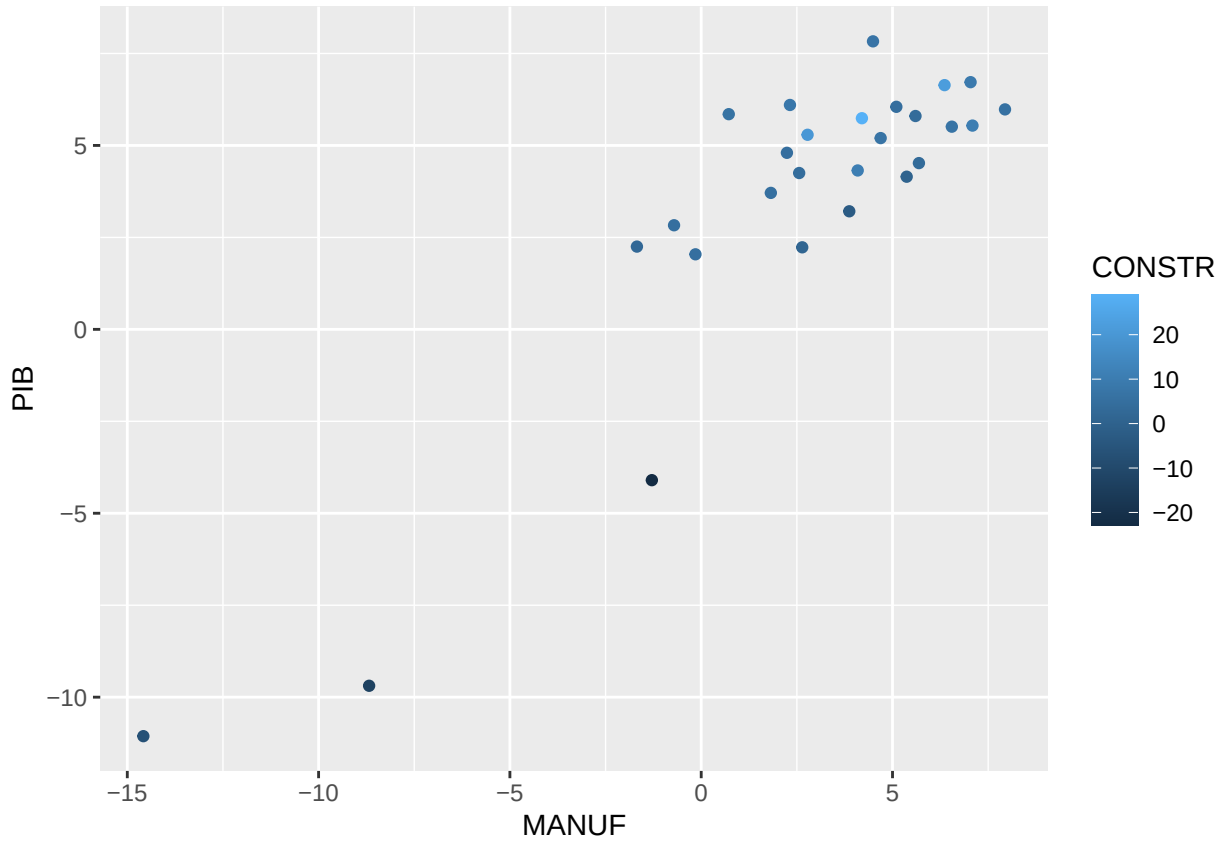



```
data %>%
  ggplot(aes(x=MANUF, y=PIB, size = DEPTO)) +
  geom_point()
```

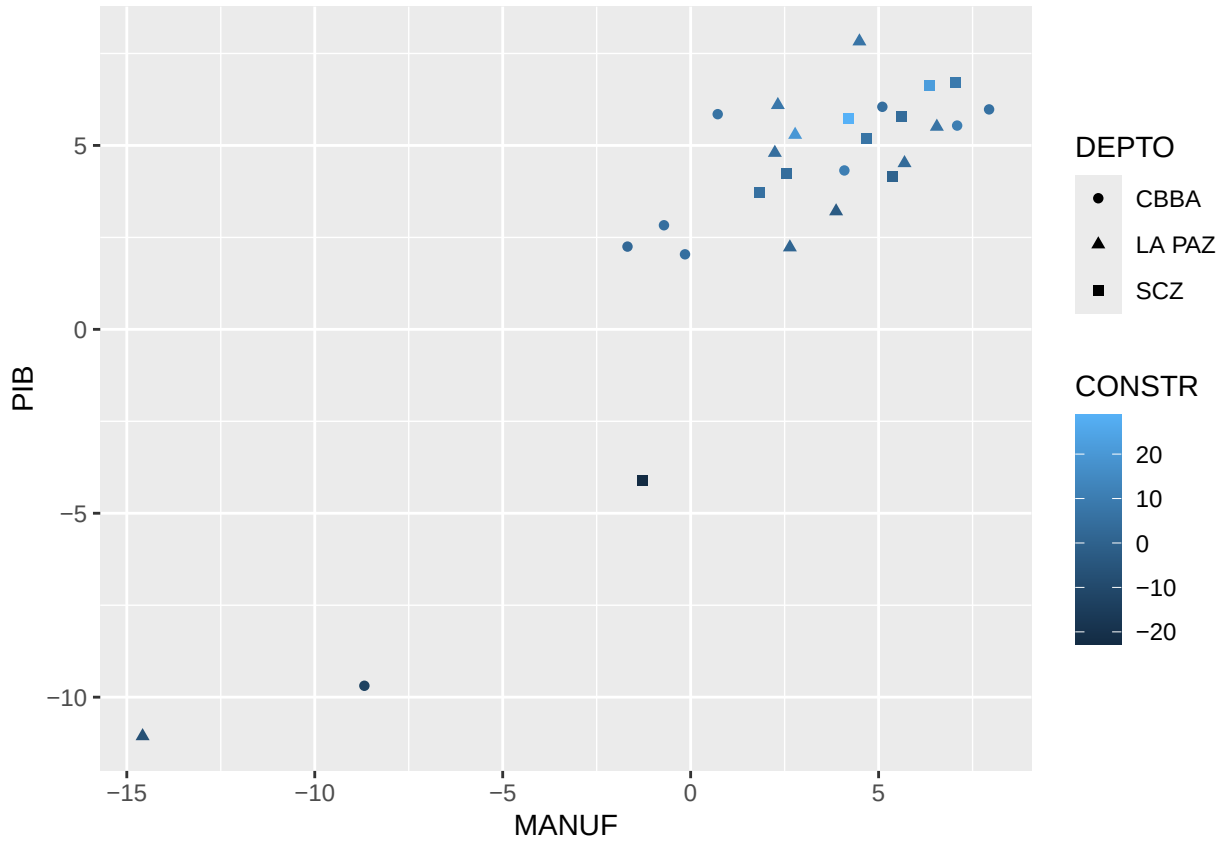
```
## Warning: Using size for a discrete variable is not advised.
```



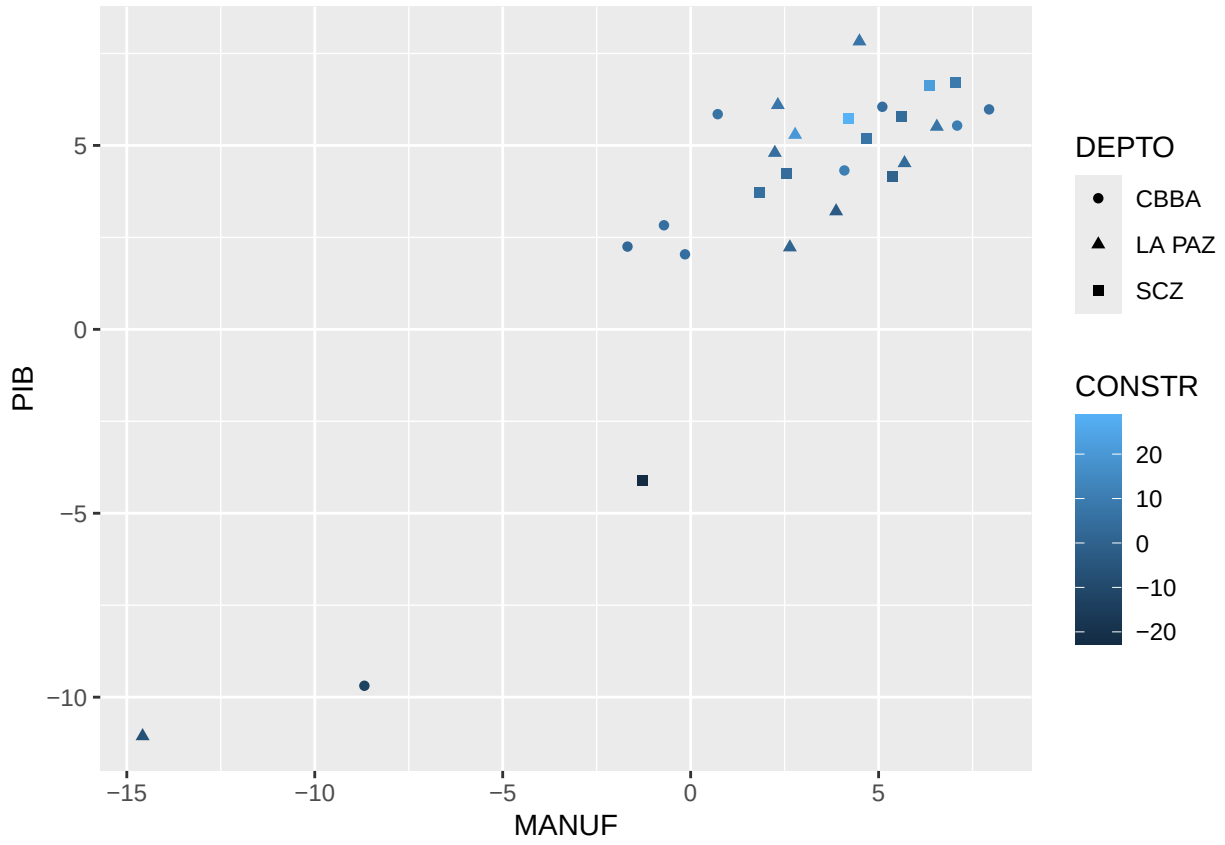

```
data %>%
  ggplot(aes(x=MANUF, y=PIB, color = CONSTR)) +
  geom_point()
```




```
data %>%
  ggplot(aes(x=MANUF, y=PIB, shape = DEPTO, color = CONSTR)) +
  geom_point()
```



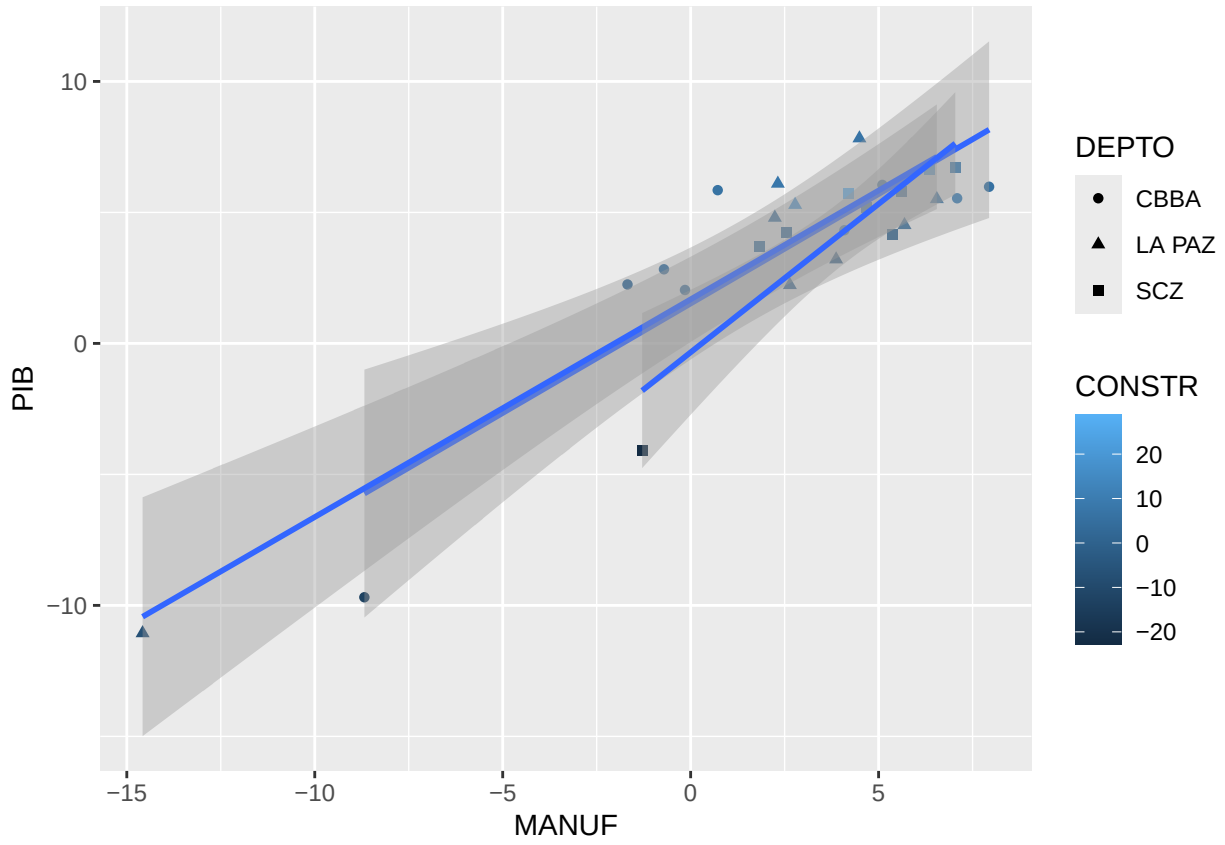

```
data %>%
  ggplot(aes(x=MANUF, y=PIB, shape = DEPTO, color = CONSTR)) +
  geom_point()
```



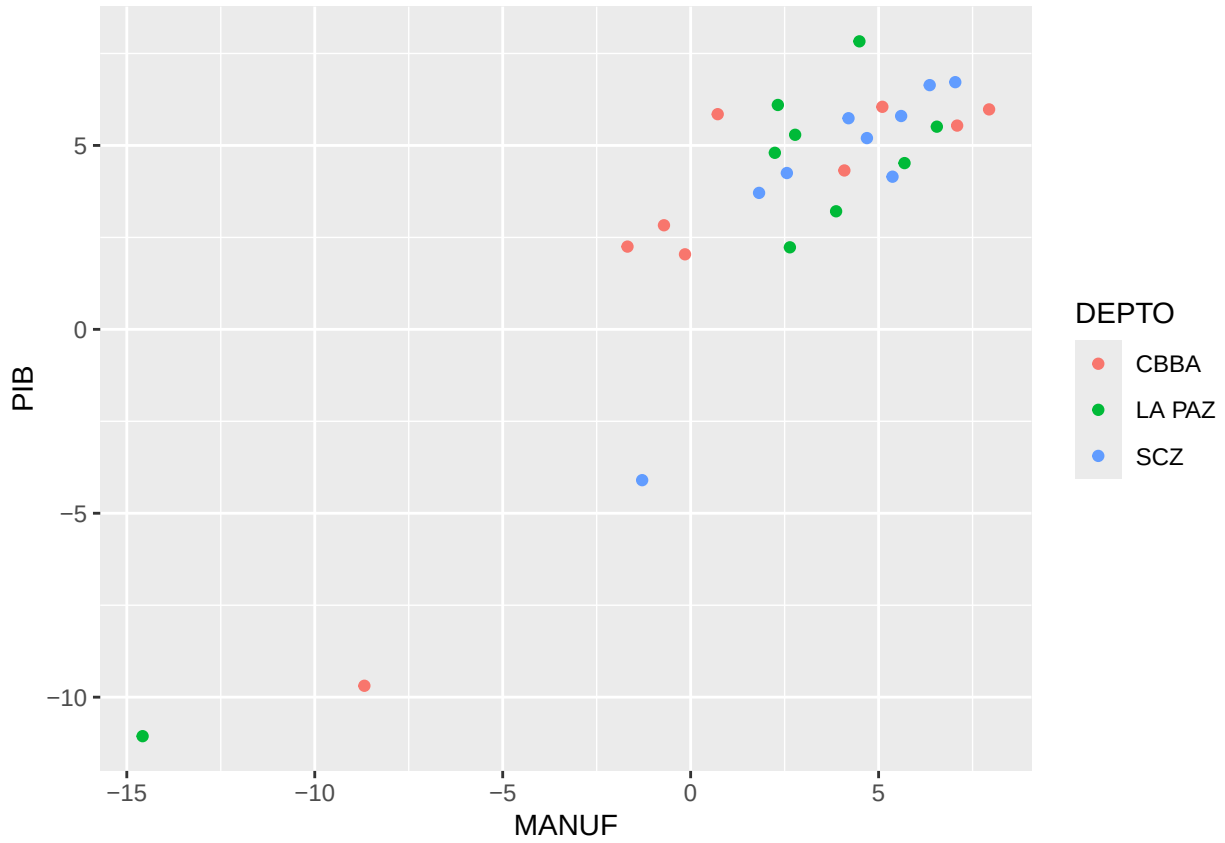

```
data %>%
  ggplot(aes(x=MANUF, y=PIB, shape = DEPTO, color = CONSTR)) +
  geom_point() +
  geom_smooth(method = "lm")
```

```
## `geom_smooth()` using formula = 'y ~ x'
```

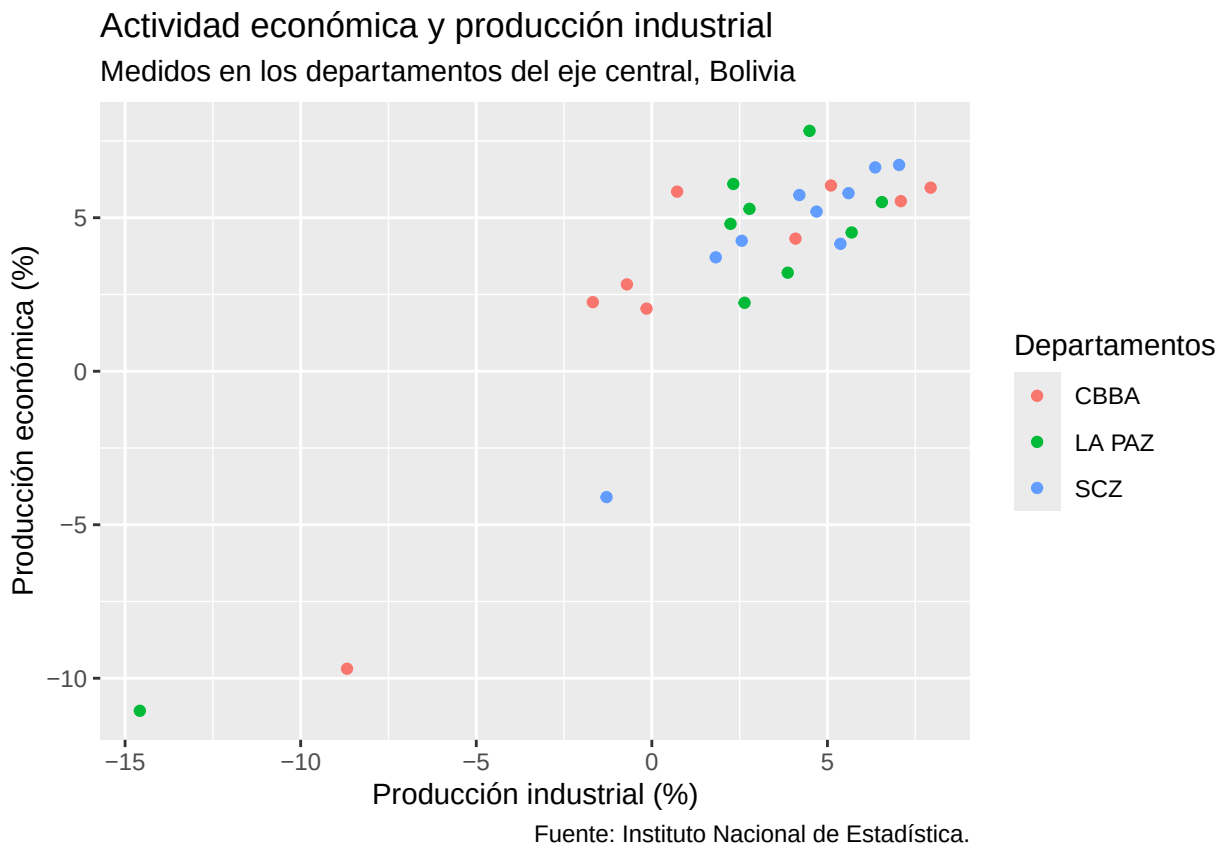
```
## Warning: The following aesthetics were dropped during statistical transformation:
## colour.
## i This can happen when ggplot fails to infer the correct grouping structure in
##   the data.
## i Did you forget to specify a `group` aesthetic or to convert a numerical
##   variable into a factor?
```



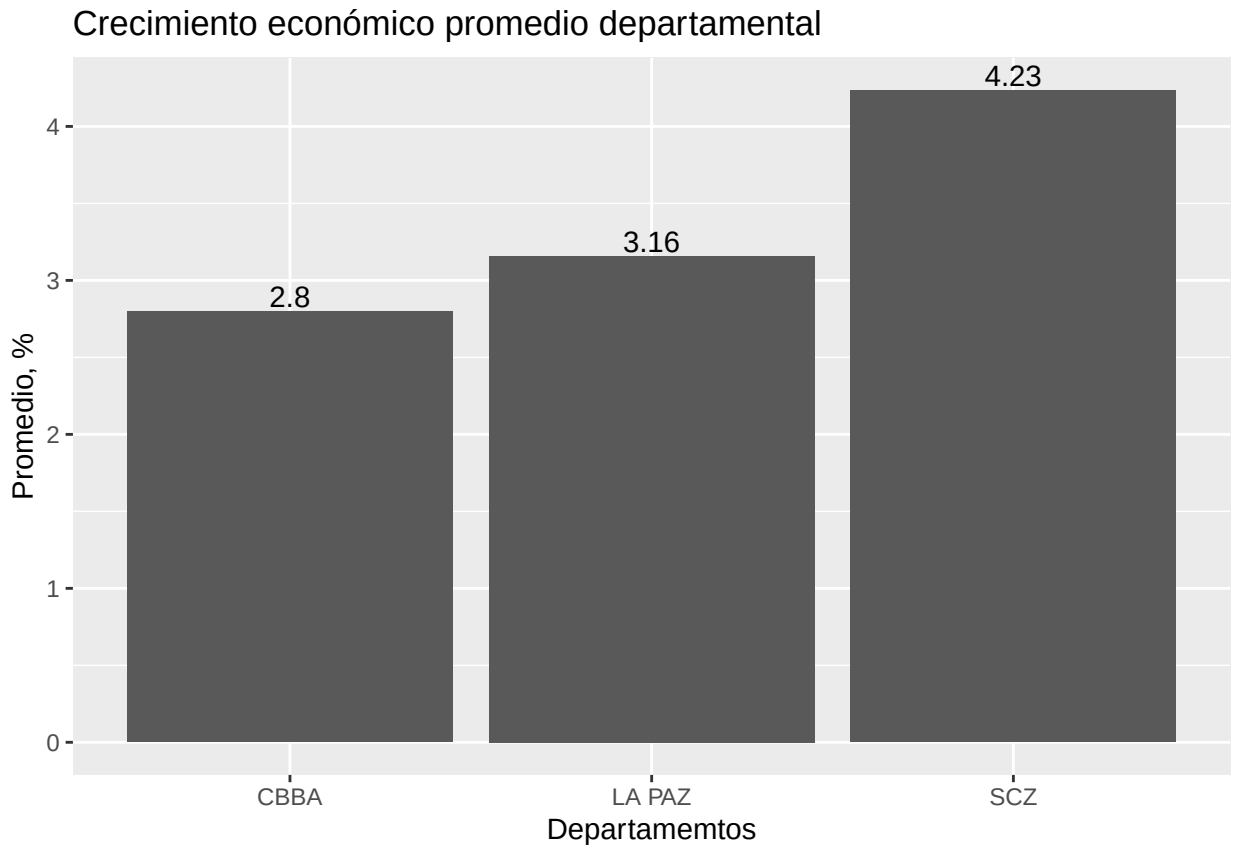

```
## Manipulación de gráficos
# Rotulación: es preciso rotular claramente cada elemento de un gráfico.

data %>%
  ggplot(aes(x=MANUF, y=PIB, color = DEPTO)) +
  geom_point()
```




```
# Una versión rotulada del mismo gráfico

data %>%
  ggplot(aes(x=MANUF, y=PIB, color = DEPTO)) +
  geom_point() +
  labs(title = "Actividad económica y producción industrial",
       subtitle = "Medidos en los departamentos del eje central, Bolivia",
       caption = "Fuente: Instituto Nacional de Estadística.",
       x = "Producción industrial (%)",
       y = "Producción económica (%)",
       color = "Departamentos")
```

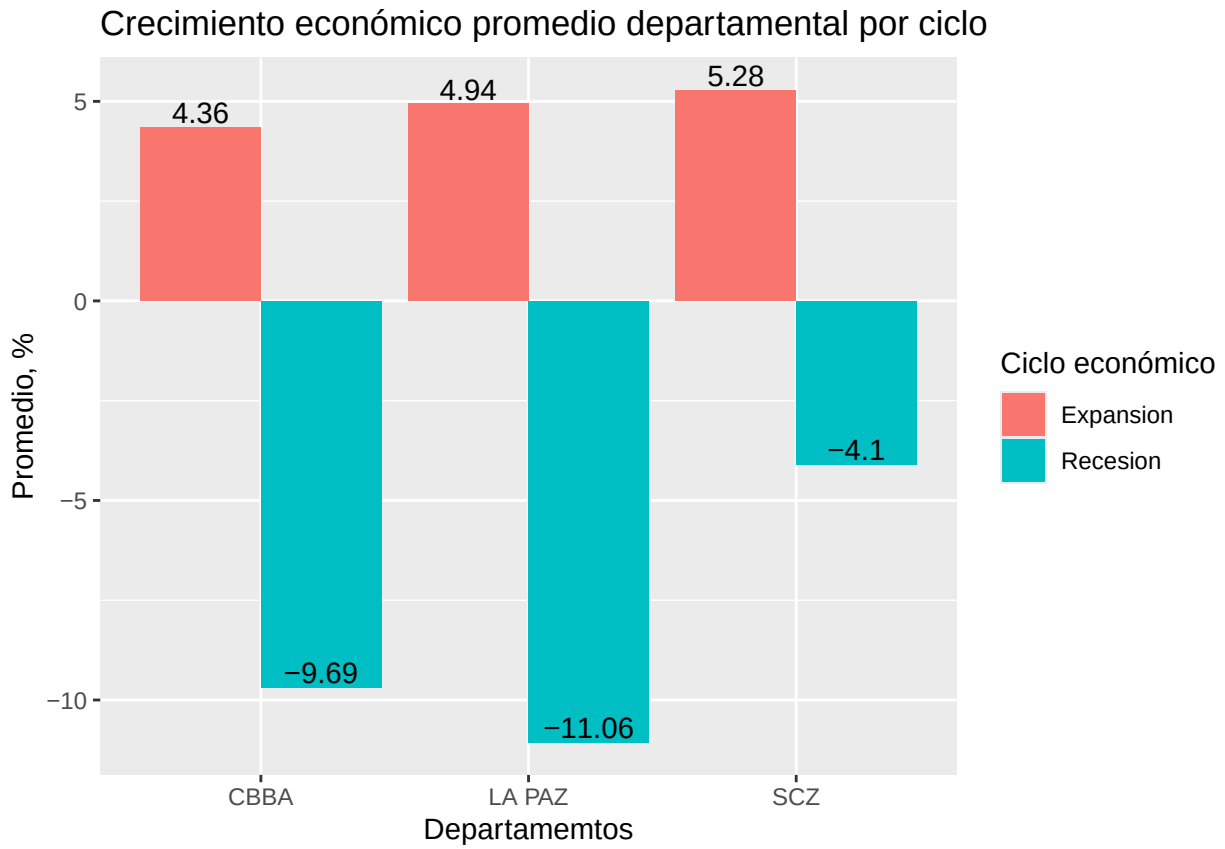



```
data %>%
  group_by(DEPTO) %>%
  summarise(promedio = mean(PIB)) %>%
  ggplot(aes(x = DEPTO, y = promedio)) +
  geom_col() +
  labs(title = "Crecimiento económico promedio departamental",
       x = "Departamemtos",
       y = "Promedio, %") +
  geom_text(aes(label=round(promedio, 2)), size=4, color="black", vjust = -0.2)
```




```
data %>%
  group_by(DEPTO, ciclo) %>%
  summarise(promedio = mean(PIB)) %>%
  ggplot(aes(x = DEPTO, y = promedio, fill = ciclo)) +
  geom_col(position = "dodge") +
  labs(title = "Crecimiento económico promedio departamental por ciclo",
       x = "Departamemtos",
       y = "Promedio, %",
       fill = "Ciclo económico") +
  geom_text(aes(label=round(promedio, 2)), size=4, color="black", vjust = -0.2, position = position_dod
```

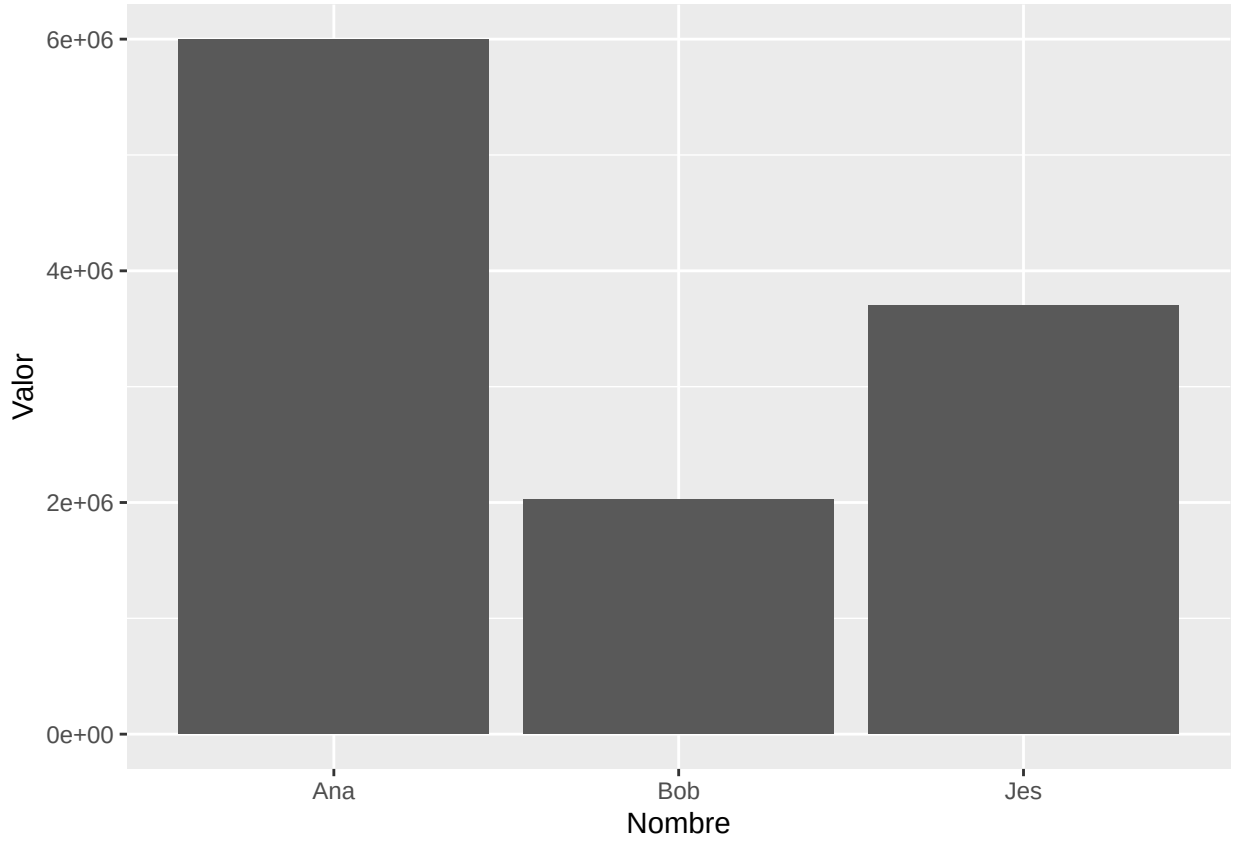
```
## `summarise()` has grouped output by 'DEPTO'. You can override using the
## `.groups` argument.
```



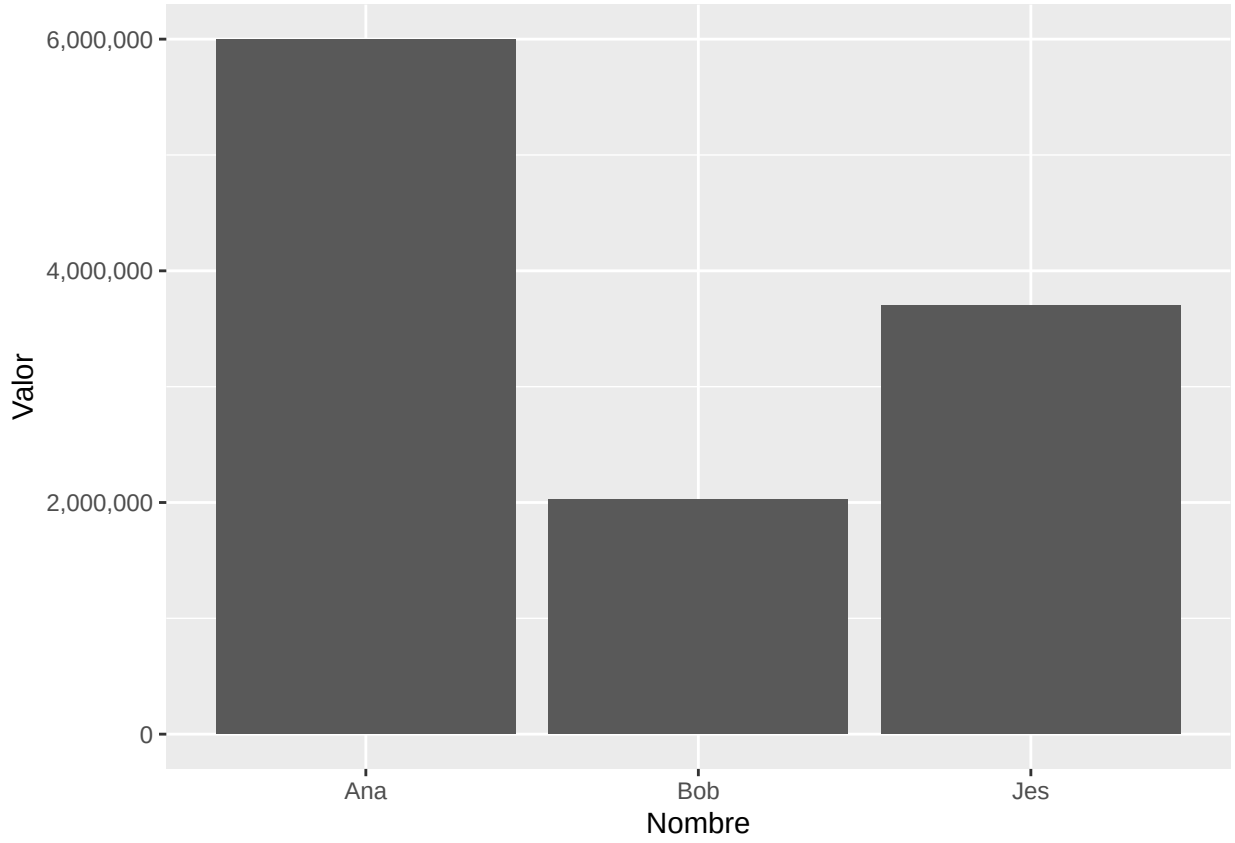

```
# Se puede realizar más ajustes: https://tidyverse.github.io/ggplot2-docs/reference/geom_text.html

# Cambiar el formato de números en ejes

datos_grandes <- tibble(Nombre = c("Bob", "Ana", "Jes"),
                        Valor = c(2023889, 5998300, 3700112))

datos_grandes
```

```
## # A tibble: 3 x 2
##   Nombre   Valor
##   <chr>    <dbl>
## 1 Bob    2023889
## 2 Ana    5998300
## 3 Jes    3700112
```

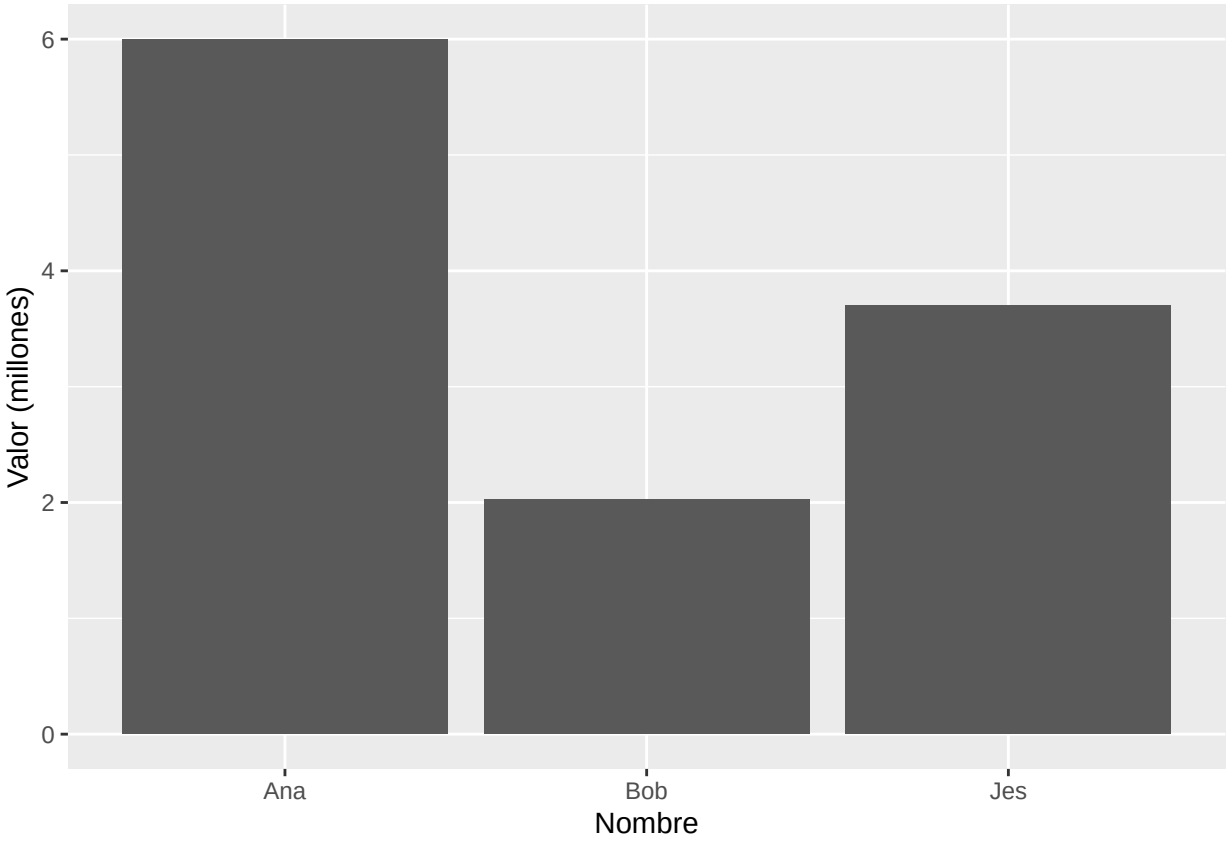
```
datos_grandes %>%
  ggplot(aes(x = Nombre, y = Valor)) +
  geom_col()
```




```
datos_grandes %>%
  ggplot(aes(x = Nombre, y = Valor)) +
  geom_col() +
  scale_y_continuous(labels = scales::label_comma())
```




```
datos_grandes %>%
  mutate(Valor = Valor/1000000) %>%
  ggplot(aes(x = Nombre, y = Valor)) +
  geom_col() +
  labs(y = "Valor (millones)")
```


6
4
2
0
Valor (millones)
Ana
Bob
Jes
Nombre