

Estadística Aplicada y Procesamiento de Datos con R

Código en: 

Clase 4. Tidyverse

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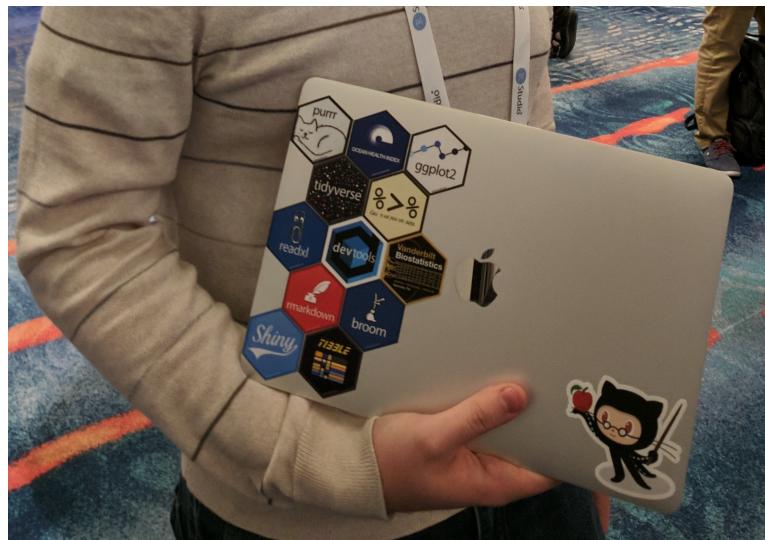
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Bienvenides a Tidyverse

```
if(!require(tidyverse)){install.packages("tidyverse")}
```

- Manipulación de datos. Similitud a PANDAS (Python)
- Flujo de trabajo
- Permite mayor simplicidad en la codificación
- Concatenación (*pipe*)
- Sintaxis entendible
- Similar a manipulación vía SQL
- Desventaja: mucho uso de memoria.



R Memes For Statistical Fiends. (2018, Mayo 02). Found on Twitter <https://twitter.com/leonawicz/status/991400769235468288> [Video]. Facebook. i

Verbos

- El paquete tidyverse funciona con verbos.
- Cada verbo cumple una función específica.
- `select()` -> Selecciona columnas
- `filter()` -> Selecciona filas
- `group_by()` -> Agrupa en torno a una variable
- `summarize()` -> Provee estadísticos de resumen
- `mutate()` -> Modifica valores en las columnas / Crea columnas nuevas
- `transmute()` -> Combina select y mutate

select()

Sintaxis:

```
select(data, variable)  
|>
```

- El primer argumento es la base de datos.
- Luego puedo incluir nombres de variables que quiero mantener.
- Se puede anteponer un negativo (-) antes del nombre si la quiero eliminar.

filter()

Sintaxis:

```
filter(data, edad > 18)
|>
```

- El primer argumento es la base de datos.
- Después establezco un criterio para mantener observaciones.
- En este ejemplo, queremos mantener en las personas que tengan más de 18 años.
- Se pueden usar todos los conectores lógicos (<, >, <=, >=, ==, !=)

group_by()

Sintaxis:

```
group_by(data, variable)
|>
```

- Casi nunca se utiliza en solitario (más adelante se explica).
- Se recomienda agrupar en torno a variables nominales.
- Permite obtener estadísticas de resumen para cada grupo.

summarize() o summarise()

Sintaxis:

```
summarize(data, media = mean(variable), mediana = median(mediana))  
|>
```

- Crea una tabla.
- Se puede solicitar: mean(), min(), max(), sd(), median(), var(), etc.
- Sirve para obtener estadísticos descriptivos.

mutate()

Sintaxis:

```
mutate(data, imc = peso/altura^2)
|>
```

- Permite crear columnas a partir de otras existentes.
- Permite modificar valores dentro de una columna.
- Cualquier modificación que se haga a las variables pasa por mutate.
- En el ejemplo, estamos creando la variable imc a partir de las variables peso y altura.

transmute()

Sintaxis:

```
transmute(data, imc = peso/altura^2, edad)
|>
```

- Combina select y mutate.
- Puedo seleccionar variables que quiero mantener, y a la vez crear una nueva.

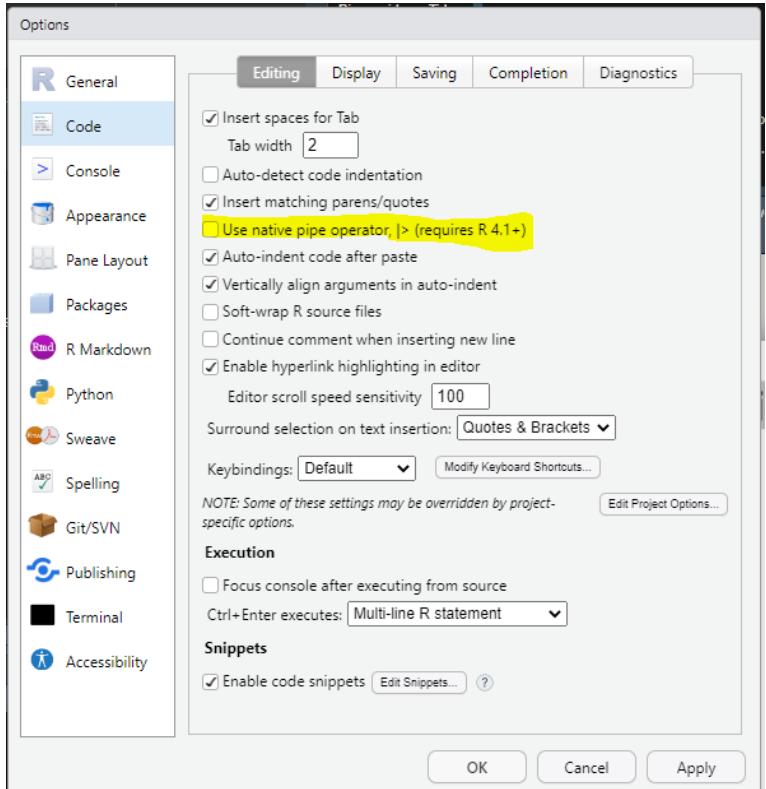
Concatenar acciones

Pipe:

```
magrittr::`%>%`  
|>
```

Más información en: <https://www.tidyverse.org/blog/2023/04/base-vs-magrittr-pipe/>

► código



► código

How mornings look like for most people:

```
me %>%  
  wake_up() %>%  
  get_out_of_bed() %>%  
  get_dressed() %>%  
  leave_house()
```

How my mornings look like most of the time:

```
leave_house(get_dressed(get_out_of_bed(wake_up(me))))
```

Concatenar acciones (2)

► código

```
### A tibble: 2 x 3
#>   vs mean_mpg  n
#>   <dbl>    <dbl> <int>
#> 1 0     26      1
#> 2 1     26.9    8
```

► código

```
### A tibble: 2 x 3
#>   vs mean_mpg  n
#>   <dbl>    <dbl> <int>
#> 1 0     16.6    18
#> 2 1     24.6    14
```

Ejercicio 1

- Importar `bbdd_prueba.xlsx` (https://raw.githubusercontent.com/AGSCL/udp_2023/main/_data/bbdd_prueba1.csv)
- Complete la guía de ejercicios

Funciones (1)

- Para añadir columnas
 - ▶ código
 - ▶ salida
- Para seleccionar columnas y filtrar valores
 - ▶ código
 - ▶ salida
- Conector "o"
 - ▶ código
 - ▶ salida
- Para filtrar y seleccionar más de una columna
 - ▶ código
 - ▶ salida

Funciones (2)

- Recodificar basado en condiciones
 - ▶ código
 - ▶ salida
- Usar más de una condición
 - ▶ código
 - ▶ salida

Funciones (3)

- Resumir la información
- ▶ código
- ▶ salida
- ▶ código
- ▶ salida

Funciones (4)

- Ordenar valores

► código
► salida

► código
► salida

Funciones (5)

- Unir bases de datos
- ▶ código
- ▶ salida
- Vea las diferencias
- ▶ código
- ▶ salida

Aplicaciones: Medidas de tendencia central, dispersión y posición

- Modo dplyr

► código

```
## promedio mediana moda p25 p75 min max valores_unicos  
## 18.83043 17 6 8 26 0 136 50
```

- ¿Y por contribuyente?

► código

```
### A tibble: 2 x 9  
## ejecutor promedio mediana moda p25 p75 min max valores_unicos  
## <chr> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <int>  
## 1 Persona1 22.7 22.5 14 11.8 31 1 72 43  
## 2 Persona2 14.9 11 6 6 18 0 136 34
```

Aplicaciones: Tablas

- la manera tidyverse
 - ▶ código

```
asistentes_curso_2020 %>% dplyr::mutate(condicion=factor(condicion),externo= factor(externo)) %>% dplyr::group_by(condicion) %>% #agrupamos  
dplyr::count(externo,,drop=FALSE) %>% #contamos los valores distintos de las categorías externo, no descartamos las categorías con valores  
tidyrr::pivot_wider(names_from="externo", values_from = "n") %>% #dejamos los datos para el lado, según interno o externo knitr::kable("markdown")
```

condicion	externo	interno
.	3	0
Académico	0	2
Estudiante	0	1
Estudiante Doctorado	0	3
Funcionario	0	2

- la manera janitor
 - ▶ código

condicion	externo	interno
.	3	0
Académico	0	2
Estudiante	0	1
Estudiante Doctorado	0	3
Funcionario	0	2

Aplicaciones: Tablas de frecuencia

- ▶ código
- ▶ código

y_interval	n	f_i	N_i	F_i
(0.0721,0.581]	41	0.10	41	0.10
(0.581,1.09]	51	0.13	92	0.23
(1.09,1.59]	78	0.20	170	0.42
(1.59,2.09]	72	0.18	242	0.60
(2.09,2.6]	68	0.17	310	0.78
(2.6,3.1]	35	0.09	345	0.86
(3.1,3.6]	18	0.04	363	0.91
(3.6,4.11]	11	0.03	374	0.94
(4.11,4.61]	9	0.02	383	0.96
(4.61,5.12]	1	0.00	384	0.96
NA	16	0.04	400	1.00

]

Ejercicio 2

- Cargue la base de datos "starwars"
- (Podría faltar el paquete magrittr, si el programa se lo pide, ¿sabría cómo instalarlo?)
- Ejecute este código: `starwars %>% dplyr::group_by(eye_color) %>% dplyr::summarise(promedio_altura_por_color_de_ojos=mean(height, na.rm=T))`
- Conversemos sobre lo que hizo

Gracias!

Contacto: CANVAS

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