

FirstNames

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1 First Names Homework

1.1 Loading and preparing the data

First we need to download the dataset

```
[1]: file = "dpt2019_txt.zip"
if(!file.exists(file)){
  download.file("https://www.insee.fr/fr/statistiques/fichier/2540004/
  ↪dpt2019_csv.zip",
    destfile=file)
}
unzip(file)
```

Then we build the file from the dataframe

```
[2]: library(tidyverse)
library(ggplot2)
FirstNames <- read_delim("dpt2019.csv",delim=";");
```

Registered S3 methods overwritten by 'ggplot2':

method	from
[.quosures	rlang
c.quosures	rlang
print.quosures	rlang

Registered S3 method overwritten by 'rvest':

method	from
read_xml.response	xml2

Attaching packages	tidyverse
1.2.1	

ggplot2	3.1.1	purrr	0.3.2
tibble	2.1.1	dplyr	
0.8.0.1			
tidyr	0.8.3	stringr	1.4.0
readr	1.3.1	forcats	0.4.0

```

Conflicts
tidyverse_conflicts()
  dplyr::filter() masks stats::filter()
  dplyr::lag()    masks stats::lag()

```

Parsed with column specification:

```

cols(
  sexe = col_double(),
  preusuel = col_character(),
  annais = col_double(),
  dpt = col_character(),
  nombre = col_double()
)

```

Warning message:

"36445 parsing failures.

```

  row   col expected actual      file
10781 annais a double   XXXX 'dpt2019.csv'
10782 annais a double   XXXX 'dpt2019.csv'
10783 annais a double   XXXX 'dpt2019.csv'
10784 annais a double   XXXX 'dpt2019.csv'
10787 annais a double   XXXX 'dpt2019.csv'
... ..

```

... ..

See problems(...) for more details.

"

Now that we have the dataset we need to explore it to have an idea about the data it contains

```

[3]: nrow(FirstNames)
      names(FirstNames)
      str(FirstNames)

```

3676682

1. 'sexe' 2. 'preusuel' 3. 'annais' 4. 'dpt' 5. 'nombre'

Classes 'spec_tbl_df', 'tbl_df', 'tbl' and 'data.frame': 3676682 obs. of 5 variables:

```

 $ sexe      : num  1 1 1 1 1 1 1 1 1 1 ...
 $ preusuel: chr   "_PRENOMS_RARES" "_PRENOMS_RARES" "_PRENOMS_RARES"
 "_PRENOMS_RARES" ...
 $ annais   : num  1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 ...
 $ dpt      : chr   "02" "04" "05" "06" ...
 $ nombre   : num   7 9 8 23 9 4 6 3 11 7 ...
 - attr(*, "problems")=Classes 'tbl_df', 'tbl' and 'data.frame': 36445
 obs. of 5 variables:
 ..$ row      : int  10781 10782 10783 10784 10787 10789 10790 12190 12191 12193
 ...
 ..$ col      : chr   "annais" "annais" "annais" "annais" ...

```

```

..$ expected: chr  "a double" "a double" "a double" "a double" ...
..$ actual   : chr  "XXXX" "XXXX" "XXXX" "XXXX" ...
..$ file     : chr  "'dpt2019.csv'" "'dpt2019.csv'" "'dpt2019.csv'"
"'dpt2019.csv'" ...
- attr(*, "spec")=
.. cols(
..   sexe = col_double(),
..   preusuel = col_character(),
..   annais = col_double(),
..   dpt = col_character(),
..   nombre = col_double()
.. )

```

```

[4]: dim(FirstNames)
length(FirstNames)
summary(FirstNames)

```

```
1. 3676682 2. 5
```

```
5
```

sexe	preusuel	annais	dpt
Min. :1.000	Length:3676682	Min. :1900	Length:3676682
1st Qu.:1.000	Class :character	1st Qu.:1948	Class :character
Median :2.000	Mode :character	Median :1980	Mode :character
Mean :1.536		Mean :1973	
3rd Qu.:2.000		3rd Qu.:2002	
Max. :2.000		Max. :2019	
		NA's :36445	

nombre
Min. : 3.00
1st Qu.: 4.00
Median : 7.00
Mean : 23.36
3rd Qu.: 19.00
Max. :6316.00

Since the data has some parsing failures, we will need to clean it. The problematic rows are:

```

[5]: nrow(problems(FirstNames))
tail(problems(FirstNames))

```

```
36445
```

	row <int>	col <chr>	expected <chr>	actual <chr>	file <chr>
A tibble: 6 × 5	3676661	annais	a double	XXXX	'dpt2019.csv'
	3676664	annais	a double	XXXX	'dpt2019.csv'
	3676671	annais	a double	XXXX	'dpt2019.csv'
	3676679	annais	a double	XXXX	'dpt2019.csv'
	3676681	annais	a double	XXXX	'dpt2019.csv'
	3676682	annais	a double	XXXX	'dpt2019.csv'

It appears that most of the problems are linked to some missing data on the annais column. We will check that by combining the similar problems by column and actual value

```
[6]: unique(select(problems(FirstNames), col, actual))
```

	col <chr>	actual <chr>
A tibble: 1 × 2	annais	XXXX

Let's remove the lines that contain a wrong year data.

```
[7]: nrow(FirstNames)
FirstNames <- subset(FirstNames, annais!="XXXX")
nrow(FirstNames)
```

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3640237

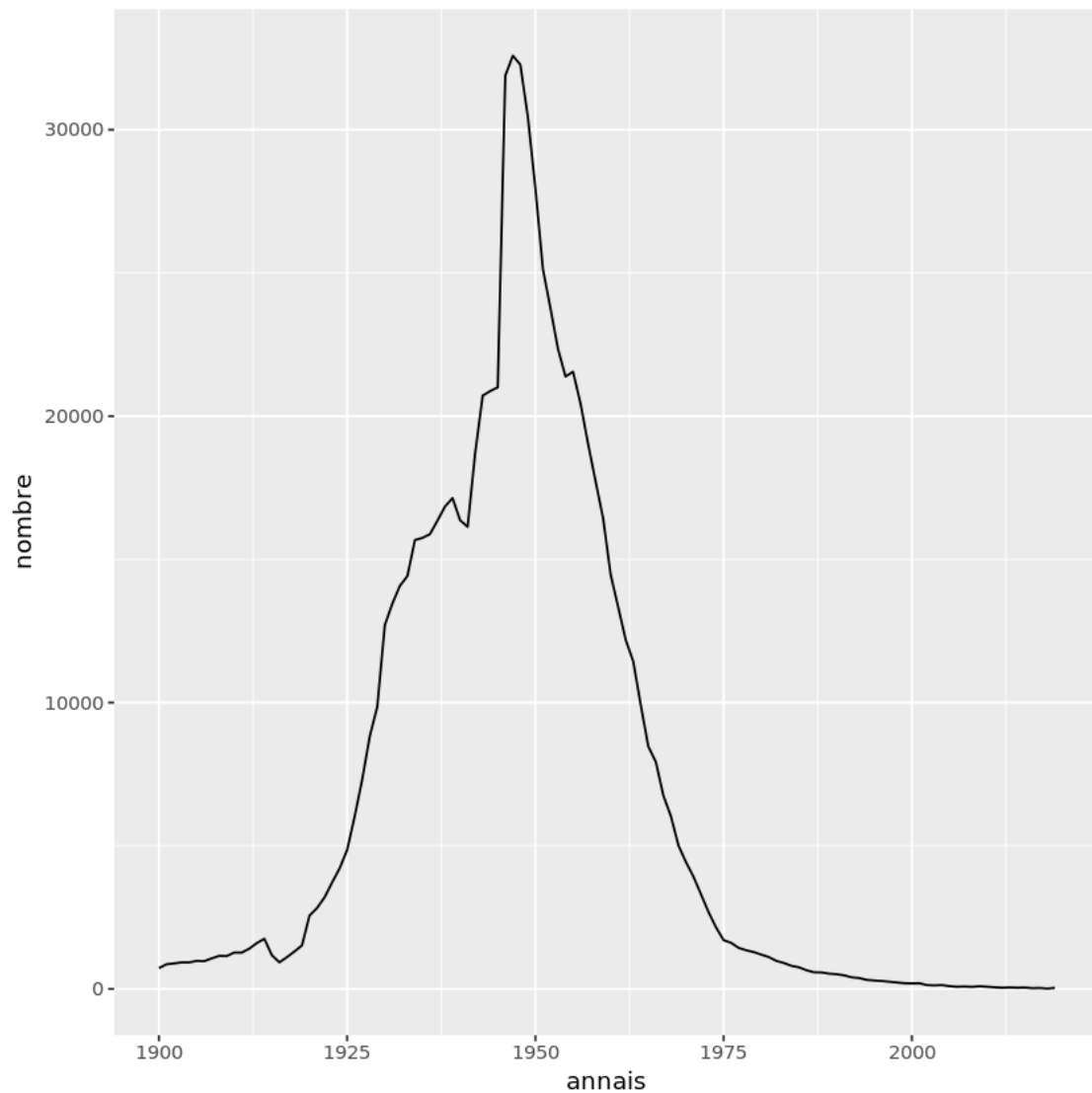
Now we can start the analysis of the data.

1.2 First Name frequency

Let's analyse the frequency of some *traditional* name like "Michel"

```
[8]: library(dplyr)
Michel <- FirstNames %>% filter(preusuel=="MICHEL") %>%
  select(annais,nombre) %>%
  group_by(annais) %>%
  summarise(nombre = sum(nombre))

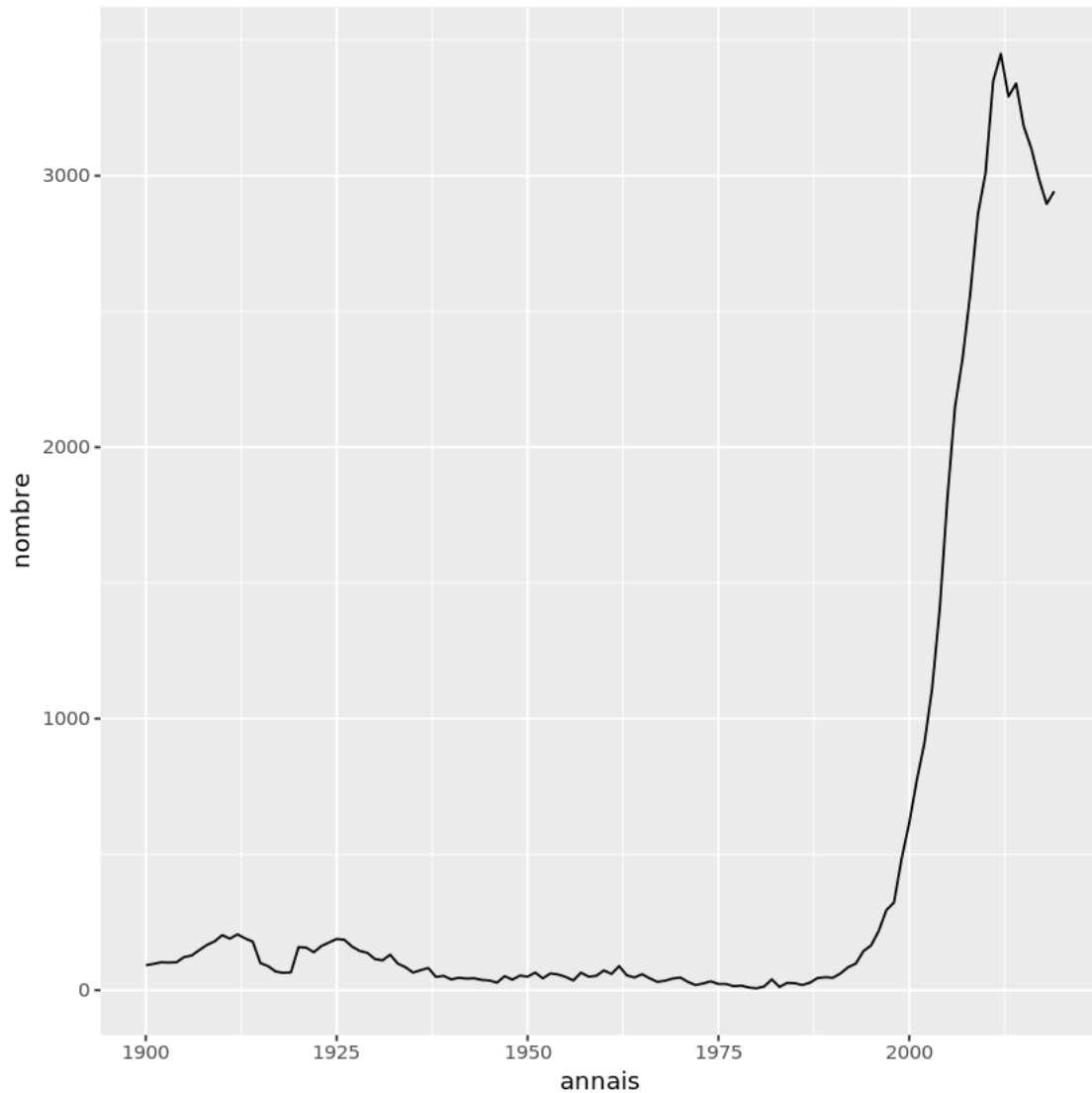
ggplot(data=Michel, aes(x=annais, y=nombre)) + geom_line()
```



And also analyse some more *modern* name like “Lina”

```
[9]: library(dplyr)
Lina <- FirstNames %>% filter(preusuel=="LINA") %>%
  select(annais,nombre) %>%
  group_by(annais) %>%
  summarise(nombre = sum(nombre))

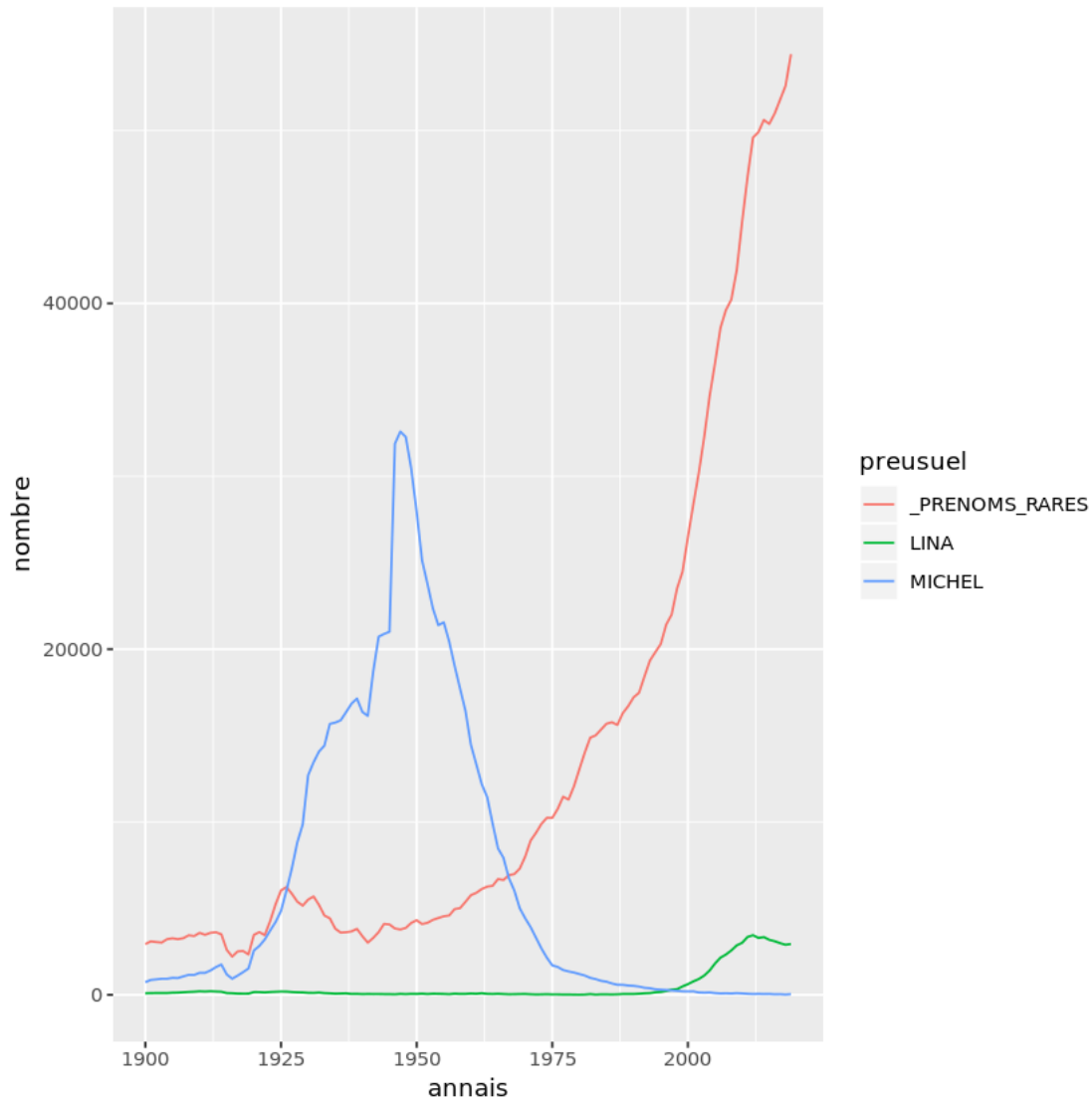
ggplot(data=Lina, aes(x=annais, y=nombre)) + geom_line()
```



Now we compare the usage of those two First Names with the number of rare first names overtime.

```
[10]: Comparison <- FirstNames %>%
      filter(preusuel == "MICHEL" | preusuel == "LINA" | preusuel ==
↪ "_PRENOMS_RARES") %>%
      group_by(annais, preusuel) %>%
      summarise(nombre = sum(nombre))

ggplot(data = Comparison, aes(x=annais, y=nombre, color = preusuel)) +
↪ geom_line()
```



So a quick analysis of the data shows that while *traditional* names are slowly getting forgotten, the *rare and unique names* are getting more and more common in France.

1.3 Popular First Names by gender

Let's get the most popular first name for the female gender for every year.

```
[11]: FemaleNames = FirstNames %>%
      filter(sexe==2) %>%
      select(preusuel, annais, nombre) %>%
      group_by(preusuel, annais) %>%
      summarise(nombre = sum(nombre)) %>%
      group_by(annais) %>%
      top_n(1, nombre)
```

```
tail(FemaleNames)
```

	preusuel <chr>	annais <dbl>	nombre <dbl>
A grouped_df: 6 × 3	STÉPHANIE	1976	16698
	STÉPHANIE	1977	15053
	SYLVIE	1961	19190
	SYLVIE	1962	20824
	SYLVIE	1963	25669
	SYLVIE	1964	27555

And now do the same thing for the male gender.

```
[12]: MaleNames = FirstNames %>%
      filter(sexe==1) %>%
      select(preusuel, annais, nombre) %>%
      group_by(preusuel, annais) %>%
      summarise(nombre = sum(nombre)) %>%
      group_by(annais) %>%
      top_n(1, nombre)

      tail(MaleNames)
```

	preusuel <chr>	annais <dbl>	nombre <dbl>
A grouped_df: 6 × 3	SÉBASTIEN	1977	19467
	SÉBASTIEN	1978	19101
	SÉBASTIEN	1979	17502
	STÉPHANE	1971	23326
	STÉPHANE	1974	18512
	THIERRY	1965	24541

Now let's get the most popular male and female first name.

```
[13]: select(top_n(summarise(group_by(FemaleNames, preusuel), nombre=sum(nombre)), 1,
      ↪nombre), preusuel)
      select(top_n(summarise(group_by(MaleNames, preusuel), nombre=sum(nombre)), 1,
      ↪nombre), preusuel)
```

	preusuel <chr>
A tibble: 1 × 1	MARIE

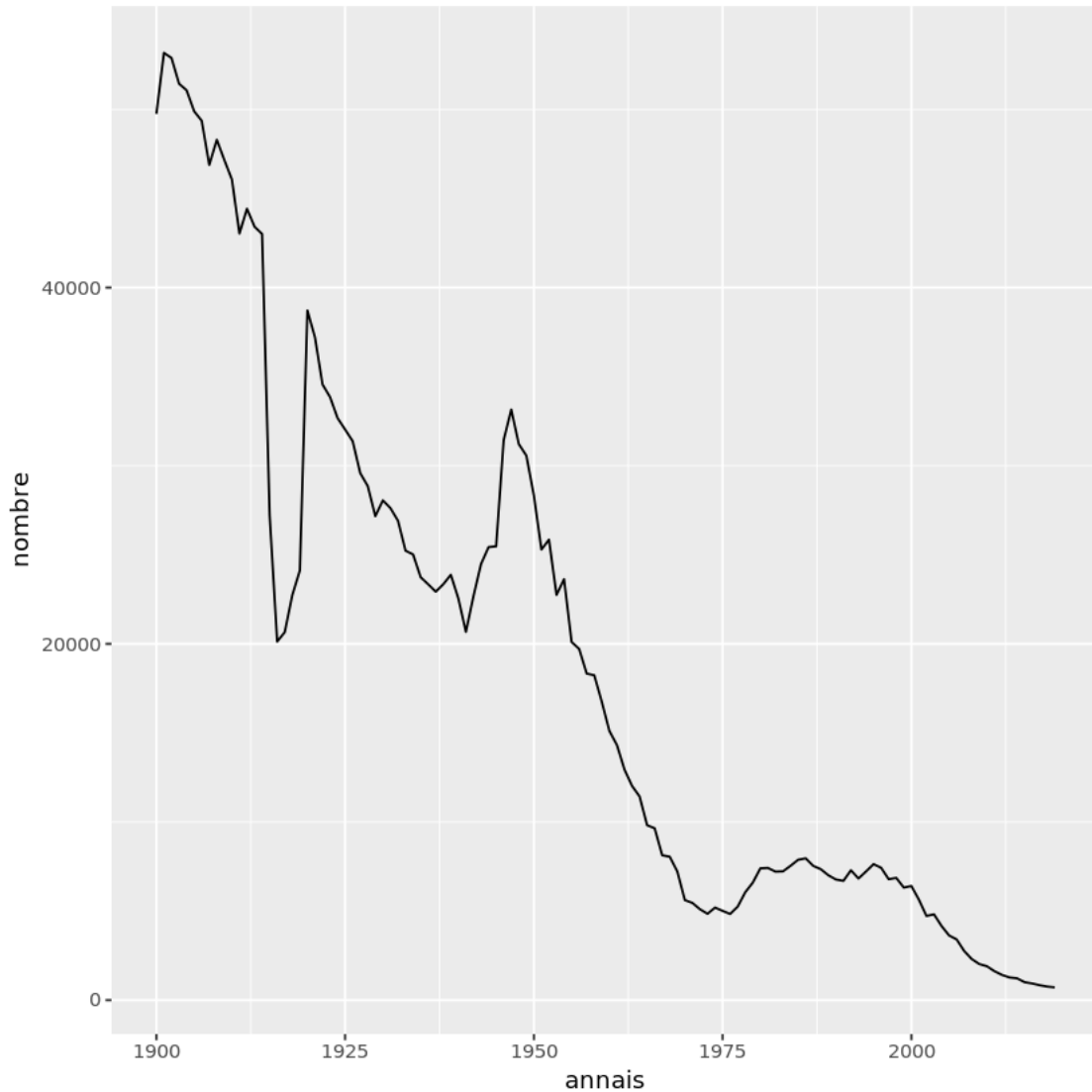
	preusuel <chr>
A tibble: 1 × 1	JEAN

Now since we got that “Jean” and “Marie” are the most popular first names for each gender throughour the years, let's draw their frequency graph.

the first one for “Marie”

```
[14]: library(dplyr)
Marie <- FirstNames %>% filter(preusuel=="MARIE") %>%
  select(annais,nombre) %>%
  group_by(annais) %>%
  summarise(nombre = sum(nombre))

ggplot(data=Marie, aes(x=annais, y=nombre)) + geom_line()
```



The second one for “Jean”

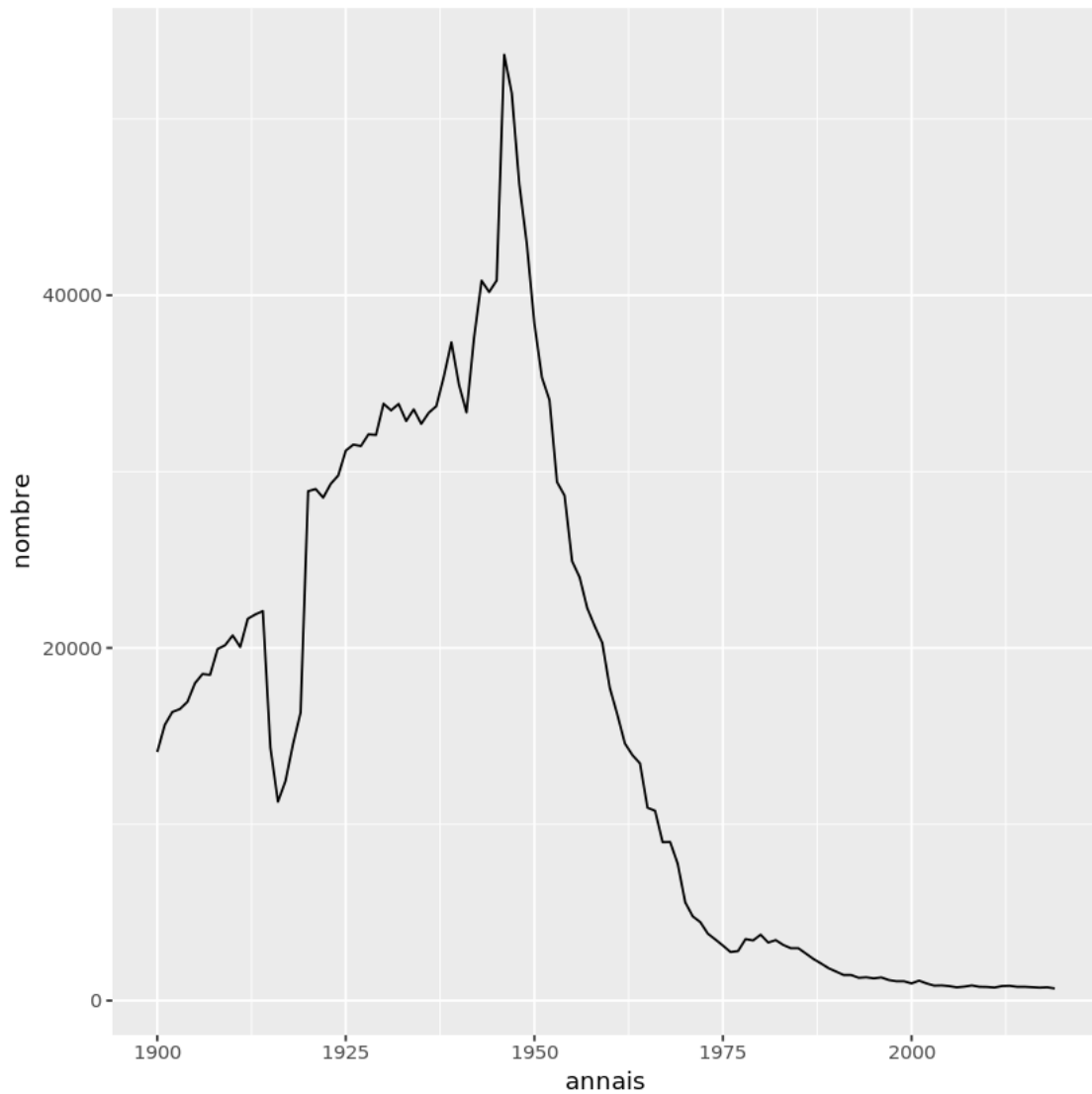
```
[15]: library(dplyr)
Jean <- FirstNames %>% filter(preusuel=="JEAN") %>%
```

```

select(annais,nombre) %>%
group_by(annais) %>%
summarise(nombre = sum(nombre))

ggplot(data=Jean, aes(x=annais, y=nombre)) + geom_line()

```



We can conclude from both graphs, although these two names were the most popular throughout the years in France, they are quickly and drastically fading out of fashion.