Seasonal morbidity variations on PD

Data of French Language PD Registry (RDPLF)

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self-care dialysis symposium

4th self-care dialysis symposium 6th & 7th June 2018

Background

Few studies on seasonal PD variations

- Only dealing with peritonitis risk
  - Seasonal variation in peritoneal dialysis associated peritonitis : a multicenter study. Youngjee Cho…and DW Johnson. Nephrol Dial Transplant (2012) 27:2018-2016
  - Seasonal variations and influence of the weather on the appearance of péritoneal infection. Miguel Nùñez-Moral…and Carmen Rodriguez-Suarez. Nefrologia (2014) 34 (6) : 743-748
  - Seasonal variation in the peritoneal dialysis-related infections : a single center experience in the méditerranean. Buttigieg et al. Ther Apher Dial. (2016) 20 (5) : 501-506
- More general recent studies
  - Seasonal variation in Blood Pressure of patients on Continuous Ambulatory Peritoneal Dialysis. Cheng L et al. Blood Purif 2006 ; 24 : 499-507
  - Seasonal inflenza vaccination is associated with reduced morbidity and mortality in peritoneal dialysis patients. I-Kuan Wang et al. Nephrol Dial Transplant (2016) 31: 269-274
  - -Seasonal variations in transition, mortality and kidney transplantation among patients with en-stage disease in the USA. Yoshitsugu Obi et al. Nephrol Dial Transplant (2017) 32 : ii99-ii105

6610 patients de 2003 à 31/12/2008

No variation in peritonitis rates

No variation in peritonitis outcomes

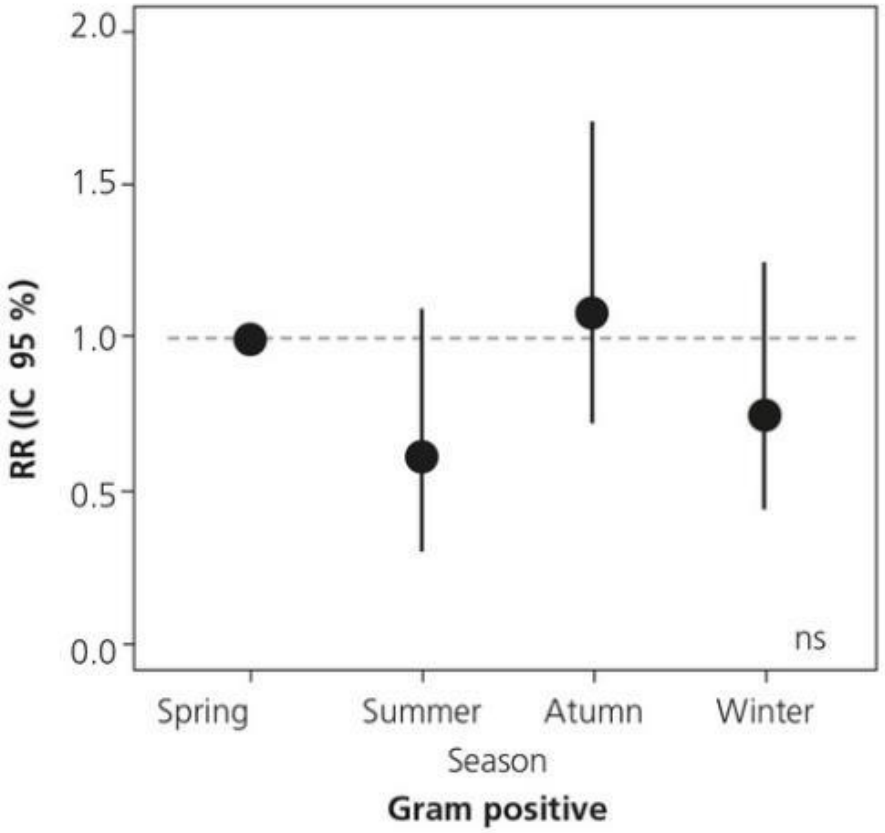
But trends to :

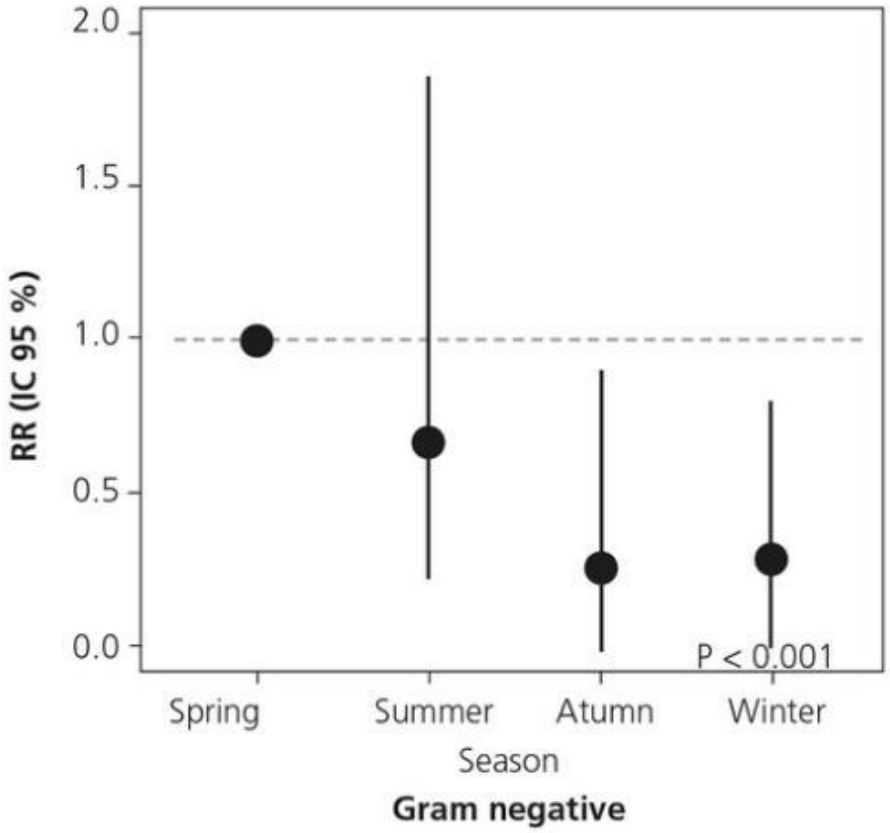
- summer and spring peak for coag neg Staph
- summer peak for pseudomonas
- summer and autumn peak for fungus, gram neg
- Winter peak for coynebacteria

Note : seasons in Australia are the reverse !

Seasonal Variations and Influence of the Weather on the Appearance of Peritoneal Infection. Miguel Núñez-Moral et al. Nefrologia 2014;34:743-8 | doi: 10.3265/

Overall, the rates of peritoneal infection are similar in all four seasons
The higher the temperature, the higher the risk that a peritoneal infection will be the result of a gram-negative bacterium.





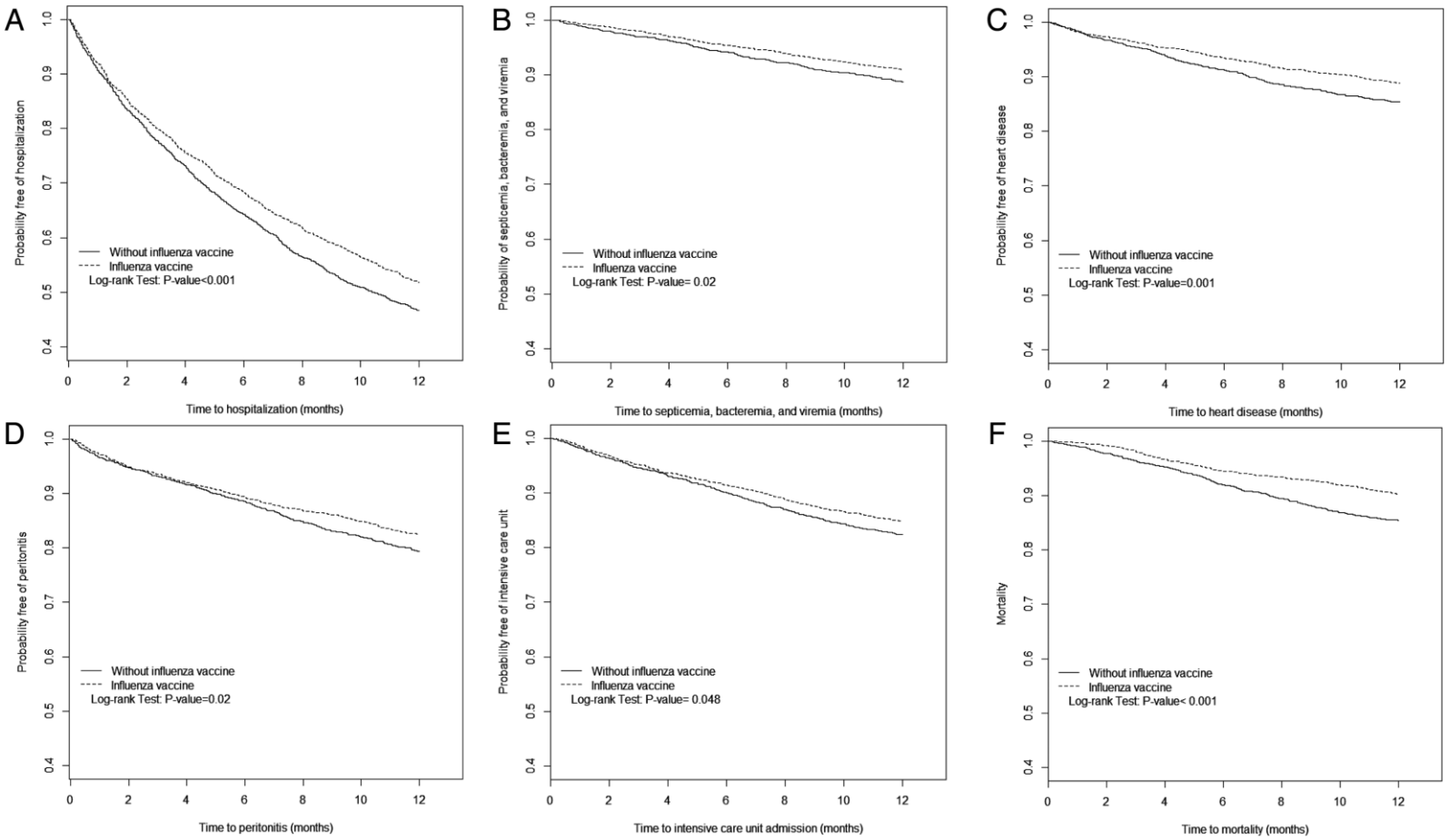
Conflicting results

- Most studies are single center studies
- different climates can explain different results
- Seasonal variations in
  - Hong Kong (Szeto et al. PDI 2003; 23 : 580-586, Chan et al. Int J Artif Organs 1989; 12: 366-368)
  - Korea (Kim et al.Adv Perit Dial 2000;16:243-247)
  - Brazil (Alves et al. Catheters infection, Adv Perit Dial 1993;9:244-247
- No seasonal variation in Denver
  - Dry and relatively cool Climate (Quinn et al. PDI 1994; 14:172-174

Seasonal influenza vaccination is associated with reduce morbidity and mortality in peritonal dialysis patients
I-Kuan Wang et al. NDT (2016) 31:269-274

Taiwan : 2089 vaccinated patients matched with 2089 no vaccinated patients (propensity score)

1998 – 2010 : Vaccinated patients had decrease mortality and morbidity of all etiology



Seasonal variation in Blood Pressure of patients on Continuous Ambulatory Peritoneal Dialysis. Cheng L et al. Blood Purif 2006 ; 24 : 499-507

Single center

122 patients

2003/01/01 – 2004/12/31

Blood pressure higher in winter, lower in summer

Blood pressure negatively correlated with temperature

No seasonal variation of weight and ECW (bioimpedance)

Rational for seasonal study in France

Climate different from those of previous authors

In the littérature :

- few reports on peritonitis
- mostly data from single centers and small series
- often short periods of time
- no study available on seasonal dropout

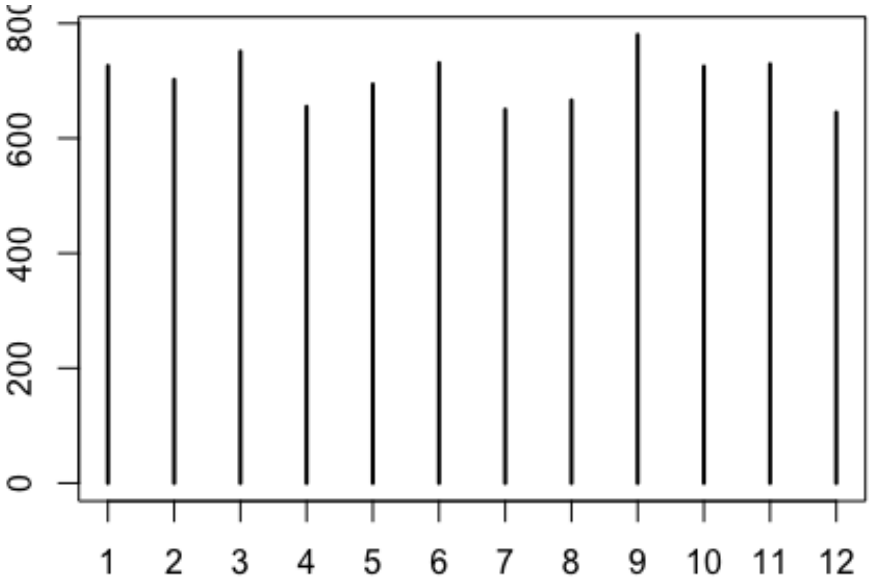
In the RDPLF

- Data available since 1986
- 40,000 patients included (32,500 in metropolitan France)

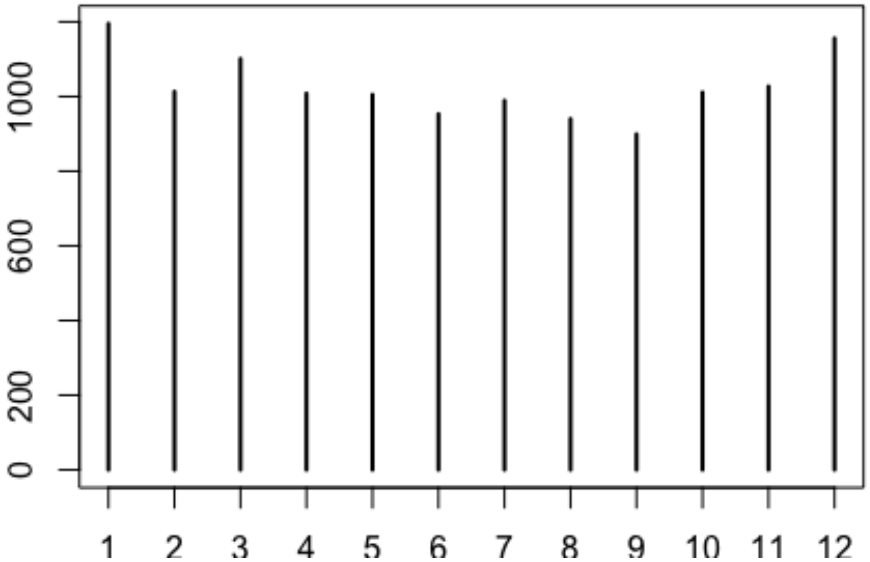
Total monthy dropout in France métropolitan

Patients included : 32,500
Period : 1986 -2018

Nb tranfers to HD

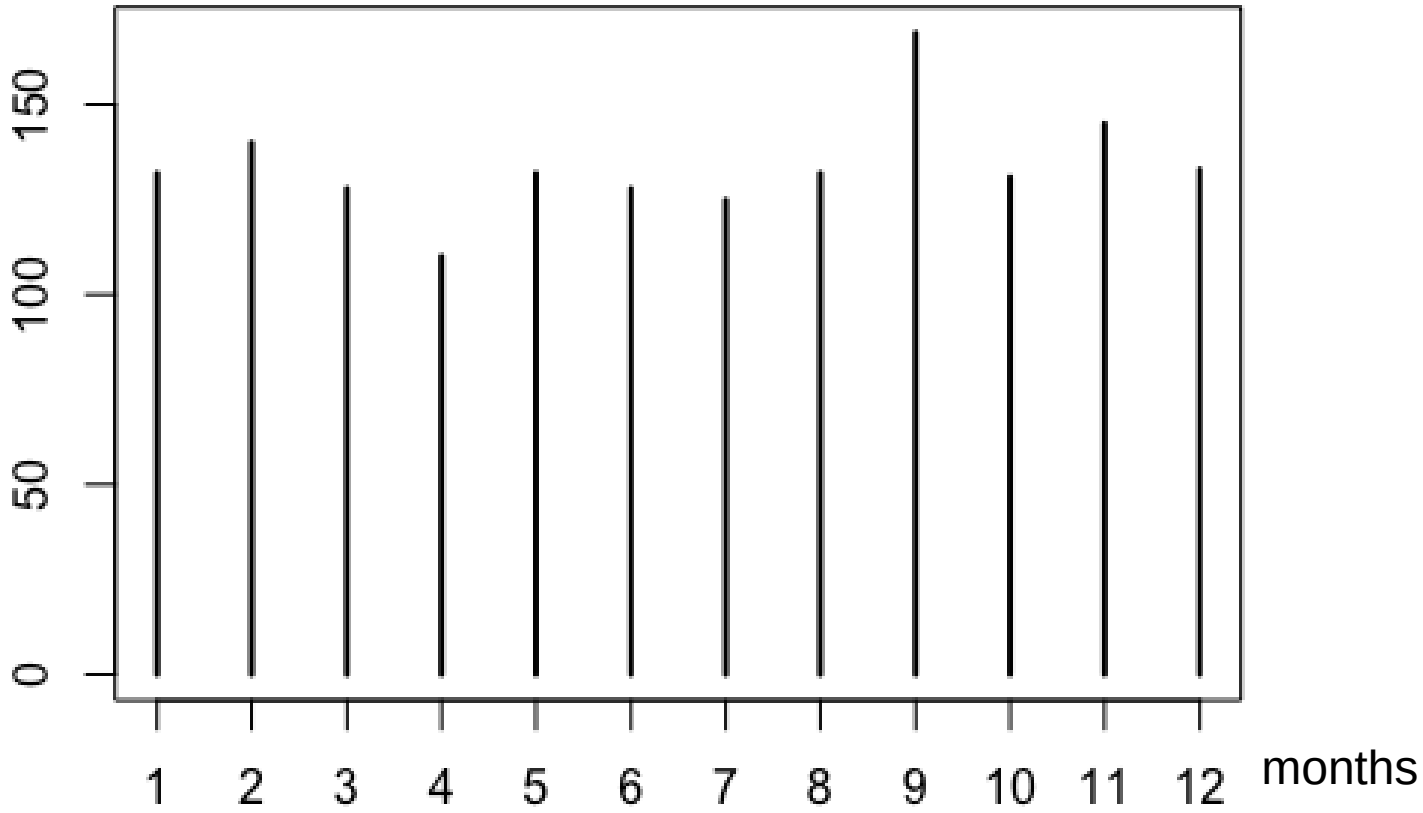


Nb deaths



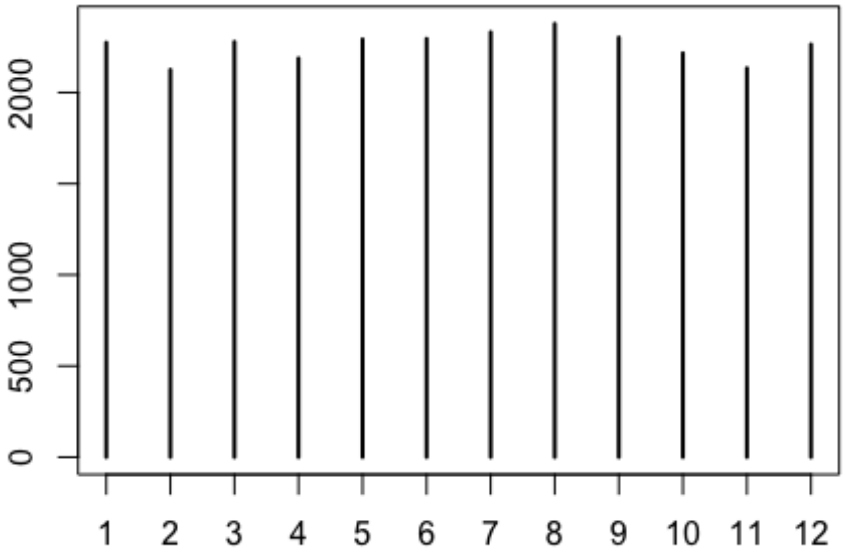
Total monthy transfers to HD for peritonitis (France 1986-2018)

Nb transfers for peritonitis

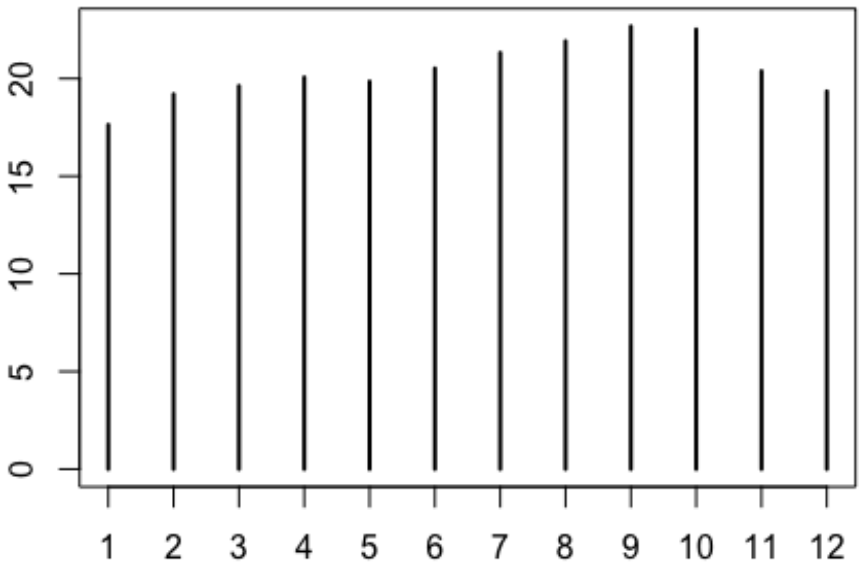


Total number of peritonitis and Gram negative percentages per month.
Period 1986 -2017, France metropolitan
32652 patients included, 26430 peritonitis

September/January : +30 %



Number of peritonitis per month



Percentage of gram neg per month

1	2	3	4	5	6	7	8	9	10	11	12
2274	2125	2278	2188	2292	2295	2331	2377	2302	2216	2134	2264

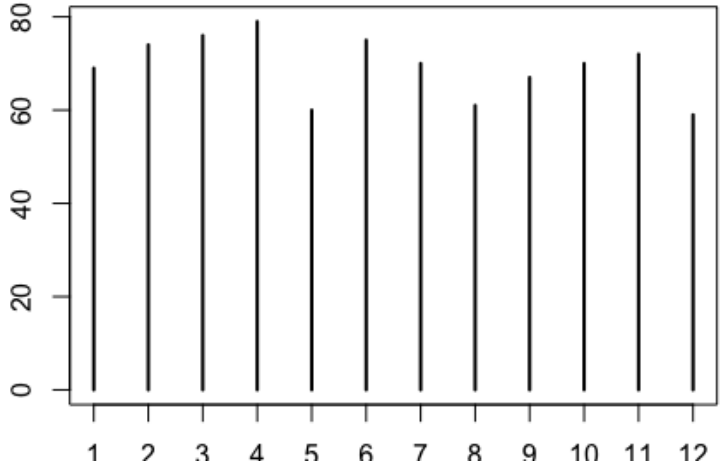
Change in climate

Robert Vautard, director of research at the CNRS at the Pierre-Simon Laplace Institute and climate specialist in Europe, explained on franceinfo 2017, June 22, that "these episodes of heat are more common today around the world. but especially in our latitudes and in Europe ". "The probability of a heat wave" like that of 2003 today "is ten times greater than it could have been at the end of the twentieth century,"

=➔ does it change the seasonal effect ?

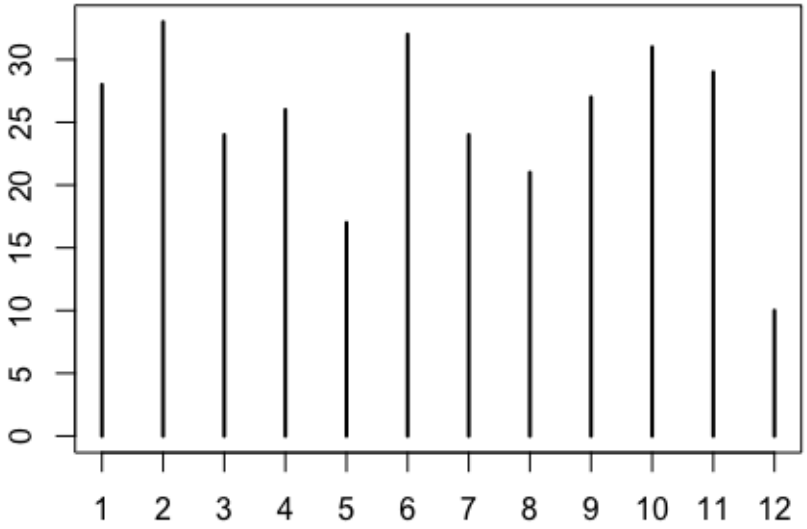
France monthly PD dropout in 2003

Total dropout

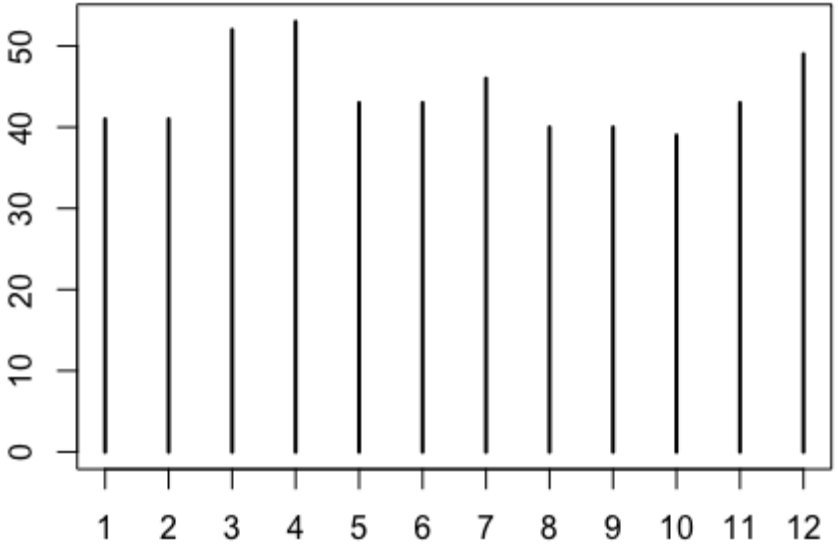


Canicule
1/08-8/08
14 000 death in general population

Transfer to HD

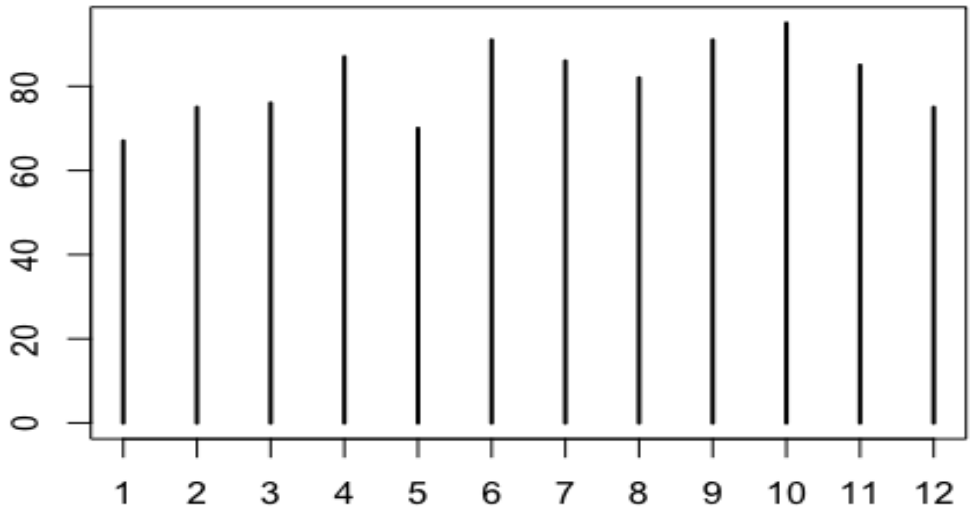


Death



Peritonitis occurrence in 2003 in France and gram negative percentages

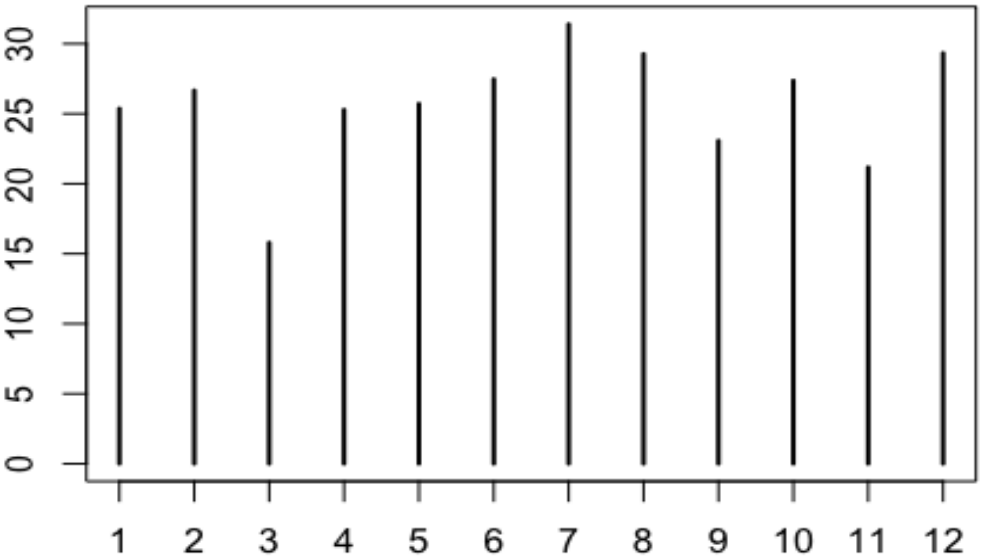
% gram negative



months

Canicule
1/08-8/08
14 000 death in general population

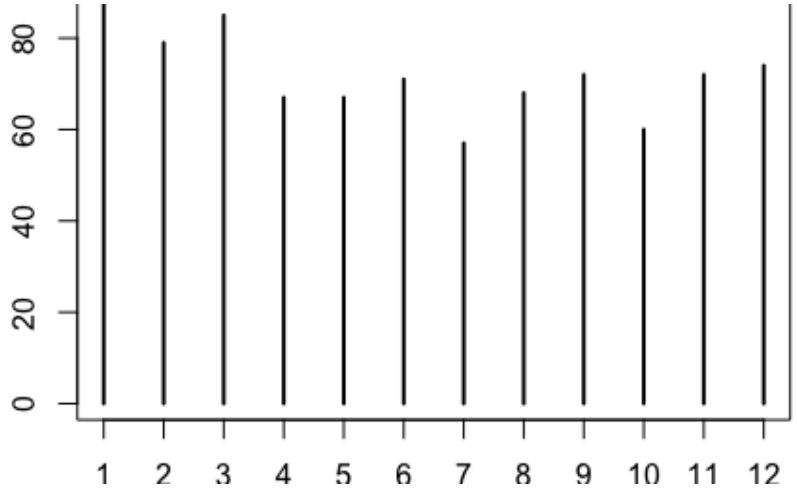
Nb



months

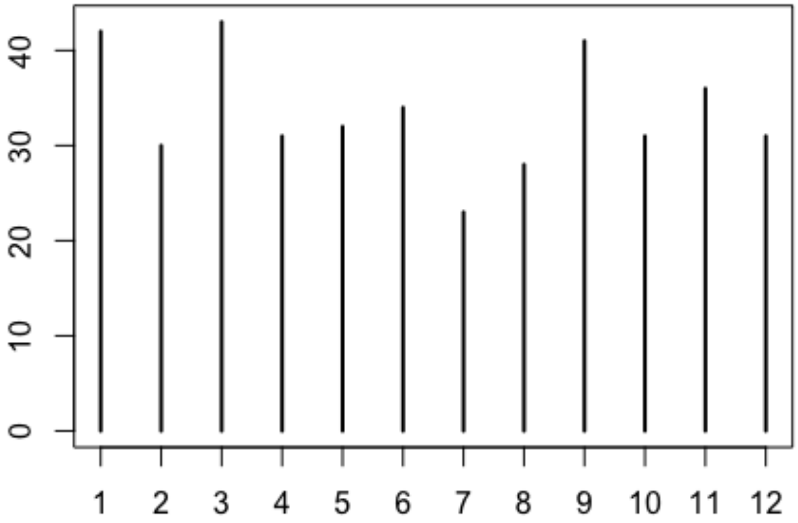
France monthly PD dropout in 2017

Total dropout

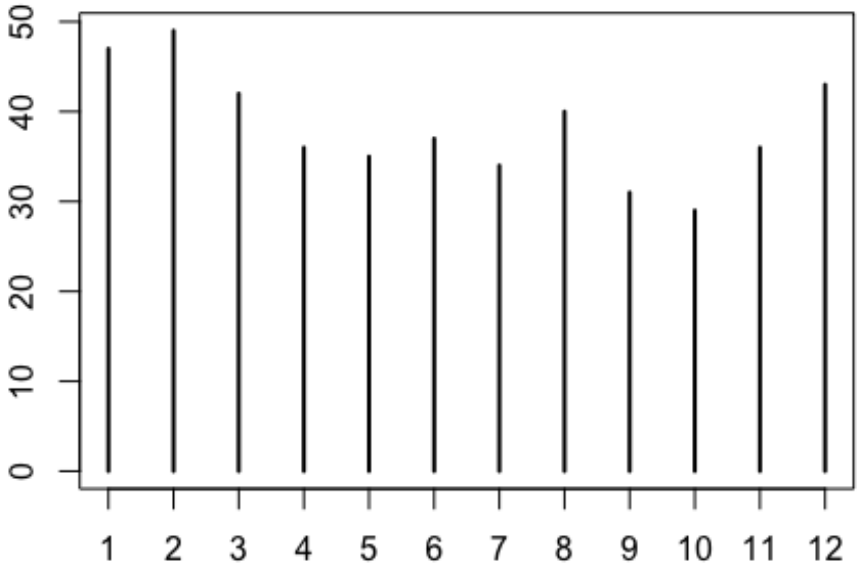


Heat wave
18/06-22/06
Peak 36 Celcius

Transfer to HD

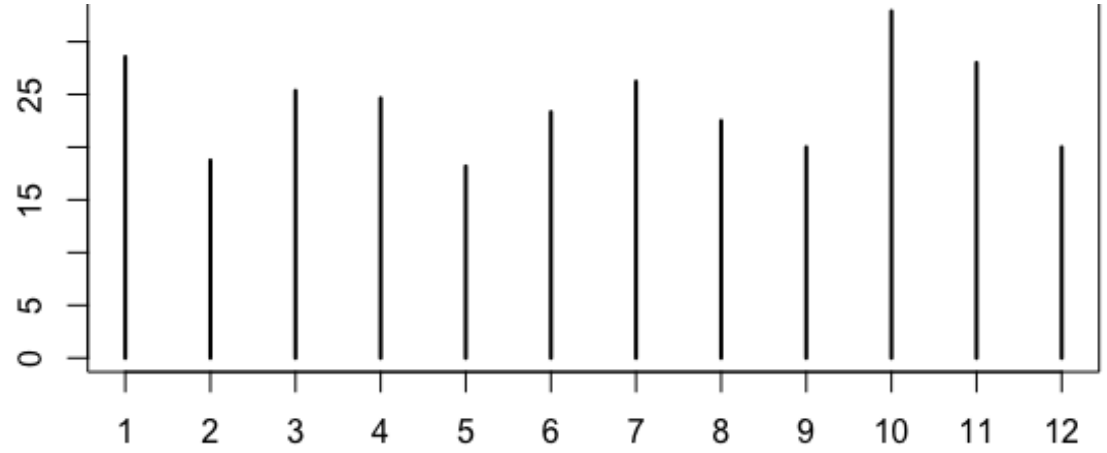


Death



Peritonitis occurrence in 2017 in France and gram negative percentages

% gram negative



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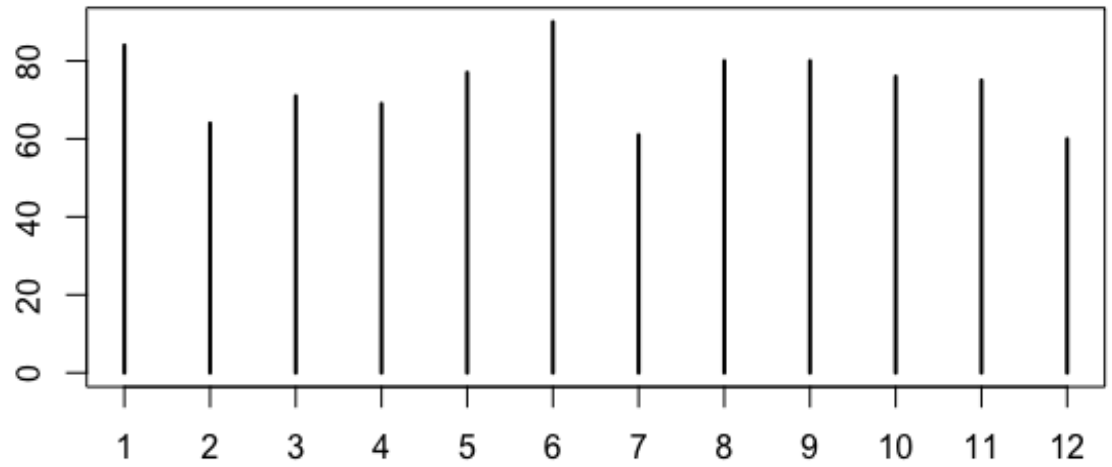
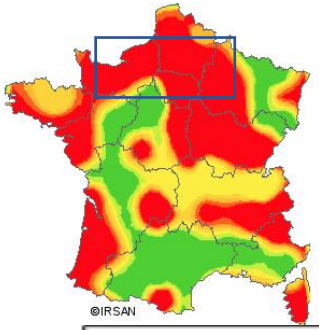
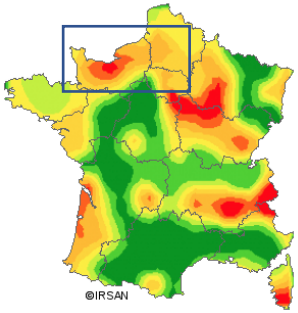
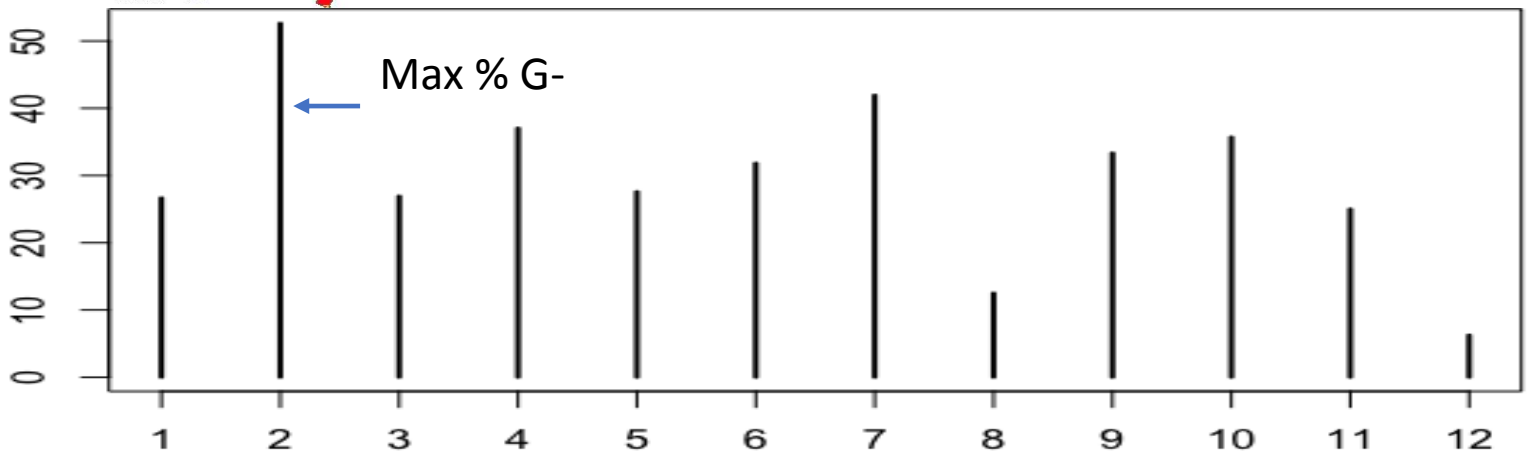


Gastro enteritis in north in 2016 and months

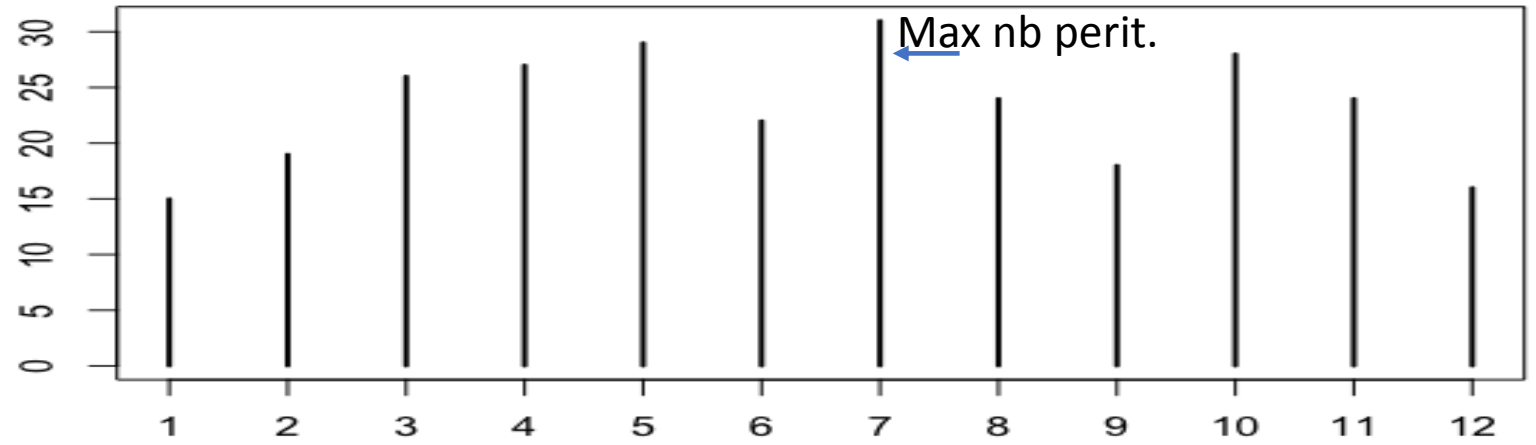




% gram -



Nb Peritonitis



Conclusion 1

Seasonal variations available only two large registries

ANZDATA : 6610 patients, 2003 -2008

RDPLF : 40000 patients 1986 – 2018

Over a 30 years period :

- No seasonal variation of dropout towards HD

-more transfers to HD for peritonitis in September

- Deaths

more numerous in January and December

less in august and September

- Peritonitis

number does change

30 % Gram neg percentage increase from Jan. to Sept.

Conclusion 2

Role of heatwaves (2003 and 2017)

No influence on general dropout

No influence on transfers to HD

No influence on deaths

No more than usual on peritonitis (except number?).

Conclusion 3

Variation in environmental infectious disease might have predominant influence over seasonal period

In case of epidemic such as influenza, vaccination is important to prevent all causes of morbidity and mortality.

Take care in case of heat wave, but…

Save time to publish in the new journal of RDPLF Bulletin de la Dialyse à domicile

Devoted only to home dialysis, Write in english and we translate in French, leaving abstract in English

Réservé à la dialyse à domicile uniquement, Ecrivez aussi en Français, Molière au ciel sera heureux

http://www.bdd.rdplf.org