



Use of principal component analysis in the evaluation of adherence to statin treatment : a method to determine a potential target population for public health intervention

Philippe Latry MD PhD, Claude Peter MD

*Cnam-TS Échelon Régional du Service Médical de l'Assurance Maladie d'Aquitaine
80 Avenue de la Jallère, 33000 Bordeaux - France*



Faculty Disclosure

<input checked="" type="checkbox"/>	No, nothing to disclose
-------------------------------------	-------------------------



Introduction

The aim of the study is to provide a method for categorization of the statin users in the Aquitaine region – south-western France



Methods (1)

- Cohort study performed using the reimbursement database of the *caisse nationale de l'assurance maladie des travailleurs salariés*
- Subjects included : submit a reimbursement for a least one delivery of a drug with ATC code C10AA (HMG CoA reductase)
- Inclusion period : 1st September 2003 to 30th June 2005
- The quantity delivered was calculated as number of DDD
- Extreme values (i.e. beyond the 99th percentile) where excluded



Definitions of the variables studied

Methods (2)

Medication availability : proportion of days covered	Proportion (total number of DDD delivered divided by the number of days between the first and last delivery)
Persistence	Number of days between the anniversary date of the first delivery and the last delivery
Number of deliveries during the observation period	-
Time to first post index refill	Number of days between the theoretical supply end of the index delivery and the second delivery
Number of gaps in treatment supply	Insufficient theoretical supply, taking into account stockpiling from previous delivery during study period
Time in days to first gap in supply	Gaps of 30, 60, 90, 120, 150 and 180 days were considered individually
Maximum gap	Maximum number of days in a gap of supply
Incident user	No delivery of statins for 6 months previous to the index date
Prevalent user	At least one delivery of statins for 6 months previous to the index date



Methods (3)

Statistics

- PCA : reduces variables to small number of factor
- K-means and hierarchical ascendant classifications : reduces subjects to small number of class



Results (1)

- **Study population 119,570**
- **Sex ratio : 1.1**
- **Mean (SD) age : 65.9 (11.9)**
- **New treatment 13 %**



Results (2)

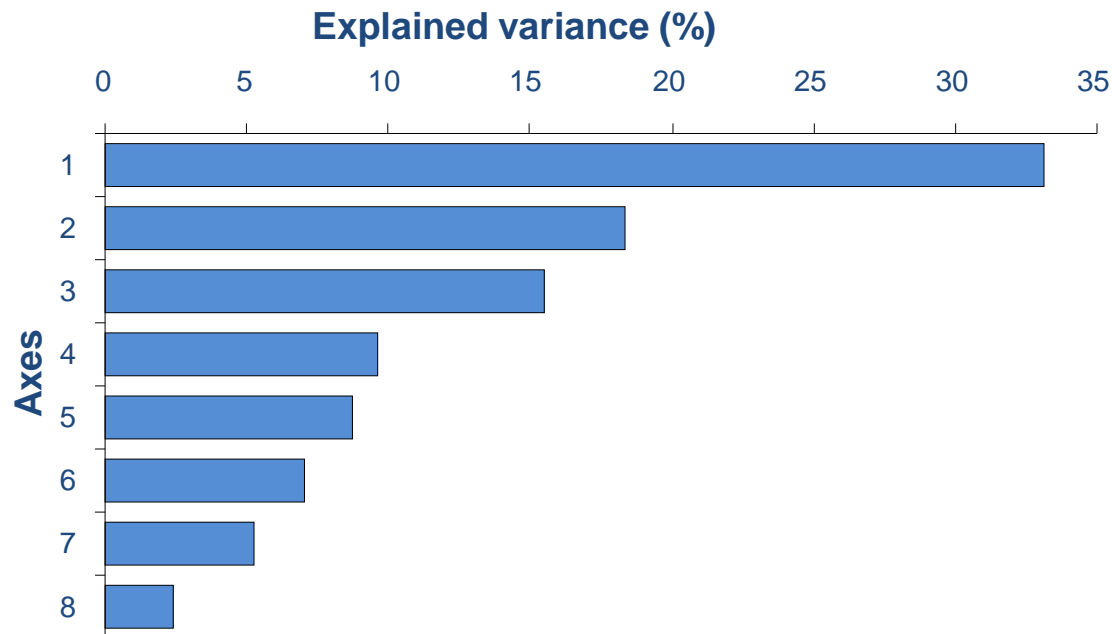
Main adherence overall variables

	Mean	95 % confidence intervall
Proportion of days covered > 80 %	83,7%	[83,53% ; 83,94%]
1 year persistence	64,7%	[64,41% ; 64,95%]
Time to first postindex refill (days)	36,5	[36,4 ; 36,5]
Mean delay between two deliveries (days)	37,1	[37,1; 37,2]



Results (3)

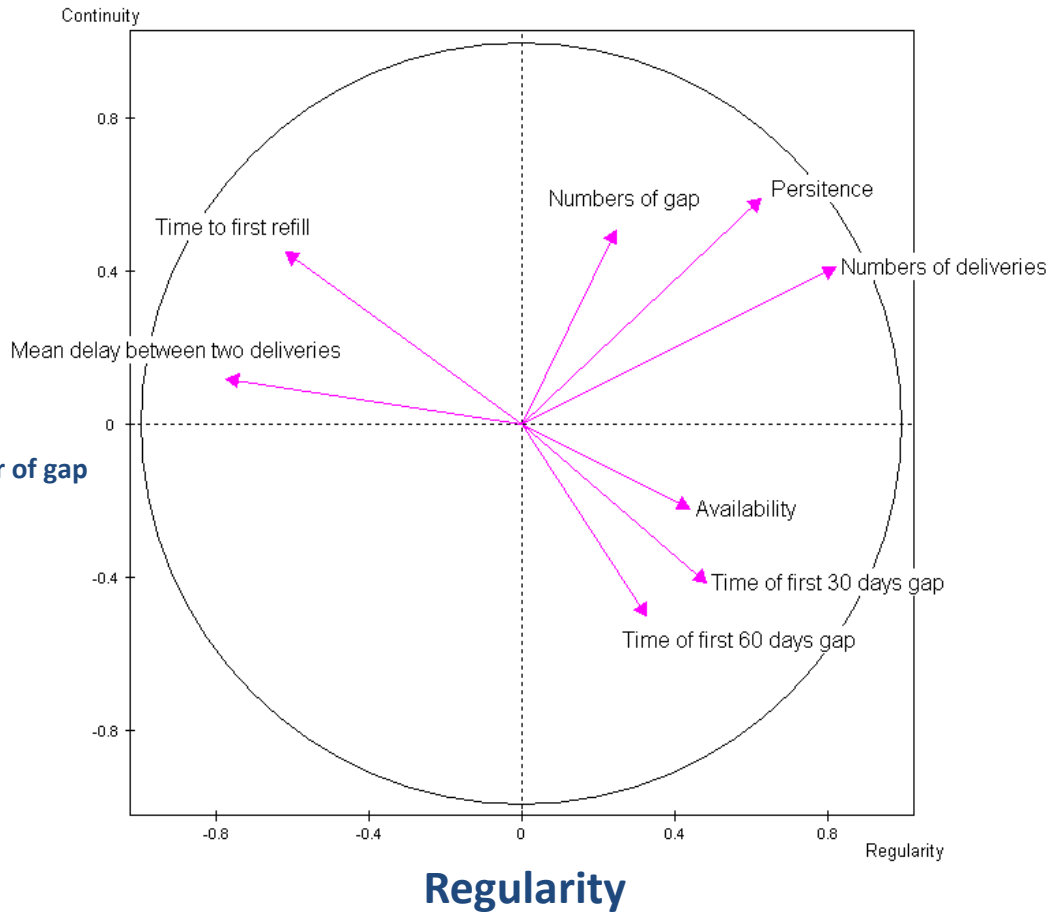
Variable categorization : ACP



Three axes explained 67 % of the variance



Results (4)



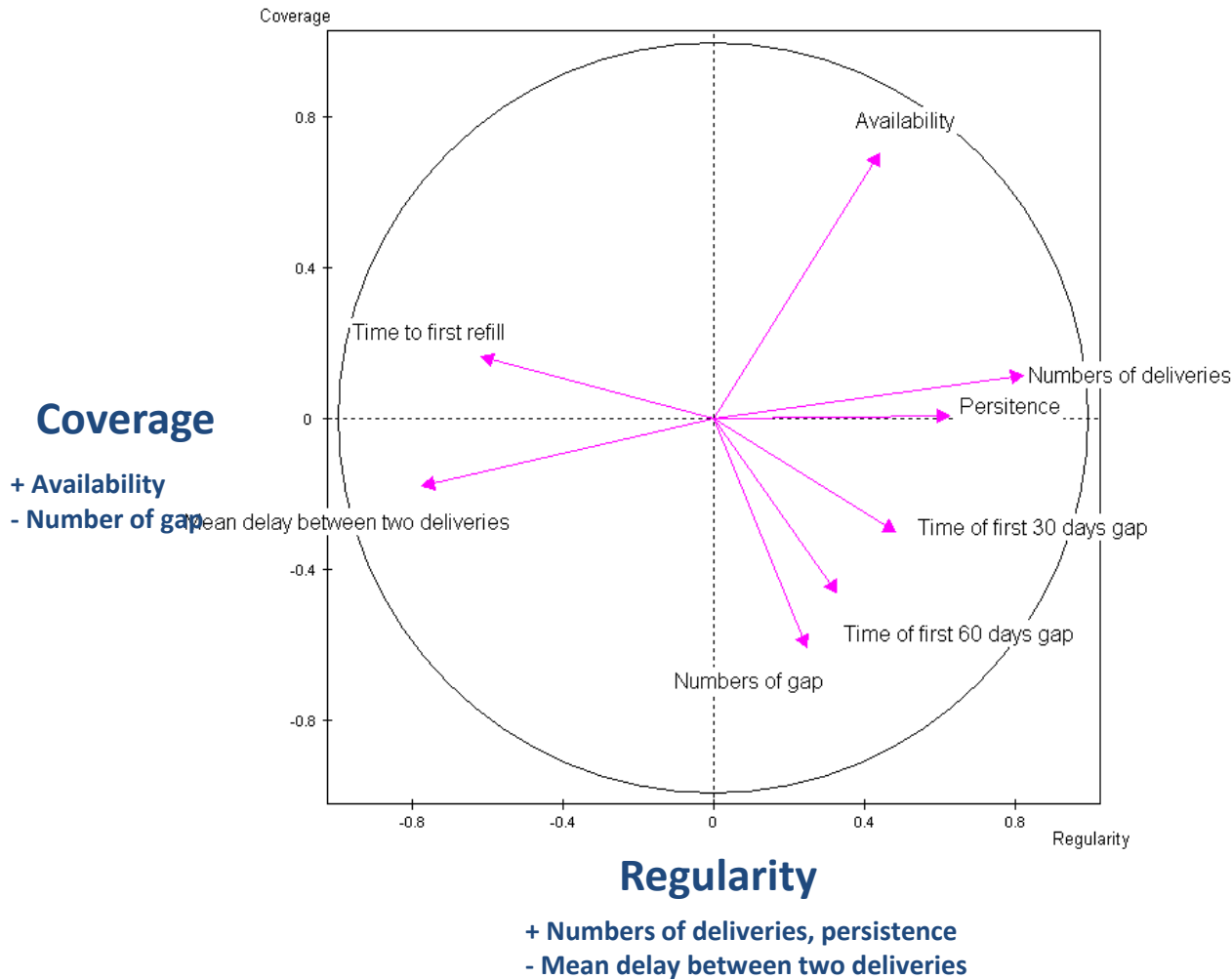
Continuity

- + Persistence, number of gap
- Time of first gap

Regularity

- + Numbers of deliveries, persistence
- Mean delay between two deliveries

Results (5)





Försäkringskassan

Subjects characterization : classifications

Results (6)

Overall
n = 119,570



Group 1
n = 51,310 (43 %)



Height number deliveries
Good persistence
Low number of gap
Good availability

Group 2
n = 36,303 (30 %)



Height Number deliveries
Height number of gap
Low availability

Group 3
n = 8,294 (7 %)



Height Number deliveries
Height number of gap
Low availability
Low persistence

Group 4
n = 11,878 (10 %)



Low number of deliveries
Long time to first post refill index
Height number of gap
Low persistence

Group 5
n = 1,401 (1%)



Id. Group 5
Height mean delay between two deliveries

Group 6
n = 10,384 (9%)



Low number deliveries
Very low persistence
Good availability



Conclusion

- Detect the patient's behavior regards to the drug intake.
- Monitor new drugs coming up and consider adherence as part of their overall utility.