

# Typology of Patients With Lung Cancer According to Demographics and Exposure to Environmental Factors in France: A Real-World Study

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OBJECTIVE

- > Lung cancer (LC) is a significant public health concern due to its high incidence and mortality, influenced by various socio-demographic, economic, and environmental risk factors.
- > This study aims to identify LC patients' profiles, through the different environmental and socio-economic factors, and describe the in-hospital drug treatment in LC patients.

METHODOLOGY

- > **Data sources** : French national hospital claims databases (PMSI) merged with open-source environmental and socio-economic data.
- > **Study design** : Adult patients with LC were identified based on the French Health Insurance disease mapping definition (including LC-related ICD-10-CM codes) and were hospitalized for LC between Jan 2017 and Dec 2022. The index hospitalization is the first LC-related hospitalization.
- > **Statistical methods** : Data sources were merged at the patient level using postal codes, or using the nearest neighbor methods when postal codes were unavailable. Patient typologies were identified using Factor Analysis of Mixed Data and K-means method based on socio-economic (social disadvantage index, distance to the patient's most frequented healthcare facility, primary care accessibility), environmental (main greenhouse gas emission sector in the residential area, annual greenhouse gas emissions per km², radon exposure, concentrations of PM10, PM2.5, and NO2 in the air), and geographical (agricultural specialization of the locality, and mountainous vs. non-mountainous residence) factors.
- > **Outcomes** : Descriptive analysis of the factors included in the typologies and treatment sequence by cluster.

RESULTS

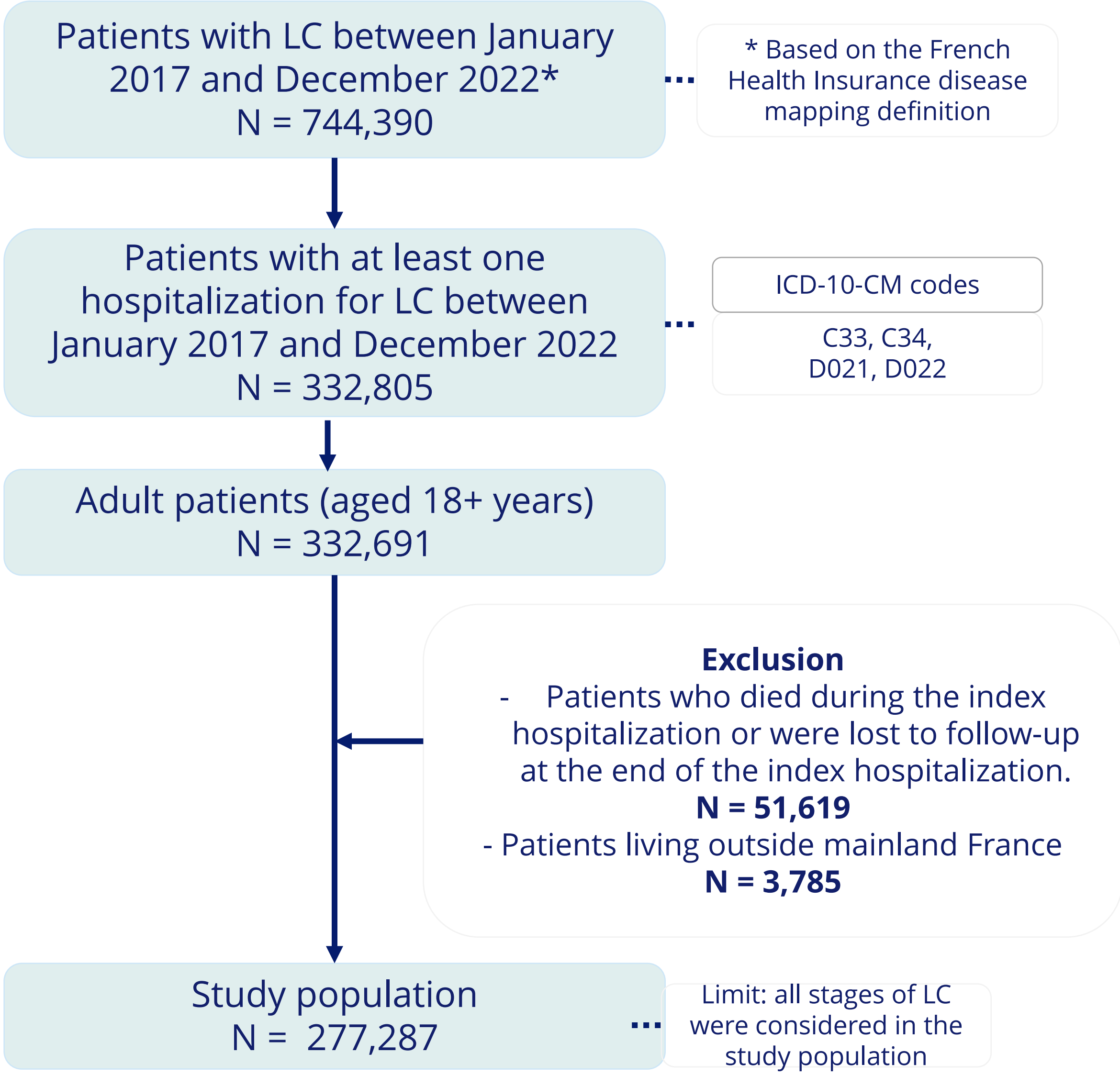


Figure 1 : Patient identification flowchart

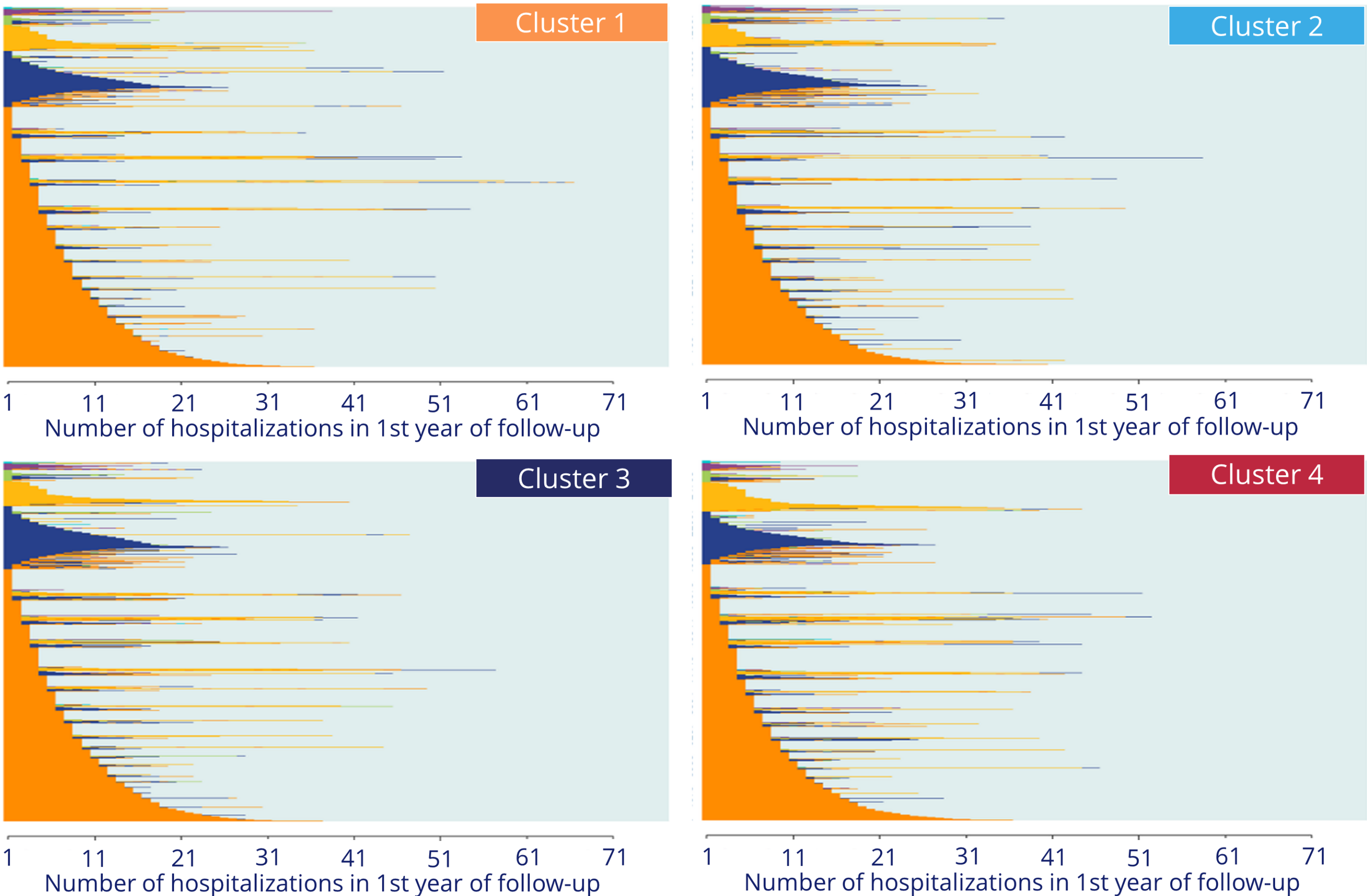
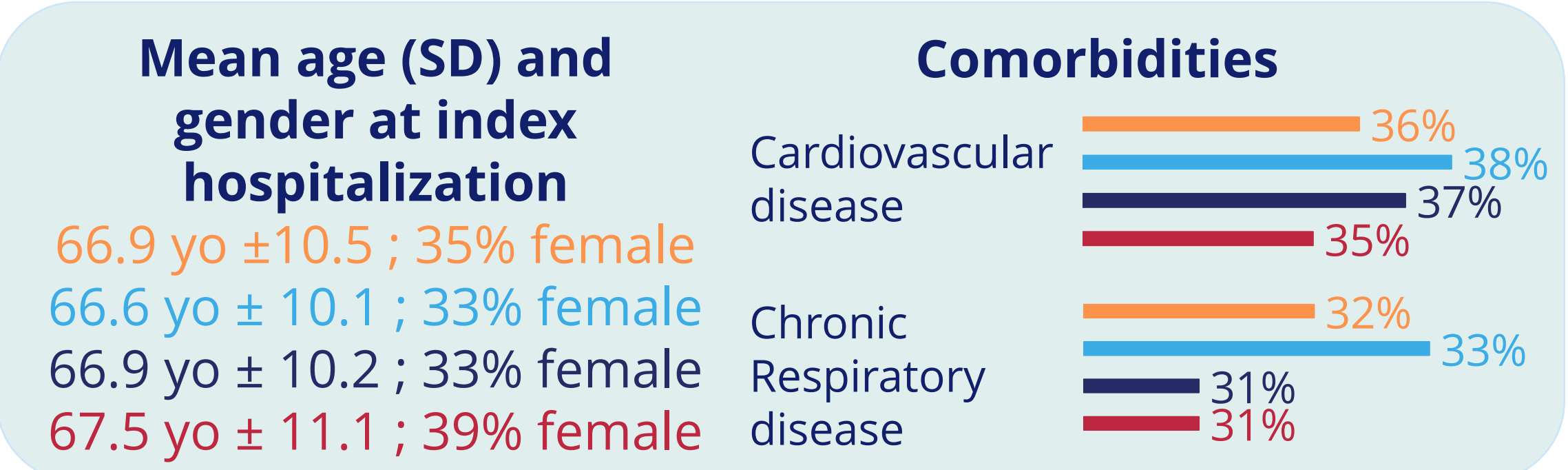


Figure 4 : Treatment sequence, by cluster

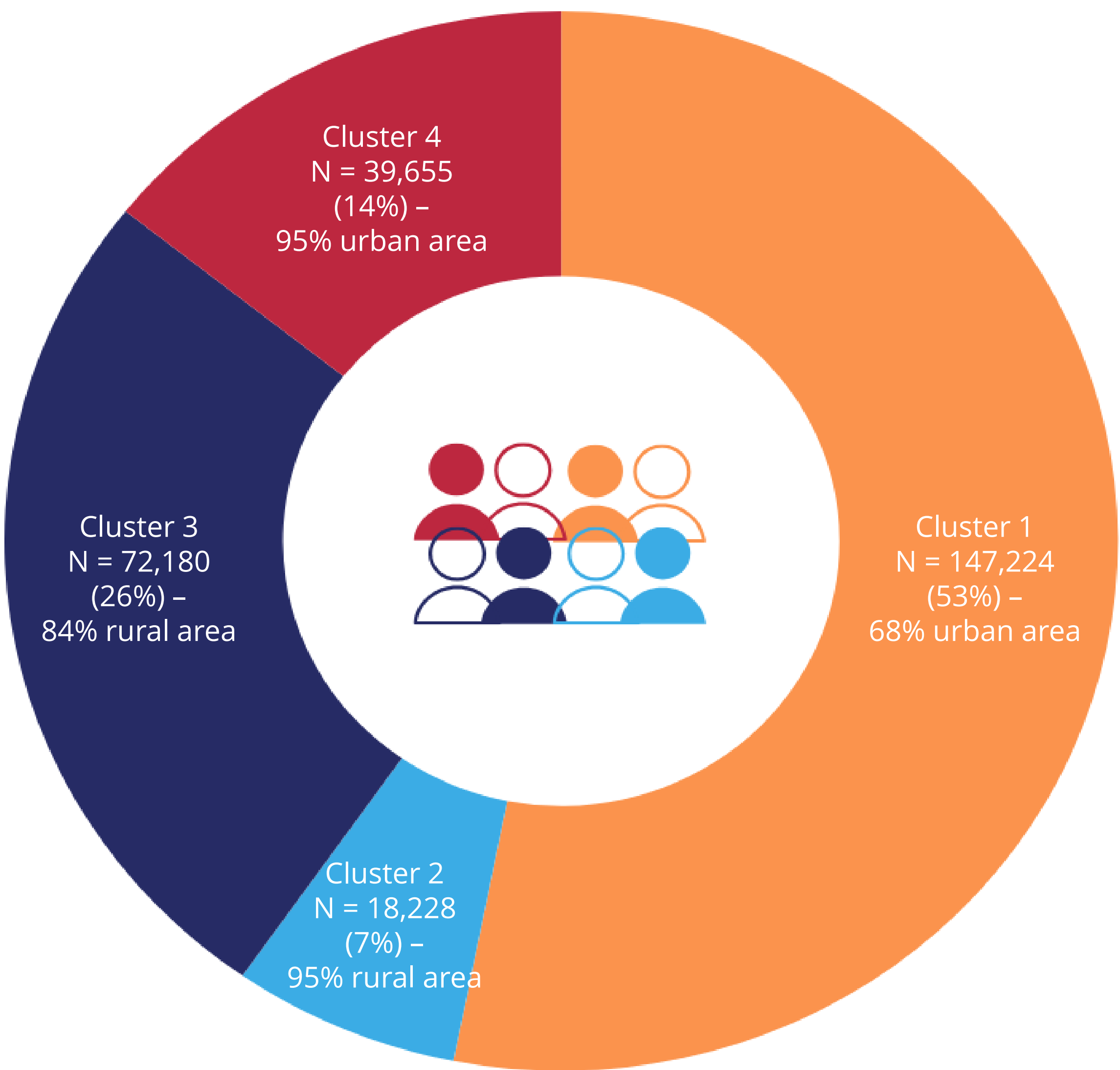


Figure 2 : Number of patients by cluster

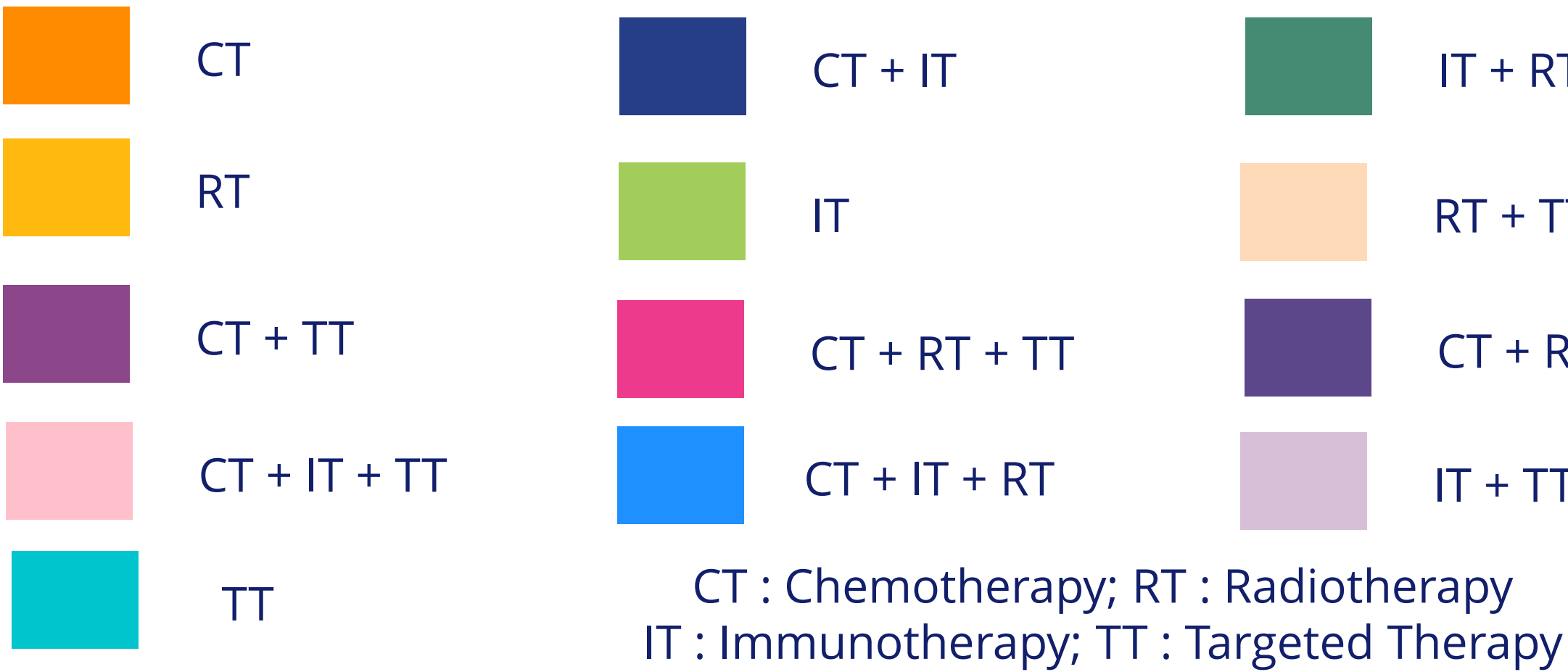


Figure 3 : Cluster description by environmental factors

**Time to (SD)\* and number (SD) of hospitalizations before the first change in therapeutic strategy**

Cluster	Time to (SD)*	Number (SD)
Cluster 1	4.3 months (3.1)	6.1 ± 4.5
Cluster 2	4.5 months (3.1)	6.3 ± 4.7
Cluster 3	4.3 months (3.0)	6.2 ± 4.6
Cluster 4	4.2 months (3.0)	6.0 ± 4.5

\*Number of days between the index date and the first hospitalization that included a change in the in-hospital drug treatment for LC



CT : Chemotherapy; RT : Radiotherapy  
IT : Immunotherapy; TT : Targeted Therapy

CONCLUSION

- > Environmental health risks persist across diverse socioeconomic settings, with urban dwellers facing significant air pollution challenges and rural residents encountering risks like radon exposure. This typology highlights disparities in healthcare access, reinforcing the idea that living environments influence not only exposure risks but also medical care for patients.

