

Epidemiology and Clinical Progression of Systemic Lupus Erythematosus and Lupus Nephritis in the Brazilian Public Health System: A Real-World Study (2012-2024)

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BACKGROUND & OBJECTIVE

Background

- Context:** Systemic lupus erythematosus (SLE) and its severe renal manifestation, lupus nephritis (LN)¹, represent a significant clinical burden within the Brazilian Unified Health System (SUS).
- Study Scope:** Sociodemographic profiles, 12-year (2012-2024) temporal trends in patient incidence/recurrence, and clinical progression patterns from initial SLE diagnosis to key outcomes.

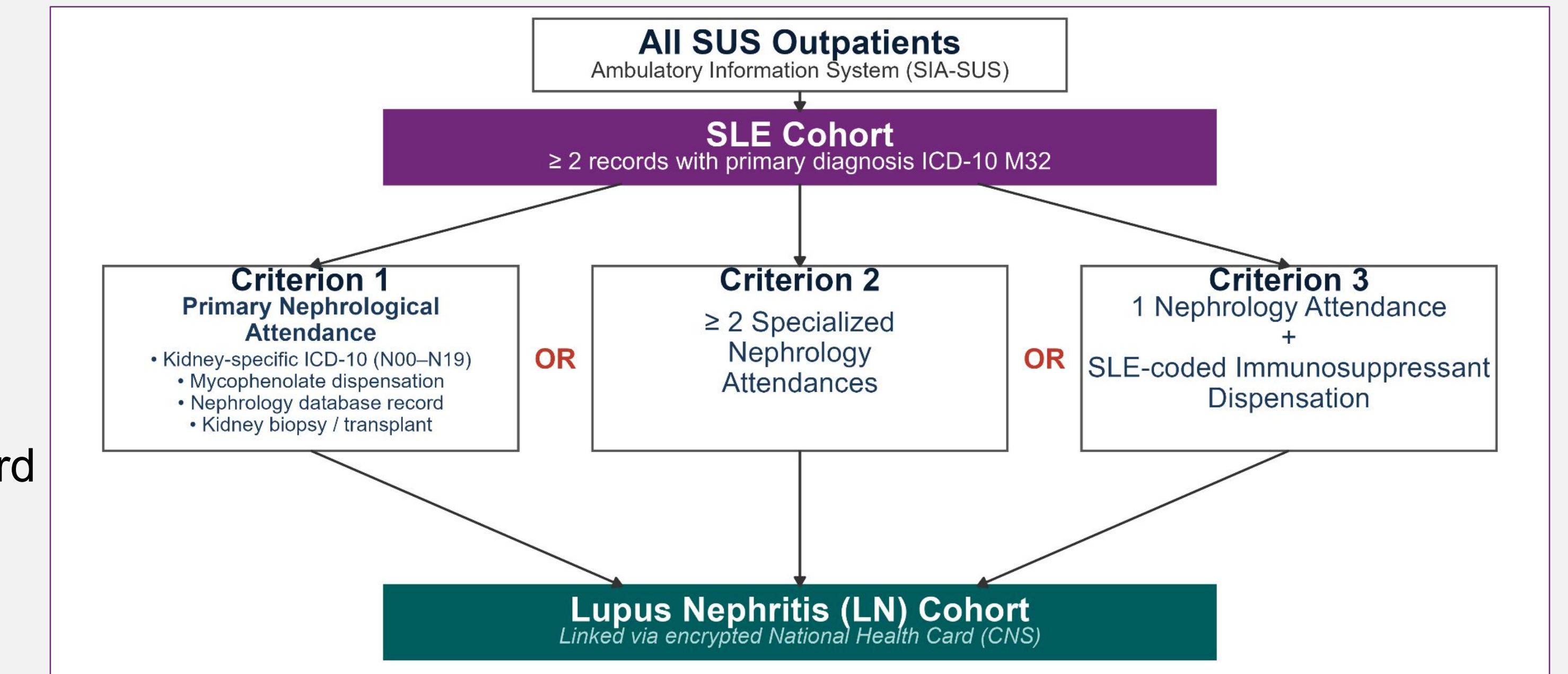
Objective

- Characterize sociodemographics and clinical characteristics of SLE and LN cohorts.
- Treatment Analysis:** Map patterns of immunosuppressive therapy and kidney biopsy utilization.
- Outcome Tracking:** Evaluate progression to key severe clinical endpoints, including dialysis.

METHODS

- Study Design:** Retrospective, observational cost-of-illness study.
- Data Source:** Outpatient Information System of the SUS (SIA-SUS/DATASUS)².
- Population:** Adult patients (≥18 years) with Lupus Nephritis (LN) identified nationwide (2012-2024).
- Inclusion Criteria:** As LN does not have a specific ICD-10 code, patients required a documented diagnosis of Systemic Lupus Erythematosus (SLE) (ICD-10: M32) linked via a National Health Card identifier to at least one of the criterias: documented dialysis, immunosuppression, or nephrology care (Figure 1).

Figure 1. Inclusion Criteria and Patient Selection Flow Diagram



RESULTS

Table 1. Sociodemographic Characteristics of SLE and LN Patients

Variables	N (%)	
Cohort	SLE (N= 125,488)	LN (N = 20,664)
Sex		
Female	112,529 (89.67)	17,721 (85.76)
Male	12,959 (10.33)	2,943 (14.24)
Region		
Southeast	61,961 (49.38)	10,180 (49.26)
Northeast	28,169 (22.45)	5,584 (27.02)
South	19,128 (15.24)	2,104 (10.18)
Central-West	9,926 (7.91)	1,550 (7.5)
North	6,304 (5.02)	1,246 (6.03)

Table 2. Number of New and Recurrent SLE and LN Patients by Year

Year	New Patients		Recurrent Patients		Total	
	SLE	LN	SLE	LN	SLE	LN
2012	4,111	513	15,122	2,871	19,233	3,384
2013	5,467	634	17,213	3,185	22,680	3,819
2014	7,270	869	20,536	3,589	27,806	4,458
2015	7,388	853	24,959	4,220	32,347	5,073
2016	8,284	1,356	28,412	4,745	36,696	6,101
2017	10,108	1,550	32,510	5,744	42,618	7,294
2018	11,325	1,559	37,956	6,753	49,281	8,312
2019	11,076	1,605	43,020	7,608	54,096	9,213
2020	12,070	1,451	48,533	8,649	60,603	10,100
2021	12,220	1,684	56,066	9,562	68,286	11,246
2022	11,394	1,562	68,286	11,246	79,680	12,808
2023	13,525	4,112	79,680	12,808	93,205	16,920
2024	11,250	3,024	93,205	16,920	104,455	19,944

Table 3. Clinical Characteristics, Procedures, and Treatments of The SLE and LN Cohorts

Characteristic	N (%)
Study Population (% of SLE Cohort)	
SLE without LN	104,824 (83.53)
Total LN Cohort	20,664 (16.47)
Total SLE Cohort	125,488 (100)
LN Clinical Procedures (% of LN Cohort)	
Nephrologist Attendance	2,994 (14.49)
Renal Biopsy	903 (4.37)
Dialysis	3,294 (15.94)
LN Immunosuppressant Use (% of LN Cohort)	
Mycophenolate	12,293 (59.49)
Cyclosporine	3,471 (5.94)
Tacrolimus	989 (4.75)
Methylprednisolone	99 (0.22)
Azathioprine	45,614 (37.91)
Cyclophosphamide	395 (0.69)
Rituximab	1,702 (2.14)

Figure 6. Age Distribution of Patients at First Dialysis Procedure

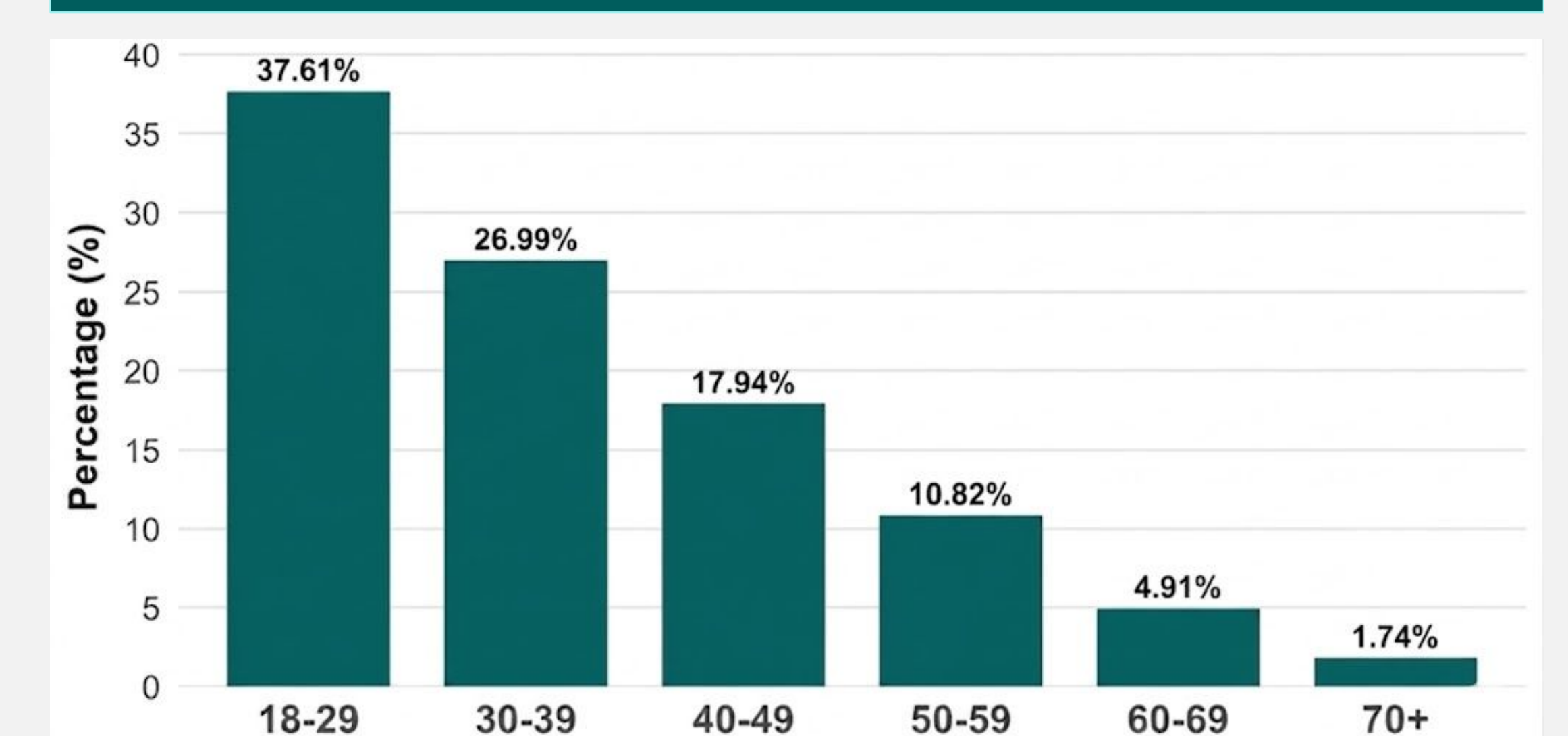


Figure 2. Number of New and Recurrent SLE Cases by Year (2012-2024)

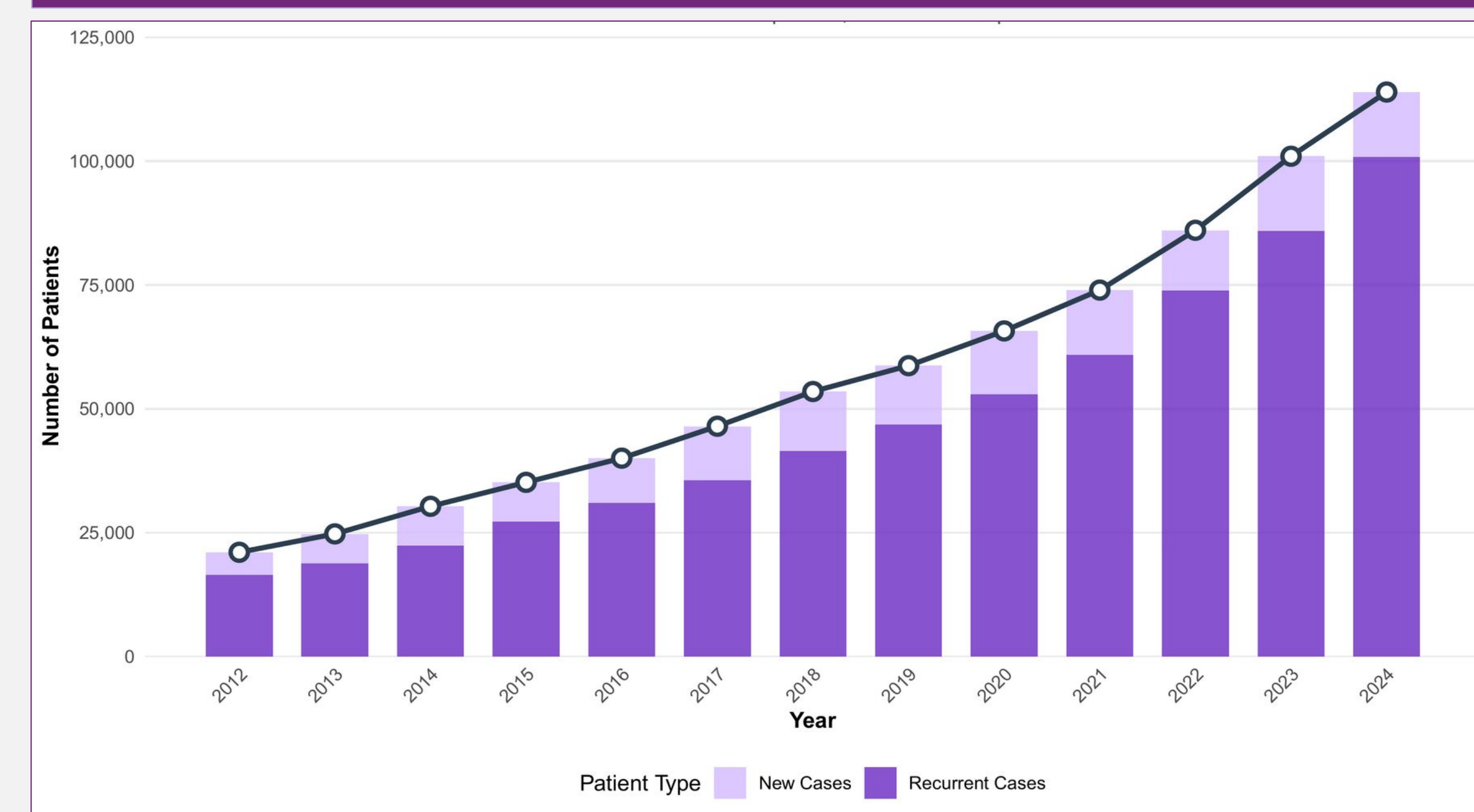


Figure 3. Number of New and Recurrent LN Cases by Year (2012-2024)

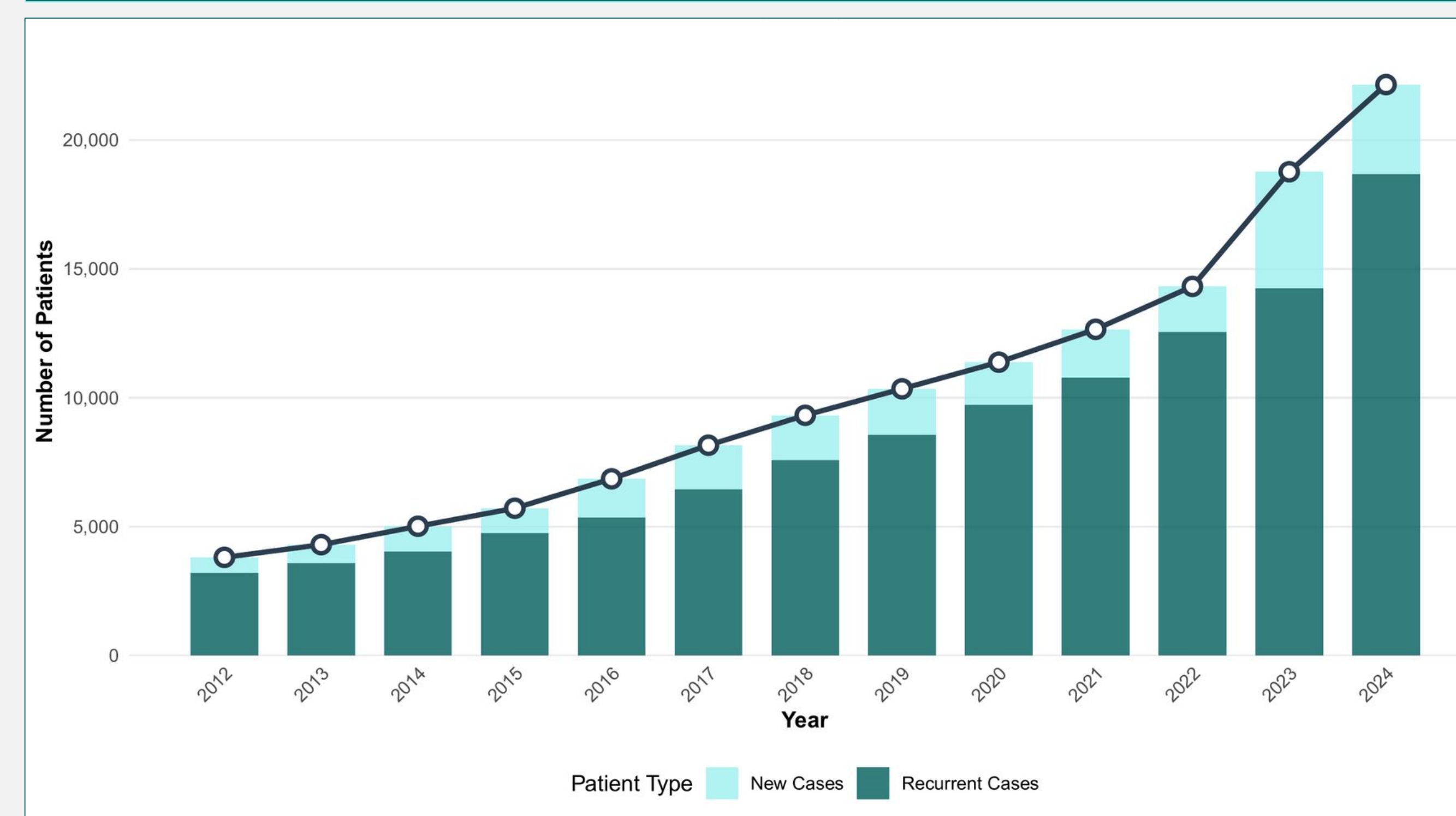


Figure 4. Age Distribution of SLE Cases at First SUS Attendance

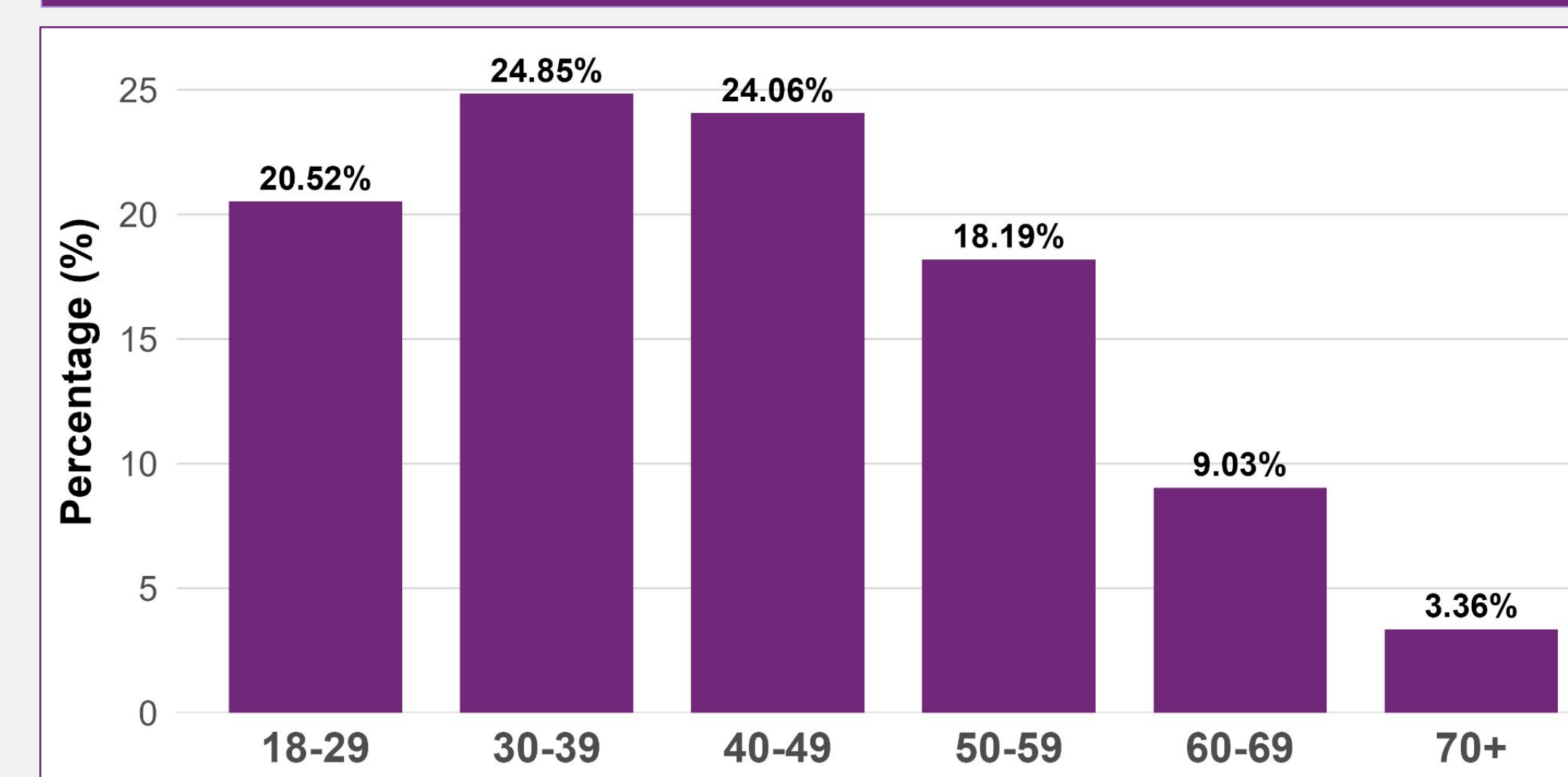
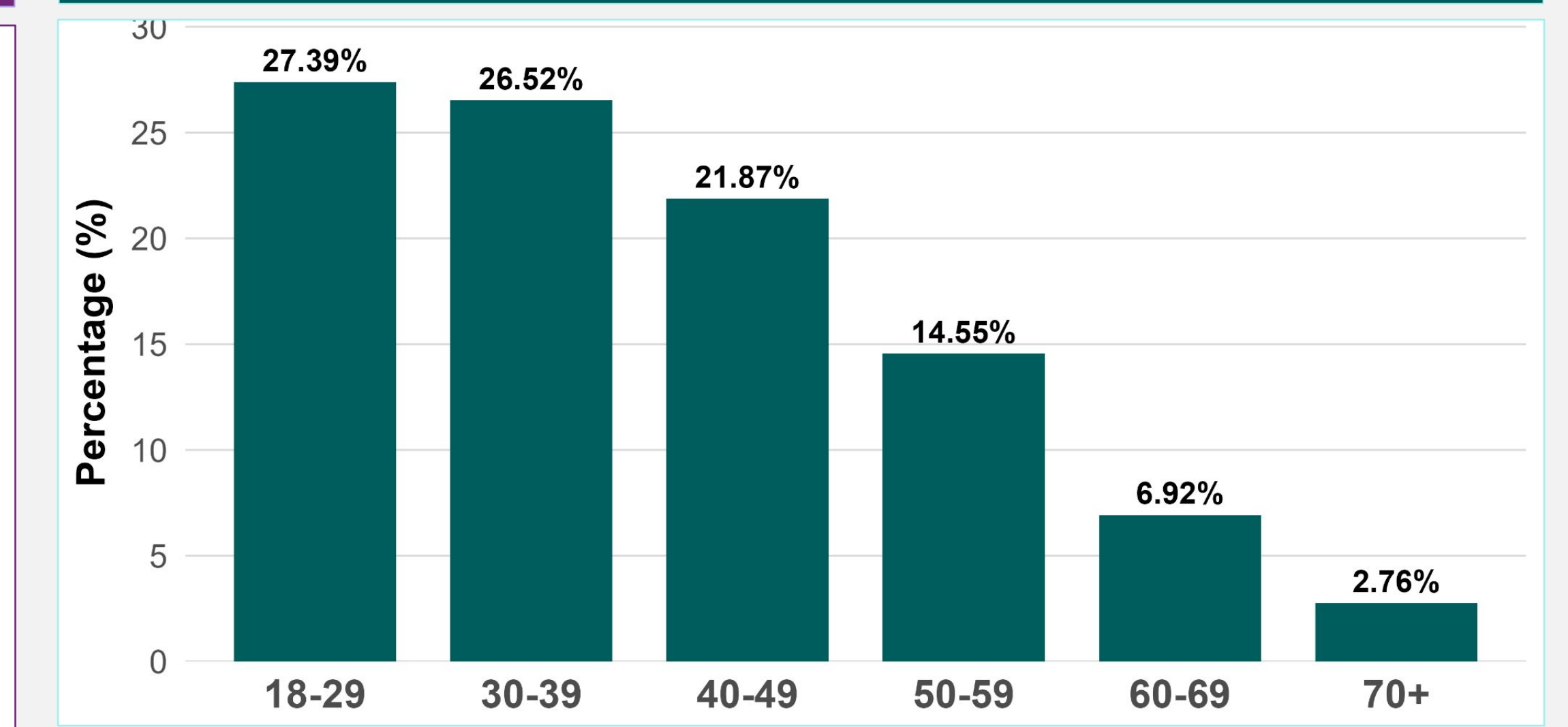


Figure 5. Age Distribution of LN Cases at First SUS Attendance



CONCLUSION

- The Good:** Advanced therapeutic access is evident, with the majority of LN patients receiving mycophenolate (59.49%).
- The Gap:** Diagnostic procedures are underutilized, with renal biopsies recorded in only 4.37% of the LN cohort.
- Study Limitations:** Relying exclusively on outpatient records (SIA-SUS) inherently underestimates hospital-based interventions (e.g., Cyclophosphamide, Methylprednisolone, and renal biopsies), creating potential gaps in capturing complete patient clinical histories.
- The Challenges:**
 - Working-Age Burden:** Patients aged 30–49 comprise ~50% of both SLE and LN cohorts.
 - Early & Severe Progression:** 15.94% of LN patients require dialysis. Of these, 37.61% start between ages 18–29, reflecting disproportionately severe SLE in younger demographics.

DISCLOSURES