

Table S1 Lung cancer diagnosis codes

Code type	Codes
ICD-O	C33.9, C34.0-34.3, C34.8, C34.9
ICD-9	1622-1625, 1628, 1629, 1658, 1970, 20921, 2357, V1011
ICD-10	C3400-3402, C3410-3412, C342, C3430-3432, C3480-3482, C3490-3492, C7A090, C7800, Z85118, D381, C399

ICD, International Classification of Diseases.

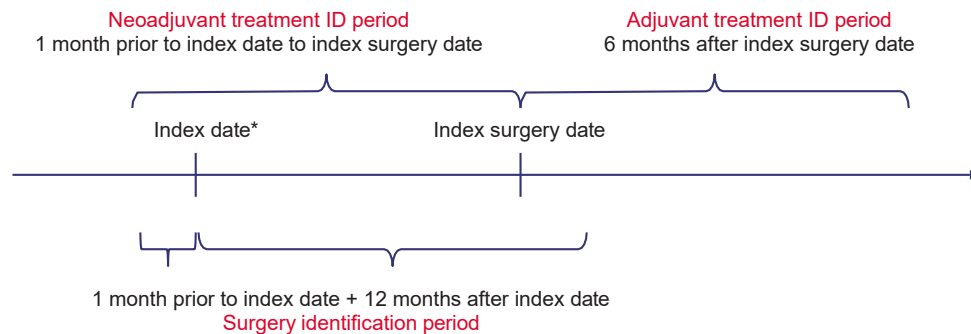


Figure S1 Study identification periods. *, index date was defined as the earliest Medicare lung cancer claim that occurred in the same year/month as the SEER diagnosis. If no Medicare claim existed, the SEER diagnosis date was used, set to the 15th of the month. SEER, Surveillance, Epidemiology, and End Results.

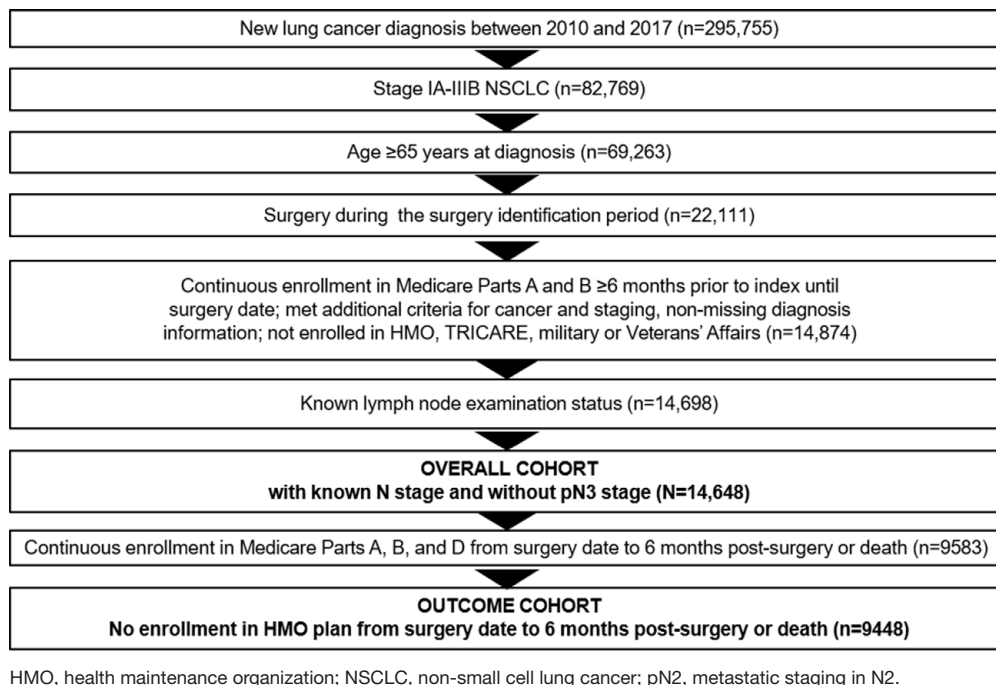


Figure S2 Patient attrition.

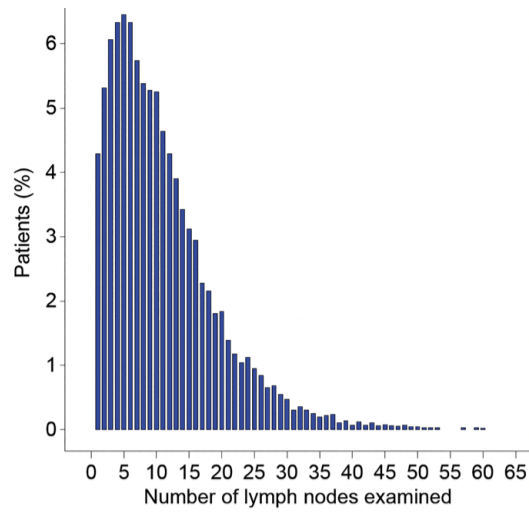


Figure S3 Distribution of number of lymph nodes examined (n=12,123).

Table S2 Characteristics of patients in the outcome cohort (N=9,448)

Characteristic	Overall (N=9,448)	pNX (n=996)	pN0 (n=6,457)	pN1 (n=1,003)	pN2 (n=992)	P value
Age at diagnosis, mean ± SD, years	73.92±5.59	74.95±6.14	73.87±5.54	73.70±5.46	73.41±5.31	<0.001
Sex, female, n [%]	5,211 [55]	529 [53]	3,658 [57]	499 [50]	525 [53]	<0.001
Race, n [%]						0.2
Black	556 [6]	67 [7]	375 [6]	52 [5]	62 [6]	
White	8,265 [87]	879 [88]	5,639 [87]	892 [89]	855 [86]	
Other	627 [7]	50 [5]	443 [7]	59 [6]	75 [8]	
Median income, mean ± SD, USD ^a	66,038±32,425	61,398±30,554	67,113±33,257	64,895±30,395	64,869±30,240	<0.001
Unknown, n	13	0	12	0	**	
Baseline CCI score (excluding cancer), mean ± SD	2.14±1.88	2.52±2.08	2.13±1.87	1.93±1.74	1.96±1.84	<0.001
Baseline interstitial lung disease, n [%]	11 [<1]	**	**	**	**	0.3
Baseline pneumonitis, n [%]	67 [1]	14 [1]	43 [1]	**	**	0.036
Baseline COPD, n [%]	3,797 [40]	478 [48]	2,581 [40]	382 [38]	356 [36]	<0.001
Baseline smoking history, n [%]	1,495 [16]	194 [19]	1,022 [16]	158 [16]	121 [12]	<0.001
Cancer stage (AJCC 7th edition derived), n [%]						<0.001
Stage IA	3,691 [39]	450 [45]	3,242 [50]	0	0	
Stage IB	2,233 [24]	195 [20]	2,038 [32]	0	0	
Stage II	1,852 [20]	126 [13]	1,010 [16]	716 [71]	0	
Stage IIIA	1,517 [16]	159 [16]	167 [3]	287 [29]	904 [91]	
Stage IIIB	154 [2]	66 [7]	0	0	88 [9]	
Tumor grade, n [%]						<0.001
1	1,333 [14]	132 [13]	1,104 [17]	45 [5]	52 [5]	
2	4,169 [44]	358 [36]	3,027 [47]	410 [41]	374 [38]	
3	3,059 [32]	293 [29]	1,884 [29]	468 [47]	414 [42]	
4	82 [1]	**	50 [1]	14 [1]	**	
Missing	805 [9]	**	392 [6]	66 [7]	**	
Histology, n [%]						<0.001
Adenomas and adenocarcinomas ^a	4,964 [53]	485 [49]	3,391 [53]	498 [50]	590 [59]	
Squamous cell carcinoma	3,006 [32]	357 [36]	2,026 [31]	355 [35]	268 [27]	
Other	1,478 [16]	154 [15]	1,040 [16]	150 [15]	134 [14]	
Extent of lung cancer resection, n [%]						<0.001
Lobectomy	5,843 [62]	172 [17]	4,286 [66]	698 [70]	687 [69]	
Wedge resection	1,952 [21]	490 [49]	1,237 [19]	96 [10]	129 [13]	
Bilobectomy	136 [1]	**	76 [1]	36 [4]	20 [2]	
Pneumonectomy	227 [2]	**	81 [1]	98 [10]	38 [4]	
Segmentectomy	829 [9]	97 [10]	637 [10]	45 [5]	50 [5]	
Other surgery	290 [3]	141 [14]	100 [2]	**	28 [3]	
Unknown/unreported	171 [2]	82 [8]	40 [1]	**	40 [4]	
Surgery, n [%]						<0.001
Robotic-assisted thoracic surgery	321 [3]	26 [3]	223 [4]	**	33 [3]	
Video-assisted thoracic surgery	28 [<1]	13 [1]	**	**	**	
Thoracotomy	3,898 [41]	319 [32]	2,586 [40]	500 [50]	493 [50]	
Sternotomy	79 [1]	11 [1]	**	**	**	
Unknown	5,122 [54]	627 [63]	3,603 [56]	454 [45]	438 [44]	
Neoadjuvant treatment, n [%]						<0.001
Yes	778 [8]	139 [14]	308 [5]	83 [8]	248 [25]	
No	8,670 [92]	857 [86]	6,149 [95]	920 [92]	744 [75]	

^a, adenoma is included in the data source histology field and could not be separated for this analysis; **, suppressed cell values according to the Centers for Medicare & Medicaid Services Cell Size Suppression Policy (n<11) (<https://resdac.org/articles/cms-cell-size-suppression-policy>). AJCC, American Joint Committee on Cancer; CCI, Charlson Comorbidity Index; COPD, chronic obstructive pulmonary disease; pNX, no examination; pN0, examination and no metastasis; pN1, metastasis staging in N1; pN2, metastatic staging in N2; SD, standard deviation; USD, US dollars.

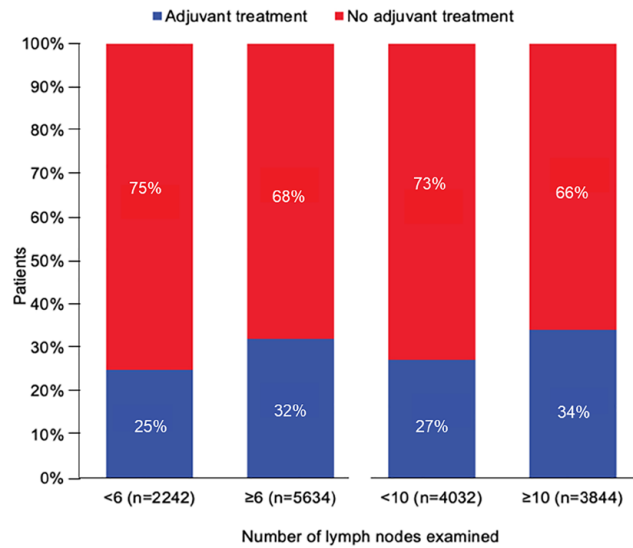


Figure S4 Receipt of adjuvant treatment by number of lymph nodes examined (n=7,876).

Table S3 Time from surgery to adjuvant treatment (n=2,947)

Time to adjuvant treatment, days	Overall (n=2,947)	pNX (n=346)	pN0 (n=1,181)	pN1 (n=682)	pN2 (n=738)	P value
Mean [SD]	55 [36]	49 [43]	61 [41]	55 [28]	50 [28]	<0.001
Median [IQR]	48 [33–68]	36 [19–61]	50 [34–77]	49 [37–65]	44 [33–61]	

IQR, interquartile range; pNX, no examination; pN0, examination and no metastasis; pN1, metastasis staging in N1; pN2, metastatic staging in N2; SD, standard deviation.

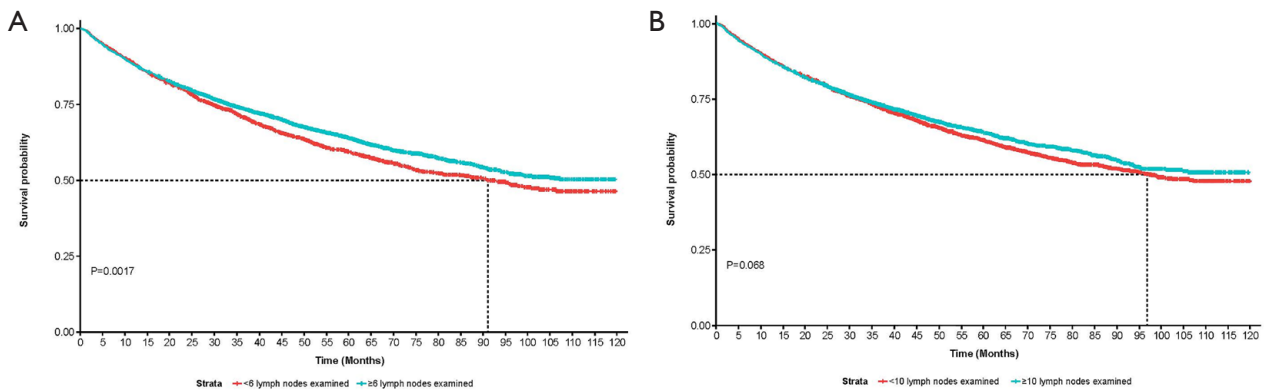


Figure S5 Unadjusted OS by number of lymph nodes examined. (A) Patients with ≥ 6 vs. < 6 lymph nodes examined; (B) patients with ≥ 10 vs. < 10 lymph nodes examined. OS, overall survival.

Table S4 Adjusted OS hazard ratio (95% CI) by number of lymph nodes examined

Time from diagnosis	LN examined, <6 vs. ≥6		LN examined, <10 vs. ≥10	
	Hazard ratio (95% CI)	P value	Hazard ratio (95% CI)	P value
0–2 years	1.17 (1.05–1.31)	0.005	1.07 (0.97–1.19)	0.168
2–3 years	1.49 (1.23–1.79)	<0.001	1.38 (1.16–1.65)	<0.001
3–5 years	1.44 (1.20–1.73)	<0.001	1.34 (1.13–1.59)	<0.001

Extended Cox proportional hazard models adjusted for time and time interaction with lymph node examination status, as well as age, sex, race, urban/rural geography, CCI score, smoking history, presence of COPD, and histology. CCI, Charlson Comorbidity Index; CI, confidence interval; COPD, chronic obstructive pulmonary disease; LN, lymph node; OS, overall survival.

Table S5 Adjusted healthcare costs by number of lymph nodes examined

Healthcare costs, USD	Marginal mean costs PPPM (95% CI) by number of lymph nodes examined			
	<10	≥10	<6	≥6
Overall	15,245 (4,249–54,703)	16,771 (4,654–60,435)	16,720 (4,613–60,608)	15,769 (4,373–56,854)
Inpatient services	9864 (1,999–48,669)	11,228 (2,265–55,668)	11,164 (2,234–55,791)	10,514 (2,119–52,164)
Outpatient services	907 (536–1,534)	810 (478–1,374)	924 (540–1,582)	835 (489–1,427)
Physician services	2,375 (998–5,654)	2,460 (1,030–5,873)	2,548 (1,065–6,095)	2,357 (989–5,619)
Other services	577 (345–966)	508 (303–852)	633 (383–1,046)	500 (303–824)
Medications	338 (187–610)	329 (182–594)	344 (190–621)	329 (183–594)

CI, confidence interval; PPPM, per patient per month; USD, US dollars.