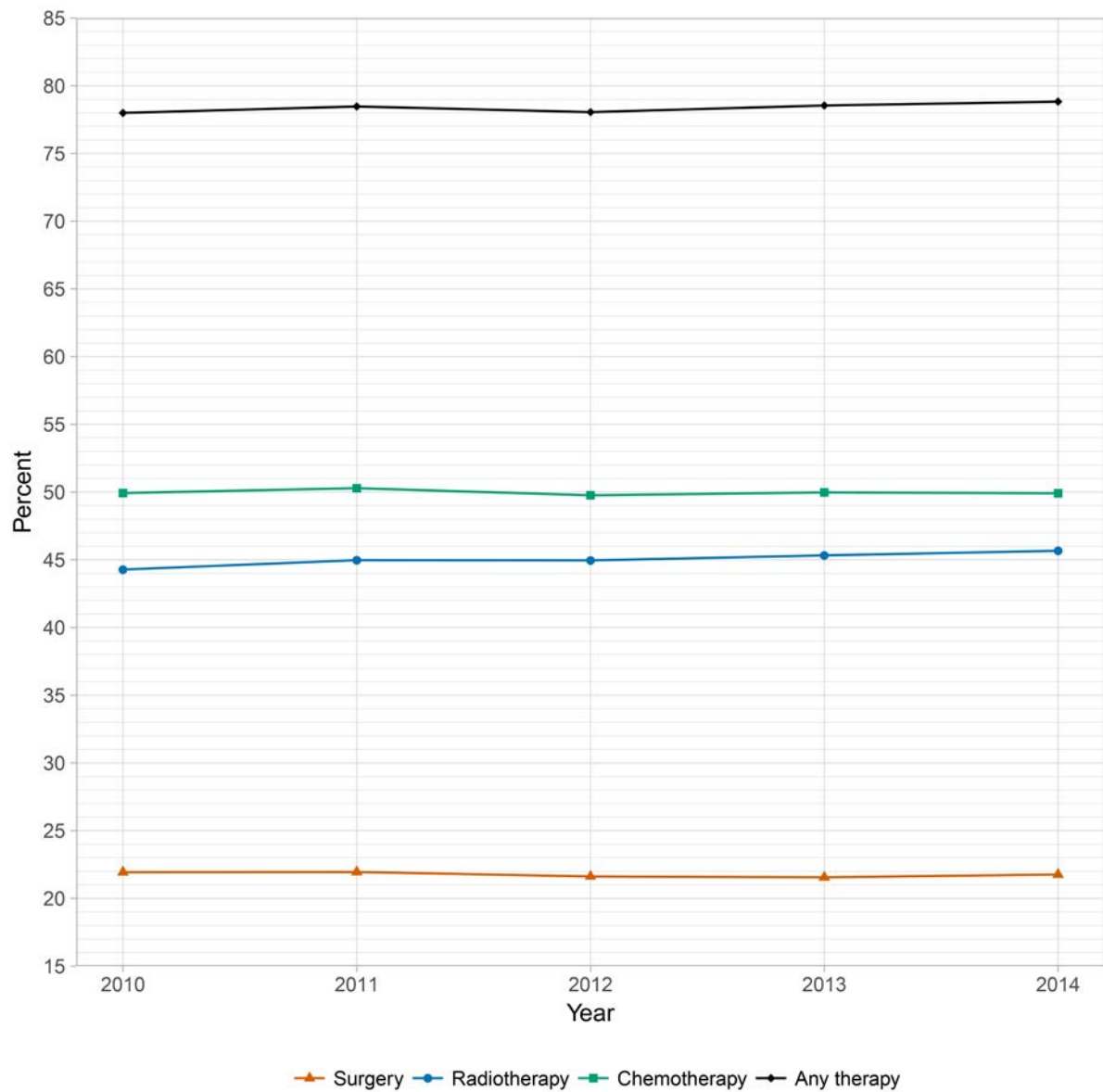


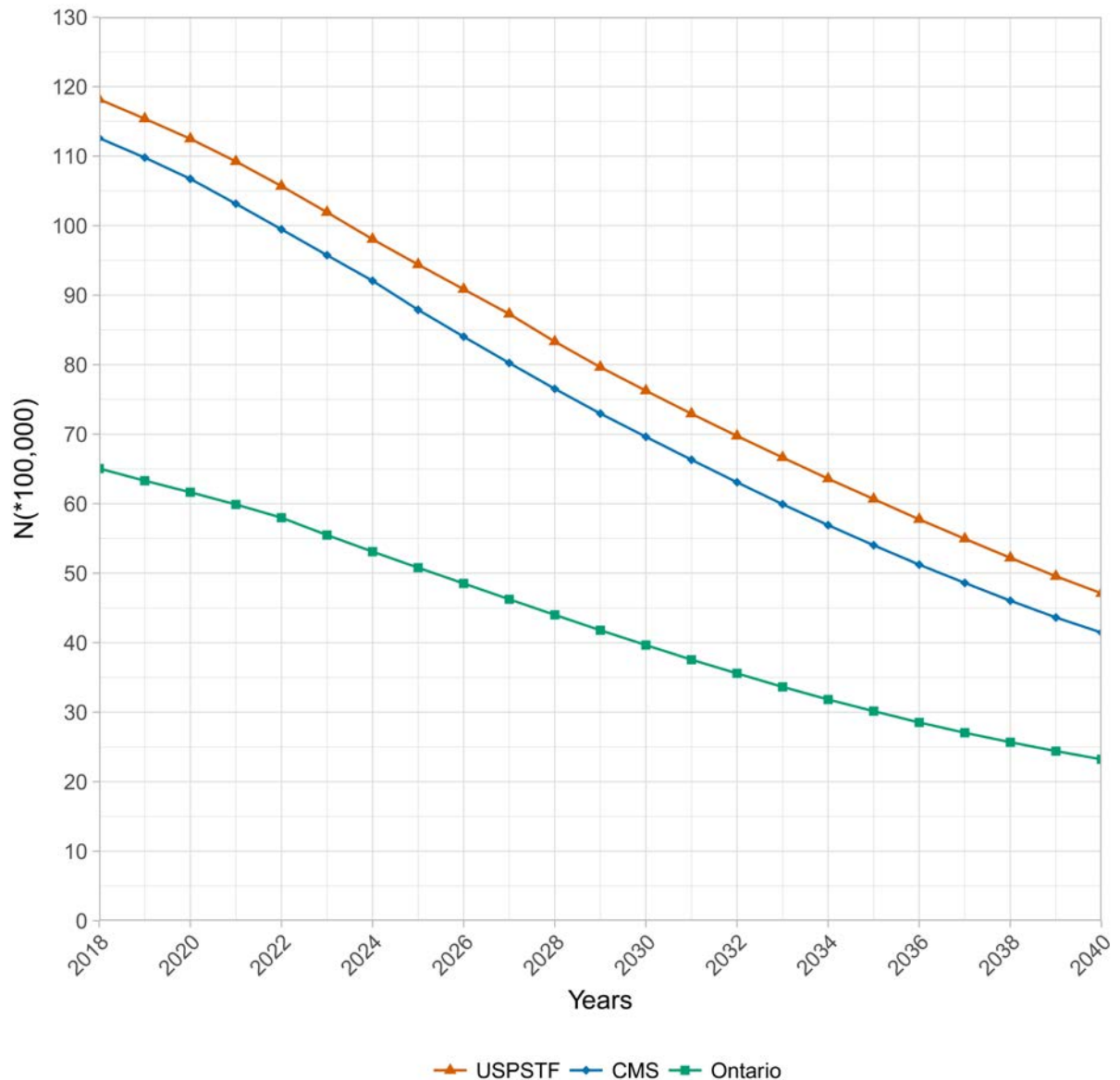
# Supporting Information B: Supplementary Tables and Figures

Treatment Capacity Required for Full-Scale Implementation of Lung Cancer Screening in the United States

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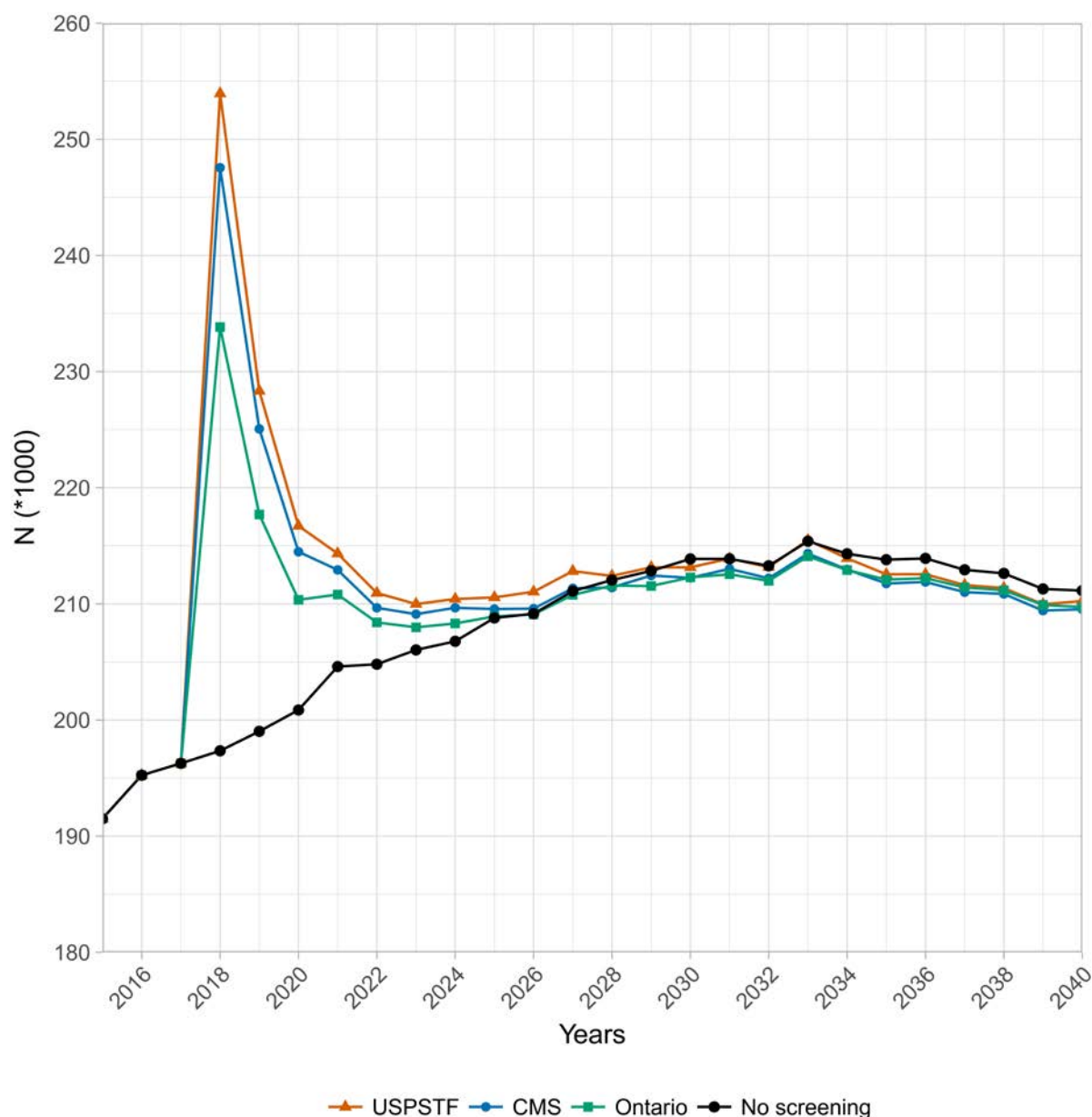


**Supporting Figure 1.** Time trends for therapy received by lung cancer patients in the United States. Figure based on analysis of 440,566 cases from the National Cancer Database diagnosed with lung cancer between 2010-2014.



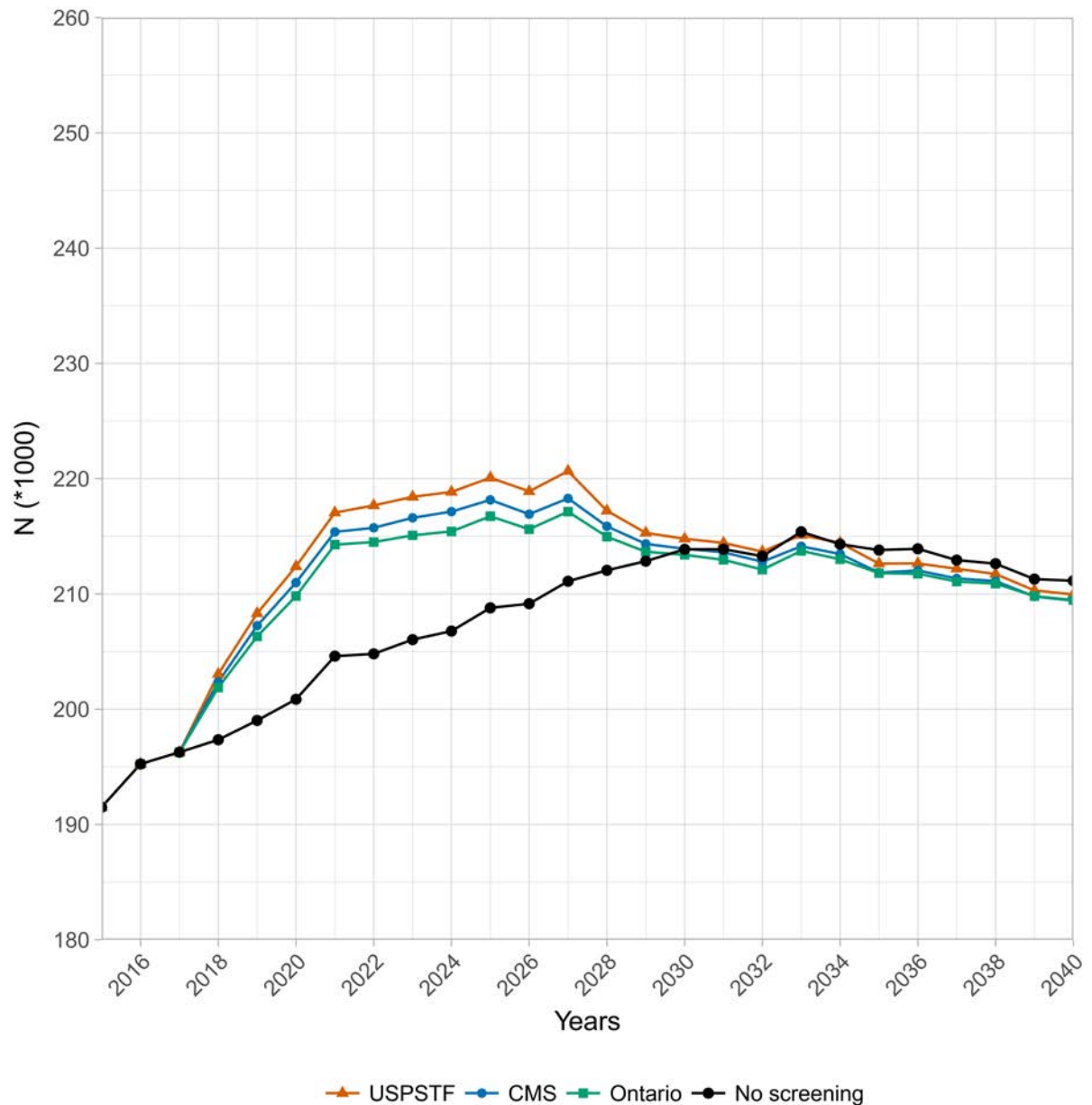
**Supporting Figure 2.** Number of persons in the United States that are eligible for Low-Dose Computed Tomography lung cancer screening in the United States between 2018-2040 for three screening policies.

USPSTF, United States Preventive Task Force recommendations, annually screening current and former smokers aged 55-80 with at least a 30 pack-years smoking history that quit fewer than 15 years ago; CMS, the Centers for Medicare & Medicaid Services recommendations, annually screening current and former smokers aged 55-77 with at least a 30 pack-years smoking history that quit fewer than 15 years ago; Ontario, the most cost-effective policy from a study for Cancer Care Ontario, annually screening current and former smokers aged 55-75 with at least a 40 pack-years smoking history that quit fewer than 10 years ago.

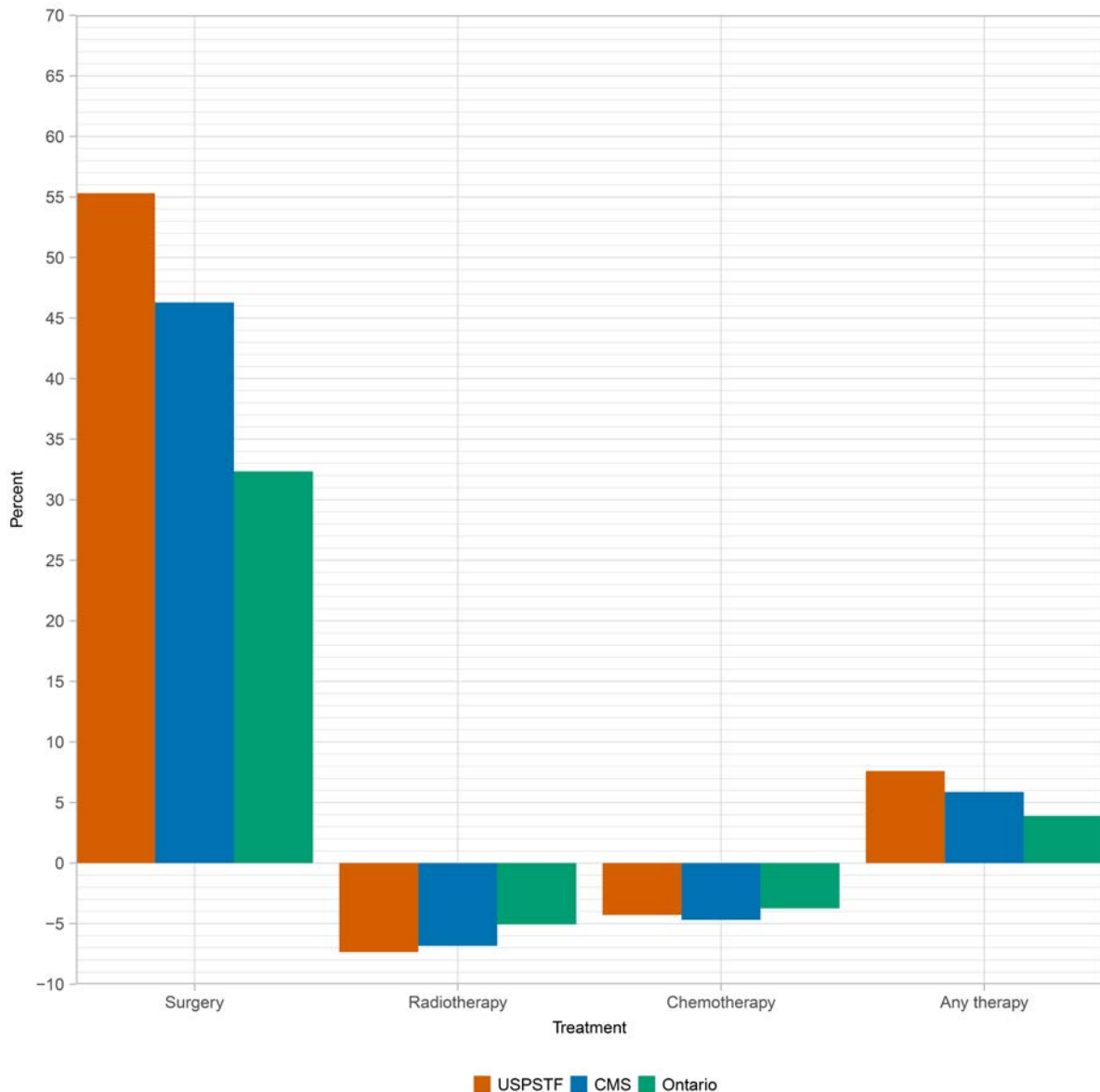


**Supporting Figure 3.** Census-adjusted lung cancer incidence in the United States between 2015-2040 in the absence of Low-Dose Computed Tomography screening and for three screening policies implemented in 2018.

All policies assumed 50% adherence to screening. USPSTF, United States Preventive Task Force recommendations, annually screening current and former smokers aged 55-80 with at least a 30 pack-years smoking history that quit fewer than 15 years ago; CMS, the Centers for Medicare & Medicaid Services recommendations, annually screening current and former smokers aged 55-77 with at least a 30 pack-years smoking history that quit fewer than 15 years ago; Ontario, the most cost-effective policy from a study for Cancer Care Ontario, annually screening current and former smokers aged 55-75 with at least a 40 pack-years smoking history that quit fewer than 10 years ago.

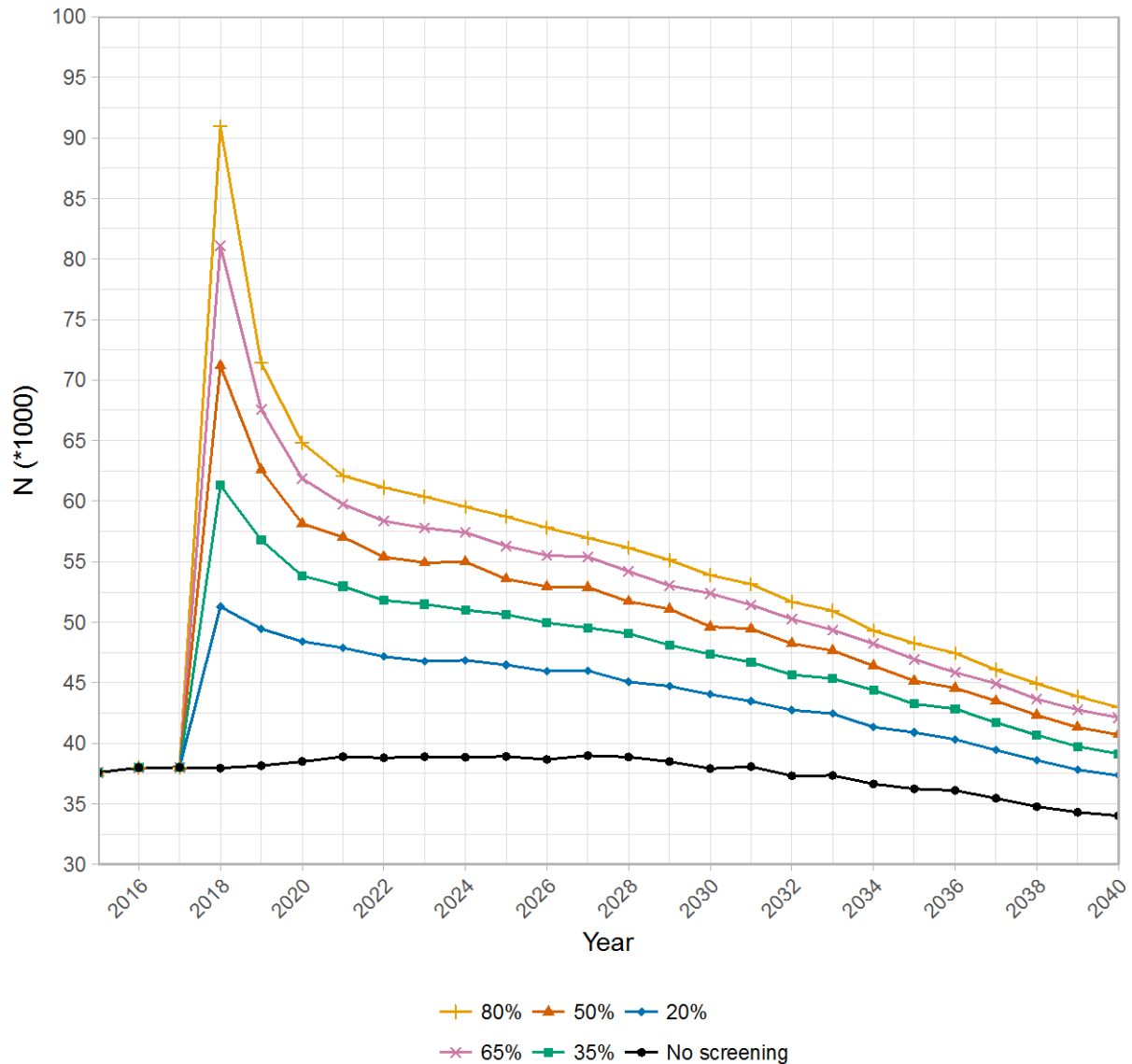


**Supporting Figure 4.** Census-adjusted lung cancer incidence in the United States between 2015-2040 in the absence of Low-Dose Computed Tomography screening and for three screening policies implemented in 2018. All policies assume an adherence level of 5% in 2018, with an annual 5 percentage point increase until a constant adherence of 50% is reached in 2027. USPSTF, United States Preventive Task Force recommendations, annually screening current and former smokers aged 55-80 with at least a 30 pack-years smoking history that quit fewer than 15 years ago; CMS, the Centers for Medicare & Medicaid Services recommendations, annually screening current and former smokers aged 55-77 with at least a 30 pack-years smoking history that quit fewer than 15 years ago; Ontario, the most cost-effective policy from a study for Cancer Care Ontario, annually screening current and former smokers aged 55-75 with at least a 40 pack-years smoking history that quit fewer than 10 years ago.



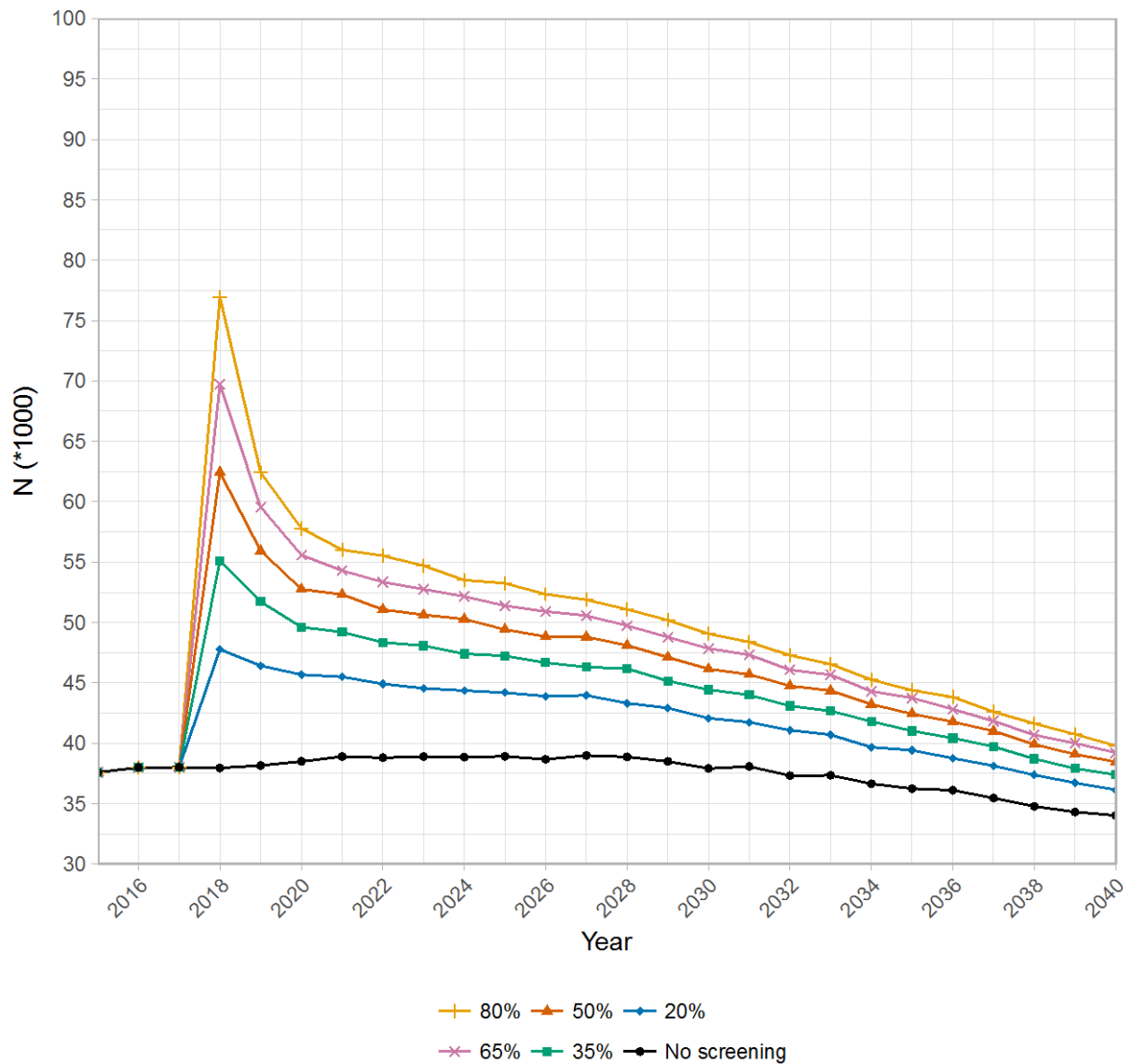
**Supporting Figure 5.** Cumulative change in demand for lung cancer therapy in the United States between 2015-2040 when implementing Low-Dose Computed Tomography screening for lung cancer in 2018, assuming that screen detected cases received stage-specific treatment as reported in the National Lung Screening Trial.

Expressed as cumulative percentage change compared to no screening. All policies assumed constant 50% adherence to screening. USPSTF, United States Preventive Task Force recommendations, annually screening current and former smokers aged 55-80 with at least a 30 pack-years smoking history that quit fewer than 15 years ago; CMS, the Centers for Medicare & Medicaid Services recommendations, annually screening current and former smokers aged 55-77 with at least a 30 pack-years smoking history that quit fewer than 15 years ago; Ontario, the most cost-effective policy from a study for Cancer Care Ontario, annually screening current and former smokers aged 55-75 with at least a 40 pack-years smoking history that quit fewer than 10 years ago.



**Supporting Figure 6.** Absolute annual number of lung cancer patients in the United States requiring surgery when implementing Low-Dose Computed Tomography screening for lung cancer in 2018 using the Centers for Medicare & Medicaid Services criteria at different constant screening adherence levels.

CMS, the Centers for Medicare & Medicaid Services recommendations, annually screening current and former smokers aged 55-77 with at least a 30 pack-years smoking history that quit fewer than 15 years ago.



**Supporting Figure 7.** Absolute annual number of lung cancer patients in the United States requiring surgery when implementing Low-Dose Computed Tomography screening for lung cancer in 2018 using the Ontario criteria at different constant screening adherence levels. Ontario, the most cost-effective policy from a study for Cancer Care Ontario, annually screening current and former smokers aged 55-75 with at least a 40 pack-years smoking history that quit fewer than 10 years ago.



Clinical stage	n	Surgery (%)	Radiotherapy (%)	Chemotherapy (%)	Any therapy (%)
<b>Non-small cell lung cancer</b>					
IA	60,876	43,920 (72.1)	13,689 (22.5)	5,476 (9.0)	56,210 (92.3)
IB	25,924	16,783 (64.7)	7,035 (27.1)	6,199 (23.9)	22,899 (88.3)
II	30,101	16,203 (53.8)	11,658 (38.7)	15,129 (50.3)	25,680 (85.3)
IIIA	48,808	10,538 (21.6)	31,196 (63.9)	32,757 (67.1)	39,803 (81.6)
IIIB	26,878	1,489 (5.5)	18,499 (68.8)	19,117 (71.1)	22,253 (82.8)
IV	182,056	5,224 (2.9)	82,756 (45.5)	91,641 (50.3)	124,814 (68.6)
<b>Subtotal</b>	<b>374,643</b>	<b>94,157 (25.1)</b>	<b>164,833 (44.0)</b>	<b>170,319 (45.5)</b>	<b>291,659 (77.8)</b>
<b>Small cell lung cancer</b>					
IA	1,571	689 (43.9)	825 (52.5)	1,108 (70.5)	1,413 (89.9)
IB	934	199 (21.3)	565 (60.5)	683 (73.1)	795 (85.1)
II	2,456	250 (10.2)	1,747 (71.1)	2,002 (81.5)	2,141 (87.2)
IIIA	9,103	227 (2.5)	6,636 (72.9)	7,742 (85.0)	7,988 (87.8)
IIIB	7,139	59 (0.8)	5,084 (71.2)	6,168 (86.4)	6,340 (88.8)
IV	44,720	304 (0.7)	18,771 (42.0)	32,138 (71.9)	34,986 (78.2)
<b>Subtotal</b>	<b>65,923</b>	<b>1,728 (2.6)</b>	<b>33,628 (51.0)</b>	<b>49,841 (75.6)</b>	<b>53,663 (81.4)</b>
<b>Overall</b>					
<b>Total</b>	<b>440,566</b>	<b>95885 (21.8)</b>	<b>198,461 (45.0)</b>	<b>220,160 (50.0)</b>	<b>345,322 (78.4)</b>

**Supporting Table 1.** Lung cancer therapy observed in the National Cancer Database by lung cancer type and clinical stage at diagnosis.

Based on analysis of 440,566 cases from the National cancer Database diagnosed with lung cancer between 2010-2014. For the actual analysis in the main paper, treatment proportions were further stratified by gender, age, stage, and histology. Patients could receive multiple treatments. Hence, treatment categories do not add up to 100%.

Stage	n	Surgery (%)	Radiotherapy (%)	Chemotherapy (%)	Any therapy (%)
IA	415	388 (93.5)	26 (6.3)	28 (6.7)	407 (98.1)
IB	104	93 (89.4)	7 (6.7)	34 (32.7)	101 (97.1)
II	72	59 (81.9)	23 (31.9)	46 (63.9)	71 (98.6)
IIIA	98	37 (37.8)	71 (72.4)	77 (78.6)	95 (96.9)
IIIB	121	36 (29.8)	63 (52.1)	91 (75.2)	111 (91.7)
IV	220	23 (10.5)	72 (32.7)	149 (67.7)	180 (81.8)

**Supporting Table 2.** Lung cancer therapy observed in the Low-Dose-Computed Tomography arm of the National Lung Screening Trial by stage at diagnosis.

Proportions were calculated based on treatment frequencies reported in Table 3 in the Supplementary Appendix of Aberle DR, Adams AM, Berg CD, et al. Reduced lung-cancer mortality with low-dose computed tomographic screening. *N. Engl. J. Med.* 2011;365(5):395-409.

Patients could receive multiple treatments. Hence, treatment categories do not add up to 100%.

Policy	n	Clinically detected (%)	Screen detected (%)
USPSTF	5,525,593	4,597,593 (83.3)	927,999 (16.8)
CMS	5,495,049	4,709,017 (85.7)	786,032 (14.3)
Ontario	5,462,657	4,908,971 (89.9)	553,686 (10.1)
No screening	5,402,854	5,402,854 (100)	-

**Supporting Table 3.** Cumulative number of lung cancer cases in the United States between 2015-2040 and the proportion of screen detected and clinically detected cases in the absence of Low-Dose Computed Tomography screening and for three screening policies implemented in 2018.

All policies assumed constant 50% adherence to screening. USPSTF, United States Preventive Task Force recommendations, annually screening current and former smokers aged 55-80 with at least a 30 pack-years smoking history that quit fewer than 15 years ago; CMS, the Centers for Medicare & Medicaid Services recommendations, annually screening current and former smokers aged 55-77 with at least a 30 pack-years smoking history that quit fewer than 15 years ago; Ontario, the most cost-effective policy from a study for Cancer Care Ontario, annually screening current and former smokers aged 55-75 with at least a 40 pack-years smoking history that quit fewer than 10 years ago.

Surgery				
Scenario/ Year	2018	2023	2028	2040
No screening	37,964	38,903	38,876	34,021
USPSTF	74,437 (+96.1)	56,794 (+46.0)	53,781 (+38.3)	42,482 (+24.9)
CMS	71,188 (+87.5)	54,912 (+41.2)	51,710 (+33.0)	40,719 (+19.7)
Ontario	62,442 (+64.5)	50,632 (+30.1)	48,105 (+23.7)	38,463 (+13.1)

Radiotherapy				
Scenario / Year	2018	2023	2028	2040
No screening	81,802	84,378	85,242	81,219
USPSTF	98,766 (+20.7)	80,426 (-4.7)	80,920 (-5.1)	78,554 (-3.3)
CMS	96,539 (+18.0)	80,246 (-4.9)	80,677 (-5.4)	78,409 (-3.5)
Ontario	92,377 (+12.9)	81,048 (-3.9)	81,830 (-4.0)	79,053 (-2.7)

Chemotherapy				
Scenario / Year	2018	2023	2028	2040
No screening	83,221	84,351	83,366	72,586
USPSTF	98,776 (+18.7)	76,729 (-9.0)	75,831 (-9.0)	68,098 (-6.2)
CMS	97,483 (+17.1)	77,192 (-8.5)	76,263 (-8.5)	68,507 (-5.6)
Ontario	93,698 (+12.6)	78,889 (-6.5)	78,217 (-6.2)	69,603 (-4.1)

Any therapy				
Scenario / Year	2018	2023	2028	2040
No screening	141,751	146,288	147,815	137,607
USPSTF	193,546 (+36.5)	154,914 (+5.9)	153,441 (+3.8)	140,452 (+2.1)
CMS	188,069 (+32.7)	153,346 (+4.8)	151,635 (+2.6)	138,978 (+1.0)
Ontario	175,527 (+23.8)	151,076 (+3.3)	150,401 (+1.7)	138,121 (+0.4)

**Supporting Table 4.** Absolute annual number of lung cancer patients in the United States requiring surgery, radiotherapy, chemotherapy, and any therapy when implementing Low-Dose Computed Tomography screening for lung cancer in 2018 (percentage change compared to no screening). All policies assumed constant 50% adherence to screening. USPSTF, United States Preventive Task Force recommendations, annually screening current and former smokers aged 55-80 with at least a 30 pack-years smoking history that quit fewer than 15 years ago; CMS, the Centers for Medicare & Medicaid Services recommendations, annually screening current and former smokers aged 55-77 with at least a 30 pack-years smoking history that quit fewer than 15 years ago; Ontario, the most cost-effective policy from a study for Cancer Care Ontario, annually screening current and former smokers aged 55-75 with at least a 40 pack-years smoking history that quit fewer than 10 years ago.

Surgery				
Scenario/ Year	2018	2023	2028	2040
No screening	37,964	38,903	38,876	34,021
USPSTF	41,599 (+9.6)	53,811 (+38.3)	55,220 (+42.0)	42,334 (+24.4)
CMS	41,248 (+8.7)	52,213 (+34.2)	52,926 (+36.1)	40,612 (+19.4)
Ontario	40,966 (+7.9)	50,732 (+30.4)	51,160 (+31.6)	39,497 (+16.1)

Radiotherapy				
Scenario / Year	2018	2023	2028	2040
No screening	81,802	84,378	85,242	81,219
USPSTF	83,538 (+2.1)	85,821 (+1.7)	82,811 (-2.9)	78,473 (-3.4)
CMS	83,293 (+1.8)	85,244 (+1.0)	82,499 (-3.2)	78,391 (-3.5)
Ontario	83,134 (+1.6)	84,862 (+0.6)	82,416 (-3.3)	78,590 (-3.2)

Chemotherapy				
Scenario / Year	2018	2023	2028	2040
No screening	83,221	84,351	83,366	72,586
USPSTF	84,819 (+1.9)	83,872 (-0.6)	77,684 (-6.8)	68,058 (-6.2)
CMS	84,675 (+1.7)	83,797 (-0.7)	78,153 (-6.3)	68,503 (-5.6)
Ontario	84,560 (+1.6)	83,741 (-0.7)	78,506 (-5.8)	68,974 (-5.0)

Any therapy				
Scenario / Year	2018	2023	2028	2040
No screening	141,751	146,288	147,815	137,607
USPSTF	146960 (+3.7)	159881 (+9.3)	157104 (+6.3)	140200 (+1.9)
CMS	146366 (+3.3)	157940 (+8.0)	155035 (+4.9)	138840 (+0.9)
Ontario	145931 (+2.9)	156304 (+6.8)	153622 (+3.9)	138295 (+0.5)

**Supporting Table 5.** Absolute annual number of lung cancer patients in the United States requiring surgery, radiotherapy, chemotherapy, and any therapy when implementing Low-Dose Computed Tomography screening for lung cancer in 2018 (percentage change compared to no screening). All policies assume an adherence level of 5% in 2018, with an annual 5 percentage point increase until a constant adherence of 50% is reached in 2027. USPSTF, United States Preventive Task Force recommendations, annually screening current and former smokers aged 55-80 with at least a 30 pack-years smoking history that quit fewer than 15 years ago; CMS, the Centers for Medicare & Medicaid Services recommendations, annually screening current and former smokers aged 55-77 with at least a 30 pack-years smoking history that quit fewer than 15 years ago; Ontario, the most cost-effective policy from a study for Cancer Care Ontario, annually screening current and former smokers aged 55-75 with at least a 40 pack-years smoking history that quit fewer than 10 years ago.