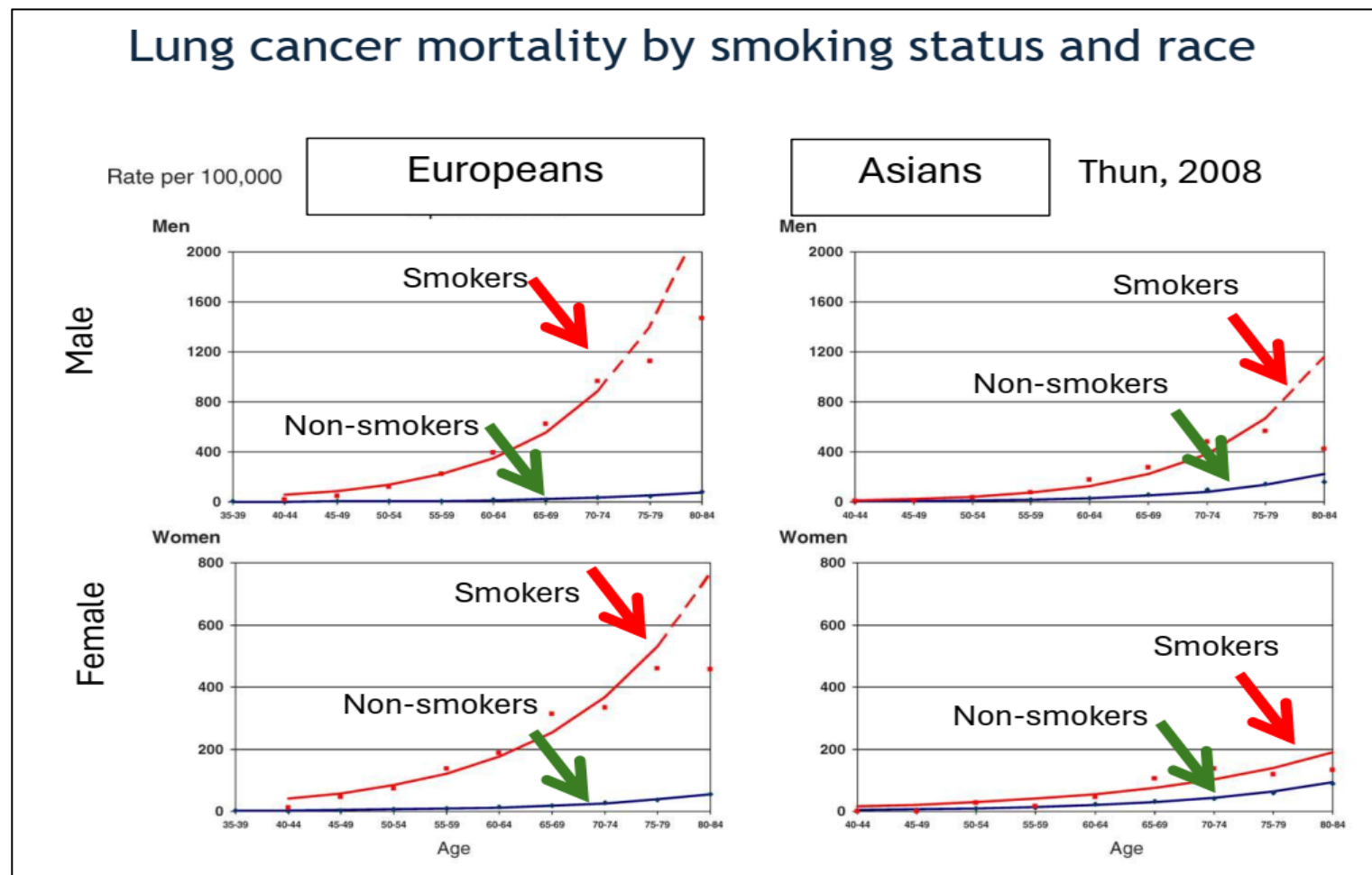


Sagawa M¹, Nakayama T², Kobayashi T³, Ashizawa K⁴, Metoki H¹, Sakurada A⁵, Nishii K⁶, Tanaka H⁷, Niikawa H¹, Saito Y⁸, on behalf of the Jecs Study Group

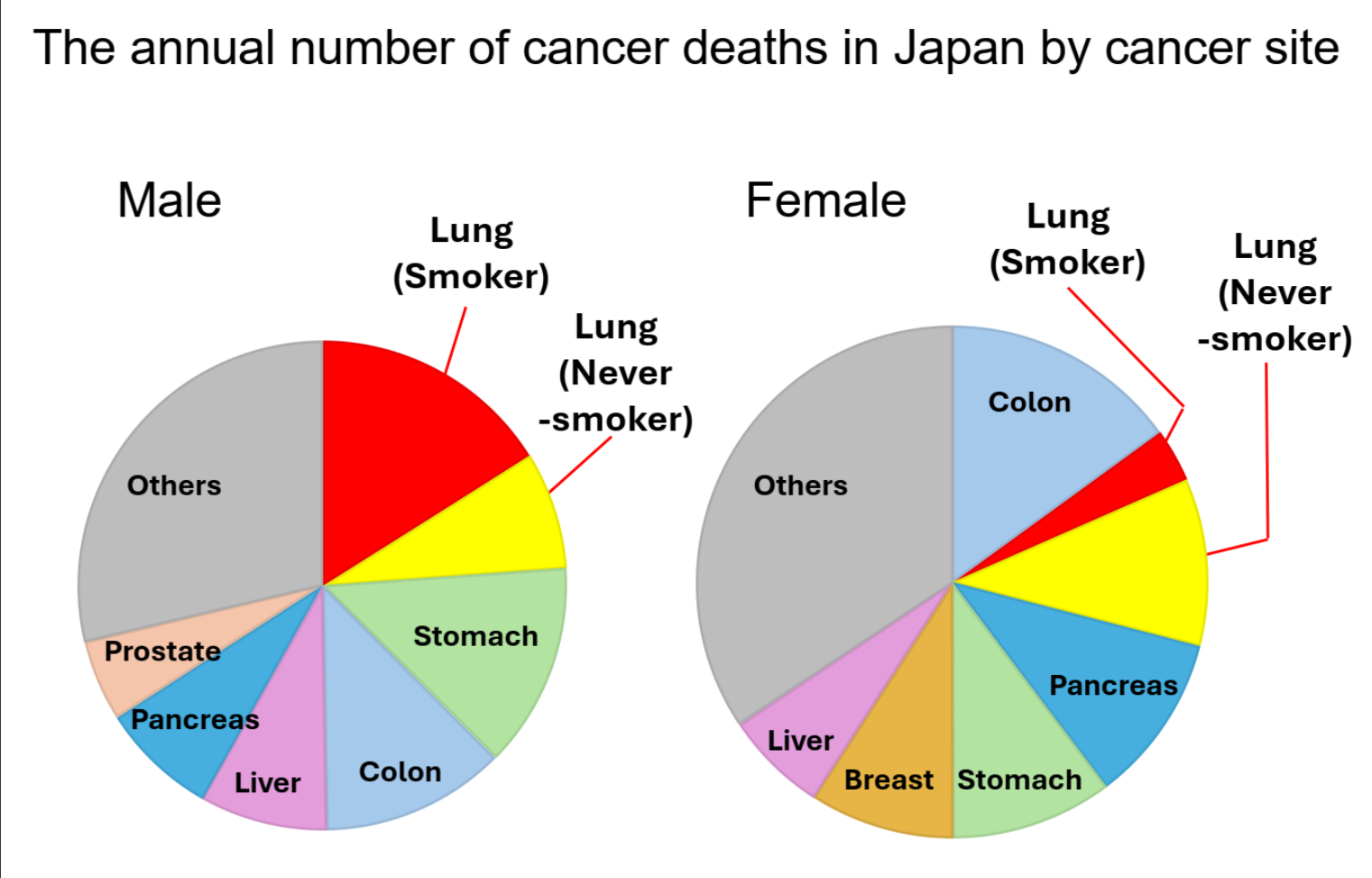
¹Tohoku Medical and Pharmaceutical University, ²National Cancer Center Japan, ³Ishikawa Health Service Association, ⁴Nagasaki University, ⁵South Miyagi Medical Center, ⁶Okayama Health Foundation Hospital, ⁷Niigata Cancer Center Hospital, ⁸Miyagi Anti-Tuberculosis Association **Correspondence: Motoyasu Sagawa MD, PhD, sagawam@tohoku-mpu.ac.jp**

INTRODUCTION

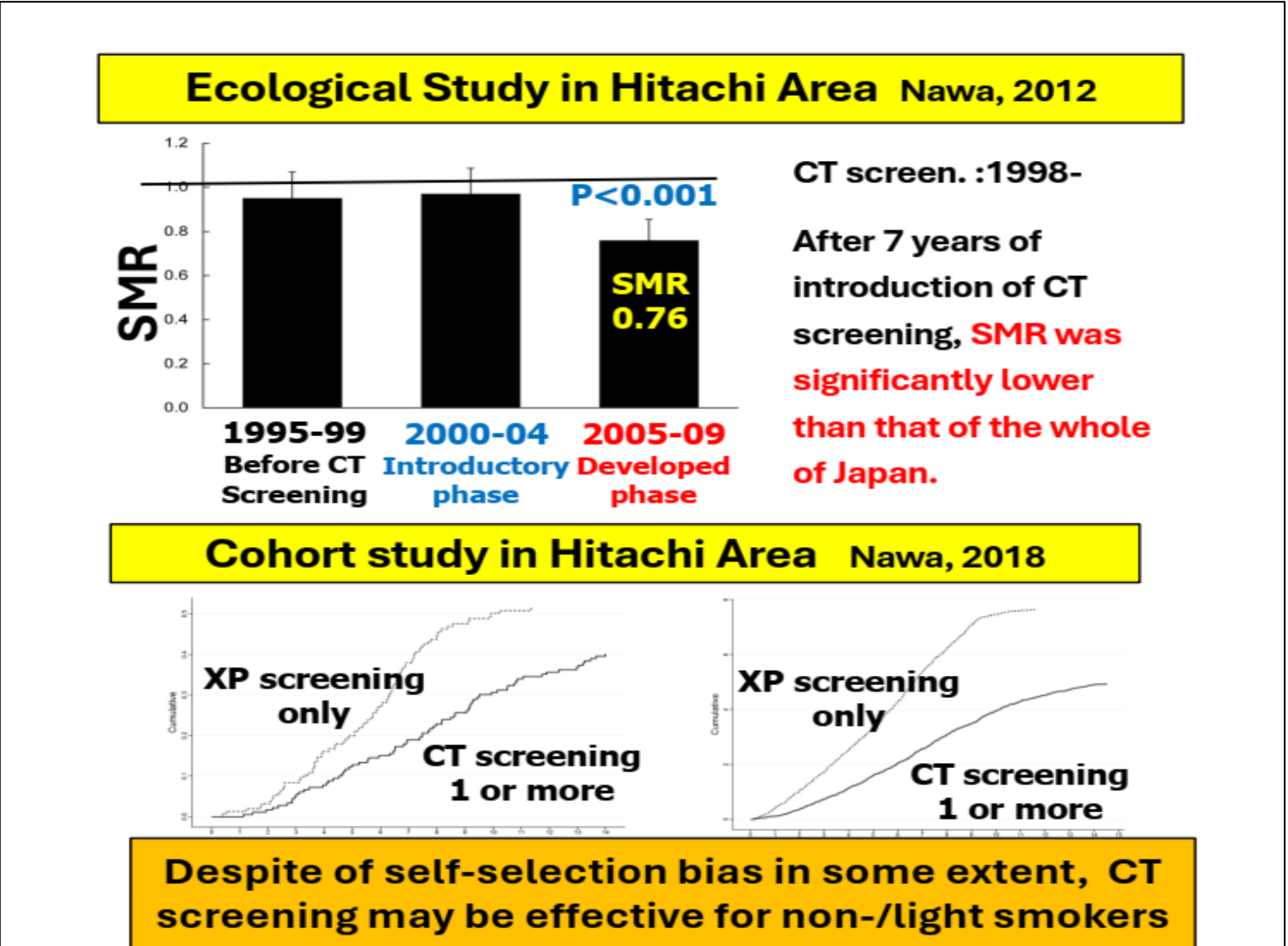
Lung cancer mortality among never-smokers is considerably higher in Asian populations than in Europeans.



The estimated number of deaths due to lung cancer in never-smokers is comparable to that from pancreatic or breast cancer in Japan.



There is very limited evidence regarding the efficacy of LDCT Screening for lung cancer among never- and light smokers.

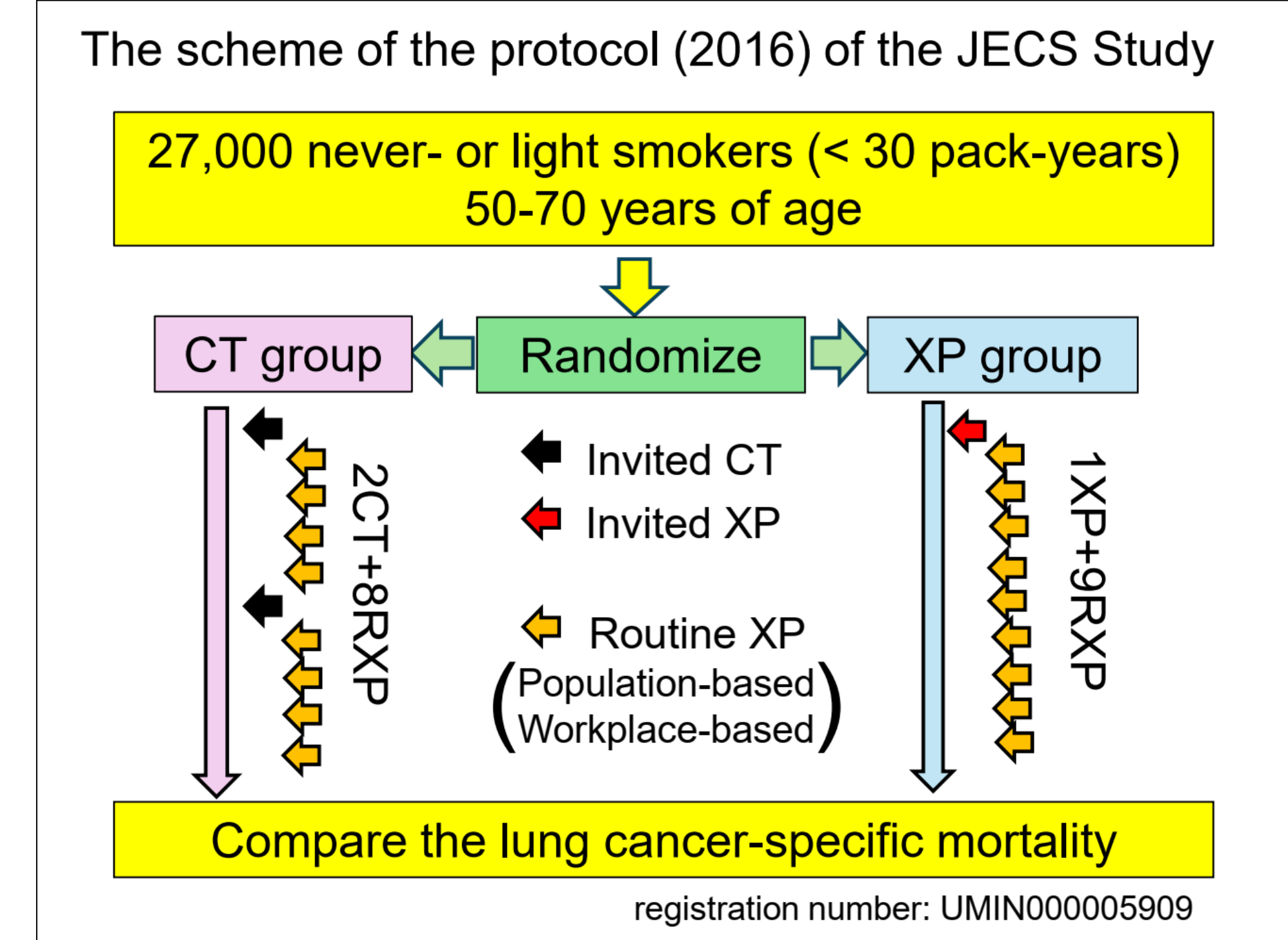


REFERENCES & ACKNOWLEDGEMENTS

We are grateful to Dr. Emi Sudo and Ms. Manami Obara for their assistance, and to all researchers and staff at the participating facilities. This study was partially supported by the Japan Society for the Promotion of Science (JSPS) KAKENHI (JP25K13593) and the Japan Agency for Medical Research and Development (AMED) (JP26ck0106910). Thun MJ, et al. *PLoS Med.* 2008;5:e185. Sagawa M, et al. *Jpn J Clin Oncol.* 2012;42:1219-21. Wakai K, et al. *Jpn J Clin Oncol.* 2006;36:309-24. Nawa T, et al. *Lung Cancer.* 2012;78:225-8. Nawa T, et al. *Jap J Clin Oncol.* 2019;49:130-6.

METHODS

The Japanese Randomized Trial for Evaluating the Efficacy of Low-dose Thoracic CT Screening for Lung Cancer: Jecs Study



Evolution of the Study Protocol

2010 Protocol: All individuals aged 50–64 years (Sample Size: 50,000)
2011 Protocol: Never-/light smokers aged 50–64 years (SS: 35,000)
2016 Protocol: Never-/light smokers aged 50–70 years (SS: 27,000) (alpha error=0.05, power=0.8, assumed RR=0.4 based on a previous study)

Screening

LDCT screening: slice thickness ≤5 mm
Low-dose: ≤2.5 mGy (BMI 20, with AEC) or ≤50 mA (without AEC)
Chest radiography: a single posteroanterior standing image
Image interpretation: at least two physicians
Further diagnostic evaluation: not strictly specified in the protocol

Follow-up

Annual mailed questionnaires to all participants
Resident record inquiries to ascertain death or relocation
Cause of death determined from national vital statistics
National Cancer Registry for lung cancer incidence ascertainment

DISCUSSION AND CONCLUSION

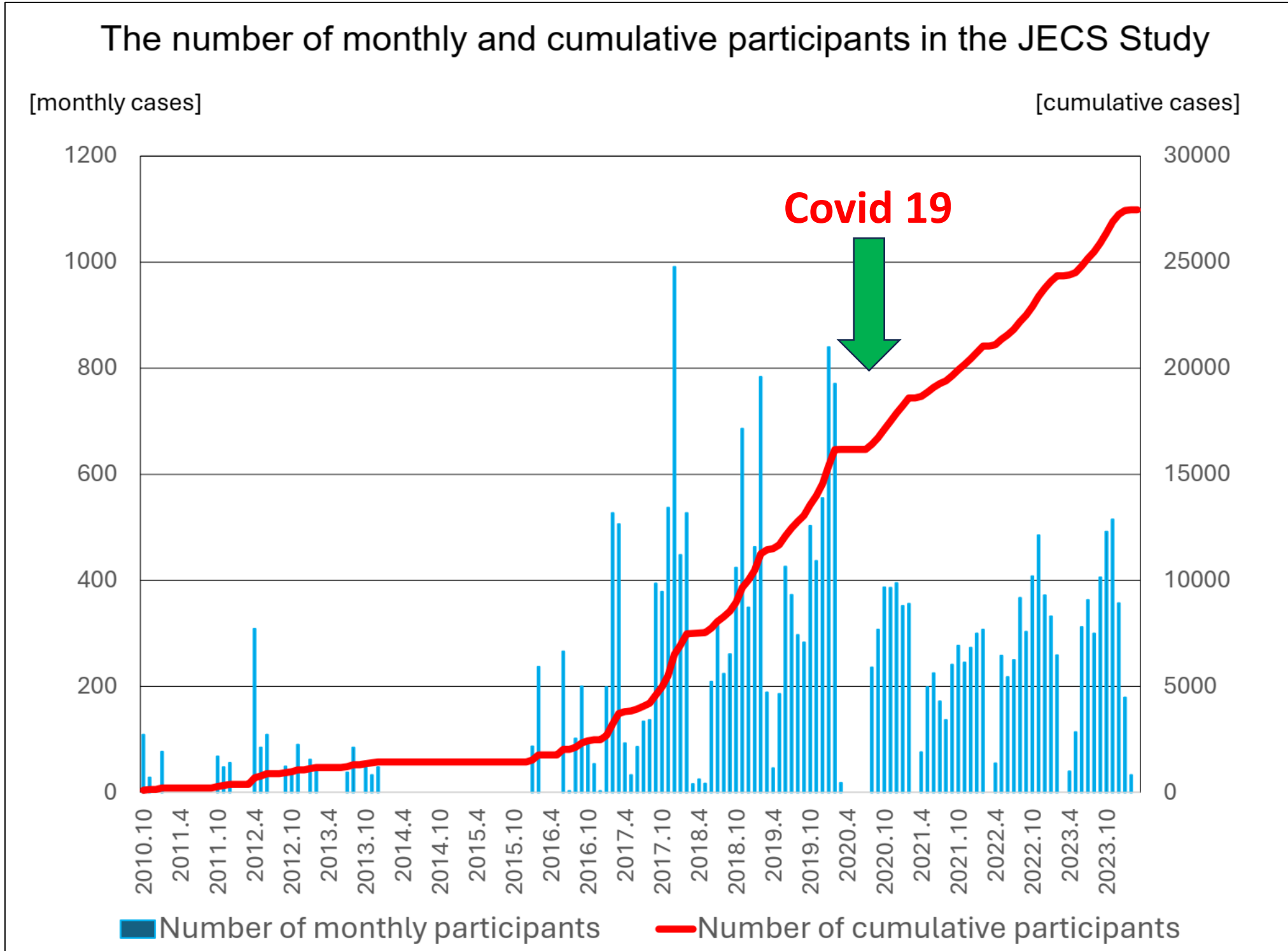
Actionable Take Away Message

- The Jecs Study was designed to evaluate the efficacy of 5-year interval LDCT screening for lung cancer in never- and light smokers, and successfully completed enrollment.
- Baseline characteristics were well balanced between groups.

Future Direction for Research

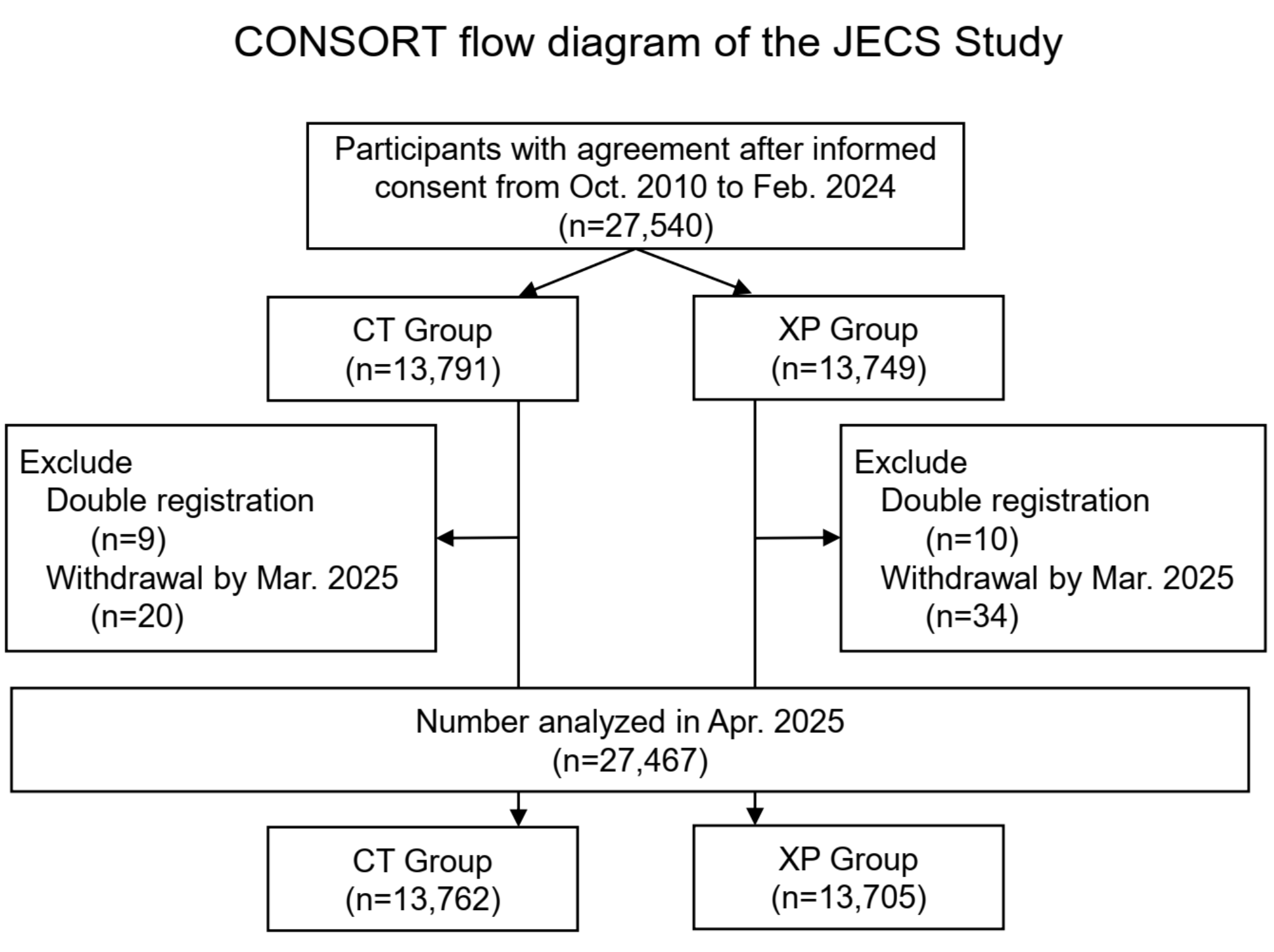
- Follow-up for lung cancer incidence and mortality is ongoing.
- The results are expected to provide high-level evidence on the efficacy of LDCT screening in never- and light smokers.

RESULTS



Following the acquisition of substantial funding from the Japan Agency for Medical Research and Development (AMED) in the fiscal year 2015, enrollment increased markedly, reaching a peak of approximately 4,700 participants per year.

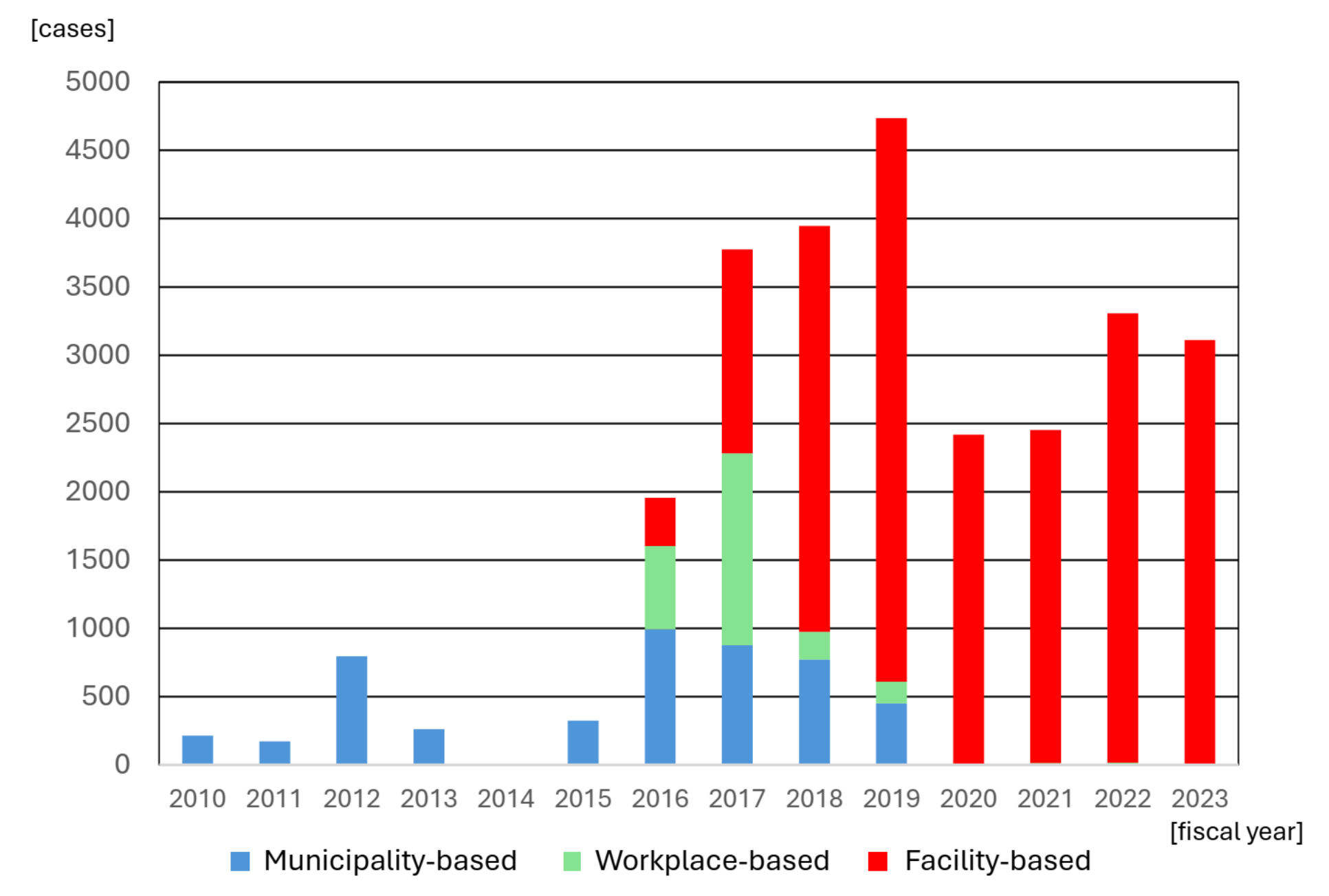
In 2020, enrollment was temporarily suspended from April to July because of the COVID-19 pandemic. Enrollment subsequently recovered, with more than 2,000 participants annually thereafter.



Between October 1, 2010, and February 29, 2024, a total of 27,540 individuals across Japan provided informed consent after receiving verbal and written explanations.

Of these, 19 cases (9 in the CT group and 10 in the XP group) represented duplicate registrations and were excluded. In addition, 54 participants (20 in the CT group and 34 in the XP group; Fisher's exact test, two-sided p=0.057) withdrew consent before the database lock on March 31, 2025, and were also excluded from the present analysis.

The number of participants in the Jecs Study according to the recruiting type



With respect to the three recruitment strategies, municipality-based recruitment accounted for 100% of participants from fiscal years 2010 to 2015. Subsequently, the proportions of workplace-based and facility-based recruitment gradually increased. By fiscal year 2019, more than 80% of participants were recruited through facility-based recruitment, and since fiscal year 2020, the vast majority of participants have been recruited through facility-based approaches.

Baseline characteristics and symptoms by assigned group and recruitment type											
	Total (n=27467)	CT Group (n=13762)	XP Group (n=13705)	p-value	Municipality-based (n=1881)	Workplace-based (n=214)	Facility-based (n=20162)	p-value			
Age											
40	118	54	64	0.277	78	9	31	0.001			
45-49	6238	3238	3000		3238	323	2677				
50-54	10238	5438	4800		5438	543	4257				
55-59	6950	3650	3300		3650	365	2925				
60-69	2512	1256	1256		1256	125	1005				
70+	82	41	41		41	4	37				
Average	52.8	52.8	52.8		52.8	52.8	52.8				
Median	50	50	50		50	50	50				
Sex											
Male	11904	6052	5852	0.742	1381	284	10819				
Female	15563	7710	7853		1440	71	13612				
Smoking status											
Never-smoker	16328	8264	8064	0.882	1380	68	14980				
Former smoker	8429	4215	4214		701	25	7693				
Current smoker	2410	1259	1151		288	9	1861				
Pack-years											
0	1837	919	918	0.808	330	12	1495				
0 <= 10	4487	2244	2243		400	15	3987				
10 <= 20	3880	1940	1940		431	8	3841				
20 <= 30	3419	1710	1709		388	8	3321				
>= 30	90	45	45		21	1	69				
Unknown	18	9	9		1	0	8				
Participation in lung cancer screening in the current fiscal year				0.588							
Yes	1321	661	660		180	37	1044				
Unknown	1508	754	754		198	38	1072				
Participation in lung cancer screening in the previous fiscal year				0.156							
Yes	2084	1042	1042		400	83	1581				
Unknown	360	180	180		40	12	268				
Participation in lung cancer screening in the fiscal year before last				0.803							
Yes	2084	1042	1042		400	83	1581				
Unknown	111	56	55		11	2	98				
Occupational history				0.578							
Involving asbestos	741	371	370		100	31	570				
Yes	2617	1309	1308		400	83	1581				
Unknown	169	85	84		19	5	144				
Occupational history				0.156							
Involving asbestos	741	371	370		100	31	570				
Yes	2617	1309	1308		400	83	1581				
Unknown	169	85	84		19	5	144				
Residential history in areas with high asbestos exposure				0.324							
Yes	2617	1309	1308		400	83	1581				
Unknown	169	85	84		19	5	144				
Past history of cancer				0.877							
Yes	2617	1309	1308		400	83	1581				
Unknown	169	85	84		19	5	144				
Past history of lung disease				0.872							
Yes	2617	1309	1308		400	83	1581				
Unknown	169	85	84		19	5	144				
Cough				0.321							
Yes	2617	1309	1308		400	83	1581				
Unknown	169	85	84		19	5	144				
Spitum				0.321							
Yes	2617	1309	1308		400	83	1581				
Unknown	169	85	84		19	5	144				
Hemoptysis				0.136							
Yes	2617	1309	1308		400	83	1581				
Unknown	169	85	84		19	5	144				
Chest pain				0.688							
Yes	2617	1309	1308		400	83	1581				
Unknown	169	85	84		19	5	144				
Fever				0.247							
Yes	2617	1309	1308		400	83	1581				
Unknown	169	85	84		19	5	144				
Operational fatigue				0.828							
Yes	2617	1309	1308		400	83	1581				
Unknown	169	85	84		19	5	144				
Weight loss				0.028							
Yes	2617	1309	1308		400	83	1581				
Unknown	169	85	84		19	5	144				
Shortness of breath				1.000							
Yes	2617	1309	1308		400	83	1581				
Unknown	169	85	84		19	5	144				
Other symptoms				0.731							
Yes	2617	1309	1308		400	83	1581				
Unknown	169	85	84		19	5	144				