Additional file 1

Number of Hospitals for Cardiology

> 23

12

< 1

Fig. S1A Distribution of cardiology hospitals in Hokkaido in 2017. The numbers of cardiology hospitals were large in Sapporo, Minami Oshima, and Kamikawa Chubu medical regions (109, 21, and 18, respectively).
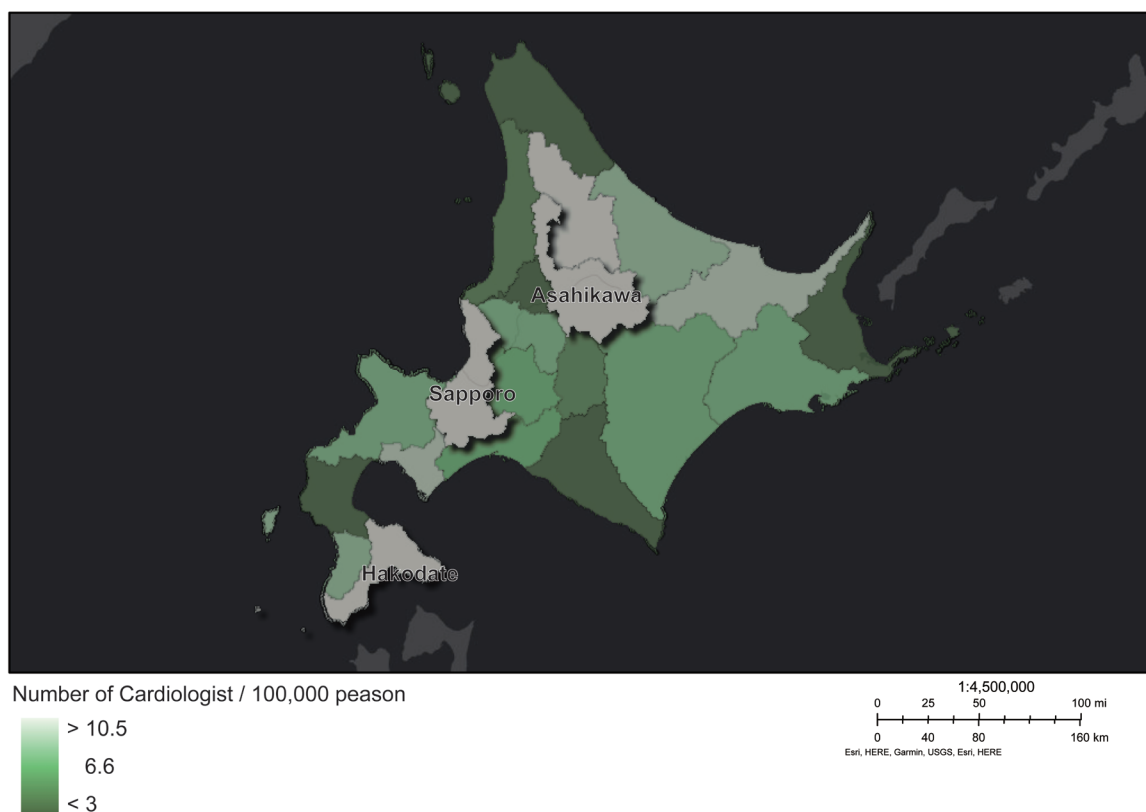

Number of Cardiologist / 100,000 peason

> 10.5

6.6

< 3

Fig. S1B Distribution of cardiologists (/100,000 persons) in Hokkaido in 2016. The numbers of cardiologists per 100,000 population were large in Sapporo, Minami Oshima, and Kamikawa Chubu medical regions (16.0, 12.8 and 12.4, respectively).

Table S1 Comparison of seasons in pretransport time and its components

	Summer (n = 192)	Winter (n = 213)	P value
Pretransport Time, min	55 (25, 120)	36 (19, 83)	< 0.01*
Onset to EMS call, min	45 (17, 113)	29 (10, 73)	< 0.01*
EMS call to FMC, min	7 (5, 8)	7 (6, 10)	0.06

Data are expressed as median (interquartile range) for continuous variables. P values for the overall comparisons were calculated using the Wilcoxon rank-sum test. *EMS*, emergency medical services; *FMC*, first medical contact.
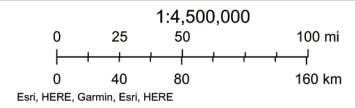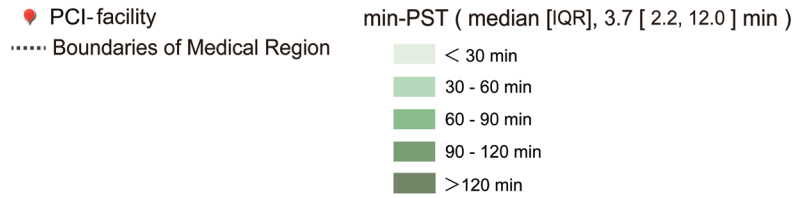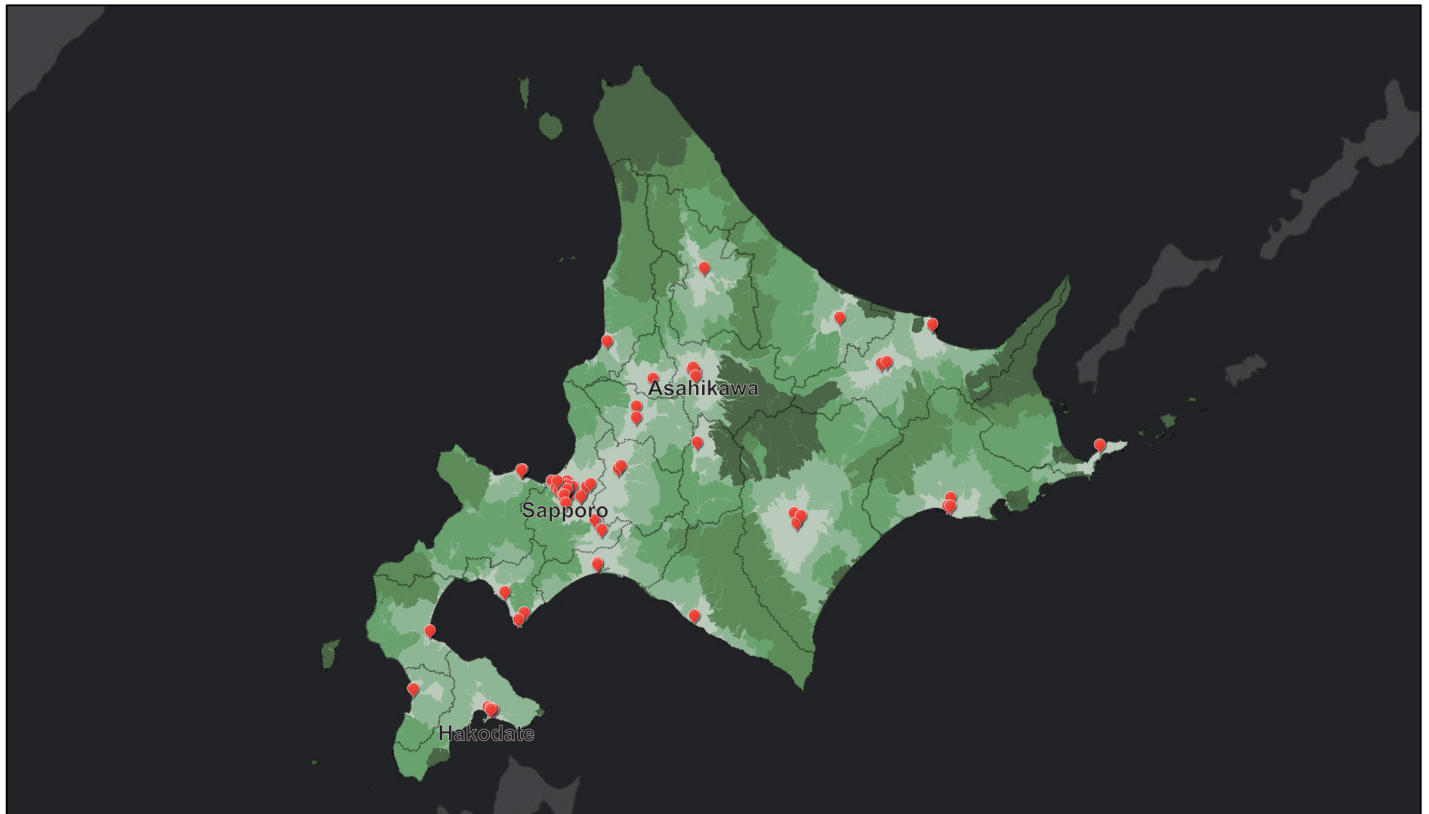
* $P < 0.05$

Fig. S2 Mapping of PCI facilities and min-PST data in Hokkaido. ArcGIS Online (ESRI, Inc., Charlotte, NC, USA) was used to determine min-PST, a time to the nearest PCI facility, and it was color-coded. *PST*, prehospital system time; *PCI*, percutaneous coronary intervention.

Table S2 Comparison of Two Groups by Median eDAD

	short eDAD (n=297)	long eDAD (n=297)	P value
Demographic characteristics and history			
Age, years (mean ± SD)	66.9 ± 12.4	68.8 ± 12.7	0.064
Women, n (%)	73 (24.6)	65 (21.9)	0.437
Presentation at PCI-facility			
Killip class on arrival			
1 / 2, n (%)	200 (67.3)	212 (71.4)	0.487
3 / 4, n (%)	44 (14.8)	42 (14.1)	
Unknown, n (%)	53 (17.9)	43 (14.5)	
Comparison of situations at symptom onset			
Location at STEMI onset			
Urban medical regions, n (%)	169 (56.9)	140 (47.1)	0.017*
Rural medical regions, n (%)	128 (43.1)	157 (52.9)	
Across medical regions			
Yes, n (%)	31 (10.4)	54 (18.2)	0.007*
No, n (%)	266 (89.6)	243 (81.8)	
Season			
Summer, n (%)	130 (43.8)	146 (49.2)	0.188
Winter, n (%)	167 (56.2)	151 (50.8)	
Day of onset			
Weekday, n (%)	204 (69.2)	208 (70.0)	0.816
Weekend or Holiday, n (%)	91 (30.9)	89 (30.0)	
Time of onset			
Daytime, n (%)	191 (64.3)	168 (56.6)	0.054
Nighttime, n (%)	106 (35.7)	129 (43.4)	
Transport path			
EMS call			
Yes, n (%)	246 (82.8)	155 (52.2)	<0.001*
No, n (%)	51 (17.2)	142 (47.8)	
Use of air transportation, n (%)	3 (7.9)	3 (2.4)	0.144
Time course			
TIT, min (median [IQR])	124 (100, 155)	285 (210, 410)	<0.001*
ODT, min (median [IQR])	56 (40, 76)	203 (138, 307)	<0.001*
DBT, min (median [IQR])	59 (43, 88)	65 (45, 92)	0.366
FMCTB, min (median [IQR])	88 (66, 117)	110 (78, 164)	<0.001*
DIDO, min (median [IQR])	29 (12, 50)	43 (13, 75)	0.040*
mPST, min (median [IQR])	3 (2, 10)	6 (2, 14)	0.001*
eDAD, min (median [IQR])	49 (35, 64)	179 (124, 290)	<0.001*
Outcome			
Death (CPC 5), n (%)	20 (6.7)	18 (6.1)	0.737
Poor (CPC 3–5), n (%)	26 (8.8)	28 (9.4)	0.775
Good (CPC 1–2), n (%)	271 (91.3)	269 (90.6)	

We simulated min-PST (travel time from each onset point to the nearest PCI facility) using ArcGIS Pro (ESRI, Inc., Charlotte, NC, USA). eDAD (estimated delay-in-arrival-to-door; ODT minus min-PST) means the amount of room for improvement. Variables are expressed as numbers (%), means ± standard deviation (SD), or medians (IQR; interquartile ranges). ODT, onset to door time; CPA, cardiopulmonary arrest; urban medical regions, Sapporo, Kamikawa Chubu, and Minami Oshima medical regions; rural medical regions, regions outside the urban medical regions; Daytime, 6:00 a.m–6:00 p.m; Nighttime, 6:00 p.m–6:00 a.m; *EMS*, emergency medical system; *TIT,* total ischemic time; *ODT,* onset-to-door-time; *min-PST,* minimum prehospital system time, *DBT,* door-to-balloon-time; *FMCTB,* first-medical-contact-to-balloon-time; *PTT,* pretransport time, *DIDO,* door-in-to-door-out-time; *CPC,* cerebral performance category.
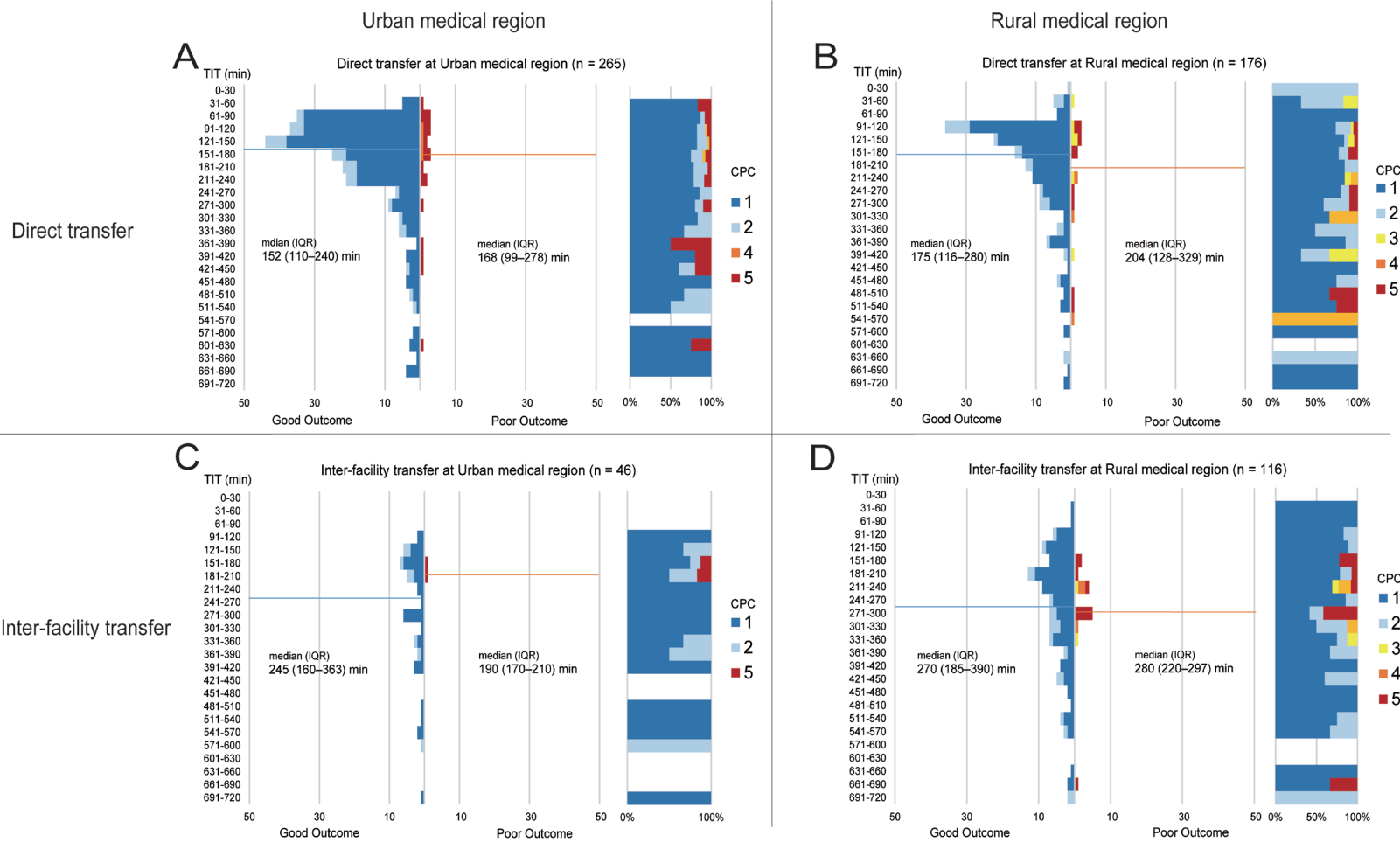* $P < 0.05$

Fig. S3 Frequency distributions of TIT in patients with good and poor outcomes in groups divided by medical regions of onset and types of transport. The figure shows the frequency distributions of TIT in patients with good outcomes and those with poor outcomes in groups divided by medical regions of onset and types of transport to PCI facilities. Numbers indicate time intervals as medians (interquartile range). *CPC*, cerebral performance category; *TIT*, total ischemic time; urban medical regions, Sapporo, Kamikawa Chubu, and Minami Oshima medical regions; rural medical regions, regions outside the urban medical regions.