

Appendix 1 to Huang Y, Senger J-LB, Korus L, et al. Geographic variation in breast reconstruction surgery after mastectomy for females with breast cancer in Alberta, Canada. *Can J Surg* 2024. Copyright © 2024 The Author(s) or their employer(s).
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Supplementary Table 1: Sub-Regional Health Authority (sRHA) identification numbers (IDs) and names.

ID	sRHA Name	ID	sRHA Name
1	R101 Crowsnest Pincher Creek	36	R501 Region 5 Northwest
2	R102 Ft McLeod Cardston	37	R502 Regions 5 Northeast
3	R103 Lethbridge	38	R503 Region 5 Southeast
4	R104 Picture Butte Raymond Milk River	39	R504 Region 5 South Central
5	R105 Vauxhall Taber	40	R505 Region5 Southwest
6	R201 Palliser North and Central	41	R601 St. Albert
7	R202 Palliser West	42	R602 Edmonton Castle Downs
8	R301 Calgary North East	43	R603 Edmonton Woodcroft
9	R302 Calgary Beddington Heights	44	R604 Edmonton Eastwood
10	R303 Calgary Northwest	45	R605 Edmonton North Central
11	R304 Calgary University	46	R606 Edmonton North East
12	R305 Calgary Charleswood	47	R607 Edmonton Bonnie Doon
13	R306 Calgary Marlborough	48	R608 Edmonton West Jasper Place
14	R307 Calgary Shaganappi	49	R609 Edmonton Twin Brooks
15	R308 Calgary Bowness	50	R612 Edmonton Mill Woods
16	R309 Calgary Scarboro	51	R613 Sherwood Park
17	R310 Calgary Forest Lawn	52	R614 Strathcona County
18	R311 Calgary Lakeview	53	R615 Thorsby
19	R312 Calgary Mount Royal	54	R616 Leduc Office
20	R313 Calgary Haysboro	55	R617 Beaumont
21	R314 Calgary Bonavista	56	R618 Westview
22	R315 Calgary South	57	R619 Sturgeon County
23	R320 Banff-Canmore	58	R620 Fort Saskatchewan
24	R321 Didsbury-Strathmore	59	R701 Aspen West
25	R322 Vulcan-Claresholm	60	R702 Aspen Central
26	R323 High River-Black Diamond	61	R703 Aspen North
27	R401 Clearwater	62	R704 Aspen East
28	R402 Brazeau	63	R801 Peace NW
29	R403 Wetaskiwin-Hobbema	64	R802 Peace NE
30	R404 Ponoka	65	R803 Peace SE
31	R405 Lacombe	66	R804 Peace SW
32	R406 Red Deer	67	R901 High Level
33	R407 Olds	68	R902 La Crete
34	R408 Drumheller-Hanna	69	R903 Northern Lights Northwest
35	R409 Stettler-Consort	70	R904 Fort McMurray

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Supplementary Table 2: Population counts (women with mastectomies), cases (women with breast reconstruction surgery at 1 year) and age group directly standardized rates (DSRs) per 1,000 by year and zone.

Fiscal Year	All	North	Edmonton	Central	Calgary	South
2004						
Cases/Pop	150/1,120	5/89	28/345	16/177	86/392	15/117
DSR	133.9	55.2	88.8	97.7	204.5	146.2
(95% CI)	(113.3, 157.2)	(17.9, 130.7)	(58.7, 129.4)	(55.7, 159.6)	(163.3, 253.6)	(80.7, 248.5)
2005						
Cases/Pop	141/1,075	9/106	28/332	14/173	81/387	9/77
DSR	127.8	88.3	87.2	95.2	168.2	119.4
(95% CI)	(107.5, 150.9)	(39.7, 174.8)	(57.6, 128.3)	(51.3, 163.7)	(132.5, 212.3)	(53.9, 238.9)
2006						
Cases/Pop	103/1,077	3/112	26/330	9/164	58/366	7/105
DSR	95.7	25.0	84.8	64.2	141.8	60.6
(95% CI)	(78.1, 116.3)	(5.2, 75.8)	(55.0, 126.2)	(28.3, 129.8)	(107.4, 184.7)	(24.3, 127.8)
2007						
Cases/Pop	111/1,136	6/118	29/323	13/173	53/413	10/109
DSR	94.7	47.5	89.4	75.8	113.6	119.0
(95% CI)	(77.9, 114.2)	(17.2, 108.5)	(59.7, 129.1)	(39.8, 135.1)	(84.8, 150.3)	(56.0, 225.2)
2008						
Cases/Pop	89/1,113	10/118	22/321	10/171	42/404	5/99
DSR	79.1	78.3	70.0	57.0	95.3	59.6
(95% CI)	(63.5, 97.7)	(36.9, 152.9)	(43.8, 106.9)	(27.2, 109.1)	(68.4, 130.0)	(18.7, 145.7)
2009						
Cases/Pop	73/1,201	7/123	18/397	7/170	32/418	9/93
DSR	59.8	56.1	44.9	45.3	71.5	106.3
(95% CI)	(46.9, 75.3)	(22.1, 121.6)	(26.6, 71.0)	(18.1, 96.5)	(48.7, 101.9)	(46.8, 216.8)
2010						
Cases/Pop	97/1,245	8/113	27/407	18/198	35/412	9/155
DSR	74.6	72.4	65.9	88.3	72.2	103.0
(95% CI)	(60.4, 91.3)	(30.7, 149.4)	(43.2, 96.8)	(51.4, 144.8)	(50.3, 102.2)	(40.2, 233.4)

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2011						
Cases/Pop	71/1,195	5/116	24/366	8/191	25/393	9/129
DSR	58.4	49.0	61.6	44.5	58.1	78.8
(95% CI)	(45.6, 73.8)	(15.8, 116.4)	(39.4, 92.4)	(19.1, 89.4)	(37.5, 87.1)	(34.4, 166.7)
2012						
Cases/Pop	121/1,143	4/86	34/381	8/160	63/394	12/122
DSR	101.9	39.0	86.0	60.6	145.3	119.2
(95% CI)	(84.5, 121.9)	(10.4, 112.1)	(59.5, 120.6)	(23.9, 134.6)	(111.3, 187.4)	(61.0, 214.8)
2013						
Cases/Pop	146/1,104	6/99	29/355	15/133	92/418	4/99
DSR	131.6	54.9	81.8	125.4	196.3	41.2
(95% CI)	(111.0, 155.2)	(19.0, 134.1)	(54.3, 119.9)	(69.3, 211.9)	(157.8, 242.4)	(11.2, 217.7)
2014						
Cases/Pop	209/1,259	11/122	43/365	20/184	126/499	9/89
DSR	157.2	82.8	113.7	126.1	221.2	103.8
(95% CI)	(136.6, 180.2)	(41.0, 154.1)	(82.1, 153.8)	(75.9, 199.0)	(183.6, 265.2)	(47.3, 200.1)
2015						
Cases/Pop	185/1,197	11/103	47/358	20/200	99/438	8/98
DSR	148.1	104.8	128.8	106.0	195.4	92.8
(95% CI)	(127.5, 171.2)	(51.0, 194.8)	(94.6, 171.8)	(64.4, 165.3)	(158.5, 239.5)	(37.1, 200.9)
2016						
Cases/Pop	206/1,177	10/126	62/378	18/158	112/430	4/85
DSR	169.0	62.7	164.8	123.6	231.7	61.3
(95% CI)	(146.7, 193.9)	(30.0, 125.9)	(126.1, 211.9)	(71.9, 203.1)	(189.9, 280.8)	(15.1, 172.8)
2017						
Cases/Pop	230/1,156	11/114	59/391	17/133	139/432	4/86
DSR	190.4	99.1	146.8	133.4	281.6	54.0
(95% CI)	(166.4, 217.0)	(49.2, 181.5)	(111.7, 189.9)	(76.8, 218.7)	(235.8, 335.0)	(13.0, 163.1)

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Supplementary Table 3: Multivariable regression models for the odds of breast reconstruction at 1 year and the time from mastectomy to breast reconstruction.

Characteristic	Breast Reconstruction at 1 year Post-mastectomy		Time from Mastectomy to Breast Reconstruction	
	Odds Ratio	(95% CI)	Hazard Ratio	(95% CI)
Age group at diagnosis				
21-44	16.70	(13.74, 20.36)	16.29	(14.23, 18.65)
45-54	9.32	(7.80, 11.16)	10.78	(9.47, 12.26)
55-64	4.22	(3.51, 5.10)	4.78	(4.18, 5.48)
≥65	Reference		Reference	
Zone				
North	0.35	(0.26, 0.49)	0.55	(0.46, 0.65)
Edmonton	0.53	(0.47, 0.61)	0.69	(0.64, 0.74)
Central	0.49	(0.37, 0.65)	0.64	(0.54, 0.75)
Calgary	Reference		Reference	
South	0.56	(0.41, 0.79)	0.67	(0.55, 0.82)
Neighbourhood income quintile				
Q1 lowest	0.59	(0.49, 0.70)	0.64	(0.57, 0.71)
Q2	0.66	(0.56, 0.78)	0.76	(0.69, 0.83)
Q3	0.78	(0.67, 0.91)	0.85	(0.78, 0.94)
Q4	0.81	(0.69, 0.94)	0.97	(0.89, 1.06)
Q5 highest	Reference		Reference	
Community size				
<10,000	1.01	(0.78, 1.30)	1.02	(0.88, 1.19)

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	10,000-99,999	1.03	(0.77, 1.38)	1.06	(0.89, 1.25)
	≥100,000	Reference		Reference	
≥ 1 Comorbidity					
	No	Reference		Reference	
	Yes	0.80	(0.66, 0.95)	0.75	(0.67, 0.84)
Stage					
	0	Reference		Reference	
	I	0.41	(0.36, 0.48)	0.61	(0.55, 0.67)
	II	0.18	(0.15, 0.22)	0.41	(0.36, 0.46)
	III	0.08	(0.06, 0.10)	0.28	(0.24, 0.33)
	IV	0.09	(0.05, 0.16)	0.19	(0.13, 0.28)
	Unknown	0.42	(0.29, 0.59)	0.59	(0.46, 0.75)
Chemotherapy before mastectomy					
	No	Reference		Reference	
	Yes	0.91	(0.73, 1.14)	1.07	(0.94, 1.21)
Chemotherapy after mastectomy					
	No	Reference		Reference	
	Yes	0.55	(0.47, 0.65)	1.02	(0.94, 1.12)
Radiation therapy after mastectomy					
	No	Reference		Reference	
	Yes	0.59	(0.39, 0.87)	0.80	(0.66, 0.95)
Year of diagnosis					
	2004	Reference		Reference	
	2005	0.92	(0.69, 1.21)	1.11	(0.93, 1.31)
	2006	0.67	(0.50, 0.89)	0.99	(0.84, 1.18)
	2007	0.67	(0.50, 0.89)	1.09	(0.92, 1.28)
	2008	0.54	(0.40, 0.73)	1.18	(1.00, 1.39)
	2009	0.43	(0.32, 0.59)	1.07	(0.91, 1.25)
	2010	0.53	(0.40, 0.71)	1.24	(1.06, 1.45)
	2011	0.42	(0.31, 0.57)	1.03	(0.87, 1.22)
	2012	0.88	(0.67, 1.16)	1.34	(1.13, 1.57)
	2013	1.06	(0.81, 1.38)	1.44	(1.22, 1.69)
	2014	1.35	(1.05, 1.73)	1.58	(1.35, 1.85)
	2015	1.21	(0.93, 1.56)	1.46	(1.24, 1.72)
	2016	1.59	(1.24, 2.05)	1.76	(1.49, 2.08)
	2017	1.62	(1.24, 2.11)	2.08	(1.73, 2.51)

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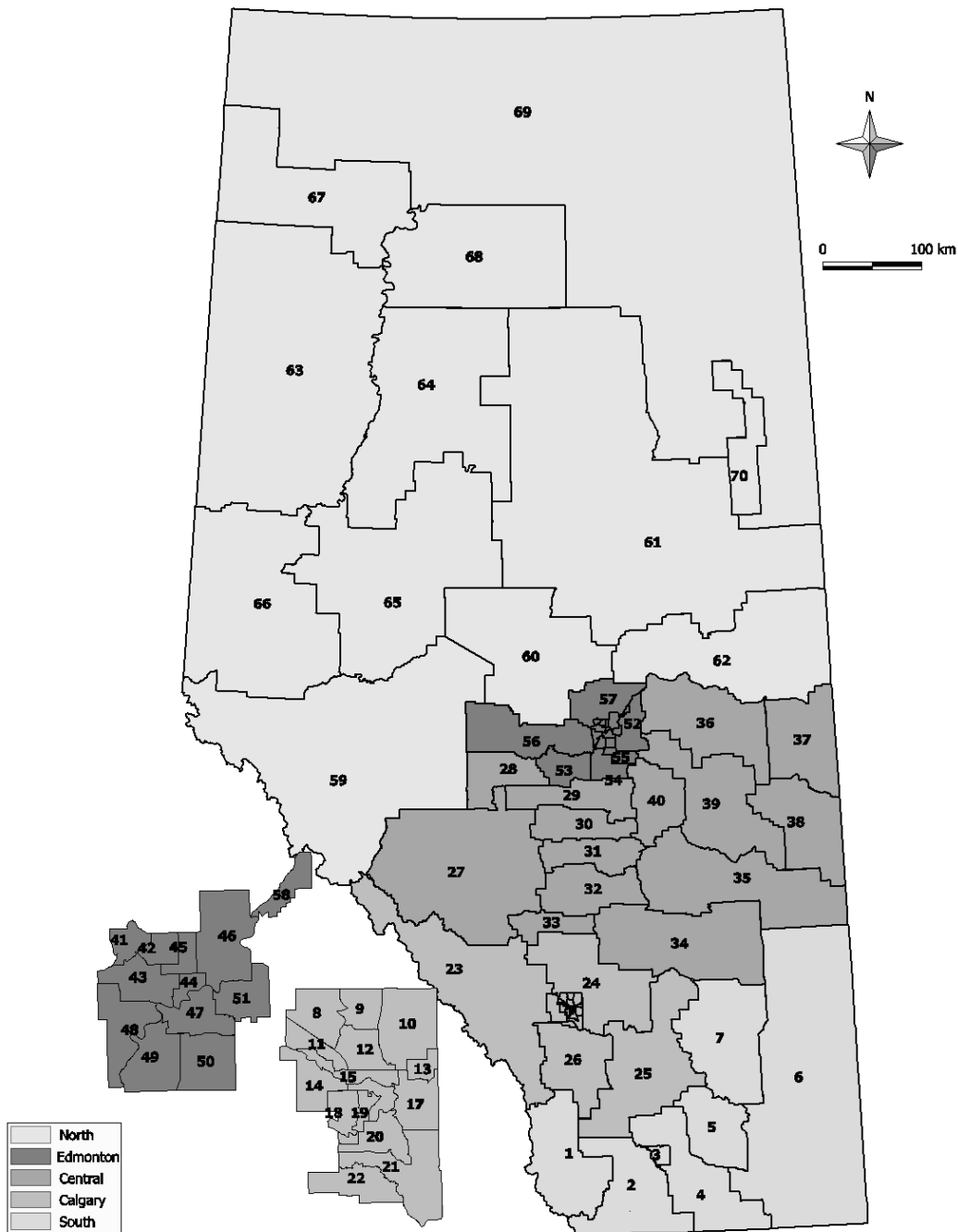
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Supplementary Figure 1: Alberta's 70 sRHA's and five zones (from top to bottom: North, Edmonton, Central, Calgary, and South).

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Supplementary Figure 2: Time to breast cancer reconstruction by cluster.

