

Table S1. Marginal annual mean costs (in CAD) for dementia by age and number of morbidities in participants ≥65 years

Morbidities	Participant-years ¹	Hospital costs Mean (95%CI)	Medication costs Mean (95%CI)	ACCS costs Mean (95%CI)	Claim costs Mean (95%CI)	LTC costs Mean (95%CI)	Total costs Mean (95%CI)
<i>No dementia</i>							
Age 65-74y							
None	604,675	209 (194-224)	187 (184-190)	305 (301-308)	430 (425-435)	57 (46-67)	1,179 (1,155-1,203)
One	716,368	687 (664-710)	583 (578-589)	632 (625-638)	854 (847-861)	144 (129-158)	2,906 (2,870-2,943)
Two	686,322	1,375 (1,343-1,407)	946 (939-952)	936 (928-944)	1,201 (1,193-1,208)	294 (273-314)	4,759 (4,711-4,807)
Three	538,278	2,326 (2,279-2,372)	1,367 (1,355-1,379)	1,304 (1,291-1,317)	1,583 (1,573-1,594)	554 (523-586)	7,143 (7,072-7,215)
Four or more	761,930	7,671 (7,579-7,763)	2,315 (2,300-2,330)	2,889 (2,857-2,920)	3,055 (3,034-3,077)	2,082 (2,023-2,142)	18,023 (17,877-18,169)
Age 75-84y							
None	171,866	289 (253-325)	193 (186-199)	277 (269-285)	385 (378-393)	167 (136-198)	1,291 (1,236-1,346)
One	240,148	962 (924-1,000)	659 (644-673)	653 (643-662)	905 (895-915)	387 (348-425)	3,560 (3,494-3,627)
Two	317,917	1,775 (1,728-1,822)	1,009 (999-1,019)	957 (945-969)	1,276 (1,263-1,290)	730 (682-779)	5,743 (5,661-5,824)
Three	324,095	2,939 (2,850-3,029)	1,385 (1,374-1,397)	1,327 (1,308-1,346)	1,663 (1,649-1,678)	1,123 (1,067-1,179)	8,434 (8,309-8,559)
Four or more	668,995	9,498 (9,400-9,595)	2,231 (2,218-2,244)	2,881 (2,848-2,915)	3,211 (3,189-3,232)	3,591 (3,512-3,670)	21,404 (21,243-21,566)
Age 85y+							
None	92,308	175 (149-201)	62 (56-67)	83 (76-90)	122 (115-129)	342 (280-405)	764 (688-840)
One	50,571	1,489 (1,385-1,593)	551 (530-573)	553 (482-625)	742 (721-763)	2,115 (1,906-2,323)	5,477 (5,204-5,751)
Two	78,979	2,728 (2,603-2,854)	933 (912-954)	829 (805-852)	1,163 (1,139-1,187)	3,012 (2,825-3,200)	8,703 (8,444-8,961)
Three	94,132	4,530 (4,375-4,685)	1,260 (1,238-1,281)	1,176 (1,144-1,209)	1,601 (1,572-1,631)	4,005 (3,810-4,199)	12,573 (12,285-12,861)
Four or more	257,719	12,513 (12,348-12,678)	2,004 (1,986-2,022)	2,501 (2,458-2,543)	3,164 (3,133-3,196)	8,998 (8,808-9,188)	29,139 (28,843-29,434)
<i>Dementia</i>							
Age 65-74y							
None	2,454	6,870 (5,207-8,533)	737 (668-806)	972 (855-1,089)	1,637 (1,462-1,813)	18,461 (15,949-20,973)	28,777 (25,683-31,871)
One	6,319	9,881 (8,509-11,253)	964 (911-1,018)	1,201 (1,108-1,293)	2,015 (1,901-2,130)	21,065 (19,519-22,611)	35,159 (33,026-37,293)
Two	9,631	12,650 (11,085-14,215)	1,180 (1,130-1,230)	1,433 (1,321-1,546)	2,570 (2,450-2,690)	21,898 (20,685-23,111)	39,627 (37,598-41,656)
Three	11,706	15,083 (14,091-16,076)	1,583 (1,522-1,644)	1,883 (1,753-2,014)	3,107 (3,000-3,214)	23,107 (22,028-24,187)	44,685 (43,129-46,241)
Four or more	50,804	28,333 (27,648-29,018)	2,570 (2,508-2,633)	4,118 (3,963-4,274)	5,837 (5,731-5,942)	31,701 (31,051-32,350)	72,195 (71,122-73,267)
Age 75-84y							
None	3,868	7,138 (6,006-8,269)	779 (717-841)	790 (727-852)	1,539 (1,450-1,628)	25,320 (23,275-27,364)	35,942 (33,565-38,320)
One	11,900	9,273 (8,152-10,394)	1,014 (971-1,057)	1,007 (947-1,067)	1,919 (1,847-1,991)	27,838 (26,648-29,028)	41,527 (39,870-43,183)
Two	21,781	11,084 (10,519-11,648)	1,252 (1,216-1,289)	1,279 (1,221-1,337)	2,332 (2,272-2,391)	26,733 (25,894-27,571)	43,011 (41,972-44,050)
Three	29,356	14,103 (13,555-14,652)	1,498 (1,462-1,534)	1,548 (1,489-1,606)	2,829 (2,769-2,888)	28,445 (27,740-29,150)	48,637 (47,719-49,554)
Four or more	132,665	24,958 (24,612-25,304)	2,139 (2,113-2,164)	3,115 (3,045-3,184)	4,913 (4,859-4,966)	35,370 (34,980-35,759)	70,463 (69,902-71,023)
Age 85y+							
None	3,384	6,360 (5,355-7,365)	418 (368-468)	548 (467-629)	1,492 (1,333-1,650)	36,757 (33,871-39,642)	46,608 (43,343-49,874)
One	10,633	8,575 (7,896-9,255)	678 (639-717)	795 (749-842)	1,872 (1,802-1,943)	38,938 (37,497-40,379)	51,870 (50,252-53,489)
Two	22,569	10,610 (10,074-11,145)	892 (857-928)	993 (948-1,037)	2,252 (2,182-2,322)	39,746 (38,806-40,685)	55,488 (54,385-56,590)
Three	33,831	13,026 (12,590-13,461)	1,026 (999-1,054)	1,237 (1,185-1,288)	2,712 (2,654-2,770)	41,707 (40,981-42,434)	60,550 (59,698-61,403)
Four or more	151,031	21,506 (21,233-21,779)	1,526 (1,506-1,545)	2,215 (2,173-2,256)	4,259 (4,218-4,300)	45,358 (44,998-45,718)	75,252 (74,794-75,709)

Morbidities	Participant-years ¹	Hospital costs Mean (95%CI)	Medication costs Mean (95%CI)	ACCS costs Mean (95%CI)	Claim costs Mean (95%CI)	LTC costs Mean (95%CI)	Total costs Mean (95%CI)

ACCS Ambulatory Care Classification System, CAD Canadian dollars, CI confidence interval, LTC long-term care

Marginal mean annual costs are reported for fixed values of dementia, age and the number of morbidities. These models include 3-way and 2-way interactions terms for dementia, age, and number of morbidity. No LTC costs include hospitalizations, medications, ACCS and provider claims All costs are reported in \$1000 Canadian dollar units and are inflated to 2017 costs using the consumer price index for all items in Canada. Unshaded cells show significant increases in cost; shaded cells show significant decreases in cost and grey font shows non-significant differences.

¹Participant-years correspond to number of full or partial fiscal-years for each participant

Table S2. Marginal differences in mean annual costs in participants ≥65 years (in CAD)

Comparisons	Hospital costs	Medication costs	ACCS costs	Claim costs	LTC costs	Total costs	No LTC total costs
Increases with dementia (referent no dementia)							
Age 65-74y							
None	6661 (4998,8325)	550 (482,619)	667 (550,784)	18404 (15892,20916)	18404 (15892,20916)	27598 (24504,30692)	8960 (7215,10706)
One	9194 (7822,10566)	381 (327,435)	569 (476,662)	20922 (19376,22467)	20922 (19376,22467)	32253 (30120,34386)	11263 (9792,12733)
Two	11275 (9710,12841)	234 (184,285)	497 (385,610)	21605 (20392,22817)	21605 (20392,22817)	34868 (32839,36897)	13340 (11682,14998)
Three	12758 (11764,13751)	215 (154,277)	579 (448,710)	22553 (21474,23632)	22553 (21474,23632)	37542 (35985,39099)	15115 (14007,16222)
Four or more	20662 (19972,21352)	255 (191,319)	1230 (1074,1386)	29618 (28969,30267)	29618 (28969,30267)	54171 (53096,55247)	25028 (24199,25858)
Age 75-84y							
None	6849 (5717,7981)	586 (524,649)	513 (449,576)	25153 (23109,27197)	25153 (23109,27197)	34652 (32274,37029)	8979 (7794,10164)
One	8310 (7189,9432)	355 (310,400)	354 (293,415)	27451 (26262,28641)	27451 (26262,28641)	37966 (36309,39623)	9921 (8756,11085)
Two	9308 (8742,9875)	243 (206,281)	322 (263,381)	26002 (25163,26841)	26002 (25163,26841)	37269 (36228,38309)	10832 (10214,11451)
Three	11164 (10609,11719)	113 (76,150)	221 (159,282)	27322 (26617,28028)	27322 (26617,28028)	40203 (39279,41127)	12601 (11986,13216)
Four or more	15460 (15102,15819)	-93 (-121,-65)	233 (159,308)	31779 (31387,32171)	31779 (31387,32171)	49059 (48483,49634)	17298 (16868,17728)
Age 85y+							
None	6185 (5180,7190)	357 (306,407)	465 (384,546)	36414 (33530,39299)	36414 (33530,39299)	45844 (42579,49110)	8130 (7019,9240)
One	7087 (6399,7774)	127 (84,169)	242 (157,327)	36823 (35372,38275)	36823 (35372,38275)	46393 (44755,48031)	8402 (7650,9155)
Two	7881 (7331,8431)	-41 (-82,-0)	164 (115,213)	36733 (35781,37686)	36733 (35781,37686)	46785 (45659,47911)	8940 (8331,9549)
Three	8496 (8034,8958)	-233 (-268,-199)	60 (0,120)	37703 (36957,38448)	37703 (36957,38448)	47977 (47086,48868)	9290 (8759,9821)
Four or more	8993 (8674,9312)	-478 (-504,-453)	-286 (-343,-229)	36360 (35966,36754)	36360 (35966,36754)	46113 (45583,46642)	9236 (8853,9620)
Increases with the number of morbidities							
One vs None							
No dementia							
Age 65-74y	478 (451,506)	397 (390,403)	327 (320,334)	425 (416,433)	87 (71,103)	1727 (1684,1770)	1617 (1578,1656)
Age 75-84y	673 (621,726)	466 (450,482)	376 (364,388)	519 (507,532)	220 (173,267)	2270 (2185,2354)	2015 (1946,2085)
Age 85y+	1314 (1207,1421)	490 (468,512)	471 (399,542)	620 (598,642)	1772 (1560,1984)	4713 (4434,4993)	2836 (2677,2994)
Dementia							
Age 65-74y	3011 (854,5167)	227 (144,310)	229 (90,369)	378 (170,586)	2604 (-196,5404)	6383 (2774,9991)	3920 (1648,6192)
Age 75-84y	2135 (544,3726)	235 (163,307)	217 (131,303)	380 (267,492)	2518 (261,4776)	5584 (2786,8382)	2957 (1300,4613)
Age 85y+	2215 (1001,3430)	260 (201,319)	248 (158,337)	381 (208,553)	2181 (-972,5335)	5262 (1674,8849)	3108 (1777,4440)
Two vs One							
No dementia							
Age 65-74y	688 (649,728)	362 (354,370)	304 (294,314)	346 (336,357)	150 (127,173)	1853 (1794,1912)	1697 (1645,1749)
Age 75-84y	813 (753,873)	350 (334,367)	304 (289,319)	372 (355,388)	344 (288,400)	2182 (2081,2283)	1839 (1759,1919)
Age 85y+	1239 (1077,1402)	381 (353,410)	275 (201,350)	421 (390,452)	897 (638,1157)	3225 (2868,3583)	2296 (2081,2511)

Comparisons	Hospital costs	Medication costs	ACCS costs	Claim costs	LTC costs	Total costs	No LTC total costs
Dementia							
Age 65-74y	2770 (679,4860)	216 (146,285)	232 (88,376)	555 (393,717)	833 (-981,2647)	4468 (1640,7295)	3774 (1557,5991)
Age 75-84y	1811 (554,3068)	238 (185,292)	272 (189,355)	413 (321,505)	-1106 (-2468,257)	1485 (-396,3366)	2750 (1435,4066)
Age 85y+	2034 (1167,2902)	214 (164,264)	197 (134,261)	380 (282,478)	807 (-839,2454)	3617 (1727,5508)	2834 (1889,3778)
Three vs Two							
No dementia							
Age 65-74y	951 (895,1007)	422 (409,435)	369 (354,383)	383 (370,395)	261 (227,294)	2384 (2301,2467)	2121 (2048,2194)
Age 75-84y	1164 (1064,1265)	376 (363,390)	370 (349,392)	387 (368,406)	392 (325,460)	2691 (2547,2835)	2297 (2175,2418)
Age 85y+	1801 (1603,2000)	327 (298,355)	348 (310,385)	438 (401,476)	993 (745,1240)	3870 (3503,4237)	2905 (2663,3148)
Dementia							
Age 65-74y	2433 (585,4281)	403 (331,474)	450 (279,621)	537 (380,693)	1209 (-255,2673)	5058 (2627,7490)	3896 (1913,5878)
Age 75-84y	3020 (2233,3806)	246 (198,294)	269 (191,346)	497 (415,580)	1713 (703,2722)	5626 (4319,6932)	4066 (3206,4925)
Age 85y+	2416 (1725,3107)	134 (92,176)	244 (177,311)	459 (370,549)	1962 (850,3074)	5062 (3738,6387)	3256 (2488,4024)
Four+ vs Three							
No dementia							
Age 65-74y	5345 (5243,5447)	948 (930,966)	1584 (1552,1617)	1472 (1448,1496)	1528 (1465,1591)	10880 (10721,11039)	9370 (9232,9508)
Age 75-84y	6558 (6427,6690)	846 (830,862)	1554 (1517,1591)	1547 (1521,1573)	2468 (2377,2559)	12970 (12771,13169)	10511 (10344,10677)
Age 85y+	7983 (7758,8209)	745 (718,771)	1324 (1272,1376)	1563 (1520,1606)	4993 (4736,5251)	16566 (16166,16966)	11615 (11333,11896)
Dementia							
Age 65-74y	13250 (12053,14447)	988 (903,1072)	2235 (2040,2430)	2730 (2583,2877)	8593 (7395,9791)	27510 (25683,29336)	19284 (17918,20649)
Age 75-84y	10855 (10208,11501)	641 (598,683)	1567 (1478,1657)	2084 (2005,2163)	6925 (6154,7696)	21826 (20785,22867)	15208 (14478,15938)
Age 85y+	8481 (7969,8993)	500 (467,532)	978 (912,1044)	1548 (1477,1618)	3651 (2872,4429)	14701 (13770,15633)	11561 (10972,12149)
Increases with age							
Age75-84y vs 65-74y							
No dementia							
None	80 (41,119)	6 (-1,13)	-28 (-36,-19)	-44 (-53,-35)	110 (79,141)	112 (53,170)	19 (-33,70)
One	276 (231,320)	76 (61,90)	21 (10,32)	50 (39,62)	243 (204,282)	654 (580,728)	417 (356,477)
Two	400 (343,457)	64 (52,75)	21 (7,35)	75 (60,91)	437 (387,487)	983 (891,1076)	559 (485,633)
Three	614 (513,714)	18 (2,34)	23 (0,46)	80 (62,98)	569 (508,629)	1290 (1149,1432)	735 (613,857)
Four or more	1827 (1695,1959)	-84 (-102,-66)	-7 (-50,35)	155 (125,185)	1509 (1418,1599)	3381 (3174,3589)	1875 (1700,2051)
Dementia							
None	267 (-1737,2272)	42 (-48,132)	-182 (-312,-52)	-99 (-293,96)	6859 (3814,9904)	7166 (3445,10887)	38 (-2059,2135)
One	-608 (-2374,1158)	50 (-17,117)	-194 (-303,-85)	-97 (-230,36)	6773 (4946,8599)	6367 (3763,8971)	-925 (-2790,940)
Two	-1567 (-3228,95)	72 (12,133)	-154 (-280,-28)	-239 (-371,-106)	4834 (3426,6243)	3384 (1156,5612)	-1949 (-3713,-184)

Appendix 1, as supplied by the author. Appendix to: Tonelli M, Wiebe N, Joannette Y, et al. Age, multimorbidity and dementia with health care costs in older Albertan people: a population-based retrospective cohort study. *CMAJ Open* 2022. DOI: 10.9778/cmajo.2021003500289. Copyright © 2022 The Author(s) or their employer(s). To receive this resource in an accessible format, please contact us at cmajgroup@cmaj.ca.

Comparisons	Hospital costs	Medication costs	ACCS costs	Claim costs	LTC costs	Total costs	No LTC total costs
Three	-980 (-2111,151)	-84 (-153,-15)	-336 (-478,-193)	-278 (-399,-157)	5338 (4105,6570)	3952 (2192,5711)	-1779 (-3036,-522)
Four or more	-3375 (-4134,-2616)	-432 (-494,-369)	-1004 (-1168,-839)	-924 (-1041,-808)	3669 (2957,4382)	-1732 (-2900,-564)	-5855 (-6762,-4947)
Age 85y+ vs 75-84y							
No dementia							
None	-114 (-159,-70)	-131 (-139,-123)	-194 (-204,-183)	-264 (-274,-253)	176 (108,243)	-527 (-618,-435)	-679 (-740,-618)
One	527 (416,637)	-107 (-132,-83)	-99 (-171,-28)	-163 (-185,-141)	1728 (1522,1934)	1917 (1642,2193)	142 (-19,302)
Two	953 (820,1087)	-76 (-98,-54)	-128 (-153,-103)	-113 (-140,-87)	2282 (2094,2469)	2960 (2696,3225)	599 (436,762)
Three	1590 (1413,1768)	-126 (-149,-102)	-151 (-187,-114)	-62 (-95,-29)	2882 (2686,3078)	4139 (3832,4446)	1208 (991,1424)
Four or more	3015 (2826,3205)	-227 (-248,-207)	-381 (-431,-331)	-46 (-83,-9)	5407 (5214,5601)	7734 (7412,8057)	2311 (2070,2553)
Dementia							
None	-777 (-2283,728)	-361 (-437,-284)	-242 (-343,-140)	-47 (-226,132)	11437 (8068,14807)	10666 (6804,14528)	-1528 (-3139,82)
One	-697 (-2005,611)	-336 (-391,-281)	-212 (-287,-136)	-46 (-145,53)	11100 (9345,12856)	10344 (8128,12560)	-1377 (-2748,-6)
Two	-474 (-1250,302)	-360 (-410,-311)	-286 (-359,-214)	-79 (-170,12)	13013 (11824,14202)	12477 (11028,13925)	-1293 (-2141,-446)
Three	-1078 (-1774,-381)	-472 (-516,-428)	-311 (-388,-234)	-117 (-199,-35)	13262 (12302,14223)	11913 (10714,13113)	-2103 (-2880,-1326)
Four or more	-3452 (-3886,-3018)	-613 (-644,-582)	-900 (-978,-822)	-654 (-720,-587)	9988 (9493,10484)	4789 (4099,5479)	-5751 (-6264,-5237)

ACCS Ambulatory Care Classification System, CAD Canadian dollars, CI confidence interval, LTC long-term care

Marginal differences in mean annual costs (in CAD) are reported: for dementia vs no dementia by age and number of morbidities categories; for increases in the number of morbidities by dementia and age categories and; for increases in age category by dementia and number of morbidities categories. These models include 3-way and 2-way interactions terms for dementia, age, and number of morbidity. No LTC costs include hospitalizations, medications, ACCS and provider claims All costs are reported in \$1000 Canadian dollar units and are inflated to 2017 costs using the consumer price index for all items in Canada. Unshaded cells show significant increases in cost; shaded cells show significant decreases in cost and grey font shows non-significant differences.

Table S3. Marginal annual mean costs (in CAD) for dementia by age and number of morbidities in participants ≥85 years

Morbidities	Participant-years ¹	Hospital costs Mean (95%CI)	Medication costs Mean (95%CI)	ACCS costs Mean (95%CI)	Claim costs Mean (95%CI)	LTC costs Mean (95%CI)	Total costs Mean (95%CI)
<i>No dementia</i>							
Age 85-89y							
None	37,235	245 (202-288)	115 (104-125)	144 (130-157)	232 (217-248)	436 (342-530)	1,132 (1,015-1,248)
One	34,388	1,372 (1,256-1,488)	619 (595-643)	567 (541-593)	820 (797-843)	1,588 (1,393-1,783)	4,960 (4,707-5,214)
Two	55,091	2,442 (2,302-2,582)	991 (968-1,015)	875 (845-904)	1,224 (1,195-1,252)	2,106 (1,941-2,272)	7,660 (7,408-7,912)
Three	65,043	3,941 (3,778-4,104)	1,319 (1,295-1,344)	1,207 (1,169-1,245)	1,632 (1,597-1,667)	2,806 (2,634-2,978)	10,964 (10,677-11,251)
Four or more	175,418	11,490 (11,298-11,682)	2,103 (2,083-2,123)	2,572 (2,524-2,620)	3,182 (3,144-3,220)	7,267 (7,082-7,451)	26,946 (26,608-27,284)
Age 90-94y							
None	24,420	174 (119-229)	50 (42-58)	70 (55-85)	107 (94-120)	401 (289-513)	745 (615-874)
One	11,744	1,583 (1,375-1,791)	505 (462-547)	592 (289-894)	669 (625-713)	2,794 (2,393-3,196)	6,087 (5,497-6,676)
Two	18,613	3,055 (2,796-3,314)	895 (854-936)	733 (699-768)	1,097 (1,059-1,134)	4,398 (3,991-4,805)	10,132 (9,601-10,663)
Three	23,005	5,235 (4,878-5,591)	1,211 (1,174-1,248)	1,098 (1,048-1,149)	1,565 (1,519-1,611)	5,833 (5,423-6,244)	14,913 (14,305-15,520)
Four or more	66,191	13,705 (13,388-14,022)	1,922 (1,893-1,952)	2,268 (2,205-2,332)	3,118 (3,067-3,169)	11,910 (11,554-12,266)	32,998 (32,448-33,547)
Age 95y+							
None	30,653	70 (38-101)	9 (7-11)	13 (10-17)	26 (20-32)	233 (144-323)	325 (228-422)
One	4,439	1,678 (1,249-2,107)	243 (210-276)	280 (234-326)	437 (379-494)	5,203 (4,122-6,284)	7,695 (6,453-8,937)
Two	5,275	3,566 (3,000-4,132)	587 (539-634)	567 (495-640)	894 (823-965)	8,783 (7,638-9,929)	14,276 (12,890-15,662)
Three	6,084	6,530 (5,800-7,259)	954 (875-1,034)	940 (851-1,028)	1,523 (1,397-1,650)	11,558 (10,342-12,773)	21,107 (19,573-22,640)
Four or more	16,110	14,815 (14,109-15,521)	1,561 (1,503-1,620)	2,024 (1,905-2,142)	3,037 (2,917-3,157)	19,913 (18,972-20,853)	40,973 (39,684-42,262)
<i>Dementia</i>							
Age 85-89y							
None	1,668	7,089 (5,660-8,518)	547 (478-616)	709 (570-849)	1,774 (1,527-2,020)	35,701 (32,722-38,681)	45,673 (42,388-48,958)
One	5,737	8,795 (7,925-9,665)	854 (803-905)	893 (825-960)	1,980 (1,890-2,070)	35,399 (33,812-36,987)	48,187 (46,367-50,008)
Two	11,867	11,227 (10,407-12,047)	1,105 (1,051-1,159)	1,108 (1,043-1,174)	2,352 (2,249-2,455)	36,147 (35,054-37,240)	52,027 (50,677-53,377)
Three	17,522	13,216 (12,633-13,800)	1,209 (1,173-1,245)	1,324 (1,259-1,389)	2,765 (2,695-2,835)	37,307 (36,441-38,172)	55,967 (54,923-57,012)
Four or more	82,467	22,401 (22,030-22,772)	1,772 (1,746-1,798)	2,418 (2,359-2,476)	4,430 (4,376-4,483)	42,032 (41,598-42,465)	73,577 (72,961-74,193)
Age 90-94y							
None	1,029	6,087 (4,339-7,835)	416 (335-497)	480 (388-572)	1,508 (1,322-1,693)	41,078 (37,035-45,122)	49,840 (45,385-54,296)
One	3,327	8,507 (7,529-9,485)	624 (561-688)	763 (695-832)	1,970 (1,853-2,086)	43,560 (41,468-45,652)	55,474 (53,259-57,689)
Two	7,349	10,355 (9,618-11,093)	803 (757-850)	928 (865-992)	2,278 (2,186-2,370)	43,111 (41,725-44,496)	57,467 (55,914-59,020)
Three	11,313	13,175 (12,439-13,911)	994 (948-1,039)	1,218 (1,117-1,319)	2,819 (2,707-2,930)	44,838 (43,750-45,926)	62,983 (61,678-64,288)
Four or more	50,298	20,762 (20,330-21,194)	1,413 (1,383-1,442)	2,046 (1,986-2,106)	4,211 (4,146-4,276)	48,838 (48,307-49,369)	77,193 (76,511-77,875)
Age 95y+							
None	687	4,164 (2,467-5,861)	171 (93-248)	247 (178-316)	913 (713-1,112)	35,585 (28,621-42,549)	40,912 (33,216-48,608)
One	1,569	6,619 (4,374-8,864)	267 (218-315)	504 (418-590)	1,489 (1,330-1,648)	45,653 (41,400-49,905)	54,549 (49,531-59,568)
Two	3,353	7,424 (6,443-8,406)	471 (414-527)	745 (632-859)	2,132 (1,970-2,293)	48,414 (45,811-51,017)	58,855 (55,924-61,786)
Three	4,996	10,205 (9,204-11,207)	605 (549-660)	969 (851-1,087)	2,595 (2,437-2,752)	53,614 (51,730-55,498)	67,412 (65,244-69,580)
Four or more	18,266	16,364 (15,695-17,034)	962 (920-1,003)	1,601 (1,519-1,684)	3,848 (3,718-3,979)	55,963 (55,031-56,894)	77,950 (76,762-79,137)

Appendix 1, as supplied by the author. Appendix to: Tonelli M, Wiebe N, Joannette Y, et al. Age, multimorbidity and dementia with health care costs in older Albertan people: a population-based retrospective cohort study. *CMAJ Open* 2022. DOI: 10.9778/cmajo.2021003500289. Copyright © 2022 The Author(s) or their employer(s). To receive this resource in an accessible format, please contact us at cmajgroup@cmaj.ca.

Morbidities	Participant-years ¹	Hospital costs Mean (95%CI)	Medication costs Mean (95%CI)	ACCS costs Mean (95%CI)	Claim costs Mean (95%CI)	LTC costs Mean (95%CI)	Total costs Mean (95%CI)

ACCS Ambulatory Care Classification System, CAD Canadian dollars, CI confidence interval, LTC long-term care

Marginal mean annual costs are reported for fixed values of dementia, age and the number of morbidities. These models include 3-way and 2-way interactions terms for dementia, age, and number of morbidity. No LTC costs include hospitalizations, medications, ACCS and provider claims All costs are reported in \$1000 Canadian dollar units and are inflated to 2017 costs using the consumer price index for all items in Canada. Unshaded cells show significant increases in cost; shaded cells show significant decreases in cost and grey font shows non-significant differences.

¹Participant-years correspond to number of full or partial fiscal-years for each participant

Table S4. Marginal differences in mean annual costs in participants ≥85 years (in CAD)

Comparisons	Hospital costs	Medication costs	ACCS costs	Claim costs	LTC costs	Total costs	No LTC total costs
Increases with dementia (referent no dementia)							
Age 85-89y							
None	6844 (5415,8274)	433 (363,503)	566 (426,706)	1541 (1294,1788)	35266 (32286,38245)	44541 (41255,47828)	9179 (7602,10756)
One	7423 (6545,8301)	235 (180,290)	326 (255,396)	1160 (1067,1253)	33811 (32214,35409)	43227 (41391,45063)	9035 (8076,9994)
Two	8785 (7953,9617)	113 (56,171)	234 (163,304)	1128 (1021,1235)	34041 (32938,35144)	44368 (42997,45738)	10257 (9328,11185)
Three	9276 (8670,9881)	-110 (-154,-67)	117 (42,192)	1133 (1055,1210)	34501 (33622,35379)	45003 (43925,46081)	10379 (9691,11067)
Four or more	10911 (10492,11330)	-331 (-363,-299)	-154 (-229,-80)	1248 (1182,1313)	34765 (34302,35227)	46632 (45957,47306)	11616 (11117,12115)
Age 90-94y							
None	5913 (4165,7662)	366 (285,447)	410 (317,503)	1400 (1214,1586)	40677 (36634,44720)	49096 (44640,53551)	7882 (5970,9794)
One	6924 (5924,7924)	120 (45,195)	172 (-139,482)	1300 (1176,1425)	40766 (38643,42888)	49387 (47101,51673)	8386 (7205,9566)
Two	7301 (6519,8082)	-92 (-153,-30)	195 (123,267)	1181 (1082,1281)	38713 (37276,40150)	47335 (45701,48968)	8505 (7620,9389)
Three	7940 (7121,8759)	-217 (-275,-160)	120 (8,233)	1254 (1133,1374)	39005 (37852,40158)	48070 (46639,49501)	9094 (8132,10057)
Four or more	7057 (6518,7596)	-510 (-550,-469)	-222 (-307,-138)	1093 (1010,1175)	36928 (36304,37552)	44195 (43333,45058)	7411 (6770,8052)
Age 95y+							
None	4094 (2396,5792)	162 (85,239)	234 (165,303)	886 (687,1086)	35352 (28387,42316)	40587 (32891,48283)	5277 (3430,7124)
One	4941 (2659,7223)	24 (-34,82)	224 (127,321)	1052 (884,1221)	40449 (36071,44828)	46854 (41693,52015)	5979 (3560,8398)
Two	3858 (2725,4991)	-116 (-189,-43)	178 (44,312)	1238 (1062,1414)	39631 (36811,42451)	44579 (41358,47800)	5080 (3780,6381)
Three	3676 (2428,4923)	-350 (-445,-254)	29 (-95,153)	1071 (869,1273)	42057 (39840,44273)	46305 (43677,48934)	4365 (2889,5840)
Four or more	1549 (572,2526)	-600 (-671,-529)	-422 (-565,-279)	812 (635,988)	36050 (34761,37339)	36977 (35248,38705)	1359 (163,2555)
Increases with the number of morbidities							
One vs None							
No dementia							
Age 85-89y	1127 (1003,1251)	504 (478,530)	423 (395,452)	588 (560,615)	1152 (942,1362)	3829 (3555,4102)	2548 (2383,2712)
Age 90-94y	1409 (1194,1624)	455 (411,498)	522 (218,825)	562 (516,607)	2393 (1984,2802)	5342 (4745,5940)	2858 (2408,3307)
Age 95y+	1608 (1178,2038)	234 (201,267)	267 (221,313)	411 (353,468)	4970 (3890,6050)	7370 (6129,8612)	2590 (2057,3124)
Dementia							
Age 85-89y	1706 (31,3380)	307 (225,388)	183 (36,330)	206 (-56,468)	-302 (-3584,2980)	2514 (-1166,6195)	2403 (566,4241)
Age 90-94y	2420 (416,4423)	209 (108,309)	283 (169,398)	462 (245,679)	2482 (-1971,6934)	5633 (740,10526)	3361 (1163,5560)
Age 95y+	2455 (-358,5268)	96 (5,187)	257 (148,366)	576 (322,831)	10067 (1979,18156)	13637 (4508,22766)	3292 (296,6287)
Two vs One							
No dementia							
Age 85-89y	1070 (888,1251)	372 (340,405)	308 (270,346)	404 (368,440)	518 (276,760)	2699 (2355,3044)	2145 (1918,2372)
Age 90-94y	1472 (1140,1804)	391 (333,448)	142 (-163,447)	428 (370,485)	1604 (1062,2145)	4045 (3276,4815)	2382 (1845,2919)
Age 95y+	1889 (1187,2590)	344 (288,400)	287 (202,373)	457 (367,547)	3580 (2072,5088)	6581 (4778,8383)	2780 (1955,3606)

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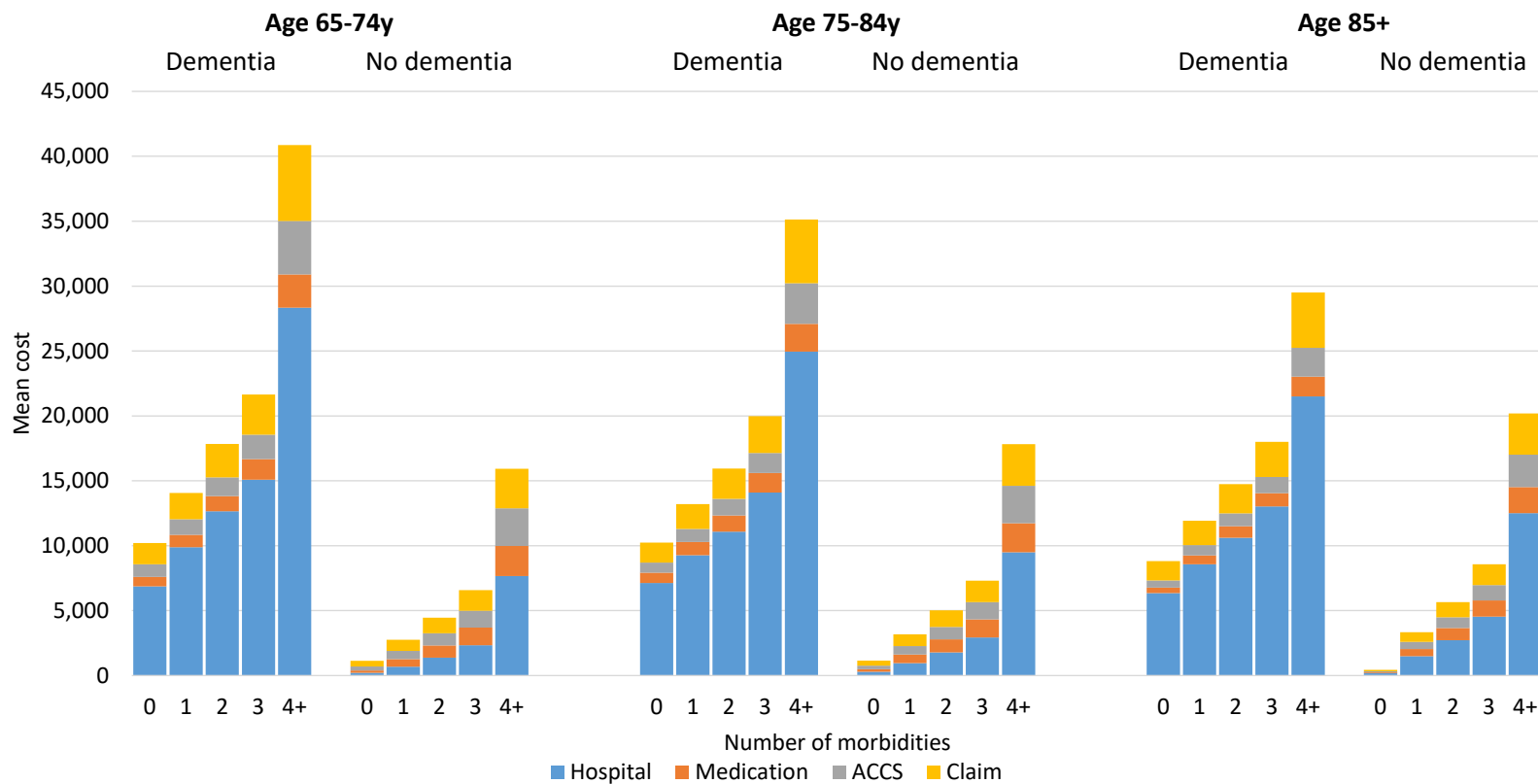
Comparisons	Hospital costs	Medication costs	ACCS costs	Claim costs	LTC costs	Total costs	No LTC total costs
Dementia							
Age 85-89y	2432 (1230,3633)	251 (180,322)	216 (122,309)	372 (237,508)	748 (-1095,2591)	3840 (1641,6039)	3367 (2047,4687)
Age 90-94y	1848 (616,3081)	179 (103,255)	165 (72,258)	308 (161,456)	-449 (-2875,1976)	1993 (-632,4619)	2501 (1121,3881)
Age 95y+	805 (-1653,3263)	204 (132,276)	241 (101,382)	643 (417,868)	2762 (-2145,7668)	4306 (-1423,10035)	1882 (-733,4497)
Three vs Two							
No dementia							
Age 85-89y	1499 (1285,1713)	328 (296,360)	332 (288,377)	409 (364,453)	700 (479,921)	3304 (2936,3672)	2584 (2316,2852)
Age 90-94y	2180 (1740,2620)	316 (264,368)	365 (308,421)	468 (410,527)	1435 (887,1983)	4781 (3999,5563)	3314 (2799,3829)
Age 95y+	2963 (2040,3887)	367 (277,457)	372 (259,486)	630 (485,774)	2774 (1194,4355)	6831 (4833,8828)	4309 (3220,5399)
Dementia							
Age 85-89y	1990 (982,2998)	104 (42,165)	216 (124,307)	413 (290,536)	1160 (-160,2480)	3940 (2298,5581)	2707 (1583,3830)
Age 90-94y	2820 (1774,3865)	190 (128,252)	290 (171,408)	541 (397,684)	1727 (49,3405)	5516 (3564,7468)	3903 (2703,5103)
Age 95y+	2781 (1378,4184)	134 (58,209)	223 (60,386)	463 (238,687)	5200 (2081,8318)	8557 (5008,12106)	3594 (1963,5224)
Four+ vs Three							
No dementia							
Age 85-89y	7549 (7298,7800)	784 (753,814)	1365 (1305,1426)	1549 (1498,1601)	4461 (4219,4702)	15982 (15548,16415)	11273 (10953,11594)
Age 90-94y	8470 (7993,8947)	711 (666,757)	1170 (1092,1249)	1553 (1485,1621)	6077 (5554,6599)	18085 (17281,18889)	11955 (11390,12520)
Age 95y+	8286 (7270,9301)	607 (511,703)	1084 (939,1228)	1513 (1339,1688)	8355 (6863,9847)	19866 (17890,21842)	11462 (10226,12698)
Dementia							
Age 85-89y	9185 (8492,9877)	563 (519,607)	1094 (1007,1181)	1665 (1577,1752)	4725 (3786,5664)	17610 (16425,18796)	12511 (11723,13298)
Age 90-94y	7587 (6733,8441)	419 (366,472)	828 (711,945)	1392 (1264,1520)	4000 (2825,5176)	14210 (12770,15651)	10272 (9266,11278)
Age 95y+	6159 (4958,7361)	357 (289,425)	633 (492,773)	1254 (1051,1457)	2349 (297,4401)	10538 (8122,12954)	8457 (7030,9883)
Increases with age							
Age 90-94y vs 85-89y							
No dementia							
None	-71 (-140,-2)	-65 (-77,-53)	-74 (-94,-54)	-125 (-144,-106)	-35 (-160,90)	-387 (-542,-232)	-310 (-431,-190)
One	211 (-25,447)	-114 (-159,-70)	25 (-279,329)	-151 (-198,-103)	1207 (809,1604)	1126 (526,1727)	0 (-459,459)
Two	613 (321,905)	-96 (-140,-53)	-141 (-186,-97)	-127 (-172,-82)	2292 (1890,2694)	2472 (1923,3022)	237 (-113,586)
Three	1294 (904,1683)	-108 (-149,-68)	-109 (-167,-51)	-67 (-123,-12)	3027 (2623,3431)	3949 (3314,4583)	966 (511,1422)
Four or more	2215 (1849,2580)	-181 (-212,-149)	-304 (-371,-236)	-64 (-126,-2)	4643 (4299,4988)	6052 (5464,6640)	1648 (1203,2093)
Dementia							
None	-1002 (-3230,1226)	-131 (-231,-32)	-230 (-390,-69)	-266 (-562,30)	5377 (1195,9559)	4167 (-478,8812)	-1607 (-4032,818)
One	-288 (-1583,1007)	-229 (-303,-156)	-129 (-224,-35)	-10 (-152,132)	8161 (5886,10435)	7286 (4756,9816)	-649 (-2074,776)
Two	-871 (-1962,220)	-301 (-368,-235)	-180 (-270,-90)	-74 (-208,60)	6964 (5400,8528)	5440 (3582,7297)	-1515 (-2729,-301)
Three	-42 (-965,882)	-215 (-270,-161)	-106 (-224,13)	54 (-75,182)	7531 (6293,8769)	7016 (5494,8538)	-319 (-1385,748)

Comparisons	Hospital costs	Medication costs	ACCS costs	Claim costs	LTC costs	Total costs	No LTC total costs
Four or more	-1639 (-2201,-1078)	-359 (-395,-323)	-371 (-451,-292)	-219 (-301,-137)	6806 (6203,7410)	3616 (2769,4462)	-2557 (-3212,-1902)
Age 95+ vs 90-94y							
No dementia							
None	-104 (-167,-41)	-41 (-49,-33)	-57 (-73,-41)	-81 (-95,-67)	-168 (-290,-46)	-420 (-562,-277)	-336 (-452,-220)
One	95 (-380,570)	-261 (-313,-210)	-312 (-618,-6)	-232 (-302,-163)	2409 (1346,3471)	1608 (332,2885)	-603 (-1287,80)
Two	512 (-105,1128)	-308 (-365,-252)	-166 (-244,-88)	-203 (-280,-126)	4385 (3253,5517)	4144 (2750,5538)	-204 (-909,500)
Three	1295 (490,2101)	-257 (-336,-177)	-158 (-253,-64)	-42 (-173,90)	5724 (4517,6931)	6194 (4633,7754)	791 (-165,1747)
Four or more	1110 (344,1877)	-361 (-422,-300)	-245 (-372,-118)	-81 (-209,47)	8003 (7079,8926)	7975 (6652,9299)	299 (-640,1237)
Dementia							
None	-1923 (-4297,450)	-245 (-347,-144)	-233 (-341,-125)	-595 (-843,-347)	-5493 (-12326,1339)	-8928 (-16445,-1412)	-2941 (-5501,-380)
One	-1888 (-4308,532)	-358 (-433,-282)	-259 (-366,-152)	-481 (-663,-298)	2093 (-2081,6267)	-925 (-5826,3977)	-3010 (-5571,-449)
Two	-2931 (-4138,-1724)	-333 (-399,-266)	-183 (-310,-56)	-146 (-324,32)	5303 (2667,7940)	1388 (-1578,4354)	-3629 (-4994,-2264)
Three	-2970 (-4197,-1742)	-389 (-457,-321)	-249 (-403,-96)	-224 (-413,-35)	8776 (6798,10754)	4429 (2103,6755)	-3938 (-5377,-2500)
Four or more	-4397 (-5183,-3612)	-451 (-499,-404)	-445 (-543,-347)	-362 (-504,-220)	7125 (6149,8100)	756 (-528,2041)	-5754 (-6695,-4812)

ACCS Ambulatory Care Classification System, CAD Canadian dollars, CI confidence interval, LTC long-term care

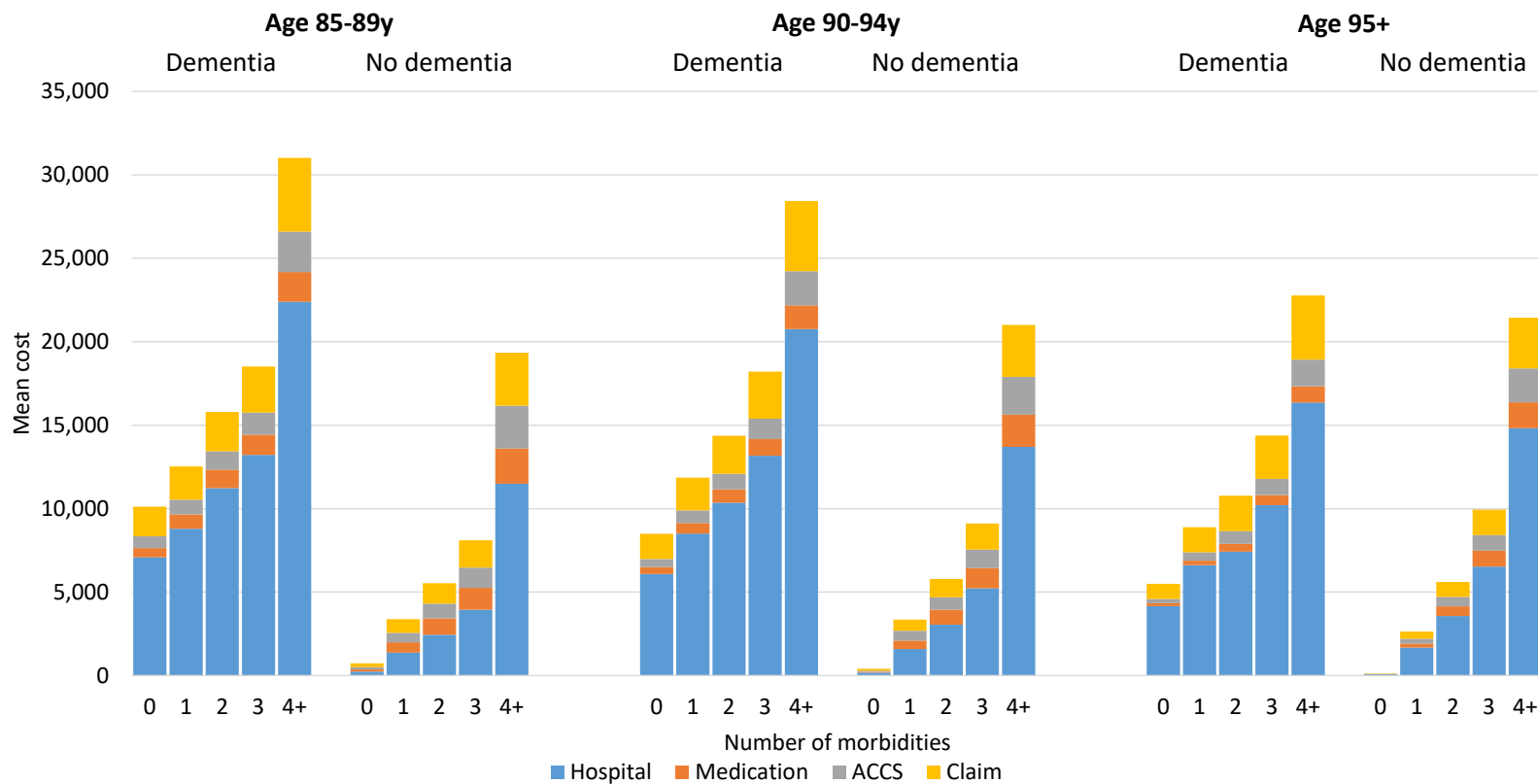
Marginal differences in mean annual costs (in CAD) are reported: for dementia vs no dementia by age and number of morbidities categories; for increases in the number of morbidities by dementia and age categories and; for increases in age category by dementia and number of morbidities categories. These models include 3-way and 2-way interactions terms for dementia, age, and number of morbidity. No LTC costs include hospitalizations, medications, ACCS and provider claims All costs are reported in \$1000 Canadian dollar units and are inflated to 2017 costs using the consumer price index for all items in Canada. Unshaded cells show significant increases in cost; shaded cells show significant decreases in cost and grey font shows non-significant differences.

Figure S1. Marginal annual mean costs (in CAD) for dementia by age and number of morbidities in participants ≥65 years, excluding costs of long-term care



ACCS Ambulatory Care Classification System, CAD Canadian dollars

Figure S2. Marginal annual mean costs (in CAD) for dementia by age and number of morbidities in participants ≥85 years, excluding costs of long-term care



ACCS Ambulatory Care Classification System, CAD Canadian dollars

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