Supplementary Appendix 1: Summary of data sources used in study

Database	Description and population coverage
Discharge Abstract Database (DAD)	National hospital administrative database maintained by the Canadian Institute for Health Information (CIHI). The DAD captures demographic, administrative and clinical information for discharges from acute inpatient hospitals in Ontario, including discharges following death or transfer. Reporting of acute inpatient care is mandatory in Ontario. During the study period, diagnoses were coded using **ICD-10-CA** and interventions using the Canadian Classification of Health Interventions. **Metadata and data quality:** https://www.cihi.ca/en/discharge-abstract-database-dad-metadata
Ontario Drug Benefit (ODB) Claims Database	Contains records of prescription medications dispensed and reimbursed through Ontario's publicly funded drug programs. Coverage includes all Ontario residents aged $\geq$65 years as well as eligible younger residents, including recipients of Ontario Works or the Ontario Disability Support Program, residents of long-term care homes, recipients of publicly funded home and community care, and people enrolled in the Trillium Drug Program. **Metadata and data quality:** https://data.ontario.ca/dataset/ontario-drug-benefit-odb-monthly-data https://pubmed.ncbi.nlm.nih.gov/12879144/
Ontario Health Insurance Plan (OHIP) Claims Database	Contains claims submitted for physician services covered by Ontario's universal health insurance program, including inpatient and outpatient physician services. It contains traditional fee-for-service claims and "shadow billings" submitted by physicians remunerated through many non-fee-for-service models. **Metadata and data quality** https://datadictionary.ices.on.ca/Applications/DataDictionary/Library.aspx?Library=OHIP https://pubmed.ncbi.nlm.nih.gov/27567819/
interRAI assessment data — Home Care and Long-Term Care *(RAI-HC and RAI-MDS 2.0/CCRS during the study period)*	Standardised comprehensive clinical assessments used for people receiving publicly funded home care or living in long-term care. RAI-HC contains multidimensional assessments of home care clients, while the legacy RAI-MDS 2.0 data submitted to CIHI's Continuing Care Reporting System (CCRS) contain corresponding information for long-term care and continuing care residents. Assessments include clinical, cognitive, functional, behavioural, social and service-use information. **Metadata and data quality:** https://www.cihi.ca/en/continuing-care-reporting-system-ccrs-metadata https://www.cihi.ca/en/home-care-reporting-system-hcrs-metadata https://www.cihi.ca/sites/default/files/document/hcrs-data-users-guide-2022-2023-en.pdf https://www.cihi.ca/sites/default/files/document/long-term-care-data-2022-2023-guide-en.pdf
Registered Persons Database (RPDB)	Population registry containing information on people who have been issued an Ontario health card. It contains demographic information and periods of eligibility for publicly funded provincial health insurance. Current descriptions identify date of birth, sex, residential information, dates of health insurance eligibility and, for deceased individuals, date of death. **Metadata and data quality:** https://data.ontario.ca/dataset/registered-persons-database-rpdb

Supplementary Appendix 2: Diagnostic codes and medications used in case ascertainment of dementia

Codes used in case ascertainment of dementia

ICD-9: Description
046.1x Creutzfeldt-Jakob disease
290.0x Senile dementia, uncomplicated
290.1x Presenile dementia
290.2x Senile dementia with delusional or depressive features
290.3x Senile dementia with delirium
290.4x Vascular dementia
294.1x Dementia in other diseases
294.2x Dementia, unspecified
331.0x Alzheimer's disease
331.1x Frontotemporal dementia
331.5x Idiopathic normal pressure hydrocephalus

ICD-10: Description
F00.x Dementia in Alzheimer's disease
F01.x Vascular dementia
F02.x Dementia in other diseases classified elsewhere
F03.x Unspecified dementia
G30.x Alzheimer's disease

OHIP Diagnosis Codes
290 Dementias
331 Other cerebral degenerations

ATC code: Drug name
N06DX01 – Memantine
N06DA03 – Rivastigmine
N06DA04 – Galantamine
N06DA02 – Donepezil
N06DA01 – Tacrine

interRAI Assessment Items: Description
J1G (RAI-HC): Alzheimer's
J1H (RAI-HC): Dementia other than Alzheimer's
I1C (interRAI HC): Alzheimer's disease
I1D (interRAI HC): Dementia other than Alzheimer's disease
I1R (CCRS-LTC): Alzheimer's disease
I1V (CCRS-LTC): Dementia other than Alzheimer's disease

Supplementary Appendix 3: List of all log-linear models fit for 10-year, three ascertainment source analysis

All Ontario Without RAI (8 Models)	abundance	stderr	df	AIC	BIC
[DADODB,DADOHIP,ODBOHIP]	472271	5104.18	0	97.1567	170.781
[DADOHIP,ODBOHIP]	422737	3500.17	1	821.767	884.873
[DADODB,ODBOHIP]	344354	769.789	1	2426.71	2489.81
[ODBOHIP,DAD]	341229	679.361	2	2541.03	2593.62
[DADODB,DADOHIP]	315042	411.135	1	5424.6	5487.71
[DADOHIP,ODB]	315642	402.234	2	5454.04	5506.63
[DADODB,OHIP]	318085	361.288	2	5592.6	5645.19
[DAD,ODB,OHIP]	318390	354.017	3	5604.66	5646.74

Supplementary Appendix 4: List of all log-linear models fit for 10-year, four ascertainment source analysis

All Ontario With RAI (113 Models)	abundance	stderr	df	AIC	BIC
[DADODBOHIP,DADODBRAI,DADOHIPRAI]	527716	4231.75	1	199.776	348.725
[DADODBOHIP,DADODBRAI,DADOHIPRAI,ODBOHIPRAI]	550754	13044.4	0	197.821	357.409
[DADODBOHIP,DADODBRAI,ODBOHIPRAI]	499582	4247.67	1	219.269	368.217
[DADODBRAI,ODBOHIPRAI,DADOHIP]	492675	3718.73	2	233.255	371.564
[DADODBOHIP,DADODBRAI,OHIPRAI]	512689	3096.06	2	233.804	372.113
[DADODBRAI,DADOHIPRAI,ODBOHIP]	517246	3655.34	2	235.702	374.012
[DADODBOHIP,DADOHIPRAI,ODBRAI]	521486	3992.86	2	237.18	375.49
[DADODBRAI,DADOHIPRAI,ODBOHIPRAI]	501920	7683.49	1	233.186	382.135
[DADODBOHIP,ODBOHIPRAI,DADRAI]	491757	3789.6	2	243.826	382.135
[DADODBRAI,DADOHIP,ODBOHIP,OHIPRAI]	506919	2794.87	3	257.626	385.296
[DADODBOHIP,DADOHIPRAI,ODBOHIPRAI]	514280	9834.03	1	238.568	387.516
[ODBOHIPRAI,DADODB,DADOHIP,DADRAI]	484237	3200.62	3	260.459	388.129
[DADODBOHIP,DADRAI,ODBRAI,OHIPRAI]	507004	2877.48	3	270.892	398.563
[DADOHIPRAI,ODBOHIPRAI,DADODB]	482555	6101.34	2	262.356	400.665
[DADOHIPRAI,DADODB,ODBOHIP,ODBRAI]	509673	3356.29	3	281.419	409.089
[DADODB,DADOHIP,DADRAI,ODBOHIP,ODBRAI,OHIPRAI]	499845	2490.59	4	302.682	419.713
[ODBOHIPRAI,DADOHIP,DADRAI]	480587	3128.92	4	387.362	504.393
[DADOHIPRAI,ODBOHIPRAI]	463998	5206.85	3	376.954	504.624
[DADOHIP,DADRAI,ODBOHIP,ODBRAI,OHIPRAI]	498475	2483.97	5	445.913	552.305
[DADOHIPRAI,ODBOHIP,ODBRAI]	505510	3279.22	4	435.351	552.383
[DADODBRAI,ODBOHIPRAI]	391635	1247.71	3	3911.67	4039.34
[ODBOHIPRAI,DADODB,DADRAI]	398190	1259.7	4	4088.91	4205.94
[ODBOHIPRAI,DADRAI]	393030	1149.64	5	4379.09	4485.49
[DADODBRAI,ODBOHIP,OHIPRAI]	427229	1418.13	4	5403.74	5520.77
[DADODB,DADRAI,ODBOHIP,ODBRAI,OHIPRAI]	429211	1357.85	5	5418.22	5524.61
[DADRAI,ODBOHIP,ODBRAI,OHIPRAI]	422811	1256.7	6	5932.94	6028.69
[DADODBOHIP,ODBOHIPRAI]	377378	1217.22	3	8493.71	8621.38
[ODBOHIPRAI,DADODB,DADOHIP]	391880	1349.97	4	9040.61	9157.64
[ODBOHIPRAI,DADOHIP]	386119	1222.71	5	9413.37	9519.76
[DADODBOHIP,DADOHIPRAI]	395559	1443.02	3	10172.8	10300.4
[DADODBOHIP,ODBRAI,OHIPRAI]	425820	1598.11	4	10338.8	10455.8
[DADODB,DADOHIP,ODBOHIP,ODBRAI,OHIPRAI]	432049	1554.97	5	10430.9	10537.3
[DADOHIPRAI,DADODB,ODBOHIP]	407761	1503.28	4	10477.7	10594.7
[DADODBOHIP,DADRAI,OHIPRAI]	422401	1556.41	4	10866.8	10983.9
[DADOHIPRAI,ODBOHIP]	400944	1366.21	5	10955.1	11061.5
[DADODB,DADOHIP,DADRAI,ODBOHIP,OHIPRAI]	429013	1523.18	5	10976	11082.4
[DADOHIP,ODBOHIP,ODBRAI,OHIPRAI]	425304	1453.09	6	11062	11157.8
[ODBOHIPRAI,DADODB]	359087	612.049	5	11439.8	11546.1
[DADOHIP,DADRAI,ODBOHIP,OHIPRAI]	422457	1422.25	6	11589.4	11685.2
[ODBOHIPRAI,DAD]	355866	549.297	6	11785.3	11881.1
[DADODB,DADRAI,ODBOHIP,OHIPRAI]	399336	1028.66	6	13683.1	13778.8
[DADRAI,ODBOHIP,OHIPRAI]	390602	883.1	7	14606.8	14691.9
[DADODBOHIP,DADODBRAI]	354701	421.324	3	14666.7	14794.4
[DADODBRAI,DADOHIPRAI]	357804	603.797	3	14769	14896.7
[DADODBOHIP,DADRAI,ODBRAI]	356795	431.231	4	15420.5	15537.5
[DADOHIPRAI,DADODB,ODBRAI]	361807	633.753	4	15434	15551.1
[DADODB,ODBOHIP,ODBRAI,OHIPRAI]	380648	703.362	6	15481.8	15577.5
[DADOHIPRAI,ODBRAI]	360838	613.001	5	15508.9	15615.3
[DADODBRAI,DADOHIP,ODBOHIP]	358046	434.772	4	15940.7	16057.8
[ODBOHIP,ODBRAI,OHIPRAI,DAD]	374868	616.907	7	16295.2	16380.3
[DADOHIP,DADRAI,ODBOHIP,ODBRAI]	360078	443.494	6	16621.9	16717.7
[DADODB,DADOHIP,DADRAI,ODBOHIP,ODBRAI]	360097	443.49	5	16620.9	16727.3
[DADODBRAI,ODBOHIP]	352643	365.337	5	17124.6	17231
[DADODBRAI,DADOHIP,OHIPRAI]	372953	689.153	4	17358	17475
[DADODB,DADOHIP,DADRAI,ODBRAI,OHIPRAI]	376470	705.376	5	17761.7	17868.1
[DADOHIP,DADRAI,ODBRAI,OHIPRAI]	374973	680.429	6	17918.2	18014
[DADODB,DADRAI,ODBOHIP,ODBRAI]	354295	371.719	6	17932.4	18028.1

Continued

Supplementary Appendix 4: Continued

All Ontario With RAI (113 Models)	abundance	stderr	df	AIC	BIC
[DADRAI,ODBOHIP,ODBRAI]	354017	367.625	7	17974.7	18059.8
[DADODBRAI,OHIPRAI]	364212	555.028	5	18598.1	18704.4
[DADODBOHIP,OHIPRAI]	381931	920.595	5	18735.4	18841.8
[DADODB,DADRAI,ODBRAI,OHIPRAI]	367077	569.152	6	19149.1	19244.8
[DADRAI,ODBRAI,OHIPRAI]	366204	555.004	7	19252	19337.1
[DADODB,DADOHIP,ODBOHIP,OHIPRAI]	389475	962.065	6	19263.3	19359
[DADOHIP,ODBOHIP,OHIPRAI]	386399	913.574	7	19629.1	19714.2
[DADODBOHIP,ODBRAI]	348952	355.142	5	20536.2	20642.6
[DADODBOHIP,DADRAI]	345874	323.267	5	21724.8	21831.2
[DADOHIPRAI,DADODB]	343332	378.14	5	21761.2	21867.6
[DADOHIPRAI,ODB]	342504	362.387	6	21878	21973.7
[DADODB,DADOHIP,ODBOHIP,ODBRAI]	351746	365.331	6	22049.2	22145
[DADODB,ODBOHIP,OHIPRAI]	366157	567.118	7	22068.2	22153.3
[DADOHIP,ODBOHIP,ODBRAI]	351323	360.786	7	22161	22246.1
[ODBOHIP,OHIPRAI,DAD]	362926	516.125	8	22560.1	22634.5
[DADODB,ODBOHIP,ODBRAI]	348200	320.903	7	22892.2	22977.3
[ODBOHIP,ODBRAI,DAD]	347466	311.388	8	23074.9	23149.4
[DADODB,DADOHIP,DADRAI,ODBOHIP]	348404	332.026	6	23382.4	23478.1
[DADODB,DADOHIP,ODBRAI,OHIPRAI]	364891	592.784	6	23409.7	23505.4
[DADOHIP,DADRAI,ODBOHIP]	348070	328.456	7	23473.5	23558.6
[DADOHIP,ODBRAI,OHIPRAI]	361977	544.524	7	23826.3	23911.4
[DADODB,DADRAI,ODBOHIP]	345652	297.585	7	24055.6	24140.8
[DADODBRAI,DADOHIP]	342672	286.51	5	24064.9	24171.3
[DADRAI,ODBOHIP]	345073	290.096	8	24203.6	24278.1
[DADODBRAI,OHIP]	340746	259.909	6	24517.4	24613.2
[DADODB,ODBRAI,OHIPRAI]	354457	428.534	7	25046.1	25131.2
[DADOHIP,DADRAI,ODBRAI]	343872	289.855	7	25161.3	25246.4
[DADODB,DADOHIP,DADRAI,ODBRAI]	343968	291.859	6	25152	25247.8
[ODBRAI,OHIPRAI,DAD]	352935	405.434	8	25323.2	25397.6
[DADRAI,ODBRAI,OHIP]	341799	262.561	8	25673.4	25747.9
[DADODB,DADRAI,ODBRAI,OHIP]	341862	264.01	7	25668.5	25753.7
[DADODB,DADOHIP,DADRAI,OHIPRAI]	352780	416.255	6	25962.5	26058.2
[DADODBOHIP,RAI]	340917	279.209	6	26005.9	26101.7
[DADOHIP,DADRAI,OHIPRAI,ODB]	351401	395.27	7	26212	26297.1
[DADODB,DADRAI,OHIPRAI]	349922	376.88	7	26494.5	26579.6
[DADRAI,OHIPRAI,ODB]	348869	361.26	8	26700.7	26775.1
[DADODB,DADOHIP,ODBOHIP,RAI]	343103	286.508	7	27923.8	28008.9
[DADOHIP,ODBOHIP,RAI]	342880	284.023	8	27984.4	28058.9
[DADODB,ODBOHIP,RAI]	341340	263.416	8	28351.6	28426.1
[ODBOHIP,DAD,RAI]	340962	258.356	9	28448	28511.8
[DADODB,DADOHIP,ODBRAI]	340172	261.893	7	29193.3	29278.4
[DADOHIP,ODBRAI]	339820	256.883	8	29277.2	29351.7
[DADODB,ODBRAI,OHIP]	338718	241.406	8	29535.7	29610.2
[ODBRAI,DAD,OHIP]	338443	237.59	9	29605.4	29669.2
[DADODB,DADOHIP,DADRAI]	338599	247.822	7	29973	30058.2
[DADOHIP,DADRAI,ODB]	338311	243.653	8	30041.6	30116
[DADODB,DADRAI,OHIP]	337398	230.434	8	30252	30326.4
[DADRAI,ODB,OHIP]	337167	227.168	9	30309.7	30373.5
[DADODB,DADOHIP,OHIPRAI]	346717	365.175	7	30491.4	30576.5
[DADOHIP,OHIPRAI,ODB]	345828	350.777	8	30651.7	30726.2
[DADODB,OHIPRAI]	343327	312.929	8	31124.7	31199.2
[OHIPRAI,DAD,ODB]	342748	304.188	9	31243	31306.8
[DADODB,DADOHIP,RAI]	335663	225.236	8	33587.6	33662.1
[DADOHIP,ODB,RAI]	335468	222.218	9	33631.1	33694.9
[DADODB,OHIP,RAI]	334845	212.21	9	33762	33825.8
[DAD,ODB,OHIP,RAI]	334683	209.744	10	33799.4	33852.6

Supplementary Appendix 5: Capture-recapture results for three-year, three ascertainment source analysis

Strata	Observed			
	Cases	Cumulative incidence (%)	Person-years of follow-up	Incidence per 10,000 person-years
All	96,290	3.7%	7,419,648	130
Female	55,778	4.0%	3,983,180	140
Male	40,512	3.4%	3,436,469	118
Rural	10,921	3.3%	923,066	118
Urban	85,068	3.7%	6,464,559	132
Income Q1 (lowest)	24,453	4.6%	1,471,738	166
Income Q2	21,215	3.8%	1,541,020	138
Income Q3	17,872	3.4%	1,451,445	123
Income Q4	16,199	3.4%	1,413,460	115
Income Q5 (highest)	16,222	3.1%	1,507,930	108

Strata	Estimated		
	Cases (95% CI)	Cumulative incidence% (95% CI)	Proportion unrecorded (95% CI)
All	213,253 (204,711, 222,459)	8.2 (7.8, 8.5)	54.8 (53.0, 56.7)
Female	124,034 (117,266, 131,546)	8.8 (8.3, 9.3)	55.0 (52.4, 57.6)
Male	89,752 (84,586, 95,507)	7.5 (7.0, 8.0)	54.9 (52.1, 57.6)
Rural	23,301 (21,035, 26,043)	7.0 (6.3, 7.8)	53.1 (48.1, 58.1)
Urban	189,982 (181,701, 198,969)	8.4 (8.0, 8.8)	55.2 (53.2, 57.2)
Income Q1 (lowest)	54,793 (50,526, 59,740)	10.3 (9.5, 11.2)	55.4 (51.6, 59.1)
Income Q2	43,402 (40,184, 47,142)	7.8 (7.2, 8.5)	51.1 (47.2, 55.0)
Income Q3	44,977 (40,557, 50,274)	8.7 (7.8, 9.7)	60.3 (55.9, 64.5)
Income Q4	38,555 (34,730, 43,176)	8.0 (7.2, 9.0)	58.0 (53.4, 62.5)
Income Q5 (highest)	32,847 (29,974, 36,307)	6.4 (5.8, 7.0)	50.6 (45.9, 55.3)