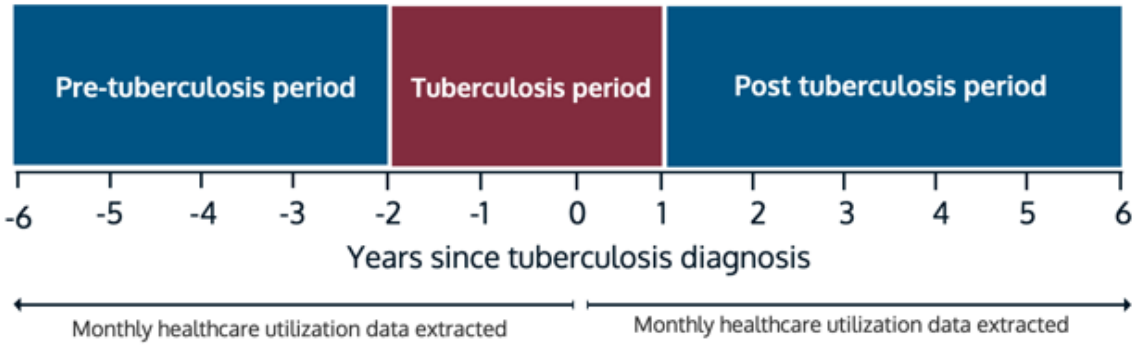
Supplementary Appendix

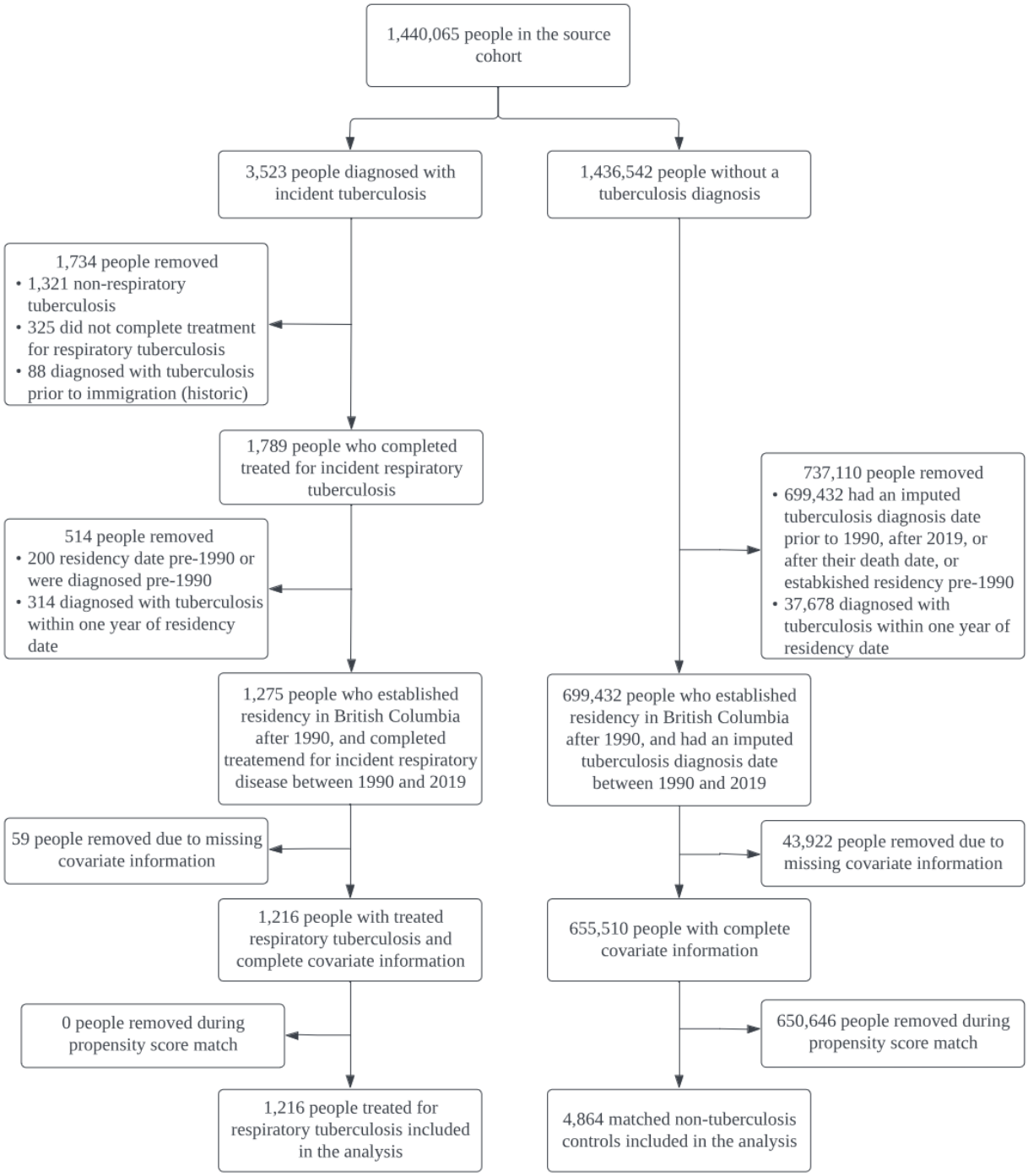
Supplementary Figure 1. Study periods



Supplementary Table 1. ICD-9 codes used to examine the impact treated tuberculosis had on different categories of out-patient physician encounters

Category	**ICD9 code range**
Diseases of the respiratory system	460 – 519
Diseases of the circulatory system	390 - 459
Mental disorders	290 - 319
Diseases of the genitourinary system	580 - 629
Infectious and parasitic diseases	001-139
Injury and poisoning	800 - 999
Endocrine, nutritional and metabolic diseases, and immunity disorders	240 - 279
Symptoms, signs, and ill-defined conditions	780 - 799

Supplementary Figure 2. Study flowchart



Supplementary Table 2. Population denominator summary for monthly intervals

Years since tuberculosis diagnosis	Monthly interval	Control population	Tuberculosis population
-5	-72	2789	692
	-71	2795	694
	-70	2825	702
	-69	2855	712
	-68	2877	717
	-67	2904	724
	-66	2930	733
	-65	2956	740
	-64	2977	744
	-63	3002	747
	-62	3017	752
	-61	3035	758
-4	-60	3051	766
	-59	3101	778
	-58	3108	781
	-57	3143	790
	-56	3163	795
	-55	3221	810
	-54	3239	814
	-53	3260	820
	-52	3269	824
	-51	3303	832
	-50	3348	844

Years since tuberculosis diagnosis	Monthly interval	Control population	Tuberculosis population
5	72	2896	705
	71	2920	710
	70	2936	714
	69	2955	719
	68	2980	728
	67	2998	737
	66	3029	745
	65	3055	756
	64	3074	763
	63	3100	771
	62	3121	777
	61	3139	783
4	60	3165	790
	59	3200	801
	58	3220	807
	57	3245	813
	56	3271	816
	55	3288	820
	54	3320	825
	53	3337	827
	52	3362	830
	51	3379	833
	50	3395	835

	-49	3371	849
-3	-48	3391	857
	-47	3437	868
	-46	3492	877
	-45	3533	885
	-44	3628	897
	-43	3663	909
	-42	3710	917
	-41	3741	928
	-40	3762	938
	-39	3810	941
	-38	3840	949
	-37	3854	958
-2	-36	3897	972
	-35	3921	978
	-34	3954	986
	-33	3976	992
	-32	3994	996
	-31	4015	1006
	-30	4029	1011
	-29	4047	1019
	-28	4094	1030
	-27	4145	1039
	-26	4201	1049
	-25	4227	1059
-1	-24	4269	1071

	49	3419	838
3	48	3441	846
	47	3464	848
	46	3488	850
	45	3527	852
	44	3557	855
	43	3588	860
	42	3611	870
	41	3640	882
	40	3667	891
	39	3698	899
	38	3718	903
	37	3749	908
2	36	3786	910
	35	3820	917
	34	3858	922
	33	3882	928
	32	3908	939
	31	3946	949
	30	3975	958
	29	4015	969
	28	4042	983
	27	4083	994
	26	4116	1008
	25	4153	1020
1	24	4175	1035

	-23	4332	1083
	-22	4362	1093
	-21	4402	1100
	-20	4452	1110
	-19	4497	1118
	-18	4581	1139
	-17	4642	1156
	-16	4691	1163
	-15	4724	1173
	-14	4762	1183
	-13	4809	1200
0	-12	4857	1214
	-11	4864	1216
	-10	4864	1216
	-9	4864	1216
	-8	4864	1216
	-7	4864	1216
	-6	4864	1216
	-5	4864	1216
	-4	4864	1216
	-3	4864	1216
	-2	4864	1216
	-1	4864	1216

	23	4204	1039
	22	4234	1048
	21	4261	1058
	20	4291	1069
	19	4329	1079
	18	4356	1092
	17	4382	1102
	16	4415	1110
	15	4448	1123
	14	4468	1129
	13	4504	1135
0	12	4528	1143
	11	4559	1148
	10	4600	1153
	9	4627	1159
	8	4650	1167
	7	4675	1175
	6	4700	1178
	5	4732	1189
	4	4761	1193
	3	4788	1203
	2	4810	1207
	1	4839	1211

Supplementary Table 3. Median follow-up time intervals for the study population

Time interval	**Control population**	**Tuberculosis population**
Median time (IQR) from date residency in British Columbia established to tuberculosis diagnosis date	7.7 years (3.7, 13.7)	7.7 years (3.6, 13.9)
Median time (IQR) from tuberculosis diagnosis date to Medical Service Plan or study end (31-December-2019)	7.8 years (3.5, 13.8)	7.2 years (3.0, 12.4)

Supplementary Figure 3. Results of the segmented regression analysis on out-patient physician encounters related to (a) diseases of the circulatory system, (b) mental disorders, (c) diseases of the genitourinary system, (d) infectious and parasitic disease, (e) injury and poisoning, (f) disease of the nervous system and sense, (g) endocrine, nutritional, and metabolic diseases, and immunity disorders, and (h) ill-defined conditions.

Figure 3a. Circulatory-related physician encounters

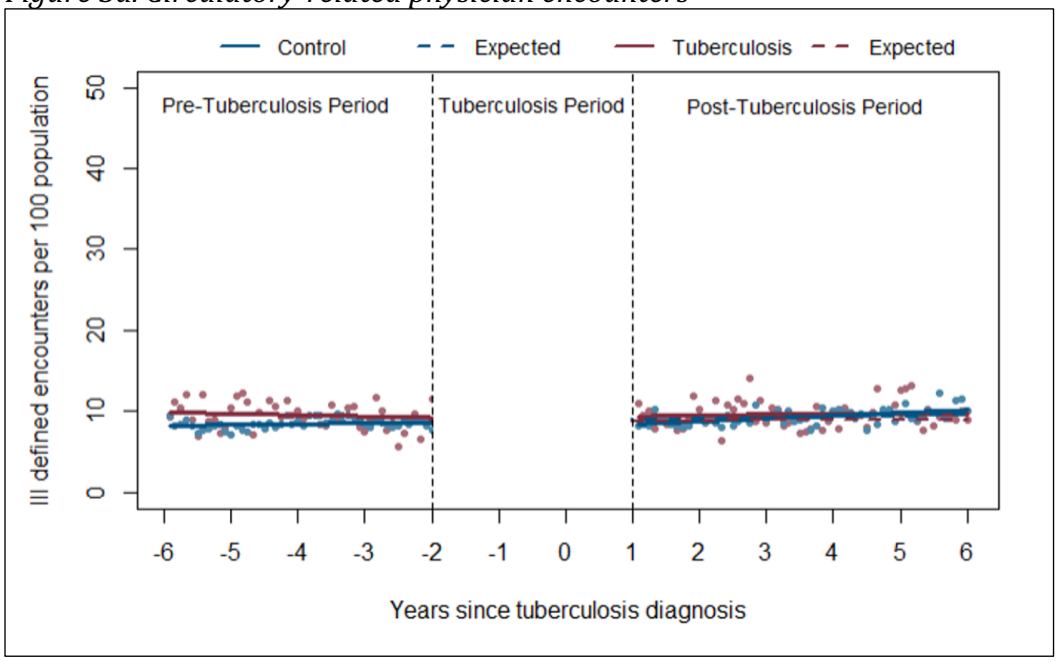


Figure 3b. Mental disorder-related physician encounters

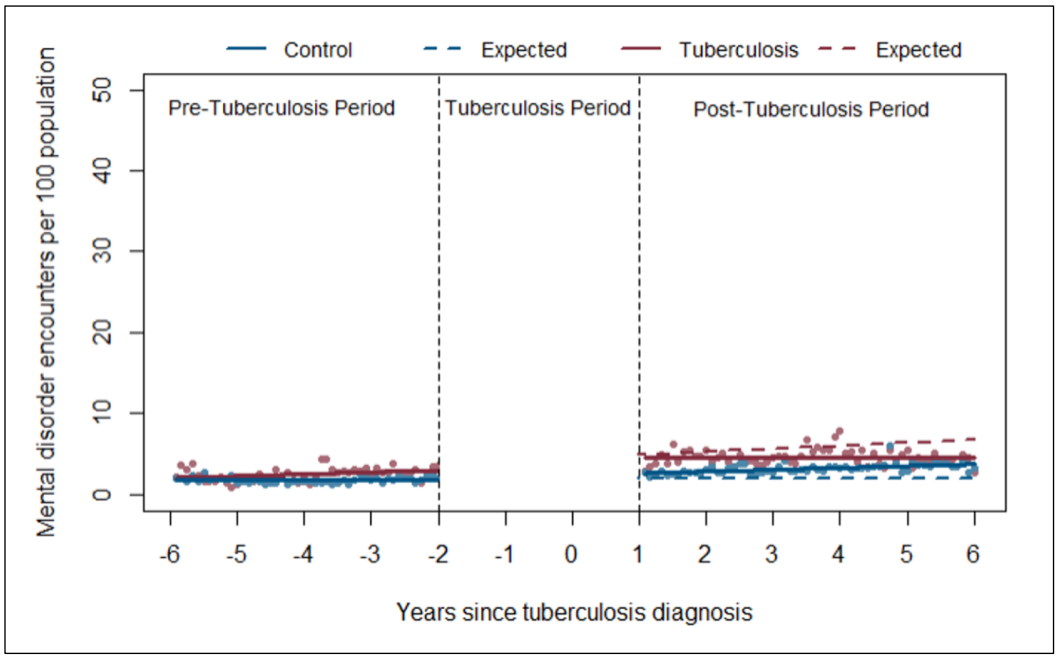


Figure 3c. Genitourinary-related physician encounters

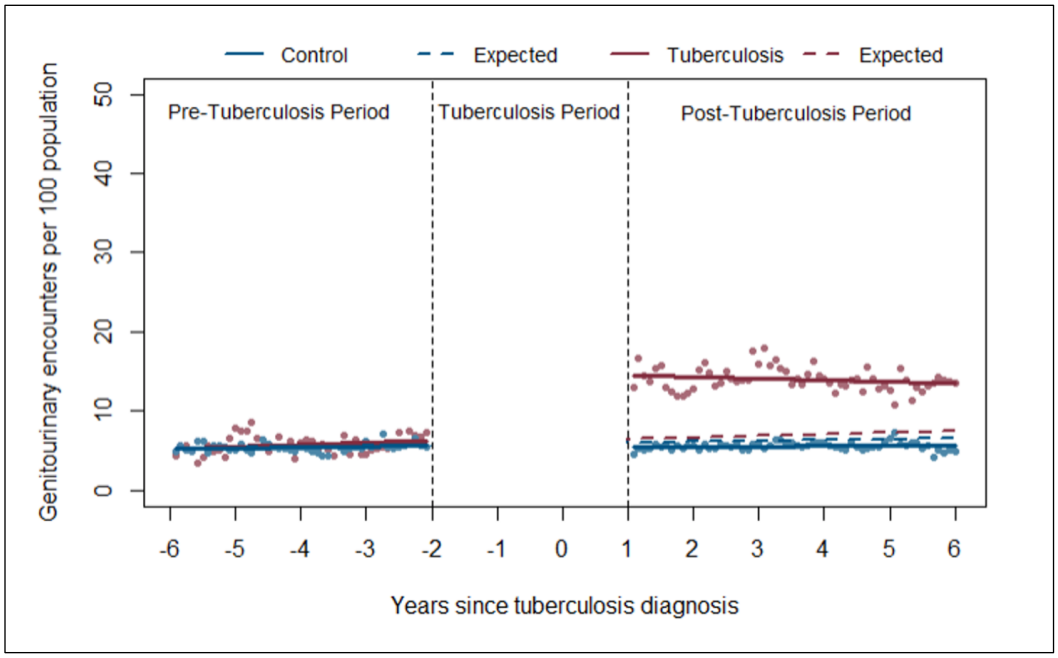


Figure 3d. Infectious and parasitic disease-related physician encounters

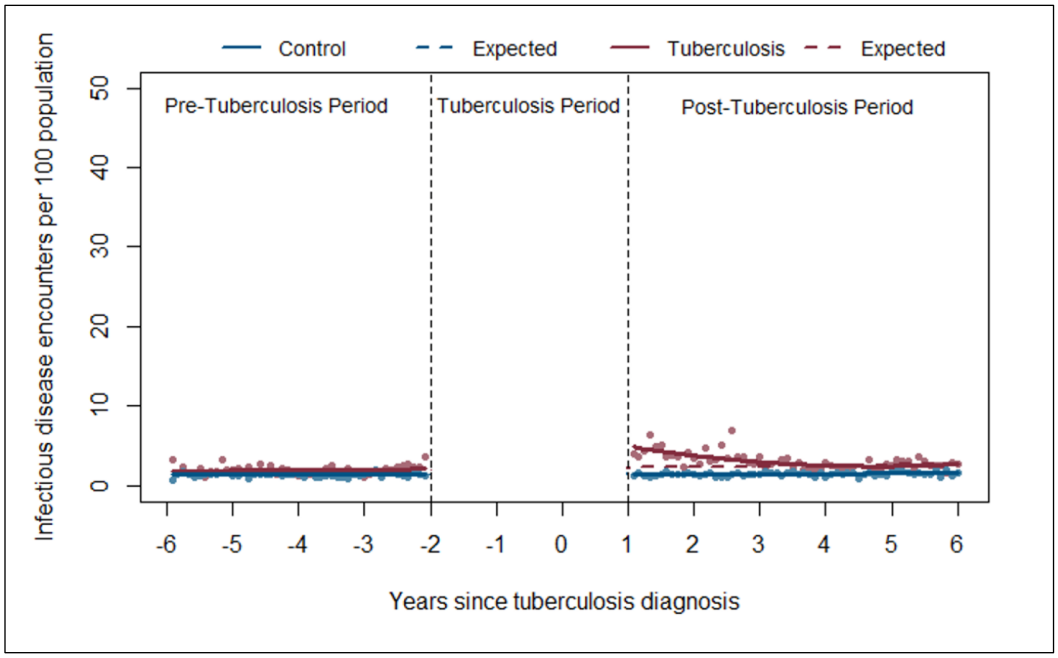


Figure 3e. Injury and poisoning-related physician encounters

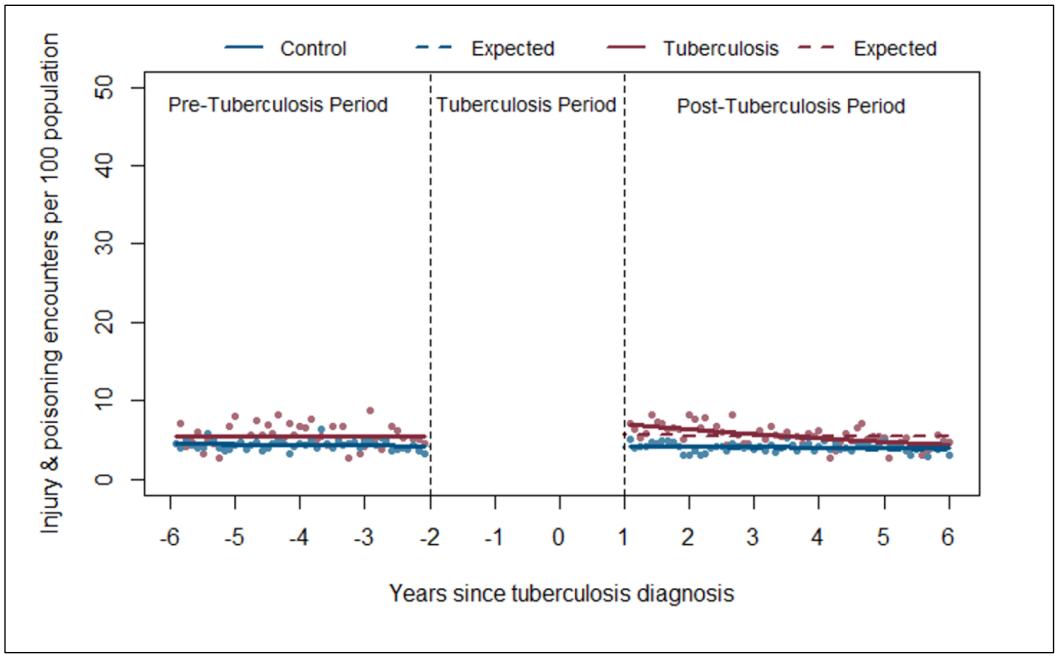


Figure 3f. Physician encounters related to endocrine, nutritional, and metabolic diseases, and immunity disorders

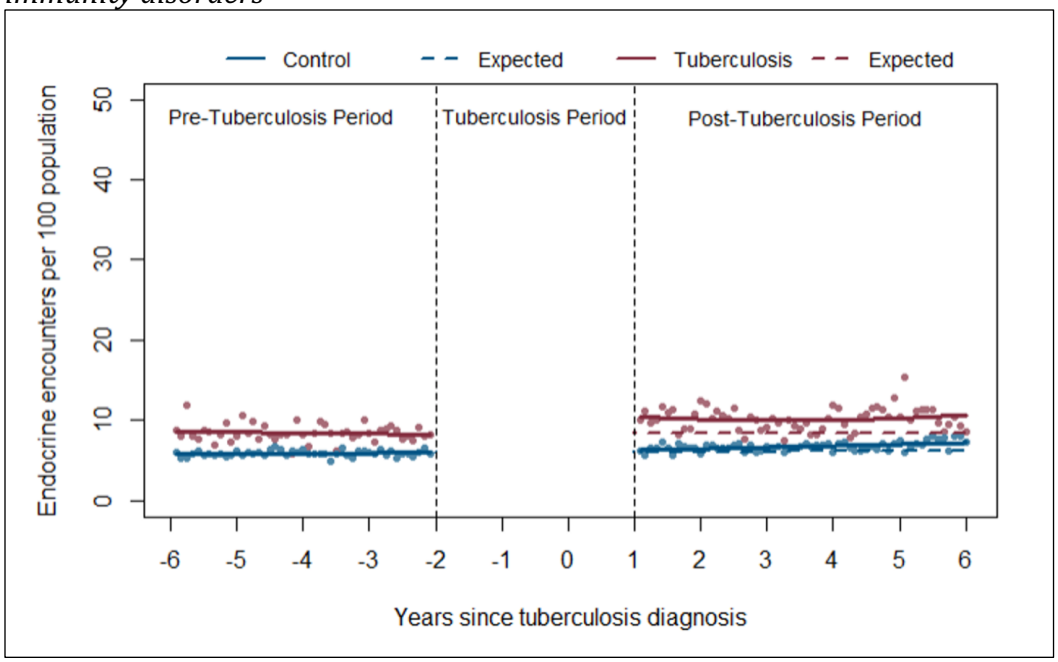
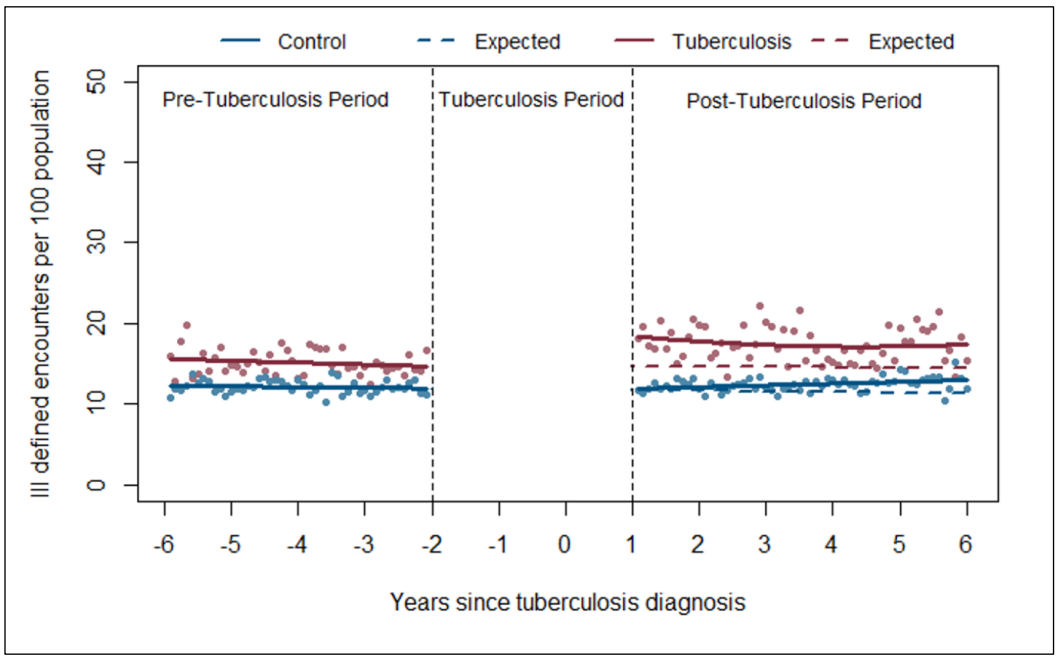


Figure 3g. Physician encounters related to ill-defined conditions



Supplementary Table 4. Changes in select outpatient physician encounters per 100 population at 1- and 5- years post-tuberculosis for people diagnosed with tuberculosis

	One year post tuberculosis					Five years post tuberculosis			
Physician encounter reason	**Expected monthly rate**	**Observed monthly rate (95% CI)**	**Absolute difference (95% CI)**	**Relative change (95% CI)**		**Expected monthly rate**	**Observed monthly rate (95% CI)**	**Absolute difference (95% CI)**	**Relative change (95% CI)**
Diseases of the circulatory system	9.8	9.4 (8.6, 10.2)	-0.4 (-1.2, 0.4)	-4.2% (-12.4, 3.6)		9.2	9.8 (9.2, 10.3)	0.6 (0.0, 1.1)	6.9% (0.0, 12.4)
Mental disorder	3.7	4.6 (4.3, 5.0)	0.9 (0.6, 1.3)	25.7% (17.5, 36.6)		5.6	4.6 (4.3, 4.8)	-1 (-0.8, -1.3)	-18.5% (-14.9, -23.8)
Diseases of the genitourinary system	5.7	14.6 (14.1, 15.1)	8.9 (8.4, 9.4)	156.7% (147.9, 165.5)		6.1	13.7 (13.4, 14.1)	7.6 (7.3, 8.0)	122.8% (117.9, 129.3)
Infectious and parasitic diseases	2.0	4.8 (4.4, 5.3)	2.8 (2.4, 3.3)	138.7% (118.8, 163.6)		2.5	2.4 (2.2, 2.6)	-0.1 (-0.3, 0.1)	-3.2% (-11.3, 4.9)
Injury and poisoning	5.1	7.0 (6.3, 7.7)	1.9 (1.2, 2.6)	37.8% (24.0, 51.5)		5.5	4.7 (4.4, 5.1)	-0.8 (-0.4, -1.1)	-14.7% (-7.4, -20.1)

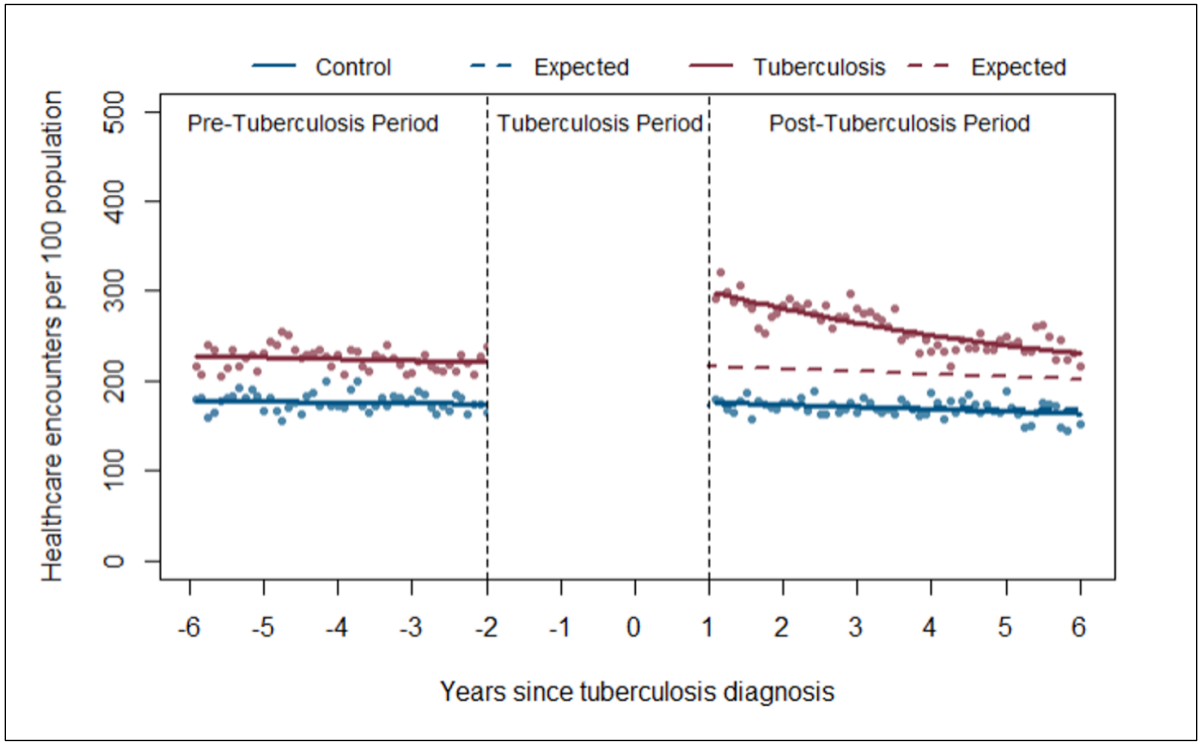
Endocrine, nutritional, and metabolic diseases, and immunity disorders	8.4	10.5 (9.7, 11.2)	2.0 (1.2, 2.7)	24.1% (14.6, 32.3)		8.8	10.3 (9.9, 10.7)	1.6 (1.1, 1.9)	16.7% (12.2, 21.2)
Symptoms, signs, and ill-defined conditions	15.3	18.4 (17.3, 19.5)	3.1 (2.0, 4.2)	20.2% (13.0, (27.4)		15.8	17.2 (16.7, 17.7)	1.4 (0.9, 1.9)	8.6% (5.4, 11.7)

Supplementary Table 5. Baseline characteristics of the coarsened exact matched tuberculosis and non-tuberculosis control populations

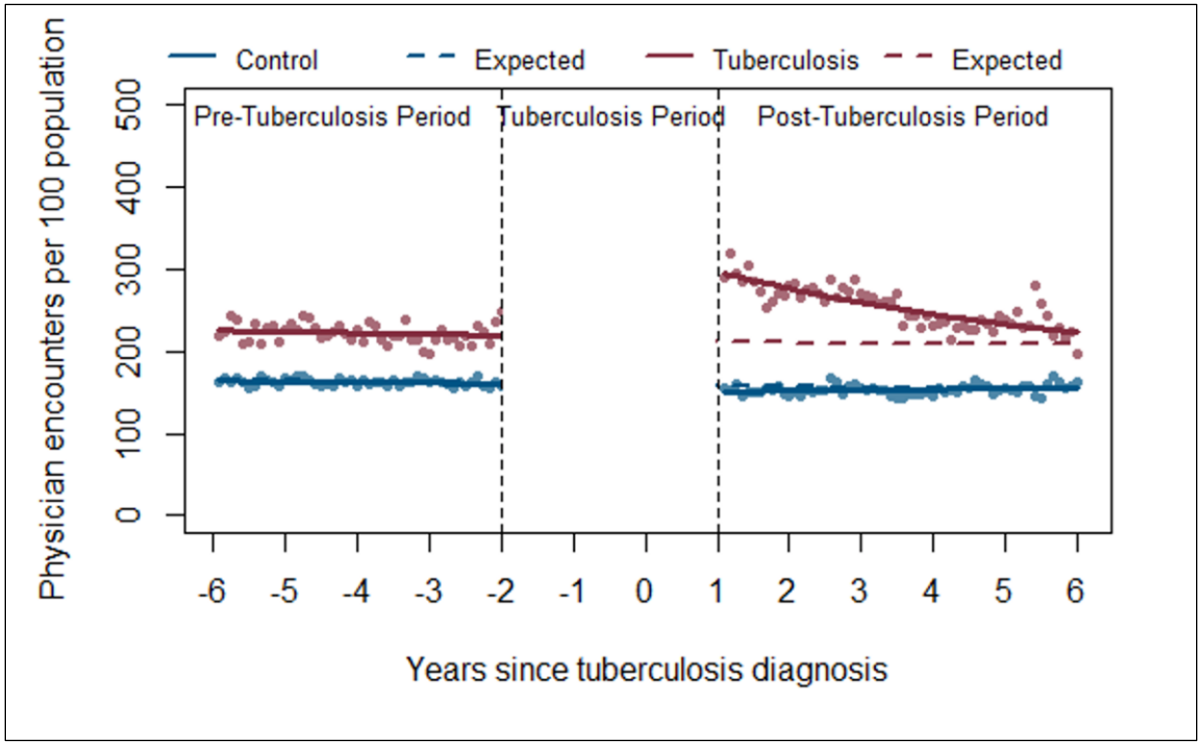
Characteristics	**Non-tuberculosis control population N (%)**	**Tuberculosis population N (%)**	**Standardized Mean Difference**
N	1108	1108	
Medical Service Plan start year			<0.001
1990 – 1995	414 (37.4)	414 (37.4)	
1996 – 2000	267 (24.1)	267 (24.1)	
2001 – 2005	166 (15.0)	166 (15.0)	
2006 – 2010	153 (13.8)	153 (13.8)	
2011 - 2015	89 (8.0)	89 (8.0)	
2016 - 2019	19 (1.7)	19 (1.7)	
Age at arrival to Canada, median (IOR)	42.0 (29.0, 58.0)	43.0 (28.0, 58.0)	0.022
Sex			<0.001
Male	619 (55.9)	619 (55.9)	
Female	489 (44.1)	489 (44.1)	
WHO tuberculosis incidence in country of origin			<0.001
< 30 per 100,000	20 (1.8)	20 (1.8)	
30 to 100 per 100,000	393 (35.5)	393 (35.5)	
101 to 200 per 100,000	363 (32.8)	363 (32.8)	
> 200 per 100,000	332 (30.0)	332 (30.0)	
WHO region of origin			<0.001
Western Pacific Region	720 (65.0)	720 (65.0)	
South-East Asia Region	298 (26.9)	298 (26.9)	
Eastern Mediterranean Region	29 (2.6)	29 (2.6)	
African Region	25 (2.3)	25 (2.3)	
European Region	23 (2.1)	23 (2.1)	

Region of the Americans	13 (1.2)	13 (1.2)	
Immigration class			<0.001
Family	587 (53.0)	587 (53.0)	
Economic	396 (35.7)	396 (35.7)	
Refugee	86 (7.8)	86 (7.8)	
Other	39 (3.5)	39 (3.5)	
Elixhauser comorbidity score, median (IQR)	0.0 (0.0, 0.0)	0.0 (0.0, 0.0)	<0.001
Neighbourhood income			<0.001
Lowest 20%	410 (37.0)	410 (37.0)	
Low-middle 20%	310 (28.0)	310 (28.0)	
Middle 20%	189 (17.1)	189 (17.1)	
Middle-high 20%	109 (9.8)	109 (9.8)	
Highest 20%	90 (8.1)	90 (8.1)	
Health service delivery area			<0.001
Metro	972 (87.7)	972 (87.7)	
Urban – Rural	124 (11.2)	124 (11.2)	
Rural - Remote	12 (1.1)	12 (1.1)	
Years since arrival, median (IQR)	7.0 (4.0, 14.0)	7.0 (4.0, 14.0)	0.004
Tuberculosis diagnosis year			<0.001
1990 - 1995	51 (4.6)	51 (4.6)	
1996 – 2000	122 (11.0)	122 (11.0)	
2001 – 2005	190 (17.1)	190 (17.1)	
2006 – 2010	223 (20.1)	223 (20.1)	
2011 – 2015	272 (24.5)	272 (24.5)	
2016 – 2019	250 (22.6)	250 (22.6)	

Supplementary Figure 4. Results of the segmented regression analysis for monthly rates of outpatient encounters, using coarsened exact matching rather than propensity score matching



Supplementary Figure 5. Results of the segmented regression analysis for monthly rates of outpatient encounters, restricted to people treated for respiratory tuberculosis between 2000 and 2019



The RECORD statement – checklist of items, extended from the STROBE statement, that should be reported in observational studies using routinely collected health data.

	Item No.	STROBE items	Location in manuscript where items are reported	RECORD items	Location in manuscript where items are reported
Title and abstract					
	1	(a) Indicate the study's design with a commonly used term in the title or the abstract (b) Provide in the abstract an informative and balanced summary of what was done and what was found	Abstract and title	RECORD 1.1: The type of data used should be specified in the title or abstract. When possible, the name of the databases used should be included. RECORD 1.2: If applicable, the geographic region and timeframe within which the study took place should be reported in the title or abstract. RECORD 1.3: If linkage between databases was conducted for the study, this should be clearly stated in the title or abstract.	Abstract Abstract Abstract
Introduction					
Background rationale	2	Explain the scientific background and rationale for the investigation being reported	Pg. 4		
Objectives	3	State specific objectives, including any prespecified hypotheses	Pg. 4 - 5		
Methods					
Study Design	4	Present key elements of study design early in the paper	Pg. 6		
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	Pg. 4 - 6		

Participants	6	*(a) Cohort study* - Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up *Case-control study* - Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls *Cross-sectional study* - Give the eligibility criteria, and the sources and methods of selection of participants *(b) Cohort study* - For matched studies, give matching criteria and number of exposed and unexposed *Case-control study* - For matched studies, give matching criteria and the number of controls per case	Pg. 6 Pg. 6 - 7	RECORD 6.1: The methods of study population selection (such as codes or algorithms used to identify subjects) should be listed in detail. If this is not possible, an explanation should be provided. RECORD 6.2: Any validation studies of the codes or algorithms used to select the population should be referenced. If validation was conducted for this study and not published elsewhere, detailed methods and results should be provided. RECORD 6.3: If the study involved linkage of databases, consider use of a flow diagram or other graphical display to demonstrate the data linkage process, including the number of individuals with linked data at each stage.	Pg. 6 NA - population selected from Provincial Registry Sup. figure 2 - study flow chart
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable.	Pg. 7	RECORD 7.1: A complete list of codes and algorithms used to classify exposures, outcomes, confounders, and effect modifiers should be provided. If these cannot be reported, an explanation should be provided.	Pg. 6 - 7; Sup. Table 1
Data sources/ measurement	8	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	Pg. 7 - 8		

Bias	9	Describe any efforts to address potential sources of bias	Pg. 7 - 8		
Study size	10	Explain how the study size was arrived at	Sup. figure 2 - study flow chart		
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen, and why	Pg. 6 - 8		
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding (b) Describe any methods used to examine subgroups and interactions (c) Explain how missing data were addressed (d) *Cohort study* - If applicable, explain how loss to follow-up was addressed *Case-control study* - If applicable, explain how matching of cases and controls was addressed *Cross-sectional study* - If applicable, describe analytical methods taking account of sampling strategy (e) Describe any sensitivity analyses	Pg. 8 - 9		
Data access and cleaning methods		..		RECORD 12.1: Authors should describe the extent to which the investigators had access to the database population used to create the study population.	Page 5; Contributions

				RECORD 12.2: Authors should provide information on the data cleaning methods used in the study.	Pg. 5
Linkage		..		RECORD 12.3: State whether the study included person-level, institutional-level, or other data linkage across two or more databases. The methods of linkage and methods of linkage quality evaluation should be provided.	Pg. 5
Results					
Participants	13	(a) Report the numbers of individuals at each stage of the study (*e.g.*, numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed) (b) Give reasons for non-participation at each stage. (c) Consider use of a flow diagram	Sup Figure 2 - study flow chart; pg. 10	RECORD 13.1: Describe in detail the selection of the persons included in the study (*i.e.*, study population selection) including filtering based on data quality, data availability and linkage. The selection of included persons can be described in the text and/or by means of the study flow diagram.	Sup Figure 2 - study flow chart; pg. 10
Descriptive data	14	(a) Give characteristics of study participants (*e.g.*, demographic, clinical, social) and information on exposures and potential confounders (b) Indicate the number of participants with missing data for each variable of interest (c) *Cohort study* - summarise follow-up time (*e.g.*, average and total amount)	Sup Figure 2 - study flow chart; Pg. 10; Table 1; Sup. Table 3		
Outcome data	15	*Cohort study* - Report numbers of outcome events or summary measures over time *Case-control study* - Report numbers in each exposure	Pg. 10 - 11; Table 2		

		category, or summary measures of exposure *Cross-sectional study* - Report numbers of outcome events or summary measures			
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (e.g., 95% confidence interval). Make clear which confounders were adjusted for and why they were included (b) Report category boundaries when continuous variables were categorized (c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	Pg. 10 - 11; Table 2		
Other analyses	17	Report other analyses done—e.g., analyses of subgroups and interactions, and sensitivity analyses	Pg. 11		
Discussion					
Key results	18	Summarise key results with reference to study objectives	Pg. 11 - 12		
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	Pg. 13	RECORD 19.1: Discuss the implications of using data that were not created or collected to answer the specific research question(s). Include discussion of misclassification bias, unmeasured confounding, missing data, and changing eligibility over time, as they pertain to the study being reported.	Pg. 13
Interpretation	20	Give a cautious overall interpretation of results considering objectives,			

		limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	Pg. 13 - 14		
Generalisability	21	Discuss the generalisability (external validity) of the study results	Pg. 13		
Other Information					
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	Funding statement		
Accessibility of protocol, raw data, and programming code		..		RECORD 22.1: Authors should provide information on how to access any supplemental information such as the study protocol, raw data, or programming code.	Data availability statement

*Reference: Benchimol EI, Smeeth L, Guttmann A, Harron K, Moher D, Petersen I, Sørensen HT, von Elm E, Langan SM, the RECORD Working Committee. The REporting of studies Conducted using Observational Routinely-collected health Data (RECORD) Statement. *PLoS Medicine* 2015; in press.