Table 1: Characteristics of the study cohort, stratified by juvenile arthritis (JA) case status and period of diagnosis

	Period of Diagnosis			
	≤ 2002[a]		2003–2012	
	JA Cases (n = 275)	Non-JA Controls (n = 332)	JA Cases (n = 111)	Non-JA Controls (n = 79)
Characteristic	n (%)	n (%)	n (%)	n (%)
Sex				
Male	94 (34.2)	125 (37.6)	40 (36.0)	20 (25.3)
Female	181 (65.8)	207 (62.4)	71 (64.0)	59 (74.7)
Age at diagnosis (years)				
0–10	188 (68.4)	188 (56.6)	40 (36.0)	32 (40.5)
11–15	87 (31.6)	144 (43.4)	71 (64.0)	47 (59.5)
Region of residence				
Urban	152 (55.3)	200 (60.2)	66 (59.5)	38 (48.1)
Rural	123 (44.7)	132 (39.8)	45 (40.5)	41 (51.9)
Income Quintile				
Q1 (Lowest/Not Found)	58 (21.1)	79 (23.8)	25 (22.5)	23 (29.1)
Q2	50 (18.2)	60 (18.1)	18 (16.2)	17 (21.5)
Q3	56 (20.4)	53 (16.0)	24 (21.6)	14 (17.7)
Q4	55 (20.0)	74 (22.3)	26 (23.4)	17 (21.5)
Q5 (Highest)	56 (20.4)	66 (19.9)	18 (16.2)	8 (10.1)

[a] The ≤1992 and 1993-2002 period of diagnosis groups were combined due to small (< 5) cell sizes in the ≤1992 period of diagnosis group

Table 2: Spearman correlation coefficients for the outcome variables across time periods

A) Any JA-related healthcare contact

Time Period	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1.00														
2	0.64	1.00													
3	0.52	0.76	1.00												
4	0.44	0.66	0.85	1.00											
5	0.40	0.53	0.68	0.78	1.00										
6	0.33	0.47	0.61	0.68	0.77	1.00									
7	0.33	0.46	0.53	0.61	0.68	0.77	1.00								
8	0.25	0.33	0.42	0.50	0.60	0.65	0.74	1.00							
9	0.27	0.34	0.43	0.47	0.53	0.57	0.67	0.70	1.00						
10	0.19	0.30	0.34	0.38	0.45	0.53	0.58	0.59	0.73	1.00					
11	0.20	0.22	0.27	0.31	0.36	0.41	0.46	0.48	0.57	0.65	1.00				
12	0.17	0.15	0.17	0.22	0.26	0.30	0.36	0.37	0.47	0.55	0.70	1.00			
13	0.17	0.13	0.19	0.20	0.23	0.28	0.29	0.28	0.35	0.41	0.57	0.68	1.00		
14	0.13	0.12	0.13	0.15	0.18	0.22	0.25	0.24	0.27	0.34	0.48	0.53	0.68	1.00	
15	0.10	0.10	0.11	0.13	0.17	0.22	0.25	0.22	0.26	0.32	0.41	0.46	0.59	0.69	1.00

B) Number of general practitioner (GP) visits

Time Period	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1.00														
2	0.71	1.00													
3	0.60	0.64	1.00												
4	0.60	0.61	0.62	1.00											
5	0.58	0.57	0.58	0.63	1.00										
6	0.49	0.49	0.53	0.57	0.65	1.00									
7	0.43	0.42	0.46	0.52	0.53	0.57	1.00								
8	0.37	0.39	0.46	0.45	0.50	0.50	0.57	1.00							
9	0.35	0.37	0.40	0.43	0.44	0.44	0.51	0.52	1.00						
10	0.32	0.31	0.34	0.40	0.40	0.40	0.43	0.46	0.50	1.00					
11	0.33	0.35	0.40	0.42	0.41	0.44	0.46	0.46	0.51	0.51	1.00				
12	0.26	0.29	0.33	0.31	0.34	0.35	0.34	0.37	0.40	0.45	0.51	1.00			
13	0.27	0.29	0.30	0.28	0.35	0.35	0.34	0.35	0.40	0.47	0.42	0.55	1.00		
14	0.20	0.23	0.20	0.23	0.26	0.27	0.27	0.29	0.27	0.34	0.37	0.47	0.53	1.00	
15	0.25	0.24	0.26	0.26	0.28	0.30	0.26	0.30	0.30	0.40	0.34	0.41	0.46	0.48	1.00

C) Number of specialist physician visits

Time Period	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1.00														
2	0.69	1.00													
3	0.61	0.73	1.00												
4	0.56	0.63	0.73	1.00											
5	0.53	0.57	0.64	0.76	1.00										
6	0.46	0.53	0.57	0.65	0.76	1.00									
7	0.42	0.48	0.51	0.59	0.67	0.72	1.00								
8	0.34	0.39	0.42	0.50	0.56	0.60	0.72	1.00							
9	0.36	0.36	0.39	0.44	0.48	0.54	0.60	0.74	1.00						
10	0.26	0.26	0.29	0.34	0.38	0.40	0.49	0.57	0.71	1.00					
11	0.27	0.28	0.27	0.31	0.34	0.37	0.43	0.49	0.57	0.64	1.00				
12	0.20	0.21	0.22	0.23	0.25	0.28	0.34	0.36	0.45	0.54	0.67	1.00			
13	0.21	0.19	0.19	0.19	0.21	0.26	0.31	0.33	0.40	0.43	0.54	0.70	1.00		
14	0.20	0.19	0.17	0.17	0.19	0.21	0.21	0.24	0.30	0.30	0.42	0.50	0.64	1.00	
15	0.17	0.14	0.13	0.10	0.13	0.14	0.16	0.18	0.23	0.27	0.35	0.43	0.49	0.64	1.00

D) Hospitalization

Time Period	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1.00														
2	0.23	1.00													
3	0.16	0.17	1.00												
4	0.08	0.14	0.15	1.00											
5	0.01	0.02	0.08	0.10	1.00										
6	0.12	0.15	0.14	0.12	0.16	1.00									
7	0.08	0.05	0.10	0.12	0.09	0.14	1.00								
8	0.07	0.16	0.12	0.11	0.08	0.16	0.16	1.00							
9	0.07	0.03	0.09	0.08	0.07	0.10	0.11	0.18	1.00						
10	0.08	0.08	0.12	0.09	0.06	0.06	0.08	0.16	0.23	1.00					
11	0.05	0.07	0.09	0.06	0.01	0.08	0.06	0.07	0.20	0.20	1.00				
12	0.10	0.08	0.06	0.03	0.02	0.09	0.09	0.05	0.11	0.12	0.19	1.00			
13	0.06	0.07	0.05	0.02	0.01	0.04	0.07	0.12	0.11	0.16	0.14	0.27	1.00		
14	0.08	0.10	0.10	0.05	0.06	0.03	0.10	0.06	0.11	0.17	0.21	0.24	0.37	1.00	
15	0.12	0.04	0.10	-0.01	0.00	0.05	0.11	0.02	0.09	0.03	0.06	0.12	0.15	0.23	1.00

Table 3: Mean (standard deviation) for predicted probabilities of being a Juvenile Arthritis (JA) case for the longitudinal discriminant analysis over the time periods using the full model, by JA status and fold

A) Marginal Prediction Approach

Time Period	JA Cases						Non-JA Controls					
	Fold 1	Fold 2	Fold 3	Fold 4	Fold 5	Overall	Fold 1	Fold 2	Fold 3	Fold 4	Fold 5	Overall
1	0.57	0.50	0.53	0.48	0.51	0.52	0.47	0.46	0.45	0.48	0.44	0.46
	(0.21)	(0.17)	(0.20)	(0.20)	(0.18)	(0.19)	(0.10)	(0.11)	(0.07)	(0.12)	(0.10)	(0.10)
2	0.60	0.51	0.54	0.53	0.51	0.54	0.45	0.43	0.42	0.46	0.41	0.43
	(0.26)	(0.21)	(0.25)	(0.26)	(0.23)	(0.24)	(0.11)	(0.12)	(0.11)	(0.14)	(0.12)	(0.12)
3	0.65	0.55	0.54	0.58	0.52	0.57	0.42	0.41	0.40	0.44	0.40	0.41
	(0.29)	(0.25)	(0.27)	(0.29)	(0.26)	(0.27)	(0.12)	(0.14)	(0.12)	(0.14)	(0.15)	(0.13)
4	0.65	0.57	0.54	0.62	0.54	0.58	0.42	0.38	0.38	0.43	0.39	0.40
	(0.31)	(0.28)	(0.28)	(0.30)	(0.28)	(0.29)	(0.14)	(0.14)	(0.12)	(0.16)	(0.16)	(0.14)
5	0.66	0.59	0.56	0.64	0.58	0.61	0.41	0.38	0.36	0.42	0.40	0.39
	(0.33)	(0.30)	(0.30)	(0.32)	(0.30)	(0.31)	(0.16)	(0.17)	(0.13)	(0.17)	(0.19)	(0.16)
6	0.66	0.60	0.59	0.66	0.61	0.62	0.41	0.38	0.34	0.42	0.41	0.39
	(0.34)	(0.32)	(0.31)	(0.32)	(0.31)	(0.32)	(0.17)	(0.18)	(0.13)	(0.20)	(0.21)	(0.18)
7	0.69	0.63	0.61	0.68	0.63	0.65	0.40	0.37	0.34	0.41	0.42	0.39
	(0.34)	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)	(0.18)	(0.20)	(0.17)	(0.21)	(0.22)	(0.20)
8	0.71	0.65	0.64	0.70	0.65	0.67	0.40	0.37	0.34	0.42	0.42	0.39
	(0.34)	(0.32)	(0.32)	(0.31)	(0.32)	(0.32)	(0.20)	(0.21)	(0.18)	(0.22)	(0.23)	(0.21)
9	0.72	0.68	0.65	0.73	0.68	0.69	0.39	0.35	0.34	0.39	0.42	0.38
	(0.34)	(0.31)	(0.33)	(0.32)	(0.32)	(0.32)	(0.22)	(0.21)	(0.19)	(0.22)	(0.24)	(0.22)
10	0.72	0.70	0.66	0.75	0.70	0.71	0.37	0.33	0.32	0.39	0.42	0.37
	(0.35)	(0.32)	(0.34)	(0.32)	(0.33)	(0.33)	(0.24)	(0.22)	(0.19)	(0.23)	(0.27)	(0.23)
11	0.74	0.73	0.69	0.78	0.72	0.73	0.35	0.31	0.31	0.38	0.40	0.35
	(0.34)	(0.31)	(0.33)	(0.30)	(0.32)	(0.32)	(0.25)	(0.22)	(0.22)	(0.24)	(0.27)	(0.24)
12	0.76	0.75	0.73	0.81	0.74	0.76	0.34	0.30	0.29	0.35	0.39	0.33
	(0.34)	(0.30)	(0.31)	(0.28)	(0.32)	(0.31)	(0.24)	(0.24)	(0.24)	(0.26)	(0.29)	(0.25)
13	0.78	0.78	0.78	0.84	0.75	0.79	0.31	0.27	0.27	0.34	0.37	0.31
	(0.32)	(0.28)	(0.29)	(0.27)	(0.31)	(0.29)	(0.25)	(0.24)	(0.26)	(0.26)	(0.30)	(0.26)

	Fold 1	Fold 2	Fold 3	Fold 4	Fold 5	Overall	Fold 1	Fold 2	Fold 3	Fold 4	Fold 5	Overall
14	0.79 (0.31)	0.81 (0.27)	0.81 (0.27)	0.85 (0.26)	0.76 (0.32)	0.80 (0.29)	0.29 (0.25)	0.24 (0.23)	0.26 (0.27)	0.32 (0.27)	0.34 (0.30)	0.29 (0.26)
15	0.80 (0.29)	0.81 (0.26)	0.82 (0.27)	0.85 (0.26)	0.77 (0.31)	0.81 (0.28)	0.25 (0.26)	0.21 (0.23)	0.24 (0.27)	0.29 (0.28)	0.30 (0.30)	0.26 (0.27)

B) Random Effects Prediction Approach

Time Period	JA Cases						Non-JA Controls					
	Fold 1	Fold 2	Fold 3	Fold 4	Fold 5	Overall	Fold 1	Fold 2	Fold 3	Fold 4	Fold 5	Overall
1	0.50 (0.05)	0.46 (0.06)	0.50 (0.05)	0.43 (0.08)	0.51 (0.07)	0.48 (0.06)	0.49 (0.04)	0.45 (0.05)	0.50 (0.03)	0.45 (0.06)	0.49 (0.06)	0.48 (0.05)
2	0.53 (0.12)	0.45 (0.12)	0.50 (0.10)	0.44 (0.12)	0.49 (0.12)	0.48 (0.12)	0.46 (0.05)	0.42 (0.06)	0.46 (0.04)	0.43 (0.07)	0.45 (0.06)	0.44 (0.06)
3	0.57 (0.20)	0.47 (0.18)	0.50 (0.16)	0.48 (0.20)	0.49 (0.17)	0.50 (0.18)	0.43 (0.06)	0.39 (0.08)	0.43 (0.05)	0.41 (0.08)	0.41 (0.07)	0.41 (0.07)
4	0.60 (0.25)	0.51 (0.23)	0.52 (0.21)	0.53 (0.25)	0.50 (0.22)	0.53 (0.23)	0.42 (0.07)	0.37 (0.08)	0.41 (0.06)	0.39 (0.09)	0.38 (0.07)	0.39 (0.07)
5	0.62 (0.28)	0.53 (0.26)	0.53 (0.24)	0.56 (0.28)	0.52 (0.24)	0.55 (0.26)	0.40 (0.07)	0.35 (0.08)	0.39 (0.06)	0.38 (0.09)	0.37 (0.08)	0.38 (0.08)
6	0.63 (0.30)	0.55 (0.28)	0.54 (0.27)	0.58 (0.30)	0.55 (0.27)	0.57 (0.28)	0.38 (0.08)	0.34 (0.09)	0.37 (0.06)	0.36 (0.10)	0.36 (0.10)	0.36 (0.09)
7	0.64 (0.31)	0.57 (0.30)	0.55 (0.28)	0.60 (0.31)	0.57 (0.29)	0.59 (0.30)	0.37 (0.08)	0.32 (0.10)	0.35 (0.07)	0.35 (0.12)	0.35 (0.10)	0.35 (0.09)
8	0.65 (0.32)	0.58 (0.31)	0.57 (0.30)	0.62 (0.32)	0.59 (0.31)	0.60 (0.31)	0.36 (0.10)	0.31 (0.10)	0.33 (0.08)	0.35 (0.12)	0.33 (0.10)	0.34 (0.10)
9	0.66 (0.33)	0.59 (0.31)	0.58 (0.31)	0.65 (0.32)	0.61 (0.32)	0.32 (0.32)	0.35 (0.11)	0.30 (0.10)	0.32 (0.09)	0.33 (0.13)	0.32 (0.11)	0.32 (0.11)
10	0.67 (0.33)	0.61 (0.32)	0.59 (0.32)	0.67 (0.32)	0.63 (0.32)	0.63 (0.32)	0.34 (0.12)	0.28 (0.10)	0.31 (0.10)	0.32 (0.13)	0.31 (0.12)	0.31 (0.11)
11	0.69 (0.32)	0.64 (0.31)	0.61 (0.32)	0.69 (0.31)	0.65 (0.32)	0.66 (0.32)	0.32 (0.12)	0.26 (0.11)	0.29 (0.11)	0.31 (0.14)	0.30 (0.13)	0.30 (0.12)
12	0.70 (0.32)	0.66 (0.31)	0.63 (0.31)	0.73 (0.30)	0.68 (0.31)	0.68 (0.31)	0.31 (0.13)	0.26 (0.12)	0.28 (0.12)	0.30 (0.15)	0.29 (0.13)	0.29 (0.13)

13	0.73	0.69	0.67	0.76	0.70	0.71	0.30	0.24	0.27	0.28	0.27	0.27
	(0.30)	(0.29)	(0.30)	(0.28)	(0.30)	(0.29)	(0.14)	(0.12)	(0.13)	(0.14)	(0.13)	(0.13)
14	0.76	0.72	0.71	0.78	0.72	0.74	0.28	0.23	0.26	0.27	0.25	0.26
	(0.28)	(0.27)	(0.28)	(0.27)	(0.29)	(0.28)	(0.15)	(0.12)	(0.15)	(0.15)	(0.14)	(0.14)
15	0.79	0.74	0.73	0.79	0.74	0.76	0.27	0.20	0.24	0.26	0.23	0.24
	(0.24)	(0.25)	(0.27)	(0.26)	(0.27)	(0.26)	(0.16)	(0.13)	(0.16)	(0.16)	(0.14)	(0.15)

Figure 1: Mean predicted probabilities of being a Juvenile Arthritis (JA) case for the longitudinal discriminant analysis over the time periods using the full model averaged across folds, by JA status