Supplementary table S1. Detailed compositions of the comorbidity categories. Because all patients were adults, only these 38 of the 40 original categories were relevant as 2 categories are applicable only in children.
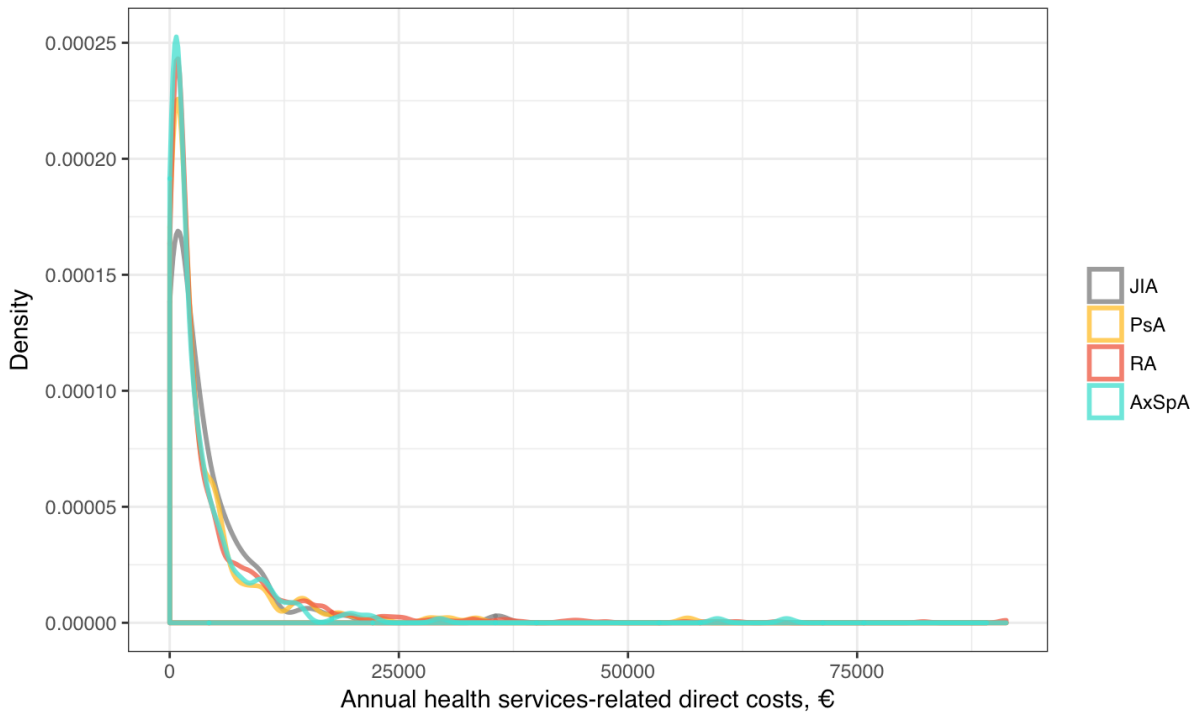
STUDY CATEGORIES	SUBCATEGORIES	CONSIDERATIONS
Cardiovascular diseases	Arrhythmias	
	Disorders of peripheral circulation	
	Congestive heart failure and other cardiac disorders	
	Hypertension	
	Ischemic heart disease and myocardial infarction	
	Stroke	
Diabetes	Diabetes	*All types of diabetes*
Neurological disorders	Dementia or infirmity	
	Other neurological disorders	*Includes migraine*
Mental disorders	Depression	
	Other psychiatric disorders	
	Schizophrenia	
Infections	Mild infections	
	Other infectious diseases	
	Severe infections	
	Urinary tract infection or pyelonephritis	
Malignancies	Malignant tumours and haematological malignancies	*Benign tumours under organ-specific categories*
Healthy/pregnancy	Healthy adult	*E.g. general medical examination, examination for driving license*
	Pregnancy	*Pregnancy and complications*
Eye disorders	Eye disorders	*Eye infections under "Infections"*
Skin disorders	Skin disorders	
Gastrointestinal disorders	Gastrointestinal disorders	*Malignant tumours under "Malignancies"*
Rheumatic diseases	Rheumatoid arthritis and other connective tissue disorders	
Musculoskeletal disorders	Injury or intoxication	
	Musculoskeletal disorders of back and neck	
	Osteoarthrosis	
	Other musculoskeletal disorders	
Other	Allergies	
	Chronic pulmonary diseases	
	Congenital defects and malformations	
	Disorders of the female urinary and reproductive system	
	Disorders of the hematopoietic system	
	Disorders of the male urinary and reproductive system	
	Ear, nose and throat disorders	*Infections under "Infections"*
	Other diseases and disorders	*Mainly tooth and mouth disorders*
	Other endocrinological disorders	
	Substance abuse	*Underreported*
	Symptom-based or non-specific disorders	*Mainly some ICD-10 Z-diagnoses*

Supplementary table S2. Proportion of annual costs (EUR) for rheumatic diseases and other disorders, a comparison between high- and low-utilization groups. Due to the small number of high utilizers in all but RA, only a few patients produce the comorbidity costs in high utilizers.
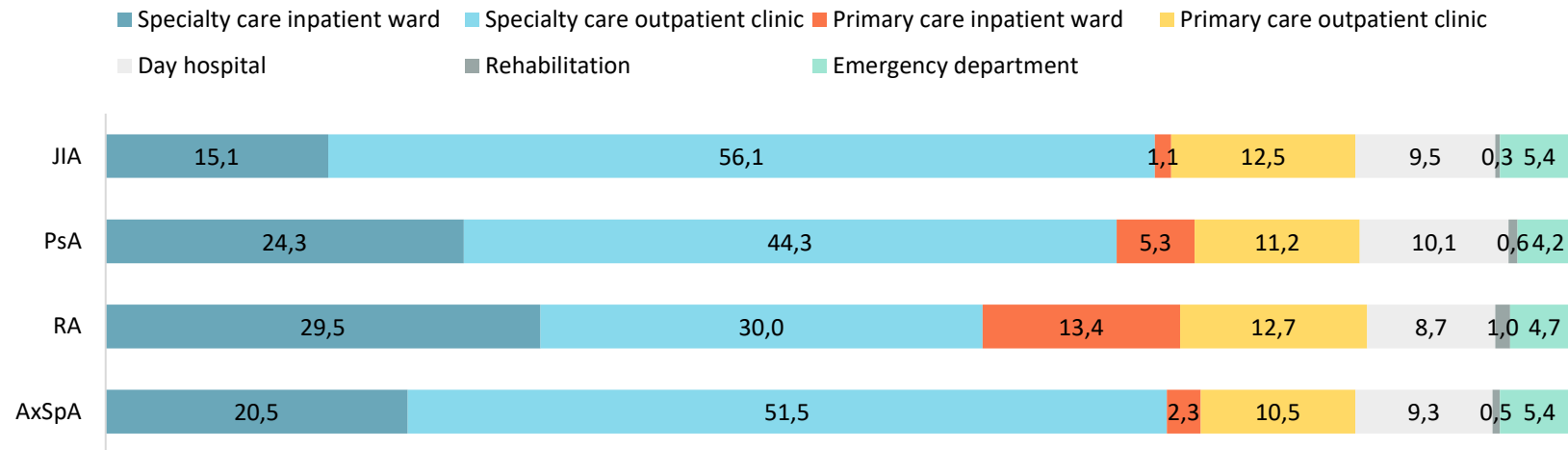
	JIA		PsA		RA		AxSpA	
	Low	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**
	n = 101	n = 18	n = 191	n = 22	n = 977	n = 109	n = 249	n = 28
	% of total costs	% of total costs	% of total costs	% of total costs	% of total costs	% of total costs	% of total costs	% of total costs
Cardiovascular diseases	2.7	0.6	4.4	14.4	8.6	16.6	2.2	6.0
Diabetes	0.6	0.1	0.7	0.2	1.0	0.6	1.5	0.9
Eye disorders	4.0	2.2	2.5	0.6	1.9	0.3	3.6	1.3
Gastrointestinal disorders	2.7	3.1	1.1	4.2	3.0	10.7	5.9	3.0
Healthy/pregnancy	9.4	6.3	6.2	0.7	6.1	1.5	6.0	2.9
Infections	2.1	2.2	1.7	2.1	3.2	9.0	2.5	5.0
Malignancies	0.7	0.0	0.9	2.4	3.4	11.2	2.1	13.5
Mental disorders	4.8	10.9	2.6	8.4	1.1	3.3	3.1	4.7
Neurological disorders	3.2	6.1	3.7	1.4	2.3	2.4	1.5	7.1
Other musculoskeletal disorders	6.9	10.5	9.9	24.7	13.2	13.8	17.3	8.2
Rheumatic diseases	**50.6**	**36.9**	**43.2**	**23.1**	**44.0**	**21.8**	**42.4**	**21.5**
Skin disorders	1.7	1.9	16.8	10.6	3.1	2.0	3.5	2.3
Other	10.7	19.2	6.5	7.0	9.0	6.8	8.3	23.6
	100	100	100	100	100	100	100	100

JIA = Juvenile idiopathic arthritis, PsA = Psoriatic arthritis, RA = Rheumatoid arthritis, AxSpA = Axial spondyloarthritis

Supplementary figure S1. Density plot on annual health service-related direct costs.
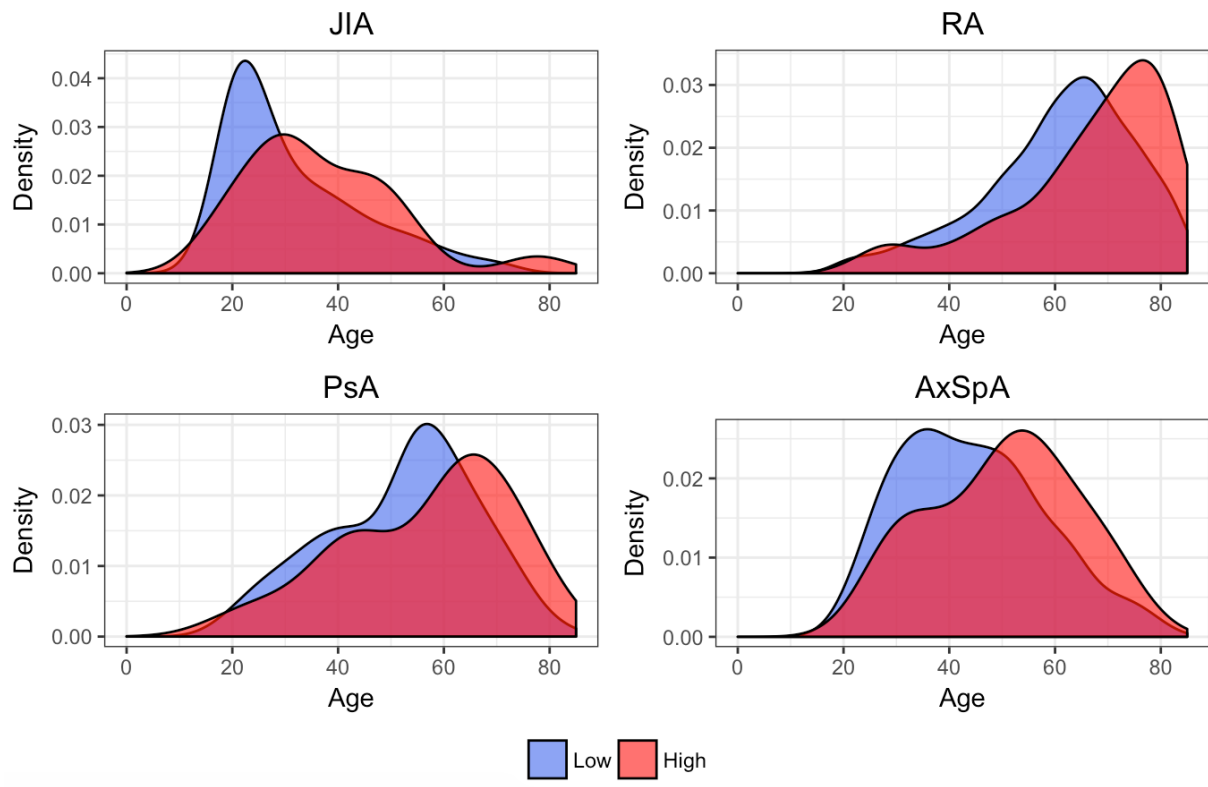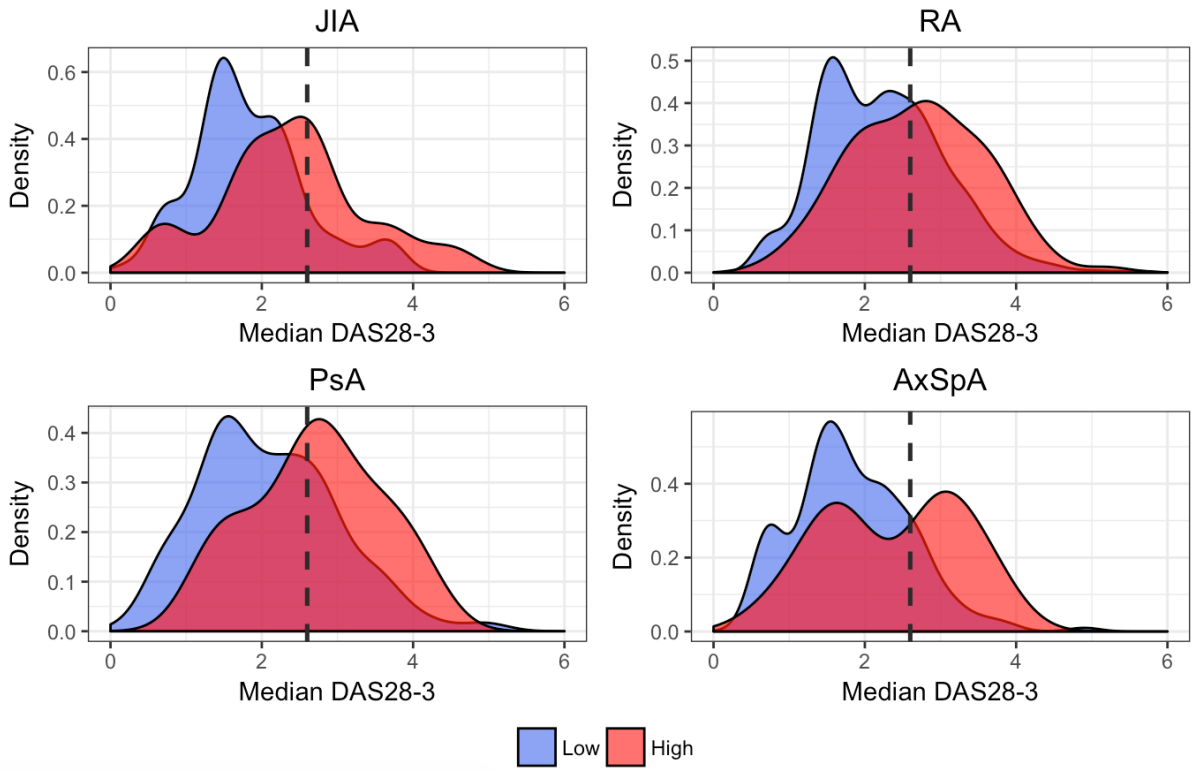
Supplementary figure S2. Annual direct all-cause healthcare costs by healthcare unit (proportions, %).

Legend:
- ■ Specialty care inpatient ward
- ■ Specialty care outpatient clinic
- ■ Primary care inpatient ward
- ■ Primary care outpatient clinic
- □ Day hospital
- ■ Rehabilitation
- ■ Emergency department

JIA: 15,1 | 56,1 | 1,1 | 12,5 | 9,5 | 0,3 | 5,4

PsA: 24,3 | 44,3 | 5,3 | 11,2 | 10,1 | 0,6 | 4,2

RA: 29,5 | 30,0 | 13,4 | 12,7 | 8,7 | 1,0 | 4,7

AxSpA: 20,5 | 51,5 | 2,3 | 10,5 | 9,3 | 0,5 | 5,4

JIA = Juvenile idiopathic arthritis, PsA = Psoriatic arthritis, RA = Rheumatoid arthritis, AxSpA = Axial spondyloarthritis
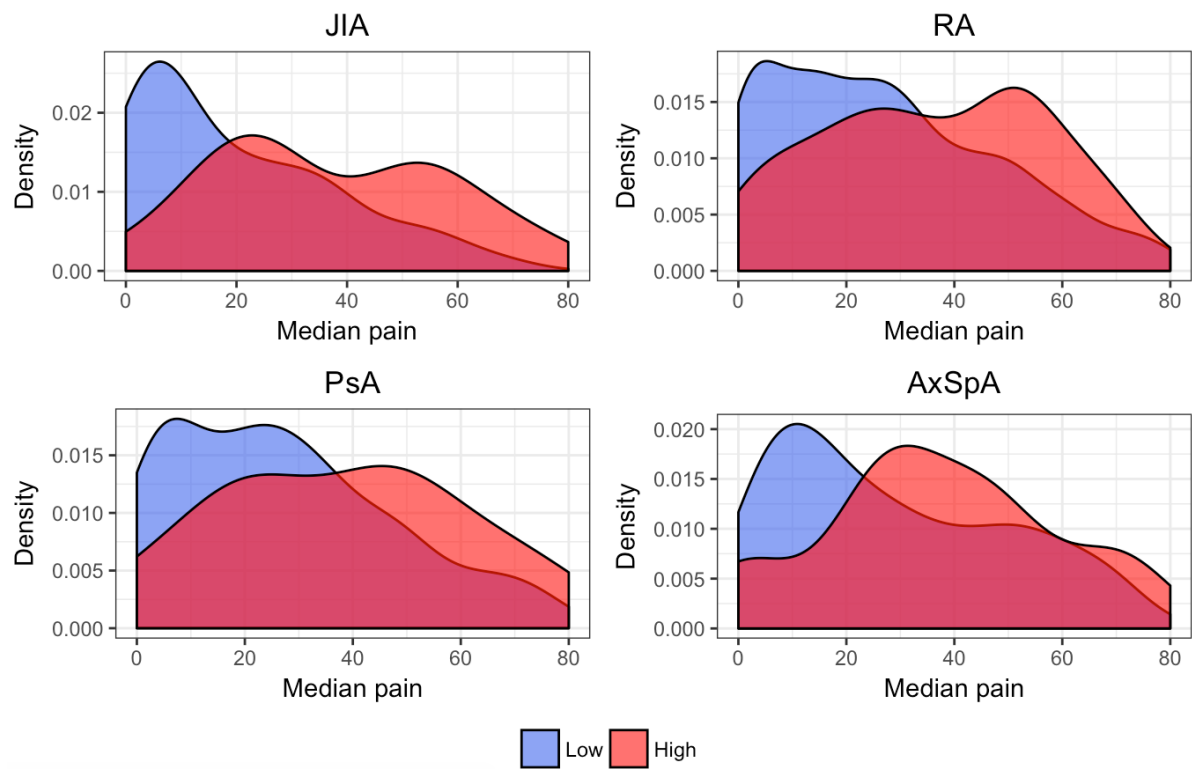
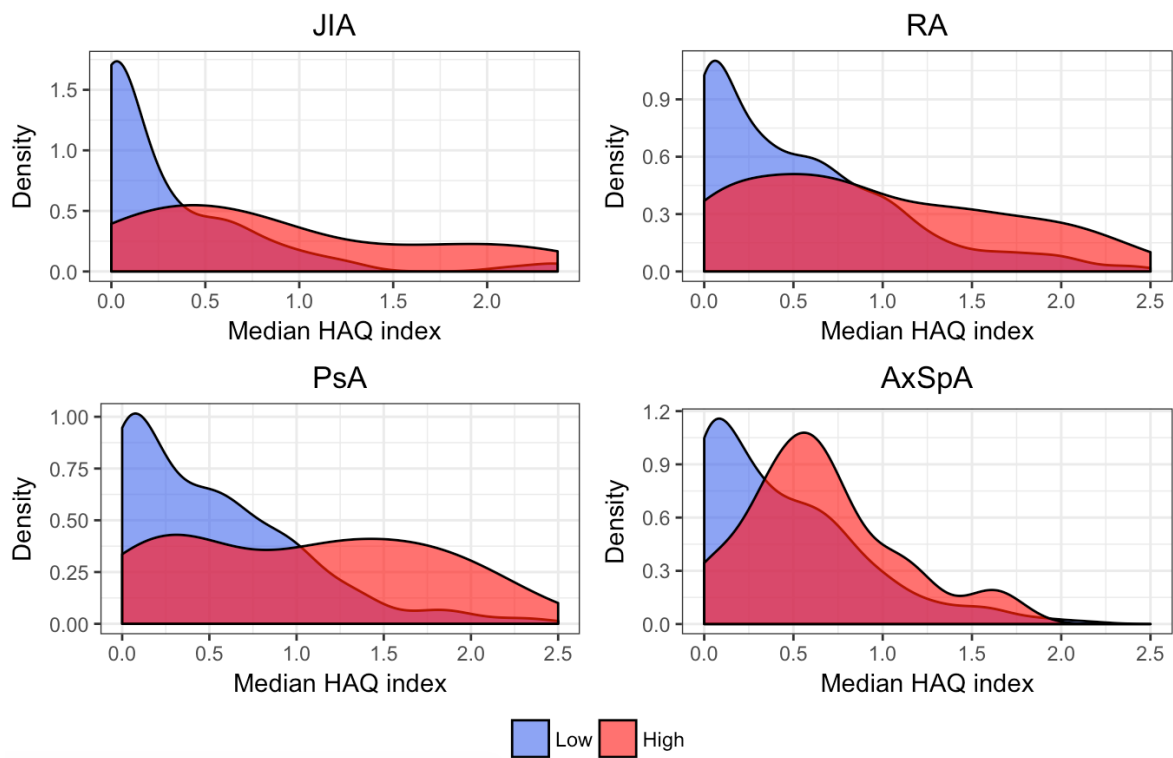**Supplementary figure S3.** Distribution of age for high- and low-utilization groups.

Supplementary figure S4. Distribution of individual medians of DAS28-3 for high- and low-utilization groups. The black line at 2.6 represents the limit below which we considered individuals to be most of the time in low disease activity state or in remission.

Supplementary figure S5. Distribution of individual medians of pain for high- and low-utilization groups.

Supplementary figure S6. Distribution of individual medians of HAQ index for high- and low-utilization groups.

Supplementary figure S7. Distribution of individual medians of fatigue for high- and low-utilization groups.