

Appendix

Development of a healthcare utilization index to compare patients worldwide: A cross-sectional study.

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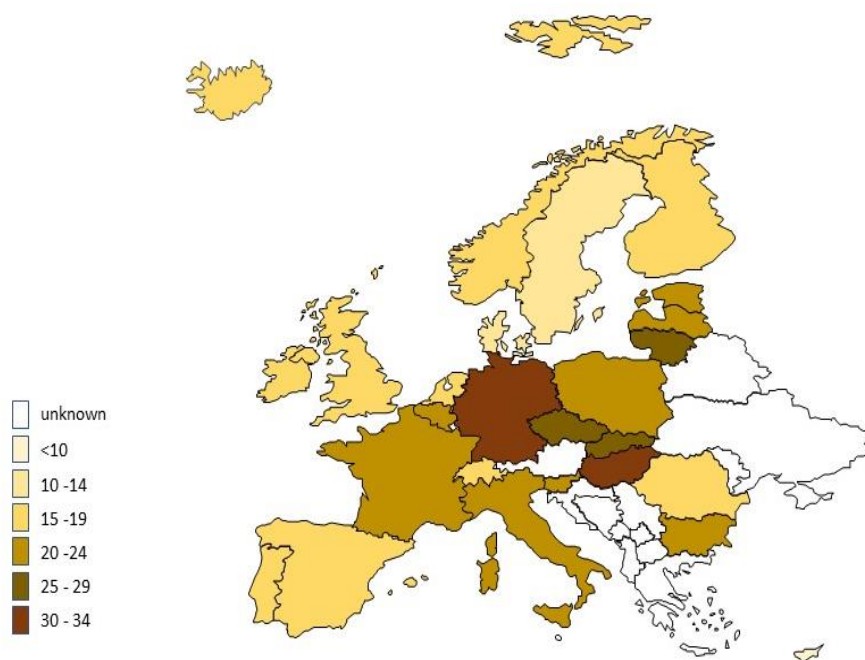
Appendix Table 1 : Mean primary care physician (PCP) visit price (in USD) by countries and healthcare services to PCP cost ratios. PCP visit=1.

	PCP price, mean (USD)	Healthcare service to PCP cost ratios			
		Specialist visit	1d in hospital	ED visit	Nurse home visit
Europe					
Austria ⁽¹⁻⁴⁾	33	1.5	19.4	5.8	1.4
Belgium ^(2, 5-7)	27	4.4	18.3	4.0	0.6
Cyprus ^(2, 8, 9)	55.0	2.0	5.6	3.6	0.9
Denmark ^(2, 10-12)	39.5	2.9	23.5	5.0	1
Finland ^(2, 12-14)	87.5	3.0	6.5	3.4	0.1
France ^(2, 15-18)	30.8	3.6	22.9	3.3	1.1
Germany ^(2, 15-19)	32.6	1.6	12.4	8.3	0.5
Greece ^(2, 10, 20-22)	45.0	1.6	9.6	NA	0.4
Iceland ^(2, 10, 23, 24)	91	1.5	7.4	1.9	0.3
Ireland ^(2, 10, 25)	49.0	2.6	16.1	2.0	0.4
Italy ^(2, 16, 17, 26, 27)	40.7	1.5	13.1	10.8	1.3
Luxembourg ^(2, 10, 28, 29)	52.5	1.2	33.5	NA	0.8
Monaco ^(2, 30, 31)	67.5	1.3	41.2	NA	NA
Netherland ^(2, 10, 15, 17, 32)	40.7	3.9	13.6	7.8	0.7
Norway ^(2, 12, 33, 34)	28	2.6	25.4	1.5	0.5
Portugal ^(2, 35-38)	33	2.3	7.6	2.5	0.4
Romania ^(10, 20, 39, 40)	37	1.6	4.9	NA	0.3
Russia ^(2, 10, 17, 20)	12	2.7	19.8	3.7	0.6
San Marino ^(2, 41)	69.0	NA	21.3	NA	NA
Slovenia ⁽⁴²⁻⁴⁵⁾	38.0	2.0	11	NA	0.2
Spain ^(2, 15-17)	67.8	2.2	9.6	3.5	0.4
Sweden ^(2, 10, 15, 46)	136	2.3	4.0	3.3	0.2
Switzerland ^(2, 5, 15, 47-50)	98.3	3.6	7.0	9.6	0.8
UK ^(2, 15-18, 20, 50-52)	66.5	3.3	7.4	3.4	0.3
America (north-south)					
Brazil ^(2, 17, 20, 53, 54)	7.4	1.0	3.5	7.6	1.1
Canada ^(2, 15, 20, 26, 50, 51, 55)	68	1.4	17.4	4.5	0.7
Ecuador ^(10, 20, 53, 56)	17.2	2.3	7.2	NA	0.8
Guatemala ^(2, 10, 53)	14.8	NA	1.7	NA	1.0
Mexico ^(2, 17, 50, 53, 57)	36.3	1.7	7.6	1.3	0.1
Peru ^(2, 10, 53)	17.4	1.7	2.6	NA	0.3
USA ^(2, 15, 17, 20, 58-62)	199.3	3.2	6.9	4.0	0.3
Asia-middle east					
Bahrain ^(20, 63-65)	28.3	1	10.1	NA	0.3
China ^(2, 10, 26, 50, 53, 66)	28.8	1.7	12.3	3.2	0.1
India ^(2, 53, 67, 68)	6.1	2	1.5	13.3	0.6

Indonesia (10, 20, 53, 69, 70)	12.4	1.6	4.3	2.9	0.8
Israel (2, 10, 71, 72)	232.0	2.1	1.5	1.9	0.1
Japan (2, 10, 17, 20, 50)	148.5	1.2	3.3	3.6	0.2
Kuwait (2, 65, 73, 74)	26.5	NA	25.1	1.2	0.4
Malaysia (10, 53, 75)	35.5	3.5	3.8	NA	0.3
Philippines (2, 10, 53, 76)	6.4	NA	2.5	4.5	0.7
Qatar (2, 65, 77)	40.5	NA	31.2	NA	NA
Saudi Arabia (2, 53, 65, 78)	27.3	NA	8.3	NA	0.7
Singapore (2, 10, 26, 79)	30.0	3.0	22.8	6.7	0.9
South Korea (2, 10, 17, 53, 75)	26.3	1.7	23.4	3.6	0.7
Taiwan (10, 75)	30	2.8	6.4	1.1	0.7
Thailand (2, 10, 50, 53, 75)	21.3	2.8	9.8	8.2	0.4
United Arab Emirates (2, 10, 20, 65, 80-83)	48.3	7.7	15.8	1.1	0.7
Oceania					
Australia (2, 15, 50, 84)	49	2.2	15.3	8.4	2.6
New Zealand (2, 15, 85, 86)	60	3.2	8.0	4.7	0.8
Africa					
Algeria (20, 87-89)	7.0	2.1	22.0	1.8	0.7
Benin (2, 90, 91)	6	1.7	0.8	1.3	0.5
Egypt (2, 90, 92)	5.3	2.0	3.6	12	0.5
Ethiopia (2, 53, 89, 93)	4.3	NA	1.4	NA	0.7
Ghana (94-97)	15.0	1.2	2.7	1.2	0.5
Kenya (2, 90, 97, 98)	14.4	1.8	2.3	1.2	0.4
Mali (20)	NA	NA	NA	NA	NA
Morocco (2, 20, 90)	12	1.5	2.2	2	0.3
Mozambique (2, 20, 89, 99-101)	13.0	3.1	35.5	11	0.6
Nigeria (2, 90, 102, 103)	14.7	2.9	1.8	1.9	0.7
Senegal (2, 90)	8.1	2.0	1.0	NA	1.0
Somalia (53, 89)	2.6	NA	NA	NA	1.4
Tunisia (2, 90, 104)	7.4	1.7	5.6	2.3	0.9
Uganda (2, 90, 97)	5.1	3.2	3.0	3.1	0.5
Zambia (54, 97, 105)	9.0	1.7	2.3	NA	0.7
All countries					
Median (IQR)	30.0 (13.0-49.0)	2.0 (1.6-2.9)	7.6 (3.5-17.4)	3.5 (1.9-5.8)	0.5 (0.4-0.8)
1d in hospital: one day spent in hospital; ED: emergency department; NA: not assessed; PCP: primary care physician					

Appendix Table 2: Annual average number of healthcare services used per inhabitant.						
Country	Doctor consultation			Hospital days	Nurse visit	ED visit
	Total	PCP	Specialist			
Europe						
Albania	2.2	1.4	0.8	-	-	-
Austria	6.6	3.8	2.8	2.1	0.8	-
Belgium	6.9	4.3	2.6	1.2	4.0	0.2
Bulgaria	6.1	4.7	1.4	1.7	0.8	0.4
Croatia	6.5	4.5	2.1	1.5	1.3	-
Czech republic	7.8	4.1	3.7	1.9	0.7	0.1
Denmark	4.1	2.8	1.2	0.8	1.9	0.2
Estonia	6.0	3.2	2.8	1.3	0.5	0.3
Finland	4.3	2.7	1.6	1.4	1.4	0.4
France	6.1	5.1	1.0	1.7	2.9	0.3
Germany	9.9	5.7	4.2	2.3	1.4	0.1
Greece	3.4	2.0	1.4	1.0	1.1	-
Hungary	10.9	6.1	4.8	1.9	1.1	0.1
Iceland	5.9	3.9	2.0	0.7	2.1	0.5
Ireland	5.6	4.2	1.4	0.8	1.0	0.3
Italy	10.0	6.7	3.3	0.9	1.2	0.3
Latvia	6.0	3.7	2.3	1.5	0.7	0.2
Lichtenstein	9.0	5.7	3.4	0.3	-	-
Lithuania	9.3	6.5	2.7	1.7	0.6	0.6
Luxembourg	5.8	3.2	2.6	1.2	1.4	-
Malta	-	-	-	1.2	1.6	0.3
Montenegro	7.5	4.7	2.8	1.0		-
Netherlands	8.6	5.2	3.4	0.5	2.5	0.1
North Macedonia	8.6	5.4	3.2	0.6	-	-
Norway	4.4	3.4	1.0	1.1	3.3	0.3
Poland	7.5	4.5	3.0	1.2	0.8	0.2
Portugal	3.9	2.2	1.7	1.0	0.8	0.7
Cyprus	2.0	1.0	1.0	0.5	0.6	0.3
Slovak Republic	11.1	6.4	4.7	1.4	0.5	0.1
Slovenia	6.7	4.1	2.6	1.2	1.0	0.4
Romania	5.2	4.2	1.0	1.5	0.4	0.2
Serbia	7.6	4.8	2.8	1.5	0.7	-
Spain	7.3	4.9	2.4	0.8	1.3	0.3
Sweden	2.8	1.9	0.9	0.8	0.7	0.3
Switzerland	4.1	2.6	1.5	1.4	2.7	0.2
Turkey	8.9	4.0	4.9	0.7	0.2	-
United Kingdom	5.0	4.4	0.6	0.9	1.4	0.4
ED: emergency department; NA: not assessed; PCP: primary care physician						

Appendix Table 3 : Sensitivity analysis for the association between the HUTIL index and life expectancy at birth or death rate.							
		Life expectancy at birth			Nb. of deaths per 100,000 inhabitants		
	HUTIL index median (IQR)	≤ median	> median	P value	≤ median	> median	P value
Standard analysis	20.1 (16.8-23.1)	82.0 (81.5-82.6)	78.2 (76.1-81.3)	0.01	889 (778-930)	1047 (979-1321)	<0.01
Sensitivity analysis 1	18.3 (12.9-21.8)	82.0 (81.5-82.6)	77.8 (75.4-81.3)	<0.01	889 (778-930)	1047 (979-1321)	<0.01
Sensitivity analysis 2	23.8 (16.4-28.2)	82.0 (81.5-82.6)	77.8 (75.4-81.3)	<0.01	889 (778-930)	1047 (979-1322)	<0.01
Sensitivity analysis 3	20.0 (13.6-22.0)	82.0 (81.5-82.6)	78.2 (76.1-81.3)	0.01	889 (778-930)	1047 (979-1321)	<0.01
Sensitivity analysis 4	20.2 (16.8-23.1)	82.0 (81.5-82.6)	78.2 (76.1-81.3)	0.01	889 (778-930)	1047 (979-1321)	<0.01
Sensitivity analysis 1: all medical consultation were analysed as PCP visits; Sensitivity analysis 2: all medical consultation were analysed as visit to a specialist; Sensitivity analysis 3: HUTIL index excluding the nurse visits in the analysis; Sensitivity analysis 4: HUTIL index calculated only in 2014 and 2019 (during the second and third waves of the European Health Interview Survey).							



Appendix Figure 1: Annual average (cost-weighted) healthcare utilization (HUTIL) index by countries.

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