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Exploring the variation in the Health Care among the small areas: the case of Bolzano

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Epidemiologic Observatory of the Autonomous
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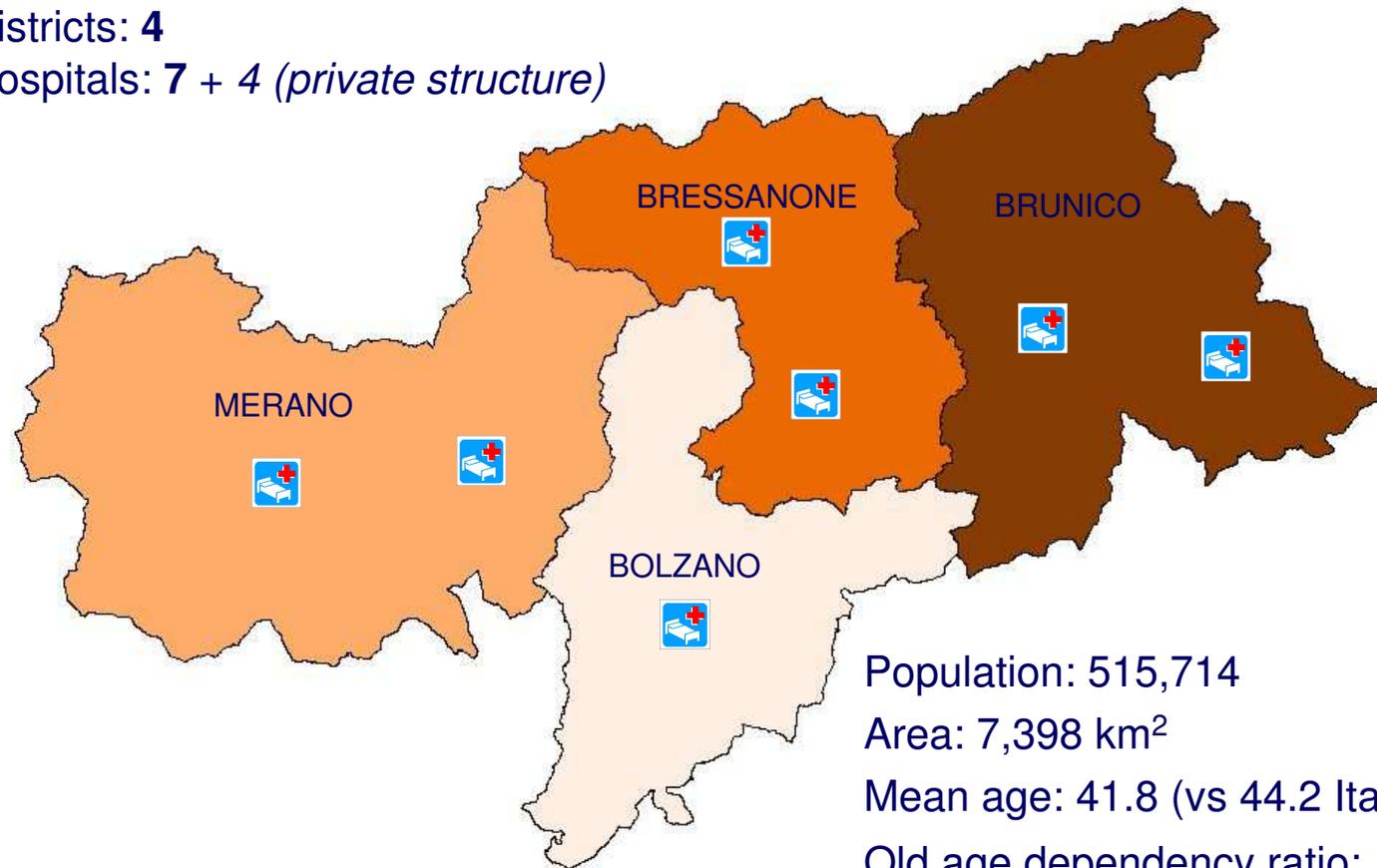
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Province of Bolzano in figures (2014)

Local health authorities: **1**

Health districts: **4**

Public Hospitals: **7 + 4 (private structure)**



Population: 515,714

Area: 7,398 km²

Mean age: 41.8 (vs 44.2 Italy)

Old age dependency ratio: 115.8
(vs 154.1 Italy)

Hospitalization rate: **172.52** x 1,000 (vs 144.95 MeS PES regions)

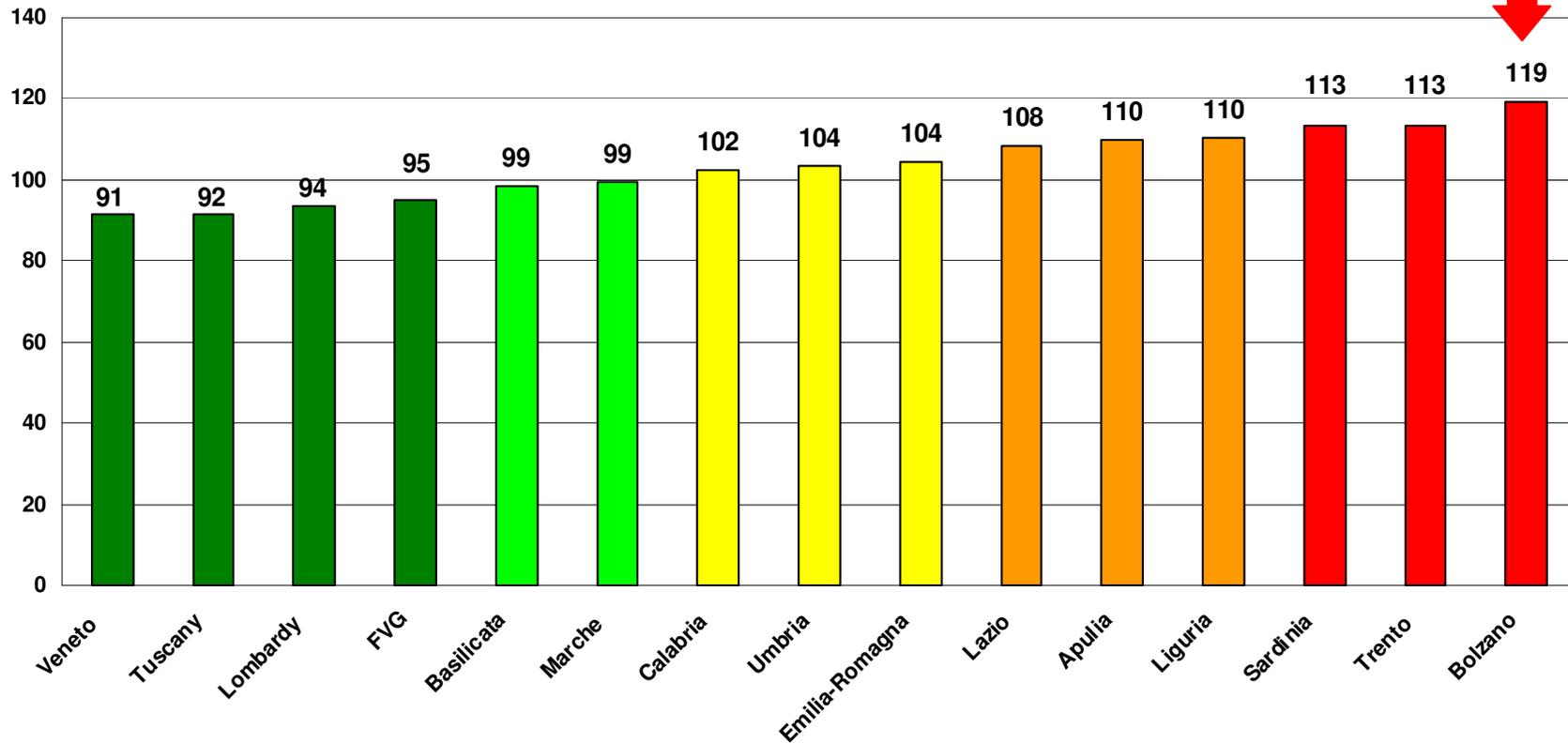
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Hospitalization Ratio (2014)



100 = average Italian PES regions

Note: Age-gender standardized ratios

Source: MesLab, Performance Evaluation System of regional health systems

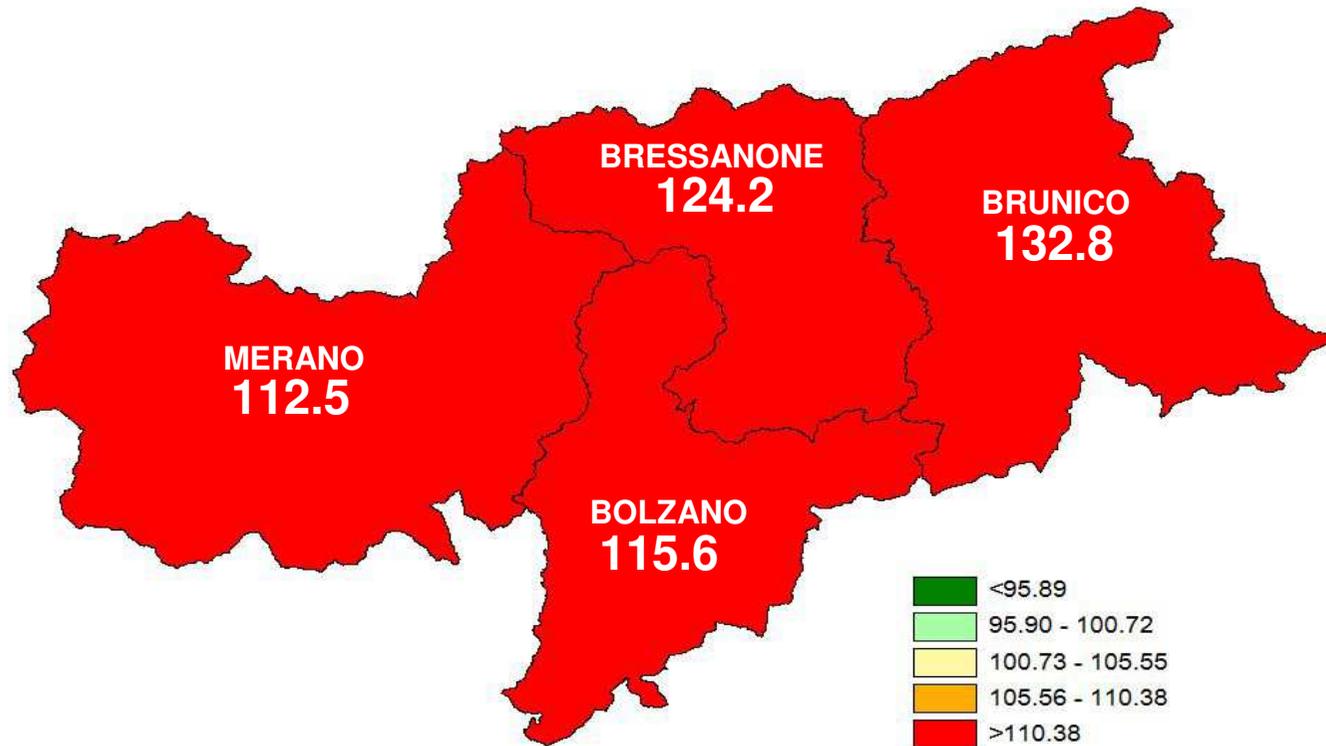
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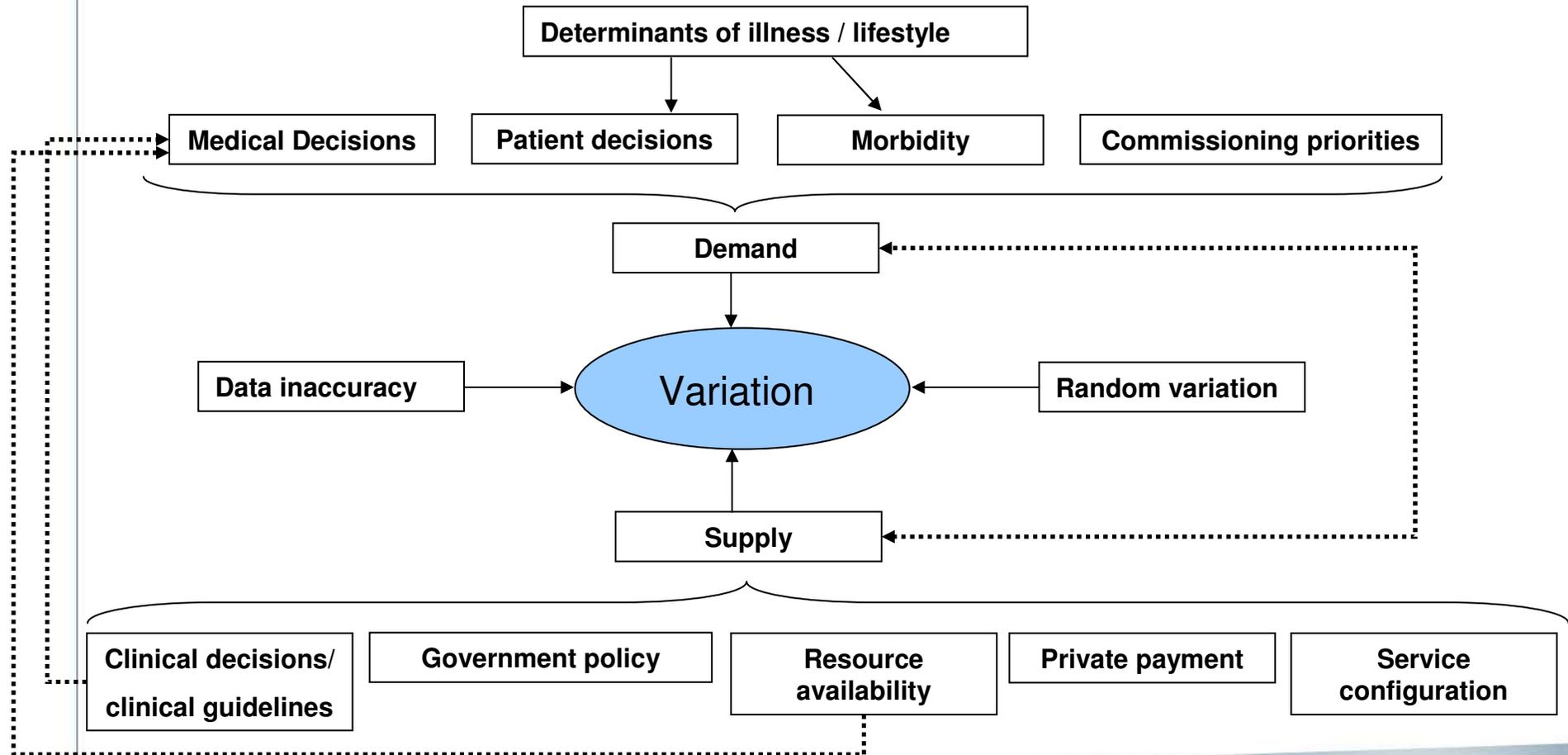
Source: MesLab, Performance Evaluation System of regional health systems

EPIDEMIOLOGIC OBSERVATORY OF THE AUTONOMOUS PROVINCE OF BOLZANO

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Causes of variation



Source: King's Fund 2011, Variation in Health Care

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Measures of variation

Less
intuitive



SYSTEMATIC COMPONENT OF VARIATION
(Observed/Expected; it adjusts for variability within areas)

COEFFICIENT OF VARIATION (CV)
(STANDARD DEVIATION/MEAN)

STANDARD DEVIATION
(degree of spread of data relative to the mean)

EXTREMAL QUOTIENT (EQ)
(MAX/MIN)

INTERQUARTILE RANGE
(Q3-Q1)

RANGE
(max-min)

More
complex

Source: King's Fund 2011, Variation in Health Care

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Elective surgery

The variation is particularly relevant for the „elective surgery“

“Elective service” to be delivered according to patient needs, choices and risk propensity”. Variation ought to reflect patients' different needs and preferences, while on the contrary, it often reflects physicians' discretionary choices (Nuti S., Seghieri C., 2014)

ANALYSIS of THESE ELECTIVE PROCEDURES:

- ✓ TONSILLECTOMY
- ✓ VEIN STRIPPING
- ✓ HIP REPLACEMENT
- ✓ KNEE REPLACEMENT
- ✓ ARTHROSCOPY



- ✓ HOSPITALIZATION RATE
- ✓ EQ, CV weighted
- ✓ SCV

*Although there is no standard value to be referred → **does unwarranted variation in elective surgery exist across the health districts of Bolzano?***

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Elective surgery: hospitalization ratio 2014

Region	Tonsillectomy	Knee Replacement	Hip Replacement	Vein stripping	Arthroscopy
Lombardy	89.6	-	-	22.0	-
Bolzano	105.0	134.6	185.1	195.0	170.4
Trento	119.1	117.7	128.6	184.3	178.5
Veneto	120.0	110.3	123.4	43.6	97.1
FVG	87.8	109.9	138.6	196.3	170.0
Liguria	156.7	100.8	98.8	127.1	158.8
Emilia-Romagna	112.9	91.4	105.3	198.9	46.6
Tuscany	83.8	102.3	96.4	140.1	106.4
Umbria	121.4	125.1	86.9	120.1	102.3
Marche	87.1	110.0	95.3	125.5	124.1
Apulia	46.8	83.5	57.2	94.7	67.0
Basilicata	49.2	109.3	51.1	90.6	43.8
Mean Regions	100.0	100.0	100.0	100.0	100.0

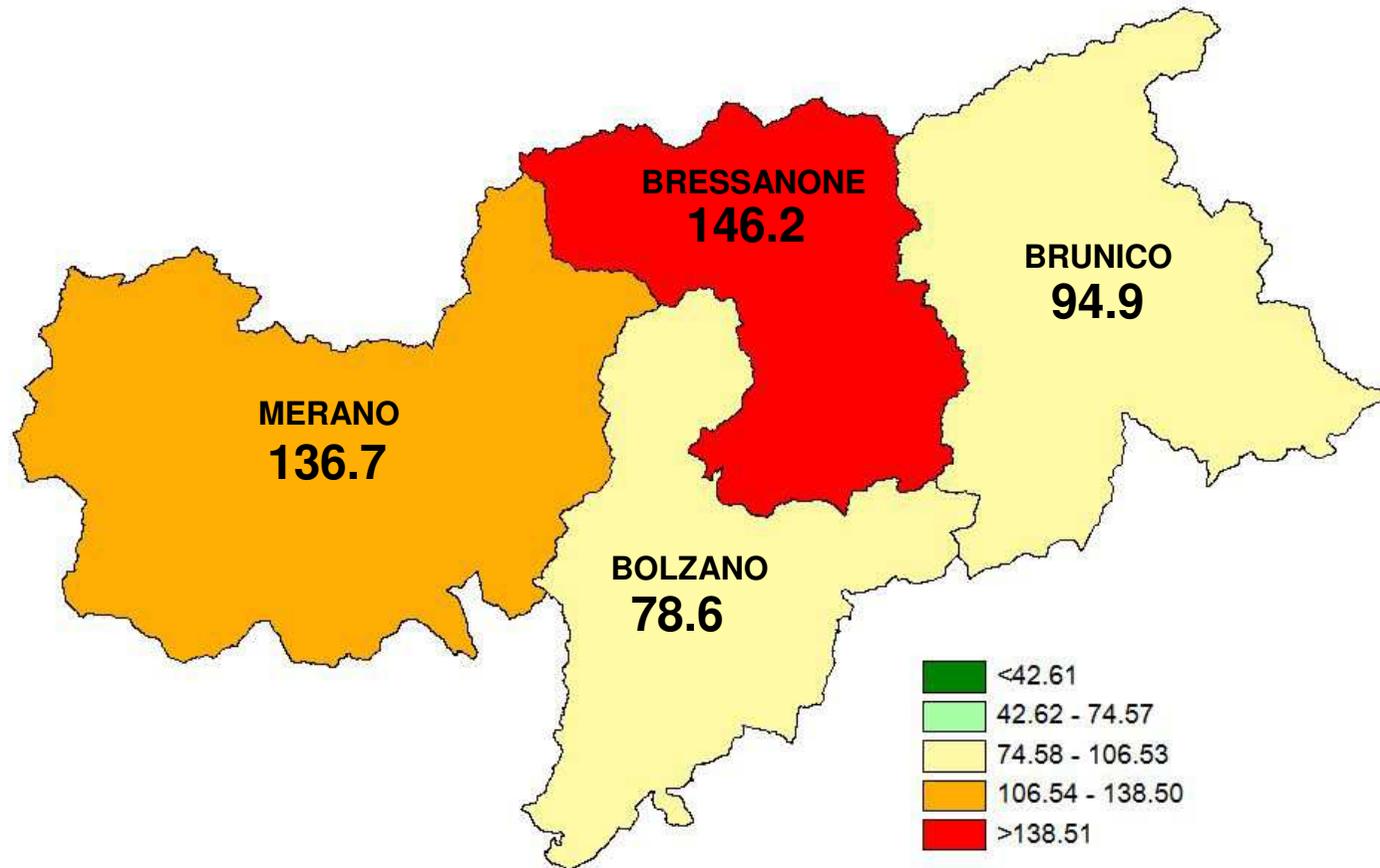
Note: Age-gender standardized ratios

Source: MesLab, Performance Evaluation System of regional health systems

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Tonsillectomy: hospitalization ratio 2014



100 = average Italian PES regions

Note: Age-gender standardized ratios

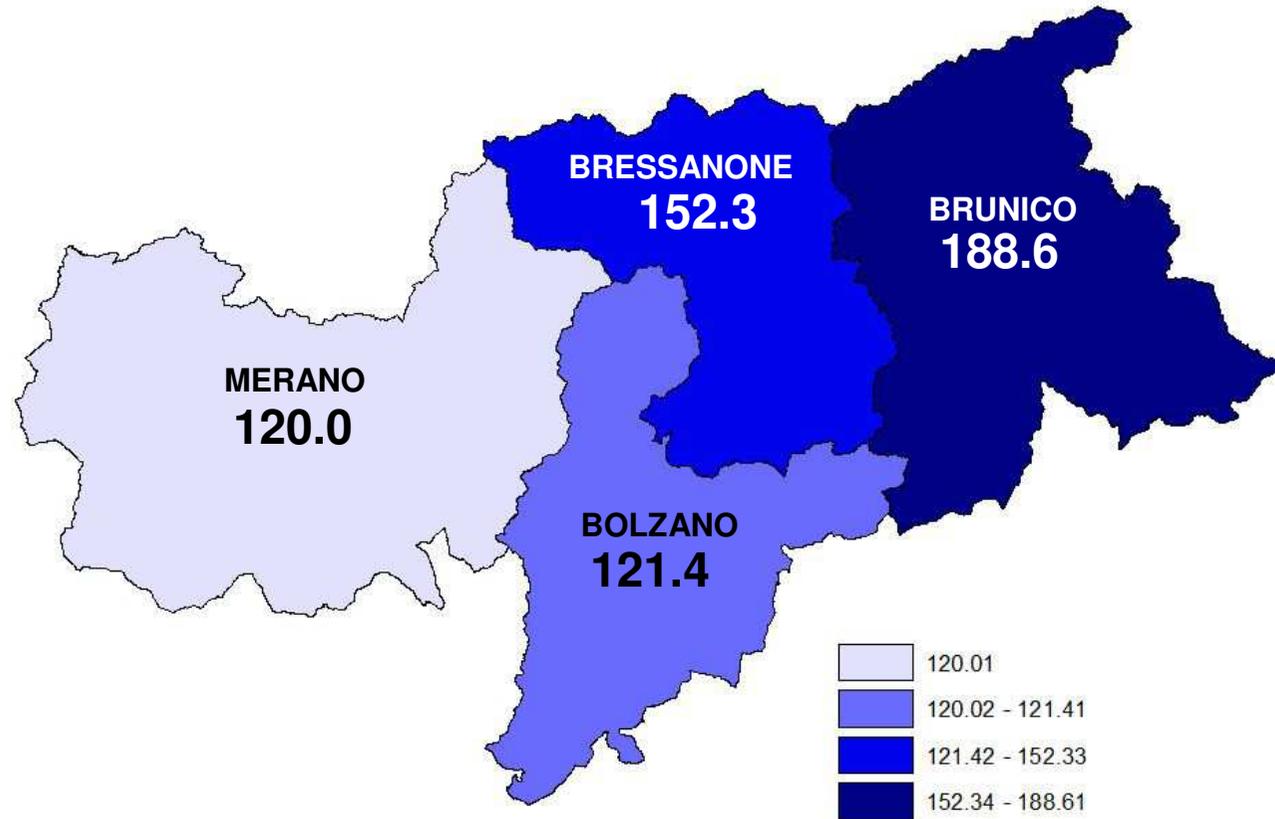
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Knee replacement: hospitalization ratio 2014



100 = average Italian PES region

Note: Age-gender standardized ratios

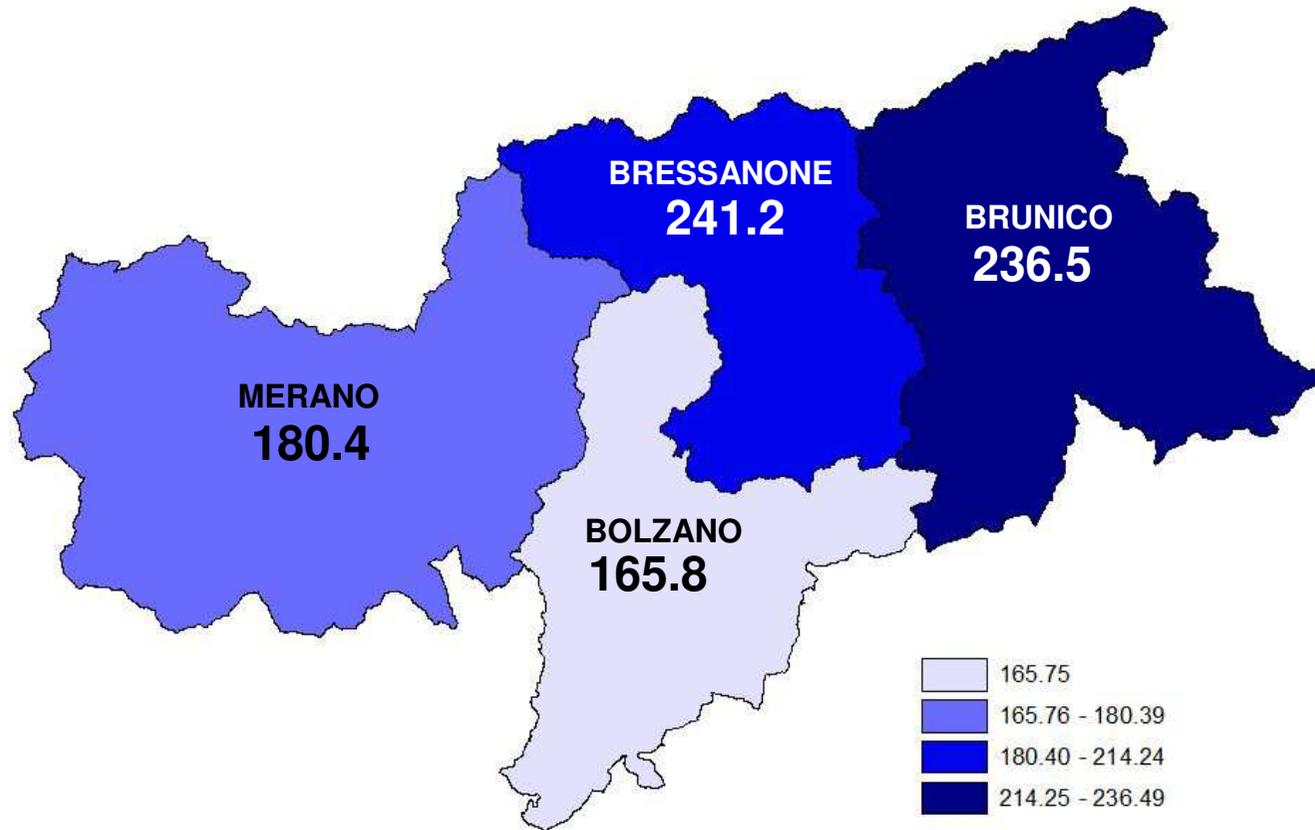
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Hip replacement: hospitalization ratio 2014



100 = average Italian PES region

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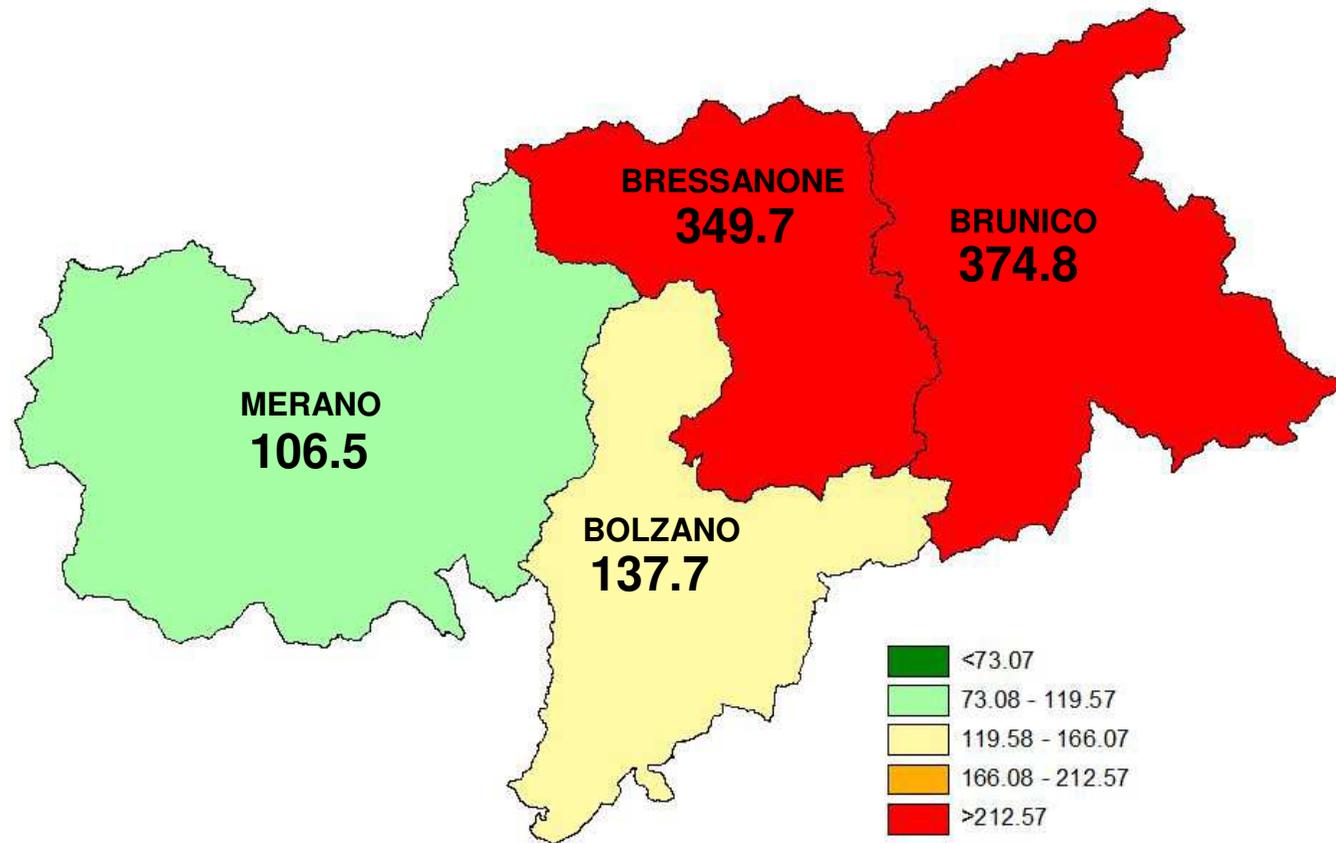
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Vein stripping: hospitalization ratio 2014



100 = average Italian PES region

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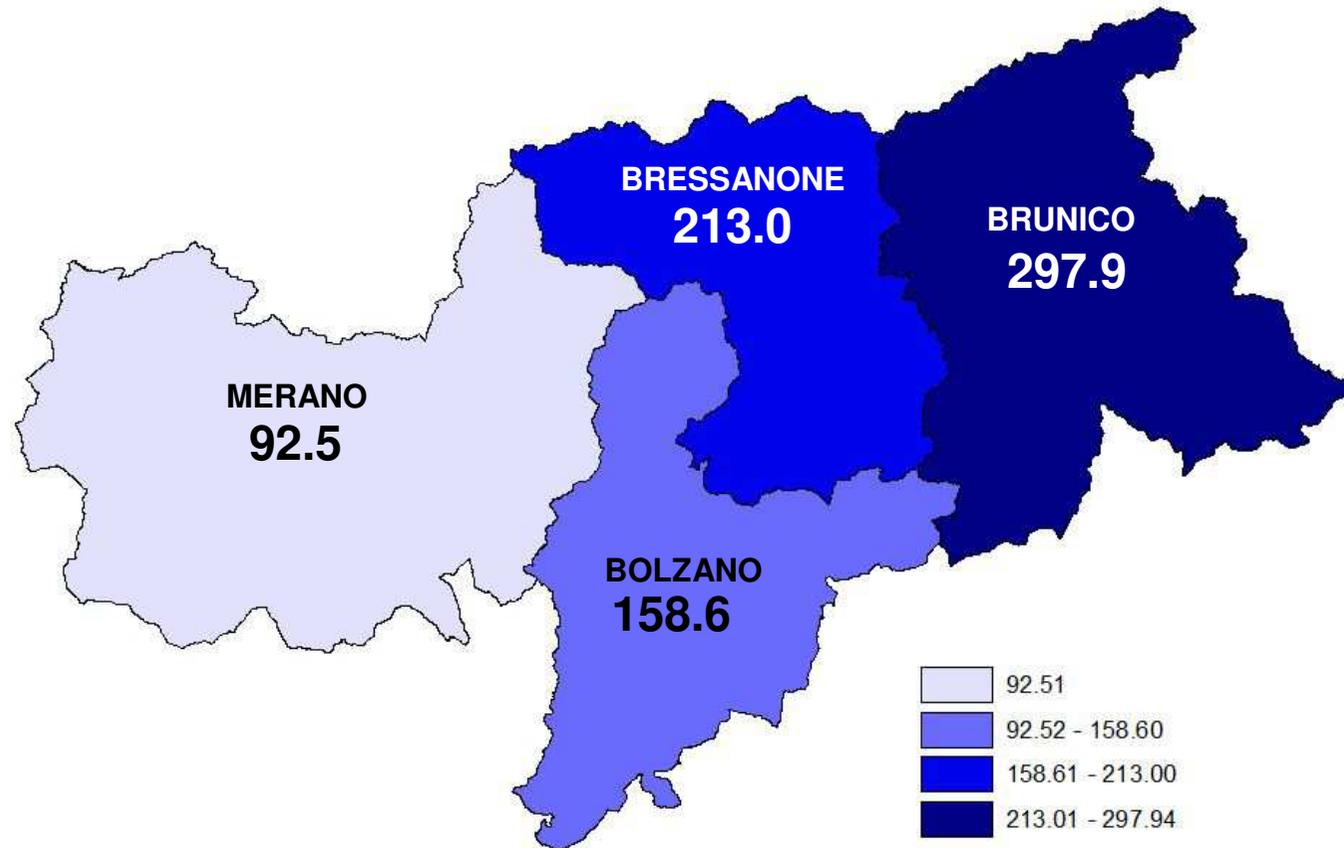
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Arthroscopy: hospitalization ratio 2014



100 = average Italian PES region

Note: Age-gender standardized ratios

Source: MesLab, Performance Evaluation System of regional health systems

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Elective surgery: extremal quotient 2014

Region	Tonsillectomy	Knee Replacement	Hip Replacement	Vein stripping	Arthroscopy
Lombardy	2.1	-	-	8.1	-
Bolzano	1.9	1.6	1.4	3.5	3.2
Trento	1.0	1.0	1.0	1.0	1.0
Veneto	3.7	1.7	1.9	22.0	3.2
FVG	1.4	1.3	1.6	2.3	1.6
Liguria	2.4	1.4	1.5	1.3	1.6
Emilia-Romagna	2.6	1.5	1.3	2.4	3.2
Tuscany	3.0	1.5	1.6	2.9	1.8
Umbria	1.2	1.0	1.1	2.1	1.1
Marche	3.3	1.6	1.9	1.6	2.3
Apulia	6.0	1.6	1.2	2.3	1.6
Basilicata	1.9	1.0	1.6	1.0	1.2

Source: our elaboration on Performance Evaluation System data

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Elective surgery: weighted coefficient of variation 2014

Region	Tonsillectomy	Knee Replacement	Hip Replacement	Vein stripping	Arthroscopy
Lombardy	0.17	-	-	0.55	-
Bolzano	0.26	0.18	0.15	0.49	0.36
Trento*	-	-	-	-	-
Veneto**	0.38	0.14	0.18	0.92	0.36
FVG	0.10	0.07	0.12	0.23	0.15
Liguria	0.28	0.10	0.17	0.11	0.13
Emilia-Romagna	0.24	0.12	0.11	0.18	0.34
Tuscany	0.33	0.13	0.12	0.27	0.18
Umbria	0.10	0.01	0.04	0.35	0.03
Marche	0.27	0.14	0.21	0.15	0.21
Apulia	0.52	0.16	0.07	0.29	0.18
Basilicata	0.31	0.02	0.23	0.01	0.10

Note: * the value is not calculable

** unweighted coefficient of variation

Source: our elaboration on Performance Evaluation System data

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Elective surgery: systematic coefficient of variation 2014

Health districts	Tonsillectomy	Knee Replacement	Hip Replacement	Vein stripping	Arthroscopy
Bolzano	0.75	0.91	0.90	0.72	0.93
Merano	1.30	0.89	0.97	0.54	0.54
Bressanone	1.40	1.12	1.15	1.77	1.25
Brunico	0.81	1.42	1.28	1.92	1.75
EQ	1.87	1.59	1.43	3.54	3.22
SCV (x 100)	7.06	4.52	1.86	42.19	20.59

Note: standardized rates indirectly by age-gender

Source: our elaboration on Performance Evaluation System data



Variation giving SCVs > 3 are likely to be due largely to differences in practice style or medical discretion; high (5,4 – 10.0), very high (> 10.0) (Mc Pherson et al)

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Results (1)

- The data reflect the overall tendency to hospitalization, particularly for the health districts of Bressanone and Brunico
- The high hospitalization rates of knee/hip replacement/arthroscopy depends on the practice style more similar to Austria and Germany and on more resource availability (beds, budget)
- High variation is persistent over time except for hip replacement
- The high variation of vein stripping is explained by more beds availability, by different care setting and by medical discretion

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Results (2)

- The high variation of arthroscopy is explained by different practice style more similar to Austria and Germany
- The variation of tonsillectomy is explained by medical discretion and by health care organization in terms of practice style, even it must consider the low numbers of cases

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Conclusions (1)

- Despite being a small region, Bolzano is characterized by higher hospitalization rates for elective procedures with respect to other Italian regions and by intra regional variation of these rates
- The variation might depends on different practice style and on the organization of health care and on the criticality in sharing guidelines and protocols among clinicians

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Conclusions (2)

- The measurement and benchmarking of measures of variation are important not only for descriptive purposes, but also at policies and governance level too (reduce the unwarranted variation, promoting changes)
- **The role of health care managers (governance) is important for prioritizing actions to reduce the variation;** some actions has been decided and applied, but the results will be evaluated by the 2016 data

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감사합니다 Natick
Grazie Danke Ευχαριστίες Dalu
Thank You Köszönöm
Tack Obrigado
Спасибо Dank Gracias
谢谢 **Merci** Seé
ありがとう

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