Medication use in public pharmacies

Anticholinergics (65 and over) (min 80 DDD)

Analysis of the distribution and evolution of medication consumption in Belgium, in terms of volume and expenditure per insured (analysis and trends by region, province and district), for the year **2024**

NIHDI – Healthcare Service – Directorate Appropriate Care
Pascal Meeus, Lies Grypdonck, Benjamin Swine, Marc De Falleur, Katrien Declercq, Cindy Opdebeeck, Delphine Beauport
Contact : appropriatecare@riziv-inami.fgov.be

Date of report: 8 November 2025

CONTENTS

CONTENTS **2**

1. INTRODUCTION **3**

2. METHODOLOGY **4**

A. ATC CODES (ANATOMICAL THERAPEUTIC CHEMICAL CLASSIFICATION SYSTEM) SELECTED FOR THIS ANALYSIS 4
B. SOURCE OF DATA AND ANALYSIS PERIOD 7
C. SPECIFIC SELECTION CRITERIA 8
D. STANDARDISATION 8

3. RESULTS **9**

3.1. PROFILE OF INSURED CONSUMERS **9**

A. VOLUME OF INSURED CONSUMERS 9
B. INSURED CONSUMERS BY SEX AND AGE GROUP 10
C. INSURED CONSUMERS BY REIMBURSEMENT SCHEME 14
D. GEOGRAPHICAL VARIATIONS OF INSURED CONSUMERS 15
E. EVOLUTION OF INSURED CONSUMERS 19

3.2. CONSUMPTION PER INSURED CONSUMER **20**

A. QUANTITY OF MEDICATION CONSUMED PER INSURED CONSUMER 20
B. DISTRIBUTION OF INSURED CONSUMERS IN CONSUMPTION CLASSES AND BY ANNUAL AVERAGE 20
C. AVERAGE QUANTITY OF MEDICATION CONSUMED BY SEX AND AGE PER INSURED CONSUMER 22
D. AVERAGE QUANTITY OF MEDICATION CONSUMED PER INSURED CONSUMER BY PROVINCE 23
E. AVERAGE QUANTITY OF MEDICATION CONSUMED PER INSURED CONSUMER BY REIMBURSEMENT SCHEME AND BY PROVINCE 24

3.3. VOLUME OF PRESCRIBED MEDICATION **25**

A. CONSUMPTION OF DDD PER 100.000 INSURED 25
B. VOLUME DISTRIBUTION (DDD) OF ATC CODES DELIVERED 26
C. SPECIALISATION OF PRESCRIBERS 27
D. EVOLUTION OF DDD CONSUMPTION PER 100.000 INSURED PERSONS 28

3.4. EXPENDITURE BORNE BY THE HEALTH INSURANCE AND BY THE INSURED **32**

A. EXPENDITURE BORNE BY THE HEALTH INSURANCE 32
B. EVOLUTION OF EXPENDITURE PER INSURED 34
C. EVOLUTION OF EXPENDITURE PER ATC CODE AND PER DDD 36
D. EXPENDITURE BORNE BY THE INSURED CONSUMER (PATIENT SHARE) 37

4. KEY DATA SUMMARY **38**

5. APPENDICES **39**

A. ANALYSIS OF VARIANCE (ANOVA), EXCEPT BRUSSELS (BASED ON INSURED-CONSUMERS) 39
B. PERCENTAGE OF LOW-COST MEDICATION 40
C. VARIATIONS IN THE TYPE OF MEDICATION DELIVERED (BASED ON DDD) 43
D. SALES VOLUMES OUTSIDE THE HEALTH INSURANCE 45

1. INTRODUCTION

Since the 1st of October 2025, the Appropriate Care Unit has been integrated into the new Appropriate Care Directorate of the NIHDI's Healthcare Service.

It was on the initiative of the Appropriate Care Unit that analyses of the distribution and evolution of consumption, in terms of volume and expenditure per insured person in Belgium, were developed and refined over the years.

Its creation within the Research-Development-Quality Directorate of the NIHDI's Healthcare Service is a result of the NIHDI's 2016-2018 Administration Contract[1]. Article 35 of this contract refers to 'the setting up of an Appropriate Care Unit, aiming specifically to promote an integrated approach to the rational use of resources'. The Appropriate Care Unit has been up and running since the second quarter of 2017.

The tasks of the Unit were set out formally in the '2016-2017 Healthcare monitoring Action plan', published by NIHDI on 18 July 2016[2]. This plan lists around thirty measures designed to make healthcare provision more efficient, by encouraging appropriate practice and tackling unnecessary or inappropriate care.

The plan states that one of the tasks of the Appropriate Care Unit is to analyse the 'appropriateness of care', in order to identify unexplained variations in consumption patterns, identified after standardisation. Such variations can potentially point to non-optimal use of resources.

"Medication use" documents report on the analyses carried out in this framework. Each report focuses on a particular topic. In this document, we present the figures and graphs relating to analyses[3] of insured consumers of Anticholinergics (65 and over) (min 80 DDD) and of the volumes dispensed within the framework of the health insurance (assimilated to their consumption), and give the explanations necessary to understand these.

We have deliberately chosen not to attempt to interpret the figures, preferring to present the results to experts who are in a better position to do so. This document has nevertheless been made available to the public in order to provide objective, open input to discussions on this issue.

[1] (National Institute for Health and Disability Insurance, 2016)
[2] (National Institute for Health and Disability Insurance, 2016)
[3] Readers interested in the methodology used in these quantitative analyses should consult the document entitled 'Variations in consumption – Methodology'.

2. METHODOLOGY

A. ATC codes (Anatomical Therapeutic Chemical Classification System) selected for this analysis

The ATC codes selected for the analysis are listed below:

Medication - Anticholinergics (65 and over) (min 80 DDD)

ATC-Code	Description	Rates	Expenses	CodeGroup
N06AA02	IMIPRAMINE	Yes	Yes	
N06AA04	CLOMIPRAMINE	Yes	Yes	
N06AA09	AMITRIPTYLINE	Yes	Yes	
N06AA10	NORTRIPTYLINE	Yes	Yes	
N06AA12	DOXEPIN	Yes	Yes	
N06AA16	DOSULEPIN	Yes	Yes	
N06AB03	FLUOXETINE	Yes	Yes	1_Antidepressant
N06AB04	CITALOPRAM	Yes	Yes	
N06AB05	PAROXETINE	Yes	Yes	
N06AB10	ESCITALOPRAM	Yes	Yes	
N06AX05	TRAZODONE	Yes	Yes	
N06AX11	MIRTAZAPINE	Yes	Yes	
A02BA01	CIMETIDINE	Yes	Yes	
A02BA02	RANITIDINE	Yes	Yes	
A03FA03	DOMPERIDONE	Yes	Yes	
A07DA03	LOPERAMIDE	Yes	Yes	
A07DA53	LOPERAMIDE, COMBINATIONS	Yes	Yes	
G04BD04	OXYBUTYNIN	Yes	Yes	
G04BD07	TOLTERODINE	Yes	Yes	
G04BE07	APOMORPHINE	Yes	Yes	
M03BX02	TIZANIDINE	Yes	Yes	
N02AA01	MORPHINE	Yes	Yes	
N02AA05	OXYCODONE	Yes	Yes	
N02AA08	DIHYDROCODEINE	Yes	Yes	
N02AA51	MORPHINE, COMBINATIONS	Yes	Yes	
N02AA58	DIHYDROCODEINE, COMBINATIONS	Yes	Yes	
N02AA59	CODEINE, COMBINATIONS EXCL. PSYCHOLEPTICS	Yes	Yes	
N02AB03	FENTANYL	Yes	Yes	
N02AX02	TRAMADOL	Yes	Yes	
N03AE01	CLONAZEPAM	Yes	Yes	
N03AF01	CARBAMAZEPINE	Yes	Yes	
N04AA01	TRIHEXYPHENIDYL	Yes	Yes	
N04BB01	AMANTADINE	Yes	Yes	
N05AA02	LEVOMEPROMAZINE	Yes	Yes	2_Other_drug
N05AD01	HALOPERIDOL	Yes	Yes	
N05AH02	CLOZAPINE	Yes	Yes	
N05AH03	OLANZAPINE	Yes	Yes	
N05AH04	QUETIAPINE	Yes	Yes	
N05AX08	RISPERIDONE	Yes	Yes	
N05BA01	DIAZEPAM	Yes	Yes	
N05BB01	HYDROXYZINE	Yes	Yes	
N05CD05	TRIAZOLAM	Yes	Yes	
R03AL01	FENOTEROL AND IPRATROPIUM BROMIDE	Yes	Yes	
R03AL02	SALBUTAMOL AND IPRATROPIUM BROMIDE	Yes	Yes	
R03BB01	IPRATROPIUM BROMIDE	Yes	Yes	
R03DA04	THEOPHYLLINE	Yes	Yes	
R03DA54	THEOPHYLLINE, COMBINATIONS EXCL. PSYCHOLEPTICS	Yes	Yes	
R03DA74	THEOPHYLLINE, COMBINATIONS WITH PSYCHOLEPTICS	Yes	Yes	
R05DA01	ETHYLMORPHINE	Yes	Yes	
R05DA04	CODEINE	Yes	Yes	
R06AA02	DIPHENHYDRAMINE	Yes	Yes	

This (simplified) table shows the ATC codes selected for the analysis, stating whether or not they were included in the analysis of prescriptions and expenditure, with their label. The ATC code groupings used in this report are indicated in the CodeGroups columns (if applicable). Medications considered "low-cost" are listed on the NIHDI website.

B. Source of data and analysis period

The data used in the analyses have been taken from the following databases:

Pharmanet document	For the percentage of insured consumers, the volume of medicines dispensed (equivalent to the consumption of medicines consumed and converted into DDD per 100,000 insured) and the amount of expenses of insured persons (who meet the selection criteria) whose age, sex, preferential regime and district are known in 2021-2024. The data are collected per accounting period.

Analysis period	2021-2024

Pharmanet documents: Pharmanet documents are data from public pharmacies communicated by the invoice offices within the framework of the health care insurance. These data show the information of the prescriptions issued, namely the identifier of the substance issued, the number of packages, the date of sale, an encrypted patient code and the prescriber code. **These data mainly concern medicines reimbursed under the health insurance scheme**
Packaging is converted into DDD (Defined Daily Dose) according to the references of the World Health Organization. The IPhEB (Institute for Pharmaco-Epidemiology in Belgium) explains that this daily dose corresponds to the assumed average maintenance dose per day for a drug used for its main indication in adults. It takes into account the route of administration: for example, that the DDD of morphine is 100 mg orally and 30 mg parenterally or rectally.
Cheap drugs are identified on the basis of their CNK code (The CNK code is a unique identification number per package, assigned to all drugs and para-pharmaceuticals (medical devices, food supplements, cosmetics ...) delivered in pharmacies).
Pharmanet also provides the following information on patients: can be retrieved: age, gender, social category and district of residence.
Cross-referencing the prescriber code with NIHDI data allows the prescriber's specialty to be retrieved.
Finally, the comparison of Pharmanet with the database "LMPB - IQVIA" (which are the sales of wholesalers to public pharmacies) converted into DDD allows to estimate the approximate share of medicines delivered outside insurance.

C. Specific selection criteria

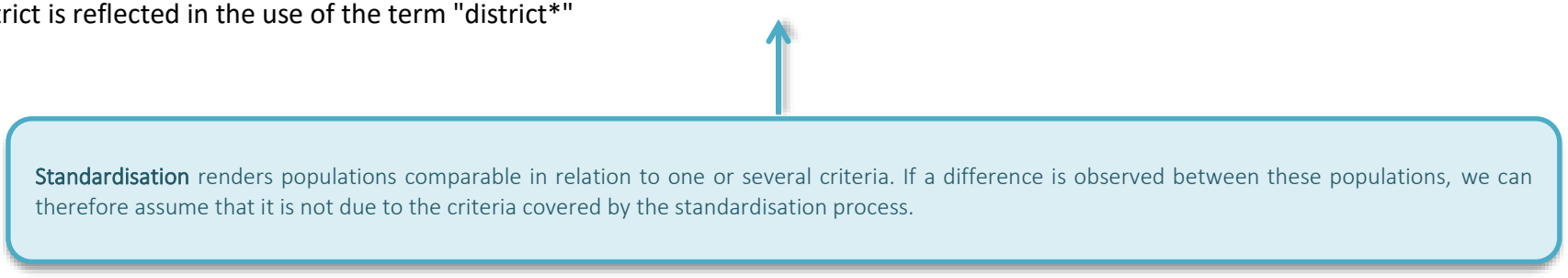
Several filters may have been applied to the data, so that only one section of the population or prescribers is considered in the analyses. If so, the filters used are shown in the table below:

FILTERS APPLIED TO DATA	
Sex	women and men
Age	>=65
Other	Min 80 ddd per drug per year

D. Standardisation

Data presented by geographical subset* or population category are standardised per year, based on age, sex and preferential regime of the national population in 2024.

Note: Districts with fewer than 100,000 insured persons are associated with a neighbouring district from the same province. The following districts are therefore considered together: Oostende/Veurne, Ieper/Diksmuide, Roeselare/Tielt, Gent/Eeklo, Charleroi/Thuin, Huy/Waremme, Namur/Philippeville, Neufchâteau/Marche-en-Famenne, Virton/Bastogne/Arlon. These regroupings and labels apply to all measurements, maps and graphs produced by district. Throughout the document, the concept of regrouped district is reflected in the use of the term "district"



3. RESULTS

3.1. Profile of insured consumers

A. Volume of insured consumers

	TOTAL
Number of consumers	*434.236*
Percentage of insured consumers	17,58%

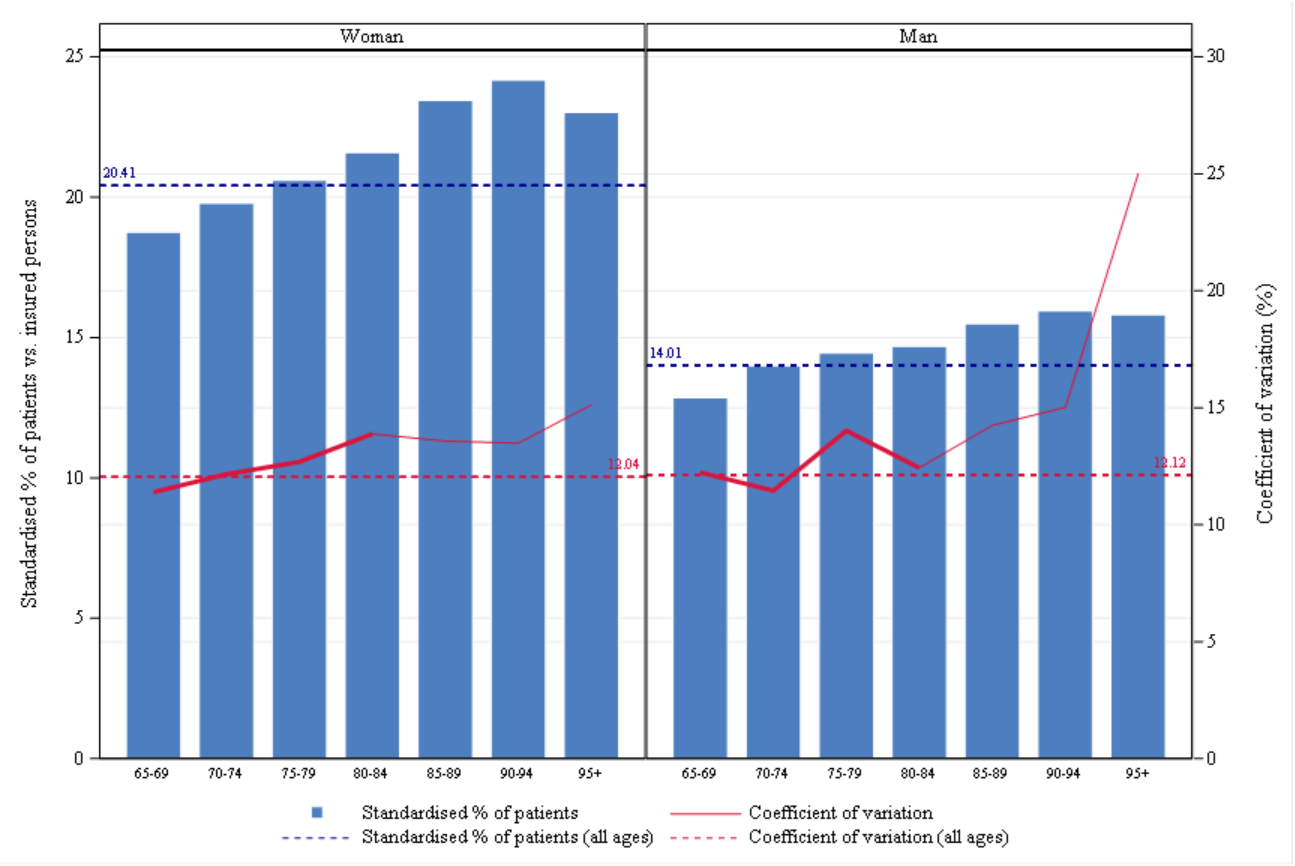
B. Insured consumers by sex and age group

	TOTAL
Number of insured consumers	*434.236*
Median age (years)	75
Mean age (years)	76,57
Max/Min Ratio of the median age (by district*)	1,04
Percentage of women	65,48%

Max/Min Ratio:

The max/min ratio measures the dispersion of values. It is calculated as the ratio of the maximum value found for the variable, in all districts*, to the minimum value. If this minimum value is equal to zero, the max/min ratio cannot be calculated, and is reported as 'NA' ('not applicable').

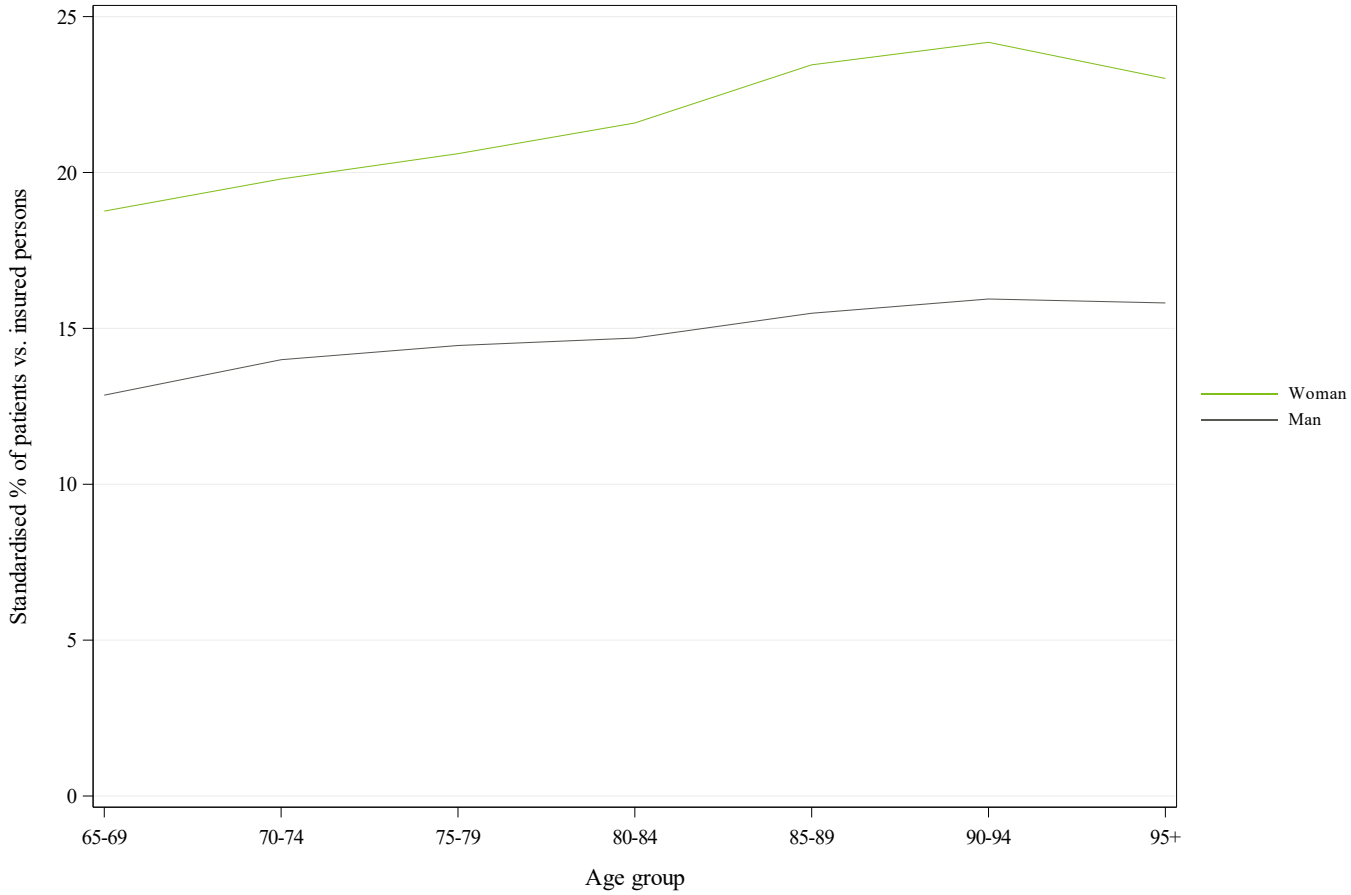
* Some districts are grouped together, see page 7, Standardisation.



Percentage of insured consumers and coefficient of variation by district*, by age group and sex

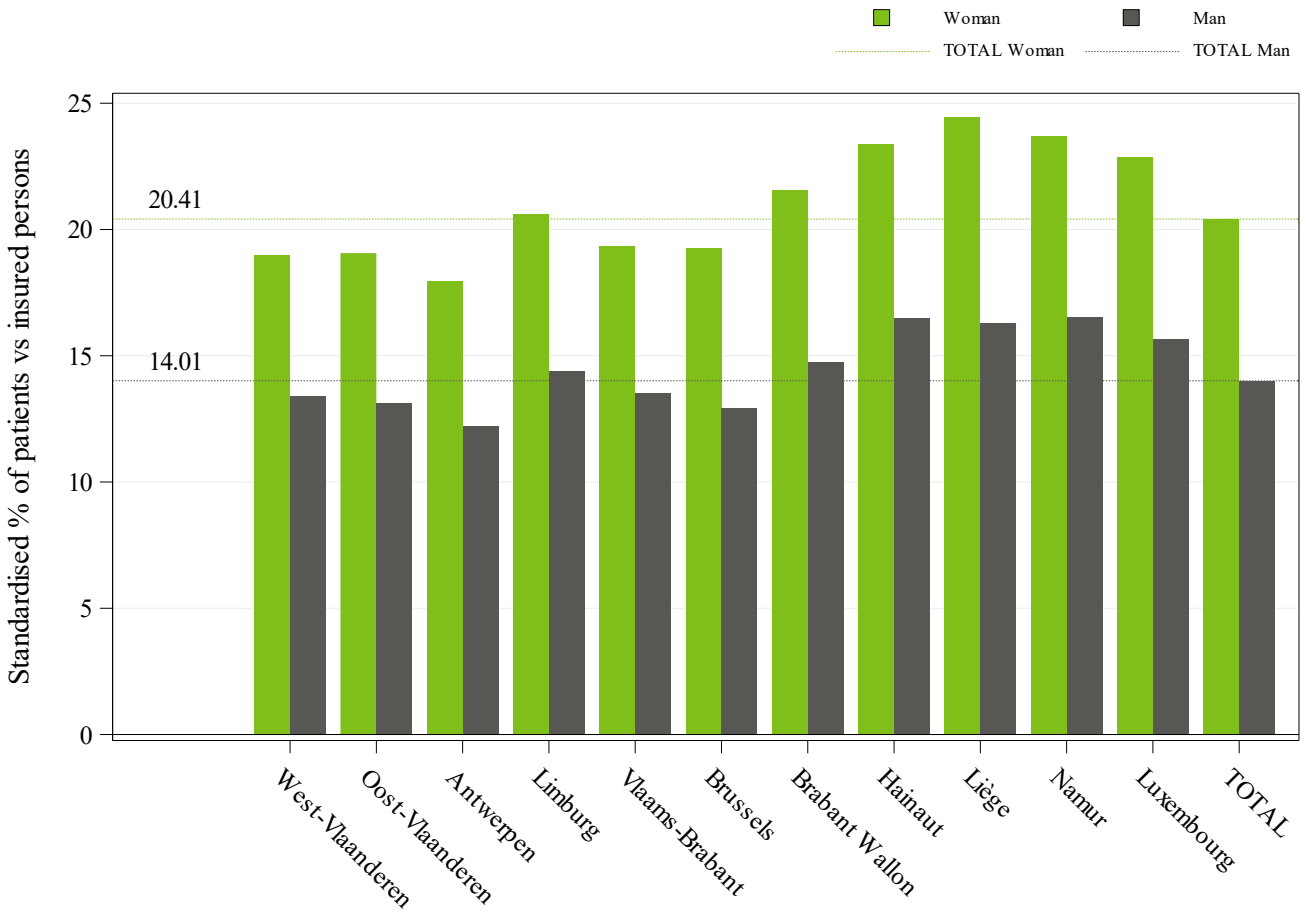
This figure is made up of bar charts for each sex. The **coefficient of variation**, shown by the red line, measures the relative dispersion of the percentages of insured consumers observed for each district*, by age group and sex (standard deviation divided by the mean). This line is shown in bold for age groups where the coefficient of variation can be validly interpreted (i.e. for age groups in which there are sufficient insured persons per district* to allow for a proper comparison).

The left-hand vertical axis of the graph represents the percentage of insured consumers, and the right-hand axis the coefficient of variation. The horizontal axis shows the age groups. The horizontal dotted lines show the total values of the percentage of insured consumers (in blue) and of the coefficient of variation (in red).



Comparison of the percentage of insured consumers by age group and sex

Medication - Anticholinergics (65 and over) (min 80 DDD)

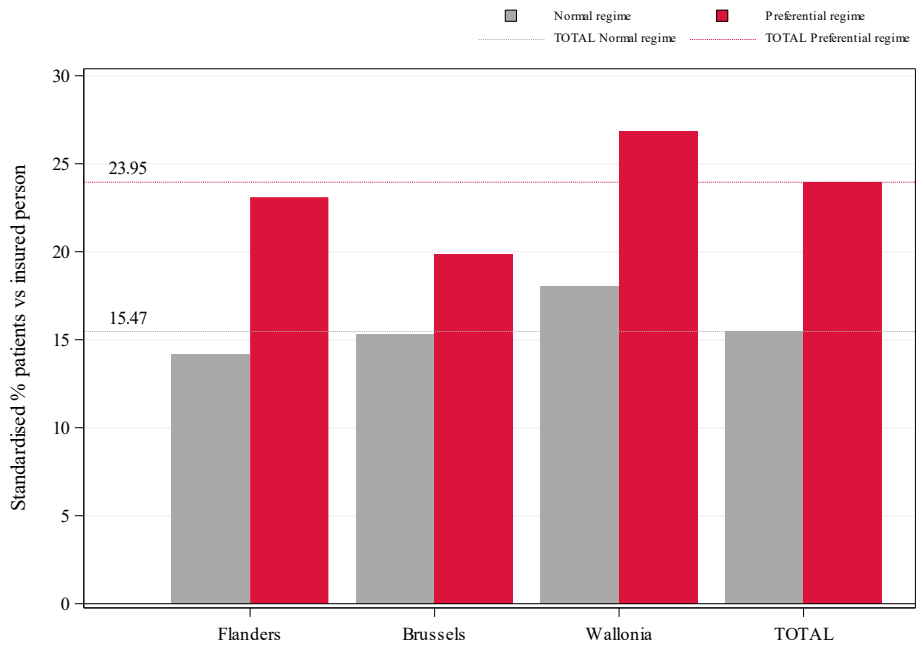


Percentage of insured consumers by province

This histogram shows the percentage of insured consumers by province and by sex. The grey bars show the rates for men, while the green bars show the rates for women, for each province. The grey and green broken lines show the percentage of insured consumers according to the same colour code.

C. Insured consumers by reimbursement scheme

	TOTAL
Number of insured consumers	*434.236*
% of insured consumers under the preferential scheme	23,95%
% of insured consumers under the general scheme	15,47%
Ratio Preferential scheme /General scheme	1,55



Percentage of insured consumers by reimbursement scheme and by region

The graph shows the percentages of insured consumers with (in red) and without (in grey) the preferential reimbursement scheme, by region and in total. The red and grey dotted lines show the percentages of insured consumers, with and without the preferential reimbursement scheme, respectively.

D. Geographical variations of insured consumers

	TOTAL
Number of insured consumers	*434.236*
Coefficient of Variation	11,97%
Max/Min Ratio of percentages insured consumers (by region)	1,23
Max/Min Ratio of percentages insured consumers (by district*)	1,52

An 'NA' result indicates a ratio which cannot be calculated, i.e. the minimum value = zero.



A **dot plot** is a distribution chart, which is useful for highlighting groups in the data, gaps in the distribution and outliers. Here, each dot represents the percentage of insured consumers of a district*, for its entire population or broken down by sex.

The graph also shows a box with the 25th, 50th and 75th percentiles of the percentages of insured consumers for all districts*. The bottom line of the box represents the 25th percentile, while the upper line represents the 75th percentile. The line inside the box represents the 50th percentile.

'Dot plot' showing percentages of insured consumers by district*, by sex



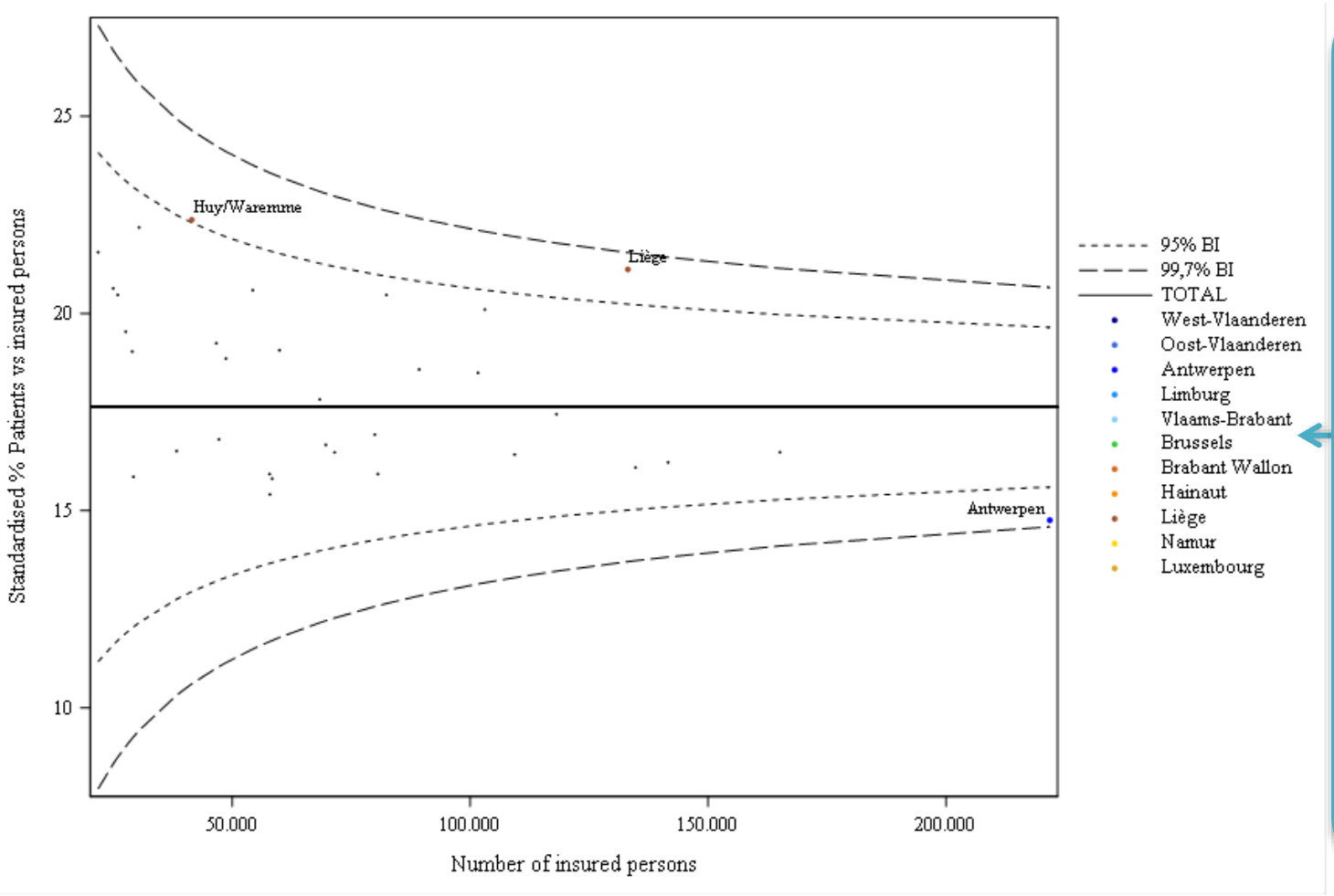
Map showing distribution of percentages of insured consumers, by district*

On this map of Belgium, thin lines show the boundaries of the districts*, while thick lines show the provincial borders. The districts* are coloured using a colour scale based on the level of rate of use in the district* compared to the Belgian national rate (overall rate). This ratio is expressed as a percentage: e.g. 0% if the district* rate is equal to the percentage of insured consumers in Belgium, 20% if the rate is 20% above the percentage of insured consumers, and -20% if the rate is 20% below the percentage of insured consumers. The differences are calculated using the last year analysed, and are displayed in bands of 20%. The following colour coding applies:

Colour	Category
	More than 50%
	Between 30% and 50%
	Between 10% and 30%
	Between - 10% and 10%
	Between -30% and -10%
	Between -50% and - 30%
	Less than -50%
	Not used

N.B.: The interpretation of this map is to be done in parallel with the graph in funnel plot (next page)

* Districts marked with * or ^ are grouped together within the same province.
see page 7, Standardisation

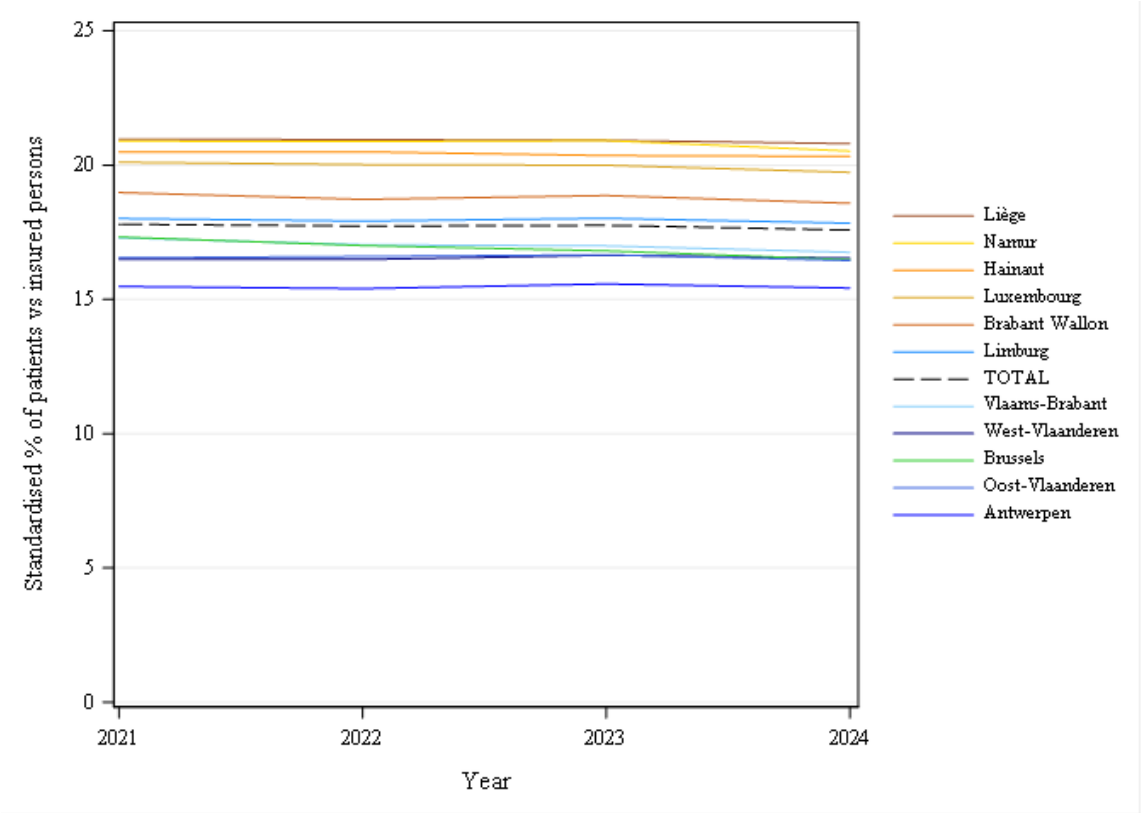


In this graph, the percentage of insured consumers in a district* is positioned versus the size of its population. Besides the dots representing the districts*, 95% and 99.7% **confidence intervals** are also shown on the graph. These are dependent of the size of the districts*. The thicker horizontal line shows the national percentage of insured consumers. The outlier districts* are identified as those districts* that fall outside the 99.7% confidence intervals, the zone between the 95% and 99.7% confidence intervals being considered as "warning zone".

N.B.: The interpretation of this graph is to be done in parallel with the map of the distribution of rates of use (previous page)

'Funnel plot' showing the percentages of insured consumers by district*

E. Evolution of insured consumers



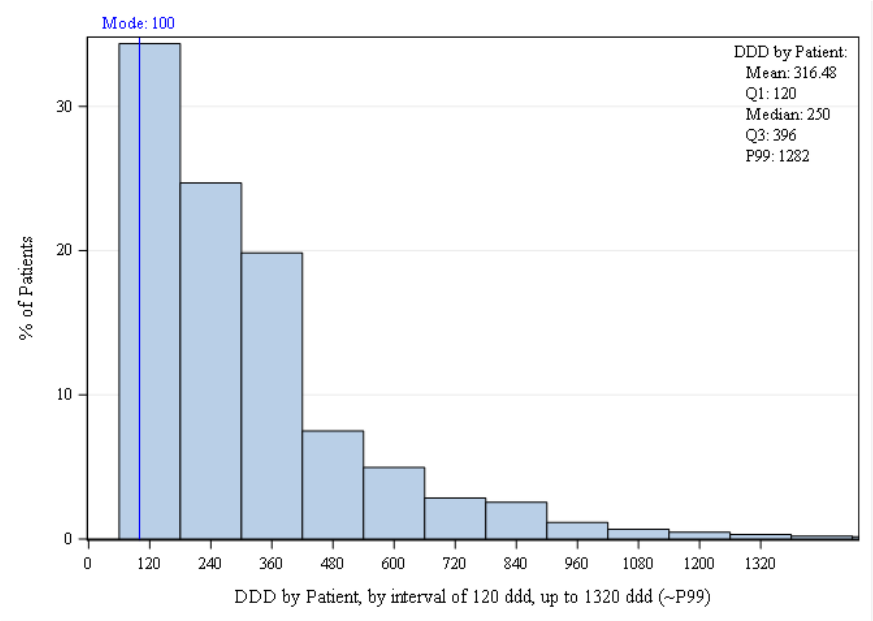
Evolution of percentage of insured consumers by province

3.2. Consumption per insured consumer

A. Quantity of medication consumed per insured consumer

	TOTAL
Consumption of medication per year (DDD)	*137.425.499*
Number of consumers	434.236
Percentage of insured consumers	17,58%
Number of DDD per insured consumer	316

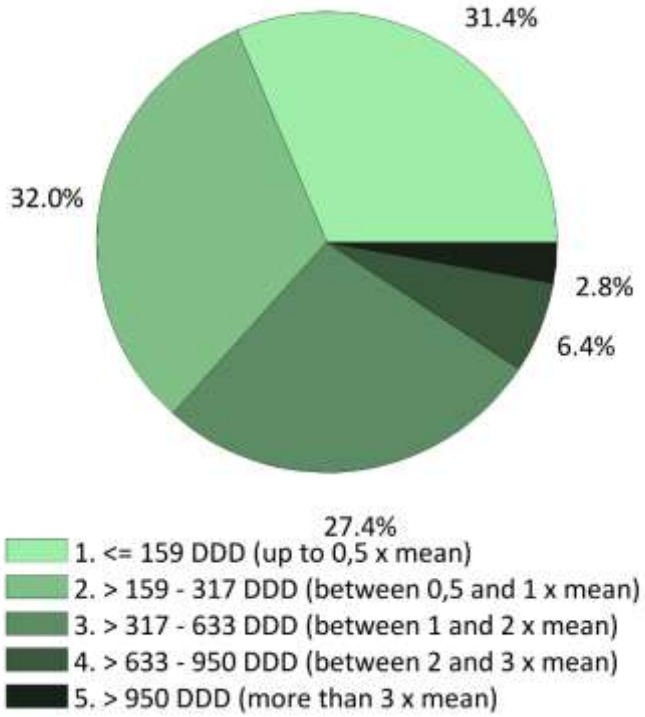
B. Distribution of insured consumers in consumption classes and by annual average



Distribution of insured consumers into consumption classes

The insured consumers are divided according to their annual consumption. High frequencies (peaks) in different classes may reflect differences in **treatment duration** or **dosage** (depending on the prescription, patient profile, pathology, compliance, etc.), but may also reflect other biases such as, among others, repetition of episodes over the year or the timing of initiation of chronic treatment.

Frequency	Per year
≤ 0,5 times the average annual consumption	31,37%
>0,5 and ≤1 times the average annual consumption	31,97%
>1 and ≤2 times the average consumption	27,41%
>2 and ≤ 3 times the average consumption	6,41%
>3 times the average annual consumption	2,85%

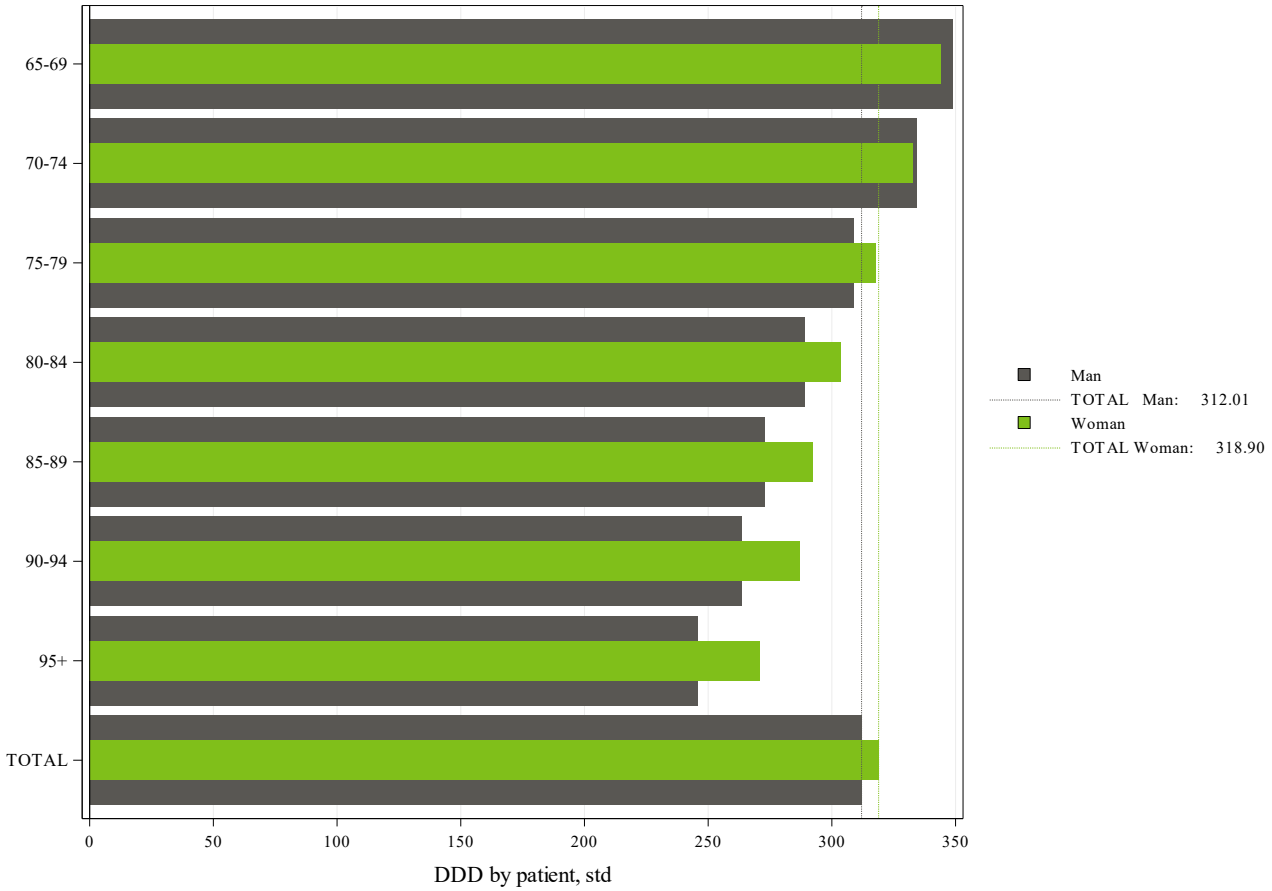


Distribution of insured consumers by average annual dose delivered

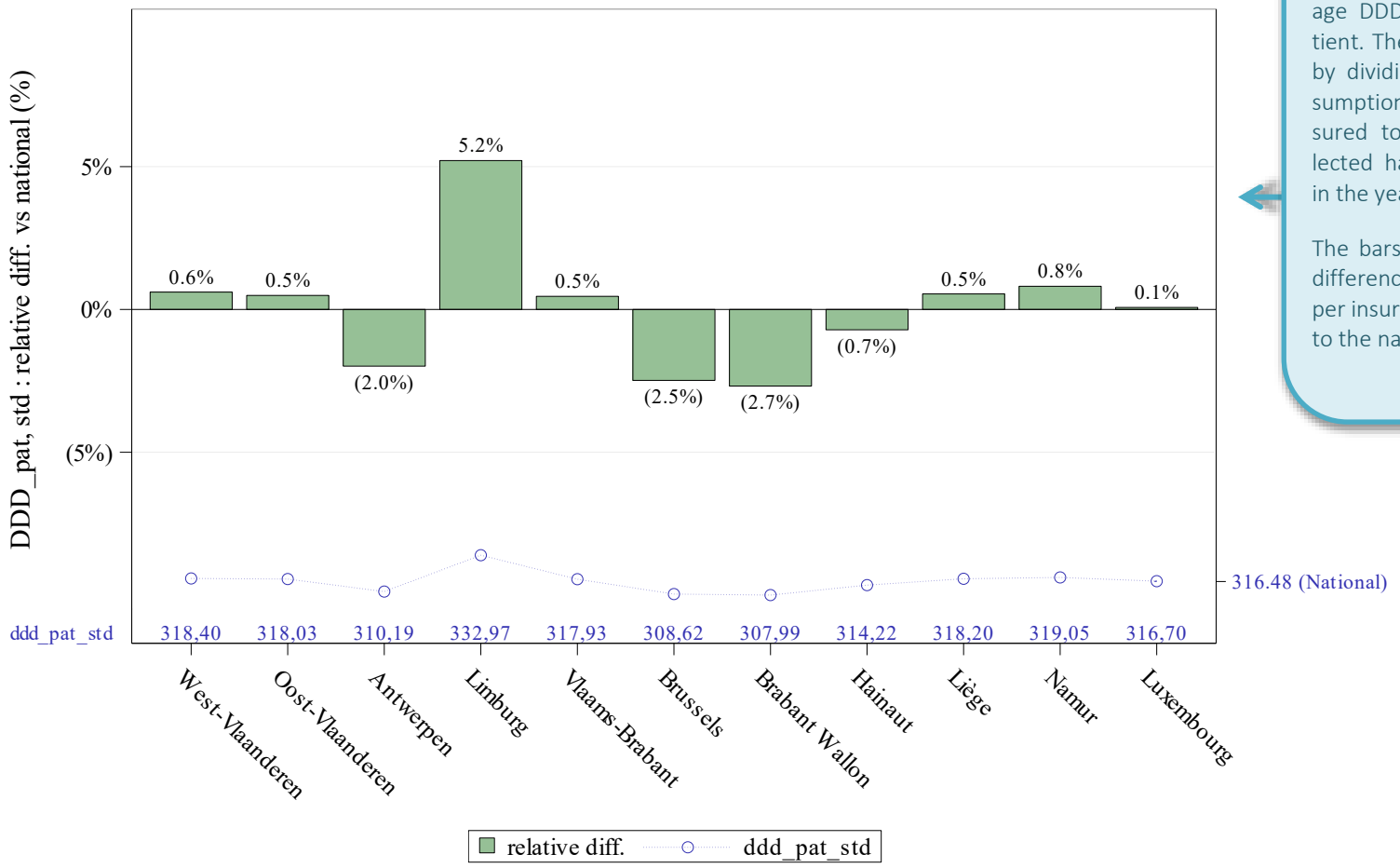
The insured consumers are divided according to their consumption in relation to the national average dose.
Variations in doses may reflect differences in **treatment duration** or **dosage** (depending on the prescription, patient profile, pathology, compliance, etc.), but may also reflect other biases such as, among others, repetition of episodes over the year or the timing of initiation of chronic treatment.

C. Average quantity of medication consumed by sex and age per insured consumer

	Women	Men	Ratio W/M
Percentage of insured consumers	20,4%	14,0%	1,46
Number of DDD per insured consumer	318,9	312,0	1,02



D. Average quantity of medication consumed per insured consumer by province



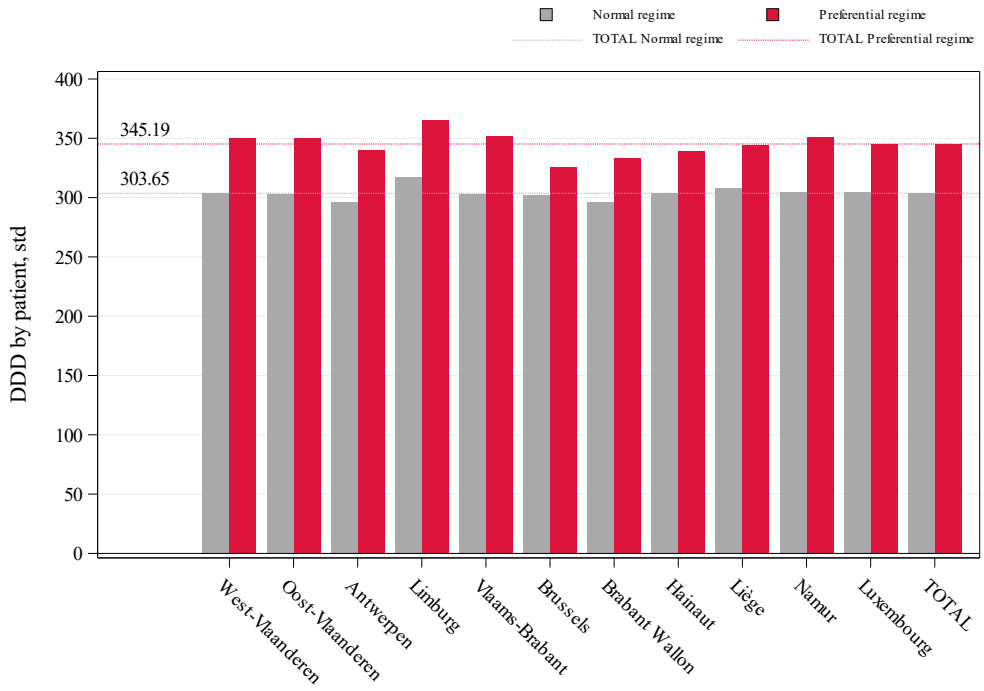
The dotted line shows the average DDD consumption per patient. The indicator is calculated by dividing the total DDD consumption by the number of insured to whom the drugs selected have been administered in the year.

The bars by province show the difference in DDD consumption per insured consumer compared to the national average.

Consumption per insured consumer (DDD) by province and variation vs average national value

E. Average quantity of medication consumed per insured consumer by reimbursement scheme and by province

	Preferential scheme	General scheme	Ratio Preferential scheme /General scheme
Percentage of insured consumers	24,0%	15,5%	1,55
Number of DDD per insured consumer	345,2	303,7	1,14



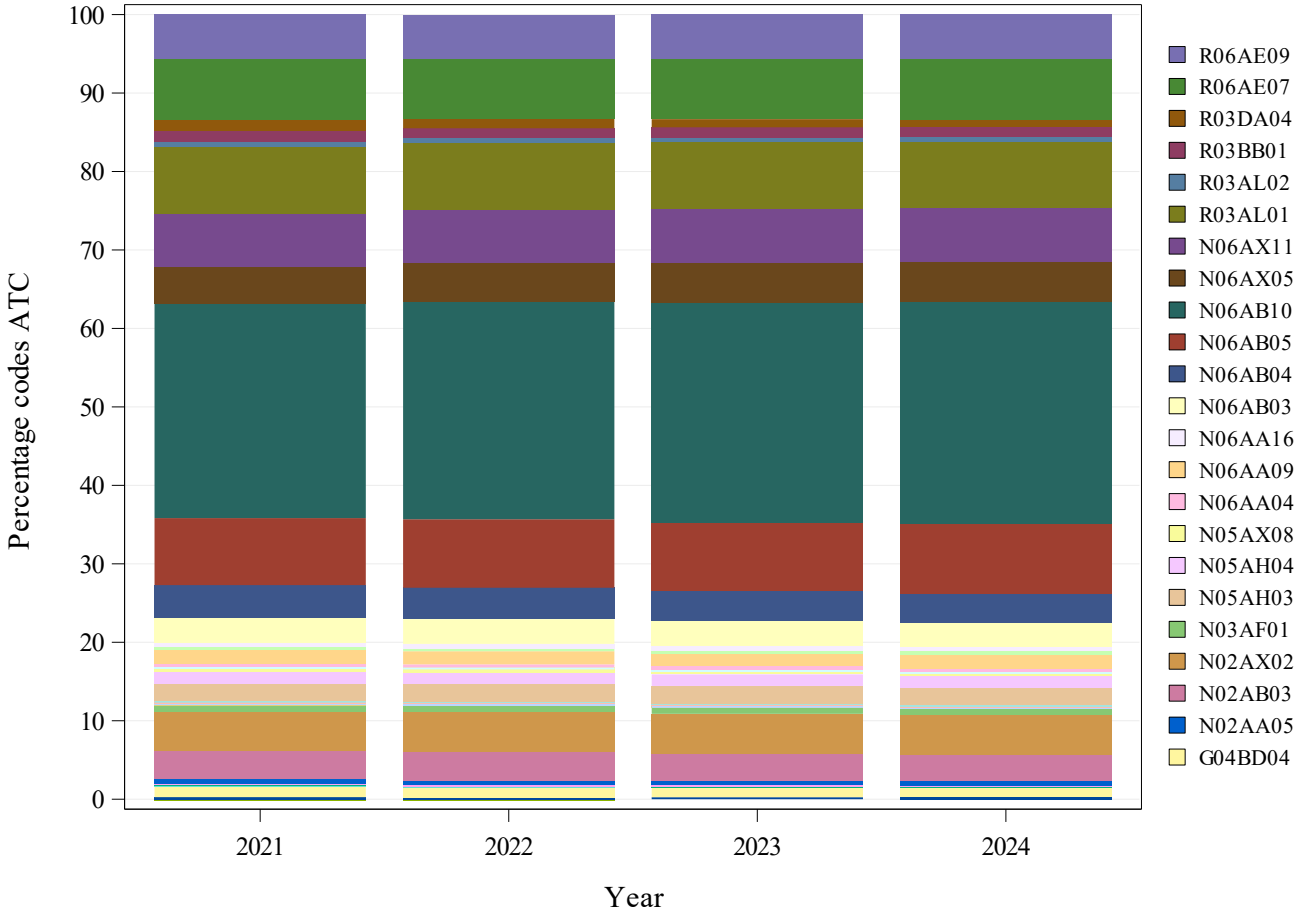
Consumption per insured consumer (DDD) by province and by reimbursement scheme

3.3. Volume of prescribed medication

A. Consumption of DDD per 100.000 insured

	TOTAL
Consumption of medication per year (DDD)	*137.425.499*
Consumption of DDD per 100.000 insured (delivered medication converted to DDD)	5.563.808

B. Volume distribution (DDD) of ATC codes delivered



See the ATC codes selected for the analysis on page 5 for further information on these codes (For ease of reading, the list is limited to the 23 most commonly issued ATC codes)
Note : The year 2020 was highlighted by a vertical line in order to draw the attention on the impact of the COVID-19

C. Specialisation of prescribers

Specialisation of the prescriber	Total prescribers	Concerned prescribers	% Prescribers	Median of prescribed DDD	Q3 of prescribed DDD	Volume of prescribed DDD	% DDD	% cheap DDD	Expenses	% Expenses
General practitioners	20.276	14.773	73%	5.765	11.880	117.244.367	85%	87%	37.134.320	85%
General practitioners in training	5.627	3.267	58%	909	2.160	4.990.817	4%	85%	1.572.934	4%
Psychiatry	2.813	1.537	55%	1.417	3.501	4.323.817	3%	88%	1.755.734	4%
Pneumology	838	646	77%	1.477	3.203	1.590.630	1%	40%	508.668	1%
Specialists in training	9.544	3.472	36%	196	515	1.411.284	1%	85%	477.582	1%
Neurology	833	652	78%	1.166	2.770	1.409.082	1%	90%	406.023	1%
Other specialities	45.043	12.237	27%	362	685	6.455.501	5%	89%	1.947.070	4%
Total	84.974	36.584	43%	754	4.523	137.425.499	100%	87%	43.802.330	100%

This table shows, in order, the following non-standardised data per specialities (figures for the year 2024):

- The number of prescribers who prescribed at least one medicine delivered;
- The number of prescribers who prescribe the ATC codes selected for this analysis;
- The percentage of prescribers prescribing these codes out of the number of providers who prescribed at least one medicine delivered;
- The median number and third quartile (= 75th percentile) of services per prescriber (prescribing codes);
- The volume of DDD prescribed, i.e. the volume of sales of medicines converted into DDD broken down by prescriber's specialty;
- The percentage of medicines prescribed, i.e. the ratio of the number of medicines dispensed by this speciality to the total number of medicines prescribed among the ATC codes selected;
- The percentage of low-cost drugs, i.e. the ratio of the number of medicines identified as "cheap" by national code number (CNK) to the total number of medicines dispensed among the selected ATC codes;
- Expenditure refers to the total costs borne by insurance (excluding patient share and non-insurance sales);
- The percentage of expenditure is the share of expenditure broken down by prescriber specialty in relation to total expenditure.

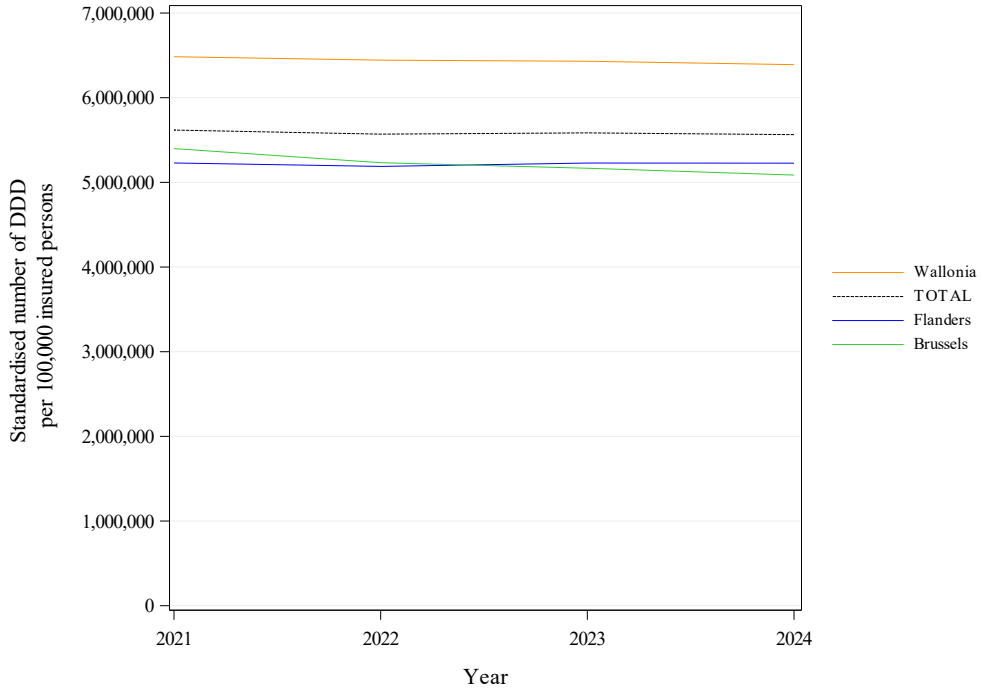
If applicable, specialties representing less than 1% of the total number of DDDs prescribed or with fewer than 5 prescribers are grouped together in the "Other specialties" category. For reasons of confidentiality, this "Other speciality" category will only be reported if there are at least 5 prescribers in total.

D. Evolution of DDD consumption per 100.000 insured persons

	TOTAL	
Annual consumption (DDD)	***137.425.499***	
Trend (2021-2024)	**-0,32%**	**NS (-0,38%)**
Trend (2021-2022)	-0,86%	NS
Trend (2022-2024)	-0,05%	

These trends correspond to the average annual growth rate.

A non-significant statistical test indicates that the trend estimated by the model (in brackets) is stable, or that there is no break in the trend.

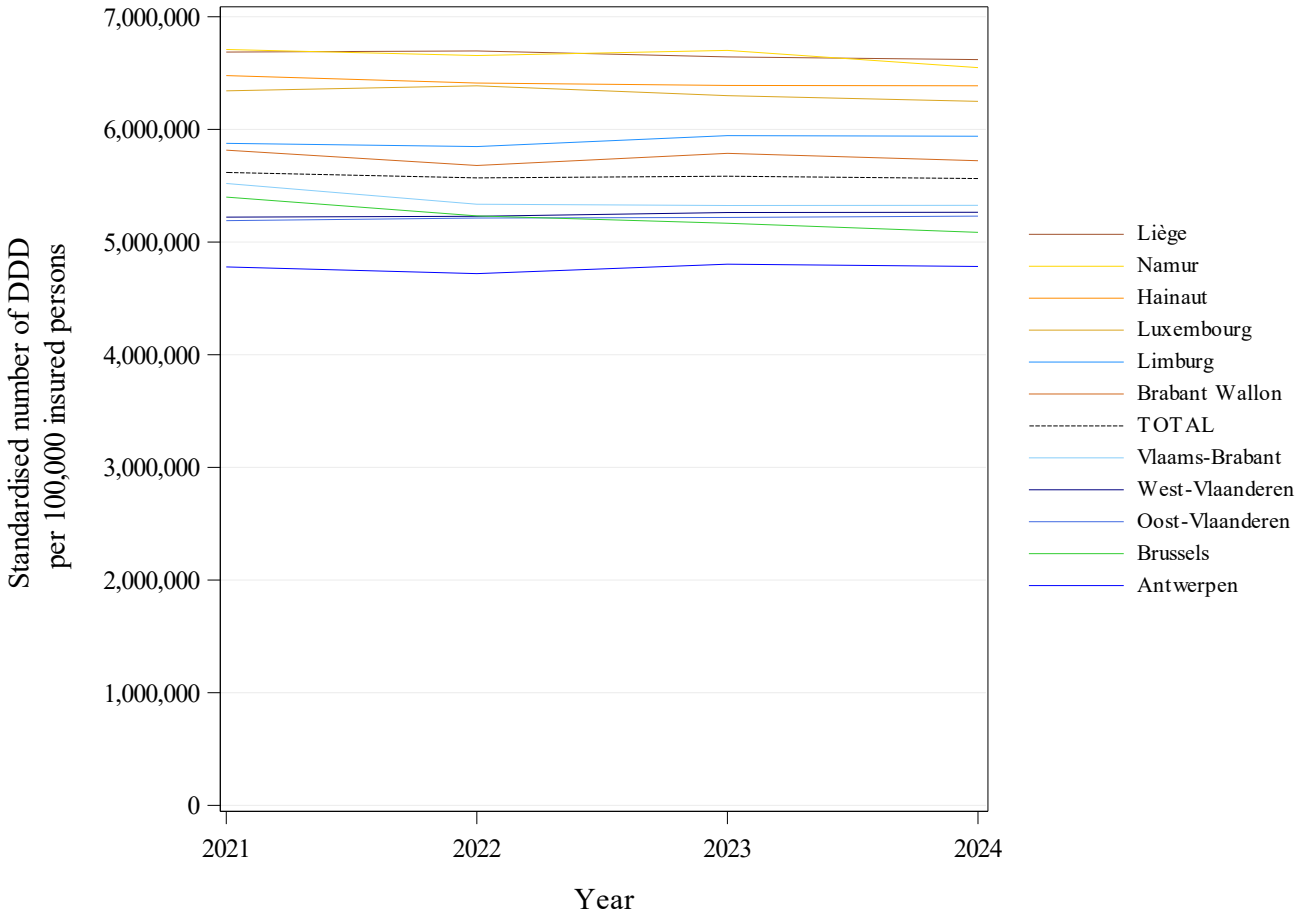


This graph shows a coloured curve for each region and a black curve for the entire Belgian population. The x-axis shows the years, and the y-axis shows the standardised consumption of DDD per 100.000 insured persons.

Note : The year 2020 was highlighted by a vertical line in order to draw the attention on the impact of the COVID-19 crisis.

Evolution of DDD consumption per 100.000 insured persons by region

Medication - Anticholinergics (65 and over) (min 80 DDD)



This graph shows a colored line for each province and a black line for the entire Belgian population. The x-axis shows the years, and the y-axis shows the standardised consumption of DDD per 100.000 insured persons.

Note : The year 2020 was highlighted by a vertical line in order to draw the attention on the impact of the COVID-19 crisis.

Evolution of DDD consumption per 100.000 insured persons by province

		Consumption in DDD	Annual increase			
		2024 *(per 10^5 insured)*	**2021-2024**	**2021-2022**	**2022-2024**	**Structural break**
Provinces	West Flanders	*5.264.606*	0,28%	0,15%	0,34%	NA
	East Flanders	*5.230.284*	0,26%	0,44%	0,16%	NA
	Antwerp	*4.783.317*	0,03%	-1,25%	0,67%	NA
	Limburg	*5.939.329*	0,36%	-0,48%	0,78%	NA
	Flemish Brabant	*5.326.237*	-1,19%	-3,34%	-0,09%	NA
	Brussels	*5.086.304*	-1,97%	-3,09%	-1,41%	NA
	Walloon Brabant	*5.722.113*	-0,54%	-2,34%	0,37%	NA
	Hainaut	*6.387.265*	-0,47%	-1,02%	-0,19%	NA
	Liège	*6.619.565*	-0,33%	0,15%	-0,57%	NA
	Namur	*6.548.254*	-0,81%	-0,80%	-0,81%	NA
	Luxembourg	*6.249.058*	-0,49%	0,70%	-1,09%	NA
Regions	Flanders	*5.227.004*	-0,01%	-0,78%	0,37%	NA
	Brussels	*5.086.304*	-1,97%	-3,09%	-1,41%	NA
	Wallonia	*6.390.483*	-0,48%	-0,62%	-0,41%	NA
	TOTAL	***5.563.808***	**-0,32%**	**-0,86%**	**-0,05%**	**NS**

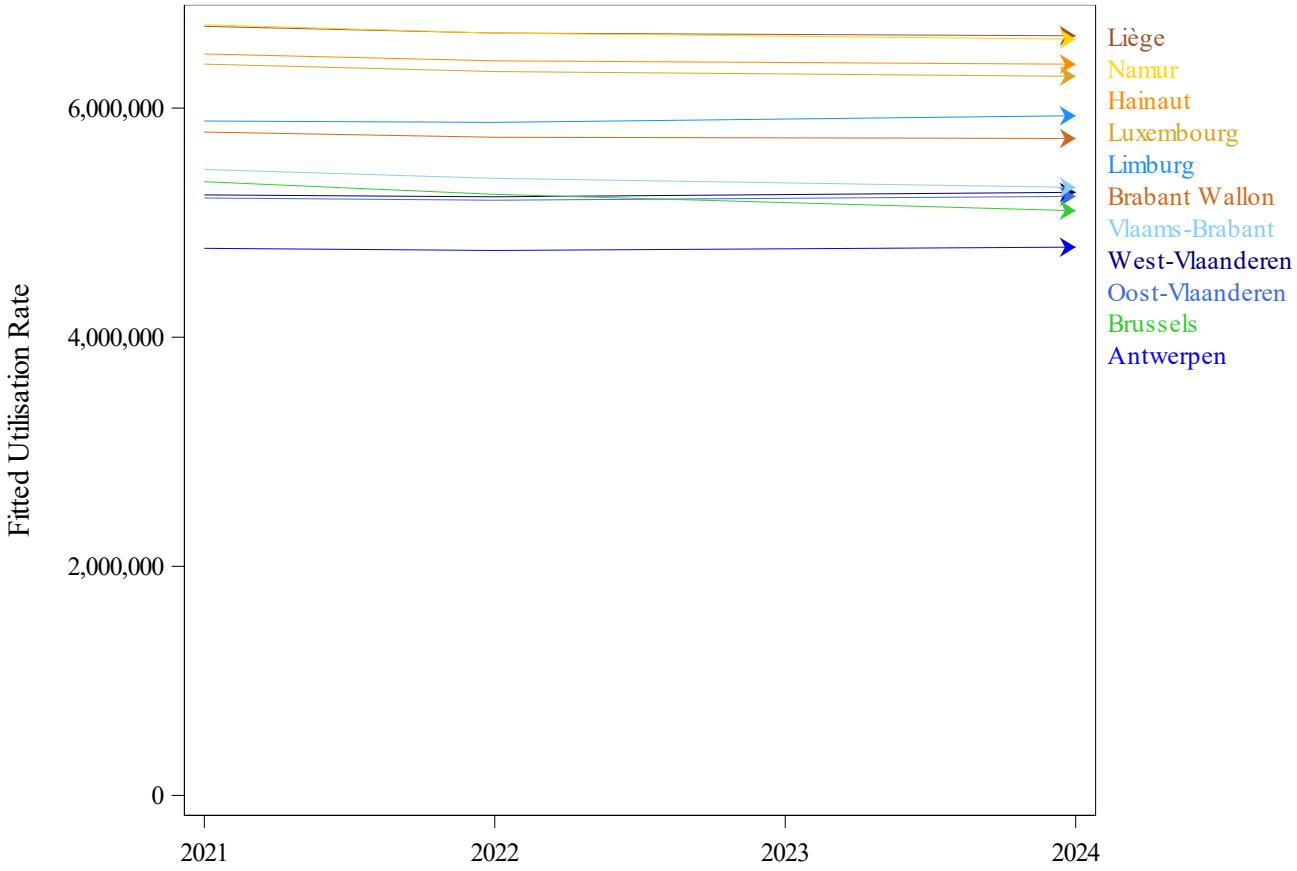
Evolution of DDD consumption by province and by region

This table reports the standardised **consumption of DDD** for the last year analysed (2024), as well as the average **rates of increase**, by province, by region and in total, for the entire period ((2021-2024), for the last years (2022-2024) and for the period preceding these ((2021-2022).

To test whether the trend of the last years differs from the trend of the previous years, a two-stage linear mixed model was applied. The first step tests whether the trend of the last years is different from the previous period at the Belgian level. Then, if the test is significant, the second step tests whether the trend break differs from one region or province to another. Data for 2020 are excluded from the models.

The significance of the test for a change in trend is reported in the Structural break column : ***** P-value ≤ 0.05 / ****** P-value ≤ 0.01 / ******* P-value ≤ 0.001 and NS for a non-significant result.

NA' is shown where the ATC codes selected for the analysis have been used for the first time after the last three-year period considered or when the statistical tests cannot be carried out.



Regression lines per province showing a possibly different slope for the last years (2022-2024) compared to the years before (2021-2022).

Data of 2020 was excluded from this analysis, but is indicated on the graph for information.

Trend break assessment model by province – Regression lines

3.4. Expenditure borne by the health insurance and by the insured

A. Expenditure borne by the health insurance

	TOTAL
Annual consumption (DDD)	*137.425.499*
Annual expenditure	43.802.330€
Average cost per DDD	0,32€
Average annual expenditure per insured	17,73€
Max/Min Ratio of expenditure per insured (by region)	1,32
Max/Min Ratio of expenditure per insured (by district*)	1,5

An 'NA' result indicates a ratio which cannot be calculated, i.e. the minimum value = zero.

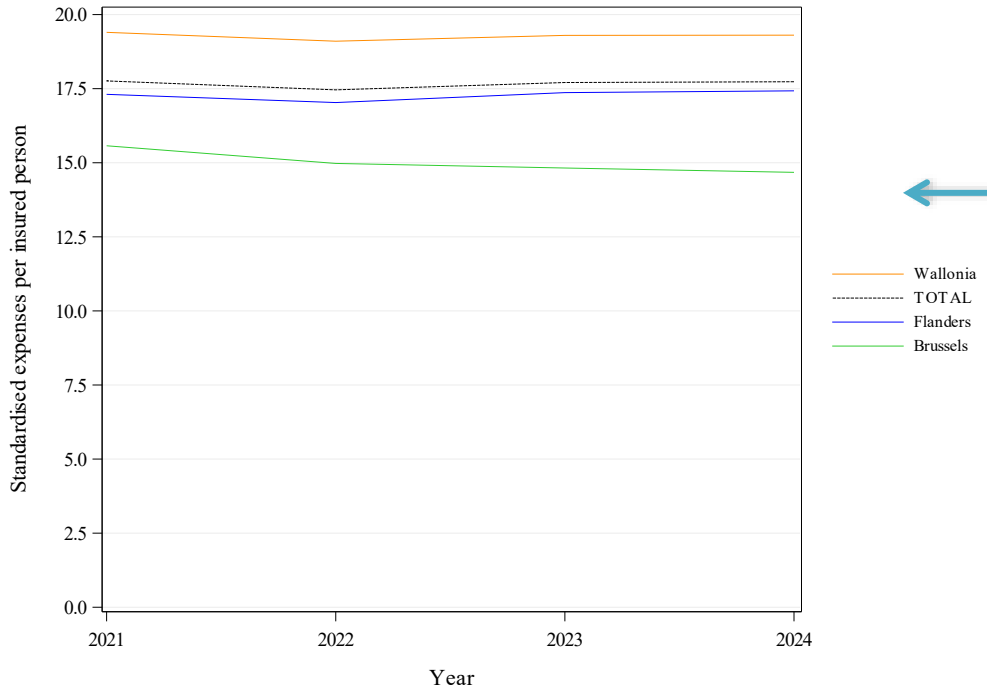
		Expenditure per insured
Provinces	West Flanders	**17,5€**
	East Flanders	**17,6€**
	Antwerp	**16,0€**
	Limburg	**19,7€**
	Flemish Brabant	**17,6€**
	Brussels	**14,7€**
	Walloon Brabant	**16,8€**
	Hainaut	**19,4€**
	Liège	**19,9€**
	Namur	**20,1€**
	Luxembourg	**19,2€**
Regions	Flanders	**17,4€**
	Brussels	**14,7€**
	Wallonia	**19,3€**
	TOTAL	**17,7€**

Regional and provincial distribution of expenditure per insured

B. Evolution of expenditure per insured

	TOTAL
Annual expenditure	43.802.330€
Average annual expenditure per insured	17,73€
Trend (2021-2024)	-0,05%
Trend (2021-2022)	-1,70%
Trend (2022-2024)	0,78%

These trends correspond to the average annual growth rate.



Evolution of expenditure per insured, by region

This graph shows a coloured curve for each region and a black curve for the entire Belgian population. The x-axis shows the years, and the y-axis shows the standardised expenditure based on 2024 population data

Note : The year 2020 was highlighted by a vertical line in order to draw the attention on the impact of the COVID-19 crisis.



Map showing distribution of expenditure, by district*

On this map of Belgium, thin lines show the boundaries of the districts*, while thick lines show the provincial borders. The districts* are coloured using a colour scale based on the level of expenditure in the district* compared to Belgian national (overall) expenditure. This ratio is expressed as a percentage: e.g. 0% if expenditure in the district* is equal to the overall expenditure, 20% if it is 20% higher, and -20% if it is 20% lower. The percentages are calculated using the standardised expenditure of the last year analysed and are displayed in bands of 20%. The following colour coding applies:

Colour	Category
	More than 50%
	Between 30% and 50%
	Between 10% and 30%
	Between - 10% and 10%
	Between -30% and -10%
	Between -50% and - 30%
	Less than -50%
	No expenditure

* Districts marked with * or ^ are grouped together within the same province.
see page 7, Standardisation

C. Evolution of expenditure per ATC code and per DDD

Code_atc	Description	2021	2022	2023	2024	Average annual growth rate
G04BD04	OXYBUTYNIN	0,11	0,12	0,13	0,14	5,96%
N02AA05	OXYCODONE	1,34	1,37	1,32	1,48	3,25%
N02AB03	FENTANYL	1,50	1,47	1,49	1,51	0,21%
N02AX02	TRAMADOL	0,54	0,54	0,56	0,59	2,70%
N03AF01	CARBAMAZEPINE	0,50	0,50	0,53	0,55	3,24%
N05AH03	OLANZAPINE	0,62	0,67	0,64	0,57	-3,11%
N05AH04	QUETIAPINE	1,25	1,23	1,26	1,26	0,19%
N05AX08	RISPERIDONE	2,05	2,02	2,08	1,75	-5,00%
N06AA04	CLOMIPRAMINE	0,38	0,39	0,39	0,41	1,87%
N06AA09	AMITRIPTYLINE	0,22	0,22	0,24	0,25	4,94%
N06AA16	DOSULEPIN	0,53	0,53	0,55	0,58	3,11%
N06AB03	FLUOXETINE	0,15	0,15	0,15	0,16	0,65%
N06AB04	CITALOPRAM	0,23	0,22	0,22	0,23	-0,24%
N06AB05	PAROXETINE	0,22	0,22	0,22	0,23	0,73%
N06AB10	ESCITALOPRAM	0,15	0,15	0,15	0,15	0,45%
N06AX05	TRAZODONE	0,28	0,28	0,29	0,30	2,38%
N06AX11	MIRTAZAPINE	0,36	0,35	0,36	0,36	0,30%
R03AL01	FENOTEROL AND IPRATROPIUM BROMIDE	0,33	0,33	0,34	0,35	2,54%
R03AL02	SALBUTAMOL AND IPRATROPIUM BROMIDE	0,82	0,84	0,86	0,89	2,67%
R03BB01	IPRATROPIUM BROMIDE	0,27	0,32	0,37	0,38	11,85%
R03DA04	THEOPHYLLINE	0,16	0,16	0,17	0,18	3,11%
R06AE07	CETIRIZINE	0,07	0,06	0,07	0,07	1,61%
R06AE09	LEVOCETIRIZINE	0,07	0,07	0,08	0,08	2,61%

Evolution of expenditure per ATC code and per DDD in Euros

(For readability, this list is limited to the 23 most commonly issued ATC codes in 2024)

D. Expenditure borne by the insured consumer (patient share)

	TOTAL
Annual consumption (DDD)	*137.425.499*
Annual expenditure	43.802.330€
Total share of patients	11.414.562€
Average annual patient share per insured consumer[1]	26,29€
% borne by the insured consumer[2]	20,67%

[1] The average financial contribution paid per year per insured consumer of the medicine is calculated by dividing the total share of patients by the number of insured consumers.

[2] This is the share of the insured consumer (patient share) in relation to the total cost of the medicine supplied under the insurance scheme (i.e. excluding sales outside health insurance).

4. KEY DATA SUMMARY

Main prescribers: *General practitioners*	**85%**	
CONTEXT		
Percentage of sales not covered by the health insurance (NIHDI) [1]	**37,5%**	
PROFILE OF INSURED CONSUMERS		
Percentage of insured consumers	**17,58%**	
Median age	**75 y.**	
Percentage of women	**65,5%**	
Ratio Preferential rate/General rate	**1,55**	
Coefficient of variation (2024)	**12,0%**	
CONSUMPTION		
Annual consumption (DDD)	**137.425.499**	
Consumption of DDD (per 100.000 insured persons)	**5.563.808**	
Average annual consumption per insured consumer (in DDD)	**316**	
Percentage insured consumers with more than 3 times the average consumption	**2,85%**	
Coefficient of variation[2] (2021-2023)	**13,05%**	**NS**
Coefficient of variation[3] (2022-2024)	**12,89%**	
Trend[3] (2021-2024)	**-0,32%**	**NS**
Trend[4] (2021-2022)	**-0,86%**	**NS**
Trend[5] (2022-2024)	**-0,05%**	
DIRECT EXPENDITURE (based on DDD)		
Annual expenditure borne by the insurance	**43.802.330€**	
Average annual expenditure per insured	**17,73€**	
Average patient share per insured consumer	**20,7%**	
Percentage low-cost medication	**86,5%**	
Trend (2021-2024)	**-0,05%**	
Trend (2022-2024)	**0,78%**	

[1] Approximate value estimated from the discrepancy between the sales declarations of wholesalers to pharmacies converted into DDD and what is paid by the health insurance and the patients' share (see Annex D). This is a contextual indicator.
[2] The test compares the coefficients of variation for the two periods and indicates whether the difference is statistically significant.
[3] The test indicates whether the observed slope is statistically significantly different from 0%.
[4] The test indicates whether the break in trend between the two periods is statistically significant.

5. APPENDICES

A. Analysis of variance (ANOVA), except Brussels (based on insured-consumers)

Statistical significance of the differences observed in 2024	
By region?	***
By sex?	***
By reimbursement scheme?	***
By sex and per region?	***
By reimbursement scheme and per region?	NS
By sex and per reimbursement scheme?	NS
By sex and reimbursement scheme and per region?	NS

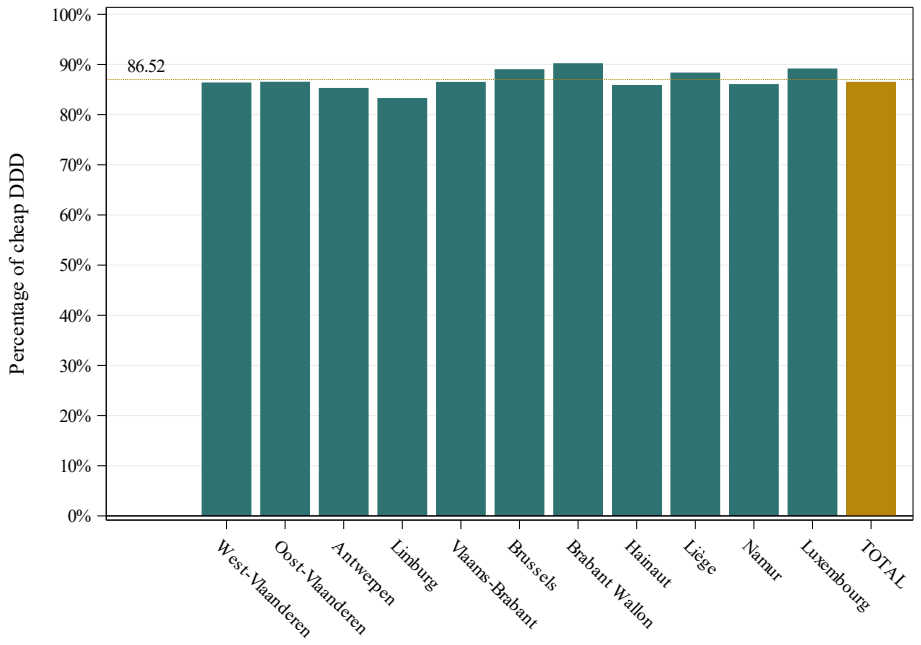
In order to be able to assess the significance of the observed differences, a linear mixed ANOVA model was fitted to the data of all districts* of the Walloon and Flemish regions, after standardising for age. The model has region, sex and reimbursement scheme as fixed effects (main effects) and also contains all two-way and three-way interactions between these effects.

In order to interpret the analysis correctly, first the three-way interaction (last row of the table) should be evaluated, followed by the two-way interactions and finally by the main effects If the three-way interaction is significant, the interpretation of the model should be done at this level only and the two-way interactions and main effects should not be interpreted. If the three-way interaction is not significant, the two-way interactions are evaluated. Every effect that appears in a significant interaction should be interpreted at the interaction level and not at the main effect level. Only if a main effect is not part of a significant interaction should the interpretation be made directly at the main effect level.

The **asterisks** represent the level of statistical significance of the tests: * P-value ≤ 0,05 / ** P-value ≤ 0,01 / *** P-value ≤ 0,001 or NS for a non-significant result.

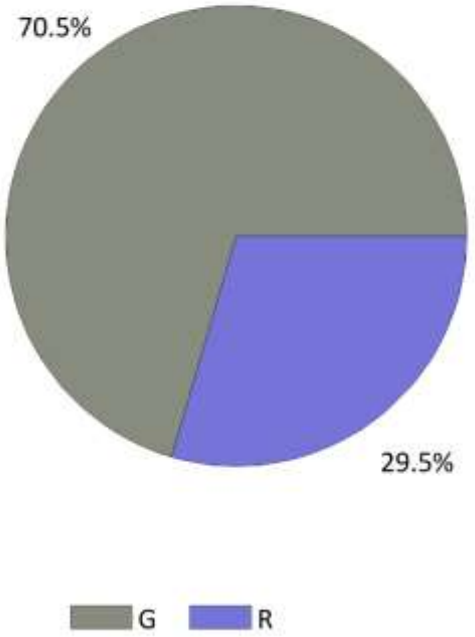
B. Percentage of low-cost medication

	TOTAL
Annual consumption (DDD)	*137.425.499*
Percentage of low-cost medication	86,5%
Max/min ratio of % low-cost (by district*)	1,11



Percentage of 'low-cost' medication delivered nationally and provincially

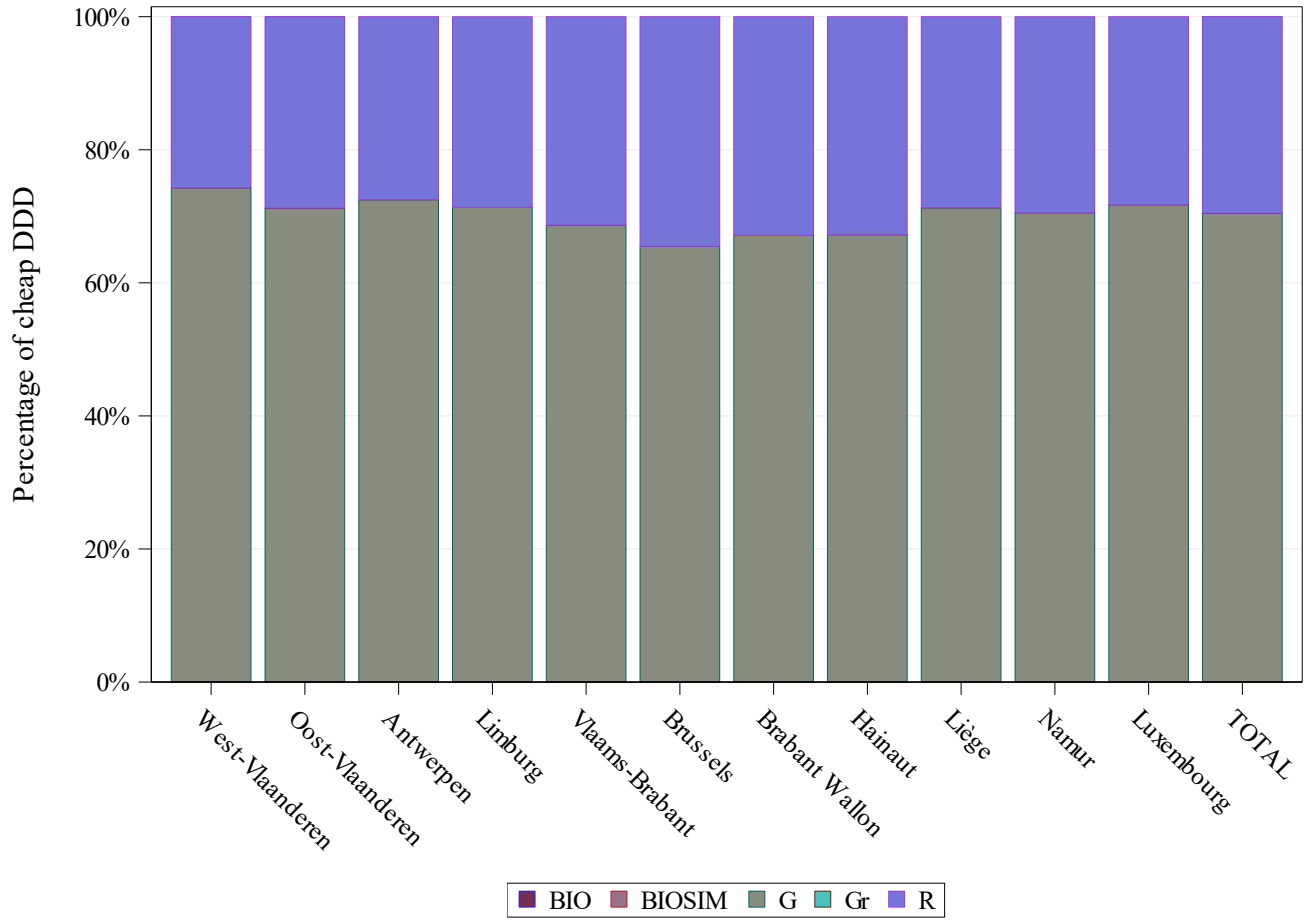
This graph shows the percentage of low-cost DDD vs the total number of DDD delivered. Besides one bar per region, an additional bar is displayed for the Belgian population. The dotted line also depicts this total ratio.



Distribution of DDD by “low-cost” drug class

% low-cost medication	
G	70,46%
R	29,54%
Gr	0,00%
BIOSIM	0,00%
BIO	0,00%

The percentage of low-cost medication is calculated per CNK code (The CNK code is a unique identification number per package, assigned to all drugs and parapharmaceuticals (medical devices, food supplements, cosmetics ...) delivered in pharmacies).
The "low-cost" status is given based on the situation in August of the year of this report.
The letter G refers to generic medicines, while Gr stands for reference generic medicines, R = branded reference drugs , BIOSIM stands for biosimilar medicines and BIO for biological medicines.

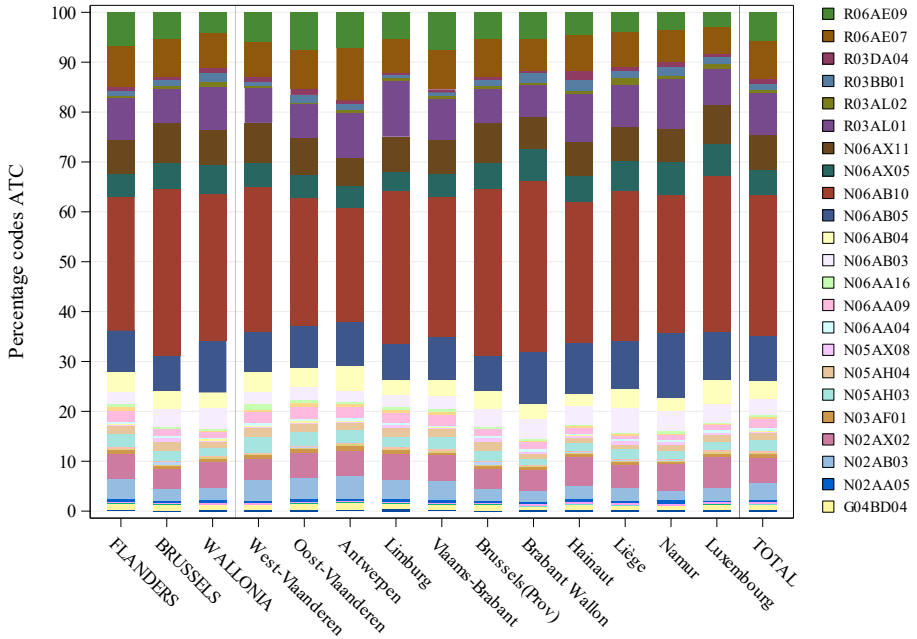


Type of low-cost drug (DDD) by province

G and Gr: low-cost generic (r= reference),
R: branded medicine,
BIO(SIM) stands for biological and biosimilar drugs.

C. Variations in the type of medication delivered (based on DDD)

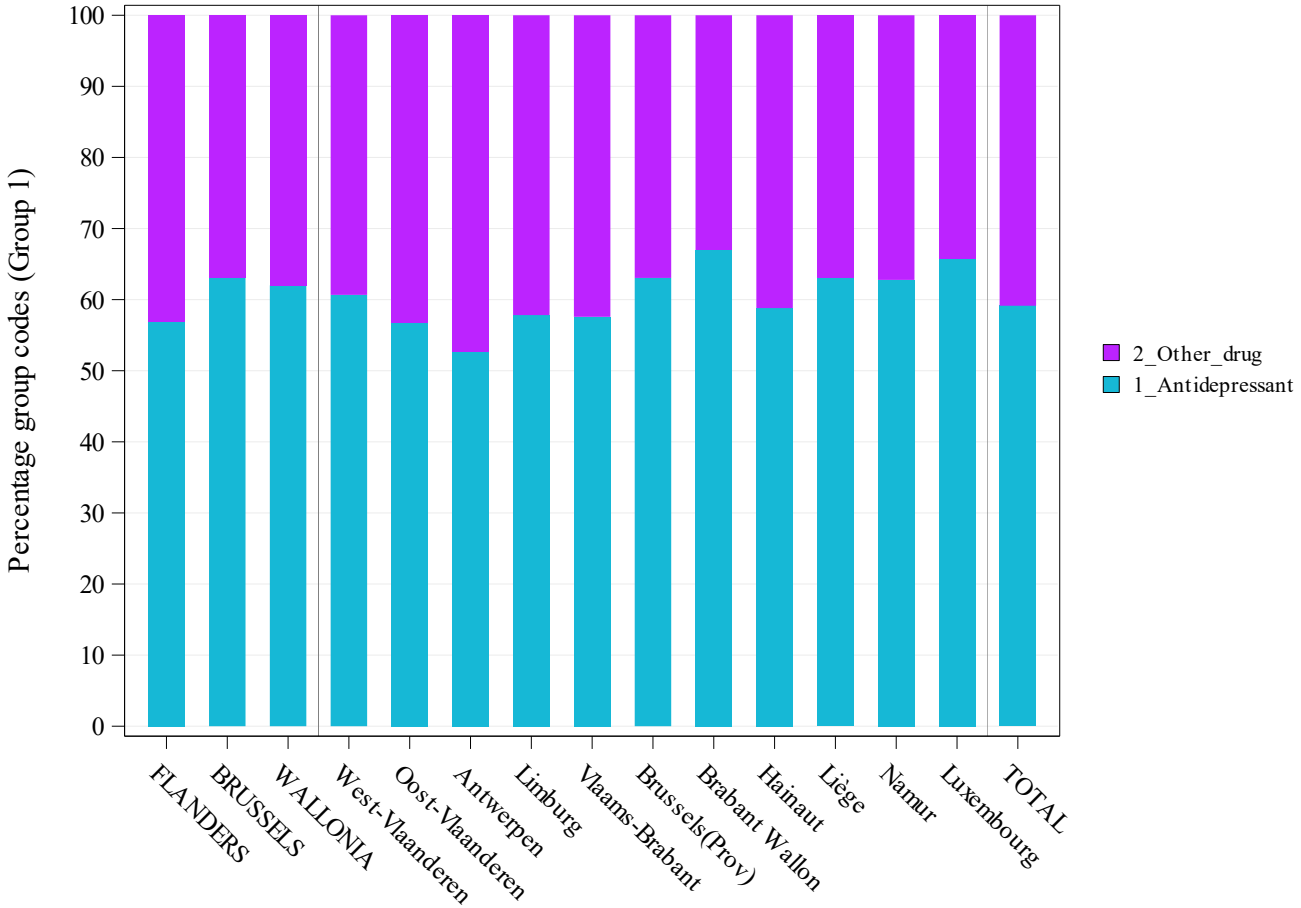
➔ **Variations in prescription based on ATC codes:**



ATC-Code	Description
R06AE09	LEVOCETIRIZINE
R06AE07	CETIRIZINE
R03DA04	THEOPHYLLINE
R03BB01	IPRATROPIUM BROMIDE
R03AL02	SALBUTAMOL AND IPRATROPIUM BROMIDE
R03AL01	FENOTEROL AND IPRATROPIUM BROMIDE
N06AX11	MIRTAZAPINE
N06AX05	TRAZODONE
N06AB10	ESCITALOPRAM
N06AB05	PAROXETINE
N06AB04	CITALOPRAM
N06AB03	FLUOXETINE
N06AA16	DOSULEPIN
N06AA09	AMITRIPTYLINE
N06AA04	CLOMIPRAMINE
N05AX08	RISPERIDONE
N05AH04	QUETIAPINE
N05AH03	OLANZAPINE
N03AF01	CARBAMAZEPINE
N02AX02	TRAMADOL
N02AB03	FENTANYL
N02AA05	OXYCODONE
G04BD04	OXYBUTYNIN

Medication - Anticholinergics (65 and over) (min 80 DDD)

➔ **Variations in prescription by group of medication:**



D. Sales volumes outside the health insurance

	2024
Total sales volume (in DDD)[1]	*1.068.126.718*
Sales volume in health insurance (in DDD)	*667.828.961*
% of sales volume outside health insurance	37,5%

[1] The total sales volume converted into DDD is based on the database "LMPB" provided by IQVIA and is converted into DDD according to the WHO references. Volumes are summarised at ATC 5 level and do not take into account potential selection criteria (age, gender or other) applicable to the analysis

Medication - Anticholinergics (65 and over) (min 80 DDD)

ATC-Code	Description	Total volume	Volume reimbursed	% not reimbursed*
A02BA	H2-RECEPTOR ANTAGONISTS	15	0	100,00%
A03FA	PROPULSIVES	16.034.261,33	294.226,26	98,17%
A07DA	ANTIPROPULSIVES	9.040.689,00	760.791,00	91,58%
G04BD	URINARY ANTISPASMODICS	39.236.405,13	9.597.799,52	75,54%
G04BE	DRUGS USED IN ERECTILE DYSFUNCTION	19.096.189,13	0	100,00%
M03BX	OTHER CENTRALLY ACTING AGENTS	4.747.114,88	4.583.222,68	3,45%
N02AA	NATURAL OPIUM ALKALOIDS	5.763.766,92	4.635.803,75	19,57%
N02AB	PHENYLPIPERIDINE DERIVATIVES	9.549.728,49	9.526.435,44	0,24%
N02AX	OTHER OPIOIDS	31.134.191,54	29.476.671,59	5,32%
N03AE	BENZODIAZEPINE DERIVATIVES	3.099.505,63	0	100,00%
N03AF	CARBOXAMIDE DERIVATIVES	4.733.405,00	4.530.182,10	4,29%
N04AA	TERTIARY AMINES	1.450.217,20	1.450.217,20	0,00%
N04BB	ADAMANTANE DERIVATIVES	16.951,50	16.951,50	0,00%
N05AA	PHENOTHIAZINES WITH ALIPHATIC SIDE-CHAIN	415.920,59	374.825,32	9,88%
N05AD	BUTYROPHENONE DERIVATIVES	2.775.815,05	2.654.778,37	4,36%
N05AH	DIAZEPINES, OXAZEPINES, THIAZEPINES AND OXEPINES	26.682.928,57	26.630.908,08	0,19%
N05AX	OTHER ANTIPSYCHOTICS	22.882.052,53	22.287.858,87	2,60%
N05BA	BENZODIAZEPINE DERIVATIVES	167.464.198,83	0	100,00%
N05BB	DIPHENYLMETHANE DERIVATIVES	1.822.753,12	0	100,00%
N05CD	BENZODIAZEPINE DERIVATIVES	103.971.062,55	5.162,67	100,00%
N06AA	NON-SELECTIVE MONOAMINE REUPTAKE INHIBITORS	15.131.139,63	14.228.639,77	5,96%
N06AB	SELECTIVE SEROTONIN REUPTAKE INHIBITORS	243.400.160,00	241.682.384,50	0,71%
N06AX	OTHER ANTIDEPRESSANTS	145.861.165,88	144.541.432,70	0,90%
R03AL	ADRENERGICS IN COMBINATION WITH ANTICHOLINERGICS	70.848.465,82	69.827.312,54	1,44%
R03BB	ANTICHOLINERGICS	17.479.236,00	17.359.759,13	0,68%
R03DA	XANTHINES	1.776.230,25	1.776.230,25	0,00%
R05DA	OPIUM ALKALOIDS AND DERIVATIVES	8.491.855,72	0	100,00%
R06AA	AMINOALKYL ETHERS	3.404.701,00	0	100,00%
R06AD	PHENOTHIAZINE DERIVATIVES	963,04	0	100,00%
R06AE	PIPERAZINE DERIVATIVES	91.815.629,00	61.587.368,00	32,92%
TOTAL		1.068.126.718,31	667.828.961,23	37,48%

Share sold outside health insurance per ATC group (2024)

**% not reimbursed: estimate of the percentage of sales not covered by the health insurance (NIHDI)*

Volumes are summarised at ATC 5 level and do not take into account potential selection criteria (age, gender or other) applicable to the analysis