[8] Toussain B, Pereira T, Goyens P, Laeremans H, Vincent M, Marie S. Guide pour le programme de dépistage néonatal des anomalies métaboliques en fédération Wallonia Bruxelles. 2013.

[9] Agentschap Zorg en Gezondheid. Vlaams bevolkingsonderzoek naar aangeboren aandoeningen bij pasgeborenen via een bloedstaal-Draaiboek. 2016.

[10] PCMA. Jaarverslag 2013 van het centrum voor opsporing van aangeboren metabole aandoeningen PCMA. 2013.

[11] PCMA. Jaarverslag 2015 van het centrum voor opsporing van aangeboren metabole aandoeningen PCMA. 2015.

[12] PCMA. Jaarverslag 2016 van het centrum voor opsporing van aangeboren metabole aandoeningen PCMA. 2016.

14.10. Antenatal consultations (MN-10)

14.10.1. Documentation sheet

Description	Median number of antenatal consultations, distributed by type of provider (GP, midwife, gynaecologist) for low risk pregnancies.
Calculation	Median calculated on the number of reimbursed contacts with the given type of provider (GP, midwife, gynaecologist) within the 280 days before delivery for women who delivered on a given year. Results are presented by region. Distribution of the number of consultations is also presented.
Rationale	For low-risk pregnancies, 7 antenatal consultations are recommended for multiparous and 10 for nulliparous regardless of the healthcare practitioner (gynaecologist, midwife of GP). [1] To ensure efficiency, an increase in the consumption of antenatal care provided by one type of provider should be compensated by a decrease in the consumption of antenatal care provided by another type of provider. More detailed analysis will be available in Benahmed et al. (Forthcoming, 2019)[2]
Data source	IMA-AIM
Technical definitions	Selection of women who delivered in a given year based on nomenclature codes for delivery: 422225,423500,422656,422671,423651,423673,423010,423021,424012,424023, 424093, 424104. Antenatal contacts with a GP are identified by the nomenclature codes 101010, 101032, 101076, 103110, 103132, 104215, 104230, 104252, 104274, 104510, 104532, 104554, 104576 within the 280 days before delivery. Antenatal contacts with a gynaecologist are identified by the nomenclature codes 102012, 102034, 102071, 102093, 102115, 102130, 102152, 102174, 102196, 102211, 102535, 102550, 102572, 102594, 102616, 102631, 102653, 102675, 102690, 102712, 102734, 102756 within the 280 days before delivery. Antenatal contacts with a midwife are identified by the nomenclature codes 422030, 428072, 428094, 422052, 428131, 428153, 422870, 422074, 428116, 428175, 428190, 422892, 428212, 428234 within the 280 days before delivery.

	Low risk deliveries are selected by excluding women younger than 18 or older than 40, women presenting pre-existing co-morbidities (diabetes, hypertension, thrombosis, coagulation disorders, asthma, rheumatoid arthritis, Crohn's disease, ulcerative colitis, HIV, chronic hepatitis B and C, multiple sclerosis, epilepsy, thyroid diseases, immunosuppression after organ transplantation, respiratory disorders, and neurological disorders) defined by the consumption within the 21 months before delivery of the following drugs (ATC codes A10A A10B (Defined daily dose or DDD>30), C02-C03-C04-C07-C08-C09 (DDD>180), B01A (DDD>90), B02BD, N06A, R03AA-R03AB- R03AC-R03AH-R03AK-R03BA-R03DC01-R03DC03 (DDD>80), L04AA11, L04AA12, L04AA13, L04AA17, A07EC01, A07EC02, J05AE, J05AF, J05AG, J05AX, L03AB04, L03AB05, L03AB10, J05AB04, L03AB07, L03AB08, L03AX13, N03, H03 (DDD>90), L04AA01, L04AA05, L04AA06, L04AA1, R03 (DDD>80), N03, N04, N05, N06-N07 (DDD>90)), women with diabetes (presence of diabetes passport/convention within the 21 months before delivery, nomenclature codes 102852, 109594, 107015, 107052, 107030, 107074)), women having had at least one individual midwifery session dedicated to high-risk pregnancy within 280 days before delivery (nomenclature codes 422870, 428175, 428190, 422892, 428212, 428234, 422074) and women for who the presence of a paediatrician was necessary at the delivery due to the high-risk pregnancy (nomenclature codes 474515-474526). Using these exclusion criteria, over the period 2010-2016, 80.13% (660 631/824 405) are selected as low-risk pregnancies. Sub-indicators: - Proportion of pregnant women (low risk) having less than 7 antenatal consultations. - Proportion of pregnant women (low risk) having more than 10 antenatal consultations.
Limitations	Number of deliveries: Deliveries are identifies based on delivery nomenclature codes recorded in the IMA-AIM database including only persons covered by a Belgian sickness fund. Several reasons explain the non-coverage by a Belgian sickness fund: socio-economical vulnerability leading to a OCMW-CPAS coverage, the coverage of healthcare costs by international agreements for foreign patients, the absence any coverage (uninsured patients), or the coverage of healthcare costs by other institutions such as FEDASIL for undocumented women, Ministry of Justice for women in prison, etc. According the 2016 MZG-RHM data, 2.2% of women who delivered in Flanders, 2.4% in Wallonia and 9.2% in Brussels were not covered by a Belgian sickness fund. Definition of low-risk pregnancy: the distinction between high- and low-risk pregnancies is based on ad-hoc definitions using drug consumption for a set of conditions. The list of considered comorbidities is not exhaustive. Other risk factors such as medical history (e.g. previous caesarean section, previous miscarriage…) could not be included based on administrative data. It is thus possible that pregnancies that could be medically considered at high-risk have been defined as low-risk. In addition, we did not capture non-medical factors such as lack of social support, victims of violence or addictions to define high-risk pregnancies. Another criterion used to define high risk pregnancy is linked to the nomenclature codes for individual midwifery sessions dedicated to high-risk pregnancy. However, these codes were introduced in 2012 so that exclusion of high-risk pregnancies is more accurate from 2012.
International comparability	No
Performance Dimension	Efficiency

14.10.2. Results

Antenatal consultations

Low-risk pregnant women who gave birth in 2016 had a median number of 11 antenatal consultations with a gynaecologist (Interquartile range (IQR=5), 1 consultation for pregnancy follow-up with a midwife (IQR=2) and 2 consultations with a GP (IQR=4), within the 280 days before delivery, corresponding to a median number of 15 consultations with one of these practitioners (IQR=7). Excluding GPs consultations (as we cannot be sure that the reason for their consultation is related to their pregnancy), the median number of antenatal consultations is 12 (IQR=5) (Table 152, Figure 235).

Over time, the median number of consultations with a GP stays stable (in 2010, the median was 2 with IQR=3), while the median number of consultations with a gynaecologist, as well as with a midwife have increased: in 2010, they were 10 for gynaecologists (IQR=6) and zero for midwives (IQR=1). Globally, the median number of consultations (gynaecologist, midwife or GP) in 2010 was 14 (IQR=6). There has been a reduction in the percentage of women having 15 or less consultations (gynaecologist, midwife or GP) during pregnancy and a subsequent increase in the proportion of women having more than 15 consultations (Figure 236).

Consultations with midwifes

Over time, there has been a sliding from no antenatal midwifery consultation towards 1-2 consultations during the whole pregnancy (and to a smaller extent to 3-6 consultations) in both Flanders and Wallonia. In 2010, 26.69% of the pregnant women in Flanders and 32.81% in Wallonia had at least one pregnancy follow-up consultation with a midwife. In 2016, these proportions increased to 53.09% and 60.07% respectively. Already in 2010, the proportion of women with at least one pregnancy follow-up with a midwife was higher in Brussels (43.19%) and it increased since then, but not as much as in the other regions (54.96% in 2016). In 2010, only 17.07% of the pregnant women in Flanders and 21.84% in Wallonia had 1 or 2 consultations with a midwife. These proportions have almost doubled since then (in 2016, 30.28% in Flanders and 40.6% in Wallonia). In Brussels, although the median number of antenatal midwifery consultations was the same as in the rest of the country (1 consultation), a higher proportion of women used 3-6 consultations with midwives (22.55% in 2016, compared to 17.60% in Flanders and 15.10% in Wallonia) (Figure 237).

Consultations with gynaecologists

Although the number of antenatal midwifery consultations increased over time, this was not compensated by a decrease in the number of consultations with gynaecologists. On the contrary, the number of gynaecologist consultations tended to slightly increase. Most of the low-risk pregnancies (99.56%) had at least one consultation with a gynaecologist in 2010, and it was still the case in 2016 (99.48%), but the proportion of women with more less than 12 consultations with a gynaecologist decreased over time while the proportion of women having 14 or more consultations with a gynaecologist increased over time (Figure 238).

A negative linear correlation exists between the number of antenatal midwifery consultations and the number of antenatal gynaecologist consultations: women who used more midwifery consultations tend to use less gynaecologist consultations (β_1 = -0.15, $p<0.001$). Consuming one additional midwifery consultation is associated with a decrease of 0.15 consultations with a gynaecologist. This corresponds to 6.67 additional midwifery consultations associated with a decrease of one in the number of gynaecologist consultations. Although the linear association is significantly different from zero, it is still small. The analysis does not allow us to draw any conclusion regarding causality. In addition, this analysis does not adjust for potential confounding factors. Although these results must be interpreted with caution, it is interesting to note that a regional difference exists. While in Wallonia, the correlation is close to the Belgian level, no significant linear correlation between midwifery and gynaecologist consultations is found in Flanders. In Brussels, the (negative) correlation is much stronger as, in this region, an additional midwifery consultation is associated with a decrease of 0.53 consultations with a gynaecologist; that is 1.89 additional midwifery consultations for one gynaecologist consultation less. Over time, this effect tended to become stronger in Brussels (in 2010, the shapewas 0.42) but to weaken in Flanders and to a smaller extent in Wallonia (in 2010, a significant coefficient of 0.26 was found in Flanders and 0.22 in Wallonia) (Figure 239, Table 153).

Increasingly, pregnant women consult both a gynaecologist and a midwife. Indeed, the proportion of women who had at least one consultation with each of these providers was increasing over time. In Belgium in 2010, only 30.57% of the pregnant women had contacts with both types of professionals, while this proportion was 55.08% in 2016. Historically, Brussels had a higher proportion of "mixed follow-up" (43.04% in 2010) but Flanders caught up since then (in 2016, the proportions were 52.79% in Flanders and 54.40% in Brussels) while Wallonia had overstepped them (59.88% in 2016) (Figure 236).

Consultations with GPs

In the AIM-IMA database it is not possible to distinguish a consultation with a GP for pregnancy follow-up from a consultation for another reason during the pregnancy. Therefore, the reader must keep in mind that the consultations analysed here may have another purpose than clinical pregnancy follow-up. The pattern of use is completely different depending on the region. In Brussels and Wallonia, most low-risk women (in 2016, 76.12% and 65.44% respectively) consulted a GP less than three times during pregnancy. On the other hand, in Flanders most women (63.00% in 2016) consult a GP three times or more during pregnancy. Over time, an increase in the number of consultations with GP during pregnancy was observed in Flanders but not in the other regions (Figure 241).

Low and high use

The number of antenatal consultations recommended is 7 for multiparous and 10 for nulliparous women regardless of the healthcare practitioner. These recommendations were formulated in the KCE guideline [3] and reiterated in its update (KCE report 248, 2015).[1]

Although it is not possible to make a distinction between multiparous and nulliparous in the IMA-AIM database (for information, in 2016, the proportions of nulliparous women were 42.9%, 45.1% and 41.2% respectively in Wallonia [4], Flanders [5] and Brussels [4]), we observe that 3.67% of the low-risk pregnant women who gave birth in 2016 had less than 7 contacts with a gynaecologist, a midwife or a GP. Excluding GP consultations, this proportion is 6.29%. Therefore, although the number of antenatal consultations is increasing over time, some women still did not reach the threshold of 7 antenatal consultations. This is particularly true in Brussels, where, in 2016, 6% of the pregnant women did not reach this threshold. When excluding consultations with GPs, 7.84% of the women did not get at least 7 antenatal consultations in Brussels. Nevertheless, Brussels region experienced a significant decrease in the proportion of women with less than 7 antenatal consultations (from 7.82% in 2010 to 6.00% in 2016 when consultations with GPs were included, from 10.99% to 7.84% when consultations with GPs were excluded). In the other regions, a decrease was observed for the proportion of women with less than 7 consultations by a midwife or a gynaecologist (from 9.73% to 6.85% in Flanders and from 5.42% to 4.38% in Wallonia); when GP consultations were included, the evolution remained more stable over time (Table 154, Figure 242).

On the other hand, an important number of women have more than 10 antenatal consultations. In 2016, 85.08% of the low-risk pregnant women had more than 10 antenatal consultations with a gynaecologist, a midwife or a GP. When excluding GP consultations, the proportion was 66.78%.Globally the proportion of women using more than 10 antenatal consultations is slightly increasing over time, in the three regions of the country (Table 155, Figure 243).

Analysis by socio-economic position

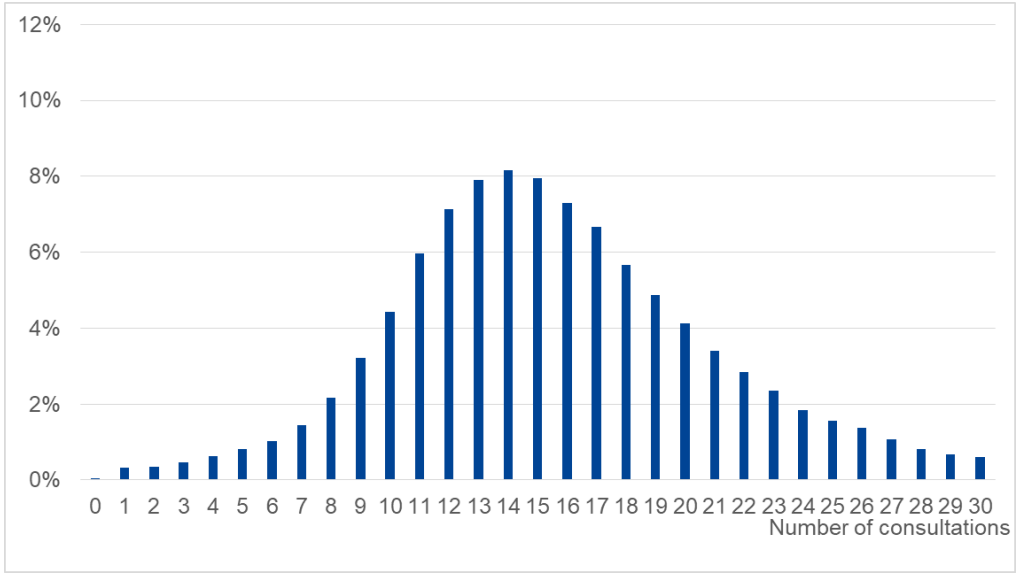
Disadvantaged women are identified through the status of increased reimbursement in the Belgian health care system (BIM status). This is an indicator of the socio-economic position as it is based on a mixture of income and other socio-economic and socio-demographic characteristics. Among the beneficiaries from this status, the proportion of women having less than 7 consultations during pregnancy is higher (11.49% compared to 5.54% for non-beneficiaries, when only gynecologists and midwives consultations are considered). On the other hand, the proportion of women having more than 10 consultations during pregnancy is lower among beneficiaries from this status (58.60% compared to 68.27% for non-beneficiaries, when only gynecologists and midwives consultations are considered (Table 156).

Table 152 – Median number of consultations during (low-risk) pregnancy, 2016

	Brussels (n=11 319)	Wallonia (n=25 582)	Flanders (n=49 724)	Belgium (n=87 161)
Median number of consultations (gynaecologist, midwife or GP) during pregnancy [Q1;Q3]	14 [11;18]	15 [12;18]	16 [12;20]	15 [12;19]
Median number of consultations (gynaecologist or midwife) during pregnancy [Q1;Q3]	13 [10;15]	13 [11;15]	12 [9;15]	12 [10;15]
Median number of consultations (gynaecologist) during pregnancy [Q1;Q3]	11 [8;13]	11 [9; 14]	10 [8; 13]	10 [7; 13]
Median number of consultations (midwife) during pregnancy [Q1;Q3]	1 [0; 2]	1 [0; 2]	1 [0;2]	1 [0; 4]
Median number of consultations (GP) during pregnancy [Q1;Q3]	2 [1; 5]	2 [0; 3]	3 [2; 6]	1 [0; 2]

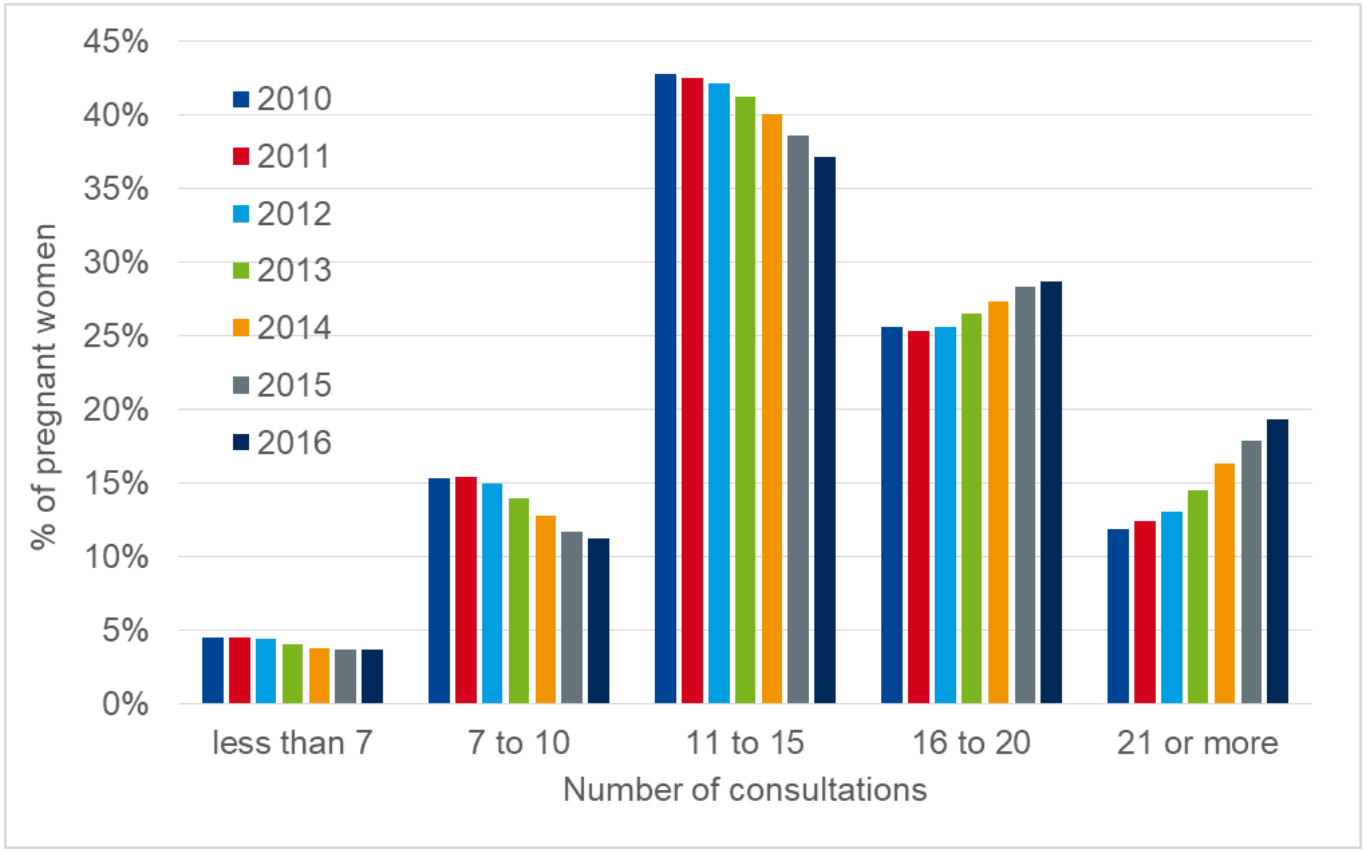
Data source: IMA-AIM; calculation: KCE

Figure 235 – Number of consultations (gynaecologist, midwife or GP) during (low-risk) pregnancy, 2016



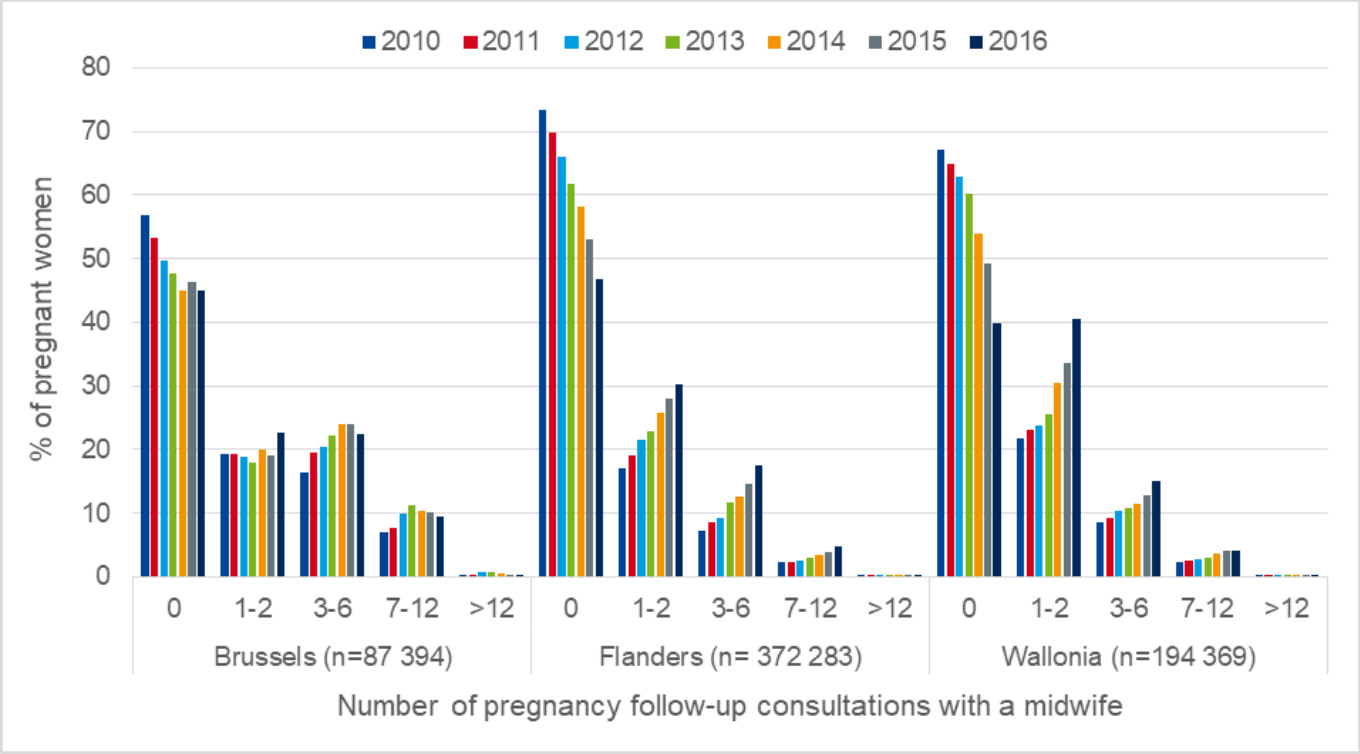
N= 87 161. Note: Women with more than 30 consultations (n=2 435; 2.79%) are not represented.
Data source: IMA-AIM; calculation: KCE

Figure 236 – Evolution of the number of antenatal consultations (gynaecologist, midwife or GP) during (low-risk) pregnancy, 2010-2016



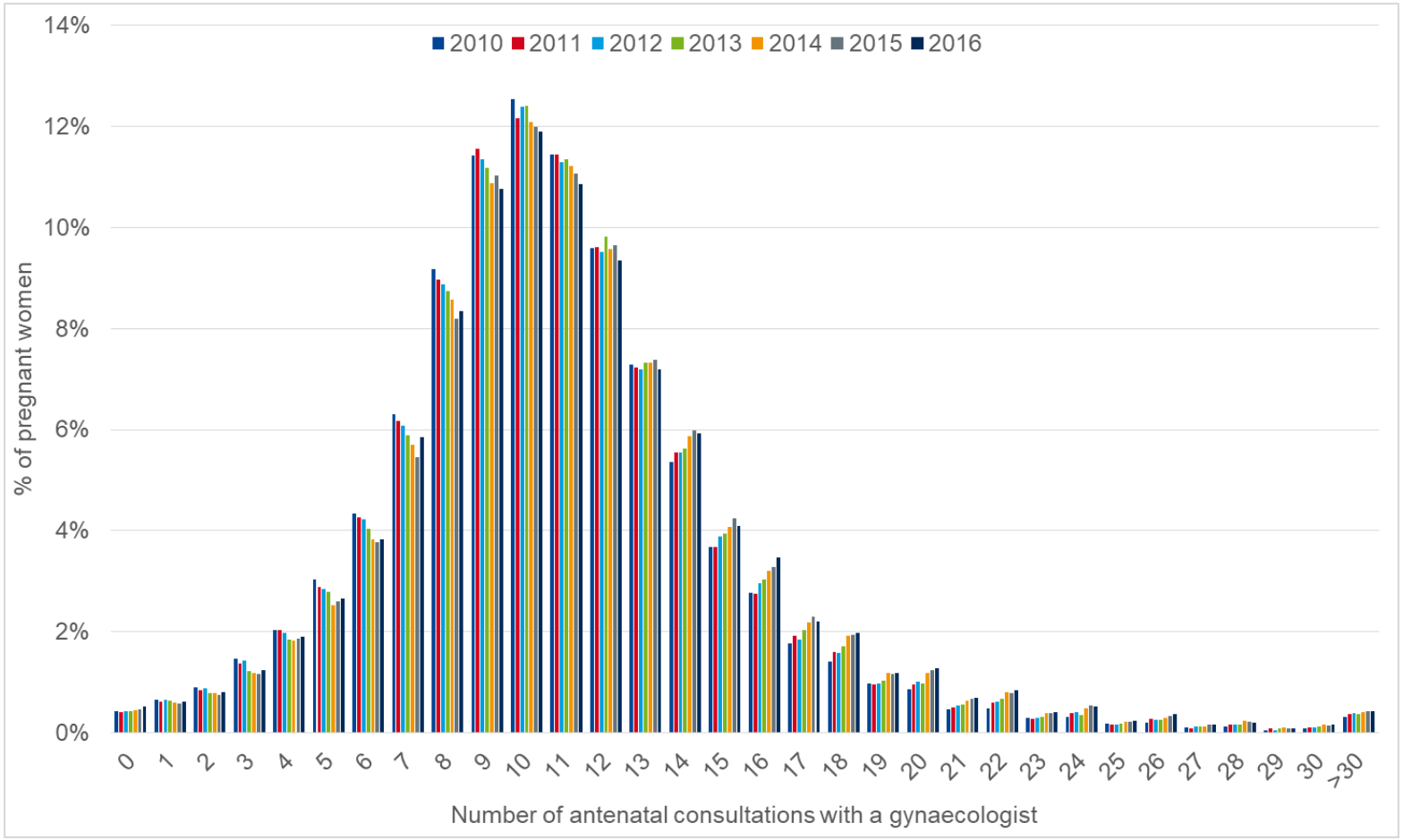
N= 657 005. Note: 2010: n=99 975; 2011: n=98 510; 2012: n=96 999; 2013: n= 93 452; 2014: n=92 080; 2015: n=88 828; 2016: n=87 161.
Data source: IMA-AIM; calculation: KCE

Figure 237 – Evolution of the number of antenatal midwifery consultations during (low-risk) pregnancy, by region, 2010-2016



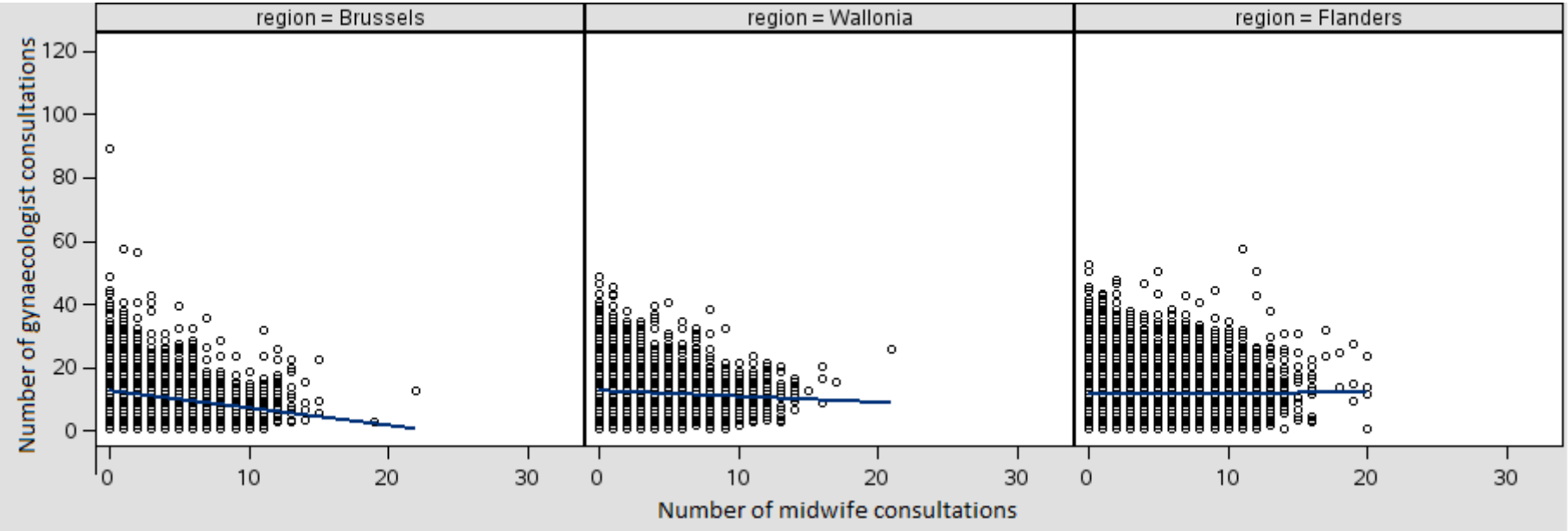
N= 654 046.
Data source: IMA-AIM; calculation: KCE

Figure 238 – Evolution of the number of antenatal gynaecologist consultations during (low-risk) pregnancy, Belgium, 2010-2016



Note: 2010: n=99 975; 2011: n=98 510; 2012: n=96 999; 2013: n= 93 452; 2014: n=92 080; 2015: n=88 828; 2016: n=87 161.
Data source: IMA-AIM; calculation: KCE

Figure 239 – Linear correlation between midwife and gynaecologist antenatal consultations, by region, 2016



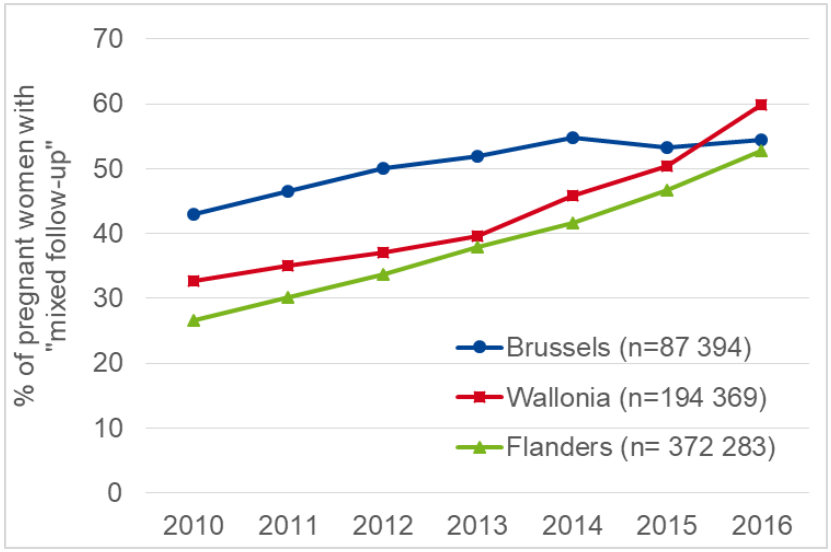
Brussels: n=11 319; Wallonia: n=25 582; Flanders: n=49 724.
Data source: IMA-AIM; calculation: KCE

Table 153 – Univariate linear regressions of the number of gynaecologist consultations depending on the number of midwife consultations, 2016

	β_1 *	p-value	R^2
Belgium (n=87 161)	-0.15	<0.001	0.005
Brussels (n=11 319)	-0.53	<0.001	0.086
Wallonia (n=25 582)	-0.19	<0.001	0.009
Flanders (n=49 724)	0.01	0.214	0.000

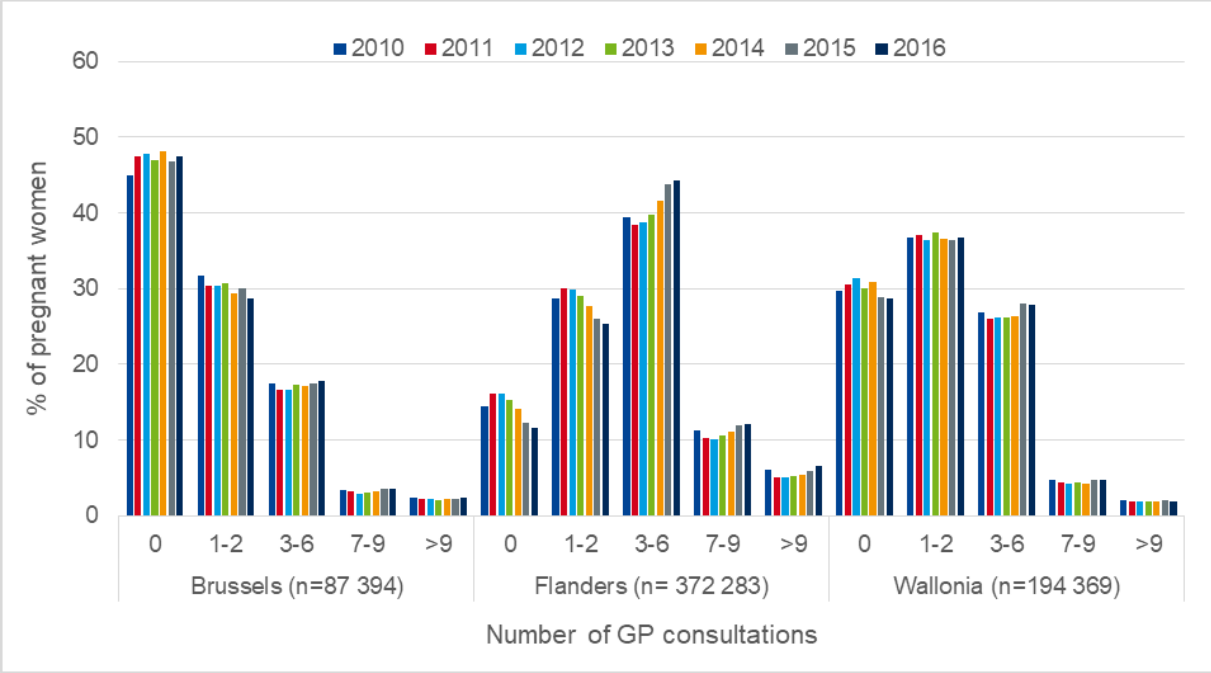
**Shape of the linear regression line. Coefficients are the estimated effect of the number midwife consultations on the number of gynaecologist consultations in a linear regression with an intercept.*
Data source: IMA-AIM; calculation: KCE

Figure 240 – Proportion of low risk pregnant women with “mixed pregnancy follow-up”, 2010-2016



N= 654 046. Note: Mixed pregnancy follow-up is defined has having at least one consultation with a gynaecologist during the 280 days before delivery and at least one consultation for pregnancy follow-up with a midwife on the same period. Information is missing for 259 pregnancies.
Data source: IMA-AIM; calculation: KCE

Figure 241 – Evolution of the number of GP consultations during (low-risk) pregnancy, by region, 2010-2016



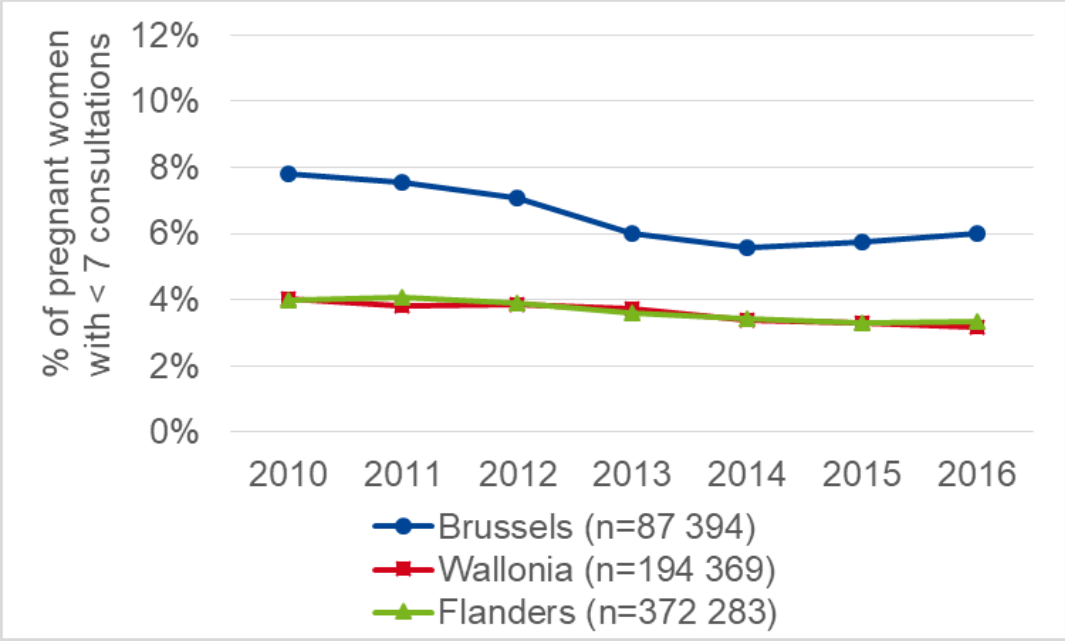
N= 654 046.
Data source: IMA-AIM; calculation: KCE

Table 154 – Proportion of women having less than 7 consultations during low-risk pregnancy, 2016

	Brussels (n=11 319)	Wallonia (n=25 582)	Flanders (n=49 724)	Belgium (n=87 161)
% of women with less than 7 consultations (gynaecologist, midwife or GP) during pregnancy	6.00%	3.19%	3.32%	3.67%
% of women with less than 7 consultations (gynaecologist or midwife) during pregnancy	7.84%	4.36%	6.85%	6.29%

Data source: IMA-AIM; calculation: KCE

Figure 242 – Evolution of the proportion of women having less than 7 consultations (gynaecologist, midwife or GP) during low-risk pregnancy, by region, 2010-2016



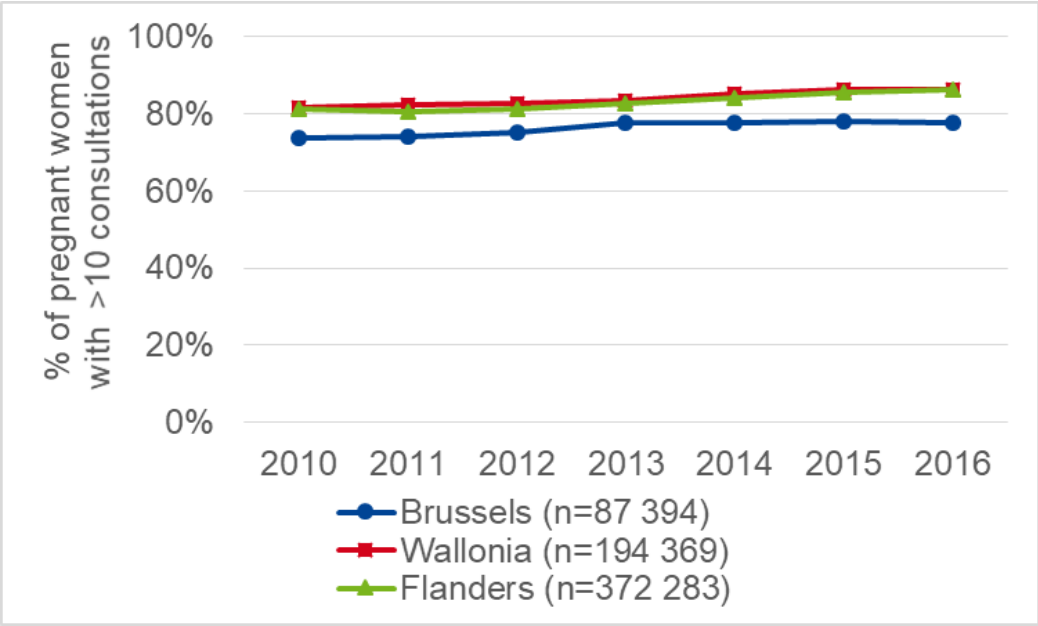
Data source: IMA-AIM; calculation: KCE

Table 155 – Proportion of women having more than 10 consultations during low-risk pregnancy, 2016

	Brussels (n=11 319)	Wallonia (n=25 582)	Flanders (n=49 724)	Belgium (n=87 161)
% of women with more than 10 consultations (gynaecologist, midwife or GP) during pregnancy	77.78%	86.04%	86.31%	85.08%
% of women with more than 10 consultations (gynaecologist or midwife) during pregnancy	69.46%	75.78%	61.55%	66.78%

Data source: IMA-AIM; calculation: KCE

Figure 243 – Evolution of the proportion of women having more than 10 consultations (gynaecologist, midwife or GP) during low-risk pregnancy, by region, 2010-2016



Data source: IMA-AIM; calculation: KCE

Table 156 – Proportion of women having less than 7 consultations or more than 10 consultations during low-risk pregnancy, depending on the status of increased reimbursement (BIM), 2016

	BIM (n=15 208)	No-BIM (n=72 162)
% of women with less than 7 consultations (gynaecologist, midwife or GP) during pregnancy	7.37%	3.25%
% of women with less than 7 consultations (gynaecologist or midwife) during pregnancy	11.49%	5.54%
% of women with more than 10 consultations (gynaecologist, midwife or GP) during pregnancy	74.78%	86.94%
% of women with more than 10 consultations (gynaecologist or midwife) during pregnancy	58.60%	68.27%

Data source: IMA-AIM; calculation: KCE

Key points

- **Low-risk pregnant women who gave birth in 2016 had a median number of 15 antenatal consultations with a gynaecologist, a midwife or a GP.**
- **The median number of antenatal consultations is increasing over time.**
- **The increase in the number of midwife antenatal consultations is not compensated by a decrease in the number of gynaecologist antenatal consultations.**
- **In 2016, 3.67% of the women have less than 7 consultations with a gynaecologist, a midwife or a GP during their low-risk pregnancy. This proportion is higher (6.00%) in Brussels. This proportion is also higher (7.37%) among beneficiaries of the status of increased reimbursement.**
- **The proportion of women having less than 7 contacts with a gynaecologist, a midwife or a GP during their low-risk pregnancy is decreasing over time, especially in Brussels.**
- **Most of the women (85.08% in 2016) have more than 10 contacts with a gynaecologist, a midwife or a GP during their low-risk pregnancy. This proportion is slightly increasing over time.**

References

[1] Gyselaers W, Jonckheer P, Ahmadzai N, Ansari M, Carville S, Dworzynski K, *et al.* What are the recommended clinical assessment and screening tests during pregnancy? Good Clinical Practice (GCP). Brussels: Belgian Health Care Knowledge Centre (KCE); 2015 30/06/2015. KCE Reports 248

[2] Benahmed N et al. The organisation of antenatal care for women with an uncomplicated pregnancy (Study 2015-17 (HSR)). Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE). KCE Reports Forthcoming 2019.

[3] Lodewyckx K, Peeters G, Spitz B, Blot S. National recommandation for prenatal care. A base for a clinical pathway aimed at following pregnancy 2004.

[4] Leroy C, Debauche C, Daelemans C, Debième F, Van Leeuw V. Santé périnatale en Wallonie-Année 2016. Centre d'épidémiologie périnatale. 2018.

[5] Devlieger R, Martens E, Martens G, Van Mol C, Cammu H. Perinatale Activiteiten in Vlaanderen 2016. SPE. Brussel: 2017.