

IQECAD INFORMATION MEETING

- ***“Last results from IQECAD (data from 2021)”***,
Mme Suchsia Chao, from Sciensano.
- ***“SWEET Benchmarking - just a nice to have? The Luxembourg experience.”***
Dr. Michael Witsch, from Centre Hospitalier de Luxembourg.
- ***“First results of the real-world impact and safety of initiation of the Medtronic MiniMed™ 780G in children with type 1 diabetes aged 2-6 years”***
Mme. Jolien De Meulemeester, from UZ Leuven.

11/01/2024

Park Inn by Radisson Brussels Airport

Suchsia Chao, Sciensano

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IQECAD MEETING

- ***“Last results from IQECAD (data from 2021)”***,
Mme Suchsia Chao, from Sciensano.

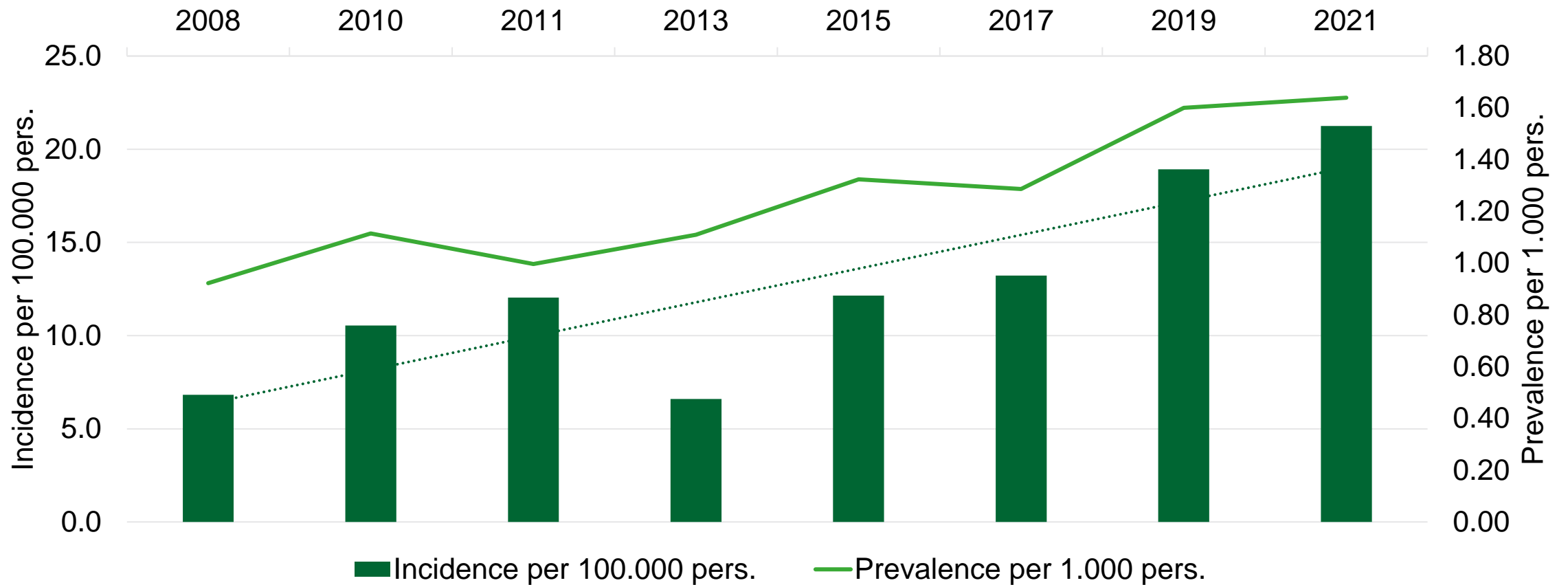
11/01/2024

Park Inn by Radisson Brussels Airport

Suchsia Chao, Sciensano

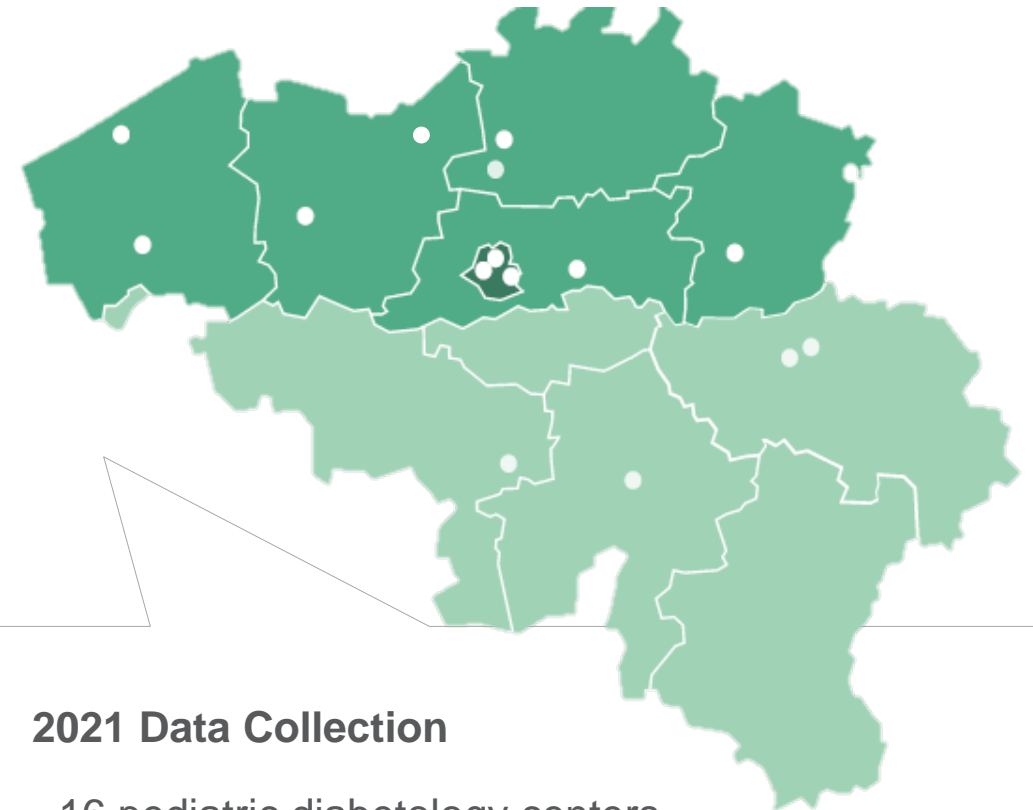
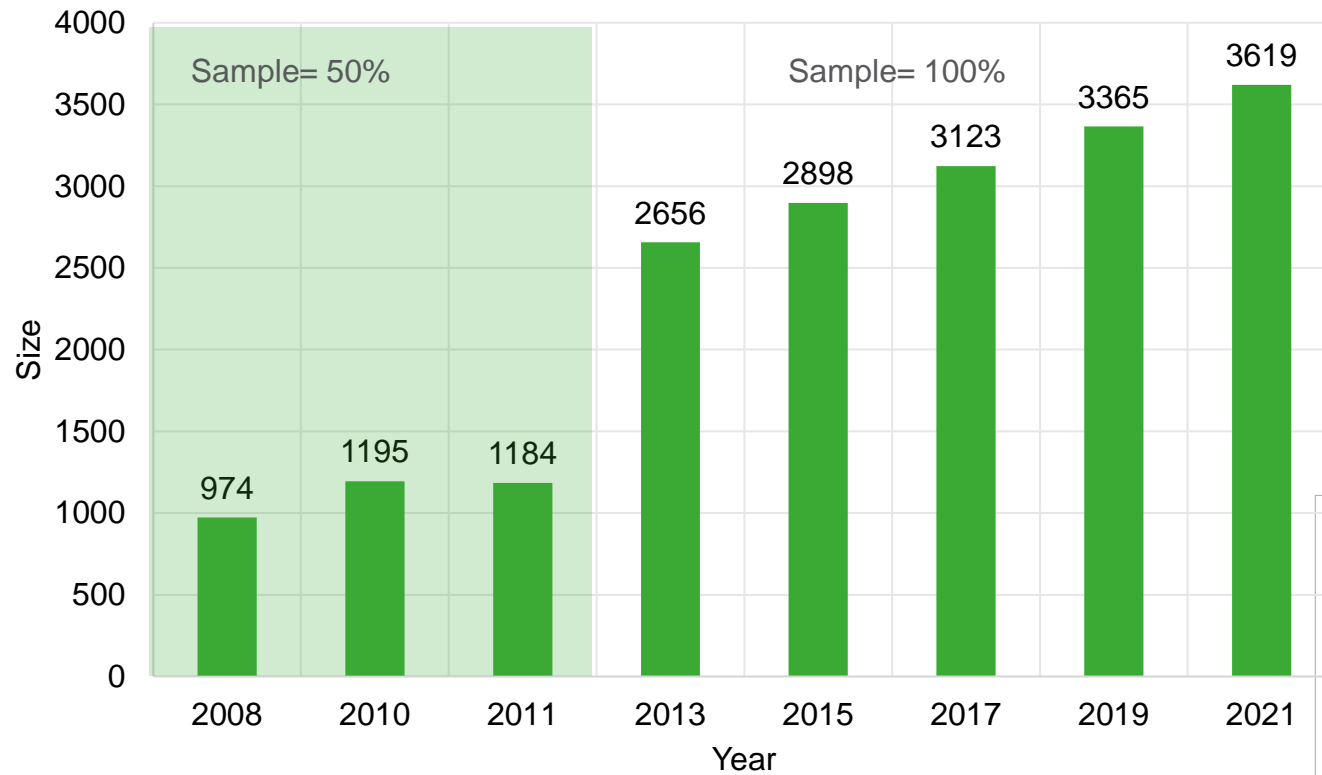
Epidemiology

Evolution of the prevalence and incidence DT1 (based on IQECAD data)



Audit 2021

IQECAD Database size

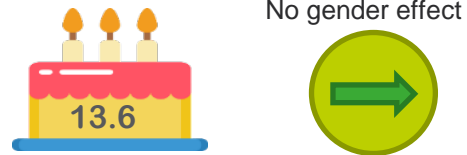
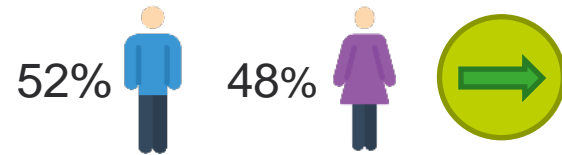


2021 Data Collection

- 16 pediatric diabetology centers
- 3619 patients with T1D & < 19 years were recorded
- 95.5 % of eligible patients were included

Characteristics of the population (2008-2021)

Socio-demographic in 2021



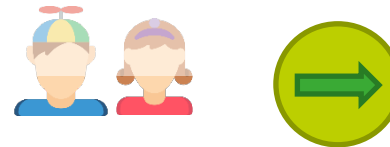
Median age: 13.6 yrs



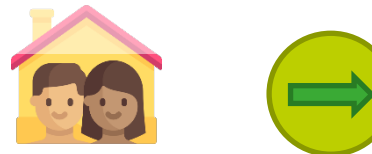
Age at diagnosis: 7.8 yrs



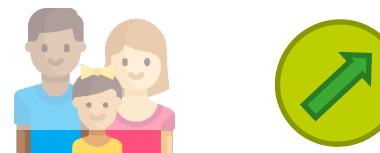
Diabetes duration : 4.4 yrs



Puberty : 2/3



Nuclear family: 3/4

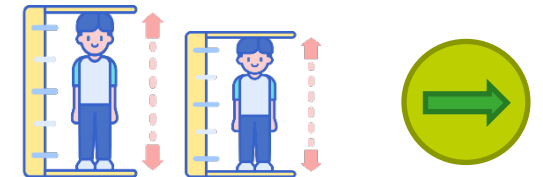


2 non-caucasian parents : 1/3

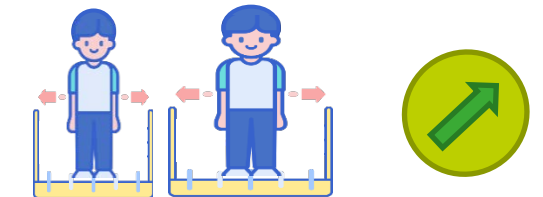


Communication problems: 1/5

Developpement



Z-score height median : -0.16



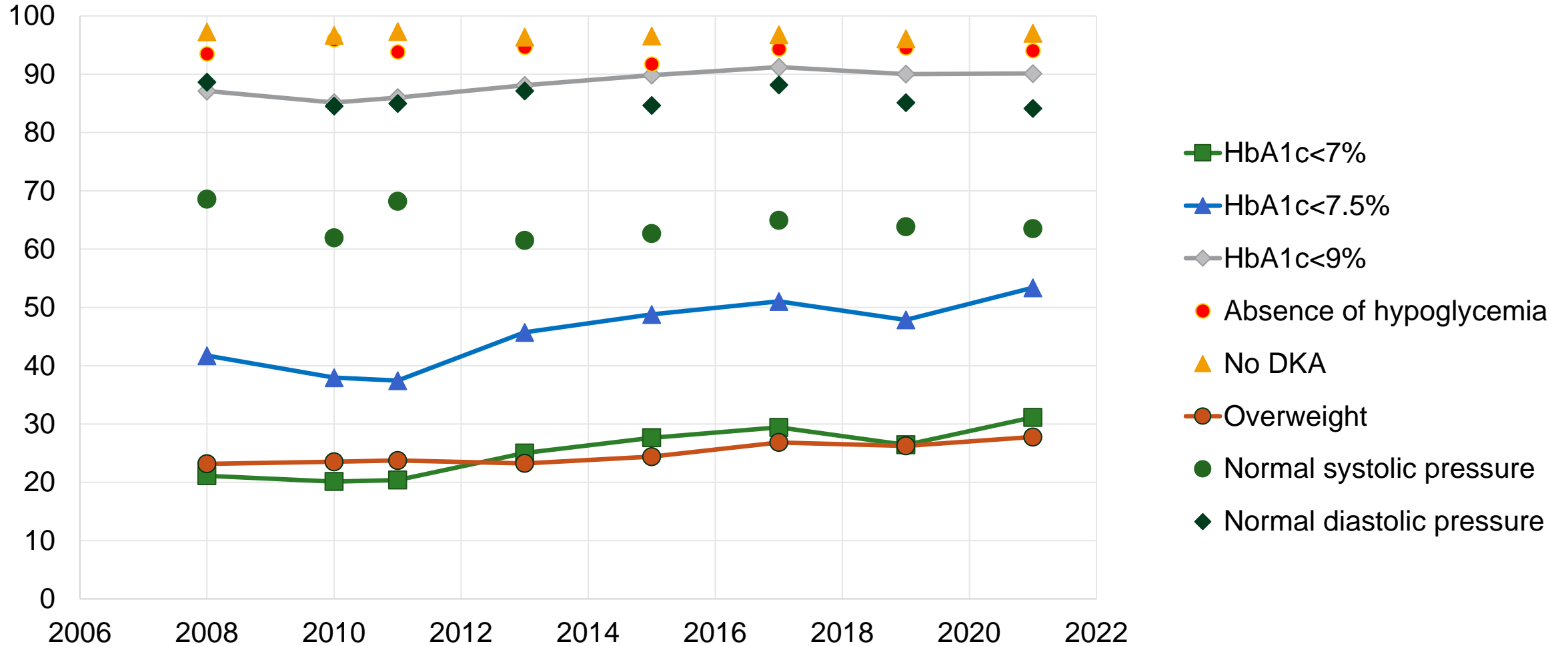
Z-score weight median: 0.40



Z-score BMI median : 0.56

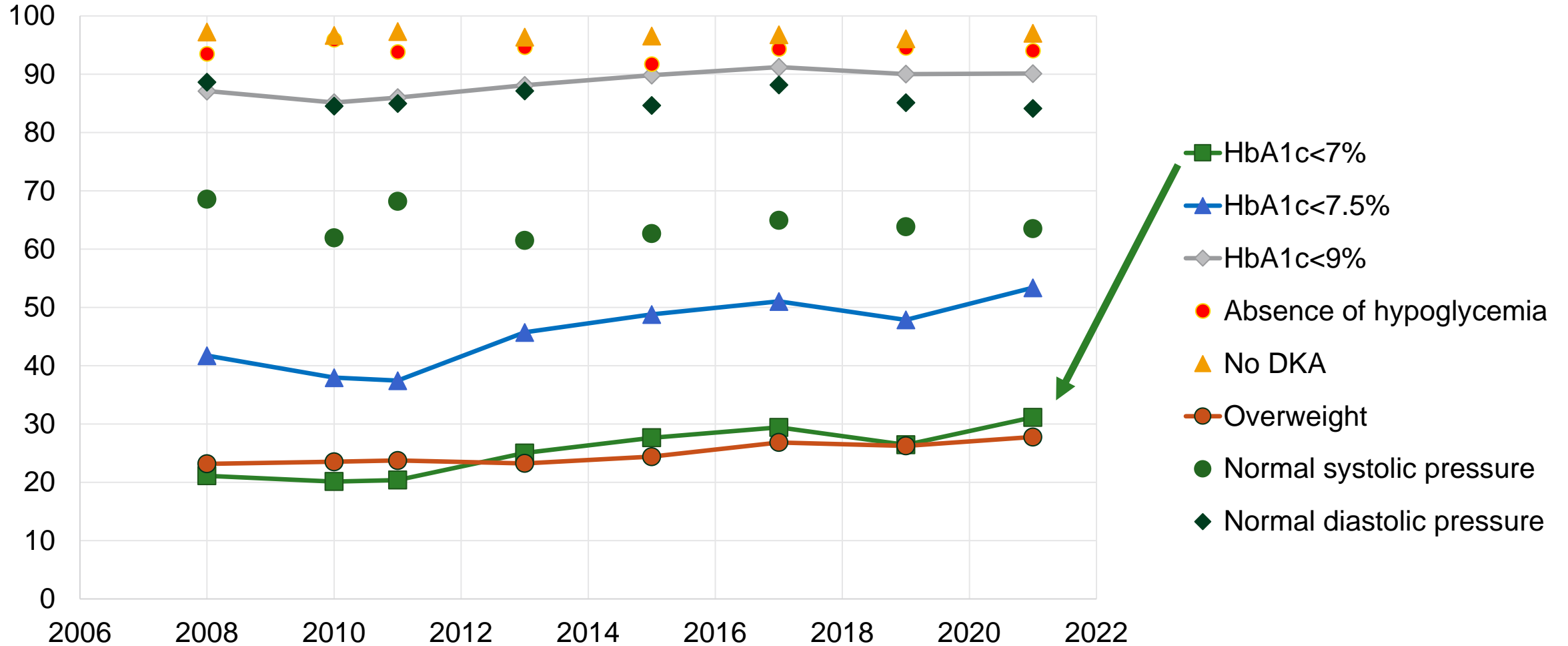
Audit 2008-2021: Outcomes indicators

Evolution - Outcomes indicators



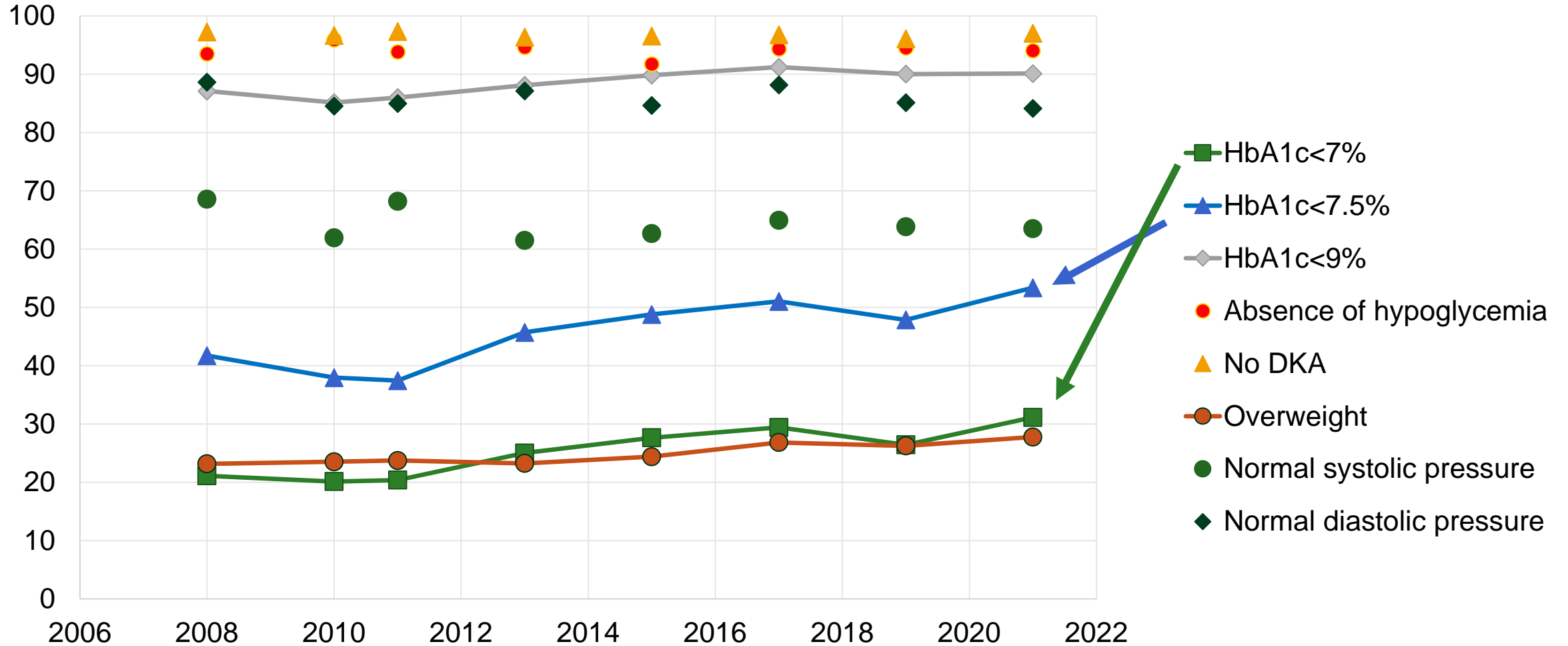
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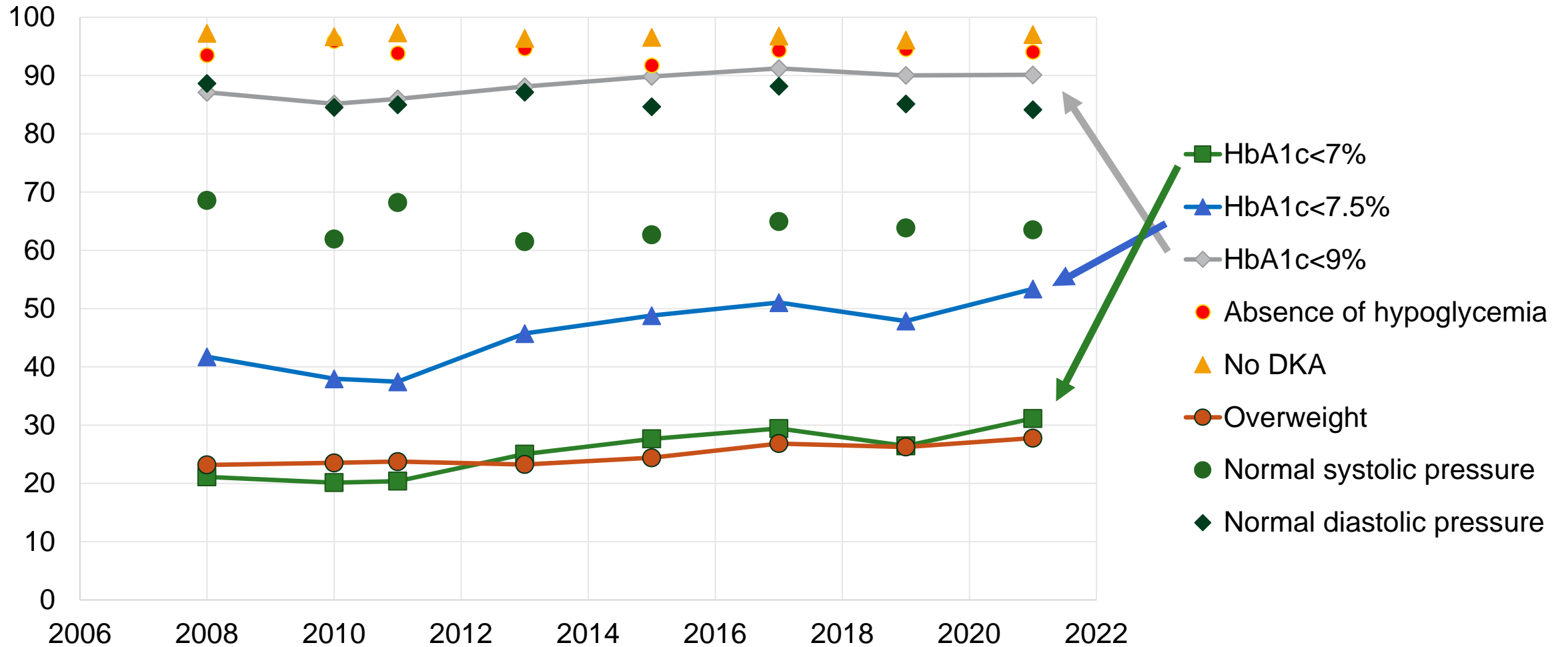
Audit 2008-2021: Outcomes indicators

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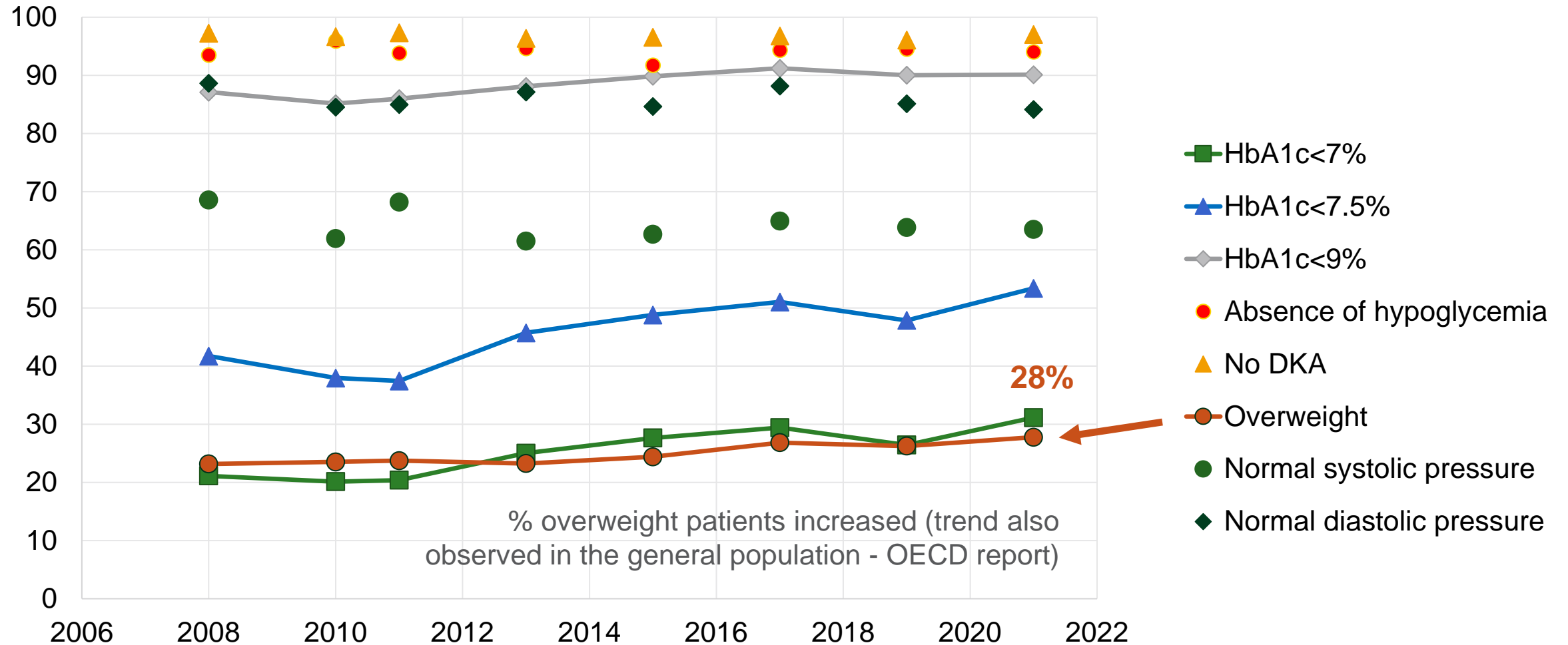
Audit 2008-2021: Outcomes indicators

Evolution - Outcomes indicators



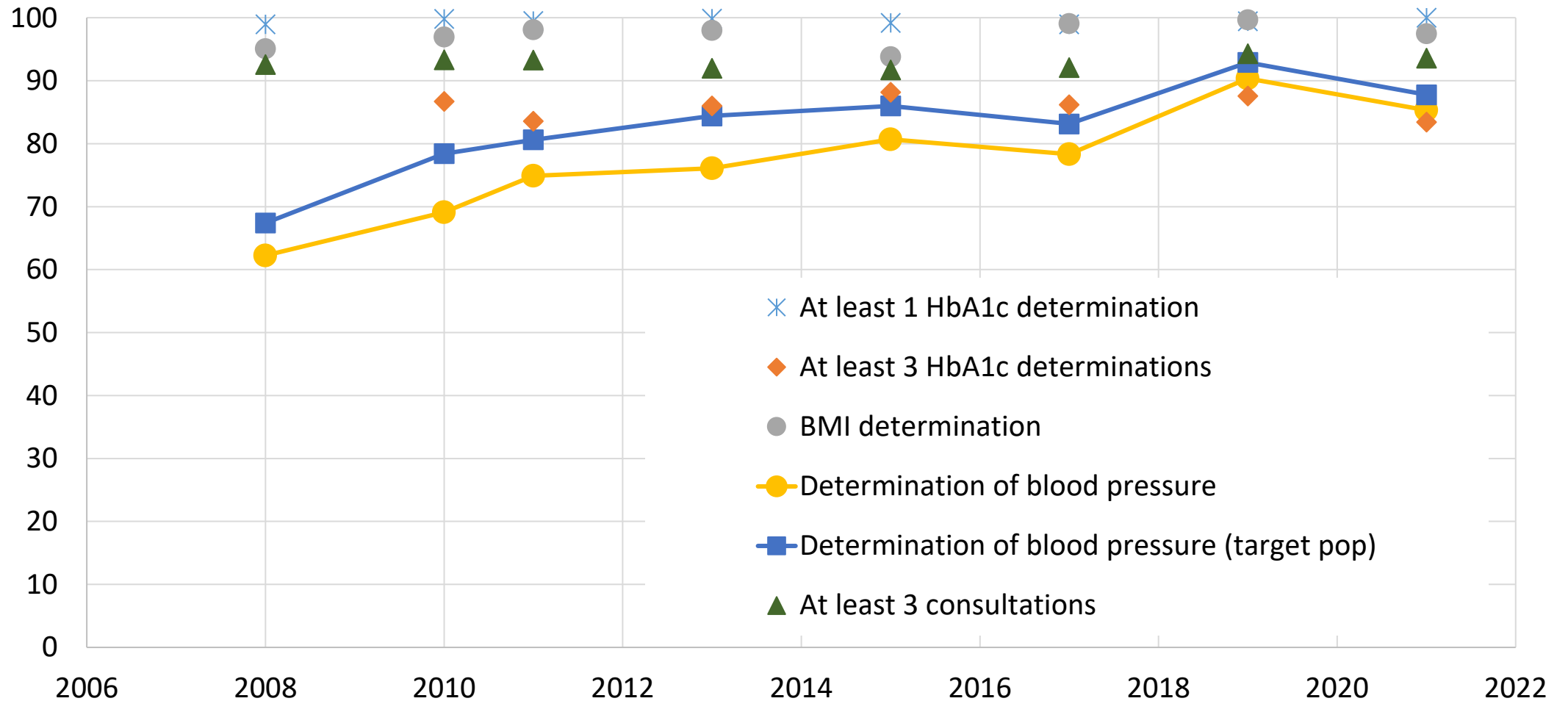
Audit 2008-2021: Outcomes indicators

Evolution - Outcomes indicators



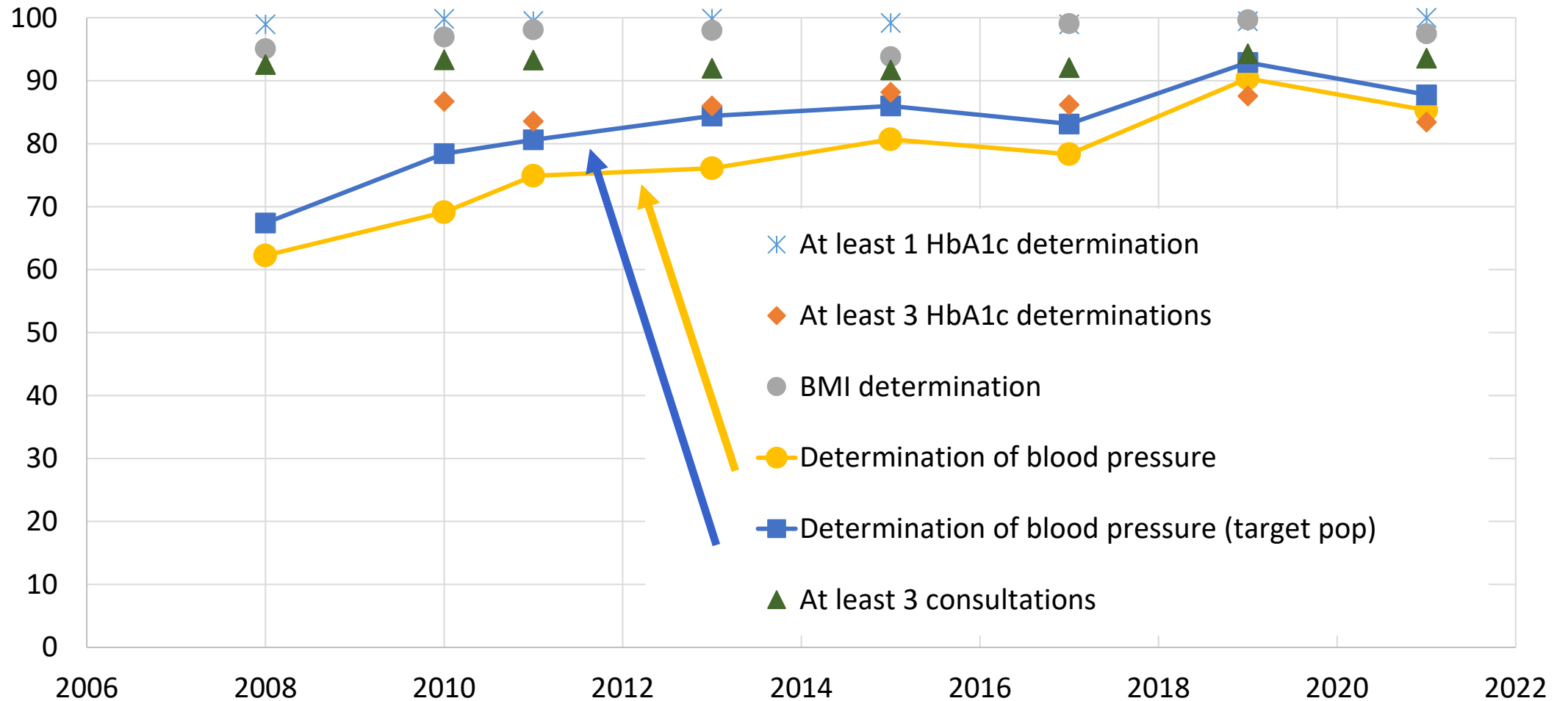
Audit 2008-2021: Processus indicators

Evolution - Processus indicators



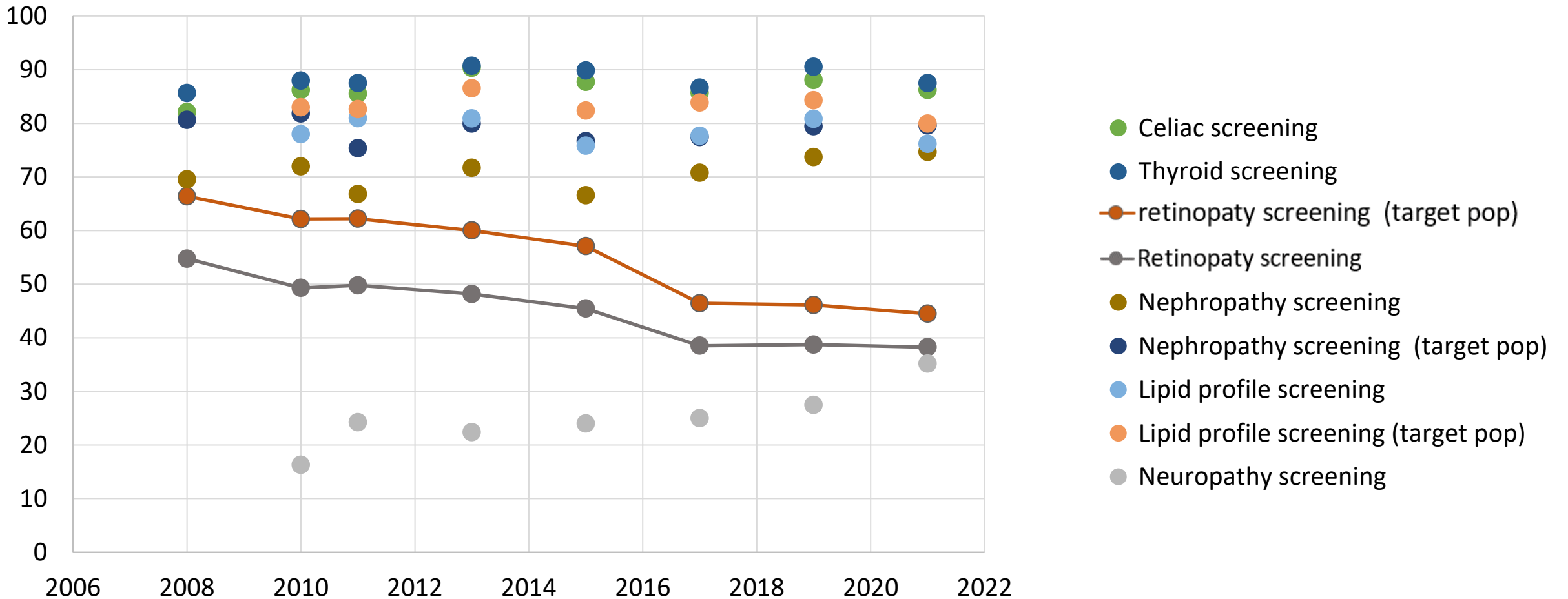
Audit 2008-2021: Process indicators

Evolution - process indicators



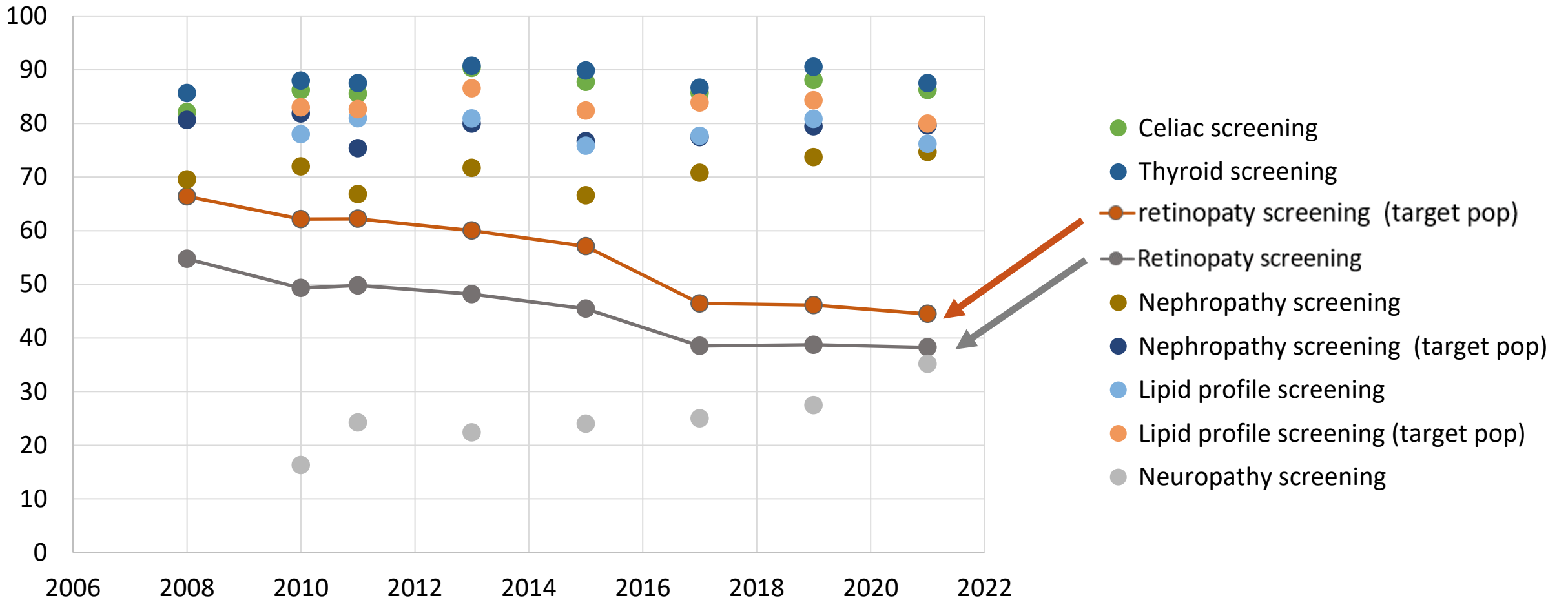
Audit 2008-2021: Processus indicators

Evolution - Processus indicators
Screening for complications and co-morbidities



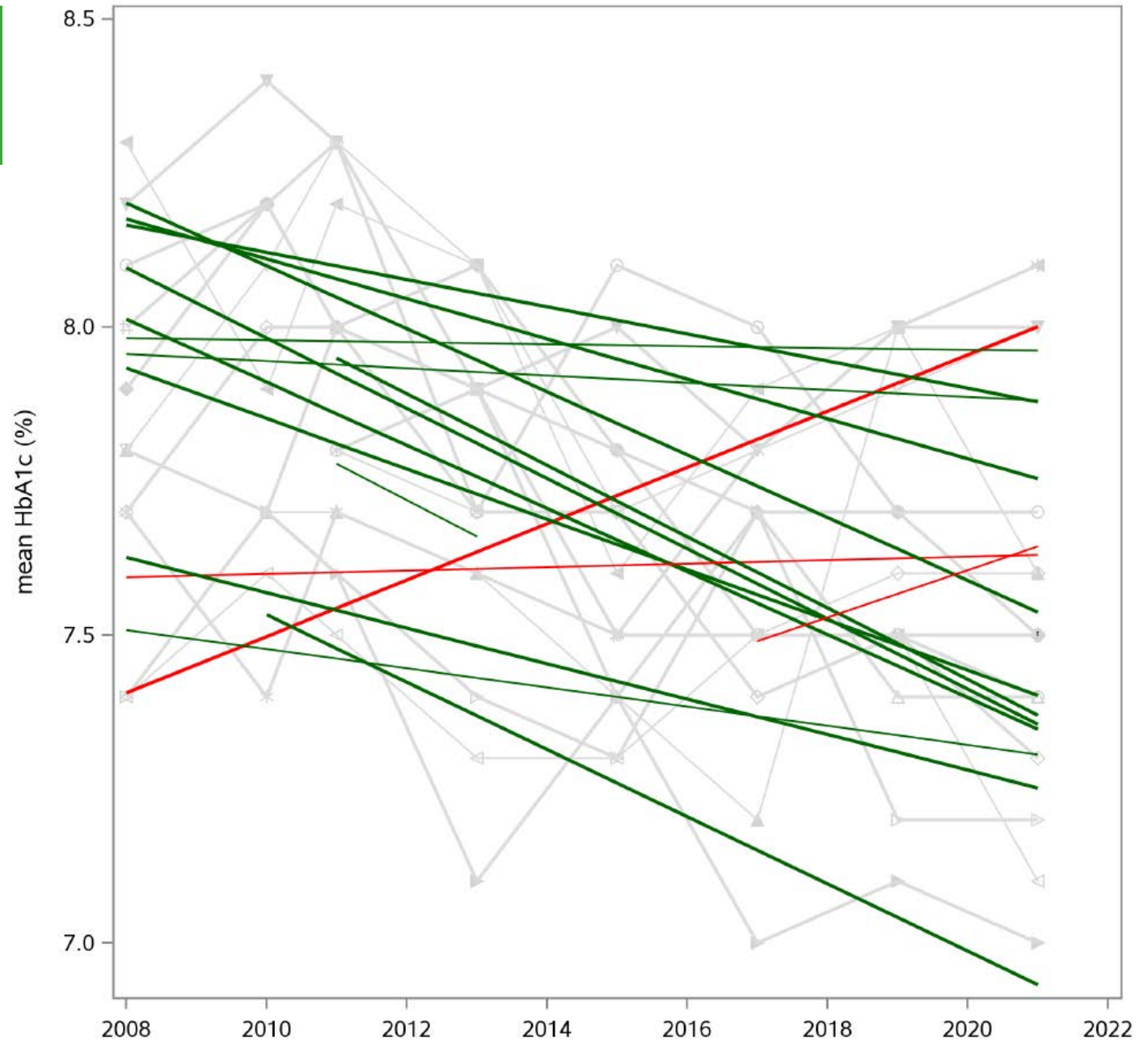
Audit 2008-2021: Processus indicators

Evolution - Processus indicators
Screening for complications and co-morbidities



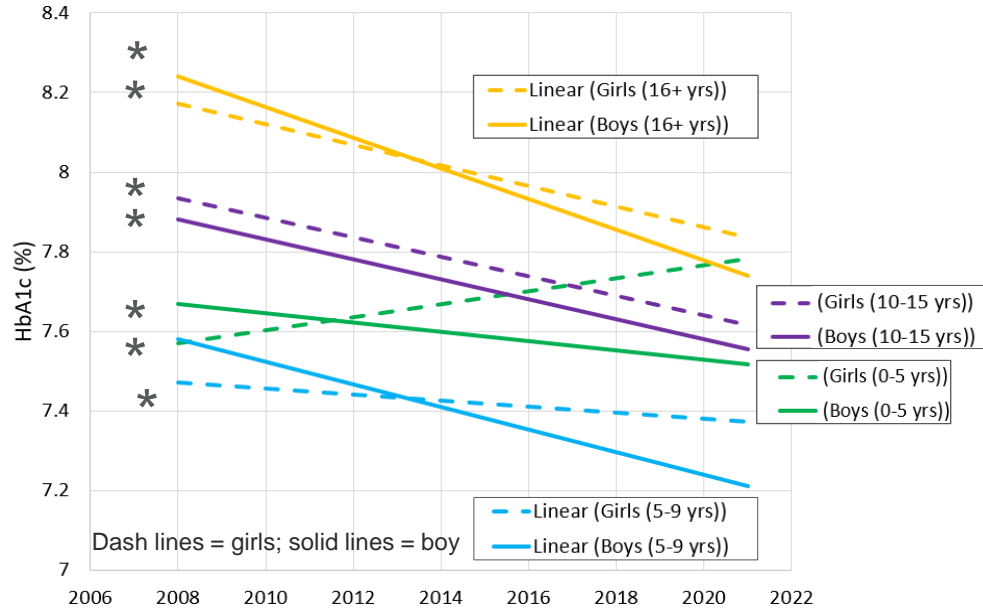
HbA1c Evolution

- Available in your personalized feedback.
- An improvement in HbA1c was observed in 14 out of 17 centers.
- For 8 centers, this decrease was statistically significant (lines in **bold**)
- For 3 centers:
HbA1c increased over time BUT had the lowest level in 2008.

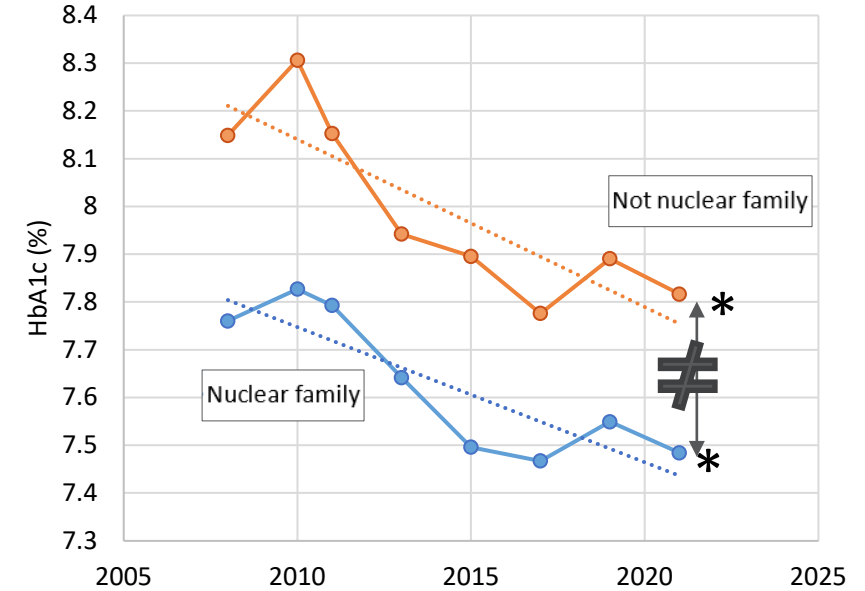


In which subpopulations the decrease in HbA1c was most pronounced ?

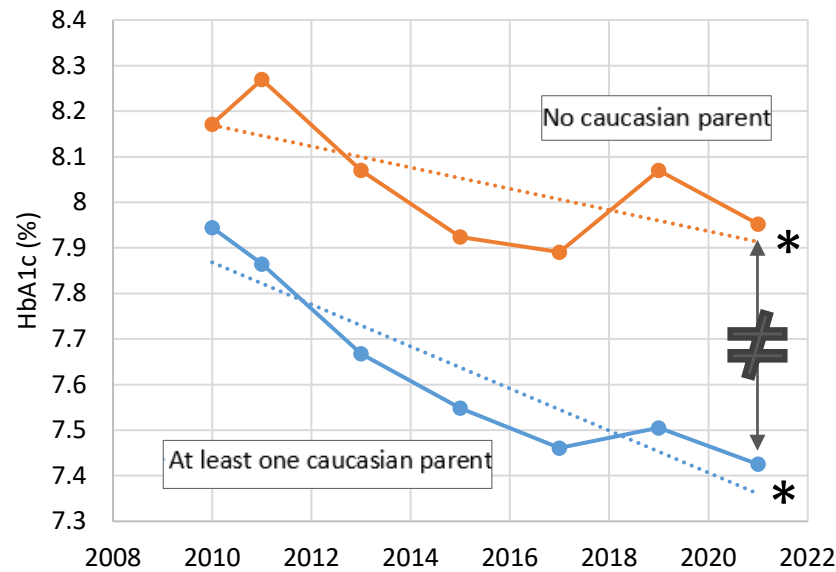
Age and gender



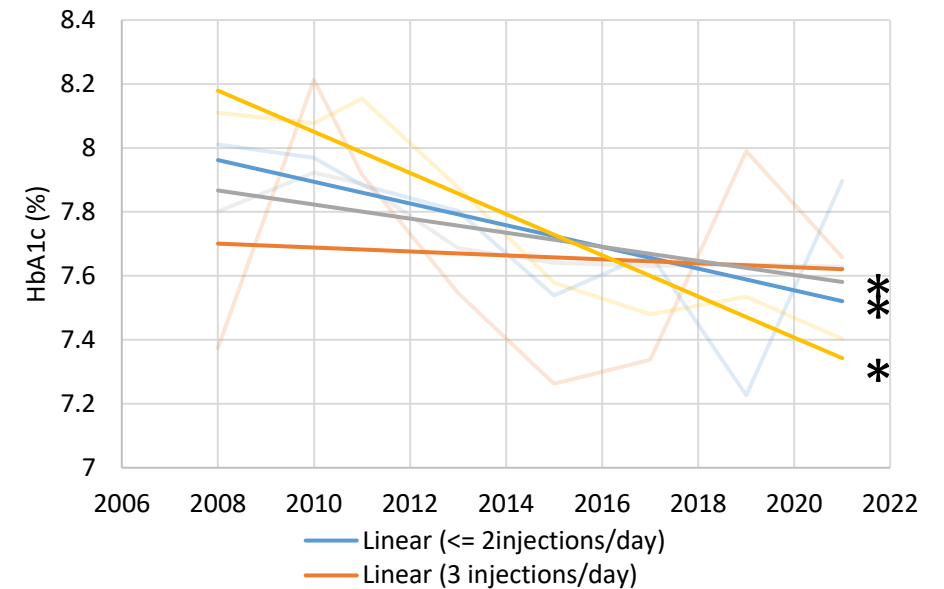
Family structure



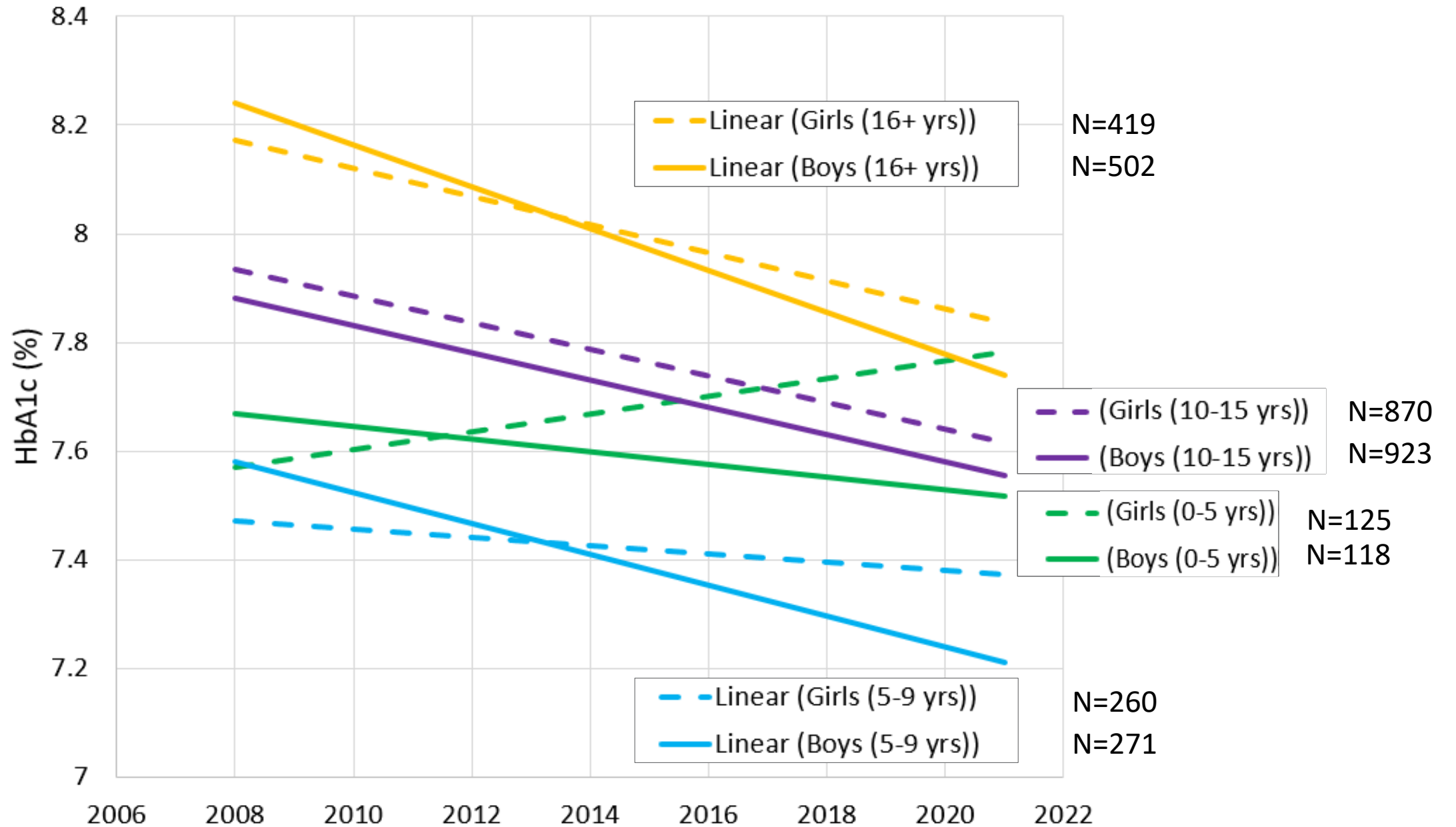
Parents' ethnicity



Insulin regimen

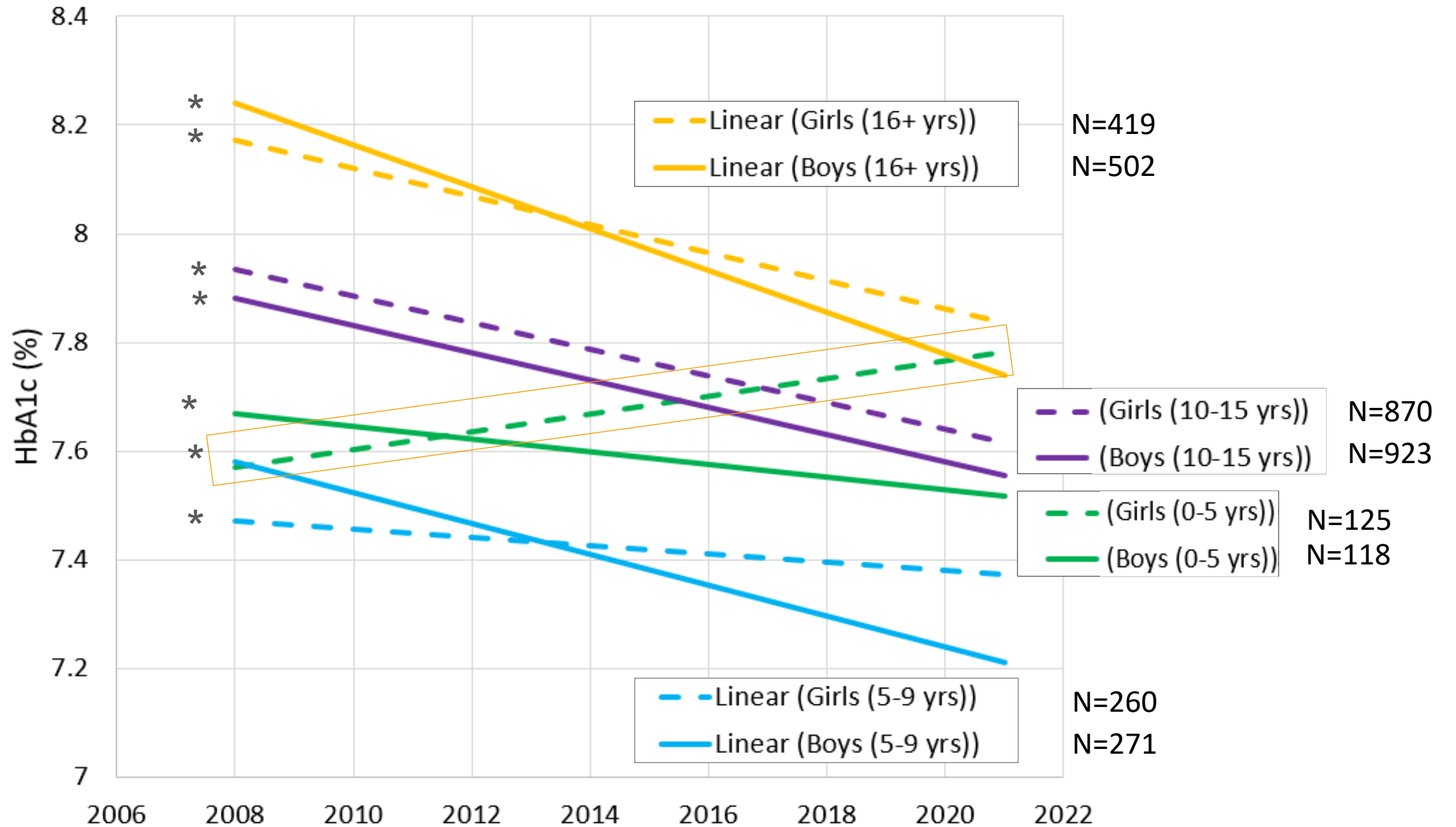


Age and gender

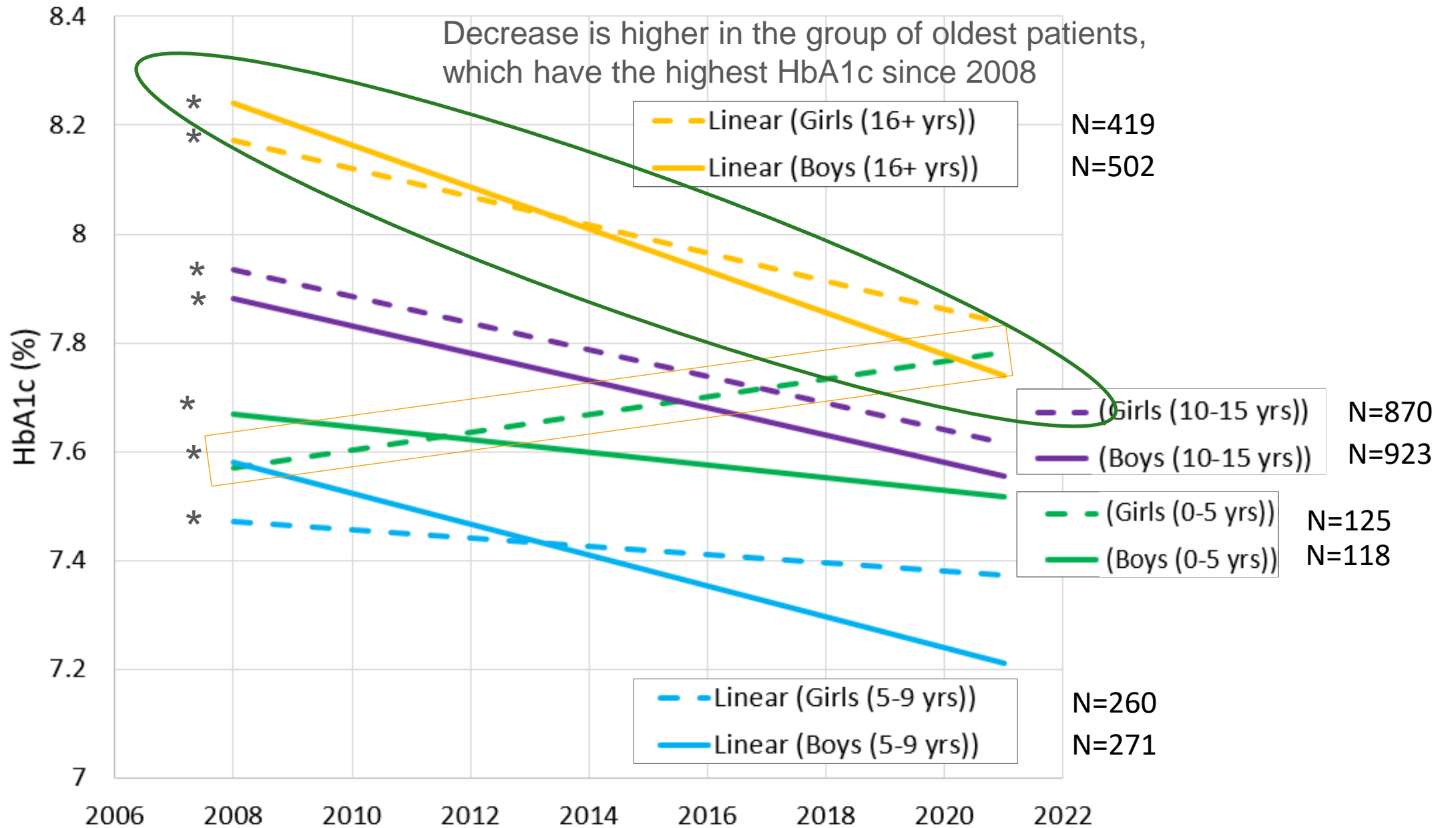


Dash lines = girls; solid lines = boy

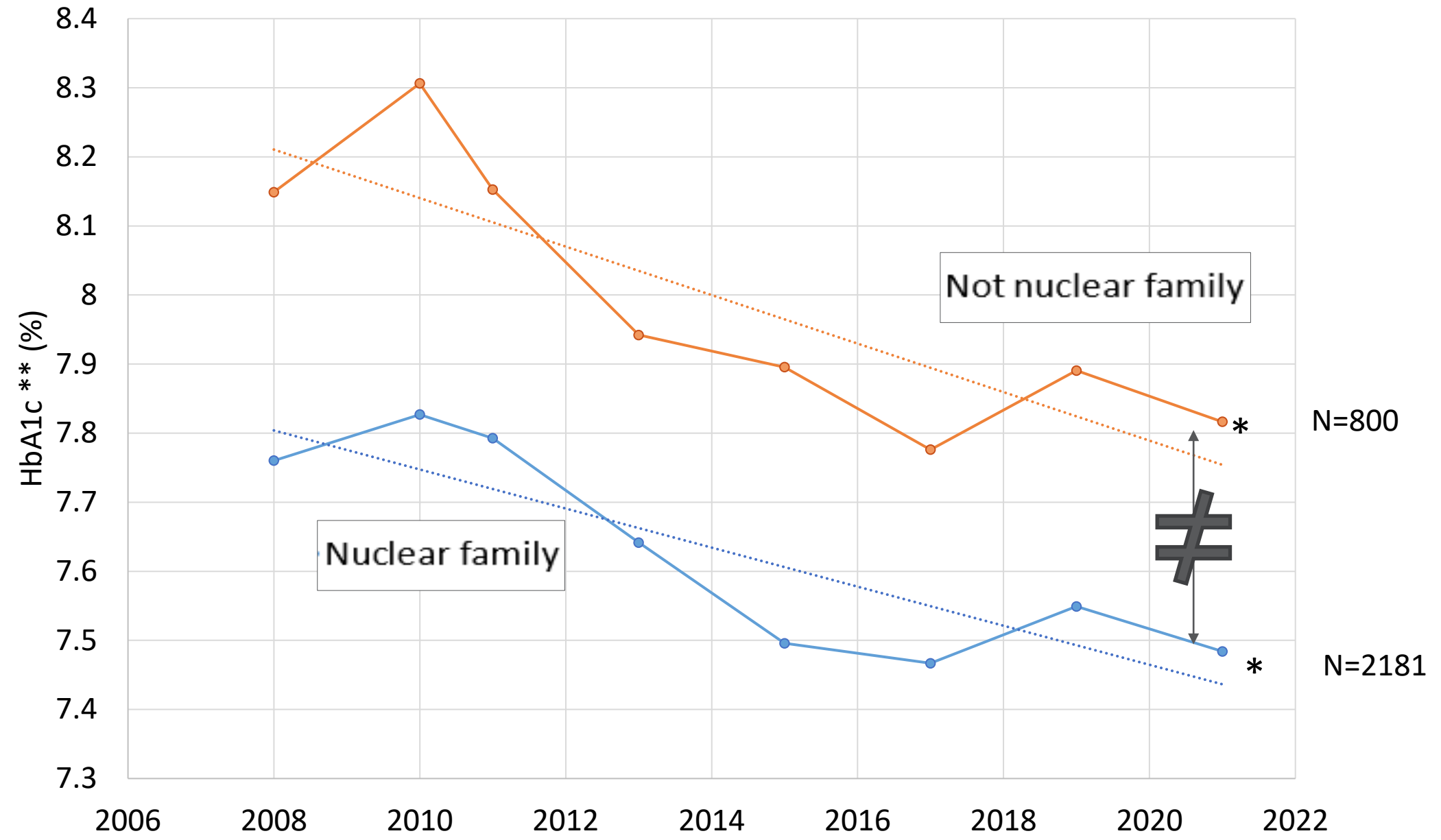
Age and gender



Age and gender



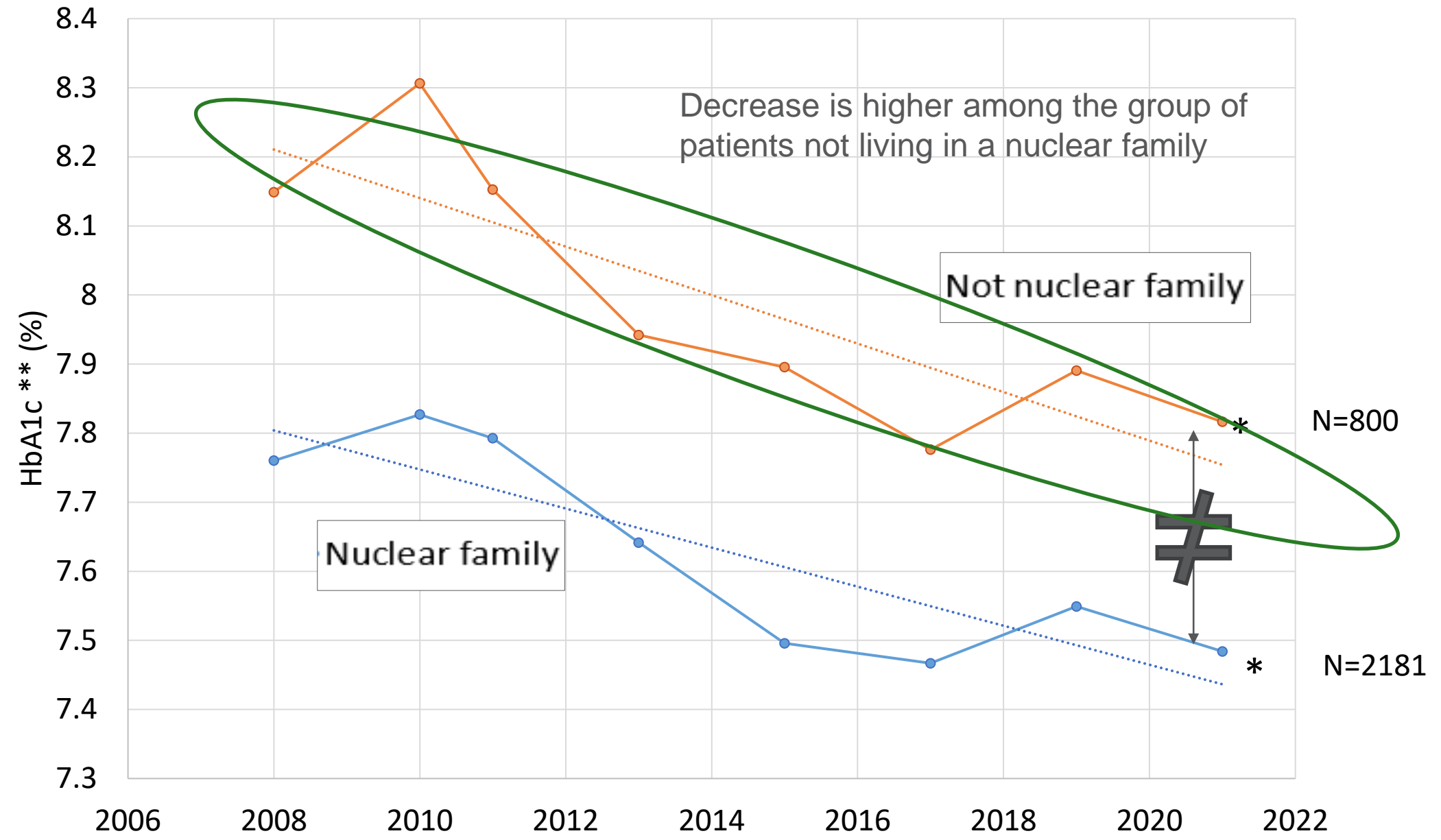
Family structure



* Significant decrease.

** adjusted for age and diabetes duration . Only patients with diabetes duration ≥ 1 year were taken into account.

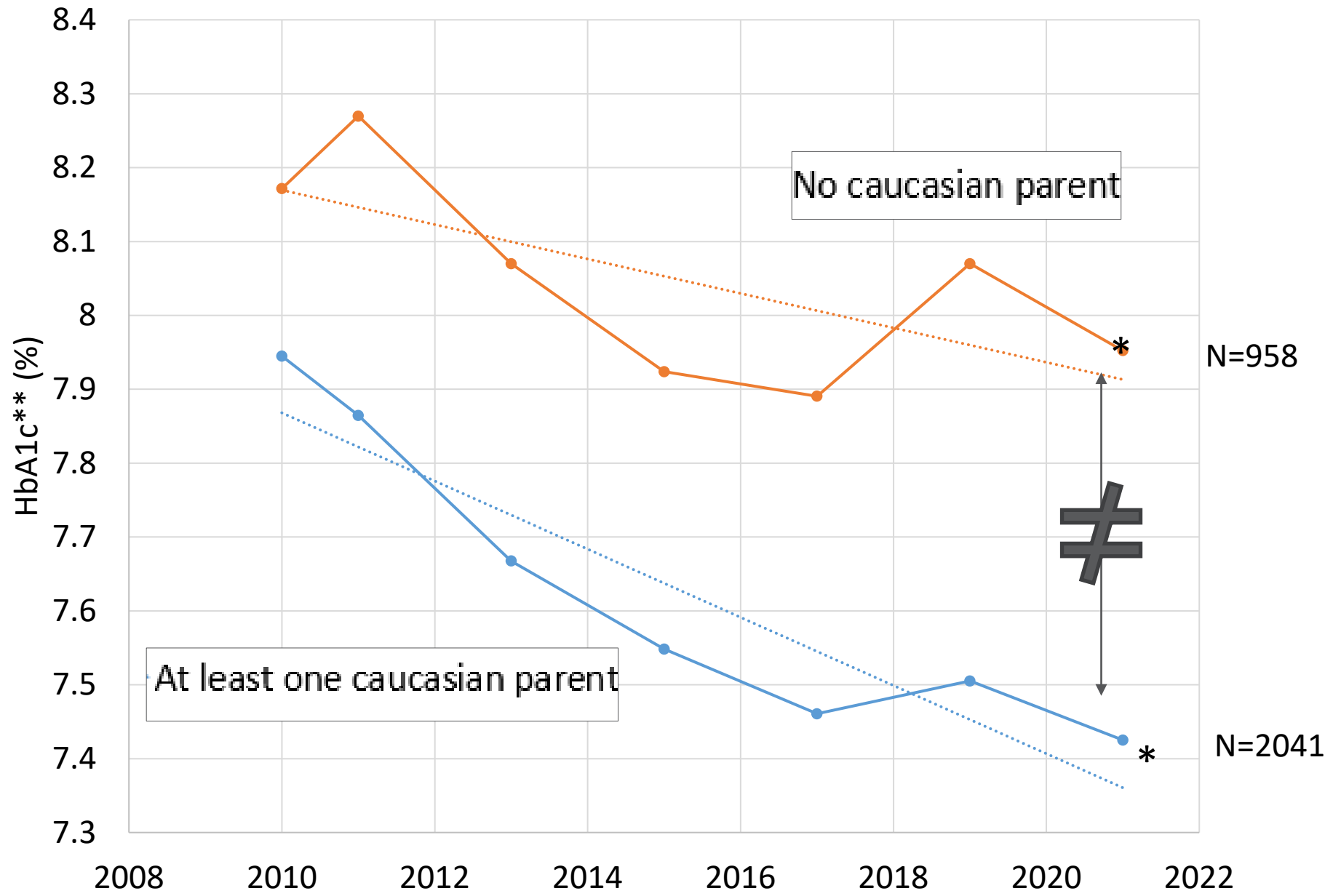
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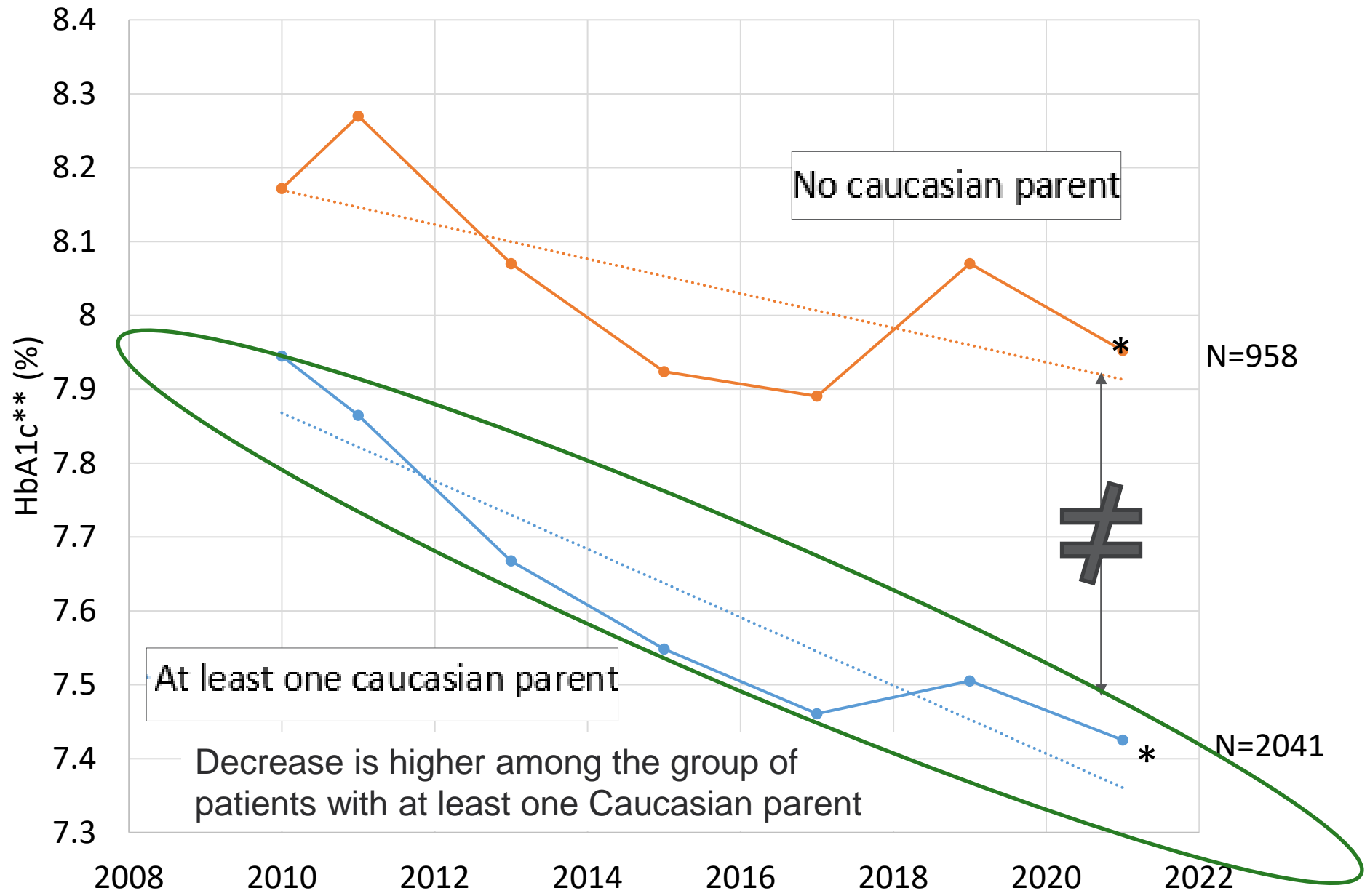
Parents' ethnicity



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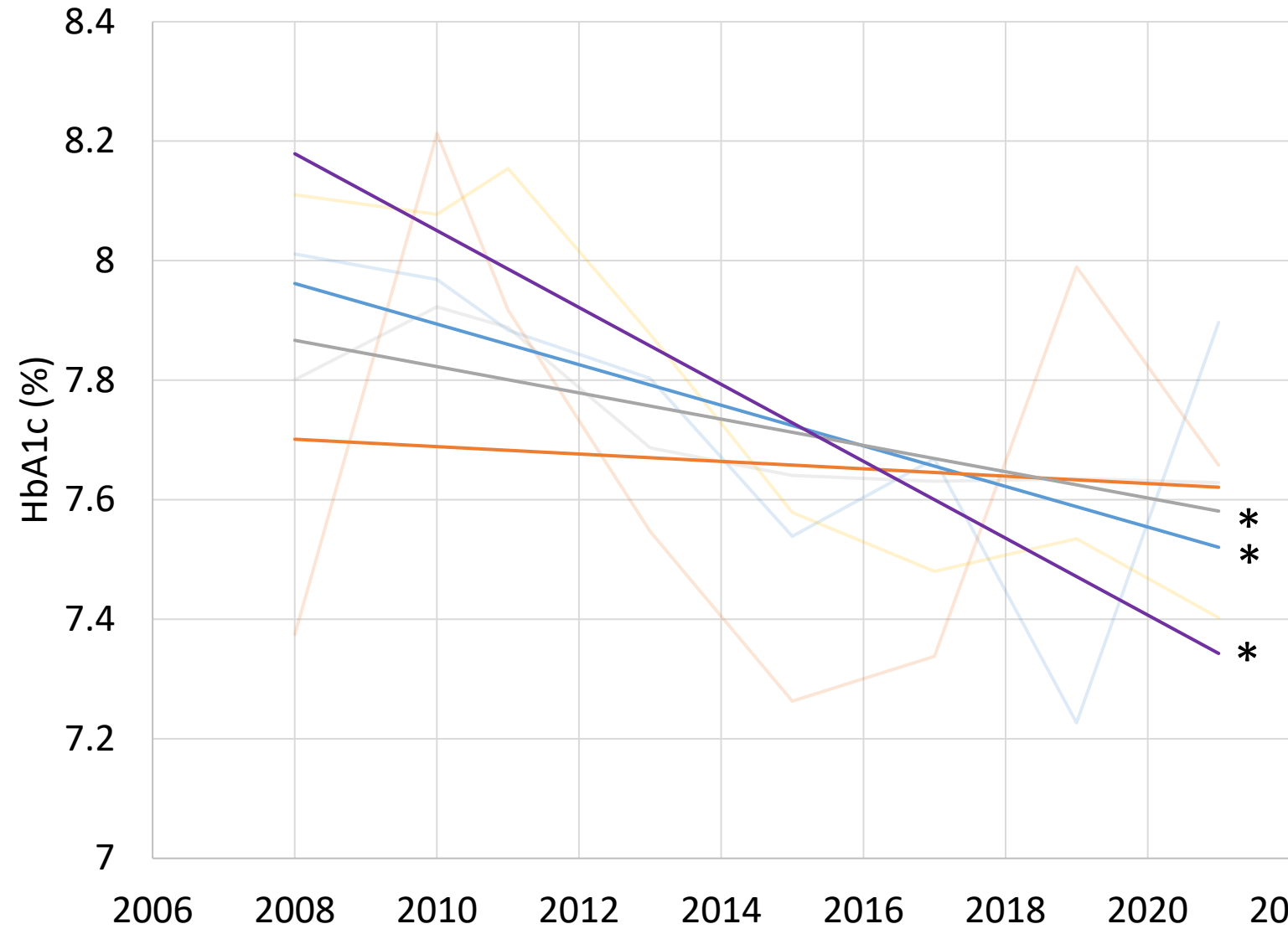
Parents' ethnicity



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Insulin regimen



- Improvement can be also explained by the fact that patients on pump have less psychosocial distress.

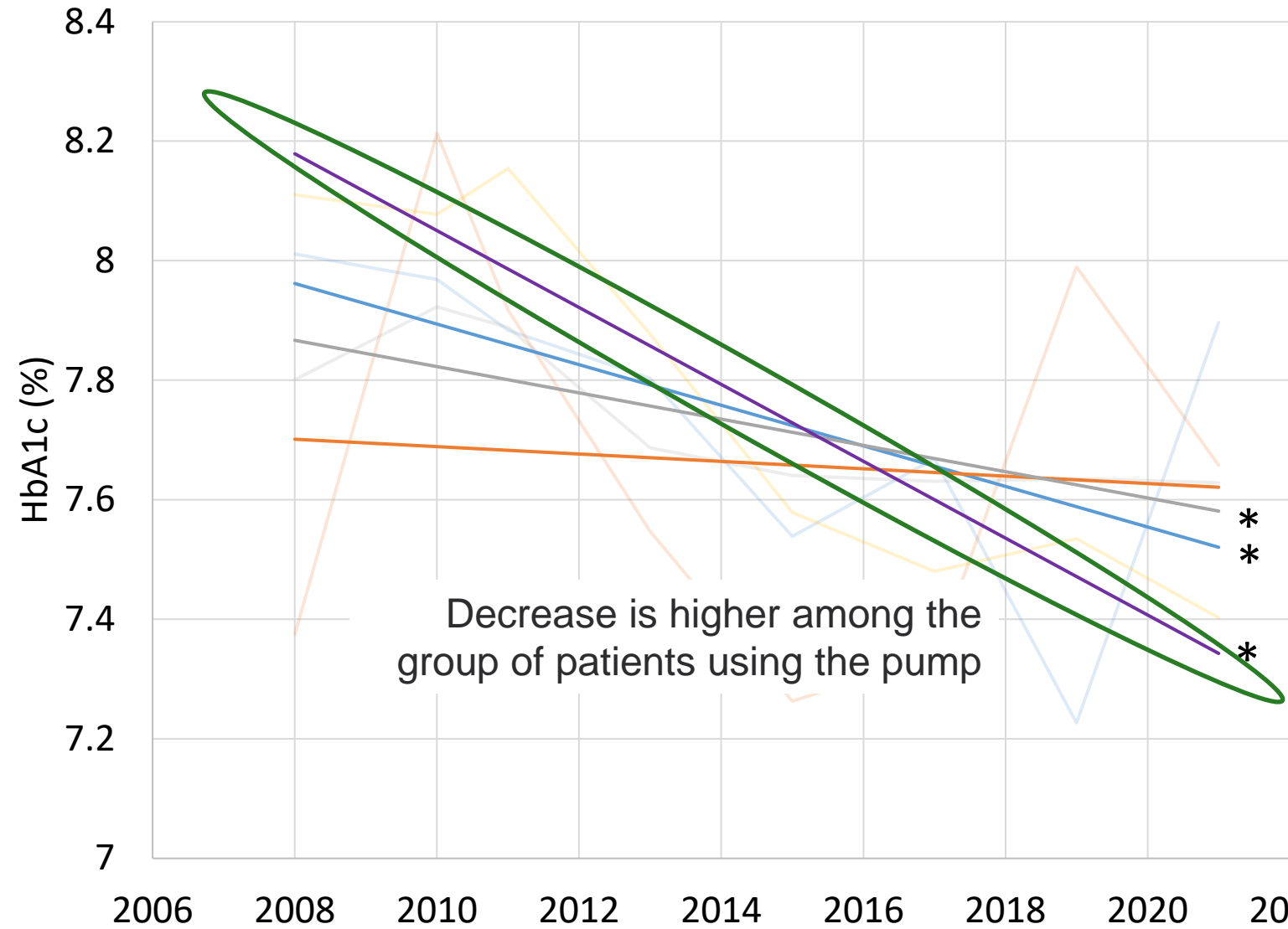
N=349
 N=1715
 N=43
 N=903

— Linear (<= 2 injections/day) — Linear (3 injections/day)
 — Linear (4 or more injections/day) — Linear (Insulin pump)

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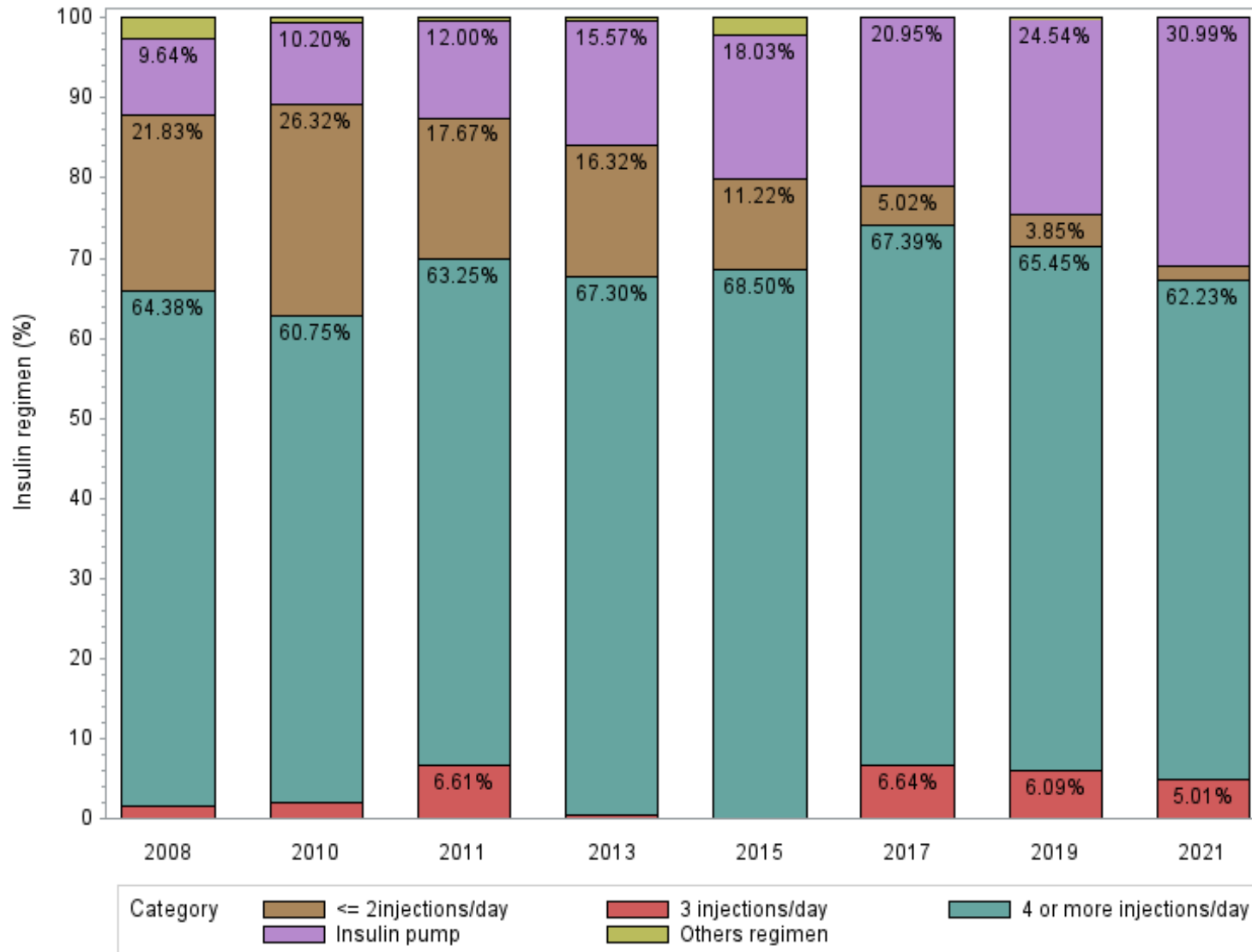
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Insulin regimen evolution



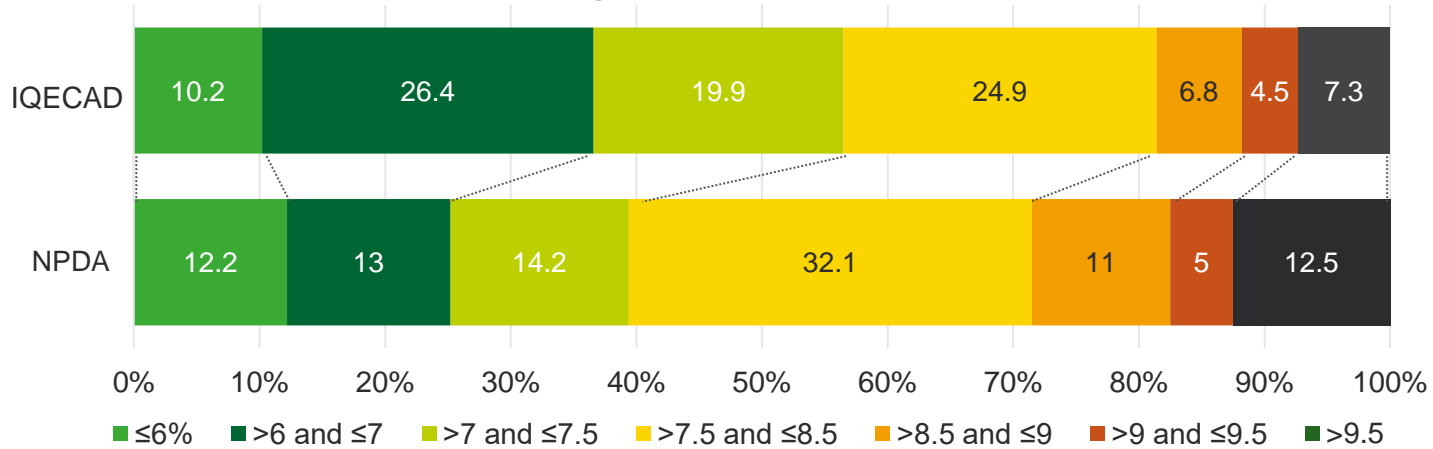
Since 2008:

- Increase of the use of the insulin pump.
- Decrease of the use of the “<2 inj/day”.
- The older the patient, the more intensive the treatment

➔ Increase in the use of diabetes technologies associated with lower HbA1c. Use of a pump system was associated with the best HbA1c (adjusted for psychosocial-distress)

International HbA1c comparison

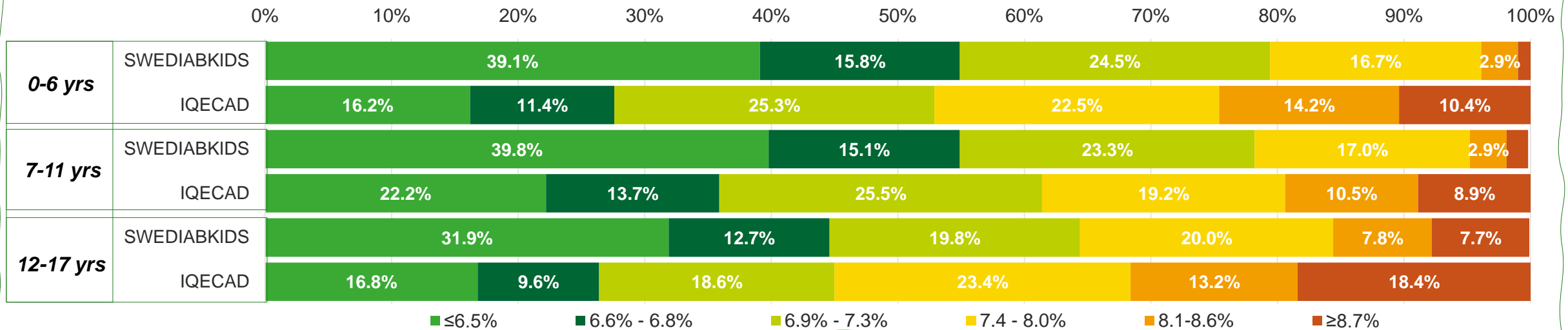
England and Wales* (2021-2022)



Comparison with national registries:

- National Paediatric Diabetes Audit of England and Wales (NPDA)
- Sweden national registry (SWEDIABKIDS)

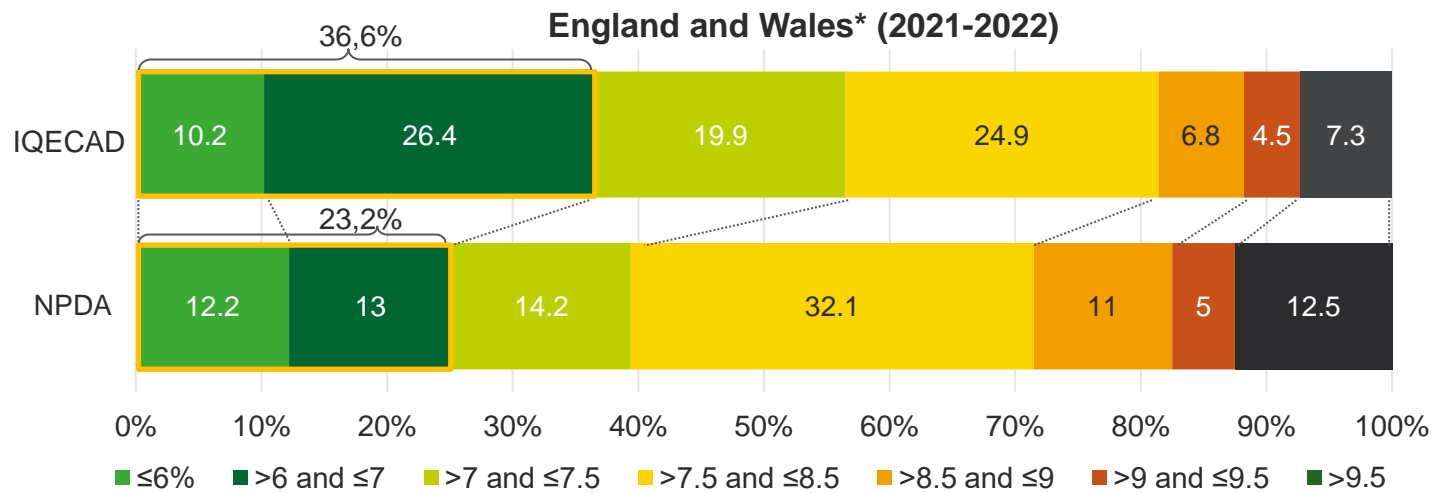
Sweden** (2021)



Source: * https://www.rcpch.ac.uk/sites/default/files/2023-11/npda_2021-22_apendix_1_extended_analysis.pdf

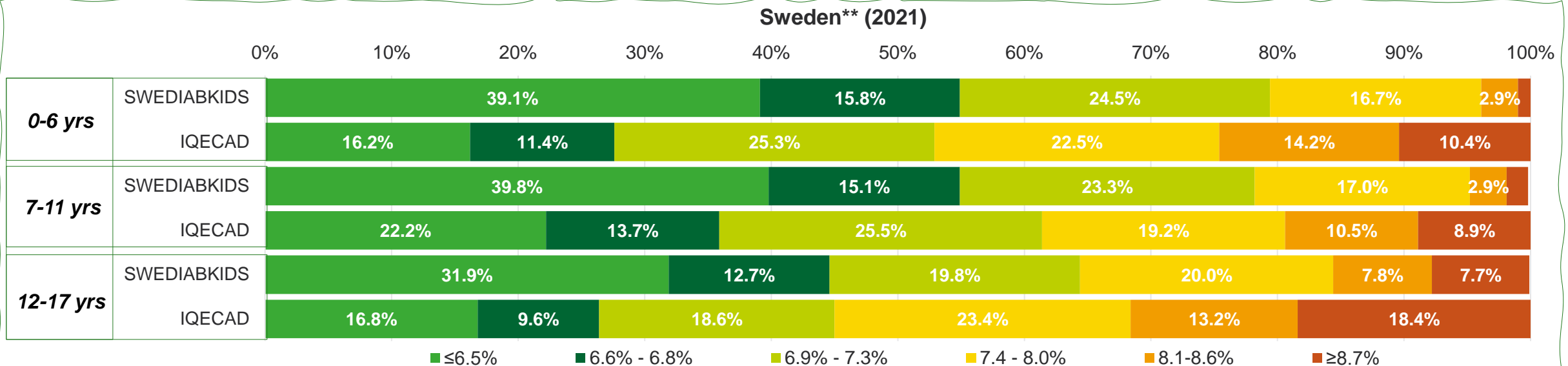
** https://www.ndr.nu/pdfs/Arsrapport_NDR_2021.pdf

International HbA1c comparison



Comparison with national registries:

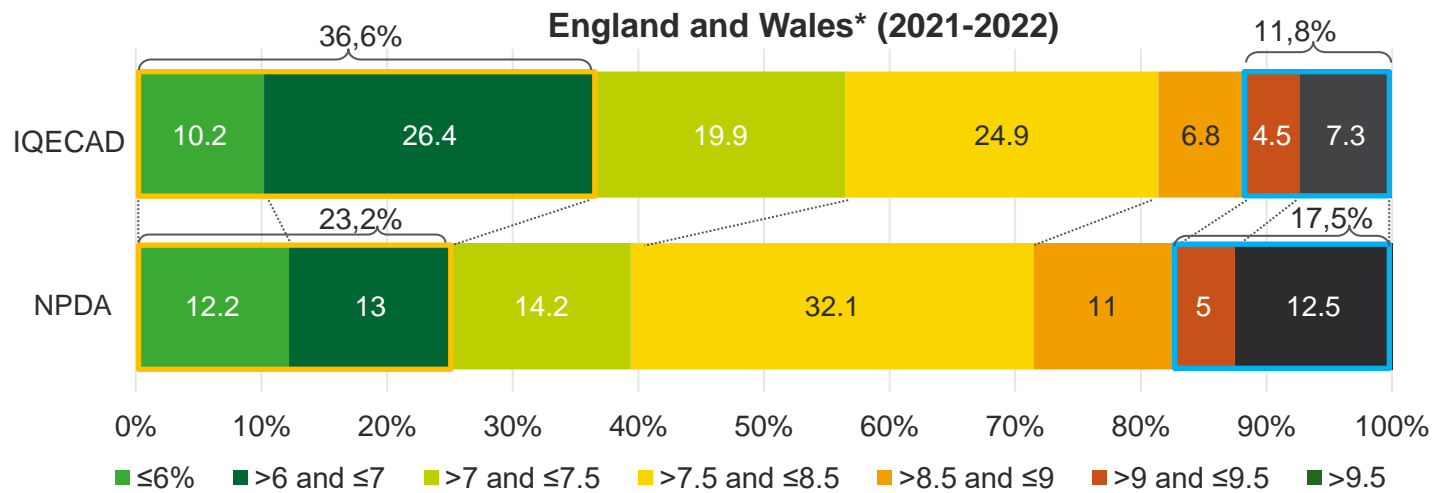
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Source: * https://www.rcpch.ac.uk/sites/default/files/2023-11/npda_2021-22_apendix_1_extended_analysis.pdf

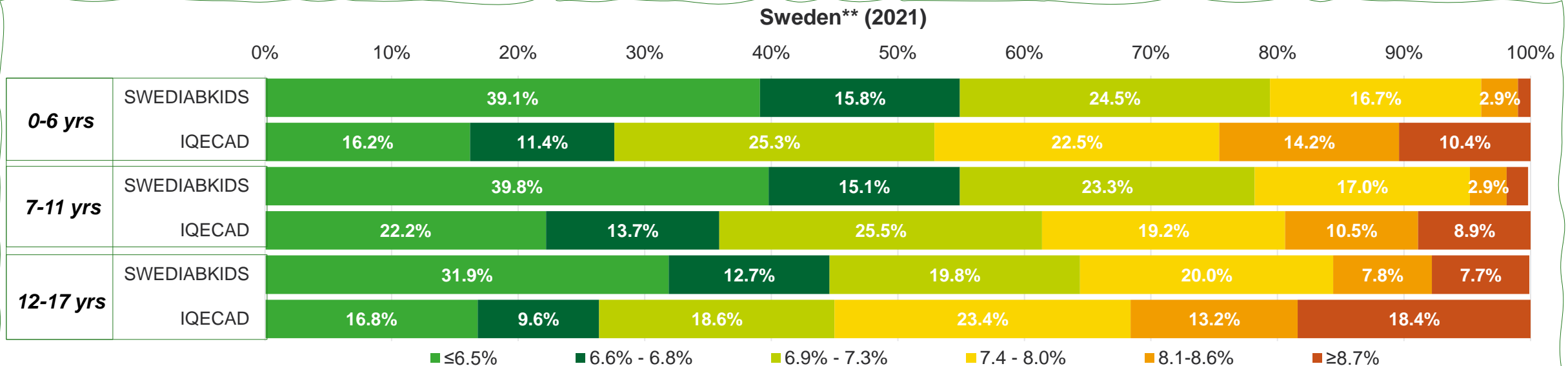
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International HbA1c comparison



Comparison with national registries:

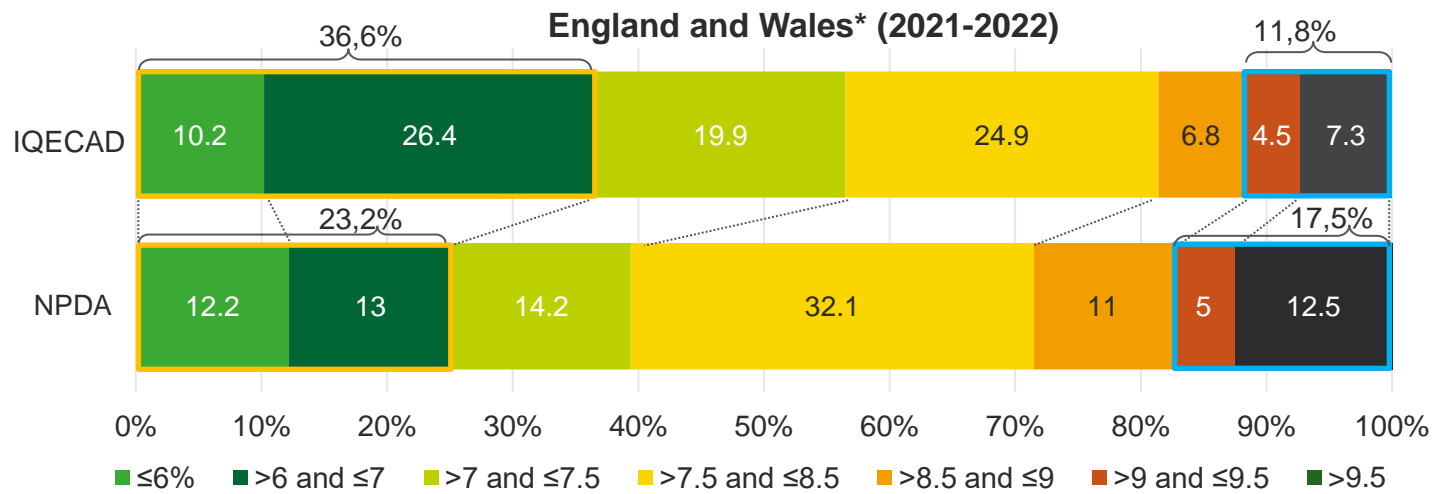
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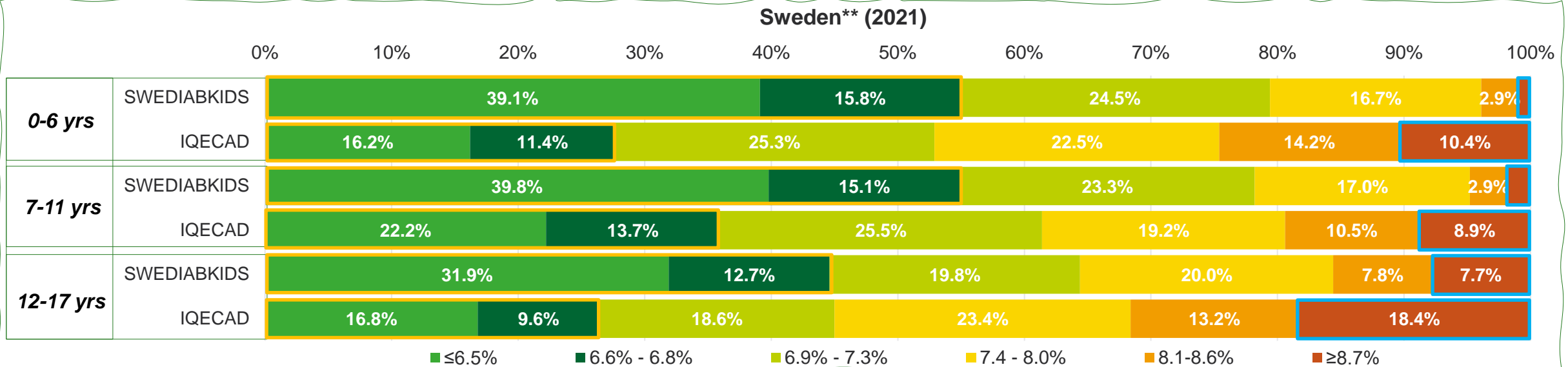
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International HbA1c comparison



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** https://www.ndr.nu/pdfs/Arsrapport_NDR_2021.pdf

International HbA1c comparison

DIABETIC
Medicine

DIABETES UK
KNOW DIABETES. FIGHT DIABETES.

RESEARCH: EPIDEMIOLOGY




International comparison of glycaemic control in people with type 1 diabetes: an update and extension

Regina Prigge, John A. McKnight, Sarah H. Wild ✉, Aveni Haynes, Timothy W. Jones, Elizabeth A. Davis, Birgit Rami-Merhar, Maria Fritsch, Christine Prchla, Astrid Lavens, Kris Doggen ... [See all authors](#) ▾

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J. A. McKnight and S. H. Wild are joint senior authors.

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Abstract

Aims

To update and extend a previous cross-sectional international comparison of glycaemic control in people with type 1 diabetes.

International comparison (Prigge et al):

- 54,158 children aged < 15 years with type 1 diabetes
- 19 countries or regions between 2016 and 2020
- Median HbA1c (IQR) is presented in order of increasing HbA1c.

➔ Belgium have a excellent position in the ranking !

International HbA1c comparison



Country/Region	Data source	N	Median HbA1c % (IQR)	Missing HbA1c (%)
Italy	regional	192	7.2 (6.8; 8.1)	0
Greece	clinic	26	7.2 (6.8; 7.6)	3.8
Belgium	national	2,242	7.3 (6.7; 7.9)	1
Denmark	national	1,869	7.4 (6.7; 8.0)	15.5
Austria	national	1,444	7.4 (6.8; 8.1)	0.6
Netherlands	clinic	583	7.4 (6.9; 8.1)	2.2
Germany	national	17,463	7.5 (6.8; 8.3)	1.3
Slovenia	national	382	7.5 (7.0; 8.1)	0
Australia	regional	627	7.6 (6.9; 8.2)	3.5
England	national	18,514	7.7 (7.0; 8.3)	6.1
Wales	national	1,045	7.7 (7.0; 8.4)	5.6
Scotland	national	1,960	7.8 (7.3; 8.5)	2.2
Finland	regional	131	7.8 (7.3; 8.4)	2.3
France	regional	40	8.0 (7.5; 8.5)	0
Hong Kong	national	228	8.1 (7.3; 9.0)	8.3
Ukraine	national	6,618	8.3 (7.3; 9.7)	13.3
New Zealand	regional	324	8.3 (7.4; 9.6)	8.8
Ireland	clinic	74	8.4 (7.5; 9.2)	12.2
Latvia	national	396	9.1 (7.8; 10.8)	12.1

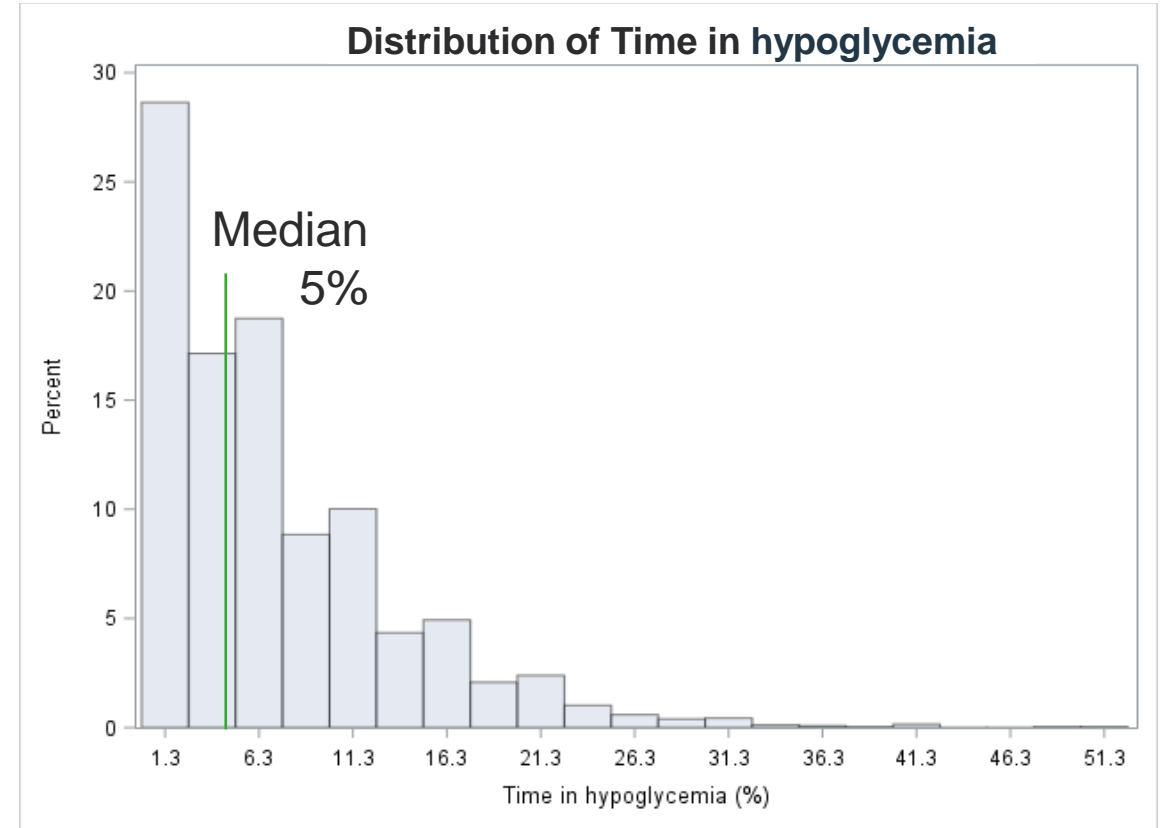
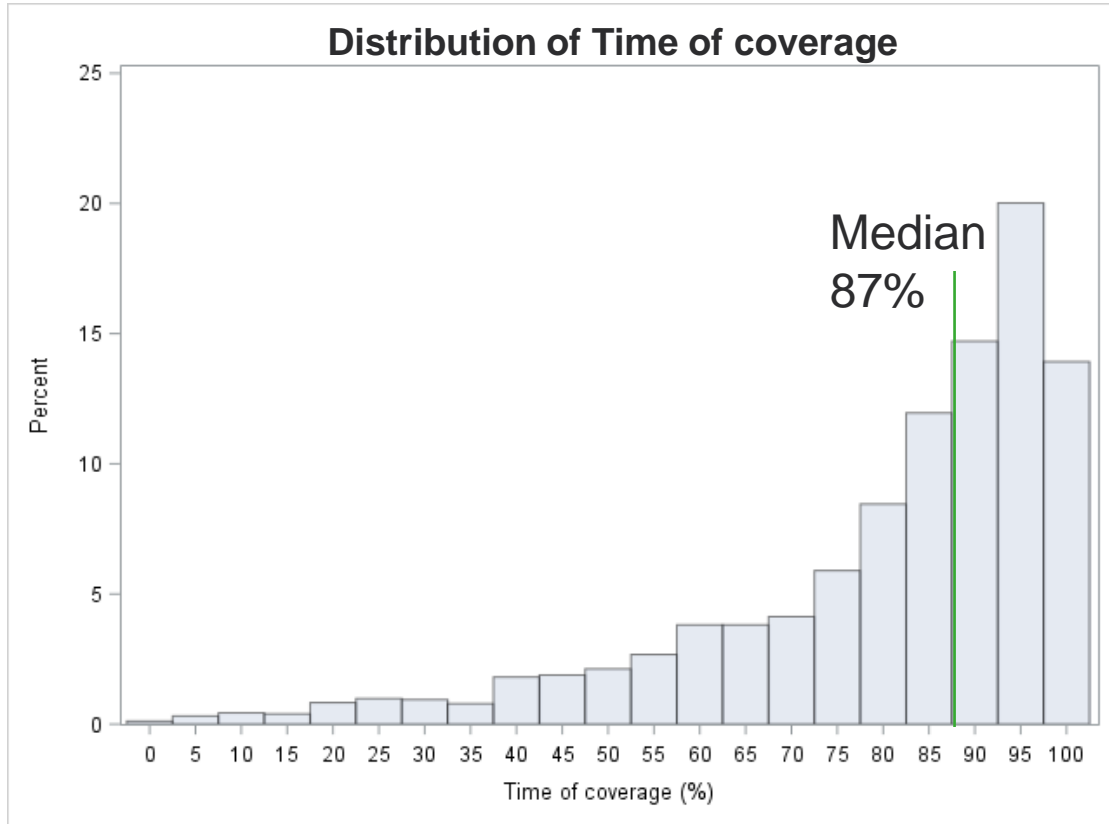
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Time of coverage & Time in hypoglycemia

New in 2021: Average time of **coverage** over a period of 14 days ?
 Average time in **hypoglycemia** (<70 mg/dl) over a period of 14 days ?

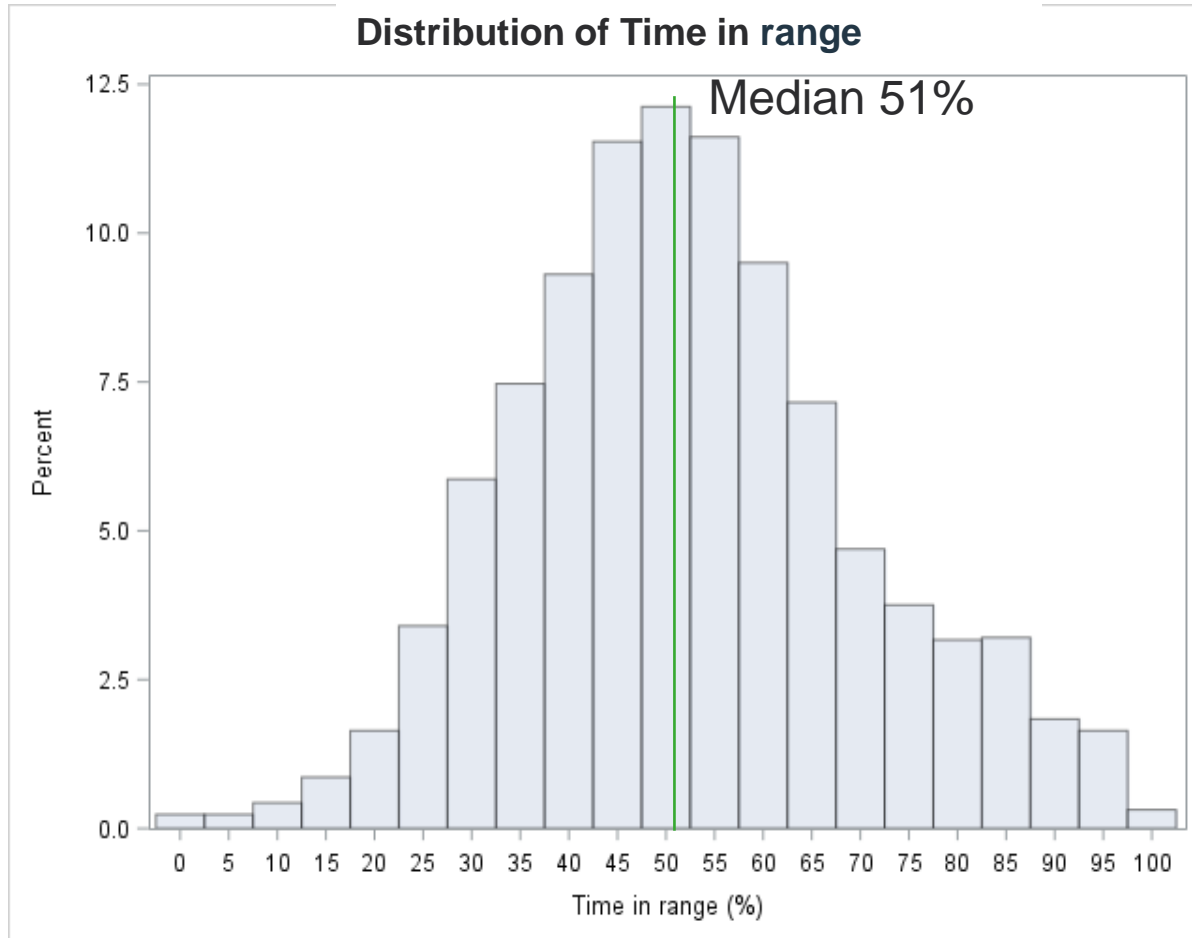


	Median	IQR	N
Time of coverage (%)	87.0%	72.0-95.0	2635

	Median	IQR	N
Time in hypoglycemia (%)	5.0%	2.0-10.0	2635

Time in Range (%) (70 to 180 mg/dl)

New in 2021: Average time in range over a period of 14 days (%)?



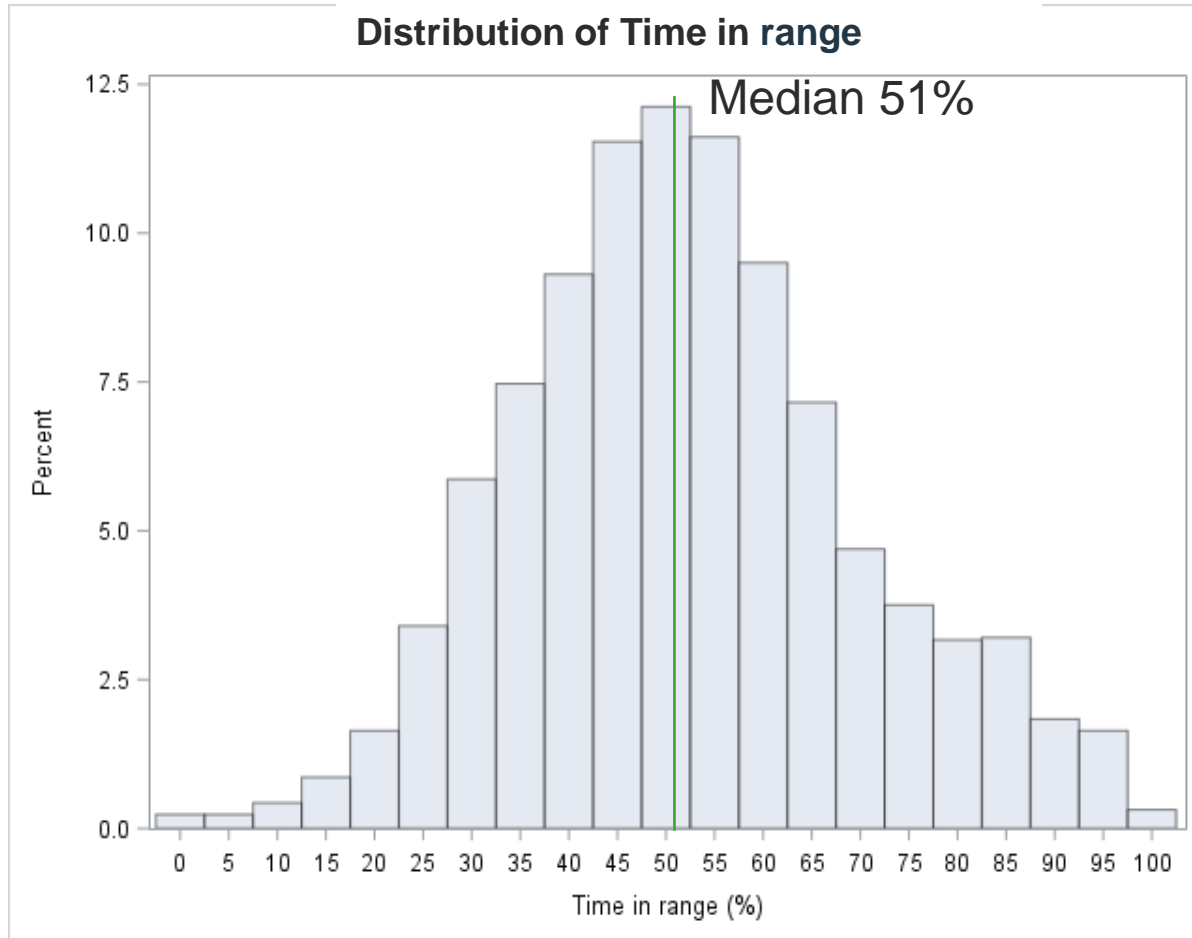
	Median	IQR	N
Time in range (%)	51.0%	40.0-63.0	2635
Variation between centers	42-57	-	16

Difference between TIR \geq 70 and TIR $<$ 70 ?

	TIR $<$ 70	TIR \geq 70	TIR \geq 70 characteristics
Age (years)	13.5	12.6	Younger
Duration (years)	5.7	2	Shorter diabetes duration
Gender (male%)	52.2	52.1	-
Puberty (%)	70.9	59.2	Less reached puberty
No caucasian (%)	36.6	25.9	Less with non caucasian p
Communication problem	21.2	19.1	-
No nuclear family (%)	28.2	19.1	More living in Nuclear fam

Time in Range (%) (70 to 180 mg/dl)

New in 2021: Average time in range over a period of 14 days (%)?

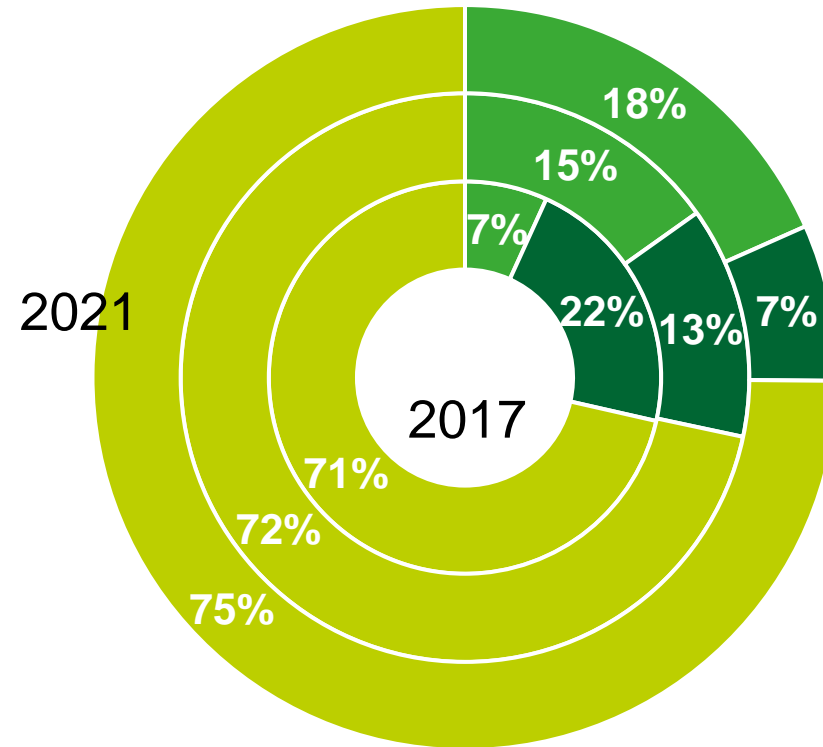


	Median	IQR	N
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Difference between TIR \geq 70 and TIR $<$ 70 ?

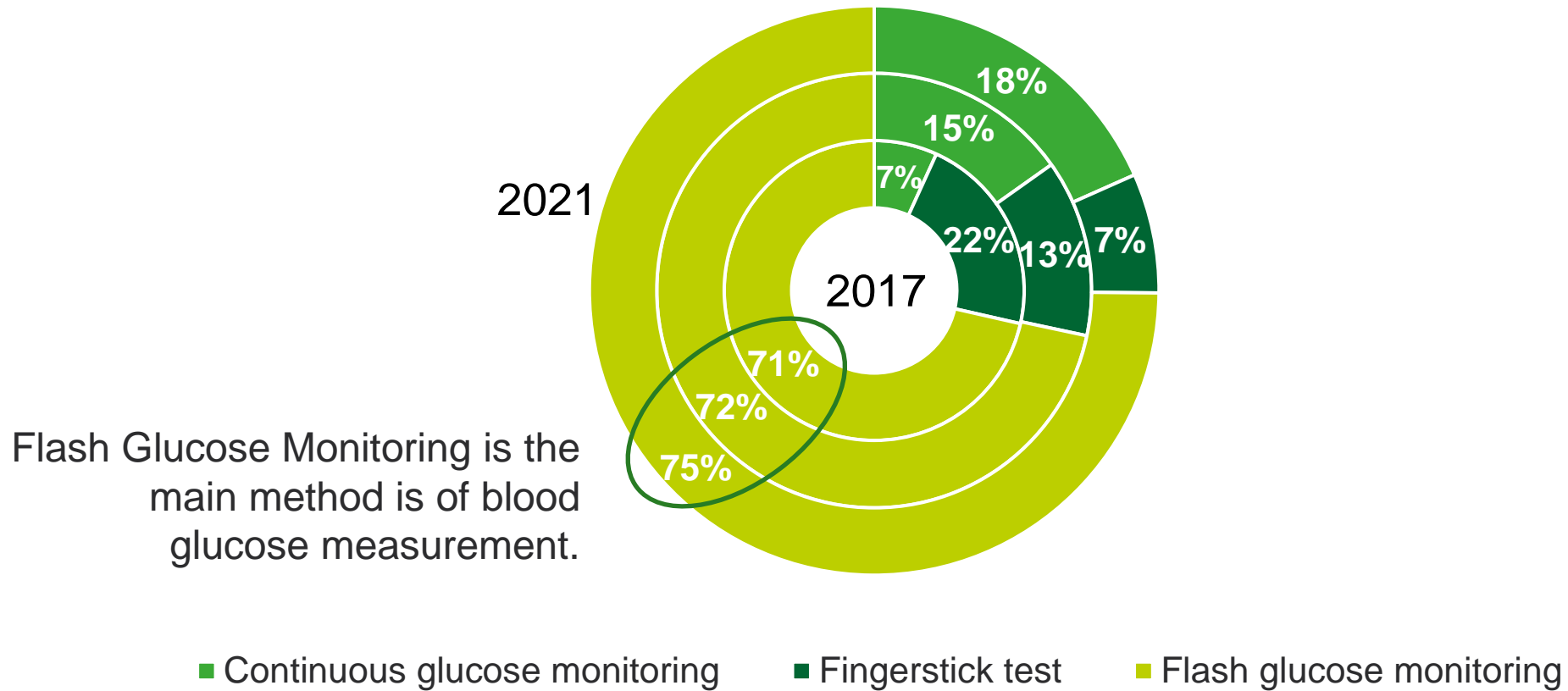
	TIR $<$ 70	TIR \geq 70	TIR \geq 70 characteristics
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Method of blood glucose measurement

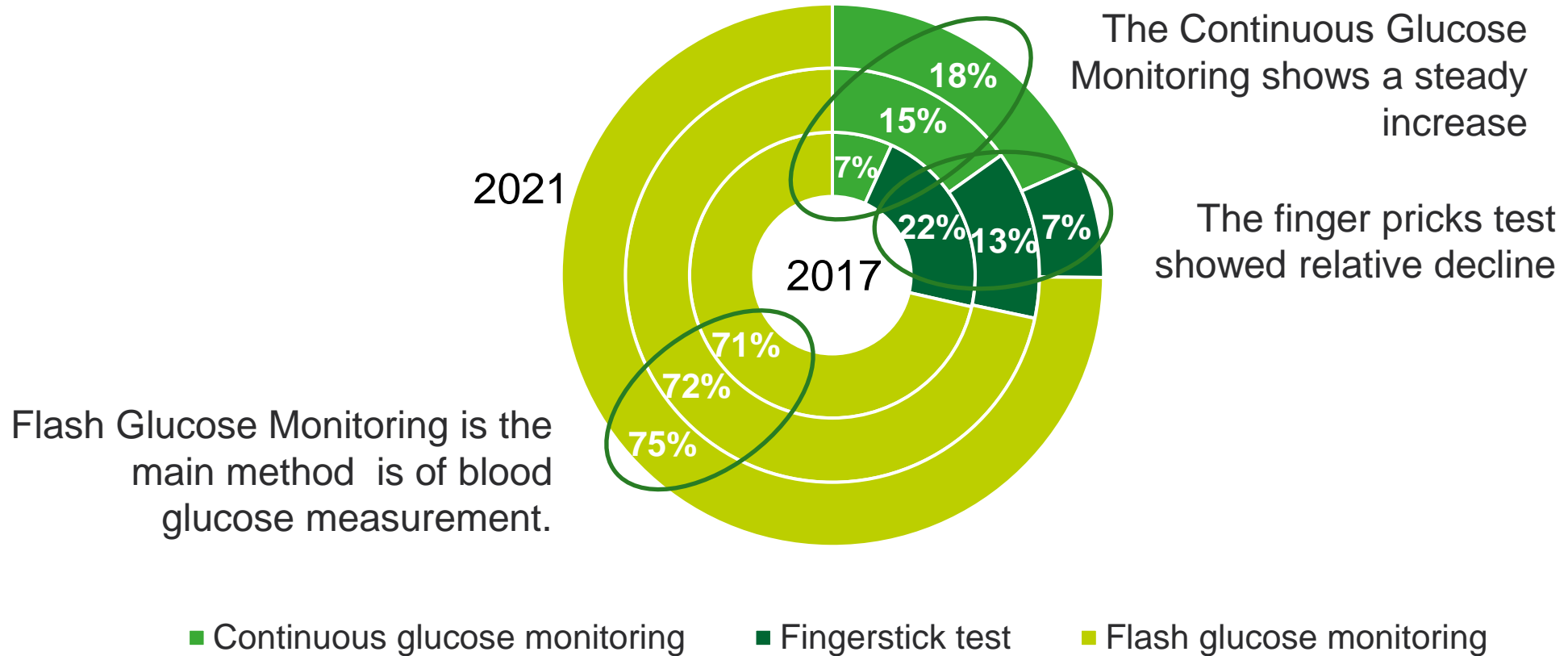


■ Continuous glucose monitoring ■ Fingerstick test ■ Flash glucose monitoring

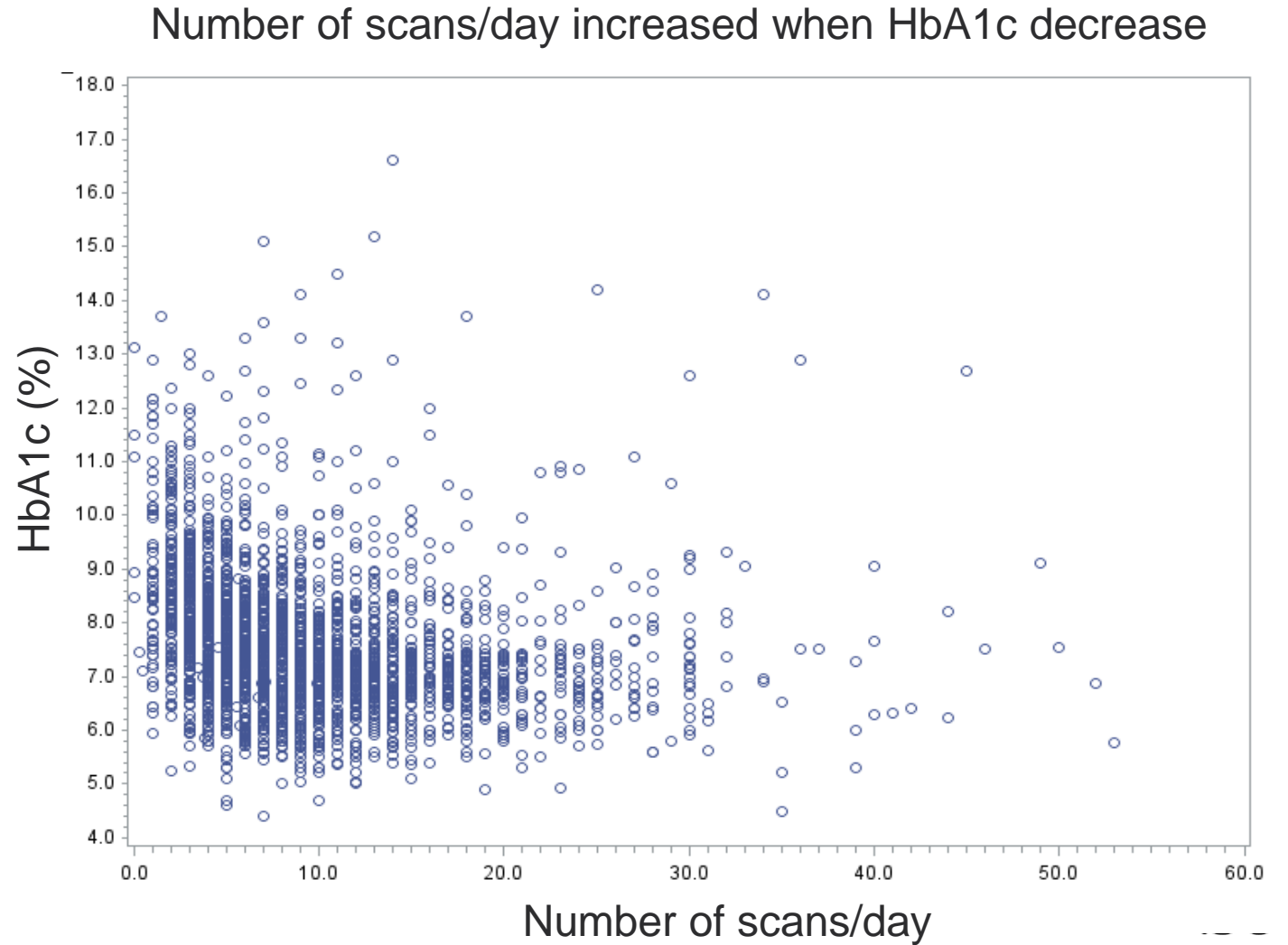
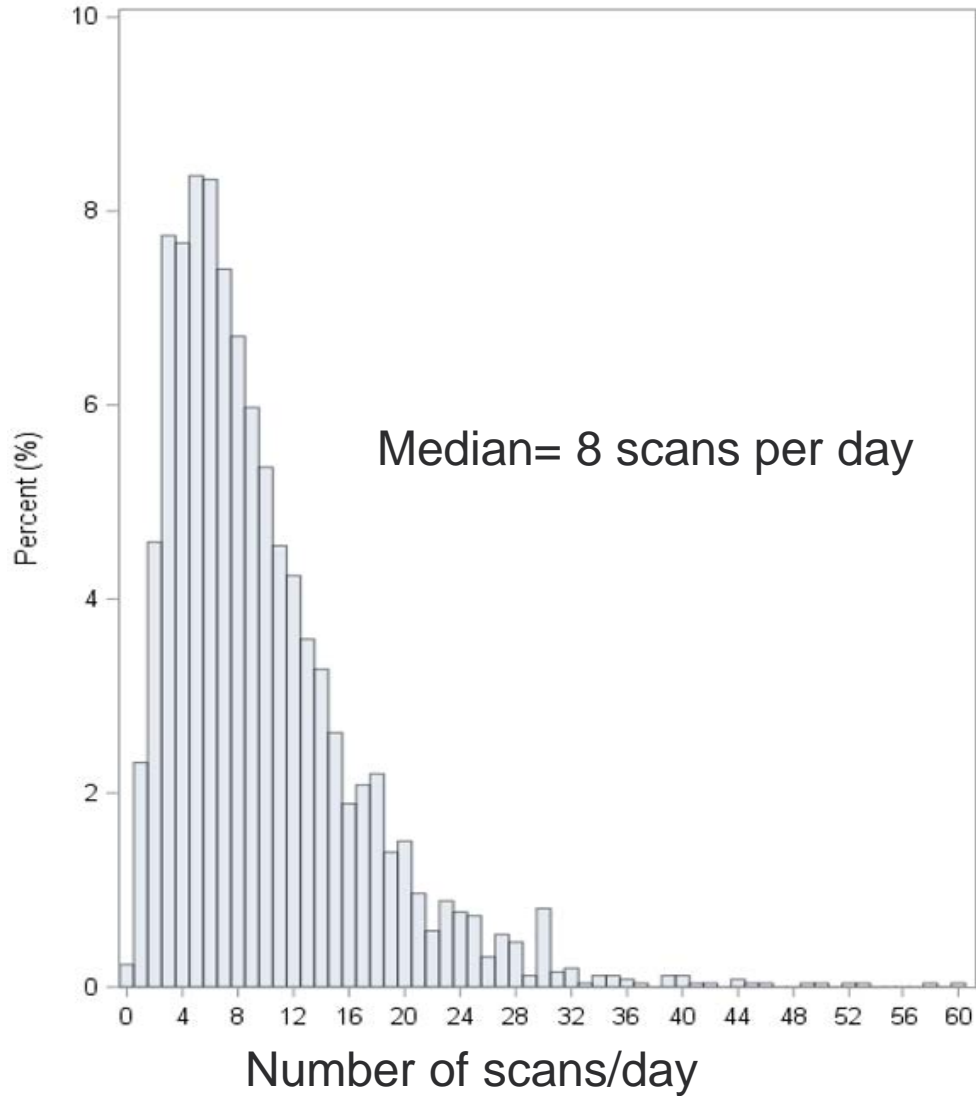
Method of blood glucose measurement



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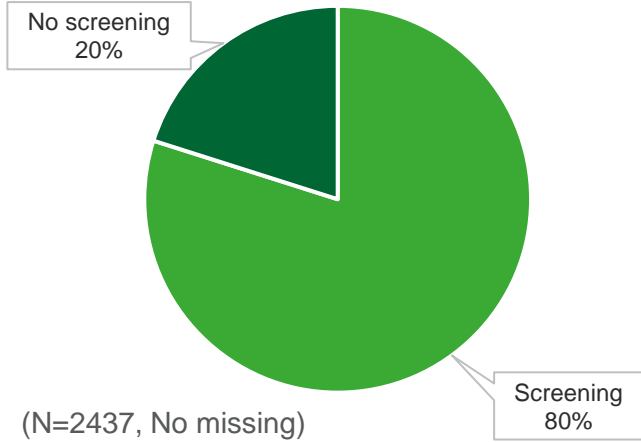


Number of scans per day

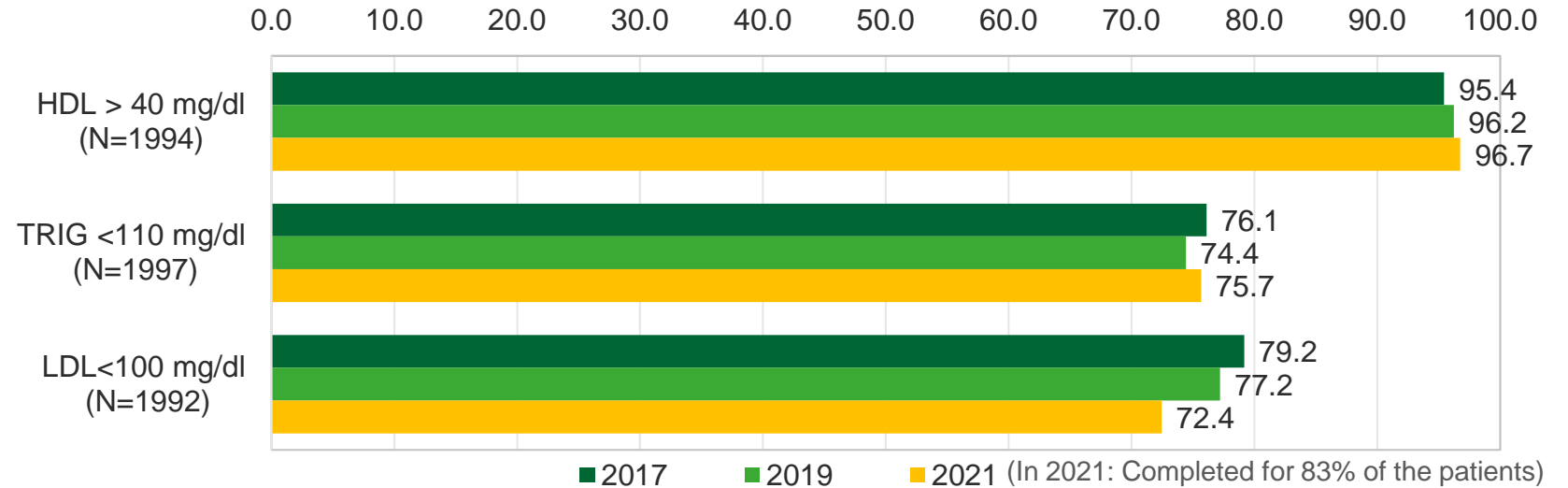


Blood lipids (target population)

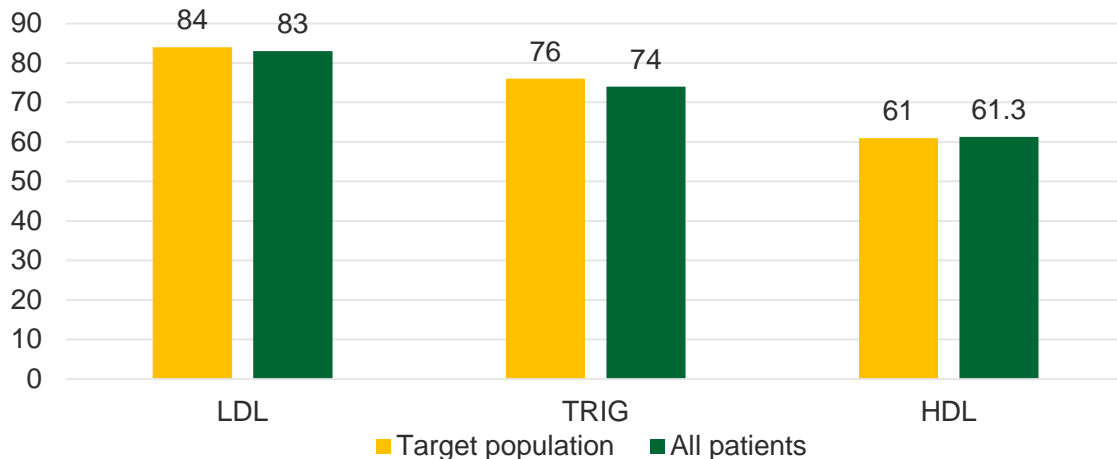
Blood lipids screening



Blood Lipids targets



Blood lipids median (2021)



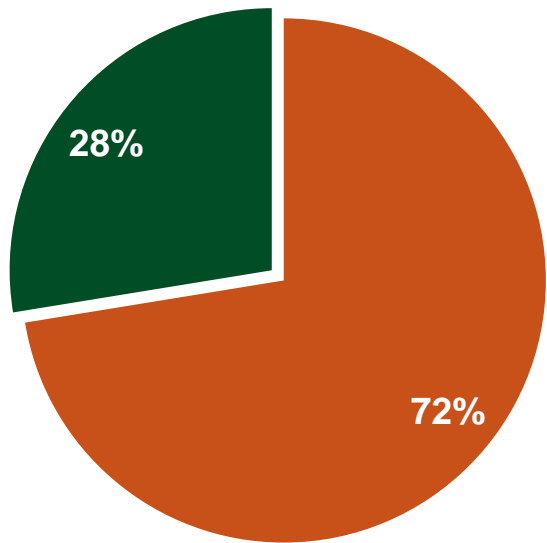
- Mean LDL increased with **age**
- Mean LDL cholesterol **significantly higher among girls** than boys (92.1 mg/dl vs. 82.8 mg/dl, P<0.0001)
- Mean LDL cholesterol **significantly higher among children with no Caucasian parents** (89.4 mg/dl vs. 86.3 mg/dl, P<0.05)

* Targets defined by US National Cholesterol Education Program Adult (NCEP ATP III)

Psychosocial distress

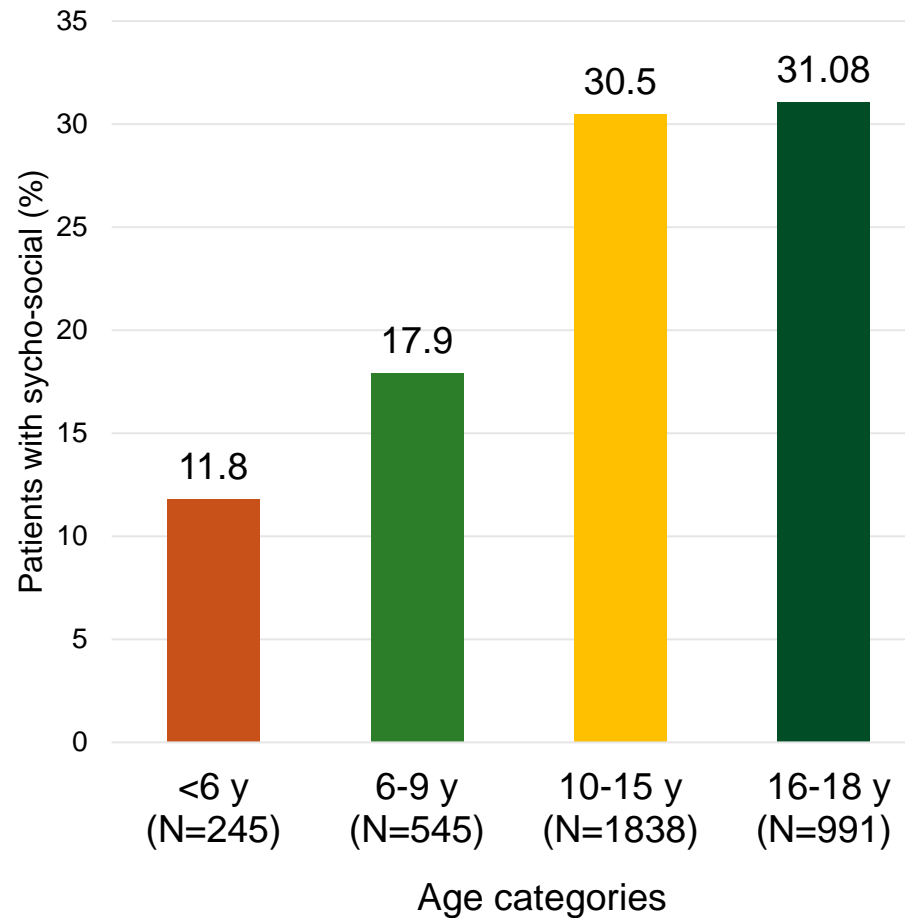


Proportion patients with psycho-social distress (N=3640)

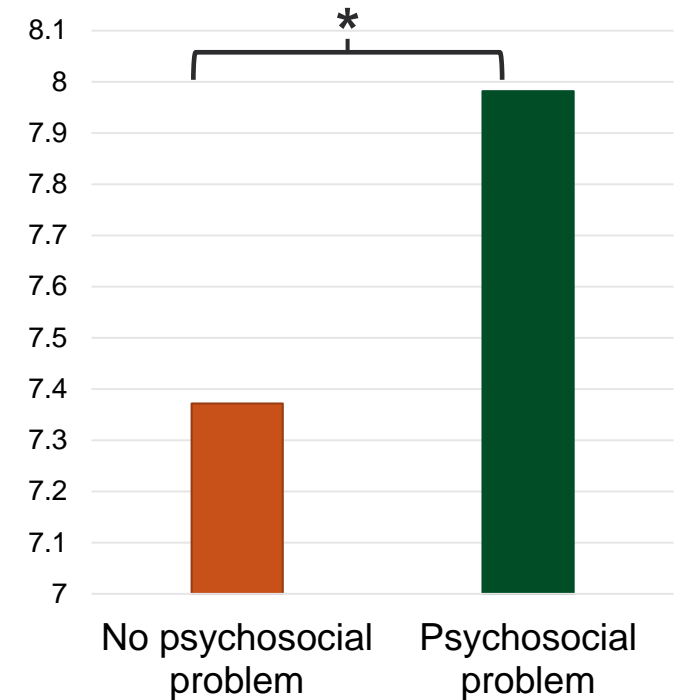


- No psychosocial problem (N=2638)
- Psychosocial problem (N=1002)

Psycho-social distress over ages



HbA1c and psycho-social distress



Conclusion

- The **increase in incidence** of Type 1 diabetes continued. During the COVID-19 : no significant increased of the new cases.
- Continuing **improvement in HbA1c** with increase in the use of diabetes technologies associated with lower HbA1c.
- Significant increase of **overweight children with DTI** (2021: 28% of patients overweighted, and 13% blood pressure in the hypertensive range).
- 1/3 were assessed as having **psychosocial distress** which is related to higher HbA1c.
- **Inequalities in HbA1c improvement** by age, ethnicity, family structure and insulin regimen. The gap between children of different ethnicities increase over time.
- Annual **screening for retinopathy** decreased (general and the target population).
- In **international HbA1c comparison**: Belgium proves to have excellent diabetes quality of care

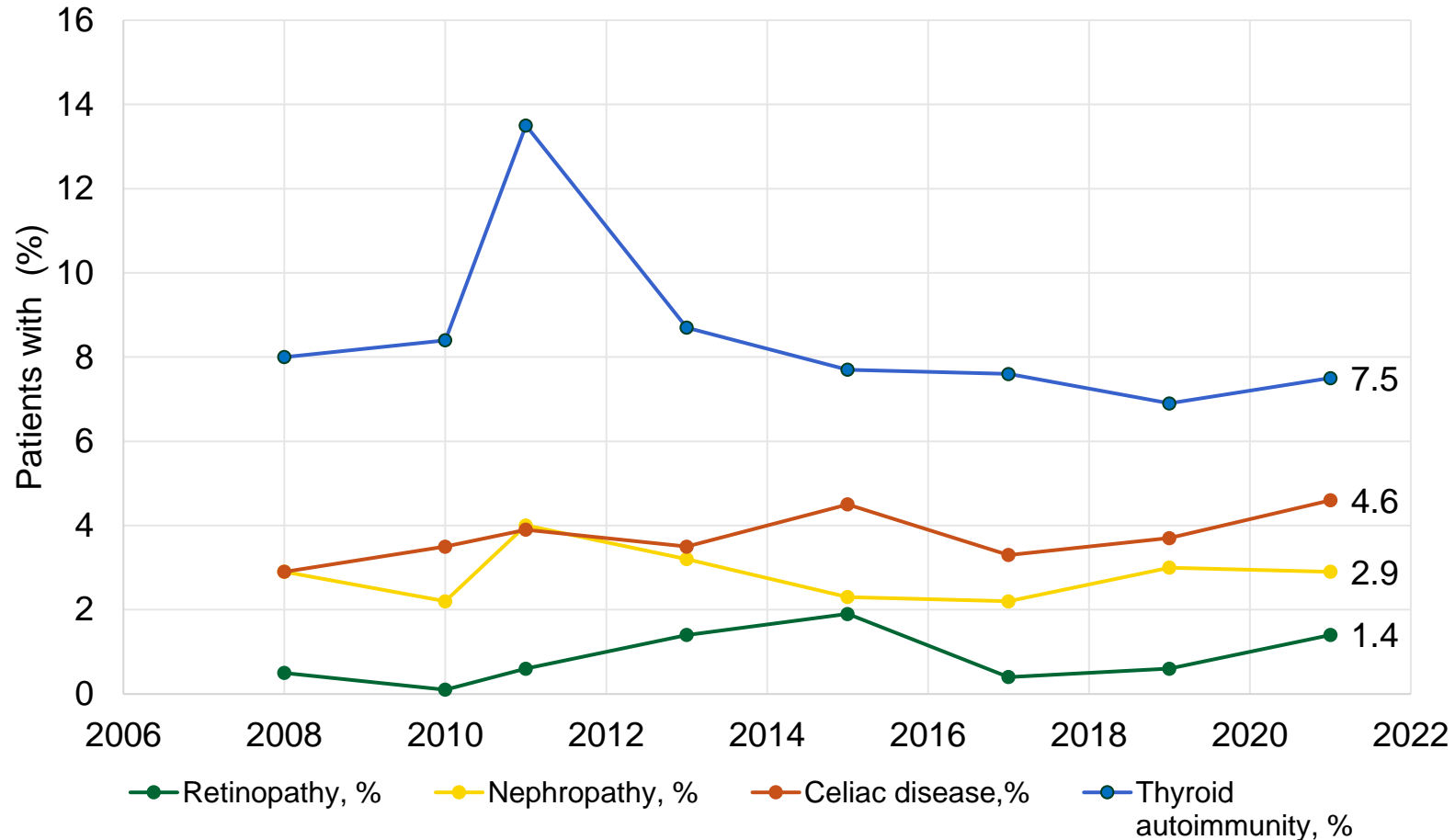
End !

**THANK
YOU**

- Presentation on our Sciensano website
- Contact : Suchsia chao
Suchsia.Chao@sciensano.be

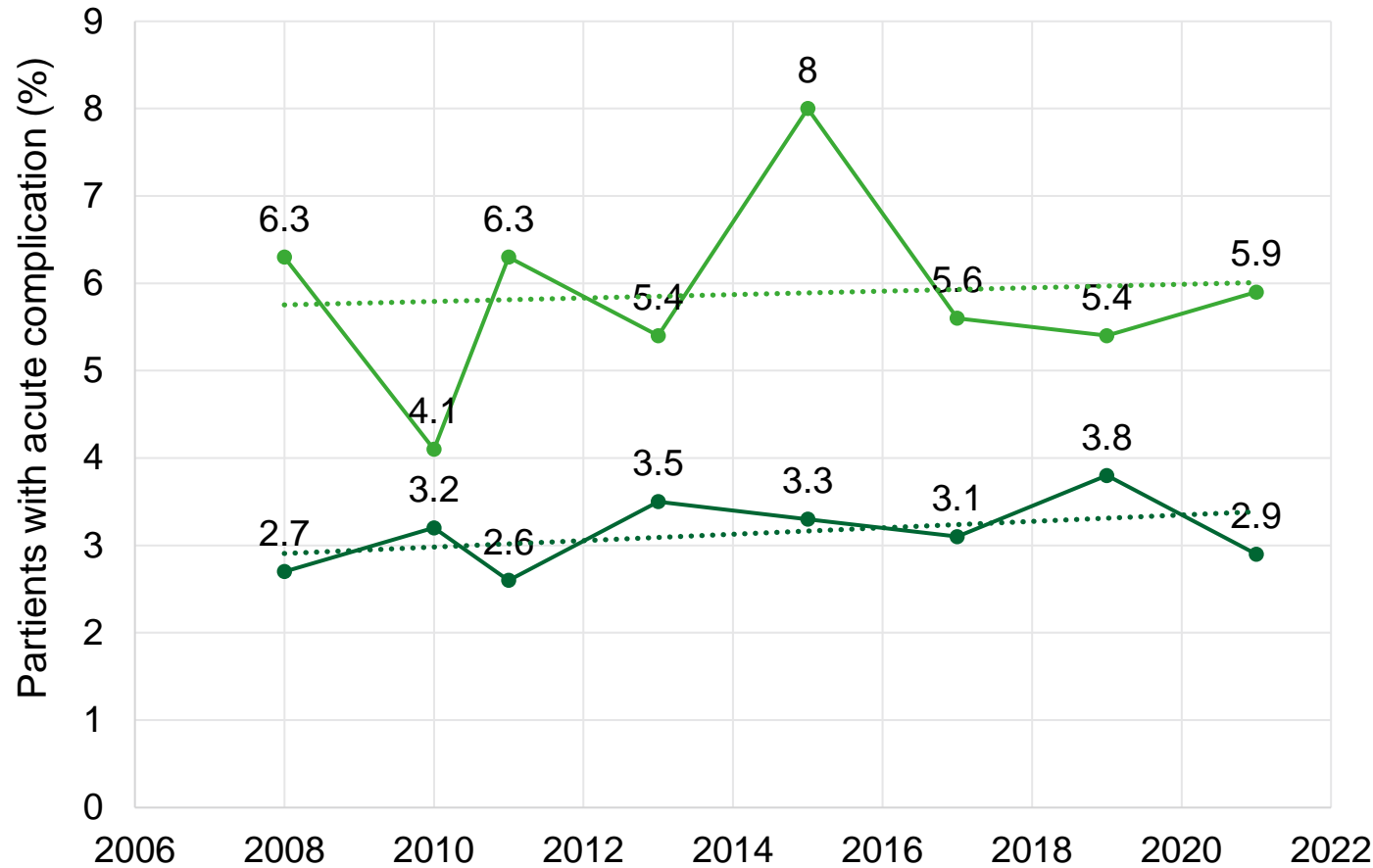
Extra: Chronic complications and comorbidities

Evolution of complications and comorbidities



Extra: Hypoglycemia & DKA

Acute complications



Taken together, in each audit approximately 1 out of 17 patients experienced severe hypoglycaemia in the preceding 3 months.
Stable over time
Rare event