

Increasing Use of Continuous Glucose Monitoring (CGM) Among Youth with Type 1 Diabetes (T1D): International Comparison of Youth from the T1D Exchange (T1DX) and the DPV Initiative

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Background / Purpose

- In previous analyses, only a small minority of youth with T1D in the T1DX and DPV registries were using continuous glucose monitoring (CGM).
- In recent years new generations of CGM have shown considerable improvements in accuracy and usability.
- In this analysis we assessed increase in CGM use over the past 6 years in the US T1D Exchange and DPV Germany and Austria registries.

Methods

- Registry participants in DPV and T1DX aged <18yrs with T1D duration ≥ 1yr with available data in any of the following years were included in the analysis: 2011, 2013, 2015 and 2017 (N for each year by registry shown in Figure 1).
- CGM use (including both real-time and intermittently scanned CGM) and most recent HbA1c at each data collection time point were obtained from clinic medical records.
- Linear regression were used to compare CGM use and mean HbA1c within each registry adjusted for age, gender and minority status.

Results

Table 1. Participant Characteristics

	DPV		T1DX	
	2011 N=17,632	2017 N=21,707	2011 N=9,060	2017 N=9,184
Age, yrs - mean±SD	12±3.7	12±3.6	12±3.6	13±3.5
<6 yrs	6%	5%	6%	4%
6-<13 yrs	43%	40%	46%	37%
13-<18 yrs	51%	55%	48%	59%
Gender – male	52%	52%	52%	51%
Diabetes Duration, yrs - mean±SD	5±3.4	5±3.5	5±3.5	7±3.5
HbA1c, % (mmol/mol) – mean±SD	7.9±1.4 (63±15)	7.9±1.3 (63±14)	8.5±1.5 (69±16)	8.9±1.7 (74±19)
<7.5% (58 mmol/mol)	43%	43%	22%	18%
Minority Status	20%	24%	22%	22%
Pump Use	43%	58%	56%	65%
CGM Use	4%	44%	3%	31%

Figure 2. CGM Use by Year and Age Group

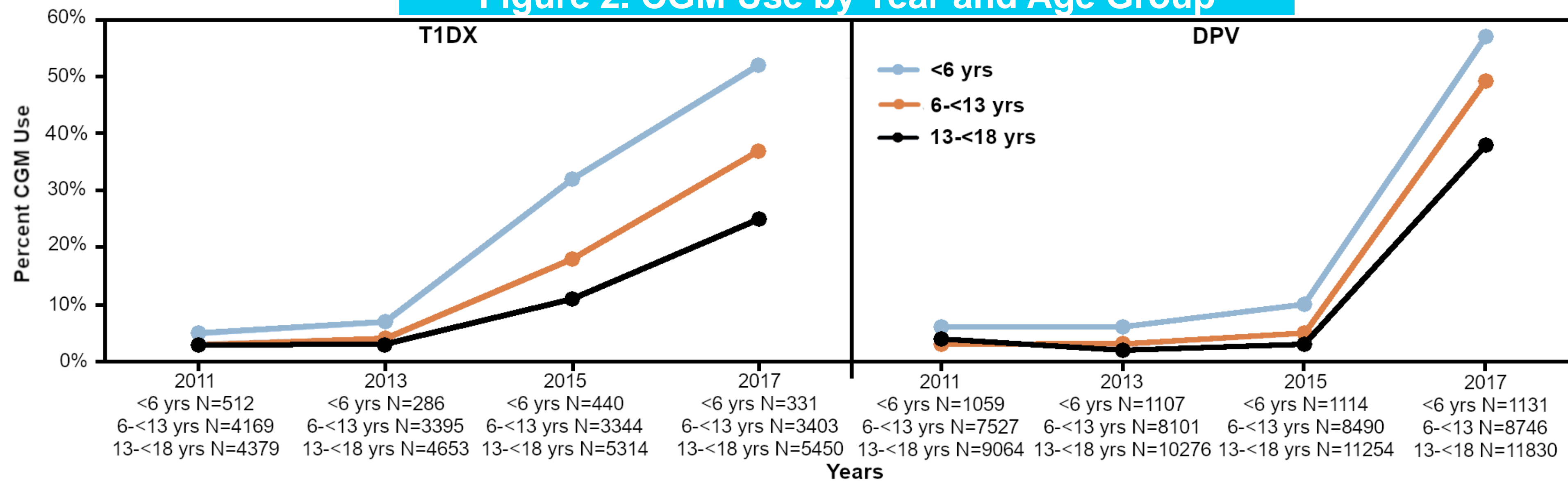


Figure 3. CGM Use by Year and Gender

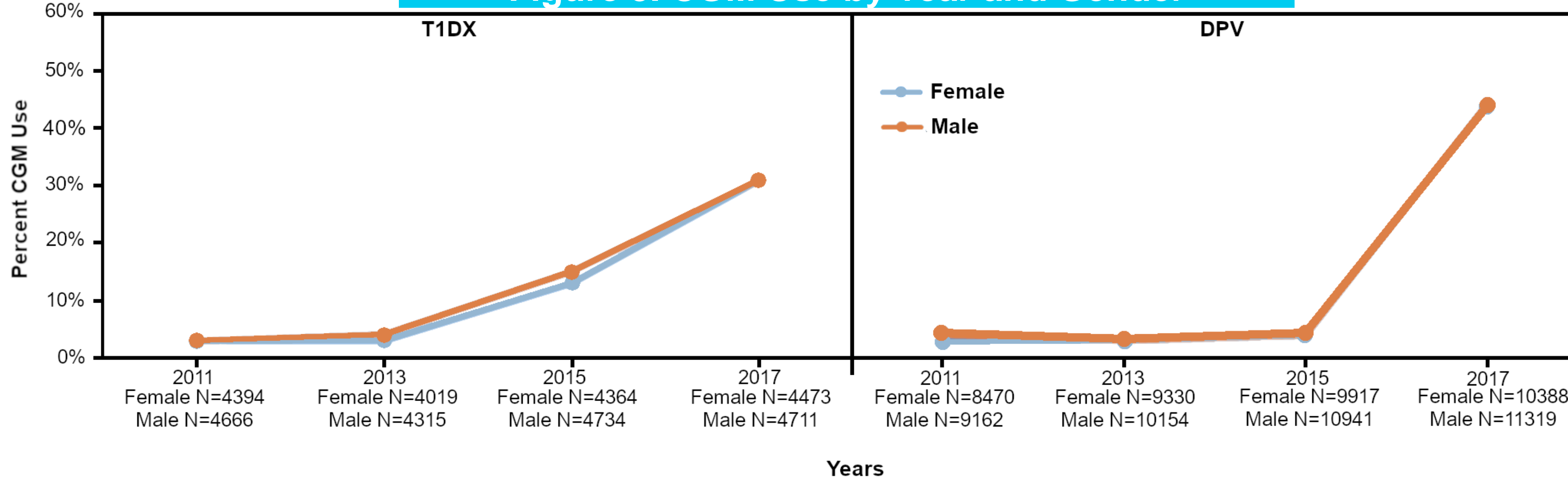


Figure 4. CGM Use by Year and Minority Status

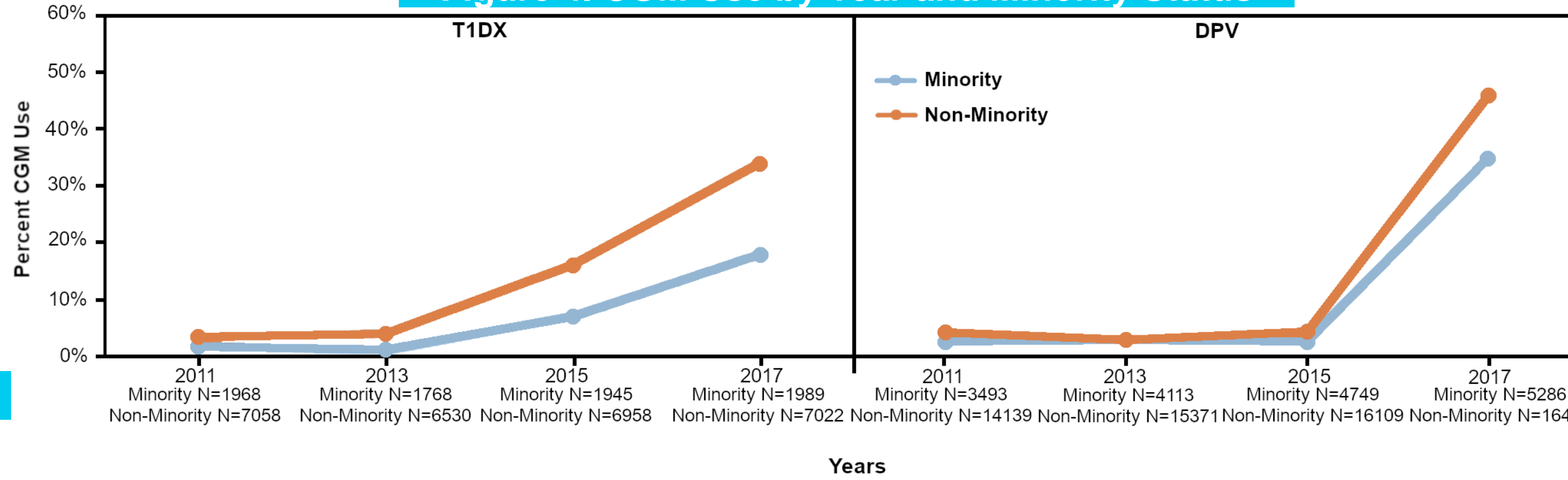
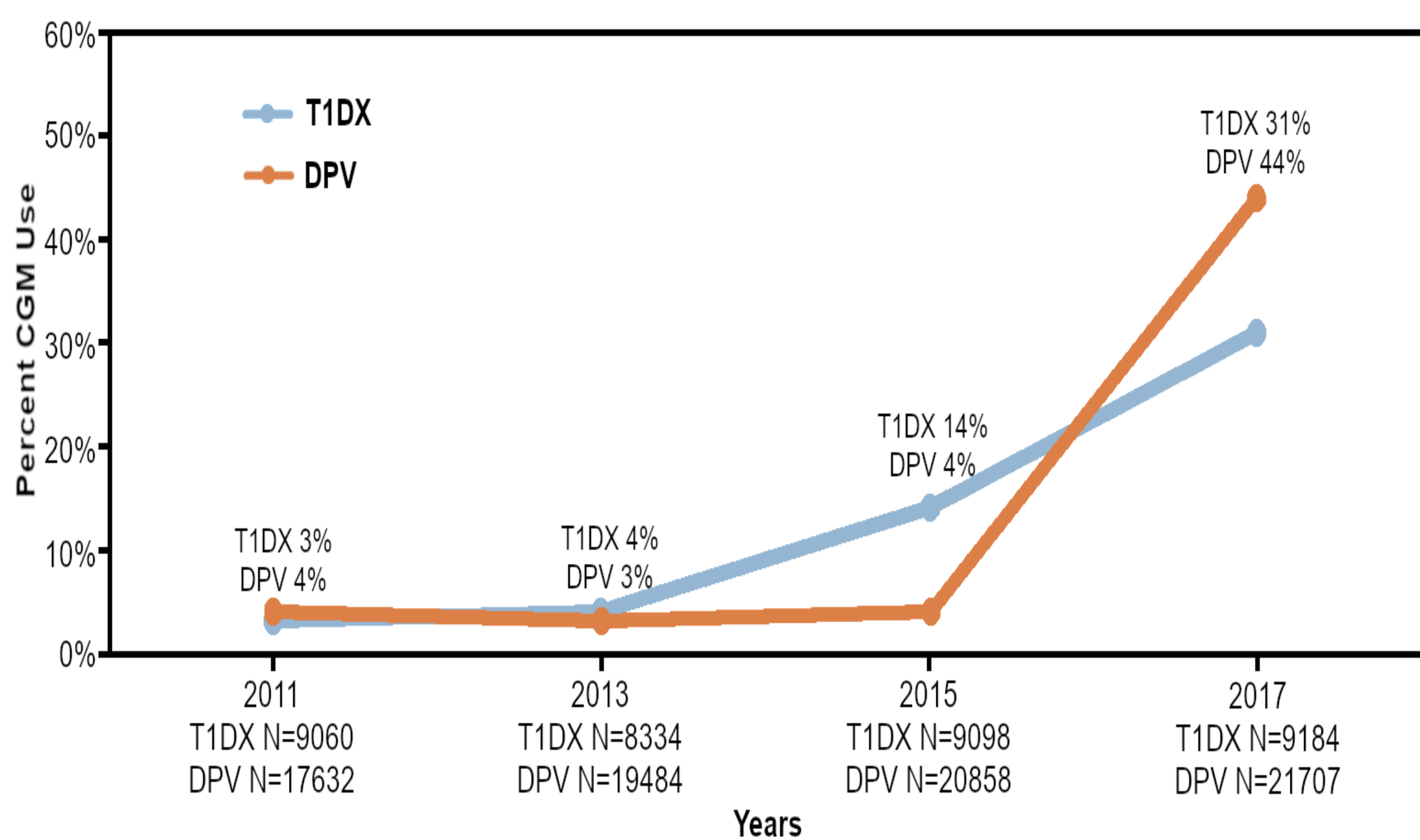


Figure 1. CGM Use by Year and Registry



- For DPV 76% of CGM users were using intermittently scanning CGM (isCGM) among those with known device type in year 2017
- For T1DX 99% of CGM users were using real-time CGM in year 2017

Figure 6. HbA1c by CGM Use and Registry in 2017

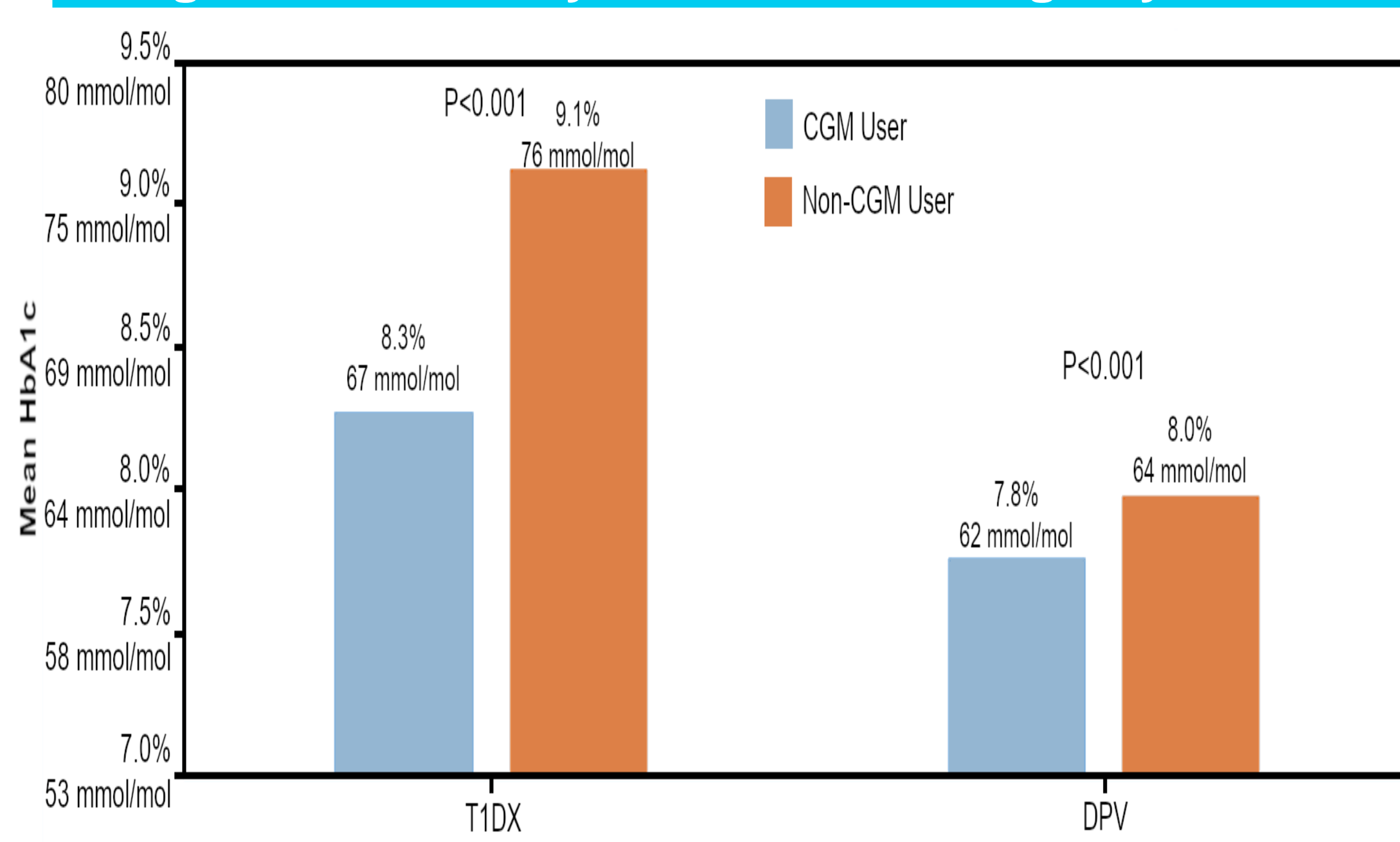
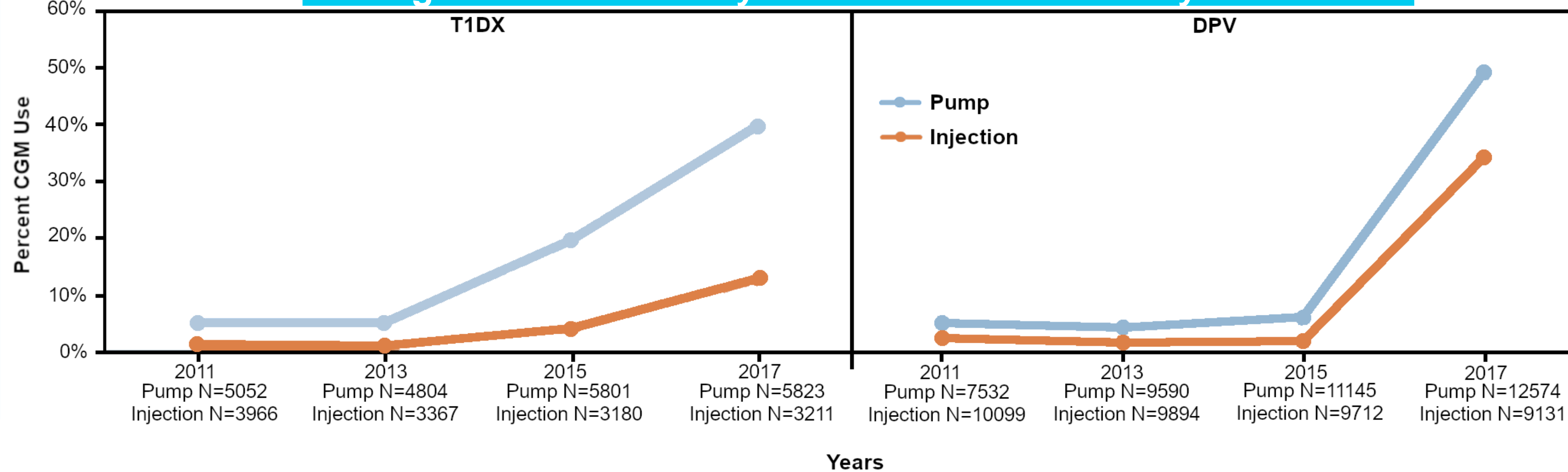


Figure 5. CGM Use by Year and Insulin Delivery Method



Summary

- CGM use increased from 2011 to 2017 in all age groups in both registries, and was most pronounced in the youngest patients
- In the DPV registry, CGM use remained steady from 2011 to 2015 with a dramatic increase from 4% to 44% occurring between years 2015 and 2017, whereas for T1DX, CGM use doubled from 4% in 2013 to 14% in 2015 to 31% in 2017.
- CGM use in both registries increased from 2011 to 2017 regardless of gender, minority status or insulin delivery method. However injection users in T1DX registry did not increase at a similar rate as pump users.
- In 2017, among participants with available data, the most common CGM type was real-time CGM for T1DX and intermittently scanned CGM (isCGM) in DPV.

Conclusions

- Pediatric CGM use increased in both registries but at different rates from 2011 to 2017.
- Increase in CGM use over time is likely reflective of changes in insurance coverage and improvements in device technology and availability.
- As penetrance of this technology is lowest in adolescents, a group noted to have the highest mean A1c, strategies to engage this cohort of youth in adoption and long-term use of CGM are needed.