

Catheter ablation to treat cardiac arrhythmia in Germany – Trends based on German hospital data

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Background

- Catheter ablation is indicated in patients with irregular or rapid heartbeats due to e.g., ventricular tachycardia¹, atrial fibrillation, or atrial flutter².
- During catheter ablation, energy in the form of radiofrequency or cold temperatures is used to destroy small areas of the heart tissue that cause abnormal heart rhythms³.

Objective

- The study objective was to investigate the utilization of catheter ablation to treat cardiac arrhythmia in Germany.

Methods

- This retrospective data analysis was based on German hospital data of the Federal Statistical Office of Germany (DESTATIS) and the Institute for the Hospital Remuneration System (InEK) of the years 2005 to 2021.
- Catheter ablation for the treatment of cardiac arrhythmia was identified by the OPS code 8-835.
- The analysis included the OPS code frequency per year and the distribution of age, sex, and methods of ablation using the fifth digit of the OPS code.

Limitations

- As a single ablation procedure (e.g., radiofrequency ablation plus 3D mapping-based ablation) may be documented by more than one OPS code, the number of OPS given is not equivalent to the number of procedures performed.
- The OPS code 8-835.5 was replaced by the code 8-835.8 starting in 2008.

Conclusions

- The utilization of catheter ablation to treat cardiac arrhythmia has proliferated over the past 16 years in Germany. An almost ten-fold increase in the total number of billed OPS codes for ablations is a testament to the growing recognition and acceptance of these interventions in managing cardiac arrhythmias.
- The age demographics, with over 75% of patients being 55 years or older, accentuates the prevalence of arrhythmic conditions in the older population. This underscores the importance of tailored approaches and heightened vigilance in geriatric cardiac care.
- The sex ratio remained stable.
- The landscape of catheter ablations has undergone significant transformations from 2005 to 2021, as evidenced by the evolving techniques such as the introduction of cryoablation and expanding number of procedures performed.

References

- Zeppenfeld K, Tfelt-Hansen J, de Riva M, Winkel BG, Behr ER, Blom NA et al. 2022 ESC guidelines for the management of patients with ventricular arrhythmias and the prevention of sudden cardiac death. *Eur Heart J*. 2022;43(40):3997–4126. doi: 10.1093/eurheartj/ehac262.
- Hindricks G, Potpara T, Dagres N, Arbelo E, Bax JJ, Blomström-Lundqvist C, et al. ESC Guidelines for the diagnosis and management of atrial fibrillation developed in collaboration with the European Association of Cardio-Thoracic Surgery (EACTS). *Eur Heart J*. 2020;42:373–498. doi: 10.1093/eurheartj/ehaa612.
- Calkins H, Hindricks G, Cappato R, Kim YH, Saad EB, Aguinaga L, et al. 2017 HRS/EHRA/ECAS/APHS/SOLAECE expert consensus statement on catheter and surgical ablation of atrial fibrillation. *Heart Rhythm*. 2017;14(10):e275–e444. doi: 10.1016/j.hrthm.2017.05.012.

Results

- The number of OPS codes for catheter ablations increased from 24,242 in 2005 to 230,270 in 2021 (**Figure 1**).
- The number rose from 2005 to 2017 by 15% on average per year and markedly from 2017 to 2018 by 40%.
- Afterwards, the increase was 11% to 12% per year except for a 1%-increase from 2019 to 2020.
- Generally, more men than women received ablation treatment with a sex ratio ranging between 1.4:1 and 1.6:1 (**Figures 2 & 3**).
- More than 75% of patients were 55 years or older (**Figure 4**).
- The proportion of conventional radiofrequency ablations decreased from 67% in 2005 to 10% in 2021 whereas the proportion of cooled radiofrequency ablations increased from 14% in 2005 to 31% in 2021 (**Figure 5**).
- Ablation using three-dimensional electro anatomical mapping techniques rose from 12% in 2005 to 25% in 2021. Cryoablation was first performed in 2010 and constituted 12% of performed ablations in 2021.

Figure 1. Number of catheter ablation OPS codes by year

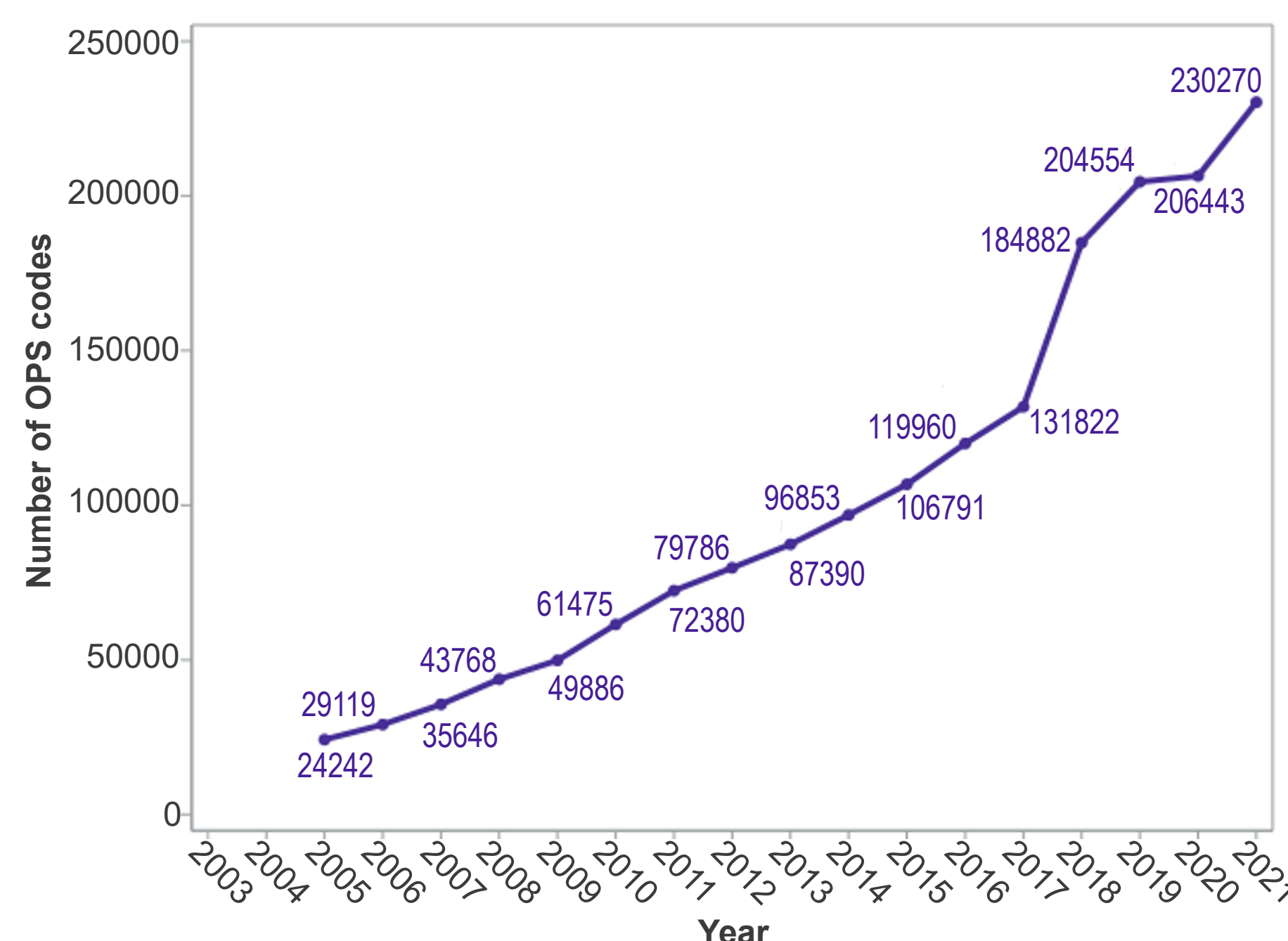


Figure 2. Number of catheter ablation OPS codes by year/sex

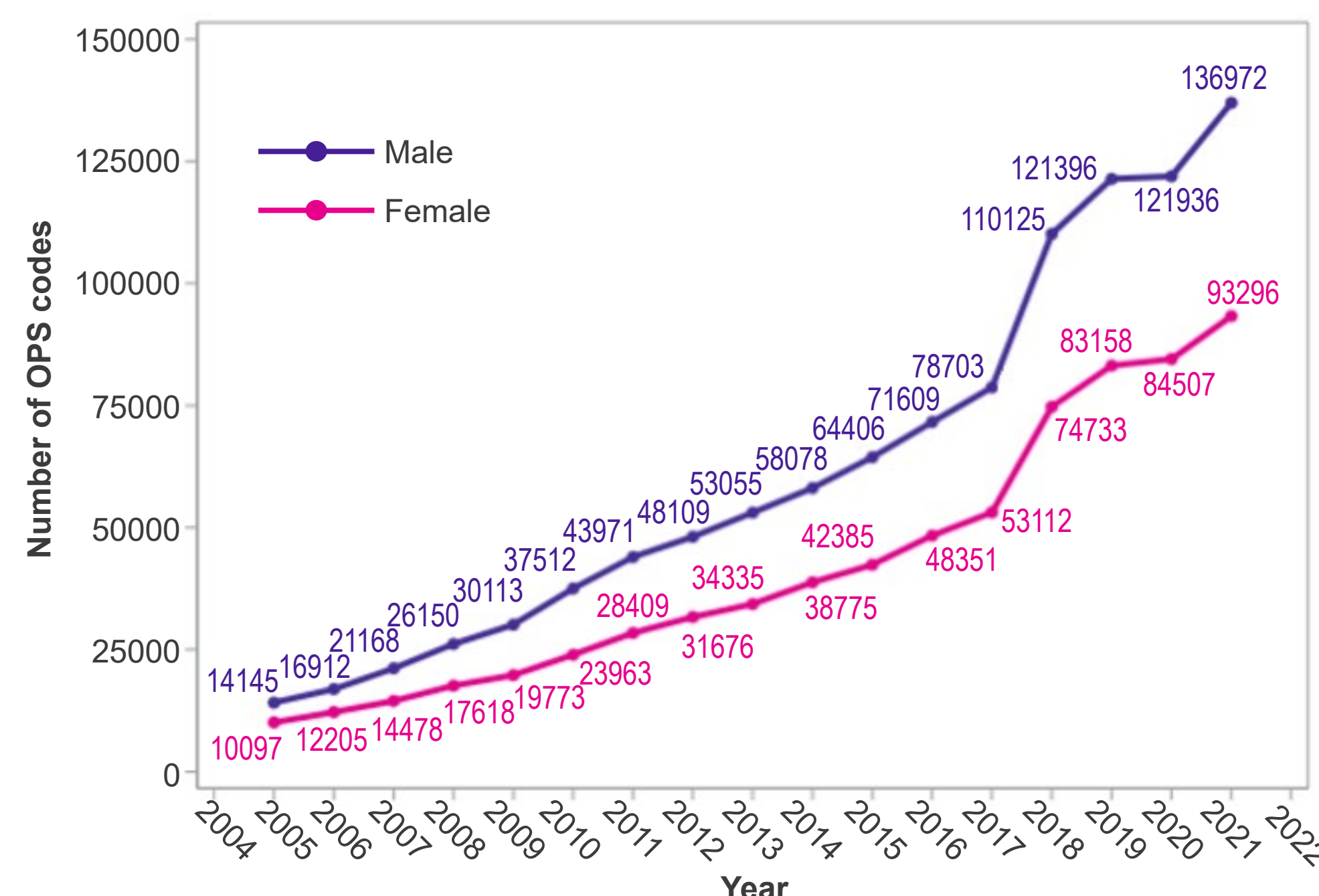


Figure 3. Gender ratio of treated patients by year

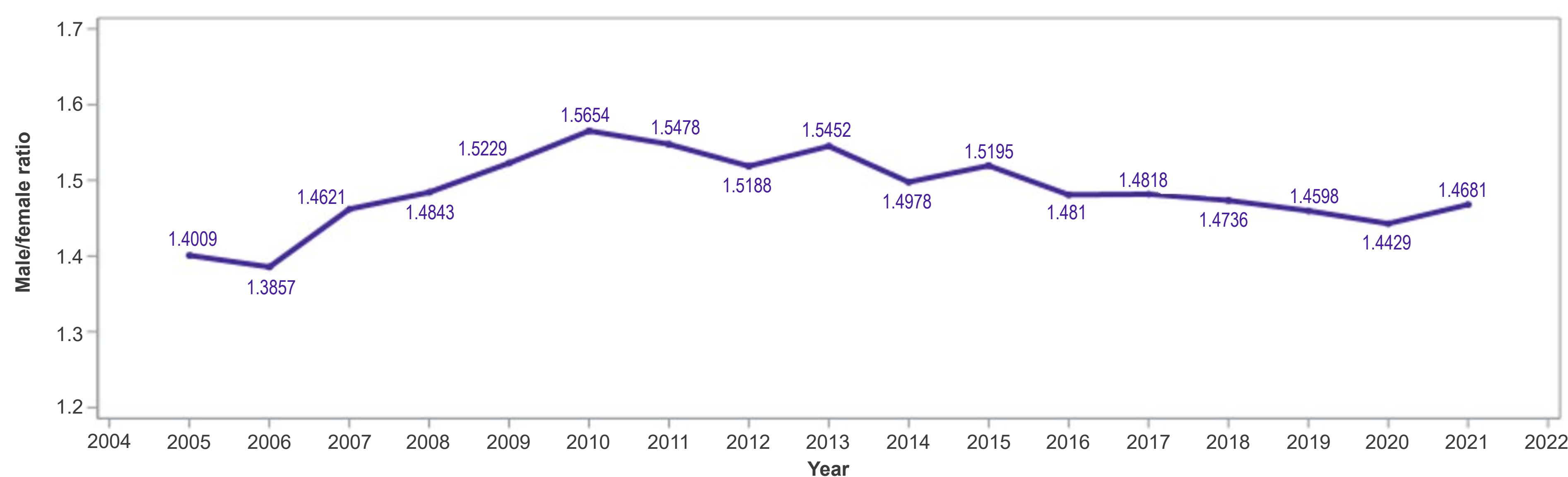


Figure 4. Age distribution of treated patients 2005-2021

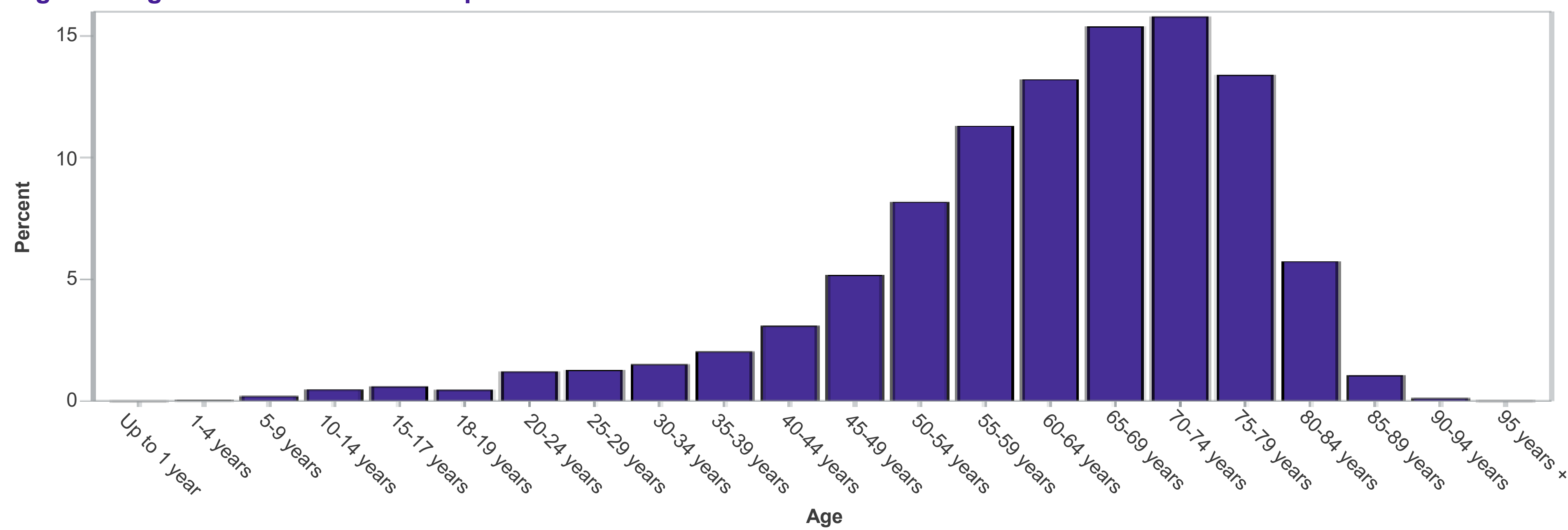
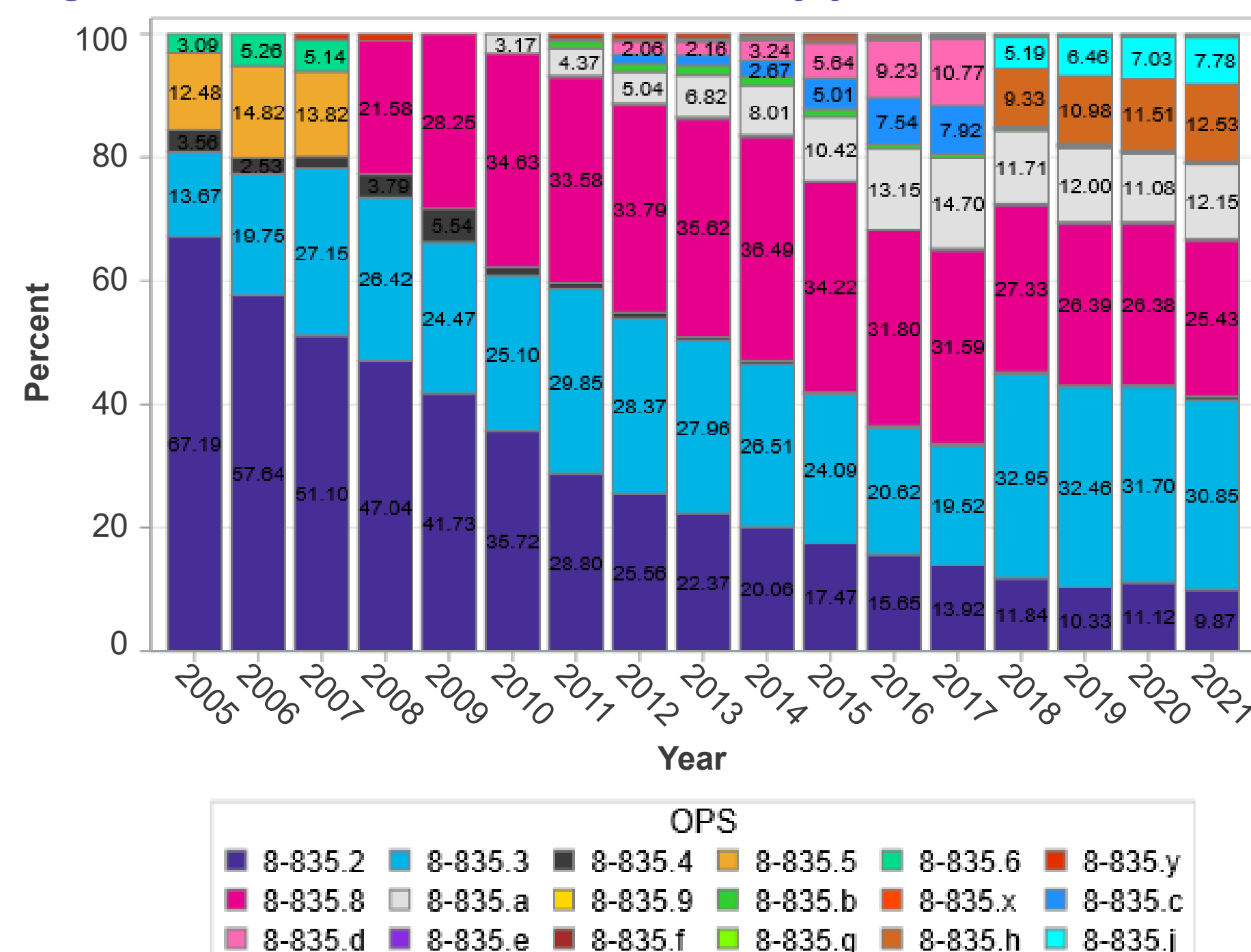


Figure 5. Distribution of OPS codes by year



8-835.2	Conventional radiofrequency ablation
8-835.3	Cooled radiofrequency ablation
8-835.4	Ablation with other energy sources
8-835.5	Ablation using 3D electro-anatomical mapping methods
8-835.6	Ablation using 3D pure anatomical mapping methods
8-835.y	Ablation, not specified
8-835.8	Ablation using 3D electro-anatomical mapping methods
8-835.a	Cryoablation
8-835.9	MESH-radiofrequency ablation
8-835.b	Bipolar phase-shifted radiofrequency ablation
8-835.x	Other ablation
8-835.c	Cooled radiofrequency ablation with measurement of contact pressure
8-835.d	Ablation using 3D electro-anatomical mapping methods with measurement of contact pressure
8-835.e	Laser ablation with endovascular endoscopic control
8-835.f	Percutaneous epicardial access for ablation
8-835.g	Ablation using electro-anatomical rotor detecting mapping methods
8-835.h	Measurement of contact pressure
8-835.j	Application of high-resolution, multipolar, 3D electro-anatomical mapping methods