

Evolutions in Intravitreal Injections: Past Insights and Future Projections from a UK Tertiary Hospital



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Background & Aim

- Intravitreal injections are vital for retinal care, with rising demand compounded by the COVID-19 pandemic.
- With emerging long-acting agents and new service delivery models, understanding past trends and forecasting demand is crucial for sustainable service planning.
- We aim to analyse historical patterns and forecast future demand for intravitreal injections at a leading UK tertiary eye hospital, providing insights for strategic planning.

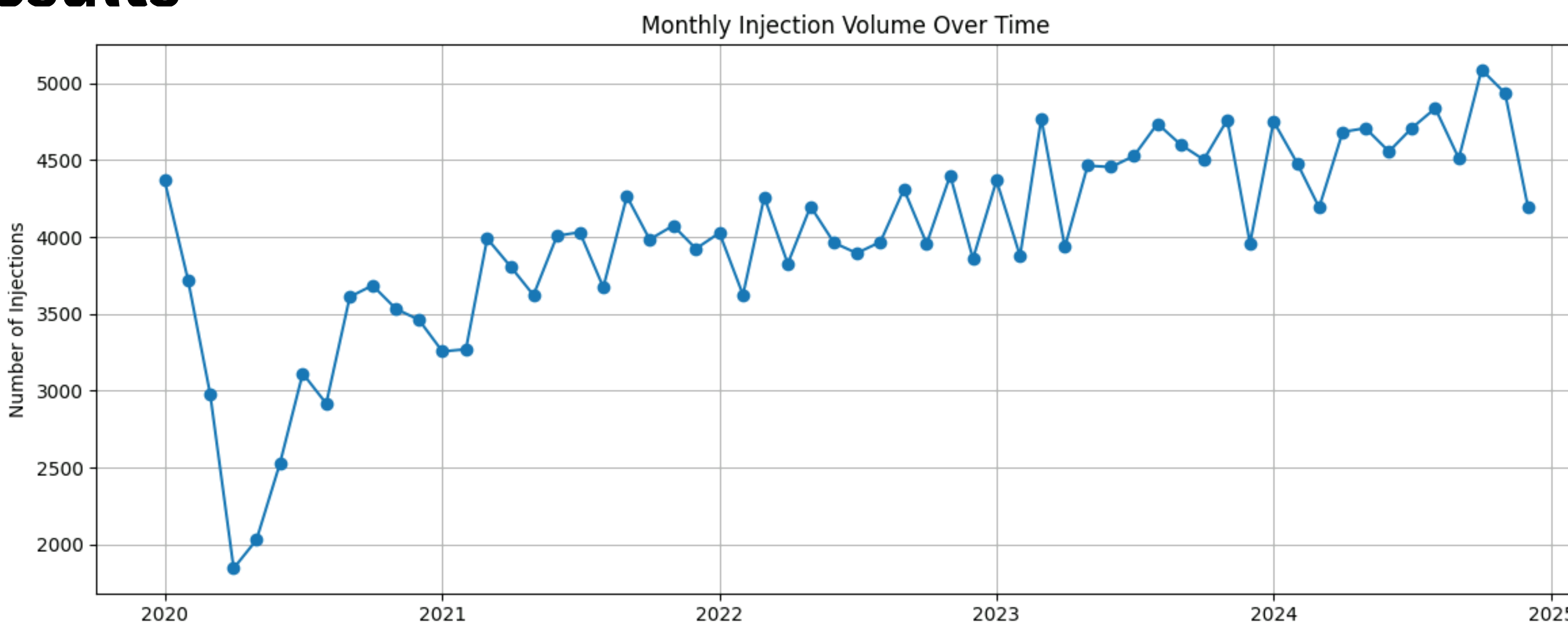
Methods

- Retrospective cohort study of all intravitreal injections performed at Moorfields Eye Hospital over a 5 year period (Jan 2020 - Dec 2024).
- Pseudonymised data was extracted from EMR systems.
- Utilisation patterns were analysed with descriptive statistics, and predictions of future trends were made using time-series forecasting (Prophet package).

Results

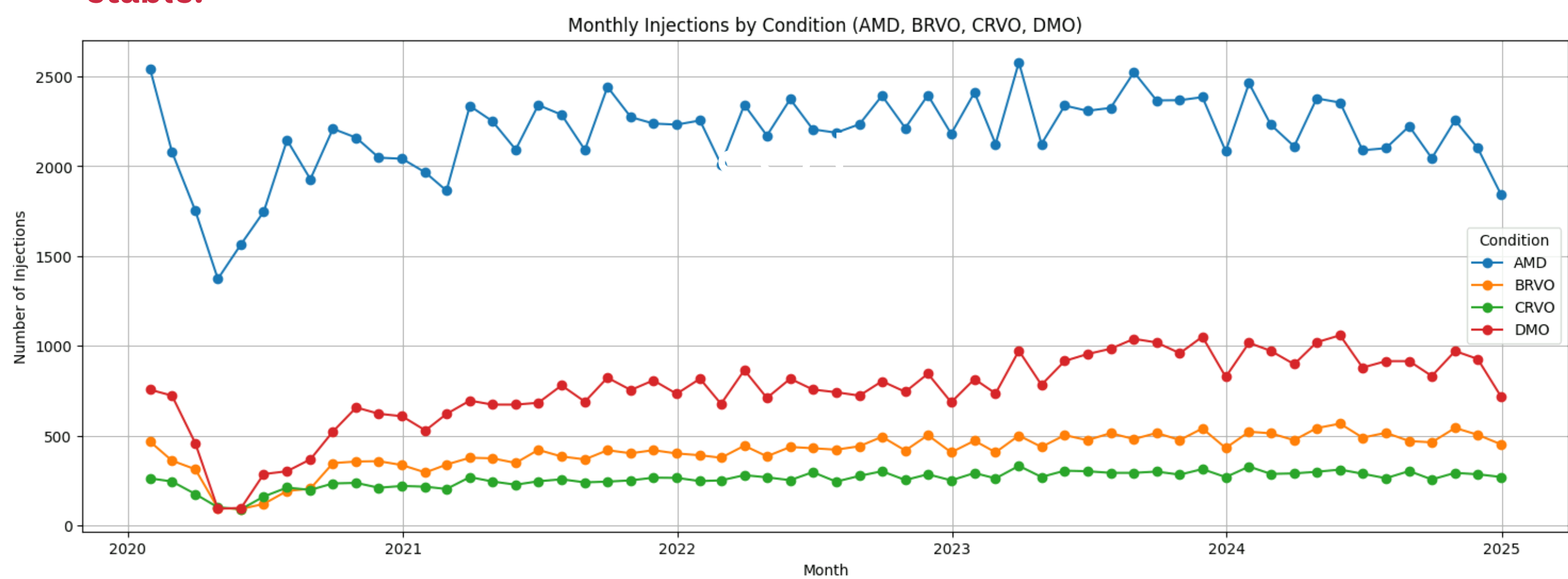
Overall Injection Volumes Demonstrate An Increasing Trend

- Following a sharp drop in early 2020 due to the COVID-19 pandemic, injection volumes rebounded and demonstrated sustained growth.
- By the end of 2024, annual injection volumes had increased by approximately 47% from the lowest point in 2020, highlighting resilient and growing demand.



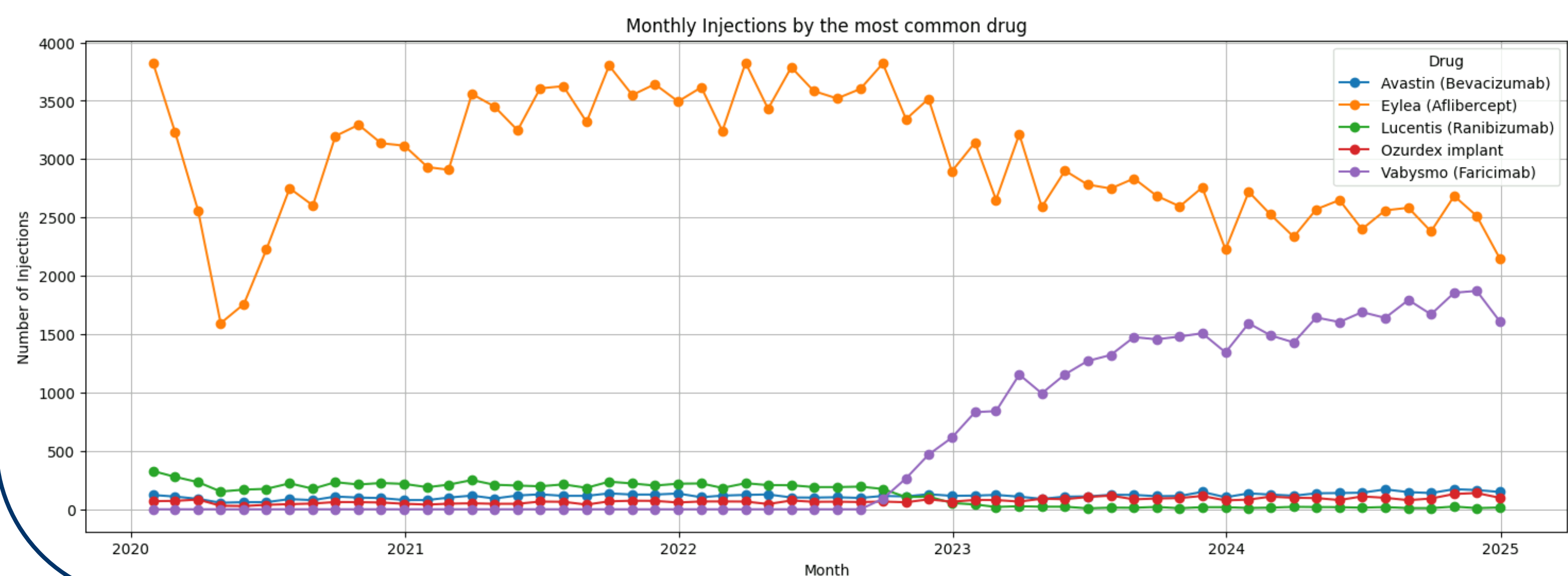
Utilisation by Primary Diagnosis

- Neovascular AMD remains the primary indication for treatment.
- While injections for Diabetic Macular Oedema (DMO) show a consistent increase, volumes for Retinal Vein Occlusions (BRVO and CRVO) have remained relatively stable.



Evolution of Drug Utilisation

- A significant shift in drug choice occurred with the introduction of Faricimab in early 2023.
- Its rapid adoption corresponds with a decline in Aflibercept use, while Ranibizumab usage remains consistently low.

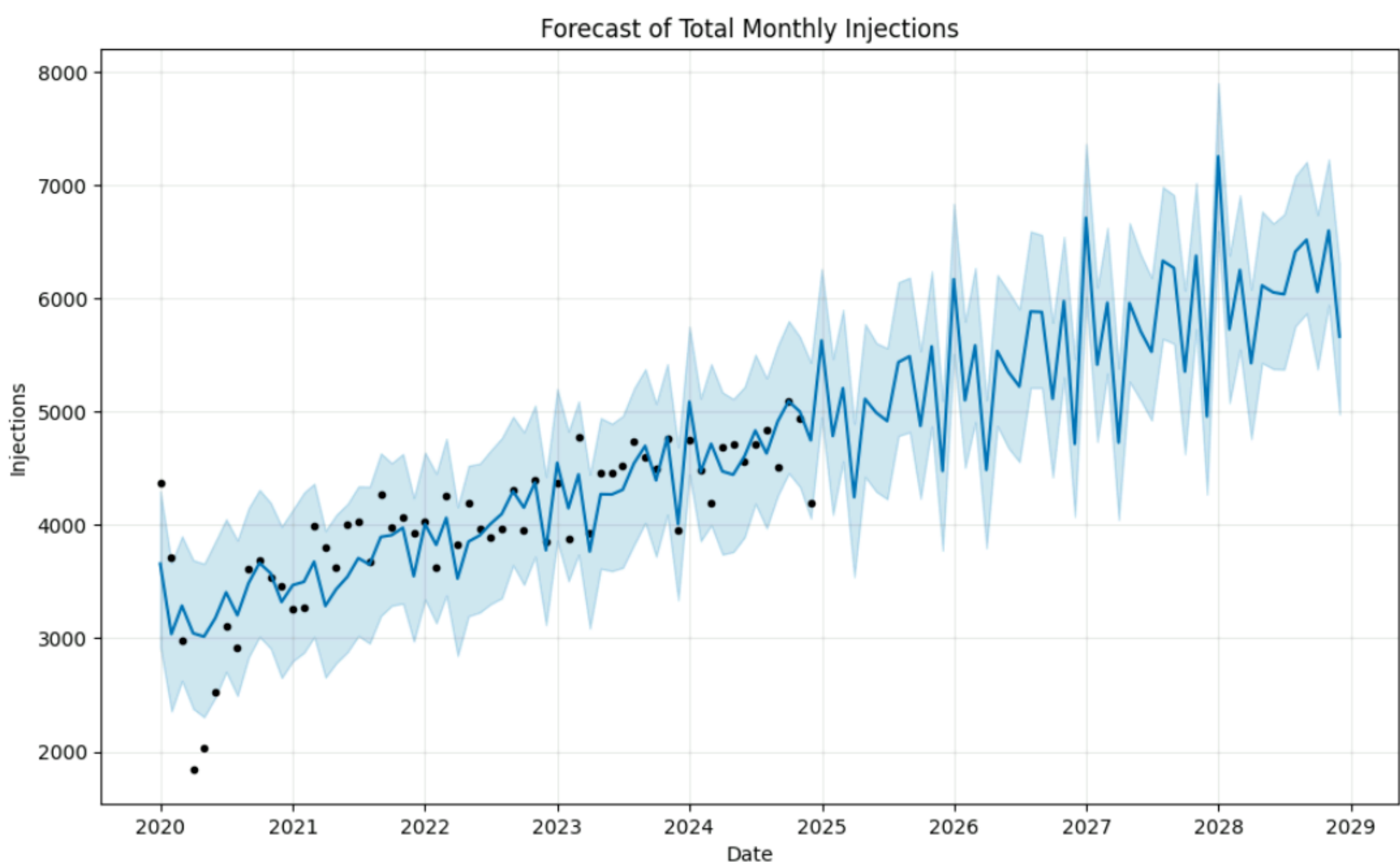
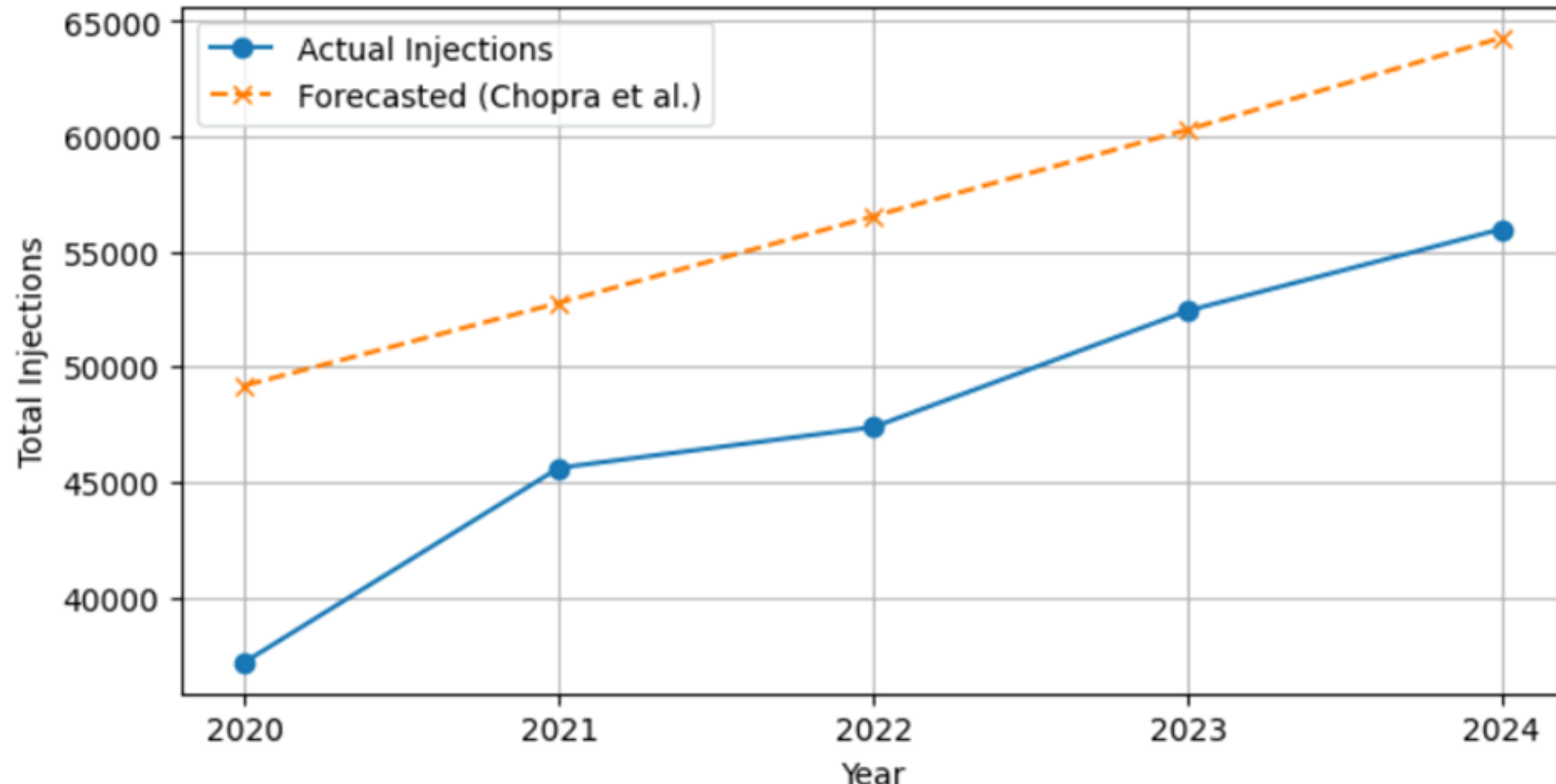


Evolution of Drug Utilisation

- Our real-world data from 2020-2024 was compared against predictions for the same period from earlier work at Moorfields (Chopra et al. 2021).
- Across the five-year study period, the overall MAE was 8898 injections with a MAPE of 19.43%, and an annual root mean squared error of RMSE of 9055.55 injections.
- The initial forecast systematically over-predicted volumes. This may be due to the introduction of longer-acting agents or the model; further work will explore this.
- We predict the yearly number of intravitreal injections will reach over 78,000 by 2029 with over 5000 monthly injections

Year	Forecasted Injections (N)	Actual Injections (N)	Absolute error (N, %)
2020	49192	37185	12007 (32.3)
2021	52778	45618	7160 (15.7)
2022	56537	47382	9155 (19.3)
2023	60296	52434	7862 (15.0)
2024	64291	55987	8304 (14.8)

Annual Injections: Actual vs. Forecasted (2020-2024)



Conclusion

- Intravitreal injection demand is projected to continue rising through 2029, with significant shifts in drug choice.
- These numbers are lower than previously predicted, which may be due to the introduction of longer-acting agents. This will be investigated in further analysis.
- The loss of licensing for major therapies will introduce lower-cost biosimilars, reshaping the economic landscape.
- Alongside new long-acting agents and service innovations, this underscores the critical need for adaptive and sustainable planning to manage future clinical and financial demands.

References

Chopra R, Preston GC, Keenan TDL, et al. Intravitreal Injections: past trends and future projections within a UK tertiary hospital. Eye 2021; 36: 1373.