



Projected Prevalence of Acute, Chronic, and End-Stage Kidney Disease in the UK From 2023 to 2033

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Background

In the United Kingdom (UK), approximately 3.25 million adults are living with chronic kidney disease (CKD) stages 3-5.¹ A total of 7.2 million adults have chronic kidney disease (all stages), more than 10% of the entire population.¹ Despite its high prevalence, early detection and awareness are low, in part because of an absence of early symptoms.¹ Currently, there are 30,000 people in the UK who rely on dialysis to stay alive,² and every year, around 3,000 people receive a kidney transplant.³ The number of people with end-stage kidney disease (ESKD) requiring kidney replacement therapy (KRT) has been increasing worldwide and is predicted to double by 2030.⁴

Methods

The purpose of this modelling study was to understand the historic trends in prevalence in the various conditions (acute, chronic, and ESKD) under the banner of kidney disease, to calculate estimates of future demand and disease burden.

Two modeling scenarios were evaluated: constrained and unconstrained. The unconstrained view estimates the growth for dialysis and transplantation based on transition probabilities for disease progression using a **Markov model**. The constrained view estimates the growth for dialysis and transplantation based on NHS historical rates per the approaches below.

Method for CKD prevalence: The prevalence of CKD stages 3-5 was calculated by applying the average expected prevalence of CKD stages 3-5 in the over-45 population (~10.1%) to the Office of National Statistics (ONS) forecasts of the over-45 population. The prevalence of CKD stages 3-5 for this projection was based on the average prevalence recorded in each age cohort in the 2016 health survey for England (HSE) (**Figure 1**).

Method for dialysis prevalence: Current prevalence was based on the 2020 UK Kidney Association (UKKA) CKD annual report.² The number of patients on dialysis was projected forward using the historical compound annual growth rate (CAGR) in dialysis prevalence from 2015-2019 (pre-Covid-19) and applied to current 2020 figures (**Figure 2**).

Method for transplantation prevalence: The starting incidence of kidney transplantation is based on the number of single-organ kidney transplants recorded in the NHS Blood and Transplant Reports on Kidney Transplant.^{2,3} The incidence of transplantation has been projected forward using the historical CAGR in transplant incidence from 2015-2019 (pre-Covid-19) applied to the most recent data on transplant incidence (December 2021) (**Figure 3**).

Table 1. Prevalence of CKD stages 3-5 by age group (2016)⁵

	16-34	35-44	45-54	55-64	65-75	75+
Prevalence of CKD 3-5	-	-	0.7%	2.6%	12.3%	34.1%

For CKD stages 3-5 three were no data available for ages 16-34 and 35-44

Results

Factoring in the ageing population and excess deaths in high-risk populations during the Covid-19 pandemic, an estimated 7.19 million people in the UK have chronic kidney disease in 2023, more than 10% of the UK population. By 2033, this will increase to 7.61 million people. While the overall prevalence as a proportion of the age 16+ population is expected to remain constant, among the people with chronic kidney disease, the proportion of patients with later-stage chronic kidney disease is expected to increase from 45% to 51%.

Results

Figure 1. Projection of CKD stages 3-5 prevalence in the UK (2033)

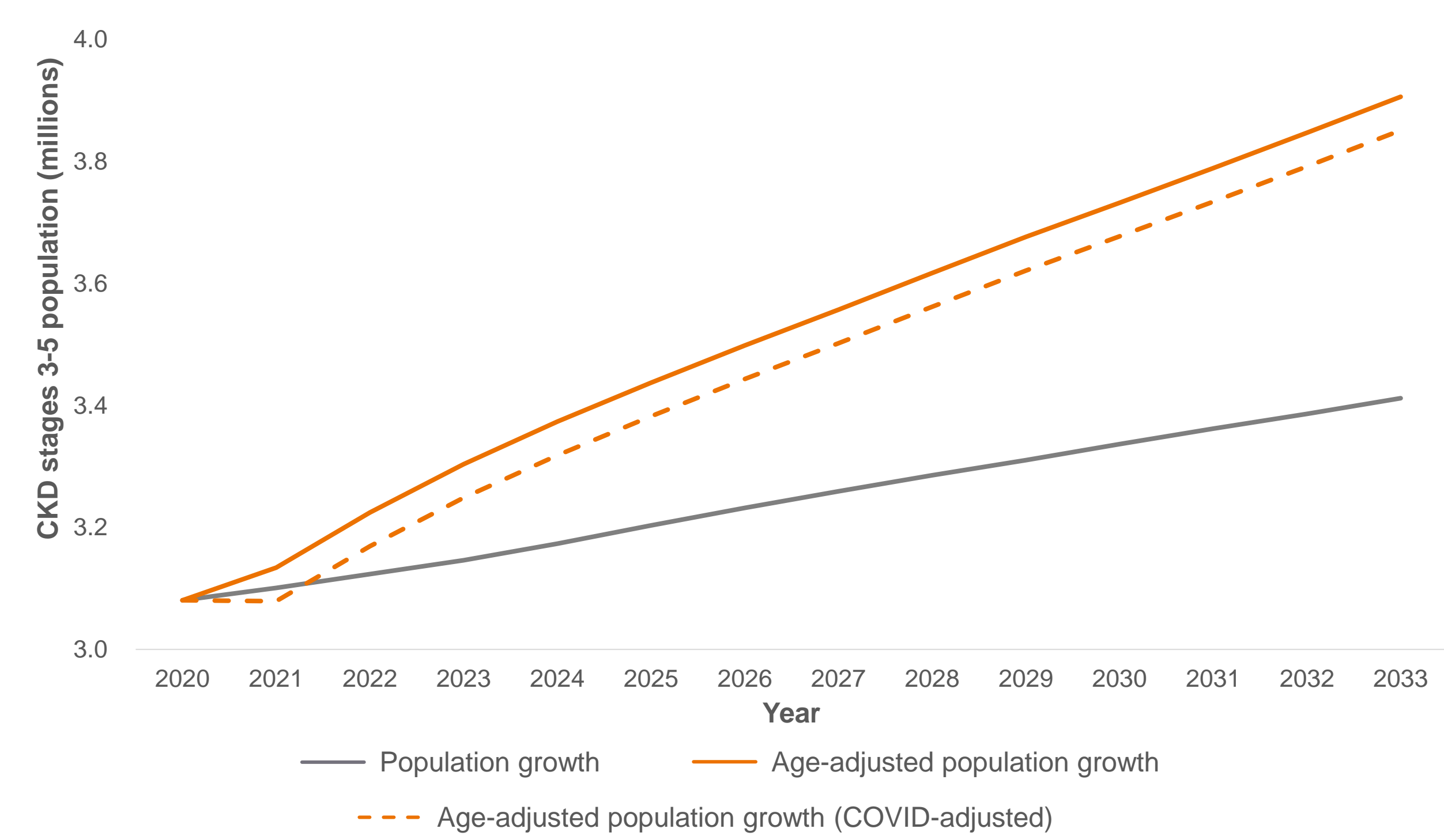


Figure 2. Projection of adults receiving dialysis in the UK (2033)

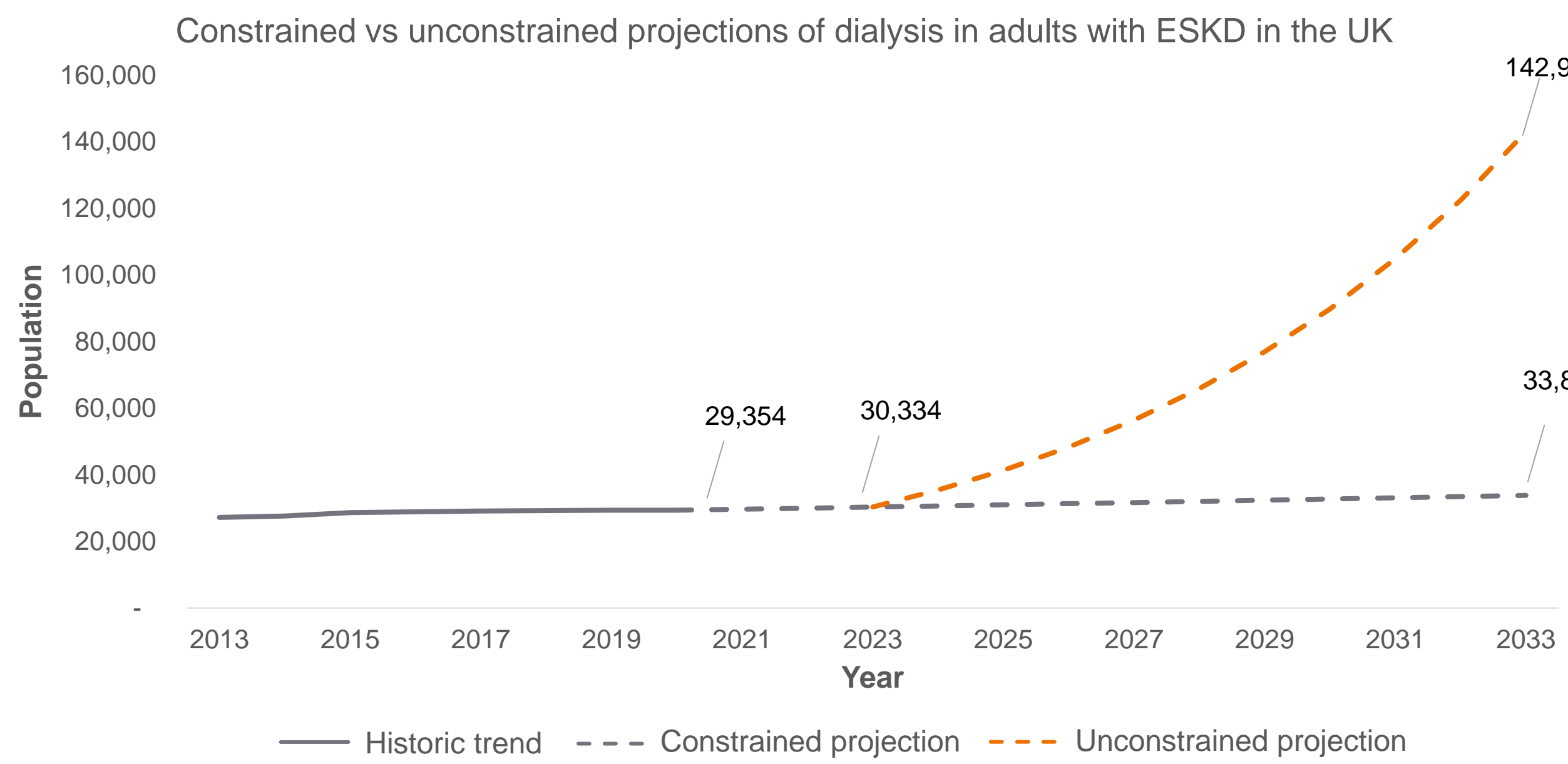
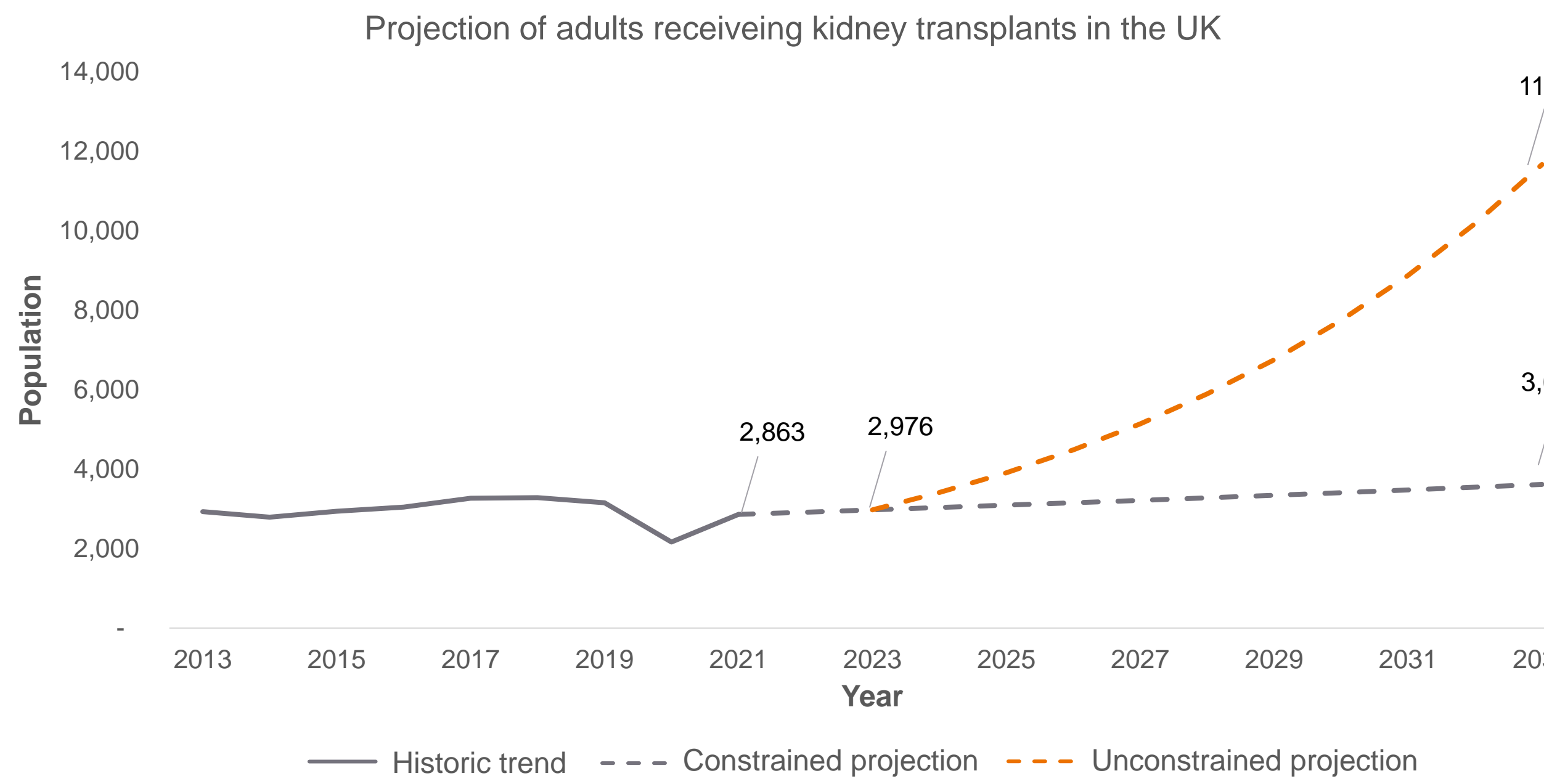


Figure 3. Projection of adults receiving kidney transplants in the UK (2033)



Conclusions

- It is estimated that as of 2023, 3.25 million people are living with CKD stages 3-5 in the UK.¹
- The prevalence of CKD stages 3-5 is expected to increase to 3.85 million over the next 10 years.¹
- By 2033, based on the constrained projection, it is expected that 33,845 adults will receive dialysis and 3,615 adults will receive a kidney transplant, due to the limited availability of dialysis and kidneys for transplantation.
- In the unconstrained projection, it is estimate that 142,920 adults will receive dialysis and 11,665 adults will receive a kidney transplant.

References

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