

CReST

NHS England and NHS Improvement



- CReST is a demand and capacity tool, developed for Children and Young People's Mental Health and was launched this year slightly earlier than planned, in response to the pandemic.
- CReST has potential uses across the MHLDA sector and there are several Covid19 specific modelling scenarios explored on the CReST website.
- CReST can be used to consider many questions such as:
 - How can I manage reduced capacity in my community team, because of absence/sickness?
 - How can I manage an influx of demand?
 - What is the optimum number of inpatient beds required for my demand?
- Through inputting some basic information, CReST enables systems to review how available capacity will respond to the demand on the service.

- CReST is based on the principles of *queueing theory*.
- Queueing theory is the mathematical study of waiting lines, or queues. It uses a measure called 'erlang' to describe utilisation of the available capacity in a queue.
- Erlang is a 'family' of equations that are useful for different aspects of queue planning.
- Erlang equations and approaches are often applied in relation to network traffic, for example call handling in call centres and telephone exchanges.
- The equations can also be applied across many aspects of healthcare planning as well.

Traditional erlang approach

INPUT KNOWN /
MEASURED VALUES

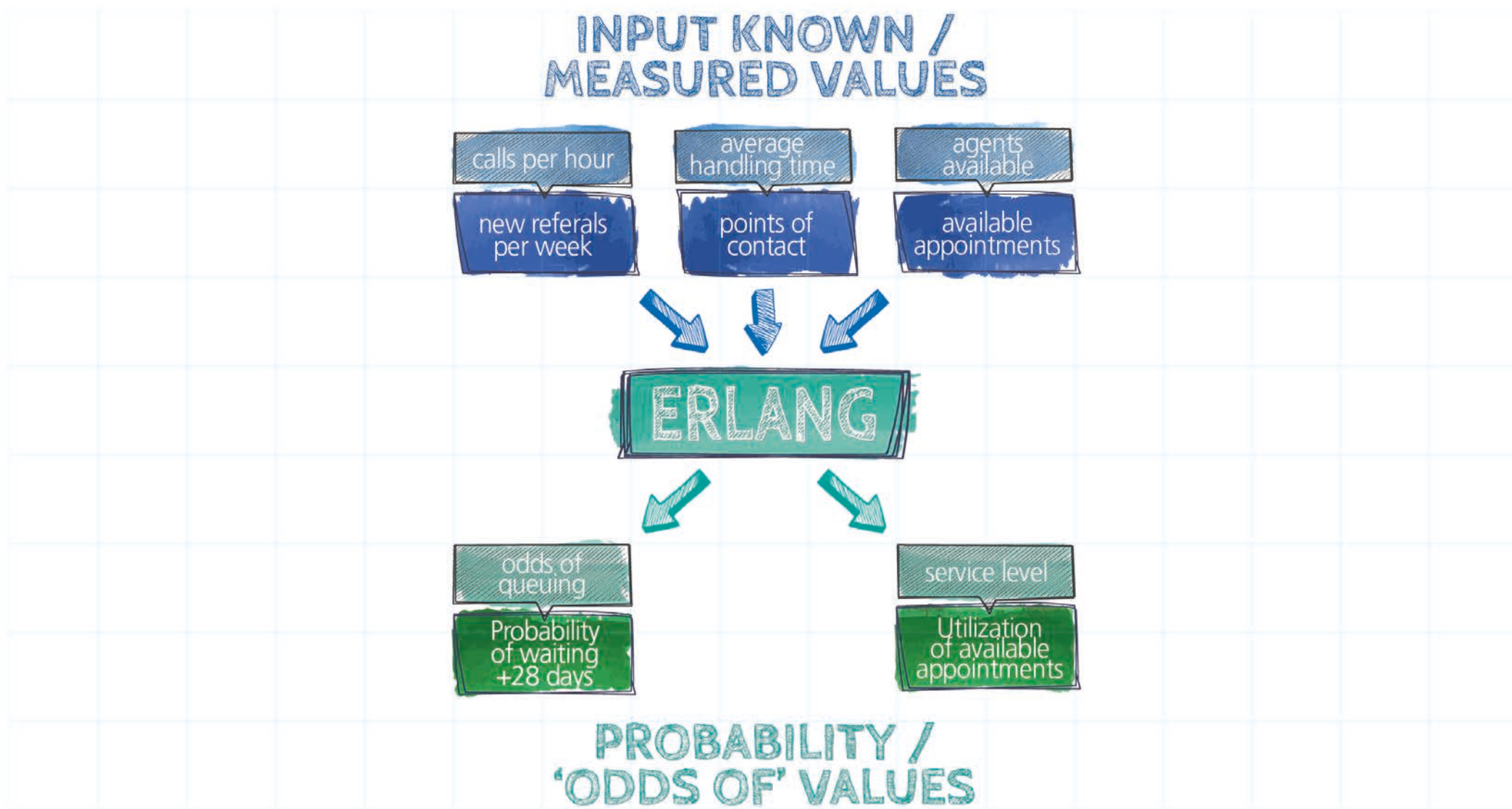


ERLANG



PROBABILITY /
'ODDS OF' VALUES

Erlang applied in a healthcare setting



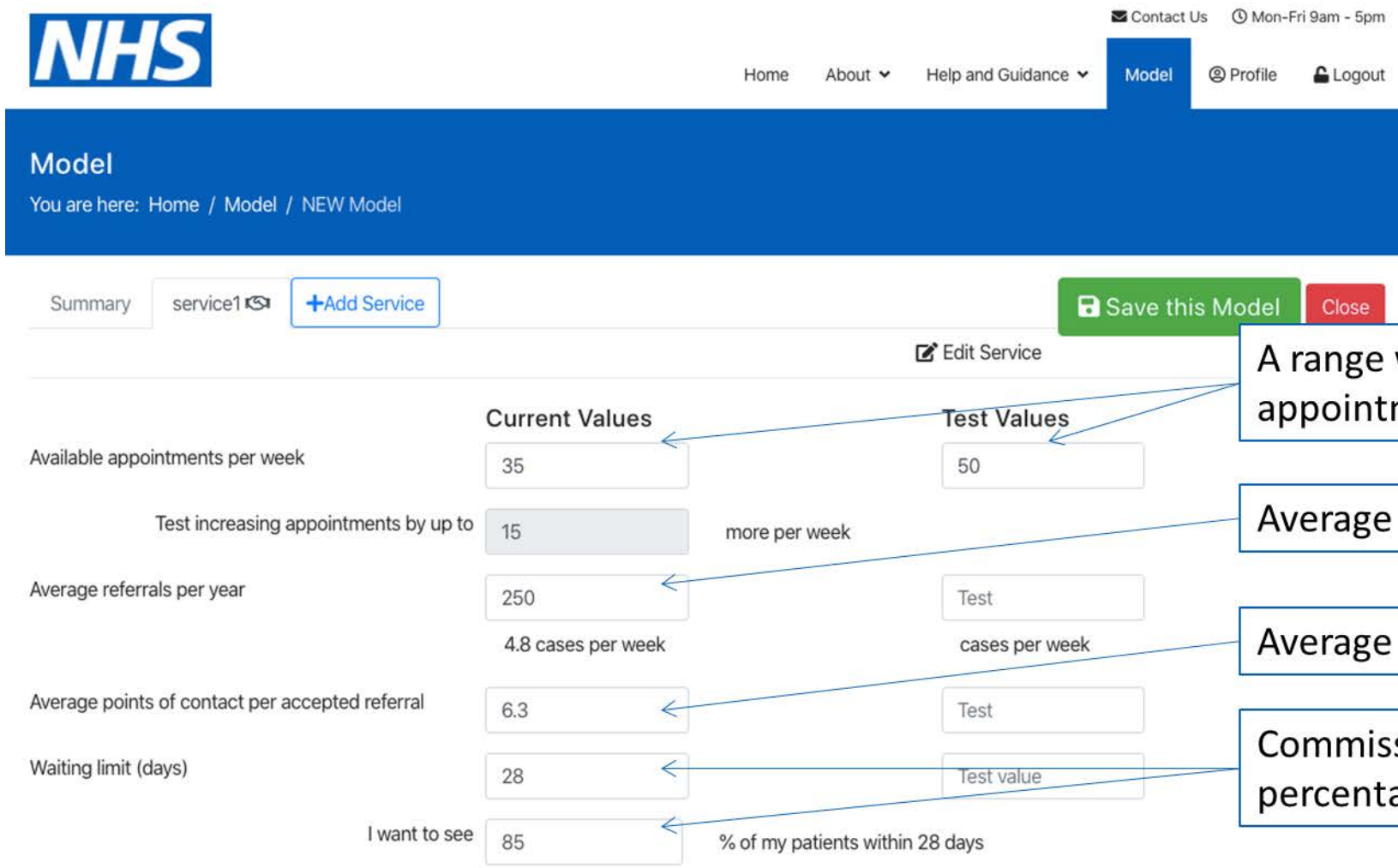
A brief example exploring...
*how to manage increased demand
as a result of Covid19*

NHS England and NHS Improvement



- In this hypothetical scenario, a small third sector counselling service (prior to Covid19) was accepting, on average, 250 referrals per year (approx. 4.8 accepted referrals per week)
- Sessions were delivered at a number of locations, face to face, which involved significant travel alongside a small proportion of therapy being delivered digitally
- Treatment was on average 6.3 sessions per person - this includes the service DNA rate (*more information on how to include your DNA rate in this figure is on the FAQ's on the CReST website*)
- The service can currently deliver 35 appointments per week
- They have been commissioned on the basis that they will see 85% of patients within 28 days

Baseline scenario



The screenshot shows the NHS Model configuration page. At the top, there is a navigation bar with the NHS logo, 'Home', 'About', 'Help and Guidance', 'Model', 'Profile', and 'Logout'. Below this is a blue header with 'Model' and a breadcrumb trail 'You are here: Home / Model / NEW Model'. The main content area has a 'Summary' tab selected, showing 'service1' and a '+Add Service' button. There are also 'Save this Model' and 'Close' buttons. The configuration is organized into two columns: 'Current Values' and 'Test Values'. Each row represents a different metric, with arrows pointing from the 'Test Values' column to explanatory text boxes on the right.

	Current Values	Test Values
Available appointments per week	35	50
Test increasing appointments by up to	15 more per week	
Average referrals per year	250 4.8 cases per week	Test cases per week
Average points of contact per accepted referral	6.3	Test
Waiting limit (days)	28	Test value
I want to see	85 % of my patients within 28 days	

A range which encompasses the 35 available appointments per week

Average referrals per year

Average sessions per person / accepted referral

Commissioned waiting time (days & percentage)

Increased demand scenario



Contact Us Mon-Fri 9am - 5pm

Home About Help and Guidance Model Profile Logout

Model

You are here: Home / Model / NEW Model

Summary service1 [+Add Service](#)

[Save this Model](#) [Close](#)

[Edit Service](#)

Current Values

Available appointments per week	<input type="text" value="35"/>	
Test increasing appointments by up to	<input type="text" value="15"/>	more per week
Average referrals per year	<input type="text" value="250"/>	
	4.8 cases per week	
Average points of contact per accepted referral	<input type="text" value="6.3"/>	
Waiting limit (days)	<input type="text" value="28"/>	
I want to see	<input type="text" value="85"/>	% of my patients within 28 days

Test Values

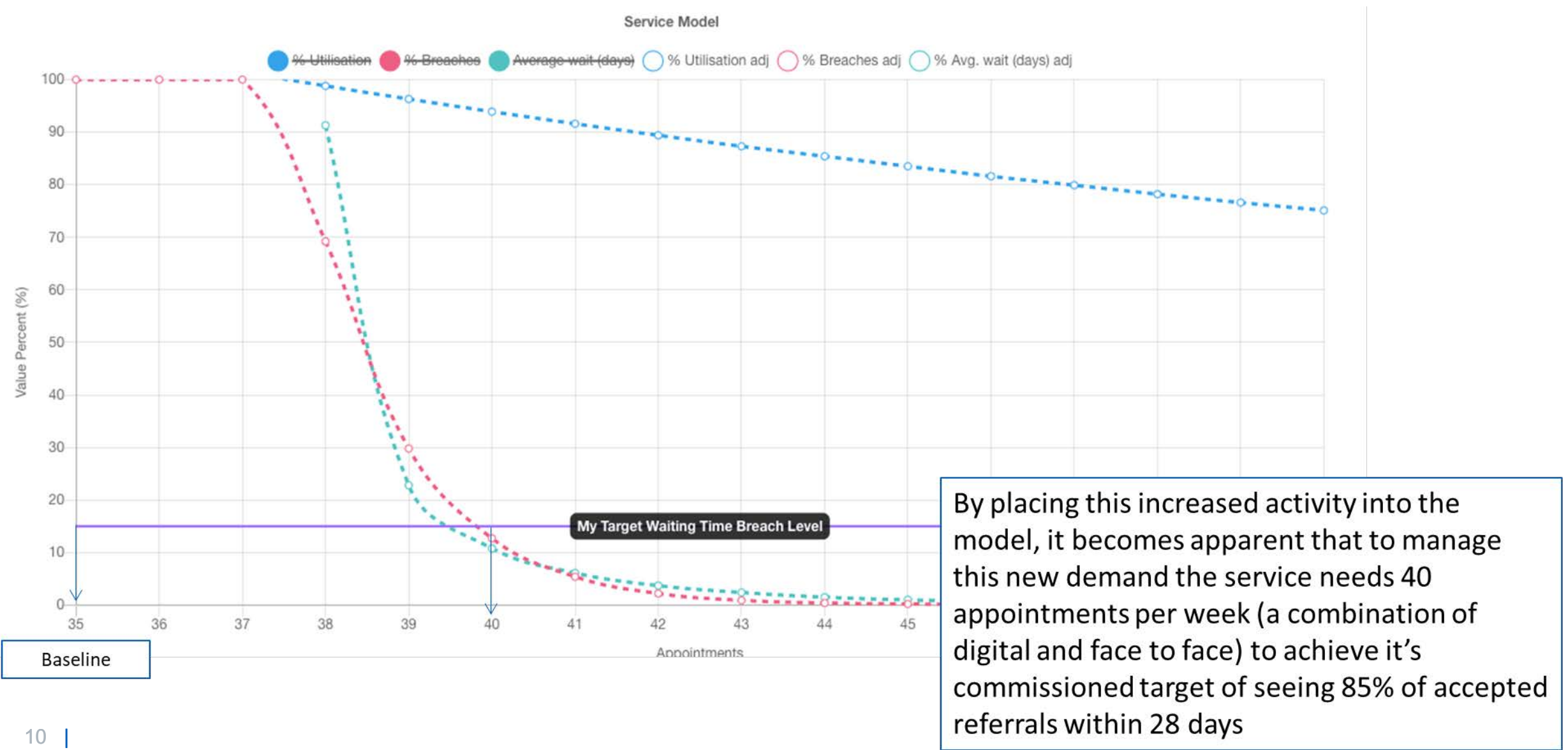
<input type="text" value="50"/>
<input type="text" value="310"/>
6.0 cases per week

Amended referral figure

The onset of Covid19 has driven an increase in referrals and the service is now accepting approx. 6 referrals per week (approx. 310 accepted referrals per year)

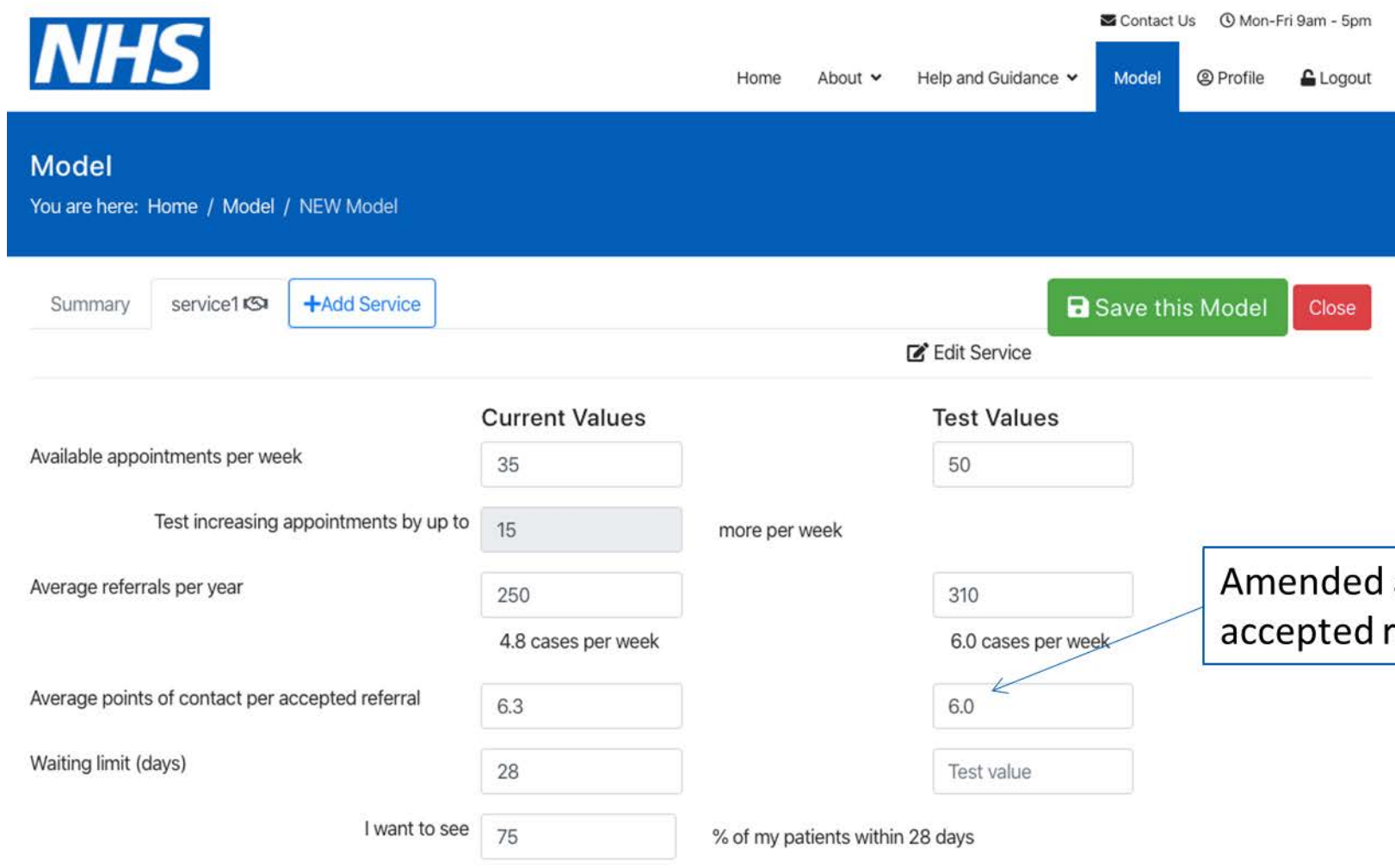
More of the therapy sessions are being delivered digitally than prior to Covid19

Increased demand scenario



- The service lead then takes this information to discuss with the service director and together they consider the other impacts of Covid19
- It soon becomes evident that there are some real benefits in delivering more of the therapy digitally
 - There is positive feedback about people receiving their counselling sessions remotely
 - Therapists report having more time for clinical notes and for professional liaison relating to their cases as they are not losing as much time traveling between appointments
 - Most notably, the DNA rate reduced significantly , which means treatment is now on average 6 sessions per person (previously 6.3)

Reduced DNA scenario

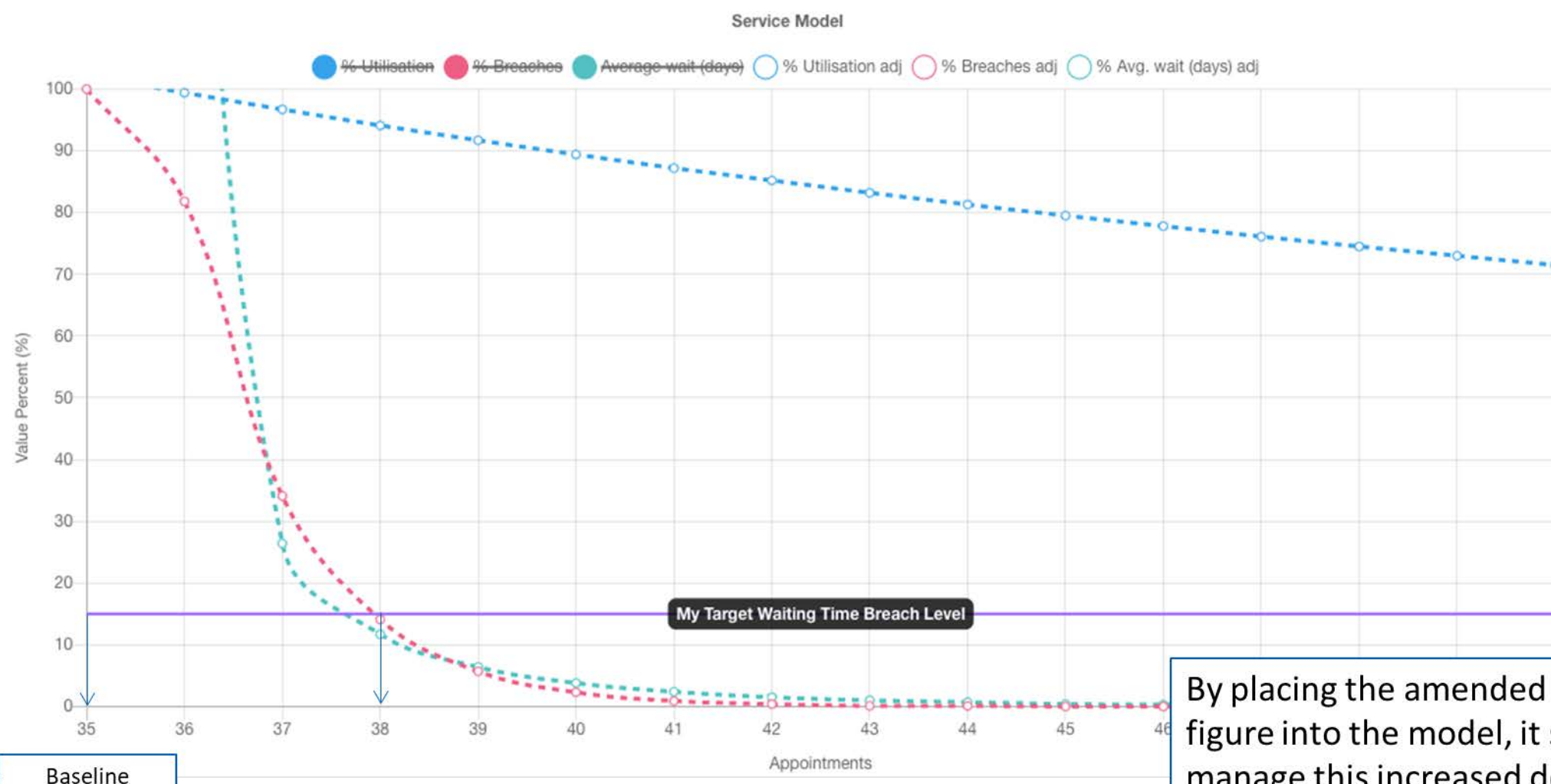


The screenshot shows the NHS Model configuration interface. At the top, there is a navigation bar with the NHS logo, a 'Model' menu item, and links for 'Home', 'About', 'Help and Guidance', 'Profile', and 'Logout'. A 'Contact Us' link with hours 'Mon-Fri 9am - 5pm' is also present. Below the navigation bar, a blue header displays 'Model' and the breadcrumb 'You are here: Home / Model / NEW Model'. The main content area features a 'Summary' tab, a service selector 'service1', and a '+Add Service' button. A green 'Save this Model' button and a red 'Close' button are positioned to the right. An 'Edit Service' link is located below the service selector. The configuration is organized into two columns: 'Current Values' and 'Test Values'. Each row represents a different parameter, with input fields for both current and test values. A callout box with a blue border and an arrow points to the '6.0' value in the 'Test Values' column for the 'Average points of contact per accepted referral' parameter.

	Current Values	Test Values
Available appointments per week	35	50
Test increasing appointments by up to	15 more per week	
Average referrals per year	250	310
	4.8 cases per week	6.0 cases per week
Average points of contact per accepted referral	6.3	6.0
Waiting limit (days)	28	Test value
I want to see	75 % of my patients within 28 days	

Amended average sessions per person / accepted referral

Reduced DNA scenario



By placing the amended average sessions figure into the model, it shows that in fact to manage this increased demand the service only needs another 3 more appointments per week because the DNA rate has reduced

Adjusted waiting time breach target



Contact Us Mon-Fri 9am - 5pm

Home About Help and Guidance Model Profile Logout

Model

You are here: Home / Model / NEW Model

Summary service1 [+Add Service](#)

[Save this](#)

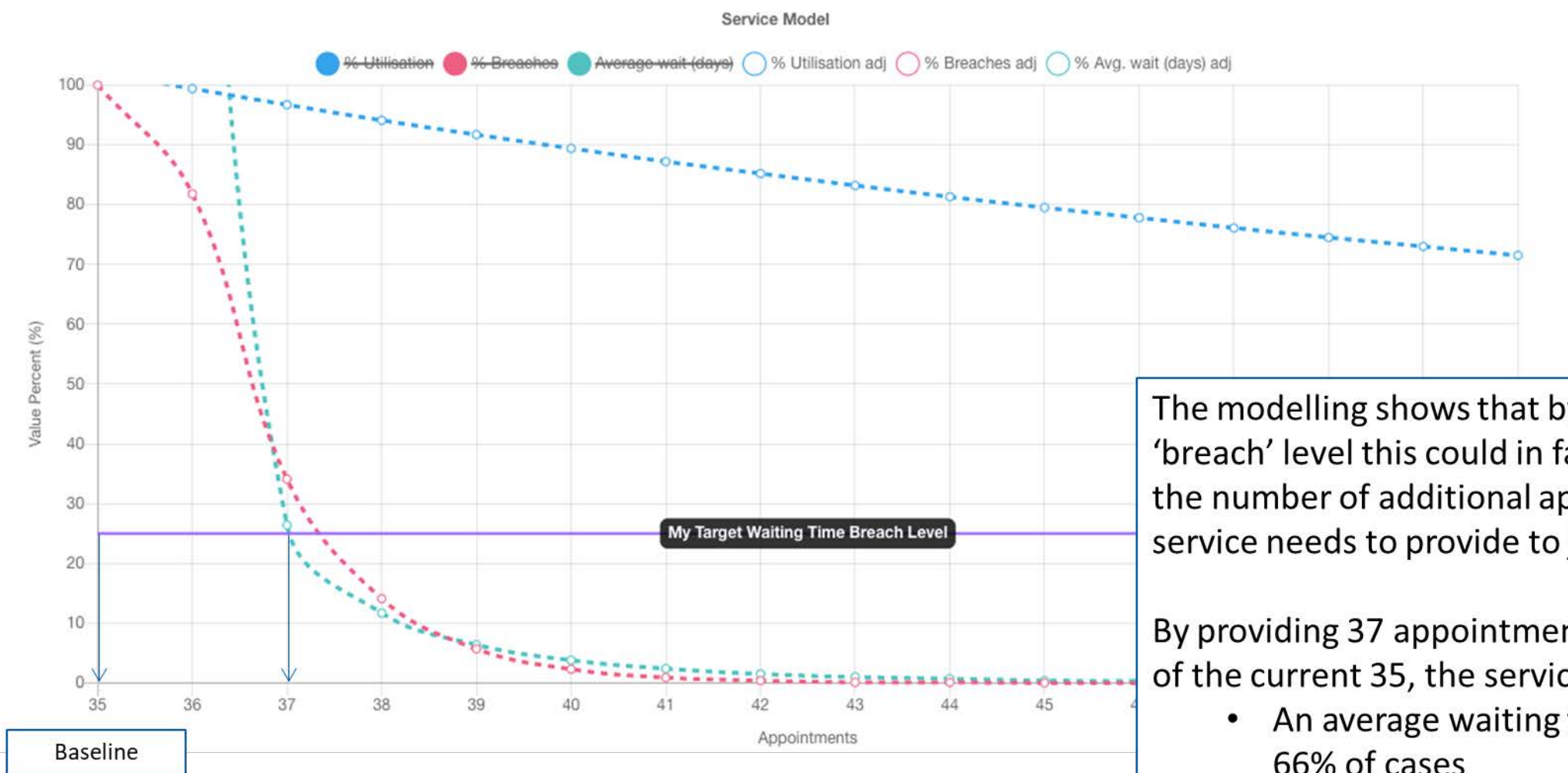
[Edit Service](#)

The counselling service share their findings with their commissioners who consider reducing the target of 85% to 75% of accepted referrals to be seen within 28 days, given the current unprecedented pressures on the system

	Current Values		Test Values
Available appointments per week	<input type="text" value="35"/>		<input type="text" value="50"/>
Test increasing appointments by up to	<input type="text" value="15"/>	more per week	
Average referrals per year	<input type="text" value="250"/>		<input type="text" value="310"/>
	4.8 cases per week		6.0 cases per week
Average points of contact per accepted referral	<input type="text" value="6.3"/>		<input type="text" value="6.0"/>
Waiting limit (days)	<input type="text" value="28"/>		<input type="text" value="Test value"/>
I want to see	<input type="text" value="75"/>	% of my patients within 28 days	

Adjusted breach target

Adjusted waiting time breach target



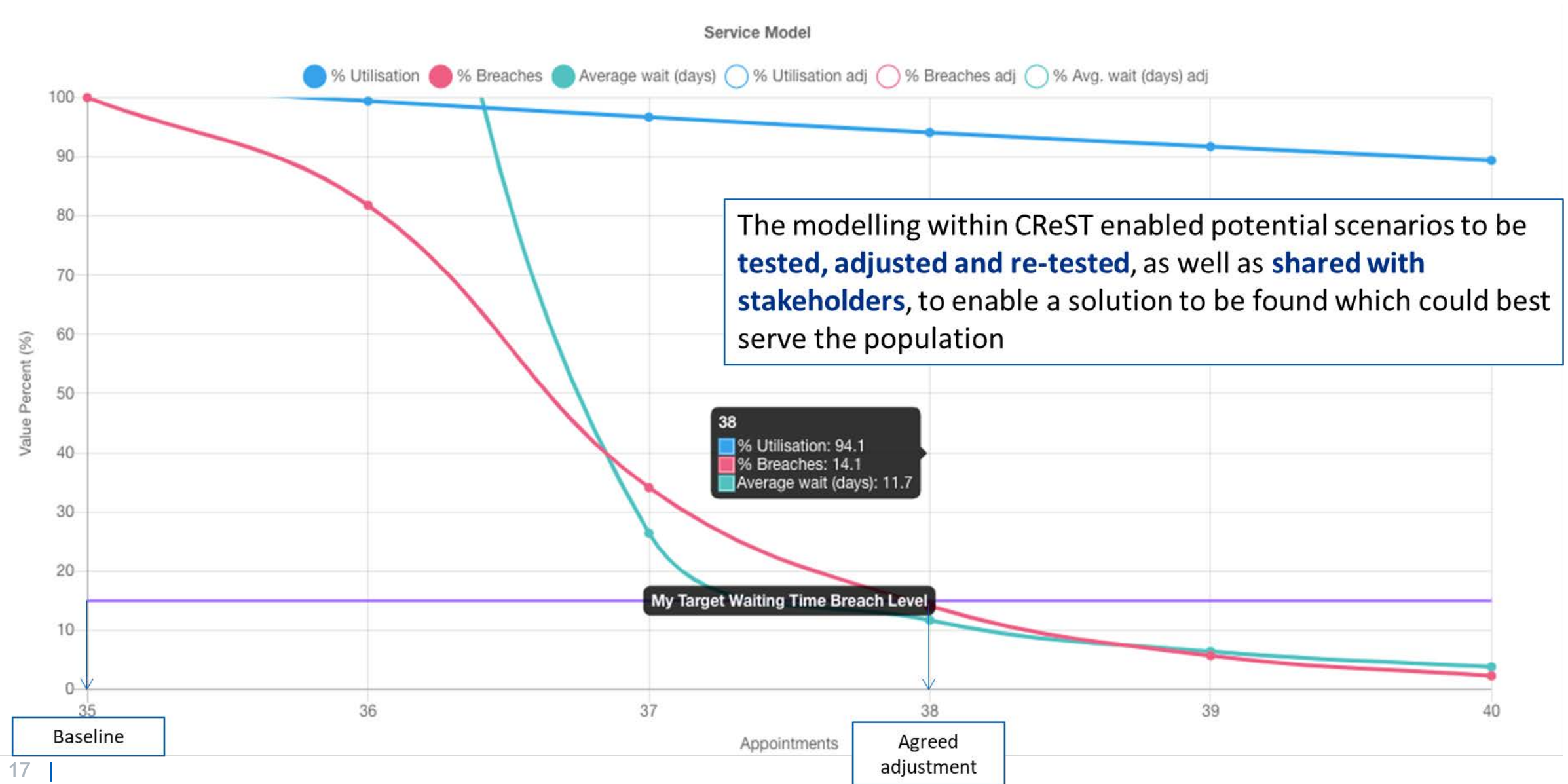
The modelling shows that by changing the 'breach' level this could in fact further reduce the number of additional appointments the service needs to provide to just 2

By providing 37 appointments per week, instead of the current 35, the service would still deliver

- An average waiting time of 26.4 days for 66% of cases
- The appointments would be 96.7% utilised

- The commissioners and service leads used the modelling to discuss and agree the optimum number of appointments to commission
- The modelling helped the all the stakeholders to see the impact of any change to the waiting time target and none wanted to alter it, as it was felt a key metric in ensuring those that need support can get access promptly
- Given the increased percentage of sessions being delivered digitally, and the subsequent reduction in travel time, the service agreed that they can deliver 38 appointments per week (3 more than prior to Covid19) without having to increase staffing levels
- This final position will mean:
 - An average waiting time of 11.7 days for 86% of cases
 - The appointments would be 94.1% utilised

Final agreed position



- As shown, to get started with CReST you only need 3 key figures (and these figures could be *anticipated* if you are modelling a new service)
 - The average number of accepted referrals for the service/unit in a period
 - The number of available appointments in the service in a period or the number of beds in the unit
 - The average number of appointments each accepted referral will receive during treatment, or the average length of stay for the unit
- CReST is accessible to anyone in the UK working in a health or social care, and you can register and access the tool instantly on the website (<http://dev.cypmh-model.nhs.uk/>)
- Today's example and several other Covid19 specific modelling scenarios are explored on the website and there is a support team is on hand (cypmh.model@nhs.net) for any queries with registration / access and to support with modelling / analysis.