# Introduction

The [NHS COVID Pass](https://www.gov.uk/guidance/nhs-covid-pass) was launched in May 2021 in response to the COVID-19 pandemic to help ease international travel and later support certain events and venues across the UK. It continues to support travel to countries where proof of COVID status is required at the border and/or at domestic events. Individuals can access the NHS COVID Pass via the NHS App, NHS.UK or a PDF or letter requested via NHS.UK or by calling 119.

In line with the [Government Digital Service (GDS) standard](https://www.gov.uk/service-manual), the NHS COVID Pass Service will publish four GDS mandatory Key Performance Indicators (KPIs) to demonstrate how the service is working for users:

* **Cost per Transaction:** What is the cost to the government each time someone completes the task a service provides? Calculating the cost per transaction allows measurement of the cost effectiveness of the service
* **User Satisfaction:** A method used to determine how well the service meets or exceeds customer expectations. It is used as a key performance indicator of customer service and product quality. Tracking user satisfaction helps identify what users think about the service and which parts of it causes problems, which can be used to continuously improve the service
* **Completion Rate:** The number of digital transactions that users complete as a percentage of all digital transactions that users start. This includes transactions where the user receives support from someone to use the digital service
* **Digital Take-up:** The percentage of people using an online service to request an NHS COVID Pass in relation to other channels, for example via the 119 service. This includes people who get support from someone else to use the digital service

Data used in this publication consists of: (i) cost data which comes from the finance department; (ii) digital transactions data across channels such as App & Web; (iii) reporting provided by the 119 NHS COVID Pass contact centre.

# Cost per Transaction

Cost Per Transaction is the cost to the government each time someone completes a task the service provides. Calculating the cost per transaction allows measurement of the cost effectiveness of the service.

## Government Guidance

1. Work out the total cost of providing the service - including assisted digital support costs - through all channels.

2. Divide it by the total number of completed transactions

Because the cost per transaction calculation includes all channels, it can be used to predict cost savings as a higher proportion of people to digital channels.

## NHS COVID Pass Formula

## Formula Breakdown

**Fixed Resource Costs**: Any NHS COVID Pass resource costs that are constant regardless of the number of transactions completed e.g. employees on the programme.

**Fixed Non-Resource Costs**: Any fixed costs not directly associated with programme resources such as fixed service costs e.g. cloud hosting service provider. Also includes Private Key Infrastructure (PKI) costs.

**Variable Service Costs**: Any costs associated with NHS COVID Pass services that vary depending on the number of transactions completed e.g. cost of printing and posting a letter and 119 management, including call handlers and quality assurance, etc.

**Total Number of Transactions**: The total frequency of all NHS COVID Pass transactions. For the purposes of the NHS COVID Pass this includes: all digital products (2D Barcodes, PDF, emails, mobile wallets), physical letters that are requested online (web-letter), 119 calls which resulted in a letter generation & 119 calls which resulted in any other outcome than a letter being generated.

## Assumptions

1. Digital Products are the sum of all possible digital outcomes, which include: 2D barcodes produced, all PDFs generated, all emails sent and all wallet downloads.
2. 119-letter volume is the sum of all daily letter requests via 119
3. All resource costs are attributed to 70% digital products, 20% web letter, 10% 119 letter
4. Variable service costs are attributed to their relevant service. For example, the cloud hosting service provider, digital collaboration tools and PKI costs are attributable to all products (digital products, 119-letters, web-letters but not 119 non-letter calls)

## Costs Categorisation

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| **Services Provided** | **Fixed vs Variable** |
| Application Programming Interface (API) Development and Service Support | Fixed |
| Communications | Fixed |
| PKI | Fixed |
| Cloud hosting for Web Security | Fixed |
| Rules Engine | Fixed |
| Letter Service | Variable |
| 119 Management | Variable |
| 119 Call Handlers | Variable |
| Project Management Office, Senior Leadership Team, Policy | Fixed |
| Platform including hosting costs | Variable |

# User Satisfaction

The service must plan to continually improve the user experience. By tracking user satisfaction, the service can find out what users think and which parts of it cause them problems. This will help inform which areas to improve.

## Government Guidance

The service should allow users to give feedback at various stages of using it:

- At the end of the online service

- Within the service

- When users drop out

- Measuring users’ satisfaction with the whole service

- Include assisted digital support

## Questionnaire

A survey was designed and launched on 14th July 2022. This survey has been set up to ask the following questions:

- **Satisfaction**: To what extent were you satisfied, or dissatisfied with your most recent experience of requesting an NHS COVID Pass?

- **Ease Of Use**: How easy, or difficult, was it to use the service?

- **Difficulties**: Why was the service difficult to use? Please tell us in the space below. Don’t include personal or financial information, for example, your national insurance number or credit card details.

- **Net Promoter Score (NPS)**: How likely is it that you would recommend this service to a friend or colleague?

- **Suggestions**: Do you have any suggestions for improving the NHS COVID Pass application process? Please tell us in the space provided. Don’t include personal or financial information, for example, your national insurance number or credit card details.

The survey is presented to users who complete the following journeys:

(i) Pass request via app - successful

(ii) Pass request via app - unsuccessful

(iii) Pass request via web browser - successful

(iv) Pass request via web browser - unsuccessful

(v) Pass request for 5-11 years old via web browser to order a letter, but are redirected to order a PDF

(vi) 16+ years old request via web browser to order a letter, but are redirected to order a PDF

(vii) Letter is requested via the web browser for yourself

(viii) Letter is requested via the web browser for an adult other than yourself

## Satisfaction Score Formula

# Completion Rate

Completion rate is the number of digital transactions that users complete, as a percentage of all digital transactions that users start. This includes transactions where the user receives support from someone to use the digital service.

## Government Guidance

The guidance from the Government website calculates Completion Rate as:

1. Count the number of completed transactions - the numerator.
2. Divide it by the total number of transactions (including partially completed or failed ones) - the denominator.
3. Show the result as a percentage.

Make sure only genuine users are included, i.e. set up the analytics tools to exclude internal users, test users and web robots from the data.

## Formula

## Completion Rate Metric Definition

**Total User Base**: This metric takes into account both (a) digital Users and (b) 119 Users. For 119 users, it considers the total number of letters requested via 119. For digital users it looks at all successful logins for users, and therefore unique users. It assumes that every user has a starting point when they log in to the app or the website and the journey ends with the barcode generation. This starting point is defined as the furthest point we can go back in their user journey that is within the NHS COVID Pass service control.

For example, the entire letter service and user journey is within the NHS COVID Pass control therefore, as soon as someone starts a journey to make a request, they will be included in this user base. In contrast, users of the NHS.UK web browser route or NHS App will need to verify their NHS login before requesting a digital product. Because the NHS login is not under the NHS COVID Pass control, only users that have successfully logged in will be counted in the total user base.

**Valid Vaccination Pass**: Measures all successfully generated vaccination certificates. It includes every request for which the system has generated a 'valid vaccination certificate' and an 'invalid recovery certificate’.

**Valid Recovery Pass**:Measures all successfully generated recovery certificates. It includes every request for which the system has generated an 'invalid vaccination certificate' and a 'valid recovery certificate’.

**Both Pass Issued**: Measures the cases where both the passes are issued successfully to the users. A single user will be tagged as a recipient of a 'valid vaccination certificate' and a 'valid recovery certificate' from a single log in mapped under the same session ID.

**No Pass Issued**: Measures the cases where the users failed to generate any pass. This logic also holds true for individuals who had successful logins but failed to generate a pass because of mismatch of vaccination records.

# Digital Take-up

Digital take-up is the percentage of people using government services online in relation to other channels, for example paper or telephone. This includes people who get support from someone else to use the digital service

## Government Guidance

The guidance from the Government website calculates digital Take-up as:

1. Find the number of completed digital transactions over any fixed period (include digital transactions where assisted digital support was used).

2. Divide that number by the total number of transactions from all channels in the same period.

3. Show the result as a percentage.

## Formula

## Digital Take-up Metric Definition

To align with the government guidance, we first need to identify how NHS COVID Passes are requested, and which would be classified as digital or non-digital. The different user journeys are as follows:

**Digital** is defined as: (i) when a user requests an NHS COVID Pass on the NHS website; (ii) or the NHS App; (iii) or the PDF via email requested on the NHS website; (iv) or a letter request on the website.

**Non-Digital** is defined as when a user calls the 119 service to request a letter.

# Quality Assurance (QA)

This report goes through a detailed QA Process to review and sign off KPIs ahead of publication. This process includes reviewing the data in the following areas:

1. Data Accuracy and relevance for the given time period
2. Completeness (i.e., no missing values or records)
3. Timelines (i.e., publishing the data in a timely manner)

**Data Accuracy**

We have extracted data using Kusto Query Language (KQL), which is a form of Structured Query Language (SQL). These queries have passed through multiple levels of QA. Therefore, there is a high degree of confidence that the queries will be pulling the correct data points from the system.

Once the data has been extracted, it is compared against the last week, and last month data sets. Any data points that are considered outliers will be queried and followed up to confirm data accuracy.

**Completeness**

All data that is extracted, are loaded into data tables to build visualisations and analysis. This supports rapid identification of missing values or data points.

**Timelines**

The data within this publication is compiled on a monthly basis and combines data sets from the Management Information (MI) reports that are generated on a weekly basis for the NHS COVID Pass programme.

# Terminology

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| **Term** | **Definition** |
| Cloud Hosting Service Provider | This is a third party that fulfils a basic function for the NHS COVID Pass. It delivers a site or an application within a Content Delivery Network (CDN). A CDN is a geographically distributed group of servers which work together to provide fast delivery of Internet content. While a CDN does not host content and can’t replace the need for proper web hosting, it does help cache content at the network edge, which improves website performance. |
| Fixed Costs | A fixed cost is a cost that does not change, in relation to the number of NHS COVID Passes that are created. For example, DHSC employees that help run the programme. |
| Government Digital Service (GDS) | The Government Digital Service (GDS) provides a Service standard which provides the principles of building and running a good government service. For more details about this service standard, please see <https://www.gov.uk/service-manual/service-standard>. |
| Key Performance Indicator (KPI) | Key Performance Indicators (KPIs) help measure performance and benefits of the service. By collecting this information, we can make sure that:   * The service is meeting user needs * The service allows users to easily complete the task it provides * There are enough people using the service to make it cost-efficient * People know about the service and are choosing to use it.   The 4 KPIs that are mandatory to publish from the GDS standard are: (i) Cost per Transaction; (ii) User Satisfaction; (iii) Completion Rate; (iv) Digital Take-up |
| NHS COVID Pass contact centre management | This is a third party supplier that provides service management for the call centre. They manage the NHS COVID Pass contact centre supplier contract and service performance, agent scripts, guidance and training, reporting and MI related to contact centre services. |
| NHS COVID Pass contact centre supplier | This is a third party supplier that supplies the call handlers on behalf of NHSBSA and the NHS COVID Pass. |
| NHS COVID Pass Service | The NHS COVID Pass was launched in May 2021 in response to the COVID-19 pandemic to help ease international travel and later support certain events and venues across the UK. It continues to support travel to a number of countries where proof of COVID status is required at the border and/or at domestic events. Individuals can access the NHS COVID Pass via the NHS App, NHS.UK or a PDF or letter requested via the NHS.UK or 119. |
| Public Key Infrastructure (PKI) | A public key infrastructure (PKI) is a set of roles, policies, hardware, software and procedures needed to create, manage, distribute, use, store and revoke digital certificates and manage public-key encryption. The purpose of a PKI is to facilitate the secure electronic transfer of information for a range of network activities such as e-commerce, internet banking and confidential email. It is required for activities where simple passwords are an inadequate authentication method and more rigorous proof is required to confirm the identity of the parties involved in the communication and to validate the information being transferred. |
| PKI Provider | This is a third party that supplies the NHS COVID Pass with certificates that are used in the PKI. They are used as a service, to generate and sign certificates. |
| Recovery Pass | A Recovery Pass is defined as having had a positive NHS PCR or equivalent test in the past 6 months. The NHS COVID Pass based on a positive NHS PCR test is available 10 days after the test and is valid for 180 days after the test. |
| Vaccination Pass | A Vaccination Pass is defined as having at least 1 dose of a COVID-19 Vaccine recognised in the UK. This may differ from international certification requirements - further details on entry requirements can be found on the [GOV.UK foreign travel advice pages](https://www.gov.uk/foreign-travel-advice) and on the websites of destination countries. |
| Variable Costs | A variable cost is a cost that will change, in relation to the number of NHS COVID Passes that are created. For example, costs associated with printing and posting NHS COVID Pass letters. |