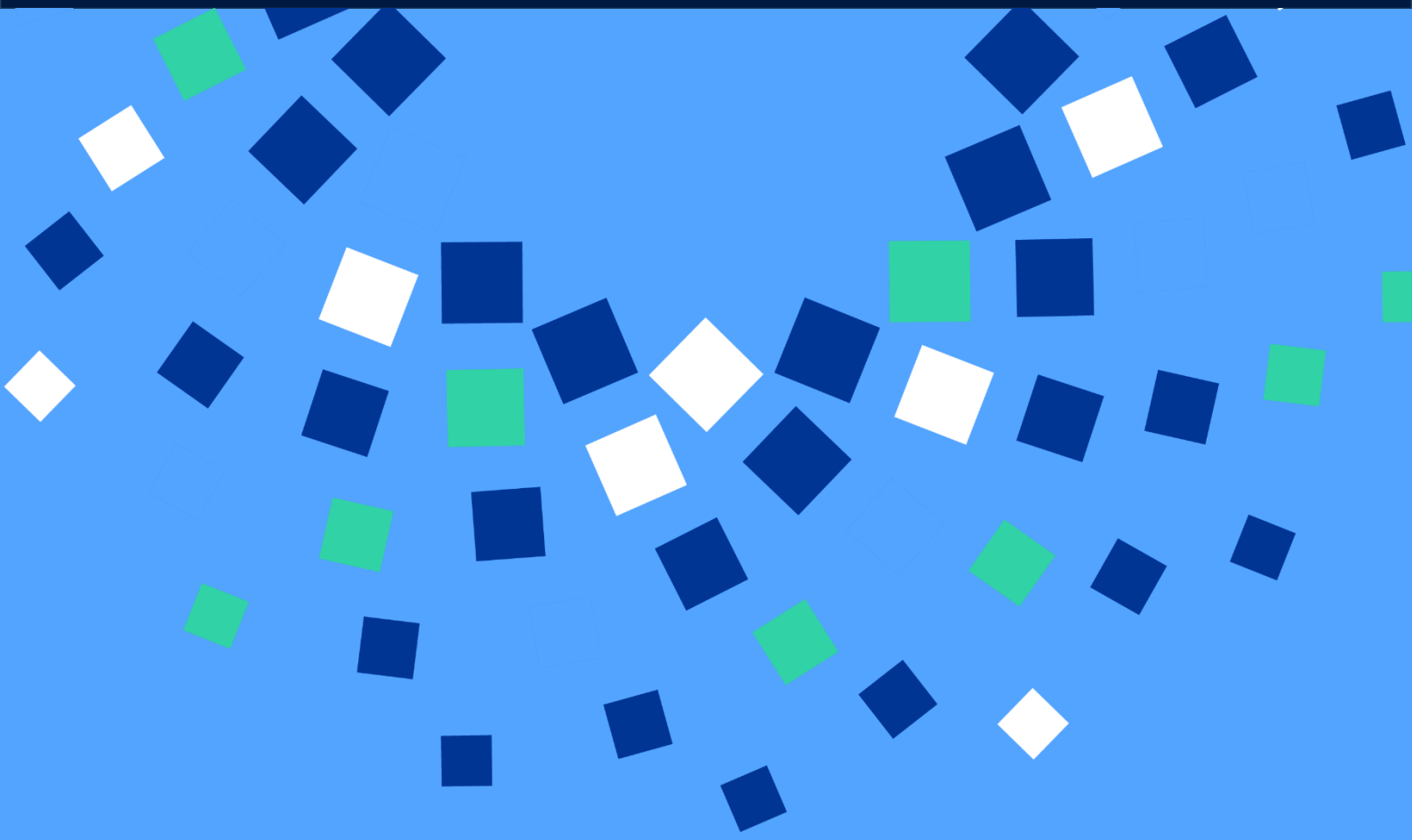
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Data Explained

Outpatient Database for Wales (OPDW)

Authors: Victoria Best, Sarah Aldridge, Roberta Chiovoloni, Ashley Akbari
Date: October 2026

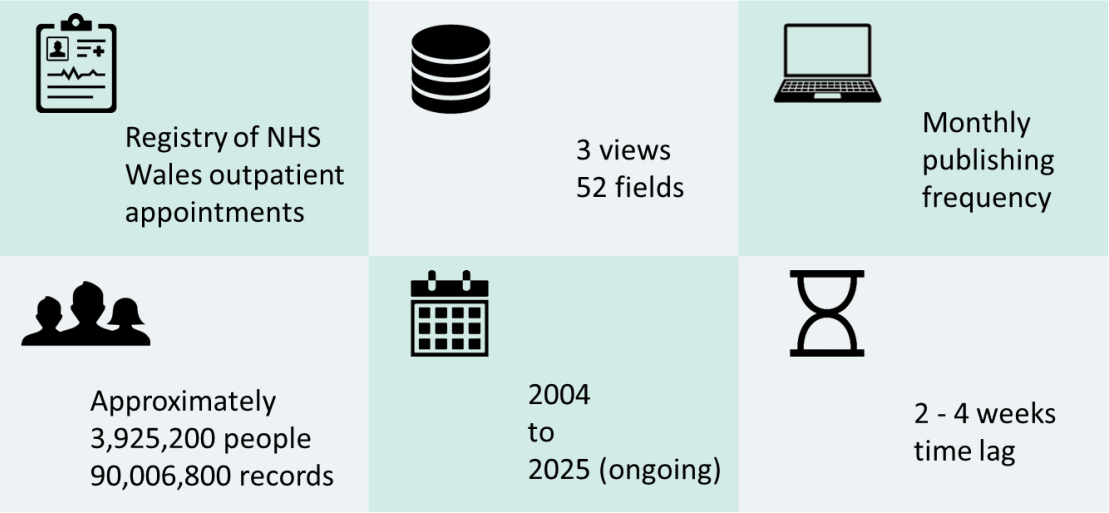


Summary

This Data Explained summarises experiences and learning from working with the Outpatient Database for Wales (OPDW). This publication is intended to help guide future researchers using this data and to provide feedback on future data development and documentation.

The administrative data discussed in this Data Explained was made securely available through an approved SAIL project via the independent Information Governance Review Panel (IGRP) – project 1934. The data used in this research project comes from Digital Health and Care Wales (DHCW) and was accessed through the Secure Anonymised Information Linkage (SAIL) Databank. The data were not originally collected for research, and gaps and inconsistencies in their recording are expected; some are detailed below.

Overview



Introduction

The Outpatient Database for Wales (OPDW) is a patient-level data source derived from the Outpatient Minimum Dataset (OP Mds), used to record National Health Service (NHS) Wales outpatient activity since April 1999 (Rees & Dolman, 2016).

The OPDW contains all NHS Wales outpatient appointments, including private patients seen at NHS clinics and English Trust outpatient appointments for Welsh residents. The data include all scheduled appointments, whether they took place, were cancelled, or the patient failed to attend (Welsh Information Standards Board, 2018). Within the OPDW data, outpatient appointments are referred to as attendances, whether or not the patient actually attended.

Outpatient appointments are consultant or non-consultant/nurse-led clinic appointments for assessment, treatment, advice, or counselling. Outpatient appointments can take place face-to-face at a hospital, in a consultant-led clinic, or in a client's home. When appointments occur in hospitals or clinics, patients do not need to stay overnight (Welsh Government, 2025). Both new and follow-up appointments are recorded in the OPDW data. From October 2020 onwards, the data include virtual appointments, so phone appointments, virtual clinic appointments (with patient

contact), and virtual appointment reviews (no patient contact) are also available (Welsh Information Standards Board, 2020).

OPDW coverage began in April 2004 and remained active when this report was produced in 2026.

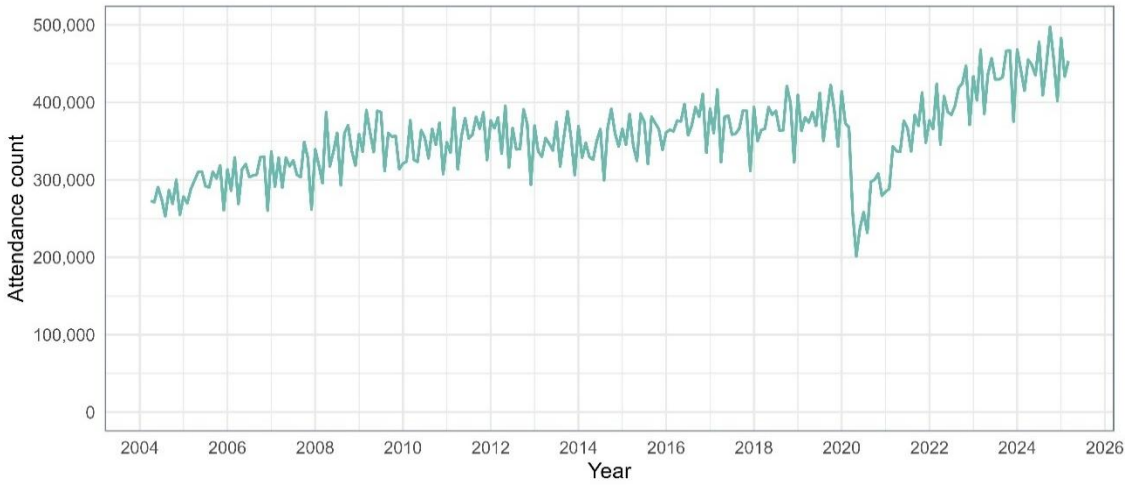


Figure 1 - Count of all OPDW outpatient attendances per month.

How is the data collected?

The seven Welsh Health Boards (HBs) and Velindre NHS Trust compile outpatient information from their sites and submit a fixed-format file via the NHS Wales Data Switching Service (NWDSS) monthly. They can run a check before submission using the Validation at Source Service (VASS), which lets HBs/Trusts validate and correct their data before submission, improving data quality (NHS Wales, n.d.-b). English organisations also submit data on patients registered with Welsh General Practices. Digital Health and Care Wales (DHCW) are responsible for collating the individual returns into a single resource.

A timeline of key events for the OPDW is provided below. This list is not exhaustive but aims to cover the most significant changes for data users.

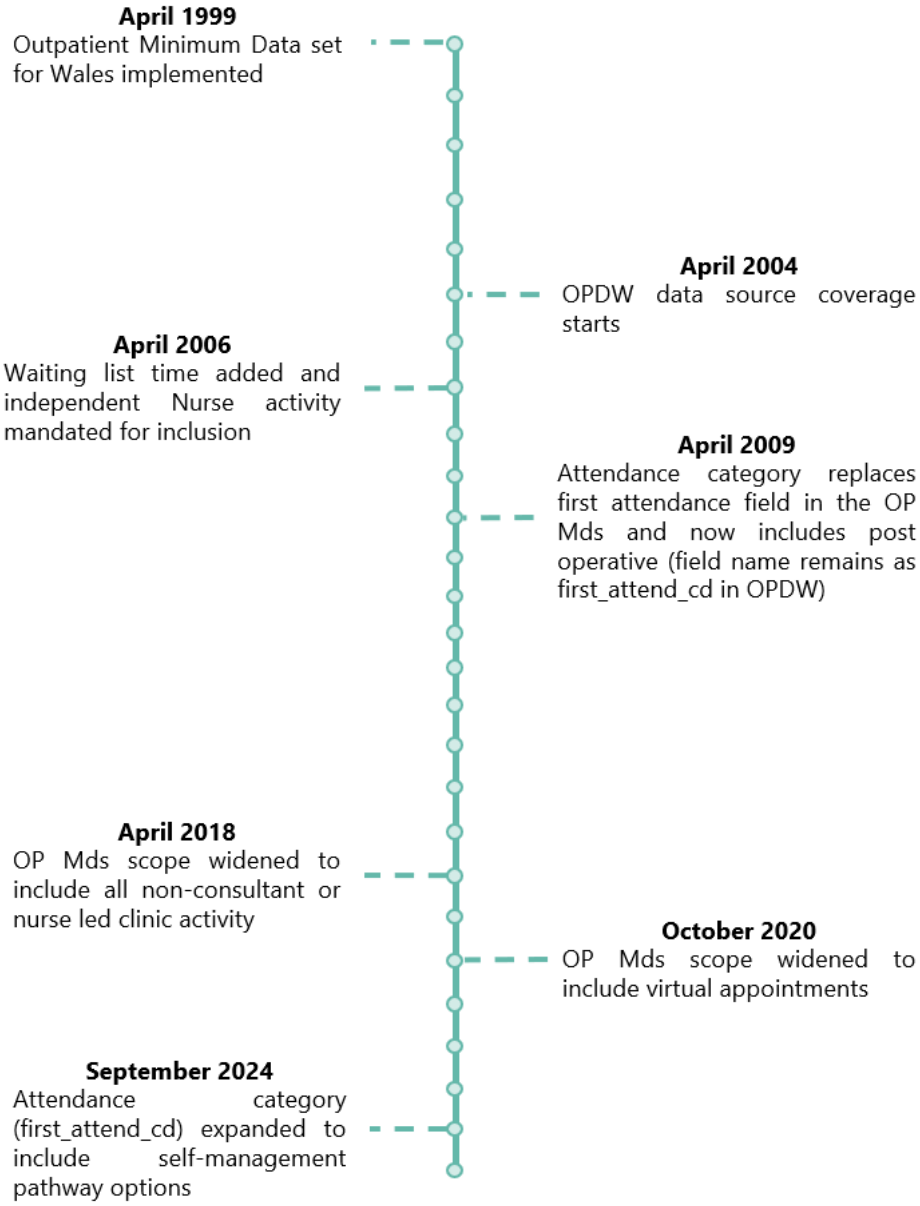


Figure 2 - Timeline of key events impacting the contents of the OPDW.

Data structure and linkage

OPDW is divided into three tables: **outpatients**, **diag** and **oper**. These tables do not contain a single primary key or unique row ID; instead, unique identifiers for outpatient attendances are generated from a combination of fields. Figure 3 indicates the OPDW linkage structure and some commonly accessed fields. ID indicates the fields which together generate a unique ID for the event. Fields which are used for linkage are highlighted in green. All tables link via *CASE_REC_NUM_PE*, *ATT_ID_PE* and *PROV_UNIT_CD*. The **outpatients** table is linkable to other SAIL data sources via *ALF_PE.*

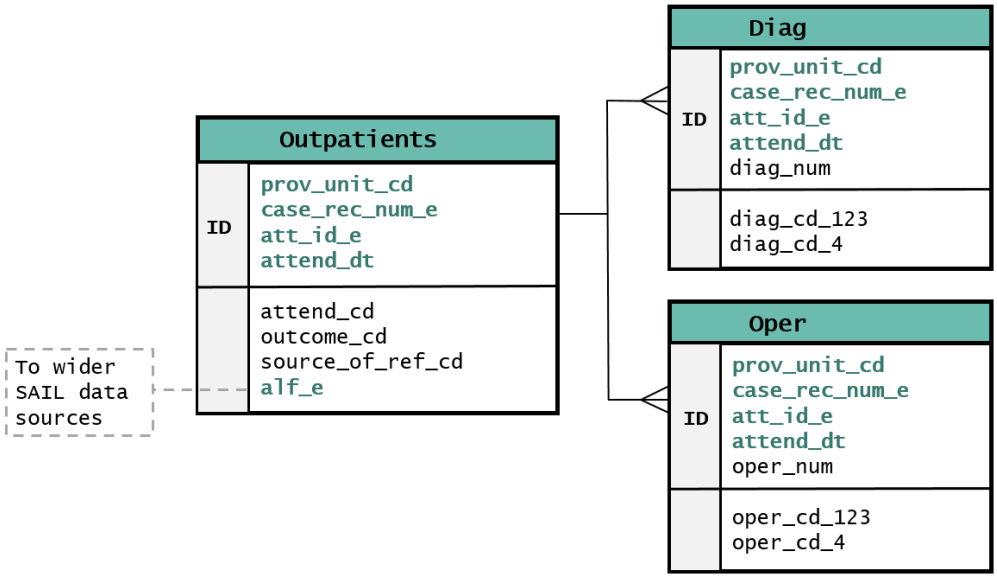


Figure 3 - Data linkage keys between the outpatient tables available in SAIL.

outpatients table: *Each row in the outpatient table represents an individual outpatient attendance. A unique outpatient attendance is identified from a combination of the PROV_UNIT_CD, CASE_REC_NUM_PE, ATT_ID_PE* and *ATTEND_DT* fields. The **outpatients** table is the only OPDW table containing the anonymised linkage field (*ALF_PE*), which can be used to link patients to wider SAIL data sources. Therefore, information from the **diag** and **oper** tables must be linked to the **outpatients** table prior to any wider linkage to SAIL data sources.

The outpatients table can be used to identify the main speciality of patient treatment (*CON_SPEC_CD_OF_TREAT*). The most frequently recorded main specialities of treatment are provided below for information, but the actual specialities of interest will depend on the project, so this should not be used to guide inclusion.

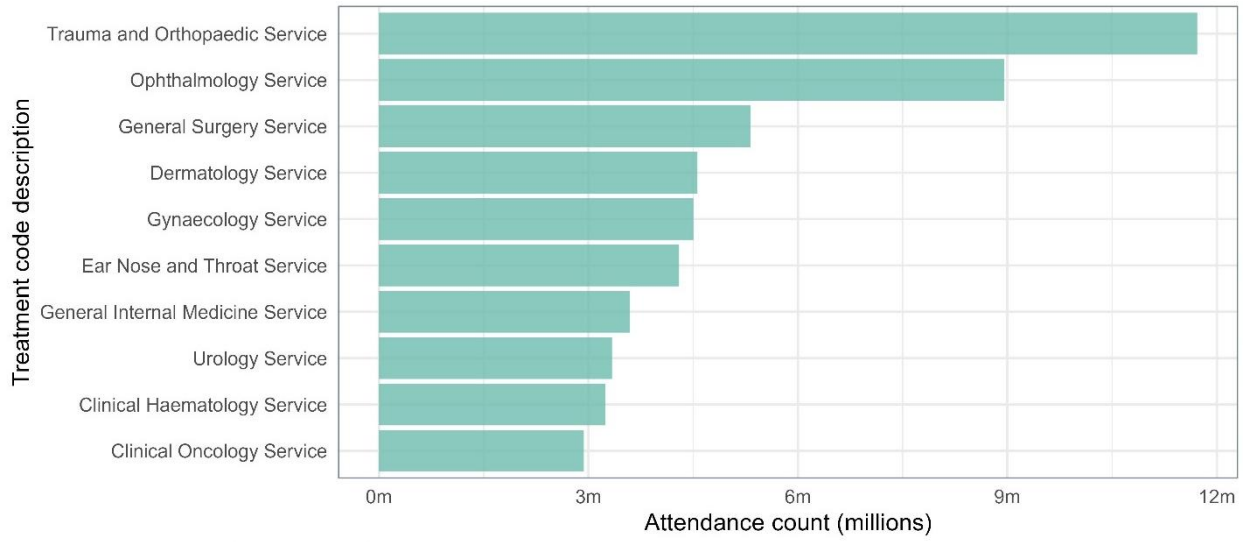


Figure 4 - Counts of the top 10 main speciality of treatment codes recorded.

oper table: The **oper** table contains details of all operations or procedures performed during outpatient attendance, with each row representing a procedure. A unique outpatient procedure is identified from a combination of the *PROV_UNIT_CD*, *CASE_REC_NUM_PE*, *ATT_ID_PE*, *ATTEND_DT* and *OPER_NUM* fields. Procedures are recorded using Office of Population Censuses and Surveys version 4 (OPCS-4) codes. Up to 12 rows can be recorded per outpatient attendance, with the primary procedure recorded in the row for *OPER_NUM* = 1, and subsequent procedures recorded in

rows for *OPER_NUM* = 2 to 12. The most frequently recorded primary procedures are provided below for information, but the actual procedures of interest will depend on the project, so this should not be used to guide inclusion.

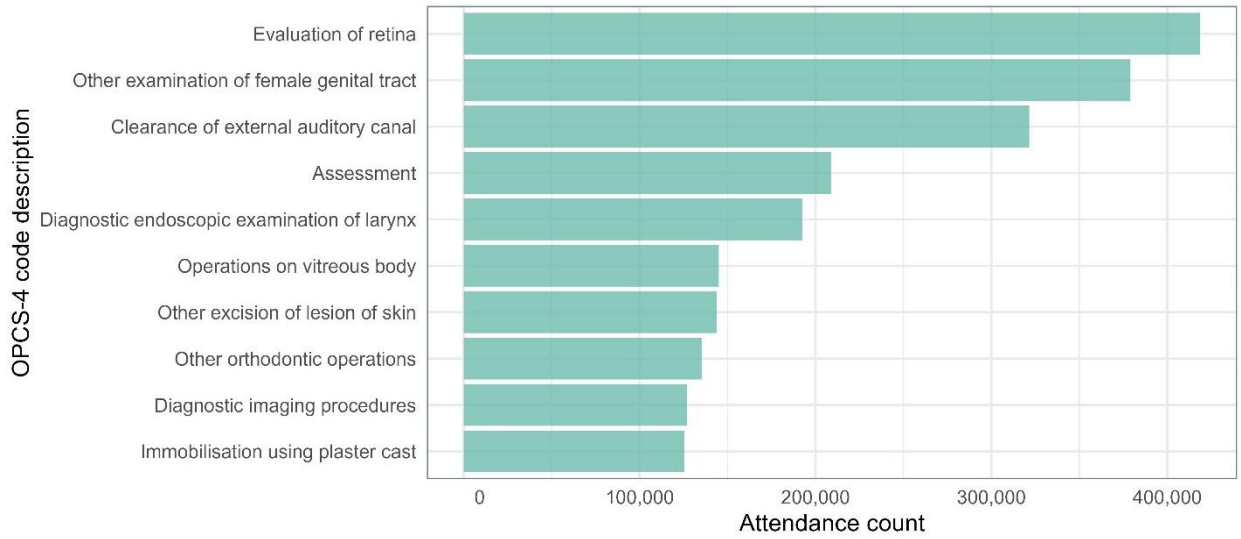


Figure 5 - Counts of the top 10 primary procedure codes recorded (OPCS-4 code to 3 characters).

diag table: The **diag** table contains details of all the diagnoses made during outpatient attendances, with each row representing a diagnosis. A unique outpatient diagnosis is identified from a combination of the *PROV_UNIT_CD*, *CASE_REC_NUM_PE*, *ATT_ID_PE*, *ATTEND_DT* and *DIAG_NUM* fields. Diagnoses are recorded using International Statistical Classification of Diseases Version 10 (ICD-10) codes. Up to three rows can be recorded per outpatient attendance, with the primary diagnosis being recorded in the row for *DIAG_NUM* = 1 and secondary diagnoses recorded in the rows for *DIAG_NUM* = 2 and = 3. The most frequently recorded primary diagnoses are provided below for information, but the actual diagnoses of interest will depend on the project, so this should not be used to guide inclusion.

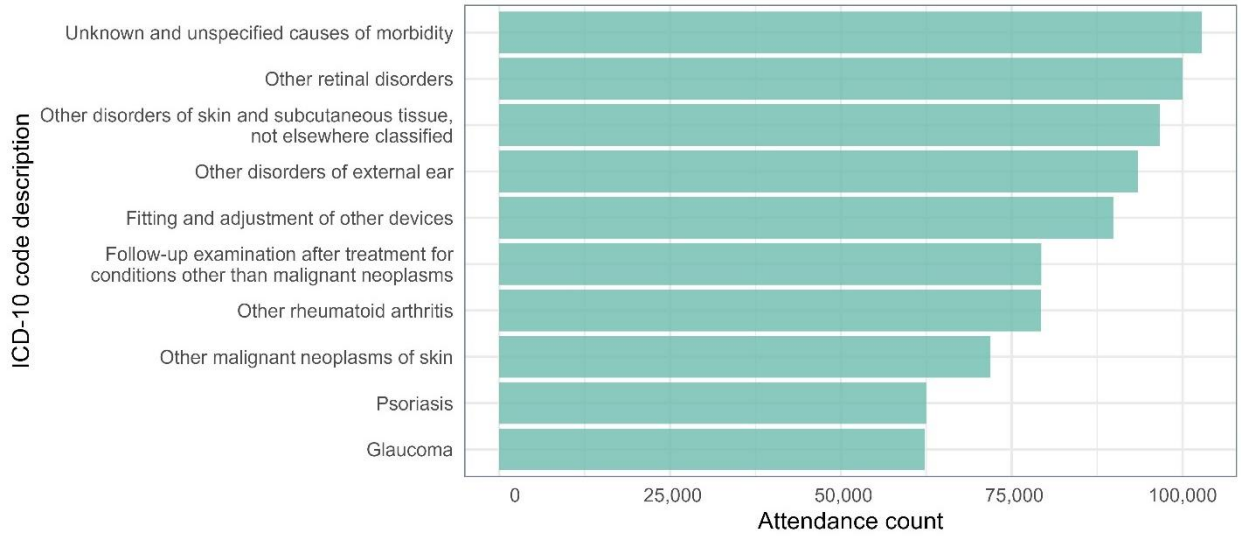


Figure 6 - Counts of the top 10 primary diagnosis codes recorded (ICD-10 code to 3 characters).

Key variables

The NHS Wales Data Dictionary (NHS Wales, n.d.-c) contains nationally agreed standard codes used for recording within Outpatient data and is therefore a useful resource for understanding and interpreting the OPDW. A selection of useful fields is listed below, but full structural metadata is provided via the HDR Gateway (Health Data Research UK, 2025a)

Field name	Description	Use	Table(s)
ALF_PE	Anonymised linkage field (person ID)	Data linkage with other SAIL data sources	**outpatients**
PROV_UNIT_CD	The provider unit code	Linkage field for OPDW data tables and to identify HB or trust	**outpatients, diag, oper**
CASE_REC_NUM_PE	Unique patient ID within hospital or care provider	Linkage field for OPDW data tables	**outpatients, diag, oper**
ATT_ID_PE	Encrypted unique attendance ID	Linkage field for OPDW tables	**outpatients, diag, oper**
ATTEND_DT	Attendance date	Identify the date of outpatient attendance and is the linkage field for OPDW tables	**outpatients, diag, oper**
CON_SPEC_CD_OF_TREAT	Consultant speciality code of treatment (treatment function code)	To identify the speciality under which the patient was treated	**outpatients**
WAITING_LIST_DT	Clinical referral date, or amended where the appointment is delayed due to the patient	To calculate waiting list times in performance targets	**outpatients**
PRIORITY_CD	Priority code	Identifies whether appointment is urgent (1), routine (2) or suspected cancer (3). Only populated when *FIRST_ATTEND_CD* = 1	**outpatients**
FIRST_ATTEND_CD	First attendance indicator	To identify whether an appointment is new (1) or a follow-up within a series of appointments with the same clinician	**outpatients**
ATTEND_CD	Patient attendance code	To identify whether the patient attended or not, and attended on time	**outpatients**
OUTCOME_CD	Outcome of attendance code	To establish the patient pathway post-attendance	**outpatients**
SOURCE_OF_REF_CD	Source of referral code	To identify who referred the patient, e.g. A&E, GP, self-referral	**outpatients**
DIAG_NUM	Diagnosis number sequence within each episode	Identifying the primary (*DIAG_NUM* = 1) or secondary (*DIAG_NUM* = 2 or 3) diagnoses	**diag**
DIAG_CD_123	Diagnosis ICD-10 code	Identifying diagnosed conditions to 3 characters	**diag**
OPER_CD_123	Procedural OPCS4 code to 3 characters	Identifying procedures and operations	**oper**

Table 1 - Key variables available in OPDW.

What can the data be used for?

The OPDW provides detailed information about outpatient appointments and any resultant diagnoses or procedures. It can therefore be linked to wider SAIL data and cohorts via the *ALF_PE* to help identify pre-existing or newly developed conditions and procedures within a cohort of interest. ICD-10 codes identify diagnoses, and OPCS-4 codes record procedures; both are common clinical coding systems across other secondary care data sources such as PEDW.

Certain procedures are more likely to be performed as outpatient appointments, such as colonoscopies or the removal of skin lesions. Therefore, OPDW is a key data source for research on commonly performed outpatient procedures.

OPDW data can be used to identify trends in the number of outpatient attendances over time by, for example, consultant speciality or Health Board. DHCW publishes secondary care activity dashboards to demonstrate these trends (Digital Health and Care Wales, 2025). Outpatient care can be further explored by geography or demographics to provide insight into health equity and attendance behaviour, including attendance rates and cancellation rates.

Official waiting times can be calculated from OPDW using the *WAITING_LIST_DT*, or the time from referral to first attendance can be calculated using the *CLINICAL_REF_DT*, which indicates the date the referral was received.

Data limitations encountered

***MED_STAFF* coding:** The *MED_STAFF* codes used by NHS England Trusts (NHS, 2025) differ from those in the NHS Wales data dictionary https://www.datadictionary.wales.nhs.uk/index.html (NHS Wales, n.d.-a). Therefore, there is inconsistent recording in this field. Specifically, NHS Wales uses 1, 2, and 8, whereas NHS England uses 3, 4, 8, and 9, so researchers should ensure they standardise the contents of this variable before use.

Fluctuating procedure counts: There appears to be an error in the **oper** table for 2013, 2024, and 2025, where large increases in row counts are observed. This appears to be caused by significant numbers of outpatient attendances in these years having a row recorded for all 12 available *OPER_NUM* rows, with 0 entered as the *OPER_CD*.

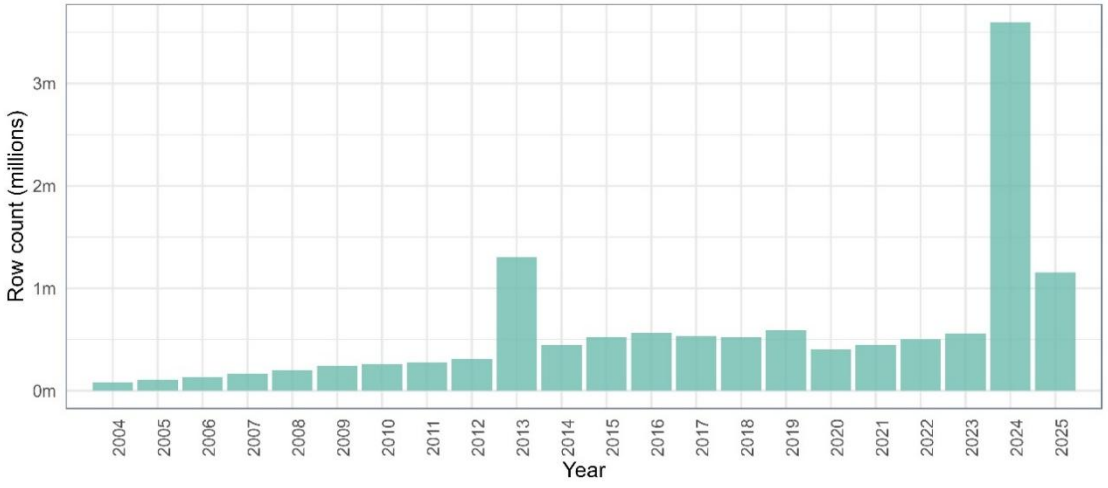


Figure 7 - oper table row count per year.

Excluding any rows from the **oper** table with an *OPER_NUM* of 0 recorded results in the row counts below.

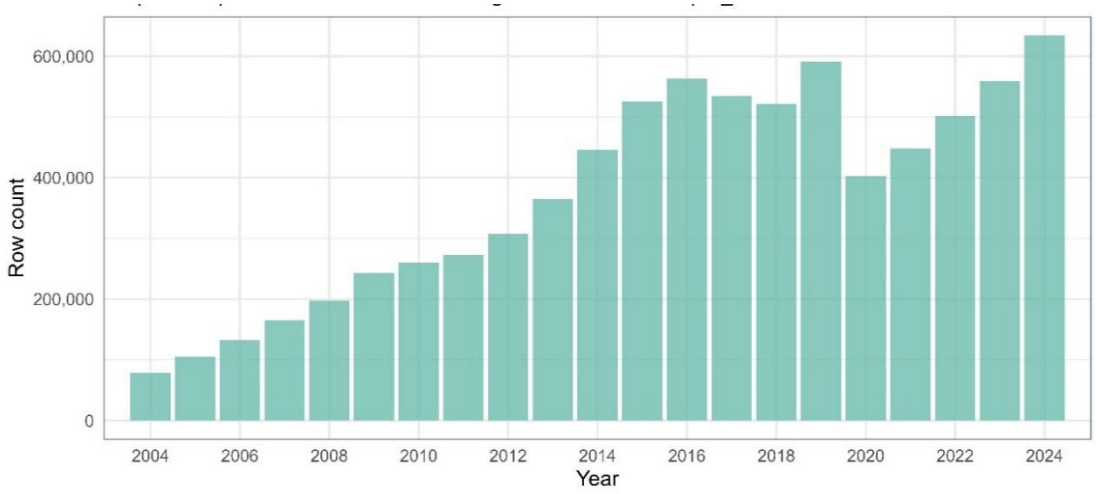


Figure 8 - oper table row count per year, where OPER_CD is not recorded as 0.

Consultation method: Since October 2020, the outpatient appointments included within OPDW have been widened to include virtual appointments (Welsh Information Standards Board, 2020). However, the consultation method field, which identifies the type of appointment that took place, does not appear to be available in the OPDW data provided in SAIL. This prevents any research into different outcomes by the outpatient consultation method, which could be an area of interest.

SOURCE_OF_REF_CD: The source of referral code field contains entries which do not match the data dictionary for the Wales source of referral code list (NHS Wales, n.d.-d). Some of these appear in the England codes (NHS England, 2024), but the majority of unmatched codes do not appear in either lookup. Since 2021, codes CA, SO, and TE have been recorded, but do not align with the NHS codes. Researchers should use caution when linking to lookup tables, as codes may be recorded as either 1 or 01, etc., so cleanse the data before use.

OPER_STS_FLG: some values in the operation status field (namely 0, 2, A, C, H, Q, W, X) are from English providers and so do not match the data dictionary for the Wales source of referral code list (NHS Wales, n.d.-d).

Reason for cancellation: A reason for cancellation field was added to the OP Mds in January 2020 to understand the reasons for hospital cancellations, with the aim of informing practice to reduce hospital cancellation rates (Welsh Information Standards Board, 2019). However, this field has not been added to the OPDW data source, meaning that potential insights for researchers regarding patient outcomes are not accessible within SAIL.

Mental health outpatient services missing data: Some health boards have known issues with missing data for both adult and child mental health services, particularly before April 2021, when some issues were resolved. Researchers studying mental health outpatient services should be cautious and seek SAIL's advice during project scoping.

Low completeness of diagnostic codes: A primary diagnosis is recorded only for a small proportion of appointments; see the following table. Therefore, the data are not suitable for robust analysis at the level of individual diagnosis codes, and analysis should rely on speciality-level codes and/or linkage to other data sources to capture diagnostic information.

Year	% with a valid primary *DIAG_CD*
2015	4.1
2016	4.3
2017	4.4
2018	5.0
2019	5.0
2020	5.5
2021	5.0
2022	4.9
2023	4.0
2024	4.0
2025	4.0

Table 2 - The proportion of rows with a valid primary DIAG_CD recorded each year.

References

Digital Health and Care Wales. (n.d.). *Clinic Appointment—Nurse Led (Outpatients)*. NHS Wales Data Dictionary. Retrieved 9 May 2024, from https://www.datadictionary.wales.nhs.uk/index.html#!WordDocuments/clinicappointmentnurseledoutpatients.htm

Digital Health and Care Wales. (2025, August 21). *Secondary Care Activity Dashboard—Digital Health and Care Wales*. NHS Wales. https://dhcw.nhs.wales/data/statistical-publications-data-products-and-open-data/hospital-data/secondary-care-activity-dashboard16/

Health Data Research UK. (2025a). *OPDW Dataset—Health Data Research Gateway*. Health Data Research Gateway. https://healthdatagateway.org/en/dataset/346

Health Data Research UK. (2025b). *OPDW Dataset—Health Data Research Gateway*. Health Data Research Gateway. https://healthdatagateway.org/en/dataset/346

Information Requirements and Standards Sub Committee. (2006a, January). *Data standards change notice: 14/05 (W)*. Health Solutions Wales. https://dhcw.nhs.wales/data/information-standards/data-standards/data-standards-files/data-standard-change-notices-docs/dscns-2005/dscn-1405-w-waiting-list-date-pdf/

Information Requirements and Standards Sub Committee. (2006b, April 1). *Dataset Change Notice (2006) 01 (W)*. Welsh Government. https://dhcw.nhs.wales/information-services/information-standards/data-standards/data-standards-files/data-standard-change-notices-docs/dscns-2006/dscn-0106-recording-of-independent-nurse-act-pdf/

NHS. (2025, September 29). *Medical Staff Type Seeing Patient*. NHS Data Dictionary. https://www.datadictionary.nhs.uk/data_elements/medical_staff_type_seeing_patient.html

NHS England. (2024, May 28). *SOURCE OF REFERRAL FOR OUTPATIENTS*. NHS.Co.Uk. https://archive.datadictionary.nhs.uk/DD%20Release%20May%202024/attributes/source_of_referral_for_out-patients.html

NHS Wales. (n.d.-a). *Medical Staff Type Seeing Patient*. NHS Wales Data Dictionary. Retrieved 1 October 2025, from https://www.datadictionary.wales.nhs.uk/index.html#!WordDocuments/medicalstafftypeseeingpatient.htm

NHS Wales. (n.d.-b). *Outpatient Data Set (OP Ds) Return Submission Details*. NHS Wales Data Dictionary. Retrieved 22 May 2025, from https://www.datadictionary.wales.nhs.uk/index.html#!WordDocuments/returnsubmissiondetails40.htm

NHS Wales. (n.d.-c). *Outpatient Data Set Structure*. NHS Wales Data Dictionary. Retrieved 19 November 2025, from https://www.datadictionary.wales.nhs.uk/#!WordDocuments/datasetstructure22.htm

NHS Wales. (n.d.-d). *Source of Referral: Outpatients*. NHS Wales Data Dictionary. Retrieved 23 September 2025, from https://www.datadictionary.wales.nhs.uk/#!WordDocuments/sourceofreferraloutpatients.htm

Rees, R., & Dolman, R. (2016). *Outpatient Activity Minimum Dataset: Publication of data and discussion of data quality*. Health and Social Care Statistics, Knowledge and Analytical Services. https://www.gov.wales/sites/default/files/statistics-and-research/2019-05/outpatient-activity-minimum-dataset-data-discussion-data-quality-2015-16.pdf

Welsh Government. (2025, September 9). *Trends in NHS planned care activity: As at March 2025*. Welsh Government. https://www.gov.wales/trends-nhs-planned-care-activity-march-2025-html

Welsh Information Governance and Standards Board. (2010, June 2). *Dataset Change Notice 2010 / 06*. https://dhcw.nhs.wales/data/information-standards/data-standards/data-standards-files/data-standard-change-notices-docs/dscns-2010/dscn-2010-06-op-data-validity-standards-final-2june10-pdf/

Welsh Information Standards Board. (2018, December 21). *Data standards change notice DSCN 2018 / 11*. NHS Wales. https://dhcw.nhs.wales/data/information-standards/data-standards/data-standards-files/data-standard-change-notices-docs/dscns-2018/20181221-dscn-2018-11-outpatient-data-set-scope-v1-0-pdf/

Welsh Information Standards Board. (2019, December 13). *Data Standards Change Notice 2019 / 10*. Welsh Government. https://dhcw.nhs.wales/data/information-standards/data-standards/data-standards-files/20191213-dscn-2019-10-outpatient-hics-v1-0-pdf/

Welsh Information Standards Board. (2020, November 5). *Dataset Change Notice 2020 / 27*. Welsh Government. https://dhcw.nhs.wales/data/information-standards/data-standards/data-standards-files/data-standard-change-notices-docs/dscns-2020/20201105-dscn-2020-27-outpatient-virtual-activity-phase-two-d0-8-pdf1/

Welsh Information Standards Board. (2024, February 22). *Data Standards Change Notice 2024 / 07*. Welsh Government. https://dhcw.nhs.wales/data/information-standards/data-standards/data-standards-files/data-standard-change-notices-docs/dscns-2024/20231019-dscn-2024-07-self-management-attendance-category-v0-1-pdf/

Glossary

Abbreviation	Description
ADR UK	Administrative Data Research UK
ALF	Anonymised Linkage Field
DHCW	Digital Health and Care Wales
ICD-10	International Statistical Classification of Diseases Version 10
IGRP	Information Governance Review Panel
HB	Health Board
NHS	National Health Service
NWDSS	NHS Wales Data Switching Service
OPCS-4	OPCS Classification of Interventions and Procedures 4th Edition
OPRD	Out Patient Referrals Data
OP Mds	Out Patient Minimum Data Set
PEDW	Patient Episode Database for Wales
SAIL	Secure Anonymised Information Linkage (SAIL) Databank
VASS	Validation at Source Service

Disclaimer

This work was produced using administrative data accessed through the SAIL Databank. The use of the data in this work does not imply the endorsement of the SAIL Databank or data owners in relation to the interpretation or analysis.

This work uses research data which may not exactly reproduce National Statistics aggregates.

Acknowledgements

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This Data Insight has been produced by the ADR Wales Ymateb research team. It provides a snapshot of informative research currently underway at ADR Wales but is not intended to provide a complete picture of work undertaken within this field or the ADR Wales programme of work. The information presented in this Data Insight has been reviewed by ADR Wales colleagues with expertise within this thematic area and accepted to be accurate at the point of publication. Views expressed in this Data Insight are those of the researchers and not necessarily those of ADR Wales partner organisations.

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