

Pre/Post Report User Guide

By CRISP, content last updated 9/26/2019

Purpose

To define and clarify how to use the Pre-Post report. The Pre-Post Analysis helps users who have implemented programs to understand hospital utilization before and after a specific enrollment date for each patient. The report allows users to upload a customized panel of patients to analyze for which they have a treatment relationship.

Please not that all users must attest a treatment relationship with the patient to use this report. Use of this service must comply with laws and regulations which govern uses and disclosures of personally identifiable information, including but not limited to sensitive health information such as drug and alcohol treatment information protected by federal confidentiality regulations and 42 CFR Part 2.

The visit level report contains detailed patient information with significant PHI data, such as MRNs, service dates, and diagnosis codes. Please consider all HIPAA requirements, including the “minimum necessary” requirement, if sharing all or part of this report.

General Information

1. Individual patients identified using CRISP EID. The total number of members in the panel is the total number of patients on the panel that were matched to a CRISP EID and not necessarily the number unique patients on the panel. This can happen if invalid MRNs are provided.
2. Opt outs and 42-CFR patients are excluded from the visit level report
3. Depending on the number of months selected, some participants might not be included in the analysis if they do not have data for the entire period before and after the analysis
4. If the admit date is on or before the program enrollment date, the visit will be considered part of the pre period. If the admit date is after the program enrollment date then the visit will be considered part of the post period.
5. Please note data for this report follows a one-group pre-post design with no control group. The limitation of this design is the inability to control for outside events and not being able to compare results for a similar population with no program exposure.

6. Patient mortality is not factored into analysis.

Data Sources

1. Inpatient and Outpatient Case Mix data from the Health Services Cost Review Commission (HSCRC)
2. CEND panel information for programs uploaded using CEND MRNs

Timeframe

The denominator is right censored based on the program enrollment date provided for each patient on the panel as well as the date of the most recent case mix data. For example, if the case mix data has been updated through March 31, 2018 and the program enrollment date for MRN 123456 is April 15, 2017, this patient will be a part of the 1, 3, and 6 month timeframes but not the 12 month. MRN 123456 will be included in the 12 month timeframe once data has been updated through April 30, 2018 and the patient has been enrolled in the program for a full 12 months. The helps to ensure the denominator is representative of how long each person has been enrolled in the program and the amount of data available.

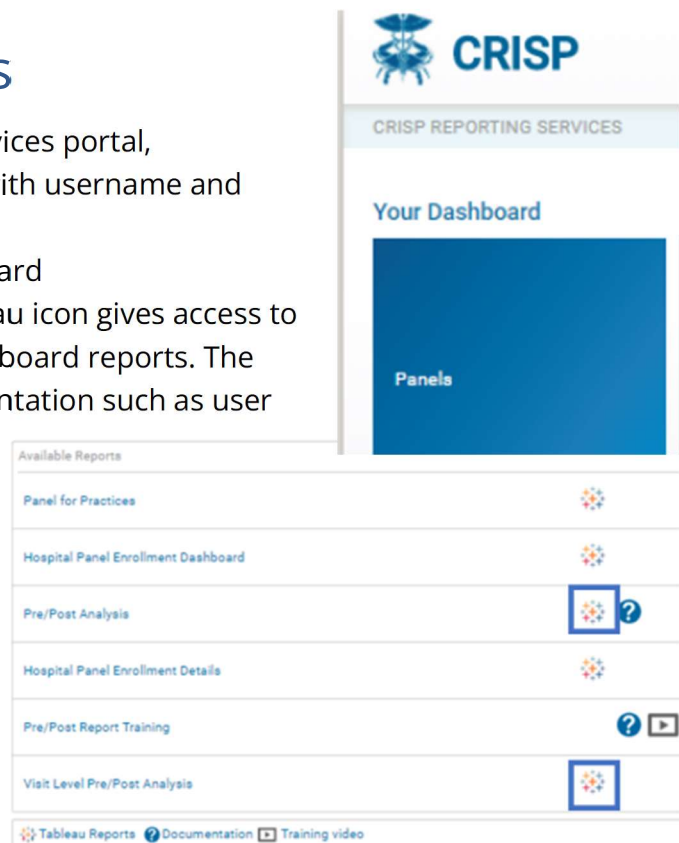
The monthly time period is based on 30 days for each month from the enrollment data. For example, Feb 28th is Jan 28th. 1 month before June 15th is May 15th, etc.

Pre-Post Report Access

1. Log in to the CRISP Reporting Services portal, <https://reports.crisphealth.org/>, with username and password
2. Once logged in, click the 'Panels' card
3. Select Pre-Post Report. The Tableau icon gives access to the most up to date Tableau dashboard reports. The question icon will pull up documentation such as user guides and data dictionaries.

The play button next to Pre/Post Report Training plays a webinar recording of PrePost User Training.

Note: Visit Level Pre-Post Analysis is only available for users with PHI access.

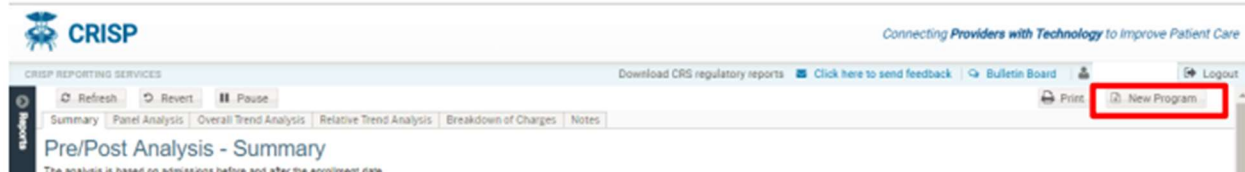


The screenshot shows the CRISP Reporting Services portal. At the top, there is the CRISP logo and the text 'CRISP REPORTING SERVICES'. Below this is a 'Your Dashboard' section with a large blue card labeled 'Panels'. Underneath the dashboard is a list of 'Available Reports':

Report Name	Icon
Panel for Practices	Tableau icon
Hospital Panel Enrollment Dashboard	Tableau icon
Pre/Post Analysis	Tableau icon with a question mark icon
Hospital Panel Enrollment Details	Tableau icon
Pre/Post Report Training	Question mark icon and play button icon
Visit Level Pre/Post Analysis	Tableau icon

At the bottom of the list, there are three icons: a Tableau icon, a question mark icon, and a play button icon, with the labels 'Tableau Reports', 'Documentation', and 'Training video' respectively.

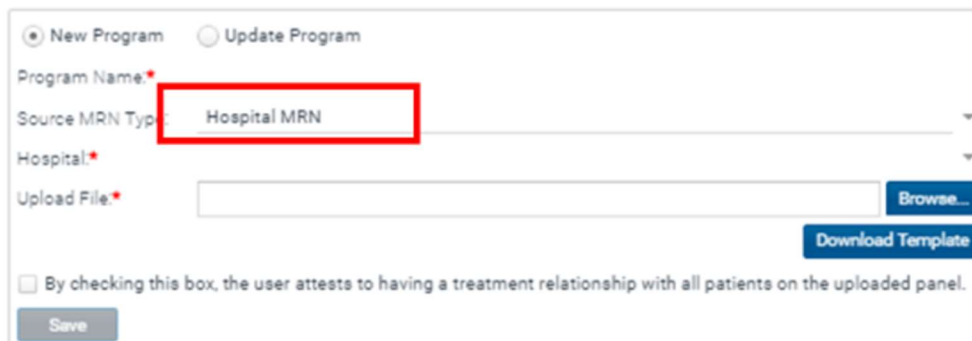
Uploading a New Program



1. Select whether you will be loading a panel using the Hospital MRN or the CEND MRN.

Program Editor

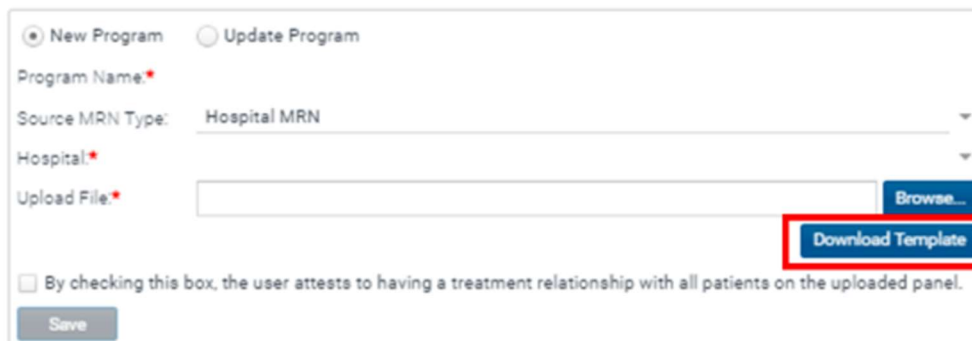
All use of this service must comply with laws and regulations which govern uses and disclosures of personally identifiable information, including but not limited to sensitive health information such as drug and alcohol treatment information protected by federal confidentiality regulations at 42 CFR Part 2.

A screenshot of the "Program Editor" form. At the top, there are two radio buttons: "New Program" (selected) and "Update Program". Below this are several fields: "Program Name" (required), "Source MRN Type" (dropdown menu set to "Hospital MRN" and highlighted with a red box), "Hospital" (dropdown menu), and "Upload File" (text input field with a "Browse..." button). There is also a "Download Template" button. At the bottom, there is a checkbox with the text "By checking this box, the user attests to having a treatment relationship with all patients on the uploaded panel." and a "Save" button.

2. Click "Download Template"

Program Editor

All use of this service must comply with laws and regulations which govern uses and disclosures of personally identifiable information, including but not limited to sensitive health information such as drug and alcohol treatment information protected by federal confidentiality regulations at 42 CFR Part 2.

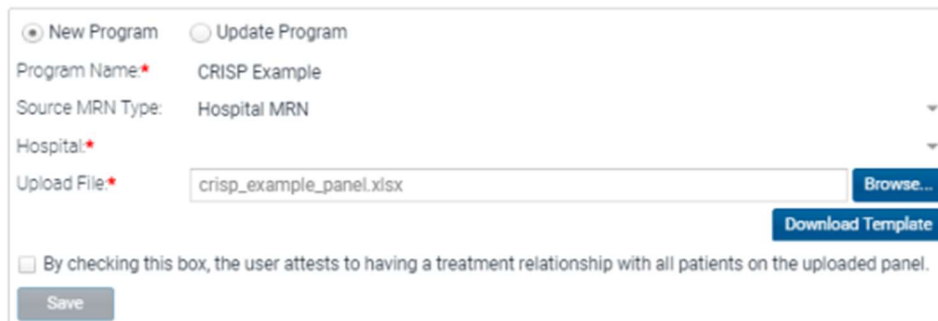
A screenshot of the "Program Editor" form, identical to the previous one. The "Download Template" button is highlighted with a red box.

3. Paste data into the Pre-Post template. Follow these specifications:
 - a. MRN

- i. Hospital MRN = Hospital Casemix MRN (should be no letters or leading zeros)
 - ii. CEND MRN = MRN submitted to CRISP for the CEND panel
 1. Please contact CRISP support (support@crisphealth.org) if you do not know the source code of your CEND panel.
 - b. Source Code = Unique CRISP Identifier for the Hospital or CEND panel. Hospital source codes are listed [at the end of this document](#). All MRNs must use the same source codes. The panel loader does not currently allow for more than one source code per panel.
 - c. Program Enrollment Date = Format date as MM/DD/YYYY
4. Save the template on your computer.
 5. Return to “Program Editor” in the CRS Portal
 6. Enter a Program Name.
 7. Select your hospital or CEND panel using the dropdown arrow.
 8. Click “Browse” to upload the template you just created.
 9. Check the treatment attestation checkbox.
 10. Click “Save.”

Program Editor

All use of this service must comply with laws and regulations which govern uses and disclosures of personally identifiable information, including but not limited to sensitive health information such as drug and alcohol treatment information protected by federal confidentiality regulations at 42 CFR Part 2.



The screenshot shows the 'Program Editor' interface. It has two radio buttons: 'New Program' (selected) and 'Update Program'. Below are fields for 'Program Name' (CRISP Example), 'Source MRN Type' (Hospital MRN), and 'Hospital'. The 'Upload File' field contains 'crisp_example_panel.xlsx' and has a 'Browse...' button. A 'Download Template' button is also present. At the bottom, there is a checkbox for attestation and a 'Save' button.

11. If your file or list of patients is invalid, you will get an upload failed notification.
12. If certain patients cannot be matched, you will have the option of downloading the unmatched patients, with explanation of why the patients were not matched. You will also be able to proceed with a partial upload of matched patients.
13. Select the newly created program under “Program Name” dropdown option on the first tab of the report.



The screenshot shows a dropdown menu for 'Program Name'. The options are '(All)', 'CRISP', and 'CRISP_EXAMPLE_PANEL (210023)'. The 'CRISP_EXAMPLE_PANEL (210023)' option is highlighted with a red box.

Panel Loader Notes

1. Some MRNs may be invalid and listed in a separate document after the panel is loaded (step 14). This is proper functionality as those MRNs do not exist in our

system. Please note that these MRNs have always been invalid (even when CRISP processed the panels).

2. The panel loader is sensitive to layout and formatting. Please load the data in the required format with same column headers that are provided in the template. The file type must be .XLSX; .CSV or other formats will not work.
3. Please note that when using an CEND panel that the CEND data in the report is not updated in real-time. For example, if an CEND panel was updated on 5/1/18, and the report contains CEND data through 4/15/18, the panel loader may not recognize all of the CEND MRNs, especially if those patients are new to the panel. The report will note how updated each data source is.
4. You are able to delete an uploaded panel using the delete button in the program editor. When you select 'Update Panel' in the program editor, select the panel you would like to delete and then click 'Delete'.
5. There is also the option to download the patients currently uploaded using the 'Download Patients' button

Report Sections

1. Summary
2. Panel Analysis
3. Relative Trend Analysis
4. Breakdown of Charges
5. Visit Details

Summary

The summary tab provides visits and charges overall and on average pre vs post. Each table is broken out by the time period 1, 3, 6 and 12 months and the number of panel members (the denominator) that have enough data to be a part of each time period analysis are located in the top right. This tab also has filters for the visit type, the most recent payer, and up to 3 chronic conditions. The table also shows the change between pre-and post for the metrics below.

Program Name Test Panel Program (2)		Chronic Conditions All Patients		Chronic Condition Operator <input checked="" type="radio"/> AND <input type="radio"/> OR	
Most Recent Payer All	Visit Type All	N/A		N/A	

	1 Month	3 Months	6 Months	12 Months
Total Number of Patients in Panel that could contribute to analysis	197	197	197	197

Time Period	Total Number of Patients with a visit - Pre %	Total Number of Patients with a visit - Post %	Total Number of Patients with a visit - Pre %	Total Number of Patients with a visit - Post %	Change in Number of Patients
1 Month	11	13	5.6%	6.6%	1.0%
3 Months	33	36	16.8%	18.3%	1.5%
6 Months	50	59	25.4%	29.9%	4.6%
12 Months	76	91	38.6%	46.2%	7.6%

Time Period	Total Number of Visits - Pre	Total Number of Visits - Post	Rate of Visits per 10 patients - Pre	Rate of Visits per 10 patients - Post	Visits Rate change
1 Month	17	18	0.9	0.9	0.1
3 Months	55	57	2.8	2.9	0.1
6 Months	135	137	6.9	7.0	0.1
12 Months	292	327	14.3	16.6	2.3

Time Period	Total Number of Patients with at least 1 visit pre or post	Total charges - Pre	Total charges - Post	Average Charge per patient - Pre	Average Charge per patient - Post	Total Charges per Patients change
1 Month	21	\$37,991	\$9,918	\$3,454	\$763	(\$2,691)
3 Months	69	\$97,031	\$39,427	\$2,840	\$1,095	(\$1,845)
6 Months	87	\$208,936	\$223,663	\$4,179	\$3,791	(\$388)
12 Months	117	\$467,098	\$459,158	\$6,146	\$5,046	(\$1,100)

Time Period	Total Number of Visits - Pre	Total Number of Visits - Post	Total charges - Pre	Total charges - Post	Average Charge per visit - Pre	Average Charge per visit - Post	Total Charges per Visit change
1 Month	17	18	\$37,991	\$9,918	\$2,235	\$551	(\$1,684)
3 Months	55	57	\$97,031	\$39,427	\$1,764	\$682	(\$1,072)
6 Months	135	137	\$208,936	\$223,663	\$1,548	\$1,633	\$85
12 Months	292	327	\$467,098	\$459,158	\$1,600	\$1,404	(\$252)

Panel Analysis

The panel analysis tab breaks down the pre and post charges, visits, and unique members by hospital. For this tab, you will need to use the filter 'Time Period' to select the time period you would like to view. There are also additional filters for most recent payer, visit type, sorting option, hospital name, and up to 3 chronic conditions.

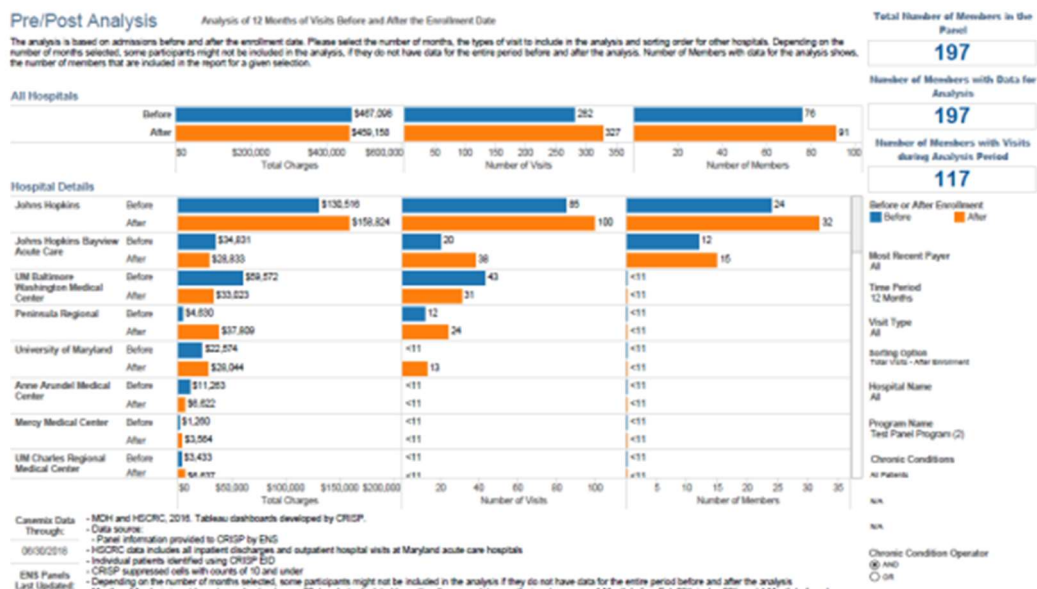


Figure 1. Panel Analysis Tab

The number of members with data for analysis is the number of patients on the panel who are eligible for inclusion for analysis. The number of patients with visits during the analysis period shows the number of patients with visits within the selected time period based on their enrollment date. In the example below, 117 patients on the panel had 12 months of data available before and after their enrollment date. Of those 117, 76 patients had visits in the pre-enrollment period, and 91 patients had visits in the post-enrollment period (Figure

2). Thought of as a Venn-diagram, there were 26 patients with visits only in the pre-enrollment period, 41 patients with visits only in the post-enrollment period and 50 patients with visits pre-enrollment and post enrollment (Figure 3).

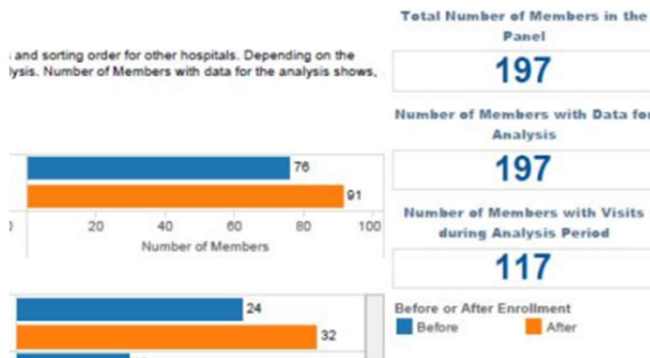


Figure 2. Detail view of Panel Analysis

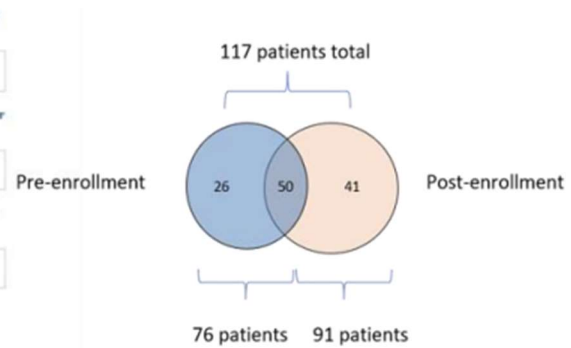


Figure 3. Panel patient breakdown

The middle graph compares the number of visits pre and post enrollment. In this example, the 76 patients had 282 visits in the pre-enrollment period, and 91 patients had 327 visits in the post-enrollment period. This enables you to compare the total number of visits as well as the average number of visits per patient.

Finally, the graph on the left compares charges pre and post enrollment. There were \$467,098 in charges in the pre-enrollment period, and \$459,158 in charges in the post-enrollment period. Using this information, you can look at the total charges for patients enrolled in the program as well as the average charges per patient in the pre-enrollment and post-enrollment period. The hospital details section enables you to view the same three graphs by hospital.

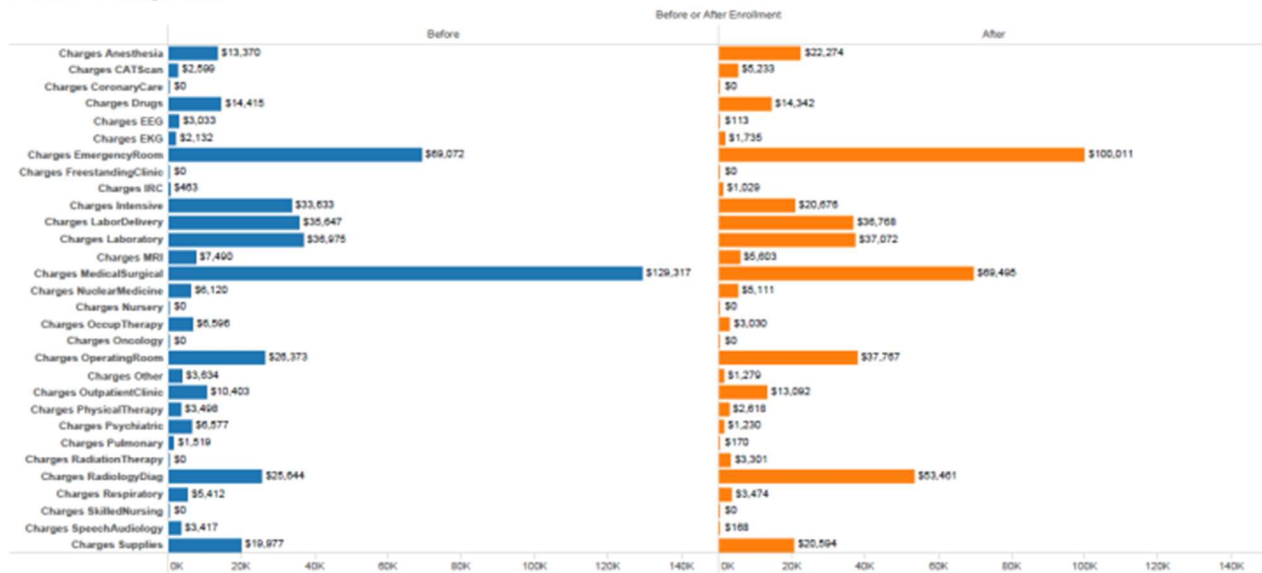
Relative Trend Analysis

The relative trend tab shows the selected trend metric (visits or charges) based on the number of months pre and post the enrollment date. There are also additional filters for most recent payer, visit type, hospital name, and up to 3 chronic conditions.

Breakdown of Charges

The breakdown of charges tab shows the total charges for each type of charge captured in the Casemix data pre and post enrollment. There are also filters for most recent payer, visit type, hospital name, and up to 3 chronic conditions.

Breakdown of Charges Sheet



Visit Details

The visit details section enables you to view visit level information for patients for up to 12 months pre and post enrollment in the program. The Crosstab button allows you to download the table into excel to perform calculations. For more detailed information on the variables, see the metric definitions section. Users can hover over the details hyperlink to view the additional fields such as diagnosis code descriptions, patient age, and last expected payer.

Please note: This is only available to viewers with PHI access.

Tips for Analyzing the Visit Details Data

- The visit level data does not exclude patients who have not been enrolled for the full analysis period. This is in an effort to provide users the most data available to them. It is important to note that the results in the visit level pre-post report will not match the patient counts in the summary and panel analysis tabs because these patients are not excluded. You must exclude patients who have not been enrolled for the full analysis period for the patient counts to align.
 - For example, if you are looking at a 3-month pre-post, with data through 12/31/18, and a patient enrolled on 11/1/2018:
- All visits in the three months prior will show
- All visits in the two months post will show
 - In the summary and panel analysis tabs, this patient would have been excluded because they do not have the full data run out for 3 months post.
- If you click the crosstab button in the visit details tab, additional demographics of age and payer are included, as well as diagnosis codes 4 and 5.

Calculating Readmission Rates

Due to the potentially small and/or non-representative nature of pre/post patient panels, the HSCRC discourages the calculation of all-cause readmission rates for RRIP and/or PAU-equivalent comparisons from these panels. Rates calculated on a subset of the population will be statistically unstable and potentially unrepresentative of broader population health improvement, resulting in a biased estimate. Instead, a control group, which should be representative of, but separate from the patients on the panel, may be required for comparison to evaluate the impact on the population's health. All-cause readmission rates are meant to be calculated at a broader population level.

If your organization has a large enough sample size and chooses to review pre- and post-intervention readmission rates for a particular panel of patients, you could calculate these using the numerator of observed readmissions generated by the Pre/Post visit level report divided by the total number IP visits (or the total number of IP and OBS visits for PAU).

Users must filter on IP (and OBS visits if applicable) and remove patients from the visit level export that have not been enrolled for the full analysis period. Users interested in this type of analysis should consider the statistical power of their analysis.

$$\frac{\text{Observed Number of Readmissions}}{\text{Total Number of IP visits}} = \text{Readmission Rate}$$

$$\frac{\text{Observed Number of PAU visits}}{\text{Total Number of IP and OBS visits}} = \text{PAU Rate}$$

Definitions/Acronym List

Filter Definitions

Filter	Definition
Program Name	Applying filter will restrict dashboard to the specific cohort of patients based on the panels the user has uploaded.
Time Period	Analysis Time Period as defined by: 1 Month = aggregated charges and visits for each patient 1 month prior to program enrollment date and 1 month after program enrollment date. 2 total months per patient. 3 Months = aggregated charges and visits for each patient 3 months prior to program enrollment date and 3 months after program enrollment date. 6 total months per patient.

	<p>6 Months = aggregated charges and visits for each patient 6 months prior to program enrollment date and 6 months after program enrollment date. 12 total months per patient.</p> <p>12 Months = aggregated charges and visits for each patient 12 months prior to program enrollment date and 12 months after program enrollment date. 24 total months per patient.</p>
Visit Type	<p>Applying filter will restrict dashboard to certain visits. Calculated at the visit-level. Defined as:</p> <ul style="list-style-type: none"> - ED = outpatient visits with ED charges and no OBS>23 charges - IP = all Inpatient visits - OBS>23 = outpatient visits with observation charges greater than 23 hours only - OP = all other visits that do not fall into ED, IP or OBS>23
Chronic Conditions	<p>Applying filter will restrict dashboard to only patients with the specified chronic condition. Patients are flagged with chronic conditions if they have the appropriate diagnosis codes in Casemix data, using CMS Chronic Condition Warehouse methodology. Calculated at the patient-level.</p>
Chronic Condition Operator	<p>Allows user to select patients with:</p> <ul style="list-style-type: none"> - Comorbid Chronic Conditions (AND) - Either one or another Chronic Condition (OR)
Most Recent Payer	<p>Applying filter will restrict dashboard to patients with specific payor on most recent visit. Calculated at the patient-level.</p>
Hospital Name	<p>Applying filter will restrict dashboard to visits at the specified hospital(s). Calculated at the visit-level.</p>
Sorting Option	<p>Allows user to sort hospital utilization by hospital A-Z or Z-A</p>
Trend Metric	<p>Allows user to select either Charges or Visits trend metric on the relative trend analysis tab.</p>

Metric Definitions

Metric	Definition
Pre-Enrollment Visit	Visit with Admit date before or on the same day as the program enrollment date.
Post-Enrollment Visit	Visit with Admit date after the program enrollment date.
Total Number of Members in the Panel	Total unique number of members on the panel that were matched to a CRISP EID. Static by Program Name.

Total Number of Members on Panel That Could Contribute to Analysis AND Number of Members with Data for Analysis	Total unique number of members on the panel who could contribute to the analysis, based on their program enrollment date and the available Case mix data.
Number of Members with Visits during Analysis Period	Total unique number of members with at least one visit within the Time Period. This is the number of members that are contributing to the analysis.
Total Number of members with 1+ Visits – Pre	Total unique number of members with at least one visit pre-enrollment.
Total Number of members with 1+ Visits – Post	Total unique number of members with at least one visit post enrollment.
Total number of Visits – Pre	Total number of Visits Pre-enrollment.
Total number of Visits – Post	Total number of Visits Post-enrollment.
Total Number of patients with at least 1 Visit	Total number of patients with at least one visit during the Time Period.
Total Charges	Total charges for all visits.
Total Visits	Unique number of visits.
Breakdown of Charges Sheet	Breakdown of charges per HSCRC data submission requirements .
Panel MRN	MRN uploaded to pre-post report via the program loader
Enrollment Date	Date patient was enrolled in the program according to the information provided to the program loader
Admit Date	Date of admission for that visit
Discharge Date	Date of discharge for that visit
Charges	Total charges associated with that visit
Service Line	Primary service line according to APR DRG for inpatient visits and EAPG for ED visits
Diagnosis 1-5	ICD-10 codes for 1st -5th diagnoses for that visit
Is Planned Admission	If the visit is a planned admission per CMS Planned Readmission Algorithm
Is Readmission Index Visit	If the visit an index visit for a readmission, according to the HSCRC RRIP logic, https://hscrc.maryland.gov/Pages/init-readm-rip.aspx

Readmission Date	Date of readmission that is associated with the index visit
Is PAU	If the visit is a Potentially Avoidable Utilization according to HSCRC PAU logic, https://hscrc.maryland.gov/Pages/PAU-Savings.aspx
Is PQI	If the visit is a Prevention Quality Indicator according to AHRQ. PQIs are a component of the PAU logic. https://www.qualityindicators.ahrq.gov/Modules/pqi_resources.aspx

Source Codes

Account Name	Source Code
Adventist Rehabilitation Hospital of Maryland	ARHM
Anne Arundel Medical Center	AAMC
Atlantic General Hospital	AGH
Baltimore Washington Medical Center	UMMS_BWMC
Bon Secours Hospital	BSB
Calvert Health Medical Center, Inc.	CVMH
Carroll Hospital Center	CHC
Doctors Community Hospital	DCH
Fort Washington Medical Center	FWMC
Frederick Memorial Hospital	FMH_ID
Garrett Regional Medical Center	GCMH
Greater Baltimore Medical Center	GBMC
Harford Memorial Hospital	HARM
Holy Cross Hospital	HCH
Holy Cross Hospital Germantown	HCH_GT
Howard County General Hospital	HCGH
Johns Hopkins Bayview Medical Center	JHH_BVIEW
Johns Hopkins Hospital	JHH
McCready Health	MCMH
Medstar Franklin Square Medical Center	MEDSTAR_FSH
Medstar Good Samaritan Hospital	MEDSTAR_GSH
Medstar Harbor Hospital	MEDSTAR_HHC
Medstar Montgomery Medical Center	MGH
Medstar Southern Maryland Hospital Center	SMH
Medstar St. Mary's Hospital	STMH
Medstar Union Memorial Hospital	MEDSTAR_UMH
Mercy Medical Center	MHS
Meritus Medical Center	MMC
Mt. Washington Pediatric Hospital	MWPH
Northwest Hospital Center	LBH_NWH

Peninsula Regional Medical Center	PRMC
Saint Agnes Hospital	SAH
Shady Grove Adventist Hospital	ADVSGAH
Sinai Hospital of Baltimore	LBH_SHB
Suburban Hospital	SUBURBAN
Union Hospital of Cecil County	UHCC
University of Maryland Charles Regional Medical Center	CMC
University of Maryland Laurel Regional Hospital	LRH
University of Maryland Medical Center (UMMC)	UMMS_UMMC
University of Maryland Medical Center Midtown Campus	UMMS_MGH
University of Maryland Prince George's Hospital Center	PGHC
University of Maryland Rehabilitation and Orthopaedic Institute	UMMS_KERNAN
University of Maryland Shore Medical Center at Chestertown	UMMS_CHSTR
University of Maryland Shore Medical Center at Easton	UMMS_EASTON
University of Maryland St. Joseph Medical Center	SJMC
Upper Chesapeake Medical Center	UCMC
Washington Adventist Hospital	ADVWAH
Western Maryland Health System	WMHS