# Analytic Plan: ISP Utilization

## Project Details

### Lead Investigator/s

Mark Gritz, Perry Dickinson, Miriam Dickinson

### Project Team Members

Carter Sevick, Kim Wiggins

### Research Objective(s)

Do PCMPs that participated in ISP have a improved outcomes for attributed members compared to members atttributed to PCMPs that did not participate in ISP?

*Email on\_\_\_ from MG: One thing I would like to get a sense of is the distribution of the number of attributed members for each PCMP by ISP participation and FQHC status.  I am thinking Min, 5%, 10%, 25%, 50% 75%, 90%, 95% and Max for each of the 4 groups for SFYs 18-19, 19-20, 20-21 and 21-22.*

*The next step is to understand the stability of member attribution to PCMPs by these same 4 categories.  I am thinking % of ever attributed members to a PCMP attributed for all 4 years, 3 of the 4 years, 2 of the 4 years and 1 of the 4 years.*

### Time Period

July 1 2015 – June 30 2022

### Study Design

Time Frame *(e.g. cross-sectional, longitudinal, retrospective cohort, cohort):*

### Patient, Practice Cohorts/Subjects

#### Inclusion Criteria

Health First Colorado Members ages <= 64 a.o 6/30 (18/19, 19/20, 20/21, and 21/22), having:

* at least one month of eligibility for Health First Colorado
* not continuously enrolled in a physical health managed care plan
* attributed to a CU Medicine primary care practice PCMP in any of SFYs

Claims Data for members identified above:

* Time Range: 07/01/2015 - 06/30/2022
* Claims data 07/01/2015 - 06/30/2018 to be used to develop risk adjustments for model
* Claims data 07/01/2018 - 06/30/2022 to be used in analysis

#### Exclusion Criteria

Dental

#### Study Site

## Data Sources, References

Data

1. Bidm db

Reference Files

1. Analytic Plan[[1]](#footnote-1)
2. Data Specs, Measures[[2]](#footnote-2)

## OUTCOMES, Measures, Metrics

### Context

Attribution to PCMPs / Trends in Monthly Attribution, as measured by:

1. Number of Unique Individuals attributed at any time in FY
2. Number of Unique Individuals attributed 6mo or more in FY
3. Number of Unique Individuals attributed 6mo or more in all FY’s

Member Characteristics

1. Number of months eligible for Health First Colorado
2. Number of months eligible and enrolled in a physical health managed care plan

### HCPF Data Measure Outcomes

|  |  |  |  |
| --- | --- | --- | --- |
| **Level** | **Outcome** | **Measure** | **Metric** |
| **Primary** | **Cost** |  | **PMPM Total FFS cost of care (excluding Dental)** |
| **Primary** | **Util** | **Behav Health** | **# of other encounters in a month** |
| Secondary | Util | Primary care | # of PC visits in a month |
| Secondary | Util | Primary care | # of Telehealth Services in a month |
| Tertiary | Util | Primary care | # of STBH Services (CPT codes) in a month |
| Tertiary | Util | Primary care | # of SBIRT Services (CPT codes) in a month |
| Tertiary | Util | Primary care | Diagnosis codes of SBIRT Services (CPT codes) in a month |
| Secondary | Cost | Primary care | PMPM cost of PC |
| Secondary | Util | ED | Utilization of # of ED visits in a month |
| Tertiary | Cost | ED | PMPM cost of ED services |
| Tertiary | Util | Hospitalizations | Utilization # of hospital services in a month |
| Tertiary | Cost | Hospitalizations | PMPM cost of hospitalizations |
| Secondary | Cost | Pharmacy | PMPM cost of prescriptions |
| Secondary | Utilization | Behav Health | # of Capitated ED visits in a month |
| Tertiary | Utilization | Behav Health | # of capitated hospitalizations in a month |
|  |  |  |  |

## VARIABLES

libname bhjt 'X:\HCPF\_SqlServer\queries';

options fmtsearch=(bhjt);

data medlong1; set bhjt.medicaidlong\_bidm; run;

data meddemog1; set bhjt.medicaiddemog\_bidm; run;

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | lev | Description | type | notes, source |
| orgtyp | pr | source: medlong1  FQHC, RHC, Indian Health Service, SBHC, Other | categorical, factor |  |
| dob | pt | source: meddemog1 |  |  |
| age | pt | source: meddemog1, added  0-64 a/o 6/30 in each respective FY | continuous | created from dob |
| age\_include | pt | 0: No  1: Yes | binary / keep flag | admin |
| rethnic\_hcpf |  | source: meddemog1  Use new HCPF categories | categorical, factor |  |
| county /  enr\_cnty | pt | source: meddemog1 OR  source: medlong1 – enr\_cnty  Use majority months elig HFColorado |  | same?? |
| county\_count | pt | for above |  |  |
| RCCO/RAE | pt | determined by County of residence |  |  |
| Budget Group |  | use rules budget group tables STBH\_table\_updated030622.xlsx |  |  |

## Context: Trends in Monthly Attribution to PCMPS

Steps

Folders & Files

|  |  |  |
| --- | --- | --- |
| Folder | Contents | File |
| 01 background | meeting notes | notes\_meetings\_emails.txt > August 28, 2022 |
|  |  |  |

Results

## Context: Member Characteristics

Steps

Folders & Files

|  |  |  |
| --- | --- | --- |
| Folder | Contents | File |
| 01 background | meeting notes | notes\_meetings\_emails.txt > August 28, 2022 |
| 02 code | -get clients in age range from meddemog1  -select variables | 01\_getClients.sas |
|  |  |  |

Results

### Question 1

Steps[[3]](#footnote-3)

## DATA ANALYSIS

Some general analytic approaches (expand and modify as needed).

1. *Setting and subjects.* Usually start by describing the sample and addressing issues of external and internal validity
   1. Generate frequency distributions and summary statistics (e.g. means, sd, median, rates) on outcome variables, sociodemographic and clinical variables, and other relevant variables of interest.
      1. For continuous outcomes, examine distributions to determine whether normality assumptions hold or if transformations or other approaches may be needed.
   2. Are the patients in this clinic similar to target population?
      1. Usually start by computing descriptive statistics for sample – frequencies, means (sd)
   3. Are refusals similar to participants?
      1. If possible, compare participants to non-participants: t-tests, chi-square tests, or just compute 95% CI on means and proportions for participants
   4. Are dropouts similar to completers (longitudinal designs)?
      1. Compare dropouts to completers and assess for differences in baseline covariates and outcomes using chi-square tests, t-tests, Kendall’s tau
      2. Also determine whether there is differential dropout by study group. For longitudinal designs this will help determine whether the data are MCAR, MAR, or MNAR. The first two are ignorable but analytic requirements differ; the last is non-ignorable. Variables related to missingness need to be included in the analysis.
   5. If an RCT, compare treatment groups on key baseline variables using chi-square tests and t-tests
      1. This will help determine which covariates are potential confounders and need to be included in the analysis.
2. Bivariate analyses (parametric/nonparametric, correlations vs. categorical statistics)
3. Multivariate analyses
   1. Choice of model and rationale (e.g. logistic regression, linear regression, survival analysis, factor analysis)
   2. Strategy for c*ovariate identification and selection.* Screen by domains (e.g. sociodemographic, clinical, etc) and retain all independent variables that are associated with the outcome at ≈ p<.20 for inclusion in initial multivariate models. Final models will include covariates that are associated with missingness (if longitudinal), treatment group, or the outcome (at ≈ p<.15 in multivariate models, depending on sample size).
   3. Assessment of appropriateness/fit of model
   4. Strategies to validate model (split sample, separate sample, etc.)

**Analyses to address study questions/hypotheses.**

Some text here will help with writing later on. This would be a good place to mention specific analyses (e.g. multivariate linear regression, etc) and highlight pros and cons or issues that need to be addressed

H1.

The primary outcome for this analysis is XXX. (see draft for examples)

H2.

H3.

Include tables if possible

Next steps, meetings, assignment of responsibilities, etc:

# APPENDIX

## PreAnalysis Complete Workflow

|  |  |  |
| --- | --- | --- |
| 0 | meeting / background | reviewed file ‘CTLP Medicaid Clinic IDs.xlsx’  - tab ‘Data Specs’  - tab ‘PCMP#s’  - tab ‘Measures’ |
| 1 | Code file | 02 code/01\_pcmp\_attr\_CUMedicine.sas |
| 2 | import practice file | 01 background/pcmps\_CUMedicine.xlsx |
| 2a | dataset | ctlp.pcmps\_cu  - pcmp  - medicaid\_npi  - ctlp (binary, y/n)  - name |
| 3 | filter medlong for practice ids | import medlong filtered for ID’s in 2a |
| 4 | merge ds from step 2 | saved final result as:  ctlp.pcmp\_cu\_ctlp |
| 4 | frequencies | ctlp & practice ID’s  ctlp 0 = 311,250  ctlp 1 = 114, 407  pcmp\_loc\_ID  Count Pct CumulCount Cumulative pct  152855 77,201 18.1% 77,201 18.1%  153211 11,269 2.6% 88,470 20.8%  159567 5,815 1.4% 94,285 22.2%  164606 71,877 16.9% 166,162 39.0%  164763 37,040 8.7% 203,202 47.7%  164764 13,654 3.2% 216,856 50.9%  164768 33,373 7.8% 250,229 58.8%  164769 18,769 4.4% 268,998 63.2%  164771 77,367 18.2% 346,365 81.4%  167691 79,292 18.6% 425,657 100.0%  Not found:  19808, 51820072, 4200085 (last one expected) |
| 5 | export to .xlsx |  |
| 6 | send to mark |  |

## Question 1 Code, steps, results (freq/s, etc)

|  |  |  |
| --- | --- | --- |
| 1 | Subset CU Medicine Practices from medlong\_bidm | medlong1 raw counts a/o 09/06/22  177234990 obs  # Variable Type Len Format Informat Label  1 clnt\_id Char 7 $255. $255. MCAID\_ID  2 month Num 8 DATE9. Month period of eligibility  3 aid\_cd Char 7 $255. $255. Qualifying aid code for eligibility assignment  4 FED\_POV\_LVL\_PC Num 8 17.5 17.5 % of federal poverty level  5 FED\_POV\_LVL\_CD Char 7 $FED\_POV\_LVL\_CD. $255. % of federal poverty level group  6 eligGrp Num 8 \_ELIGGRP\_. Eligibility group  7 DISBLD\_IND Char 1 DISBLD\_IND  8 SS\_DSBLTY\_INS\_IND Char 1 $1. $1. SS\_DSBLTY\_INS\_IND  9 SPLM\_SCRTY\_INCM\_IND Char 1 SPLM\_SCRTY\_INCM\_IND  10 SSI\_1619B\_IND Char 1 $1. $1. SSI\_1619B\_IND  11 enr\_cnty Char 2 County of enrollment  12 managedCare Num 8 Managed care flag  13 title19\_ENR Num 8 Title 19 status by enrolment file  14 title19\_AID Num 8 Title 19 status by aid code  15 BUDGET\_GROUP Num 8 BUDGET\_GROUP. HCPF budget reporting group assignment (incomplete)  16 aid\_cd\_1 Char 3 $255. other aid code 1  17 aid\_cd\_2 Char 3 $255. other aid code 2  18 aid\_cd\_3 Char 3 $255. other aid code 3  19 aid\_cd\_4 Char 3 $255. other aid code 4  20 aid\_cd\_5 Char 3 $255. other aid code 5  21 pcmp\_loc\_ID Char 7 $255. $255. PCMP location ID code  22 pcmp\_loc\_type\_cd Char 7 $PCMPTYPE. $255. PROV\_TYP\_CD  23 fost\_aid\_cd Char 3 $255. $255. AID\_CD  24 dual Num 8 Has MEDICARE eligibility in the month, may not be from the qualifying AID Code  25 rae\_assign Num 8 Client assigned to a RAE  STEP TWO ADD SFY variable |
| 2 | Flag practices ctlp, non-ctlp |  |
| 3 | Subset members:   * 0-64 a/o June 30 for each SFY 18/19, 19/20, 20/21, 21/22 * attributed to a CU Medicine primary care practice * at least one month of eligibility for HealthFirst Colorado * not continuously enrolled in a physical health managed care plan | sas file: 01\_getClients   1. Get client’s ages, subset   FROM:  meddemog1 (raw) a/o 09/06/22:  records:  obs 2991591, var 7  proc contents:  # Variable Type Len Format Informat Label  1 clnt\_id Char 11 $255. $255. MCAID\_ID  6 county Char 7 $255. $255. RSDNC\_CNTY\_CD  2 dob Num 8 DATE9.  5 ethnic Char 3 $255. $255. ETHNC\_CD  3 gender Char 3 $255. $255. GNDR\_CD  4 race Char 7 $255. $255. RACE\_CD  7 rethnic\_hcpf Num 8 |
| 4 | Pull claims |  |
|  |  |  |

1. S:/FHPC/DATA/HCPF\_Data\_files\_SECURE/Kim/isp/isp\_utilization/01 background/ [↑](#footnote-ref-1)
2. S:/FHPC/DATA/HCPF\_Data\_files\_SECURE/Kim/isp/isp\_utilization/01 background/Analysis\_Specifications [↑](#footnote-ref-2)
3. See appendix code / steps [↑](#footnote-ref-3)