# Claims-Based Physician Affiliations

This process should run once per month, dependent on monthly commercial claims updates.

Code can be found here: <https://github.com/kmay-dhc/physician_org_affiliations>

Steps

* 001\_Monthly\_Claims\_EdgeLists

This step pulls claims data aggregated by physician, facility, and month for 2016 and later.

*Commercial* – data is aggregated in BQ. Claim count is based on unique DPID + date of service.

*Medicare* – data is aggregated in SSMS, pulling info from each available MEDICARE\_SAF\_*yyyy* database. If the database contains table/view “dbo.CLAIMS\_FILE”, it is assumed that yearly data is available for that year. Otherwise, if the database contains table/view “dbo.CLAIMS\_FILE\_QTRLY”, it is assumed that only quarterly data is available.

Tables populated (in BQ):

*Commercial*

* DS\_WORK.RENDERING\_BILLING\_AFFILIATIONS
  + Billing NPI must have a corresponding DefHC ID
  + Rendering NPI is not the same as the Billing NPI
* DS\_WORK.RENDERING\_FACILITY\_AFFILIATIONS
  + Service facility NPI must have a corresponding DefHC ID
  + Service facility NPI is not the same as the billing NPI (to avoid double counting)

*Medicare*

* DS\_WORK.MCR\_ATTENDING\_ORGANIZATION\_AFFILIATIONS
* DS\_WORK.MCR\_OPERATING\_ORGANIZATION\_AFFILIATIONS
  + Operating NPI is not the same as the Attending NPI (to avoid double counting)
* DS\_WORK.MCR\_RENDERING\_ORGANIZATION\_AFFILIATIONS
  + Rendering NPI is not the same as the Attending NPI or the Operating NPI (to avoid double counting)
* 002\_Combine\_Affiliations

Data from step 1 is combined into a single table in BQ: DS\_WORK.PHYSICIAN\_ORG\_AFFILIATIONS.

This table contains claims data aggregated by physician NPI and organization DefHC ID (1 record per affiliation)

Calculations are performed to create input variables for affiliation scoring:

* Minimum and maximum Medicare claim dates
* Minimum and maximum commercial claim dates
* Average, minimum, and maximum month lag (# of calendar months between claims; avg lag of 1 means there are claims every calendar month)
* Months (# of calendar months with claims)
* Months denominator (# of calendar months between min and max claim dates)
* Medicare months
* Commercial Months
* Commercial claims
* Medicare claims

Percentage of physician claim totals by month and unique patients per relationship are calculated for each relationship. These metrics are used to determine if the affiliation passes thresholds for inclusion.

* 003\_In\_Product\_Affiliations

Current physician/org affiliations are pulled from Database5 (Physician NPI + DefHC ID)

Hospitals

DefinitiveHC.HOSPITAL.PHYSICIAN\_COMPARE\_NPI\_TO\_HOSPITAL\_AFFILIATION

Physician Groups

DefinitiveHC.HOSPITAL.PHYSICIAN\_COMPARE\_PHYSICIANS\_TO\_GROUP\_PRACTICE

*Surgery Centers\**

*DefinitiveHC.HOSPITAL.PHYSICIAN\_COMPARE\_PHYSICIANS\_TO\_GROUP\_PRACTICE*

*DefinitiveHC.HOSPITAL.AMBULATORY\_SURGERY\_CENTERS (join on PG\_PARENT\_ID)*

*Imaging Centers\**

*DefinitiveHC.HOSPITAL.PHYSICIAN\_COMPARE\_PHYSICIANS\_TO\_GROUP\_PRACTICE*

*DefinitiveHC.HOSPITAL.IMAGING (join on PG\_PARENT\_ID)*

*\*Note: PG Parent affiliation relationships will be removed.*

* 004\_Decay\_Rates

Rate of decay is calculated for each affiliation, assuming that 90% decay will occur at t = max month lag + 1 month

Rate of decay = ( 0.1 ^ [1/(Max month lag+1)] ) - 1

If the max month lag is null, assume value of 1.

Current month lag is determined by current available data date:

* + Commercial date: Max claim date - 3 months + 1 day (data is available through 5/31/2020; commercial date = 3/1/2020).
  + Medicare date: Max claim date + 1 day (data is available through 12/31/2019; Medicare date = 1/1/2020)

If the most recent claim is commercial, calc is based off the commercial date. If the most recent claim is Medicare, calc is based off the Medicare date.

“Remaining value” is calculated based on the current month lag and decay rate. If remaining value is < 0.1, the affiliation is deemed as no longer current.

* 005\_Scoring

A numeric score is computed for all claims-based affiliations.

Score = Log(% Months Medicare) + Log(% Months Commercial) + Log(Months) + Log(Claims) – Log(Avg Month Lag)

Score Bucket = ceiling( [score - min score] / [(max score - min score) / 10] )

* 006\_Final\_Table

Compiles final table with all data needed for production

* 007\_NonClaim\_Affiliations

Inserts hospital and PG affiliations from other sources (no claims).

Updates inclusion flag based on selected thresholds.