IRIS XML FTE Calculations

I. Overview:

IRIS submissions do not record FTE counts directly. Rather, they record residents and their assignments, from which FTE counts can be calculated. This document outlines how to calculate the FTE contribution represented by a single IRIS assignment. The FTE totals represented by an entire IRIS submission can then be obtained by summing the FTEs from all of its individual assignments.

This document is primarily intended for use by software developers and auditors in order to allow them to replicate CMS's FTE calculations. Individual providers are encouraged to use a third-party vendor when preparing their IRIS submissions.

See accompanying documentation for definitions of the IRIS XML fields referenced in this document: timePercentage, imePercentage, ipfDpuPercentage, irfDpuPercentage, gmePercentage, initialResidencyPeriodCode, residencyCode, residencyYearsCompleted, nonProviderSitePercentage, isNewProgramFte, imeException, and isDisplacedResidentFte.

A note on rounding and precision: Rounding should only be employed when displaying final results to users. Rounding should never be employed in any intermediate steps of FTE calculations. This includes aggregates. All sums, such as summing assignment-level counts in order to get submission-level totals, should be done by summing full-precision values NOT by summing values that have already been rounded. All FTE calculations are done using high-precision floating point arithmetic. When displaying FTE counts, the CMS implementation rounds values to six decimal places.

II. IME FTEs (IPPS, IRF & IPF):

The formula for calculating the IPPS IME FTEs represented by a single IRIS assignment is defined as:

$$\text{Assignment's IPPS IME FTE Contribution}$$
$$=$$
$$\text{timePercentage} \times \text{imePercentage} \times \frac{<\text{ number of days in assignment }>}{<\text{ number of days in cost reporting period }>}$$

IPF (Psych) and IRF (Rehab) FTEs use the same formula, except substituting "imePercentage" with "ipfDpuPercentage" and "irfDpuPercentage" respectively.

Note that this formula is based on the length of the provider's cost reporting period, so a single resident is theoretically able to contribute 1.0 FTEs in a short cost reporting period. This is different from the GME FTE calculation, which is based on calendar years.

III. DGME FTEs

The formula for calculating the DGME FTEs represented by a single IRIS assignment is defined as:

$$\text{Assignment's Unweighted GME FTE Contribution}$$
$$=$$
$$\text{timePercentage} \times \text{gmePercentage} \times \text{ASSIGNMENT\_DURATION}$$

$$\text{Assignment's Weighted GME FTE Contribution}$$
$$=$$
$$\text{Unweighted GME FTE Contribution} \times \text{GME\_WEIGHT\_FACTOR}$$

1) Exception: International Dental Residents (Medical School Code 99998) always receive zero weighted and unweighted GME FTEs.
2) ASSIGNMENT_DURATION is defined as the percentage of a full <u>calendar year</u> covered by the assignment. If you ignore leap years then this is simply <days in assignment>/365. See full definition below.
3) GME_WEIGHT_FACTOR is either 1 or 0.5 depending on whether the assignment qualifies for full GME reimbursement or not. See full definition below.
4) Note: Since the GME calculation is based on calendar years rather than the length of the cost reporting period, for long cost reporting periods a single resident can contribute more than 1.0 GME FTEs (e.g.: 1.08 FTEs for a 13 month period).

A. GME Weight Factor

1) For calculating the GME Weight Factor, the resident's Initial Residency Period (IRP) length is determined by each resident's IRP residency code (initialResidencyPeriodCode). A reference table containing the IRP lengths for each residency type code is included in the accompanying documentation.
2) If the assignment's residency years completed value (residencyYearsCompleted) is greater than or equal to the resident's IRP length, then GME_WEIGHT_FACTOR is 0.5 (unless bonus years apply, see below). Otherwise GME_WEIGHT_FACTOR is 1.0.
3) Bonus Years: If an assignment's residency type is geriatric, preventative medicine, or child neurology, the approved residency length should be increased by 2 years for purposes of weighting that specific assignment. (42 CFR 413.79 (a); (2), (3), and (4))
   a) For example, a resident might be weighted for three years before starting geriatrics, at which point they would receive two "bonus" years of unweighted contribution.
   b) Bonus years can cause unweighted reimbursement to exceed the normal 5-year limit.
   c) Bonus years may start or end in the middle of an academic year and/or the middle of a cost reporting period, so the calculation must check whether each individual assignment qualifies for bonus years or not.
   d) Calculation:
      i) Looking across all assignments for the current resident, <u>including all years/providers that have ever claimed the resident</u>, find the earliest assignment begin date where the assignment's residency type code (residencyCode) qualifies for bonus years. Consider that date the BONUS_YEARS_START_DATE. Consider the BONUS_YEARS_END_DATE to be that start date plus 2 years.
      (1) More specifically, BONUS_YEARS_END_DATE = BONUS_YEARS_START_DATE + 24 months - 1 day.

ii) If the current assignment has an assignment residency type (residencyCode) that qualifies for bonus years AND the current assignment's begin date occurs within the bonus years date range (inclusive of the start and end dates), then apply a GME_WEIGHT_FACTOR of 1.0.

iii) Notes:

(1) Since the bonus year range calculation looks across all FYEs and Providers, this means that one submission's data can affect the FTE counts on a different submission.

(2) The bonus years clock starts even if resident is currently unweighted.

e) A reference table listing which specific residency codes are considered eligible for bonus years is included in the accompanying documentation

B. GME FTEs: ASSIGNMENT_DURATION - Dealing with Leap Years

Since GME FTEs are based on the length of a calendar year rather than the length of the cost reporting period, the formula needs to account for leap years. IRIS uses a simple approach for this:

If the provider's Medicare cost reporting period contains the leap day (February 29th) then:

ASSIGNMENT_DURATION = <number of days in assignment> / 366

Else, if the cost reporting period does NOT contain the leap day:

ASSIGNMENT_DURATION = <number of days in assignment> / 365

IV. FTE Subcategory Breakdowns

The FTEs represented by an IRIS assignment may be broken down into more granular categories, based on additional fields that are captured for each assignment, in order to determine their contribution to specific lines in the cost report. Examples of subcategory breakdowns include: Displaced Residents, New Programs, Non-Provider Site Settings, Primary Care, etc.

The table below presents the formulas for calculating the FTEs that a single assignment contributes to each subcategory. The formulas in this table use the following variables:

For the following variables, refer to IME and GME FTE formulas presented above:
IRIS_ASGN_FTE_IME = Assignment's Total IME FTE Contribution (IPPS+IPF+IRF)
IRIS_ASGN_FTE_IME_IPPS = Assignment's IME IPPS Contribution
IRIS_ASGN_FTE_IME_IPF = Assignment's IME IPF Contribution
IRIS_ASGN_FTE_IME_IRF = Assignment's IME IRF Contribution
IRIS_ASGN_FTE_UNWEIGHTED_GME = Assignment's Unweighted GME FTE Contribution
IRIS_ASGN_FTE_WEIGHTED_GME = Assignment's Weighted GME FTE contribution

For the following true/false variables, refer to the residency type codes reference table in the accompanying documentation:
IRIS_ASGN_FTE_ALLOPATHIC = True if the assignment residency type qualifies as Allopathic.
IRIS_ASGN_FTE_OSTEOPATHIC = True if the assignment residency type qualifies as Osteopathic.
IRIS_ASGN_FTE_PODIATRIC = True if the assignment residency type qualifies as Podiatric.
IRIS_ASGN_FTE_DENTAL = True if the assignment residency type qualifies as Dental.
IRIS_ASGN_FTE_OB_GYN = True if the assignment residency type qualifies as OB/GYN.
IRIS_ASGN_FTE_PRIMARY_CARE = True if the assignment residency type qualifies as Primary Care.

ID	FTE Subcategory	Formula
1	IME IPPS Allopathic and Osteopathic	If ASGN_FTE_ALLOPATHIC OR ASGN_FTE_OSTEOPATHIC Then ASGN_FTE_IME_IPPS Else 0
2	IME IPPS Dental and Podiatry	If ASGN_FTE_PODIATRIC OR ASGN_FTE_DENTAL Then ASGN_FTE_IME_IPPS Else 0
3	IME IPPS New Program	If isNewProgramFte = true and (either no imeExceptions are present or an imeException of "IPPS" is present) Then ASGN_FTE_IME_IPPS Else 0
4	IME IPPS New Program - Allopathic and Osteopathic	If isNewProgramFte = true AND (IRIS_ASGN_FTE_ALLOPATHIC OR IRIS_ASGN_FTE_OSTEOPATHIC) Then ASGN_FTE_IME_IPPS Else 0
5	IME IPPS Displaced Residents	If isDisplacedResidentFte = true Then ASGN_FTE_IME_IPPS Else 0
6	IME IPF Contribution for New Programs	If isNewProgramFte = true and (either no imeExceptions are present or an imeException of "IPF" is present) Then ASGN_FTE_IME_IPF Else 0
7	IME IPF Displaced Residents	If isDisplacedResidentFte = true Then ASGN_FTE_IME_IPF Else 0
8	IME IRF Contribution for New Programs	If isNewProgramFte = true and (either no imeExceptions are present or an imeException of "IRF" is present) Then ASGN_FTE_IME_IRF Else 0
9	IME IRF Displaced Residents	If isDisplacedResidentFte = true Then ASGN_FTE_IME_IRF Else 0
10	Unweighted GME FTE Contribution at Nonprovider Site (ASGN_FTE_UW_GME_NON_PROV_SITE)	nonProviderSitePercentage x ASGN_FTE_UNWEIGHTED_GME
11	Unweighted GME FTE Contribution at Provider Site (ASGN_FTE_UW_GME_PROV_SITE)	ASGN_FTE_UNWEIGHTED_GME - ASGN_FTE_UW_GME_NON_PROV_SITE
12	Unweighted GME FTE Contribution at Nonprovider Site - Primary Care	If (IRIS_ASGN_FTE_PRIMARY_CARE) Then ASGN_FTE_UW_GME_NON_PROV_SITE Else 0
13	Unweighted GME FTE Contribution at Nonprovider Site - Non-Primary Care	If **NOT** (IRIS_ASGN_FTE_PRIMARY_CARE) Then ASGN_FTE_UW_GME_NON_PROV_SITE Else 0

ID	FTE Subcategory	Formula
14	Unweighted GME FTE Contribution at Provider Site – Primary Care	If (IRIS_ASGN_FTE_PRIMARY_CARE) Then ASGN_FTE_UW_GME_PROV_SITE Else 0
15	Unweighted GME FTE Contribution at Provider Site - Non-Primary Care	If **NOT** (IRIS_ASGN_FTE_PRIMARY_CARE) Then ASGN_FTE_UW_GME_PROV_SITE Else 0
16	Unweighted GME Allopathic and Osteopathic (ASGN_FTE_UW_GME_AO)	If ASGN_FTE_ALLOPATHIC OR ASGN_FTE_OSTEOPATHIC Then ASGN_FTE_UNWEIGHTED_GME Else 0
17	Unweighted GME Dental and Podiatry	If ASGN_FTE_PODIATRIC OR ASGN_FTE_DENTAL Then ASGN_FTE_UNWEIGHTED_GME Else 0
18	Unweighted GME Non-Displaced Resident Allopathic and Osteopathic	If (ASGN_FTE_ALLOPATHIC OR ASGN_FTE_OSTEOPATHIC) AND isDisplacedResidentFte = false Then ASGN_FTE_UW_GME_AO Else 0
19	Unweighted GME Displaced Resident Allopathic and Osteopathic	If (ASGN_FTE_ALLOPATHIC OR ASGN_FTE_OSTEOPATHIC) AND isDisplacedResidentFte = true Then ASGN_FTE_UW_GME_AO Else 0
20	Unweighted GME New Program Allopathic and Osteopathic	If isNewProgramFte = true AND no imeExceptions are present Then IRIS_ASGN_FTE_UW_GME_AO Else 0
21	Weighted GME A&O Total	If ASGN_FTE_ALLOPATHIC OR ASGN_FTE_OSTEOPATHIC Then ASGN_FTE_WEIGHTED_GME Else 0
22	Weighted GME A&O Primary (Includes OB/GYN)	If (ASGN_FTE_ALLOPATHIC OR ASGN_FTE_OSTEOPATHIC) AND (ASGN_FTE_PRIMARY_CARE OR ASGN_FTE_OB_GYN) Then ASGN_FTE_WEIGHTED_GME Else 0
23	Weighted GME A&O Other	If (ASGN_FTE_ALLOPATHIC OR ASGN_FTE_OSTEOPATHIC) AND NOT (ASGN_FTE_PRIMARY_CARE OR ASGN_FTE_OB_GYN) Then ASGN_FTE_WEIGHTED_GME Else 0
24	Weighted GME Dental and Podiatry	If ASGN_FTE_PODIATRIC OR ASGN_FTE_DENTAL Then ASGN_FTE_WEIGHTED_GME Else 0
25	Weighted GME Dental	If ASGN_FTE_DENTAL Then ASGN_FTE_WEIGHTED_GME Else 0

ID	FTE Subcategory	Formula
26	Weighted GME Podiatry	If ASGN_FTE_PODIATRIC Then ASGN_FTE_WEIGHTED_GME Else 0

27	Weighted GME New Program Primary	If (ASGN_FTE_ALLOPATHIC OR ASGN_FTE_OSTEOPATHIC)
		   AND (ASGN_FTE_PRIMARY_CARE OR ASGN_FTE_OB_GYN)
		   AND isNewProgramFte = true AND no imeExceptions are present
		Then ASGN_FTE_WEIGHTED_GME
		Else 0

28	Weighted GME New Program Other	If (ASGN_FTE_ALLOPATHIC OR ASGN_FTE_OSTEOPATHIC)
		   AND NOT (ASGN_FTE_PRIMARY_CARE OR ASGN_FTE_OB_GYN)
		   AND isNewProgramFte = true AND no imeExceptions are present
		Then ASGN_FTE_WEIGHTED_GME
		Else 0

29	Weighted GME Displaced Resident Primary	If (ASGN_FTE_ALLOPATHIC OR ASGN_FTE_OSTEOPATHIC)
		   AND (ASGN_FTE_PRIMARY_CARE OR ASGN_FTE_OB_GYN)
		   AND isDisplacedResidentFte = true
		Then ASGN_FTE_WEIGHTED_GME
		Else 0

30	Weighted GME Displaced Resident Other	If (ASGN_FTE_ALLOPATHIC OR ASGN_FTE_OSTEOPATHIC)
		   AND NOT (ASGN_FTE_PRIMARY_CARE OR ASGN_FTE_OB_GYN)
		   AND isDisplacedResidentFte = true
		Then ASGN_FTE_WEIGHTED_GME
		Else 0