FTE Estimation by Pay Period Dashboard Methodology Overview JHU Controller's Office 01/25/2017

Following is an overview explaining how FTE metrics are calculated for the Finance dashboard. In the accompanying attachments, you will also find examples for a variety of employee groups and work schedules. We welcome your questions and feedback, and encourage suggestions for improving the procedure.

I. FTE Defined

A common metric for measuring workforce size is FTE, which represents the number of *full-time equivalent employees* working during a specific period. FTE is calculated as the ratio of the number of hours worked to the standard work week for a full-time employee.

For example, assuming a 37.5 hour work week, if three people worked 37.5, 22 and 16 hours during a week, they would equal two FTE for the week (75.5 / 37.5 = 2 FTE).

The procedure explained below is similar to this method as it calculates FTE for each employee paid during every payroll cycle, and extrapolates these estimates to create monthly and quarterly FTE metrics.

II. Why FTE is Useful

Historically, we have used employee head count to measure changes in employee base. While this is a useful metric, it is a quarter-end, point-in-time snapshot of active employees that is incomplete because it does not provide insight into activities during the quarter, and it cannot be tied to cash compensation paid.

On the other hand, FTE estimates yield very granular metrics, especially when generated for each pay period and person and extrapolated to create monthly and quarterly estimates.

Using this method we can account for activity during the quarter including terminations, new hires, schedule changes, part-time employees, concurrent employment and cross-divisional salary allocations. Additionally, we can compare FTE to cash compensation for a given month or quarter.

III. Overview of FTE Calculation Procedure

The most accurate method for calculating FTE is to analyze each pay period. By summarizing each individual's base paid amount for the period and comparing it to HR master data for base pay and employment percent, it is possible to estimate FTE with a high degree of accuracy.

- A. For each pay period, base pay totals are calculated for every person receiving base pay during the period.
- B. HR master data for base pay and employment percent is compared to the summarized payroll distribution base pay to calculate FTE.
- C. Procedures vary by pay schedule and type (semi-monthly/weekly, salaried/hourly, 37.5/40 hours per week) and by employee type (full-time, part-time, limited, casual, student) for maximum accuracy of estimates.
- D. Concurrent employment occurs when an employee holds multiple positions during a pay cycle. For example, a full-time employee may also work part-time as an instructor. When there is concurrent employment, an individual's FTE estimate for the pay cycle may exceed 1 FTE because he/she fills multiple jobs. Concurrent employment is the only situation where individuals can exceed 1 FTE.

Note: concurrent employment occurs in only about 1% of cases, as shown in the accompanying analysis of the 7/15/2015 semi-monthly payroll.

IV. Labor Distribution and FTE

After estimating each individual's pay period FTE, the estimate is divided into clinical, sponsored and non-sponsored buckets using their labor distribution. For example, if someone is paid 50% from clinical accounts and 25% from sponsored and non-sponsored accounts, their FTE is prorated to these categories. This allows for analysis of changes to employee counts and funding sources for current and historical periods.

Note: Retroactive payroll cost transfers will cause fluctuation in sponsored and non-sponsored percentages when salary is transferred between grants and non-sponsored accounts. Total FTE for a pay period will not change for historical periods however.

V. Home Division and Other Division

By default, dashboard FTE metrics are reported by responsible department, which is based on the responsible cost center from which the salary was paid. This provides an accurate snap-shot of the number of employees who are supported by a division or department. It is possible in the Finance dashboard, however, to distinguish between employees who are supported by their home division and those who are supported outside their home division.

For example, if someone from Public Health is working on grants in both Public Health and Medicine, it is possible to view the percent of their FTE that is supported by each division. Similarly, if a divisional business officer wants to see who they support from other divisions, they may do so using the appropriate dashboard filters.

VI. Students

A. Post-Docs, House Staff, Medical Interns/Residents and Medical Trainees can be counted as 1 FTE. Calculating FTE for these individuals uses base pay only. Employment percent master data is excluded because we are unsure if it accurately reflects an individual's work schedule.

For example, if HR master data lists base pay amount as \$2,500, and they are paid \$2,500, they are counted as 1 FTE.

B. Graduate and undergraduate students are limited to 20 hours per week, and are capped at a maximum of 1/2 FTE for each position.

In some cases, students may have multiple positions during a pay cycle. When this occurs, it is possible for their total pay period FTE to exceed 0.5 or 1 FTE. For an example of this, see *Graduate Student with Multiple Jobs* in the attached examples.

Semi-Monthly Pay Analysis July 15, 2015 Pay Period Report Date: 1/25/2017

0

2

ß

This overview of the 7/15/2015 semi-monthly payroll shows how many people work one or multiple jobs during a pay cycle, and provides insight into the job classifications used when estimating FTE.

	Semi-Monthly Pa	y Overview
Туре	Employees	% of Total
One Job During Pay Period	22,025	99%
Concurrent Employment*	289	1%
	22,314	100%

99% of employees had only 1 job during pay period

* Includes records with overlapping HR master data that may not be concurrent employment.

	One Jo	ob During Pay Pe	riod
Employee Type	Salaried	Hourly	Total
Full-Time	15,055	8	15,063
Part-Time	256	1	257
Limited	72	32	104
Casual/On Call	524	1,215	1,739
Staff Total	15,907	1,256	17,163
House Staff	866		866
Medical Trainees	26		26
Post-Docs	1,374	2	1,376
Post-Doc/House Staff Total	2,266	2	2,268
Graduate	1,424	429	1,853
Undergraduate	120	621	741
Undergrad/Graduate Total	1,544	1,050	2,594
Grand Total	19,717	2,308	22,025

The majority of employees paid semi-monthly are full-time salaried (15,055).

	Concurrent E	mployment
Employee Type	# People	FTE Estimate
Full-Time	77	63
Part-Time	20	8
Limited	7	2
Casual/On Call	107	40
Students	172	99
	289 people	212

Only 77 full-time employees had concurrent employment or over-lapping master data.

Full-Time Salaried Employees

July 2015 Pay Period examples as of 4/24/2016

Report Date: 1/24/2017

		From Payroll D	Distribution			HR	Master Data	Calculated Field	HR Master Data	Calculated Field	Calculated Field
Full-Time Salaried	Payroll Area	Pay Period Ending	Wage Type	А	mount Paid		Base Salary	Pct Paid	Employment Pct	Pay Period FTE	Month FTE
Full-Time Semi-Monthly	S1	7/15/2015	1000	\$	3,008	\$	3,008	100%	100%	1.00	
Full-Time and worked 100% time during July.	S1	7/31/2015	1000	\$	3,008	\$	3,008	100%	100%	1.00	
Month FTE = 1.0										2.00	1.00
Full-Time Semi-Monthly (Not 100%)	S1	7/15/2015	1000	\$	1,273	\$	1,273	100%	80%	0.80	
Full-Time and worked 80% during both semi-pay periods in July.	S1	7/31/2015	1000	\$	1,273	\$	1,273	100%	80%	0.80	
Month FTE = 0.8										1.60	0.80
Full-Time Semi-Monthly (Schedule Changed During Month)	S1	7/15/2015	1000	\$	2,836	\$	2,836	100%	80%	0.80	
Worked 80% first semi-pay; worked 100% second semi-pay of July	S1	7/31/2015	1000	\$	3,545	\$	3,545	100%	100%	1.00	
Month FTE = 0.9										1.80	0.90
Full-Time Semi-Monthly Pay. Employee Terminated During the Month	S1	7/15/2015	1000	\$	2,417	\$	2,417	100%	100%	1.00	
Employee Terminated on 7/25/2015, reducing monthly FTE	S1	7/31/2015	1000	\$	1,410	\$	2,417	58%	100%	0.58	
Month FTE = .79										1.58	0.79

Equations for Calculated Fields

Pct Paid= Amount Paid / Base SalaryPay Period FTE= Pct Paid * Employment PctMonth FTE= Sum of Pay Period FTE/2

Calculation Example

Pct Paid:	3,008/3,0	08 = 100%
Pay Period FTE:	100% * 10	00% = 1.0 FTE
Month FTE:	2/2	= 1.0 FTE

If Amount Paid > Base Salary then Pct Paid = 100%

FTE Calculation Examples - Using each pay period to calculate FTE for July 2015 Full-Time Hourly Employees

July 2015 Pay Period examples as of 4/24/2016

Report Date: 1/24/2017

		From F	Payroll Distr	ibution			HR Master Data		Calculated Field	HR Master Data	Calculated Field	Calculated Field
Full-Time Hourly	Payroll Area	Pay Period Ending	Wage Type	Concurrent Employment	А	mount Paid	н N	lourly Nage	Hours Worked	Standard Work Hours	Pay Period FTE	Month FTE
Full-Time Semi-Monthly paid hourly	S1	7/15/2015	1100	No	\$	480	\$	10.00	48.00	86.67	0.55	
Month FTE = .78	S1	7/31/2015	1100	No	Ş	960	Ş	10.00	96.00	86.67	1.00	0.78

Equations for Calculated Fields

Hours Worked = Amount Paid / Hourly Wage Pay Period FTE = Hours Worked / Standard Work Hours Month FTE = Sum of Pay Period FTE/2

Calculation Example

 Hours Worked:
 480/10
 = 48

 Pay Period FTE:
 48/86.67
 = .55 FTE

 Month FTE:
 1.55/2
 = 0.78 FTE

Standard Work Hours

86. 67 = 40 hour work week 81.50 = 37.5 hour work week

If hours worked > standard work hours then pay period FTE = 1.

Part-Time, Limited and Casual Employees

July 2015 Pay Period examples as of 4/24/2016

Report Date: 1/24/2017

		From Payroll D	istribution			HR Mast Data	er Calculated Field	HR Master Data	Calculated Field	Calculated Field
Part-Time - Salaried	Payroll Area	Pay Period Ending	Wage Type	A	mount Paid	Base Salary	Pct Paid	Employment Pct	Pay Period FTE	Month FTE
Part-Time Semi-Monthly Part-Time and worked 53% time during both July pay periods Month FTE = 0.53	S1 S1	7/15/2015 7/31/2015	1000 1000	\$ \$	1,070 1,070	\$ 1, \$ 1,	070 100% 070 100%	53.3% 53.3%	0.53 0.53 1.07	0.53
Part-Time Semi-Monthly. Part Time Instructor (Wage Type 1002) Month FTE = 0.51	51 51	7/15/2015 7/31/2015	1002 1002	\$ \$	833 833	\$ \$	333 100% 333 100%	50.7% 50.7%	0.51 0.51 1.01	0.51

		From Payroll D			н	R Master Data	Calculated Field	HR Master Data	Calculated Field	Calculated Field	
Limited Employees - Salaried	Payroll Area	Pay Period Ending	Wage Type	A	mount Paid	Bas Ho	e Salary or urly Wage	Pct Paid	Emp Pct or Standard Work Hours	Pay Period FTE	Month FTE
Limited Salaried Limited employee using employment percent to calculate FTE Month FTE = 0.27	S1 S1	7/15/2015 7/31/2015	1000 1000	\$ \$	1,500 1,500	\$ \$	1,500 1,500	100% 100%	26.7% 26.7%	0.27 0.27 0.53	0.27
Limited Employee with both Part-Time Instructor and Hourly Pay Employee switched from Part-Time Instructor to Hourly Worked 48 hours during 7/31 pay period Month FTE = 0.33	S1 S1	7/15/2015 7/31/2015	1002 1100	\$ \$	241 1,931	\$ \$	1,656 40	15% 48 hrs	48.0% 81.25	0.07 0.59 0.66	0.33

		From Payroll D			HR	R Master Data	Calculated Field	HR Master Data	Calculated Field	Calculated Field	
Casual Employees - Salaried	Payroll Area	Pay Period Ending	Wage Type	Aı	mount Paid	1	Base Salary	Pct Paid	Employment Pct	Pay Period FTE	Month FTE
Casual Employee with 100% employment percent Same as rules for egroups 1, 2, 3 salaried. Use employment percent Month FTE = 1.0	S1 S1	7/15/2015 7/31/2015	1000 1000	\$ \$	4,222 4,222	\$ \$	4,222 4,222	100% 100%	100% 100%	1.00 1.00 2.00	1.00
Casual Employee paid from Wage type 1002. Part-Time Instructor Same as rules for egroups 1, 2, 3 salaried. Use employment percent Month FTE = 0.70	S1 S1	7/15/2015 7/31/2015	1002 1002	\$ \$	4,518 4,518	\$ \$	4,518 4,518	100% 100%	70% 70%	0.70 0.70 1.40	0.70

Equations for Salaried Calculated Fields

Pct Paid= Amount Paid / Base SalaryPay Period FTE = Pct Paid * Employment PctMonth FTE= Sum of Pay Period FTE/2

Equations for Hourly Calculated Fields

Hours Worked = Amount Paid / Hourly Wage Pay Period FTE = Hours Worked / Standard Work Hours Month FTE = Sum of Pay Period FTE/2

Concurrent Employment and Misc Other Examples

July 2015 Pay Period examples as of 4/24/2016

Report Date: 1/24/2017

		From Payroll D	istribution		HR Master Data	Calculated Field	HR Master Data	Calculated Field	Calculated Field
Concurrent Employment Full-Time and Casual	Employee Group	Pay Period Ending	Wage Type	Amount Paid	Base Salary	Pct Paid	Employment Pct	Pay Period FTE	Month FTE
Faculty that is both full-time employee and casual instructor	1	7/15/2015	1000	\$ 7,778	\$ 7,778	100%	100.00%	1.00	
FTE will exceed 1 FTE.	5	7/15/2015	1002	\$ 521	\$ 521	100%	53.07%	0.53	
Month FTE = 1.53								1.53	
	1	7/31/2015	1000	\$ 7,778	\$ 7,778	100%	100.00%	1.00	
	5	7/31/2015	1002	\$ 521	\$ 521	100%	53.07%	0.53	
								1.53	

3.06 **1.53**

		From Payroll L	Distribution		HR Master Data	Calculated Field	HR Master Data	Calculated Field	Calculated Field
Concurrent Employment	Employee	Pay Period	Wage	Amount	Hourly		Standard	Pay Period	Month
Casual Employee paid Hourly	Group	Ending	Туре	Paid	Wage	Hours worked	Work Hours	FTE	FTE
Casual Employee	5	7/15/2015	1100 \$	\$ 1,155	\$ 30.00	38.51	86.67	0.44	
Paid from multiple pernrs for the pay period	5	7/15/2015	1100 \$	\$ 350	\$ 50.00	7.00	86.67	0.08	
Pay Period FTE for 7/15/2015 = 0.87	5	7/15/2015	1100 \$	\$ 507	\$ 17.00	29.80	86.67	0.34	
						75.31		0.87	

		From Payroll D	istribution			HR Master Data	Calculated Field	HR Master Data	Calculated Field	Calculated Field
Full-Time and Part-Time in Same Pay Period	Employee	Pay Period	Wage	Α	mount	Base	Pct	Employment	Pay Period	Month
Not Concurrent Employment	Group	Ending	Туре		Paid	Salary	Paid	Pct	FTE	FTE
Full-Time and Part-Time in Same Pay Period	1	7/15/2015	1000	\$	1,238	\$ 2,083		100	1	
Pernr is the same	2	7/15/2015	1000	\$	846	\$ 2,083		100	<u> </u>	
Pay Period FTE for 7/15/2015 = 1.0				\$	2,083	\$ 2,083	1	100.00	1.00	

Equations for Salaried Calculated Fields

Pct Paid= Amount Paid / Base SalaryPay Period FTE= Pct Paid * Employment PctMonth FTE= Sum of Pay Period FTE/2

Equations for Hourly Calculated Fields

Hours Worked = Amount Paid / Hourly Wage Pay Period FTE = Hours Worked / Standard Work Hours Month FTE = Sum of Pay Period FTE/2

Students who can be counted as 1 FTE - Post-Docs, Medical Trainees,

July 2015 Pay Period examples as of 4/24/2016

Report Date: 1/24/2017

Post-Docs Paid Hourly

Post Doc Paid Hourly

Month FTE = 0.57

Very few post-docs paid hourly

		From F	ayroll Distri	ibution		HR Master Data		Calculated Field	HR Master Data	Calculated Field	Calculated Field	
Post-Docs and House Staff Paid Salary	Payroll Area	Pay Period Ending	Wage Type	Concurrent Employment	A	Amount Paid		Base alary	Pct Paid	Employment Pct	Pay Period FTE	Month FTE
Post Docs - Salaried Semi-Monthly Paid full amount both pay periods Employment percent not used for this group. Use percent paid only	S1 S1	7/15/2015 7/31/2015	1000 1000	No No	\$ \$	1,273 1,273	\$ \$	1,273 1,273	100% 100%		1.00 1.00 2.00	1.00
Month FTE = 1.0												
House Staff - Salaried Semi-Monthly Paid less than full amount (terminated 7/24/2016)	S1 S1	7/15/2015 7/31/2015	1000 1000	No No	\$ \$	2,399 1,400	\$ \$	2,399 2,399	100% 58%		1.00 0.58	
Month FTE = 0.79											1.58	0.79
	From Payroll Distribution						HR	Master Data	Calculated Field	HR Master Data	Calculated Field	Calculated Field
Pact Docs Paid Hourly	Payroll	Pay Period	Wage	Concurrent	А	mount	Hourly Standard					Month

Type

1100

1100

Employment

No

No

Paid

396

432

\$

\$

Wage

9

9

Hours Worked

44.00

48.00

Work Hours Pay Period FTE

81.25

81.25

FTE

0.57

0.54

0.59

1.13

Area

S1

S1

Ending

7/15/2015

7/31/2015

Equations for Salaried Calculated Fields	

Pct Paid = Amount Paid / Base Salary Pay Period FTE = Pct Paid Month FTE = Sum of Pay Period FTE/2

Equations for Hourly Calculated Fields

Hours Worked = Amount Paid / Hourly Wage Pay Period FTE = Hours Worked / Standard Work Hours Month FTE = Sum of Pay Period FTE/2

Students Capped at .5 FTE - Undergraduate and Graduate Students

July 2015 Pay Period examples as of 4/24/2016

Report Date: 1/24/2017

		From F	ibution		HR Master Data		Calculated Field	HR Master Data	Calculated Field	Calculated Field		
Undergraduate and Graduate Students - Salaried Capped at 20 hours per week.	Payroll Area	Pay Period Ending	Wage Type	Concurrent Employment	Amount Paid		Base Salary		Pct Paid	(capped at 20 hours week)	Pay Period FTE	Month FTE
Graduate Assistant Paid Salary.	S1	7/15/2015	1000	No	\$	1,267	\$	1,267	100%	50%	0.50	
Reduce FTE by 50% because Is limited to 20 hours per week.	S1	7/31/2015	1000	No	\$	1,267	\$	1,267	100%	50%	0.50	
Month FTE = 0.50											1.00	0.50
Graduate Assistant Paid Salary.	S1	7/15/2015	1000	No	\$	663	\$	663	100%	50%	0.50	
Reduce FTE by 50% and also by pct paid.	S1	7/31/2015	1000	No	\$	373	\$	663	56%	50%	0.28	
Month FTE = 0.39											0.78	0.39

		From P	ayroll Distri	bution	HR Master Data	Calculated Field	HR Master Data	Calculated Field	Calculated Field	
Undergraduate and Graduate Students - Hourly	Payroll	Pay Period	Wage	Concurrent	ncurrent Amount Star					
Capped at 20 hours per week.	Area	Ending	Туре	Employment	Paid	Hourly Wage	Hours Worked	Work Hours	Pay Period FTE	Month FTE
Graduate Student Paid Hourly.	S1	7/15/2015	1100	No	1,260	30	42.00	81.25	0.50	
Pay Period FTE capped at 0.5 FTE	S1	7/31/2015	1100	No	1,350	30	45.00	81.25	0.50	
Month FTE = 0.50									1.00	0.5

	From Payroll Distribution						1aster ata	Calculated Field	Calculated Field	HR Master Data	Calculated Field	Calculated Field
Students with multiple pernrs but same egroup in the payroll period	Ba						Salary					
	Payroll	Pay Period	Wage	A	Amount		or			Standard		
	Area	Ending	Туре		Paid		y Wage	Hours Worked	Pct Paid	Work Hours	Pay Period FTE	Month FTE
Graduate Student with multiple jobs during pay period	S1	7/15/2015	1100	\$	1,320	\$	22	60.00		81.25	0.50	
Three jobs during pay period, each capped at 0.5 FTE	S1	7/15/2015	1100	\$	450	\$	25	18.00		81.25	0.22	
Pay Period FTE for 7/15/2015 = 1.22	S1	7/15/2015	1000	\$	1,217	\$	1,217		1		0.50	
											1 22	

Equations for Salaried Calculated Fields

Pct Paid= Amount Paid / Base SalaryPay Period FTE= Pct Paid (if > 0.5 then = 0.5)Month FTE= Sum of Pay Period FTE/2

Equations for Hourly Calculated Fields

Hours Worked = Amount Paid / Hourly Wage Pay Period FTE = Hours Worked / Standard Work Hours (if > 0.5 then = 0.5) Month FTE = Sum of Pay Period FTE/2

Bargaining Unit Employees

July 2015 Pay Period examples as of 4/24/2016

Report Date: 1/24/2017

		From Payroll D		н	R Master Data	Calculated Field	HR Master Data	Calculated Field	Calculated Field	
Bargaining Unit - Paid Weekly	Payroll Area	Pay Period Ending	Wage Type	Amount Paid		Hourly Wage	Hours Worked	Standard Work Hours	Pay Period FTE	Month FTE
Bargaining Unit - Full-Time	W1	7/5/2015	1100	\$ 745.92	\$	23.31	32.00	40.00	0.80	
Worked Reduced Time 1st week of July	W1	7/12/2015	1100	\$ 932.40	\$	23.31	40.00	40.00	1.00	
Month FTE = 0.95	W1	7/19/2015	1100	\$ 932.40	\$	23.31	40.00	40.00	1.00	
	W1	7/26/2015	1100	\$ 932.40	\$	23.31	40.00	40.00	1.00	
									3.80	0.95

		From Payroll Distribution						Calculated Field	HR Master Data	Calculated Field	Calculated Field
Bargaining Unit - Paid Weekly	Payroll Area	Pay Period Ending	Wage Type		Amount Paid		Hourly Wage	Hours Worked	Standard Work Hours	Pay Period FTE	Month FTE
Bargaining Unit - Part-Time	W1	7/5/2015	1100	\$	354.20	\$	17.71	20.00	40.00	0.50	
Worked 20 hours each week of July	W1	7/12/2015	1100	\$	354.20	\$	17.71	20.00	40.00	0.50	
Month FTE = 0.50	W1	7/19/2015	1100	\$	354.20	\$	17.71	20.00	40.00	0.50	
	W1	7/26/2015	1100	\$	354.20	\$	17.71	20.00	40.00	0.50	
										2.00	0.50

		From Payroll D			н	IR Master Data	Calculated Field	HR Master Data	Calculated Field	Calculated Field	
Bargaining Unit - Paid Weekly	Payroll	Pay Period	Wage		Amount Paid		Hourly	Hours Worked	Standard Work Hours	Pay Period ETE	Month FTF
Bargaining Unit - Casual	W1	7/5/2015	1100	Ś	348.71	Ś	12.27	28.42	40.00	0.71	
Only worked 2 weeks during July 2015	W1	7/12/2015	1100	\$	215.83	\$	12.27	17.59	40.00	0.44	
Month FTE = 0.29										1.15	0.29

Equations for Calculated Fields

Hours Worked = Amount Paid / Hourly Wage Pay Period FTE = Hours Worked / Standard Work Hours Month FTE = sum(Pay Period Fte) / # of weeks in month

Example

 Hours Worked:
 745.92/23.31 = 32.00

 Pay Period FTE:
 32/40
 = .80 FTE

 Month FTE:
 3.80/4
 = .95 FTE