Capacity Analysis: Using a Simple Metric to Tell Your Story

SIMULATION CENTER
STAFFING CAPACITY ANALYSIS WORKBOOK

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READINESS CHECKLIST

PEOPLE / DEPARTMENT READINESS *Acceptance and ease of data use/analysis by stakeholders, leadership, and staff*				
No.	ITEM	YES	NO	COMMENTS
1	There is a common commitment by stakeholders to using data to guide institutional improvement			
2	The institution's governing board requests and receives routine data on performance			
3	Top leadership utilizes data to answer "what if" questions			
4	Faculty, staff, and administrators see a clear connection between data provided and institutional planning			
5	Information Technology seeks to put data tools (e.g. software, hardware) in the hands of end users.			
6	Information Technology or department has adequate programming and/or data analytics expertise to meet the institution's demand for data.			
7	Frontline staff understand the purpose of workload data collection as a means to guide institutional improvement			
DATA COLLECTION READINESS *Data collection process and tools in place*				
No.	ITEM	YES	NO	COMMENTS
8	Implementation of data collection tools (software / hardware) for real-time or actual workload data			
9	Reliable extraction of retrospective data on simulation hours based on historical sampling of workload data			
DATA AVAILABILITY READINESS *Data needed to determine capacity is available*				
No.	ITEM	YES	NO	COMMENTS
10	Average number of hours per type of course/event			
11	Total number of full-time versus part-time staff			
12	Full-Time Equivalent (FTE) calculation of staff *(Regular Scheduled Hrs per Week / 40 Hours = FTE; Max = 1.0 FTE)*			
13	Average hours/week of accrued paid time off (PTO)			
14	General categories of simulation activity performed by staff in a Simulation Center			
15	Types of simulation activities that fit in to each general category			
16	Average hours/week spent in each general category of simulation activity			
17	Categories of simulation course/events based on level of effort			

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WORKSHEET A: FTE CALCULATIONS *List only positions included in your simulation-specific operational budget*

POSITION	Hours / Week	Hours / Week → Full-Time Equivalent (FTE) Conversion
	Sub Total	
	Sub Total	
	Sub Total	
	TOTAL	

EXAMPLE POSITIONS	Example Hrs / Week	Example Hours / Week → FTE Conversion
Sim Ops Specialist	40	40 / 40 = 1.00 FTE
Sim Ops Specialist	20	20 / 40 = 0.50 FTE
Sim Education Specialist	40	40 / 40 = 1.00 FTE
Sim Education Specialist	30	30 / 40 = 0.75 FTE
Sim Manager	40	40 / 40 = 1.00 FTE
Administrative Support	20	20 / 40 = 0.50 FTE
Student Worker	12	12 / 40 = 0.30 FTE
	Sub Total (SOS)	1.50 FTE
	Sub Total (Educator)	1.75 FTE
	Sub Total (Other)	1.80 FTE
	GRAND TOTAL	5.05 FTE

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WORKSHEET B: FTE % ALLOCATION OF SIMULATION ACTIVITIES *Complete Worksheet B for each position identified on Worksheet A*

ROLE/POSITION: _____ **ROLE/POSITION:** Simulation Ops Specialist (1.0 FTE)

**Collecting actual data through time tracking for a period of time supports accuracy of time spent per type of activity.*

CATEGORIES OF ACTIVITY PER ROLE	AVG HRS/WK (FTE %)	TYPES OF ACTIVITY
DIRECT SIM ACTIVITIES *Course/Event Execution and Delivery Activities*		
DIRECT SIM ACTIVITIES *Course/Event Development and Planning Activities*		
INDIRECT SIM ACTIVITIES *Administrative and Operational Support Activities*		
PAID TIME OFF ACCRUAL		
NOTES		

CATEGORIES OF ACTIVITY	EX AVG HRS/WK (FTE %)	EXAMPLE TYPES OF ACTIVITY
DIRECT Course/Event Execution and Direct Delivery Activities	20 0.5 FTE (20/40)	Setup
		Sim delivery time
		Teardown
		Pilot, practice runs
		Debrief time
DIRECT Course/Event Development and Planning Activities	10 0.25 FTE (10/40)	Planning meetings
		Moulage/event prep
		Video production
		Testing/experimenting
		Documentation
INDIRECT Center Administrative, Operational Support Activities	6 0.15 FTE (6/40)	Staff meetings
		Staff training
		Inventory management
		Policies, procedures
		Maintenance, repairs
PAID TIME OFF	4 0.10 FTE	4 hrs/week PTO accrual
Notes		

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WORKSHEET C: CALCULATING TOTAL CAPACITY for DIRECT SIM ACTIVITIES *Results from Worksheet A plus Worksheets B*

ROLE	**FTE** *Worksheet A*	**% Direct Sim Activities** *Delivery & Execution From Worksheet B*	**% Direct Sim Activities** *Development & Planning From Worksheet B*	**Total Capacity** *Hrs/Week*
MAXIMUM CAPACITY:				
Recommended **TARGET CAPACITY:** *(80% of Max)*				

ROLE	FTE	% Direct Sim Activities *Delivery & Execution*	% Direct Sim Activities *Development & Planning*	**Maximum** Capacity *Hrs/Week*
Educator	1.75	25% (25% x 1.75 x 40 hrs = **17.5** hrs)	50% (50% x 1.75 x 40 hrs = **35**)	52.5
SOS	1.50	50% (50% x 1.50 x 40 hrs = **30**)	25% (25% x 1.50 x 40 hrs = **15**)	45
Admin	1.80	10% (10% x 1.80 x 40 hrs = **7.2**)	10% (10% x 1.80 x 40 hrs = **7.2**)	14.4
Faculty	2.00	50% (50% x 2 x 40 hrs = **40**)	25% (25% x 2 x 40 hrs = **20**)	60
MAXIMUM CAPACITY:		94.7	77.2	171.9
Recommended TARGET CAPACITY: (80% of max)		75.8 (94.7 x .8)	61.8 (77.2 x .8)	137.6 (171.9x.8)

In this example, the total number of FTEs from **Worksheet A** was combined with the percentage FTE allocation for direct simulation activities from **Worksheet B** to calculate the *total capacity for direct simulation activities in terms of hours per week*. This sample center has a **maximum capacity of 171.9 hours** developing and planning (77.2 hours) & delivering and executing (94.7 hours) per week. This sample center has determined its target capacity to be 80% of the maximum, which equals a **target capacity of 137.6 hours** developing and planning (61.8 hours) & delivering and executing (75.8 hours) per week.

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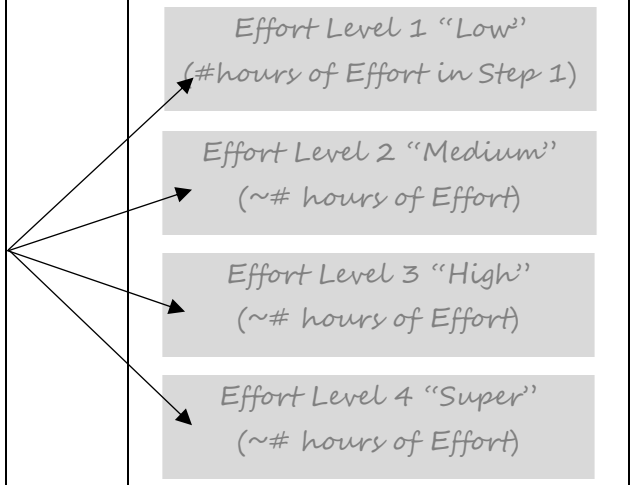
WORKSHEET D: DETERMINING LEVEL OF EFFORT

STEP 1: "TYPICAL" COURSE/EVENT HOURS and ASSIGNED EFFORT

List characteristics that define most of your "typical" Course/Events.		**State the Total Time Allocation Per "Typical" Course/Event**

STEP 2: IDENTIFY OTHER FACTORS THAT INCREASE EFFORT

STEP 3: DETERMINE LEVELS OF EFFORT BASED ON STEP 2 CRITERIA



*Alternatively, apply a multiplier to the "typical" Low Effort course/event to determine additional levels. *(e.g. 2x multiplier for Medium, 3x High, 4x for "Super")*

STEP 4: ASSIGN LEVEL OF EFFORT FOR EVERY EVENT/COURSE SCHEDULED FOR THE WEEK

**See next page for example.*

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WORKSHEET D: DETERMINING LEVEL OF EFFORT

STEP 1: "TYPICAL" COURSE/EVENT HOURS and ASSIGNED EFFORT

List characteristics that define most of your "typical" Course/Events.	Example Event: Event run time (3 hours) Setup (1 hour) Tear down time (0.5 hours) Equipment/manikin prep time, minor equipment substitutions, room layout, Document review and update time (0.5 hours)	**State the Total Time Allocation Per "Typical" Course/Event** Example Event: 5 hours

STEP 2: IDENTIFY OTHER FACTORS THAT INCREASE EFFORT

New SP course
New manikin-based course
Extended length of event
Extra # of staff required
Off-hours, off-site location
Significant moulage, model building
Extra setup time, teardown time
Complex clinical equipment
Extra inventory/supply management
Significant manikin/equipment modifications
Significant IPE coordination

STEP 3: DETERMINE LEVELS OF EFFORT BASED ON STEP 2 CRITERIA

Effort Level 1 "Low"
(~5 hours of effort)

Effort Level 2 "Medium"
(~10 hours of effort)

Effort Level 3 "High"
(~15 hours of effort)

Effort Level 4 "Super"
(~20+ hours of effort)

*Alternatively, apply a multiplier to the "typical" Low Effort course/event to determine additional levels. *(e.g. 2x multiplier for Medium, 3x High, 4x for "Super")*

STEP 4: ASSIGN LEVEL OF EFFORT FOR EVERY EVENT/COURSE SCHEDULED FOR THE WEEK

Hypothetical Week 1

3 – Recurring SP course on end-of-life care (10 ea)
1 – Recurring course on respiratory distress (10)
2 – Virtual SP course on Breaking Bad News for Urology residents (20 ea)
2 –Rapid Response Team boot camp w/minor refresh on nursing skills workshop (15 ea)
2 – Overhaul of acute decompensating patient for new learner group (20 ea)
2 – New OR Team Training (20 ea)
1 – New IPE Neonatal Resuscitation (20)
1 – Labor & Delivery in situ (20)

The events/courses listed above require 230 Efforts Hours

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WORKSHEET E: C-D = TOTAL WEEKLY CAPACITY

To determine whether your simulation center is over or under its capacity for any given week, subtract the Required Effort from **Worksheet D** from the Maximum Available Effort (and Target Available Effort, if applicable) from **Worksheet C**. A positive results indicates being under capacity while a negative number indicates being over capacity.

CAPACITY ANALYSIS			
Maximum Available Effort/week **(Worksheet C)**	*Target Available Effort/week* **(Worksheet C)**	*Subtract Total Required Effort/week* **(Worksheet D, Step 4)**	**RESULT** *Under (+) or Over (-)*
	(Leave this space blank)		
(Leave this space blank)			

CAPACITY ANALYSIS			
Maximum Available Effort/week **(Worksheet C)**	*Target Available Effort/week* **(Worksheet C)**	*Total Scheduled Effort/week* **(Worksheet D, Step 4)**	**TOTAL** *Over or Under*
171.9 hours	(Leave this space blank)	230 hours	-58.1 Over max capacity by 58.1 hours
(Leave this space blank)	137.6 hours	230 hours	-92.4 Over target capacity by 92.4 hours

In this example, the number of **Effort Hours (230)** required to facilitate the list of sample events in **Step 4 of Worksheet D** exceed both the **Maximum Effort (171.9 hours)** and **Target Effort (137.6 hours)** calculated on **Worksheet C**. Complete this process for each time period to be analyzed. It should be noted that this example does not delineate between roles and no distinction is made between the roles listed on **Worksheet A.** Simulation centers that wish to take a "deeper dive" into their capacity may choose to complete a capacity analysis for each distinct FTE using this same process.

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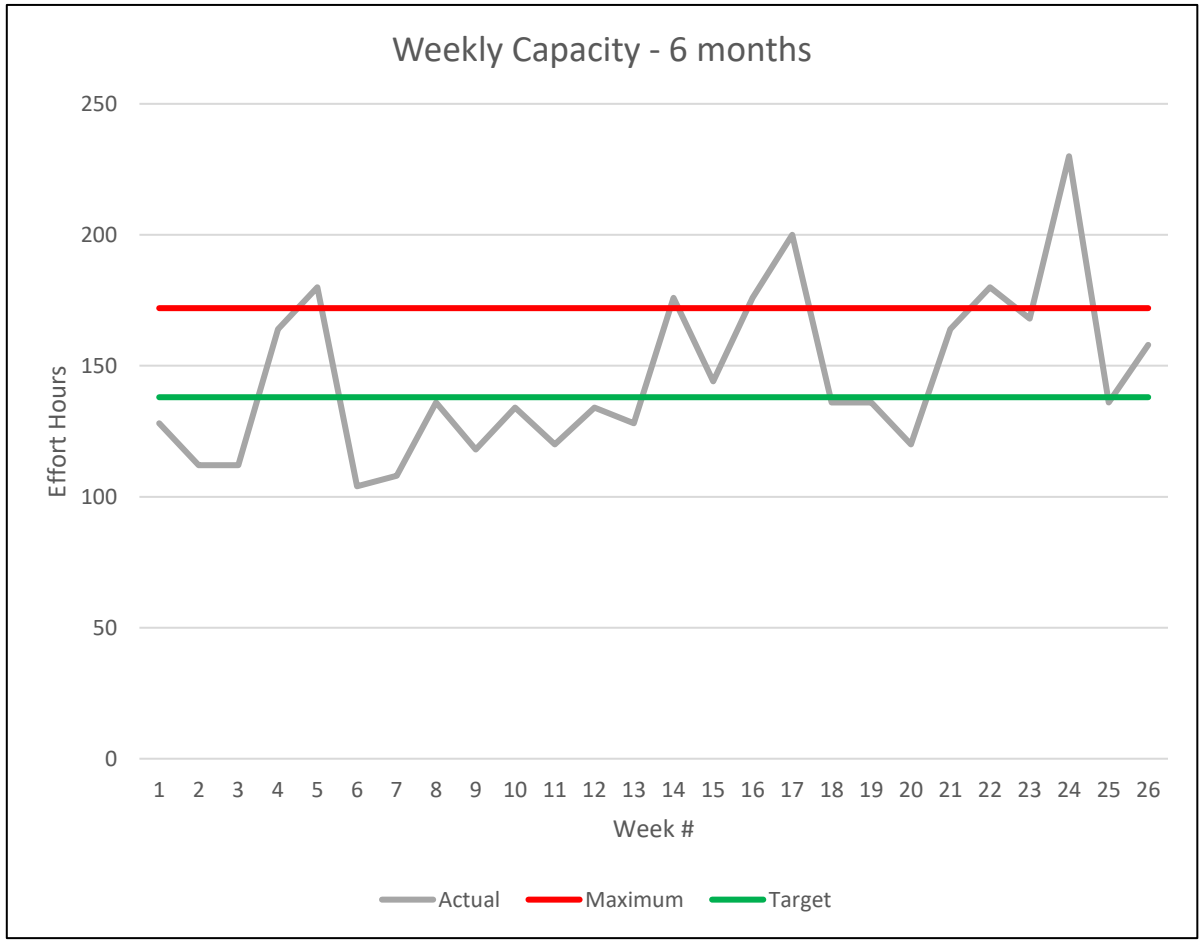
SUMMARY & DATA VISUALIZATION

Traditional simulation center metrics are insufficient for determining staffing capacity. Simulation leaders should determine their readiness for embarking on this project by answering the questions on the first page, which will help identify gaps in support that are necessary for success. From there, leaders can follow the process outlined in the steps below to determine current capacity and forecast future capacity needs due to programmatic growth to justify additional staffing.



a) Calculate staff FTEs, include only those in the simulation center's operational budget

b) Determine the % of FTEs allocated to direct simulation activities (vs. indirect and PTO)

c) Use **a** and **b** to calculate the Maximum and Target Effort hours available per week

d) Determine the number of Effort hours it takes per "typical" course/event to plan and deliver

e) Account for additional Effort for atypical courses/events and assign levels of "Effort" required of each

f) Determine total Effort hours required by adding the number of Effort hours for each event in a given time period; then divide by the amount of Effort available in that time period to determine capacity

g) Display in graph form for easy visualization of capacity variance over time

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