



Two Steps Forward, One Step Back: The Complexity of Accurately Defining and Measuring Clinical Activity in Academic Pediatrics

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Most physicians in the US have institutional compensation benchmarks based on those provided by various organizations such as the Association of American Medical Colleges, Medical Group Management Association, and Association of Administrators in Academic Pediatrics (AAP), whereas other organizations collect data on compensation, including base and incentives and work relative value units (wRVUs). Benchmarks on work expectations that clearly define work effort, whether clinical time expectations, academic, or administrative, are less common. The absence of these definitions creates multiple challenges for institutions and leaders, such as

- recruiting and retaining physicians with realistic expectations to ensure a manageable workload and not creating more burnout;
- evaluating current and future workforce needs in primary and specialty care practices; and
- balancing the missions and priorities in an academic medical center, including educational activities, quality-improvement efforts, advocacy, diversity and inclusion work, research, and patient care.

The clinical work of a physician has changed from primarily being in-person visits to work now including telehealth visits, demands for previous authorization, responses to in-basket messages, imaging and laboratory follow-up, and other duties that occur in between in-person visits. Some of this work is billable and some may not be but must occur in order to deliver care. All the clinical work needs to be recognized in the time for clinical work effort; this was a driver for us to undertake these efforts. Recognizing the need to understand better clinical effort definitions, the AAP and Association of Medical School Pediatric Department Chairs (AMSPDC) collaborated to help provide pediatric leadership groups across the US and Canada with a framework for definitions of work effort. Our initial interactions regarding this topic began at a joint AMSPDC and AAP conference in 2019, where we discussed the topic

and began to collect high-level data on work effort expectations. We quickly recognized that our demonstration project needed to be confined and strictly targeted, as the topic is fraught with complexities and nuances. The work was delayed because of the coronavirus disease 2019 epidemic and was reinitiated in 2021 with the launch of an AAP-AMSPDC workgroup. At our initial 2019 conference, it was determined through polling that most institutions considered 46 weeks per year and 45-50 hours per week to be relatively standard. This would result in an annual expectation of 2070-2300 hours of total work per year for physicians. Our demonstration project was focused on gaining an understanding of academic pediatric department definitions related to overall full-time equivalent (FTE) expectations and how institutions interpreted and reported clinical full-time equivalent (cFTE). The endpoint of this project was to share the collected data and analysis with AAP and AMSPDC members available on a secure site with an overview and explanation of the demonstration project. The specific goals of this project were to develop consistent terminology and definitions to align understanding when there were discussions about FTE and cFTE, and to create a data summary to begin understanding actual work being performed in individual specialties related to reported cFTE.

The AAP-AMSPDC workgroup also realized that our focus needed to be on what physicians were expected to do clinically (number of sessions/hours/shifts), understanding that expectations were not necessarily what was happening. This mismatch occurs based on varied institutional approaches to defining overall FTE, how institutions break down cFTE and/or clinical work effort, and what is included in the definitions.

For this reason, the AAP-AMSPDC workgroup decided to execute this demonstration project to complement their annual national compensation and productivity survey, to understand better what the reported cFTE means to their attending physicians. The demonstration project represents

AAAP	Association of Administrators in Academic Pediatrics
ABP	American Board of Pediatrics
AMSPDC	Association of Medical School Pediatric Department Chairs
cFTE	Clinical full-time equivalent
FTE	Full-time equivalent
wRVU	Work relative value unit

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<https://doi.org/10.1016/j.jpeds.2023.113446>

more than 30 specialties across 100 academic pediatric departments.

Method/Approach

The data were collected at a national joint AAAP-AMSPDC conference, initiating the conversation on basic nomenclature and understanding of an overarching framework to define components of overall FTE. This step was critical to emphasize the relationship of cFTE in the larger scheme of total effort and led to the development of a joint AAAP-AMSPDC workgroup to oversee the process. An AAAP cFTE workgroup was also formed and charged with carrying out a demonstration project. An inquiry to gather data for the project was sent to over 100 AAAP member institutions to collect general institutional information and clinical hours expected to be worked by a provider.

A survey was developed with detailed instructions and educational sessions to define what was being collected. Six AAAP institutions tested the alpha version of the survey and its associated instructions to ensure that interpretation of the survey and its instructions were clear.

General questions verified data collected previously at the conference and included number of work weeks/year for a 1.0 FTE and number of hours/week for a 1.0 FTE. Data were collected for clinical FTE such as in-person care, documentation, billing, and other supportive clinical activities. Additional questions included related to academic effort for scholarly work, and what effort, if any, is given as clinical administrative time to complete billable activities. We further asked for the number of inpatient hours, number of ambulatory and procedural sessions, along with definitions of the number of hours in a session, along with collecting data on the non-billable work needed to complete care. Clarification questions were asked about on-call shifts as they relate to clinical effort. On-call work effort was outside the scope of the demonstration project but planned for study the future.

Upon considering all the data collected, the AAAP cFTE workgroup decided to exclude select factors, based on several data irregularities, to ensure better data integrity. Examples include cases in which very low or no cFTE was reported but clinical work hours were reported and the reverse where no clinical work hours were reported but a cFTE was reported, and when the area of work reported was not clear but marked as "other."

Following these data exclusions, the data set included 6300 physicians and 31 pediatric specialties (including General Pediatrics). The top 10 specialty responses (Figure 1) highlight the specialties with the greatest unique physicians count with actual clinical work data submitted (inpatient hours, outpatient sessions and/or procedure sessions). Procedure sessions are those in which the time is spent performing clinical procedures, eg, endoscopy, electroencephalogram interpretation, or interventional cardiology procedures. There was variability in the number of physicians in each specialty. For example, Neonatology data included information about 915 physicians compared with Sports

Medicine data, reflecting input from 6 physicians. There were many other specialties, such as Medical Genetics, Adolescent Medicine, Cardiac Intensive Care, Infectious Disease, Rheumatology, and Developmental and Behavioral Pediatrics, in which the data included information from more than 100 physicians each.

The data were analyzed for maximum, minimum, and median values. Quartiles and individual data points collected are not included in this manuscript but are available to AAAP and AMSPDC members as part of a member-privileged data set.

Results

Of the 100 AAAP member institutions active in summer 2021, 52% participated in the survey to some extent. Regional breakdown of participant response rates as a percentage of all respondents vs percentage of participation by member count from their region can be seen in Figures 2 and 3, respectively.

We confirmed that the number of weeks worked by a 1.0 FTE physician, regardless of academic or clinical work, was an average of 46 (range 26-52 weeks). The average expected number of hours worked per week was 44 (maximum of 50 and minimum of 40 reported). Ambulatory sessions on average were defined as 4 hours except for those in the Mid-west region reporting average of 5 hours.

The average, maximum, and minimum of inpatient hours/year, number of ambulatory sessions/year, and procedural sessions per year are reported by specialty in Table I. Minimum and maximum hours were not reported in relationship to cFTE and therefore cannot be thought of as absolute hours worked, as many specialties work a combination of inpatient, ambulatory, and procedural hours or shifts. Similarly, inpatient, ambulatory, and procedural hours and sessions cannot be combined to estimate hours for a full-time clinical physician. Of note, there are some areas, such as Neonatology, in which an institution reported 6552 hours per year, which would translate to 20 hours per day for 46 weeks per year reported as working (Table I). The maximum General Pediatrics outpatient session number of 3120 extrapolates to 12 140 hours per year, which would be more than 24 hours per day of reported work (Table I). These are extreme examples but demonstrate that the data reported by institutions have limitations. An individual's cFTE includes a combination of ambulatory and procedural sessions as well as inpatient effort. The data were normalized to a 1.0 FTE; however, because of the amplification of effort with normalization, those physicians with minimal cFTE who are doing more than the stated clinical work hours or sessions were amplified, skewing the data further.

We next reported those with ≥ 0.8 cFTE as median effort for inpatient hours and ambulatory and procedural sessions (Table II). We need to emphasize that reported hours or sessions alone cannot define total FTE as academic and some administrative time was not collected. In addition,

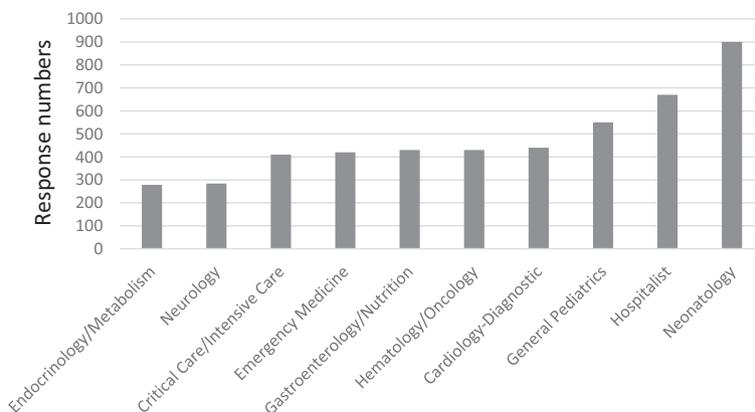


Figure 1. Top 10 specialty responses.

with the many variations of inpatient vs ambulatory/procedural effort, it is not possible to directly compare an individual’s work distribution.

Discussion

Measuring and assessing clinical activity is crucial to successfully managing a clinical practice, especially in academic medical centers with the ongoing expectations of our missions in education, research, advocacy, and equity, diversity, and inclusion. This assessment is an ever-growing topic in pediatrics, for which the workforce is not growing, and the supply of certain subspecialty providers cannot keep up with the present demand to care for children. In the past, for pediatric specialties that have been recognized as being associated with the lowest compensation (both primary care and subspecialty), the result was to ask the physician to do more than their regular schedules or to prioritize care for certain types of patients and referrals. Although workforce development in pediatrics is another key topic on which AMSPDC is partnering with other organizations, it cannot be done appropriately without understanding how effort is defined, monitored, and reported.

Historically, wRVUs have served as the metric defining clinical productivity. However, increasingly there is clinical

activity that contributes to clinical practice that does not lead to the production of wRVUs. Examples of low- or non-wRVU-producing clinical activities include child abuse assessments, motility studies, and complex care coordination, thus limiting the utility of such a metric. Conversely, some areas of work have high wRVU value with less time needed to complete the service. Another aspect of the complexity is that the work needed to complete tasks varies greatly based on the institution; acuity of care, team support, and infrastructure must be accounted for in this equation. The fact that clinical activity metrics are not reported in conjunction with external benchmarks, as is the case for compensation and wRVUs, adds to the challenge of appropriately assessing clinical productivity and equity. We also recognize that what is defined as clinical work has changed, and more work occurs not in front of patients, especially with the complexity of the electronic medical record systems, documentation and authorization needed for billing, ordering, and prescribing. A novel assessment of clinical work expectations was developed in Neonatology by creating a point system based on intensity and complexity of patients, as weeks on service were no longer sustainable in their program as the time measure of clinical work.¹ While workload is often measured by number of “contact” days, hours, or sessions with patients or wRVUs generated, this does not quantify

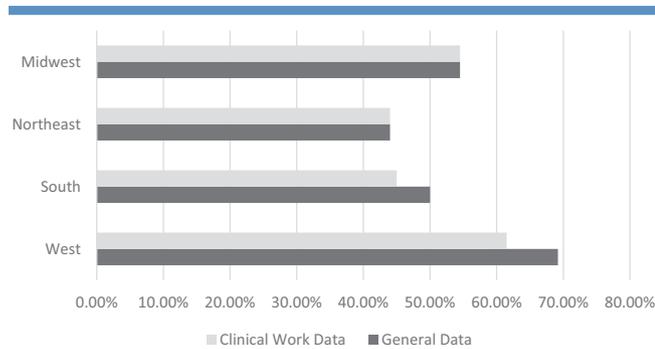


Figure 2. National response rate by region (n = 52).

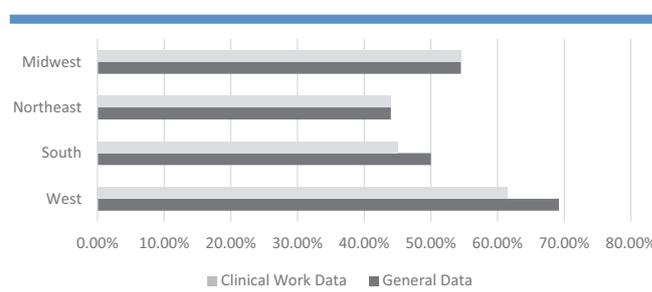


Figure 3. Regional participation by regional member count (West, n = 13; South, n = 40; Northeast, n = 25; Midwest, n = 22).

Table I. Annual inpatient hours and outpatient/procedure sessions (actual reported data; represents data from all physicians with various FTE and cFTE per each specialty)

Column A: Specialties	Column B: Minimum inpatient hours/year	Column C: Maximum inpatient hours/year	Column D: Median inpatient hours/year
Annual inpatient hours			
Adolescent Medicine	3	1400	339
Allergy/Immunology	7	3024	216
Bone Marrow Transplant	48	2352	676
Cardiology—Critical Care	38	2100	1216
Cardiology—Diagnostic	22	2310	371
Cardiology—Interventional	50	2184	333
Child Abuse Pediatrics	120	1700	526
Child Development	130	2688	250
Critical Care/Intensive Care	168	3316	1107
Dermatology	125	416	184
Emergency Medicine	55	2492	980
Endocrinology/Metabolism	5	1359	298
Epilepsy	168	1070	374
Gastroenterology/Nutrition	4	2100	330
General Pediatrics	8	2010	207
General Peds—in ED (Urgent Care)	84	1960	786
Genetics	21	2912	289
Hematology/Oncology	12	4050	426
Hospitalist	56	2592	1201
Infectious Diseases	40	1832	560
Med/Peds	164	840	458
Neonatology	33	6552	1222
Nephrology	86	3024	550
Neurology	48	2142	420
Palliative Care	546	2600	1400
Psychology	10	1840	173
Pulmonary	3	3024	408
Rehabilitation	96	2026	384
Rheumatology	8	3053	414
Sleep Medicine	59	989	329
Sports Medicine	—	—	—

Column A: Specialty	Column B: Minimum sessions/year	Column C: Maximum sessions/year	Column D: Median sessions/year
Annual outpatient/procedure sessions	Annual outpatient/procedure sessions	Annual outpatient/procedure sessions	Annual outpatient/procedure sessions
Adolescent Medicine	1.0	795.0	155
Allergy/Immunology	2.0	522	218
Bone Marrow Transplant	28	283.0	83
Cardiology—Critical Care	0	362	115
Cardiology—Diagnostic	1	449	208
Cardiology—Interventional	35	510	217
Child Abuse Pediatrics	5	257	108
Child Development	4	373	208
Critical Care/Intensive Care	2	284	72
Dermatology	142	374	261
Emergency Medicine	12	364	281
Endocrinology/Metabolism	5	656	185
Epilepsy	3	365	218
Gastroenterology/Nutrition	16	1099	200
General Pediatrics	1	3120	229
General Peds—in ED (Urgent Care)	108	384	230
Genetics	20	384	138
Hematology/Oncology	9	640	119
Hospitalist	1	781	131
Infectious Diseases	1	635	45
Med/Peds	5	534	180
Neonatology	1	267	17
Nephrology	12	452	128
Neurology	1	688	178
Palliative Care	10	107	44
Psychology	1	460	267
Pulmonary	2	881	156
Rehabilitation	58	353	198
Rheumatology	12	384	192
Sleep Medicine	51	633	256
Sports Medicine	96	348	248

ED, emergency department.

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the current workload, as much of the work occurs while not in contact with patients. As well, if the neonatologist has night-time coverage, RVU standards do not apply, as those physicians are often not performing revenue-generating activity. Using the expectation that all faculty should spend 2350 hours annually and that 70% of the work is direct patient care contact with the remainder used for administrative, quality, and committee work, Olsen et al created a point system to account for the greater intensity and less-desirable work, which allowed for the workload to be balanced based on these important factors. Various models of full-time and cFTE in neonatology used a similar approach.² The 2021 Pediatric Hospital Medicine Workforce survey recently published their report, which found the median total effort for a 1.0 cFTE to be 1849 hours with community hospitals working on average more hours than those in university sites.³ They point out that the work varies in volume and acuity, which is not often considered. However, they did notice that many programs had plans to expand services during times of predictable patient volume changes to help account for the increased acuity and maintain high quality.

Others have written about the need to find solutions to measure clinical activity more accurately. Previously, the AAAP suggested that the critical issue in defining cFTE was

setting a standard approach to defining the numerator and denominator.⁴ In addition, they recommend defining the activities that go into billable activity.

In the execution of this project, the AAAP cFTE workgroup acknowledged multiple assumptions and constraints. Even within the workgroup members, it was noted that institutions have different definitions not only for cFTE but also for other terminology like “work week” and “on-call.” The workgroup assumed that much of the variation would be mitigated by clear instructions with examples for each question and data element being collected. The work group also assumed that institutions used similar approaches in how they identified the data elements (ie, FTE vs cFTE) and how to report them. One example is how organizations allocate and report effort for indirect patient care, which often is non-wRVU-generating by itself but is necessary to complete the billing of wRVU generating activity, and whether this is included in a physician member’s reported cFTE. Despite these assumptions, this work exposed significant heterogeneity in what is included in the definitions used.

To further clarify FTE, an effort funnel was developed to offer a consistent terminology and approach (Figure 4), which was one of the goals of this demonstration project. As seen in the framework, effort can be categorized starting with a 1.0 FTE and then differentiating elements of the individual’s work effort as they relate to academic, clinical, and business leadership/management activities. For this framework, clinical administration (ie, business leadership/management roles in the clinical practice realm) is categorized under cFTE. The rationale is to total all effort related to any clinical activity (administrative roles, direct patient care or indirect patient care).

After reviewing the preliminary survey data, the AAAP workgroup noted the following 4 key insights in understanding the topic of cFTE and determining the associated clinical hours worked. First, *Institutions have different definitions and approaches related to effort management and reporting.* The responses from institutions varied on how they reported data on cFTE, defining total effort or full-time employment, and how on-call work was described. Although this is understandable, since every institution has different infrastructure, funds flow, market dynamics, and patient complexity, this also creates difficulty in understanding truly what clinical effort is—not just what is expected but what is actually worked by physicians. This is further demonstrated when using Adolescent Medicine as an example, in which total clinical hours averaged 959 hours annually. If we use the average of what was reported for a 1.0 FTE with a 50-hour work week and 46 work weeks per year, of the 2300 possible work hours in a year the average Adolescent Medicine physicians nationally would be working at a 0.41 cFTE (959 hours/2300 hours). This may seem appropriate, but when looking at the range of data reported (minimum of 80 hours annually and maximum of 3183 hours annually), we must question what was included in these reported hours, when the maximum reported would translate to working over 60 hours a week for 52 weeks a year.

Table II. Data are reported for physicians with >0.8 cFTE as median effort for inpatient hours and ambulatory and procedural sessions

Specialties	No.	Median inpatient hours/year	Median sessions/year
Adolescent Medicine	14	428.9	290.0
Allergy/Immunology	52	356.0	331.2
Bone Marrow Transplant	13	1020.0	239.2
Cardiology—Critical Care	53	1539.0	179.4
Cardiology—Diagnostic	220	408.0	257.6
Cardiology—Interventional	52	340.5	234.6
Child Abuse Pediatrics	4	242.7	174.8
Child Development	37	130.0	266.8
Critical Care/Intensive Care	159	1270.0	92.0
Dermatology	5	150.0	326.6
Emergency Medicine	173	1183.0	363.4
Endocrinology/Metabolism	78	368.0	266.8
Epilepsy	15	422.6	216.2
Gastroenterology/Nutrition	154	336.0	271.4
General Pediatrics	150	591.2	312.8
General Peds—in ED (Urgent Care)	33	1248.0	308.2
Genetics	33	636.0	225.4
Hematology/Oncology	94	421.0	197.8
Hospitalist	287	1620.0	184.0
Infectious Diseases	16	1075.3	138.0
Med/Peds	5	840.0	271.4
Neonatology	377	1619.0	13.8
Nephrology	36	670.0	161.0
Neurology	100	492.0	253.0
Palliative Care	5	1816.0	105.8
Psychology	24	173.3	312.8
Pulmonary	77	469.5	216.2
Rehabilitation	9	449.6	202.4
Rheumatology	20	798.5	266.8
Sleep Medicine	9	234.0	280.6
Sports Medicine	2	N/A	308.2

N/A, not applicable.

Second, *Effort can be segregated by the different types of mission work a physician does.* This emphasizes the need to have similar definitions when reporting so that the same work is not split into different mission areas based on variations in institutional definitions.

Third, *Clinical effort includes direct patient care and nondirect patient care.* The effort funnels (Figure 4) illustrate how to think about how effort could be categorized when performing benchmarking reporting. More and more nondirect patient care effort is seen in recent years, with the increase in documentation expectations, compliance, needs to assess and respond to social drivers of health and mental health needs as part of ongoing clinical care.

The AAAP workgroup survey did ask institutions to classify an example of the 20% nondirect patient care effort given to a 1.0 FTE. Respondents were asked to select a response on how the clinical effort would be reported—1.0 cFTE, 0.80 cFTE, or other. Twenty-three institutions chose that they would report the clinical effort as 1.0 cFTE, whereas 18 chose the 0.80 cFTE option, and 9 institutions noted not applicable or other. This variation in reporting cFTE also relates to whether institutions give nondirect patient care effort to physicians or determine whether to include nondirect patient care effort in their cFTE definition. This information shows that for reporting purposes, it is important that a future survey has standardized definitions for what is direct and nondirect patient care and how that relates to the overall cFTE definition so institutions can align and consistently report their cFTE externally, even though internally there may be a different translation.

Fourth, *The proportion of direct patient care and nondirect patient care is critical for benchmarking (hours worked, wRVU, and compensation).* If there is a goal to have national benchmarks for clinical effort, definitions and consistent application of such definitions will be essential. Standardization would lead to more meaningful comparisons of reported cFTE to direct patient care work (hours/sessions) performed and the resulting wRVUs.

There are many physicians who may have the same reported cFTE, but different numbers of sessions and clinical hours worked. This disparity skews the numbers favorably to those expected to do more sessions/hours for their cFTE while their counterparts may wonder why they struggle to meet the benchmarks as reported. The driver of these challenges, which leads to frustration and burnout among physicians, is the result, in part, simply of reporting differences. Therefore, standardized definitions will be critical for comparisons.

To complement this, work the American Board of Pediatrics (ABP) is working to describe the workforce need based on our population and rates of individual entering and leaving the subspecialty workforce.^{5,6} Along with the ABP and AAAP/AMSPDC, subspecialty groups are looking to define the work time or volume related to a 1.0 FTE. All these approaches will add to our understanding and definitions of clinical work by an academic physician.

Overall, this demonstration project generated some key learnings on what we need to understand if our goal is to

understand the clinical work being achieved. Without clear and standard definitions that allow institutions to translate their internal data into comparable outputs that can be trusted to represent a shared baseline, it will prove very difficult to ever have the meaningful benchmarks we all desire for comparing cFTE workload, productivity, and compensation plans. We understand that defining cFTE is complex and there is not a one-size-fits-all methodology. However, beginning the process is important to help evaluate our workforce needs and identify what “work effort” looks like in an ever-changing environment as we recruit physicians. As we face the aging pediatric workforce with fewer individuals entering the field of pediatrics and its subspecialties, it is imperative to understand the reasons behind workforce attrition, including workload and compensation, so that we can take actions to mitigate these trends. We also recognize that many specialty areas are looking at clinical expectations for themselves, and we want to contribute to that dialogue. This is not dissimilar to what other groups have concluded, such as Trauma and Acute Care Surgery, who wanted to define clinical, academic, and schedule expectations for trauma surgeons.⁷ They surveyed department leaders at level I-III trauma centers and identified inconsistent models. They concluded that defining workload is nuanced and requires consideration of volume, acuity, and culture. They did report what they determined to be a reasonable workload to be 24-28 weeks per year of service that included 4-5 in-house calls per month.

Other groups have instead defined the work based on the number of new patients, such as in Pediatric Hematology-Oncology or consultations such as in Pediatric Palliative Medicine.^{8,9} In Palliative Medicine, 10 programs were surveyed and work was defined for a 1.0 FTE by RVUs (1626/year) based on the expectation of seeing 15 new consults a month and having 70 encounters per month. In Pediatric Hematology-Oncology division, directors were asked to report a hypothetical 1.0 cFTE workload. They determined on average they would work 12 weeks on the inpatient service and spend 5-7 half days per week in the ambulatory setting. The individual would care for 15-20 new cancer diagnosis/year. They recognize that there are variable factors, such as the number of Advanced Practice Providers participating in the care. The ratios did not change based on size of the program or presence of a transplant program.

We acknowledge that caution must be taken in the interpretation of the data. Some reports of hours or number of sessions stem from normalization of data or misinterpretation of the definitions of the data that individual's report. For example, some reports of hours or shifts in some cases would be unachievable, as they would be 24/7/365. It should be noted that we are not saying these are the only hours spent working but rather are the hours reported working in the clinical arena, as most academic physicians have other responsibilities, such as quality improvement, advocacy, education, administration, and research.

Proposed next steps include seeking to collect data from centers who did not participate in the initial reporting

THE EFFORT FUNNEL

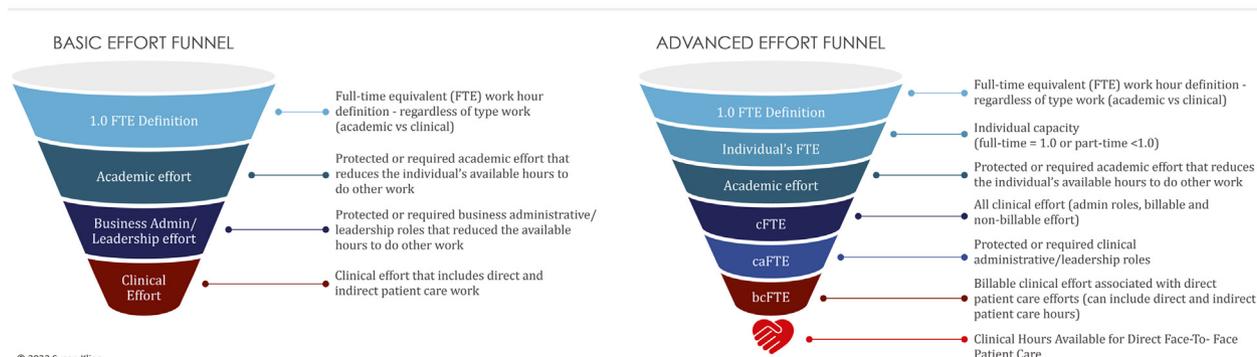


Figure 4. An effort funnel was developed to offer a consistent terminology and approach.

and gaining clarity on defining FTE for specific roles (medical directors, practice leads, etc), which will support interpretation of the data gathered. These data are extremely valuable to allow definitions for reporting as groups such as the ABP and Council of Pediatric Specialties, which are working to understand the workforce needs. This is timely, as the National Academies of Sciences, Engineering and Medicine convened a study on the pediatric specialty workforce, which is presently underway. Lastly this aligns with the AMSPDC 2025 Workforce Initiative, which is bringing together AMSPDC, AAAP, ABP, Council on Medical Student Education in Pediatrics, Council of Pediatric Specialties, American Academy of Pediatrics, Society of Pediatric Research, American Pediatric Association, American Pediatric Society, Pediatric Osteopathic Medicine, National Institutes of Health, and Association of Pediatric Program Directors to ensure future pediatric specialists in an environment of decreasing interest in the field in medical schools. ■

Declaration of competing interest

The authors declare no conflicts of interest.

We thank the AAAP and AMSPDC members and boards; the AAAP-AMSPDC workgroup, who initiated the beginning work at the 2019 AMSPDC-AAAP national conference—Ann Reed, MD, Lucky Jain, MD, Morris Gessouroun, MD, Liz McCarty, MS, Melody Altman, MBA, and Susan Kline, MS; the AAAP cFTE workgroup, who led the demonstration projection effort—Liz McCarty, MS, Desiree Brown, MAIOP, Angela Fuste, MHSA, Kristine Kirstein, MHA, Gil Pak, MHA, Susan Kline, MS; David Dellinger, who compiled and

generated the data; and Drs Sherin Devaskar and Joseph St Geme for their review of the manuscript.

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