

Day Care Centers: A Theoretical Model for Computing Adult-Child Ratios

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I Background

The staff-child ratio question is a very critical item when it comes to monitoring child care facilities. However, it has eluded proper measurement because of inadequate or time-consuming measures. Past methods have tried the direct approach of dividing the total number of children by the total number of teachers. This works, but does not give the overall day illustration; therefore it is only good as an incredibly gross measure. There have been discussions revolving around the dichotomous points of view of the states and the federal role in enforcing the various principles. Once it is decided what the ratios will be, how will compliance with the ratios be measured?

This is a new theoretical model for computing adult-child ratios that is not time-consuming and provides accurate information in an extremely concise fashion. With this new approach, all a day care monitor needs to do is ask six questions of the provider. Then put the data into a formula to find if the program is within compliance or not.

2 Formulas

Formula - # 1 $CH = \frac{NC (TH+TO)}{2}$

Formula - # 2 $RWCH = \left[\frac{NC (TH + TO)}{2} \right] \left[\frac{1}{TA} \right]$

Formula - # 3 $RWCHR = \left[\frac{\sum NC_o (TH_o + TO_o)}{2} \right] \left[\frac{2}{\sum TA} \right]$

Formula - # 4 $NC_o = NC_p + NC_i + NC_s$

Formula - # 5 $TH_o = TH_p + TH_i + TH_s$

Formula - # 6 $TO_o = TO_p + TO_i + TO_s$

3 Adult-Child Ratio Table

TABLE OF CONVERSIONS FOR ADULT-CHILD RATIO							
NC	CONTACT HOURS	RELATIVELY WEIGHTED CONTACT HOURS			RELATIVELY WEIGHTED CONTACT HOURS RANGE		
		I	P	S	I	P	S
		TO = 8 TH = 8					
1	8	8	8	8+	8	8	8+
2	16	16	16	16+	16	16	16+
3	24	24	24	24+	24	24	24+
4	32	32	32	32+	32	32	32+
5	40	40	40	40+	40	40	40+
6	48	24	48	48+	36	37-48	49+
7	56	28	56	56+	42	43-56	57+
8	64	32	32	64+	32	33-48	49+
9	72	36	36	72+	36	37-54	55+
10	80	40	40	80+	40	41-60	61+
11	88	29	44	44+	37	38-44	45+
12	96	32	48	48+	40	41-48	49+
13	104	35	52	52+	43	44-52	53+
14	112	37	56	56+	37	38-46	47+
15	120	40	40	60+	40	41-50	51+
16	128	32	43	64+	37	38-53	54+
17	136	34	45	68+	39	40-56	57+
18	144	36	48	72+	42	43-55	56+
19	152	38	51	76+	44	45-57	58+
20	160	40	53	80+	46	47-60	61+
21	168	34	56	56+	38	39-46	47+
22	176	35	44	59+	39	40-47	48+
23	184	37	46	61+	41	42-49	50+
24	192	38	48	64+	43	44-53	54+
25	200	40	50	67+	45	46-54	55+
26	208	35	52	69+	43	44-51	52+
27	216	36	54	72+	45	46-55	56+
28	224	37	56	75+	46	47-56	57+
29	232	39	46	77+	42	43-53	54+
30	240	40	48	80+	44	45-61	62+
31	248	35	50	62+	42	43-49	50+
32	256	37	51	64+	44	45-57	58+
33	264	38	53	66+	45	46-59	60+
34	272	39	54	68+	46	47-60	61+
35	280	40	56	70+	48	49-56	57+
36	288	36	48	72+	42	43-60	61+
37	296	37	49	74+	43	44-61	62+
38	304	38	51	76+	44	45-57	58+
39	312	39	52	78+	45	46-59	60+
40	320	40	53	80+	46	47-60	61+
41	328	36	55	66+	45	46-51	52+
42	336	37	56	67+	46	47-52	53+
43	344	38	49	69+	43	44-54	55+
44	352	39	50	70+	44	45-55	56+
45	360	40	51	72+	45	46-56	57+
46	368	37	53	74+	45	46-56	57+
47	376	38	54	75+	46	47-57	58+
48	384	38	55	77+	46	47-58	59+
49	392	39	56	78+	47	48-59	60+
50	400	40	50	80+	45	46-61	62+
51	408	37	51	68+	44	45-53	54+
52	416	38	52	69+	45	46-54	55+
53	424	39	53	71+	46	47-56	57+
54	432	39	54	72+	46	47-56	57+
55	440	40	55	73+	47	48-57	58+
56	448	37	56	75+	46	47-56	57+
57	456	38	51	76+	44	45-57	58+
58	464	39	52	77+	45	46-58	59+
59	472	39	52	79+	45	46-59	60+
60	480	40	53	80+	46	47-60	61+

4 More Details

The six basic questions are as follows:

- 1) When does your first staff member (teaching) arrive?
- 2) When does your last staff member (teaching) leave?
- 3) What is the number of teaching staff?
- 4) What is the total number of children present on your maximum enrollment day? What are their ages? Which staff members are assigned to each age group (if there is vertical grouping)?
- 5) When does your last child arrive?
- 6) When does your first child leave (if vertical grouping, give breakdown according to age)?

After these questions are answered, then the day care monitor will compute the number of contact hours (CH) between staff and children using the above formulas. In Formula # 1; NC = total number of children present on the maximum enrollment day; TO = total number of hours the center is open; TH = total number of hours at full enrollment; CH = contact hours between staff and children in any type of caring arrangement. After the CH is computed, the data is then put into another formula, which will determine the relatively weighted contact hours for horizontal grouping (RWCH), or the relatively weighted contact hours range (RWCHR) for a vertically grouped program.

In the formulas above, NC_o = total number of children on the maximum enrollment day. TO_o = total number of hours the center is open. TH_o = total number of hours at full enrollment. RWCH = relatively weighted contact hours – indicator of compliance for horizontally grouped programs. RWCHR = relatively weighted contact hours range – indicator of compliance for vertically grouped programs. TA = total number of teaching staff. NC_i = total number of infants. NC_p = total number of preschoolers. NC_s = total number of school age children. TH_p = total number of hours at full enrollment with preschoolers. TH_i = total number of hours at full enrollment with infants-toddlers. TH_s = total number of hours at full enrollment with school-age children. Once the RWCH or the RWCHR figures are computed, it can be determined if the programs are within compliance by using Table of Conversions for RWCH and RWCHR (see Table).

This Table is computed from an ideal where TO and TH both equal eight hours. In other words, all staff and children arrive and leave at the same time, which is an ideal programmatic set-up. By using the Table of Conversions, it is relatively easy to compute if a program is within compliance. In the Table of Conversions I = infant-toddlers; P = preschoolers; S = school-age children. For example, in the Table of Conversions, look under the NC column and match the number with the same on in the formula. Then look under the CH column and match the number with the same one in the formula. Now look under RWCH in the P (preschoolers) column. In reading the Table of Conversions, if a program received a score equal to or less than the score on the Table it will always be within compliance. If the program receives a score greater than the score on the Table for that particular category, then the program will always be out of compliance. The aspect of the above theoretical model is that it takes both time and numbers of staff into account. It is a simple one-shot mathematical calculation, and it can determine if a program is within compliance or not.