

## Theoretical Model For Computing Adult-Child Ratios in Day Care Centers



Dr. Richard Fiene

Dr. Richard Fiene here presents a theoretical model for computing adult-child ratios which takes both numbers (caregivers and children) and time (hours at the day care center) into account. Its purpose is to increase accuracy and save time in the computation of ratios to determine compliance with requirements, whether for FDCR or for licensing.

He is beginning an adaptation of this model for use in residential or twenty-four hour facilities.

He has confidence that his model can be put into State regulatory systems, using the expertise of program oriented licensers and statistics/research oriented technicians.

If you care to explore this presentation further, you may call Dr. Fiene at 717-787-2724. He is Director, Bureau of Information Systems, Pa. DPW, 1514 N. 2nd St., Harrisburg, Pa. 17102.

There has been much controversy over the Federal Day Care Requirements, in particular, the adult-child ratios. The majority of the discussion has revolved around the dichotomous points of view of the states and the federal role in enforcing the various standards. There is another issue that is equally important, which has been addressed only in a side-glance manner. Once it is decided what the ratios will be, how are we going to measure compliance with the ratios?

There have been various attempts at doing this - the most recent had been tried by Health, Education and Welfare (1977) and it does get at the required information. There is only one problem with it: it is rather time consuming. If a state or region has a great number of programs, it becomes almost an impossible task. 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 picture; therefore it is only good as a very gross measure.

The staff-child ratio question is a very critical item when it comes to monitoring of child development/child care facilities. However, it has eluded proper measurement because of inadequate or time-consuming measures. I am proposing a new theoretical model for compu-

ting adult-child ratios which is not time-consuming and gives accurate information in a very concise fashion.

With this new approach, all a day care monitor needs to do is ask six questions of the provider, and then put the data into a formula to find if the program is within compliance or not.

The six questions are as follows:

- (1) When does your first staff member (teaching) arrive?
- (2) When does your last staff member (teaching) leave?
- (3) Number of teaching staff?
- (4) Number of children present on your maximum enrollment day? Their ages and 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 following formula:

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

In the formula, 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 are 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.

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

$$RWCHR = \left[ \frac{\sum NC_i (TH_i + TO_o)}{2} \right] \left[ \frac{1}{TA} \right] \quad \text{Formula 3}$$

$$NC_o = NC_p + NC_i + NC_s \quad \text{Formula 4}$$

$$TH_o = TH_p + TH_i + TH_s \quad \text{Formula 5}$$

$$TO_o = TO_p + TO_i + TO_s \quad \text{Formula 6}$$

In the formulae 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 num-

ber of hours at full enrollment with school-age children. I = infant-toddlers. P = preschoolers. S = school-age children.

Once the RWCH or the RWCHR figures are computed, now we can find if the programs are within compliance by using the Table of Conversions for RWCH and RWCHR. (See Table 1).

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.

I think a few examples will suffice: Example A: Day care monitor asks the six questions and gets:

- (1) 6:30 a.m.
- (2) 5:30 p.m.
- (3) six staff
- (4) 35 children - all four years old
- (5) 9:30 a.m.
- (6) 3:15 p.m.

Compute CH:

$$\begin{aligned} CH &= \frac{NC(TH+TO)}{2} \\ &= \frac{35(5.45+11)}{2} \\ &= \frac{35(16.45)}{2} \\ &= 287.87 \end{aligned}$$

Compute RWCH: (because it is a horizontally grouped program).

$$\begin{aligned} RWCH &= \left[ \frac{NC(TH+TO)}{2} \right] \left[ \frac{1}{TA} \right] \\ &= \left[ \frac{35(5.45+11)}{2} \right] \left[ \frac{1}{6} \right] \\ &= \left[ \frac{35(16.45)}{2} \right] \left[ \frac{1}{6} \right] \\ &= \left[ 287.87 \right] \left[ \frac{1}{6} \right] \\ &= 47.97 \end{aligned}$$

Now refer to the Table of Conversions. Look under NC = 35, CH = 280. Now look under RWCH in the P column. The score here is 56, which indicates that this program is well within compliance. In reading the Table of Conversions, if a program receives 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.

Example B: Day Care monitor asks the six questions and gets:

- (1) 6:00 a.m.
- (2) 6:00 p.m.
- (3) three staff
- (4) 15 children - five infants, five preschoolers, five school age children
- (5) 10:00 a.m.
- (6) 4:00 p.m.

Compute CH:

$$\begin{aligned} CH &= \frac{NC(TH+TO)}{2} \\ &= \frac{15(6+12)}{2} \\ &= \frac{15(18)}{2} \\ &= 135 \end{aligned}$$

(Continued on page 11)

through our short discussion session. We hope to have some new members as a result.

We are now preparing a Conference Summary Booklet to summarize materials presented at each of the 16 sessions. This summary should provide a good base for a person just beginning in the field of regulatory administration, or for experienced staff to brush-up on basic principles. Booklets will be available at no charge. If you would like a copy, please write to Karen E. Kroh, Licensing Specialist, Office of Children, Youth and Families, Pennsylvania Department of Public Welfare, 1514 North Second Street, Harrisburg, Pennsylvania 17102.

Karen E. Kroh, Harrisburg, Pa.

\* \* \* \* \*

## A Glimpse at the ARA/NAEYC Commission on Licensing and Regulation Workshop

By all accounts and an outline of four sessions in the Editor's hands, November 8, 1979, was a day to remember for quality of leadership and excellence of content. The overall theme of this joint session, put on by the NAEYC Commission on Child Care Licensing and Regulation and ARA, was "Professionalization of the Licensing Service". Coordinator, Audrey Lane, Director of Child Care Licensing for Georgia, assisted by Polly Condon of the Georgia Staff, in Atlanta.

NAEYC at its annual conference regularly hosts sessions sponsored by other groups and associations, whose purposes are child growth and education related.

This Newsletter may be able to obtain, for later publication, an article or two of substance based on these workshops, somewhat similar in length and approach to those in this issue expressing the thinking of Jake Terpstra and John Vick. With that as a possibility, only the topics and the leaders will be mentioned at this time.

**I. Refinement of Licensing Administration** Audrey Lane, Convener and ARA Vice-President; Anne L. Leatherman, Discussion Leader and ARA President.

**II. Refinement of Licensees' Attitudes Toward Licensing** Polly Condon, Convener, with, as presenter: a licenser who was also a parent using day care; an attorney, who was likewise a parent using day care; an owner/director of a day care center; a supervisor of chain-operated centers; and the Executive Director of the Georgia Day Care Association.

**III. Refinement of Licensers' Performance** Ms. Donna Jo Bridges, Texas, Presenter: Two video tape cassettes on Pre-hearing Preparation and the

second on the Appeal Hearing.

**IV. Refinement of Licensing Staff Training** Shirley Norris, ARA Advisor, Kansas; David Lowe, Michigan Department of Social Services.

**V. Refinement of Child Care Provider Training** Marilyn Geise, Iowa State University; Mrs. Brooke Dixon Appalachian 202 Child Development Programs - Georgia DHR; Mary Olsen, Utah Division of Family Services; Ruth Collins, Child Care Licensing - Georgia DHR

(Based on outlines of topics made by recorders and/or leaders of the four sessions and sent to Editor.)

\* \* \* \* \*

## Caught Up In It All

(Continued from page 3)

The national mood has little compromise in it. Title XX money cuts hurt us badly. There is the uncertainty of Title IV-B money. Food stamps turned out to be a real cliff-hanger. The image and acceptance of regulation of human services is being altered by this national mood.

In a recent ARA newsletter, Wendell Williams raised an interesting question: "Is regulatory administration a coming profession?"

Well, some of the ingredients of a profession already exist:

There is a body of knowledge. There are common principles of practice. There are sources of professional training and education, and there is an organizational voice, the ARA Newsletter.

That's a good foundation. But tornadoes blow things off their foundations. We must be ready to bend with the forces of changing government, for the voices of people are clamoring for different approaches that could change forever our government as we know it now.

\* \* \* \* \*

## CREATIVE HOMES AND CENTERS

Vol. III in the Child Care Comprehensive Guide Series edited by Stevanue Auerback and published by the Human Sciences Press, contains two essays on licensing among a number on the program aspects of day care, by such educators as Bettye M. Caldwell, June Solnit Sale, and Maria W. Piers. Of the two on licensing, Linda McCauley is the author of "Registration of Family Day Care Homes in Massachusetts" and Edna Hughes of a conceptual article on the regulatory service in the system of child day care. These are mentioned, in part, because it is still news when something on licensing appears in hardback, in company with articles on program. This volume in its entirety would be an asset to your agency library - or your own (EHH).

## Theoretical Model For Computing Adult-Child Ratios In Day Care Centers

(Continued from page 9)

Compute RWCHR: (because it is a vertically grouped program).

$$RWCHR = \frac{\sum NC_i (TH_i + TO_i)}{2} \left[ \frac{1}{TA} \right]$$

$$RWCHR = \frac{NC_1 (TH_1 + TO_1) + NC_2 (TH_2 + TO_2) + NC_3 (TH_3 + TO_3)}{2} \left[ \frac{1}{TA} \right]$$

$$= \frac{[5(6+12)] + [5(6+12)] + [5(6+12)]}{2} \left[ \frac{1}{3} \right]$$

$$= \frac{[90+90+90]}{2} \left[ \frac{1}{3} \right]$$

$$= [135] \left[ \frac{1}{3} \right]$$

$$= 45.00$$

Now refer to the Table of Conversions. Look under NC = 15, CH = 120. Now look under RWCHR in the P column because we have an equal number of infants, preschoolers and school age children. The score here is 40-50 which indicates this program is well within compliance.

Example C: Day care monitor asks the six questions and gets:

- (1) 6:00 a.m.
- (2) 6:00 p.m.
- (3) Three staff
- (4) 20 children - all four years old
- (5) 7:00 a.m.
- (6) 5:00 p.m.

Compute CH:

$$CH = \frac{NC (TH + TO)}{2}$$

$$= \frac{20(10+12)}{2}$$

$$= \frac{20(22)}{2}$$

$$= \frac{440}{2}$$

$$= 220$$

Compute RWCH: (because it is horizontally grouped program).

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

$$= \frac{[20(10+12)]}{2} \left[ \frac{1}{3} \right]$$

$$= \frac{[20(22)]}{2} \left[ \frac{1}{3} \right]$$

$$= \frac{[440]}{2} \left[ \frac{1}{3} \right]$$

$$= [220] \left[ \frac{1}{3} \right]$$

$$= 73.33$$

Now refer to the Table of Conversions. Look under NC = 20, CH = 160. Now look under RWCH in the P column. The score here is 53, which indicates that this program is well 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.

TC=8  
TH=8

TABLE I  
TABLE OF CONVERSIONS  
FOR ADULT-CHILD RATIO

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