

## DATA OF TWINS BORN IN ITALY 1936-51

by  
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These data were obtained from the Clinica Ostetrica of the University of Rome by the courtesy of the Director Professor Cattaneo, and were extracted in order from the series of all births in the hospital for the years 1936-1951, the numbers taken for each year being given in the table, as follows:

Year	Twin Births	Year	Twin Births
1936	57	1944	33
1937	75	1945	39
1938	77	1946	54
1939	74	1947	50
1940	90	1948	57
1941	72	1949	56
1942	82	1950	61
1943	53	1951	56

986

These pairs are divided as regards sex:

MM MF FM FF

310 190 171 315, making 625 like sex and 361 unlike sex. The percentage of monozygotic pairs in the data would be 26.77, assuming the sex-ratio to be  $\frac{1}{2}$ . The data of English hospitals (Karn 1953) give a corresponding percentage of 30.70. Other data can be quoted as giving 26.43% (U.S.), 24.40% (German), and 29.89 Italy 1949-50, (McArthur, 1953).

The data provide information (incomplete in a few cases) as to mother's age, order of birth, birth weight and length of gestation. The distributions of these are set out in Tables 1, 3, 5, 6 for groups of like and unlike sex and for the total.

The distributions are different for like and unlike sex groups, showing the usual characteristic of a lower modal value in the like sex group (Tab. 1).

It is not possible to say what particular factors there may be in the hospital population which may influence the age distributions, but it may be useful to compare the pre-

Table 1 - Distribution of mother's age, with means and standard deviations

Sex Group	Mother's age						Total	Mean (yr.)	Standard deviation (yr)
	Under 20	20-	25-	30-	35-	40 & over			
Like	8	114	178	160	112	53	625	30.83	6.14
Unlike	2	60	85	113	73	28	361	31.50	5.81

sent data with those of English hospitals and the English population, also with the Italian population using such data as are available.

Table 2 shows the percentages in the age groups in the different data. The agreement of Italian hospitals with English hospitals and with the English population is good.

Table 2 - Percentages (twins) in groups of mother's age in different data

Data	Source	Mother's age						Total
		Under 20	20-	25-	30-	35-	40 & over	
Italian hospitals	present data 1936-51	1.01	17.65	26.67	27.69	18.76	8.22	100.00
English hospitals	Karn 1953, 1927-46	1.68	16.21	28.42	28.63	17.69	7.37	100.00
English population	Stocks 1953, 1938-45	1.69	17.17	28.37	28.76	19.13	4.88	100.00
Italian population	McArthur 1953, 1949-50	1.74	15.95	29.26	22.05	23.62	7.38	100.00

No significant difference appears in order of birth in the two sex groups (Table 3).

Table 3 - Distributions of order of birth in like and unlike sex groups, with means and standard deviations

Sex Group	Order of birth										Total	Mean	Standard deviation
	1	2	3	4	5	6	7	8	9	10 & over			
Like	187	147	69	71	42	37	16	19	15	22	625	3.28	2.60
Unlike	101	78	43	40	28	22	17	11	10	11	361	3.44	2.62

In comparing the sex groups there appear to be a few more of the 1st and 2nd born in the like sex. This effect is not evident in the English data, which show, however, when compared with the present data as a whole, some selection of firstborn not similarly evident in the Italian data (Table 4).

The distributions of birth weight in groups of 500 g. are given for like and unlike sex for males and for females and the totals in each case (Table 5).

The unusual feature about these distributions is the large group of low weight, under 495 g. which would probably all be neonatal deaths. This makes the mean weight low in each sex group compared with other data. The order of magnitude of the means is preserved as in other data, the unlike sex group having the highest means for males and females separately, and the like sex having means lower than both.

Table 4 - Percentages in groups of order of birth in like and unlike sex (present data) compared with those in English data

Ordes of Birth	Percentages		
	Present data		English data
	Like	Unlike	
1	29.92	27.98	36.84
2	23.52	21.61	17.68
3	11.04	11.91	13.05
4	11.36	11.08	7.37
5	6.72	7.75	6.95
6	5.92	6.09	4.63
7	2.56	4.71	3.79
8	3.04	3.05	3.58
9 & over	5.92	5.82	6.11
	100.00	100.00	100.00

The standard deviations are large in consequence of the greater number of low weight cases.

The distributions of days of gestation are peculiar to these data also in having a series of a few cases of very low period, under 155 days, corresponding to the group of low weight.

This makes the mean length of gestation lower, 252.65 days for like sex, and 255.57 for unlike sex, with higher standard deviations (Table 6).

The weight data can be most usefully set out as in Table (7, 8) giving pairs of weights in a symmetrical table for like twins (1232 infants) and a male-female table for unlike twins (355 pairs).

The groups of very low weight in Tables 7 and 8 are large and make about 0.025 of the total in each table, and have the effect of increasing the correlations,  $r=0.8030$  like sex and  $r=0.7604$  unlike sex which are a little higher than those for the data of English hospitals.

A table of interest and value can be made of weight and number of days of gestation. Tables were made separately for like and unlike sex groups, and were added together for the consideration of the regression of weight on length of gestation (Table 9).

**Table 5 - Distributions of birth weight for groups of like and unlike sex for males and females and the totals, with means and standard deviations**

Sex Group	Birth weight g.											Total	Mean g.	s. d. g.
	Birth weight g.													
	0-	495-	995-	1495-	1995-	2495-	2995-	3495-	3995-					
Like	M	23	35	41	73	190	163	66	15	1	606	2241.70	781.91	
	F	16	25	48	111	197	159	65	4	1	626	2212.25	707.20	
Total		39	60	89	184	387	322	131	19	2	1232	2226.74	745.03	
Unlike	M	9	7	16	49	103	99	67	5	—	355	2399.93	701.06	
	F	9	9	21	51	124	95	43	3	—	355	2292.89	676.96	
Total		18	16	37	100	227	194	110	8	—	710	2346.41	691.19	

**Table 6 - Distribution of days of gestation in groups of like and unlike sex, with means and standard deviations**

Sex Group	Days of gestation																Total	Mean	S. d.	
	Days of gestation																			
	80-	95-	110-	125-	140-	155-	170-	185-	200-	215-	230-	245-	260-	275-	290-	305-				320-
Like	1	4	1	4	4	8	10	15	27	36	61	121	138	135	27	6	1	599	252.65	34.24
Unlike	1	1	1	1	2	5	4	4	7	17	46	85	82	64	16	10	—	346	255.42	31.17

Table 7 - Weights of twins. Like sex group

		Weight of one twin (g.)									Total
		Under 495-	495- 995-	995- 1495-	1495- 1995-	1995- 2495-	2495- 2995-	2995- 3495-	3495- 3995-	3995-	
Weight of other twin (g.)	Under										
	495	32	6	—	—	—	—	—	—	—	38
	495—	6	46	8	—	—	—	—	—	—	60
	995—	—	8	50	17	10	3	1	—	—	89
	1495—	—	—	17	84	69	11	3	—	—	184
	1995—	—	—	10	69	190	98	19	1	—	387
	2495—	—	—	3	11	98	146	58	5	1	322
	2995—	—	—	1	3	19	58	38	11	1	131
	3495—	—	—	—	—	1	5	11	2	—	19
	3995—	—	—	—	—	—	1	1	—	—	2
Total		38	60	89	184	387	322	131	19	2	1232

Table 8 - Weights of twin pairs Unlike sex group

		Weight of male twin (g.)								Total
		Under 495-	495- 995-	995- 1495-	1495- 1995-	1995- 2495-	2495- 2995-	2995- 3495-	3495-	
Weight of female twin (g.)	Under									
	495	9	—	—	—	—	—	—	—	9
	495—	—	7	—	2	—	—	—	—	9
	995—	—	—	10	8	3	—	—	—	21
	1495—	—	—	2	21	17	8	3	—	51
	1995—	—	—	2	17	56	36	13	—	124
	2495—	—	—	—	1	23	43	28	—	95
	2995—	—	—	2	—	4	12	21	4	43
	3495—	—	—	—	—	—	—	2	1	3
	Total		9	7	16	49	103	99	67	5

In making the tables each pair of weights was entered against the corresponding length of gestation; correction was made for this by taking the partial correlations, keeping weight of one twin constant, and the resulting correlations were  $r=0.3814$  for like and  $r=0.3606$  for unlike sex, agreeing well with the corresponding values for the similar English data.

Table 10 shows the mean weight for given number of days of gestation. As a diagram of the regression of weight on length of gestation it appears as a very smooth curve with slow growth in the very early period, increasing to a quicker linear rate between

190 days and 254 days (the mean) and then slowing down until in the period over 280 days very little further growth is made.

If this table is compared with the similar one for English hospitals it will be noticed

Table 9 - Weight (g) and length of gestation (days). All twins

		Weight (g.)								Totals
		Under 495	495-	995-	1495-	1995-	2495-	2995-	3495-	
Length of gestation (days)	Under 155 days	30	4	—	3	—	1	—	—	38
	155—	13	11	2	—	—	—	—	—	26
	170—	6	15	6	1	—	—	—	—	28
	185—	4	17	11	5	1	—	—	—	38
	200—	—	15	30	13	8	—	—	—	66
	215—	—	9	23	49	18	5	1	1	106
	230—	—	4	18	80	84	19	9	—	214
	245—	—	—	14	64	181	117	33	2	411
	260—	—	—	6	34	155	160	76	6	437
	275—	—	—	8	26	111	149	87	17	398
	290—	—	—	2	4	28	31	18	3	86
	305—	—	—	2	—	8	12	10	—	32
	320—	—	—	—	—	—	1	—	1	2
	Total		53	75	122	279	594	495	234	30

Table 10 - Mean weight (g) for given length of gestation (days). All twins

Days	No.	Mean wt. (g.)
Under 155	38	482
155—	26	533
170—	28	781
185—	38	1008
200—	66	1351
215—	106	1717
230—	214	2032
245—	411	2363
260—	437	2570
275—	398	2662
290—	86	2640
305 & over	34	2716
A11	1882	2270

that the 2 sets of data correspond very well, the Italian means being, however, rather higher for the lower gestation periods.

### Summary

Data of 986 twins from the records of the Clinica Ostetrica of the University of Rome have been analysed as regards the distributions, means and standard deviations of mother's age, order of birth, birth weight and length of gestation time in groups of like and unlike sex.

The chief characteristic of these data compared with similar data from English hospitals is the inclusion of cases of low birth weight and short gestation time. In the English data there are 9 cases out of 1137 of the group of weight under 680 g; in the present data there are 57 out of 1942 which fall into the lowest group under 500 g.

Similarly in length of gestation the English data have only 2 cases out of 926 under 170 days compared with 33 of the Italian out of 945.

The correlations between twin weights are respectively .8030 for like sex and .7604 for unlike sex; for weight and gestation period they are .3814 (like sex) and .3606 (unlike sex).

The regression of weight on length of gestation runs as a smooth curve in accordance with previous findings. The mean weights for given gestation times are about the same as, or a little higher than, those for the English data.

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### References

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### SOMMARIO

Un collettivo di 986 parti gemellari (distinto in due gruppi pressochè uguali di coppie dello stesso sesso e di sesso opposto) è stato raccolto dagli schedari delle nascite della Clinica Ostetrica dell'Università di Roma, per studiare le distribuzioni dei seguenti caratteri: età della madre, ordine di generazione, peso alla nascita, durata della gravidanza (« tempo di gestazione »).

La caratteristica essenziale di tale collettivo, rispetto ad un analogo collettivo precedentemente raccolto in due Ospedali

Inglese, è la presenza di un elevato numero di coppie di gemelli dal peso alla nascita spiccatamente basso e di un numero altrettanto sensibile di parti immaturi: nei dati inglesi infatti il gruppo di nati dal peso sotto i 680 gr. comprende solo 9 casi su 1137 contro i 57 su 1942 che nel presente collettivo cadono nel gruppo dei nati dal peso inferiore ai 500 gr.

Allo stesso modo, per quanto riguarda i parti immaturi (« tempo di gestazione » inferiore ai 170 giorni), ai due casi su 926 dei dati inglesi corrispondono qui ben 33 casi su 945.

L'indice di correlazione per

il peso alla nascita è pari a 0.8030 per le coppie dello stesso sesso e 0.7604 per quelle di sesso opposto; quello tra il peso alla nascita e il « tempo di gestazione » è 0.3814 per le prime, e 0.3606 per le seconde.

Con il diminuire del « tempo di gestazione » si ha una regressione del peso secondo una curva liscia, così come si era già visto nei dati del precedente collettivo.

Le medie del peso alla nascita, a parità di tempo di gestazione, sono qui uguali o leggermente più elevate di quelle dei dati inglesi.

## RESUMÉ

On a analysé un échantillon de 986 paires de jumeaux accouchés dans le Clinica Ostetrica dell'Università di Roma, divisé en groupes de sexe similaire et dissimilaire, à l'égard des distributions, les moyennes, et les déviations types de l'âge maternel, du rang de naissances, du poids de naissance, et de la durée de la gestation.

La caractéristique principale de ces données comparées avec ces deux hôpitaux anglais est

l'inclusion de cas de petit poids de naissance et de brève durée de la gestation. Chez les données anglaises il y a 9 parmi 1137 dans la groupe moins que 680 g; chez les données de ces recherches il y a 57 parmi 1942 qui sont placés dans la groupe inférieure à 500 g.

De même, dans la durée de la gestation les données anglaises ont 2 cas seulement parmi 926 moins que 170 jours contre 33 parmi 945 chez les données italiennes.

Les correlations des poids des jumeaux sont 0.8030 chez le sexe similaire et 0.7604 chez le sexe dissimilaire; entre le poids et la durée de la gestation elles sont 0.3814 et 0.3604 respectivement.

La régression du poids en durée de la gestation coule comme une courbe nette d'accord des résultats précédents. Les poids moyens pour la durée de la gestation égalent ces chez les données anglaises, ou sont peu plus grands.

## ZUSAMMENFASSUNG

986 Zwillinge aus der geburtshilflicher Abteilung der Università in Rom wurden in gleichgeschlechtliche und ungleichgeschlechtliche Paare unterteilt und Angaben über die Verteilung, die Mittelwerte und Standard-deviationen des mütterlichen Alters und der Schwangerschaftszahl, sowie des Geburtsgewichts und des Schwangerschaftsdauer gemacht.

Die Hauptcharakteristik dieser Daten, die sie von ähnlichen englischen Krankenhausdaten unterscheidet, ist de grössere Zahl

von Fällen von geringem Geburtsgewicht und kurzer Schwangerschaftsdauer. In den englischen Statistiken hatten 9 Fälle unter 1137 ein Gewicht von unter 680 g, während in den vorgelegten Daten 57 unter 1942 unter 500 g.

Desgleichen gab es unter den englischen Zwillingen nur 2 Fälle unter 926 mit einer Schwangerschaftsdauer unter 170 Tagen während unter den 945 italienischen Zwillingengeburt 33 vor dem 170 Tage geboren waren.

Die Korrelation zwischen den Gewichten gleichgeschlechtlicher

Zwillinge war 0.8030 und für ungleichgeschlechtliche Zwillinge 0.7604; die Korrelation zwischen Geburtsgewicht und Schwangerschaftsdauer betrug 0.3814 für gleichgeschlechtliche und 0.3606 für ungleichgeschlechtliche Zwillinge.

In Übereinstimmung mit früheren Befunden ist die Regression von Geburtsgewicht auf Schwangerschaftsdauer eine glatte Kurve. Die mittleren Geburtsgewichte für spezielle Schwangerschaftsdauer sind etwa die gleichen wie für die englischen Daten, oder ein wenig höher.