9

COMPLETE SET OF DATA IN SUPPORT OF

"A COMPARISON OF CONCENTRATIONS OF LEAD IN HUMAN TISSUES"

BY P.S.I. BARRY

PUBLISHED IN BRITISH JOURNAL OF INDUSTRIAL MEDICINE,

1975, 32, 119 - 139

CORRECTED JANUARY, 1976

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BY P.S.I. BARRY BJIM 1975,32,119-139

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NOTE: In Figs. M = Males
F = Females

TABLE I. TOTAL TISSUE LEAD CONCENTRATIONS, ALL SUBJECTS (ppm WET WEIGHT)

Tissue		No. Samples	Mean	Standard Deviation	Range
Bone	Petrous Temporal	60	27·97	23·21	0·25 – 90·00
	Tibia	123	21·91	25·68	0·21 – 221·00
	Calvarium	62	17·46	16·31	10 – 79·00
	Rib	129	8·71	9·20	0·01 – 61·00
	Hair	65	11·35	11·35	0·70 – 99·00
	Nails	47	10·65	17·67	0·65 – 100·00
Aorta	Atheroma	55	2·10	3·04	0·03 – 17·20
	Non Atheroma	82	2·04	3·91	0·04 – 27·90
	Liver	127	0·92	0·68	0·08 – 5·10
Dense Connect Tissue	Cartilage	41	0·79	1·16	0·04 – 4·80
	Ligament Nuchae	33	0·35	0·27	0·03 – 1·00
Kidney	Cortex	126	0·65	0·41	0·01 – 2·20
	Medulla	127	0·44	0·27	0·01 – 1·60
	Hilar Lymphatics	109	0·49	0·46	0·02 – 2·88
	Pancreas	121	0·34	0·24	0·01 – 1·42
	Ovary	30	0·31	0·37	0·03 – 1·50
	Prostate	67	0·29	0·54	0·03 – 2·82
	Skin	61	0·26	0·35	0·01 – 2·00
	Spleen	124	0·22	0·23	0·02 – 1·43
	Lung	128	0·21	0·12	0·01 – 0·64
	Thyroid	111	0·20	0·24	0·01 – 1·73
	Blood	108	0·19	0·13	0·01 – 0·79
	Suprarenal	104	0·18	0·16	0·01 – 1·20
Brain	Cortex	124	0·15	0·39	0·01 – 4·17
	Basal Ganglia	66	0·11	0·08	0·03 – 0·58
Fat	Subcutaneous	59	0·13	0·20	0·01 – 1·30
	Omentum	44	0·12	0·12	0·02 – 0·67
Gut	Caecum	81	0·12	0·11	0·01 – 0·68
	Midgut	80	0·12	0·09	0·03 – 0·52
	Stomach	80	0·09	0·07	0·01 – 0·42
	Testis	53	0·09	0·06	0·02 – 0·30
	Heart	126	0·07	0·06	0·01 – 0·35
	Muscle	85	0·06	0·05	0·01 – 0·30
	Faeces (μg/g. ash)	99	19·18	17·59	1·70 – 80·00
	Urine (μg/l)	42	36·00	37·11	5·00 – 192·00

TABLE II. CONCENTRATIONS OF LEAD IN TISSUES OF SUBJECTS WITH NO KNOWN OCCUPATIONAL EXPOSURE TO LEAD (ppm WET WEIGHT)

Tissue		MALE ADULTS				FEMALE ADULTS			
		No. Samples	Mean	Standard Deviation	Range	No. Samples	Mean	Standard Deviation	Range
Bone	Petrous Temporal	30	33.71	22.34	6.70 – 89.00	16	26.63	15.42	7.50 – 62.00
	Tibia	60	23.40	15.96	3.00 – 73.00	36	15.99	12.49	1.50 – 48.00
	Calvarium	31	20.17	16.00	3.90 – 79.00	17	16.46	13.08	5.00 – 54.20
	Rib	60	8.85	5.81	0.90 – 28.50	36	6.77	5.08	0.85 – 22.60
	Hair	33	6.56	5.05	1.00 – 20.00	18	11.49	14.89	0.70 – 55.00
	Nails	28	4.72	3.46	0.65 – 15.00	11	5.58	4.22	1.50 – 15.00
Aorta	Atheroma	32	2.56	3.49	0.21 – 17.20	16	1.17	1.23	0.09 – 4.20
	Non-Atheroma	42	1.82	2.47	0.09 – 12.70	22	1.70	2.64	0.07 – 12.20
	Liver	58	1.03	0.62	0.18 – 3.13	36	0.66	0.38	0.19 – 1.72
Dense Connect-Tissue	Cartilage	18	1.29	1.58	0.05 – 4.80	12	0.56	0.53	0.08 – 1.75
	Ligament Nuchae	16	0.33	0.29	0.03 – 0.90	11	0.37	0.23	0.10 – 0.86
Kidney	Cortex	59	0.78	0.38	0.15 – 1.85	35	0.55	0.39	0.10 – 2.20
	Medulla	59	0.50	0.25	0.13 – 1.46	36	0.38	0.19	0.11 – 0.97
	Hilar Lymphatics	56	0.50	0.57	0.06 – 2.88	34	0.46	0.28	0.03 – 1.20
	Pancreas	58	0.37	0.26	0.09 – 1.42	36	0.27	0.17	0.11 – 0.95
	Prostate	53	0.27	0.51	0.03 – 2.82				
	Ovary					25	0.26	0.31	0.03 – 1.09
	Skin	26	0.19	0.14	0.01 – 0.60	20	0.15	0.11	0.03 – 0.42
	Spleen	59	0.23	0.25	0.03 – 1.43	34	0.21	0.26	0.04 – 1.40
	Lung	59	0.22	0.11	0.05 – 0.59	36	0.22	0.12	0.04 – 0.55
	Thyroid	55	0.19	0.23	0.05 – 1.45	30	0.21	0.30	0.04 – 1.73
	Blood	53	0.20	0.12	0.03 – 0.79	30	0.16	0.10	0.04 – 0.41
	Suprarenal	54	0.15	0.11	0.01 – 0.62	27	0.17	0.11	0.05 – 0.48
Brain	Cortex	58	0.10	0.14	0.02 – 0.78	34	0.12	0.15	0.01 – 0.67
	Basal Ganglia	34	0.09	0.04	0.04 – 0.19	17	0.11	0.05	0.05 – 0.23
Fat	Subcutaneous	23	0.08	0.08	0.01 – 0.40	20	0.06	0.04	0.02 – 0.16
	Omentum	19	0.11	0.11	0.02 – 0.52	14	0.08	0.03	0.03 – 0.13
Gut	Caecum	32	0.09	0.06	0.03 – 0.27	27	0.14	0.14	0.02 – 0.68
	Midgut	31	0.12	0.06	0.05 – 0.32	27	0.12	0.10	0.03 – 0.48
	Stomach	32	0.09	0.05	0.03 – 0.25	26	0.11	0.10	0.02 – 0.42
	Testis	43	0.08	0.04	0.02 – 0.28				
	Heart	59	0.07	0.05	0.01 – 0.30	36	0.08	0.06	0.02 – 0.31
	Muscle	35	0.05	0.04	0.02 – 0.23	29	0.05	0.03	0.01 – 0.15
	Faeces (μg/g. ash)	50	17.39	12.40	2.20 – 59.40	29	17.69	18.11	2.80 – 80.00
	Urine (μg/l)	24	39.58	43.80	8.00–192.00	10	23.8	25.27	5.00 – 90.00

Shown as Table 1 in A Comparison of Concentrations of Lead in Human Tissues published in BJIM issue 1975,32,119-139.

TABLE III. DISTRIBUTION OF FREQUENCIES OF OCCURRENCE OF LEAD IN THE BONES OF SUBJECTS WITH NO KNOWN OCCUPATIONAL EXPOSURE TO LEAD

Pb Concentrations (ppm WET WT.)	MALE				FEMALE			
	Rib	Tibia	Calvarium	Petrous Temporal	Rib	Tibia	Calvarium	Petrous Temporal
< 4·9	34	16	7	3	27	10	2	2
5·0 – 9·9	20	10	9	7	9	10	9	5
10·0 – 14·9	12	10	5	3	6	9	4	2
15·0 – 19·9	4	5	4	5	2	3	3	2
20·0 – 24·9	3	5	6	3	1	5	0	2
25·0 – 29·9	1	5	1	1		1	1	2
30·0 – 34·9		4	2	2		1	2	2
35·0 – 39·9		6	0	1		0	0	1
40·0 – 44·9		5	2	1		3	0	1
45·0 – 49·9		2	1	2		1	0	1
> 50		3	1	9			1	1
Total Samples	74	71	38	37	45	43	22	21

TABLE IV.
LEAD CONCENTRATIONS IN BONES(ppm)

	COMPARISON OF ASH WEIGHT/WET WEIGHT							
	Rib		Calvarium		Tibia		Petrous Temporal	
	Ash	Wet	Ash	Wet	Ash	Wet	Ash	Wet
Total of 46 subjects								
Mean	19 8	5 9	22 3	15 12	24 3	15 7	37 7	25 9
Standard Deviation	19 7	4 6	23 5	16 3	32 5	15 5	33 9	22 5
Range	4 0 - 105 0	0 9 - 21 0	1 7 - 135 0	1 1 - 79 0	1 8 - 205 0	1 4 - 73 0	0 4 - 150 0	0 3 - 89 0
Ratio	3 4		1 4		1 5		1 5	
Total of 21 Male Adults								
Mean	27 7	7 4	33 9	23 6	37 3	23 2	54 2	37 2
Standard Deviation	25 7	5 5	29 5	18 9	43 1	18 2	39 3	24 8
Range	4 0 - 105 0	0 9 - 21 0	5 6 - 135 0	3 9 - 79 0	4 0 - 205 0	3 0 - 73 0	9 5 - 150 0	6 7 - 89 0
Ratio	3 7		1 4		1 6		1 5	
Total of 14 Female Adults								
Mean	16 9	5 8	17 3	13 1	19 0	13 7	35 7	25 1
Standard Deviation	9 8	3 8	10 3	8 3	14 5	10 4	10 7	15 3
Range	4 1 - 32 0	1 2 - 12 0	6 5 - 39 0	5 0 - 33 0	4 4 - 53 0	3 5 - 42 0	9 4 - 88 0	7 6 - 62 0
Ratio	2 9		1 3		1 4		1 4	
Total of 11 Children								
Mean	8 3	3 1	6 7	4 8	6 0	3 7	8 7	5 6
Standard Deviation	2 8	1 3	3 3	2 4	2 9	1 8	6 1	4 2
Range	3 5 - 12 0	1 0 - 5 5	1 7 - 10 3	1 1 - 9 0	1 8 - 10 9	1 4 - 6 2	0 4 - 22 0	0 3 - 16 0
Ratio	2 7		1 4		1 6		1 6	

Children 16 Years and Under

TABLE V. AGE GROUPS — MALES TISSUE LEAD CONCENTRATIONS — ppm WET WEIGHT

	Tissue	Age 0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89
		No. Mean (Range)	No. Mean (Range)	No. Mean (Range)	No. Mean (Range)	No. Mean (Range)	No. Mean (Range)	No. Mean (Range)	No. Mean (Range)	No. Mean (Range)
Bone	Petrous Temporal	3 5.50 (1.20 - 8.10)	4 7.95 (3.40 - 16.00)	7 9.86 (6.70 - 15.40)	2 15.15 (10.30 - 20.00)	3 29.67 (19.00 - 48.00)	1 35.00 (28.00 - 45.00)	10 44.20 (16.00 - 65.00)	4 56.50 (22.00 - 89.00)	1 50.00
	Tibia	7 2.41 (0.21 - 5.50)	7 4.55 (1.50 - 12.50)	9 6.91 (3.00 - 12.30)	5 16.40 (3.30 - 38.00)	9 18.22 (4.40 - 38.00)	9 22.39 (11.20 - 43.00)	15 31.67 (13.00 - 55.00)	5 31.76 (11.00 - 49.00)	5 47.94 (38.00 - 73.00)
	Calvarium	3 5.10 (2.00 - 8.70)	4 4.90 (1.90 - 9.00)	8 6.49 (4.10 - 11.80)	2 7.95 (3.90 - 12.00)	3 16.83 (9.50 - 22.00)	3 20.17 (15.00 - 24.00)	10 23.95 (14.00 - 41.00)	4 32.00 (12.00 - 47.00)	1 79.00
	Rib	9 1.83 (0.01 - 3.80)	8 3.09 (1.00 - 6.96)	9 4.03 (1.75 - 5.60)	5 6.10 (0.90 - 13.30)	9 8.31 (2.60 - 21.00)	9 11.75 (7.00 - 20.40)	15 10.31 (3.20 - 28.50)	5 8.68 (4.20 - 15.00)	5 14.34 (4.10 - 24.00)
	Hair	2 6.10 (3.20 - 9.00)	5 8.66 (2.30 - 19.00)	7 9.28 (1.50 - 19.00)	2 2.95 (2.90 - 3.00)	4 10.39 (8.00 - 16.00)	3 12.00 (6.00 - 20.00)	11 4.04 (1.00 - 8.20)	4 4.95 (1.10 - 12.20)	1 4.00
	Nails	1 85.00	3 12.00 (6.00 - 15.00)	4 7.48 (5.30 - 9.00)	1 2.00	4 4.34 (1.80 - 6.25)	3 6.58 (3.00 - 12.50)	10 2.62 (0.80 - 5.00)	4 3.09 (0.65 - 6.40)	1 6.00
Aorta	Atheroma	0	3 0.06 (0.03 - 0.09)	4 0.23 (0.21 - 0.24)	2 2.01 (0.26 - 3.76)	3 1.72 (0.33 - 3.85)	6 1.66 (0.55 - 2.90)	12 3.33 (0.46 - 17.20)	3 4.12 (0.42 - 10.20)	2 4.81 (2.60 - 7.02)
	Non-Atheroma	4 0.19 (0.04 - 0.29)	6 1.83 (0.04 - 9.90)	9 0.41 (0.10 - 1.04)	4 0.71 (0.22 - 1.56)	7 1.21 (0.33 - 4.26)	7 1.69 (0.57 - 2.85)	8 3.03 (0.90 - 8.10)	4 5.52 (0.28 - 12.70)	1 3.10
	Liver	9 0.65 (0.08 - 1.24)	8 0.82 (0.34 - 1.36)	8 1.11 (0.44 - 1.80)	5 0.88 (0.18 - 1.93)	9 0.76 (0.34 - 1.25)	9 0.98 (0.34 - 2.01)	15 1.19 (0.28 - 3.00)	5 0.70 (0.42 - 1.17)	4 1.47 (0.56 - 3.13)
Dense Connect Tissue	Cartilage	3 0.21 (0.08 - 0.44)	3 0.13 (0.04 - 0.22)	2 0.09 (0.05 - 0.12)	2 0.33 (0.10 - 0.56)	2 4.25 (3.70 - 4.80)	1 0.30	7 1.10 (0.20 - 4.67)	3 1.45 (0.34 - 2.70)	1.50
	Ligament Nuchae	1 0.15	3 0.43 (0.09 - 1.00)	2 0.26 (0.20 - 0.31)	1 0.20	1 0.10	1 0.22	7 0.26 (0.03 - 0.70)	3 0.53 (0.20 - 0.90)	0.80
Kidney	Cortex	8 0.40 (0.01 - 1.06)	8 0.67 (0.34 - 1.00)	9 1.07 (0.55 - 1.85)	5 0.73 (0.35 - 0.91)	9 0.80 (0.25 - 1.28)	9 0.69 (0.15 - 1.80)	15 0.72 (0.18 - 1.08)	5 0.60 (0.22 - 1.26)	4 0.91 (0.40 - 1.66)
	Medulla	8 0.29 (0.01 - 0.80)	8 0.43 (0.24 - 0.81)	9 0.52 (0.27 - 0.71)	5 0.64 (0.22 - 1.46)	9 0.46 (0.22 - 0.87)	9 0.51 (0.13 - 1.00)	15 0.42 (0.19 - 0.84)	5 0.42 (0.19 - 0.90)	4 0.71 (0.37 - 1.08)
	Hilar Lymphatics	3 0.66 (0.04 - 1.40)	7 0.61 (0.10 - 1.70)	7 0.48 (0.15 - 1.75)	5 0.32 (0.18 - 0.50)	9 0.35 (0.06 - 0.80)	9 0.23 (0.06 - 0.50)	15 0.74 (0.11 - 2.88)	5 0.33 (0.09 - 0.75)	4 0.66 (0.43 - 1.10)
	Pancreas	6 0.41 (0.26 - 0.68)	8 0.36 (0.22 - 0.61)	9 0.50 (0.30 - 1.20)	5 0.53 (0.12 - 0.94)	9 0.35 (0.17 - 0.65)	9 0.36 (0.09 - 1.42)	14 0.27 (0.10 - 0.49)	5 0.22 (0.10 - 0.32)	4 0.53 (0.19 - 0.92)
	Prostate	3 0.35 (0.10 - 0.50)	6 0.13 (0.03 - 0.25)	9 0.09 (0.04 - 0.15)	4 0.08 (0.05 - 0.11)	8 0.12 (0.04 - 0.23)	9 0.15 (0.04 - 0.58)	15 0.46 (0.03 - 2.82)	3 0.17 (0.07 - 0.33)	4 1.04 (0.08 - 2.51)
	Skin	3 0.29 (0.07 - 0.69)	4 0.36 (0.15 - 0.70)	3 0.39 (0.28 - 0.60)	2 0.22 (0.20 - 0.24)	3 0.28 (0.03 - 0.42)	3 0.17 (0.07 - 0.24)	9 0.07 (0.01 - 0.20)	3 0.20 (0.16 - 0.25)	2 0.27 (0.19 - 0.35)
	Spleen	9 0.12 (0.06 - 0.18)	7 0.14 (0.07 - 0.21)	9 0.12 (0.05 - 0.24)	5 0.19 (0.07 - 0.40)	9 0.06 (0.06 - 0.31)	9 0.28 (0.06 - 0.82)	15 0.36 (0.03 - 1.43)	5 0.23 (0.06 - 0.65)	4 0.27 (0.17 - 0.38)
	Lung	9 0.11 (0.01 - 0.42)	8 0.18 (0.09 - 0.40)	9 0.16 (0.11 - 0.20)	5 0.23 (0.10 - 0.37)	9 0.20 (0.12 - 0.32)	9 0.22 (0.10 - 0.47)	15 0.24 (0.05 - 0.59)	5 0.22 (0.06 - 0.40)	4 0.28 (0.14 - 0.51)
	Thyroid	6 0.18 (0.01 - 0.42)	6 0.20 (0.07 - 0.41)	8 0.13 (0.08 - 0.21)	5 0.11 (0.08 - 0.16)	9 0.12 (0.06 - 0.26)	8 0.12 (0.05 - 0.25)	15 0.25 (0.06 - 1.45)	5 0.35 (0.07 - 1.00)	3 0.30 (0.19 - 0.38)
	Blood	6 0.09 (0.04 - 0.13)	6 0.30 (0.07 - 0.79)	8 0.19 (0.08 - 0.25)	5 0.22 (0.08 - 0.28)	8 0.16 (0.08 - 0.24)	7 0.21 (0.03 - 0.43)	15 0.18 (0.04 - 0.31)	5 0.11 (0.08 - 0.17)	3 0.23 (0.18 - 0.31)
	Suprarenal	5 0.31 (0.01 - 0.87)	6 0.17 (0.04 - 0.27)	8 0.18 (0.08 - 0.38)	5 0.13 (0.09 - 0.19)	9 0.17 (0.01 - 0.62)	7 0.11 (0.07 - 0.13)	15 0.14 (0.03 - 0.35)	5 0.19 (0.04 - 0.46)	3 0.14 (0.12 - 0.16)
Brain	Cortex	9 0.06 (0.01 - 0.21)	8 0.09 (0.02 - 0.17)	9 0.07 (0.04 - 0.09)	4 0.06 (0.05 - 0.08)	9 0.13 (0.03 - 0.78)	9 0.06 (0.02 - 0.12)	15 0.09 (0.03 - 0.30)	5 0.12 (0.04 - 0.27)	4 0.25 (0.08 - 0.73)
	Basal Ganglia	3 0.15 (0.08 - 0.24)	5 0.13 (0.04 - 0.18)	8 0.09 (0.05 - 0.16)	2 0.06 (0.05 - 0.07)	5 0.08 (0.05 - 0.12)	3 0.08 (0.04 - 0.13)	10 0.11 (0.04 - 0.19)	4 0.08 (0.04 - 0.12)	1 0.17
Fat	Subcutaneous	3 0.27 (0.18 - 0.36)	4 0.30 (0.03 - 0.58)	3 0.10 (0.04 - 0.18)	2 0.06 (0.04 - 0.07)	3 0.06 (0.03 - 0.11)	3 0.07 (0.03 - 0.11)	8 0.06 (0.01 - 0.14)	2 0.09 (0.04 - 0.13)	1 0.07
	Omentum	2 0.13 (0.08 - 0.17)	3 0.11 (0.05 - 0.16)	3 0.10 (0.06 - 0.14)	3 0.03 (0.02 - 0.04)	2 0.14 (0.04 - 0.23)	2 0.04 (0.04 - 0.04)	6 0.07 (0.03 - 0.13)	3 0.26 (0.11 - 0.52)	1 0.15
Gut	Caecum	6 0.11 (0.01 - 0.21)	4 0.15 (0.04 - 0.21)	2 0.06 (0.04 - 0.07)	2 0.06 (0.04 - 0.06)	5 0.08 (0.03 - 0.17)	4 0.06 (0.04 - 0.11)	10 0.09 (0.04 - 0.27)	4 0.12 (0.10 - 0.17)	4 0.11 (0.04 - 0.18)
	Midgut	6 0.09 (0.03 - 0.17)	4 0.15 (0.06 - 0.19)	2 0.09 (0.05 - 0.12)	2 0.09 (0.06 - 0.13)	4 0.14 (0.09 - 0.17)	4 0.09 (0.05 - 0.14)	10 0.12 (0.05 - 0.18)	4 0.16 (0.07 - 0.32)	4 0.10 (0.06 - 0.14)
	Stomach	7 0.07 (0.01 - 0.20)	4 0.12 (0.04 - 0.26)	2 0.13 (0.06 - 0.20)	2 0.09 (0.03 - 0.15)	5 0.07 (0.03 - 0.11)	4 0.08 (0.04 - 0.13)	10 0.08 (0.04 - 0.12)	4 0.11 (0.06 - 0.14)	4 0.09 (0.06 - 0.12)
	Testis	3 0.18 (0.03 - 0.30)	6 0.08 (0.03 - 0.16)	9 0.09 (0.06 - 0.12)	2 0.21 (0.13 - 0.28)	8 0.06 (0.04 - 0.07)	6 0.07 (0.03 - 0.11)	12 0.08 (0.02 - 0.19)	5 0.07 (0.05 - 0.11)	1 0.06
	Heart	8 0.05 (0.01 - 0.11)	8 0.12 (0.03 - 0.24)	9 0.08 (0.03 - 0.19)	5 0.10 (0.04 - 0.30)	9 0.06 (0.03 - 0.09)	9 0.05 (0.03 - 0.08)	15 0.05 (0.01 - 0.17)	5 0.07 (0.03 - 0.10)	4 0.10 (0.05 - 0.21)
	Muscle	6 0.08 (0.02 - 0.16)	4 0.10 (0.02 - 0.23)	3 0.05 (0.04 - 0.07)	3 0.04 (0.03 - 0.06)	5 0.06 (0.02 - 0.16)	5 0.05 (0.02 - 0.08)	10 0.05 (0.02 - 0.12)	4 0.06 (0.02 - 0.09)	4 0.05 (0.04 - 0.06)
	Faeces (µg/g. ash)	3 38.49 (3.46 - 77.00)	8 31.61 (5.50 - 59.40)	6 16.13 (3.15 - 23.00)	5 19.22 (4.70 - 51.40)	8 17.04 (2.30 - 31.00)	7 16.82 (7.10 - 31.00)	15 14.70 (3.40 - 39.00)	4 15.65 (5.10 - 36.50)	3 17.73 (12.00 - 23.00)
	Urine (µg/l)	3 27.43 (8.30 - 50.00)	5 39.20 (13.00 - 71.00)		2 38.50 (36.00 - 42.00)	4 51.50 (16.00 - 132.00)	3 51.67 (10.00 - 110.00)	9 26.22 (13.00 - 43.00)		2 102.00 (12.0 - 192.00)

Shown as Table 11 in A Comparison of Concentrations of Lead in Human Tissues published in BJIM issue 1975, 32,119-139.

TABLE VI. AGE GROUPS – FEMALES TISSUE LEAD CONCENTRATIONS – ppm WET WEIGHT

Tissue		Age 0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99
		No Mean (Range)	No Mean (Range)	No Mean (Range)	No Mean (Range)	No Mean Range	No Mean (Range)	No Mean (Range)	No Mean (Range)	No Mean (Range)	No Mean (Range)
Bone	Petrous Temporal	5 4.27 (0.25 6.70)	1 7.50	2 9.40 (7.80 11.00)	2 23.50 (17.00 30.00)	3 21.17 (14.00 34.00)	2 27.00 (20.00 34.00)	2 31.50 (29.00 35.00)	0	3 43.33 (26.00 62.00)	1 48.50
	Tibia	7 2.99 (0.62 6.20)	1 5.90	5 3.46 (2.50 6.80)	2 17.50 (14.00 21.00)	7 10.43 (1.50 22.00)	3 12.38 (4.70 17.10)	8 18.84 (7.71 43.20)	4 33.85 (10.50 44.60)	4 24.59 (6.15 42.00)	1 48.00
	Calvarium	5 4.68 (1.10 6.50)	1 5.20	2 7.00 (6.50 7.50)	2 22.50 (17.00 31.00)	4 14.71 (5.60 31.50)	2 10.50 (5.00 16.00)	2 13.65 (11.30 16.00)	0	3 18.07 (10.70 27.00)	1 54.20
	Rib	9 2.48 (0.01 5.50)	1 10.00	5 3.21 (1.50 4.90)	2 10.50 (9.00 12.00)	7 3.92 (1.30 10.00)	4 5.56 (2.50 9.10)	8 8.16 (0.85 32.60)	4 2.57 (1.50 4.10)	4 8.55 (1.00 16.50)	1 17.10
	Hair	5 16.14 (7.20 25.00)	1 8.60	1 17.10 (7.70 39.00)	2 5.18 (3.16 9.10)	3 5.97 (4.70 8.00)	3 8.35 (1.80 21.10)	2 20.65 (7.50 55.00)	0	3 16.27 (0.70 43.00)	1 2.57
	Nails	2 72.50 (45.00 100.0)	0	2 11.00 (11.00 15.00)	2 1.59 (1.57 3.60)	1 7.00	2 3.50 (1.50 5.50)	2 11.5 (1.50 21.50)	0	3 4.85 (2.00 6.70)	0
Aorta	Atheroma	0	1 0.14	1 0.09	0	4 0.64 (0.13 0.95)	2 0.89 (0.80 0.97)	3 1.01 (0.98 1.10)	1 4.11	3 1.77 (0.47 4.20)	1 1.60
	Non-Atheroma	6 0.34 (0.07 1.10)	1 0.26	5 0.27 (0.07 0.64)	2 0.43 (0.41 0.47)	3 0.56 (0.12 0.88)	3 1.21 (0.63 1.65)	3 1.71 (0.98 3.10)	1 4.11	3 2.15 (1.46 3.50)	1 12.20
	Liver	9 0.63 (0.10 1.37)	1 0.67	5 0.64 (0.42 0.80)	2 0.43 (0.25 0.61)	7 0.70 (0.13 1.75)	4 0.47 (0.21 0.43)	8 0.84 (0.21 1.40)	4 0.51 (0.31 0.71)	4 0.57 (0.20 1.00)	1 1.72
Dense Connect Tissue	Cartilage	5 0.29 (0.18 0.50)	1 0.26	7 0.14 (0.08 0.70)	0	6 0.29 (0.28 0.80)	2 0.80 (0.30 1.30)	2 0.71 (0.35 1.10)	0	2 1.15 (0.55 1.75)	0
	Ligament Nuchae	7 0.34 (0.19 0.48)	0	2 0.30 (0.20 0.40)	0	3 0.48 (0.24 0.86)	2 0.48 (0.20 0.75)	2 0.70 (0.10 0.80)	0	2 0.31 (0.30 0.80)	0
Kidney	Cortex	9 0.42 (0.03 1.20)	1 0.57	5 0.59 (0.26 1.35)	2 0.24 (0.20 0.28)	7 0.86 (0.17 2.50)	4 0.41 (0.30 0.77)	7 0.52 (0.21 0.85)	4 0.41 (0.30 0.68)	4 0.34 (0.10 0.57)	1 0.61
	Medulla	9 0.29 (0.03 0.73)	1 0.59	5 0.49 (0.21 0.97)	2 0.19 (0.13 0.24)	7 0.42 (0.25 0.70)	3 0.21 (0.17 0.30)	8 0.43 (0.14 0.77)	4 0.37 (0.26 0.54)	4 0.27 (0.11 0.48)	1 0.57
	Hilar Lymphatics	4 0.51 (0.38 1.60)	0	5 0.33 (0.07 0.65)	2 0.09 (0.03 0.15)	7 0.41 (0.10 1.05)	3 0.36 (0.12 0.60)	8 0.48 (0.15 0.81)	4 0.71 (0.36 1.20)	4 0.49 (0.35 0.60)	1 0.64
	Pancreas	8 0.25 (0.01 0.58)	1 0.36	5 0.28 (0.24 0.31)	2 0.15 (0.11 0.18)	7 0.26 (0.12 0.39)	1 0.37 (0.13 0.95)	8 0.29 (0.16 0.73)	4 0.26 (0.13 0.41)	3 0.12 (0.12 0.25)	1 0.45
	Ovary	5 0.54 (0.10 1.50)	1 0.14	5 0.11 (0.03 0.34)	2 0.10 (0.05 0.15)	3 0.25 (0.05 0.62)	1 0.14 (0.11 0.15)	4 0.26 (0.05 0.78)	1 0.89	4 0.32 (0.07 0.84)	1 1.02
	Skin	5 0.73 (0.25 1.80)	0	2 0.14 (0.07 0.21)	2 0.25 (0.08 0.41)	3 0.16 (0.07 0.30)	2 0.15 (0.10 0.20)	6 0.15 (0.04 0.35)	2 0.12 (0.03 0.20)	2 0.08 (0.07 0.08)	0
	Spleen	9 0.12 (0.07 0.23)	1 0.11	5 0.11 (0.06 0.14)	1 0.04	6 0.14 (0.09 0.17)	4 0.15 (0.07 0.28)	8 0.33 (0.08 1.40)	4 0.20 (0.07 0.39)	4 0.36 (0.07 0.88)	1 0.36
	Lung	9 0.15 (0.02 0.37)	1 0.31	5 0.19 (0.06 0.44)	2 0.15 (0.14 0.15)	7 0.21 (0.18 0.40)	4 0.16 (0.06 0.20)	8 0.18 (0.04 0.40)	4 0.33 (0.16 0.53)	4 0.25 (0.11 0.33)	1 0.50
	Thyroid	7 0.28 (0.10 0.80)	1 0.12	5 0.10 (0.04 0.20)	2 0.11 (0.08 0.13)	6 0.14 (0.06 0.26)	4 0.16 (0.10 0.225)	4 0.17 (0.07 0.27)	1 0.16 (0.11 0.25)	4 0.24 (0.06 0.55)	1 1.71
	Blood	6 0.12 (0.01 0.40)	1 0.25	5 0.18 (0.04 0.32)	2 0.14 (0.12 0.15)	6 0.17 (0.06 0.30)	1 0.07 (0.05 0.10)	7 0.19 (0.04 0.41)	1 0.14 (0.07 0.26)	2 0.13 (0.15 0.22)	1 0.20
	Suprarenal	6 0.39 (0.14 1.20)	1 0.22	5 0.14 (0.09 0.19)	1 0.27	5 0.18 (0.06 0.35)	4 0.18 (0.06 0.48)	1 0.19 (0.08 0.25)	1 0.11 (0.05 0.28)	4 0.09 (0.05 0.13)	1 0.32
Brain	Cortex	8 0.07 (0.01 0.19)	1 0.08	5 0.06 (0.04 0.07)	1 0.06	7 0.08 (0.04 0.18)	1 0.05 (0.01 0.08)	8 0.27 (0.05 0.67)	4 0.10 (0.06 0.16)	4 0.06 (0.03 0.09)	1 0.28
	Basal Ganglia	5 0.11 (0.06 0.33)	0	3 0.08 (0.05 0.10)	2 0.09 (0.08 0.09)	4 0.13 (0.09 0.16)	2 0.09 (0.05 0.13)	2 0.13 (0.11 0.13)	0	3 0.12 (0.06 0.23)	1 0.16
Fat	Subcutaneous	5 0.48 (0.09 1.80)	1 0.05	2 0.05 (0.04 0.06)	2 0.04 (0.03 0.05)	4 0.07 (0.03 0.13)	1 0.01 (0.07 0.03)	5 0.06 (0.02 0.16)	2 0.06 (0.05 0.06)	2 0.06 (0.02 0.09)	0
	Omentum	5 0.25 (0.11 0.67)	1 0.10	2 0.06 (0.05 0.06)	2 0.06 (0.06 0.06)	4 0.08 (0.05 0.13)	2 0.08 (0.01 0.13)	2 0.10 (0.08 0.12)	0	2 0.07 (0.04 0.10)	0
Gut	Caecum	7 0.15 (0.01 0.25)	1 0.29	2 0.06 (0.05 0.06)	0	6 0.20 (0.05 0.68)	3 0.05 (0.03 0.07)	8 0.13 (0.04 0.23)	4 0.17 (0.02 0.46)	3 0.07 (0.04 0.09)	0
	Midgut	7 0.19 (0.03 0.52)	1 0.17	2 0.07 (0.05 0.08)	0	6 0.09 (0.03 0.16)	3 0.08 (0.04 0.11)	8 0.17 (0.04 0.48)	4 0.15 (0.06 0.36)	3 0.09 (0.06 0.13)	0
	Stomach	7 0.08 (0.03 0.14)	1 0.40	2 0.07 (0.05 0.08)	0	6 0.15 (0.05 0.42)	3 0.11 (0.03 0.24)	7 0.09 (0.06 0.14)	4 0.08 (0.02 0.16)	3 0.05 (0.05 0.06)	0
	Heart	9 0.08 (0.01 0.14)	1 0.15	5 0.07 (0.04 0.13)	2 0.05 (0.04 0.05)	7 0.09 (0.02 0.31)	4 0.05 (0.04 0.05)	8 0.07 (0.03 0.14)	4 0.08 (0.05 0.13)	4 0.05 (0.03 0.07)	1 0.21
	Muscle	7 0.10 (0.03 0.30)	1 0.04	2 0.05 (0.04 0.05)	2 0.03 (0.03 0.03)	6 0.07 (0.01 0.15)	3 0.03 (0.01 0.05)	8 0.06 (0.02 0.10)	4 0.05 (0.03 0.07)	3 0.03 (0.01 0.04)	0
	Faeces (µg/g. ash)	6 79.95 (1.70 75.00)	1 31.00	3 32.50 (2.50 65.00)	2 13.00 (12.00 14.00)	6 13.80 (3.40 39.00)	2 6.00 (3.00 9.00)	7 18.97 (2.80 80.00)	4 14.65 (6.99 32.10)	3 16.33 (5.00 31.00)	1 21.00
	Urine (µg/l)	1 27.00	1 36.00	0	2 12.50 (5.0 20.00)	4 17.00 (7.00 26.0)	0	1 50.00	0	1 7.00	1 12.00

Shown as Table III in A Comparison of Concentrations of Lead in Human Tissues published in BJIM issue 1975, 32,119-139.

TABLE VII.
TISSUE LEAD CONCENTRATIONS IN CHILDREN AGED 16 YEARS AND UNDER (ppm WET WEIGHT)

Tissue		No. Samples	Mean	Standard Deviation	Range
Bone	Petrous Temporal	12	5·80	4·02	0·25 – 16·00
	Tibia	18	2·71	1·94	0·21 – 6·20
	Calvarium	12	4·82	2·32	1·10 – 9·00
	Rib	23	2·16	1·48	0·01 – 5·50
	Hair	11	10·65	7·36	2·30 – 25·00
	Nails	5	44·20	37·23	6·00 – 100·00
Aorta	Atheroma	4	0·07	0·04	0·03 – 0·11
	Non-Atheroma	14	0·97	2·59	0·04 – 9·90
	Liver	23	0·64	0·41	0·08 – 1·40
Dense Connect Tissue	Cartilage	11	0·23	0·15	0·04 – 0·50
	Ligament Nuchae	6	0·35	0·35	0·09 – 1·00
Kidney	Cortex	22	0·45	0·36	0·01 – 1·20
	Medulla	22	0·31	0·24	0·01 – 0·80
	Hilar Lymphatics	11	0·62	0·49	0·04 – 1·60
	Pancreas	19	0·33	0·17	0·01 – 0·68
	Ovary	5	0·54	0·56	0·10 – 1·50
	Prostate	7	0·22	0·19	0·03 – 0·50
	Skin	11	0·52	0·48	0·07 – 1·80
	Spleen	22	0·13	0·06	0·02 – 0·23
	Lung	23	0·14	0·10	0·01 – 0·42
	Thyroid	17	0·22	0·18	0·01 – 0·80
	Blood	16	0·12	0·10	0·01 – 0·40
	Suprarenal	15	0·30	0·32	0·01 – 1·20
Brain	Cortex	22	0·07	0·05	0·01 – 0·21
	Basal Ganglia	12	0·13	0·09	0·04 – 0·33
Fat	Subcutaneous	11	0·36	0·35	0·03 – 1·30
	Omentum	10	0·18	0·18	0·05 – 0·67
Gut	Caecum	16	0·12	0·07	0·01 – 0·25
	Midgut	16	0·14	0·12	0·03 – 0·52
	Stomach	17	0·07	0·05	0·01 – 0·20
	Testis	7	0·14	0·10	0·03 – 0·30
	Heart	22	0·07	0·05	0·01 – 0·18
	Muscle	16	0·08	0·07	0·02 – 0·30
	Faeces (μg/g. ash)	14	31·26	27·85	1·70 – 77·00
	Urine (μg/l)	7	35·90	23·90	8·3 – 71·00

Shown as Table IV in A Comparison of Concentrations of Lead in Human Tissues published in BJIM issue 1975. 32.119-139.

TABLE VIII. TISSUE LEAD CONCENTRATIONS (ppm WET WEIGHT) IN CHILDREN OF VARYING AGE GROUPS

		8 infants < 1 year old (4 of each sex)			10 children aged 2–9 years (5 of each sex)			5 children aged 13–16 years (All male sex)		
Tissue		No.	Mean	Range	No.	Mean	Range	No.	Mean	Range
Bone	Petrous Temporal	0			8	4 73	0 25 – 8 10	4	7 95	3 40 – 16 00
	Calvarium	0			8	4 78	1 10 – 6 70	4	4 90	1 90 – 9 00
	Tibia	5	0 91	0 21 – 1 53	9	3 70	0 96 – 6 20	4	2 73	1 50 – 4 40
	Rib	8	1 09	0 01 – 2 71	10	3 01	0 01 – 5 50	5	2 18	1 00 – 3 30
	Aorta	1	0 11		9	0 30	0 04 – 1 10	5	2 16	0 04 – 9 90
	Liver	8	0 35	0 08 – 1 37	10	0 87	0 44 – 1 40	5	0 63	0 34 – 0 92
Kidney	Cortex	8	0 09	0·01 – 0 22	9	0 70	0 21 – 1 20	5	0 58	0 34 – 1 00
	Medulla	8	0 07	0 01 – 0·22	9	0 49	0 22 – 0 80	5	0 37	0 24 – 0 65
	Hilar Lymphatics	1	0 41		6	0 73	0 04 – 1 60	4	0 50	0 10 – 0 80
	Lung	8	0 06	0·01 – 0·18	10	0 19	0 05 – 0 42	5	0 15	0 10 – 0 25
	Skin	1	0 10		7	0 63	0 07 – 1 80	3	0 39	0 15 – 0 70
	Subcutaneous Fat	1	0 28		7	0 42	0 09 – 1 30	3	0 27	0 03 – 0 58
	Prostrate	1	0 10		2	0 48	0 45 – 0 50	4	0 13	0 03 – 0 25
	Pancreas	4	0 15	0 01 – 0 31	10	0 38	0 17 – 0 68	5	0 36	0 22 – 0 61
	Thyroid	4	0 13	0 01 – 0·24	9	0 28	0 07 – 0 80	4	0 17	0 07 – 0 26
	Suprarenal	3	0 10	0 01 – 0 14	8	0 45	0 29 – 1 20	4	0 15	0 04 – 0 27
	Spleen	8	0 10	0·02 – 0·18	10	0 13	0 08 – 0 23	4	0 16	0 13 – 0 21
	Blood	4	0·03	0 01 – 0 05	8	0·14	0 05 – 0 40	4	0 15	0 07 – 0 28
Gut	Stomach	6	0 03	0 01 – 0 06	8	0 11	0 05 – 0 20	3	0 07	0 04 – 0 10
	Midgut	5	0·05	0·03 – 0 08	8	0 20	0 11 – 0 52	3	0 14	0 06 – 0 18
	Caecum	5	0 06	0·01 – 0 10	8	0 15	0 06 – 0 25	3	0 13	0 06 – 0 20
	Brain Cortex	7	0·03	0 01 – 0 06	10	0 09	0 03 – 0 21	5	0 07	0 02 – 0 13
	Heart	8	0·03	0 01 – 0 09	9	0 09	0·03 – 0 17	5	0 10	0·03 – 0 18
	Muscle	5	0 06	0 02 – 0 13	8	0 11	0 03 – 0 30	3	0 06	0 02 – 0 11
	Faeces (µg./g. ash)	2	2·58	1 70 – 3 46	7	41 43	4 00 – 77 00	5	28·50	9 00 – 52·00

Shown as Table V in A Comparison of Concentrations of Lead in Human Tissues published in BJIM issue 1975, 32,119-139.

TABLE IX. FAECAL LEAD CONCENTRATIONS RELATIVE TO TISSUE LEAD CONCENTRATIONS IN NINE CHILDREN UNDER TEN YEARS OF AGE (ppm WET WEIGHT)

Tissue		6 Children			3 Children		
		No. Samples	Mean	Range	No. Samples	Mean	Range
Faeces (µg/g. ash)		6	12 53	1 70 – 35 00	3	73 33	68 00 – 77 00
Bone	Petrous Temporal	4	3 11	0 25 – 5 20	3	6 27	4 00 – 8 10
	Tibia	6	2 17	0 85 – 5 20	3	5 33	4 40 – 6 20
	Calvarium	4	3 50	1 10 – 5 60	3	5 87	4 40 – 6 70
	Rib	6	2 12	0 70 – 3 80	3	4 60	3 90 – 5 50
Hair		4	11 68	7 20 – 21 00	3	15 40	3 20 – 25 00
Aorta		4	0 46	0 18 – 1 10	3	0 19	0 07 – 0 29
Liver		6	0 48	0 17 – 0 66	3	1 05	0 72 – 1 40
Cartilage		4	0 23	0 13 – 0 31	3	0 25	0 06 – 0 50
Kidney	Cortex	6	0 35	0 08 – 0 65	3	1 00	0 74 – 1 20
	Medulla	6	0 25	0 05 – 0 46	3	0 70	0 57 – 0 80
Hilar Lymphatics		5	0 84	0 38 – 1 60	1	0 55	
Pancreas		6	0 24	0 04 – 0 38	3	0 43	0 31 – 0 58
Ovary		3	0 28	0 10 – 0 50	2	0 93	0 35 – 1 50
Prostate		2	0 28	0 10 – 0 45	1	0 50	
Skin		4	0 80	0 25 – 1 80	3	0 40	0 07 – 0 58
Spleen		6	0 13	0 08 – 0 18	3	0 17	0 13 – 0 23
Lung		6	0 16	0 05 – 0 27	3	0 18	0 09 – 0 32
Thyroid		5	0 27	0 17 – 0 42	3	0 38	0 07 – 0 80
Blood		5	0 15	0 05 – 0 40	2	0 11	0 08 – 0 13
Suprarenal		5	0 34	0 14 – 0 87	3	0 59	0 25 – 1 20
Brain	Cortex	6	0 09	0 03 – 0 19	3	0 05	0 03 – 0 08
	Basal Ganglia	4	0 16	0 06 – 0 33	3	0 08	0 06 – 0 10
Fat	Subcutaneous	4	0 21	0 09 – 0 39	3	0 69	0 35 – 1 30
	Omentum	4	0 29	0 11 – 0 67	3	0 13	0 08 – 0 17
Gut	Caecum	6	0 12	0 01 – 0 21	3	0 14	0 08 – 0 25
	Midgut	6	0 14	0 03 – 0 21	3	0 25	0 11 – 0 52
	Stomach	6	0 07	0 03 – 0 11	3	0 09	0 05 – 0 14
Testis		1	0 22		1	0 03	
Heart		6	0 08	0 02 – 0 14	2	0 09	0 08 – 0 10
Muscle		6	0 09	0 03 – 0 16	3	0 13	0 03 – 0 30

TABLE X. TISSUE LEAD CONCENTRATIONS IN A NINE YEAR OLD MENTALLY RETARDED BOY WITH HYPERCALCAEMIA AND HYPERTENSION

	Tissue	Pb Content (ppm WET WT.)
	Faeces (µg/g. ash)	77·00
Bone	Petrous Temporal	8·10
Bone	Tibia	5·40
Bone	Calvarium	6·70
Bone	Rib	3·90
	Hair	3·20
	Aorta	0·29
	Liver	1·40
	Cartilage	0·06
Kidney	Cortex	1·05
Kidney	Medulla	0·80
	Hilar Lymphatics	0·55
	Pancreas	0·39
	Prostate	0·50
	Skin	0·07
	Spleen	0·13
	Lung	0·14
	Thyroid	0·07
	Blood	0·13
	Suprarenal	0·32
Brain	Cortex	0·04
Brain	Basal Ganglia	0·08
Fat	Subcutaneous	0·35
Fat	Omentum	0·08
Gut	Caecum	0·09
Gut	Midgut	0·11
Gut	Stomach	0·05
	Testis	0·03
	Muscle	0·03

TABLE XI. CONCENTRATIONS OF LEAD (ppm WET WEIGHT) IN TISSUE OF TEN MALE ADULTS WITH OCCUPATIONAL EXPOSURE TO LEAD AGE 29-82 YEARS

Tissue		No. Samples	Mean	Standard Deviation	Range
Bone	Petrous Temporal	2	85 50	6 36	81 00 – 90 00
	Tibia	9	74 01	58 60	16 60 – 221 00
	Calvarium	2	59 75	6 72	55 00 – 64 50
	Rib	10	29 92	15 91	8 70 – 61 00
	Hair	3	65 67	44 61	15 00 – 99 00
	Nails	3	28 63	15 06	13 90 – 44 00
Aorta	Atheroma	3	4 88	4 40	2 10 – 9 95
	Non-Atheroma	4	9 93	12 69	0 32 – 27 90
	Liver	10	1 93	1 22	0 87 – 5 10
Kidney	Cortex	10	0 66	0 56	0 33 – 2 20
	Medulla	10	0 63	0 42	0 23 – 1 60
	Hilar Lymphatics	8	0 36	0 22	0 02 – 0 61
	Pancreas	8	0 49	0 37	0 13 – 1 20
	Prostate	7	0 52	0 88	0 07 – 2 50
	Skin	4	0 53	0 98	0 01 – 2 00
	Spleen	9	0 32	0 18	0 11 – 0 57
	Lung	10	0 31	0 16	0 14 – 0 64
	Thyroid	9	0 18	0 16	0 03 – 0 50
	Blood	9	0 31	0 19	0 02 – 0 72
	Suprarenal	8	0 18	0 15	0 07 – 0 52
Brain	Cortex	10	0 65	1 25	0 03 – 4 17
	Basal Ganglia	3	0 29	0 28	0 03 – 0 58
Fat	Subcutaneous	5	0 10	0 12	0 01 – 0 30
	Omentum	1	0 15		
Gut	Caecum	6	0 18	0 19	0 03 – 0 44
	Midgut	6	0 12	0 09	0 03 – 0 22
	Stomach	5	0 10	0 07	0 04 – 0 20
	Testis	3	0 11	0 03	0 08 – 0 14
	Heart	9	0 10	0 11	0 01 – 0 35
	Muscle	5	0 04	0 15	0 02 – 0 06
	Faeces (µg/g. ash)	6	24 32	13 00	7 40 – 52 20
	Urine (µg/l)	1	72 0		

Shown as Table VI in A Comparison of Concentrations of Lead in Human Tissues published in BJIM issue 1975, 32,119-139.

TABLE XII. LEAD CONCENTRATIONS (ppm WET WEIGHT) IN MALE ADULTS AGED 55-88 YEARS NON-OCCUPATIONAL V. OCCUPATIONAL EXPOSURE

		NON-OCCUPATIONAL EXPOSURE				OCCUPATIONAL EXPOSURE			
Tissue		No. Samples	Mean	Standard Deviation	Range	No. Samples	Mean	Standard Deviation	Range
Bone	Petrous Temporal	17	46 53	19 88	16 00 - 89 00	2	85 50	6 36	81 00 - 90 00
	Tibia	29	33 74	14 54	11 00 - 73 00	8 (7)	81 19 (61 22	58 26	39·70 - 221 00 39 70 - 84 50)
	Calvarium	17	28 56	16 70	12 00 - 79 00	2	59 75	6 72	55 00 - 64 50
	Rib	29	11 05	6 13	3 20 - 28 50	9 (8)	32 28 (24 66	14 91	14 00 - 61 00 14 00 - 44 50)
	Hair	18	5 24	4 70	1 00 - 20 00	2	57 00	59 40	15 00 - 99 00
	Nails	17	3 26	1 94	0 65 - 7 20	2	36 00	11 31	28 00 - 44 00
Aorta	Atheroma	20	3 27	4 15	0 42 - 17 20	3 (2)	4 88 (2 35	4 39	2 10 - 9 95 2 10 - 2 60)
	Non Atheroma	16	3 30	3 34	0 28 - 12 70	3 (2)	13 13 (5 75	13 41	1 70 - 27 90 1 70 - 9 80)
	Liver	28	1 08	0 73	0 18 - 3 13	9	1 97	1 29	0 87 - 5 10
Kidney	Cortex	28	0 72	0 33	0 28 - 1 66	9	0 67	0 59	0 33 - 2 20
	Medulla	28	0 48	0 24	0 19 - 1 08	9	0 64	0 45	0 23 - 1 60
	Hilar Lymphatics	27	0 60	0 69	0 09 - 2 88	7	0 41	0 18	0 19 - 0 61
	Pancreas	27	0 33	0 28	0 10 - 1 42	7	0 50	0 39	0 13 - 1 20
	Prostate	25	0 44	0 71	0 03 - 2 82	6	0 59	0 94	0 07 - 2 50
	Skin	15	0 13	0 10	0 01 - 0 35	4	0 53	0 98	0 01 - 2 00
	Spleen	28	0 30	0 32	0 03 - 1 43	8	0 34	0 18	0 11 - 0 57
	Lung	28	0 24	0 14	0 05 - 0 59	9	0 32	0 16	0 14 - 0 64
	Thyroid	27	0·26	0 30	0 06 - 1 45	8	0·19	0 16	0·03 - 0 50
	Blood	26	0·17	0 08	0 04 - 0 35	8	0 31	0 20	0 02 - 0 72
	Suprarenal	27	0 14	0 09	0 03 - 0 46	7	0 18	0 16	0 07 - 0 52
Brain	Cortex	28	0 12	0 14	0 03 - 0 73	9 (8)	0 72 (0 29	1 31	0 06 - 4 17 0 06 - 0 69)
	Basal Ganglia	17	0 10	0 05	0 04 - 0 19	2	0 42	0 23	0 26 - 0 58
Fat	Subcutaneous	12	0 06	0 04	0 01 - 0 14	5	0 09	0 12	0 01 - 0 30
	Omentum	11	0 13	0 14	0 03 - 0 52	1	0 15		
Gut	Caecum	19	0·10	0 06	0 04 - 0 27	6	0 18	0 19	0 03 - 0 44
	Midgut	19	0·12	0 06	0 05 - 0 32	6	0 12	0 09	0 03 - 0 22
	Stomach	19	0 09	0 03	0 04 - 0 14	5	0 10	0 07	0 04 - 0 20
	Testis	22	0·07	0 03	0 02 - 0 19	2	0 13	0 01	0 12 - 0 14
	Heart	28	0·06	0 04	0 01 - 0 21	8 (7)	0 11 (0·08	0 11	0 01 - 0 35 0 01 - 0 20)
	Muscle	20	0 05	0 03	0 02 - 0 12	5	0·04	0 01	0 02 - 0 06
	Faeces (µg/g. ash)	25	14·97	10·23	3 40 - 39·00	5	18·74	8 15	7 40 - 27 40
	Urine (ug/l)	11	40·00	51 41	12 0 - 192 0	1	72 0		

Results with highest values of one individual excluded in parenthesis

TABLE XIII. WEIGHT OF ORGANS AS PERCENT OF BODY WEIGHT

TISSUE	% BODY WEIGHT
MUSCLE	40·00
FAT	17·85
SKELETON	14·30
BLOOD	7·86
SKIN	7·00
DENSE CONNECTIVE TISSUE	3·29
LIVER	2·57
BRAIN	2·04
GI. TRACT	1·71
LUNGS	1·43
HEART	0·50
KIDNEYS	0·44
SPLEEN	0·26
PANCREAS	0·14
AORTA	0·14
HAIR	0·02
OTHER	0·45
	100·00

TABLE XIV. TOTAL BODY BURDENS OF LEAD IN MILLIGRAMS

	60 MALE ADULTS Non-Occupational Exposure (Mean Actual Weight 70 Kilos)			10 MALE ADULTS Occupational Exposure (Mean Actual Weight 76 Kilos)			36 FEMALE ADULTS (Mean Actual Weight 61 Kilos)			23 CHILDREN (Mean Actual Weight 23 Kilos)		
Tissue	**Mean**	**Standard Deviation**	**Range**	**Mean**	**Standard Deviation**	**Range**	**Mean**	**Standard Deviation**	**Range**	**Mean**	**Standard Deviation**	**Range**
Bone	155 5	89 39	21 8 342 0	550 8	411 21	149 7-1668 0	97 4	66.72	12 1 237 4	8 9	8 63	0 2 25 4
Soft Tissue	9 3	3 12	2 7 20 3	15 7	12 11	5 6 46 3	6 2	1 68	3 2 9 7	3 4	2 71	0 3 8 8
Total	164 8	89 58	27 2 353 5	566 4	414 52	162 4-1691 5	103 6	67 03	18 5 244 5	12 3	11 11	0 5 33 7
% Pb in Bone	94 4			97 2			94 0			72 5		
	STANDARD WEIGHT 70 KILOS.											
Bone	↑			507 3		126 6-1411 4	111 8		19 0 329 3	27 0		3 3 58 6
Soft Tissue	← AS ABOVE →			14 4		5 6 - 36 4	7 1		4 6 - 10 3	10 2		7 1 24 9
Total	↓			521 7		137 4-1431 3	118 9		29 0 339 2	37 2		10 4 83 5
% Pb in Bone				97 2			94 0			72 5		

Shown as Table VII in A Comparison of Concentrations of Lead in Human Tissues published in BJIM issue 1975, 32,119-139.

TABLE XV. TOTAL BODY BURDENS OF LEAD (mg) IN CHILDREN OF VARYING AGE GROUPS

	8 infants - 1 year old (4 of each sex) Mean Actual Wt. 6 kilos		10 children aged 2-9 years (5 of each sex) Mean Actual Wt. 19 kilos		5 children aged 13-16 years (All of male sex) Mean Actual Wt. 58 kilos	
Tissue	**Mean**	**Range**	**Mean**	**Range**	**Mean**	**Range**
Bone	1.02	0.17 - 1.90	9.36	2.38 - 17.95	20.58	13.08 - 25.54
Soft Tissue	0.75	0.26 - 1.77	3.45	1.22 - 5.79	7.37	5.28 - 8.81
Total	1.77	0.54 - 3.67	12.81	3.60 - 22.48	27.95	18.36 - 33.68
%Pb in Bone	57.63		73.07		73.63	
			STANDARD WEIGHT 70 KILOS.			
Bone	12.95	3.27 - 27.57	32.63	9.10 - 58.57	26.41	12.51 - 38.04
Soft Tissue	8.75	7.12 - 11.55	13.15	8.06 - 24.90	9.33	5.05 - 12.12
Total	21.70	10.39 - 39.12	45.78	20.26 - 83.47	35.74	17.56 - 50.16
%Pb in Bone	59.68		71.28		73.89	

TABLE XVI. TOTAL BODY BURDENS OF LEAD (mg) IN MALE ADULTS AGED 55-88 YEARS

	Non-Occupational Exposure			Occupational Exposure		
	29 Subjects Av. Age 68 (Mean Actual Weight 68 Kilos)			9 Subjects Av. Age 68 (Mean Actual Weight 75 Kilos)		
	Bone	Soft Tissue	Total	Bone	Soft Tissue	Total
Mean	205 4	8 5	213 9	595 3	16 0	611 3
Standard Deviation	70 5	2 8	72 0	409 7	12 8	413 1
Range	67 1-342 0	2 7-14 3	70 25-353 5	344 0-1668 0	5 6-46 3	352 2-1691 5
% Pb in Bone	96 0			97 4		
	STANDARD WEIGHT 70 KILOS.					
Mean	217 8	9 0	226 8	555 6	14 9	570 5
Range	82 1-358 9	3 3-14 3	91 6-395 3	350 4-1411 4	5 6-36 4	386 7-1431 3
% Pb in Bone	96 0			97 4		

TABLE XVII. TOTAL BODY BURDENS OF LEAD (mg) IN AGE GROUPS - NON-OCCUPATIONAL EXPOSURE

Age Group (Actual Wts)	MALE								FEMALE							
	No. Samples	Bone			Soft Tissues			Total	% Bone	No. Samples	Bone			Soft Tissues			Total	% Bone
		Mean	Range		Mean	Range					Mean	Range		Mean	Range			
0 9	9	5 19	0 17	19 95	1 82	0 26	4 87	7 01	74 04	9	6 00	1 18	14 16	2 68	0 69	5 79	8 68	69 12
10 19	8	33 98	18 20	88 54	9 86	5 28	19 66	43 84	77 51	1	72 35			6 54			78 89	91 71
20 29	9	53 25	27 30	77 08	8 95	5 32	11 12	62 20	85 61	5	37 58	21 34	52 07	5 73	3 34	7 75	43 31	85 80
30 39	5	121 58	21 98	256 76	8 77	5 17	11 16	130 35	93 27	2	152 88	125 58	180 18	6 51	5 99	7 03	159 39	95 92
40 49	9	151 94	57 33	335 56	11 20	6 51	20 27	163 14	93 13	7	73 22	12 10	160 16	7 44	5 26	8 95	80 66	90 78
50 59	9	178 43	97 77	342 04	8 57	6 38	11 74	187 00	95 42	4	80 92	31 12	131 13	5 13	3 35	6 54	86 05	94 04
60 69	15	196 17	36 40	259 12	7 85	2 67	13 62	204 02	96 15	8	103 63	27 27	237 37	6 61	3 18	9 74	110 24	94 00
70 79	5	174 77	85 81	262 08	9 36	5 47	10 73	184 13	94 92	4	114 17	58 57	235 46	5 09	3 19	6 61	119 16	95 74
80 89	5	256 89	219 64	295 30	9 56	5 56	14 31	266 45	96 41	4	145 18	36 25	229 32	5 39	4 20	6 93	150 57	96 42
90 99										1	236 97			6 88			243 85	97 18
(Standard Wt 70 Kilos) 0 9	9	20 58	3 27	46 54	9 74	7 12	12 65	30 32	67 88	9	27 18	8 13	58 57	12 65	7 57	24 90	39 83	68 24
10 19	8	38 25	12 51	97 39	11 16	5 05	21 63	49 41	77 41	1	79 59			7 19			86 78	91 71
20 29	9	54 75	29 28	84 34	9 26	7 32	12 23	64 01	85 53	5	40 48	24 02	54 54	6 17	5 25	7 75	46 65	86 77
30 39	5	112 95	21 02	256 76	8 02	4 95	11 16	120 97	93 37	2	140 12	115 11	165 16	5 97	5 49	6 44	146 09	95 91
40 49	9	132 77	35 14	295 29	9 47	6 51	17 84	142 24	93 34	7	74 37	19 01	160 16	7 77	5 26	10 03	82 14	90 54
50 59	9	170 87	97 59	317 31	8 29	6 42	10 63	179 16	95 37	4	92 48	36 03	131 13	5 60	4 91	6 23	98 08	94 29
60 69	15	210 08	85 08	338 34	8 27	3 33	11 45	218 35	96 21	8	132 99	42 84	329 32	8 39	5 38	10 34	141 38	94 07
70 79	5	202 38	82 07	320 32	10 66	6 33	13 67	213 04	95 68	4	149 74	85 09	287 78	6 65	5 40	8 08	156 39	95 75
80 89	5	311 71	281 28	385 88	11 15	9 41	14 31	322 86	96 55	4	165 86	49 84	242 74	6 47	4 60	9 15	172 33	96 25
90 99										1	325 83			9 46			335 29	97 18

Shown as Table VIII in A Comparison of Concentrations of Lead in Human Tissues published in BJIM issue 1975, 32,119-139.

TABLE XVIII. LEAD CONCENTRATIONS IN HAIR AND NAILS (ppm) IN POST MORTEM SUBJECTS

	TOTAL		MALE ADULTS			FEMALE ADULTS		CHILDREN
			Non-Occupational Exposure		Occupational Exposure			
HAIR								
No. Samples	65	(67)	33	(34)	3	18	(19)	11
Mean	11 4	(30 8)	6 6	(35 8)	65 7	11 5	(28 0)	10 7
Standard Deviation	17 1		5 1		44 6	14 9		7 4
Range	0 7 99 0	(0 7 1000 0)	1 0 20 0	(1 0 1000 0)	15 0 99 0	0 7 55 0	(0 7 325 0)	2 3 25 0
NAILS								
No. Samples	47		28		3	11		5
Mean	10 7		4 7		28 6	5 6		44 2
Standard Deviation	17 6		3·5		15 1	4 2		37 2
Range	0 7 100 0		0 7 15 0		13 9 44 0	1 5 15 0		6 0 100 0

Two highest hair lead values included in parenthesis

Shown as Table 1X in A Comparison of Concentrations of Lead in Human Tissues published in BJIM Issue 1975, 32,119-139.

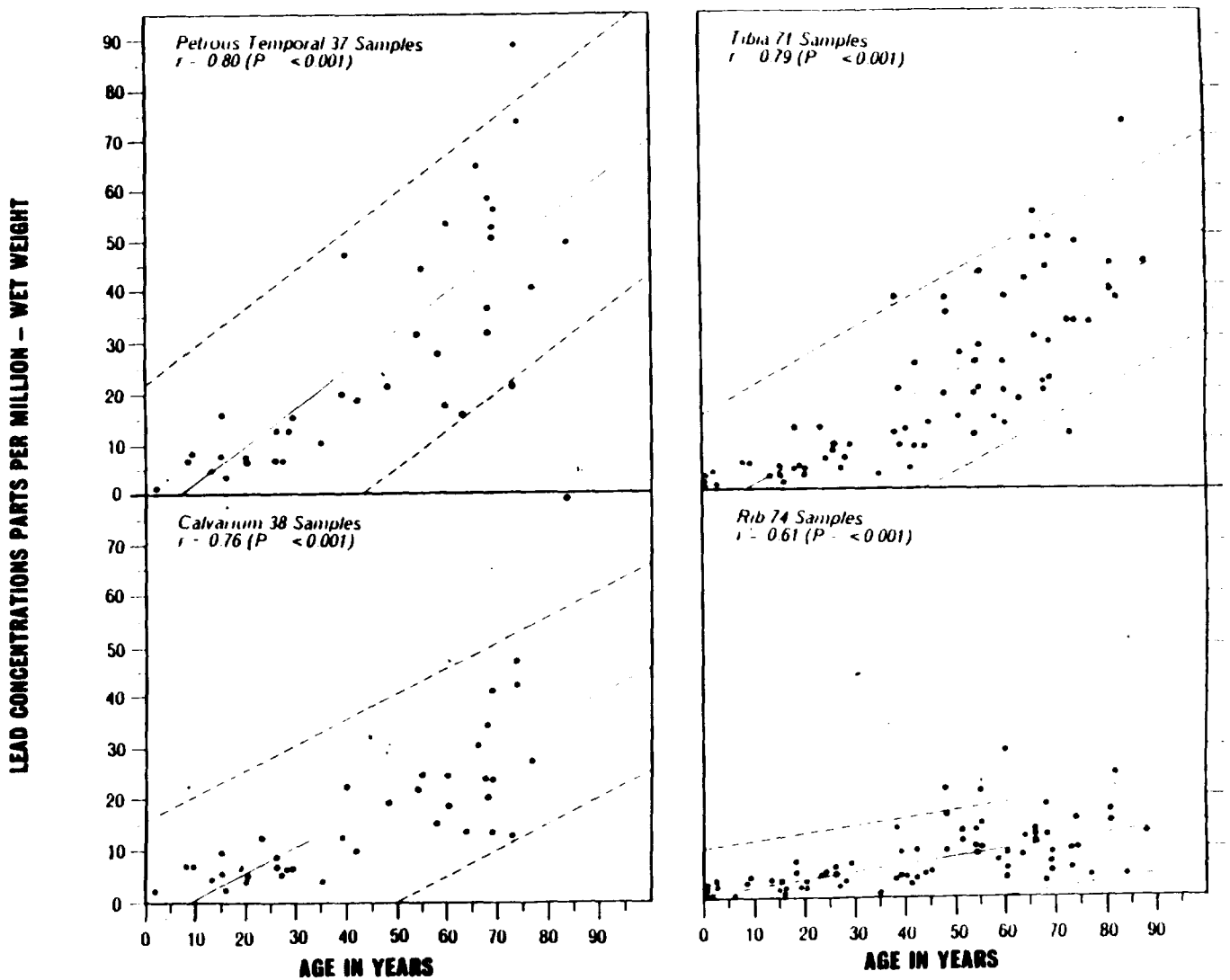
TABLE XIX.
LEAD CONCENTRATIONS IN HAIR, BLOOD AND URINE FROM 32 LEAD WORKERS

	Hair ppm		Blood µg/100g	Urine µg/l
	Proximal	Distal		
Mean	402	517	30	82
Standard Deviation	385	428	15	41
Range	24–1830	24-1880	10 - 67	18 - 171

		Years in Industry						Age of Subjects			
		<1 (5)	1–5 (11)	6–10 (14)	11–15 (9)	>15 (3)		20–29 (5)	30–39 (7)	40–49 (14)	50–59 (6)
Hair	Proximal ppm	278	419	713	345	303	Mean	280	349	434	581
		81–740	40-1000	37-1830	47-1210	24-505	Range	85-382	40-740	37-1210	24-1830
	Distal ppm	327	591	806	419	468	Mean	353	405	573	719
		103-704	57-1270	59-1880	24-1220	43-910	Range	103-660	57-930	24-1270	43-1880
	Blood µg/100g	42	28	40	24	22	Mean	32	31	24	40
		18-57	10-53	26-67	11-44	18-24	Range	10-57	16-55	11-45	18 67
	µg/l	110	70	89	87	55	Mean	109	92	70	74
		50-170	25-137	66-121	17-181	24-108	Range	79-137	41-170	18-111	24-171

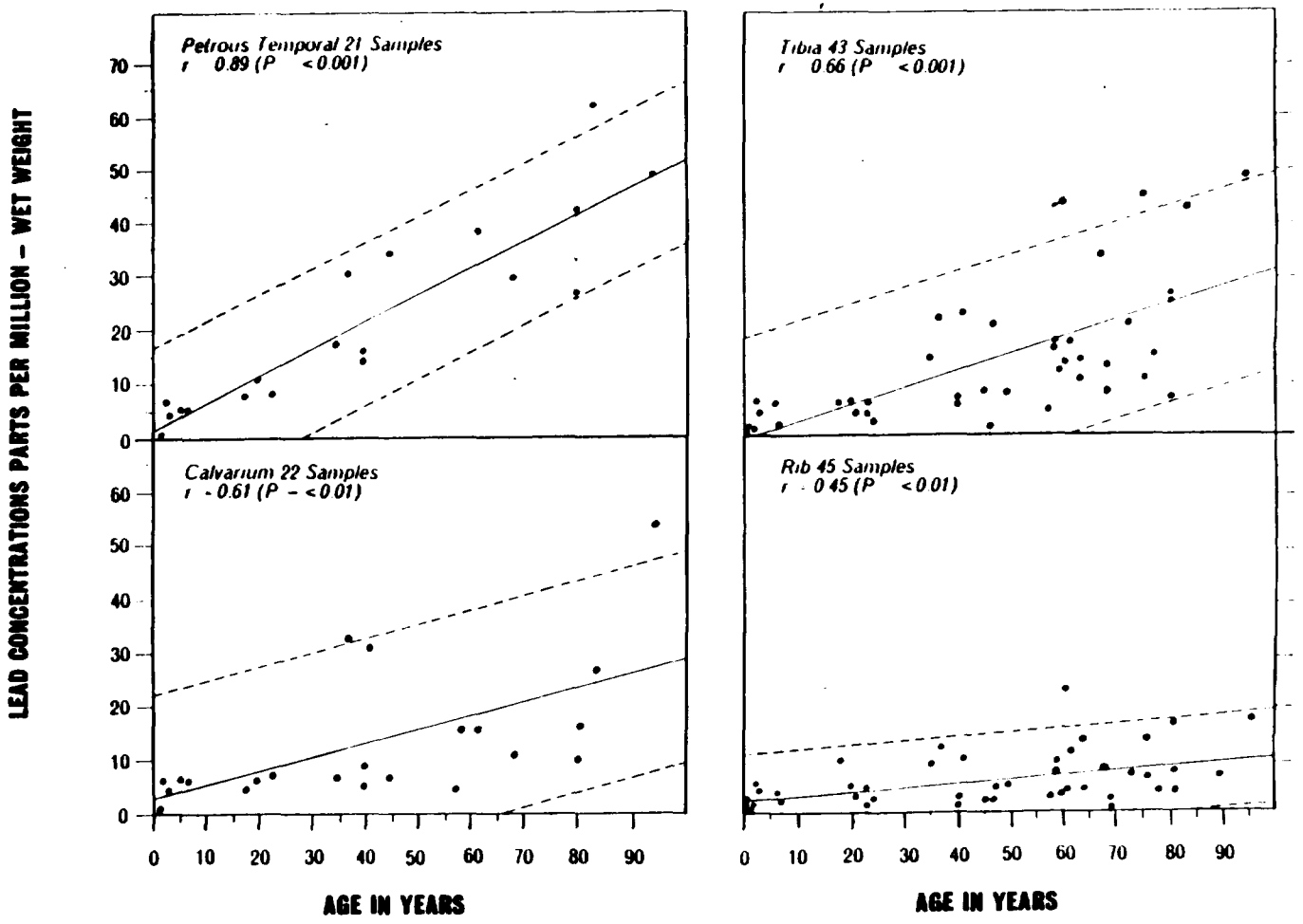
(Number of Samples in Parentheses)

FIGURE M1. MALES · LEAD CONCENTRATIONS IN BONES – NON-OCCUPATIONAL EXPOSURE (95% CONFIDENCE LIMITS)



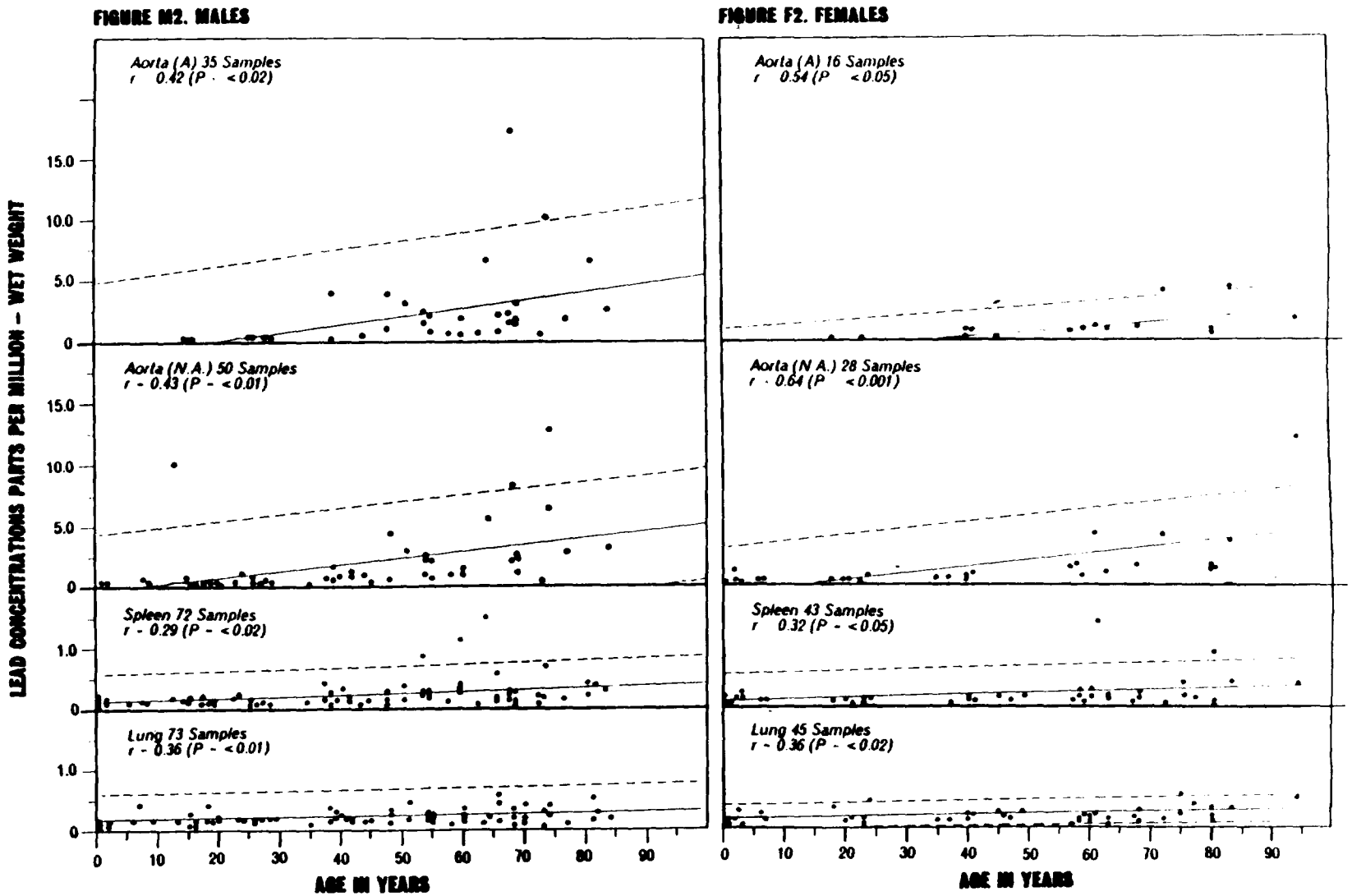
Shown as Fig.1 in A Comparison of Concentrations of Lead in Human Tissues published in BJIM issue 1975,32,119-139.

FIGURE F1. FEMALES : LEAD CONCENTRATIONS IN BONES – NON-OCCUPATIONAL EXPOSURE (95% CONFIDENCE LIMITS)



Shown as Fig.2 in A Comparison of Concentrations of Lead in Human Tissues published in BJIM issue 1975, 32,119-139.

LEAD CONCENTRATIONS IN SOFT TISSUES – NON OCCUPATIONAL EXPOSURE (95% CONFIDENCE LIMITS)

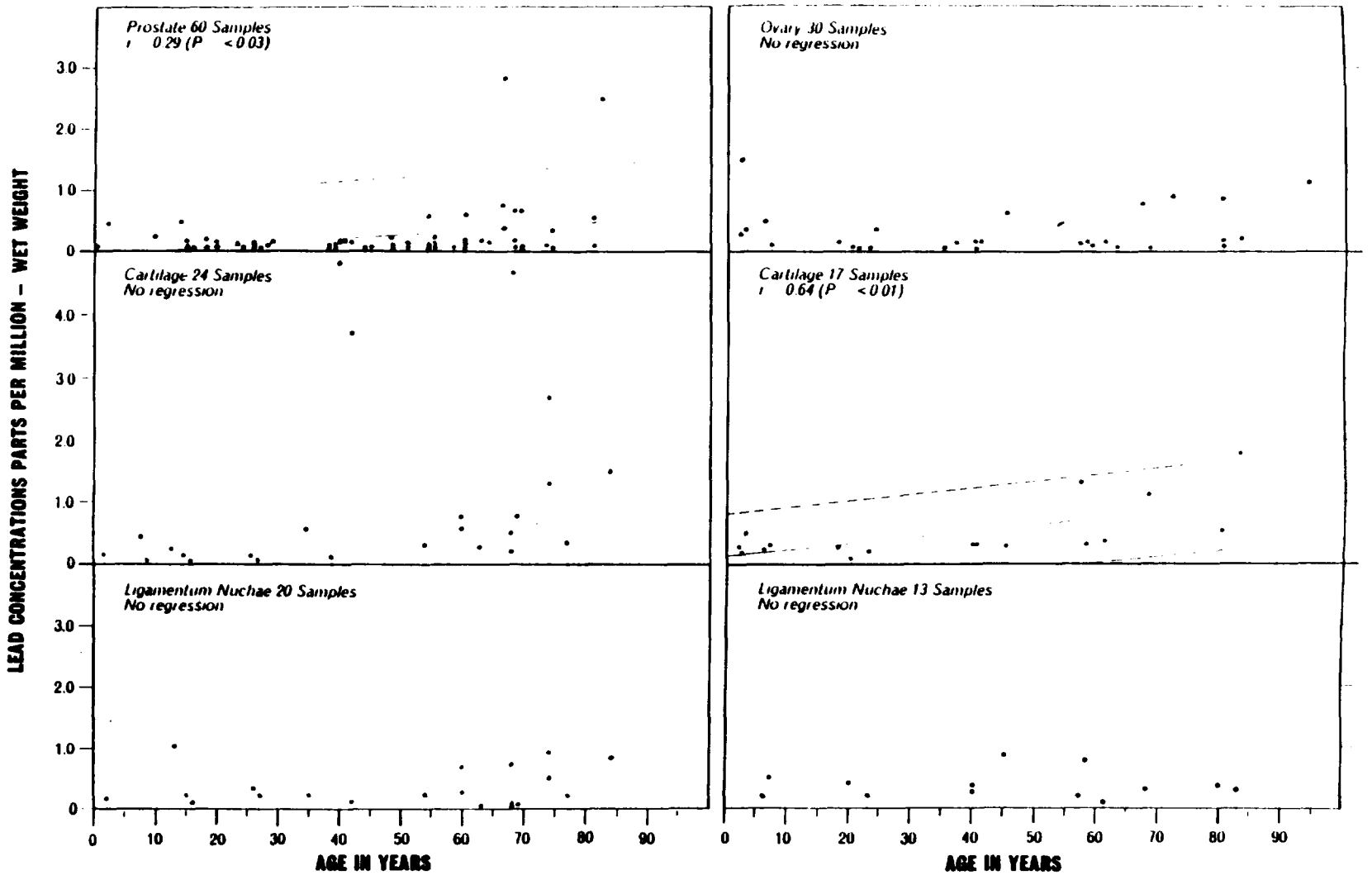


Aorta A/Aorta N/A shown as Fig.3 in A Comparison of Concentrations of Lead in Human Tissues published in BJIM issue 1975, 32,119-139.

Spleen/Lung shown as Fig.4 in A Comparison of Concentrations of Lead in Human Tissues published in BJIM issue 1975, 32,119-139.

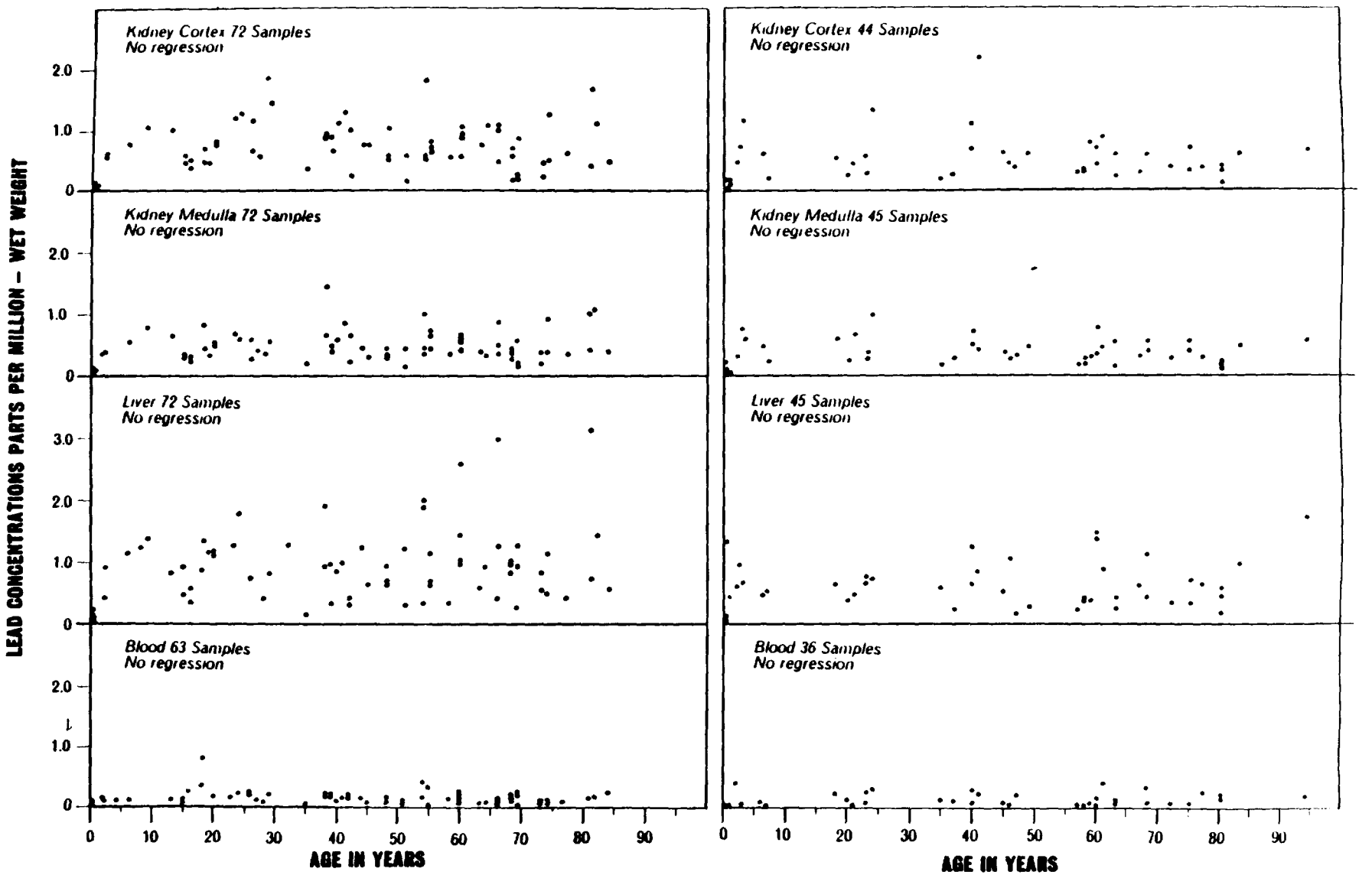
LEAD CONCENTRATIONS IN SOFT TISSUES – NON OCCUPATIONAL EXPOSURE (95% CONFIDENCE LIMITS)

FIGURE M3. MALES | **FIGURE F3. FEMALES**



LEAD CONCENTRATIONS IN SOFT TISSUES – NON OCCUPATIONAL EXPOSURE (95% CONFIDENCE LIMITS)

FIGURE M4. MALES | **FIGURE F4. FEMALES**



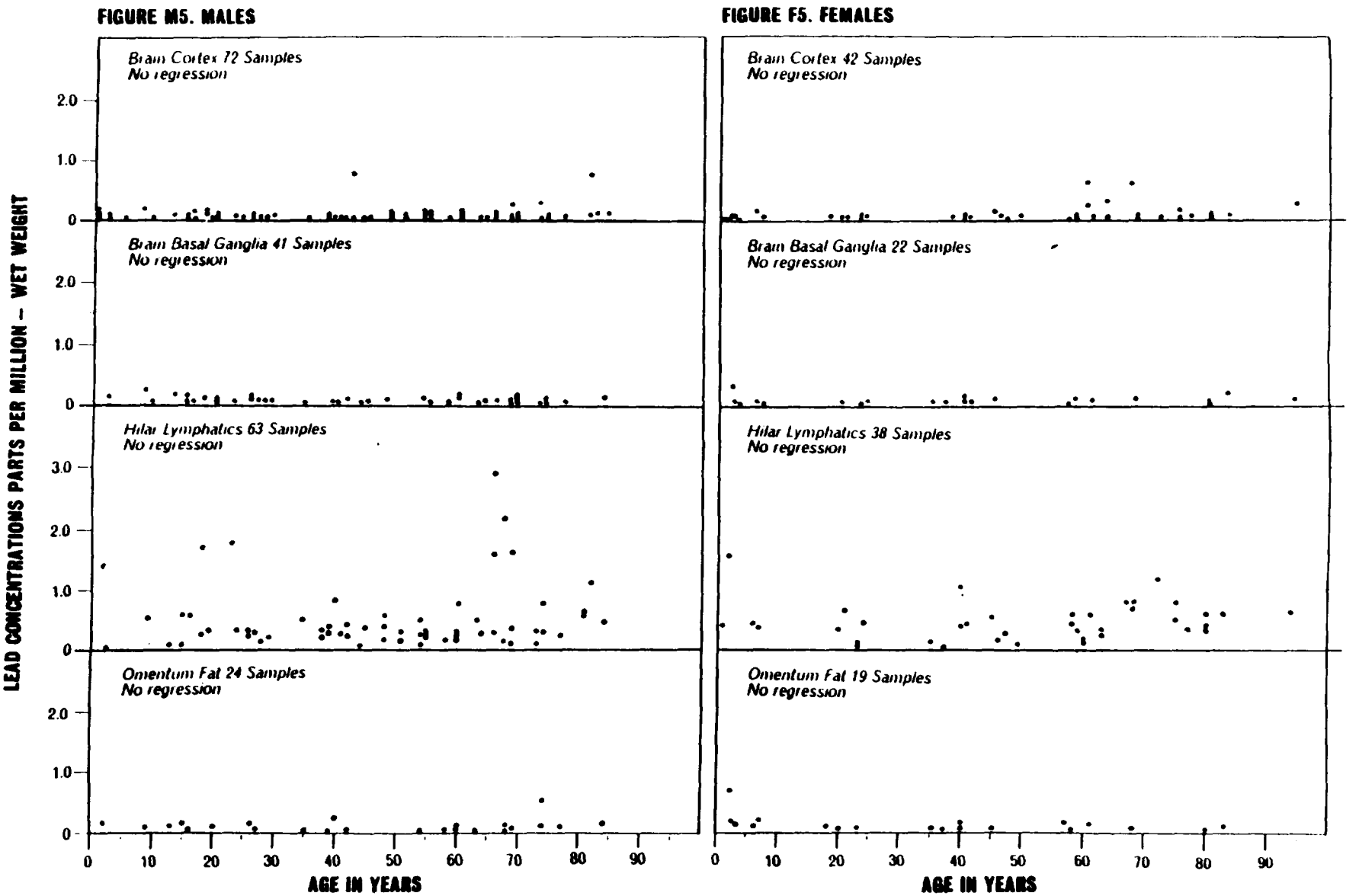
LEAD CONCENTRATIONS IN SOFT TISSUES – NON OCCUPATIONAL EXPOSURE (95% CONFIDENCE LIMITS)

FIGURE M5. MALES | **FIGURE F5. FEMALES**

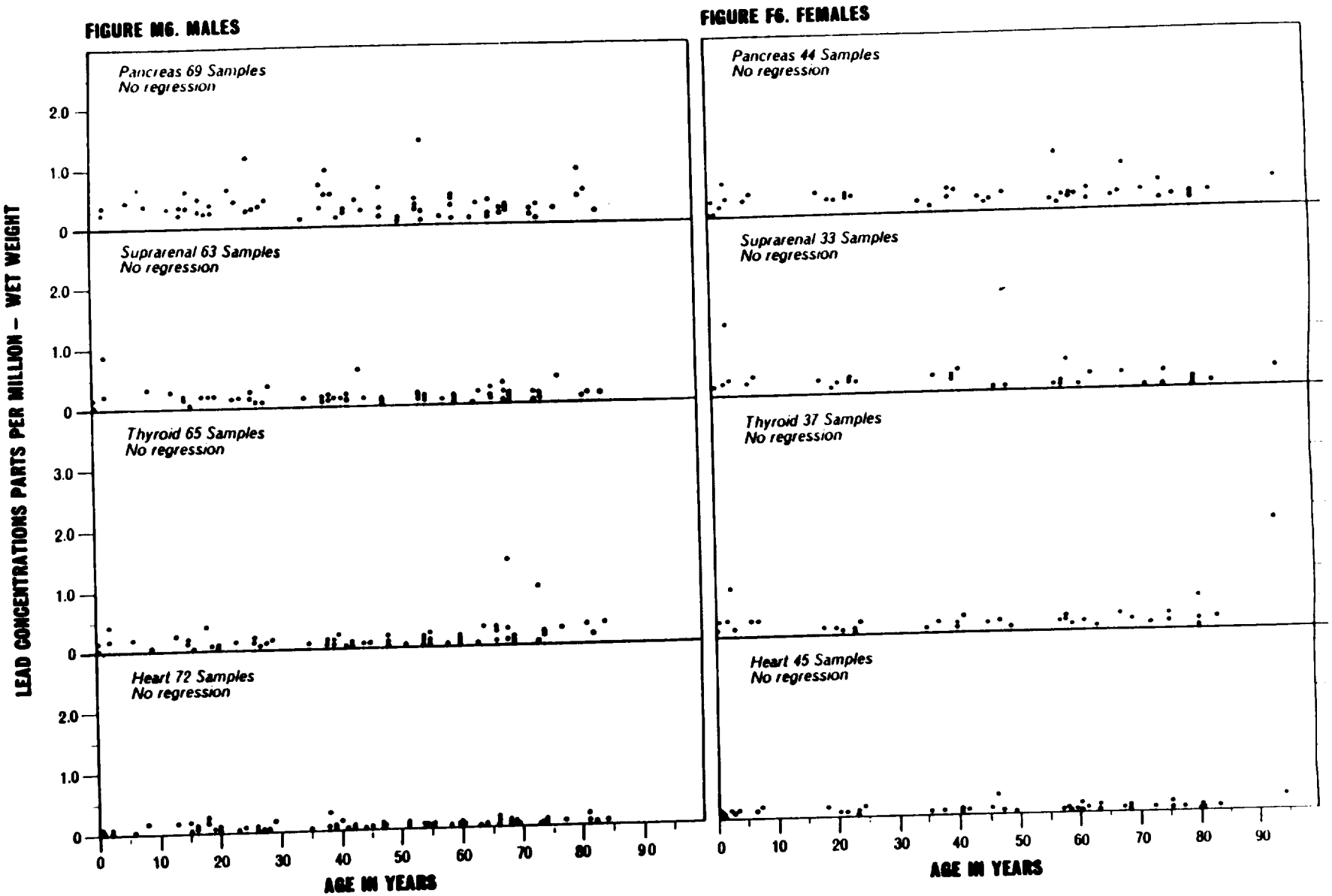
AGE IN YEARS

AGE IN YEARS

LEAD CONCENTRATIONS IN SOFT TISSUES – NON OCCUPATIONAL EXPOSURE (95% CONFIDENCE LIMITS)



LEAD CONCENTRATIONS IN SOFT TISSUES – NON OCCUPATIONAL EXPOSURE (95% CONFIDENCE LIMITS)

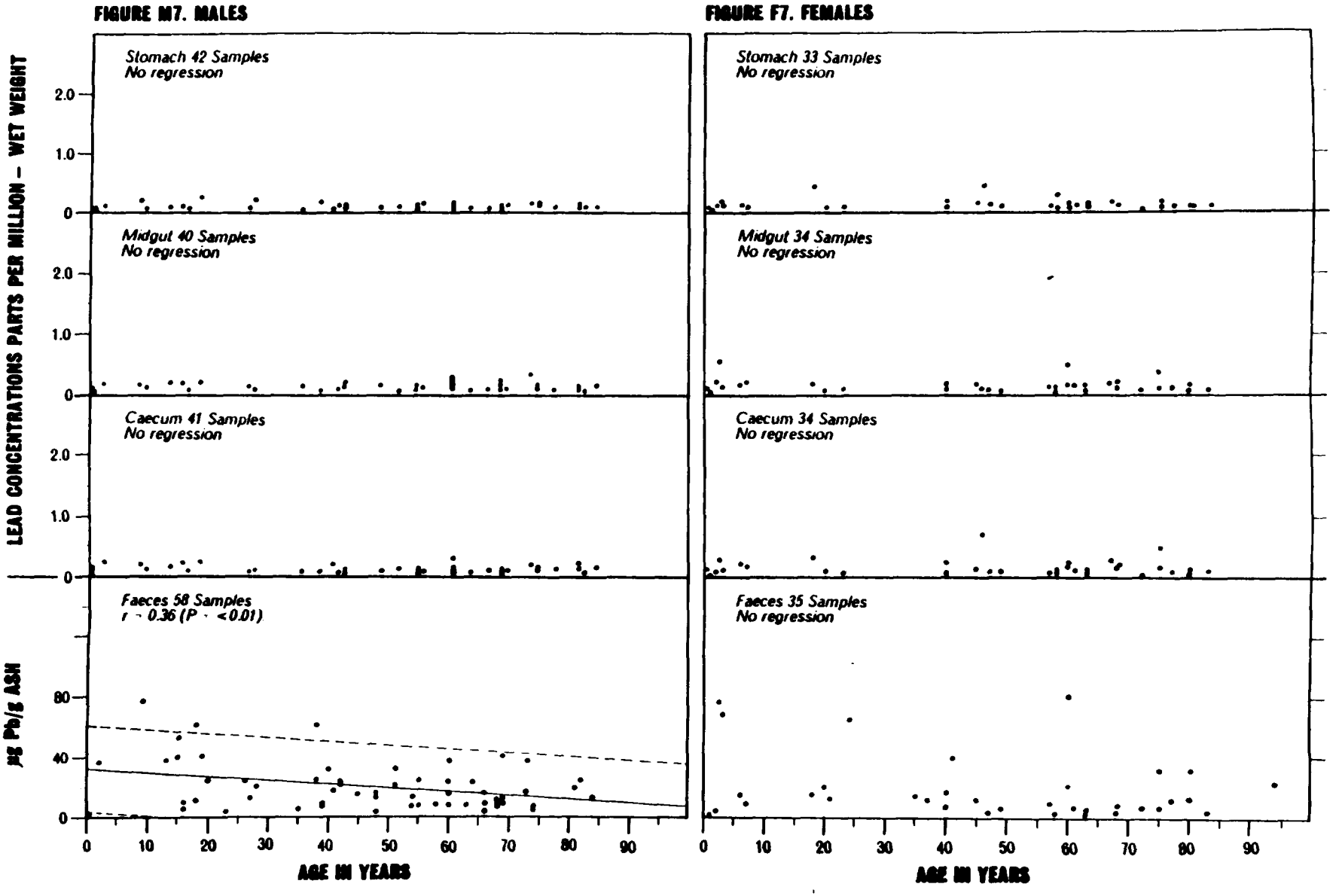


LEAD CONCENTRATIONS IN SOFT TISSUES – NON OCCUPATIONAL EXPOSURE (95% CONFIDENCE LIMITS)

FIGURE M7. MALES

FIGURE F7. FEMALES

LEAD CONCENTRATIONS IN SOFT TISSUES – NON OCCUPATIONAL EXPOSURE (95% CONFIDENCE LIMITS)



LEAD CONCENTRATIONS IN SOFT TISSUES – NON OCCUPATIONAL EXPOSURE (95% CONFIDENCE LIMITS)

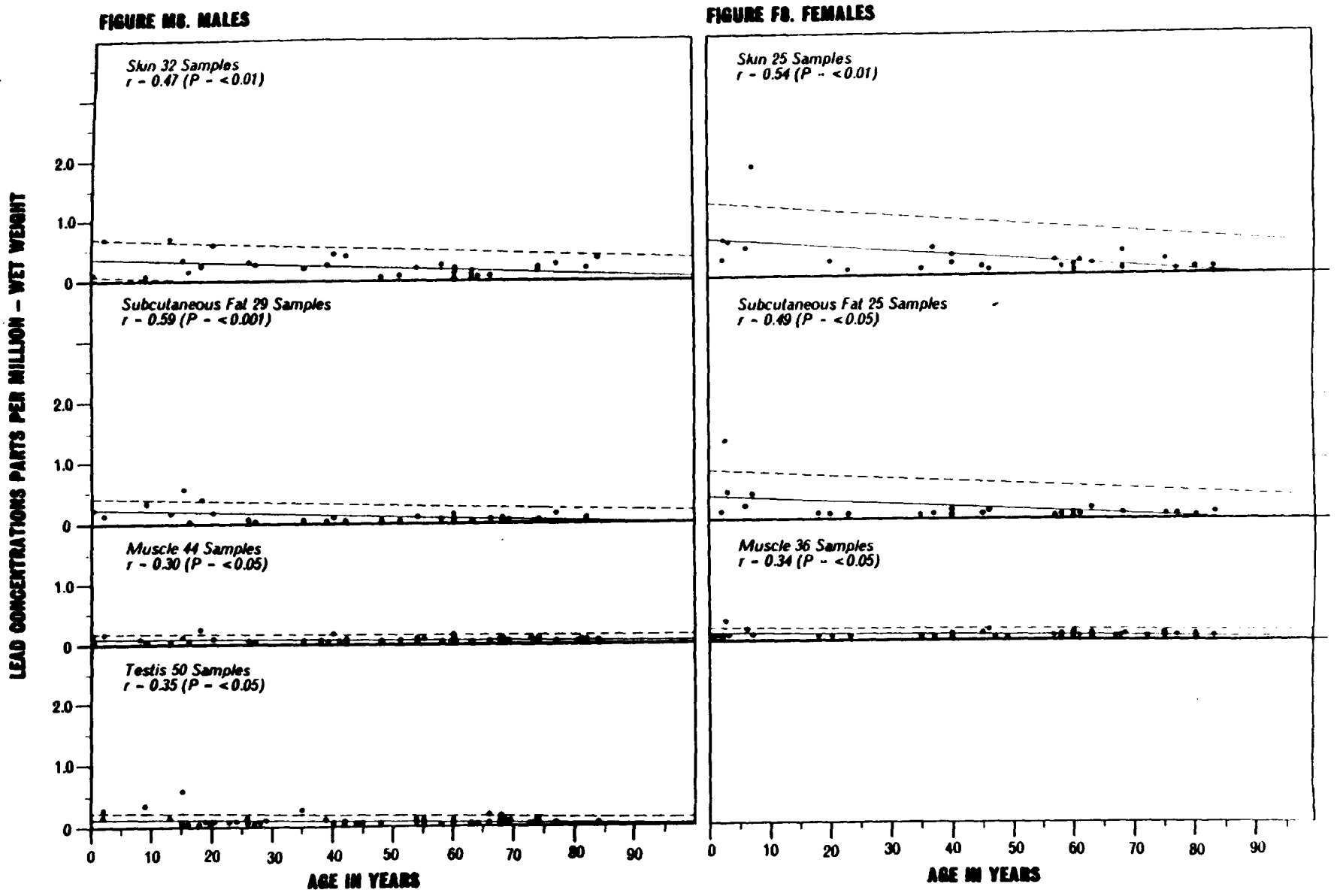
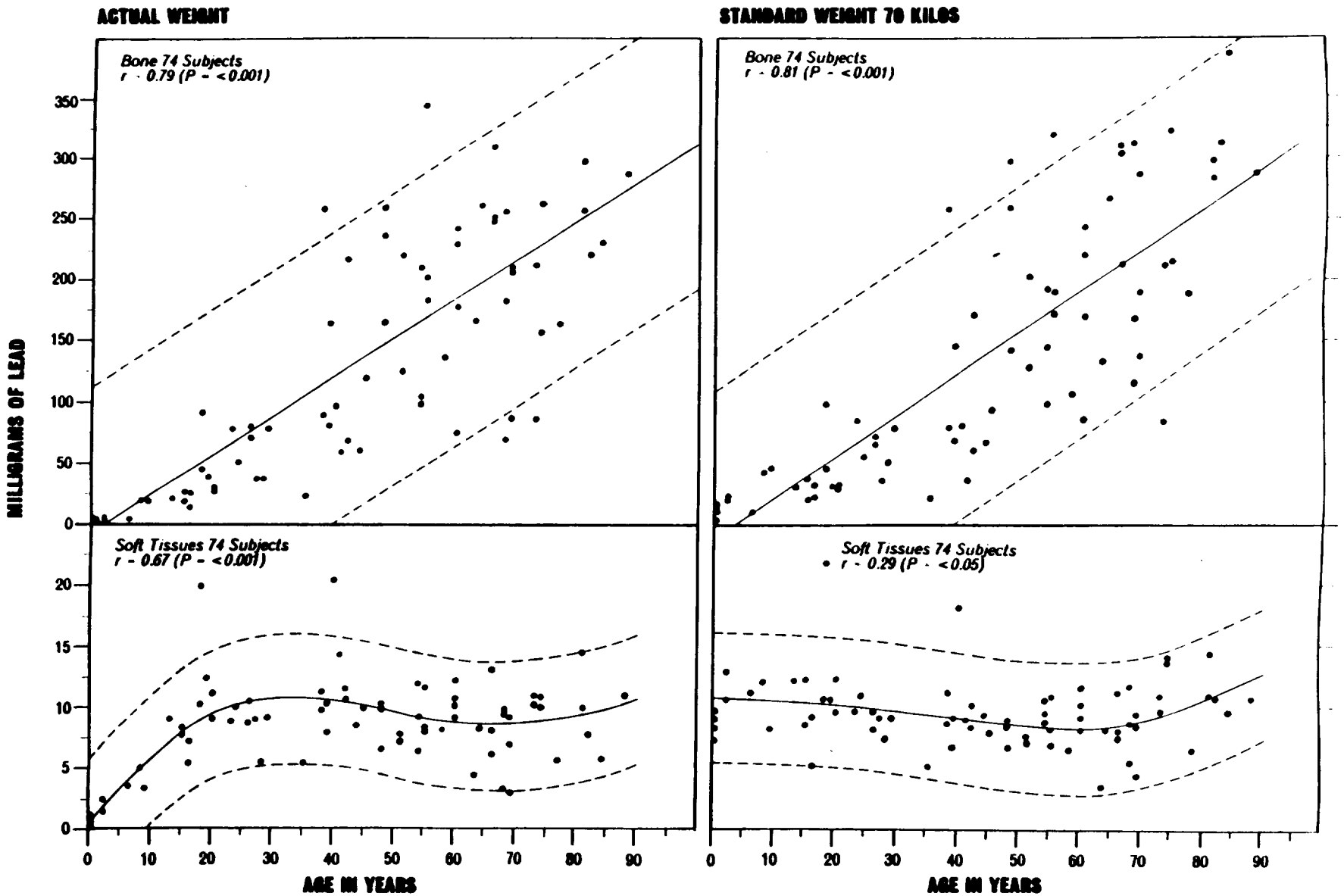


FIGURE M9. MALES · TOTAL BODY BURDENS OF LEAD (95% CONFIDENCE LIMITS)

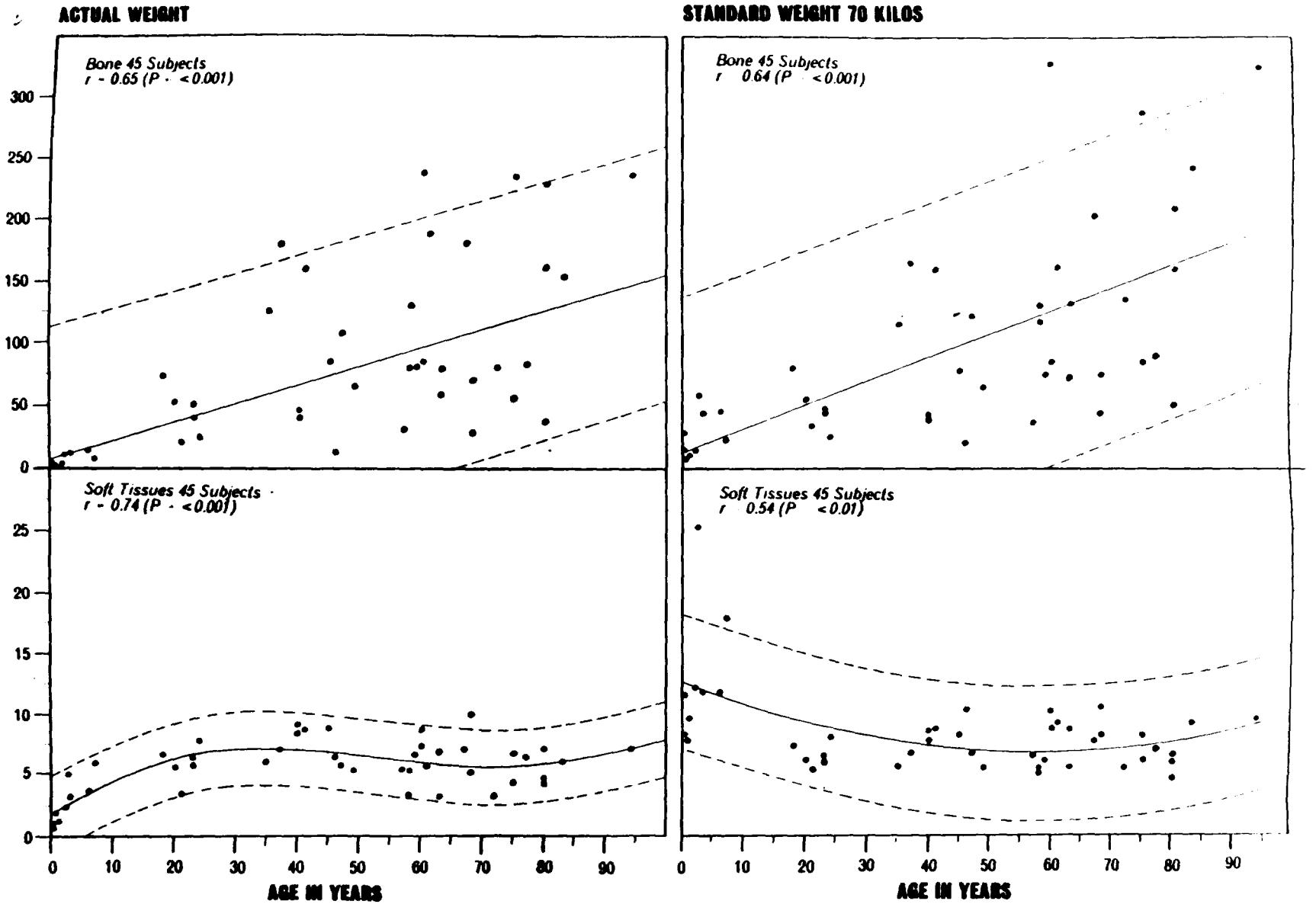
Act of

FIGURE M9. MALES · TOTAL BODY BURDENS OF LEAD (95% CONFIDENCE LIMITS)



Actual Weight only Males part paired with Females part, shown as Fig.5 in A Comparison of Concentrations of Lead in Human Tissues published in BJIM issue 1975, 32,119-139.

FIGURE F9. FEMALES · TOTAL BODY BURDENS OF LEAD (95% CONFIDENCE LIMITS)



Actual weight only Females part paired with Males part, shown as Fig. 5 in A Comparison of Concentrations of Lead in Human Tissues published in BJIM issue 1975, 32, 119-139.

LEAD CONCENTRATIONS IN HAIR AND NAILS (95% CONFIDENCE LIMITS)

LEAD CONCENTRATIONS IN HAIR AND NAILS (95% CONFIDENCE LIMITS)

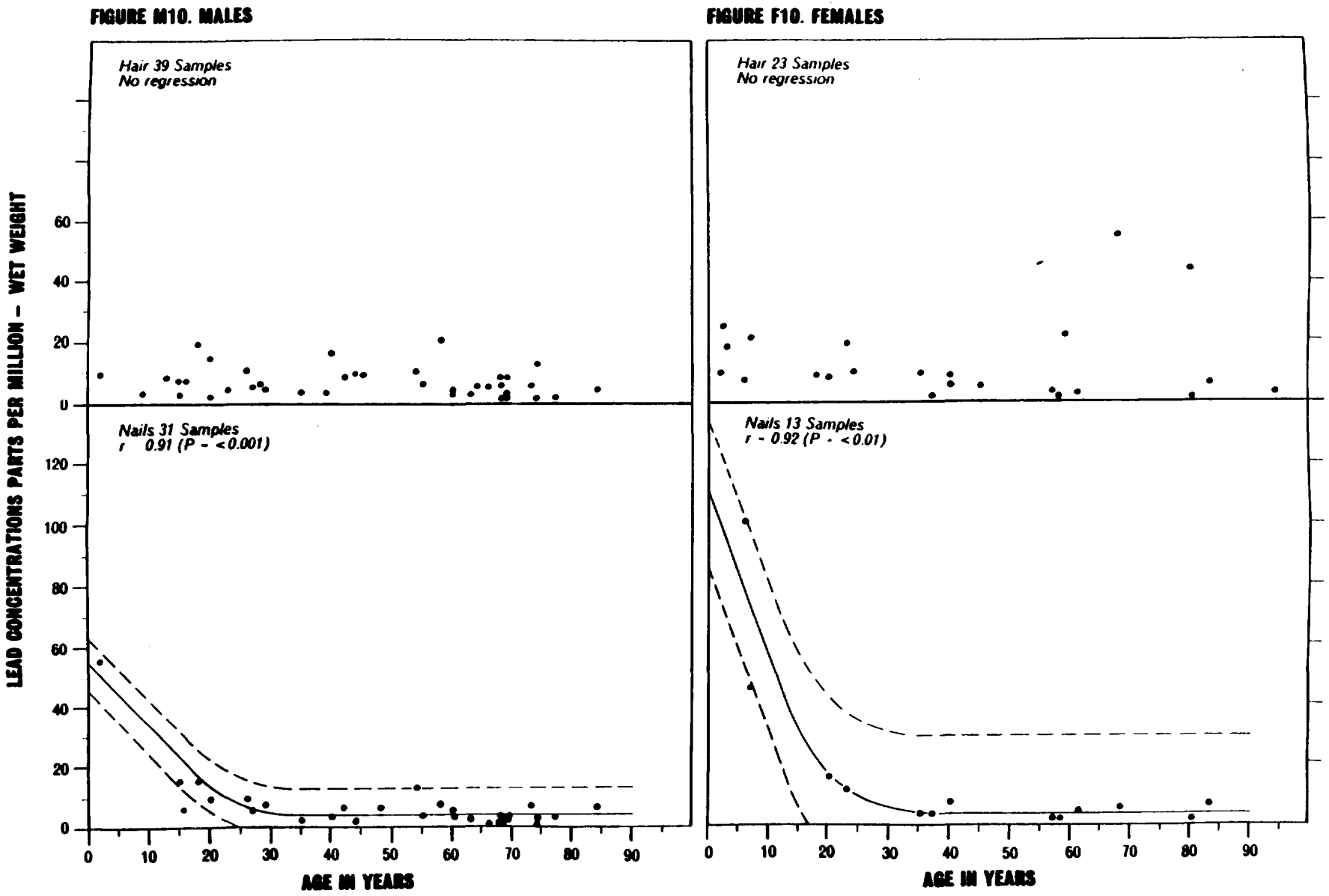
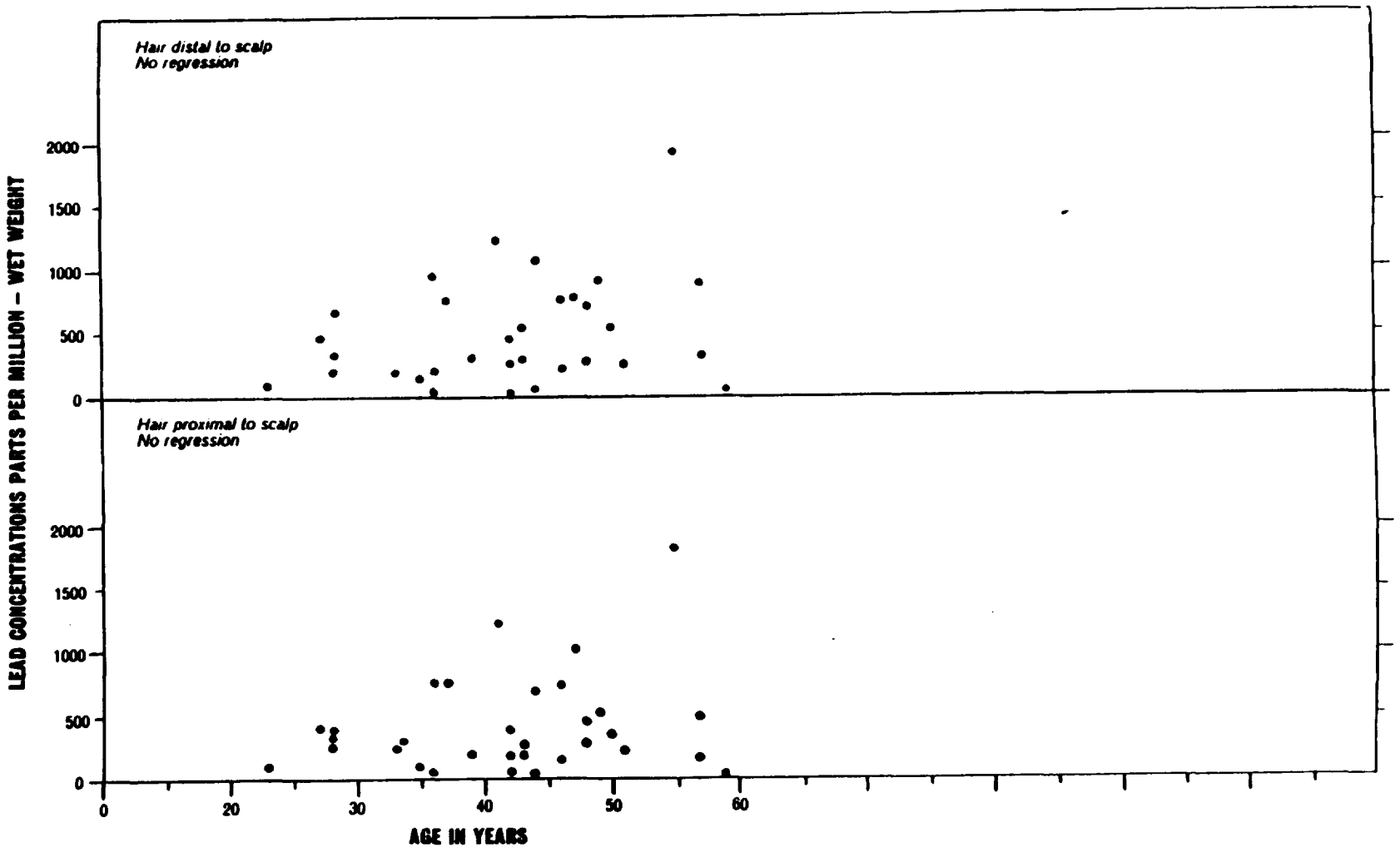



FIGURE M11. MALES · 32 LEAD WORKERS – LEAD CONCENTRATIONS IN HAIR (PARTS PER MILLION) RELATED TO AGE (95% CONFIDENCE LIMITS)