Appendix 12

Estimation of intercorrelations within never smokers between fruit, vegetables, dietary fat and education

Published data on the extent of intercorrelations within never smokers between fruit, vegetables, dietary fat and education were not available in the literature. For the five studies HALS, HALS 2, HSE 93, HSE 94 and HULS referred to in Appendix 9 we have the data on computer. Education scores are as defined in Appendix C. The derivation of the variables used for fruit, vegetables and dietary fat are as given below. For this report we have added results from NHIS2000 and NHANES III and the possible confounder Tea.

Variable	Study	Derivation
Fruit	HALS	Answers for fresh fruit in summer, fresh fruit in winter and fruit juice, each coded 0 = never, 1 = less than once a week, 2 = once or twice a week, 3 = most days (3-6), 4 = once a day, 5 = more than once a day, were combined.
	HALS 2	As HALS
	HSE 93	Respondents were asked how often they usually ate fruit. Possible answers were more than once a day, once a day, 5-6 days a week, 3-4 days a week, 1-2 days a week, at least once a month, less than once a month or rarely/never
	HSE 94	Respondents were asked how often on average they ate fruit. Possible answers as HSE 93

Variable	Study	Derivation
	HULS	Answers for fresh fruit in summer, fresh fruit in winter and fruit juice, each coded 1 = never, 2 = more infrequently, 3 = monthly, 4 = weekly and 5 = several times per week, were combined.
	NHIS2000	Answers for frequency per week of eating fruit and drinking fruit juice were combined.
	NHANESIII	Answers for frequency per month of consuming Orange juice, etc, Other fruit juices, Citrus fruits, Melons, Peaches, nectarines and any other fruits were combined.
Vegetables	HALS	Answers for root vegetables (like carrots, turnips and parsnips), green vegetables and other cooked vegetables (including onions and mushrooms), each coded 0-5 as for fruit in HALS were combined.
	HALS 2	As HALS
	HSE 93	Respondents were asked how often they usually ate vegetables and salad. Possible answers as for fruit for HSE 93.
	HSE 94	Respondents were asked how often on average they ate vegetables or salad. Possible answers as for fruit for HSE 93.
	HULS	Answers for peas/beans and for cooked vegetables, coded 1-5 as for fruit in HULS were combined
	NHIS2000	Answers for frequency per week of eating salads and “other veg” (other than salads, potatoes, beans) were combined.
	NHANESIII	Answers for frequency per month of Carrots, Broccoli, Brussel sprouts/cauliflower, Spinach, greens, etc, Tossed salad, Cabbage, coleslaw, sauerkraut and Any other vegetables were combined.
Dietary fat	HALS	Answers for fried foods (other than chips), chips, eggs and sausages, each coded 0-5 as for fruit in HALS were combined
	HALS 2	As HALS

	HSE 93	Respondents were asked what type of cooking fat they usually used when frying food. Those replying that they did not eat fried food were compared with those who gave any other reply.
	HSE 94	As HSE 93
	HULS	Answers for fried potatoes, bacon, sausages, eggs, food fried in fat and food fried in vegetable oil, coded 1-5 as for fruit in HULS were combined.
	NHIS2000	Answers for frequency per week of eating bacon, fried potatoes and chips were combined.
	NHANESIII	Answers for frequency per month of eating bacon/sausage/processed meats and eggs were combined.
Tea	HALS	The answer for cups of tea drunk coded as: 0=none, 1=1 OR 2, 2=3 OR 4, 3=5 OR 6, 4= >6 was used.
	HALS 2	As HALS
	HSE 93	Respondents were asked whether they used sugar in their tea. Those replying that they did or did not use sugar in their tea were compared with those who answered “no tea”.
	HSE 94	As HSE 93
	HULS	The answer for tea drinking coded as: 1=never, 2=less often, 3=several times a week , 4=1-2 times a day, 5=3-5 times a day, 6=more than 5 times a day was used..
	NHIS2000	Nothing available on tea drinking
	NHANESIII	The answer to regular times drink tea a month was used.

Based on these definitions, the data available for never smokers gave Spearman rank correlations of:

		Correlation coefficients						
	Sex	HALS	HALS 2	HSE 93	HSE 94	HULS	NHIS 2000	NHANES III
Fruit and vegetables	M	+0.2338	+0.2631	+0.2970	+0.3356	+0.1638	+0.3527	+0.3706
	F	+0.2324	+0.2146	+0.3584	+0.3901	+0.2774	+0.3365	+0.3860
	M+F	+0.2383	+0.2423	+0.3429	+0.3785	+0.2479	+0.3466	+0.3899
Fruit and dietary fat	M	-0.1997	-0.1890	-0.0831	-0.1171	+0.0111	-0.1449	-0.0449
	F	-0.1813	-0.2337	-0.0703	-0.0713	+0.0161	-0.1535	-0.0310
	M+F	-0.2162	-0.2428	-0.0826	-0.0927	+0.0040	-0.1624	-0.0618
Fruit and education	M	+0.1931	+0.1722	+0.0909	+0.0729	+0.1731	+0.0766	+0.0969
	F	+0.2720	+0.2199	+0.0845	+0.1119	+0.2012	+0.0510	+0.0594
	M+F	+0.2257	+0.1759	+0.0547	+0.0661	+0.1841	+0.0523	+0.0798
Vegetables and dietary fat	M	-0.1481	-0.0708	+0.0437	-0.0690	-0.0696	-0.0994	-0.0284
	F	-0.0435	-0.0976	-0.0223	-0.0406	-0.0104	-0.1051	-0.0572
	M+F	-0.0830	-0.1139	-0.0053	-0.0569	-0.0481	-0.1201	-0.0596
Vegetables and education	M	+0.0427	+0.0773	+0.1123	+0.1169	+0.1531	+0.1579	+0.1924
	F	+0.0680	+0.0244	+0.1156	+0.1640	+0.1744	+0.1787	+0.1873
	M+F	+0.0499	+0.0200	+0.0959	+0.1153	+0.1481	+0.1614	+0.1904
Dietary fat and education	M	-0.1437	-0.1634	-0.0249	+0.0018	-0.1388	-0.1339	-0.1496
	F	-0.0534	-0.0955	+0.0422	+0.0623	-0.0532	-0.0551	-0.1224
	M+F	-0.0329	-0.0707	+0.0334	+0.0562	-0.0321	-0.0682	-0.1379
Tea and Fruit	M	-0.0369	+0.0198	+0.0479	+0.0063	+0.1515		+0.0078
	F	-0.0819	-0.0987	+0.0021	+0.0327	+0.1063		-0.0050
	M+F	-0.0669	-0.0546	+0.0254	+0.0261	+0.1226		+0.0093
Tea and Vegetables	M	+0.0343	+0.0038	+0.0309	+0.0608	+0.1318		+0.1050
	F	+0.0469	+0.0269	+0.0368	+0.0032	+0.0392		+0.0861
	M+F	+0.0434	+0.0209	+0.0379	+0.0289	+0.0717		+0.0997
Tea and Dietary fat	M	+0.0615	+0.0542	-0.0109	+0.0502	+0.0118		+0.0368
	F	+0.0262	+0.0420	-0.0151	-0.0001	+0.0559		+0.0432
	M+F	+0.0282	+0.0360	-0.0158	+0.0157	+0.0224		+0.0297
Tea and Education	M	-0.1445	-0.0500	+0.0017	+0.0300	+0.0801		+0.0986
	F	-0.1727	-0.1186	-0.0732	-0.0674	+0.0519		+0.0672
	M+F	-0.1635	-0.1013	-0.0514	-0.0360	+0.0459		+0.0834

Averaging the estimates for the seven studies (six for tea) gives the following correlation matrices:

	Fruit	Vegetables	Dietary fat	Education	Tea
Sexes combined					
Fruit	1	+0.3122	-0.1221	+0.1198	+0.0103
Vegetables		1	-0.0696	+0.1116	+0.0504
Dietary fat			1	-0.0360	+0.0194
Education				1	-0.0372
Tea					1
Females					
Fruit	1	+0.3136	-0.1036	+0.1428	-0.0074
Vegetables		1	-0.0538	+0.1303	+0.0399
Dietary fat			1	-0.0393	+0.0254
Education				1	-0.0521
Tea					1