

Michael Dang – 16257750

MATH434

HW4

9.

a.

Smoker data set.

IBM SPSS Statistics Data Editor - *Untitled1 [DataSet0]

File Edit View Data Transform Analyze Graphs Utilities Extensions Window Help

Visible: 12 of 12 Variables

ID	Age	Gender	Height	Weight	Apical Pulse	Apical Pulse	Cholesterol	Glucose	Alcohol	Active	Cardiac	var	var	var	var	var	var	var
1	23	14532	2	181	95	130	90	1	1	1	1	0						
2	29	21755	2	162	56	120	70	1	1	0	1	0						
3	52	23388	2	162	72	130	80	1	1	0	1	1						
4	73	15901	2	172	84	140	90	1	1	0	1	1						
5	74	20431	1	164	64	180	90	1	1	0	1	1						
6	90	22099	2	171	97	150	100	3	1	0	1	1						
7	138	18128	2	183	95	125	80	1	3	0	1	0						
8	140	20627	2	168	78	140	90	2	1	0	1	1						
9	142	14499	2	164	48	110	70	1	2	1	1	1						
10	166	19507	2	174	77	120	80	1	1	0	1	1						
11	170	19556	2	153	47	130	80	3	1	0	1	0						
12	180	21473	2	174	90	140	80	1	1	1	0	1						
13	206	20533	2	169	79	120	80	2	2	0	1	0						
14	220	20533	2	171	70	110	70	1	1	0	1	0						
15	240	21948	2	170	69	120	80	1	1	1	1	0						
16	246	22671	2	174	74	130	80	3	1	0	1	1						
17	252	21305	2	157	51	120	80	1	1	0	1	0						
18	253	19631	2	169	55	120	80	1	1	0	1	0						
19	254	19081	2	175	53	140	80	1	1	0	1	1						
20	258	19987	2	169	68	110	80	1	1	0	1	0						
21	260	21166	2	162	59	140	90	2	1	0	1	1						
22	285	17548	2	156	60	110	70	1	1	0	1	0						
23	286	21086	1	161	68	120	70	3	3	0	1	1						
24	311	15825	2	166	70	110	70	1	1	0	1	0						
25	314	17489	2	183	98	160	1100	1	2	0	1	1						
26	318	23376	2	175	75	180	100	3	1	1	1	1						
27	321	18444	2	173	75	130	80	2	1	1	0	0						
28	328	17326	2	180	90	130	80	1	1	0	1	1						
29	337	17460	2	162	66	150	100	3	1	0	0	1						

Data View Variable View

Male non-smoker

IBM SPSS Statistics Data Editor - *Untitled1 [DataSet0]

File Edit View Data Transform Analyze Graphs Utilities Extensions Window Help

Visible: 13 of 13 Variables

ID	Age	Gender	Height	Weight	Apical Pulse	Apical Pulse	Cholesterol	Glucose	Alcohol	Active	Cardiac	var	var	var	var	var	var	var
1	1	20228	1	156	85	140	90	3	1	0	0	1	1					
2	2	18857	1	165	64	130	70	3	1	0	0	0	1					
3	4	17474	1	156	56	100	60	1	1	0	0	0	0					
4	8	21914	1	151	67	120	80	2	2	0	0	0	0					
5	9	22113	1	157	93	130	80	3	1	0	0	0	1					
6	13	17668	1	158	71	110	70	1	1	0	0	0	1					
7	14	19834	1	164	68	110	60	1	1	0	0	0	0					
8	15	22530	1	169	80	120	80	1	1	0	0	0	1					
9	21	19809	1	158	78	110	70	1	1	0	0	0	1					
10	25	21296	1	170	75	130	70	1	1	0	0	0	0					
11	27	16747	1	158	52	110	70	1	3	0	0	0	1					
12	28	17482	1	154	68	100	70	1	1	0	0	0	0					
13	31	21413	1	157	69	130	80	1	1	0	0	0	1					
14	32	23046	1	158	90	145	85	2	2	0	0	0	1					
15	35	16608	1	170	68	150	90	3	1	0	0	0	1					
16	36	14453	1	153	65	130	100	2	1	0	0	0	1					
17	37	19559	1	156	59	130	90	1	1	0	0	0	1					
18	38	18085	1	159	78	120	80	1	1	0	0	0	1					
19	42	18291	1	155	105	120	80	3	1	0	0	0	1					
20	43	23186	1	169	71	140	90	3	1	0	0	0	1					
21	44	14605	1	159	60	110	70	1	1	0	0	0	1					
22	45	20652	1	160	73	130	85	1	1	0	0	0	0					
23	47	20404	1	163	55	120	80	1	1	0	0	0	1					
24	51	17976	1	164	70	130	90	1	1	0	0	0	1					
25	53	18126	1	165	70	140	90	1	1	0	0	0	1					
26	54	19848	1	157	62	110	70	1	1	0	0	0	0					
27	56	18274	1	178	68	110	80	1	1	0	0	0	1					
28	59	19764	1	154	50	170	80	3	1	0	0	0	1					
29	60	17471	1	162	64	140	90	1	1	0	0	0	1					

Data View Variable View

Female non-smoker

IBM SPSS Statistics Data Editor

File Edit View Data Transform Analyze Graphs Utilities Extensions Window Help

3 : Visible: 13 of 13 Variables

	ID	Age	Gender	Height	Weight	Appetite	Appetite	Cholesterol	Glucose	Smoking	Alcohol	Exercise	Cardio	var	var	var	var	var	var	var
1	0	18393	2	168	62	110	80	1	1	0	0	1	0							
2	3	17623	2	169	82	150	100	1	1	0	0	1	1							
3	12	22584	2	178	95	130	90	3	3	0	0	1	1							
4	16	18815	2	173	60	120	80	1	1	0	0	1	0							
5	18	14791	2	165	60	120	80	1	1	0	0	0	0							
6	24	16782	2	172	112	120	80	1	1	0	0	0	1							
7	30	19778	2	163	83	120	80	1	1	0	0	0	1							
8	33	23376	2	156	45	110	60	1	1	0	0	0	1							
9	39	14574	2	166	66	120	80	1	1	0	0	0	1							
10	40	21057	2	169	74	130	70	1	3	0	0	0	0							
11	46	21940	2	173	82	140	90	3	1	0	0	0	0							
12	49	18328	2	175	95	120	80	1	1	0	0	0	1							
13	57	21475	2	171	69	140	90	1	1	0	0	0	1							
14	58	20556	2	159	63	120	60	1	1	0	0	0	1							
15	62	18535	2	168	69	120	80	1	1	0	0	0	0							
16	63	16864	2	175	70	120	80	2	1	0	0	0	1							
17	67	19575	2	166	85	150	100	1	1	0	0	0	1							
18	70	21787	2	165	73	125	90	1	1	0	0	0	0							
19	79	20960	2	165	75	180	90	3	1	0	0	0	1							
20	81	20330	2	187	115	130	90	1	1	0	1	1	0							
21	86	20649	2	169	71	120	80	1	1	0	0	0	1							
22	88	19148	2	170	69	130	80	1	1	0	0	0	1							
23	96	21874	2	179	95	150	90	1	1	0	0	0	1							
24	103	16039	2	180	90	140	90	2	2	0	0	0	0							
25	105	20397	2	188	105	120	80	1	1	0	0	0	1							
26	108	20370	2	164	74	140	85	1	1	0	0	0	0							
27	119	19663	2	166	94	140	90	2	3	0	0	0	1							
28	122	19480	2	172	87	120	80	1	1	0	0	0	0							
29	125	18752	2	173	76	150	90	1	1	0	0	0	1							

Data View Variable View

b. & c.

Smoker

➔ Factor Analysis

Communalities		
	Initial	Extraction
Age	1.000	1.000
Height	1.000	1.000
Weight	1.000	1.000
Ap_hi	1.000	1.000
Ap_lo	1.000	1.000
Extraction Method: Principal Component Analysis.		

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.487	29.746	29.746	1.487	29.746	29.746
2	1.224	24.475	54.221	1.224	24.475	54.221
3	.957	19.134	73.355	.957	19.134	73.355
4	.745	14.905	88.260	.745	14.905	88.260
5	.587	11.740	100.000	.587	11.740	100.000

Extraction Method: Principal Component Analysis.

Component Matrix^a

	Component				
	1	2	3	4	5
Age	.082	.699	.527	.471	-.066
Height	.609	-.535	.112	.406	.408
Weight	.796	-.204	.122	-.089	-.549
Ap_hi	.613	.497	.075	-.508	.337
Ap_lo	.317	.399	-.804	.305	-.039

Extraction Method: Principal Component Analysis.

a. 5 components extracted.

Male non-smoker



Output
Factor Analysis
Title
Notes
Communalities
Total Variance Exp
Component Matrix

Factor Analysis

Communalities

	Initial	Extraction
Age	1.000	1.000
Height	1.000	1.000
Weight	1.000	1.000
Ap_hi	1.000	1.000
Ap_lo	1.000	1.000

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.170	23.391	23.391	1.170	23.391	23.391
2	1.088	21.757	45.148	1.088	21.757	45.148
3	.984	19.687	64.834	.984	19.687	64.834
4	.981	19.616	84.451	.981	19.616	84.451
5	.777	15.549	100.000	.777	15.549	100.000

Extraction Method: Principal Component Analysis.

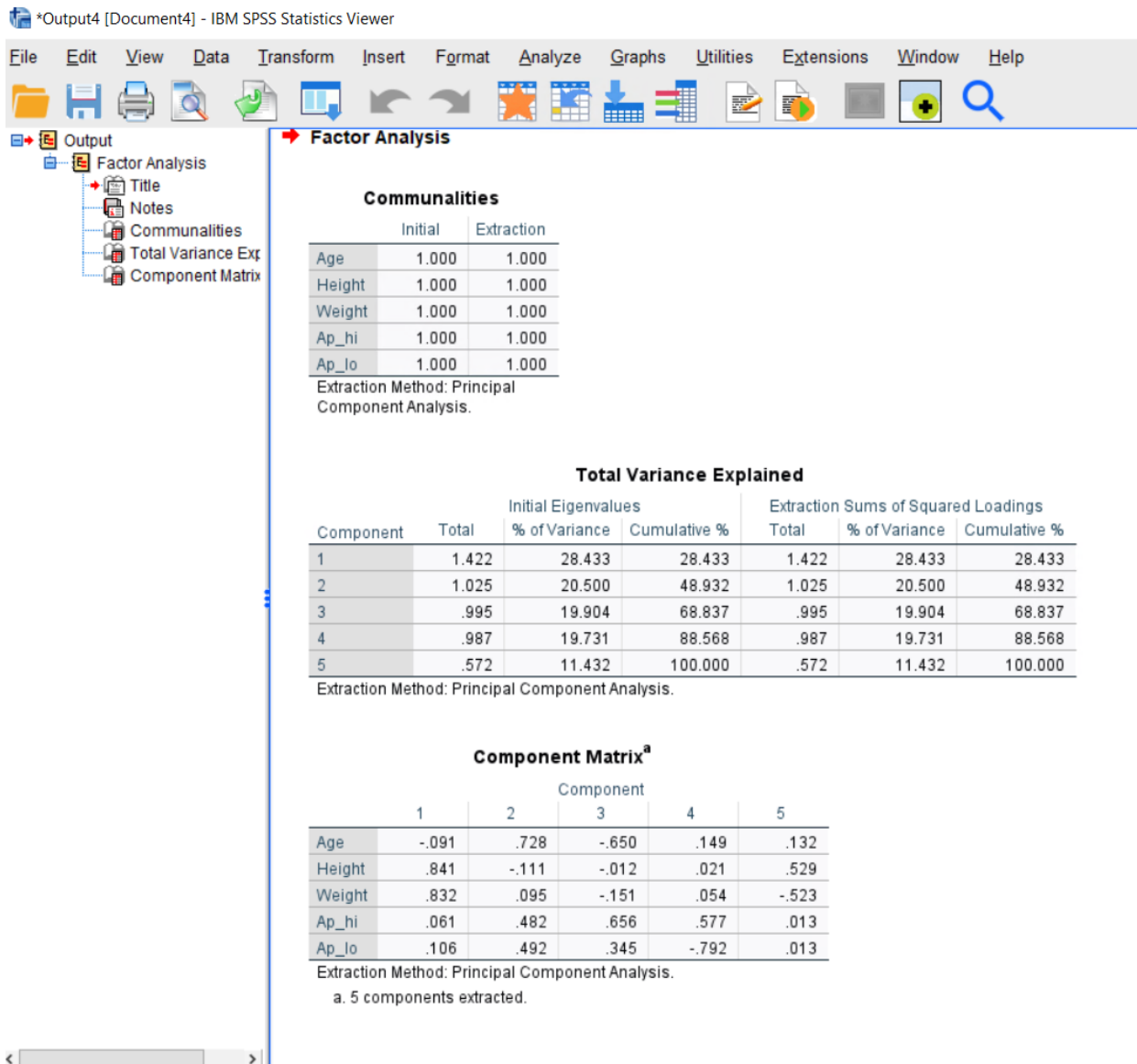
Component Matrix^a

	Component				
	1	2	3	4	5
Age	.137	.747	-.048	-.521	.385
Height	.675	-.495	.020	.018	.547
Weight	.791	.119	-.073	-.190	-.564
Ap_hi	.189	.338	.814	.431	.029
Ap_lo	.184	.395	-.560	.698	.103

Extraction Method: Principal Component Analysis.

a. 5 components extracted.

Female non-smoker



d.

For smoker, the total variance capture at the accepting percentage is PC3 or PC4. Because it captures more than 73%, which is pretty good.

For male non-smoker, the total variance capture at the accepting percentage is PC4. Because at that level it captures more than 84%, also pretty good.

For female non-smoker, the total variance capture at the accepting percentage is PC4. Because at that level it captures more than 88%, incredibly good.

Note: I used the eigenvalue greater than 0 to get this analysis.