

Term Project

Group 4

MATH 1040—Intro to Statistics

Professor McGrade

Purpose

- Research Question:
 - For Adult Women, is the number of children they have related to the amount of sleep they get (in hours) per night?
- This study was designed to find if a correlation exists between the number of children Adult Women have and the hours of sleep they get on average each night.



Study Design

It was decided that we should interview 50 adult women to get our information. We each chose different places to gather the data to get variety of samples

Project Data

Record #	# of Children	Average Hours of Sleep Each Night
1	5	7
2	0	7
3	0	6
4	1	6
5	4	6
6	0	6
7	0	7
8	0	8
9	0	6
10	2	7
11	5	6
12	0	6

Record #	# of Children	Average Hours of Sleep Each Night
13	0	6
14	0	6
15	3	5
16	5	7
17	4	6.5
18	2	7
19	2	7
20	3	7.5
21	1	6
22	4	7
23	2	7
24	6	8

Project Data

Record #	# of Children	Average Hours of Sleep Each Night
25	0	7
26	1	7
27	3	7
28	2	5
29	4	8
30	1	7
31	2	9
32	3	7
33	1	6
34	4	8
35	2	6
36	2	7

Record #	# of Children	Average Hours of Sleep Each Night
37	2	5
38	1	6
39	3	6
40	3	7
41	4	7
42	1	7
43	5	8
44	4	8
45	2	5
46	5	8
47	6	7.5
48	6	6

Project Data

Record #	# of Children	Average Hours of Sleep Each Night
49	1	5
50	2	8
51	2	7
52	3	6
53	4	7
54	0	5
55	0	6
56	0	6
57	0	6
58	0	6
59	0	6
60	0	6

Record #	# of Children	Average Hours of Sleep Each Night
61	0	7
62	0	7
63	0	7
64	0	7
65	0	7
66	0	7
67	0	7
68	0	7.5
69	0	7.5
70	0	8
71	0	8
72	0	9

Project Data

Record #	# of Children	Average Hours of Sleep Each Night
73	1	6
74	1	7
75	1	7
76	1	7
77	1	7
78	1	9
79	2	5
80	2	5
81	2	6
82	2	6
83	2	6.5
84	2	7

Record #	# of Children	Average Hours of Sleep Each Night
85	2	8
86	2	8
87	2	9
88	3	4.5
89	3	6
90	3	6
91	3	7
92	3	7
93	3	7.5
94	3	8
95	4	5
96	4	7

Project Data

Record #	# of Children	Average Hours of Sleep Each Night
97	4	7
98	4	8
99	5	6
100	6	5
101	6	7
102	6	7
103	0	5
104	0	5
105	0	5
106	0	6
107	0	6
108	0	6

Record #	# of Children	Average Hours of Sleep Each Night
109	0	6
110	0	7
111	0	7
112	0	7
113	0	7
114	0	7
115	0	7
116	0	9
117	1	6
118	1	6
119	1	6
120	1	6

Project Data

Record #	# of Children	Average Hours of Sleep Each Night
121	1	7
122	1	7
123	1	7
124	1	7
125	1	8
126	1	9
127	2	5
128	2	5
129	2	5
130	2	6
131	2	6
132	2	6

Record #	# of Children	Average Hours of Sleep Each Night
133	2	7
134	2	8
135	2	8
136	2	9
137	3	5
138	3	6
139	3	6
140	3	6
141	3	7
142	3	8
143	4	6
144	4	6

Project Data

Record #	# of Children	Average Hours of Sleep Each Night
145	4	7
146	4	7
147	4	8
148	5	5
149	5	7
150	6	7
151	6	7
152	4	6
153	3	9
154	2	7
155	1	5
156	1	6

Record #	# of Children	Average Hours of Sleep Each Night
157	4	8
158	3	7
159	4	6
160	1	5
161	2	8
162	4	6
163	1	8
164	3	9
165	3	5
166	5	8
167	1	6
168	4	5

Project Data

Record #	# of Children	Average Hours of Sleep Each Night
169	2	7
170	2	6
171	3	5
172	4	9
173	2	4
174	4	8
175	2	4
176	3	5
177	3	7
178	1	7
179	2	8
180	4	9

Record #	# of Children	Average Hours of Sleep Each Night
181	3	5
182	3	5
183	1	4
184	2	6
185	3	7
186	1	5
187	2	5
188	1	9
189	3	7
190	4	6
191	2	7
192	2	5

Project Data

Record #	# of Children	Average Hours of Sleep Each Night
193	1	6
194	2	7
195	3	6
196	2	8
197	2	9
198	3	5
199	1	6
200	3	6
201	2	7
202	4	8
203	0	6
204	0	5

Record #	# of Children	Average Hours of Sleep Each Night
205	3	8
206	6	6
207	3	7
208	0	6
209	3	7
210	1	8
211	1	8
212	4	6
213	3	5
214	2	7
215	2	8
216	3	6

Project Data

Record #	# of Children	Average Hours of Sleep Each Night
217	0	9
218	2	7
219	0	6
220	3	7
221	2	6
222	0	8
223	2	8
224	3	6
225	4	7
226	4	7
227	2	8
228	4	6

Record #	# of Children	Average Hours of Sleep Each Night
229	3	7
230	3	7
231	4	8
232	2	6
233	0	7
234	2	7
235	4	6
236	0	9
237	2	7
238	9	8
239	0	7
240	1	7

Project Data

Record #	# of Children	Average Hours of Sleep Each Night
241	0	8
242	0	5
243	1	7
244	4	6
245	2	7
246	3	8
247	1	7
248	2	7
249	4	8
250	3	7
251	0	9
252	3	8

Record #	# of Children	Average Hours of Sleep Each Night
253	0	5
254	5	7
255	4	6
256	5	5
257	3	5
258	6	4
259	1	7
260	3	4
261	1	5
262	3	7
263	4	7
264	6	5

Project Data

Record #	# of Children	Average Hours of Sleep Each Night
265	1	7
266	4	5
267	0	7
268	2	5
269	2	5
270	2	5
271	1	5
272	5	5
273	5	4
274	6	8
275	1	7
276	5	6

Record #	# of Children	Average Hours of Sleep Each Night
277	0	5
278	0	5
279	4	6
280	0	4
281	3	8
282	3	4
283	0	7
284	4	6
285	3	4
286	0	8
287	3	7
288	4	6

Project Data

Record #	# of Children	Average Hours of Sleep Each Night
289	1	4
290	1	5
291	3	7
292	1	7
293	3	6
294	0	4
295	4	7
296	1	7
297	3	5
298	0	4
299	1	5
300	1	5

Record #	# of Children	Average Hours of Sleep Each Night
301	1	7
302	1	5
303	1	4
304	0	4
305	6	7
306	3	4
307	0	5.5
308	0	9
309	3	8
310	2	8
311	2	6.5
312	0	7

Project Data

Record #	# of Children	Average Hours of Sleep Each Night
313	0	6.5
314	2	7
315	3	6.5
316	0	7
317	0	6
318	4	8
319	0	8.5
320	2	8
321	3	8
322	1	4.5
323	0	6.5
324	0	3.5

Record #	# of Children	Average Hours of Sleep Each Night
325	9	6
326	2	5.5
327	4	8
328	1	8
329	4	6
330	1	6
331	1	7
332	5	9
333	3	6
334	4	6
335	2	7
336	1	6.5

Project Data

Record #	# of Children	Average Hours of Sleep Each Night
337	1	8
338	3	7
339	3	6
340	3	7.5
341	2	6
342	4	5
343	1	6
344	2	6.5
345	1	9
346	2	6
347	0	8
348	2	7

Record #	# of Children	Average Hours of Sleep Each Night
349	1	4
350	6	9
351	0	4.5
352	2	9
353	0	10
354	2	5
355	2	7.5
356	5	6.5

Statistics for Number of Children

Mean – 2.166

Standard Deviation – 1.744

Min – 0

Q1 – 1

Median – 2

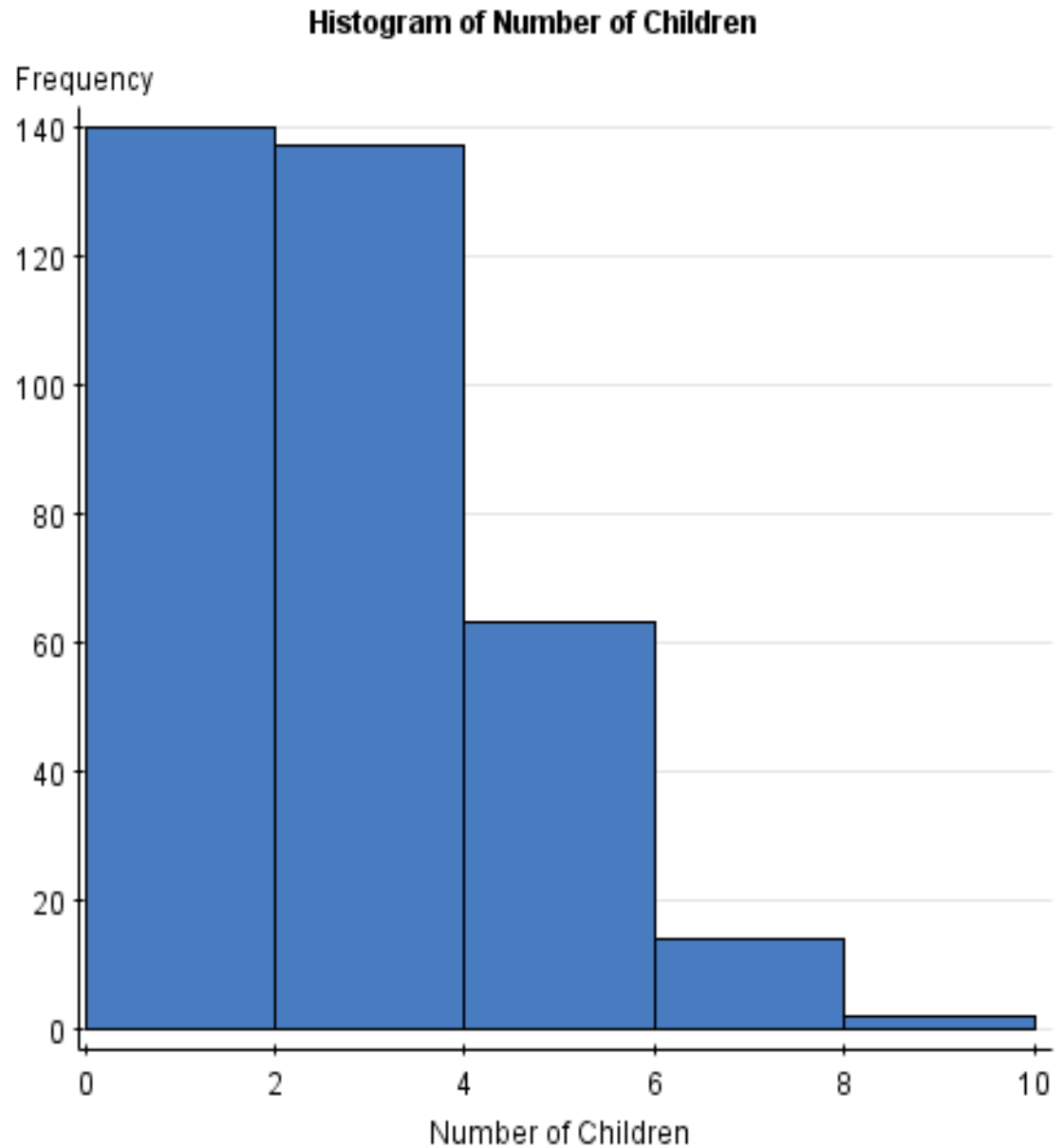
Q3 – 3

Max - 9

Range – 9

Mode – 0

Outliers – 9



Statistics for Number of Children

Mean – 2.166

Standard Deviation – 1.744

Min – 0

Q1 – 1

Median – 2

Q3 – 3

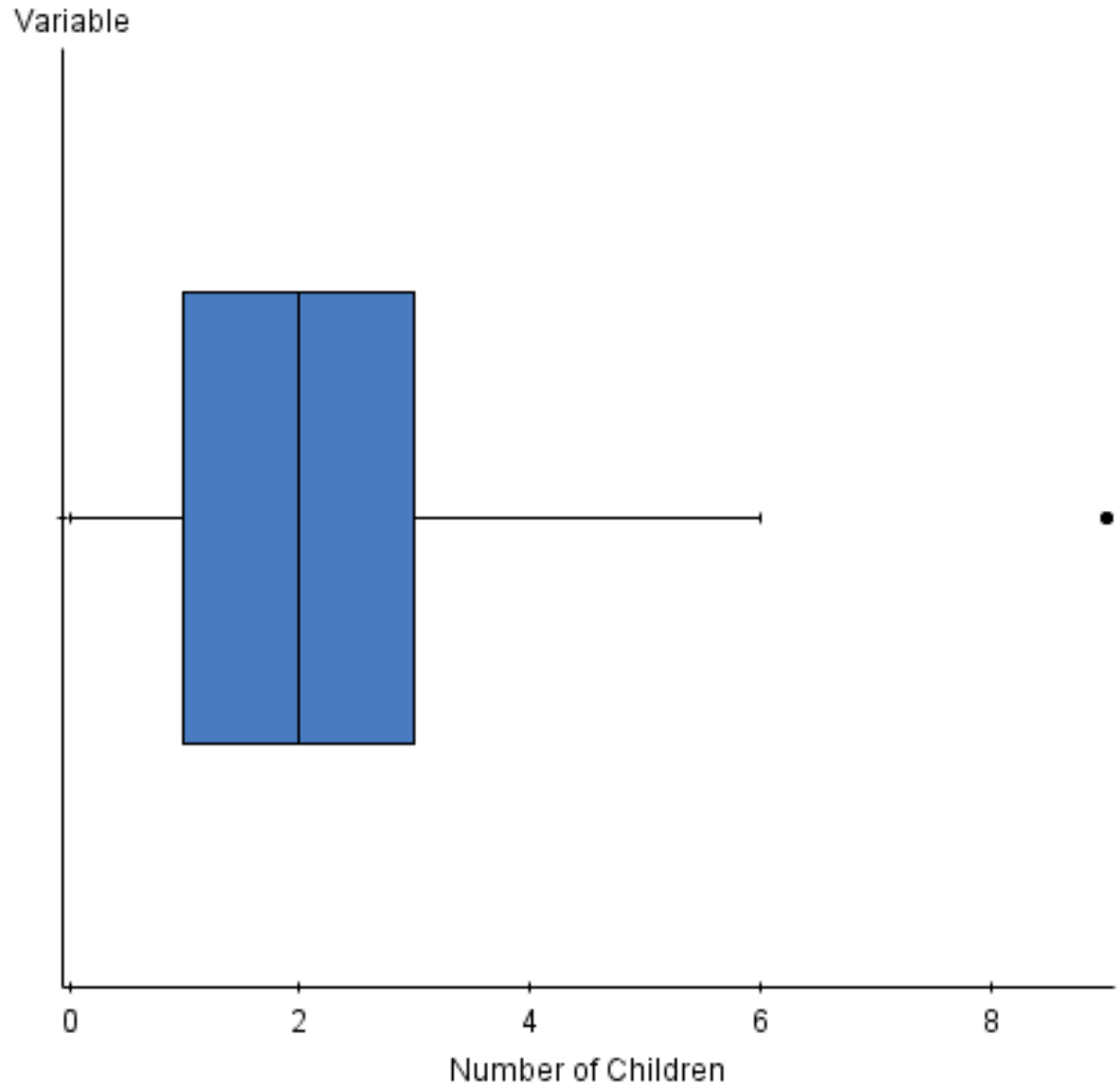
Max - 9

Range – 9

Mode – 0

Outliers – 9

Box Plot for Number of Children



Statistics for Hours of Sleep

Mean – 6.565

Standard Deviation – 1.255

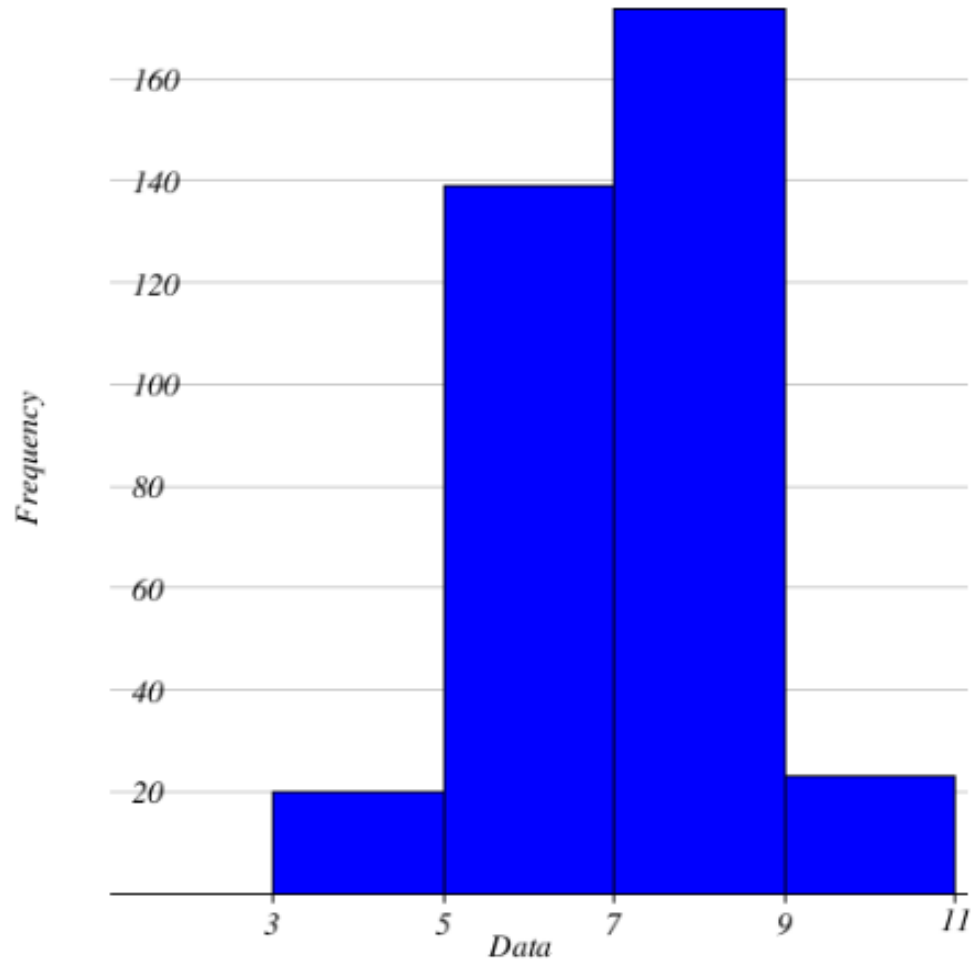
Five-Number Summary – 3.5,6,7,7,10

Range – 6.5

Mode – 7

Outliers – none

Histogram for Hours of Sleep



Statistics for Hours of Sleep

Mean – 6.565

Standard Deviation – 1.255

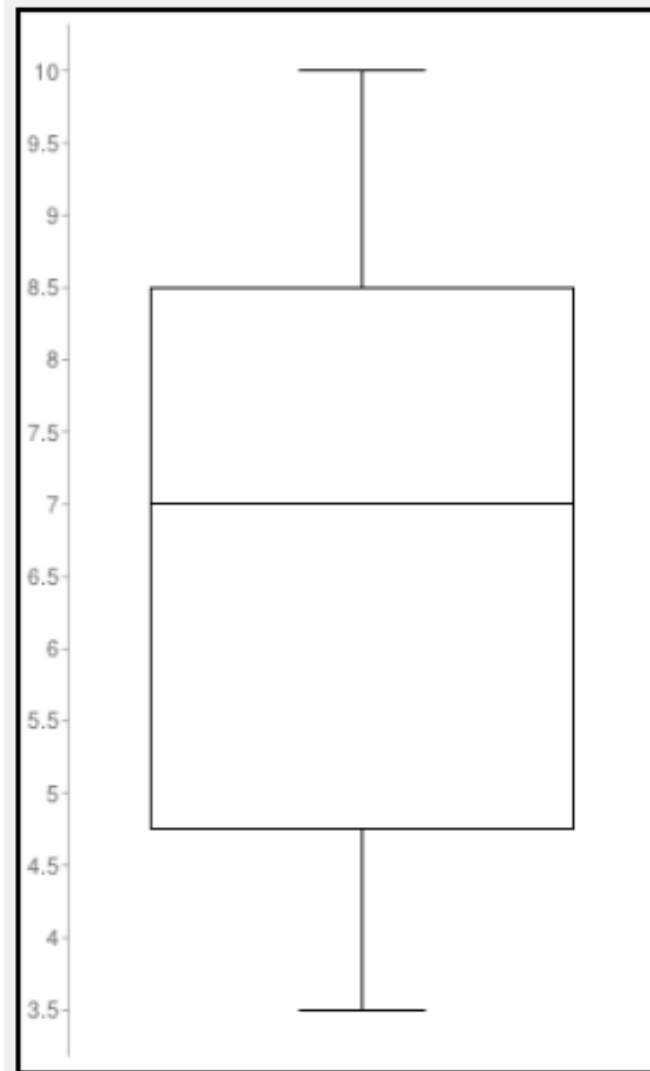
Five-Number Summary – 3.5,6,7,7,10

Range – 6.5

Mode – 7

Outliers – none

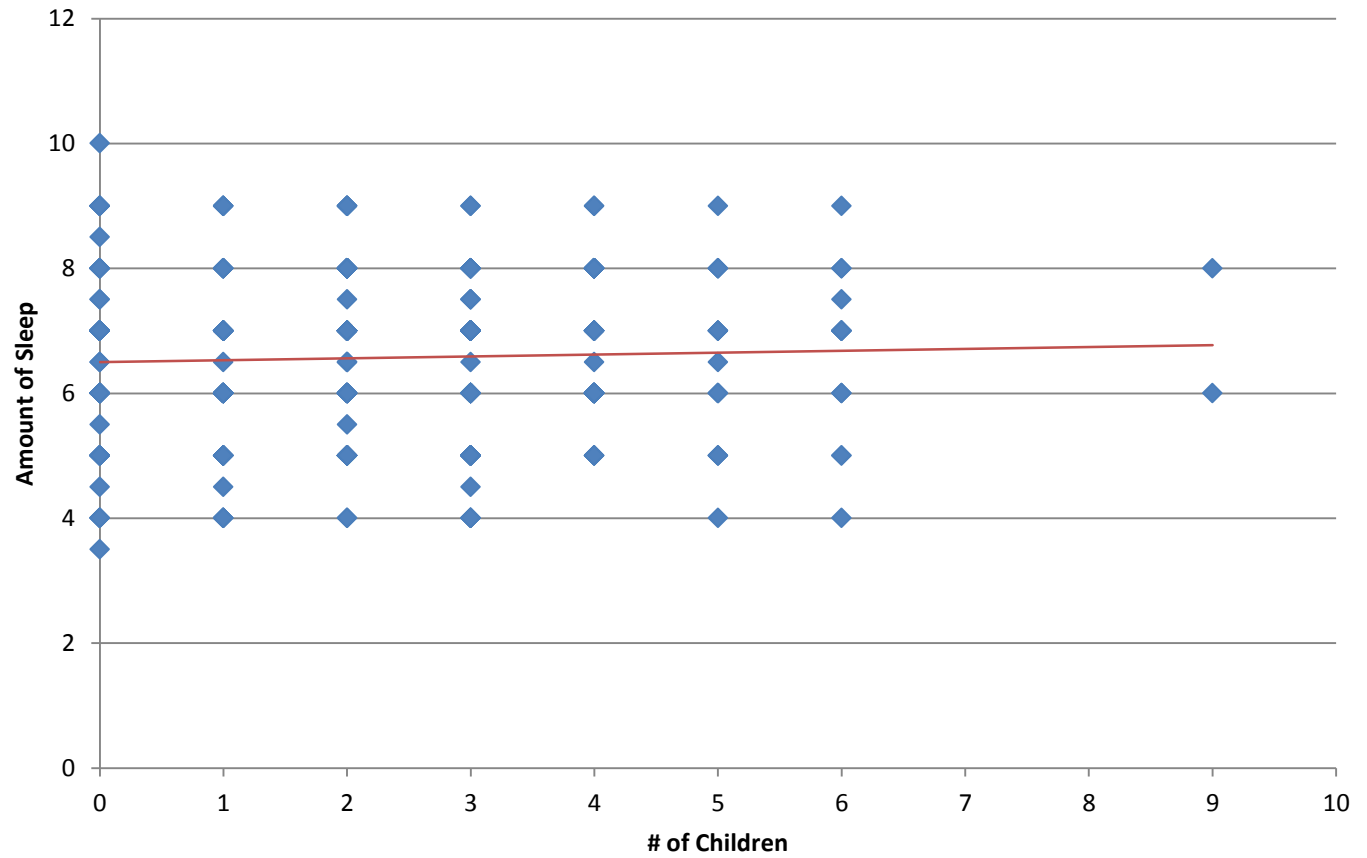
Boxplot for Hours of Sleep



Linear Correlation Statistics

$r = 0.042$

Scatter Plot of Number of Children & Hours of Sleep



Difficulties

There seemed to be too many variables that affected our sampling. For example, single women with young children seemed to be different than married women with older children. However, without narrowing it down or asking additional questions we got a very wide range of data.

It would have been interesting to see if the data would have shown more of correlation if our group had put parameters around our sample population.

Analysis

- The distribution of the explanatory variable, number of children, is skewed right with two occurrences of outliers while the distribution of the response variable, amount of sleep per night, appears to be nearly symmetrical.
- With the critical value at 0.195 the linear correlation coefficient of 0.042 fails to establish a linear correlation between the number of children an adult woman has and the amount of sleep per night she receives.

Interpretations and Conclusion

- There is no linear relationship between the number of children an adult woman has and the hours of sleep she receives per night.
- Accurately represents population, but results could vary if original question were to be altered to be more specific.

Credits

- Danielle Creasy – Title & Purpose, Interpretations & Conclusion (slides 1,2, & 26)
- Andrea Gentry – Study Design (slide 3)
- Michael Simmons – Project Data, 1st Variable Stats & Graphs, Linear Correlation Stats & Graph, Analysis (slides 4-20, 23, & 25)
- Christian Judd – 2nd Variable Stats & Graphs (slides 21 & 22)
- Stephanie Linton – Difficulties (slide 24)