Activity: Understanding confidence intervals
Exercise Sheet

NOTE: Complete questions 1 to 3 INDIVIDUALLY (not as a group).

In this activity, we will be working with a dataset obtained from a survey of students in an introductory statistics course in Vancouver in 2016. The students were asked how many friends they had on their Facebook profile. Students without a Facebook profile were instructed to enter '0' in the survey.

1. Sample 10 observations from the population data using the 10 random integers you have drawn. Write down the 10 observations below.

   _____ _____ _____ _____ _____

   _____ _____ _____ _____ _____

2. Calculate the mean and standard deviation for the 10 observations that you sampled. (You can use the mean and standard deviation calculator available at https://www.easycalculation.com/statistics/standard-deviation.php; use the fields marked "Mean (Average)" and "Standard deviation".) Write down the values below.

   Mean: _____ Standard deviation: _____

3. Calculate the 95% confidence interval. Write down the lower and upper bounds of the confidence interval. (Round to 2 decimal places.)

   Lower bound: _____ Upper bound: _____

   Stop here. Wait for further instructions.

4. Does your confidence interval contain the true mean? Submit your response.

5. What percentage of your classmates found confidence intervals that contain the true mean? Your instructor will provide you the number.

   _____

6. In theory, what percentage of confidence intervals should contain the true mean? _____

7. Compare the numbers you have for questions 5 and 6. Are they the same or different? Why do you think that is the case?

   _____

   _____

8. What was the focus of this activity? Why were you asked to do this? What have you learned?

   _____

   _____

   _____

Subj #	# Friends	Subj #	# Friends	Subj #	# Friends	Subj #	# Friends	Subj #	# Friends	Subj #	# Friends	Subj #	# Friends
1	165	32	700	63	300	94	938	125	481	156	673	187	54
2	350	33	300	64	260	95	489	126	0	157	250	188	400
3	700	34	30	65	260	96	179	127	276	158	340	189	830
4	47	35	1700	66	10	97	15	128	350	159	788	190	700
5	70	36	77	67	603	98	997	129	200	160	233	191	365
6	690	37	330	68	70	99	487	130	30	161	724	192	334
7	150	38	146	69	834	100	457	131	100	162	300	193	220
8	42	39	674	70	620	101	1185	132	792	163	768	194	1044
9	245	40	150	71	200	102	25	133	1196	164	455	195	0
10	413	41	280	72	138	103	1250	134	200	165	233	196	3
11	50	42	0	73	700	104	349	135	120	166	692	197	1235
12	453	43	179	74	400	105	887	136	680	167	223	198	105
13	200	44	45	75	300	106	350	137	423	168	300	199	296
14	174	45	660	76	700	107	800	138	439	169	71	200	0
15	512	46	200	77	250	108	128	139	400	170	585	201	2
16	588	47	259	78	250	109	0	140	977	171	650	202	100
17	0	48	676	79	326	110	526	141	453	172	300	203	10
18	923	49	947	80	1000	111	100	142	748	173	746	204	478
19	212	50	407	81	160	112	162	143	50	174	921	205	300
20	584	51	0	82	694	113	0	144	400	175	177	206	2770
21	280	52	326	83	870	114	400	145	577	176	205	207	300
22	282	53	664	84	624	115	733	146	878	177	287	208	300
23	230	54	67	85	100	116	1	147	550	178	980	209	350
24	350	55	0	86	600	117	560	148	226	179	700	210	520
25	960	56	508	87	103	118	184	149	0	180	338	211	120
26	523	57	35	88	501	119	483	150	400	181	312	212	20
27	766	58	1110	89	682	120	275	151	484	182	1076	213	704
28	757	59	420	90	790	121	300	152	135	183	543	214	134
29	730	60	342	91	195	122	760	153	350	184	140	215	1744
30	82	61	96	92	170	123	970	154	420	185	350		
31	0	62	98	93	675	124	463	155	800	186	478		