

Sampling People, Records, & Networks

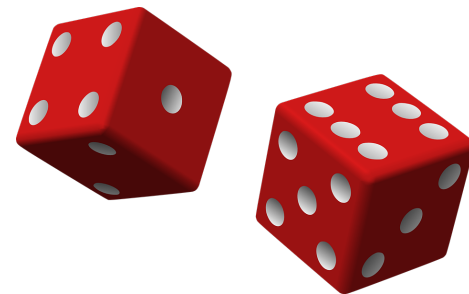
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Professor & Research Professor *Emeritus*

Institute for Social Research, University of Michigan

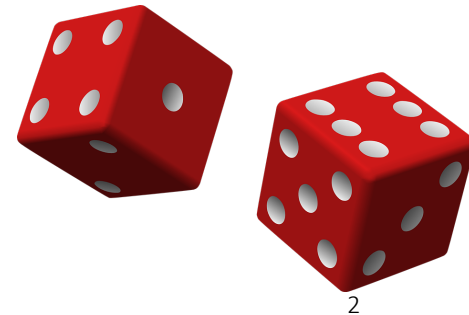
Research Professor,

Joint Program in Survey Methodology, University of Maryland



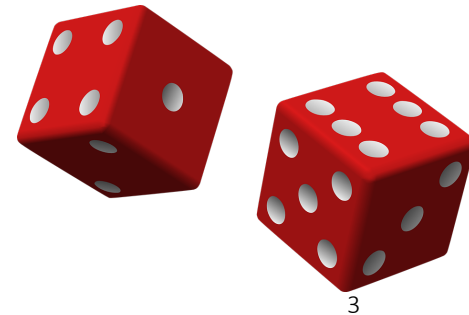
Unit 2

- 1 Simple random sampling
 - 2 History
 - 3 Sampling distribution
 - 4 Sample size
 - 5 Margin of error
 - 6 Sample & population size
- **Unit 1: Sampling as a research tool**
 - **Unit 2: Mere randomization**
 - Lecture 1: Simple Random Sampling (SRS)
 - Lecture 2: A short history
 - Lecture 3: The SRS sampling distribution
 - Lecture 4: Sample size
 - Lecture 5: Margin of error
 - Lecture 6: Sample size & population size
 - **Unit 3: Saving money**
 - **Unit 4: Being more efficient**
 - **Unit 5: Simplifying sampling**
 - **Unit 6: Some extensions & applications**

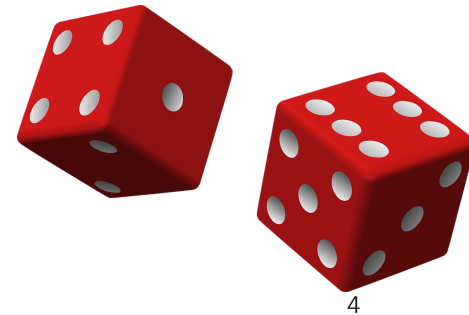


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 - Unit 6: Some extensions & applications



- Frame & RN's
 - Selecting a sample
 - Definitions
 - Practical use
- Unit 1: Sampling as a research tool
 - Unit 2: Mere randomization
 - **Lecture 1: Simple Random Sampling (SRS)**
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Survey Data Collection & Analytic Specialization

Sampling People, Records, & Networks

Exercise 1: Table of Random Digits

- Frame & RN's
- Selecting a sample
- Definitions
- Practical use

Row	Column																	
	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	76-80	81-85	86-90
1	49018	34042	72000	49522	85941	84723	51072	56454	67420	05025	25234	10671	05579	90906	54706	79486	57057	40468
2	97294	25351	12331	82557	13834	91334	32510	47165	08535	27491	87064	23579	72223	45164	98781	20189	17391	75145
3	97638	18356	31198	39366	37340	76043	77528	21714	44751	81797	28670	50973	07915	45259	45334	88904	47365	37249
4	34525	30477	75462	34635	51422	60669	62413	52524	79883	26235	46933	23381	72335	74702	77289	83419	28761	68996
5	79619	43993	89902	64817	88397	35390	44558	91500	87656	83603	00491	37693	75524	04058	77373	61598	60059	32241
6	54778	70353	54134	19513	89074	07807	74520	59684	47494	58194	29810	91489	45410	28737	55504	50467	94953	25565
7	12256	17900	33754	11853	65033	24106	41833	68345	62300	33076	70119	60498	70180	06929	34567	37075	57735	44602
8	33297	14796	91080	67108	85984	81892	37533	24643	37522	71461	96220	16177	04449	38396	09675	64290	96410	49117
9	75083	44991	46851	46383	00695	54453	34156	49854	68163	83123	89928	39667	15632	43854	04707	41766	01876	20016
10	66288	63908	74090	52902	69701	72959	64480	78123	81841	92675	08731	20577	94939	43211	63438	93640	75825	57922
11	84578	05698	92016	94285	26563	36372	55989	94790	36338	30640	81337	56599	05695	42896	57115	73143	49959	84903
12	55699	23402	30639	39508	41495	44462	11924	70471	97867	82637	18031	38020	70819	64948	17274	67345	31672	66155
13	51917	88538	58239	58633	80392	89447	81230	97654	52579	34888	06454	94398	16452	76723	00902	81924	73166	85669
14	36779	68538	88591	96616	84918	29413	99116	66987	41334	43877	00185	90070	43292	01754	01505	25362	39548	60933
15	49852	36333	84789	65346	46181	61218	54131	57370	64814	44430	43774	72286	11644	33071	74301	02154	37021	04828
16	66752	08578	57498	17884	83667	59532	73254	83347	85751	18536	55969	73265	06726	80734	29351	36800	77081	10687
17	61689	45570	53663	66779	85627	27662	34436	58824	18902	49414	05020	98033	85987	53127	72623	00983	92504	54686
18	19111	76703	32467	51391	85381	48433	68754	89843	02166	59177	80856	71628	27731	90073	04233	34913	46188	28778
19	46913	70576	16918	46675	02304	83330	55894	39684	20753	48885	72907	37048	80065	58931	78214	36397	97252	69593
20	22224	48264	96826	15434	52010	22811	07914	89541	61620	83346	96204	52742	27485	37716	71756	79244	04517	20831
21	84119	49920	29328	03239	15832	72406	94946	45797	70566	19586	26419	40852	70097	02276	93410	87952	71018	96533
22	75594	56191	18861	44995	44764	76960	12585	01842	19324	46085	33903	77234	07418	42805	21925	86305	12510	87281
23	34821	90491	28843	85959	72301	14576	94229	43353	55740	86145	73278	89446	36093	39173	07384	32388	17494	52734
24	23378	01578	09081	20536	31412	00632	16380	14876	26249	00449	26441	14765	05223	08297	54280	35937	02965	79389
25	09985	71346	32130	58906	97244	07003	91231	23396	47378	19064	01118	40376	83218	01890	94316	40309	41332	30966
26	43814	09227	11841	44516	62348	31284	58895	88559	19567	82425	00614	68626	10523	96822	79297	16858	52693	63887
27	26724	80216	75905	54725	46995	75504	79112	50571	57115	02600	35097	04329	78514	02663	48700	57166	30316	97649
28	37876	85859	19333	87221	44809	50700	57889	43075	99310	32235	62624	88356	51865	21946	52479	69599	29065	26434
29	23634	07454	63628	30531	52979	28534	03208	75663	33587	27738	04018	32256	32259	14042	27624	94889	91414	72658
30	10906	61337	16571	98829	96434	25748	01518	97758	93725	64532	79331	25961	82782	23354	47052	36078	12780	78331
31	09372	97239	72017	99537	99977	96404	04824	64248	68816	02734	38384	87274	18213	67600	18730	17870	02026	34180
32	86659	47171	96123	33853	64659	76657	53911	09900	70918	07733	89084	42345	22250	13583	52020	96144	25382	10875
33	78209	23140	94532	89438	43271	89616	63137	85026	15799	62580	70837	50071	74496	94191	45858	13545	66999	77390
34	15430	43742	77673	21745	34854	31505	05275	16758	58996	70211	97794	60918	98986	14446	72130	43056	13412	86691
35	64947	43432	14105	78393	03682	47498	75738	76250	69143	19799	31068	31261	31912	47359	26853	62917	40581	40772
36	71143	09505	65318	29034	89055	17744	48752	69171	08426	08827	14816	61969	68694	19168	67081	26010	68211	80384
37	03104	54280	49703	72368	99964	68555	57769	27567	55962	31100	26364	61603	48176	04177	00935	05130	83625	66323
38	56085	69548	50876	92855	52293	11580	22797	94044	67994	50651	26397	01782	73341	80486	72738	66943	75883	10106
39	41842	68437	92724	67791	21113	47124	28279	50647	09809	26717	48925	14686	24824	38530	62429	57330	33340	07994
40	28521	08035	30260	91407	04111	18581	84777	87116	96280	09202	31360	02923	83625	19821	35903	86927	36021	90593
41	85133	15310	42745	84831	82992	73756	67473	62066	83254	02735	55402	39765	92121	07338	39944	36882	74892	00148
42	28122	35506	71104	96492	90721	22225	32256	30415	63671	27160	19768	08441	38172	15357	73851	53381	20093	42073
43	56665	12467	44282	00817	58668	70312	66617	75720	93458	74491	72624	45673	68051	53523	58745	13730	93676	87636
44	19871	89889	70142	63766	71799	97398	23855	08350	11993	16729	23096	75940	45632	05786	46643	52563	30407	28338
45	48253	37932	79566	98774	02523	54942	15195	01354	03979	36909	21991	08828	45452	75565	90933	08713	36319	70259
46	80828	98357	85671	69918	30878	48784	81471	43729	60566	81014	68445	82593	59634	16601	05712	80642	26928	11496
47	09863	88615	26990	94808	32784	51992	60048	09830	75745	30593	64917	90209	55266	57533	68877	37486	91998	30055
48	05754	47499	53052	86074	01045	90121	12938	84746	55683	64345	22413	08513	44316	38192	73202	99160	56397	77063
49	32883	01773	11423	07799	12268	59983	60446	16744	12452	81457	56278	49040	31680	66267	05187	69329	28067	78017
50	82869	70040	36427	18798	57316	09565	11637	30597	11151	46114	30048	60952	48736	39133	79698	90272	80447	88785

- Frame & RN's
- Selecting a sample
- Definitions
- Practical use

Faculty Member Salaries (in \$1,000)

Seq. No.	ID	Division	Sex	Ran	Salary	Seq. No.	ID	Division	Sex	Ran	Salary	Seq. No.	ID	Division	Sex	Ran	Salary
1	1	Eng&Prof	m	3	\$88	51	155	Eng&Prof	m	3	\$55	101	217	Lit&SocSci	m	2	\$55
2	2	Medicine	f	3	\$45	52	156	Biol&Sci	m	1	\$49	102	218	Medicine	m	3	\$80
3	9	Medicine	m	3	\$57	53	157	Eng&Prof	m	3	\$57	103	219	Eng&Prof	m	1	\$114
4	11	Medicine	m	1	\$133	54	158	Medicine	m	1	\$118	104	220	Lit&SocSci	m	1	\$63
5	12	Eng&Prof	f	2	\$71	55	159	Medicine	m	3	\$84	105	221	Medicine	m	1	\$112
6	13	Lit&SocSci	m	1	\$113	56	160	Eng&Prof	m	3	\$52	106	222	Medicine	m	1	\$93
7	14	Medicine	f	3	\$65	57	161	Medicine	m	3	\$64	107	223	Lit&SocSci	m	2	\$47
8	15	Biol&Sci	m	3	\$47	58	162	Eng&Prof	m	1	\$75	108	224	Biol&Sci	m	1	\$127
9	16	Lit&SocSci	f	3	\$39	59	163	Medicine	f	1	\$87	109	225	Eng&Prof	m	2	\$121
10	17	Biol&Sci	m	1	\$74	60	164	Eng&Prof	m	3	\$58	110	226	Medicine	m	3	\$58
11	18	Medicine	m	1	\$88	61	165	Medicine	f	3	\$39	111	227	Biol&Sci	f	3	\$97
12	19	Lit&SocSci	m	1	\$62	62	166	Medicine	m	3	\$69	112	228	Lit&SocSci	m	1	\$71
13	37	Lit&SocSci	m	1	\$49	63	167	Medicine	f	2	\$46	113	229	Eng&Prof	m	1	\$72
14	38	Medicine	m	3	\$88	64	179	Eng&Prof	f	1	\$86	114	230	Lit&SocSci	m	3	\$29
15	39	Medicine	m	1	\$181	65	180	Medicine	m	3	\$87	115	231	Medicine	m	2	\$167
16	40	Eng&Prof	m	3	\$63	66	181	Medicine	m	3	\$59	116	232	Lit&SocSci	m	3	\$36
17	41	Medicine	m	2	\$94	67	182	Eng&Prof	f	3	\$44	117	233	Medicine	m	1	\$57
18	42	Eng&Prof	m	1	\$91	68	183	Medicine	m	2	\$123	118	234	Biol&Sci	m	1	\$107
19	43	Medicine	m	1	\$60	69	184	Lit&SocSci	f	3	\$37	119	235	Medicine	m	2	\$88
20	44	Eng&Prof	m	3	\$55	70	185	Lit&SocSci	m	1	\$106	120	236	Medicine	m	2	\$87
21	45	Biol&Sci	m	2	\$55	71	186	Lit&SocSci	m	1	\$91	121	237	Lit&SocSci	f	2	\$43
22	46	Medicine	f	1	\$106	72	187	Lit&SocSci	m	1	\$78	122	238	Lit&SocSci	m	1	\$79
23	47	Medicine	m	1	\$116	73	188	Biol&Sci	m	1	\$77	123	239	Medicine	m	2	\$113
24	48	Medicine	m	3	\$79	74	189	Medicine	m	1	\$90	124	240	Medicine	m	3	\$55
25	49	Lit&SocSci	m	1	\$61	75	190	Eng&Prof	m	2	\$71	125	280	Medicine	m	3	\$57
26	50	Lit&SocSci	f	3	\$37	76	191	Medicine	f	3	\$42	126	281	Eng&Prof	m	3	\$56
27	51	Medicine	m	2	\$72	77	192	Medicine	f	2	\$59	127	282	Eng&Prof	m	2	\$65
28	52	Eng&Prof	m	1	\$105	78	193	Eng&Prof	m	2	\$49	128	283	Medicine	m	2	\$42
29	59	Medicine	m	2	\$79	79	194	Biol&Sci	m	1	\$83	129	284	Medicine	m	1	\$102
30	133	Medicine	m	1	\$61	80	195	Lit&SocSci	m	1	\$34	130	285	Medicine	f	3	\$40
31	134	Medicine	m	1	\$86	81	196	Medicine	f	3	\$42	131	286	Eng&Prof	m	3	\$53
32	135	Biol&Sci	m	1	\$103	82	197	Medicine	m	2	\$97	132	287	Medicine	m	3	\$82
33	136	Lit&SocSci	m	1	\$48	83	198	Medicine	m	1	\$109	133	288	Medicine	m	2	\$64
34	137	Eng&Prof	m	2	\$64	84	199	Lit&SocSci	f	2	\$48	134	289	Eng&Prof	m	1	\$72
35	138	Eng&Prof	m	1	\$78	85	200	Medicine	m	1	\$47	135	290	Biol&Sci	f	3	\$36
36	139	Medicine	f	2	\$53	86	201	Eng&Prof	m	2	\$45	136	291	Lit&SocSci	f	1	\$66
37	140	Biol&Sci	m	1	\$85	87	202	Medicine	m	3	\$83	137	292	Medicine	f	3	\$66
38	141	Eng&Prof	m	1	\$61	88	203	Medicine	m	2	\$51	138	293	Medicine	m	2	\$102
39	142	Medicine	m	1	\$106	89	204	Biol&Sci	m	1	\$78	139	294	Biol&Sci	m	1	\$103
40	143	Lit&SocSci	m	2	\$60	90	205	Lit&SocSci	m	1	\$70	140	295	Medicine	m	1	\$148
41	144	Biol&Sci	f	1	\$73	91	206	Eng&Prof	f	2	\$46	141	296	Lit&SocSci	f	1	\$60
42	145	Medicine	m	1	\$70	92	207	Eng&Prof	m	1	\$85	142	297	Lit&SocSci	f	3	\$46
43	147	Medicine	f	3	\$32	93	208	Lit&SocSci	m	1	\$53	143	298	Lit&SocSci	f	1	\$57
44	148	Lit&SocSci	m	2	\$49	94	209	Medicine	f	3	\$40	144	299	Medicine	f	2	\$50
45	149	Eng&Prof	m	3	\$43	95	210	Eng&Prof	m	1	\$87	145	300	Lit&SocSci	m	1	\$90
46	150	Medicine	m	1	\$75	96	211	Lit&SocSci	m	1	\$71	146	301	Eng&Prof	m	3	\$63
47	151	Lit&SocSci	m	1	\$92	97	212	Medicine	m	1	\$75	147	303	Eng&Prof	m	1	\$80
48	152	Medicine	m	2	\$107	98	214	Biol&Sci	m	1	\$85	148	304	Medicine	m	3	\$56
49	153	Biol&Sci	m	2	\$57	99	215	Lit&SocSci	m	2	\$50	149	305	Medicine	m	1	\$72
50	154	Medicine	m	2	\$114	100	216	Medicine	m	3	\$118	150	306	Eng&Prof	m	1	\$96

Faculty Member Salaries (Continued)

• Frame & RN's

• Selecting a sample

• Definitions

• Practical use

Seq. No.	ID	Division	Sex	Ran	Salary	Seq. No.	ID	Division	Sex	Ran	Salary	Seq. No.	ID	Division	Sex	Ran	Salary
151	307	Medicine	m	3	\$65	201	440	Medicine	m	1	\$108	251	496	Medicine	m	3	\$60
152	308	Lit&SocSci	m	3	\$37	202	441	Lit&SocSci	m	1	\$48	252	497	Eng&Prof	m	1	\$86
153	309	Eng&Prof	m	1	\$127	203	442	Medicine	m	3	\$85	253	498	Medicine	m	1	\$134
154	310	Lit&SocSci	m	1	\$90	204	443	Lit&SocSci	m	1	\$59	254	499	Medicine	f	3	\$63
155	311	Lit&SocSci	m	3	\$45	205	444	Lit&SocSci	f	1	\$63	255	500	Medicine	m	1	\$123
156	312	Eng&Prof	f	1	\$75	206	445	Lit&SocSci	f	2	\$46	256	501	Medicine	m	3	\$85
157	313	Medicine	m	2	\$60	207	446	Medicine	f	3	\$41	257	502	Medicine	f	3	\$42
158	314	Lit&SocSci	m	2	\$57	208	447	Medicine	m	3	\$71	258	503	Medicine	f	2	\$83
159	315	Medicine	m	1	\$129	209	448	Eng&Prof	f	3	\$44	259	504	Lit&SocSci	m	1	\$54
160	316	Eng&Prof	m	1	\$102	210	449	Lit&SocSci	m	2	\$46	260	505	Lit&SocSci	f	1	\$66
161	317	Eng&Prof	m	3	\$57	211	450	Medicine	m	3	\$85	261	506	Medicine	m	1	\$84
162	318	Eng&Prof	m	3	\$61	212	452	Medicine	m	1	\$119	262	507	Eng&Prof	m	3	\$46
163	319	Eng&Prof	m	1	\$93	213	453	Medicine	m	2	\$69	263	508	Eng&Prof	m	1	\$90
164	320	Medicine	f	3	\$41	214	454	Eng&Prof	m	3	\$74	264	509	Medicine	m	2	\$76
165	321	Medicine	m	1	\$181	215	455	Biol&Sci	m	1	\$59	265	510	Eng&Prof	m	1	\$88
166	322	Medicine	f	2	\$69	216	456	Biol&Sci	m	1	\$53	266	515	Medicine	f	1	\$87
167	323	Lit&SocSci	m	1	\$81	217	457	Medicine	f	3	\$49	267	516	Eng&Prof	m	3	\$75
168	324	Biol&Sci	m	1	\$94	218	459	Eng&Prof	m	1	\$78	268	517	Eng&Prof	m	3	\$64
169	325	Lit&SocSci	m	2	\$53	219	460	Biol&Sci	m	1	\$68	269	518	Biol&Sci	f	3	\$52
170	326	Medicine	m	3	\$48	220	461	Eng&Prof	m	1	\$83	270	519	Medicine	m	2	\$109
171	327	Lit&SocSci	m	1	\$83	221	462	Eng&Prof	m	1	\$105	271	520	Lit&SocSci	m	1	\$144
172	328	Lit&SocSci	m	1	\$47	222	463	Lit&SocSci	m	3	\$37	272	521	Eng&Prof	m	2	\$79
173	329	Lit&SocSci	m	3	\$45	223	464	Medicine	m	1	\$111	273	522	Biol&Sci	m	1	\$56
174	330	Medicine	f	1	\$75	224	465	Medicine	f	2	\$70	274	530	Biol&Sci	m	1	\$60
175	331	Medicine	m	3	\$49	225	466	Eng&Prof	m	1	\$57	275	531	Biol&Sci	m	3	\$52
176	333	Medicine	m	3	\$53	226	467	Eng&Prof	m	1	\$71	276	532	Lit&SocSci	f	2	\$45
177	334	Eng&Prof	m	1	\$84	227	468	Biol&Sci	m	3	\$36	277	533	Lit&SocSci	m	1	\$59
178	335	Eng&Prof	m	1	\$78	228	469	Eng&Prof	f	3	\$43	278	534	Eng&Prof	m	3	\$56
179	336	Lit&SocSci	m	1	\$102	229	470	Eng&Prof	m	1	\$120	279	535	Medicine	m	1	\$123
180	337	Lit&SocSci	f	2	\$50	230	471	Lit&SocSci	m	1	\$66	280	536	Medicine	m	2	\$75
181	338	Medicine	f	2	\$49	231	472	Eng&Prof	m	1	\$84	281	537	Eng&Prof	m	1	\$84
182	339	Medicine	m	1	\$54	232	473	Medicine	m	2	\$99	282	538	Medicine	m	2	\$70
183	340	Medicine	m	3	\$35	233	474	Biol&Sci	f	1	\$91	283	539	Medicine	m	3	\$84
184	341	Medicine	m	2	\$87	234	475	Eng&Prof	m	2	\$105	284	540	Eng&Prof	m	1	\$63
185	342	Lit&SocSci	m	1	\$52	235	476	Medicine	f	2	\$60	285	541	Eng&Prof	m	1	\$121
186	343	Lit&SocSci	m	1	\$75	236	477	Medicine	f	3	\$34	286	542	Medicine	m	1	\$52
187	344	Medicine	f	3	\$41	237	478	Medicine	f	3	\$42	287	543	Biol&Sci	m	1	\$73
188	345	Eng&Prof	m	2	\$62	238	479	Medicine	m	2	\$80	288	544	Eng&Prof	f	3	\$32
189	346	Medicine	m	1	\$79	239	480	Medicine	m	1	\$94	289	545	Eng&Prof	f	3	\$40
190	347	Biol&Sci	m	3	\$37	240	481	Biol&Sci	m	1	\$57	290	546	Biol&Sci	m	3	\$47
191	348	Lit&SocSci	m	3	\$44	241	482	Medicine	m	1	\$82	291	547	Medicine	m	1	\$112
192	349	Lit&SocSci	m	3	\$47	242	483	Lit&SocSci	m	1	\$70	292	548	Biol&Sci	m	1	\$68
193	353	Medicine	m	1	\$70	243	484	Lit&SocSci	m	1	\$75	293	550	Medicine	m	2	\$93
194	433	Lit&SocSci	m	1	\$113	244	485	Medicine	m	1	\$139	294	551	Medicine	m	1	\$124
195	434	Medicine	m	3	\$55	245	486	Lit&SocSci	m	1	\$40	295	552	Lit&SocSci	f	2	\$49
196	435	Lit&SocSci	m	1	\$50	246	488	Lit&SocSci	m	2	\$60	296	556	Medicine	f	3	\$65
197	436	Lit&SocSci	f	2	\$54	247	489	Eng&Prof	f	1	\$128	297	557	Eng&Prof	m	1	\$84
198	437	Eng&Prof	m	3	\$53	248	490	Medicine	m	3	\$47	298	558	Medicine	f	2	\$71
199	438	Biol&Sci	m	1	\$79	249	491	Eng&Prof	m	3	\$67	299	559	Medicine	f	3	\$40
200	439	Biol&Sci	m	2	\$53	250	495	Eng&Prof	m	1	\$90	300	560	Medicine	m	2	\$70

- Frame & RN's
- Selecting a sample
- Definitions
- Practical use

Faculty Member Salaries (Continued)

Seq. No.	ID	Division	Sex	Ran	Salary	Seq. No.	ID	Division	Sex	Ran	Salary	Seq. No.	ID	Division	Sex	Ran	Salary
301	561	Eng&Prof	m	1	\$98	351	636	Lit&SocSci	f	1	\$72						
302	562	Lit&SocSci	m	1	\$89	352	637	Eng&Prof	m	1	\$94						
303	563	Medicine	f	3	\$36	353	638	Eng&Prof	m	3	\$52						
304	564	Medicine	m	1	\$63	354	639	Biol&Sci	m	1	\$66						
305	565	Eng&Prof	m	2	\$74	355	640	Eng&Prof	m	3	\$68						
306	566	Medicine	f	3	\$38	356	641	Lit&SocSci	m	1	\$89						
307	567	Eng&Prof	m	3	\$76	357	642	Medicine	m	2	\$148						
308	568	Medicine	m	3	\$97	358	643	Medicine	m	1	\$159						
309	569	Medicine	m	1	\$76	359	644	Biol&Sci	m	1	\$62						
310	570	Eng&Prof	m	1	\$86	360	645	Lit&SocSci	m	1	\$70						
311	571	Medicine	m	3	\$59	361	646	Medicine	f	3	\$109						
312	572	Medicine	f	2	\$60	362	647	Eng&Prof	m	1	\$120						
313	573	Lit&SocSci	m	2	\$45	363	648	Eng&Prof	m	1	\$112						
314	595	Biol&Sci	m	2	\$56	364	649	Medicine	m	2	\$90						
315	596	Lit&SocSci	m	1	\$63	365	650	Medicine	m	1	\$108						
316	597	Lit&SocSci	m	1	\$69	366	651	Eng&Prof	m	1	\$152						
317	598	Eng&Prof	m	1	\$138	367	652	Medicine	f	2	\$47						
318	599	Lit&SocSci	f	3	\$31	368	653	Medicine	m	1	\$116						
319	600	Medicine	f	2	\$50	369	654	Biol&Sci	m	1	\$77						
320	601	Eng&Prof	m	1	\$89	370	655	Biol&Sci	M	1	\$57						
321	602	Eng&Prof	m	1	\$148												
322	603	Lit&SocSci	m	3	\$55												
323	604	Lit&SocSci	m	1	\$81												
324	605	Lit&SocSci	m	1	\$52												
325	606	Medicine	m	3	\$85												
326	607	Medicine	m	1	\$132												
327	608	Lit&SocSci	m	1	\$85												
328	609	Eng&Prof	m	1	\$66												
329	610	Eng&Prof	f	1	\$94												
330	611	Eng&Prof	m	2	\$77												
331	612	Medicine	f	2	\$76												
332	613	Medicine	m	1	\$109												
333	614	Lit&SocSci	m	1	\$99												
334	616	Eng&Prof	f	2	\$78												
335	617	Eng&Prof	m	1	\$98												
336	618	Medicine	f	3	\$41												
337	619	Medicine	f	3	\$37												
338	620	Eng&Prof	m	3	\$89												
339	622	Biol&Sci	m	2	\$55												
340	623	Lit&SocSci	m	1	\$52												
341	624	Eng&Prof	m	3	\$42												
342	625	Biol&Sci	m	2	\$52												
343	626	Lit&SocSci	m	1	\$63												
344	627	Lit&SocSci	m	1	\$95												
345	628	Medicine	f	3	\$75												
346	629	Medicine	f	3	\$106												
347	630	Lit&SocSci	f	3	\$44												
348	631	Lit&SocSci	m	1	\$58												
349	632	Lit&SocSci	m	1	\$79												
350	633	Lit&SocSci	m	1	\$135												

- Frame & RN's
- Selecting a sample
- Definitions
- Practical use

- Sample size n from population size N
- Using random numbers from a table, match numbers to unique numbers assigned to each frame element
 - For each selection after the 1st, check to see if the frame element has already been selected
 - If selected already, reject the selection and use another random number
 - Continue process until n distinct frame element selected
- Without replacement selection: unique sample elements
- Every element of the population has the same probability of selection (*epsem*) and every combination of size n has the same probability of selection



- Frame & RN's
- Selecting a sample
- Definitions
- Practical use

- Sample size n from population size N
- Using random numbers from a table, or a statistical software system, assign a random number to each of the N frame elements
 - Sort the frame elements by random number, from smallest to largest
 - Select the first n frame elements
- This is without replacement & *epsem*
- Random number generation for $n = 500$:



$$RN = \text{TRUNC}(\text{URAN}(0718)*500)+1$$

- Frame & RN's
- Selecting a sample
- Definitions
- Practical use

- Sample size n from population size N
- Using random numbers from a table, match numbers to unique numbers assigned to each frame element
 - Continue process until n frame element selected
 - Check for duplicates in sample
 - If any duplicates occur, reject sample, and draw another sample of size n
- Without replacement & *epsem*
- Restricted (Simple) RS v. Unrestricted RS



- Frame & RN's
- Selecting a sample
- Definitions
- Practical use

- Any procedure with fixed sample size n and for which every element of the population has the same probability of selection (*epsem*) and every combination of size n has the same probability of selection
- All sets of size n distinct elements from N – pick one

$$\binom{N}{n} = \frac{N!}{(N-n)!n!} = \binom{370}{20} = \frac{370!}{(370-20)!20!} = 5.68 \times 10^{32}$$

One large set of outcomes ...



- Frame & RN's
- Selecting a sample
- Definitions
- Practical use

- **Widely used for simple problems**
- **But rarely used by practitioners in 'isolation'**
 - Complicated for 'lay' administration
 - More efficient methods available
 - Relies only on randomization
- **For practitioner a tool to be used in conjunction with other methods**
 - Random sample of elements within a group
 - Random sample of groups



Unit 2

- 1 Simple random sampling
 - **2 History**
 - 3 Sampling distribution
 - 4 Sample size
 - 5 Margin of error
 - 6 Sample & population size
- Unit 1: Sampling as a research tool
 - Unit 2: Mere randomization
 - Lecture 1: Simple Random Sampling (SRS)
 - **Lecture 2: A short history**
 - Lecture 3: The SRS sampling distribution
 - Lecture 4: Sample size
 - Lecture 5: Margin of error
 - Lecture 6: Sample size & population size
 - Unit 3: Saving money
 - Unit 4: Being more efficient
 - Unit 5: Simplifying sampling
 - Unit 6: Some extensions & applications

