

# Get good data out of bad spreadsheets

## With tidy tools

Duncan  
Garmonsway

**@nacnudus**





Alberto Cairo 

@albertocairo

Following



I'm staring at this nightmare right now  
and wondering why @hadleywickham's  
Tidy Data principles aren't taught  
**EVERYWHERE**

**Table 2****Crime in the United States<sup>1</sup>**

by Region, Geographic Division, and State, 2015–2016

Area	Year	Population <sup>2</sup>	Violent crime <sup>3</sup>		Murder and nonnegligent manslaughter		Rape (revised definition) <sup>4</sup>		Rape (legacy definition) <sup>5</sup>	
				Rate per 100,000		Rate per 100,000		Rate per 100,000		Rate per 100,000
United States Total <sup>6, 7, 8, 9</sup>	2015	320,896,618	1,234,183	384.6	15,883	4.9	126,134	39.3	91,261	28.4
	2016	323,127,513	1,283,058	397.1	17,250	5.3	130,603	40.4	95,730	29.6
	Percent change		+4.0	+3.2	+8.6	+7.9	+3.5	+2.8	+4.9	+4.2
Northeast <sup>6</sup>	2015	56,184,737	180,474	321.2	1,967	3.5	16,415	29.2	11,912	21.2
	2016	56,209,510	178,244	317.1	1,955	3.5	16,651	29.6	12,219	21.7
	Percent change		-1.2	-1.3	-0.6	-0.7	+1.4	+1.4	+2.6	+2.5
New England <sup>6</sup>	2015	14,710,229	42,121	286.3	326	2.2	4,602	31.3	3,374	22.9
	2016	14,735,525	41,598	282.3	292	2.0	4,505	30.6	3,328	22.6
	Percent change		-1.2	-1.4	-10.4	-10.6	-2.1	-2.3	-1.4	-1.5
Connecticut	2015	3,584,730	7,938	221.4	116	3.2	798	22.3	585	16.3
	2016	3,576,452	8,123	227.1	78	2.2	763	21.3	561	15.7
	Percent change		+2.3	+2.						

## Average Lost Customer Hours per period - all causes and all attribution

Lost Customer Hours	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
	1	2	3	4	5	6	7
Customers & Public	370,474	342,168	422,408	418,575	398,729	371,203	370,301
Fleet	810,549	786,762	827,643	1,068,261	695,777	484,212	539,396
Signals	841,022	624,380	642,461	608,837	511,533	417,942	481,831
Staff	260,428	474,811	360,768	454,134	315,016	255,822	308,335
<b>TOTAL</b>	<b>3,449,886</b>	<b>4,833,617</b>	<b>3,512,910</b>	<b>3,773,681</b>	<b>2,816,607</b>	<b>2,547,417</b>	<b>3,042,028</b>
<b>2003/04</b>							
Customers & Public	305,702	350,413	275,617	319,294	316,218	335,910	333,293
Fleet	945,618	1,090,879	1,242,152	1,179,417	1,259,153	1,270,679	1,357,454
Signals	733,701	462,152	401,097	983,874	969,259	803,010	729,406
Staff	202,303	188,719	186,301	259,160	279,235	311,071	234,013
<b>TOTAL</b>	<b>3,257,855</b>	<b>3,425,283</b>	<b>3,859,340</b>	<b>4,127,866</b>	<b>4,447,877</b>	<b>4,503,476</b>	<b>4,467,453</b>
<b>2004/05</b>							
Customers & Public	328,656	315,068	344,002	411,093	411,317	348,730	484,594
Fleet	990,202	834,319	998,413	758,689	898,227	680,174	698,981
Signals	976,290	953,037	539,124	906,334	1,340,513	872,532	671,213
Staff	298,873	281,610	261,793	288,014	290,844	238,311	241,246
<b>TOTAL</b>	<b>3,844,130</b>	<b>3,342,358</b>	<b>3,507,979</b>	<b>5,410,752</b>	<b>4,089,718</b>	<b>2,892,844</b>	<b>2,983,461</b>
<b>2005/06</b>							
Customers & Public	517,751	389,401	320,075	301,134	270,953	238,993	324,337
Fleet	688,087	799,678	777,540	739,357	828,314	912,217	770,837
Signals	700,398	529,351	825,217	475,735	552,355	926,275	1,058,817
Staff	291,788	233,118	258,129	346,012	351,339	404,668	2,075,709
<b>TOTAL</b>	<b>3,139,284</b>	<b>4,025,029</b>	<b>3,620,728</b>	<b>13,232,497</b>	<b>7,</b>	<a href="https://nacnudus.github.io/underground/">https://nacnudus.github.io/underground/</a>	

# Uh oh

## Officer-issued speed monetary amount

		2009	2010	
		Nov	Dec	Jan
Auckland	Auckland Central Area	\$63,350	\$38,750	\$43,650
Auckland	Auckland East Area	\$81,780	\$53,950	\$48,860
Auckland	Auckland West Area	\$67,820	\$75,550	\$65,980
Bay Of Plenty	Eastern Bay of Plenty	\$29,020	\$24,680	\$22,100
Bay Of Plenty	Rotorua	\$45,120	\$39,800	\$50,670
				Feb

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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**TORONTO TRANSIT COMMISSION  
ANALYSIS OF RIDERSHIP  
1985 TO 2017 ACTUALS (000's)**

	FARE MEDIA	2017	2016	2015 *	2014	2013	2012	2011
<b>WHO</b>	<b>ADULT</b>							
TOKENS	76,106	102,073	110,945	111,157	112,360	117,962	124,748	
TICKETS	N/A							
TWO-FARE	N/A							
PRESTO - SINGLE RIDE	67,800	67,800	62,202	62,202	8,194	4,399	1,139	
PRESTO - SRVM TOKEN RIDE								
PRESTO - SRVM CASH RIDE								
PRESTO - MONTHLY PASS								
REGULAR MONTHLY PASS					2	213,982	205,086	194,928
POST-SECONDARY PASS						38,426	35,019	32,091
TWIN-GO PASS						N/A	N/A	N/A
WEEKLY PASS	6,653	7,547	8,843	9,361	9,557	10,185	9,893	
CASH	36,045	41,536	48,873	49,120	48,623	46,467	43,795	
<b>SUB-TOTAL</b>	<b>417,608</b>	<b>426,973</b>	<b>434,889</b>	<b>437,287</b>	<b>431,142</b>	<b>419,118</b>	<b>406,594</b>	
<b>SENIOR/STUDENT</b>								
MONTHLY PASS	27,324	27,621	25,092	23,064	20,509	19,769	18,590	
	1,011	959	672	515	540	624	702	
	31,195	32,997	32,595	33,408	35,472	37,039	38,299	
	N/A							
PRESTO - SINGLE RIDE	5,703	1,421	428	191	N/A	N/A	N/A	
PRESTO - SRVM CASH RIDE	253	2						
PRESTO - MONTHLY PASS	26	N						
CASH	12,532	10,4					7,609	
<b>SUB-TOTAL</b>	<b>78,044</b>	<b>73,648</b>	<b>70,967</b>	<b>69,036</b>	<b>65,059</b>	<b>65,596</b>	<b>65,200</b>	
<b>CHILDREN</b>								
FREE RIDES	24,856	21,875	10,939	N/A	N/A	N/A	N/A	
	0	0	1,066	7,097	7,563	7,929	8,304	
PRESTO - FREE CHILD RIDE	163	36	10	N/A	N/A	N/A	N/A	
CASH	0	0	526	3,705	2,708	2,589	2,433	
<b>SUB-TOTAL</b>	<b>25,019</b>	<b>21,911</b>	<b>12,541</b>	<b>10,802</b>	<b>10,271</b>	<b>10,518</b>	<b>10,737</b>	
<b>DAY/VISIT/OTHER</b>								
DAY/VISIT/OTHER	6,728	9,130	8,561	10,033	11,428	11,929	10,642	
BLIND/WAR AMPS	1,086	1,088	1,086	1,119	1,109	1,086	1,060	
PREMIUM EXPRESS	448	474	490	451	401	372	344	
POSTAL CARRIERS	N/A							
GTA PASS	4,283	4,855	5,471	6,087	5,784	5,388	5,642	
<b>SYSTEM TOTAL</b>	<b>533,216</b>	<b>535,079</b>	<b>534,005</b>	<b>534,819</b>	<b>525,194</b>	<b>514,007</b>	<b>500,219</b>	
<b>WHERE</b>	<b>BUS</b>							
	BUS	261,113	252,899	238,943	245,292	239,968	234,582	223,269
<b>SUB-TOTAL</b>	<b>261,113</b>	<b>252,899</b>	<b>238,943</b>	<b>245,292</b>	<b>239,968</b>	<b>234,582</b>	<b>223,269</b>	
<b>RAIL</b>								
SUBWAY	213,012	221,622	228,129	219,849	217,250	216,101	213,280	
S.R.T.	3,177	2,951	3,352	4,254	4,661	4,667	4,766	
TROLLEY COACH	0	0	0	0	0	0	0	
STREETCAR	55,914	60,607	63,581	65,420	63,315	58,657	58,904	
<b>SUB-TOTAL</b>	<b>272,103</b>	<b>285,180</b>	<b>295,062</b>	<b>289,523</b>	<b>285,226</b>	<b>279,425</b>	<b>276,950</b>	
<b>SYSTEM TOTAL</b>	<b>533,216</b>	<b>535,079</b>	<b>534,005</b>	<b>534,819</b>	<b>525,194</b>	<b>514,007</b>	<b>500,219</b>	
<b>WHEN</b>								
WEEKDAY	424,155	424,117	423,808	423,269	416,297	406,913	395,578	
WEEKEND/HOLIDAY	109,061	113,962	110,197	111,546	108,897	107,094	104,641	
<b>SYSTEM TOTAL</b>	<b>533,216</b>	<b>535,079</b>	<b>534,005</b>	<b>534,819</b>	<b>525,194</b>	<b>514,007</b>	<b>500,219</b>	

\* Please note ridership results for 2015 exclude the Free Rides allowance for Pan Am & Parapan Am games.

FINANCE DEPARTMENT - STATISTICS SECTION

15/May/18

preamble  
postamble

	April	May	June
<b>Beginning Cash Balance</b>	<b>0</b>	<b>(\$20,518)</b>	<b>(\$20,260)</b>
<b>Cash Inflows (Income):</b>			
Cash Collections	2,437	-1,812	1,008
Credit Collections	1,695	82	-1,649
Investment Income	3,817	2,838	4,446
Other:	4,679	-1,951	-4,198
<b>Total Cash Inflows</b>	<b>\$12,628</b>	<b>(\$843)</b>	<b>(\$393)</b>
<b>Available Cash Balance</b>	<b>\$12,628</b>	<b>(\$21,361)</b>	<b>(\$20,653)</b>
<b>Cash Outflows (Expenses):</b>			
Advertising	1,514	3,744	4,273
Bank Service Charges	4,350	1,090	270
Insurance	2,955	2,408	1,746
Interest	4,883	1,714	1,458
Inventory Purchases	1,369	-1,553	-1,490
Maintenance & Repairs	2,727	-2,614	-4,714
Operating Supplies	-770	-3,922	-3,249
Payroll	-4,419	-3,207	-4,462
Payroll Expenses	4,155	2,714	3,359
Sales Commissions	-898	-4,117	-3,220
Professional Fees	712	4,382	-306
Communications Equip.	-1,490	4,430	1,558
Rent	1,460	-4,970	-2,436
Office Supplies	2,452	-1,106	-114
Permits & Licenses	-652	3,617	-949
Utilities & Telephone	1,999	1,536	3,126
Travel	1,637	-2,575	-3,823
Taxes	3,294	-3,498	3,220
Other:	3,317	-3,413	-3,948
*Sales training	748	1,556	-3,447
<b>Subtotal</b>	<b>\$29,343</b>	<b>(\$3,784)</b>	<b>(\$19,866)</b>
<b>Other Cash Out Flows:</b>			
Capital Purchases	-3,910	2,633	-116
Loan Principal	-397	-896	3,306
Owner's Draw	3,869	2,588	-95
Other:	4,241	-1,642	4,105
<b>Subtotal</b>	<b>\$3,803</b>	<b>\$2,683</b>	<b>\$588</b>
<b>Total Cash Outflows</b>	<b>\$33,146</b>	<b>(\$1,101)</b>	<b>(\$19,278)</b>
<b>Ending Cash Balance</b>	<b>(\$20,518)</b>	<b>(\$20,260)</b>	<b>(\$1,375)</b>

## Année 2014, semaine et weekend

		Population âgée de 10 à 74 ans		Selon le genre					
		Ensemble		Hommes		Femmes		10 - 19 ans	
	Total	Population ayant réalisé l'activité	Total	Population ayant réalisé l'activité	Total	Population ayant réalisé l'activité	Total	Population réalisée l'	
	Durée	Durée %	Durée	Durée %	Durée	Durée %	Durée	Durée %	
<b>0 Besoins physiologiques</b>			<b>11:35</b>	<b>11:35</b> 100.0	<b>11:28</b>	<b>11:28</b> 100.0	<b>11:43</b>	<b>11:43</b> 100.0	
01 Dormir	08:46	08:46 99.9	08:44	08:45 99.9	08:48	08:48 100.0	09:43	09:43	
02 Manger et boire	01:53	01:54 99.7	01:52	01:53 99.7	01:54	01:54 99.7	01:48	01:49	
03 Soins personnels et médicaux à domicile	00:56	00:57 97.5	00:51	00:53 97.2	01:01	01:02 97.9	00:53	00:55	
<b>1 Travail professionnel</b>			<b>03:00</b>	<b>07:29</b> 40.0	<b>03:34</b>	<b>08:00</b> 44.7	<b>02:24</b>	<b>06:48</b> 35.2	
11 Principal emploi	02:55	07:38 38.3	03:30	08:09 43.0	02:19	06:57 33.4	00:16	05:38	
12 Recherche d'un emploi	00:02	02:35 1.0	00:02	03:09 1.2	00:01	01:43 0.8	00:12	07:42	
13 Second emploi	00:03	04:06 1.1	00:02	04:04 0.8	00:03	04:07 1.4	00:01	01:45	
<b>2 Etudes</b>			<b>00:48</b>	<b>05:41</b> 14.1	<b>00:50</b>	<b>05:49</b> 14.4	<b>00:46</b>	<b>05:32</b> 13.8	
21 Ecole ou université	00:32	05:43 9.2	00:34	05:52 9.6	00:30	05:33 8.9	03:07	05:43	
22 Devoirs	00:14	02:10 10.7	00:15	02:16 11.2	00:12	02:03 10.2	01:06	01:51	
23 Formation extra-scolaire/non professionnelle	00:02	01:35 2.6	00:01	01:31 1.5	00:04	01:37 3.7	00:06	01:15	
<b>3 Travaux domestiques et soin de la famille</b>			<b>02:34</b>	<b>03:04</b> 83.8	<b>01:42</b>	<b>02:12</b> 77.1	<b>03:28</b>	<b>03:50</b> 90.8	
31 Travaux à la cuisine	00:42	01:07 62.7	00:22	00:47 47.7	01:03	01:20 78.2	00:11	00:32	
32 Entretien de la maison	00:28	01:04 43.8	00:16	00:55 29.4	00:40	01:08 58.5	00:07	00:38	
33 Création et entretien du textile et des chaussures	00:14	00:56 24.6	00:03	00:32 10.8	00:24	01:02 38.9	00:02	00:23	
34 Jardinage et soins aux animaux	00:16	01:17 20.6	00:14	01:20 17.8	00:18	01:15 23.5	00:05	00:50	
35 Travaux de construction, de réparation et de bricolage	00:06	01:50 5.2	00:10	01:57 8.3	00:02	01:22 2.2	00:02	01:57	

Table 4a

**Ethnic group (grouped total responses)<sup>(1)</sup>**

By age group, sex, and Māori electorate

For the Māori descent census usually resident population count

2013 Census

<https://hacnudus.github.io/nzmigration/>

Age group, sex, and Māori electorate	Ethnic group (grouped total responses)							
	European	Māori	Pacific Peoples	Asian	Middle Eastern/ Latin American/ African	Other Ethnicity <sup>(2)</sup>		
					New Zealander	Other Ethnicity nec		
<b>Hauraki-Waikato</b>								
0–4 Years								
Male	3,687	5,082	882	153	24	33	0	
Female	3,444	4,770	732	171	27	39	3	
Total people	7,131							
5–9 Years								
Male	3,251							
Female	3,100							
Total people	6,351							
	<b>Departamento</b>		<b>Municipio</b>					
	ATLANTIDA				1	2	3	
			LA CEIBA		477	384	347	
			EL PORVENIR		11	14	9	
			ESPARTA		3	7	-	
			JUTIAPA		45	47	43	
			LA MASICA		-	1	-	
			TELA		330	242	213	
			ARIZONA		-	-	1	
	<b>Total</b>		867		695	613	374	
	COLON				1	2	3	
	TRINIDAD				107	126	120	
					82	52	52	

ENGLAND 1985 COUNTY STATISTICS - SELECTED ITEMS FROM JUNE CENSUS 1985 (LEFT COLUMN = HOLDINGS, RIGHT COLUMN = HECTARES and NUMBER OF LIVESTOCK)																		
ENGLAND 1985		COUNTY STATISTICS - SELECTED ITEMS FROM JUNE CENSUS 1985 (LEFT COLUMN = HOLDINGS, RIGHT COLUMN = HECTARES and NUMBER OF LIVESTOCK)																
ENGLAND 1985		COUNTY STATISTICS - SELECTED ITEMS FROM JUNE CENSUS 1985 (LEFT COLUMN = HOLDINGS, RIGHT COLUMN = HECTARES and NUMBER OF LIVESTOCK)																
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
	Avon			BEDFORDSHIRE		BERKSHIRE		BUCKINGHAMSHIRE		CAMBRIDGESHIRE		CHESHIRE		CLEVELAND		CORNWALL		CLERKENWELL
1	ENGLAND 1985																	
2	TOTAL ENGLAND LAND AREA (EXCLUDING WATER) (HECTARES)		133 718		122 671		124 451		187 183		338 736		230 121		58 383		363 935	
3	TOTAL AGRICULTURAL AREA - ALL HOLDINGS	3 073	89 201	1 674	93 443	1 151	74 855	2 381	134 304	4 972	290 844	5 994	175 524	584	32 132	9 911	285 077	7 379
4	TOTAL AGRICULTURAL AREA - SIGNIFICANT HOLDINGS ONLY	2 263	87 352	1 354	92 762	991	74 396	2 061	133 378	4 002	288 909	4 494	172 260	474	31 903	7 121	278 801	6 459
5	Cereals for threshing: Total	571	17 257	802	59 180	366	36 273	874	57 241	3 058	178 318	1 391	28 765	311	14 437	2 678	44 149	1 945
6	Wheat	364	8 398	634	39 871	285	20 792	691	36 033	2 772	127 293	420	7 653	221	6 988	494	6 081	83
7	Barley	463	8 341	645	18 473	309	13 860	694	18 754	2 321	48 938	1 299	20 106	289	7 006	2 394	33 829	1 863
8	Crops for Stockfeeding	290	1 326	190	2 729	162	2 249	169	2 118	726	8 743	357	1 759	101	521	1 363	1 000	
9	Horticultural Crops : Total	239	518	537	3 633	116	659	163	806	1 366	13 959	362	1 338	32	67	747	2 288	139
10	Vegetables (excluding potatoes)	116	214	424	3 401	53	468	70	449	846	10 884	189	682	21	52	436	1 403	76
11	Carrots	16	3	31	10	11	9	15	13	172	2 140	59	102	~	1	46	30	41
12	Cabbage	62	73	244	503	20	122	29	116	125	306	94	111	16	18	200	341	39
13	Cauliflower and Broccoli	28	17	125	112	15	66	14	13	77	66	69	71	9	5	145	460	23
14	Brussels Sprouts	22	12	250	1 323	7	5	16	7	91	271	33	41	10	5	41	19	30
15	Green Peas	12	2	24	128	3	2	13	43	64	1 595	13	11	4	5	37	28	10
16	Beans, Runner and French	50	11	150	54	21	17	24	13	84	449	31	5	5	1	90	20	4
17	Onions, Salad and Dry Bulb	20	10	97	179	12	16	14	17	338	1 983	26	23	~	0	36	10	14
18	Commercial Orchards	39	143	6	22	20	53	19	170	248	1 918	16	71	0	0	25	17	9
19	Small Fruit	46	61	27	56	34	92	33	84	319	388	43	209	6	8	138	116	30
20	Strawberries	27	31	19	36	21	33	20	40	262	240	30	131	4	4	98	69	22
21	Flowers, Bulbs and HNS	51	47	45	69	27	26	47	46	244	695	124	330	12	5	268	685	37
22	Glasshouses	74	20	182	62	38	12	62	16	195	83	136	37	7	1	179	33	55
23	Potatoes	195	366	287	1 005	54	222	76	247	1 483	12 136	843	4 421	105	343	1 169	4 128	609
24	Sugar Beet	0	0	36	553	~	13	~	38	1 679	24 420	13	155	0	0	10	87	~
25	Rape grown for Oilseed	28	364	185	6 550	55	2 073	175	5 059	530	14 577	68	1 465	118	2 170	14	329	13
26	Grass under 5 years old	781	12 460	250	3 310	352	8 846	643	12 782	391	4 159	2 076	33 014	238	3 434	3 542	50 270	2 741
27	Grass 5 years old and over	1 937	50 035	825	10 544	775	16 414	1 653	47 160	1 808	19 400	3 749	89 123	383	7 071	6 229	145 559	5 945
28	Cattle and Calves : Total	1 426	123 827	398	28 714	502	52 086	1 191	110 020	748	41 851	3 047	291 704	284	23 227	5 211	409 573	5 325
29	Dairy Cows	690	46 876	74	5 337	132	13 326	296	22 721	83	4 454	1 877	145 976	103	4 810	2 229	111 741	2 692
30	Beef Cows	387	3 564	136	1 829	182	2 957	394	5 507	291	4 534	593	8 224	95	1 913	2 032	25 629	2 617
31	Sheep and Lambs: Total	440	66 640	174	49 464	173	56 866	592	184 586	232	55 865	778	146 335	142	48 218	2 046	524 274	4 150
32	Breeding Fews and 2-Tooth Fews	411	30 847	157	21 198	158	25 520	554	77 837	713	27 105	710	66 368	131	19 331	1 968	262 641	3 991

	A	B	C	D	E	F	G	H	I	J	K	L	M
1		Old Base			New Base			Change					
2	Pokemon	Stamina	Attack	Defense	Stamina	Attack	Defense	Stamina	Attack	Defense	Max CP at lvl 40	% change in Base CP	Buff/Nerfed
3	Bulbasaur	90	126	126	90	118	118	0	-8	-8	981	-9.32	Nerfed
4	Ivysaur	120	156	158	120	151	151	0	-5	-7	1552	-5.4	Nerfed
5	Venusaur	160	198	200	160	198	198	0	0	-2	2568	-0.48	Nerfed
6	Charmander	78	128	108	78	116	96	0	-12	-12	831	-14.57	Nerfed
7	Charmeleon	116	160	140	116	158	129	0	-2	-11	1484	-5.2	Nerfed
8	Charizard	156	212	182	156	223	176	0	11	-6	2686	3.44	Buffed
9	Squirtle	88	112	142	88	94	122	0	-18	-20	808	-22.22	Nerfed
10	Wartortle	118	144	176	118	126	155	0	-18	-21	1324	-17.88	Nerfed
11	Blastoise	158	186	222	158	171	210	0	-15	-12	2291	-10.59	Nerfed
12	Caterpie	90	62	66	90	55	62	0	-7	-4	393	-14.05	Nerfed
13	Metapod	100	56	86	100	45	94	0	-11	8	419	-15.99	Nerfed
14	Butterfree	120	144	144	120	167	151	0	23	7	1701	18.76	Buffed
15	Weedle	80	68	64	80	63	55	0	-5	-9	397	-14.2	Nerfed
16	Kakuna	90	62	82	90	46	86	0	-16	4	392	-24.06	Nerfed
17	Beedrill	130	144	130	130	169	150	0	25	20	1777	26.01	Buffed
18	Pidgey	80	94	90	80	85	76	0	-9	-14	580	-16.94	Nerfed
19	Pidgeotto	126	126	122	126	117	108	0	-9	-14	1085	-12.68	Nerfed
20	Pidgeot	166	170	166	166	166	157	0	-4	-9	1994	-5.07	Nerfed
21	Rattata	60	92	86	60	103	70	0	11	-16	588	1.06	Buffed
22	Raticate	110											

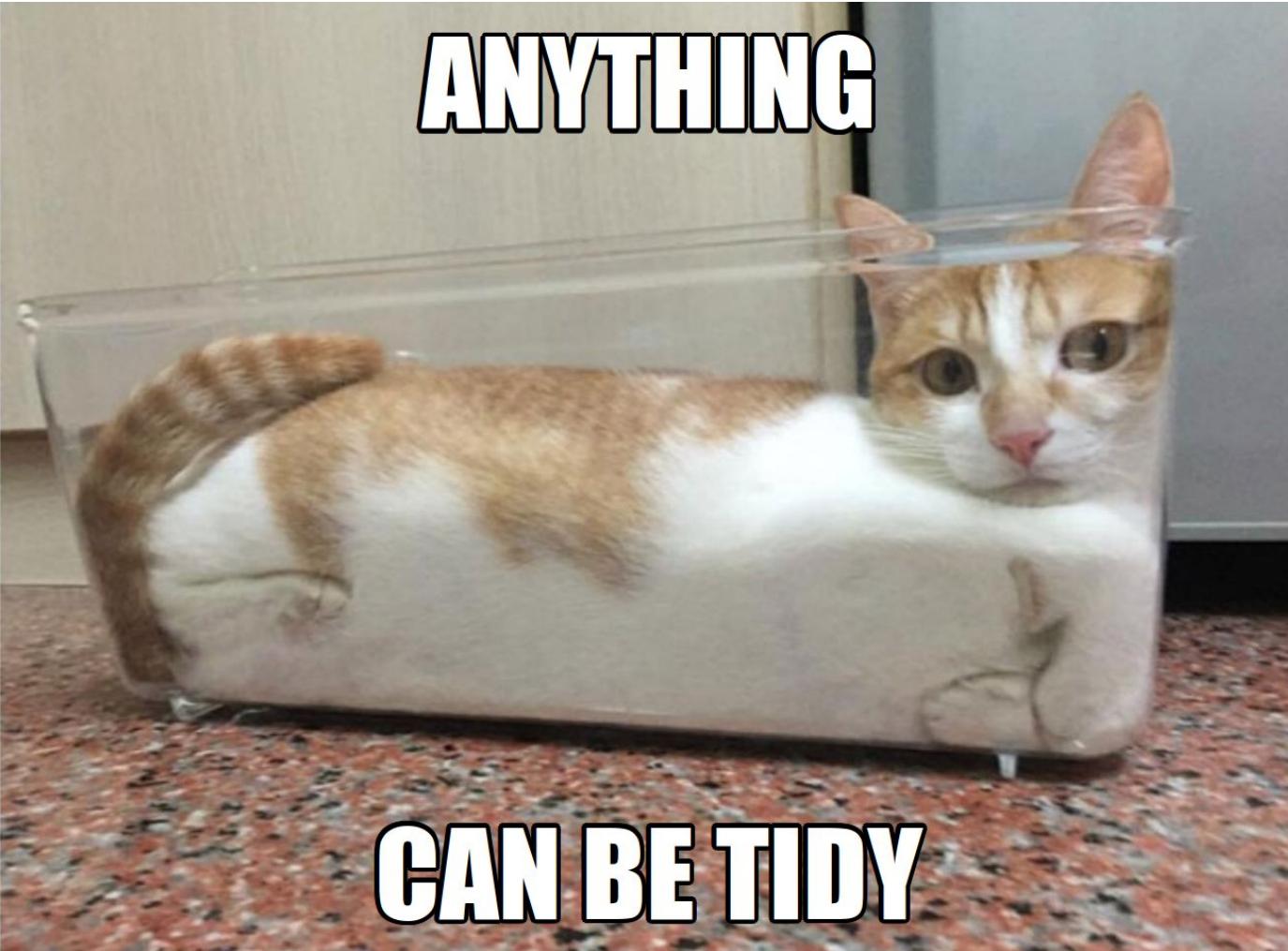
<https://www.mic.com/articles/160125/pokemon-go-cp-changes-balance-update-hits-every-pokemon-but-one>

[https://www.reddit.com/r/TheSilphRoad/comments/5e6jev/silph\\_research\\_group\\_on\\_cp\\_balancing/](https://www.reddit.com/r/TheSilphRoad/comments/5e6jev/silph_research_group_on_cp_balancing/)

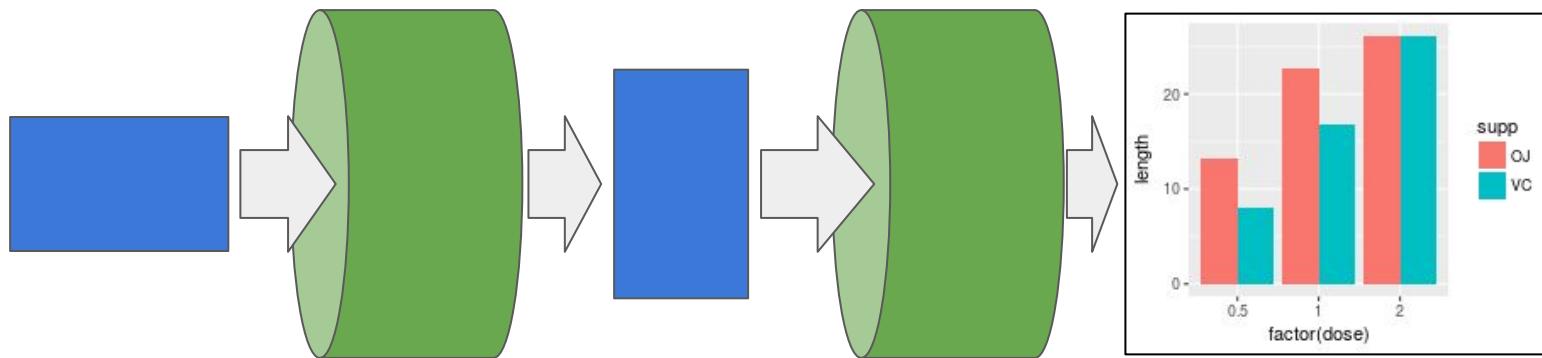
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	A	C	D	E	F	G	I	J	K	L	N	O
1	<b>Best in show?</b>											
2												
3	Sources - see bottom right											
4												
5												
6	Dog breed	exclude?	category	POPULARITY			INTELLIGENCE (TRAINABILITY)			LONGEVITY		
7		X = exclude	American Kennel Club group	popularity ranking (1-173, 1 = most popular)	intelligence ranking	intelligence category	repetitions to understand new commands	obey first command (% of time)	life expectancy (years)	survey sample size		
27	Bedlington Terrier		terrier	134	40	Average	25-40	>50	13.51	54		
28	Belgian Malinois		herding	74	22	Excellent	5-15	>85	no data	-		
29	Belgian Shepherd Dog		herding	118	15	Excellent	5-15	>85	no data	-		
30	Belgian Shepherd Dog (Tervuren)		herding	108	14	Excellent	5-15	>85	10.60	105		
31	Bernese Mountain Dog		working	34	22	Excellent	5-15	>85	7.56	701		
32	Bichon Frise		non-sporting	39	45	Average	25-40	>50	12.21	146		
33	Black and Tan Coonhound		hound	109	44	Average	25-40	>50	no data	-		
34	Black Russian Terrier		working	128	no data	no data	no data	no data	1.83 - really?	4		
35	Bloodhound		hound	48	75	Lowest	80-100	<25	6.75	82		

**ANYTHING**



**CAN BE TIDY**



*A tibble: 8 x 4*

<i>Pupil</i>	<i>Year</i>	<i>Subject</i>	<i>Mark</i>
<i>&lt;chr&gt;</i>	<i>&lt;chr&gt;</i>	<i>&lt;chr&gt;</i>	<i>&lt;dbl&gt;</i>
Ron	<i>1st year</i>	<i>Potions</i>	3
Ron	<i>1st year</i>	<i>Herbology</i>	7
Ron	<i>2nd year</i>	<i>Potions</i>	2
Ron	<i>2nd year</i>	<i>Herbology</i>	10
Ginny	<i>1st year</i>	<i>Potions</i>	8
Ginny	<i>1st year</i>	<i>Herbology</i>	9
Ginny	<i>2nd year</i>	<i>Potions</i>	9
Ginny	<i>2nd year</i>	<i>Herbology</i>	7

A tibble: 8 x 4

Pupil	Year	Subject	Mark
<chr>	<chr>	<chr>	<dbl>
Ron	1st year	Potions	3
Ron	1st year	Herbology	7
Ron	2nd year	Potions	2
Ron	2nd year	Herbology	10
Ginny	1st year	Potions	8
Ginny	1st year	Herbology	9
Ginny	2nd year	Potions	9
Ginny	2nd year	Herbology	7

	Potions	Herbology
<b>Ron</b>		
1st year	3	7
2nd year	2	10 - really?
<b>Ginny</b>		
1st year	8	9
2nd year	9	7

A tibble: 6 x 3

```
...1      Potions Herbology  
<chr>    <dbl> <chr>  
Ron          NA <NA>  
1st year     3 7  
2nd year     2 10 - really?  
Ginny         NA <NA>  
1st year     8 9  
2nd year     9 7
```

	Potions	Herbology
<b>Ron</b>		
1st year	3	7
2nd year	2	10 - really?
<b>Ginny</b>		
1st year	8	9
2nd year	9	7

A tibble: 16 x 5

row	col	character	numeric	indent
<dbl>	<dbl>	<chr>	<dbl>	<dbl>
1	2	Potions	NA	0
1	3	Herbology	NA	0
2	1	Ron	NA	0
3	1	1st year	NA	1
3	2	<NA>	3	0
3	3	<NA>	7	0
4	1	2nd year	NA	1
4	2	<NA>	2	0
4	3	10 - really?	NA	0
5	1	Ginny	NA	0
6	1	1st year	NA	1
6	2	<NA>	8	0
6	3	<NA>	9	0
7	1	2nd year	NA	1
7	2	<NA>	9	0
7	3	<NA>	7	0

	Potions	Herbology
<b>Ron</b>		
1st year	3	7
2nd year	2	10 - really?
<b>Ginny</b>		
1st year	8	9
2nd year	9	7

A tibble: 16 x 5

row	col	character	numeric	indent
<dbl>	<dbl>	<chr>	<dbl>	<dbl>
1	2	Potions	NA	0
1	3	Herbology	NA	0
2	1	Ron	NA	0
3	1	1st year	NA	1
3	2	<NA>	3	0
3	3	<NA>	7	0
4	1	2nd year	NA	1
4	2	<NA>	2	0
4	3	10 - really?	NA	0
5	1	Ginny	NA	0
6	1	1st year	NA	1
6	2	<NA>	8	0
6	3	<NA>	9	0
7	1	2nd year	NA	1
7	2	<NA>	9	0
7	3	<NA>	7	0

	Potions	Herbology
Ron		
1st year	3	7
2nd year	2	10 - really?
Ginny		
1st year	8	9
2nd year	9	7

A tibble: 16 x 5

row	col	character	numeric	indent
<dbl>	<dbl>	<chr>	<dbl>	<dbl>
1	2	Potions	NA	0
1	3	Herbology	NA	0
2	1	Ron	NA	0
3	1	1st year	NA	1
3	2	<NA>	3	0
3	3	<NA>	7	0
4	1	2nd year	NA	1
4	2	<NA>	2	0
4	3	10 - really?	NA	0
5	1	Ginny	NA	0
6	1	1st year	NA	1
6	2	<NA>	8	0
6	3	<NA>	9	0
7	1	2nd year	NA	1
7	2	<NA>	9	0
7	3	<NA>	7	0

	Potions	Herbology
<b>Ron</b>		
1st year	3	7
2nd year	2	10 - really?
<b>Ginny</b>		
1st year	8	9
2nd year	9	7

A tibble: 16 x 5

row	col	character	numeric	indent
<dbl>	<dbl>	<chr>	<dbl>	<dbl>
1	2	Potions	NA	0
1	3	Herbology	NA	0
2	1	Ron	NA	0
3	1	1st year	NA	1
3	2	<NA>	3	0
3	3	<NA>	7	0
4	1	2nd year	NA	1
4	2	<NA>	2	0
4	3	10 - really?	NA	0
5	1	Ginny	NA	0
6	1	1st year	NA	1
6	2	<NA>	8	0
6	3	<NA>	9	0
7	1	2nd year	NA	1
7	2	<NA>	9	0
7	3	<NA>	7	0

	Potions	Herbology
<b>Ron</b>		
1st year	3	7
2nd year	2	10 - really?
<b>Ginny</b>		
1st year	8	9
2nd year	9	7

# TORONTO TRANSIT COMMISSION ANALYSIS OF RIDERSHIP

1985 TO 2017 ACTUALS (000'S)

WHO	FARE MEDIA			
	ADULT	YOUTH	STUDENT	DISABILITY
	TOKENS			
	TICKETS			
	TWO-FARE			
	PRESTO - SINGLE RIDE			



```
filter(row == 3, col == 1)$character
```

`readr::melt_csv()`



`googlesheets4::sheets_cells()`

`tidyxl::xlsx_cells()`

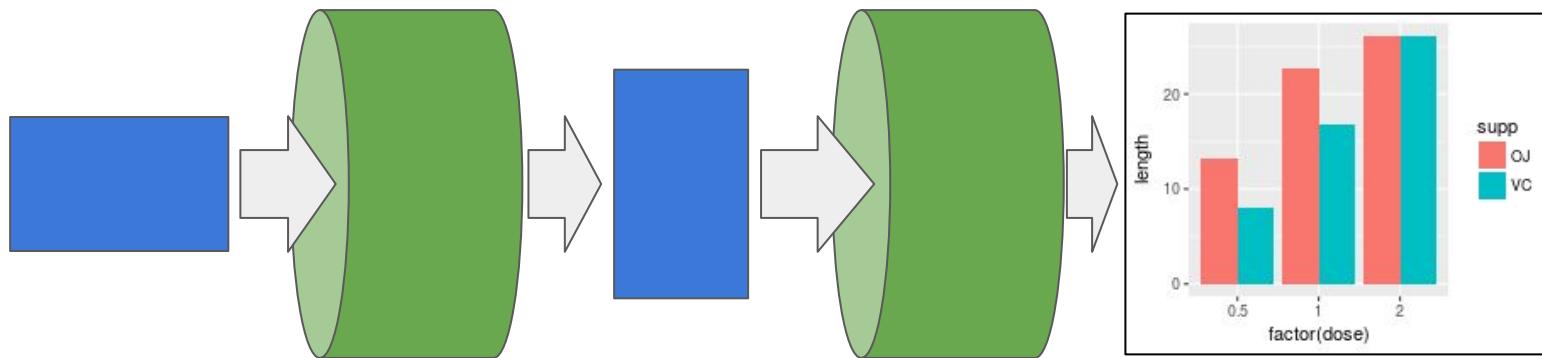


Jenny Bryan  
@JennyBryan

A circular profile picture of a woman with blonde hair, identified as Jenny Bryan. To the right of the picture is her name "Jenny Bryan" and her Twitter handle "@JennyBryan". A blue button labeled "Following" is located to the right of her name, and a small downward arrow is at the far right edge.

Replying to [@nacnudus](#)

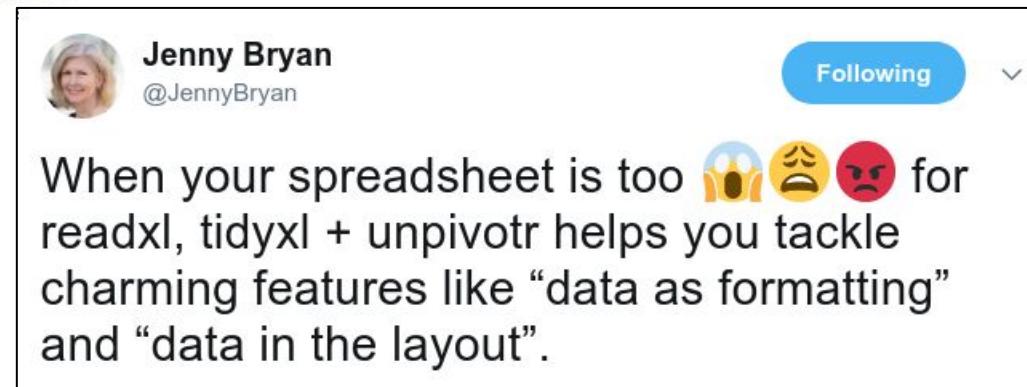
ooh was sheets\_cells() useful? I'm convinced it's a good idea to expose this level of detail, if one is constructing this sort of wrapper, for poor souls doing low-level detective work



# unpivotr

[unpivotr](#) deals with non-tabular data, especially from spreadsheets. Use `unpivotr` when your source data has any of these ‘features’:

- Multi-headered hydra
- Meaningful formatting
- Headers anywhere but at the top of each column
- Non-text headers e.g. dates
- Other stuff around the table
- Several similar tables in one sheet
- Sentinel values
- Superscript symbols
- Meaningful comments
- Nested HTML tables



Jenny Bryan (@JennyBryan) Following

When your spreadsheet is too 😱💩😡 for `readxl`, `tidyxl` + `unpivotr` helps you tackle charming features like “data as formatting” and “data in the layout”.

If that list makes your blood boil, you’ll enjoy the function names.

- `behead()` deals with multi-headered hydra tables one layer of headers at a time

	A	B	C	D	E
1		Witch		Wizard	
2		Hermione	Ginny	Harry	Ron
3	<b>Castle</b>	<b>11</b>	<b>11</b>	<b>7</b>	<b>2</b>
4	Charms	2	6	0	0
5	Potions	9	5	7	2
6	<b>Grounds</b>	<b>7</b>	<b>8</b>	<b>13</b>	<b>9</b>
7	Herbology	5	1	10	6
8	Care of	2	7	3	3
9	Magical				
10	Creatures				

	A	B	C	D	E
1		Witch		Wizard	
2		Hermione	Ginny	Harry	Ron
3	Castle	11	11	7	2
4	Charms	2	6	0	0
5	Potions	9	5	7	2
6	Grounds	7	8	13	9
7	Herbology	5	1	10	6
8	Care of Magical	2	7	3	3

	A	B	C	D	E
1		Witch		Wizard	
2		Hermione	Ginny	Harry	Ron
3	<b>Castle</b>	<b>11</b>	<b>11</b>	<b>7</b>	<b>2</b>
4	Charms	2	6	0	0
5	Potions	9	5	7	2
6	<b>Grounds</b>	<b>7</b>	<b>8</b>	<b>13</b>	<b>9</b>
7	Herbology	5	1	10	6
8	Care of	2	7	3	3
9	Magical				
10	Creatures				

```
cells <- xlsx_cells("./data/harry-potter.xlsx")
```

row	col	is_blank	data_type	error	logical	numeric	date	character
1	2	FALSE	character	NA	NA	NA	NA	Witch
1	4	FALSE	character	NA	NA	NA	NA	Wizard
2	1	TRUE	blank	NA	NA	NA	NA	NA
2	2	FALSE	character	NA	NA	NA	NA	Hermione
2	3	FALSE	character	NA	NA	NA	NA	Ginny
2	4	FALSE	character	NA	NA	NA	NA	Harry
2	5	FALSE	character	NA	NA	NA	NA	Ron
3	1	FALSE	character	NA	NA	NA	NA	Castle
3	2	FALSE	numeric	NA	NA	11	NA	NA
3	3	FALSE	numeric	NA	NA	11	NA	NA
3	4	FALSE	numeric	NA	NA	7	NA	NA
3	5	FALSE	numeric	NA	NA	2	NA	NA
4	1	FALSE	character	NA	NA	NA	NA	Charms
4	2	FALSE	numeric	NA	NA	2	NA	NA

```
cells %>%
  filter(!is_blank) %>%
  select(row, col, data_type, character, numeric, local_format_id)
```

<b>row</b>	<b>col</b>	<b>data_type</b>	<b>character</b>	<b>numeric</b>	<b>local_format_id</b>
1	2	character	Witch	NA	2
1	4	character	Wizard	NA	2
2	2	character	Hermione	NA	3
2	3	character	Ginny	NA	4
2	4	character	Harry	NA	3
2	5	character	Ron	NA	4
3	1	character	Castle	NA	8
3	2	numeric	NA	11	7
3	3	numeric	NA	11	8
3	4	numeric	NA	7	7
3	5	numeric	NA	2	8

```

cells %>%
  filter(!is_blank) %>%
  select(row, col, data_type, character, numeric, local_format_id) %>%
  behead("NNW", "dormitory")

```

row	col	data_type	character	numeric	local_format_id	dormitory
8	2	numeric	NA	2	10	Witch
8	3	numeric	NA	7	12	Witch
2	4	character	Harry	NA	3	Wizard
2	5	character	Ron	NA	4	Wizard
3	4	numeric	NA	7	7	Wizard
3	5	numeric	NA	2	8	Wizard
4	4	numeric	NA	0	2	Wizard
4	5	numeric	NA	0	1	Wizard
5	4	numeric	NA	7	3	Wizard

```

cells %>%
  filter(!is_blank) %>%
  select(row, col, data_type, character, numeric, local_format_id) %>%
  behead("NNW", "dormitory")

```

row	col	data_type	character	numeric	local_format_id	dormitory
8	2	numeric	NA	2	10	Witch
8	3	numeric	NA	7	12	Witch
2	4	character	Harry	A	B	C
2	5	character	Ron	1	Witch	Wizard
3	4	numeric	NA	2	Hermione	Ginny
3	5	numeric	NA	3	Castle	Harry
4	4	numeric	NA	4	Charms	Ron
4	5	numeric	NA	5	Potions	
4	4	numeric	NA	6	Grounds	
4	5	numeric	NA	7	Herbology	
5	4	numeric	NA	8	Care of	
				9	Magical	
				10	Creatures	

```

cells %>%
  filter(!is_blank) %>%
  select(row, col, data_type, character, numeric, local_format_id) %>%
  behead("NNW", "dormitory") %>%
  behead("N", "pupil")

```

row	col	data_type	character	numeric	local_format_id	dormitory	pupil
8	2	numeric	NA	2	10	Witch	Hermione
8	3	numeric	NA	7	12	Witch	Ginny
3	4	numeric	NA	7	7	Wizard	Harry
3	5	numeric	NA	2	8	Wizard	Ron
4	4	numeric	NA	0	2	Wizard	Harry
4	5	numeric	NA	0	1	Wizard	Ron
5	4	numeric	NA	7	3	Wizard	Harry
5	5	numeric	NA	2	4	Wizard	Ron
6	4	numeric	NA	13	7	Wizard	Harry
6	5	numeric	NA	9	8	Wizard	Ron
7	4	numeric	NA	10	2	Wizard	Harry

```

cells %>%
  filter(!is_blank) %>%
  select(row, col, data_type, character, numeric, local_format_id) %>%
  behead("NNW", "dormitory") %>%
  behead("N", "pupil")

```

row	col	data_type	character	numeric	local_format_id	dormitory	pupil
8	2	numeric	NA	2	10	Witch	Hermione
8	3	numeric	NA	7	12	Witch	Ginny
3	4	numeric	NA	A	B	C	D
3	5	numeric	NA	1	Witch	Wizard	
4	4	numeric	NA	2	Hermione	Ginny	Harry
4	5	numeric	NA	3	Castle	11	7
4	5	numeric	NA	4	Charms	2	0
5	4	numeric	NA	5	Potions	9	2
5	5	numeric	NA	6	Grounds	7	13
5	5	numeric	NA	7	Herbology	8	9
6	4	numeric	NA	8	Care of	5	10
6	5	numeric	NA	9	Magical	2	6
7	4	numeric	NA	10	Creatures	7	3
							3
							3

```
formats <- xlsx_formats("./data/harry-potter.xlsx")
```

▶ formats	list [2]	List of length 2
▶ local	list [6]	List of length 6
numFmt	character [18]	'General' 'General'
▶ font	list [10]	List of length 10
▶ fill	list [2]	List of length 2
▶ border	list [12]	List of length 12
▶ alignment	list [8]	List of length 8
horizontal	character [18]	'general' 'general'
vertical	character [18]	'bottom' 'bottom'
wrapText	logical [18]	FALSE FALSE FALSE
readingOrder	character [18]	'context' 'context'
indent	integer [18]	0 0 0 0 1 1 ...

```

cells %>%
  filter(!is_blank) %>%
  select(row, col, data_type, character, numeric, local_format_id) %>%
  behead("NNW", "dormitory") %>%
  behead("N", "pupil") %>%
  behead_if(formats$local$font$bold[local_format_id], direction = "WNW", name = "location")

```

row	col	data_type	character	numeric	local_format_id	dormitory	pupil	location
4	1	character	Charms	NA	5	NA	NA	Castle
5	1	character	Potions	NA	6	NA	NA	Castle
6	2	numeric	NA	7	7	Witch	Hermione	Grounds
6	3	numeric	NA	8	8	Witch	Ginny	Grounds
7	2	numeric	NA	5	2	Witch	Hermione	Grounds
7	3	numeric	NA	1	1	Witch	Ginny	Grounds
8	2	numeric	NA	2	10	Witch	Hermione	Grounds
8	3	numeric	NA	7	12	Witch	Ginny	Grounds
6	4	numeric	NA	13	7	Wizard	Harry	Grounds
6	5	numeric	NA	9	8	Wizard	Ron	Grounds
7	4	numeric	NA	10	2	Wizard	Harry	Grounds
7	5	numeric	NA	6	1	Wizard	Ron	Grounds

```

cells %>%
  filter(!is_blank) %>%
  select(row, col, data_type, character, numeric, local_format_id) %>%
  behead("NNW", "dormitory") %>%
  behead("N", "pupil") %>%
  behead_if(formats$local$font$bold[local_format_id], direction = "WNW", name = "location")

```

row	col	data_type	character	numeric	local_format_id	dormitory	pupil	location
4	1	character	Charms	NA	5	NA	NA	Castle
5	1	character	Potions	NA	6	NA	NA	Castle
6	2	numeric	NA	A	B	C	D	E
6	3	numeric	NA	1	Witch		Wizard	
7	2	numeric	NA	2	Hermione	Ginny	Harry	Ron
7	3	numeric	NA	3 Castle	11	11	7	2
8	2	numeric	NA	4 Charms	2	6	0	0
8	3	numeric	NA	5 Potions	9	5	7	2
8	4	numeric	NA	6 Grounds	7	8	13	9
6	4	numeric	NA	7 Herbology	5	1	10	6
6	5	numeric	NA	8 Care of	2	7	3	3
7	4	numeric	NA	9 Magical				Grounds
7	5	numeric	NA	10 Creatures				Grounds

```

cells %>%
  filter(!is_blank) %>%
  select(row, col, data_type, character, numeric, local_format_id) %>%
  behead("NNW", "dormitory") %>%
  behead("N", "pupil") %>%
  behead_if(formats$local$font$bold[local_format_id], direction = "WNW", name = "location") %>%
  behead("W", "subject") %>%
  select("row", "col", mark = "numeric", dormitory, pupil, location, subject)

```

row	col	mark	dormitory	pupil	location	subject
3	2	11	Witch	Hermione	Castle	NA
3	3	11	Witch	Ginny	Castle	NA
4	2	2	Witch	Hermione	Castle	Charms
4	3	6	Witch	Ginny	Castle	Charms
5	2	9	Witch	Hermione	Castle	Potions
5	3	5	Witch	Ginny	Castle	Potions
3	4	7	Wizard	Harry	Castle	NA
3	5	2	Wizard	Ron	Castle	NA
4	4	0	Wizard	Harry	Castle	Charms
4	5	0	Wizard	Ron	Castle	Charms

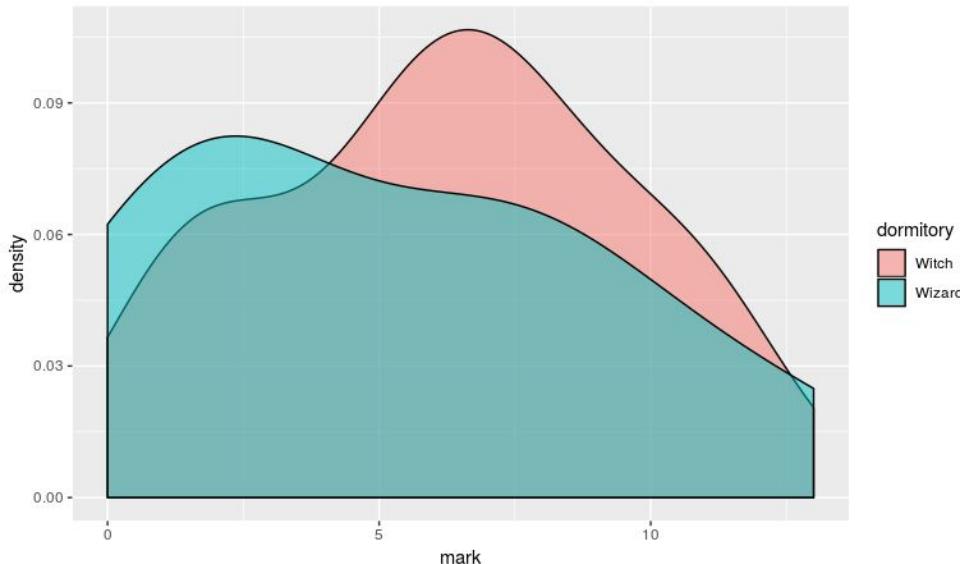
```

cells %>%
  filter(!is_blank) %>%
  select(row, col, data_type, character, numeric, local_format_id) %>%
  behead("NNW", "dormitory") %>%
  behead("N", "pupil") %>%
  behead_if(formats$local$font$bold[local_format_id], direction = "WNW", name = "location") %>%
  behead("W", "subject") %>%
  select("row", "col", mark = "numeric", dormitory, pupil, location, subject)

```

	A	B	C	D	row	col	mark	dormitory	pupil	location	subject
1		Witch		Wizard	11		Witch	Hermione	Castle	NA	
2		Hermione	Ginny	Harry	11		Witch	Ginny	Castle	NA	
3	Castle	11	11	7	2		Witch	Hermione	Castle	Charms	
4	Charms	2	6	0	6		Witch	Ginny	Castle	Charms	
5	Potions	9	5	7	9		Witch	Hermione	Castle	Potions	
6	Grounds	7	8	13	5		Witch	Ginny	Castle	Potions	
7	Herbology	5	1	10	7		Wizard	Harry	Castle	NA	
8	Care of	2	7	3	2		Wizard	Ron	Castle	NA	
9	Magical				0		Wizard	Harry	Castle	Charms	
10	Creatures				0		Wizard	Ron	Castle	Charms	

```
cells %>%
  filter(!is_blank) %>%
  select(row, col, data_type, character, numeric, local_format_id) %>%
  behead("NNW", "dormitory") %>%
  behead("N", "pupil") %>%
  behead_if(formats$local$font$bold[local_format_id], direction = "WNW", name = "location") %>%
  behead("W", "subject") %>%
  select("row", "col", mark = "numeric", dormitory, pupil, location, subject) %>%
  ggplot(aes(mark, fill = dormitory)) +
  geom_density(alpha = .5)
```



# 1. One-row-per-cell format:

1. One-row-per-cell format:

**tidyxl**

**readr**

**googlesheets4**

1. One-row-per-cell format:

**tidyxl**

**readr**

**googlesheets4**

2. `behead()` each header in turn

1. One-row-per-cell format:

**tidyxl**

**readr**

**googlesheets4**

2. behead() each header in turn

**unpivotr**

as_cells()	Tokenize data frames into a tidy 'melted' structure
behead() behead_if()	Strip a level of headers from a pivot table
enhead()	Join data cells to headers
isolate_sentinels()	Move sentinel values into a separate column leaving NA behind
justify()	Align one set of cells with another set
merge_rows() merge_cols()	Merge cell values into a single cell by rows or columns
pack() unpack()	Pack cell values from separate columns per data type into one list-column
partition() partition_dim()	Divide a grid of cells into partitions containing individual tables
purpose	Sense-of-purpose in the 2014 New Zealand General Social Survey
rectify() print(<cell_grid>)	Display cells as though in a spreadsheet
spatter()	Spread key-value pairs of mixed types across multiple columns
tidy_table()	Tokenize data frames into a tidy 'melted' structure
unpivotr-package	Un-pivot complex and irregular data layouts.



`excel_functions`

Names of all Excel functions

`is_date_format()`

Test that Excel number formats are date formats

`is_range()`

Test that Excel formulas are ranges

`maybe_xlsx()`

Determine file format

`tidy_xlsx()`

Import xlsx (Excel) cell contents into a tidy structure.

`tidyxl`

tidyxl: Import xlsx (Excel) spreadsheet data and formatting into tidy structures.

`xlex()`

Parse xlsx (Excel) formulas into tokens

`xlsx_cells()`

Import xlsx (Excel) cell contents into a tidy structure.

`xlsx_color_standard`

Names and RGB values of Excel standard colours

`xlsx_colour_standard`

`xlsx_color_theme()` `xlsx_colour_theme()` Import theme color definitions from xlsx (Excel) files

`xlsx_formats()`

Import xlsx (Excel) formatting definitions.

`xlsx_names()`

Import named formulas from xlsx (Excel) files

`xlsx_sheet_names()`

List sheets in an xlsx (Excel) file

`xlsx_validation()`

Import data validation rules of cells in xlsx (Excel) files

((IF((103-B\$89)=103,0,(103-B\$89)))+(IF((200-B\$95)=200,0,(200-B\$95)))+(IF((196-B\$98)=196,0,(196-B\$98)))+(IF((200-B\$101)=200,0,(200-B\$101)))+(IF((70-B\$104)=70,0,(MIN(40,(70-B\$104)))))+(IF((78-B\$109)=78,0,(MIN(50,(78-B\$109)))))+(IF((103-B\$114)=103,0,(MIN(66,(103-B\$114)))))+(IF((195-B\$119-B\$124-B\$129-B\$134-B\$139)=195,0,(MIN(70,(195-B\$119-B\$124-B\$129-B\$134-B\$139)))))+(IF((64-B\$144)=64,0,(MIN(50,(64-B\$144)))))+(IF((48-B\$149)=48,0,(MIN(20,(48-B\$149)))))+(IF((44-B\$154)=44,0,(MIN(20,(44-B\$154)))))+(IF((130-B\$159)=130,0,(MIN(20,(130-B\$159)))))))

## 1 Setup

### 1.1 Packages

### 1.2 Data

## 2 Tidy-ish tables

### 2.1 Clean & tidy tables

### 2.2 Almost-tidy tables

### 2.3 Meaningfully formatted rows

### 2.4 Meaningfully formatted cells

### 2.5 Layered meaningful formatting

### 2.6 Hierarchies in formatting

### 2.7 Sentinel values in non-text columns

## 3 Pivot tables

### 3.1 Simple unpivoting

### 3.2 Complex unpivoting

# Spreadsheet Munging Strategies

*Duncan Garmonsway*

## Welcome

This is a work-in-progress book about getting data out of spreadsheets, no matter how peculiar. The book is designed primarily for R users who have to extract data from spreadsheets and who are already familiar with the [tidyverse](#). It has a cookbook structure, and can be used as a reference, but readers who begin in the middle might have to work backwards from time to time.

R packages that feature heavily are

- [unpivotr](#): deals with non-tabular data, especially from spreadsheets.
- [tidyxl](#): imports non-tabular data from Excel files



## Duncan Garmonsway

49 subscribers

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## CHANNELS

## DISCUSSION

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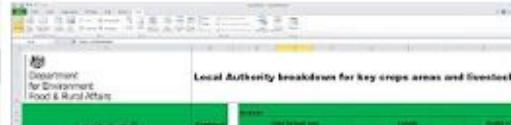
 PLAY ALL



All currently listed clients present in 1

provide their current therapeutic interventions in the family of substance abuse. Nurses have a role as educators, as well as a role as advocates for families who are trying to make changes. When the client comes to the family, it is important to help each person implement his or her goals. This article discusses interventions to assist the family in this regard. Therapeutic family intervention can help nurses, as well as clients and their families, to better understand the family system.

35:26



#### **Local Authority breakdown for key crops areas and locations**

31:42



My thanks to all who helped me with this article.

As a result, we can place an understanding base to determine the strategic importance of each country.

4  
A company's marketing communication strategy is the marketing mix. It consists of four main components: product, price, promotion, and distribution. The marketing mix is often referred to as the 4Ps of marketing. By understanding the 4Ps, companies can better tailor their products and services to meet the needs of their target market.

43:49

## Tidy Tuesday Screencast: Tidying US PhD data with R

198 views • 2 months ago

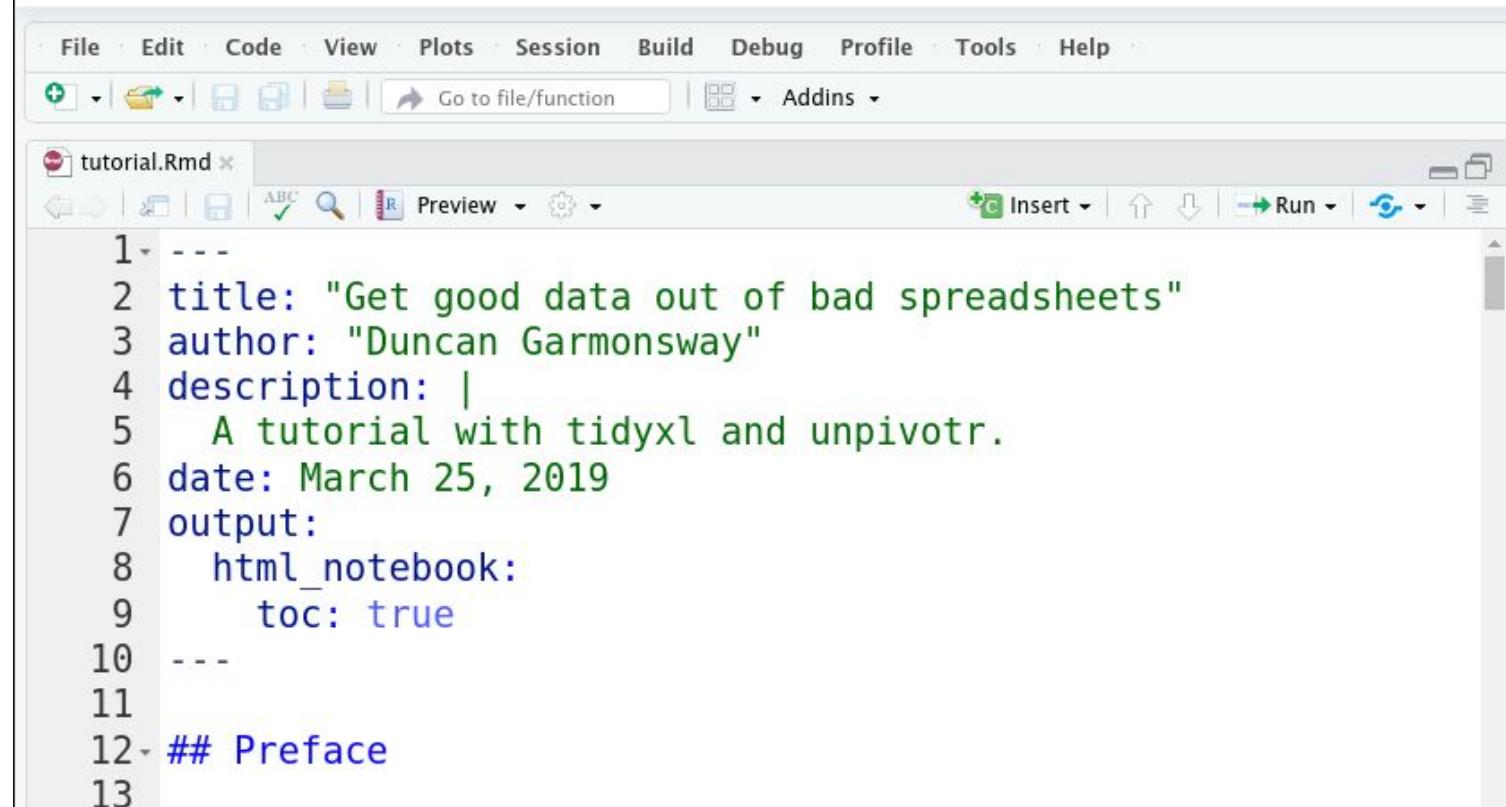
## Tidy Spreadsheet screencast: Unpivoting UK agriculture...

224 views • 4 months ago

## Tidy Tuesday Screencast: tidying invasive species dat...

248 views • 5 months ago

≡ Your Workspace / Get good data out of bad spreadsheets with tidyxl and unpivotr

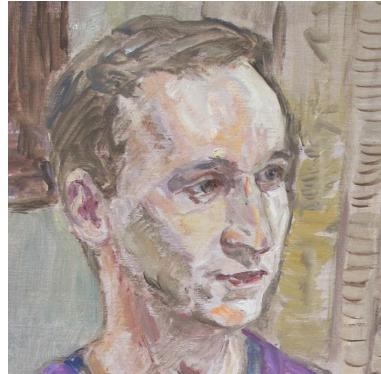


The screenshot shows the RStudio interface with the following details:

- File menu:** File, Edit, Code, View, Plots, Session, Build, Debug, Profile, Tools, Help.
- Toolbar:** Includes icons for New, Open, Save, Print, Go to file/function, and Addins.
- File tab:** tutorial.Rmd x
- Editor toolbar:** ABC, Preview, Insert, Run, etc.
- Code content:**

```
1 ---  
2 title: "Get good data out of bad spreadsheets"  
3 author: "Duncan Garmonsway"  
4 description: |  
5   A tutorial with tidyxl and unpivotr.  
6 date: March 25, 2019  
7 output:  
8   html_notebook:  
9     toc: true  
10 ---  
11  
12 ## Preface  
13
```

<https://rstudio.cloud/project/269487>



# Get good data out of bad spreadsheets

My stuff:

<https://github.com/nacnudus/tidyxl>

<https://github.com/nacnudus/unpivotr>

<https://nacnudus.github.io/spreadsheet-munging-strategies/>

<https://rstudio.cloud/project/269487>

Duncan  
Garmonsway

**@nacnudus**

Related:

<https://github.com/luisDVA/unheadr>

<https://github.com/ianmoran11/tidyABS>

<https://databaker.sensiblecode.io/>