

CMPU 100 · Programming with Data

Working with Tabular Data

Class 7



Loading tabular data



WNBA

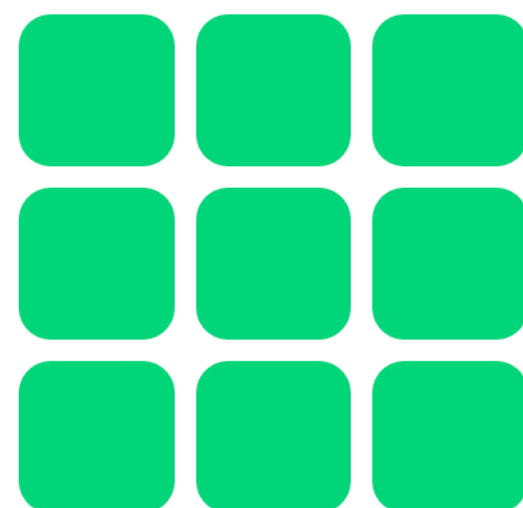
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Every NBA Team

2024-25 NBA Standings

[Summary](#) · [Schedule](#) · [Scores](#) · [Leaders](#) · [Rookies](#)

East			West		
	W	L		W	L
CLE (1)	F 5	64 18	OKC (1)	F 5	68 14
BOS (2)	F 5	61 21	HOU (2)	F 5	52 30
NYK (3)	F 5	51 31	LAL (3)	F 5	50 32
IND (4)	F 5	50 32	DEN (4)	F 5	50 32
MIL (5)	F 5	48 34	LAC (5)	F 5	50 32
DET (6)	F 5	44 38	MIN (6)	F 5	49 33
ORL (7)	F 5	41 41	GSW (7)	F 5	48 34
ATL (8)	F 5	40 42	MEM (8)	F 5	48 34
CHI (9)	F 5	39 43	SAC (9)	F 5	40 42
MIA (10)	F 5	37 45	DAL (10)	F 5	39 43
TOR (11)	F 5	30 52	PHO (11)	F 5	36 46
BRK (12)	F 5	26 56	POR (12)	F 5	36 46
PHI (13)	F 5	24 58	SAS (13)	F 5	34 48
CHO (14)	F 5	19 63	NOP (14)	F 5	21 61
WAS (15)	F 5	18 64	UTA (15)	F 5	17 65

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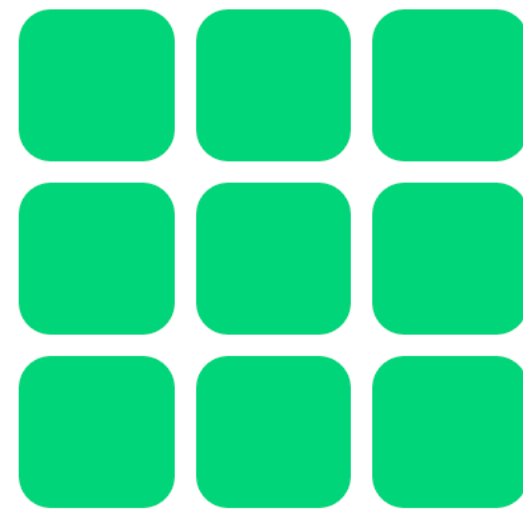
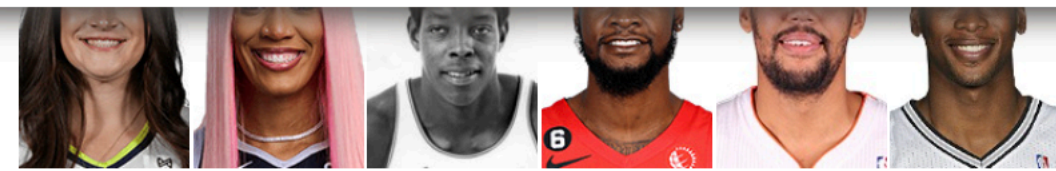
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NYK (3)	F	\$	51	31	LAL (3)	F	\$	50	32
IND (4)	F	\$	50	32	DEN (4)	F	\$	50	32
MIL (5)	F	\$	48	34	LAC (5)	F	\$	50	32
DET (6)	F	\$	44	38	MIN (6)	F	\$	49	33
ORL (7)	F	\$	41	41	GSW (7)	F	\$	48	34
ATL (8)	F	\$	40	42	MEM (8)	F	\$	48	34
CHI (9)	F	\$	39	43	SAC (9)	F	\$	40	42
MIA (10)	F	\$	37	45	DAL (10)	F	\$	39	43
TOR (11)	F	\$	30	52	PHO (11)	F	\$	36	46
BRK (12)	F	\$	26	56	POR (12)	F	\$	36	46
PHI (13)	F	\$	24	58	SAS (13)	F	\$	34	48
CHO (14)	F	\$	19	63	NOP (14)	F	\$	21	61
WAS (15)	F	\$	18	64	UTA (15)	F	\$	17	65

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2025 WNBA Player Stats - Per Game



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Most Valuable Player: [A'ja Wilson](#)
PPG Leader: [A'ja Wilson](#) (23.4)
RPG Leader: [Angel Reese](#) (12.6)
APG Leader: [Alyssa Thomas](#) (9.2)
WS Leader: [A'ja Wilson](#) (9.5)

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Per Game **Totals** Per 36 Minutes Per 100 Possessions Advanced Play-by-Play Shooting

Player	Team	Pos	G	MP	G	GS	MP	FG	FGA	FG%	3P	3PA	3P%	2P	2PA	2P%	FT	FTA	FT%	ORB	TRB	AST	STL	BLK	TOV	PF	PTS
Monique Akoa Makani	PHO	G	41	881	41	40	21.5	2.8	6.5	.429	1.2	3.0	.395	1.6	3.5	.458	0.9	1.0	.927	0.6	2.2	2.7	0.8	0.1	1.3	2.5	7.7
Julie Allemand	LAS	G	34	963	34	27	28.3	2.1	4.7	.440	0.8	3.0	.277	1.2	1.7	.724	0.4	0.6	.789	0.4	3.7	5.0	1.3	0.0	1.6	1.6	5.4
Lindsay Allen	CON	G	31	450	31	9	14.5	0.8	2.1	.400	0.1	0.6	.167	0.7	1.5	.489	0.6	0.7	.826	0.3	1.0	2.0	0.3	0.2	1.0	1.2	2.4
Rebecca Allen	CHI	F-G	44	821	44	17	18.7	1.9	5.5	.342	1.0	3.0	.318	0.9	2.5	.370	0.4	0.7	.613	0.4	2.6	1.3	0.5	0.5	0.9	1.4	5.1
Laeticia Amihere	GSV	F	29	384	29	0	13.2	1.8	3.9	.456	0.1	0.7	.143	1.7	3.2	.527	1.7	2.2	.778	1.2	4.3	0.9	0.6	0.4	1.1	1.2	5.4
Yvonne Anderson	MIN	G	1	12	1	0	12.0	0.0	3.0	.000	0.0	1.0	.000	0.0	2.0	.000	0.0	0.0		0.0	1.0	2.0	2.0	0.0	0.0	3.0	0.0
Ariel Atkins	CHI	G	34	971	34	34	28.6	4.8	10.7	.444	1.3	3.5	.361	3.5	7.2	.484	2.4	2.7	.860	0.7	3.4	3.6	1.6	0.7	2.5	3.0	13.1
Shakira Austin	WAS	F-C	38	874	38	30	23.0	5.0	10.8	.465	0.1	0.4	.133	5.0	10.4	.477	2.6	3.8	.664	1.5	6.4	1.8	1.1	1.1	2.4	2.1	12.7
Marième Badiane	MIN	C	3	11	3	0	3.7	0.0	1.0	.000	0.0	0.3	.000	0.0	0.7	.000	0.0	0.0		0.3	0.3	0.0	0.7	0.0	0.7	2.0	0.0



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Totals *-Hall of Famer; **Bold**=Active Player Share & Export ▾ Glossary Hide Partial Rows

Player	Team	Pos	G	MP	G	GS	MP	FG	FGA	FG%	3P	3PA	3P%	2P	2PA	2P%	FT	FTA	FT%	ORB	TRB	AST	STL	BLK	TOV	PF	PTS
Monique Akoa Makani	PHO	G	41	881	41	40	881	114	266	.429	49	124	.395	65	142	.458	38	41	.927	25	91	111	32	3	55	101	315
Julie Allemand	LAS	G	34	963	34	27	963	70	159	.440	28	101	.277	42	58	.724	15	19	.789	13	127	170	45	1	53	55	183
Lindsay Allen	CON	G	31	450	31	9	450	26	65	.400	3	18	.167	23	47	.489	19	23	.826	9	32	61	10	6	31	37	74
Rebecca Allen	CHI	F-G	44	821	44	17	821	82	240	.342	42	132	.318	40	108	.370	19	31	.613	16	113	57	23	23	39	62	225
Laeticia Amihere	GSV	F	29	384	29	0	384	52	114	.456	3	21	.143	49	93	.527	49	63	.778	35	125	27	17	13	32	36	156
Yvonne Anderson	MIN	G	1	12	1	0	12	0	3	.000	0	1	.000	0	2	.000	0	0		0	1	2	2	0	0	3	0
Ariel Atkins	CHI	G	34	971	34	34	971	162	365	.444	43	119	.361	119	246	.484	80	93	.860	23	114	122	53	24	84	102	447
Shakira Austin	WAS	F-C	38	874	38	30	874	191	411	.465	2	15	.133	189	396	.477	97	146	.664	57	242	68	41	43	92	81	481
Marième Badiane	MIN	C	3	11	3	0	11	0	3	.000	0	1	.000	0	2	.000	0	0		1	1	0	2	0	2	6	0



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Totals *-Hall of Famer; **Bold**=Active Player **Share & Export ▾** Glossary Hide Partial Rows

Player	Team	Pos	G	MP	G	GS	MP	FG	FGA	FG%	3P	3PA	3P%	2P	2PA	2P%	FT	FTA	FT%	ORB	TRB	AST	STL	BLK	TOV	PF	PTS
Monique Akoa Makani	PHO	G	41	881	41	40	881	114	266	.429	49	124	.395	65	142	.458	38	41	.927	25	91	111	32	3	55	101	315
Julie Allemand	LAS	G	34	963	34	27	963	70	159	.440	28	101	.277	42	58	.724	15	19	.789	13	127	170	45	1	53	55	183
Lindsay Allen	CON	G	31	450	31	9	450	26	65	.400	3	18	.167	23	47	.489	19	23	.826	9	32	61	10	6	31	37	74
Rebecca Allen	CHI	F-G	44	821	44	17	821	82	240	.342	42	132	.318	40	108	.370	19	31	.613	16	113	57	23	23	39	62	225
Laeticia Amihere	GSV	F	29	384	29	0	384	52	114	.456	3	21	.143	49	93	.527	49	63	.778	35	125	27	17	13	32	36	156
Yvonne Anderson	MIN	G	1	12	1	0	12	0	3	.000	0	1	.000	0	2	.000	0	0		0	1	2	2	0	0	3	0
Ariel Atkins	CHI	G	34	971	34	34	971	162	365	.444	43	119	.361	119	246	.484	80	93	.860	23	114	122	53	24	84	102	447
Shakira Austin	WAS	F-C	38	874	38	30	874	191	411	.465	2	15	.133	189	396	.477	97	146	.664	57	242	68	41	43	92	81	481
Marième Badiane	MIN	C	3	11	3	0	11	0	3	.000	0	1	.000	0	2	.000	0	0		1	1	0	2	0	2	6	0



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Totals *Hall of Famer; **Bold**=Active Player

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Player	Team	Pos	G	M	MP	PTS	FT%	FTA	FT	ORB	TRB	AST	STL	BLK	TOV	PF	PTS
Monique Akoa Makani	PHO	G	41			158	.38	41	158	25	91	111	32	3	55	101	315
Julie Allemand	LAS	G	34			724	.15	19	724	13	127	170	45	1	53	55	183
Lindsay Allen	CON	G	31			489	.19	23	489	9	32	61	10	6	31	37	74
Rebecca Allen	CHI	F-G	44			370	.19	31	370	16	113	57	23	23	39	62	225
Laeticia Amihere	GSV	F	29			527	.49	63	527	35	125	27	17	13	32	36	156
Yvonne Anderson	MIN	G	1			000	0	0	000	0	1	2	2	0	0	3	0
Ariel Atkins	CHI	G	34			484	.80	93	484	23	114	122	53	24	84	102	447
Shakira Austin	WAS	F-C	38			477	.97	146	477	57	242	68	41	43	92	81	481
Marième Badiane	MIN	C	3			11	3	0	11	0	3	.000	0	1	.000	0	2

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Player	Team	Pos	G	MP	G	GS	MP	FG	FGA	FG%	3P	3PA	3P%	2P	2PA	2P%	FT	FTA	FT%	ORB	TRB	AST	STL	BLK	TOV	PF	PTS
Monique Akoa Makani	PHO	G	41	881	41	40	881	114	266	.429	49	124	.395	65	142	.458	38	41	.927	25	91	111	32	3	55	101	315
Julie Allemand	LAS	G	34	963	34	27	963	70	159	.440	28	101	.277	42	58	.724	15	19	.789	13	127	170	45	1	53	55	183
Lindsay Allen	CON	G	31	450	31	9	450	26	65	.400	3	18	.167	23	47	.489	19	23	.826	9	32	61	10	6	31	37	74
Rebecca Allen	CHI	F-G	44	821	44	17	821	82	240	.342	42	132	.318	40	108	.370	19	31	.613	16	113	57	23	23	39	62	225
Laeticia Amihere	GSV	F	29	384	29	0	384	52	114	.456	3	21	.143	49	93	.527	49	63	.778	35	125	27	17	13	32	36	156

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Step 0: Get data

Step 1: Make a spreadsheet



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Sheet1





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A1:A235 | fx Player,Team,Pos,G,MP,G,GS,MP,FG,FGA,FG%,3P,3PA,3P%,2P,2PA,2P%,FT,FTA,FT%,ORB,TRB,AST,STL,BLK,TOV,PF,PTS

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2	Monique Akoa Makani,PHO,G,41,881,41,40,881,114,266,.429,49,124,.395,65,142,.458,38,41,.927,25,91,111,32,3,55,101,315											
3	Julie Allemand,LAS,G,34,963,34,27,963,70,159,.440,28,101,.277,42,58,.724,15,19,.789,13,127,170,45,1,53,55,183											
4	Lindsay Allen,CON,G,31,450,31,9,450,26,65,.400,3,18,.167,23,47,.489,19,23,.826,9,32,61,10,6,31,37,74											
5	Rebecca Allen,CHI,F-G,44,821,44,17,821,82,240,.342,42,132,.318,40,108,.370,19,31,.613,16,113,57,23,23,39,62,225											
6	Laetitia Amihere,GSV,F,29,384,29,0,384,52,114,.456,3,21,.143,49,93,.527,49,63,.778,35,125,27,17,13,32,36,156											
7	Yvonne Anderson,MIN,G,1,12,1,0,12,0,3,.000,0,1,.000,0,2,.000,0,0,.0,0,1,2,2,0,0,3,0											
8	Ariel Atkins,CHI,G,34,971,34,34,971,162,365,.444,43,119,.361,119,246,.484,80,93,.860,23,114,122,53,24,84,102,447											
9	Shakira Austin,WAS,F-C,38,874,38,30,874,191,411,.465,2,15,.133,189,396,.477,97,146,.664,57,242,68,41,43,92,81,481											
10	Marième Badiane,MIN,C,3,11,3,0,11,0,3,.000,0,1,.000,0,2,.000,0,0,.1,1,0,2,0,2,6,0											
11	Rachel Banham,CHI,G,44,1081,44,33,1081,129,338,.382,86,241,.357,43,97,.443,52,59,.881,6,74,119,26,11,71,84,396											
12	Sarah Ashlee Barker,LAS,G,34,481,34,8,481,35,104,.337,18,61,.295,17,43,.395,17,24,.708,10,66,31,11,4,37,45,105											
13	Kierstan Bell,LVA,F,35,427,35,16,427,52,153,.340,30,102,.294,22,51,.431,12,15,.800,20,62,23,14,11,17,30,146											
14	Monique Billings,GSV,F,26,474,26,8,474,72,151,.477,10,36,.278,62,115,.539,36,53,.679,37,116,14,16,21,21,44,190											
15	Aliyah Boston,IND,C-F,44,1327,44,44,1327,271,504,.538,6,29,.207,265,475,.558,112,147,.762,107,361,163,52,41,81,136,660											
16	Crystal Bradford,LVA,F,4,24,4,0,24,2,6,.333,0,2,.000,2,4,.500,0,0,.2,5,1,2,0,1,3,4											
17	Cameron Brink,LAS,F,19,244,19,0,244,35,82,.427,10,34,.294,25,48,.521,16,21,.762,26,82,9,10,26,25,48,96											
18	Jaelyn Brown,CON,G-F,10,131,10,0,131,14,37,.378,8,18,.444,6,19,.316,1,2,.500,4,12,1,5,2,5,17,37											
19	Kalani Brown,PHO,C,29,370,29,1,370,59,96,.615,3,8,.375,56,88,.636,27,35,.771,36,117,16,7,18,23,46,148											
20	Lexie Brown,SEA,G,24,227,24,0,227,17,48,.354,10,37,.270,7,11,.636,7,10,.700,2,17,23,9,1,6,20,51											
21	Paige Bueckers,DAL,G,36,1199,36,36,1199,259,543,.477,39,118,.331,220,425,.518,135,152,.888,25,141,194,57,18,72,82,692											
22	Kennedy Burke,NYL,G-F,36,779,36,9,779,102,218,.468,46,111,.414,56,107,.523,41,54,.759,21,85,45,28,16,34,47,291											
23	Rae Burrell,LAS,G-F,28,515,28,1,515,77,178,.433,22,67,.328,55,111,.495,35,47,.745,18,65,34,16,5,25,36,211											
24	Veronica Burton,GSV,G,44,1292,44,44,1292,149,385,.387,61,177,.345,88,208,.423,166,189,.878,50,192,265,50,27,94,103,525											
25	Maya Caldwell,PHO,G,21,760,21,16,760,83,195,.426,39,110,.355,44,85,.518,16,20,.800,33,127,74,37,7,40,65,221											
26	Jordin Canada,PHO,G,26,783,26,26,783,108,273,.396,25,86,.291,83,187,.444,73,96,.760,8,91,159,48,9,62,46,314											
27	Emma Cannon,LAS,F,21,212,21,0,212,32,63,.508,14,36,.389,18,27,.667,15,22,.652,11,38,8,10,1,16,36,93											

Sheet1

Count: 235

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A1:A235 | fx Player,Team,Pos,G,MP,G,GS,M

RB,AST,STL,BLK,TOV,PF,PTS

	A	B	C	D	E	F	G	H	I	J	K	L
1	Player,Team,Pos,G,MP,G,GS,MP,FG,F											
2	Monique Akoa Makani,PHO,G,41,881,											
3	Julie Allemand,LAS,G,34,963,34,27,96											
4	Lindsay Allen,CON,G,31,450,31,9,450											
5	Rebecca Allen,CHI,F-G,44,821,44,17,											
6	Laetitia Amihere,GSV,F,29,384,29,0,3											
7	Yvonne Anderson,MIN,G,1,12,1,0,12,C											
8	Ariel Atkins,CHI,G,34,971,34,34,971,1											
9	Shakira Austin,WAS,F-C,38,874,38,30											
10	Marième Badiane,MIN,C,3,11,3,0,11,0											
11	Rachel Banham,CHI,G,44,1081,44,33											
12	Sarah Ashlee Barker,LAS,G,34,481,34											
13	Kierstan Bell,LVA,F,35,427,35,16,427,											
14	Monique Billings,GSV,F,26,474,26,8,4											
15	Aliyah Boston,IND,C-F,44,1327,44,44,											
16	Crystal Bradford,LVA,F,4,24,4,0,24,2,6											
17	Cameron Brink,LAS,F,19,244,19,0,244											
18	Jaelyn Brown,CON,G-F,10,131,10,0,1											
19	Kalani Brown,PHO,C,29,370,29,1,370											
20	Lexie Brown,SEA,G,24,227,24,0,227,											
21	Paige Bueckers,DAL,G,36,1199,36,36											
22	Kennedy Burke,NYL,G-F,36,779,36,9,779,102,218,.468,46,111,.414,56,107,.523,41,54,.759,21,85,45,28,16,34,47,291											
23	Rae Burrell,LAS,G-F,28,515,28,1,515,77,178,.433,22,67,.328,55,111,.495,35,47,.745,18,65,34,16,5,25,36,211											
24	Veronica Burton,GSV,G,44,1292,44,44,1292,149,385,.387,61,177,.345,88,208,.423,166,189,.878,50,192,265,50,27,94,103,525											
25	Maya Caldwell,											
26	Jordin Canada,											
27	Emma Cannon,											

Sort sheet

Sort range

Create a filter

Create group by view

Create filter view

Add a slicer

Protect sheets and ranges

Named ranges

Named functions

Randomize range

Column stats

Data validation

Data cleanup

Split text to columns

Data extraction

Data connectors New

Count: 235



Untitled spreadsheet

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Share

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B I A

A1 | fx Player

	A	B	C	D	E	F	G	H	I	J	K	L	
1	Player	Team	Pos	G	MP	G	GS	MP	FG	FGA	FG%	3P	3PA
2	Monique Akoa	PHO	G		41		41	40	881	114	266	0.429	49
3	Julie Allemand	LAS	G		34		34	27	963	70	159	0.44	28
4	Lindsay Allen	CON	G		31		31	9	450	26	65	0.4	3
5	Rebecca Allen	CHI	F-G		44		44	17	821	82	240	0.342	42
6	Laetitia Amihe	GSV	F		29		29	0	384	52	114	0.456	3
7	Yvonne Anders	MIN	G		1		1	0	12	0	3	0	0
8	Ariel Atkins	CHI	G		34		34	34	971	162	365	0.444	43
9	Shakira Austin	WAS	F-C		38		38	30	874	191	411	0.465	2
10	Marième Badia	MIN	C		3		3	0	11	0	3	0	0
11	Rachel Banhar	CHI	G		44		44	33	1081	129	338	0.382	86
12	Sarah Ashlee E	LAS	G		34		34	8	481	35	104	0.337	18
13	Kierstan Bell	LVA	F		35		35	16	427	52	153	0.34	30
14	Monique Billing	GSV	F		26		26	8	474	72	151	0.477	10
15	Aliyah Boston	IND	C-F		44		44	44	1327	271	504	0.538	6
16	Crystal Bradfor	LVA	F		4		4	0	24	2	6	0.333	0
17	Cameron Brink	LAS	F		19		19	0	244	35	82	0.427	10
18	Jaelyn Brown	CON	G-F		10		10	0	131	14	37	0.378	8
19	Kalani Brown	PHO	C		29		29	1	370	59	96	0.615	3
20	Lexie Brown	SEA	G		24		24	0	227	17	48	0.354	10
21	Paige Buecker	DAL	G		36		36	36	1199	259	543	0.477	39
22	Kennedy Burke	NYL	G-F		36		36	9	779	102	218	0.468	46
23	Rae Burrell	LAS	G-F		28		28	1	515	77	178	0.433	22
24	Veronica Burto	GSV	G		44		44	44	1292	149	385	0.387	61
25	Maya Caldwell	ATL	G		41		41	16	760	83	195	0.426	39
26	Jordin Canada	ATL	G		28		28	26	783	108	273	0.396	25
27	Emma Cannon	LAS	F		21		21	0	212	32	62	0.508	11

+ Sheet1

WNBA stats

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A1 | fx Player

	MP	G	GS	MP	FG	FGA	FG%	3P	3PA
	41	881	41	40	881	114	266	0.429	49
	34	963	34	27	963	70	159	0.44	28
	31	450	31	9	450	26	65	0.4	3
	44	821	44	17	821	82	240	0.342	42
	29	384	29	0	384	52	114	0.456	3
	1	12	1	0	12	0	3	0	0
	34	971	34	34	971	162	365	0.444	43
	38	874	38	30	874	191	411	0.465	2
	3	11	3	0	11	0	3	0	0
	44	1081	44	33	1081	129	338	0.382	86
	34	481	34	8	481	35	104	0.337	18
	35	427	35	16	427	52	153	0.34	30
	26	474	26	8	474	72	151	0.477	10
	44	1327	44	44	1327	271	504	0.538	6
	4	24	4	0	24	2	6	0.333	0
	19	244	19	0	244	35	82	0.427	10
	10	131	10	0	131	14	37	0.378	8
	29	370	29	1	370	59	96	0.615	3
	24	227	24	0	227	17	48	0.354	10
	36	1199	36	36	1199	259	543	0.477	39
	36	779	36	9	779	102	218	0.468	46
	28	515	28	1	515	77	178	0.433	22
	44	1292	44	44	1292	149	385	0.387	61
	41	760	41	16	760	83	195	0.426	39
	28	783	28	26	783	108	273	0.396	25
	21	212	21	0	212	32	62	0.508	11

Sheet1

At this point, it's a good idea to give meaningful names to both the spreadsheet and the individual sheet.

- Delete
- Duplicate
- Copy to
- Rename**
- Change color
- Protect sheet
- Hide sheet
- View comments
- Move right
- Move left

Step 0: Get data

Step 1: Make a spreadsheet

Step 2: Load the spreadsheet as a table

WNBA stats ☆ 📁 📄

File Edit View Insert Format Data Tools Extensions Help

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A1 Player

Player	Team	Pos	G	MP	G	GS	MP	FG	FGA	FG%	3P	3PA
Monique Akoa	PHO	G		41	881	41	40	881	114	266	0.429	49
Julie Allemand	LAS	G							70	159	0.44	28
Lindsay Allen	CON	G							26	65	0.4	3
Rebecca Allen	CHI	F-G							82	240	0.342	42
Laeticia Amihe	GSV	F							52	114	0.456	3
Yvonne Anders	MIN	G							0	3	0	0
Ariel Atkins	CHI	G							162	365	0.444	43
Shakira Austin	WAS	F-C							191	411	0.465	2
Marième Badia	MIN	C							0	3	0	0
Rachel Banhar	CHI	G							129	338	0.382	86
Sarah Ashlee E	LAS	G							35	104	0.337	18
Kierstan Bell	LVA	F							52	153	0.34	30
Monique Billing	GSV	F							72	151	0.477	10
Aliyah Boston	IND	C-F							271	504	0.538	6
Crystal Bradfor	LVA	F							2	6	0.333	0
Cameron Brink	LAS	F							35	82	0.427	10
Jaelyn Brown	CON	G-F							14	37	0.378	8
Kalani Brown	PHO	C							59	96	0.615	3
Lexie Brown	SEA	G							17	48	0.354	10
Paige Buecker	DAL	G		36				1199	259	543	0.477	39
Kennedy Burke	NYL	G-F		36				779	102	218	0.468	46
Rae Burrell	LAS	G-F		28				515	77	178	0.433	22
Veronica Burto	GSV	G		44	1292		44	1292	149	385	0.387	61
Maya Caldwell	ATL	G		41	760	41	16	760	83	195	0.426	39
Jordin Canada	ATL	G		28	783	28	26	783	108	273	0.396	25
Emma Cannon	LAS	F		21	212	21	0	212	22	62	0.508	11

Share "WNBA stats" ? ⚙️

Add people, groups, spaces, and calendar events

People with access

- Jonathan Gordon (you) jgordon@vassar.edu Owner

General access

Restricted

- Restricted
- Anyone with the link

Done

Vassar Google Apps for Education

```
from datascience import *
```

```
url = "https://docs.google.com/spreadsheets/d/  
1Zmd79B0w0z6Uuov17j0hsmA-nmY2PNatxuWTe1QsSSk/export?  
format=csv"
```

```
stats = Table.read_table(url)
```

*We replaced the **edit...** part of
the URL with **export?format=csv***

*This is a lot
of columns!*

Player	Team	Pos	G	MP	G.1	GS	MP.1	FG	FGA	FG%	3P	3PA	3P%	2P	2PA	2P%	FT	FTA	FT%	ORB	TRB	AST	STL	BLK	TOV	PF	PTS
Monique Akoa Makani	PHO	G	41	881	41	40	881	114	266	0.429	49	124	0.395	65	142	0.458	38	41	0.927	25	91	111	32	3	55	101	315
Julie Allemand	LAS	G	34	963	34	27	963	70	159	0.44	28	101	0.277	42	58	0.724	15	19	0.789	13	127	170	45	1	53	55	183
Lindsay Allen	CON	G	31	450	31	9	450	26	65	0.4	3	18	0.167	23	47	0.489	19	23	0.826	9	32	61	10	6	31	37	74
Rebecca Allen	CHI	F-G	44	821	44	17	821	82	240	0.342	42	132	0.318	40	108	0.37	19	31	0.613	16	113	57	23	23	39	62	225
Laeticia Amihere	GSV	F	29	384	29	0	384	52	114	0.456	3	21	0.143	49	93	0.527	49	63	0.778	35	125	27	17	13	32	36	156
Yvonne Anderson	MIN	G	1	12	1	0	12	0	3	0	0	1	0	0	2	0	0	0	nan	0	1	2	2	0	0	3	0
Ariel Atkins	CHI	G	34	971	34	34	971	162	365	0.444	43	119	0.361	119	246	0.484	80	93	0.86	23	114	122	53	24	84	102	447
Shakira Austin	WAS	F-C	38	874	38	30	874	191	411	0.465	2	15	0.133	189	396	0.477	97	146	0.664	57	242	68	41	43	92	81	481
Marième Badiane	MIN	C	3	11	3	0	11	0	3	0	0	1	0	0	2	0	0	0	nan	1	1	0	2	0	2	6	0
Rachel Banham	CHI	G	44	1081	44	33	1081	129	338	0.382	86	241	0.357	43	97	0.443	52	59	0.881	6	74	119	26	11	71	84	396

... (224 rows omitted)

Step 0: Get data

Step 1: Make a spreadsheet

Step 2: Load the spreadsheet as a table

Step 3: Rethink that table

Player	Team	Pos	G	MP	G.1	GS	MP.1	FG	FGA	FG%	3P	3PA	3P%	2P	2PA	2P%	FT	FTA	FT%	ORB	TRB	AST	STL	BLK	TOV	PF	PTS
Monique Akoa Makani	PHO	G	41	881	41	40	881	114	266	0.429	49	124	0.395	65	142	0.458	38	41	0.927	25	91	111	32	3	55	101	315
Julie Allemand	LAS	G	34	963	34	27	963	70	159	0.44	28	101	0.277	42	58	0.724	15	19	0.789	13	127	170	45	1	53	55	183
Lindsay Allen	CON	G	31	450	31	9	450	26	65	0.4	3	18	0.167	23	47	0.489	19	23	0.826	9	32	61	10	6	31	37	74
Rebecca Allen	CHI	F-G	44	821	44	17	821	82	240	0.342	42	132	0.318	40	108	0.37	19	31	0.613	16	113	57	23	23	39	62	225
Laeticia Amihere	GSV	F	29	384	29	0	384	52	114	0.456	3	21	0.143	49	93	0.527	49	63	0.778	35	125	27	17	13	32	36	156
Yvonne Anderson	MIN	G	1	12	1	0	12	0	3	0	0	1	0	0	2	0	0	0	nan	0	1	2	2	0	0	3	0
Ariel Atkins	CHI	G	34	971	34	34	971	162	365	0.444	43	119	0.361	119	246	0.484	80	93	0.86	23	114	122	53	24	84	102	447
Shakira Austin	WAS	F-C	38	874	38	30	874	191	411	0.465	2	15	0.133	189	396	0.477	97	146	0.664	57	242	68	41	43	92	81	481
Marième Badiane	MIN	C	3	11	3	0	11	0	3	0	0	1	0	0	2	0	0	0	nan	1	1	0	2	0	2	6	0
Rachel Banham	CHI	G	44	1081	44	33	1081	129	338	0.382	86	241	0.357	43	97	0.443	52	59	0.881	6	74	119	26	11	71	84	396

... (224 rows omitted)


```
stats = stats.select(
    "Player", "Team", "Pos", "G", "PTS"
)
```

stats

Player	Team	Pos	G	PTS
Monique Akoa Makani	PHO	G	41	315
Julie Allemand	LAS	G	34	183
Lindsay Allen	CON	G	31	74
Rebecca Allen	CHI	F-G	44	225
Laeticia Amihere	GSV	F	29	156
Yvonne Anderson	MIN	G	1	0
Ariel Atkins	CHI	G	34	447
Shakira Austin	WAS	F-C	38	481
Marième Badiane	MIN	C	3	0
Rachel Banham	CHI	G	44	396

... (224 rows omitted)

```
stats = stats.relabeled("G", "Games")  
stats = stats.relabeled("PTS", "Pts")
```

Player	Team	Pos	Games	Pts
Monique Akoa Makani	PHO	G	41	315
Julie Allemand	LAS	G	34	183
Lindsay Allen	CON	G	31	74
Rebecca Allen	CHI	F-G	44	225
Laeticia Amihere	GSV	F	29	156
Yvonne Anderson	MIN	G	1	0
Ariel Atkins	CHI	G	34	447
Shakira Austin	WAS	F-C	38	481
Marième Badiane	MIN	C	3	0
Rachel Banham	CHI	G	44	396

... (224 rows omitted)

```
stats = stats.relabeled("G", "Games")
```

```
stats = stats.relabeled("PTS", "Pts")
```

stats

Player	Team	Pos	Games	Pts
Monique Akoa Makani	PHO	G	41	315
Julie Allemand	LAS	G	34	183
Lindsay Allen	CON	G	31	74
Rebecca Allen	CHI	F-G	44	225
Laeticia Amihere	GSV	F	29	156
Yvonne Anderson	MIN	G	1	0
Ariel Atkins	CHI	G	34	447
Shakira Austin	WAS	F-C	38	481
Marième Badiane	MIN	C	3	0
Rachel Banham	CHI	G	44	396

... (224 rows omitted)

Player	Team	Pos	Games	Pts
Monique Akoa Makani	PHO	G	41	315
Julie Allemand	LAS	G	34	183
Lindsay Allen	CON	G	31	74
Rebecca Allen	CHI	F-G	44	225
Laeticia Amihere	GSV	F	29	156
Yvonne Anderson	MIN	G	1	0
Ariel Atkins	CHI	G	34	447
Shakira Austin	WAS	F-C	38	481
Marième Badiane	MIN	C	3	0
Rachel Banham	CHI	G	44	396

... (224 rows omitted)

Rows!

stats =

Player	Team	Pos	Games	Pts
Monique Akoa Makani	PHO	G	41	315
Julie Allemand	LAS	G	34	183
Lindsay Allen	CON	G	31	74
Rebecca Allen	CHI	F-G	44	225
Laeticia Amihere	GSV	F	29	156
Yvonne Anderson	MIN	G	1	0
Ariel Atkins	CHI	G	34	447
Shakira Austin	WAS	F-C	38	481
Marième Badiane	MIN	C	3	0
Rachel Banham	CHI	G	44	396

... (224 rows omitted)

How do I get just this row from stats?

stats =

<i>n</i>	Player	Team	Pos	Games	Pts
0	Monique Akoa Makani	PHO	G	41	315
1	Julie Allemand	LAS	G	34	183
2	Lindsay Allen	CON	G	31	74
3	Rebecca Allen	CHI	F-G	44	225
4	Laeticia Amihere	GSV	F	29	156
5	Yvonne Anderson	MIN	G	1	0
6	Ariel Atkins	CHI	G	34	447
7	Shakira Austin	WAS	F-C	38	481
8	Marième Badiane	MIN	C	3	0
9	Rachel Banham	CHI	G	44	396
... (224 rows omitted)					

How do I get just this row from stats?

stats =

<i>n</i>	Player	Team	Pos	Games	Pts
0	Monique Akoa Makani	PHO	G	41	315
1	Julie Allemand	LAS	G	34	183
2	Lindsay Allen	CON	G	31	74
3	Rebecca Allen	CHI	F-G	44	225
4	Laeticia Amihere	GSV	F	29	156
5	Yvonne Anderson	MIN	G	1	0
6	Ariel Atkins	CHI	G	34	447
7	Shakira Austin	WAS	F-C	38	481
8	Marième Badiane	MIN	C	3	0
9	Rachel Banham	CHI	G	44	396
... (224 rows omitted)					

How do I get just this row from stats?

`stats.rows[3]`

stats =

Player	Team	Pos	Games	Pts
Monique Akoa Makani	PHO	G	41	315
Julie Allemand	LAS	G	34	183
Lindsay Allen	CON	G	31	74
Rebecca Allen	CHI	F-G	44	225
Laeticia Amihere	GSV	F	29	156
Yvonne Anderson	MIN	G	1	0
Ariel Atkins	CHI	G	34	447
Shakira Austin	WAS	F-C	38	481
Marième Badiane	MIN	C	3	0
Rachel Banham	CHI	G	44	396

... (224 rows omitted)

*How do I get just
the rows for players
who are guards?*

stats =

Player	Team	Pos	Games	Pts
Monique Akoa Makani	PHO	G	41	315
Julie Allemand	LAS	G	34	183
Lindsay Allen	CON	G	31	74
Rebecca Allen	CHI	F-G	44	225
Laeticia Amihere	GSV	F	29	156
Yvonne Anderson	MIN	G	1	0
Ariel Atkins	CHI	G	34	447
Shakira Austin	WAS	F-C	38	481

How do I get just the rows for players who are guards?

```
stats.where("Pos", are.containing("G"))
```

Table.where Predicates

All of the predicates described below can be negated by preceding the name with `not_`. For example, we can find values *not* equal to a specific value using `are.not_equal_to(value)`.

`are.equal_to()`

```
tbl.where(column, are.equal_to(value))
```

Filter leaves rows only where the value in `column` is equal to `value`.

```
[166]: trips.where("Duration", are.equal_to(519))
```

```
[166]:
```

Trip ID	Duration	Start Date	Start Station	Start Terminal	End Date	End Station	End Terminal	Bike #	Subscriber Type	Zip Code
723352	519	4/13/2015 17:04	Howard at 2nd	63	4/13/2015 17:12	San Francisco Caltrain (Townsend at 4th)	70	629	Subscriber	94061
824979	519	6/27/2015 15:02	Japantown	9	6/27/2015 15:11	San Jose City Hall	10	660	Customer	nil
439946	519	9/5/2014 12:38	Yerba Buena Center of the Arts (3rd @ Howard)	68	9/5/2014 12:47	Civic Center BART (7th at Market)	72	452	Subscriber	94105
788261	519	6/1/2015 9:21	Powell at Post (Union Square)	71	6/1/2015 9:30	Steuart at Market	74	575	Subscriber	94108
560479	519	11/28/2014 14:20	South Van Ness at Market	66	11/28/2014 14:29	Powell at Post (Union Square)	71	609	Subscriber	94108
653797	519	2/23/2015 8:47	Market at 10th	67	2/23/2015 8:55	Yerba Buena Center of the Arts (3rd @ Howard)	68	546	Subscriber	94102
887134	519	8/12/2015 17:29	Civic Center BART (7th at Market)	72	8/12/2015 17:38	Mechanics Plaza (Market at Battery)	75	313	Subscriber	94103
482225	519	10/3/2014 16:41	Spear at Folsom	49	10/3/2014 16:50	Broadway St at Battery St	82	209	Subscriber	94133

```
def is_guard(pos: str) -> bool:
    """Return True if the player is any kind of guard,
    e.g., "G" (guard) or "C-G" (center guard).
    """
    return "G" in pos

assert is_guard("G") == True
assert is_guard("C-G") == True
assert is_guard("F") == False

stats.where("Pos", is_guard)
```

Player	Team	Pos	Games	Pts
Monique Akoa Makani	PHO	G	41	315
Julie Allemand	LAS	G	34	183
Lindsay Allen	CON	G	31	74
Rebecca Allen	CHI	F-G	44	225
Laeticia Amihere	GSV	F	29	156
Yvonne Anderson	MIN	G	1	0
Ariel Atkins	CHI	G	34	447
Shakira Austin	WAS	F-C	38	481
Marième Badiane	MIN	C	3	0
Rachel Banham	CHI	G	44	396

... (224 rows omitted)

Player	Team	Pos	Games	Pts
Monique Akoa Makani	PHO	G	41	315
Julie Allemand	LAS	G	34	183
Lindsay Allen	CON	G	31	74
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Shakira Austin	WAS	F-C	38	481
Marième Badiane	MIN	C	3	0
Rachel Banham	CHI	G	44	396

... (224 rows omitted)

What about columns?

stats =

Player	Team	Pos	Games	Pts
Monique Akoa Makani	PHO	G	41	315
Julie Allemand	LAS	G	34	183
Lindsay Allen	CON	G	31	74
Rebecca Allen	CHI	F-G	44	225
Laeticia Amihere	GSV	F	29	156
Yvonne Anderson	MIN	G	1	0
Ariel Atkins	CHI	G	34	447
Shakira Austin	WAS	F-C	38	481
Marième Badiane	MIN	C	3	0

How do I get just the points column?

```
stats["Pts"]
```

```
stats["Pts"]
```

→

```
array([228, 133, 17, 532, ...])
```



```
stats["Pts"]
```

→ `array([228, 133, 17, 532, ...])`

The data type isn't Column; it's an array!

Exercise: Who scores the most points per game?

See notebook for example.

So, we've seen that we can build a new column based on the values in each row, but what if we just want to change an existing column?

Player	Team	Pos	Games	Pts
Monique Akoa Makani	PHO	G	41	315
Julie Allemand	LAS	G	34	183
Lindsay Allen	CON	G	31	74
Rebecca Allen	CHI	F-G	44	225
Laeticia Amihere	GSV	F	29	156
Yvonne Anderson	MIN	G	1	0
Ariel Atkins	CHI	G	34	447
Shakira Austin	WAS	F-C	38	481
Marième Badiane	MIN	C	3	0
Rachel Banham	CHI	G	44	396

... (224 rows omitted)

A fake WNBA fan like me can't remember what these team abbreviations stand for.

Let's fill in the actual team names.

What *are* the team names?

WNBA Teams

Eastern Conference

Western Conference

ATL



Atlanta Dream

[Statistics](#) | [Schedule](#) | [Roster](#) | [Tickets](#)

CHI



Chicago Sky

[Statistics](#) | [Schedule](#) | [Roster](#) | [Tickets](#)

CON



Connecticut Sun

[Statistics](#) | [Schedule](#) | [Roster](#) | [Tickets](#)

IND



Indiana Fever

[Statistics](#) | [Schedule](#) | [Roster](#) | [Tickets](#)

NYL



New York Liberty

[Statistics](#) | [Schedule](#) | [Roster](#) | [Tickets](#)

WAS



Washington Mystics

[Statistics](#) | [Schedule](#) | [Roster](#) | [Tickets](#)



Dallas Wings

[Statistics](#) | [Schedule](#) | [Roster](#) | [Tickets](#)



Golden State Valkyries

[Statistics](#) | [Schedule](#) | [Roster](#) | [Tickets](#)



Las Vegas Aces

[Statistics](#) | [Schedule](#) | [Roster](#) | [Tickets](#)



Los Angeles Sparks

[Statistics](#) | [Schedule](#) | [Roster](#) | [Tickets](#)



Minnesota Lynx

[Statistics](#) | [Schedule](#) | [Roster](#) | [Tickets](#)



Phoenix Mercury

[Statistics](#) | [Schedule](#) | [Roster](#) | [Tickets](#)



Seattle Storm

[Statistics](#) | [Schedule](#) | [Roster](#) | [Tickets](#)

DAL

GSV

LVA

LAS

MIN

PHO

SEA


```
def team_name(abbr: str) -> str:
    """Return the name of the team with the given
    abbreviation
    """
    ...

assert team_name("NYL") == "New York Liberty"
assert team_name("CHI") == "Chicago Sky"
...
```

```
def team_name(abbr: str) -> str:
    """Return the name of the team with the given
    abbreviation
    """
    if abbr == "DAL": return "Dallas Wings"
    elif abbr == "LVA": return "Las Vegas Aces"
    ...

assert team_name("NYL") == "New York Liberty"
assert team_name("CHI") == "Chicago Sky"
...
```

```
def team_name(abbr: str) -> str:
    """Return the name of the team with the given
    abbreviation
    """
    if abbr == "DAL": return "Dallas Wings"
    elif abbr == "LVA": return "Las Vegas Aces"
    ...

assert team_name("NYL") == "New York Liberty"
assert team_name("CHI") == "Chicago Sky"
...
```

*This will work, but remember what we said when we introduced tables for looking up population: We want to **separate data from computation.***

```
teams = Table().with_columns(  
    "Abbr",  
    ["DAL", "GSV", ...],  
    "Name",  
    ["Dallas Wings", "Golden State Valkyries", ...]  
)
```

Advantage: This makes it easy to add new teams or more information about these teams, in a central place.

```
teams = ...
```

```
def team_name(abbr: str) -> str:
```

```
    """Return the name of the team with the given abbreviation"""
```

```
    # 1. Get the row with abbreviation `abbr`
```

```
    # 2. Return the value in the `name` column
```

```
assert team_name("NYL") == "New York Liberty"
```

```
assert team_name("CHI") == "Chicago Sky"
```

```
...
```

```
teams = ...
```

```
def team_name(abbr: str) -> str:
```

```
    """Return the name of the team with the given abbreviation"""
```

```
    matches = teams.where("Abbr", abbr)
```

```
    team = matches.rows[0]
```

```
    # 2. Return the value in the `name` column
```

```
assert team_name("NYL") == "New York Liberty"
```

```
assert team_name("CHI") == "Chicago Sky"
```

```
...
```

```
teams = ...
```

```
def team_name(abbr: str) -> str:
```

```
    """Return the name of the team with the given abbreviation"""
```

```
    matches = teams.where("Abbr", abbr)
```

```
    team = matches.rows[0]
```

```
    return team.name
```

```
assert team_name("NYL") == "New York Liberty"
```

```
assert team_name("CHI") == "Chicago Sky"
```

```
...
```

```
IndexError: index 0 is out of bounds for axis 0 with size 0
```




```
teams = ...
```

```
def team_name(abbr: str) -> str:
```

```
    """Return the name of the team with the given abbreviation"""
```

```
    matches = teams.where("Abbr", abbr)
```

```
    team = matches.rows[0]
```

```
    return team.name
```

```
assert team_name("NYL") == "New York Liberty"
```

```
assert team_name("CHI") == "Chicago Sky"
```

```
...
```

0 is too big? That means there were no matching rows! An abbreviation not in our table – what is it?

```
teams = ...
```

```
def team_name(abbr: str) -> str:
```

```
    """Return the name of the team with the given abbreviation"""
```

```
    if abbr == "TOT":
```

```
        return "Total"
```

```
    matches = teams.where("Abbr", abbr)
```

```
    team = matches.rows[0]
```

```
    return team.name
```

```
assert team_name("NYL") == "New York Liberty"
```

```
assert team_name("CHI") == "Chicago Sky"
```

```
...
```

```
teams = ...
```

```
def team_name(abbr: str) -> str:
```

```
    """Return the name of the team with the given abbreviation"""
```

```
    if abbr == "TOT":
```

```
        return "Total"
```

```
    matches = teams.where("Abbr", abbr)
```

```
    team = matches.rows[0]
```

```
    return team.name
```

```
assert team_name("NYL") == "New York Liberty"
```

```
assert team_name("CHI") == "Chicago Sky"
```

```
...
```

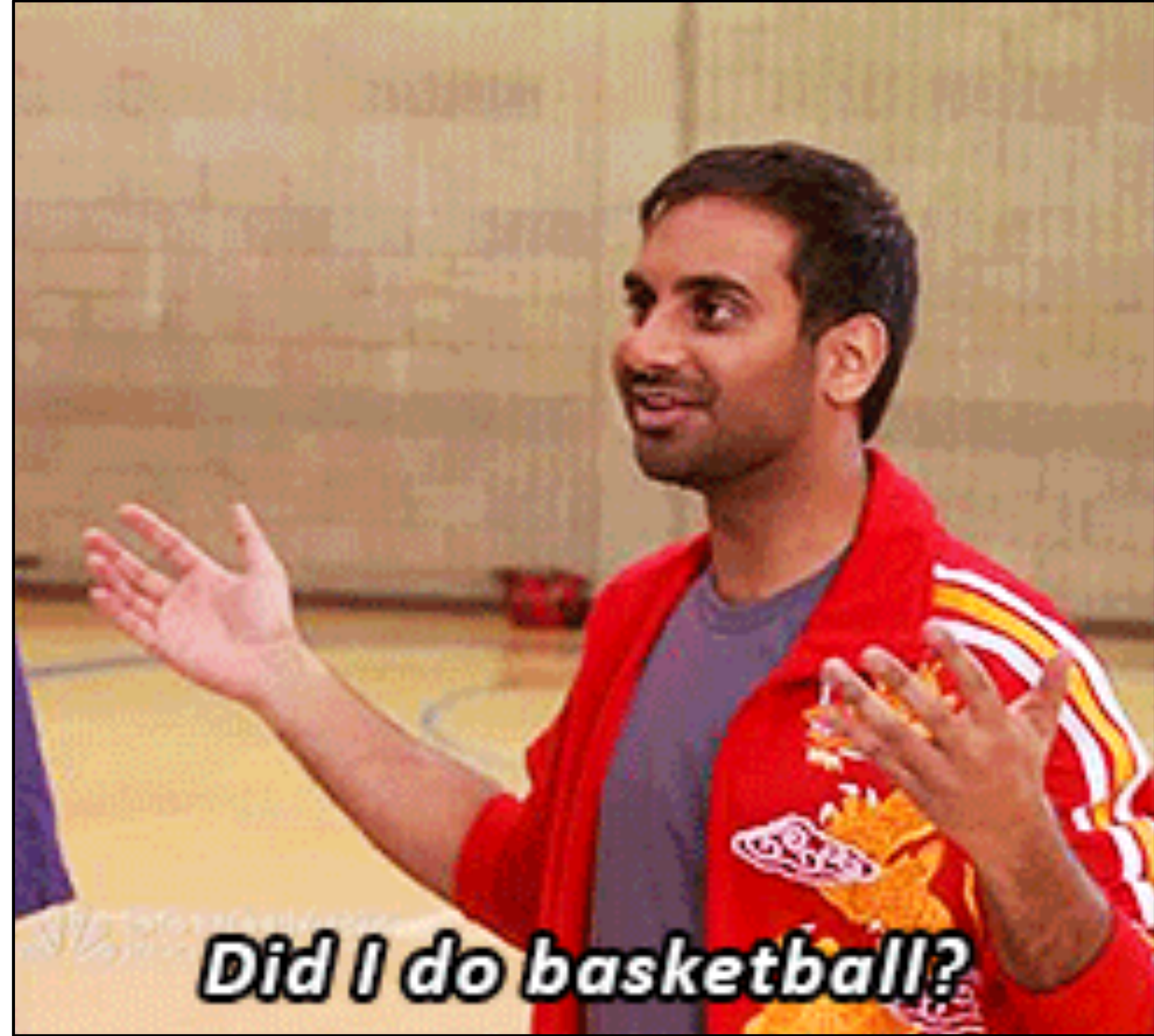
```
stats = stats.with_columns(  
    "Team",
```

```
    stats.apply(team_name, "Team")
```

```
)
```



Did I do basketball?



Did I do basketball?

