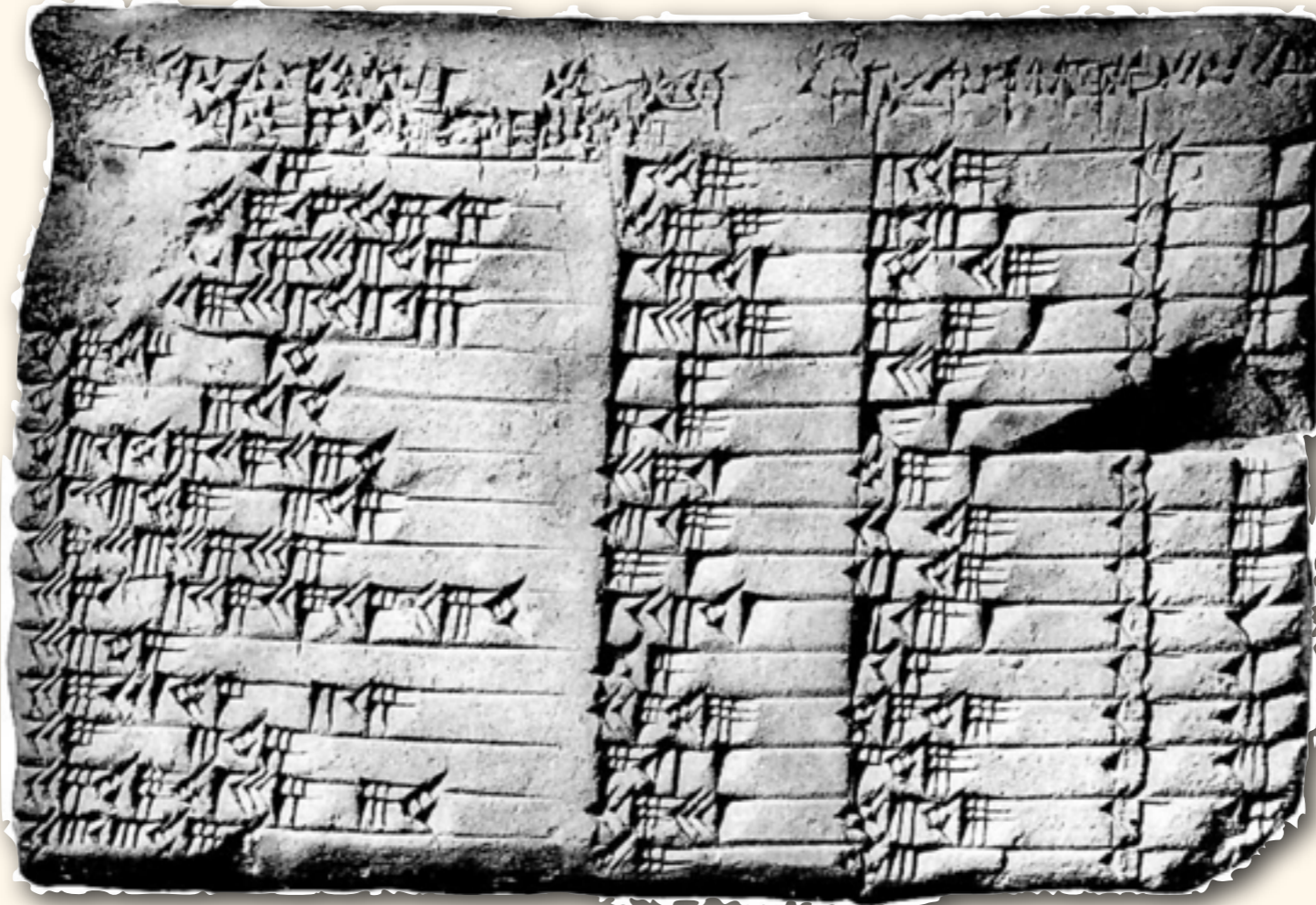


Tables:

Yes, they count as visualizations, too.



Cuneiform table of Pythagorean triplets, ca. 1800 BCE.

Jackie Wirz & Steven Bedrick

CSE 631, 10/25/16

Plan for today:

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What is a table?

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When should we use tables (vs. graphs, etc.)?

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What can we do with tables?

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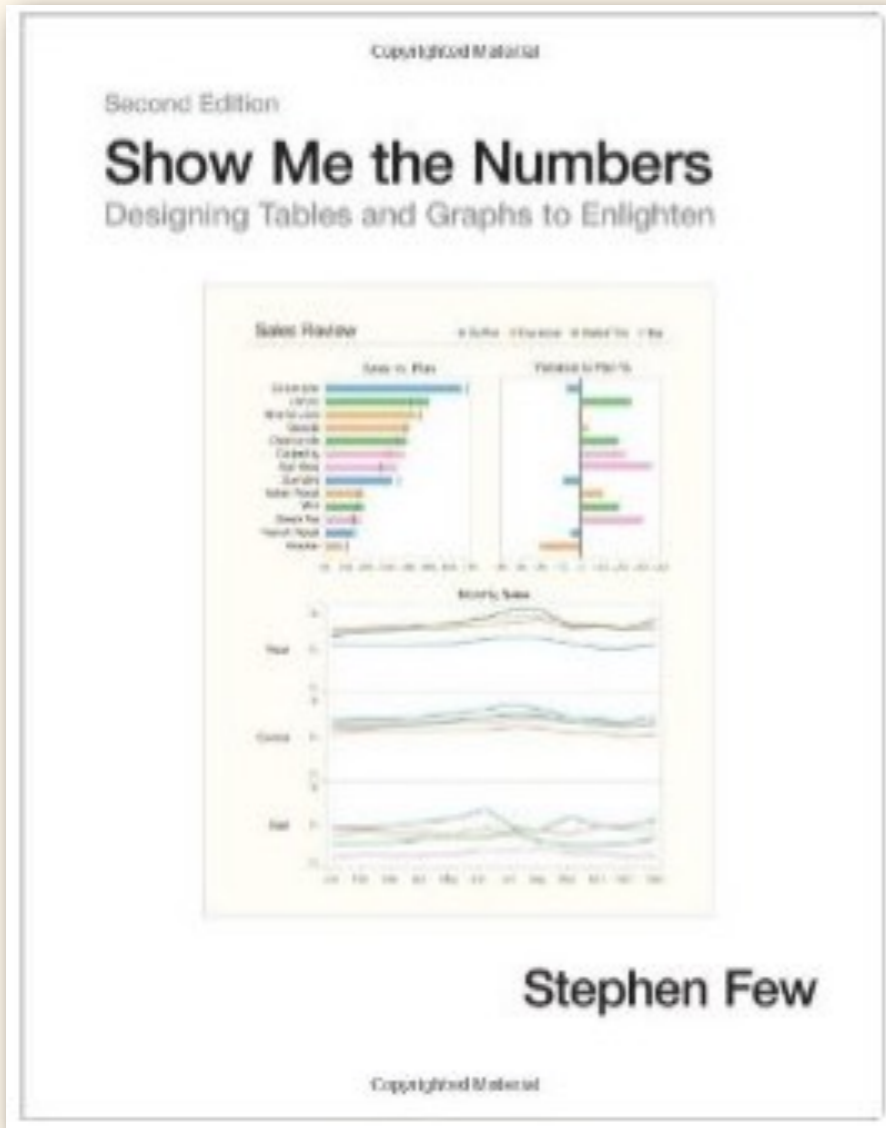
What is a table?

When should we use tables (vs. graphs, etc.)?

What can we do with tables?

Considerations in table design

What is a table?



A structure for organizing information in which:

1. Information is arranged in columns and rows...
2. Information is encoded as text.

Note: “columns and rows” does not imply anything about grid lines (or lack thereof).

Tables are not necessarily quantitative:

Time	Topic	Speaker
09:30	Welcome	Steven
10:00	Introductions	Group
10:30	Vampire defense strategies	Jackie
11:30	Werewolf taxonomy & phylogenetics	Alison
12:30	Cthuloid informatics	Steven

When should we use tables?

When should we use tables?

Tables...

When should we use tables?

Tables...

... make it easy to look up individual values.

When should we use tables?

Tables...

... make it easy to look up individual values.

... make it easy to compare pairs of related values.

When should we use tables?

Tables...

... make it *easy* to look up individual values.

... make it *easy* to compare pairs of related values.

... *already* have their data encoded as text.

When should we use tables?

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How will your information be used?

When should we use tables?

How will your information be used?

Will you be looking up and comparing individual values? ***Table***

When should we use tables?

How will your information be used?

Will you be looking up and comparing individual values? ***Table***

Do you want people to be able to identify patterns, or compare large numbers of values? ***Graph***

Note: It's OK to present both!

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Job Satisfaction by Income, Education, and Age

Income	College degree		No college degree	
	Under 50	50 & Over	Under 50	50 & Over
Up to \$50,000	643	793	590	724
Over \$50,000	735	928	863	662

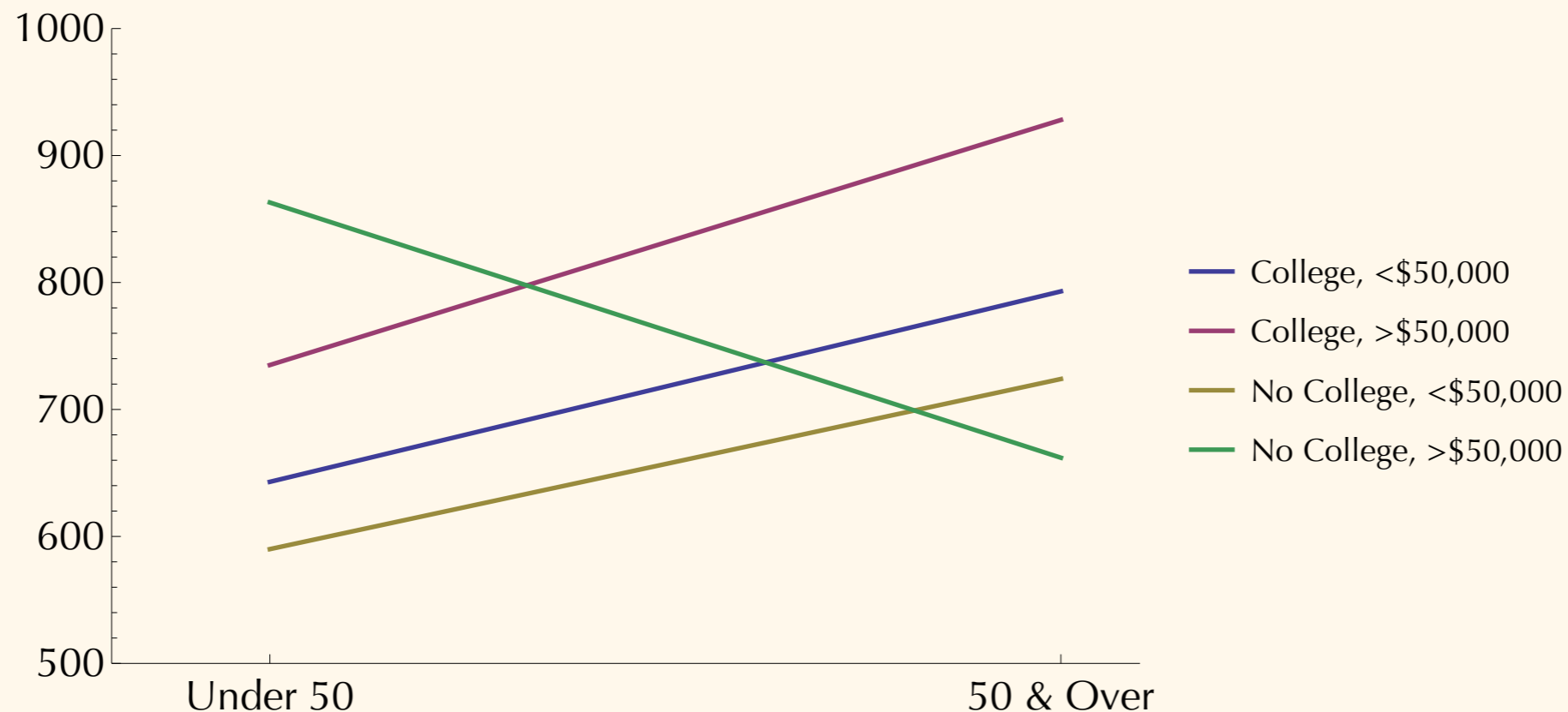
Single-value lookup, and two-value comparison is easy.

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Single-value lookup, and two-value comparison is easy.



Patterns in the data become apparent, but details are lost.

Tables have many strengths:

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Look up individual values...

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Compare pairs of related values...

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Display & access precise values...

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Look up individual values...

Compare pairs of related values...

Display & access precise values...

Include multiple sets of quantitative values that use different units or on different scales...

Communicate both detail and summary information in one display...

All of these are hard/impossible to do in a graph!

In order to design a table, we must know what relationship we're trying to show.

The key to a table is the *relationship* between the rows and the columns.

Time	Topic	Speaker
09:30	Welcome	Steven
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Quantitative-to-categorical, between:

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One quantitative and one categorical variable

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One quantitative and the *intersection* of multiple categories

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Quantitative-to-quantitative:

Quantitative-to-categorical, between:

One quantitative and one categorical variable

One quantitative and the *intersection* of multiple categories

One quantitative and the *intersection* of hierarchical categories

Quantitative-to-quantitative:

One quantitative and multiple categorical items

Quantitative-to-categorical, between:

One quantitative and one categorical variable

One quantitative and the *intersection* of multiple categories

One quantitative and the *intersection* of hierarchical categories

Quantitative-to-quantitative:

One quantitative and multiple categorical items

Multiple quantitative sets and a single categorical item

Quantitative-to-categorical, between:

One quantitative and one categorical variable

Session	Enrollment
Vampire defense strategies	12
Werewolf taxonomy & phylogenetics	14
Cthuloid informatics	4
Computational demonology	5
AgNO ₃ synthesis lab	28
Post-apocalyptic grantwriting	2
Total	65

Quantitative-to-categorical, between:

One quantitative and one categorical variable

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Quantitative-to-categorical, between:

One quantitative and the *intersection* of multiple categories:

Session	AM	PM
Vampire defense strategies	12	30
Werewolf taxonomy & phylogenetics	14	28
Cthuloid informatics	4	14
Computational demonology	5	10
AgNO ₃ synthesis lab	28	5
Post-apocalyptic grantwriting	2	4
Total	65	91

Quantitative-to-categorical, between:

One quantitative and the *intersection* of multiple categories:

Session	AM	PM
Vampire defense strategies	12	30
Werewolf taxonomy & phylogenetics	14	28
Cthuloid informatics	4	14
Computational demonology	5	10
AgNO ₃ synthesis lab	28	5
Post-apocalyptic grantwriting	2	4
Total	65	91

Quantitative-to-categorical, between:

One quantitative and the intersection of *hierarchical* categories

Track	Session	AM	PM
Labs	Vampire defense strategies	12	30
	AgNO ₃ synthesis lab	28	5
	Cthuloid informatics	4	14
Theory	Computational demonology	5	10
	Werewolf taxonomy & phylogenetics	14	28
Administrative	Post-apocalyptic grantwriting	2	4
	Lab management for zombies	0	3
Total		65	94

Quantitative-to-quantitative:

One set of quantitative values associated with multiple categorical items:

Session	AM	PM
Vampire defense strategies	12	30
Werewolf taxonomy & phylogenetics	14	28
Cthuloid informatics	4	14
Computational demonology	5	10
AgNO ₃ synthesis lab	28	5
Post-apocalyptic grantwriting	2	4
Total	65	91

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Why is this important?

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Different layouts prioritize different activities.

Another important consideration:

Unidirectional vs. Bidirectional

In a unidirectional table, categorical items vary across *either* rows *or* columns:

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Department	Headcount	Expenses
Finance	26	202,202
Sales	93	983,393
Operations	107	948,216
Total	226	\$2,133,811

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Department	Finance	Sales	Ops	Total
Headcount	26	93	107	226
Expenses	202202	983,393	948,216	2,133,811

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Department	Finance	Sales	Ops	Total
Headcount	26	93	107	226
Expenses	202,202	983,393	948,216	2,133,811

Note: “Headcount” and “Expenses” are two *distinct sets* of quantitative information, *not* levels of a categorical variable!

Unidirectional tables can get more complex:

Department	Expense Type	Expenses
Finance	Compensation	160,383
	Supplies	5,038
	Travel	10,385
Sales	Compensation	683,879
	Supplies	193,378
	Travel	125,705
Total		\$1,178,768

Even though there's multiple categorical variables, they are still only vertically-oriented.

Bidirectional tables display *more than one* categorical set, and do so across *both* rows and columns:

Expense Type	Dept		Total
	Finance	Sales	
Compensation	160,383	683,879	844,262
Supplies	5,038	193,375	198,413
Travel	10,385	125,705	136,090
Total	\$175,806	\$1,002,959	\$1,178,765

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Considerations in table design

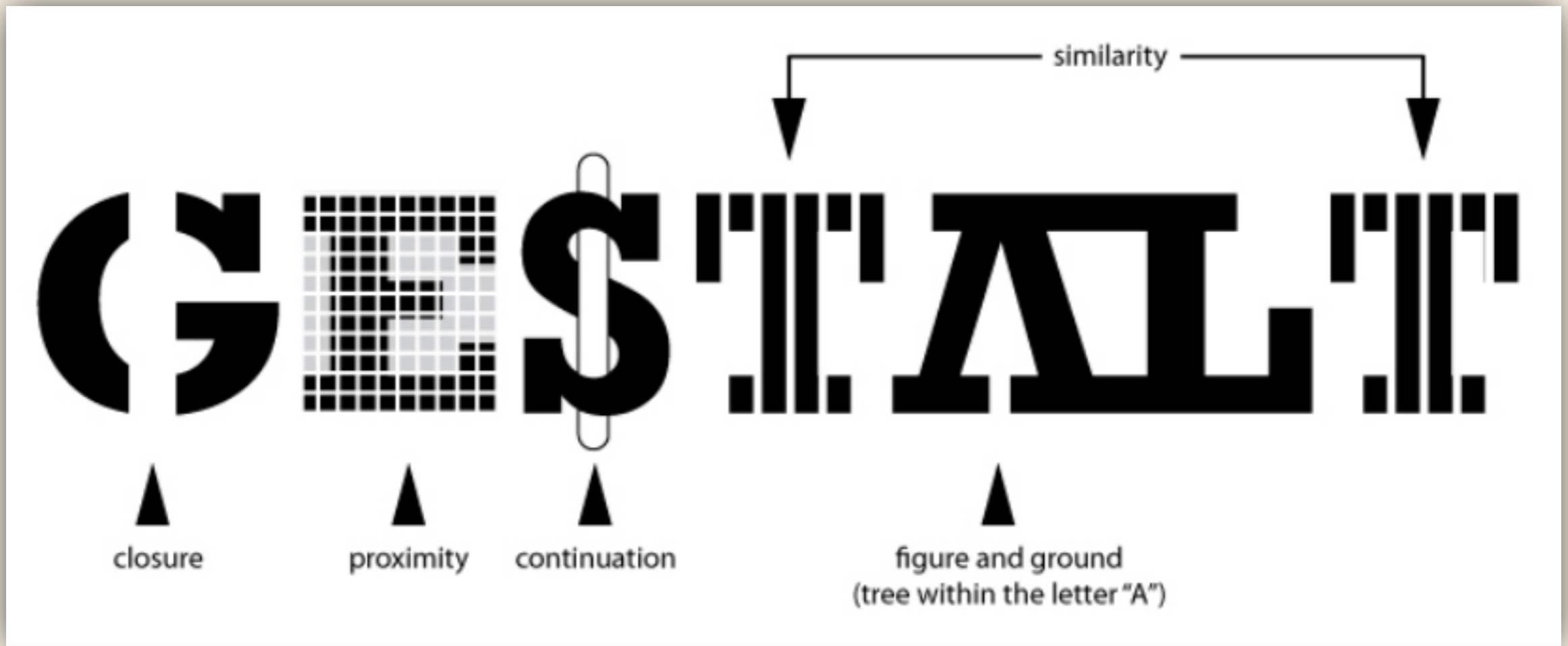
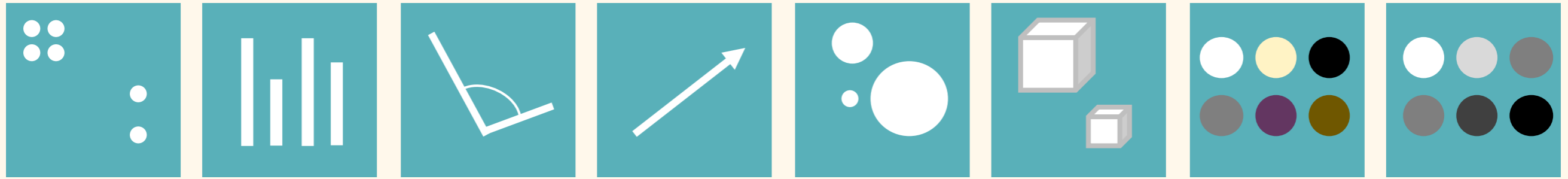
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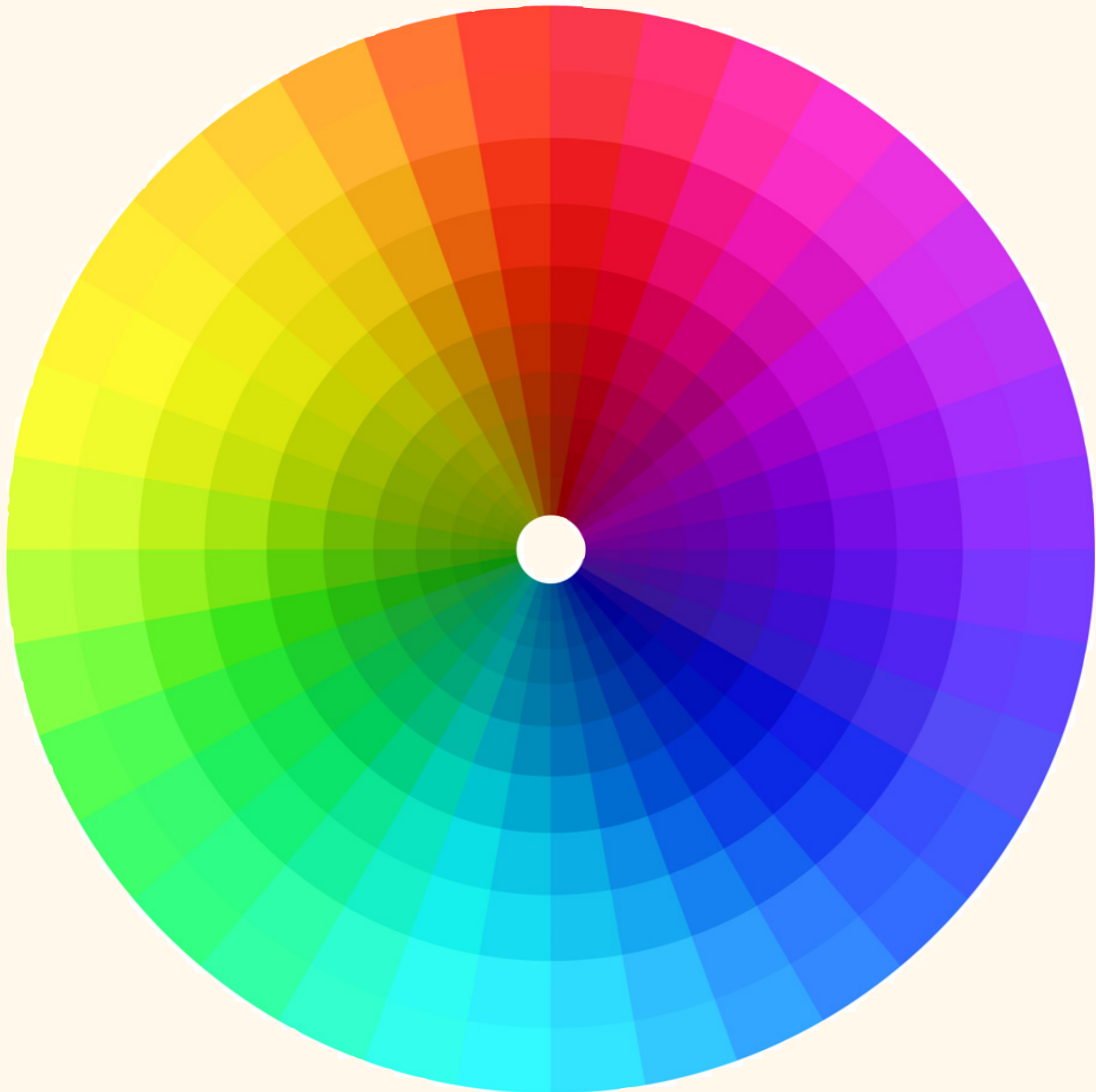
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Anatomy of a table:

Title		2011 Travel Expenses				
Subtitle		Plan vs Actual				
Rule		Plan	Actual	Variance		
Division	Dept	U.S. \$	U.S. \$	U.S. \$	%	
G&A	Operations	25,000	27,483	2,483	9.9%	
	IS	80,000	93,744	13,744	17.2%	
	HR	10,000	17,383	7,383	73.8%	
Sales	Field Sales	275,000	250,730	(24,270)	(8.8%)	
	Sales Ops	10,000	8,393	(1,607)	(16.1%)	
	Marketing	25,000	22,304	(2,696)	(10.8%)	
Finance	Accounting	5,000	6,394	1,394	27.9%	
	Corp Finance	20,000	17,384	(2,616)	(13.1%)	
	FP&A	5,000	4,383	(617)	(12.3%)	
Total		\$455,000	\$448,198	(6,802)	(1.5%)	

Design considerations:

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Delineating columns and rows

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Arranging data

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Delineating columns and rows

Arranging data

Formatting text

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Question: which is more important: rows, or columns?

Answer: it depends!

We can control which is easier using white space.

Product	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Product 01	93,993	84,773	88,833	95,838	93,874	83,994	84,759	92,738	93,728	93,972	93,772	99,837
Product 02	87,413	78,839	82,615	89,129	87,303	78,114	78,826	86,246	87,167	87,394	87,208	92,848
Product 03	90,036	81,204	85,093	91,803	89,922	80,458	81,191	88,834	89,782	90,016	89,824	95,634
Product 04	92,737	83,640	87,646	94,557	92,620	82,872	83,626	91,499	92,476	92,716	92,519	98,503
Product 05	86,245	77,785	81,511	87,938	86,136	77,071	77,773	85,094	86,002	86,226	86,043	91,608
Product 06	88,833	80,119	83,956	90,576	88,720	79,383	80,106	87,647	88,582	88,813	88,624	94,356
Product 07	82,614	74,511	78,079	84,236	82,510	73,826	74,498	81,511	82,382	82,596	82,420	87,751
Product 08	85,093	76,746	80,421	86,763	84,985	76,041	76,733	83,957	84,853	85,074	84,893	90,384
Product 09	87,646	79,048	82,834	89,366	87,535	78,322	79,035	86,475	87,399	87,626	87,440	93,095
Product 10	90,275	81,420	85,319	92,047	90,161	80,672	81,406	89,070	90,021	90,255	90,063	95,888

In this example, column scanning is *much* easier.

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Product 10	90,275	81,420	85,319	92,047	90,161	80,672	81,406	89,070	90,021	90,255	90,063	95,888

Adding white space between rows makes row-scanning easier.

Rule of thumb:

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To optimize vertical scanning, put more space between columns than between rows...

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To optimize vertical scanning, put more space between columns than between rows...

To optimize horizontal scanning, put more space between rows than between columns.

Arranging data:

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Which categorical elements should be rows, and which should be columns?

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Region	2010				2011	
	Q1	Q2	Q3	Q4	Q1	Q2
North	393	473	539	639	439	538
East	326	393	447	530	364	447
South	401	483	550	652	448	549
West	538	647	737	874	601	736
Total	1,658	1,996	2,274	2,696	1,852	2,270

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Year	Qtr	Region				Total
		North	East	South	West	
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	2	473	393	483	647	1,996
	3	539	447	550	737	2,273
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Questions to ask:

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1. How many elements are in each category?

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 - 3a. If so, what?

1. How many elements are in each category?

Product	Regions			
	North	East	South	West
Product 01	94	152	174	87
Product 02	122	198	226	113
Product 03	101	164	188	94
Product 04	142	230	263	131
Product 05	132	214	244	122
Product 06	174	282	323	161
Product 07	401	648	742	371
Product 08	281	454	519	260
Product 09	112	182	208	104
Product 10	584	944	1,081	540
Product 11	543	878	1,005	502
Product 12	163	263	301	151
Product 13	489	790	904	452
Product 14	327	529	606	303
Product 15	295	476	545	273
Total	3,960	6,403	7,330	3,665

2. How long are their labels?

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Time goes from left to right...

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“Ranks” go from top to bottom...

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Time goes from left to right.

“Ranks” go from top to bottom...

Rank	Product	Sales (U.S. \$)
1	Product J	1,939,993
2	Product E	1,784,794
3	Product G	1,642,010
4	Product A	1,510,649
5	Product D	1,389,797
6	Product C	1,278,614
7	Product B	1,176,324
8	Product H	1,082,219
9	Product F	995,641
10	Product I	915,990

As always, the guiding principle:

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Focus on *your* viewer's task!

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What lookups and comparisons do you want to emphasize?

Rules and grids:

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Remember the Gestalt principle of enclosure!

Having too many rules/grids breaks up the data, and inhibits scanning.

Use them sparingly and intentionally!

Team	1999	2000	2001	2002	2003	2004	2005	2006
Arizona Diamondbacks	\$61,184,250	\$72,346,275	\$72,505,825	\$77,893,950	\$80,657,500	\$60,521,550	\$58,348,000	\$56,943,475
Atlanta Braves	\$68,134,250	\$70,448,200	\$74,073,950	\$75,379,325	\$96,872,425	\$79,024,800	\$85,148,575	\$79,708,500
Baltimore Orioles	\$73,057,675	\$70,213,300	\$62,436,500	\$47,260,525	\$59,872,650	\$45,725,575	\$66,580,850	\$64,808,675
Boston Red Sox	\$55,142,125	\$64,950,275	\$85,592,900	\$90,305,050	\$89,473,775	\$104,340,450	\$108,314,225	\$111,204,200
Chicago White Sox	\$22,740,725	\$26,839,225	\$57,743,525	\$52,826,700	\$49,048,075	\$62,704,325	\$69,655,550	\$98,918,900
Chicago Cubs	\$51,889,225	\$50,449,450	\$61,553,675	\$67,581,100	\$72,092,250	\$78,535,925	\$77,866,900	\$84,679,625
Cincinnati Reds	\$28,588,575	\$43,395,550	\$43,488,350	\$37,542,000	\$50,874,800	\$38,453,450	\$49,715,225	\$53,115,200
Cleveland Indians	\$60,769,300	\$72,962,375	\$76,645,825	\$65,757,875	\$39,382,925	\$28,807,750	\$36,060,700	\$56,795,875
Colorado Rockies	\$53,716,200	\$54,563,575	\$65,803,700	\$52,639,850	\$55,818,050	\$57,670,000	\$41,197,425	\$34,277,500
Detroit Tigers	\$30,450,600	\$53,949,225	\$44,492,125	\$49,150,000	\$47,272,125	\$41,387,100	\$61,605,525	\$76,205,625
Florida Marlins	\$17,477,775	\$17,303,450	\$29,586,800	\$37,482,075	\$43,185,975	\$38,998,175	\$55,903,675	\$14,421,625
Houston Astros	\$49,643,275	\$47,489,925	\$55,909,875	\$58,748,525	\$67,778,700	\$74,666,300	\$73,825,975	\$88,991,825
Kansas City Royals	\$22,794,225	\$20,922,325	\$30,726,725	\$40,738,800	\$38,959,125	\$39,674,175	\$34,149,075	\$40,770,700
Los Angeles Dodgers	\$70,773,175	\$81,596,550	\$93,949,100	\$91,202,850	\$101,824,625	\$86,244,550	\$67,524,575	\$91,830,500
Anaheim/Los Angeles Angels	\$39,265,275	\$42,886,800	\$37,554,975	\$55,108,625	\$73,177,475	\$93,596,925	\$81,911,925	\$103,625,325
Milwaukee Brewers	\$38,329,400	\$28,519,800	\$39,897,525	\$43,351,575	\$35,023,275	\$27,518,500	\$40,234,825	\$56,790,000
Minnesota Twins	\$18,502,400	\$15,884,125	\$22,548,800	\$38,677,875	\$53,466,350	\$51,524,050	\$52,421,300	\$61,355,825
Montreal/Washington Nationals	\$14,977,325	\$30,006,750	\$28,978,750	\$34,527,225	\$49,950,950	\$35,997,925	\$40,484,575	\$52,722,925
New York Mets	\$57,824,475	\$79,509,775	\$83,191,450	\$90,993,850	\$100,748,800	\$96,758,950	\$97,009,400	\$97,020,275
New York Yankees	\$75,923,825	\$79,774,350	\$88,541,850	\$108,559,125	\$133,670,525	\$157,616,825	\$198,017,725	\$177,376,950
Oakland Athletics	\$22,340,700	\$29,603,075	\$31,306,250	\$36,740,500	\$48,423,875	\$55,393,675	\$53,720,450	\$62,322,050
Philadelphia Phillies	\$26,118,525	\$40,782,750	\$40,061,700	\$51,745,525	\$61,017,250	\$86,314,050	\$91,671,075	\$81,734,575
Pittsburgh Pirates	\$18,498,050	\$27,815,700	\$42,498,650	\$36,485,850	\$48,698,300	\$29,840,675	\$34,047,325	\$41,846,200
San Diego Padres	\$42,703,875	\$45,684,175	\$35,493,625	\$35,711,200	\$37,858,325	\$54,639,500	\$56,150,175	\$62,254,625
Seattle Mariners	\$48,041,825	\$56,649,050	\$67,546,875	\$80,282,675	\$80,726,400	\$72,807,000	\$67,096,350	\$84,927,400
San Francisco Giants	\$44,943,550	\$51,670,975	\$58,641,350	\$72,499,850	\$79,184,775	\$66,144,500	\$86,045,600	\$90,862,075
St. Louis Cardinals	\$42,313,275	\$56,901,725	\$66,612,800	\$71,248,325	\$67,057,175	\$75,633,525	\$89,730,625	\$85,039,625
Tampa Bay Rays	\$29,269,400	\$50,617,050	\$50,881,125	\$30,696,425	\$19,630,000	\$27,321,000	\$26,690,675	\$31,623,175
Texas Rangers	\$71,956,675	\$68,073,000	\$71,374,525	\$90,777,700	\$87,105,400	\$47,263,775	\$46,089,375	\$52,796,875
Toronto Blue Jays	\$42,797,425	\$44,459,925	\$67,677,225	\$66,262,350	\$47,480,550	\$48,093,275	\$43,621,625	\$66,587,975
Average	\$43,338,913	\$49,875,624	\$56,243,878	\$59,605,910	\$63,877,748	\$62,107,276	\$66,361,310	\$72,051,937

Team	1999	2000	2001	2002	2003	2004	2005	2006
Arizona Diamondbacks	\$61,184,250	\$72,346,275	\$72,505,825	\$77,893,950	\$80,657,500	\$60,521,550	\$58,348,000	\$56,943,475
Atlanta Braves	\$68,134,250	\$70,448,200	\$74,073,950	\$75,379,325	\$96,872,425	\$79,024,800	\$85,148,575	\$79,708,500
Baltimore Orioles	\$73,057,675	\$70,213,300	\$62,436,500	\$47,260,525	\$59,872,650	\$45,725,575	\$66,580,850	\$64,808,675
Boston Red Sox	\$55,142,125	\$64,950,275	\$85,592,900	\$90,305,050	\$89,473,775	\$104,340,450	\$108,314,225	\$111,204,200
Chicago White Sox	\$22,740,725	\$26,839,225	\$57,743,525	\$52,826,700	\$49,048,075	\$62,704,325	\$69,655,550	\$98,918,900
Chicago Cubs	\$51,889,225	\$50,449,450	\$61,553,675	\$67,581,100	\$72,092,250	\$78,535,925	\$77,866,900	\$84,679,625
Cincinnati Reds	\$28,588,575	\$43,395,550	\$43,488,350	\$37,542,000	\$50,874,800	\$38,453,450	\$49,715,225	\$53,115,200
Cleveland Indians	\$60,769,300	\$72,962,375	\$76,645,825	\$65,757,875	\$39,382,925	\$28,807,750	\$36,060,700	\$56,795,875
Colorado Rockies	\$53,716,200	\$54,563,575	\$65,803,700	\$52,639,850	\$55,818,050	\$57,670,000	\$41,197,425	\$34,277,500
Detroit Tigers	\$30,450,600	\$53,949,225	\$44,492,125	\$49,150,000	\$47,272,125	\$41,387,100	\$61,605,525	\$76,205,625
Florida Marlins	\$17,477,775	\$17,303,450	\$29,586,800	\$37,482,075	\$43,185,975	\$38,998,175	\$55,903,675	\$14,421,625
Houston Astros	\$49,643,275	\$47,489,925	\$55,909,875	\$58,748,525	\$67,778,700	\$74,666,300	\$73,825,975	\$88,991,825
Kansas City Royals	\$22,794,225	\$20,922,325	\$30,726,725	\$40,738,800	\$38,959,125	\$39,674,175	\$34,149,075	\$40,770,700
Los Angeles Dodgers	\$70,773,175	\$81,596,550	\$93,949,100	\$91,202,850	\$101,824,625	\$86,244,550	\$67,524,575	\$91,830,500
Anaheim/Los Angeles Angels	\$39,265,275	\$42,886,800	\$37,554,975	\$55,108,625	\$73,177,475	\$93,596,925	\$81,911,925	\$103,625,325
Milwaukee Brewers	\$38,329,400	\$28,519,800	\$39,897,525	\$43,351,575	\$35,023,275	\$27,518,500	\$40,234,825	\$56,790,000
Minnesota Twins	\$18,502,400	\$15,884,125	\$22,548,800	\$38,677,875	\$53,466,350	\$51,524,050	\$52,421,300	\$61,355,825
Montreal/Washington Nationals	\$14,977,325	\$30,006,750	\$28,978,750	\$34,527,225	\$49,950,950	\$35,997,925	\$40,484,575	\$52,722,925
New York Mets	\$57,824,475	\$79,509,775	\$83,191,450	\$90,993,850	\$100,748,800	\$96,758,950	\$97,009,400	\$97,020,275
New York Yankees	\$75,923,825	\$79,774,350	\$88,541,850	\$108,559,125	\$133,670,525	\$157,616,825	\$198,017,725	\$177,376,950
Oakland Athletics	\$22,340,700	\$29,603,075	\$31,306,250	\$36,740,500	\$48,423,875	\$55,393,675	\$53,720,450	\$62,322,050
Philadelphia Phillies	\$26,118,525	\$40,782,750	\$40,061,700	\$51,745,525	\$61,017,250	\$86,314,050	\$91,671,075	\$81,734,575
Pittsburgh Pirates	\$18,498,050	\$27,815,700	\$42,498,650	\$36,485,850	\$48,698,300	\$29,840,675	\$34,047,325	\$41,846,200
San Diego Padres	\$42,703,875	\$45,684,175	\$35,493,625	\$35,711,200	\$37,858,325	\$54,639,500	\$56,150,175	\$62,254,625
Seattle Mariners	\$48,041,825	\$56,649,050	\$67,546,875	\$80,282,675	\$80,726,400	\$72,807,000	\$67,096,350	\$84,927,400
San Francisco Giants	\$44,943,550	\$51,670,975	\$58,641,350	\$72,499,850	\$79,184,775	\$66,144,500	\$86,045,600	\$90,862,075
St. Louis Cardinals	\$42,313,275	\$56,901,725	\$66,612,800	\$71,248,325	\$67,057,175	\$75,633,525	\$89,730,625	\$85,039,625
Tampa Bay Rays	\$29,269,400	\$50,617,050	\$50,881,125	\$30,696,425	\$19,630,000	\$27,321,000	\$26,690,675	\$31,623,175
Texas Rangers	\$71,956,675	\$68,073,000	\$71,374,525	\$90,777,700	\$87,105,400	\$47,263,775	\$46,089,375	\$52,796,875
Toronto Blue Jays	\$42,797,425	\$44,459,925	\$67,677,225	\$66,262,350	\$47,480,550	\$48,093,275	\$43,621,625	\$66,587,975
Average	\$43,336,913	\$49,875,624	\$56,243,878	\$59,605,910	\$63,877,748	\$62,107,276	\$66,361,310	\$72,051,937

Team	1999	2000	2001	2002	2003	2004	2005	2006
Arizona Diamondbacks	61,184,250	72,346,275	72,505,825	77,893,950	80,657,500	60,521,550	58,348,000	56,943,475
Atlanta Braves	68,134,250	70,448,200	74,073,950	75,379,325	96,872,425	79,024,800	85,148,575	79,708,500
Baltimore Orioles	73,057,675	70,213,300	62,436,500	47,260,525	59,872,650	45,725,575	66,580,850	64,808,675
Boston Red Sox	55,142,125	64,950,275	85,592,900	90,305,050	89,473,775	104,340,450	108,314,225	111,204,200
Chicago White Sox	22,740,725	26,839,225	57,743,525	52,826,700	49,048,075	62,704,325	69,655,550	98,918,900
Chicago Cubs	51,889,225	50,449,450	61,553,675	67,581,100	72,092,250	78,535,925	77,866,900	84,679,625
Cincinnati Reds	28,588,575	43,395,550	43,488,350	37,542,000	50,874,800	38,453,450	49,715,225	53,115,200
Cleveland Indians	60,769,300	72,962,375	76,645,825	65,757,875	39,382,925	28,807,750	36,060,700	56,795,875
Colorado Rockies	53,716,200	54,563,575	65,803,700	52,639,850	55,818,050	57,670,000	41,197,425	34,277,500
Detroit Tigers	30,450,600	53,949,225	44,492,125	49,150,000	47,272,125	41,387,100	61,605,525	76,205,625
Florida Marlins	17,477,775	17,303,450	29,586,800	37,482,075	43,185,975	38,998,175	55,903,675	14,421,625
Houston Astros	49,643,275	47,489,925	55,909,875	58,748,525	67,778,700	74,666,300	73,825,975	88,991,825
Kansas City Royals	22,794,225	20,922,325	30,726,725	40,738,800	38,959,125	39,674,175	34,149,075	40,770,700
Los Angeles Dodgers	70,773,175	81,596,550	93,949,100	91,202,850	101,824,625	86,244,550	67,524,575	91,830,500
Anaheim/Los Angeles Angels	39,265,275	42,886,800	37,554,975	55,108,625	73,177,475	93,596,925	81,911,925	103,625,325
Milwaukee Brewers	38,329,400	28,519,800	39,897,525	43,351,575	35,023,275	27,518,500	40,234,825	56,790,000
Minnesota Twins	18,502,400	15,884,125	22,548,800	38,677,875	53,466,350	51,524,050	52,421,300	61,355,825
Montreal/Washington Nationals	14,977,325	30,006,750	28,978,750	34,527,225	49,950,950	35,997,925	40,484,575	52,722,925
New York Mets	57,824,475	79,509,775	83,191,450	90,993,850	100,748,800	96,758,950	97,009,400	97,020,275
New York Yankees	75,923,825	79,774,350	88,541,850	108,559,125	133,670,525	157,616,825	198,017,725	177,376,950
Oakland Athletics	22,340,700	29,603,075	31,306,250	36,740,500	48,423,875	55,393,675	53,720,450	62,322,050
Philadelphia Phillies	26,118,525	40,782,750	40,061,700	51,745,525	61,017,250	86,314,050	91,671,075	81,734,575
Pittsburgh Pirates	18,498,050	27,815,700	42,498,650	36,485,850	48,698,300	29,840,675	34,047,325	41,846,200
San Diego Padres	42,703,875	45,684,175	35,493,625	35,711,200	37,858,325	54,639,500	56,150,175	62,254,625
Seattle Mariners	48,041,825	56,649,050	67,546,875	80,282,675	80,726,400	72,807,000	67,096,350	84,927,400
San Francisco Giants	44,943,550	51,670,975	58,641,350	72,499,850	79,184,775	66,144,500	86,045,600	90,862,075
St. Louis Cardinals	42,313,275	56,901,725	66,612,800	71,248,325	67,057,175	75,633,525	89,730,625	85,039,625
Tampa Bay Rays	29,269,400	50,617,050	50,881,125	30,696,425	19,630,000	27,321,000	26,690,675	31,623,175
Texas Rangers	71,956,675	68,073,000	71,374,525	90,777,700	87,105,400	47,263,775	46,089,375	52,796,875
Toronto Blue Jays	42,797,425	44,459,925	67,677,225	66,262,350	47,480,550	48,093,275	43,621,625	66,587,975
Average Salary	43,338,913	49,875,624	56,243,878	59,605,910	63,877,748	62,107,276	66,361,310	72,051,937

Fill colors *can* be a better choice than rules...

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A little bit of visual contrast on a row can help guide the eye...

Fill colors *can* be a better choice than rules...

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A little bit of visual contrast on a row can help guide the eye...

... too much *constrains* the eye.

Session	AM	PM
Vampire defense strategies	12	30
Werewolf taxonomy & phylogenetics	14	28
Cthuloid informatics	4	14
Computational demonology	5	10
AgNO ₃ synthesis lab	28	5
Post-apocalyptic grantwriting	2	4
Total	65	91

Session	AM	PM
Vampire defense strategies	12	30
Werewolf taxonomy & phylogenetics	14	28
Cthuloid informatics	4	14
Computational demonology	5	10
AgNO ₃ synthesis lab	28	5
Post-apocalyptic grantwriting	2	4
Total	65	91

Vertical scanning is inhibited by too much contrast!



Competitor	2011	2012	2013	2014
Joey Chestnut	62.00	68.00	69.00	61.00
Matt Stonie	34.00	46.00	51.00	56.00
Tim Janus	45.00	52.25	50.00	44.00
Erik Denmark		32.00	28.00	34.00
Brian Dudzinski				34.00
Kiki Sudo				34.00
Sonya Thomas	40.00	45.00	36.75	27.75
Michelle Ilesco	20.00	25.50	27.50	27.00
Juliet Lee	29.50	33.00	36.00	23.00
Meredith Boxberger		21.50	26.00	18.00

Competitor	2011	2012	2013	2014
Joey Chestnut	62.00	68.00	69.00	61.00
Matt Stonie	34.00	46.00	51.00	56.00
Tim Janus	45.00	52.25	50.00	44.00
Erik Denmark		32.00	28.00	34.00
Brian Dudzinski				34.00
Kiki Sudo				34.00
Sonya Thomas	40.00	45.00	36.75	27.75
Michelle Ilesco	20.00	25.50	27.50	27.00
Juliet Lee	29.50	33.00	36.00	23.00
Meredith Boxberger		21.50	26.00	18.00
Total				358.75

Competitor	2011	2012	2013	2014
Joey Chestnut	62.00	68.00	69.00	61.00
Matt Stonie	34.00	46.00	51.00	56.00
Tim Janus	45.00	52.25	50.00	44.00
Erik Denmark		32.00	28.00	34.00
Brian Dudzinski				34.00
Kiki Sudo				34.00
Sonya Thomas	40.00	45.00	36.75	27.75
Michelle Ilesco	20.00	25.50	27.50	27.00
Juliet Lee	29.50	33.00	36.00	23.00
Meredith Boxberger		21.50	26.00	18.00

Competitor	2011	2012	2013	2014
Joey Chestnut	62.00	68.00	69.00	61.00
Matt Stonie	34.00	46.00	51.00	56.00
Tim Janus	45.00	52.25	50.00	44.00
Erik Denmark		32.00	28.00	34.00
Brian Dudzinski				34.00
Kiki Sudo				34.00
Sonya Thomas	40.00	45.00	36.75	27.75
Michelle Ilesco	20.00	25.50	27.50	27.00
Juliet Lee	29.50	33.00	36.00	23.00
Meredith Boxberger		21.50	26.00	18.00

Competitor	2011	2012	2013	2014
Joey Chestnut	62.00	68.00	69.00	61.00
Matt Stonie	34.00	46.00	51.00	56.00
Tim Janus	45.00	52.25	50.00	44.00
Erik Denmark		32.00	28.00	34.00
Brian Dudzinski				34.00
Kiki Sudo				34.00
Sonya Thomas	40.00	45.00	36.75	27.75
Michelle Ilesco	20.00	25.50	27.50	27.00
Juliet Lee	29.50	33.00	36.00	23.00
Meredith Boxberger		21.50	26.00	18.00

Competitor	2011	2012	2013	2014
Men				
Joey Chestnut	62.00	68.00	69.00	61.00
Matt Stonie	34.00	46.00	51.00	56.00
Tim Janus	45.00	52.25	50.00	44.00
Erik Denmark		32.00	28.00	34.00
Brian Dudzinski				34.00
Women				
Kiki Sudo				34.00
Sonya Thomas	40.00	45.00	36.75	27.75
Michelle Ilesco	20.00	25.50	27.50	27.00
Juliet Lee	29.50	33.00	36.00	23.00
Meredith Boxberger		21.50	26.00	18.00

Competitor	2011	2012	2013	2014
Men				
Joey Chestnut	62.00	68.00	69.00	61.00
Matt Stonie	34.00	46.00	51.00	56.00
Tim Janus	45.00	52.25	50.00	44.00
Erik Denmark		32.00	28.00	34.00
Brian Dudzinski				34.00
Women				
Kiki Sudo				34.00
Sonya Thomas	40.00	45.00	36.75	27.75
Michelle Lesco	20.00	25.50	27.50	27.00
Juliet Lee	29.50	33.00	36.00	23.00
Meredith Boxberger		21.50	26.00	18.00

Competitor	2011	2012	2013	2014
Men				
Joey Chestnut	62.00	68.00	69.00	61.00
Matt Stonie	34.00	46.00	51.00	56.00
Tim Janus	45.00	52.25	50.00	44.00
Erik Denmark		32.00	28.00	34.00
Brian Dudzinski				34.00
Women				
Kiki Sudo				34.00
Sonya Thomas	40.00	45.00	36.75	27.75
Michelle Lesco	20.00	25.50	27.50	27.00
Juliet Lee	29.50	33.00	36.00	23.00
Meredith Boxberger		21.50	26.00	18.00

Competitor	2011	2012	2013	2014
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Men

Joey Chestnut	62.0	68.0	69.0	61.0
Matt Stonie	34.0	46.0	51.0	56.0
Tim Janus	45.0	52.3	50.0	44.0
Erik Denmark		32.0	28.0	34.0
Brian Dudzinski				34.0

Women

Kiki Sudo				34.0
Sonya Thomas	40.0	45.0	36.8	27.8
Michelle Lesco	20.0	25.5	27.5	27.0
Juliet Lee	29.5	33.0	36.0	23.0
Meredith Boxberger		21.5	26.0	18.0

Competitor	2011	2012	2013	2014
Men				
Joey Chestnut	62.0	68.0	69.0	61.0
Matt Stonie	34.0	46.0	51.0	56.0
Tim Janus	45.0	52.3	50.0	44.0
Erik Denmark		32.0	28.0	34.0
Brian Dudzinski				34.0
Women				
Kiki Sudo				34.0
Sonya Thomas	40.0	45.0	36.8	27.8
Michelle Lesco	20.0	25.5	27.5	27.0
Juliet Lee	29.5	33.0	36.0	23.0
Meredith Boxberger		21.5	26.0	18.0

Nathan's Hot Dog Eating Competition Historical Consumption

Competitor	2011	2012	2013	2014
Men				
Joey Chestnut	62.0	68.0	69.0	61.0
Matt Stonie	34.0	46.0	51.0	56.0
Tim Janus	45.0	52.3	50.0	44.0
Erik Denmark		32.0	28.0	34.0
Brian Dudzinski				34.0
Women				
Kiki Sudo				34.0
Sonya Thomas	40.0	45.0	36.8	27.8
Michelle Lesco	20.0	25.5	27.5	27.0
Juliet Lee	29.5	33.0	36.0	23.0
Meredith Boxberger		21.5	26.0	18.0

Table 1 depicts the historical performance of the 2014 Top 5 competitors in both the men's and women's category of Nathan's Famous Hot Dog Eating Competition. Numerical values represent the number of hot dogs and buns eaten by each competitor during the 10 minute competition time frame.

Formatting text

Watch out for fonts that affect number width!

Region	Revenue
Americas	639,453,661
Europe	413,874,773
Asia	199,393,922
Australia	67,802,333
Middle East	10,349,381
Africa	7,011,159

Helvetica

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Big Caslon

A couple of “ripped from the headlines” examples...

Table 1. Concussion Group and Control Group Characteristics and Baseline Test Results

Characteristics	Concussion Group (n = 94)*	Control Group (n = 56)*	Mean Difference (95% CI)
Demographics			
Age, y	20.04 (1.36)	19.20 (1.45)	0.84 (0.37 to 1.32)
Academic year (collegiate)	2.78 (1.18)	2.02 (1.23)	0.76 (0.35 to 1.16)
Height, in	73.50 (2.94)	72.75 (3.23)	0.75 (−0.28 to 1.78)
Body weight, kg	105.87 (21.10)	98.33 (20.79)	7.54 (0.47 to 14.62)
Self-reported history			
No. of previous concussions in past 7 y	0.58 (0.78)	0.39 (0.68)	0.19 (−0.07 to 0.44)
Concussion (lifetime), No. (%)	41 (43.2)	17 (30.4)	12.8 (0.0 to 28.9)
ADHD, No. (%)	2 (2.30)	1 (1.80)	0.5 (0.0 to 59.2)
Learning disability, No. (%)	2 (2.30)	1 (1.80)	0.5 (0.0 to 58.8)
Baseline test results†			
GSC total score ¹⁷	1.95 (4.94)	0.99 (3.26)	0.96 (−0.49 to 2.43)
SAC total score ⁴²	27.40 (2.17)	27.43 (1.77)	−0.03 (−0.68 to 0.61)
BESS total score ⁴¹	11.89 (8.09)	12.73 (7.57)	−0.84 (−3.47 to 1.80)
HVLT Immediate Memory ⁴³	25.03 (4.36)	25.31 (4.05)	−0.28 (−1.70 to 1.13)
HVLT Delayed Recall ⁴³	8.61 (2.18)	9.15 (2.13)	−0.54 (−1.27 to 0.18)
HVLT Recognition ⁴³	22.60 (1.97)	22.94 (1.26)	−0.34 (−0.92 to 0.24)
Trail-Making Test Part B ⁴⁴	64.42 (22.22)	57.30 (18.69)	7.12 (0.12 to 14.11)
SDMT ⁴⁵	55.56 (11.61)	58.90 (12.19)	−3.34 (−7.29 to 0.60)
Stroop Color-Word Test ⁴⁶	47.21 (9.23)	48.66 (9.75)	−1.45 (−4.59 to 1.70)
COWAT ⁴⁷	40.46 (12.36)	37.15 (10.61)	3.31 (−0.61 to 7.23)

Abbreviations: ADHD, attention-deficit/hyperactivity disorder; BESS, Balance Error Scoring System; CI, confidence interval; COWAT, Controlled Oral Word Association Test; GSC, Graded Symptom Checklist; HVLT, Hopkins Verbal Learning Test; SAC, Standardized Assessment of Concussion; SDMT, Symbol Digit Modalities Test.

*Data are expressed as mean (SD) unless otherwise specified.

†See Table 2 for explanation of total possible range of scores.

Table 3. Model-Based Adjusted Estimates of Mean Differences Between Concussion and Control Groups in Symptoms, Cognitive Functioning, and Postural Stability*

Assessment Point	Mean Difference (95% Confidence Interval)		
	Symptoms (GSC)	Cognitive Functioning (SAC)	Postural Stability (BESS)
Time of concussion	20.93 (15.65 to 26.21)	-2.94 (-4.38 to -1.50)	5.81 (-0.67 to 12.30)
Postgame/postpractice	16.97 (12.61 to 21.33)	-2.15 (-3.26 to -1.04)	5.66 (1.27 to 10.06)
Postinjury day			
1	11.53 (8.37 to 14.69)	-1.59 (-2.43 to -0.75)	2.72 (-0.14 to 5.57)
2	6.88 (4.17 to 9.59)	-0.72 (-1.51 to 0.08)	2.33 (-0.30 to 4.95)
3	5.08 (2.27 to 7.88)	-0.46 (-1.25 to 0.32)	1.46 (-1.22 to 4.14)
5	2.02 (-0.03 to 4.06)	-0.52 (-1.28 to 0.25)	-0.31 (-3.02 to 2.40)
7	0.33 (-1.41 to 2.06)	-0.03 (-1.33 to 1.26)	-0.55 (-3.19 to 2.09)
90	0.62 (-0.90 to 2.14)	-0.51 (-1.41 to 0.39)	-2.45 (-5.09 to 0.18)

Abbreviations: BESS, Balance Error Scoring System, GSC, Graded Symptom Checklist; SAC, Standardized Assessment of Concussion.

*Estimated mean differences for the GSC are adjusted for baseline GSC score and number of previous concussions; SAC estimates are adjusted for baseline SAC score, academic year, number of previous concussions, history of learning disability and attention-deficit/hyperactivity disorder, and institution; BESS estimates are adjusted for baseline BESS score, height, body weight, number of previous concussions, and institution. Positive mean differences indicate more severe symptoms reported on the GSC and poorer performance on the BESS in the concussion group relative to baseline; negative mean differences indicate poorer performance in the concussion group on the SAC relative to baseline.

Table 1. Concussion and control group characteristics

	Concussion (<i>n</i> = 94)		Control (<i>n</i> = 56)		Mean Diff.	<i>t</i>	<i>p</i>
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>			
Demographics:	73.50	2.94	72.75	3.23	.75	1.44	.151
Weight (lbs.)	235.26	46.88	218.50	46.19	16.76	2.11	.037*
Age (years)	20.04	1.36	19.20	1.45	.84	3.51	.001*
Academic year (collegiate)	2.78	1.18	2.02	1.23	.76	3.71	.001*
Self-reported history of:							
No. of previous concussions (past 7 years)	.58	.78	.39	.68	.19	1.47	.145
Range	0–5		0–3				
Any concussion (lifetime) (%)	43.2		30.4		$\chi^2 = 2.78$.123
ADHD (%)	2.30		1.80		$\chi^2 = .034$.854
Learning disability (%)	2.30		1.80		$\chi^2 = 1.64$.440

Notes. *Statistically significant. ADHD = Attention Deficit Hyperactivity Disorder. LD = Learning Disability.

Table 3. GSC, SAC, and BESS data for concussion and control groups at baseline and postinjury assessment points

	GSC				SAC				BESS			
	Concussion		Control		Concussion		Control		Concussion		Control	
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
Baseline	1.97	4.94	.99	3.26	27.37	2.16	27.43	1.77	11.95	8.09	12.73	7.57
Time of concussion	20.60	10.58	.20	2.54	24.94	3.07	27.69	1.91	19.46	9.48	12.34	9.06
Postgame/ postpractice	16.73	11.86	.18	1.96	25.58	3.03	27.76	1.85	16.70	9.16	12.49	9.32
Day 1	12.25	12.52	.18	.69	26.25	2.79	27.96	1.65	14.18	8.04	11.96	8.11
Day 2	7.63	10.55	.06	.45	27.44	2.32	28.02	1.51	12.96	7.26	11.20	9.40
Day 3	6.03	10.26	.04	.44	27.57	2.46	27.96	1.64	12.31	7.80	11.29	7.71
Day 5	3.06	5.95	.04	.47	28.02	3.24	28.73	1.40	10.97	6.78	11.69	7.95
Day 7	1.27	3.37	.02	.46	28.41	1.85	28.37	3.39	9.67	6.88	10.93	8.21

GSC = Graded Symptom Checklist (Lovell & Collins, 1998); SAC = Standardized Assessment of Concussion (McCrea et al., 2000); BESS = Balance Error Scoring System (Guskiewicz et al., 2001).

Assessment Point	Symptoms (GSC)	Cognitive Functioning (SAC)	Postural Stability (BESS)
Time of concussion	20.93 (15.65 to 26.21)	-2.94 (-4.38 to -1.50)	5.81 (-0.67 to 12.30)
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3	5.08 (2.27 to 7.88)	-0.46 (-1.25 to 0.32)	1.46 (-1.22 to 4.14)
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90	0.62 (-0.90 to 2.14)	-0.51 (-1.41 to 0.39)	-2.45 (-5.09 to 0.18)

Abbreviations: BESS = Balance Error Scoring System; GSC = Graded Symptom Checklist; SAC = Standardized Assessment of Concussion.