

CHAPTER 6: TABLES AND GRAPHS

Tables

Tables are an effective way to communicate the structure of a model and the results. You can replace a lot of words with a well-constructed table. A poorly-laid out table can just make an analysis more confusing.

Give a lot of thought to how you create, construct, and label tables.

Look at this: Clear Off the Table,
<http://www.darkhorseanalytics.com/blog/clear-off-the-table>.

And this: <https://medium.com/mission-log/design-better-data-tables-430a30a00d8c>



Art created by T.Horiuchi in Excel. See <https://pasokonga.com/> for more.

Good tables make it easy for the reader to understand the results, emphasize the main results, avoid unnecessary shading or lines, use whitespace, and avoid unnecessary digits or numbers.

Rules for tables

1. Round to significant digits. Use “\$1.4 billion” instead of “\$1,364,908,433.62.” The same principle applies to decimal places. Write, “The smoking rate is 11%.” rather than, “The smoking rate is 11.25%.” The extra digits do not provide useful information.
2. If your table is displaying billions of dollars (or millions or thousands), but “Billions of dollars” or something like that in the row or column labels. Don’t write “billions” under each entry in the table.
3. Do not put a border around every number or cell. Take out unnecessary lines.
4. Numbers should be right-justified.
5. Text should be left-justified. (Except that headings of columns with numbers should probably be right-justified like the numbers.)
6. Use shading sparingly, if at all.
7. Rows in tables should be single-spaced. Reduce the white space between row labels and the numbers.

8. I suggest that you make tables in Excel. I think it is easier to adjust row and column spacing in Excel, and you can do the analysis in Excel so that you do not have to copy it into Word tables.
9. Tables should have a consistent look.
10. Try to avoid the words “Number of” and “Total” in row or column labels, as they are often self-explanatory.
11. If some headers have long text descriptions, it is better to set up the table so that they are in rows rather than columns.
12. If you have a table that displays all the steps in an analysis, orient the table so that the steps are in rows rather than columns.
13. The font size should be readable.
14. The font should be something other than the default, Calibri.
15. Emphasize the main result.
16. Tables should be laid out logically in a way that facilitates reader interpretation
17. Use whitespace or overlapping headings to group related items. But rows should not be double-spaced.
18. Take out all superfluous lines/numbers in your table. Here’s a quick check: If you change a number in your table and your final result doesn’t change, take out that number.

Bad

	Best-case	Worst-case
Birth costs		
Birth rate per 1,000 women 15-44 ^a	65.6	65.6
Percent reduction in births ^b	8.9	0.004
Reduction in the birth rate per 1,000 women 15-44	5.8	0.0
Cost per birth 1996 ^c	\$12,700	\$12,700
PPI-Hospital 2006/1996 ^d	1.35	1.35
Cost per birth 2006	\$17,000	\$17,000
Avoided birth costs	\$99,000	\$40

Better

	Best-case	Worst-case
Birth costs		
Birth rate per 1,000 women 15-44 ^a	65.6	65.6
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Cost per birth 2006	\$17,000	\$17,000
Avoided birth costs	\$99,000	\$40
Abortion costs		
Abortion rate per 1,000 ^a	22.9	22.9
Percent reduction in abortions ^b	33.3	0.004
Reduction in abortions	7.6	0.0

Best

	Best-case	Worst-case
Birth costs		
Birth rate per 1,000 women 15-44 ^a	65.6	65.6
Percent reduction in births ^b	8.9	0.004
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Avoided birth costs	\$99,000	\$40
Abortion costs		
Abortion rate per 1,000 ^a	22.9	22.9
Percent reduction in abortions ^b	33.3	0.004

19. Tables made in Excel will look better than tables made in Word.

20. Minimize space between the row labels and numbers.

Bad

	Best-case	Worst-case	Source
Birth costs			
Birth rate per 1,000 women	65.6	65.6	CDC (2018)
Percent reduction in births ^b	8.9	0.004	Redd et al. (2014)

Better

	Best-case	Worst-case	Source
Birth costs			
Birth rate per 1,000 women	65.6	65.6	CDC (2018)
Percent reduction in births ^b	8.9	0.004	Redd et al. (2014)

21. Try to format tables so that row labels aren't wrapped.

Bad

	Best-case	Worst-case	Source
Birth costs			
Birth rate per 1,000	65.6	65.6	https://www.cdc.gov/nchs/nvss/births.htm
Percent reduction in births ^b	8.9	0.004	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6482903/
Reduction in the birth rate per 1,000 women 15-44	5.8	0.0	

Better

	Best-case	Worst-case	Source
Birth costs			
Birth rate per 1,000 women	65.6	65.6	CDC (2018)
Percent reduction in births ^b	8.9	0.004	Redd et al. (2014)

22. To paste an Excel table into Word, select “Paste Special” from the Edit menu and then double click on “Picture”.

23. Tables should fit on a single page. Adjust spacing or location if your table bleeds onto a second page.

Some examples

Good

	Assumption	Notes
Step 1	45	
Step 2	25%	
Step 3	11.3	
Step 4	38%	
Step 5	43%	
Step 6	425	

Bad

Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
45	25%	11.25	38%	43%	425

Good

	Before	After	Difference	Notes
Step 1	45	45		
Step 2	0.25	0.25		
Step 3	11.3	9	2.3	
Step 4	38%	30%	8	
Step 5	43%	35%	8	
Step 6	427	350	77	

Section headings can help

	Before	After	Difference	Notes
Enrollment				
Step 1	45	45		
Step 2	0.25	0.25		
Step 3	11.3	9	2.3	
Completion				
Step 4	38%	30%	8	
Step 5	43%	35%	8	
Step 6	427	350	77	

Ok but could be better

Annual Medicare Spending	\$536,000,000,000	Kaiser Family Foundation (2012) (2)
Total Medicare Beneficiaries	48,722,929	Kaiser Family Foundation (2012) (3)
Eligible Beneficiaries	29,720,987	Centers for Medicare and Medicaid Services (4)
Enrolled Beneficiaries	19,814,982	Ackermann (2008) (5)
Beneficiaries That Complete Program	8,916,742	Ackermann (2008)
Percent of Total Beneficiaries That Complete Program	18%	(Beneficiaries who complete the program/Total Medicare Beneficiaries) x 100
Percent of Eligible Beneficiaries That Complete Program	30%	(Beneficiaries who complete the program/Eligible beneficiaries) x 100
Percent of Enrolled Beneficiaries That Complete Program	45%	(Beneficiaries that complete the program/Enrolled Beneficiaries) x 100
Annual Program Cost Per Beneficiary	\$660.00	Average US gym membership (\$55.00 per month) x 12 months (6)

Bad

	Total cost of Medicare <i>Before</i> intervention	Total cost of the program	Total cost of Medicare <i>after</i> intervention	Net saving from program intervention/year	Reduction percent
2 to 3 chronic disease	56 million	4 million	24 million	32 million	
4 to 5	87 million	2 million	40 million	85 million	
6+	142 million	780 thousand	70 million	141 million	
Total	285 million	7 million	136 million	260 million	48%

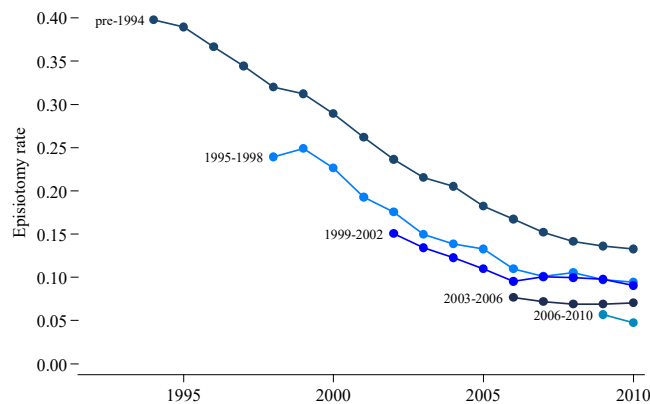
Variable	Estimate	Data Source/ Method of Calculation
Number of meals consumed at restaurants subject to calorie labeling rules		
1. Total annual restaurant revenue, Los Angeles County	\$14,600,000,000	Projected restaurant sales for 2007 in California as reported by National Restaurant Association, web site: Http://www.restaurant.org , accessed September
2. Large chain restaurant market share - 15 or more stores in California	51%	Extrapolated information from the NYPD Group, 2005; cited in the U.S. District Court Declaration of Thomas R. Frieden, Commissioner of the New York
3. Large chain restaurant revenue, Los Angeles County	\$7,446,000,000	Calculated by multiplying the estimates in variables 1 and 2.
4. Average price per meal in large chain restaurants (includes fast food and sit-down restaurants)	\$7.80	Based on national meal price estimates in 1992 (Jekanowski, 1999), adjusted for inflation using a factor of 2.866% per year compounded (based on the
5. Annual number of meals served in large chain restaurants, Los Angeles County	954,615,385	Calculated by dividing the estimate in variable 3 by the estimate in variable 4.
6. Annual number of meals served, ages 0-4 years	36,500,000	Estimate derived from the 2005 Los Angeles County Health Survey data.
7. Annual number of meals served, ages 5 and older	918,115,385	Calculated by subtracting the estimate in variable 6 from the estimate in variable 5.
Reduction in caloric consumption due to calorie labeling rules		
8. Percentage of large chain restaurant patrons who select reduced-calorie meals as a result	10%	Extrapolated from data published by Burton et al., <i>Am J Public Health</i> 2006;96:1669-1675.
9. Annual number of reduced-calorie meals	91,811,538	Calculated by multiplying the estimates in variables 7 and 8.
10. Average amount of calorie reduction per meal	100	Unpublished survey data (person communication: Dr. Lynn Silver, New York City Department of Health and Mental Hygiene, December 3, 2007).
11. Total annual number of reduced calories attributable to menu labeling	9,181,156,846	Calculated by multiplying the estimates in variables 9 and 10.
Impact on population weight gain		
12. Calories per pound of weight	3,500	Duyff RL. <i>American Dietetic Association Complete Food and Nutrition Guide</i> . Hoboken, New Jersey: John Wiley and Sons, 2002 (page 36).
13. Total annual pounds of weight loss attributable to menu labeling	2,623,187	Calculated by dividing the estimate in variable 11 by the estimate in variable 12.
14. Average annual population weight gain, ages 18 years and older (pounds)	5,500,000	Calculated using data from the 1997 and 2005 Los Angeles County Health Surveys.
15. Average annual population weight gain, ages 5 to 17 years (pounds)	1,250,000	Calculated using data from the 1999 and 2006 California Department of Education Physical Fitness Testing Program.
16. Average annual population weight gain, ages 5 years and older (pounds)	6,750,000	Calculated as the sum of the estimated in variables 14 and 15.
17. Percentage of population weight gain averted due to menu labeling	38.90%	Calculated by dividing the estimate in variable 13 by the estimate in variable 16.

Graphs

For every paper I write, I ask myself one question, “If I could only show someone one picture that would illustrate my result, what would it be?” I then set out to create that picture, before I do any regression analyses.

I know if I have one good picture, then a harried reader can look at the paper and quickly get an idea of what it is about. I know that someone who does not have any background in statistics, like most journalists or policymakers, can look at the picture and understand the study. I know that someone who wants to share the result can copy and paste the picture into an email or Powerpoint presentation. Here is an example:

Figure 4: Episiotomy rates by obstetricians' year of entry



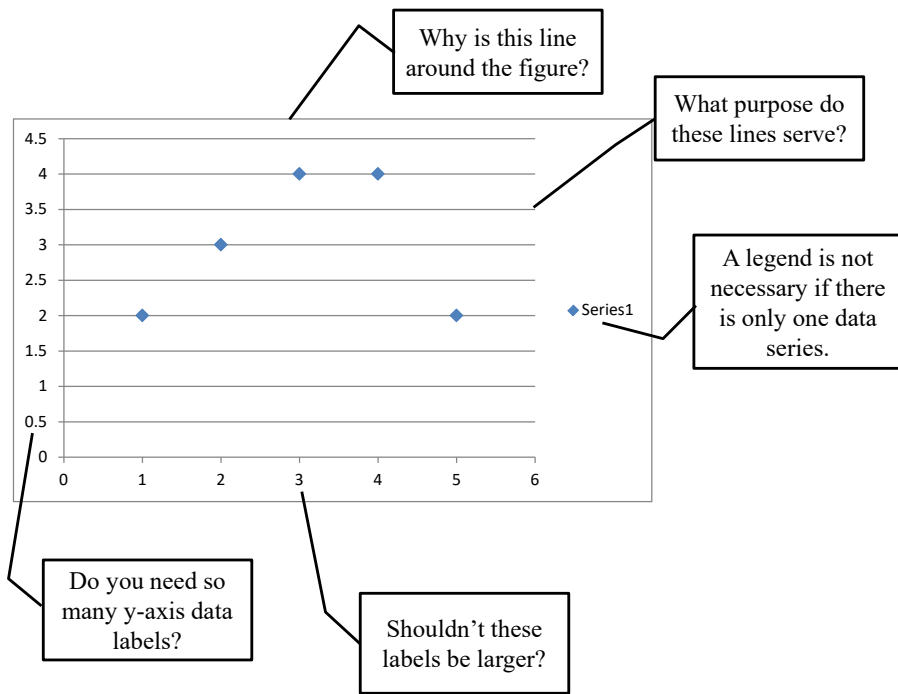
Now of course it helps to have some explanation, but many of you can probably understand what is going on without any additional text. Just in case: The use of episiotomy has declined, but at any point in time, women treated by older doctors are more likely to have an episiotomy.

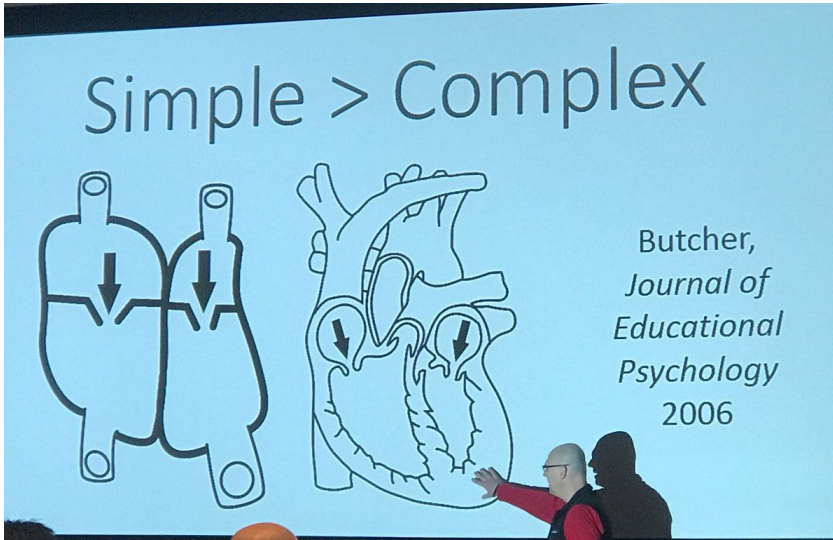
Graphs can also lend credibility to claims. They make them seem more rigorous. Respondents to a survey were more likely to believe that a drug is effective if materials about the drug were accompanied by a graph, even if the graph did not provide new or useful information.¹

¹ Tal A, Wansink B. Blinded with science: Trivial graphs and formulas increase ad persuasiveness and belief in product efficacy. *Public Understanding of Science* October 15, 2014.

A quick guide to good graphs

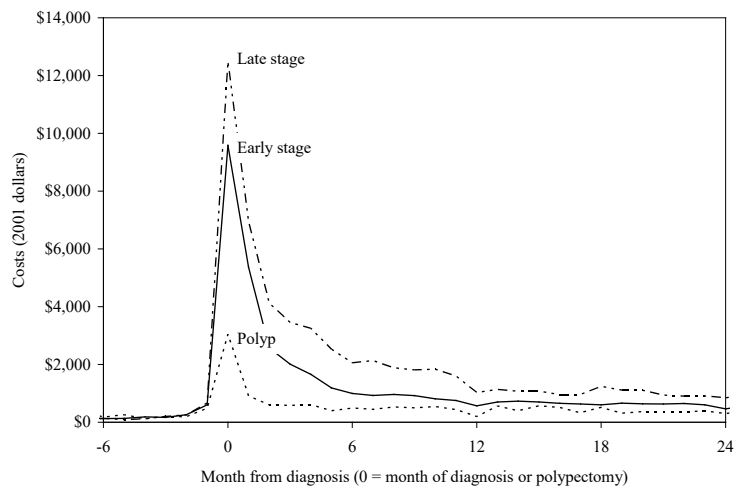
1. Use a figure only if you have two or more data points.
2. Label axes clearly.
3. The units on axes should be appropriate for the data. For example, if you are trying to display trends in total Medicare spending, you do not need a tick mark for every \$100 increment. Round to significant digits. If you are graphing total Medicare spending, don't put "\$300,000,000,000" on the y-axis. Instead, put "\$300" and then use "Total Medicare spending (\$ billions)" as the y-axis label.
4. Label lines and bars clearly.
5. The font size should be readable.
6. Avoid unnecessary lines, outlines, and shading.





7. Label lines or bars in graphs directly rather than using a key:

Figure 1: Average monthly costs by stage at diagnosis for men 65-74 without comorbidities



NOTE: Comorbidities are heart disease, pulmonary conditions, and diabetes. Costs from diagnosis onward include only costs for men who have survived to that point. Decedents are excluded from the month of death onward.

- 8. Don't leave the default border around graphs. To get rid of the border, always select the "on a new sheet option" in the chart wizard. Then, click on the sheet and copy.
- 9. To paste a Excel graph into Word, select "Paste Special" from the Edit menu and then double click on "Picture".
- 10. Use constant design-examples are open-high-low-close stock charts and chess diagrams.

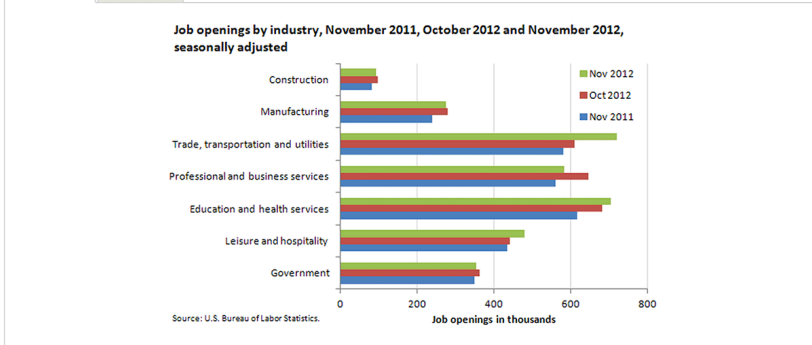


Job openings in November 2012

JANUARY 11, 2013

There were 3.7 million job openings on the last business day of November 2012, unchanged from October 2012. In November 2011 there were 3.3 million job openings.

CHART IMAGE CHART DATA

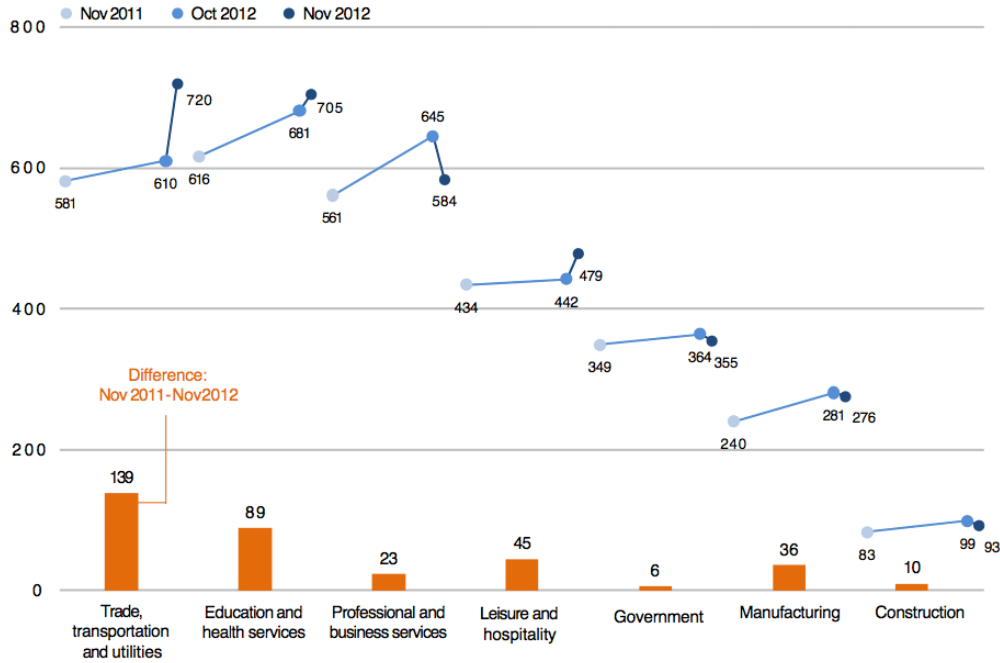


From November 2011 to November 2012, job openings increased most in retail trade (144,000, within the trade, transportation and utilities industry) and health care and social assistance (91,000, within the education and health services industry).

Government job openings increased the least, by 6,000.

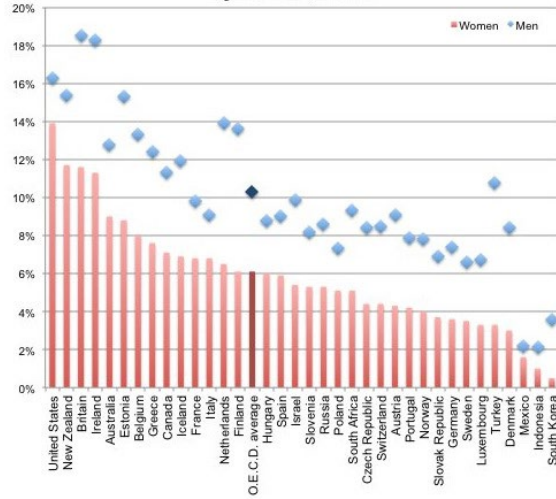
These data are from the Job Openings and Labor Turnover Survey. Data for the most recent month are preliminary and subject to revision. For additional information, see Job Openings and Labor Turnover — November 2012* (HTML) (PDF), news release USDL-13-0015. More charts featuring data on job openings, hires, and employment separations can be found in Job Openings and Labor Turnover Survey Highlights: November 2012 (PDF).

Job openings by industry, November 2011, October 2012 and November 2012, seasonally adjusted
(Thousands of jobs)



And this: <http://thewhyaxis.info/gap-remake/>

Percentage of Employed Who Are Senior Managers, by Gender, 2008



Percentage of Employed Who are Senior Managers, by Gender, 2008

