TEACHING WITH TABLEAU

SUCCESSFULLY INTEGRATING TABLEAU INTO THE CLASSROOM

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GOALS

Make an informed decision about using Tableau for classroom use

Know the strengths and limitations of Tableau for class assignments

Know how to prepare data for Tableau

Use the Tableau interface

Create a well-designed visualization

TABLEAU FOR EDUCATORS

Free 1-year licenses for:

academic instructors
students
classes

tableau.com/academic

TABLEAU IS BIG

$199.9 million company

3,193 employees around the world

Leader in visual analytics and business intelligence

THE CASE FOR USING TABLEAU IN THE CLASSROOM

It's free (for educators)

Easier to do visual exploration of data

Integrates well with other platforms

Marketable skill

IS IT EASY?

Open Tableau Public on your computer

Open the "Tableau files" folder on your desktop

Choose a data set

Create a well-designed visualization in Tableau with that data set

DISCUSSION

What were your emotions?

Were you successful?

What preparation, guidance or resources would you need to be successful?

Did you want to figure it out yourself or seek help?

CONSIDERATIONS

Tableau is not collaboration software

Tableau requires clean data

Interface and menus are not intuitive

Procrastinators will be sorry :(

WHAT TABLEAU IS GOOD FOR

Encouraging students to think visually during data analysis

Visual experimentation without altering original data

Creating calculations on data during the vis process

Filtering data

No need for pivot tables

Interactivity

INTEGRATING TABLEAU: QUESTIONS TO CONSIDER

What are the students ultimately trying to accomplish?

What skills do they need to get there?

What level of support will they need?

DETERMINING LEVEL OF SUPPORT

How crucial is Tableau to the overall project? (the more crucial, the more support)

What does the original data look like? (the messier, the more support)

Will statistical analysis be required? (the more complex, the more support)

Is streaming or big data involved? (if yes, much more support)

MINIMAL INSTRUCTION SUPPORT

making a basic bar or line chart with two variables using clean data

MORE INSTRUCTION SUPPORT

filtering

designing a chart for communication with annotations

using dashboard actions

selecting a non-traditonal chart style successfully

pivoting data, splitting data, or making data unions

MOST INSTRUCTION SUPPORT

working with multiple data sources

extracting data from PDFs

cleaning messy data

creating custom calculated fields

integrating with R or other software

professional-looking design

DATA PRE-PROCESSING

Characteristics of clean data:

single row of data per line

no nested headers or sub headers

no sub tables or extraneous descriptive text above or below table

each variable measured should be in own column

only one thing measured per table (ex: life expectancy)

SO CLEAN

LCR	LCR DESC	INC DATETIME	INC NO	latitude	longitude	DISTRICT
30B	Burglary/Residential	10/19/2015	P15058201	35.85499671	-78.60183108	NORTH
30B	Burglary/Residential	10/19/2015	P15058196	35.7609638	-78.69539657	SOUTWEST
30B	Burglary/Residential	10/19/2015	P15058192	35.78339188	-78.64879203	DOWNTOWN
30B	Burglary/Residential	10/19/2015	P15058175	35.79207901	-78.60076898	SOUTHEAST
30B	Burglary/Residential	10/19/2015	P15058170	35.89628385	-78.79600756	NORTHWEST
30B	Burglary/Residential	10/19/2015	P15058165	35.79141111	-78.5982833	SOUTHEAST
30B	Burglary/Residential	10/19/2015	P15058156	35.84203716	-78.68826019	NORTHWEST
30B	Burglary/Residential	10/19/2015	P15058140	35.77426117	-78.68990722	SOUTWEST
30B	Burglary/Residential	10/19/2015	P15058120	35.77258985	-78.62574142	SOUTHEAST
30B	Burglary/Residential	10/19/2015	P15058107	35.78781725	-78.6291625	DOWNTOWN
30B	Burglary/Residential	10/19/2015	P15058079	35.83544927	-78.5945136	NORTH
30B	Burglary/Residential	10/19/2015	P15058006	35.76459796	-78.63164028	DOWNTOWN
30B	Burglary/Residential	10/18/2015	P15057934	35.74021711	-78.63168346	DOWNTOWN
30B	Burglary/Residential	10/18/2015	P15057909	35.89004993	-78.6054164	NORTH
30A	Burglary/Commercial or	10/18/2015	P15057845	35.77840799	-78.63705619	DOWNTOWN
30B	Burglary/Residential	10/18/2015	P15057809	35.78166769	-78.69172712	SOUTWEST
30A	Burglary/Commercial or	10/17/2015	P15057686	35.77122985	-78.61248255	SOUTHEAST
30B	Burglary/Residential	10/17/2015	P15057661	35.7899214	-78.62270564	SOUTHEAST

MESSY DATA

NHIS Data

Table 48. Age-adjusted prevalence of current cigarette smoking among adults aged 25 and over, by sex, race, and education level: United States, selected years 1974–2014

Updated data when available, Excel, PDF, more data years, and standard errors: http://www.cdc.gov/nchs/hus/contents2015.htm#048.

[Data are based on household interviews of a sample of the civilian noninstitutionalized population]

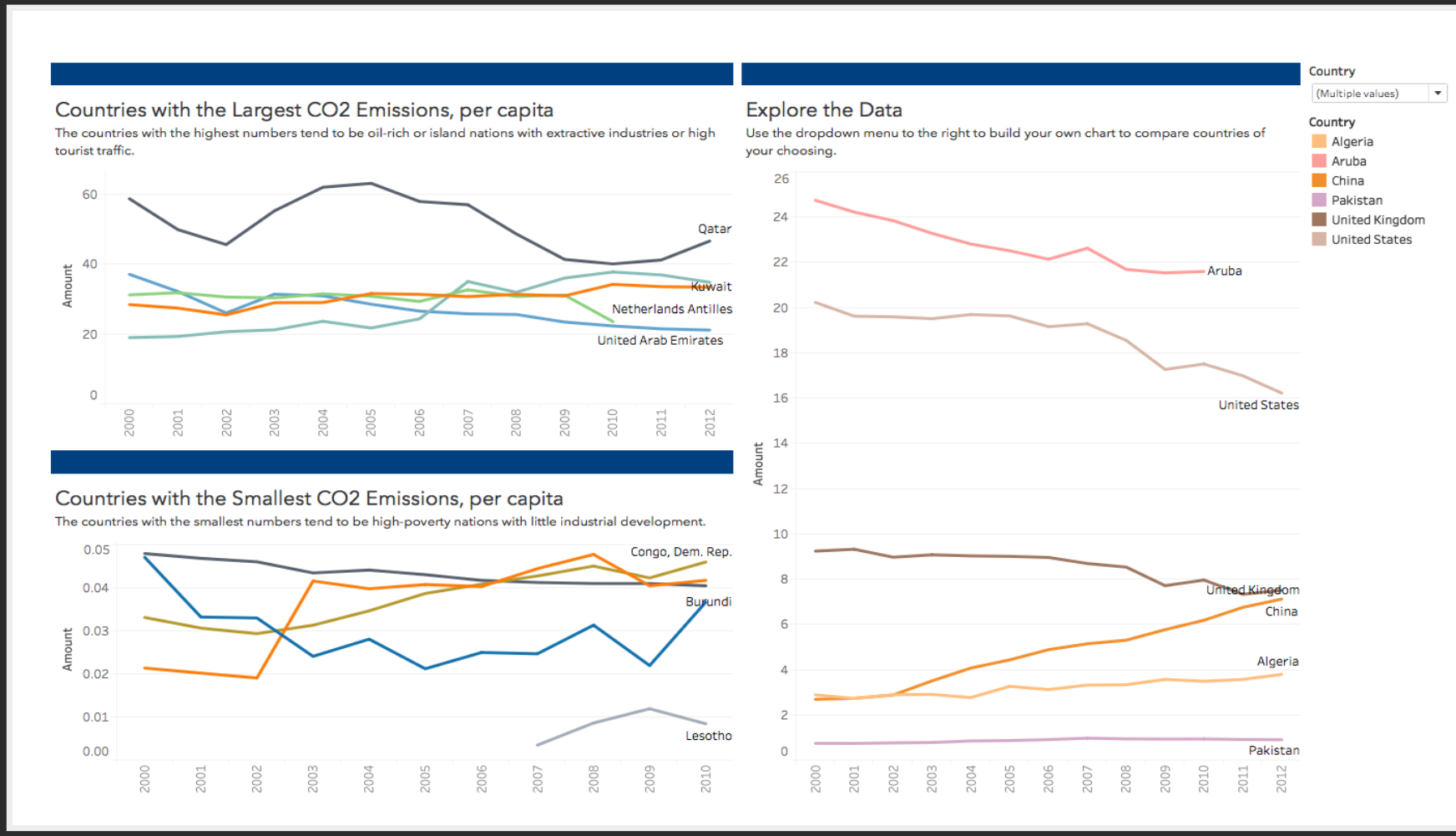
Sex, race, and education level	*1974*[1]	*1979*[1]	*1985*[1]	*1990*[1]	*1995*[1]	*2000*	*2005*	*2010*	*2013*	*2014*
25 years and over, age-adjusted[2]	Percent of adults who were current cigarette smokers[3]									
All persons[4]	36.9	33.1	30.0	25.4	24.5	22.6	20.3	19.2	17.8	17.1
No high school diploma or GED	43.7	40.7	40.8	36.7	35.6	31.6	28.2	26.9	25.8	24.4
High school diploma or GED	36.2	33.6	32.0	29.1	29.1	29.2	27.0	27.0	25.6	25.9
Some college, no bachelor's degree	35.9	33.2	29.5	23.4	22.6	21.7	21.8	21.3	19.5	18.6
Bachelor's degree or higher	27.2	22.6	18.5	13.9	13.6	10.9	9.1	8.3	7.7	7.0
All males[4]	42.9	37.3	32.8	28.2	26.4	24.7	22.7	21.0	20.3	19.1
No high school diploma or GED	52.3	47.6	45.7	42.0	39.7	36.0	31.7	29.7	31.6	27.7
High school diploma or GED	42.4	38.9	35.5	33.1	32.7	32.1	29.9	29.3	28.8	28.2
Some college, no bachelor's degree	41.8	36.5	32.9	25.9	23.7	23.3	24.9	23.2	20.4	20.2
Bachelor's degree or higher	28.3	22.7	19.6	14.5	13.8	11.6	9.7	8.7	8.7	7.9

CLEAN DATA, BUT NOT TIDY

Gapminder Data on C02 Emissions Per Capita

CO2 per capita	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Afghanistan	0.057965	0.052333	0.048547	0.037446	0.03417	0.027255	0.014583	0.022704	0.027472	0.03678	0.04709	0.068312	0.131602	0.213325	0.262174		
Akrotiri and Dhekelia																	
Albania	0.647905	0.499261	0.569226	0.971342	0.983553	1.04732	1.214003	1.382066	1.332966	1.353789	1.22431	1.27942	1.297753	1.215055	1.336544		
Algeria	3.354239	3.01567	3.608258	3.060245	2.879528	2.720453	2.889313	2.899236	2.76222	3.25701	3.113135	3.312875	3.328945	3.564361	3.480977	3.562504	3.785654
American Samoa																	
Andorra	6.520817	7.061603	7.533543	8.022714	8.112345	7.897776	7.700515	7.414281	7.49969	7.390955	6.83994	6.622435	6.527241	6.17852	6.0921		
Angola	0.842413	0.576991	0.556212	0.677617	0.685079	0.676339	0.850521	0.58781	1.17761	1.161662	1.308849	1.435044	1.474353	1.500054	1.593918		
Anguilla		1.789665	2.453558	2.392716	2.981568	3.18896	3.054792	3.214324	3.363143	3.78174	3.664573	4.076055	3.98091	3.896823	4.297435		
Antigua and Barbuda	4.58008	4.664325	4.497461	4.584238	4.438378	4.353776	4.508925	4.75631	4.913204	4.893783	5.006749	5.162817	5.275415	5.679445	5.786646		
Argentina	3.661563	3.770571	3.809678	3.981141	3.819694	3.555285	3.273067	3.502902	4.072844	4.160611	4.464492	4.582394	4.78517	4.483564	4.466338	4.67632	4.774982
Armenia	0.821831	1.045669	1.095601	0.989444	1.126427	1.155323	0.994207	1.120168	1.190052	1.421961	1.427326	1.648352	1.804106	1.410815	1.364888		
Aruba	21.80517	21.74313	19.21445	19.02942	24.73663	24.21605	23.83822	23.27742	22.80422	22.50914	22.1333	22.62093	21.68186	21.52978	21.59311		
Australia	17.97143	18.00759	18.51527	17.17836	17.19728	16.7592	17.39287	17.46184	17.34624	17.77398	17.89313	17.85991	18.01631	18.03727	16.7523	16.77266	16.18209
Austria	7.916498	8.015418	8.219538	7.989369	7.956564	8.174472	8.310385	8.889629	8.7788	9.017238	8.649446	8.319712	8.18316	7.438353	7.969244	7.606392	7.095971
Azerbaijan	4.016582	3.766426	3.971172	3.554326	3.637859	3.51203	3.57622	3.654527	3.783992	3.998027	4.500682	4.695871	5.109538	4.701319	4.976935	5.326446	5.408627
Bahamas	5.881102	4.749023	5.779425	5.699779	5.604998	5.203256	5.155858	4.893601	5.475436	5.005876	4.695546	4.705129	3.131921	4.854818	7.18625		
Bahrain	27.16928	29.20417	30.1078	28.74762	29.20955	21.67437	24.44749	25.44486	26.06338	26.49809	24.0269	24.19272	23.09003	20.66301	19.17842		
Bangladesh	0.20035	0.204802	0.192671	0.198357	0.215033	0.245964	0.251023	0.248178	0.286703	0.267095	0.338118	0.336645	0.319161	0.355868	0.37761	0.401268	0.426003
Barbados	3.219332	3.402644	4.287918	4.535946	4.440939	4.552709	4.569471	4.709423	4.794768	5.001793	5.059113	5.251247	6.008279	5.955393	5.500047		
Belarus	5.87169	5.832168	5.669983	5.522028	5.315637	5.253946	5.257819	5.416118	5.878412	6.011032	6.323492	6.196024	6.488174	6.256458	6.483926	6.39922	6.506759
Belgium	11.84509	11.49809	11.76603	11.41402	11.37005	11.23815	10.48577	11.14473	10.74369	10.4199	10.19807	9.792963	9.797337	9.772561	10.16953	9.513115	9.19422
Belize	1.360406	1.672073	1.55304	2.459733	2.751698	2.772343	1.368019	1.391576	1.387398	1.409519	1.417946	1.451036	1.360126	1.3567	1.353113		

DEMO


Countries with the Largest CO2 Emissions, per capita
The countries with the highest numbers tend to be oil-rich or island nations with extractive industries or high tourist traffic.
Amount
60
40
20
0
Qatar
Kuwait
Netherlands Antilles
United Arab Emirates
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Countries with the Smallest CO2 Emissions, per capita
The countries with the smallest numbers tend to be high-poverty nations with little industrial development.
Amount
0.05
0.04
0.03
0.02
0.01
0.00
Congo, Dem. Rep.
Burundi
Lesotho
Explore the Data
Use the dropdown menu to the right to build your own chart to compare countries of your choosing.
Amount
26
24
22
20
18
16
14
12
10
8
6
4
2
0
Aruba
United States
United Kingdom
China
Algeria
Pakistan
Country
(Multiple values)
Country
Algeria
Aruba
China
Pakistan
United Kingdom
United States