Web Resources for Constructing Applications Andrea Hendricks and Pauline Chow

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Google Population Data (http://google.com/publicdata/directory)



Click U.S. Census Bureau > Population in the U.S. > Explore the Data. From the left menu, you can drill down to state and county data.



In the next screen, the population of Gwinnett County, GA and North Dakota are displayed.



This is a great opportunity for an application of systems. We only need to find the trendlines for the years in question. Hover over the line in question to obtain specific data points.



Gwinnett Co. , Georgia		North	Dakota
Years Since 2000	Population	Years Since 2000 Population	
0	596343	0	641183
1	621901	1	636211
2	644872	2	633521
3	666978	3	632689
4	692302	4	636196
5	716818	5	635222



Now we can interpret slope, find intersection and predict growth using the linear models.

Star Tribune Population Data

(http://www.startribune.com/newsgraphics/112068769.html)



As your scroll over each state, the long term trend for that state is displayed:



This now leads to a discussion about the application of exponential functions. Select a year at the bottom to get specific annual data for that state.



Build a data set and use Excel to produce the graph:



GapMinder (http://www.gapminder.org)

A web-service displaying time series of development statistics for all countries

Data > Hourly compensation (Time on the x-axis and hourly compensation on the y-axis). As you scroll over a bubble, the country's name will appear. The population of the country will appear in the lower right corner and the geographic region where the country is located will be highlighted in the upper right corner.



Click play to view the changes in hourly compensation with respect to time. Then we can select countries to highlight.



To get the data set, click the view data icon below the y-axis. This will display the data in a Google spreadsheet.



To download data into excel spreadsheet, go to gapminder.org/data and search for hourly compensation. Click the excel icon.







Change markers > Format Data Series, right click on data set. Add trendline.



Trends in Higher Education

The College Board provides detailed information on college pricing, student aid, and the benefits of education.

http://trends.collegeboard.org/

We will go into Education Pays > Enter website > Figures & Tables.

Earnings over Time by Education Level and Gender (Figure 1.6)









Unemployment Rates by Education Level

Figure 1.10a: Unemployment Rates Among Individuals Ages 25 and Older, by Education Level, 1992–2009



View Notes and Sources



Retail Means Jobs (http://www.retailmeansjobs.com/)

provides data on the economic impact of retail establishments.



Click on a state to find specific information about that state's retail industries. Good site for pie graphs.



Overview By Subsector	Retail & Oth	ier Industries	, 国, Print Version		
Industry Description	Employment (Jobs) 🖵	GDP (\$Million)	Retail and Other Industries by Employme		
Retail trade (including food services and drinking places)	2,282,733	\$93,072			
Health care and social assistance	1,330,757	\$70,428			
Construction	956,980	\$51,434			
Professional, scientific, and technical services	909,816	\$80,267			
Manufacturing	890,360	\$148,916			
Administrative and waste services	884,377	\$34,595			
Other services, except public administration	800,687	\$25,630			

National Association of Theater Owners Statistics

(http://www.natoonline.org/statistics.htm)

Application of Piecewise Defined Function







CTIA - The Wireless Association (<u>http://www.ctia.org/index.cfm</u>)

An international nonprofit membership organization that has represented the wireless communications industry since 1984

Media > Industry Info > Wireless 101 > Wireless Quick Facts

Wireless Quick Facts

Mid-Year Figures

Торіс	Jun-11	June-06	June-01	June-96
Wireless Subscriber Connections	322.9M	219.6M	118.4M	38.2M
Wireless Penetration equals # of active units divided by the total U.S. and territorial population (Puerto Rico, Guam and the USVI)	102.4%	72.5%	40.9%	14%
Wireless-Only Households ¹ % of U.S. Households	29.7%	10.5%	N/A	N/A
Direct Carrier Jobs	243,239	238,236	196,317	73,365
Wireless Carrier Payroll ² Direct Carrier Wages	N/A	\$13.1B	\$11.3B	N/A
Annualized Total Wireless Revenues	\$164.6B	\$118.3B	\$58.7B	\$21.5B
Annualized Wireless Data Revenues	\$55.4B	\$11.3B	\$280.8M	N/A
Annualized Incremental Capital Investment	\$27.5B	\$22.7B	\$23.1B	\$5B
Annualized Minutes of Use	2.25T	1.68T	344.9B	44.4B
Monthly Text Messages	196.9B	12.5B	33.5M	N/A
Annualized Yearly Text Messages	2.12T	113.5B	N/A	N/A
Cell Sites	256,920	197,576	114,059	24,802

The National Oceanic and Atmospheric Administration

The National Oceanic and Atmospheric Administration collects data concerning climate. The data can be accessed by state and by major city.

www.esrl.noaa.gov/psd/data/usstations

U.S. Department o	of Commerce Nati	onal Oceanic (& Atmospheric	Administration I	NOAA Researd	ch			
Ear Phy	th System sical Scien	Resear ces Divis	ch Labo	ratory	in.				Search PSD: Search Calendar People Publications
Physical Science	es Division	About	Contact	Research	Data	Products	Outreach		
US Station	Daily Data	Access	by State						
By selecting a subtraction of the selecting a selectin	state and then a aily maximum ar	city, the use id minimum t	er can examin emperature a	e the temperat and for precipit	ure and pre ation.	cipitation statio	n data for contine	ental US. All stati	ons available have data from 195
If you have proble Detailed help and	ms with a plot, plea I data set informati	ase send me th on is available	ne webpage yo	u were using and	l all input value	es.			
Choose a s	state								
Alabama California Delaware Idaho Iowa Louisiana Massachusetts Mississippi Nebraska New Jersey North Carolina Oklahoma Rhode Island Tennessee Vermont West Virginia	Arizona Colorado Florida Illinois Kansas Maine Michigan Missouri Nevada New Mexico North Dakota Oregon South Carolina Texas Virginia	Arkansas Connecticut Georgia Indiana Kentucky Maryland Minnesota Montana New Hamps New York Ohio Pennsylvani South Dako Utah Washington Wyoning	shire a ta						
U.S. Department of C Earth System Resea	Commerce National C rch Laboratory Physi	Oceanic and Atmo cal Sciences Div	ospheric Administ ision	ration				Privac	y Policy Accessibility Disclaimer USA.go Contact Us Webmaste

Once you have selected a state (Georgia was selected as an example), select "climitologies" :

Georgia: Select a city

Select type of plot. Plots use data from 1950-1999.

- Olimatologies
- Time Series Plots
- O Data Distribution Plots



Now you can gather data. In the example below, mean tempreatures for the station in Atlanta are collected:

Georgia Climatologies: Select a city

Click over a city name. Plots use data from 1950-1999.



Once "Submit" is pressed, the output is seen below:



Now it's time to put the student's to work.....

Students can use the above graph to pull estimated data values to use in a spreadsheet. We will demonstrate the creation of a data set. The independent variable will be the first day of the month; the dependent variable will be the daily mean tempreature. The picture below is an enlargment of the bottom left corner of the above graph.



Continuing with the above, we develop a data set:

Х	Y	Х	Y
First day of	Mean Tempreature	First day of Month	Mean Tempreature
Month	(°F)		(°F)
1	44	9	76
2	45	10	68
3	52	11	60
4	58	12	46
5	66		
6	74		
7	79		
8	79		

This is the data that we enter into an Excel spreadsheet.

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File	Home	Inse	rt	Pa	ge L	ayoı
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Now the students can develop their own trendlines and explore models that best fit the data.

The student should drag and select the temperatures column and then select the "Insert" tab. Once there, they should select "Scatter" and produce a scatter plot of the tempreatures.



We can then use Excel to provide trendlines in various degrees:





The Centers for Disease Control and Prevention

The Centers for Disease Control and Prevention website also proves to be an excellent resource:

http://www.cdc.gov/



Select "More Data and Statistics"

The available reports:



of Information Published Since 1995

Related Pages

Publications

Related CDC

Organizations

Tools & Resources

Region 5 (Chicago Region 7 (Kansar Region 8 (Denve

JUL SEP SEP OCT NOV NOV JUN JUN

Click image for more information

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« Previous

First we will examine STD's...



Be sure to note: Prepared PowerPoint Slides, Sexually Transmitted Disease Surveillance (Browse Report Online)

Next, Smoking and Tabacco



From there, choose State Data:



Tobacco Control State Highlights:



Choose Highlights 2010 (by section)



Select "Indicators by State" at the bottom of the next page, this is a spreadsheet containing summary data for all states (and D.C.)



I compared excise tax levels to prevelance of smoking: (Taxation doesn't associate with behavior.)





U.S. Energy Information Administration (<u>http://www.eia.gov/</u>)

Geography > U.S. States > Select State > Go to Data Tab > Select Economy



Map of Georgia MAP LEGEND NORTH Coal Mine, Surface Energy Information Administration Coal Mine, Underground 40 80 Natural Gas Hub miles Petroleum Refinery Oil Import Site Athens 7 SC 4 Oil Seaport Atlanta Electricity Transmission Line (>= 345 kV) Augusta Natural Gas Flow (1 mile band width = 100 million cubic feet/day) Oil and Gas Active Leases $\nabla \nabla$ Vogtle MAJOR ELECTRIC POWER PLANTS (>=100 MW) ∇ Coal •Columbus GEORGIA ۸ Petroleum 0 Geothermal AL the Solar 0 Hydroelectric × Wind Savannah V Natural Gas 🐮 Wood Edwin I Hatch • Nuclear Other Renewable Elba Island

Sources & Uses > Petroleum & Other Liquids > Data > Prices > Weekly Retail Gasoline & Diesel Prices



Weekly Retail Gasoline and Diesel Prices

(Dollars per Gallon, Including Taxes)

Area: U.S.

Period: Weekly 💌

Download Series History 10 Definitions, Sources & Notes								
Show Data By: Product O Area	10/10/11	10/17/11	10/24/11	10/31/11	11/07/11	11/14/11	View History	
Gasoline - All Grades	3.476	3.533	3.520	3.511	3.482	3.495	<u>1993-2011</u>	
All Grades - Conventional Areas	3.422	3.484	3.469	3.460	3.424	3.442	<u>1994-2011</u>	
All Grades - Reformulated Areas	3.584	3.632	3.623	3.614	3.599	3.602	<u>1994-2011</u>	
Regular	3.417	3.476	3.462	3.452	3.424	3.436	<u>1990-2011</u>	
Conventional Areas	3.368	3.431	3.415	3.405	3.370	3.388	<u>1990-2011</u>	
Reformulated Areas	3.520	3.571	3.560	3.551	3.535	3.538	<u>1994-2011</u>	
Midgrade	3.551	3.604	3.594	3.587	3.558	3.571	<u>1994-2011</u>	
Conventional Areas	3.481	3.540	3.529	3.520	3.483	3.502	<u>1994-2011</u>	
Reformulated Areas	3.685	3.728	3.721	3.714	3.701	3.703	<u>1994-2011</u>	
Premium	3.679	3.730	3.721	3.713	3.683	3.697	<u>1994-2011</u>	
Conventional Areas	3.627	3.683	3.673	3.664	3.627	3.647	<u>1994-2011</u>	
Reformulated Areas	3.777	3.818	3.811	3.803	3.788	3.792	<u>1994-2011</u>	