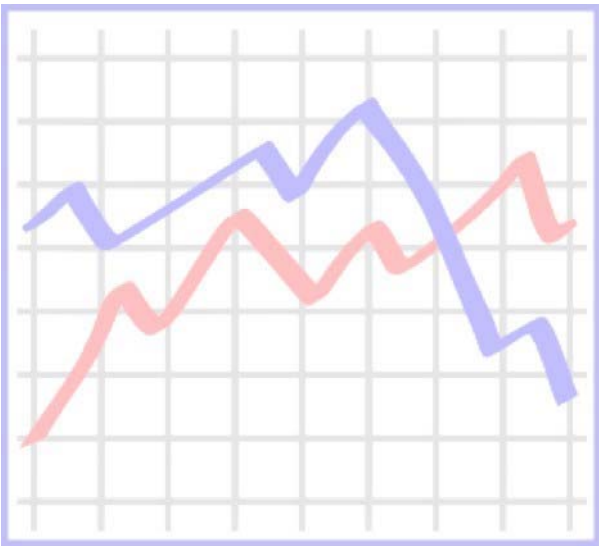




# Assessment of Essential Studies Quantitative Reasoning Skills

## INSTRUCTIONS

This Performance Task will be used to assess quantitative reasoning skills as they relate to Essential Studies at UND. As part of this performance task, you will prepare a written response to a hypothetical but realistic situation. The Performance Task is made up of an introductory scenario, questions, and some documents that include several information sources. You will use information from the documents in carrying out the task. While your personal values and experiences are important, you should base your response only on the data provided in these documents. You will have access to Microsoft Word and Excel. You are welcome (and encouraged) to use these tools as you develop your response to this Performance Task. Feel free to create graphs based on the included data if that helps you make your case. You have two hours to complete this activity.



Task developed collaboratively by University of North Dakota faculty: Jeff Carmichael, Anne Kelsch, Alena Kubatova, Kathy Smart and Ryan Zerr (2014).

# PERFORMANCE TASK

## SCENARIO

You are about to graduate from college— congratulations! Although you have accumulated some debt over the years, you received three offers of employment just last week. You have some decisions to make since your job offers are in Los Angeles, Chicago, and New York. Many factors might influence which job you choose to take. For example, you'll want to optimize your earning potential while factoring in costs of living in the three cities. Your parents, always willing to provide advice, are strongly encouraging you to choose the job in New York. They make the following claims to try and convince you that the New York job makes the most sense!

1. The New York job pays the highest and, therefore, you'll be happiest with that job.
2. Home prices in New York are lower than in Chicago and Los Angeles.
3. Crime rate is lower in New York than in Chicago and Los Angeles.
4. New York has less rain and cooler temperatures than Chicago and Los Angeles.
5. New York has better air quality than Chicago and Los Angeles.

You think that they may have some valid points. Nevertheless, you decide to do some research on your own to investigate their claims. You also find additional information that is relevant to deciding which job to accept. All of your research findings are included in the documents provided as part of this Performance Task.

## TASK

Your job is to evaluate your parents' claims and decide which job offer to accept. To do so, please answer the questions that follow using only the supporting documents provided. Your answers should include quantitative summaries of any relevant data drawn from the documents provided to support your position. You are asked to make calculations and create summary charts or graphs to make your case as strong as possible. A strong response will include relevant data summarized and presented in a format that you create (e.g., text, graph, table). Simply copying and pasting portions of the supporting documents does not demonstrate strong quantitative reasoning skills. Keep in mind that there is no single correct response to the questions! Instead, your ability to interpret quantitative data and make sound conclusions is most relevant.

## QUESTIONS

1. What are the strengths and/or weaknesses of your parents' claims? Be sure to summarize and present all relevant data derived from the supporting documents as you evaluate their claims.
2. Which job will you accept? Make your case by summarizing and presenting all relevant data in the supporting documents. Keep in mind that you should evaluate various factors among the jobs in the three different locations and present a convincing case demonstrating why the job offer you choose is better than the others.

## Document 1: Employment Offer

J. Ander  
Adventure Works  
123 Central Parkway  
New York, New York 56731

February 15, 2014

Sloan Mansfield  
123 University Avenue  
Grand Forks, North Dakota 58201



Dear Sloan Mansfield:

It is our pleasure to confirm our offer of employment to you as a professional staff member at Adventure Works. In this position, you will report directly to Mr. Tom Smith beginning June 1, 2014. You are being offered one of three locations, each with different starting salaries as indicated below. The salary amount is based on the regional norms of the corporation's satellite locations. You may choose your location and please note there are differing relocation assistance packages.

Location	Annual Salary
New York, New York	\$100,000.00
Los Angeles	\$90,000.00
Chicago	\$80,000.00

Paychecks are issued monthly, beginning with your first paycheck on July 1, 2014.

We will provide relocation assistance (based on location) in the amount of \$3,500.00 for New York, \$2,700.00 for Los Angeles and \$2,200.00 for Chicago. If you leave Adventure Works before one year of continuous employment, you are required to return the total amount of relocation assistance provided by the company. We recommend the Gold Star Real Estate firm as one with which Adventure Works has had a long-standing professional relationship. The housing market is tight in each city, but Gold Star Real Estate has identified a property in each city that they think you might be interested in (see attached maps that indicate the properties in relation to our offices).

You will be eligible for medical and dental benefits beginning on your first day of employment. You may purchase additional coverage for dependents. Retirement benefits contributed by the company are at a rate of 3% of your monthly salary. Vacation accrues at a rate of 14 days per year for the first three years. You will be eligible to take accrued vacation after 6 months of continuous employment.

To confirm your acceptance of this offer of employment, please sign below and return to me via email at [jander@advworks.com](mailto:jander@advworks.com)

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Signature

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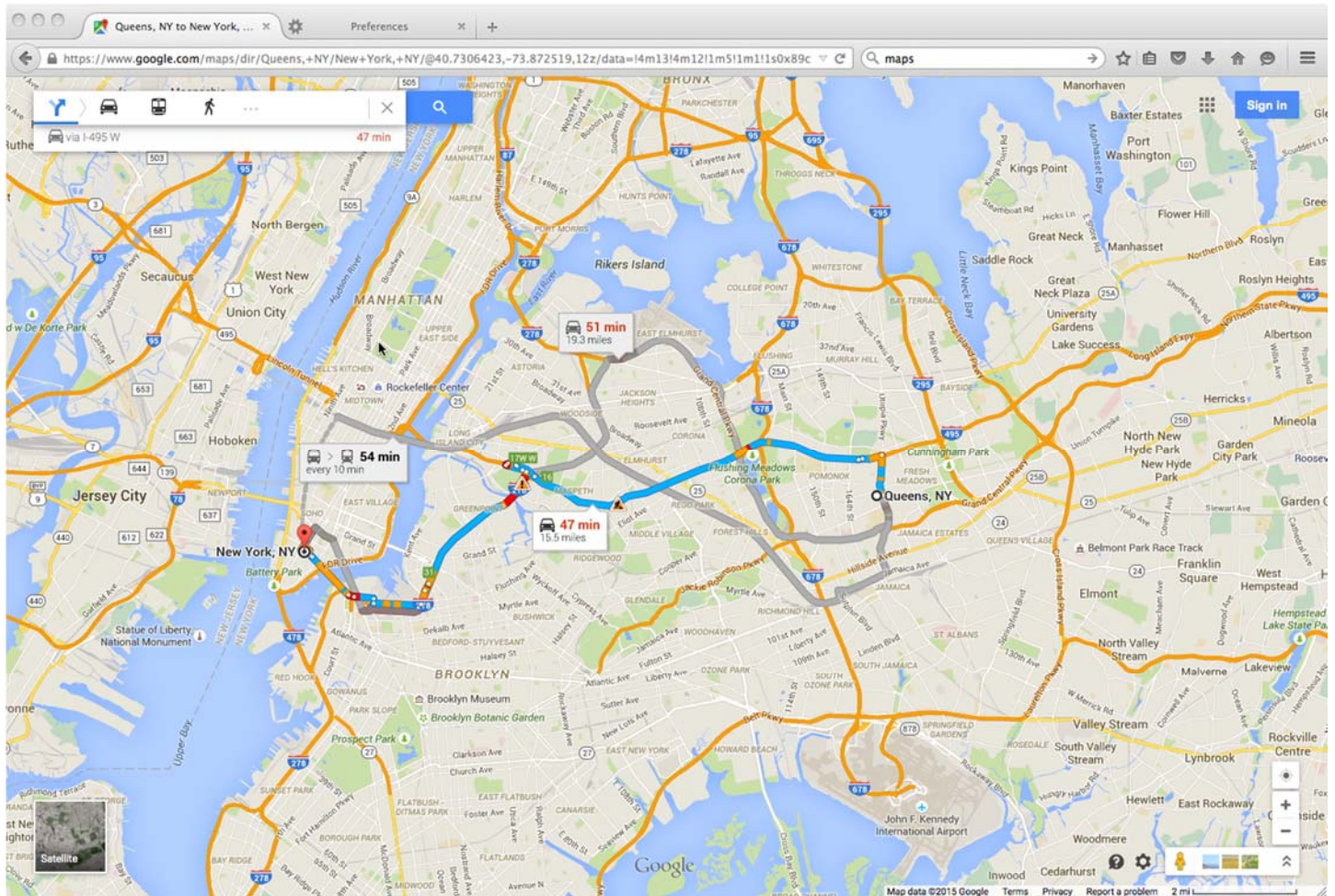
Date

Sincerely,

J. Ander  
Vice President of Human Resources

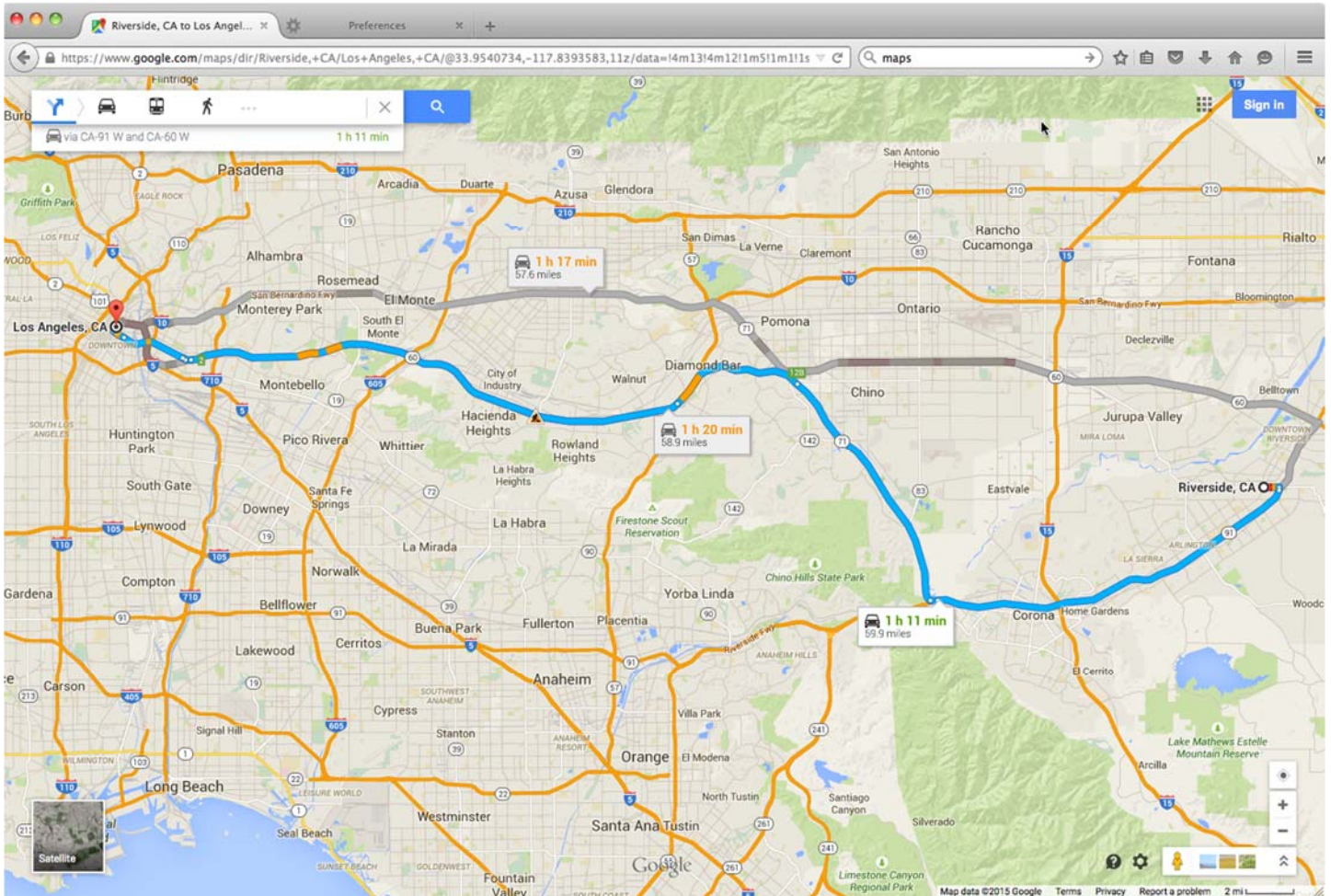
## Document 2a: New York Map

Office Location: New York, NY  
Property Location: Queens, NY



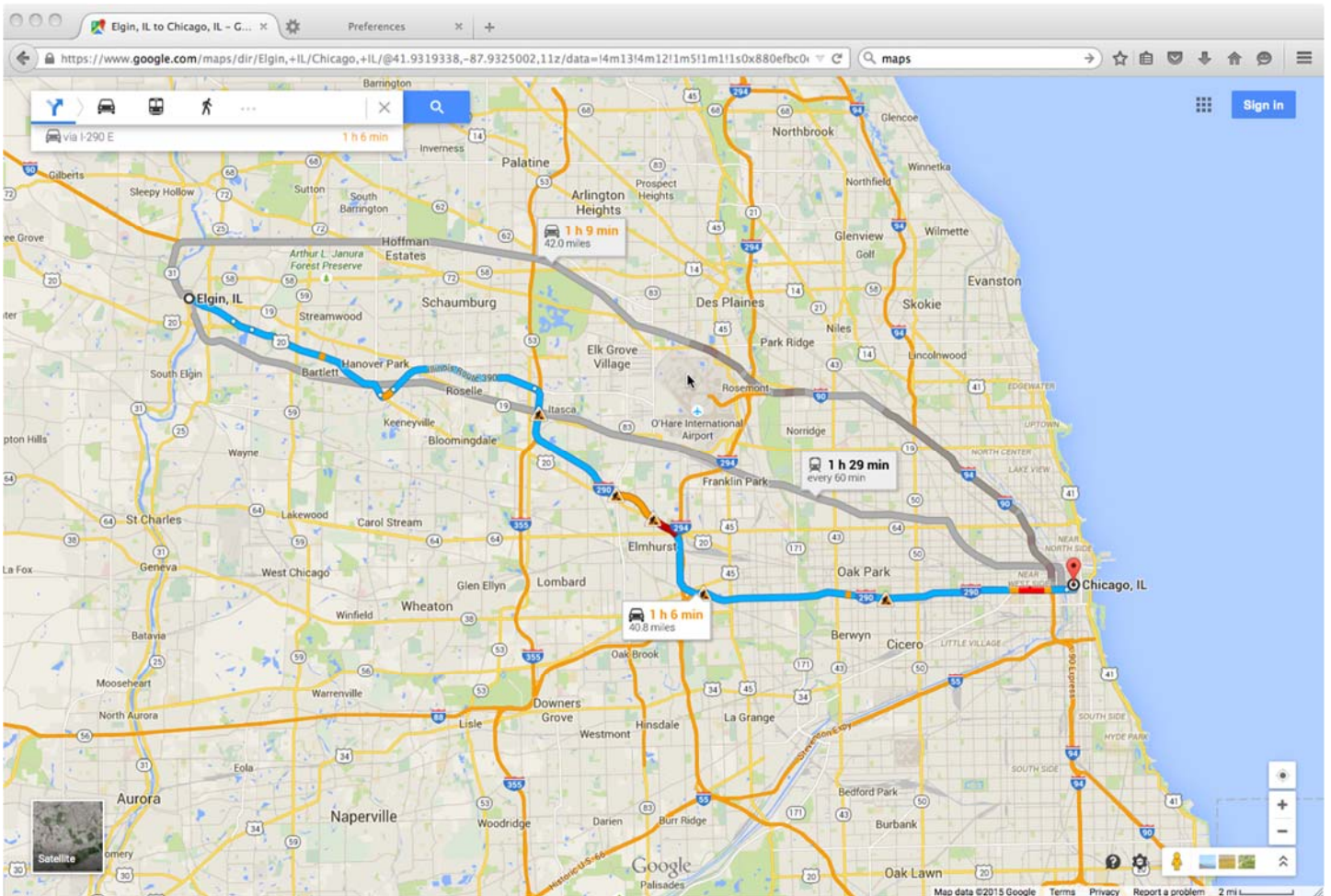


Office Location: Los Angeles, CA  
Property Location: Riverside, CA



## Document 2c: Illinois Map

Office Location: Chicago, IL  
Property Location: Elgin, IL



### Document 3: Commuting cost data

Distance between Elgin and Chicago: 40 miles (64 kilometers)  
Downtown Chicago Rent: \$2,400 per month  
Gas Cost: \$4.55 per gallon (assume car gets 30 mpg)  
Monthly Train Fare: \$152.55

Distance between Riverside and Los Angeles: 56 miles (90 kilometers)  
Downtown Los Angeles Rent: \$1900 per month  
Gas Cost: \$3.37 per gallon (assume car gets 30 mpg)  
Bus Fare, one-way: \$5.45

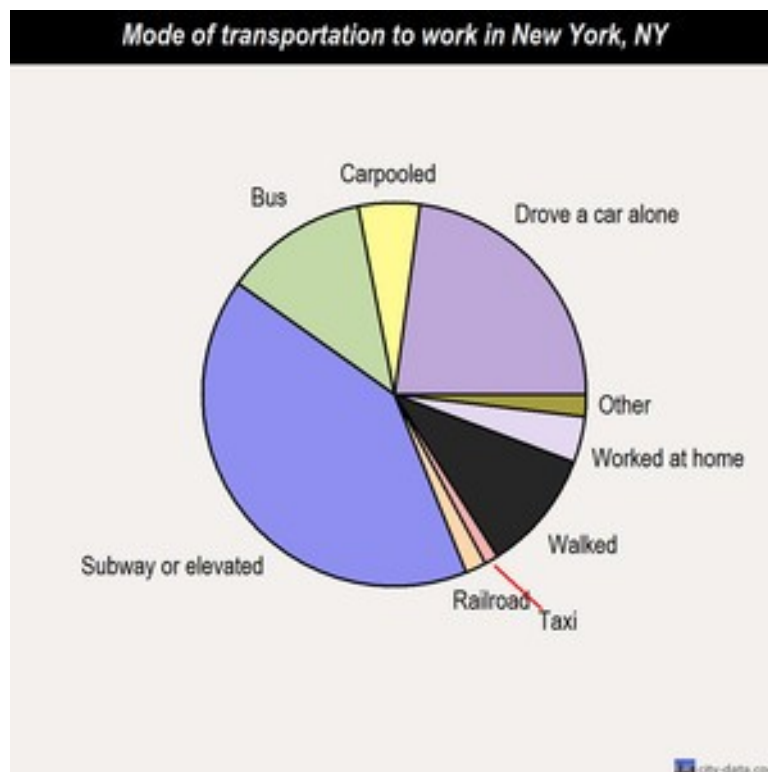
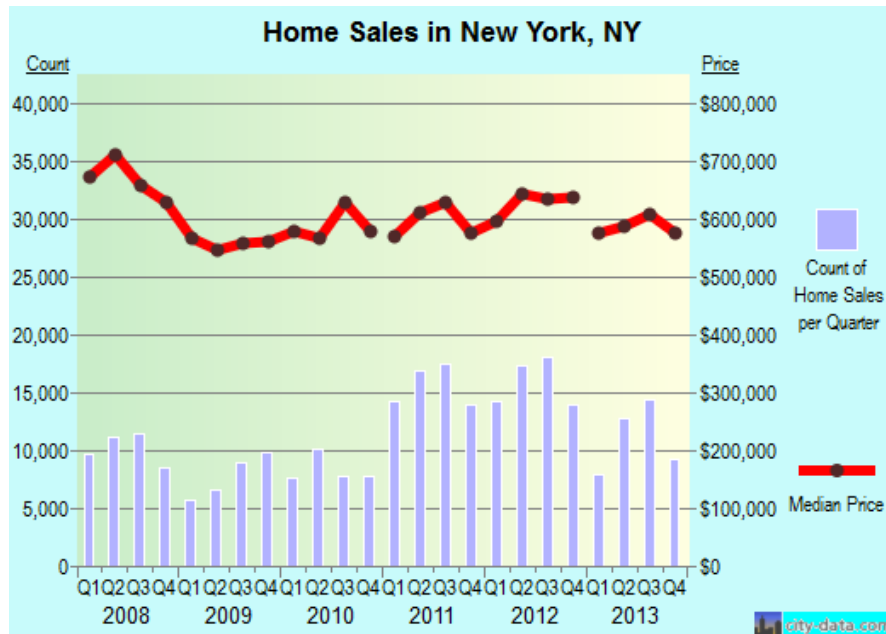
Distance between Queens and New York: 12 miles (19 kilometers)  
Downtown New York Rent: \$2,900 per month  
Gas Cost: \$3.62 per gallon (assume car gets 30 mpg)  
Bus, one-way: \$2.50

Sources: Rand McNally (distance) 2) U.S. Census Bureau (rent) 3) U.S. Dept. of Energy (gas cost) 4) Chicago Metra, Los Angeles Metro and New York Metro Transit Authority (fares).

## Document 4: Quality of Life

### Statistics:

#### A) New York

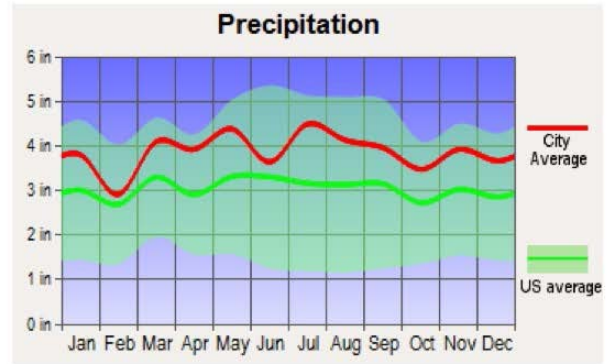
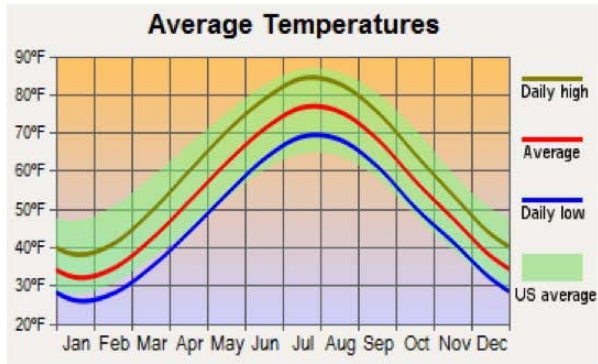




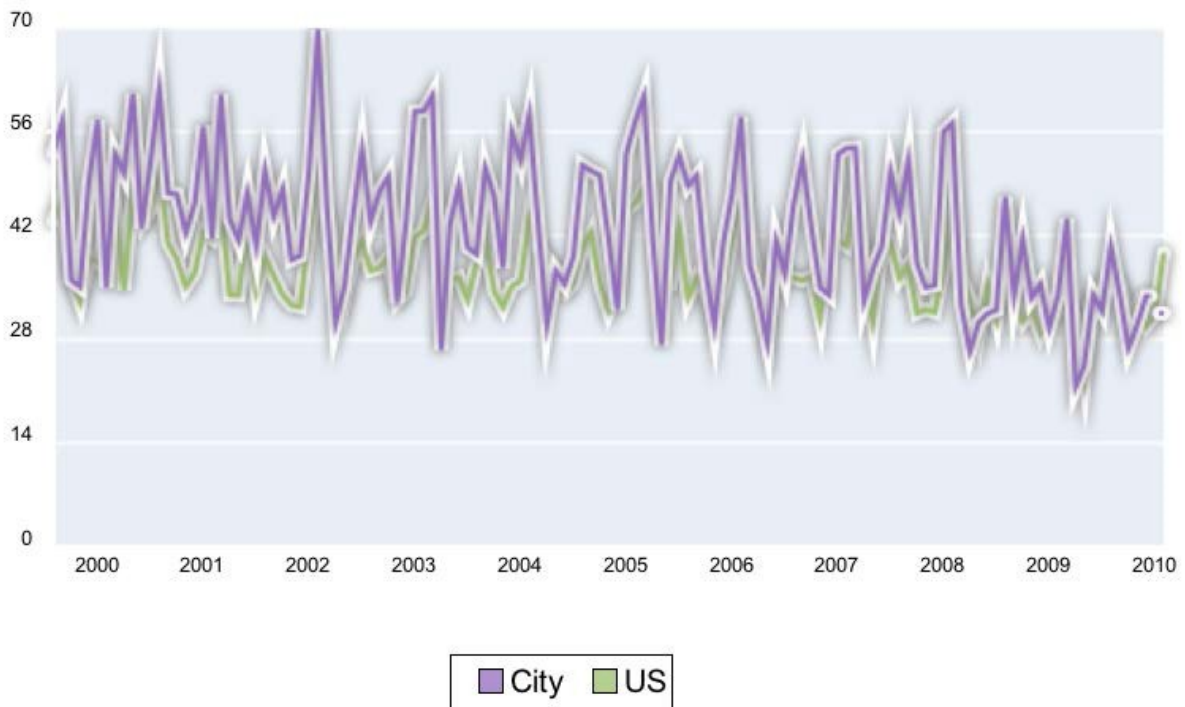


Crime rates in New York by Year									
Type	2003	2004	2005	2006	2007	2008	2009	2010	2011
<b>Murders</b>	597	570	539	596	496	523	471	536	515
<b>per 100,000</b>	7.4	7	6.6	7.3	6	6.3	5.6	6.4	6.3
<b>Rapes</b>	1,609	1,428	1,412	1,071	875	890	832	1,036	1,092
<b>per 100,000</b>	19.9	17.6	17.4	13.1	10.6	10.7	9.9	12.4	13.3
<b>Robberies</b>	25,989	24,373	24,722	23,511	21,787	22,186	18,597	19,608	19,773
<b>per 100,000</b>	320.9	300.9	304.6	287.9	265	265.9	221.4	235.2	240.8
<b>Assaults</b>	31,253	29,317	27,950	26,908	27,295	24,831	26,457	27,309	29,829
<b>per 100,000</b>	385.9	361.9	344.4	329.6	332	297.6	314.9	327.6	363.2
<b>Burglaries</b>	28,293	26,100	23,210	22,137	20,914	19,867	18,780	17,926	18,159
<b>per 100,000</b>	349.4	322.2	286	271.1	254.4	238.1	223.5	215	221.1
<b>Thefts</b>	124,846	124,016	120,918	115,363	115,318	117,682	112,526	111,370	112,864
<b>per 100,000</b>	1541.7	1530.8	1489.9	1412.9	1402.9	1410.2	1339.5	1336	1374.4
<b>Auto thefts</b>	23,628	21,072	18,381	15,936	13,256	12,440	10,694	10,319	9,434
<b>per 100,000</b>	291.8	260.1	226.5	195.2	161.3	149.1	127.3	123.8	114.9
<b>Crime rate (higher means more crime, U.S. average = 319.1)</b>	322.1	303.4	292.9	275.8	260.2	252	234.1	243.7	254.4

## New York data



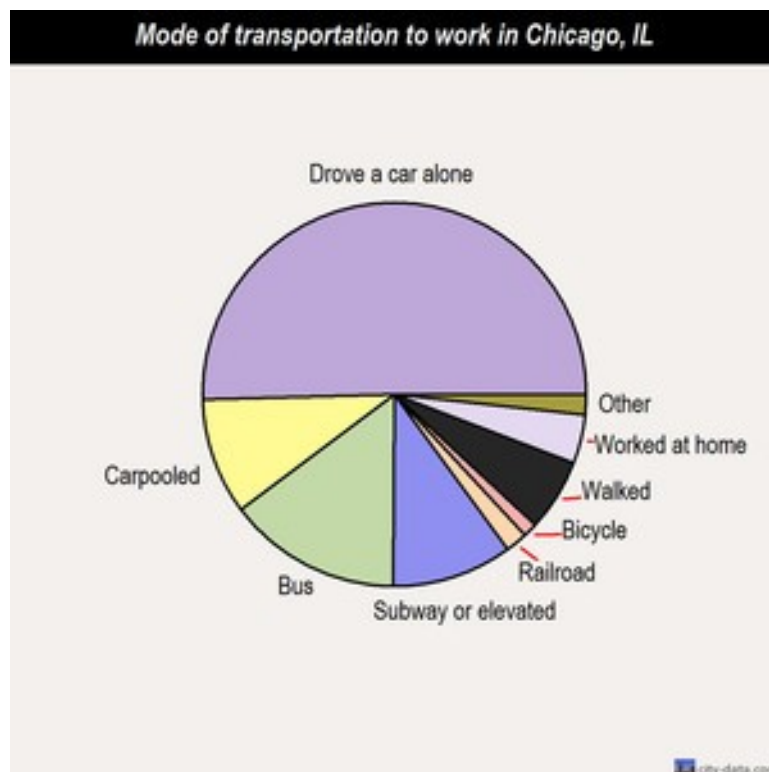
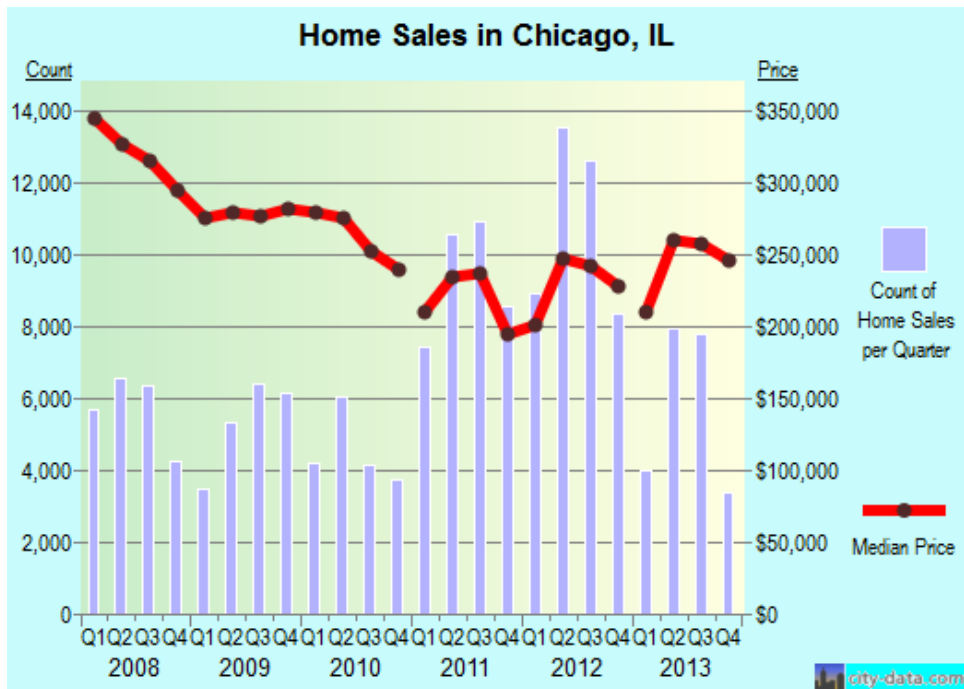
## Air Quality Index (AQI)



## Document 4: Quality of Life

### Statistics:

#### B) Chicago

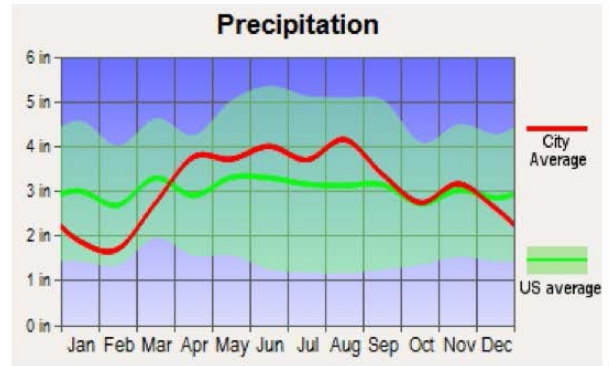
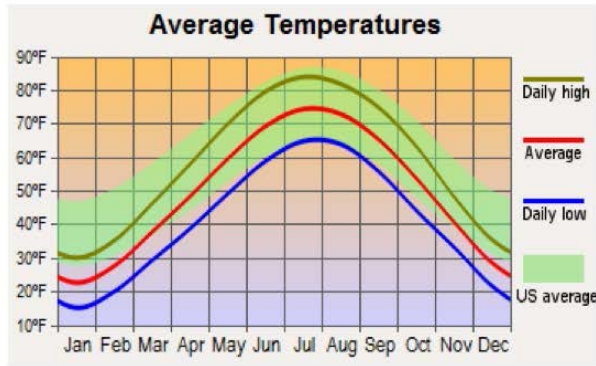




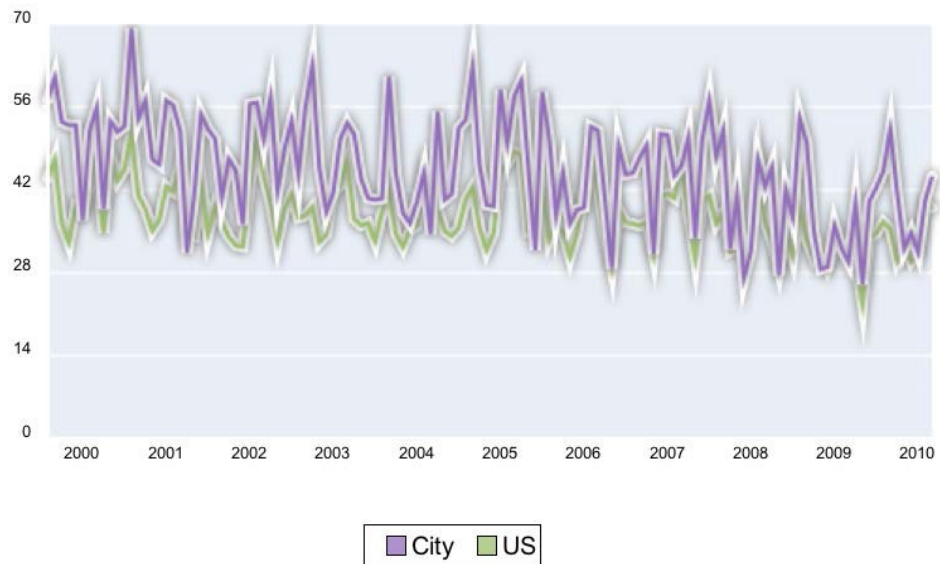
Crime rates in Chicago by Year									
Type	2003	2004	2005	2006	2007	2008	2009	2010	2011
<b>Murders</b>	651	448	446	467	443	510	459	432	431
<b>per 100,000</b>	22.6	15.6	15.6	16.4	15.6	18	16.1	15.2	15.9
<b>Rapes</b>	2,023	1,757	1,618	1,524	1,593	1,569	1,439	N/A	N/A
<b>per 100,000</b>	70.1	61.2	56.5	53.6	56.2	55.3	50.4	N/A	N/A
<b>Robberies</b>	18,530	15,965	15,961	15,860	15,412	16,649	15,884	14,213	13,975
<b>per 100,000</b>	642	556.4	557.6	558	544	587	556.7	501.6	516.9
<b>Assaults</b>	22,905	18,820	17,934	17,441	17,414	17,029	15,743	13,757	12,408
<b>per 100,000</b>	793.6	656	626.6	613.6	614.6	600.4	551.8	485.5	458.9
<b>Burglaries</b>	25,614	24,542	25,298	24,125	24,719	26,031	26,520	26,203	26,420
<b>per 100,000</b>	887.4	855.4	883.9	848.7	872.4	917.9	929.5	924.7	977.2
<b>Thefts</b>	97,484	94,651	83,235	83,518	82,418	85,999	78,679	74,764	72,373
<b>per 100,000</b>	3377.5	3299	2908	2938.2	2908.9	3032.3	2757.7	2638.4	2676.8
<b>Auto thefts</b>	25,096	22,788	22,491	21,823	18,567	18,969	15,476	19,078	19,446
<b>per 100,000</b>	869.5	794.3	785.8	767.7	655.3	668.8	542.4	673.3	719.2
<b>Arson</b>	1,016	772	683	716	705	637	609	N/A	N/A
<b>per 100,000</b>	35.2	26.9	23.9	25.2	24.9	22.5	21.3	N/A	N/A
<b>Crime rate (higher means more crime, U.S. average = 319.1)</b>	737.8	650	625.7	619.7	607.4	631.3	583.3	N/A	N/A



## Chicago data

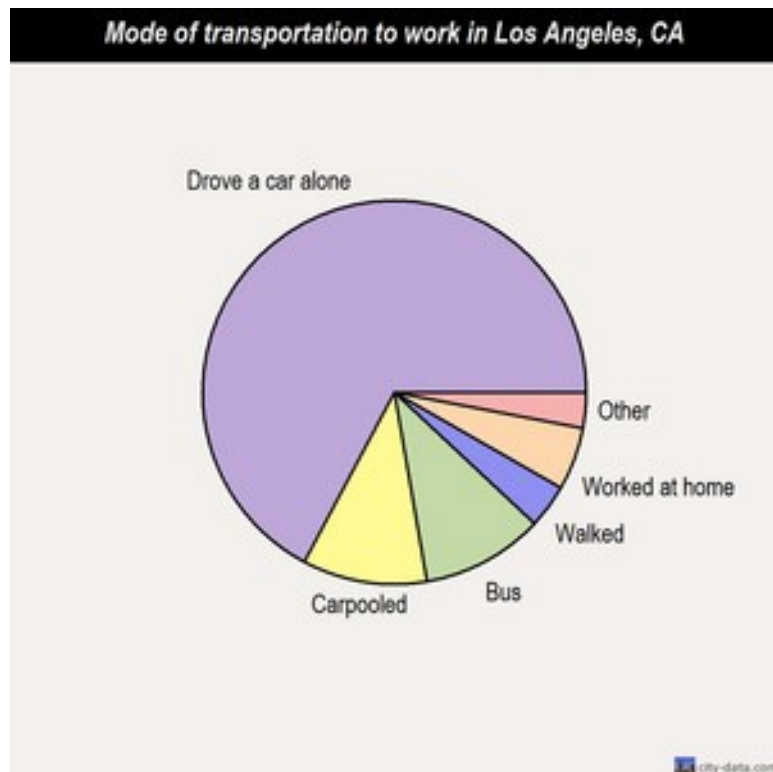
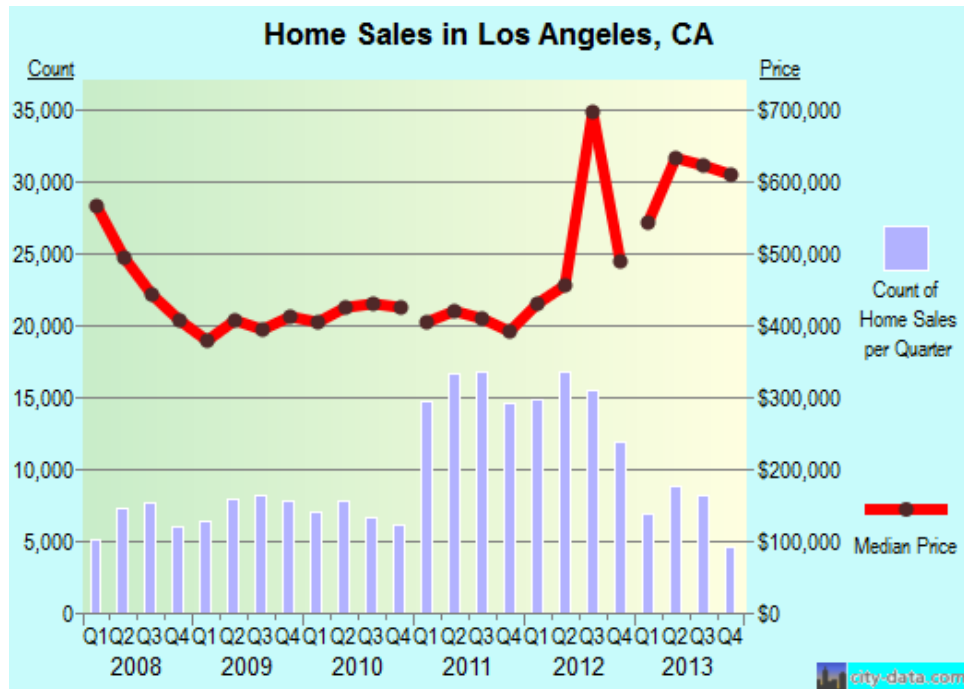


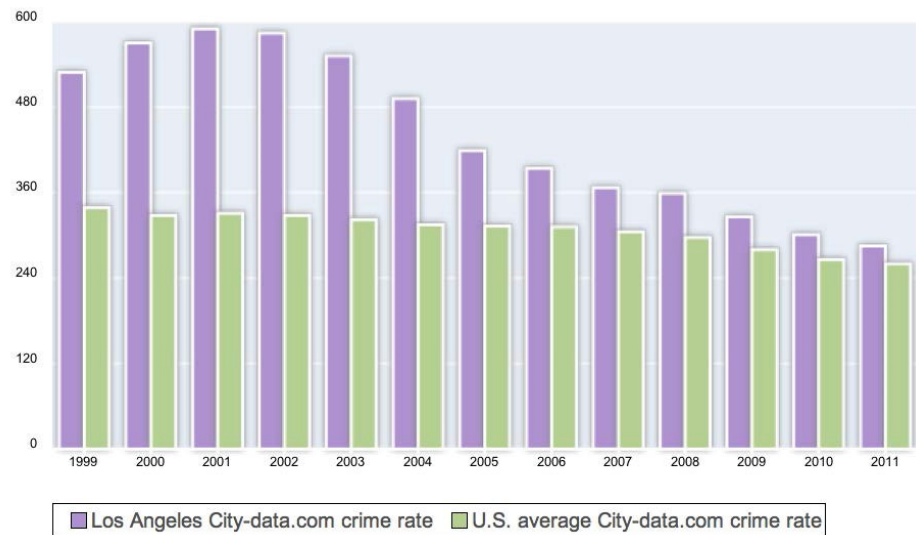
## Air Quality Index (AQI)



## Document 4: Quality of Life Statistics:

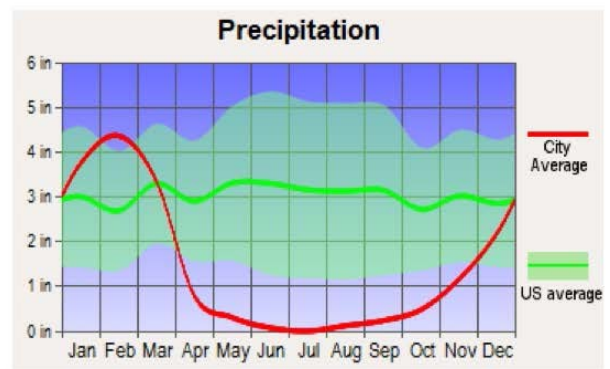
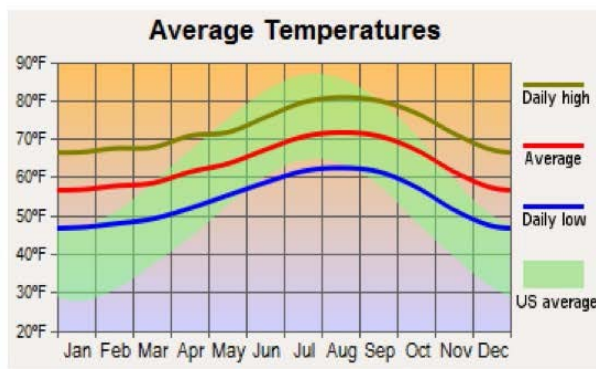
### C) Los Angeles



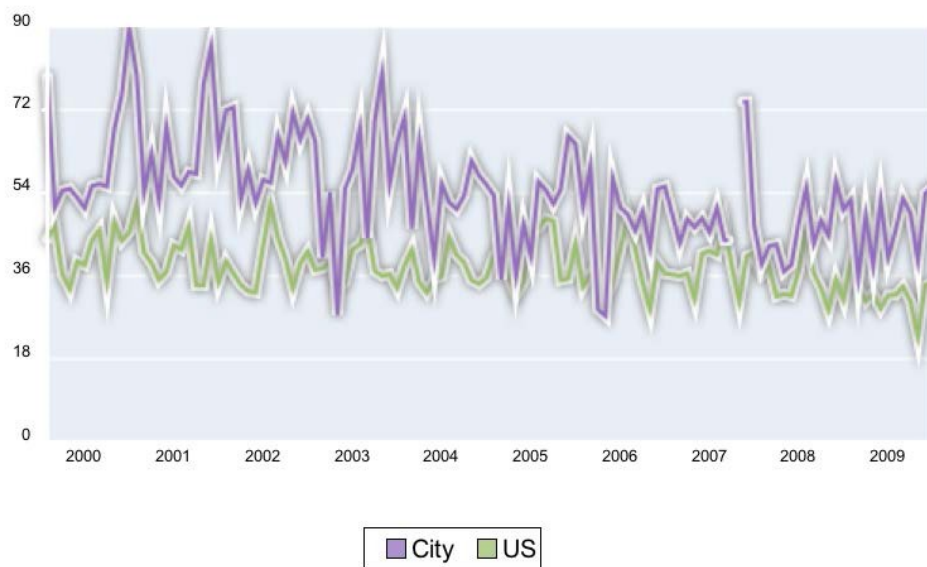


Crime rates in Los Angeles by Year									
Type	2003	2004	2005	2006	2007	2008	2009	2010	2011
<b>Murders</b>	515	518	489	480	395	384	312	293	297
<b>per 100,000</b>	13.4	13.4	12.6	12.4	10.2	10	8.1	7.6	7.7
<b>Rapes</b>	1,226	1,131	1,105	1,059	1,004	949	903	923	828
<b>per 100,000</b>	31.9	29.3	28.5	27.3	25.9	24.6	23.5	24	21.6
<b>Robberies</b>	16,577	14,181	13,797	14,353	13,481	13,422	12,217	10,924	10,077
<b>per 100,000</b>	431.8	367	356.4	370	348.3	348.5	317.4	284.4	262.6
<b>Assaults</b>	30,506	26,956	16,376	14,634	12,926	11,798	10,638	9,344	8,843
<b>per 100,000</b>	794.7	697.6	423	377.2	334	306.4	276.4	243.2	230.5
<b>Burglaries</b>	25,115	23,182	22,592	20,359	19,629	19,726	18,435	17,410	17,264
<b>per 100,000</b>	654.2	599.9	583.6	524.8	507.1	512.2	479	453.2	449.9
<b>Thefts</b>	77,111	72,045	65,972	59,711	58,304	58,472	57,414	55,248	53,469
<b>per 100,000</b>	2008.7	1864.5	1704.2	1539.2	1506.4	1518.4	1491.7	1438.1	1393.4
<b>Auto thefts</b>	33,555	29,973	28,721	25,389	23,524	22,623	18,391	17,046	15,597
<b>per 100,000</b>	874.1	775.7	741.9	654.4	607.8	587.5	477.8	443.7	406.5
<b>Arson</b>	2,072	1,926	2,229	2,356	2,207	1,967	1,561	1,341	1,376
<b>per 100,000</b>	54	49.8	57.6	60.7	57	51.1	40.6	34.9	35.9
<b>Crime rate (higher means more crime, U.S. average = 319.1)</b>	551.7	491.7	419.3	394.3	366.7	358.7	325.7	301.2	285

## Los Angeles data

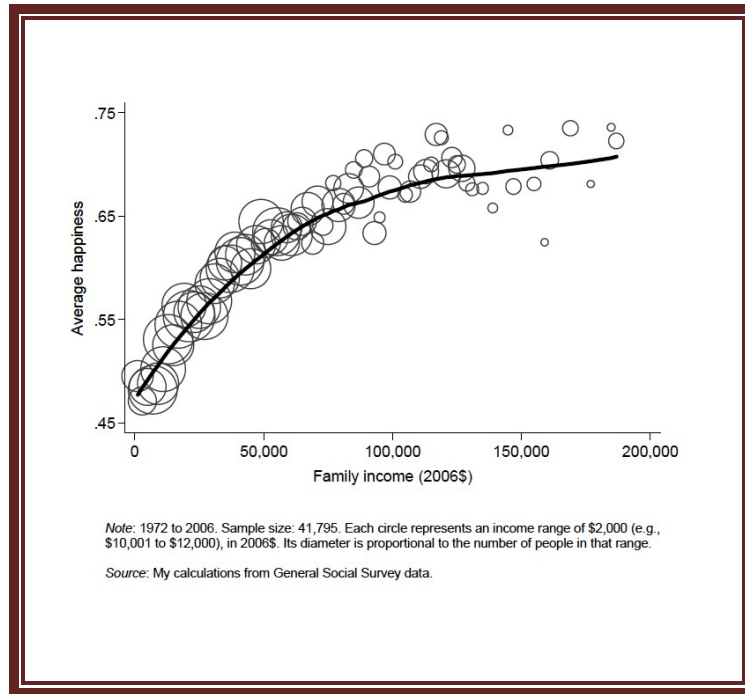


## Air Quality Index (AQI)





## Document 5: Income Happiness Index



## Document 6: Health Care Indices

	Chicago,	New York,	Los Angeles,
Skill and competency of medical staff	5	65.62	59
Speed in completing examination and reports	6	66.67	67
Equipment for modern diagnosis and treatment	7	1	10
Accuracy and completeness in filling out	6	61.11	67
Friendliness and courtesy of the staff	7	5	87
Responsiveness (waitings) in medical institutions	5	33.33	67
Cost to you	6	2	50
Convenience of location for you	56.25	66.67	82
Health Care Index	62.92	54.82	70
<i>Health Care Index is an estimation of the overall quality of the health care system, health care professionals, equipment, staff, doctors, cost, etc. A higher number means more highly satisfied.</i>			