

Model	DV	IV	Interpretation
<b><u>Level-level Regression</u></b> $y = \beta_0 + \beta_1 x + \epsilon$	$y$	$x$	<p>"If you change <math>x</math> by one, we'd expect <math>y</math> to change by <math>\beta_1</math>"</p> $\Delta y = \beta_1 \cdot \Delta x$
<b><u>Log-Level Regression</u></b> $\ln(y) = \beta_0 + \beta_1 x + \epsilon$	$\ln(y)$	$x$	<p>"If we change <math>x</math> by 1 (unit), we'd expect our <math>y</math> variable to change by <math>100 \cdot \beta_1</math> percent"</p> $\% \Delta y = 100 \cdot \beta_1 \cdot \Delta x$
<b><u>Level-Log Regression</u></b> $y = \beta_0 + \beta_1 \cdot \ln(x) + \epsilon$	$y$	$\ln(x)$	<p>"If we increase <math>x</math> by one percent, we expect <math>y</math> to increase by <math>(\beta_1/100)</math> units of <math>y</math>."</p> $\Delta y = (\beta_1/100) \cdot \% \Delta x$
<b><u>Log-Log Regression</u></b> $\ln(y) = \beta_0 + \beta_1 \cdot \ln(x) + \epsilon$	$\ln(y)$	$\ln(x)$	<p>"If we change <math>x</math> by one percent, we'd expect <math>y</math> to change by <math>\beta_1</math> percent (i.e., an elasticity)."</p> $\% \Delta y = \beta_1 \cdot \% \Delta x$

\*Table borrowed shamelessly from: <http://www.cazaar.com/ta/econ113/interpreting-beta>

## Population of the 100 Largest US Cities in 1900

Source: U.S. Bureau of the Census  
Internet Release date: June 15, 1998

Rank	Place 1/	Population	Rank	Place	Population
1	New York city, NY *	3,437,202	51	Wilmington city, DE	76,508
2	Chicago city, IL	1,698,575	52	Camden city, NJ	75,935
3	Philadelphia city, PA	1,293,697	53	Trenton city, NJ	73,307
4	St. Louis city, MO	575,238	54	Bridgeport city, CT	70,996
5	Boston city, MA	560,892	55	Lynn city, MA	68,513
6	Baltimore city, MD	508,957	56	Oakland city, CA	66,960
7	Cleveland city, OH	381,768	57	Lawrence city, MA	62,559
8	Buffalo city, NY	352,387	58	New Bedford city, MA	62,442
9	San Francisco city, CA	342,782	59	Des Moines city, IA	62,139
10	Cincinnati city, OH	325,902	60	Springfield city, MA	62,059
11	Pittsburgh city, PA *	321,616	61	Somerville city, MA	61,643
12	New Orleans city, LA	287,104	62	Troy city, NY	60,651
13	Detroit city, MI	285,704	63	Hoboken city, NJ	59,364
14	Milwaukee city, WI	285,315	64	Evansville city, IN	59,007
15	Washington city, DC	278,718	65	Manchester city, NH	56,987
16	Newark city, NJ	246,070	66	Utica city, NY	56,383
17	Jersey City city, NJ	206,433	67	Peoria city, IL	56,100
18	Louisville city, KY	204,731	68	Charleston city, SC	55,807
19	Minneapolis city, MN	202,718	69	Savannah city GA	54,244
20	Providence city, RI	175,597	70	Salt Lake City city, UT	53,531
21	Indianapolis city, IN	169,164	71	San Antonio city, TX	53,321
22	Kansas City city, MO	163,752	72	Duluth city, MN	52,969
23	St. Paul city, MN	163,065	73	Erie city, PA	52,733
24	Rochester city, NY	162,608	74	Elizabeth city, NJ	52,130
25	Denver city, CO	133,859	75	Wilkes-Barre city, PA	51,721
26	Toledo city, OH	131,822	76	Kansas City city, KS	51,418
27	Allegheny city, PA *	129,896	77	Harrisburg city, PA	50,167
28	Columbus city, OH	125,560	78	Portland city, ME	50,145
29	Worcester city, MA	118,421	79	Yonkers city, NY	47,931
30	Syracuse city, NY	108,374	80	Norfolk city, VA	46,624
31	New Haven city, CT	108,027	81	Waterbury city, CT	45,859
32	Paterson city, NJ	105,171	82	Holyoke city, MA	45,712
33	Fall River city, MA	104,863	83	Fort Wayne city, IN	45,115
34	St. Joseph city, MO	102,979	84	Youngstown city, OH	44,885
35	Omaha city, NE	102,555	85	Houston city, TX	44,633
36	Los Angeles city, CA	102,479	86	Covington city, KY	42,938
37	Memphis city, TN	102,320	87	Akron city, OH	42,728
38	Scranton city, PA	102,026	88	Dallas city, TX	42,638
39	Lowell city, MA	94,969	89	Saginaw city, MI	42,345
40	Albany city, NY	94,151	90	Lancaster city, PA	41,459
41	Cambridge city, MA	91,886	91	Lincoln city, NE	40,169
42	Portland city, OR	90,426	92	Brockton city, MA	40,063
43	Atlanta city, GA	89,872	93	Binghamton city, NY	39,647
44	Grand Rapids city, MI	87,565	94	Augusta city, GA	39,441
45	Dayton city, OH	85,333	95	Pawtucket city, RI	39,231
46	Richmond city, VA	85,050	96	Altoona city, PA	38,973
47	Nashville city, TN	80,865	97	Wheeling city, WV	38,878
48	Seattle city, WA	80,671	98	Mobile city, AL	38,469
49	Hartford city, CT	79,850	99	Birmingham city, AL	38,415
50	Reading city, PA	78,961	100	Little Rock city, AR	38,307

The US population has been growing by approximately 1% a year.

What is the predicted size of NYC in 2010? What about Milwaukee, WI?