

SQL Database Developer Competitive Position™ Market Report

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Welcome

I established Whole Root™ Economic Research, Inc. in 1996 to provide extensive market analysis to individual decision makers. My Competitive Position™ Market Reports enable individuals to assess salary opportunities and set employment goals. It is the first affordable market analysis designed specifically to assist all participants in the job marketplace. Whether you are a computer professional, data processing manager or human resource professional, I hope you find this material useful.

Thank you,

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Economic Statistician

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A Special Thanks to:

Nicholas Vivona
Computer Industry Consultant

SQL Database Developer Characteristics of Sample Data

Sample Source: The **New York Times** Sunday Employment section
Dates: the 52 weeks (1 Year) from January 5 through December 28, 1997

Number of Classified Want Ads: 35

Qualifications listed in the Want Ads

	To be Included Each Want Ad Must Have	Salary Effectd When Listed	Salary Not Effectd when Listed
Responsibility	Database Designer/Developer, Database Analyst, or Database Programmer		
Hardware / OS		UNIX = 13	
Language			
Database	Sybase, SQL Server or Informix		
Network			
MIS Software			
Industry			

Job Description

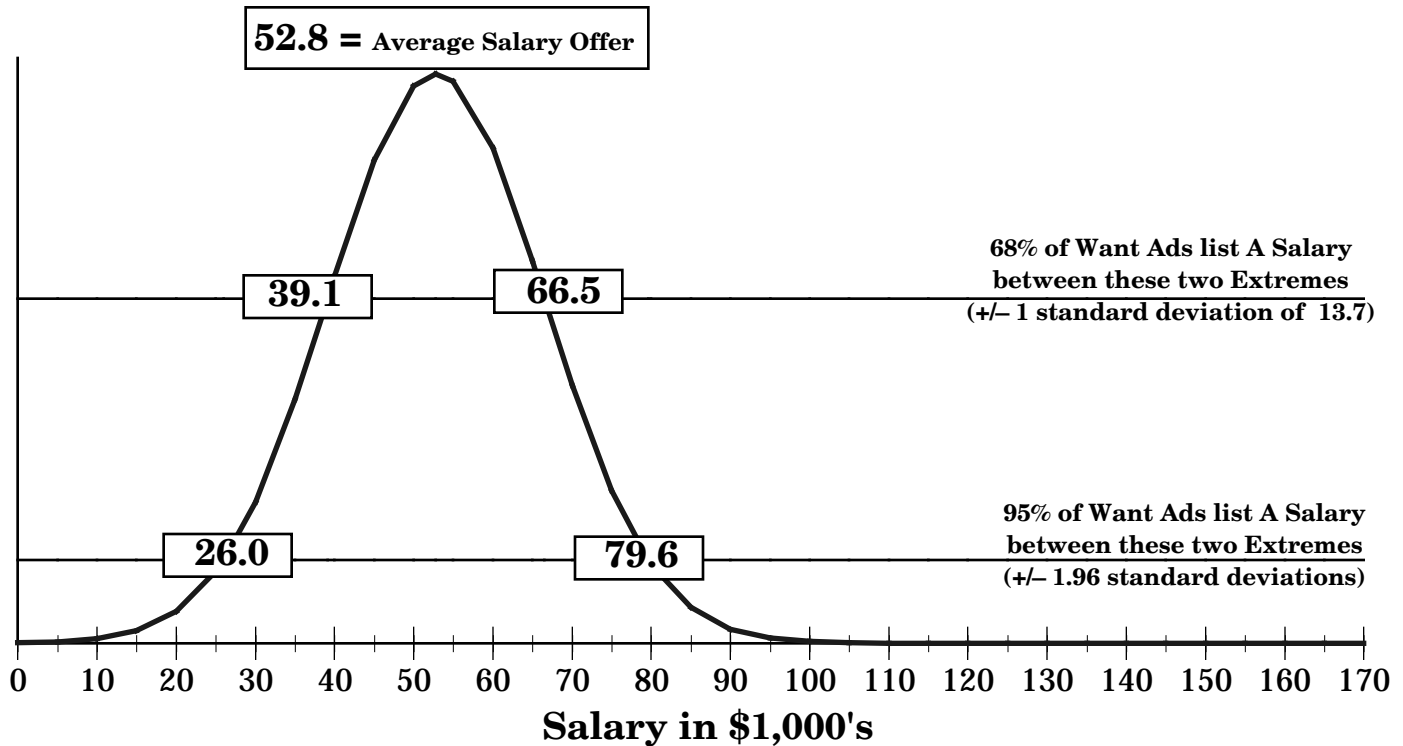
- Develops a Relational Model of the application's requirements.
- Applies database technologies: access security, data integrity, transaction management, locking, stored procedures, triggers, query optimization and data replication
- Assists in the creation and maintenance of database definitions and tables. Designs and implements queries to optimize performance
- Tunes database application to desired performance

SQL Database Developer Sample Averages and Distributions

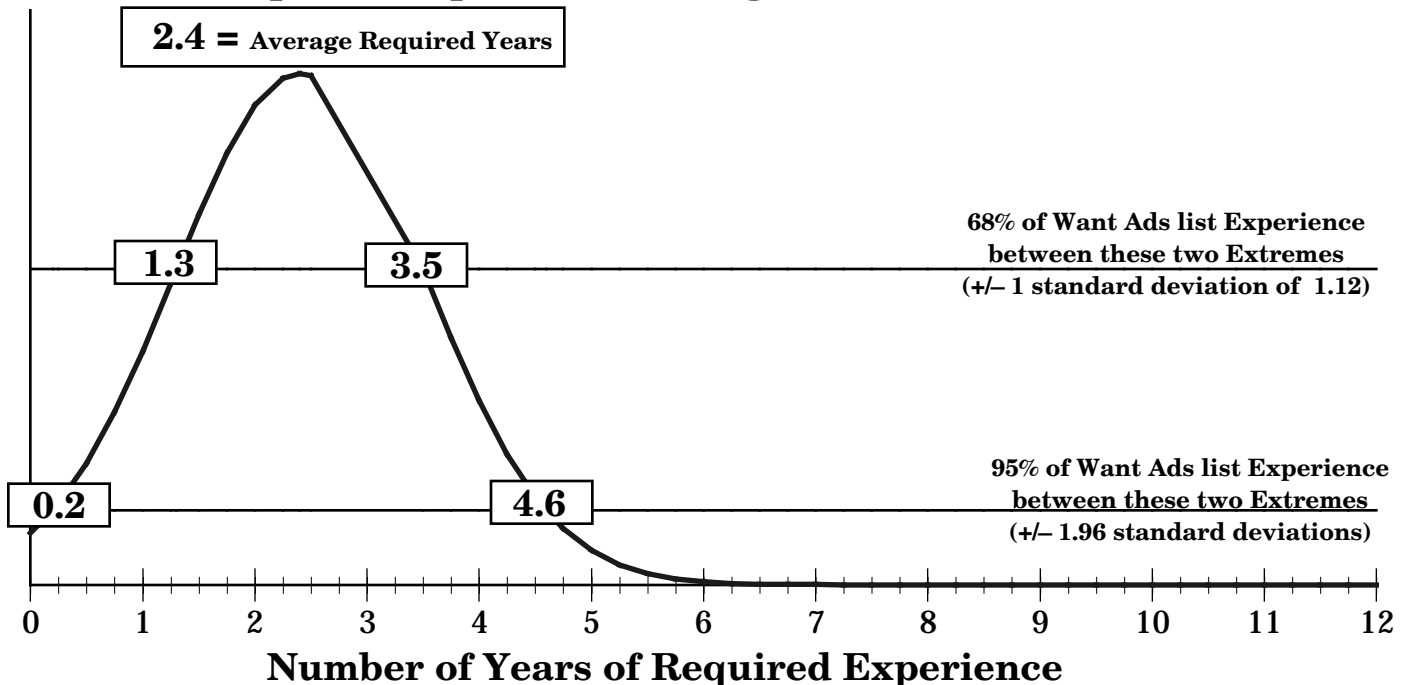
Sample Size: 35 Want Ads

Sample Source: The New York Times
Sunday Employment section 52 Weeks from
January 5 through December 28, 1997

Salary Average and Distribution



Required Experience Average and Distribution



SQL Database Developer

The Equation of the Expected Salary Offer

Salary offers are lowest at entry level and increase by a constant amount with each year of experience.

In 1997 wage deflation effected salary offers.

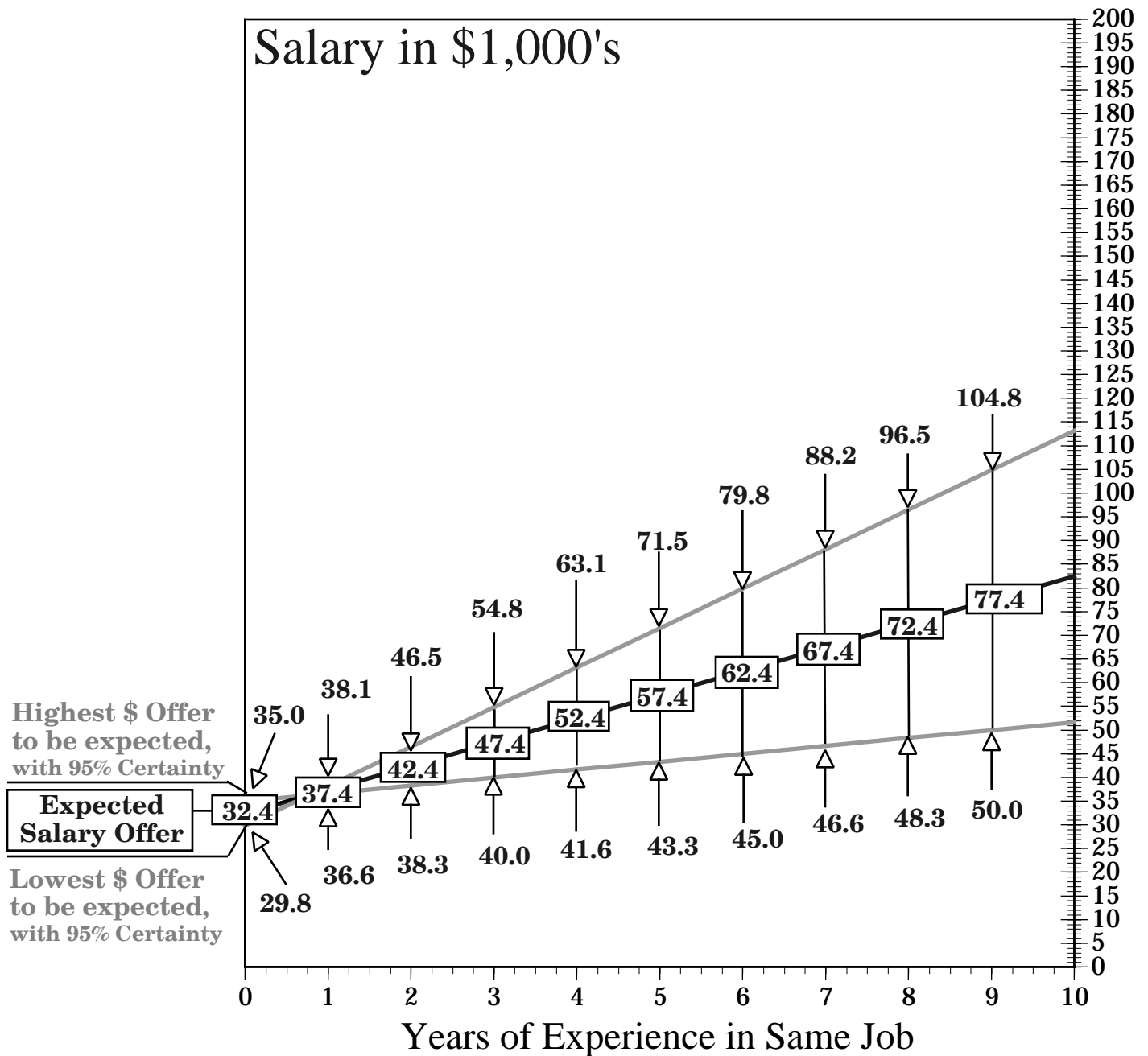
Salary offers were larger when UNIX was listed in the want ad.

	Entry Level		Wage Deflation		UNIX		Year of Experience	
			Dollars of Inflation per Week Multiplied by Natural Logarithm of Number of Weeks		Effect on Salary Offer only when listed in position description		Dollars per Year Multiplied by Number of Years	
Expected Salary Offer	=	\$53.3	+	\$-5.3 ln(Weeks) or 1997 = \$-20.9	+	\$10.2 (if UNIX) or 0	+	\$5.0 Years
First 95% Confidence Bound of Expected Salary Offer	=	\$67.7	+	\$-9.6 ln(Weeks) or 1997 = \$-37.9	+	\$17.1 (if UNIX) or 0	+	\$8.3 Years
Second 95% Confidence Bound of Expected Salary Offer	=	\$38.9	+	\$-1.0 ln(Weeks) or 1997 = \$-3.9	+	\$3.3 (if UNIX) or 0	+	\$1.7 Years

The first and second bounds are constructed from the upper and lower 95% confidence intervals of the variables presented above. The Expected Salary Offer Graphs present the minimum confidence interval of the equation.

SQL Database Developer

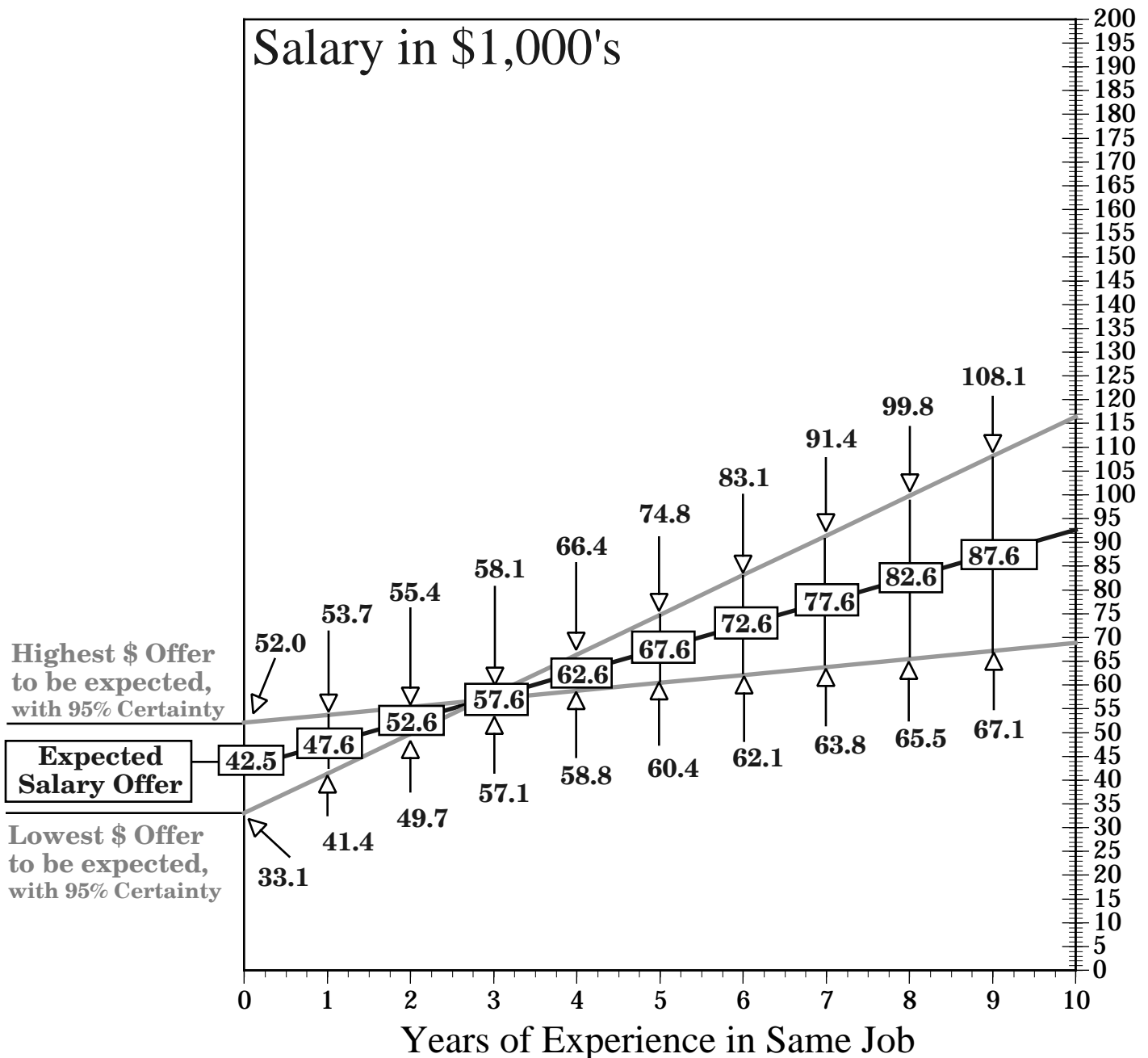
The Expected Salary Offer
& its 95% Probability Range
for Each Year of Required Experience



Sample Source: The New York Times
Sunday Employment section 52 Weeks from
January 5 through December 28, 1997

UNIX SQL Database Developer

The Expected Salary Offer
& its 95% Probability Range
for Each Year of Required Experience



Sample Source: The New York Times
Sunday Employment section 52 Weeks from
January 5 through December 28, 1997

SQL Database Developer Wage Inflation

The statistical analysis indicates that Salary Offers are increasing at a decreasing rate each week

Expected Wage Inflation = $-5.290\ln(\text{Week}) = \-3.7 per 1998

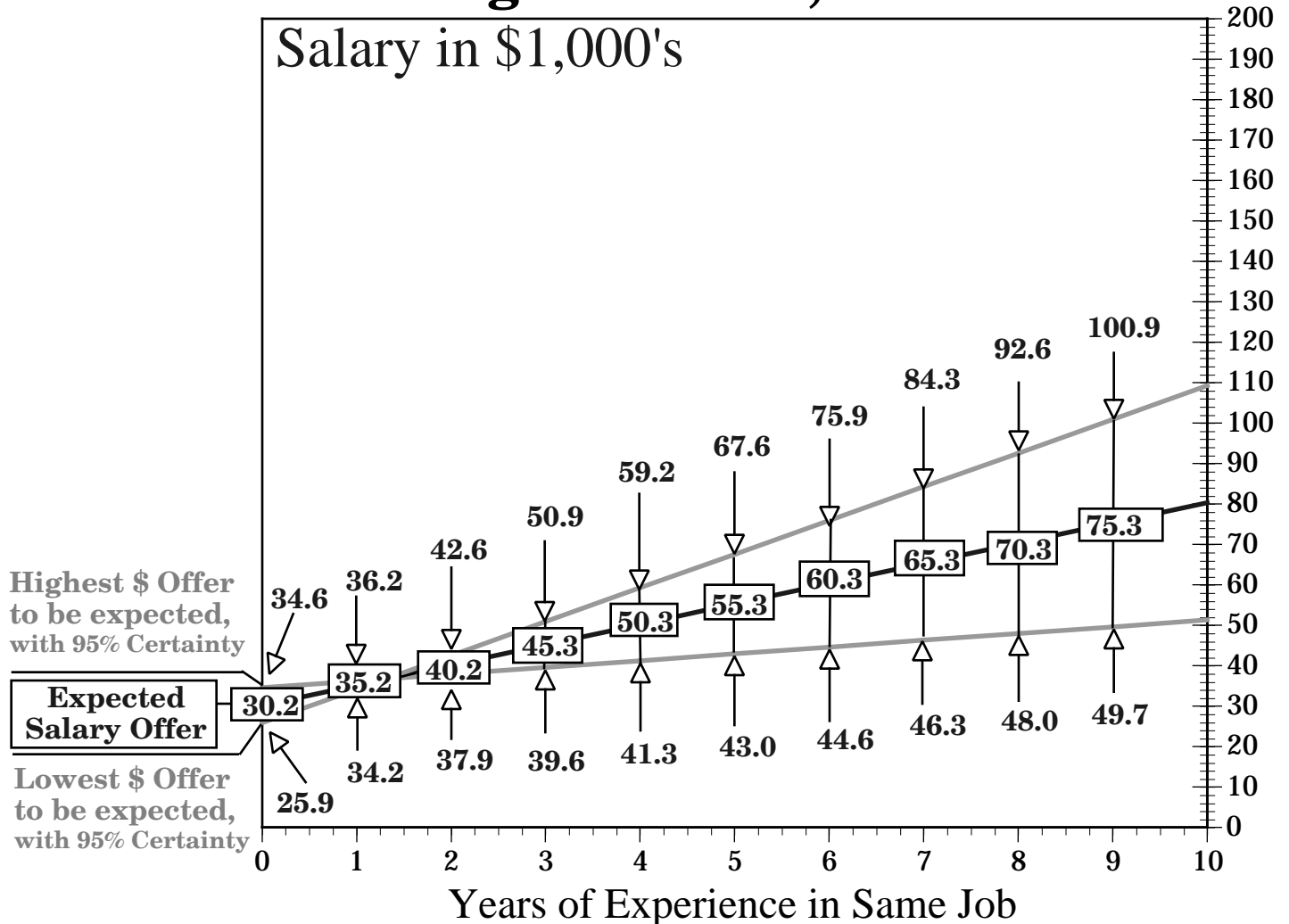
95% Confidence Interval

Highest Expected Wage Inflation = $-.985\ln(\text{Week}) = \-0.7 per 1998

Lowest Expected Wage Inflation = $-9.595\ln(\text{Week}) = \-6.7 per 1998

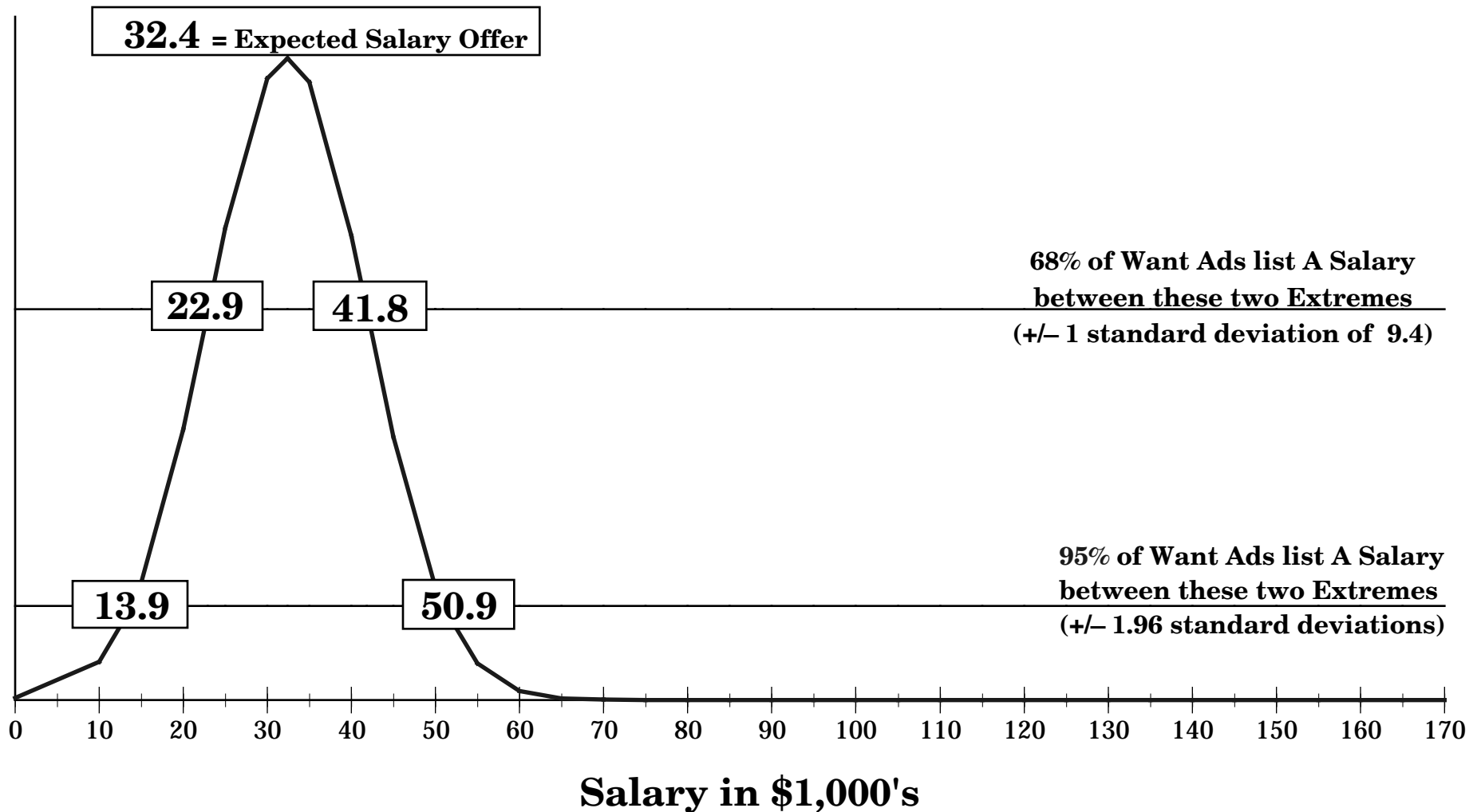
Salaries in \$1,000 ; 52 Weeks per year ; 1998 = Weeks 53 – 104

Predicted Salary Offers through June 28, 1998



Sample Source: The New York Times
Sunday Employment section 52 Weeks from
January 5 through December 28, 1997

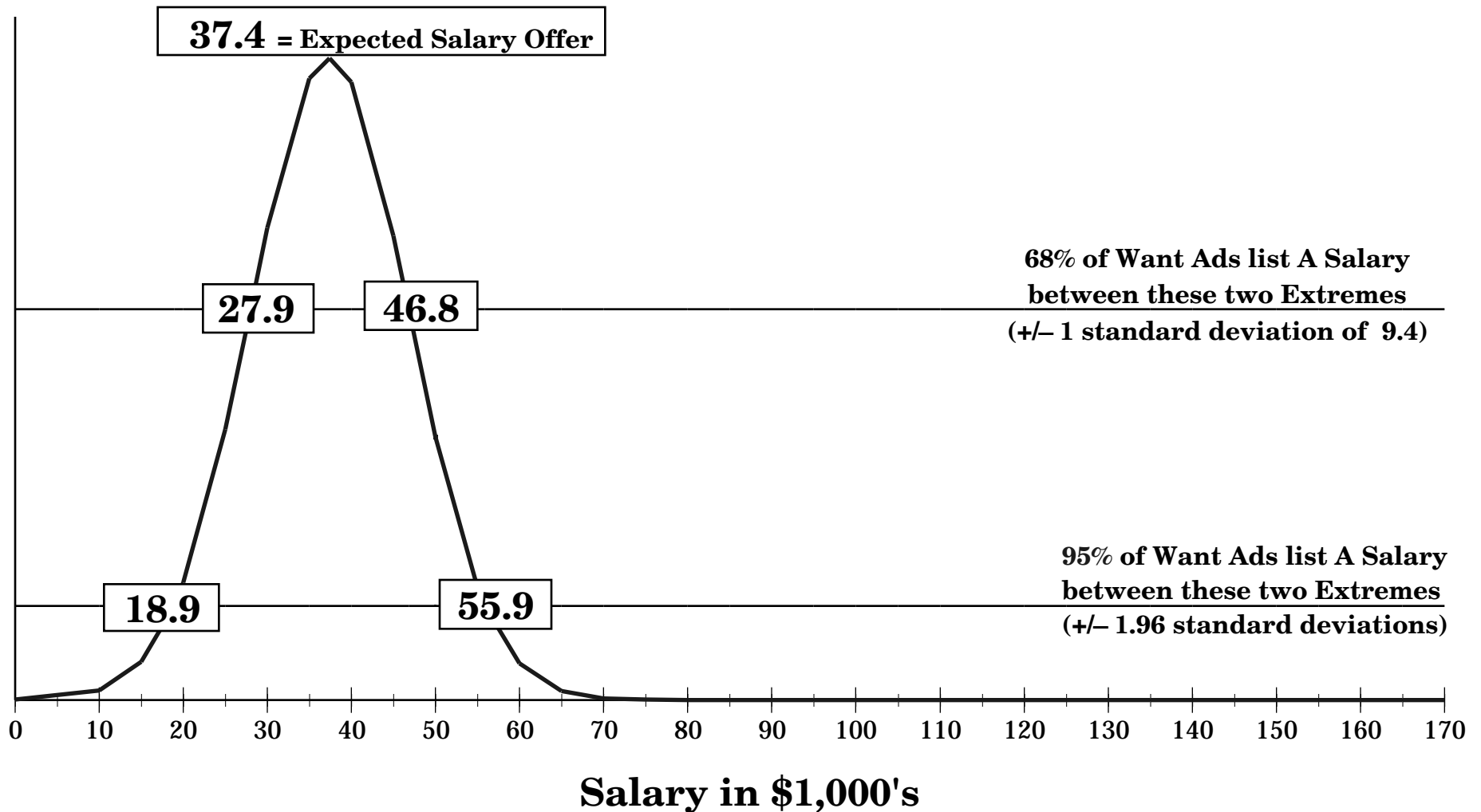
SQL Database Developer Extreme Salary Offers: Entry Level



Sample Source: The New York Times
Sunday Employment section 52 Weeks from
January 5 through December 28, 1997

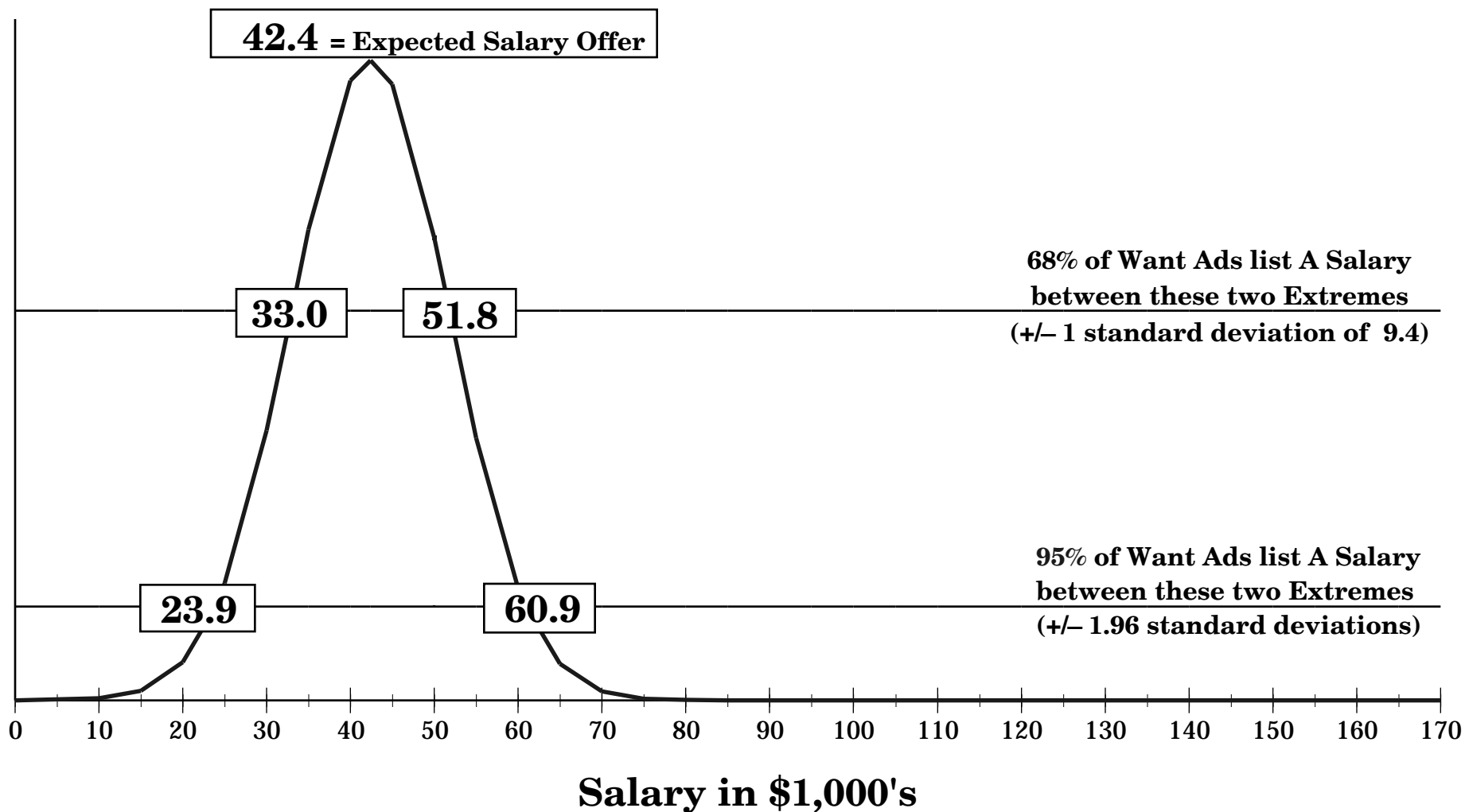
SQL Database Developer

Extreme Salary Offers: 1 Year of Required Experience



Sample Source: The New York Times
Sunday Employment section 52 Weeks from
January 5 through December 28, 1997

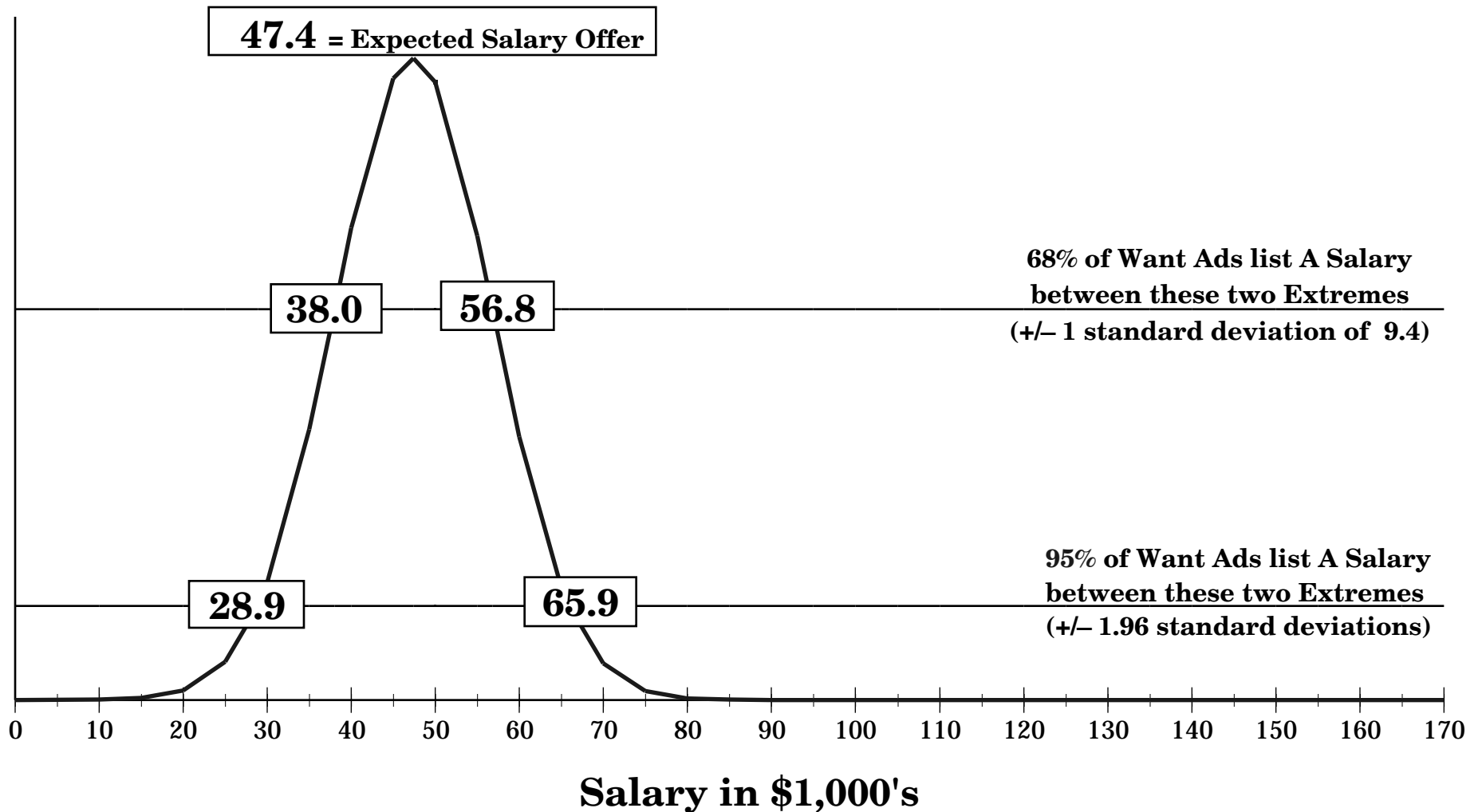
SQL Database Developer Extreme Salary Offers: 2 Years of Required Experience



**Sample Source: The New York Times
Sunday Employment section 52 Weeks from
January 5 through December 28, 1997**

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Extreme Salary Offers: 3 Years of Required Experience



Sample Source: The New York Times
Sunday Employment section 52 Weeks from
January 5 through December 28, 1997

Graph Reference: Expected Salary Offer per Year of Experience

The Middle Black Line

This line depicts the expected salary offer for each year of required experience calculated from the sample of want ads.

The expected salary for each year of required experience is shown in a box on the line.

The expected salary is the most likely, and the average, salary offered.

The 95% Probability Lines Infer the Expected Salary Offer for the Entire Job Market

The sample of classified want ads enables inferences to be made concerning the entire job market for this position.

The gray lines above and below the middle black line present the Highest and Lowest salary offers that can be expected in the entire job market.

There is a 95% certainty that the average salary offer, within the entire job market for this position, lies between the High and the Low numbers that point to the gray lines at each year of required experience.

Please Note:

All three curves cross at the central tendency point.

The further the number of years of required experience is from the central tendency point, the larger the 95% probability region of the expected salary offer.

Graph Reference: Extreme Salary Offers

There are 3 statistics presented in this graph

Each statistic presents an assessment of the likelihood or frequency of a salary offer occurring:

= **Expected Salary Offer**

The expected salary offer is the most likely salary offer as calculated from the sample of want ads

68% of Want Ads list a Salary between these two Extremes (+/- 1 standard deviation)

The 68% probability extreme indicates the boundaries where salary offers become infrequent for the entire job market

95% of Want Ads list a Salary between these two Extremes (+/- 1.96 standard deviations)

The 95% probability extreme indicates the boundaries where salary offers become extremely infrequent for the entire job market

Extreme Salaries

The 68% Probability Extremes:

Salary offers are unlikely above or below this range

Two Thirds (68%) of salary offers are in this range

Only 1/6th (16%) of salary offers are greater than the high number

Only 1/6th (16%) of salary offers are less than the low number

The 68% confidence interval is constructed by taking one standard deviation then adding it to and subtracting it from the expected salary offer

The 95% Probability Extremes

Salary offers are extremely unlikely above or below this range

95% of salary offers are in this range

Only 2.5% of salary offers are greater than the high number

Only 2.5% of salary offers are less than the low number

The 95% confidence interval is constructed by multiplying the standard deviation by 1.96 then adding it to and subtracting it from the expected salary offer

For the complete presentation of the expected salary offer please see the "Expected Salary Offer per Year of Experience" graph.

SQL Database Developer Statistical Test Results

Regression Corrected for Heteroscedasticity

Regression Summary
Salary (H adj) vs. 4 Independents

Count	35
Num. Missing	0
R	.989
R Squared	.978
Adjusted R Squared	.975
RMS Residual	1.141

The expected salary offer line was corrected for heteroscedasticity (please view the Heteroscedasticity Correction page for specifics). A consequence of correctly accounting for the relationship within the variance is that the R Squared statistic is no longer accurate. The variation around the mean salary offer has been altered to correctly calculate the expected salary offer line with all available information.

The variability of salary offers around the Expected Salary Offer line is depicted in the 95% Probability Range of the expected salary offer and in the Extreme Salary Offer Graphs.

The R Squared statistic calculates the percentage of the variation in salary offers away from the mean salary offer, explained by the expected salary offer line. An R Squared statistic of 1 would indicate that the expected salary offer line would be the only salary offered in the marketplace. A reasonable degree of variability should be expected due to the many factors influencing individual want ads.

ANOVA Table
Salary (H adj) vs. 4 Independents

	DF	Sum of Squares	Mean Square	F-Value	P-Value
Regression	4	1762.286	440.571	338.209	<.0001
Residual	31	40.382	1.303		
Total	35	1802.668			

Regression Coefficients
Salary (H adj) vs. 4 Independents

	Coefficient	Std. Error	Std. Coeff.	t-Value	P-Value
Entry Level (H adj)	53.279	7.069	1.238	7.537	<.0001
ln(Weeks) (H adj)	-5.290	2.111	-.452	-2.506	.0177
UNIX (H adj)	10.172	3.384	.301	3.006	.0052
Years (H adj)	5.008	1.633	.067	3.066	.0045

The statistical significance tests indicate a high level of quality for the expected salary offer numbers:

1. There is less than a .01% (one ten-thousandth) chance that there is no relationship between salary offers and experience requirements (P-Value in ANOVA Table).
2. There is less than a .01% (one ten-thousandth) chance that the entry level salary can't be defined (Entry Level P-Value in Regression Coefficients Table).
3. There is a .45% (forty-five ten-thousandths) chance that the yearly increase in salary offer can't be defined (Years P-Value in Regression Coefficients Table).
4. There is a 1.77% chance that the Weekly wage inflation effect can't be defined (ln(Week) P-Value in Regression Coefficients Table).
5. There is a .52% (fifty-two ten-thousandths) chance that the UNIX effect can't be defined (UNIX P-Value in Regression Coefficients Table).

SQL Database Developer Heteroscedasticity Correction

Heteroscedasticity Regression Test

Dependent Variable = $\ln(\text{Resid}^2)$ Independent Variables: $X_1 = \text{UNIX}$, $X_2 = \ln(\text{Years})$

The variation in salary offers above and below the expected salary line increases at an increasing rate as the years of experience increase. In addition, the variation in salary offers above and below the expected salary line is larger when "UNIX" is asked for.

This additional information is factored into the analysis by dividing all columns by:
 $(e^{(1.162 + 1.757*\text{UNIX} + 1.547*\ln(\text{Years}))})^{.5}$

When each want ad is weighted by its dependent effect on the variance, an unbiased expected salary offer line with constant variance is derived.

Test Results

R ² Statistic		F Statistic						
Count	35	Regression	DF	Sum of Squares	Mean Square	F-Value	P-Value	
Num. Missing	0		2	50.890	25.445	7.043	.0029	
R	.553		Residual	32	115.603	3.613		
R Squared	.306		Total	34	166.492			
Adjusted R Squared	.262	t Statistics						
RMS Residual	1.901		Coefficient	Std. Error	Std. Coeff.	t-Value	P-Value	
		Intercept	1.162	.643	1.162	1.809	.0799	
		UNIX	1.757	.694	.382	2.531	.0165	
		ln(Years)	1.547	.722	.324	2.142	.0399	

Original Regression Test Results with Heteroscedasticity

R ² Statistic		F Statistic						
Count	35	Regression	DF	Sum of Squares	Mean Square	F-Value	P-Value	
Num. Missing	0		3	3597.748	1199.249	13.473	<.0001	
R	.752		Residual	31	2759.447	89.014		
R Squared	.566		Total	34	6357.195			
Adjusted R Squared	.524	t Statistics						
RMS Residual	9.435		Coefficient	Std. Error	Std. Coeff.	t-Value	P-Value	
		Intercept	51.008	8.305	51.008	6.141	<.0001	
		UNIX	10.827	3.781	.381	2.863	.0075	
		ln(Week)	-5.775	2.355	-.319	-2.453	.0200	
		Years	6.559	1.517	.536	4.325	.0001	

95% Confidence Intervals

	Coefficient	95% Lower	95% Upper
Intercept	51.008	34.068	67.947
UNIX	10.827	3.115	18.539
ln(Week)	-5.775	-10.578	-.973
Years	6.559	3.466	9.653