

**UNIX Administrator
Competitive Position™ Market Report
Preliminaries**

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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,

Robert Gerald Vivona
Economic Statistician

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A Special Thanks to:

Nicholas Vivona
Computer Industry Consultant

UNIX Administrator 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: 74

Qualifications listed in the Want Ads

	To be Included Each Want Ad Must Have	Salary Effectd When Listed	Salary Not Effectd when Listed
Responsibility	System Administrator, System Manager, Network Administrator, System Analyst, System Operator, Manage System or System Support	Non -Admin = System Analyst, System Operator, Manage System or System Support = 22	
Hardware / OS	UNIX, HP-UNIX, AIX (UNIX), and/or IBM RS6000		AIX (UNIX) = 11
Language			
Database			
Network		TCP/IP = 7	
MIS Software			
Industry		Banking, Investment Banking, Financial, Wall Street, Insurance or Accounting = 13	

Job Description

- Oversee the day-to-day operation of scheduled system processing
- Develop and execute operation tracking facilities and status reporting
- Handle mail merge printer output and delivery
- Maintain user accounts, access permission, usage and fees
- Maintain integrity of software and data libraries
- Schedule and monitor execution of cyclic applications
- Recommend data purge, archive, & acquisition/reduction of hardware

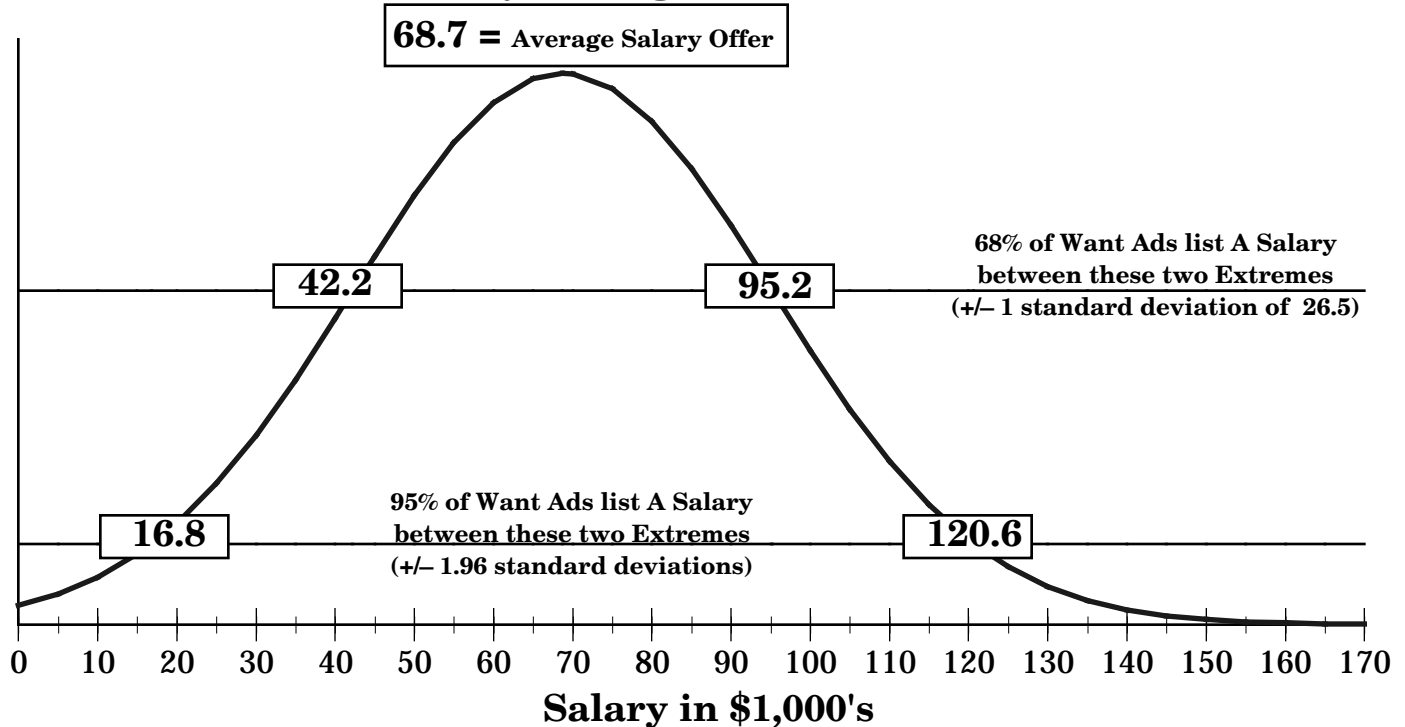
UNIX Administrator

Sample Averages and Distributions

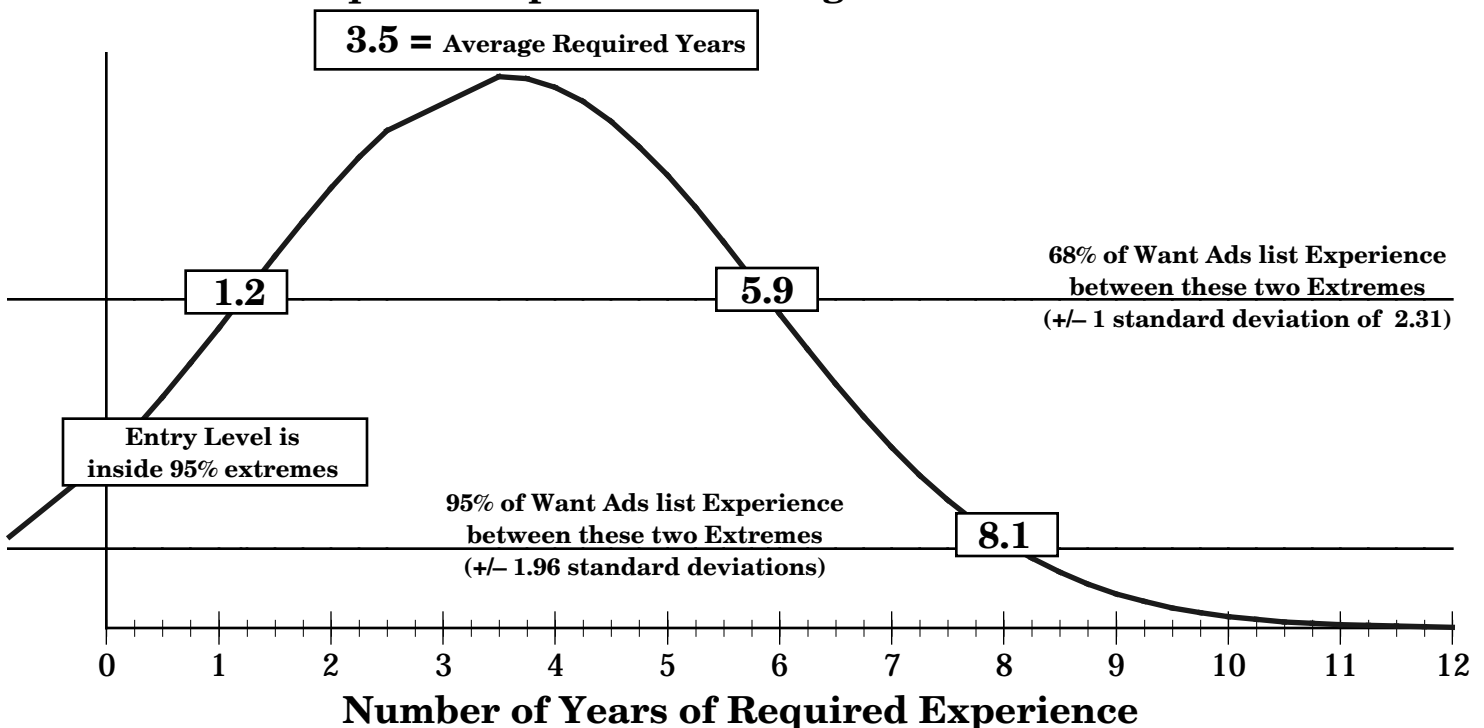
Sample Size: 74 Want Ads

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



UNIX Administrator

The Equation of the Expected Salary Offer

Salary offers are lowest at entry level, increase rapidly with the first years of experience and approach a ceiling as experience matures.

In 1997 wage inflation effected salary offers.

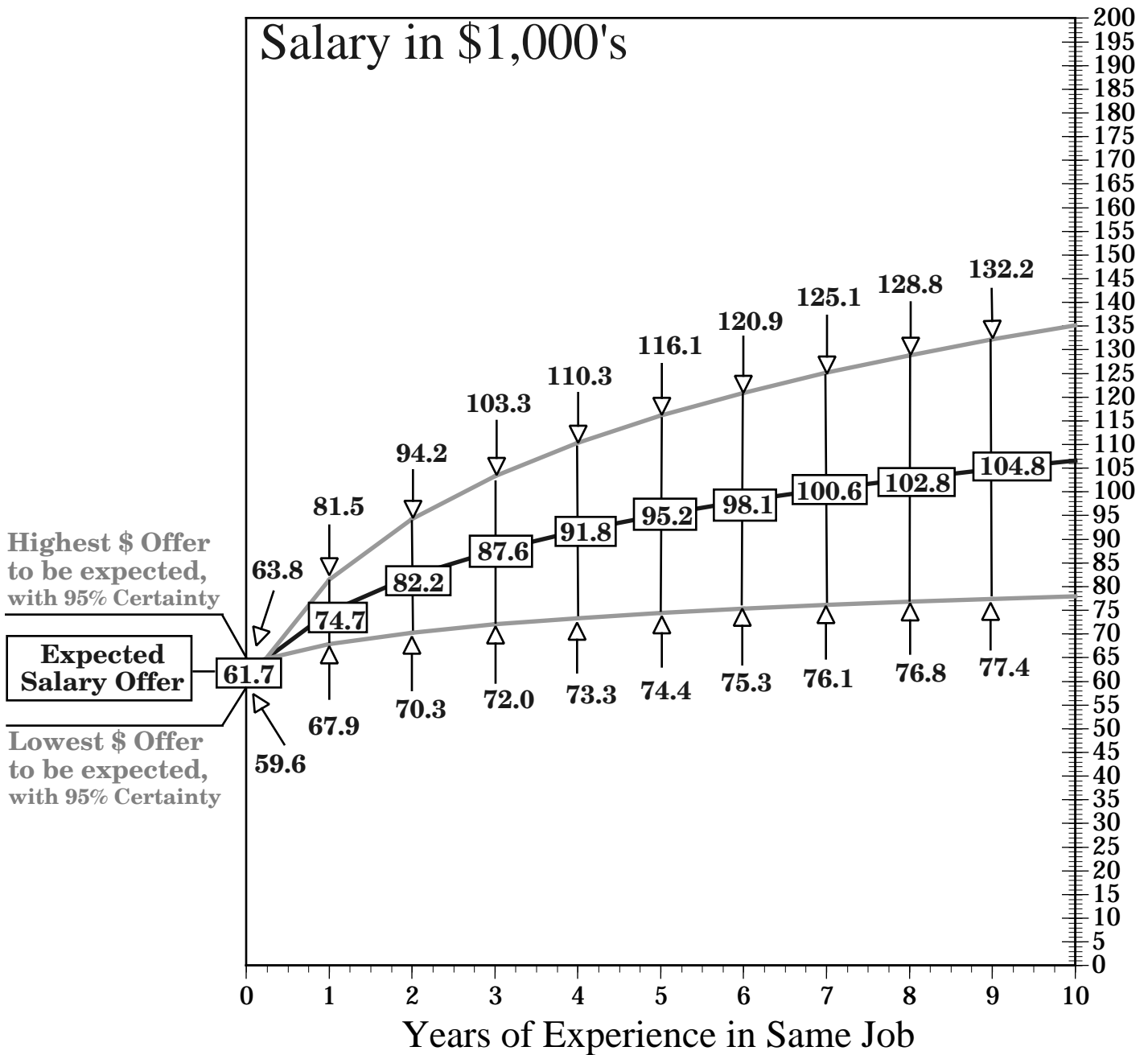
Salary offers were smaller when Non-Administrator or TCP/IP were listed and larger when Financial was listed.

		Entry Level		Wage Inflation		Non-Admin, Financial, TCP/IP		Year of Experience				
				Dollars of Inflation per Week Multiplied by Number of Weeks		Effect on Salary Offer only when listed in position description		Dollars per Year Multiplied by Natural Logarithm of Number of Years + 1 for entry level				
Expected Salary Offer	=	\$42.8	+	\$0.36 Weeks or 1997 = \$18.9	-	\$27.0 (if Non-Admin) or 0	+	\$13.4 (if Financial) or 0	-	\$30.1 (If TCP/IP) or 0	+	\$18.7 ln(Years + 1)
First 95% Confidence Bound of Expected Salary Offer	=	\$62.8	+	\$0.02 Weeks or 1997 = \$1.0	-	\$35.8 (if Non-Admin) or 0	+	\$23.7 (if Financial) or 0	-	\$46.5 (If TCP/IP) or 0	+	\$5.9 ln(Years + 1)
Second 95% Confidence Bound of Expected Salary Offer	=	\$22.7	+	\$0.71 Weeks or 1997 = \$36.9	-	\$18.3 (if Non-Admin) or 0	+	\$3.2 (if Financial) or 0	-	\$13.7 (If TCP/IP) or 0	+	\$31.5 ln(Years + 1)

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.

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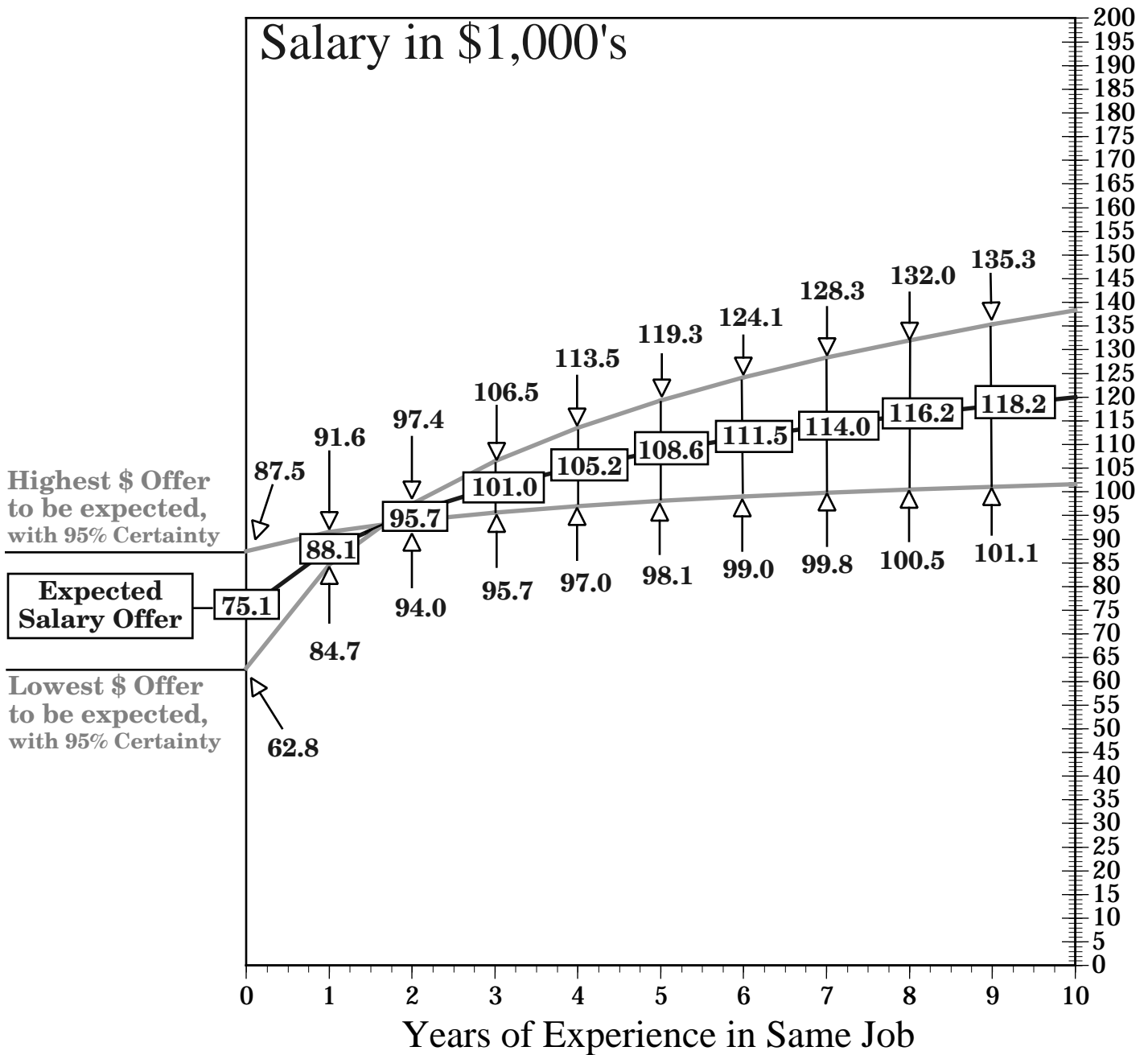
The Expected Salary Offer
& its 95% Probability Range
for Each Year of Required Experience



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

Financial UNIX Administrator

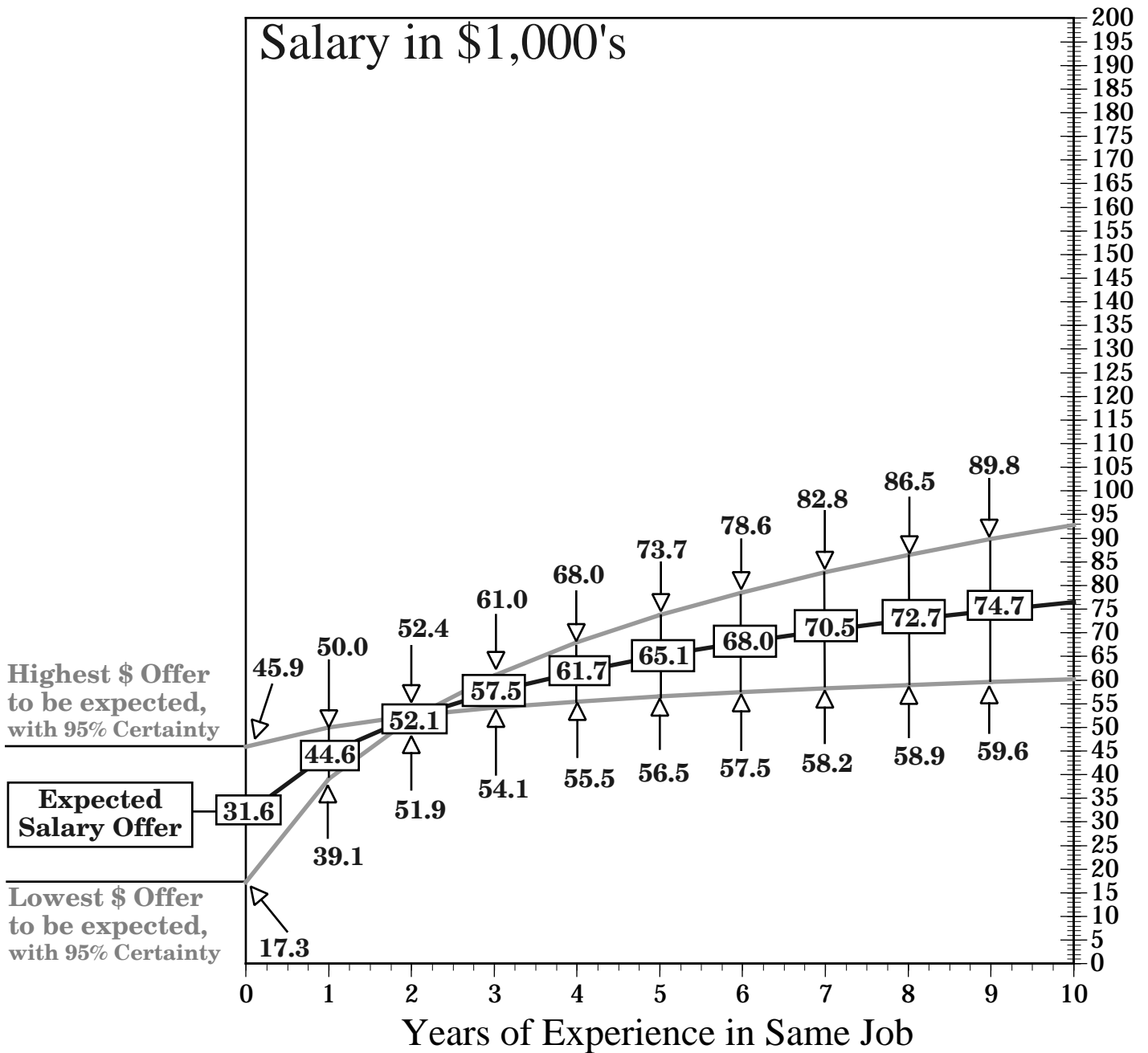
The Expected Salary Offer
& its 95% Probability Range
for Each Year of Required Experience



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

UNIX TCP/IP Administrator

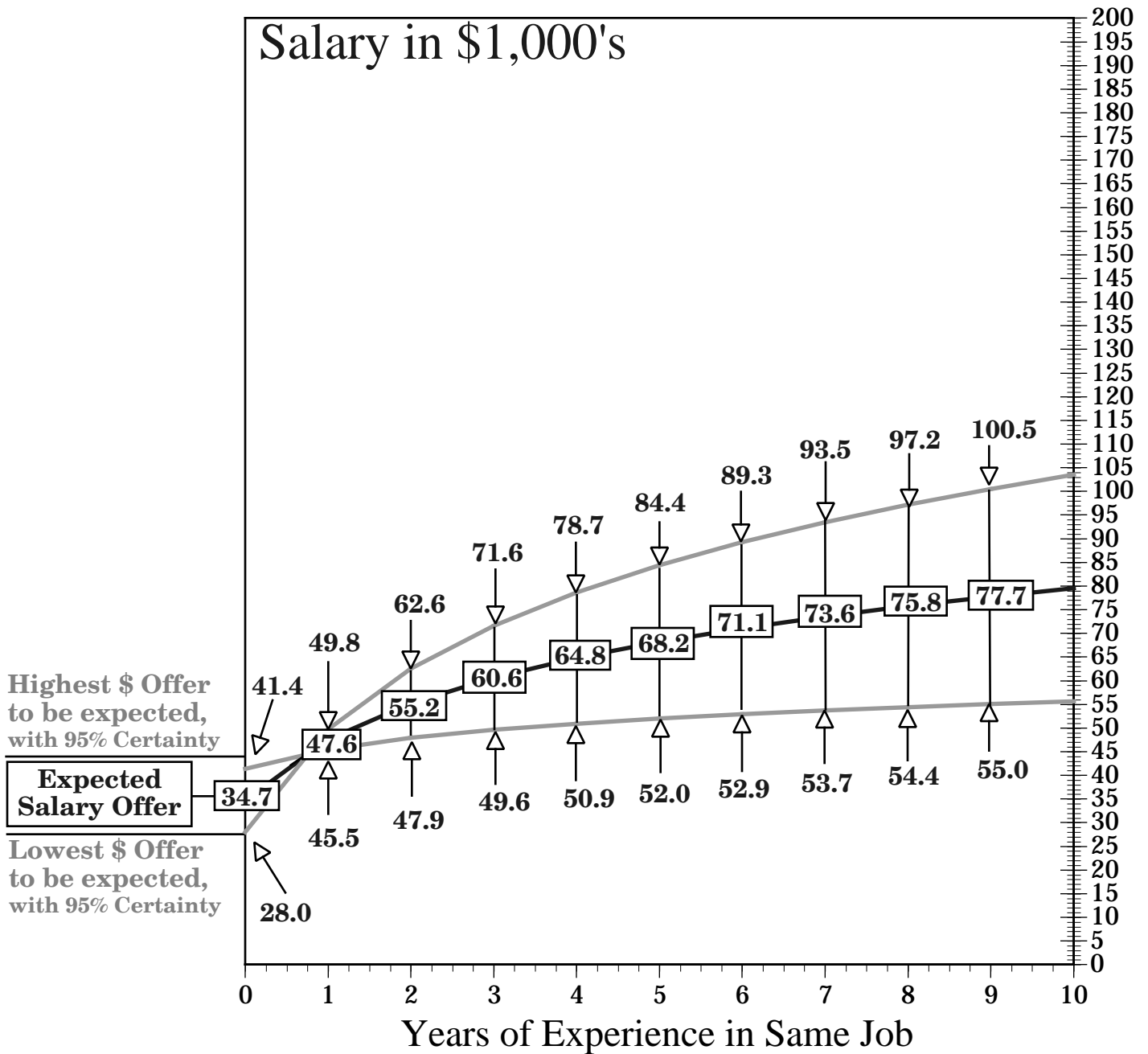
The Expected Salary Offer
& its 95% Probability Range
for Each Year of Required Experience



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

UNIX System Support

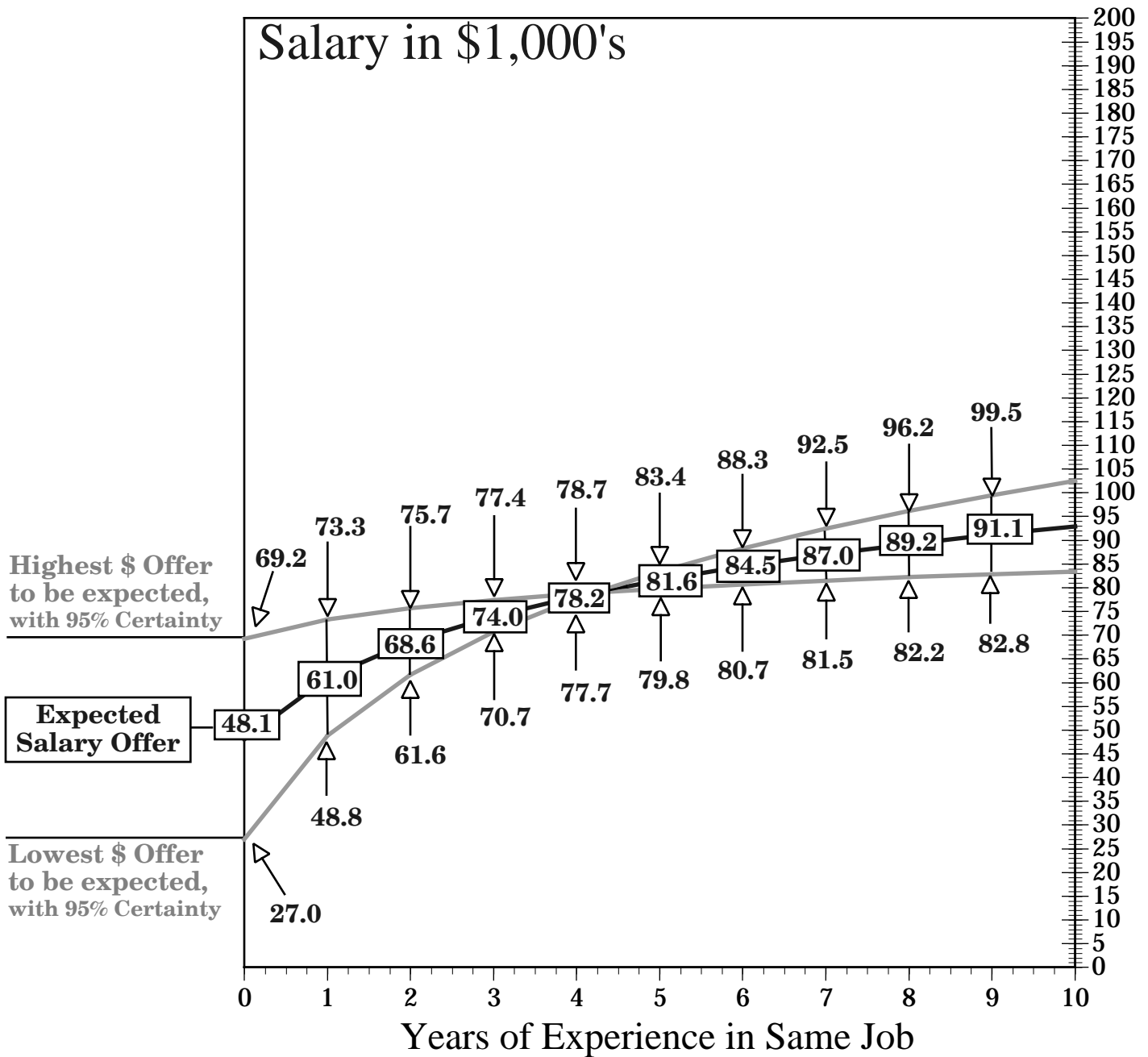
The Expected Salary Offer
& its 95% Probability Range
for Each Year of Required Experience



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

Financial UNIX System Support

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 Administrator Wage Inflation

The statistical analysis indicates that Salary Offers are increasing by a fixed amount each week
Expected Wage Inflation = 0.364(Week) = \$18.9 per Year

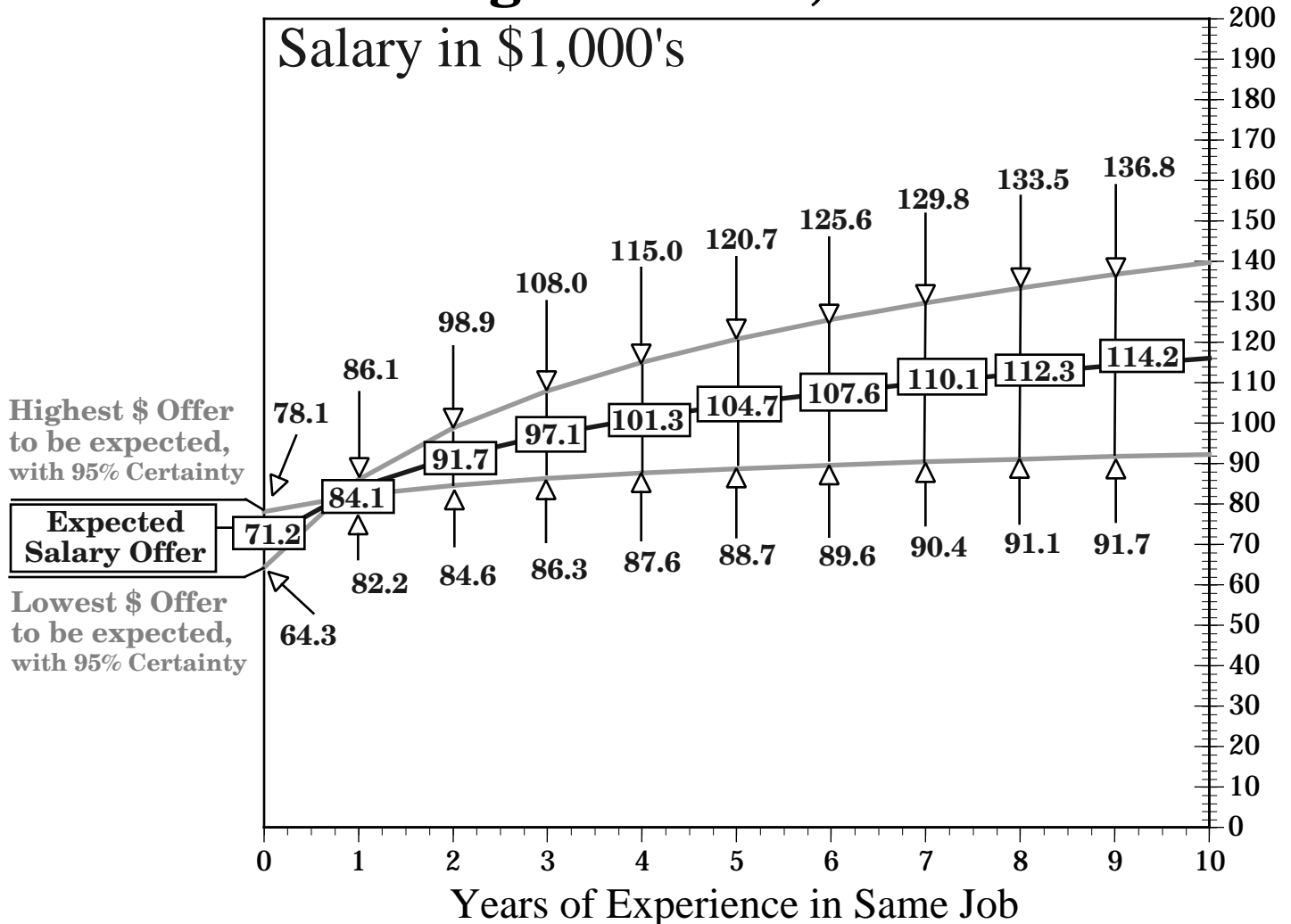
95% Confidence Interval

Highest Expected Wage Inflation = 0.710(Week) = \$36.9 per Year

Lowest Expected Wage Inflation = 0.019(Week) = \$1.0 per Year

Salaries in \$1,000 ; 52 Weeks per year

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

UNIX Administrator Support Wage Inflation

The statistical analysis indicates that Salary Offers are increasing by a fixed amount each week
Expected Wage Inflation = 0.364(Week) = \$18.9 per Year

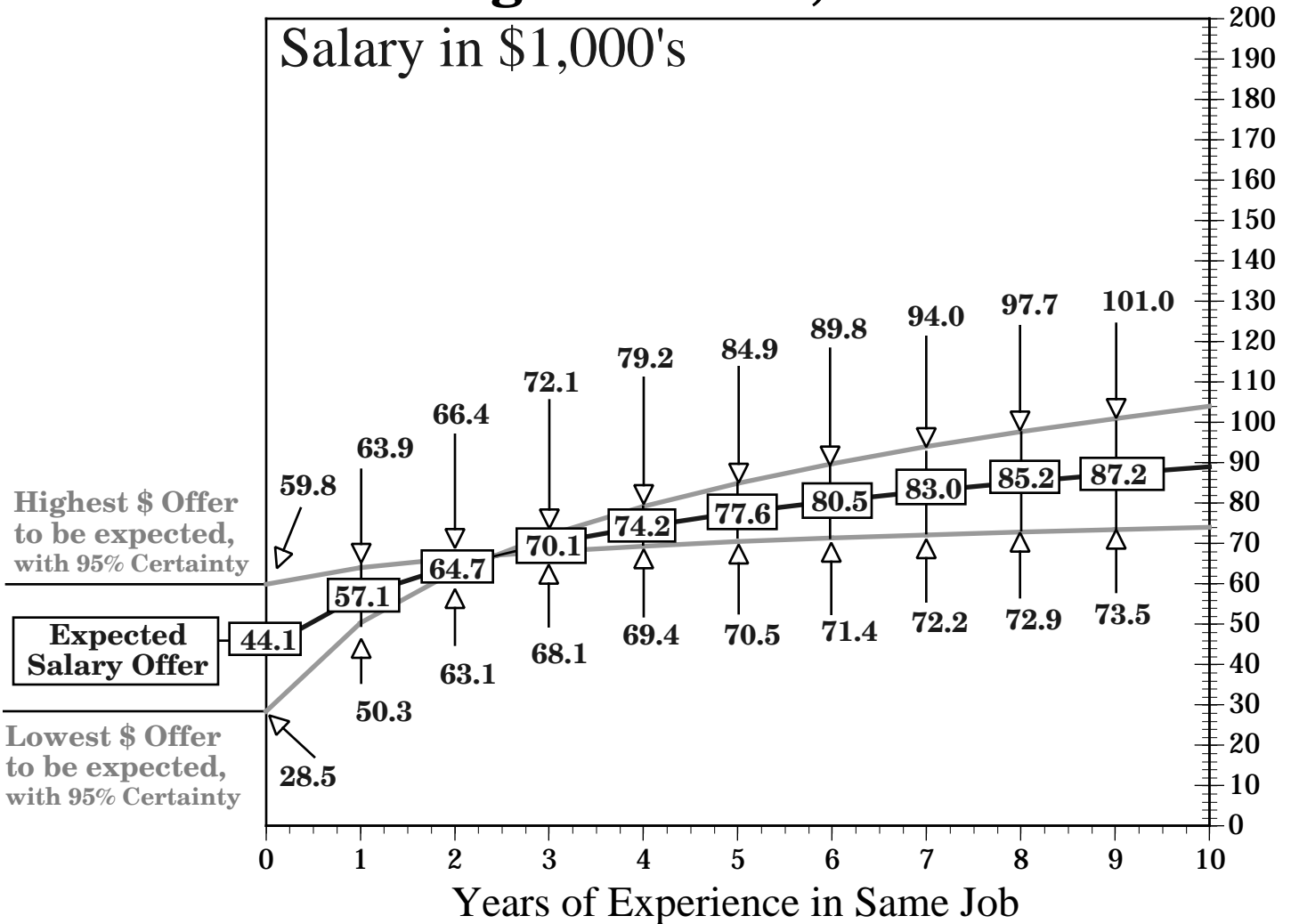
95% Confidence Interval

Highest Expected Wage Inflation = 0.710(Week) = \$36.9 per Year

Lowest Expected Wage Inflation = .019(Week) = \$1.0 per Year

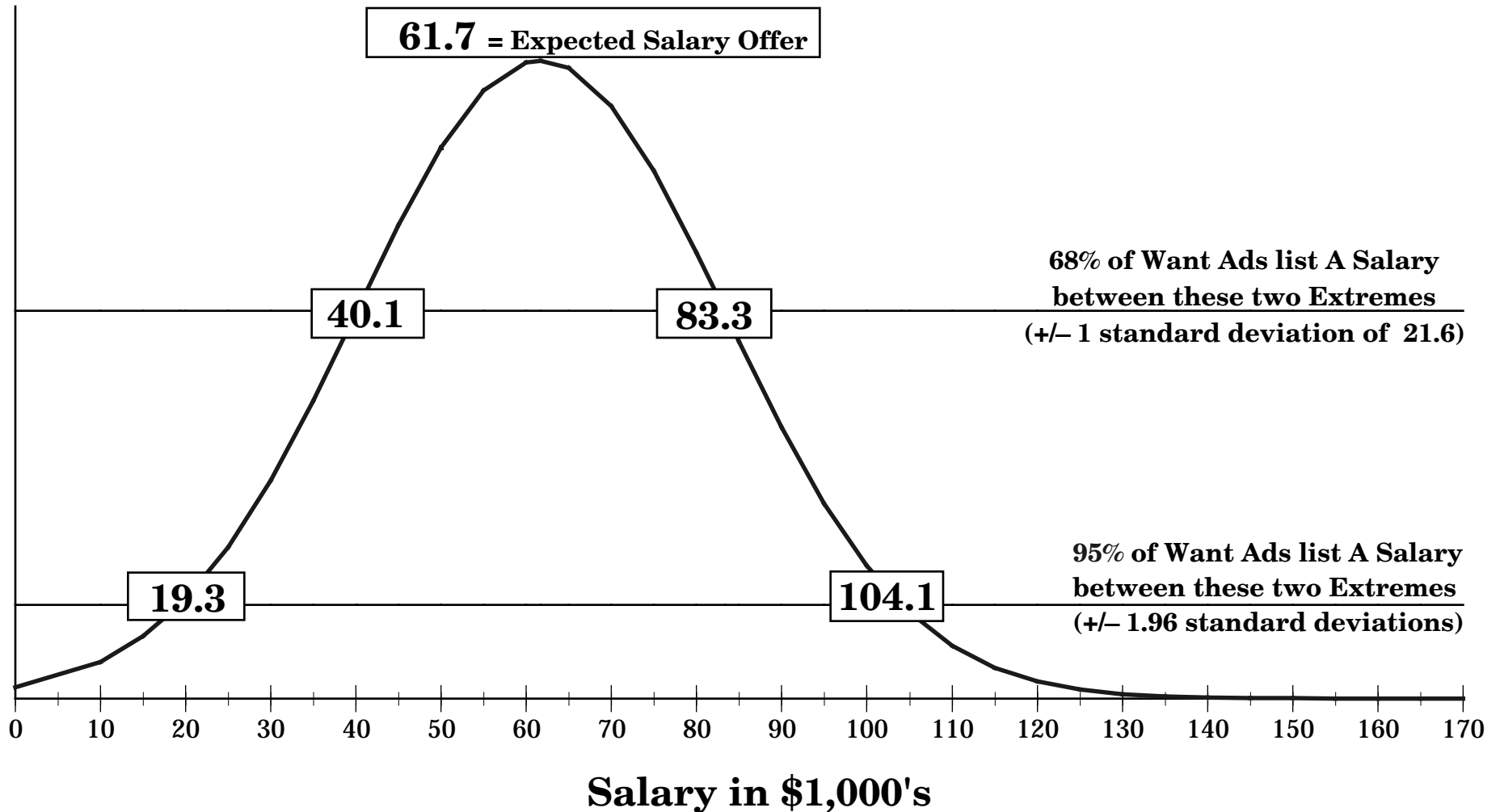
Salaries in \$1,000 ; 52 Weeks per year

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

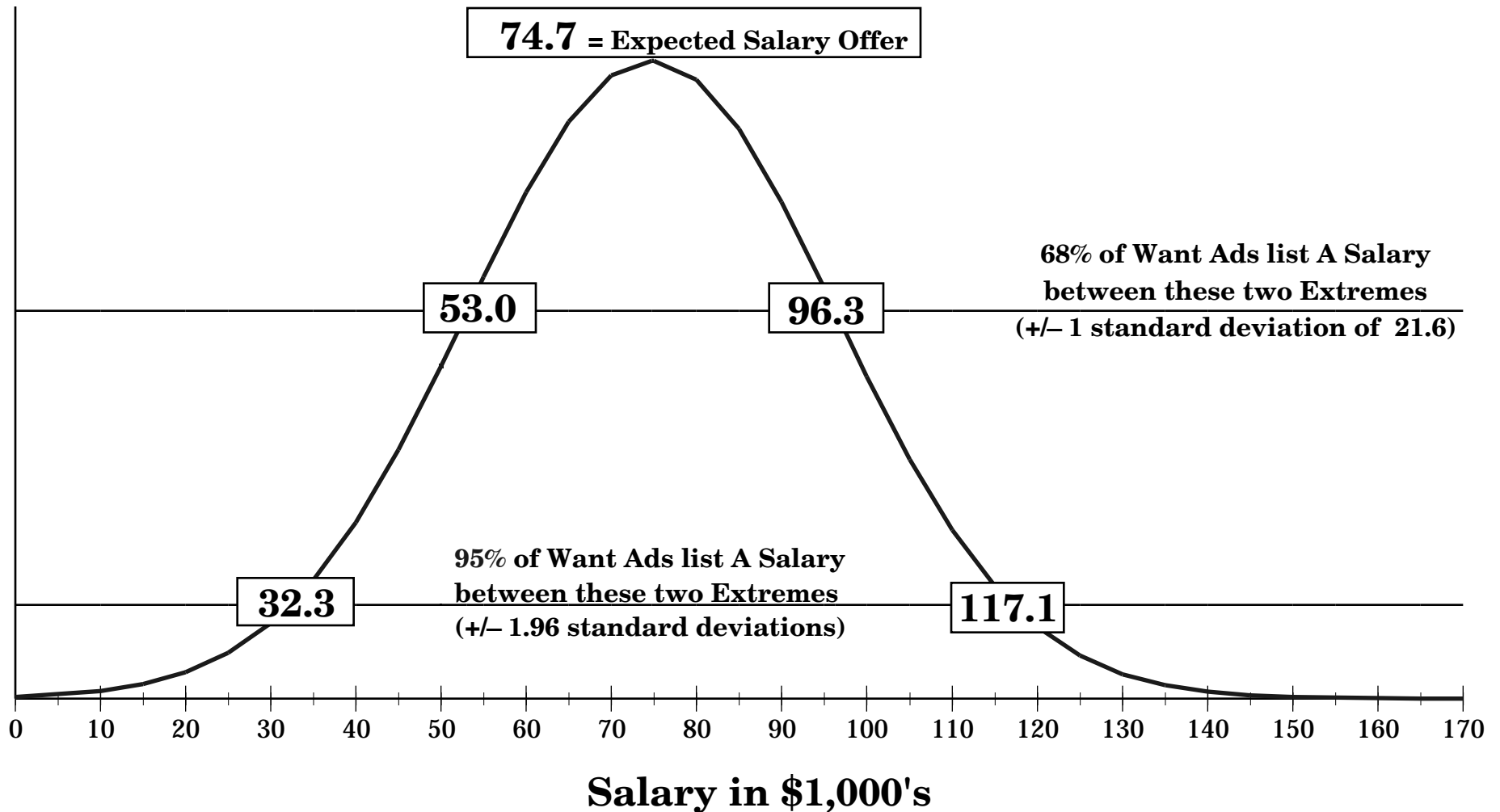
UNIX Administrator Extreme Salary Offers: Entry Level



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

UNIX Administrator

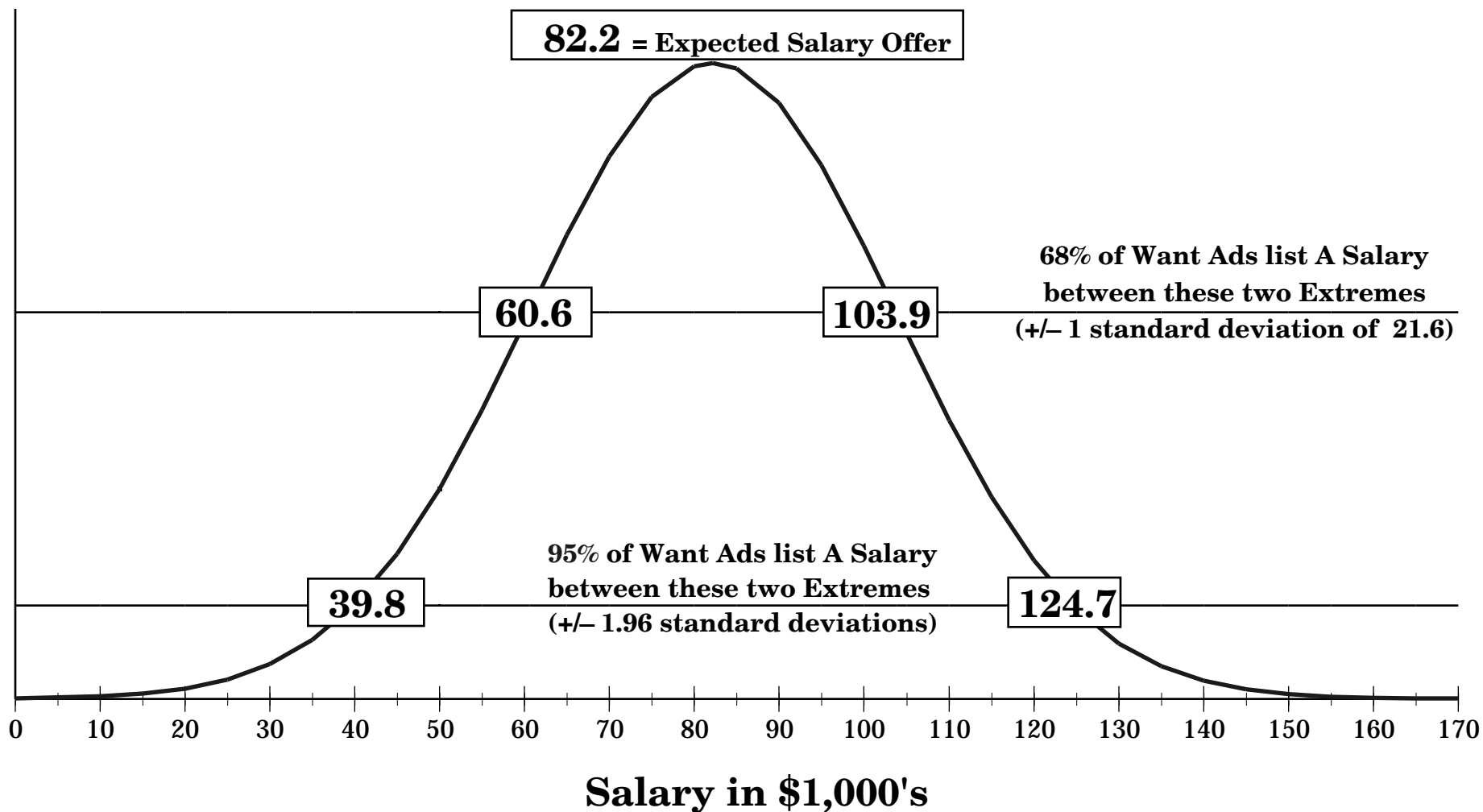
Extreme Salary Offers: 1 Year of Required Experience



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

UNIX Administrator

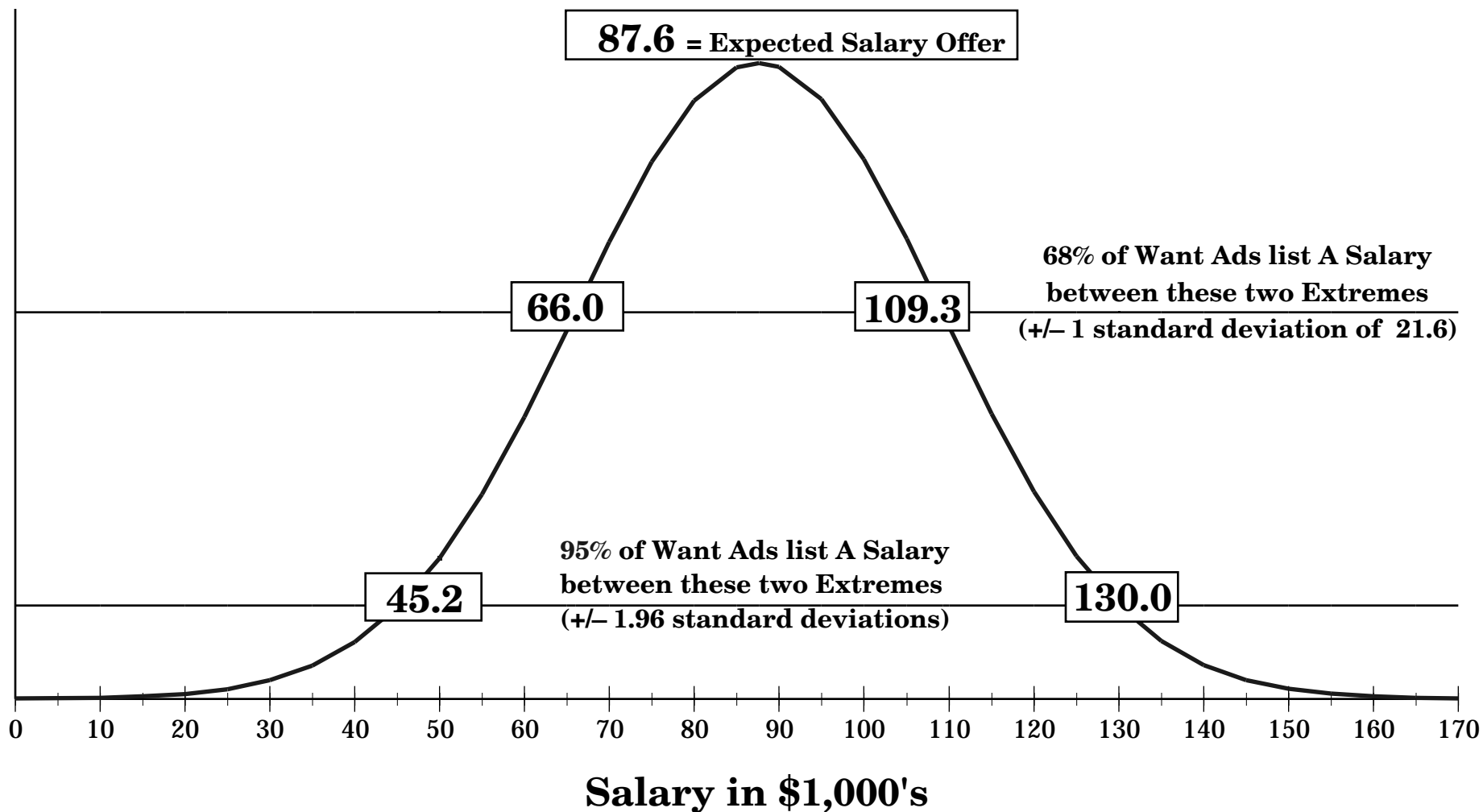
Extreme Salary Offers: 2 Years of Required Experience



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

UNIX Administrator

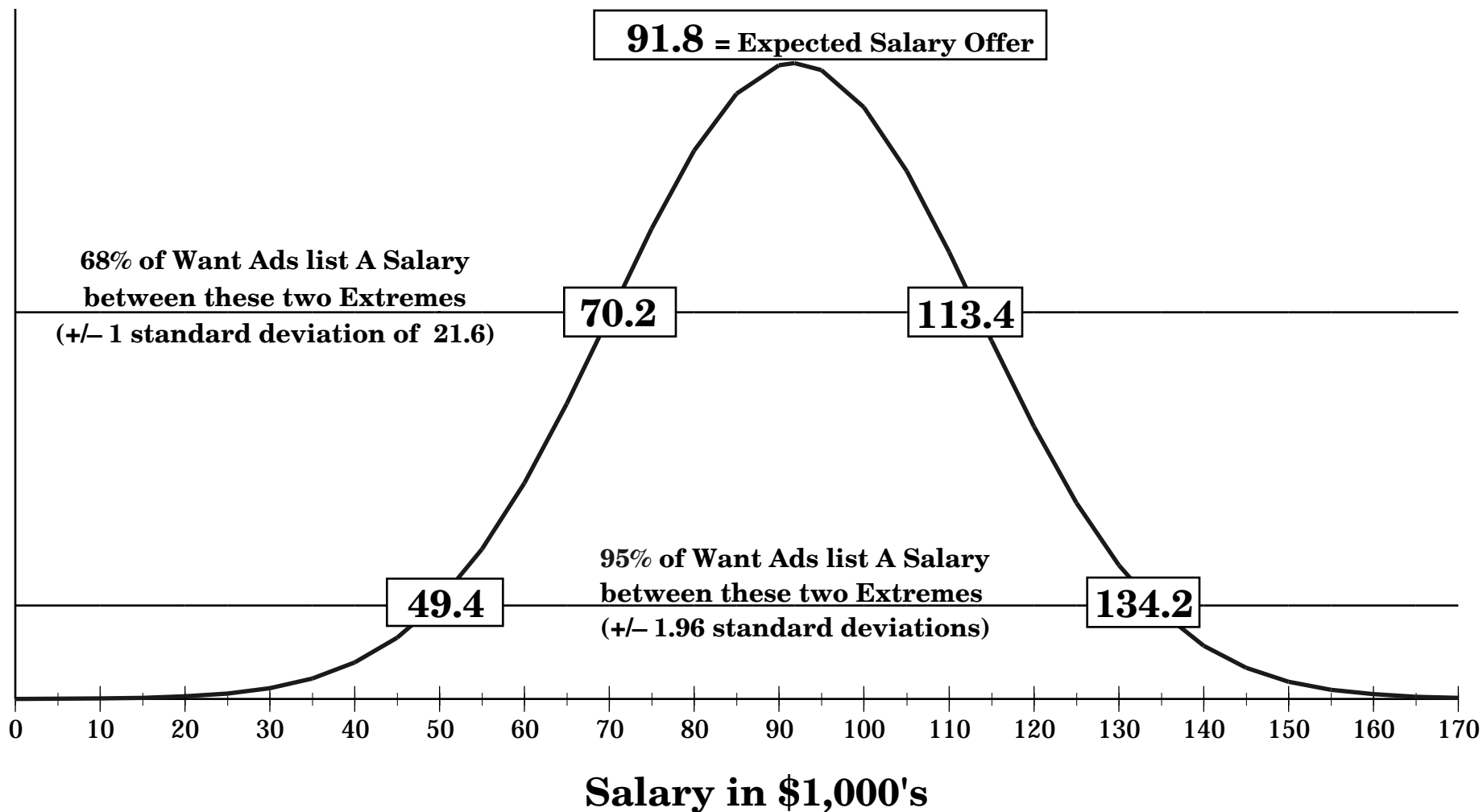
Extreme Salary Offers: 3 Years of Required Experience



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

UNIX Administrator

Extreme Salary Offers: 4 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.

UNIX Administrator Statistical Test Results

Regression Corrected for Heteroscedasticity

Regression Summary
Salary (H adj) vs. 6 Independents

Count	74
Num. Missing	0
R	.974
R Squared	.950
Adjusted R Squared	.945
RMS Residual	2.980

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. 6 Independents

	DF	Sum of Squares	Mean Square	F-Value	P-Value
Regression	6	11382.999	1897.166	213.656	<.0001
Residual	68	603.808	8.880		
Total	74	11986.807			

Regression Coefficients
Salary (H adj) vs. 6 Independents

	Coefficient	Std. Error	Std. Coeff.	t-Value	P-Value
Entry Level (H adj)	42.768	10.045	.605	4.258	<.0001
Non-Admin (H adj)	-27.040	4.401	-.384	-6.145	<.0001
Fin (H adj)	13.418	5.128	.219	2.617	.0109
TCP/IP (H adj)	-30.111	8.216	-.150	-3.665	.0005
Week (H adj)	.364	.173	.103	2.105	.0390
ln(Years+1) (H adj)	18.707	6.407	.293	2.920	.0047

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 .47% (47 ten-thousandth) chance that the yearly increase in salary offer can't be defined (ln(Years+1) P-Value in Regression Coefficients Table).
4. There is a 3.9% chance that the Weekly wage inflation effect can't be defined (Week P-Value in Regression Coefficients Table).
5. There is less than a .01% (one ten-thousandth) chance that the Non-Admin effect can't be defined (Non-Admin P-Value in Regression Coefficients Table).
6. There is a 1.09% chance that the Financial effect can't be defined (Financial P-Value in Regression Coefficients Table).
7. There is a .05% (five ten-thousandth) chance that the TCP/IP effect can't be defined (TCP/IP P-Value in Regression Coefficients Table).

UNIX Administrator Heteroscedasticity Correction

Heteroscedasticity Regression Test

Dependent Variable = $\ln(\text{Resid}^2)$

Independent Variables: $X_1 = \text{Financial}$, $X_2 = \text{Support}$, $X_3 = \ln(\text{Years})$

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 smaller when "Financial" or "Support" is asked for.

This additional information is factored into the analysis by dividing all columns by:

$$(e^{(4.025 - 2.8536*\text{Financial} - 1.656*\text{Support} + 1.224*\ln(\text{Years}))})^{.5}$$

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					
		DF	Sum of Squares	Mean Square	F-Value	P-Value	
Count	74	Regression	3	122.842	40.947	6.880	.0004
Num. Missing	0	Residual	70	416.604	5.951		
R	.477	Total	73	539.446			
R Squared	.228	t Statistics					
Adjusted R Squared	.195		Coefficient	Std. Error	Std. Coeff.	t-Value	P-Value
RMS Residual	2.440	Intercept	4.025	.676	4.025	5.951	<.0001
		Fin	-2.836	.766	-.400	-3.704	.0004
		Non-Admin	-1.656	.641	-.280	-2.585	.0118
		ln(Years)	1.224	.530	.244	2.309	.0239

Original Regression Test Results with Heteroscedasticity

R ² Statistic		F Statistic					
		DF	Sum of Squares	Mean Square	F-Value	P-Value	
Count	74	Regression	5	19323.896	3864.779	8.257	<.0001
Num. Missing	0	Residual	68	31827.890	468.057		
R	.615	Total	73	51151.785			
R Squared	.378	t Statistics					
Adjusted R Squared	.332		Coefficient	Std. Error	Std. Coeff.	t-Value	P-Value
RMS Residual	21.635	Intercept	43.418	10.444	43.418	4.157	<.0001
		Non-Admin	-25.751	5.750	-.448	-4.478	<.0001
		TCP/IP	-19.318	8.732	-.215	-2.212	.0303
		Fin	14.773	6.983	.214	2.116	.0380
		Week	.329	.163	.201	2.022	.0471
		ln(Years+1)	17.389	6.177	.274	2.815	.0064
		95% Confidence Intervals		Coefficient	95% Lower	95% Upper	
		Intercept		43.418	22.577	64.259	
		Non-Admin		-25.751	-37.225	-14.277	
		TCP/IP		-19.318	-36.744	-1.893	
		Fin		14.773	.839	28.707	
		Week		.329	.004	.653	
		ln(Years+1)		17.389	5.063	29.714	