

# STATISTICAL ANALYSIS OF GENDER PATTERNS IN WAL-MART WORKFORCE

Richard Drogin, Ph. D.

February 2003

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# Statistical Analysis of Gender Patterns in Wal-Mart Workforce

Prepared by Richard Drogin, Ph. D.

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## A. INTRODUCTION

1. I hold a Ph.D. in statistics from the University of California at Berkeley, earned in 1970. I am currently an Emeritus Professor in the Department of Statistics at California State University, Hayward, where I have taught graduate and undergraduate courses in data analysis, non-parametric methods, regression analysis, sample surveys, probability theory, queuing theory, simulation methods, and design of statistical software. I have been employed at California State University, Hayward, since 1973, and became an Emeritus Professor in 1996.

2. I am a partner in the statistical consulting firm of Drogin, Kakigi & Associates. This firm provides consulting services and computerized database management. We have experience in designing sample surveys, supplying census demographic data, organizing and managing large database systems, stochastic modeling, and performing advanced statistical analysis. Our firm has served as statistical consultants to both governmental agencies and the private sector for over twenty years. I have testified as an expert witness (statistical analysis, computer processing) in numerous state, and federal courts. A copy of my curriculum vitae is attached as Appendix 1

3. I have been retained by Plaintiffs' counsel to analyze statistical questions raised in the *Dukes v. Wal-Mart Stores, Inc.* litigation. The purpose of my study was to obtain descriptive summaries of computer data, and prepare various statistical analyses relevant to the issues in the case. I examined statistics pertaining to workforce summaries, advancement patterns, and compensation levels.

4. In order to conduct my study, I was provided with computer-readable personnel and compensation data received through discovery as well as documentation and clarification regarding this data, contained in letters, emails between counsel, depositions, and telephonic conferences with Wal-Mart personnel

familiar with their personnel and payroll systems. The first data files turned over by defendants were received in March, 2002.

5. This report will describe the data provided to me, how it was processed, the statistical methodology, and the results of my analysis. The analyses described here are restricted to retail store employees<sup>1</sup> working in Wal-Mart Discount Stores, Supercenters, Sam's Clubs, and Neighborhood Markers in the United States<sup>2</sup>, during 1996 through the first quarter of 2002.

### Data Sources

6. In March, 2002 Wal-Mart turned over an electronic copy of its personnel database including data for all U.S. employees who were employed between January, 1996 and March, 2002. There were 3,945,151 persons included in this database. A Complete job history for each of these persons was provided, including job history information prior to 1996, if any. This database is called the *PeopleSoft data*. For each person, the database includes basic identification information such as employee ID, social security number, name, address, phone number, gender, and race, as well as extensive information on the person's job history at Wal-Mart. The job history gives a chronological account of the jobs held, stores where the person worked, salary changes, personnel actions such as promotion or transfers, status changes indicating whether the person was active or on leave or terminated, whether the person was full-time or part-time, whether the person was salaried or hourly.

7. In late April, 2002 Wal-Mart turned over 250 computer tapes which included detailed bi-weekly payroll information for Wal-Mart U.S. employees. For the most part, this data included the same persons as those included in the PeopleSoft personnel data. Subsequently, in early July, 2002, Wal-Mart provided year-end summaries of payroll data for each person, for the years 1996-2001. This year-end payroll information was processed, merged into the PeopleSoft data, and is the basis for all earnings studies presented in this report.

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<sup>1</sup> Retail store employees are defined in Appendix 2.

<sup>2</sup> In December and January 2003 some data regarding Puerto Rico employees was provided. This data was not used for any analysis in this report.

8. When Wal-Mart turned over their People-Soft data in March, 2002, they also provided two databases known as the *MCS data*, and *Job Posting data*. These are databases that give limited information about employees who bid for job vacancies. The MCS data includes information about employees applying for salary job vacancies and the Job Posting data includes information about employees applying for hourly job vacancies. As described in more detail later in this report, the MCS and Job Posting data do not contain information useful for analyzing promotions into higher store management positions and upper level hourly supervisory jobs.

9. In early January, 2003 Wal-Mart turned over part of its Associate database, which includes information on recent performance review ratings for hourly employees. This data was processed and used in the analyses described below.

10. Salaried PeopleSoft data was received in mid-December, 2002. Performance Review information is included in this data. However, this data was incomplete. Additional salary PeopleSoft data was provided at the end of January 2003, a few days prior to the completion of this report. This data has not been used for any studies presented in this report.

11. Payroll data covering 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> quarters 2002 was turned over in late January 2003. This data has not been used for any studies presented in this report.

12. In late January 2003, a few days prior to completing this report, Wal-Mart turned over additional PeopleSoft data for the 2<sup>nd</sup> and 3<sup>rd</sup> quarters of 2002, replacing data provided earlier in January 2003 that was unreadable. This data has not been used for any studies presented in this report.

13. During the period from March 2002 to the present, there were numerous conference calls with defendant and its computer database specialists, as well as emails, and other correspondence with defendant regarding data questions.

Several supplementary files were provided by Wal-Mart in response to questions from plaintiffs.

14. The PeopleSoft and payroll data constitute the primary data sources used for the analyses described in this report. From these sources, three main working files were created: A history file, a year-end file, and a file of job moves. The history file includes all the job history records found in the PeopleSoft data, but with only the fields of information relevant for the analyses, and with some additional information merged from other data sources. There are 14,915,700 records in the history file. The year-end file was created from the history file to include one record for each year in which a person worked, for all the people who were included in the data. In addition, yearly payroll information, and hourly performance ratings (if any) were appended to each record. There are 9,082,732 records in the year-end file, covering the years 1996 through 2002.<sup>3</sup> The moves file was constructed from the history file for use in the promotion analyses. It includes one record for each pair of consecutive history records when there was a change in job or there was an action code indicating a promotion took place.

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<sup>3</sup> The 2002 data gives employee status only up to end of the first quarter of 2002.

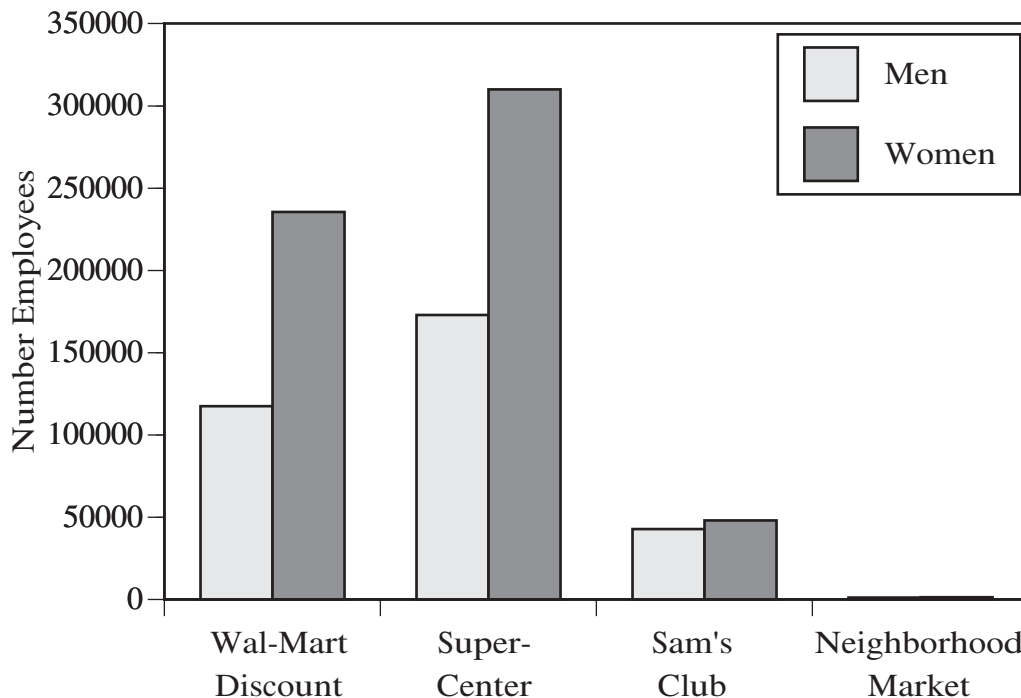
## B. DESCRIPTION OF WORKFORCE

### Size and Growth

15. Wal-Mart is big and has been steadily growing. During the time period 1996 through 2001 the number of year-end active employees in retail positions increased about 50%, from about 600,000 to about 930,000. The percentage of women decreased slightly from 67% to 64% during this same period. At year-end 2001, approximately 38% of Wal-Mart employees worked in Wal-Mart Discount stores, 52% worked in Supercenters, nearly 10% worked in Sam' Club stores, and less than 1% worked in Neighborhood Markets. Table 1 below shows the number of men and women working at year-end 2001 in each of the four Wal-Mart store types.

Table 1

Number of Employees by Store Type, 2001



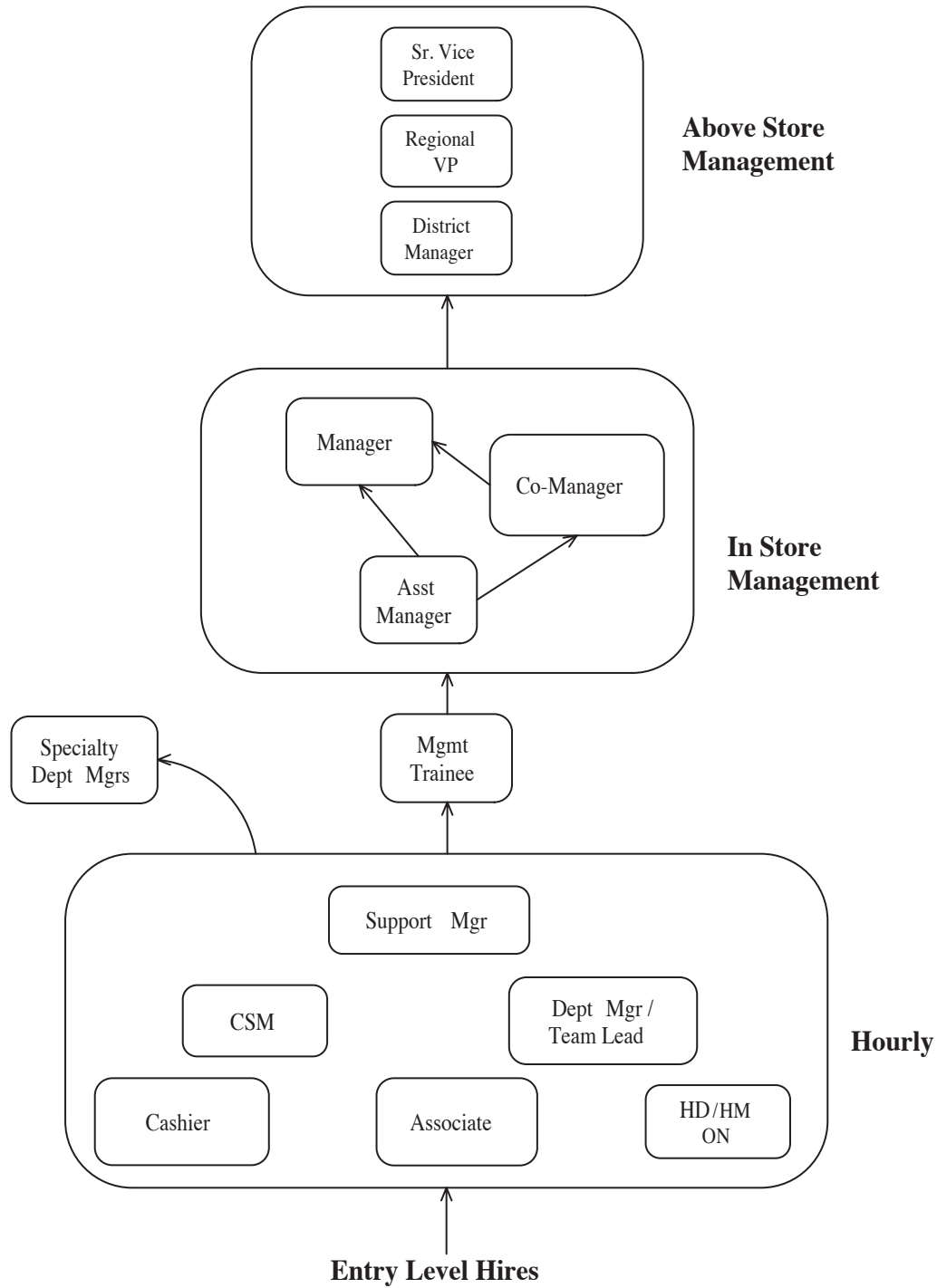
16. Retail store employees include the hourly workforce, the store management, and higher-level managers such as District Managers and Regional Vice Presidents. The store management positions include Store Manager, Co-Managers, Assistant Managers, and Management Trainees. The Management

Trainee position is the entry-level position into management and leads directly into the Assistant Manager positions, after a 4-5 month training program. All of the store management positions are salaried jobs, except for the Management Trainee position. A complete list of the retail jobs studied for this report, and how they are classified, is given in Appendix 2.

17. Tables 2a and 2b below show the hierarchical structure of these jobs at Wal-Mart stores (excluding Sam's), and Sam's stores, respectively. This hierarchy was derived from Wal-Mart documents, and analysis of salaries and job movement patterns.

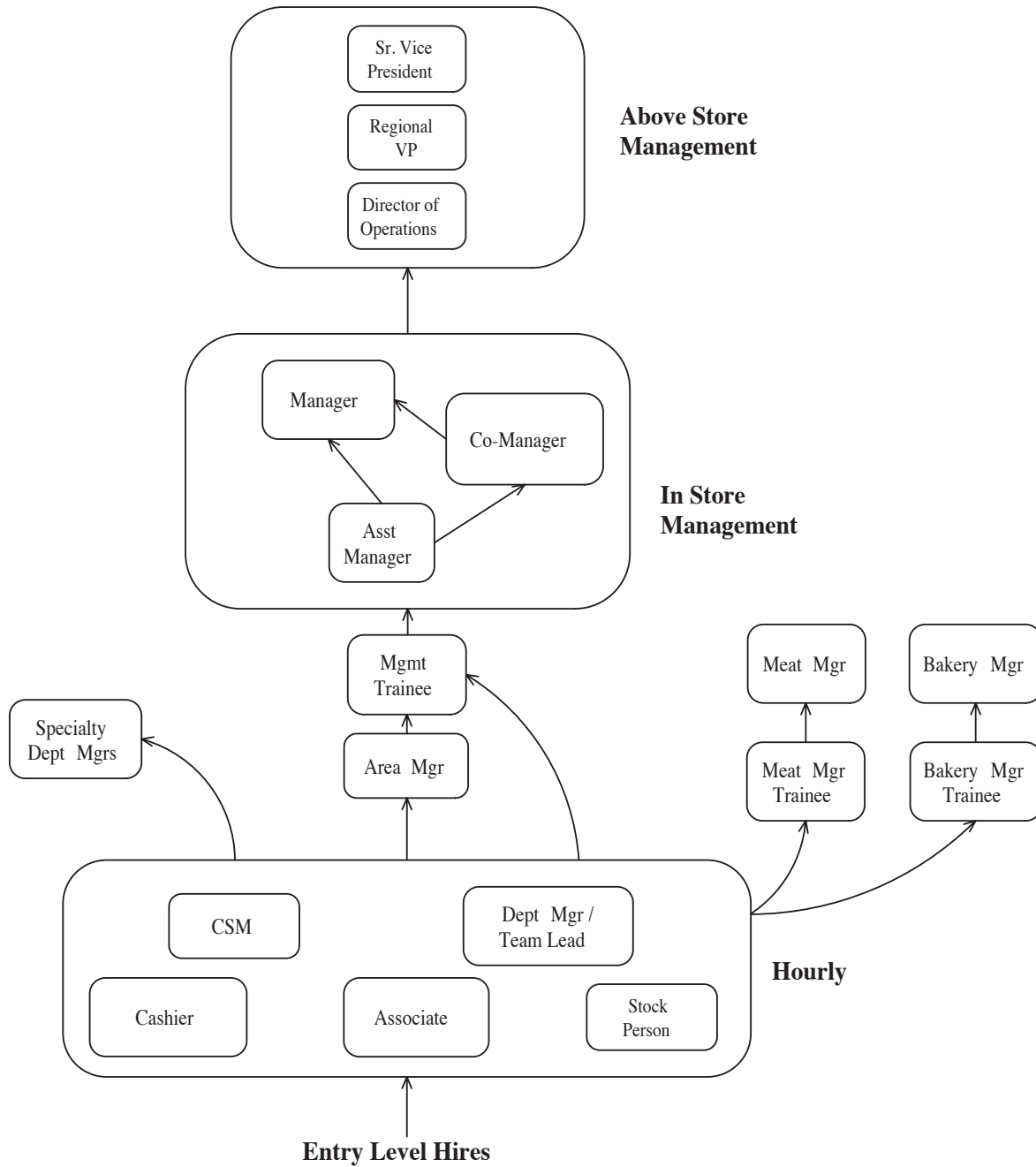


Table 2a  
**Job Hierarchy at Wal-Mart**



**Table 2b**

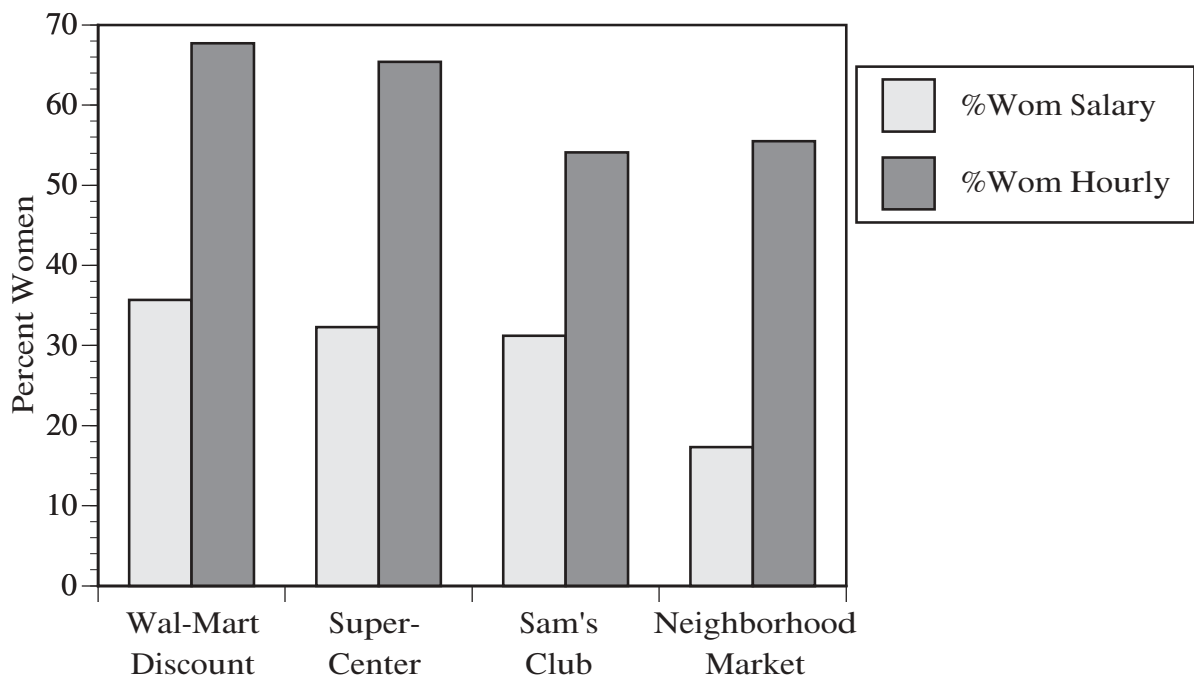
**Job Hierarchy at Sam's Club**



## Gender Hierarchy – Management vs. Hourly

18. Women earn less money than men at Wal-Mart. This fact is due to women working disproportionately in the lower paying hourly jobs, and earning less money than men holding the same jobs. Table 3 compares the percentage of women in hourly and salary jobs, in each of the four Wal-Mart store types.

Table 3  
Percent Women in Hourly and Salary Jobs  
By Store Type, 2001



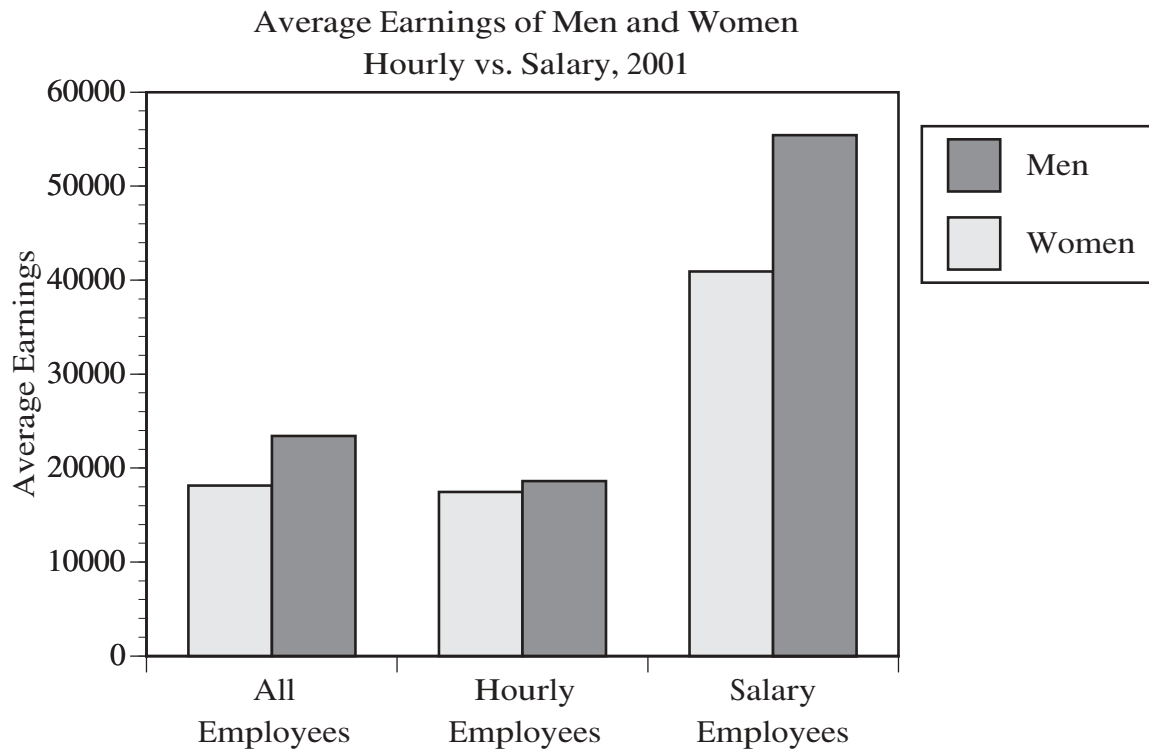
19. Management employees earn much larger salaries than the hourly employees. For example, in 2001, management employees earned about \$50,000 on average, compared to the approximately \$18,000 earned by hourly employees.<sup>4</sup> Women are disproportionately working in the hourly jobs: about 65% of hourly employees are women while about 33% of management employees are women.

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<sup>4</sup> Average earnings comparisons are restricted to year-end active employees with full-time status who worked over 45 weeks in the year. Approximately 85% of Wal-Mart workforce is full-time.

20. Not only are women disproportionately working in the lower paid hourly jobs, but they also earn less than men holding the same job, for nearly all jobs, in each year. Overall, women earned about \$5,200 less than men, on the average, in 2001. Within the hourly workforce, women earned about \$1,100 less than men, and about \$14,500 less among management employees, in 2001.

Table 4



Average Earnings, 2001  
Full-Time Employees Working At Least 45 Weeks

Group	Total	%Fem	Ave\$ M	Ave\$ F
Total	508724	67.9	23403.	18184.
Hourly	476813	70.2	18609.	17459.
Salary	31911	33.5	55443.	40905.

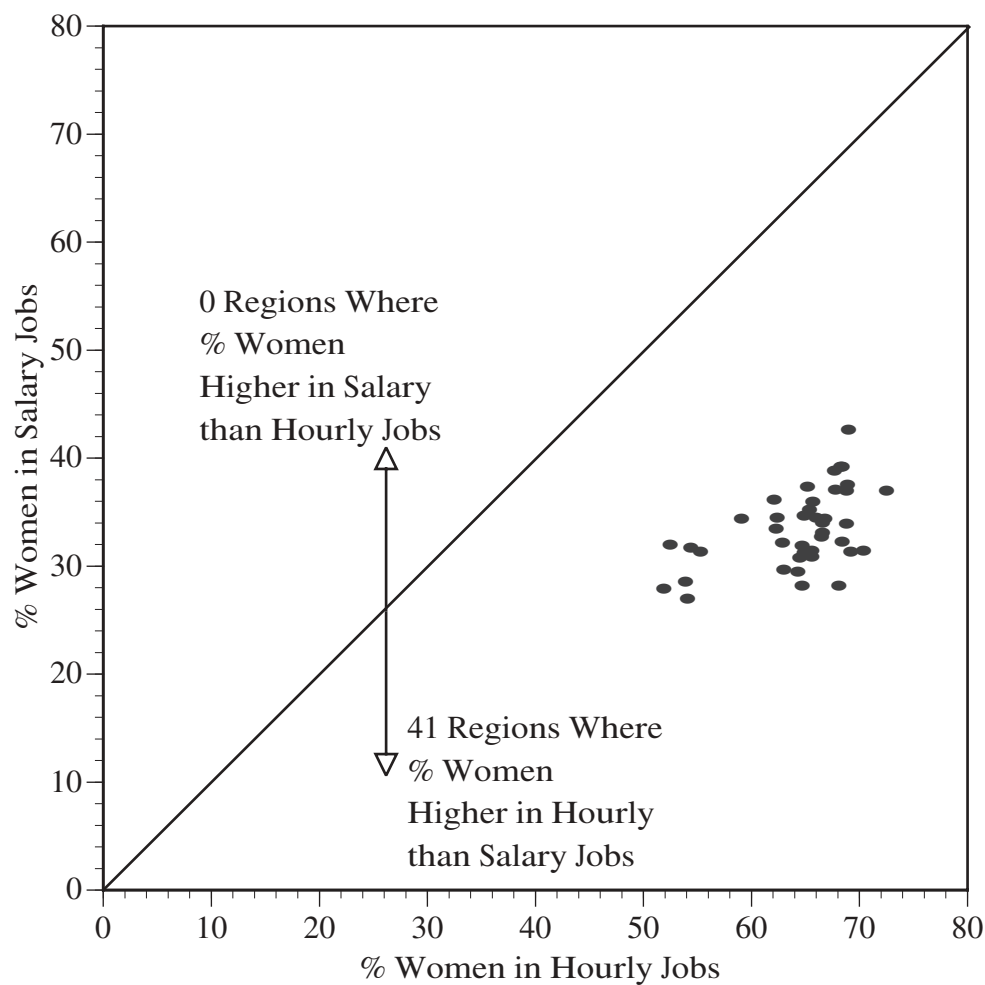
#### Consistency of Gender Hierarchy Across Regions

21. Wal-Mart is administratively broken up into 41 regions<sup>5</sup>, each including about 80 stores and headed by a Regional Vice President. The gender hierarchy at

<sup>5</sup> There are 6 Sam's regions, and 35 Wal-Mart only regions.

Wal-Mart nationwide is repeated across all 41 geographic regions in the country. As of year-end 2001, the percent women in hourly jobs ranged between 52% and 73%, while the percent women in salary jobs ranged between 26% and 42% across regions. In every region, the percent women among hourly employees was higher than the percent women among salaried employees. The following chart illustrates the distribution of percent women among hourly employees compared to the percent women among salaried employees, for each of the 41 regions.

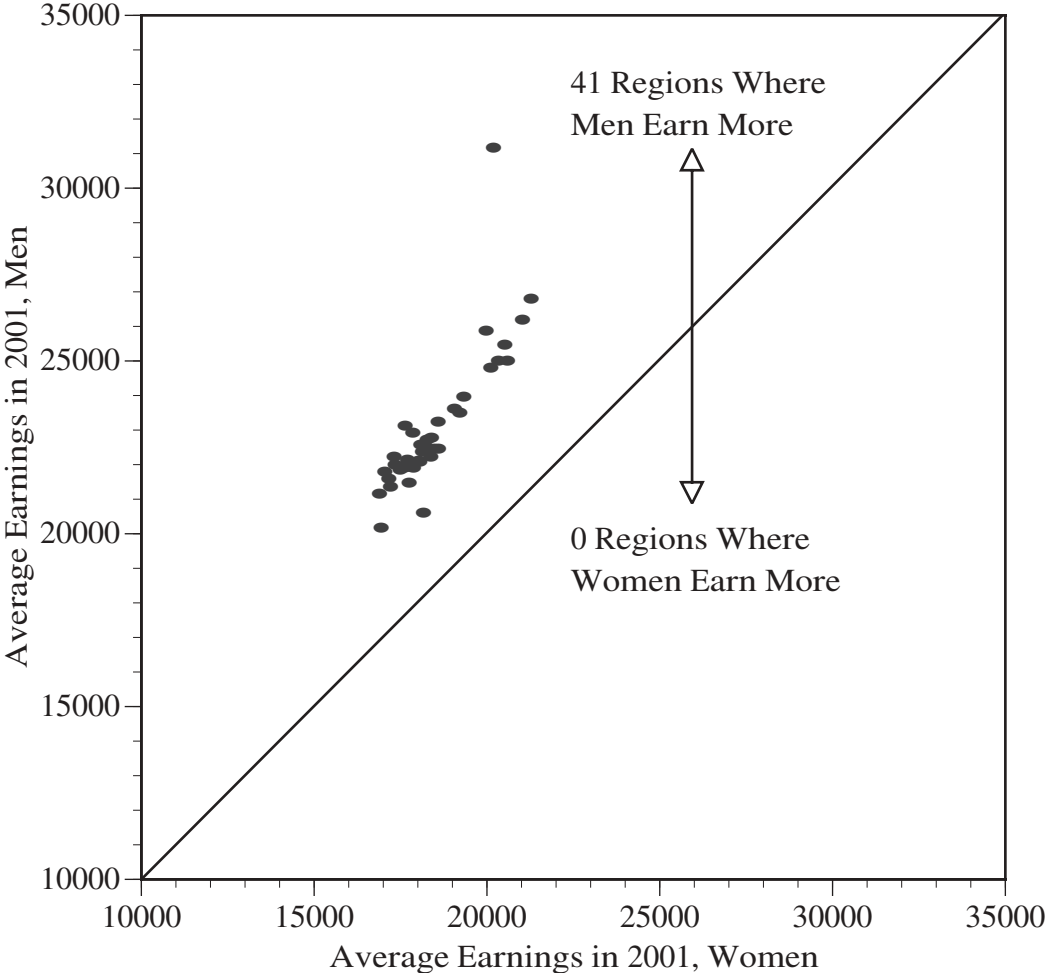
Table 5  
**Percent Women among Hourly and Salary Employees, 2001**  
Each Region Represented by a Point on Graph



22. The gender hierarchy illustrated in Table 5 leads to lower earnings for women in every region across the country. The following chart shows the

distribution of male and female total earnings in 2001, for Full-Time employees active at year-end who worked at least 45 weeks during the year.

Table 6  
**Average Total Earnings for Men and Women, 2001**  
Each Region Represented by a Point on Graph

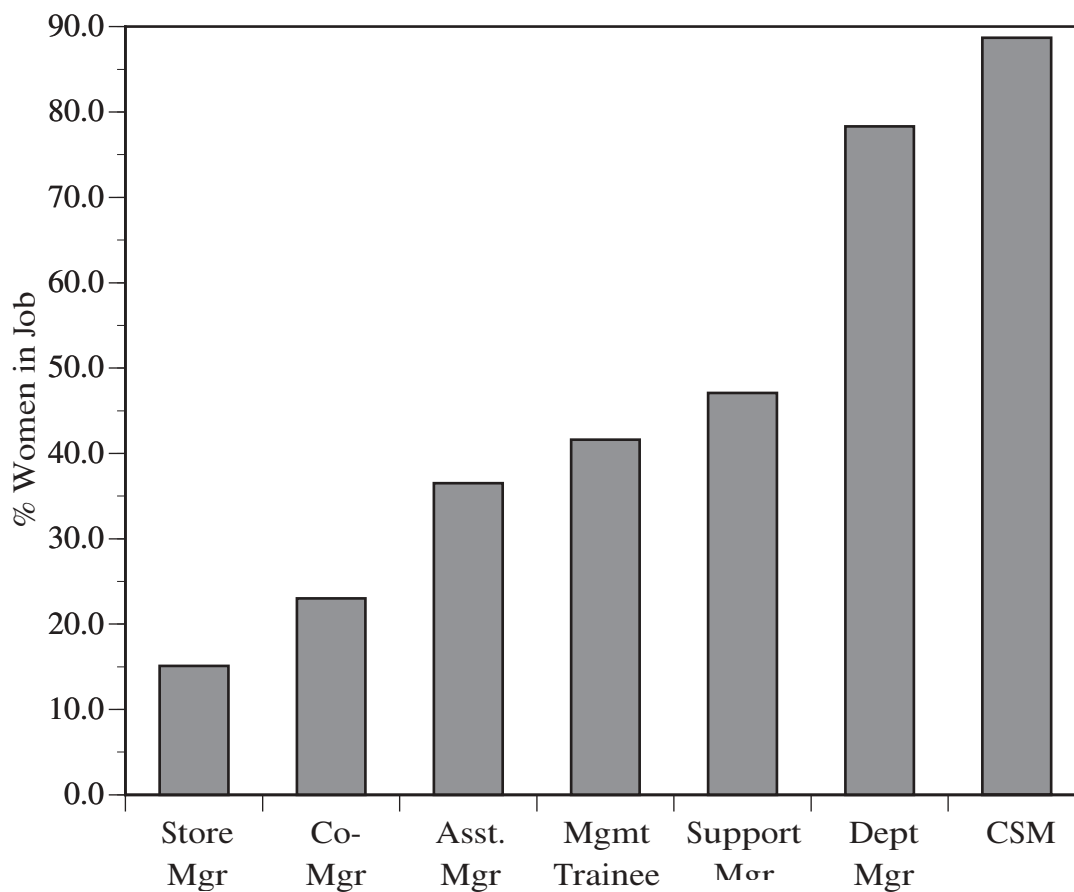


## Gender Hierarchy within Management and Hourly Supervisors

23. The pattern of gender hierarchy between management and hourly jobs is further reflected within the management and hourly supervisor positions, as shown in the following table. The Support Manager, Department Manager, and CSM (Customer Service Manager, which is a supervisor of Cashiers) are the main supervisory hourly jobs.

Table 7

**Percent Women in Store Management and Hourly Supervisors, 2001**



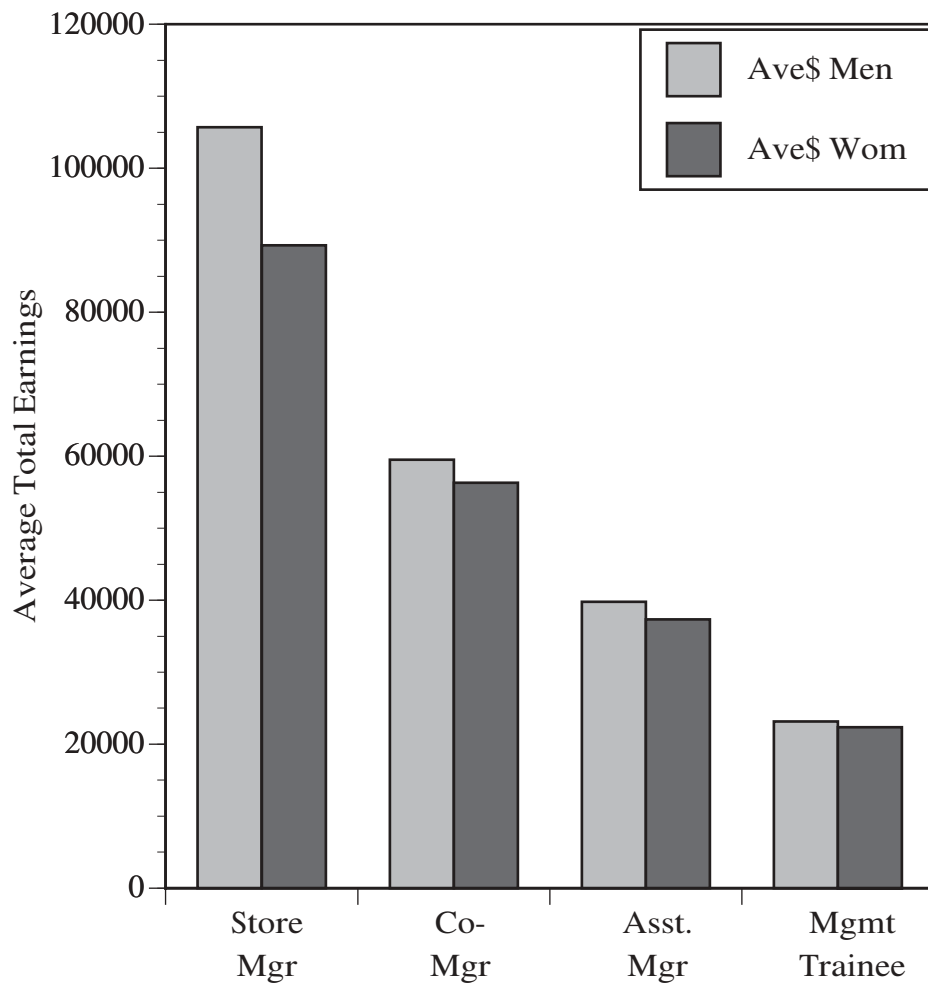
24. Within each of the store management jobs, women earn less than men, on the average, for each year 1999-2001. The following table shows these earnings differences within the store management jobs, for 2001.<sup>6</sup>

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<sup>6</sup> Restricted to year-end active employees with full-time status who worked over 45 weeks in the year. See Appendix 7.

Table 8

Average Earnings of Men and Women  
in Store Management Jobs, 2001





25. The following table shows the average total earnings for men and women holding store management jobs and above store management jobs.

Table 9  
**Average Earnings Higher-Level Jobs<sup>7</sup>**

<u>Job</u>	<u>Total</u>	<u>%</u>	<u>Average Earnings</u>	
	<u>EES</u>	<u>Women</u>	<u>Men</u>	<u>Women</u>
Regional VP	39	10.3	419435.	279772.
District Mgr	508	9.8	239519.	177149.
Manager	3241	14.3	105682.	89280.
Co-Mgr	2336	23.0	59535.	56317.
Asst Mgr	18731	35.7	39790.	37322.
Mgmt Trainee	1203	41.3	23175.	22371.

### **Earnings Gap – Within Hourly Jobs**

26. Table 10 compares average total earnings, and Table 11 compares the average hourly rates for men and women in the four largest hourly jobs. The chart illustrates the shortfall in female earnings and hourly rates compared to men in the same job. A complete list for all jobs, and for part-time and full-time workers, and for the years 1999-2001 is given in Appendices 6a-d and 8a-d.

Table 10  
**Average Earnings**

4 Largest Hourly Jobs, 2001<sup>8</sup>

<u>Job</u>	<u>Total</u>	<u>%</u>	<u>Average Earnings</u>	
	<u>EES</u>	<u>Women</u>	<u>Men</u>	<u>Women</u>
000101 DEPT HEAD	63747	78.3	23518.	21709.
000201 SALES ASSOC	100003	67.8	16526.	15067.
000469 HD/HM O/N	29333	57.4	19121.	17870.
000501 CASHIER	50987	92.5	14525.	13831.
Total All Hourly	476813	70.2	18609.	17459.

<sup>7</sup> The District Managers included here do not include the Specialty Division District Managers in Tire and Lube, Photo, Shoes and Jewelry, Optical, and Pharmacy. These Specialty Division Managers have a higher percentage of women, but they earn much less money, on the average than the regular District Managers. The Sam's Director of Operations position is included in the District Manager row of this table. A complete summary is given in Appendix 7a.

<sup>8</sup> Restricted to employees active at year-end with full-time status, and who worked at least 45 weeks during the year. The 'HD/HM O/N' job refers to 'Hardlines/Home Area Overnight Associates'.

Table 11

**Average Hourly Rates**

4 Largest Hourly Jobs, 2001<sup>9</sup>

Job	Total	%	Average \$/Hour	
	EES	Women	Men	Women
000101 DEPT HEAD	63010	78.5	11.13	10.62
000201 SALES ASSOC	96539	68.1	8.73	8.27
000469 HD/HM O/N	28408	57.8	9.56	9.29
000501 CASHIER	49261	92.6	8.33	8.05
Total All Hourly	463526	70.6	9.55	9.26

27. In hourly jobs overall, and in the largest hourly jobs at Wal-Mart, women earned less total compensation and had lower hourly rates than men. This earnings gap persists, even though women have greater average seniority and higher performance ratings, as described below.

**Years With Wal-Mart**

28. Women stay in the workforce longer than men at Wal-Mart. This is shown by the fact that the average number of years since date of hire is greater for women than men in the workforce. Among full-time women active at year-end 2001, the average number of years since date of hire was 4.47 years, while the corresponding average for men was only 3.13 years. The average time since hire was greater for women overall, and in salary and hourly jobs separately, for both full-time and part-time employees in 2001. Women had greater time since hire in 97% of the job codes with at least 1000 full-time employees active at year-end 2001. The following table shows the average years since hire for full-time employees active at year-end 2001 for the four largest hourly positions. A complete summary for all jobs is given in Appendix 12.

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<sup>9</sup> Restricted to employees active at year-end with full-time status, and at least 1 year since date of hire.

Table 12

Average Years Since Date of Hire  
Full-Time Active Employees at Year-End 2001

<u>Job</u>	<u>Men</u>	<u>Women</u>
Total	3.13 Yrs	4.47 Yrs
All Hourly	2.76	4.39
All Salary	6.69	7.39
Sales Associates	2.53	3.41
Dept Mgr	5.29	7.49
Cashier	1.86	2.53
HD/HM O/N	2.28	3.16

Years to Reach Manager and Asst Manager

29. Not only do women generally have more time with Wal-Mart, and hence have lower turnover rates, it takes women longer to work their way up to an Assistant Manager or Manager position, among those who are eventually promoted into these positions. In particular, the average time since date of hire until first being promoted in an Assistant Manager job was 4.38 years for women, but only 2.86 years for men. The same pattern is true for men and women who eventually became Store Managers: It took women 10.12 years on the average to reach Store Manager, but it took men only 8.64 years.

Performance Ratings – Hourly Employees

30. Wal-Mart uses a database known as the Associate Database to track hourly employee performance review ratings.<sup>10</sup> Historical review ratings are incomplete, prior to 2001. I have analyzed the performance review data for 2001 and have summarized my computations for hourly jobs in Appendix 9. Ratings for hourly employees are given according to a scale of 1, 3, 5, and 7, where 7 is the highest rating. In 2001, among those with ratings, over 95% received ratings of

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<sup>10</sup> Performance rating data for salaried employees was incomplete until a few days prior to the completion of this report, and therefore has not been utilized for this report.

either 3 or 5. Among hourly employees working in 2001 with ratings, women have a higher average rating than men overall, and in 75% of the jobs with over 1000 employees. The following table shows the average ratings for hourly employees in 2001, and for the four largest hourly positions.

Table 13  
Average Performance Rating  
Hourly Employees, 2001

<u>Job</u>	<u>Men</u>	<u>Women</u>
All Hourly	3.84	3.91
Sales Associates	3.68	3.75
Dept Mgr	4.28	4.38
Cashier	3.58	3.49
HD/HM O/N	3.81	3.96

#### Gender Distribution by Department

31. Men and women are unevenly distributed in departments. The following table shows the employees and percent women in each of the departments that had at least 5000 employees at year-end 2001. The list is sorted by percent women in the department.

Table 14  
Gender Composition By Department, 2001  
Departments with At Least 5000 Employees

Department	Total	%Women
34 LADIES SPORTSWEAR	10399	99.2
27 HOSIERY	14061	99.1
19 PIECE GOODS	12931	99.1
46 HEALTH AND BEAUTY AIDS	7901	98.7
26 INFANTS/TODDLERS	8838	98.6
32 JEWELRY	18493	97.3
910 BACK OFFICE	27659	94.2
988 DEMOS	7480	93.0
23 MENS WEAR	9040	92.5
20 DOMESTIC GOODS	7565	92.4
38 DIV 10 D38	10218	91.4
940 DIV 10, D38 & D40	6424	90.8
40 PHARMACY	8347	88.8
25 SHOES	15710	88.0
3 STATIONARY AND BOOKS	6771	87.5
916 MERCH DEPTS: 16,18,56	6078	86.7
98 BAKERY	11621	86.5
80 SERVICE DELI	10804	81.4
49 OPTICAL PROFESSIONAL	7233	79.5
14 HOUSEWARES	7136	79.2
903 OVERNIGHT ASSOCIATES	16853	78.6
990 FRONT END	244251	78.2
2 HEALTH AND BEAUTY AIDS	11398	77.7
85 PHOTO LAB	16047	75.4
<b>Total All Departments</b>	<b>930770</b>	<b>64.0</b>
1 CANDY, TOBACCO, COOKIES	5881	61.0
994 RECEIVING	5178	59.2
7 TOYS	13837	55.9
931 NIGHT RECEIVING	59764	53.6
5 ELECTRONICS	21966	46.7
10 AUTOMOTIVE	10210	42.0
92 GROCERY DRY GOODS	5647	40.3
930 DAY RECEIVING	58245	39.8
16 HORTICULTURE AND ACCESS	23792	39.3
8 PETS AND SUPPLIES	6289	37.6
284 DIV 28 RECEIVING	19057	30.7
9 SPORTING GOODS	15105	30.2
4 PAPER GOODS	9753	29.5
11 HARDWARE	9943	27.7
90 DAIRY PRODUCTS	6525	25.9
93 MEAT	5611	21.9
995 MAINTENANCE	23283	19.6
94 PRODUCE	7780	19.4
996 SECURITY	7748	11.8
37 TBO SERVICE	14706	6.7

### Salary Rate Progress after Hire

32. I examined whether the pay rate difference between men and women changed over time, for employees hired in hourly positions in the same year. I examined this for all hourly hires during 1996<sup>11</sup>, and followed their progress in salary rate through 2001, and separately for hourly hires into the same job position. I repeated this for 1998 hires. The following chart shows the initial difference in starting hourly rate for men and women hourly hires in 1996, and how this pay gap increased over time during the period 1996 through 2001, for employees remaining in the Wal-Mart workforce. The chart shows the results for all employees hired into hourly jobs in 1996, and for those hired as Sales Associates and Cashiers separately, the jobs with the greatest number of hires. About 65% of new hires start in one of these two positions. The complete summary of this analysis is given in Appendix 11.

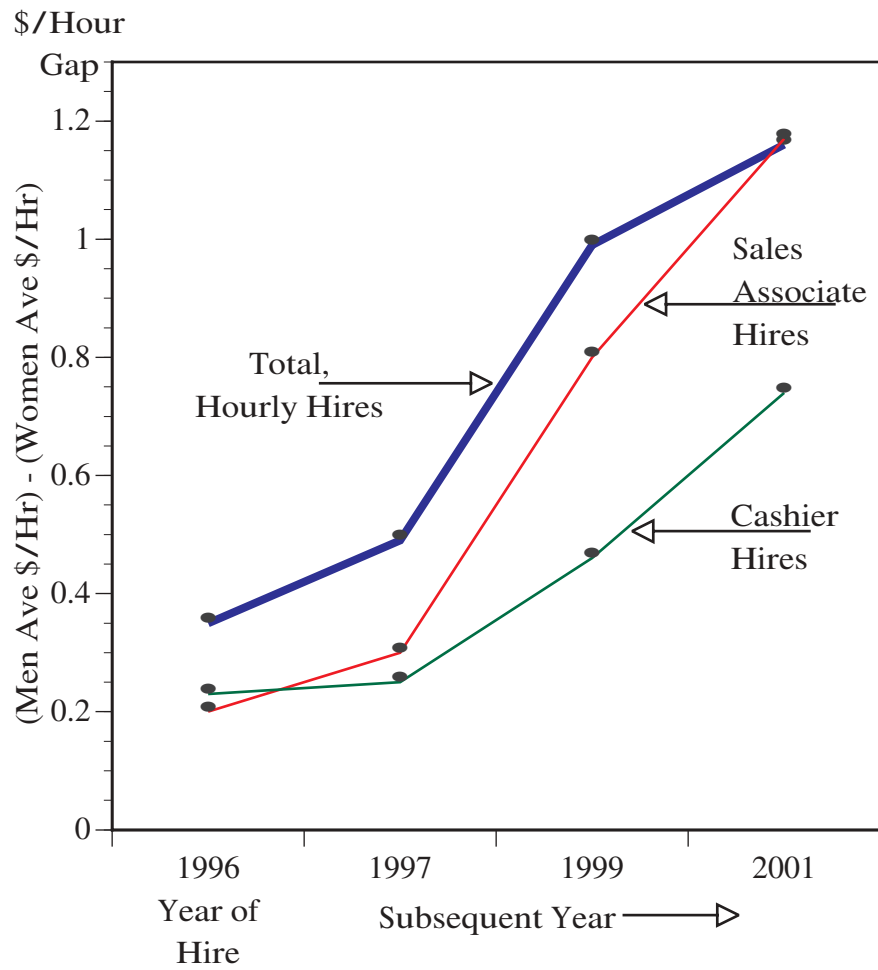
33. As shown on the chart below, 1996 women hired in hourly jobs in 1996 were paid \$0.35 per hour less than men hired in hourly jobs that year. For those 1996 hourly hires who stayed at Wal-Mart through 2001, the gender gap between men and women increased to \$1.16 per hour, on the average. For 1996 hires into the Sales Associate, the largest job, the shortfall in average hourly rate for women when hired was \$0.20 per hour. Among employees hired into Sales Associate jobs in 1996 who were still active employees at year-end 2001, men were being paid \$1.17 more than women. I also examined the progress of 1998 hires, and found a similar pattern of increasing salary rate gap over time between men and women hired in same year and job.

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<sup>11</sup> 1996 is the first year for which complete data on hires is available, and 2001 is the latest full year with data.

Table 15

Gender Gap in Hourly Rate Over Time  
for 1996 Hires Into Hourly Jobs



## Changes in Stores, Districts, and Regions

34. Most employees stay in the same store when moving up through hourly positions. Moves into the position of Management Trainee, and higher level positions usually involve a change in store, or even a change in district and region. The following table shows the percent of times when an employee changed store, district, or region when being promoted into the target jobs listed in the table.

Table 16  
Percent of Promotions<sup>12</sup> Where Employee  
Changed Store, District, or Region, 1996 and later

<u>Target Job</u>	<u>Change Store</u>	<u>Change District</u>	<u>Change Region</u>
Store Manager	91.2%	69.4%	35.6%
Co-Manager	81.3	57.0	32.6
Assistant Manager	63.3	40.2	22.0
Management Trainee	62.2	32.5	17.0
Area Manager, Sam's	17.4	5.4	2.8
Support Manager	4.8	7.6	6.0

35. I also examined the number of times store management employees changed store, district, or region after first entering those positions. This is summarized in the following table.

Table 17  
Number of Changes in Store, District and Region  
After Entering Store Management Jobs

<u>Target Job</u>	<u>Changed Store</u>		<u>Changed District</u>		<u>Change Region</u>	
	<u>≥ Once</u>	<u>Ave</u>	<u>≥ Once</u>	<u>Ave</u>	<u>≥1 Once</u>	<u>Ave</u>
Store Manager	97.8%	3.60	88.7%	2.77	67.1%	1.72
Co-Manager	95.8	2.96	83.0	2.22	61.5	1.31
Assistant Manager	85.4	2.80	68.9	1.98	49.6	1.17
Management Trainee	86.2	3.04	68.7	2.04	47.8	1.16
Area Manager	48.5	1.15	31.6	0.64	26.5	0.50
Support Manager	36.3	0.82	34.0	0.64	24.4	0.41

<sup>12</sup> These include moves during 1996 or later, and also lateral moves classified as promotions in PeopleSoft.



## C. INFERENCEAL STATISTICS

### Statistical Methodology

36. In statistics a distinction is made between *descriptive* and *inferential* statistics. Descriptive statistics simply report or summarize counts, percentages, or averages, based upon some given data set. Descriptive statistics speak for themselves, they make no assumptions about the underlying population or how the data was selected; there is no probability model assumed. Inferential statistics attempt to measure whether certain disparities, calculated from descriptive statistics, are within the range of what might be expected if variation were due simply to random fluctuation.

37. Inferential statistics ask the question, "Is the observed disparity consistent with what would be expected from random fluctuation?" To answer this question requires some definition of random fluctuation. Random fluctuation is usually represented by a random selection process, where all individuals in a certain pool are assumed to have the same chance of selection. The probability model determines which results are expected and which results are unlikely.

38. The likelihood that a disparity as big as the one actually observed will occur by random fluctuation is called the *significance probability*. If this probability is very low then doubt is raised as to whether the disparity is the result of random fluctuation expected from the model.

39. The significance probability of an observed result can be expressed in terms of a *Z-value*, which gives the size of the disparity in terms of standard deviations. Significance probabilities and Z-values are equivalent. That is, one can be determined from the other. A Z-value of 1.96 indicates that a disparity has 1 chance in 20 of occurring by random fluctuation. A Z-value of 2.58 (+ or -) indicates that a disparity has 1 chance in 100 of occurring by random fluctuation. The following table summarizes the appropriate correspondence between Z-values and significance probabilities:

Table 18  
**Z-Values and Probability of Occurrence**

<u>Z-Value</u>	<u>Probability of Occurrence</u>
1.96	1 chance in 20    (.05)
2.58	1 chance in 100   (.01)
3.08	1 chance in 500   (.002)
3.3	1 chance in 1,000(.001)
3.9	1 chance in 10,000    (.0001)
5.0	1 chance in 1,000,000   (.000001)
6.0	1 chance in 100,000,000 (.00000001)
20.0	less than 1 chance in 10 to 88 <sup>th</sup> power

## D. ANALYSIS OF PROMOTIONS

### Methodology

40. As described above, women are under-represented in management positions compared to their representation in the hourly workforce. Wal-Mart has a strong “promote from within” policy, as shown by its statement that “72% of all Salaried Management started as hourly Associates”<sup>13</sup>. Moreover, most hourly Associates start in the entry level positions of Sales Associate or Cashier. Employees reach Salaried Management positions by first becoming a Management Trainee, which leads directly into the Assistant Manager position. Higher level store management positions of Manager and Co-Manager are filled almost entirely by employees who have been Assistant Managers. The large disparity between the percentage of women in store management positions, and in the hourly workforce is a result of Wal-Mart’s failing to promote women at the same rate it promotes similarly situated men. The following sections will describe my analysis of this pattern for promotion into several positions above the entry level hourly workforce.

41. The promotion analysis of moves into a particular target job compares the percentage of women among those promoted into that job, to the percentage of women in the availability pool for that promotion. To perform this analysis, it is first necessary to specify the target job, and identify the promotions into that job. The definition of the target jobs, and promotion into these jobs, is detailed in Appendix 2. Basically, a person is counted as being promoted into a target job if his or her previous job is a lower position, and his or her job history data shows a change code of ‘PRO’, indicating that he or she was promoted.<sup>14</sup> Secondly, it is necessary to identify the percentage of women in the availability pool for the promotion.

### Determining the Availability Pool for Promotions

42. There are two methods that are often used for determining the availability pool for a promotion. One method is to use applicant flow data, and a

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<sup>13</sup> Wal-Mart Stores career opportunities document, Bates WMHO 714869.

<sup>14</sup> Promotions into Support Manager (1050) are defined as any move from a lower job, since Wal-Mart does not use the ‘PRO’ code for promotions into Support Manager.

second method is to determine the availability pool from the incumbents in historical feeder jobs for the promotion. Using applicant flow data to determine availability is useful when all job vacancies are posted, complete data is maintained on applicants and selections, and the fairness of the job posting system is not contested. If these criteria are not met, then it may be impossible to use applicant flow data, or using applicant flow data to determine availability pools will not give meaningful results.

43. Wal-Mart has two systems used to collect some applicant data. Their Job Posting System is used for some hourly job vacancies, and their Management Career Selection System (referred to as MCS) is used for some Management job vacancies. These two systems provide no useful data for analyzing promotions into the upper level hourly supervisory, and store management positions considered in this report. The following sections describe the inadequacies of these two databases.

### Job Posting Data

44. The job posting data identifies applicants for some hourly jobs, and those who were selected for openings.<sup>15</sup> Support Manager is the only target job analyzed in this report that is included in the job posting data. However, the data included in the job posting system for Support Manager contains only a fraction of the vacancies that were actually filled, as determined from the PeopleSoft personnel database. The job posting data shows only 4504 promotions into Support Manager for the period 1997-2002. However, the PeopleSoft data shows there were 22,388 promotions into Support Manager for the same period<sup>16</sup>. The number of job posting acceptances into Support Manager represents only 20% of the PeopleSoft promotions into Support Manager. The following table provides a breakdown of the applicants and acceptances for Support Manager vacancies found in the job posting data, compared to the actual number of promotions found in the PeopleSoft data.

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<sup>15</sup> See February 12, 2002, Steve Catlett letter. The applicant table was named "intvwrq" and identified as "Interview\_request" table, and the selectees were identified as those with nonblank "offer made date."

<sup>16</sup> Data for 2002 goes through the 1<sup>st</sup> quarter only.

Table 19  
Job Posting Data For Promotions into Support Manager  
Compared to PeopleSoft Data

<u>Jobtitle</u>	<u>Year</u>	<u>. Job Posting .</u>		<u>PeopleSoft</u>
		<u>Bids</u>	<u>Accepts</u>	<u>Moves</u>
Support Mgr	1997	1029	173	4316
Support Mgr	1998	7426	729	4559
Support Mgr	1999	9209	823	3939
Support Mgr	2000	12952	1218	4630
Support Mgr	2001	13385	1315	4153
Support Mgr	2002	1155	246	791
Support Mgr	Total	45146	4504	22388

#### MCS Data

45. The MCS system was intended to allow “Assistant, Store and District Management the opportunity to view and apply for field management openings throughout”<sup>17</sup> the company. Thus, the system was not intended to collecting applicant information for Management Trainee, Assistant Manager and Co-Manager vacancies<sup>18</sup>. MCS data contains no data for any management positions in Sam’s stores<sup>19</sup>. The MCS allows for the collection of information on applicants for vacancies and acceptances.<sup>20</sup> The table below shows the number of MCS applicants and selctions compared to the actual number of moves in the PeopleSoft data.

<sup>17</sup> See Management Career Selection Guide, Bates WMHO 217238.

<sup>18</sup> See deposition of Debra Kintzele, October 2, 2002, page 41-42.

<sup>19</sup> See deposition of Jeffrey Reeves, January 14, 2003, page 159, lines 22-23.

<sup>20</sup> From MCS tables job\_appnew, app\_offernew, job\_slotnew, job\_openingnew and app\_acceptnew. These were used to link job\_opening\_id to job\_slot\_id to MCS jobcode. Promotion occurs if Accept indicator is "Y".

Table 20  
MCS Applicants by Jobcode<sup>21</sup> 1997-2002

<u>Number of Applicants</u>	<u>MCS Accepts</u>	<u>PeopleSoft Moves</u>	<u>Target Job</u>
41000	3707	4821	Store Manager <sup>22</sup>
0	0	4124	Co-Manager
641	113	24604	Assistant Manager
0	0	15043	Management Trainee

46. The MCS system contains no information about how vacancies in Management Trainee and Co-Manager positions were filled. The information on Assistant Manager vacancies is negligible. For Store Manager, the total number of acceptances was 3,687 during 1998-2002. There were a total of 3,980 moves to Store Manager in the Wal-Mart data in PeopleSoft. Table 21 below provides a breakdown of MCS applicants for Store Manager by year.

Table 21  
MCS Applicants For Store Manager and Assistant Manager by Year

<u>Jobtitle</u>	<u>Year</u>	<u>MCS Bids</u>	<u>MCS Accepts</u>	<u>PeopleSoft Moves</u>
Manager	1998	8807	755	803
Manager	1999	10121	910	993
Manager	2000	9088	933	1035
Manager	2001	10585	979	1054
Manager	2002	1832	110	95
Manager	Total	40433	3687	3980

<sup>21</sup> The MCS system uses different codes to identify jobs than are used in the PeopleSoft data. Defendant provided a mapping of PeopleSoft to MCS job codes included in a June 24, 2002 email from defendant's counsel. That mapping was used for MCS summaries by job appearing in this report.

<sup>22</sup> PeopleSoft Store Manager moves in Tables 20 and 21 include lateral moves where employee prior job was store manager, but there was a change in store or a promotion was indicated in the job history data. Moves into Store Manager at Sam's are excluded.

47. The MCS system does not give a true measure of applicant flow for the positions of Store Manager and above. To get a true measure of applicant flow, it would be necessary to have an open bidding system where employees would determine whether they wanted to come forward and bid for a vacancy, and the vacancy would be filled from these applicants. This is not the case with the MCS system, since “positions may be filled outside of the Management Career Selection process”,<sup>23</sup> and individual exceptions may be made to stated eligibility criteria.<sup>24</sup> Moreover, the system requires pre-screening of applicants before they can be considered for promotion.<sup>25</sup>

48. Due to the limitations of the Job Posting and MCS system described in the previous paragraphs, availability pools in the promotion analysis are determined from the incumbents in historical feeder jobs for the promotion.

49. The availability pool for a particular promotion is constructed to represent the group of employees who are similarly situated to the person promoted. In my analysis, I have specified employees as *similarly situated* if they worked in the same job and geographic area as the person promoted, as of the year-end prior to the promotion. Geographic area is taken to be district or store, depending on the target job. In order to determine the appropriate geographic area to be used in restricting the availability pool for a particular promotion, I relied on the historic pattern of changes in store, districts and regions for employees being promoted into each of the target jobs, which is described in a previous paragraph. This is a conservative approach that may mask some discrimination due to differential assignment of men and women to stores or jobs with greater earnings or promotion potential.

50. Wal-Mart policy is that all hourly employees are eligible for for a Management Trainee position. If this pool were used, instead of controlling for job, a much higher female availability percentage would result, and consequently the

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<sup>23</sup> See Management Career Selection Guide, Bates WMHO 217239. bottom of page 2.

<sup>24</sup> See Management Career Selection Guide, Bates WMHO 217238. middle of page 1. See also

<sup>25</sup> See deposition of Debra Kintzele, October 2, 2002, page 157 through top of page 159.

shortfall in female promotions discussed below would be greater. This also would be true if the availability pool were defined to include hourly supervisors such as Department Head, Customer Service Manager, and Support Manager, instead of controlling for historic feeder jobs.

51. By using prior job held by person promoted in determining the feeder pool for that promotion, any discrimination by Wal-Mart in selecting the job positions from which promotions are made would not be reflected in the promotion analysis. To illustrate this point, consider a hypothetical example where there were two jobs, one with all men and one with all women. Assume that employees in each of these jobs were equally qualified for promotion. If Wal-Mart always selected from the job with all men, then the availability pool would be 100% male, and there would be no disparities observed in the promotion analysis controlling for job.

52. The promotion analyses described in the following paragraphs give results for Wal-Mart and Sam's combined. The results for Sam's alone are discussed in a separate section below. Appendix 13e-h includes Sam's promotion summaries. All of the promotion analyses include promotions during 1997 through first quarter 2002. Promotions during 1996 are not included, because determining the availability pool would require knowing incumbents in 1995, and 1996 is the earliest year of complete data.

#### Promotions into Support Manager

53. Support Manager is the highest level hourly supervisory position below Management Trainee, and many Support Managers are eventually promoted into Management Trainee and higher positions. Sales Associates and Department Managers are the largest feeder jobs into the Support Manager job. Women comprise about 70% of the Sales Associates and Department Managers, but only about 45% of the Support Managers. About 95% of employees promoted into Support Manager positions stay in the same store when promoted. Accordingly, in the analysis of promotion into Support Manager, I have used store as a geographic control, thus considering employees in the same job, and same store to be similarly situated for promotion.



54. The analysis of promotions into Support Manager shows that women received 2891 promotions fewer than would be expected from their representation in the availability pool, controlling for feeder job, store, and year of move. This disparity has a Z-value of -54.38 indicating a high degree of statistical significance, which is practically impossible to occur by random fluctuation.

Table 22

Analysis of Promotions Into Support Manager, Wal-Mart

Year	Promotions		% Women		Loss	Z-Value
	Tot	Women		in Pool		
1997	4316	2094	48.5	62.6	-608.2	-25.61
1998	4559	2161	47.4	61.4	-637.5	-26.59
1999	3939	1695	43.0	56.6	-535.6	-24.20
2000	4630	1941	41.9	54.2	-569.7	-23.59
2001	4153	1664	40.1	50.8	-446.1	-19.84
2002	791	294	37.2	49.1	-94.2	-9.02
Total	22388	9849	44.0	56.9	-2891.4	-54.38

Promotions into Management Trainee

55. The Management Trainee position is a transitional job leading directly into an Assistant Manager assignment, after the employee has completed a 4-5 month training program. Employees who were promoted into Management Trainee positions changed stores 62% of the time when being promoted. Thus, when Wal-Mart promotes an hourly employee into a Management Trainee position in a particular store, the company usually looks outside that store to select an employee to fill the vacancy. and sometimes it goes out of the district.

56. I have performed a promotion analysis comparing the percentage of women among those promoted into Management Trainee positions with the percentage of women in the available pool of hourly workers. The available pool of hourly workers for a particular promotion into a Management Trainee job consists of those employees who held the same job as the person promoted, and who worked in the same district, at the end of the year prior to the promotion. For example, if an employee was promoted into a Management Trainee position in

1998, had previously held a Sales Associate position (201) and was working in District 26, then the availability pool for that promotion would be the group of employees in the Associate position in District 26 at year-end 1997. In statistical terms, this definition of an availability pool for the promotions is referred to as “controlling for feeder job, district<sup>26</sup>, and year of move”. Thus, employees in the same availability pool for a promotion are *similarly situated* in that they held the same job, in the same district, at the end of year prior to the promotion.

57. The next table below summarizes the results of the analysis of promotions into Management Trainee jobs. Women received 2952 promotions fewer than expected according to their representation in the availability pools, during 1997-2002. The Z-value corresponding to this disparity is -60.81, indicating a statistically significant shortfall that is virtually impossible to occur by chance, if promotions were selected at random from the availability pool.

Table 23

Analysis of Promotions Into Management Trainee, Wal-Mart

Year	Promotions		% Women			
	Tot	Women		in Pool	Loss	Z-Value
1997	1569	640	40.8	60.0	-302.0	-20.11
1998	2390	958	40.1	59.3	-460.3	-23.67
1999	2946	1142	38.8	59.4	-607.7	-28.34
2000	4003	1593	39.8	59.2	-777.6	-31.27
2001	3463	1407	40.6	59.9	-668.5	-28.25
2002	672	273	40.6	60.9	-136.3	-12.69
Total	15043	6013	40.0	59.6	-2952.5	-60.81

Promotions into Co-Manager

58. Larger stores have a Co-Manager position, which is above the Assistant Manager but below Manager within the store. Nearly all Co-Manager vacancies are filled by promotion of an Assistant Manager, and involve a change in store over

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<sup>26</sup> In the promotion analyses that include a control for district, districts are defined separately for Sam's and non-Sam's. For example, Sam's employees with district=1 are considered to be in a separate district from non-Sam's employees with district=1.

80% of the time. The analysis of promotions into Co-Manager controls for district, job, and year of promotion.

59. Women received 346 promotions fewer than expected according to their representation in the availability pools, during 1997-2002.<sup>27</sup> The Z-value corresponding to this disparity is -13.81, indicating a statistically significant shortfall that is virtually impossible to occur by chance, if promotions were selected at random from the availability pool.

Table 24

Analysis of Promotions Into Co-Manager, Wal-Mart

Year	<u>Promotions</u>		% Women		Loss	Z-Value
	Tot	Women		in Pool		
1997	533	94	17.6	28.1	-55.8	-5.84
1998	652	118	18.1	29.5	-74.2	-6.96
1999	899	205	22.8	31.3	-76.4	-5.90
2000	1017	237	23.3	31.2	-80.4	-6.15
2001	868	209	24.1	30.2	-52.8	-4.46
2002	155	38	24.5	28.9	-6.8	-1.35
Total	4124	901	21.8	30.2	-346.4	-13.01

Promotions into Store Manager

60. Each store has a Store Manager who is the person most responsible for running the store. About 60% of Manager vacancies are filled by promotion of a Co-Manager, and the remainder mostly are filled by Assistant Managers. The promotion involves a change in store over 90% of the time. The analysis of promotions into Manager controls for district, job, and year of promotion.

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<sup>27</sup> Data for 2002 includes only the 1<sup>st</sup> quarter.

61. Women received 155 promotions fewer than expected according to their representation in the availability pools, during 1997-2002. The Z-value corresponding to this disparity is -7.72, indicating a statistically significant shortfall.

Table 25  
Analysis of Promotions Into Store Manager

Year	<u>Promotions</u>		% Women		Loss	Z-Value
	Tot	Women		in Pool		
1997	607	126	20.8	24.3	-21.4	-2.53
1998	624	100	16.0	20.4	-27.3	-3.56
1999	706	103	14.6	19.9	-37.6	-4.74
2000	758	142	18.7	23.1	-32.9	-3.35
2001	809	153	18.9	23.2	-35.0	-3.38
2002	63	14	22.2	24.4	-1.4	-0.45
Total	3567	638	17.9	22.3	-155.7	-7.72

#### Promotions at Sam's

62. The above analysis looked at total Wal-Mart, including Sam's. I have also analyzed promotions into higher level hourly and store management positions at Sam's alone. The analyses include promotions into Store Manager, Co-Manager, Management Trainee, and Area Managers<sup>28</sup>, in Sam's stores. There are statistically significant shortfalls for promotions into Area Manager, Management Trainee, and Store Manager at Sam's, but not for promotions into Co-Manager. However, the position of Co-Manager is much less frequently used at Sam's than at regular Wal-Mart stores. For example, the ratio of the number of Co-Managers to Store Managers at regular Wal-Mart stores is about 4:5, while at Sam's this ratio is less than 1:5. Moreover, there are relatively few promotions into Co-Manager at Sam's, compared to the number at Wal-Mart stores. The results of the analysis for Sam's alone are given in Appendices 13e-h.

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<sup>28</sup> The position of Area Manager is only used in Sam's, and is similar to a Support Manager at non-Sam's stores, in that they are both the highest position below Management Trainee. The job codes for Sam's Area Managers are 043350, 043360, and 043550. The job code 043500, with title 'Area Mgr' is actually an Assistant Manager position at Wal-Mart.

### Consistency of Promotion Disparities Across Regions

63. The pattern of under-promotion of women into Support Managers, Management Trainee, Co-Manager and Manager jobs is consistent in nearly every geographic region at Wal-Mart. The following table summarizes the number of regions that have a shortfall, or excess, of promotions of women.

Table 26  
Count of Promotion Disparities Across Regions  
Minus column gives number of regions  
where women received fewer promotions than expected

Target Position	All Regions			Regions Where Disparity Statistically Significant		
	Total	Plus	Minus	Total	Plus	Minus
Support Manager	40	2	38	35	0	35
Management Trainee	41	0	41	40	0	40
Co-Manager	40	3	37	22	0	22
Store Manager	40	6	34	13	0	13

For promotions into Support Manager, women received fewer promotions than expected in 95% of regions across the country. For promotions into Management Trainee, women received fewer promotions than expected in 100% of regions across the country, and in 40 out of 41 regions the female shortfall was statistically significant. For each target job, there was no region that showed a statistically significant excess of promotions of women.

## E. ANALYSIS OF TOTAL EARNINGS AND HOURLY RATES

### Methodology

64. Descriptive statistics of the Wal-Mart workforce indicate that women are paid less than men even within the same job<sup>29</sup>. These earnings differences could be due to extraneous factors such as how much seniority a person has, whether a person is a part time or full time employee, which store a person works in or how many weeks during the year the person worked. For example, if women generally have less seniority than men, this could explain why they earn less than men, or women might earn less because more of them are part time than men.

65. Total annual earnings<sup>30</sup> were analyzed to determine if women are paid less than men even after taking into account extraneous factors, using a statistical technique known as regression analysis. Regression analysis is widely used by statisticians to make comparisons between male and female earnings, while accounting for the effects of any extraneous factors. In a regression model, total earnings are assumed to be a function of the independent variables plus a random error. The basic steps in this procedure are outlined as follows:

- a. Use all the data to estimate the function of the independent variables, including gender.
- b. Determine the 'gender coefficient' of the resulting regression function.
- c. Determine if the gender coefficient is statistically significant.

66. A negative gender coefficient indicates that women are compensated less than similarly situated men. Negative coefficients may be expressed as a percentage difference. For example, if the coefficient as a percentage were 10%, this means that, all other factors being equal, a woman earns 10% less than a man. Statistical significance is determined by a t-value which measures the size of the gender coefficient in standard deviation units. For large sample sizes, t-values

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<sup>29</sup> See Appendix 6.

<sup>30</sup> Total annual earnings includes three types of earnings found in the yearend payroll data: regular, overtime and other earnings.

larger than 2.00 are considered statistically significant. If the gender coefficient is statistically significant, the disparity cannot be explained by chance variation and the coefficient measures a real difference between male and female earnings.

#### Total Annual Earnings Comparisons

67. The initial regression<sup>31</sup> of total annual earnings included variables which account for how long an employee has worked for the company, how many weeks the employee worked during the year, whether the employee was hired or terminated during the year, whether the employee was full time or part time, which store the employee worked in, whether the employee was ever hired into a retail store management position, and whether the employee is a woman. Regressions were run for each year, 1996-2001, and were restricted to non-probationary employees in a retail store job who worked and had earnings<sup>32</sup>. The results of the initial regressions show that women are paid at least 9.3% less than similarly situated men in every year. These results are highly significant with t-values more extreme than -120.5 in every year. The initial regression shows that the earnings difference between men and women is significant even after taking into account factors such as seniority, weeks worked, part time status and store location.

68. The initial regression was also run separately for hourly and salaried employees<sup>33</sup>. The results for hourly employees show that women are paid at least 6.7% less than comparable men, and are highly significant with t-values more extreme than -89.3 in every year. The results for salaried employees show that women are paid at least 12.6% less than similarly situated men in every year. These results are highly significant with t-values more extreme than -24.6 in every year. These models show that the earnings difference between men and women are more pronounced among salaried than hourly employees.

69. A second regression model was run, with job position added as a control factor in addition to those included in the initial model. This second

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<sup>31</sup> Referred to as model 1 in Appendix 15.

<sup>32</sup> Technical descriptions of regression models are given in Appendix 14.

<sup>33</sup> Referred to model 1h for hourly and model 1s for salaried in Appendix 15.

model<sup>34</sup> measures differences in earnings within the same job position. As noted earlier in this report, women are under-represented in management jobs and have significant shortfalls in management promotions. Therefore, job positions held by women may be the result of discrimination and would be a tainted variable. Accordingly, regressions including job as a control factor will not reflect any discrimination due to failure to promote women. Nevertheless, the job that a person held was added as a variable to the initial model in order to explore whether earnings differences persist within jobs, notwithstanding the possible discrimination in job positions. The results show that women are paid at least 4.5% less than comparable men in every year, and are highly significant with t-values more extreme than -54.9 in every year. Thus, women still earn less than similarly situated men even after taking into account the job they held.<sup>35</sup>

70. The second model was also run separately for hourly and salaried employees<sup>36</sup>. The results for hourly employees show that women are still paid at least 4.5% less than similarly situated men in each year, and are highly significant with t-values more extreme than -53.84 in every year. The results for salaried employees show that women are paid least 5.8% less than similarly situated men, and are highly significant with t-values more extreme than -12.1 in every year. Thus, among hourly and salaried employees, women earn less than similarly situated men even after taking into account the job they held.

71. Job review ratings for hourly employees take on values 1, 3, 5, and 7, with 7 being the best rating. As mentioned earlier in this report, ratings of 3 and 5 comprise over 95% of the ratings given. To assess the effect of job review ratings on annual earnings, variables for the four rating values were added to the second model.<sup>37</sup> This third model<sup>38</sup> was run only for year 2001 when ratings data was most

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<sup>34</sup> Referred to as model 2 in Appendix 15.

<sup>35</sup> The variable of “Store” may also be a tainted, because female managers may be assigned to stores with less earnings potential.

<sup>36</sup> Referred to as models 1h and 1s in Appendix 15.

<sup>37</sup> Performance review data for management employees was not used in any regressions, because the data provided was incomplete until a few days prior to the completion of this report, and because performance ratings are not used for determining pay for Managers and Co-Managers.

<sup>38</sup> Referred to as model 3



complete and excluded about 25% of hourly employees because they did not have a valid rating. The third model shows that women are paid 6.1% less than comparable men in 2001 with a highly significant t-value of -77.35. The 6.1% figure is higher than disparities when ratings were not taken into account, which is consistent with the earlier finding that women tend to have higher ratings than men.

72. Table 27 below summarizes all regressions on total earnings. Details by year are attached as Appendix 15.

Table 27  
**Summary of Annual Earnings Regressions**

Initial model controls for seniority, weeks worked, store,  
PT/FT status, whether hired or terminated during year, whether a management hire.

All models exclude probationary employees and  
employees who did not work or had zero earnings.

Employees Included	Model	Range of Yearly Results, 1996-2001	
		Percent Difference	t-value
Hourly & Salary	1 Initial	9.37% to 10.52%	-120.59 to -147.87
Hourly only	1h Initial	6.75% to 8.14%	-89.36 to -115.64
Salary only	1s Initial	12.63% to 14.72%	-24.62 to -37.03
Hourly & Salary	2 Adds job	4.54% to 5.60%	-54.96 to -71.37
Hourly only	2h Adds job	4.54% to 5.58%	-53.84 to -69.56
Salary only	2s Adds job	5.46% to 7.07%	-12.17 to -20.05
Hourly only	3h Adds job and ratings	6.14%	-77.35*

\* Year 2001 only, restricted to hourly employees with valid job review rating.

### Hourly Pay Rate Comparisons

73. In the preceding regressions for hourly employees, total annual earnings were significantly less for women than for men. Total earnings for hourly employees are affected by regular and overtime hours worked and by hourly pay rates. To investigate differences in pay rates, regressions on dollar per hour rates were run for non-probationary hourly retail store employees who were active at

year end. These first regressions on hourly rates<sup>39</sup> control for how long an employee has worked for the company, whether the employee was hired during the year, whether the employee was full time or part time, which store the employee worked in, whether the employee was ever hired into a retail store management position, what job the employee held, and whether the employee is a woman<sup>40</sup>. Gender coefficients for these regressions are expressed in dollars and represent the dollar difference in hourly rates between women and men. For example, if the gender coefficient is -0.30, then this means that hourly women earn \$0.30 per hour less than similarly situated men.

74. The hourly rate regressions show that women are paid at least \$0.18 per hour less than similarly situated men, and results are highly significant with t-values more extreme than -62.3 in every year<sup>41</sup>. Also, the disparities get steadily worse from 1997 to 2001 when women were paid \$0.18 per hour less than men in 1997 to \$0.34 less per hour in 2001. These regressions show that the hourly pay rate difference between men and women cannot be explained by factors such as seniority, part time status, store location and job held.

75. Job review ratings were added to the hourly rate regressions to investigate whether ratings could explain differences in hourly pay rates. This second model on hourly rates<sup>42</sup> was run only for year 2001 when ratings were most complete. The results show that women are paid \$0.37 per hour less than comparable men in 2001, and are highly significant with a t-value of -102.65. Thus, women are paid at a lower hourly rate than similarly situated men even after taking into account both the job they held and their job review ratings, as well as the basic factors in the model. The \$0.37 disparity is higher than the disparity when ratings are not taken into account, which is again consistent with the earlier finding that women tend to have higher ratings than men. Table 28 below summarizes the regressions on hourly pay rates, and details by year are given in Appendix 15.

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<sup>39</sup> Referred to as model 4h.

<sup>40</sup> Details of the regression models are given in Appendix 14.

<sup>41</sup> Details of these regressions are given in Appendix 15.

<sup>42</sup> Referred to as model 5h.

Table 28

## Summary of Pay Rate Regressions on Hourly Employees

All models control for seniority, store, PT/FT status,  
whether hired during year, whether a management hire, job held.  
All models exclude probationary employees, those not active at year end, and  
those without a pay rate.

Employees Included	Model	Range of Yearly Results, 1996-2001	
		\$/hour Difference	t-value
Hourly only	4h Has job	\$0.18 to \$0.34	-62.30 to -101.18
Hourly only	5h Has job and rating	\$0.37	-102.65*
* Year 2001 only, restricted to hourly employees with valid job review rating.			

### Consistency in Regressions Across Regions

76. In all regressions on total annual earnings and hourly pay rates, the gender coefficients are statistically highly significant because actual earnings and pay rates for women tend to be lower than what would be predicted for similarly situated men. To determine if women are paid less or at a lower rate consistently across regions, the average female difference between actual and predicted values was computed for every region in year 2001. For every regression model in this report, these averages were negative in 100% of all regions (41 out of 41), indicating that women are earning less and are paid at a lower hourly rate than similarly situated men in every region. Details by region are given in Appendix 16.

## F. CONCLUSIONS

77. Based on my analyses of Wal-Mart personnel and payroll data, and documents I have reviewed, I reach the following conclusions:

- a) Women are disproportionately employed in lower paying hourly jobs. In each of the 41 regions at Wal-Mart, the percentage of women among hourly employees was approximately twice their percentage among salaried employees, at year-end 2001.
- b) The total earnings paid to men is about \$5000 more than earnings paid to women, among full-time employees working at least 45 weeks, on the average, in 2001. In each of the 41 regions across the country men earned at least \$2200 more than women, and in 35 out of 41 regions men earned at least \$4000 more than women, among full-time employees working at least 45 weeks, during 2001.
- c) Women have lower hourly rates than men in hourly jobs, on the average. Women have lower hourly rates than men working in the same job in 2001, in 76% of the jobs with over 1000 employees, for employees who were employed for at least 1 year since date of hire.
- d) Women have more years employed at Wal-Mart than men overall, in salary jobs, and in hourly jobs. Women have been working at Wal-Mart longer than men in the same job, for 97% of jobs with at least 1000 employees in 2001.
- e) Women have higher performance ratings in hourly jobs than men, on the average in 2001. The average performance rating is higher for women than men in the same job, for 75% of hourly jobs with at least 1000 employees with ratings in 2001.
- f) The hourly pay rate for men is \$1.16 more than for women, on the average, at year-end 2001, among men and women hired in hourly positions in 1996, and still employed in 2001. Among men and women hired into the same hourly job in 1996, and still employed in 2001, the average hourly pay rate for men is higher than the rate for women in 80% of the hourly jobs with over 1000 hires in 1996.

- g) Over 95% of Store Managers and Co-Managers change stores at least once when entering those positions or later, and over 80% change district, and over 60% change region. Store Managers change stores 3.6 times on the average, when entering that position and subsequently.
- h) Over 80% of Assistant Managers and Management Trainees change stores at least once when entering those positions or later, and over 60% change district at least once.
- i) 80% of the promotions into Support Manager positions do not appear in the job posting data.
- j) The Management Career Selection system (MCS) was not used for selecting promotions into Management Trainee or Co-Manager jobs.
- k) The MCS system includes information on less than 1% of the promotions into Assistant Manager positions.
- l) Women received 2891 fewer promotions into Support Manager than would be expected from their representation in the feeder pools.
- m) Women received 2952 fewer promotions into Management Trainee than would be expected from their representation in the feeder pools.
- n) Women received 346 fewer promotions into Co-Manager than would be expected from their representation in the feeder pools.
- o) Women received 155 fewer promotions into Store Manager than would be expected from their representation in the feeder pools.
- p) Total earnings paid to women ranged between 5% and 15% less than total earnings paid to similarly situated men in each year 1996-2001, even when accounting for factors such as seniority, status, and store.
- q) In 2001 when performance ratings were available, the shortfall in earnings for female hourly employees was greater when including performance ratings as a possible explanatory factor for earnings differences than when it was not included.
- r) Among hourly employees, women were paid between 18 and 34 cents per hour less than similarly situated men during 1996-2001, even when accounting for factors such as seniority, status, and store. The shortfall in female hourly pay rates became steadily worse from 1997 to 2001.

- s) In 2001 when performance ratings were available, the shortfall in hourly rate paid to female hourly employees was greater when including performance ratings as a possible explanatory factor for earnings differences than when it was not included.
- t) Women had lower total earnings, and lower hourly rates, than would be predicted for similarly situated men in every one of the 41 regions across the country.

78. Women employees at Wal-Mart are concentrated in the lower paying jobs, are paid less than men in the same job, and are less likely to advance to management positions than men. These gender patterns persist even though women have more seniority, have lower turnover rates, and have higher performance ratings in most jobs. The shortfall in female earnings, pay rates, and promotion rates have a high degree of statistical significance.