

**The Path to the Top: Changes in the Attributes of Corporate Executives
1980 to 2001**

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Abstract:

The analyses below compare the career histories and personal characteristics of the executives in the top ranks of the world's largest and most stable business operations, the Fortune 100, between 1980 and 2001. To our knowledge, there have been no prior studies of changes in the experience or attributes of executives beyond CEOs. In 2001, these executives were younger, more likely to be women, and less likely to have been Ivy League educated. Most important, they got to the executive suite about four years faster than in 1980 and did so by holding fewer jobs on the way to the top. (In particular, women in 2001 got to the top faster than their male counterparts --there were no women executives in the Fortune 100 in 1980). Executives in 2001 also spent about five years less in their current organization and were more likely to be hired from the outside than in 1980. Interestingly, the most stable firms – the 26 that were in the Fortune 100 in both periods – had just as much lifetime employment among executives in 2001 as in 1980, although changes in other aspects of careers were similar. Overall, the path to the executive suite and the attributes of the individuals who get there appear to have changed even in the largest and most stable business operations. Generalizing these results to other organizations is uncertain, but if anything, we would expect less change in these large, bureaucratic organizations, many of which had been committed to practices of internal promotion and lifetime employment for managers and executives.

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Introduction:

Multinational corporations are among the most important economic actors in the world. The largest of them have more economic assets than all but the biggest countries. They are engines of cultural and economic change that can alter the economic fates of entire nations. The people who control them, in turn, have arguably as much power and influence as all but the highest-ranking government officials. Understanding who they are is therefore relevant to understanding the corporations and how they operate.

In addition to knowing the attributes of the people who run large corporations, it is also important to understand the path that took them to these powerful positions. These paths say a great deal about access to positions of influence, about social mobility generally, and specifically about career development practices.

Research on these questions has a long history, especially in the U.S. where notions of social mobility are central to national culture and values. Popular biographies of the “robber baron” generation and its leading figures like John D. Rockefeller and Andrew Carnegie reinforced the notion that individuals became business leaders through hard work or, in the case of manufacturing leaders like Henry Ford and Thomas Edison, inventive genius, typically overcoming hardships in the process. Arguably the first study to examine this meritocratic thesis was Pitirim Sorokin’s 1924 study of millionaires in the U.S.² He compared an older generation of millionaires to the then current generation and found that while about half of the former had come from middle or upper class backgrounds, three quarters of the latter had done so. This suggested to him that society was becoming less meritocratic and that it had become more difficult to work one’s way up economic and class levels.

Carl S. Joslyn and Frank W. Taussig aimed their study of social mobility precisely at business executives.³ They studied the backgrounds of 7,371 executives drawn from the ranks of corporate directors in the 1920s. While they found that the vast majority of these executives had fathers who were also businessmen, and that this percentage actually had grown over time, they also found that 11 percent had fathers who were laborers.

² Pitirim Sorokin. *American Millionaires and Multi-Millionaires: A Comparative Statistical Study*. *Journal of Social Forces* 3(4) 1925, pp.627-640.

³ Carl S. Joslyn and Frank W. Taussig. 1932. *American Business Leaders*, New York: MacMillan.

They focused on this finding and concluded that individuals with merit could work their way to the top of the business community. Differences in the probability of advancement by social class, they argued, were the result of differences in merit and ability – the upper class had more able people.

A number of studies followed the Joslyn and Taussig investigations in examining more closely the origins of the business leadership in the U.S. William Miller looked into the backgrounds of 190 of the most elite executives -- Presidents and Chairmen of Boards of Directors of the largest companies in the most important industries – at the beginning of the industrial age, from 1900-1910.⁴ What was interesting about this group, and in contrast to business leaders from earlier generations, is that most were professional managers, not the founders or entrepreneurs who had started the businesses. Miller concluded that half had come from upper class backgrounds and only 5 percent from working or lower-class families. Frances Gregory and Irene Neu looked back even further in time at the backgrounds of business leaders just before the beginnings of the modern corporation in the 1880s. They found that most of the business leaders before the turn of the last century had inherited money, which allowed them to invest in and then become leaders of companies.⁵ The meritocracy argument was no longer looking credible.

A generation later, the notion of a corporate career with entry-level jobs and promotion from within was more fully in place. Lloyd Warner and James Abbelegan attempted to replicate and extend the Joslyn and Taussig study. They looked at the background and careers of 8300 corporate executives in 1953 and found far fewer founders or entrepreneurs in the ranks and relatively fewer members of the rich or idle class than had the Joslyn and Taussig study. There was also a sharp decline compared to earlier studies in the percentage of executives who had inherited their positions or who were in the same firm as their fathers. What Warner and Abbelegan saw instead was something that looked, at least relative to earlier periods, like an increase in more meritocratic arrangements. In an era when about half of men did not even finish high school, they found that roughly half of the executives of large companies they surveyed were college graduates (three

⁴ William Miller. American Historians and the Business Elite. *Journal of Economic History* 9(2) 1949.

⁵ Frances W. Gregory and Irene D. Neu. The American Industrial Elite in the 1870s. in William Miller (Ed). *Men in Business*. Cambridge, MA: Harvard University Press, 1952.

quarters had attended college), and 20 percent had gone on to graduate school. By far the most common route to the top was to begin either in sales or as a clerk in the company (34 percent of future executives). The next most common path began in production work (14 percent). The most striking statistics, however, concerned the stability of their career in the same company. The executives they surveyed averaged 54 years in age, they had been in their current executive job seven years, and had spent 24 years in their current firm, roughly half their life. Almost 50 percent had only worked at their current firm, and 26 percent had been an executive at only one other firm.⁶

At roughly the same time, Mabel Newcomer undertook a systematic assessment of changes in executive careers over time that focused on their experiences inside their corporations.⁷ She looked at the background and experience of the very top executives – Presidents and Board Chairmen – for the largest companies in 1900, 1925, and 1950, around 400 individuals in each period. This sample was more elite in terms of the importance of their positions in the organization and the importance of their organizations than earlier studies. Newcomer’s results reinforced the conclusion that top executives were increasingly professional managers (as opposed to entrepreneurs or financiers) who were promoted to the top from within the company where they began their career. The extent to which these leaders held positions in companies where their father or close relatives worked declined from 26 percent in 1900 to 16 percent in 1925 and then to 11 percent in 1950. In 1925, 30 percent had begun their careers as entrepreneurs. By 1950, that figure was down to 10 percent. More important for the study here, half of these leaders were hired from outside their corporations in 1900, but by 1950, only 20 percent were outside hires. That number was substantially higher than the 50 percent estimate that Warner and Abbeglen had found for all executives, suggesting that this more elite population was more likely to have been developed from within than was a more typical executive. In 1950, 47 percent of Newcomer’s sample retired in office, as opposed to only 11 percent in 1900. Of those who retired in office, 40 percent had been with their firm more than 40 years in 1950, in contrast to 21 percent in 1925 and only 5 percent in 1900.

⁶ W. Lloyd Warner and James C. Abbeglen. *Occupational Mobility in American Business and Industry*. Minneapolis: University of Minnesota Press, 1995.

⁷ Mabel Newcomer. *The Big Business Executive: The Factors that Made Him, 1900-1950*. New York: Columbia University Press, 1955.

In part as a result of the Newcomer study, ideas about what constituted a business career changed. The dominant notion now was that a business career was an organizational career, that is, it operated inside a corporation. William H. Whyte, an editor at *Fortune* magazine, became arguably the best-known commentator on the rise of the new organizational career with his famous book, *The Organization Man*. He cites a study by the Booze-Allen consulting firm which asked what was seen at the time as a novel question: why would executives ever leave their corporation? Its study of 422 executives who had left their first employer found that they did so only if their corporation could not deliver on its implicit promise of upward mobility.⁸ A series of studies throughout the 1960s and 1970s went on to map out the intricate details of how careers played out in practice, such as Rosabeth Kanter's famous account of in-breeding at the pseudonymous "Indisco" corporation.⁹ There were some hints through the 1970s that perhaps things were changing for executive careers.¹⁰ But for the most part, the question of whether executive careers had changed in any fundamental way would not be questioned for more than a decade.

A New Era in the 1980s? A number of studies have argued that the early 1980s represented a watershed moment for the U.S. economy and for corporations in particular. The worst recession since the Great Depression in 1981 unleashed a massive wave of corporate restructuring. The rise of deregulation and global competition, especially in manufacturing and most prominently from Japan, greatly increased the pressure to improve performance while the growing power of institutional investors and the shareholder value movement increased the demands to improve financial performance. Together these forces were seen as continuing the wave of corporate restructuring, and

⁸ William H. Whyte. *The Organization Man*. New York: Harper 1956.

⁹ Rosabeth Moss Kanter. 1977. *Men and Women of the Corporation*. Boston: Basic Books, p.130-140.

¹⁰ A smaller survey of corporate Presidents from the American Management Association in the late 1970s found that 38 percent had been outside hires, as opposed to only 20 percent in the Newcomer study conducted a generation before. The authors concluded that "One can argue that there is a trend toward selecting the professional manager from the outside as opposed to encouraging the internal succession route to the top." Gene F. Brady, Robert M. Fulmer, and Donald L. Helmich. *Planning Executive Succession: The Effect of Recruitment Source and Organizational Problems on Anticipated Tenure*. *SMJ* Vol. 3 1982, 269-275.

terms like “downsizing” and “reengineering” as well as record levels of mergers and acquisitions became a continuous part of the business landscape.¹¹

In the 1990s, the issue of career paths once again became a topic of interest because of concerns that downsizing was disrupting traditional patterns of advancement. Specifically, the apparent willingness to lay off white collar workers and managers broke the old notions of lifetime job security. Growing problems with employee retention in the 1990s suggested that employees were no longer interested in secure, lifetime careers, and the anecdotal sense was that outside hiring for executives was becoming more popular as a means of restructuring leadership, and organizations, more quickly. The conceptual notion that careers should be thought of as spanning more than one organization – “The Boundaryless Career” – became popular in organizational psychology.¹² But empirical research on this question was virtually nonexistent. A flurry of articles debated the issue of whether employee tenure was falling across the workforce as a whole,¹³ and there was some evidence that white collar and managerial job tenure was declining faster than for the overall workforce. [Cite Kletzer, Farber, me.] Whether internal labor markets and associated career paths were eroding was also a topic for debate¹⁴. Especially for the executive ranks, however, there was little hard evidence one way or the other on these issues.

The Present Study:

The issue motivating this study is the nature of executive careers and how they may have changed in recent decades. Among the specific questions to consider is whether individuals with different attributes are getting to the top now, replicating a question from earlier studies. The more contemporary question is whether the path through which executives have gotten to the top has changed. There are many different ways to

¹¹ Among the more influential arguments that the U.S. economy had undergone fundamental and painful change in this period was Michael L. Dertouzos et al. *Made in American: Regaining the Productive Edge*. Cambridge, MA: MIT Press, 1989. Peter Cappelli, et al. *Change at Work*. New York: Oxford University Press, 1997, suggests that the economic restructuring of the 1980s had a range of negative consequences for employees.

¹² Michael B. Arthur and Denise M. Rousseau. *The Boundaryless Career*. New York: Oxford University Press, 1996.

¹³ See, e.g., David Neumark (ed). *On the Job: Is Long-Term Employment a Thing of the Past?* New York: Russell Sage, 2001.

¹⁴ See, e.g., the exchange between Sanford Jacoby and Peter Cappelli in *California Management Review*, Vol. 42 No1. Fall 1999.

examine these questions, and they begin with the choice as to which sample of executives to examine. The definition of executive jobs is not completely straightforward. For example, how far down the organizational chart does one go before “executives” become “managers”? How should one address the fact that organizational charts are not consistent across companies and the titles used for executive positions differ? And how should one compare equivalent job titles across companies of very different sizes – is a Vice President of a small company an executive?

Earlier studies addressed these questions in two different ways. One was to sample individuals, not jobs, by relying on published directories of executives or biographies of leading business figures such as “Who’s Who.” The alternative approach was to base the sample on specific job titles in existing corporations, the approach we use because it makes it more likely that we are comparing individuals holding equivalent executive positions over time: We know that they come from equivalent corporations, and we can assess the job titles to ensure that the individuals we examine truly hold the appropriate executive positions.

We collected information on the top executives from the Fortune 100 companies – the 100 largest companies in the world in terms of revenue – in 1980 and in 2001. We focus on these 100 corporations precisely because they are the largest and most stable corporations with the scale to manage internal employee development and career programs. This sampling frame stacks the deck against finding change given that these are the companies most likely to be able to persist in the traditional, organizational career model. As a practical matter, limiting the study to 100 corporations also made the data collection exercise more manageable. The year 1980 was chosen as being just before the watershed recession of 1981 and providing a means of seeing whether the period since then does indeed represent a breaking point in careers for executives. The year 2001 was the one with the most recent, reliable data available when we began work on the project in 2003.

We defined “top executives” as those business leaders with fundamental influence of corporate-wide operations in these organizations, the people who truly direct the strategic decisions of the companies. They include the very top positions - President, Chief

Executive Officer (CEO), and Chairman\Chairperson and Vice-Chair of the Board of Directors. Often the same individual will hold more than one of these titles. Board Chairs and Vice-Chairs do not have to be executives of that corporation, and we only included those in our study who were. Next we included Chief Operating Officer, Executive Vice Presidents (EVPs) and Senior VP's. The executives in these jobs typically head functional or operating areas of the corporation, and they sometimes have more than one area under their responsibility (e.g., EVP for "administration," which may encompass human resources and facilities operation). Senior vice presidents (SVPs), the next level down, hold similar positions in organizations that do not use the EVP title. In companies that do have EVPs, the SVP job directs a single area or function. We also included Chief Financial Officer (CFO), Chief Technology Officer/Chief Information Officer and other heads of specialty areas. Vice-Presidents and Group Presidents, who typically head a division of the corporation, were the next level, and where operating divisions are very large, Group Vice-Presidents may also have responsibility for important strategic decisions.

Organizational charts differ widely across companies. As described below, some do not use the EVP title, the use and position of "CIO/CTO" varies, others combine titles, etc. The top group of executives across two similar companies may therefore have different job titles. Because of this, it could be misleading to base the selection of top executives strictly on a fixed set of job titles. Instead, our sampling decision was to examine the top 10 executives in each company in 1980 and 2001. In practice, this approach meant working down the organizational chart from the top job until we got to the 10th individual in the hierarchy. Our sampling decision, therefore, did not attempt to compare executive titles but instead relied on what we see as a simpler and more robust, nonparametric approach of examining the top10 executives in each corporation.

The information we collected on each executive examines demographical attributes, educational background, and career histories. Demographical attributes included the year when the executive was born and the executive's gender. Educational background included the type of degrees that the executives earned (Bachelor's, Master's, Ph.D or equivalent, as well as the field of the degree), the name of the educational institutions from which the executives received their degree, and the year when they received it. We

examined each degree separately. For each degree granting educational institution, we collected additional information on whether the institution is an Ivy League school, whether it is a college or a university, and whether it is a public or private institution. The Ivy League and public institution variables measure aspects of social elitism. Career history-related information included data on executives' entry-level jobs and on each subsequent job up to their current executive position -- typically six to 12 different jobs. For each job, we collected information regarding the year when the executive started that position, the job title, and the name of the company where it was located. In some cases, the name of the division or the function where the executive had the job was also collected to help determine whether a "new" job was a lateral transfer or a promotion.

For the sample of 1980 Fortune 100 executives, we collected data from two printed sources: the *Dun & Bradstreet reference book of corporate managements* (1980 volume, Publisher: Dun & Bradstreet, Bethlehem, PA) and the *Standard & Poor's register of corporations, directors and executives: United States and Canada* (1980-1981 volume, Publisher: Standard and Poor, New York). Both list the names of the top executives with their title, and typically their educational background along with a brief biography. In both directories, the most commonly listed titles include: the Chairman and the President, the Vice-Chairmen (about 3 in number), the Executive VPs (about 4), the Senior VPs (between 7 and 10), and the VPs (between 10 and 39). The two directories were not always consistent in their information, however. The most common area of disagreement concerned the number of senior vice presidents and executive vice presidents in a corporation.¹⁵ For the sake of consistency, we used the Dun & Bradstreet directory and resorted to the Standard & Poor's directory only if information on the career history of executives was missing from the Dun & Bradstreet directory. Data on entry-level positions was especially likely to be missing, and we pursued a variety of print sources to fill in the missing information, an issue we return to below.

The set of Fortune 100 executives for 2001 comes from two online and three printed sources. The Hoover's Online electronic database served as the main source of data for 2001 Fortune 100 executives. For each corporation, Hoover's Online lists the holders of

¹⁵ In the case of General Motors, for example, the Dun & Bradstreet directory lists four EVPs, while the Standard & Poor's directory lists three.

the top executive positions (Chairperson, CEO, Vice-Chairmen, SVPs, EVPs, VPs and board members) with their biographical information in text format. Unfortunately, this source omits a great deal of career history information. We used the Lexis-Nexis database to supplement missing biographical data on the executives. We also consulted printed directories to fill in the gaps in career paths, including the *Dun & Bradstreet reference book of corporate managements* (2001 volume, Publisher: Dun & Bradstreet, Bethlehem, PA), the *Standard & Poor's register of corporations, directors and executives: United States and Canada* (2001 volume, Publisher: Standard and Poor, New York) and *Who's Who in finance and industry* (2002 volume, Publisher: Marquis group, Chicago). As with the 1980 data, information on entry-level positions was the most likely to be missing, especially so for executives who switched companies.

In practice, it was sometimes impossible to identify enough information on some executives to include them in the data base. Skipping over these executives to take the others further down the organizational chart would create a complicated bias because corporations with more missing data would end up with more lower-level executives. Comparisons across establishments would therefore be to different levels in the organization. Our decision was to not sample further when not enough information was available to include an executive, which meant that there were cases with fewer than 10 executives in the same corporation. Similarly, there were also many cases where the 10th executive was one of several who held the same title in the organizational chart. For example, the 10th executive may have been one of three who held the SVP title. Rather than making an arbitrary distinction as to which of these should be the 10th executive, we included all of them.

The database that we constructed contains data on 1962 executives -- 802 executives affiliated with Fortune 100 companies in 1980 and 1160 affiliated with Fortune 100 companies in 2001. The number is more than the expected 1000 in 2001 because of the inclusion of multiple position holders as noted above. It is less than the expected 1,000 for the 1980 sample because of much greater incidence of incomplete information. We consider the issue of an unbalanced sample below. Within the overall sample, it was still the case that data on at least one variable was missing for about one-third of the

executives. The issue of missing data is potentially important, and we also examine it at some length below.

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Company Descriptions and Organizational Charts:

In addition to **Fortune** Magazine, which is the source for identifying the Fortune 100 in 1980 and 2001¹⁶, we collected information on the companies per se from Hoover's Online databases (for company age and 2001 financial data) and from the Compustat database (for 1980 financial data). The information included the year when the company was founded, the industry that the company belongs to, its total assets, total sales and net income in 1980 and 2001, and its position in the Fortune 100 rankings.

Despite the fact that the Fortune 100 represents what one would think of as among the most stable corporations in the world, there is considerable turnover in that list over time. Only 26 of that select group from 1980 made it into the Fortune 100 in 2001. They are:

Boeing	Caterpillar Tractor
Chevron	Coca-Cola
Conoco	Dow Chemical
E.I. Du Pont de Nemours	Exxon Mobil
Ford Motor	General Electric
General Mills	General Motors
Georgia-Pacific	Honeywell Intl
IBM	International Paper
Johnson & Johnson	Lockheed Martin
Marathon Oil	PepsiCo
Philip Morris	Phillips Petroleum Co
Procter & Gamble	Texaco
Union Pacific	United Technologies

Table 1 illustrates how the distribution of the Fortune 100 changed by industry over this period. The changes by industry group are often dramatic -- the decline of the manufacturing sectors (from 17.1 percent to 1.1 percent of the total) and the rise of

¹⁶Geoffrey Colvin. The Fortune directory of the 500 Largest U.S. Industrial Corporations. Fortune. 101(9): 274 May 5, 1980 and Clifford Lee. Fortune 5 Hundred. Fortune. 143(8): 100. April 16, 2001.

financial services (from zero to 16.9 percent) are especially striking. The change in the composition of the Fortune 100 raises important issues concerning the source of any changes in executive-related attributes and experience that are examined below.

Table 1: Distribution of Fortune 100 by Industry – 1980 and 2001

Industries	1980 frequencies	Percent in 1980 sample	2001 frequencies	Percent in 2001 sample
Aerospace	59	7.4	49	4.2
Agriculture	9	1.1		
Automotive	55	6.9	28	2.4
Business services	5	.6	11	.9
Chemicals	59	6.0	37	3.2
Communications	27	3.4	106	9.1
Computer	21	2.6	103	8.9
Construction	5	.6		
Consumer Products			10	.9
Electric Utilities	46	5.7	63	5.4
Energy	164	20.4	149	12.8
Entertainment			4	.3
Financial Services			192	16.6
Food	96	12.0	54	4.7
Healthcare	6	.7	62	5.3
Insurance			68	5.9
Manufacturing	139	17.3	13	1.1
Paper	36	4.5	24	2.1
Photography	8	1.0		
Retail	21	2.6	167	14.4
Steel	43	5.4	8	.7
Transportation	14	1.7	10	.9
Wholesale			12	1.0
Total	802	100.0	1160	100.0

The Fortune 100 companies differ across the two periods in other ways as well. As Table 1A indicates, the companies in 2001 are significantly older, despite the apparent turmoil in the economy since 1980. They are also significantly bigger in financial terms. Total sales, for example, were more than four times greater. The differences in financial size cannot be accounted for by inflation over this period, which totaled only 115 percent. The average number of employees is also greater, albeit only by about 34 percent. Overall, then, the Fortune 100 companies are substantially bigger in 2001 than in 1980. (The final column in Table 1A indicates the significance level of any differences between the 1980 and 2001 cohorts based on difference of means tests.) Other things equal, then,

one might assume that the executives in the 2001 sample held more important positions because their organizations were so much larger than equivalent executives from the 1980 sample: An SVP from the 2001 sample may have greater responsibilities than an EVP from the 1980 sample. Offsetting this conclusion is that fact noted above that there are more missing observations in the 1980 sample. The missing observations were more likely to be for lower-level executives than more senior ones as information was more likely to be missing for lower-level executives. The 1980 executives, therefore, may on balance represent slightly more senior positions within their companies than do the 2001 executives. But because the 2001 executives hold positions in more substantial organizations, the two biases therefore work in opposite directions and may cancel out.

Table 1A: Descriptive Statistics for the Fortune 100 in 1980 and 2001

	Year	N	Mean	Sign
Age of the company	1980	778	81.0347	.000
	2001	1160	96.1448	
Number of employees	1980	802	104436.8	.000
	2001	1160	136614.2	
Total Assets	1980	802	7812.0	.000
	2001	1160	147017.9	
Sales	1980	802	11224.6	.000
	2001	1160	50426.1	
Net Income	1980	802	557.4	.000
	2001	1160	2151.0	

Note: Total assets, sales and net income are in million US dollars.

Change in Organizational Charts: Table 2 shows how the distribution of executives by job position changed in the two periods. The biggest changes are the sharp declines in the use of EVP titles and the stand-alone President title as well as big increases in the use of the Group President titles and the emergence of the Chief Operating Office title. More details of job titles are provided in the Appendix – Tables A-C offer details on the distribution of executives by title, Tables D-G provide details on how that distribution differs by industry in 1980 and 2001. Among the findings there is greater use of multiple job titles in 2001 – 36.2 percent had these titles versus only 11.7 percent of all executives in 1980 (see Table C).

Table 2: Organizational Chart for Executive Positions, 1980 to 2001

Titles	1980 frequency and percentages		2001 frequency and percentages	
CEO	4	.5	15	1.3
CEO2	57	7.1	83	7.2
CEO3	6	.7	36	3.1
Chief Officer of a function	3	.4	35	3.0
Chairman	42	5.2	31	2.7
Chairman2	2	.2	1	.1
EVP	219	27.3	213	18.4
Group President or Group VP	55	6.9	157	13.5
President	58	7.2	11	.9
President2	20	2.5	26	2.2
Senior executive VP	5	.6	12	1.0
Senior VP	291	36.3	234	20.2
SVP2	4	.5	88	7.6
Vice Chairman	28	3.5	35	3.0
Vice Chairman 2	6	.7	22	1.9
VP	2	.2	7	.6
Chief Officer2	0		9	.8
EVP2	0		100	8.6
Group P or VP2	0		22	1.9
SEVP2	0		2	.2
VP2	0		21	1.8
Total	802	100.0	1160	100.0

Note: The number 2 or 3 following a title indicates that the incumbent held that title in addition to 2 or 3 others.

Another way to look at the distribution of titles that is arguably more revealing of changes over time is to rank them based on their typical position in an organizational chart. Not all companies have exactly the same hierarchy of titles (see Appendix for representative corporate charts), but there is little debate that the three general tiers of executive titles reported in Table B of the Appendix do form a hierarchical relationship. Interestingly, the percentage of individuals holding positions in the top third of executive titles declined (1980: 27.6% vs. 2001: 22.6%) as it did for those in the middle tier (1980: 65.1% vs. 2001: 59.9%). But the distribution in the lower third expanded considerably (1980:7% vs. 2001:18.5%), consistent with the notion of flatter hierarchies.

Changes in the Attributes and Experiences of Top Executives:

In the analyses below, we turn to attributes of the individuals who hold top executive positions as well as aspects of their career experiences and how they have changed from 1980 to 2001. We examined the following variables:

Job Title and Promotions: In order to examine the career paths of these executives, we identified the hierarchy of positions that a typical executive held over the course of their career and organized those jobs into 13 different categories: 1. Non-managerial jobs; 2. Assistant manager; 3. Manager; 4. General manager; 5. Assistant director; 6. Director; 7. Assistant vice president; 8. Vice president; 9. Senior vice president; 10. Chief functional officers (CFO, CTO); 11. COO; 12. Executive vice president; 13. President, Chairman, CEO. In cases when an executive had two or three titles (e.g. President and CEO, President and COO), the code for the higher-ranking title was used.

We look at the course of their careers (“Number of Positions”) as measured by the number of positions they went through before becoming a top executive. We use the numerical coding above to generate a simple calculation -- an absolute value difference score -- of the size of an executive’s promotion (or in some cases demotion). A move from Assistant Director (5) to Vice president (8), for example, receives a score of 3. This is a nonparametric measure, and as such it may not accurately or even consistently reflect the true increase in position across different points in a career (e.g., is the above move, with a score of 3, truly equivalent to a move from Chief Functional Officer (10) to CEO (13), which also gets a score of 3). There is no obviously preferable approach, however.¹⁷ We take the average of these promotions to generate an “Average Promotion Size” measure. Calculating the size of a promotion compounds issues of measurement error because the estimate is the difference between two measures/titles, each of which may be estimated with some error. It might therefore be reasonable to interpret this measure with some caution.

Years of Education: The biographical data on executives, unlike standard survey data, only reports degrees completed and not years of education received. For comparison purposes, we follow conventions used elsewhere and translate these degrees into the typical years of education associated with them -- a high school degree corresponded to 12 years of education, a Bachelor’s to 16, a Master’s to 18 and a PhD to 20.

¹⁷ For example, one could generate scales for jobs based on responsibility, on skill requirements, on compensation. Generating these hierarchies is the task of job evaluation systems in personnel psychology, and there are limitless variations as to how it is done.

Nature of Educational Institution: For each degree, we calculate whether the institution from which the degree was earned was an elite, Ivy League school or a public institution. (The omitted group is private, non-Ivy League institutions.) Ivy League educations, especially at the undergraduate level, have historically been associated with elite social backgrounds.¹⁸

Tenure: We calculate two measures of tenure for these executives. The first is the amount of time spent in their current organization – “Organizational Tenure.” The second is based on tenure in each job they held during their career as measured by the year when an executive started each new job subtracted from the year in which they started their previous job. The “Average Job Tenure” represents the number of years that it took the executive to get to their current position divided by the number of jobs that the executive has held.

Lifetime Employees: We also report the percentage of executives who began their careers at their current company and are still there at the point of data collection.

Time to Top: The “Time to top” measure represents for the number of years that it took the executive to reach his or her top position beginning with the year when the executive started his or her first job.¹⁹ Time to the top differs from organizational tenure in that it reflects an entire career, including time spent working in other organizations.

Analyzing what is “different” about these variables in 1980 versus 2001 is not completely straight-forward as there are many aspects of statistical distributions that can be compared across two periods. The most obvious and arguably most relevant here is whether the mean values of the variables differ across the two periods, an assessment that can be generated by simple difference of means tests. Mean values can be distorted by

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¹⁸ There are only eight Ivy League schools – Brown, Columbia, Cornell, Dartmouth, Harvard, Penn, Princeton, and Yale. Clearly there are other schools that historically have drawn from the socially elite as well, but calculating exactly where that line of demarcation fell was even more arbitrary than the Ivy League classification.

¹⁹ Where dates for entry-level positions were missing, we estimated their years of work experience by subtracting their years of education from their age.

outliers, however, and for that reason it is also useful to examine whether the median values for these variables are different in the two periods. We use a median test, a special case of Pearson's chi-square test, to examine whether the median values from the two periods are identical. Finally, we use the nonparametric Kruskal-Wallis test to examine more broadly whether the distributions of responses from the two periods are independent. This test combines observations from the two periods, assigns them ranks,

Deleted: Kruskal-Wallis Test for K Independent Samples¶

and then calculates \bar{R}_i , the average of the ranks of the observations in the i th sample. The

test statistic is then

$$KW = \frac{12}{N(N+1)} \sum_{i=1}^K n_i \left(\bar{R}_i - \frac{N+1}{2} \right)^2,$$

and the null hypothesis that the distributions are the same is rejected if $KW > \chi^2_{K-1}$.

In virtually all cases, the median and Kruskal-Wallis test results are similar to the difference of mean tests and are therefore only reported where there are differences. The Appendix reports the complete results for the analyses used most often, those for the full sample.

We begin the analyses by comparing the demographic and human capital attributes of the Fortune 100 executives in 1980 and 2001.

Table 3: Human Capital Comparisons in 1980 and 2001 samples

	YEAR	N	Mean	Sign
Gender of executive (1=male)	1980	801	1.00	.000
	2001	1159	.89	
Age of executive	1980	704	56.04	.000
	2001	705	51.9	
Years of Schooling	1980	726	17.02	.000
	2001	802	17.26	
1 st Degree Institution				

Public (=1)	1980	728	.32	.000
	2001	778	.48	
Ivy League (=1)	1980	728	.14	.017
	2001	778	.10	
2 nd Degree Institution				
Public	1980	345	.26	.021
	2001	496	.34	
Ivy League	1980	345	.35	.000
	2001	496	.21	
3 rd Degree Institution				
Public	1980	38	.29	.832
	2001	74	.27	
Ivy League	1980	38	.21	.592
	2001	74	.26	

The results in Table 3 above suggest some striking differences between the characteristics of executives in 1980 and 2001. (Significance levels for difference of means tests between the two periods are reported in column three.) First, there are more women in these executive positions in 2001 – not a difficult achievement given that the number was zero in 1980. Eleven percent of the incumbents in these positions in 2001 are women who differ from their male counterparts in important ways (examined below). A more surprising change is that the average top executive is considerably younger in 2001 – more than four years younger than in 1980.²⁰ It is not immediately obvious why this should be the case. Economic growth that might have pulled younger executives into the top ranks, e.g., was not noticeably stronger during the career of the 2001 executives (from roughly 1970 to 2000) than during the career of the 1980 executives (1950 to 1980).²¹ We return to this issue below.

Average years of education for top executives are significantly higher in 2001, roughly in line with higher levels of education for the population as a whole over this period.

²⁰ Given an average age in 1980 of 56, the 1980 executives would have been 22 – a typical graduation age – in 1946. But many of these executives would have had their education interrupted by service in World War II, so it is quite likely that many attended college after the War, graduating closer to 1950. The 2001 executives with an average age of 52 would have graduated roughly in 1972. Some of these, but a much smaller percentage than for the earlier cohort, would have served in the military during the Vietnam War. Differences in the incidence of military experience may account for some of the age difference in the two cohorts.

²¹ Early retirement programs associated with downsizing and corporate restructuring might have created more opportunities for younger executives, given that they tend to target older employees. But the jobs examined here are the very top positions that are not the group typically targeted by early retirement programs.

(Median years of education are not significantly different, however.) The more important changes concern the type of institutions that these executives attended. In 1980, a full 14 percent of top executives in the Fortune 100 companies attended one of eight Ivy League institutions for their undergraduate education. Only 32 percent attended public or state-sponsored schools. Michael Useem and Jerome Karabel examined the educational background of 3105 Fortune 500 executives in 1977 and found some roughly similar results -- 11 percent had only a first degree from one of 10 elite, private institutions; about 22 percent had a second, professional degree (MBA or Law degree) from one of these institutions. They found that holding a bachelors degree from an elite institution increased the odds on becoming CEO by 42 percent.²² In 2001, in contrast, only 10 percent of the equivalent executives received undergraduate degrees from Ivy League schools, and forty-eight percent attended public institutions. Another aspect of these findings is that the percentage of executives who attended private, non-Ivy League institutions (i.e., non-public and non-Ivy) therefore fell sharply across the two periods, from 54 percent in 1980 to 42 percent in 2001.

This change in educational background may reflect a difference in the characteristics of the entry-level hires in each period: Although the pool of four-year college graduates from which these corporations typically hired did not in fact shift toward public institutions over this period,²³ on average, hiring practices may have shifted toward public university graduates. The change in educational background may also reflect a change in the attributes of those who were promoted after being hired: On average, Ivy League graduates may have had a much higher rate of promotion in the earlier period. It is impossible to tease out the answer from these data,²⁴ but it is reasonable to conclude that the erosion in the importance of an elite alma mater and the shift toward public institutions more generally was the result of changes in corporate practices and not demographics.

²² Michael Useem and Joan Karabel. 1986. "Pathways to Top Corporate Management." *American Sociological Review*, 51(2): 184-200.

²³ In the 1950s, when the 1980 executives would have been hired, four-year graduates from public institutions were equal to 34 percent of the graduates from private institutions. That figure rose only to 35 percent by 1970, when the 2001 executives would have been hired. See Table 243 "Degree Granting Institutions by Control and Type of Institution," *Digest of Educational Statistics*, National Center for Educational Statistics: Washington, D.C. 2002.

²⁴ There are other possible explanations as well. The preferences of the students may have changed, e.g., interest in corporate jobs disproportionately eroding in Ivy League institutions during the latter period.

Does the above finding indicate that corporations became less elitist and more open to students from all levels of society in this period? The results for second degrees suggest an even greater change. There is something of an increase in the proportion of second degrees among these executives by 2001, and the decline in the percentage that came from Ivy League institutions was much greater than for first degrees. (Most of these degrees are MBA or law degrees, and there are only five Ivy League law schools and six MBA programs.²⁵) A more accurate story about changing access to these top executive jobs, therefore, might be as follows: In 1980, an Ivy League undergraduate education played a central role as a gatekeeper to a Fortune 100 executive career. By 2001, graduates from public institutions had greater access to executive positions, especially those with advanced degrees. A simple explanation for the change, possibly a cynical one as well concerning the role of elitism, is just that the Ivy League represented a smaller share of the population of graduates over time, especially in the exploding area of professional degrees where the scale of Ivy League programs was particularly small.

Table 4 presents descriptive results for changes in career experiences over the two periods. These measures could be especially sensitive to the missing data issues noted earlier. To illustrate, because missing data was more common for entry level jobs, an analysis that ignored these missing jobs could make it appear that executives made it to the top more quickly. The missing information is also more likely to occur for those executives who have moved across companies. Individuals that began careers elsewhere, therefore, might appear to have advanced more quickly because information on their first jobs was omitted. These issues matter for the 1980-2001 comparisons because missing data was more common for the 1980 sample. We address these issues first by restricting the analysis only to those executives for whom we have complete data. One complication with this approach is that it excludes disproportionately more executives who switched companies. A second approach, therefore, is to use the full sample and impute estimates for the missing data, typically the first job, by using the convention in labor economics of estimating when first jobs began by subtracting years of education from current age (the assumption is that careers began when one left school).

²⁵ Princeton and Brown have neither a law school nor a business school. Dartmouth has a business school but no law school.

Table 4: Descriptive Statistics for Top Executives, 1980-2001

Full Sample					
	Year	N	Mean	Std. Dev.	Sign
Lifetime employees					
	1980	749	.53	.499	.001
	2001	1099	.45	.498	
Time to the Top					
	1980	735	28.38	6.52	.000
	2001	778	24.11	8.93	
Average Job Tenure					
	1980	740	4.32	2.44	.012
	2001	771	3.99	2.62	
Average Promotion Size					
	1980	802	1.10	.91	.004
	2001	1160	1.25	1.21	
Number of Positions Held					
	1980	761	5.76	2.27	.000
	2001	1104	5.04	2.60	
Organizational Tenure					
	1980	742	20.63	10.94	.000
	2001	916	15.15	11.80	
Sample Restricted to Complete Career History					
	Year	N	Mean	Std. Dev.	Significance
Lifetime Employees					
	1980	367	.60	.491	.001
	2001	515	.48	.500	
Time to the Top					
	1980	373	28.31	6.147	.000
	2001	395	25.00	7.293	
Number of Positions Held					
	1980	379	6.6544	2.18322	.004
	2001	524	6.1565	2.78111	
Average Job Tenure					
	1980	373	4.1850	1.88447	.889
	2001	395	4.1631	2.43006	
Average Promotion					
	1980	379	1.5907	.69847	.000
	2001	524	1.9034	1.02796	
Organizational Tenure					
	1980	469	23.69	10.46	.000
	2001	591	18.65	11.79	

The results in Table 4 are revealing. There was a large and significant decline over this period in the percentage of top executives who spent their entire career at the same company – 12 percentage points in the sample with complete career data, falling

somewhat to eight points in the full sample. If, as noted earlier, more data is missing for executives who switched companies, then eliminating observations with incomplete data would tend to disproportionately eliminate executives who switched firms and account for a higher estimate in the restricted sample. Average tenure for these executives in their current company, a related statistic, dropped between 1980 and 2001 by almost a full five years. The average levels were higher in both 1980 and in 2001 for the restricted sample, again presumably because missing data excluded more executives who switched companies and therefore had lower tenure. But the size of the drop in tenure between the two periods was nearly identical in the full sample to that in the restricted sample. Differences in median tenure are even sharper, dropping by seven and a half years (see Appendix).

The other important development in Table 4 concerns the nature of the path to the executive suite. Average time to the top is less in 2001 than in 1980, a result that is consistent with the younger age reported for executives in 2001. (The gap is smaller but still significant for the restricted sample, and the levels are also lower for both periods.) The reductions in time to the top do not necessarily lead to reductions in organizational tenure, however. Organizational tenure is considerably less than time to the top in both periods as these executives apparently spent several years working in organizations other than their current employer. It is clearly possible for individuals to get to executive jobs sooner by spending less time working for these earlier employers while not reducing time with their current employer, but in fact the opposite appears to be happening. The declines in organizational tenure appear to be larger than the declines in time to the top.

The average amount of time these executives spent in each position was not that different in 2001 than it was in 1980 -- a little over four years -- although it was significantly smaller in 2001 for the full sample.²⁶ (Significance levels were higher for both the median and Kruskal Wallis tests.) The explanation for the more rapid promotion path of executives in 2001 is that they held fewer jobs on their climb up the corporate ladder. There were fewer stops along the way. And, as the data above indicate, the average size of a promotion was therefore bigger. (Significance levels for the alternative tests were

²⁶ For observations where information on jobs was missing, the estimates were calculated only for those jobs where information was available. An analysis of the number of jobs these executives had along the way to the top could only be calculated reliably where information on entry-level jobs was available.

lower here.) These results are consistent with the perception that corporate hierarchies are flatter now such that the difference in responsibilities between positions at each level is greater.²⁷ Moving at the same speed up a ladder with fewer steps means one gets to the top faster.

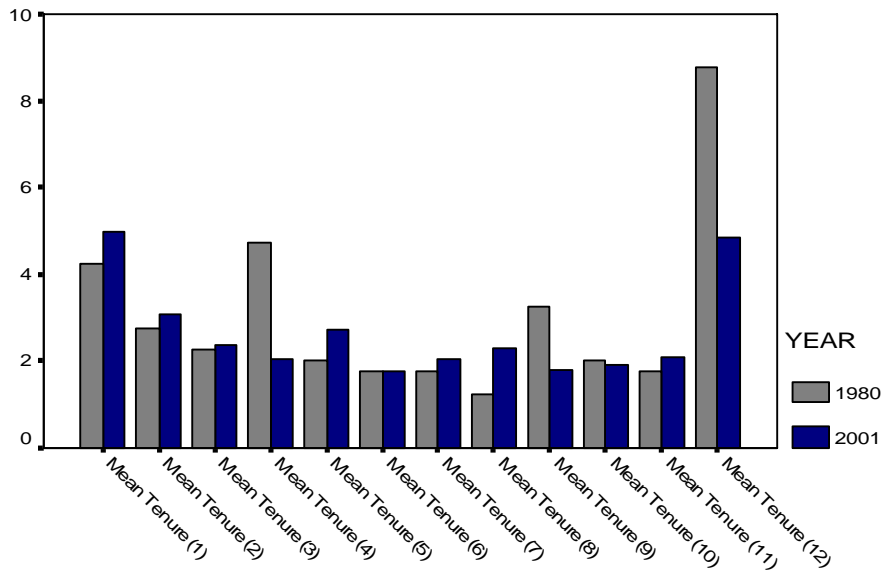
An obvious question is whether executives get ahead faster by switching companies. Does loyalty and stability in the form of a lifetime career in the same company slow down advancement? Interestingly, the evidence for 1980, when the “Organization Man” model of internal promotion appeared to still be firmly in place, suggests that the answer was yes. Results from analyses available on request suggest that those executives who changed companies in the 1980 cohort got to the top about a year quicker than did those who remained with their first company, a statistically significant difference. Despite spending significantly more time on average in each job they held, executives who changed companies held fewer positions on their climb to the top and got there faster as compared to those who were lifetime employees. The results for 2001, however, do not find significant differences in time to the top for those who changed companies. Perhaps the greater frequency of switching corporations in the more recent period has reduced the relative advantage associated with doing so.

Finally, we compare the amount of time spent in each job that executives report in their path to the top in 1980 and 2001. Executives vary in the number of jobs they held and, as one would imagine, there are considerable differences in the titles of jobs that each executive held. This makes it next to impossible to draw comparisons by job title. We can, however, compare the amount of time executives in 1980 spent in their first job – whatever its title – with the amount of time executives in 2001 spent in their first job, and so on over the course of their careers. The differences in Chart 1 below are statistically significant only for jobs 1-4 and job 12, but these results suggest that the 2001 pool of executives spent slightly more time in their initial jobs, then sharply less time in their fourth position (the modal title of which was “general manager”) before moving on.²⁸

²⁷ See, e.g., Raghuram Rajan and Julie Wulf (2003), “The Flattening Firm: Evidence from Panel Data on the Changing Nature of Corporate Hierarchies”, NBER working paper No. w9633. April, 2003.

²⁸ Again, it is important to remember that these results are not comparing identical jobs, only jobs based on the order in which the executives held the. The results are especially difficult to interpret for the higher numbered jobs: Job #12, e.g., is always the current or “top” job for those who reported having held 12

Chart 1: Tenure by Previous Job Title, 1980 and 2001



The overall results presented above for 1980 seem reasonably consistent with those reported by other studies for earlier periods. The Warner and Abbeglen figure of 50 percent noted earlier for the proportion of executives who were lifetime employees in the 1950s included lower-level executives from smaller companies, but it is only slightly less than the figure here. The average age of the executives in 1980 – 56 – is quite close to the Warner and Abbeglen estimate of 54 – again, the Fortune 100 executives were on average more senior in level, and that may explain the small difference. More important, average organizational tenure is very similar in their study (24 years) and in 1980 (23.69 in the restricted sample). These results suggest that career patterns may have been reasonably similar from the 1950s through 1980, suggesting that the post-1980 period may well represent an important breaking point in corporate careers. A contemporary study by Murphy and Zabonjnik of CEO turnover over this period found a similar pattern. They found that the proportion of CEOs having been at their firm less than one year grew only slightly from 15 percent in 1970 to 17 percent in 1980 but then rose sharply to 25 percent by the 1990s.²⁹

jobs, but those executives who held fewer jobs in total would report that their current or top position was, say, job # 9.

²⁹ Kevin J. Murphy and Jan Zabonjnik. Managerial Capital and the Market for CEOs. Marshall School of Business, University of Southern California, December 2003.

Explanations for the Differences:

A first step in attempting to explain the above differences between the 1980 and 2001 top executive cohorts is to ask to what extent they truly result from changes in corporate employment practices over time or, alternatively, from spurious sources such as changes in the type of companies that make up the Fortune 100. As noted earlier, we know from Table 1 that the Fortune 100 in 2001 was made up of very different kinds of corporations than in 1980. Perhaps the overall changes noted above simply result from the fact that service industries have different practices than the manufacturing industries and were much more prominent in the sample in 2001 than in 1980. In the language of demographics, to what extent are the changes in outcomes that we observe truly the result of “period effects” – something about the modern period that caused all executives in large firms to have different attributes and experiences? Or was the change the result of “cohort effects” – the type of firms in the Fortune 100 changed in 2001, and that change drove the results described above.

We can begin to examine this question by restricting the analysis to the 26 companies that were in the Fortune 100 in both 1980 and 2001. Any changes in the attributes and experience of top executives in this restricted sample by definition result from changes in practices within those companies over time. We can then compare those results to the ones reported above for the entire sample (all Fortune 100 companies in 1980 vs. 2001). The extent to which they are substantially similar suggests that the overall results reported above are driven by period effects; the extent to which they are substantially different suggests that the overall results are driven by cohort effects.

Table 5: Top Executive Attributes and Experiences in 1980 and 2001 for 26 Companies in Both 1980 and 2001 Fortune 100

	YEAR	N	Mean	Std. Dev.	Sign
Gender of exec	1980	225	1.00	.000	.000
	2001	307	.94	.241	
Age of exec	1980	193	56.82	5.92	.000
	2001	258	53.50	6.55	
Years of Schooling	1980	216	17.01	1.29	.264
	2001	232	17.18	1.88	
1 st degree institution					
Public u	1980	217	.37	.484	.017
	2001	214	.49	.501	

Ivy League	1980	217	.12	.331	.057
	2001	214	.07	.256	
2 nd degree institution					
Public u	1980	103	.29	.457	.048
	2001	145	.41	.494	
Ivy League	1980	103	.29	.457	.008
	2001	145	.15	.360	
3 rd degree institution					
Public u	1980	14	.43	.514	.177
	2001	27	.22	.424	
Ivy League	1980	14	.21	.426	.585
	2001	27	.30	.465	
Lifetime Employees					
	1980	220	.67	.472	.635
	2001	298	.69	.464	
Time to the Top					
	1980	216	29.24	5.79	.000
	2001	275	26.98	6.44	
Average Job Tenure					
	1980	218	4.36	2.94	.024
	2001	240	3.82	2.17	
Average Promotion Size					
	1980	226	1.16	.75	.031
	2001	307	1.34	1.07	
Number of Jobs Held					
	1980	223	6.22	2.40	.170
	2001	301	6.65	3.10	
Organizational Tenure					
	1980	221	23.29	10.40	.038
	2001	265	21.14	12.03	

The considerably smaller sample size with these analyses no doubt contributes to the fact that not all of the differences between the two periods are statistically significant, but the results are broadly similar to those reported for the entire sample above. In particular, the differences are in the same direction except for the striking result that the percentage of executives who began their careers in the same company is marginally higher in 2001, albeit not significantly so. Despite the fact that these companies did not appear to have changed their practices with respect to outside hiring of executives, other aspects of their career experience have changed, including getting to the top faster by holding fewer jobs. These results confirm that executives even in the same companies had quite different experiences over the 1980-2001 period. They lend support to the notion that cohort effects – different kinds of firms populating the Fortune 100 – alone cannot be responsible for the overall differences in attributes and experiences of Fortune 100 executives from 1980 to 2001. But they do suggest that the increase in outside hiring of

executives in the overall sample could be attributed to a change in the corporations making up the Fortune 100.³⁰

A related question is whether the change in practices described above -- more outside hiring, shorter organizational tenure, faster promotions, younger executives, less elite college hiring -- represent new approaches to corporate operations that are more likely to be characteristics of newer firms.³¹ The Fortune 100 is clearly older on average in 2001 than it was in 1980, but it might be that the newer firms within the sample are driving the overall results. If so, the results may represent a variation on the cohort effect theme: Firms that started in the later part of the 20th Century will look and act differently than those that started in the 19th century. And if new firms continue to take over, overall corporate practices will shift in their direction. A finding that younger firms have distinctive practices may also represent what demographers refer to as “age effects”: Young firms have different practices because such firms are young, and their practices will change as they grow older.

The analyses below compare the attributes and experience of top executives in younger firms to those in older firms. The young firm/old firm distinction is a general argument that presumably is not specific to either 1980 or 2001, so the analyses examine the differences between young and old firms for the pooled sample of Fortune 100 executives in both periods. Few Fortune 100 firms in either period are truly young, and pooling the two periods also has the advantage of producing a large enough sample to generate useful variance. Determining where to divide the firms between “young” and “old” is not straight-forward. Because so few Fortune 100 companies are truly new, setting the age for “young” too low will lead to a sample that is too small to be useful.³² We also want at least some of the companies in the “young” group to have been around long enough so that it is not a logical impossibility for their executives to have grown up in the organization. Indeed, an interesting hypothesis is whether executives who begin their

³⁰ We also compared the attributes and experiences of executives in the 74 companies in 1980 that fell out of the Fortune 100 in 2001 to the 74 that took their place. These results, available on request, effectively replicate the results of the full sample.

³¹ All Fortune 100 firms are big, but there is a small correlation between age and size in terms of sales -- .139. Younger firms may therefore be somewhat smaller. Whether the variation in size is relevant across these huge firms is a question for speculation.

³² Fourteen of the 200 firms in this analysis are younger than 30 years, although some of them existed as other entities before mergers and other transformations put them in the top 100. The youngest firm in the Fortune 100 in 2001 was Cisco Systems at 17 years.

careers with a start-up firm that makes it to the Fortune 100 may be more likely to remain with that firm because of the opportunities it offers. Stock options, more significant in smaller, fast-growing firms for example, may also hold such executives longer.

Table 6 reports a comparison of the attributes and experiences of Fortune 100 executives who are in corporations that are less than 30 years old with those in corporations older than 30 years. Younger firms have younger executives, perhaps not surprising, but no more women than the older corporations. Aside from more public and fewer Ivy grads at younger firms, the education differences are not significant. In terms of career differences, the start-up hypothesis above has little support. Executives in younger firms were far less likely to have begun their careers there, and their organizational tenure is about half that for executives in older firms. Executives from younger companies get to the top much faster apparently by having fewer steps in their promotion ladder. Although they spend about the same amount of time in each job they hold as do executives in older firms, they hold fewer jobs before being promoted into the executive ranks, which implies bigger promotions. This pattern is consistent with being in organizations that have less hierarchy and fewer levels, as many believe is the case for younger firms.

Table 6: Top Executive Attributes by Founding Age of the Company

	CO_AGE	N	Mean	Std. Dev	Significance
Gender of exec	30 and below	149	.93	.262	.673
	over 30	1787	.94	.246	
Age of exec	30 and below	100	51.36	7.67	.000
	over 30	1287	54.25	7.01	
Years of Schooling	30 and below	96	16.98	1.265	.192
	over 30	1411	17.16	1.345	
1 st degree institution					
Public	30 and below	95	.46	.492	.231
	Over 30	1390	.40	.471	
Ivy league	30 and below	95	.13	.417	.791
	Over 30	1390	.12	.435	
2 nd degree institution					
Public	30 and below	42	.50	.506	.005
	Over 30	793	.30	.463	
Ivy league	30 and below	42	.12	.397	.027
	Over 30	793	.27	.468	
3 rd degree institution					
Public	30 and below	6	.00	.000	.121

	Over 30	106	.29	.457	
Ivy league	30 and below	6	.33	.516	.591
	Over 30	106	.24	.432	
Lifetime Employees					
	30 and below	139	.17	.379	.000
	Over 30	1687	.52	.500	
Time to the Top					
	30 and below	91	23.17	7.96	.000
	Over 30	1400	26.44	8.09	
Average Tenure					
	30 and below	92	4.23	2.74	.733
	Over 30	1397	4.14	2.54	
Average Promotion					
	20 and below	149	1.08	1.33	.206
	Over 30	1789	1.20	1.07	
Number of Jobs Held					
	30 and below	141	4.11	1.68	.000
	Over 30	1702	5.44	2.53	
Organizational Tenure					
	30 and below	118	9.22	7.60	.000
	Over 30	1518	18.33	11.79	

Other analyses, available on request, compare the attributes and experiences of executives across three corporate age categories; Fortune 100 firms younger than 20 years; firms from 20 to 70 years; and companies older than 70 years. There are few differences in the human capital attributes between the executives in the young and mid-aged companies, but there are important differences in career patterns: The younger companies have significantly fewer executives who started at the current firm, they have less tenure in the organization, and they move to the top more quickly. There are few differences in career patterns between executives in the mid-age and older firms but important differences in human capital: The mid-age firms have more women executives and older executives who have less schooling. These results reinforce the notion that the age of companies has an important influence on executive experiences and that it is the youngest firms – presumably the fastest-growing as well -- that have the most externally-oriented career experience.

Finally, we consider the fundamental manufacturing/service industry distinction. We know that the service sector is different in many ways from manufacturing. Observers sometimes see manufacturing firms as more bureaucratic and hierarchical, in part because they have more functionally oriented departments. And we also know that there was a

significant shift in the Fortune 100 companies away from manufacturing and toward service companies in the period 1980 to 2001. We compare the differences between the attributes and experiences of executives in the service and manufacturing sectors in both 1980 and 2001. The results, available on request, indicate that, other than more public university graduates in manufacturing, there are no significant differences in either the attributes or career experiences between manufacturing and service executives in 1980. In 2001, in contrast, there are many differences: Executives in the service sector are younger, more likely to be women and to be Ivy League graduates. Most important, they are much less likely to have started their career at the same company (41 percent for services vs. 54 percent in manufacturing), and they spent four and a half fewer years in their current organization. They also got to the top about two and a half years sooner than their peers in manufacturing. The manufacturing/service distinction apparently was irrelevant in understanding differences in executive experience in 1980 but has become highly relevant in 2001.

Summary

While there has been considerable debate about whether internalized labor market practices have eroded in recent years, aside from evidence about CEO turnover, there has been relatively little inquiry into this question at the management level and essentially none for executive-level positions. The analysis above focuses on the largest and arguably most stable corporations in the world, organizations that one might reasonably see as having the biggest investments in the traditional “Organization Man” model of internally oriented careers. The results suggest important differences in the attributes and experiences of top executives over the past 20 years. While the 1980 results seem reasonably consistent with studies of executives from the 1950s, a generation earlier, the results from 2001 are different in a number of ways. This lends support to the general notion that the period since 1980 represents an important transition point for the economy and employment in particular. Compared to 1980, executives in equivalent executive positions are younger, more likely to be women, and more likely to be from public institutions. Because it is difficult to attribute these developments to changes in the underlying populations in the two periods, it seems much more reasonable to see them as being related to changes in the way in which these large corporations operate. More

important, the nature of executive career paths has changed. Outside hiring is much more common among top executive in 2001 than in 1980, tenure in one's company is significantly lower, and, perhaps most important, these executives got to the top faster by holding fewer jobs. It is as if the ladder to the top held fewer rungs in 2001, consistent with the evidence presented earlier of flatter organizational charts.

Overall, there may be something of a "is the glass half full or half empty" issue in interpreting these results. Despite all the discussions about corporate job-hopping and an open labor market for executives, one might say that almost half of these top executives in 2001 were still in the company where they held their first job, and the average executive had been there 15 years. There is clearly some stability in the careers of top executives in 2001. On the other hand, these are the largest companies in the world with the biggest internal labor markets and the strongest policies oriented around promotion from within. If more than half their top executives now come from the outside, roughly half their careers have been spent elsewhere,³³ and both the percentage of lifetime careers and average tenure are falling significantly, then something is clearly different about how executive careers operate now. The "Organization Man" model has clearly eroded.

What explains these differences is less obvious, however. The 26 corporations that were in the Fortune 100 in 1980 and 2001 also exhibited many of the changes in executive attributes and experiences over this period. The fact that most of the attributes and experiences of executives were different in the same firms over these two periods suggests that the changes are likely to be systematic and widespread and not simply the result of changes in the type of companies that made up the Fortune 100. The extent of lifetime careers was no different among these firms in the two periods, however, suggesting that the decline in lifetime careers that we see in the overall samples must be due to the change in the composition of firms in the Fortune 100 between 1980 and 2001.

What characteristics of the sample of firms are driving this change and possibly influencing others as well are not obvious, however. We know that younger firms get executives to the top more quickly, presumably because of faster growth, and the way

³³ With an average age of 52, most of these executives have been working approximately 30 years. Average tenure of about 15 years means roughly 15 years working elsewhere.

they do so is by holding fewer jobs along the way than do executives in older firms. Younger firms also do more outside hiring. But age differences do not explain the overall difference in outcomes between 1980 and 2001. The shift from manufacturing to the service sector would seem to be a promising place to look for an explanation of the changes in executive experience between 1980 and 2001. But there are no differences in the attributes and experiences of executives in manufacturing vs. service firms until 2001. The nature of being an executive in manufacturing as compared to an executive in service firms seems to have changed over this period.

Because there were no women in the sample in 1980, it is only possible to examine gender issues within the 2001 sample. The manufacturing/service distinction is the only significant predictor of gender differences from the above analyses, with women being significantly more represented in the service sector. In additional analyses available on request, we explored how the experiences of executive women in 2001 were different from their male counterparts. They were significantly younger (47 years vs. 52 for men), less likely to have been a lifetime employee (32 percent vs. 47 percent), they spent less time on average in each of their jobs (3.4 years vs. 4.0), and got to the executive ranks much quicker (21 vs. 25 years) than did their male counterparts. The corporations in which they are employed are not significantly different than average in terms of age or size. Nor can this result be attributed to differences in the level of jobs held by women executives.³⁴

The basic question asked at the beginning of this study, whether the attributes and career experiences of Fortune 100 executives are different in 2001 than in 1980, seems to have

³⁴ When executives are grouped into five broad job titles, the same pattern of results applies with the exception of CFO/CTO positions:

	GENDER	N	Mean	Std. Dev	Sign
C-SUITE	Female	10	22.80	9.47	.061
	Male	216	27.43	7.51	
CF/T/O/O	Female	7	20.14	5.40	.318
	Male	24	22.50	5.41	
EVP	Female	34	21.32	4.82	.019
	Male	195	24.31	7.11	
Group Head	Female	15	21.27	2.05	.003
	Male	147	26.50	6.55	
SVP	Female	28	20.93	5.84	.065
	Male	206	23.62	7.37	

been answered with a clear “yes.” The most important concern in substantiating this conclusion is the extent to which the executives examined in 1980 are truly similar to those in 2001. The potential biases with the samples – more lower-level executives in 2001 but more important jobs associated with much larger corporations – seem to offset each other. And analyses with and without missing data suggest reasonably similar conclusions.

Efforts to generalize these results to other contexts are more complicated. The Fortune 100 corporations are clearly significant in their own right given their enormous size and influence, and any differences in the nature of executive positions in them over time are therefore relevant as well. In many ways, the choice of this sample – the largest, most stable firms – seems to stack the deck in favor of not finding changes in attributes or experiences. Organizational inertia and resistance to change should be expected to reduce the incidence of differences, especially in the sub-sample of the same firms across the two periods. If we see changes in these firms, then, there are good reasons for thinking that changes may be even more likely in other corporations, which are smaller, younger, and were less invested originally in the “Organizational Man” approach to management.

Understanding why these changes have occurred is a considerably more complicated question than simply assessing whether they have occurred. Doing so carefully would require separate analyses for each issue – e.g., what factors drive changes in lifetime employment, changes in educational patterns, etc. – with separate models and hypotheses in each case. Answers to that question await further research.

Appendix:

Table A. The distribution of executive titles in 1980 and 2001

Title	1980 percent	2001 percent
CEO	.5	1.3
CEO+CH	.1	2.4
CEO+CH+P	0	.1
CEO + Director	0	.1
CEO+P	1.4	2.7
CEO+P+D	0	.8
CFO	.4	2.6
CFO+EVP	0	.2
CFO+S	0	.1
CFO+SVP	0	.2
CFO+VP	0	.3
CH	5.2	2.3
CH+CEO	5.5	2.0
CH+COO	.1	0
CH+P	.2	.1
CH+P+CEO	.7	2.1
CH+P+CEO+D	0	.1
CH Emeritus	0	.3
COO	0	.4
D	0	.3
ExViceCH	0	.1
EVP	27.3	18.3
EVP+CFO	0	5.3
EVP+CH	0	.1
EVP+COO	0	.3
EVP+D	0	.1

EVP+GroupCEO	0	.2
EVP+GCH	0	.1
EVP+GM	0	.4
EVP+GP	0	1.1
EVP+GP+GCEO	0	.9
EVP+H	0	.1
EVP+P	0	.1
GCEO	0	.3
GCH	0	.8
GCH+GCEO	0	1.0
GCH+GP+GCEO	0	.3
GEVP	.2	0
GP	0	10.0
GSVP	0	.2
GVP	6.6	1.2
GVP+CFO	0	.1
GVP+CH	0	.2
GVP+P	0	.3
Head	0	.9
P	7.2	.9
P+CFO+D	0	.1
P+COO	2.5	1.6
P+COO+D	0	.4
P+GM	0	.1
SEVP	.6	.9
SEVP+CFO	0	.2
SEVP+COO+CFO	0	.1
SVC	0	.1
SVP	36.3	20.2
SVP+CFO	.5	5.0
SVP+COO	0	.2
SVP+D	0	.2
SVP+GC	0	.1

SVP+GM	0	.1
SVP+GP	0	.1
SVP+H	0	.2
SVP+P	0	.8
SVP+P+CEO	0	1.0
VCH	3.5	3.0
VCH+CEO	.1	0
VCH + COO	.6	.7
VCH+CFO	0	.6
VCH+P	0	.6
VP	.2	.6
VP+CFO	0	.6
VP+CH	0	.4
VP+P	0	1.3
Total	100.0	100.0

2 after a title = double title (e.g. CEO+CH)

3 after a title= triple title (e.g. CEO+P+CH)

Table B: A list of executive double and triple titles and percentages in 1980 and 2001

Title	1980 percent	2001 percent
CEO+CH	.1	2.4
CEO+CH+P	0	.1
CEO+D	0	.1
CEO+P	1.4	2.7
CEO+P+D	0	.8
CFO+EVP	0	.2
CFO+S	0	.1
CFO+SVP	0	.2
CFO+VP	0	.3
CH+CEO	5.5	2.0

CH+COO	.1	0
CH+P	.2	.1
CH+P+CEO	.7	2.1
CH+P+CEO+D	0	.1
EVP+CFO	0	5.3
EVP+CH	0	.1
EVP+COO	0	.3
EVP+D	0	.1
EVP+GCEO	0	.2
EVP+GCH	0	.1
EVP+GM	0	.4
EVP+GP	0	1.1
EVP+GP+GCEO	0	.9
EVP+H	0	.1
EVP+P	0	.1
GCH+GCEO	0	1.0
GCH+GP+GCEO	0	.3
GVP+CFO	0	.1
GVP+CH	0	.2
GVP+P	0	.3
P+CFO+D	0	.1
P+COO	2.5	1.6
P+COO+D	0	.4
P+GM	0	.1
SEVP+CFO	0	.2
SEVP+COO+CFO	0	.1
SVP+CFO	.5	5.0
SVP+COO	0	.2
SVP+D	0	.2
SVP+GC	0	.1
SVP+GM	0	.1
SVP+GP	0	.1
SVP+H	0	.2

SVP+P	0	.8
SVP+P+CEO	0	1.0
VCH+CEO	.1	0
VCH + COO	.6	.7
VCH+CFO	0	.6
VCH+P	0	.6
VP+CFO	0	.6
VP+CH	0	.4
VP+P	0	1.3
Total	11.7	36.2.

Table C. The three tiers of executive titles in 1980 and 2001

Title	1980 percent	2001 percent
CEO	.5	1.3
CEO+CH	.1	2.4
CEO+CH+P	0	.1
CEO+D	0	.1
CEO+P	1.4	2.7
CEO+P+D	0	.8
CH	5.2	2.3
CH+CEO	5.5	2.0
CH+COO	.1	0
CH+P	.2	.1
CH+P+CEO	.7	2.1
CH+P+CEO+D	0	.1
CH Emeritus	0	.3
EVCH	0	.1
P	7.2	.9
P+CFO+D	0	.1
P+COO	2.5	1.6

P+COO+D	0	.4
P+GM	0	.1
SVC	0	.2
VCH	3.5	3.0
VCH+CEO	.1	0
VCH + COO	.6	.7
VCH+CFO	0	.6
VCH+P	0	.6
Subtotal	27.6	22.6
CFO	.4	2.6
CFO+EVP	0	.2
CFO+S	0	.1
CFO+SVP	0	.2
CFO+VP	0	.3
COO	0	.4
EVP	27.3	18.3
EVP+CFO	0	5.3
EVP+CH	0	.1
EVP+COO	0	.3
EVP+D	0	.1
EVP+GCEO	0	.2
EVP+GCH	0	.1
EVP+GM	0	.4
EVP+GP	0	1.1
EVP+GP+GCEO	0	.9
EVP+H	0	.1
EVP+P	0	.1
SEVP	.6	.9
SEVP+CFO	0	.2
SEVP+COO+CFO	0	.1
SVP	36.3	20.2
SVP+CFO	.5	5.0

SVP+COO	0	.2
SVP+D	0	.2
SVP+GC	0	.1
SVP+GM	0	.1
SVP+GP	0	.1
SVP+H	0	.2
SVP+P	0	.8
SVP+P+CEO	0	1.0
Subtotal	65.1	59.9
D	0	.3
GCEO	0	.3
GCH	0	.8
GCH+GCEO	0	1.0
GCH+GP+GCEO	0	.3
GEVP	.2	0
GP	0	10.0
GSVP	0	.2
GVP	6.6	1.2
GVP+CFO	0	.1
GVP+CH	0	.2
GVP+P	0	.3
H	0	.9
VP	.2	.6
VP+CFO	0	.6
VP+CH	0	.4
VP+P	0	1.3
Subtotal	7.00	18.5
Total	100.0	100.0

Distribution of Executives Across Organizational Charts by Industry

Table D: The Distribution of Executive Titles in 1980. Percentages reported. The percentages in each row total 100 per cent.

	CEO	CEO2	CEO3	CFO	CH	EVP	G	P	P2	SEVP	SVP	SVP2	VCH	VCH2	VP
Aerospace		10.2			3.4	22.0	11.9	8.5	3.4		37.3		3.4		
Agriculture		22.2			11.1						44.4		22.2		
Automotive		9.1			7.3	45.5		9.1	3.6		20.0		3.6	1.8	
Business services		20.0				60.0							20.0		
Chemicals		10.4		2.1	8.3	8.3	31.3	6.3	4.2		25.0		2.1	2.1	
Communications					11.1	37.0		7.4		7.4	37.0				
Computer		4.8			4.8	4.8	28.6	4.8	4.8		42.9	4.8			
Construction					20.0	60.0			20.0						
Electric Utilities	2.2				2.2	32.6		8.7		4.3	39.1	2.2	6.5	2.2	
Energy		3.7	1.2	.6	7.3	27.4	.6	9.1	.6		46.7		2.4	.6	.6
Food		6.3	1.0		7.3	33.3	9.4	8.3	1.0	1.0	26.0		5.2		1.0
Healthcare					33.3			33.3			33.3				
Manufacturing	.7	9.4	.7		2.9	29.5	5.0	4.3	4.3		39.6		2.2	1.4	
Paper		8.3	2.8	2.8		33.3		2.8			50.0				
Photography		12.5				12.5		12.5			62.5				
Retail		9.5				19.0		4.8			61.9	4.8			
Steel	2.3	11.6			4.7	23.3	9.3	9.3	7.0		23.3	2.3	7.0		
Transportation	7.1	7.1	7.1				42.9		7.1		14.3		14.3		
Total	.5	7.1	.7	.4	5.5	27.3	6.9	7.2	2.5	.6	36.3	.5	3.5	.7	.2

Table E: The Distribution of Executive Titles in2001. Percentages reported. The percentages in each row total 100 per cent.

	CEO	CEO2	CEO3	CFO	CH	EVP	EVP2	G	P	P2	SEVP	SVP	SVP2	VCH	VCH2	VP	VP2
Aerospace		8.2		8.2		14.3	4.1	14.3		4.1		18.4	26.5	2.0			
Automotive		3.6	3.6	7.1	3.6	3.6	3.6	42.9		3.6				7.1	7.1		14.3
Business services		9.1										63.6	27.3				
Chemicals		5.4	2.7		2.7	5.4	5.4	56.8		2.7		8.1	5.4	2.7	2.7		
Communications		11.3	1.9	3.8	2.8	17.0	6.6	13.2	1.9	2.8	2.8	26.4	.9	3.8	2.8	1.9	
Computer	1.9	8.7	1.0	1.9	3.9	18.4	6.8	8.7		3.9		35.0	5.8	3.9			
Consumer Products		50.0	10.0									10.0	10.0		10.0		
Electric Utilities	11.1	4.8	3.2	1.6	1.6	4.8	4.8					30.2	28.6	6.3	1.6	1.6	
Energy	1.3	8.7	4.0	1.3	2.0	11.4	10.1	28.2		1.3		16.1	6.0	1.3	.7		7.4
Entertainment		25.0				25.0				25.0	25.0						
Financial Services	2.1	4.7	2.6	5.7	3.6	21.4	8.9	17.2	1.0	3.1	3.1	14.6	3.1	7.3	1.6		
Food		11.1	1.9	5.6	1.9	14.8	11.1	11.1	1.9	3.7		13.9	14.8		3.7		5.6
Healthcare		3.2	6.5	6.5	4.8	12.9	17.7	4.8				22.6	16.1		1.6	1.6	1.6
Insurance		7.4	5.9	8.8	1.5	20.6	2.9		8.8	1.5	4.4	16.2	2.9	2.9	10.3	4.4	1.5
Manufacturing		7.7	7.7	23.1	7.7			46.2									7.7
Paper		8.3				33.3	12.5	37.5				4.2	4.2				
Retail		3.6	3.6	1.2	2.4	31.7	14.4	10.2		1.8		25.7	4.8	.6			
Steel			12.5			87.5											
Wholesale		8.3			8.3	50.0					8.3	25.0					
Total	1.3	7.2	3.1	3.8	2.8	18.4	8.6	15.4	.9	2.2	1.2	20.2	7.6	3.0	1.9	.6	1.8

Table F: Distribution of titles by sector. 1980

	CEO	CEO2	CEO3	CFO	CH	CH2	EVP	G	P	P2	SEVP	SVP	SVP2	VCH	VCH2	VP
Service	1.6	3.2	.8		4.8	.8	28.2	4.8	7.3	1.6	3.2	36.3	1.6	4.8	.8	
Manufacturing	.3	7.6	.7	.4	5.2	.1	27.5	7.3	7.3	2.7	.1	36.2	.3	3.0	.7	.3
Agriculture		22.2			11.1							44.4		22.2		
Total	.5	7.1	.7	.4	5.2	.2	27.3	6.9	7.2	2.5	.6	36.3	.5	3.5	.7	.2

Table G: Distribution of titles by sector. 2001

	CEO	CEO2	CEO3	CFO	CH	CH2	EVP	EVP2	G	P	P2	SEVP	SVP	SVP2	VCH	VP	VP2
Services	1.6	5.8	3.4	4.1	2.8	.1	21.0	9.3	9.8	1.5	2.0	2.0	22.3	7.0	5.8	1.0	.3
Manufacturing	.8	9.1	2.7	3.4	2.5		14.5	7.6	23.6	.2	2.5		17.1	8.4	3.6		4.0
Total	1.3	7.2	3.1	3.8	2.7	.1	18.4	8.6	15.4	.9	2.2	1.2	20.2	7.6	4.9	.6	1.8

Tables D and E show the breakdown of executive titles by industry in 1980 and 2001. Tables F and G show the breakdown of executive titles in three sectors: manufacturing, services and agriculture (for the 1980 sample) in the two time periods. The tables show the percentage distribution of each executive title in a given industry. Sector differences seem relatively modest, arguably greater in 2001—the more extensive use of EVPs in services and the greater use of Group Presidents in manufacturing are especially noticeable.

Representative Organizational Charts:

COCA-COLA IN 1980

Chairman
Chairman of the Finance Committee
President
EVP-s (6)
SVP-s (4)
VP-s (26)

COCA-COLA IN 2001

Chairman&CEO
|
Vice Chairman
|
President&COO
|

EVP&CFO, EVP&General Counsel, EVP&President&COO, in charge of geo regions (5)

|

SVP-s (10)

|

In charge of a function (e.g. Strategy and planning)

VP-s (40)

In charge of a specialty function (M&A, Global HR Planning, Chief Creativity Officer)

|

Presidents, regional (22)

GENERAL ELECTRIC IN 1980

Chairman

Vice Chairman (2)

SVP-s (6); SVP-s & Executives of a product-based sector (5)

VP-s (85) who head product-based divisions

GENERAL ELECTRIC IN 2001

|

Chairman and CEO

|

Vice Chairmen (3)

SVPs (18)

In charge of either a function (HR, R&D, law&public affairs, SVP&CIO, SVP&CFO) or a product (specialty materials, energy, medical systems, insurance)

|

President&CEO-s (67)

In charge of either a geo region (Asia, India, Europe), a product (Capital markets services, Entertainment, GE Nuclear, Plastics, National Broadcasting Co) or an operational area (Supply)

|

VP-s (23)

In charge of a specialty (Taxes, Six Sigma, Corporate Citizenship, Executive Development)

BOEING IN 1980

Chairman

President

EVP (1)

SVP (1)

VP-s (14): either heading a product division (Commercial Airplane Company Division) or a function (negotiations & pricing, industrial& public relations)

Treasurer (1)

BOEING IN 2001

Chairman

President, CEO and Director

CFO

EVP-s (4), all have double/triple titles, e.g. COO, or President & CEO

SVP-s (13)

They either head divisions(Boeing Capital Corporation, Commercial Airplanes) or a function (General counsel, international relations)

VP-s (40) they either head functions, product divisions or geo regions

DU PONT IN 1980

Chairman

Chairman of the Finance Committee

President

SVP-s (4)

VP-s (10), heading a productbased department (plastic products & resins)

DU PONT IN 2001

Chairman and CEO

EVP&COO

EVP& Chief Marketing Officer

SVP & head of a function (4)

Group VP-s (7)

VP-s (41), heading a function (tax, safety) or a division

Presidents (17), heading a product division, e.g. Global Apparel

Regional Leaders (2), heading a geo region

Group managing Director (1)

CTO (1)

GENERAL MOTORS IN 1980

Chairman

President

EVP-s (4), both in charge of a geo area (e.g. North American operations/overseas operations) and a function (design, engineering, manufacturing)

VP-s (37) heading divisions (Buick Motor division, Pontiac Motor division) or functions (government relations, industrial relations)

Secretary
Treasurer
Comptroller

GENERAL MOTORS IN 2001

Chairman & CEO

Vice Chairman & CFO

Vice Chairman

EVP (1)

Group VP-s (9): heading a division (e.g. GM Powertrain, GM Acceptance) or a geo area (North America)

VP-s (31): heading a function or a geo region

Chairman and Managing Director (2)

President & Managing Director (4)

Chief Accounting Officer, Chief tax Officer, Secretary, Treasurer, Controller

COMPANIES IN HEALTHCARE

AMERICAN HOME PRODUCTS IN 1980

Chairman

President

Senior Vice President (2)

VP (8)

VP and General Counsel

Secretary

Treasurer

Comptroller

PFIZER IN 2001

Chairman&President&CEO

|

EVP&CFO, EVP

|

SVP-s (7)

In charge of a function (HR, General counsel, Government relations)

|

VP-s (16)

In charge of either functions or productbased divisions

|

Group Presidents

|

| Group EVP-s

Group SVP-s

CARDINAL HEALTH IN 2001

| Chairman&CEO

| President&COO

EVP-s (12)

| In charge of product divisions or functions

| SVP (1)

VP (1)

MEDIAN TESTS, WHOLE SAMPLE, 1980 VS. 2001

MEDIAN VALUES AND MEDIAN TEST

YEAR	Gender	AGE	Y of sch	Pub (1)	Ivy(1)	Publ (2)	Ivy (2)	Publ (3)	Ivy (3)	Lifetim	Timetot	Avtenur	Avpro	No of jo	Orgtenure
1980	1.00	56.0000	16.00	.00	.00	.00	.00	.00	.00	1.00	29.0000	3.8000	1.1429	6.0000	20.5000
2001	1.00	52.0000	18.00	.00	.00	.00	.00	.00	.00	.00	25.0000	3.4000	1.2500	4.0000	13.0000
Total	1.00	54.0000	18.00	.00	.00	.00	.00	.00	.00	.00	27.0000	3.6250	1.2000	5.0000	17.0000

	Gender	AGE	Y of sch	Pub (1)	Ivy(1)	Publ (2)	Ivy (2)	Publ (3)	Ivy (3)	Lifetim	Timetot	Avtenur	Avpro	No of jo	Orgtenure
N	1961	1409	1529	1506	1506	841	841	112	112	1848	1631	1511	1962	1865	1658
Chi-Square		83.734	1.072	44.455	5.736	5.362	19.242	.046	.293	11.291	62.437	12.056	4.241	61.616	64.220
df		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Asymp. Sig.		.000	.300	.000	.017	.021	.000	.830	.588	.001	.000	.001	.039	.000	.000
T- test result			.000									.012	.004		

a All values are less than or equal to the median. Median Test cannot be performed.

b Grouping Variable: YEAR01

KRUSKAL WALLIS TEST, WHOLE SAMPLE, 1980 VS. 2001

	Gender	AGE	Y of sch	Pub (1)	Ivy(1)	Publ (2)	Ivy (2)	Publ (3)	Ivy (3)	Lifetim	Timetot	Avtenur	Avpro	No of jo	Orgtenure
Chi-Square	93.919	128.342	26.371	44.425	5.733	5.356	19.219	.046	.291	11.285	108.596	17.706	6.073	69.987	96.834
df	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Asymp. Sig.	.000	.000	.000	.000	.017	.021	.000	.830	.590	.001	.000	.000	.014	.000	.000
T-test												.012	.004		

a Kruskal Wallis Test

b Grouping Variable: YEAR01