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Measuring Change in the Markets for Brand-Name and Generic Drugs, 1970-2004

Burton A. Weisbrod
Faculty Fellow, Institute for Policy Research
John Evans Professor of Economics
Northwestern University

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2040 Sheridan Rd. ◆ Evanston, IL 60208-4100 ◆ Tel: 847-491-3395 Fax: 847-491-9916
www.northwestern.edu/ipr, ◆ ipr@northwestern.edu

Abstract

Few industries have exhibited as much change as pharmaceuticals. Quantitative measurement of change in the menu of the most-dispensed pharmaceuticals can be valuable for analysis of the causes of new drug development in this increasingly-important industry. This paper presents a new measure of change, to examine the time-pattern of appearance of new drugs over the 35-year period 1970-2004, and separately for brand-name and generic drugs. **Results:** The number of new brand-name drugs entering the most-dispensed lists has increased substantially. Between 1970 and 1981, about 6-8 percent of all brand-name drugs on the most-dispensed list were new each year, but this increased to more than 10 percent in the past decade. The quantitative importance of new generic drugs increased even more sharply, particularly since about 1985. **Conclusion:** This new measure of change in the pharmaceutical industry provides a step toward understanding the process of innovation in an industry characterized by rapid change.

Introduction. Outputs of the pharmaceutical sector have changed in many dimensions, but quantitative measurements remain elusive (*1*). This paper presents indicators of change over time in pharmaceutical outputs, focusing on the changing rates of appearance of "new" brand-name drugs and of new generic drugs, and utilizes the measures to portray change over the 35-year period 1970-2004.

The measures we present capture the rate of appearance of pharmaceuticals that are new additions to the class of the 200, or, alternatively, 25, most-dispensed drugs, in terms of prescriptions filled each year. Data are presented separately for brand-name and generic drugs, showing how each has changed over time. The measures provide quantitative evidence of industry change that can be useful for studies of industry innovativeness and competitiveness. The measures are not ideal, of course, for all potential uses: As currently presented—which can and should evolve over time—all new drugs are counted equally, regardless of their medical importance—whether they represent major innovations or minor improvements on pre-existing drugs. We cannot distinguish quantitatively among drugs on the basis of either the dollar volume of sales or even the absolute number of prescriptions written, for we know only whether a drug is or is not on the lists of the 200 (or 25) most-dispensed drugs in a given year. We do not know, in general, even the ordinal ranking of a drug, let alone the absolute number of prescriptions filled or their market values.

The lists of most-dispensed drugs include both brand-name and generic drugs. Generics, having active ingredients that are chemically the same as pre-existing patented, brand-name, drugs, do not constitute new product innovation, although they do bring

reduced prices and, thus, improved consumer well-being. Because of their differing roles, we analyze separately the rates of entry to the most-dispensed lists of brand-name drugs and of generic substitutes (*2*). The appearance of generics on a most-dispensed list is an indicator of marketplace competition. As we show, generics have become increasingly prominent among the most-dispensed drugs.

The data permit analysis only of drugs dispensed by retail pharmacies, excluding, for example, drugs used in hospitals. There is no evidence on whether the medications were taken by the patient, or whether, if taken, they were taken as prescribed (Ellikson *et al*, 1999), nor is there evidence on the prices paid or on other measures of output that might be useful for some purposes (*3*).

Improvements in the basic measures presented here can and should be pursued in future research. For now, however, the rate of entry of new drugs, brand-name and generic, into a most-dispensed class is a useful step in quantitative measurement of change over time in the output mix of the pharmaceutical market.

The rate of appearance of new drugs is also an indicator, albeit rather imperfect, of innovation in the industry. In a world of no technological change in pharmaceuticals the same drugs would be sold each year, apart from demographic or other exogenous changes in demand or costs, and so there would be no new drugs among the most-dispensed (*4*). Aging of the population, for example, would lead, *ceteris paribus*, to increased use of anti-cholesterol and anti-gastric reflux drugs, which could move those drugs onto a most-dispensed list even with no change in the set of drugs available. Population aging, however, is a gradual process, likely to be dwarfed in its effects by technological

innovation; over the three decades 1970-2000, for example, the population aged 65 or over increased by 2.5 percentage points, from 9.9 percent to 12.4 percent (Hobbs and Stoops, 2002). Still, further research is needed to distinguish the effects on physician prescribing patterns of these varied forces.

Apart from material change in demand patterns, development of new drugs could lead some of them to reach high levels of utilization, and so the turnover rate among the most-dispensed drugs could be large. In the limit, each year could witness an entirely new set of most-dispensed drugs, thus generating a 100 percent turnover rate of drugs on a most-dispensed list. In short, the lists have potential turnover rates ranging from zero to 100 percent, because of either new product development or shifting demand patterns.

Deciding on a precise and useful definition of a "new drug" is problematic, for no measure is ideal for all potential uses. Drugs differ in their incremental therapeutic effects and in their market "value added." A "blockbuster" drug that successfully treats a previously untreatable major illness, and a "me-too" drug that is only slightly different from a previously-existing therapy but that is heavily marketed, can enter the list of most-dispensed drugs (Drugs that are "most dispensed" are not necessarily those that are most-prescribed, for some prescriptions are written but not filled by the patient and, so, are not dispensed.)

The entry of a drug onto a most-dispensed list has normative meaning even if it is a close substitute for a previously-existing drug on that list. The entry suggests that the combination of the new drug's medical effectiveness and its price to the consumer makes it preferable to the substitute it replaced. By prescribing a drug, physicians demonstrate, and

by filling and refilling prescriptions (both of which are counted in the data), patients demonstrate, that a drug prescription actually filled passed the patient's benefit-cost test relative to alternatives. It is also true, though, that insurance, by reducing the consumer's cost of a drug below market price, facilitates purchase of a relatively high-priced but low-value drug — in the parlance of insurance, a "moral-hazard" effect.

A new entrant to a most-dispensed list need not represent a substitute for an existing pharmaceutical. It could also represent a substitute for a non-drug alternative technology. This was the case, for example, with the development, in the 1970s, of the new drug cimetidine (Tagamet—now available over-the-counter), which reduced the amount of ulcer surgery (Weisbrod and Geweke, 1982).

A new entrant to the list need not be a substitute for any medical input, drug or other. It can be a preventive or treatment for an illness heretofore unpreventable or untreatable. Thus, while some new drugs diminish health care costs, substituting for more-costly health care inputs, as did cimetidine, others increase health care costs even as they enhance quality of life (e.g., erectile dysfunction drugs such as Viagra and Cialis).

The potential utility of drug-count data, despite the limitations, is illustrated by the use of another type of data, on patent-counts. Just as our measure of new drugs that achieve major importance, as reflected by the number of prescriptions filled, lacks information on their market values or on other indications of social contribution, so do the basic data on new patents issued or on journal article citations of patents. Yet those data have been used to quantify the development and diffusion of knowledge, to measure welfare change, and to predict a firm's market value (*5*), as well as to measure knowledge

spillovers and technological change (*6*). Recent studies show positive correlations between patent counts and independently-reported assessments of innovation by firms and researchers (*7*). The National Bureau of Economic Research (NBER) has even constructed a comprehensive database of U.S. patents for public use.

Data. Lists of the most-dispensed drugs have been reported for many years in annual issues (April or July) of *Pharmacy Times* magazine. These lists, which go back to 1969, permit our determination of "new" drugs beginning in 1970. We examine each year's list of most-dispensed drugs, defining a drug as new if it is on the lists of the 200 (or 25) most-dispensed drugs in one year, not having previously been on the list. As noted above, I have separated brand-name drugs from generic versions so as to distinguish a drug that is medically new from one that is chemically-indistinguishable from a previously-existing drug . Exhibit 1 shows the numbers of brand-name and generic drugs in the top-200 lists each year (columns 1 and 2), as well as the number of each that is new each year (columns 3 and 4).

Generics have become increasingly numerous—20 or fewer in the years before 1985 but growing to 90 of the top-200 list in 2004. Exhibit 1 also shows the percentages of all brand-name and all generic drugs that are new to the list each year (columns 6 and 7) (*8*). In 2004, for example, there were 110 non-generic, brand-name drugs and 90 generics, columns 1 and 2, in the top 200 most-dispensed drugs, of which 14 brand-name (11.9 percent) and 12 generics (13.3 percent) were new to the list that year, columns 4 and 5. It is noteworthy that our approach, analyzing separately generics and non-generics, permits

any finding between zero and 100 percent in the rates of entry of new drugs of either sort (*9*).

Exhibit 1, column 6, shows that in the 1970s some 6-8 percent of all the brand-name, non-generic, drugs in the top-200 were new in most years. Two decades later this measure of the pace of technological change in pharmaceuticals grew to above 10 percent almost every year after 1994—an upward trend of .19 percentage points per year, as shown in Exhibit 2a (*10*). Because the data suggest a change in the growth rate around 1982—a matter discussed below—the growth rate for the later period, 1983-2004, during which the definitions of terms is constant, is also shown (*11*). It is somewhat greater than for the entire period 1970-2004, .23 percent compared with .19 percent, both growth rates being positive and statistically significant at the 1 percent level.

Generics. Generics do not constitute technological innovations, but they are nonetheless relevant to the process of technological change in pharmaceuticals. Because generics compete with brand-name drugs, their increased prominence among the most-dispensed drugs implies increased competition for the brand-name versions, and, thus, downward pressure on prices and diminished financial incentives for undertaking the R&D that generates future innovation (*12*). With drug R&D processes often taking a decade or more, the effects of increased competition could take many years to become evident, but they could result in a shift of resources away from highly-risky efforts to develop breakthrough drugs, and toward "me-too" drugs that, while new, are less risky to produce but also less valuable socially. If that occurred, the evidence in Exhibit 1, column 6, showing that an increasing percentage of brand-name drugs is of drugs that are new to the

most-dispensed lists, could reflect such a shift to easier but less-risky new product development.

Column 1 in Exhibit 1 shows that over the past several decades generics have come to account for a growing number of the 200 most-dispensed drugs—from 15-16 in the early 1970s to 70 or more since 1999. Moreover, during the 1970s virtually none of the generics was *new* to the list (column 4), the same generics being on the list each year, but a major change began in the mid-1980s. Over the succeeding two decades the absolute number of new generic drugs soared (*13*). Exhibit 2b, using data in Exhibit 1, makes clear that over the three decades, the percentage of generics that are new to the top-200 drugs lists increased by nearly 0.7 percentage points annually. The Exhibit also shows, however, that in the two decades since 1984 there has been a downward, trend in the percentage of generics entering anew, the decline being at the rate of 0.9 percent annually. The decreasing rate of new generics implies that those generics that achieve the status of a top-200 drug tend, increasingly, to stay on the list rather than be displaced.

While drugs going off-patent doubtless explains much of the opportunity for generics to come to market, change in the FDA law was also a powerful influence on the entry of generics to the most-dispensed list—greatly reducing the cost-barrier to entry. The Drug Price Competition and Patent Term Restoration Act of 1984 (the Hatch-Waxman Act) specified that new clinical trials no longer were required to be repeated for a generic form of a drug if it was the bioequivalent of a brand-name drug that had previously successfully completed such trials (FDA, 2004). The law was intended to facilitate entry of generic drugs and thereby bring down prices. Previously, to receive FDA approval a

generic drug had to undergo clinical trials like any other drug, to demonstrate its safety and efficacy. With the elimination of this major cost barrier to entry of generics, their numbers grew, spurred by the mounting pressure from state Medicaid authorities and private insurers to reign in the rising pharmaceutical costs by requiring use of generics when available. Competition increased as generics became increasingly available.

The growing prominence of generics may have had effects beyond their competition with brand-name drugs, altering R&D incentives. The expected profitability of developing major new, brand-name, patentable drugs relative to minor variations of existing ones decreased. After Hatch-Waxman (1984) the eased entry of generics diminished sales of brand-name drugs once their patents expired, and, by so doing, increased the incentive for brand-name drug manufacturers to pursue new patents that differed only slightly from the originals, effectively extending the market life of the original patented drug. This process could explain not only the increased number of new generics among the top-200 drugs beginning in 1984 (Exhibit 1, column 4), but also the increased number of new *non*-generic, brand-name drugs (column 5) (*14*). The new brand-name drugs might, on average, be more marginal and less innovative.

Robustness of findings. As a test of robustness of findings I replicated analysis of the 200 most-dispensed drugs for the top-25 most-dispensed drugs. Exhibit 3 portrays these data, using the same format as Exhibit 1. (These data begin in 1973 rather than 1970, however, because prior to 1973 the available data did not identify the top 25.)

Generics' relative importance among the top 25 drugs changed little over the decades. It never exceeded 6 in the top 25 in any year (although the number fell to zero

between 1983 and 1993 and then increased to the pre-1983 level). By contrast, among the top 200 the number of generics increased five-fold, from 15-18 in the 1970s to 85-90 in the most recent two years (Compare columns 1 in Exhibits 1 and 3.)

When we focus on brand-name drugs we again find little change over time in the annual number of new entrants to the top-25 list (Exhibit 3, column 5), generally about 3 per year, while among the top 200 drugs the number of new brand-name entrants was generally in the 10-20 range throughout the period.

As for brand-name drugs, by contrast, the time pattern of entry of new brand-name drugs is rather stable whether we focus on the top-200 or the more-restrictive, top-25, most-dispensed drugs. Thus, relatively more of the additions to the top-25 lists are brand-name, non-generics and relatively fewer are generics than is the case for the additions to the top-200. For generics, their smaller quantitative importance among the top-25 may reflect the replacement-effect of a highly prescribed patented drug going off-patent and leading to the entry of generics by multiple manufacturers who split the market so that no single version made the top-25 list. With such a process at work, the top-25 would tend to include virtually only patented drugs. This is what is found. Among the top-25 drugs, 19 (76%) or more are consistently brand-name, non-generics (Exhibit 3, column 2), while among the top-200 drugs, brand-name non-generics constitute over 180 (90 percent) of the drugs in the earlier years but fall sharply from the high of 189 (94%) in 1983 to a low of 110 (55%) in 2004.

Comparability of data over time. Over the entire period some definitional changes occurred in the survey question. The changes were, in general, not massive, but neither

were they trivial. Thus, there is not precise comparability of data over the entire period. In 1969, when the most-prescribed drug lists were initiated, the survey data did not distinguish among multiple generics for a particular drug, instead aggregating them; as a result, the number of generics that reached prescribing levels great enough to be in the most-dispensed lists exceeded the number that would have entered had there been no aggregation, as occurred later. In addition, the data did not distinguish between dosage forms—e.g., tablet or liquid—for a given drug. Also, a prescription was counted as the physician writing it specified, either for a brand-name or generic version, rather than as the prescription was actually filled.

In 1976 the classification system was changed to treat different dosage forms as different drugs, which eliminated a number of products from the top-200 list. Because of this change, Exhibit 1 excludes comparison of 1976 with 1975, and so there is no entry for new drugs in 1976. Subsequent years' data continue to show year-to-year changes, though, with the new definition of a top-200 (or top-25) drug.

The last two definitional changes occurred in1982. A prescription was no longer counted as the physician writing it specified, for a brand-name or generic version, but was counted as brand-name or generic depending on what the pharmacist actually dispensed. This change reflected legislation in many states that gave retail pharmacists discretion to dispense a generic drug or a brand-name drug even if a physician prescribed the other, if the prescription did not explicitly prohibit substitution. Also beginning in 1982, generic drugs of a particular chemical composition began being reported separately by manufacturer, rather than aggregated, which had the effect of reducing the number of

generic drugs making it onto the most-dispensed lists. Because of these definitional changes I do not report, in the tables below, drugs that were "new" in 1982, the year of the change in definition. Subsequent years' data and year-to-year changes reflect the new definitions, which have been constant ever since (*15*).

In short, whether we focus on the entire 35 years or the latest 21 years of stable definitions, whether the focus is on the top-200 drugs or on the more elite 25, and whether it is on brand-name or generic drugs, the conclusion is that the market for drugs has changed over time. Drugs reaching the most-dispensed levels are increasingly new to the lists and increasingly generics.

Conclusion. We have examined entry rates of drugs onto the lists of most-dispensed prescription drugs, and provided quantitative measures of the rates of change over time for both brand-name and generic drugs. By these measures, and recognizing their limitations, we find that over recent decades the quantitative importance of generic drugs has increased from 16 of the top-200 drugs in 1970 to 90 in 2004. Among the brand-name drugs on the most-dispensed lists, turnover—as measured by the rate of ascendancy of new drugs to the lists—has also grown over time.

Pharmaceuticals have become increasingly competitive in two respects—subject to more competition from generic drugs and from newly-patented drugs that are sometimes, though not always, substitutes for pre-existing drugs. The consequences of increased competitiveness of the pharmaceutical market, from both sources, are potentially great because of the effect on expected profitability of pharmaceutical R&D, but this is a matter beyond the focus of this paper.

While no single measure of pharmaceutical innovation can capture the frequency, social value, and cost implications of a new drug, three points have been made here: (1) Change in the set of most-dispensed pharmaceuticals can be quantified, and the shortcomings of the particular measures used can be identified. (2) The pace of change, entry to and exit from the lists, among the leading pharmaceuticals has been substantial and increasing over the past several decades. And (3) brand-name drugs are facing growing competition from generics. These conclusions, while not startling, emphasize the measurability of change in the pharmaceutical sector. Further applications and refinements of our measures of change hold promise for increasing understanding of the causes and consequences of the flow of new drugs.

Notes:

1. In another industry in which change has been rapid and multi-dimensional, computers, the change in computational speed has been measured and used by the Bureau of Labor Statistics (BLS) in calculating the computer element of the Consumer Price Index. The BLS adjusts observed market prices by the speed of calculations. (Robert Coen suggested this example to me.) The pharmaceutical industry, however, produces a wide variety of drugs that do not lend themselves to a single-dimensional measure; some drugs extend life expectancy, though with great variation among people, while others reduce pain, increase mobility, etc., and so there is no natural unit analogous to speed of calculation that can be used to compare drugs.

2. If generics are counted, a subsidiary question is whether multiple manufacturers' generic versions of a given drug should each be treated as a new drug if it is highly prescribed.

3. Beginning in 1998 *Pharmacy Times* began reporting data in an additional dimension—dollar volume.

4. It would be possible, however, for some pre-existing drug that had minor sales to be found to be more effective and then to climb into the top-200 list.

5. See the following: P. Dasgupta and P. Stoneman, Eds., *Economic Policy and Technological Performance* (Cambridge University Press, Cambridge, England, 1987), pp. 97-124. B. Hall, A. Jaffe, M. Trajtenberg, "Market Value and Patent Citations: A First Look," *NBER Working Paper no. 7741* (June 2000). E. Duguet, M. MacGarvie, "How Well Do Patent Citations Measure Flows of Technology? Evidence from French Innovations Surveys," *Cahiers de la MSE-EUREQua* (2003).

6. For a survey of the literature, see Griliches, Zvi. *J.Econ. Lit.* **28**, 1661-1707(1990).

7. See the following: Agrawal, Ajay, R. Henderson. *Magmt. Sci.* **48**, 44-60 (January 2002). E. Duguet, M. MacGarvie. *Econ. Inno. New Tech.* **14**, 375-393 (July 2005). M. Cloodt, J. Hagedoorn. *Resea. Pol.* **32**, September 1365-79 (2003). J. O. Lanjouw, A. Pakes, J. Putnam. *J. Ind. Econ.* **46**, 405-32 (December 1998). For discussions of the econometric issues surrounding patent data and the merits of various approaches to using patent counts, see Bronwyn, Hall A. Jaffe, M. Trajtenberg. "The NBER patent citation data file: Lessons, insights and methodological tools," *NBER Working Paper No. W8498* (October 2001).

8. Not having information about drugs above the top-200 cutoff, we cannot replace the generics on the list with non-generics to reconstitute lists of the top-200 *non-generic* drugs.

9. While there is no reason to expect bias in the mean percentage of either type of drug

simply because the top-200 were divided into the two groups, the variance is affected by the sample size.

10. In Exhibits 2a and 2b, a year in which data are missing is excluded, as is the following year, since it reflects changes over two years.

11. Missing years of data, and years in which definitional changes occurred are excluded from Exhibits 2a and 2b, and are described below.

12. A current example involves Lipitor, Pfizer's patented anti-cholesterol statin drug, the best-selling drug in the world. It began to face major increased competition in June 2006 when Merck's statin, Zocor, went off patent in the U.S. and entry of lower-priced generics began to occur. R. Winslow, S. Hensley, "Pfizer's Lipitor Faces Challenge against Generics," *Wall Street Journal* (November 2005).

13. Even in the 1960s, however, the use of generics was growing as a percentage of all new prescriptions written by physicians. That percentage increased from 6.4 percent in 1966 to 9.2 percent in 1971. "For the 1st Time, Generic Drugs Climb to the Top 50," *Pharmacy Times* (April 1972).

14. I thank Michael Noel for this point.

15. There is another advantage to focusing on the later period. For years nearer the beginning of the time series there is the possibility of a "censoring" problem—that is, a drug could have been identified as new when, in reality, is was a "Lazarus" drug, having been on the list in a year prior to the beginning of the data set. Because of the data censoring prior to 1969 there is potential upward bias in the number of drugs identified as new, especially in the earliest years, and a resulting downward bias in the estimated growth

rate of new drugs over time. Such effects, however, are almost certainly small, for even in later years, when there is presumably no censoring problem, the number of Lazarus drugs is very limited, the modal number being zero. In only one year did the number exceed three.

References:

Ellikson R, Stern S, Trajtenberg M. 1999. Patient Welfare and Patient Compliance: An Empirical Framework for Measuring the Benefits from Pharmaceutical Innovation. *NBER Working Paper no. 6890.*

The Food and Drug Administration (FDA) Website. 2004. *Greater Access to Generic Drugs: New FDA Initiatives to Improve Drug Reviews and Reduce Legal Loopholes* http://www.fda.gov/fdac/features/2003/503_drug.html [2 November 2007.]

Hobbs F, Stoops N. 2002. *Demographic Trends in the 20th Century.* U.S. Census Bureau: Washington, DC. Census 2000 Special Reports, Series CENSR-4, Appendix A, table 5.

Weisbrod B. A, Geweke J. 1982. Clinical Evaluation vs. Economic Evaluation: The Case of a New Drug. *Medical Care;* **20:** 821-830.

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Exhibit 1. New Drugs Among the 200 Most-Dispensed Drugs, 1970-2004

Year	Generic drugs	Brand-name drugs	Total drugs new to list	New generic drugs	New brand-name drugs	Percentage of total brand-name drugs new to the list (%)	Percentage of total generic drugs new to the list (%)
						(5)/(2)	(4)/(1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1970	16	184	15	1	14	7.6	6.3
1971	15	185	21	0	21	11.4	0.0
1972	16	184	16	1	15	8.2	6.3
1973	15	185	14	0	14	7.6	0.0
1974	15	185	9	0	9	4.9	0.0
1975	15	185	15	0	15	8.1	0.0
1976							
1977	18	182	17	4	13	7.1	22.2
1978	17	183	13	0	13	7.1	0.0
1979	18	183	11	1	10	5.5	5.6
1980	18	183	13	1	12	6.6	5.6
1981	20	180	12	2	10	5.6	10.0
1982							
1983	11	189	22	1	21	11.1	9.1
1984	16	184	23	7	16	8.7	43.8
1985	22	178	19	7	12	6.7	31.8
1986	25	175	27	9	18	10.3	36.0
1987	26	174	20	5	15	8.6	19.2
1988	28	172	32	11	21	12.2	39.3
1989	33	167	26	5	21	12.6	15.2
1990	27	173	22	3	19	11.0	11.1
1991	34	166	18	8	10	6.0	23.5
1992	35	165	24	7	17	10.3	20.0
1993	47	153	36	21	15	9.8	44.7
1994	53	147	31	17	14	9.5	32.1
1995	55	145	32	10	22	15.2	18.2
1996	57	143	30	11	19	13.3	19.3
1997	65	135	36	22	14	10.4	33.8
1998	69	131	33	14	19	14.5	20.3
1999	70	130	27	6	21	16.2	8.6
2000	73	127	24	11	13	10.2	15.1
2001							
2002	76	124	42	11	31	25.0	14.5
2003	85	115	32	19	13	11.3	22.4

2004	90	110	26	12	14	12.7	13.3

Source: Derived from data in annual (April or July) issues of *Pharmacy Times.*

Note: Data are not reported for years in which definitional changes in survey questions occurred—1976 and 1982. The survey was not undertaken in 2001.

Exhibit 3: New Drugs Among the 25 Most-Dispensed Drugs, 1973-2004

Year	Generic drugs	Brand-name drugs	Total drugs new to list	New generic drugs	New brand-name drugs	Percentage of total brand-name drugs new to the list	Percentage of total generic drugs new to the list
						(5)/(2)	(4)/(1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1973	3	22	2	0	2	9.1	0.0
1974	3	22	4	0	4	18.2	0.0
1975	3	22	2	0	2	9.1	0.0
1976							
1977	3	22	1	1	0	0.0	33.3
1978	4	21	1	1	0	0.0	25.0
1979	4	21	2	0	2	9.5	0.0
1980	5	20	2	1	1	5.0	20.0
1981	6	19	2	1	1	5.3	16.7
1982							
1983	0	25	3	0	3	12.0	0.0
1984	0	25	0	0	0	0.0	0.0
1985	0	25	3	0	3	12.0	0.0
1986	0	25	3	0	3	12.0	0.0
1987	0	25	3	0	3	12.0	0.0
1988	0	25	2	0	2	8.0	0.0
1989	0	25	3	0	3	12.0	0.0
1990	0	25	3	0	3	12.0	0.0
1991	0	25	3	0	3	12.0	0.0
1992	0	25	3	0	3	12.0	0.0
1993	0	25	4	0	4	16.0	0.0
1994	3	24	6	3	3	12.5	100.0
1995	4	21	7	3	4	19.0	75.0
1996	4	21	5	2	3	14.3	50.0
1997	4	21	3	1	2	9.5	25.0
1998	5	20	4	2	2	10.0	40.0
1999	4	21	3	1	2	9.5	25.0
2000	5	20	2	1	1	5.0	20.0
2001							
2002	6	19	8	1	7	36.8	16.7
2003	6	19	3	0	3	15.8	0.0
2004	5	20	4	0	4	20.0	0.0

Source: Derived from data in annual (April or July) issues of *Pharmacy Times*.
Note: Data are not reported for years in which definitional changes in survey questions occurred—1976 and 1982. The survey was not undertaken in 2001.

Ethics statement: No human subjects were involved in this research, only published data. I am aware of no ethical issues of any sort.