Healthcare Costs in Alberta in Context after Corrections for Inflation, Population Growth, and the Aging of the Population: 1975–2001

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Abstract

Background: Alberta is due for cost-containment and system reform as a consequence of a purported dramatic rise in healthcare costs. The problem with this justification is that the expenditure analyses underlying these claims have not included adequate consideration of the influences of inflation, population growth, the aging of the population or the improved performance of the economy.

Design: Estimates of Alberta government health expenditures for the years 1975 through 2001 were adjusted for population growth, inflation and the shift in the age-distribution of the Province's population. To add appropriate context, data were assembled on changes in (1) purchasing power over this time period and (2) out-of-pocket healthcare expenditures over the years 1988 to 2001.

Results: Overall government expenditure figures increased by about 900% over the 27 years of the study. However, when population growth, inflation and population aging were considered, the increase proved to be a more modest 65%. Moreover, personal income per person increased by 48.6% over that time leaving an effective increase in government healthcare spending of about 17.5%. For the years 1988 to 2001, out-of-pocket expenses rose at double the rate of government expenditures. The shift in the age-distribution of the population had a relatively small effect.

Interpretation: There has not been a crisis due to rising healthcare costs over the last quarter century in Alberta. Thus, dramatic systemic and policy changes that are based on this belief are not justified.

Key Words: health, costs, inflation, consumer price index, aging, government

The turning of the millennium has been accompanied by intense action on Canada's healthcare front, with particular emphasis on cost containment. This appears to be most pronounced in Alberta where a wave of reforms has been promised on the heels of the provincial government-commissioned "Mazankowski Report" (Premier's Advisory Council on Health 2001). Constant references have been made about rising healthcare costs as the driver of these initiatives in Alberta, and throughout Canada. The concerns surrounding escalating healthcare costs have been around for some time, and although they appear to have been well accepted generally, there have been some dissenting voices. In January of 2000, an Alberta advocacy group, the Friends of Medicare (2000) released a statement claiming that, when expenditures were expressed on a per capita basis, Alberta ranked poorly among Canadian provinces, and that as public expenditures were reduced over time, private expenditures increased. The Alberta government quickly provided a rebuttal, pointing out some inaccuracies in the Friends of Medicare data and claiming that the data actually depict Alberta's expenditures in a more positive light (Alberta Health and Wellness 2000). More recently, the Alberta Liberal Party (currently the official opposition) reported an analysis which "factored in" inflation, population growth and overall productivity (gross domestic product). The conclusion drawn from this report was that actual provincial government expenditures on healthcare have not changed appreciably over the last 10 to 15 years (Alberta Liberal Caucus 2002).

This is not the first attempt to contain costs. In the late 1980s and early 1990s, the Alberta government presented data which showed that the provincial health budget had increased in multiples over several years, and indicated that if the trend were to continue, the numbers would not be manageable by the turn of the century. Again, although there were some contrary opinions, these figures were generally accepted.

The major problem with the data that were used to justify serious cost-cutting action was that there was not adequate correction for five important factors. These factors are:

1. population growth – (a growth in total costs of 20% is reasonable if the population has also grown by 20%)

2. inflation – (if per capita costs and income grow at the same rate, then no real increase has occurred)

3. aging of the population – (healthcare is more expensive for older people – thus, if there are more people in this age group, then higher health budgets may be justifiable). Although the aging of the population due to the "baby-boomers" has been shown to have a significant effect in a number of social and economic areas (Foot and Stoffman 1996), the Canadian Health Services Research Foundation (2001) has noted that this factor is not likely to disable the health system. The argument here is that aging will also produce an increase in retirements which will actually increase job opportunities for new graduates and produce higher wages for those who work, thus making the increased cost of care affordable. Barer et al. (1995) have estimated that the economic effect of the aging of the population will be relatively modest (about 1% per year during the years when the population age-distribution is shifting).

4. purchasing power – Barer et al. (1995) have suggested any economic effect of the aging of the population that does occur will be outstripped by the growth of the economy. Purchasing power, of course, will play a role in the determination of all health expenditures, and should be included in any list of important factors to consider when fiscal decisions are being made.

5. off-loading of expenditures – Although some cost-cutting measures may actually result in savings (either through greater efficiency or by reducing unnecessary services), others may merely off-load costs from the government purse to that of individual citizens. This may have some benefits, because it allows personal control over cost-saving decisions, but too often it creates a situation where actual costs are more difficult to ascertain. Furthermore, it may actually increase health costs overall as services purchased on an individual basis are often more expensive than those negotiated by a public agency such as the government.

The difficulty that most taxpayers face when confronted with the general question, "Have healthcare costs gone up?" is that figures are thrown out that may or may not take the above-noted five factors into account. A further complicating factor is that data are often presented from selected time periods that may not accurately represent the question being addressed. Often we see the lowest expenditure year being selected as a starting point of a particular analysis that, to no great surprise, shows an increase in costs. Someone else choosing a beginning just a few years away can often show no difference or, occasionally, the opposite. The Mazankowksi Report, for example includes the statement "Health spending in Alberta has increased from $3.9 billion in 1995/96 to over $6.4 billion in 2001/02 – a 64% increase" (Premier's Advisory Council on Health 2001: 26). These are raw figures with no corrections applied and no explanation offered as to why the starting period was 1995/96. Later, on the same page, is the assertion that "Inter-provincial comparisons of spending from 1986 to 2000 show that Alberta's spending is comparable with other provinces." Other sections on that page made use of other time periods. This approach, in sum, makes it very difficult for the reader to know what is actually going on.

In contrast to the Mazankowski Report, the recent federally commissioned health report, "Building on Values: The Future of Health Care in Canada" (the "Romanow Report"), addressed all of the five points mentioned above, but did not quantify the effects of an aging population nor attempt to place all of these factors in context in their overall analysis. It is notable that even when only population growth and inflation were considered in the analysis, average provincial and territorial spending rose only 75% (from $1200 to $2100 per capita) over the period 1975–2001 (Commission on the Future of Health Care in Canada 2002). While the Romanow report has concluded that healthcare increases have been relatively modest, it was noted that the annual rate of growth in health costs has risen about 25% faster than the growth of Canada's wealth (measured by the gross domestic product). The Report points out, however, that Boychuk (2002) has argued that Canadian provincial health expenditures have not increased faster than the GDP over the last decade.

In spite of the evidence that questions the notion of runaway healthcare spending, warnings about this potential "crisis" are still being produced by respected agencies. The most recent example of this being a warning about Canada's healthcare spending from the Organization for Economic Co-operation and Development (2003). Furthermore, the Premier of Alberta and Prime Minister Martin have recently been jousting about provincial adherence to the provisions of the Canada Health Act (The Globe and Mail 2004). Interestingly, both seem to agree that the basic issue is the fiscal sustainability of the healthcare system in its current form. It is the means of financing future healthcare delivery that is the matter of the debate – Mr. Klein appears to embrace privatization, user-fees, de-listing of services and perhaps delivery of services outside of the domain of the Canada Health Act. Prime Minister Martin has stated that he will defend the Act, but did not reveal specific plans about addressing its attendant problems. Neither has questioned the underlying assumption that healthcare costs are in a state of dangerous escalation. As a consequence of this, the present study was designed to examine population, inflation and age-adjusted government healthcare expenditures in Alberta from the "boom" period of the 1970s to the present time in order to provide an estimate of real costs of provincially funded health services in Alberta, and to place these findings in the context of current purchasing power and "off-loading" of payment responsibility. It should be noted that this study is not, however, about the determinants of health costs. While it is important to acknowledge that variations in health expenditures can be determined by such factors as "high-tech" medicine, shifting age-specific utilization rates (Evans 1985), policies regarding length of hospital stay (e.g., maternity) (Thompson et al. 2003), and federal transfer payments to the provinces (Di Matteo and Di Matteo 1998), the fact remains that senior officials and politicians have to make policy decisions on global expenditures, often without significant regard to the way in which these various influences play out. The primary question to be addressed here, then, is whether health expenditures have increased over time in a meaningful way, irrespective of the fluctuating impacts of the many drivers of the healthcare system.

METHODS

The overall approach here was to take health expenditures by the Province of Alberta for each year from 1975 through 2001 and adjust them for population growth, inflation and the aging of the population. For the sake of comparison, expenditures were converted to costs/Albertan throughout. The procedure involved the following steps:

1. Health expenditures were obtained from the Canadian Institute for Health Information (2003). The expenditures included all Alberta government payments deemed to be for healthcare.

2. Per Capita expenditures (costs per person) were arrived at by simply taking the total health expenditure for a particular year and dividing it by the total population (Statistics Canada 2003) for that year.

3. Adjustment for Inflation was approached in the traditional way, based on the Consumer Price Index (CPI; all items) that is generated by Statistics Canada (2002a). The general CPI was selected, rather than the CPI for healthcare services, to allow the examination of health expenditures within the context of the economy overall. This is because the notion under study here implies a comparison with all types of competing expenditures. To be able to express the expenditure (EXP) for a particular year in 1975 dollars, that expenditure was multiplied by the ratio of the base (1975) CPI to the CPI for the year in question. That is, EXP1975$ = EXPYear X * (CPI1975 / CPIYear X)

4. Age Correction involved a more complicated procedure. To start with, the purpose was to be able to express costs as if the years following 1975 (the base year), had the same age distribution as the base year itself. To exemplify, say that the average cost per person in a particular year was $500 and the average inflation-adjusted cost some years later was more (say $750), but the proportion of people over 65 had risen from 10 to 25%, we would not be justified in concluding that spending habits had increased expenditures by 50%. Much of the increase would have been due to the fact that more was being spent

because of the greater proportion of a segment of our society (i.e., those aged 65+) whose healthcare needs (and concomitant costs) are greater. Thus, we would want to make some sort of adjustment in order to account for this factor. Calculation of the age-corrected per capita costs for a particular year, in this fashion, involved the following steps:

i) Calculation of relative expenditures according to age. Generally speaking, healthcare costs are high during the first year of life, very low to about age 45 years where they rise to moderate levels, and very high after age 65. Thus, these age-groupings were used to adjust for differences in healthcare costs in the present study. Table 1 shows the per capita costs for the year 1996 for the sum of physician services, hospital services and drugs (Canadian Institute for Health Information 2002). In order to accommodate age-related cost differentials on age differences across the period of the study, costs were weighted in accord with the distribution of ages for the year in question. The weights were calculated by first dividing the per capita cost for each age-category by the overall per capita cost, and then determining the product of this value and a constant (1.09006) that was used to bring the derived and observed total expenditure for the base year into line (population figures for the two data sources differed slightly). These values are also shown in Table 1.

ii) Calculation of the age-corrected per capita values for a particular year involved the calculation of the amount that the per capita expenditure would change as a result of the difference in the age-distribution between the base year (1975) and the year in question. This was accomplished by multiplying the per capita cost for the year in question by the number of persons in the age category in 1975 by the health multiplier for the age-category in question. Then, the age-category expenditures were summed to arrive at the adjusted total expenditure, which was then divided by the 1975 population figure to arrive at a per capita cost that represents the influence of variations in the age-distribution across years. More specifically, the cost-effect is determined by taking the difference between the thus derived per capita figure and the 1975 value. This cost-effect figure was then subtracted from the inflation-adjusted per capita expenditure estimate, to produce the final per capita figure, which is now adjusted for age-distribution-related expenditures, as well as for inflation and population growth.

It should be noted that the adjustment of expenditures for inflation and population growth is not of the same kind as that for the aging of the population. The former two adjustments remove costs that are not deemed to be real, but the latter is an actual expenditure that is made necessary by a shifting age-distribution (greater needs among a larger elderly population).

Table 1. Per capita healthcare expenditure and expenditure ratios according to age group

Age (Yrs.)	Expenditure Per Capita	Expenditure Ratio	Adjusted Exp. Ratio
<1	$2,960.20	3.0077	3.2786
1–44	$525.62	0.5341	0.5822
45–64	$1,108.27	1.1261	1.2275
65+	$3,709.20	3.7687	4.1081
All Ages	$984.21		

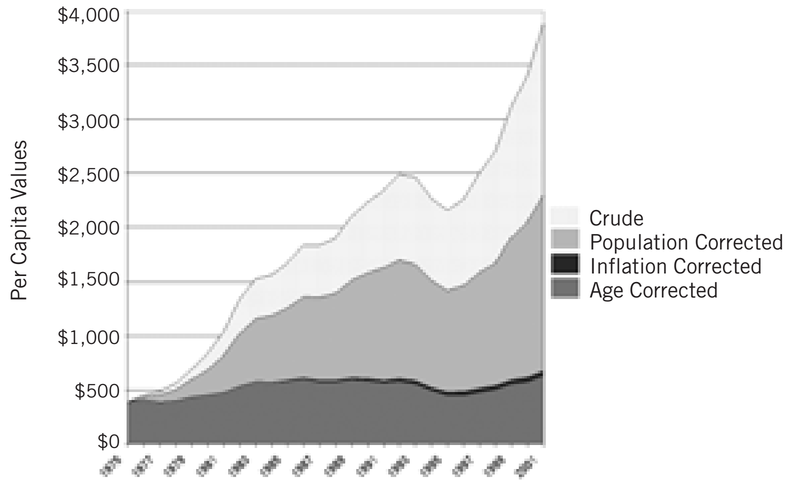
5. Purchasing power was measured using “personal income per person” (Statistics Canada 2002b), which is based on the gross domestic product. It should be noted that the 2002 Statistics Canada calculations for this measure are based on slight revisions in method to account for the influence of a number of economic factors (license and registration fees, farm inventories, land transfer taxes, cellular phone “spectrum” charges). These revisions were “carried back” to 1981 (Statistics Canada 2002c). Thus, the figures for 1975 to 1980 were based on a slightly different formula than those for 1981 onward. Data from both methods were available for 1981 to 1990. Generally, the revision produced lower income estimates, averaging a 2.1% drop, with a range from +0.3% to –3.9%. The resulting income figures were adjusted for inflation in the manner noted in point 3 above.

6. Off-loaded costs were measured using what is termed “out of pocket” expenditures. Included are expenditures for healthcare by individuals out of their own “pocket,” so to speak (Canadian Institute for Health Information 2004). These data were adjusted for inflation and age.

RESULTS

The effects of performing the above-noted adjustments to Alberta’s health expenditure figures are shown in Figure 1, and in more detail in Table 2. The unadjusted figures show an increase from about $385 per 1975 Albertan to $3,884 per person in 2001 – an apparent ten-fold increase. This is

Figure 1. Corrected Alberta Provincial Government Health Expenditures 1975-2001



the per person equivalent to the total budget expenditures over that time period (from $695 million to about $7 billion). However, correcting for population growth dramatically reduced the upper limit of the actual per capita expenditure to $2,293 and the inflation-adjustment produced another large reduction, dropping the maximum to $678.

Accounting for the changing age distribution brought about a much smaller, but nonetheless meaningful reduction (to $634 per capita). As noted above, this was anticipated by Barer et al. (1995) who suggested that the impact of the aging population on total health expenditure would be about 1% per year. That is, although per person costs for those over age 65 years are about four times higher than young adults, the economic impact is not overwhelming because they still represent a minority in the population. In the period under study here, the percentage 65 years of age and over increased by one-third. This is quite large, in proportion to the starting point, but it only represents a small shift in population terms; from 7.4 to 10.2%. A second factor that is in play here is that the aging of Alberta's population has been accompanied by a considerable drop in the number of births, resulting in fewer individuals receiving the very expensive care required during the first year of life.

In the end, adjustments for population growth, inflation and the aging population have left the per capita

Table 2. Derived per capita figures and related values

				Age Distribution				Per Capita Estimates					
Year	Exp. In Millions	CPI	StatCan Popul'n	<1	1-44	45-64	65 +	Crude	Actual	Inflation Adj	Age Adj.	Personal Income	Out of Pocket
1975	$694.9	35.5	1,808,690	1.7%	73.7%	17.2%	7.4%	$384.20	$384.20	$384.20	$384.20	$6,223	---
1976	$811.6	38.3	1,869,302	1.7%	73.7%	17.2%	7.4%	$448.72	$434.17	$402.42	$401.90	$6,448	---
1977	$879.1	41.4	1,947,671	1.7%	73.9%	16.9%	7.4%	$486.04	$451.36	$386.76	$387.17	$6,528	---
1978	$1,020.5	45.3	2,021,798	1.7%	74.2%	16.7%	7.4%	$564.22	$504.75	$395.50	$396.85	$6,821	---
1979	$1,258.2	49.7	2,097,606	1.7%	74.4%	16.5%	7.4%	$695.64	$599.83	$428.51	$430.45	$7,149	---
1980	$1,510.2	54.7	2,192,418	1.7%	74.8%	16.1%	7.3%	$834.97	$688.83	$447.11	$450.76	$7,485	---
1981	$1,871.3	61.8	2,294,193	1.8%	75.2%	15.8%	7.2%	$1,034.62	$815.67	$468.61	$474.15	$7,927	---
1982	$2,426.3	68.8	2,368,249	1.8%	75.3%	15.7%	7.2%	$1,341.47	$1,024.51	$528.71	$534.33	$7,618	---
1983	$2,769.4	72.3	2,390,378	1.9%	75.0%	15.9%	7.3%	$1,531.16	$1,158.56	$568.94	$572.17	$7,337	---
1984	$2,843.5	74.3	2,390,064	1.8%	74.6%	16.1%	7.5%	$1,572.13	$1,189.72	$568.52	$568.46	$7,394	---
1985	$3,035.1	76.5	2,402,928	1.8%	74.3%	16.2%	7.8%	$1,678.07	$1,263.08	$586.22	$582.93	$7,844	---
1986	$3,316.8	79.1	2,430,857	1.8%	74.0%	16.3%	8.0%	$1,833.81	$1,364.46	$612.45	$606.64	$7,726	---
1987	$3,308.1	82.3	2,435,416	1.7%	73.6%	16.4%	8.3%	$1,829.00	$1,358.33	$586.00	$575.74	$7,586	---
1988	$3,427.8	84.5	2,454,715	1.7%	73.2%	16.7%	8.5%	$1,895.18	$1,396.41	$586.74	$573.60	$8,056	$261.25
1989	$3,792.9	88.1	2,495,799	1.7%	72.8%	16.8%	8.7%	$2,097.04	$1,519.71	$612.46	$596.31	$8,134	$267.73
1990	$4,043.8	93.1	2,547,636	1.7%	72.6%	16.9%	8.8%	$2,235.76	$1,587.28	$605.33	$586.96	$8,233	$268.58
1991	$4,233.2	98.5	2,592,551	1.6%	72.3%	17.1%	9.0%	$2,340.48	$1,632.83	$588.56	$568.12	$7,996	$265.44
1992	$4,498.3	100.0	2,634,361	1.6%	71.8%	17.5%	9.1%	$2,487.05	$1,707.55	$606.26	$583.02	$7,950	$267.01
1993	$4,443.7	101.2	2,670,726	1.5%	71.2%	17.9%	9.3%	$2,456.86	$1,663.85	$583.75	$558.05	$8,014	$286.10
1994	$4,098.5	102.6	2,704,904	1.5%	70.7%	18.4%	9.5%	$2,266.00	$1,515.21	$524.34	$496.01	$7,943	$291.79
1995	$3,896.1	105.0	2,739,853	1.4%	70.1%	18.8%	9.6%	$2,154.10	$1,422.01	$480.84	$449.71	$7,963	$280.95
1996	$4,085.2	107.3	2,780,639	1.4%	69.6%	19.2%	9.8%	$2,258.65	$1,469.16	$486.14	$452.42	$7,965	$273.30
1997	$4,526.3	109.5	2,837,191	1.3%	69.2%	19.6%	9.8%	$2,502.53	$1,595.35	$517.28	$482.29	$8,338	$262.25
1998	$4,882.0	110.7	2,906,820	1.3%	68.8%	20.0%	9.9%	$2,699.19	$1,679.50	$538.67	$502.35	$8,637	$303.98
1999	$5,628.8	113.4	2,959,504	1.3%	68.2%	20.6%	10.0%	$3,112.09	$1,901.94	$595.49	$556.79	$8,560	$289.95
2000	$6,152.9	117.4	3,009,249	1.3%	67.4%	21.2%	10.1%	$3,401.85	$2,044.66	$618.36	$577.00	$8,899	$310.36
2001	$7,025.8	120.1	3,064,249	1.2%	66.8%	21.9%	10.2%	$3,884.47	$2,292.83	$677.83	$634.39	$9,185	$318.06

estimates showing a comparatively modest increase of just over 65% across the period of the study ($384 to $634 in 1975 dollars). However, as noted in Table 2, Alberta's purchasing power (GDP) has increased by 47.6% over the same time period, which leaves the effective impact of expenditure increases at about 17.5%, or about two-thirds of 1% per year over the 27 years examined here.

A concern about cost containment in the health sector is that some public expenditure reductions may not be cost containment at all, but rather a downloading of costs from the public sector to the individual. Since the citizenry pays for public sector expenditures, albeit indirectly, as well as for direct costs, both costs need to be considered when evaluating impacts. In this regard, Statistics Canada has been recording "out of pocket" expenditures from 1988 onward (Canadian Institute for Health Information 2004). Table 2 shows the per capita out of pocket expenditures adjusted for inflation and the aging of the Alberta population. Over the fourteen-year period from 1988 to 2001, out of pocket expenditures (adjusted) have risen from $261 to $318 per person, an increase of $57 (21.7%). Over the same time period, the adjusted Alberta government per capita annual expenditure has fluctuated, but the increase is a similar absolute value of $61 (but with a lesser proportion at 11.7%). In these latter years of the study period, public expenditures have still increased at less than 1% per year, but it has been nearly doubled by the rate of increase of out of pocket expenses. The public misconception that expenses have gone up is thus partly true – except that much of this is coming from disposable income rather than from public accounts.

DISCUSSION

The data from this study suggest that the recent concerns about runaway healthcare costs in Alberta were brought about by the use of figures that did not account for factors like inflation, population growth, the aging population, offloaded costs and increased purchasing power. Clearly, when such consideration is in place, we see that the supposed need for dramatic attempts to curb spending is not supported by the facts. Although there has been a meaningful net increase of 17.5%, it has accrued over more than a quarter-century, and, except for one brief period during the "boom" of the late 1970s and another during the cost-cutting exercise in the early 1990s, it has been slow and gradual. At this level, it is not obvious that dramatic cost-cutting exercises are in order.

A potentially troublesome situation arises with increases in off-loading of expenditures from the public base to personal disposable resources. Since the taxpayer and the private citizen as payer are one and the same (notwithstanding the differential effects on some taxpayers because of various transfer payments), it does not appear sensible to have a future reduction in per capita public healthcare costs replaced by higher per capita out-of-pocket expenditures. However, this has to be tempered by the fact that we often use services differently when payment is out-of-pocket than when services are pre-paid (for better or for worse), and by the fact that some out-of-pocket health expenditures that are recorded may never be included as an insured service in any case (e.g., massage). This notion is often debated, but a more detailed and ongoing analysis of the trade off of tax-based versus personal expenditures for appropriate healthcare services is badly needed.

By the year 2011, the early "baby boomers" will begin to populate the 65 plus age category where health costs per individual older Canadian will rise dramatically, and we will have to adjust to an increased need for overall health expenditures. We should not, however, make the mistake of ascribing this to a healthcare system that is out of control. To the extent that an increase occurs, it will be a real cost that is due to a real need that will return to "normal" levels once the baby boomer cohort has passed through the life course. Furthermore, as noted earlier in this paper, other studies have suggested that any increase due to a changing age distribution will not be overwhelming. In any case, analyses such as that presented here, can be used to monitor any sharp increases in cost as the age distribution changes over time.

It is important to note that although this investigation involves an examination of the spending of a provincial government, a significant proportion of its funding comes from the federal government, and that the federal contribution has been greatly reduced over the time period covered by this study. But the present paper does not deal with the manner in which the provincial government acquires its funding, but rather with the way in which it presents its expenditures.

As a final thought, Albertans enjoyed a gain in life expectancy of about five years over the time period covered by this study (Alberta Health and Wellness 1996). To the extent that this can be attributed to health services, they might well believe that health expenditures represent money well spent. In fact, the Canadian public has expressed a willingness to pay higher taxes for quality healthcare services for both general medical health (Maxwell et al. 2002) and mental health (Thompson et al. 2002).

Thus, we seem to have a situation where (1) in a historical context health costs have changed very little – i.e., are not out of control, and (2) the public is currently willing to accept higher taxation for more effective health services. The real question, then, is why are governments proceeding as if these two facts do not exist? It is almost a certainty that it is not because of an inability to provide valid expenditure figures, since all Canadian health departments employ skilled individuals who adjust financial estimates for population size, inflation and other factors, as a matter of course.

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