

## Discussion of Robert L. Brown's "Recent Canadian Human Rights Decisions Having an Impact on Gender-Based Risk Classification Systems"

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### Abstract

This commentary examines the political and economic influence of demographic groups on rationales for granting exemption from laws prohibiting classification by age or sex, as evidenced in the cases discussed by Robert L. Brown. Age is less subject than sex to manipulation for group advantage. In Professor Brown's discussion of auto insurance cases, only the influence of group dominance can explain:

- Selective focus on young drivers;
- Indifference to ongoing overcharging of adult women signaled by undisputed 2:1 ratios of cost-related averages; and
- Avoidance of effective ways to evaluate miles of exposure to risk.

Contrary to Professor Brown's invitation to actuaries to defend the status quo, they are advised to eschew group politics and to acknowledge in legal and public discourse all alternatives to an abuse that the car year statistical unit makes unavoidable—the shifting of costs from higher to lower mileage cars in the same risk class.

Key words and phrases: *age politics, sex politics, car year, car mile, exposure units, mileage rating*

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## 1 Introduction

Robert L. Brown is to be commended for opening a timely discussion of three recent court decisions that involve challenges by one woman and two men to age and sex classifications. In a retirement case the court's opinion acknowledged the power balance in age-group politics by upholding the age classification. In the two auto insurance cases the courts ignored the power imbalance between groups in allowing insurance companies to win exemption from law prohibiting unequal treatment of individuals by age and sex.

There are bona fide physical and psychological reasons for age classifications, as in managing motor vehicle risk. In contrast, so-called sex differences in data on driving risk are simply artifacts of group-average differences in vehicles and conditions of use. The large differences in accident involvement auto insurers use to defend selective sex classifications are products of misleading time-unit statistics and the fact that on an annual basis in each age group women drivers average markedly fewer miles of exposure than men drivers average.

Professor Brown's analysis approving the auto insurance case outcomes seems to assume that statistical information provided to support these class decisions is pure, i.e., complete, consistent, not misleading, and apolitical. His analysis thus can bypass the essential fact that decision-making by insurance company executives, regulators, and courts concerning which risk classes are necessary and what measures of exposure are well-founded is de facto dominated by and responsive to the needs of members of certain age and sex groups. In particular, the claim by representatives of these dominant groups that sex classification favors women contradicts an axiom of political science and the basis for representative government. Buoyed by its emotional appeal (to men), the false idea that men are disadvantaging themselves to women's benefit in auto insurance pricing is perpetuated largely through professional selection and interpretation of statistical information. The following commentary augments Professor Brown's analysis from the perspective of intergroup politics.

## 2 First Case: Dickason

In the non-insurance case Olive Dickason, a university full professor, challenged her mandatory retirement at age 65 as a violation of Canadian law against unequal treatment by age. This case pits a presumably small class of senior faculty against a large class of junior faculty that

would benefit from the expanded opportunity for promotion created by mandatory retirement. Although age is a demographic factor that can be misused to excuse invidious and stereotypical treatment, age differs conclusively from the immutable factors of sex and race because it is a sequence through which everyone potentially passes. Therefore, a decision to treat individuals differently by age is not necessarily an instance of one group gaining an advantage over another group. Junior faculty are aware that any age rule they create is likely to govern their own retirement.

This reality is stated in the court's opinion quoted by Professor Brown:

the terms of the collective agreement relating to compulsory retirement will [eventually] apply to *every member* of the faculty association. (Added word and emphasis are mine.)

Professor Brown uses the disposition of this case to bolster the argument that if bona fide reasons can be found to justify exceptions to law prohibiting age classification, then insurance reasons (more respectable than simply one group gaining an advantage at the expense of another) can be found to justify classification by sex.

The political difference between age and sex classification is demonstrated by retirement arrangements such as that in the Dickason case prior to enactment of laws against unequal treatment by sex. Mandatory retirement age commonly was set at 62 for women and at 65 for men. In this instance, the immutability of sex allowed academic and non-academic men to gain an advantage at the expense of women in applying an age classification.

### 3 First Auto Case: Bates

The first auto insurance case Professor Brown discusses provides a good example of the strong influence of age-group politics on classification decisions. The case brought by 20 year old Michael Bates involves an unsuccessful challenge to price classes defined by driver age, sex, and marital status. Professor Brown hints that these classifiers may not be applied uniformly. The court, he says,

noted that single males under the age of 25 had the highest claim frequency, the highest loss per car insured, and the highest average claim cost of any of the categories *for which statistics were kept*. (Emphasis added.)

The truth behind the emphasized clause is that the claim frequency, loss per car insured, and average claim cost are not available by driver sex for cars whose drivers are over age 25. Through classification by driver age, auto insurers have exempted the adult owners of four of five cars from paying costs according to the sex of a principal or occasional driver. Men benefit from this unisex merging of men's and women's annual insurance statistics for the large majority of cars. This fact became apparent, but was not acknowledged, by the court's opinion in the Watters case.

#### 4 Second Auto Case: Watters

In the second auto insurance case 19 year old Adrian Watters unsuccessfully challenged sex classification as applied to cars with drivers under age 25. Professor Brown quotes the five insurance and public accident statistical comparisons by the sex of young drivers that the court cited to justify its decision. (The fifth comparison is from his own expert testimony.) It is necessary, however, to turn to the complete published Watters opinion for important adult-driver comparisons by sex. In this regard, the court wrote that

The final interested group is male and female drivers over 25 years of age. Although the accident ratio of male to female drivers *remains constant at 2:1* across all age groups, as was pointed out by Mr. Brown under cross-examination, the severity of the accidents involving young males significantly exceeds the severity of accidents involving young females and older male and female drivers. (*Dominion Law Reports*, Volume 107, page 320. Emphasis added.)

Professor Brown's testimony on the constancy of this ratio across all driver ages is validated by a review of published age and sex data on reported accidents during 1984 from 7 million drivers in Pennsylvania. In this driver population the ratio had a low of 1.8:1 at age 17, at ages 60 to 64 and for several age groups between, and had highs of 2.2:1 at age 25, and 2.1:1 for the 30-35 age group. The absolute involvement values per 100 licensed drivers decreased for women from 5 at age 17 to 1 at age 65. Men's values followed the same pattern at about double the value, from 9 to 1.8 involvements per 100 drivers. At all ages the ratio of men's to women's involvements in severe accidents as measured by fatal accidents was about 3:1 (Butler, Butler, and Williams, 1988, pp. 253, 269, 271). There is no discontinuity or marked change in relative

differences by driver sex in total or severe accidents below and above age 25.

Because men and women apparently average about the same risk rates per mile (accident involvements per mile times average severity) when driver age and vehicle differences are controlled, the annual accident ratio is an expression of the ratio of men's to women's annual miles of exposure. Although average annual mileages vary strongly with driver age, the ratio of men's to women's average mileages is remarkably constant at approximately the annual accident involvement ratio. In 1990 men's to women's overall average mileage ratio was 1.74:1 (U.S. Department of Transportation, *1990 Nationwide Personal Transportation Survey*.)

## 5 Classification Alternative: Mileage

Although the car is the unit of insurance, insurers make no bona fide attempt to measure the individual mileages cars are driven. What provision, therefore, is made for measuring the costs indicated by the large difference in group averages for annual accidents and annual mileages? The question of practical or superior alternatives to sex as a rating variable plays a prominent part in Professor Brown's analysis. He notes from the Watters opinion that the "criteria of annual mileage driven was used as an example of a rating variable which could somewhat offset the loss of gender as a rating variable." Because simple classification of cars at one or several annual mileage break points already is used by some insurers (and has been discontinued by others) for providing nominal discounts, it is possible to consider the reasons for the opinion that annual mileage classification is not practical for measuring the costs underlying the approximately 2:1 ratios of men's to women's annual accidents and mileages.

Professor Brown's reference to annual mileage *driven* as a rating class criterion is misleading because the class definition does not refer to the mileage the car was driven last year. Instead, *annual mileage* is defined in company rate and rule manuals as the mileage to be driven in the ensuing year or as future mileage as stated by the insured (or filled in by the agent) before the beginning of the policy rating period. Future mileage is inherently unmeasurable, and no premium adjustment is made to a low mileage discount at the end of the rating period regardless of actual miles driven. Predictably, the resulting cost distinction between future mileage classes generally conforms to the nominal discount size.

When the subject of the car mile exposure unit is raised, some professionals wrongly equate it with future mileage rating. Although Professor Brown's reference is not specific, it is probably not the car mile exposure unit but this future mileage rating factor that he justifiably rejects as impractical for accurately delineating the difference between young men's and women's average costs. Therefore, classifying all cars by the sex of a driver needs to be considered as another alternative to unisex pricing that charges women on average about twice as much per mile as men at all ages for the same insurance protection for their cars.

## 6 Classification Alternative: All Cars by Driver Sex

A change to unisex pricing on the present car year unit basis represents a *group* overcharge to young women. The price changes for young men and women predicted at the top of the list of five statistics Professor Brown quotes from the Watters opinion are considerably less than what has happened to some car owners in the states where pricing by driver sex has been outlawed, despite efforts by regulators to cap the increases to young women.<sup>1</sup> On the same basis, however, women over 25 are being overcharged *as a group*. If current application of sex pricing to a relatively small minority of cars is necessary and justified, then the only question is why the accident involvement statistics do not require application of sex-divided pricing to all cars.

One reason is that there is no consumer demand for more and better sex discrimination. Both the disparity by sex in adult costs and its cause—men's greater average annual mileage—continue to be hidden.<sup>2</sup> Women have good reason in principle and experience to distrust classification by sex as an unsolicited gift for which unlimited compensation will be demanded. Having to pay higher surcharges for a few years as

<sup>1</sup>The price increases predicted to occur in Alberta as a result of unisex pricing did affect 600,000 young women in Pennsylvania in 1989. But the adult 3 million women drivers in that state already were paying unisex prices. As in other states where courts have outlawed pricing by driver sex in auto insurance, this change to unisex youth prices was understood to benefit men at women's expense, but it has not been followed by elimination of sex-divided pricing in health insurance and annuities where insurers overtly charge women more than men.

<sup>2</sup>Although the information is available to the courts, its absence from public discussion of insurance costs apparently allows it to be discounted in court rulings. One of the Supreme Court justices on the dissenting side in the Bates case quoted a law review summary of state insurance department studies: "Male accident rates remain higher than those of female drivers because men, as a group, drive twice as many miles as women. When accident figures are calculated on a per-mile basis, the rates are comparable." (*Dominion Law Reports*, Vol. 93, page 366.)

young drivers currently supplies many men with a motive to find ways of getting even not only personally but also in supporting other public and business arrangements that treat women unequally. Sex-priced insurance is a powerful promoter of invidious attitudes. Auto insurance is used widely to back the threat that women will be hurt by unisex equality (as the dominant group defines it).

The compelling reason for *not* sex pricing insurance on all cars—a reason consistent with established group political and economic power—is that adult men would lose the benefit of shifting the cost of their greater average annual miles of exposure to adult women and insurers would lose the flexibility in price competition for men's business that merged costs provide. For the minority of cars where insurance is sex-priced, men and women as groups (not individuals) *are* paying the differential costs of their different mileage averages.

But individual cars are not driven the class average annual mileage. Despite the 2:1 ratio of averages, a sizable minority of men drive fewer miles and have fewer accidents than women's averages, and a smaller minority of women drive more miles and have more accidents than men's averages (Butler, Butler, and Williams, pp. 396, 402). Annual income distributions for men and women show a similar relationship between averages, with a 2.04:1 ratio in 1989, and in the overlaps of the averages by proportions of the other sex (1989 *U.S. Census Statistical Abstracts*, Table 728). Many upper income homemaker, business, professional, and managerial women do well under the current car year exposure unit system—the cost of their excess mileage is shifted to the owners of below average mileage cars in their risk class. Therefore, the alternative of pricing all cars by driver sex makes a poor match to the accident risk costs of individual driving. The same severe disability, however, applies to pricing insurance by driver sex on any subgroup of cars.

## 7 Alternative Statistical Unit

Having examined two unsatisfactory alternatives—classifications by future mileage or by driver sex for all cars—to current risk evaluation practices, we turn to a third. Although Professor Brown does not discuss my work on the car mile exposure unit (Butler, 1993), he seems to be referring to the car mile as an alternative to the car year unit in allowing “that an alternative statistical base might exist in 1992,” but not in 1983 when Bates initiated his case. Nonetheless, the property and casualty actuarial literature (Butler, 1993) contains discussions of

the car mile unit (exposure medium or base) at least as early as 1929 when it was judged to be superior to the car year medium. The only question raised in 1929 and subsequently has been the practicality of odometer auditing.

As Professor Brown indicates by quoting from the Watters opinion, the courts are currently told by experts that "it is impractical in the extreme to individually assess the risk that each person brings to the system". But courts are not told that the individual car—not its drivers—is the insured unit and that a car brings risk to the system only when it is driven. The courts also are not told that measurement of the mile by mile transfer of risk to an insurance class pool by individual car use simply requires sealing of the car's odometer and annual verification of seals and readings. If it is a gross overstatement that the cost of odometer auditing is impractical in the extreme, it is a gross understatement of the inherent impossibility, regardless of cost, of measuring empirical probabilities for individuals.<sup>3</sup> A statistically credible measurement of a *class risk rate* per exposure unit—in cents per car mile (or dollars per car year)—can be determined only from an insurer's experienced cost of covering a large number of insured car miles (or car years) of exposure for cars in an insurance class (defined, for example, by car use, territory, driver age, etc.). Because the car year unit does not measure physical exposure to risk, however, risk rates per car year are without probability meaning for individuals. That is, an insurance price per car year provides no cost-of-risk incentive at the margins where decisions are made about making a given trip (Vickrey, 1968).

In 1992 I studied, for Pennsylvania legislators, the practical aspects of an audited car mile exposure unit system for private passenger automobile insurance. The report was summarized in this journal (Butler, 1993) and reprinted in full in *The Casualty Actuarial Society Forum* (Summer 1993, pp. 307-338). Noting that the actuarial literature views practicality and not theoretical soundness as the barrier to conversion to the car mile exposure unit, the reprint introduction suggests that the report serve as a framework for renewed, informed consideration of the practicality question. (Readers of this discussion can obtain copies from me on request.)

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<sup>3</sup>This is what the public is misled to believe that pricing by driver record can do. The so-called actuarial risk class justification is simply an artifact of the car year exposure unit: cars driven by higher mileage drivers selectively are concentrated by the random processes of accident involvement and traffic citation into the driver-record subclasses. With a raised average annual miles of exposure, the subclass claim frequency per car year thereby also is raised relative to the class as a whole. Actuarial modeling in 1960 of this risk concentration process was reviewed by Butler (1993).



## 8 Conclusion

In his conclusion Professor Brown asserts that “no superior alternative exists, either in fact or in theory” to the present use of sex categories in the risk classification system. Confining attention to driver classifications based on stereotypes and applied to a minority of cars creates an illusion of actuarial precision that obscures the lump-sum character of a car year exposure basis. Although the higher income, higher mileage beneficiaries of this cover-up are found in all demographic groups, mileage and accident statistics reveal that the predominant winners are adult men.

The power of political and economic influence to cause the disappearance of criticism of auto insurance lump-sum pricing is remarkable. For example, two eminent economists made this criticism nearly 30 years ago. The first paper, published in 1967 with Professor Oliver E. Williamson as first author, lists definitions of automobile classification categories (class-plan classes were more numerous then than now), but concludes (pp. 247-248):

Despite this multitude of rate classifications, however, no effort is made to adjust rates within categories according to the volume of activity. Thus our judgment holds that the insurance premium has mainly lump-sum characteristics . . . . That the premium has a lump-sum rather than marginal character thus leads to the result that the individual operates either at the origin [zero activity] or at [an excessive level], but has no incentive to take up [the socially optimal level].

The following year, Professor William Vickrey (1968, p. 470) published the same conclusion about the lump-sum character of premiums and its negative effect on incentives:

[T]he frequently overlooked fact [is] that the manner in which premiums are computed and paid fails miserably to bring home to the automobile user the costs he imposes in a manner that will appropriately influence his decisions...[T]hey provide incentives that are largely inappropriate at the margins where decisions are actually made as to whether to maintain a car and whether to make a given trip by car.

Although these two papers continue to be cited as authority for the economic efficiency rationale for making auto liability insurance compulsory and unlimited, there has been little mention of the fact emphasized

by both papers that auto insurance premiums are calculated virtually without regard to the number of miles individual cars are driven.

Actuaries, especially those in academia, may choose to engage in uncritical defense of the status quo and to keep the code of silence about who benefits from the present system. Or they can eschew group politics and constructively engage with published well-founded criticism of the car year exposure unit. Car mile exposure unit analysis has the potential for explaining failures in the current system, such as risk class dysfunction in pricing the effects of car weight and safety devices on risk rates.

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