

Unsustainable Cost-Shifting in Bonus-Malus Auto Insurance: British Columbia Example?

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Note: see end of handout for references

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Outline

1. What Bonus-Malus is generally
2. New data from monopoly insurer ICBC
 - 2005 study ties B-M classes to odometer-mile classes (Litman)
 - 2007 hearings by the Utilities Commission on “rate design”
3. B-M cost-shifting & vested beliefs
4. Conclusion:
 - Legislative antidote for BC—if one is needed

1. What B-M is and is not

- System of price classes defined by history of at-fault accidents
- B-M class prices are not “cost-based”
 - Use by private insurers is usually prescribed. E.g., surcharging following not-at-fault accidents is often prohibited despite proven cost basis
 - A monopoly insurer—like ICBC—
 - Is free from adverse selection by competitors
 - Can administer class definitions
 - Can administer price relativities regardless of class experience
 - Is still constrained politically by the self assessment of most drivers of their own above average ability to avoid accidents

Previous work on B-M

- Lemaire books
 - (1985) n-a-f accidents predict like a-f B-M does
 - (1995) M's are soon overwhelmed by B's
- Industry advisory report to NAIC on auto insurance classification (1979)
 - Opposed mandatory B-M: random & effect is minor
 - Modeled effect as a mixed class of high- & low-risks
- Butler & Butler (1989) in JIR criticized B-M, including use mandated by California Prop. 103
 - Reinterpreted industry's mixed class model as cars on the road randomly sampled by accidents

Industry model: mixed risk classes

	Class I	Class II	Mixed I+II
Claims per 100 CY	5.0	20.0	6.4
Number of cars (#)	10,000	1,000	11,000
<u>After 3 years</u>			
# Bonus cars (0 claims)	8,607	549	9,156
# Malus cars (1+ claims)	1,393	451	1,844
<u>Fourth year</u>			
Claims per 100 CY by:			
Bonus class cars	5.0	20.0	5.9
Malus class cars	5.0	20.0	8.7
High/Low B-M class range	1.00	1.00	1.47

Reinterpretation by Butler & Butler 1989: Class I & II cars travel 5,000 & 20,000 miles per year respectively, all miles at a rate of 10 claims per million miles.

Random sampling with replacement from an urn & on-the-road

Ball color	Black	White	Green	Red
# picks (# accidents) =	0	1	2	3
Urn content before sampling	100			
<u>After 15 balls drawn, each recolored, replaced & mixed before next draw</u>				
<u>(5 per year for 3 years)</u>				
# Bonus balls (0 picks)	86			
# Malus balls (1+ picks)		13	1	0.05
Industry advisory report to NAIC (1979)				
<u>3-year record in NC</u>				
per 100 drivers				
0 accidents	84.4			
1+ accidents		13.0	2.1	0.4

Exposure unit (e.u.) vs. class definitions

<u>e.u.</u> (denominator unit)	<u>Class definitions</u> (= “risk factors”)	<u>Class rate</u> (= $\frac{\sum \text{claims}}{\sum \text{e.u.'s}}$)
Gasoline- gallon	one class only	¢ per gallon
Car-year (car-day)	B-M, mileage bins, driver demographics, credit-score, address, car use, GPS, etc., etc.	\$ per car-year
Odometer- mile	driver age, address, car use, & any others tied to per-mile risk	¢ per odometer- mile

2. Insurance Corporation of British Columbia data

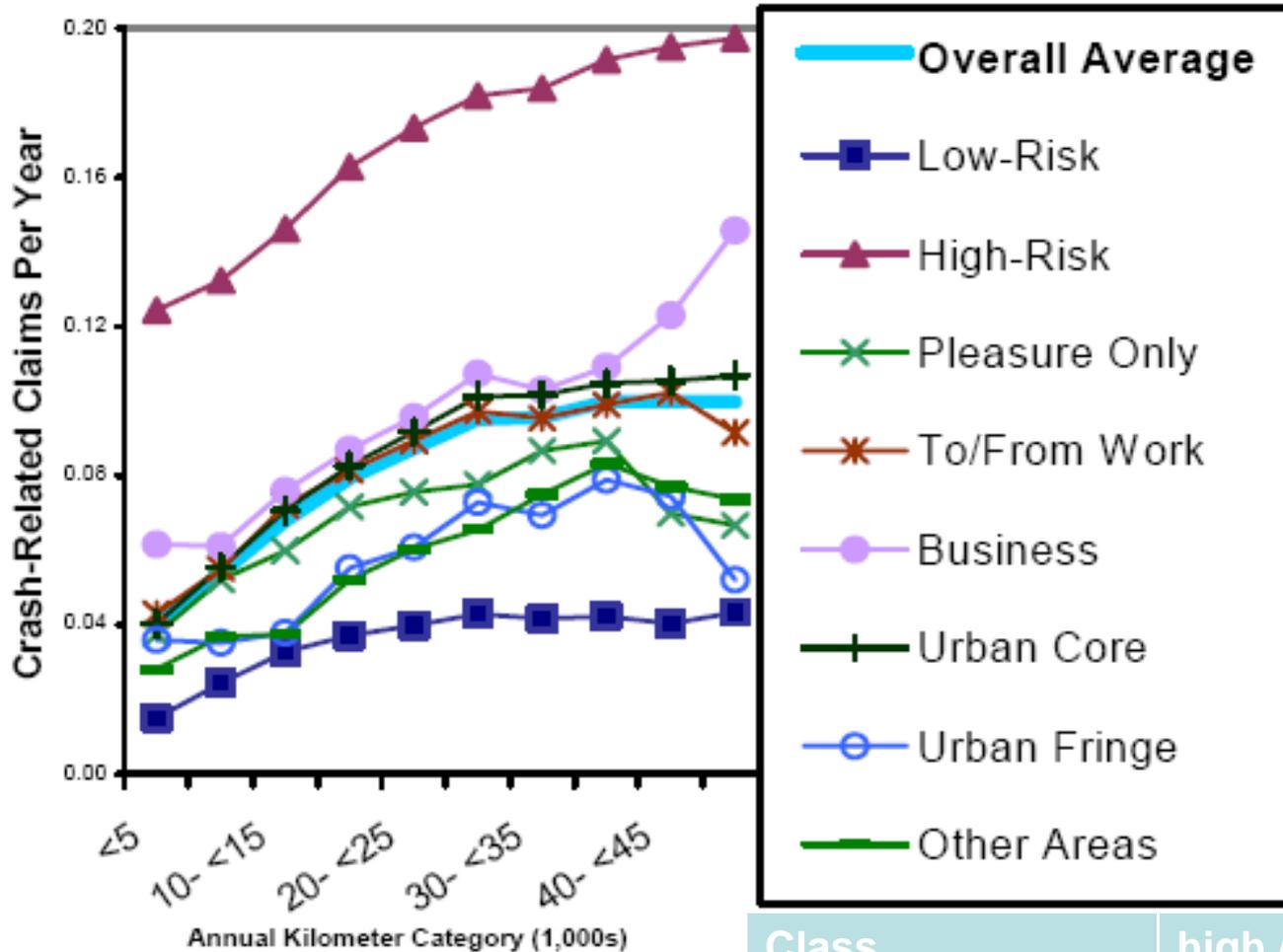
- Monopoly insurer for mandatory auto insurance from 1973 to present
- 2007 rate filing with BC Utilities Commission does not divide claim rates by B-M classes
- But 2005 odometer-mile study apparently did divide claim rates by B-M class

ICBC experience by car-use class (March 2007 filing)

Car use class		Claims / 100 car-years
Code	Name	Vancouver
004 + 024	Park & ride	6.06
005	65 or Over	7.09
001 + 021	Pleasure Use	8.51
003 + 023	Work <15 km	8.94
002 + 022	Work >15 km	9.22
007 + 027	Business Use	9.39
Use-class high/low range		1.55

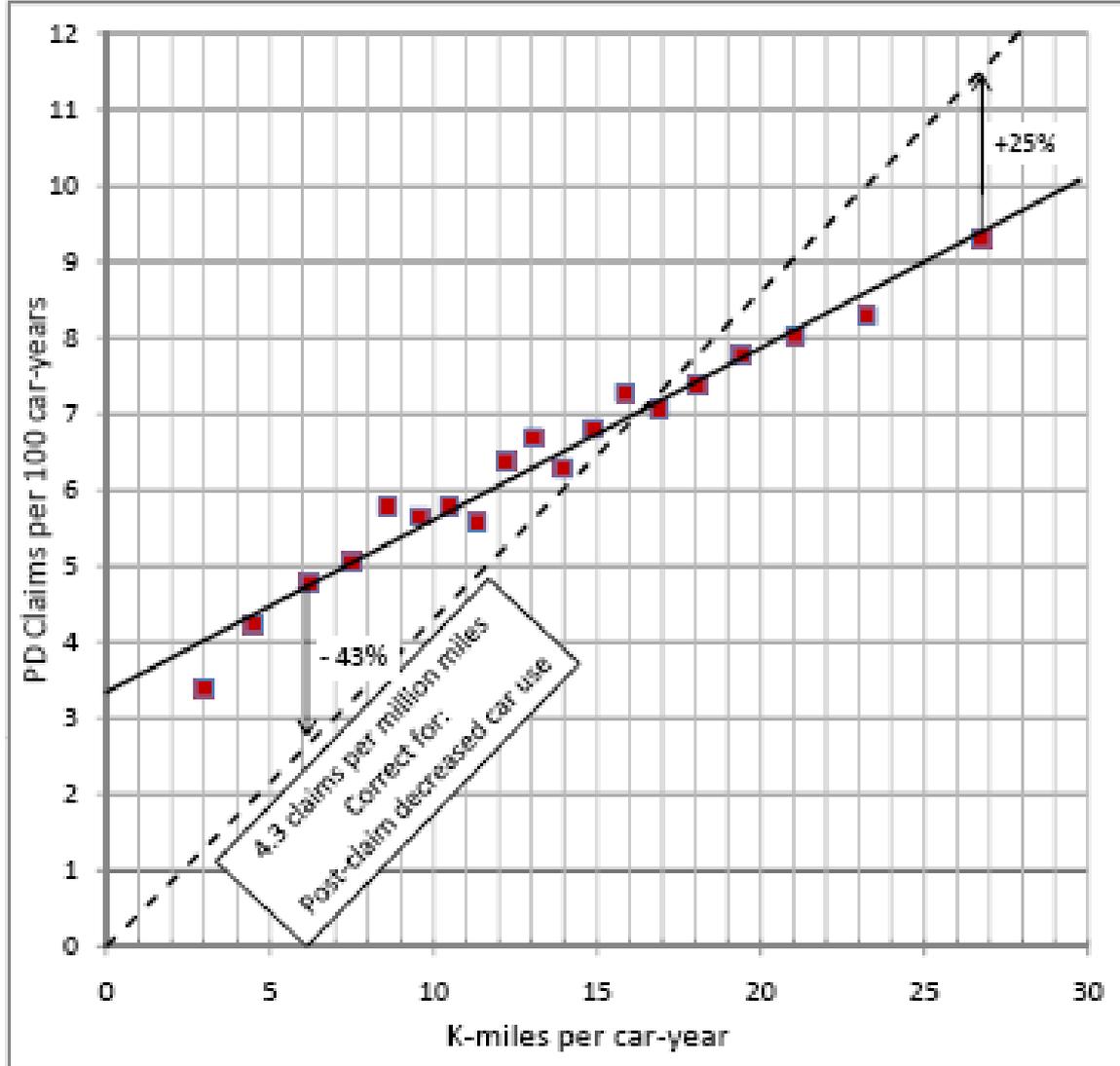
Ann. claims by use, B-M, & annual-km classes

(ICBC claim data, Vancouver area. Litman's figure, 2005)



Class	high / low range	
Use	9 / 6	= 1.5
Annual-kilometer	10 / 4	= 2.5
B-M	15 / 3	= 5.0

Ann. PD claims by odometer mile classes only



Data from: Progressive Ins. Co. (2005) N. Cent. Texas odometer-mile study

3. Question: Can British Columbia sustain this pay per car system?

- Are B-M classes cost based? (I doubt it)
- B-M shifts costs between which groups?
 - Public believes it's from the non-negligent (themselves) to the negligent (others)
 - Actually shifts accident costs from lucky to unlucky (total antithesis of insurance)
- B-M does build a broad vested interest in itself

Claim Rated Scale Position Guide

	C.R.S. Level	Basic Insurance Surcharges and Discounts	Chargeable claim? Move up:
Surcharge Levels	+10	205%	6 steps
	+9	165%	6 steps
	+8	130%	6 steps
	+7	100%	6 steps
	+6	75%	6 steps
	+5	55%	6 steps
	+4	40%	6 steps
	+3	30%	6 steps
	+2	20%	6 steps
	+1	10%	0 steps
	0	Base Rate	6 steps
Safe Driving Discount	-1	5%	6 steps
	-2	10%	6 steps
	-3	15%	6 steps
	-4	20%	5 steps
	-5	25%	5 steps
	-6	30%	5 steps
	-7	35%	5 steps
	-8	40%	5 steps
RoadStar Discount	-9	43%	4 steps
	-10	43%	4 steps
	-11	43%	4 steps
	-12	43%	4 steps
	-13	43%	4 steps
	-14	43%	4 steps
	-15	43%	3 steps
RoadStar Gold Discount	-16	43%	3 steps
	-17	43%	3 steps
	-18	43%	3 steps
	-19	43%	3 steps
	-20	43%	3 steps

Notes to Customer

Had a chargeable claim? To estimate your new position on the scale, locate your most recent CRS level in the left column, then move up the number of steps indicated in the right column. The arrows are examples.

The exact discount or surcharge you receive will depend on:

- future claims;
- driving history;
- previous claims of the registered owner and principal operator;
- whether the insurance on other vehicle(s) is cancelled or not renewed;
- other factors.

The exact amount you will pay can only be determined when you renew your insurance policy or take out a new one. The amount will depend on:

- coverages purchased;
- principal operator and registered owner's claims records;
- make/year/model of the vehicle insured;
- ICBC's current premium levels;
- other factors.

For more detailed information, call ICBC at 604-661-2800 or toll free 1-800-663-3051.

4. Conclusion

- Signs of stress
 - Utilities Commission rate hearing criticism from
 - Insurance broker (43% Bonus “is tricking” public)
 - Consumers (car-year e.u. prevents efficient car owning)
- Barrier to change is “bonus hunger”
- One suggested reform path
 - Legislative Assembly could order ICBC
 - to offer the audited odometer-mile e.u. option as an alternative to car-year e.u.
 - to base class ϕ -per-mile premiums on experienced per-mile costs—with Utility Commission oversight
 - Within the ICBC monopoly, B-M classes would have to compete for customers with per-mile class premiums

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