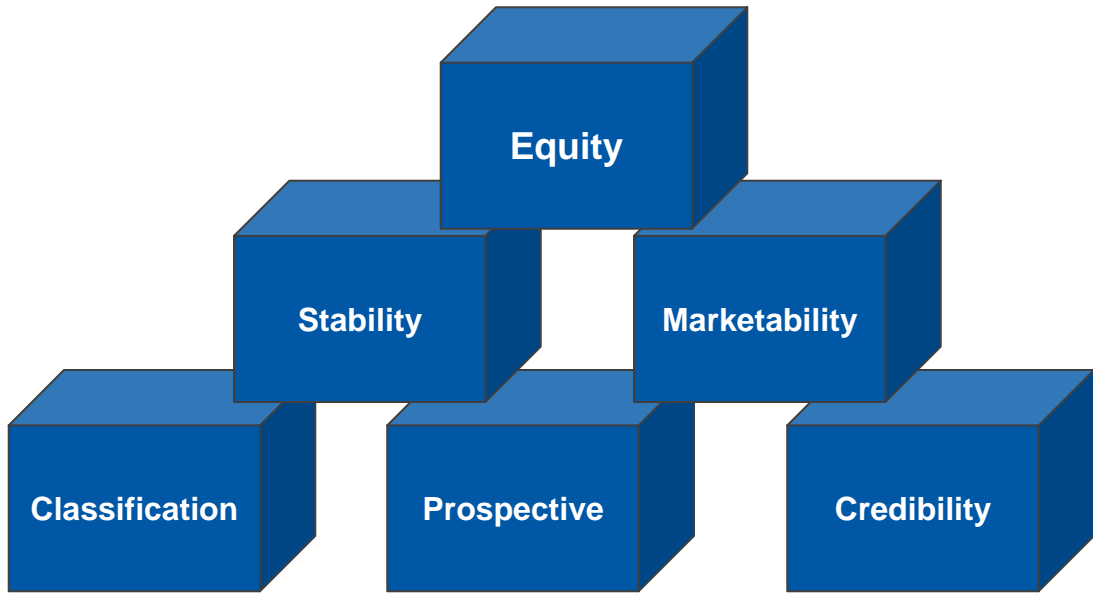# OLIVER WYMAN

Oliver Wyman Actuarial Consulting, Inc.

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Experience Rating Plan— OBWC Education Session

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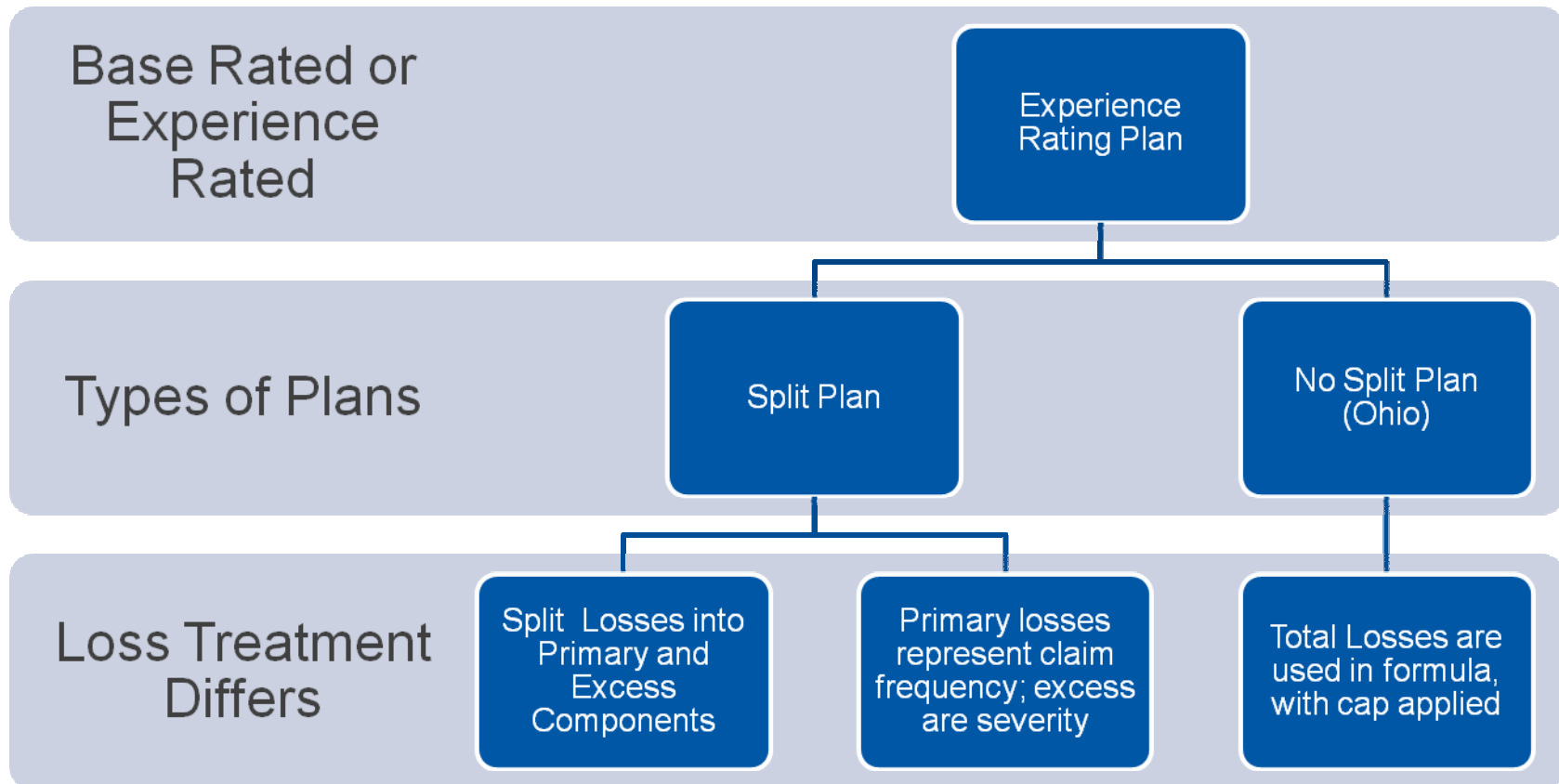# Objectives of this Session

Objectives

- High level review of experience rating plan types and of experience rating plan performance measures

- Understand the impact of both future experience rating plan changes being considered as well as past changes to the plan

- Understand the options for mitigating premium volatility

Comparison of Experience Rating Plans

Base Rated or Experience Rated	Experience Rating Plan
Types of Plans	Split Plan / No Split Plan (Ohio)
Loss Treatment Differs	Split Losses into Primary and Excess Components / Primary losses represent claim frequency; excess are severity / Total Losses are used in formula, with cap applied

Comparison of Experience Rating Plans
Credibility

Split Plan Credibility

Separate Credibility measures for Primary and Excess losses (Z_p and Z_e)

Max of 91% for Primary, and 57% for Excess; Combined Max range from 60% to 75%

No Split Plan Credibility

One Credibility measure applied to the total losses
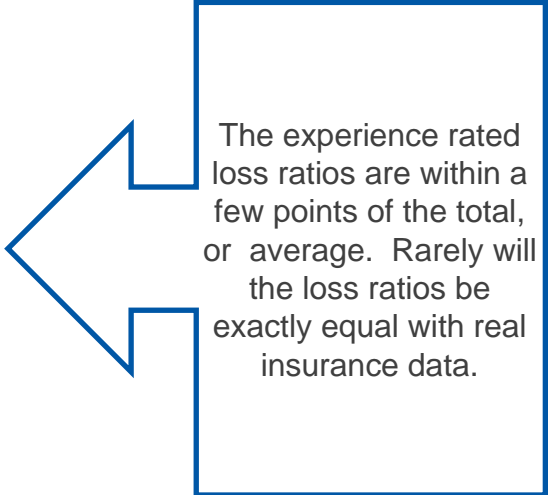
Current Max of 85% at $1 million

Performance Measures

- How do we know if experience rating is fair and equitable? Is the plan predictive of future loss cost differences?

- A basic way to review plan performance is to examine the loss ratios before and after experience rating has been applied—the desired outcome is equal loss ratios across the range of debit and credit risk groups. [we are ignoring possible expense differences]

Example of desired experience rating plan results

Quintile Rank	Description	Manual Loss Ratio	Exp Rated Loss Ratio
1	Highest	150%	85%
2	High	100%	78%
3	Average	80%	83%
4	Low	60%	75%
5	Lowest	40%	82%
Total		80%	80%

The experience rated loss ratios are within a few points of the total, or average. Rarely will the loss ratios be exactly equal with real insurance data.

Split Plan Summary Results

Split Plan Scenario

$10,000 Split (primary)

MSL $175k

Max Credibility of 66%

SACC = $7,000; G=7.0

Split Plan Summary Results
$10,000 Split Point

Loss Ratios by Group Status

Policy Status	Policy Year 2003		Policy Year 2004		Policy Year 2005	
	Current	Plan 10N	Current	Plan 10N	Current	Plan 10N
Group	145.1%	89.0%	131.7%	77.8%	117.7%	75.7%
Non Group	63.8%	79.7%	53.4%	67.7%	56.1%	69.2%
Base Rated	80.2%	106.8%	73.7%	90.0%	83.0%	96.1%
Total	87.5%	87.5%	75.0%	75.0%	75.5%	75.5%

The loss ratios of Group and Non Group segments move towards the average (total) with this split plan scenario

Split Plan Summary Results
$10,000 Split Point

Loss Ratios by Premium Size

Premium Ranges	Policy Year 2003		Policy Year 2004		Policy Year 2005	
	Current	Plan 10N	Current	Plan 10N	Current	Plan 10N
$4,500,000 >	148.5%	86.9%	156.2%	84.0%	126.8%	76.4%
$1,000,001 to $4,500,000	124.2%	83.3%	95.1%	68.2%	103.4%	73.1%
$250,001 to $1,000,000	62.1%	76.0%	49.8%	62.1%	60.3%	71.9%
$50,001 to $250,000	61.8%	79.3%	53.7%	70.6%	54.6%	70.3%
$50,000 <	69.5%	86.9%	59.1%	75.3%	56.7%	68.5%
Total	89.2%	84.2%	75.3%	72.3%	74.0%	72.1%

The loss ratios by premium size also move towards the total average with this split plan

Split Plan Summary Results
$10,000 Split Point

Experience Rated Loss Ratios by Size and Quintile--Policy Year 2005

Quintile	Greater than $4,500,000		$1,000,001 to $4,500,000		$250,001 to $1,000,000		$50,001 to $250,000		Less than $50,000	
	Current	Plan 10N	Current	Plan 10N	Current	Plan 10N	Current	Plan 10N	Current	Plan 10N
1	420.2%	74.6%	378.1%	87.8%	91.2%	71.9%	57.3%	64.6%	47.6%	62.1%
2	276.9%	97.9%	166.1%	75.3%	58.9%	65.6%	57.9%	78.2%	54.3%	74.0%
3	230.3%	88.9%	115.6%	77.7%	57.0%	70.6%	58.4%	56.7%	49.4%	57.8%
4	104.7%	77.0%	86.1%	70.8%	44.9%	64.1%	42.7%	73.8%	58.9%	63.1%
5	59.3%	61.0%	58.5%	59.8%	60.7%	83.3%	57.4%	75.5%	64.6%	82.3%
Test Statistic	30.73	0.66	53.60	0.61	0.49	0.07	0.18	0.16	0.13	0.11

• As demonstrated on slide 9, the equity in the rating plan is improved with the new split plan, as the loss ratios are much more similar across the quintile segments.

• The test statistic is a formal measure of performance:

  • A measure above 1.00 means the experience rating plan is making results worse, or less equitable

  • A measure below 1.00 means the experience rating plan is predictive of higher costs, improving equity

  • In all cases a lower measure is better

Split Plan Summary Results
$10,000 Split Point

Experience Rated Loss Ratios by Size and Quintile--Policy Year 2004

Quintile	Greater than $4,500,000		$1,000,001 to $4,500,000		$250,001 to $1,000,000		$50,001 to $250,000		Less than $50,000	
	Current	Plan 10N	Current	Plan 10N	Current	Plan 10N	Current	Plan 10N	Current	Plan 10N
1	513.6%	104.3%	392.8%	85.0%	72.5%	54.3%	54.7%	65.2%	45.0%	47.7%
2	477.6%	90.2%	144.6%	72.9%	42.0%	54.3%	57.7%	72.8%	43.1%	86.3%
3	180.8%	92.9%	93.3%	68.9%	53.7%	54.0%	49.0%	68.7%	55.3%	69.7%
4	95.6%	68.7%	75.9%	60.3%	42.8%	74.5%	51.4%	67.9%	56.0%	75.1%
5	74.3%	67.4%	57.5%	60.9%	47.5%	68.4%	55.6%	75.5%	76.8%	87.4%
Test Statistic	64.17	0.96	67.82	0.51	0.44	0.14	0.05	0.04	0.28	0.22

- The test statistic is a formal measure of performance:
  - A measure above 1.00 means the experience rating plan is making results worse, or less equitable
  - A measure below 1.00 means the experience rating plan is predictive of higher costs, improving equity
  - In all cases a lower measure is better

Split Plan Summary Results
$10,000 Split Point

Experience Rated Loss Ratios by Size and Quintile--Policy Year 2003

Quintile	Greater than $4,500,000		$1,000,001 to $4,500,000		$250,001 to $1,000,000		$50,001 to $250,000		Less than $50,000	
	Current	Plan 10N	Current	Plan 10N	Current	Plan 10N	Current	Plan 10N	Current	Plan 10N
1	639.6%	113.0%	467.0%	92.3%	92.0%	74.2%	61.1%	63.7%	55.5%	60.5%
2	421.4%	119.1%	197.4%	91.9%	56.5%	74.6%	62.1%	86.8%	41.6%	71.1%
3	185.5%	101.9%	128.9%	81.7%	55.2%	68.1%	61.2%	70.4%	80.2%	100.9%
4	105.3%	84.2%	100.9%	77.3%	70.4%	77.3%	58.0%	76.7%	67.1%	82.0%
5	74.3%	69.6%	76.4%	78.6%	51.0%	82.7%	64.9%	90.7%	82.6%	97.5%
Test Statistic	135.61	2.34	32.13	0.13	0.79	0.04	0.02	0.13	0.40	0.19

- The test statistic is a formal measure of performance:

  - A measure above 1.00 means the experience rating plan is making results worse, or less equitable

  - A measure below 1.00 means the experience rating plan is predictive of higher costs, improving equity

  - In all cases a lower measure is better

Impact of Past Credibility Changes

Impact of Past Credibility Changes
Group rating and credibility

A confluence of credibility issues

- The past and present credibility tables give too much weight to the loss history of large risks, with large defined as expected losses of roughly 250k and higher

- The OBWC has not had regular updates to the credibility table to recognize inflation indexing

- Effective July 2008 the credibility is 85% for expected losses of $1M; other states with comparable benefit levels have a credibility of roughly 50% at $1M

- The maximum credibility level also defines the maximum experience rating credit: a large risk or large group with minimal losses can receive an experience mod of 0.15, or an 85% credit

- Experience rating is revenue neutral, meaning no additional dollars should be gained or lost after all debits and credits are applied (in practice there is always a slight impact)

Large Employer	Group
Constancy—has a risk profile that does not change much over time	Risk profile changes can be significant as members are dropped and added
Homogeneity-Represented by a few manual classes, typically having one large primary class	Heterogeneous—risks may come from the same industry group, but represent many different classes
All loss experience stays with the employer over time for experience rating purposes	Loss experience stays with the risk, but not with the group, allowing for adverse selection
Qualifies for higher credibility and therefore higher credits or debits from experience rating	Qualifies for the same level of credibility as a large employer, even though a group does not statistically resemble a large employer

Impact of Past Credibility Changes
Base rate off balance adjustment

The combination of excessive credibility for large risks and rules allowing groups to be rated as large risks has resulted in a significant rate imbalance within the OBWC rating plan.

In the follow series of tables, we show the progression of how the premium imbalance evolves from the current group rating rules and the interaction with experience rating credibility

This first table shows the full indicated premium for class '123', as determined by the ratemaking process:

Class	Payroll [in millions]	Base Rate [per $100]	Experience Modification	Premium[in millions]
123	$90.0	$2.0	1.00	$1.8

The next table is an example of introducing experience rating within the class, where the overall premiums are in balance:

Class	Payroll [in millions]	Base Rate [per $100]	Experience Modification	Premium[in millions]
123	$30.0	$2.0	1.25	$0.8
123	$30.0	$2.0	1.00	$0.6
123	$30.0	$2.0	0.75	$0.5
Total				$1.8

Impact of Past Credibility Changes
Base rate off balance adjustment

When we introduce a group program, there is financial incentive to move to a group with the promise of discounted premiums. In this example, $60 million of the $90 million of payroll moved to group with an EM of 0.35, or a credit of 65%.

Class	Payroll [in millions]	Base Rate [per $100]	Experience Modification	Premium[in millions]
123	$15.0	$2.0	1.25	$0.38
123	$10.0	$2.0	1.00	$0.20
123	$5.0	$2.0	0.75	$0.08
123	$60.0	$2.0	0.35	$0.42
Total				$1.07

By adding group membership the premium decreased to $1.07 million from $1.80 million for the class, however there is not a commensurate decrease in loss costs. From a rating perspective the credibility is much higher for those who joined group, but from a statistical perspective the credibility did not increase as much as the current plan allows. In addition, group membership changes each year as determined by the four year experience rating history, further biasing the experience rating data and diminishing the credibility of the groups.

Impact of Past Credibility Changes
Base rate off balance adjustment

To bring premiums back in balance at the class level, an off balance adjustment is applied to the base rate. In this case the off balance is 1.68, increasing the base rate to $3.4 from $2.0, and restoring the total class premiums to $1.8 million. We are now in balance overall, but not by class (group and non group)

Note the actual OBWC average off balance has been running around 1.49.

Class	Payroll [in millions]	Base Rate [per $100]	Experience Modification	Premium[in millions]
123	$15.0	$3.4	1.25	$0.63
123	$10.0	$3.4	1.00	$0.34
123	$5.0	$3.4	0.75	$0.13
123	$60.0	$3.4	0.35	$0.71
Total				$1.80

The non group premium level is $0.66 million from the previous slide after rounding (0.38+0.20+0.08), however the premiums have increased to $1.10 million (rounded) by virtue of the base rate off balance. Group premiums have decreased by the same amount, $0.44 million (from $1.15 to $0.71). Rounding differences cause the totals to be off by 0.01

While this example is illustrative only, it clearly shows how the premium charges shift with the interaction of group rating and experience rating. Unfortunately the shift in premiums is not supported by the actual results.

Impact of Past Credibility Changes
$10,000 Split Point example

Loss Ratios by Group Status

Policy Status	Policy Year 2003		Policy Year 2004		Policy Year 2005	
	Current	Plan 10N	Current	Plan 10N	Current	Plan 10N
Group	145.1%	89.0%	131.7%	77.8%	117.7%	75.7%
Non Group	63.8%	79.7%	53.4%	67.7%	56.1%	69.2%
Base Rated	80.2%	106.8%	73.7%	90.0%	83.0%	96.1%
Total	87.5%	87.5%	75.0%	75.0%	75.5%	75.5%

Premium Distribution by Group Status

Policy Status	Policy Year 2003		Policy Year 2004		Policy Year 2005	
	Current	Plan 10N	Current	Plan 10N	Current	Plan 10N
Group	408,225,707	665,258,810	394,258,436	667,095,381	395,388,376	614,350,985
Non Group	897,396,952	718,754,681	1,011,954,561	798,274,973	962,351,017	779,917,369
Base Rated	314,620,176	236,229,343	327,356,187	268,198,830	267,036,124	230,507,163
Total	$ 1,620,242,835	$ 1,620,242,835	$ 1,733,569,184	$ 1,733,569,184	$ 1,624,775,517	$ 1,624,775,517

Notes: The premiums shown are gross of all discount programs, and exclude ACF and DWRF charges;

Impact of Past Credibility Changes
$10,000 Split Point example

The table below shows the premium changes resulting from adopting a 10k split plan relative to the rating plan used in each respective policy year.

The resulting premium changes tell us:

- The rate level imbalance between group and non group improved from 2004 to 2005 with the change in credibility tables from 100% to 95%

- The rate level imbalance is near zero with these policy years modeled on a 10k split plan. This is an approximation only, which excludes the impact of all discount programs, and the annual reconstitution of group membership

Policy Status	Policy Year 2003 Credibility Max of 100%		Policy Year 2004 Credibility Max of 100%		Policy Year 2005 Credibility Max of 95%	
	Group	Non Group	Group	Non Group	Group	Non Group
Current	408,225,707	1,212,017,128	394,258,436	1,339,310,748	395,388,376	1,229,387,141
Plan 10N	665,258,810	954,984,025	667,095,381	1,066,473,803	614,350,985	1,010,424,532
Dollar Change	257,033,103	(257,033,103)	272,836,945	(272,836,945)	218,962,609	(218,962,609)
Percent Change	63.0%	-21.2%	69.2%	-20.4%	55.4%	-17.8%

*Non group includes base rated risks in this table

CAVEATS:

The premiums shown are gross of all discount programs, and exclude ACF and DWRF charges, therefore these percentages and dollar amounts are illustrative in magnitude only, and are not consistent with the full premium calculation.

A rate imbalance would likely still result under a 10k split plan with the current group rules that allow for annual changes in group membership. The premiums calculated are estimates, with the assumption of static group membership.

"True" Premium Cost

True Premium Cost
Base Rates

Base rates will decrease if the average experience rating mod increases

- For example, the average experience mod changed from 0.58 to 0.79 for policy year 2005 in the scenario modeling a 10k split plan. After accounting for base rated business, this results in a 23% decrease to the base rate. This measures the change from a 95% credibility table to a full split plan.

- In modeling the premium impact of moving from the July 2008 85% credibility table to a full split plan, the base rate decrease is 10.6%.

- National comparisons of Ohio WC premiums will benefit as the base rates move towards a more neutral, "base" level. The typical base rate offset for other states is 1% to 2%, whereas Ohio could still have an offset in excess of 25%.

CAVEAT: These examples assume a static group program—the actual results will be less of a base rate decrease with group reconstitution)

True Premium Cost
High level impact

<u>Likely to pay less premium</u>

- Base rated risks

- Non group experience rated risks

- Larger experience rated premium sizes

- Retro and one claim program risks

<u>Likely to pay more premium</u>

- Group rated risks

- Risks removed from group

Impact Mitigation Strategies

Impact mitigation strategy

- Current policyholders in group, and those removed from group, could realize a significant increase in premiums with the adoption of a new experience rating plan and appropriate credibility levels.

- If a group risk currently receives the maximum discount of 85%, with an Experience Mod (EM) of 0.15 as of July 2008, their discount could change to 50% under a split plan, or 50/15= 233%.

- Likewise, a risk removed from group in 2008 could see their EM increase from 0.15 to 1.00 or higher, which is an even larger increase (1.00/0.15=567%)

- These are clearly not stable or predictable premium movements, and could be disruptive to business in general

The capping process considered for Group policies is a three stage premium computation:

1. Compute the new policy premium with the original '85%' credibility table using new payroll and new loss experience
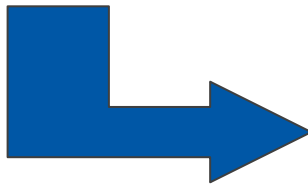
2. Compute the new policy premium using the same information as [1], except use the new experience rating plan/credibility
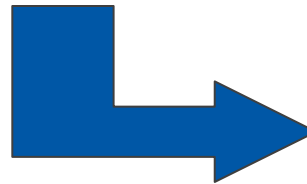
3. Cap the premium increase from the change in plan/credibility only to $500. If the $500 level is exceeded, then cap the increase at 20%.

Impact mitigation strategy
Typical Policy Examples—draft stage

Scenario—Policy Impact examples of moving from current 85% table to a 77% table-Group only

- Captures change in experience rating credibility table only

- Allow premium changes to reach $500, with a 20% cap for increases over $500

- New 77% table is based on a progressive movement towards a 10k split plan curve

Premium Size Range	Average Premium with 85% Table	Average Premium with 77% Table	Average Premium with 77% Table after Capping	Percent Change after Capping
$0-$500 Approx 30,000 risks	$241	$301	$301	25%
$501-$999 Approx 15,000 risks	$721	$920	$920	28%
$1,000-$2,499 Approx 19,000 risks	$1,613	$2,018	$1,969	22%
$2,500-$4,999 Approx 11,000 risks	$3,552	$4,296	$4,081	15%
$5,000-$9,999 Approx 8,000 risks	$7,077	$8,216	$7,941	12%
$10,000+ Approx 12,000 risks	$45,307	$47,374	$47,001	6%

Impact mitigation strategy
Non group policy capping--EM

The capping process considered for non group policies is more basic, and is aimed to reduce the volatility of employers removed from group

1. Compute the new premium for each non group risk using updated payroll, loss experience, and the new rating plan/credibility table.

2. Compare the new experience mod (EM) to the prior renewal experience mod, and cap the increase at 100%.

3. Compute the new premium using the capped EM, and repeat the EM capping in subsequent renewals until the full EM is realized.

Impact mitigation strategy
Typical Policy Examples—<u>draft</u> stage

Scenario—Policy Impact examples of moving from current 85% table to a 77% table--risks removed from group only

- Captures changes in experience rating credibility, in group membership, in payroll and in experience rating history

- Experience Mod change capped at 100%

Premium Size Range	Average Premium with 85% Table	Average Premium with 77% Table	Average Premium with 77% Table after Capping	Percent Change after Capping
$0-$500 Approx 1,300 risks	$199	$719	$300	50%
$501-$999 Approx 500 risks	$736	$2,900	$1,210	64%
$1,000-$2,499 Approx 700 risks	$1,633	$6,270	$2,721	67%
$2,500-$4,999 Approx 600 risks	$3,630	$12,303	$5,963	64%
$5,000-$9,999 Approx 500 risks	$6,970	$20,774	$11,511	65%
$10,000+ Approx 1,100 risks	$55,041	$91,436	$79,883	45%

Impact mitigation strategy
Typical Policy Examples—<u>draft</u> stage

Scenario—Policy Impact examples of moving from current 85% table to a 77% table-non group (excluding rejected group members)

- Captures changes in experience rating credibility, in payroll and in experience rating history

- No caps are applied to decreases in these examples

Premium Size Range	Average Premium with 85% Table	Average Premium with 77% Table	Average Premium with 77% Table after Capping	Percent Change after Capping
$0-$500 Approx 57,000 risks	$212	$202	$203	-4%
$501-$999 Approx 20,000 risks	$721	$681	$681	-6%
$1,000-$2,499 Approx 24,000 risks	$1,604	$1,506	$1,507	-6%
$2,500-$4,999 Approx 13,000 risks	$3,519	$3,304	$3,302	-6%
$5,000-$9,999 Approx 8,000 risks	$7,021	$6,659	$6,585	-5%
$10,000+ Approx 13,000 risks	$77,155	$72,015	$69,047	-7%

Impact mitigation strategy
Aggregate capping Impacts—draft stage

While capping helps smooth the transition to a new rating plan for individual risks, there will also be a premium revenue impact

It is also possible to recapture some or all of the lost revenue through a base rate off-balance, however the capping process would need to be reiterated several times to reach the desired level.

These impacts capture the effects of capping on all policies, group and non group

Only the 2009 policy year includes the actual movement of risks from group to non group, therefore the revenue impacts on 2010 and 2011 are understated.

Year Modeled	Approximate Revenue Impact
2009	$35 Million or 1.8%
2010	$35 million or 1.8%
2011	$20 million or 1.0%
2012	$5 million or 0.25%
2013	Less than $1 million

Recap

Recap
Summary

- The OBWC is considering a split plan structure for experience rating, which is the current form used in almost all other states.

- Initial testing of the 10k single split plan show improved performance across most classes. If group rules remain unchanged, the performance modeled here will be diminished by group membership reconstitution and possible growth in group membership.

- The interaction of group rules with the current experience rating plan credibility has resulted in a large base rate off balance for Ohio. The credibility changes in 2005 helped to reduce the imbalance between group and non group

- Groups do not emulate large employers statistically, even though they are rated as such

- The premium increase mitigation options are effective in reducing premium volatility, however perceptions can vary as to what is reasonable. The potential revenue impact of capping must be considered, not to mention that the systems implementation of premium capping is above average in difficulty.

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