Claims Leakage Case Studies Using Data Mining and Predictive Modeling

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Section 1 – What is Claims Leakage?

What is Claims Leakage?

- Claims Leakage is defined as the difference between the actual claim payment made and the amount that would have been paid if more effective claim payment controls had been in place.

What is Claims Leakage?

How can DM and PM enhance the claims investigation process?

The Solution: Claims investigation for better claim payment controls. Data Mining and Predictive Modeling enhance the claims investigation process

Section 2 – Predictive Modeling

Predictive Modeling

- Predictive modeling can be used to investigate the problem of claims leakage at any stage in the development of the claim.
- The models can also provide guidance in:
    - claim assignment
    - coverage reviews
    - claim investigation
    - negotiations
    - use of litigation
    - recoveries

Predictive Modeling

- Predictive Modeling can also be used to inform the underwriting process and applied in screening new applicants for coverage.

Step 1

- Predictive Modeling Step One – Gather data through questionnaires and use the data to create a predictive model.

Step 1

- External data may be added to the gathered data in order fill in any gaps in the data, such as information on medical costs, the local court systems, and income levels of potential claimants.

Step 2

- Predictive Modeling Step Two – Measure the data development at various intervals (12 months, 24 months, etc)

- This can help to identify factors that lead to excessive increases in claims.

Step 3

- Predictive Modeling Step Three: Review of the data.

- By reviewing what has happened with the claims that have been identified as excessive/possible sources of leakage, the model can determine what needs to be done in order to reduce such occurences in the future.

Section 3 – Case Studies

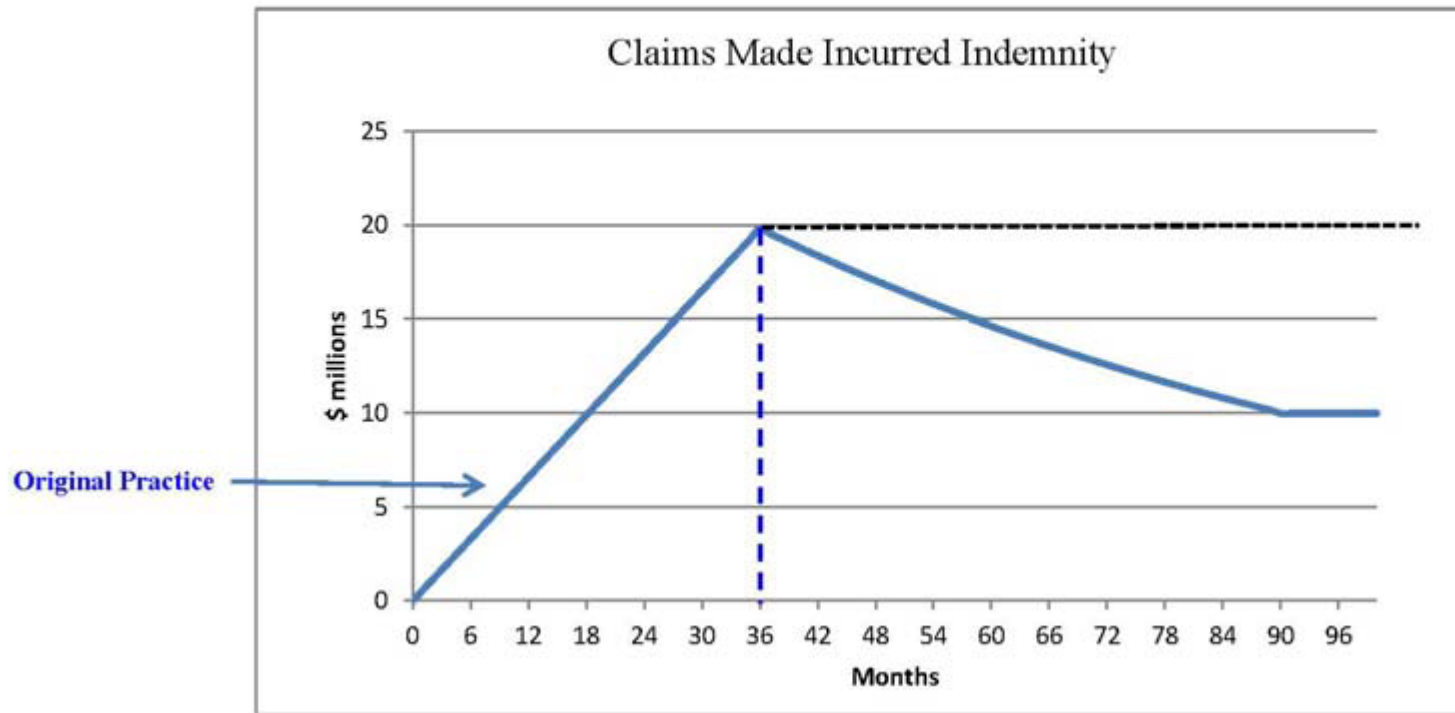# Case Study 1 – The Case of the Redundant Medical Malpractice Reserves

- **Happy Person Insurance Company (HPIC) - Predominantly medical malpractice insurer also writing workers compensation and general liability medical malpractice liability coverage in the State of Bliss**

- **Formed by the Bliss State Medical Society in 1977**

- **Management wanted to ensure adequate claim reserves**

  - **Claims Department developed a unified philosophy of reserving at probable maximum loss (PML) , based on insured's potential liability**

  - **Reserves became mature once investigation and initial depositions were performed and PML was determined**

- **Generally, a mature reserve was reached approximately 24 to 36 months from date of report**

Case Study 1 – The Case of the Redundant Medical Malpractice Reserves

- Claims with payment generally settled well below the case reserve value; also many claims settled for no payment due to jury verdicts, etc.

- Loss adjustment expense ratio to indemnity payment are very low approx 20%

- Win rate of 97.5% on jury trials; they go to trial on 5% of cases

- Claim Department considers results a "win"; actuary sees significant redundancy and thinks this is good

Case Study 1 – The Case of the Redundant Medical Malpractice Reserves

Happy Person Insurance Company Original Claims Reserving Philosophy

Case Study 1 – The Case of the Redundant Medical Malpractice Reserves

- **HPIC hires new president who is very knowledgeable about claim characteristics in the state of Bliss**

- **New president proclaims that HPIC is known as a "soft touch" and historically has overpaid on its medical malpractice claims**

- **Actuary is befuddled due to this strange contradiction in ideas**

- **New president orders a full claims audit and analysis by the actuary to determine the truth**

- **Independent claims auditing firm brought in to perform closed claim audit to test for potential claims leakage**

- **Actuary uses predictive modeling and benchmarking analytics to review historic claim settlements for potential claims leakage**
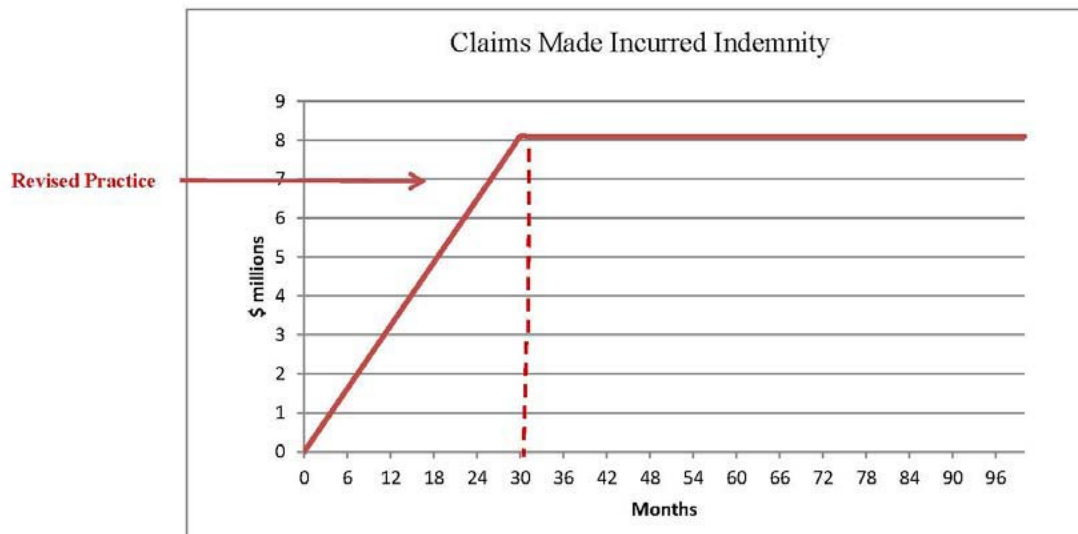
Case Study 1 – The Case of the Redundant Medical Malpractice Reserves

- **Data mining and analysis performed on various claim statistical fields**
- **Actuary benchmarks settlements with state of Bliss industry data from competitor rate filings, NPDB, etc.**
- **Actuarial analysis and claims auditing results indicate that HPIC was overpaying on all types of claims**
  - **i.e., $400K claim settled for $300K - $100K "win" for company**
  - **Original $400K reserve <u>could</u> have been set at $225K and settled for that amount**
  - **Indicates $75K of claims leakage (25%)**
- **A new claims reserving and settlement philosophy was implemented as a result of the analysis**
  - **Include probability of payment in formula for reserve setting**
  - **More LAE will be paid; more cases taken to trial**

Case Study 1 – The Case of the Redundant Medical Malpractice Reserves

- **Company implemented new philosophy, then performed a second review of claims experience**
  - ➢ **Claim reserves now peaked at 30 months**
  - ➢ **Total claim cost at that point held constant, as opposed to decline exhibited under the previous claim handling philosophy**

Happy Person Insurance Company Revised Claims Reserving Philosophy

Case Study 1 – The Case of the Redundant Medical Malpractice Reserves

- See comparison of claim handling philosophies on next slide

- Original philosophy resulted in significant claim savings as redundancy was burned off over time

- Burnoff took five years to complete

- Under new philosophy, final value of claims occurred two years earlier, and resulted in additional savings of $2 million, or **20% on indemnity payments; partially offset by additional LAE**

- After implementation of new claims handling philosophy, actuary's review indicated a much smaller redundancy

- "Claim leakage gap" eliminated

- Company's budgeting process improved

- More favorable perception of management by outside reviewers

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Case Study 1 – The Case of the Redundant Medical Malpractice Reserves

Happy Person Insurance Company Original and Revised Claims Reserving Philosophies
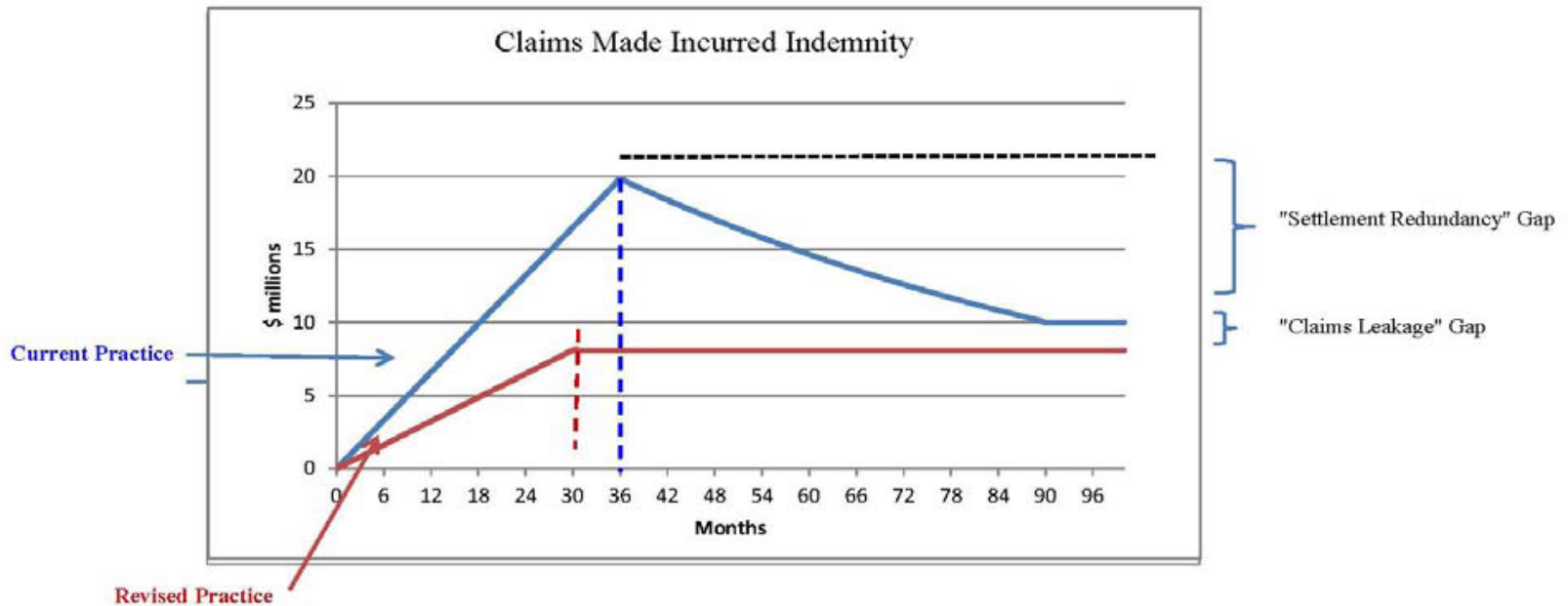
Case Study 2 – The Case of the Orphan Files

- **Big State Medical Liability Insurance Company (BSMLIC)**

- **BSMLIC formed by the Big State Medical Society in 1978**

- **BSMLIC writes medical malpractice for physicians on a claims made policy form**

- **BSMLIC has expanded its business to two additional states - small contiguous state #1 and small contiguous state #2**

- **BSMLIC has four regional claims offices, located in each quadrant of Big State**
  - **Northeast Claims Office handles Northeast quadrant of Big State and small contiguous state #1**
  - **Southwest Claims Office handles Southwest quadrant of Big State and small contiguous state #2**

Case Study 2 – The Case of the Orphan Files

- **BSMLIC follows many best practices in the claims handling and actuarial areas**

- **BSMLIC has a Loss Reserve Committee that consists of top management**
  - **Chief Actuary Cassandra Goodcalc performs a quarterly reserve analysis and presents it to the Loss Reserve Committee**

Case Study 2 – The Case of the Orphan Files

Ms. Goodcalc presents the following loss reserve analysis results to the Reserve Committee with data as of June 30, 2009:

Report Year	Actuary's Indicated Indemnity Ultimate at 6/30/09 ($000)
1986	31,104
1987	32,660
.	.
.	.
2007	86,656
2008	90,988
2009	47,770
Total	1,336,438
2008 and Prior	1,288,669

Case Study 2 – The Case of the Orphan Files

At the October Reserve Committee meeting, using data evaluated as of September 30, Ms. Goodcalc's estimates increased slightly from the ones as of June 30. Ms. Goodcalc presents the following loss reserve analysis results to the Reserve Committee using data as of December 31, 2009:

Report Year	Actuary's Indicated Ultimate at 6/30/09 ($000)	Actuary's Indicated Ultimate at 12/31/09 ($000)
1986	31,104	31,104
1987	32,660	32,660
.	.	.
.	.	.
2007	86,656	94,818
2008	90,988	99,520
2009	47,769	104,458
Total	1,336,438	1,458,036
2008 and Prior	1,288,669	1,353,578

Case Study 2 – The Case of the Orphan Files
Big State Medical Insurance Company
Reserve Review as of December 31, 2009

What happened?

	Indic. Ult. Indem.	Reserve @ 6/30/09
6/30/09	$1.289 Billion	$124.04 Million
12/31/09	$1.354 Billion	$188.95 Million
Difference	$65 Million	$65 Million
Pct. Diff.	5.0%	52.3%

Case Study 2 – The Case of the Orphan Files
Big State Medical Liability Insurance Company
Reserve Review as of December 31, 2009
Average Per Outstanding Claim

Year	3 Mos.	6 Mos.	9 Mos.	12 Mos.	15 Mos.	18 Mos.
2006	17,390	20,764	21,891	26,243	35,332	45,195
2007	18,260	21,803	22,986	27,555	37,099	47,454
2008	19,173	22,893	24,135	28,933	38,954	49,827
2009	20,131	24,037	25,342	30,379		
Ann. Chg.	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%

Case Study 2 – The Case of the Orphan Files
Big State Medical Liability Insurance Company
Reserve Review as of December 31, 2009
Incurred Development Tests (in $000)

Ms. Goodcalc shows the following exhibit to the Reserve Committee and explains that historically she had used the 5 year hi-low, but noticing a change in the development factors, she then switched to the two-year weighted to pick up the latest trend in the data. The Reserve Committee members were angry and began asking many probing questions.

Year	2 Yr. Wtd.	3 Yr. Wtd.	5 Yr. Wtd.	3 Yr. Avg.	5 Yr. Avg.	5 Yr. Hi-Low
1986-2004	…	…	…	…	…	…
2005	85,801	83,741	82,189	83,535	81,881	79,457
2006	90,298	87,974	86,222	87,742	85,881	83,157
2007	94,818	92,264	90,338	92,008	89,966	86,980
2008	99,520	96,781	94,715	96,507	94,318	91,120
2009	104,458	101,559	99,372	101,269	98,953	95,570
2008 & Prior	1,353,578	1,336,129	1,322,920	1,334,381	1,320,345	1,299,712

Case Study 2 – The Case of the Orphan Files

- **Senior management questions the internal actuary**

  - **"That's what the numbers show"**

- **Hire outside consulting actuarial firm to perform second opinion**

  - **Perform similar calculations**
  - **Results same as internal analysis**

- **Second outside consultant hired**

  - **Same answers as first two reviews**

- **Third outside consultant hired**

  - **Requested detailed individual claim listing of all outstanding claims as of each quarter of 2009**
  - **Examined claim histories using predictive modeling and data mining**
  - **Determined that claims generally settled with a 40% redundancy in the past**
  - **As of third quarter of 2009, observed redundancy decreased**

Case Study 2 – The Case of the Orphan Files

- **Additional analysis performed on claims**
  - ➢ **Able to group claims into two distinct groups**
    - **First group continued to maintain 40% redundancy on settlement**
    - **Second group had a redundancy of only 20% and had settled very recently, starting in July of 2009**
- **Second group of claims came 100% from the Northeast Claims Office**
- **Detailed interviews held with Claims Department**
  - ➢ **Information on closing of claim office comes to light**
  - ➢ **Northeast Claims Office closed to save $1 million in expense on July 1, 2009**
  - ➢ **Northeast Claims Office pending claim files become "orphan" claim files, and are transferred to the remaining three claims offices**
  - ➢ **Remaining claims adjusters resentful of added workload**
  - ➢ **Pushed to get extra case load back to prior levels by settling "orphan" claims without the normal level of care**

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Case Study 2 – The Case of the Orphan Files

- **Management reemphasizes need to follow prescribed practices when settling claims**

- **Test of reserve redundancy conducted six months later (6/30/10)**

- **Overall redundancy of recently closed claims back to 40%**

- **Claims leakage during the period 7/1/09 through 3/31/10 was measured to be approximately $14 million out of total paid losses of $56 million, or approximately 25%**

Case Study 3 – The Case of the Stair-Steppers

- One State Medical Liability Insurance Company (OSMLIC)
- OSMLIC was formed in 1977 by the One State Medical Society
- OSMLIC writes primarily medical malpractice insurance for both physicians and other healthcare entities, and also writes workers' compensation and general liability insurance on hospital risks *(the following example pertains to workers comp medical payments, and it can also pertain to DCC payments for MPL)*
- One State has two large cities, one in the southeast corner and one in the northwest corner, and the remainder of the state is rural

Case Study 3 – The Case of the Stair-Steppers

- The Problem: In mid-2003, Predictive modeling techniques and data mining algorithms identified deterioration in the workers' compensation medical line of business.
  - Average outstanding losses per claim by class were increasing rapidly by maturity over many maturities.
  - Average paid and incurred losses per claim by class were increasing at rates much higher than the industry.
  - Incurred loss development patterns began to stretch out, causing development factors to increase over time.
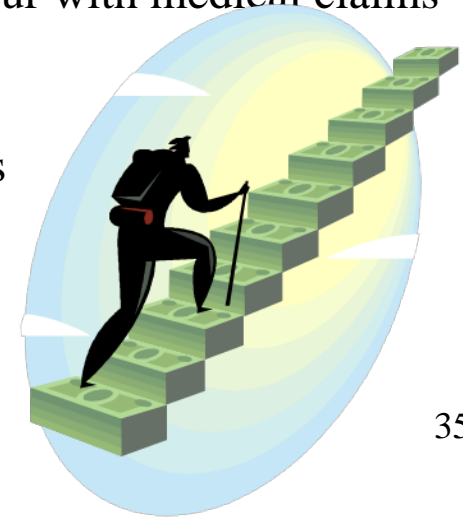
Case Study 3 – The Case of the Stair-Steppers

- In Early 2004, the insurer retained a claims consultant to review the practices and methods of the claims department, as well as of all open claims. This review identified the following issues:

1. Extremely long claim reporting lag
2. Limited medical management "best practices" used
3. Too many poor quality physicians and providers on the medical current panels
4. Lack of partnership with employer on return to work

Case Study 3 – The Case of the Stair-Steppers

5. Adversarial model of claims handling resulting in 80% of lost time claims being litigated
6. Extremely low success rate on litigated cases
7. **Stair-step reserving -** Stair Stepping is the process of setting an initial case reserve, and periodically raising the reserve amount when partial payments hit or exceed the existing case reserve(generally this can occur with medical claims and DCC .

8. No red flag methodology for repeaters and problem claims

Case Study 3 – The Case of the Stair-Steppers

- The Solution: The insurer implemented an injury management model which is considered to be best practice in workers' compensation claims handling. This model focuses on care and concern for injured workers in order to provide the best medical care for a full recovery and return to work. The idea is to reduce the number of claim denials and the number of litigated claims since non-litigated claims cost significantly less than litigated claims.

Case Study 3 – The Case of the Stair-Steppers

- The strategy behind this model is to reduce the number of claim denials and the number of litigated claims since non-litigated claims cost significantly less than litigated claims.
- The claims consultant retrained claim staff in all aspects of claims management. A review of all recent open claims was performed with an increased emphasis on claims settlement.

Case Study 3 – The Case of the Stair-Steppers

- The claims staff was instructed to focus on closing and containing higher exposure lost time and complex medical claims using action plans including Medicare set asides (MSA), compromise & release (C&R), aggressive legal intervention or full investigation.
- The insurer established claims management controls including director approval required for increases to reserves above $20,000, new claim denials, new litigation, and all independent medical exams and surveillance. Case reserves were set to the most probable outcome.

Case Study 3 – The Case of the Stair-Steppers

- The Result: Within a year of establishing these new claims department processes, the insurer experienced a decrease in the number of lost time days on open claims in 2004.
- The average number of litigated cases has now dropped from an average of 18 per month in 2002 to 0 in the first half of 2004. Legal expenses are significantly lower.
- Savings were estimated to be overall approximately 15% of medical payments and 20% of loss adjustment expenses on medical claims.

Section 4 – Conclusion

Conclusion

- Claims Leakage is often a result of not having a clearly delineated policy for handling and settling claims. Once a policy has been set within a company, it should be closely monitored for deviations.

- Claim settlements must be in alignment with both the policy terms and the facts of the claim and not inflated for one reason or another. Bear in mind that identifying leakage requires data mining, along with the review of individual files. Only at this granular level does it become possible to determine with confidence whether settlement values have been in alignment with the facts of the claim and not inflated for one reason or another.