



# APPENDIX 2H – Fraud Prevention – Submission to Measurement & Monitoring Committee



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# **Fraud Deterrence Savings Analysis – 2003**

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## **Fraud Prevention & Investigations**

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## **Executive Summary**

The following report presents a second look at the effects of the Fraud Prevention and Investigations department (FPI) in deterring claims fraud. The report studies the deterrence effects of two overlapping groups of individuals flagged by FPI:

- Individuals involved in a claim investigated by an SIU officer and recorded in the Insurance Crime Analysis Program (ICAP) database.
- Individuals who have or are suspected of having a history of fraudulent activity and are listed on the “08” Warning System.

We estimate that, as a direct result of SIU officer investigations and “08” warning list deterrence, ICBC saves approximately \$21 million per year in reduced claims reported. These savings come from a reduction of 6,163 claims amongst listed individuals each year. Direct savings resulting from the SIU investigations themselves are excluded. Only savings from a reduction in the number of submitted claims are included in the estimates. This study does not specifically address the indirect impact of fraud prevention amongst the public either.

Savings have been calculated conservatively in order to achieve a high degree of confidence. Therefore, it is expected that the actual savings as a result of having a FPI department significantly go beyond what is estimated in this study.

## **Objective**

Quality Planning Corporation (QPC) completed the initial study on FPI deterrence savings in 1999. The analysis was done in San Francisco with the data supplied by ICBC. Although the analysis was believed to be accurate, all the assumptions were not fully documented nor the results verified by ICBC.

The objective of this report is to redo the analysis using current data, verify and document the assumptions, calculate new deterrence savings, and compare results to the previous study. As well, we want to identify further areas where improvements may be made to the model.

# Outline of the Document

This report is organized into three major sections. The first section describes the databases used, the conception model, assumptions, and results of the previous 1999 study.

The second section describes the analysis results for the five defined groups as well as a control group representative of the general population. Appropriate tables and graphs are used in each group to describe the results. As well, a written interpretation is provided separately in each subsection.

The third section summarizes the results of the analysis, and also provides concluding remarks and recommendations for future improvement of the results.

# Section 1 - Background

## Conceptual Model

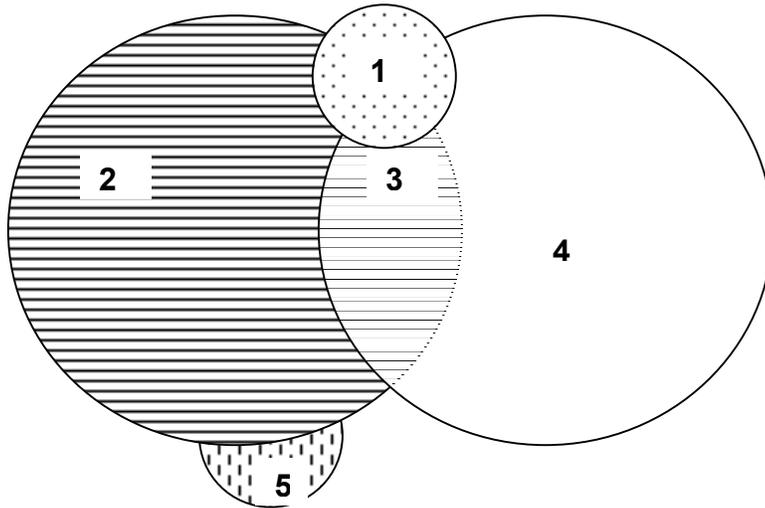
Fraud Prevention and Investigations (FPI) maintains two databases:

1. Individuals involved in a claim investigated by an SIU officer and recorded in the Insurance Crime Analysis Program (ICAP) database. This would include all MD (Material Damage) and BI CIT (Bodily Injury Claims Investigation Teams) files as well as files initiated by the Provincial Investigation Team (PIT), Licensing, ATTF, and Intelligence/Assist files. However for the purposes of this analysis, we only include MD and BI investigation files. We do not claim deterrence savings for all other file types in this study, and the statistical results are not subject to the regression-to-mean problem as people are not selected based on the frequency of claims.
2. Individuals suspected of having a history of fraudulent activity or requiring a closer look when they report another claim are placed on the “08” Warning System for a specified period of time. Individuals can also be entered on the “08” Warning System for other reasons:
  - committed supplier fraud
  - discovered via a non-SIU fraud investigation
  - involved in other criminal activities known to FPI.

The two groups overlap in that some individuals are in both groups. For purposes of this analysis, an individual can only be counted in one of the groups defined below to avoid double counting.

## **Groups Considered**

### **ICAP Investigations    “08” SIU Warnings**



Fraud deterrence resulting from FPI investigations can be envisioned by studying the above diagram. All individuals in the Insurance Crime Analysis Program (ICAP) database, or on the “08” SIU Warning System database can be broken down into five mutually exclusive groups. We attempt to measure the deterrence effects of investigations according to the above numbered groups:

1. Deterrence from future fraud of individuals caught and accused in claim fraud resulting from an ICAP investigation. People placed on the accused list can come from ICAP only, both ICAP and “08”, or just “08” itself.
2. Deterrence of individuals involved in an FPI fraud investigated claim, but not added to the “08” Warning System and not accused of fraud.
3. Deterrence of individuals added to the “08” Warning System as a result of evidence of fraud found in an ICAP investigation, but never directly charged with fraud.
4. Deterrence due to individuals currently listed on the “08” Warning System who were not involved in an ICAP investigated claim.
5. Deterrence of individuals driving vehicles on policies involved in an ICAP investigated claim, but not included in the first three groups. This will

measure the deterrence on other family members and friends who drive the vehicle of an investigated individual.

To be in one of the groups is not proof of fraud for that individual. Sometimes investigations resulted in a finding that the claim presented was perfectly legitimate. Some individuals involved in claims where fraud was present did not take any part in the fraud.

## **General Approach**

By investigating, intervening, and interviewing people involved in an ICAP investigation and/or placed on the “08” warning system, FPI can influence their future claiming behavior. People placed on the “08” Warning System must go to a claim centre rather than being handled over the phone. As well, they are not eligible for other services such as Express Repair, Express Glass, and BI by Phone. People involved in an ICAP file normally know within 30 days of the file being set up that they are being investigated. People placed on “08” Warning System because of an ICAP investigation know they are being monitored. Others placed on the “08” Warning System because of suspicions of committing fraud may or may not know they are being monitored until they report future claims. They may notice a difference in the service they previously received in that they are no longer handled by TCD or qualify for express repair. Questioning and details they have to provide may be more intense. People stay on the “08” Warning System for a fixed period of time; normally 3 years for MD and 5 years for BI, and indefinitely if accused of fraud. When their expiry date is reached, their claiming behavior is reviewed for the time period they were on the “08” system. If their claiming record has improved, they are removed. Those with a continual bad claiming history may be extended for another fixed period of time.

The method for measuring fraud deterrence savings examines the overall claiming behavior of the individuals in the five groups for periods up to 48 months before and after the FPI investigated claim or when the individual was placed on the “08” Warning System. In tracing their claiming behavior, we exclude the investigated claim itself. Savings for these claims are captured through the CIT program.

Many of the investigations have taken place over the last four years, so it is not possible to track the behavior of associated individuals for the full four years. To account for this fact, we calculate claim rates for each group by month rather than count the absolute number of claims. For example, if we were able to trace post-investigation claims for a given individual for only 12 months we included them in the rate calculation for the first 12 months but excluded them for the subsequent 36 months. The difference in claiming rates before and after intervention is what we attribute to claims saved. Multiplying by the number of individuals involved in each group times an average claim cost determines the deterrence savings.

To ensure that the general driving public does not exhibit this same change in claiming behavior, a random sample of driver's licences and their associated claims were studied in the same manner as above. The claiming rate behavior before and after an artificially picked claim was essentially flat. This indicates that the claiming rate changes that we have observed reflect the actual claim rate changes and their consequent savings.

## **Assumptions**

The major assumptions used in this analysis are described in the following paragraphs. The assumptions establish a basis for a conservative analysis:

- FPI can have an influence over the claiming behavior of offenders or possible offenders for up to 4 years. Had FPI not intervened, we expect that offenders would continue to defraud the corporation for at least another four years. Even with intervention, it takes several years before the different groups conform and have a claiming rate similar to the general population. However, in reality the influenced people may only restart their fraudulent behaviour if they feel that they are not being watched any more. Since investigated people do not know when they have stopped being watched, the impact of the investigations may even go beyond the 4 years. Such continuation of behaviour is not taken into account, adding to more reliability of the results.
- We only consider ICAP files marked as MD or BI. An ICAP file may involve one or more claim files. A claim file may be involved in more than one investigation. We eliminate all duplicate claim files so that we only consider each claim at most once. Finally, we only look at those claims that have a driver's licence attached to them. Approximately 20% of the ICAP claim files or 6,000 claims do not have a driver's licence attached to them. These are mostly older comprehensive claims and special coverage claims. These are not included in the analysis. This also results in more conservative estimations.
- We determine the claims rate before and after intervention by extracting all claims attached to the driver's licences. As well we capture the issuance date of driver's licence and current status.
- Although some of the investigations are for passengers involved in bodily injury claims, we only track the claims attached to the driver of the vehicle. The driver's licences of the passengers are not captured in the claim file.
- For groups involving ICAP claims, we only used accused drivers or drivers involved in an ICAP file who were added to the system over the last eight years - January 1994 to June 2002 to determine the change in claim rate. However, only those added over the last four years are used for determining deterrence savings.

- All people on the “08” Warning System are considered active. All are used to determine the change in claim rate and contribute to deterrence savings. “08” records are currently not marked as to which FPI unit placed them on the system.
- Not all individuals have been licenced in the Province for the full 48 months before and after the claim being tracked. For those investigations that have taken place within the last four years, it has not been possible to track the behavior of associated individuals for the full four years. To account for this fact, we calculated claim rates for the group by month rather than by the absolute number of claims. The claim rate is calculated by counting the number of claims that occurred in that month divided by the number of driver’s licences that were in effect that month. For example, if we were able to trace post-investigation claims for a given individual for only 12 months we included them in the rate calculation for the first 12 months but excluded them for the subsequent 36 months. Further, in tracing claiming behavior we excluded the investigated claim itself. We are interested solely in the deterrence and not the detection effects of FPI which are accounted for in the CIT savings.
- In measuring the difference in claiming rates before and after intervention, we ignore the time frame 6 months before or after the intervention date as we don’t have knowledge of the immediate events. Thus we compare the claiming rate before intervention using the time period –6 to –18 months as compared to the period after intervention of 6 to 18 months. This would also result in a more conservative estimation, as in most cases the before claim rates represent a slightly increasing trend, and the after claim rates tend to decline sharply.
- In tracing claiming behavior, we excluded the investigated claim itself. Adding the savings associated with the investigated claim, the overall savings would be significantly higher than what is stated in this report.
- We only count a driver’s licence and it’s associated claims for a given month if the licence is active.

## **Previous Analysis – 1999**

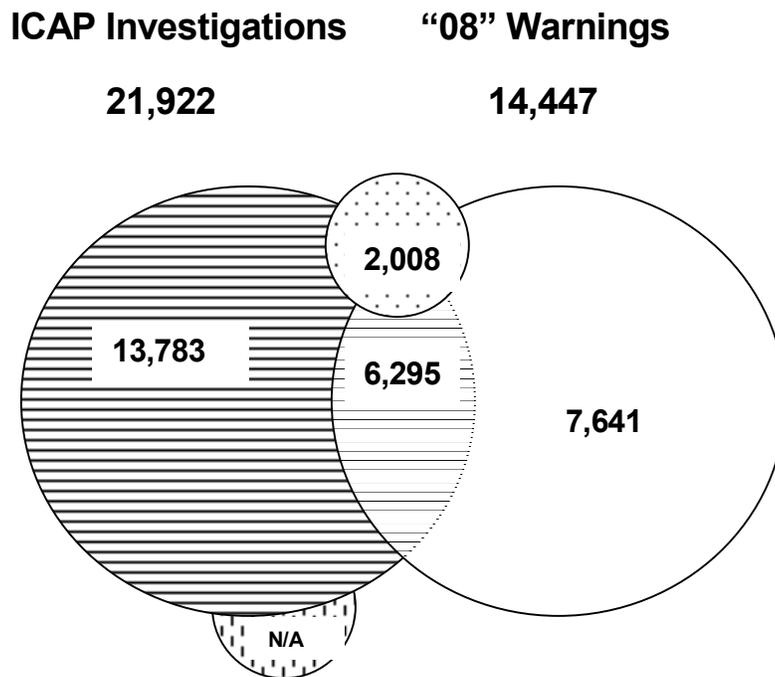
Based on statistical analysis, and after all conservative adjustments, the savings for the five groups were calculated, as illustrated in Table A. The total savings were estimated at over \$21 million. The largest savings came from Group 2 which contains the largest group of drivers. Also, the total savings associated with the accused drivers was a small portion of the total savings, but the claims of the accused drivers represented the largest savings per claim.

<b>Group</b>	<b>Description</b>	<b>Claims Saved</b>	<b>Dollars Saved</b>
1	ICAP Accused Drivers	117	\$321,939
2	ICAP minus ("08" + Accused)	1,955	\$6,713,459
3	ICAP & "08" minus Accused	1,654	\$5,976,007
4	"08" but not ICAP	1,620	\$6,520,280
5	Family Ties	817	\$1,812,923
	Total Savings	6,163	\$21,344,608

Based on the results of the past analysis, the Measuring and Monitoring Committees (M&M) in 1999 approved savings of \$15.0 million per year. The decision was founded based on the subjective assumption that 25% of savings was overlapping with other fraud and road safety programs.

## Driver's Licences in each Group

The following figure shows the number of driver licences that were available for analysis. In summary 21,922 drivers licences were used in the analysis from the ICAP database. Also, the FPI "08" Warning System contained 14,447 driver licences. There were 2,008 accused drivers whose claim patterns were investigated. The 2,008 accused can be subdivided into three groups as follows: 1,497 from ICAP only, 347 from both ICAP and "08", and 164 from "08" only.



As described in the following sections, only a fraction of these available samples were used for the estimation of savings. Out of 2,008 accused drivers, only 391 were actually used for savings calculation. Out of the 21,922 and 14,447 drivers of ICAP and "08" Warning databases, the claiming patterns of 9,815 and 12,472 respectively were used in the analysis.

## Section 2 - Analysis

### Group 1 - ICAP Accused Drivers

The first subgroup we examined consisted of individuals who had been accused of fraud on an FPI investigated claim. We used the claiming records for people accused between January 1, 1994 and December 31, 2001 to determine the claim rate change. For these individuals, we examined claim rates, by month, for up to the 48 months before and after the investigated claim that placed them on the accused list. Deterrence savings are calculated only for those accused added to the system in the last four years.

Exhibit 1 presents the monthly claim rates for individuals accused by FPI of fraud four years prior and post investigation. A claim may be a single event (e.g. single vehicle crash or theft of auto) or part of a larger incident or accident involving multiple claims (multi-vehicle crash). Each claim may involve multiple KOLs (kinds of loss). In calculating the claim cost, we summed all the KOLs associated with the claim. The exhibit shows significantly lower claim rates for accused individuals after investigations. Because generally several months pass before the SIU investigation is underway and the claimant becomes aware of the investigation, we exclude the information in the 6 months before and after the investigated claim. Therefore to calculate the change in annual claim rate due to the investigation, we used the period 6 to 18 months before and after the date the investigation started.

**Exhibit 1: Claim Frequency for Accused Driver's Licenses by Time Since First Investigation**

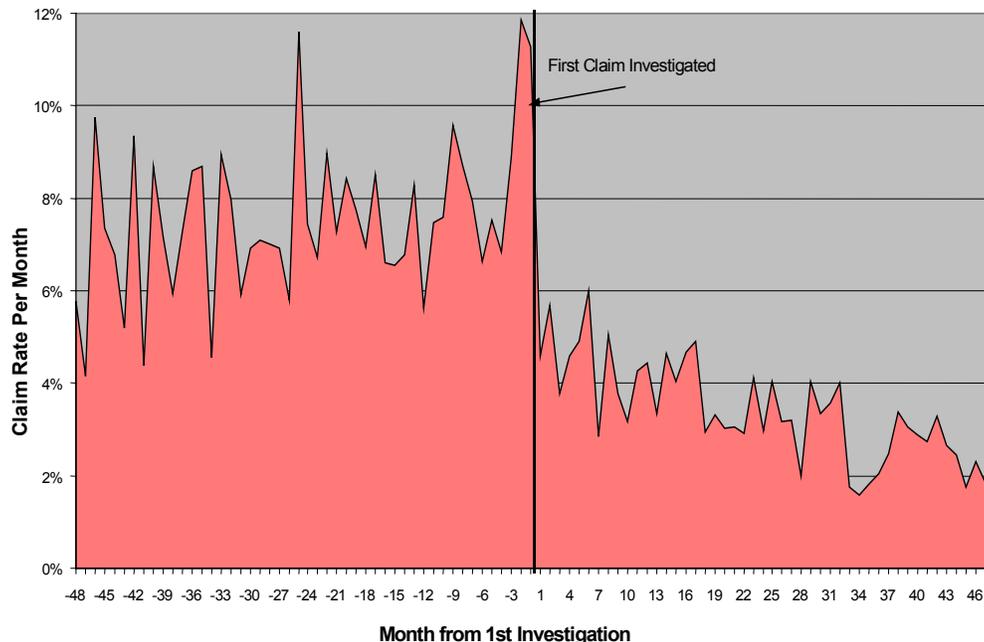


Exhibit 1 exhibits a more erratic pattern than the graphs for the next three groups because of the lower number of driver licences used. There is a slight upward trend in claims rate by accused individuals before discovery. Claims drop sharply after the investigation begins and continues to drop over the next 4 years.

Table 1 summarizes the results for the accused subgroup. As seen in the table, claim rates of accused drivers decreased by about 48% in the 6 to 18 months following the start of investigation compared to the 6 to 18 months before. Average claim costs also decreased from \$5,120 to \$4,021 for the same periods before and after. Overall savings for the drivers listed in the last four years was estimated at slightly below \$1 million.

<b>Table 1: Effects of Investigation on Accused Group</b>	
Driver's Licences used in determining claims rate (last 8 years)	633
Average cost per claim before discovery	\$5,120
Average cost per claim after discovery	\$4,021
Annual claim rate before discovery (-6 to -18 months) <sup>1</sup>	0.99
Annual claim rate after discovery (6 to 18 months)	0.51
Percent Reduction in Annual Claim Rate	48%
Number of Driver's Licences Listed (last 4 years) <sup>2</sup>	391
Annual Reduction in Claims	186
<b>Group 1 Savings Estimate<sup>3</sup></b>	<b>\$952,320</b>

The reduction in claims is calculated by multiplying the number of accused listed in the last 4 years times the difference in the annual claim rates before and after start of investigation; namely,  $391 \times (0.99 - 0.51)$ . Results may not match exactly as we only display the annual claim rate to 2 decimal places above.

It is interesting to note that average claim severity *decreased* after discovery. We speculate that this is the result of many of the recently added accused being involved

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<sup>1</sup> Claim rate is defined as the number of claims per year per accused driver. It is calculated by adding up the claims for the 12 months divided by the average number of driver's licences in effect for the year.

<sup>2</sup> Only 391 accused in the last 48 months out of the total of 2,008 are used for savings estimates.

<sup>3</sup> The savings value is based on a simultaneous estimate. That is, at the current time, at the current rate of savings, the saving for the accused sub-group is \$952,320 per year. Rate of savings does not correspond to the calendar year unless the rate remains constant.

in staged accident rings. Injury claims are down compared to the before period while legitimate material damage claims continue to be presented. The correct claim cost to be used in calculating deterrence savings will be discussed in the following sections. For now, we will use the before discovery claim cost as the estimated value of deterred claims. The basic assumption is that if we hadn't intervened, this is what the claims would have continued to cost excluding factors such as the cost of inflation.

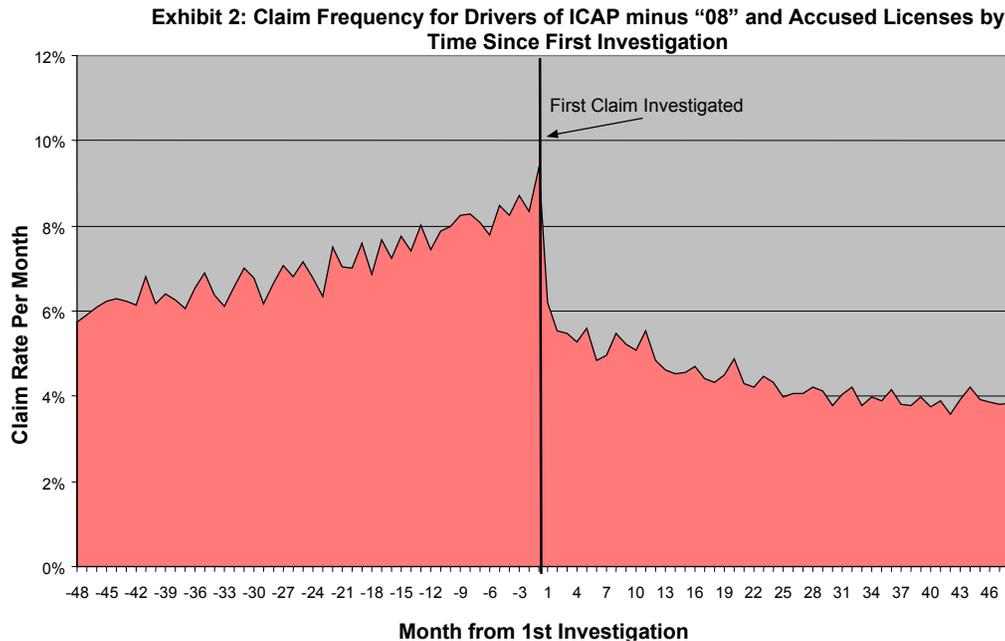
Although 2,008 accused individuals are included in Exhibit 1, savings calculations were made on the basis of only 391 individuals who have been accused in the last four years. Truncating all deterrence effects at four years again results in downwardly biasing the savings estimates. We did this because the data after four years becomes unstable and cannot produce reliable estimates.

There is good reason to believe that the savings estimate shown significantly underestimates actual savings. This is because we were able to track only those claims where the accused was listed as a driver. Several of the accused were not listed as drivers in the claims investigated. They could have been an injured passengers or involved in a comprehensive claim such as a stolen vehicle where TCD did not capture a driver licence.

## Group 2: ICAP but not “08” Warning List

The second group in our deterrence analysis consists of individuals involved in an SIU fraud investigated claim that were neither accused nor entered on the warning list. This is by far the largest group of driver licences since ICAP files have been logged electronically since 1990.

The analysis for this group was done identical to the prior group. Exhibit 2 displays the claim trends. As before, we observe a strong upward trend in claims before the SIU initial intervention. After discovery, claims again drop off dramatically. The claim rate just before the investigation is close to 9% but goes back to the more normal rate of 4% after 2 years. The full effect of the investigation appears a few months after the investigation begins.



Translating these results into savings produces Table 2. As shown by the table, a reduction of approximately 37% in the annual claim rate is estimated. The average claim cost increased from \$3,457 before to \$3,683 after investigation. The increase is likely due to both inflation and less smaller claims. The overall saving for the 4,069 investigated individuals in the last four years was estimated at slightly less than \$5 million.

<b>Table 2: Effects of Investigation on ICAP minus "08" and Accused</b>	
Driver's Licences used in determining claim rate (last 8 years)	8,000
Average cost per claim before discovery	\$3,457
Average cost per claim after discovery	\$3,683
Annual claim rate before discovery (-6 to -18 months)	0.94
Annual claim rate after discovery (6 to 18 months)	0.59
Reduction in Annual Claim Rate	37%
Number of Driver's Licences Listed (last 4 years) <sup>4</sup>	4,069
Annual Reduction in Claims	1,428
<b>Group 2 Savings Estimate</b>	<b>\$4,938,181</b>

The significant reduction of 37% for Group 2 is reasonable when compared to the 48% reduction for the accused group. We are still dealing with experienced people who are heavily involved in fraudulent claims. Outside of the accused group, this group represented the highest claim rate before the investigation. The investigation caused them to change their claiming behaviour to more normal levels. Therefore, we have demonstrated and can conclude that FPI investigations can avert the behaviour of unlawful people from committing automobile insurance fraud.

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<sup>4</sup> Number of licences reflects only individuals involved in an ICAP investigation during the last 48 months.

## **Group 3: ICAP and “08” Warning List**

The third subgroup we examined consisted of individuals involved in an ICAP claim and who were also added to the “08” Warning System but who were not accused of fraud. This group would encompass fairly recent ICAP investigations. The outcome of the investigated claim may have been to pay it, but the SIU officer was still suspicious of wrongdoing but couldn’t prove it. The person was placed on the “08” Warning System so that FPI can monitor future claims that are presented. The same analysis procedures (as used with the last two groups) were applied to this subgroup.

Exhibit 3 presents the claim rate trend for Group 3. The effects shown are very similar to those found in the previous two groups. After a few months delay, average claims per month significantly declined, but not as much as the previous two groups.

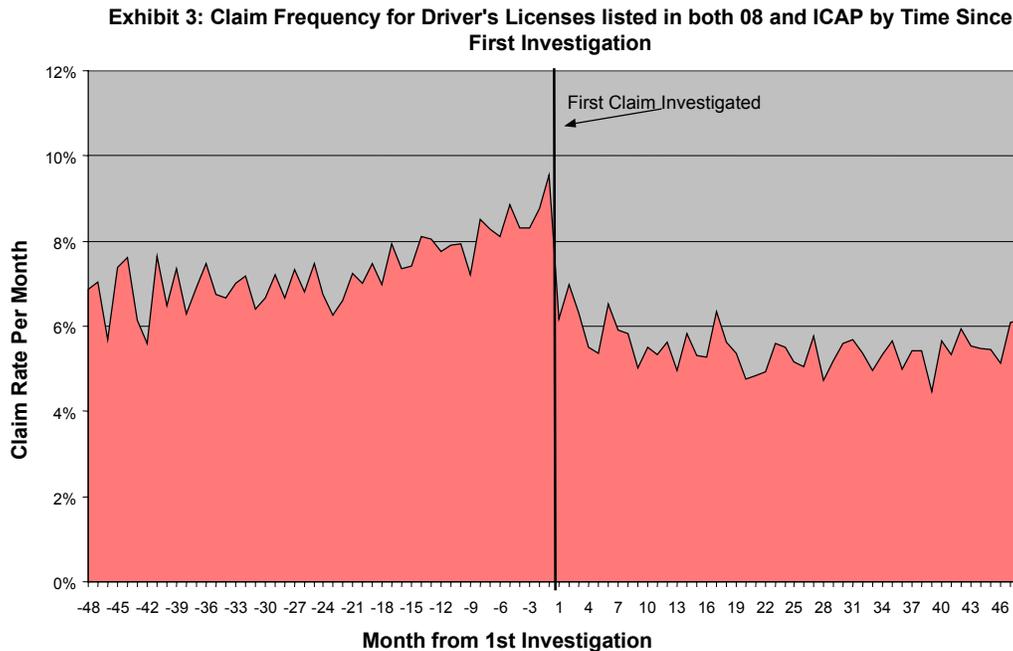


Table 3 presents the savings estimates. As seen in the table, the analysis of 6,457 drivers showed a reduction of approximately 28% in the annual claim rate. However, the average cost per claim increased which may indicate a higher reduction in the smaller valued comprehensive claims. The overall saving for drivers who belong to this group and were added to the “08” Warning System in the last 4 years was approximately \$4.7 million.

<b>Table 3: Effects of Investigation on both “08” Warning and ICAP</b>	
Driver’s Licences used in determining claim rates (last 8 years)	6,457
Average cost per claim before discovery	\$3,833
Average cost per claim after discovery	\$4,291
Annual claim rate before discovery (-6 to -18 months)	0.75
Annual claim rate after discovery (6 to 18 months)	0.54
Reduction in Annual Claim Rate	28%
Number of Driver’s Licences Listed (last 4 years) <sup>5</sup>	5,746
Annual Reduction in Claims	1,225
<b>Group 3 Savings Estimate</b>	<b>\$4,696,119</b>

As with the accused subgroup, savings estimates for the ICAP and “08” warning list are systematically low. Only individuals currently on the list are included, although it is doubtlessly unduly pessimistic to assume all deterrence ends the day they are removed from the warning list.

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<sup>5</sup> The base number for this estimate is the number of currently active warning list driver’s licences which were involved in an ICAP claim over the past 4 years. As will be discussed below, a large number of warning list individuals are not involved in an ICAP claim. Furthermore, some “08” warning list individuals do not have a driver’s licence.

## **Group 4: “08” Warning List but not ICAP**

In the last group, we considered the claiming behavior of ICAP investigated individuals who were also listed on the FPI “08” Warning System.

Here we consider those individuals currently listed on the “08” Warning System who were not listed as a driver on an ICAP investigated claim. Individuals can be entered on the warning system in a variety of ways: they may have committed vendor fraud and been discovered by PIT, they may have been discovered in a non-SIU fraud investigation, or they may have been involved in other criminal activities known to FPI. None of these paths would have resulted in an ICAP claim file.

	<i>Number</i>	<i>Percent</i>
Not in ICAP	7,805	54%
In ICAP	6,642	46%
Total	14,447	100%

Table 4A illustrates the percentages of “08” drivers who were directly involved in an SIU investigation (in ICAP) or who were simply placed on the system because of a suspicious in presenting a questionable claim. As displayed in Table 4A, only 46% of all warning list drivers are listed on an ICAP claim. The table contains only individuals whom had driver’s licences listed in the “08” Warning System and who had at least one ICBC claim associated with their licence.

To determine deterrence effects of the “08” Warning System, we followed the same procedures as in the previous three groups. We are interested solely in claims reduction. If a fraudulent claim was committed by an individual on the “08” warning list, and lead to the opening of an ICAP file, such effects would not be reflected in the following analysis.

Because no ICAP file exists, we could not determine what claim, if any, led to the “08” listing. Hence we used the date they were placed on the “08” Warning System as the date for determining the before and after claims rate. Any recent suspicious claim that may have caused the adjuster or SIU officer to place them on the “08” system would be counted in the before period, possibly resulting in an over-estimation of savings. To ensure a conservative baseline, we take a similar approach used in all the other groups and ignore any claims that occurred in the six months prior to the individual being placed on the “08” Warning System.

Exhibit 4 shows a claim rate of about 6% per month before being added to the “08” Warning System. The claim rate dropped to about 4% per month after being added.

Similar to the other preceding groups, FPI activities still had an impact on their claiming behaviour although not as dramatic. This is to be expected as some of the individuals may not know they are on the warning list until they present another claim. Because these people are placed on the system because of suspicion only, many may be just be bad drivers or live in a high crime area. The claims they present may in fact be legitimate. Thus we still expect to have an impact on their claiming behaviour although not to the same extent as the previous groups. Of the four groups examined so far, the warning list group shows the most constant claim rates both before and after.

**Exhibit 4: Claim Frequency for "08" minus ICAP Driver's Licenses by Time Since First Investigation**

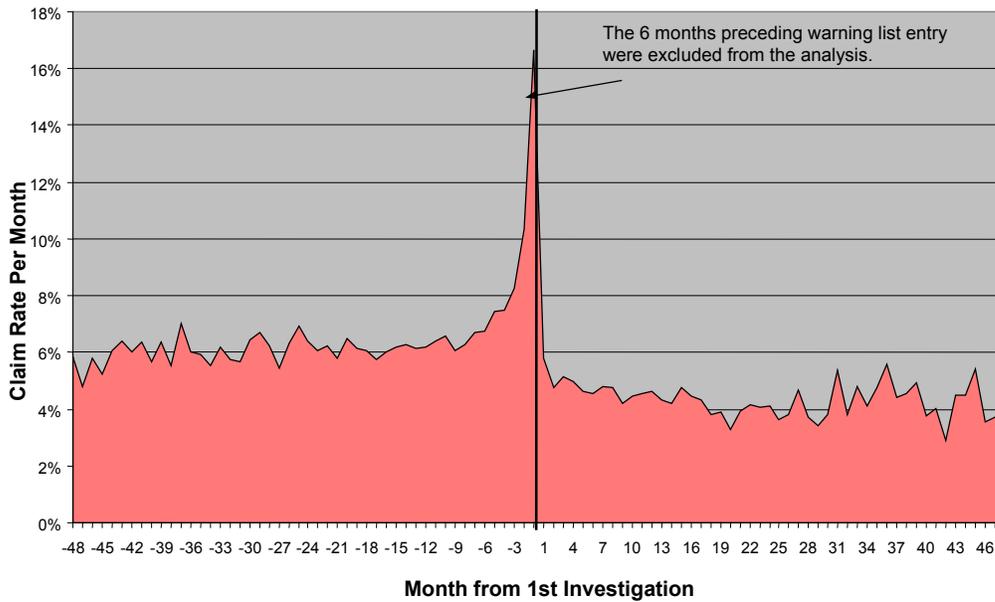


Table 4B presents the effects of FPI on the "08" minus ICAP group. As seen from the table, both the annual claim rate and average claim cost dropped after they were added to the list. The annual claim rate dropped by 285, while the average claim cost also dropped from \$4,375 to \$3,641. This resulted in approximately \$7.8 million savings in claim costs for the 8,403 people listed in this group. This group accounts for an annual reduction of nearly 1,800 claims.

**Table 4B: Effects of Investigation for "08" minus ICAP**

Driver's Licences used in determining claims rate (all "08" entries used)	8,403
Average cost per claim before discovery	\$4,375
Average cost per claim after discovery	\$3,641
Annual claim rate before discovery (-6 to -18 months)	0.75
Annual claim rate after discovery (6 to 18 months)	0.54
Reduction in Annual Claim Rate	28%
Number of Driver's Licences used (all "08" entries used)	8,403
Annual Reduction in Claims	1,792
<b>Group 5 Savings Estimate</b>	<b>\$7,837,764</b>

## **Group 5: ICAP Family Ties**

Our last group involves policies rather than individuals. Here, we are interested in the claim rate for policies in FPI investigated claims regardless of whom the driver was. In each ICAP file, there is normally a policy and a driver licence associated with the claim file. The first three groups looked at the claims presented by the driver involved in the claim. This group deals with claims presented on the policy involved in the investigated claim. Approximately one-third of all claims attached to the policies involved a different driver than those used in the first three groups. In defining this group, we excluded all claims included in one of the prior groups, as well as all FPI investigated claims themselves.

We are interested in household deterrence effects. If I am accused in a FPI investigation, will other members of my household suddenly begin to have fewer claims on my vehicles? The answer is yes! Deterrence spreads beyond the investigated individuals to include others using their vehicles.

Because we were concerned with policies and not driver's licences we were forced to modify our estimation methods. One of the reasons for this difference is that we track a specific vehicle that belongs to an investigated individual. The chance that the vehicle is sold or replaced in a few years is relatively high. Therefore, time can play a role in the pattern. Hence we need a technique that not only separates the before and after claims, but also accounts for the role of time. Multivariate regression technique can take two variables at the same time and separate the effects of time on the change in claim frequency before and after. This type of analysis is also more conservative than simply comparing the claim frequencies before and after.

We removed all claims otherwise covered in a prior group and examined only the remaining claims within the context of policy history. A multivariate regression equation estimated the probability of claims per month before and after discovery while removing effects of trend and the number of policies in force.

Table 5 represents the results of the analysis. As seen, an approximate reduction of 31% is estimated for the annual claim rate. Considering an overall reduction of 1,469 claims, this represents an annual saving of \$3 million due to ICAP family ties.

<b>Table 5: Effects of Investigation for Policies Subgroup – Family Ties</b>	
Driver's Licences used in determining claim rate	N/A
Average cost per claim before discovery	\$2,167
Average cost per claim after discovery	\$2,435
Annual Claim rate before discovery (-6 to -18 months)	N/A
Annual Claim rate after discovery (6 to 18 months)	N/A
Reduction in Annual Claim Rate	31%
Number of Driver's Licences Listed	N/A
Annual Reduction in Claims	1,469
Group 4 Savings Estimate	\$3,080,493

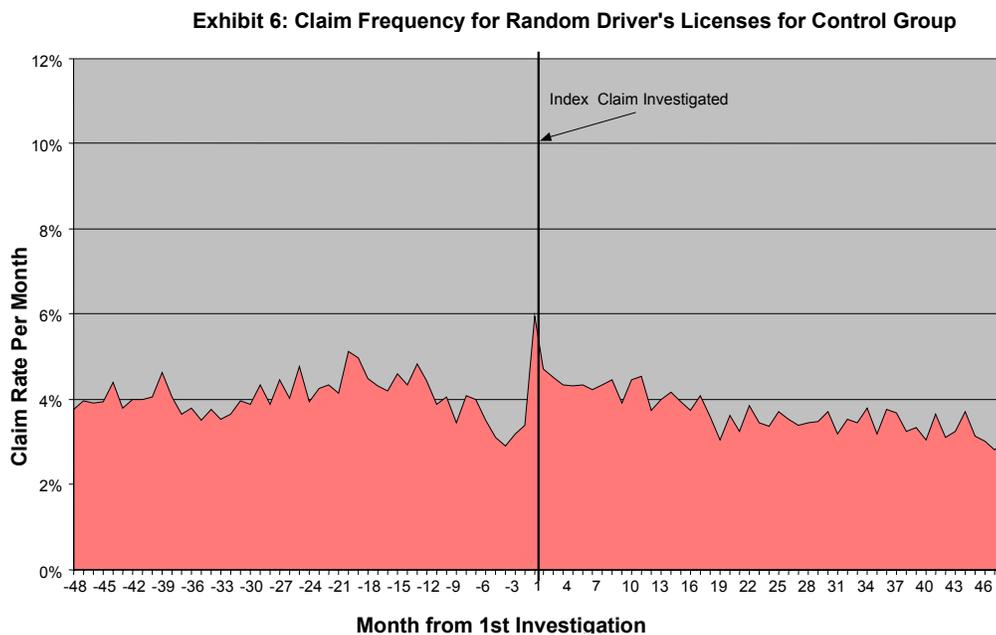
As with the other groups the estimate is very conservative, although for different reasons. Here, all claims on the policy were included. However, other vehicles owned by an investigated individual but not involved in an investigated claim were not included. Thus, if John, an accused individual, used his Chevy in a staged accident that SIU discovered, we tracked the claims history of that Chevy. If John also owned a Ford and Mazda, we did not track those vehicles.

## **Control Group Analysis**

Review of our initial findings by ICBC's Measuring and Monitoring Committee raised the issue of whether at least part of the attributed deterrence effects were the result of the measurement technique and not a true reduction in claims. Several individuals were concerned that there is a natural reduction in the likelihood of filing a new claim after an individual makes a claim. If such an effect exists, we would have confused a reduction that applies to the whole population with FPI deterrence. As a result deterrence savings estimates would be inflated.

Therefore, the committee requested that a similar analysis be conducted on a control group of random claims where claiming behavior was traced before and after the claim.

To meet this requirement we constructed a random sample of 7,966 drivers who had a claim in 1998. We artificially picked a claim to be the investigated claim. We then traced their claiming behavior for up to 48 months before and after the index claim. Exhibit 6 presents the trend found:



The dip at –3 months is a result of the claim selection process. Some of the driver’s licences selected had more than one claim in 1998. We tended to select the first claim in the year as the index claim not knowing that this would create a dip. The spike at one month appears related to the index claim. These claims are ignored any ways when computing the annual claim rate. Overall, we find no long term trend related to the index claim with the claim rate stable both before and after.

We performed the same financial analysis for the control group as we did for the other groups. The results are shown in Table 6. As seen in the table, the claim rate does not change significantly. There is a slight increase in the average claim cost from \$4,761 to \$4,900 that must be due to inflation. This indicates that there may be an approximately 3% growth in the cost of a claim between the two four year averages.

<b>Table 6: Control Group Index Claim Effects</b>	
Average cost per claim before discovery	\$4,761
Average cost per claim after discovery	\$4,900
Annual claim rate before discovery (-6 to –18 months)	0.4966
Annual claim rate after discovery (6 to 18 months)	0.4962
Reduction in Annual Claim Rate	0.08%

As can be seen, the claim rates before and after are almost identical. We had to add two decimal places to our table even to show that minuscule effect. Therefore, there does not appear to be a post-claim reduction in claim probability that is inflating deterrence savings estimate.

## Section 3 - Summary

### Savings Summary

In the five prior sections, we attempted to trace the ripple effects of FPI investigations. Here we pause to look at the grand total. Table 7 merges the earlier savings estimates into a single source.

**Table 7: Summary of ICAP & "08" Deterrence**

	Accused	ICAP Only	ICAP/"08"	"08" Only	Policies
Average cost per claim before discovery	\$5,120	\$3,457	\$3,833	\$4,375	\$2,167
Average cost per claim after discovery	\$4,012	\$3,683	\$4,291	\$3,641	\$2,435
Annual claim rate before discovery	0.99	0.94	0.75	0.75	N/A
Annual claim rate after discovery	0.51	0.59	0.54	0.54	N/A
Reduction in Annual Claim Rate	48%	37%	28%	28%	31%
Number of Driver's Licences Listed	391	4,069	5,746	8,403	N/A
Annual Reduction in Claims	186	1,428	1,225	1,792	1,469
Savings Estimate	\$952,320	\$4,938,181	\$4,696,119	\$7,837,764	\$3,080,493

The table shows a total of about \$21.5 million annual savings from the deterrence effects of ICAP investigations and the "08" Warning System. One striking element of this finding is how little of it is derived from accused individuals. Although this group had the largest reduction in claim rate (48%) they contributed only 4.5% of the total savings. We take this finding to mean that the primary impact of SIU investigations does not follow directly from the proof of criminal fraud, but rather it is the indirect effect of visible enforcement efforts.

### Deterrence Savings Range

Factors that affect the deterrence savings are:

- Reduction in Claims
- Number of Driver's Licenses applicable to savings in the group
- Average Cost of each reduced claim

The first is statistically derived, the second is the number expected to be influenced, and the third is the hardest to determine. When we prevent a claim, what is the proper dollar value to attribute to it? For purposes of the above discussion, we always took the average cost of a claim before intervention. There are arguments that can be made for using both the before and after average costs. However, it is for the most part speculation.

The true claim cost averages can be affected by the following factors:

- Some claims, particularly for the after average, are still open and include the outstanding reserve. This will tend to lower the after period average.
- Inflation is not accounted for, other than we are using a blend of up to 4 years of claims in the before and after averages.
- Deductibles increased in 2002, which will affect the after average.
- Changes in the types and values of vehicles involved in claim files over time.
- The averages will be affected by the blend of BI and MD CIT files or reasons why people were placed on the "08" Warning System. People involved in BI fraud tend to have higher cost claims than those involved in MD fraud.

We can speculate for people being investigated for BI fraud that we have reduced their injury claims that must make the after average claim cost lower. However for MD fraud, we may be preventing the less severe material damage claims such as faked stereo losses but the more serious legitimate claims may be affected less resulting in a higher after average claim costs.

The true extent of this argument is that there is no right or wrong answer. Savings deterrence should not be a single number but represented by a dollar range. Taking the minimum and maximum respectively of the before and after claim cost in each group and recalculating the claims savings, the deterrence savings can range between \$20.0 and \$22.8 million dollars.

## **Comments on Deterrence Savings**

Our analysis shows conservatively that deterrence savings are somewhere between \$20.0 to \$22.8 million dollars. Our analysis is very conservative and the true deterrence savings are actually higher as explained in the previous sections.

The following factors have not been considered and would increase the deterrence savings:

- Other units (Licensing, ATTF, and PIT) use ICAP to track their investigation files. As well, ICAP is also used for tracking assist and intelligence files. There are another potential 1773 ICAP files, which have not been used in this analysis.
- SIU officers reach a much larger audience during their investigation besides the driver directly involved in the claim file. During their investigation, SIU officers may also talk to friends, relatives, passengers, and co-workers. This interview or intervention may also have an influence on their future claiming behaviour. We do not currently monitor or collect information on these subjects. FPI should start collecting a list of these associated driver licences and the earliest date of contact. We suspect that these people associating with an investigated suspect may also exhibit a higher than normal claiming pattern. If they are part of the normal driving public, the intervention will have no effect on the before and after claim rate.
- People on the “08” Warning System are purged off the system several times per year. We do not maintain lists of people purged off the “08” system but FPI should begin to do so. Currently the analysis only looks at people who are active on the “08” Warning System at the time of the data extraction. People who have been dropped off the warning system over the past four years are not included. As well, those added to the system in the last 6 months are basically ignored since as we don’t have enough claiming experience afterwards to include them. Those dropped have generally cleaned up their claiming behaviour. Had they been factored into the analysis, the after claim rate would be lower, contributing to higher savings.
- We have based deterrence savings using the average claim rate for 6 to 18 months before and after the intervention to determine the savings. In actual fact, looking at the diagram, the claim rate is increasing during the before period and decreasing during the after period. This indicates that if unchecked, the actual claim rate reduction may actually be higher.
- Several ICAP claims do not have a driver’s licence attached to them. These represent mostly comprehensive and special coverage claims. There are approximately 6000 claims or 20% of the claim files ignored in this analysis.
- Only the driver involved in the ICAP file has been used in the analysis. For most claims, the driver is also the owner of the vehicle. For files where the owner and driver are different, we have not included the owner in the study except possibly in the family ties group. We also do not include injured passengers in the analysis
- The deterrence effect can go beyond only those with criminal minds. The general public will also use a more honest approach to reporting claims when they know that a fair system is in effect and that they may be watched.

## **Conclusion**

Two separate independent studies have now been completed and each shows that the deterrence savings due to the presence of a FPI department to be in the range of \$21 million dollars. The method used for the two studies was essentially the same although many refinements were built into the second analysis based upon experience gained from the first study. The method used is fairly self-explanatory and savings are based upon ICBC data with a minimum number of assumptions. In general, the results of the study comply with the previous work done by Quality Planning Corporation and the findings endorse the previous approach and results. The earlier analysis done in 1999 was discounted by 25% by the M&M Committee for overlap with other Road Safety and Fraud programs.

The figures presented in this document are conservative, based upon actual data with minimal assumptions, and should not be discounted further for the following reasons:

- There is no significant drop in the claim rate for the control group which could be attributable to other fraud and road safety programs.
- We have already discounted the results by taking the most conservative position with regard to the assumptions and data.
- We are looking at the claiming records of specific individuals rather than making broad assumptions about groups of people. In fact, the actual savings must go beyond the investigated claims and individuals.
- If we are discounting \$5 million for 25,000 people, what does this mean in terms of the whole population?
- Factors that affect the overall results, such as regression to the mean, don't exist. This is because the selection of ICAP or "08" listed individuals is not based solely on their past claim history. In many cases, just one suspicious claim may put you into one or both lists.
- Compared to other Road Safety and FPI studies, the assumptions and factors which could affect the outcome are minimal. As long as the procedure used is deemed reasonable, the confidence limit is much higher compared to more generalized studies.

Based upon the current analysis, the deterrence savings are not without bound. Even including all the other savings that we have not measured, there is an upper limit as to how many claims can be deterred within the current confines of FPI staffing. Even though we are deterring claims within these two groups, ICAP and "08", there are always new players who wish to join the game.

The major factors that affect the overall savings are:

- Number of investigators
- Actual number of potential fraud files
- Number of ICAP files opened
- Type of investigation – MD versus BI
- Number of people placed on the “08” system
- And the average cost of a claim file.

The current work force is stable now and not expected to increase in the near future. Each officer can only handle a fixed number of files per year so the number of ICAP files will not vary significantly. There is a transition within FPI to take on more BI files as this is where the biggest savings are. We also have a program in place to generate better referrals within each claim centre. Simply adding more people to the “08” Warning System will not necessarily increase the deterrence savings. As you add more people, it is likely that more will have similar claims records before and after diluting the actual reduction in the annual claim rate. The average claims cost will also likely be reduced. Hence even though you have added more people to the group, the combination of a reduced claim rate and average claim costs may not actually generate more savings.

Deterrence savings have been fairly stable over the past four years. There is no need to recalculate them every year. However, there are additional areas that should be explored if time permits.

## **Future Work**

Although the above analysis continues to support deterrence savings in the neighborhood of \$21 million per year, there are still many interesting areas that can be explored both from a savings perspective as well as understanding the effects of deterrence.

Depending upon FPI and corporate interest, other research that could be pursued include:

- What types of claims are we deterring? Does an investigation on a BI claim file deter future BI claims, MD claims, or both? Are we deterring the low cost MD claims or also high valued BI claims?

- Is there any deterrence savings due to associated people being interviewed by an SIU Officer?
- How long does deterrence last? Is it more than 4 years? At what point does an investigated driver behave similar to the general public? The approach is to look at those investigated drivers who have driving records of equal time frames both before and after intervention. Compare the claim rates for time periods of 1 year, 2 years, etc. Does the claim rate continue to still drop after 4 years? Do they ever become better drivers than a random sample of the general public?
- What are the demographics of the people involved in an ICAP file or placed on the "08" warning system? What is the average age, sex, driving experience, location, etc?
- Can we obtain more complete claiming records for a driver licence? We are currently only extracting all claims attached to a driver licence. There may be additional claims attached to one or more policies belonging to the driver, which we ignore. As well, they may be an injured passenger in someone else's vehicle. A batch program, using the same algorithm as is used in the IMS SRCH online transaction, is required so that we can extract all claims for a list of driver licences rather than just one driver licence at a time.
- Is there any deterrence savings for ICAP files, such as ATTF, Licensing, Intelligence, not used in this analysis?
- Can we proportion the deterrence savings amongst the various FPI units?
- Redo the analysis a year later using the same data but updating the incurred cost to see the effects of the open claims on the after claim cost.