CHURN CHANGES IMPACT ON CLV ：

What's the changes of CLV for 1% decrease in churn.

Churn→retention rate

If we have 3 groups with different level of revenue: (running a frequency distribution to identify the segments; running a mixture regression model would get an A)

Explaination of the logsitc regression: exp(b)*std if the number is 1.094, then it's importance is 0.094.

And we can compare the importance of the variables based on this number

1. $35 monthly
2. $50 monthly
3. $80 monthly

Assuming the contribution rate is 0.7, then the margin for the first group will be $35*0.7.

Assuming the interest rate, we can calculate the post and con CLV.

So we can produce how much we should invest to retain a customer who is about to churn. And it should be different across segments with different level of revenue. Because their CLV will be different if the churn rate decrease.

Except for those first 10% who are about to leave, it would be good to give them incentive to retain them based on the segement. And we can define the maximum number to invest on them.

Drivers of Churn – Most important variables

For example,

Steps to reduce churn – design a management program

Try to match what are most desirable for each of them for their "drivers of churn"

If eqpdavs > m+sd give a rebate on new phone

Else if month < ... m-sd give them ...

Else if

Do control group testing to test whether the program would work

Appendix R CODE

Example: % likelihood of Attrion; Lift; % of members identified as high risk (point from the roc code); % of actual churners cover

Random

Logistic regression

Probability or tree model

P and tree model

Combine the logistic regression and decision tree. Compare the criteria produced by tree and proeduced by logistic regression.

For example, look at the people who churn in December.

CLV:

Percentile:

rounded_revenue	Frequency	Percent	Cumulative Frequency	Cumulative Percent
36	1676	2.54	22129	33.48
59	652	0.99	43709	66.13

Criteria for monthly revenue: (suggested mean)

The MEANS Procedure

revenue_class=1

Analysis Variable : rounded_revenue					
Maximum	Mean	Median	Mode	Std Dev	Minimum
36.0000000	27.3532017	30.0000000	30.0000000	8.4525476	-6.0000000

revenue_class=2

Analysis Variable : rounded_revenue					
Maximum	Mean	Median	Mode	Std Dev	Minimum
59.0000000	47.3960148	48.0000000	50.0000000	6.5696130	37.0000000

revenue_class=3

Analysis Variable : rounded_revenue					
Maximum	Mean	Median	Mode	Std Dev	Minimum
1223.00	99.9900371	84.0000000	60.0000000	52.6072264	60.0000000

Maximum Investment:

Class	Maximum Investment
1	415.8
2	723.8
3	1524.6

Logistic Regression for the whole data base

```
Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept) -1.178e+00  5.477e-02 -21.511  < 2e-16 ***
ï..REVENUE   2.862e-03  3.051e-04   9.380  < 2e-16 ***
RECCHRGE    -4.495e-03  4.988e-04  -9.012  < 2e-16 ***
ROAM         1.433e-03  1.136e-03   1.261 0.207204
CHANGEM     -5.915e-04  4.518e-05 -13.092  < 2e-16 ***
CHANGER      2.861e-03  3.030e-04   9.444  < 2e-16 ***
DROPVCE      5.950e-03  1.243e-03   4.786 1.70e-06 ***
BLCKVCE      2.953e-03  8.809e-04   3.352 0.000802 ***
UNANSVCE     3.962e-04  3.396e-04   1.167 0.243395
CUSTCARE    -9.028e-03  2.303e-03  -3.921 8.83e-05 ***
THREEWAY    -3.908e-02  9.904e-03  -3.946 7.96e-05 ***
INCALLS     -2.725e-03  7.195e-04  -3.788 0.000152 ***
PEAKVCE     -8.111e-04  1.622e-04  -5.001 5.72e-07 ***
MONTHS      -2.293e-03  1.513e-03  -1.515 0.129727
UNIQSUBS     8.372e-02  1.006e-02   8.318  < 2e-16 ***
PHONES       6.125e-02  1.073e-02   5.711 1.12e-08 ***
EQPDAYS      1.254e-03  5.745e-05  21.818  < 2e-16 ***
AGE1        -3.400e-03  5.363e-04  -6.340 2.30e-10 ***
CHILDREN     1.207e-01  2.224e-02   5.426 5.76e-08 ***
CREDITC     -1.704e-01  2.966e-02  -5.743 9.28e-09 ***
CREDITDE    -3.865e-01  2.906e-02 -13.302  < 2e-16 ***
PRIZMUB     -6.380e-02  1.872e-02  -3.409 0.000653 ***
REFURB       2.418e-01  2.592e-02   9.328  < 2e-16 ***
WEBCAP      -1.403e-01  3.063e-02  -4.580 4.66e-06 ***
MARRYUN      4.617e-02  2.284e-02   2.021 0.043240 *
MAILRES     -1.306e-01  2.205e-02  -5.923 3.16e-09 ***
NEWCELLY    -1.555e-02  2.231e-02  -0.697 0.485700
SETPRC       5.362e-04  1.972e-04   2.718 0.006561 **
RETCALL      7.347e-01  4.557e-02  16.123  < 2e-16 ***
```

Mixture Logistic Regression for the whole database