# Predictive Modeling Analysis – 3

**Question 1**- In a recent campaign for Marsden’s Wild Berry pies (sold only at Mega Markets), promotional materials were sent to 100,000 individuals who help Mega Market shopping cards. At the end of the “coupon good until” date, 50,000 individuals had used their name-specific coupon to purchase a Marsden’s Wild Berry Pie. 70% of those receiving the coupons were females and 30% were males. 30,000 of the 50,000 pies sold were to males. What is the lift of “male” regarding Marsden’s Wild Berry pie purchase? Would you send the next set of coupons only to males?

**Solution1A**-

1. Marking down the parameters :-

* Total number of promotional materials sent: 100,000
* Total number of promotional materials used: 50,000
* Number of males receiving the coupon: 30,000 ( 30% of 100,000 )
* Number of females receiving the coupon: 70,000( 70% of 100,000 )
* Number of males using the coupon out of all the coupons provided to them: 30,000
* Number of females using the coupon out of all the coupons provided to them: 20,000

1. As per the ask of the question our required lift is:

**Lift = Confidence of males using the coupon out of all the coupons provided**

**Expected confidence of total number of coupons out of all the coupons** **provided**

1. Confidence of males using coupon out of all the coupons provided: 30,000/30,000 = 1
2. Expected confidence of total number of coupons used out of all the coupons provided: 50,000/100,000 = ½
3. Therefore required Lift => 1/ (1/2) => **2**

**Solution1A (Second Part)**-

Yes, we would send the next set of coupons only to males since they are **twice** as likely to use the coupons provided to them. This can be inferred from the **lift** calculated in above section.

**Solution 2)** Suppose you have built a model to predict a 0, 1 target variable. What are the mistakes the model can make when applied in the real world?

**Solution 2)** If ourmodel is to predict just a 0, 1 target variable. In this case the mistakes a model can make during a prediction are misclassifications of **False Positive** and **False Negative.**

For example, a medical equipment manufacturing company develops a model to predict the *maintenance status* of their equipment. Now there can be two possibilities for such prediction:

False **Positive –** An equipment being identified for maintenance when in reality the equipment does not need maintenance. In such a case there is loss on just operational cost but customer satisfaction is not hampered. In this case, company can afford such wrong prediction.

False **Negative -** An equipment not being identified for maintenance when in reality the equipment needs maintenance. In such a case there is huge loss on customer satisfaction but company might end up saving some operational cost. In this case, company **cannot** afford such wrong prediction.