The mean of our distribution of estimated revenues was $1,116,194.97, and based on that we calculated an estimated annual income of $764,593.56. In other words, based on our model. Loafe Café UBC has a 50% probability of making $764,593.56 in a year. It's difficult to find reliable data on what a café of that size could expect to make in a year - this seems to be relatively high (https://cafely.com/blogs/info/how-much-do-coffee-shops-make?srsltid=AfmBOoqynUyEfzbTxL1Kwt-IoE5mkg0KzK70OZ-zfOkVVJn_Q4LW4Qur - I'm sorry, I know this is not the best source, could just take this sentence out), but it is also the profits from two separate cafés combined. This is using January as a reference point, and calculating a,b, and c empirically, using the data from July.

We can vary these parameters to see how strongly they affect the model. Varying a does not change the annual income hugely as long as it's between -10 and -2.5, but as soon as it becomes positive, the annual income rises sharply. This is consistent with what we would expect from the equation, but in practice $a > 0$ makes little sense - $(T-T0)^2$ is larger when the difference between the reference temperature and input temperature is larger, and in reality we would expect the income to drop when the weather is either very hot or very cold.

When b is positive, more precipitation than the reference point leads to more income, and less precipitation to less income. This makes sense in-context - rain tends to drive people inside, and indeed, the value we calculated for b was above zero. When varying b from -30 to 20 the annual income shows a consistent rise, but $b<0$ does not make sense in this context (a café facing out onto a street, where people tend to shelter when it rains).

We see the opposite trend with c - as it rises, annual income falls. This is mathematically consistent with the equation we were given, since negative c is multiplying a positive quantity. Interpreted in the context of the problem, a negative c-value would tell us that a greater difference in humidity leads to more customers, and a positive c-value would say the opposite. We calculated c to be -1, which tells us that a greater difference between the actual humidity and the reference point leads to more customers - perhaps people trying to escape particularly humid or particularly dry, cold days.

The parameter c has the lowest absolute value here, hinting that humidity has the least significant impact on café revenue out of the three weather variables, while b has the highest, suggesting that precipitation has a very high influence on whether or not people spend money in Loafe Café - not inconsistent with what one would expect, given that precipitation generally tends to influence how people spend their time, and given the high levels of precipitation in the climate in which the café is situated.