Question 1

(a) 135 firms are used in the estimation.

(b) Receiving grants increased 29.120188 hours of training per employee. The coefficient is significant since p-value ≈ 0.

(c) we modify our model by replacing $grant_{it}$ with $grant\_first_{it}$ and $grant\_second_{it}$, namely

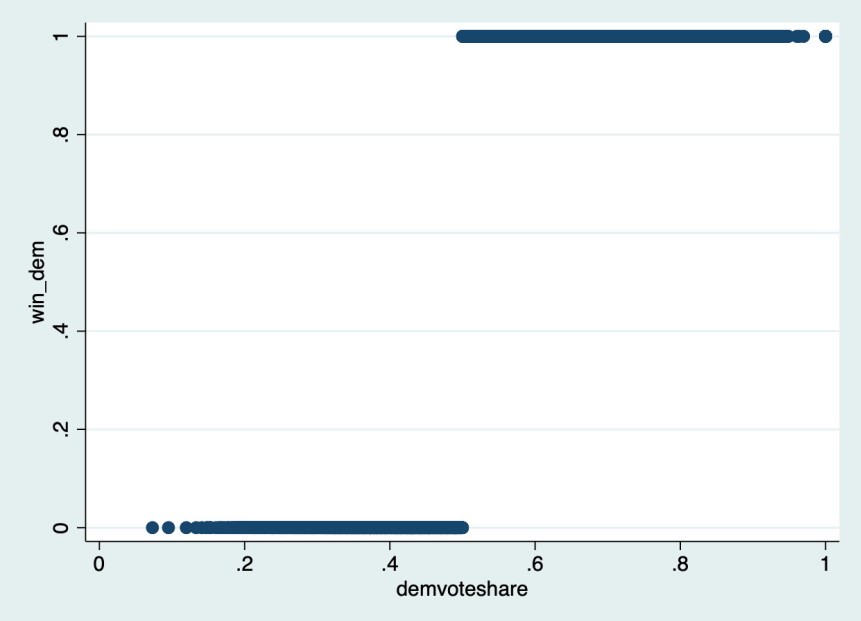
$$hrsemp_{it} = \beta_0 + \beta_1 \cdot grant\_first_{it} + \beta_2 \cdot grant\_second_{it} + \alpha_i + \delta_1 \cdot year_{1t} + \delta_2 \cdot year_{2t} + e_{it}$$

where $grant\_first_{it}$ indicates whether the firm was in the first year of grants (no matter the firms received grants in 1988 or 1989), while $grant\_second_{it}$ indicates whether the firm was in the second year of grants (the firms must receive grants in 1988).

(d) The coefficient of $grant\_first_{it}$ is statistically significant 34.228179, while the coefficient of $grant\_second_{it}$ is statistically insignificant 0.50408042. This result means that the effect of grants were generally restricted to the year they were distributed, implying the long-term effect of this policy was small.

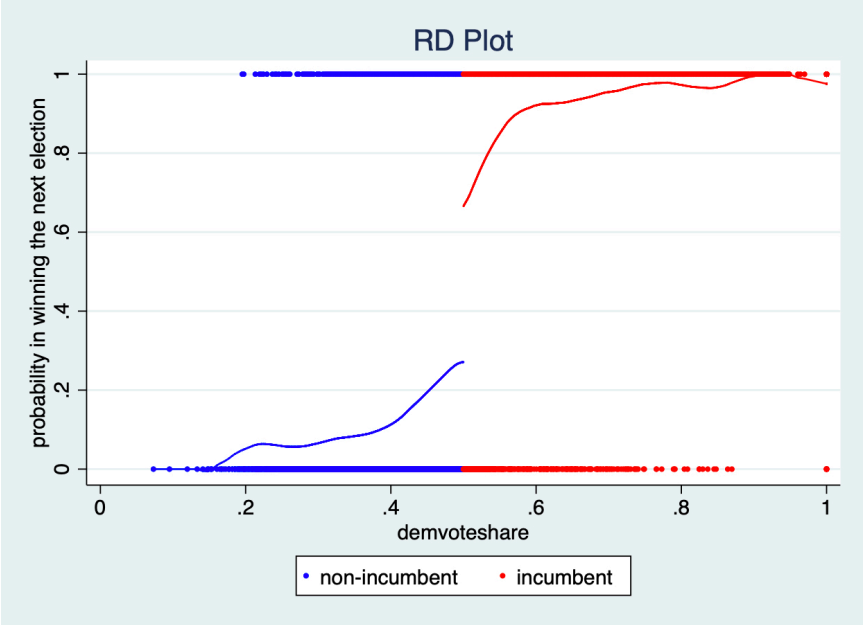
Question 2

(a) The dependent variable is win_dem_t1.
The running variable is $demvoteshare$.
The treatment is win_dem.
This is a sharp RDD with the cut-off threshold of $demvoteshare = 0.5$.



(b) Observations with $win\_dem = 1$ are largely different from observations with $win\_dem = 0$, that is, treatment and control groups are not "randomized". The estimation will be biased since regions with $win\_dem = 1$ are composed of more voters preferring Democrats.

(c) The jump is estimated to be 0.39458507 with calculations presented in the do-file.



An alternative way to make the RD plot is to use the rdrobust package as I presented in the do file. Output is as follows.