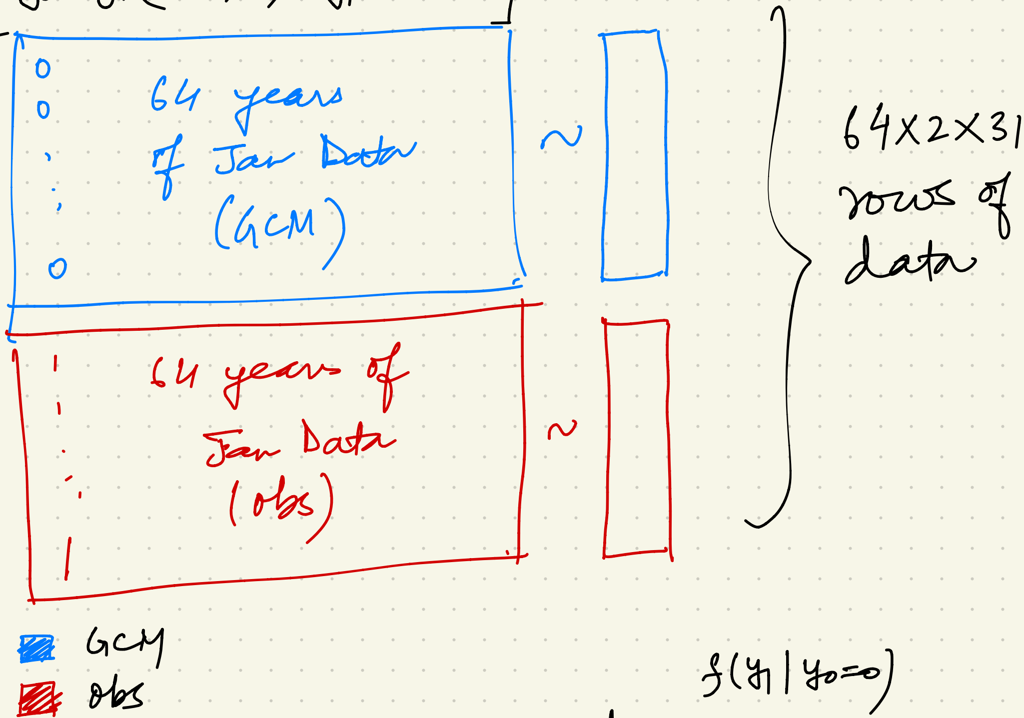
Data

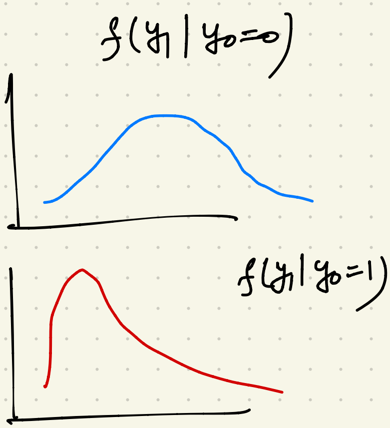
space time

$\underline{X} \equiv \left[y_0 \;\; y_1(s-1,t) \;\; y_1(s,t-1) \right] \sim y_1(s,t)$



Fit

$Y_1 \sim \underline{X}$



(*) Let's say $s = 1$,
i.e. $y_1(s-1,t)$ is not available

Further, let's drop the time variable too.
then $X = y_0$

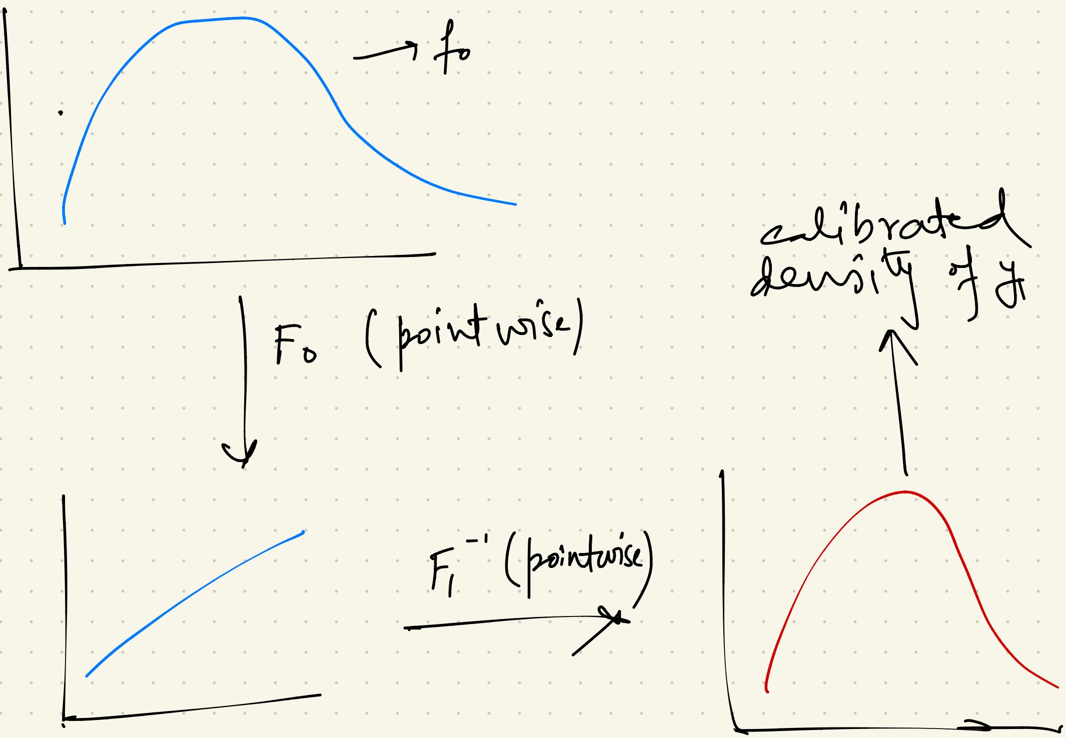
Predict :

From the fitted model we have

$f_0 = f(y_1 | y_0 = 0)$, $f_1 = f(y_1 | y_0 = 1)$

$F_0 = F(y_1 | y_0 = 0)$, $F_1 = F(y_1 | y_0 = 1)$

also F_0^{-1} and F_1^{-1}



$\hat{y}_1 \sim Y_1$, $y_0 = 1$

$\hat{y}_1 \sim F_1^{-1} F_0(Y_1)$, $y_0 = 0$ → calibration

- For $s=2$

→ Fit is identical.

→ For predictions, replace $y_1(1,t)$ by $\hat{y}_1(1,t)$ from the previous model

→ calibrate

- If $y_1(s,t-1)$ is a covariate

→ Fit is identical

→ Predict in sequence:

$$\hat{y}_1(t=1) = F_1^{-1} F_0 (y_1(t=1))$$

$$\hat{y}_1(t=2) = F_1^{-1} F_0 (\hat{y}_1(t=1))$$

$$\vdots$$