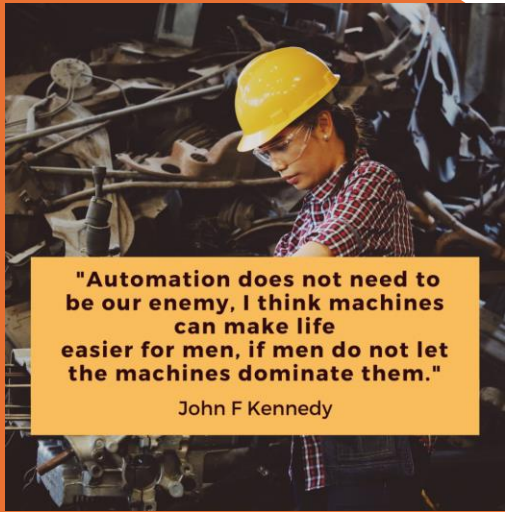


Automation Anxiety

By Kathryn Sullivan & Arieana Talavera

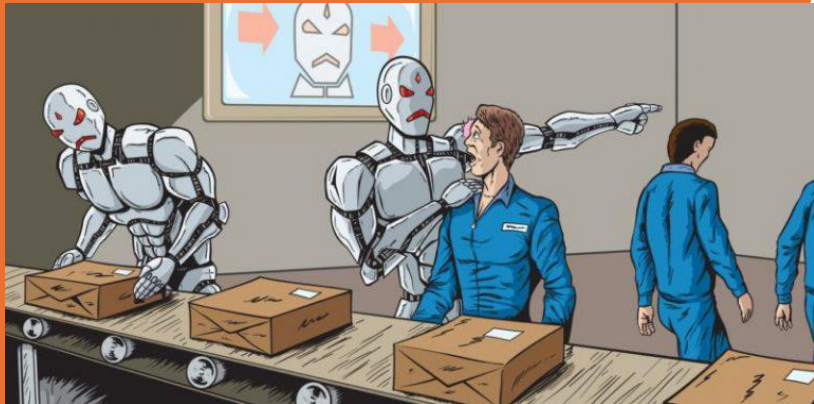
Is Automation
Really
Replacing
Human
Employment?



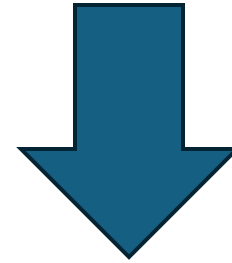
"Automation does not need to be our enemy, I think machines can make life easier for men, if men do not let the machines dominate them."

John F Kennedy

Problem & Question



- **Problem:** “AI is going to take your job” has become a buzz-phrase that fuels public anxiety, but it’s not clear whether automation is actually reducing employment or if the fear is overstated



- **Question:** Do increases in automation investment and productivity lead to lower U.S. employment, or are fears of job loss driven by automation anxiety?



Data Sources



1) All Employees: Total Nonfarm Payrolls (PAYEMS)

➤ US Employment

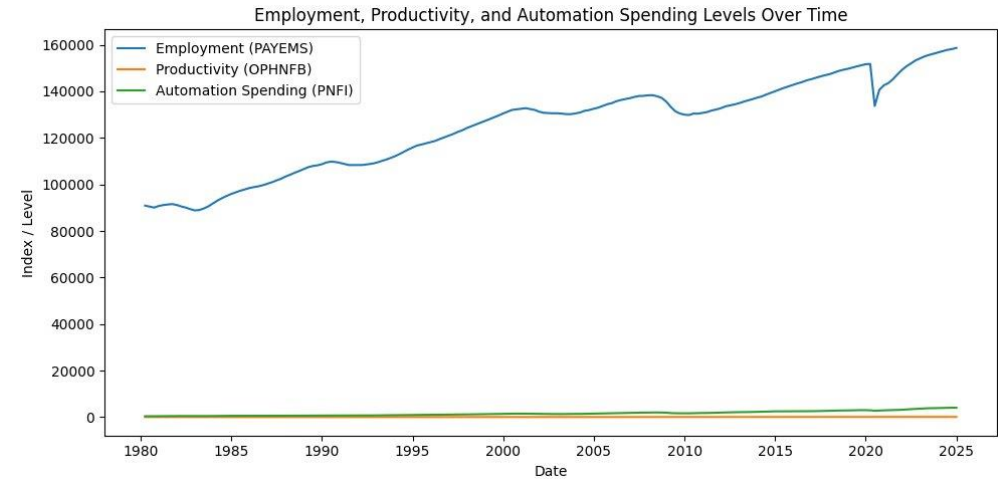
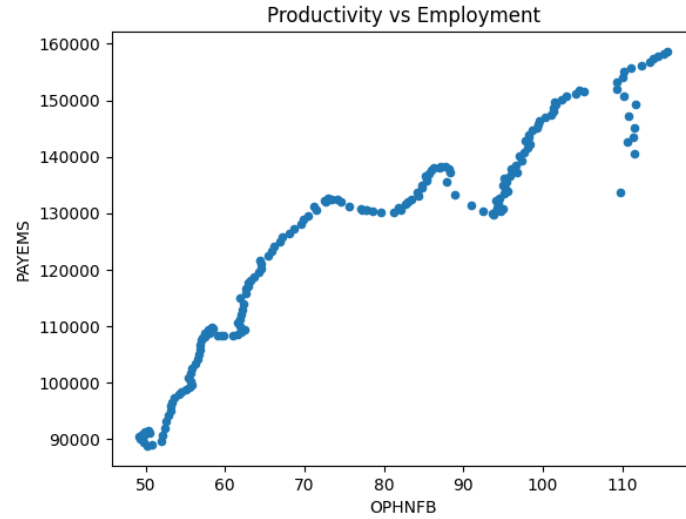
2) Nonfarm Business Sector: Labor Productivity (OPHNFB)

➤ US productivity

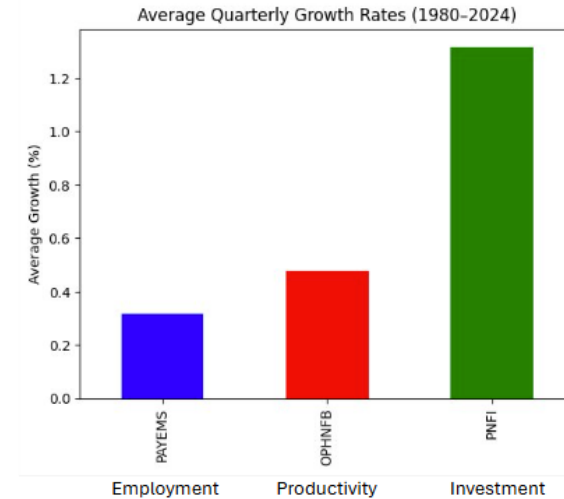
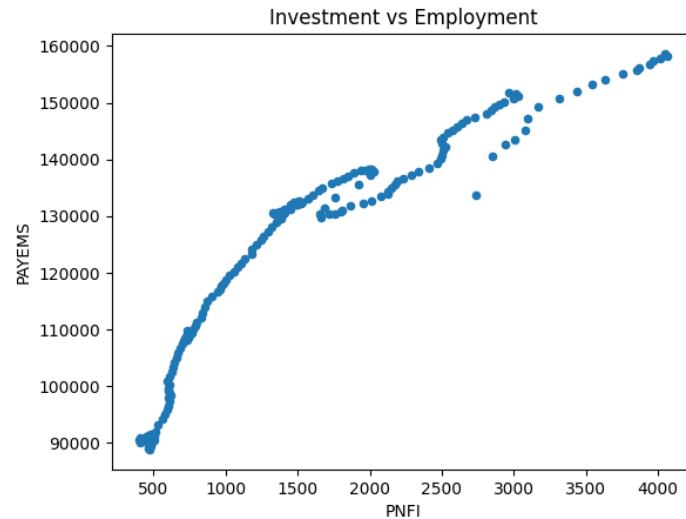
3) Private Nonresidential Fixed Investment (PNFI)

➤ Automation spending





Automation rises with employment



Regression Model:

$$\Delta \text{Emp}_t = \beta_0 + \beta_1 \Delta \text{Prod}_t + \beta_2 \Delta \text{Auto}_t + \beta_3 \Delta \text{Prod}_{t-1} + \beta_4 \Delta \text{Auto}_{t-1}$$

- **Emp(t)** - whether jobs rise/fall each quarter (PAYEMS)
- **β_1** - effect of current productivity changes (PNFI)
- **β_2** - effect of current automation spending (OPHNFB)
- **β_3** - effect of lagged productivity changes
- **β_4** - effect of lagged automation spending

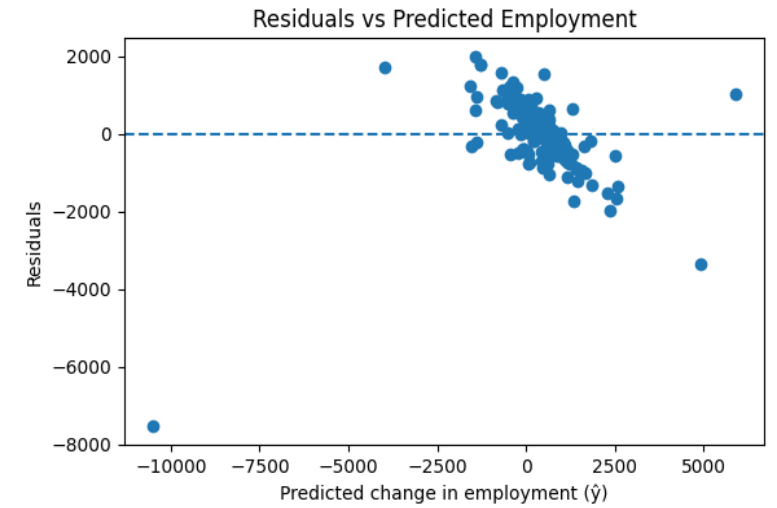
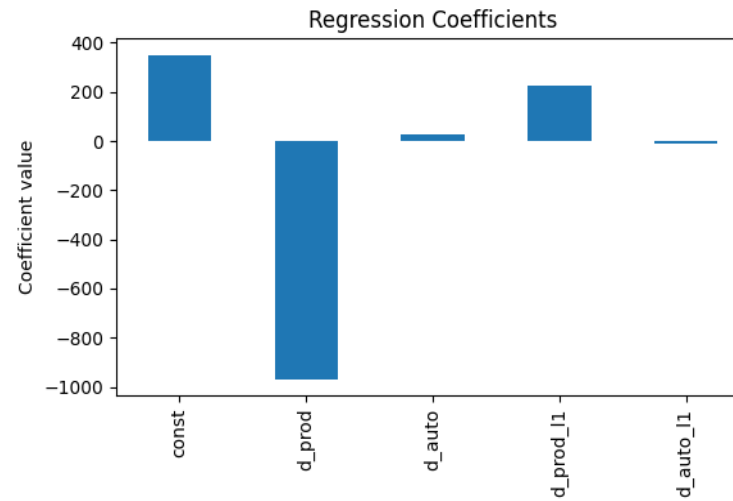
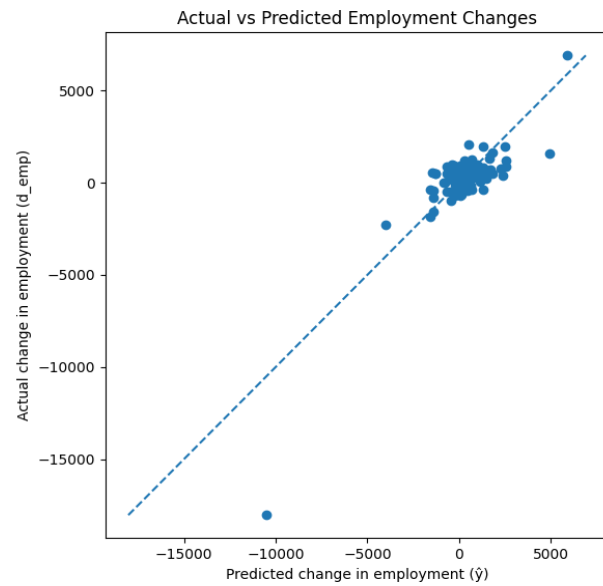
```
model_lagged = sm.OLS(y, X).fit()  
print(model_lagged.summary())
```

OLS Regression Results

Dep. Variable:	d_emp	R-squared:	0.651
Model:	OLS	Adj. R-squared:	0.643
Method:	Least Squares	F-statistic:	80.65
Date:	Mon, 01 Dec 2025	Prob (F-statistic):	1.66e-38
Time:	01:08:00	Log-Likelihood:	-1469.2
No. Observations:	178	AIC:	2948.
Df Residuals:	173	BIC:	2964.
Df Model:	4		
Covariance Type:	nonrobust		

	coef	std err	t	P> t	[0.025	0.975]
const	350.8167	113.600	3.088	0.002	126.596	575.037
d_prod	-968.2479	119.169	-8.125	0.000	-1203.461	-733.035
d_auto	27.8041	2.247	12.375	0.000	23.370	32.239
d_prod_l1	223.8969	122.622	1.826	0.070	-18.131	465.925
d_auto_l1	-12.5508	2.351	-5.340	0.000	-17.190	-7.911

Omnibus:	160.730	Durbin-Watson:	2.091
Prob(Omnibus):	0.000	Jarque-Bera (JB):	4304.910
Skew:	-3.118	Prob(JB):	0.00
Kurtosis:	26.271	Cond. No.	123.



Automation has minimal impact on employment



Anxiety might be overstated