

How Much Are Public School Teachers Willing to Pay for Their Retirement Benefits? Comment

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At the margin, how much do teachers value retirement benefits?

- Fitzpatrick (2015), senior teachers (22-28 years of experience)
 - more than a quarter of Illinois teachers were unwilling to pay 19 cents for pension enhancements worth one dollar in present value.
- Biasi (2019)
- Goldhaber and Holden (2020)
- Johnston (2020)
- Fuchsman, et. al. (2021) (this panel)

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- This paper reexamines the IL teacher pension upgrade experience using pension system (TRS) data tracking the 1998-99 (22-28 experience) cohort to 2019. Actual retirement annuity and timing.
- Findings
 - More teachers purchased upgrade (87% versus 74%)
 - Importantly, nearly all teachers who did not purchase upgrade were better off not making the purchase
 - IL pension upgrade experience not well suited to answer the question

Illinois upgrade

- IL teachers in FAS-DB plan: annuity = $S \times \text{FAS} \times f$
- In 1998 service additional service years $f = .022$
- Option to purchase upgrade of prior years at
 - Price = $\min(\text{Exp}98/100, 20/100) \times \text{salary}$
- Seemingly a very good deal
 - Exp 22 teacher, PV of benefits 6.3 x price
 - Yet ... by 2009 only 70% had purchased benefit (22-28 exp, 74%)
- Our reexamination, relying on TRS data, tracked teachers to 2019, nearly all of whom retired
 - Purchase rate 87%
 - Of 13% who didn't purchase, 12% better off not doing so.
 - Key factor: Annuity capped at 75% of FAS → If you worked longer, no benefit from upgrade

Figure 1: Present Value of Pension Wealth With and Without Upgrade

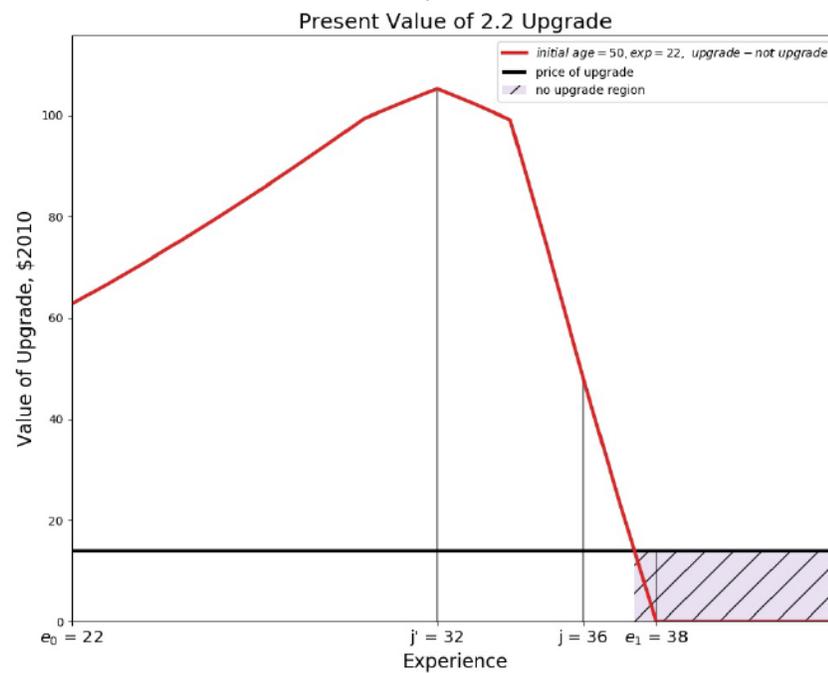
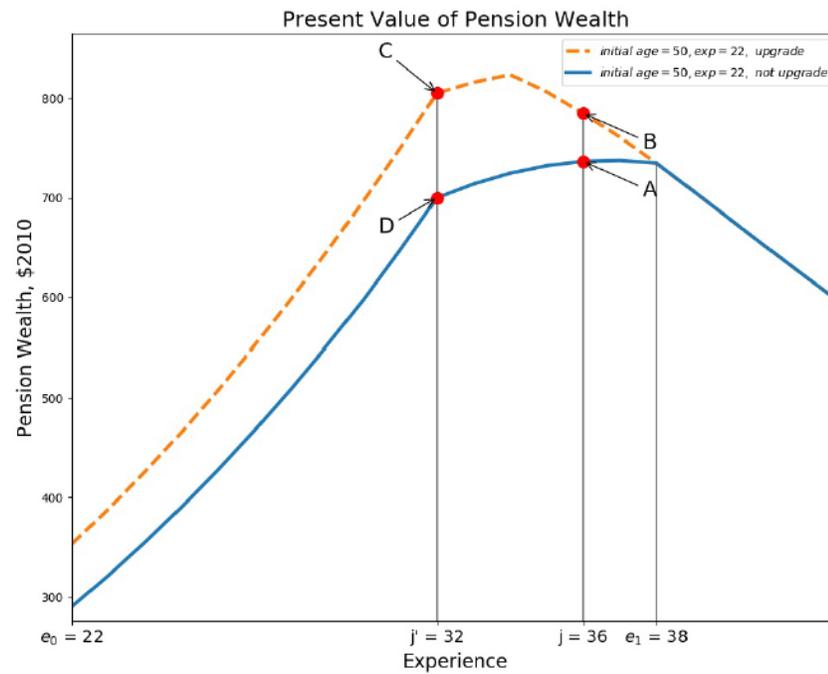
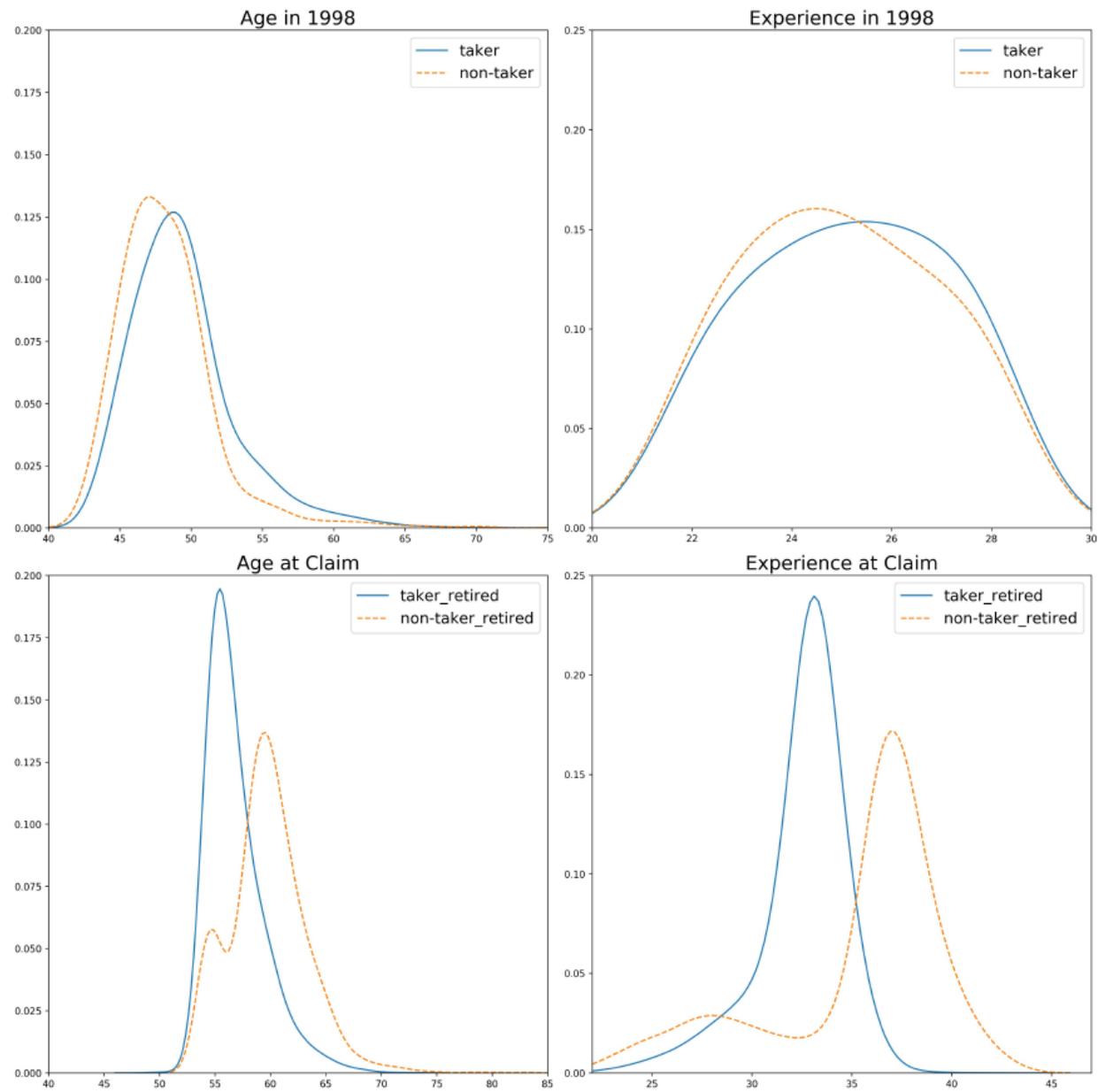


Figure 3: Age and Experience Distribution of Takers and Non-Takers in 1998 and at Retirement Claim Date



Note: Kernel density smoothing with bandwidth = 1.

Figure 2: Distribution of Net Realized Benefit from Upgrade for Takers and Non-Takers

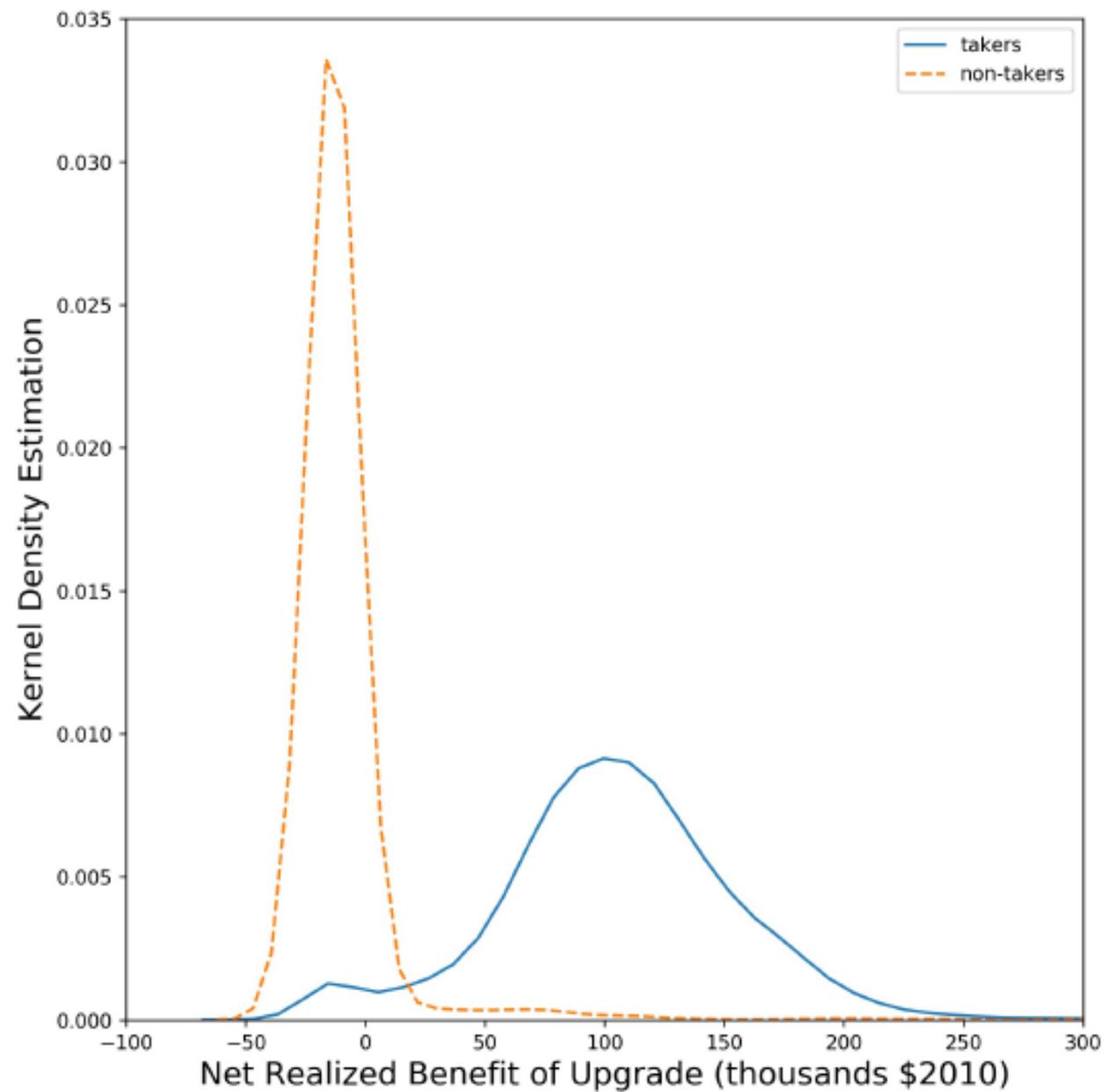


Table 1: Summary Statistics on Upgrade Takers and Non-Takers

	number	percent	average price (\$)	average benefit (\$)	average net benefit (\$)	average net benefit (\$)
				based on realized retirement	based on realized retirement	based on predicted retirement
	(1)	(2)	(3)	(4)	(5)	(6)
All Teachers	19,126	100.0%	15,093	106,411	91,318	100,771
-taker	16,654	87.1%	15,255	121,552	106,297	101,800
-non-taker	2,472	12.9%	14,002	4,406	-9,596	93,839
Female	12,506	100.0%	14,135	104,441	90,305	98,860
-taker	10,794	86.3%	14,277	120,286	106,009	99,893
-non-taker	1,712	13.7%	13,245	4,540	-8,704	92,345
Male	6,620	100.0%	16,902	110,133	93,230	104,382
-taker	5,860	88.5%	17,057	123,884	106,827	105,313
-non-taker	760	11.5%	15,708	4,103	-11,605	97,206

Note: The sample is teachers with 22-28 years experience in 1998. The “takers” are teachers who purchased the 2.2 upgrade by 2019. The “non-takers” are those who did not purchase by 2019. Teachers with at least 22 years experience in 1998 and still working in 2014 are considered non-takers. We use the same nominal rate of 5.1% as Fitzpatrick (2015). This along with the cost of living adjustment of 3% implies the real discount factor of 2.1%. The benefit in Column (4) is based on the realized annuity at retirement. The predicted benefit in Column (6) is computed from forecast of retirement timing for each teacher based on historical data observed before 1998, and assuming teachers paid for the upgrade in 1998.

Table 2: Distribution of Net Realized Benefit of Upgrade for Takers and Non-Takers

	positive	negative	Total
taker	16,061	593	16,654
	[83.97%]	[3.10%]	[87.08%]
non-taker	120	2,352	2,472
	[0.63%]	[12.30%]	[12.92%]
Total	16,181	2,945	19,126
	[84.60%]	[15.40%]	[100.00%]

96% made the “right”
decision

Note: Percentage of the whole sample (N = 19,126) is in square bracket.

- Econometric paradox
- Even with updated (ex post) data on retirement timing and actual annuity the “19 cents” paradox persists

finds such surprising results regarding teacher valuation of the upgrade. She estimates a linear probability model of individual demand for the pension upgrade:

$$D_i = \beta_0 + \beta_1 P_i + \beta_2 B_i + \mathbf{X}'_i \gamma + \epsilon_i \quad (1)$$

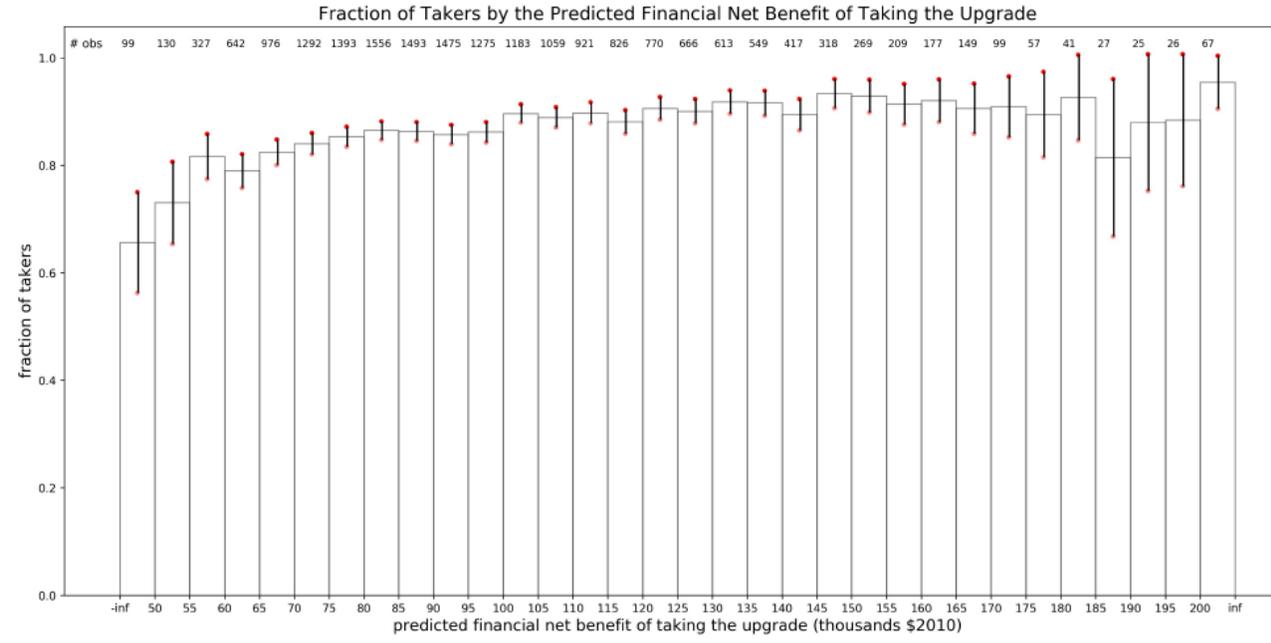
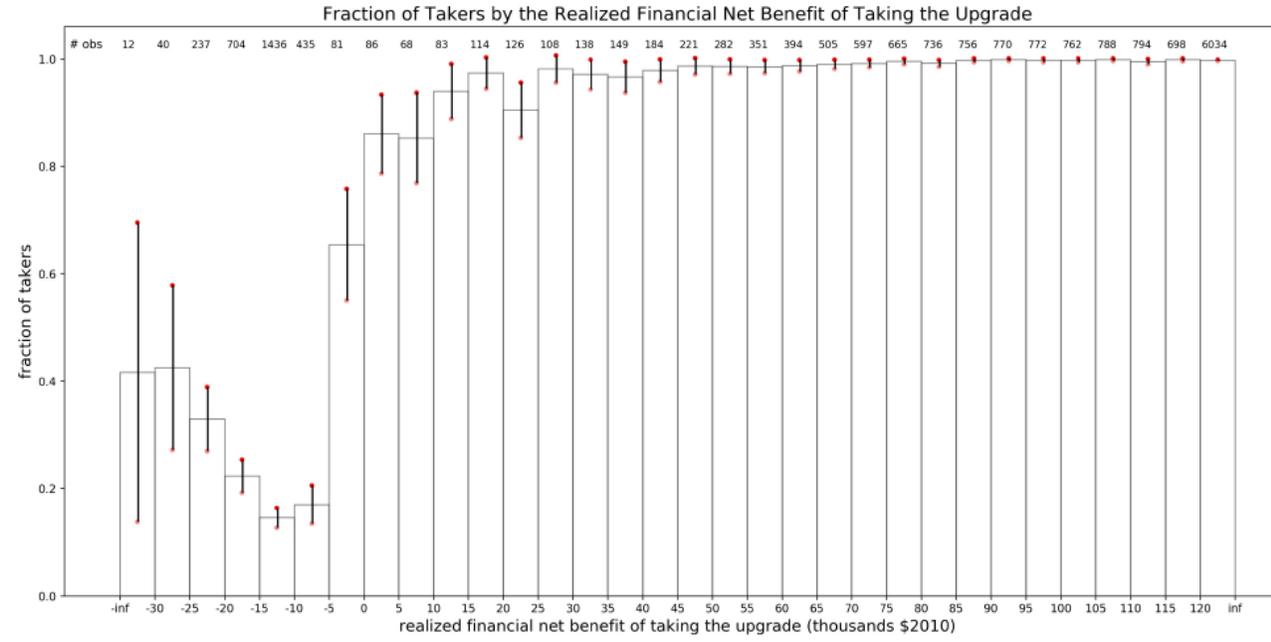
$$\text{Ratio} - \beta_2 / \beta_1 = 1$$

Table 3: Estimates of Demand for Upgrade

		Fitzpatrick (2015)		Updated data			Simulated	
		OLS	IV	OLS	OLS	IV	OLS	IV
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
Predicted Annuity	price	0.010*** (0.001)	-0.071*** (0.008)	0.004 (0.002)	0.005* (0.003)	-0.047*** (0.017)	-0.006** (0.003)	-0.062*** (0.018)
	benefit	0.001*** (0.000)	0.012*** (0.001)	0.000 (0.000)	0.000 (0.000)	0.009*** (0.002)	0.002*** (0.000)	0.011*** (0.003)
	ratio of coef	0.142*** (0.026)	-0.174*** (0.007)	0.096 (0.145)	0.076 (0.120)	-0.187*** (0.016)	-0.257*** (0.063)	-0.173*** (0.010)
	# obs	19394	19394	19126	15601	15309	15601	15309
	price	.	.	-0.014*** (0.000)	-0.011*** (0.001)	-0.019** (0.007)	-0.019*** (0.001)	-0.028*** (0.007)
Realized Annuity	benefit	.	.	0.003*** (0.000)	0.003*** (0.000)	0.004*** (0.001)	0.004*** (0.000)	0.005*** (0.001)
	ratio of coef	.	.	-0.222*** (0.007)	-0.268*** (0.016)	-0.218*** (0.039)	-0.204*** (0.007)	-0.182*** (0.017)
	# obs	.	.	19126	15601	15309	15601	15309
	County fixed effect	X	X		X	X	X	X
	District characteristics	X	X		X	X	X	X

- Problem with instruments (benefit and price are both functions of salary) (Goldhaber and Holden, 2020)
- Problem with LPM (and non-linear)
 - Few “marginal teachers” Step function in net benefits and choice

Figure 4: Fraction of Upgrade Takers by Realized and Predicted Net Benefit of Purchasing The Upgrade



Conclusion

- Vast majority of Illinois teachers made upgrade decisions consistent with PW maximization at conventional discount rates (2%)
- Illinois upgrade experience not well suited to estimate WTP of teachers for pension upgrades
- **Illustrates (yet again) that pension plan incentives affect timing of retirement**
 - **Very important to understand behavioral effects of pension rules in estimating the costs or benefits of pension rule changes**