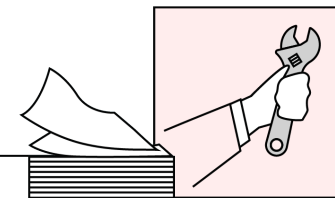


Custom DC plan benchmarks

Unions



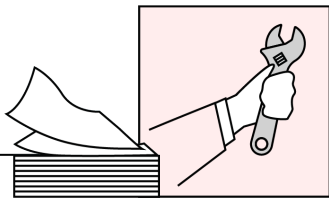


Benchmark population

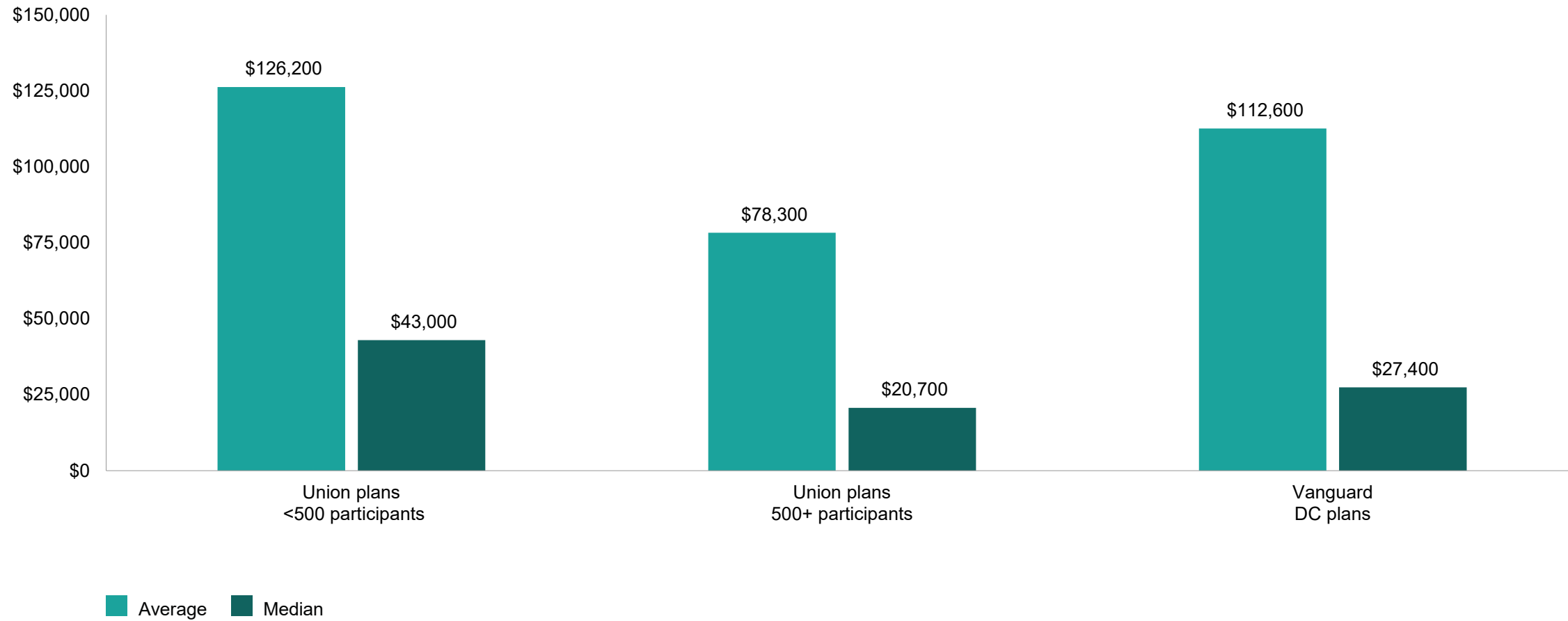
	Unions <500 participants	Unions 500+ participants	Vanguard DC plans
Number of plans	47	44	1,650
Number of participants	9,114	162,266	4.9 million
Average number of participants	194	3,688	2,950
Median number of participants	175	1,198	565
Amount of assets	\$1.2 billion	\$12.7 billion	\$550.2 billion
Average assets	\$24.5 million	\$288.8 million	\$333.9 million
Median assets	\$13.8 million	\$116.2 million	\$65.5 million

Union plans are defined as those plans designated exclusively for benefit of union participants.

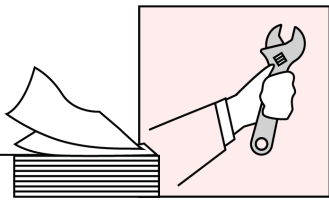
Source: Vanguard, as of December 31, 2022.



Participant balances

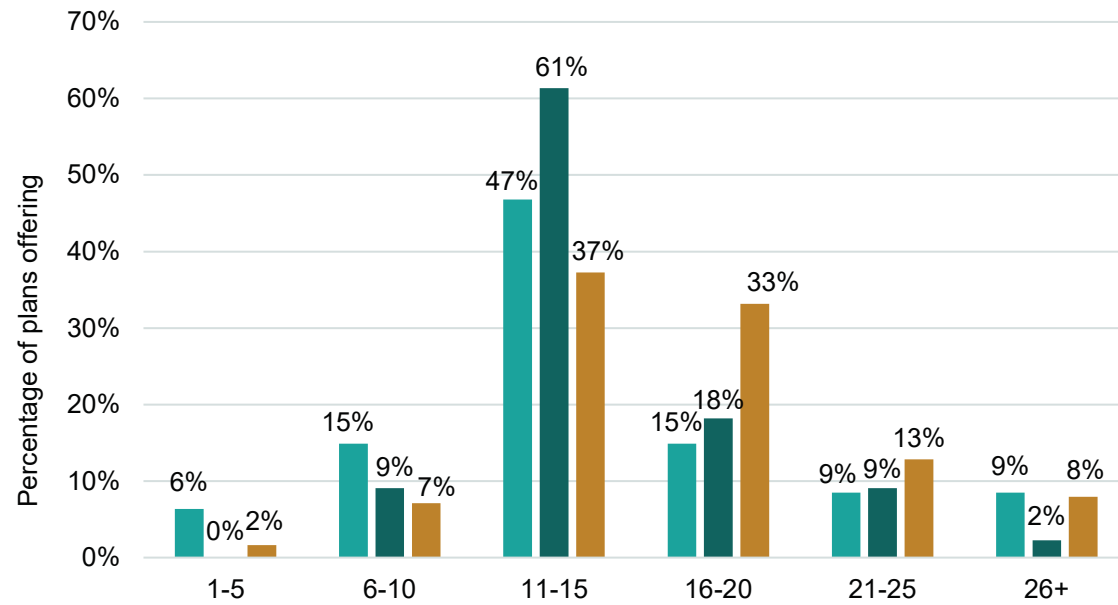


Source: Vanguard, as of December 31, 2022.
Bar chart may not align precisely with percentages due to rounding.

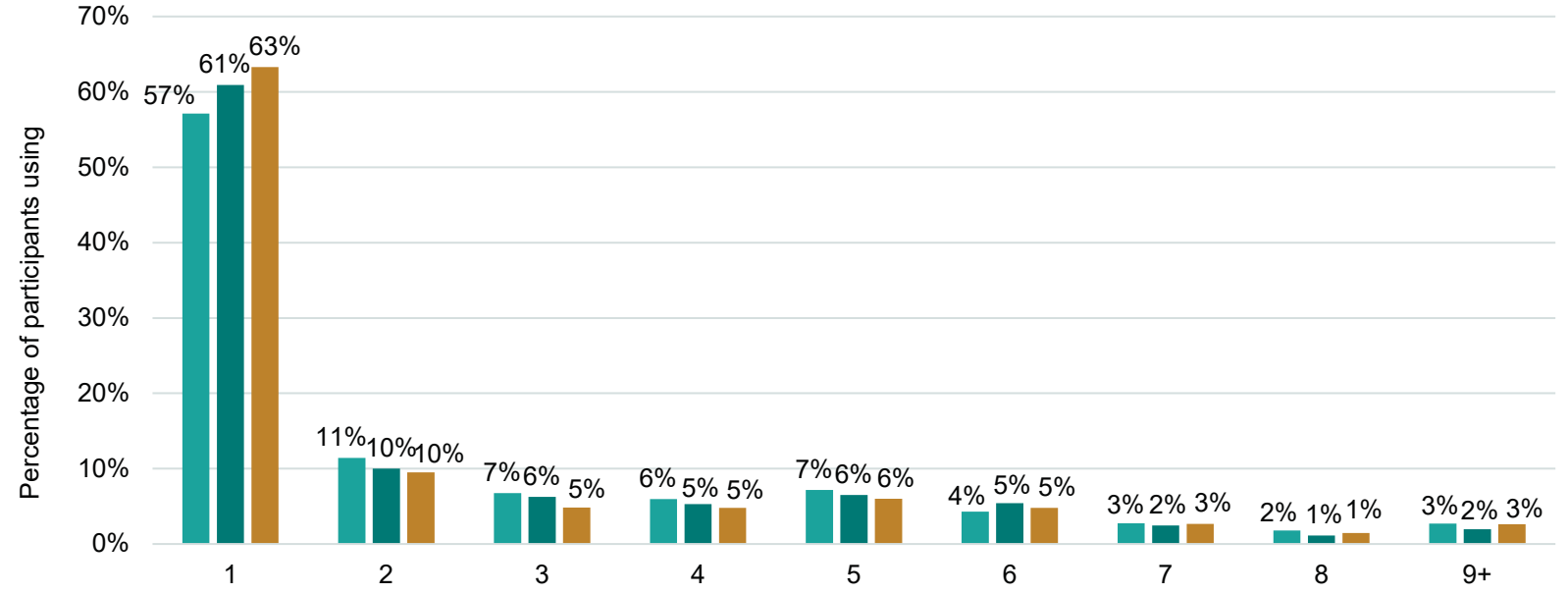


Number of fund options offered and used

Funds offered per plan (all life-cycle funds counted as one)



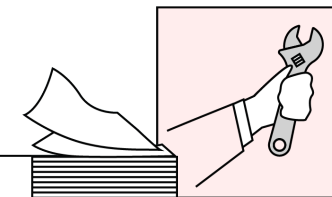
Funds used per participant



	Average funds offered	Median funds offered	Average funds used	Median funds used
Union plans <500 participants	15.7	14	2.5	1
Union plans 500+ participants	15.7	15	2.4	1
Vanguard DC plans	17.4	16	2.4	1

Source: Vanguard, as of December 31, 2022.

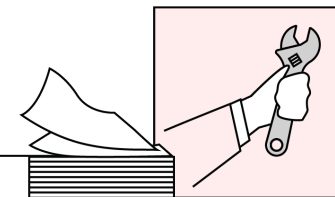
Bar chart may not align precisely with percentages due to rounding.



Types of investment options offered and used*

	Unions <500 participants		Unions 500+ participants		Vanguard DC plans	
	Percentage of plans offering	Percentage of participants using*	Percentage of plans offering	Percentage of participants using*	Percentage of plans offering	Percentage of participants using*
Cash	94%	20%	100%	13%	99%	12%
Money market	51	6	77	4	70	6
Stable value / GIC	87	18	73	16	68	10
Bond	94%	19%	100%	17%	98%	17%
Active	64	10	70	5	80	7
Index	83	16	95	15	89	14
Inflation-protected securities	17	5	18	3	35	3
Multisector	2	3	5	2	8	2
High-yield	6	7	18	1	17	3
International	19	10	18	<0.5	19	3
Emerging markets	0	0	0	0	1	2
Balanced funds	100%	78%	100%	89%	99%	87%
Traditional balanced	57	20	77	14	62	12
Target-risk	15	18	20	8	13	10
Target-date	96	71	98	83	96	83
Company stock	6%	85%	9%	43%	8%	36%
Self-directed brokerage	11%	3%	2%	0%	20%	1%

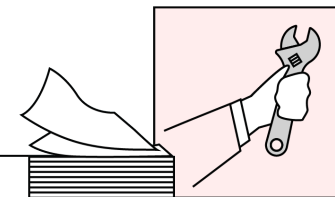
*Among participants offered the option.
Source: Vanguard, as of December 31, 2022.



Types of investment options offered and used* (continued)

	Unions <500 participants		Unions 500+ participants		Vanguard DC plans	
	Percentage of plans offering	Percentage of participants using*	Percentage of plans offering	Percentage of participants using*	Percentage of plans offering	Percentage of participants using*
Equity funds	96%	38%	100%	31%	99%	30%
Domestic equity funds	96%	37%	100%	30%	99%	29%
Large-cap index	96	26	100	23	98	23
Large-cap active	81	22	91	15	90	16
Large-cap value	79	14	82	10	87	9
Large-cap growth	87	17	86	12	91	13
Large-cap blend	96	25	100	23	98	23
Mid-cap index	79	13	89	11	83	14
Mid-cap active	43	13	34	4	52	7
Small-cap index	45	12	48	9	63	11
Small-cap active	57	9	45	10	63	7
Socially responsible	11	2	16	8	15	5
International equity funds	91%	19%	100%	18%	97%	19%
Index international	77	13	86	11	79	14
Active international	77	13	77	12	83	10
Emerging markets	26	9	23	5	35	8
Global equity funds	11%	10%	14%	1%	17%	3%

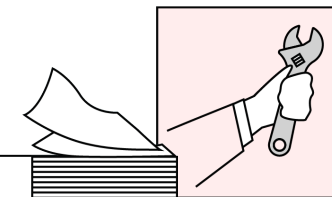
*Among participants offered the option.
Source: Vanguard, as of December 31, 2022.



Types of investment options offered and used* (continued)

	Unions <500 participants		Unions 500+ participants		Vanguard DC plans	
	Percentage of plans offering	Percentage of participants using*	Percentage of plans offering	Percentage of participants using*	Percentage of plans offering	Percentage of participants using*
Sector funds	32%	11%	25%	3%	38%	6%
REIT	21	6	23	2	32	5
Health care	9	12	5	21	8	7
Energy	6	13	2	6	5	5
Precious metals	4	5	2	1	2	2
Technology	4	5	0	0	3	5
Utilities	4	4	0	0	1	2
Natural resources	2	5	2	11	1	4
Financials	2	2	0	0	<0.5	1
Communications	0	0	0	0	<0.5	1
Consumer	0	0	0	0	<0.5	2
Industrials	0	0	0	0	<0.5	1

*Among participants offered the option.
Source: Vanguard, as of December 31, 2022.



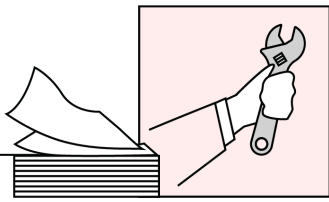
Target-date funds availability and use

	Unions <500 participants	Unions 500+ participants	Vanguard DC plans
Percentage of plans offering	96%	98%	96%
Plan assets invested*	32%	37%	40%
Percentage of plan assets*			
<10%	2%	5%	5%
10–19%	13%	12%	10%
20–29%	27%	14%	17%
30–39%	9%	28%	21%
40–49%	13%	9%	17%
50%+	36%	33%	30%
Percentage of participants using *	71%	83%	83%
Percentage of participant assets**	61%	56%	61%
Percentage of participant assets in target-date funds**			
1–24%	12%	11%	10%
25–49%	9%	12%	8%
50–74%	4%	5%	4%
75–99%	4%	5%	6%
100%	71%	67%	72%
Percentage of participants owning**			
One target-date fund only	69%	65%	71%
One target-date fund plus other funds	25%	27%	23%
Two or more target-date funds only	2%	2%	2%
Two or more target-date funds plus other funds	4%	6%	4%

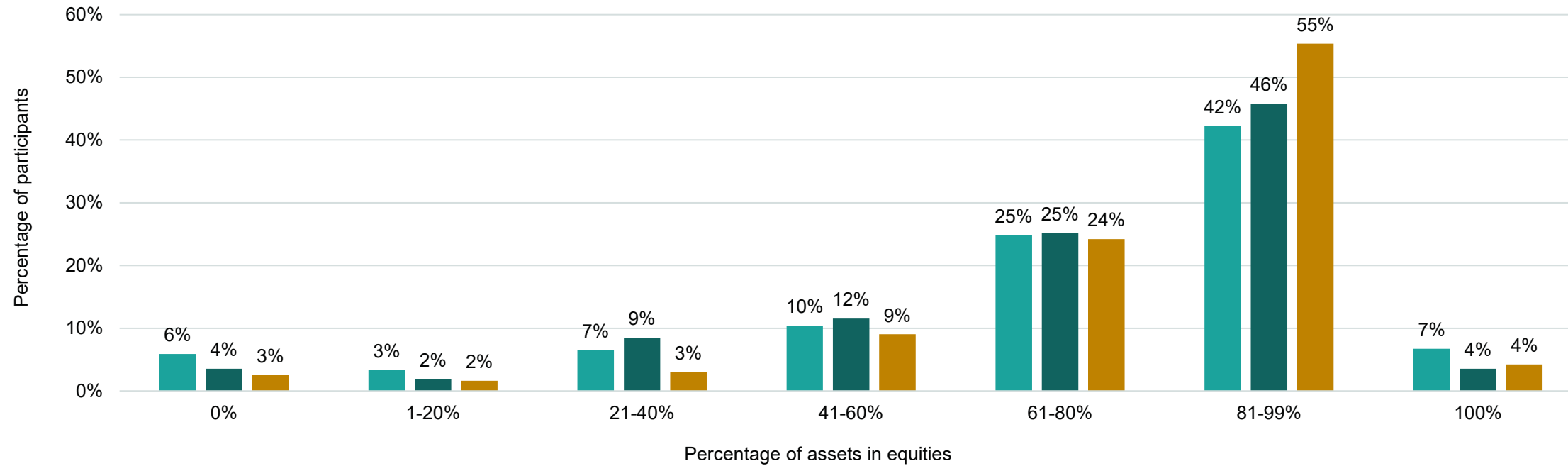
*Among plans offering target-date options.

**Among participants owning target-date options.

Source: Vanguard, as of December 31, 2022.



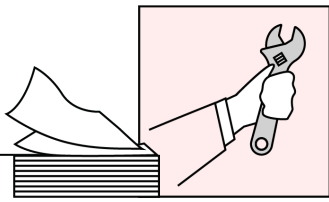
Participant equity exposure



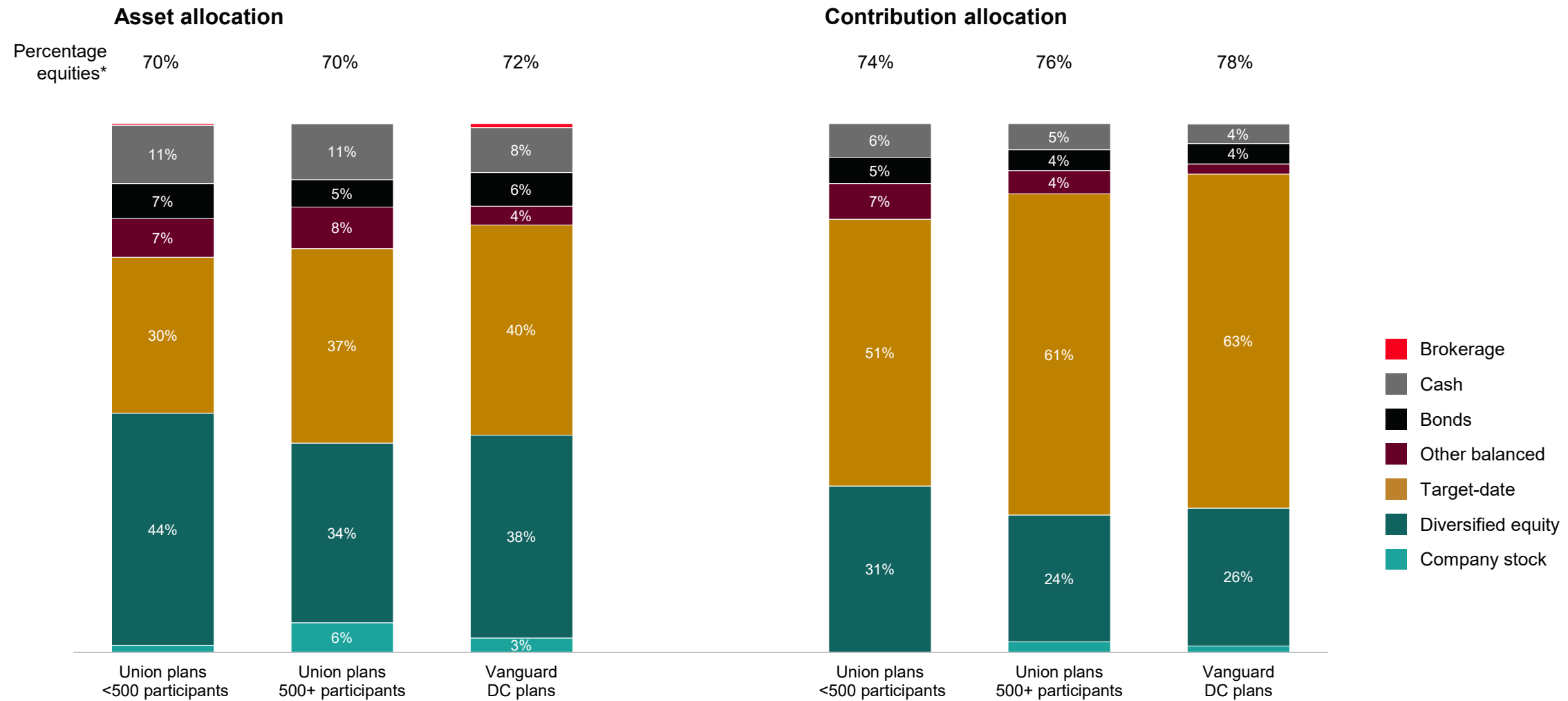
	Average percentage in equities	Median percentage in equities
Union plans <500 participants	70%	80%
Union plans 500+ participants	71%	80%
Vanguard DC plans	77%	86%

Source: Vanguard, as of December 31, 2022.

Bar chart may not align precisely with percentages due to rounding.



Asset and contribution allocations

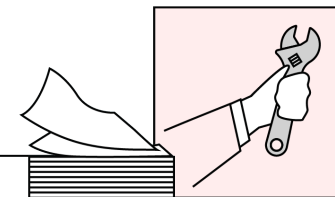


*Equities include company stock, diversified equity, and the equity portion of balanced funds.

Source: Vanguard, as of December 31, 2022.

Bar chart may not align precisely with percentages due to rounding.

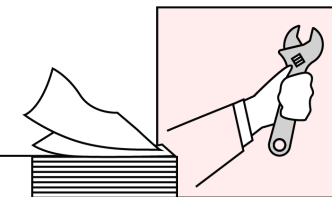
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Participants with professionally managed allocations

	Unions <500 participants	Unions 500+ participants	Vanguard DC plans
All participants			
Single target-date fund	46%	54%	59%
Single balanced fund	3%	2%	<0.5%
Managed account program	6%	7%	7%
Total	55%	63%	66%
New plan entrants during the year			
Single target-date fund	85%	90%	87%
Single balanced fund	3%	1%	<0.5%
Managed account program	2%	3%	2%
Total	90%	94%	89%

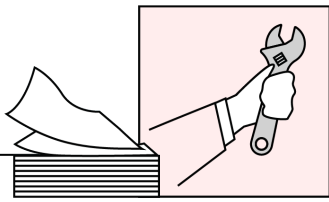
Source: Vanguard, as of December 31, 2022.



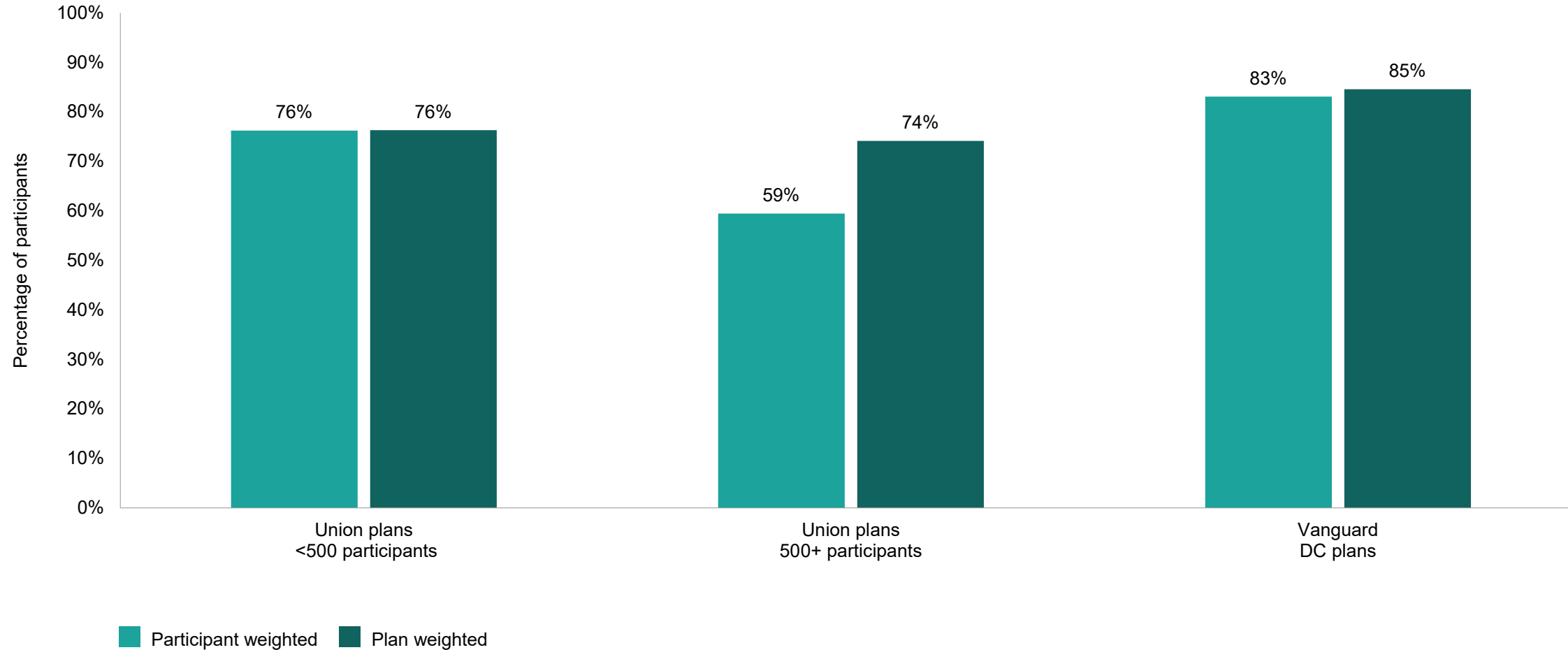
Automatic enrollment options*

	Unions <500 participants	Unions 500+ participants	Vanguard DC plans
Automatic enrollment*			
Number of plans	14	16	884
Percentage of plans	33%	48%	58%
Default automatic enrollment rate			
1 percent	0%	6%	2%
2 percent	0%	25%	5%
3 percent	36%	31%	34%
4 percent	14%	6%	14%
5 percent	7%	19%	17%
6 percent or more	43%	13%	28%
Default automatic increase rate			
1 percent	71%	75%	66%
2 percent	0%	0%	3%
Voluntary election	29%	19%	25%
Service feature not offered	0%	6%	6%
Default automatic increase cap			
<6 percent	10%	8%	2%
6 to 9 percent	10%	25%	17%
10 to 14 percent	20%	33%	48%
15 to 19 percent	40%	8%	22%
20+ percent	20%	17%	6%
No cap	0%	8%	5%
Default fund			
Target-date fund	100%	100%	98%
Other balanced fund	0%	0%	1%
Money market or stable value fund	0%	0%	1%

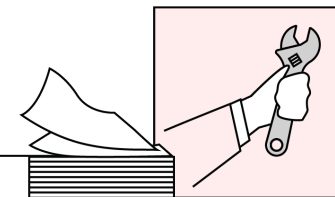
*Limited to plans using Vanguard's automatic enrollment service.
Source: Vanguard, as of December 31, 2022.



Participation rates



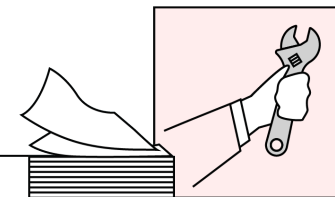
Source: Vanguard active plans with nondiscrimination testing completed during the past two years. Bar chart may not align precisely with percentages due to rounding.



Participant deferral rates

	Unions <500 participants	Unions 500+ participants	Vanguard DC plans
Deferral rates			
Average	6.3%	7.3%	7.4%
Median	5.0%	6.0%	6.4%
Distribution of rates			
<4.0%	39%	31%	25%
4.0% – 6.0%	21%	19%	19%
6.1% – 9.9%	21%	25%	32%
10.0% – 14.9%	12%	17%	17%
15.0%+	7%	8%	7%

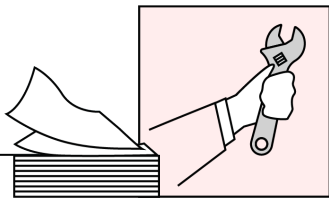
Source: Vanguard active plans with nondiscrimination testing completed during the past two years.



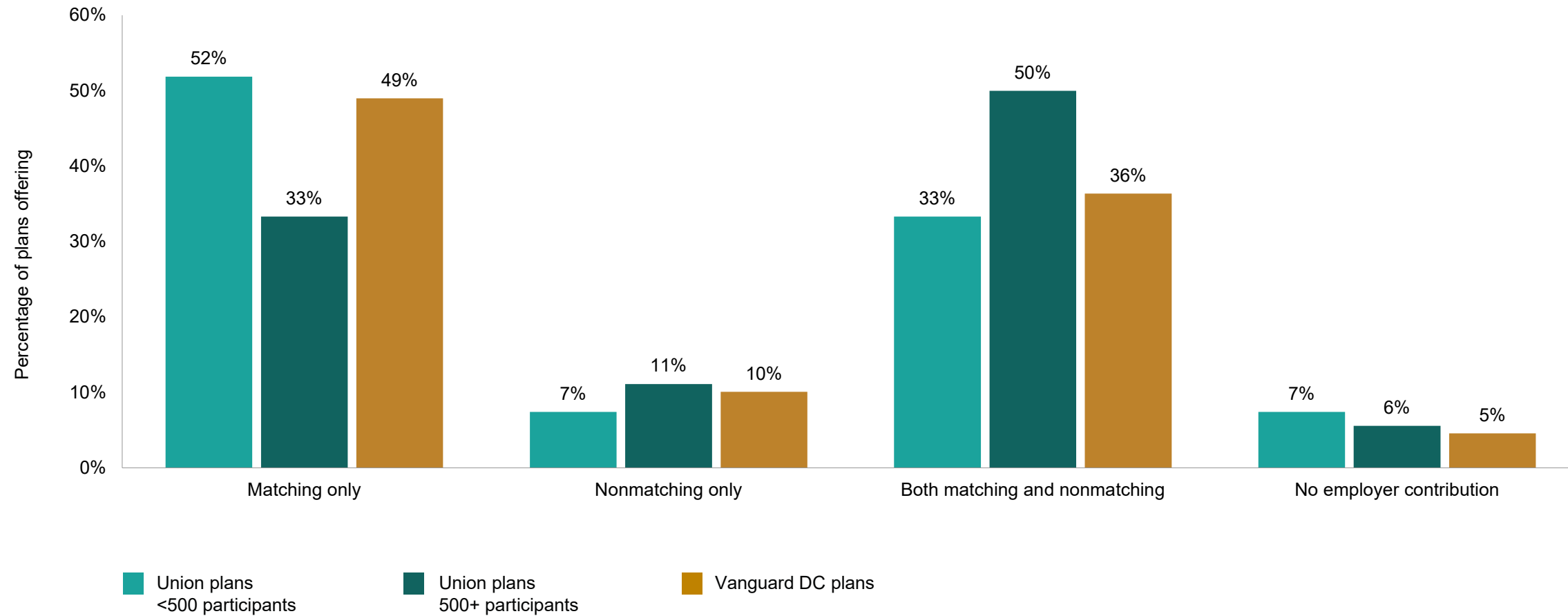
Aggregate participant and employer contribution rates

	Unions <500 participants	Unions 500+ participants	Vanguard DC plans
Total saving rate			
Average	9.2%	8.5%	11.3%
Median	8.0%	7.0%	10.6%
Distribution of rates			
<5.0%	16%	35%	18%
5.0% – 8.9%	20%	26%	20%
9.0% – 11.9%	19%	15%	21%
12.0% – 14.9%	17%	10%	17%
15.0% +	29%	14%	23%

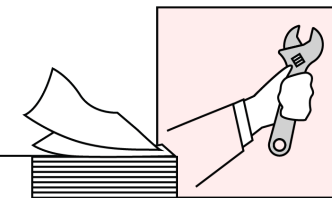
Source: Vanguard active plans with nondiscrimination testing completed during the past two years.



Types of employer contributions

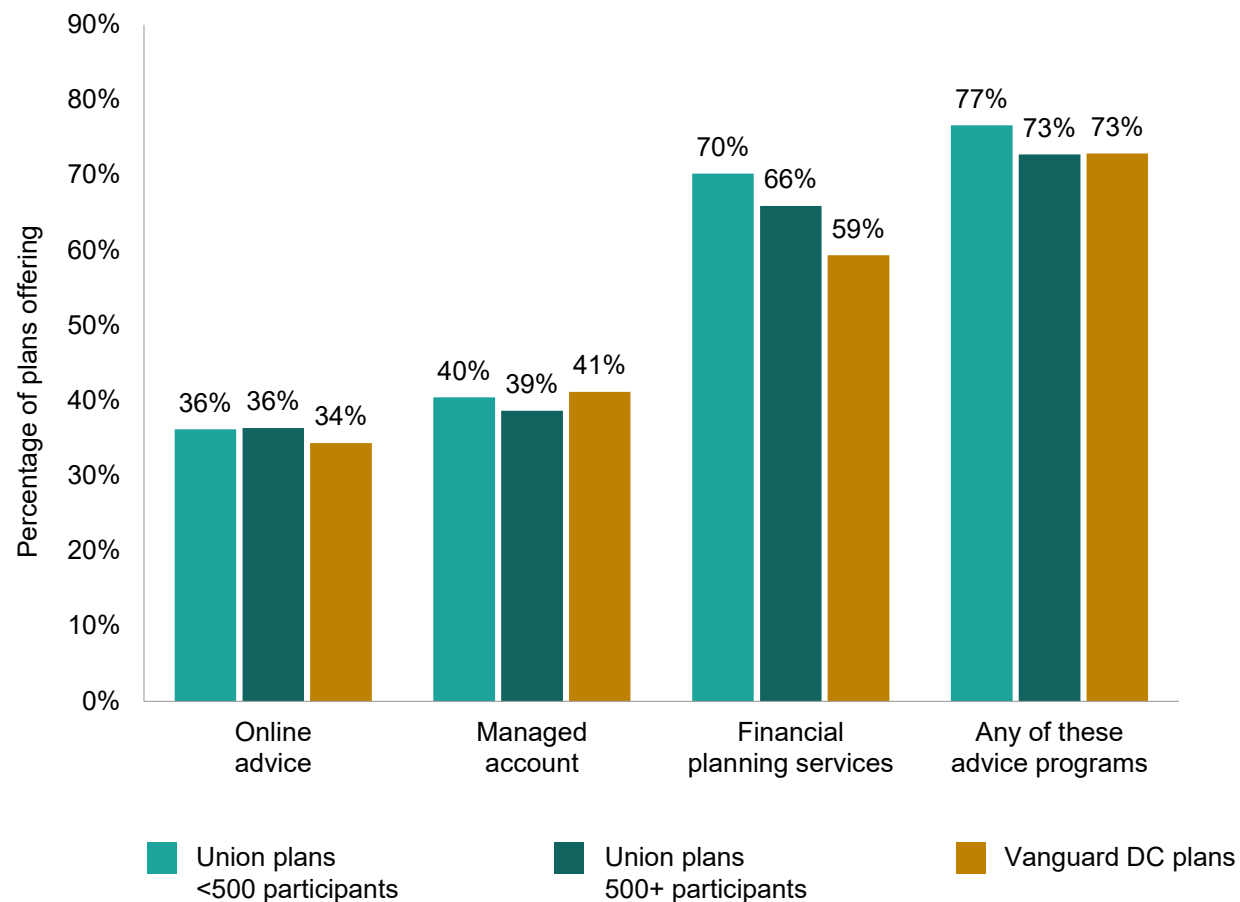


Source: Vanguard active plans with nondiscrimination testing completed during the past two years. Bar chart may not align precisely with percentages due to rounding.

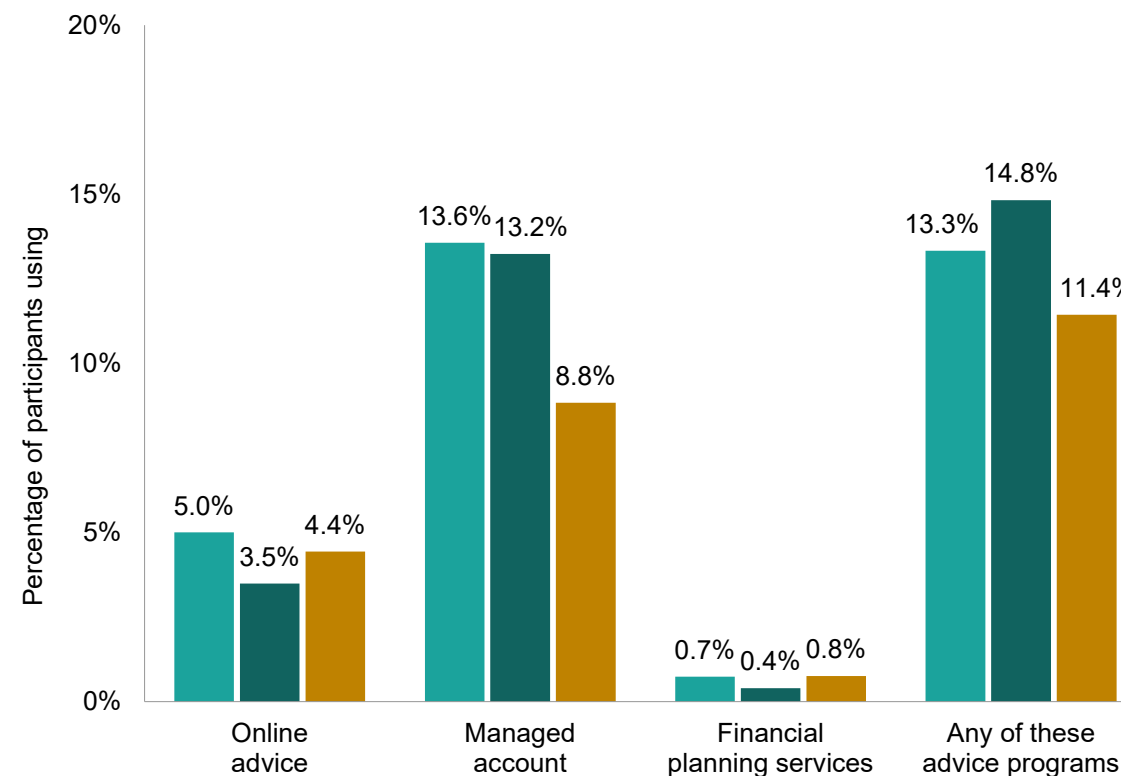


Advice services

Advice offered

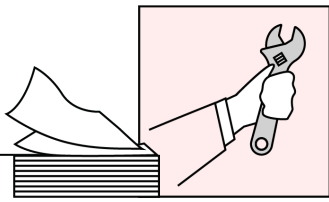


Advice used

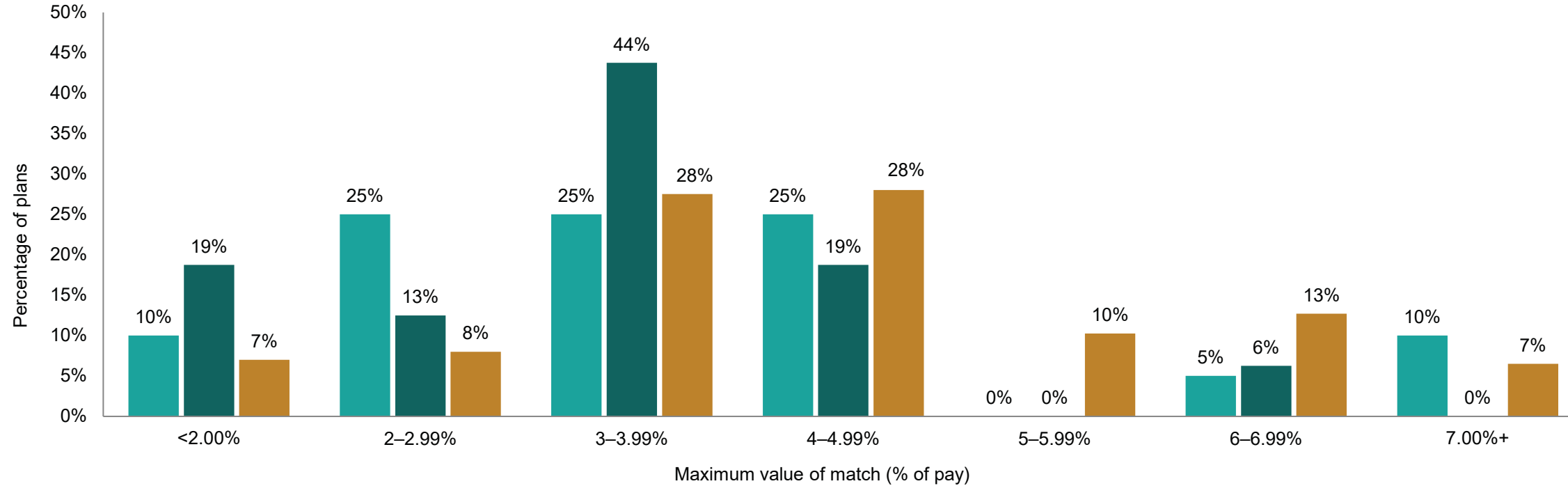


Source: Vanguard, as of December 31, 2022.

Bar chart may not align precisely with percentages due to rounding.

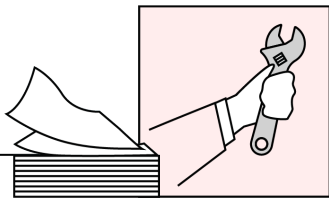


Matching contributions

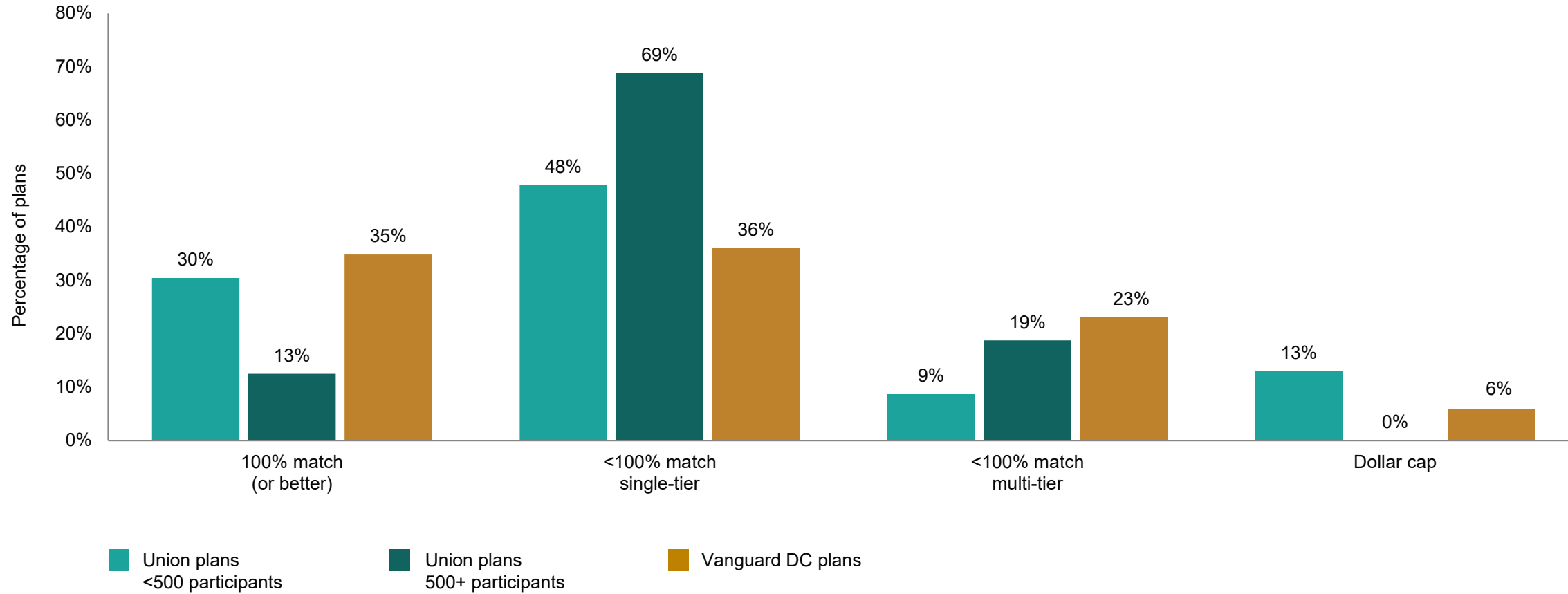


	Average value	Median value
Union plans <500 participants	4.6%	3.0%
Union plans 500+ participants	3.1%	3.0%
Vanguard DC plans	4.5%	4.0%

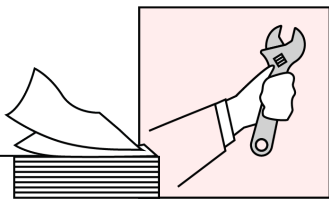
Source: Vanguard active plans with nondiscrimination testing completed during the past two years. Bar chart may not align precisely with percentages due to rounding.



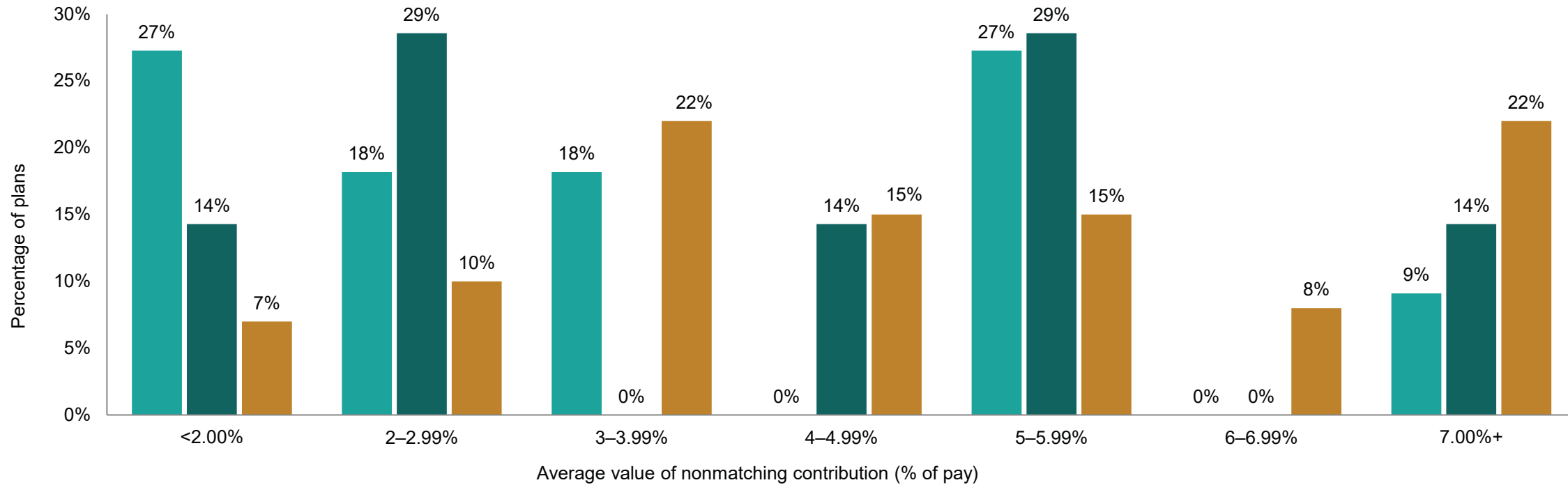
Matching formulas



Source: Vanguard active plans with nondiscrimination testing completed during the past two years. Bar chart may not align precisely with percentages due to rounding.

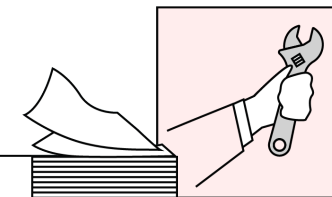


Nonmatching/Profit-sharing employer contributions



	Average value	Median value
Union plans <500 participants	3.8%	3.1%
Union plans 500+ participants	4.1%	4.7%
Vanguard DC plans	5.1%	4.1%

Source: Vanguard active plans with nondiscrimination testing completed during the past two years. Bar chart may not align precisely with percentages due to rounding.



Roth availability and use

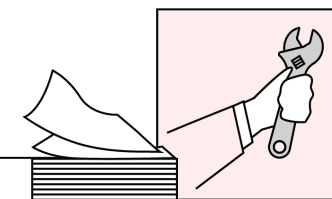
	Unions <500 participants	Unions 500+ participants	Vanguard DC plans
Percentage of plans offering Roth (among plans with elective deferrals)	56%	67%	80%
Percentage of plan assets invested in Roth*	5.1%	3.9%	3.8%
Distribution of percentage of plan assets in Roth			
<1%	42%	23%	19%
1–2%	13%	36%	36%
3–5%	38%	36%	27%
6–9%	4%	0%	13%
10–14%	4%	5%	4%
15%+	0%	0%	2%
Percentage of participants with assets in Roth*	20%	20%	16%
Percentage of participant assets in Roth**	18%	19%	17%
Distribution of participant assets in Roth			
1–24%	59%	50%	54%
25–49%	24%	24%	23%
50–74%	12%	10%	14%
75–99%	3%	10%	6%
100%	1%	7%	3%
Percentage of participants making Roth contributions (past 12 mo)***	23%	23%	15%
Percentage of participant contributions going to Roth**	50%	49%	55%
Distribution of percentage of participant contributions to Roth			
1–24%	21%	22%	22%
25–49%	30%	28%	26%
50–74%	20%	18%	15%
75–99%	5%	5%	7%
100%	24%	28%	30%

*Among plans offering Roth.

**Among participants using Roth.

***Among participants making elective deferrals.

Source: Vanguard, as of December 31, 2022.



Participant loans and in-service withdrawals

	Unions <500 participants	Unions 500+ participants	Vanguard DC plans
Outstanding loans*			
Percentage of participants with outstanding loans	18%	19%	12%
Percentage of account balance in loans	10%	12%	11%
Average loan balance	\$11,878	\$11,043	\$10,369
Number of outstanding loans per participant*			
No loans	82%	81%	88%
One loan	14%	13%	10%
Two loans	3%	6%	2%
Three+ loans	1%	0%	0%
Loans issued past 12 months*			
Average per 1,000 active participants	114	123	93
Average loan amount	\$13,479	\$10,940	\$10,701
Nonhardship withdrawals taken past 12 months**			
Average per 1,000 active participants	163	120	93
Average withdrawal amount	\$17,766	\$12,858	\$17,560
Hardship withdrawals taken past 12 months**			
Average per 1,000 active participants	109	36	49
Average withdrawal amount	\$6,449	\$8,609	\$5,126

*Among plans allowing loans.

**Among participants allowed in-service withdrawals.

Source: Vanguard, as of December 31, 2022.

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