Arrow Consulting

Age	40	
Current Salary	85150	
Current Portfolio	55000	
Annual Investment Rate	0.096148586	<-- Number needed to reach 1000000 in 20 years
Salary Growth Rate	0.020	<-- changed to random number between 0 and 5.1%
Portfolio Growth Rate	0.08489098	<-- norm.inv function to show the variability of 9.85% rat with 4.9% std

1. Keiran would have to increase his overall annual investment rate to 9.62% (0.09614) in order to reach his goal of 1000000 in 20 years.

2. There is a 60% chance that Kieran does not reach is $1 million goal. In this simulation with the variabilty of the salary growth rate Kieran comes close but ultimately does not have a very good chance of reaching his goal. He does howevr have a better chance if he were to decide to work a few years longer.

3. I would recommmend that workers like Kieran try to invest more of there slaries for compound interest in the long term and also recommend staying at work for another few years before deciding to retire. That is unless slary growth rates begin to increase in the next 20 years.

4. Kieran has a much better chance of reaching is $1 million goal if he works five more years. He has a approximately a 67% chance with the same variability in the 20 year model, which only showed a 60% probability of him not reaching his goal. While it deifnitely isn't a gurantee it is a better model.

5. The model can be adjusted at any point for any different circumstances for an employee. If an employee wanted to adjust this model for there personal use they could use the protfolio growth rate variability range and the salary grwoth rate range to model there financial cirumstances. The simiulation will then provide them with data dpeending on their financial circumstances. It can also be adjust for specific goals.

Model

Year	Beginning Balance	Salary	New Investment	Earnings	Ending Balance	Age
1	55000	85150	8187.052062	5017	68204	41
2	68204	86853	5364	6018	79585	42
3	79585	88590	5633	6995	92213	43
4	92213	90362	5914	8079	106206	44
5	106206	92169	6210	9280	121696	45
6	121696	94012	9039	10715	141450	46
7	141450	95893	9220	12399	163069	47
8	163069	97811	9404	14242	186715	48
9	186715	99767	9592	16258	212565	49
10	212565	101762	9784	18460	240810	50
11	240810	103797	9980	20866	271656	51
12	271656	105873	10180	23493	305329	52
13	305329	107991	10383	26360	342072	53
14	342072	110151	10591	29488	382151	54
15	382151	112354	10803	32900	425854	55
16	425854	114601	11019	36619	473491	56
17	473491	116893	11239	40672	525403	57
18	525403	119231	11464	45089	581955	58
19	581955	121615	11693	49899	643547	59
20	643547	124047	11927	55138	710612	60
21	710612	126528	12166	60841	783618	60
22	783618	129059	12409	67049	863076	60
23	863076	131640	12657	73805	949538	60
24	949538	134273	12910	81155	1043603	60
25	1043603	136958	13168	89151	1145923	60

Target	1000000
Under $1000000:	593
P(<10000000)	0.593
Over $1000000	407
P(>1000000)	0.407

simulation	Ending Balance
1	710612
2	333700.363
3	3268112.153
4	703559.3856
5	484600.3272
6	220214.2262
7	1525260.141
8	758226.6287
9	407601.1769
10	1746024.173
1000	355065.0389

Simulation (25 years)	Ending Balance
1	1145923
2	1776112.799
3	557121.6229
4	500402.7316
5	491173.2791
6	1627140.843
7	1746443.026
8	765389.848
9	688907.9273
10	1420376.982
1000	1452481.332

Under $1000000:	333
P(<10000000)	0.333
Over $1000000	667
P(>1000000)	0.667