Retirement Planning Project

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Bob Davidson's Retirement Plan

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Current Situation

46-year-old professor, wants to retire at 60-65.

2

Financial Goals

Comfortable retirement, daughter’s education, desired lifestyle, travel.

3

Key Questions

Savings rate sufficiency, annual savings amount, risk management (inflation, etc.).

4

Project Aim

Build financial model, analyze it, create structured approach, evaluate strategies, answer key questions, reflect on lessons learned.

Create Retirement Plan Model

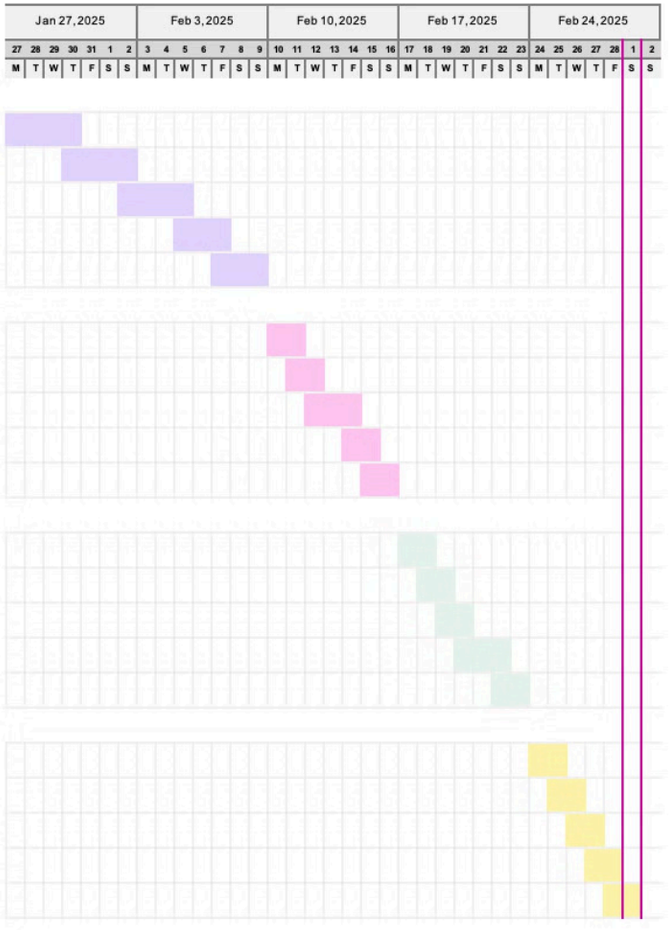
Project Plan

Retirement Planning Project Plan

Project start: Mon, 1/27/2025

Display week: 1

TASK	PROGRESS	START	END
Project Plan & Design			
Review requirements	100%	1/27/25	1/30/25
Create ghantt chart to ouline tasks and timelines	100%	1/30/25	2/2/25
Identify key variables & relationships in retirement planning model	100%	2/2/25	2/5/25
Create a concept map	100%	2/5/25	2/7/25
Review the map & submit for feedback	100%	2/7/25	2/9/25
Execution			
Review requirements & concept map	100%	2/10/25	2/11/25
Create initial structure of retirement planning model in Excel	100%	2/11/25	2/12/25
Ingest input parameters, decisions and calculations into the model	100%	2/12/25	2/14/25
Test and validate the model to ensure accuracy	100%	2/14/25	2/15/25
Submit model for feedback & make refinements	100%	2/15/25	2/16/25
Evaluation			
Review Bob questions & personal case questions	100%	2/17/25	2/18/25
Analyze the Excel model results by capturing detailed responses to each case question	100%	2/18/25	2/19/25
Outline the structure of 6-to-9 page case paper	100%	2/19/25	2/20/25
Write the introduction, methodology, case questions and reflection sections	100%	2/20/25	2/22/25
Review answers for grammatical, citation errors and submit case paper for feedback	100%	2/22/25	2/23/25
Result			
Create a PPT (PowerPoint) with 12-to-16 slides based on model, concept map and 6-to-9 page case pap	100%	2/24/25	2/25/25
Review PPT for clarity and ensure a coherent integration of concepts and images	100%	2/25/25	2/26/25
Do mock reharsal of screen recording & refine PPT	100%	2/26/25	2/27/25
Create a screen capture video of PPT in Panapto with explanation of 8 to 12 minutes in length	100%	2/27/25	2/28/25
Review recording and submit for feedback	100%	2/28/25	3/1/25
Insert new rows ABOVE this one			



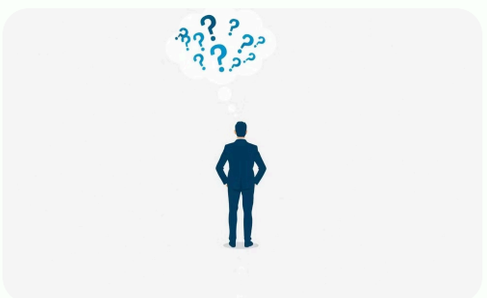
Create Retirement Plan Model

Process

Creating a retirement plan model involves four key steps. The flow from initial inputs, through key human decisions and calculations determines the final outputs of the model. This ensures a logical and structured approach to address Bob's retirement questions.

Input Parameters

Model begins with gathering initial financial data inputs like savings, salary, and retirement goals.

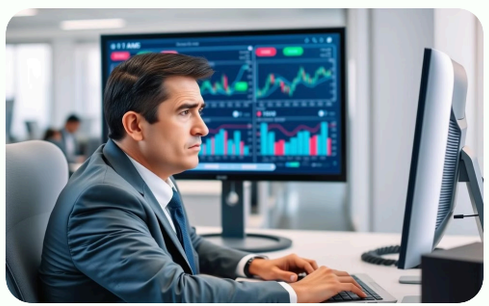


Decisions

Key decisions, like retirement age, are ingested into the model to test different scenarios.

Calculations

Model calculates crucial financial variables like ROI (Return on Investment), FV (Future Value), PMT (Periodic Payment), Total Income & Savings, Years until retirement.



Outputs

Answers to Bob's key questions based on the calculations (Ex: does current savings meet retirement goals ?)

Create Retirement Plan Model

Concept Map

To determine if Bob's current savings are sufficient for retirement (a key model output), I developed a concept map as shown below. This map identifies key variables and their relationships, linking them across three modules (Inputs, Decisions, Calculations) within the Retirement Plan model. Concept maps ensure model accuracy and enhance the clarity of the model outputs.

For example, the input parameter of current age, when combined with the decision of retirement age, is used to calculate the years until retirement: Retirement Age - Current Age.

Create Retirement Plan Model

Financial Model

Retirement plan model is built in Excel as shown below. Input parameters are in blue cells, while decision variables are in gold. Calculations (in violet) are automatically generated based on inputs and decisions. The table in grey projects Bob's retirement savings and estimates his retirement income at ages 60 and 65, both with and without inflation, to facilitate scenario analysis. Further, model also assesses future expenses, and analyzes potential risks.

Retirement Planning Model

Note: Blue colored cells are input paramters. Gold-colored cells are decisions (adjustable values). Calculations (in violet) are automatically genrated based on input parameters & decisions.

Input Parameters		Decisions		Calculations	
Current retirement savings	137,000.00	Return on Investment (ROI) on Savings	7.12%	ROI % Calculation	7.12%
Annual Salary	95000.00	Personal Contribution (Till 10k tax-free)	7500	Employer Contribution	9500.00
Current Age	46	Retirement Age	65	Years till retirement	19
Retirement funds withdrawl rate	4.00%	TIAA long-term bond fund	0.20	FV (Future Value of Annuity)	$2,456,394.13
Asset 1: Home equity	40000	Global Equity Fund (U.S. equities)	0.32	PMT	$60,596.81
Asset 2: College fund (college savings	24000	Global Equity Fund (Non-U.S. equities)	0.48		
Asset 3: Life Insurance	580,000	Salary Growth Rate (Annual)	4.00%		
Extra Income (Research work)	21111.11	Extra Income (Consulting upto $20k)	10,000.00	Total Extra Income (Annual)	31,111.11
Asset 4: Other funds	50,000	Inflation Rate	2%		

Year	Age	Annual Salary	Retirement Fund				ROI (with out extra income)	Retirement savings with out extra income	ROI (with extra income)	Retirement savings with extra income	Retirement at 65 Withdrawls (w/o extra	Retirement at 65 Withdrawls (w/ extra income)	Inflation Factor	Inflation adjusted Savings (w/ extra income)	Inflation adjusted income)
			Personal Contribution	Employer Contribution	Total Savings	Extra Income to Savings									
2,025	46.00	95,000.00	7,500.00	9500.00	17,000.00	48,111.11		137,000.00		137,000.00			1	137000.00	
2,026	47.00	98,800.00	7,500.00	9880.00	17,380.00	48,491.11	9,754.40	164,134.40	9,754.47	195,245.58			1.02	191417.24	
2,027	48.00	102,752.00	7,500.00	10275.20	17,775.20	48,886.31	11,686.37	193,595.97	13,901.49	258,033.38			1.0404	248013.63	
2,028	49.00	106,862.08	7,500.00	10686.21	18,186.21	49,297.32	13,784.03	225,566.21	18,371.98	325,702.67			1.061208	306916.90	
2,029	50.00	111,136.56	7,500.00	11113.66	18,613.66	49,724.77	16,060.31	260,240.18	23,190.03	398,617.47			1.08243216	368260.93	
2,030	51.00	115,582.03	7,500.00	11558.20	19,058.20	50,169.31	18,529.10	297,827.48	28,381.56	477,168.35			1.104080803	432186.08	
2,031	52.00	120,205.31	7,500.00	12020.53	19,520.53	50,631.64	21,205.32	338,553.33	33,974.39	561,774.38			1.126162419	498839.57	
2,032	53.00	125,013.52	7,500.00	12501.35	20,001.35	51,112.46	24,105.00	382,659.68	39,998.34	652,885.18			1.148685668	568375.84	
2,033	54.00	130,014.06	7,500.00	13001.41	20,501.41	51,612.52	27,245.37	430,406.46	46,485.42	750,983.12			1.171659381	640956.86	
2,034	55.00	135,214.62	7,500.00	13521.46	21,021.46	52,132.57	30,644.94	482,072.86	53,470.00	856,585.69			1.195092569	716752.59	
2,035	56.00	140,623.21	7,500.00	14062.32	21,562.32	52,673.43	34,323.59	537,958.77	60,988.90	970,248.02			1.21899442	795941.32	
2,036	57.00	146,248.14	7,500.00	14624.81	22,124.81	53,235.92	38,302.66	598,386.24	69,081.66	1,092,565.61			1.243374308	878710.14	
2,037	58.00	152,098.06	7,500.00	15209.81	22,709.81	53,820.92	42,605.10	663,701.15	77,790.67	1,224,177.20			1.268241795	965255.36	
2,038	59.00	158,181.98	7,500.00	15818.20	23,318.20	54,429.31	47,255.52	734,274.87	87,161.42	1,365,767.92			1.29360663	1055783.02	
2,039	60.00	164,509.26	7,500.00	16450.93	23,950.93	55,062.04	52,280.37	**810,506.17**	97,242.68	**1,518,072.63**			1.319478763	**1150509.34**	
2,040	61.00	171,089.63	7,500.00	17108.96	24,608.96	55,720.07	57,708.04	892,823.17	108,086.77	1,681,879.48			1.345868338	1249661.23	
2,041	62.00	177,933.22	7,500.00	17793.32	25,293.32	56,404.43	63,569.01	981,685.50	119,749.82	1,858,033.73			1.372785705	1353476.89	
2,042	63.00	185,050.55	7,500.00	18505.05	26,005.05	57,116.17	69,896.01	1,077,586.56	132,292.00	2,047,441.90			1.400241419	1462206.35	
2,043	64.00	192,452.57	7,500.00	19245.26	26,745.26	57,856.37	76,724.16	1,181,055.98	145,777.86	2,251,076.13			1.428246248	1576112.06	
2,044	65.00	200,150.67	7,500.00	20015.07	27,515.07	58,626.18	84,091.19	**1,292,662.24**	160,276.62	**2,469,978.93**			1.456811173	**1695469.51**	
2,045	66.00						92,037.55	1,240,955.75	175,862.50	2,371,179.77	51706.49	98799.16			67818.78
2,046	67.00						88,356.05	1,189,249.26	168,828.00	2,272,380.62	51706.49	98799.16			67818.78
2,047	68.00						84,674.55	1,137,542.77	161,793.50	2,173,581.46	51706.49	98799.16			67818.78
2,048	69.00						80,993.05	1,085,836.28	154,759.00	2,074,782.30	51706.49	98799.16			67818.78
2,049	70.00						77,311.54	1,034,129.79	147,724.50	1,975,983.14	51706.49	98799.16			67818.78
2,050	71.00						73,630.04	982,423.30	140,690.00	1,877,183.99	51706.49	98799.16			67818.78
2,051	72.00						69,948.54	930,716.81	133,655.50	1,778,384.83	51706.49	98799.16			67818.78
2,052	73.00						66,267.04	879,010.32	126,621.00	1,679,585.67	51706.49	98799.16			67818.78
2,053	74.00						62,585.53	827,303.83	119,586.50	1,580,786.52	51706.49	98799.16			67818.78
2,054	75.00						58,904.03	775,597.34	112,552.00	1,481,987.36	51706.49	98799.16			67818.78
2,055	76.00						55,222.53	723,890.85	105,517.50	1,383,188.20	51706.49	98799.16			67818.78
2,056	77.00						51,541.03	672,184.36	98,483.00	1,284,389.04	51706.49	98799.16			67818.78
2,057	78.00						47,859.53	620,477.87	91,448.50	1,185,589.89	51706.49	98799.16			67818.78
2,058	79.00						44,178.02	568,771.38	84,414.00	1,086,790.73	51706.49	98799.16			67818.78
2,059	80.00						40,496.52	517,064.90	77,379.50	987,991.57	51706.49	98799.16			67818.78
2,060	81.00						36,815.02	465,358.41	70,345.00	889,192.41	51706.49	98799.16			67818.78
2,061	82.00						33,133.52	413,651.92	63,310.50	790,393.26	51706.49	98799.16			67818.78
2,062	83.00						29,452.02	361,945.43	56,276.00	691,594.10	51706.49	98799.16			67818.78
2,063	84.00						25,770.51	310,238.94	49,241.50	592,794.94	51706.49	98799.16			67818.78
2,064	85.00						22,089.01	258,532.45	42,207.00	493,995.79	51706.49	98799.16			67818.78
2,065	86.00						18,407.51	206,825.96	35,172.50	395,196.63	51706.49	98799.16			67818.78
2,066	87.00						14,726.01	155,119.47	28,138.00	296,397.47	51706.49	98799.16			67818.78
2,067	88.00						11,044.51	103,412.98	21,103.50	197,598.31	51706.49	98799.16			67818.78
2,068	89.00						7,363.00	51,706.49	14,069.00	98,799.16	51706.49	98799.16			67818.78
2,069	90.00						3,681.50	0.00	7,034.50	0.00	51706.49	98799.16			67818.78

Bob's Questions

Savings Rate: Is Bob's current savings rate adequate for retirement?

Retirement Savings

At 65, Bob's retirement savings would be $1,695,469.51 at current yearly savings of $48.1K (Adjusted for 2% inflation)

Withdrawal Rate

With a 4% withdrawal rate, Bob can take $45,640.10 yearly from TIAA retirement fund of $1,695,469.51 (Adjusted for 2% inflation)

Standard of Living

With social security benefits of $20 - 30K annually and other inheritances (house), Bob can maintain his current lifestyle after retirement.

Bob's Questions

How much should he set aside each year?

To ensure his retirement savings last 30+ years, Bob needs to adjust his savings strategy. Here's what he should consider:

$60.6K

Ideal Annual Investment

To ensure his retirement savings last, this is the recommended amount to invest annually to TIAA retirement fund.

$48.1K

Current Annual Investment

This is Bob's current annual investment, which falls short of the recommended amount.

>$10K

Recommended Increase

Increasing his personal contributions (consider tax bracket) by at least this amount per year is highly recommended to ensure financial security well beyond age 90.

Bob's Questions

How long can he live comfortably after retirement?

Bob's retirement savings are projected to last for 25 years as per the projected withdrawal plan of Model. After he hits age 91, his savings would be depleted. So, Bob can live comfortably after retirement for 25 years under 4% withdrawal rule at his current savings rate.

How much will he have to live on when he retires?

If Bob retires at 65, he will have approximately $1,695,469.51 in his retirement fund, allowing him to withdraw around $45640.10 annually (adjusted for 2% inflation).

Bob's Questions

What risks does he face, and how should his retirement plan account for them?

Health & Care Insurance

Allocate a portion of his salary towards long-term health & care insurance of him & his wife to protect against unforeseen healthcare & medical costs.

Daughter's Welfare

Set aside funds for his daughter's welfare until she secures stable employment, providing a safety net for unexpected care needs.

Potential Inheritances

Discuss potential inheritances with his mother and mother-in-law early on and factor this into his retirement plan.

Conclusion: Securing Bob's Retirement

Key Takeaways

Scenario Planning: Crucial for retirement success, test various ages, savings, and inflation rates.

Inflation Impact: Significantly affects retirement outcomes.

Diversification: Mitigates risks for financial security.

Recommendations for Bob

Increase Savings: Boost annual contributions for a secure future.

Diversify Investments: Spread investments to mitigate risks.

Discuss Inheritances: Early discussions can inform planning.

Future Enhancements

AI Integration: Use AI in Excel or Excel Online for advanced forecasting.

Detailed Planning: Include tax rates, annuities, and real estate investments for comprehensive retirement security.

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