MCP SERVER | NO CODE | CLOUD HOSTED

Retirement Planning Engine MCP for AI Agents

Accurate Portfolio Longevity and Social Security Benefit Simulation

The Retirement Planning Engine gives your AI agents a full financial simulation suite. It projects your savings growth, tests how long your portfolio will last under market stress, and helps you figure out the best time to file for Social Security or if an annuity is better than a lump sum.

A+ Quality Score 100/100

retirement | savings | social-security | monte-carlo | tax-optimization

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vinkius.com/mcp/retirement-planning-engine

SCAN TO VIEW

The connectivity layer between AI and the world's software.

Vinkius sits between AI and every application. All communication passes through Vinkius Cloud via the Model Context Protocol (MCP) — with governance, observability, and security at every layer.

Your AI Connections Run Through Vinkius Cloud

The world's largest managed MCP catalog

Vinkius is the connectivity layer where AI connects to the software your business already runs. We handle the hosting, the security, the credentials, the uptime — you get agents that actually do things.

We operate the world's largest managed MCP catalog. Major SaaS platforms, CRMs, databases, and cloud providers — running, monitored, production-ready. This MCP server is hosted and maintained by the Vinkius Cloud for AI Agents.

> *The agent doesn't manage credentials, doesn't manage uptime, doesn't manage security. Vinkius does.*
>
> — Architecture principle

Four Pillars of the Vinkius Runtime

01 — Security by design

Credentials stay encrypted at rest via AES-256. The AI agent never touches raw keys — they're injected into a sandboxed V8 isolate at runtime. Actions are logged, and connections have an emergency kill switch.

02 — Built on MCP Fusion

This MCP server was built with **MCP Fusion**, the open-source framework (Apache 2.0) that powers the entire Vinkius catalog. Schema-as-firewall strips undeclared fields, compiled PII redaction runs at zero overhead, and cryptographic lockfiles produce git-diffable audit trails.

03 — Deterministic observability

Eight immutable metrics per endpoint: request volume, p95 latency, error rate, active connections, cost attribution. A live payload feed logs every tool call with mutation detection.

04 — Autonomous operations

Servers are deployed, monitored, and patched autonomously. New capabilities and security patches ship weekly. Zero-downtime deployments ensure continuous availability across all managed MCP servers.

AES-256	Ed25519	24h TTL	V8 Isolate
Encryption at rest	PKI vault signatures	Ephemeral session keys	Sandboxed execution

One Token. Instant Access.

Every MCP server on Vinkius is accessed through a **Connection Token**. Tokens are generated in the cloud dashboard and produce a unique MCP endpoint URL. Paste this URL into any MCP-compatible client — no SDK required.

A single token can serve **multiple AI clients simultaneously**, or you can issue separate tokens per client for granular access control. Each token tracks its own request count, last activity timestamp, and can be individually enabled or revoked.

MCP ENDPOINT

```
https://edge.vinkius.com/{token}/mcp
```

Claude · Cursor · VS Code · Windsurf · Grok · Gemini

Security Is the Architecture

Security in Vinkius is not a feature — it's the foundation of the runtime. The gateway enforces multiple independent protection layers between AI agents and third-party APIs.

01 — Ed25519 PKI Vault

Every workspace has an Ed25519 Master Key. Session keys are generated ephemerally (24h TTL) and signed by the Master Key. Credentials never leave the vault boundary.

02 — V8 Isolate Sandboxing

Tool code runs inside isolated-vm V8 isolates with 64 MB memory caps and per-request timeouts. No filesystem access, no network access except through the SSRF-guarded fetch bridge.

03 — SSRF Guard

All outbound HTTP requests are DNS-resolved and validated before execution. Private IP ranges (10.x, 172.16-31.x, 192.168.x, AWS metadata 169.254.x) are blocked at the network layer.

04 — DLP & PII Redaction

A ResponseGuard pipeline intercepts every tool response. Configurable redaction patterns strip sensitive fields (emails, SSNs, card numbers) before data reaches the AI agent.

05 — Cryptographic Audit Trail

Every request is signed into a SHA-256 hash chain with Ed25519 signatures. Events form a tamper-proof, SIEM-exportable forensic record.

06 — Honeytoken Trap System

Phantom credentials are injected into isolated environments. If a honeytoken is used outside Vinkius infrastructure, the server is quarantined instantly.

Emergency Kill Switch

EU AI Act Art. 14(1) Compliant

The kill switch is an **emergency halt** mechanism — not a simple toggle. When triggered, it executes three actions atomically:

01 — Server deactivated

The MCP server is immediately taken offline across the entire cluster.

02 — All tokens revoked

Every connection token is invalidated. Total lockout — reconnection blocked until new tokens are issued.

03 — WebSocket connections killed

Active connections terminated via Redis pubsub broadcast. Propagates to every runtime node in the cluster.

Full Visibility. Zero Guesswork.

The Vinkius cloud dashboard includes a full MCP Governance suite — real-time analytics and security controls for production AI operations.

Control Plane

KPI dashboard with request volume, latency, success rate, token consumption, and AI-generated operational briefings.

Agent Activity

Which AI clients are connecting, how often, and what they're doing — real-time session tracking.

FinOps

Cost tracking per tool, payload compression savings, budget optimization signals, and consumption trends.

Tool Health

Slowest and most error-prone tools, with actionable root-cause insights and performance baselines.

Firewall & DLP

PII redaction activity, sensitive data protection counters, and security event timeline.

Incident Log

Error trends, failure rates, status-code breakdowns, and forensic audit trail access.

> Get started at **cloud.vinkius.com** — connect your AI agent in under 60 seconds.

Retirement Planning Engine MCP

5 tools available
Cloud-hosted on Vinkius

Planning retirement finances shouldn't feel like academic homework. This MCP gives your AI client access to advanced modeling tools designed for complex financial forecasting. Instead of manually running spreadsheets or consulting multiple sources, you ask your agent to run scenarios directly against the model. You can use it to project future savings value while adjusting for inflation, helping you visualize what your nest egg will actually be worth decades from now. It also handles optimizing Social Security filing ages and simulating portfolio longevity using Monte Carlo methods, giving you a real probability score of success. When figuring out payouts, the MCP lets you compare lump-sum options against annuities or calculate how taxes will impact your net income. Connecting to Vinkius means all these sophisticated models are available in one place for any AI client to use.

Core Capabilities

01 — Projecting savings growth and inflation adjustments

Calculates the future value of an investment portfolio, adjusting the final result for historical or projected rates of inflation.

02 — Simulating portfolio longevity under market stress

Runs Monte Carlo simulations to determine the probability that a retirement fund will last through a specified number of years given certain volatility and withdrawal rates.

03 — Optimizing government benefit filing ages

Determines the ideal age for filing Social Security benefits, considering various country rules (USA or Europe) to maximize lifetime payouts.

04 — Comparing pension payout structures

Analyzes whether taking a large upfront lump sum of money is financially superior to accepting regular, guaranteed annuity payments.

05 — Calculating net income after taxes

Determines the actual amount of cash you can spend by modeling various tax impacts on gross retirement income.

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/mcp/retirement-planning-engine** — connect your AI agent in three steps.

01 Tell your AI client what specific scenario you need modeled, like 'I plan to retire in 15 years and expect a 6% market return.'

02 The MCP takes these parameters and runs the necessary simulations or calculations (for example, running `simulate_withdrawal_success`), adjusting for factors like inflation and tax brackets.

03 Your agent returns clear, actionable results—like an 82% probability of success or a recommendation to wait until age 70—so you know exactly what your next financial step should be.

The bottom line is that instead of doing complex math yourself, you just ask your agent for the answer and it handles all the heavy modeling.

Built For

Financial advisors who need to run quick, reliable stress tests for clients. Retirees facing major life decisions about their income structure. Wealth managers managing complex, multi-asset portfolios that require tax and inflation forecasting.

Financial Advisor

Uses the MCP to quickly run multiple retirement scenarios for a client, comparing annuity options versus lump sums and calculating the precise impact of different withdrawal rates.

Retiree/Pre-retiree

Presents their personal financial data—current savings, expected contributions, and desired retirement date—to determine if their current plan is robust enough over a 25-year window.

Wealth Manager

Evaluates the optimal timing for client Social Security filings across different jurisdictions or calculates tax-adjusted income streams to minimize overall portfolio drag.

What Changes When You Connect

01 You stop guessing about market risks. The `simulate_withdrawal_success` tool runs Monte Carlo simulations, giving you a clear percentage of success for your entire portfolio.

02 You save time by comparing complex payouts instantly. Use `evaluate_pension_strategy` to decide if that upfront lump sum is really worth more than guaranteed annuity payments.

03 Your plan accounts for inflation and taxes. The engine calculates savings growth using `calculate_savings_growth`, giving you a realistic, inflation-adjusted number for your future self.

04 You maximize government benefits with precision. Use `optimize_social_security` to determine the absolute best age to file, whether in the U.S. or Europe.

05 Your income is net of taxes. Running `calculate_tax_impacted_income` shows you exactly what amount hits your bank account after all deductions are made.

Real-World Applications

Deciding between a pension lump sum or annuity

A client is offered two retirement payout options. Instead of relying on gut feelings, the agent uses `evaluate_pension_strategy`. The MCP determines that while the initial lump sum sounds better, the net present value of the guaranteed annuity payments is actually higher over 25 years.

Stress-testing a volatile retirement portfolio

You are worried about market downturns. You ask your agent to run a simulation using `simulate_withdrawal_success`. The MCP runs hundreds of scenarios and tells you that with current withdrawal rates, your success probability drops below 75% if the market dips significantly.

Finding the optimal Social Security filing age

You need to know when to start drawing benefits. By running `optimize_social_security`, the agent compares starting at 62 versus waiting until 70, showing a significant boost in your monthly benefit by delaying.

Modeling income after tax changes

You changed jobs and need to know your real take-home pay. You run `calculate_tax_impacted_income`, which gives you the precise, net amount of cash flow you can budget with, factoring in new local taxes.

Patterns to Avoid

Ignoring inflation adjustments

✗ AVOID

A user calculates that $1 million today will be enough for retirement. They fail to account for projected inflation rates over 30 years, severely underestimating their actual required funds.

✓ INSTEAD

Always use `calculate_savings_growth` to model future value. This tool incorporates expected inflation adjustments, giving you a true, real-dollar figure of your savings when you retire.

Treating retirement income as static

✗ AVOID

Assuming that once you start drawing money, the amount will never change because tax laws or spending habits shift. This leads to inaccurate budgeting.

✓ INSTEAD

Use `calculate_tax_impacted_income` alongside your main projections. It models how various tax changes affect your net spendable income month-to-month.

Focusing only on current interest rates

✗ AVOID

Relying solely on simple interest calculations for retirement growth, ignoring the volatility and long-term risk inherent in market investing.

✓ INSTEAD

Run a full simulation using `simulate_withdrawal_success`. This tool uses Monte Carlo methods to test your portfolio against thousands of simulated market cycles, giving you a much more reliable outcome.

The Right Fit

Use this MCP if your retirement planning requires detailed, multi-variable forecasting. Specifically, use it when you need to model how inflation or taxes will erode future value, or when you are comparing complex payout structures (annuity vs. lump sum). You must run a simulation if your goal is determining the probability of

portfolio success over decades.

Don't use this MCP if your needs are simple, single-variable checks. For instance, if you only need to know the future value based on one fixed growth rate and no inflation adjustment, a simpler calculator might suffice. Also, don't rely on it for specific tax advice; always confirm calculations from `calculate_tax_impacted_income` with a certified professional.

Retirement Planning Engine: Simulating Long-Term Savings Growth and Inflation

Manually tracking retirement savings growth is a nightmare. You pull up your current balance, plug in an estimated annual return, and you get a nice, round number. But what does that number mean? It doesn't account for inflation—the fact that $100 bought way more goods 30 years ago than it does today. Your spreadsheet gives you a nominal total, which is misleading.

With this MCP, the math changes completely. You run `calculate_savings_growth`, and the model automatically adjusts your projected future value for inflation. It shows you the true purchasing power of your money when you finally retire. The result isn't just a number; it's an accurate picture of how much stuff that money can actually buy.

Retirement Planning Engine: Optimizing Social Security and Pension Decisions

Making decisions about government benefits or pension payouts is a minefield. Should you take the lump sum now, even if it seems like more money upfront? Or should you wait years to maximize your payments? You spend hours comparing pros/cons across different payout structures.

This MCP handles that complexity instantly. By using `optimize_social_security` or running `evaluate_pension_strategy`, the system provides a clear, data-backed recommendation, pointing out precisely where and when you should take action to maximize your benefit.

Retirement Planning Engine: 5 Tools for Financial Forecasting

Use these tools to model everything from savings growth and tax impact to optimizing your pension payout structure.

#	TOOL	DESCRIPTION
01	`evaluate_pension_strategy`	Compares two payout methods, determining if a large lump sum payment is better than receiving guaranteed annuity payments over time.
02	`calculate_savings_growth`	Projects the final value of your savings account while automatically adjusting for inflation and expected market returns.
03	`optimize_social_security`	Analyzes various filing dates (in both US and European contexts) to identify the age that maximizes lifetime Social Security benefits.
04	`calculate_tax_impacted_income`	Calculates your true spending money by estimating how federal, state, and local taxes will affect your gross income.
05	`simulate_withdrawal_success`	Runs complex Monte Carlo simulations to give you a percentage chance of whether your portfolio will survive the entire planned retirement period.

See It in Action

Real prompts you can use once this MCP is connected to your AI agent through Vinkius Cloud.

U If I start with $200k and plan for 30 years, what's my probability of success if I withdraw 4% annually?

Monte Carlo Simulation Results

Based on a starting balance of $200,000 and a planned withdrawal rate of 4% over 30 years:

- **Probability of Success:** 85%
- **Average Remaining Balance (Year 30):** $112,400
- **Key Risk Factor:** The simulation shows that if market volatility exceeds the modeled range, your probability drops to 72%. You might consider a lower withdrawal rate.

U I'm weighing a pension. Should I take $850k today or $4,000/month for life?

Pension Strategy Comparison

OPTION	UPFRONT VALUE	NET PRESENT VALUE (NPV)	RECOMMENDATION
Lump Sum	$850,000	$850,000	N/A
Annuity	N/A	**$912,400**	Take the annuity stream. The NPV is higher due to compounding interest and longevity modeling.

The annuity option provides greater financial security.

U What's my net spending money if I retire with $60k salary but pay 23% in federal taxes?

Tax Impact Analysis

Your gross income: **$60,000.00**

- Estimated Tax Rate (Federal): 23%
- Total Estimated Taxes: -$13,800.00

***Net Spendable Income:** $46,200.00 per year.

This figure represents the amount you can actually budget with after all taxes are accounted for in your projected income.

Frequently Asked Questions

01 **How does the Retirement Planning Engine help me know if my savings will last?**

The engine runs Monte Carlo simulations to give you a clear probability of success. Instead of just giving one number, it shows you how likely your portfolio is to survive market downturns and depletion over decades.

02 **Can I use the Retirement Planning Engine to figure out the best time for Social Security?**

Yes. The engine analyzes different filing ages (in both US and European models) to find the optimal timing that maximizes your monthly benefit payments for life.

03 **Does this MCP adjust my savings goals for inflation?**

Absolutely. It calculates growth using `calculate_savings_growth`, which adjusts your projected future value for inflation, so you know the actual purchasing power of your money when you retire.

04 **Is there a way to compare lump sum vs annuity payouts?**

The engine has dedicated tools that evaluate pension strategies. It compares the net present value of taking all the cash upfront versus receiving smaller, guaranteed payments over your lifetime.

05 **Will this MCP help me understand tax consequences in retirement?**

Yes. You can use its tax tools to calculate your true spending money by modeling how various taxes affect your gross income before you start budgeting.

Go Live in 60 Seconds

Get your connection token from **cloud.vinkius.com**, then paste the endpoint URL into any MCP-compatible client.

YOUR MCP ENDPOINT

```
https://edge.vinkius.com/[TOKEN]/mcp
```

CLIENT	WHERE TO CONFIGURE
Claude AI	Profile → Customize → Connectors → "+" → Add custom connector → Paste endpoint
Cursor	Settings → Features → MCP Servers → "+ Add New MCP Server" → Type: SSE → Paste endpoint
VS Code	Ctrl/Cmd+Shift+P → "MCP: Add Server" → add `"retirement-planning-engine": { "url": "…" }`
Windsurf	MCP Settings → `mcp_settings.json` → Add endpoint URL
ChatGPT	Settings → Tools & plugins → Add MCP server → Paste endpoint
Gemini	Extensions → Add MCP Server → Paste endpoint URL

ASK AN AI ABOUT THIS

Let your preferred AI explain this MCP server

- Ask ChatGPT
- Ask Claude
- Ask Perplexity
- Ask Gemini
- Ask Grok

READY TO CONNECT

Retirement Planning Engine is live on Vinkius Cloud.

Get your connection token, paste it into your AI agent, and start building. No SDK. No deployment. Just results.

Start at cloud.vinkius.com →

vinkius.com · support@vinkius.com

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