

Top 7 AI Workflows to Save Actuaries 20+ Hours/Week

Practical AI implementation guide for qualified
actuaries and students

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INQA Group

International Qualified Actuaries



Transform Your Actuarial Practice with AI

AI tools are transforming professional work across industries. As a qualified actuary who has experienced firsthand how AI can accelerate complex technical work by 10x, I've identified seven high-potential workflows where actuaries could reclaim 20+ hours per week.

These workflows represent promising applications of AI tools like ChatGPT, Claude, and others to common actuarial tasks. Consider them starting-point strategies to test and adapt for your specific practice area and organizational requirements.

**20 HOURS PER WEEK =
HALF YOUR WORKWEEK RECLAIMED**



About This Guide

This guide was created by **Patrick Lee, FIA (1990 to Sep 2020)**, founder of INQA Group. After working as a pensions/investment actuary and traditional software developer for decades, Patrick has experienced first-hand—via trial and error over the last 7 months—how AI tools (like Vectal, Windsurf, Grok, LindyAI, and ChatGPT) can be used to develop software at least 10 times faster than before, and with a much smaller team.

Professor David Wilkie, CBE FIA FFA, double gold medallist and former Vice President of both the Faculty of Actuaries and the Institute of Actuaries, supports the emergence of INQA as a new, modern membership body within the actuarial membership space. His comprehensive assessment of the IFoA can be read at inqa.group/wilkie-ifo-a-assessment.

Workflow 1: AI-Assisted Chain Ladder Diagnostics

Time Saved: 3-4 hours per analysis

The Problem: Validating chain ladder assumptions requires checking residual patterns, identifying outliers, and testing multiple tail factor scenarios—easily 3-4 hours per reserve analysis.

The AI Solution: AI generates diagnostic code instantly. Provide your triangle data structure, and tools like ChatGPT create Python/R scripts that calculate age-to-age factors, plot residuals, flag outliers using statistical tests, and run sensitivity analyses.

The Workflow:

1. Export your development triangle to CSV
2. Upload to ChatGPT with prompt: "Analyze this claims development triangle. Identify outliers, unusual development patterns, and suggest diagnostic checks."
3. Review AI-generated insights and incorporate into your documentation
4. Use AI to draft the diagnostic section of your actuarial report

This workflow represents a starting-point approach. Prompts and outputs will require customization for your specific data, systems, and organizational requirements.

Actuarial Example: You're analyzing medical malpractice reserves with a 10x10 triangle. AI generates complete diagnostic code in 2 minutes. You run it, identify two outlier periods requiring investigation, and document your validation. Previously: 3-4 hours. Now: 30 minutes.

Workflow 2: Automating Actuarial Assumption Documentation

Time Saved: 2-3 hours per assumption set

The Problem: Documenting assumption changes for peer review requires explaining rationale, showing supporting data, comparing to prior assumptions, and formatting for technical review—2-3 hours per assumption update.

The AI Solution: AI transforms your analysis notes into structured assumption documentation. Provide bullet points on what changed and why, and AI generates peer-review-ready documentation with proper actuarial terminology.

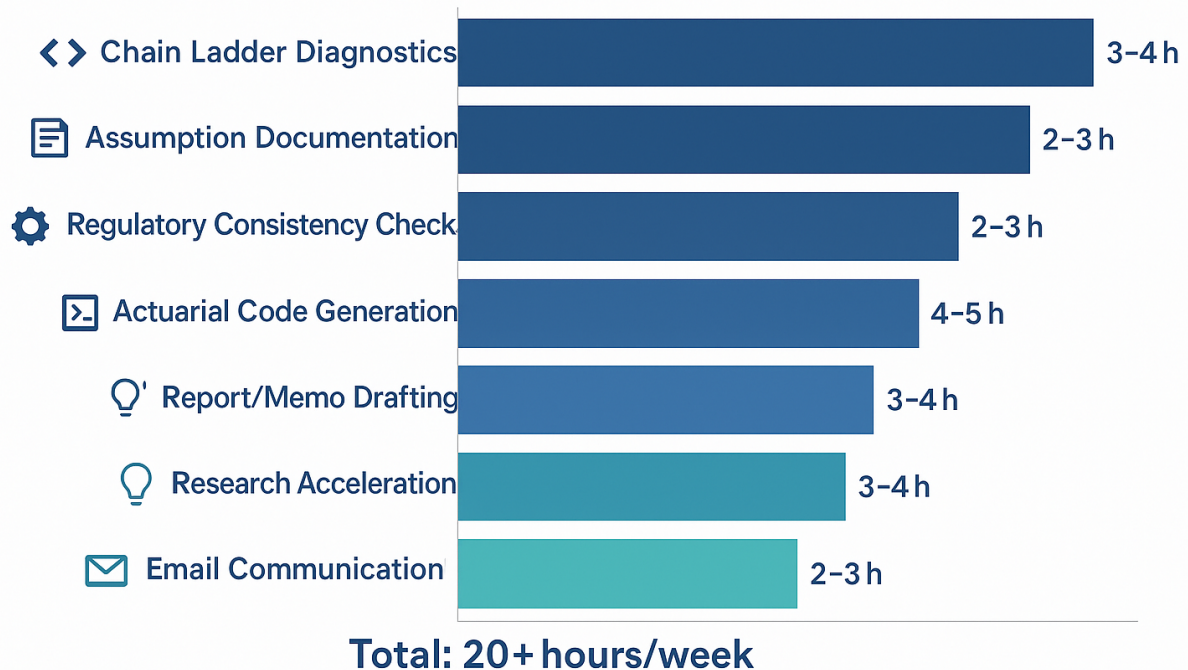
The Workflow:

1. Gather your assumption data (mortality tables, discount rates, expense assumptions)
2. Prompt: "Draft actuarial assumption documentation for [product/analysis]. Include: rationale, data sources, sensitivity analysis, and compliance with [relevant standards]."
3. AI generates structured documentation following actuarial standards
4. Review, add professional judgment, and finalize

This workflow represents a starting-point approach. Prompts and outputs will require customization for your specific data, systems, and organizational requirements.

Actuarial Example: You're updating mortality improvement assumptions for pension valuations. You provide AI with your analysis bullets: "CMI_2023 model shows slower improvement rates, credibility-weighted with scheme experience, 5-year average used, results in 2% reserve increase." AI generates complete documentation. You refine technical details and add professional judgment commentary.

Weekly Time Savings by AI Workflow



Workflow 3: Regulatory Filing Consistency Checks

Time Saved: 2-3 hours per filing

The Problem: Statement of Actuarial Opinion and ORSA reports must be internally consistent across dozens of pages. Manually cross-checking that reserve figures, assumption descriptions, and methodology explanations match across sections takes hours and errors slip through.

The AI Solution: AI can compare multiple document sections and flag inconsistencies. Upload your draft SAO and supporting exhibits, then ask AI to verify that reserve amounts, assumption descriptions, and methodology explanations are consistent throughout.

The Workflow:

1. Upload all filing documents (actuarial report, financial statements, regulatory forms)
2. Prompt: "Cross-check these documents for consistency in: figures, assumptions, terminology, and dates. Flag any discrepancies."
3. AI identifies inconsistencies and potential errors
4. Resolve issues before submission, avoiding costly revisions

This workflow represents a starting-point approach. Prompts and outputs will require customization for your specific data, systems, and organizational requirements.

Pro Tip

Create a standardized prompt template for your most common filing types. This ensures consistent quality and saves even more time on repeat filings.

Actuarial Example: Your SAO references "loss development factors updated using 5-year weighted average" but your reserve report says "3-year weighted average." AI flags this inconsistency along with 4 other discrepancies in reserve amounts and assumption descriptions. You correct them before submission, avoiding regulatory questions.

Workflow 4: Code Generation for Actuarial Calculations

Time Saved: 4-5 hours per week

The Problem: Implementing Bornhuetter-Ferguson, Bühlmann credibility, or stochastic reserving models in R/Python requires hours of coding and debugging—even when you know the mathematical formulas.

The AI Solution: Describe the actuarial method and AI generates working code with error handling and documentation. Translate legacy VBA to Python, optimize existing code, or implement new techniques from research papers.

The Workflow:

1. Describe your coding task in plain English
2. Prompt: "Write R code to [specific task]. Include error handling and comments."
3. AI generates working code with documentation
4. Test, refine, and integrate into your workflow

This workflow represents a starting-point approach. Prompts and outputs will require customization for your specific data, systems, and organizational requirements.

ChatGPT

ChatGPTs

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ChatGPT

Generate R code for chain ladder diagnostics:

- Calculate age-to-age factors for incremental triangle
- Plot residual patterns by development period
- Flag outliers using standardized residuals > 2
- Test tail factor sensitivity (1.00, 1.02, 1.05)

Include comments and ggplot2 visualizations.

Chain Ladder Diagnostics

Load required libraries

library(ChainLadder)

library(ggplot2)

Calculate age-to-age factors

calculate_factors <- function(triangle) {

Calculate development factors

factors <- triangle[, -1] / triangle[, -ncol(triangle)]

}

Message ChatGPT...

Actuarial Example: You need Bornhuetter-Ferguson reserves for 5 lines of business. AI generates complete Python code with proper handling of immature periods. You test with sample data and deploy. Previously: 3-4 hours. Now: 30 minutes.

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Workflow 5: Actuarial Report and Memo Drafting

Time Saved: 3-4 hours per report

The Problem: Translating technical analysis into polished reports for management, regulators, or boards takes hours. You need different versions for technical and non-technical audiences.

The AI Solution: AI converts bullet points into professional documentation. Provide your analysis summary and specify audience, and AI generates appropriate drafts you refine with professional judgment.

The Workflow:

1. Outline your report structure and key findings
2. Prompt: "Draft an actuarial report for [purpose]. Include: executive summary, methodology, results, limitations, and recommendations."
3. AI generates professional draft following actuarial reporting standards
4. Add technical details, professional judgment, and sign off

This workflow represents a starting-point approach. Prompts and outputs will require customization for your specific data, systems, and organizational requirements.

Actuarial Example: Your quarterly reserve review shows 5% adverse development. You need three documents: technical memo, executive summary, and board talking points. AI generates drafts in minutes. You refine technical accuracy and add professional judgment.

Workflow 6: Research and Literature Review Acceleration

Time Saved: 3-4 hours per week

The Problem: Researching new methodologies—IFRS 17 implementation, climate risk models, emerging mortality trends—requires reviewing dozens of papers and regulatory documents, taking days.

The AI Solution: AI summarizes research papers, compares methodologies, extracts key findings, and identifies relevant sections in lengthy documents. Upload PDFs and ask specific questions about assumptions or implementation.

The Workflow:

1. Upload research papers or paste regulatory text
2. Prompt: "Summarize this paper/regulation. Extract: key findings, methodology, implications for [your area], and action items."
3. AI provides structured summary with actionable insights
4. Use summaries to stay informed and make better decisions faster

This workflow represents a starting-point approach. Prompts and outputs will require customization for your specific data, systems, and organizational requirements.

Actuarial Example: You're evaluating stochastic reserving methods. You have 8 papers on bootstrap, Mack, and Bayesian approaches. AI summarizes each and creates a comparison table showing which methods suit long-tail lines with sparse data. You read the most relevant papers in detail, but AI accelerated initial research from 2 days to 180 minutes.

Workflow 7: Professional Email Drafting

Time Saved: 2-3 hours per week

The Problem: Explaining technical results to non-technical stakeholders, coordinating with auditors, or addressing regulatory questions requires carefully worded emails. Each takes 10-15 minutes; dozens per week consume hours.

The AI Solution: AI drafts professional emails from bullet points. Specify recipient, purpose, tone, and key points. Particularly valuable for sensitive communications requiring diplomatic language.

The Workflow:

1. Outline the key points you need to communicate
2. Prompt: "Draft a professional email to [recipient] explaining [topic]. Tone: [formal/friendly]. Length: [brief/detailed]."
3. AI generates polished email ready to send or customize
4. Review, personalize if needed, and send

This workflow represents a starting-point approach. Prompts and outputs will require customization for your specific data, systems, and organizational requirements.

Actuarial Example: Your CFO needs to explain an 8% reserve increase to the board. You provide 5 bullet points about severity trends, case reserve strengthening, and IBNR increases. AI generates a clear, jargon-free explanation with reassurance about adequacy. Review and send in 6 minutes instead of 30.

Ready to Transform Your Actuarial Practice?

These seven workflows are just the foundation. **INQA members** get:

- ✓ **AI-enhanced modern infrastructure** traditional societies don't offer
- ✓ **Private member community** of actuaries pioneering AI-enhanced practice
- ✓ **Regular updates** on tools, techniques, and implementation strategies
- ✓ **Professional community** focused on productivity and career growth

Join INQA for £65-90/year

Approximately 0.1% of typical actuarial salary

Add INQA alongside your existing professional membership and get the AI productivity tools IFoA, SOA, and CAS don't provide.

Visit: <https://inqa.group>

30-day money-back guarantee. Cancel anytime.

Important Notes

Professional Standards Compliance

Always maintain professional responsibility: AI-generated outputs must be reviewed and validated by a qualified actuary before use in professional work. You remain fully responsible for all actuarial work product, regardless of tools used.

Data confidentiality: Never upload confidential client data to public AI tools without proper authorization and data protection measures. Consider enterprise AI solutions with appropriate security for sensitive work.

Regulatory compliance: Ensure your use of AI tools complies with all applicable professional standards, regulatory requirements, and employer policies.

About INQA Group

INQA Group (International Qualified Actuaries) is a professional membership organization dedicated to empowering actuaries with modern tools, knowledge, and community. We provide practical resources for AI implementation, professional development, and career advancement.

Questions or feedback? We'd love to hear from you at secretariat@inqa.group

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