

Plots Providing the Probability of Successful Demonstration for a Normal Distribution Test

William Q. Meeker
Gerald J. Hahn
Luis A. Escobar

Summary

This document provides plots of the probability of successful demonstration, with $100(1 - \alpha)\%$ confidence, for a normal distribution test that the proportion conforming from a sampled process exceeds a given value p^\dagger . These plots extend the plots given in Figures 9.1a–9.1d in the book Meeker, Hahn, and Escobar (2017, Chapter 9). Applications and examples of the use of these figures are described in Chapters 9 and 11 of this book. Plots are provided here for all combinations of p^\dagger and $100(1 - \alpha)\%$, where $p^\dagger = 0.50, 0.70, 0.80, 0.90, 0.95, 0.97,$ and 0.99 and $100(1 - \alpha)\% = 90\%$ and 95% . Theory for producing the plots is given in Appendix Section I.1 of the book.

Reference:

Meeker, W.Q., G.J. Hahn, and L.A. Escobar (2017), *Statistical Intervals: A Guide for Practitioners and Researchers*, Second Edition, John Wiley.

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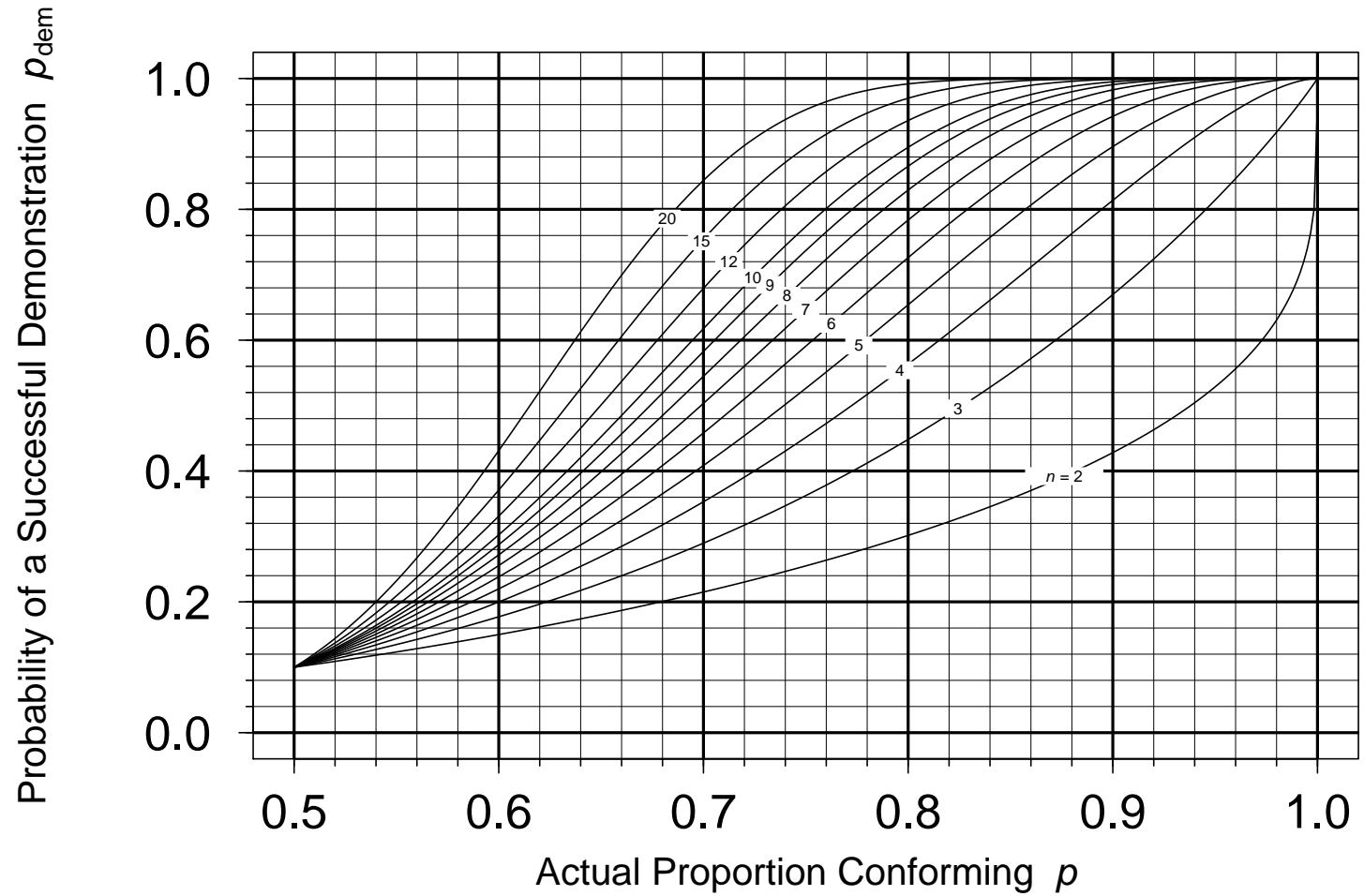


Figure 1a. Probability of successfully demonstrating that $p > p^\dagger = 0.50$ with 90% confidence (normal distribution).

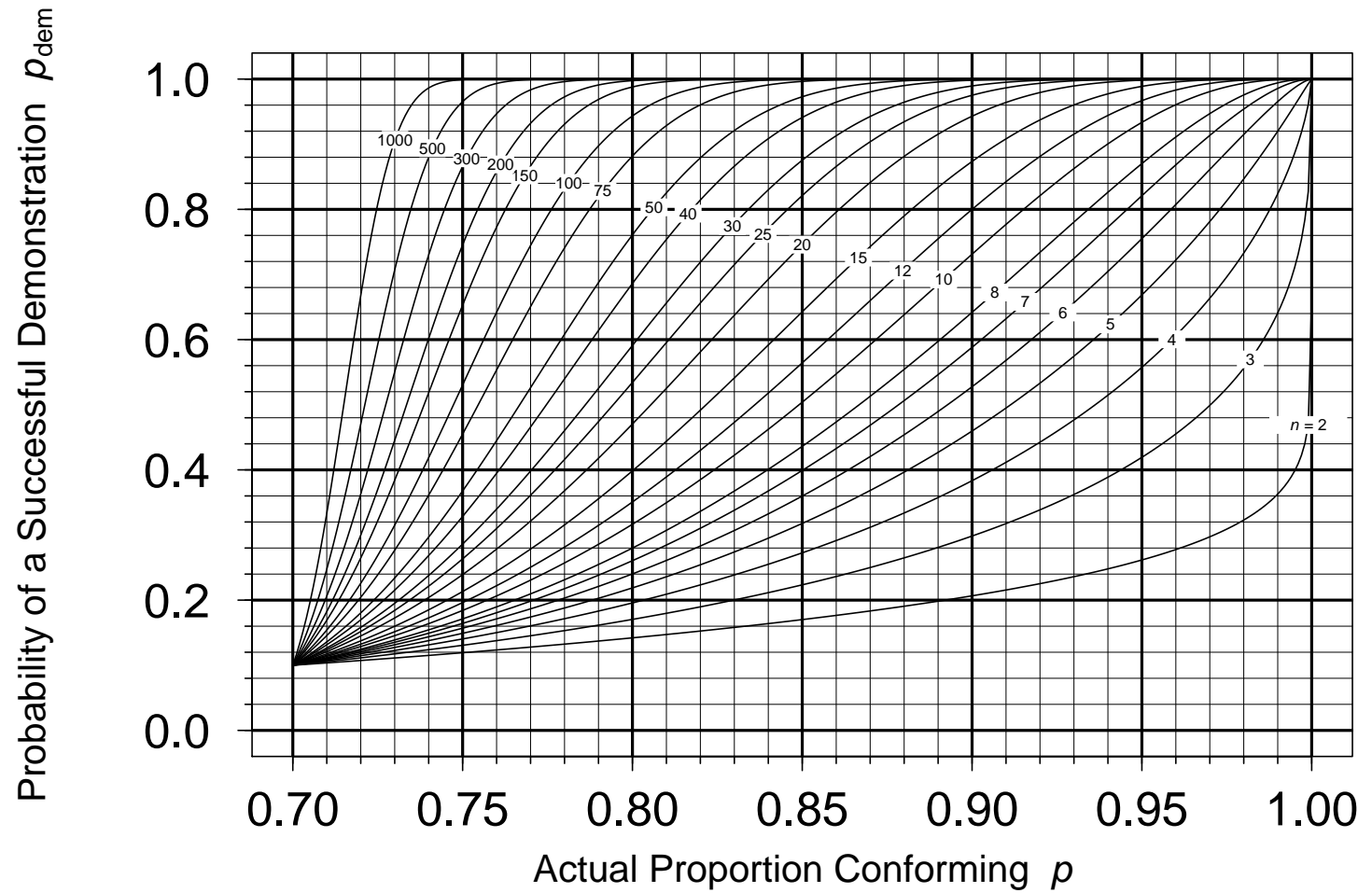


Figure 1b. Probability of successfully demonstrating that $p > p^\dagger = 0.70$ with 90% confidence (normal distribution).

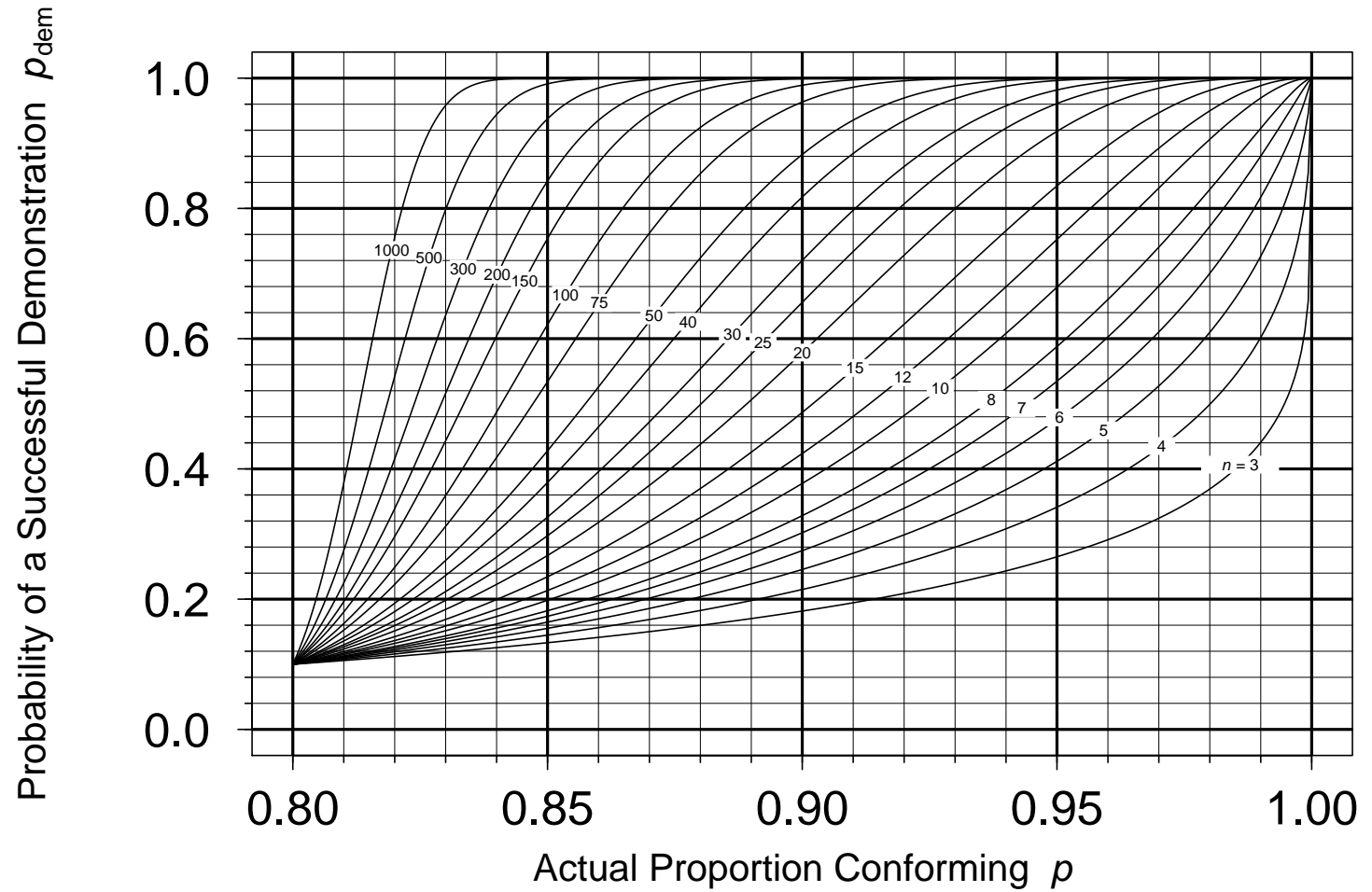


Figure 1c. Probability of successfully demonstrating that $p > p^\dagger = 0.80$ with 90% confidence (normal distribution).

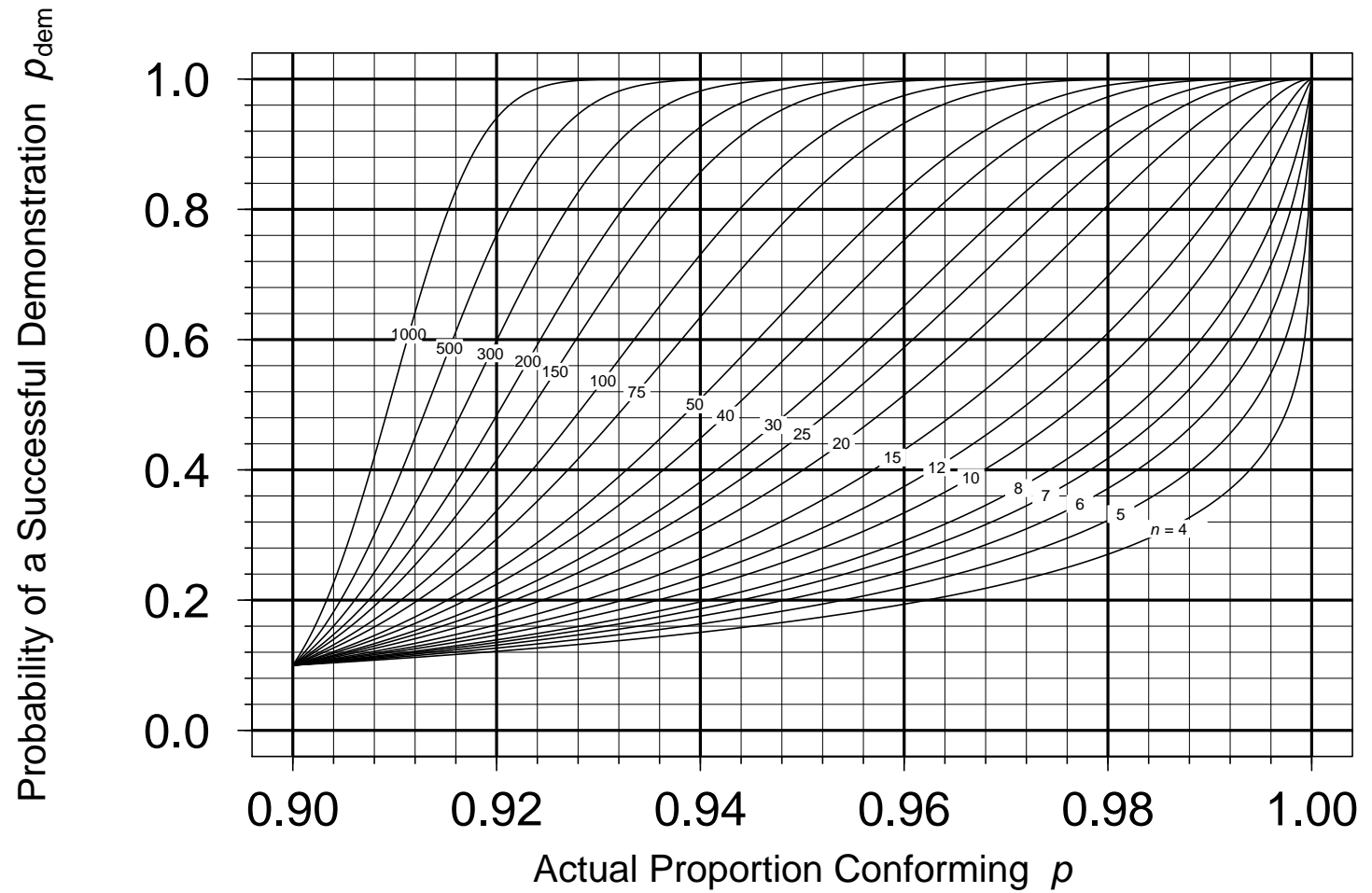


Figure 1d. Probability of successfully demonstrating that $p > p^\dagger = 0.90$ with 90% confidence (normal distribution).

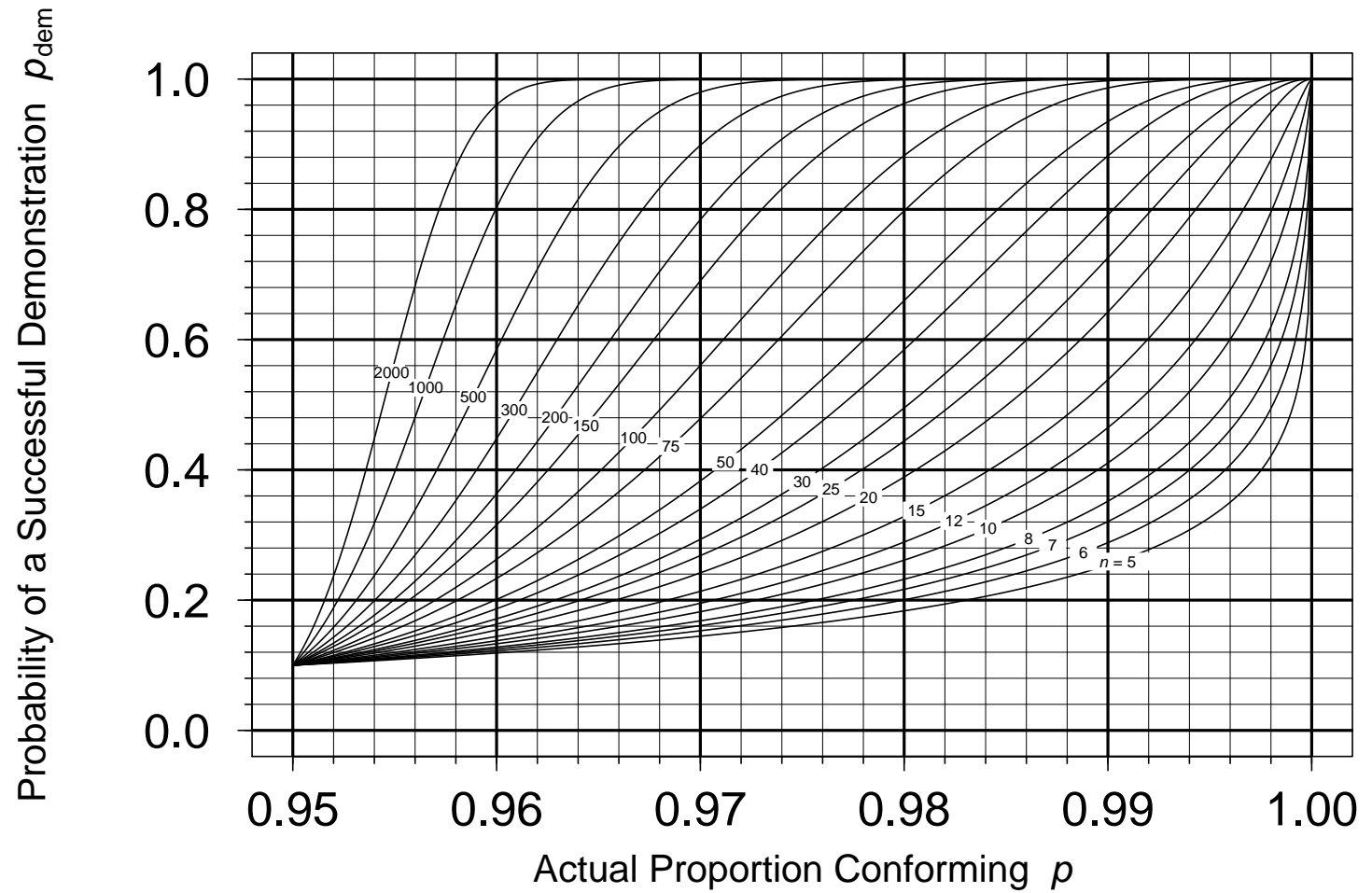


Figure 1e. Probability of successfully demonstrating that $p > p^\dagger = 0.95$ with 90% confidence (normal distribution).

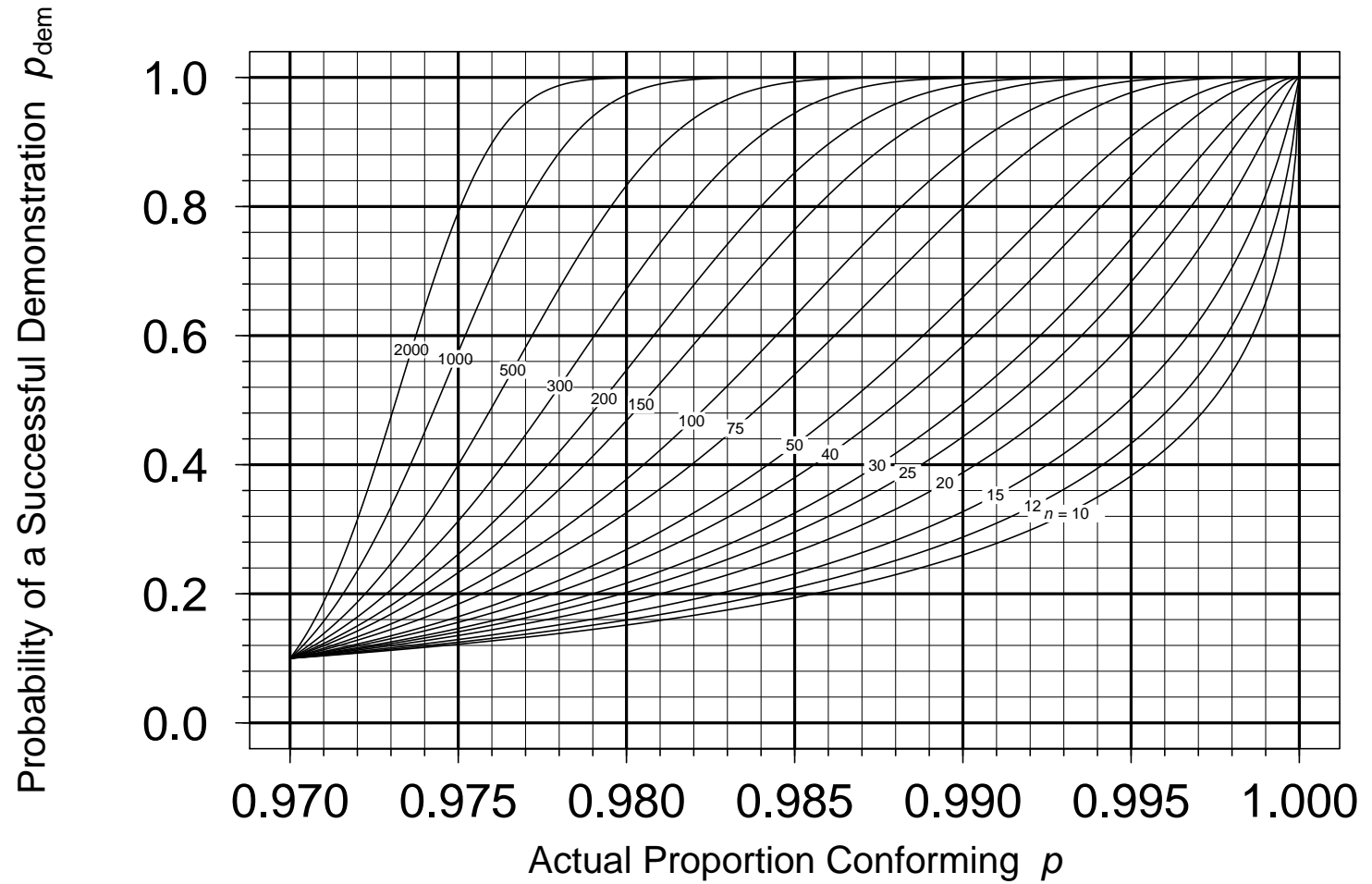


Figure 1f. Probability of successfully demonstrating that $p > p^\dagger = 0.97$ with 90% confidence (normal distribution).

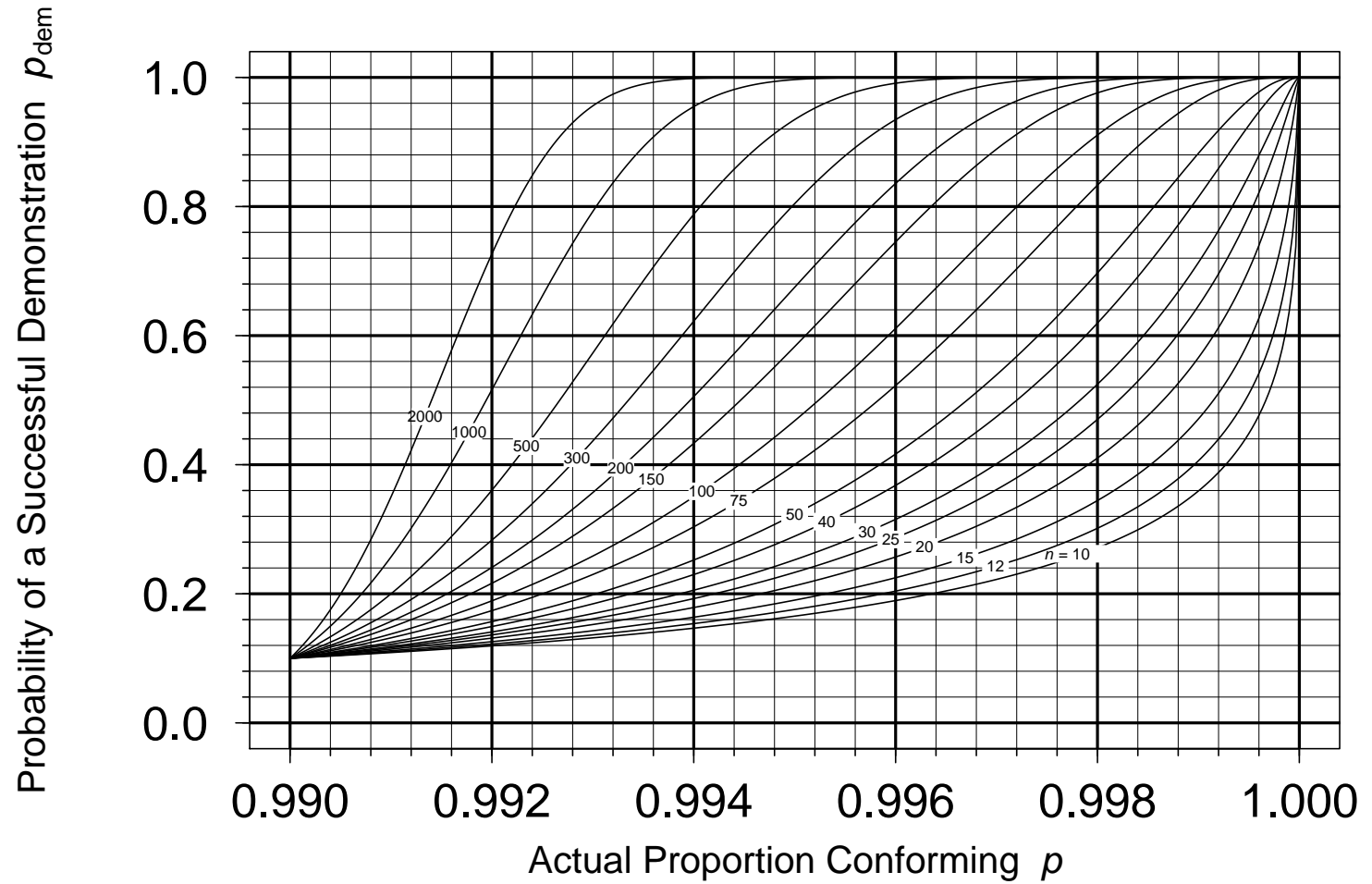


Figure 1g. Probability of successfully demonstrating that $p > p^\dagger = 0.99$ with 90% confidence (normal distribution).

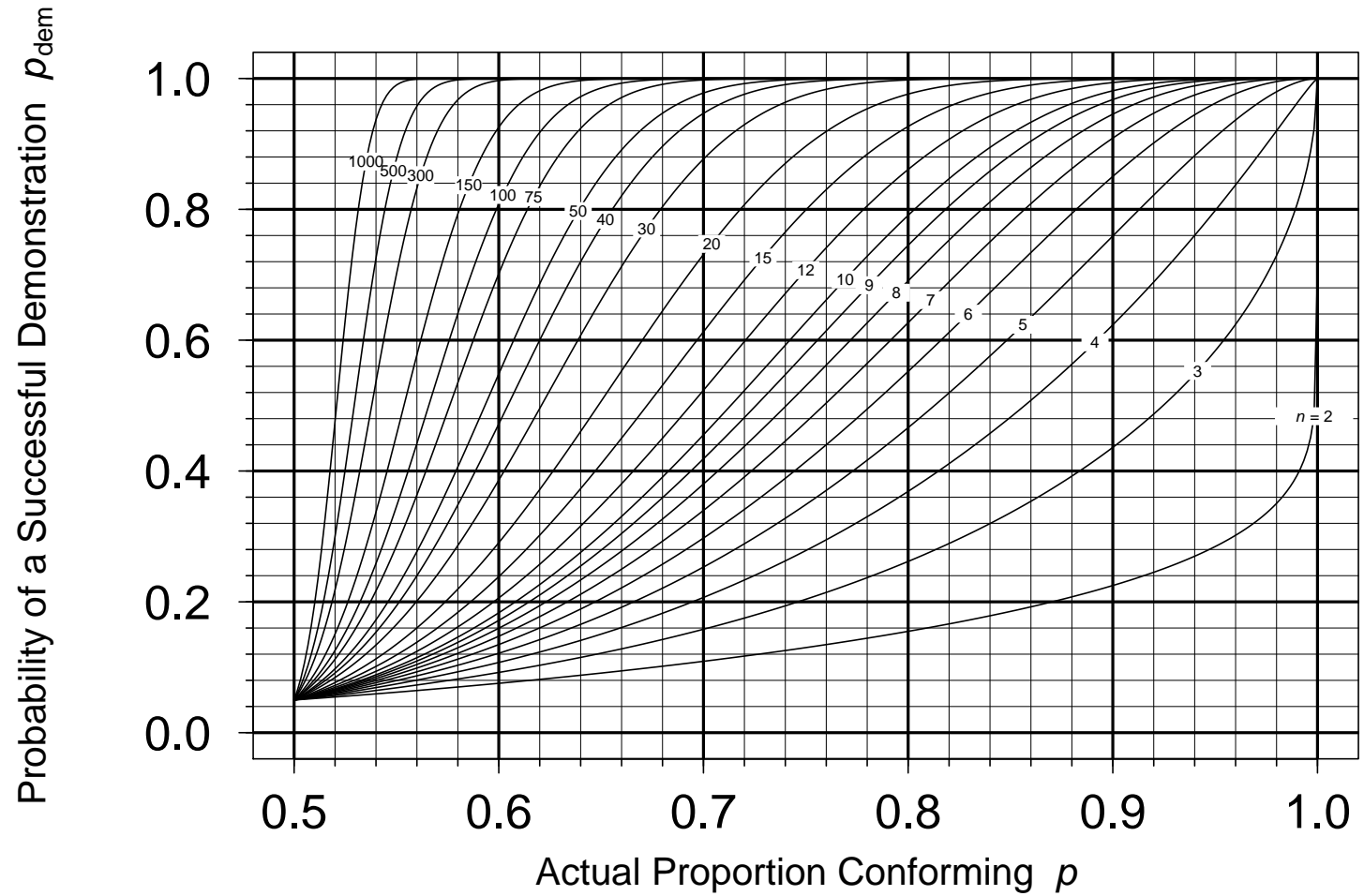


Figure 1h. Probability of successfully demonstrating that $p > p^\dagger = 0.50$ with 95% confidence (normal distribution).

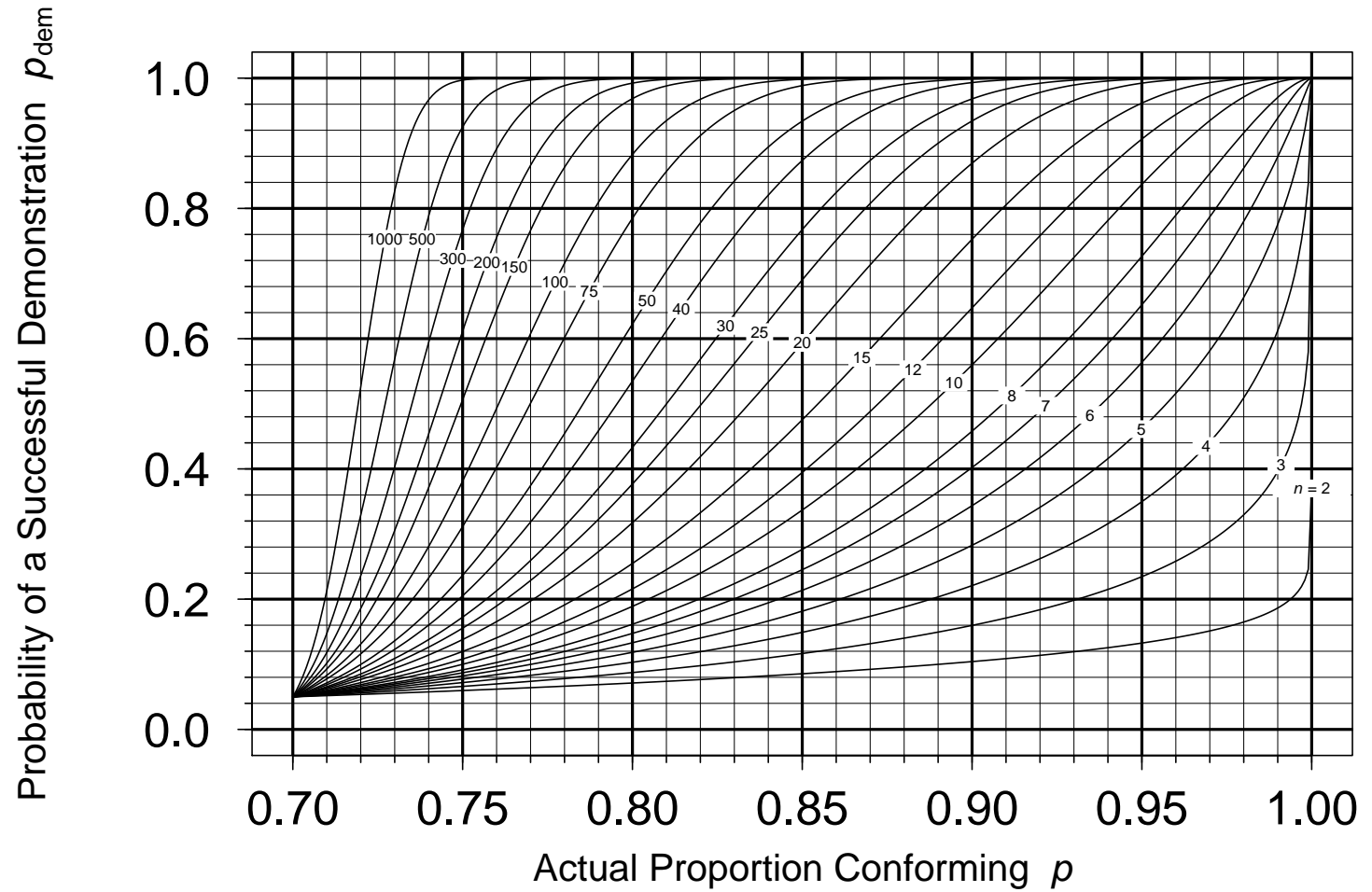


Figure 1i. Probability of successfully demonstrating that $p > p^\dagger = 0.70$ with 95% confidence (normal distribution).

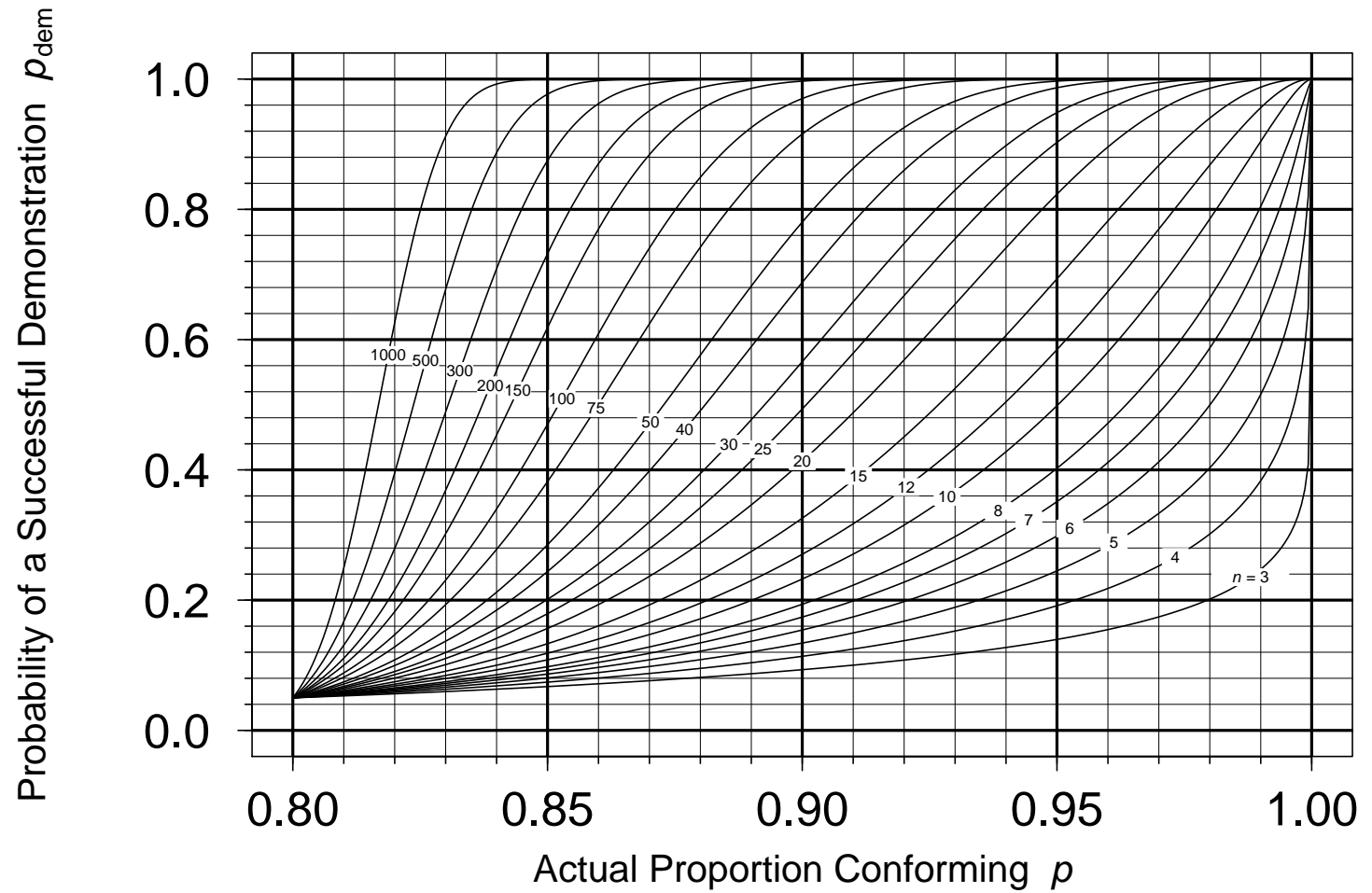


Figure 1j. Probability of successfully demonstrating that $p > p^\dagger = 0.80$ with 95% confidence (normal distribution).

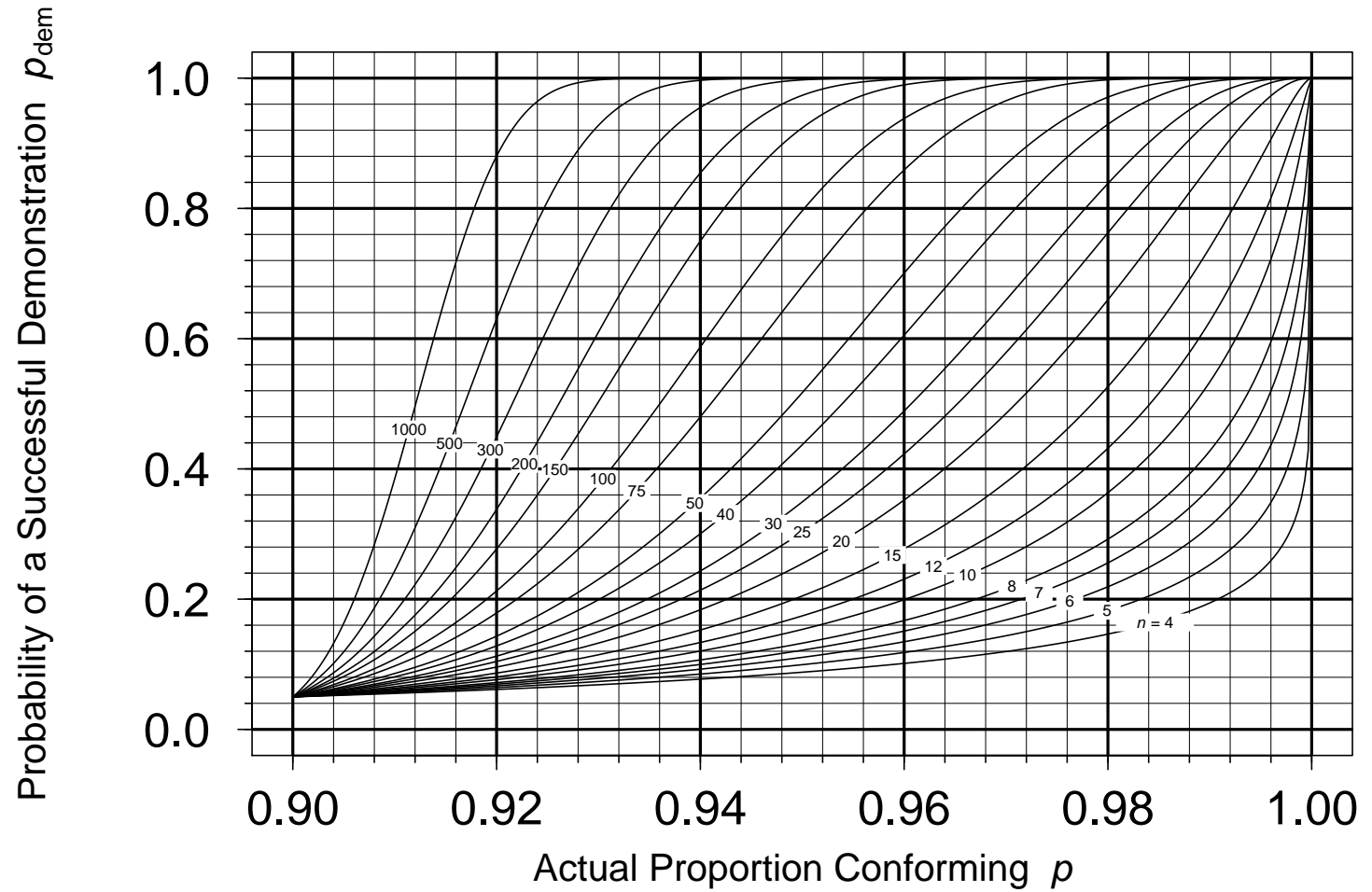


Figure 1k. Probability of successfully demonstrating that $p > p^\dagger = 0.90$ with 95% confidence (normal distribution).

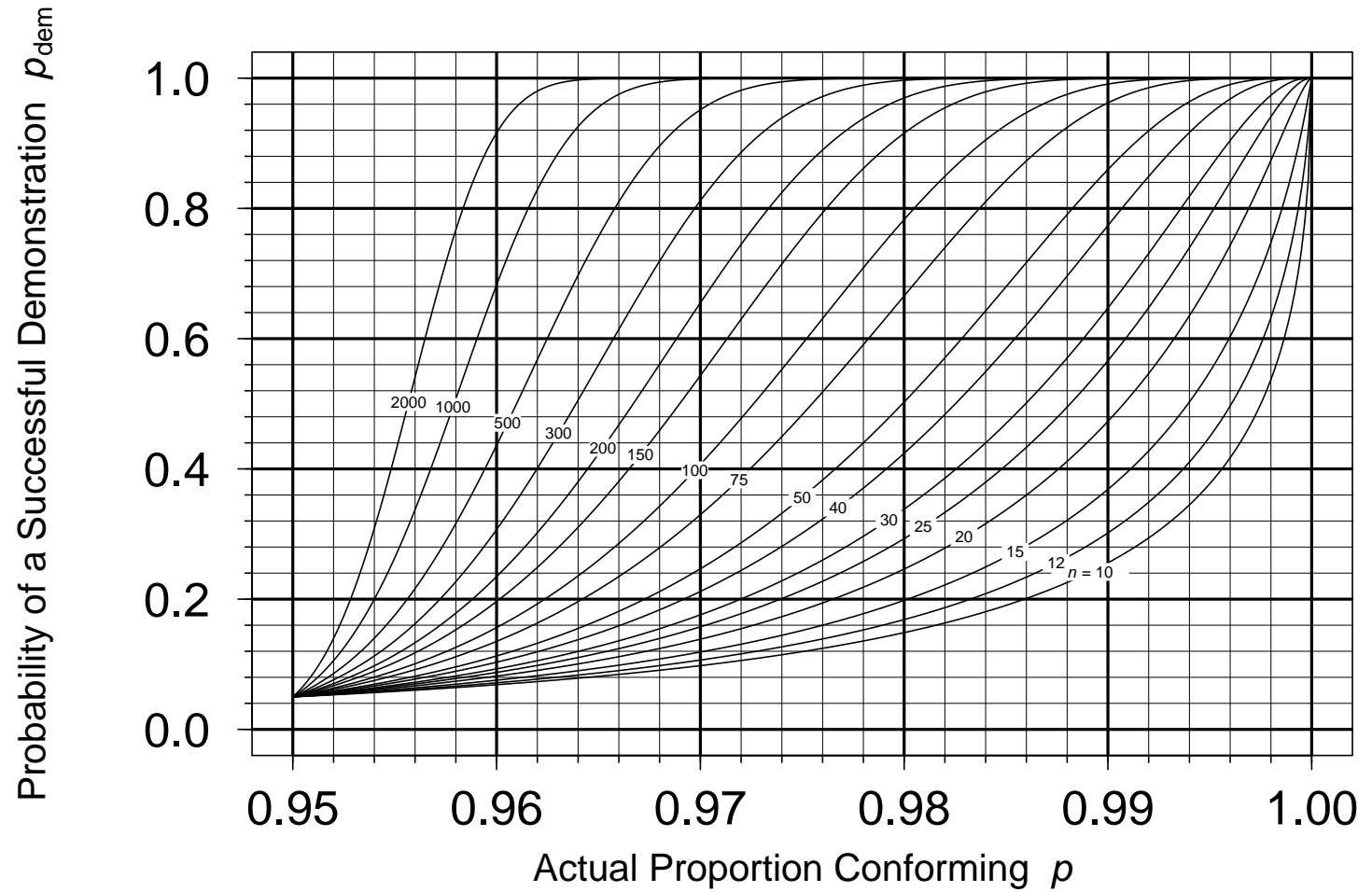


Figure 11. Probability of successfully demonstrating that $p > p^\dagger = 0.95$ with 95% confidence (normal distribution).

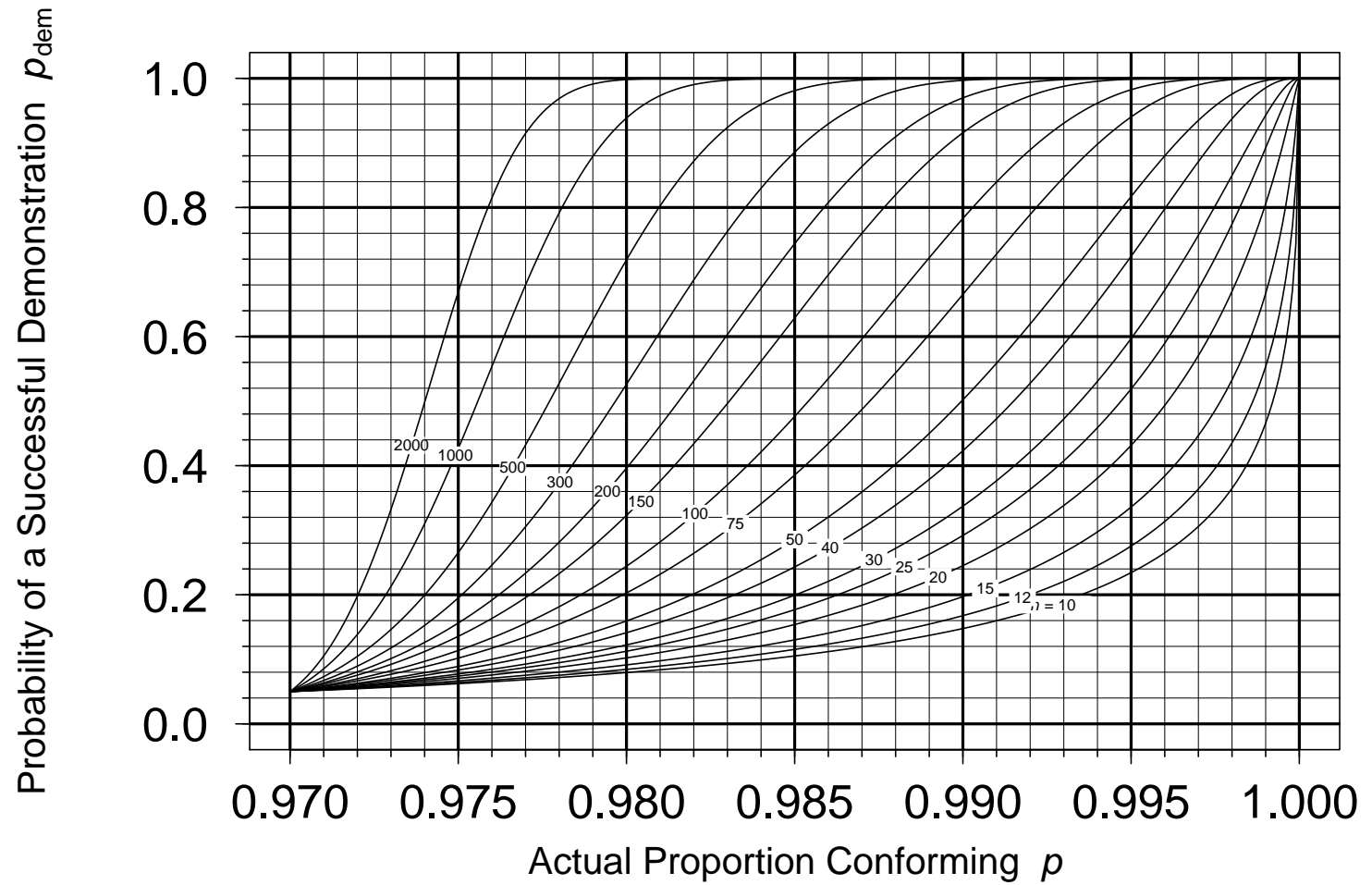


Figure 1m. Probability of successfully demonstrating that $p > p^\dagger = 0.97$ with 95% confidence (normal distribution).

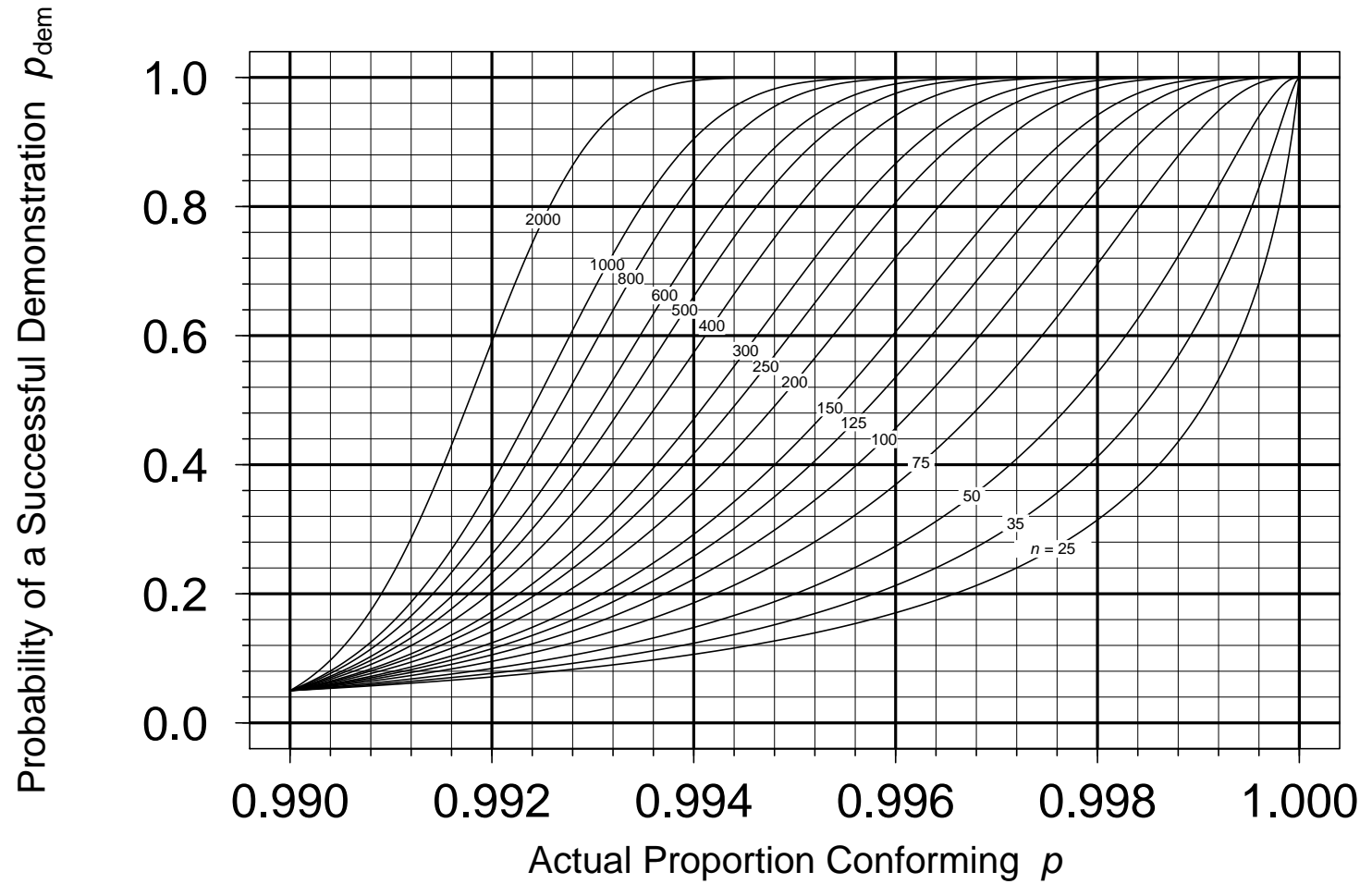


Figure 1n. Probability of successfully demonstrating that $p > p^\dagger = 0.99$ with 95% confidence (normal distribution).