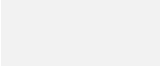





CORE SYLLABUS FOR ACTUARIAL TRAINING IN EUROPE

Analysis of questioning of the AAE in 2013/2014
Data of „MINIMUM“

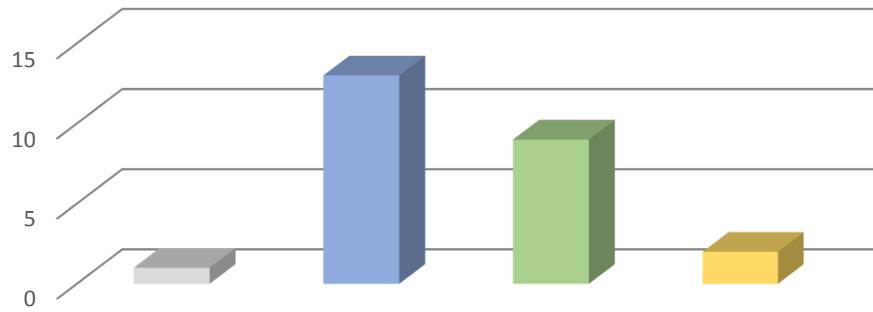
Legend for following data according to survey

| | |
|---|----------------------------|
|  | n/c |
|  | pre |
|  | comprehension/first |
|  | analysis/second |

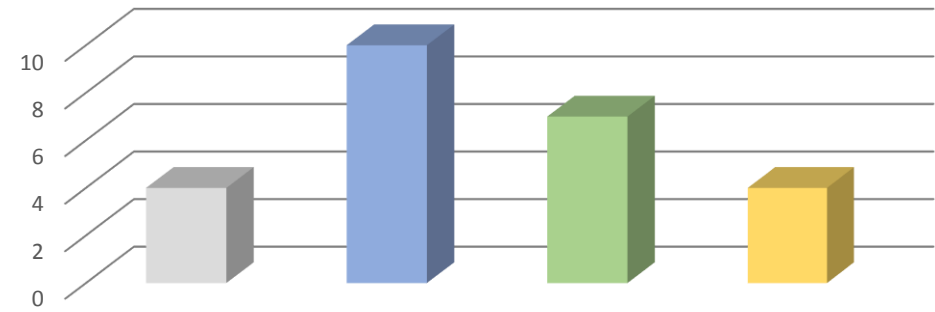
General Skills

General Skills

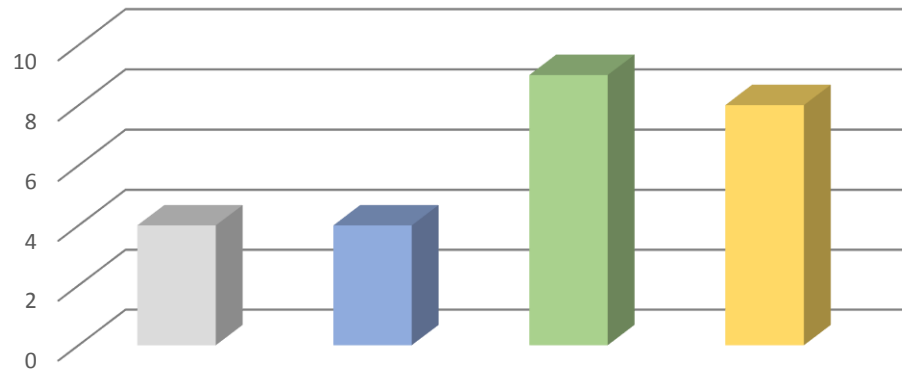
Computing



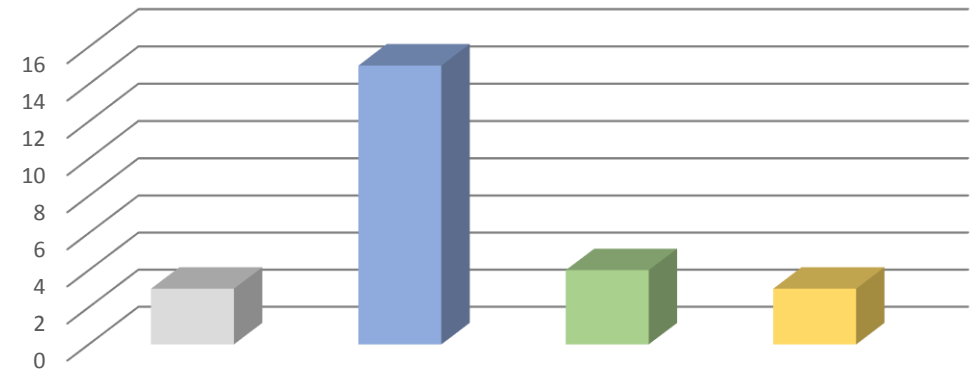
Communication Skills



Regulation and Legislation and Taxation



Language Skills



Overview

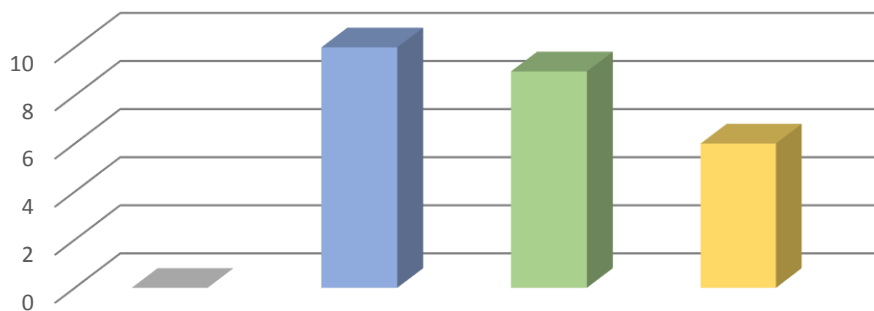
| | arithmetic average rounded | estimated standard deviation | arithmetic average runded per group of required skills | estimated standard deviationper group of required skills |
|---|----------------------------|------------------------------|---|---|
| General Skills | | | | |
| Computing | 1,48 | 0,70 | 1,51 | 0,91 |
| Regulation and Legislation and Taxation | 1,84 | 1,05 | | |
| Communication Skills | 1,44 | 0,94 | | |
| Language Skills | 1,28 | 0,83 | | |

General Technical Skills

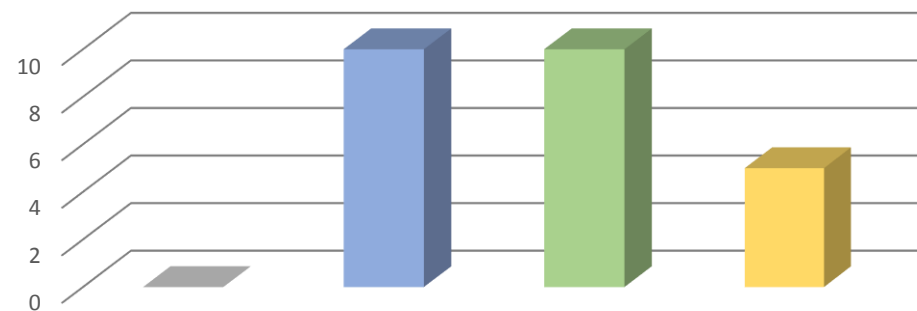
1. Mathematics

1. Mathematics

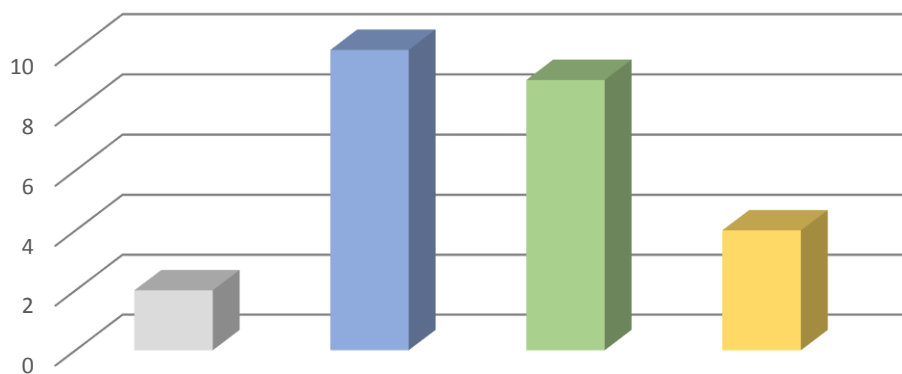
(a) Mathematical analysis



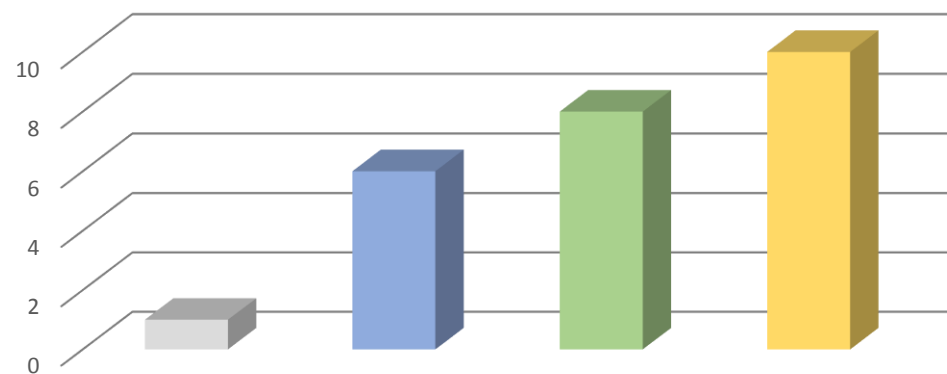
(b) Linear algebra



(c) Numerical analysis



(d) Stochastic calculus



Overview

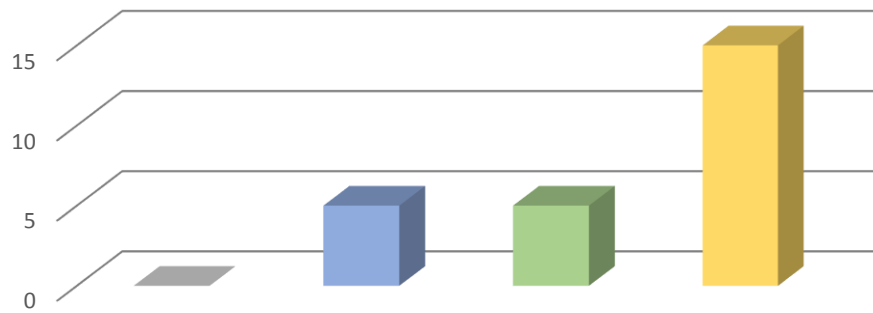
| | arithmetic average rounded | estimated standard deviation | arithmetic average runded per group of required skills | estimated standard deviationper group of required skills |
|---------------------------|----------------------------|------------------------------|---|---|
| Mathematics | | | | |
| (a) Mathematical analysis | 1,84 | 0,78 | 1,83 | 0,84 |
| (b) Linear algebra | 1,80 | 0,75 | | |
| (c) Numerical analysis | 1,60 | 0,85 | | |
| (d) Stochastic calculus | 2,08 | 0,89 | | |

General Technical Skills

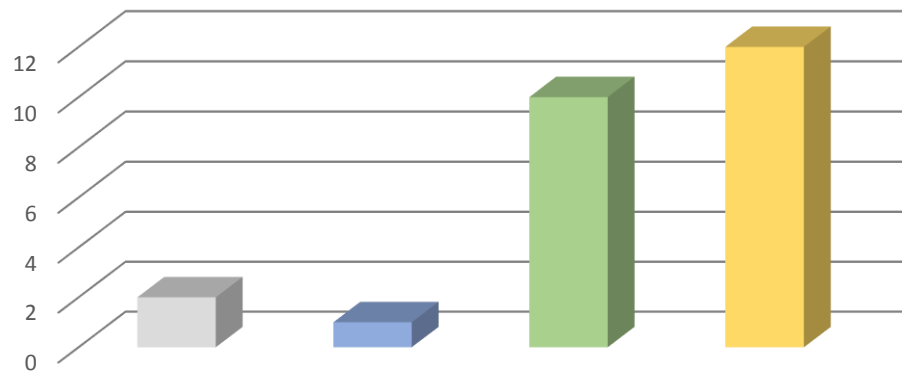
2. Probability and Mathematical Statistics

2. Probability and Mathematical Statistics

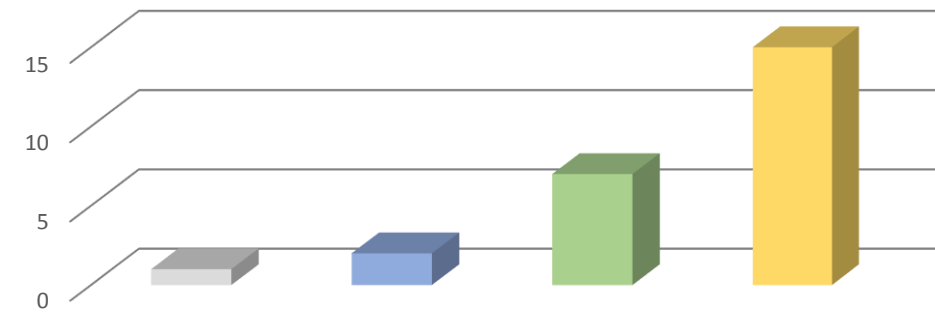
(a) Theory of probability and mathematical statistics



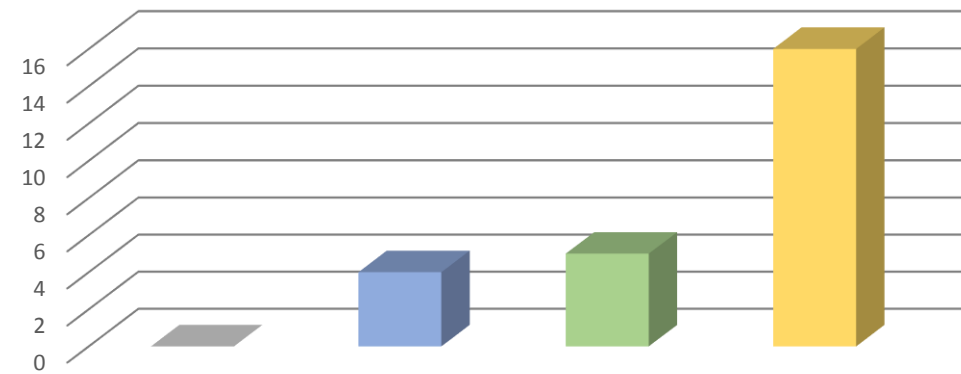
(b) Decision theory



(c) Data analysis



(d) Regression analysis



Overview

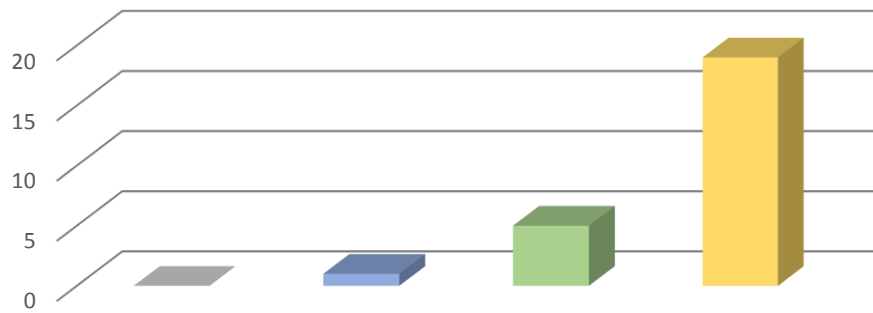
| | arithmetic average rounded | estimated standard deviation | arithmetic average rounded per group of required skills | estimated standard deviationper group of required skills |
|---|----------------------------|------------------------------|---|--|
| Probability and Mathematical Statistics | | | | |
| (a) Theory of probability and mathematical statistics | 2,40 | 0,80 | 2,40 | 0,81 |
| (b) Decision theory | 2,28 | 0,87 | | |
| (c) Data analysis | 2,44 | 0,80 | | |
| (d) Regression analysis | 2,48 | 0,75 | | |

General Technical Skills

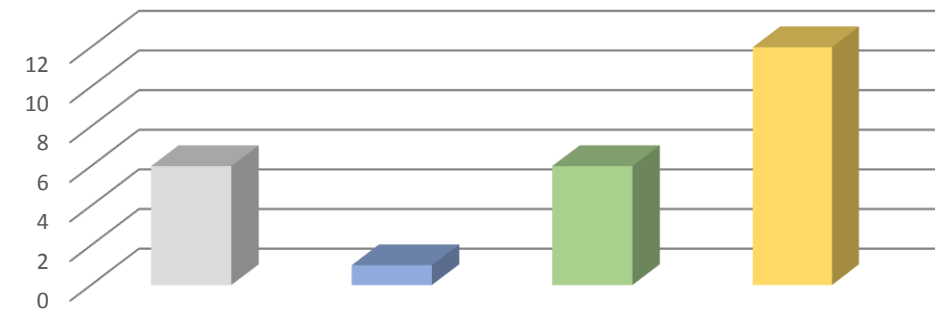
3. Stochastic Processes and Modelling

3. Stochastic Processes and Modelling

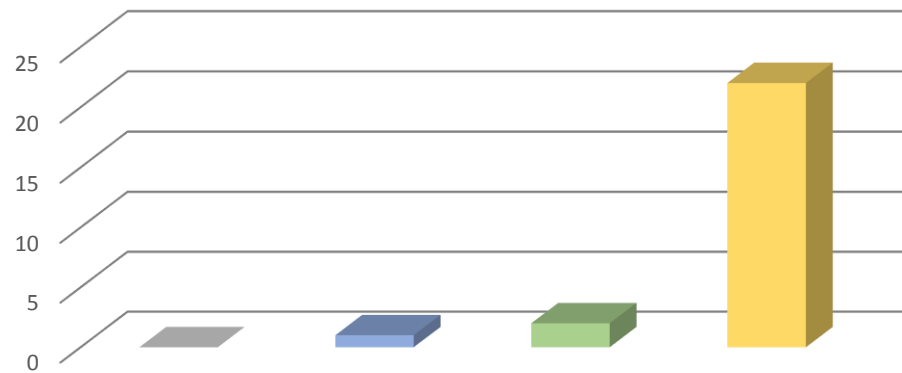
(a) Principles and methods of modelling



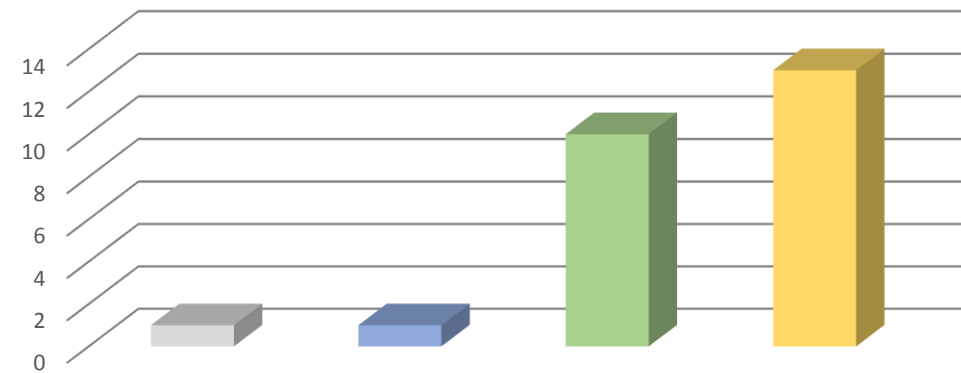
(c) Time series modelling



(b) Stochastic processes for insurance and finance



(d) Simulation methods



Overview

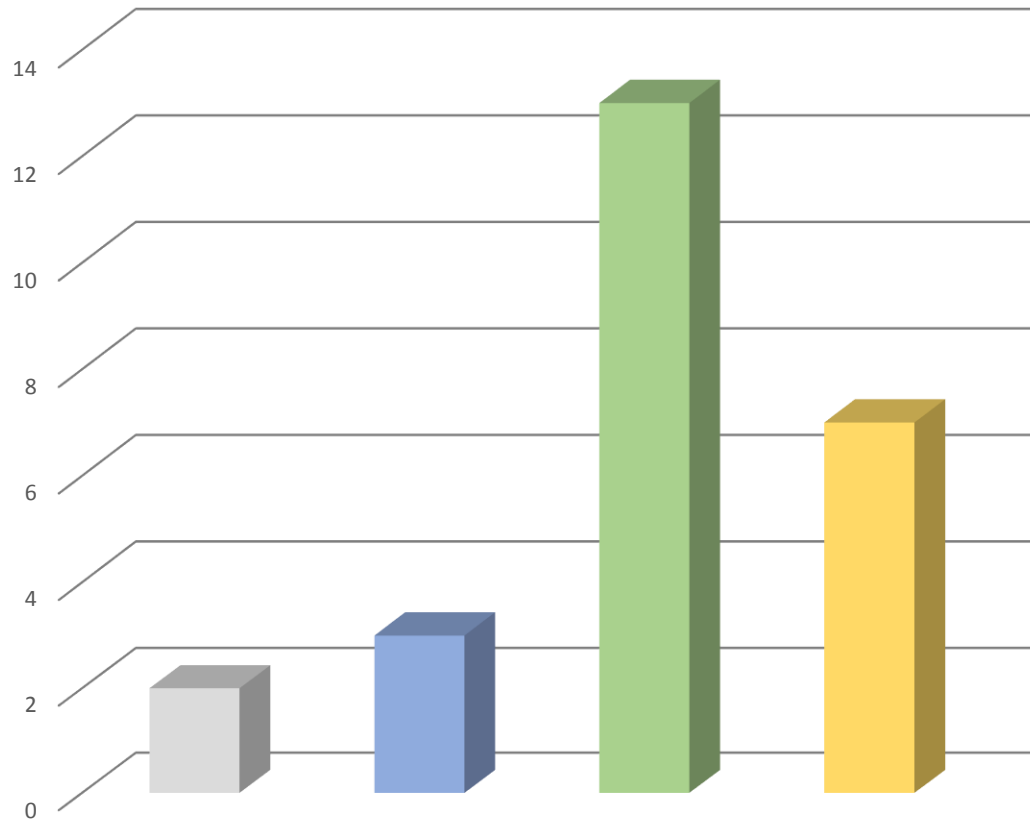
| | arithmetic average rounded | estimated standard deviation | arithmetic average runded per group of required skills | estimated standard deviationper group of required skills |
|--|----------------------------|------------------------------|---|---|
| Stochastic Processes and Modelling | | | | |
| (a) Principles and methods of modelling | 2,72 | 0,53 | 2,48 | 0,87 |
| (b) Stochastic processes for insurance and finance | 2,84 | 0,46 | | |
| (c) Time series modelling | 1,96 | 1,22 | | |
| (d) Simulation methods | 2,40 | 0,75 | | |

General Technical Skills

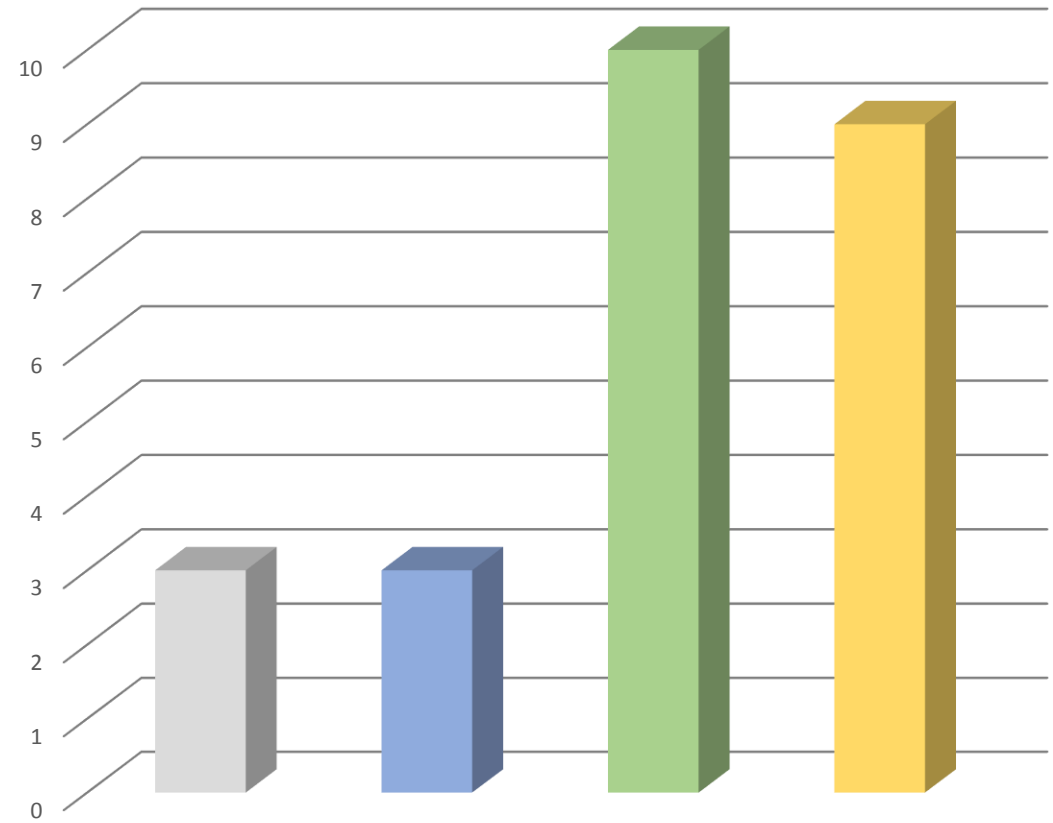
4. Economics

4. Economics

(a) Macroeconomics



(b) Microeconomics



Overview

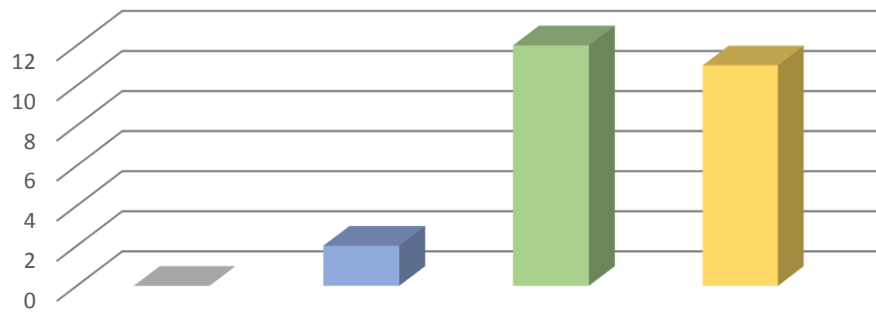
| | arithmetic average rounded | estimated standard deviation | arithmetic average rounded per group of required skills | estimated standard deviationper group of required skills |
|--------------------|----------------------------|------------------------------|---|--|
| Economics | | | | |
| (a) Macroeconomics | 2,00 | 0,85 | | |
| (b) Microeconomics | 2,00 | 0,98 | 2,00 | 0,92 |

General Technical Skills

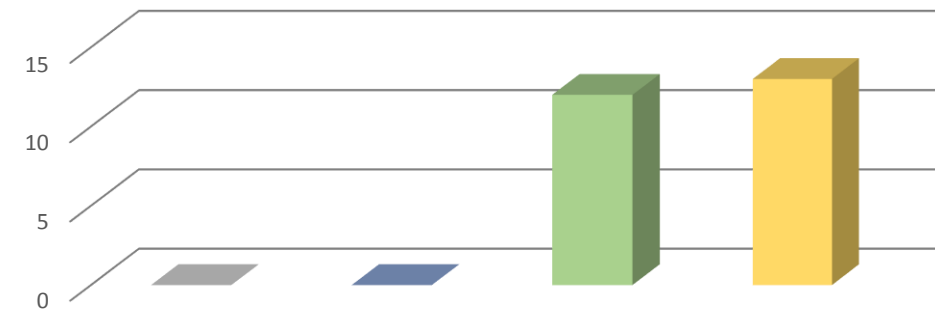
5. Accounting and Financial Reports

5. Accounting and Financial Reports

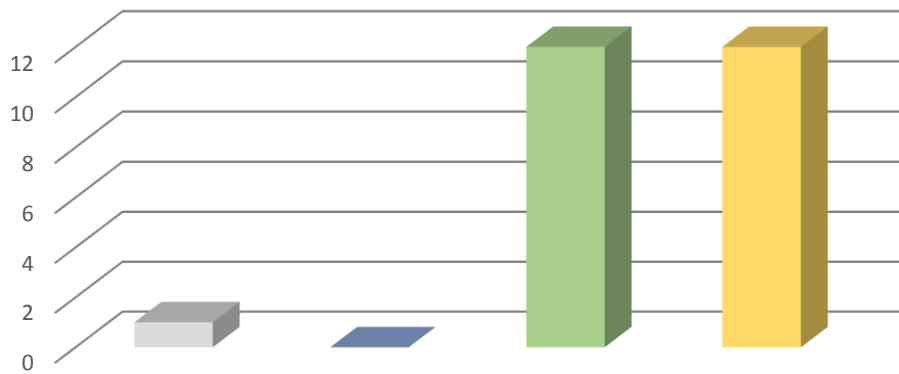
(a) Accounting principles



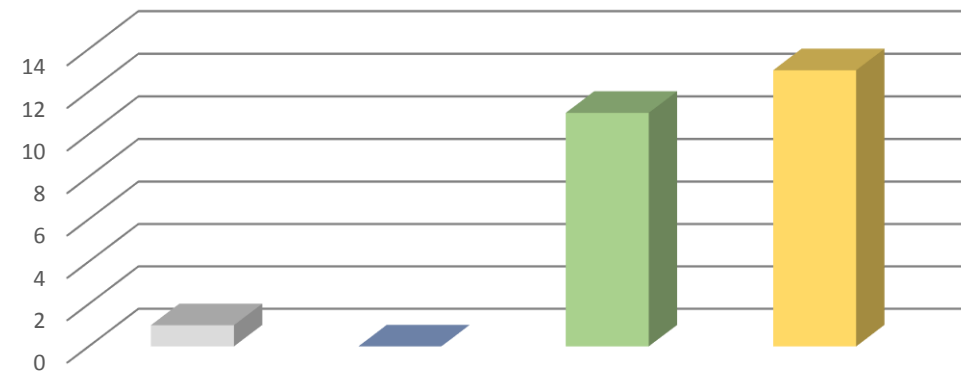
(c) Basic structure of company accounts



(b) Financial structures of business entities



(d) Interpretation of business accounts



Overview

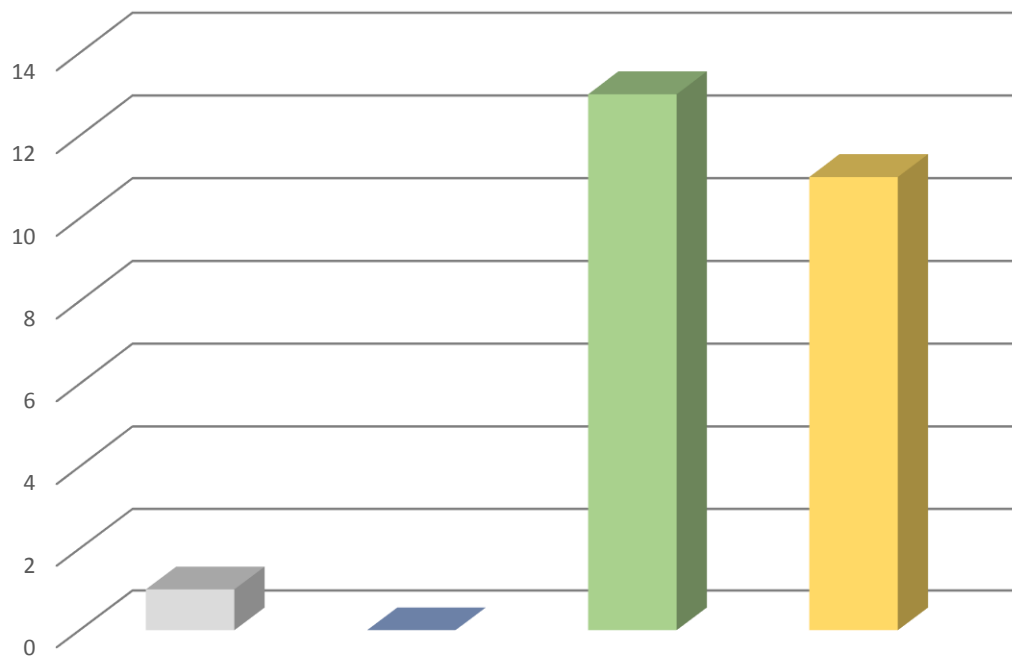
| | arithmetic average rounded | estimated standard deviation | arithmetic average rounded per group of required skills | estimated standard deviation per group of required skills |
|---|----------------------------|------------------------------|---|---|
| Accounting and Financial Reports | | | | |
| (a) Accounting principles | 2,36 | 0,62 | 2,43 | 0,64 |
| (b) Financial structures of business entities | 2,40 | 0,69 | | |
| (c) Basic structure of company accounts | 2,52 | 0,50 | | |
| (d) Interpretation of business accounts | 2,44 | 0,70 | | |

General Technical Skills

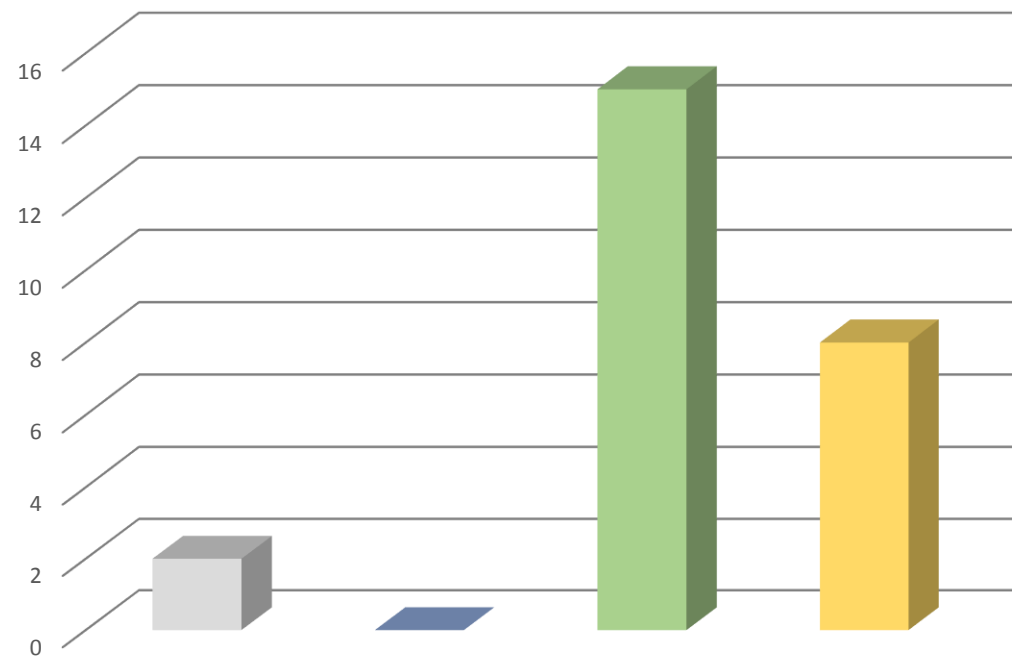
6. Legislation

6. Legislation

(a) Supervisory legislation



(b) Financial services laws



Overview

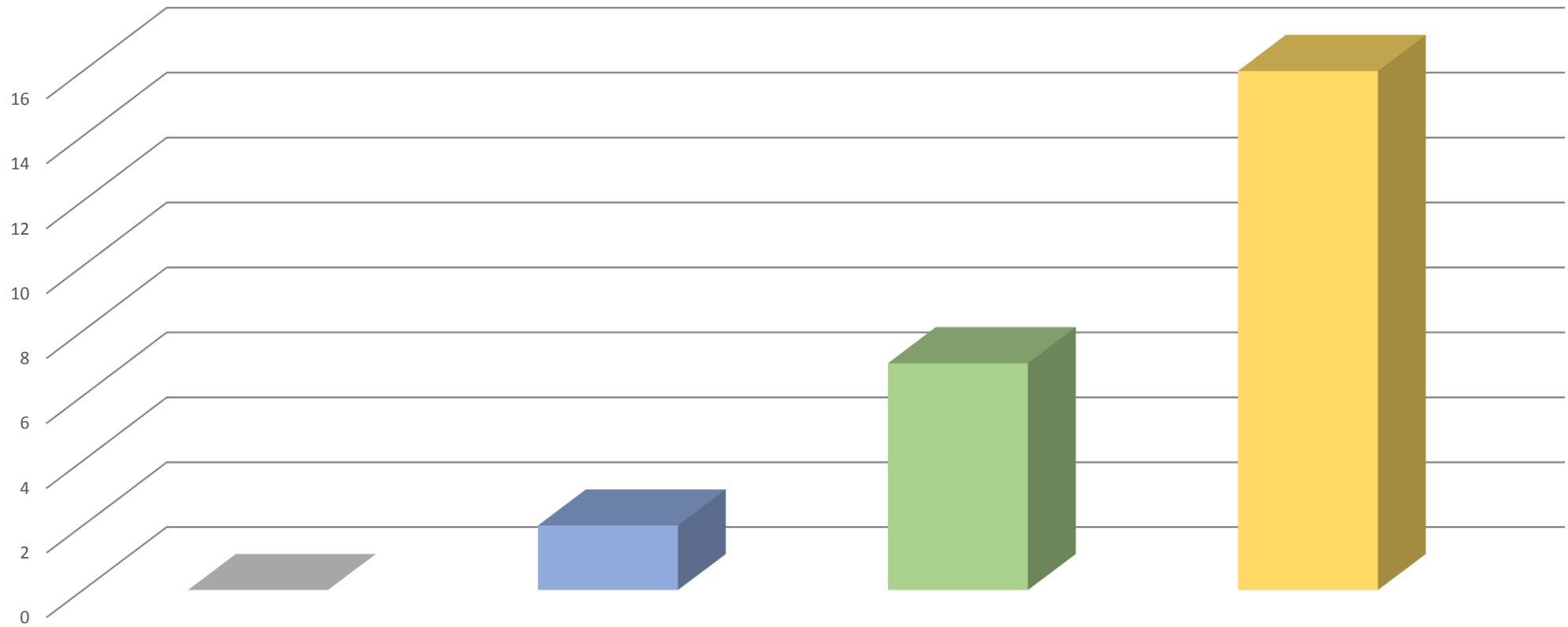
| | arithmetic average rounded | estimated standard deviation | arithmetic average rounded per group of required skills | estimated standard deviationper group of required skills |
|-----------------------------|----------------------------|------------------------------|---|--|
| Legislation | | | | |
| (a) Supervisory legislation | 2,36 | 0,69 | | |
| (b) Financial services laws | 2,16 | 0,78 | 2,26 | 0,74 |

Actuarial Technical Subjects

7. Financial Mathematics

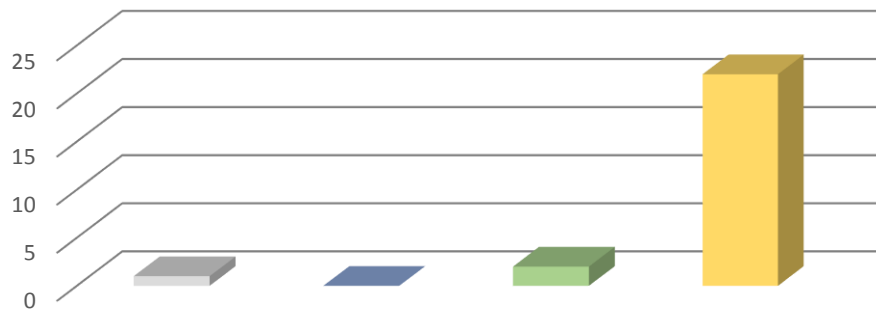
7. Financial Mathematics

(a) Theory of deterministic interest

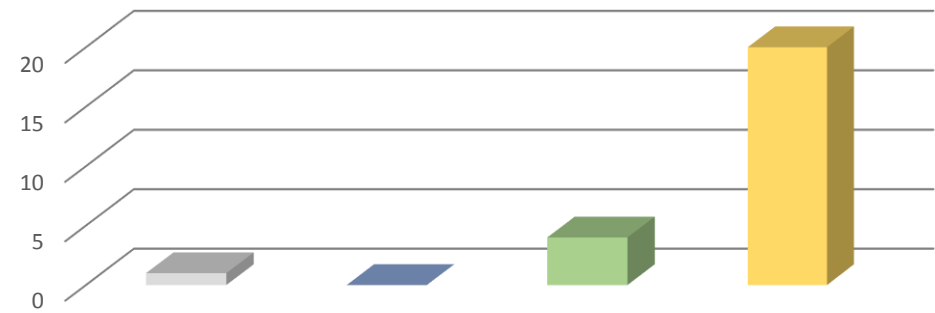


7. Financial Mathematics

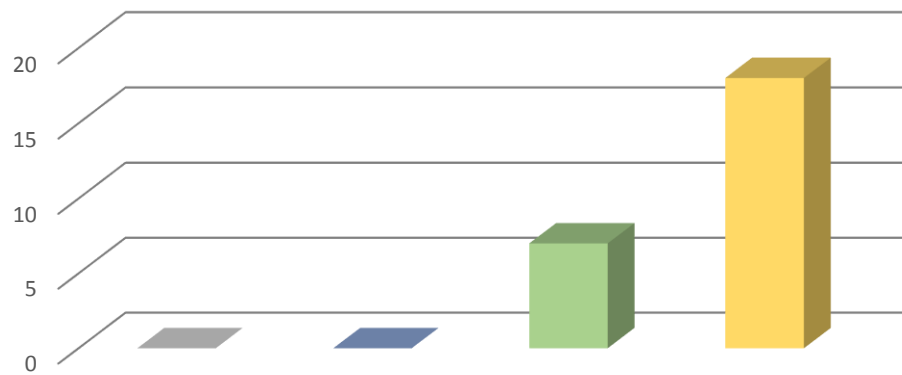
(b) Introduction to contingent claims analysis



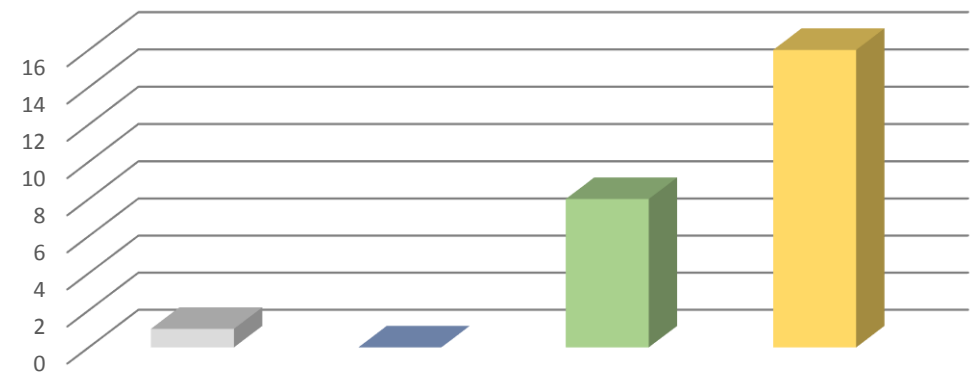
(d) Theory of stochastic interest



(c) Stochastic calculus for finance



(e) Asset management



Overview

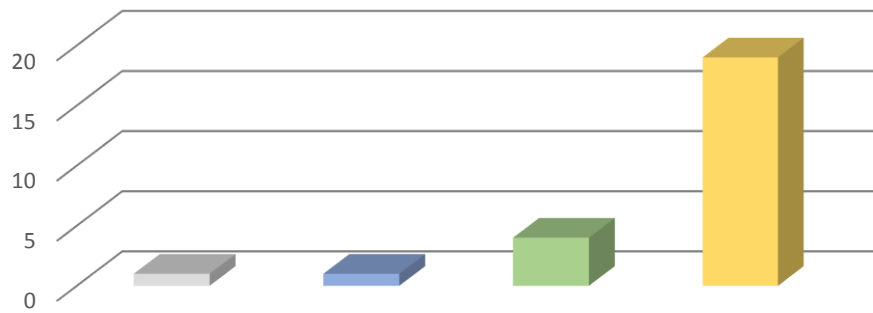
| | arithmetic average rounded | estimated standard deviation | arithmetic average rounded per group of required skills | estimated standard deviation per group of required skills |
|--|----------------------------|------------------------------|---|---|
| Financial Mathematics | | | | |
| (a) Theory of deterministic interest | 2,56 | 0,64 | 2,67 | 0,63 |
| (b) Introduction to contingent claims analysis | 2,80 | 0,63 | | |
| (c) Stochastic calculus for finance | 2,72 | 0,45 | | |
| (d) Theory of stochastic interest | 2,72 | 0,66 | | |
| (e) Asset management | 2,56 | 0,70 | | |

Actuarial Technical Subjects

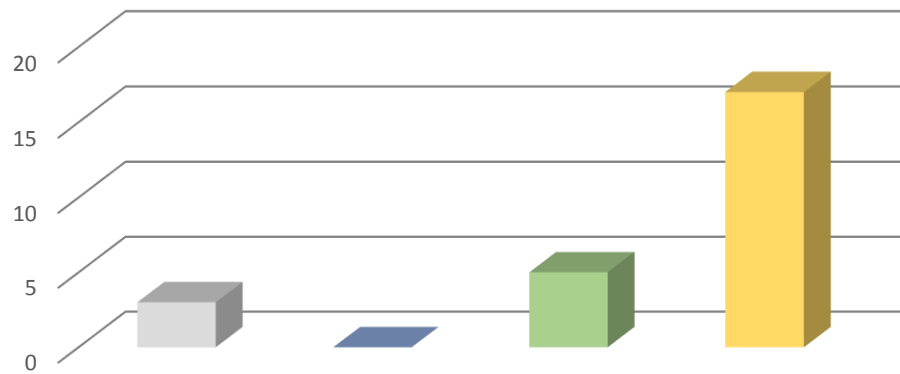
8. Multiple State Modelling

8. Multiple State Modelling

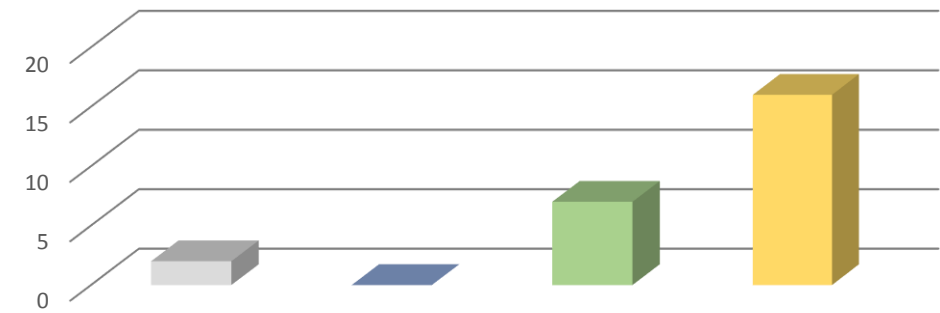
(a) Survival models and parameter estimation



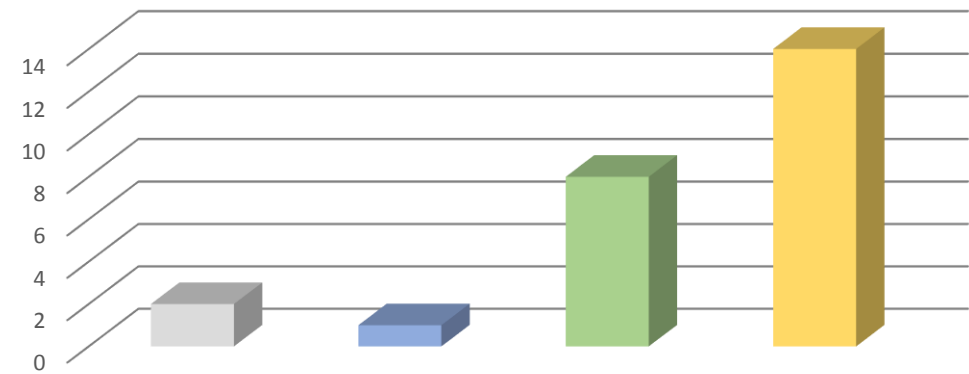
(b) Multiple state models and parameter estimation



(c) Construction of a decrement table



(d) Population characteristics and risk classification



Overview

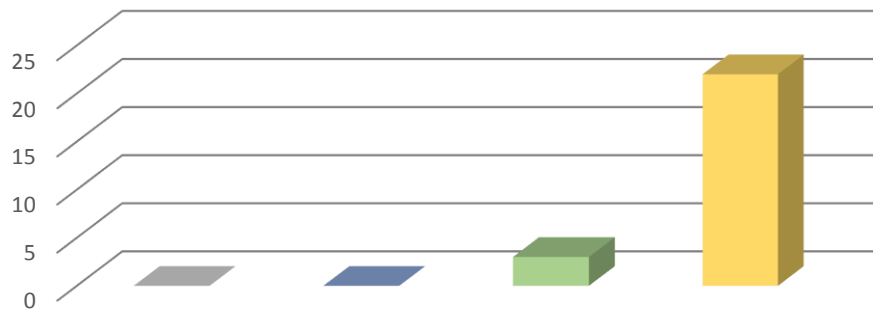
| | arithmetic average rounded | estimated standard deviation | arithmetic average rounded per group of required skills | estimated standard deviationper group of required skills |
|--|----------------------------|------------------------------|---|--|
| Multiple State Modelling | | | | |
| (a) Survival models and parameter estimation | 2,64 | 0,74 | 2,48 | 0,88 |
| (b) Multiple state models and parameter estimation | 2,44 | 0,98 | | |
| (c) Construction of a decrement table | 2,48 | 0,85 | | |
| (d) Population characteristics and risk classification | 2,36 | 0,89 | | |

Actuarial Technical Subjects

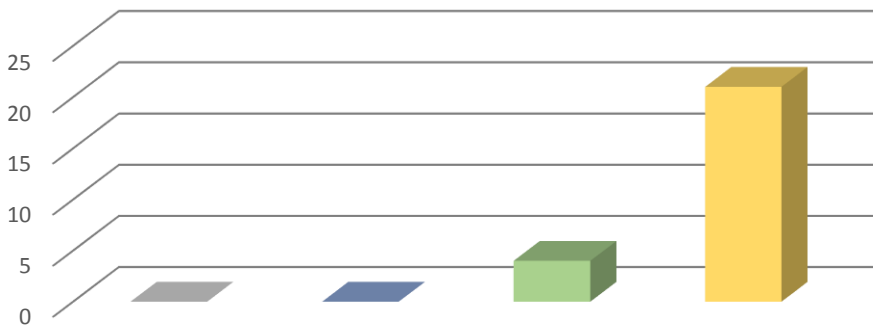
9. Contingencies

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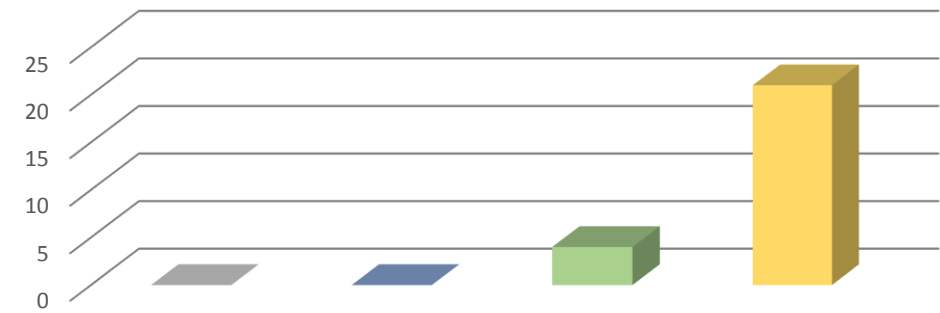
(a) Reserving methodology



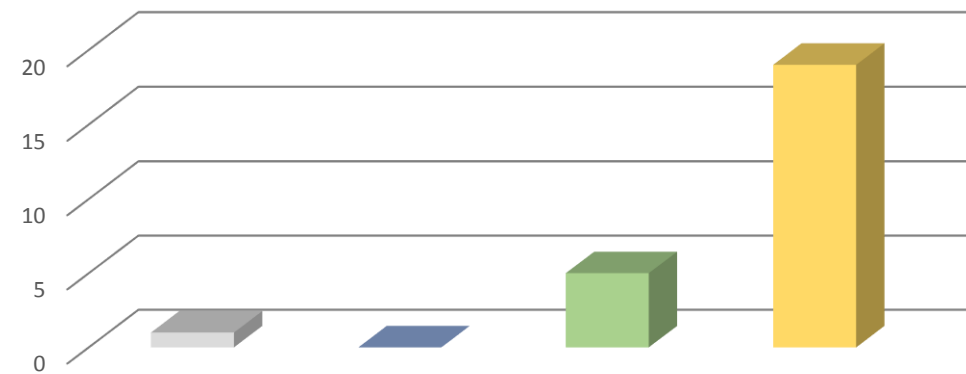
(b) Pricing of long term and short term insurance products



(c) Valuation techniques



(d) Analysis of changes in technical results



Overview

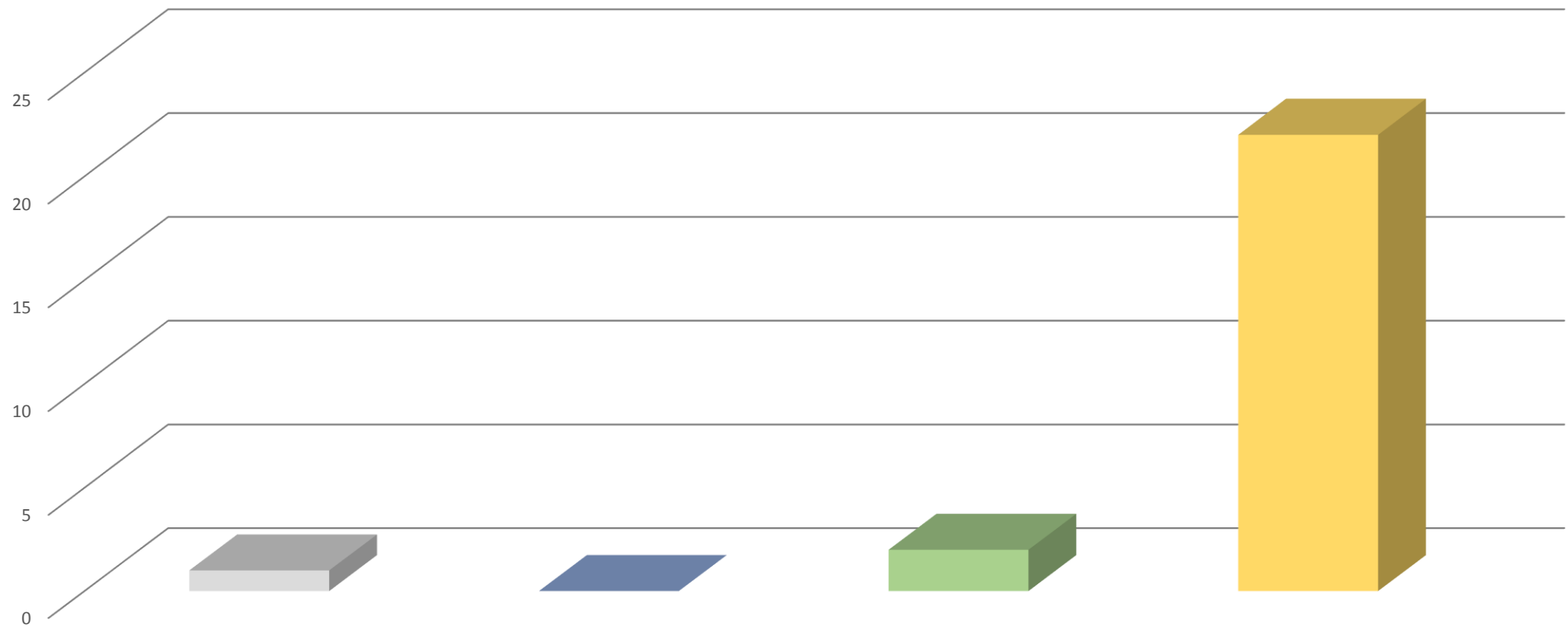
| | arithmetic average rounded | estimated standard deviation | arithmetic average runded per group of required skills | estimated standard deviationper group of required skills |
|---|----------------------------|------------------------------|---|---|
| Contingencies | | | | |
| (a) Reserving methodology | 2,88 | 0,32 | 2,81 | 0,46 |
| (b) Pricing of long term and short term insurance products | 2,84 | 0,37 | | |
| (c) Valuation techniques | 2,84 | 0,37 | | |
| (d) Analysis of changes in technical results | 2,68 | 0,68 | | |

Actuarial Technical Subjects

10. Risk Mathematics

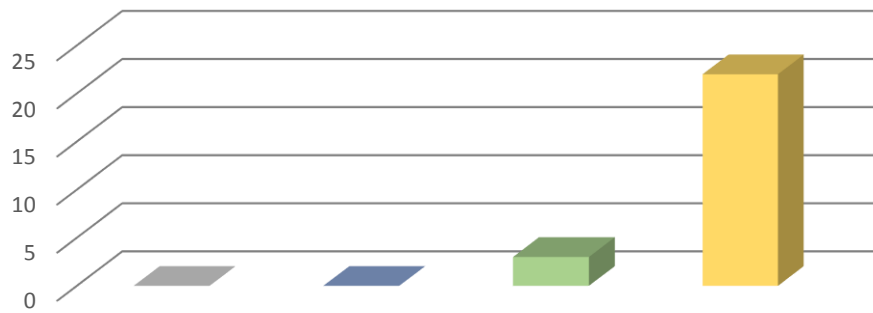
10. Risk Mathematics

(a) Distribution of frequency and severity of claims

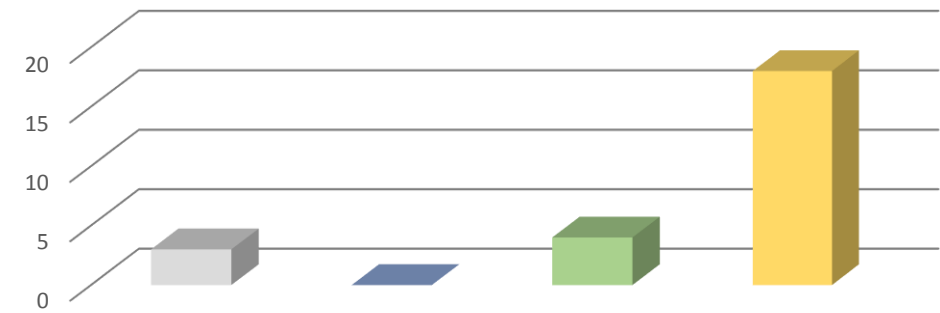


10. Risk Mathematics

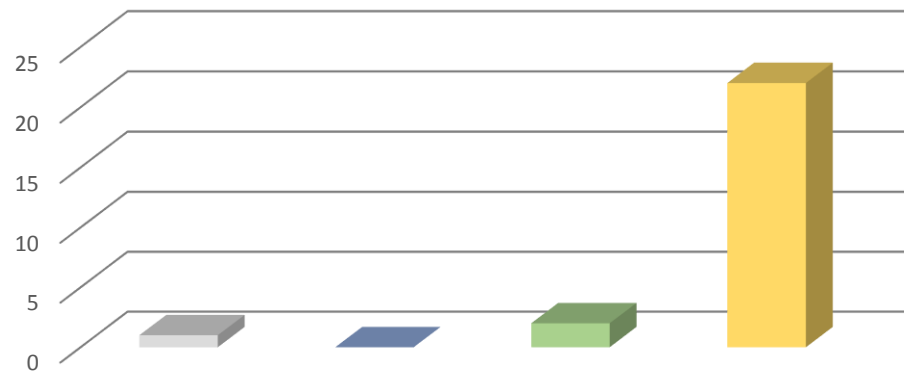
(b) Risk theory



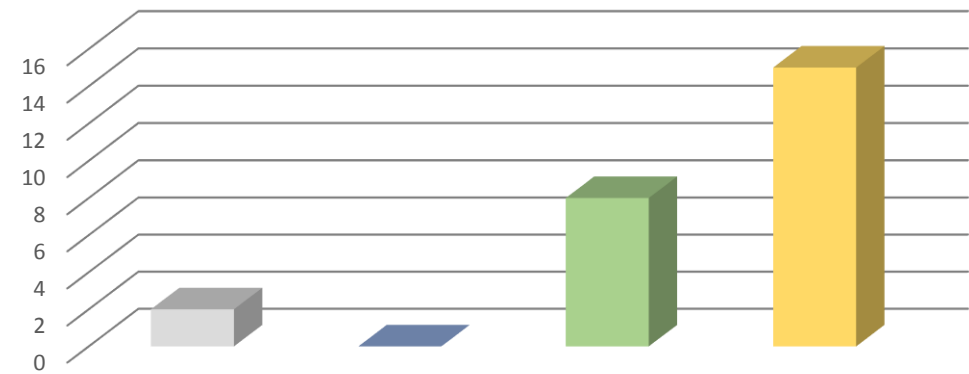
(d) Dependencies



(c) Credibility theory



(e) Generalised linear models



Overview

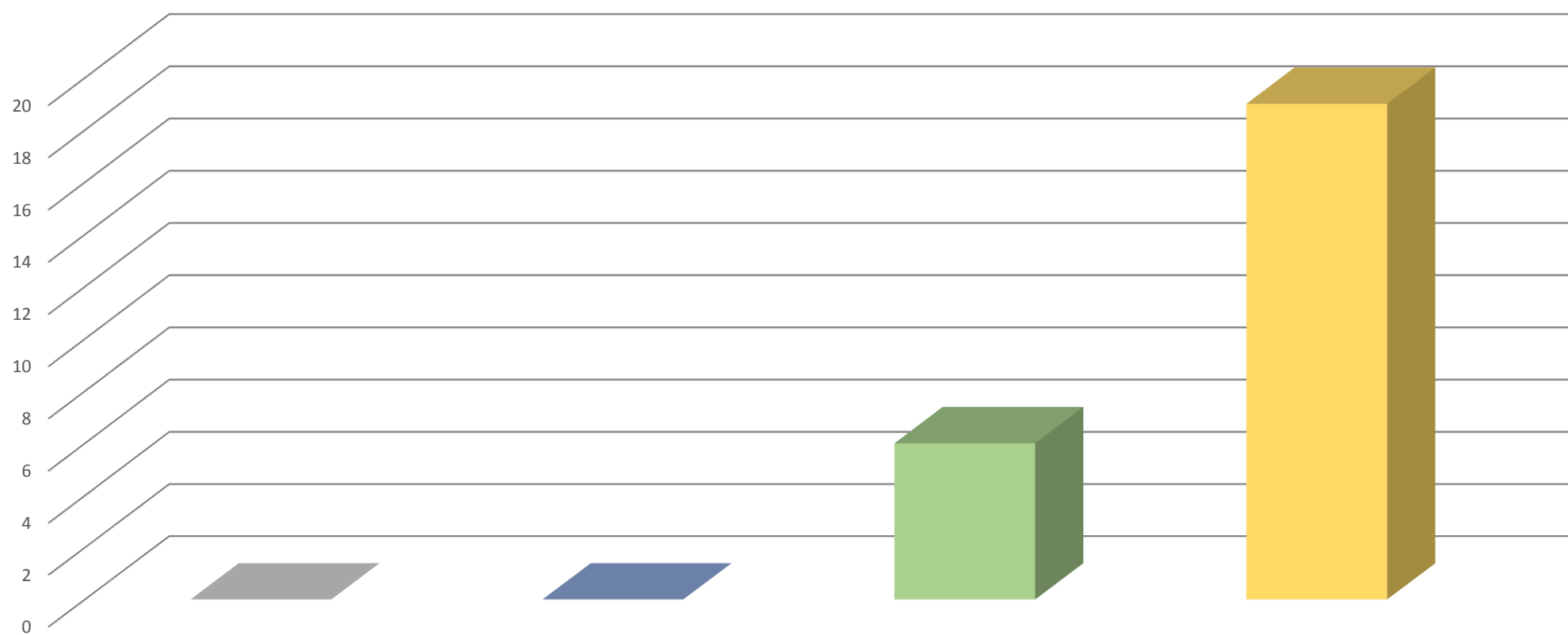
| | arithmetic average rounded | estimated standard deviation | arithmetic average rounded per group of required skills | estimated standard deviationper group of required skills |
|--|----------------------------|------------------------------|---|--|
| Risk Mathematics | | | | |
| (a) Distribution of frequency and severity of claims | 2,80 | 0,63 | 2,68 | 0,74 |
| (b) Risk theory | 2,88 | 0,32 | | |
| (c) Credibility theory | 2,80 | 0,63 | | |
| (d) Dependencies | 2,48 | 0,98 | | |
| (e) Generalised linear models | 2,44 | 0,85 | | |

Actuarial Technical Subjects

11. Finance and Financial Markets

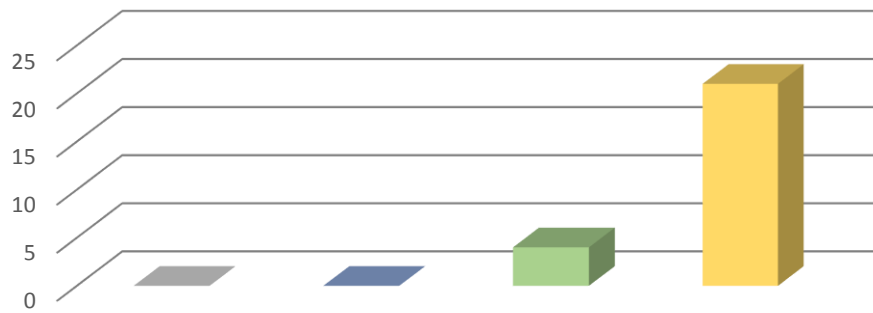
11. Finance and Financial Markets

(a) Financial markets

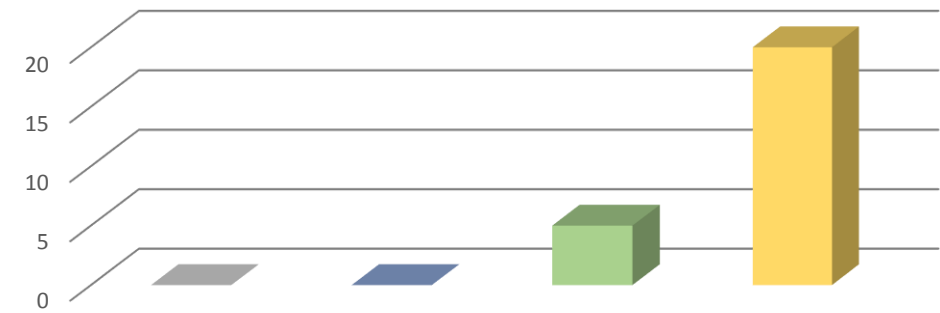


11. Finance and Financial Markets

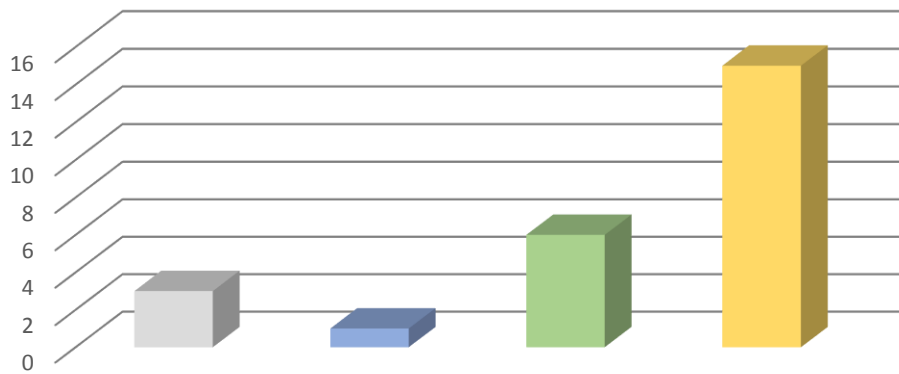
(b) Pricing and valuation of financial products



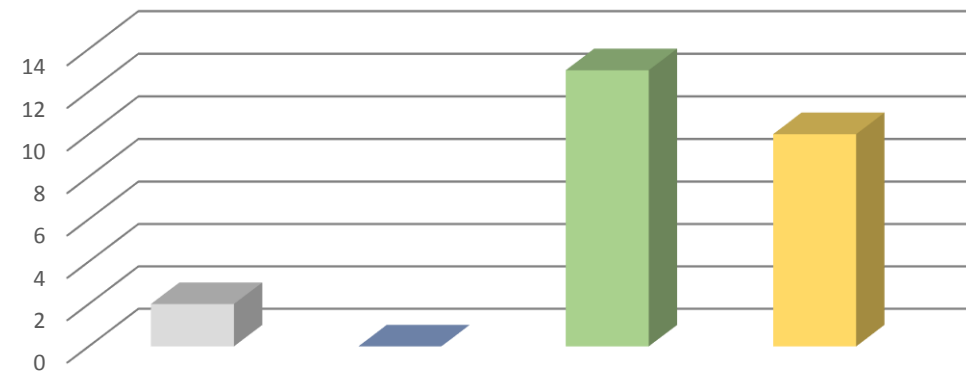
(d) Portfolio theory



(c) Corporate finance



(e) Economic value and measurement



Overview

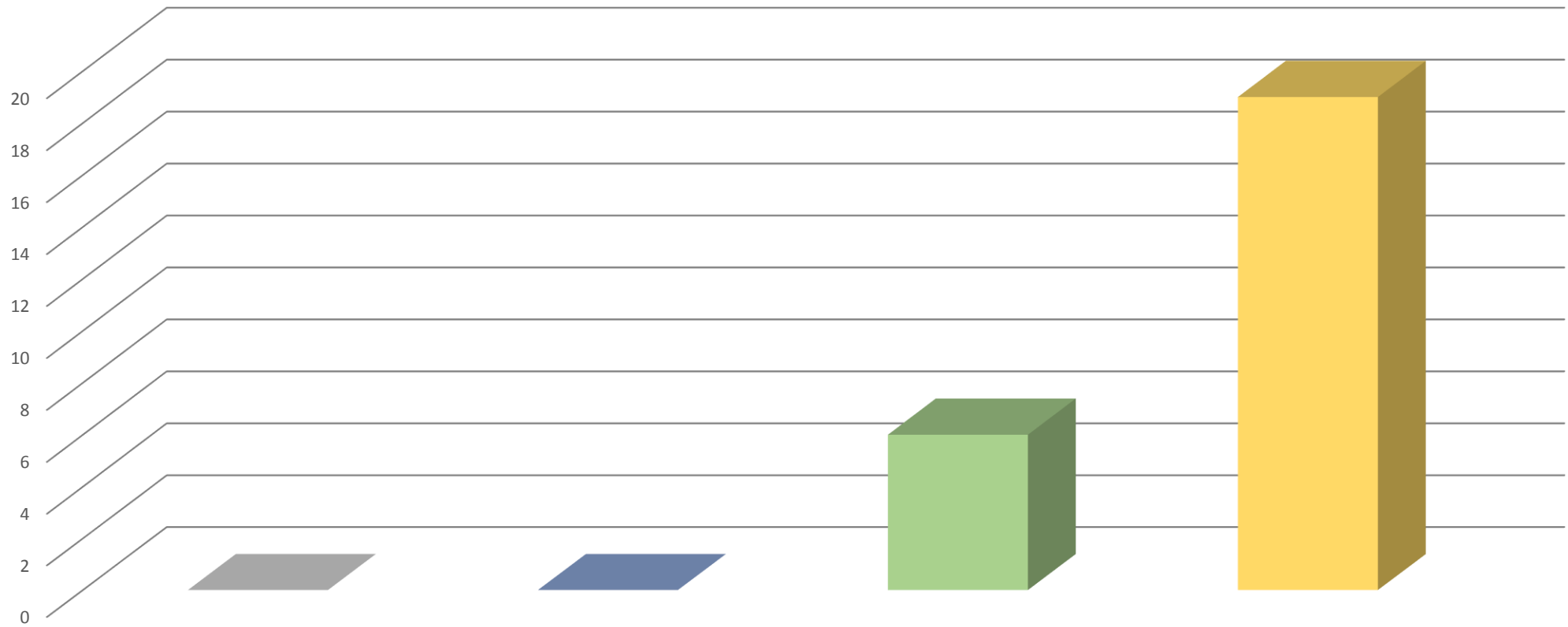
| | arithmetic average rounded | estimated standard deviation | arithmetic average rounded per group of required skills | estimated standard deviation per group of required skills |
|---|----------------------------|------------------------------|---|---|
| Finance and Financial Markets | | | | |
| (a) Financial markets | 2,76 | 0,43 | 2,59 | 0,71 |
| (b) Pricing and valuation of financial products | 2,84 | 0,37 | | |
| (c) Corporate finance | 2,32 | 1,01 | | |
| (d) Portfolio theory | 2,80 | 0,40 | | |
| (e) Economic value and measurement | 2,24 | 0,81 | | |

Actuarial Technical Subjects

12. Quantitative Risk Management and Solvency

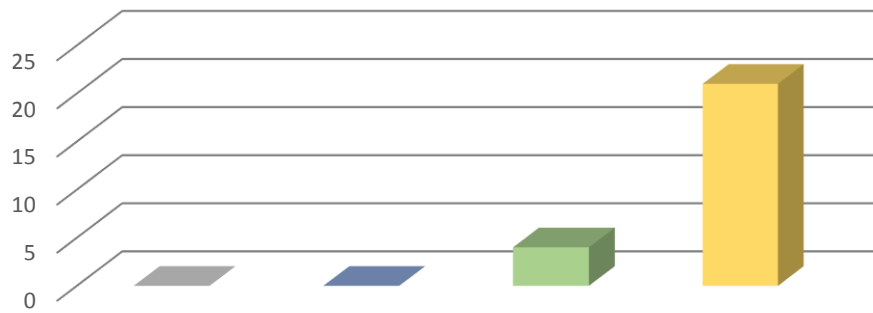
12. Quantitative Risk Management and Solvency

(a) Financial markets

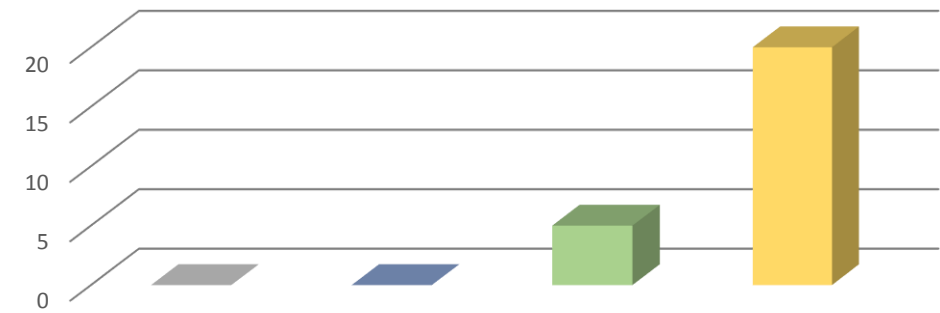


12. Quantitative Risk Management and Solvency

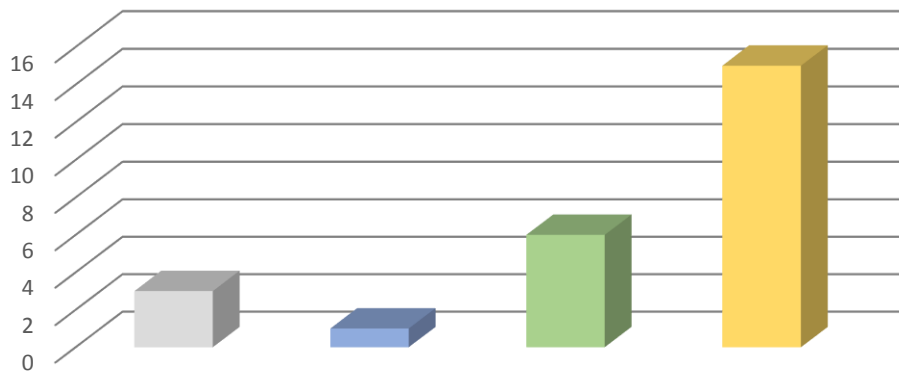
(b) Pricing and valuation of financial products



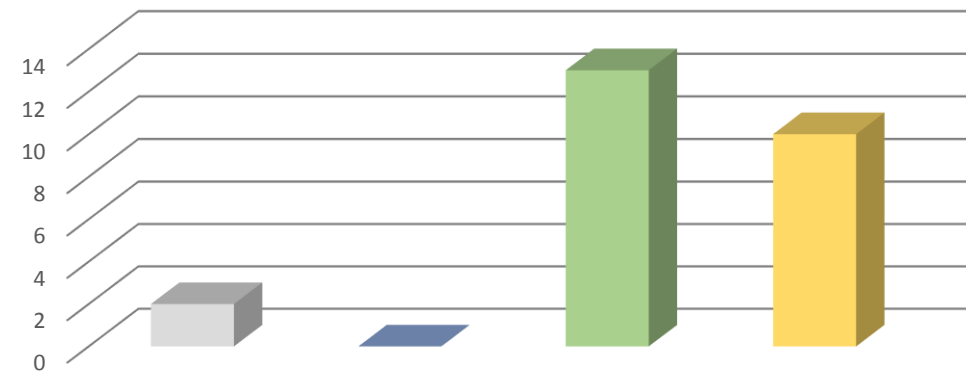
(d) Portfolio theory



(c) Corporate finance



(e) Economic value and measurement



Overview

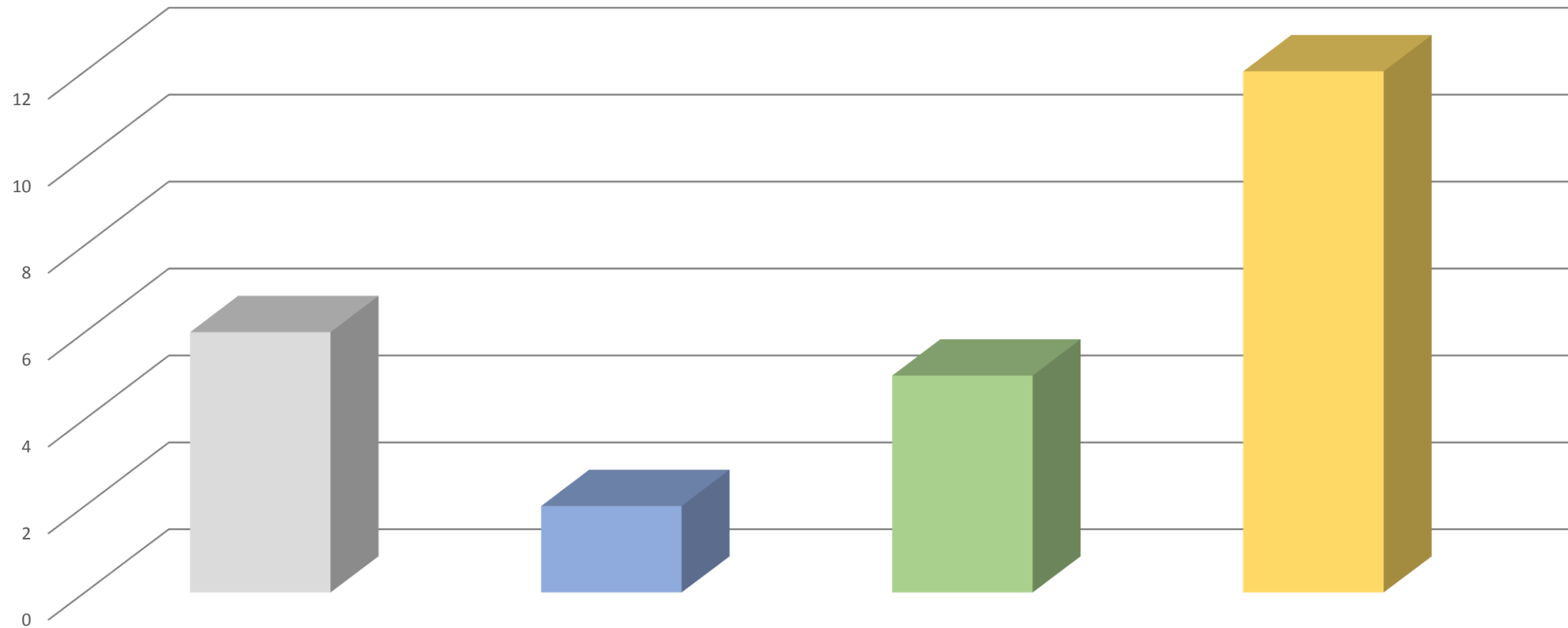
| | arithmetic average rounded | estimated standard deviation | arithmetic average rounded per group of required skills | estimated standard deviationper group of required skills |
|--|----------------------------|------------------------------|---|--|
| Quantitative Risk Management and Solvency | | | | |
| (a) Risk classification | 2,48 | 0,98 | 2,35 | 1,07 |
| (b) Measuring risk | 2,48 | 0,98 | | |
| (c) Diversification | 2,52 | 0,98 | | |
| (d) Dynamic financial analysis and internal models | 2,04 | 1,22 | | |
| (e) Capital requirements | 2,24 | 1,07 | | |

Actuarial Applications

13. Actuarial Enterprise Risk Management

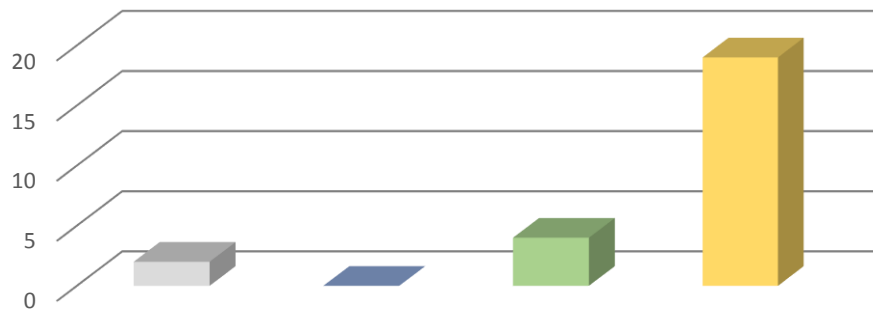
13. Actuarial Enterprise Risk Management

- The general operating environment of the enterprise

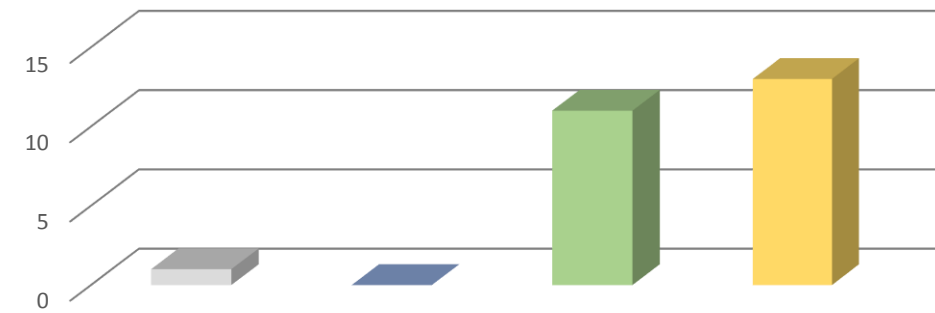


13. Actuarial Enterprise Risk Management

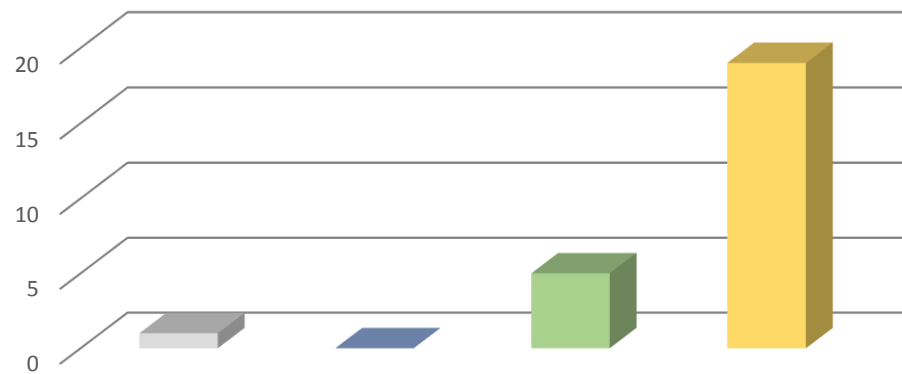
- Assessment of risks; risk types and risk measures



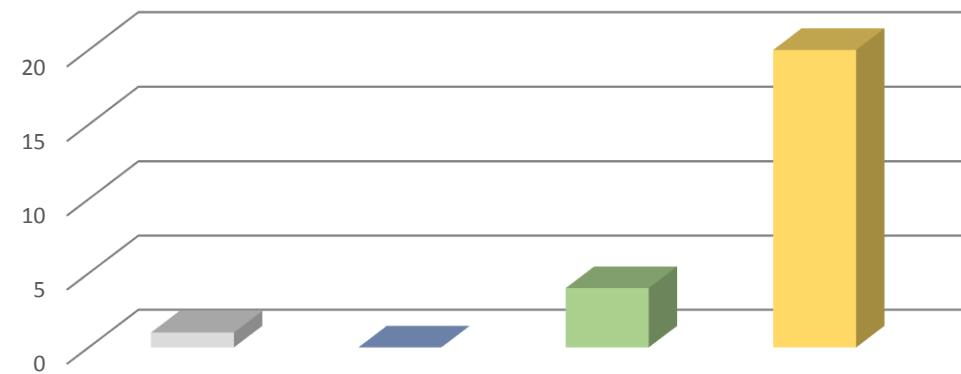
- Determination of assumptions and scenario setting



- Design and pricing of products and/or services

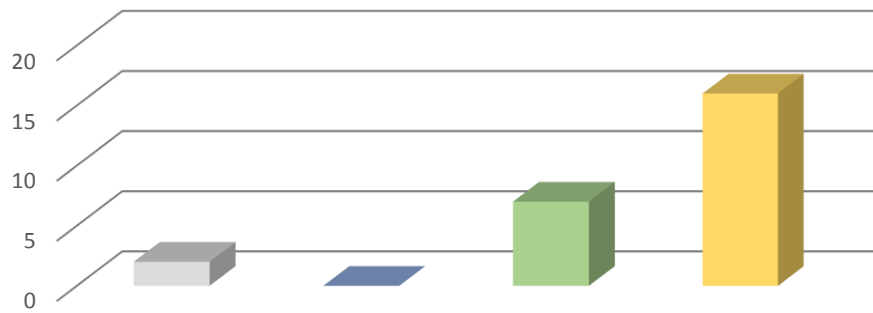


- Reserving and valuation of liabilities

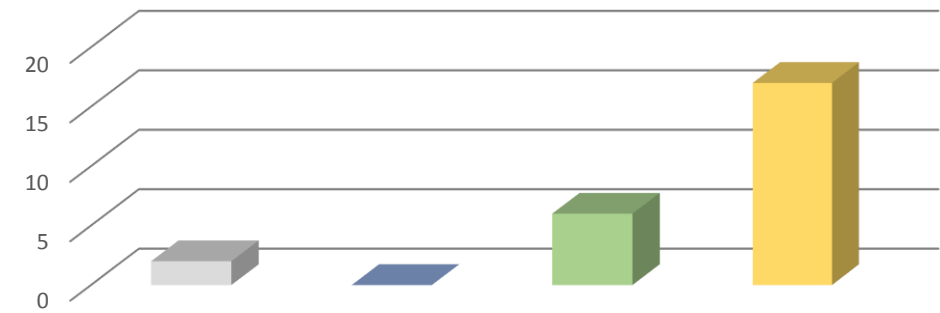


13. Actuarial Enterprise Risk Management

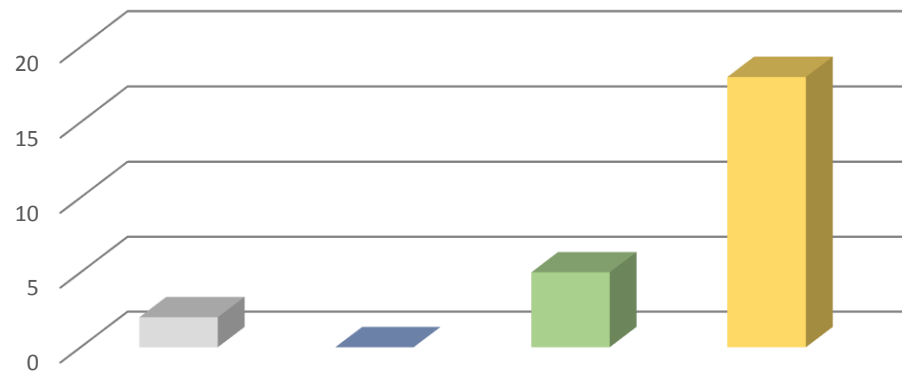
• Risk mitigation



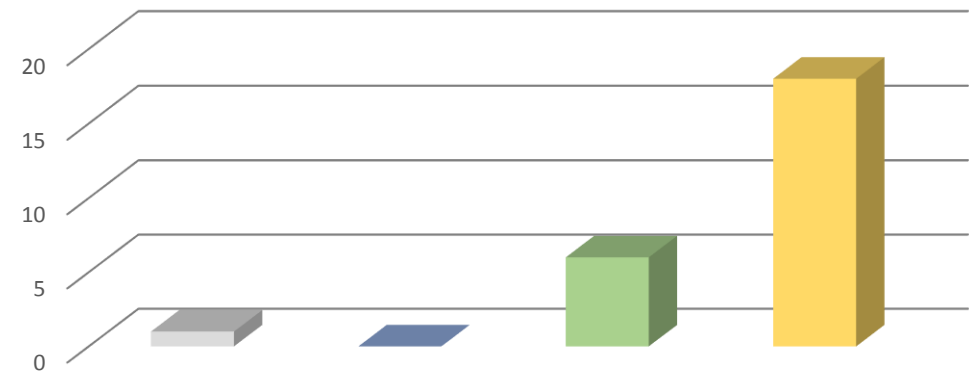
• Monitoring the experience and exposure to risk



• Asset Liability Management



• Solvency



Overview

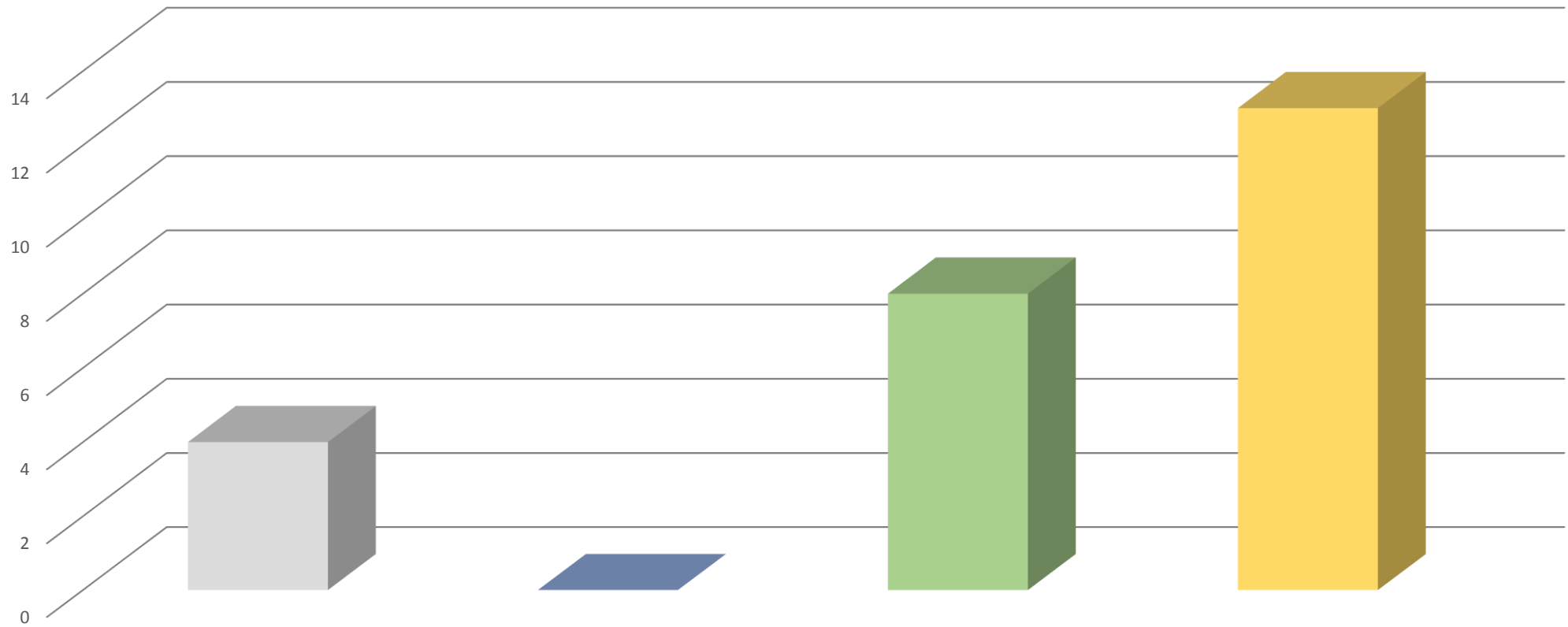
| | arithmetic average rounded | estimated standard deviation | arithmetic average rounded per group of required skills | estimated standard deviation per group of required skills |
|---|----------------------------|------------------------------|---|---|
| Actuarial Enterprise Risk Management | | | | |
| • The general operating environment of the enterprise | 1,92 | 1,23 | 2,51 | 0,86 |
| • Assessment of risks; risk types and risk measures | 2,60 | 0,85 | | |
| • Design and pricing of products and/or services | 2,68 | 0,68 | | |
| • Determination of assumptions and scenario setting | 2,44 | 0,70 | | |
| • Reserving and valuation of liabilities | 2,72 | 0,66 | | |
| • Risk mitigation | 2,48 | 0,85 | | |
| • Asset Liability Management | 2,56 | 0,85 | | |
| • Monitoring the experience and exposure to risk | 2,52 | 0,85 | | |
| • Solvency | 2,64 | 0,69 | | |

Actuarial Applications

14. Professionalism

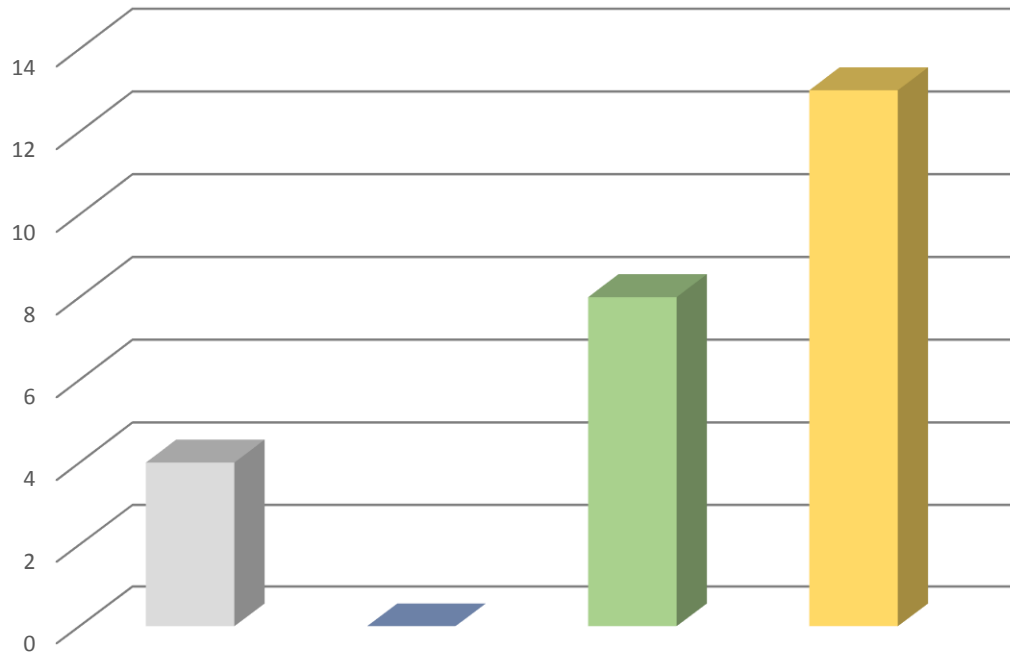
14. Professionalism

- Conduct standards and discipline

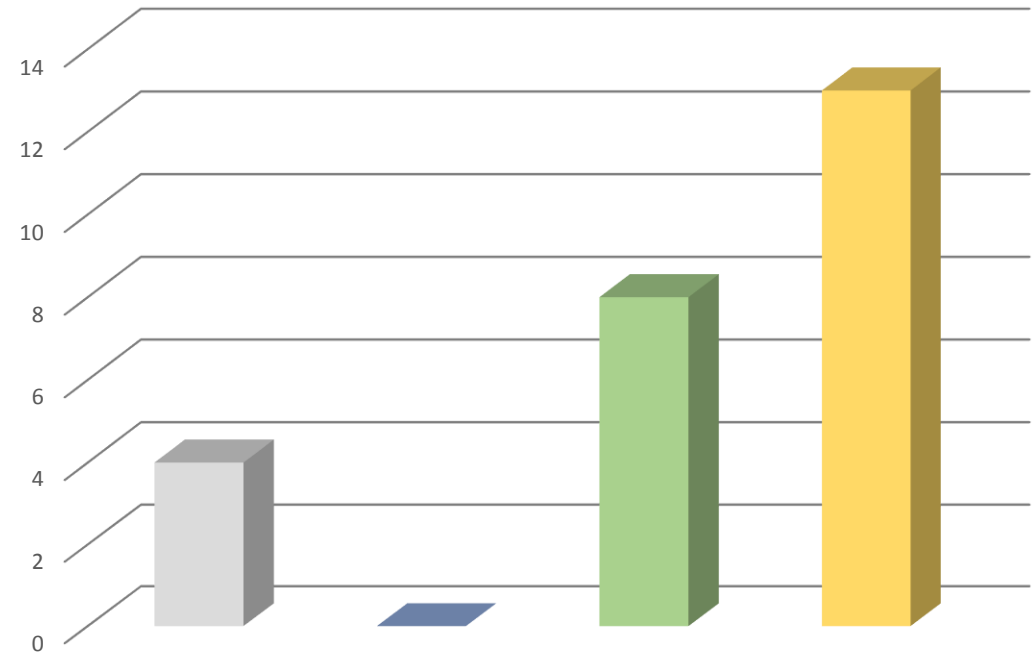


14. Professionalism

• Professional Standards



• Professionalism and business ethics



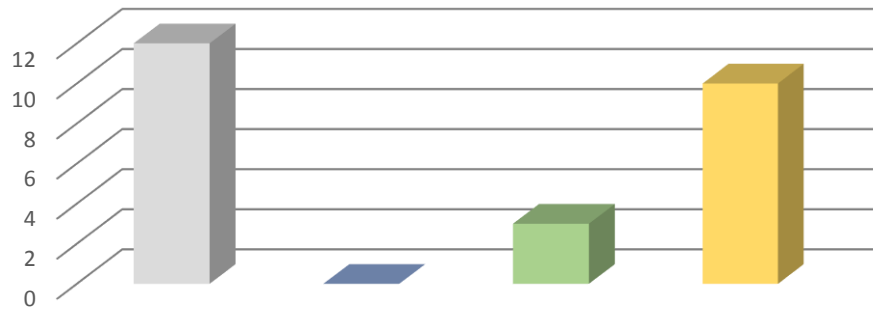
Overview

| | arithmetic average rounded | estimated standard deviation | arithmetic average runded per group of required skills | estimated standard deviationper group of required skills |
|---------------------------------------|----------------------------|------------------------------|--|--|
| Professionalism | | | | |
| • Conduct standards and discipline | 2,20 | 1,06 | 2,20 | 1,06 |
| • Professional Standards | 2,20 | 1,06 | | |
| • Professionalism and business ethics | 2,20 | 1,06 | | |

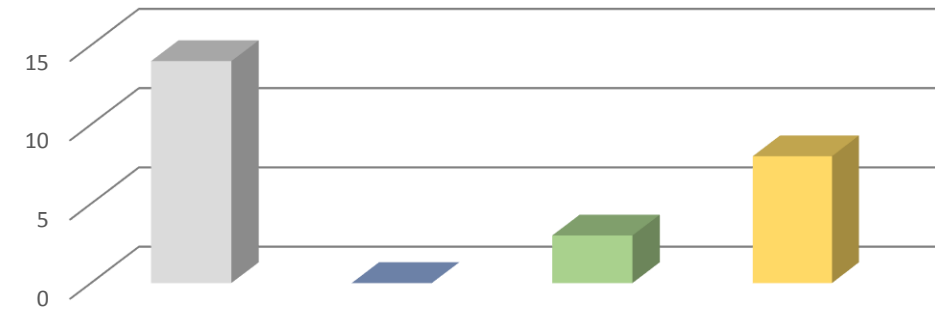
Specialisation

Specialisation

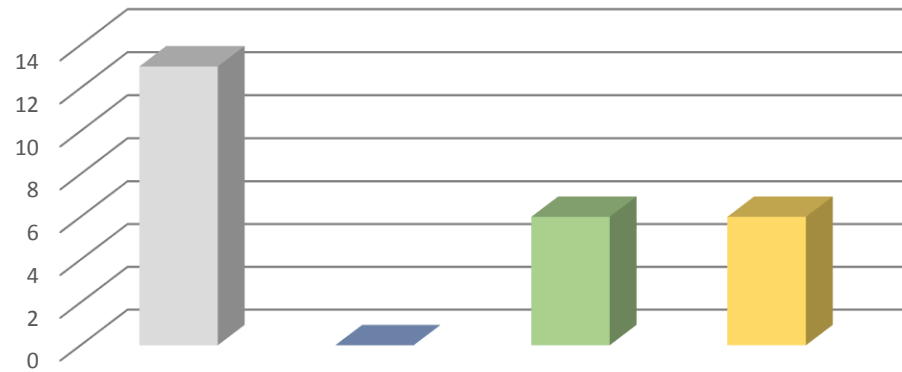
(a) Deeper studies



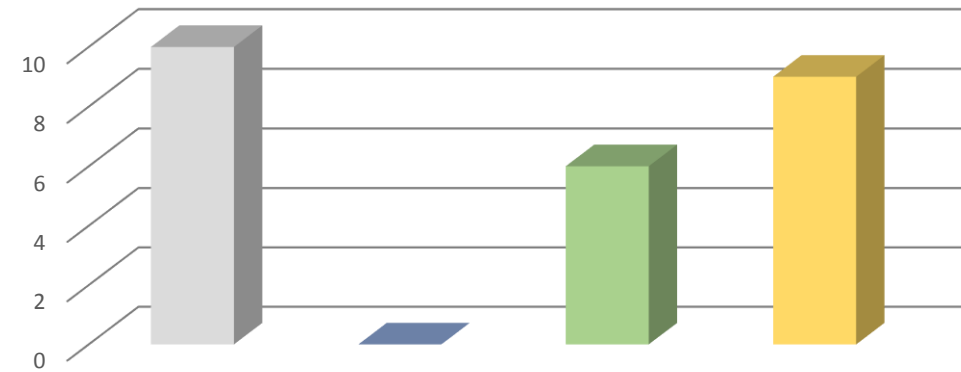
(c) Research



(b) Studies of European and country specific topics



(d) Practical application of principles



Overview

| | arithmetic average rounded | estimated standard deviation | arithmetic average runded per group of required skills | estimated standard deviationper group of required skills |
|---|----------------------------|------------------------------|---|---|
| Specialisation | | | | |
| (a) Deeper studies | 1,44 | 1,42 | 1,35 | 1,37 |
| (b) Studies of European and country specific topics | 1,20 | 1,30 | | |
| (c) Research | 1,20 | 1,39 | | |
| (d) Practical application of principles | 1,56 | 1,33 | | |