

Index

- Access
 - Functions See Functions, Access
 - Data Profile, 64–68
 - Histogram, 69–72
 - Periodic graph, 75
 - Benford's Law, 99–101
 - Employee network access, 318–320
 - Overview, 456–472
 - Architecture, 457–459
 - Tables, 458, 459–461
 - Queries, 458, 462–465
 - Database size limit, 468
 - Reports, 458, 469–471
- Accounting numbers
 - Benford's Law, 85–87, 96–96, 105–106
 - Textbook numbers, 107–109, 132–134
- ACFE
 - Report to the Nations, 23–24, 483–484, 500–501
 - Fraud risk assessments, 116, 496
- AICPA
 - Audit Data Analytics, 11, 20, 25–26, 104, 324–325
 - Risk assessment standards, 19–21
- Audit Data Analytics
 - Definition, 11
 - Risk assessment standards, 20
 - False positives, 21
 - Main steps, 25–27
- Audit tests, 103–107, 124, 268, 426
- Audit opinion, 11, 273, 434, 499
 - Link to Benford's Law, 103–107
 - Audit report, 188, 426
- Beneish's M-Score, 445, 446–447
- Benford's Law
 - Check amounts, 11
 - Logarithm tables, 80
 - Original study, 80–83
 - Formulas, 81
 - Expected frequencies table, 81
 - Geometric sequence, 82–83
 - Published articles, 83–90
 - Scale invariance, 83
 - Fibonacci sequence, 84
 - Accounting numbers, 85–87, 96–96, 105–106
 - Enron's numbers, 86–87
 - Tax evasion, 88–89, 89–90,
 - Payroll fraud, 89, 131–132
 - Sequences, 91, 93
 - Distributions, 91, 93, 94
 - Functions, 91
 - Differences, 92
 - Conformity considerations, 94–95, 114–116
 - First digits test, 107–109, 110, 133, 377–378, 443–445
 - Textbook numbers, 107–109
 - Conformity tests, 109–111, 111–112, 112–114
 - Findings, 117–119
 - Journal entries, 119–123
 - Upper bound, 121–122
 - First two digits, 96–97, 105–106, 115–116, 117–119, 120–123, 128–129, 133–136, 251–252, 256–257, 259–260, 262–263, 351, 428–429
 - Second digits test, 86, 87, 378–379, 405–406, 427–429, 430–431
 - Financial statement fraud, 442–446
- Bribery
 - Definition, 24
 - Link to duplicate payments, 218
- Census data, 157
- Chi-square test, 111–112
- CFO, 217, 426, 449–450
 - Ryan Homa, 4
 - Bennett Nussbaum, 54–55
 - Michael Spada, 158–160
 - Duplicate payments fraud, 217–219
 - Rita Crundwell, 263–268
 - Victor Sturman, 344–348
 - Andrew Fastow, 432–433
 - Weston Smith, 120
- Code of Business Conduct, 222
- Collusion, 168–169, 194
- Correlation, 322–324, 327, 360–361
- Crime insurance, 498–500
- Cyberattack, 401
- Dashboards
 - Excel, 43–46
 - Examples, 46–47
 - Vector Variation Score, 332–334
- Data
 - Reliability of, 26

- Cleansing steps, 26
- County populations, 107–108
- Textbook numbers, 107–109, 132–134
- Debit and credit cards, 257–261
- Grocery store sales, 261–263, 321–322
- Fuel oil sales, 465–466
- Joe Biden's tax returns, 299–302
- Property tax refunds, 394–400
- Fraudulent shipping claims, 404
- Petty cash checks, 138
- Enron's reported numbers, 86, 430
- Bar tab amounts, 142
- Cash deposits, 144
- Vendor invoices for repairs, 169
- Duplicate payments, 219
- Withdrawals by branch manager, 314
- Fraudulent Arizona checks, 349
- Data profile
 - Description, 51–56
 - Strata, 52
- Decimal point error, 184
- Descriptive statistics
 - High-level test, 60–62
 - Parameters and statistics, 60
 - Review, 249–250
 - Purchasing card data, 252–254
 - Excel, 268–269
 - Minitab, 269–270
 - SAS, 270–272
- Detective controls, 496–498
- Discriminant analysis, 341–343
- Distortion factor model, 89–90
- Economics of crime model, 492–493
- Embezzlement
 - Court of law, 2–3
 - Check alterations, 5
 - Procurement department, 7
 - University employee, 9–10
 - Possible defenses against, 490, 492
 - Differs from criminal behavior, 491–492
 - Definition, 24
 - Annual cost, 483–484
- Employee network access, 317–320
- Enron, 86–87, 430–433
- Excel
 - Overview, 28–29
 - Importing data, 29–30
 - Formatting, 30–32
 - Protecting data, 32–33
 - Functions See Functions, Excel
 - PivotTables, 36–38, 74, 144–146, 175–176
 - Data profile, 62–64
 - Copying to Word, 40–42
 - Warnings and indicators, 42–43
 - Dashboards, 43–46
 - Histogram, 68–69
 - Benford's Law, 98–99, 125–126
- False positives
 - AICPA recommendations, 21
 - Definition, 27
- FBI, 388, 484, 485
 - Arrest statistics, 24, 483, 492
- Financial statement fraud, 426–454
 - Definition, 24, 426, 442
 - Enron, 430–433
 - HealthSouth, 433–436
 - WorldCom, 436–442
 - Benford's Law, 442–446
 - Detection and investigation, 447–448
 - Internal reports, 449–453
 - Rounding-up behavior, 427–430
- First-two digits test, 96–97, 105–106, 115–116, 117–119, 120–123, 128–129, 133–136, 251–252, 256–257, 259–260, 262–263, 351, 428–429
- Forecasting
 - Tableau, 17
- Forensic reports, 27–28, 364–365
- Forensic units
 - Definition, 338, 454
- Fraud
 - Triangle, 3, 424
 - Hexagon, 3
 - Competence, 3
 - Arrogance, 3
 - Undeterred, 3
 - FBI definition, 23
 - Fraud types, 24
 - End-of-lease computers, 25
 - Detection tools/methods, 50–51, 79, 500–501, 501–503
 - Suspicion scores, 51
 - Electric utility case, 134–136
 - Petty cash scheme, 136–139
 - Credit card sales, 141–142
 - Nightclub cash sales, 142–144
 - By CFO, 4, 158–160
 - Awareness, 159–160, 191, 368, 370–371, 372
 - Overtime, 162–163
 - Spouse indicted, 167
 - School district, 168
 - SkyBonus scheme, 170
 - Bank vault coins, 186–189
 - Elements of fraud scheme, 186, 192, 494
 - Duplicate payments fraud, 217–219
 - Expense reports, 223
 - Bank account withdrawals, 312–317
 - Employee network access, 317–320
 - Annual cost, 483–484
 - Trust account, 485–487
- Fraud risk assessment, 116, 495–496
- Functions, Access
 - AND, 70
 - YEAR, 75
 - MONTH, 75
 - VAL, 99, 149, 150, 172
 - LEFT, 99, 172
 - ABS, 100
 - RIGHT, 149, 150
 - ROUND, 149, 150, 178, 244
 - INT, 150
 - IF, 178, 243

- BETWEEN, 67
- IS NULL, 178, 205
- MAX, 206
- Functions, Excel
 - QUARTILE, 62
 - IF, 33–36, 39, 148, 149, 175, 176, 195, 197, 234, 236–239
 - VLOOKUP, 38–40
 - COUNTIFS, 62–64, 69
 - SUMIFS, 64
 - CONCATENATE, 74
 - YEAR, 74, 175
 - MONTH, 74, 175
 - ABS (Absolute) 98, 148
 - LEFT, 98–99
 - RANK, 147
 - VALUE, 148, 149
 - RIGHT, 148, 149
 - ROUND, 148, 149, 176
 - DAY, 175
 - DATE, 175
 - MID, 99
 - CHINV, 111
 - AND, 234, 236, 237, 238
 - OR, 237
 - LARGE, 268
 - CORREL, 327
 - BINOMDIST, 431
- General ledger analytics, 324–327
- Greek mythology, 1
- Grocery store data
 - Tableau, 17
 - Minitab, 321–322
 - Excel, 261–263
- Handbook of Statistical Methods, 61, 109–110, 250
- HealthSouth fraud, 120–121, 123–124, 433–436
- Histogram
 - High-level test, 56–58, 250–251, 255–256, 258–259, 261–262
 - IDEA, 72
 - Tableau, 72–73
- IDEA
 - Histogram, 72
 - Number duplications, 127–131
 - Time-series analysis, 311–312
 - First-two digits test, 127–129
- Identity theft refund fraud, 282–284
- Internal controls, 22, 268, 347–348, 376, 393–394, 405, 426, 448, 493–495, 499, 505
 - Preventive, detective, & corrective, 423, 493–494, 496–498
 - COSO components, 494
- IBM Watson, 261
- Journal entries
 - Manual and automated, 47
 - Halo for journals, 47
 - Benford's Law, 97, 104–105, 119–123, 110
 - WorldCom, 438–439
 - Financial statement fraud, 448
 - Top-side journal entries, 439
- Kolmogorov-Smirnoff test, 112
- Largest subsets test
 - Purchasing card fraud, 12, 161–165
 - Excel, 172–173
 - Access, 173–174
- Largest subsets growth test, 165–167, 349, 350, 431
 - Excel, 174–176
 - Access, 176–178
 - R, 179–180
- Last-two digits test, 139–141, 141–142, 378–379
 - Excel, 148–149
 - Access, 149–151
 - R, 151–153
- Machine learning data, 257–261
- Matthews International, 166–167
- Mean Absolute Deviation, 116, 126, 128, 133, 134, 135, 140, 256–257, 259, 263, 377, 378, 428–429, 443–445
 - Described, 112–114
 - Critical values, 114, 257
 - Last-two digits, 140
- Mean Absolute Percentage Error, 307, 310, 321
- Minitab, 269–270, 308–311, 316–317, 321–322
- My Law
 - Payroll application, 255–257
 - Machine learning data, 257–261
- Number duplication test
 - Check amounts, 11
 - Purchasing card data, 127–132
 - Candidates for review, 129–132
 - Accounting textbooks, 132–134
 - Petty cash, 137
 - Excel, 144–146
 - Access, 146–148
 - Debit and credit card data, 259–260
 - Sales reports, 362–363
 - Tax refunds, 380–381
 - Shipping claims, 405
- Number frequency factor
 - Formula, 231
 - Access, 242–245
- Occupational fraud
 - Definition, 2, 24
 - Six drivers of, 3
 - Discussion, 504–505
- Outliers, 141–142
- Payroll fraud, 89, 159, 162, 190, 350–351
- Period-to-period change, 275–280
 - Examples, 280–282, 299–302

- Periodic graph
 - High-level test, 58–60
 - Access, 75–76
 - Tax refunds scheme, 377
- Petty cash fraud scheme, 136–139
- Plea agreement, 226–227, 412–415, 487
- Payments fraud
 - Duplicates, 217–219
- PivotTables, 36–38, 74, 144–146, 175–176
- PCAOB, 47, 248
- Purchasing cards
 - Philadelphia fraud, 7–9
 - Georgia Tech, 9–10
 - Split purchases, 55–56, 215, 220, 232
 - Air Force helmets, 55–56
 - Largest merchants, 165
- Purchasing card data
 - District of Columbia, 13–16, 52–54, 56–62, 64–68, 116–117, 129–131, 156–157, 183–184, 215–217, 220–221, 232–233, 250–254, 280–282, 307–311
- R
 - Number duplication test, 151–153
 - Largest subsets test, 179–180
 - Overview, 151, 472–481
 - R Studio, 151, 472–473
 - R Markdown, 475
- Relative Size Factor, 182–186
 - Excel steps, 34–36, 194–199
 - Formula, 183
 - Findings, 184–186
 - Access steps, 199–208
 - SAS steps, 208–212
- Restitution, 6, 8, 10, 160, 189, 192, 193, 219, 230–231, 267, 346, 391–392, 393, 420, 487
- Richard Hatch, 284–299
- Risk assessment standards, 19–21
- Risk scoring, 339–365, 449–453
 - Predictors, 339
 - Sales reports, 354–365
- Rita Crundwell
 - Fraud scheme, 263–268
- Round numbers, 133–134, 137, 141, 143, 313–314, 352–353, 361–362, 438–439
- Rounded EPS numbers, 440–442
- Same-same-same test, 215–217
 - Purchasing card fraud, 12
 - Excel, 233–235
 - Access, 239–240
- Same-same-different test, 220–221
 - Excel, 235–237
 - Access, 240–242
- SAS code, 208–212, 270–272, 303–304, 334–336
- Shepherds stealing lambs, 1–2
- Skewness measure, 57–58, 61, 252–254
- Spreadsheet risk
 - Definition, 29
 - Horror stories, 29
- SQL code, 207
- Subset Number Duplication, 231–233
 - Excel, 237–239
- Summation test, 155–158
 - Excel, 170–171
 - Access, 171–172
- Tableau
 - Overview, 13–19
 - Measures and Dimensions, 13
 - Positive features, 18
 - Benford’s Law, 19
 - R compatibility, 19
 - Histogram, 72–73
 - Functions, 73
 - Periodic graph, 76, 77
- Threshold numbers, 143–144
- Tax evasion, 88–89, 89–90, 118
 - Tax refund, excessive, 155
 - Spouse indicted, 167
 - Richard Hatch, 284–299
 - Audit selection method, 340–343
- Tax returns, 276
 - Joe Eiden, 299–302
- Tax refund fraud scheme
 - Property tax refunds, 368–400
 - Income tax refunds, 392–393
- Taxpayer Compliance Measurement Program, 340–343
- Time series, 307–317
 - Definition, 16–17, 306–307
 - SAS code, 334–336
- Type I and Type II errors, 104
- Vectors, 275–280
- Vector Variation Score
 - Effect on profitability, 12
 - Formulas, 278–280
 - Purchasing card data, 280–282
 - Angle theta, 324–327
 - Customer rebates, 327–331
 - R, 477–479
 - Cisco Systems, 497–498
- Vendor fraud, 168–169, 344–348
 - Risk scoring, 348–353
 - Shipping claims, 401–424
- WorldCom fraud, 436–442
- Z-statistic, 109–111, 116–117, 121–122, 126, 129