

Fraud Count	Column Labels
Row Labels	1
grocery_pos	518
shopping_net	478
misc_net	287
shopping_pos	253
gas_transport	193
misc_pos	77
personal_care	76
kids_pets	74
entertainment	68
home	65
travel	42
food_dining	42
grocery_net	40
health_fitness	39

How many fraudulent transactions occurred in each category?

Row Labels	Average Transaction Amount
Broadcast journalist	\$1,011.33
Ship broker	\$972.11
Veterinary surgeon	\$655.05
Industrial buyer	\$654.49
Engineer, site	\$638.91
Personnel officer	\$638.58
Dancer	\$586.45
Careers adviser	\$531.47
Sales promotion account executive	\$529.65
Air traffic controller	\$503.75
Homeopath	\$477.76
Armed forces technical officer	\$351.60
Legal secretary	\$292.42
Accountant, chartered	\$282.58
Forest/woodland manager	\$274.22
Solicitor	\$152.26
Plant breeder/geneticist	\$119.02
Minerals surveyor	\$110.08
Clinical biochemist	\$109.96
Chief of Staff	\$109.34
Manufacturing systems engineer	\$108.45
Osteopath	\$107.87
Oceanographer	\$106.24
Marketing executive	\$104.30
Production assistant, television	\$103.44
Outdoor activities/education manager	\$103.41
Television/film/video producer	\$102.71
Horticultural therapist	\$102.41
Solicitor, Scotland	\$101.93
Air broker	\$99.68
Secretary/administrator	\$99.54
Records manager	\$99.10
Environmental health practitioner	\$97.62
Merchandiser, retail	\$97.30
Glass blower/designer	\$97.24
Ambulance person	\$97.10
Loss adjuster, chartered	\$97.04
Immigration officer	\$96.54
Garment/textile technologist	\$96.53
Public house manager	\$96.52
Cabin crew	\$96.43
Pathologist	\$96.43
Volunteer coordinator	\$96.37
Animator	\$95.93

Designer, interior/spatial	\$95.58
Broadcast engineer	\$95.54
Orthoptist	\$95.06
Learning disability nurse	\$94.89
Fisheries officer	\$93.83
Dance movement psychotherapist	\$93.71
Advertising account executive	\$93.22
IT consultant	\$93.03
Oncologist	\$92.92
Gaffer	\$92.54
Engineer, agricultural	\$92.35
Teacher, English as a foreign language	\$92.24
Field trials officer	\$92.15
Toxicologist	\$92.11
Pharmacist, hospital	\$91.92
Music therapist	\$91.70
Buyer, retail	\$91.67
Administrator, local government	\$91.11
Pharmacist, community	\$90.98
Civil Service administrator	\$90.95
Pharmacologist	\$90.61
Community development worker	\$90.57
Planning and development surveyor	\$90.51
Training and development officer	\$90.44
Chartered loss adjuster	\$90.31
Communications engineer	\$90.09
Petroleum engineer	\$90.05
Tourist information centre manager	\$90.00
Manufacturing engineer	\$89.43
Electrical engineer	\$88.32
Mental health nurse	\$87.95
Arts development officer	\$87.70
Restaurant manager, fast food	\$87.61
Sports development officer	\$87.50
Statistician	\$87.46
Structural engineer	\$87.45
Barrister's clerk	\$87.39
Freight forwarder	\$87.31
Radiographer, therapeutic	\$87.13
Museum/gallery conservator	\$86.94
Health physicist	\$86.92
Geneticist, molecular	\$86.90
Broadcast presenter	\$86.79
Charity fundraiser	\$86.52
Soil scientist	\$86.44
Airline pilot	\$86.41
Environmental education officer	\$86.29

Leisure centre manager	\$86.18
Clothing/textile technologist	\$86.16
Intelligence analyst	\$86.11
Trade mark attorney	\$85.73
Surveyor, rural practice	\$85.33
Land	\$85.27
Civil engineer, contracting	\$84.88
Logistics and distribution manager	\$84.87
Dealer	\$84.62
Designer, furniture	\$84.57
Geologist, engineering	\$84.47
Transport planner	\$84.44
Contractor	\$84.15
Theatre manager	\$84.10
Farm manager	\$84.08
Designer, exhibition/display	\$83.66
Designer, industrial/product	\$83.31
Agricultural consultant	\$83.17
Chartered accountant	\$83.15
Environmental manager	\$83.09
Commercial horticulturist	\$83.05
Writer	\$82.92
Librarian, public	\$82.88
Air cabin crew	\$82.87
Trading standards officer	\$82.62
Administrator	\$82.60
Aeronautical engineer	\$82.50
Dispensing optician	\$82.38
Bookseller	\$82.01
Lawyer	\$81.86
Phytotherapist	\$81.75
Museum/gallery exhibitions officer	\$81.75
Administrator, arts	\$81.44
Pilot, airline	\$81.02
Administrator, charities/voluntary organisations	\$80.89
Economist	\$80.44
Geophysicist/field seismologist	\$80.36
Fine artist	\$80.18
Academic librarian	\$79.91
Administrator, education	\$79.83
Medical technical officer	\$79.79
Sports administrator	\$79.64
Artist	\$79.47
Chemical engineer	\$79.14
Podiatrist	\$79.08
Theme park manager	\$78.84
Sales executive	\$78.69

Film/video editor	\$78.60
Investment banker, corporate	\$78.57
Learning mentor	\$78.41
Commercial/residential surveyor	\$77.70
Psychologist, counselling	\$77.55
English as a second language teacher	\$77.46
Television floor manager	\$77.40
Radio broadcast assistant	\$77.39
Sub	\$77.26
Occupational psychologist	\$77.25
Teacher, early years/pre	\$77.24
Arboriculturist	\$77.19
Occupational hygienist	\$77.02
Careers information officer	\$76.94
Teacher, secondary school	\$76.63
Police officer	\$76.59
Editor, magazine features	\$76.44
Furniture designer	\$76.37
Psychologist, forensic	\$76.34
Engineer, building services	\$76.34
Presenter, broadcasting	\$76.28
Development worker, community	\$75.83
Human resources officer	\$75.70
Physiotherapist	\$75.65
Education administrator	\$75.54
Accounting technician	\$75.46
Medical sales representative	\$75.41
Naval architect	\$75.38
Horticulturist, commercial	\$75.32
Mudlogger	\$75.21
Primary school teacher	\$74.96
Technical brewer	\$74.83
Politician's assistant	\$74.82
Systems developer	\$74.80
Environmental consultant	\$74.72
Health service manager	\$74.47
Conservator, museum/gallery	\$74.32
Therapist, horticultural	\$74.21
Purchasing manager	\$74.19
Call centre manager	\$74.12
Operational researcher	\$73.82
Scientist, audiological	\$73.76
Chief Financial Officer	\$73.72
Surveyor, land/geomatics	\$73.63
Hospital pharmacist	\$73.47
Scientist, marine	\$73.43
Radiographer, diagnostic	\$72.95

Accountant, chartered certified	\$72.89
Prison officer	\$72.83
Science writer	\$72.62
Programmer, applications	\$72.51
Clinical research associate	\$72.46
Engineer, control and instrumentation	\$72.41
Firefighter	\$72.38
Sales professional, IT	\$72.34
Private music teacher	\$72.31
Production engineer	\$72.23
Hydrologist	\$72.23
Health and safety adviser	\$72.21
Conservation officer, historic buildings	\$72.12
IT trainer	\$72.06
Mechanical engineer	\$71.77
Public relations account executive	\$71.31
Nurse, children's	\$71.26
Health visitor	\$71.18
Retail buyer	\$71.15
Research scientist (medical)	\$71.11
Engineer, biomedical	\$71.04
Buyer, industrial	\$70.96
Scientific laboratory technician	\$70.96
Data scientist	\$70.76
Exhibition designer	\$70.74
Health promotion specialist	\$70.70
Designer, ceramics/pottery	\$70.64
Advice worker	\$70.60
Higher education careers adviser	\$70.38
Theatre director	\$70.23
TEFL teacher	\$70.16
Medical physicist	\$70.06
Analytical chemist	\$70.04
Biochemist, clinical	\$70.02
Wellsite geologist	\$70.01
Race relations officer	\$69.99
Chief Strategy Officer	\$69.98
Education officer, community	\$69.97
Production manager	\$69.88
Interpreter	\$69.86
Information systems manager	\$69.75
Equities trader	\$69.74
Water engineer	\$69.62
Textile designer	\$69.53
Paramedic	\$69.36
Musician	\$69.33
Multimedia programmer	\$69.29

Engineer, aeronautical	\$69.14
Chiropodist	\$69.13
Press photographer	\$69.07
Education officer, museum	\$69.06
Equality and diversity officer	\$68.95
Media buyer	\$68.94
Engineer, production	\$68.92
Geologist, wellsite	\$68.86
Journalist, newspaper	\$68.78
Network engineer	\$68.66
Jewellery designer	\$68.53
Psychologist, sport and exercise	\$68.53
Ceramics designer	\$68.50
Animal nutritionist	\$68.43
Editor, film/video	\$68.43
Designer, textile	\$68.41
Civil Service fast streamer	\$68.39
Geochemist	\$68.37
Nature conservation officer	\$68.37
Therapist, drama	\$68.32
Facilities manager	\$68.30
Scientist, biomedical	\$68.27
Systems analyst	\$68.26
Company secretary	\$68.25
Senior tax professional/tax inspector	\$68.22
General practice doctor	\$68.13
Chief Executive Officer	\$67.99
Landscape architect	\$67.97
Engineer, mining	\$67.95
Stage manager	\$67.91
Archivist	\$67.87
Engineer, structural	\$67.82
Engineer, civil (contracting)	\$67.77
Event organiser	\$67.75
Control and instrumentation engineer	\$67.74
Metallurgist	\$67.61
Insurance broker	\$67.43
English as a foreign language teacher	\$67.41
Doctor, general practice	\$67.39
Early years teacher	\$67.36
Land/geomatics surveyor	\$67.17
Pensions consultant	\$67.09
Financial trader	\$67.05
Audiological scientist	\$67.03
Teacher, special educational needs	\$67.01
Management consultant	\$66.96
Community pharmacist	\$66.89

Comptroller	\$66.83
Commissioning editor	\$66.81
Designer, multimedia	\$66.79
Programmer, multimedia	\$66.66
Forensic psychologist	\$66.59
Futures trader	\$66.58
Architect	\$66.54
Site engineer	\$66.49
Catering manager	\$66.39
Art gallery manager	\$66.35
Energy manager	\$66.27
Scientist, physiological	\$66.21
Engineer, maintenance	\$66.14
Advertising copywriter	\$66.09
Engineer, materials	\$66.06
Librarian, academic	\$66.05
Associate Professor	\$66.00
Cytogeneticist	\$65.93
Magazine journalist	\$65.87
Chemist, analytical	\$65.85
Acupuncturist	\$65.74
Television production assistant	\$65.73
Set designer	\$65.72
Chief Technology Officer	\$65.61
Waste management officer	\$65.44
Quantity surveyor	\$65.42
Teacher, adult education	\$65.42
Investment analyst	\$65.32
Cartographer	\$65.31
Engineer, civil (consulting)	\$65.27
Engineer, automotive	\$65.20
Copywriter, advertising	\$65.16
Engineer, petroleum	\$65.13
Psychotherapist, child	\$65.12
Retail banker	\$64.92
Educational psychologist	\$64.84
Engineering geologist	\$64.82
Radio producer	\$64.77
Community education officer	\$64.64
Research officer, political party	\$64.63
Psychologist, clinical	\$64.61
Risk analyst	\$64.60
Product manager	\$64.59
Building control surveyor	\$64.53
Surveyor, minerals	\$64.47
Public affairs consultant	\$64.46
Heritage manager	\$64.46

Armed forces training and education officer	\$64.39
Exhibitions officer, museum/gallery	\$64.38
Diagnostic radiographer	\$64.36
Surgeon	\$64.32
Town planner	\$64.31
Database administrator	\$64.28
Nurse, mental health	\$64.24
Archaeologist	\$64.15
Web designer	\$64.01
Make	\$63.97
Conservator, furniture	\$63.96
Maintenance engineer	\$63.81
Lexicographer	\$63.65
Scientist, research (medical)	\$63.57
Applications developer	\$63.54
Research scientist (physical sciences)	\$63.50
Engineer, land	\$63.49
Fitness centre manager	\$63.32
Insurance risk surveyor	\$63.07
Production assistant, radio	\$63.01
Historic buildings inspector/conservation officer	\$62.95
Development worker, international aid	\$62.93
Telecommunications researcher	\$62.92
Occupational therapist	\$62.82
Building surveyor	\$62.77
Teacher, primary school	\$62.60
Optician, dispensing	\$62.58
Research officer, trade union	\$62.52
Visual merchandiser	\$62.45
Water quality scientist	\$62.34
Quarry manager	\$62.29
Emergency planning/management officer	\$62.12
Optometrist	\$62.00
Horticultural consultant	\$61.84
Armed forces logistics/support/administrative officer	\$61.78
Insurance claims handler	\$61.78
Operations geologist	\$61.73
Counsellor	\$61.61
Chief Operating Officer	\$61.51
Charity officer	\$61.50
Physicist, medical	\$61.48
Exercise physiologist	\$61.47
Social research officer, government	\$61.45
Chartered public finance accountant	\$61.42
Energy engineer	\$61.39
Psychiatrist	\$61.38
Corporate investment banker	\$61.31

Estate manager/land agent	\$61.29
Child psychotherapist	\$61.24
Clinical cytogeneticist	\$61.22
Field seismologist	\$61.10
Building services engineer	\$61.07
Advertising account planner	\$61.06
Music tutor	\$61.05
Producer, radio	\$61.04
Curator	\$61.02
Pension scheme manager	\$61.02
Camera operator	\$60.98
Chief Marketing Officer	\$60.95
Producer, television/film/video	\$60.89
Hydrogeologist	\$60.87
Aid worker	\$60.85
Scientist, clinical (histocompatibility and immunogenetics)	\$60.85
Claims inspector/assessor	\$60.78
Lecturer, higher education	\$60.76
Physiological scientist	\$60.75
Herbalist	\$60.71
Community arts worker	\$60.69
Warden/ranger	\$60.59
Programme researcher, broadcasting/film/video	\$60.45
Editor, commissioning	\$60.37
Sport and exercise psychologist	\$60.37
Copy	\$60.28
Patent attorney	\$60.27
Teaching laboratory technician	\$60.23
Licensed conveyancer	\$60.12
Doctor, hospital	\$60.01
Further education lecturer	\$59.91
Surveyor, mining	\$59.90
Tax adviser	\$59.87
Designer, jewellery	\$59.74
Interior and spatial designer	\$59.72
Insurance underwriter	\$59.72
Designer, television/film set	\$59.71
Market researcher	\$59.70
Rural practice surveyor	\$59.53
Secondary school teacher	\$59.52
Museum education officer	\$59.41
Ecologist	\$59.38
Magazine features editor	\$59.30
Counselling psychologist	\$59.29
Professor Emeritus	\$59.14
Mining engineer	\$59.13
Medical secretary	\$59.12

Barista	\$59.11
Drilling engineer	\$59.07
Tax inspector	\$59.03
Paediatric nurse	\$59.02
Financial adviser	\$58.81
Retail manager	\$58.79
Television camera operator	\$58.62
Therapist, occupational	\$58.52
Product designer	\$58.52
Chartered legal executive (England and Wales)	\$58.48
Materials engineer	\$58.34
Regulatory affairs officer	\$58.26
Video editor	\$58.23
Amenity horticulturist	\$58.23
Herpetologist	\$58.17
Biomedical scientist	\$58.08
Engineer, technical sales	\$58.08
Social researcher	\$57.88
Special effects artist	\$57.88
Therapist, art	\$57.87
Barrister	\$57.78
Surveyor, hydrographic	\$57.77
Industrial/product designer	\$57.64
Engineer, drilling	\$57.63
Engineer, manufacturing	\$57.62
Therapist, music	\$57.58
Research scientist (maths)	\$57.53
Tree surgeon	\$57.45
Colour technologist	\$57.29
Lecturer, further education	\$57.19
Art therapist	\$57.17
Illustrator	\$56.72
Immunologist	\$56.66
Investment banker, operational	\$56.35
Neurosurgeon	\$56.19
Biomedical engineer	\$56.02
Accountant, chartered public finance	\$55.97
Tourism officer	\$55.87
Geoscientist	\$55.46
Local government officer	\$54.94
Public relations officer	\$54.90
Media planner	\$54.84
Engineer, broadcasting (operations)	\$54.47
Probation officer	\$54.44
Embryologist, clinical	\$54.42
Hotel manager	\$54.37
Psychiatric nurse	\$54.37

Public librarian	\$54.13
Location manager	\$54.11
Retail merchandiser	\$54.03
Nutritional therapist	\$53.86
Animal technologist	\$53.67
Hospital doctor	\$53.42
Special educational needs teacher	\$53.37
Engineer, electronics	\$53.28
Hydrographic surveyor	\$53.22
Product/process development scientist	\$52.39
Electronics engineer	\$52.33
Scientist, research (maths)	\$51.73
Press sub	\$51.66
Tour manager	\$50.91
Architectural technologist	\$50.78
Psychotherapist	\$49.78
Travel agency manager	\$49.58
Scientist, research (physical sciences)	\$49.45
Furniture conservator/restorer	\$48.88
Seismic interpreter	\$48.53
Clinical psychologist	\$47.97
Research scientist (life sciences)	\$45.66
Therapist, sports	\$44.17
Engineer, communications	\$42.80
Information officer	\$39.25
Grand Total	\$70.44

How does the average transaction amount vary between different job roles?

Row Labels	Count of amt
TX	28482
NY	25034
PA	23911

Show the top 3 states by the highest number of transactions

Correlation (Transaction Amount vs City Population) #REF! 0.007

Is there a correlation between transaction amount and city population?

The correlation between transaction amount and city population is **0.007**, indicating an extremely weak relationship. This suggests that transaction values are largely independent of city population size, and fraud risk is not significantly influenced by whether a transaction occurs in a highly populated or less populated city.

tion between transaction amount
on?

Column1

Mean	70.44214816
Standard Error	0.2600671
Median	47.57
Mode	1.04
Standard Deviation	162.2039152
Sample Variance	26310.11011
Kurtosis	3868.242869
Skewness	40.27383233
Range	27389.12
Minimum	1
Maximum	27390.12
Sum	27402136.52
Count	389002

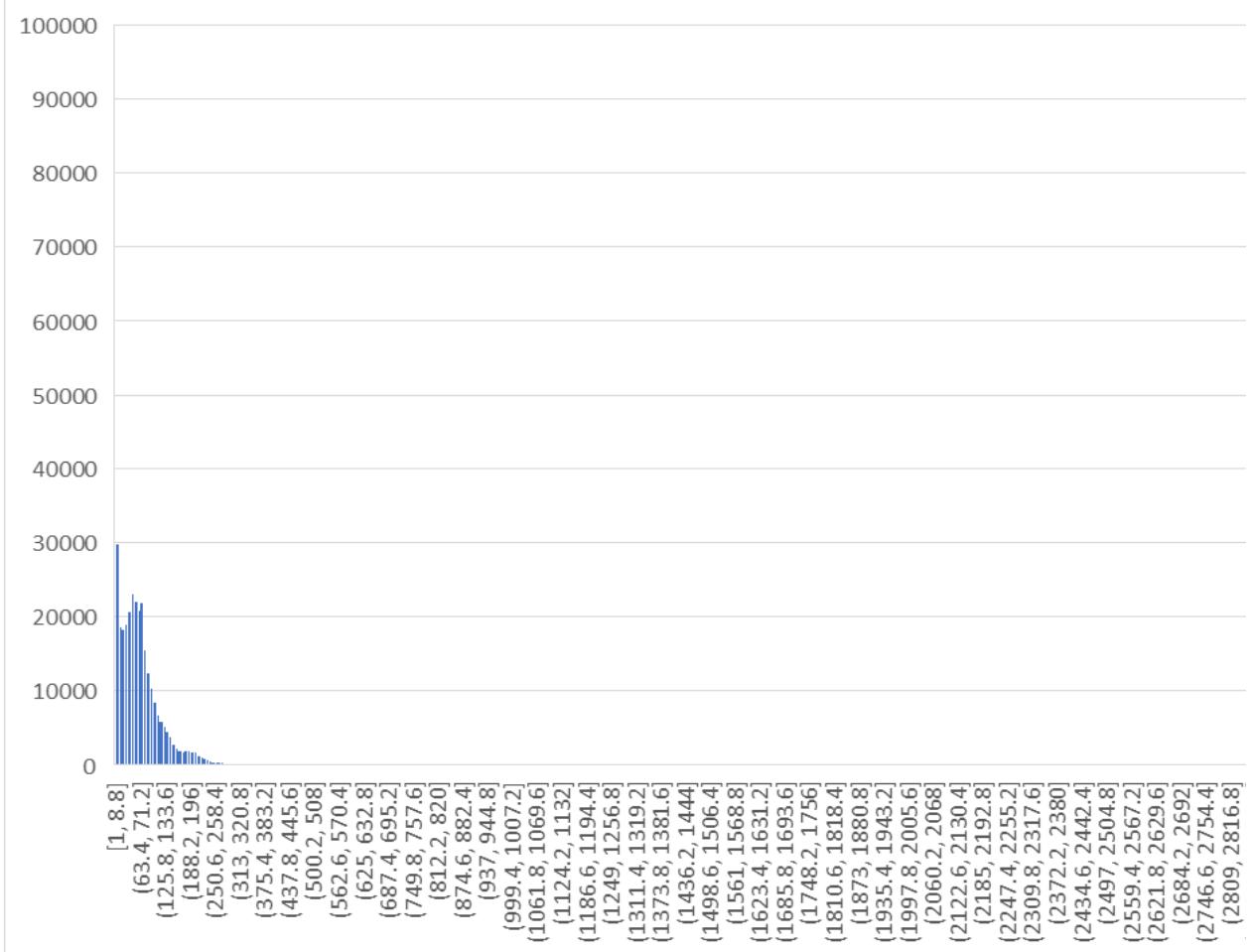
Create a statistical summary on
amt and city_pop

Column1

Mean	88680.84286
Standard Error	482.9404869
Median	2456
Mode	606
Standard Deviation	301210.1017
Sample Variance	90727525376
Kurtosis	37.54431154
Skewness	5.587892446
Range	2906677
Minimum	23
Maximum	2906700
Sum	34497025233
Count	389002

Create a statistical summary on
amt and city_pop

Plot a histogram on amt



Distribution of Transaction Amounts

(2871.4, 2879.2]	(2933.8, 2941.6]
(2936.2, 3004)	(2996.2, 3004)
(3058.6, 3066.4]	(3058.6, 3066.4)
(3121, 3128.8]	(3121, 3128.8)
(3183.4, 3191.2]	(3183.4, 3191.2)
(3245.8, 3253.6]	(3245.8, 3253.6)
(3308.2, 3316]	(3308.2, 3316)
(3370.6, 3378.4]	(3370.6, 3378.4)
(3433, 3440.8]	(3433, 3440.8)
(3495.4, 3503.2]	(3495.4, 3503.2)
(3557.8, 3565.6]	(3557.8, 3565.6)
(3620.2, 3628]	(3620.2, 3628)
(3682.6, 3690.4]	(3682.6, 3690.4)
(3745, 3752.8]	(3745, 3752.8)
(3807.4, 3815.2]	(3807.4, 3815.2)
(3869.8, 3877.6]	(3869.8, 3877.6)
(3932.2, 3940]	(3932.2, 3940)
(3994.6, 4002.4]	(3994.6, 4002.4)
(4057, 4064.8]	(4057, 4064.8)
(4119.4, 4127.2]	(4119.4, 4127.2)
(4181.8, 4189.6]	(4181.8, 4189.6)
(4244.2, 4252]	(4244.2, 4252)
(4306.6, 4314.4]	(4306.6, 4314.4)
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(4556.2, 4564]	(4556.2, 4564)
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(5180.2, 5188]	(5180.2, 5188)
(5242.6, 5250.4]	(5242.6, 5250.4)
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(5367.4, 5375.2]	(5367.4, 5375.2)
(5429.8, 5437.6]	(5429.8, 5437.6)
(5492.2, 5500)	(5492.2, 5500)
(5554.6, 5562.4]	(5554.6, 5562.4)
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(7177, 7184.8]
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(7364.2, 7372]
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(7489, 7496.8]
(7551.4, 7559.2]
(7613.8, 7621.6]
(7676.2, 7684]
(7738.6, 7746.4]

Row Labels	Column Labels		
	F	M	Grand Total
entertainment	14351	13771	28122
food_dining	14260	12810	27070
gas_transport	21949	17684	39633
grocery_net	7535	6311	13846
grocery_pos	19504	17259	36763
health_fitness	13610	12122	25732
home	19611	17286	36897
kids_pets	18889	15018	33907
misc_net	10754	8358	19112
misc_pos	12850	11198	24048
personal_care	16852	10521	27373
shopping_net	16591	12703	29294
shopping_pos	20414	14598	35012
travel	6061	6132	12193
Grand Total	213231	175771	389002

Create a report showing number

of Frauds by