Correlation Analysis

Heatmap & Correlation Matrix

Correlation Heatmap with Dendrogram

	Balance	Debt	Spend	Age	Credit	Income	Savings
Balance	1.0	0.9	-0.1	0.2	0.3	0.4	0.2
Debt	0.9	1.0	-0.3	-0.2	-0.5	-0.4	-0.6
Spending	-0.1	-0.3	1.0	0.3	0.4	0.5	0.6
Age	0.2	-0.2	0.3	1.0	0.5	0.7	0.4
Credit	0.3	-0.5	0.4	0.5	1.0	0.6	0.7
Income	0.4	-0.4	0.5	0.7	0.6	1.0	0.8
Savings	0.2	-0.6	0.6	0.4	0.7	0.8	1.0

-1.0 ▬▬▬▬▬ +1.0
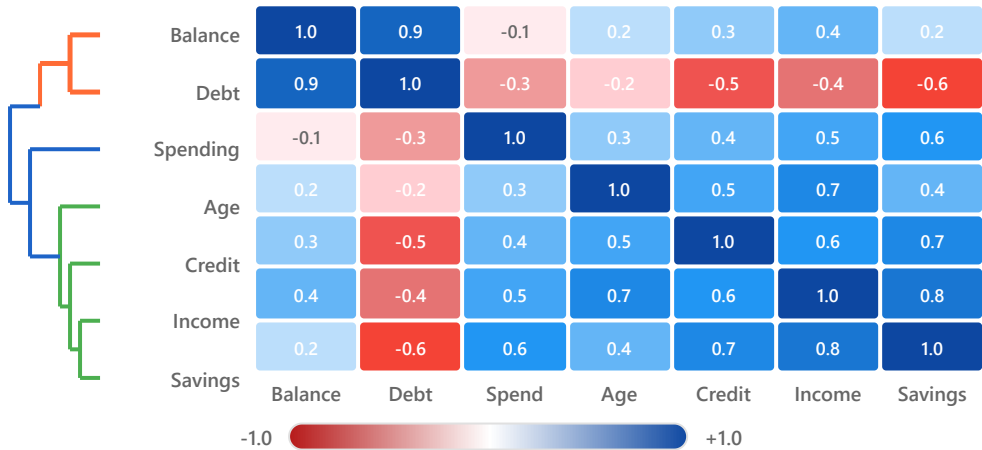
Interpretation

🔵 Positive: Variables move together

🔴 Negative: Inverse relationship

⚪ Zero: No linear relationship

🌳 Dendrogram groups similar features

Correlation Matrix (Original Order)

	Age	Income	Credit	Balance	Spend	Savings	Debt
Age	1.00	0.70	0.50	0.20	0.30	0.40	-0.20
Income	0.70	1.00	0.60	0.40	0.50	0.80	-0.40
Credit	0.50	0.60	1.00	0.30	0.40	0.70	-0.50
Balance	0.20	0.40	0.30	1.00	-0.10	0.20	0.90
Spend	0.30	0.50	0.40	-0.10	1.00	0.60	-0.30
Savings	0.40	0.80	0.70	0.20	0.60	1.00	-0.60

🔍 Key Insights

🔴 **Balance-Debt**: 0.9 (very strong)

🟢 **Income-Savings**: 0.8 (strong)

🟢 **Age-Income**: 0.7 (strong)

🔵 Financial health cluster visible

✓ Best Practices

✓ Use diverging colormap

✓ Cluster similar variables

✓ Identify redundant features

✓ Look for multicollinearity