

```
In [24]: import pandas as pd  
df = pd.read_csv('../data/processed_data/master_spend_cleand_data.csv')
```

What are the largest individual payments (top 100 and top 20)

```
In [25]: top_100 = df.nlargest(100, 'Amount')  
  
top_20 = top_100.sort_values('Amount', ascending=False).head(20)  
  
print(f"Top 100 transactions: {len(top_100)}")  
print(top_20[['Date of Payment', 'Amount']])
```

```
Top 100 transactions: 100  
   Date of Payment      Amount  
316    2024-02-09  736000000.0  
27     2024-01-03  689838000.0  
377    2025-03-03  687419661.0  
341    2024-02-12  580000000.0  
201    2025-02-01  455000000.0  
456    2024-03-06  449000000.0  
159    2024-01-11  400000000.0  
137    2024-01-08  387000000.0  
123    2024-01-07  378000000.0  
108    2025-01-05  300000000.0  
109    2025-01-05  290000000.0  
171    2024-02-01  290000000.0  
153    2024-01-10  277000000.0  
539    2024-04-03  250000000.0  
172    2024-02-01  246000000.0  
135    2024-01-08  225000000.0  
376    2025-03-03  225000000.0  
632    2025-04-06  210000000.0  
74     2025-01-04  205000000.0  
173    2024-02-01  200000000.0
```

Who received them and for what?

```
In [17]: (top_20[['Supplier', 'Amount', 'Description', 'Expense Type']])
```

Out[17]:

	Supplier	Amount	Description	Expense Type
316	Ukri - Engineering And Physical Sciences Resea...	736000000.0	Dsit - Epsrc Financing-grant-in-aid To Arms Le...	Grant-in-aid To Arms Length Bodies
27	Ukri-innovate Uk	689838000.0	Dsit - Tsb Financing-grant-in-aid To Arms Leng...	Grant-in-aid To Arms Length Bodies
377	Ukri - Engineering And Physical Sciences Resea...	687419661.0	Dsit - Epsrc Financing-grant-in-aid To Arms Le...	Grant-in-aid To Arms Length Bodies
341	Ukri - Engineering And Physical Sciences Resea...	580000000.0	Dsit - Epsrc Financing-grant-in-aid To Arms Le...	Grant-in-aid To Arms Length Bodies
201	Ukri - Engineering And Physical Sciences Resea...	455000000.0	Dsit - Epsrc Financing-grant-in-aid To Arms Le...	Grant-in-aid To Arms Length Bodies
456	Ukri - Engineering And Physical Sciences Resea...	449000000.0	Dsit - Epsrc Financing-grant-in-aid To Arms Le...	Grant-in-aid To Arms Length Bodies
159	Ukri - Engineering And Physical Sciences Resea...	400000000.0	Dsit - Epsrc Financing-grant-in-aid To Arms Le...	Grant-in-aid To Arms Length Bodies
137	Ukri - Engineering And Physical Sciences Resea...	387000000.0	Dsit - Epsrc Financing-grant-in-aid To Arms Le...	Grant-in-aid To Arms Length Bodies
123	Ukri - Engineering And Physical Sciences Resea...	378000000.0	Dsit - Epsrc Financing-grant-in-aid To Arms Le...	Grant-in-aid To Arms Length Bodies
108	Ukri-innovate Uk	300000000.0	Dsit - Tsb Financing-grant-in-aid To Arms Leng...	Grant-in-aid To Arms Length Bodies
109	Ukri - Engineering And Physical Sciences Resea...	290000000.0	Dsit - Epsrc Financing-grant-in-aid To Arms Le...	Grant-in-aid To Arms Length Bodies
171	Ukri - Engineering And Physical Sciences Resea...	290000000.0	Dsit - Epsrc Financing-grant-in-aid To Arms Le...	Grant-in-aid To Arms Length Bodies
153	Ukri - Engineering And Physical Sciences Resea...	277000000.0	Dsit - Epsrc Financing-grant-in-aid To Arms Le...	Grant-in-aid To Arms Length Bodies
539	The Royal Society	250000000.0	Dsit - Discovery Fellowships Endowment-r & D C...	R & D Current Grants To Private Sector - Npish

	Supplier	Amount	Description	Expense Type
172	Uk Space Agency	246000000.0	Dsit - Uk Space Agency - Supply Funding-res - ...	Res - Npf - Agencies - General Fund
135	Ukri-innovate Uk	225000000.0	Dsit - Tsb Financing-grant-in-aid To Arms Leng...	Grant-in-aid To Arms Length Bodies
376	Ukri-innovate Uk	225000000.0	Dsit - Tsb Financing-grant-in-aid To Arms Leng...	Grant-in-aid To Arms Length Bodies
632	Uk Space Agency	210000000.0	Dsit - Uk Space Agency - Supply Funding-res - ...	Res - Npf - Agencies - General Fund
74	Ukri - Engineering And Physical Sciences Resea...	205000000.0	Dsit - Epsrc Financing-grant-in-aid To Arms Le...	Grant-in-aid To Arms Length Bodies
173	Ukri - Science And Technology Facilities Council	200000000.0	Dsit - Stfc Financing-grant-in-aid To Arms Len...	Grant-in-aid To Arms Length Bodies

What patterns exist in high-value spending?

```
In [18]: print(f"Total high-value spend: £{top_20['Amount'].sum():,.2f}")
print(f"Average transaction: £{top_20['Amount'].mean():,.2f}")

print("\nBy Expense Type:")
print(top_20.groupby('Expense Type')['Amount'].sum().sort_values(ascending=False))

print("\nBy Supplier Type:")
print(top_20.groupby('Supplier Type')['Amount'].sum().sort_values(ascending=False))

# AI used to print the results.
```

Total high-value spend: £7,480,257,661.00

Average transaction: £374,012,883.05

By Expense Type:

Expense Type

Grant-in-aid To Arms Length Bodies	6.774258e+09
------------------------------------	--------------

Res - Npf - Agencies - General Fund	4.560000e+08
-------------------------------------	--------------

R & D Current Grants To Private Sector - Npish	2.500000e+08
--	--------------

Name: Amount, dtype: float64

By Supplier Type:

Supplier Type

Vendor	5.134420e+09
--------	--------------

Wga Only	2.095838e+09
----------	--------------

Grant	2.500000e+08
-------	--------------

Name: Amount, dtype: float64

