

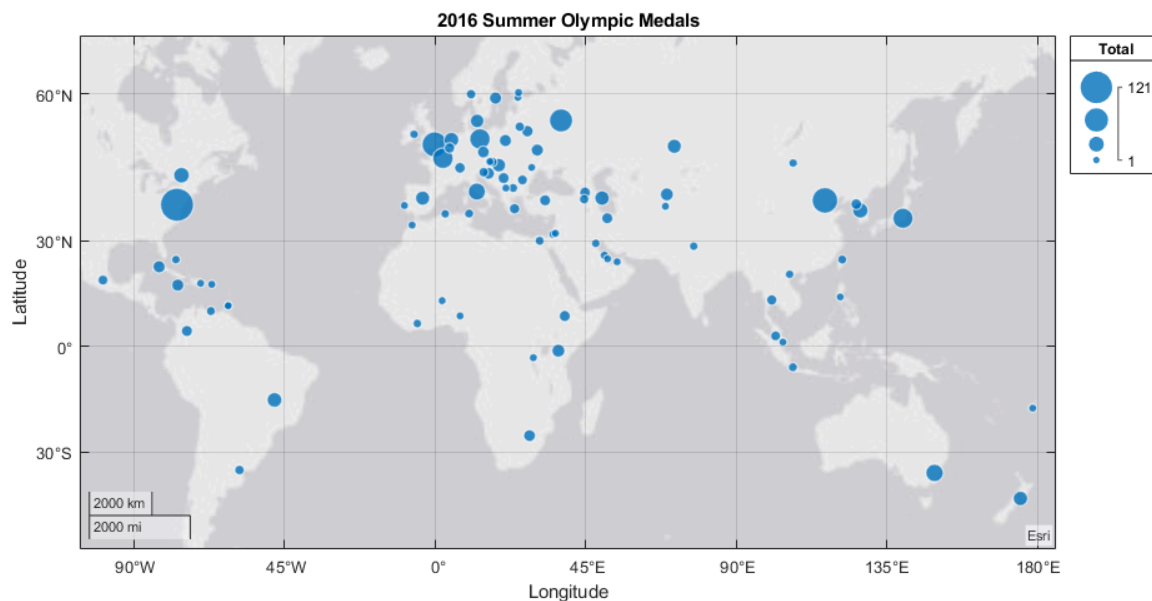
Does GDP Affect a Country's Olympic Success?

In this example, we'll look at the relationship between a country's gross domestic product (GDP) and its Olympic success. We will use data from the Summer 2016 games in this example.

Read Medals Data

We'll start by reading the medals won by each country from an Excel file. We can plot these values on a geobubble chart where the size of the bubble indicates the number of medals won by that country. We can see that the United States, China, Russia, and the United Kingdom did quite well.

```
medals = readtable('olympic.xlsx');  
f = figure;  
f.Position = f.Position.*[1 1 1.8 1.2];  
geobubble(medals, 'Latitude', 'Longitude', 'SizeVariable', 'Total');  
title('2016 Summer Olympic Medals')
```



Read GDP data

Read the data for the country's gross domestic product (GDP) from an Excel file.

```
gdp = readtable('gdp.xlsx')
```

gdp = 191x3 table

| | Index | Country | GDP |
|---|-------|------------------|----------|
| 1 | 1 | 'United States' | 18624450 |
| 2 | 2 | 'China' | 11221836 |
| 3 | 3 | 'Japan' | 4949272 |
| 4 | 4 | 'Germany' | 3479232 |
| 5 | 5 | 'United Kingdom' | 2660687 |

| | Index | Country | GDP |
|----|-------|---------------|---------|
| 6 | 6 | 'France' | 2466472 |
| 7 | 7 | 'India' | 2273556 |
| 8 | 8 | 'Italy' | 1860152 |
| 9 | 9 | 'Brazil' | 1793066 |
| 10 | 10 | 'Canada' | 1535768 |
| 11 | 11 | 'South Korea' | 1411042 |
| 12 | 12 | 'Russia' | 1283286 |
| 13 | 13 | 'Australia' | 1264944 |
| 14 | 14 | 'Spain' | 1237766 |

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Join the Medals Data with the GDP Data

We would like to see if there is a relationship between GDP and Olympic success. To do that, we need to join the medals table with the table that contains the GDP data. A *join* operation is a way to combine two tables of data using a common key variable -- in this case the country name. Here we'll use the **Join Tables** Live Editor Task to combine the data.

```
% Join tables
medalsVsGDP = innerjoin(medals,gdp,'Keys','Country')
```

medalsVsGDP = 80×10 table

| | Ranking | Country | Gold | Silver | Bronze | Total | Latitude | Longitude |
|----|---------|--------------|------|--------|--------|-------|----------|-----------|
| 1 | 62 | 'Algeria' | 0 | 2 | 0 | 2 | 36.7529 | 3.0420 |
| 2 | 27 | 'Argentina' | 3 | 1 | 0 | 4 | -34.6037 | -58.3816 |
| 3 | 42 | 'Armenia' | 1 | 3 | 0 | 4 | 40.1833 | 44.5167 |
| 4 | 10 | 'Australia' | 8 | 11 | 10 | 29 | -35.3082 | 149.1242 |
| 5 | 78 | 'Austria' | 0 | 0 | 1 | 1 | 48.2082 | 16.3738 |
| 6 | 39 | 'Azerbaijan' | 1 | 7 | 10 | 18 | 40.4350 | 49.8676 |
| 7 | 51 | 'Bahamas' | 1 | 0 | 1 | 2 | 25.0600 | -77.3450 |
| 8 | 48 | 'Bahrain' | 1 | 1 | 0 | 2 | 26.2167 | 50.5833 |
| 9 | 40 | 'Belarus' | 1 | 4 | 4 | 9 | 53.9000 | 27.5667 |
| 10 | 35 | 'Belgium' | 2 | 2 | 2 | 6 | 50.8503 | 4.3517 |
| 11 | 13 | 'Brazil' | 7 | 6 | 6 | 19 | -15.7801 | -47.9292 |
| 12 | 65 | 'Bulgaria' | 0 | 1 | 2 | 3 | 42.6978 | 23.3217 |
| 13 | 69 | 'Burundi' | 0 | 1 | 0 | 1 | -3.3762 | 29.3593 |
| 14 | 20 | 'Canada' | 4 | 3 | 15 | 22 | 45.4215 | -75.6972 |

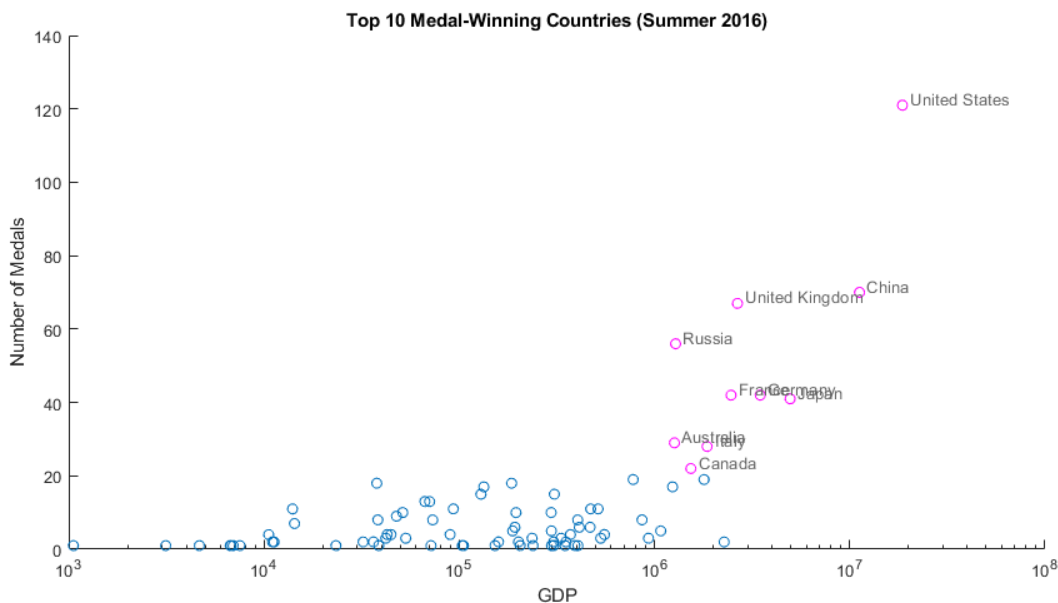
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```
medalsVsGDP = sortrows(medalsVsGDP, 'Total', 'descend');
```

Plot Olympic Medals vs. GDP

The last step is to plot the number of medals won against GDP for each country. We can see that countries with high GDP tend to do better in the Olympics maybe because they have more resources to spend on their athletes.

```
topNum = 10;  
topMedals = medalsVsGDP(1:topNum,:);  
  
f = figure;  
f.Position = f.Position.*[1 1 1.8 1.2];  
h_sc = scatter(medalsVsGDP.GDP, medalsVsGDP.Total);  
h_sc.Parent.XScale = 'log';  
hold on  
h_sc = scatter(topMedals.GDP, topMedals.Total, 'om');  
text(1.09*topMedals.GDP, topMedals.Total+2, string(topMedals.Country), ...  
    'Color', [0.4 0.4 0.4], 'FontSize', 10)  
hold off  
xlabel('GDP'); ylabel('Number of Medals')  
title(sprintf('Top %2d Medal-Winning Countries (Summer 2016)',topNum))  
xlim([1000 100000000])
```



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Export

```
%publish('OlympicAnalysis.mlx','pdf');  
%publish('OlympicAnalysis.mlx','html');
```

Attribution

This example uses Olympic medal data from the Wikipedia article [2016_Summer_Olympics_medal_table](#) which is released under the [Creative Commons Attribution-Share-Alike License 3.0](#). It also uses 2016 GDP data from the Wikipedia article [List_of_countries_by_past_and_projected_GDP_\(nominal\)](#) which is released under the [Creative Commons Attribution-Share-Alike License 3.0](#).

Downloads

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[gdp.xlsx](#)

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