### **PROJECT NAME: Phone Usage India**

### Project Members: 1. Prajwal Kore 2. Tanush Bobde

Import CSV file in Google collab

from google.colab import files # to load files----upload = files.upload()



Choose Files phone\_usage\_india.csv

• phone\_usage\_india.csv(text/csv) - 1532919 bytes, last modified: 1/13/2025 - 100% done Saving phone\_usage\_india.csv to phone\_usage\_india.csv

### Read CSV File

import pandas as pd

df=pd.read\_csv('phone\_usage\_india.csv') #read csv file
print(df.to\_string())

User ID Age	_ `	_	, ,							
1	<b>→</b>	User ID	Age	Gender	Location	Phone Brand	OS			
2	_									
3   U000005   10   Male   Mumbal   Xiaomi   105   2.2   2.5   236.2										
4										
6 U80806 21 Male 73 Iqur 0ppo 105 5.4 18.6 214.6,5 6 U80807 57 Female Lucknow Apple 105 6.0 35.2 154.5,5 7 U80808 56 Other Kolkata Gealme 105 3.1 43.5 125.3 8 U80809 46 Female Kolkata Oppo Android 5.3 44.4 21.3 9 U80810 44 Other Kolkata Apple 105 9.9 18.6 123.7 122.0 18 U80811 55 Other Lucknow Nokia Android 1.6 23.7 122.0 11 U80812 41 Female Delhi Oppo Android 7.5 23.5 84.9 12 U80813 53 Male Bangalore Realme 105 10.5 1.4 33.7 13 U80813 53 Male Bangalore Realme Android 10.3 32.4 247.1 14 U80815 52 Raie Bangalore Songle Pixel Android 10.3 32.4 247.1 15 U80815 52 Male Bangalore Healme Android 10.3 32.4 247.1 16 U80816 52 Male Bangalore Healme Android 10.3 32.4 10.9 17 U80818 40 Healme Male Chemral Congle Pixel Android 5.1 28.5 10.9 2 18 U80818 40 Healme Male Chemral Congle Pixel Android 5.3 1.2 2.5 10.9 2 19 U80801 46 Other Hyderabad Male Motorala 10.5 9.0 838.0 280.6 20 U80802 46 Other Hyderabad Male Motorala 10.5 9.0 838.0 280.6 20 U80802 59 Female Bangalore Kealme Android 11.7 9.1 283.9 21 U80802 59 Female Bangalore Evaluation Android 11.7 9.1 283.9 22 U80802 46 Other Hyderabad Vivo Android 11.7 9.1 283.9 22 U80802 47 Female Hyderabad Vivo Android 1.7 9.1 283.9 23 U80802 59 Female Bangalore Realme Android 1.7 9.1 283.9 24 U80802 59 Female Bangalore Realme Android 1.7 9.1 283.9 25 U80802 46 Other Damber Male Hyderabad Vivo Android 1.7 9.1 128.9 26 U80802 59 Female Hyderabad Vivo Android 1.7 9.1 128.9 27 U80803 40 Female Hyderabad Vivo Android 1.7 9.1 128.9 28 U80802 51 Female Hyderabad Vivo Android 1.7 9.1 128.9 29 U80803 45 Female Hyderabad Vivo Android 1.7 9.1 128.9 30 U80804 51 Female Hyderabad Vivo Android 1.7 9.1 128.9 31 U80805 52 Female Bangalore Realme Android 1.8 1.1 11.5 12.5 228.8 31 U80803 42 Female Hyderabad Vivo 105 10.7 45.1 19.4 31 U80805 52 Female Hyderabad Vivo 105 10.7 45.1 19.6 32 U80803 40 Female Hyderabad Vivo 105 10.7 19.9 19.9 33 U80804 52 Female Hyderabad Vivo 105 10.7 19.9 19.9 34 U80805 52 Female Hyderabad Vivo 105 10.7 19.9 19.9 35 U80805 52 Female Hyderabad Vivo 105 10.7 19.9 19.9 3										
6 U89897 57 Female Lucknow Apple 105 6.0 35.2 154.5 5 7 U89898 56 Other Nolkata Reales 105 3.1 43.5 125.3 8 U89899 46 Female Kolkata Oppo Android 5.3 46.4 21.3 9 U8981 40 Other Kolkata Apple 105 9.9 10.6 188.2 10 U8981 55 Other Lucknow Nokia Android 1.6 23.7 152.0 11 U8981 55 Other Lucknow Nokia Android 1.6 23.7 152.0 11 U8981 53 Mole Bangalore Robles 105 16.5 1.4 33.7 152.0 12 U8981 53 Mole Bangalore Robles 105 16.5 1.4 33.7 152.0 1										
8 U800809 46 Femile Kolkata Realme 10S 3.1 43.5 125.3 8 U800809 46 Femile Kolkata Oppo Android 5.3 46.4 21.3 9 U80410 44 Other Kolkata Oppo Android 1.6 23.7 192.0 190 U80410 45 Other Lucknow Nokia Android 1.6 23.7 192.0 190 U80410 41 Female Delhi Oppo Android 7.5 23.5 84.9 12 U80413 53 Nale Bangalore Realme 10S 10.5 1.4 33.7 13 U80414 35 Nale Bangalore Realme 10S 10.5 1.4 33.7 14 U80415 33 Female Jaipur Realme 10S 10.5 1.7 33.2 208.8 15 U80815 35 Female Rollard Android 10.3 32.4 247.1 14 U80415 35 Female Semble Kolkata Magnetic Android 5.1 28.5 169.2 16 U80417 46 Center Rubbat Apple Android 5.1 28.5 169.2 17 18 U80419 19 Female Kolkata Magnetic Android 5.1 28.5 169.2 18 U80419 19 Female Kolkata Magnetic Android 11.6 12.3 18.0 18.9 19 Female Walket Magnetic Android 11.6 12.3 18.0 18.9 19 Female Walket Magnetic Android 11.6 12.3 18.0 18.9 19 Female Walket Magnetic Android 11.6 12.3 18.0 18.9 19 Female Walket Magnetic Android 11.6 12.3 18.0 18.9 19 Female Walket Magnetic Android 11.6 12.3 18.0 18.9 19 Female Walket Magnetic Android 11.6 12.3 18.0 18.9 19 Female Walket Magnetic Android 11.7 18.0 19 18.0 18.9 18.0 18.9 18.0 18.9 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0					•					
8   1888										
9   108011   55   50   108-12   105   9.9   10.6   188-2										
19										
11   1   108012   41   Female   Delhi   Oppo   Android   7.5   22.5   84.9     12   12   12   12   13   14   15   14   15   14   15   15   16   16   16   16   16   16										
122   U80913   53   Male   Bangalore   Realme   105   10.5   1.4   33.7     13   U80915   33   Female   Jaipur   Roame   Android   10.3   32.4   247.1     14   U80915   33   Female   Jaipur   Samsung   105   1.7   33.2   208.8     15   U80916   52   Male   Bangalore Google Pixel   Android   5.1   25.5   169.2     16   U80917   46   Other   Mumbai   Apple   Android   3.1   23.6   133.9     17   U80918   54   Male   Kolkata   Apple   Android   3.1   23.6   133.9     18   U80919   59   Female   Chennai   Google Pixel   Android   5.3   5.2   235.6     19   U80921   60   Male   Pune   Samsung   105   9.8   38.9   289.6     20   U80921   60   Male   Pune   Samsung   105   10.4   46.8   38.6     21   U80922   50   Other   Chennai   Samsung   105   10.4   46.8   38.6     22   U80923   45   Other   Chennai   Samsung   Android   11.7   9.1   208.9     23   U80924   15   Female   Bangalore   Realme   Android   7.0   41.7   51.6     25   U80927   15   Male   Delhi   Vivo   Android   7.0   41.7   51.6     26   U80927   15   Male   Delhi   Vivo   Android   9.2   42.7   230.9     27   U80928   41   Other   Jaipur   Realme   Android   8.1   44.1   81.8     28   U80929   51   Female   Kolkata   Vivo   105   10.7   45.1   44.1   81.8     28   U80929   51   Female   Kolkata   Vivo   105   10.7   45.1   44.0     29   U80930   45   Female   Daipur   Realme   Android   4.0   9.4   44.0     30   U80931   39   Female   Daipur   Android   4.0   9.4   44.0     31   U80932   28   Female   Chennai   Xiaomi   105   5.3   16.8   264.9     32   U80939   35   Female   Daipur   Android   4.0   9.4   4.0     34   U80935   57   Male   Delhi   Vivo   105   4.1   31.2   61.5     35   U80937   50   Other   Kolkata   Mokia   Android   1.4   48.4   42.5   5     36   U80931   50   Other   Kolkata   Mokia   Android   1.4   48.4   42.7   50.8     37   U80938   20   Other   Kolkata   Mokia   Android   1.6   4.1   4.										
13   198914   35   Female   Jaipur   Realme   Android   18.3   32.4   247.1     14   198915   35   Female   Sangalore   Google Pixel   Android   5.1   28.5   159.2     15   198916   52   Male   Bangalore   Google Pixel   Android   5.1   28.5   159.2     17   198919   54   Male   Kolkata   Apple   Android   11.6   12.6   219.4     18   198919   59   Female   Kolkata   Apple   Android   11.6   12.6   219.4     19   198919   59   Female   Hyderabad   Motorola   105   9.8   38.9   289.6     20   198922   59   Other   Pure   Xiaomi   Android   11.7   9.1   283.9     21   198922   59   Other   Pure   Xiaomi   Android   11.7   9.1   283.9     22   198923   60   Female   Hyderabad   Sansung   Android   11.7   9.1   283.9     23   198926   36   Male   Hyderabad   Vivo   Android   1.4   25.5   222.0     24   198922   36   Male   Hyderabad   Vivo   Android   1.4   25.5   222.0     25   198922   37   Female   Kolkata   Vivo   Android   3.1   4.1   4.1   3.1     26   198922   37   Female   Kolkata   Vivo   Android   3.1   4.1   4.1   3.1     28   198928   37   Female   Hyderabad   Realme   Android   3.1   4.1   4.1   3.1     29   198929   37   Female   Android   Realme   Android   3.1   4.1   4.1   3.1     29   198929   37   Female   Android   Realme   Android   3.1   4.1   4.1   3.1     30   198921   39   Female   Delhi   Vivo   Android   3.1   4.1   4.1   3.1     31   198925   39   Female   Chemmai   Xiaomi   105   5.5   3.3   16.8   244.3     31   198929   57   Female   Chemmai   Xiaomi   105   5.3   16.8   244.3     32   198929   57   Female   Chemmai   Xiaomi   105   5.5   2.9   2.0     31   198929   57   Female   Chemmai   Xiaomi   105   5.5   2.9   2.0     32   198939   20   Other   Kolkata   Nokia   Android   3.1   4.1   4.1   4.8										
15 U00015 33 Female Barglance Gosqle Piscel 16 U00017 46 Other Mumbai Apple Android 5.1 28.5 169.2 161 U00017 46 Other Mumbai Apple Android 3.1 23.6 133.9 17 U00018 54 Male Kolkata Apple Android 3.1 23.6 139.9 18 U00019 59 Female Chennai Gosqle Piscel Android 11.6 12.6 210.4 18 U00019 59 Female Chennai Gosqle Piscel Android 11.6 12.6 220.4 19 U00020 40 Other Hyderabad Motorola 10S 9.0 38.9 289.6 12 U00022 59 Other Pune Sansung 10S 10.4 46.0 38.0 22 U000023 40 Other Hyderabad Vivo Android 11.7 9.1 233.9 105 10.4 46.0 38.0 22 U000023 40 Other Chennai Sansung Android 11.7 9.1 233.9 105 10.4 46.0 38.0 22 U000023 45 Female Bargalore Realme Android 11.7 9.1 233.9 1000024 15 Female Hyderabad Vivo Android 1.4 25.5 222.0 1000025 29 Female Bargalore Realme Android 9.2 42.7 230.9 27 U000028 41 Other Jaipur Realme Android 9.2 42.7 230.9 27 U000028 41 Other Jaipur Realme Android 8.1 44.1 81.8 28 U000029 51 Female Hyderabad Realme Android 8.1 44.1 81.8 28 U000029 51 Female byderabad Realme Android 8.1 44.1 81.8 28 U000029 51 Female Lucknow OnePlus Android 9.2 42.7 230.9 1000030 45 Female Lucknow OnePlus Android 11.4 48.4 25.5 244.3 31 U000032 40 Female Lucknow OnePlus Android 8.4 25.7 262.8 32 U000033 28 Female Chennai Sansung 10S 10.7 45.1 94.0 9.4 194.2 31 U000032 50 Female Chennai Sansung 10S 11.4 48.4 216.8 34 U000035 57 Male Delhi Vivo 10S 10.7 45.1 94.0 9.0 9.0 194.2 194										
15 U000015 52 Male Bangalore Google Pixel Android 5.1 23.6 153.9   17 U00018 54 Male Kolkata Apple Android 11.6 12.6 210.4   18 U00029 59 Female Chemia Google Pixel Android 15.3 5.2 235.6   19 U00020 40 Other Hyderabad Motorola 105 9.0 38.9 289.6   20 U000221 60 Male Hyderabad Notorola 105 9.0 38.9 289.6   21 U00022 59 Other Pune Xiaomi 105 10.4 46.0 38.0   22 U00022 59 Other Pune Xiaomi 105 10.4 46.0 38.0   23 U00024 16 Female Hyderabad Vivo 105 10.4 46.0   24 U00025 29 Female Bangalore Rampalore Ra										
16										
18 U00019 50 Female Kolkata Apple Android 11.6 12.6 210.4 18 U00019 50 Female Chennai Gogle Pixel Android 5.3 5.2 235.6 19 U00021 60 Male Pune Samsung 105 10.4 46.0 38.0 20 U00021 60 Male Pune Samsung 105 10.4 46.0 38.0 21 U00022 59 Other Pune Xiaomi Android 11.7 9.1 203.9 22 U00023 46 Other Chennai Samsung Android 11.4 25.5 226.8 23 U00023 46 Female Hyderabad Vivo Android 1.4 25.5 222.0 24 U00025 59 Female Bangalore Realme Android 7.0 41.7 51.0 25 U00027 15 Male Delhi Vivo Android 9.2 42.7 230.9 27 U00028 1 Hother Jaipur Realme Android 8.1 44.1 81.8 28 U00029 51 Female Kolkata Vivo i05 10.7 45.1 94.0 29 U00031 39 Female Samsung Android 6.3 34.5 244.3 30 U00031 39 Female Jaipur Motorola Android 6.3 34.5 244.3 31 U00032 38 Female Chennai Xiaomi i05 5.3 16.8 25.7 262.8 32 U00033 28 Female Chennai Xiaomi i05 5.3 16.8 264.9 33 U00033 28 Female Chennai Xiaomi i05 5.3 16.8 264.9 34 U00037 56 Other Kolkata Nokia Android 9.4 42.1 24.6 8 34 U00037 57 Male Delhi Vivo i05 10.7 29.0 9.0 35 U00037 56 Other Kolkata Nokia Android 11.4 48.4 216.8 34 U00037 57 Male Delhi Vivo i05 10.7 29.0 9.0 35 U00037 56 Other Kolkata Samsung i05 1.9 4.1 31.2 61.5 35 U00037 56 Other Kolkata Apple i05 15.5 2.9 212.5 36 U00037 57 Male Delhi Vivo i05 10.7 29.0 9.0 36 U00037 56 Other Kolkata Apple i05 5.5 2.9 212.5 38 U00033 20 Other Chennai Samsung i05 1.9 45.5 195.8 38 U00033 20 Other Kolkata Apple i05 5.5 2.9 212.5 39 U00044 52 Female Kolkata Samsung i05 1.9 4.2 3.4 171.6 40 U00044 52 Female Kolkata Samsung i05 5.2 2.3 3.4 171.6 41 U00045 27 Other Hyderabad Samsung i05 1.9 4.2 3.4 171.6 42 U00045 31 Female Kolkata Kiaomi i05 10.7 17.6 293.4 43 U00045 31 Female Kolkata Kiaomi i05 10.7 17.6 293.4 44 U00045 40 The Uncknow Apple i05 10.7 17.6 293.4 44 U00045 52 Other Hyderabad Samsung i05 10.7 17.6 293.4 45 U00045 53 Other Hyderabad Samsung i05 10.7 17.6 293.4 48 U00045 53 Other Hyderabad Nokia i05 10.7 17.6 293.4 59 U00045 53 Other Hyderabad Nokia i05 10.7 17.6 10.9 10.5 50 U00055 32 Other Kolkabadad Nokia i05 5.8 27.5 30.0 0.0 0.0 0.0 0.0 0.0 0										
19 U00032 40 Other Hyderabad Motorola 105 9.8 38.9 289.6 20 U00021 60 Male Plyne Samsung 105 18.4 46.0 38.0 21 U00022 59 Other Pune Xiaomi 105 18.4 46.0 38.0 21 U00022 59 Other Pune Xiaomi 105 18.4 46.0 38.0 21 U00022 59 Other Pune Xiaomi 105 18.4 46.0 38.0 21 U00022 59 Other Pune Xiaomi 105 18.4 46.0 38.0 21 U00024 16 Female Hyderabad Vivo Android 11.7 9.1 201.5 206.8 21 U00026 36 Male Hyderabad Vivo 105 5.6 47.4 155.4 222.0 24 U00026 36 Male Hyderabad Vivo 105 5.6 47.4 155.4 222.0 24 U00026 36 Male Hyderabad Vivo 105 5.6 47.4 155.4 222.0 24 U00027 15 Male Delhi Vivo Android 9.2 42.7 230.9 22 U00027 24 15 Female Kolkata Vivo 105 10.7 45.1 94.0 23.0 29 U00030 45 Female Juderabad Realme Android 8.1 44.1 81.8 28 U00039 51 Female Lucknow OnePlus Android 4.0 9 9.4 124.2 31 U00032 40 Female Lucknow OnePlus Android 8.4 25.7 262.8 32 U00033 28 Female Chennai Xiaomi 105 5.3 16.8 264.9 33 U00033 28 Female Chennai Motorola Android 8.4 25.7 262.8 34 U00035 57 Male Delhi Vivo 105 4.1 31.2 61.5 35 U00035 57 Male Delhi Vivo 105 4.1 31.2 61.5 35 U00036 25 Female Shembadad Vivo 105 10.7 29.0 9.0 9.0 39 U00030 22 Other Kolkata Motorola Android 11.4 48.4 22.1 246.7 39 U00032 40 Female Chennai Motorola Android 11.4 48.4 22.1 246.7 39 U00035 57 Male Delhi Vivo 105 4.1 31.2 61.5 34 U00035 57 Male Delhi Vivo 105 10.7 29.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0										
19			-							
20			40			•				
22   U80022 59   Other Pune   Xiaomi   Android   11.7   9.1   23.9   22   U80023 59   Female   Hyderabad   Vivo   Android   1.4   25.5   266.8   23   U80024 16   Female   Hyderabad   Vivo   Android   1.4   25.5   222.0   24   U80025 29   Female   Bangalore   Realme   Android   7.0   41.7   51.0   25   U80026 30   Male   Hyderabad   Vivo   105   5.6   47.4   155.4   26   U80027 15   Male   Delhi   Vivo   Android   9.2   42.7   230.9   27   U80028 41   Other   Jaipur   Realme   Android   8.1   44.1   81.8   28   U80029 51   Female   Kolkata   Vivo   105   10.7   45.1   99.4   29   U80031 39   Female   Hyderabad   Realme   Android   4.0   9.4   194.2   31   U80031 39   Female   Jaipur   Motorola   Android   4.0   9.4   194.2   32   U80031 39   Female   Hohenai   Xiaomi   105   5.3   16.8   264.9   33   U80031 23   Female   Chennai   Xiaomi   105   5.3   16.8   264.9   34   U80035 23   Female   Chennai   Motorola   Android   11.4   48.4   216.8   34   U80035 23   Female   Chennai   Samsung   105   10.7   29.0   9.0   36   U80033 22   Other   Kolkata   Kolkata   Kolkata   Kolkata   Samsung   105   11.9   45.5   195.8   38   U80033 22   Other   Chennai   Samsung   105   11.9   45.5   195.8   39   U80040 19   Male   Kolkata   Apple   105   5.5   2.9   212.5   40   U80041 49   Other   Lucknow   Samsung   105   5.2   24.3   4.1   15.8   15.6   41   U80045 52   Female   Kolkata   Apple   105   5.2   2.2   22.0   30.8   42   U80043 34   Male   Bangalore   Vivo   105   5.2   2.2   22.0   30.8   43   U80045 42   Other   Mumbai   Google Pixel   105   5.2   2.3   4.4   4.5   4.					-					
22 U80023 46 Other Chennai Samsung Android 1.4 25.5 222.0 23 100024 16 Female Hyderabad Vivo Android 1.4 25.5 222.0 24 U80025 29 Female Bangalore Realme Android 7.0 41.7 51.0 25 U80026 36 Male Hyderabad Vivo 105 5.6 47.4 155.4 26 U80027 15 Male Delhi Vivo Android 9.2 42.7 230.9 27 U80028 41 Other Jaipur Realme Android 8.1 44.1 81.8 28 U80029 51 Female Kolkata Vivo 105 10.7 45.1 94.0 29 U80030 45 Female Hyderabad Realme Android 6.3 34.5 244.3 30 U80031 39 Female Lucknow OnePlus Android 8.4 25.7 262.8 31 U80032 40 Female Chennai Motorola Android 8.4 25.7 262.8 32 U80033 28 Female Chennai Motorola Android 8.4 25.7 262.8 33 U80033 57 Male Delhi Vivo 105 5.3 16.8 264.9 33 U80033 57 Female Chennai Motorola Android 11.4 48.4 216.8 34 U80035 57 Male Delhi Vivo 105 4.1 31.2 61.5 35 U80037 56 Other Kolkata Nokia Narroid 9.4 42.1 246.7 37 U80038 20 Other Kolkata Nokia Nokia Android 9.4 42.1 246.7 37 U80038 20 Other Kolkata Samsung 105 11.9 45.5 195.8 38 U80039 22 Other Kolkata Samsung 105 5.5 2.9 212.5 40 U80044 49 Male Bangalore Vivo 105 5.5 2.9 212.5 40 U80044 52 Female Kolkata Samsung 105 5.5 2.9 212.5 41 U80043 40 Male Bangalore Vivo 105 2.5 10.6 21.9 11.6 45 U80045 57 Male Delhi Samsung 105 5.5 2.9 212.5 40 U80044 52 Female Kolkata Samsung 105 5.5 2.9 212.5 41 U80044 52 Female Kolkata Samsung 105 5.5 2.9 212.5 42 U80045 57 Male Bangalore Vivo 105 2.2 22.0 30.8 42 U80044 52 Female Kolkata Samsung 105 4.2 3.4 171.6 45 U80045 57 Other Mumbai Samsung 105 4.2 3.4 171.6 46 U80045 57 Other Mumbai Samsung 105 4.2 3.4 171.6 47 U80048 50 Tother Mumbai Samsung 105 4.7 30.4 171.6 48 U80045 57 Other Mumbai Samsung 105 4.7 30.4 171.6 59 U80060 17 Other Mumbai Samsung 105 4.7 30.4 151.8 51 U80065 32 Other Mumbai Vivo 105 5.4 15.8 15.8 51 U80065 32 Other Mumbai Vivo 105 5.4 15.8 15.7 30.0 5.5 10.0 5.5						-				
23 U90924 16 Female Hyderabad Vivo Android 1.4 25.5 222.0 24 U90925 29 Female Bangalore Realme Android 7.0 41.7 51.0 25 U90926 36 Male Hyderabad Vivo 10S 5.6 47.4 155.4 26 U90927 15 Male Delhi Vivo Android 9.2 42.7 230.9 27 U90928 41 Other Jaipur Realme Android 8.1 44.1 81.8 28 U90929 51 Female Kolkata Vivo 10S 10.7 45.1 94.0 29 U90930 45 Female Hyderabad Realme Android 6.3 34.5 244.3 30 U90931 39 Female Jaipur Motorola Android 4.0 9.4 194.2 31 U90932 40 Female Chennai Kiaomi 10S 5.3 16.8 264.9 31 U90933 28 Female Chennai Kiaomi 10S 5.3 16.8 264.9 33 U90934 23 Female Chennai Kiaomi 10S 5.3 16.8 264.9 34 U90935 23 Female Chennai Kiaomi 10S 5.3 16.8 264.9 36 U90936 23 Female Chennai Kiaomi 10S 5.3 16.8 264.9 37 U90938 20 Other Chennai Kaomi 10S 10.7 29.0 9.0 36 U90937 56 Other Chennai Samsung 10S 11.9 45.5 195.8 38 U90938 20 Other Chennai Samsung 10S 11.9 45.5 195.8 39 U90940 19 Male Kolkata Apple 10S 5.5 2.9 212.5 40 U90941 49 Male Kolkata Apple 10S 5.5 2.9 212.5 40 U90943 40 Male Bangalore Vivo 10S 2.2 22.0 30.8 41 U90945 54 Male Android Samsung 10S 5.5 2.9 212.5 40 U90944 55 Female Kolkata Apple 10S 5.5 2.9 212.5 40 U90947 51 Other Mumbai Google Pixel 10S 4.4 33.8 189.3 41 U90949 52 Other Kolkata Apple 10S 5.5 2.9 212.5 40 U90947 51 Other Mumbai Samsung 10S 4.4 33.8 189.3 41 U90949 52 Other Mumbai Samsung 10S 4.4 33.8 189.3 42 U90949 51 Female Kolkata Apple 10S 5.5 10.6 219.1 43 U90949 52 Other Mumbai Samsung 10S 4.4 33.8 189.3 44 U90945 54 Male Android Samsung 10S 4.4 33.8 189.3 45 U90949 55 Other Delhi Xiaomi Android 1.5 4.0 6.9 293.4 46 U90947 51 Other Mumbai Samsung 10S 4.4 33.8 189.3 47 U90948 19 Male Bangalore Realme 10S 3.1 24.8 82.1 48 U90949 52 Other Delhi Motorola Android 1.5 4.0 6.6 293.4 48 U90949 52 Other Delhi Motorola Samsung 10S 4.7 30.4 155.4 50 U90955 32 Other Delhi Motorola 50S 9.4 15.4 16.6 51 U90955 32 Other Delhi Motorola 50S 9.4 15.4 15.8 115.7 51 U90955 32 Other Mumbai Vivo 10S 5.8 275 30.0			46							
25 U00026 36 Male Hyderabad Vivo iOS 5.6 47.4 155.4 26 U00027 15 Male Delhi Vivo Android 9.2 42.7 230.9 27 U00028 41 Other Daipur Realme Android 8.1 44.1 81.8 28 U00029 51 Female Hyderabad Realme Android 6.3 34.5 244.3 30 U00031 39 Female Jaipur Motorola Android 4.0 9.4 194.2 31 U00032 40 Female Lucknow OnePlus Android 8.4 25.7 262.8 31 U00032 40 Female Chennai Xiaomi iOS 5.3 16.8 264.9 33 U00033 27 Male Delhi Vivo iOS 5.3 16.8 264.9 33 U00033 27 Female Chennai Motorola Android 11.4 48.4 216.8 264.9 33 U00033 57 Male Delhi Vivo iOS 4.1 31.2 661.5 35 U00037 56 Other Kolkata Kokia Android 9.4 42.1 31.2 661.5 35 U00037 56 Other Chennai Samsung iOS 10.7 29.0 9.0 36 U00037 56 Other Kolkata Android 9.4 42.1 246.7 37 U00038 20 Other Chennai Samsung iOS 11.9 45.5 195.8 38 U00039 22 Other Kolkata Apple iOS 5.5 2 2.9 212.5 40 U00041 49 Other Lucknow Samsung iOS 5.5 2 2.9 212.5 40 U00041 49 Male Kolkata Apple iOS 5.5 2 2.9 212.5 40 U00044 52 Female Kolkata Apple iOS 5.5 10.0 2.2 2.0 30.8 41 U00045 52 Other Mumbai Google Pixel Android 1.6 34.1 6.0 42 U00045 40 Male Samsung iOS 5.5 1.0 4.0 U00047 51 Other Mumbai Google Pixel iOS 4.4 33.8 189.3 44 U00045 52 Other Mumbai Google Pixel iOS 4.4 33.8 189.3 44 U00045 52 Other Mumbai Google Pixel iOS 4.4 33.8 189.3 44 U00045 52 Other Mumbai Google Pixel iOS 4.4 33.8 189.3 44 U00045 52 Other Mumbai Google Pixel iOS 4.4 33.8 189.3 44 U00045 52 Other Mumbai Google Pixel iOS 4.2 3.4 171.6 293.4 190.0 1						_				
25 U00026 36 Male Hyderabad Vivo 10S 5.6 47.4 155.4 26 U00027 15 Male Delhi Vivo Android 9.2 42.7 230.9 27 U00028 41 Other Daipur Realme Android 8.1 44.1 81.8 28 U00029 51 Female Hyderabad Realme Android 6.3 34.5 244.3 30 U00031 39 Female Jaipur Motorola Android 4.0 9.4 194.2 31 U00032 40 Female Lucknow OnePlus Android 8.4 25.7 262.8 32 U00032 40 Female Chennai Xiaomi 10S 5.3 16.8 264.9 33 U00034 27 Female Chennai Motorola Android 11.4 48.4 216.8 34 U00035 57 Male Delhi Vivo i0S 4.1 31.2 661.5 35 U00037 55 Other Kolkta Kokia Android 9.4 42.1 31.2 661.5 35 U00037 56 Other Chennai Samsung 10S 11.9 45.5 195.8 38 U00037 56 Other Kolkta Android 1.6 34.1 6.0 39 U00041 49 Other Lucknow Samsung i0S 11.9 45.5 195.8 41 U00042 54 Male Kolktat Apple i0S 5.5 22 43.4 151.8 41 U00042 54 Male Maledabad Vivo i0S 5.5 2.2 22.0 30.8 41 U00042 54 Male Maledabad Vivo i0S 5.5 2.2 43.4 151.8 41 U00042 54 Male Maledabad Vivo i0S 5.5 2.2 43.4 151.8 41 U00042 54 Male Maledabad Vivo i0S 5.5 5.5 2.9 212.5 40 U00041 49 Other Lucknow Samsung i0S 5.2 43.4 151.8 41 U00042 54 Male Maledabad Vivo i0S 5.5 5.2 2.9 30.8 41 U00042 54 Male Almedabad Vivo i0S 5.5 5.2 2.9 30.8 41 U00044 52 Female Kolktat Apple i0S 5.5 5.2 2.9 30.8 41 U00044 52 Female Kolktat Xiaomi i0S 4.4 33.8 189.3 44 U00044 52 Female Kolktat Xiaomi i0S 4.4 33.8 189.3 44 U00045 52 Other Mumbai Google Pixel i0S 4.2 3.4 171.6 293.4 41 U00045 52 Other Mumbai Samsung i0S 4.2 3.4 171.6 293.4 189.3 41 U00045 52 Other Mumbai Samsung i0S 4.2 3.4 171.6 293.4 189.3 189	24	U00025	29	Female	Bangalore	Realme	Android	7.0	41.7	51.0
27	25	U00026	36	Male	_	Vivo	iOS	5.6	47.4	155.4
28	26	U00027	15	Male	Delhi	Vivo	Android	9.2	42.7	230.9
29	27	U00028	41	Other	Jaipur	Realme	Android	8.1	44.1	81.8
30	28	U00029	51	Female	Kolkata	Vivo	iOS	10.7	45.1	94.0
31 U00032 40 Female Lucknow OnePlus Android 8.4 25.7 262.8 32 U00033 28 Female Chennai Xiaomi 10S 5.3 16.8 264.9 33 U00034 23 Female Chennai Motorola Android 11.4 48.4 216.8 34 U00035 57 Male Delhi Vivo 10S 4.1 31.2 61.5 35 U00037 56 Other Kolkata Nokia Android 9.4 42.1 246.7 37 U00038 20 Other Chennai Samsung 10S 11.9 45.5 195.8 38 U00037 20 Other Kolkata Google Pixel Android 1.6 34.1 6.0 39 U00040 19 Male Kolkata Apple 10S 5.5 2 43.4 151.8 41 U00041 49 Other Lucknow Samsung 10S 5.5 2.2 43.4 151.8 41 U00043 40 Male Bangalore Vivo 10S 2.2 22.0 30.8 42 U00043 40 Male Bangalore Vivo 10S 2.5 10.6 219.1 43 U00044 52 Female Kolkata Xiaomi 10S 4.4 133.8 189.3 44 U00045 42 Other Hyderabad Samsung 10S 4.3 26.4 210.5 40 U00047 51 Other Hyderabad Samsung 10S 4.2 3.4 171.6 293.4 47 U00048 19 Male Bangalore Realme 10S 4.3 26.4 210.5 49 U00047 51 Other Hyderabad Samsung 10S 4.2 3.4 171.6 293.4 48 U00048 19 Male Bangalore Realme 10S 4.3 26.4 210.5 49 U00048 19 Male Bangalore Realme 10S 4.7 30.4 157.7 50 U0005 31 Female Ahmedabad Nokia 10S 4.7 30.4 157.7 50 U0005 32 Male Delhi Motorola 10S 4.7 30.4 157.7 50 U0005 32 Male Delhi Motorola 10S 5.4 15.8 115.7 54 10.0 0055 32 U0005 43 Other Bangalore Xiaomi 10S 5.4 15.8 115.7 54 10.0 0055 32 U0005 43 Other Bangalore Xiaomi 10S 5.4 15.8 115.7 54 10.0 0055 32 U0005 45 U0005 45 U0005 32 Male Delhi Motorola 10S 5.4 15.8 115.7 54 10.0 0055 32 U0005 45 U0005 4	29	U00030	45	Female	Hyderabad	Realme	Android	6.3	34.5	244.3
32	30	U00031	39	Female	Jaipur	Motorola	Android	4.0	9.4	194.2
33	31	U00032	40	Female	Lucknow	OnePlus	Android	8.4	25.7	262.8
34	32	U00033	28	Female	Chennai	Xiaomi	iOS	5.3	16.8	264.9
35	33	U00034	23	Female	Chennai	Motorola	Android	11.4	48.4	216.8
36										
37	35	U00036	23	Female	Ahmedabad				29.0	9.0
38										
39						•				
40						•				
41 U00042 54 Male Ahmedabad Vivo iOS 2.2 22.0 30.8 42 U00043 40 Male Bangalore Vivo iOS 2.5 10.6 219.1 43 U00044 52 Female Kolkata Xiaomi iOS 4.4 33.8 189.3 44 U00045 42 Other Mumbai Google Pixel iOS 4.2 3.4 171.6 45 U00046 23 Other Hyderabad Samsung iOS 4.3 26.4 210.5 46 U00047 51 Other Mumbai Samsung iOS 10.7 17.6 293.4 47 U00048 19 Male Bangalore Realme iOS 3.1 24.8 82.1 48 U00049 52 Other Delhi Xiaomi Android 1.5 41.0 95.5 49 U00050 17 Other Lucknow Apple iOS 4.7 30.4 157.7 50 U00051 31 Female Ahmedabad Nokia iOS 10.4 41.1 32.5 51 U00052 49 Other Jaipur OnePlus Android 8.6 46.0 181.8 52 U00053 21 Male Delhi Motorola riOS 9.4 15.4 10.6 53 U00054 51 Male Lucknow OnePlus iOS 5.4 15.8 115.7 54 U00055 32 Other Mumbai Vivo iOS 5.8 27.5 30.0 55 U00056 43 Other Bangalore Xiaomi iOS 8.6 14.4 275.5 ▼										
42										
43										
44					_					
45										
46						_				
47					-					
48						_				
49       U00050       17       Other       Lucknow       Apple       iOS       4.7       30.4       157.7         50       U00051       31       Female       Ahmedabad       Nokia       iOS       10.4       41.1       32.5         51       U00052       49       Other       Jaipur       OnePlus       Android       8.6       46.0       181.8         52       U00053       21       Male       Delhi       Motorola       iOS       9.4       15.4       10.6         53       U00054       51       Male       Lucknow       OnePlus       iOS       5.4       15.8       115.7         54       U00055       32       Other       Mumbai       Vivo       iOS       5.8       27.5       30.0         55       U00056       43       Other       Bangalore       Xiaomi       iOS       8.6       14.4       275.5       **										
50										
51										
52										
53     U00054     51     Male     Lucknow     OnePlus     iOS     5.4     15.8     115.7       54     U00055     32     Other     Mumbai     Vivo     iOS     5.8     27.5     30.0       55     U00056     43     Other     Bangalore     Xiaomi     iOS     8.6     14.4     275.5										
54										
55 U00056 43 Other Bangalore Xiaomi iOS 8.6 14.4 275.5										
·										
		550050	+2	o circi	201160110110	ATGORIT	103	0.0	27.7	

print(df.info()) # check information

```
<class 'pandas.core.frame.DataFrame'>
     RangeIndex: 17686 entries, 0 to 17685
     Data columns (total 16 columns):
      # Column
                                        Non-Null Count Dtype
      0
          User ID
                                        17686 non-null
                                                        object
                                        17686 non-null
                                                        int64
          Age
          Gender
                                        17686 non-null object
                                        17686 non-null
          Location
      3
                                                        obiect
      4
          Phone Brand
                                        17686 non-null
                                                        object
                                        17686 non-null
                                                        object
      6
          Screen Time (hrs/day)
                                        17686 non-null
                                                        float64
          Data Usage (GB/month)
                                        17686 non-null float64
          Calls Duration (mins/day)
                                        17686 non-null float64
          Number of Apps Installed
                                        17686 non-null
                                                        int64
      10 Social Media Time (hrs/day)
                                        17686 non-null
                                                        float64
      11 E-commerce Spend (INR/month)
                                        17686 non-null int64
          Streaming Time (hrs/day)
                                        17686 non-null
                                                        float64
      13 Gaming Time (hrs/day)
                                        17686 non-null float64
      14 Monthly Recharge Cost (INR)
                                        17686 non-null int64
      15 Primary Use
                                        17686 non-null
     dtypes: float64(6), int64(4), object(6)
     memory usage: 2.2+ MB
print(df.head()) # first 5 rows
<del>_</del>
       User ID
                     Gender
                              Location Phone Brand
                                                         OS Screen Time (hrs/day) \
                Age
     0 U00001
                       Male
                                Mumbai
                                              Vivo Android
                 53
                                                                                3.7
     1
        U00002
                 60
                      Other
                                 Delhi
                                            Realme
                                                        iOS
                                                                                9.2
                                                    Android
        U00003
                 37
                     Female
                             Ahmedabad
                                             Nokia
                                                                                4.5
        U00004
     3
                 32
                                  Pune
                                           Samsung
                                                    Android
                                                                               11.0
                       Male
     4
       11000005
                 16
                       Male
                                Mumbai
                                            Xiaomi
                                                        ios
                                                                               2.2
        Data Usage (GB/month) Calls Duration (mins/day) Number of Apps Installed
     0
                         23.9
                                                    37.9
                                                                                104
     1
                         28.1
                                                    13.7
                                                                                169
     2
                         12.3
                                                    66.8
                                                                                 96
     3
                                                   156.2
                                                                                146
                         25.6
     4
                          2.5
                                                   236.2
                                                                                 86
        Social Media Time (hrs/day) E-commerce Spend (INR/month) \
     0
                                3.9
                                2.8
                                                              4997
                                                              2381
     2
                                3.0
                                                             1185
                                5.2
     3
     4
                                5.5
                                                              106
        Streaming Time (hrs/day) Gaming Time (hrs/day) \
     0
                             5.2
                                                    4.1
     1
                             5.1
                                                    0.4
     2
                             1.7
                                                    2.9
     3
                             3.2
                                                    0.3
     4
                             3.4
                                                    2.3
        Monthly Recharge Cost (INR)
                                       Primary Use
                                         Education
     0
                                803
                               1526
                                            Gaming
     1
     2
                               1619
                                     Entertainment
     3
                               1560
                                     Entertainment
     4
                                742
                                      Social Media
df.drop_duplicates(inplace=True) # Remove duplicate rows
df.isnull().sum() # Count missing values per column
```

```
₹
                User ID
                                   0
                                   0
                  Age
                Gender
                Location
                                   0
              Phone Brand
                  os
                                   0
          Screen Time (hrs/day)
         Data Usage (GB/month)
                                   0
         Calls Duration (mins/day)
                                   0
         Number of Apps Installed
                                   0
        Social Media Time (hrs/day)
      E-commerce Spend (INR/month) 0
         Streaming Time (hrs/day)
          Gaming Time (hrs/day)
                                   0
       Monthly Recharge Cost (INR)
                                   0
              Primary Use
                                   0
     dtype: int64
df['User ID'].unique() # Check unique values in a categorical column
    array(['U00001', 'U00002', 'U00003', ..., 'U17684', 'U17685', 'U17686'],
           dtype=object)
df['Screen Time (hrs/day)'] = pd.to_datetime(df['Screen Time (hrs/day)'])
df['Social Media Time (hrs/day)'] = pd.to_datetime(df['Social Media Time (hrs/day)'])
df['Streaming Time (hrs/day)'] = pd.to_datetime(df['Streaming Time (hrs/day)'])
df['Gaming Time (hrs/day)'] = pd.to_datetime(df['Gaming Time (hrs/day)'])
print(df.info()) # check above all are data type changed
    <class 'pandas.core.frame.DataFrame'>
     RangeIndex: 17686 entries, 0 to 17685
     Data columns (total 16 columns):
     # Column
                                        Non-Null Count Dtype
         User ID
     0
                                        17686 non-null object
      1
         Age
                                        17686 non-null int64
      2
          Gender
                                        17686 non-null
                                        17686 non-null object
         Location
                                        17686 non-null
      4
         Phone Brand
                                                        object
         OS
                                        17686 non-null
                                                        object
                                        17686 non-null datetime64[ns]
         Screen Time (hrs/day)
                                        17686 non-null
          Data Usage (GB/month)
                                                        float64
         Calls Duration (mins/day)
                                        17686 non-null
                                                        float64
         Number of Apps Installed
                                        17686 non-null int64
      10 Social Media Time (hrs/day)
                                        17686 non-null
                                                        datetime64[ns]
                                        17686 non-null int64
      11 E-commerce Spend (INR/month)
      12 Streaming Time (hrs/day)
                                        17686 non-null datetime64[ns]
                                        17686 non-null
      13 Gaming Time (hrs/day)
                                                        datetime64[ns]
      14 Monthly Recharge Cost (INR)
                                        17686 non-null int64
     15 Primary Use
                                        17686 non-null object
     dtypes: datetime64[ns](4), float64(2), int64(4), object(6)
     memory usage: 2.2+ MB
     None
print(df.dtypes) # Cheek datatypes
→ User ID
                                             object
                                              int64
     Age
                                             object
     Gender
```

```
Location
                                         object
Phone Brand
                                        object
                                        object
Screen Time (hrs/day)
                                datetime64[ns]
Data Usage (GB/month)
                                       float64
Calls Duration (mins/day)
                                       float64
Number of Apps Installed
                                         int64
Social Media Time (hrs/day)
                                datetime64[ns]
E-commerce Spend (INR/month)
                                         int64
Streaming Time (hrs/day)
                                datetime64[ns]
                                datetime64[ns]
Gaming Time (hrs/dav)
Monthly Recharge Cost (INR)
                                         int64
Primary Use
                                         object
dtype: object
```

Location And their How Many GB data user in perticular city

```
group_by_Location = df.groupby('Location')['Age'].mean()
print(group_by_Location)
→ Location
    Ahmedabad
                 37.609524
    Bangalore
                 37.208287
                 37.402235
    Chennai
    Delhi
                  37.441127
    Hyderabad
                 37.590588
                 37.850877
    Jaipur
    Kolkata
                  37.678032
    Lucknow
                 38.056471
```

Highest Ecommerce Spend INR/Month by location

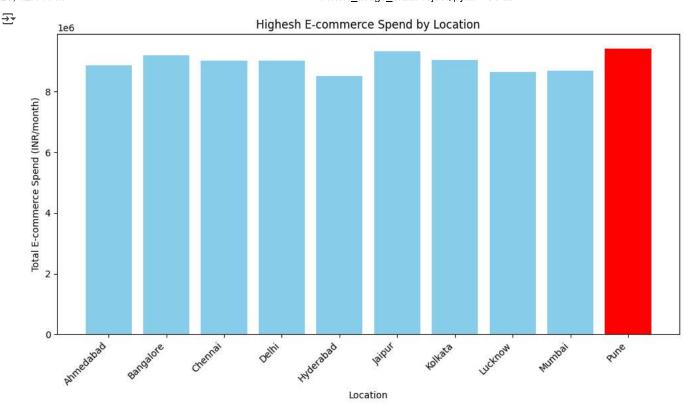
37,677120

37.352066

Name: Age, dtype: float64

Mumbai Pune

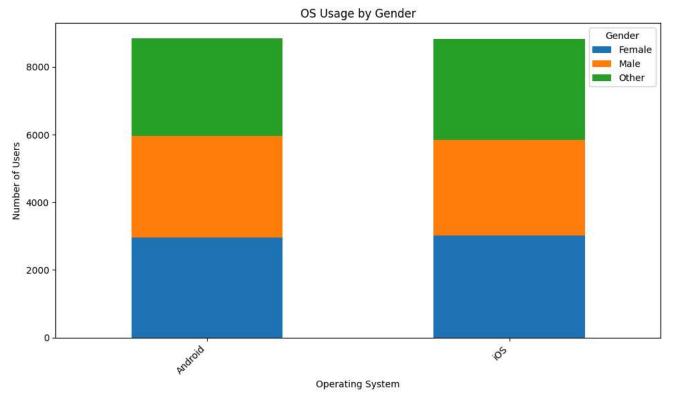
```
# Group by location and calculate the total spend for each location
location_spend = df.groupby('Location')['E-commerce Spend (INR/month)'].sum()
# location with the maximum spend
max_spend_location = location_spend.idxmax()
print(f"The location with the maximum E-commerce spend is: {max_spend_location}")
The location with the maximum E-commerce spend is: Pune
import matplotlib.pyplot as plt
# bar chart
plt.figure(figsize=(10, 6))
plt.bar(location_spend.index, location_spend.values, color='skyblue')
# Highlight the maximum spend location
plt.bar(max_spend_location, location_spend[max_spend_location], color='red')
plt.xlabel('Location')
plt.ylabel('Total E-commerce Spend (INR/month)')
plt.title('Highesh E-commerce Spend by Location')
plt.xticks(rotation=45, ha='right')
plt.tight_layout()
plt.show()
```



Count users and check Operating systems by genders

```
import pandas as pd
os_gender_grouped = df.groupby(['OS', 'Gender'])['User ID'].count().reset_index()
# Rename the 'User ID' column to 'Count' for better clarity
os_gender_grouped = os_gender_grouped.rename(columns={'User ID': 'Count'})
# Print the grouped data
print(os_gender_grouped)
             OS Gender
₹
                         Count
     0 Android Female
                          2961
     1 Android
                   Male
                          2996
     2 Android
                  Other
                          2894
           iOS Female
                          3008
     3
                  Male
                          2829
     4
            iOS
     5
            iOS
                  Other
                          2998
{\tt import\ matplotlib.pyplot\ as\ plt}
import pandas as pd
# stacked bar chart
os_gender_grouped.pivot(index='OS', columns='Gender', values='Count').plot(kind='bar', stacked=True, figsize=(10, 6))
plt.xlabel('Operating System')
plt.ylabel('Number of Users')
plt.title('OS Usage by Gender')
plt.xticks(rotation=45, ha='right')
plt.legend(title='Gender')
plt.tight_layout()
plt.show()
```

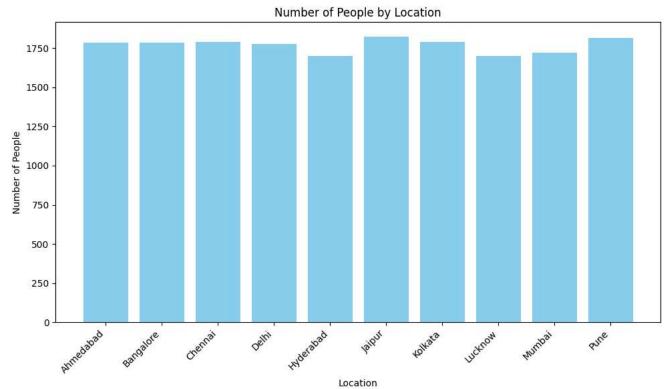




### Count Users by location

```
# Total users from different location count
import pandas as pd
location_counts = df.groupby('Location')['User ID'].count().reset_index()
# Print the location counts
print(location_counts)
₹
        Location User ID
     0
       Ahmedabad
                      1785
       Bangalore
                      1786
         Chennai
                      1790
     2
     3
                      1775
           Delhi
     4
       Hyderabad
                      1700
     5
          Jaipur
                      1824
     6
          Kolkata
                      1789
     7
          Lucknow
                      1700
     8
                      1722
           Mumbai
                      1815
             Pune
import matplotlib.pyplot as plt
import pandas as pd
# Create a bar chart
plt.figure(figsize=(10, 6)) # Adjust figure size if needed
plt.bar(location_counts['Location'], location_counts['User ID'], color='skyblue')
plt.xlabel('Location')
plt.ylabel('Number of People')
plt.title('Number of People by Location')
plt.xticks(rotation=45, ha='right') # Rotate x-axis labels for better readability
plt.tight_layout()
plt.show()
```



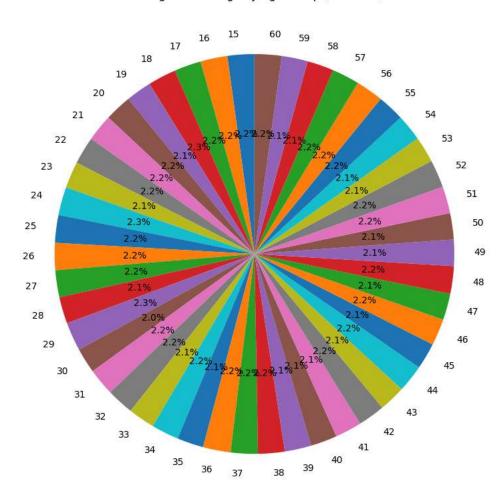


```
import matplotlib.pyplot as plt
group_by_Location = df.groupby('Age')['Data Usage (GB/month)'].mean()

# pie chart
plt.figure(figsize=(8, 8))
plt.pie(group_by_Location.values, labels=group_by_Location.index, autopct='%1.1f%%', startangle=90)
plt.title('Average Data Usage by Age Group (Pie Chart)')
plt.tight_layout()
plt.show()
```



## Average Data Usage by Age Group (Pie Chart)

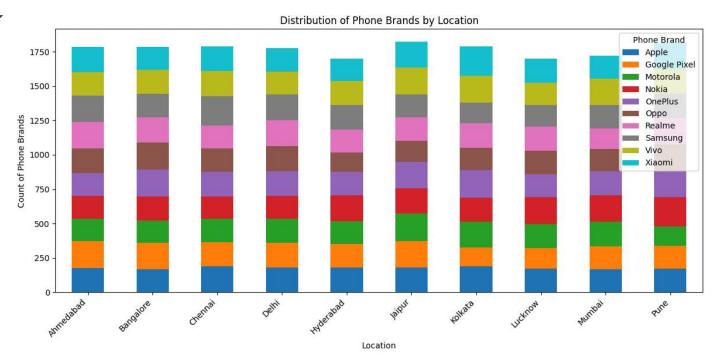


#### Distribution of Phone Brands by Location

```
group_by_Location = df.groupby('Data Usage (GB/month)')['Age'].max()
print(group_by_Location)
    Data Usage (GB/month)
     1.0
             60
     1.1
             58
     1.2
             59
     1.3
             59
     1.4
             57
     49.6
             57
     49.7
             59
     49.8
             58
     49.9
             60
     50.0
             60
     Name: Age, Length: 491, dtype: int64
import matplotlib.pyplot as plt
import pandas as pd
# Group data by location and phone brand, then count occurrences
grouped_data = df.groupby(['Location', 'Phone Brand'])['Phone Brand'].count().unstack()
# stacked bar chart
grouped_data.plot(kind='bar', stacked=True, figsize=(12, 6))
plt.xlabel('Location')
plt.ylabel('Count of Phone Brands')
plt.title('Distribution of Phone Brands by Location')
plt.xticks(rotation=45, ha='right')
plt.legend(title='Phone Brand')
```

plt.tight\_layout()
plt.show()

₹



## **Average Screen Time by Age Group**

```
import matplotlib.pyplot as plt
import pandas as pd

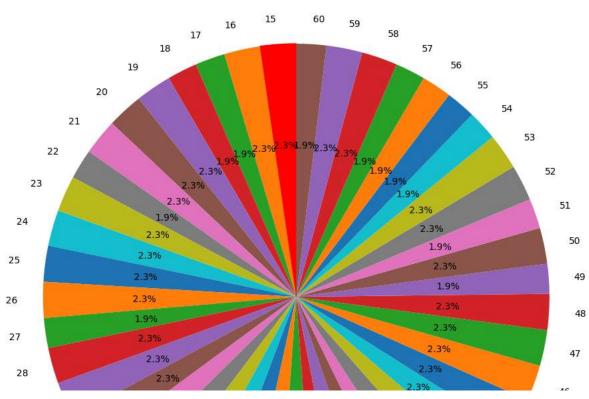
# Group data by age and calculate average screen time
age_screen_time = df.groupby('Age')['Screen Time (hrs/day)'].mean()

# age group with the highest average screen time
highest_screen_time_age = age_screen_time.idxmax()

# pie chart
plt.figure(figsize=(15,10))
plt.pie(age_screen_time, labels=age_screen_time.index, autopct='%1.1f%%', startangle=90)
plt.title('Average Screen Time by Age Group')

# Highlight the highest screen time age group
plt.gca().patches[age_screen_time.index.get_loc(highest_screen_time_age)].set_color('red')
plt.tight_layout()
plt.show()
```

# Average Screen Time by Age Group



male\_data = df[df['Gender'] == 'Male']
female\_data = df[df['Gender'] == 'Female']