changes in denver metro area’s rent price

A Project Presented in Partial Fulfillment of the

Requirements for MGMT 600

By

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June 2018

**Abstract**

As I have seen during last couple years that I live in a Denver, the state’s rent and house price got much higher than when I moved in. Furthermore, increases in rent causes other macroeconomics factors’ movement and have a big influence on everyday life.

The purpose of this analysis is to analyze the growth rate of rent prices, their future trend, and to investigate the following questions:

1. Does the rent price in Denver Metro area tend to continue increasing?
2. When were the rent prices the highest and the lowest?
3. Which counties in Denver Metro area experiencing the highest increase?

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Statement of the problem

Since the existence of human beings, there have always been certain needs which must be met to live and survive other forces such as animals and natural disasters. Abraham Harold Maslow, an American psychologist, found out generally people have five levels of needs, and when one is fulfilled another one comes. According to Maslow’s hierarchy of needs, human beings have physiological needs, safety needs, belongingness and love needs, esteem needs, and self-actualization. Basic needs include oxygen, water, food, shelter or home, and sleep that nobody can live without them. Thus, I think Maslow’s theory can explain one of the factors that causes the constant increase of rent and property price.

If you google Colorado’s rent price, you will find lots of topics with names like “How Colorado became one of the least affordable places to live in the U.S”, “How Rent prices are changing in Colorado”, and “Rents up to another few percent over last years”. So, there is definitely a big increase in Colorado’s rent price, especially Denver metro area, and it is getting more and more attention from researchers, reporters, and real estate companies. In other words, Colorado’s rent price has become a public concern not only for residents, and that makes my analysis more valuable and exciting.

Another big question that current residents and future residents want to know is will rent price keep increasing or will it slow down a bit, because price-level of rent plays significant role. By knowing future trend of rent price, people can make moving-in or moving-out decisions.

Background

 The state’s home and rent values dropped after economic the recession reached the lowest value in 2011 and rebounded to being more than the U.S average. It is not as expensive as San Francisco, but much more expensive than neighbor states such as Wyoming, Utah, and New Mexico. According to Colorado Residential Rent and Rental Statistics, released in September of 2017, Colorado’s median gross rent is $190 higher than the U.S median gross rate, $981 in 2016. Furthermore, the last-one and three-year increases in the rent prices are 4 percent and 19.86 percent, while the average rent price increased by 0.93 percent and 7.8 percent nationwide.

 The Denver, Aurora, Lakewood area was ranked number two for a city with new residents after Virginia Beach, North Carolina. At the same time the Denver area named second city because it was losing its population the most. Among the cities of Colorado, Boulder has the highest rent price, and then Denver, Centennial, Westminster, and Lakewood, while Arvada was the fastest rent growing city.

Methods

At first, I aimed to use accurate and as long as possible data, which is from reliable source. From my own perspectives, collecting the data is the hardest and most important part of any analysis due to the result depends on data and bad data can lead to wrong decision. Purpose of my research is to see changes in Denver metro area’s rent price, so I chose timeseries data in my analysis. I used Denver Metro Area Vacancy and Rent Survey data in my analysis, provided by Apartment Association of Metro Denver in fourth quarter of 2014 and 2017. The data ranges from first quarter of 2008 to fourth quarter of 2017, and covers six counties Adams, Arapahoe, Boulder/ Broomfield, Denver, Douglas, and Jefferson. Total sample size is 40 quarters and I chose the sample size that can represent the population the most.

Basically, my research based on two types of data, which are Average rent price of counties by apartment type in U.S dollars and quarterly resident turnover by county in percent. I used Regression analysis in order to predict future changes in the area’s rent price, also applied descriptive statistics to compare mean, maximum, and minimum rent prices of counties. Furthermore, I split up my data as one-bedroom apartment, two-bedroom apartment with two-bathroom, and three-bedroom apartment for the best result.

Results

Average rent price of Denver Metro area

One-bedroom apartment

According to my analysis, average rent price of One-Bedroom apartment in Denver Metro area has been increasing continuously and reached the highest amount at the first quarter of 2017. When I predict the future price, it tends to keep increasing to about $1900 by 2021. Speaking of significance of my analysis, R-squared is good enough 97.8 percent and trendline fits with the historical average rent price *(Figure 1)*.

Figure 1. Average Rent Price of One-Bedroom Apartment in Denver Metro Area

 Figure 2 shows us how one-bedroom apartment’s prices in different counties move together. At the beginning of 2008, residents were able to rent nice apartment at $750 in any areas, but it is increased by over $400 in 9 years. Trend analysis starts from 2018 to 2021 and residents won’t see decline on the rent for coming 4 years due to my trend analysis with 96.86 percent confidence level.

Figure 2. Average Rent of One-Bedroom Apartment in Denver Metro Area by County

Comparing between six counties, Boulder has the highest rent, then Douglas, and Denver, while Adams and Arapahoe’s rents are lower than Metro Average. One-bedroom apartment in Adams is the lowest, average of $883 per month *(Figure 3)*.

Figure 3. Mean- Minimum- Maximum Points of One-Bedroom Apartment in Denver Metro Area by County

Two-Bedroom Apartment

Comparing to one-bedroom apartment in Denver metro area, two-bedroom apartment in the area is over $330 higher. Starting from first quarter of 2016, Denver’s rent price is getting even higher than Boulder/ Broomfield and Douglas’ and Denver will be the greatest one in 4 years. Douglas was at the top-level until 2017, conversely it tends to get lower than metro average in the future. Also, Arapahoe is going to be the most affordable county to live as two-bedroom apartment based on the trend analysis *(Figure 4)*.

R-squared of my regression analysis on two-bedroom apartment is 96 percent, which is considered better, closer to 100 percent.

Figure 4. Average Rent of Two-Bedroom Apartment in Denver Metro Area by County

In consideration of descriptive statistics, Boulder/ Broomfield area has the greatest and Adams has the smallest rent price of two-bedroom apartment same as one-bedroom apartment *(Figure 5)*. In the result of 10-year timeseries data analysis, two-bedroom apartment hit $1853.84 maximum amount, and $923 minimum point around Denver Metro area. On the other hand, 10-year average the rent price is $1265, which is lesser than one-bedroom in Boulder/ Broomfield since second quarter of 2015.

Figure 5. Mean-Minimum-Maximum Points of Two-Bedroom Apartment in Denver Metro Area by County

Three-Bedroom Apartment

Three-bedroom apartment in Denver Metro area has more fluctuation than other two apartment types, especially the Denver’s rent has been moving up and down a lot.

Figure 6. Average Rent of Three-Bedroom Apartment in Denver Metro Area by County

Most importantly, future trend of three-bedroom apartment’s rent is going to be fairly same in any Denver metro area besides Jefferson and Douglas *(Figure 6)*. Also, overall confidence level of three-bedroom apartment regression analysis is 92.06 percent. Even though, that is the smallest R-squared between three apartment types’ regression analysis, it is still good enough to tell about future changes.

Like other two apartment types, one-bedroom and two-bedroom, three-bedroom apartment in Boulder/ Broomfield, Douglas, and Denver are the most expensive in the area. Jefferson experienced the cheapest rent $1059.12 in 10 years history, from 2008 to 2017. Average three-bedroom apartment rent of Denver Metro area is $1494, and Arapahoe, Denver, Boulder/ Broomfield, and Douglas’ average rents are higher than metro average *(Figure 7)*. Maximum amount of rent is $2121.87, which is in Boulder/ Broomfield area at the first quarter of 2017.

Figure 7. Mean-Minimum-Maximum Points of Three-Bedroom Apartment in Denver Metro Area by County

Resident Turnover of Denver Metro Area

 Since 2005, there has been positive turnover, which means number of people moving in Denver metro area exceeds number of people moving out. Especially, Boulder/ Broomfield county has the highest resident turnover based on overall result (*Figure 8*). At the third quarter of 2014, Denver had new residents the most, while Douglas reached its top-level of turnover in 2010. Furthermore, when I predict the future trend, resident turnover of Denver Metro area will decrease a little bit compared to last 3 years’ turnover.

 Another thing *Figure 8* shows us is there is a cyclical effect on resident turnover, such as fall season (September- November) is the highest, then summer (June- August), winter (December- February), and spring (March- May) has the lowest turnover.

Figure 8. Denver Metro Area- Quarterly Resident Turnover by County

conclusions

 I analyzed quarterly timeseries data, ranges from first quarter of 2008 to fourth quarter of 2017, collected from Denver Housing Authority’s Denver Metro apartment Vacancy & Rent report. I used Regression analysis and Descriptive statistics in order to predict future rent prices of Denver Metro areas’ apartments and see how the price differs between different counties.

 In a result of my analysis, regardless of its apartment type, one-bedroom, two- bedroom, three- bedroom, and counties, Adams, Arapahoe, Boulder/ Broomfield, Douglas, Denver, and Jefferson, the rent price of Denver metro area has been increasing continuously. To be more specific, Denver, Boulder/ Broomfield, and Douglas areas are the most expensive counties in rent, while Adams and Arapahoe are smaller than Metro average. According to my prediction, Denver Metro area’s average rent price will hit $2,814 point, which is three-bedroom apartment in Boulder/ Broomfield, the most at the end of 2021. Moreover, increase in one-bedroom apartment’s rent is going to be greater than other two apartment types in the future.

 There is a seasonal effect on resident turnover and fall is the season people move in more than summer, winter, and spring. Another interesting fact is there was big resident turnover in Denver at the third quarter of 2014. Unlike the rent price, resident turnover will be slowed down coming 4 years.

 In conclusion, I think my analysis about rent price of Denver Metro area is good, based on average R-squared of one-bedroom apartment regression is 96.86 percent, two-bedroom 95.99 percent, three-bedroom 92.06 percent, and resident turnover is 81.99 percent.

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Appendix 1: average rent of one-bedroom apartment in denver metro area by county in u.s dollars

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Qtr- Yr** | **Adams** | **Arapahoe** | **Boulder/ Broomfield** | **Denver** | **Douglas** | **Jefferson** | **Metro Average** |
| **Mar-08** | 717.07 | 715.97 | 834.33 | 784.21 | 895.89 | 730.26 | 759.28 |
| **Jun-08** | 765.23 | 722.66 | 847.52 | 822.74 | 922.36 | 736.34 | 781.73 |
| **Sep-08** | 752.28 | 729.4 | 868.08 | 814.55 | 927.68 | 754.7 | 782.91 |
| **Dec-08** | 745.74 | 738.7 | 850 | 808.35 | 874.49 | 729.24 | 775.89 |
| **Mar-09** | 736.51 | 738.98 | 843.51 | 806.46 | 861.4 | 723.15 | 772.32 |
| **Jun-09** | 748.66 | 709.33 | 880.02 | 790.7 | 861.56 | 720.93 | 760.75 |
| **Sep-09** | 725.94 | 738.43 | 859.59 | 798.49 | 900.19 | 724.18 | 770.94 |
| **Dec-09** | 695.11 | 722.13 | 844.49 | 793.86 | 874.91 | 725.32 | 756.42 |
| **Mar-10** | 754.64 | 731.76 | 850.1 | 793.92 | 908.53 | 726.04 | 770.29 |
| **Jun-10** | 770.89 | 737.27 | 882.44 | 818.1 | 917.84 | 745.26 | 787.18 |
| **Sep-10** | 784.46 | 754.9 | 876.48 | 819.69 | 949.36 | 766.7 | 798.11 |
| **Dec-10** | 769.27 | 762.02 | 878.39 | 823.59 | 936.07 | 752.94 | 795.33 |
| **Mar-11** | 789.71 | 755 | 875.48 | 834.82 | 946.23 | 740.47 | 799.9 |
| **Jun-11** | 766.82 | 759.68 | 893.63 | 839.2 | 921.16 | 764.29 | 799.5 |
| **Sep-11** | 822.1 | 763.5 | 905.02 | 866.16 | 946.09 | 787.22 | 819.58 |
| **Dec-11** | 797.86 | 775.02 | 929.51 | 864.7 | 921.35 | 789.83 | 822.47 |
| **Mar-12** | 816.52 | 787.86 | 942.26 | 881.34 | 949.78 | 807.02 | 838.93 |
| **Jun-12** | 789.62 | 814.37 | 962.03 | 904.86 | 948.13 | 827.41 | 856.38 |
| **Sep-12** | 778.08 | 816.94 | 1017.54 | 919.51 | 960.55 | 857.89 | 866.1 |
| **Dec-12** | 771.42 | 815.01 | 971.61 | 862.38 | 1003.31 | 841.52 | 848.3 |
| **Mar-13** | 794.79 | 823.7 | 991.77 | 901.61 | 1005.37 | 869.21 | 868.14 |
| **Jun-13** | 806.27 | 848.95 | 1041.22 | 915.25 | 1032.08 | 890.37 | 889.81 |
| **Sep-13** | 826.27 | 872.2 | 1045.16 | 950.36 | 1057.44 | 928.32 | 918.82 |
| **Dec-13** | 825.68 | 863.51 | 1059.93 | 968.23 | 1088.18 | 902.43 | 921.44 |
| **Mar-14** | 858.89 | 891.19 | 1070.57 | 995.39 | 1077.89 | 910.86 | 944.58 |
| **Jun-14** | 891.45 | 918.57 | 1091.72 | 1023.56 | 1166.51 | 983.94 | 981.36 |
| **Sep-14** | 927.93 | 960.11 | 1147.34 | 1020.35 | 1181.59 | 1017.75 | 1006.14 |
| **Dec-14** | 951.44 | 975.63 | 1187.06 | 1075.16 | 1193.55 | 1003.25 | 1034.51 |
| **Mar-15** | 991.77 | 1004.95 | 1204.03 | 1099.71 | 1205.83 | 1046.1 | 1061.91 |
| **Jun-15** | 1026.21 | 1065.38 | 1291.93 | 1162.81 | 1299.23 | 1088.19 | 1121.21 |
| **Sep-15** | 1063.53 | 1079.96 | 1340.98 | 1185.83 | 1268.93 | 1132.98 | 1149.3 |
| **Dec-15** | 1040.74 | 1069.55 | 1339.78 | 1198.8 | 1252.74 | 1132 | 1148.28 |
| **Mar-16** | 1083.28 | 1078.34 | 1315.91 | 1216.23 | 1301.34 | 1163.37 | 1169.61 |
| **Jun-16** | 1147.29 | 1139.44 | 1356.71 | 1255.28 | 1349.18 | 1191.17 | 1217.53 |
| **Sep-16** | 1107.5 | 1147.85 | 1339.47 | 1272.17 | 1325.19 | 1204.55 | 1220.57 |
| **Dec-16** | 1094.17 | 1136.57 | 1334.48 | 1250.03 | 1316.47 | 1166.24 | 1201.88 |
| **Mar-17** | 1114.29 | 1156.98 | 1396.38 | 1279.21 | 1354.35 | 1226.94 | 1234.01 |
| **Jun-17** | 1163.52 | 1188.72 | 1430.88 | 1300.58 | 1348.37 | 1245.74 | 1263.51 |
| **Sep-17** | 1168.39 | 1177.54 | 1418.66 | 1314.05 | 1351.84 | 1245.08 | 1264.06 |
| **Dec-17** | 1143.86 | 1174.92 | 1366.6 | 1306.18 | 1347.82 | 1250.12 | 1251.17 |
| ***Mar-18*** | *1242.33* | *1272.05* | *1517.98* | *1410.83* | *1462.80* | *1346.76* | *1361.56* |
| ***Jun-18*** | *1271.15* | *1300.98* | *1550.80* | *1443.71* | *1491.16* | *1378.47* | *1393.60* |
| ***Sep-18*** | *1300.76* | *1330.64* | *1584.37* | *1477.44* | *1520.19* | *1410.96* | *1426.48* |
| ***Dec-18*** | *1330.84* | *1360.70* | *1618.32* | *1511.65* | *1549.56* | *1443.86* | *1459.83* |
| ***Mar-19*** | *1361.36* | *1391.14* | *1652.63* | *1546.30* | *1579.25* | *1477.14* | *1493.61* |
| ***Jun-19*** | *1393.36* | *1422.99* | *1688.45* | *1582.56* | *1610.25* | *1511.93* | *1528.97* |
| ***Sep-19*** | *1426.15* | *1455.56* | *1725.02* | *1619.68* | *1641.92* | *1547.50* | *1565.16* |
| ***Dec-19*** | *1459.38* | *1488.51* | *1761.94* | *1657.24* | *1673.90* | *1583.45* | *1601.78* |
| ***Mar-20*** | *1493.40* | *1522.18* | *1799.61* | *1695.63* | *1706.53* | *1620.15* | *1639.22* |
| ***Jun-20*** | *1528.58* | *1556.95* | *1838.44* | *1735.29* | *1740.17* | *1658.03* | *1677.89* |
| ***Sep-20*** | *1564.57* | *1592.45* | *1878.02* | *1775.80* | *1774.49* | *1696.69* | *1717.41* |
| ***Dec-20*** | *1600.95* | *1628.29* | *1917.92* | *1816.72* | *1809.08* | *1735.69* | *1757.31* |
| ***Mar-21*** | *1637.71* | *1664.44* | *1958.12* | *1858.00* | *1843.93* | *1775.00* | *1797.58* |
| ***Jun-21*** | *1676.08* | *1702.13* | *1999.95* | *1901.05* | *1880.22* | *1815.96* | *1839.57* |
| ***Sep-21*** | *1715.25* | *1740.55* | *2042.54* | *1944.95* | *1917.17* | *1857.70* | *1882.40* |
| ***Dec-21*** | *1754.79* | *1779.27* | *2085.41* | *1989.22* | *1954.37* | *1899.75* | *1925.58* |

Table 1. Average Rent of One-Bedroom Apartment in Denver Metro

Appendix 2: average rent of two-bedroom apartment in denver metro area by county in u.s dollars

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Qtr- Yr** | **Adams** | **Arapahoe** | **Boulder/ Broomfield** | **Denver** | **Douglas** | **Jefferson** | **Metro Average** |
| **Mar-08** | 963.46 | 972.83 | 1124.72 | 1103.91 | 1136.87 | 943.3 | 1020.84 |
| **Jun-08** | 1016.66 | 968.01 | 1128.19 | 1137.85 | 1166.03 | 971.72 | 1040.72 |
| **Sep-08** | 1020.4 | 998.71 | 1153.34 | 1131.52 | 1153.7 | 988.27 | 1052.78 |
| **Dec-08** | 1013.34 | 1021.66 | 1137.12 | 1149.92 | 1128.07 | 953.89 | 1056.04 |
| **Mar-09** | 1006.93 | 1001.23 | 1087.21 | 1169.04 | 1131.33 | 936.59 | 1043.45 |
| **Jun-09** | 1009.62 | 978.55 | 1104.97 | 1126.14 | 1115.79 | 936.01 | 1027.33 |
| **Sep-09** | 970.65 | 1025.35 | 1117.28 | 1097.55 | 1187.23 | 951.02 | 1042.66 |
| **Dec-09** | 923 | 1001.19 | 1085.42 | 1163.05 | 1144.54 | 962.08 | 1035.87 |
| **Mar-10** | 1013.25 | 974.12 | 1095.48 | 1108.16 | 1180.02 | 969.19 | 1032.92 |
| **Jun-10** | 1012.72 | 1004.12 | 1180.2 | 1143.62 | 1197.13 | 965.82 | 1058.99 |
| **Sep-10** | 1035.89 | 1044.61 | 1167.59 | 1125.83 | 1217.95 | 985.51 | 1074.7 |
| **Dec-10** | 1030.5 | 1046.47 | 1172.99 | 1135.9 | 1176.85 | 954.99 | 1068.95 |
| **Mar-11** | 1036.53 | 1035.97 | 1170 | 1133.45 | 1220.34 | 973.16 | 1071.28 |
| **Jun-11** | 1047.53 | 1055.76 | 1168.75 | 1147.66 | 1214.56 | 994.94 | 1085.16 |
| **Sep-11** | 1080.14 | 1052.06 | 1193.74 | 1166.21 | 1253.3 | 1008.49 | 1097.1 |
| **Dec-11** | 1051.87 | 1061.6 | 1197.83 | 1181.63 | 1249.01 | 1000.72 | 1098.45 |
| **Mar-12** | 1116.15 | 1068.62 | 1255.23 | 1250.83 | 1233.92 | 1018.26 | 1130.98 |
| **Jun-12** | 1062.6 | 1131.74 | 1267.41 | 1290.11 | 1267.69 | 1037.18 | 1162.32 |
| **Sep-12** | 1067.54 | 1137.46 | 1272.76 | 1298.8 | 1281.57 | 1081.12 | 1174.35 |
| **Dec-12** | 1061.47 | 1133.25 | 1273.8 | 1250.77 | 1324.29 | 1103.71 | 1170.7 |
| **Mar-13** | 1077.02 | 1116.6 | 1354.92 | 1302.49 | 1329.91 | 1107.51 | 1182.71 |
| **Jun-13** | 1116.03 | 1152.42 | 1412.06 | 1327 | 1412.23 | 1178.82 | 1227.38 |
| **Sep-13** | 1150.05 | 1179.87 | 1439.82 | 1362.69 | 1371.85 | 1208.44 | 1254.11 |
| **Dec-13** | 1129.35 | 1165.74 | 1412.58 | 1353.31 | 1352.49 | 1143.89 | 1233.91 |
| **Mar-14** | 1170.24 | 1199.19 | 1428.48 | 1404.81 | 1404.82 | 1205.68 | 1275.91 |
| **Jun-14** | 1234.15 | 1265.02 | 1497 | 1449.08 | 1502.41 | 1260.47 | 1338.16 |
| **Sep-14** | 1265.21 | 1308.75 | 1516.8 | 1451.92 | 1534.33 | 1342.47 | 1369.9 |
| **Dec-14** | 1302.52 | 1305.64 | 1563.65 | 1520.75 | 1527.71 | 1277.67 | 1383.44 |
| **Mar-15** | 1348.87 | 1363.69 | 1546.96 | 1544.75 | 1559.79 | 1319 | 1424.79 |
| **Jun-15** | 1365.6 | 1427.39 | 1713.69 | 1620.84 | 1621.63 | 1405.67 | 1492.88 |
| **Sep-15** | 1419.78 | 1410.87 | 1769.45 | 1621.56 | 1649.07 | 1438.28 | 1516.37 |
| **Dec-15** | 1384.01 | 1412.23 | 1692.7 | 1647.18 | 1585.83 | 1439.09 | 1508.34 |
| **Mar-16** | 1435.67 | 1433.46 | 1682.17 | 1658.62 | 1664.34 | 1486.82 | 1542.56 |
| **Jun-16** | 1524.03 | 1498.93 | 1723.35 | 1738.39 | 1682.64 | 1511.81 | 1604.44 |
| **Sep-16** | 1448.82 | 1473.33 | 1715.13 | 1757.12 | 1652.32 | 1515.66 | 1584.66 |
| **Dec-16** | 1442.82 | 1466.21 | 1725.56 | 1732.51 | 1624.33 | 1483.2 | 1569.46 |
| **Mar-17** | 1482.15 | 1510.71 | 1798.01 | 1747.82 | 1683.17 | 1535.87 | 1613.52 |
| **Jun-17** | 1533.22 | 1574.67 | 1853.84 | 1794.2 | 1701.26 | 1544.64 | 1661.65 |
| **Sep-17** | 1506.84 | 1540.11 | 1754.81 | 1824.56 | 1683.97 | 1541.18 | 1648.08 |
| **Dec-17** | 1500.18 | 1515.64 | 1734.36 | 1778.04 | 1672.55 | 1585.27 | 1626.23 |
| ***Mar-18*** | *1625.00* | *1638.41* | *1922.53* | *1933.42* | *1796.45* | *1689.14* | *1689.14* |
| ***Jun-18*** | *1658.72* | *1670.31* | *1958.58* | *1975.37* | *1823.42* | *1726.69* | *1726.69* |
| ***Sep-18*** | *1693.31* | *1702.97* | *1995.34* | *2018.35* | *1850.86* | *1765.15* | *1765.15* |
| ***Dec-18*** | *1728.38* | *1736.03* | *2032.42* | *2061.89* | *1878.47* | *1804.09* | *1804.09* |
| ***Mar-19*** | *1763.90* | *1769.46* | *2069.78* | *2105.95* | *1906.21* | *1843.47* | *1843.47* |
| ***Jun-19*** | *1801.06* | *1804.38* | *2108.67* | *2152.01* | *1935.04* | *1884.62* | *1884.62* |
| ***Sep-19*** | *1839.09* | *1840.07* | *2148.29* | *2199.11* | *1964.33* | *1926.67* | *1926.67* |
| ***Dec-19*** | *1877.56* | *1876.13* | *2188.18* | *2246.72* | *1993.77* | *1969.17* | *1969.17* |
| ***Mar-20*** | *1916.88* | *1912.92* | *2228.77* | *2295.35* | *2023.66* | *2012.54* | *2012.54* |
| ***Jun-20*** | *1957.50* | *1950.89* | *2270.52* | *2345.54* | *2054.34* | *2057.30* | *2057.30* |
| ***Sep-20*** | *1998.98* | *1989.61* | *2312.99* | *2396.77* | *2085.50* | *2102.97* | *2102.97* |
| ***Dec-20*** | *2040.87* | *2028.67* | *2355.71* | *2448.46* | *2116.77* | *2149.03* | *2149.03* |
| ***Mar-21*** | *2083.13* | *2068.03* | *2398.64* | *2500.59* | *2148.15* | *2195.45* | *2195.45* |
| ***Jun-21*** | *2127.19* | *2109.02* | *2443.24* | *2554.90* | *2180.69* | *2243.81* | *2243.81* |
| ***Sep-21*** | *2172.12* | *2150.77* | *2488.56* | *2610.25* | *2213.69* | *2293.07* | *2293.07* |
| ***Dec-21*** | *2217.41* | *2192.82* | *2534.09* | *2666.02* | *2246.80* | *2342.69* | *2342.69* |

Table 2. Average Rent of Two-Bedroom Apartment in Denver Metro

Appendix 3: average rent of three-bedroom apartment in denver metro area by county in u.s dollars

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Qtr- Yr** | **Adams** | **Arapahoe** | **Boulder/ Broomfield** | **Denver** | **Douglas** | **Jefferson** | **Metro Average** |
| **Mar-08** | 1199.67 | 1179.71 | 1258.75 | 1529.22 | 1363.59 | 1059.12 | 1230.57 |
| **Jun-08** | 1270.6 | 1225.42 | 1220.86 | 1490.17 | 1367.92 | 1084.21 | 1261.69 |
| **Sep-08** | 1291.58 | 1274.25 | 1285.12 | 1411.77 | 1435.08 | 1127.62 | 1290.76 |
| **Dec-08** | 1256.68 | 1236.44 | 1291.99 | 1405.35 | 1263.63 | 1086.38 | 1258.64 |
| **Mar-09** | 1204.98 | 1269.28 | 1216.97 | 1495.73 | 1319.2 | 1080.05 | 1245.42 |
| **Jun-09** | 1237.07 | 1218.78 | 1280.24 | 1456.48 | 1354.96 | 1119.47 | 1250.45 |
| **Sep-09** | 1125.97 | 1206.83 | 1283.15 | 1439.59 | 1446.95 | 1118.76 | 1229.25 |
| **Dec-09** | 1077.46 | 1255.12 | 1320.96 | 1397.92 | 1406.91 | 1122.91 | 1222.57 |
| **Mar-10** | 1113.73 | 1235.9 | 1317.18 | 1263.72 | 1474.66 | 1111.09 | 1216.55 |
| **Jun-10** | 1173.47 | 1262.3 | 1381.29 | 1321.12 | 1555.55 | 1133.51 | 1267.18 |
| **Sep-10** | 1203.03 | 1299.39 | 1376.1 | 1309.38 | 1567.48 | 1157.06 | 1285.56 |
| **Dec-10** | 1200.72 | 1325.81 | 1292.24 | 1332.35 | 1545.91 | 1156.45 | 1283.99 |
| **Mar-11** | 1255.98 | 1283.6 | 1375.22 | 1318.35 | 1503.32 | 1164.89 | 1286.43 |
| **Jun-11** | 1204.07 | 1322.59 | 1371.89 | 1301.38 | 1550.72 | 1184.76 | 1292.61 |
| **Sep-11** | 1308.25 | 1305.15 | 1374 | 1448.66 | 1590.98 | 1221.11 | 1336.55 |
| **Dec-11** | 1236.8 | 1289.19 | 1390.5 | 1381.17 | 1452.82 | 1219.64 | 1295 |
| **Mar-12** | 1246.64 | 1302.07 | 1453.69 | 1420.19 | 1516.24 | 1213.65 | 1316.48 |
| **Jun-12** | 1241.14 | 1376.53 | 1455.25 | 1429.85 | 1612.31 | 1229.41 | 1359.15 |
| **Sep-12** | 1282.64 | 1375.89 | 1512.71 | 1494.5 | 1544.48 | 1241.19 | 1374.33 |
| **Dec-12** | 1283.09 | 1392.63 | 1472.61 | 1653.35 | 1621.09 | 1241.3 | 1406.98 |
| **Mar-13** | 1315.65 | 1356.72 | 1526.98 | 1424.02 | 1605.32 | 1235.79 | 1378.91 |
| **Jun-13** | 1358.96 | 1390.48 | 1568.64 | 1457.73 | 1704.51 | 1284.5 | 1421.42 |
| **Sep-13** | 1479.06 | 1431.93 | 1583.28 | 1471.85 | 1644.69 | 1372.52 | 1469.13 |
| **Dec-13** | 1282.23 | 1429.87 | 1579.45 | 1576.77 | 1636.38 | 1310.14 | 1437.85 |
| **Mar-14** | 1402.53 | 1452.84 | 1644.45 | 1473.5 | 1686.15 | 1334.54 | 1473.59 |
| **Jun-14** | 1427.92 | 1562.96 | 1655.63 | 1575.54 | 1785.16 | 1441.69 | 1548.5 |
| **Sep-14** | 1476.72 | 1619.44 | 1617.55 | 1601.54 | 1893.15 | 1506.48 | 1591.57 |
| **Dec-14** | 1518.36 | 1656.59 | 1687.07 | 1824.68 | 1874.46 | 1486.25 | 1635.19 |
| **Mar-15** | 1673.17 | 1735.84 | 1666.23 | 1807.69 | 1867.5 | 1529.28 | 1692.2 |
| **Jun-15** | 1715.27 | 1815.87 | 1861.13 | 1826.67 | 1999.32 | 1648.53 | 1787.96 |
| **Sep-15** | 1673.31 | 1768.32 | 2008.62 | 1626.74 | 1924.9 | 1698.3 | 1758.19 |
| **Dec-15** | 1729.76 | 1810.5 | 1987.45 | 1859.66 | 1925.37 | 1673.83 | 1808.21 |
| **Mar-16** | 1794.45 | 1839.74 | 1945.43 | 1910.65 | 1967.81 | 1706.44 | 1841.36 |
| **Jun-16** | 1844.95 | 1899.14 | 2028.99 | 1936.51 | 2118.03 | 1755.01 | 1910.72 |
| **Sep-16** | 1798.54 | 1894.73 | 2055.03 | 1928.78 | 2035.08 | 1834.83 | 1901.95 |
| **Dec-16** | 1748.8 | 1872.45 | 2067.05 | 1802.83 | 1985.78 | 1747.33 | 1844.89 |
| **Mar-17** | 1787.02 | 1904.13 | 2121.87 | 1941.96 | 2004.1 | 1753.19 | 1893.68 |
| **Jun-17** | 1845.72 | 1969.16 | 2055.74 | 1990.38 | 2089.77 | 1789.38 | 1942.36 |
| **Sep-17** | 1833.6 | 1933.57 | 1935.73 | 1849.84 | 1983.83 | 1770.28 | 1876.83 |
| **Dec-17** | 1784.71 | 1885.28 | 1980.48 | 1776.66 | 1997.02 | 1814.62 | 1854.81 |
| ***Mar-18*** | *2000.87* | *2087.96* | *2193.83* | *2068.75* | *2139.35* | *1948.71* | *2063.53* |
| ***Jun-18*** | *2047.36* | *2132.25* | *2235.5* | *2110.91* | *2166.41* | *1991.2* | *2106.43* |
| ***Sep-18*** | *2095.16* | *2177.64* | *2278.02* | *2154.35* | *2193.81* | *2034.68* | *2150.41* |
| ***Dec-18*** | *2143.7* | *2223.6* | *2320.92* | *2198.59* | *2221.22* | *2078.68* | *2194.97* |
| ***Mar-19*** | *2192.98* | *2270.12* | *2364.16* | *2243.57* | *2248.64* | *2123.16* | *2240.08* |
| ***Jun-19*** | *2244.62* | *2318.75* | *2409.22* | *2290.82* | *2276.99* | *2169.63* | *2287.25* |
| ***Sep-19*** | *2297.57* | *2368.48* | *2455.12* | *2339.36* | *2305.67* | *2217.11* | *2335.49* |
| ***Dec-19*** | *2351.22* | *2418.75* | *2501.37* | *2388.63* | *2334.36* | *2265.06* | *2384.27* |
| ***Mar-20*** | *2406.15* | *2470.08* | *2548.45* | *2439.16* | *2363.36* | *2313.99* | *2434.09* |
| ***Jun-20*** | *2462.96* | *2523.07* | *2596.9* | *2491.52* | *2393* | *2364.46* | *2485.53* |
| ***Sep-20*** | *2521.08* | *2577.16* | *2646.2* | *2545.17* | *2422.97* | *2415.94* | *2538.05* |
| ***Dec-20*** | *2579.85* | *2631.73* | *2695.81* | *2599.49* | *2452.93* | *2467.85* | *2591.05* |
| ***Mar-21*** | *2639.22* | *2686.76* | *2745.69* | *2654.45* | *2482.88* | *2520.15* | *2644.5* |
| ***Jun-21*** | *2701.19* | *2744.09* | *2797.53* | *2711.91* | *2513.82* | *2574.62* | *2700.21* |
| ***Sep-21*** | *2764.47* | *2802.52* | *2850.22* | *2770.64* | *2545.06* | *2630.08* | *2756.99* |
| ***Dec-21*** | *2828.33* | *2861.39* | *2903.18* | *2830.01* | *2576.3* | *2685.94* | *2814.2* |

Table 3. Average Rent of Three-Bedroom Apartment in Denver Metro