

# Sujal\_Maheshwari\_Clustering

Aa CustomerID	☰ CustomerName	📅 SignupDate	# total_spent	# total_transactions	# avg_transaction_value	# distinct_products
<u>C0001</u>	Lawrence Carroll	@July 10, 2022	3354.520000000000	5	670.904000000000	5
<u>C0002</u>	Elizabeth Lutz	@February 13, 2022	1862.74	4	465.685	4
<u>C0003</u>	Michael Rivera	@March 7, 2024	2725.38	4	681.345	4
<u>C0004</u>	Kathleen Rodriguez	@October 9, 2022	5354.88	8	669.36	8
<u>C0005</u>	Laura Weber	@August 15, 2022	2034.24	3	678.08	3
<u>C0006</u>	Brittany Palmer	@January 7, 2024	4227.57	4	1056.8925	4
<u>C0007</u>	Paul Graves	@June 18, 2022	2579.820000000000	3	859.940000000000	3
<u>C0008</u>	David Li	@January 13, 2024	4271.61	10	427.161000000000	10
<u>C0009</u>	Joy Clark	@August 14, 2023	896.5	3	298.833333333333	3
<u>C0010</u>	Aaron Cox	@December 15, 2022	1717.550000000000	4	429.387500000000	4
<u>C0011</u>	Bryan Mathews	@December 12, 2022	3730	5	746	5
<u>C0012</u>	Kevin May	@August 7, 2024	5231.259999999999	7	747.322857142857	6
<u>C0013</u>	Lauren Buchanan	@May 19, 2024	6000.56	7	857.222857142857	7
<u>C0014</u>	Deborah Wilcox	@June 22, 2024	318.66	1	318.66	1
<u>C0015</u>	Tina Duran	@November 20, 2023	1157.48	2	578.74	2
<u>C0016</u>	Emily Woods	@January 3, 2024	3874.42	5	774.884	5
<u>C0017</u>	Jennifer King	@December 5, 2023	4753.82	8	594.2275	8
<u>C0018</u>	Tyler Haynes	@September 21, 2024	4781.85	5	956.370000000000	5
<u>C0019</u>	Brandon Rodriguez	@January 12, 2023	2185.820000000000	6	364.303333333333	6
<u>C0020</u>	Mr. Manuel Conway	@June 11, 2024	922.41	1	922.41	1
<u>C0021</u>	Robert Blanchard	@April 17, 2023	5419.92	8	677.49	8
<u>C0022</u>	Teresa Esparza	@October 27, 2023	4655.07	6	775.845000000000	6
<u>C0023</u>	Nicholas Cain	@March 4, 2022	5158.65	6	859.775	6
<u>C0024</u>	Michele Cooley	@February 5, 2024	3627.02	7	518.145714285714	7
<u>C0025</u>	Gregory Odom	@July 4, 2022	1589.81	4	397.4525	4
<u>C0026</u>	Sara Miller	@May 3, 2024	3549.05	4	887.2625	4
<u>C0027</u>	Justin Heath	@November 9, 2022	2562.94	4	640.735	4
<u>C0028</u>	Jennifer Pena	@June 29, 2024	6819.57	8	852.44625	6
<u>C0029</u>	Erin Manning	@April 16, 2022	1785.870000000000	4	446.467500000000	4
<u>C0030</u>	Mark Brock	@January 30, 2024	2549.680000000000	5	509.936000000000	5
<u>C0031</u>	Tina Miller	@April 11, 2024	2005.38	4	501.345	4
<u>C0032</u>	Dustin Campbell	@April 17, 2024	673	3	224.333333333333	3
<u>C0033</u>	Tyler Holt	@August 4, 2024	132.64	1	132.64	1

Aa CustomerID	☰ CustomerName	📅 SignupDate	# total_spent	# total_transactions	# avg_transaction_value	# distinct_products
<u>C0034</u>	Dalton Perez	@September 27, 2023	3073.200000000000	6	512.2	6
<u>C0035</u>	Brianna Richardson	@October 1, 2024	2587.61	4	646.9025	4
<u>C0036</u>	Brian Aguilar DDS	@July 6, 2024	1877.96	3	625.986666666667	3
<u>C0037</u>	Linda Smith	@February 4, 2023	4252.77	5	850.554000000000	5
<u>C0038</u>	Jeffrey Perkins	@April 16, 2022	2696.85	5	539.37	5
<u>C0039</u>	Angela Harris	@October 13, 2024	4239.6	6	706.6	6
<u>C0040</u>	Michael Harrell	@March 7, 2022	3969.400000000000	3	1323.133333333333	2
<u>C0041</u>	Lindsey Deleon	@December 27, 2023	6149.78	7	878.54	7
<u>C0042</u>	Heather Riley	@March 15, 2023	2402.49	3	800.830000000000	3
<u>C0043</u>	Sandy Short MD	@February 5, 2023	1131.320000000000	3	377.106666666667	3
<u>C0044</u>	Kenneth Alexander	@July 10, 2024	3230.110000000000	3	1076.703333333333	3
<u>C0045</u>	Michael Williams	@February 25, 2022	6021.8	7	860.257142857143	7
<u>C0046</u>	Beth Cardenas	@October 23, 2024	5627.83	7	803.975714285714	7
<u>C0047</u>	Samantha Frank	@March 22, 2024	2870.54	7	410.077142857143	7
<u>C0048</u>	Matthew Park	@November 7, 2024	3850.940000000000	5	770.188000000000	5
<u>C0049</u>	Jason Yates	@September 18, 2024	2315.48	8	289.435	8
<u>C0050</u>	Ryan Davis	@March 2, 2024	3068.83	3	1022.943333333333	3
<u>C0051</u>	Nicholas Ellis	@December 21, 2023	5699.57	7	814.224285714286	7
<u>C0052</u>	Stanley Aguirre	@February 20, 2024	2488.01	4	622.0025	3
<u>C0053</u>	Albert Burke	@June 18, 2022	5316.46	6	886.076666666667	6
<u>C0054</u>	Bruce Rhodes	@September 29, 2024	8040.389999999999	8	1005.048750000000	8
<u>C0055</u>	Lauren Williams	@November 11, 2024	2857.680000000000	5	571.536000000000	5
<u>C0056</u>	Erika Fernandez	@April 12, 2024	3182.94	5	636.588	5
<u>C0057</u>	Elizabeth Nguyen	@July 27, 2024	4536.4	6	756.066666666667	6
<u>C0058</u>	Zachary Turner	@January 28, 2024	396.34	1	396.34	1
<u>C0059</u>	Mrs. Kimberly Wright	@April 7, 2024	7073.28	8	884.16	8
<u>C0060</u>	James Murphy	@April 22, 2022	82.36	1	82.36	1
<u>C0061</u>	Brandon Escobar	@March 6, 2023	2138.26	3	712.753333333333	3
<u>C0062</u>	Jeffery Hartman	@December 14, 2022	1639.54	3	546.513333333333	2
<u>C0063</u>	Wayne Ferguson	@February 5, 2024	1378.170000000000	2	689.085000000000	2
<u>C0064</u>	Martha Montgomery	@October 22, 2023	4039.77	5	807.954	5
<u>C0065</u>	Gerald Hines	@July 10, 2024	7663.7	10	766.37	10

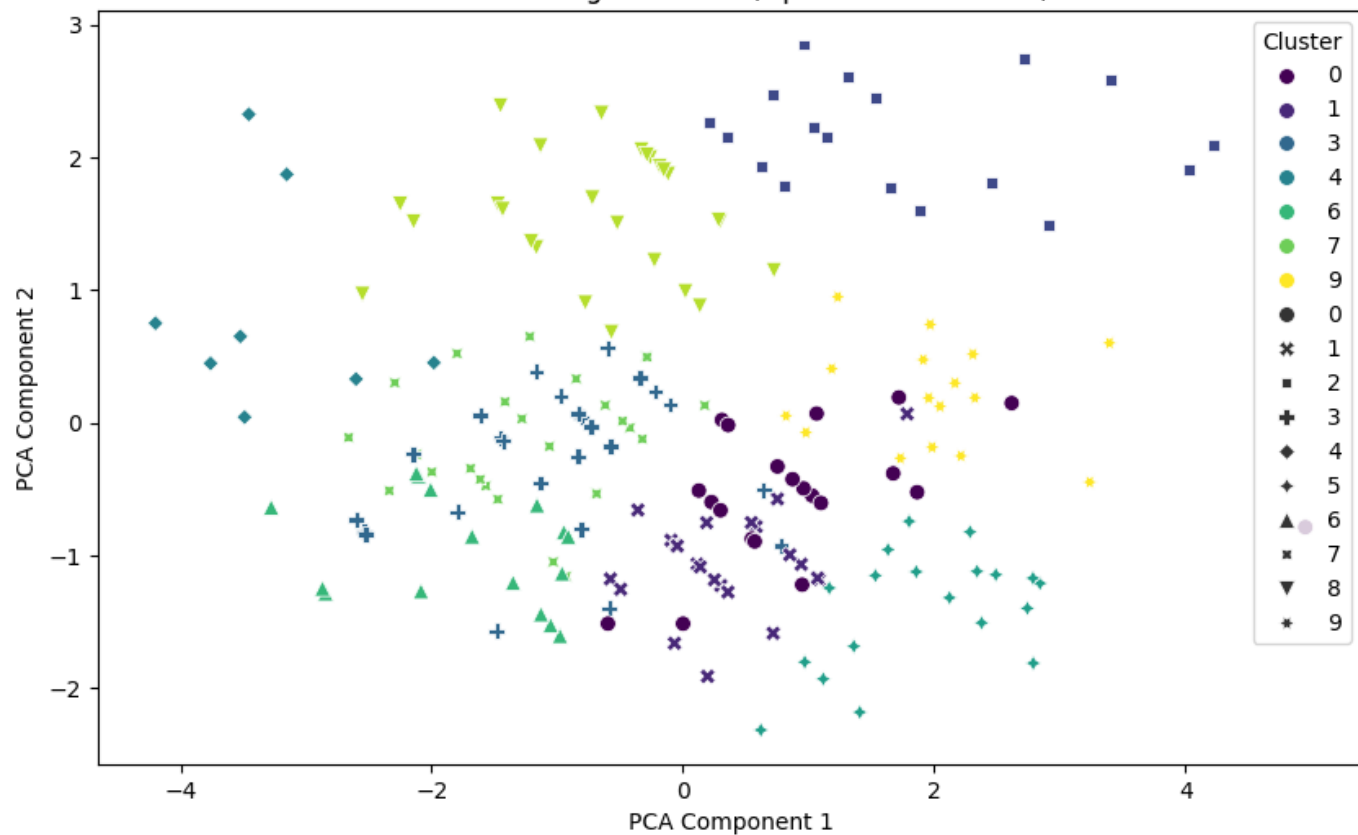
Aa CustomerID	☰ CustomerName	📅 SignupDate	# total_spent	# total_transactions	# avg_transaction_value	# distinct_products
<u>C0066</u>	Catherine White	@November 15, 2024	3799.2800000000000	3	1266.4266666666667	3
<u>C0067</u>	Carl Gonzalez	@July 6, 2023	4090.84	6	681.8066666666667	6
<u>C0068</u>	Mark Cox	@April 4, 2023	5950.42	8	743.8025	8
<u>C0069</u>	Stacy Foster	@December 3, 2023	2878.69	5	575.738	5
<u>C0070</u>	Timothy Perez	@March 15, 2022	3125.49	4	781.3725	4
<u>C0071</u>	Taylor Murphy	@July 1, 2022	1400.83	3	466.9433333333333	3
<u>C0072</u>	Sarah Scott	@July 24, 2024	2999.59	5	599.918	5
<u>C0073</u>	Heidi Johnson	@August 20, 2022	2060.54	3	686.8466666666667	3
<u>C0074</u>	Jonathan Russo	@May 27, 2022	3055.2200000000000	3	1018.4066666666667	3
<u>C0075</u>	Misty Higgins	@May 1, 2023	5848.97	9	649.8855555555556	9
<u>C0076</u>	Emily Roberts	@February 11, 2024	2333.06	5	466.6120000000000	5
<u>C0077</u>	Scott Sims	@October 18, 2023	837.3	3	279.1000000000000	3
<u>C0078</u>	Julia Palmer	@November 13, 2024	995.52	1	995.52	1
<u>C0079</u>	Brian Murillo	@February 2, 2022	4251.5600000000000	4	1062.8900000000000	4
<u>C0080</u>	David Gonzalez	@February 7, 2024	1007.52	1	1007.52	1
<u>C0081</u>	Kimberly Turner	@February 24, 2024	3542.48	6	590.4133333333333	6
<u>C0082</u>	Aimee Taylor	@May 13, 2022	7572.91	7	1081.844285714286	7
<u>C0083</u>	Christina Stark	@April 7, 2022	642.8	3	214.2666666666667	3
<u>C0084</u>	Belinda Garner	@September 17, 2024	4441.1	9	493.4555555555556	8
<u>C0085</u>	Richard Brown	@September 22, 2024	2598.33	3	866.11	3
<u>C0086</u>	Stephanie Peterson	@September 18, 2022	2754.68	5	550.9360000000000	5
<u>C0087</u>	Travis Campbell	@April 11, 2024	6604.23	7	943.461428571429	7
<u>C0088</u>	Carlos Murray	@May 14, 2023	2135.38	5	427.076	5
<u>C0089</u>	Paul Carter	@April 2, 2024	2556.2200000000000	2	1278.1100000000000	2
<u>C0090</u>	Charles Hamilton	@October 17, 2023	4138.16	7	591.165714285714	7
<u>C0091</u>	Lisa Kirk	@March 16, 2023	3137.66	6	522.9433333333333	5
<u>C0092</u>	Jacqueline Zamora	@May 29, 2024	3015.95	4	753.9875	3
<u>C0093</u>	Nancy Walker	@July 13, 2024	5294.99	9	588.3322222222222	8
<u>C0094</u>	Emily Trevino	@September 16, 2023	1166.97	4	291.7425	4
<u>C0095</u>	William Walker	@March 4, 2023	1284.27	2	642.135	2
<u>C0096</u>	Benjamin McClure	@November 18, 2022	6072.92	5	1214.584	5
<u>C0097</u>	Tina Ford	@December 18, 2023	137.54	1	137.54	1
<u>C0098</u>	Laura Gilbert	@October 21, 2024	3158.02	8	394.7525	8
<u>C0099</u>	Rodney Eaton	@January 29, 2023	6715.72	8	839.465	8
<u>C0100</u>	Clinton Gomez	@March 16, 2023	5003.45	6	833.9083333333333	6
<u>C0101</u>	Kelsey Roberts	@September 30, 2023	5550.99	8	693.87375	7

Aa CustomerID	☰ CustomerName	📅 SignupDate	# total_spent	# total_transactions	# avg_transaction_value	# distinct_products
<a href="#">C0102</a>	Michael Atkinson	@September 16, 2022	6132.3600000000001	8	766.5450000000000	7
<a href="#">C0103</a>	Jennifer Munoz	@May 15, 2022	2462.5500000000000	5	492.5100000000000	5
<a href="#">C0104</a>	Laura Bennett	@February 10, 2022	6579.1	8	822.3875	8
<a href="#">C0105</a>	Ryan Hampton	@November 11, 2024	4807.45	6	801.2416666666667	6
<a href="#">C0106</a>	Amanda McGuire	@September 22, 2022	2939.3	5	587.86	5
<a href="#">C0107</a>	Dana Cantrell	@February 7, 2023	3623.92	5	724.784	5
<a href="#">C0108</a>	David Davis	@September 28, 2022	4848.54	7	692.648571428572	7
<a href="#">C0109</a>	Abigail Jones	@May 9, 2022	5487.25	11	498.840909090909	10
<a href="#">C0110</a>	Elizabeth Wells	@September 21, 2024	942.32	1	942.32	1
<a href="#">C0111</a>	Roger David	@November 13, 2024	1973.02	5	394.604	5
<a href="#">C0112</a>	Brian Adkins	@July 7, 2022	1959.51	3	653.17	3
<a href="#">C0113</a>	Joseph Ortiz Jr.	@June 17, 2022	4812.1	8	601.5125	7
<a href="#">C0114</a>	Benjamin Anderson	@November 18, 2024	5780.43	5	1156.086	5
<a href="#">C0115</a>	Joshua Hamilton	@November 11, 2024	3137.18	3	1045.7266666666667	3
<a href="#">C0116</a>	James Martinez	@September 11, 2024	2758.6800000000000	6	459.7800000000000	6
<a href="#">C0117</a>	Jeffrey McMahon	@November 22, 2024	4028.2700000000000	4	1007.0675000000000	4
<a href="#">C0118</a>	Jacob Holt	@January 22, 2022	3434.77	6	572.4616666666667	6
<a href="#">C0119</a>	David Armstrong	@November 13, 2023	1191.61	5	238.3220000000000	5
<a href="#">C0120</a>	Francisco Diaz	@January 13, 2023	2470.02	3	823.34	3
<a href="#">C0121</a>	Mark Atkinson	@July 23, 2023	974.52	4	243.63	4
<a href="#">C0122</a>	Corey Ruiz	@May 6, 2022	5072.55	7	724.65	7
<a href="#">C0123</a>	Jason Johnston	@November 5, 2023	1400.06	2	700.03	2
<a href="#">C0124</a>	Lindsay Perez	@August 26, 2024	4264.33	7	609.1900000000000	7
<a href="#">C0125</a>	Nicholas Taylor	@December 18, 2022	2973.96	4	743.49	4
<a href="#">C0126</a>	Caitlin Brown	@February 20, 2024	4565.57	6	760.9283333333333	6
<a href="#">C0127</a>	Kathryn Stevens	@April 4, 2024	3232.88	6	538.8133333333333	6
<a href="#">C0128</a>	Henry Leach	@May 29, 2023	773.19	2	386.595	2
<a href="#">C0129</a>	Marcus Livingston	@April 14, 2024	2339.61	3	779.87	3
<a href="#">C0130</a>	Robert Jones	@April 19, 2023	601.36	1	601.36	1
<a href="#">C0131</a>	Scott Wilson	@June 5, 2022	1943.82	3	647.9400000000000	3
<a href="#">C0132</a>	Lisa Jackson	@February 1, 2023	1851.2600000000000	3	617.0866666666667	2
<a href="#">C0133</a>	Gwendolyn Carter	@March 11, 2023	2884.33	4	721.0825	4
<a href="#">C0134</a>	Theresa Gonzalez	@February 19, 2022	2679.28	5	535.856	5

Aa CustomerID	☰ CustomerName	📅 SignupDate	# total_spent	# total_transactions	# avg_transaction_value	# distinct_products
<a href="#">C0135</a>	Toni Weaver	@August 23, 2022	3135.58	4	783.895	4
<a href="#">C0136</a>	Kristen Holder	@March 14, 2024	4298.99	6	716.498333333333	6
<a href="#">C0137</a>	Robert Gardner	@April 9, 2024	3332.55	5	666.51	5
<a href="#">C0138</a>	Cynthia Clayton	@November 1, 2024	5610.25	5	1122.05	4
<a href="#">C0139</a>	Ricky Gutierrez	@March 14, 2022	3703.64	8	462.955	8
<a href="#">C0140</a>	Gregory Estrada	@July 1, 2023	1888.140000000000	2	944.070000000000	2
<a href="#">C0141</a>	Paul Parsons	@February 23, 2023	10673.869999999999	10	1067.387	10
<a href="#">C0142</a>	Nicole Long DVM	@February 8, 2024	2239.04	4	559.76	4
<a href="#">C0143</a>	Brian Parker	@May 27, 2024	6044.63	7	863.518571428572	6
<a href="#">C0144</a>	Andrea Hart	@September 30, 2024	1304.680000000000	2	652.340000000000	2
<a href="#">C0145</a>	Wayne Stone	@January 13, 2023	5771.27	8	721.40875	7
<a href="#">C0146</a>	Brittany Harvey	@September 4, 2024	2570.8	4	642.7	4
<a href="#">C0147</a>	Hunter Fuller	@May 16, 2022	2948.44	9	327.604444444444	9
<a href="#">C0148</a>	Matthew Rogers	@April 16, 2023	5457.79	5	1091.558	5
<a href="#">C0149</a>	Tina Wilson	@January 21, 2023	4404.78	5	880.956000000000	5
<a href="#">C0150</a>	Angela Williams	@September 13, 2022	580.34	1	580.34	1
<a href="#">C0151</a>	Amber Gonzalez	@November 22, 2024	223.96	1	223.96	1
<a href="#">C0152</a>	Justin Evans	@April 19, 2022	3385.860000000000	5	677.172000000000	5
<a href="#">C0153</a>	Justin Smith	@March 20, 2022	4744.79	6	790.798333333333	6
<a href="#">C0154</a>	Robert Sharp	@October 27, 2024	3703.61	6	617.268333333333	6
<a href="#">C0155</a>	Michelle Brown	@March 23, 2023	5377.83	7	768.261428571429	7
<a href="#">C0156</a>	William Adams	@August 19, 2023	7634.45	11	694.040909090909	10
<a href="#">C0157</a>	Miguel Wong	@January 30, 2024	1876.1	5	375.220000000000	5
<a href="#">C0158</a>	Wendy Browning	@April 12, 2023	3716.52	4	929.13	4
<a href="#">C0159</a>	Austin Miller	@August 6, 2022	2072.41	3	690.803333333333	3
<a href="#">C0160</a>	Jodi Cook	@April 5, 2022	2926.93	5	585.386	5
<a href="#">C0161</a>	Jessica Warren	@March 14, 2022	3141.83	8	392.72875	8
<a href="#">C0162</a>	Edwin Watson	@March 29, 2022	4802.24	8	600.28	8
<a href="#">C0163</a>	Tiffany Cain	@June 8, 2023	5775.28	6	962.546666666667	5
<a href="#">C0164</a>	Morgan Perez	@June 1, 2023	3087.69	5	617.538	5
<a href="#">C0165</a>	Juan Mcdaniel	@April 9, 2022	6708.1	9	745.344444444444	6
<a href="#">C0166</a>	John Rogers	@February 13, 2022	2405.350000000000	4	601.337500000000	4
<a href="#">C0167</a>	Brandy Welch	@January 27, 2024	2300.42	3	766.806666666667	3
<a href="#">C0168</a>	Karen Clements MD	@December 13, 2022	5053.83	4	1263.4575	4
<a href="#">C0169</a>	Jennifer Shaw	@April 13, 2023	4533.32	6	755.553333333333	6
<a href="#">C0170</a>	Logan Harris	@September 13, 2023	4931.74	5	986.348	5

Aa CustomerID	☰ CustomerName	📅 SignupDate	# total_spent	# total_transactions	# avg_transaction_value	# distinct_products
<u>C0171</u>	Michael Cowan	@December 16, 2022	5145.35	5	1029.070000000000	5
<u>C0172</u>	Jamie Webb	@September 9, 2024	2201.7	6	366.95	6
<u>C0173</u>	Francisco Young	@October 6, 2022	5808.04	8	726.005	8
<u>C0174</u>	Tracy Steele	@November 3, 2022	2891.95	5	578.39	5
<u>C0175</u>	Matthew Johnson	@April 16, 2022	6210.53	10	621.053	10
<u>C0176</u>	Nicole Booth	@March 23, 2022	2331.32	3	777.106666666667	3
<u>C0177</u>	Julia Kelly	@June 1, 2024	2509.81	4	627.4525	4
<u>C0178</u>	Carol Williams	@November 19, 2023	2708.83	4	677.2075	4
<u>C0179</u>	Donald Miller	@October 16, 2022	3652.83	6	608.805	6
<u>C0180</u>	Amy Carpenter	@October 25, 2023	0	0	0	0
<u>C0181</u>	Alexander Barker	@November 16, 2023	3347.600000000000	6	557.933333333333	6
<u>C0182</u>	Joshua Preston	@December 28, 2024	4980.770000000000	5	996.154000000000	5
<u>C0183</u>	Kimberly Johnson	@January 23, 2024	3850.220000000000	5	770.044000000000	5
<u>C0184</u>	Tina Jacobs	@May 13, 2022	3393.180000000000	7	484.740000000000	6
<u>C0185</u>	Kathleen Logan	@October 17, 2023	3424.320000000000	3	1141.440000000000	3
<u>C0186</u>	Amber Alexander	@October 11, 2023	1761.640000000000	3	587.213333333333	3
<u>C0187</u>	Kayla Kelly	@August 2, 2024	4612.44	5	922.488000000000	5
<u>C0188</u>	Anna Ball	@May 17, 2022	7111.320000000001	8	888.915000000000	7
<u>C0189</u>	Sherri Dixon	@January 22, 2024	2643.21	5	528.642	5
<u>C0190</u>	Alexander Lowe	@May 31, 2024	2983.02	5	596.604	5
<u>C0191</u>	Samantha Gibson DVM	@April 7, 2024	2997.970000000000	5	599.594	5
<u>C0192</u>	Sarah Arias	@September 15, 2022	2072.720000000000	4	518.180000000000	4
<u>C0193</u>	Douglas Torres	@February 3, 2023	3009.290000000000	4	752.322500000000	4
<u>C0194</u>	Stacy Cook	@May 4, 2024	3869.17	7	552.738571428571	7
<u>C0195</u>	Jeremy McLaughlin	@September 17, 2024	4036.27	6	672.711666666667	6
<u>C0196</u>	Laura Watts	@June 7, 2022	4982.88	4	1245.72	3
<u>C0197</u>	Christina Harvey	@March 21, 2023	1928.65	3	642.883333333333	3
<u>C0198</u>	Rebecca Ray	@February 27, 2022	931.83	2	465.915	2
<u>C0199</u>	Andrea Jenkins	@December 3, 2022	1979.28	4	494.82	4
<u>C0200</u>	Kelly Cross	@June 11, 2023	4758.6	5	951.72	5

Customer Segmentation (Optimal Clusters: 10)



Best KMeans Parameters: {'init': 'random', 'max\_iter': 300, 'n\_clusters': 10}

Davies-Bouldin Index: 0.9963056672551005

Customer segmentation results saved to 'Customer\_Segments\_KMeans.csv'