**Model**: RandomForestRegressor (scikit-learn)

**Split**: 80/10/10 (chronologically – train/val/test, where test is very latest data)

**Data**: Base HDB data (no location features)

**Hyperparameters:**

{'bootstrap': True,

'ccp\_alpha': 0.0,

'criterion': 'squared\_error',

'max\_depth': 22,

'max\_features': 18,

'max\_leaf\_nodes': None,

'max\_samples': None,

'min\_impurity\_decrease': 0.0,

'min\_samples\_leaf': 2,

'min\_samples\_split': 2,

'min\_weight\_fraction\_leaf': 0.0,

'n\_estimators': 200,

'n\_jobs': -1,

'oob\_score': False,

'random\_state': 42,

'verbose': 0,

'warm\_start': False}

**Results:**

**--- Test Set ---**

Mean Absolute Error: ... 7.357105190379599

Mean Squared Error:..... 104.88

RMSE: .................. 10.241221739791756

Coeff of det (R^2):..... **0.705**

**--- Val Set ---**

Mean Absolute Error: ... 5.641605598502287

Mean Squared Error:..... 61.92

RMSE: .................. 7.869156277441714

Coeff of det (R^2):..... **0.848**

**--- Train Set ---**

Mean Absolute Error: ... 3.1527835875700263

Mean Squared Error:..... 19.86

RMSE: .................. 4.456422803668449

Coeff of det (R^2):..... **0.905**

**Feature ranking:**

1. remaining\_lease\_years (0.367498)

2. region\_Central (0.122463)

3. lease\_commence\_date (0.100029)

4. floor\_area\_sqm (0.078654)

5. n\_rooms (0.042052)

6. region\_North (0.029872)

7. region\_West (0.021646)

8. storey\_range\_max (0.015075)

9. flat\_type\_3 Room (0.013889)

10. storey\_range\_min (0.013531)

11. storey\_range\_avg (0.013468)

12. town\_Clementi (0.013035)

13. town\_Woodlands (0.012928)

14. town\_Jurong West (0.011618)

15. town\_Marine Parade (0.011298)

16. flat\_type\_5 Room (0.009114)

17. flat\_model\_Standard (0.008182)

18. region\_East (0.007804)

19. flat\_model\_Improved (0.007487)

20. flat\_type\_4 Room (0.007349)

21. town\_Bukit Merah (0.006243)

22. town\_Central Area (0.005663)

23. town\_Ang Mo Kio (0.005363)

24. town\_Geylang (0.005334)

25. flat\_type\_Executive (0.004637)

26. flat\_model\_New Generation (0.004471)

27. town\_Bishan (0.004466)

28. flat\_model\_Terrace (0.004381)

29. region\_North-East (0.004297)

30. town\_Queenstown (0.004269)

31. flat\_model\_Model A (0.003833)

32. town\_Toa Payoh (0.003448)

33. town\_Tampines (0.002844)

34. town\_Choa Chu Kang (0.002713)

35. town\_Bukit Batok (0.002687)

36. town\_Jurong East (0.002667)

37. town\_Bedok (0.002540)

38. town\_Yishun (0.002536)

39. town\_Kallang/Whampoa (0.002473)

40. flat\_type\_2 Room (0.002389)

41. flat\_model\_Maisonette (0.002050)

42. town\_Serangoon (0.001890)

43. flat\_model\_Simplified (0.001736)

44. town\_Bukit Panjang (0.001708)

45. town\_Hougang (0.001678)

46. town\_Sengkang (0.001292)

47. town\_Pasir Ris (0.001096)

48. flat\_type\_1 Room (0.000852)

49. flat\_model\_Apartment (0.000839)

50. flat\_model\_Premium Apartment (0.000698)

51. town\_Bukit Timah (0.000548)

52. flat\_model\_Adjoined Flat (0.000445)

53. town\_Sembawang (0.000424)

54. town\_Punggol (0.000157)

55. flat\_model\_Model A2 (0.000111)

56. flat\_model\_Model A-Maisonette (0.000105)

57. town\_Lim Chu Kang (0.000051)

58. flat\_type\_Multi Generation (0.000024)

59. flat\_model\_Multi Generation (0.000022)

60. flat\_model\_Improved-Maisonette (0.000018)

61. flat\_model\_Premium Maisonette (0.000008)

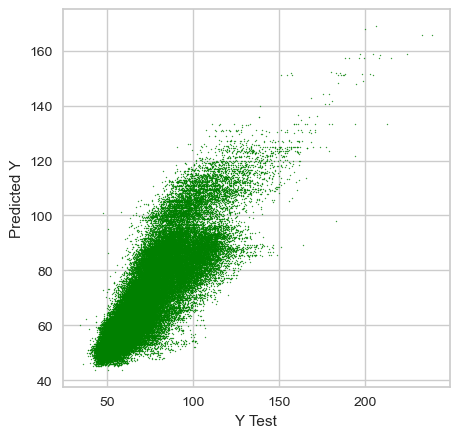
62. flat\_model\_2-Room (0.000005)

63. flat\_model\_Dbss (0.000000)

64. flat\_model\_Type S1 (0.000000)

65. flat\_model\_Type S2 (0.000000)

66. flat\_model\_Premium Apartment Loft (0.000000)



Chart, scatter chart

Description automatically generated

Chart, scatter chart

Description automatically generated

**Model**: RandomForestRegressor (scikit-learn)

**Split**: 80/20 (chronologically – train/test)

**Data**: Base HDB data (no location features)

**Hyperparameters:**

Optimal Hyper-parameters:

{'bootstrap': True,

'ccp\_alpha': 0.0,

'criterion': 'squared\_error',

'max\_depth': 22,

'max\_features': 18,

'max\_leaf\_nodes': None,

'max\_samples': None,

'min\_impurity\_decrease': 0.0,

'min\_samples\_leaf': 2,

'min\_samples\_split': 3,

'min\_weight\_fraction\_leaf': 0.0,

'n\_estimators': 500,

'n\_jobs': -1,

'oob\_score': False,

'random\_state': 42,

'verbose': 0,

'warm\_start': False}

**Results:**

**--- Test Set ---**

Mean Absolute Error: ... 6.499360358414414

Mean Squared Error:..... 83.40

RMSE: .................. 9.132537759432319

Coeff of det (R^2):..... **0.773 (have been able to get as high as 0.815 with variable tweaking)**

**--- Train Set ---**

Mean Absolute Error: ... 3.152783587570027

Mean Squared Error:..... 19.86

RMSE: .................. 4.45642280366845

Coeff of det (R^2):..... **0.905**

**Feature ranking:**

1. remaining\_lease\_years (0.367498)

2. region\_Central (0.122463)

3. lease\_commence\_date (0.100029)

4. floor\_area\_sqm (0.078654)

5. n\_rooms (0.042052)

6. region\_North (0.029872)

7. region\_West (0.021646)

8. storey\_range\_max (0.015075)

9. flat\_type\_3 Room (0.013889)

10. storey\_range\_min (0.013531)

11. storey\_range\_avg (0.013468)

12. town\_Clementi (0.013035)

13. town\_Woodlands (0.012928)

14. town\_Jurong West (0.011618)

15. town\_Marine Parade (0.011298)

16. flat\_type\_5 Room (0.009114)

17. flat\_model\_Standard (0.008182)

18. region\_East (0.007804)

19. flat\_model\_Improved (0.007487)

20. flat\_type\_4 Room (0.007349)

21. town\_Bukit Merah (0.006243)

22. town\_Central Area (0.005663)

23. town\_Ang Mo Kio (0.005363)

24. town\_Geylang (0.005334)

25. flat\_type\_Executive (0.004637)

26. flat\_model\_New Generation (0.004471)

27. town\_Bishan (0.004466)

28. flat\_model\_Terrace (0.004381)

29. region\_North-East (0.004297)

30. town\_Queenstown (0.004269)

31. flat\_model\_Model A (0.003833)

32. town\_Toa Payoh (0.003448)

33. town\_Tampines (0.002844)

34. town\_Choa Chu Kang (0.002713)

35. town\_Bukit Batok (0.002687)

36. town\_Jurong East (0.002667)

37. town\_Bedok (0.002540)

38. town\_Yishun (0.002536)

39. town\_Kallang/Whampoa (0.002473)

40. flat\_type\_2 Room (0.002389)

41. flat\_model\_Maisonette (0.002050)

42. town\_Serangoon (0.001890)

43. flat\_model\_Simplified (0.001736)

44. town\_Bukit Panjang (0.001708)

45. town\_Hougang (0.001678)

46. town\_Sengkang (0.001292)

47. town\_Pasir Ris (0.001096)

48. flat\_type\_1 Room (0.000852)

49. flat\_model\_Apartment (0.000839)

50. flat\_model\_Premium Apartment (0.000698)

51. town\_Bukit Timah (0.000548)

52. flat\_model\_Adjoined Flat (0.000445)

53. town\_Sembawang (0.000424)

54. town\_Punggol (0.000157)

55. flat\_model\_Model A2 (0.000111)

56. flat\_model\_Model A-Maisonette (0.000105)

57. town\_Lim Chu Kang (0.000051)

58. flat\_type\_Multi Generation (0.000024)

59. flat\_model\_Multi Generation (0.000022)

60. flat\_model\_Improved-Maisonette (0.000018)

61. flat\_model\_Premium Maisonette (0.000008)

62. flat\_model\_2-Room (0.000005)

63. flat\_model\_Dbss (0.000000)

64. flat\_model\_Type S1 (0.000000)

65. flat\_model\_Type S2 (0.000000)

66. flat\_model\_Premium Apartment Loft (0.000000)

Chart, scatter chart

Description automatically generated

Chart, scatter chart

Description automatically generated

Chart, scatter chart

Description automatically generated