

# SINGLE FAMILY MARKET AREA 4 MODEL

Revaluation Cycle – January 1, 2025 to December 31, 2028  
Base Date: January 1, 2023



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**Effective Date of Valuation** – January 1, 2023

**Date of Report** – January 1, 2025



# Scope of Data and Analysis

## Valuation Approach

The appraisal method employed for residential properties is the sales comparison approach using the multiple regression analysis technique. Multiple regression analysis (MRA) is an accepted statistical technique used in the mass appraisal of property. MRA determines the statistical relationship between property characteristics and sale prices and is used in determining an estimate of value.

Regression analysis helps one understand how the typical value of the dependent variable changes when any one of the independent variables is varied, while the other independent variables are held fixed. A dependent variable is something that depends on other factors.

For assessment valuation purposes, the dependent variable is the predicted adjusted sale prices whereas, independent variables are factors that cause a change in the dependent variable; for example, property characteristics such as age, size and quality. Multiple regression is a statistical technique widely used for prediction and forecasting. In this case, it is used for predicting the sale price of houses. Before MRA begins, single family houses must be grouped.

Section 163(f.3) of *The Cities Act* defines mass appraisal as "...the process of preparing a group of properties..." Assessment Branch research and consultation with two local major property appraisal companies has stratified (grouped) single family residences into eight market areas considering neighbourhood age, type of construction, area layout, amenities. A market area readies the sales data for extraction and cleaning.

With market areas defined, quality control identifies valid sales for extraction and data cleaning. Once complete, sale prices are adjusted for non-realty components and time to the base date. The sales dataset is now ready to be analyzed using the multiple regression technique to identify and estimate the relationship between an adjusted sale price and property characteristics (variables). A detailed explanation follows in the 'Development of the Market Area Model' section.

The development of a multiple regression model is determined by utilizing statistical software that simultaneously identifies and analyzes property characteristics of sold properties. Multiple regression determines the coefficient values representing statistically significant property characteristics to establish the multiple regression model. The application of the regression model to the subject property characteristics represents its assessed value. It is important to note that although there may be discussion on the relative value of an individual variable (property characteristic) within the multiple regression model, any changes to the value of one variable will shift or, affect, the value of the other variables.

The MRA technique predicts property values on sales price and will always compensate for any deviation of established variables and/or its corresponding value. Another important note is that the coefficient value in the MRA model does not represent the replacement cost or reproduction cost of the variable.

For single family residences, there are individual MRA models for each of the eight market

areas.

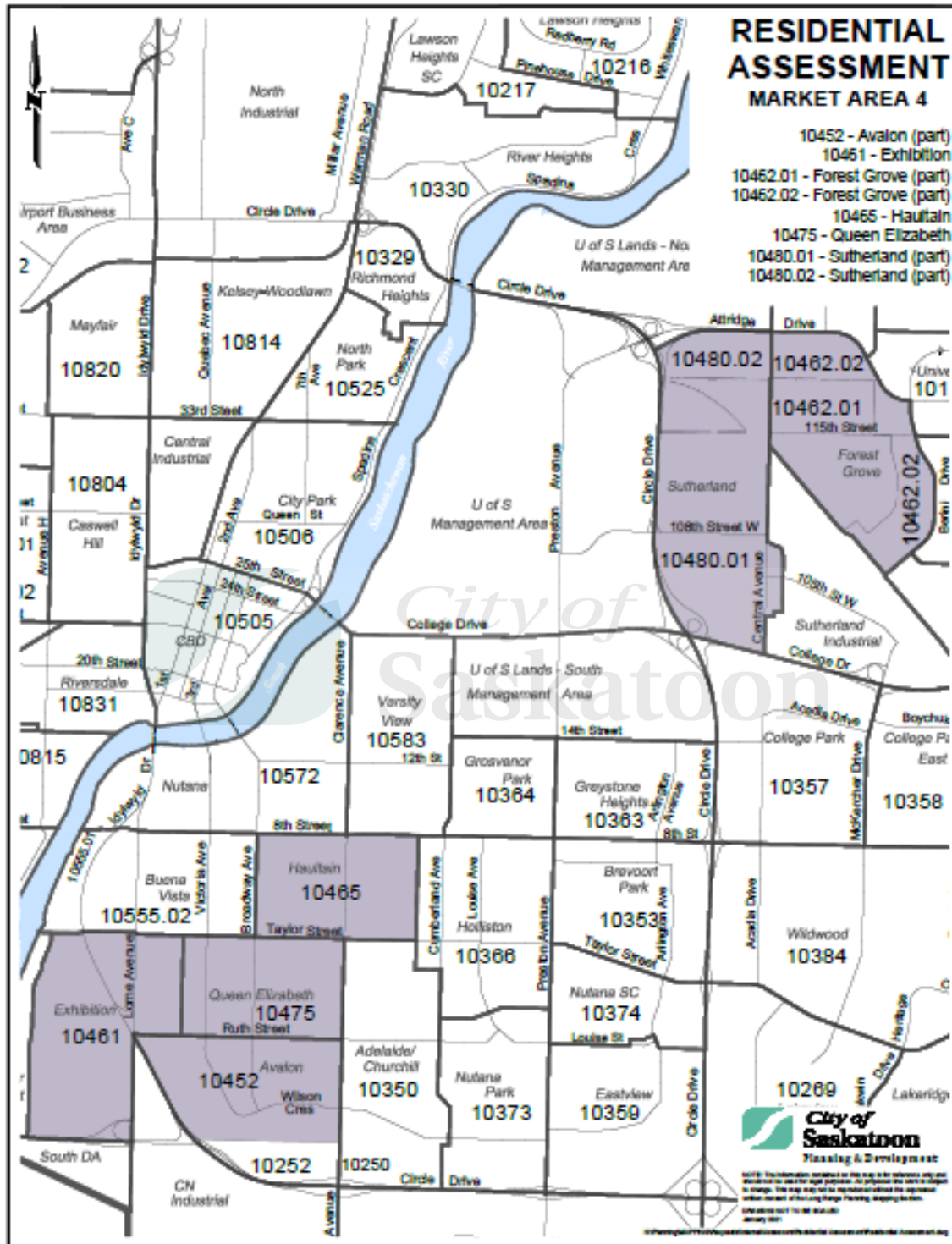
## **Market Area 4 Geographic Neighbourhoods**

Market Area 4 consists of eight geographic neighbourhoods:

1. Older portion of Avalon
2. Exhibition
3. Older portion of Forest Grove
4. Newer portion of Forest Grove
5. Haultain
6. Queen Elizabeth
7. Older portion of Sutherland
8. Newer portion of Sutherland.



# Market Area 4 Map



## Market Area 4 Summary

There are 1,077 sales that were used to establish Assessed Values in Market Area 4. A detailed summary of key characteristics for Market Area 4 is listed below:

	City Wide	Market Area 4
<b>ASSESSMENT AND SALE STATISTICS</b>		
Community Median Assessment For Properties Sold In Market Analysis Period	\$425,775	\$355,676
Community Median Assessment Per Sq Ft For Properties Sold In Market Analysis Period	\$329	\$343
Community Overall Median Adjusted Sale Price	\$426,009	\$352,392
Community Overall Median Adjusted Sale Price Per Sq Ft	\$329	\$343
Number of Sales Used In Market Analysis	12,346	1,077
<b>DESCRIPTIVE STATISTICS (INVENTORY)</b>		
Median Living Area (Sq Ft) of Residences	1,192	1,040
Median Parcel Area (Sq Ft) of Lots	5,987	5,993
Median Year of Construction of Residences	1978	1958
Properties With Basement Finish	76%	85%
Properties With a Garage -- Attached	38%	19%
Properties With a Garage -- Built-in	8%	3%
Properties With a Garage -- Detached	42%	61%
One Storey Properties	49%	72%
Two Storey Properties	21%	8%
All Other Structure Properties	30%	20%
Number of Inventory (Oct, 2024)	63,544	5,749

The table above represents the market area that consists of eight geographic neighbourhoods. Adjustments are derived by the multiple regression analysis for the relative value differences between geographic neighbourhoods within this market area.

# Development of Market Area 4 Multiple Regression Model

## Introduction

The development of the multiple regression analysis (MRA) model is the major valuation tool in developing assessment values for residential single family properties. However, MRA is only one of following six steps within the valuation process.

- Data Extraction
- Data Cleaning
- Non-realty Analysis
- Time Trend Analysis
- Multiple Regression Analysis (MRA)
- Ratio Study

## Data Extraction

The primary source of sales information is from Information Services Corporation (ISC). This information is stored in a digital format from which the Assessment Branch extracts sales data for analysis. All relevant variables are captured in this data set that is ready for cleaning.

## Data Cleaning

Since it is practically impossible to check every sale, there is a quality control process that helps identify extreme sales. Extreme sales are often referred to as outliers or sales that seem out of context with the majority of the property group and/or neighbourhood. Outliers are identified by querying and assembling sold properties based on some key attributes, such as size, age, and quality. This quality review process helps to identify missing data, re-sales, low-price properties, high price properties and questionable data characteristics. Extreme (outlier) sales are investigated and changes made as required as part of the Assessment Branch quality control process.

## Non-realty Analysis

Once the sales dataset has passed the quality control phase, an analysis of non-realty items is undertaken. Assessed values reflect real estate only and should not include the non-realty component of the sale, often referred to as 'chattels'. A chattel is a moveable item of property which is neither land nor permanently attached to land or a building and therefore is not considered real estate. The value of chattels is sourced and quantified from sales verification forms that ask property purchasers whether chattels such as appliances, draperies and/or furniture are included in the sale price and, if so, their approximate value. Based on a sample of this information, an adjustment for non-realty components of the sales is determined. For the 2023 base date, the adjustment for chattels is 1.2%. Applying the non-realty adjustment to sold properties reduces individual sale prices by 1.2%.

## Time Trend Analysis

Sales that have been adjusted for a non-realty component are analyzed for time influences. The real estate market is not always flat. In other words, in a rising market, a purchaser would expect to pay more for a house in 2020 than if it was purchased in 2019. A time trend analysis measures the influence of time on sales price. This is particularly relevant for the current revaluation cycle as the valuation process uses four years of sales, occurring between 2019 and 2022. These sales are examined for time influence and adjusted to reflect the assessment base date of January 1, 2023.

The sales assessment ratio (SAR) technique is used to measure time trends. The result of the time trend analysis shows that the sales prices compared to the current assessed value in Market Area 4 are factored on a monthly basis. For example, from the resulting monthly time adjustment factors for Market Area 4 table below, a January 2019 \$350,000 sale price (adjusted for non-realty) would result in a fully adjusted sale price of \$378,140 ( $\$350,000 \times 1.0804$ ) that would be used in multiple regression analysis.

Sale Month	Time Adjustment Factors	Sale Month	Time Adjustment Factors
Jan-19	1.0804	Jan-21	1.0680
Feb-19	1.0854	Feb-21	1.0617
Mar-19	1.0900	Mar-21	1.0549
Apr-19	1.0941	Apr-21	1.0479
May-19	1.0978	May-21	1.0454
Jun-19	1.1009	Jun-21	1.0429
Jul-19	1.1036	Jul-21	1.0404
Aug-19	1.1058	Aug-21	1.0380
Sep-19	1.1076	Sep-21	1.0355
Oct-19	1.1088	Oct-21	1.0331
Nov-19	1.1095	Nov-21	1.0306
Dec-19	1.1097	Dec-21	1.0282
Jan-20	1.1094	Jan-22	1.0258
Feb-20	1.1086	Feb-22	1.0234
Mar-20	1.1073	Mar-22	1.0210
Apr-20	1.1055	Apr-22	1.0186
May-20	1.1032	May-22	1.0163
Jun-20	1.1004	Jun-22	1.0139
Jul-20	1.0971	Jul-22	1.0116
Aug-20	1.0934	Aug-22	1.0092
Sep-20	1.0892	Sep-22	1.0069
Oct-20	1.0845	Oct-22	1.0046
Nov-20	1.0794	Nov-22	1.0023
Dec-20	1.0739	Dec-22	1.0000



## Multiple Regression Analysis (MRA)

In Market Area Four, 1,077 valid, fully adjusted sales occurring between 2019 and 2022 are used in multiple regression analysis (MRA). MRA estimates relationships between multiple variables simultaneously. For assessment purposes, it is the relationship between adjusted sale prices and property characteristics as determined by multiple regression algorithms. These model variables proved to significantly affect sales price and are represented in the single family residence valuation model for Market Area 4 below.

### Market Area 4 – Multiple Regression Analysis Model

Description	Variable	Coefficient (\$)
Constant		288,239.86
Adjustment Based on Effective Age	Age	-6,121.91
Location per ft <sup>2</sup> of lot size	10452_Avalon Part	7.70
	10461_Exhibition	4.13
	10462.01_Forest Grove Part	0.00
	10462.02_Forest Grove Part	
	10465_Haultain	10.93
	10475_Queen Elizabeth	7.37
	10480.01_Sutherland Part	0.00
	10480.02_Sutherland Part	
Size by Quality per ft <sup>2</sup>	Size - Low Quality	89.03
	Size - Low/Fair Quality	
	Size - Fair Quality	107.73
	Size - Average Quality	136.22
	Size - Good Quality	216.34
	Size - Very Good Quality	240.51
	Size - Excellent Quality	333.17
Size by Condition per ft <sup>2</sup>	Condition - Poor	-135.55
	Condition - Below Average	-95.21
	Condition - Above Average	11.22
	Condition - Good	49.43
	Condition - Very good	
	Condition - Superior	81.13
	Condition - Excellent	89.49

Description	Variable	Coefficient (\$)
Garage area per ft <sup>2</sup>	Attached Garage	46.91
	Built in Garage	
	Detached Garage	35.10
Improvement Style	Mixed Style (25%)	-35,116.79
Basement area per ft <sup>2</sup>	Basement Structure	17.11
Finished basement area per ft <sup>2</sup>	Walkout Basement No River No Lake No Green Space No park	26.70
	Walkout Basement With Bk Green Space	42.27
	Walkout Basement With Bk Park	
	Walkout Basement With Bk Lake	81.64
	Walkout Basement With Bk River	17.88
	Finished Basement - Regular	
	Finished Basement - Basement Suite	
Large Lot Size per ft <sup>2</sup>	Lot Size Greater Than 2,200 ft <sup>2</sup>	-48.89
Pool Area per ft <sup>2</sup>	Indoor Swimming Pool	-184.77
	Outdoor Swimming Pool	106.12
Site Influences	Front / Adjacent To Arterial	-20,076.82
	Backing Arterial	
	Backing Highway	
	Near Railway	
Mobile	Mobile Homes	-129,943.14

The appraisal level of the final multiple regression model is tested using a ratio study.

## Ratio Study

The median assessment to sales ratio (ASR) study is used in measuring the level of mass appraisals. The median is the middle value of the ratios when arrayed in order of magnitude. It divides the ratios into two equal groups, and is therefore only minutely affected by extreme ratios. The closer this value is to 1, the better.

### ASR Results for Market Area 4

The result of the ASR study for the single family properties in Market Area 4 is displayed in the table below.

Number of Sales	1,077
Median Assessment to Sale Price Ratio (ASR)	1.00
Coefficient of Dispersion (COD)	9.1%
Price-Related Differential (PRD)	1.01

The median ASR is 1.00 which is within the I.A.A.O. range of acceptable A.S.R.s between 0.90 and 1.10.