SINGLE FAMILY MARKET AREA 1 MODEL

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

SINGLE FAMILY MARKET AREA 1 MODEL

Revaluation Cycle – January 1, 2025 to December 31, 2028

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

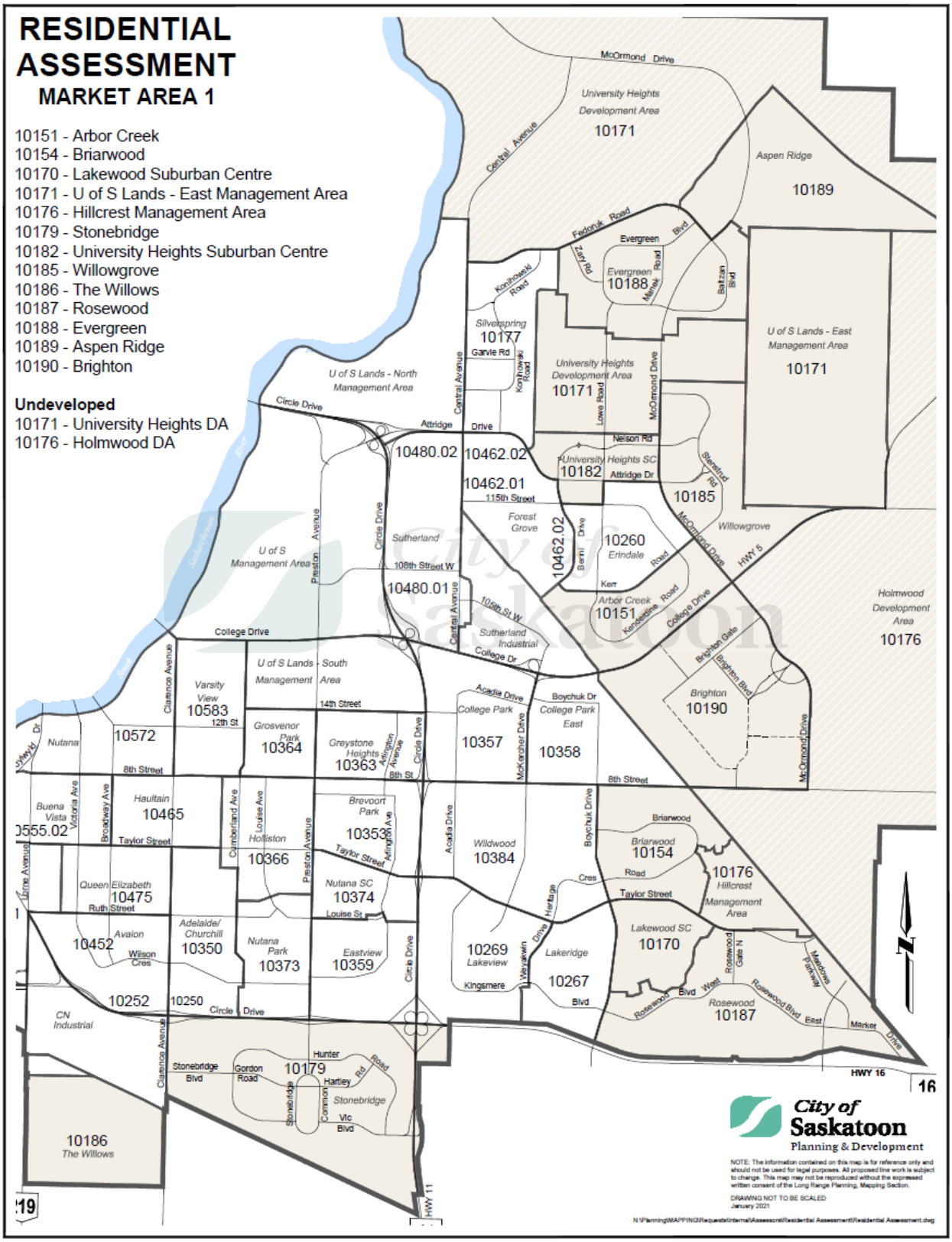
areas.

Market Area 1 Geographic Neighbourhoods

Market Area 1 consists of eight geographic neighbourhoods:

1. Arbor Creek
2. Aspen Ridge
3. Briarwood
4. Brighton
5. Evergreen
6. Rosewood
7. Stonebridge
8. Willowgrove

Market Area 1 Map



Market Area 1 Summary

There are 3,816 sales that were used to establish Assessed Values in Market Area 1. A detailed summary of key characteristics for Market Area 1 is listed below:

	City Wide	Market Area 1
ASSESSMENT AND SALE STATISTICS		
Community Median Assessment For Properties Sold In Market Analysis Period	$425,775	$549,104
Community Median Assessment Per Sq Ft For Properties Sold In Market Analysis Period	$329	$339
Community Overall Median Adjusted Sale Price	$426,009	$539,875
Community Overall Median Adjusted Sale Price Per Sq Ft	$329	$340
Number of Sales Used In Market Analysis	12,346	3,816
DESCRIPTIVE STATISTICS (INVENTORY)		
Median Living Area (Sq Ft) of Residences	1,192	1,560
Median Parcel Area (Sq Ft) of Lots	5,987	5,511
Median Year of Construction of Residences	1978	2012
Properties With Basement Finish	76%	63%
Properties With a Garage -- Attached	38%	65%
Properties With a Garage -- Built-in	8%	19%
Properties With a Garage -- Detached	42%	12%
One Storey Properties	49%	18%
Two Storey Properties	21%	50%
All Other Structure Properties	30%	32%
Number of Inventory (Oct, 2024)	63,544	12,616

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 1 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 1 are factored on a monthly basis. For example, from the resulting monthly time adjustment factors for Market Area 1 table below, a January 2019 $350,000 sale price (adjusted for non-realty) would result in a fully adjusted sale price of $419,265 ($350,000 x 1.1979) that would be used in multiple regression analysis.

Sale Month	Time Adjustment Factors	Sale Month	Time Adjustment Factors
Jan-19	1.1979	Jan-21	1.1726
Feb-19	1.1969	Feb-21	1.1587
Mar-19	1.1958	Mar-21	1.1455
Apr-19	1.1948	Apr-21	1.1332
May-19	1.1938	May-21	1.1215
Jun-19	1.1928	Jun-21	1.1105
Jul-19	1.1918	Jul-21	1.1001
Aug-19	1.1908	Aug-21	1.0904
Sep-19	1.1898	Sep-21	1.0812
Oct-19	1.1888	Oct-21	1.0725
Nov-19	1.1878	Nov-21	1.0644
Dec-19	1.1867	Dec-21	1.0568
Jan-20	1.1857	Jan-22	1.0497
Feb-20	1.1847	Feb-22	1.0431
Mar-20	1.1837	Mar-22	1.0370
Apr-20	1.1827	Apr-22	1.0312
May-20	1.1818	May-22	1.0259
Jun-20	1.1808	Jun-22	1.0211
Jul-20	1.1798	Jul-22	1.0166
Aug-20	1.1788	Aug-22	1.0125
Sep-20	1.1778	Sep-22	1.0088
Oct-20	1.1768	Oct-22	1.0055
Nov-20	1.1758	Nov-22	1.0026
Dec-20	1.1748	Dec-22	1.0000

Multiple Regression Analysis (MRA)

In Market Area One, 3,816 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 1 below.

Market Area 1 – Multiple Regression Analysis Model

Description	Variable	Coefficient ($)
Constant		139,712.42
Adjustment Based on Effective Age	Age	-8,374.45
Location per ft^2 of lot size	10151_Arbor Creek	10.14
	10170_Lakewood Suburban Centre	
	10154_Briarwood	10.86
	10179_Stonebridge	11.26
	10186_The Willows	
	10182_University Heights Suburban Centre	9.27
	10185_Willowgrove	
	10186_The Willows	11.26
	10187_Rosewood	10.14
	10188_Evergreen	12.86
	10189_Aspen Ridge	7.99
	10190_Brighton	10.06
Size by Quality per ft^2	Size - Low Quality	142.98
	Size - Low/Fair Quality	
	Size - Fair Quality	
	Size - Average Quality	147.27
	Size - Good Quality	167.29
	Size - Very Good Quality	184.45
	Size - Excellent Quality	229.84
Size by Condition per ft^2	Condition - Poor	-194.23
	Condition - Below Average	-136.63
	Condition - Above Average	52.78
	Condition - Good	122.86
	Condition - Very good	155.17

Description	Variable	Coefficient ($)
	Condition - Superior	255.98
	Condition - Excellent	282.90
Garage area per ft^2	Attached Garage	123.93
	Built in Garage	
	Detached Garage	83.76
Basement area per ft^2	Basement Structure	67.18
Finished basement area per ft^2	Walkout Basement No River No Lake No Green Space No park	56.18
	Walkout Basement With Bk Green Space	90.77
	Walkout Basement With Bk Park	
	Walkout Basement With Bk Lake	118.09
	Walkout Basement With Bk River	
	Finished Basement - Regular	64.56
	Finished Basement - Basement Suite	51.42
Pool Area per ft^2	Indoor Swimming Pool	-93.39
	Outdoor Swimming Pool	244.79
Site Influences	Front / Adjacent To Arterial	-20,761.03
	Backing Arterial	
	Backing Highway	
	Near Railway	
	Backing Major Collector Road	-14,640.68
View Influences	Backing Greenspace, No Walkout	54,954.48
	Backing Park, No Walkout	
	Backing Lake, No Walkout	157,875.04
	Backing River, No Walkout	
	Fronting River	
	Backing Apartments	-8,076.87
	Opposite Apartments	
	Backing Commercial	
	Opposite Commercial	
	Backing Row House	
	Opposite Row House	
Mobile	Mobile Homes	-60,076.34
Zoning	R2	-13,431.13
	R2A	-13,767.32

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 1

The result of the ASR study for the single family properties in market area 1 is displayed in the table below.

Number of Sales	3,816
Median Assessment to Sale Price Ratio (ASR)	1.00
Coefficient of Dispersion (COD)	5.8%
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.