

**Review of
Tax Year 2021-2024 Non-Residential Valuation Models**

Prepared for

Steve Ward

Regina City Assessor

by

Robert J. Gloudemans

Mass Appraisal Consultant

7630 North 10th Avenue

Phoenix, Arizona 85021

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Review of Tax Year 2021-2024 Non-Residential Valuation Models

By

**Robert J. Gloudemans
Mass Appraisal Consultant**

1. Overview

The Regina City Assessor asked the author to review the City's non-residential valuation models developed for tax years 2021-2024, which have a valuation base date of January 1, 2019.

In conjunction with the request the City provided the data and program ("syntax") files used to develop the models. As well, staff provided supplemental information helpful in understanding the data and analyses conducted.

The City developed models for four broad groups of non-residential properties: multi-family, commercial, industrial, and mixed use.

Multi-family properties are separated into low-rise, high-rise, and townhouse apartments and a separate potential gross income (PGI) model was developed for each. After vacancies were estimated, staff developed an effective gross income multiplier (EGIM) model. Estimated PGI less vacancy allowances were then multiplied by estimated EGIM to arrive at estimated market values. Section 2 of the report reviews the three multi-family PGI models and the EGIM model.

Commercial properties are divided into offices, general commercial, and shopping centers and a separate net rent model was developed for each. Vacancy and expense allowances were applied and staff developed a capitalization rate model to determine estimated property values. Section 3 of the report reviews the three net rent models and the capitalization rate model.

A net rent and capitalization rate model were also developed for industrial properties. Section 4 reviews the two models.

Mixed use properties are those with mixed commercial and residential uses. For such properties, staff developed two separate commercial and residential PGI models, estimated vacancy ratios, and then developed a mixed use EGIM model. Section 5 reviews the models.

Section 6 summarizes conclusions and makes several recommendations for consideration in future revaluations. As a general matter, the models were carefully developed, are well-documented, and achieve reasonably good results. All adopt a mass appraisal versus single-property appraisal approach.

2. Multi-Family Models

During the first quarter of 2019 the City mailed its annual request for rental income and expense data to multi-family properties. The *Cities Act* requires that responses be submitted in the next 30 days and provides penalties, including loss of right to appeal, for failure to provide the requested information. For convenience, rather than complete the form itself, respondents may submit the requested information in their own format, including a copy of their current rent roll (as of January 1, 2019) and income operating statement for the prior year (2018).

The form requests property name and location, name and contact information for the person supplying the information, potential gross income, vacancy and collection losses, and annual operating expenses, along with an itemization of rents for each unit type (bachelor, 1-bedroom, etc.). To further ease compliance, the City is looking to eliminate requested expense information since a gross income capitalization approach is used.

The four sections that follow explain and critique the four multi-family models developed by the City. Section 2.1 address the low-rise potential gross rent (PGI) model, section 2.2 the high-rise PGI model, section 2.3 the townhouse PGI model, and section 2.4 the effective gross income multiplier (EGIM) model.

2.1 Low-Rise rent Model

16(1)(a)




Exhibit LR-1. Low-Rise Rents by Space Type

3(1)(a), 16(1)(a), Regs 8.1(a)

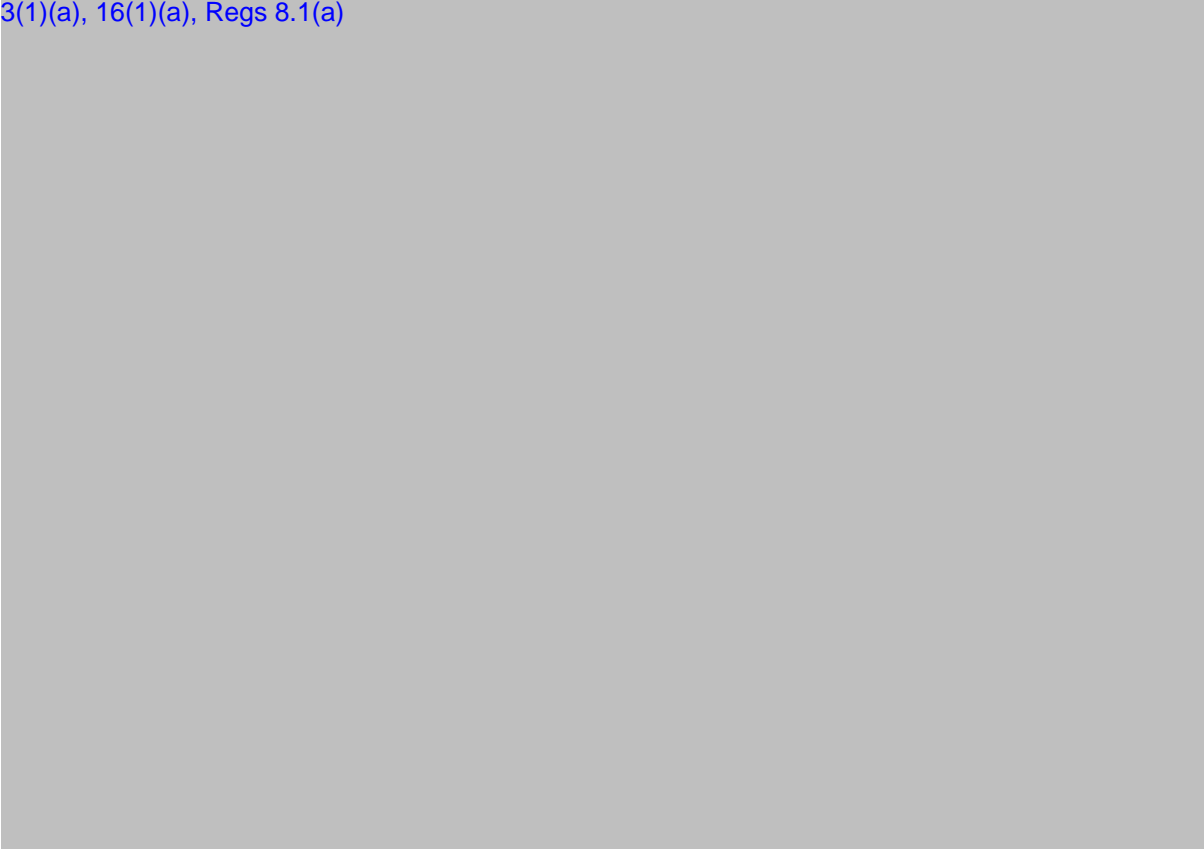
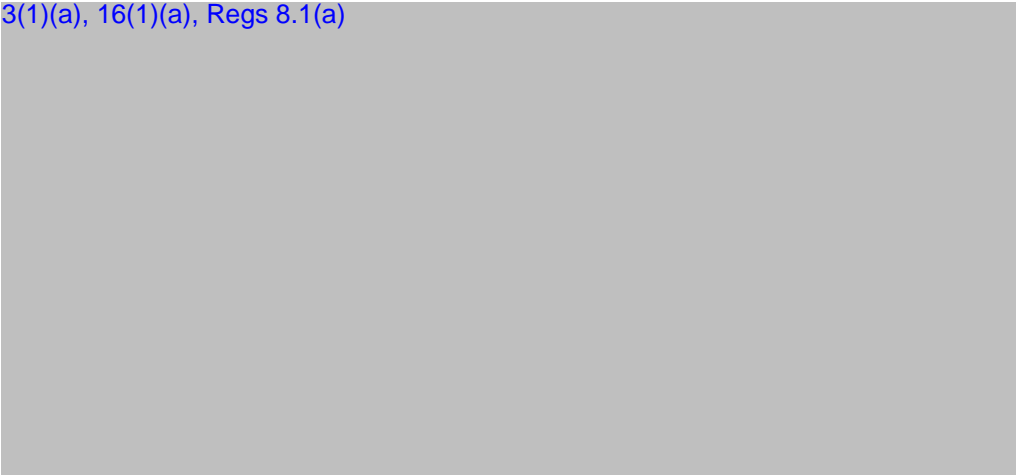


Exhibit LR-2 below shows the distribution of rents by floor location. Basement units have the lowest rents and 4th floor units have the highest.

Exhibit LR-2. Low-Rise Rents by Floor Location

3(1)(a), 16(1)(a), Regs 8.1(a)



For modeling purposes, building types, space types, and floor location were rolled into a series of binary variables (e.g., second floor units in semi-basement buildings, second floor units in non-semi-basement buildings, one-bedroom garden apartment units, two-bedroom garden apartment


units, and so forth) supplemented by separate binaries for dens and balconies. Two-bedroom units on the main floor in semi-basement buildings were held out as the base unit type.

16(1)(a)



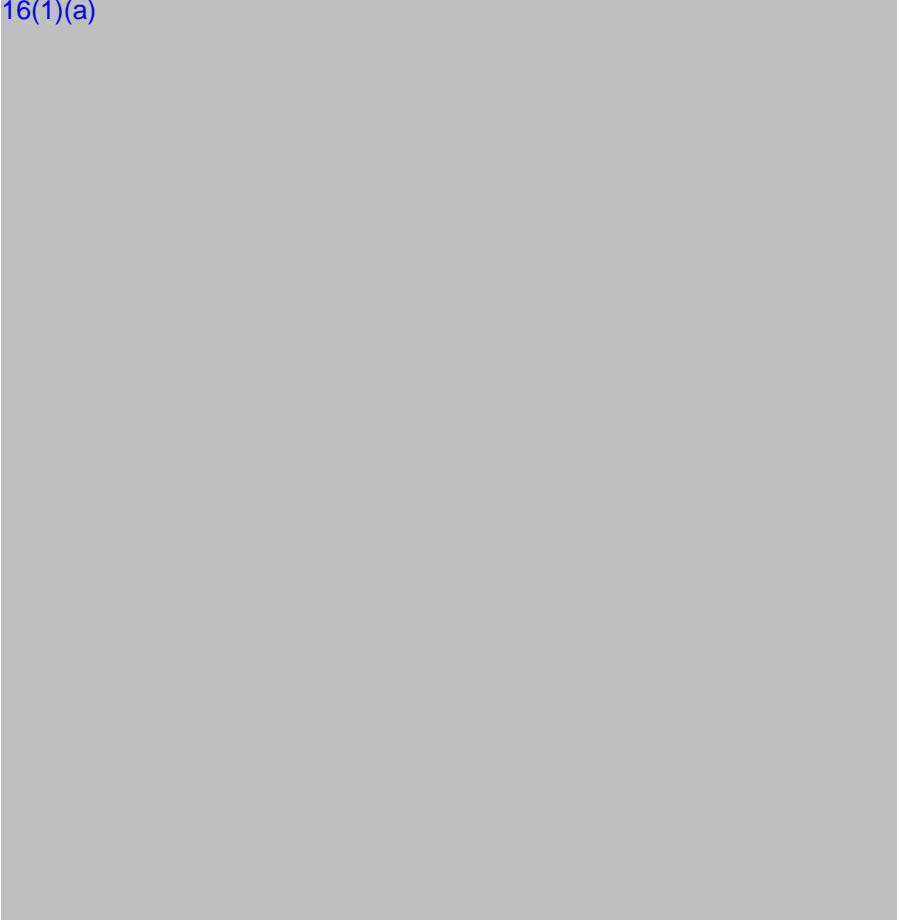
Exhibit LR-3. Final Low-Rise Model

16(1)(a)



Model: 10

16(1)(a)




Excluded Variables^a

16(1)(a)



**Ratio Statistics for PRE_3 Unstandardized Predicted Value /
Gross_Rent_Per_Month**

16(1)(a)



16(1)(a)


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Exhibit LR-4. Graph of Ratio with Linearized Age


16(1)(a)

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16(1)(a)

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16(1)(a)




2.2 High-Rise Rent Model

16(1)(a)



Exhibit HR-1. High-Rise Rents by Space Type

3(1)(a), 16(1)(a), Regs 8.1(a)



An initial high-rise model tested the following variables:

- Binary variables for bachelor and 2+ bedroom units (one-bedroom is base)
- A binary variable for quality 5 construction (4 is base)
- Binary variables for good and very good condition (above average is base)
- Binary variables for the presence of dens and balconies
- Binary variables for the various floors (3rd floor is base)
- A binary variable for location on the top floor
- A binary variable for integrated parking
- Age (2019 minus year built)

16(1)(a)






Exhibit HR-2. High-Rise Model with Outliers Removed

16(1)(a)




16(1)(a)



**Ratio Statistics for PRE_2 Unstandardized Predicted Value /
Gross Rent Per Month**

16(1)(a)



16(1)(a)



Exhibit HR-3. Final High-Rise Model

Model Summary

16(1)(a)



Model: 3

16(1)(a)



**Ratio Statistics for PRE_3 Unstandardized Predicted Value /
Gross Rent Per Month**

16(1)(a)



16(1)(a)



16(1)(a)

Exhibit HR-4. Graph of Ratios with Condition

16(1)(a)



16(1)(a)



2.3 Townhouse Rent Model

16(1)(a)



Exhibit TH-1. Distribution of Townhouse Rents

16(1)(a)



16(1)(a)



Exhibit TH-2. Graph of Rents with Age

16(1)(a)



16(1)(a)

Exhibit TH-3. Rents by Condition

Gross_Rent_Per_Month

3(1)(a), 16(1)(a), Regs 8.1(a)

Models tested the following variables:

- Binary variables for 2-bedroom and 4-bedroom units (3 is base)
- Binary variable for construction quality 4 (3 is base)
- Binaries for study areas 2620, 2650, 2670, and 2680 (areas 2630 and 2640 are base)
- Binaries for average and above average/good condition (very good is base)
- Age (2019 less year built)

16(1)(a)

Exhibit TH-4. Model Without Quality 4

Model Summary^d

16(1)(a)

16(1)(a)

Ratio Statistics for Unstandardized Predicted Value / Gross_Rent_Per_Month

16(1)(a)



16(1)(a)



Exhibit TH-5. Final Townhome Model

Model Summary^d

16(1)(a)



Model: 3

16(1)(a)



Excluded Variables

Model: 3

16(1)(a)



Ratio Statistics for Unstandardized Predicted Value / Gross Rent Per Month

16(1)(a)




16(1)(a)



Exhibit TH-6. Graph of Ratios with Age

16(1)(a)



16(1)(a)




Exhibit TH-7. Model with AGE51Plus

Model Summary^b

16(1)(a)



b. Dependent Variable: Gross_Rent_Per_Month

16(1)(a)



Ratio Statistics for Unstandardized Predicted Value / Gross_Rent_Per_Month

Rents
767

16(1)(a)



16(1)(a)



Exhibit TH-8. Graph of Ratios with Age (Model with AGE51Plus)

16(1)(a)



16(1)(a)



2.4 Multi-Family EGIM Model

16(1)(a)





Exhibit EGIM-1. Indicated EGIM's

16(1)(a)



16(1)(a)



Exhibit EGIM-2. Graph of Linearized Age and EGIM

16(1)(a)



16(1)(a)



16(1)(a)



Exhibit EGIM-3. Final EGIM Model

Model Summary

16(1)(a)



Model: 7

16(1)(a)



Excluded Variables^a

Model: 7

16(1)(a)



Exhibit EGIM-4. Multi-Family Sales Ratio Statistics

16(1)(a)



Exhibit EGIM-5. Model with Binary for Age ≤ 10

Model Summary^h

Model: 7

16(1)(a)



Model: 7

16(1)(a)



Excluded Variables

Model: 7

16(1)(a)



Ratio Statistics for MRAVAL 6 / TASP

16(1)(a)



EGIM-6. Graph of Ratios with Age (Comparison Model)

16(1)(a)



16(1)(a)



3. Commercial Models

Commercial rents were obtained by a questionnaire requesting annual net rents as of January 2019. Rent models were developed for class A and B offices, general commercial (retail) properties, and shopping centers. For sale properties, predicted net rents were then divided by sales prices to derive indicated capitalization rates and a cap rate model developed to test for differences among properties. Section 3.1 below describes the office rent model, section 3.2 discusses the commercial rent model, and section 3.3 examines the shopping center rent model. Section 3.4 analyzes the cap rate model.

3.1 Office A&B Rent Model

16(1)(a)



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Exhibit OFF-1. Office Rents by Space Type

16(1)(a)


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16(1)(a)

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Exhibit OFF-2. Office Rents by Floor Group

16(1)(a)

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16(1)(a)

A horizontal rectangular area is completely redacted with a solid grey fill.

Exhibit OFF-3. Graph of Office Rents with Effective Year Built and Building Class

16(1)(a)



16(1)(a)



Exhibit OFF-4. Final Office Rent Model

Model Summary^f

Model: 5


16(1)(a)



Excluded Variables

Model: 5

16(1)(a)



16(1)(a)

Exhibit OFF-5. Ratios by Space Type

16(1)(a)

Exhibit OFF-6. Alternate Office Rent Model


Model Summary²

Model: 4

16(1)(a)

Model: 4


16(1)(a)



Excluded Variables


Model: 4

16(1)(a)



Ratio Statistics for Unstandardized Predicted Value / NET RENT

16(1)(a)



3.2 Commercial Rent Model

16(1)(a)




Exhibit COM-1. Commercial Rents by Space Type

16(1)(a)






Exhibit COM-2. Commercial Rents by Floor

3(1)(a), 16(1)(a), Regs 8.1(a)



16(1)(a)



16(1)(a)



Exhibit COM-3. Final Commercial Rent Model

16(1)(a)



Model: 8

16(1)(a)




16(1)(a)



Exhibit COM-4. Graph of Ratios with Size

16(1)(a), 3(1)(a), Regs 8.1(a)



3.3 Shopping Center Rent Model

16(1)(a)





Exhibit SC-1. Shopping Center Rents by Space Type

16(1)(a)



16(1)(a)



Exhibit SC-2. Graph of Rents with Size

16(1)(a)



16(1)(a)



Exhibit SC-3 below contains the final model.

Exhibit SC-3. Final Shopping Center Rent Model

Model Summary

Model: 9

16(1)(a)



Excluded Variables

Model: 9

16(1)(a)



Ratio Statistics for Unstandardized Predicted Value / NET RENT

16(1)(a)



Exhibit SC-4. Graph of Ratios by Space Type

16(1)(a)



16(1)(a)

Exhibit SC-5. Graph of Ratios by Shopping Center.

16(1)(a)

16(1)(a)



3.4 Commercial Cap Rate Model

16(1)(a)



Exhibit OAR-1. Indicated Cap Rates by Property Type

16(1)(a)



Exhibit OAR-2. Final Commercial OAR Model

Model Summary

Model: 5

16(1)(a)



Exhibit OAR-3. Model Indicated Cap Rates by Property Type

16(1)(a)




Exhibit OAR-4. Commercial Sales Ratios by Property Type

16(1)(a)




Exhibit OAR-5. Commercial Sales Ratio by Study Area

16(1)(a)



4. Industrial Models

Similar to commercial properties, the City developed an industrial net rent model followed by a cap rate model based on a comparison of predicted rents and sales prices. Section 4.1 below reviews the industrial rent model and section 4.3 reviews the cap rate model.

4.1 Industrial Rent Model

16(1)(a)





Exhibit IND-1. Net Rents by Lease Start Date

16(1)(a), 3(1)(a), Regs 8.1(a)



16(1)(a)




Exhibit IND-2. Net Rents by Space type

3(1)(a), 16(1)(a), Regs 8.1(a)


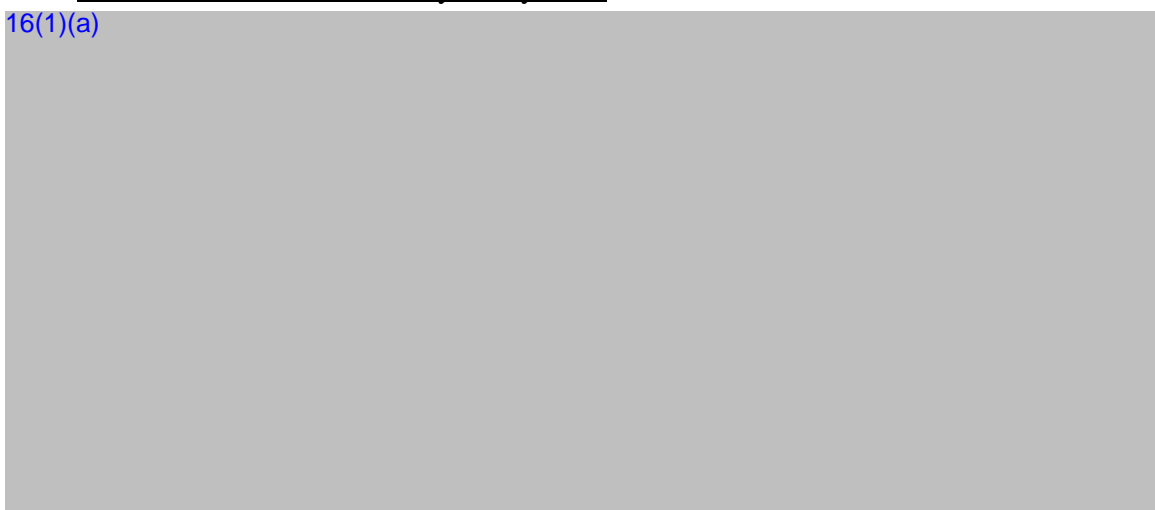


Exhibit IND-3. Net Rents by Study Area

16(1)(a)



16(1)(a)



Exhibit IND-4. Final Industrial Rent Model

Model Summary^j

Model: 8

16(1)(a)



Model: 8

16(1)(a)



Excluded Variables

Model: 8

16(1)(a)



Exhibit IND-5. Graph of Ratios with Site Coverage

16(1)(a)



4.2 Industrial Cap Rate Model

16(1)(a)



Exhibit 4-6. Indicated Industrial Cap Rates

16(1)(a)




Exhibit 4-7. Graph of Industrial Cap Rates with Time

16(1)(a)



Exhibit 4-9. Graph of Industrial Cap Rates with Site Coverage

16(1)(a)



16(1)(a)



Exhibit 4-9. Final Industrial Cap Rate Model

Model Summary

Model: 4

16(1)(a)



5. Mixed Use Models

As with multi-residential properties, the City conducted a gross income approach for properties that had mixed residential and non-residential uses. First an analysis was done to estimate gross income, along with vacancy rates, and then a gross income multiplier (GIM) analysis was conducted. While rental data was obtained largely from 2019 mailers, some older (2006-2018) rents for which no more recent information was available were also used in the analysis.

Section 5.1 reviews the gross rent analysis and section 5.2 takes up the GIM model.


5.1 Mixed Use GIM Models

Rental spaces in mixed use building were divided between commercial and residential spaces and a separate model and vacancy rate analysis conducted for each.

After deleting one extreme value at \$60 psf, the commercial mixed use model was built from 61 office, retail, restaurant, bank, storage, and warehouse spaces largely in multi-story buildings where the first floor contained commercial uses and the second floor contained apartment units. Exhibit MX-1 contains the gross annual rents psf of the 61 spaces. The one bank was combined with office rents and the one warehouse was combined with storage rents.

Exhibit MX-1. Commercial Mixed Use Rents by Space Type.

GROSS RENT PSFT
3(1)(a), 16(1)(a), Regs 8.1(a)

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16(1)(a)


A large rectangular area of the document is redacted with a solid grey fill, obscuring the data for Exhibit MX-2.

Exhibit MX-2. Final Mixed Use Commercial Model

Model Summary^g

Model: 6


16(1)(a)

A large rectangular area of the document is redacted with a solid grey fill, obscuring the data for Exhibit MX-2.

Excluded Variables

Model: 6

16(1)(a)



Ratio Statistics for Unstandardized Predicted Value / GROSS_RENT_PSFT

16(1)(a)





Exhibit MX-3. Mixed Use Apartment Rents by Space Type

3(1)(a), 16(1)(a), Regs 8.1(a)



16(1)(a)





Exhibit MX-4. Initial Mixed Use Residential Model

Model: 4

16(1)(a)



Excluded Variables

Model: 4

16(1)(a)



Ratio Statistics for Unstandardized Predicted Value / Gross_Rent_Per_Month

16(1)(a)



Exhibit MX-5. Graph of Mixed Use Commercial Ratios with Effective Age

16(1)(a)



5.2 Mixed Use GIM Model

16(1)(a)




Exhibit MX-6. Mixed Use EGIM Model

Model Summary

Model: 2

16(1)(a)



Excluded Variables

Model: 2

16(1)(a)




Exhibit MX-7. Graph of Unit Count and EGIM

16(1)(a)




Exhibit MX-8. Graph of Effective Age with EGIM

16(1)(a)



Exhibit MX-9. Model with Effective Age (Versus Unit Count)

Model Summary

Model: 2

16(1)(a)



Excluded Variables

Model: 2

16(1)(a)



6. Conclusions

16(1)(a)



16(1)(a)



About the Author

Robert J. Gloudemans is a Mass Appraisal Consultant and longtime partner in Almy, Gloudemans, Jacobs & Denne which has been recently dissolved after 29 wonderful years. He began his career as a research associate for IAAO, where he worked for six years before accepting an appointment as Mass Appraisal Supervisor for the Arizona Dept of Revenue, where he worked for eleven years before starting his own consulting practice and forming Almy, Gloudemans, Jacobs & Denne in 1991.

Bob provides consulting services in mass appraisal and has assisted over 100 clients in the U.S., Canada, and worldwide. He has served three appointments on the IAAO Standards Committee and contributed extensively to the mass appraisal literature. He is the author of *Mass Appraisal of Real Property* (IAAO, 1999) and with Richard Almy is co-author of the current IAAO textbook, *Fundamentals of Mass Appraisal* (2011). Recently he completed development of a series of four courses that constitute IAAO's new, advanced mass appraisal curriculum. In 2018 he received the IAAO Most Valuable Member award and in 2019 was awarded an IAAO Fellow designation.