



# VBA for Real Estate Analysis

MBA 641  
Wilford Wong

## **I. Executive Summary**

As a real estate acquisition analyst, my duty is to analyze multi-family properties that are currently on the market. On average, I spend 4-5 hours to analyze each property in excel. I can use VBA to automate part of that process. It will not only help me save time, but also help me concentrate on analyzing the parts that require more intellectual focus.

The first process that can be automated is retrieving data from the Internet. Using a few websites as the data sources, the macro can insert those demographics and economics data from those websites by searching with the subject and comparable property addresses. The second process that can be automated is to insert photos of the subject and comparable properties into the Excel. The third process that can be automated is to perform a rent analysis base on the rent roll. The macro will populate a few graphs to look at rent trend and seasonality.

## **II. Background**

Real estate brokers will email my company when a property is on the market for sale. The real estate broker provide us with a offering memorandum that include the property description, financial analysis, and market overview. In additional to the offering memorandum, the broker will also provide a copy of the current rent roll, financial statements, and tax bills.

My job is to digest all the information provided by the broker, perform an analysis, underwrite the property, and put the information into the pre-designed Excel template. By organizing the property information into a standardized format, the senior managers in my company can have readily available information on the property. The managers can then decide whether the property is suitable for our company. We can then move on to send employee to take a tour of the property, perform due diligent, and submit an offer on the property.

The pre-designed Excel template that my company use is confidential. However, these are the basic components in the template. First, a “Key Assumptions” tab that includes the project information, unit mix, financing option, and tax analysis. Second, a “Cash flow statement” that project the cash flow for the property in the next 7 years. Third, an “Improvement Budget” for inputting the upgrade and renovation that my company is planning to do for the subject property. Forth, a “Rent Comparable” tab that include 5-7 properties that are located close to the subject property. The rent comparable is important because it tells us what kind of rent premium we can expected to charge after we upgrade the property after we acquired it.

Below are the major components of the Excel template that my company use. It included 1) Key Assumptions 2) Cash Flow Forecast 3) Improvement Budget and 4) Comparable Properties

1)

KEY ASSUMPTIONS									
<b>Project Information</b>			<b>Acquisition &amp; Improvement Assumptions</b>				<b>Bridge Loan</b> <i>Active</i>		
Project Name	Desert Wind		Contract Price	\$ 6,000,000			Cost Basis	\$ 9,048,300	
Address	4141 West McDowell Rd		Legal Fees	75,000			Loan to Value	75.0%	
City, State Zip	Phoenix, AZ 85009		Due Diligence & Inspections	60,000			Initial Funds Distributed	\$ 3,900,625	
Property Type	Class B Multifamily		Earnest Money Carry Costs	2,700			Construction Funds Distributed	\$ 2,885,600	
Year Built	1987		Title Costs	25,000			Total Funds Distributed	\$ 6,786,225	
Number of Units	216		Transfer Tax/Recording Fee	13,572			Interest Rate	3.50%	
Number of Buildings	28		Improvement Costs	2,885,600			Loan Fees	1.0%	
Acres	7.12		Acquisition Fee	1.0%			Period Loan Issued	Month 0	
Covered Parking	205		Equity Raise Fee	2.0%			Period Loan Repaid	Month 36	
Surface Parking	101		Initial Loan Fees	67,862			Construction Draws	Yes	
Current Occupancy	91%		Start-up Working Capital	50,000			<b>Permanent Loan</b> <i>Active</i>		
Holding Period	7 Years		Insurance/Tax/Replace Escrows	67,998			Loan to Value	62%	
<b>Rehab Projections</b>			<b>Total Investment</b>	<b>9,359,192</b>			Initial Loan Balance	\$ 6,421,995	
Do we need to Remodel the units?	All		<b>Acquisition &amp; Renovation Metrics</b>			Interest Rate	6.25%		
Number of units for Full Remodel:	216		T-12 Cap Rate	7.3%			Loan Fees	1.0%	
Number of units for Part Remodel:	0		GRM	4.69			Period Loan Issued	Month 36	
Total Number of units Remodeled:	216		Adjusted T-12 Cap rate	7%			Period Loan Repaid	Year 7	
Renovation Delay	3 Months		T-12 Cap Rate w/All Expenses	4.7%			Amortization Period	30 Years	
Months to remodel Interiors:	26 Months		Purchase Price Per Unit	27,778			Loan Payment	\$ 479,099	
Months to remodel Exteriors:	21 Months		Price per Square Foot	43.65			<b>Supplemental Loan</b> <i>Inactive</i>		
<b>Exit Assumptions</b>			Stabilized Cap Rate	7.2%			Loan to Value	0%	
Gross Sales Proceeds	#####		Return on Renovations >12%	12%			Initial Loan Balance	\$ -	
Exit Cap Rate	6.5%		Price Advertised by Seller/Broker	47K per door			Target DSCR	1.35	
Period of Sale	Year 7		<b>Stabilized Valuation</b>			Interest Rate	6.25%		
Selling Costs	2.1%		Stabilized NOI at Month	Month 36			Loan Fees	1.0%	
Sales Price Per Unit	\$ 51,766		Number of Trailing Months	3 Months			Period Loan Issued	Month 36	
			Stabilized NOI	\$ 675,542			Period Loan Repaid	Year 7	
			Appraised Cap Rate	6.50%			Amortization Period	30 Years	
			Appraised Value	\$ 10,392,961			Loan Payment	\$ -	

Type	# of Units	% of Complex	Size	Current Rent Rates			Renovated Rent Rates			Initial % Increase	Total #f
				Monthly Rent/Unit	Annual GPR	p.s.f.	Monthly Rent/Unit	Annual GPR	p.s.f.		
1.0 bd / 1.0 ba	88	40.7%	535	442	466,752	\$0.83	560	591,360	1.05	26.7%	47,080
1.0 bd / 1.0 ba	40	18.5%	635	486	233,280	\$0.77	580	278,400	0.91	19.3%	25,400
2.0 bd / 1.0 ba	56	25.9%	716	532	357,504	\$0.74	605	406,560	0.84	13.7%	40,096
2.0 bd / 2.0 ba	32	14.8%	778	586	225,024	\$0.75	635	243,840	0.82	8.4%	24,896
0	0	0.0%	-	-	-	-	-	-	-	0.0%	-
0	0	0.0%	-	-	-	-	-	-	-	0.0%	-
0	0	0.0%	-	-	-	-	-	-	-	0.0%	-
0	0	0.0%	-	-	-	-	-	-	-	0.0%	-
0	0	0.0%	-	-	-	-	-	-	-	0.0%	-
0	0	0.0%	-	-	-	-	-	-	-	0.0%	-
0	0	0.0%	-	-	-	-	-	-	-	0.0%	-
<b>Totals</b>	<b>216</b>	<b>100.0%</b>	<b>636</b>	<b>\$ 495</b>	<b>\$ 1,282,560</b>	<b>\$0.78</b>	<b>\$ 586</b>	<b>\$ 1,520,160</b>	<b>0.92</b>	<b>18.5%</b>	<b>137,472</b>

2)

	UNLEVERAGED CASH FLOW ANALYSIS							
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
<b>Revenue Drivers</b>								
General Vacancy Target	Look at Monthly Projections							
Average Annual Actual Vacancy	12.40%	15.00%	11.80%	6.00%	6.00%	6.00%	6.00%	6.00%
Collection Loss	2.00%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%
Concessions	5.00%	4.00%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Market Growth	0.00%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Loss to Lease	2.63%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%
General Inflation	2.00%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
% of Utilities Reimbursed	8.97%	51.82%	93.27%	100.00%	100.00%	100.00%	100.00%	100.00%
Units Renovated	74.8	99.7	41.5	0.0	0.0	0.0	0.0	0.0
<b>Transaction Costs</b>								
Acquisition Costs	\$ (8,287,732)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 10,947,312
Improvement Costs	-	(1,079,301)	(1,439,068)	(967,231)	-	-	-	-
<b>Total Costs</b>	<b>\$(8,287,732)</b>	<b>(1,079,301)</b>	<b>(1,439,068)</b>	<b>(967,231)</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>10,947,312</b>
<b>Property Cash Flow</b>								
	<b>T-12 Actual</b>	<b>Yr. 1 - PUPA</b>						
Gross Potential Income	\$ 1,282,560	\$ 6,036	\$ 1,303,883	\$ 1,441,077	\$ 1,580,316	\$ 1,637,046	\$ 1,677,972	\$ 1,719,022
Loss to Lease	3.9%	3.9%	(50,554)	(157)	(33,306)	(17,760)	(19,506)	(20,463)
Concessions (model unit, employee)	1.5%	1.5%	(18,277)	(294)	(63,498)	(66,933)	(39,018)	(40,415)
Collection Loss	1.1%	1.1%	(14,008)	(118)	(25,400)	(17,791)	(19,509)	(20,207)
Schedule Base Rent Revenue	1,199,721	5,468	1,181,078	1,348,584	1,502,182	1,555,961	1,594,860	1,634,732
Late Fees	30,683	133	28,736	28,589	30,427	33,217	34,047	34,898
Admin Fees	8,508	40	8,339	8,300	8,827	9,643	9,884	10,131
Application Fees	9,272	40	8,680	8,639	9,188	10,037	10,288	10,545
Laundry Income	13,636	59	12,760	12,705	13,513	14,762	15,131	15,509
Utility Reimbursements	\$ 40	\$ 40	80,523	81,609	92,392	103,774	106,369	109,028
Other Income	\$ 19,428	\$ 84	18,182	18,523	19,254	21,023	21,559	22,098
Subtotal Fees & Income	160,400	728	157,224	157,945	173,583	192,467	197,278	202,210
<b>Total Potential Gross Income</b>	<b>\$ 1,362,171</b>	<b>\$ 6,196</b>	<b>\$ 1,338,302</b>	<b>\$ 1,506,539</b>	<b>\$ 1,675,769</b>	<b>\$ 1,748,428</b>	<b>\$ 1,792,138</b>	<b>\$ 1,836,942</b>
General Vacancy	6.5%	6.5%	(83,221)	(752)	(162,450)	(216,162)	(186,472)	(168,223)
<b>Effective Gross Income</b>	<b>\$ 1,278,950</b>	<b>\$ 5,444</b>	<b>\$ 1,175,852</b>	<b>\$ 1,290,377</b>	<b>\$ 1,480,293</b>	<b>\$ 1,650,209</b>	<b>\$ 1,691,460</b>	<b>\$ 1,733,747</b>
<b>Operating Expenses</b>								
Compensation	\$ 1,000	\$ (236,765)	(1,000)	(216,000)	(221,400)	(226,935)	(232,608)	(238,424)
Legal Expense	\$ -	\$ -	-	-	-	-	-	-
Advertising & Promotion	\$ 100	\$ (27,565)	(100)	(21,600)	(22,140)	(22,694)	(23,261)	(23,842)
Administrative Expense	\$ 200	\$ (28,857)	(200)	(43,200)	(44,280)	(45,387)	(46,522)	(47,685)
Other Operating Costs	\$ -	\$ -	-	-	-	-	-	-
Unit Preparation	\$ 200	\$ (30,667)	(200)	(43,200)	(44,280)	(45,387)	(46,522)	(47,685)
Contract Services	\$ -	\$ (48,987)	(231)	(49,367)	(51,216)	(52,496)	(53,809)	(55,154)
Repairs & Maintenance	\$ 300	\$ (36,662)	(300)	(64,800)	(66,420)	(68,081)	(69,783)	(71,527)
Utilities	\$ (180,718)	(852)	(184,333)	(188,941)	(193,665)	(198,506)	(203,466)	(208,556)
Insurance	\$ (41,311)	(139)	(30,000)	(31,500)	(33,075)	(34,729)	(36,465)	(38,288)
Property Management Fee	3.0%	\$ (45,973)	(163)	(35,276)	(38,711)	(44,679)	(49,506)	(50,744)
Real Estate Taxes	\$ (101,304)	(317)	(133,187)	(137,183)	(141,298)	(145,537)	(149,903)	(154,401)
Asset Management Fee	0.0%	\$ -	-	-	-	-	-	-
Travel Expense	\$ -	\$ (56)	(12,000)	(12,240)	(12,546)	(12,860)	(13,181)	(13,511)
Replacement Reserves	\$ 300	\$ (84,800)	(300)	(84,800)	(86,420)	(88,081)	(89,783)	(91,527)
<b>Total Operating Expenses</b>	<b>\$(433,613)</b>	<b>(4,159)</b>	<b>\$(433,613)</b>	<b>\$(433,613)</b>	<b>\$(433,613)</b>	<b>\$(433,613)</b>	<b>\$(433,613)</b>	<b>\$(433,613)</b>

3)

IMPROVEMENT BUDGET					
Construction Budget Interiors	# of Units	Price Per Unit	Total Cost	PSF Cost	
<b>General Improvements</b>					
Materials	216	\$ 4,500	\$ 972,000	7.07	
Labor	216	\$ 1,500	\$ 324,000	2.36	
Flooring	216	\$ 1,500	\$ 324,000	2.36	
<b>Deferred Maintenance</b>					
Electrical	216	\$ -	\$ -	-	
Plumbing	216	\$ -	\$ -	-	
Other	216	\$ -	\$ -	-	
<b>W/D Hookups</b>					
Materials	216	\$ -	\$ -	-	
Labor	216	\$ -	\$ -	-	
<b>HVAC Improvements</b>					
Materials	216	\$ -	\$ -	-	
Labor	216	\$ -	\$ -	-	
Windows	216	\$ -	\$ -	-	
Contingency	% of Cap Ex	10.0%	162,000	1.18	
<b>Total Interior Renovation Costs</b>		<b>\$ 7,500</b>	<b>\$ 1,782,000</b>	<b>12.96</b>	
<b>General Deferred Maintenance</b>					
Roofs	N/A	N/A	-	-	
Concrete	N/A	N/A	-	-	
Asphalt	N/A	N/A	-	-	
Drainage	N/A	N/A	-	-	
Other	N/A	N/A	300,000	2.18	
Contingency	% of Site Costs	10.0%	30,000	0.22	
<b>Total Deferred Maintenance</b>			<b>\$ 330,000</b>	<b>2.40</b>	
<b>Exterior &amp; Other Improvements</b>					
Clubhouse	N/A	N/A	-	-	
Pool Area	N/A	N/A	-	-	
Leasing Office	N/A	N/A	-	-	
Corridors/Breezeways	N/A	N/A	-	-	
Building Exteriors	N/A	N/A	-	-	
Amenity Space 1	N/A	N/A	-	-	
Amenity Space 2	N/A	N/A	-	-	
Landscaping	N/A	N/A	-	-	
Signage	N/A	N/A	-	-	
Other	N/A	N/A	400,000	2.91	
Contingency	% of Site Costs	10.0%	40,000	0.29	
<b>Total Exterior &amp; Other Improvements</b>			<b>\$ 440,000</b>	<b>3.20</b>	
<b>Development Soft Costs</b>					
Designer & Architect Costs	N/A	N/A	50,000	1.96%	
Engineer Costs	N/A	N/A	30,000	1.18%	
Permits	N/A	N/A	40,000	1.57%	
Start-up Marketing & Branding	N/A	N/A	50,000	1.96%	
Development Travel Overhead	N/A	N/A	36,000	1.41%	
Development Overhead	% of Cap Ex	5.0%	127,600	5.00%	
<b>Total Development Soft Costs</b>			<b>\$ 333,600</b>	<b>13.07%</b>	
<b>Total Improvement Costs</b>			<b>\$ 2,885,600</b>	<b>20.99</b>	

4)

Comparable Apartment Complexes																
#	Property Name Address, City, State	Year Bldg Renovated	Occupancy Rate (%)	Total Number of Units	Net Rentable Area	C o u n t y	Number of Units	Bedrooms	Bathrooms	Unit Price (\$/SF)	Quoted Monthly Rent & Utilities				Washer Dryer In-Unit	Comments
											Market Rent (\$/Month)	Market Rent (\$/Sq Ft/Month)	Market Rent (\$/Sq Ft/Month)	Market Rent (\$/Sq Ft/Month)		
Subject	Desert Wind 1414 West McDowell Rd Phoenix, AZ 85008	1987	91%	216	137,472	C	88	1.0 bd / 1.0 ba	535	\$442	\$0.83	\$0.83	\$0.83	None	On-Site Laundry Center	
							40	1.0 bd / 1.0 ba	635	\$495	\$0.77	\$0.77	\$0.77	None		
							56	2.0 bd / 1.0 ba	716	\$532	\$0.74	\$0.74	\$0.74	None		
							32	2.0 bd / 2.0 ba	778	\$595	\$0.75	\$0.75	\$0.75	None		
							216		630	\$495	\$0.75	\$0.75	\$0.75	None		
							88	1.0 bd / 1.0 ba	535	\$560	\$1.05	\$0.60	\$0.60	None		
							40	1.0 bd / 1.0 ba	635	\$560	\$0.81	\$0.81	\$0.81	None		
							56	2.0 bd / 1.0 ba	716	\$605	\$0.84	\$0.84	\$0.84	None		
							32	2.0 bd / 2.0 ba	778	\$635	\$0.82	\$0.82	\$0.82	None		
							216		630	\$545	\$0.82	\$0.82	\$0.82	None		
<b>Additional Comparable Complexes</b>																
1	TERESA SANTA 4820 West McDowell Road Phoenix, AZ 85035	1987	94%	274	159,848		32	0.0 bd / 1.0 ba	460	\$420	\$1.25	\$420	\$420	None		
							30	1.0 bd / 1.0 ba	480	\$505	\$1.15	\$505	\$505	None		
							50	1.0 bd / 1.0 ba	630	\$565	\$0.90	\$565	\$565	None		
							64	2.0 bd / 1.0 ba	630	\$605	\$0.96	\$605	\$605	None		
							48	2.0 bd / 2.0 ba	761	\$635	\$0.83	\$635	\$635	None		
2	WINDSPRING PALMS 1401 North 43rd Avenue Phoenix, AZ 85008	1985	95%	200	174,464		64	1.0 bd / 1.0 ba	635	\$544	\$0.86	\$544	\$544	Hookup		
							138	2.0 bd / 2.0 ba	984	\$633	\$0.64	\$633	\$633	Hookup		
3	LOS VEGOS 1950 North 43rd Avenue Phoenix, AZ 85008	1983	97%	483	222,630		168	0.0 bd / 1.0 ba	385	\$378	\$0.88	\$378	\$378	None		
							310	1.0 bd / 1.0 ba	495	\$470	\$0.95	\$470	\$470	None		
							5	2.0 bd / 1.0 ba	900	\$950	\$0.73	\$950	\$950	None		
4	LYNWOOD 5535 West McDowell Road Phoenix, AZ 85035	1982	90%	300	212,880		72	1.0 bd / 1.0 ba	625	\$499	\$0.80	\$499	\$499	None		
							109	2.0 bd / 1.0 ba	670	\$535	\$0.80	\$535	\$535	None		
							72	2.0 bd / 1.0 ba	740	\$575	\$0.78	\$575	\$575	None		
							48	2.0 bd / 2.0 ba	890	\$615	\$0.70	\$615	\$615	None		
5	GASA SOL 4102 West Osborn Road Phoenix, AZ 85019	1983	90%	247	190,180		1	0.0 bd / 1.0 ba	473	\$399	\$0.84	\$399	\$399	None		
							23	1.0 bd / 1.0 ba	576	\$499	\$0.87	\$499	\$499	None		
							15	1.0 bd / 1.0 ba	607	\$499	\$0.82	\$499	\$499	None		
							12	1.0 bd / 1.0 ba	619	\$499	\$0.81	\$499	\$499	None		
							12	1.0 bd / 1.0 ba	645	\$499	\$0.77	\$499	\$499	None		
							61	1.0 bd / 1.0 ba	645	\$499	\$0.77	\$499	\$499	None		
							33	2.0 bd / 1.0 ba	763	\$399	\$0.79	\$399	\$399	None		
							30	2.0 bd / 1.0 ba	817	\$399	\$0.70	\$399	\$399	None		
							32	2.0 bd / 2.0 ba	858	\$630	\$0.74	\$630	\$630	None		
							28	2.0 bd / 2.0 ba	890	\$630	\$0.72	\$630	\$630	None		
6	MANBLE CREEK 901 West McDowell Road Phoenix, AZ 85005	1983	95%	244	206,280		108	1.0 bd / 1.0 ba	720	\$510	\$0.71	\$510	\$510	None		
							48	2.0 bd / 1.0 ba	840	\$620	\$0.74	\$620	\$620	None		
							88	2.0 bd / 2.0 ba	1,020	\$720	\$0.72	\$720	\$720	None		

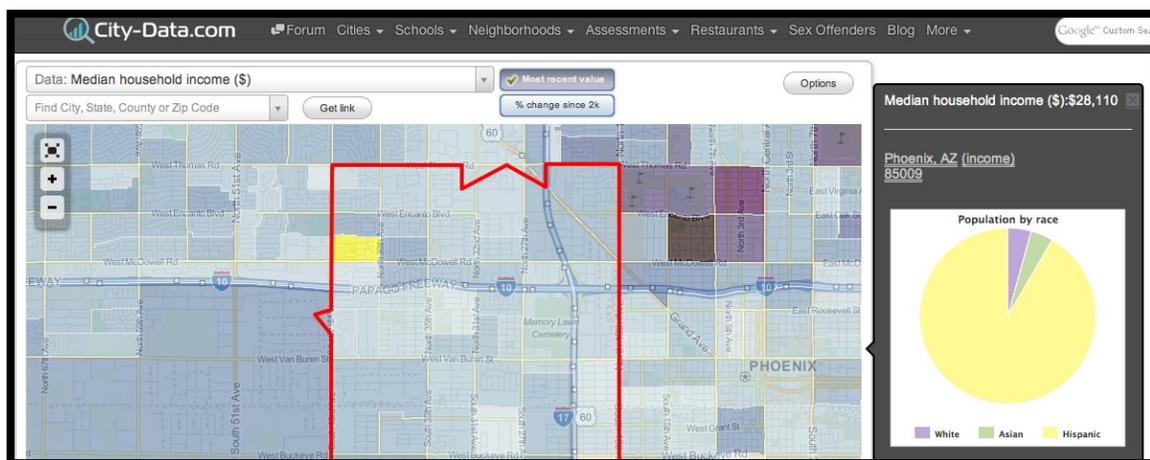
### III. Implementation Document

#### A. Retrieve Data from Internet

For the subject property, I need to find out the demographics, economics, and school information.

Get Data Online				
<b>Demographics</b>				
Median Income		White	Asian	Black
city-data.com				
<b>Economics</b>				
Median Home \$		Unemp.	Pop. Growth	
City-data.com		bestplaces.net		
<b>School Ratings</b>				
Elem.	Middle	H.S.	School District	

The demographics information is obtained from City-Data.com by searching with a zip code.



The economics information is obtained from bestplace.net by searching with the zip code.

### Phoenix (zip 85009), Arizona [1 Reviews](#) | [Leave a Comment](#)

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<b>49,581</b> <a href="#">Population</a>	Down -15.0%	<b>26.8</b> <a href="#">Median Age</a>
<b>40.1%</b> <a href="#">Married Population</a>		<b>3.64</b> <a href="#">Household Size</a>
<b>5.4%</b> <a href="#">Unemployment Rate</a>		<b>\$54,900</b> <a href="#">Median Home Price</a>
<b>25.26</b> minutes <a href="#">Average Commute Time</a>		<b>Real Estate</b> <a href="#">For Sale</a> <a href="#">For Rent</a>

The school information is obtained from greatschool.org by searching with the complete property address.

### School and District Boundaries Map

Researching schools in your neighborhood is a snap with our interactive map tool. Enter an address to see school attendance and district boundary lines. Go ahead and give it a spin.

4141 West McDowell Rd Phoenix, AZ 85009 [Search](#) [Nearby homes for sale](#)

**2** Isaac Elementary District

Districts near 4141 W McDowell Rd, Phoenix, AZ 85009, USA

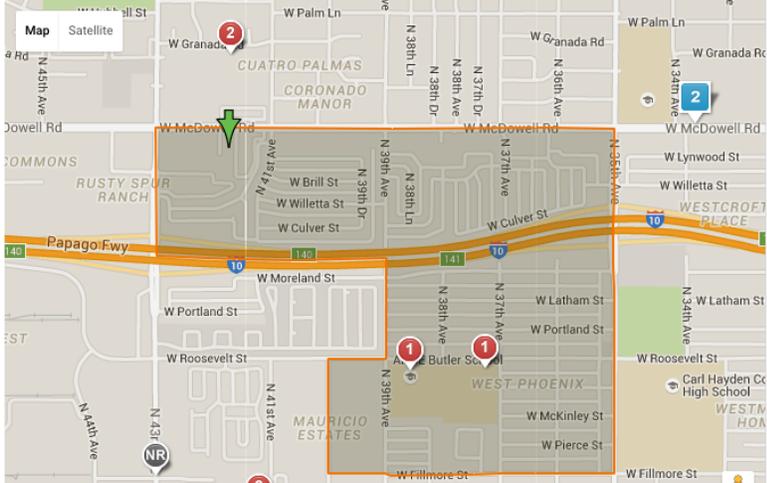
Isaac Elementary District

Grade level

Elementary  Middle  High

Schools in District

- 3 Esperanza Elementary School
- 3 Joseph Zito Elementary School
- 2 J B Sutton Elementary School
- 2 Mitchell Elementary School
- 2 Moya Elementary School



After clicking the “Get Data Online” button, the data will be retrieved from the 3 websites above.

Get Data Online				
<b>Demographics</b>				
<i>Median Income</i>		<i>White</i>	<i>Asian</i>	<i>Black</i>
\$	28,110	6,501	208	2,232
city-data.com				
<b>Economics</b>				
<i>Median Home \$</i>		<i>Unemp.</i>	<i>Pop. Growth</i>	
\$	54,900.00	5%	-15%	
City-data.com		bestplaces.net		
<b>School Ratings</b>				
<i>Elem.</i>	<i>Middle</i>		<i>H.S.</i>	<i>School District</i>
1	1		3	2

Other than the demographic information, I also need to find out the distant of each comparable property in related to the subject property. I can look up the distant on mapdevelopers.com

								Get Distant
Property	Address	Date of Sale	Price	Units	Price per Unit	Price per SF	Distance	Year Built
Marble Creek	5601 West McDowell Road   Phoenix, Arizona 85035	Oct-15	12,100,000	244	49,590	59		1985
Ventana Palms	7021 West McDowell Road   Phoenix, Arizona 85035	Aug-15	8,552,000	160	53,450	62		1989
Villa De La Paz	6041 West Thomas Road   Phoenix, Arizona 85033	Jun-15	4,900,000	103	47,573	55		1982
Brookside	6131 West Thomas Road   Phoenix, Arizona 85033	Apr-15	10,000,000	204	49,020	73		1984
Maryland Gardens	4529 West Ocotillo Road   Glendale, Arizona 85301	Feb-15	5,100,000	120	42,500	57		1983

**Distance From To: Calculate distance between two addresses, cities, states, zipcodes, or locations**

Enter a city, a zipcode, or an address in both the **Distance From** and the **Distance To** address inputs. Click Calculate Distance, and the tool will place a marker at each of the two addresses on the map along with a line between them. The distance between them will appear just above the map in both miles and kilometers. The tool is useful for estimating the mileage of a flight, drive, or walk. Can easily determine the distance between 2 cities as well.

Distance From:  Distance To:  [Calculate Distance](#)

Straight line distance: 0.55 miles, 0.89 kilometers (km), 2908 feet, 886 meters  
 Driving distance: 0.54 miles, 0.88 kilometers (km), 2871 feet, 875 meters

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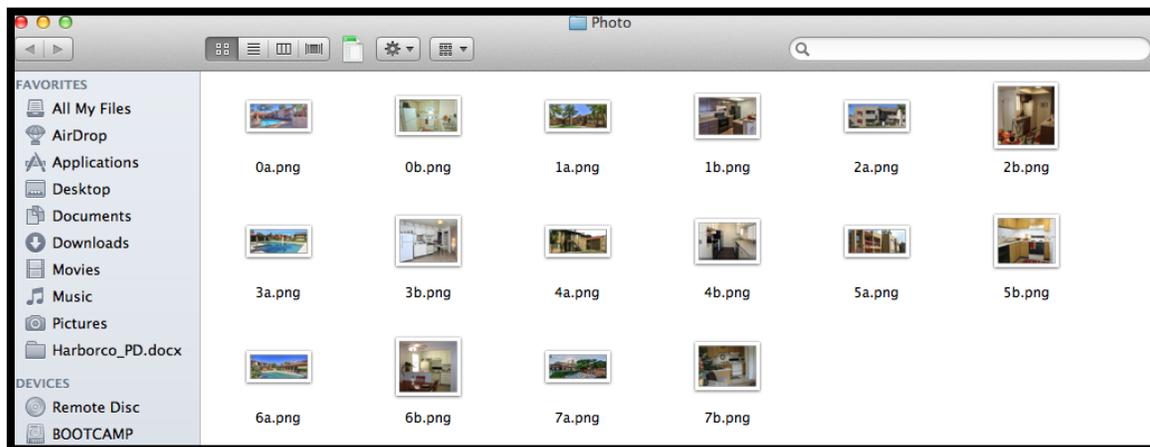
After clicking the “Get distant” button, the distant of each comparable property will generate automatically.

								Get Distant
Property	Address	Date of Sale	Price	Units	Price per Unit	Price per SF	Distance	Year Built
Marble Creek	5601 West McDowell Road   Phoenix, Arizona 85035	Oct-15	12,100,000	244	49,590	59	1.9	1985
Ventana Palms	7021 West McDowell Road   Phoenix, Arizona 85035	Aug-15	8,552,000	160	53,450	62	3.5	1989
Villa De La Paz	6041 West Thomas Road   Phoenix, Arizona 85033	Jun-15	4,900,000	103	47,573	55	3.7	1982
Brookside	6131 West Thomas Road   Phoenix, Arizona 85033	Apr-15	10,000,000	204	49,020	73	2.7	1984
Maryland Gardens	4529 West Ocotillo Road   Glendale, Arizona 85301	Feb-15	5,100,000	120	42,500	57	4.8	1983

## B. Import Photos

For the subject property and each comparable property, I need to insert two photos (exterior and interior) in the Excel. These photos are either provided by the real estate broker or found on the Internet. I usually take a screen capture of photo and then insert it in excel, depend on the order of the comparable property.

To automate part of this process, a macro will be created to insert all the property photos from a local folder into the Excel. The macro will insert the photos into the correct location based on the name of the files. For example, file name 0a is the exterior photo of the subject property; file name 0b is the interior photo of the subject property; file name 1a is the exterior photo of the first comparable property; file name 1b is the interior photo of the first comparable property; file name 2a is the exterior photo of the second comparable property; file name 2b is the interior photo of the second comparable property, etc.



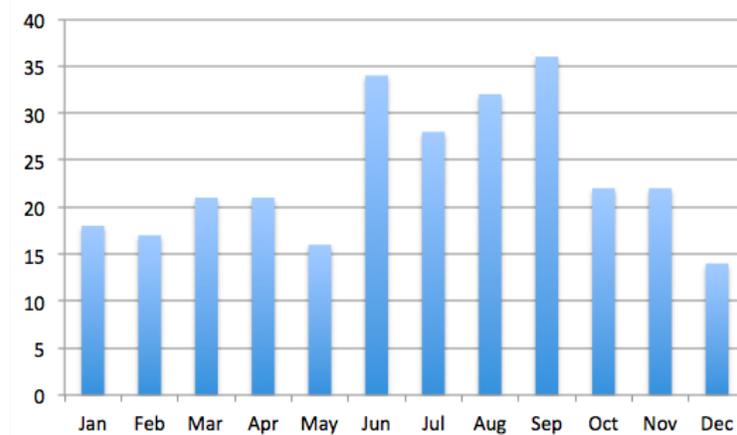


## C. Rent Analysis

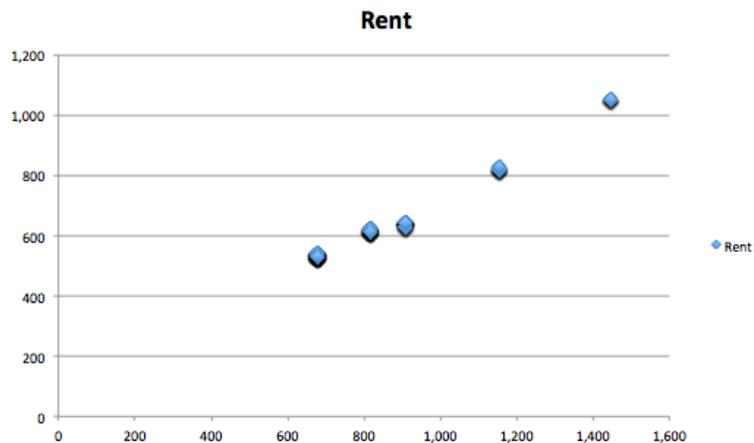
The broker would provide a current rent roll for the property. The rent roll would show the name of the tenants, rent amount, square footage, and contract date.

1	Unit Type	Sqft	Resident	Name	Rent	Charge	Amount	Resident	Other	Move In	Lease
2	145th	1,444.00	t1774949	Margarita Diamond	1,050.00	watr	44.00	0.00	0.00	May	4/17/16
3	145th	1,444.00	t1774950	Ralph Albanese	1,050.00	watr	44.00	125.00	0.00	Aug	4/17/16
4	145th	1,444.00	t1790457	Jose Figueroa	1,050.00	rnta	1,100.00	0.00	0.00	May	4/30/16
5	145th	1,444.00	t1774953	Susan Hoerner	1,050.00	petf	30.00	250.00	0.00	Jan	1/25/16
6	145th	1,444.00	t1791257	Kenyatta Wiggins	1,050.00	rnta	1,050.00	0.00	0.00	Jun	6/25/16
7	14522d	910.00	t1790720	Elizabeth Kennedy	641.00	rnta	681.00	0.00	0.00	May	5/28/16
8	14522u	910.00	t1774956	Cary Tash	641.00	petf	30.00	0.00	0.00	Apr	6/30/16
9	14522d	910.00	t1788851	Arryonne Baldus	641.00	rnta	641.00	0.00	0.00	Dec	12/6/15
10	14522u	910.00	t1787028	Pedro Torres De-Jesus	641.00	rnta	621.00	0.00	0.00	Sep	9/28/15
11	14522d	910.00	t1783679	Mike Francis	641.00	watr	34.00	0.00	0.00	Mar	5/17/16
12	14522u	910.00	t1787792	Tamara Calana	641.00	watr	34.00	0.00	0.00	Oct	11/9/15
13	14522d	910.00	t1791476	Ema Urias	641.00	rnta	716.00	0.00	0.00	Aug	7/31/16
14	14522u	910.00	t1786929	AnnMarie Smith	631.00	watr	34.00	0.00	0.00	Aug	11/25/15
15	14532u	1,153.00	t1791314	Lucia Solis	826.00	rnta	816.00	0.00	0.00	Jul	7/29/16
16	14532d	1,153.00	t1775992	Hugo Perez	816.00	watr	42.00	0.00	0.00	Jun	6/4/15
17	14532u	1,153.00	t1787874	Omar Grande-Quintana	826.00	rnta	816.00	0.00	0.00	Nov	10/31/15
18	14532d	1,153.00	t1785998	Mark Roberts	816.00	watr	44.00	0.00	0.00	Jul	3/1/16
19	14532u	1,153.00	t1776191	Hollanda Asansa	816.00	watr	44.00	0.00	0.00	Jul	1/27/16
20	145th	1,444.00	t1789239	Joseph Rahn	1,050.00	rnta	1,050.00	0.00	0.00	Jan	1/20/16
21	145th	1,444.00	t1776189	Lilia Lopez	1,050.00	watr	32.00	0.00	0.00	Jul	6/30/15
22	14532d	1,153.00	t1774969	Raphael Andrada	816.00	watr	44.00	75.00	0.00	Oct	7/20/16
23	14532u	1,153.00	t1791464	Kevin May	816.00	rnta	816.00	0.00	0.00	Jul	7/16/16
24	14532d	1,153.00	t1791309	John Baloyot	816.00	rnta	826.00	0.00	0.00	Jul	6/30/16
25	14532u	1,153.00	t1789157	Ontoniell Berrera	816.00	rnta	816.00	0.00	0.00	Jan	1/9/16
26	14532d	1,153.00	t1785008	Edlyn Salvador	816.00	watr	44.00	0.00	0.00	May	5/29/16
27	14532u	1,153.00	t1779908	Kylie Dougman	826.00	watr	44.00	0.00	0.00	Nov	11/1/14
28	145th	1,444.00	t1790662	Kristopher Youts	1,050.00	rnta	1,050.00	150.00	0.00	Jun	5/31/16
29	14522d	910.00	t1774976	Antonio Martinez-Garcia	641.00	rnta	631.00	0.00	0.00	Sep	1/4/16
30	14522u	910.00	t1780898	Nenita Denao	641.00	watr	34.00	0.00	0.00	Nov	10/31/15
31	14522d	910.00	t1789810	Siohquei Donald	641.00	watr	34.00	0.00	0.00	Mar	3/9/16
32	14522u	910.00	t1790581	Keekee Phillips	631.00	rnta	641.00	0.00	0.00	Apr	4/29/16
33	14522d	910.00	t1776183	Alexander Santiago	641.00	rnta	641.00	0.00	0.00	Jun	6/25/16
34	14522u	910.00	t1789649	Rhonda Smith	641.00	rnta	631.00	0.00	0.00	Mar	3/5/16
35	14532d	1,153.00	t1783010	Agner Penuliar	816.00	watr	44.00	0.00	0.00	Jan	1/25/16
36	14532u	1,153.00	t1774981	Feza Minani	826.00	watr	44.00	250.00	0.00	Jan	12/31/14
37	14532d	1,153.00	t1789177	Luis DeLaCruz	816.00	rnta	826.00	0.00	0.00	Jan	1/9/16

With these data, I created a graph showing the month when the tenants enter into the contract. It shows the seasonality of tenants move in. It is important because we can only increase rent when tenants either sign new contracts or renew their contracts. This graph would give us the window of opportunity of renovating the apartments and increase rent.



The other thing to look at is the relationship between the square footage and rent. With this graph, we can see how much we are able to charge with increase of square footage of the apartment.



## **IV. Learning and Conceptual Difficulties**

### **A. Getting data online**

Getting the data using the “Import Data from Web” function is not easy. There's always script problem when using the web browser in Excel. Sometimes, there will be elements that are showing on a regular browser that's not showing in the Excel web browser. It takes a lot of trial and error to make it works. I also need to do a lot of element inspection to find the source of the data. If there are multiple websites showing the data that I need, it's better to test it in the excel web browser to find the one that's most compatible with the excel web browser. Using the most compatible website would make the vba code simpler and run smoother.

### **B. Calculating distant**

Originally, I would measure the distant between properties on Google map, using the ruler tool. It was tedious and labor intensive. In order to automate that process, I found a website that generate the distant after the user entered the 2 addresses. This website is much more convenience than using the ruler tool in Google map. As a result, the vba I need is lookup the address on the Excel and enter it on the website. Then retrieve the distant after pressing enter.

The code works well on getting the distant. However, it's not possible to get the direction of the property in relation to the subject property. There no text on the website that display the direction, whether it's N, E, S, or W. The solution for getting the direction is just to manually visual the map on the website. Therefore, after generating the distant page, I would just leave it un-close and get the next property distant using a new tab in the web browser. With the un-closed tabs, I can then visually find out the direction and enter it into Excel.

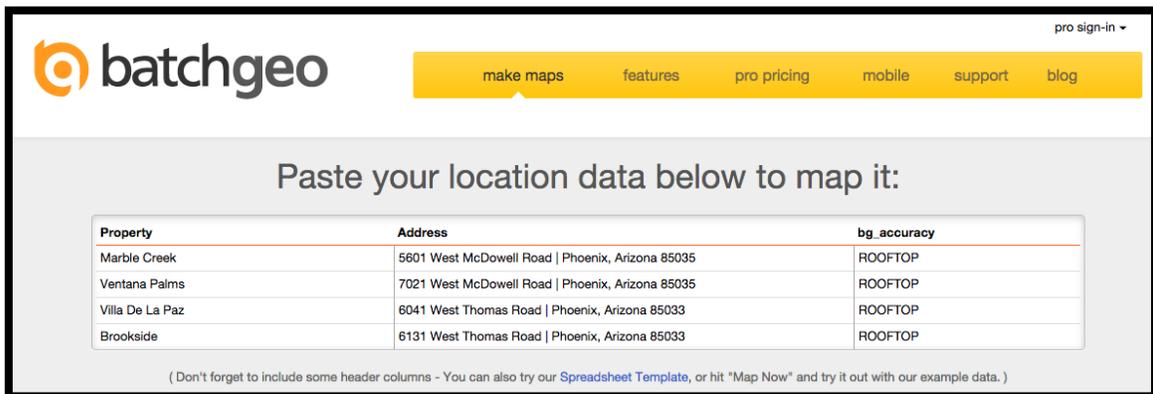
### **C. Importing photos**

The challenge for importing photos is inserting each of the photos at the correct location in the Excel. The Excel template has fix locations for each of the property photos, depending on the sequence of the comparable property. There are already name of the property above the location of where the photos suppose to go.

The first way to make sure the photos are inserted in the correct order is to take the screen shots in the correct sequence. With the time stamps on the name of the screen-captured photos, the vba would then insert them in sequence. The second way to make sure the photos are inserted in the correct order is to rename the photos before using the macro to insert the photos. I find renaming the photos using number and alphabet is an effective way to accomplish that purpose.

## D. Create map with comparable properties

It would be nice to have a Google map with markers on the location of all the comparable properties on it. It would provide a visual presentation of the relative distant and landscape. However, it would be very time consuming to write all those codes. It would also be complicated. Luckily, I was able to find a website that can generate a map after the user import a batch of address. The website is batchgeo.com. This website simplify the process of locating each property and adding them on the map individually. I can easily create a macro to copy and paste all the address to this website to generate the map. I just need to link the macro to a "Go to map" button in Excel to take the user to the map on a internet browser if the user wants to see the map.



The screenshot shows the batchgeo.com website interface. At the top left is the batchgeo logo. To the right of the logo is a navigation bar with links: make maps, features, pro pricing, mobile, support, and blog. In the top right corner, there is a "pro sign-in" dropdown menu. Below the navigation bar, the main heading reads "Paste your location data below to map it:". Underneath this heading is a table with three columns: Property, Address, and bg\_accuracy. The table contains four rows of data. Below the table, there is a small note: "( Don't forget to include some header columns - You can also try our Spreadsheet Template, or hit "Map Now" and try it out with our example data. )".

Property	Address	bg_accuracy
Marble Creek	5601 West McDowell Road   Phoenix, Arizona 85035	ROOFTOP
Ventana Palms	7021 West McDowell Road   Phoenix, Arizona 85035	ROOFTOP
Villa De La Paz	6041 West Thomas Road   Phoenix, Arizona 85033	ROOFTOP
Brookside	6131 West Thomas Road   Phoenix, Arizona 85033	ROOFTOP

## **V. Assistance**

For the import photo function, I build the code base on a VBA code that's provide on a Excel macro tutorial website. (<http://excel-macro.tutorialhorizon.com/excel-vba-insert-multiple-images-from-a-folder-to-excel-cells/>) I made some adjustment to the code. First, I change the code to retrieve the photo folder base on the location of the excel file current path, instead of a fixed path. Second, I change the location on where the photos are inserted to better fit my excel template. Third, I change the photo size to better fit my excel template.