



# Buying a House: The Decision-Making Process

Team 2:

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*Decision Making in Engineering & Technology Management*

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# Outline

- Introduction
- Methodology
- Assumptions
- Results & Discussion
- Recommendations
- Conclusions



# Introduction

- Home-buying process
  - Largest & longest-term purchase many will make
  - Numerous steps, forms to fill-out, legal ramifications
  - Numerous factors to consider (tangible & emotional)
  - Conflicting criteria (e.g., price vs. location)
  - Often multiple decision makers (with differing priorities)



# Methodology

- Use structured decision approach (AHP)
  1. Specify primary criteria
  2. Weight criteria via pairwise comparisons
  3. Select candidate homes
  4. Rank candidate homes



# Methodology

- Method conducted twice:
  - “Test run” - buyers that have purchased homes
  - “Sample Couple” – buyers currently in the market for a home



# Assumptions

- Finances already considered
- Criteria grouping reasonable/ preferentially independent criteria correctly identified
  - E.g., “Location” includes city, neighborhood, schools
- “Virtual” home visits




# Results – Couple 1

- Five criteria
  - Price
  - Location
  - Floor plan
  - Square footage
  - Quality of construction/ Condition of home



# Results – Couple 1



Price 40	Location 60
Square Footage 60	Floor Plan 40
Floor Plan 50	Price 50
Location 70	Square Footage 30
Price 70	Square Footage 30
Location 60	Floor Plan 40
Price 40	Quality of Const. 60
Location 70	Quality of Const. 30
Floor Plan 20	Quality of Const. 80
Square Footage 30	Quality of Const. 70



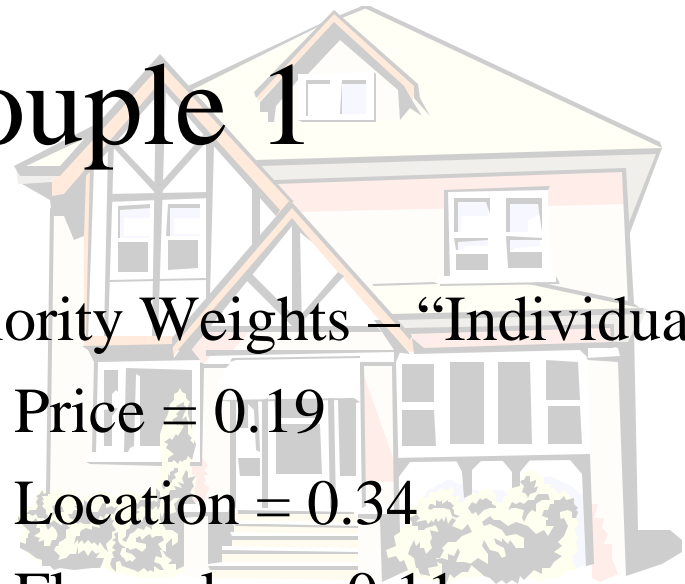
# Results – Couple 1



- Priority Weights
  - Price = 0.18
  - Location = 0.31
  - Floor plan = 0.12
  - Square footage = 0.12
  - Quality of const. = 0.27
- Inconsistency = 0.11 – Too high?

# Results – Couple 1


- Priority Weights – “Team”
  - Price = 0.18
  - Location = 0.31
  - Floor plan = 0.12
  - Square footage = 0.12
  - Quality of const. = 0.27
- Inconsistency = 0.11
- Priority Weights – “Individual”
  - Price = 0.19
  - Location = 0.34
  - Floor plan = 0.11
  - Square footage = 0.10
  - Quality of const. = 0.26
- Inconsistency = 0.10




# Results – Couple 1

## Candidate Homes for Couple 1

### 1. PORTLAND

ML: <a href="#">289792</a>	City: PORTLAND	Status: ACT	Price: \$155,900	Soft: 1336
	Beds: 3	Baths: 2.0	School: GILBERT PARK	
	YrBuilt: 1997	Tax/Yr: \$2,125	NHood: SPRINGWATER HIGHLAND	
BEAUTIFUL, CONTEMPORARY RANCH HOME, FULLY LANDSCAPED WITH TILE PATIO, VAULTED CEILING THROUGHOUT. IMMACULATE INSIDE AND OUT. LOCATED ON PEACE- FUL CUL-DE-SAC. ADDRESS: 5841 SE 133 PL & RAMONA. CALL RICH 503.267.3105				

### 2. ALOHA

ML: <a href="#">299609</a>	City: ALOHA	Status: ACT	Price: \$174,990	Soft: 1590
	Beds: 3	Baths: 2.0	School: ALOHA	
	YrBuilt: 1996	Tax/Yr: \$1,817	NHood:	
3BDRM/2BTH PRACTICALLY NEW W/1590 SQ FT. LG. FNCD LOT.NEW CARPET/ PERGO FLRS IN KIT/DNG RMS.TILE ENTRY/KITCHEN MUST SEE.FOR PERSONAL SHOWING CALL KURT @ 503-803-1033. AGENTS CALL TRENT AT 503-628-1517				

### 3. HILLSBORO

ML: <a href="#">301226</a>	City: HILLSBORO	Status: ACT	Price: \$152,500	Soft: 1305
	Beds: 3	Baths: 2.0	School: MOOBERRY	

# Calculations:


Weights

Alternatives

*Portland, Aloha, ...*

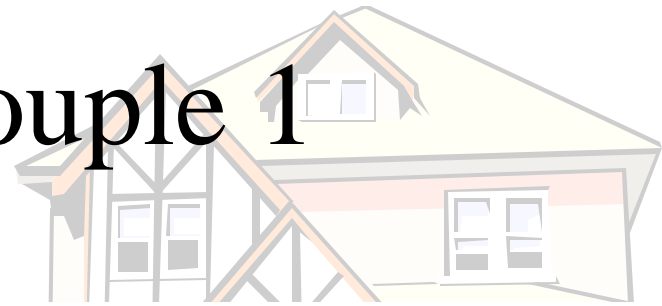
*Beaverton*

$[W_P, W_L, W_F, W_S, W_Q]$  X


$$\begin{bmatrix} A_{P1} & A_{P2} & \dots & A_{P5} \\ A_{L1} & A_{L2} & \dots & A_{L5} \\ \cdot & & & \\ \cdot & & & \\ \cdot & & & \\ A_{Q1} & A_{Q2} & \dots & A_{Q5} \end{bmatrix}$$

$$= V_1 \quad V_2 \quad \dots \quad V_5$$

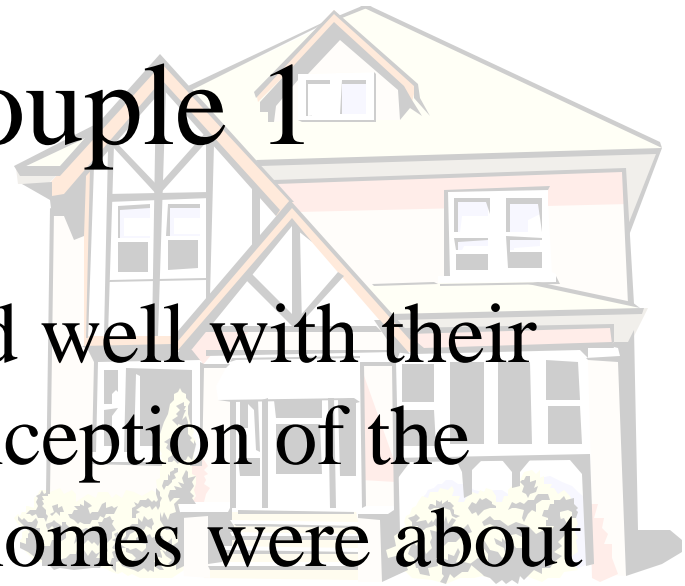
# Results – Couple 1



Home Purchase Decision Matrix						
		Alternative Homes				
		<i>Portland</i>	<i>Aloha</i>	<i>Hillsboro</i>	<i>Tigard</i>	<i>Beaverton</i>
<b>Price</b>		0.21	0.05	0.56	0.04	0.15
<b>Location</b>		0.24	0.09	0.15	0.06	0.46
<b>Floor plan</b>		0.29	0.25	0.18	0.15	0.14
<b>Square footage</b>		0.14	0.42	0.08	0.25	0.11
<b>Quality of construction/ Condition</b>		0.29	0.30	0.20	0.13	0.08
	<b>Value</b>	<b>0.24</b>	0.20	0.23	0.11	0.22
	<b>Rank</b>	1	4	2	5	3

# Results – Couple 1

- Couple felt results agreed well with their perceptions – with the exception of the Tigard home (0.11), all homes were about equal (0.20-0.24), though they leaned towards the Portland home



# Results – Couple 2

- Five criteria
  - Price
  - Location
  - Floor plan
  - Square footage
  - Year built



# Results – Couple 2



- Priority Weights
  - Price = 0.30
  - Location = 0.12
  - Floor plan = 0.21
  - Square footage = 0.28
  - Year built = 0.09
- Inconsistency = 0.03



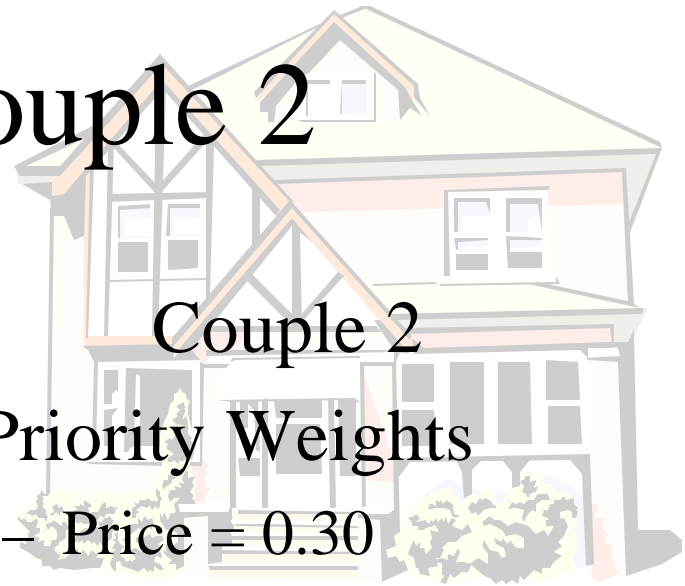
# Results – Couple 2

## Couple 1

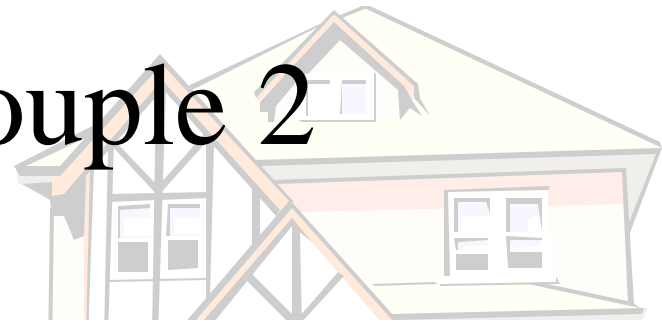
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## Couple 2

- Priority Weights
  - Price = 0.30
  - Location = 0.12
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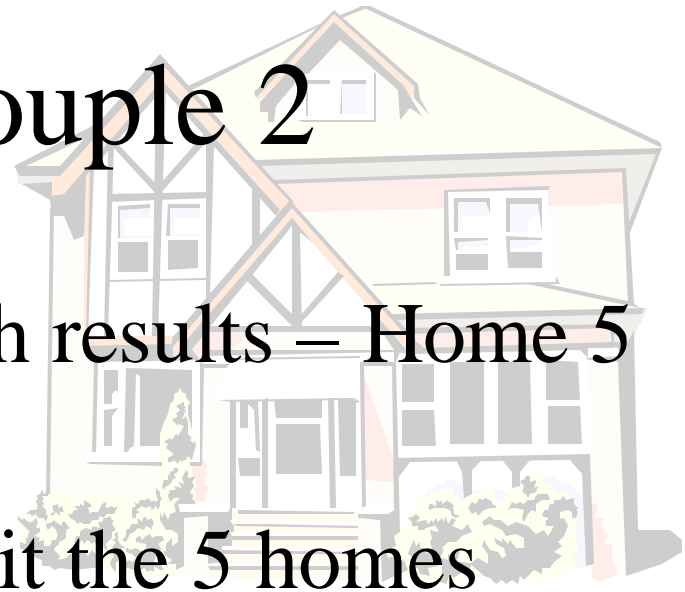
# Results – Couple 2



Home Purchase Decision Matrix					
	Alternative Homes (MLS #)				
	<i>287581</i>	<i>291133</i>	<i>295418</i>	<i>297981</i>	<i>299417</i>
<b>Price</b>	0.14	0.26	0.07	0.13	0.40
<b>Location</b>	0.17	0.30	0.13	0.19	0.20
<b>Floor plan</b>	0.14	0.26	0.07	0.13	0.40
<b>Square footage</b>	0.11	0.30	0.09	0.14	0.36
<b>Year built</b>	0.19	0.16	0.16	0.10	0.39
<b>Value</b>	0.14	0.27	0.09	0.14	<b>0.36</b>
<b>Rank</b>	3	2	5	4	1

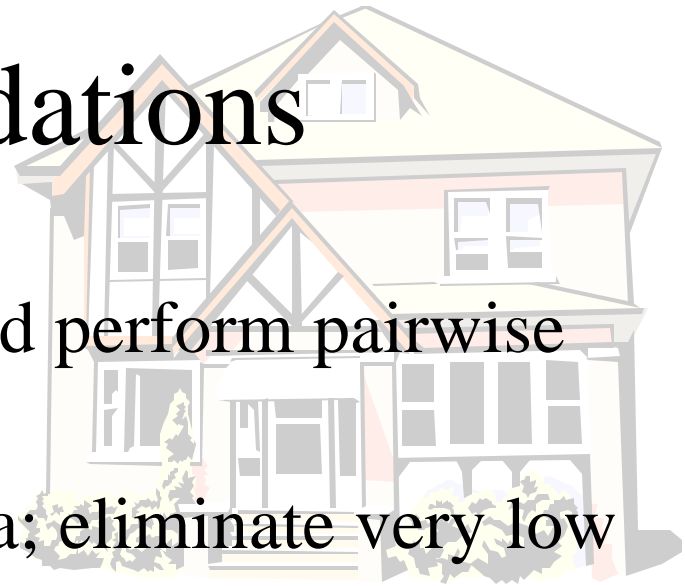
## Results – Couple 2

- Couple also satisfied with results – Home 5 was their clear favorite
- Couple is planning to visit the 5 homes



# Recommendations

- Couple 2 to visit 5 homes and perform pairwise comparison on homes again
- Consider more than 5 criteria; eliminate very low value criteria
- Consider more than 5 homes; visit only top 3-5
- Make purchase offers following home ranking (offer on #1, counter-offer, etc. then go to home #2)



# Conclusions

- Process as important as outcome
  - Less time spent visiting non-viable homes
  - Better understanding of partner's priorities (or realtor understands you better)
  - More confidence in decision



# Questions?

