

# RentPath™



Lani Hannah, Burhan Khan, Michael Starnes, Jay Whitmire, Molly Xie

# Agenda

- Context
- Primary analysis and recommendation 1
- Secondary analysis and recommendation 2
- Information gain and recommendation 3
- Conclusion and next steps

# Company background

- Rentpath is an online broker of referrals to rental property websites
- Connects apartment renters with property owners
- Property owners pay for subscriptions to have their properties promoted



# Business Problem

- How can we boost revenue and increase leads?
- Can we increase the return rate of customers in comparison the current baseline?

# Recommendation 1: Implement our model

	Per Month	Per Year
Total Profit	\$2,592,325.00	\$31,107,900.00
Revenue above No Ads	\$224,887.50	\$2,698,650.00
Ad Cost	\$132,562.50	\$1,590,750.00
Profit above No Ads	\$92,325.00	\$1,107,900.00
Return on Investment	70%	70%
Model Time per 10,000	2 seconds	2 seconds

# Secondary analysis

- Rule association mining
- Can predict the page a user would visit based on previous view history

# Recommendation 2: Display recommended pages to users

**Apartment**  
guide

Write a ReviewFind Apartments ▾BlogNext Steps ▾Advertise Your Property

My PlacesRegisterLog In

Atlanta, GABEDS ▾PRICE ▾MORE ▾

Home // Georgia // Atlanta // Landmark at Creekside Grand

## Landmark at Creekside Grand

From \$945 **10+ units available now** — Updated 9 days ago ★★★★★☆ (66 Ratings)

3505 Redwine Road, Atlanta, GA 30344


[Check Availability](#) or Call: (844) 485-1317


Pet Friendly

[Slideshow](#) [Video](#) [Tour](#)

### Users also viewed:

Peachtree Park





### Check Availability (844) 485-1317

\*Your Name:  \*Email Address:

Phone Number:  Contact Me By:

Message:  
Hello,  
I'm interested in Landmark at Creekside Grand. Please send me current availability and additional details.

By submitting this form, you agree to RentPath's [Terms of Service](#) and [Privacy Policy](#).

☒ Stay in-the-know with our e-newsletter and local community special offers.

[Send](#)

# Most important attributes

weight by info gain	weight by correlation	
U_OS_D	1 U_PageCt_pdp	0.42557339
U_Screen_D	0.96411965 U_ActionCt_pageview	0.38876982
U_ProfileKey_D	0.90261417 U_PageTime_pdp	0.3806636
U_OSV_D	0.67773159 U_PageCt_home	0.37638178
U_Browser_D	0.48720642 U_ActionCt	0.33001446
U_PageTime_pdp	0.25090944 U_ActionCt_click	0.30687825
U_PageCt_pdp	0.24268133 U_PageTime_srp	0.29001907
U_ActionCt_pageview	0.22524037 U_Browser_D	0.28101222
U_SessionT	0.21430679 U_ClickCt_ClickPrope rtyTitle	0.27908327



# Desktop users are largest growth potential

Profile Key	# Revisited	# Did not revisit	% Revisited
Apartment Guide Desktop	8423	40638	17.17%
Mobile Apartment Guide	17002	33937	33.38%

Screen	# Revisited	# Did not revisit	% Revisited
Desktop	6835	35723	16.06%
Smartphones	16944	33772	33.41%

# Recommendation 3: Improve the desktop user experience

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Write a ReviewFind Apartments ▾BlogNext Steps ▾Advertise Your Property

♥ My PlacesRegisterLog In

University of Virginia, VABEDS ▾PRICE ▾MORE ▾


List ViewMap View

Home // Virginia // University of Virginia

Apartments for rent in University of Virginia, VASort by: Best Match ▾

## University Heights Apartments

250 Colonnade Drive, Charlottesville, Virginia 22901



**\$815+**

1 Bed | **\$815+**  
2 Beds | **\$950+**  
3 Beds | **\$1,499+**  
4 Beds | **\$1,600+**

**Current Rent Specials**

**(434) 200-8472**

**Check Availability**

★★★★☆  
(9 Ratings)

### Beds

[1 Bedroom Apartments in University of Virginia](#)

[2 Bedroom Apartments in University of Virginia](#)

### Cost

[Luxury Apartments in University of Virginia](#)

### Features

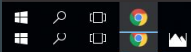
[Pet Friendly Apartments University of Virginia](#)

[Short Term Lease Apartments University of Virginia](#)


Information is copyrighted and school data provided by GreatSchools.org. Information is deemed reliable but not guaranteed. Schools listed above are based on distance from the selected location and are just a sampling of the schools in the area. To find a particular school district, and how it relates to a specific apartment, please contact the apartment manager.

ApartmentGuide.com is part of the **RentPath** Network of Sites

## Minimum 4 clicks



# Improve desktop user experience: Eliminate long scroll bars

















**Stonefield Commons**   
\$1198–\$2868 **10+ units available now** — Updated 12 hours ago  
3105 District Avenue, Charlottesville, VA 22901 | Pet Friendly

[Check Availability](#) or Call: **(434) 260-8332**

1 / 10


[Floor Plans & Pricing](#) [Property Details](#) [Office Hours](#) [Ratings & Reviews](#) [Map](#) [Schools](#) [Helpful Information](#)


## Amenities

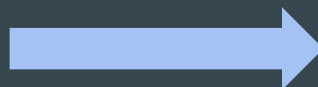
Apartment Features	Special Features	Community Features	Additional Features
 Air Conditioning	 Disability Access	 Accepts Credit Card Payments	 Private Screened-In Porches or Sunrooms
 Balcony	 Furnished Available	 Accepts Electronic Payments	 Large Granite Kitchen Islands with Pendant Lights
 Cable Ready	 Pets	 Business Center	 Impressive Nine-Foot or Vaulted Ceilings
 Ceiling Fan(s)	 Short Term Available	 Clubhouse	 Double Crown Molding with Dual Color Paint

[View More](#)

## Pets

 **Pet Friendly**  
0  
\$15 per month per pet rent; limit of 2 per apartment, one time non-refundable \$400 fee

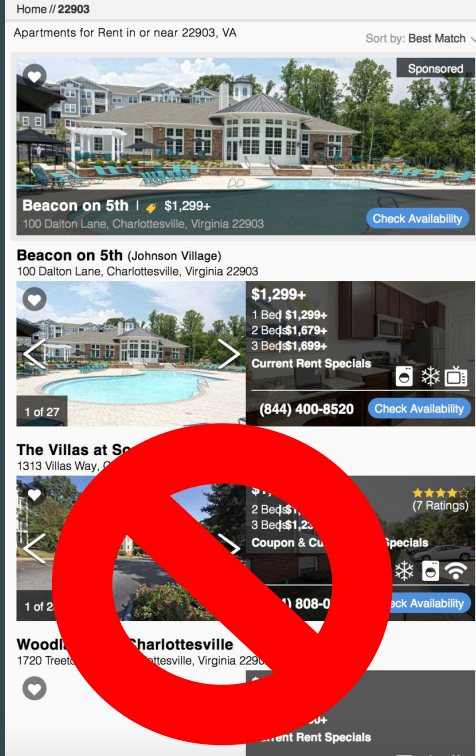
 **Call for Policy**  
No breed or weight restrictions.



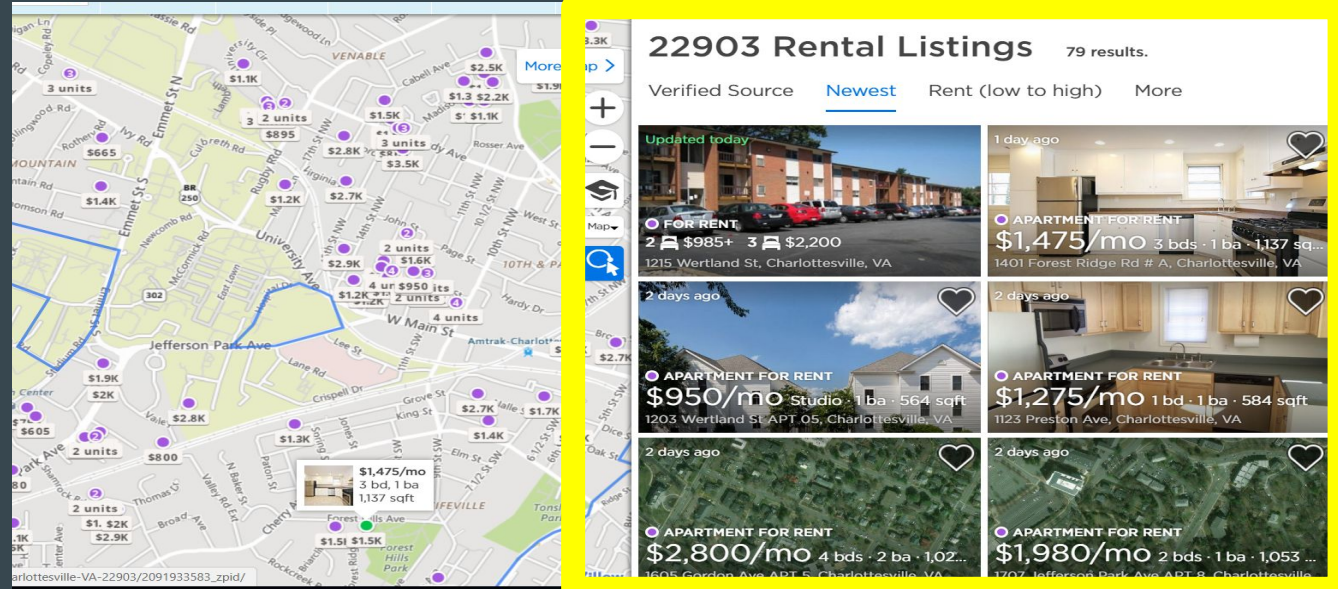
Replace with TABS

Home Value	▼
Price / Tax History	▼
Mortgages	▼
Price This Home	▼
Home Expenses	▼
Neighborhood: 22903	▼
Nearby Schools in Charlottesville	▼
Owner Dashboard	▼

# Switching to Map-View as the default



Helps users filter listings by LOCATION







Source: Zillow

# Adding a “rent-near-transit” feature

See businesses, schools, and crimes near this home

Calculate your commute time from this home

Enter your commute destination:     Calculate

Enter your commute destination above.

AI Carbon Chicken, The Fresh Market, Travinia Italian Kitch... ✓

33 median age, 40% married, 51% college graduate in thi... ✓

See 3 schools assigned to this home. Albemarle High Sch... ✓

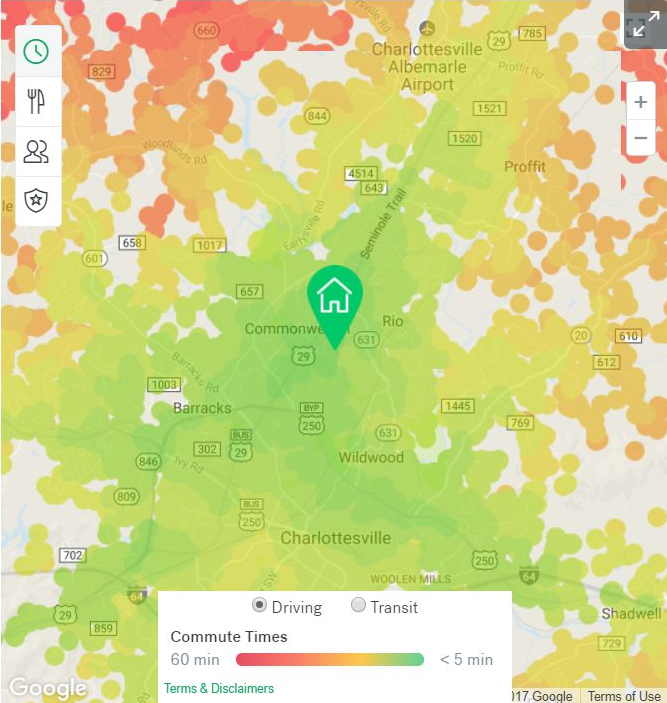
See reported crimes within 1 mile of this home ✓

Driving Transit

Commute Times  
60 min < 5 min

Terms & Disclaimers

117 Google Terms of Use



Calculates what  
**COMMUTE** looks  
like

Source: Trulia

# Conclusion & next steps

- Model adoption would give an additional \$1,107,900 per year in added revenue
  - 70% return on investment
- Focus on improving desktop user experience
  - Implement listing-recommendation algorithm to increase revisit rates
- Constantly update models as new data is generated

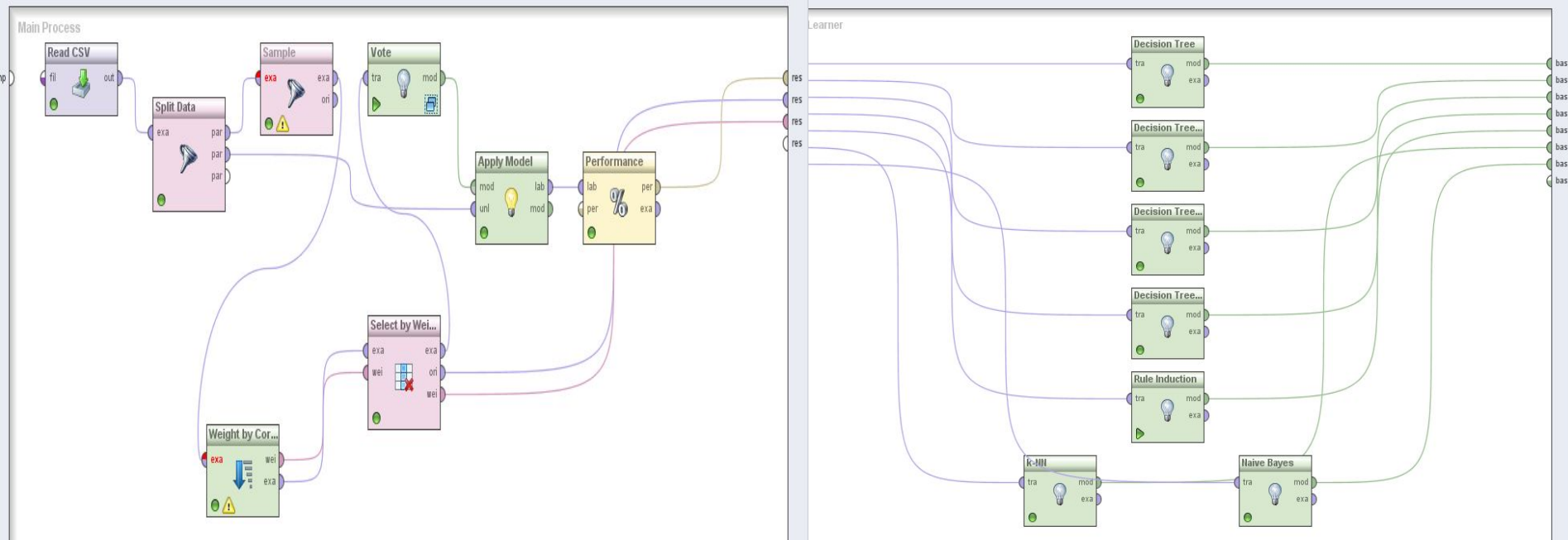


**Questions?**

# Appendix



# Modeling process



# Modeling process continued

Split Data
0.9
0.1

Sample (Balanced)	
Revisited	4,000
Did not revisit	4,000

Decision Tree	Criterion	Min. Size for Split	Min. Leaf Size	Min. Gain	Max Depth	Confidence
1	Info Gain	175	500	0.005	20	0.25
2	Info Gain	175	40	0.005	20	0.25
3	Info Gain	4	2	0.01	20	0.25
4	Info Gain	4	2	0.005	20	0.25

# Cost matrix

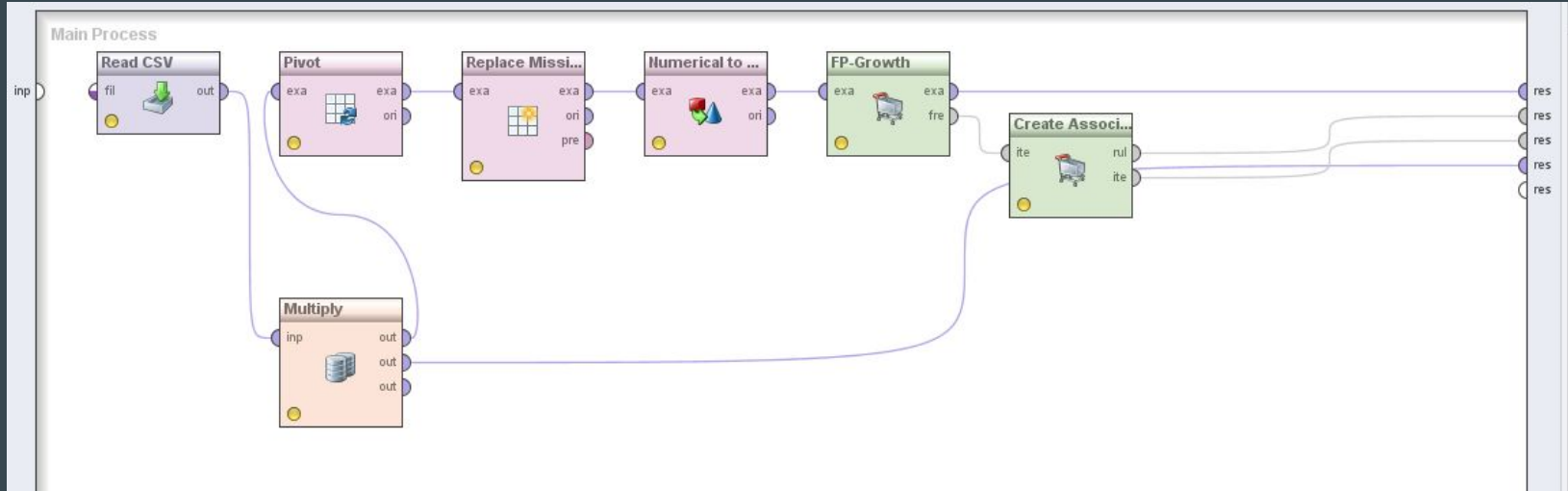
Cost		Actual	
		Class = Still looking	Class = <sup>Not</sup> still looking
Predicted	Class = <sup>Still</sup> looking	-.575	.025
	Class = <sup>Not</sup> still looking	-.5	0

# Confusion matrix and model outputs

Confusion		Actual	
		Still Looking	Not Still Looking
Predicted	Still Looking	$20,000,000 * 25\% * \text{Revisit Recall}$	$20,000,000 * 75\% * (1 - \text{Don't Revisit Recall})$
	Not Still Looking	$20,000,000 * 25\% * (1 - \text{Revisit Recall})$	$20,000,000 * 75\% * \text{Don't Revisit Recall}$

Voting	56.60%	66.33%
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# Association rule process



# Association rule results

Premises	Conclusion	Support	Confidence ▼
Viewed_100010883, Viewed_100030769	Viewed_177953	0.001	0.867
Viewed_662, Viewed_78904	Viewed_100012093	0.001	0.850
Viewed_100025832, Viewed_722	Viewed_6863	0.001	0.833
Viewed_14330, Viewed_100024677	Viewed_2380	0.001	0.812
Viewed_78904, Viewed_108	Viewed_100022115	0.001	0.778
Viewed_131, Viewed_191247	Viewed_177953	0.001	0.765
Viewed_190267, Viewed_35969	Viewed_100022115	0.001	0.762
Viewed_6863, Viewed_1	Viewed_6878	0.001	0.737
Viewed_100022115, Viewed_100012093	Viewed_662	0.001	0.737
Viewed_6863, Viewed_2623	Viewed_2400	0.002	0.714
Viewed_2400, Viewed_6779	Viewed_19	0.001	0.714
Viewed_2029507	Viewed_2002240	0.001	0.700
Viewed_186241, Viewed_192243	Viewed_100021180	0.001	0.700
Viewed_6863, Viewed_100025830	Viewed_6878	0.001	0.696
Viewed_2400, Viewed_662	Viewed_6863	0.001	0.696
Viewed_11781, Viewed_185380	Viewed_94	0.002	0.690
Viewed_94, Viewed_185380	Viewed_11781	0.002	0.690
Viewed_6863, Viewed_2393	Viewed_6878	0.001	0.684
Viewed_100022115, Viewed_100012093	Viewed_78904	0.001	0.684
Viewed_6863, Viewed_722	Viewed_100025832	0.001	0.682