Just Scraping By: Understanding Rents at a Neighbourhood Level Using Web Scraping Technology

May 2024

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Agenda

1.Context and Background2.Approach and Demo3.Technical walkthrough4.Applications and Insights5.Challenges and next steps6.Questions





Lessons from COVID

- During uncertainty, *timely* data is vital to responding to crisis
- Data we rely on during stable times may not be suitable during crisis



Affordability Housing Crisis

- Average Market Rent (AMR) set by CMHC
- Vital metric that many benefits program base off
- Is it *timely*?



Apartment Average Market Rent with 1 bedroom and 2 bedrooms from 2013-2023. SOURCE: CMHC Ontario - Rental Market Statistics Summary by Metropolitan Areas, Census Agglomerations and Cities





Average Monthly Rent per Year in Ottawa | Source: rentals.ca and SPRA calculation





Late 2022

- Director of Housing challenged SPRA to find more timely rental data
- How can non-admin and non-statistical agency data fit and compliment our data work?



APPROACH

Can we do it?

- Skill 🗸
- Tools

How would operational staff use the data?

How would management consume data? ?

Legal and privacy considerations? ??





Internal Engagements

- Front line case workers needed a better tool to help find and match housing for their clients
- Management wants real time insights on costs by neighbourhood and types





Legal and Privacy

- "Grey Zone" but not completely unfamiliar
- Concerns of PII and liability
- Supportive of our idea and solutions





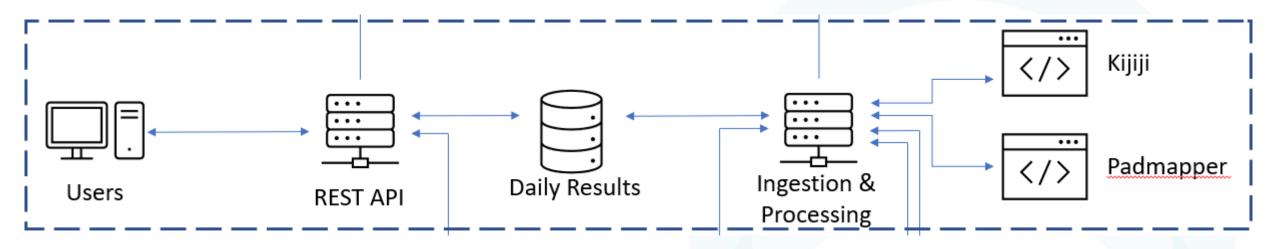
Ottawa Neighbourhood Study (ONS)

- Not for profit research group out of University of Ottawa
- Neighbourhood boundaries and socio-economic profiles
- Interested in private rental market





Current Architecture





DASHBOARD – DEMO

Data source Neighbourhood All ✓		Property Type ✓ All			Ottawa Rental Dashboard			
Bedrooms All			Bat All	hrooms	Place du Centre PARLIAMENT HILL Sparks Chaudière Island Street Street Street VILLAGE Ottawa	ILL		
Rent	Beds	Baths	Ad	Source	URL	Date	o Citawa	
640.00	4.00	2.00	1 Bedroom in 4 Bedroom 2 Bathroom House	kijiji	୍ଦ	2024-Apr-09 3:09:12 AM	CENTRE POWN GOLDENO	LEES AVENUE
750.00	1.00	2.00	Room for rent	kijiji	e	2024-Apr-09 3:09:12 AM	LEBRETON EVELOPMENT	
900.00	4.00	3.00	1 Bed 1 Bath	kijiji	୍ଦ	2024-Apr-09 3:09:12 AM	CHINATOWN O O O O O O O O O O O O O O O O O O	Hurdman
950.00	3.00	2.00	Room for Rent in beautiful Centretown House - Females only	kijiji	Q	2024-Apr-09 3:09:12 AM	OO THE MARK	Park 24 Microsoft Corporation Terms
1,195.00	0.00	1.00	Fully furnished bachelor studio near Algonquin and Bayshore	kijiji	Q	2024-Apr-09 3:09:12 AM	640 1,905 1,780 Lowest Rent Average Rent Median Rent	4,400 Highest Rent
1,295.00	0.00	1.00	Golden Equity Properties at 229 Argyle Apt.	kijiji	8	2024-Apr-09 3:09:12 AM	Nr. of listings per bed Nr of Ads by N	
1,300.00	1.00	1.00	521 Bank Street - One Bedroom Unit	kijiji	S	2024-Apr-09 3:09:12 AM		
1,300.00	1.00	1.00	Central one bedroom apartment	kijiji	S	2024-Apr-09 3:09:12 AM	50 44 20 18 10 3 Centretown	96
1,349.00	0.00	1.00	Downtown Studio - May 1st!	kijiji	B	2024-Apr-09 3:09:12 AM	* <u>0</u> <u>1.00</u> <u>0.00</u> <u>2.00</u> <u>3.00</u> <u>4.00</u> <u>0</u>	50 100

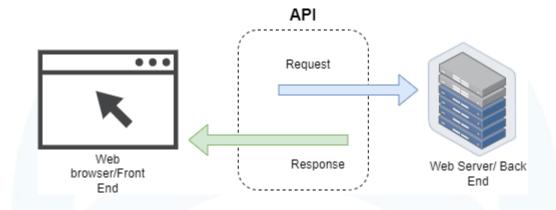


TECHNICAL WALKTHOUGH

Modern websites are sophisticated software/applications that run in a web browser

- Front-end
 - -What we see and what we feel -Dynamic, static, or both
- Back-end

 processing of requests
 retrieval of information and data
- Typically, the two components interact via an API which manages requests and responses

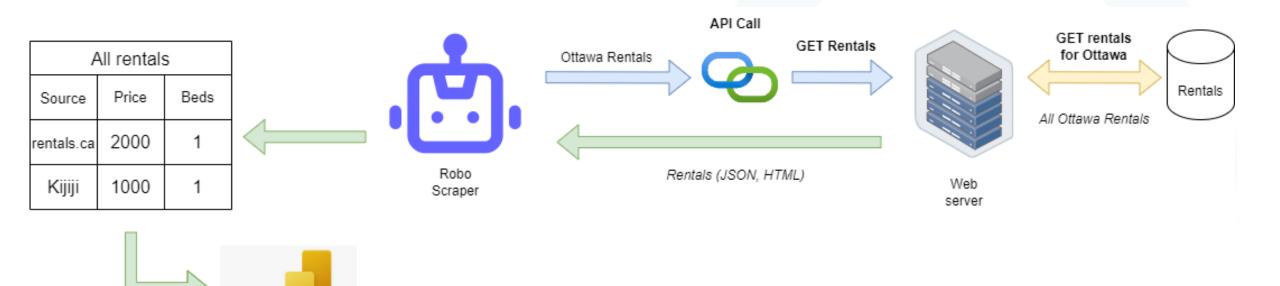




TECHNICAL WALKTHOUGH

What if we wrote a program that imitates a web browser?

- Instead of rendering the data for a fancy website, we parse the data (response)
- The response data can be JSON or HTML
- Program then manipulates the response and throws everything into a table
- Table is consumed by Power BI





TECHNICAL WALKTHOUGH

Key tools and libraries

- R or python (we prefer python)
- Power BI for ingestion, data transformation and viz
- R: Httr for requests, jsonlite for json parsing, tidyverse for all data manipulations
- Python: Requests, cloudscraper, json, pandas



EARLY APRIL 2024 DATA

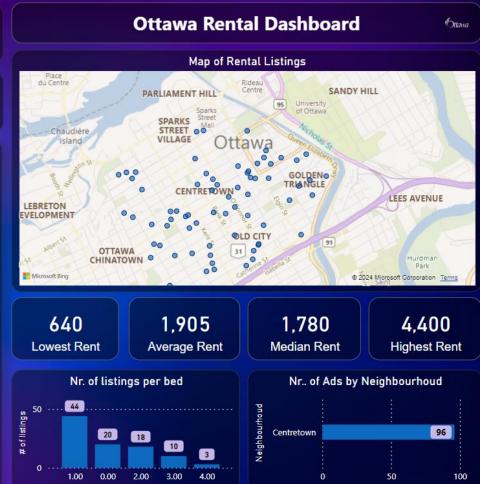
All Apartments and Basements only		
	Neighbourhood	Metric
Most expensive 1 bed	Chatelaine Village (Orléans)	\$5199
Most expensive 2 bed	Byward Market	\$8500
Most expensive 3 bed	Westboro/Stonebridge-Halfmoon Bay	\$6500
Most affordable 1 bed/studio	Centretown	\$1300
Most affordable 2 bed	Fallingbrook	\$1700
Most affordable 3 bed	Greenboro East	\$1650
Most listings	Centretown	96
Fewest listings	7 neighbourhoods	1
Total number of listings	N/A	1844
Number of 1 bed listing	N/A	511
Number of 2 bed listing	N/A	594
Number of 3+ bed listing	N/A	739
Average rent	N/A	\$2282
Median rent	N/A	\$2195

	2022 AMR	2024 Rental Data			
1 bed	\$1347	\$1784			
2 bed	\$1635	\$2278			



- Internal and external use
- Well over 10 agencies and community partners
- Over 100
 users

Data sou All	irce	▼	Neighbourhood Centretown			Property Type	
Bedroon All	ns	▼	99.00 9,500.00		Bathrooms		
Rent	Beds	Baths	Ad	Source	URL	Date	
640.00	4.00	2.00	1 Bedroom in 4 Bedroom 2 Bathroom House	kijiji	୍ତ	2024-Apr-09 3:09:12 AM	
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Rapid Rehousing Pilot

- Urgent need to housed our Physical Distancing shelter users
- What were the barriers to their attaining housing?
- Used web scrape dashboard to assess availability of units in 1 bed AMR
- Pilot: limited City funds to top-up COHB to help remove cost barrier via EHAB (Enhanced housing allowance benefit)



EHAB

- Approx. \$1800 would increase availability of units
- January 2024: 74 listings \$0-1349 vs. 1353 listings from \$1350 - \$1800
- 161 users housed using EHAB
- 30 participating landlords with 14 new landlords



CHALLENGES AND NEXT STEPS

- DATA QUALITY AND RELIABILITY (DUPLICATES, GAMEIFICATION, ROOMS)
- POINT IN A TIME—NO ARCHIVING NO HISTORICAL DATA YET
- DATA DEFINITIONS (AVG? BEDROOMS?)
- HARDENING SECURITY



CHALLENGES AND NEXT STEPS

EXISTING REPO: <u>https://github.com/Ottawa-Neighbourhood-</u> <u>Study/aptafford</u>

- Migrating repo to python → improve code to handle hardened security, make it easier to deploy across province
- End of 2024: Public repo for other municipalities an use



THANK YOU!

QUESTIONS?

