How public housing applicants choose where to live

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What am I talking about

- Behaviour and preferences of public housing applicants while they're on the housing waitlist

- In markets, prices reveal a lot about preferences, but what if there are no prices?

- Learning about how public housing applicants make choices can help inform how we design policy

- Denver Housing Authority allocation mechanism, 1987-2005

- Public housing applicants value having choices, and different people have different values

Denver Housing Authority allocation mechanism
1987-2005

- Participants are placed on a single waitlist

- When a unit is freed up, it is offered to the suitable applicant closest to the top of the waitlist

- Quasi-random from applicant's point of view!

- Applicant chooses **Accept offer** or **Reject offer**

- Applicant can reject first offer without penalty. Rejecting a second offer bumps applicant down to the bottom of the waitlist.

What matters when choosing where to live?
Applicants' choice tree
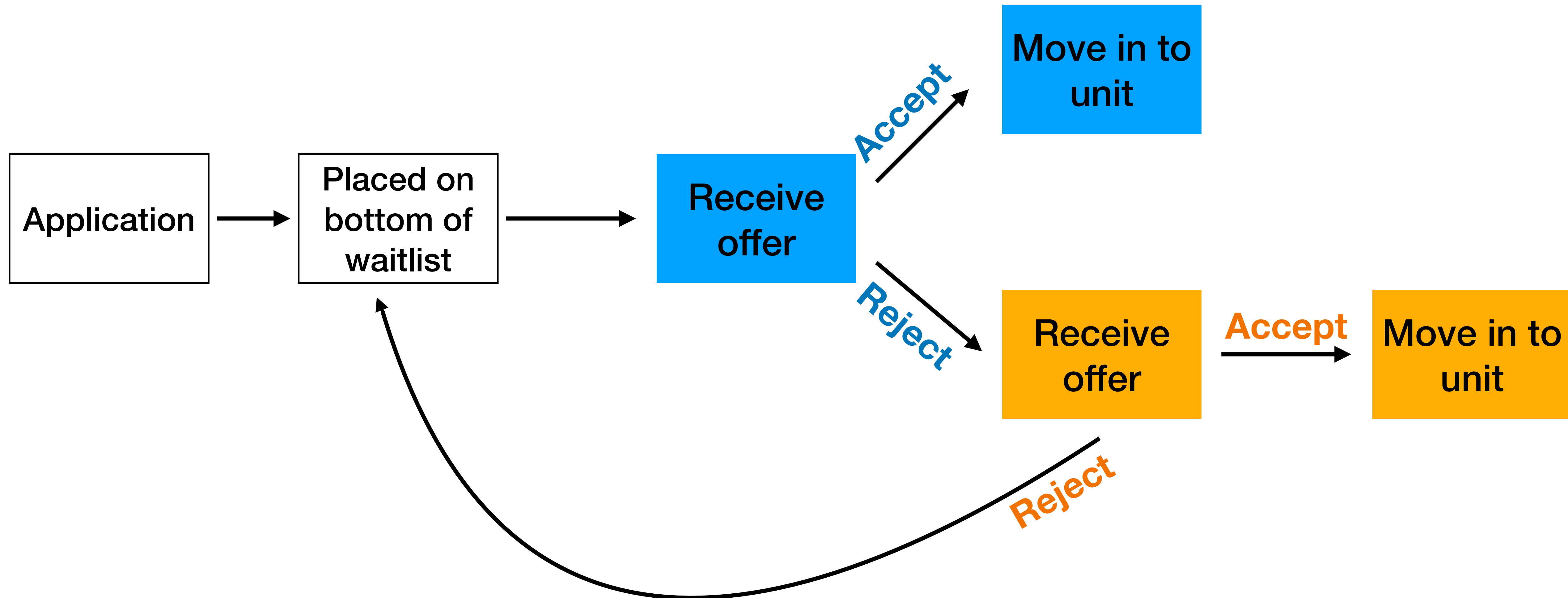
Data
Denver Housing Authority

- **Offers database**

  - Set of offers made to applicants from 1987-2005

  - Offer date, accept/refuse status, housing development ID, applicant ID

  - No exact address or demographics

- **Residents database**

  - Denver Housing Authority residents for same period

  - Head of household demographics - birth date, sex, race/ethnicity, marital status, income at time of application, household composition, applicant ID

Denver Housing Authority
Who lives here?

Unique residents, 1987-2005	15,245
Age at move in (mean)	41
Female (%)	69
White (%)	18
Non-Hispanic Black (%)	28
Hispanic (%)	45
Asian (%)	6
Single parent (%)	36
Foreign born (%)	18
Income at application (2000 $) (mean)	9,471

Denver Housing Authority mechanism
How do people use their choices (1987-2005)

Unique applicants receiving an offer	17,008
Offers made	27,018
Offers accepted	12,257
1st offers accepted	8,989
2nd offers accepted	2,609
3rd+ offers accepted	659
Mean wait time between first and second offer (days)	54
Mean wait time between second and third offer (days)	145

Cost of refusing

$$accept_{ik} = \beta_0 + \beta_1 I(Offer_k N = 1) + \beta_2 I(Offer_k N = 2) + \beta_3 I(Offer_k N = 3) + \varepsilon_{ik}$$

Applicant *i* receives a housing offer in year *k*

- Hazard regression: coefficients give "risk" of accepting a first, second, third offer

- Costlier to refuse a second offer than first or third, because shunted to bottom of the waitlist

- Estimating using logistic regression, reporting average marginal effects

Cost of refusing

$$accept_{ik} = \beta_0 + \beta_1 I(Offer_k N = 1) + \beta_2 I(Offer_k N = 2) + \beta_3 I(Offer_k N = 3) + \varepsilon_{ik}$$

	Average marginal effect	Average marginal effect	Average wait time until next offer (if refused)
First offer	-0.148*** (0.023)	-0.164*** (0.021)	54 days
Second offer	-0.048* (0.024)	-0.063** (0.0222)	145 days
Third offer	-0.099*** (0.027)	-0.106*** (0.0248)	90 days
Offer-year FE	NO	YES	
N	27,018	27,018	

*p<0.05, **p<0.01, *** p<0.001

Who refuses and accept offers?

$$acceptFirstOffer_{ik} = \beta_0 + \beta X_i + YearFE_k + \varepsilon_{ik}$$

Applicant *i* receives a housing offer in year *k*

- Xi vector of demographic variables

- Only applicants who eventually accept an offer included

  - No demographics available for never-accepters

- Restricting to the set of **first offers only**

  - Applicants who refuse a first offer and receive a second (third, etc) offer may differ systematically, so avoiding selection bias

- Estimating using logistic regression, reporting average marginal effects

Who refuses and accept offers?

$$acceptFirstOffer_{ijk} = \beta_0 + \beta X_i + YearFE_k + \varepsilon_{ijk}$$

	Average marginal effect	SE
Age	0.0021 ***	(0.0005)
Female	0.0397 ***	(0.0098)
Married	0.0344 *	(0.0138)
Has children	-0.0457 ***	(0.0115)
Black (non-Hispanic)	0.0404 ***	(0.0115)
Hispanic ethnicity	0.0006	(0.0102)
Foreign-born	0.0277 **	(0.0107)
Offer-year FE	YES	
N	12,835	

*p<0.05, **p<0.01, *** p<0.001

Conclusion

- Applicants willing to "pay" for another draw at a housing unit, but willingness to exercise choice varies a lot with applicant characteristics

- When price of receiving a new offer increases by 90 days, 10 percentage point drop in willingness to wait for new offer

- More marginalised applicants less willing to wait for a new shot at an offer, though families are more patients.