Online Appendix of "Child Adoption Matching: Preferences for Gender and Race"

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Abstract

In Appendix A, we provide some additional analysis and robustness checks to support the results in the paper. In Appendix B, we detail the PAPs' preferences with respect to the time at which a baby is presented on the website, and we find that the desirability of a baby is monotonically increasing during the pregnancy, and decreases rapidly after birth. Finally, in Appendix C, we present an example of a basic model of matching with search frictions that is consistent with our empirical strategy.

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1 Appendix A: Supplementary Analysis

Variable	Mean	Std. Dev.	Min.	Max.	N
Girl	0.267	0.443	0	1	409
Boy	0.357	0.48	0	1	409
Caucasian	0.368	0.377	0	1	408
African-American	0.386	0.41	0	1	408
Hispanic	0.155	0.29	0	1	408
Same-Sex PAPs Allowed	0.196	0.398	0	1	408
Single PAPs Allowed	0.574	0.495	0	1	408
Already Born	0.086	0.28	0	1	408
Days from Presentation to Birth if Unborn	246.35	863.309	1	5879	334
Days from Birth to Presentation if Born	169.875	147.48	1	338	8
Number of Interested PAPs	2.834	2.29	0	15	409
Number of Interested Same-Sex PAPs	2.218	1.428	0	6	408
Number of Interested Single PAPs	5.272	2.593	0	12	408
PAP Arrival Rate Per Day	0.186	0.315	0	3	397
Matched on the Website	0.154	0.361	0	1	409
Days from Presentation to Last Day on Website	39.718	41.618	0	374	397

Table A1: Summary Statistics of BMOs if matched

	2004	2005	2006	2007	2008	2009
PAP						
Number of PAPs	135	278	149	103	88	151
Gay PAP	0.013	0.049	0.047	0.054	0.077	0.053
Lesbian PAP	0.044	0.045	0.042	0.076	0.089	0.104
Single PAP	0.174	0.122	0.112	0.072	0.060	0.085
BMO						
Number of BMOs	139	238	141	88	117	210
Same-Sex PAP Allowed	0.302	0.176	0.156	0.295	0.333	0.345
Single PAP Allowed	0.784	0.643	0.518	0.602	0.590	0.631
African-American	0.447	0.457	0.370	0.365	0.350	0.304
Girl	0.302	0.206	0.234	0.216	0.231	0.257
Boy	0.252	0.378	0.376	0.239	0.393	0.362
Months to Birth	0.621	0.749	1.22	0.409	1.79	1.02
Finalization Cost	20522	22834	26543	27294	31076	31638

Table A2: Trends from 2004 to 2009

Dependent Variable:	All	Straight PAP	Gay PAP	Lesbian PAP	Single PAP
PAP Applies for Baby					
Activity Window: 90 Days					
Already Born (d)	-0.007	-0.007	-0.017	-0.042	0.031
	(-1.28)	(-1.23)	(-0.24)	(-0.60)	(1.16)
Months to Birth	-0.001**	-0.001*	-0.001	-0.001	-0.001
	(-3.02)	(-1.98)	(-0.52)	(-0.43)	(-0.96)
Finalization Cost in $ 10 000	-0.014***	-0.013***	-0.025	-0.110***	-0.018*
	(-6.37)	(-5.18)	(-0.96)	(-3.36)	(-2.31)
African-American Girl	-0.036***	-0.035***	-0.150*	-0.148*	-0.039*
	(-5.93)	(-4.98)	(-2.07)	(-2.31)	(-2.21)
African-American Boy	-0.046***	-0.045***	-0.044	-0.079	-0.055*
	(-7.14)	(-6.09)	(-0.74)	(-1.06)	(-2.57)
African-American Unknown Gender	-0.051***	-0.052***	-0.098	-0.085	-0.059***
	(-8.06)	(-7.11)	(-1.24)	(-1.38)	(-3.71)
Non-African-American Girl	0.021***	0.020***	0.098	0.187**	0.023
	(4.37)	(3.95)	(1.29)	(2.61)	(1.35)
Non-African-American Boy	-0.004	-0.006	-0.010	0.081	0.003
	(-0.89)	(-1.15)	(-0.18)	(1.54)	(0.19)
Hispanic	0.004	0.000	0.101	-0.009	-0.017
	(0.65)	(0.08)	(1.30)	(-0.09)	(-0.86)
Year 2004 (d)	-0.009	-0.006	0.033	-0.083	0.011
	(-1.77)	(-1.15)	(0.33)	(-1.63)	(0.54)
Year 2005 (d)	-0.004	-0.004	-0.039	-0.044	0.001
	(-0.72)	(-0.70)	(-0.67)	(-0.82)	(0.04)
Year 2006 (d)	0.004	0.008	0.109	-0.026	-0.021
	(0.78)	(1.25)	(1.30)	(-0.43)	(-1.31)
Year 2007 (d)	-0.000	0.000	0.123	-0.155***	0.009
	(-0.04)	(0.06)	(1.59)	(-5.72)	(0.30)
Year 2008 (d)	0.013**	0.004	-0.017	0.080	0.035
	(2.58)	(0.74)	(-0.52)	(1.86)	(1.52)
Gay PAP (d)	0.081***				
	(4.19)				
Single PAP (d)	0.010				
	(1.72)				
Lesbian PAP (d)	0.131***				
	(6.13)				
Probability for Mean Attributes	0.062	0.047	0.148	0.164	0.054
Probability for Base Case[‡]	0.067	0.067	0.136	0.208	0.070
χ^2	292.68	137.86	26.90	54.30	46.81
Log-Likelihood	-244141.8	-161059.9	-6340.1	-9886.6	-22187.9
Observations	1226170	876289	17346	22886	107390
PAP-BMO	36839	26270	518	716	2841

Note: (d) for discrete change of dummy variable from 0 to 1. (d) for discrete change of dummy variable from 0 to 1. $^{*}p < 0.05, ^{**}p < 0.01, ^{***}p < 0.001$. Standard Errors clustered by PAP-BMO pair. (‡) The omitted category is a gender unknown, non-African-American, unborn child, less than one month to birth, with finalization cost of $26,000 in 2009.

Table A3: Determinants of PAPs' Applications (Activity Window of 90 Days) – Marginal Effects for Probit

Dependent Variable: PAP Applies for Baby	All	Straight PAP	Gay PAP	Lesbian PAP	Single PAP
♣ Application at Some Point in Time					
Already Born (d)	-0.002	-0.005	0.009	0.062	0.026
	(-0.53)	(-0.99)	(0.13)	(0.82)	(1.28)
Months to Birth	-0.000	0.000	0.003	0.003	-0.000
	(-1.02)	(0.04)	(1.00)	(1.62)	(-0.67)
Finalization Cost in $ 10 000	-0.012***	-0.011***	-0.003	-0.040	-0.016*
	(-7.11)	(-6.06)	(-0.13)	(-1.61)	(-2.35)
African-American Girl	-0.033***	-0.031***	-0.130*	-0.109	-0.056***
	(-7.05)	(-5.74)	(-2.17)	(-1.84)	(-3.51)
African-American Boy	-0.047***	-0.048***	-0.065	-0.110*	-0.070***
	(-9.68)	(-8.53)	(-1.28)	(-2.04)	(-3.69)
African-American Unknown Gender	-0.043***	-0.045***	-0.177***	-0.043	-0.044**
	(-10.29)	(-9.15)	(-3.57)	(-0.99)	(-3.04)
Non-African-American Girl	0.015***	0.013**	-0.047	0.046	0.039*
	(3.90)	(3.01)	(-0.71)	(0.73)	(2.48)
Non-African-American Boy	-0.010**	-0.010*	-0.074	0.065	-0.025
	(-2.84)	(-2.42)	(-1.52)	(1.41)	(-1.68)
Hispanic	-0.005	-0.000	0.013	-0.046	-0.039*
	(-1.19)	(-0.05)	(0.17)	(-0.63)	(-2.08)
Year 2004 (d)	-0.017***	-0.013**	-0.031	-0.026	-0.006
	(-4.62)	(-3.14)	(-0.48)	(-0.46)	(-0.33)
Year 2005 (d)	-0.009*	-0.008	-0.006	0.058	0.002
	(-2.45)	(-1.90)	(-0.11)	(0.89)	(0.11)
Year 2006 (d)	-0.007	-0.002	0.247*	-0.031	-0.034**
	(-1.79)	(-0.31)	(2.38)	(-0.52)	(-2.77)
Year 2007 (d)	0.014*	0.015*	0.296**	-0.060	0.018
	(2.38)	(2.27)	(3.21)	(-1.27)	(0.60)
Year 2008 (d)	0.024***	0.021***	0.092	0.106*	0.033
	(4.54)	(3.44)	(1.62)	(2.22)	(1.28)
Gay PAP (d)	0.081***				
	(5.53)				
Single PAP (d)	0.019***				
	(3.81)				
Lesbian PAP (d)	0.096***				
	(7.18)				
Probability for Mean Attributes	0.059	0.047	0.133	0.158	0.061
Probability for Base Case ‡	0.072	0.069	0.132	0.143	0.090
χ^2	508.53	241.41	59.60	36.08	40.02
Log-Likelihood	-7137.8	-4737.7	-175.6	-268.5	-575.3
Observations	36488	26024	475	653	2713
PAP-BMOs	36487	26024	475	653	2713

Note: (d) for discrete change of dummy variable from 0 to 1. $^{*}p < 0.05$,$^{**}p < 0.01$,$^{***}p < 0.001$. Standard Errors clustered by PAP-BMO pair. (‡) The omitted category is gender unknown, non-African-American, unborn child who is less than one month to birth, with finalization cost of $26,000 in 2009. ♣ PAP submits an application at some point when the BMO is available on the website. Activity window of 90 days.

Table A4: Determinants of PAPs' Applications (at Some Point in Time) – Marginal Effects for Probit

Dependent Variable: Chosen PAP	I	II
Single PAP	0.02	0.02
	(0.05)	(0.05)
Same-Sex PAP	-0.32	
	(-0.86)	
Gay PAP		-0.37
		(-0.80)
Lesbian PAP		-0.26
		(-0.48)
Baseline	0.48	0.48
χ^2	0.83	0.86
Log-Likelihood	-107.5	-107.5
PAPs	345	345
Babies	118	118

Note: Conditional Logit on the choice of PAP by a BMO. Marginal Effects, assuming a fixed effect of zero, presented. Omitted Category is straight PAP.

Table A5: Marginal Effect of Multinomial Logit of Chosen PAP

Dependent Variable:	(1)	(2)
PAP Applies for BMO		
Activity Window: 10 Days		
Number of Previous Applications†	0.007***	0.006***
	(12.98)	(11.87)
BMO's Time on Website ◇		0.000***
		(7.09)
Already Born (d)	-0.005	0.000
	(-0.98)	(0.03)
Months to Birth	-0.001*	-0.000
	(-2.56)	(-1.07)
Finalization Cost $ 10 000	-0.010***	-0.011***
	(-4.58)	(-4.85)
African-American Girl	-0.030***	-0.028***
	(-4.99)	(-4.76)
African-American Boy	-0.037***	-0.036***
	(-5.89)	(-5.97)
African-American Unknown Gender	-0.041***	-0.044***
	(-6.70)	(-7.13)
Non-African-American Girl	0.015**	0.017***
	(3.21)	(3.53)
Non-African-American Boy	-0.005	-0.004
	(-1.03)	(-1.00)
Hispanic	0.003	0.003
	(0.52)	(0.51)
Single PAP	0.008	0.008
	(1.52)	(1.53)
Gay PAP	0.074***	0.073***
	(3.92)	(3.87)
Lesbian PAP	0.122***	0.123***
	(6.06)	(6.08)
Year FE	X	X
χ^2	485.34	505.92
Log-Likelihood	-241585.5	-238121.1
Observations	1226169	1215901
PAP-Babies	36839	36640

Note: † Number of Previous Applications counts the number of other PAPs who have previously applied for this BMO. ◇ BMO's Time on Website counts the number of days that a BMO has been on website.

Table A6: Application Decisions and Number of Previous Applications for a BMO

Dependent Variable: Application	First 30 Days PAP on Website	More than 30 Days PAP on Website
Already Born	-0.084*	0.017
	-0.153,-0.015	-0.168,0.202
Finalization Cost in $ 10 000	-0.139***	-0.139**
	-0.183,-0.095	-0.233,-0.046
African-American Girl	-0.357***	-0.158
	-0.475,-0.238	-0.449,0.132
African-American Boy	-0.448***	-0.333*
	-0.571,-0.326	-0.611,-0.055
African-American Unknown Gender	-0.470***	-0.531***
	-0.596,-0.344	-0.805,-0.256
Non-African-American Girl	0.168***	0.364**
	0.072,0.264	0.133,0.594
Non-African-American Boy	-0.026	0.013
	-0.116,0.063	-0.214,0.240
Hispanic	0.043	0.002
	-0.067,0.153	-0.220,0.224
Gay PAP	0.557***	0.557*
	0.377,0.737	0.029,1.086
Lesbian PAP	0.725***	0.756**
	0.569,0.882	0.252,1.259
Single PAP	0.073	-0.016
	-0.027,0.174	-0.390,0.358
Year FE	X	X
χ^2	277.90	77.95
Log-Likelihood	-261462.7	-11933.3
Observations	1305794	76662
PAP-Babies	33989	6127

Note: Probit Coefficients Presented, along with 95% confidence intervals.

Table A7: Application Decisions of PAPs: First Month, versus Subsequent Months on Website.

Dependent Variable: PAP Applies for Baby	All	Straight PAP	Gay PAP	Lesbian PAP	Single PAP
Activity Window: 10 Days					
Already Born	-0.211	-0.293	0.381	-0.825	0.510
	(-1.48)	(-1.52)	(0.27)	(-0.61)	(1.17)
Months to Birth	-0.017**	-0.016*	0.016	0.006	-0.014
	(-2.78)	(-2.02)	(0.30)	(0.13)	(-0.83)
Finalization Cost in $ 10 000	-0.400***	-0.323***	-0.229	-0.447	-0.288
	(-7.51)	(-4.52)	(-0.46)	(-1.33)	(-1.53)
African-American Girl	-0.748***	-0.883***	-1.431	-1.549*	-0.734
	(-5.60)	(-5.38)	(-1.71)	(-2.27)	(-1.84)
African-American Boy	-1.047***	-1.164***	-0.066	-0.607	-1.069*
	(-6.85)	(-6.04)	(-0.09)	(-0.71)	(-1.99)
African-American Unknown Gender	-1.111***	-1.454***	-0.736	-0.810	-1.273***
	(-8.07)	(-6.70)	(-0.61)	(-1.62)	(-3.34)
Non-African-American Girl	0.460***	0.483***	0.902	1.428	0.529
	(4.62)	(3.81)	(0.82)	(1.80)	(1.27)
Non-African-American Boy	-0.032	-0.082	-0.339	0.878	0.068
	(-0.35)	(-0.70)	(-0.38)	(1.59)	(0.20)
Hispanic	0.065	-0.005	1.408	-0.340	-0.407
	(0.49)	(-0.03)	(1.13)	(-0.46)	(-0.87)
PAP-Day FE	X	X	X	X	X
Log-Likelihood	889326	546996	9950	14414	65500
PAP-BMO	31771	20048	330	478	2061

Note: (d) for discrete change of dummy variable from 0 to 1. $^{*}p < 0.05,^{**}p < 0.01,^{***}p < 0.001$. Standard Errors clustered by PAP-BMO pair. (‡) The omitted category is gender unknown non-African-American unborn child with finalization cost of 26 000 dollars in 2009 who is less than one month from birth.

Table A8: Determinants of PAPs' Applications (Activity Window of 10 days) – Conditional Logit Coefficients

Dependent Variable:	I	II	III
PAP Applies for Baby			
Activity Window: 10 Days			
Already Born	-0.176	-0.211	-0.197
	(-1.42)	(-1.48)	(-1.57)
Months to Birth	-0.015**	-0.017**	-0.015**
	(-3.16)	(-2.78)	(-3.23)
Finalization Cost in $ 10 000	-0.382***	-0.400***	-0.367***
	(-8.49)	(-7.51)	(-8.19)
African-American Girl	-0.730***	-0.748***	-0.735***
	(-5.88)	(-5.60)	(-5.91)
African-American Boy	-0.998***	-1.047***	-1.012***
	(-7.22)	(-6.85)	(-7.31)
African-American Unknown Gender	-1.012***	-1.111***	-1.023***
	(-7.57)	(-8.07)	(-7.63)
Non-African-American Girl	0.402***	0.460***	0.386***
	(4.33)	(4.62)	(4.15)
Non-African-American Boy	-0.084	-0.032	-0.096
	(-0.94)	(-0.35)	(-1.08)
Hispanic	0.071	0.065	0.066
	(0.64)	(0.49)	(0.60)
Months PAP on Website			-0.002***
			(-10.95)
PAP-Day FE		X	
Year FE	X		X
PAP Type FE	X		X
χ^2	-277602.5	-169792.3	-272766.9
Log-Likelihood	1444871	889326	1444871
PAP-BMOs	42218	42218	42218

Note: T-statistic in parenthesis. $^{*}p < 0.05,^{**}p < 0.01,^{***}p < 0.001$. Coefficients of Logit shown in Columns I and III. Coefficients of Conditional Logit shown in Column II. Standard Errors Clustered by PAP-BMO Pair (using a bootstrap procedure with 100 replications for Column II).

Table A9: Determinants of PAPs' Applications Accounting for Fixed Effects (Activity Window of 10 days)

Dependent Variable	Full Sample		Unborn		Born	
Finalization Cost in $1,000s	I	II	III	IV	V	VI
Already Born	1.00	0.90				
	(1.22)	(1.12)				
Months to Birth	-0.05	-0.05	-0.20	-0.11	-0.00	-0.01
	(-0.80)	(-0.85)	(-1.27)	(-0.72)	(-0.00)	(-0.16)
African-American Girl	-8.20***	-7.72***	-9.27***	-8.45***	-6.74	-7.14
	(-7.71)	(-7.36)	(-7.61)	(-6.97)	(-1.78)	(-1.91)
African-American Boy	-7.87***	-7.63***	-7.90***	-7.64***	-9.78**	-9.76**
	(-7.92)	(-7.81)	(-6.84)	(-6.74)	(-2.78)	(-2.82)
African-American Unknown Gender	-7.48***	-7.02***	-7.76***	-7.28***	-5.69	-5.53
	(-7.75)	(-7.39)	(-7.67)	(-7.29)	(-1.21)	(-1.20)
Non-African-American Girl	-0.38	-0.45	-0.11	-0.01	-2.87	-3.40
	(-0.40)	(-0.49)	(-0.11)	(-0.01)	(-0.79)	(-0.95)
Non-African-American Boy	-2.65**	-2.52**	-2.47**	-2.21*	-6.00	-6.92
	(-3.25)	(-3.17)	(-2.75)	(-2.52)	(-1.69)	(-1.96)
Hispanic	0.06	-0.25	-0.26	-0.70	0.15	-0.85
	(0.06)	(-0.26)	(-0.24)	(-0.65)	(0.05)	(-0.30)
Asian	2.10	1.42	2.40	1.63	1.98	-0.86
	(0.94)	(0.65)	(1.02)	(0.71)	(0.23)	(-0.10)
Year 2004	-10.76***	-10.74***	-10.74***	-10.66***	-11.44***	-11.50***
	(-11.88)	(-12.10)	(-10.98)	(-11.13)	(-3.95)	(-4.05)
Year 2005	-8.69***	-9.25***	-8.79***	-9.32***	-7.88**	-7.89**
	(-10.85)	(-11.73)	(-10.09)	(-10.93)	(-3.16)	(-3.21)
Year 2006	-5.90***	-6.41***	-6.02***	-6.53***	-3.55	-3.40
	(-6.55)	(-7.25)	(-6.14)	(-6.81)	(-1.20)	(-1.17)
Year 2007	-4.85***	-4.85***	-5.53***	-5.47***	-2.77	-3.11
	(-4.99)	(-5.12)	(-5.10)	(-5.18)	(-0.95)	(-1.08)
Year 2008	-0.65	-0.70	-1.07	-1.26	2.57	2.95
	(-0.70)	(-0.78)	(-1.06)	(-1.27)	(0.97)	(1.12)
Single PAP OK		0.14		0.52		-2.42
		(0.25)		(0.84)		(-1.55)
Gay PAP OK		-3.54***		-3.94***		-1.32
		(-5.70)		(-5.80)		(-0.77)
Constant	35.46***	36.38***	36.16***	36.63***	36.61***	39.02***
	(43.59)	(43.32)	(34.07)	(34.82)	(8.93)	(9.34)
R^2	0.40	0.43	0.40	0.43	0.50	0.53
Adjusted-R^2	0.38	0.41	0.38	0.42	0.41	0.43
F-Stat	31.0	30.8	28.5	28.5	5.9	5.6
Babies	673	673	581	581	91	91

Note: $^{*}p < 0.05,^{**}\ p < 0.01,^{***}\ p < 0.001$. The omitted category is gender unknown non-African-American unborn child in 2009.

Table A10: Adoption Finalization Cost Regressions

2 Appendix B: Preferences over Time to Birth and Child Age

Understanding how the desirability of a child changes during the pregnancy and after birth is relevant for evaluating how a disruption of an adoption plan at different stages of the BMO's pregnancy and child growth can affect adoption outcomes.

Tables 5 (in the paper) and A11 show estimates regarding the desirability of unborn children over the pregnancy and of already-born children. Table 5 reports a negative marginal effect of 1.4% on application rates for already born children. Note that this significant decrease occurs despite the fact that the average age of already-born children in our sample is *just over* 1 *month*. Table 5 suggests a significant negative effect of time to birth for unborn children. In Table A11, we allow for nonlinearities over the months to birth. We find that, while in the first 5 months of pregnancy application probabilities increase rapidly, going monotonically from 3.8% to 7.2%, they are fairly constant over the three months preceding birth.

In principle, there are two opposing effects at work that influence children's desirability over time. On the one hand, a match occurring early in the pregnancy offers PAPs the possibility of monitoring the BMO's health habits and medical conditions for a longer portion of the pregnancy.[1] On the other hand, several forces make BMOs early in their pregnancy potentially less appealing. First, since by law the BMO cannot relinquish parental rights until after the birth, a BMO who is in early pregnancy might be more tentative about relinquishing her child for adoption and has more time to reconsider her decision. Thus, BMOs that are later in gestation can be perceived as more committed to the adoption plan. Second, since PAPs typically cover the BMO's living and medical expenses from the time of the match until the delivery, an early match could entail more risk with respect to ultimate costs. Indeed, if the BMO eventually reconsiders the adoption plan, most of the costs incurred up to that point are non-recoverable for the PAPs.[2] Our results show that the effects that make a BMO that is closer to delivery more appealing to PAPs are dominant.

[1] It is often the case that, after the match takes place, the matched PAPs monitor the BMO's medical condition and lifestyle. Depending on PAPs' state of residence, this can be done, for example, by offering the BMO to move temporarily to the PAPs' geographical area or home until the delivery.

[2] Detailed information we collected on auxiliary cases suggests that out of the total adoption finalization costs, up to 60% is non-refundable in the event the match falls through.

Dependent Variable: PAP Applies for Baby	All	Straight PAP	Gay PAP	Lesbian PAP	Single PAP
Activity Window: 10 Days					
Already Born (d)	-0.010	-0.011	0.043	-0.037	0.028
	(-1.37)	(-1.32)	(0.36)	(-0.36)	(0.85)
1 Month Before Birth (d)	-0.000	-0.002	0.047	0.001	0.000
	(-0.04)	(-0.60)	(0.89)	(0.03)	(0.00)
2 Month Before Birth (d)	0.001	-0.002	0.076	0.001	-0.009
	(0.37)	(-0.53)	(1.25)	(0.02)	(-0.78)
3 Month Before Birth (d)	-0.005	-0.007	0.057	-0.015	-0.016
	(-1.27)	(-1.57)	(0.91)	(-0.26)	(-1.22)
4 Month Before Birth (d)	-0.017***	-0.015**	-0.059	-0.065	-0.022
	(-4.20)	(-3.29)	(-1.33)	(-1.19)	(-1.55)
5 Month Before Birth (d)	-0.027***	-0.025***	-0.080	-0.091	-0.024
	(-6.42)	(-5.18)	(-1.83)	(-1.63)	(-1.55)
6 Month Before Birth (d)	-0.032***	-0.029***	-0.064	-0.120*	-0.023
	(-6.48)	(-5.05)	(-1.08)	(-2.28)	(-1.28)
7 Month Before Birth (d)	-0.048***	-0.043***	0.111	-0.173***	-0.052***
	(-9.47)	(-6.93)	(0.78)	(-3.38)	(-3.95)
8 Month Before Birth (d)	-0.051***	-0.051***	-0.013		
	(-7.40)	(-7.40)	(-0.08)		
Month After Birth	-0.000	-0.002*	-0.008	-0.010	0.000
	(-0.89)	(-2.45)	(-0.81)	(-1.40)	(0.37)
Finalization Cost in $ 10 000	-0.021***	-0.020***	-0.033	-0.109*	-0.021*
	(-6.85)	(-5.69)	(-0.97)	(-2.51)	(-2.15)
African-American Girl	-0.065***	-0.063***	-0.246**	-0.296***	-0.069**
	(-7.75)	(-6.29)	(-2.80)	(-3.32)	(-2.83)
African-American Boy	-0.078***	-0.078***	-0.076	-0.161	-0.089**
	(-9.00)	(-7.52)	(-1.04)	(-1.64)	(-3.21)
African-American Unknown Gender	-0.081***	-0.084***	-0.158	-0.174*	-0.091***
	(-9.51)	(-8.16)	(-1.62)	(-2.20)	(-4.13)
Non-African-American Girl	0.017*	0.018*	0.070	0.209	0.022
	(2.55)	(2.43)	(0.71)	(1.93)	(0.93)
Non-African-American Boy	-0.016*	-0.018*	-0.054	0.065	-0.009
	(-2.53)	(-2.45)	(-0.71)	(0.88)	(-0.43)
Hispanic	-0.003	-0.006	0.102	-0.105	-0.034
	(-0.35)	(-0.75)	(1.03)	(-0.76)	(-1.27)
Gay PAP (d)	0.086***				
	(3.77)				
Single PAP (d)	0.014				
	(1.82)				
Lesbian PAP (d)	0.155***				
	(5.91)				
Years (d)	X	X	X	X	X
Probability for Mean Attributes	0.089	0.074	0.182	0.221	0.078
Probability for Base Case[‡]	0.137	0.144	0.196	0.372	0.118
χ^2	409.42	232.37	50.87	48.35	53.30
Log-Likelihood	-221287.6	-144163.9	-5451.6	-8537.2	-20522.2
Observations	879830	598726	13144	16792	79908
PAP-BMOs	31039	21655	434	544	2499

Note: (d) for discrete change of dummy variable from 0 to 1. $^{*}p < 0.05,^{**}\ p < 0.01,^{***}\ p < 0.001$. Standard Errors clustered by PAP-BMO pair. (‡) The omitted category is gender unknown non-African-American unborn child with finalization cost of 26 000 dollars in 2009 who is less than one month from birth.

Table A11: Determinants of PAPs' Applications (Activity Window of 10 days) – Marginal Effects for Probit

3 Appendix C: A Model of Matching with Search

We present a basic model of matching with search frictions that is related to Burdett and Coles (1997) and Eeckhout (1999).The model is useful in two respects. First, it provides a justification for the revealed preferences assumptions that are at the root of our estimations. In particular, it validates the separate estimation of PAPs' and BMOs' preferences (rather than the estimation of a simultaneous set of equations capturing the demand and supply of children, which would have emerged from a static model). Second, it links the estimated constant term with an endogenous reservation utility (in addition to a constant associated with the parents' utility function).

In our data set, we observe several types of PAPs: straight couples, gay men, lesbian couples, and single women. These PAPs' types may have dissimilar preferences over children's attributes and may impact the BMOs' utilities differently. Formally, each type is characterized by a vector of attributes and denoted by $\theta = (\theta_1, \ldots, \theta_h) \in \Theta_{PAP}$. BMOs may care about other PAP attributes that need not affect PAPs' preferences (e.g., wealth or looks). We capture such additional attributes by $a = (a_1, ..., a_m) \in A_{PAP}$. We assume that (θ, a) is determined independently and identically across PAPs, with a joint cumulative distribution F_{PAP}.

We assume that each BMO is characterized by the child's attributes $c = (c_1, ..., c_n) \in C_{BMO}$ (capturing the child's race, gender, time to birth, and so on). Attributes are independently and identically distributed across BMOs with a cumulative distribution F_{BMO}. Each BMO is also characterized by the set of types she is willing to consider $\Theta \subseteq \Theta_{PAP}$ (such as straight couples, single women, etc). These are determined independently of the child's attributes and of the set of types other BMOs are willing to consider according to the cumulative distribution H_{BMO}.[3]

Prospective Adoptive Parents

A PAP of type $\theta \in \Theta_{PAP}$ gains a match utility $u_{PAP}(\theta; c)$ from adopting a child with attributes c. We normalize the utility from remaining unmatched to zero, while we assume that the utility from adopting any child is non-negative: $u_{PAP}(\theta; c) \geq 0$ for all c and strictly positive for some c. This amounts to assuming that the outside option (not pursuing adoption or pursuing it through a different channel) is worse than the

[3] Acceptable categories of PAPs are arguably due to upbringing and ideological convictions that go beyond strategic forces in the matching process we study. We therefore assume that acceptable categories of PAPs are exogenous and independent of the child's characteristics. Empirically, the most significant restriction imposed by BMOs in our data is whether they allow applications from same-sex couples. While we have verified that none of the observable characteristics of children explains these restrictions, the model would extend directly to a situation in which the BMOs' attributes do affect these limitations.

adoption of any child on the website.[4]

PAPs have an arrival rate of λ. Each PAP experiences a discount factor of δ_{PAP}. This discount rate can be thought of as capturing PAPs' fatigue or aging.

Birth Mothers

Each BMO gains a match utility $u_{BMO}(\theta, a)$ from giving up her child to a PAP with attributes (θ, a). We normalize the BMO's utility from being unmatched to zero and assume that $u_{BMO}(\theta, a) > 0$ for some PAP attributes (θ, a).[5] A note on the modeling asymmetry we impose between the BMOs and PAPs is now in order. In principle, some of the BMOs' attributes could play a role in both the BMOs' and the PAPs' preferences. Empirically, however, this does not seem to be the case – BMOs' observable decisions do not seem to differ across child attributes.

BMOs have an arrival rate of γ and experience a discount factor of δ_{BMO}. This discount factor can be interpreted as the forgone monetary flow that birth mothers give up by not committing immediately to a match.[6]

The Dynamic Matching Process

Upon arrival in the matching process, a PAP of type θ may or may not submit an application to each BMO that enters the process and allows applications from PAPs of type θ. Notice that key to the adoption process we study is the fact that PAPs can submit as many applications as they want. In other words, the (opportunity) costs associated with each additional application is negligible.[7]

As described in the paper, an application involves a letter from the PAP to the BMO. This letter is effectively comprised of two elements: the type θ of the PAP submitting the application and a noisy signal α of the PAP's remaining attributes a (the letter could suggest certain characteristics to BMOs, such as affluence, warmth, etc., but may not accurately describe the vector a of attributes the BMO may be inter-

[4] We justify this assumption on the basis of the considerable fixed (time, financial, and emotional) costs associated with deciding to pursue adoption in general and adoption through this facilitator in particular.

[5] In general, $u_{BMO}(\theta, a)$ may be negative. This allows some mothers to decide during the matching process to mother the child or use alternative routes for adoption.

[6] We assume that BMOs' discount factor does not depend on the child's attribute, not even on the time to birth, despite it being correlated with the time on the website. Table 2 (in the paper) implies a case resolution that is very quick (less than two months). This short time interval suggests that decisions of BMOs do not change dramatically over their duration on the site, making the uniformity of the discount factor an arguably weak assumption.

[7] This is a key difference between the process analyzed here and, for example, the school admission process, where the number of applications each candidate can submit is institutionally fixed, hence every application is associated with an opportunity cost. See, for example, the discussion of school choice in Roth (2008).

ested in). That is, the BMO observes an application of the form (θ, α), where we assume that the signal α has full support (of A_{PAP}) and denote by $G_{PAP}(\alpha|a)$ its conditional distribution. We denote by $U_{BMO}(\theta, \alpha) = \mathbb{E}_{G_{PAP}}\{u_{BMO}(\theta, a)|\alpha\}$ the BMO's expected utility associated with the application (θ, α). We assume that the parameters of the model are common knowledge among all participants. A BMO who receives an application immediately decides whether to accept it or reject it.[8] When an application is accepted, the match gets irreversibly formed and the corresponding PAP and BMO exit the process. Otherwise, both the PAP and the BMO stay in the matching process.

Equilibrium Characterization

In this subsection, we characterize the equilibrium behavior of PAPs and BMOs. Notice, first, that we can restrict attention to stationary reservation utility strategies for both PAPs and BMOs.[9]

In equilibrium, each PAP of type θ and attributes a has a reservation utility $\bar{u}_{PAP}(\theta, a)$. That is, upon considering a BMO i with a set Θ^i of acceptable PAPs' types and with child's attributes c, a PAP of type $\theta \in \Theta^i$ submits an application if and only if $u_{PAP}(\theta; c) \geq \bar{u}_{PAP}(\theta, a)$. Similarly, each BMO i with acceptable types Θ^i and a child of attributes c has a reservation utility $\bar{u}_{BMO}(\Theta^i, c)$. Upon considering an application (θ, α) from a PAP of type $\theta \in \Theta^i$, the BMO will accept the application if and only if $U_{BMO}(\theta, \alpha) \geq \bar{u}_{BMO}(\Theta^i, c)$.

Given thresholds $\{\bar{u}_{PAP}(\theta, a)\}_{\theta \in \Theta, a \in A_{PAP}}$ and $\{\bar{u}_{BMO}(\Theta, c)\}_{\Theta \subseteq \Theta_{PAP}, c \in C}$, the arrival rates λ, γ, together with the distributions $F_{PAP}, G_{PAP}, F_{BMO}$, and H_{BMO}, each PAP of type θ and attributes a faces an equilibrium arrival rate $r_{\theta,a}$ of BMOs' acceptances, and an equilibrium distribution of these BMOs' attributes $\phi_{\theta,a}$. Similarly, a BMO of type Θ with a child of attributes c faces an arrival rate of applications $s_{\Theta,c}$ and an equilibrium distribution of these PAPs' attributes $\psi_{\Theta,c}$.[10]

[8] The assumption that agents consider potential matches one at a time is standard in the literature on bilateral search (see Rogerson, Shimer, and Wright, 2005). Technically, it dramatically simplifies the equilibrium characterization of our model. In particular, it implies that a PAP's decision whether to send an application out does not depend on the number and identity of the other PAPs interested in the same child. The justification for this assumption is in the monetary flow the BMO forgoes by not making an immediate decision paired with the relatively short interval of time that a BMO spends in the matching process as well as the limited, if at all present, access BMOs have to the internet in general and the website in particular.

[9] As highlighted in Burdett and Coles (1997), this model can lead to multiple equilibria. We could impose regularity conditions on u_{PAP} and u_{BMO} that would guarantee uniqueness (mirroring, for example, the structure imposed by Eeckhout, 1999). However, since all equilibria are characterized by reservation strategies, such additional assumptions are not necessary for the purpose of our estimations.

[10] We are essentially characterizing a partial equilibrium of this environment in that the distributions over characteristics are assumed exogenous. As discussed in Burdett and Coles (1997), this can be viewed as a full equilibrium if one assumes the appearance of 'clones' of agents who leave the market. Alternatively, under simple regularity assumptions, one can show that, in fact, there exist distributions constituting part of a full equilibrium. However, we stress that the key insight for our estimations is the equilibrium use of threshold strategies.

Denote by $V_{PAP}(\theta; c)$ the continuation value of a type θ PAP considering a BMO whose child has attributes c. The following Bellman equation corresponds to the PAP's optimization problem:

$$V_{PAP}(\theta; c) = \max\left\{u_{PAP}(\theta; c), \mathbb{E}_{r_{\theta,a},\phi_{\theta,a}}\delta_{PAP}^{t} V_{PAP}\left(\theta; c'\right)\right\},$$

where t is the random time it takes a PAP to encounter a BMO in the process.

The solution to this problem is the reservation utility $\bar{u}_{PAP}(\theta, a)$ such that:

$$\bar{u}_{PAP}(\theta, a) = \mathbb{E}_{r_{\theta,a},\phi_{\theta,a}}\delta_{PAP}^{t} V_{PAP}\left(\theta; c'\right).$$

A similar analysis applies to the BMO's behavior.[11]

We conclude with three remarks. First, although we assumed that PAPs get positive utility from adopting any child on the website, in equilibrium, their reservation utility may be above the utility of adopting some of these children. Thus, in equilibrium, some BMOs may not find a suitable PAP.

Second, note that our data describe the operation of one adoption facilitator, while the PAPs and BMOs may take part in parallel matching processes through other channels (e.g., religious organizations, private attorneys, etc.). Thus, it is inherently difficult for us to identify the arrival and departure rates of PAPs and BMOs together with utilities corresponding to all types of participants. However, the arrival and departure rates do not affect the marginal rates of substitution given by the underlying preferences of participants. Therefore, our approach of using the information on whether PAPs and BMOs fall above or below each other's reservation utility in order to make inferences on the relative importance of different children's and PAPs' characteristics is valid even when other channels are being utilized by either side.

Third, the model described above derives stationary reservation utilities for both PAPs and BMOs. In principle one might conceive a behavior by PAPs that leads to a reservation utility that varies while the PAP is active on the website. In our empirical estimations we do allow for PAPs' reservation utilities that varies with the time spent on the website (see Table A6). Our estimates of the marginal rate of substitutions are invariant to this generalization.

[11] Notice that the particular structure of the noise in our model assures that PAPs who submit an application are never indifferent between applying and not applying.

4 Data Appendix

4.1 Data Sources

The data were collected from the adoption facilitator's website. On this website, there are two linked pages that we utilized (both publicly accessible):

- *"List of Currently Available Children"* (CA hereafter), containing the list of children currently available on the website.
- *"Archive,"* containing the list of children who have been placed on the website in the past.

The data used in this project originate from four separate collection efforts:

1. **Perlscript Data** correspond to CA and archive data harvested via HTML on a daily basis. These data refer to the period from September 2008 to December 2009.
2. **PDF Data** correspond to data harvested from the same sources as above (the CA and archive pages), but transcribed from screen grabs in pdf using an external company. These data refer to the period from May 2008 to September 2008.
3. **RA data** contain CA data only. They were assembled by a research assistant who manually uploaded a spreadsheet with daily observations. These data were gathered from May 2007 to January 2008.
4. **Archive Data** contain CA data only and were put together using an Internet archive ("Wayback"). We used that source to generate data between June 2004 and September 2007.

Table 1 specifies the distribution of our data across these sources, and

Data Source	Frequency	Percent
PerlScript data	383,802	22
PDF data	37,076	2
Interpolated PDF data	59,494	3
RA Data	9,819	1
Archive data	295,020	17
Interpolated from Archive data	977,032	56
Total	1,752,424	100

Table A12: Origins of CA Data

Figure 1 depicts the data collection efforts across time.

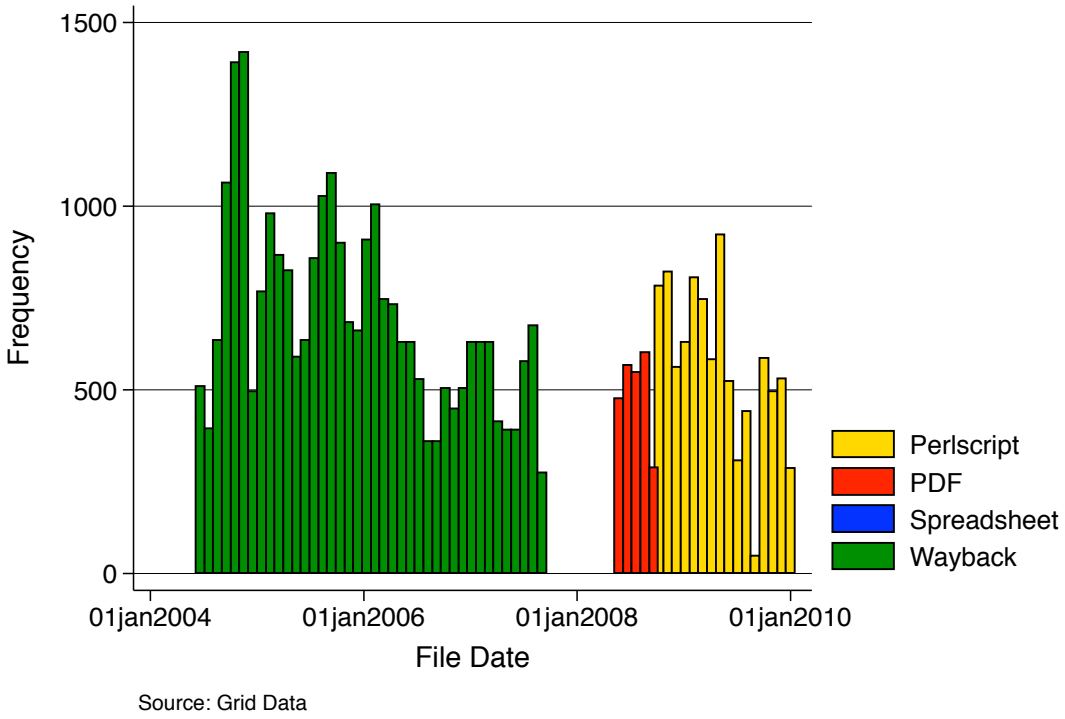

Figure 1: Data Collection over Time.

4.2 PAP Activity

The activity period of individual PAPs on the site is defined using two dates: the first time that an individual PAP appears in our records (i.e., the first application for a child, which is conditional on the PAP having paid an initial fee to the facilitator), and the last time that same PAP submits an application for a child. We assume that PAPs are actively checking the website and are aware of each child available on each day between these two end-points. Moreover, for some results in the paper, we define a PAP as 'active' up to either 10 or 90 days following their last application. If a PAP is eventually matched to a BMO on the website, we consider the PAP inactive since the last application they submitted (possibly a few days before the match appears on the website). This is justified by the fact that as soon as the BMO makes her choice, the facilitator prevents the chosen PAP from applying to other children.

4.3 Interpolation

Some of our data (in particular, the PDF and Archive Data) have resolution smaller than one day. In these cases, the data are filled via a one-sided interpolation: If an observation on a given day is missing, the data

are assumed identical to the data on the day before (that includes available children, outstanding applications for children, etc.). That is, if we observed data A on day 1, data B on day 5, and data C on day 7, our filled data set was constructed as A, A, A, A, B, B, C. Additionally, we coded the resolution of each element in our data as the time lag between actual observations, so the resolution for the example above would be: $0, 4, 4, 4, 0, 2, 0$.

4.4 BMOs' Attributes and Restrictions

BMO data were entered using the text produced by the HTML files in the CA data. Exploiting the consistency of the organization of the website, we searched for specific strings within specific columns of the data table. For instance the string 'lesbian' in the column of the CA data detailing the PAPs types acceptable to the BMO was used to code BMOs open to lesbian PAPs (note that all restrictions are worded in the direction of acceptance; e.g., 'BMO wants a married couple or a single woman,' 'BMO will consider all families including lesbians, gay, single,' etc.). Race percentages were coded using a similar method, utilizing a database of words used in referring to ethnicities within the BMO characteristics column (e.g., '3/4 Caucasian, 1/4 African-American,' etc.).

The BMO's due date and the date on which the case was presented to the facilitator were captured searching for several alternative date formats and accuracies, as well as performing a local search in nearby lines for explanatory strings. For example, 'Due Date: 08-Feb' in a data point with date 25 December 2008 would translate into a coded due date of 02-08-2009. 'Presented on 08-05-09' would force the presentation date to be coded as 08-05-2009.

Finally, to code the adoption finalization costs, a research assistant went through the raw data determining the final monetary costs associated with every BMO.[12]

4.5 PAPs' Attributes

4.5.1 Single and Same-Sex Classification

The website refers to PAPs reporting their first names or initials only. Thus, PAPs are coded in the data via strings such as 'jack&jill,' 'mary,' or 'a&b.'[13] We used this information to determine the sexual orientation of a PAP, as well as whether the PAP is a couple or a single woman. When the names or initials did not indicate

[12] We discarded four cases in which the BMO's ID name changed over the period in which the case was posted on the website.

[13] Names were sorted alphabetically to make sure their reversal on the website was not coded as identifying a separate PAP unit.

a couple, we assigned a value of 1 to the "Single PAP" variable. We classified PAPs' sexual preferences as follows:

1. We determined the gender of each name according to the classification 'male,' 'female,' and 'unisex.' In particular:

   (a) For well-known anglo and foreign names, coding was automatic.

   (b) For obscure names that were unknown to the coders, we checked with online child name databases to determine the classification of the name.

   (c) If a name's gender specificity could not be determined, or the PAP couple was identified only through its initials, each name was assumed to be 'unisex.'

2. If the couple was identified by one 'male' and one 'female' name, we assigned a value of 1 to the "straight couple" variable. Similarly, if the couple were identified by two 'male' names or two 'female' names, we assigned a value of 1 to the "Gay PAP" or "Lesbian PAP" variable, respectively. If one of the names was 'unisex,' the PAP was classified as PAP with ambiguous name, and not used in some of the analysis in the paper.

5 Data and Program Glossary

The code for making the dataset and producing the tables and statistics in the paper is in the shell script `make_data_adoption.sh`.

5.1 Data Glossary

- case_data_all.dta: data from the archive webpage.
- ChoicePanel.dta: combination of PAP choices for each child on each day.
- grid_data.dta: data from the CA webpage.

5.2 Statistical Program Glossary

- grid_hedonic_regression1.do: runs the finalization cost regressions.
- Matching_Regression_Match-Not.do: runs the regression on finding a match or not.

- Matching_Regression.do: runs the regressions on the BMO's choice of a PAP.
- ChoicePanel_Sum9.do: creates all the tables and figures in the paper, except for those describing matching, finalization cost, and the determinants of a BMO's choice.

5.3 Data Construction Programs

- HTMLdata.m: reads in data on archive from html and pdf files and imports them; general purpose script file calling the main functions, and getting data into matlab through the *outdata* cell variable.
- generate_PAP_file.do: generates the data set file *ChoicePanel.dta* from the data. Uses *pap_data.dta* and *CA_data.dta*
- replacePAPnames.do: changes a long list of misspellings, errors, etc. to the 'correct' values, as coded by hand.
- import_CA_data-AJW.do: imports the csv file generated by *FlatFileOutputPAP.m*, changes the names and various details that need correction. Also assigns unique IDs as necessary and generates a couple of diagnostic values. The main function is generating the file *pap_data.dta*.
- DateEnter.m: finds and codes date information using differing formats and regular expressions. In particular, 'mm-dd-yy' and 'mm-dd-yyyy' formats. Pre-processes the strings to replace words and other formats to create richer information. Dates are attributed to events via the strings on the same or previous lines.
- DateEnterCD.m: customized version of *DateEnter.m* for use with the Cases data. Changes where the algorithm looks for explanatory strings and dates.
- DateExtract.m: similar date extraction routine to *DateEnter.m*, but used with Cases data.
- GenerateData.m: global Script. Runs the data entry part within MATLAB.
- InterestedPersonsVector.m: formats the interested PAPs data from a row of the CA file. Takes the interested PAPs string and converts to a cell array.
- MatchedPersonsVector.m: similar to *InterestedPersonsVector.m*, but customized for data from the Cases file.

- FlatFileOutputPAPs.m: converts data from cell variable in MATLAB through to csv file for entry into STATA file for Grid data, where a row is a day-mother-pap entry.
- HTMLtimemachine.m: enters data from the HTML data captured from Internet Archive.
- EnterHongData.m: enters data from a customized csv-version of the RA entered data. Each i entry in outdata $(i, \cdot)$ represents a BMO, where the second element represents time on the site.
- StripArchive.m: function that saves HTML for targeted website for specified date ranges.
- RaceFractionCode.m: For each column entry in the cell given by the coordinate system, codes the racial fraction and word given in the text. Used to extract well-specified race data from the HTML.
- AgeCode.m: codes ages of children from string data.
- CodeLanguage.m: script file that runs the data refinement routines—i.e., those that convert string data to numeric coded data.
- CodeLanguageCD.m retasked version of *CodeLanguage.m* for the Archive data instead of the CA data.
- CreateMatchInformation.m: tries to match string data near to date information with known phrases, thereby coding matches, cases closed, missing, etc.
- DateReplaceWords.m: pre-formatting for dates; tries to put dates into a systematic format for subsequent data capture.
- MoneyCode.m: extracts monetary amounts from string data, looking for date ranges and stated amounts. For date ranges, the code is the top limit of the range. These data are superseded in the final analysis by the hand-entered amounts for each BMO.
- RearrangePAP.m: orders PAP pairs so that the names are listed in alphabetical order.
- FlatFileOutputCaseData.m: converts data from cell variable in MATLAB through to csv file for entry into STATA file for Archive data where a row is a date-mother entry.
- HTMLcaseData.m: enters information from the Archive page html.
- FlatFileOutput.m: converts data from cell variable in MATLAB through to csv file for entry into STATA file for CA data where a row is a date-mother entry.

5.4 Helper Programs Glossary

The following codes are "helper" functions in that they perform specific tasks such as manipulating strings and so on.

- coderow.m: enters data from a HTML-table tow into MATLAB. Used as an extraction tool for rows after the *gettabledata.m* file populates from the string.
- coderowCaseData.m: customized version of *coderow.m* for use with data from the Archive data rather than the CA data.
- gettabledata.m: finds the first table within an HTML file.
- PreviousLine.m: string manipulation utility. Function returns the line above/or below the current position within the string using custom line delimiters.
- LineContents.m: string manipulation utility. Function returns the line above/or below the current position.
- replacestring.m: string manipulation utility. Replaces one string with another.
- RenameFiles.m: unused. File manipulation utility. Basic utility for renaming files in a particular directory.
- striptags.m: string manipulation utility. Removes HTML tag information—i.e., transforms \<a href="link.htm"\>link address\<\/a\> to "link address" using regular expressions.

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