

Supplementary Online Material

Zia A, Brassart A, Thomas S, et al. Patient-centric structural determinants of adherence rates among asthma populations: exploring the potential of patient activation and encouragement tool TRUSTR to improve adherence. *JHEOR*. 2020;7(2);111-122.

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Appendix 1: Asthma Code Lists; QCI Coding Algorithm

Table S1. Diagnosis Codes for Moderate or Severe Persistent Asthma

Table S2. Asthma Medication Code List

Table S3. Coding algorithm for Quan-Charlson Comorbidity Score

Appendix 2: Detailed Outputs of eight Structural Equation Models and Estimated Direct, Indirect and Total Effects

Appendix 3: Sensitivity Analysis Results Presenting Detailed Outputs of Eight Additional Structural Equation Models and Their Estimated Direct, Indirect and Total Effects

This supplementary material has been provided by the authors to give readers additional information about their work.



Appendix 1: Asthma Code Lists; QCI Coding Algorithm

Table S1. Diagnosis Codes for Moderate or Severe Persistent Asthma

Diagnosis code	ICD-10-CM: J45.4x or J45.5x
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Table S2. Asthma Medication Code List

Drug	GPI Code (starting with)	HCPCS Code	ICD-9-CM Procedure Code	ICD-10-PCS
Asthma controller medications				
Inhaled corticosteroids (ICS)				
Beclomethasone	44400010	J7622		
Budesonide	44400015	J7626, J7627, J7633, J7634		
Ciclesonide	44400017			
Flunisolide	44400030	J7641		
Fluticasone	44400033			
Mometasone	44400036			
Triamcinolone	44400040	J7683, J7684		
Long acting beta-2 adrenergic agonist (LABA)				
Salmeterol	44201058x			
Formoterol	44201027x	J7606, J7640, Q4099		
Arformoterol	44201012102520	J7605		
ICS/LABA combination				
Budesonide + formoterol	442099024x			
Fluticasone + formoterol				
Fluticasone + salmeterol	4420990270x			
Fluticasone+ Vilanterol	44209902758020, 44209902758030			
Mometasone furoate+ formoterol	4420990290x			
Leukotriene modifiers				
Zileuton	4450x 44504085x			
Leukotriene receptor antagonist (LTRA)				
Montelukast	44505050x			
Zafirlukast	44505080x			
Methylxanthine				
Aminophylline	44300010x	J0280		
Dyphylline	44300020x, 44993204200310, 4499100220	J1180		
Oxtriphylline	44300030x, 449910023			
Theophylline	4430004000, 4430004001, 4499100240, 4499100242, 4499100250, 4499300322, 4499320440, 4499900305, 44992203, 44999602	J2810		
Monoclonal antibodies*				
Omalizumab	44603060002120	J2357		
Mepolizumab	44604055002120	C9473, J2182		

Table S2. Asthma Medication Code List

Drug	GPI Code (starting with)	HCPCS Code	ICD-9-CM Procedure Code	ICD-10-PCS
Reslizumab	44604460002020	J2786		
Benralizumab	4460402000E520	C9466		
Long acting muscarinic antagonists (LAMA)				
Tiotropium Bromide (Spiriva)	44100080x			
Mast cell stabilizers				
Cromolyn	4415001010 excluding 44150010102900	J7630, J7631, J7632		
Long acting albuterol	44201010107410, 44201010107420, 44201010107470, 44201010107480, 44201010100410, 44201010100470, 44201010100480			
Asthma rescue medications				
Short acting beta-2 adrenergic agonist (SABA)				
Inhaled SABA				
Albuterol	44201010003405, 44201010102100, 44201010102515, 44201010102520, 44201010102555, 44201010102560, 44201010103410, 44201010108020	J7602, J7603, J7609, J7610, J7611, J7613, J7616, J7618, J7619, J7621, J7625, Q4093, Q4094		
Bitolterol	44201020x	J7628, J7629		
Levalbuterol	44201045x	J7607, J7612, J7614, J7615, J7617		
Metaproterenol	44201050202503, 44201050202505, 44201050202510, 44201050203310	J7667-J7670, J7672, J7675		
Pirbuterol	44201055x			
Terbutaline	44201060203405	J7680, J7681		
Isoetharine	44201030x	J7647-J7655		
Isoproterenol	44201040102520	J7657-J7660		
	44201040102525			
	44201040102530			
	44201040103405			
	44201040102510			
	44201040103410			
	44201040203405			
	44209902103410			
Non-inhaled SABA				
Albuterol	44201010100120, 44201010100305, 44201010100310, 44201010101205			

Table S2. Asthma Medication Code List

Drug	GPI Code (starting with)	HCPCS Code	ICD-9-CM Procedure Code	ICD-10-PCS
Isoproterenol	44201040100705, 44201040100710, 44201040102005			
Metaproterenol	44201050200305, 44201050200310, 44201050201205			
Terbutaline	44201060200305, 44201060200310, 44201060202005	J3105		
Oral corticosteroids (OCS)				
Prednisone	22100045000305, 22100045000310, 22100045000315, 22100045000320, 22100045000325, 22100045000330, 22100045000335, 22100045001205, 22100045001310, 22100045002005, 22100045002010, 22100045002015, 22100045006405, 22100045006410			
Prednisolone	22100040000305, 22100040001203, 22100040001205, 22100040006420, 22100040200910, 22100040202020, 22100040202040, 22100040202060, 22100040207215, 22100040207220, 22100040207240, 22100040202050, 22100040202025, 22100040101860			
Methylprednisolone	22100030000305, 22100030000310, 22100030000315, 22100030000320, 22100030000325, 22100030000330, 22100030006405, 22100030006410			
Paramethasone	22100035100305, 22100035100310			
Hydrocortisone	22100025000303, 22100025000305, 22100025000310, 22100025201810			

Table S2. Asthma Medication Code List

Drug	GPI Code (starting with)	HCPCS Code	ICD-9-CM Procedure Code	ICD-10-PCS
Dexamethasone	22100020000310, 22100020000315, 22100020000320, 22100020000325, 22100020000330, 22100020000335, 22100020000340, 22100020000345, 22100020001005, 22100020001320, 22100020002005, 22100020002010, 22100020006400, 22100020006420			
Betamethasone	22100010000305, 22100010002010			
Budesonide	22100012007530, 22100012007020			
Cortisone Acetate	22100015100303, 22100015100305, 22100015100310			
Triamcinolone	22100050000305, 22100050000310, 22100050000315, 22100050000320, 22100050006405, 22100050201203, 22100050201205			
SAMA and SAMA combinations				
Ipratropium (Atrovent)	42300040102010, 44100030102020, 44100030103410, 44100030123420	J7644, J7645		
Ipratropium/albuterol (Combivent or DuoNeb)	44209902013220, 44209902013420, 44209902012015	J7620		

Table S3. Coding algorithm for Quan-Charlson Comorbidity Score

Comorbidities	ICD-9-CM Diagnosis Codes	ICD-10-CM Diagnosis Codes	Charlson Score
Myocardial infarction	410.x, 412.x	I21.x, I22.x, I25.2	1
Congestive heart failure	398.91, 402.01, 402.11, 402.91, 404.01, 404.03, 404.11, 404.13, 404.91, 404.93, 425.4-425.9, 428.x	I09.9, I11.0, I13.0, I13.2, I25.5, I42.0, I42.5-I42.9, I43.x, I50.x, P29.0	1
Peripheral vascular disease	093.0, 437.3, 440.x, 441.x, 443.1-443.9, 447.1, 557.1, 557.9, V43.4	I70.x, I71.x, I73.1, I73.8, I73.9, I77.1, I79.0, I79.2, K55.1, K55.8, K55.9, Z95.8, Z95.9	1
Cerebrovascular disease	362.34, 430.x-438.x	G45.x, G46.x, H34.0, I60.x-I69.x	1
Dementia	290.x, 294.1, 331.2	F00.x-F03.x, F05.1, G30.x, G31.1	1
Chronic pulmonary Disease	416.8, 416.9, 490.x-505.x, 506.4, 508.1, 508.8	I27.8, I27.9, J40.x-J47.x, J60.x-J67.x, J68.4, J70.1, J70.3	1
Rheumatic disease	446.5, 710.0-710.4, 714.0-714.2, 714.8, 725.x	M05.x, M06.x, M31.5, M32.x-M34.x, M35.1, M35.3, M36.0	1
Peptic ulcer disease	531.x-534.x	K25.x-K28.x	1
Mild liver disease	070.22, 070.23, 070.32, 070.33, 070.44, 070.54, 070.6, 070.9, 570.x, 571.x, 573.3, 573.4, 573.8, 573.9, V42.7	B18.x, K70.0-K70.3, K70.9, K71.3-K71.5, K71.7, K73.x, K74.x, K76.0, K76.2-K76.4, K76.8, K76.9, Z94.4	1
Diabetes without chronic complication	250.0-250.3, 250.8, 250.9	E10.0, E10.1, E10.6, E10.8, E10.9, E11.0, E11.1, E11.6, E11.8, E11.9, E12.0, E12.1, E12.6, E12.8, E12.9, E13.0, E13.1, E13.6, E13.8, E13.9, E14.0, E14.1, E14.6, E14.8, E14.9	1
Diabetes with chronic complication	250.4-250.7	E10.2-E10.5, E10.7, E11.2-E11.5, E11.7, E12.2-E12.5, E12.7, E13.2-E13.5, E13.7, E14.2-E14.5, E14.7	2
Hemiplegia or paraplegia	334.1, 342.x, 343.x, 344.0-344.6, 344.9	G04.1, G11.4, G80.1, G80.2, G81.x, G82.x, G83.0-G83.4, G83.9	2
Renal disease	403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 582.x, 583.0-583.7, 585.x, 586.x, 588.0, V42.0, V45.1, V56.x	I12.0, I13.1, N03.2-N03.7, N05.2-N05.7, N18.x, N19.x, N25.0, Z49.0-Z49.2, Z94.0, Z99.2	2
Any malignancy	140.x-172.x, 174.x-195.8, 200.x-208.x, 238.6	C00.x-C26.x, C30.x-C34.x, C37.x-C41.x, C43.x, C45.x-C58.x, C60.x-C76.x, C81.x-C85.x, C88.x, C90.x-C97.x	3
Moderate or severe liver disease	456.0-456.2, 572.2-572.8	I85.0, I85.9, I86.4, I98.2, K70.4, K71.1, K72.1, K72.9, K76.5, K76.6, K76.7	6
Metastatic solid tumor	196.x-199.x	C77.x-C80.x	6
AIDS/HIV	042.x-044.x	B20.x-B22.x, B24.x	6

Note: The table above outlines the QCI index. To quantify comorbidity, the QCI score is computed by adding the weights that are assigned to the specific diagnoses. A score of 1 is attributed to myocardial infarction, congestive heart failure, peripheral vascular disease, cerebrovascular disease, dementia, chronic pulmonary disease, connective tissue/rheumatologic disease, peptic ulcer disease, mild liver disease, and diabetes without chronic complications. The following diseases are scored as 2: hemiplegia or paraplegia, renal disease, diabetes with complications, and malignancy including leukemia and lymphoma. Moderate or severe liver disease is scored 3. Finally, a score of 6 is assigned to metastatic solid carcinoma and AIDS/HIV. Each diagnosis is only counted once (e.g. if a patient has ICD-9 code 410.xx and 412.xx, they will receive a score of 1 for MI, not 2). The minimum possible score is 0 and the maximum possible score is 33.

ICD-9-CM: International Classification of Disease, Version 9, Clinical Modification; ICD-10-CM: International Classification of Disease, Version 10, Clinical Modification

Appendix 2: Detailed Outputs of Eight Structural Equation Models and Estimated Direct, Indirect and Total Effects

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-----
name: <unnamed>
log: /Users/asim/Dropbox/Integrative Sustainable Solutions/TRUST APP/Cancer and Asthma Application/Health Corp
Data/LateralizationResults20190830.smcl

. ssd init age inpatient_hospitalizations er_visits pcp_officevisits specialist_office_visits other_outpatientservices
pharmacy_fills qci_score mpr pdc rewards engagement_rate

Summary statistics data initialized. Next use, in any order,

ssd set observations (required)
  It is best to do this first.

ssd set means (optional)
  Default setting is 0.

ssd set variances or ssd set sd (optional)
  Use this only if you have set or will set correlations and, even then, this is optional but highly recommended.
  Default setting is 1.

ssd set covariances or ssd set correlations (required)

.
. ssd set observations 37359
(value set)

Status:
      observations:  set
      means:        unset
      variances or sd:  unset
      covariances or correlations:  unset (required to be set)

. ssd set means 49.64 0.04 0.02 2.18 2.61 2.22 9.95 1.47 0.58 0.59 30 234
(values set)

```

Status:

```

      observations:    set
      means:          set
      variances or sd: unset
      covariances or correlations: unset (required to be set)

```

```

.
. ssd set covariances 221.105233\0.089650 0.067846\ -0.094017 0.011868 0.040578\2.451662 0.037385 0.033620
6.244202\3.267802 0.033255 0.022245 6.805591 14.548804\ 5.864529 0.113002 0.075032 7.918511 15
> .837080 22.331055\ 14.209445 0.200045 0.084031 4.385411 7.174931 10.065882 54.346633\ 4.632682 0.036237 0.002199
0.1013640 .076749 0.274862 0.771759 1.282943\ 0.803770 0.000065 -0.001100 0.087459 0.
> 131478 0.182628 1.037027 0.018688 0.129239\ 0.761121 -0.000166 -0.000795 0.047573 0.073374 0.105173 0.708629 0.012082
0.062483 0.082140\ -0.2 -0.8 -0.6 0.05 0.1 0.15 0.85 0.002 0.7 0.6 225\ -0.1 -.6 -
> 0.7 0.08 0.2 0.26 1.04 0.001 0.5 0.46 0.82 32400
(values set)

```

Status:

```

      observations:    set
      means:          set
      variances or sd: set
      covariances or correlations: set

```

. MODEL 1

```

.
. sem (inpatient_hospitalizations -> mpr, ) (er_visits -> mpr, ) (pcp_officevisits -> mpr, ) (specialist_office_visits
-> mpr, ) (other_outpatientservices -> mpr, ) (pharmacy_fills -> mpr, ) (age -> m
> pr, ) (age -> inpatient_hospitalizations, ) (age -> er_visits, ) (age -> pcp_officevisits, ) (age ->
specialist_office_visits, ) (age -> other_outpatientservices, ) (age -> pharmacy_fills, ) (qci_sc
> ore -> mpr, ) (qci_score -> inpatient_hospitalizations, ) (qci_score -> er_visits, ) (qci_score -> pcp_officevisits,
) (qci_score -> specialist_office_visits, ) (qci_score -> other_outpatientservice
> s, ) (qci_score -> pharmacy_fills, ), standardized cov( age*qci_score) nocapslatent

```

Endogenous variables

Observed: inpatient_hospitalizations mpr er_visits pcp_officevisits specialist_office_visits other_outpatientservices
pharmacy_fills

age	|	.0607252	.0053595	11.33	0.000	.0502207	.0712296
qci_score	|	.0191099	.0053677	3.56	0.000	.0085893	.0296305
_cons	|	.6448901	.0184688	34.92	0.000	.6086919	.6810884
-----+-----							
specialist_office_visits	|						
age	|	.0570456	.0053643	10.63	0.000	.0465318	.0675593
qci_score	|	.0020736	.0053723	0.39	0.700	-.008456	.0126031
_cons	|	.4911462	.0183427	26.78	0.000	.4551952	.5270972
-----+-----							
other_outpatientservices	|						
age	|	.0750104	.0053462	14.03	0.000	.064532	.0854888
qci_score	|	.0307194	.0053578	5.73	0.000	.0202183	.0412206
_cons	|	.1795071	.0181625	9.88	0.000	.1439093	.215105
-----+-----							
pharmacy_fills	|						
age	|	.1127323	.0052952	21.29	0.000	.102354	.1231106
qci_score	|	.0614172	.0053172	11.55	0.000	.0509956	.0718388
_cons	|	.893662	.018832	47.45	0.000	.8567521	.930572
-----+-----							
mean(age)	|	3.338398	.0132637	251.69	0.000	3.312401	3.364394
mean(qci_score)	|	1.297835	.0070221	184.82	0.000	1.284072	1.311598
-----+-----							
var(e.inpatient_hospitaliz~s)	|	.9847916	.0012567			.9823317	.9872577
var(e.mpr)	|	.8304298	.0036817			.8232451	.8376772
var(e.er_visits)	|	.9986536	.0003792			.9979108	.9993971
var(e.pcp_officevisits)	|	.9953089	.0007054			.9939273	.9966924
var(e.specialist_office_vi~s)	|	.9966764	.0005946			.9955118	.9978424
var(e.other_outpatientserv~s)	|	.9921621	.0009089			.9903823	.9939451
var(e.pharmacy_fills)	|	.9797105	.001444			.9768844	.9825448
var(age)	|	1	.			.	.
var(qci_score)	|	1	.			.	.
-----+-----							
cov(age,qci_score)		.2750612	.0047823	57.52	0.000	.2656881	.2844343
-----+-----							

LR test of model vs. saturated: chi2(15) = 88816.15, Prob > chi2 = 0.0000

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 . (note: file /Users/asim/Dropbox/Integrative Sustainable Solutions/TRUST APP/Cancer and Asthma Application/Health Corp Data/SEMS version 2/SEM_M1.stsem not found)
 estat gof, stats(all)

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Fit statistic      |      Value  Description
-----+-----
Likelihood ratio  |
  chi2_ms(15)    |  88816.147  model vs. saturated
  p > chi2       |      0.000
  chi2_bs(35)    |  97574.734  baseline vs. saturated
  p > chi2       |      0.000
-----+-----
Population error  |
  RMSEA          |      0.398  Root mean squared error of approximation
  90% CI, lower bound |      0.000
  upper bound    |      .
  pclose        |      0.000  Probability RMSEA <= 0.05
-----+-----
Information criteria |
  AIC           |  1.291e+06  Akaike's information criterion
  BIC           |  1.291e+06  Bayesian information criterion
-----+-----
Baseline comparison |
  CFI           |      0.090  Comparative fit index
  TLI           |     -1.124  Tucker-Lewis index
-----+-----
Size of residuals  |
  SRMR          |      0.211  Standardized root mean squared residual
  CD            |      0.062  Coefficient of determination
-----

```

. estat teffects, standardized

Direct effects

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                |
                |      OIM
                |      Coef.  Std. Err.    z    P>|z|      Std. Coef.
-----+-----
Structural      |
  inpatient_hospitalizations |
    age         |  -.0002016  .0000935   -2.16  0.031     -.0115084
    qci_score    |   .0289732  .0012281   23.59  0.000     .1259904

```

-----+-----						
mpr	|					
inpatient_hospitalizations	|	-.0470599	.006801	-6.92	0.000	-.0340214
er_visits	|	-.0463937	.0087124	-5.33	0.000	-.0259384
pcp_officevisits	|	.0022833	.000983	2.32	0.020	.0158356
specialist_office_visits	|	-.0010115	.0010068	-1.00	0.315	-.0107087
other_outpatientservices	|	-.0005981	.0007748	-0.77	0.440	-.007845
pharmacy_fills	|	.0187895	.0002437	77.09	0.000	.3844501
age	|	.0025256	.0001198	21.08	0.000	.104232
qci_score	|	-.0044392	.0015748	-2.82	0.005	-.0139556
-----+-----						
er_visits	|					
age	|	-.0004989	.0000729	-6.85	0.000	-.0368249
qci_score	|	.0035154	.0009564	3.68	0.000	.0197669
-----+-----						
pcp_officevisits	|					
age	|	.0102049	.0009022	11.31	0.000	.0607252
qci_score	|	.0421594	.011844	3.56	0.000	.0191099
-----+-----						
specialist_office_visits	|					
age	|	.0146331	.0013781	10.62	0.000	.0570456
qci_score	|	.0069828	.0180914	0.39	0.700	.0020736
-----+-----						
other_outpatientservices	|					
age	|	.0238384	.0017035	13.99	0.000	.0750104
qci_score	|	.1281635	.0223629	5.73	0.000	.0307194
-----+-----						
pharmacy_fills	|					
age	|	.0558901	.0026407	21.16	0.000	.1127323
qci_score	|	.3997355	.0346671	11.53	0.000	.0614172
-----+-----						
Indirect effects						
-----+-----						
	|		OIM			
	|	Coef.	Std. Err.	z	P>|z|	Std. Coef.
-----+-----						
Structural	|					
inpatient_hospitalizations	|					

age	|	0	(no path)			0
qci_score	|	0	(no path)			0

mpr	|					
inpatient_hospitalizations	|	0	(no path)			0
er_visits	|	0	(no path)			0
pcp_officevisits	|	0	(no path)			0
specialist_office_visits	|	0	(no path)			0
other_outpatientservices	|	0	(no path)			0
pharmacy_fills	|	0	(no path)			0
age	|	.001077	.0000524	20.57	0.000	.0444489
qci_score	|	.0059968	.000691	8.68	0.000	.0188522

er_visits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0

pcp_officevisits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0

specialist_office_visits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0

other_outpatientservices	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0

pharmacy_fills	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0

Total effects						

	|	OIM				
	|	Coef.	Std. Err.	z	P>|z|	Std. Coef.

Structural	|					
inpatient_hospitalizations	|					
age	|	-.0002016	.0000935	-2.16	0.031	-.0115084
qci_score	|	.0289732	.0012281	23.59	0.000	.1259904
-----+						
mpr	|					
inpatient_hospitalizations	|	-.0470599	.006801	-6.92	0.000	-.0340214
er_visits	|	-.0463937	.0087124	-5.33	0.000	-.0259384
pcp_officevisits	|	.0022833	.000983	2.32	0.020	.0158356
specialist_office_visits	|	-.0010115	.0010068	-1.00	0.315	-.0107087
other_outpatientservices	|	-.0005981	.0007748	-0.77	0.440	-.007845
pharmacy_fills	|	.0187895	.0002437	77.09	0.000	.3844501
age	|	.0036026	.0001289	27.95	0.000	.1486809
qci_score	|	.0015576	.0016924	0.92	0.357	.0048966
-----+						
er_visits	|					
age	|	-.0004989	.0000729	-6.85	0.000	-.0368249
qci_score	|	.0035154	.0009564	3.68	0.000	.0197669
-----+						
pcp_officevisits	|					
age	|	.0102049	.0009022	11.31	0.000	.0607252
qci_score	|	.0421594	.011844	3.56	0.000	.0191099
-----+						
specialist_office_visits	|					
age	|	.0146331	.0013781	10.62	0.000	.0570456
qci_score	|	.0069828	.0180914	0.39	0.700	.0020736
-----+						
other_outpatientservices	|					
age	|	.0238384	.0017035	13.99	0.000	.0750104
qci_score	|	.1281635	.0223629	5.73	0.000	.0307194
-----+						
pharmacy_fills	|					
age	|	.0558901	.0026407	21.16	0.000	.1127323
qci_score	|	.3997355	.0346671	11.53	0.000	.0614172
-----+						

. (note: file /Users/asim/Dropbox/Integrative Sustainable Solutions/TRUST APP/Cancer and Asthma Application/Health Corp Data/SEMS version 2/SEM_M2.stsem not found)

pdv	|						
inpatient_hospitalizations	|	-.0303064	.0049997	-6.06	0.000	-.0401055	-.0205072
er_visits	|	-.0191494	.004957	-3.86	0.000	-.0288648	-.0094339
pcp_officevisits	|	-.0006992	.0069386	-0.10	0.920	-.0142986	.0129002
specialist_office_visits	|	-.0093955	.0108487	-0.87	0.386	-.0306586	.0118676
other_outpatientservices	|	-.0154057	.0103394	-1.49	0.136	-.0356706	.0048592
pharmacy_fills	|	.3293921	.0047729	69.01	0.000	.3200373	.3387468
age	|	.1451071	.0049904	29.08	0.000	.135326	.1548882
qci_score	|	-.0283679	.0050377	-5.63	0.000	-.0382417	-.0184941
_cons	|	1.180709	.0196405	60.12	0.000	1.142214	1.219204
-----+-----							
er_visits	|						
age	|	-.0368249	.0053743	-6.85	0.000	-.0473584	-.0262915
qci_score	|	.0197669	.0053767	3.68	0.000	.0092288	.030305
_cons	|	.1965688	.0181193	10.85	0.000	.1610555	.232082
-----+-----							
pcp_officevisits	|						
age	|	.0607252	.0053595	11.33	0.000	.0502207	.0712296
qci_score	|	.0191099	.0053677	3.56	0.000	.0085893	.0296305
_cons	|	.6448901	.0184688	34.92	0.000	.6086919	.6810884
-----+-----							
specialist_office_visits	|						
age	|	.0570456	.0053643	10.63	0.000	.0465318	.0675593
qci_score	|	.0020736	.0053723	0.39	0.700	-.008456	.0126031
_cons	|	.4911462	.0183427	26.78	0.000	.4551952	.5270972
-----+-----							
other_outpatientservices	|						
age	|	.0750104	.0053462	14.03	0.000	.064532	.0854888
qci_score	|	.0307194	.0053578	5.73	0.000	.0202183	.0412206
_cons	|	.1795071	.0181625	9.88	0.000	.1439093	.215105
-----+-----							
pharmacy_fills	|						
age	|	.1127323	.0052952	21.29	0.000	.102354	.1231106
qci_score	|	.0614172	.0053172	11.55	0.000	.0509956	.0718388
_cons	|	.893662	.018832	47.45	0.000	.8567521	.930572
-----+-----							
mean(age)	|	3.338398	.0132637	251.69	0.000	3.312401	3.364394
mean(qci_score)	|	1.297835	.0070221	184.82	0.000	1.284072	1.311598
-----+-----							
var(e.inpatient_hospitaliz~s)	|	.9847916	.0012567			.9823317	.9872577


```

      var(e.pdc) |      .8602612      .0034683                .8534903      .8670858
      var(e.er_visits) |      .9986536      .0003792                .9979108      .9993971
      var(e.pcp_officevisits) |      .9953089      .0007054                .9939273      .9966924
      var(e.specialist_office_visits) |      .9966764      .0005946                .9955118      .9978424
      var(e.other_outpatientservs) |      .9921621      .0009089                .9903823      .9939451
      var(e.pharmacy_fills) |      .9797105      .001444                .9768844      .9825448
      var(age) |              1              .                    .              .
      var(qci_score) |              1              .                    .              .

```

```

-----+-----
      cov(age,qci_score) |      .2750612      .0047823      57.52      0.000      .2656881      .2844343
-----+-----

```

LR test of model vs. saturated: chi2(15) = 88816.15, Prob > chi2 = 0.0000

```

.
. estat gof, stats(all)

```

```

-----+-----
Fit statistic      |      Value      Description
-----+-----
Likelihood ratio  |
  chi2_ms(15) |      88816.147      model vs. saturated
  p > chi2 |              0.000
  chi2_bs(35) |      96183.252      baseline vs. saturated
  p > chi2 |              0.000
-----+-----
Population error  |
  RMSEA |              0.398      Root mean squared error of approximation
  90% CI, lower bound |              0.000
  upper bound |              .
  pclose |              0.000      Probability RMSEA <= 0.05
-----+-----
Information criteria |
  AIC |      1.275e+06      Akaike's information criterion
  BIC |      1.275e+06      Bayesian information criterion
-----+-----
Baseline comparison |
  CFI |              0.076      Comparative fit index
  TLI |              -1.155      Tucker-Lewis index
-----+-----
Size of residuals |
  SRMR |              0.211      Standardized root mean squared residual

```

CD | 0.072 Coefficient of determination

. estat teffects, standardized

Direct effects

	Coef.	OIM Std. Err.	z	P>|z|	Std. Coef.

Structural					
inpatient_hospitalizations					
age	-.0002016	.0000935	-2.16	0.031	-.0115084
qci_score	.0289732	.0012281	23.59	0.000	.1259904

pdc					
inpatient_hospitalizations	-.0334531	.0055239	-6.06	0.000	-.0303064
er_visits	-.0273322	.0070763	-3.86	0.000	-.0191494
pcp_officevisits	-.0000805	.0007984	-0.10	0.920	-.0006992
specialist_office_visits	-.0007082	.0008178	-0.87	0.386	-.0093955
other_outpatientservices	-.0009373	.0006293	-1.49	0.136	-.0154057
pharmacy_fills	.0128467	.000198	64.90	0.000	.3293921
age	.0028058	.0000973	28.83	0.000	.1451071
qci_score	-.0072009	.0012791	-5.63	0.000	-.0283679

er_visits					
age	-.0004989	.0000729	-6.85	0.000	-.0368249
qci_score	.0035154	.0009564	3.68	0.000	.0197669

pcp_officevisits					
age	.0102049	.0009022	11.31	0.000	.0607252
qci_score	.0421594	.011844	3.56	0.000	.0191099

specialist_office_visits					
age	.0146331	.0013781	10.62	0.000	.0570456
qci_score	.0069828	.0180914	0.39	0.700	.0020736

other_outpatientservices					
age	.0238384	.0017035	13.99	0.000	.0750104

qci_score	|	.1281635	.0223629	5.73	0.000	.0307194
-----+-----						
pharmacy_fills	|					
age	|	.0558901	.0026407	21.16	0.000	.1127323
qci_score	|	.3997355	.0346671	11.53	0.000	.0614172
-----+-----						

Indirect effects

		OIM				
		Coef.	Std. Err.	z	P>|z|	Std. Coef.
-----+-----						
Structural	|					
inpatient_hospitalizations	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
-----+-----						
pdc	|					
inpatient_hospitalizations	|	0	(no path)			0
er_visits	|	0	(no path)			0
pcp_officevisits	|	0	(no path)			0
specialist_office_visits	|	0	(no path)			0
other_outpatientservices	|	0	(no path)			0
pharmacy_fills	|	0	(no path)			0
age	|	.0007049	.0000364	19.35	0.000	.036453
qci_score	|	.0039415	.0004818	8.18	0.000	.0155274
-----+-----						
er_visits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
-----+-----						
pcp_officevisits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
-----+-----						
specialist_office_visits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
-----+-----						

other_outpatientservices	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0

pharmacy_fills	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0

Total effects						

	|		OIM			
	|	Coef.	Std. Err.	z	P>|z|	Std. Coef.

Structural	|					
inpatient_hospitalizations	|					
age	|	-.0002016	.0000935	-2.16	0.031	-.0115084
qci_score	|	.0289732	.0012281	23.59	0.000	.1259904

pdc	|					
inpatient_hospitalizations	|	-.0334531	.0055239	-6.06	0.000	-.0303064
er_visits	|	-.0273322	.0070763	-3.86	0.000	-.0191494
pcp_officevisits	|	-.0000805	.0007984	-0.10	0.920	-.0006992
specialist_office_visits	|	-.0007082	.0008178	-0.87	0.386	-.0093955
other_outpatientservices	|	-.0009373	.0006293	-1.49	0.136	-.0154057
pharmacy_fills	|	.0128467	.000198	64.90	0.000	.3293921
age	|	.0035106	.0001024	34.29	0.000	.1815601
qci_score	|	-.0032594	.0013441	-2.43	0.015	-.0128405

er_visits	|					
age	|	-.0004989	.0000729	-6.85	0.000	-.0368249
qci_score	|	.0035154	.0009564	3.68	0.000	.0197669

pcp_officevisits	|					
age	|	.0102049	.0009022	11.31	0.000	.0607252
qci_score	|	.0421594	.011844	3.56	0.000	.0191099

specialist_office_visits	|					
age	|	.0146331	.0013781	10.62	0.000	.0570456

qci_score	|	.0069828	.0180914	0.39	0.700	.0020736
-----+-----						
other_outpatientservices	|					
age	|	.0238384	.0017035	13.99	0.000	.0750104
qci_score	|	.1281635	.0223629	5.73	0.000	.0307194
-----+-----						
pharmacy_fills	|					
age	|	.0558901	.0026407	21.16	0.000	.1127323
qci_score	|	.3997355	.0346671	11.53	0.000	.0614172

. (note: file /Users/asim/Dropbox/Integrative Sustainable Solutions/TRUST APP/Cancer and Asthma Application/Health Corp Data/SEMS version 2/SEM_M3.stsem not found)

MODEL 3

```
sem (inpatient_hospitalizations -> mpr, ) (er_visits -> mpr, ) (pcp_officevisits -> mpr, ) (specialist_office_visits ->
mpr, ) (other_outpatientservices -> mpr, ) (pharmacy_fills -> mpr, ) (age -> mpr
> , ) (age -> inpatient_hospitalizations, ) (age -> er_visits, ) (age -> pcp_officevisits, ) (age ->
specialist_office_visits, ) (age -> other_outpatientservices, ) (age -> pharmacy_fills, ) (qci_scor
> e -> mpr, ) (qci_score -> inpatient_hospitalizations, ) (qci_score -> er_visits, ) (qci_score -> pcp_officevisits, )
(qci_score -> specialist_office_visits, ) (qci_score -> other_outpatientservices,
> ) (qci_score -> pharmacy_fills, ) (rewards -> mpr, ) (rewards -> inpatient_hospitalizations, ) (rewards ->
er_visits, ) (rewards -> pcp_officevisits, ) (rewards -> specialist_office_visits, ) (rewards ->
> rds -> other_outpatientservices, ) (rewards -> pharmacy_fills, ), standardized cov( age*qci_score age*rewards
qci_score*rewards) nocapslatent
```

Endogenous variables

Observed: inpatient_hospitalizations mpr er_visits pcp_officevisits specialist_office_visits other_outpatientservices
pharmacy_fills

Exogenous variables

Observed: age qci_score rewards

qci_score	|	.0191094	.0053677	3.56	0.000	.0085888	.02963
rewards	|	.0013862	.0051616	0.27	0.788	-.0087303	.0115026
_cons	|	.6421138	.0211656	30.34	0.000	.60063	.6835977

specialist_office_visits	|						
age	|	.0570474	.0053642	10.63	0.000	.0465337	.0675611
qci_score	|	.0020729	.0053723	0.39	0.700	-.0084567	.0126024
rewards	|	.0017987	.0051651	0.35	0.728	-.0083247	.0119221
_cons	|	.4875436	.021059	23.15	0.000	.4462687	.5288185

other_outpatientservices	|						
age	|	.0750126	.0053462	14.03	0.000	.0645342	.0854909
qci_score	|	.0307186	.0053578	5.73	0.000	.0202174	.0412197
rewards	|	.0021798	.0051534	0.42	0.672	-.0079206	.0122802
_cons	|	.1751413	.0208893	8.38	0.000	.134199	.2160836

pharmacy_fills	|						
age	|	.1127401	.005295	21.29	0.000	.1023621	.1231181
qci_score	|	.0614141	.0053171	11.55	0.000	.0509929	.0718354
rewards	|	.0077806	.0051207	1.52	0.129	-.0022557	.0178169
_cons	|	.8780785	.0214427	40.95	0.000	.8360516	.9201054

mean(age)	|	3.338398	.0132637	251.69	0.000	3.312401	3.364394
mean(qci_score)	|	1.297835	.0070221	184.82	0.000	1.284072	1.311598
mean(rewards)	|	2.000027	.0089612	223.19	0.000	1.982463	2.01759

var(e.inpatient_hospitaliz~s)	|	.9428563	.0023322			.9382963	.9474384
var(e.mpr)	|	.8175303	.0037562			.8102013	.8249257
var(e.er_visits)	|	.9592093	.0020046			.9552884	.9631463
var(e.pcp_officevisits)	|	.995307	.0007055			.9939251	.9966907
var(e.specialist_office_vi~s)	|	.9966732	.0005948			.995508	.9978397
var(e.other_outpatientserv~s)	|	.9921574	.0009092			.990377	.9939409
var(e.pharmacy_fills)	|	.9796499	.0014461			.9768198	.9824883
var(age)	|	1	.			.	.
var(qci_score)	|	1	.			.	.
var(rewards)	|	1	.			.	.

cov(age,qci_score)	|	.2750612	.0047823	57.52	0.000	.2656881	.2844343
cov(age,rewards)	|	-.0008967	.0051737	-0.17	0.862	-.011037	.0092436
cov(qci_score,rewards)		.0001177	.0051737	0.02	0.982	-.0100226	.010258

 LR test of model vs. saturated: chi2(15) = 88379.85, Prob > chi2 = 0.0000

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 . (note: file /Users/asim/Dropbox/Integrative Sustainable Solutions/TRUST APP/Cancer and Asthma Application/Health Corp Data/SEMS version 2/SEM_M4.stsem not found)
 estat gof, stats(all)

Fit statistic	Value	Description

Likelihood ratio		
chi2_ms(15)	88379.852	model vs. saturated
p > chi2	0.000	
chi2_bs(42)	100912.442	baseline vs. saturated
p > chi2	0.000	

Population error		
RMSEA	0.397	Root mean squared error of approximation
90% CI, lower bound	0.000	
upper bound	.	
pclose	0.000	Probability RMSEA <= 0.05

Information criteria		
AIC	1.595e+06	Akaike's information criterion
BIC	1.596e+06	Bayesian information criterion

Baseline comparison		
CFI	0.124	Comparative fit index
TLI	-1.453	Tucker-Lewis index

Size of residuals		
SRMR	0.191	Standardized root mean squared residual
CD	0.151	Coefficient of determination

. estat teffects, standardized

Direct effects

		OIM				
		Coef.	Std. Err.	z	P>|z|	
					Std. Coef.	
-----+-----						
Structural						
inpatient_hospitalizations						
	age	-.0002052	.0000915	-2.24	0.025	-.0117142
	qci_score	.0289917	.0012016	24.13	0.000	.1260711
	rewards	-.003556	.0000872	-40.76	0.000	-.2047813
-----+-----						
mpr						
inpatient_hospitalizations						
	er_visits	-.0167126	.006848	-2.44	0.015	-.0120911
	pcp_officevisits	-.0099082	.0087566	-1.13	0.258	-.0055437
	pcp_officevisits	.0019699	.0009746	2.02	0.043	.0136725
	specialist_office_visits	-.0001406	.0009988	-0.14	0.888	-.0014893
	other_outpatientservices	-.0013258	.0007687	-1.72	0.085	-.017402
	pharmacy_fills	.0186207	.0002417	77.03	0.000	.3812777
	age	.0025701	.0001188	21.63	0.000	.1061491
	qci_score	-.0052943	.0015617	-3.39	0.001	-.016656
	rewards	.0029578	.0001164	25.41	0.000	.1232295
-----+-----						
er_visits						
	age	-.0005016	.0000714	-7.03	0.000	-.0370246
	qci_score	.0035294	.0009373	3.77	0.000	.0198452
	rewards	-.0026671	.000068	-39.20	0.000	-.198606
-----+-----						
pcp_officevisits						
	age	.0102051	.0009022	11.31	0.000	.0607266
	qci_score	.0421582	.011844	3.56	0.000	.0191094
	rewards	.0002309	.0008599	0.27	0.788	.0013862
-----+-----						
specialist_office_visits						
	age	.0146336	.0013781	10.62	0.000	.0570474
	qci_score	.0069804	.0180914	0.39	0.700	.0020729
	rewards	.0004574	.0013134	0.35	0.728	.0017987
-----+-----						
other_outpatientservices						
	age	.0238391	.0017035	13.99	0.000	.0750126
	qci_score	.1281599	.0223629	5.73	0.000	.0307186
	rewards	.0006867	.0016235	0.42	0.672	.0021798
-----+-----						

pharmacy_fills						
		Coef.	Std. Err.	z	P>|z|	Std. Coef.
	age	.055894	.0026406	21.17	0.000	.1127401
	qci_score	.3997155	.034666	11.53	0.000	.0614141
	rewards	.0038239	.0025167	1.52	0.129	.0077806

Indirect effects						

		Coef.	Std. Err.	z	P>|z|	Std. Coef.

Structural						
inpatient_hospitalizations						
	age	0	(no path)			0
	qci_score	0	(no path)			0
	rewards	0	(no path)			0

mpr						
inpatient_hospitalizations						
	er_visits	0	(no path)			0
	pcp_officevisits	0	(no path)			0
	specialist_office_visits	0	(no path)			0
	other_outpatientservices	0	(no path)			0
	pharmacy_fills	0	(no path)			0
	age	.0010356	.0000517	20.05	0.000	.0427721
	qci_score	.0068356	.0006824	10.02	0.000	.0215051
	rewards	.0001565	.0000561	2.79	0.005	.0065219

er_visits						
	age	0	(no path)			0
	qci_score	0	(no path)			0
	rewards	0	(no path)			0

pcp_officevisits						
	age	0	(no path)			0
	qci_score	0	(no path)			0
	rewards	0	(no path)			0

specialist_office_visits						

age	|	0	(no path)	0
qci_score	|	0	(no path)	0
rewards	|	0	(no path)	0
-----+-----				
other_outpatientservices	|			
age	|	0	(no path)	0
qci_score	|	0	(no path)	0
rewards	|	0	(no path)	0
-----+-----				
pharmacy_fills	|			
age	|	0	(no path)	0
qci_score	|	0	(no path)	0
rewards	|	0	(no path)	0

Total effects

	|	Coef.	OIM Std. Err.	z	P>|z|	Std. Coef.
-----+-----						
Structural	|					
inpatient_hospitalizations	|					
age	|	-.0002052	.0000915	-2.24	0.025	-.0117142
qci_score	|	.0289917	.0012016	24.13	0.000	.1260711
rewards	|	-.003556	.0000872	-40.76	0.000	-.2047813
-----+-----						
mpr	|					
inpatient_hospitalizations	|	-.0167126	.006848	-2.44	0.015	-.0120911
er_visits	|	-.0099082	.0087566	-1.13	0.258	-.0055437
pcp_officevisits	|	.0019699	.0009746	2.02	0.043	.0136725
specialist_office_visits	|	-.0001406	.0009988	-0.14	0.888	-.0014893
other_outpatientservices	|	-.0013258	.0007687	-1.72	0.085	-.017402
pharmacy_fills	|	.0186207	.0002417	77.03	0.000	.3812777
age	|	.0036058	.0001277	28.24	0.000	.1489212
qci_score	|	.0015413	.0016765	0.92	0.358	.0048491
rewards	|	.0031143	.0001217	25.59	0.000	.1297515
-----+-----						
er_visits	|					
age	|	-.0005016	.0000714	-7.03	0.000	-.0370246

qci_score	|	.0035294	.0009373	3.77	0.000	.0198452
rewards	|	-.0026671	.000068	-39.20	0.000	-.198606
-----+-----						
pcp_officevisits	|					
age	|	.0102051	.0009022	11.31	0.000	.0607266
qci_score	|	.0421582	.011844	3.56	0.000	.0191094
rewards	|	.0002309	.0008599	0.27	0.788	.0013862
-----+-----						
specialist_office_visits	|					
age	|	.0146336	.0013781	10.62	0.000	.0570474
qci_score	|	.0069804	.0180914	0.39	0.700	.0020729
rewards	|	.0004574	.0013134	0.35	0.728	.0017987
-----+-----						
other_outpatientservices	|					
age	|	.0238391	.0017035	13.99	0.000	.0750126
qci_score	|	.1281599	.0223629	5.73	0.000	.0307186
rewards	|	.0006867	.0016235	0.42	0.672	.0021798
-----+-----						
pharmacy_fills	|					
age	|	.055894	.0026406	21.17	0.000	.1127401
qci_score	|	.3997155	.034666	11.53	0.000	.0614141
rewards	|	.0038239	.0025167	1.52	0.129	.0077806
-----+-----						

MODEL 4

```
. sem (inpatient_hospitalizations -> pdc, ) (er_visits -> pdc, ) (pcp_officevisits -> pdc, ) (specialist_office_visits
-> pdc, ) (other_outpatientservices -> pdc, ) (pharmacy_fills -> pdc, ) (age -> p
> dc, ) (age -> inpatient_hospitalizations, ) (age -> er_visits, ) (age -> pcp_officevisits, ) (age ->
specialist_office_visits, ) (age -> other_outpatientservices, ) (age -> pharmacy_fills, ) (qci_sc
> ore -> pdc, ) (qci_score -> inpatient_hospitalizations, ) (qci_score -> er_visits, ) (qci_score -> pcp_officevisits,
) (qci_score -> specialist_office_visits, ) (qci_score -> other_outpatientservice
> s, ) (qci_score -> pharmacy_fills, ) (rewards -> pdc, ) (rewards -> inpatient_hospitalizations, ) (rewards ->
er_visits, ) (rewards -> pcp_officevisits, ) (rewards -> specialist_office_visits, ) (re
> wards -> other_outpatientservices, ) (rewards -> pharmacy_fills, ), standardized cov( age*qci_score age*rewards
qci_score*rewards) nocapslatent
```

Endogenous variables

er_visits	|						
age	|	-.0370246	.0052672	-7.03	0.000	-.0473481	-.0267011
qci_score	|	.0198452	.0052695	3.77	0.000	.0095172	.0301731
rewards	|	-.198606	.0049663	-39.99	0.000	-.2083398	-.1888722
_cons	|	.5943509	.02021	29.41	0.000	.5547401	.6339617

pcp_officevisits	|						
age	|	.0607266	.0053595	11.33	0.000	.0502221	.071231
qci_score	|	.0191094	.0053677	3.56	0.000	.0085888	.02963
rewards	|	.0013862	.0051616	0.27	0.788	-.0087303	.0115026
_cons	|	.6421138	.0211656	30.34	0.000	.60063	.6835977

specialist_office_visits	|						
age	|	.0570474	.0053642	10.63	0.000	.0465337	.0675611
qci_score	|	.0020729	.0053723	0.39	0.700	-.0084567	.0126024
rewards	|	.0017987	.0051651	0.35	0.728	-.0083247	.0119221
_cons	|	.4875436	.021059	23.15	0.000	.4462687	.5288185

other_outpatientservices	|						
age	|	.0750126	.0053462	14.03	0.000	.0645342	.0854909
qci_score	|	.0307186	.0053578	5.73	0.000	.0202174	.0412197
rewards	|	.0021798	.0051534	0.42	0.672	-.0079206	.0122802
_cons	|	.1751413	.0208893	8.38	0.000	.134199	.2160836

pharmacy_fills	|						
age	|	.1127401	.005295	21.29	0.000	.1023621	.1231181
qci_score	|	.0614141	.0053171	11.55	0.000	.0509929	.0718354
rewards	|	.0077806	.0051207	1.52	0.129	-.0022557	.0178169
_cons	|	.8780785	.0214427	40.95	0.000	.8360516	.9201054

mean(age)	|	3.338398	.0132637	251.69	0.000	3.312401	3.364394
mean(qci_score)	|	1.297835	.0070221	184.82	0.000	1.284072	1.311598
mean(rewards)	|	2.000027	.0089612	223.19	0.000	1.982463	2.01759

var(e.inpatient_hospitaliz~s)	|	.9428563	.0023322			.9382963	.9474384
var(e.pdc)	|	.844002	.0036047			.8369665	.8510967
var(e.er_visits)	|	.9592093	.0020046			.9552884	.9631463
var(e.pcp_officevisits)	|	.995307	.0007055			.9939251	.9966907
var(e.specialist_office_vi~s)	|	.9966732	.0005948			.995508	.9978397
var(e.other_outpatientserv~s)	|	.9921574	.0009092			.990377	.9939409

```

var(e.pharmacy_fills) | .9796499 .0014461 .9768198 .9824883
var(age) | 1 . . .
var(qci_score) | 1 . . .
var(rewards) | 1 . . .
-----+-----
cov(age,qci_score) | .2750612 .0047823 57.52 0.000 .2656881 .2844343
cov(age,rewards) | -.0008967 .0051737 -0.17 0.862 -.011037 .0092436
cov(qci_score,rewards) | .0001177 .0051737 0.02 0.982 -.0100226 .010258
-----+-----

```

LR test of model vs. saturated: chi2(15) = 88379.85, Prob > chi2 = 0.0000

.

. estat gof, stats(all)

```

-----+-----
Fit statistic | Value Description
-----+-----
Likelihood ratio |
chi2_ms(15) | 88379.852 model vs. saturated
p > chi2 | 0.000
chi2_bs(42) | 99638.621 baseline vs. saturated
p > chi2 | 0.000
-----+-----
Population error |
RMSEA | 0.397 Root mean squared error of approximation
90% CI, lower bound | 0.000
upper bound | .
pclose | 0.000 Probability RMSEA <= 0.05
-----+-----
Information criteria |
AIC | 1.580e+06 Akaike's information criterion
BIC | 1.580e+06 Bayesian information criterion
-----+-----
Baseline comparison |
CFI | 0.113 Comparative fit index
TLI | -1.484 Tucker-Lewis index
-----+-----
Size of residuals |
SRMR | 0.190 Standardized root mean squared residual
CD | 0.162 Coefficient of determination
-----+-----

```

. estat teffects, standardized

Direct effects

		OIM			
	Coef.	Std. Err.	z	P>|z|	Std. Coef.
-----+-----					
Structural					
inpatient_hospitalizations					
age	-.0002052	.0000915	-2.24	0.025	-.0117142
qci_score	.0289917	.0012016	24.13	0.000	.1260711
rewards	-.003556	.0000872	-40.76	0.000	-.2047813
-----+-----					
pdc					
inpatient_hospitalizations					
er_visits	-.0066559	.0055533	-1.20	0.231	-.0060334
pcp_officevisits	.0048853	.007101	0.69	0.491	.0034248
specialist_office_visits	-.0003571	.0007904	-0.45	0.651	-.0031058
other_outpatientservices	.0000609	.00081	0.08	0.940	.0008078
pharmacy_fills	-.0015799	.0006234	-2.53	0.011	-.0259822
age	.0126977	.000196	64.77	0.000	.3257658
qci_score	.0028451	.0000964	29.53	0.000	.1472301
rewards	-.007956	.0012664	-6.28	0.000	-.0313613
rewards	.0026118	.0000944	27.67	0.000	.1363392
-----+-----					
er_visits					
age	-.0005016	.0000714	-7.03	0.000	-.0370246
qci_score	.0035294	.0009373	3.77	0.000	.0198452
rewards	-.0026671	.000068	-39.20	0.000	-.198606
-----+-----					
pcp_officevisits					
age	.0102051	.0009022	11.31	0.000	.0607266
qci_score	.0421582	.011844	3.56	0.000	.0191094
rewards	.0002309	.0008599	0.27	0.788	.0013862
-----+-----					
specialist_office_visits					
age	.0146336	.0013781	10.62	0.000	.0570474
qci_score	.0069804	.0180914	0.39	0.700	.0020729
rewards	.0004574	.0013134	0.35	0.728	.0017987

other_outpatientservices	|					
age	|	.0238391	.0017035	13.99	0.000	.0750126
qci_score	|	.1281599	.0223629	5.73	0.000	.0307186
rewards	|	.0006867	.0016235	0.42	0.672	.0021798

pharmacy_fills	|					
age	|	.055894	.0026406	21.17	0.000	.1127401
qci_score	|	.3997155	.034666	11.53	0.000	.0614141
rewards	|	.0038239	.0025167	1.52	0.129	.0077806

Indirect effects

	|	Coef.	OIM Std. Err.	z	P>|z|	Std. Coef.

Structural	|					
inpatient_hospitalizations	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
rewards	|	0	(no path)			0

pdc	|					
inpatient_hospitalizations	|	0	(no path)			0
er_visits	|	0	(no path)			0
pcp_officevisits	|	0	(no path)			0
specialist_office_visits	|	0	(no path)			0
other_outpatientservices	|	0	(no path)			0
pharmacy_fills	|	0	(no path)			0
age	|	.0006682	.0000359	18.61	0.000	.0345792
qci_score	|	.0046826	.0004754	9.85	0.000	.0184581
rewards	|	.0000581	.0000406	1.43	0.153	.0030305

er_visits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
rewards	|	0	(no path)			0

pcp_officevisits	|				
age	|	0	(no path)		0
qci_score	|	0	(no path)		0
rewards	|	0	(no path)		0
-----+-----					
specialist_office_visits	|				
age	|	0	(no path)		0
qci_score	|	0	(no path)		0
rewards	|	0	(no path)		0
-----+-----					
other_outpatientservices	|				
age	|	0	(no path)		0
qci_score	|	0	(no path)		0
rewards	|	0	(no path)		0
-----+-----					
pharmacy_fills	|				
age	|	0	(no path)		0
qci_score	|	0	(no path)		0
rewards	|	0	(no path)		0

Total effects

	|	OIM				
	|	Coef.	Std. Err.	z	P>|z|	
	|				Std. Coef.	
-----+-----						
Structural	|					
inpatient_hospitalizations	|					
age	|	-.0002052	.0000915	-2.24	0.025	-.0117142
qci_score	|	.0289917	.0012016	24.13	0.000	.1260711
rewards	|	-.003556	.0000872	-40.76	0.000	-.2047813
-----+-----						
pdc	|					
inpatient_hospitalizations	|	-.0066559	.0055533	-1.20	0.231	-.0060334
er_visits	|	.0048853	.007101	0.69	0.491	.0034248
pcp_officevisits	|	-.0003571	.0007904	-0.45	0.651	-.0031058
specialist_office_visits	|	.0000609	.00081	0.08	0.940	.0008078
other_outpatientservices	|	-.0015799	.0006234	-2.53	0.011	-.0259822
pharmacy_fills	|	.0126977	.000196	64.77	0.000	.3257658

	age	|	.0035133	.0001013	34.69	0.000		.1818093
	qci_score	|	-.0032734	.0013297	-2.46	0.014		-.0129031
	rewards	|	.0026698	.0000965	27.66	0.000		.1393698
-----+-----								
er_visits		|						
	age	|	-.0005016	.0000714	-7.03	0.000		-.0370246
	qci_score	|	.0035294	.0009373	3.77	0.000		.0198452
	rewards	|	-.0026671	.000068	-39.20	0.000		-.198606
-----+-----								
pcp_officevisits		|						
	age	|	.0102051	.0009022	11.31	0.000		.0607266
	qci_score	|	.0421582	.011844	3.56	0.000		.0191094
	rewards	|	.0002309	.0008599	0.27	0.788		.0013862
-----+-----								
specialist_office_visits		|						
	age	|	.0146336	.0013781	10.62	0.000		.0570474
	qci_score	|	.0069804	.0180914	0.39	0.700		.0020729
	rewards	|	.0004574	.0013134	0.35	0.728		.0017987
-----+-----								
other_outpatientservices		|						
	age	|	.0238391	.0017035	13.99	0.000		.0750126
	qci_score	|	.1281599	.0223629	5.73	0.000		.0307186
	rewards	|	.0006867	.0016235	0.42	0.672		.0021798
-----+-----								
pharmacy_fills		|						
	age	|	.055894	.0026406	21.17	0.000		.1127401
	qci_score	|	.3997155	.034666	11.53	0.000		.0614141
	rewards	|	.0038239	.0025167	1.52	0.129		.0077806
-----+-----								

. (note: file /Users/asim/Dropbox/Integrative Sustainable Solutions/TRUST APP/Cancer and Asthma Application/Health Corp Data/SEMS version 2/SEM_M5.stsem not found)

MODEL 5

```
sem (inpatient_hospitalizations -> mpr, ) (er_visits -> mpr, ) (pcp_officevisits -> mpr, ) (specialist_office_visits ->
mpr, ) (other_outpatientservices -> mpr, ) (pharmacy_fills -> mpr, ) (age -> mpr
```


inpatient_hospitalizations	|	-.0339593	.0049109	-6.92	0.000	-.0435845	-.0243341
er_visits	|	-.0258236	.0048699	-5.30	0.000	-.0353684	-.0162788
pcp_officevisits	|	.015826	.0068168	2.32	0.020	.0024654	.0291866
specialist_office_visits	|	-.0106713	.0106576	-1.00	0.317	-.0315597	.0102172
other_outpatientservices	|	-.0078844	.0101603	-0.78	0.438	-.0277983	.0120294
pharmacy_fills	|	.3844366	.0045822	83.90	0.000	.3754558	.3934175
age	|	.1042404	.0049243	21.17	0.000	.094589	.1138918
qci_score	|	-.0139636	.0049504	-2.82	0.005	-.0236663	-.004261
engagement_rate	|	.0064819	.0047156	1.37	0.169	-.0027605	.0157244
_cons	|	.7576056	.0195373	38.78	0.000	.7193133	.795898

er_visits	|						
age	|	-.0368258	.0053733	-6.85	0.000	-.0473572	-.0262943
qci_score	|	.0197672	.0053757	3.68	0.000	.009231	.0303034
engagement_rate	|	-.0193069	.0051683	-3.74	0.000	-.0294366	-.0091772
_cons	|	.2216704	.019315	11.48	0.000	.1838137	.2595271

pcp_officevisits	|						
age	|	.0607252	.0053595	11.33	0.000	.0502208	.0712296
qci_score	|	.0191099	.0053677	3.56	0.000	.0085893	.0296305
engagement_rate	|	.00018	.0051616	0.03	0.972	-.0099364	.0102965
_cons	|	.6446561	.0196503	32.81	0.000	.6061422	.6831699

specialist_office_visits	|						
age	|	.0570456	.0053643	10.63	0.000	.0465318	.0675593
qci_score	|	.0020736	.0053723	0.39	0.700	-.008456	.0126031
engagement_rate	|	.0002934	.0051651	0.06	0.955	-.00983	.0104168
_cons	|	.4907647	.0195333	25.12	0.000	.4524801	.5290493

other_outpatientservices	|						
age	|	.0750104	.0053462	14.03	0.000	.064532	.0854888
qci_score	|	.0307194	.0053578	5.73	0.000	.0202183	.0412206
engagement_rate	|	.0003083	.0051534	0.06	0.952	-.0097922	.0104088
_cons	|	.1791063	.0193588	9.25	0.000	.1411637	.2170489

pharmacy_fills	|						
age	|	.1127323	.0052951	21.29	0.000	.102354	.1231106
qci_score	|	.0614172	.0053172	11.55	0.000	.0509956	.0718388
engagement_rate	|	.0007877	.005121	0.15	0.878	-.0092492	.0108245
_cons	|	.892638	.0199742	44.69	0.000	.8534892	.9317867

```

-----+-----
      mean(age) | 3.338398 .0132637 251.69 0.000 3.312401 3.364394
      mean(qci_score) | 1.297835 .0070221 184.82 0.000 1.284072 1.311598
      mean(engagement_rate) | 1.300017 .0070275 184.99 0.000 1.286244 1.313791
-----+-----
var(e.inpatient_hospitaliz~s) | .9846278 .0012632 .9821551 .9871068
      var(e.mpr) | .8303914 .0036819 .8232062 .8376393
      var(e.er_visits) | .9982809 .0004283 .9974418 .9991207
      var(e.pcp_officevisits) | .9953088 .0007054 .9939273 .9966923
var(e.specialist_office_vi~s) | .9966763 .0005946 .9955117 .9978423
var(e.other_outpatientserv~s) | .992162 .0009089 .9903822 .993945
      var(e.pharmacy_fills) | .9797099 .001444 .9768837 .9825442
      var(age) | 1 . .
      var(qci_score) | 1 . .
      var(engagement_rate) | 1 . .
-----+-----
      cov(age,qci_score) | .2750612 .0047823 57.52 0.000 .2656881 .2844343
      cov(age,engagement_rate) | -.0000374 .0051737 -0.01 0.994 -.0101777 .0101029
      cov(qci_score, |
      engagement_rate) | 4.90e-06 .0051737 0.00 0.999 -.0101354 .0101452
-----+-----

```

Note: The LR test of model vs. saturated is not reported because the fitted model is not full rank.

```

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. estat gof, stats(all)

```

```

-----+-----
Fit statistic      |      Value  Description
-----+-----
Likelihood ratio  |
  chi2_ms(.)      |      .      model vs. saturated
  p > chi2        |      .
  chi2_bs(42)     | 97594.077  baseline vs. saturated
  p > chi2        |      0.000
-----+-----
Population error  |
  RMSEA          |      .      Root mean squared error of approximation
  90% CI, lower bound |      0.000
  upper bound     |      .
  pclose         |      .      Probability RMSEA <= 0.05

```


	age	|	-.0004989	.0000728	-6.85	0.000		-.0368258
	qci_score	|	.0035155	.0009562	3.68	0.000		.0197672
	engagement_rate	|	-.0000216	5.78e-06	-3.73	0.000		-.0193069
-----+-----								
pcp_officevisits								
	age	|	.0102049	.0009022	11.31	0.000		.0607252
	qci_score	|	.0421594	.011844	3.56	0.000		.0191099
	engagement_rate	|	2.50e-06	.0000717	0.03	0.972		.00018
-----+-----								
specialist_office_visits								
	age	|	.0146331	.0013781	10.62	0.000		.0570456
	qci_score	|	.0069828	.0180914	0.39	0.700		.0020736
	engagement_rate	|	6.22e-06	.0001095	0.06	0.955		.0002934
-----+-----								
other_outpatientservices								
	age	|	.0238384	.0017035	13.99	0.000		.0750104
	qci_score	|	.1281634	.0223629	5.73	0.000		.0307194
	engagement_rate	|	8.09e-06	.0001353	0.06	0.952		.0003083
-----+-----								
pharmacy_fills								
	age	|	.0558901	.0026407	21.16	0.000		.1127323
	qci_score	|	.3997354	.0346671	11.53	0.000		.0614172
	engagement_rate	|	.0000323	.0002097	0.15	0.878		.0007877
-----+-----								

Indirect effects

		OIM				
		Coef.	Std. Err.	z	P>|z|	Std. Coef.
-----+-----						
Structural						
inpatient_hospitalizations						
	age	|	0	(no path)		0
	qci_score	|	0	(no path)		0
	engagement_rate	|	0	(no path)		0
-----+-----						
mpr						
inpatient_hospitalizations						
	er_visits	|	0	(no path)		0

pcp_officevisits	|	0	(no path)			0
specialist_office_visits	|	0	(no path)			0
other_outpatientservices	|	0	(no path)			0
pharmacy_fills	|	0	(no path)			0
age	|	.0010768	.0000523	20.57	0.000	.0444411
qci_score	|	.0059993	.000691	8.68	0.000	.0188601
engagement_rate	|	2.47e-06	3.98e-06	0.62	0.535	.0012333
-----+-----						
er_visits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
-----+-----						
pcp_officevisits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
-----+-----						
specialist_office_visits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
-----+-----						
other_outpatientservices	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
-----+-----						
pharmacy_fills	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
-----+-----						
Total effects						
-----+-----						
	|	OIM				
	|	Coef.	Std. Err.	z	P>|z|	Std. Coef.
-----+-----						

Structural	|					
inpatient_hospitalizations	|					
age	|	-.0002016	.0000935	-2.16	0.031	-.0115089
qci_score	|	.0289732	.001228	23.59	0.000	.1259906
engagement_rate	|	-.0000185	7.43e-06	-2.49	0.013	-.0127983
-----+						
mpr	|					
inpatient_hospitalizations	|	-.0469739	.0068012	-6.91	0.000	-.0339593
er_visits	|	-.0461882	.0087134	-5.30	0.000	-.0258236
pcp_officevisits	|	.0022819	.0009829	2.32	0.020	.015826
specialist_office_visits	|	-.001008	.0010068	-1.00	0.317	-.0106713
other_outpatientservices	|	-.0006011	.0007748	-0.78	0.438	-.0078844
pharmacy_fills	|	.0187888	.0002437	77.09	0.000	.3844366
age	|	.0036026	.0001289	27.95	0.000	.1486815
qci_score	|	.0015575	.0016923	0.92	0.357	.0048965
engagement_rate	|	.0000154	.0000102	1.51	0.131	.0077152
-----+						
er_visits	|					
age	|	-.0004989	.0000728	-6.85	0.000	-.0368258
qci_score	|	.0035155	.0009562	3.68	0.000	.0197672
engagement_rate	|	-.0000216	5.78e-06	-3.73	0.000	-.0193069
-----+						
pcp_officevisits	|					
age	|	.0102049	.0009022	11.31	0.000	.0607252
qci_score	|	.0421594	.011844	3.56	0.000	.0191099
engagement_rate	|	2.50e-06	.0000717	0.03	0.972	.00018
-----+						
specialist_office_visits	|					
age	|	.0146331	.0013781	10.62	0.000	.0570456
qci_score	|	.0069828	.0180914	0.39	0.700	.0020736
engagement_rate	|	6.22e-06	.0001095	0.06	0.955	.0002934
-----+						
other_outpatientservices	|					
age	|	.0238384	.0017035	13.99	0.000	.0750104
qci_score	|	.1281634	.0223629	5.73	0.000	.0307194
engagement_rate	|	8.09e-06	.0001353	0.06	0.952	.0003083
-----+						
pharmacy_fills	|					
age	|	.0558901	.0026407	21.16	0.000	.1127323
qci_score	|	.3997354	.0346671	11.53	0.000	.0614172

```
engagement_rate | .0000323 .0002097 0.15 0.878 .0007877
```

```
. (note: file /Users/asim/Dropbox/Integrative Sustainable Solutions/TRUST APP/Cancer and Asthma Application/Health Corp
Data/SEMS version 2/SEM_M6.stsem not found)
```

MODEL 6

```
sem (inpatient_hospitalizations -> pdc, ) (er_visits -> pdc, ) (pcp_officevisits -> pdc, ) (specialist_office_visits ->
pdc, ) (other_outpatientservices -> pdc, ) (pharmacy_fills -> pdc, ) (age -> pdc
> , ) (age -> inpatient_hospitalizations, ) (age -> er_visits, ) (age -> pcp_officevisits, ) (age ->
specialist_office_visits, ) (age -> other_outpatientservices, ) (age -> pharmacy_fills, ) (qci_scor
> e -> pdc, ) (qci_score -> inpatient_hospitalizations, ) (qci_score -> er_visits, ) (qci_score -> pcp_officevisits, )
(qci_score -> specialist_office_visits, ) (qci_score -> other_outpatientservices,
> ) (qci_score -> pharmacy_fills, ) (engagement_rate -> pdc, ) (engagement_rate -> inpatient_hospitalizations, )
(engagement_rate -> er_visits, ) (engagement_rate -> pcp_officevisits, ) (engagement_r
> ate -> specialist_office_visits, ) (engagement_rate -> other_outpatientservices, ) (engagement_rate ->
pharmacy_fills, ), standardized cov( age*qci_score age*engagement_rate qci_score*engagement_rat
> e) nocapslatent
```

Endogenous variables

```
Observed: inpatient_hospitalizations pdc er_visits pcp_officevisits specialist_office_visits other_outpatientservices
pharmacy_fills
```

Exogenous variables

```
Observed: age qci_score engagement_rate
```

Fitting target model:

```
Iteration 0: log likelihood = -884509.38
Iteration 1: log likelihood = -884509.38
```

```
Structural equation model          Number of obs    =    37,359
Estimation method = ml
```

Log likelihood = -884509.38

	Standardized	Coef.	OIM Std. Err.	z	P>|z|	[95% Conf. Interval]	

Structural							
inpatient_hospitalizations							
age	-.0115089	.0053394		-2.16	0.031	-.021974	-.0010438
qci_score	.1259906	.0053005		23.77	0.000	.1156019	.1363793
engagement_rate	-.0127983	.0051334		-2.49	0.013	-.0228595	-.0027371
_cons	.0451134	.0192102		2.35	0.019	.007462	.0827648

pdc							
inpatient_hospitalizations							
er_visits	-.0302308	.0049997		-6.05	0.000	-.04003	-.0204315
pcp_officevisits	-.0190096	.0049575		-3.83	0.000	-.0287262	-.009293
specialist_office_visits	-.0007109	.0069384		-0.10	0.918	-.0143099	.012888
other_outpatientservices	-.0093499	.0108484		-0.86	0.389	-.0306124	.0119126
pharmacy_fills	-.0154537	.0103391		-1.49	0.135	-.0357179	.0048106
age	.3293753	.0047728		69.01	0.000	.3200208	.3387298
qci_score	.1451174	.0049903		29.08	0.000	.1353366	.1548981
engagement_rate	-.0283777	.0050376		-5.63	0.000	-.0382512	-.0185043
_cons	.0078895	.0047995		1.64	0.100	-.0015173	.0172963
_cons	1.170433	.020606		56.80	0.000	1.130046	1.21082

er_visits							
age	-.0368258	.0053733		-6.85	0.000	-.0473572	-.0262943
qci_score	.0197672	.0053757		3.68	0.000	.009231	.0303034
engagement_rate	-.0193069	.0051683		-3.74	0.000	-.0294366	-.0091772
_cons	.2216704	.019315		11.48	0.000	.1838137	.2595271

pcp_officevisits							
age	.0607252	.0053595		11.33	0.000	.0502208	.0712296
qci_score	.0191099	.0053677		3.56	0.000	.0085893	.0296305
engagement_rate	.00018	.0051616		0.03	0.972	-.0099364	.0102965
_cons	.6446561	.0196503		32.81	0.000	.6061422	.6831699

specialist_office_visits							
age	.0570456	.0053643		10.63	0.000	.0465318	.0675593
qci_score	.0020736	.0053723		0.39	0.700	-.008456	.0126031

engagement_rate	|	.0002934	.0051651	0.06	0.955	-.00983	.0104168
_cons	|	.4907647	.0195333	25.12	0.000	.4524801	.5290493
-----+-----							
other_outpatientservices	|						
age	|	.0750104	.0053462	14.03	0.000	.064532	.0854888
qci_score	|	.0307194	.0053578	5.73	0.000	.0202183	.0412206
engagement_rate	|	.0003083	.0051534	0.06	0.952	-.0097922	.0104088
_cons	|	.1791063	.0193588	9.25	0.000	.1411637	.2170489
-----+-----							
pharmacy_fills	|						
age	|	.1127323	.0052951	21.29	0.000	.102354	.1231106
qci_score	|	.0614172	.0053172	11.55	0.000	.0509956	.0718388
engagement_rate	|	.0007877	.005121	0.15	0.878	-.0092492	.0108245
_cons	|	.892638	.0199742	44.69	0.000	.8534892	.9317867
-----+-----							
mean(age)	|	3.338398	.0132637	251.69	0.000	3.312401	3.364394
mean(qci_score)	|	1.297835	.0070221	184.82	0.000	1.284072	1.311598
mean(engagement_rate)	|	1.300017	.0070275	184.99	0.000	1.286244	1.313791
-----+-----							
var(e.inpatient_hospitaliz~s)	|	.9846278	.0012632			.9821551	.9871068
var(e.pdc)	|	.8602023	.0034688			.8534304	.8670279
var(e.er_visits)	|	.9982809	.0004283			.9974418	.9991207
var(e.pcp_officevisits)	|	.9953088	.0007054			.9939273	.9966923
var(e.specialist_office_vi~s)	|	.9966763	.0005946			.9955117	.9978423
var(e.other_outpatientserv~s)	|	.992162	.0009089			.9903822	.993945
var(e.pharmacy_fills)	|	.9797099	.001444			.9768837	.9825442
var(age)	|	1	.			.	.
var(qci_score)	|	1	.			.	.
var(engagement_rate)	|	1	.			.	.
-----+-----							
cov(age,qci_score)	|	.2750612	.0047823	57.52	0.000	.2656881	.2844343
cov(age,engagement_rate)	|	-.0000374	.0051737	-0.01	0.994	-.0101777	.0101029
cov(qci_score,engagement_rate)	|	4.90e-06	.0051737	0.00	0.999	-.0101354	.0101452

Note: The LR test of model vs. saturated is not reported because the fitted model is not full rank.

. estat gof, stats(all)

```

-----
Fit statistic      |      Value  Description
-----+-----
Likelihood ratio  |
  chi2_ms(.)      |      .      model vs. saturated
  p > chi2        |      .
  chi2_bs(42)     |  96203.408  baseline vs. saturated
  p > chi2        |      0.000
-----+-----
Population error  |
  RMSEA           |      .      Root mean squared error of approximation
  90% CI, lower bound |      0.000
  upper bound     |      .
  pclose         |      .      Probability RMSEA <= 0.05
-----+-----
Information criteria |
  AIC             |  1.769e+06  Akaike's information criterion
  BIC             |  1.770e+06  Bayesian information criterion
-----+-----
Baseline comparison |
  CFI             |      1.000  Comparative fit index
  TLI             |      .      Tucker-Lewis index
-----+-----
Size of residuals |
  SRMR           |      0.191  Standardized root mean squared residual
  CD             |      0.072  Coefficient of determination
-----

```

. estat teffects, standardized

Direct effects

```

-----
                |      OIM
                |      Coef.  Std. Err.   z   P>|z|      Std. Coef.
-----+-----
Structural      |
  inpatient_hospitalizations |
    age         |  -.0002016  .0000935   -2.16  0.031      -.0115089
    qci_score    |  .0289732   .001228    23.59  0.000      .1259906
-----

```

engagement_rate	|	-.0000185	7.43e-06	-2.49	0.013		-.0127983

pdc							
inpatient_hospitalizations	|	-.0333696	.0055239	-6.04	0.000		-.0302308
er_visits	|	-.0271326	.0070771	-3.83	0.000		-.0190096
pcp_officevisits	|	-.0000818	.0007983	-0.10	0.918		-.0007109
specialist_office_visits	|	-.0007048	.0008177	-0.86	0.389		-.0093499
other_outpatientservices	|	-.0009402	.0006293	-1.49	0.135		-.0154537
pharmacy_fills	|	.012846	.000198	64.89	0.000		.3293753
age	|	.002806	.0000973	28.83	0.000		.1451174
qci_score	|	-.0072034	.001279	-5.63	0.000		-.0283777
engagement_rate	|	.0000126	7.67e-06	1.64	0.100		.0078895

er_visits							
age	|	-.0004989	.0000728	-6.85	0.000		-.0368258
qci_score	|	.0035155	.0009562	3.68	0.000		.0197672
engagement_rate	|	-.0000216	5.78e-06	-3.73	0.000		-.0193069

pcp_officevisits							
age	|	.0102049	.0009022	11.31	0.000		.0607252
qci_score	|	.0421594	.011844	3.56	0.000		.0191099
engagement_rate	|	2.50e-06	.0000717	0.03	0.972		.00018

specialist_office_visits							
age	|	.0146331	.0013781	10.62	0.000		.0570456
qci_score	|	.0069828	.0180914	0.39	0.700		.0020736
engagement_rate	|	6.22e-06	.0001095	0.06	0.955		.0002934

other_outpatientservices							
age	|	.0238384	.0017035	13.99	0.000		.0750104
qci_score	|	.1281634	.0223629	5.73	0.000		.0307194
engagement_rate	|	8.09e-06	.0001353	0.06	0.952		.0003083

pharmacy_fills							
age	|	.0558901	.0026407	21.16	0.000		.1127323
qci_score	|	.3997354	.0346671	11.53	0.000		.0614172
engagement_rate	|	.0000323	.0002097	0.15	0.878		.0007877

Indirect effects

		OIM				
		Coef.	Std. Err.	z	P>|z|	Std. Coef.

Structural						
inpatient_hospitalizations						
	age	0	(no path)			0
	qci_score	0	(no path)			0
	engagement_rate	0	(no path)			0

pdc						
inpatient_hospitalizations		0	(no path)			0
	er_visits	0	(no path)			0
	pcp_officevisits	0	(no path)			0
	specialist_office_visits	0	(no path)			0
	other_outpatientservices	0	(no path)			0
	pharmacy_fills	0	(no path)			0
	age	.0007047	.0000364	19.35	0.000	.0364435
	qci_score	.0039439	.0004818	8.19	0.000	.0155371
	engagement_rate	1.61e-06	2.72e-06	0.59	0.555	.0010057

er_visits						
	age	0	(no path)			0
	qci_score	0	(no path)			0
	engagement_rate	0	(no path)			0

pcp_officevisits						
	age	0	(no path)			0
	qci_score	0	(no path)			0
	engagement_rate	0	(no path)			0

specialist_office_visits						
	age	0	(no path)			0
	qci_score	0	(no path)			0
	engagement_rate	0	(no path)			0

other_outpatientservices						
	age	0	(no path)			0
	qci_score	0	(no path)			0

engagement_rate	|	0	(no path)			0

pharmacy_fills	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0

Total effects						

	|		OIM			
	|	Coef.	Std. Err.	z	P>|z|	Std. Coef.

Structural	|					
inpatient_hospitalizations	|					
age	|	-.0002016	.0000935	-2.16	0.031	-.0115089
qci_score	|	.0289732	.001228	23.59	0.000	.1259906
engagement_rate	|	-.0000185	7.43e-06	-2.49	0.013	-.0127983

pdc	|					
inpatient_hospitalizations	|	-.0333696	.0055239	-6.04	0.000	-.0302308
er_visits	|	-.0271326	.0070771	-3.83	0.000	-.0190096
pcp_officevisits	|	-.0000818	.0007983	-0.10	0.918	-.0007109
specialist_office_visits	|	-.0007048	.0008177	-0.86	0.389	-.0093499
other_outpatientservices	|	-.0009402	.0006293	-1.49	0.135	-.0154537
pharmacy_fills	|	.012846	.000198	64.89	0.000	.3293753
age	|	.0035106	.0001024	34.29	0.000	.1815608
qci_score	|	-.0032595	.001344	-2.43	0.015	-.0128407
engagement_rate	|	.0000142	8.13e-06	1.75	0.081	.0088952

er_visits	|					
age	|	-.0004989	.0000728	-6.85	0.000	-.0368258
qci_score	|	.0035155	.0009562	3.68	0.000	.0197672
engagement_rate	|	-.0000216	5.78e-06	-3.73	0.000	-.0193069

pcp_officevisits	|					
age	|	.0102049	.0009022	11.31	0.000	.0607252
qci_score	|	.0421594	.011844	3.56	0.000	.0191099
engagement_rate	|	2.50e-06	.0000717	0.03	0.972	.00018

```

-----+-----
specialist_office_visits |
      age | .0146331 .0013781 10.62 0.000 .0570456
      qci_score | .0069828 .0180914 0.39 0.700 .0020736
      engagement_rate | 6.22e-06 .0001095 0.06 0.955 .0002934
-----+-----
other_outpatientservices |
      age | .0238384 .0017035 13.99 0.000 .0750104
      qci_score | .1281634 .0223629 5.73 0.000 .0307194
      engagement_rate | 8.09e-06 .0001353 0.06 0.952 .0003083
-----+-----
pharmacy_fills |
      age | .0558901 .0026407 21.16 0.000 .1127323
      qci_score | .3997354 .0346671 11.53 0.000 .0614172
      engagement_rate | .0000323 .0002097 0.15 0.878 .0007877
-----+-----

```

. (note: file /Users/asim/Dropbox/Integrative Sustainable Solutions/TRUST APP/Cancer and Asthma Application/Health Corp Data/SEMS version 2/SEM_M7.stsem not found)

MODEL 7

```

sem (inpatient_hospitalizations -> mpr, ) (er_visits -> mpr, ) (pcp_officevisits -> mpr, ) (specialist_office_visits ->
mpr, ) (other_outpatientservices -> mpr, ) (pharmacy_fills -> mpr, ) (age -> mpr
> , ) (age -> inpatient_hospitalizations, ) (age -> er_visits, ) (age -> pcp_officevisits, ) (age ->
specialist_office_visits, ) (age -> other_outpatientservices, ) (age -> pharmacy_fills, ) (qci_scor
> e -> mpr, ) (qci_score -> inpatient_hospitalizations, ) (qci_score -> er_visits, ) (qci_score -> pcp_officevisits, )
(qci_score -> specialist_office_visits, ) (qci_score -> other_outpatientservices,
> ) (qci_score -> pharmacy_fills, ) (engagement_rate -> mpr, ) (engagement_rate -> inpatient_hospitalizations, )
(engagement_rate -> er_visits, ) (engagement_rate -> pcp_officevisits, ) (engagement_r
> ate -> specialist_office_visits, ) (engagement_rate -> other_outpatientservices, ) (engagement_rate ->
pharmacy_fills, ) (rewards -> mpr, ) (rewards -> inpatient_hospitalizations, ) (rewards -> er_v
> isits, ) (rewards -> pcp_officevisits, ) (rewards -> specialist_office_visits, ) (rewards ->
other_outpatientservices, ) (rewards -> pharmacy_fills, ), standardized cov( age*qci_score age*engagement
> _rate qci_score*engagement_rate engagement_rate*rewards rewards*age rewards*qci_score) nocapslatent

```

Endogenous variables

Observed: inpatient_hospitalizations mpr er_visits pcp_officevisits specialist_office_visits other_outpatientservices
pharmacy_fills

Exogenous variables

Observed: age qci_score engagement_rate rewards

Fitting target model:

Iteration 0: log likelihood = -1044572.4

Iteration 1: log likelihood = -1044572.4

Structural equation model Number of obs = 37,359

Estimation method = ml

Log likelihood = -1044572.4

	Standardized	Coef.	OIM Std. Err.	z	P>|z|	[95% Conf. Interval]	

Structural							
inpatient_hospitalizations							
age	-.0117148	.0052245		-2.24	0.025	-.0219546	-.0014749
qci_score	.1260713	.005188		24.30	0.000	.115903	.1362397
engagement_rate	-.0127361	.0050229		-2.54	0.011	-.0225808	-.0028914
rewards	-.2047775	.0049186		-41.63	0.000	-.2144177	-.1951372
_cons	.4551753	.0212149		21.46	0.000	.4135949	.4967557

mpr							
inpatient_hospitalizations	-.0120157	.0049528		-2.43	0.015	-.021723	-.0023084
er_visits	-.0054108	.0048998		-1.10	0.269	-.0150142	.0041927
pcp_officevisits	.0136612	.0067647		2.02	0.043	.0004027	.0269198
specialist_office_visits	-.0014452	.0105818		-0.14	0.891	-.022185	.0192947
other_outpatientservices	-.0174484	.0100834		-1.73	0.084	-.0372116	.0023148
pharmacy_fills	.3812621	.0045603		83.60	0.000	.372324	.3902002
age	.1061591	.0048855		21.73	0.000	.0965837	.1157344
qci_score	-.0166658	.004913		-3.39	0.001	-.0262952	-.0070364
engagement_rate	.0071283	.0046789		1.52	0.128	-.0020422	.0162988
rewards	.1232698	.0048269		25.54	0.000	.1138093	.1327303
_cons	.5074725	.0215687		23.53	0.000	.4651985	.5497464

-----+-----							
er_visits	|						
age	|	-.0370254	.0052662	-7.03	0.000	-.0473469	-.0267039
qci_score	|	.0198455	.0052685	3.77	0.000	.0095195	.0301715
engagement_rate	|	-.0192466	.0050652	-3.80	0.000	-.0291743	-.009319
rewards	|	-.1986002	.0049654	-40.00	0.000	-.2083321	-.1888682
_cons	|	.6193624	.0212275	29.18	0.000	.5777573	.6609675
-----+-----							
pcp_officevisits	|						
age	|	.0607266	.0053595	11.33	0.000	.0502222	.071231
qci_score	|	.0191094	.0053677	3.56	0.000	.0085888	.02963
engagement_rate	|	.0001796	.0051616	0.03	0.972	-.0099369	.0102961
rewards	|	.0013861	.0051616	0.27	0.788	-.0087304	.0115026
_cons	|	.6418804	.0222031	28.91	0.000	.5983632	.6853977
-----+-----							
specialist_office_visits	|						
age	|	.0570474	.0053642	10.63	0.000	.0465337	.0675611
qci_score	|	.0020729	.0053723	0.39	0.700	-.0084567	.0126024
engagement_rate	|	.0002929	.0051651	0.06	0.955	-.0098305	.0104163
rewards	|	.0017986	.0051651	0.35	0.728	-.0083248	.011922
_cons	|	.487163	.0221029	22.04	0.000	.4438422	.5304838
-----+-----							
other_outpatientservices	|						
age	|	.0750126	.0053462	14.03	0.000	.0645342	.085491
qci_score	|	.0307186	.0053578	5.73	0.000	.0202174	.0412197
engagement_rate	|	.0003077	.0051534	0.06	0.952	-.0097928	.0104081
rewards	|	.0021797	.0051534	0.42	0.672	-.0079207	.0122801
_cons	|	.1747415	.0219364	7.97	0.000	.1317469	.2177361
-----+-----							
pharmacy_fills	|						
age	|	.1127401	.005295	21.29	0.000	.1023621	.1231181
qci_score	|	.0614141	.0053171	11.55	0.000	.0509929	.0718354
engagement_rate	|	.0007853	.0051208	0.15	0.878	-.0092513	.0108219
rewards	|	.0077803	.0051206	1.52	0.129	-.0022559	.0178166
_cons	|	.877058	.0224515	39.06	0.000	.8330539	.9210621
-----+-----							
mean (age)	|	3.338398	.0132637	251.69	0.000	3.312401	3.364394
mean (qci_score)	|	1.297835	.0070221	184.82	0.000	1.284072	1.311598
mean (engagement_rate)	|	1.300017	.0070275	184.99	0.000	1.286244	1.313791
mean (rewards)	|	2.000027	.0089612	223.19	0.000	1.982463	2.01759

```

-----+-----
var(e.inpatient_hospitaliz~s) | .9426941 .0023351 .9381285 .9472819
      var(e.mpr) | .8174848 .0037566 .8101551 .8248808
      var(e.er_visits) | .9588389 .0020129 .9549018 .9627922
      var(e.pcp_officevisits) | .9953069 .0007055 .9939251 .9966907
var(e.specialist_office_vi~s) | .9966731 .0005948 .9955079 .9978397
var(e.other_outpatientserv~s) | .9921573 .0009092 .9903769 .9939408
      var(e.pharmacy_fills) | .9796493 .0014461 .9768192 .9824877
      var(age) | 1 . . .
      var(qci_score) | 1 . . .
      var(engagement_rate) | 1 . . .
      var(rewards) | 1 . . .
-----+-----
      cov(age,qci_score) | .2750612 .0047823 57.52 0.000 .2656881 .2844343
      cov(age,engagement_rate) | -.0000374 .0051737 -0.01 0.994 -.0101777 .0101029
      cov(age,rewards) | -.0008967 .0051737 -0.17 0.862 -.011037 .0092436
      cov(qci_score, |
      engagement_rate) | 4.90e-06 .0051737 0.00 0.999 -.0101354 .0101452
      cov(qci_score,rewards) | .0001177 .0051737 0.02 0.982 -.0100226 .010258
      cov(engagement_rate,rewards) | .0003037 .0051737 0.06 0.953 -.0098366 .010444
-----+-----

```

Note: The LR test of model vs. saturated is not reported because the fitted model is not full rank.

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. (note: file /Users/asim/Dropbox/Integrative Sustainable Solutions/TRUST APP/Cancer and Asthma Application/Health Corp
Data/SEMS version 2/SEM_M8.stsem not found)
estat gof, stats(all)

```

```

-----+-----
Fit statistic      |      Value  Description
-----+-----
Likelihood ratio  |
  chi2_ms(.)      |          .   model vs. saturated
  p > chi2       |          .
  chi2_bs(49)    | 100933.301  baseline vs. saturated
  p > chi2       |          0.000
-----+-----
Population error  |
  RMSEA          |          .   Root mean squared error of approximation
  90% CI, lower bound |          0.000

```

```

upper bound |          .
pclose      |          .   Probability RMSEA <= 0.05
-----+-----
Information criteria |
      AIC | 2.089e+06   Akaike's information criterion
      BIC | 2.090e+06   Bayesian information criterion
-----+-----
Baseline comparison |
      CFI |      1.000   Comparative fit index
      TLI |          .   Tucker-Lewis index
-----+-----
Size of residuals  |
      SRMR |      0.174   Standardized root mean squared residual
      CD  |      0.151   Coefficient of determination
-----+-----

. estat teffects, standardized

Direct effects
-----+-----
              |
              |          Coef.      OIM      z      P>|z|      Std. Coef.
              |          |          |          |          |          |
-----+-----+-----+-----+-----+-----+-----
Structural    |
  inpatient_hospitalizations |
    age       | -0.0002052   .0000915   -2.24   0.025   -0.0117148
    qci_score |  .0289918   .0012015   24.13   0.000   .1260713
    engagement_rate | -0.0000184   7.27e-06   -2.54   0.011   -0.0127361
    rewards   | -0.0035559   .0000872  -40.77   0.000   -0.2047775
-----+-----
mpr          |
  inpatient_hospitalizations |
    er_visits | -0.0096706   .0087577   -1.10   0.269   -0.0054108
    pcp_officevisits |  .0019683   .0009746    2.02   0.043   .0136612
    specialist_office_visits | -0.0001364   .0009988   -0.14   0.891   -0.0014452
    other_outpatientservices | -0.0013293   .0007687   -1.73   0.084   -0.0174484
    pharmacy_fills |  .0186198   .0002417   77.03   0.000   .3812621
    age       |  .0025704   .0001188   21.63   0.000   .1061591
    qci_score | -0.0052974   .0015617   -3.39   0.001   -0.0166658

```

	engagement_rate	|	.0000143	9.36e-06	1.52	0.128		.0071283
	rewards	|	.0029587	.0001164	25.42	0.000		.1232698
-----+-----								
er_visits		|						
	age	|	-.0005016	.0000714	-7.03	0.000		-.0370254
	qci_score	|	.0035294	.0009371	3.77	0.000		.0198455
	engagement_rate	|	-.0000215	5.67e-06	-3.80	0.000		-.0192466
	rewards	|	-.0026671	.000068	-39.20	0.000		-.1986002
-----+-----								
pcp_officevisits		|						
	age	|	.0102051	.0009022	11.31	0.000		.0607266
	qci_score	|	.0421582	.011844	3.56	0.000		.0191094
	engagement_rate	|	2.49e-06	.0000717	0.03	0.972		.0001796
	rewards	|	.0002309	.0008599	0.27	0.788		.0013861
-----+-----								
specialist_office_visits		|						
	age	|	.0146336	.0013781	10.62	0.000		.0570474
	qci_score	|	.0069804	.0180914	0.39	0.700		.0020729
	engagement_rate	|	6.21e-06	.0001095	0.06	0.955		.0002929
	rewards	|	.0004574	.0013134	0.35	0.728		.0017986
-----+-----								
other_outpatientservices		|						
	age	|	.0238391	.0017035	13.99	0.000		.0750126
	qci_score	|	.1281599	.0223629	5.73	0.000		.0307186
	engagement_rate	|	8.08e-06	.0001353	0.06	0.952		.0003077
	rewards	|	.0006867	.0016235	0.42	0.672		.0021797
-----+-----								
pharmacy_fills		|						
	age	|	.055894	.0026406	21.17	0.000		.1127401
	qci_score	|	.3997155	.034666	11.53	0.000		.0614141
	engagement_rate	|	.0000322	.0002097	0.15	0.878		.0007853
	rewards	|	.0038238	.0025167	1.52	0.129		.0077803

Indirect effects

		OIM			
	Coef.	Std. Err.	z	P>|z|	Std. Coef.
-----+-----					

Structural	|					
inpatient_hospitalizations	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
mpr	|					
inpatient_hospitalizations	|	0	(no path)			0
er_visits	|	0	(no path)			0
pcp_officevisits	|	0	(no path)			0
specialist_office_visits	|	0	(no path)			0
other_outpatientservices	|	0	(no path)			0
pharmacy_fills	|	0	(no path)			0
age	|	.0010354	.0000517	20.04	0.000	.0427629
qci_score	|	.0068387	.0006823	10.02	0.000	.0215147
engagement_rate	|	1.11e-06	3.92e-06	0.28	0.778	.0005532
rewards	|	.0001555	.0000561	2.77	0.006	.0064798
-----+-----						
er_visits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
pcp_officevisits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
specialist_office_visits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
other_outpatientservices	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0

engagement_rate	|	0	(no path)	0
rewards	|	0	(no path)	0

pharmacy_fills	|			
age	|	0	(no path)	0
qci_score	|	0	(no path)	0
engagement_rate	|	0	(no path)	0
rewards	|	0	(no path)	0

Total effects

	|	Coef.	OIM Std. Err.	z	P>|z|	Std. Coef.

Structural	|					
inpatient_hospitalizations	|					
age	|	-.0002052	.0000915	-2.24	0.025	-.0117148
qci_score	|	.0289918	.0012015	24.13	0.000	.1260713
engagement_rate	|	-.0000184	7.27e-06	-2.54	0.011	-.0127361
rewards	|	-.0035559	.0000872	-40.77	0.000	-.2047775

mpr	|					
inpatient_hospitalizations	|	-.0166083	.0068481	-2.43	0.015	-.0120157
er_visits	|	-.0096706	.0087577	-1.10	0.269	-.0054108
pcp_officevisits	|	.0019683	.0009746	2.02	0.043	.0136612
specialist_office_visits	|	-.0001364	.0009988	-0.14	0.891	-.0014452
other_outpatientservices	|	-.0013293	.0007687	-1.73	0.084	-.0174484
pharmacy_fills	|	.0186198	.0002417	77.03	0.000	.3812621
age	|	.0036058	.0001277	28.24	0.000	.148922
qci_score	|	.0015413	.0016764	0.92	0.358	.004849
engagement_rate	|	.0000154	.0000101	1.51	0.130	.0076815
rewards	|	.0031142	.0001217	25.59	0.000	.1297496

er_visits	|					
age	|	-.0005016	.0000714	-7.03	0.000	-.0370254
qci_score	|	.0035294	.0009371	3.77	0.000	.0198455
engagement_rate	|	-.0000215	5.67e-06	-3.80	0.000	-.0192466
rewards	|	-.0026671	.000068	-39.20	0.000	-.1986002

-----+-----						
pcp_officevisits	|					
age	|	.0102051	.0009022	11.31	0.000	.0607266
qci_score	|	.0421582	.011844	3.56	0.000	.0191094
engagement_rate	|	2.49e-06	.0000717	0.03	0.972	.0001796
rewards	|	.0002309	.0008599	0.27	0.788	.0013861
-----+-----						
specialist_office_visits	|					
age	|	.0146336	.0013781	10.62	0.000	.0570474
qci_score	|	.0069804	.0180914	0.39	0.700	.0020729
engagement_rate	|	6.21e-06	.0001095	0.06	0.955	.0002929
rewards	|	.0004574	.0013134	0.35	0.728	.0017986
-----+-----						
other_outpatientservices	|					
age	|	.0238391	.0017035	13.99	0.000	.0750126
qci_score	|	.1281599	.0223629	5.73	0.000	.0307186
engagement_rate	|	8.08e-06	.0001353	0.06	0.952	.0003077
rewards	|	.0006867	.0016235	0.42	0.672	.0021797
-----+-----						
pharmacy_fills	|					
age	|	.055894	.0026406	21.17	0.000	.1127401
qci_score	|	.3997155	.034666	11.53	0.000	.0614141
engagement_rate	|	.0000322	.0002097	0.15	0.878	.0007853
rewards	|	.0038238	.0025167	1.52	0.129	.0077803
-----+-----						

MODEL 8

```
. sem (inpatient_hospitalizations -> pdc, ) (er_visits -> pdc, ) (pcp_officevisits -> pdc, ) (specialist_office_visits
-> pdc, ) (other_outpatientservices -> pdc, ) (pharmacy_fills -> pdc, ) (age -> p
> dc, ) (age -> inpatient_hospitalizations, ) (age -> er_visits, ) (age -> pcp_officevisits, ) (age ->
specialist_office_visits, ) (age -> other_outpatientservices, ) (age -> pharmacy_fills, ) (qci_sc
> ore -> pdc, ) (qci_score -> inpatient_hospitalizations, ) (qci_score -> er_visits, ) (qci_score -> pcp_officevisits,
) (qci_score -> specialist_office_visits, ) (qci_score -> other_outpatientservice
> s, ) (qci_score -> pharmacy_fills, ) (engagement_rate -> pdc, ) (engagement_rate -> inpatient_hospitalizations, )
(engagement_rate -> er_visits, ) (engagement_rate -> pcp_officevisits, ) (engagement
> _rate -> specialist_office_visits, ) (engagement_rate -> other_outpatientservices, ) (engagement_rate ->
pharmacy_fills, ) (rewards -> pdc, ) (rewards -> inpatient_hospitalizations, ) (rewards -> er
```


pharmacy_fills	|	.3257464	.0047411	68.71	0.000	.3164539	.3350388
age	|	.1472421	.0049423	29.79	0.000	.1375554	.1569288
qci_score	|	-.0313731	.004991	-6.29	0.000	-.0411552	-.0215909
engagement_rate	|	.0086041	.0047539	1.81	0.070	-.0007135	.0179216
rewards	|	.1363877	.0048956	27.86	0.000	.1267925	.1459829
_cons	|	.8937658	.0225853	39.57	0.000	.8494993	.9380322
-----+-----							
er_visits	|						
age	|	-.0370254	.0052662	-7.03	0.000	-.0473469	-.0267039
qci_score	|	.0198455	.0052685	3.77	0.000	.0095195	.0301715
engagement_rate	|	-.0192466	.0050652	-3.80	0.000	-.0291743	-.009319
rewards	|	-.1986002	.0049654	-40.00	0.000	-.2083321	-.1888682
_cons	|	.6193624	.0212275	29.18	0.000	.5777573	.6609675
-----+-----							
pcp_officevisits	|						
age	|	.0607266	.0053595	11.33	0.000	.0502222	.071231
qci_score	|	.0191094	.0053677	3.56	0.000	.0085888	.02963
engagement_rate	|	.0001796	.0051616	0.03	0.972	-.0099369	.0102961
rewards	|	.0013861	.0051616	0.27	0.788	-.0087304	.0115026
_cons	|	.6418804	.0222031	28.91	0.000	.5983632	.6853977
-----+-----							
specialist_office_visits	|						
age	|	.0570474	.0053642	10.63	0.000	.0465337	.0675611
qci_score	|	.0020729	.0053723	0.39	0.700	-.0084567	.0126024
engagement_rate	|	.0002929	.0051651	0.06	0.955	-.0098305	.0104163
rewards	|	.0017986	.0051651	0.35	0.728	-.0083248	.011922
_cons	|	.487163	.0221029	22.04	0.000	.4438422	.5304838
-----+-----							
other_outpatientservices	|						
age	|	.0750126	.0053462	14.03	0.000	.0645342	.085491
qci_score	|	.0307186	.0053578	5.73	0.000	.0202174	.0412197
engagement_rate	|	.0003077	.0051534	0.06	0.952	-.0097928	.0104081
rewards	|	.0021797	.0051534	0.42	0.672	-.0079207	.0122801
_cons	|	.1747415	.0219364	7.97	0.000	.1317469	.2177361
-----+-----							
pharmacy_fills	|						
age	|	.1127401	.005295	21.29	0.000	.1023621	.1231181
qci_score	|	.0614141	.0053171	11.55	0.000	.0509929	.0718354
engagement_rate	|	.0007853	.0051208	0.15	0.878	-.0092513	.0108219
rewards	|	.0077803	.0051206	1.52	0.129	-.0022559	.0178166

_cons	|	.877058	.0224515	39.06	0.000	.8330539	.9210621

mean(age)	|	3.338398	.0132637	251.69	0.000	3.312401	3.364394
mean(qci_score)	|	1.297835	.0070221	184.82	0.000	1.284072	1.311598
mean(engagement_rate)	|	1.300017	.0070275	184.99	0.000	1.286244	1.313791
mean(rewards)	|	2.000027	.0089612	223.19	0.000	1.982463	2.01759

var(e.inpatient_hospitaliz~s)	|	.9426941	.0023351			.9381285	.9472819
var(e.pdc)	|	.8439326	.0036053			.8368959	.8510286
var(e.er_visits)	|	.9588389	.0020129			.9549018	.9627922
var(e.pcp_officevisits)	|	.9953069	.0007055			.9939251	.9966907
var(e.specialist_office_vi~s)	|	.9966731	.0005948			.9955079	.9978397
var(e.other_outpatientserv~s)	|	.9921573	.0009092			.9903769	.9939408
var(e.pharmacy_fills)	|	.9796493	.0014461			.9768192	.9824877
var(age)	|	1	.			.	.
var(qci_score)	|	1	.			.	.
var(engagement_rate)	|	1	.			.	.
var(rewards)	|	1	.			.	.

cov(age,qci_score)	|	.2750612	.0047823	57.52	0.000	.2656881	.2844343
cov(age,engagement_rate)	|	-.0000374	.0051737	-0.01	0.994	-.0101777	.0101029
cov(age,rewards)	|	-.0008967	.0051737	-0.17	0.862	-.011037	.0092436
cov(qci_score,engagement_rate)	|	4.90e-06	.0051737	0.00	0.999	-.0101354	.0101452
cov(qci_score,rewards)	|	.0001177	.0051737	0.02	0.982	-.0100226	.010258
cov(engagement_rate,rewards)	|	.0003037	.0051737	0.06	0.953	-.0098366	.010444

Note: The LR test of model vs. saturated is not reported because the fitted model is not full rank.

.
. estat gof, stats(all)

Fit statistic	|	Value	Description
Likelihood ratio	|		
chi2_ms(.)	|	.	model vs. saturated
p > chi2	|	.	
chi2_bs(49)	|	99660.434	baseline vs. saturated
p > chi2	|	0.000	

```

-----+-----
Population error |
      RMSEA |          .   Root mean squared error of approximation
90% CI, lower bound |      0.000
      upper bound |          .
      pclose |          .   Probability RMSEA <= 0.05
-----+-----
Information criteria |
      AIC | 2.074e+06   Akaike's information criterion
      BIC | 2.074e+06   Bayesian information criterion
-----+-----
Baseline comparison |
      CFI |      1.000   Comparative fit index
      TLI |          .   Tucker-Lewis index
-----+-----
Size of residuals |
      SRMR |      0.173   Standardized root mean squared residual
      CD |      0.163   Coefficient of determination
-----+-----

```

. estat teffects, standardized

Direct effects

```

-----+-----
              |
              |          OIM
              |          Coef.  Std. Err.    z    P>|z|          Std. Coef.
-----+-----
Structural    |
  inpatient_hospitalizations |
      age | -.0002052   .0000915   -2.24  0.025   -.0117148
      qci_score | .0289918   .0012015   24.13  0.000   .1260713
      engagement_rate | -.0000184   7.27e-06   -2.54  0.011   -.0127361
      rewards | -.0035559   .0000872  -40.77  0.000   -.2047775
-----+-----
pdc          |
  inpatient_hospitalizations | -.0065554   .0055533   -1.18  0.238   -.0059424
      er_visits | .0051142   .0071018    0.72  0.471   .0035852
      pcp_officevisits | -.0003587   .0007903   -0.45  0.650   -.0031194
      specialist_office_visits | .0000649   .0008099    0.08  0.936   .0008611
-----+-----

```

other_outpatientservices	|	-.0015833	.0006233	-2.54	0.011	-.0260383
pharmacy_fills	|	.0126969	.000196	64.77	0.000	.3257464
age	|	.0028454	.0000964	29.53	0.000	.1472421
qci_score	|	-.007959	.0012664	-6.28	0.000	-.0313731
engagement_rate	|	.0000137	7.59e-06	1.81	0.070	.0086041
rewards	|	.0026127	.0000944	27.68	0.000	.1363877
-----+-----						
er_visits	|					
age	|	-.0005016	.0000714	-7.03	0.000	-.0370254
qci_score	|	.0035294	.0009371	3.77	0.000	.0198455
engagement_rate	|	-.0000215	5.67e-06	-3.80	0.000	-.0192466
rewards	|	-.0026671	.000068	-39.20	0.000	-.1986002
-----+-----						
pcp_officevisits	|					
age	|	.0102051	.0009022	11.31	0.000	.0607266
qci_score	|	.0421582	.011844	3.56	0.000	.0191094
engagement_rate	|	2.49e-06	.0000717	0.03	0.972	.0001796
rewards	|	.0002309	.0008599	0.27	0.788	.0013861
-----+-----						
specialist_office_visits	|					
age	|	.0146336	.0013781	10.62	0.000	.0570474
qci_score	|	.0069804	.0180914	0.39	0.700	.0020729
engagement_rate	|	6.21e-06	.0001095	0.06	0.955	.0002929
rewards	|	.0004574	.0013134	0.35	0.728	.0017986
-----+-----						
other_outpatientservices	|					
age	|	.0238391	.0017035	13.99	0.000	.0750126
qci_score	|	.1281599	.0223629	5.73	0.000	.0307186
engagement_rate	|	8.08e-06	.0001353	0.06	0.952	.0003077
rewards	|	.0006867	.0016235	0.42	0.672	.0021797
-----+-----						
pharmacy_fills	|					
age	|	.055894	.0026406	21.17	0.000	.1127401
qci_score	|	.3997155	.034666	11.53	0.000	.0614141
engagement_rate	|	.0000322	.0002097	0.15	0.878	.0007853
rewards	|	.0038238	.0025167	1.52	0.129	.0077803
-----+-----						

Indirect effects

		OIM				
		Coef.	Std. Err.	z	P>|z|	Std. Coef.

Structural						
inpatient_hospitalizations						
age		0	(no path)			0
qci_score		0	(no path)			0
engagement_rate		0	(no path)			0
rewards		0	(no path)			0

pdv						
inpatient_hospitalizations		0	(no path)			0
er_visits		0	(no path)			0
pcp_officevisits		0	(no path)			0
specialist_office_visits		0	(no path)			0
other_outpatientservices		0	(no path)			0
pharmacy_fills		0	(no path)			0
age		.000668	.0000359	18.60	0.000	.034568
qci_score		.0046855	.0004754	9.86	0.000	.0184697
engagement_rate		4.06e-07	2.68e-06	0.15	0.880	.0002542
rewards		.0000571	.0000406	1.41	0.160	.0029797

er_visits						
age		0	(no path)			0
qci_score		0	(no path)			0
engagement_rate		0	(no path)			0
rewards		0	(no path)			0

pcp_officevisits						
age		0	(no path)			0
qci_score		0	(no path)			0
engagement_rate		0	(no path)			0
rewards		0	(no path)			0

specialist_office_visits						
age		0	(no path)			0
qci_score		0	(no path)			0
engagement_rate		0	(no path)			0
rewards		0	(no path)			0

other_outpatientservices	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0

pharmacy_fills	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0

Total effects						

	|		OIM			
	|	Coef.	Std. Err.	z	P>|z|	Std. Coef.

Structural	|					
inpatient_hospitalizations	|					
age	|	-.0002052	.0000915	-2.24	0.025	-.0117148
qci_score	|	.0289918	.0012015	24.13	0.000	.1260713
engagement_rate	|	-.0000184	7.27e-06	-2.54	0.011	-.0127361
rewards	|	-.0035559	.0000872	-40.77	0.000	-.2047775

pdc	|					
inpatient_hospitalizations	|	-.0065554	.0055533	-1.18	0.238	-.0059424
er_visits	|	.0051142	.0071018	0.72	0.471	.0035852
pcp_officevisits	|	-.0003587	.0007903	-0.45	0.650	-.0031194
specialist_office_visits	|	.0000649	.0008099	0.08	0.936	.0008611
other_outpatientservices	|	-.0015833	.0006233	-2.54	0.011	-.0260383
pharmacy_fills	|	.0126969	.000196	64.77	0.000	.3257464
age	|	.0035134	.0001013	34.69	0.000	.1818102
qci_score	|	-.0032734	.0013296	-2.46	0.014	-.0129033
engagement_rate	|	.0000141	8.04e-06	1.76	0.079	.0088582
rewards	|	.0026698	.0000965	27.66	0.000	.1393674

er_visits	|					

age	|	-.0005016	.0000714	-7.03	0.000	-.0370254
qci_score	|	.0035294	.0009371	3.77	0.000	.0198455
engagement_rate	|	-.0000215	5.67e-06	-3.80	0.000	-.0192466
rewards	|	-.0026671	.000068	-39.20	0.000	-.1986002
-----+-----						
pcp_officevisits	|					
age	|	.0102051	.0009022	11.31	0.000	.0607266
qci_score	|	.0421582	.011844	3.56	0.000	.0191094
engagement_rate	|	2.49e-06	.0000717	0.03	0.972	.0001796
rewards	|	.0002309	.0008599	0.27	0.788	.0013861
-----+-----						
specialist_office_visits	|					
age	|	.0146336	.0013781	10.62	0.000	.0570474
qci_score	|	.0069804	.0180914	0.39	0.700	.0020729
engagement_rate	|	6.21e-06	.0001095	0.06	0.955	.0002929
rewards	|	.0004574	.0013134	0.35	0.728	.0017986
-----+-----						
other_outpatientservices	|					
age	|	.0238391	.0017035	13.99	0.000	.0750126
qci_score	|	.1281599	.0223629	5.73	0.000	.0307186
engagement_rate	|	8.08e-06	.0001353	0.06	0.952	.0003077
rewards	|	.0006867	.0016235	0.42	0.672	.0021797
-----+-----						
pharmacy_fills	|					
age	|	.055894	.0026406	21.17	0.000	.1127401
qci_score	|	.3997155	.034666	11.53	0.000	.0614141
engagement_rate	|	.0000322	.0002097	0.15	0.878	.0007853
rewards	|	.0038238	.0025167	1.52	0.129	.0077803
-----+-----						

Appendix 3: Sensitivity Analysis Results Presenting Detailed Outputs of Eight Additional Structural Equation Models and Their Estimated Direct, Indirect and Total Effects

#SCENARIO 1: Sensitivity analysis 10% higher covariance (S1)

```
. ssd init age inpatient_hospitalizations er_visits pcp_officevisits specialist_office_visits other_outpatientservices
pharmacy_fills qci_score mpr pdc rewards engagement_rate
```

Summary statistics data initialized. Next use, in any order,

```
ssd set observations (required)
    It is best to do this first.
```

```
ssd set means (optional)
    Default setting is 0.
```

```
ssd set variances or ssd set sd (optional)
    Use this only if you have set or will set correlations and, even then, this is optional but highly recommended.
    Default setting is 1.
```

```
ssd set covariances or ssd set correlations (required)
```

```
.
. ssd set observations 37359
    (value set)
```

```
Status:
          observations:  set
                means:  unset
          variances or sd:  unset
    covariances or correlations:  unset (required to be set)
```

```
.
. ssd set means 49.64 0.04 0.02 2.18 2.61 2.22 9.95 1.47 0.58 0.59 30 234
    (values set)
```

```
Status:
          observations:  set
                means:  set
```

```

variances or sd:  unset
covariances or correlations:  unset (required to be set)

.
. ssd set covariances 221.105233\0.089650 0.067846\ -0.094017 0.011868 0.040578\2.451662 0.037385 0.033620
6.244202\3.267802 0.033255 0.022245 6.805591 14.548804\ 5.864529 0.113002 0.075032 7.918511 15
> .837080 22.331055\ 14.209445 0.200045 0.084031 4.385411 7.174931 10.065882 54.346633\ 4.632682 0.036237 0.002199
0.1013640 .076749 0.274862 0.771759 1.282943\ 0.803770 0.000065 -0.001100 0.087459 0.
> 131478 0.182628 1.037027 0.018688 0.129239\ 0.761121 -0.000166 -0.000795 0.047573 0.073374 0.105173 0.708629 0.012082
0.062483 0.082140\ -0.2 -0.8 -0.6 0.05 0.1 0.15 0.85 0.002 0.77 0.66 225\ -0.1 -.6
> -0.7 0.08 0.2 0.26 1.04 0.001 0.55 0.506 0.82 32400
(values set)

Status:
      observations:  set
              means:  set
      variances or sd:  set
covariances or correlations:  set

```

MODEL 9

```

. sem (inpatient_hospitalizations -> mpr, ) (er_visits -> mpr, ) (pcp_officevisits -> mpr, ) (specialist_office_visits
-> mpr, ) (other_outpatientservices -> mpr, ) (pharmacy_fills -> mpr, ) (age -> m
> pr, ) (age -> inpatient_hospitalizations, ) (age -> er_visits, ) (age -> pcp_officevisits, ) (age ->
specialist_office_visits, ) (age -> other_outpatientservices, ) (age -> pharmacy_fills, ) (qci_sc
> ore -> mpr, ) (qci_score -> inpatient_hospitalizations, ) (qci_score -> er_visits, ) (qci_score -> pcp_officevisits,
) (qci_score -> specialist_office_visits, ) (qci_score -> other_outpatientservice
> s, ) (qci_score -> pharmacy_fills, ) (engagement_rate -> mpr, ) (engagement_rate -> inpatient_hospitalizations, )
(engagement_rate -> er_visits, ) (engagement_rate -> pcp_officevisits, ) (engagement
> _rate -> specialist_office_visits, ) (engagement_rate -> other_outpatientservices, ) (engagement_rate ->
pharmacy_fills, ) (rewards -> mpr, ) (rewards -> inpatient_hospitalizations, ) (rewards -> er
> _visits, ) (rewards -> pcp_officevisits, ) (rewards -> specialist_office_visits, ) (rewards ->
other_outpatientservices, ) (rewards -> pharmacy_fills, ), standardized cov( age*qci_score age*engageme
> nt_rate qci_score*engagement_rate engagement_rate*rewards rewards*age rewards*qci_score) nocapslatent

```

Endogenous variables

-----+-----							
er_visits	|						
age	|	-.0370254	.0052662	-7.03	0.000	-.0473469	-.0267039
qci_score	|	.0198455	.0052685	3.77	0.000	.0095195	.0301715
engagement_rate	|	-.0192466	.0050652	-3.80	0.000	-.0291743	-.009319
rewards	|	-.1986002	.0049654	-40.00	0.000	-.2083321	-.1888682
_cons	|	.6193624	.0212275	29.18	0.000	.5777573	.6609675
-----+-----							
pcp_officevisits	|						
age	|	.0607266	.0053595	11.33	0.000	.0502222	.071231
qci_score	|	.0191094	.0053677	3.56	0.000	.0085888	.02963
engagement_rate	|	.0001796	.0051616	0.03	0.972	-.0099369	.0102961
rewards	|	.0013861	.0051616	0.27	0.788	-.0087304	.0115026
_cons	|	.6418804	.0222031	28.91	0.000	.5983632	.6853977
-----+-----							
specialist_office_visits	|						
age	|	.0570474	.0053642	10.63	0.000	.0465337	.0675611
qci_score	|	.0020729	.0053723	0.39	0.700	-.0084567	.0126024
engagement_rate	|	.0002929	.0051651	0.06	0.955	-.0098305	.0104163
rewards	|	.0017986	.0051651	0.35	0.728	-.0083248	.011922
_cons	|	.487163	.0221029	22.04	0.000	.4438422	.5304838
-----+-----							
other_outpatientservices	|						
age	|	.0750126	.0053462	14.03	0.000	.0645342	.085491
qci_score	|	.0307186	.0053578	5.73	0.000	.0202174	.0412197
engagement_rate	|	.0003077	.0051534	0.06	0.952	-.0097928	.0104081
rewards	|	.0021797	.0051534	0.42	0.672	-.0079207	.0122801
_cons	|	.1747415	.0219364	7.97	0.000	.1317469	.2177361
-----+-----							
pharmacy_fills	|						
age	|	.1127401	.005295	21.29	0.000	.1023621	.1231181
qci_score	|	.0614141	.0053171	11.55	0.000	.0509929	.0718354
engagement_rate	|	.0007853	.0051208	0.15	0.878	-.0092513	.0108219
rewards	|	.0077803	.0051206	1.52	0.129	-.0022559	.0178166
_cons	|	.877058	.0224515	39.06	0.000	.8330539	.9210621
-----+-----							
mean (age)	|	3.338398	.0132637	251.69	0.000	3.312401	3.364394
mean (qci_score)	|	1.297835	.0070221	184.82	0.000	1.284072	1.311598
mean (engagement_rate)	|	1.300017	.0070275	184.99	0.000	1.286244	1.313791
mean (rewards)	|	2.000027	.0089612	223.19	0.000	1.982463	2.01759

```

-----+-----
var(e.inpatient_hospitaliz~s) | .9426941 .0023351 .9381285 .9472819
      var(e.mpr) | .8142406 .0037738 .8068776 .8216708
      var(e.er_visits) | .9588389 .0020129 .9549018 .9627922
      var(e.pcp_officevisits) | .9953069 .0007055 .9939251 .9966907
var(e.specialist_office_vi~s) | .9966731 .0005948 .9955079 .9978397
var(e.other_outpatientserv~s) | .9921573 .0009092 .9903769 .9939408
      var(e.pharmacy_fills) | .9796493 .0014461 .9768192 .9824877
      var(age) | 1 . . .
      var(qci_score) | 1 . . .
      var(engagement_rate) | 1 . . .
      var(rewards) | 1 . . .
-----+-----
      cov(age,qci_score) | .2750612 .0047823 57.52 0.000 .2656881 .2844343
      cov(age,engagement_rate) | -.0000374 .0051737 -0.01 0.994 -.0101777 .0101029
      cov(age,rewards) | -.0008967 .0051737 -0.17 0.862 -.011037 .0092436
      cov(qci_score, |
      engagement_rate) | 4.90e-06 .0051737 0.00 0.999 -.0101354 .0101452
      cov(qci_score,rewards) | .0001177 .0051737 0.02 0.982 -.0100226 .010258
      cov(engagement_rate,rewards) | .0003037 .0051737 0.06 0.953 -.0098366 .010444
-----+-----

```

Note: The LR test of model vs. saturated is not reported because the fitted model is not full rank.

```

.
. estat gof, stats(all)

```

```

-----+-----
Fit statistic      |      Value  Description
-----+-----
Likelihood ratio  |
  chi2_ms(.)      |          .   model vs. saturated
  p > chi2        |          .
  chi2_bs(49)     | 101088.450  baseline vs. saturated
  p > chi2        |          0.000
-----+-----
Population error  |
  RMSEA          |          .   Root mean squared error of approximation
  90% CI, lower bound |          0.000
  upper bound    |          .

```

```

pclose |          .      Probability RMSEA <= 0.05
-----+-----
Information criteria |
      AIC | 2.089e+06   Akaike's information criterion
      BIC | 2.090e+06   Bayesian information criterion
-----+-----
Baseline comparison |
      CFI |      1.000   Comparative fit index
      TLI |          .   Tucker-Lewis index
-----+-----
Size of residuals   |
      SRMR |      0.174   Standardized root mean squared residual
      CD  |      0.155   Coefficient of determination
-----+-----

.
. estat teffects, standardized

Direct effects
-----+-----
                |
                |          OIM
                |          Coef.  Std. Err.    z    P>|z|          Std. Coef.
-----+-----
Structural      |
  inpatient_hospitalizations |
    age | -.0002052   .0000915   -2.24  0.025          -.0117148
    qci_score | .0289918   .0012015   24.13  0.000           .1260713
    engagement_rate | -.0000184   7.27e-06   -2.54  0.011          -.0127361
    rewards | -.0035559   .0000872  -40.77  0.000          -.2047775
-----+-----
mpr             |
  inpatient_hospitalizations | -.0131648   .0068339   -1.93  0.054          -.0095253
    er_visits | -.0055173   .0087396   -0.63  0.528          -.0030873
    pcp_officevisits | .0019327   .0009726    1.99  0.047           .0134152
  specialist_office_visits | -.0000374   .0009967   -0.04  0.970          -.0003967
  other_outpatientservices | -.001412    .0007671   -1.84  0.066          -.0185354
    pharmacy_fills | .0186006   .0002412   77.11  0.000           .380903
    age | .0025754   .0001186   21.72  0.000           .1063776
    qci_score | -.0053944   .0015584   -3.46  0.001          -.0169726

```


engagement_rate	|	.0000159	9.34e-06	1.71	0.088	.0079735
rewards	|	.0032932	.0001162	28.35	0.000	.1372191
-----+-----						
er_visits	|					
age	|	-.0005016	.0000714	-7.03	0.000	-.0370254
qci_score	|	.0035294	.0009371	3.77	0.000	.0198455
engagement_rate	|	-.0000215	5.67e-06	-3.80	0.000	-.0192466
rewards	|	-.0026671	.000068	-39.20	0.000	-.1986002
-----+-----						
pcp_officevisits	|					
age	|	.0102051	.0009022	11.31	0.000	.0607266
qci_score	|	.0421582	.011844	3.56	0.000	.0191094
engagement_rate	|	2.49e-06	.0000717	0.03	0.972	.0001796
rewards	|	.0002309	.0008599	0.27	0.788	.0013861
-----+-----						
specialist_office_visits	|					
age	|	.0146336	.0013781	10.62	0.000	.0570474
qci_score	|	.0069804	.0180914	0.39	0.700	.0020729
engagement_rate	|	6.21e-06	.0001095	0.06	0.955	.0002929
rewards	|	.0004574	.0013134	0.35	0.728	.0017986
-----+-----						
other_outpatientservices	|					
age	|	.0238391	.0017035	13.99	0.000	.0750126
qci_score	|	.1281599	.0223629	5.73	0.000	.0307186
engagement_rate	|	8.08e-06	.0001353	0.06	0.952	.0003077
rewards	|	.0006867	.0016235	0.42	0.672	.0021797
-----+-----						
pharmacy_fills	|					
age	|	.055894	.0026406	21.17	0.000	.1127401
qci_score	|	.3997155	.034666	11.53	0.000	.0614141
engagement_rate	|	.0000322	.0002097	0.15	0.878	.0007853
rewards	|	.0038238	.0025167	1.52	0.129	.0077803

Indirect effects

	|	OIM			
	|	Coef.	Std. Err.	z	P>|z|
	|				Std. Coef.
-----+-----					

Structural	|					
inpatient_hospitalizations	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
mpr	|					
inpatient_hospitalizations	|	0	(no path)			0
er_visits	|	0	(no path)			0
pcp_officevisits	|	0	(no path)			0
specialist_office_visits	|	0	(no path)			0
other_outpatientservices	|	0	(no path)			0
pharmacy_fills	|	0	(no path)			0
age	|	.0010306	.0000516	19.98	0.000	.0425706
qci_score	|	.0069341	.0006815	10.17	0.000	.0218168
engagement_rate	|	9.53e-07	3.91e-06	0.24	0.808	.0004764
rewards	|	.0001321	.000056	2.36	0.018	.0055047
-----+-----						
er_visits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
pcp_officevisits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
specialist_office_visits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
other_outpatientservices	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0

engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0

pharmacy_fills	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0

Total effects						

	|		OIM			
	|	Coef.	Std. Err.	z	P>|z|	Std. Coef.

Structural	|					
inpatient_hospitalizations	|					
age	|	-.0002052	.0000915	-2.24	0.025	-.0117148
qci_score	|	.0289918	.0012015	24.13	0.000	.1260713
engagement_rate	|	-.0000184	7.27e-06	-2.54	0.011	-.0127361
rewards	|	-.0035559	.0000872	-40.77	0.000	-.2047775

mpr	|					
inpatient_hospitalizations	|	-.0131648	.0068339	-1.93	0.054	-.0095253
er_visits	|	-.0055173	.0087396	-0.63	0.528	-.0030873
pcp_officevisits	|	.0019327	.0009726	1.99	0.047	.0134152
specialist_office_visits	|	-.0000374	.0009967	-0.04	0.970	-.0003967
other_outpatientservices	|	-.001412	.0007671	-1.84	0.066	-.0185354
pharmacy_fills	|	.0186006	.0002412	77.11	0.000	.380903
age	|	.0036061	.0001275	28.29	0.000	.1489482
qci_score	|	.0015397	.0016732	0.92	0.357	.0048443
engagement_rate	|	.0000169	.0000101	1.67	0.095	.0084499
rewards	|	.0034254	.0001215	28.20	0.000	.1427238

er_visits	|					
age	|	-.0005016	.0000714	-7.03	0.000	-.0370254
qci_score	|	.0035294	.0009371	3.77	0.000	.0198455
engagement_rate	|	-.0000215	5.67e-06	-3.80	0.000	-.0192466
rewards	|	-.0026671	.000068	-39.20	0.000	-.1986002

-----+-----						
pcp_officevisits	|					
age	|	.0102051	.0009022	11.31	0.000	.0607266
qci_score	|	.0421582	.011844	3.56	0.000	.0191094
engagement_rate	|	2.49e-06	.0000717	0.03	0.972	.0001796
rewards	|	.0002309	.0008599	0.27	0.788	.0013861
-----+-----						
specialist_office_visits	|					
age	|	.0146336	.0013781	10.62	0.000	.0570474
qci_score	|	.0069804	.0180914	0.39	0.700	.0020729
engagement_rate	|	6.21e-06	.0001095	0.06	0.955	.0002929
rewards	|	.0004574	.0013134	0.35	0.728	.0017986
-----+-----						
other_outpatientservices	|					
age	|	.0238391	.0017035	13.99	0.000	.0750126
qci_score	|	.1281599	.0223629	5.73	0.000	.0307186
engagement_rate	|	8.08e-06	.0001353	0.06	0.952	.0003077
rewards	|	.0006867	.0016235	0.42	0.672	.0021797
-----+-----						
pharmacy_fills	|					
age	|	.055894	.0026406	21.17	0.000	.1127401
qci_score	|	.3997155	.034666	11.53	0.000	.0614141
engagement_rate	|	.0000322	.0002097	0.15	0.878	.0007853
rewards	|	.0038238	.0025167	1.52	0.129	.0077803
-----+-----						

MODEL 10

```
. sem (inpatient_hospitalizations -> pdc, ) (er_visits -> pdc, ) (pcp_officevisits -> pdc, ) (specialist_office_visits
-> pdc, ) (other_outpatientservices -> pdc, ) (pharmacy_fills -> pdc, ) (age -> p
> dc, ) (age -> inpatient_hospitalizations, ) (age -> er_visits, ) (age -> pcp_officevisits, ) (age ->
specialist_office_visits, ) (age -> other_outpatientservices, ) (age -> pharmacy_fills, ) (qci_sc
> ore -> pdc, ) (qci_score -> inpatient_hospitalizations, ) (qci_score -> er_visits, ) (qci_score -> pcp_officevisits,
) (qci_score -> specialist_office_visits, ) (qci_score -> other_outpatientservice
> s, ) (qci_score -> pharmacy_fills, ) (engagement_rate -> pdc, ) (engagement_rate -> inpatient_hospitalizations, )
(engagement_rate -> er_visits, ) (engagement_rate -> pcp_officevisits, ) (engagement
```


specialist_office_visits	|	.0019877	.010726	0.19	0.853	-.019035	.0230103
other_outpatientservices	|	-.0272061	.0102159	-2.66	0.008	-.0472289	-.0071834
pharmacy_fills	|	.3253462	.0047322	68.75	0.000	.3160713	.334621
age	|	.1474767	.0049309	29.91	0.000	.1378124	.157141
qci_score	|	-.0317031	.0049794	-6.37	0.000	-.0414627	-.0219436
engagement_rate	|	.0095724	.0047429	2.02	0.044	.0002765	.0188682
rewards	|	.1513662	.0048764	31.04	0.000	.1418086	.1609238
_cons	|	.8622232	.0225095	38.30	0.000	.8181055	.906341
-----+-----							
er_visits	|						
age	|	-.0370254	.0052662	-7.03	0.000	-.0473469	-.0267039
qci_score	|	.0198455	.0052685	3.77	0.000	.0095195	.0301715
engagement_rate	|	-.0192466	.0050652	-3.80	0.000	-.0291743	-.009319
rewards	|	-.1986002	.0049654	-40.00	0.000	-.2083321	-.1888682
_cons	|	.6193624	.0212275	29.18	0.000	.5777573	.6609675
-----+-----							
pcp_officevisits	|						
age	|	.0607266	.0053595	11.33	0.000	.0502222	.071231
qci_score	|	.0191094	.0053677	3.56	0.000	.0085888	.02963
engagement_rate	|	.0001796	.0051616	0.03	0.972	-.0099369	.0102961
rewards	|	.0013861	.0051616	0.27	0.788	-.0087304	.0115026
_cons	|	.6418804	.0222031	28.91	0.000	.5983632	.6853977
-----+-----							
specialist_office_visits	|						
age	|	.0570474	.0053642	10.63	0.000	.0465337	.0675611
qci_score	|	.0020729	.0053723	0.39	0.700	-.0084567	.0126024
engagement_rate	|	.0002929	.0051651	0.06	0.955	-.0098305	.0104163
rewards	|	.0017986	.0051651	0.35	0.728	-.0083248	.011922
_cons	|	.487163	.0221029	22.04	0.000	.4438422	.5304838
-----+-----							
other_outpatientservices	|						
age	|	.0750126	.0053462	14.03	0.000	.0645342	.085491
qci_score	|	.0307186	.0053578	5.73	0.000	.0202174	.0412197
engagement_rate	|	.0003077	.0051534	0.06	0.952	-.0097928	.0104081
rewards	|	.0021797	.0051534	0.42	0.672	-.0079207	.0122801
_cons	|	.1747415	.0219364	7.97	0.000	.1317469	.2177361
-----+-----							
pharmacy_fills	|						
age	|	.1127401	.005295	21.29	0.000	.1023621	.1231181
qci_score	|	.0614141	.0053171	11.55	0.000	.0509929	.0718354

engagement_rate	|	.0007853	.0051208	0.15	0.878	-.0092513	.0108219
rewards	|	.0077803	.0051206	1.52	0.129	-.0022559	.0178166
_cons	|	.877058	.0224515	39.06	0.000	.8330539	.9210621
-----+							
mean(age)	|	3.338398	.0132637	251.69	0.000	3.312401	3.364394
mean(qci_score)	|	1.297835	.0070221	184.82	0.000	1.284072	1.311598
mean(engagement_rate)	|	1.300017	.0070275	184.99	0.000	1.286244	1.313791
mean(rewards)	|	2.000027	.0089612	223.19	0.000	1.982463	2.01759
-----+							
var(e.inpatient_hospitaliz~s)	|	.9426941	.0023351			.9381285	.9472819
var(e.pdc)	|	.8400235	.0036334			.8329322	.8471751
var(e.er_visits)	|	.9588389	.0020129			.9549018	.9627922
var(e.pcp_officevisits)	|	.9953069	.0007055			.9939251	.9966907
var(e.specialist_office_vi~s)	|	.9966731	.0005948			.9955079	.9978397
var(e.other_outpatientserv~s)	|	.9921573	.0009092			.9903769	.9939408
var(e.pharmacy_fills)	|	.9796493	.0014461			.9768192	.9824877
var(age)	|	1	.			.	.
var(qci_score)	|	1	.			.	.
var(engagement_rate)	|	1	.			.	.
var(rewards)	|	1	.			.	.
-----+							
cov(age,qci_score)	|	.2750612	.0047823	57.52	0.000	.2656881	.2844343
cov(age,engagement_rate)	|	-.0000374	.0051737	-0.01	0.994	-.0101777	.0101029
cov(age,rewards)	|	-.0008967	.0051737	-0.17	0.862	-.011037	.0092436
cov(qci_score,engagement_rate)	|	4.90e-06	.0051737	0.00	0.999	-.0101354	.0101452
cov(qci_score,rewards)	|	.0001177	.0051737	0.02	0.982	-.0100226	.010258
cov(engagement_rate,rewards)	|	.0003037	.0051737	0.06	0.953	-.0098366	.010444

Note: The LR test of model vs. saturated is not reported because the fitted model is not full rank.

```
.
. estat gof, stats(all)
```

Fit statistic	|	Value	Description
Likelihood ratio	|		
chi2_ms(.)	|	.	model vs. saturated

p > chi2	|	.	
chi2_bs(49)	|	99838.892	baseline vs. saturated
p > chi2	|	0.000	

Population error	|		
RMSEA	|	.	Root mean squared error of approximation
90% CI, lower bound	|	0.000	
upper bound	|	.	
pclose	|	.	Probability RMSEA <= 0.05

Information criteria	|		
AIC	|	2.073e+06	Akaike's information criterion
BIC	|	2.074e+06	Bayesian information criterion

Baseline comparison	|		
CFI	|	1.000	Comparative fit index
TLI	|	.	Tucker-Lewis index

Size of residuals	|		
SRMR	|	0.173	Standardized root mean squared residual
CD	|	0.167	Coefficient of determination

.
. estat teffects, standardized

Direct effects

		OIM				
		Coef.	Std. Err.	z	P>|z|	
					Std. Coef.	

Structural	|					
inpatient_hospitalizations	|					
age	|	-.0002052	.0000915	-2.24	0.025	-.0117148
qci_score	|	.0289918	.0012015	24.13	0.000	.1260713
engagement_rate	|	-.0000184	7.27e-06	-2.54	0.011	-.0127361
rewards	|	-.0035559	.0000872	-40.77	0.000	-.2047775

pdc	|					

inpatient_hospitalizations	|	-.0036032	.00554	-0.65	0.515	-.0032664
er_visits	|	.0086757	.0070849	1.22	0.221	.0060824
pcp_officevisits	|	-.0003892	.0007885	-0.49	0.622	-.0033853
specialist_office_visits	|	.0001497	.000808	0.19	0.853	.0019877
other_outpatientservices	|	-.0016542	.0006219	-2.66	0.008	-.0272061
pharmacy_fills	|	.0126804	.0001956	64.84	0.000	.3253462
age	|	.0028497	.0000961	29.65	0.000	.1474767
qci_score	|	-.0080422	.0012634	-6.37	0.000	-.0317031
engagement_rate	|	.0000153	7.57e-06	2.02	0.044	.0095724
rewards	|	.0028994	.0000942	30.79	0.000	.1513662

er_visits	|					
age	|	-.0005016	.0000714	-7.03	0.000	-.0370254
qci_score	|	.0035294	.0009371	3.77	0.000	.0198455
engagement_rate	|	-.0000215	5.67e-06	-3.80	0.000	-.0192466
rewards	|	-.0026671	.000068	-39.20	0.000	-.1986002

pcp_officevisits	|					
age	|	.0102051	.0009022	11.31	0.000	.0607266
qci_score	|	.0421582	.011844	3.56	0.000	.0191094
engagement_rate	|	2.49e-06	.0000717	0.03	0.972	.0001796
rewards	|	.0002309	.0008599	0.27	0.788	.0013861

specialist_office_visits	|					
age	|	.0146336	.0013781	10.62	0.000	.0570474
qci_score	|	.0069804	.0180914	0.39	0.700	.0020729
engagement_rate	|	6.21e-06	.0001095	0.06	0.955	.0002929
rewards	|	.0004574	.0013134	0.35	0.728	.0017986

other_outpatientservices	|					
age	|	.0238391	.0017035	13.99	0.000	.0750126
qci_score	|	.1281599	.0223629	5.73	0.000	.0307186
engagement_rate	|	8.08e-06	.0001353	0.06	0.952	.0003077
rewards	|	.0006867	.0016235	0.42	0.672	.0021797

pharmacy_fills	|					
age	|	.055894	.0026406	21.17	0.000	.1127401
qci_score	|	.3997155	.034666	11.53	0.000	.0614141
engagement_rate	|	.0000322	.0002097	0.15	0.878	.0007853
rewards	|	.0038238	.0025167	1.52	0.129	.0077803

 Indirect effects

		OIM				
		Coef.	Std. Err.	z	P>|z|	Std. Coef.

Structural						
inpatient_hospitalizations						
	age	0	(no path)			0
	qci_score	0	(no path)			0
	engagement_rate	0	(no path)			0
	rewards	0	(no path)			0

pdv						
inpatient_hospitalizations		0	(no path)			0
	er_visits	0	(no path)			0
	pcp_officevisits	0	(no path)			0
	specialist_office_visits	0	(no path)			0
	other_outpatientservices	0	(no path)			0
	pharmacy_fills	0	(no path)			0
	age	.0006639	.0000359	18.51	0.000	.0343596
	qci_score	.0047674	.0004749	10.04	0.000	.0187935
	engagement_rate	2.74e-07	2.67e-06	0.10	0.918	.0001716
	rewards	.000037	.0000405	0.91	0.361	.0019318

er_visits						
	age	0	(no path)			0
	qci_score	0	(no path)			0
	engagement_rate	0	(no path)			0
	rewards	0	(no path)			0

pcp_officevisits						
	age	0	(no path)			0
	qci_score	0	(no path)			0
	engagement_rate	0	(no path)			0
	rewards	0	(no path)			0

specialist_office_visits						

age	|	0	(no path)	0
qci_score	|	0	(no path)	0
engagement_rate	|	0	(no path)	0
rewards	|	0	(no path)	0
-----+-----				
other_outpatientservices	|			
age	|	0	(no path)	0
qci_score	|	0	(no path)	0
engagement_rate	|	0	(no path)	0
rewards	|	0	(no path)	0
-----+-----				
pharmacy_fills	|			
age	|	0	(no path)	0
qci_score	|	0	(no path)	0
engagement_rate	|	0	(no path)	0
rewards	|	0	(no path)	0

Total effects

	|	Coef.	OIM Std. Err.	z	P>|z|	Std. Coef.
-----+-----						
Structural	|					
inpatient_hospitalizations	|					
age	|	-.0002052	.0000915	-2.24	0.025	-.0117148
qci_score	|	.0289918	.0012015	24.13	0.000	.1260713
engagement_rate	|	-.0000184	7.27e-06	-2.54	0.011	-.0127361
rewards	|	-.0035559	.0000872	-40.77	0.000	-.2047775
-----+-----						
pdc	|					
inpatient_hospitalizations	|	-.0036032	.00554	-0.65	0.515	-.0032664
er_visits	|	.0086757	.0070849	1.22	0.221	.0060824
pcp_officevisits	|	-.0003892	.0007885	-0.49	0.622	-.0033853
specialist_office_visits	|	.0001497	.000808	0.19	0.853	.0019877
other_outpatientservices	|	-.0016542	.0006219	-2.66	0.008	-.0272061
pharmacy_fills	|	.0126804	.0001956	64.84	0.000	.3253462
age	|	.0035136	.0001011	34.77	0.000	.1818364
qci_score	|	-.0032748	.0013267	-2.47	0.014	-.0129097

engagement_rate	|	.0000156	8.03e-06	1.94	0.053	.009744
rewards	|	.0029364	.0000963	30.49	0.000	.153298
-----+-----						
er_visits	|					
age	|	-.0005016	.0000714	-7.03	0.000	-.0370254
qci_score	|	.0035294	.0009371	3.77	0.000	.0198455
engagement_rate	|	-.0000215	5.67e-06	-3.80	0.000	-.0192466
rewards	|	-.0026671	.000068	-39.20	0.000	-.1986002
-----+-----						
pcp_officevisits	|					
age	|	.0102051	.0009022	11.31	0.000	.0607266
qci_score	|	.0421582	.011844	3.56	0.000	.0191094
engagement_rate	|	2.49e-06	.0000717	0.03	0.972	.0001796
rewards	|	.0002309	.0008599	0.27	0.788	.0013861
-----+-----						
specialist_office_visits	|					
age	|	.0146336	.0013781	10.62	0.000	.0570474
qci_score	|	.0069804	.0180914	0.39	0.700	.0020729
engagement_rate	|	6.21e-06	.0001095	0.06	0.955	.0002929
rewards	|	.0004574	.0013134	0.35	0.728	.0017986
-----+-----						
other_outpatientservices	|					
age	|	.0238391	.0017035	13.99	0.000	.0750126
qci_score	|	.1281599	.0223629	5.73	0.000	.0307186
engagement_rate	|	8.08e-06	.0001353	0.06	0.952	.0003077
rewards	|	.0006867	.0016235	0.42	0.672	.0021797
-----+-----						
pharmacy_fills	|					
age	|	.055894	.0026406	21.17	0.000	.1127401
qci_score	|	.3997155	.034666	11.53	0.000	.0614141
engagement_rate	|	.0000322	.0002097	0.15	0.878	.0007853
rewards	|	.0038238	.0025167	1.52	0.129	.0077803
-----+-----						

.
 . clear all

#SCENARIO 2: Sensitivity analysis 20% higher covariance (S2)

```
.
. ssd init age inpatient_hospitalizations er_visits pcp_officevisits specialist_office_visits other_outpatientservices
pharmacy_fills qci_score mpr pdc rewards engagement_rate
```

Summary statistics data initialized. Next use, in any order,

```
ssd set observations (required)
    It is best to do this first.
```

```
ssd set means (optional)
    Default setting is 0.
```

```
ssd set variances or ssd set sd (optional)
    Use this only if you have set or will set correlations and, even then, this is optional but highly recommended.
    Default setting is 1.
```

```
ssd set covariances or ssd set correlations (required)
```

```
.
. ssd set observations 37359
(value set)
```

```
Status:
           observations:  set
                means:  unset
           variances or sd:  unset
covariances or correlations:  unset (required to be set)
```

```
.
. ssd set means 49.64 0.04 0.02 2.18 2.61 2.22 9.95 1.47 0.58 0.59 30 234
(values set)
```

```
Status:
           observations:  set
```

```

                means:      set
            variances or sd:  unset
    covariances or correlations:  unset (required to be set)

.
. ssd set covariances 221.105233\0.089650 0.067846\ -0.094017 0.011868 0.040578\2.451662 0.037385 0.033620
6.244202\3.267802 0.033255 0.022245 6.805591 14.548804\ 5.864529 0.113002 0.075032 7.918511 15
> .837080 22.331055\ 14.209445 0.200045 0.084031 4.385411 7.174931 10.065882 54.346633\ 4.632682 0.036237 0.002199
0.1013640 .076749 0.274862 0.771759 1.282943\ 0.803770 0.000065 -0.001100 0.087459 0.
> 131478 0.182628 1.037027 0.018688 0.129239\ 0.761121 -0.000166 -0.000795 0.047573 0.073374 0.105173 0.708629 0.012082
0.062483 0.082140\ -0.2 -0.8 -0.6 0.05 0.1 0.15 0.85 0.002 0.84 0.72 225\ -0.1 -.6
> -0.7 0.08 0.2 0.26 1.04 0.001 0.6 0.552 0.82 32400
(values set)

Status:
                observations:  set
                    means:      set
            variances or sd:  set
    covariances or correlations:  set

```

. MODEL 11

```

. sem (inpatient_hospitalizations -> mpr, ) (er_visits -> mpr, ) (pcp_officevisits -> mpr, ) (specialist_office_visits
-> mpr, ) (other_outpatientservices -> mpr, ) (pharmacy_fills -> mpr, ) (age -> m
> pr, ) (age -> inpatient_hospitalizations, ) (age -> er_visits, ) (age -> pcp_officevisits, ) (age ->
specialist_office_visits, ) (age -> other_outpatientservices, ) (age -> pharmacy_fills, ) (qci_sc
> ore -> mpr, ) (qci_score -> inpatient_hospitalizations, ) (qci_score -> er_visits, ) (qci_score -> pcp_officevisits,
) (qci_score -> specialist_office_visits, ) (qci_score -> other_outpatientservice
> s, ) (qci_score -> pharmacy_fills, ) (engagement_rate -> mpr, ) (engagement_rate -> inpatient_hospitalizations, )
(engagement_rate -> er_visits, ) (engagement_rate -> pcp_officevisits, ) (engagement
> _rate -> specialist_office_visits, ) (engagement_rate -> other_outpatientservices, ) (engagement_rate ->
pharmacy_fills, ) (rewards -> mpr, ) (rewards -> inpatient_hospitalizations, ) (rewards -> er
> _visits, ) (rewards -> pcp_officevisits, ) (rewards -> specialist_office_visits, ) (rewards ->
other_outpatientservices, ) (rewards -> pharmacy_fills, ), standardized cov( age*qci_score age*engageme
> nt_rate qci_score*engagement_rate engagement_rate*rewards rewards*age rewards*qci_score) nocapslatent

```

Endogenous variables

Observed: inpatient_hospitalizations mpr er_visits pcp_officevisits specialist_office_visits other_outpatientservices
pharmacy_fills

Exogenous variables

Observed: age qci_score engagement_rate rewards

Fitting target model:

Iteration 0: log likelihood = -1044408.6

Iteration 1: log likelihood = -1044408.6

Structural equation model Number of obs = 37,359

Estimation method = ml

Log likelihood = -1044408.6

	Standardized	Coef.	OIM Std. Err.	z	P>|z|	[95% Conf. Interval]	

Structural							
inpatient_hospitalizations							
age	-.0117148	.0052245		-2.24	0.025	-.0219546	-.0014749
qci_score	.1260713	.005188		24.30	0.000	.115903	.1362397
engagement_rate	-.0127361	.0050229		-2.54	0.011	-.0225808	-.0028914
rewards	-.2047775	.0049186		-41.63	0.000	-.2144177	-.1951372
_cons	.4551753	.0212149		21.46	0.000	.4135949	.4967557

mpr							
inpatient_hospitalizations	-.0070344	.0049327		-1.43	0.154	-.0167024	.0026336
er_visits	-.0007634	.0048794		-0.16	0.876	-.0103268	.0088001
pcp_officevisits	.0131691	.0067364		1.95	0.051	-.000034	.0263722
specialist_office_visits	.0006519	.0105371		0.06	0.951	-.0200004	.0213043
other_outpatientservices	-.0196226	.0100396		-1.95	0.051	-.0392997	.0000546
pharmacy_fills	.3805434	.0045459		83.71	0.000	.3716336	.3894532
age	.1065962	.0048649		21.91	0.000	.0970612	.1161311
qci_score	-.0172794	.0048924		-3.53	0.000	-.0268684	-.0076904
engagement_rate	.0088187	.0046592		1.89	0.058	-.0003131	.0179506
rewards	.1511708	.004794		31.53	0.000	.1417747	.1605668
_cons	.448852	.021424		20.95	0.000	.4068617	.4908422

-----+-----							
er_visits	|						
age	|	-.0370254	.0052662	-7.03	0.000	-.0473469	-.0267039
qci_score	|	.0198455	.0052685	3.77	0.000	.0095195	.0301715
engagement_rate	|	-.0192466	.0050652	-3.80	0.000	-.0291743	-.009319
rewards	|	-.1986002	.0049654	-40.00	0.000	-.2083321	-.1888682
_cons	|	.6193624	.0212275	29.18	0.000	.5777573	.6609675
-----+-----							
pcp_officevisits	|						
age	|	.0607266	.0053595	11.33	0.000	.0502222	.071231
qci_score	|	.0191094	.0053677	3.56	0.000	.0085888	.02963
engagement_rate	|	.0001796	.0051616	0.03	0.972	-.0099369	.0102961
rewards	|	.0013861	.0051616	0.27	0.788	-.0087304	.0115026
_cons	|	.6418804	.0222031	28.91	0.000	.5983632	.6853977
-----+-----							
specialist_office_visits	|						
age	|	.0570474	.0053642	10.63	0.000	.0465337	.0675611
qci_score	|	.0020729	.0053723	0.39	0.700	-.0084567	.0126024
engagement_rate	|	.0002929	.0051651	0.06	0.955	-.0098305	.0104163
rewards	|	.0017986	.0051651	0.35	0.728	-.0083248	.011922
_cons	|	.487163	.0221029	22.04	0.000	.4438422	.5304838
-----+-----							
other_outpatientservices	|						
age	|	.0750126	.0053462	14.03	0.000	.0645342	.085491
qci_score	|	.0307186	.0053578	5.73	0.000	.0202174	.0412197
engagement_rate	|	.0003077	.0051534	0.06	0.952	-.0097928	.0104081
rewards	|	.0021797	.0051534	0.42	0.672	-.0079207	.0122801
_cons	|	.1747415	.0219364	7.97	0.000	.1317469	.2177361
-----+-----							
pharmacy_fills	|						
age	|	.1127401	.005295	21.29	0.000	.1023621	.1231181
qci_score	|	.0614141	.0053171	11.55	0.000	.0509929	.0718354
engagement_rate	|	.0007853	.0051208	0.15	0.878	-.0092513	.0108219
rewards	|	.0077803	.0051206	1.52	0.129	-.0022559	.0178166
_cons	|	.877058	.0224515	39.06	0.000	.8330539	.9210621
-----+-----							
mean (age)	|	3.338398	.0132637	251.69	0.000	3.312401	3.364394
mean (qci_score)	|	1.297835	.0070221	184.82	0.000	1.284072	1.311598
mean (engagement_rate)	|	1.300017	.0070275	184.99	0.000	1.286244	1.313791
mean (rewards)	|	2.000027	.0089612	223.19	0.000	1.982463	2.01759
-----+-----							


```

-----+-----
var(e.inpatient_hospitaliz~s) | .9426941 .0023351 .9381285 .9472819
      var(e.mpr) | .8106312 .0037924 .8032323 .8180983
      var(e.er_visits) | .9588389 .0020129 .9549018 .9627922
      var(e.pcp_officevisits) | .9953069 .0007055 .9939251 .9966907
var(e.specialist_office_vi~s) | .9966731 .0005948 .9955079 .9978397
var(e.other_outpatientserv~s) | .9921573 .0009092 .9903769 .9939408
      var(e.pharmacy_fills) | .9796493 .0014461 .9768192 .9824877
      var(age) | 1 . . .
      var(qci_score) | 1 . . .
      var(engagement_rate) | 1 . . .
      var(rewards) | 1 . . .
-----+-----
      cov(age,qci_score) | .2750612 .0047823 57.52 0.000 .2656881 .2844343
      cov(age,engagement_rate) | -.0000374 .0051737 -0.01 0.994 -.0101777 .0101029
      cov(age,rewards) | -.0008967 .0051737 -0.17 0.862 -.011037 .0092436
      cov(qci_score, |
      engagement_rate) | 4.90e-06 .0051737 0.00 0.999 -.0101354 .0101452
      cov(qci_score,rewards) | .0001177 .0051737 0.02 0.982 -.0100226 .010258
      cov(engagement_rate,rewards) | .0003037 .0051737 0.06 0.953 -.0098366 .010444
-----+-----

```

Note: The LR test of model vs. saturated is not reported because the fitted model is not full rank.

```

.
. estat gof, stats(all)

```

```

-----+-----
Fit statistic      |      Value  Description
-----+-----
Likelihood ratio  |
  chi2_ms(.)      |      .      model vs. saturated
  p > chi2        |      .
  chi2_bs(49)     | 101260.960  baseline vs. saturated
  p > chi2        |      0.000
-----+-----
Population error  |
  RMSEA          |      .      Root mean squared error of approximation
  90% CI, lower bound |      0.000
  upper bound    |      .

```

```

pclose |          .      Probability RMSEA <= 0.05
-----+-----
Information criteria |
      AIC | 2.089e+06   Akaike's information criterion
      BIC | 2.089e+06   Bayesian information criterion
-----+-----
Baseline comparison |
      CFI |      1.000   Comparative fit index
      TLI |          .   Tucker-Lewis index
-----+-----
Size of residuals   |
      SRMR |      0.174   Standardized root mean squared residual
      CD  |      0.159   Coefficient of determination
-----+-----

.
. estat teffects, standardized

Direct effects
-----+-----
                |
                |          OIM
                |          Coef.  Std. Err.    z    P>|z|          Std. Coef.
-----+-----
Structural      |
  inpatient_hospitalizations |
    age | -.0002052   .0000915   -2.24  0.025          -.0117148
    qci_score | .0289918   .0012015   24.13  0.000           .1260713
    engagement_rate | -.0000184   7.27e-06   -2.54  0.011          -.0127361
    rewards | -.0035559   .0000872  -40.77  0.000          -.2047775
-----+-----
mpr            |
  inpatient_hospitalizations | -.0097214   .0068182   -1.43  0.154          -.0070344
    er_visits | -.0013641   .0087194   -0.16  0.876          -.0007634
    pcp_officevisits | .0018971   .0009704    1.96  0.051           .0131691
  specialist_office_visits | .0000615   .0009944    0.06  0.951           .0006519
  other_outpatientservices | -.0014947   .0007653   -1.95  0.051          -.0196226
    pharmacy_fills | .0185815   .0002407   77.21  0.000           .3805434
    age | .0025805   .0001183   21.81  0.000           .1065962
    qci_score | -.0054915   .0015548   -3.53  0.000          -.0172794

```

engagement_rate	|	.0000176	9.32e-06	1.89	0.058	.0088187
rewards	|	.0036278	.0001159	31.30	0.000	.1511708
-----+-----						
er_visits	|					
age	|	-.0005016	.0000714	-7.03	0.000	-.0370254
qci_score	|	.0035294	.0009371	3.77	0.000	.0198455
engagement_rate	|	-.0000215	5.67e-06	-3.80	0.000	-.0192466
rewards	|	-.0026671	.000068	-39.20	0.000	-.1986002
-----+-----						
pcp_officevisits	|					
age	|	.0102051	.0009022	11.31	0.000	.0607266
qci_score	|	.0421582	.011844	3.56	0.000	.0191094
engagement_rate	|	2.49e-06	.0000717	0.03	0.972	.0001796
rewards	|	.0002309	.0008599	0.27	0.788	.0013861
-----+-----						
specialist_office_visits	|					
age	|	.0146336	.0013781	10.62	0.000	.0570474
qci_score	|	.0069804	.0180914	0.39	0.700	.0020729
engagement_rate	|	6.21e-06	.0001095	0.06	0.955	.0002929
rewards	|	.0004574	.0013134	0.35	0.728	.0017986
-----+-----						
other_outpatientservices	|					
age	|	.0238391	.0017035	13.99	0.000	.0750126
qci_score	|	.1281599	.0223629	5.73	0.000	.0307186
engagement_rate	|	8.08e-06	.0001353	0.06	0.952	.0003077
rewards	|	.0006867	.0016235	0.42	0.672	.0021797
-----+-----						
pharmacy_fills	|					
age	|	.055894	.0026406	21.17	0.000	.1127401
qci_score	|	.3997155	.034666	11.53	0.000	.0614141
engagement_rate	|	.0000322	.0002097	0.15	0.878	.0007853
rewards	|	.0038238	.0025167	1.52	0.129	.0077803

Indirect effects

	|	OIM			
	|	Coef.	Std. Err.	z	P>|z|
	|				Std. Coef.
-----+-----					

Structural	|					
inpatient_hospitalizations	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
mpr	|					
inpatient_hospitalizations	|	0	(no path)			0
er_visits	|	0	(no path)			0
pcp_officevisits	|	0	(no path)			0
specialist_office_visits	|	0	(no path)			0
other_outpatientservices	|	0	(no path)			0
pharmacy_fills	|	0	(no path)			0
age	|	.0010259	.0000515	19.91	0.000	.0423781
qci_score	|	.0070295	.0006807	10.33	0.000	.022119
engagement_rate	|	7.99e-07	3.91e-06	0.20	0.838	.0003996
rewards	|	.0001087	.000056	1.94	0.052	.0045295
-----+-----						
er_visits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
pcp_officevisits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
specialist_office_visits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
other_outpatientservices	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0

engagement_rate	|	0	(no path)	0
rewards	|	0	(no path)	0

pharmacy_fills	|			
age	|	0	(no path)	0
qci_score	|	0	(no path)	0
engagement_rate	|	0	(no path)	0
rewards	|	0	(no path)	0

Total effects

	|	Coef.	OIM Std. Err.	z	P>|z|	Std. Coef.

Structural	|					
inpatient_hospitalizations	|					
age	|	-.0002052	.0000915	-2.24	0.025	-.0117148
qci_score	|	.0289918	.0012015	24.13	0.000	.1260713
engagement_rate	|	-.0000184	7.27e-06	-2.54	0.011	-.0127361
rewards	|	-.0035559	.0000872	-40.77	0.000	-.2047775

mpr	|					
inpatient_hospitalizations	|	-.0097214	.0068182	-1.43	0.154	-.0070344
er_visits	|	-.0013641	.0087194	-0.16	0.876	-.0007634
pcp_officevisits	|	.0018971	.0009704	1.96	0.051	.0131691
specialist_office_visits	|	.0000615	.0009944	0.06	0.951	.0006519
other_outpatientservices	|	-.0014947	.0007653	-1.95	0.051	-.0196226
pharmacy_fills	|	.0185815	.0002407	77.21	0.000	.3805434
age	|	.0036064	.0001272	28.36	0.000	.1489743
qci_score	|	.001538	.0016696	0.92	0.357	.0048396
engagement_rate	|	.0000184	.0000101	1.83	0.068	.0092184
rewards	|	.0037365	.0001212	30.83	0.000	.1557003

er_visits	|					
age	|	-.0005016	.0000714	-7.03	0.000	-.0370254
qci_score	|	.0035294	.0009371	3.77	0.000	.0198455
engagement_rate	|	-.0000215	5.67e-06	-3.80	0.000	-.0192466
rewards	|	-.0026671	.000068	-39.20	0.000	-.1986002

-----+-----						
pcp_officevisits	|					
age	|	.0102051	.0009022	11.31	0.000	.0607266
qci_score	|	.0421582	.011844	3.56	0.000	.0191094
engagement_rate	|	2.49e-06	.0000717	0.03	0.972	.0001796
rewards	|	.0002309	.0008599	0.27	0.788	.0013861
-----+-----						
specialist_office_visits	|					
age	|	.0146336	.0013781	10.62	0.000	.0570474
qci_score	|	.0069804	.0180914	0.39	0.700	.0020729
engagement_rate	|	6.21e-06	.0001095	0.06	0.955	.0002929
rewards	|	.0004574	.0013134	0.35	0.728	.0017986
-----+-----						
other_outpatientservices	|					
age	|	.0238391	.0017035	13.99	0.000	.0750126
qci_score	|	.1281599	.0223629	5.73	0.000	.0307186
engagement_rate	|	8.08e-06	.0001353	0.06	0.952	.0003077
rewards	|	.0006867	.0016235	0.42	0.672	.0021797
-----+-----						
pharmacy_fills	|					
age	|	.055894	.0026406	21.17	0.000	.1127401
qci_score	|	.3997155	.034666	11.53	0.000	.0614141
engagement_rate	|	.0000322	.0002097	0.15	0.878	.0007853
rewards	|	.0038238	.0025167	1.52	0.129	.0077803
-----+-----						

. MODEL 12

```
. sem (inpatient_hospitalizations -> pdc, ) (er_visits -> pdc, ) (pcp_officevisits -> pdc, ) (specialist_office_visits
-> pdc, ) (other_outpatientservices -> pdc, ) (pharmacy_fills -> pdc, ) (age -> p
> dc, ) (age -> inpatient_hospitalizations, ) (age -> er_visits, ) (age -> pcp_officevisits, ) (age ->
specialist_office_visits, ) (age -> other_outpatientservices, ) (age -> pharmacy_fills, ) (qci_sc
> ore -> pdc, ) (qci_score -> inpatient_hospitalizations, ) (qci_score -> er_visits, ) (qci_score -> pcp_officevisits,
) (qci_score -> specialist_office_visits, ) (qci_score -> other_outpatientservice
> s, ) (qci_score -> pharmacy_fills, ) (engagement_rate -> pdc, ) (engagement_rate -> inpatient_hospitalizations, )
(engagement_rate -> er_visits, ) (engagement_rate -> pcp_officevisits, ) (engagement
> _rate -> specialist_office_visits, ) (engagement_rate -> other_outpatientservices, ) (engagement_rate ->
pharmacy_fills, ) (rewards -> pdc, ) (rewards -> inpatient_hospitalizations, ) (rewards -> er
```


pharmacy_fills	|	.3249456	.0047221	68.81	0.000	.3156904	.3342009
age	|	.1477112	.0049182	30.03	0.000	.1380718	.1573507
qci_score	|	-.0320332	.0049666	-6.45	0.000	-.0417676	-.0222989
engagement_rate	|	.0105408	.0047306	2.23	0.026	.001269	.0198126
rewards	|	.1663465	.0048552	34.26	0.000	.1568305	.1758626
_cons	|	.8306757	.0224263	37.04	0.000	.786721	.8746305
-----+-----							
er_visits	|						
age	|	-.0370254	.0052662	-7.03	0.000	-.0473469	-.0267039
qci_score	|	.0198455	.0052685	3.77	0.000	.0095195	.0301715
engagement_rate	|	-.0192466	.0050652	-3.80	0.000	-.0291743	-.009319
rewards	|	-.1986002	.0049654	-40.00	0.000	-.2083321	-.1888682
_cons	|	.6193624	.0212275	29.18	0.000	.5777573	.6609675
-----+-----							
pcp_officevisits	|						
age	|	.0607266	.0053595	11.33	0.000	.0502222	.071231
qci_score	|	.0191094	.0053677	3.56	0.000	.0085888	.02963
engagement_rate	|	.0001796	.0051616	0.03	0.972	-.0099369	.0102961
rewards	|	.0013861	.0051616	0.27	0.788	-.0087304	.0115026
_cons	|	.6418804	.0222031	28.91	0.000	.5983632	.6853977
-----+-----							
specialist_office_visits	|						
age	|	.0570474	.0053642	10.63	0.000	.0465337	.0675611
qci_score	|	.0020729	.0053723	0.39	0.700	-.0084567	.0126024
engagement_rate	|	.0002929	.0051651	0.06	0.955	-.0098305	.0104163
rewards	|	.0017986	.0051651	0.35	0.728	-.0083248	.011922
_cons	|	.487163	.0221029	22.04	0.000	.4438422	.5304838
-----+-----							
other_outpatientservices	|						
age	|	.0750126	.0053462	14.03	0.000	.0645342	.085491
qci_score	|	.0307186	.0053578	5.73	0.000	.0202174	.0412197
engagement_rate	|	.0003077	.0051534	0.06	0.952	-.0097928	.0104081
rewards	|	.0021797	.0051534	0.42	0.672	-.0079207	.0122801
_cons	|	.1747415	.0219364	7.97	0.000	.1317469	.2177361
-----+-----							
pharmacy_fills	|						
age	|	.1127401	.005295	21.29	0.000	.1023621	.1231181
qci_score	|	.0614141	.0053171	11.55	0.000	.0509929	.0718354
engagement_rate	|	.0007853	.0051208	0.15	0.878	-.0092513	.0108219
rewards	|	.0077803	.0051206	1.52	0.129	-.0022559	.0178166

_cons	|	.877058	.0224515	39.06	0.000	.8330539	.9210621
-----+							
mean(age)	|	3.338398	.0132637	251.69	0.000	3.312401	3.364394
mean(qci_score)	|	1.297835	.0070221	184.82	0.000	1.284072	1.311598
mean(engagement_rate)	|	1.300017	.0070275	184.99	0.000	1.286244	1.313791
mean(rewards)	|	2.000027	.0089612	223.19	0.000	1.982463	2.01759
-----+							
var(e.inpatient_hospitaliz~s)	|	.9426941	.0023351			.9381285	.9472819
var(e.pdc)	|	.8356931	.0036633			.828544	.842904
var(e.er_visits)	|	.9588389	.0020129			.9549018	.9627922
var(e.pcp_officevisits)	|	.9953069	.0007055			.9939251	.9966907
var(e.specialist_office_vi~s)	|	.9966731	.0005948			.9955079	.9978397
var(e.other_outpatientserv~s)	|	.9921573	.0009092			.9903769	.9939408
var(e.pharmacy_fills)	|	.9796493	.0014461			.9768192	.9824877
var(age)	|	1	.			.	.
var(qci_score)	|	1	.			.	.
var(engagement_rate)	|	1	.			.	.
var(rewards)	|	1	.			.	.
-----+							
cov(age,qci_score)	|	.2750612	.0047823	57.52	0.000	.2656881	.2844343
cov(age,engagement_rate)	|	-.0000374	.0051737	-0.01	0.994	-.0101777	.0101029
cov(age,rewards)	|	-.0008967	.0051737	-0.17	0.862	-.011037	.0092436
cov(qci_score,engagement_rate)	|	4.90e-06	.0051737	0.00	0.999	-.0101354	.0101452
cov(qci_score,rewards)	|	.0001177	.0051737	0.02	0.982	-.0100226	.010258
cov(engagement_rate,rewards)	|	.0003037	.0051737	0.06	0.953	-.0098366	.010444

Note: The LR test of model vs. saturated is not reported because the fitted model is not full rank.

```
.
. estat gof, stats(all)
```

Fit statistic	|	Value	Description
-----+			
Likelihood ratio	|		
chi2_ms(.)	|	.	model vs. saturated
p > chi2	|	.	
chi2_bs(49)	|	100036.914	baseline vs. saturated

pcp_officevisits	|	-.0004198	.0007864	-0.53	0.593	-.0036511
specialist_office_visits	|	.0002346	.0008059	0.29	0.771	.0031143
other_outpatientservices	|	-.0017251	.0006202	-2.78	0.005	-.0283741
pharmacy_fills	|	.012664	.000195	64.93	0.000	.3249456
age	|	.002854	.0000959	29.77	0.000	.1477112
qci_score	|	-.0081254	.00126	-6.45	0.000	-.0320332
engagement_rate	|	.0000168	7.55e-06	2.23	0.026	.0105408
rewards	|	.0031862	.0000939	33.92	0.000	.1663465
-----+-----						
er_visits	|					
age	|	-.0005016	.0000714	-7.03	0.000	-.0370254
qci_score	|	.0035294	.0009371	3.77	0.000	.0198455
engagement_rate	|	-.0000215	5.67e-06	-3.80	0.000	-.0192466
rewards	|	-.0026671	.000068	-39.20	0.000	-.1986002
-----+-----						
pcp_officevisits	|					
age	|	.0102051	.0009022	11.31	0.000	.0607266
qci_score	|	.0421582	.011844	3.56	0.000	.0191094
engagement_rate	|	2.49e-06	.0000717	0.03	0.972	.0001796
rewards	|	.0002309	.0008599	0.27	0.788	.0013861
-----+-----						
specialist_office_visits	|					
age	|	.0146336	.0013781	10.62	0.000	.0570474
qci_score	|	.0069804	.0180914	0.39	0.700	.0020729
engagement_rate	|	6.21e-06	.0001095	0.06	0.955	.0002929
rewards	|	.0004574	.0013134	0.35	0.728	.0017986
-----+-----						
other_outpatientservices	|					
age	|	.0238391	.0017035	13.99	0.000	.0750126
qci_score	|	.1281599	.0223629	5.73	0.000	.0307186
engagement_rate	|	8.08e-06	.0001353	0.06	0.952	.0003077
rewards	|	.0006867	.0016235	0.42	0.672	.0021797
-----+-----						
pharmacy_fills	|					
age	|	.055894	.0026406	21.17	0.000	.1127401
qci_score	|	.3997155	.034666	11.53	0.000	.0614141
engagement_rate	|	.0000322	.0002097	0.15	0.878	.0007853
rewards	|	.0038238	.0025167	1.52	0.129	.0077803
-----+-----						

Indirect effects

		OIM				
		Coef.	Std. Err.	z	P>|z|	Std. Coef.

Structural						
inpatient_hospitalizations						
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0

pdc						
inpatient_hospitalizations	|	0	(no path)			0
er_visits	|	0	(no path)			0
pcp_officevisits	|	0	(no path)			0
specialist_office_visits	|	0	(no path)			0
other_outpatientservices	|	0	(no path)			0
pharmacy_fills	|	0	(no path)			0
age	|	.0006599	.0000358	18.41	0.000	.0341512
qci_score	|	.0048492	.0004744	10.22	0.000	.0191172
engagement_rate	|	1.42e-07	2.67e-06	0.05	0.958	.0000891
rewards	|	.0000169	.0000405	0.42	0.676	.0008838

er_visits						
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0

pcp_officevisits						
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0

specialist_office_visits						
age	|	0	(no path)			0
qci_score	|	0	(no path)			0

engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
other_outpatientservices	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
pharmacy_fills	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0

Total effects						

	|		OIM			
	|	Coef.	Std. Err.	z	P>|z|	Std. Coef.
-----+-----						
Structural	|					
inpatient_hospitalizations	|					
age	|	-.0002052	.0000915	-2.24	0.025	-.0117148
qci_score	|	.0289918	.0012015	24.13	0.000	.1260713
engagement_rate	|	-.0000184	7.27e-06	-2.54	0.011	-.0127361
rewards	|	-.0035559	.0000872	-40.77	0.000	-.2047775
-----+-----						
pdc	|					
inpatient_hospitalizations	|	-.0006509	.0055254	-0.12	0.906	-.0005901
er_visits	|	.0122372	.0070661	1.73	0.083	.0085799
pcp_officevisits	|	-.0004198	.0007864	-0.53	0.593	-.0036511
specialist_office_visits	|	.0002346	.0008059	0.29	0.771	.0031143
other_outpatientservices	|	-.0017251	.0006202	-2.78	0.005	-.0283741
pharmacy_fills	|	.012664	.000195	64.93	0.000	.3249456
age	|	.0035139	.0001008	34.86	0.000	.1818624
qci_score	|	-.0032762	.0013234	-2.48	0.013	-.0129161
engagement_rate	|	.000017	8.01e-06	2.12	0.034	.0106299
rewards	|	.0032031	.0000961	33.34	0.000	.1672303

```

-----+-----
er_visits      |
      age | -.0005016  .0000714  -7.03  0.000  -.0370254
      qci_score | .0035294  .0009371   3.77  0.000  .0198455
      engagement_rate | -.0000215  5.67e-06  -3.80  0.000  -.0192466
      rewards | -.0026671  .000068  -39.20  0.000  -.1986002
-----+-----
pcp_officevisits |
      age | .0102051  .0009022  11.31  0.000  .0607266
      qci_score | .0421582  .011844   3.56  0.000  .0191094
      engagement_rate | 2.49e-06  .0000717   0.03  0.972  .0001796
      rewards | .0002309  .0008599   0.27  0.788  .0013861
-----+-----
specialist_office_visits |
      age | .0146336  .0013781  10.62  0.000  .0570474
      qci_score | .0069804  .0180914   0.39  0.700  .0020729
      engagement_rate | 6.21e-06  .0001095   0.06  0.955  .0002929
      rewards | .0004574  .0013134   0.35  0.728  .0017986
-----+-----
other_outpatientservices |
      age | .0238391  .0017035  13.99  0.000  .0750126
      qci_score | .1281599  .0223629   5.73  0.000  .0307186
      engagement_rate | 8.08e-06  .0001353   0.06  0.952  .0003077
      rewards | .0006867  .0016235   0.42  0.672  .0021797
-----+-----
pharmacy_fills |
      age | .055894  .0026406  21.17  0.000  .1127401
      qci_score | .3997155  .034666  11.53  0.000  .0614141
      engagement_rate | .0000322  .0002097   0.15  0.878  .0007853
      rewards | .0038238  .0025167   1.52  0.129  .0077803
-----+-----

```

```

.
. clear all

```

#SCENARIO 3: Sensitivity analysis 10% lower covariance (S3)

```
.
. ssd init age inpatient_hospitalizations er_visits pcp_officevisits specialist_office_visits other_outpatientservices
pharmacy_fills qci_score mpr pdc rewards engagement_rate
```

Summary statistics data initialized. Next use, in any order,

```
ssd set observations (required)
    It is best to do this first.
```

```
ssd set means (optional)
    Default setting is 0.
```

```
ssd set variances or ssd set sd (optional)
    Use this only if you have set or will set correlations and, even then, this is optional but highly recommended.
    Default setting is 1.
```

```
ssd set covariances or ssd set correlations (required)
```

```
.
. ssd set observations 37359
    (value set)
```

```
Status:
           observations:  set
                means:  unset
    variances or sd:  unset
    covariances or correlations:  unset (required to be set)
```

```
.
. ssd set means 49.64 0.04 0.02 2.18 2.61 2.22 9.95 1.47 0.58 0.59 30 234
    (values set)
```

```
Status:
           observations:  set
                means:  set
    variances or sd:  unset
    covariances or correlations:  unset (required to be set)
```

```
. ssd set covariances 221.105233\0.089650 0.067846\ -0.094017 0.011868 0.040578\2.451662 0.037385 0.033620
6.244202\3.267802 0.033255 0.022245 6.805591 14.548804\ 5.864529 0.113002 0.075032 7.918511 15
> .837080 22.331055\ 14.209445 0.200045 0.084031 4.385411 7.174931 10.065882 54.346633\ 4.632682 0.036237 0.002199
0.1013640 .076749 0.274862 0.771759 1.282943\ 0.803770 0.000065 -0.001100 0.087459 0.
> 131478 0.182628 1.037027 0.018688 0.129239\ 0.761121 -0.000166 -0.000795 0.047573 0.073374 0.105173 0.708629 0.012082
0.062483 0.082140\ -0.2 -0.8 -0.6 0.05 0.1 0.15 0.85 0.002 0.63 0.54 225\ -0.1 -.6
> -0.7 0.08 0.2 0.26 1.04 0.001 0.45 0.414 0.82 32400
(values set)
```

Status:

```
      observations:  set
              means:  set
      variances or sd:  set
covariances or correlations:  set
```

. MODEL 13

```
. sem (inpatient_hospitalizations -> mpr, ) (er_visits -> mpr, ) (pcp_officevisits -> mpr, ) (specialist_office_visits
-> mpr, ) (other_outpatientservices -> mpr, ) (pharmacy_fills -> mpr, ) (age -> m
> pr, ) (age -> inpatient_hospitalizations, ) (age -> er_visits, ) (age -> pcp_officevisits, ) (age ->
specialist_office_visits, ) (age -> other_outpatientservices, ) (age -> pharmacy_fills, ) (qci_sc
> ore -> mpr, ) (qci_score -> inpatient_hospitalizations, ) (qci_score -> er_visits, ) (qci_score -> pcp_officevisits,
) (qci_score -> specialist_office_visits, ) (qci_score -> other_outpatientservice
> s, ) (qci_score -> pharmacy_fills, ) (engagement_rate -> mpr, ) (engagement_rate -> inpatient_hospitalizations, )
(engagement_rate -> er_visits, ) (engagement_rate -> pcp_officevisits, ) (engagement
> _rate -> specialist_office_visits, ) (engagement_rate -> other_outpatientservices, ) (engagement_rate ->
pharmacy_fills, ) (rewards -> mpr, ) (rewards -> inpatient_hospitalizations, ) (rewards -> er
> _visits, ) (rewards -> pcp_officevisits, ) (rewards -> specialist_office_visits, ) (rewards ->
other_outpatientservices, ) (rewards -> pharmacy_fills, ), standardized cov( age*qci_score age*engageme
> nt_rate qci_score*engagement_rate engagement_rate*rewards rewards*age rewards*qci_score) nocapslatent
```

Endogenous variables

```
Observed:  inpatient_hospitalizations mpr er_visits pcp_officevisits specialist_office_visits other_outpatientservices
pharmacy_fills
```

Exogenous variables

```
Observed:  age qci_score engagement_rate rewards
```


_cons	|	.6193624	.0212275	29.18	0.000	.5777573	.6609675
-----+-----							
pcp_officevisits	|						
age	|	.0607266	.0053595	11.33	0.000	.0502222	.071231
qci_score	|	.0191094	.0053677	3.56	0.000	.0085888	.02963
engagement_rate	|	.0001796	.0051616	0.03	0.972	-.0099369	.0102961
rewards	|	.0013861	.0051616	0.27	0.788	-.0087304	.0115026
_cons	|	.6418804	.0222031	28.91	0.000	.5983632	.6853977
-----+-----							
specialist_office_visits	|						
age	|	.0570474	.0053642	10.63	0.000	.0465337	.0675611
qci_score	|	.0020729	.0053723	0.39	0.700	-.0084567	.0126024
engagement_rate	|	.0002929	.0051651	0.06	0.955	-.0098305	.0104163
rewards	|	.0017986	.0051651	0.35	0.728	-.0083248	.011922
_cons	|	.487163	.0221029	22.04	0.000	.4438422	.5304838
-----+-----							
other_outpatientservices	|						
age	|	.0750126	.0053462	14.03	0.000	.0645342	.085491
qci_score	|	.0307186	.0053578	5.73	0.000	.0202174	.0412197
engagement_rate	|	.0003077	.0051534	0.06	0.952	-.0097928	.0104081
rewards	|	.0021797	.0051534	0.42	0.672	-.0079207	.0122801
_cons	|	.1747415	.0219364	7.97	0.000	.1317469	.2177361
-----+-----							
pharmacy_fills	|						
age	|	.1127401	.005295	21.29	0.000	.1023621	.1231181
qci_score	|	.0614141	.0053171	11.55	0.000	.0509929	.0718354
engagement_rate	|	.0007853	.0051208	0.15	0.878	-.0092513	.0108219
rewards	|	.0077803	.0051206	1.52	0.129	-.0022559	.0178166
_cons	|	.877058	.0224515	39.06	0.000	.8330539	.9210621
-----+-----							
mean(age)	|	3.338398	.0132637	251.69	0.000	3.312401	3.364394
mean(qci_score)	|	1.297835	.0070221	184.82	0.000	1.284072	1.311598
mean(engagement_rate)	|	1.300017	.0070275	184.99	0.000	1.286244	1.313791
mean(rewards)	|	2.000027	.0089612	223.19	0.000	1.982463	2.01759
-----+-----							
var(e.inpatient_hospitaliz~s)	|	.9426941	.0023351			.9381285	.9472819
var(e.mpr)	|	.820364	.0037408			.8130648	.8277288
var(e.er_visits)	|	.9588389	.0020129			.9549018	.9627922
var(e.pcp_officevisits)	|	.9953069	.0007055			.9939251	.9966907
var(e.specialist_office_vi~s)	|	.9966731	.0005948			.9955079	.9978397

```

var(e.other_outpatientserv~s) | .9921573 .0009092 .9903769 .9939408
var(e.pharmacy_fills) | .9796493 .0014461 .9768192 .9824877
var(age) | 1 . . .
var(qci_score) | 1 . . .
var(engagement_rate) | 1 . . .
var(rewards) | 1 . . .
-----+-----
cov(age,qci_score) | .2750612 .0047823 57.52 0.000 .2656881 .2844343
cov(age,engagement_rate) | -.0000374 .0051737 -0.01 0.994 -.0101777 .0101029
cov(age,rewards) | -.0008967 .0051737 -0.17 0.862 -.011037 .0092436
cov(qci_score, |
engagement_rate) | 4.90e-06 .0051737 0.00 0.999 -.0101354 .0101452
cov(qci_score,rewards) | .0001177 .0051737 0.02 0.982 -.0100226 .010258
cov(engagement_rate,rewards) | .0003037 .0051737 0.06 0.953 -.0098366 .010444
-----+-----

```

Note: The LR test of model vs. saturated is not reported because the fitted model is not full rank.

```

.
. estat gof, stats(all)

```

```

-----+-----
Fit statistic      |      Value  Description
-----+-----
Likelihood ratio  |
  chi2_ms(.)      |          .  model vs. saturated
  p > chi2        |          .
  chi2_bs(49)     | 100795.299  baseline vs. saturated
  p > chi2        |          0.000
-----+-----
Population error  |
  RMSEA          |          .  Root mean squared error of approximation
  90% CI, lower bound |      0.000
  upper bound    |          .
  pclose        |          .  Probability RMSEA <= 0.05
-----+-----
Information criteria |
  AIC           | 2.089e+06  Akaike's information criterion
  BIC           | 2.090e+06  Bayesian information criterion
-----+-----

```

Baseline comparison	|		
CFI	|	1.000	Comparative fit index
TLI	|	.	Tucker-Lewis index

Size of residuals	|		
SRMR	|	0.174	Standardized root mean squared residual
CD	|	0.148	Coefficient of determination

.
 . estat teffects, standardized

Direct effects

	|	Coef.	OIM Std. Err.	z	P>|z|	Std. Coef.

Structural	|					
inpatient_hospitalizations	|					
age	|	-.0002052	.0000915	-2.24	0.025	-.0117148
qci_score	|	.0289918	.0012015	24.13	0.000	.1260713
engagement_rate	|	-.0000184	7.27e-06	-2.54	0.011	-.0127361
rewards	|	-.0035559	.0000872	-40.77	0.000	-.2047775

mpr	|					
inpatient_hospitalizations	|	-.0200517	.0068608	-2.92	0.003	-.0145056
er_visits	|	-.0138238	.0087739	-1.58	0.115	-.0077338
pcp_officevisits	|	.0020039	.0009764	2.05	0.040	.0139072
specialist_office_visits	|	-.0002354	.0010006	-0.24	0.814	-.0024934
other_outpatientservices	|	-.0012467	.0007701	-1.62	0.105	-.0163616
pharmacy_fills	|	.018639	.0002422	76.96	0.000	.3816209
age	|	.0025653	.000119	21.55	0.000	.1059405
qci_score	|	-.0052003	.0015646	-3.32	0.001	-.016359
engagement_rate	|	.0000126	9.38e-06	1.34	0.180	.0062833
rewards	|	.0026242	.0001166	22.50	0.000	.1093228

er_visits	|					
age	|	-.0005016	.0000714	-7.03	0.000	-.0370254
qci_score	|	.0035294	.0009371	3.77	0.000	.0198455

engagement_rate	|	-.0000215	5.67e-06	-3.80	0.000	-.0192466
rewards	|	-.0026671	.000068	-39.20	0.000	-.1986002

pcp_officevisits	|					
age	|	.0102051	.0009022	11.31	0.000	.0607266
qci_score	|	.0421582	.011844	3.56	0.000	.0191094
engagement_rate	|	2.49e-06	.0000717	0.03	0.972	.0001796
rewards	|	.0002309	.0008599	0.27	0.788	.0013861

specialist_office_visits	|					
age	|	.0146336	.0013781	10.62	0.000	.0570474
qci_score	|	.0069804	.0180914	0.39	0.700	.0020729
engagement_rate	|	6.21e-06	.0001095	0.06	0.955	.0002929
rewards	|	.0004574	.0013134	0.35	0.728	.0017986

other_outpatientservices	|					
age	|	.0238391	.0017035	13.99	0.000	.0750126
qci_score	|	.1281599	.0223629	5.73	0.000	.0307186
engagement_rate	|	8.08e-06	.0001353	0.06	0.952	.0003077
rewards	|	.0006867	.0016235	0.42	0.672	.0021797

pharmacy_fills	|					
age	|	.055894	.0026406	21.17	0.000	.1127401
qci_score	|	.3997155	.034666	11.53	0.000	.0614141
engagement_rate	|	.0000322	.0002097	0.15	0.878	.0007853
rewards	|	.0038238	.0025167	1.52	0.129	.0077803

Indirect effects

		OIM			
		Coef.	Std. Err.	z	P>|z|
					Std. Coef.
Structural	|				
inpatient_hospitalizations	|				
age	|	0	(no path)		0
qci_score	|	0	(no path)		0
engagement_rate	|	0	(no path)		0
rewards	|	0	(no path)		0

-----+-----						
mpr	|					
inpatient_hospitalizations	|	0	(no path)			0
er_visits	|	0	(no path)			0
pcp_officevisits	|	0	(no path)			0
specialist_office_visits	|	0	(no path)			0
other_outpatientservices	|	0	(no path)			0
pharmacy_fills	|	0	(no path)			0
age	|	.0010401	.0000517	20.11	0.000	.0429552
qci_score	|	.0067432	.0006832	9.87	0.000	.0212127
engagement_rate	|	1.26e-06	3.92e-06	0.32	0.748	.00063
rewards	|	.0001789	.0000562	3.18	0.001	.0074546
-----+-----						
er_visits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
pcp_officevisits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
specialist_office_visits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
other_outpatientservices	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
pharmacy_fills	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0

engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0

Total effects						

	|		OIM			
	|	Coef.	Std. Err.	z	P>|z|	Std. Coef.

Structural	|					
inpatient_hospitalizations	|					
age	|	-.0002052	.0000915	-2.24	0.025	-.0117148
qci_score	|	.0289918	.0012015	24.13	0.000	.1260713
engagement_rate	|	-.0000184	7.27e-06	-2.54	0.011	-.0127361
rewards	|	-.0035559	.0000872	-40.77	0.000	-.2047775

mpr	|					
inpatient_hospitalizations	|	-.0200517	.0068608	-2.92	0.003	-.0145056
er_visits	|	-.0138238	.0087739	-1.58	0.115	-.0077338
pcp_officevisits	|	.0020039	.0009764	2.05	0.040	.0139072
specialist_office_visits	|	-.0002354	.0010006	-0.24	0.814	-.0024934
other_outpatientservices	|	-.0012467	.0007701	-1.62	0.105	-.0163616
pharmacy_fills	|	.018639	.0002422	76.96	0.000	.3816209
age	|	.0036055	.0001279	28.18	0.000	.1488957
qci_score	|	.0015429	.0016794	0.92	0.358	.0048536
engagement_rate	|	.0000138	.0000102	1.36	0.173	.0069133
rewards	|	.0028031	.0001219	22.99	0.000	.1167775

er_visits	|					
age	|	-.0005016	.0000714	-7.03	0.000	-.0370254
qci_score	|	.0035294	.0009371	3.77	0.000	.0198455
engagement_rate	|	-.0000215	5.67e-06	-3.80	0.000	-.0192466
rewards	|	-.0026671	.000068	-39.20	0.000	-.1986002

pcp_officevisits	|					
age	|	.0102051	.0009022	11.31	0.000	.0607266
qci_score	|	.0421582	.011844	3.56	0.000	.0191094
engagement_rate	|	2.49e-06	.0000717	0.03	0.972	.0001796
rewards	|	.0002309	.0008599	0.27	0.788	.0013861

-----+-----						
specialist_office_visits	|					
age	|	.0146336	.0013781	10.62	0.000	.0570474
qci_score	|	.0069804	.0180914	0.39	0.700	.0020729
engagement_rate	|	6.21e-06	.0001095	0.06	0.955	.0002929
rewards	|	.0004574	.0013134	0.35	0.728	.0017986
-----+-----						
other_outpatientservices	|					
age	|	.0238391	.0017035	13.99	0.000	.0750126
qci_score	|	.1281599	.0223629	5.73	0.000	.0307186
engagement_rate	|	8.08e-06	.0001353	0.06	0.952	.0003077
rewards	|	.0006867	.0016235	0.42	0.672	.0021797
-----+-----						
pharmacy_fills	|					
age	|	.055894	.0026406	21.17	0.000	.1127401
qci_score	|	.3997155	.034666	11.53	0.000	.0614141
engagement_rate	|	.0000322	.0002097	0.15	0.878	.0007853
rewards	|	.0038238	.0025167	1.52	0.129	.0077803
-----+-----						

MODEL 14

```
. sem (inpatient_hospitalizations -> pdc, ) (er_visits -> pdc, ) (pcp_officevisits -> pdc, ) (specialist_office_visits
-> pdc, ) (other_outpatientservices -> pdc, ) (pharmacy_fills -> pdc, ) (age -> p
> dc, ) (age -> inpatient_hospitalizations, ) (age -> er_visits, ) (age -> pcp_officevisits, ) (age ->
specialist_office_visits, ) (age -> other_outpatientservices, ) (age -> pharmacy_fills, ) (qci_sc
> ore -> pdc, ) (qci_score -> inpatient_hospitalizations, ) (qci_score -> er_visits, ) (qci_score -> pcp_officevisits,
) (qci_score -> specialist_office_visits, ) (qci_score -> other_outpatientservice
> s, ) (qci_score -> pharmacy_fills, ) (engagement_rate -> pdc, ) (engagement_rate -> inpatient_hospitalizations, )
(engagement_rate -> er_visits, ) (engagement_rate -> pcp_officevisits, ) (engagement
> _rate -> specialist_office_visits, ) (engagement_rate -> other_outpatientservices, ) (engagement_rate ->
pharmacy_fills, ) (rewards -> pdc, ) (rewards -> inpatient_hospitalizations, ) (rewards -> er
> _visits, ) (rewards -> pcp_officevisits, ) (rewards -> specialist_office_visits, ) (rewards ->
other_outpatientservices, ) (rewards -> pharmacy_fills, ), standardized cov( age*qci_score age*engageme
> nt_rate qci_score*engagement_rate engagement_rate*rewards rewards*age rewards*qci_score) nocapslatent
```

Endogenous variables

Observed: inpatient_hospitalizations pdc er_visits pcp_officevisits specialist_office_visits other_outpatientservices
pharmacy_fills

Exogenous variables

Observed: age qci_score engagement_rate rewards

Fitting target model:

Iteration 0: log likelihood = -1036822.2

Iteration 1: log likelihood = -1036822.2

Structural equation model Number of obs = 37,359

Estimation method = ml

Log likelihood = -1036822.2

	Standardized	Coef.	OIM Std. Err.	z	P>|z|	[95% Conf. Interval]	

Structural							
inpatient_hospitalizations							
age	-.0117148	.0052245		-2.24	0.025	-.0219546	-.0014749
qci_score	.1260713	.005188		24.30	0.000	.115903	.1362397
engagement_rate	-.0127361	.0050229		-2.54	0.011	-.0225808	-.0028914
rewards	-.2047775	.0049186		-41.63	0.000	-.2144177	-.1951372
_cons	.4551753	.0212149		21.46	0.000	.4135949	.4967557

pdc							
inpatient_hospitalizations	-.0086179	.0050434		-1.71	0.087	-.0185028	.001267
er_visits	.0010884	.0049889		0.22	0.827	-.0086898	.0108665
pcp_officevisits	-.0028536	.006887		-0.41	0.679	-.0163519	.0106446
specialist_office_visits	-.0002653	.0107737		-0.02	0.980	-.0213813	.0208508
other_outpatientservices	-.0248705	.0102628		-2.42	0.015	-.0449853	-.0047558
pharmacy_fills	.3261462	.004749		68.68	0.000	.3168383	.335454
age	.1470074	.0049525		29.68	0.000	.1373007	.1567141
qci_score	-.031043	.0050013		-6.21	0.000	-.0408453	-.0212407
engagement_rate	.0076358	.0047638		1.60	0.109	-.001701	.0169727
rewards	.1214111	.0049127		24.71	0.000	.1117824	.1310398
_cons	.9253032	.0226539		40.85	0.000	.8809023	.9697041

-----+-----							
er_visits	|						
age	|	-.0370254	.0052662	-7.03	0.000	-.0473469	-.0267039
qci_score	|	.0198455	.0052685	3.77	0.000	.0095195	.0301715
engagement_rate	|	-.0192466	.0050652	-3.80	0.000	-.0291743	-.009319
rewards	|	-.1986002	.0049654	-40.00	0.000	-.2083321	-.1888682
_cons	|	.6193624	.0212275	29.18	0.000	.5777573	.6609675
-----+-----							
pcp_officevisits	|						
age	|	.0607266	.0053595	11.33	0.000	.0502222	.071231
qci_score	|	.0191094	.0053677	3.56	0.000	.0085888	.02963
engagement_rate	|	.0001796	.0051616	0.03	0.972	-.0099369	.0102961
rewards	|	.0013861	.0051616	0.27	0.788	-.0087304	.0115026
_cons	|	.6418804	.0222031	28.91	0.000	.5983632	.6853977
-----+-----							
specialist_office_visits	|						
age	|	.0570474	.0053642	10.63	0.000	.0465337	.0675611
qci_score	|	.0020729	.0053723	0.39	0.700	-.0084567	.0126024
engagement_rate	|	.0002929	.0051651	0.06	0.955	-.0098305	.0104163
rewards	|	.0017986	.0051651	0.35	0.728	-.0083248	.011922
_cons	|	.487163	.0221029	22.04	0.000	.4438422	.5304838
-----+-----							
other_outpatientservices	|						
age	|	.0750126	.0053462	14.03	0.000	.0645342	.085491
qci_score	|	.0307186	.0053578	5.73	0.000	.0202174	.0412197
engagement_rate	|	.0003077	.0051534	0.06	0.952	-.0097928	.0104081
rewards	|	.0021797	.0051534	0.42	0.672	-.0079207	.0122801
_cons	|	.1747415	.0219364	7.97	0.000	.1317469	.2177361
-----+-----							
pharmacy_fills	|						
age	|	.1127401	.005295	21.29	0.000	.1023621	.1231181
qci_score	|	.0614141	.0053171	11.55	0.000	.0509929	.0718354
engagement_rate	|	.0007853	.0051208	0.15	0.878	-.0092513	.0108219
rewards	|	.0077803	.0051206	1.52	0.129	-.0022559	.0178166
_cons	|	.877058	.0224515	39.06	0.000	.8330539	.9210621
-----+-----							
mean (age)	|	3.338398	.0132637	251.69	0.000	3.312401	3.364394
mean (qci_score)	|	1.297835	.0070221	184.82	0.000	1.284072	1.311598
mean (engagement_rate)	|	1.300017	.0070275	184.99	0.000	1.286244	1.313791
mean (rewards)	|	2.000027	.0089612	223.19	0.000	1.982463	2.01759
-----+-----							

```

-----+-----
var(e.inpatient_hospitaliz~s) | .9426941 .0023351 .9381285 .9472819
      var(e.pdc) | .8474208 .0035792 .8404346 .8544651
      var(e.er_visits) | .9588389 .0020129 .9549018 .9627922
      var(e.pcp_officevisits) | .9953069 .0007055 .9939251 .9966907
var(e.specialist_office_vi~s) | .9966731 .0005948 .9955079 .9978397
var(e.other_outpatientserv~s) | .9921573 .0009092 .9903769 .9939408
      var(e.pharmacy_fills) | .9796493 .0014461 .9768192 .9824877
      var(age) | 1 . . .
      var(qci_score) | 1 . . .
      var(engagement_rate) | 1 . . .
      var(rewards) | 1 . . .
-----+-----
      cov(age,qci_score) | .2750612 .0047823 57.52 0.000 .2656881 .2844343
      cov(age,engagement_rate) | -.0000374 .0051737 -0.01 0.994 -.0101777 .0101029
      cov(age,rewards) | -.0008967 .0051737 -0.17 0.862 -.011037 .0092436
      cov(qci_score, |
      engagement_rate) | 4.90e-06 .0051737 0.00 0.999 -.0101354 .0101452
      cov(qci_score,rewards) | .0001177 .0051737 0.02 0.982 -.0100226 .010258
      cov(engagement_rate,rewards) | .0003037 .0051737 0.06 0.953 -.0098366 .010444
-----+-----

```

Note: The LR test of model vs. saturated is not reported because the fitted model is not full rank.

```

.
. estat gof, stats(all)

```

```

-----+-----
Fit statistic      |      Value  Description
-----+-----
Likelihood ratio  |
  chi2_ms(.)      |      .      model vs. saturated
  p > chi2        |      .
  chi2_bs(49)     | 99501.266   baseline vs. saturated
  p > chi2        |      0.000
-----+-----
Population error  |
  RMSEA          |      .      Root mean squared error of approximation
  90% CI, lower bound |      0.000
  upper bound    |      .

```

```

pclose |          .      Probability RMSEA <= 0.05
-----+-----
Information criteria |
      AIC | 2.074e+06   Akaike's information criterion
      BIC | 2.074e+06   Bayesian information criterion
-----+-----
Baseline comparison |
      CFI |      1.000   Comparative fit index
      TLI |          .   Tucker-Lewis index
-----+-----
Size of residuals   |
      SRMR |      0.173   Standardized root mean squared residual
      CD  |      0.159   Coefficient of determination
-----+-----

.
. estat teffects, standardized

Direct effects
-----+-----
                |
                |          OIM
                |          Coef.  Std. Err.    z    P>|z|          Std. Coef.
-----+-----
Structural      |
  inpatient_hospitalizations |
    age | -.0002052   .0000915   -2.24  0.025          -.0117148
    qci_score | .0289918   .0012015   24.13  0.000           .1260713
    engagement_rate | -.0000184   7.27e-06   -2.54  0.011          -.0127361
    rewards | -.0035559   .0000872  -40.77  0.000          -.2047775
-----+-----
pdc
inpatient_hospitalizations | -.0095076   .0055651   -1.71  0.088          -.0086179
  er_visits | .0015526   .007117    0.22  0.827           .0010884
  pcp_officevisits | -.0003282   .000792   -0.41  0.679          -.0028536
  specialist_office_visits | -.00002     .0008117   -0.02  0.980          -.0002653
  other_outpatientservices | -.0015124   .0006247   -2.42  0.015          -.0248705
  pharmacy_fills | .0127133   .0001964   64.72  0.000           .3261462
    age | .002841    .0000966   29.42  0.000           .1470074
    qci_score | -.0078758   .0012691   -6.21  0.000          -.031043

```

engagement_rate	|	.0000122	7.61e-06	1.60	0.109	.0076358
rewards	|	.0023259	.0000946	24.59	0.000	.1214111
-----+-----						
er_visits	|					
age	|	-.0005016	.0000714	-7.03	0.000	-.0370254
qci_score	|	.0035294	.0009371	3.77	0.000	.0198455
engagement_rate	|	-.0000215	5.67e-06	-3.80	0.000	-.0192466
rewards	|	-.0026671	.000068	-39.20	0.000	-.1986002
-----+-----						
pcp_officevisits	|					
age	|	.0102051	.0009022	11.31	0.000	.0607266
qci_score	|	.0421582	.011844	3.56	0.000	.0191094
engagement_rate	|	2.49e-06	.0000717	0.03	0.972	.0001796
rewards	|	.0002309	.0008599	0.27	0.788	.0013861
-----+-----						
specialist_office_visits	|					
age	|	.0146336	.0013781	10.62	0.000	.0570474
qci_score	|	.0069804	.0180914	0.39	0.700	.0020729
engagement_rate	|	6.21e-06	.0001095	0.06	0.955	.0002929
rewards	|	.0004574	.0013134	0.35	0.728	.0017986
-----+-----						
other_outpatientservices	|					
age	|	.0238391	.0017035	13.99	0.000	.0750126
qci_score	|	.1281599	.0223629	5.73	0.000	.0307186
engagement_rate	|	8.08e-06	.0001353	0.06	0.952	.0003077
rewards	|	.0006867	.0016235	0.42	0.672	.0021797
-----+-----						
pharmacy_fills	|					
age	|	.055894	.0026406	21.17	0.000	.1127401
qci_score	|	.3997155	.034666	11.53	0.000	.0614141
engagement_rate	|	.0000322	.0002097	0.15	0.878	.0007853
rewards	|	.0038238	.0025167	1.52	0.129	.0077803

Indirect effects

	|	OIM			
	|	Coef.	Std. Err.	z	P>|z|
	|				Std. Coef.
-----+-----					

Structural	|					
inpatient_hospitalizations	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
pdcc	|					
inpatient_hospitalizations	|	0	(no path)			0
er_visits	|	0	(no path)			0
pcp_officevisits	|	0	(no path)			0
specialist_office_visits	|	0	(no path)			0
other_outpatientservices	|	0	(no path)			0
pharmacy_fills	|	0	(no path)			0
age	|	.0006721	.000036	18.69	0.000	.0347764
qci_score	|	.0046037	.000476	9.67	0.000	.018146
engagement_rate	|	5.38e-07	2.68e-06	0.20	0.841	.0003367
rewards	|	.0000772	.0000407	1.90	0.058	.0040275
-----+-----						
er_visits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
pcp_officevisits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
specialist_office_visits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
other_outpatientservices	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0

engagement_rate	|	0	(no path)	0
rewards	|	0	(no path)	0

pharmacy_fills	|			
age	|	0	(no path)	0
qci_score	|	0	(no path)	0
engagement_rate	|	0	(no path)	0
rewards	|	0	(no path)	0

Total effects

	|	Coef.	OIM Std. Err.	z	P>|z|	Std. Coef.

Structural	|					
inpatient_hospitalizations	|					
age	|	-.0002052	.0000915	-2.24	0.025	-.0117148
qci_score	|	.0289918	.0012015	24.13	0.000	.1260713
engagement_rate	|	-.0000184	7.27e-06	-2.54	0.011	-.0127361
rewards	|	-.0035559	.0000872	-40.77	0.000	-.2047775

pcp	|					
inpatient_hospitalizations	|	-.0095076	.0055651	-1.71	0.088	-.0086179
er_visits	|	.0015526	.007117	0.22	0.827	.0010884
pcp_officevisits	|	-.0003282	.000792	-0.41	0.679	-.0028536
specialist_office_visits	|	-.00002	.0008117	-0.02	0.980	-.0002653
other_outpatientservices	|	-.0015124	.0006247	-2.42	0.015	-.0248705
pharmacy_fills	|	.0127133	.0001964	64.72	0.000	.3261462
age	|	.0035131	.0001015	34.62	0.000	.1817838
qci_score	|	-.003272	.0013323	-2.46	0.014	-.012897
engagement_rate	|	.0000127	8.06e-06	1.58	0.114	.0079725
rewards	|	.0024031	.0000967	24.84	0.000	.1254386

er_visits	|					
age	|	-.0005016	.0000714	-7.03	0.000	-.0370254
qci_score	|	.0035294	.0009371	3.77	0.000	.0198455
engagement_rate	|	-.0000215	5.67e-06	-3.80	0.000	-.0192466
rewards	|	-.0026671	.000068	-39.20	0.000	-.1986002

```

-----+-----
pcp_officevisits |
      age | .0102051 .0009022 11.31 0.000 .0607266
      qci_score | .0421582 .011844 3.56 0.000 .0191094
      engagement_rate | 2.49e-06 .0000717 0.03 0.972 .0001796
      rewards | .0002309 .0008599 0.27 0.788 .0013861
-----+-----
specialist_office_visits |
      age | .0146336 .0013781 10.62 0.000 .0570474
      qci_score | .0069804 .0180914 0.39 0.700 .0020729
      engagement_rate | 6.21e-06 .0001095 0.06 0.955 .0002929
      rewards | .0004574 .0013134 0.35 0.728 .0017986
-----+-----
other_outpatientservices |
      age | .0238391 .0017035 13.99 0.000 .0750126
      qci_score | .1281599 .0223629 5.73 0.000 .0307186
      engagement_rate | 8.08e-06 .0001353 0.06 0.952 .0003077
      rewards | .0006867 .0016235 0.42 0.672 .0021797
-----+-----
pharmacy_fills |
      age | .055894 .0026406 21.17 0.000 .1127401
      qci_score | .3997155 .034666 11.53 0.000 .0614141
      engagement_rate | .0000322 .0002097 0.15 0.878 .0007853
      rewards | .0038238 .0025167 1.52 0.129 .0077803
-----+-----

```

```
.
. clear all
```

#SCENARIO 4: Sensitivity analysis 20% lower covariance (S4)

```
.
. ssd init age inpatient_hospitalizations er_visits pcp_officevisits specialist_office_visits other_outpatientservices
pharmacy_fills qci_score mpr pdc rewards engagement_rate
```

Summary statistics data initialized. Next use, in any order,


```

ssd set observations (required)
    It is best to do this first.

ssd set means (optional)
    Default setting is 0.

ssd set variances or ssd set sd (optional)
    Use this only if you have set or will set correlations and, even then, this is optional but highly recommended.
    Default setting is 1.

ssd set covariances or ssd set correlations (required)

.
. ssd set observations 37359
  (value set)

  Status:
            observations:  set
            means:       unset
            variances or sd:  unset
            covariances or correlations:  unset (required to be set)

.
. ssd set means 49.64 0.04 0.02 2.18 2.61 2.22 9.95 1.47 0.58 0.59 30 234
  (values set)

  Status:
            observations:  set
            means:       set
            variances or sd:  unset
            covariances or correlations:  unset (required to be set)

.
. ssd set covariances 221.105233\0.089650 0.067846\ -0.094017 0.011868 0.040578\2.451662 0.037385 0.033620
6.244202\3.267802 0.033255 0.022245 6.805591 14.548804\ 5.864529 0.113002 0.075032 7.918511 15
> .837080 22.331055\ 14.209445 0.200045 0.084031 4.385411 7.174931 10.065882 54.346633\ 4.632682 0.036237 0.002199
0.1013640 .076749 0.274862 0.771759 1.282943\ 0.803770 0.000065 -0.001100 0.087459 0.
> 131478 0.182628 1.037027 0.018688 0.129239\ 0.761121 -0.000166 -0.000795 0.047573 0.073374 0.105173 0.708629 0.012082
0.062483 0.082140\ -0.2 -0.8 -0.6 0.05 0.1 0.15 0.85 0.002 0.56 0.48 225\ -0.1 -.6

```

```
> -0.7 0.08 0.2 0.26 1.04 0.001 0.4 0.368 0.82 32400
(values set)
```

```
Status:
      observations:  set
      means:       set
      variances or sd:  set
      covariances or correlations:  set
```

MODEL 15

```
. sem (inpatient_hospitalizations -> mpr, ) (er_visits -> mpr, ) (pcp_officevisits -> mpr, ) (specialist_office_visits
-> mpr, ) (other_outpatientservices -> mpr, ) (pharmacy_fills -> mpr, ) (age -> m
> pr, ) (age -> inpatient_hospitalizations, ) (age -> er_visits, ) (age -> pcp_officevisits, ) (age ->
specialist_office_visits, ) (age -> other_outpatientservices, ) (age -> pharmacy_fills, ) (qci_sc
> ore -> mpr, ) (qci_score -> inpatient_hospitalizations, ) (qci_score -> er_visits, ) (qci_score -> pcp_officevisits,
) (qci_score -> specialist_office_visits, ) (qci_score -> other_outpatientservice
> s, ) (qci_score -> pharmacy_fills, ) (engagement_rate -> mpr, ) (engagement_rate -> inpatient_hospitalizations, )
(engagement_rate -> er_visits, ) (engagement_rate -> pcp_officevisits, ) (engagement
> _rate -> specialist_office_visits, ) (engagement_rate -> other_outpatientservices, ) (engagement_rate ->
pharmacy_fills, ) (rewards -> mpr, ) (rewards -> inpatient_hospitalizations, ) (rewards -> er
> _visits, ) (rewards -> pcp_officevisits, ) (rewards -> specialist_office_visits, ) (rewards ->
other_outpatientservices, ) (rewards -> pharmacy_fills, ), standardized cov( age*qci_score age*engagemen
> t_rate qci_score*engagement_rate engagement_rate*rewards rewards*age rewards*qci_score) nocapslatent
```

Endogenous variables

```
Observed:  inpatient_hospitalizations mpr er_visits pcp_officevisits specialist_office_visits other_outpatientservices
pharmacy_fills
```

Exogenous variables

```
Observed:  age qci_score engagement_rate rewards
```

Fitting target model:

```
Iteration 0:  log likelihood = -1044701.9
```


qci_score	|	.0191094	.0053677	3.56	0.000	.0085888	.02963
engagement_rate	|	.0001796	.0051616	0.03	0.972	-.0099369	.0102961
rewards	|	.0013861	.0051616	0.27	0.788	-.0087304	.0115026
_cons	|	.6418804	.0222031	28.91	0.000	.5983632	.6853977
-----+-----							
specialist_office_visits	|						
age	|	.0570474	.0053642	10.63	0.000	.0465337	.0675611
qci_score	|	.0020729	.0053723	0.39	0.700	-.0084567	.0126024
engagement_rate	|	.0002929	.0051651	0.06	0.955	-.0098305	.0104163
rewards	|	.0017986	.0051651	0.35	0.728	-.0083248	.011922
_cons	|	.487163	.0221029	22.04	0.000	.4438422	.5304838
-----+-----							
other_outpatientservices	|						
age	|	.0750126	.0053462	14.03	0.000	.0645342	.085491
qci_score	|	.0307186	.0053578	5.73	0.000	.0202174	.0412197
engagement_rate	|	.0003077	.0051534	0.06	0.952	-.0097928	.0104081
rewards	|	.0021797	.0051534	0.42	0.672	-.0079207	.0122801
_cons	|	.1747415	.0219364	7.97	0.000	.1317469	.2177361
-----+-----							
pharmacy_fills	|						
age	|	.1127401	.005295	21.29	0.000	.1023621	.1231181
qci_score	|	.0614141	.0053171	11.55	0.000	.0509929	.0718354
engagement_rate	|	.0007853	.0051208	0.15	0.878	-.0092513	.0108219
rewards	|	.0077803	.0051206	1.52	0.129	-.0022559	.0178166
_cons	|	.877058	.0224515	39.06	0.000	.8330539	.9210621
-----+-----							
mean(age)	|	3.338398	.0132637	251.69	0.000	3.312401	3.364394
mean(qci_score)	|	1.297835	.0070221	184.82	0.000	1.284072	1.311598
mean(engagement_rate)	|	1.300017	.0070275	184.99	0.000	1.286244	1.313791
mean(rewards)	|	2.000027	.0089612	223.19	0.000	1.982463	2.01759
-----+-----							
var(e.inpatient_hospitaliz~s)	|	.9426941	.0023351			.9381285	.9472819
var(e.mpr)	|	.8228784	.0037268			.8156063	.8302153
var(e.er_visits)	|	.9588389	.0020129			.9549018	.9627922
var(e.pcp_officevisits)	|	.9953069	.0007055			.9939251	.9966907
var(e.specialist_office_vi~s)	|	.9966731	.0005948			.9955079	.9978397
var(e.other_outpatientserv~s)	|	.9921573	.0009092			.9903769	.9939408
var(e.pharmacy_fills)	|	.9796493	.0014461			.9768192	.9824877
var(age)	|	1	.			.	.
var(qci_score)	|	1	.			.	.

var(engagement_rate) |	1	.	.	.	.	.
var(rewards) |	1	.	.	.	.	.
-----+						
cov(age,qci_score) |	.2750612	.0047823	57.52	0.000	.2656881	.2844343
cov(age,engagement_rate) |	-.0000374	.0051737	-0.01	0.994	-.0101777	.0101029
cov(age,rewards) |	-.0008967	.0051737	-0.17	0.862	-.011037	.0092436
cov(qci_score, |						
engagement_rate) |	4.90e-06	.0051737	0.00	0.999	-.0101354	.0101452
cov(qci_score,rewards) |	.0001177	.0051737	0.02	0.982	-.0100226	.010258
cov(engagement_rate,rewards) |	.0003037	.0051737	0.06	0.953	-.0098366	.010444
-----+						

Note: The LR test of model vs. saturated is not reported because the fitted model is not full rank.

```
.
. estat gof, stats(all)
```

Fit statistic	Value	Description
-----+		
Likelihood ratio		
chi2_ms(.)	.	model vs. saturated
p > chi2	.	
chi2_bs(49)	100674.259	baseline vs. saturated
p > chi2	0.000	
-----+		
Population error		
RMSEA	.	Root mean squared error of approximation
90% CI, lower bound	0.000	
upper bound	.	
pclose	.	Probability RMSEA <= 0.05
-----+		
Information criteria		
AIC	2.090e+06	Akaike's information criterion
BIC	2.090e+06	Bayesian information criterion
-----+		
Baseline comparison		
CFI	1.000	Comparative fit index
TLI	.	Tucker-Lewis index
-----+		

Size of residuals |
 SRMR | 0.174 Standardized root mean squared residual
 CD | 0.146 Coefficient of determination

.
 . estat teffects, standardized

Direct effects

	Coef.	OIM Std. Err.	z	P>|z|	Std. Coef.
Structural					
inpatient_hospitalizations					
age	-.0002052	.0000915	-2.24	0.025	-.0117148
qci_score	.0289918	.0012015	24.13	0.000	.1260713
engagement_rate	-.0000184	7.27e-06	-2.54	0.011	-.0127361
rewards	-.0035559	.0000872	-40.77	0.000	-.2047775
mpr					
inpatient_hospitalizations	-.0234952	.0068719	-3.42	0.001	-.0169951
er_visits	-.017977	.0087881	-2.05	0.041	-.0100565
pcp_officevisits	.0020395	.000978	2.09	0.037	.0141532
specialist_office_visits	-.0003343	.0010023	-0.33	0.739	-.0035415
other_outpatientservices	-.001164	.0007714	-1.51	0.131	-.0152749
pharmacy_fills	.0186582	.0002426	76.92	0.000	.3819794
age	.0025602	.0001192	21.47	0.000	.1057218
qci_score	-.0051033	.0015671	-3.26	0.001	-.0160523
engagement_rate	.0000109	9.39e-06	1.16	0.247	.0054385
rewards	.0022897	.0001168	19.60	0.000	.0953783
er_visits					
age	-.0005016	.0000714	-7.03	0.000	-.0370254
qci_score	.0035294	.0009371	3.77	0.000	.0198455
engagement_rate	-.0000215	5.67e-06	-3.80	0.000	-.0192466
rewards	-.0026671	.000068	-39.20	0.000	-.1986002
pcp_officevisits					

age	|	.0102051	.0009022	11.31	0.000	.0607266
qci_score	|	.0421582	.011844	3.56	0.000	.0191094
engagement_rate	|	2.49e-06	.0000717	0.03	0.972	.0001796
rewards	|	.0002309	.0008599	0.27	0.788	.0013861
-----+-----						
specialist_office_visits	|					
age	|	.0146336	.0013781	10.62	0.000	.0570474
qci_score	|	.0069804	.0180914	0.39	0.700	.0020729
engagement_rate	|	6.21e-06	.0001095	0.06	0.955	.0002929
rewards	|	.0004574	.0013134	0.35	0.728	.0017986
-----+-----						
other_outpatientservices	|					
age	|	.0238391	.0017035	13.99	0.000	.0750126
qci_score	|	.1281599	.0223629	5.73	0.000	.0307186
engagement_rate	|	8.08e-06	.0001353	0.06	0.952	.0003077
rewards	|	.0006867	.0016235	0.42	0.672	.0021797
-----+-----						
pharmacy_fills	|					
age	|	.055894	.0026406	21.17	0.000	.1127401
qci_score	|	.3997155	.034666	11.53	0.000	.0614141
engagement_rate	|	.0000322	.0002097	0.15	0.878	.0007853
rewards	|	.0038238	.0025167	1.52	0.129	.0077803

Indirect effects

		OIM				
		Coef.	Std. Err.	z	P>|z|	Std. Coef.
-----+-----						
Structural	|					
inpatient_hospitalizations	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
mpr	|					
inpatient_hospitalizations	|	0	(no path)			0
er_visits	|	0	(no path)			0

pcp_officevisits	|	0	(no path)			0
specialist_office_visits	|	0	(no path)			0
other_outpatientservices	|	0	(no path)			0
pharmacy_fills	|	0	(no path)			0
age	|	.0010449	.0000518	20.17	0.000	.0431475
qci_score	|	.0066478	.0006842	9.72	0.000	.0209106
engagement_rate	|	1.41e-06	3.93e-06	0.36	0.719	.0007068
rewards	|	.0002024	.0000563	3.59	0.000	.0084293
-----+-----						
er_visits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
pcp_officevisits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
specialist_office_visits	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
other_outpatientservices	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
pharmacy_fills	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						

Total effects

		OIM			
	Coef.	Std. Err.	z	P>|z|	Std. Coef.

Structural					
inpatient_hospitalizations					
age	-.0002052	.0000915	-2.24	0.025	-.0117148
qci_score	.0289918	.0012015	24.13	0.000	.1260713
engagement_rate	-.0000184	7.27e-06	-2.54	0.011	-.0127361
rewards	-.0035559	.0000872	-40.77	0.000	-.2047775

mpr					
inpatient_hospitalizations					
er_visits	-.0234952	.0068719	-3.42	0.001	-.0169951
pcp_officevisits	-.017977	.0087881	-2.05	0.041	-.0100565
specialist_office_visits	.0020395	.000978	2.09	0.037	.0141532
other_outpatientservices	-.0003343	.0010023	-0.33	0.739	-.0035415
pharmacy_fills	-.001164	.0007714	-1.51	0.131	-.0152749
age	.0186582	.0002426	76.92	0.000	.3819794
qci_score	.0036051	.0001281	28.14	0.000	.1488693
engagement_rate	.0015445	.001682	0.92	0.358	.0048583
rewards	.0000123	.0000102	1.21	0.227	.0061452
rewards	.002492	.0001221	20.41	0.000	.1038076

er_visits					
age	-.0005016	.0000714	-7.03	0.000	-.0370254
qci_score	.0035294	.0009371	3.77	0.000	.0198455
engagement_rate	-.0000215	5.67e-06	-3.80	0.000	-.0192466
rewards	-.0026671	.000068	-39.20	0.000	-.1986002

pcp_officevisits					
age	.0102051	.0009022	11.31	0.000	.0607266
qci_score	.0421582	.011844	3.56	0.000	.0191094
engagement_rate	2.49e-06	.0000717	0.03	0.972	.0001796
rewards	.0002309	.0008599	0.27	0.788	.0013861

specialist_office_visits					
age	.0146336	.0013781	10.62	0.000	.0570474
qci_score	.0069804	.0180914	0.39	0.700	.0020729

engagement_rate	|	6.21e-06	.0001095	0.06	0.955	.0002929
rewards	|	.0004574	.0013134	0.35	0.728	.0017986
-----+-----						
other_outpatientservices	|					
age	|	.0238391	.0017035	13.99	0.000	.0750126
qci_score	|	.1281599	.0223629	5.73	0.000	.0307186
engagement_rate	|	8.08e-06	.0001353	0.06	0.952	.0003077
rewards	|	.0006867	.0016235	0.42	0.672	.0021797
-----+-----						
pharmacy_fills	|					
age	|	.055894	.0026406	21.17	0.000	.1127401
qci_score	|	.3997155	.034666	11.53	0.000	.0614141
engagement_rate	|	.0000322	.0002097	0.15	0.878	.0007853
rewards	|	.0038238	.0025167	1.52	0.129	.0077803

MODEL 16

```
. sem (inpatient_hospitalizations -> pdc, ) (er_visits -> pdc, ) (pcp_officevisits -> pdc, ) (specialist_office_visits
-> pdc, ) (other_outpatientservices -> pdc, ) (pharmacy_fills -> pdc, ) (age -> p
> dc, ) (age -> inpatient_hospitalizations, ) (age -> er_visits, ) (age -> pcp_officevisits, ) (age ->
specialist_office_visits, ) (age -> other_outpatientservices, ) (age -> pharmacy_fills, ) (qci_sc
> ore -> pdc, ) (qci_score -> inpatient_hospitalizations, ) (qci_score -> er_visits, ) (qci_score -> pcp_officevisits,
) (qci_score -> specialist_office_visits, ) (qci_score -> other_outpatientservice
> s, ) (qci_score -> pharmacy_fills, ) (engagement_rate -> pdc, ) (engagement_rate -> inpatient_hospitalizations, )
(engagement_rate -> er_visits, ) (engagement_rate -> pcp_officevisits, ) (engagement
> _rate -> specialist_office_visits, ) (engagement_rate -> other_outpatientservices, ) (engagement_rate ->
pharmacy_fills, ) (rewards -> pdc, ) (rewards -> inpatient_hospitalizations, ) (rewards -> er
> _visits, ) (rewards -> pcp_officevisits, ) (rewards -> specialist_office_visits, ) (rewards ->
other_outpatientservices, ) (rewards -> pharmacy_fills, ), standardized cov( age*qci_score age*engageme
> nt_rate qci_score*engagement_rate engagement_rate*rewards rewards*age rewards*qci_score) nocapslatent
```

Endogenous variables

Observed: inpatient_hospitalizations pdc er_visits pcp_officevisits specialist_office_visits other_outpatientservices
pharmacy_fills

Exogenous variables

engagement_rate	|	-.0192466	.0050652	-3.80	0.000	-.0291743	-.009319
rewards	|	-.1986002	.0049654	-40.00	0.000	-.2083321	-.1888682
_cons	|	.6193624	.0212275	29.18	0.000	.5777573	.6609675
-----+-----							
pcp_officevisits	|						
age	|	.0607266	.0053595	11.33	0.000	.0502222	.071231
qci_score	|	.0191094	.0053677	3.56	0.000	.0085888	.02963
engagement_rate	|	.0001796	.0051616	0.03	0.972	-.0099369	.0102961
rewards	|	.0013861	.0051616	0.27	0.788	-.0087304	.0115026
_cons	|	.6418804	.0222031	28.91	0.000	.5983632	.6853977
-----+-----							
specialist_office_visits	|						
age	|	.0570474	.0053642	10.63	0.000	.0465337	.0675611
qci_score	|	.0020729	.0053723	0.39	0.700	-.0084567	.0126024
engagement_rate	|	.0002929	.0051651	0.06	0.955	-.0098305	.0104163
rewards	|	.0017986	.0051651	0.35	0.728	-.0083248	.011922
_cons	|	.487163	.0221029	22.04	0.000	.4438422	.5304838
-----+-----							
other_outpatientservices	|						
age	|	.0750126	.0053462	14.03	0.000	.0645342	.085491
qci_score	|	.0307186	.0053578	5.73	0.000	.0202174	.0412197
engagement_rate	|	.0003077	.0051534	0.06	0.952	-.0097928	.0104081
rewards	|	.0021797	.0051534	0.42	0.672	-.0079207	.0122801
_cons	|	.1747415	.0219364	7.97	0.000	.1317469	.2177361
-----+-----							
pharmacy_fills	|						
age	|	.1127401	.005295	21.29	0.000	.1023621	.1231181
qci_score	|	.0614141	.0053171	11.55	0.000	.0509929	.0718354
engagement_rate	|	.0007853	.0051208	0.15	0.878	-.0092513	.0108219
rewards	|	.0077803	.0051206	1.52	0.129	-.0022559	.0178166
_cons	|	.877058	.0224515	39.06	0.000	.8330539	.9210621
-----+-----							
mean(age)	|	3.338398	.0132637	251.69	0.000	3.312401	3.364394
mean(qci_score)	|	1.297835	.0070221	184.82	0.000	1.284072	1.311598
mean(engagement_rate)	|	1.300017	.0070275	184.99	0.000	1.286244	1.313791
mean(rewards)	|	2.000027	.0089612	223.19	0.000	1.982463	2.01759
-----+-----							
var(e.inpatient_hospitaliz~s)	|	.9426941	.0023351			.9381285	.9472819
var(e.pdc)	|	.8504881	.0035554			.8435481	.8574852
var(e.er_visits)	|	.9588389	.0020129			.9549018	.9627922

```

var(e.pcp_officevisits) | .9953069 .0007055 .9939251 .9966907
var(e.specialist_office_visits) | .9966731 .0005948 .9955079 .9978397
var(e.other_outpatient_services) | .9921573 .0009092 .9903769 .9939408
var(e.pharmacy_fills) | .9796493 .0014461 .9768192 .9824877
var(age) | 1 . . .
var(qci_score) | 1 . . .
var(engagement_rate) | 1 . . .
var(rewards) | 1 . . .
-----+-----
cov(age,qci_score) | .2750612 .0047823 57.52 0.000 .2656881 .2844343
cov(age,engagement_rate) | -.0000374 .0051737 -0.01 0.994 -.0101777 .0101029
cov(age,rewards) | -.0008967 .0051737 -0.17 0.862 -.011037 .0092436
cov(qci_score,
engagement_rate) | 4.90e-06 .0051737 0.00 0.999 -.0101354 .0101452
cov(qci_score,rewards) | .0001177 .0051737 0.02 0.982 -.0100226 .010258
cov(engagement_rate,rewards) | .0003037 .0051737 0.06 0.953 -.0098366 .010444
-----+-----

```

Note: The LR test of model vs. saturated is not reported because the fitted model is not full rank.

```
. estat gof, stats(all)
```

```

-----+-----
Fit statistic      |      Value  Description
-----+-----
Likelihood ratio  |
  chi2_ms(.)      |          .   model vs. saturated
  p > chi2        |          .
  chi2_bs(49)     | 99361.144  baseline vs. saturated
  p > chi2        |      0.000
-----+-----
Population error  |
  RMSEA           |          .   Root mean squared error of approximation
  90% CI, lower bound |      0.000
  upper bound     |          .
  pclose         |          .   Probability RMSEA <= 0.05
-----+-----
Information criteria |
  AIC            | 2.074e+06  Akaike's information criterion

```

BIC | 2.074e+06		Bayesian information criterion				
-----+-----						
Baseline comparison |						
CFI |	1.000	Comparative fit index				
TLI |	.	Tucker-Lewis index				
-----+-----						
Size of residuals |						
SRMR |	0.173	Standardized root mean squared residual				
CD |	0.156	Coefficient of determination				
-----+-----						
.						
. estat teffects, standardized						
Direct effects						
-----+-----						
		OIM				
		Coef.	Std. Err.	z	P>|z|	Std. Coef.
-----+-----						
Structural						
inpatient_hospitalizations |						
age |	-.0002052	.0000915	-2.24	0.025		-.0117148
qci_score |	.0289918	.0012015	24.13	0.000		.1260713
engagement_rate |	-.0000184	7.27e-06	-2.54	0.011		-.0127361
rewards |	-.0035559	.0000872	-40.77	0.000		-.2047775
-----+-----						
pdc						
inpatient_hospitalizations |						
er_visits |	-.0124599	.0055756	-2.23	0.025		-.0112931
pcp_officevisits |	-.0020089	.0071303	-0.28	0.778		-.0014081
specialist_office_visits |	-.0002976	.0007935	-0.38	0.708		-.0025879
other_outpatientservices |	-.0014415	.0006258	-2.30	0.021		-.023703
pharmacy_fills |	.0127298	.0001968	64.68	0.000		.3265457
age |	.0028367	.0000967	29.32	0.000		.1467726
qci_score |	-.0077926	.0012715	-6.13	0.000		-.0307129
engagement_rate |	.0000106	7.62e-06	1.40	0.162		.0066678
rewards |	.0020392	.0000948	21.52	0.000		.1064365
-----+-----						
er_visits |						

age	|	-.0005016	.0000714	-7.03	0.000	-.0370254
qci_score	|	.0035294	.0009371	3.77	0.000	.0198455
engagement_rate	|	-.0000215	5.67e-06	-3.80	0.000	-.0192466
rewards	|	-.0026671	.000068	-39.20	0.000	-.1986002

pcp_officevisits	|					
age	|	.0102051	.0009022	11.31	0.000	.0607266
qci_score	|	.0421582	.011844	3.56	0.000	.0191094
engagement_rate	|	2.49e-06	.0000717	0.03	0.972	.0001796
rewards	|	.0002309	.0008599	0.27	0.788	.0013861

specialist_office_visits	|					
age	|	.0146336	.0013781	10.62	0.000	.0570474
qci_score	|	.0069804	.0180914	0.39	0.700	.0020729
engagement_rate	|	6.21e-06	.0001095	0.06	0.955	.0002929
rewards	|	.0004574	.0013134	0.35	0.728	.0017986

other_outpatientservices	|					
age	|	.0238391	.0017035	13.99	0.000	.0750126
qci_score	|	.1281599	.0223629	5.73	0.000	.0307186
engagement_rate	|	8.08e-06	.0001353	0.06	0.952	.0003077
rewards	|	.0006867	.0016235	0.42	0.672	.0021797

pharmacy_fills	|					
age	|	.055894	.0026406	21.17	0.000	.1127401
qci_score	|	.3997155	.034666	11.53	0.000	.0614141
engagement_rate	|	.0000322	.0002097	0.15	0.878	.0007853
rewards	|	.0038238	.0025167	1.52	0.129	.0077803

Indirect effects

		OIM				
		Coef.	Std. Err.	z	P>|z|	Std. Coef.
Structural	|					
inpatient_hospitalizations	|					
age	|	0	(no path)			0
qci_score	|	0	(no path)			0

engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
pdc						
inpatient_hospitalizations	|	0	(no path)			0
er_visits	|	0	(no path)			0
pcp_officevisits	|	0	(no path)			0
specialist_office_visits	|	0	(no path)			0
other_outpatientservices	|	0	(no path)			0
pharmacy_fills	|	0	(no path)			0
age	|	.0006761	.000036	18.78	0.000	.0349847
qci_score	|	.0045219	.0004767	9.49	0.000	.0178224
engagement_rate	|	6.69e-07	2.68e-06	0.25	0.803	.0004192
rewards	|	.0000972	.0000407	2.39	0.017	.0050751
-----+-----						
er_visits						
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
pcp_officevisits						
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
specialist_office_visits						
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
other_outpatientservices						
age	|	0	(no path)			0
qci_score	|	0	(no path)			0
engagement_rate	|	0	(no path)			0
rewards	|	0	(no path)			0
-----+-----						
pharmacy_fills						

age	|	0	(no path)	0
qci_score	|	0	(no path)	0
engagement_rate	|	0	(no path)	0
rewards	|	0	(no path)	0

Total effects

		Coef.	OIM Std. Err.	z	P>|z|	Std. Coef.

Structural	|					
inpatient_hospitalizations	|					
age	|	-.0002052	.0000915	-2.24	0.025	-.0117148
qci_score	|	.0289918	.0012015	24.13	0.000	.1260713
engagement_rate	|	-.0000184	7.27e-06	-2.54	0.011	-.0127361
rewards	|	-.0035559	.0000872	-40.77	0.000	-.2047775

pdcc	|					
inpatient_hospitalizations	|	-.0124599	.0055756	-2.23	0.025	-.0112931
er_visits	|	-.0020089	.0071303	-0.28	0.778	-.0014081
pcp_officevisits	|	-.0002976	.0007935	-0.38	0.708	-.0025879
specialist_office_visits	|	-.0001048	.0008132	-0.13	0.897	-.0013915
other_outpatientservices	|	-.0014415	.0006258	-2.30	0.021	-.023703
pharmacy_fills	|	.0127298	.0001968	64.68	0.000	.3265457
age	|	.0035128	.0001017	34.55	0.000	.1817573
qci_score	|	-.0032706	.0013347	-2.45	0.014	-.0128906
engagement_rate	|	.0000113	8.07e-06	1.40	0.161	.007087
rewards	|	.0021364	.0000969	22.05	0.000	.1115116

er_visits	|					
age	|	-.0005016	.0000714	-7.03	0.000	-.0370254
qci_score	|	.0035294	.0009371	3.77	0.000	.0198455
engagement_rate	|	-.0000215	5.67e-06	-3.80	0.000	-.0192466
rewards	|	-.0026671	.000068	-39.20	0.000	-.1986002

pcp_officevisits	|					
age	|	.0102051	.0009022	11.31	0.000	.0607266
qci_score	|	.0421582	.011844	3.56	0.000	.0191094

engagement_rate	|	2.49e-06	.0000717	0.03	0.972	.0001796
rewards	|	.0002309	.0008599	0.27	0.788	.0013861
-----+-----						
specialist_office_visits	|					
age	|	.0146336	.0013781	10.62	0.000	.0570474
qci_score	|	.0069804	.0180914	0.39	0.700	.0020729
engagement_rate	|	6.21e-06	.0001095	0.06	0.955	.0002929
rewards	|	.0004574	.0013134	0.35	0.728	.0017986
-----+-----						
other_outpatientservices	|					
age	|	.0238391	.0017035	13.99	0.000	.0750126
qci_score	|	.1281599	.0223629	5.73	0.000	.0307186
engagement_rate	|	8.08e-06	.0001353	0.06	0.952	.0003077
rewards	|	.0006867	.0016235	0.42	0.672	.0021797
-----+-----						
pharmacy_fills	|					
age	|	.055894	.0026406	21.17	0.000	.1127401
qci_score	|	.3997155	.034666	11.53	0.000	.0614141
engagement_rate	|	.0000322	.0002097	0.15	0.878	.0007853
rewards	|	.0038238	.0025167	1.52	0.129	.0077803
-----+-----						