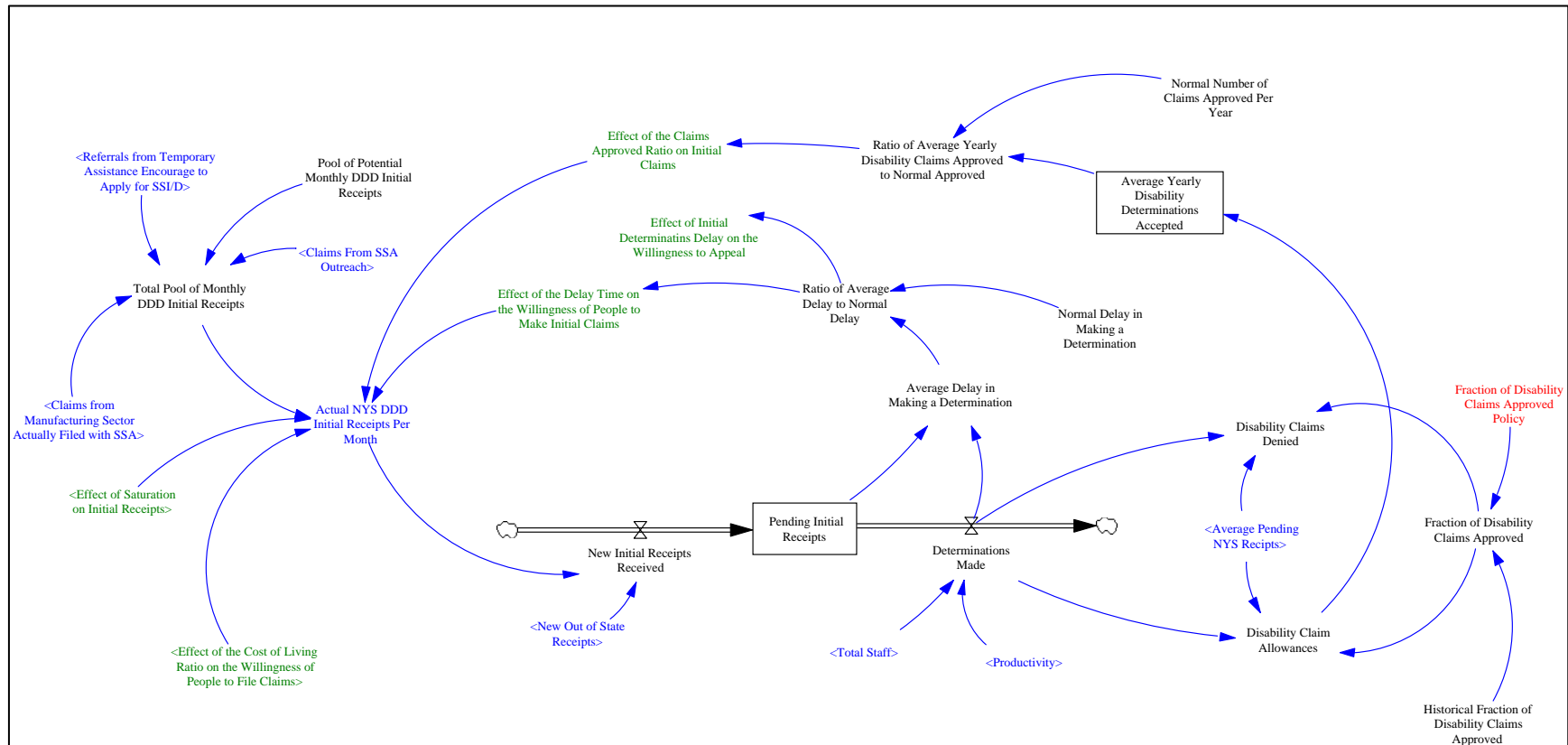
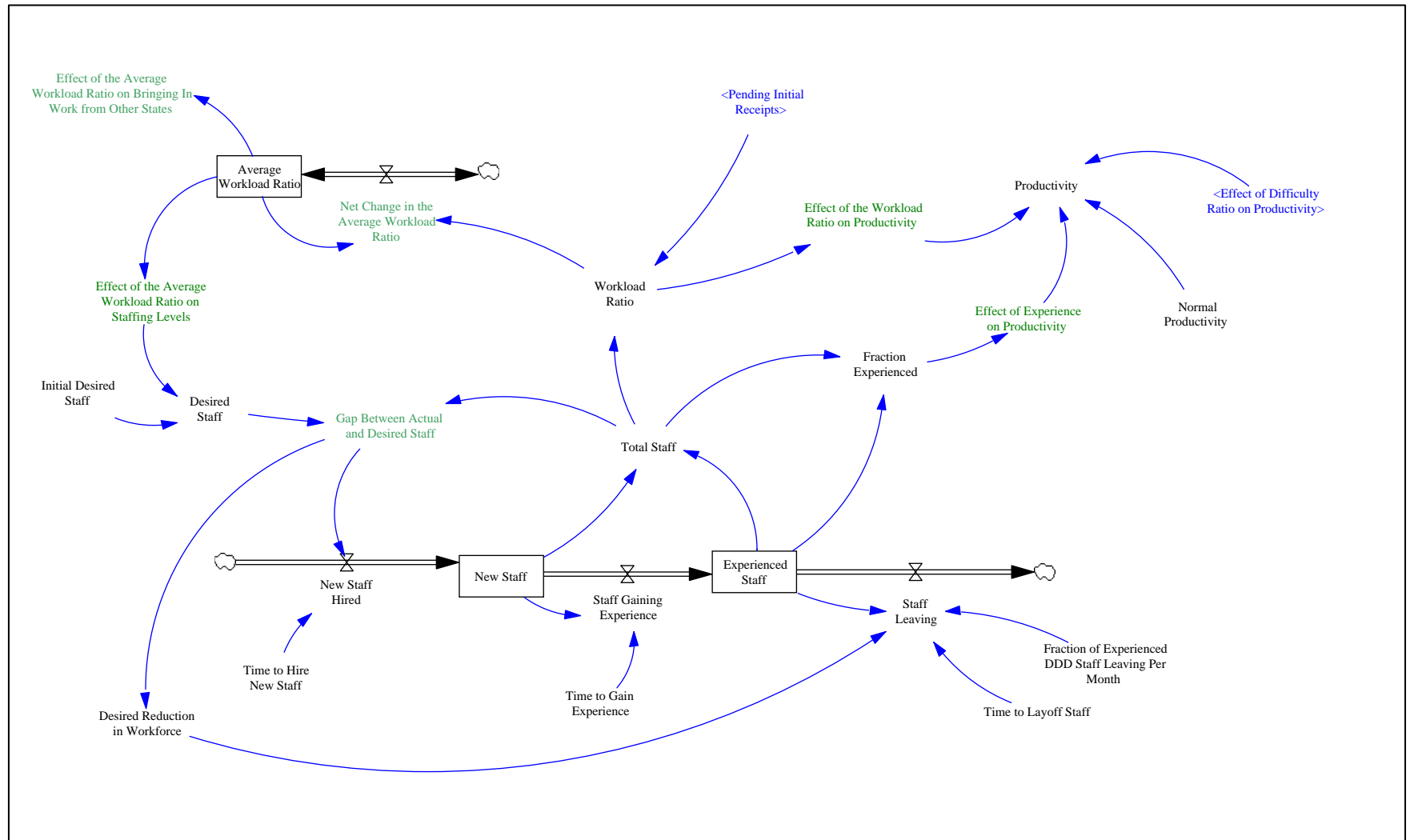


## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

### Pending Initial Receipts

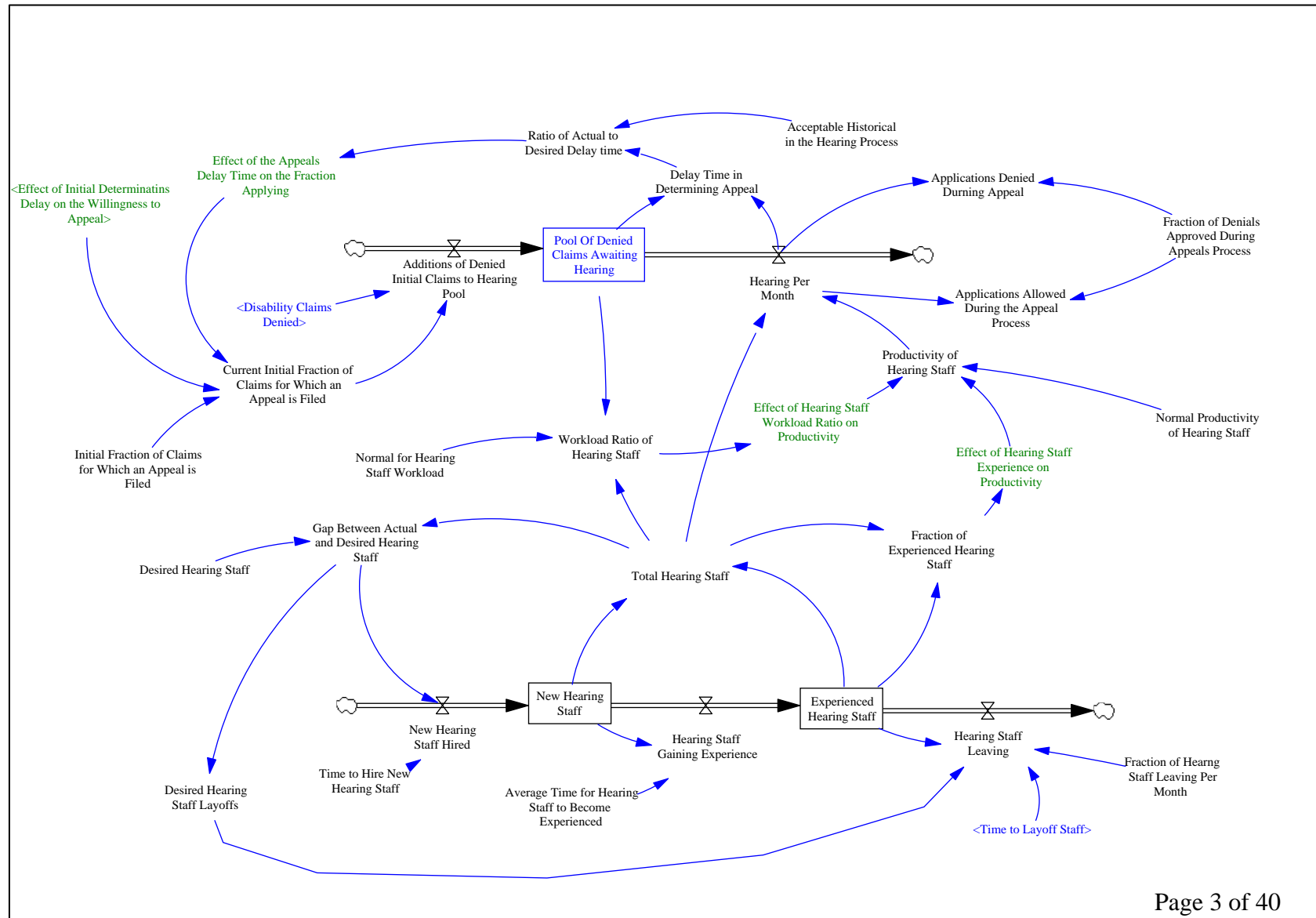


## DDD Staffing

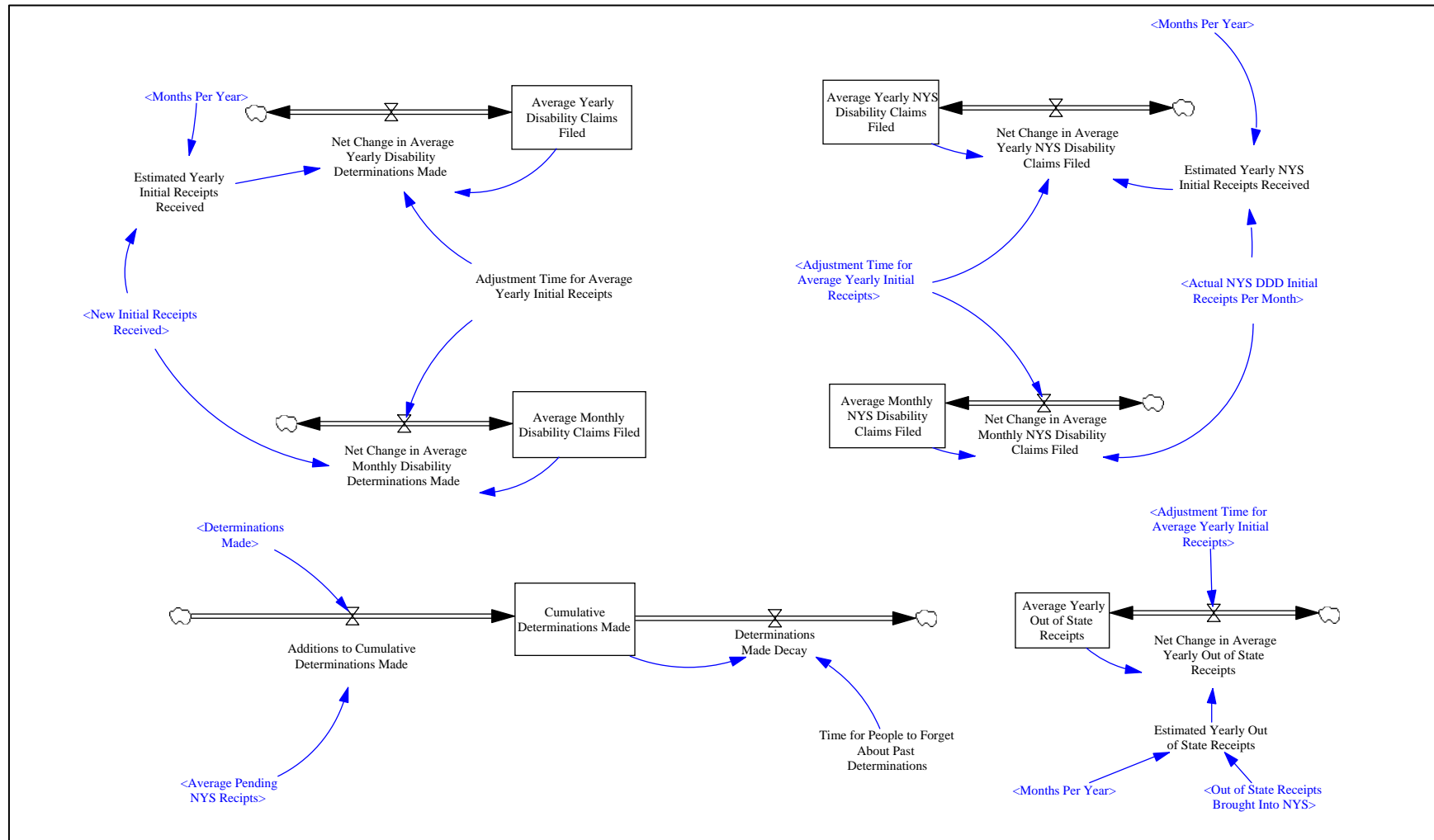


## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

### Hearing Process



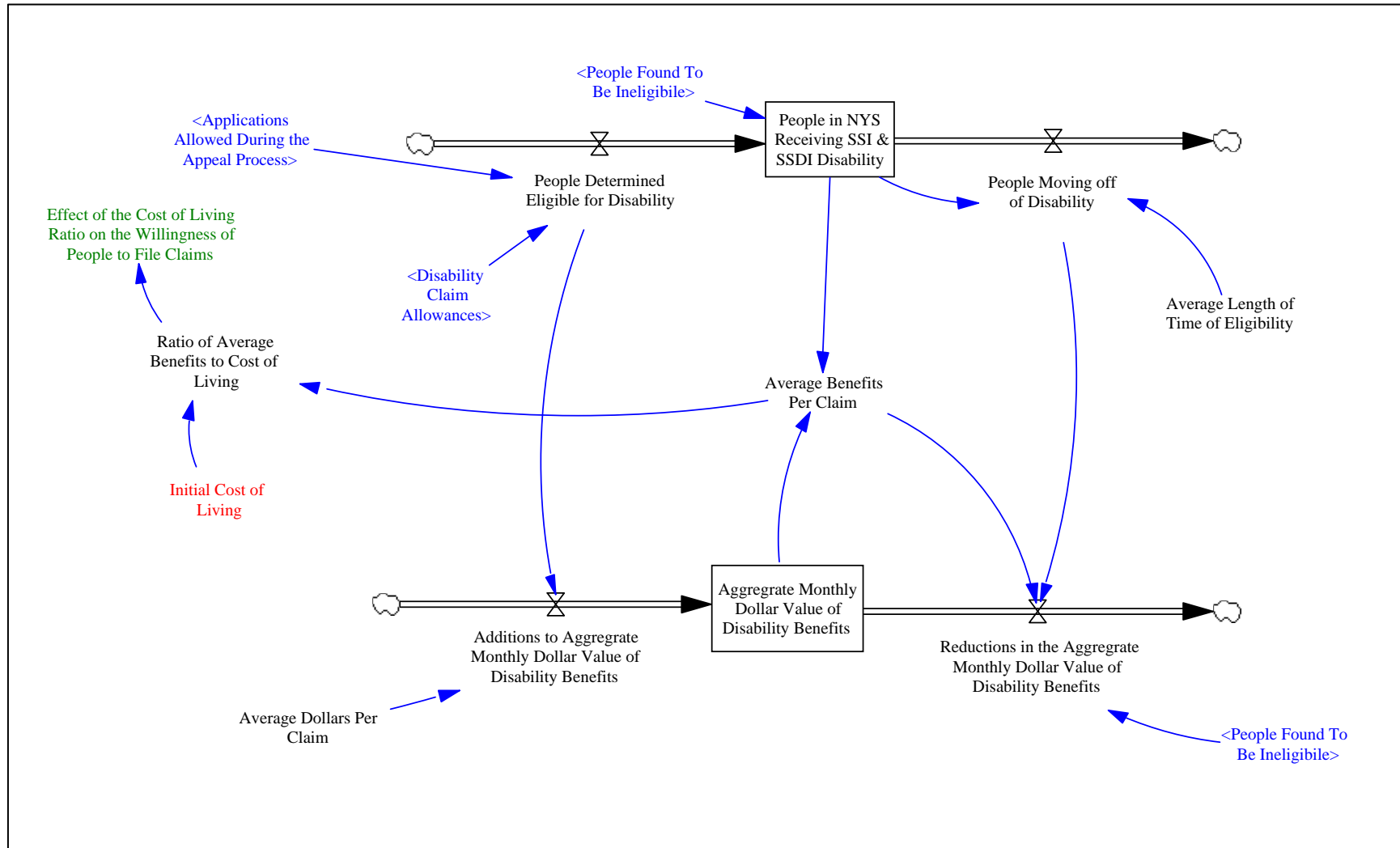
## Calculations for Averages



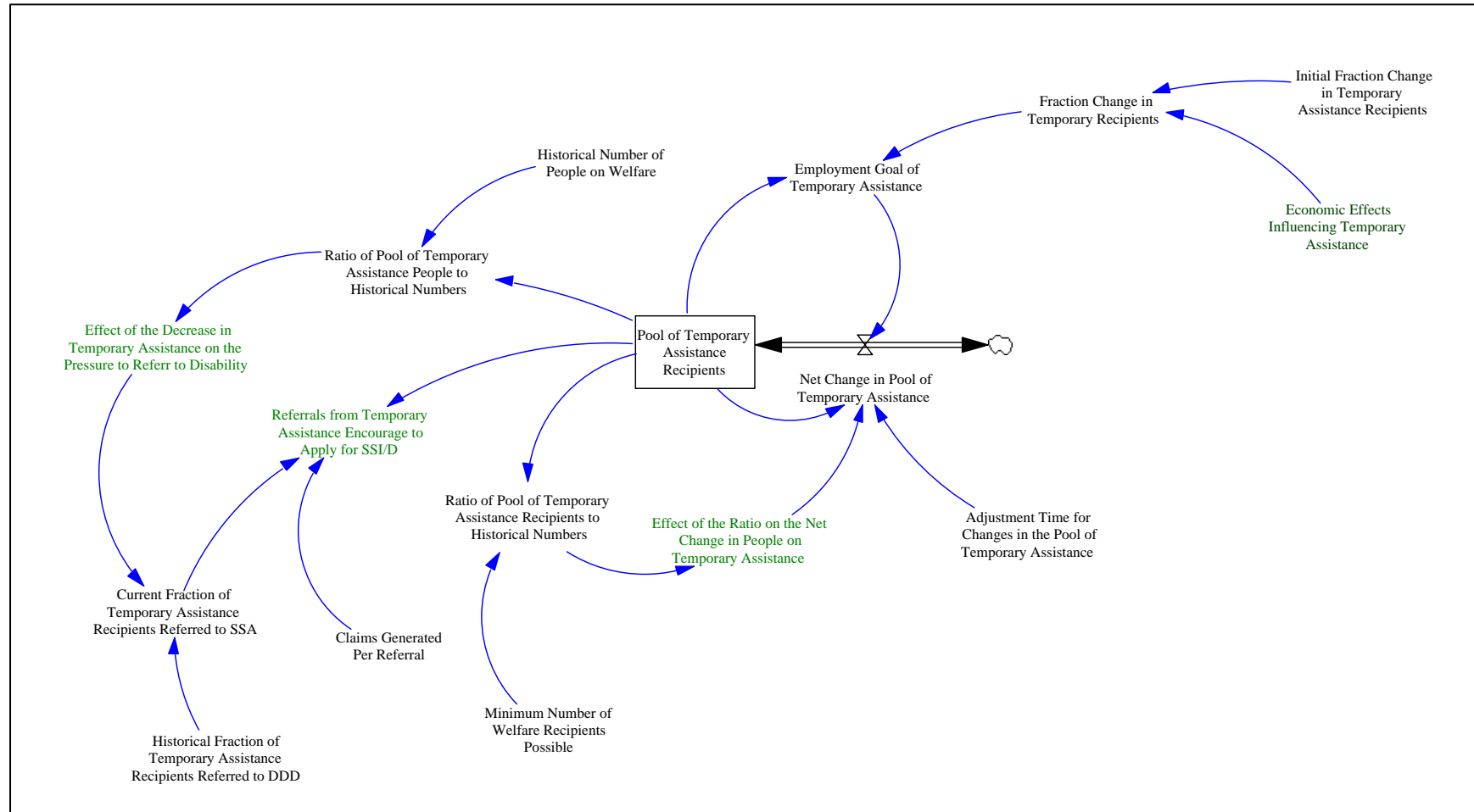


## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

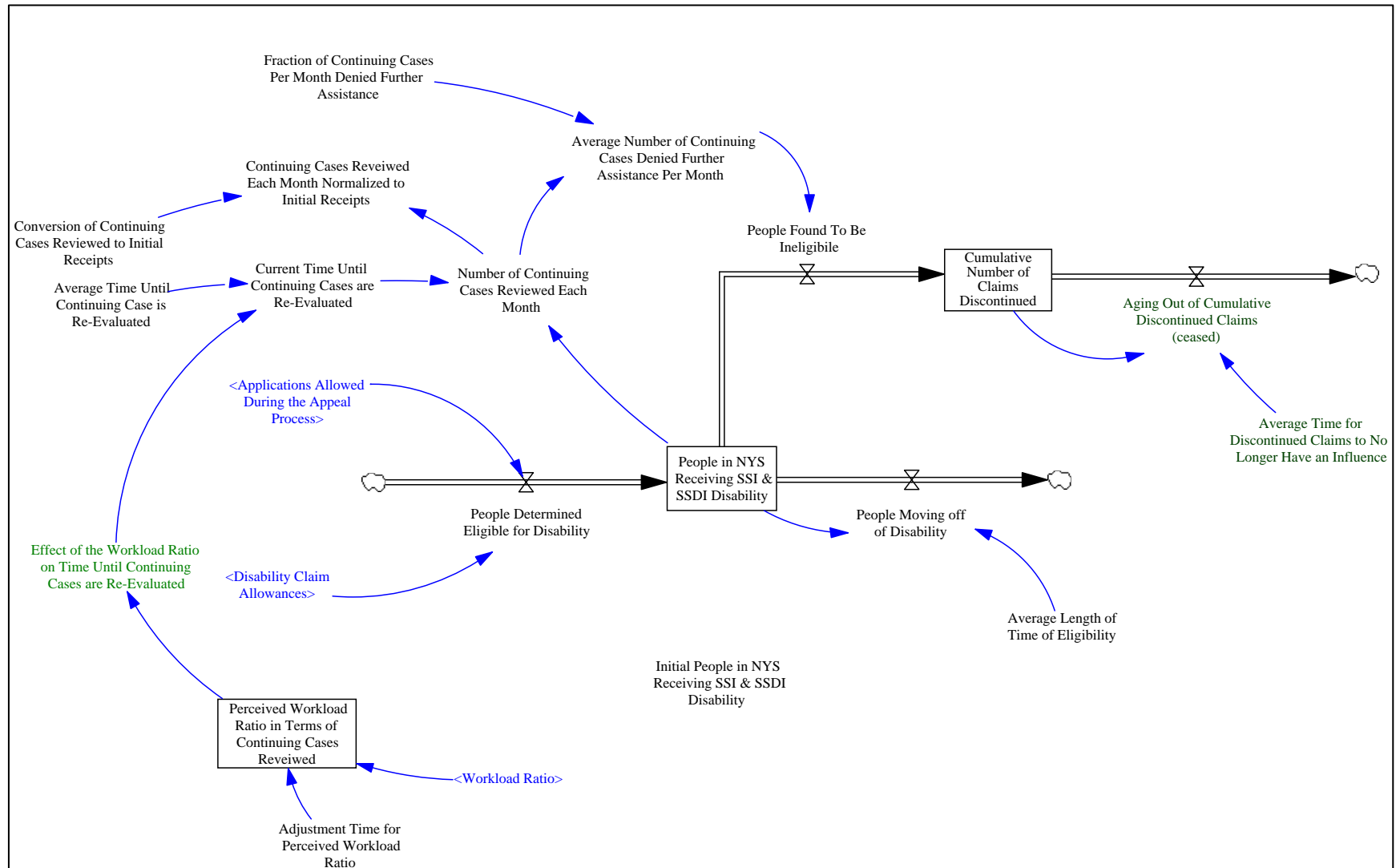
## Cost of Living



## Welfare Reform



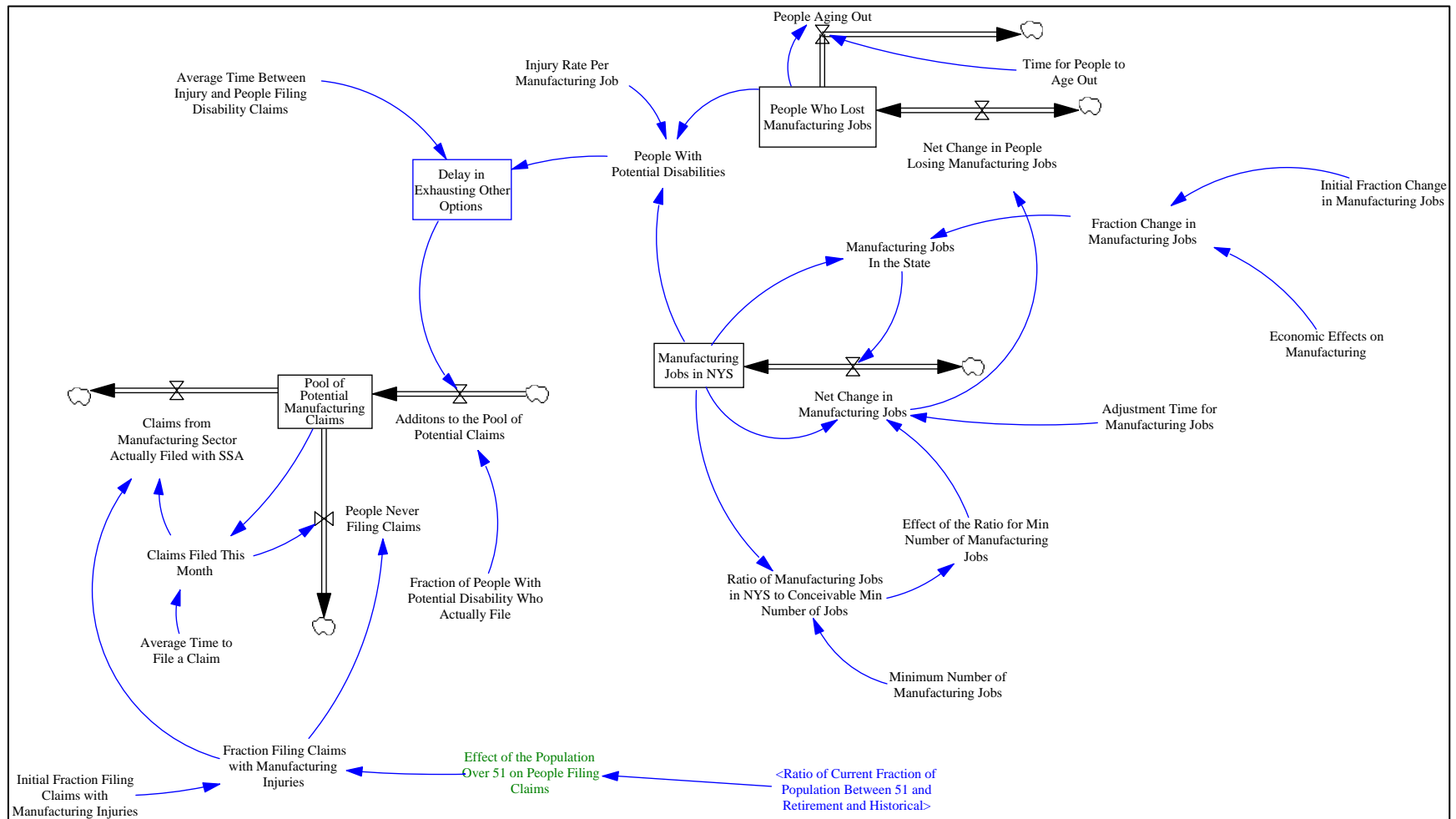
## Total Disability Roles



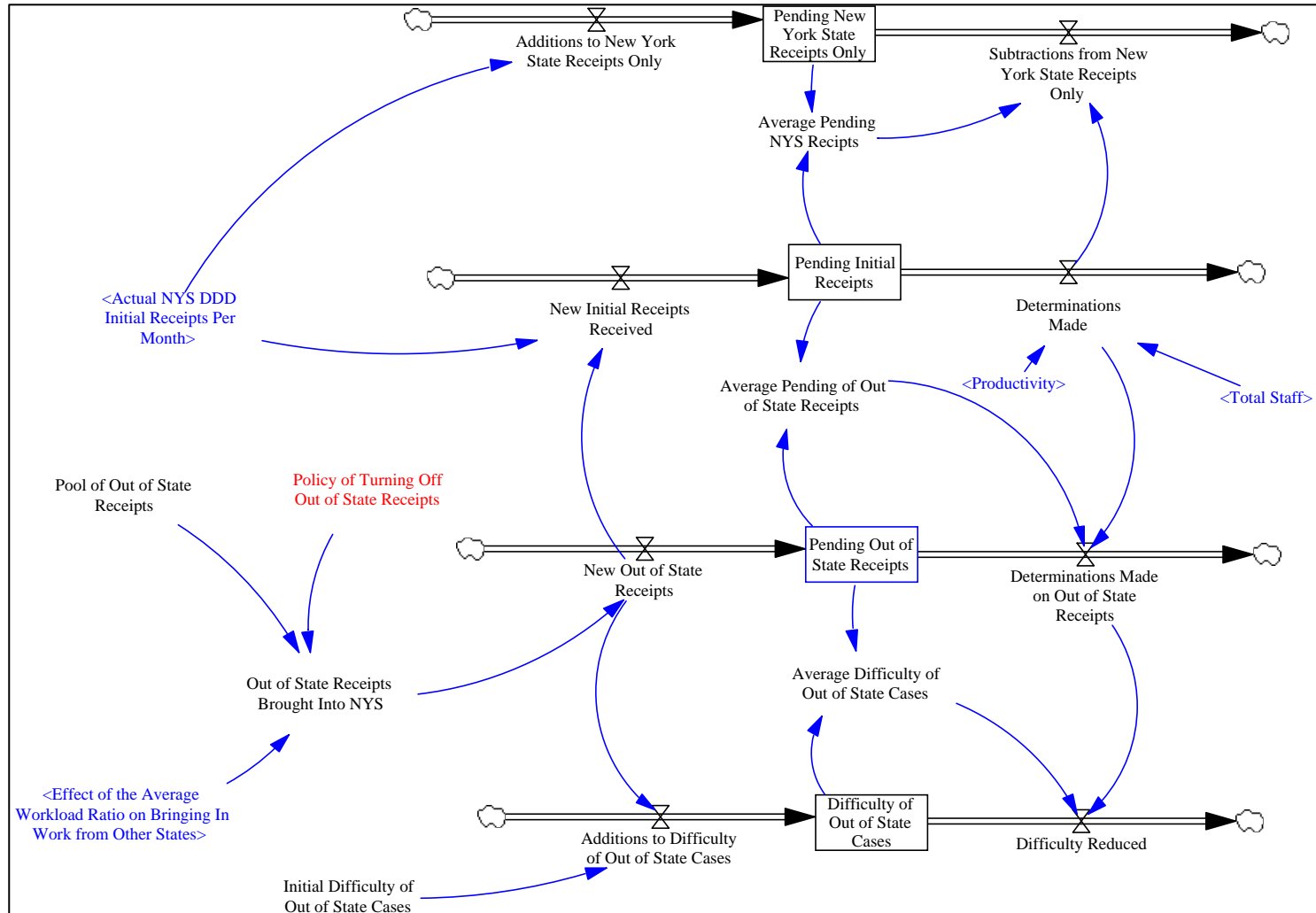


## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

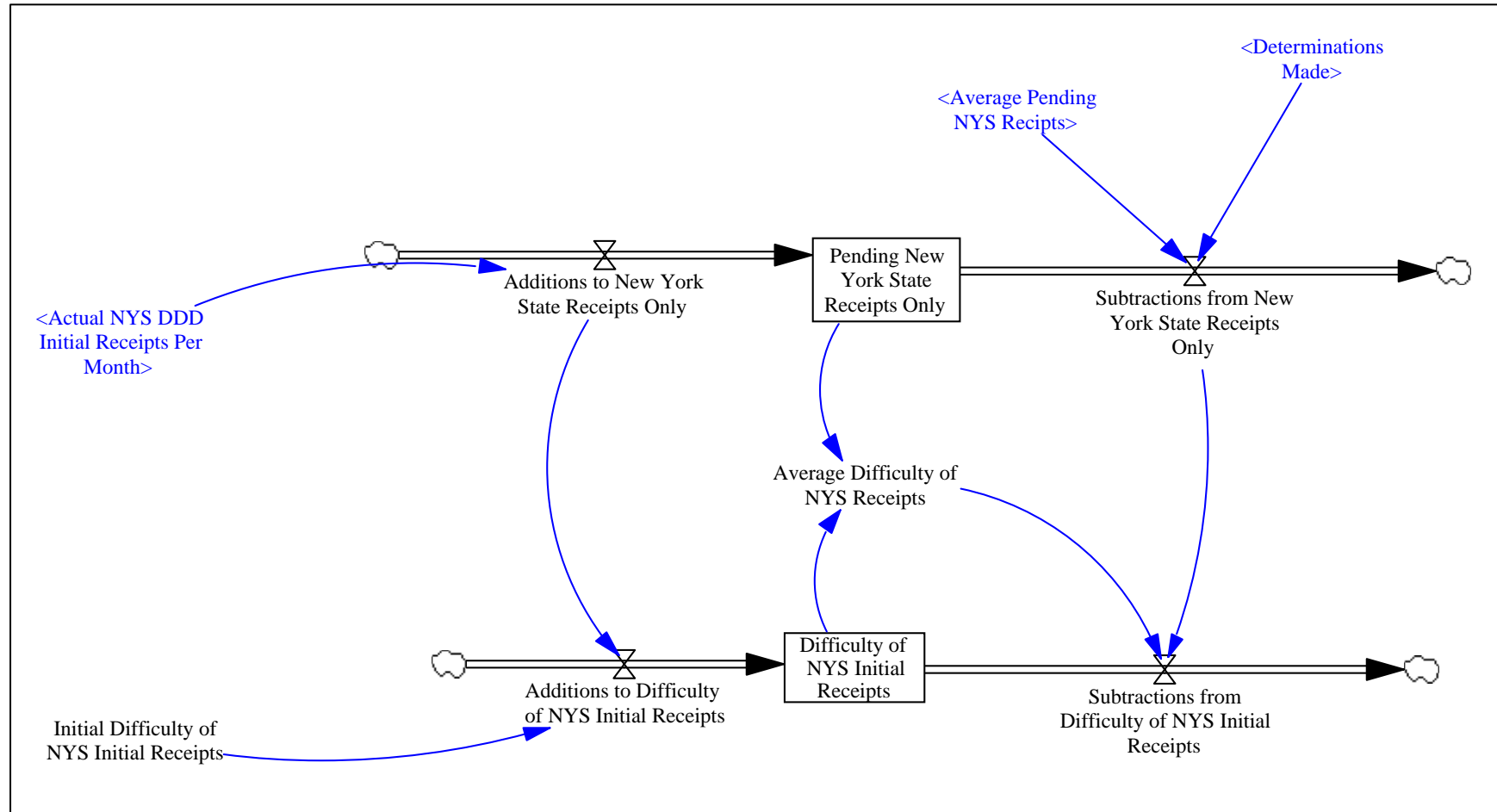
### Manufacturing



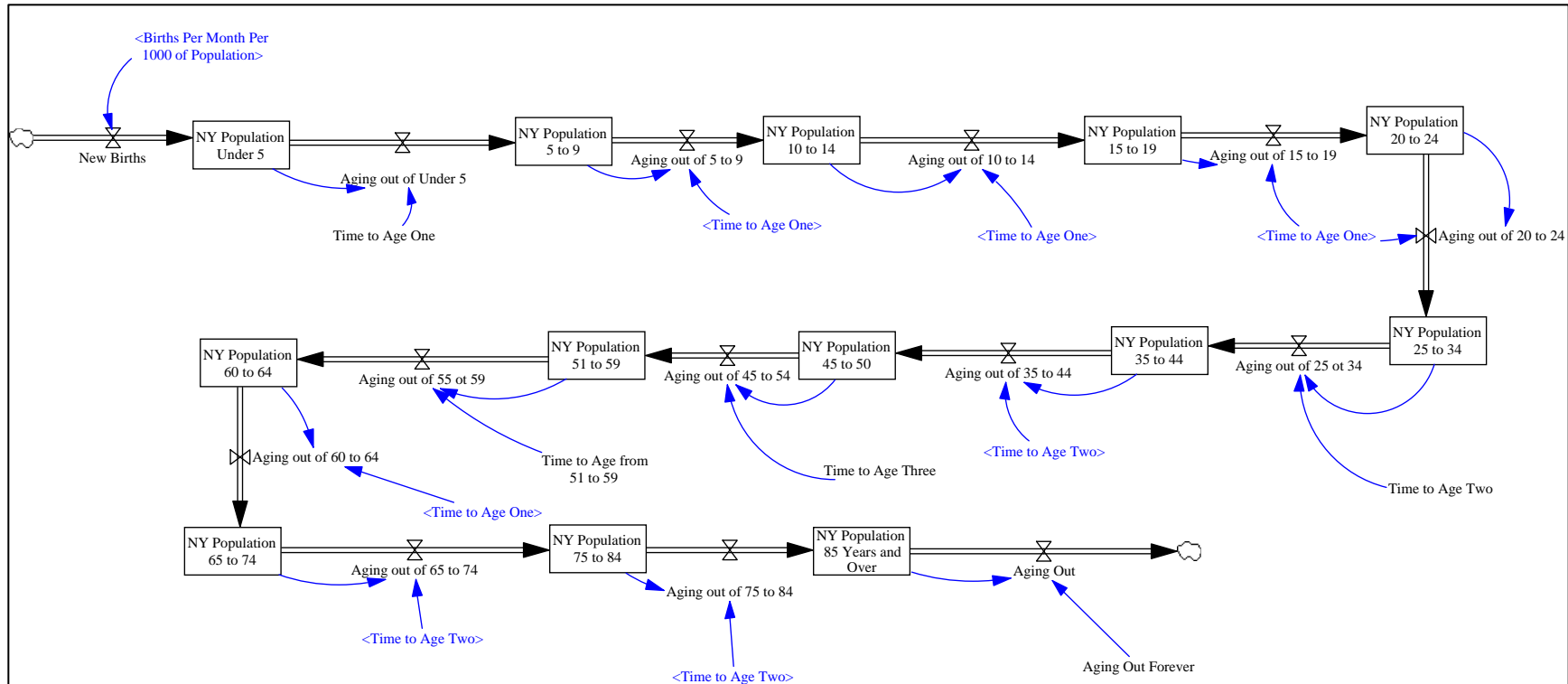
## Out of State Receipts



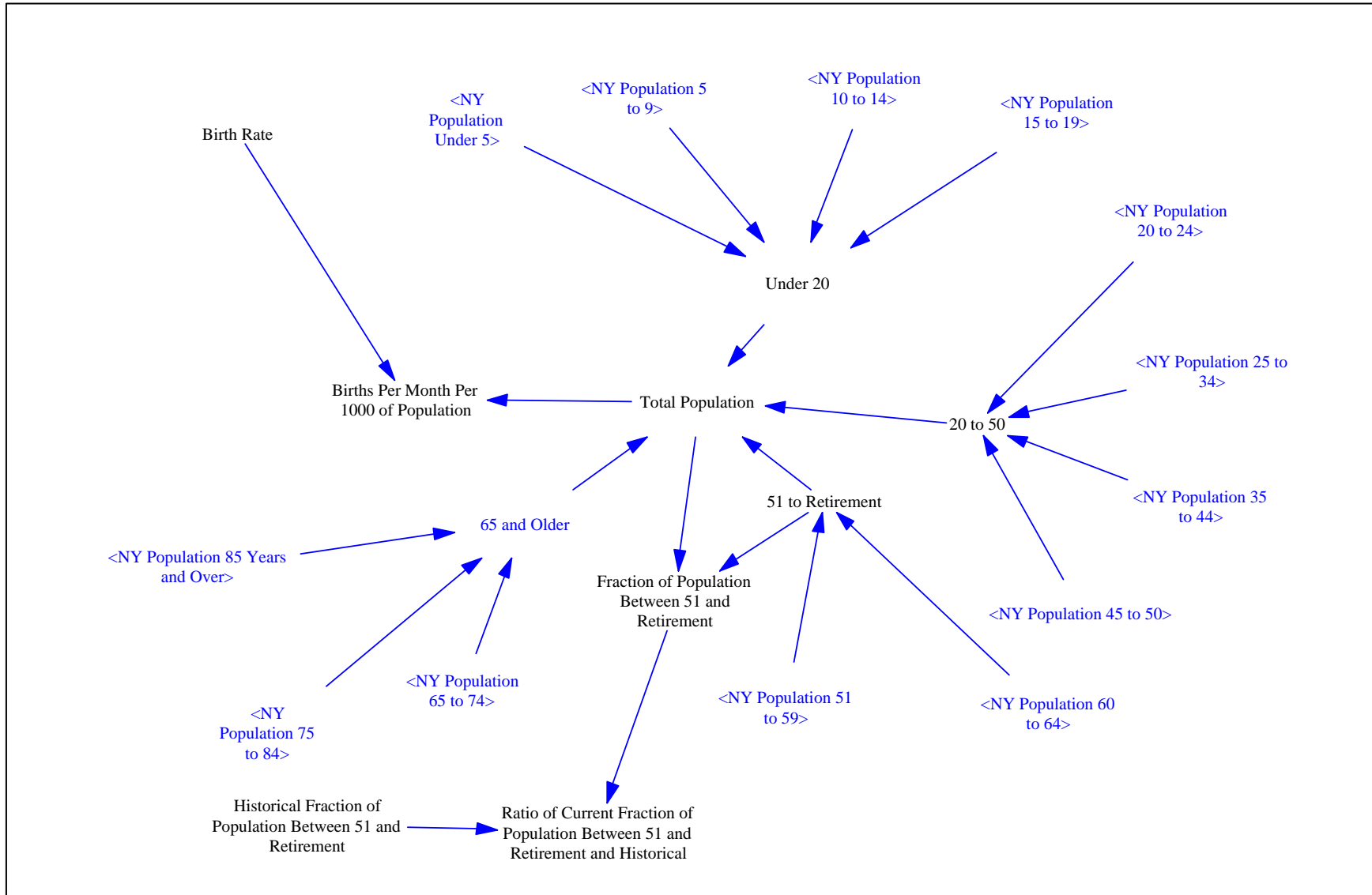
## Initial Receipts for New York State Only



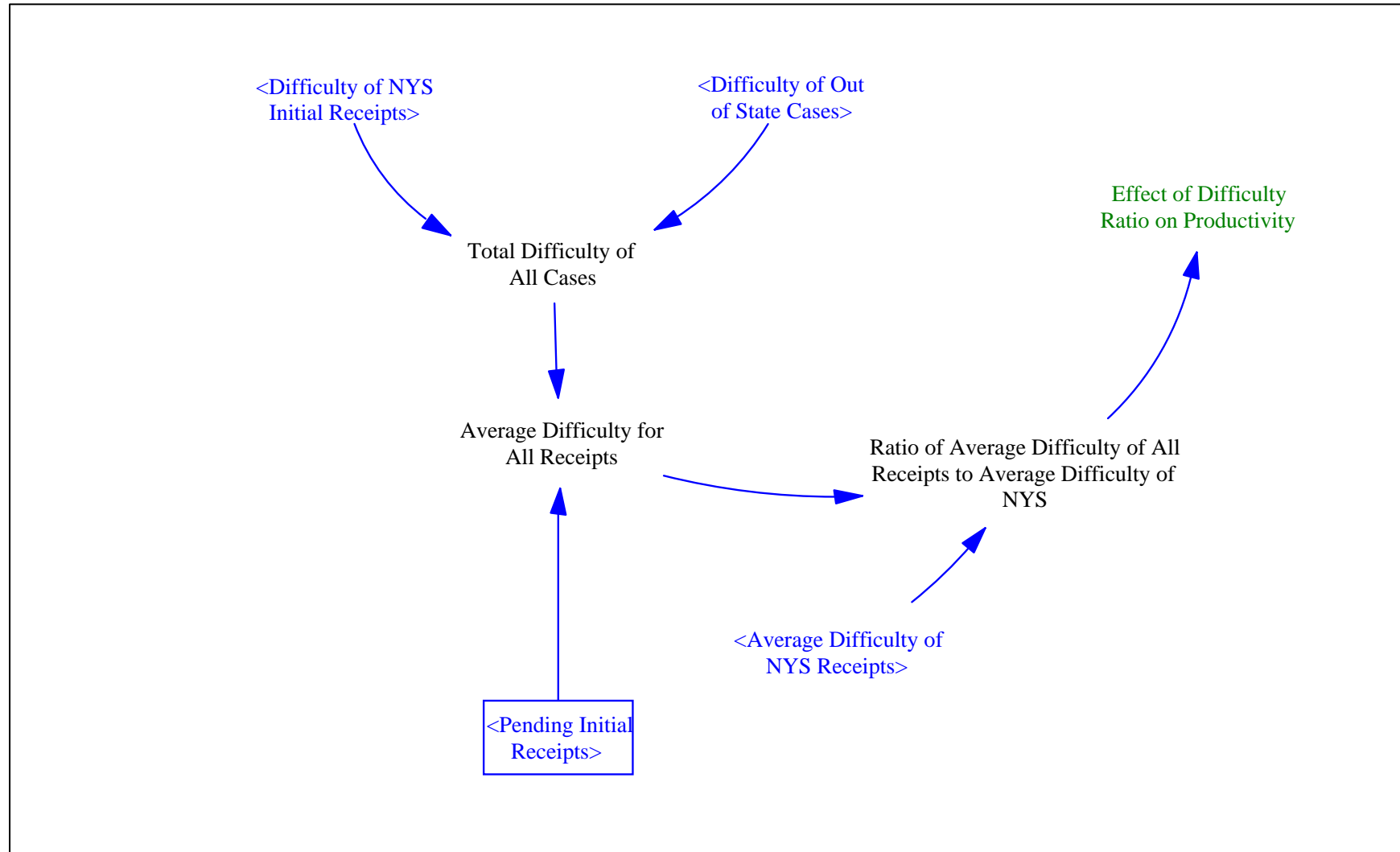
## Population Aging Chain



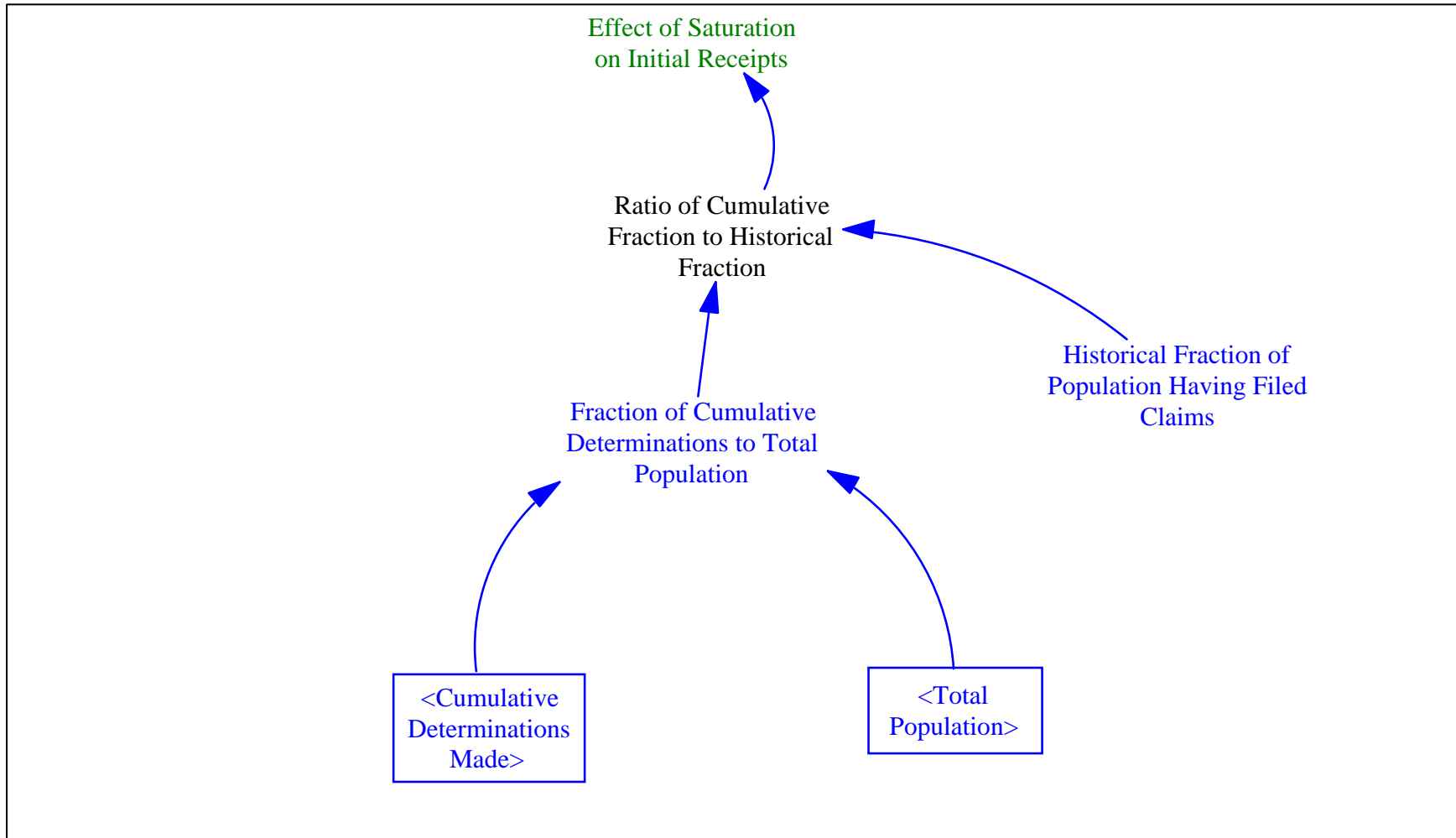
## Population Calculations



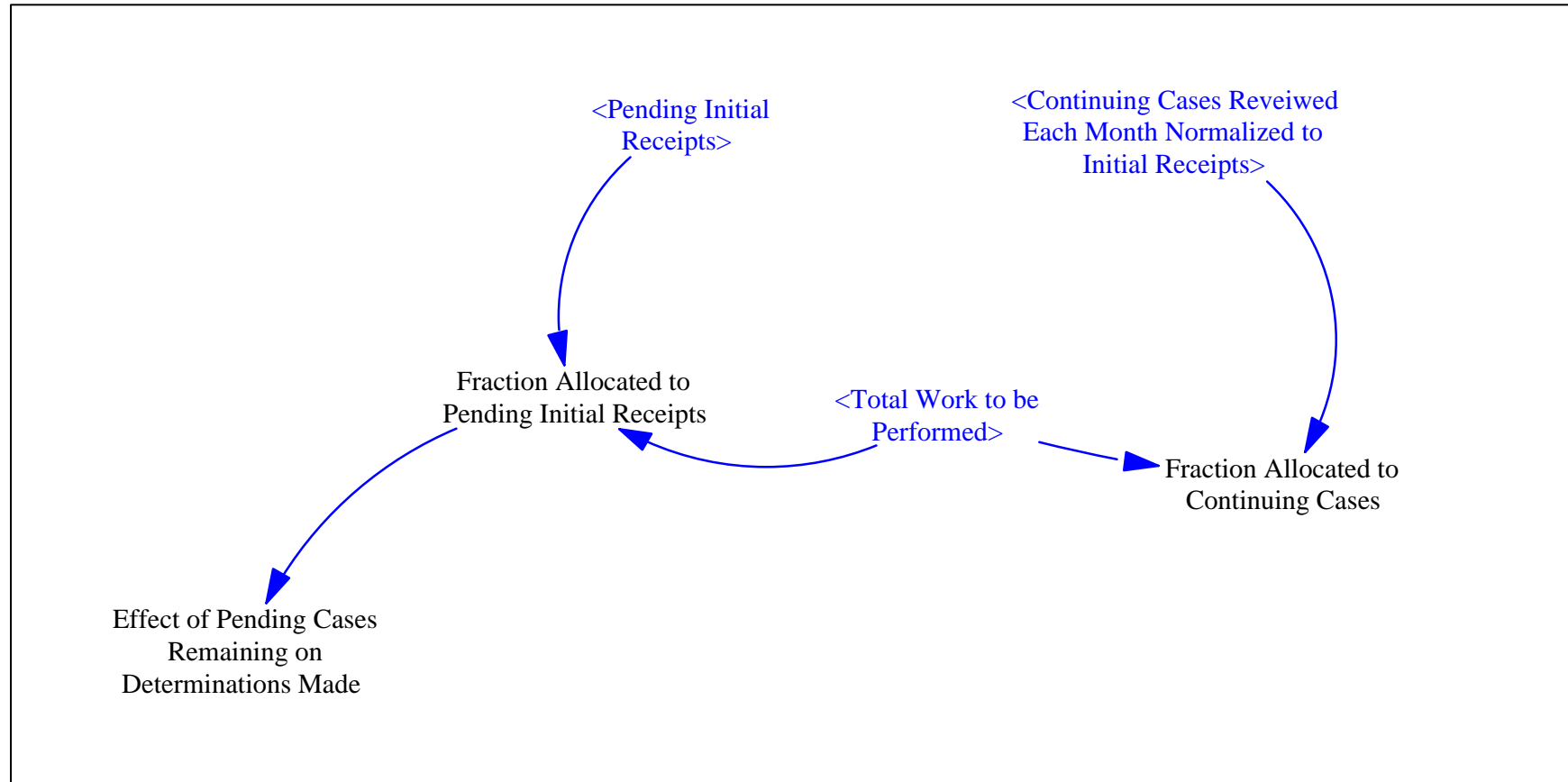
## Difficulty of Cases



## Market Saturation



## Workload Allocation





## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

### Model Equations

Policy of Turning Off Out of State Receipts = 1

- ~ Dimensionless
- ~ To turn off out of state initial receipts set this to zero

Average Yearly NYS Disability Claims Filed = INTEG (Net Change in Average Yearly NYS Disability Claims Filed, Estimated Yearly NYS Initial Receipts Received)

- ~ Claims/Year

Average Monthly NYS Disability Claims Filed = INTEG (Net Change in Average Monthly NYS Disability Claims Filed, Actual Initial NYS DDD Applications Submitted Per Month)

- ~ Claims/Month

Estimated Yearly NYS Initial Receipts Received = Months Per Year\*Actual Initial NYS DDD Applications Submitted Per Month

- ~ Claims/Year

Net Change in Average Monthly NYS Disability Claims Filed = (Actual Initial NYS DDD Applications Submitted Per Month-Average Monthly NYS Disability Claims Filed)/Adjustment Time for Average Yearly Initial Receipts

- ~ Claims/(Month\*Month)

Net Change in Average Yearly NYS Disability Claims Filed = (Estimated Yearly NYS Initial Receipts Received-Average Yearly NYS Disability Claims Filed)/Adjustment Time for Average Yearly Initial Receipts

- ~ Claims/(Year\*Month)

Out of State Receipts Brought Into NYS = (Effect of the Average Workload Ratio on Bringing In Work form Other States\*Pool of Out of State Receipts)\*Policy of Turning Off Out of State Receipts

- ~ Claims/Month

Average Yearly NYS Initial Receipts = INTEG (Net Change in Average Yearly NYS Initial Receipts, Estimated New York State Initial Receipts Only)

- ~ Claims/Year

## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

Fraction of Total Initial Receipts Attributed to NYS Only =  $\text{SMOOTH}(\text{Actual Initial NYS DDD Applications Submitted Per Month} / (\text{Actual Initial NYS DDD Applications Submitted Per Month} + \text{Out of State Receipts Brought Into NYS}), \text{Adjustment Time for Fraction of Total Initial Receipts Attributed to NYS to Become Known}, 1)$

~ Dimensionless

~  $\text{Actual Initial DDD Applications Submitted Per Month} / (\text{Actual Initial DDD Applications Submitted Per Month} + \text{Out of State Receipts Brought Into NYS})$

Difficulty of Out of State Cases =  $\text{INTEG}(\text{Additions to Difficulty of Out of State Cases} - \text{Difficulty Reduced}, 0)$

~ Difficulty

Adjustment Time for Fraction of Total Initial Receipts Attributed to NYS to Become Known = 3

~ Month

Disability Applications Approved =  $\text{Determinations Made} * \text{Fraction of Disability Applications Approved} * \text{Fraction of Total Initial Receipts Attributed to NYS Only}$

~ Claims/Month

Disability Applications Denied =  $(1 - \text{Fraction of Disability Applications Approved}) * \text{Determinations Made} * \text{Fraction of Total Initial Receipts Attributed to NYS Only}$

~ Claims/Month

Additions to Difficulty of Out of State Cases =  $\text{New Out of State Receipts} * \text{Initial Difficulty of Out of State Cases}$

~ Difficulty/Month

New Initial Receipts Received =  $\text{Actual Initial NYS DDD Applications Submitted Per Month} + \text{New Out of State Receipts}$

~ Claims/Month

Effect of the Fraction of Out of State Initial Receipts on Productivity =  $\text{WITH LOOKUP}(\text{Fraction of Total Initial Receipts Attributed to NYS Only}, [(0,0)-(1,2)], (0,0.65), (0.191638,0.678161), (0.512195,0.747126), (0.71777,0.827586), (0.898955,0.91954), (1,1))$

~ Dimensionless

Continuing Cases Reviewed Each Month Normalized to Initial Receipts =  $\text{Conversion of Continuing Cases Reviewed to Initial Receipts} * \text{Number of Continuing Cases Reviewed Each Month}$

~ Claims

## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

Net Change in Average Yearly NYS Initial Receipts = (Estimated New York State Initial Receipts Only-Average Yearly NYS Initial Receipts)  
/Adjustment Time for Average Yearly Initial Receipts  
~ Claims/(Month\*Year)

Difficulty Reduced = Average Difficulty of Out of State Cases\*Determinations Made on Out of State Receipts  
~ Difficulty/Month

Average Difficulty of Out of State Cases = ZIDZ(Difficulty of Out of State Cases,Backlog of Out of State Receipts )  
~ Difficulty/Claims

Estimated New York State Initial Receipts Only = Months Per Year\*Actual Initial NYS DDD Applications Submitted Per Month  
~ Claims/Year

Initial Difficulty of Out of State Cases = 10  
~ Difficulty/Claims

Productivity = Normal Productivity\*Effect of the Workload Ratio on Productivity\*Effect of Experience on Productivity\*Effect of the Fraction of  
Out of State Initial Receipts on Productivity  
~ Claims/(Month\*Staff)

Conversion of Continuing Cases Reviewed to Initial Receipts = 1  
~ Month  
~ Captures the concept that initial receipts and continuing cases reviewed generate work for folks.

Workload Ratio = ((Backlog of Initial Receipts+Continuing Cases Reviewed Each Month Normalized to Initial Receipts)/  
Total Staff)/Workload Normal  
~ Dimensionless  
~ ((Backlog of Initial Receipts+Backlog of Out of State Receipts)/Total Staff)/Workload Normal

People with Potential Disabilities = Injury Rate Per Manufacturing Job\*Manufacturing Jobs in NYS  
~ People/Month

Backlog of Out of State Receipts = INTEG (New Out of State Receipts-Determinations Made on Out of State Receipts, 0)  
~ Claims

## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

Actual Initial NYS DDD Applications Submitted Per Month = Total Pool of DDD Applicants\*Effect of the Delay Time on the Willingness of People to Make Initial Claims\*Effect of the Claims Denied Ratio on New Claims Submitted\*Effect of SSA Field Office Outreach on New Initial Claims\*Effect of the Cost of Living Ratio on the Willingness of People to File Claims

~ Claims/Month

Average Time Between Injury and People Filing Disability Claims = 24

~ Month

Pool of Potential Claims = INTEG (Additions to the Pool of Potential Claims-Claims from Manufacturing Sector Actually Filed with SSA-People Never Filing Claims, Delay in Exhausting Other Options\*Fraction of People With Potential Disability Who Actually File\*Average Time to File a Claim)

Claims

Additions to the Pool of Potential Claims = Delay in Exhausting Other Options\*Fraction of People With Potential Disability Who Actually File

~ Claims/Month

Claims Generated Per Outreach Staff = 50

~ Claims/Staff/Month

Average Backlog of Out of State Receipts = Backlog of Out of State Receipts/Backlog of Initial Receipts

~ Dimensionless

Total Pool of DDD Applicants = Pool of Potential Monthly DDD Applications+Referrals from Temporary Assistance Encouraged to Apply for SSI/DI+Claims from Manufacturing Sector Actually Filed with SSA

~ Claims/Month

People Never Filing Claims = Claims Filed This Month\*(1-Fraction Filing Claims)

~ Claims/Month

Determinations Made on Out of State Receipts = Average Backlog of Out of State Receipts\*Determinations Made

~ Claims/Month

Claims From SSA Outreach = Staff Performing Outreach\*Claims Generated Per Outreach Staff\*Months Per Year

~ Claims/Year

## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

Average Time to File a Claim = 12  
~ Month

New Out of State Receipts = Out of State Receipts Brought Into NYS  
~ Claims/Month

Claims Filed This Month = Pool of Potential Claims/Average Time to File a Claim  
~ Claims/Month

Pool of Out of State Receipts = 50,000  
~ Claims/Month  
~ Pool of claims per month that NYS could possible bring into NYS

Fraction of People with Potential Disability Who Actually File = 0.65  
~ Claims/People

Fraction Filing Claims = 0.65  
~ Dimensionless

Injury Rate per Manufacturing Job = 0.002  
~ Dimensionless/Month

Claims from Manufacturing Sector Actually Filed with SSA = Fraction Filing Claims\*Claims Filed This Month  
~ Claims/Month

Delay in Exhausting Other Options = SMOOTH(People With Potential Disabilities,Average Time Between Injury and People Filing Disability Claims)  
~ People/Month

Effect of the Average Workload Ratio on Bringing In Work form Other States = WITH LOOKUP(Average Workload Ratio,  
([(0,0)-(1,1)],(0,1),(0.0662021,0.977012),(0.167247,0.971264),(0.341463,0.942529),  
(0.501742,0.890805),(0.714286,0.683908),(0.853659,0.408046),(1,0) ))  
~ Dimensionless  
~ ([[(0,0)-(1,1)],(0,1),(0.0662021,0.856322),(0.174216,0.666667),(0.341463,0.396552),(0.498258,0.235632),(0.714286,0.0804598),(1,0) )\!]

## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

Cumulative Determinations Made = INTEG (Additions to Cumulative Determinations Made, 0)

~ Claims

Additions to Cumulative Determinations Made = Determinations Made

~ Claims/Month

Effect of the Ratio for Min Number of Manufacturing Jobs = WITH LOOKUP (Ratio of Manufacturing Jobs in NYS to Conceivable Min Number of Jobs, ([ (1,0)-(2,2)],(1,0),(1.12892,0.37931),(1.2892,0.632184),(1.45993,0.850575),(1.61324,0.954023),(1.77352,1),(2,1) ))

~ Dimensionless

Initial Fraction Change in Manufacturing Jobs = 1-0.032

~ Dimensionless

Adjustment Time for Manufacturing Jobs = 12

~ Month

Economic Effects on Manufacturing = RANDOM NORMAL(0.95, 1.05 , 1 , 0.123 , 1 )

~ Dimensionless

Minimum Number of Manufacturing Jobs = 400,000

~ People

Net Change in Manufacturing Jobs = ((Manufacturing Jobs Leaving the State-Manufacturing Jobs in NYS)/Adjustment Time for Manufacturing Jobs)\*Effect of the Ratio for Min Number of Manufacturing Jobs

~ People/Month

Fraction Change in Manufacturing Jobs = Initial Fraction Change in Manufacturing Jobs\*Economic Effects on Manufacturing

~ Dimensionless

Manufacturing Jobs Leaving the State = Manufacturing Jobs in NYS\*Fraction Change in Manufacturing Jobs

~ People

Manufacturing Jobs in NYS = INTEG (Net Change in Manufacturing Jobs, 800,000)

~ People

## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

Ratio of Manufacturing Jobs in NYS to Conceivable Min Number of Jobs = Manufacturing Jobs in NYS/Minimum Number of Manufacturing Jobs

~ Dimensionless

Gap Between Actual an Desired Staff = Desired Staff-Total Staff

~ Staff

Acceptable Time Delay = 5.723

~ Month

Desired Layoffs = Max(-Gap Between Actual an Desired Staff,0)

~ Staff

Average Time for Discontinued Claims to No Longer Have and Influence = 60

~ Month

Hearing Staff Leaving = Experienced Hearing Staff\*Fraction of Hearing Staff Leaving Per Month+(Desired Hearing Staff Layoffs to Layoff Staff) /Time

~ Staff/Month

People Found To Be Ineligible = Average Number of Continuing Cases Denied Further Assistance per Month

~ Claims/Month

Ratio of Actual to Acceptable Time Delay = Time Delay for Initial Claims and Appeals/Acceptable Time Delay

~ Dimensionless

Average Number of Continuing Cases Denied Further Assistance per Month = Fraction of Continuing Cases Per Month Denied Further Assistance\*Number of Continuing Cases Reviewed Each Month

~ Claims/Month

Cumulative Number of Claims Discontinued = INTEG (People Found To Be Ineligible-Aging Out of Cumulative Discontinued Claims (Forgetting), Average Number of Continuing Cases Denied Further Assistance Per Month\*Average Time for Discontinued Claims to No Longer Have and Influence)

~ Claims

## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

Staff Leaving = (Experienced Staff\*Fraction of Experienced Staff Leaving Per Month)+Desired Layoffs/Time to Layoff Staff  
~ Staff/Month

Aging Out of Cumulative Discontinued Claims (Forgetting) = Cumulative Number of Claims Discontinued/Average Time for Discontinued Claims to No Longer Have and Influence  
~ Claims/Month

Fraction of Continuing Cases per Month Denied Further Assistance = 0.007  
~ Dimensionless  
~ Generates the approximately 5000 cases losing eligibility per year

Time to Layoff Staff = 3  
~ Month

Desired Hearing Staff Layoffs = Max(-Gap Between Actual and Desired Hearing Staff,0)  
~ Staff

New Staff Hired = Max(Gap Between Actual and Desired Staff/Time to Hire New Staff,0)  
~ Staff/Month

Acceptable Delay Historical = 10.5  
~ Month

Initial Fraction of Claims for Which an Appeal is Filed = 0.586  
~ Dimensionless  
~ Information from David Stapleton's paper "The eligibility definition used in the Social Security Programs for People with Disabilities needs to be changed in a fundamental way." Draft: March 22, 2004.

Additions of Denied Initial Claims to Hearing Pool = Disability Applications Denied\*Current Initial Fraction of Claims for Which an Appeal is Filed  
~ Claims/Month



## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

Effect of the Delay Time on the Fraction Applying = WITH LOOKUP (Ratio of Actual to Desired Delay time, ((0,0)-(2,2)],(0,2),(0.271777,1.91954),(0.445993,1.78161),(0.696864,1.47126),(0.836237,1.25287),(1,1),(1.14286,0.827586),(1.30314,0.678161),(1.59582,0.54023),(2,0.5) ))

~ Dimensionless

Current Initial Fraction of Claims for Which an Appeal is Filed = Effect of the Delay Time on the Fraction Applying\*Initial Fraction of Claims for Which an Appeal is Filed

~ Dimensionless

Total Determinations Made Per Month = Determinations Made+Hearing Per Month

~ Claims/Month

Ratio of Actual to Desired Delay time = Delay Time in Determining Appeal/Acceptable Delay Historical

~ Dimensionless

Total Backlog of People Waiting to Hear About Claims = Backlog of Initial Receipts +Pool Of Denied Applications Awaiting Hearing

~ Claims

Time Delay for Initial Claims and Appeals = ZIDZ(Total Backlog of People Waiting to Hear About Claims, Total Determinations Made Per Month )

~ Month

Historical Fraction of Temporary Assistance Recipients Referred to DDD = 0.001

~ Dimensionless/Month

~ This claim is that 1.2 percent of the people receiving temporary assistance (welfare) were referred to DDD per year.

Historical Number of People on Welfare = 1.7e+006

~ People

Adjustment Time = 3

~ Month

Economic Effects Influencing Temporary Assistance = RANDOM NORMAL(0.95, 1.05 , 1 , 0.0123 , 1 )

~ Dimensionless

## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

Net Change in Pool of Temporary Assistance = ((Employment Goal of Temporary Assistance - Pool of Temporary Assistance Recipients) / Adjustment Time) \* Effect of the Ratio on the Net Change  
~ People/Month

Pool of Temporary Assistance Recipients = INTEG (Net Change in Pool of Temporary Assistance, 1.7e+006)  
~ People  
~ This level captures the historical information as identified in the "Temporary and Disability Assistance Statistics - December 2003" published by the New York State Office of Temporary and Disability Assistance.

Referrals from Temporary Assistance Encouraged to Apply for SSI/DI = (Pool of Temporary Assistance Recipients \* Current Fraction of Temporary Assistance Recipients Referred to DDD) \* Claims Generated Per Referral  
~ Claims/Month

Minimum Number of Welfare Recipients Possible = 500,000  
~ People

Claims Generated Per Referral = 1  
~ Claims/People

Ratio of Pool of Temporary Assistance Recipients to Historical Numbers = Pool of Temporary Assistance Recipients / Minimum Number of Welfare Recipients Possible  
~ Dimensionless

Initial Fraction Change in Temporary Recipients = 1 + Step(-0.03, 12)  
~ Dimensionless  
~ A step function to 1.01 will generate an increase in the number of temporary assistance folks. This captures the idea that the economy is not doing as well. 0.97

Current Fraction of Temporary Assistance Recipients Referred to DDD = Effect of the Decrease in Temporary Assistance on the Pressure to Perform Outreach \* Historical Fraction of Temporary Assistance Recipients Referred to DDD  
~ Dimensionless/Month

## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

Ratio of Pool of Temporary Assistance People to Historical Numbers = Pool of Temporary Assistance Recipients/Historical Number of People on Welfare

~ Dimensionless

Effect of the Decrease in Temporary Assistance on the Pressure to Perform Outreach = WITH LOOKUP( Ratio of Pool of Temporary Assistance People to Historical Numbers, ([ (0,0)-(1,2)],(0,0),(0.226481,0.091954),(0.407666,0.252874),(0.501742,0.425287),(0.616725,0.666667),(0.749129,0.91954),(0.874564,0.954023),(1,1) ))

~ Dimensionless

Effect of the Ratio on the Net Change = WITH LOOKUP (Ratio of Pool of Temporary Assistance Recipients to Historical Numbers, ([ (1,0)-(4,2)],(1,0),(1.15679,0.0804598),(1.27178,0.218391),(1.60627,0.632184),(2,0.95),(3,1),(4,1) ))

~ Dimensionless

Difficulty in Identifying Fraudulent Cases Due to the Number of Cases = WITH LOOKUP (Average Number of Fraudulent Claims Receiving Benefits, ([ (0,0)-(0.01,1)],(0,0),(0.000905923,0.126437),(0.00268293,0.402299),(0.00480836,0.678161),(0.00703833,0.896552),(0.00832753,0.95977),(0.01,1) ))

~ Dimensionless

Employment Goal of Temporary Assistance = Fraction Change in Temporary Recipients\*Pool of Temporary Assistance Recipients

~ People

Fraction Change in Temporary Recipients = Initial Fraction Change in Temporary Recipients\*Economic Effects Influencing Temporary Assistance

~ Dimensionless

Net Change in Yearly Average Fraudulent Claims Removed = (Estimated Yearly Fraudulent Claims Removed from the Roles-Average Yearly Fraudulent Claims Removed)/Adjustment Time for Average Yearly Fraudulent Claims

~ Claims/(Month\*Year)

New Fraudulent Claims Unknowingly Approved = Current Fraction of Claimants Practicing Fraud\*People Determined Eligible for Disability

~ Claims/Month

Number of Cases Examined = Cases Examined Per Fraud Unit Staff Per Month\*Fraud Unit Resources (Staff)

~ Claims/Month

## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

Desired Fraud Unit Staff = 0  
~ Staff

Adjustment Time for Average Yearly Fraudulent Claims = 4  
~ Month

Adjustment Time for Changes in Fraud Unit Staff = 3  
~ Month

Initial Fraction of Fraudulent Claims Found Per Case Examined = 0.5  
~ Dimensionless

Initial Fraction Practicing Fraud = 0.01  
~ Dimensionless

Average Number of Fraudulent Claims Receiving Benefits=  
Number of People With Fraudulent Claims Receiving Benefits/"People in NYS Receiving SSI & SSD Disability"  
~ Dimensionless

Current Fraction of Claims Practicing Fraud = Initial Fraction Practicing Fraud  
~ Dimensionless

Minimum Number of Fraud Cases Identified In Order to Generate Word of Mouth = 250  
~ Claims/Year

People in NYS Receiving SSI & SSD Disability= INTEG (People Determined Eligible for Disability-People Found To Be Ineligible-People Moving off of Disability-Fraudulent Claims Identified and Removed, 580000)  
~ Claims

Fraudulent Claims Leaving NYS Disability Roles = (People Found To Be Ineligible+People Moving off of Disability)\*Average Number of Fraudulent Claims Receiving Benefits  
~ Claims/Month

Number of Fraudulent Claims Identified = Current Number of Fraudulent Claims Identified\*Number of Cases Examined  
~ Claims/Month

## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

Estimated Yearly Fraudulent Claims Removed from the Roles = Fraudulent Claims Identified and Removed\*Months Per Year  
~ Claims/Year

Net Change in Fraud Unit Staff = (Desired Fraud Unit Staff-Fraud Unit Resources (Staff))/Adjustment Time for Changes in Fraud Unit Staff  
~ Staff/Month

Effect of Knowledge about Getting Caught with a Fraudulent Claims= WITH LOOKUP (Ratio of Average Yearly Fraudulent Claims Removed to Minimum Number, ((0,0)-(4,2)],(0,1),(1,1),(1.35192,0.908046),(2,0.66),(3,0.4),(4,0.33) ))  
~ Dimensionless

Cases Examined Per Fraud Unit Staff Per Month = 2  
~ Claims/(Month\*Staff)

Average Yearly Fraudulent Claims Removed = INTEG ( Net Change in Yearly Average Fraudulent Claims Removed, Estimated Yearly Fraudulent Claims Removed from the Roles)  
~ Claims/Year

Current Number of Fraudulent Claims Identified = Difficulty in Identifying Fraudulent Cases Due to the Number of Cases\*Initial Fraction of Fraudulent Claims Found Per Case Examined  
~ Dimensionless

Fraudulent Claims Identified and Removed = Number of Fraudulent Claims Identified  
~ Claims/Month

Fraud Cases Identified and Eliminated = Average Number of Fraudulent Claims Receiving Benefits\*Fraudulent Claims Identified and Removed  
~ Claims/Month

Fraud Unit Resources (Staff) = INTEG (Net Change in Fraud Unit Staff, 0)  
~ Staff

Number of People With Fraudulent Claims Receiving Benefits = INTEG (+New Fraudulent Claims Unknowingly Approved-Fraudulent Claims Leaving NYS Disability Roles-Fraud Cases Identified and Eliminated, Initial Fraction Practicing Fraud\*People in NYS Receiving SSI & SSD Disability)  
~ Claims

## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

Ratio of Average Yearly Fraudulent Claims Removed to Minimum Number = Average Yearly Fraudulent Claims Removed/Minimum Number of Fraud Cases Identified In Order to Generate Word of Mouth

~ Dimensionless

Average Length of Time of Eligibility = 168

~ Month

~ Average age is 51 and people usually can collect until they turn 65.

People Determined Eligible for Disability = Applications Won During the Appeal Process+Disability Applications Approved

~ Claims/Month

Average Time Until Continuing Case is Reevaluated = 10

~ Month

~ Cases are reviewed on average every three years. However, cases where folks are near 60 or where people have a terminal illness are not reevaluated. The average for the whole group works out to approximately 10 years. That is why this value was used.

People Moving off of Disability = People in NYS Receiving SSI & SSD Disability/Average Length of Time of Eligibility

~ Claims/Month

Number of Continuing Cases Reviewed Each Month = People in NYS Receiving SSI & SSD Disability/Average Time Until Continuing Case is Reevaluated

~ Claims/Month

Initial Cost of Living = 603+RAMP(0.75, 12 , 120 ) +RAMP(4, 12, 36 )

Additions to Aggregate Monthly Dollar Value of Disability Benefits = Average Dollars Per Claim\*New People Determined Eligible for Benefits

~ Dollars/Month

Ratio of Average Benefits to Cost of Living = Average Benefits Per Claim/Initial Cost of Living

~ Dimensionless

Average Time Until People Age Out = 168

~ Month

People Aging Out = People Receiving Benefits/Average Time Until People Age Out

~ Claims/Month

## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

Net Change in Average Monthly Disability Determinations Made = (New Initial Receipts Received-Average Monthly Disability Claims Filed)/Adjustment Time for Average Yearly Initial Receipts  
~ Claims/Month/Month

Effect of the Cost of Living Ratio on the Willingness of People to File Claims = WITH LOOKUP(Ratio of Average Benefits to Cost of Living, ((0,0)-(2,2)],(0,0.25),(0.466899,0.655172),(0.808362,0.896552),(1,1),(2,1.3) ))  
~ Dimensionless

Aggregate Monthly Dollar Value of Disability Benefits = INTEG (Additions to Aggregate Monthly Dollar Value of Disability Benefits-Reductions in the Aggregate Monthly Dollar Value of Disability Benefits Average Dollars Per Claim\*People Receiving Benefits)  
~ Dollars

Current Fraction Processing Claims = Initial Fraction Processing Claims\*Effect of the Desired Productivity Ratio on the Fraction of Staff Processing Claims  
~ Dimensionless

Average Benefits per Claim = Aggregate Monthly Dollar Value of Disability Benefits/People Receiving Benefits  
~ Dollars/Claims

People No Longer Receiving Benefits = Fraction No Longer Receiving Benefits Per Year\*People Receiving Benefits  
~ Claims/Month

Average Dollars Per Claim = 603  
~ Dollars/Claims

People Receiving Benefits = INTEG (New People Determined Eligible for Benefits-People Aging Out-People No Longer Receiving Benefits, 580000)  
~ Claims

Fraction No Longer Receiving Benefits Per Year = 0.003875  
~ Dimensionless/Month

Estimated Yearly Initial Receipts Received = Months Per Year\*New Initial Receipts Received  
~ Claims/Year

## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

New People Determined Eligible for Benefits = Disability Applications Approved  
~ Claims/Month

Reductions in the Aggregate Monthly Dollar Value of Disability Benefits = (People No Longer Receiving Benefits+People Aging Out)\*Average Benefits Per Claim  
~ Dollars/Month

Adjustment Time for Average SSA Field Office Perceived Productivity = 3  
~ Month

Initial Desired Hearing Staff = 100  
~ Staff

Initial Desired SSA Field Office Staffing Level = 150  
~ Staff

Adjustment Time for Average Yearly Initial Receipts = 4  
~ Month

Adjustment Time for Changing Employees = 18  
~ Month

Adjustment Time for Effect of Actual to Desired Productivity Ratio = 18  
~ Month

Applications Denied During Appeal = (1-Fraction of Denials Approved During Appeals Process)\*Hearing Per Month  
~ Claims/Month

Applications Won During the Appeal Process = Hearing Per Month\*Fraction of Denials Approved During Appeals Process  
~ Claims/Month

Effect of the Desired Productivity Ratio on the Fraction of Staff Processing Claims = WITH LOOKUP (SMOOTH(Ratio of the Perceived Average Monthly SSA Field Office Productivity to Desired Productivity ,Adjustment Time for Effect of Actual to Desired Productivity Ratio),  
([(0.8,0.8)- 1.2,1.2]),(0.8,1.111),(0.852962,1.111),(0.885017,1.1111),(0.924042,1.08736),  
(1,1),(1.04251,0.958621),(1.09129,0.924138),(1.16098,0.901149),(1.2,0.9) ))  
~ Dimensionless



## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

Average Monthly Disability Claims Filed = INTEG (Net Change in Average Monthly Disability Determinations Made, Determinations Made)  
~ Claims/Month

Average Time for Hearing Staff to Become Experienced = 36  
~ Month

Net Change in Average Yearly Disability Determinations Made = (Estimated Yearly Initial Receipts Received-Average Yearly Disability Claims Filed)/Adjustment Time for Average Yearly Initial Receipts  
~ Claims/Year/Month

Net Change in Field Office Staff = Gap Between Actual SSA Field Office Staff and Desired Staff/Adjustment Time for Changing Employees  
~ Staff/Month

Average Yearly Disability Claims Filed = INTEG (Net Change in Average Yearly Disability Determinations Made, Estimated Yearly Initial Receipts Received)  
~ Claims/Year

Net Change in the Perceived Average Monthly SSA Field Office Productivity = (Perceived Productivity-Perceived Average Monthly SSA Field Office Productivity)/Adjustment Time for Average SSA Field Office Perceived Productivity  
~ (Claims/(Month\*Staff))/Month

Current Desired SSA Field Office Staffing Level = Effect of the Actual to the Desired Productivity Ratio on Staffing\*Initial Desired SSA Field Office Staffing Level  
~ Staff

Delay Time in Determining Appeal = ZIDZ(Pool Of Denied Applications Awaiting Hearing, Hearing Per Month )  
~ Month

Desired Hearing Staff = Initial Desired Hearing Staff  
~ Staff

Desired Productivity of SSA Field Office = Initial Desired Productivity of SSA Field Office\*National SSA Productivity Standards  
~ Claims/(Month\*Staff)

Hearing Per Month = Productivity of Hearing Staff\*Total Hearing Staff

## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

~ Claims/Month

Hearing Staff Gaining Experience = New Hearing Staff/Average Time for Hearing Staff to Become Experienced

~ Staff/Month

Normal Productivity of Hearing Staff = 48.3

~ Claims/(Month\*Staff)

~ From Hearing and Appeals Annual Report. They average 2.3 cases per day multiplied by an average of 21 work days per month.

Effect of Experience on Productivity = WITH LOOKUP (Fraction Experienced, ((0,0)-(1,1)],(0,0.2),(0.2,0.25),(0.4,0.4),(0.6,0.7),(0.8,0.9),(1,1) ))

~ Dimensionless

Effect of Hearing Staff Experience on Productivity = WITH LOOKUP (Fraction of Experienced Hearing Staff, ((0,0)-(1,1)],(0,0.2),(0.2,0.25),(0.4,0.4),(0.6,0.7),(0.8,0.9),(1,1) ))

~ Dimensionless

Effect of Hearing Staff Workload Ratio on Productivity = WITH LOOKUP (Workload Ratio of Hearing Staff, ((0,0)-(2,2)],(0,0),(0.2,1),(0.4,1),(0.6,1),(0.8,1),(1,1),(1.2,1),(1.4,1),(1.6,1), (1.8,1),(2,1) ))

~ Dimensionless

~ ((0,0)-(2,2)],(0,0),(0.2,0.2),(0.4,0.4),(0.6,0.6),(0.8,0.8),(1,1),(1.2,1.06),(1.4,1),(1.6,0.8),(1.8,0.7),(2,0.65) )\!\!

|

Effect of SSA Field Office Outreach on New Initial Claims = WITH LOOKUP (Staff Performing Outreach, ((0,0.9)-(15,1)],(0,0.9),(5,0.94),(10,0.98),(15,1) ))

~ Dimensionless

Effect of the Actual to the Desired Productivity Ratio on Staffing = SMOOTH(Ratio of the Perceived Average Monthly SSA Field Office Productivity to Desired Productivity, Adjustment Time for Effect of Actual to Desired Productivity Ratio)

~ Dimensionless

Productivity of Hearing Staff = Effect of Hearing Staff Experience on Productivity\*Normal Productivity of Hearing Staff \*Effect of Hearing Staff Workload Ratio on Productivity

~ Claims/(Month\*Staff)

Initial Fraction Processing Claims = 0.9

~ Dimensionless

## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

Initial SSA Field Office Productivity = 20

~ Claims/(Month\*Staff)

Ratio of the Perceived Average Monthly SSA Field Office Productivity to Desired Productivity =

Perceived Average Monthly SSA Field Office Productivity/Desired Productivity of SSA Field Office

~ Dimensionless

Experienced Hearing Staff = INTEG ( Hearing Staff Gaining Experience-Hearing Staff Leaving, Initial Desired Hearing Staff)

~ Staff

SSA Field Office Staff Processing Claims = Current Fraction Processing Claims\*SSA Field Office Staff

~ Staff

Initial Claims Processed Per Month by SSA Field Office Staff = Initial SSA Field Office Productivity\*SSA Field Office Staff Processing Claims

~ Claims/Month

Fraction of Denials Approved During Appeals Process = 0.7

~ Dimensionless

Staff Performing Outreach = (1-Current Fraction Processing Claims)\*SSA Field Office Staff

~ Staff

Fraction of Experienced Hearing Staff = Experienced Hearing Staff/Total Hearing Staff

~ Dimensionless

New Hearing Staff Hired = Max(Gap Between Actual and Desired Hearing Staff/Time to Hire New Hearing Staff,0)

~ Staff/Month

Fraction of Hearing Staff Leaving Per Month = 0

~ Dimensionless/Month

Gap Between Actual SSA Field Office Staff and Desired Staff = Current Desired SSA Field Office Staffing Level-SSA Field Office Staff

~ Staff

## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

Perceived Average Monthly SSA Field Office Productivity = INTEG (Net Change in the Perceived Average Monthly SSA Field Office Productivity, Initial Desired Productivity of SSA Field Office)  
~ Claims/(Month\*Staff)

Perceived Productivity = Initial Claims Processed Per Month by SSA Field Office Staff/SSA Field Office Staff  
~ Claims/(Month\*Staff)

National SSA Productivity Standards = 1+Step(0.22,12)  
~ Dimensionless  
~ +Step(.22,12)

Gap Between Actual and Desired Hearing Staff = Desired Hearing Staff-Total Hearing Staff  
~ Staff

Normal Workload = 4830  
~ Claims/Staff  
~ This represents one months work. The idea would be that people would start to slow down once they realized that they only had a months worth of work left.

Initial Desired Productivity of SSA Field Office = 18  
~ Claims/(Month\*Staff)

Pool Of Denied Applications Awaiting Hearing= INTEG (Additions of Denied Initial Claims to Hearing Pool-Hearing Per Month, Disability Applications Denied\*Acceptable Delay Historical\*Initial Fraction of Claims for Which an Appeal is Filed)  
~ Claims  
~ 20000

Total Hearing Staff = New Hearing Staff+Experienced Hearing Staff  
~ Staff

Time to Hire New Hearing Staff = 4  
~ Month

New Hearing Staff= INTEG (+New Hearing Staff Hired-Hearing Staff Gaining Experience, 0)  
~ Staff

## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

Workload Ratio of Hearing Staff = (Pool Of Denied Applications Awaiting Hearing/Total Hearing Staff)/Normal Workload  
~ Dimensionless

SSA Field Office Staff = INTEG (Net Change in Field Office Staff, Initial Desired SSA Field Office Staffing Level)  
~ Staff

Adjustment Time for Average Workload Ratio = 12  
~ Month

Adjustment Time for Average Yearly Disability Determinations Denied = 4  
~ Month

Effect of the Workload Ratio on Productivity = WITH LOOKUP (Workload Ratio, ([ (0,0)-(2,2)], (0,0), (0.2,0.2), (0.4,0.4), (0.6,0.6), (0.8,0.8), (1,1), (1.2,1.06), (1.4,1), (1.6,0.8), (1.8,0.7), (2,0.65) ))  
~ Dimensionless

Average Workload Ratio = INTEG (Net Change in the Average Workload Ratio, Workload Ratio)  
~ Dimensionless

Average Yearly Disability Determinations Denied = SMOOTH( Disability Applications Denied\*Months Per Year , Adjustment Time for Average Yearly Disability Determinations Denied , 111600 )  
~ Claims/Year  
~ SMOOTH(Disability Applications Denied\*Months Per Year, Adjustment Time for Average Yearly Disability Determinations Denied )

Normal Number of Claims Denied Per Year = 111600  
~ Claims/Year

Desired Staff = Initial Desired Staff\*Effect of the Average Workload Ratio on Staffing Levels  
~ Staff

Determinations Made = Productivity\*Total Staff  
~ Claims/Month

## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

Effect of the Average Workload Ratio on Staffing Levels = WITH LOOKUP (Average Workload Ratio, ([ (0,0)-(1,2)], (0,0.1), (0.25,0.2), (0.5,0.5), (0.787456,0.908046), (0.95,1), (1,1) ))  
~ Dimensionless

Effect of the Claims Denied Ratio on New Claims Submitted = WITH LOOKUP (Ratio of Average Yearly Disability Claims to Normal Claims Denied, ([ (0,0)-(2,2)], (0,2), (0.209059,1.71264), (0.45993,1.42529), (0.703833,1.1954), (1,1), (1.38676,0.747126), (1.70035,0.586207), (2,0.5) ))  
~ Dimensionless

Workload Normal = 64.375  
~ Claims/Staff  
~ 28.125

Fraction of Disability Applications Approved = 0.38  
~ Dimensionless

Normal Productivity = 9.375  
~ Claims/Staff/Month

Ratio of Average Yearly Disability Claims to Normal Claims Denied = Average Yearly Disability Determinations Denied/Normal Number of Claims Denied Per Year  
~ Dimensionless

Net Change in the Average Workload Ratio = (Workload Ratio-Average Workload Ratio)/Adjustment Time for Average Workload Ratio  
~ Dimensionless/Month

Months Per Year = 12  
~ Month/Year

Average Delay in Making a Determination = Backlog of Initial Receipts/Determinations Made  
~ Month

Backlog of Initial Receipts = INTEG ( +New Initial Receipts Received-Determinations Made, 45000)  
~ Claims

## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

Effect of the Delay Time on the Willingness of People to Make Initial Claims = WITH LOOKUP(Ratio of Average Delay to Normal Delay,   
 ((0,0)-(5,2)],(0,1),(1,1),(1.51568,0.965517),(1.95122,0.890805),(3,0.66),(3.51916,0.545977),(4,0.5),(5,0.5) ))  
 ~ Dimensionless

Experienced Staff = INTEG (Staff Gaining Experience-Staff Leaving, 1600)  
 ~ Staff

Fraction Experienced = Experienced Staff/Total Staff  
 ~ Dimensionless

Fraction of Experienced Staff Leaving Per Month = 0  
 ~ Dimensionless/Month

Initial Desired Staff = 1600  
 ~ Staff

New Staff = INTEG (New Staff Hired-Staff Gaining Experience, 0)  
 ~ Staff

Normal Delay in Making a Determination = 3  
 ~ Month

Pool of Potential Monthly DDD Applications = 13040-676  
 ~ Claims/Month  
 ~ 14740 -1600

Ratio of Average Delay to Normal Delay = Average Delay in Making a Determination/Normal Delay in Making a Determination  
 ~ Dimensionless

Staff Gaining Experience = New Staff/Time to Gain Experience  
 ~ Staff/Month

Time to Gain Experience = 18  
 ~ Month

## APPENDIX II. MODEL STRUCTURE AND EQUATIONS

Time to Hire New Staff = 4  
~ Month

Total Staff = New Staff+Experienced Staff  
~ Staff