

Parameter Name	Default Value(s)	Description
Miscellaneous Parameters		
numReplications	1	Number of times to run the model. If the model animation is enabled, this parameter will be ignored, and the model will always be run once.
replicationRunTime	180	Length of time (in days) the model will run in a single replication.
animationScaleFactor	1	Size of the animation relative to its intended size. Changing this parameter is useful if the intended size of the animation is too large or too small for the display.
minutesPerTimeStep	1	Minutes represented by each model time step.
cityWidth / cityHeight	5 / 5	Width and height (in miles) of the rectangle representing the city.
marketSizeRange	0.5 / 0.5	Minimum and maximum lengths (in miles) of the sides of the rectangles representing markets.
walkingSpeed	2	Speed (in mph) of all motion that takes place by foot.
drivingSpeed	30	Speed (in mph) of all motion that takes place by car, bus, etc.
visionRadiusRange	60 / 60	Minimum and maximum distances (in feet) within which agents can "see" each other. Each agent is assigned a vision radius drawn from a uniform distribution with these bounds.
dealUnits	{10, 30, 40, 60, 120, 360}	List of quantities (in drug units) in which drugs are sold.
dealPrices	{20, 40, 50, 70, 130, 330}	List of prices (in dollars) for each drug sale increment.
useIncrement	5	Multiple to which all drug use amounts are rounded, with one exception: If the user's inventory is less than the rounded amount, the user uses his entire inventory whether it is a multiple of this value or not.
Output File Parameters		
outfileSummaryCreate	false	Whether or not to create an output file that summarizes the model at regular time intervals. If running as an applet, this parameter will be ignored, and the model will not create a summary output file.
outfileSummaryName	summary.tsv	Name (and path, if desired) of the summary output file.
outfileSummaryAppend	false	Whether or not to append the summary results to the end of an existing summary output file. If false, the results will overwrite the specified file if it already exists.
outfileSummaryInterval	1	Time interval (in hours) between entries to the summary output file.
outfileCustomerCreate	false	Whether or not to create an output file that that contains customer details at regular time intervals. If running as an applet, this parameter will be ignored, and the model will not create a customer output file.
outfileCustomerName	customer.tsv	Name (and path, if desired) of the customer output file.
outfileCustomerAppend	false	Whether or not to append the customer details to the end of an existing customer output file. If false, the results will overwrite the specified file if it already exists.
outfileCustomerInterval	24	Time interval (in hours) between entries to the customer output file.
outfileStreetBrokerCreate	false	Whether or not to create an output file that that contains street broker details at regular time intervals. If running as an applet, this parameter will be ignored, and the model will not create a street broker output file.
outfileStreetBrokerName	streetBroker.tsv	Name (and path, if desired) of the street broker output file.
outfileStreetBrokerAppend	false	Whether or not to append the street broker details to the end of an existing street broker output file. If false, the results will overwrite the specified file if it already exists.
outfileStreetBrokerInterval	24	Time interval (in hours) between entries to the street broker output file.
Initial Object Count Parameters		
numInitialMarkets	1	Number of markets to include in the model at startup.
numInitialCustomers	200	Number of customers to include in the model at startup.
numInitialStreetBrokers	50	Number of street brokers to include in the model at startup.
numInitialStreetDealers	20	Number of street dealers to include in the model at startup.

numInitialPrivateDealers	25	Number of private dealers to include in the model at startup.
numInitialPolice	1	Number of police to include in the model at startup.
numInitialHomeless	100	Number of homeless to include in the model at startup.
User Parameters		
metabolismRateRange	0.004 / 0.004	Minimum and maximum metabolism rates (in drug units per minute). Each user is assigned a metabolism rate drawn from a uniform distribution with these bounds.
addictionIncreaseDurationRange	1 / 1	Minimum and maximum lengths of time (in hours) after drug use during which addiction level increases. Each user is assigned an addiction increase duration drawn from a uniform distribution with these bounds.
addictionIncreaseRateRange	0.0014 / 0.0014	Minimum and maximum rates of addiction increase (in drug units per minute) during the first addictionIncreaseDuration time units after drug use. Each user is assigned an addiction increase rate drawn from a uniform distribution with these bounds.
addictionDecreaseOnsetRange	12 / 12	Minimum and maximum lengths of time (in hours) after drug use when addiction level starts to decrease. Each user is assigned an addiction decrease onset time drawn from a uniform distribution with these bounds.
addictionDecreaseRateRange	0.00014 / 0.00014	Minimum and maximum rates of addiction decrease (in drug units per minute) beginning addictionDecreaseBegin time units after drug use. Each user is assigned an addiction decrease rate drawn from a uniform distribution with these bounds.
addictionUpperBound	360	Upper bound on a user's addiction level (in drug units).
desperateNeedThresholdRange	0.75 / 0.75	Minimum and maximum need rates above which a user is considered desperate, possibly resulting in behavior changes. The need rate is computed as 1 - (concentration / addiction). Each user is assigned a need rate threshold drawn from a uniform distribution with these bounds.
desperateAddictionThresholdRange	5 / 5	Minimum and maximum addiction levels above which a user is eligible to be labeled desperate. Each user is assigned an addiction threshold drawn from a uniform distribution with these bounds.
useDelayRange	30 / 30	Minimum and maximum lengths of time (in minutes) required to use drugs. The time required for each use is drawn from a uniform distribution with these bounds.
probTransmitHIV	0.005	Probability that HIV is transmitted from an HIV positive user to an HIV negative user if the users use together.
treatmentDelayRange	1 / 30	Minimum and maximum lengths of time (in days) a user spends in a treatment facility. The time spent in each stay at a treatment facility is drawn from a uniform distribution with these bounds.
treatmentAddictionReductionRange	0.5 / 0.9	For users who are not cured by treatment, minimum and maximum proportions by which the user's addiction is reduced after treatment. Each user is assigned an addiction reduction proportion drawn from a uniform distribution with these bounds.
Customer Parameters		
csInitialConcentrationDistrParams	15 / 45	Mean and standard deviation of the normal distribution from which each customer's initial drug concentration (in drug units) is drawn.
csInitialAddictionDistrParams	120 / 55	Mean and standard deviation of the normal distribution from which each customer's initial addiction level (in drug units) is drawn.
csInitialInventoryDistrParams	0 / 33	Upper and lower bounds of the uniform distribution from which each customer's initial drug inventory (in drug units) is drawn.
csInitialTimeSinceLastUseDistrParams	1 / 12	Minimum and maximum times (in hours) since customers last used prior to model startup. Each customer is assigned a last use time drawn from a uniform distribution with these bounds.
csInitialMoneyDistrParams	18	Mean of the exponential distribution from which each customer's initial money amount (in dollars) is drawn.
csProbInitialHIV	0.05	Probability that a customer is HIV positive at model startup.

csIncomeAmountDailyRange	2 / 20	Minimum and maximum income amounts (in dollars) available to customers for the purchase of drugs, expressed as a daily income (even though income is received at less frequent intervals.) Each customer is assigned an income amount drawn from a uniform distribution with these bounds.
csProbIncomeIntervalWeekly csProbIncomeIntervalMonthly	0.25 / 0.25	Probability that a customer receives his income every 7 days and every 30 days, respectively. The remaining probability applies to a customer receiving his income every 15 days.
csWindfallAmountRange	20 / 500	Minimum and maximum windfall amounts, money that customers stumble upon randomly or obtain when they are seeking money to buy drugs. Each windfall amount is drawn from a uniform distribution with these bounds.
csWindfallIntervalRange	1 / 365	Minimum and maximum time intervals (in days) between customers randomly receiving windfalls. Each time interval until the next windfall is drawn from a uniform distribution with these bounds.
csProbBuyMethodAfford	0.25	Probability that a customer's buying method is to buy as much as he can afford. The alternative method is to buy only what he needs.
csRandomUseIntervalRange	1 / 7	Minimum and maximum time intervals (in days) between a customer randomly getting a desire to use drugs. Each time interval until the next random drug use desire is drawn from a uniform distribution with these bounds.
csProbKnowPrivateDealer	0.10	Probability that a customer knows a private dealer at model startup. Each customer who knows a private dealer at model startup is assigned exactly one known private dealer.
csProbTryPrivateDealerRange	0.50 / 0.50	Minimum and maximum probabilities that a customer will try to buy drugs from a private dealer if he knows at least one. Each customer is assigned a private dealer probability drawn from a uniform distribution with these bounds.
csAcceptableSbQueueLength	0	Length of the longest street broker queue that a customer will get into. A buyer is considered to be in the queue if the street broker is currently brokering a deal for him or if the buyer is "waiting in line" for the street broker. Note that the current model does not support any value other than 0 for this parameter.
csAcceptableSdQueueLengthRange	2 / 2	Minimum and maximum lengths of the longest street dealer queue that a customer will get into. A buyer is considered to be in the queue if the dealer is currently on a deal with him or if the buyer is "waiting in line" for the dealer. Each customer is assigned a queue length drawn from a uniform discrete distribution with these bounds.
csAcceptablePdQueueLengthRange	3 / 3	Minimum and maximum lengths of the longest private dealer queue that a customer will get into. A buyer is considered to be in the queue if the dealer is currently on a deal with him or if the buyer is "waiting in line" for the dealer. Each customer is assigned a queue length drawn from a uniform discrete distribution with these bounds.
csDealQuitTime	4	Length of time (in hours) that a customer will wait for a deal to end after it started until he gives up on the deal and searches for another seller.
csMarketQuitTimeRange	2 / 2	Minimum and maximum lengths of the time (in hours) searching for a seller in the market that a customer will find acceptable. Searches lasting longer than this time will cause the customer to quit the market and try another source. Each customer is assigned a market quit time drawn from a uniform discrete distribution with these bounds.
csProbUseAtSellerRange	0.1 / 0.1	Minimum and maximum probabilities that a customer will use drugs while at the seller's location, even if he is not desperate. Each customer is assigned a probability drawn from a uniform distribution with these bounds.
csProbUseTogetherRange	0.5 / 0.5	Minimum and maximum probabilities that a customer will share a syringe when he uses drugs with another user. Each customer is assigned a probability drawn from a uniform distribution with these bounds.
csProbTreatmentSatisfied	0.001	Probability that a customer will seek treatment when he is not in need of a drug fix.
csProbTreatmentNotSatisfied	0	Probability that a customer will seek treatment when he is in need of a drug fix.

csProbSeekMoneyRange	0.1 / 0.1	Minimum and maximum probabilities that a customer will try to obtain money when he is desperate, has decided not to get treatment, and does not already have money. Each customer is assigned a money seeking probability drawn from a uniform distribution with these bounds.
csProbSeekMoneySuccessRange	0.5 / 0.5	Minimum and maximum probabilities of success when a customer tries to obtain money. Each customer is assigned a success probability drawn from a uniform distribution with these bounds.
csSeekMoneyDelayRange	60 / 300	Minimum and maximum lengths of time (in minutes) required to seek money. The time required for each attempt is drawn from a uniform distribution with these bounds.
csRetryDelayRange	30 / 30	Minimum and maximum lengths of time (in minutes) that a customer waits after a failed attempt to obtain drugs before trying again. The length of each retry period is drawn from a uniform distribution with these bounds.
Street Broker Parameters		
sbInitialConcentrationDistrParams	0 / 10	Upper and lower bounds of the uniform distribution from which each street broker's initial drug concentration (in drug units) is drawn.
sbInitialAddictionDistrParams	1 / 10	Upper and lower bounds of the uniform distribution from which each street broker's initial addiction level (in drug units) is drawn.
sbInitialTimeSinceLastUseDistrParams	12 / 24	Minimum and maximum times (in hours) since street brokers last used prior to model startup. Each street broker is assigned a last use time drawn from a uniform distribution with these bounds.
sbProbInitialHIV	0.10	Probability that a street broker is HIV positive at model startup.
sbProbKnowPrivateDealer	0.9	Probability that a street broker knows a private dealer at model startup. Each street broker who knows a private dealer at model startup is assigned exactly one known private dealer.
sbProbTryPrivateDealerRange	0.10 / 0.10	Minimum and maximum probabilities that a street broker will try to buy drugs from a private dealer if he knows at least one. Each street broker is assigned a private dealer probability drawn from a uniform distribution with these bounds.
sbCheckAllKnownSd	false	Whether or not a street broker will travel to the location of all his known street dealers in an attempt to find an available street dealer before he wanders randomly in the market.
sbNumKnownSdToCheck	1	If sbCheckAllKnownSd=false, the number of known street dealer locations to which a street broker will travel before he decides to wander randomly in the market.
sbAcceptableSdQueueLengthRange	2 / 2	Minimum and maximum lengths of the longest street dealer queue that a street broker will get into. A buyer is considered to be in the queue if the dealer is currently on a deal with him or if the buyer is "waiting in line" for the dealer. Each street broker is assigned a queue length drawn from a uniform discrete distribution with these bounds.
sbAcceptablePdQueueLengthRange	3 / 3	Minimum and maximum lengths of the longest private dealer queue that a street broker will get into. A buyer is considered to be in the queue if the dealer is currently on a deal with him or if the buyer is "waiting in line" for the dealer. Each street broker is assigned a queue length drawn from a uniform discrete distribution with these bounds.
sbDealQuitTime	2	Length of time (in hours) that a street broker will wait for a deal to end after it started until he gives up on the deal and searches for another seller.
sbMarketQuitTimeRange	2 / 2	Minimum and maximum lengths of the time (in hours) searching for a street dealer in the market that a street broker will find acceptable. Searches lasting longer than this time will cause the street broker to quit the market and try another source. Each street broker is assigned a market quit time drawn from a uniform discrete distribution with these bounds.
sbTipPercent	10	Percentage of the drug amount in a brokered deal that a street broker takes from the customer as a tip.
sbTipLowerBound	3	Lower bound on the drug amount (in drug units) that a street broker takes as a tip in a brokered deal.
sbTipUpperBound	30	Upper bound on the drug amount (in drug units) that a street broker takes as a tip in a brokered deal.

sbProbUseTogetherRange	0.5 / 0.5	Minimum and maximum probabilities that a street broker will share a syringe when he uses drugs with another user. Each street broker is assigned a probability drawn from a uniform distribution with these bounds.
Street Dealer Parameters		
sdInitialMoneyDistrParams	500 / 2000	Upper and lower bounds of the uniform distribution from which each street dealer's initial money amount (in dollars) is drawn.
sdInitialInventoryDistrParams	120 / 3600	Upper and lower bounds of the uniform distribution from which each street dealer's initial drug inventory (in drug units) is drawn.
sdShiftStartRange	6 / 7	Minimum and maximum clock hours when street dealers enter the market. Each day, the street dealers enter the market at a clock hour drawn from a uniform distribution with these bounds.
sdShiftEndRange	22 / 22	Minimum and maximum clock hours when street dealers leave the market. Each day, the street dealers leave the market at a clock hour drawn from a uniform distribution with these bounds.
sdProbChangeLocationRange	0.1 / 0.1	Minimum and maximum probabilities that a street dealer will change his location in the market from one day to the next. Each street dealer is assigned a location change probability drawn from a uniform distribution with these bounds.
sdDealDelayRange	15 / 15	Minimum and maximum lengths of time (in minutes) required for a street dealer to process a drug deal (not including travel). The time required for each deal is drawn from a uniform distribution with these bounds.
Private Dealer Parameters		
pdInitialMoneyDistrParams	2000 / 10000	Upper and lower bounds of the uniform distribution from which each private dealer's initial money amount (in dollars) is drawn.
pdInitialInventoryDistrParams	1200 / 3600	Upper and lower bounds of the uniform distribution from which each private dealer's initial drug inventory (in drug units) is drawn.
pdShiftStartHourRange	6 / 10	Minimum and maximum clock hours when private dealers are first available to make deals each day. Every day, each private dealer's opening clock hour is drawn from a uniform distribution with these bounds.
pdShiftLengthRange	8 / 16	Minimum and maximum lengths of time (in hours) that a private dealer is available to make deals each day. Every day, each private dealer's shift length is drawn from a uniform distribution with these bounds.
pdAcceptableDeliverUnitsRange	120 / 120	Minimum and maximum counts of the smallest number of drug units a private dealer will deliver to a buyer. Each private dealer is assigned a unit count drawn from a uniform distribution with these bounds.
pdProbDeliverHomeRange	0.5 / 0.5	Minimum and maximum probabilities that a private dealer will decide to deliver to a person's home. Each private dealer is assigned a home delivery probability drawn from a uniform distribution with these bounds.
pdProbDeliverMarketRange	0.1 / 0.1	Minimum and maximum probabilities that a private dealer will decide to deliver to a market location. Each private dealer is assigned a market delivery probability drawn from a uniform distribution with these bounds.
pdDealQuitTime	4	Length of time (in hours) that a private dealer will wait for a for a buyer to travel to him until he gives up on the deal.
pdDealDelayRange	30 / 30	Minimum and maximum lengths of time (in minutes) required for a private dealer to process a drug deal (not including travel). The time required for each deal is drawn from a uniform distribution with these bounds.
pdInvitationDealsRange	6 / 6	Minimum and maximum number of brokered deals a private dealer will make with a customer before inviting the customer to make direct deals. Each private dealer is assigned an invitation threshold drawn from a discrete uniform distribution with these bounds.

Police Parameters		
poVisionRadius	100	Distance (in feet) within which police can "see" other agents.
poProbHarassCustomer	0.25	Probability that a police officer will harass a customer that he sees.
poProbHarassStreetBroker	0.50	Probability that a police officer will harass a street broker that he sees.
poProbHarassStreetDealer	0.75	Probability that a police officer will harass a street dealer that he sees.
poProbHarassPrivateDealer	0.25	Probability that a police officer will harass a private dealer that he sees.
poProbHarassHomeless	0.50	Probability that a police officer will harass a homeless person that he sees.
poHarassDuration	60	Time (in minutes) that it takes an officer to harass someone.
poHarassRepeatDelay	24	Time (in hours) after being harassed during which a person will not be harassed again.
poProbArrestCustomer	0.8	Probability that a police officer will arrest a customer if the officer finds drugs on him.
poProbArrestStreetBroker	0.8	Probability that a police officer will arrest a street broker if the officer finds drugs on him.
poProbArrestStreetDealer	0.9	Probability that a police officer will arrest a street dealer if the officer finds drugs on him.
poProbArrestPrivateDealer	0.1	Probability that a police officer will arrest a private dealer if the officer finds drugs on him.
poProbArrestHomeless	0.8	Probability that a police officer will arrest a homeless person if the officer finds drugs on him.
poArrestDuration	60	Time (in minutes) that it takes an officer to arrest someone.
poJailPerDrugUnit	0.05	Jail time (in days) assigned for each drug unit when making an arrest for possession.
poUseBusts	false	Whether or not to allow police bust operations.
poBustStartTimes	{30,60,90,120,150}	List of times (in days) at which busts should be initiated. All times are measured from model startup, so if the list contains 1, for example, then a bust would start 1 day after the model begins. All markets are busted at the same times.
poBustDuration	24	Time (in hours) that each bust operation lasts.
poBustOfficers	30	Number of additional police officers sent to a market during a bust operation.
poBustVisionRadius	300	Distance (in feet) within which police can "see" other agents during a bust operation.
poBustProbHarassCustomer	0.50	Probability that a police officer will harass a customer that he sees during a bust operation.
poBustProbHarassStreetBroker	0.75	Probability that a police officer will harass a street broker that he sees during a bust operation.
poBustProbHarassStreetDealer	1	Probability that a police officer will harass a street dealer that he sees during a bust operation.
poBustProbHarassPrivateDealer	0.50	Probability that a police officer will harass a private dealer that he sees during a bust operation.
poBustProbHarassHomeless	0.75	Probability that a police officer will harass a homeless person that he sees during a bust operation.
poBustProbArrestCustomer	1	Probability that a police officer will arrest a customer if the officer finds drugs on him during a bust operation.
poBustProbArrestStreetBroker	1	Probability that a police officer will arrest a street broker if the officer finds drugs on him during a bust operation.
poBustProbArrestStreetDealer	1	Probability that a police officer will arrest a street dealer if the officer finds drugs on him during a bust operation.
poBustProbArrestPrivateDealer	0.1	Probability that a police officer will arrest a private dealer if the officer finds drugs on him during a bust operation.
poBustProbArrestHomeless	1	Probability that a police officer will arrest a homeless person if the officer finds drugs on him during a bust operation.