Dynamics of the New York City Court System

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Abstract

For policy makers in New York City the functioning of the criminal justice system appears to be deteriorating. During the last few years arrests by police have dropped. However inmate population continued to increase for over a year after the drop in arrests. For the court system the drop in arrests corresponded to a drop in total court cases. In spite of the drop in court cases, or case load per judge, the average length of time to dispose of a case continued to increase. During this time the total number of judges working in New York City increased, further dropping the average caseload.

The importance of this topic lies in the resistance of the criminal justice system to change and the high total cost of this system. Recent policy goals of New York City management have been to reduce needed jail capacity by reducing both the intake of inmates and average length of stay. New York City officials estimated that by reducing the inmate length of stay by ten days savings of $108 million could be realized.

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This model examines some of the basic dynamics in the New York City (NYC) criminal justice system. The model is not designed to forecast the number of inmates, court backlog or time to disposition. It is designed to identify feedback loops in the system and how interactions between the courts, correction system, or police can affect the observed dynamics of the system. The structure of this model comes from my own experience working for NYC in the Office of Management and Budget analyzing this system. The model contains some of the stated assumptions of the officials in each sector. Most often stated was the fact that they must live with the exogenous inputs from the other sectors in the criminal justice system. I believe it is possible to demonstrate that the actions in each sector affect the whole criminal justice system, and that a small model can indicate some of the areas which require further research.

The importance of this topic lies in the high total cost of this system and the inability of policy makers to develop adequate analysis models. Policy makers are frustrated by NYC's relatively slow pace of litigation but have been unable to substantially affect change. This is not a new problem. For example there was evidence of this slow pace as far back as 1953 (Church 1992). In 1978 a national study by the National Center for State Courts described the Bronx County court as "pathologically delayed" (Church 1992).

Background

The criminal justice system in the U.S. is a two tiered system. The Federal system has its own set of police, courts and jails. This system is separate from local systems which are run by a combination of state and county governments. The analysis in this paper is of the local criminal justice system in NYC.

The court system in NYC is different from other cities because it is bigger than some state systems and each borough is a different county. This means that each county must maintain a separate court system from the other boroughs. The local jails are the NYC jails which hold inmates for all of the courts.

The NYC jail system is a primarily a detention system. The inmate population is approximately 65% detainees, 20% short-term sentences (under 1 year), and 15% state inmates (those waiting transfer back to a state jail). Detainees are inmates awaiting trial or at some point along this process. Sentenced inmates are serving short-term sentences. State inmates fall into three categories. Inmates sentenced to terms over one year who are awaiting transfer to the state system Parole violators who have to go through a series of parole violation hearings. Inmates who came from the state system to appear in a trial and are awaiting transfer back to the state.

Political climate

Police protection was considered to be a serious problem in NYC during the period investigated by this model. The response by Mayor Koch was to increase the size of the police force and to put the additional forces into high arrest units. This tended to increase the arrest rate of the police force. In addition to added police capacity additional capacity was required for the court and correction sectors.

From a monetary perspective a jail release would have been an inexpensive solution compared with the building of jail capacity. However, Mayors Koch and Dinkins would not allow fo the possibility of repeating the 1983 jail release (see below). This type of occurrence was considered to be a career ending political event. In this political atmosphere it is understandable that no mayo could say, "I am saving tax dollars by not building jails".

After one year in office, in 1991 Mayor Dinkins changed the police strategy. Rather than force oriented to responding to crime, the emphasis was placed on crime prevention. Simply stated this meant more foot patrols and fewer high arrest response teams.

System stress

During the period from 1983 to 1992 the inmate population in NYC jails increased from about 9,000 to 22,000. In some years the increase was over 17% (OMB 1994). The Department of Correction (DOC) was always seeking ways to have enough capacity to meet the needs of the court system. NYC officials did not want a repeat of a 1983 release of inmates due to overcrowding. The courts blamed NYC for not being properly prepared. This was the type of crisis which the mayor and DOC wished to avoid.

To keep up with this need NYC used inappropriate facilities to house inmates. These facilities included prefab dormitories, barges, converted homeless shelters, and sprung structures (a tent like structure similar in appearance to a tennis bubble but made of plastic stretched over a frame). Because the planning and building of a jail in NYC takes about five years, all planning was limited to short-term solutions. The oversight agencies who protected the inmates' minimum standards mandated high levels of staffing to overcome poor planning and the inappropriateness of the spaces used. This made the operating costs of these facilities relatively high compared to a regularly constructed jail.

Due to the high cost of the detention system NYC officials were always seeking ways to reduce the size of this system. DOC officials claimed that the structure of the system was such that it had no control over the level of inmates in the system. Their agency mission was simply to house inmates sent by the court system.

Increasing length of detention time was an indication of increasing trial time. For every day off the length of stay the average number of inmates in custody dropped by about 315. It was estimated that a 10 day drop in detainee length of stay (LOS) would save NYC approximately $108 million per year. In the first year of Dinkin's term LOS increased by 5 days. This translated to NYC building and operating more jail beds because of the court system's increasing time to disposition (identified as decreased efficiency). The operating cost per bed was about $54,000 per year. This changed the discussion in the government. Now the court system became the essential point in reducing the size of the city's inmate population.

Court system costs

The cost of the criminal justice system comes from two sources, volume of cases and time per case. The assumption is that it is possible to reduce both of these. Reductions in case volume can be achieved two ways. One is for the crime rate to go down, which would lead to fewer arrests. The second possible way to reduce volume is to change policing strategy in a way which reduces arrests. Time per case can be reduced by reducing the number of appearances and the time between appearances in court to dispose of the case.

NYC has been successful at implementing policy which affects the volume of cases, but unsuccessful in reducing time per case. The reason why volume of cases is controllable is that the police are a mayoral agency. This gives the mayor a large degree of control over police deployment policy. Police deployment has a large affect upon arrests and therefore the volume of cases coming into the court system. The District Attorneys (DAs) for each Borough of New York are independently elected officials. This gives them control over their budget and policy and a large measure of political independence. New York City funds the DAs but has no control over their budget. In addition it is illegal for the City to reduce the budget allocation in absolute dollars. Budgetarily the worst that can happen to a DA is for the budget to remain constant. The Office of Court Administration is a state agency. The City has no authority regarding court personnel or judges.

In 1983, partly as a response to the release of 613 detainees (OMB 1994) and the political crisis which ensued, a program to reduce the number of long term detainees was developed and implemented. In short this program offered a budgetary increase to any DA who would reduce the number of long term detainee cases associated with their borough. This program was a failure by three different measures. During the two years of the program total detainees in custody increased from 6500 to 7600. Long term detainees, those over six months, increased by 12.2% or 178

inmates. The cost benefit analysis with favorable assumptions credited the program with saving $2.4 million while costing $8.25 million (Church 1992).
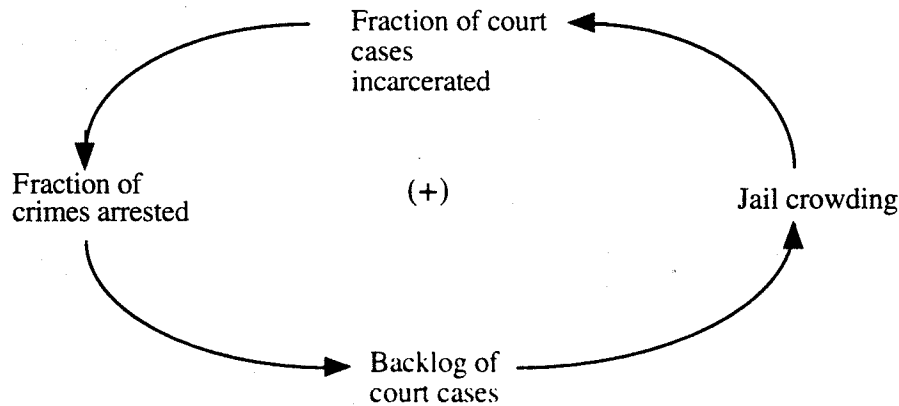
The dramatic increase in detainee length of stay mentioned above played a key role in the City and State establishing a committee to examine ways to improve the functioning of the court system in NYC. This committee was made up of the officials from all the agencies who had a role in the criminal justice system. The Cases committee was to explore areas of mutual agreement which would result in reducing case time in court.

Sectors of the criminal justice model

The criminal justice model has three sectors, police, corrections, and courts. Two of the sectors are included in greater detail: corrections and courts. The police sector is limited to the response of the police to changes in the rate of arrests held in custody (could not pay bail or were not granted bail) during their trials (remanded).

Details of the police sector were left out to simplify the model. Detailed modeling of the police would require connections between police headcount, patrol strength, and possible deterrent effects upon crime. There is also the question of civilians working in the police department. Do these civilians replace police in administrative jobs? If this does happen what do the freed up police do? How is police effectiveness measured, by patrol strength or by total police head count? It is unclear which of these factors should be considered. I eliminated the parts having to do with internal policy and funding of department head count. The model is limited to the question of how the police arrest rate changes with regards to the behavior of the courts.

Diagram 1: major loop of criminal justice model

Fraction of court
cases
incarcerated

Fraction of
crimes arrested

(+)

Jail crowding
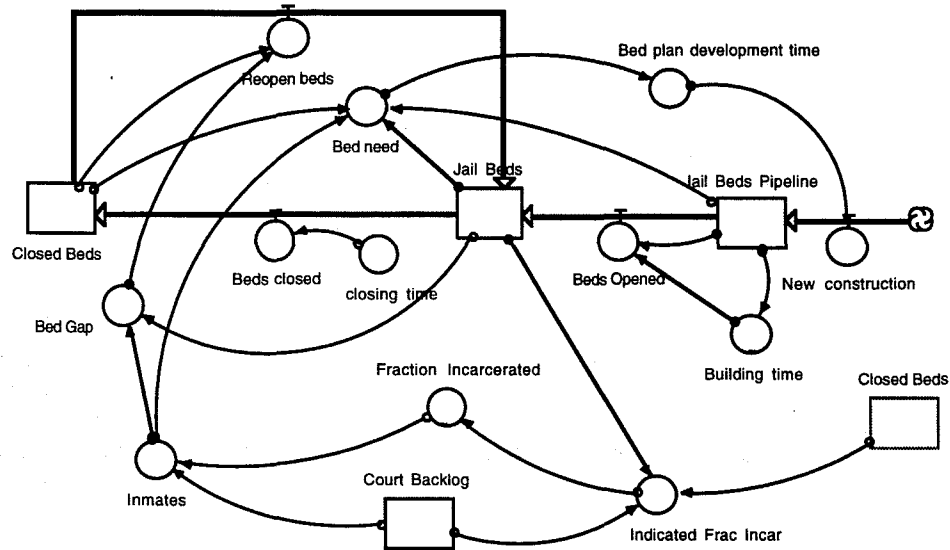
Backlog of
court cases

The model has one dominant negative loop (see diagram 1 above). This causal loop diagram illustrates some of the basic assumptions in the criminal justice model. At the top, fraction of court cases incarcerated has a positive effect upon fraction of crimes arrested. This assumes the police respond positively when more of their arrest cases are incarcerated. Fraction of crimes arrested has a positive effect upon backlog of court cases. The higher the backlog of court cases the higher is jail crowding. The higher jail crowding the lower the fraction of cases incarcerated. This makes for a negative feedback loop. In McCold's (1993) conclusion he includes some discussion of possible feedback in the criminal justice system. These structures are similar to the feedback structure used in this model.

the corrections sector

Jail beds are included in three levels: jail bed pipeline; current capacity and; closed beds. Once a jail bed is built it does not leave the system. Capacity can be closed but system administrators view these as available resources which can be re-opened at any time. The reason for this is that beds were

never permanently closed unless ordered closed by court mandate. In the model beds are reopened when there is a gap between jail beds and inmates. Beds are built when inmates are greater than jail beds, closed beds and a fraction of the pipeline. The pipeline is discounted because of the different construction times for different types of capacity.

Figure 1: corrections sector

In the corrections sector, court backlog is perceived to be exogenous (by DOC managers). Higher court backlog increases the number of inmates and increases the bed gap. If the bed gap increases, the reduction in available beds will decrease the percent of court cases held in custody. This is a negative loop. If the bed gap persists, more bed construction will be planned, adding beds into the bed pipeline. This is a negative loop which will reduce the bed gap. If the bed gap shrinks beds will be closed. As the bed pipeline increases the building time will increase. This is a positive loop which increases the time between the start and completion of construction. Unused beds are always closed to save the operating costs associated with them. These beds can be held in reserve but when judges are aware of these vacant beds it permits an increase in the fraction of cases incarcerated. This is a negative loop.

the police sector

In this sector the police perceive the fraction of cases incarcerated as exogenous. In the criminal justice model when the rate of incarceration increases, after a delay, the police response is to increase the fraction of crimes arrested. The delay assumes that it takes time for the police force to be aware of the change in the custody rate. This model assumes crime is exogenous. Inmates increases the bed gap which decreases the fraction incarcerated. Fraction incarcerated positively affects the perceived fraction incarcerated which increases the fraction of crimes arrested which increases arrests. This loop is negative.

Figure 2: police sector
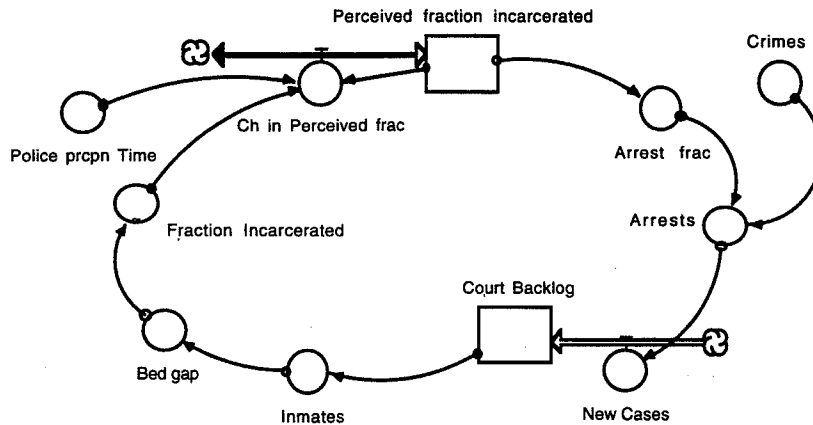
the court sector

Two variables are treated as exogenous to this model: crimes and DA charge rate. The DA charge rate is the fraction of arrests that are prosecuted by the DA. About 3 to 4 percent of cases are not prosecuted (OMB 1994). This could be endogenous in a larger model.

The table function for average time in court has many assumptions behind it. This variable could be disaggregated into a sub-system in a larger model. This function represents causes for the increasing time per case. One assumption is that as all the judges and attorneys acquire higher workloads, it gets more difficult to schedule the necessary meetings to negotiate a settlement or complete a trial. Completion time is dependent upon several rates and variables: judge workload; defense attorney workload; DA workload and time to prepare a case; probation workload; judge ability to calendar cases; probation investigation time; time for defense to prepare case; and DOC ability to produce inmates. The model has no assumption about fraction of total cases which are plea bargained due to workload.

The change in workload standard is a positive loop. As case backlog increases, it is assumed that the participants in the criminal justice system will work more intensely to increase their capacity and meet required workload demands (Shaffer 1976). Increases in the workload standard should reduce the need for increases in judges.

Figure 3: court sector
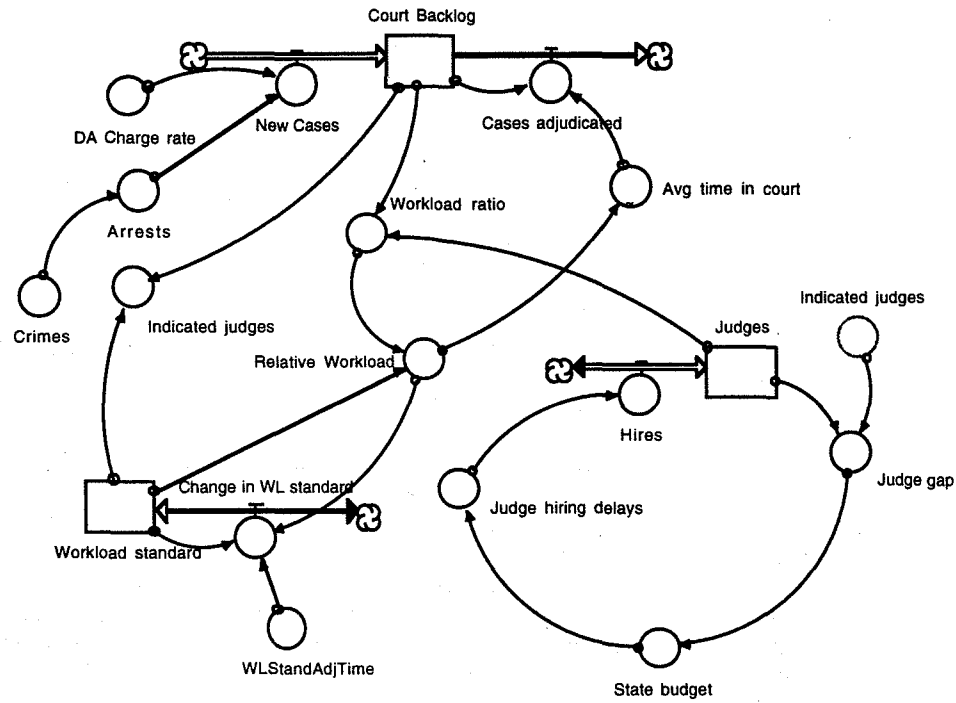
An additional feedback loop in this sector is a negative loop closing the gap between indicated judges and actual judges. As the judge gap grows, the state legislature will be pressured to increase the number of judges. At yearly intervals there will be head count adjustments made to meet demand. The delays in adding judges and the fluctuations above and below needs should cause the level of court backlog to oscillate.

Model results

The model runs focused on determining the source of growth in jail capacity, court backlog and changes in fraction of crimes arrested. In the criminal justice model time is in months with a dt of .125.

Graph 1: Base run
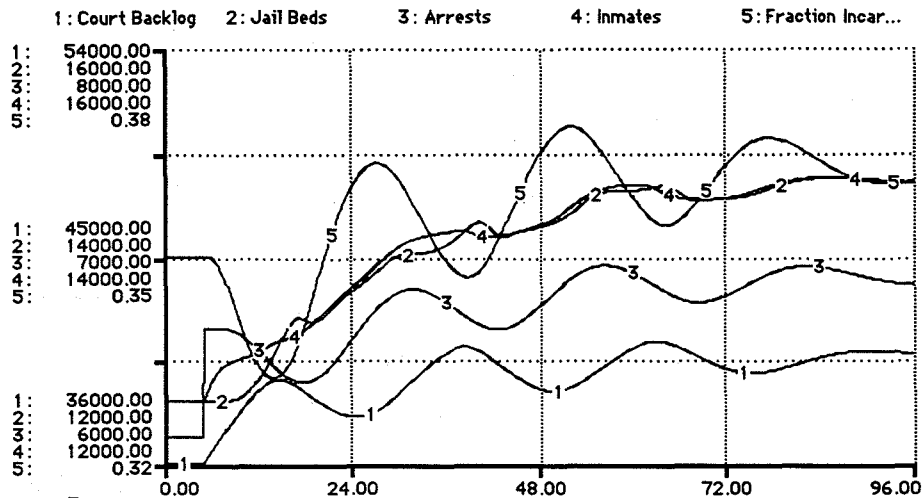
In the base run the step increase in crimes was from 17500 to 19000 per month. Initially, arrests increased but the lack of jail space forced the judges to reduce the fraction of cases held in custody. The arrest rate dropped in response to this decrease. In time jail capacity was increased and the fraction of cases incarcerated increased to a rate higher than in the original equilibrium condition.

The single step increase causes the system to oscillate and it does not return to equilibrium until near the end of the 8 year period shown above. As seen above, court backlog, arrests and fraction incarcerated all have large oscillations.

corrections sector

In general the longer the delay is in building capacity to house the backlog of the court system, the more capacity will be built in the long run. This result appears counter intuitive. What has occurred is that in the short run the courts reduce the fraction of cases held in custody. The police respond to this by reducing the fraction of crimes arrested, therefore reducing the arrest rate. When the planned capacity comes on line the courts can again increase the fraction of cases held in custody and the police increase the fraction of crimes arrested. When this occurs it appears that there is a growth in the arrest rate and there is a need for more jail capacity. This will push the system managers into seeking additional capacity.
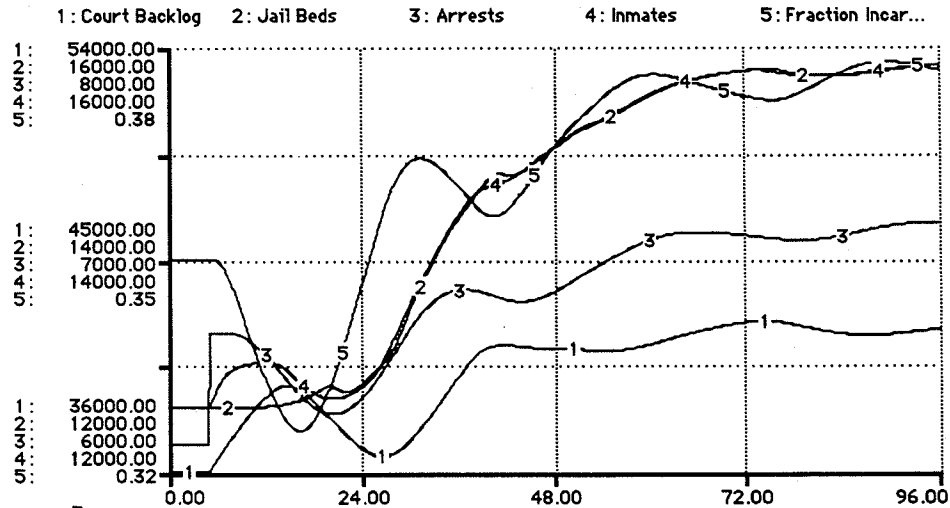
These results indicate that large systems with long lead times for planning and building jail capacity might affect the system in ways that increase the need for jail beds.

Graph 2: shorter planning time

1: Court Backlog 2: Jail Beds 3: Arrests 4: Inmates 5: Fraction Incar...
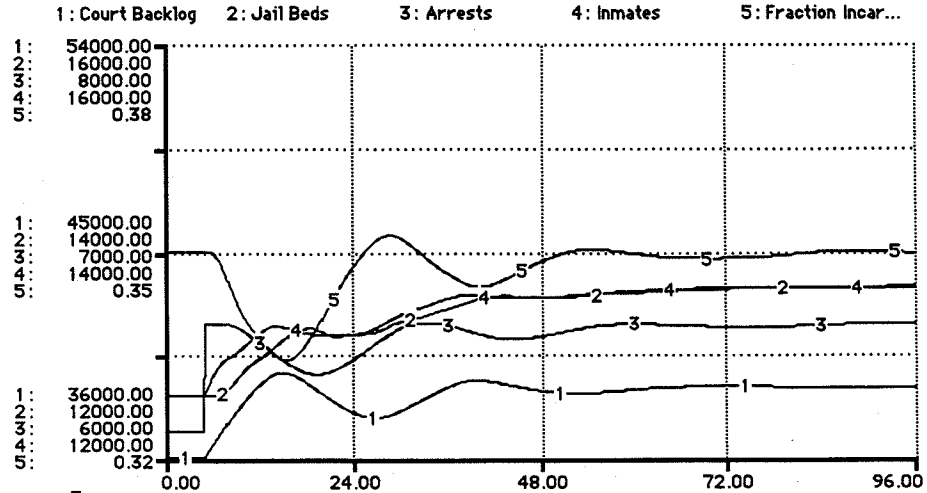
Graph 3: longer planning time

1: Court Backlog 2: Jail Beds 3: Arrests 4: Inmates 5: Fraction Incar...

As can be seen above in graph 3, longer lead time results in more jail capacity being built and more inmates. The fraction of cases incarcerated has increased and so have the total number of arrests. The criminal justice model returns to equilibrium much faster with a shorter planning time.

The results of these two runs indicate that NYC's growth in capacity needs might be a direct result of the long planning periods necessary for capacity acquisition. It might be that bigger government and more time required to plan capacity acquisition will result in greater needs over time.

Court sector

Two effects were tested in the court sector. The affect of state budget cycles upon the court backlog and the effect of changes in workload standard.
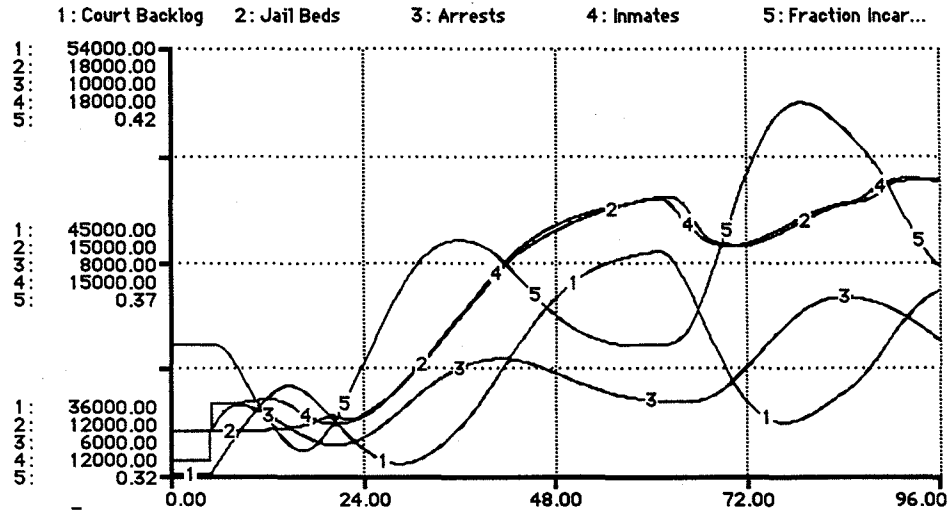
Graph 4: no change in workload standard
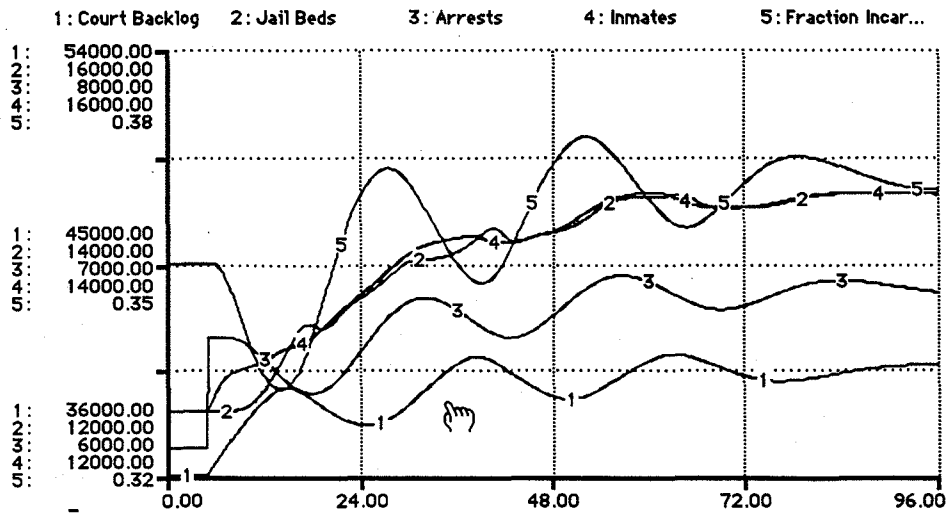
The results change very little from the base run. It appears that this feedback loop does not have a significant effect upon the model.

Graph 5: two year periods between state funding of judges
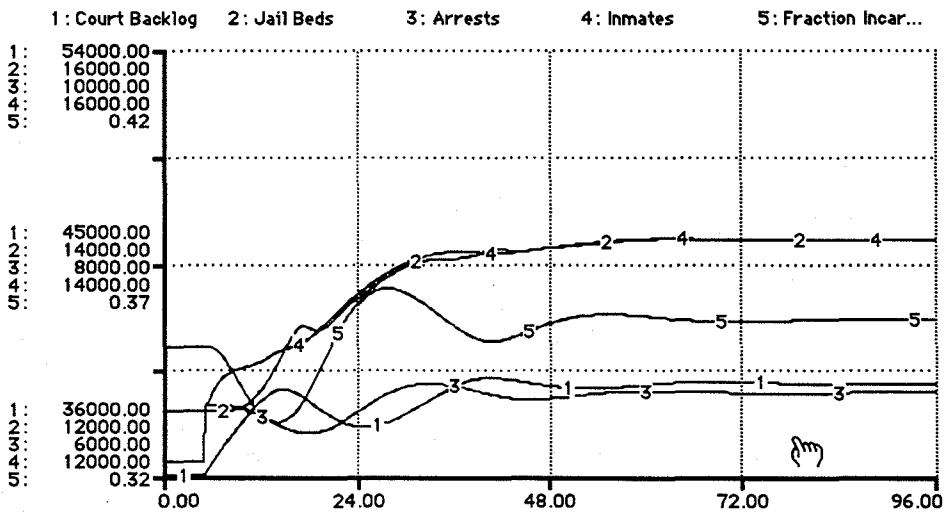
The longer periods between allocating funds for judges tends to dampen the oscillations in the system. During the two years between funding of additional judges, the capacity of the courts has grown and this has absorbed some of the need to complete cases. The result is that in the long run the criminal justice system has increased capacity relative to resources.
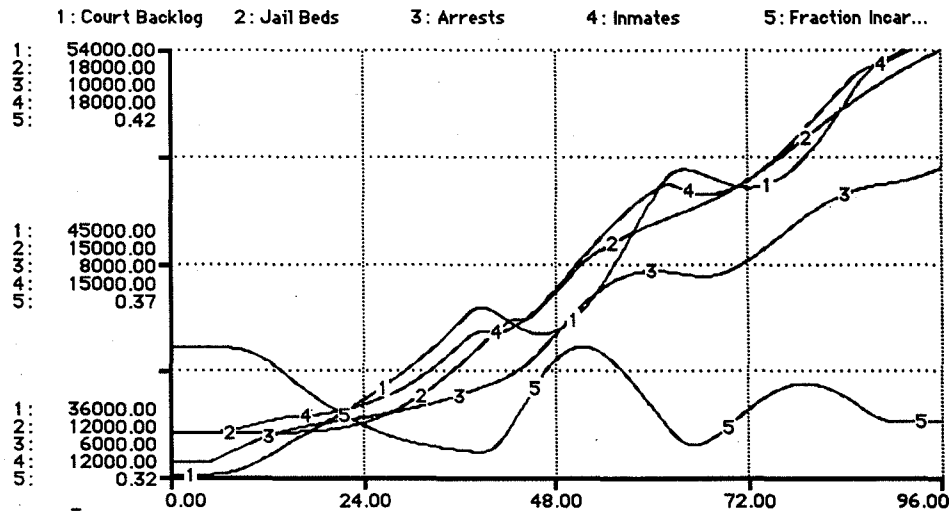
Graph 6: long planning time, no change in workload standard, and two year periods between state funding of judges

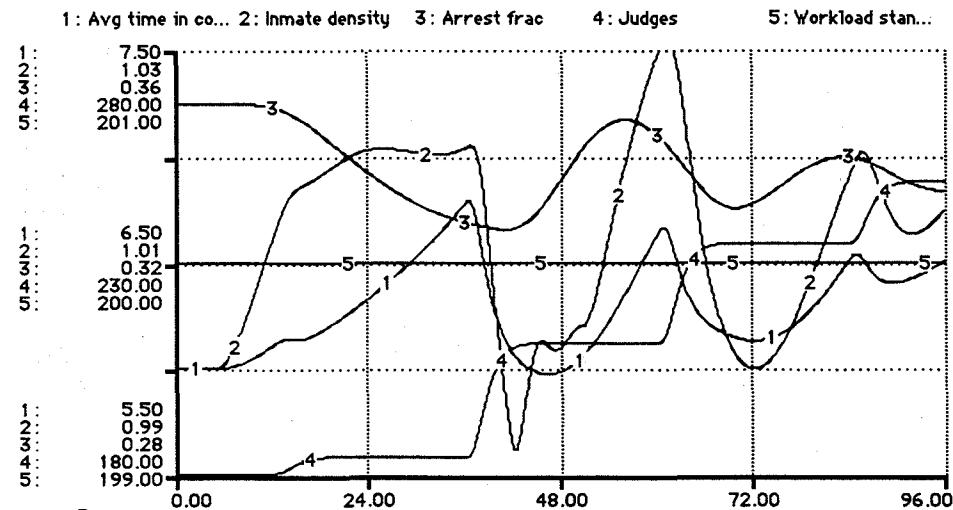| 1: Court Backlog | 2: Jail Beds | 3: Arrests | 4: Inmates | 5: Fraction Incar... |

The results of this run are larger oscillations along with increases in inmates, jail capacity, arrests and court backlog. The removal of changes in workload standard assumes that the system is at its peak capacity. This removes the dampening effect upon the system, increasing the oscillations.

The state does not change the level of judges on a regular basis and is reluctant to make any changes. The infrequent additions of staff means that capacity must be increased by other means. However when these additions are made the system appears to reduce backlogs.

Graph 7: change step increase in crime to a ramp increase

| 1: Court Backlog | 2: Jail Beds | 3: Arrests | 4: Inmates | 5: Fraction Incar... |

Graph 8: additional indicators

1: Avg time in co... 2: Inmate density   3: Arrest frac   4: Judges   5: Workload stan...

1: 2: 3: 4: 5:	7.50 1.03 0.36 280.00 201.00
1: 2: 3: 4: 5:	6.50 1.01 0.32 230.00 200.00
1: 2: 3: 4: 5:	5.50 0.99 0.28 180.00 199.00

0.00   24.00   48.00   72.00   96.00

        Graph 7 appears most like the NYC criminal justice system. There is a steady rise in the number of inmates. Capacity is rising as well but always slightly under the inmate population. The system is oscillating and increasing at the same time. However the general trend is for arrests to be growing slower than inmates and jail capacity while the court backlog is increasing.

        Graph 8 shows some additional indicators. The general conclusions are that all of the system irregularities together create the oscillations observed in the system.   This shows the relationship between court staff additions, reductions in case backlog and reduced numbers of inmates.

        The results indicate that long planning periods, infrequent staff additions and increasing crime work together in creating the criminal justice system oscillations.

Further research

        In Church (1992) the only DA to have positive results in reducing long term detainees and court cases over the two year was the Manhattan DA. This was done not by reorganizing the office but by changing some of the priorities of the Assistant DAs (ADAs). The method used was a report which tracked the old cases and a single staff who checked into the status of these cases. By doing this the individual ADAs were responsible for reducing these cases. Prior to this change, any case the ADA did not like could be delayed. This report made delaying more difficult. This method eliminated the need for cooperation with other agencies and a small change in the organizational culture had some affect upon the problem. This would indicate that the criminal justice system in NYC is in need of organizational learning.

        I think there are many areas which warrant further study. In the corrections sector there is a clear link between the time to plan and build capacity and arrest rates. In the court sector the yearly budget cycle with the ratcheting up of staff could be causing some of the observed oscillations in the case backlog or time to disposition. It is unclear if there are any workload adjustments being made in the courts. It might be that capacity is at its limit given the current organizational culture of the criminal justice agencies.

Conclusions

        The results of this model demonstrate that there is feedback in the NYC criminal justice system. Each sector has effects upon the whole criminal justice system. By incorporating some of the basic beliefs of NYC officials about the criminal justice system, I think I have demonstrated that

these results contradict their firmly held beliefs that the essential causes of problems are wholly exogenous in origin. Many feel that it is beyond them to affect change in the system. This is not true. This model demonstrates that there are ways to change the system. Peter Senge characterizes this type of behavior as "the enemy is out there" (Senge 1990).

Much of the blame for the inability to change the system was placed upon the lack of cooperation between the agencies in the court system. I believe that I have demonstrated this is not entirely true. To a large extent it is delays in the system, not lack of cooperation which has created many of the observed problems with the criminal justice system.

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