

# CARTOGRAPHIC AND STATISTICAL ANALYSES OF THE EFFECTS OF DOUBLE BUNKING A CLOSE-CUSTODY CORRECTIONAL FACILITY



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# Introduction

- State of Minnesota, Department of Corrections
  - 1984 = 1,875 offenders
  - 1995 = 4,846
  - 2004 = 8,758
    - Largest one-year increase in the United States from 2003 – 2004
- Between 2003 and 2004, the budget for the close-custody facility in this study was only increased by \$12,000 even though 200 offenders were to be added to the population
- Funding cuts plus rising prison populations
  - Eliminated 192 positions
  - Began double-bunking offenders



# Experience

- Worked for the DOC for more than 14 years
  - 8 years as a correctional officer in a close-custody male facility
  - 6 years as an investigator in a close-custody male facility
  - 1 year as an investigator for Level 3 Sex Offenders
- Earning my Bachelor of Science Degree in Geography with a minor in GIS/Cartography



# Literature Review

- Numerous journal articles including:
  - *The Prison Journal, Journal of Applied Psychology, Social Science Quarterly, and American Journal of Community Psychology*
- Several books, including:
  - *Violence in Prison, Architectural Determinism.* 1982. Atlas, R.
  - *Prison Violence: The Dynamics of Conflict, Fear and Power.* 2003. Edgar, Kimmett et. al.
- Several studies done by the Bureau of Prisons and the National Institute of Justice



# Problem Statement

- Study the effects of double bunking close-custody offenders within a correctional facility
  - Overcrowding, outdoor air temperature, gang membership, severity of governing sentence, age, race and possible relationships between rule violations
  
- Department of Corrections (throughout the U.S.) has never used GIS or cartographic analysis to better manage the offender population
  - Is GIS a useful tool to map activities within a building
  - Is GIS an effective tool for better management of offenders



# Hypotheses

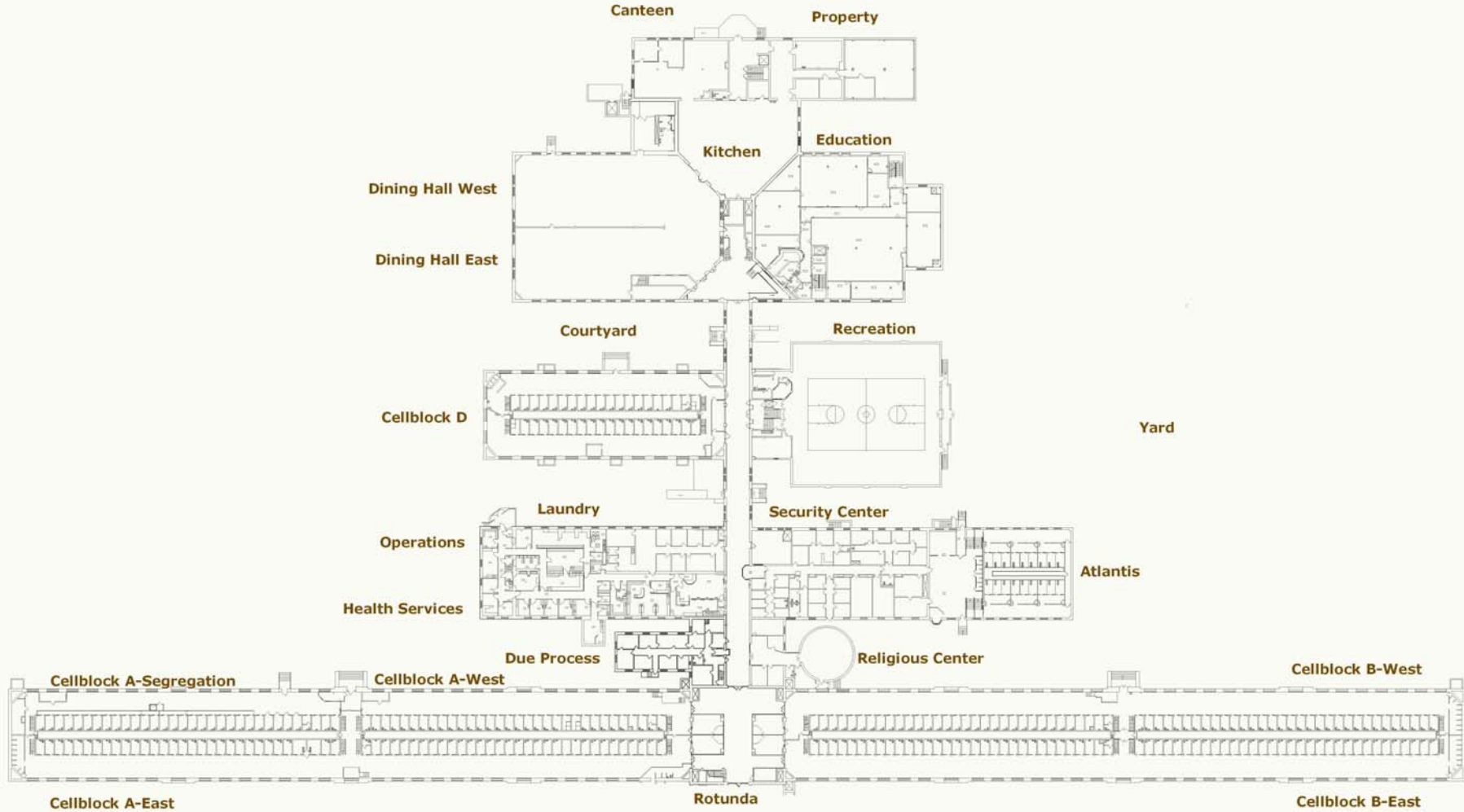
- The numbers of rule violations within a correctional facility are directly correlated to many factors:
  - Spatial density – less space per offender indicates more rule violations,
  - Uneven distribution of offenders by race will result in a larger number of rule violations,
  - Patterns exist between minor, intermediate and major rule violations,
  - An increase in temperature has a positive correlation to rule violations,
  - A greater number of gang members living in a cell block indicates a higher propensity for violence,
  - Younger offenders are more likely to be involved in rule infractions,
  - Offenders with governing sentences relating to drugs are more violent in prison, and
  - Offenders with more than ten years left to serve in prison are more likely to be involved in major rule violations, including assaults.



# Data

- Selected study period
  - 12 months prior to double bunking with highest number of rule violations and 3 months of double bunking
    - September 2003 = month with largest number of rule violations
    - 60 days after start of double bunking
- Digital map of facility sections – coordinate transformation
- Collected incident reports (2,500+) and information for security threat group membership, age, race, years until release, type of crime, and cell location (for each person for each day for four months)

# Layout of Correctional Facility





# Methods

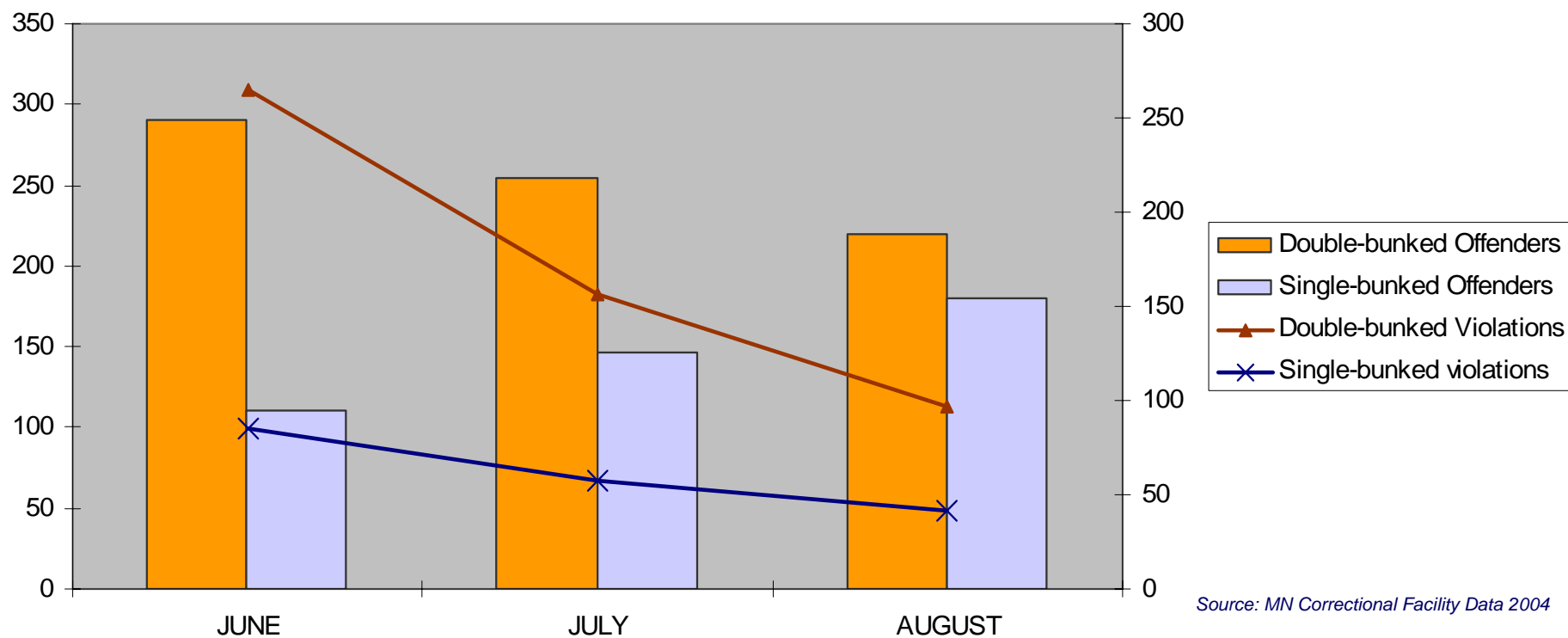
## ■ Classification

- Gangs: Native American, White Power, Folks, People, Asian, Other
- Age: Less than 25, 25-34, 35-44, 45-54, 55+
- Crimes: Violent, Person, Property, Sex, Drugs, Gang, Other
- Years Until Release: Less than 10, 10-19, 20-29, 30-39, 40+
- Race: Black, White, Native American, Asian, Other
- Rules: Major, Intermediate, Minor
  - Major = assaults, drugs, weapons
  - Intermediate = disobey direct orders, being in an unauthorized area, threatening others
  - Minor = refuse to stand for count, disturbing others, failure to display ID

# Results – *Spatial Density*

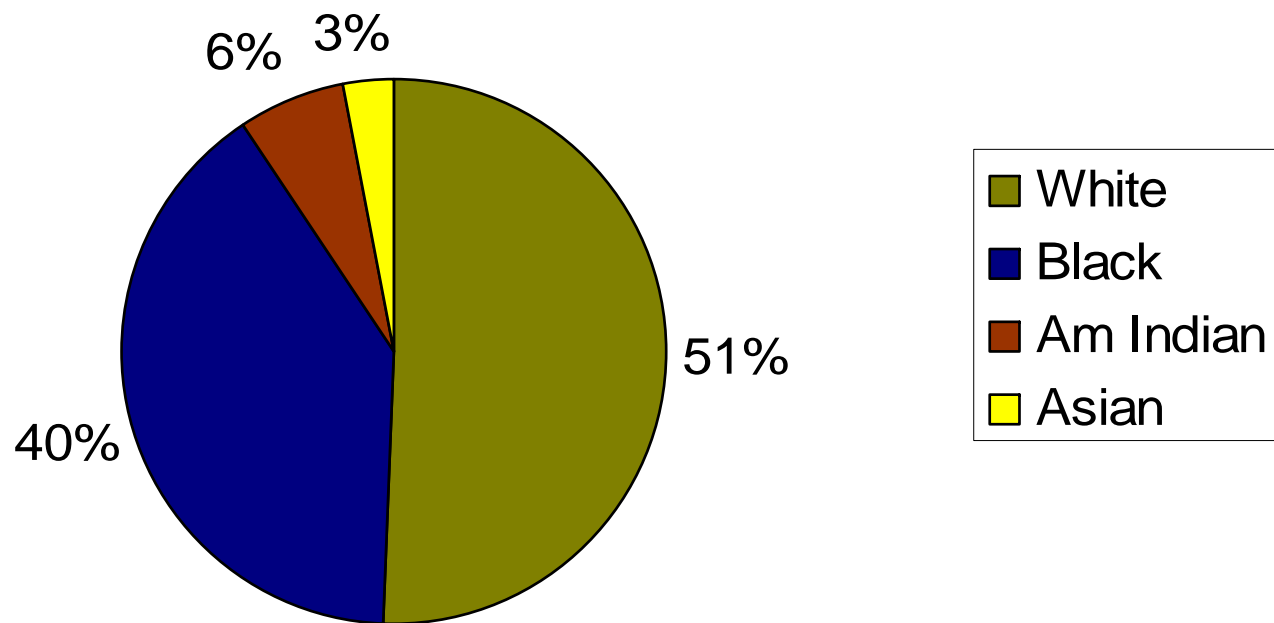
- Spatial Density
  - Single Cell = 60 square feet
  - Double-bunked cell = 30 square feet
    - Does not take into account space taken up by bed, toilet, sink, table
- Monthly totals
  - June = 70% of offenders in B-West
  - July = 64% of offenders in B-West
  - August = 55% of offenders in B-West
- Threshold for B-West = approximately 225 double-bunked offenders – possibly lower
- Those in single bunks appear to also be affected by double bunking – spatial and social density issue

## RULE VIOLATIONS COMMITTED BY SINGLE-BUNKED AND DOUBLE-BUNKED OFFENDERS



# Results -- *Race*

## AVERAGE POPULATION BY RACE June, July, August 2004



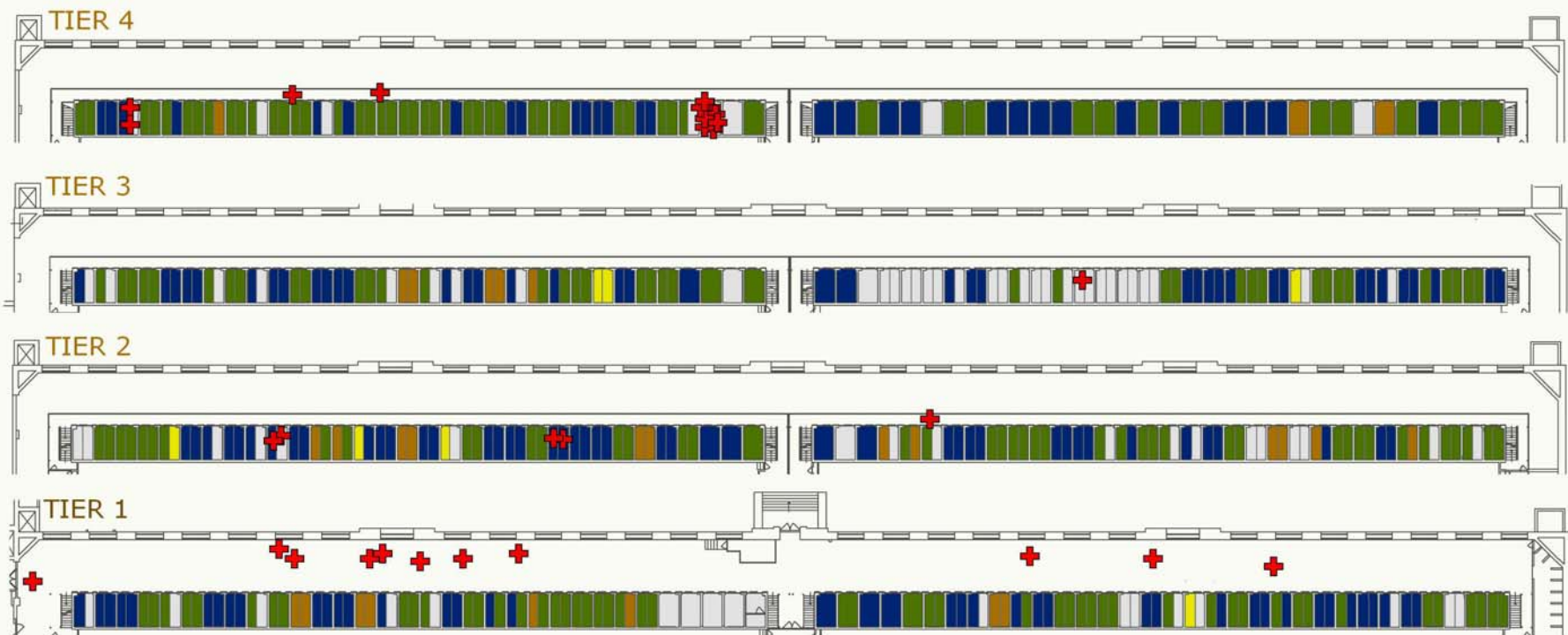
Source: MN Correctional Facility Data 2004

# Results -- *Race*

Month	Minor	Intermediate	Major	Assaults
Sept 03	Black	Black	Black	Black
June 04	Black	White	White	White
July 04	Asian	Black	White	White
Aug 04	White	Black	White	White

- White offenders became more violent as double bunking progressed
- Black offenders began to respond in July

# CELL BLOCK B-WEST JUNE 2004 ASSAULTS AND LIVING ASSIGNMENTS BY RACE



A disproportionate number of white offenders were located on Tiers 1 and 4. White offenders accounted for approximately 44% of offenders on Tiers 2 and 3. Fifty percent of offenders on Tier 1 were white and more than 60% of offenders on Tier 4 were white. Five of the nine assaults on Tier 4 were committed by white offenders. However, 2 assaults were committed by unknown offenders.





# Results – *Rule Violations*

## ■ Positive Correlations

□ Staff Assaults and Weapons (0.838)

- 19 staff were assaulted during 2004 study period but weapons were not used

□ Staff Assaults and Visiting Misconduct (1.00)

□ Staff Assaults and Unsanitary Acts and Conditions (1.00)

□ Lying/ Misrepresentation and Possession of Security Threat Group (gang) materials (0.897)

## ■ Negative Correlation

□ Possession of Weapons and Disobeying a Direct Order (-.640)

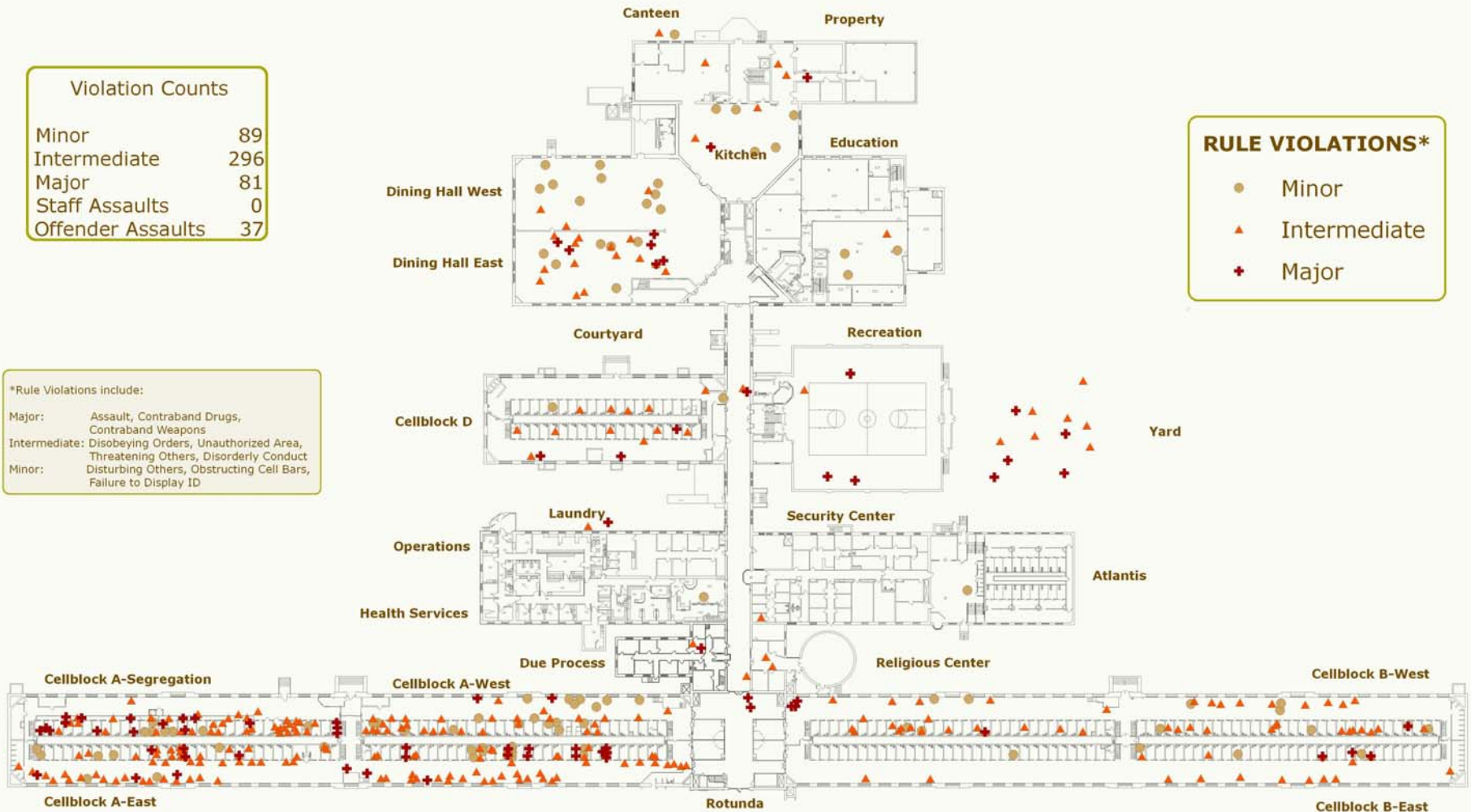
# SEPTEMBER 2003 RULE VIOLATIONS

## Violation Counts

Minor	89
Intermediate	296
Major	81
Staff Assaults	0
Offender Assaults	37

## RULE VIOLATIONS\*

- Minor
- ▲ Intermediate
- ✚ Major



### \*Rule Violations include:

- Major: Assault, Contraband Drugs, Contraband Weapons
- Intermediate: Disobeying Orders, Unauthorized Area, Threatening Others, Disorderly Conduct
- Minor: Disturbing Others, Obstructing Cell Bars, Failure to Display ID

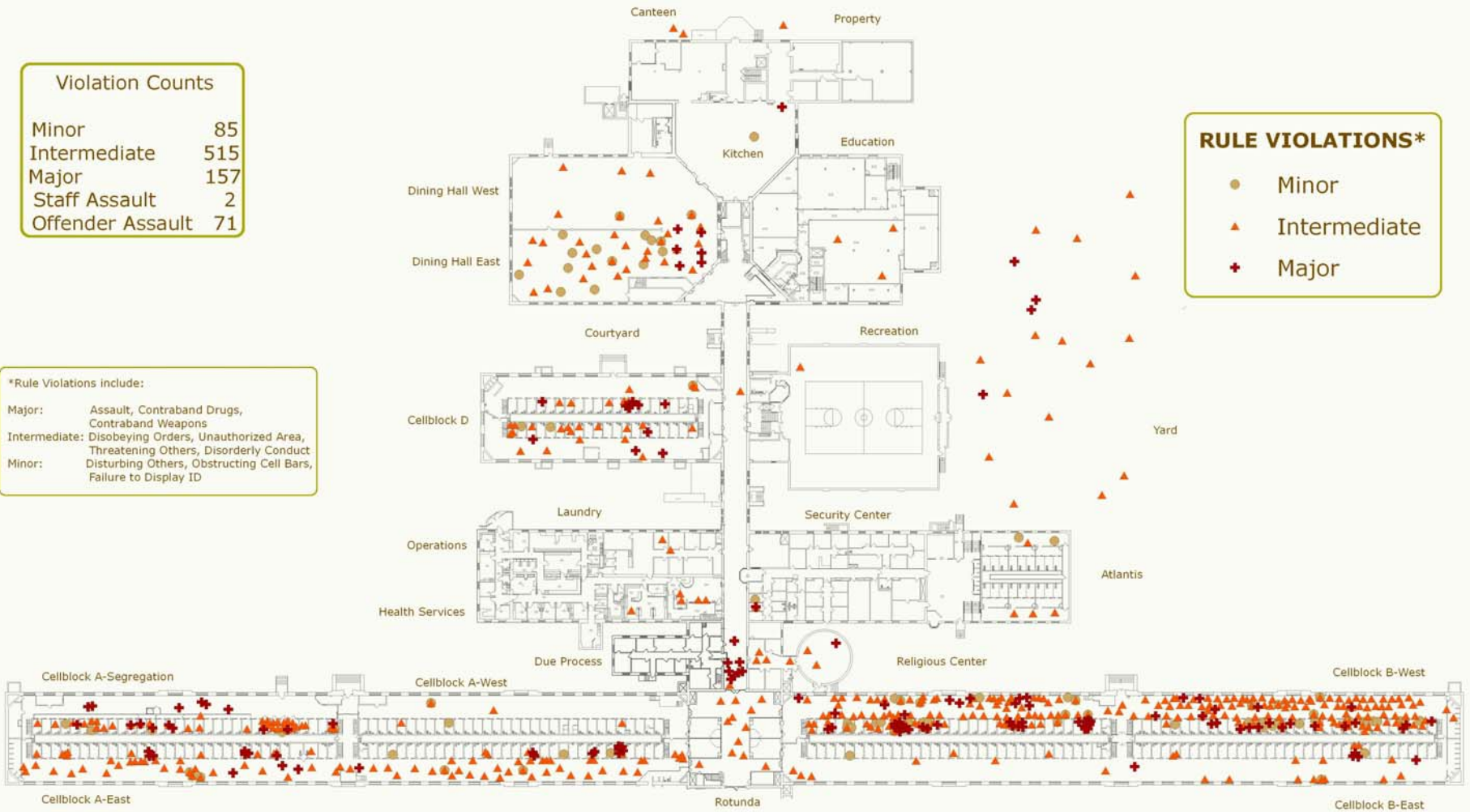


# JUNE 2004 RULE VIOLATIONS

Violation Counts	
Minor	85
Intermediate	515
Major	157
Staff Assault	2
Offender Assault	71

**RULE VIOLATIONS\***

- Minor
- ▲ Intermediate
- ✚ Major



\*Rule Violations include:

Major: Assault, Contraband Drugs, Contraband Weapons

Intermediate: Disobeying Orders, Unauthorized Area, Threatening Others, Disorderly Conduct

Minor: Disturbing Others, Obstructing Cell Bars, Failure to Display ID

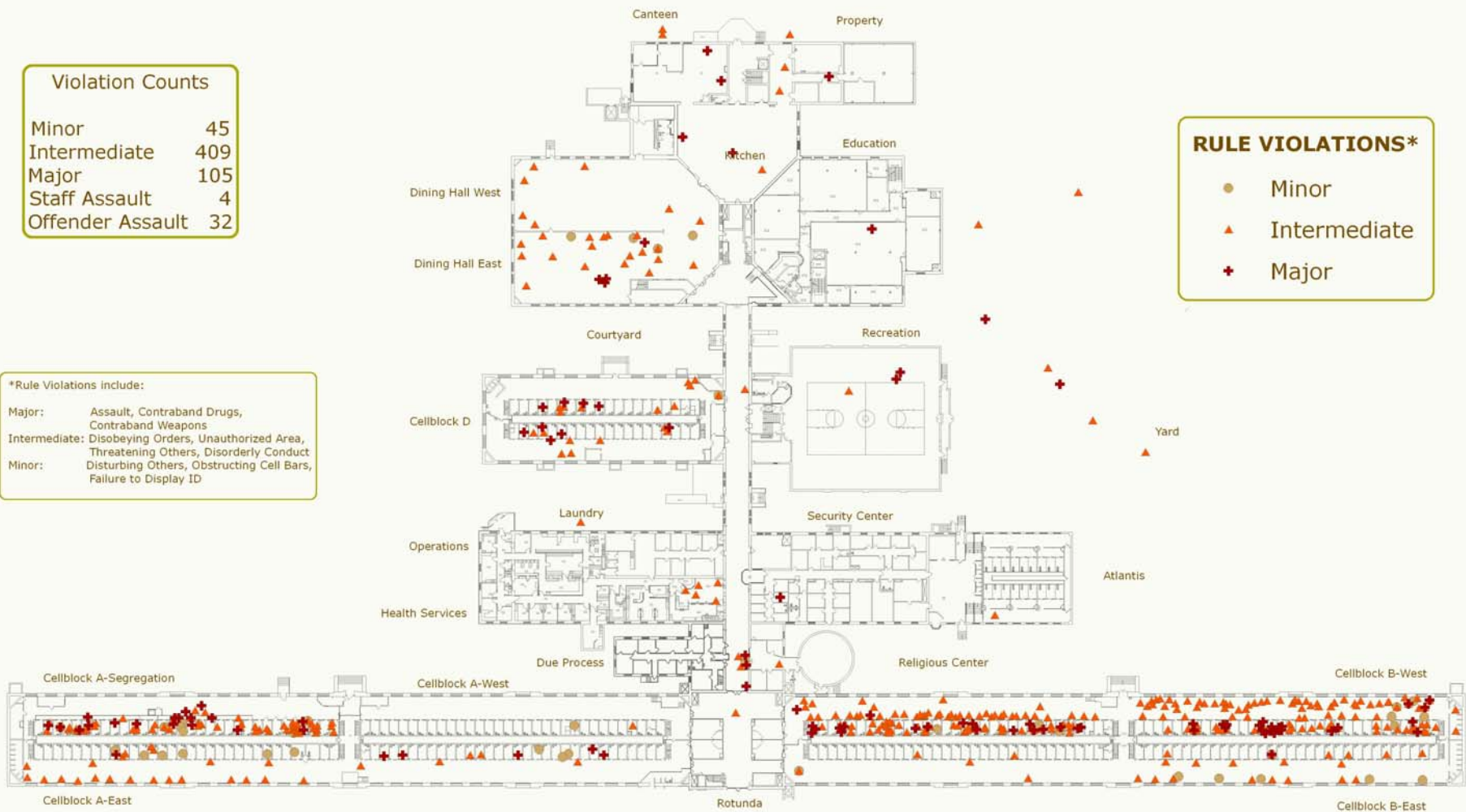
# JULY 2004 RULE VIOLATIONS

## Violation Counts

Minor	45
Intermediate	409
Major	105
Staff Assault	4
Offender Assault	32

## RULE VIOLATIONS\*

- Minor
- ▲ Intermediate
- ✦ Major



### \*Rule Violations include:

- Major: Assault, Contraband Drugs, Contraband Weapons
- Intermediate: Disobeying Orders, Unauthorized Area, Threatening Others, Disorderly Conduct
- Minor: Disturbing Others, Obstructing Cell Bars, Failure to Display ID

# AUGUST 2004 RULE VIOLATIONS

Violation Counts	
Minor	89
Intermediate	355
Major	78
Staff Assault	4
Offender Assault	26

\*Rule Violations include:

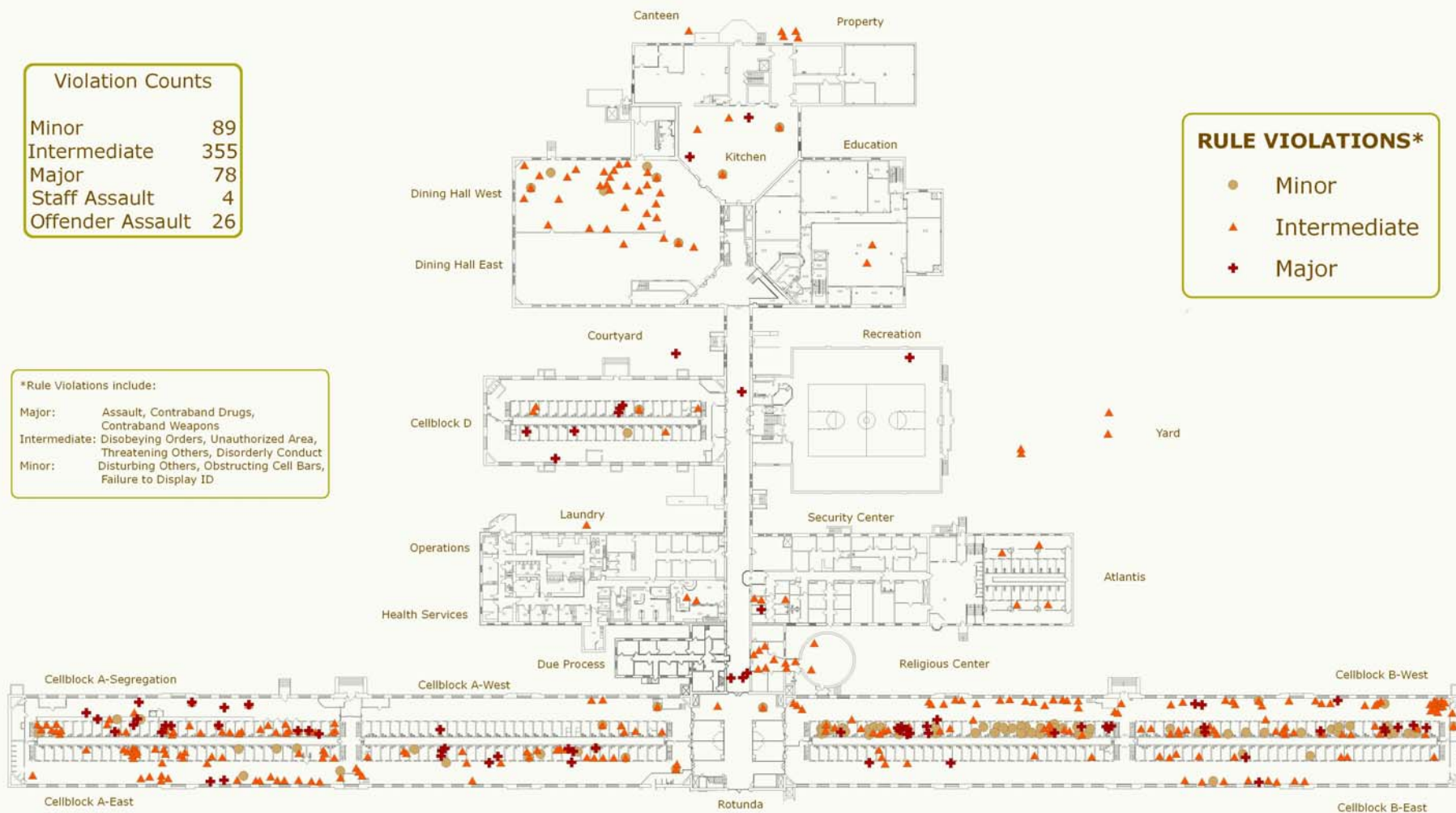
Major: Assault, Contraband Drugs, Contraband Weapons

Intermediate: Disobeying Orders, Unauthorized Area, Threatening Others, Disorderly Conduct

Minor: Disturbing Others, Obstructing Cell Bars, Failure to Display ID

**RULE VIOLATIONS\***

- Minor
- ▲ Intermediate
- ✚ Major



# Results -- *Temperature*

- Outdoor Air Temperature
  - Mild summer
    - Only three days over 95 degrees
- September 2003
  - Slightly positive correlations
    - A-East = .414 – low temperatures
    - B-East = .349 – low temperatures

# Results -- *Temperature*

## ■ 2004 Anomaly

- Weather had no effects until violations were correlated with temperature occurring two days prior to violation

## ■ June, July, August 2004

- Major -- positive correlations

- Cellblocks

- A-Segregation and B-West most sensitive to maximum temperatures

- Facing to the west

- B-East and A-East -- strongest correlation to high-low temperature variance or minimum temperatures

- Assaults

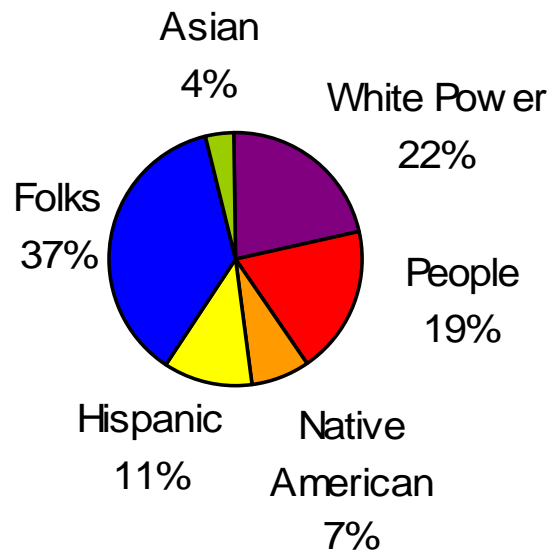
- High-low temperature variance in June +0.351

- Negative correlation with high temperatures in July (-0.453)

# Results – *Security Threat Groups*

- 30% of offenders identified as a member of a gang

**SECURITY THREAT GROUP MEMBERS**



Source: MN Correctional Facility Data 2004

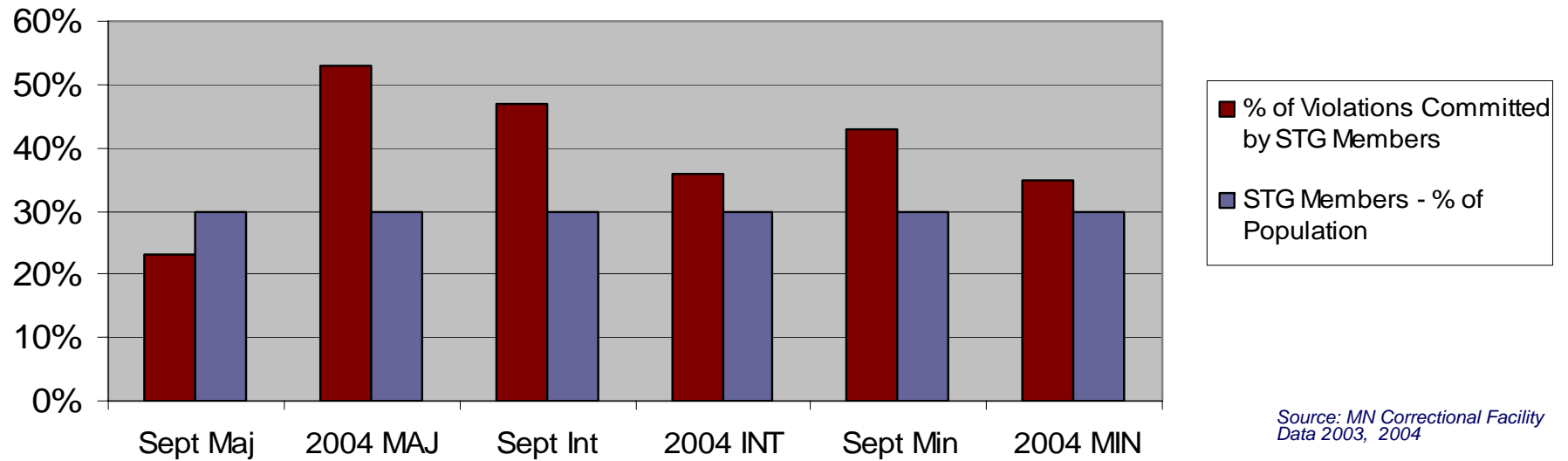




# Results – *Security Threat Groups*

- Uneven distribution of offenders based on STG status throughout the institution
- Higher percentage of BW offenders were STG members
- B-West had the highest percentage of all types of gangs
- Uneven distribution of gang members within B-West

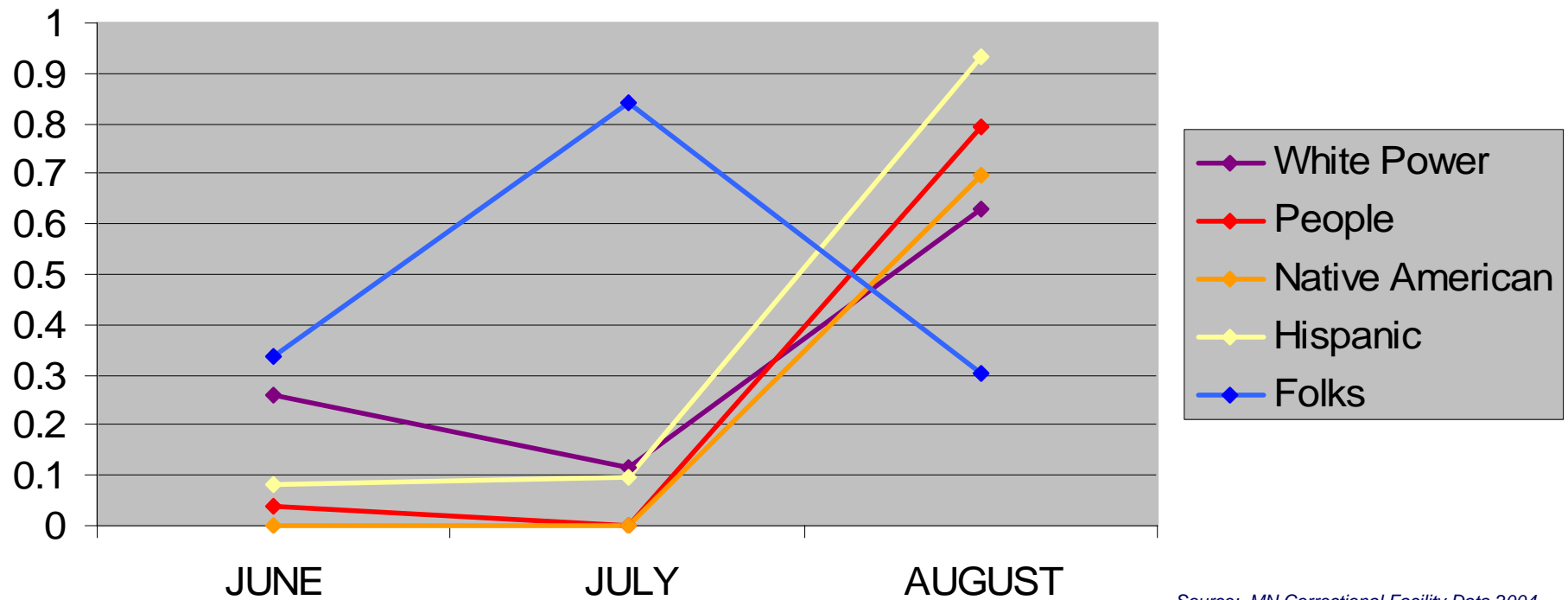
## PERCENT OF STG MEMBERS AND PERCENT OF RULE VIOLATIONS COMMITTED BY STG MEMBERS



Source: MN Correctional Facility  
Data 2003, 2004



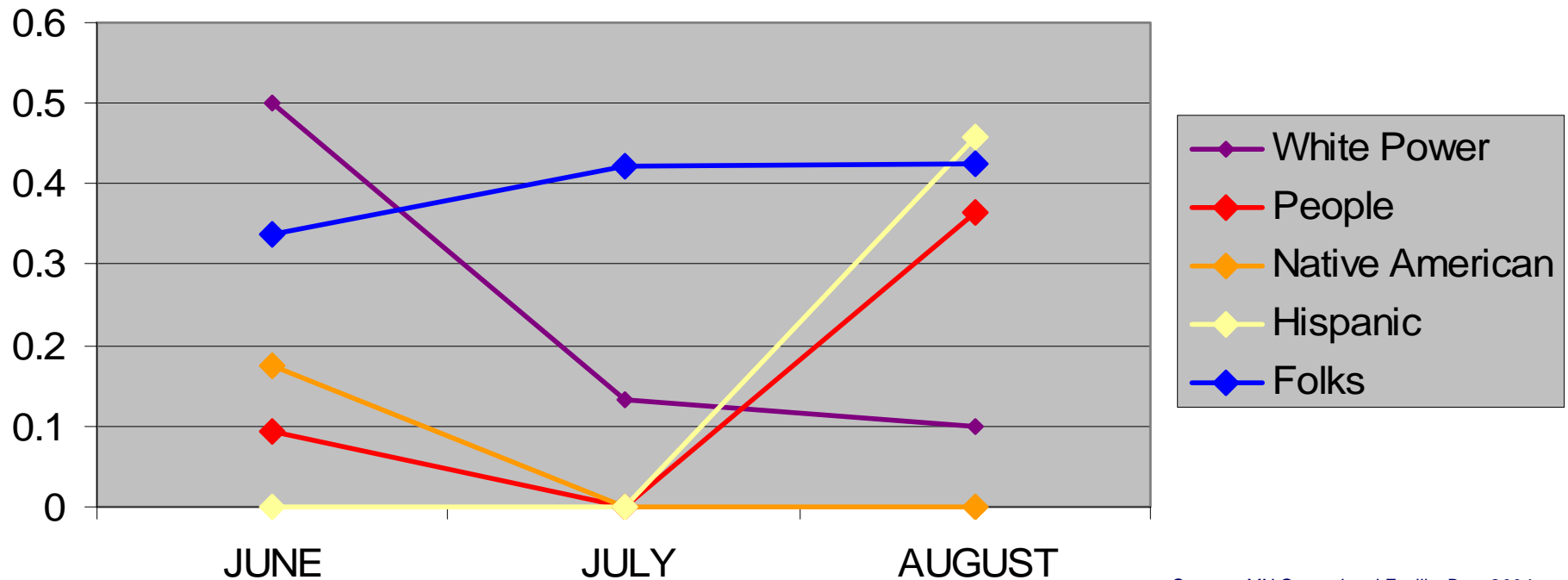
## TOTAL VIOLATION CORRELATION



Source: MN Correctional Facility Data 2004

- Clearly shows a struggle for power among gangs
- Did the Folks make the first move – escalated violations

## MAJOR VIOLATION CORRELATIONS

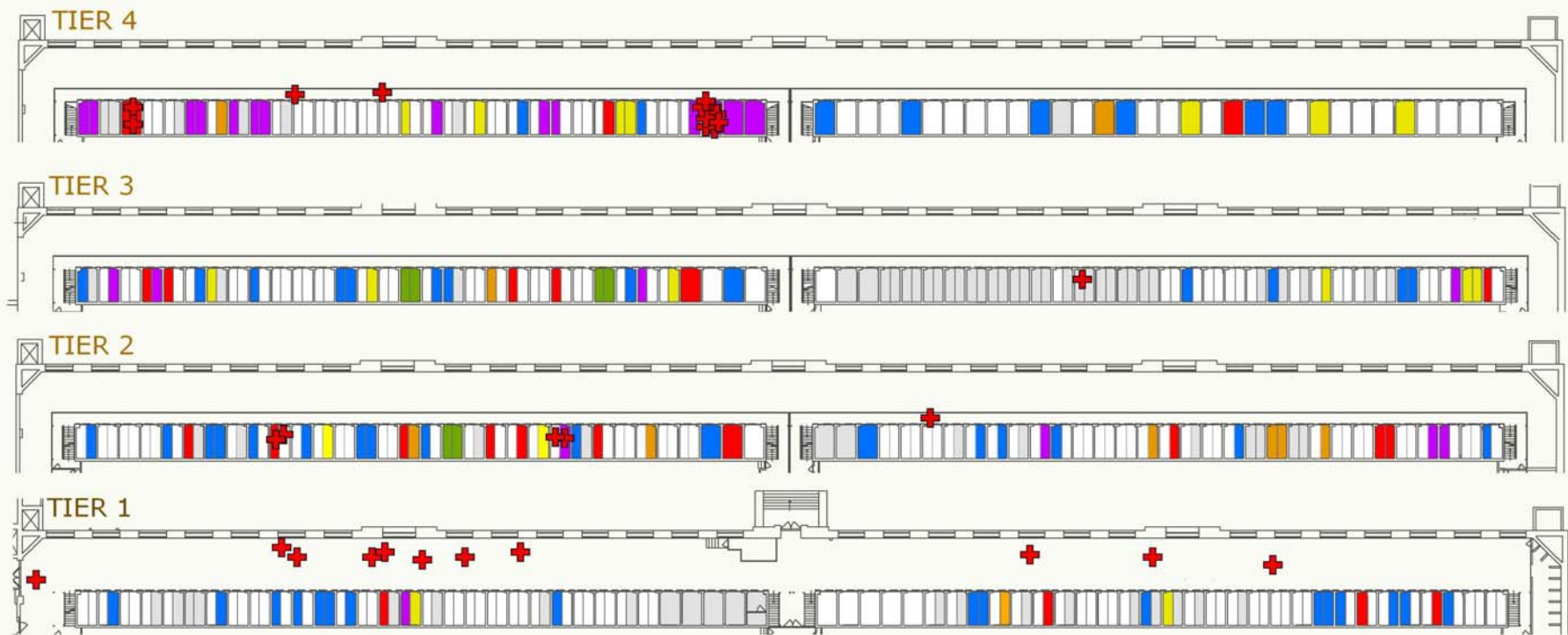


Source: MN Correctional Facility Data 2004

- White Power more likely to commit major rule violations in June
  - Decreased due to placement in segregation
- Folks weren't defeated in August – concentrating on assaults and contraband
- Native American and People numbers lower due to placement in segregation after July assaults

# CELL BLOCK B-WEST

## JUNE 2004 ASSAULTS AND LIVING ASSIGNMENTS BY SECURITY THREAT GROUP



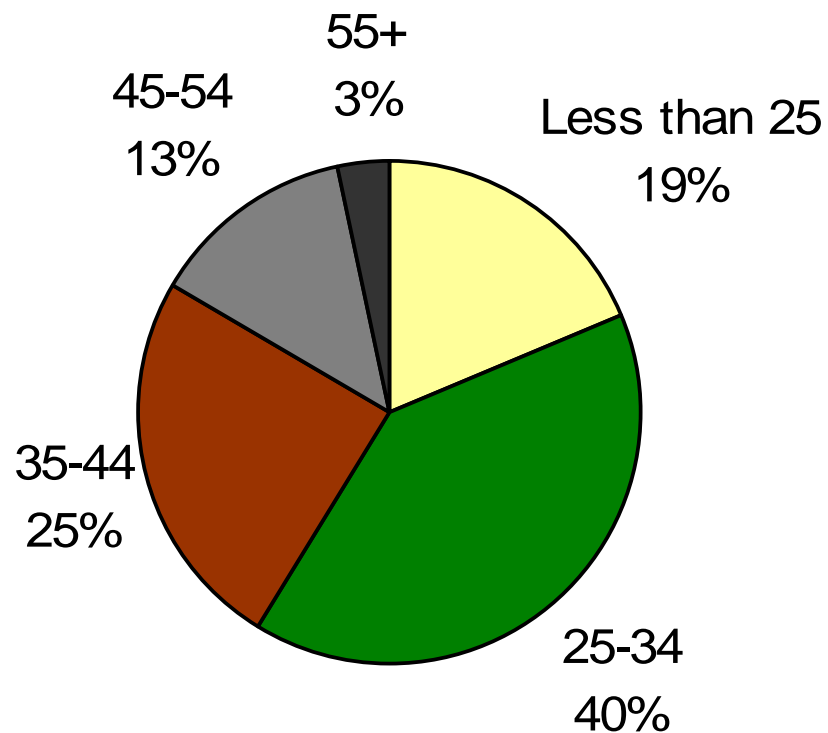
A disproportionate number of White Power offenders were housed on Tier 4, especially in one half of the tier. This is also where numerous assaults occurred. Folks members were disproportionately distributed on Tiers 1 and 2. Many assaults occurred in front of these cells.

### SECURITY THREAT GROUPS

ASIAN	PEOPLE
FOLKS	WHITE POWER
HISPANIC	No STG
NATAM	Empty Cell

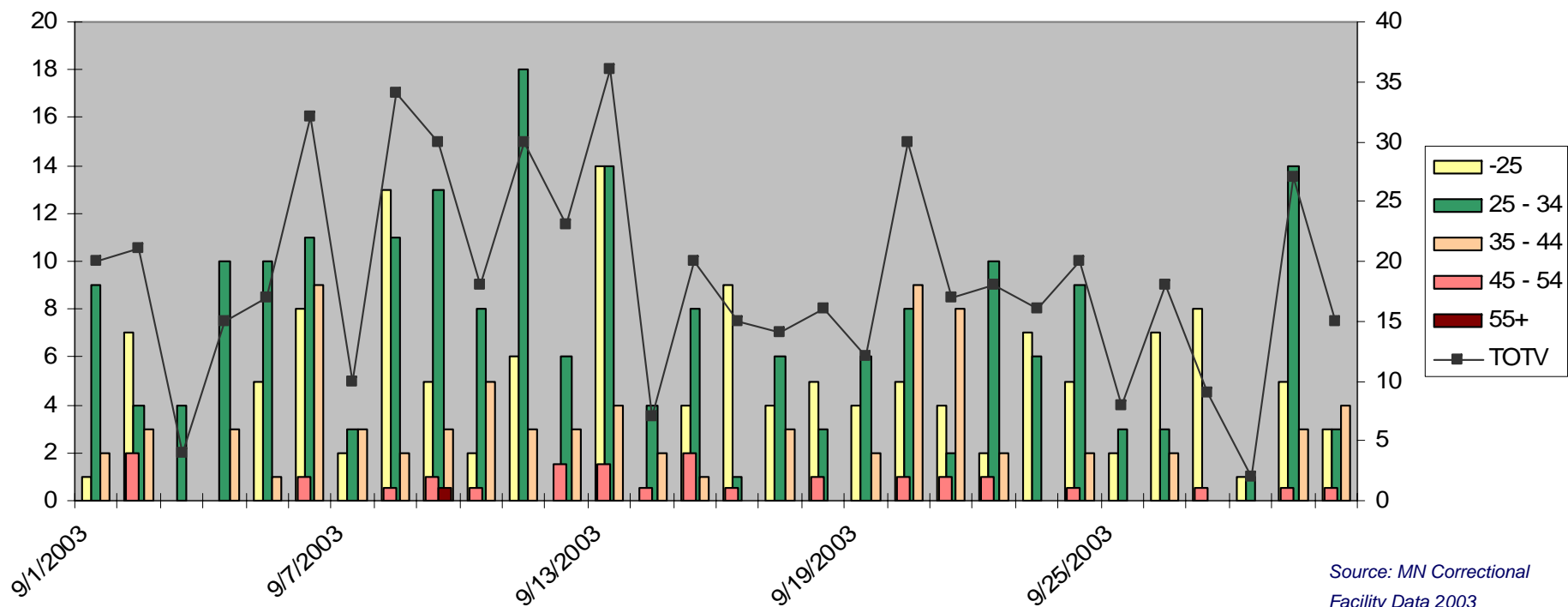
# Results -- Age

## PRISON POPULATION BY AGE



Source: MN Correctional Facility Data 2004

## TOTAL RULE VIOLATIONS AND AGE OF OFFENDERS COMMITTING VIOLATIONS SEPTEMBER 2003

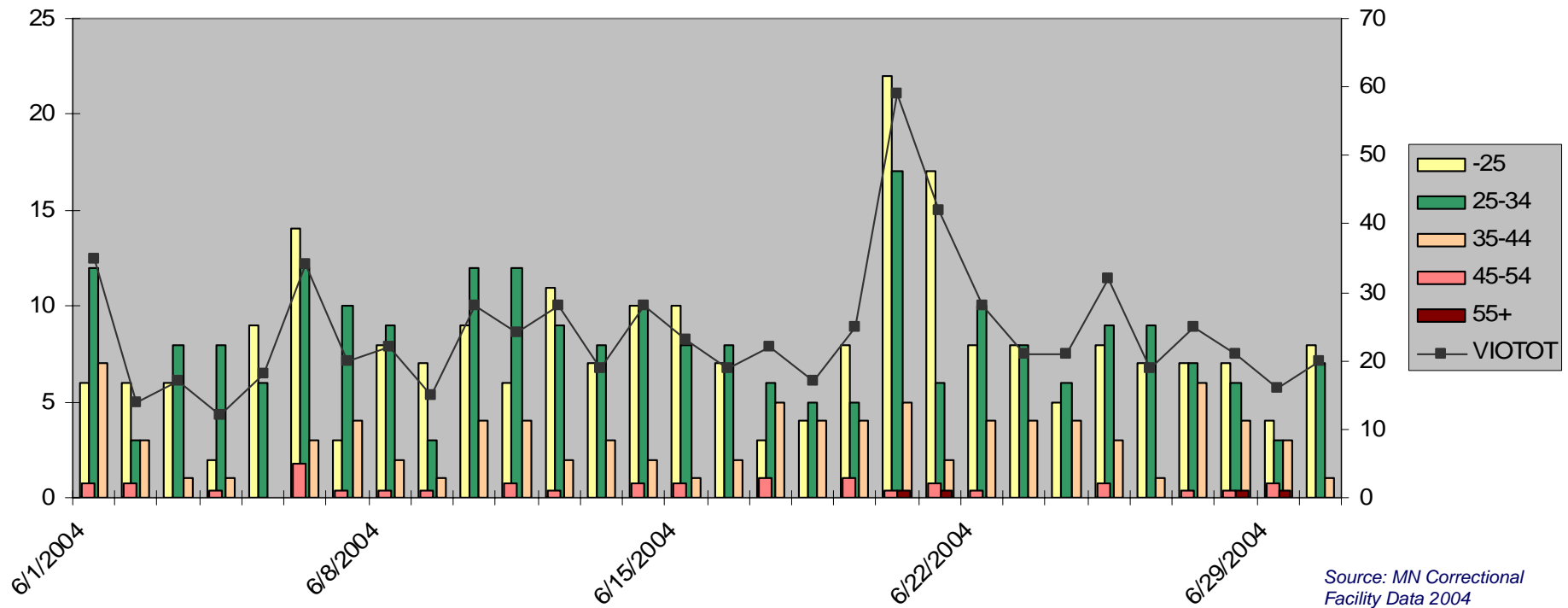


Source: MN Correctional Facility Data 2003

### Correlation Rates

-25	+0.118
25 - 34	+0.225
35 - 44	+0.036
45 - 54	+0.078
Over 55	-0.100

## TOTAL RULE VIOLATIONS AND AGE OF OFFENDERS COMMITTING RULE VIOLATIONS JUNE 2004

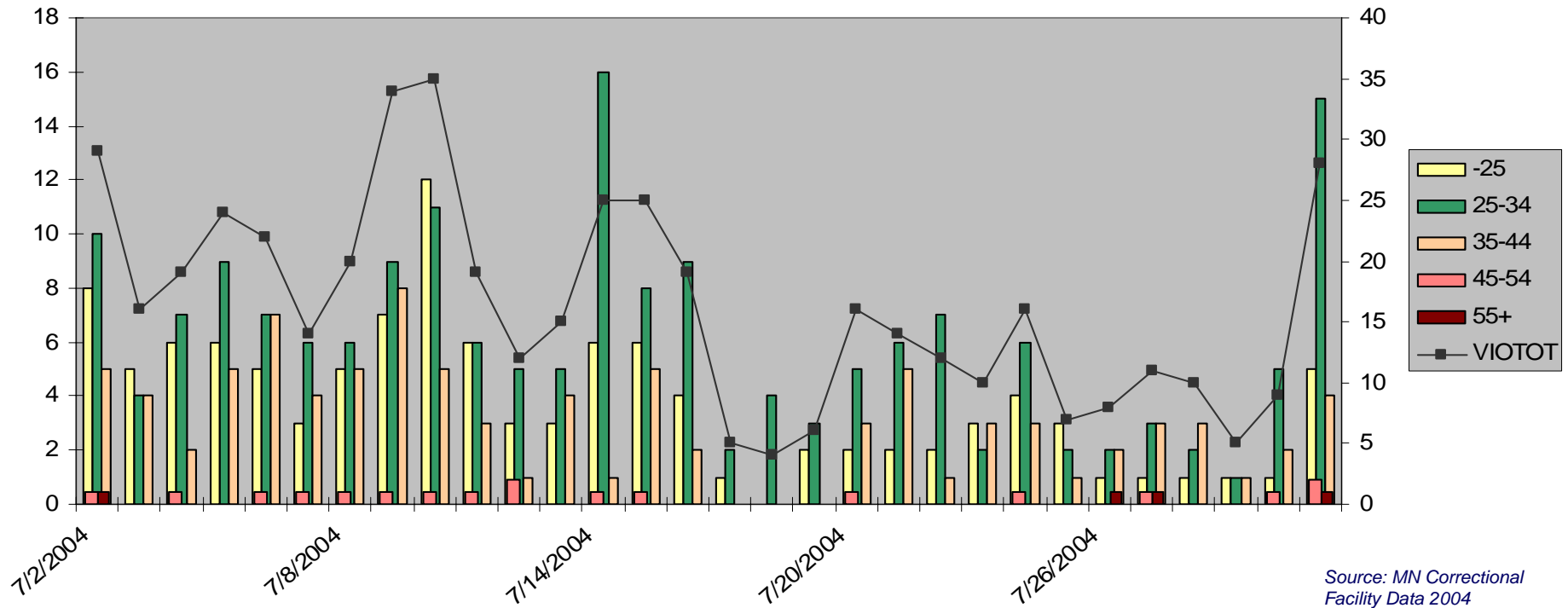


Source: MN Correctional Facility Data 2004

### Correlation Rates

-25	+0.137
25 – 34	+0.353
35 – 44	-0.149
45 – 54	-0.251
Over 55	-0.221

## TOTAL RULE VIOLATIONS AND AGE OF OFFENDERS COMMITTING RULE VIOLATIONS JULY 2004

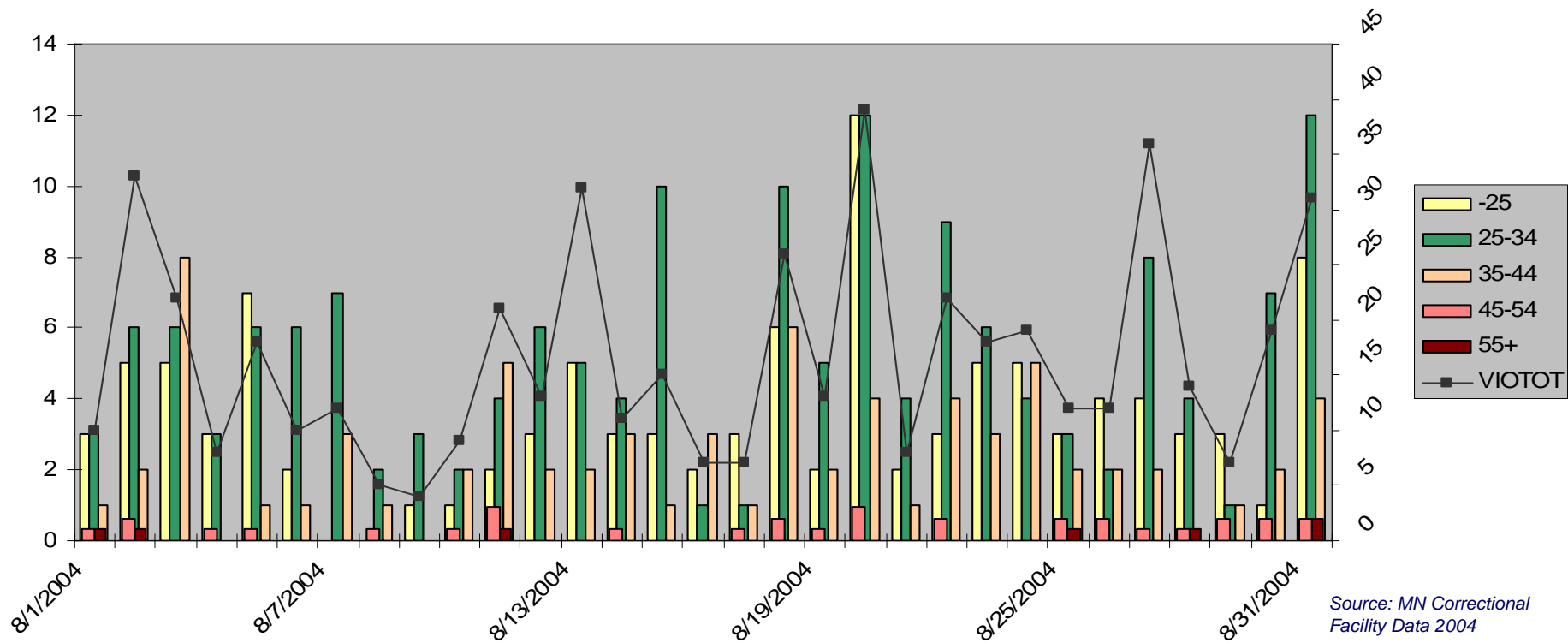


Source: MN Correctional Facility Data 2004

### Correlation Rates

-25	-0.273
25 - 34	+0.154
35 - 44	+0.071
45 - 54	+0.697
Over 55	+0.271

## TOTAL RULE VIOLATIONS AND AGE OF OFFENDERS COMMITTING RULE VIOLATIONS AUGUST 2004



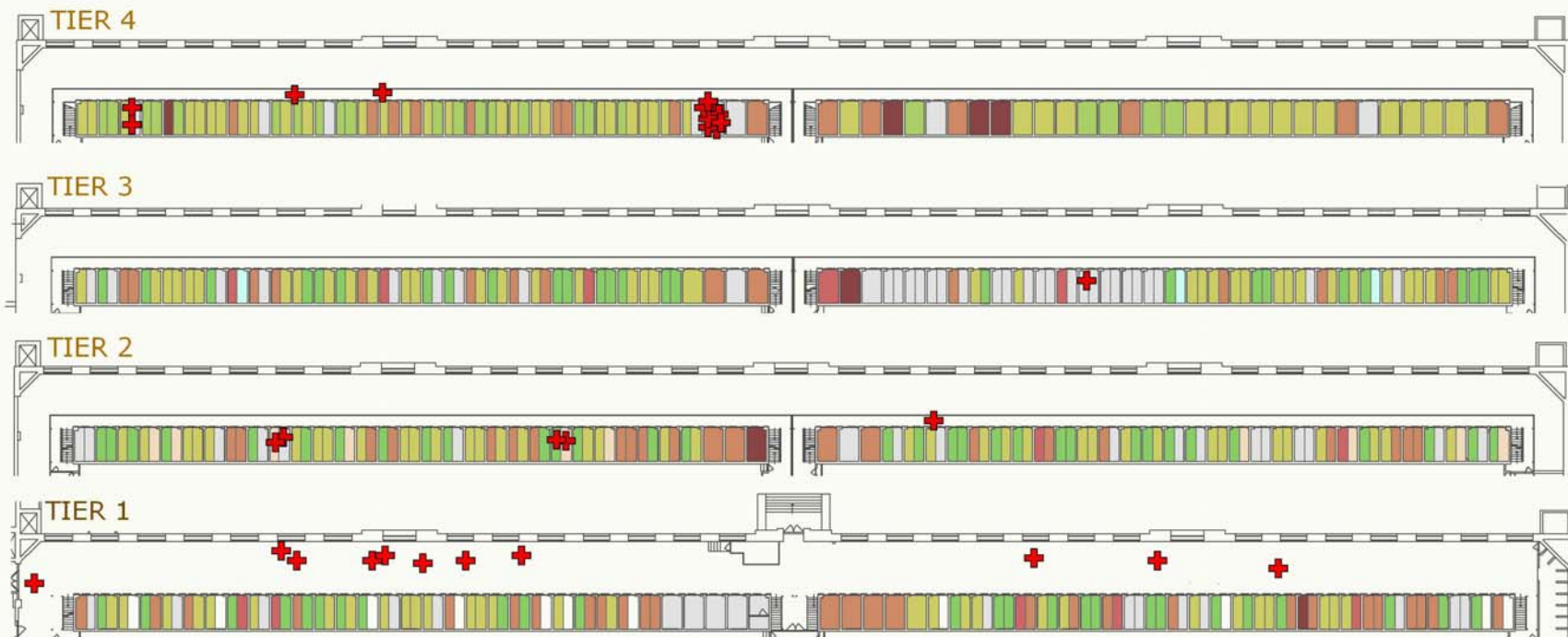
Source: MN Correctional Facility Data 2004

### Correlation Rates

-25	+0.400
25 - 34	+0.654
35 - 44	+0.149
45 - 54	+0.192
Over 55	+0.214

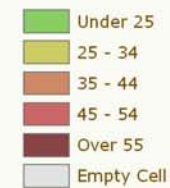


# CELL BLOCK B-WEST JUNE 2004 ASSAULTS AND LIVING ASSIGNMENTS BY AGE OF OFFENDER



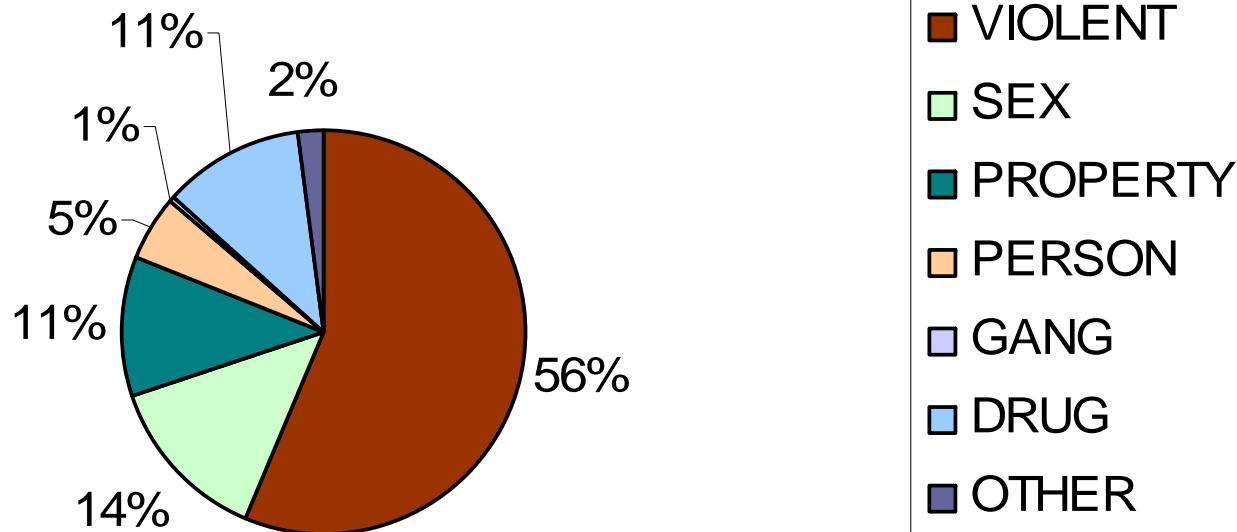
An uneven distribution of offenders by age throughout the institution may have contributed to the increase in rule violations. B-West and A-East housed the most offenders under the age of 34. Younger offenders had stronger correlations with assaults than younger offender. More than 25% of offenders in B-West were under the age of 25. Younger offenders wishing to join a gang often must prove themselves by committing an assault.

## OFFENDER AGE



# Results -- *Crime*

## PRISON POPULATION GOVERNING SENTENCE 2004



Source: MN Correctional Facility Data 2004

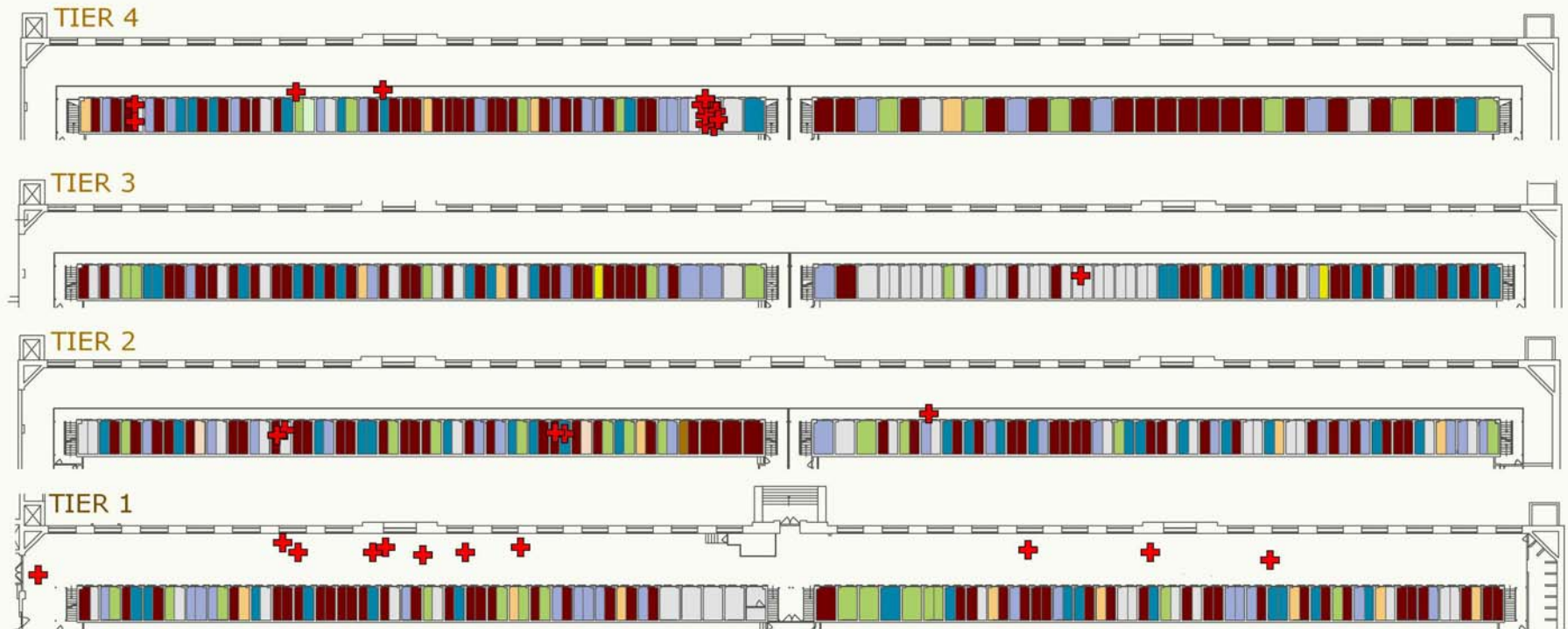
# Results -- *Crime*

Month	Minor	Intermediate	Major	Assaults
Sept 2003	Property	Violent	Sex	Sex
June 2004	Property	Person	Violent	Violent
July 2004	Violent	Property	Other	Other
Aug 2004	Other	Violent	Violent	Violent

- CHD had the highest percentage of Violent offenders but B-West had the most Property, Person and Drug Offenders
- Approximately 50% of B-West housed offenders with Violent governing sentences

# CELL BLOCK B-WEST

## JUNE 2004 ASSAULTS AND LIVING ASSIGNMENTS BY GOVERNING SENTENCE



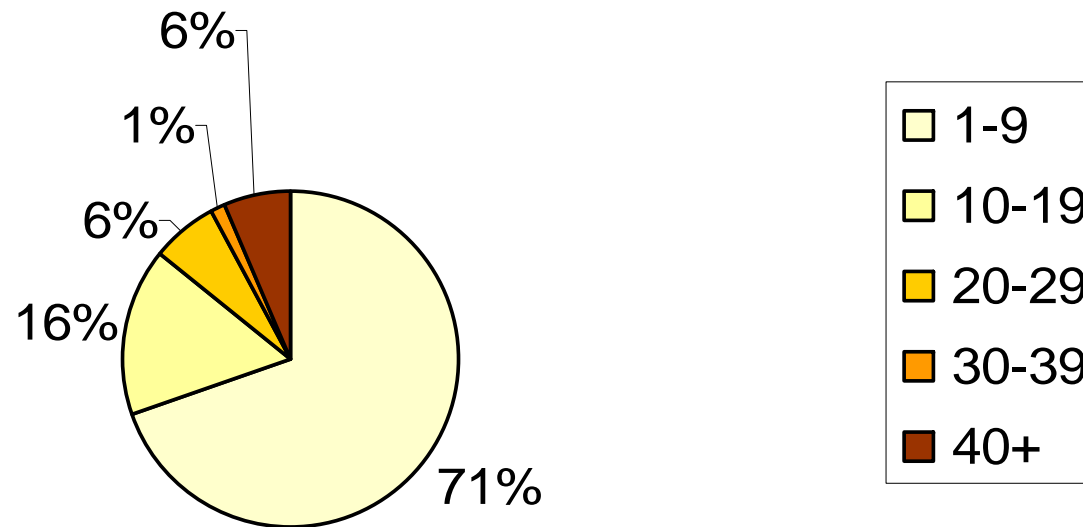
Violent offenders were evenly distributed in B-West, however, Violent offenders comprised almost 50% of the cell block. Violent offenders correlated strongly with every rule violation. Offenders with governing sentences other than Violent did not even come close to the correlation shown by Violent offenders with rule violations.

### GOVERNING SENTENCE

- |  |  |
|--|--|
|  Drug     |  Sex        |
|  Gang     |  Violent    |
|  Person   |  Empty Cell |
|  Property |  Other      |

# Results – *Years Until Release*

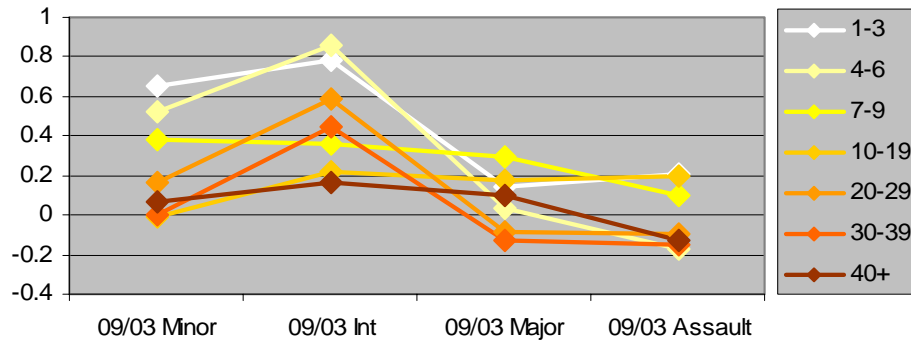
## PRISON POPULATION – YEARS UNTIL RELEASE - 2004



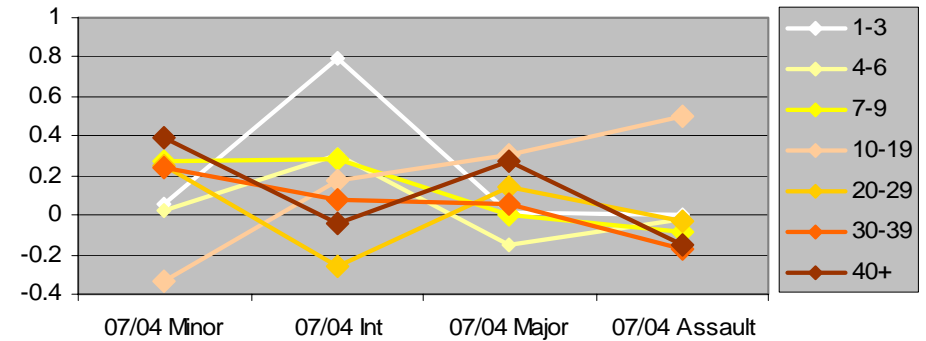
Source: MN Correctional Facility Data 2004

# Correlation Between Rule Violations and Years Until Release

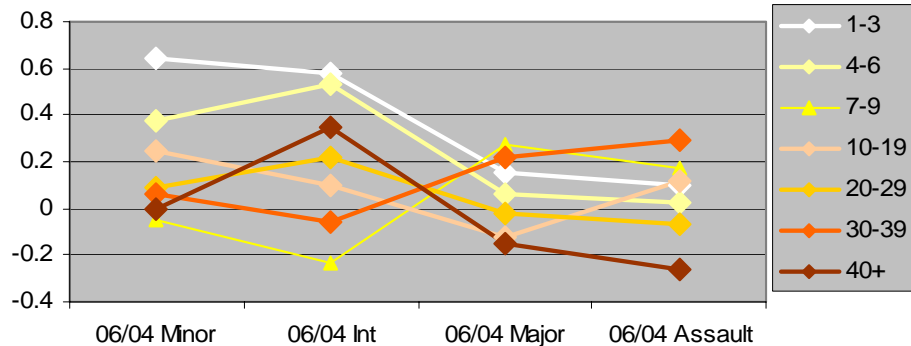
## SEPTEMBER 2003



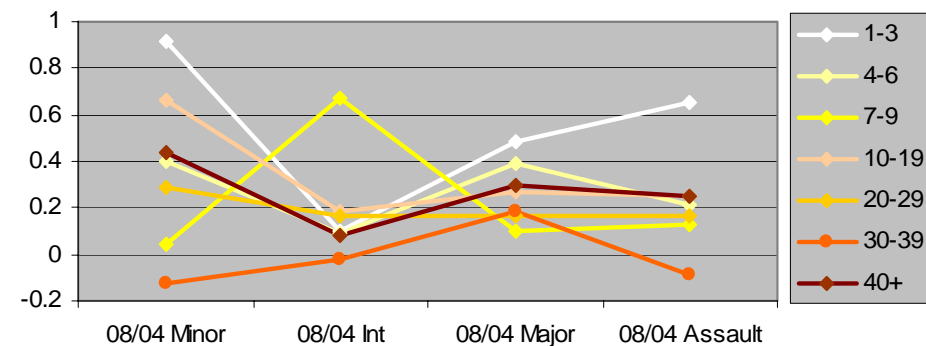
## JULY 2004



## JUNE 2004



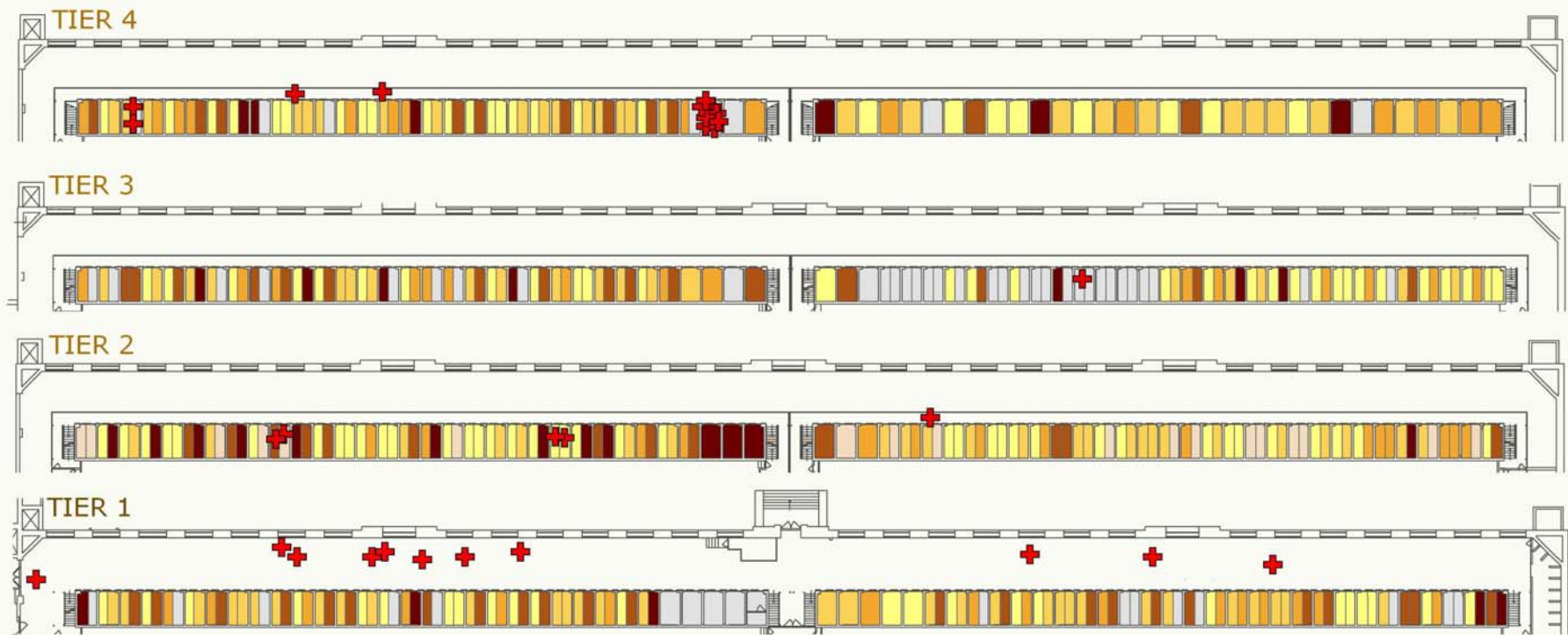
## AUGUST 2004





# CELL BLOCK B-WEST

## JUNE 2004 ASSAULTS AND LIVING ASSIGNMENTS AND YEARS UNTIL RELEASE



Uneven distribution of offenders by age was a strong contributing factor to rule violations. Eighty-five percent of the offenders in B-West had less than ten years to serve, compared to 75% in A-East and 57% in B-East. Offenders with one to three years left to serve had a strong positive correlation with assaults.



# Conclusions

- Spatial density results in more rule violations
  - A population of more than 225 double-bunked offenders (or 112 double-bunked cells) in one cell block poses the probability of more rule violations
  - Single-bunked offenders are affected by the social density posed by double bunking
- Even distribution of offenders by race within double-bunked cell blocks may assist in better offender management
  - Could probably be accomplished by better gang distribution
- Staff should be aware of strong indicators of staff assaults :  
visiting misconduct, weapons and unsanitary acts and conditions
- Outdoor air temperature may play a significant role in rule violations; cell blocks with a western exposure are more sensitive to maximum temperatures



# Conclusions

- Better distribution of offenders throughout the institution and within double-bunked cell blocks by STG status would result in less major rule violations
- Younger offenders must be distributed more evenly throughout the institution – concentrated numbers mean more rule violations
- Violent offenders had a high probability of committing assaults and major rule violations
- Offenders with less than ten years to serve had a high probability of assault but offenders with more years to serve will react swiftly to aggression by younger offenders
- Young gang members with a violent governing sentence present a higher threat to safety
- GIS can be a useful tool for better offender management with updated data collection and delivery systems
- GIS provides better visualization and more efficient, detailed analysis of offender management issues



# Future research

- Conduct spatial analysis of assaults and gang member living assignments – within-sight assaults
- Conduct assessment of offenders' custody status and move those who are lower custody status with less time to do to other institutions
- Conduct five-year study of the effects of outdoor air temperature – inside and outdoor readings
- Conduct long-term study of rule violation patterns and gang membership, age, and release dates
- Conduct an in-depth 3D study of double-bunking and/or offender misconduct