LDA MODEL

----------------------------------------------

proc format;

value specfmt

1="ShotMade"

0="NoShotMade";

run;

data kobe3;

set kobe;

format shot\_made\_flag specfmt.;

if shot\_type = "3PT Field Goal" then FieldGoal3ind = 1; else FieldGoal3ind =0;

if shot\_type = "2PT Field Goal" then FieldGoal2ind = 1; else FieldGoal2ind =0;

if shot\_zone\_area = 'Left Side(L)' then LSL = 1; else LSL = 0;

if shot\_zone\_area = 'Left Side Center(LC)' then LSC = 1; else LSC = 0;

if shot\_zone\_area = 'Right Side Center(RC)' then RSC = 1; else RSC = 0;

if shot\_zone\_area = 'Center(C)' then CENTER = 1; else CENTER = 0;

if shot\_zone\_area = 'Right Side(R)' then RIGHTSIDE = 1; else RIGHTSIDE = 0;

if shot\_zone\_area = 'Back Court(BC)' then BACKCOURT = 1; else BACKCOURT = 0;

if shot\_zone\_basic = 'Mid-Range' then MIDRANGE = 1; else MIDRANGE = 0;

if shot\_zone\_basic = 'Restricted Area' then RESTRICTEDAREA = 1; else RESTRICTEDAREA = 0;

if shot\_zone\_basic = 'In The Paint (Non-RA)' then INTHEPAINT = 1; else INTHEPAINT = 0;

if shot\_zone\_basic = 'Above the Break 3' then ABOVETHEBREAK = 1; else ABOVETHEBREAK = 0;

if shot\_zone\_basic = 'Right Corner 3' then RIGHTCORNER = 1; else RIGHTCORNER = 0;

if shot\_zone\_basic = 'Backcourt' then BACKCOURT = 1; else BACKCOURT = 0;

if shot\_zone\_basic = 'Left Corner 3' then LEFTCORNER = 1; else LEFTCORNER = 0;

if shot\_zone\_range = '8-16 ft.' then EIGHTSIXTEENFT = 1; else EIGHTSIXTEENFT = 0;

if shot\_zone\_range = '16-24 ft.' then SIXTEENTWENTYFOUR = 1; else SIXTEENTWENTYFOUR= 0;

if shot\_zone\_range = 'Less Than 8 ft.' then LESS8 = 1; else LESS8 = 0;

if shot\_zone\_range = '24+ ft.' then TWENTYFOURFT = 1; else TWENTYFOURFT = 0;

if shot\_zone\_range = 'Back Court Shot' then BACKCOURT = 1; else BACKCOURT = 0;

if action\_type = 'Jump Shot' then JumpShot = 1; else JumpShot = 0;

if action\_type = 'Driving Dunk Shot' then DrivingDunkShot = 1; else DrivingDunkShot = 0;

if action\_type = 'Layup Shot' then LayupShot = 1; else LayupShot=0;

if action\_type = 'Running Jump Shot' then RunningJumpShot= 1; else RunningJumpShot =0;

if action\_type = 'Reverse Dunk Shot' then ReverseDunkShot= 1; else ReverseDunkShot =0;

if action\_type = 'Slam Dunk Shot' then SlamDunkShot= 1; else SlamDunkShot=0;

if action\_type = 'Driving Layup Shot' then DrivingLayupShot= 1; else DrivingLayupShot=0;

if action\_type = 'Turnaround Jump Shot' then TurnaroundJumpShot= 1; else TurnaroundJumpShot=0;

if action\_type = 'Reverse Layup Shot' then ReverseLayupShot= 1; else ReverseLayupShot=0;

if action\_type = 'Tip Shot' then TipShot= 1; else TipShot=0;

if action\_type = 'Running Hook Shot' then RunningHookShot = 1; else RunningHookShot = 0;

if action\_type = 'Alley Oop Dunk Shot' then AlleyOopDunkShot= 1; else AlleyOopDunkShot=0;

if action\_type = 'Dunk Shot' then DunkShot= 1; else DunkShot=0;

if action\_type = 'Alley Oop Layup shot' then AlleyOopLayupshot= 1; else AlleyOopLayupshot=0;

if action\_type = 'Running Dunk Shot' then RunningDunkShot= 1; else RunningDunkShot=0;

if action\_type = 'Driving Finger Roll Shot' then DrivingFingerRollShot= 1; else DrivingFingerRollShot=0;

if action\_type = 'Running Layup Shot' then DrivingFingerRollShot= 1; else DrivingFingerRollShot=0;

if action\_type = 'Finger Roll Shot' then FingerRollShot= 1; else FingerRollShot=0;

if action\_type = 'Fadeaway Jump Shot' then FadeawayJumpShot= 1; else FadeawayJumpShot=0;

if action\_type = 'Follow Up Dunk Shot' then FollowUpDunkShot= 1; else FollowUpDunkShot=0;

if action\_type = 'Hook Shot' then HookShot= 1; else HookShot=0;

if action\_type = 'Turnaround Hook Shot' then TurnaroundHookShot= 1; else TurnaroundHookShot=0;

if action\_type = 'Jump Hook Shot' then JumpHookShot = 1; else JumpHookShot=0;

if action\_type = 'Running Finger Roll Shot' then RunningFingerRollShot= 1; else RunningFingerRollShot=0;

if action\_type = 'Jump Bank Shot' then JumpBankShot= 1; else JumpBankShot=0;

if action\_type = 'Turnaround Finger Roll Shot' then TurnaroundFingerRollShot= 1; else TurnaroundFingerRollShot=0;

if action\_type = 'Hook Bank Shot' then HookBankShot = 1; else HookBankShot = 0;

if action\_type = 'Driving Hook Shot' then DrivingHookShot= 1; else DrivingHookShot=0;

if action\_type = 'Running Tip Shot' then RunningTipShot= 1; else RunningTipShot=0;

if action\_type = 'Running Reverse Layup Shot' then RunningReverseLayupShot= 1; else RunningReverseLayupShot=0;

if action\_type = 'Driving Finger Roll Layup Shot' then DrivingFingerRollLayupShot= 1; else DrivingFingerRollLayupShot=0;

if action\_type = 'Fadeaway Bank shot' then FadeawayBankshot= 1; else FadeawayBankshot=0;

if action\_type = 'Pullup Jump shot' then PullupJumpshot= 1; else PullupJumpshot=0;

if action\_type = 'Finger Roll Layup Shot' then FingerRollLayupShot= 1; else FingerRollLayupShot=0;

if action\_type = 'Turnaround Fadeaway shot' then TurnaroundFadeawayshot= 1; else TurnaroundFadeawayshot=0;

if action\_type = 'Driving Reverse Layup Shot' then DrivingReverseLayupShot= 1; else DrivingReverseLayupShot=0;

if action\_type = 'Driving Slam Dunk Shot' then DrivingSlamDunkShot= 1; else DrivingSlamDunkShot=0;

if action\_type = 'Step Back Jump shot' then StepBackJumpshot= 1; else StepBackJumpshot=0;

if action\_type = 'Turnaround Bank shot' then TurnaroundBankshot= 1; else TurnaroundBankshot=0;

if action\_type = 'Reverse Slam Dunk Shot' then ReverseSlamDunkShot= 1; else ReverseSlamDunkShot=0;

if action\_type = 'Floating Jump shot' then FloatingJumpshot= 1; else FloatingJumpshot=0;

if action\_type = 'Putback Slam Dunk Shot' then PutbackSlamDunkShot= 1; else PutbackSlamDunkShot=0;

if action\_type = 'Running Bank shot' then RunningBankshot= 1; else RunningBankshot=0;

if action\_type = 'Driving Bank shot' then DrivingBankshot= 1; else DrivingBankshot=0;

if action\_type = 'Driving Jump shot' then DrivingJumpshot= 1; else DrivingJumpshot=0;

if action\_type = 'Putback Layup Shot' then PutbackLayupShot= 1; else PutbackLayupShot=0;

if action\_type = 'Putback Dunk Shot' then PutbackDunkShot= 1; else PutbackDunkShot=0;

if action\_type = 'Running Finger Roll Layup Shot' then RunningFingerRollLayupShot= 1; else RunningFingerRollLayupShot=0;

if action\_type = 'Pullup Bank shot' then PullupBankshot= 1; else PullupBankshot=0;

if action\_type = 'Running Slam Dunk Shot' then RunningSlamDunkShot= 1; else RunningSlamDunkShot=0;

if action\_type = 'Cutting Layup Shot' then CuttingLayupShot= 1; else CuttingLayupShot=0;

if action\_type = 'Driving Floating Jump Shot' then DrivingFloatingJumpShot= 1; else DrivingFloatingJumpShot=0;

if action\_type = 'Running Pull-Up Jump Shot' then RunningPullUpJumpShot= 1; else RunningPullUpJumpShot=0;

if action\_type = 'Tip Layup Shot' then TipLayupShot= 1; else TipLayupShot=0;

if action\_type = 'Driving Floating Bank Jump Shot' then DrivingFloatingBankJumpShot= 1; else DrivingFloatingBankJumpShot=0;

RUN;

proc print data=kobe3; run;

data test2;

set work.test(keep=

period

minutes\_remaining

seconds\_remaining

game\_date

attendance

arena\_temp

action\_type

shot\_type

shot\_zone\_area

shot\_zone\_basic

shot\_zone\_range); run;

data test3;

set test2;

format shot\_made\_flag specfmt.;

if shot\_type = "3PT Field Goal" then FieldGoal3ind = 1; else FieldGoal3ind =0;

if shot\_type = "2PT Field Goal" then FieldGoal2ind = 1; else FieldGoal2ind =0;

if shot\_zone\_area = 'Left Side(L)' then LSL = 1; else LSL = 0;

if shot\_zone\_area = 'Left Side Center(LC)' then LSC = 1; else LSC = 0;

if shot\_zone\_area = 'Right Side Center(RC)' then RSC = 1; else RSC = 0;

if shot\_zone\_area = 'Center(C)' then CENTER = 1; else CENTER = 0;

if shot\_zone\_area = 'Right Side(R)' then RIGHTSIDE = 1; else RIGHTSIDE = 0;

if shot\_zone\_area = 'Back Court(BC)' then BACKCOURT = 1; else BACKCOURT = 0;

if shot\_zone\_basic = 'Mid-Range' then MIDRANGE = 1; else MIDRANGE = 0;

if shot\_zone\_basic = 'Restricted Area' then RESTRICTEDAREA = 1; else RESTRICTEDAREA = 0;

if shot\_zone\_basic = 'In The Paint (Non-RA)' then INTHEPAINT = 1; else INTHEPAINT = 0;

if shot\_zone\_basic = 'Above the Break 3' then ABOVETHEBREAK = 1; else ABOVETHEBREAK = 0;

if shot\_zone\_basic = 'Right Corner 3' then RIGHTCORNER = 1; else RIGHTCORNER = 0;

if shot\_zone\_basic = 'Backcourt' then BACKCOURT = 1; else BACKCOURT = 0;

if shot\_zone\_basic = 'Left Corner 3' then LEFTCORNER = 1; else LEFTCORNER = 0;

if shot\_zone\_range = '8-16 ft.' then EIGHTSIXTEENFT = 1; else EIGHTSIXTEENFT = 0;

if shot\_zone\_range = '16-24 ft.' then SIXTEENTWENTYFOUR = 1; else SIXTEENTWENTYFOUR= 0;

if shot\_zone\_range = 'Less Than 8 ft.' then LESS8 = 1; else LESS8 = 0;

if shot\_zone\_range = '24+ ft.' then TWENTYFOURFT = 1; else TWENTYFOURFT = 0;

if shot\_zone\_range = 'Back Court Shot' then BACKCOURT = 1; else BACKCOURT = 0;

if action\_type = 'Jump Shot' then JumpShot = 1; else JumpShot = 0;

if action\_type = 'Driving Dunk Shot' then DrivingDunkShot = 1; else DrivingDunkShot = 0;

if action\_type = 'Layup Shot' then LayupShot = 1; else LayupShot=0;

if action\_type = 'Running Jump Shot' then RunningJumpShot= 1; else RunningJumpShot =0;

if action\_type = 'Reverse Dunk Shot' then ReverseDunkShot= 1; else ReverseDunkShot =0;

if action\_type = 'Slam Dunk Shot' then SlamDunkShot= 1; else SlamDunkShot=0;

if action\_type = 'Driving Layup Shot' then DrivingLayupShot= 1; else DrivingLayupShot=0;

if action\_type = 'Turnaround Jump Shot' then TurnaroundJumpShot= 1; else TurnaroundJumpShot=0;

if action\_type = 'Reverse Layup Shot' then ReverseLayupShot= 1; else ReverseLayupShot=0;

if action\_type = 'Tip Shot' then TipShot= 1; else TipShot=0;

if action\_type = 'Running Hook Shot' then RunningHookShot = 1; else RunningHookShot = 0;

if action\_type = 'Alley Oop Dunk Shot' then AlleyOopDunkShot= 1; else AlleyOopDunkShot=0;

if action\_type = 'Dunk Shot' then DunkShot= 1; else DunkShot=0;

if action\_type = 'Alley Oop Layup shot' then AlleyOopLayupshot= 1; else AlleyOopLayupshot=0;

if action\_type = 'Running Dunk Shot' then RunningDunkShot= 1; else RunningDunkShot=0;

if action\_type = 'Driving Finger Roll Shot' then DrivingFingerRollShot= 1; else DrivingFingerRollShot=0;

if action\_type = 'Running Layup Shot' then DrivingFingerRollShot= 1; else DrivingFingerRollShot=0;

if action\_type = 'Finger Roll Shot' then FingerRollShot= 1; else FingerRollShot=0;

if action\_type = 'Fadeaway Jump Shot' then FadeawayJumpShot= 1; else FadeawayJumpShot=0;

if action\_type = 'Follow Up Dunk Shot' then FollowUpDunkShot= 1; else FollowUpDunkShot=0;

if action\_type = 'Hook Shot' then HookShot= 1; else HookShot=0;

if action\_type = 'Turnaround Hook Shot' then TurnaroundHookShot= 1; else TurnaroundHookShot=0;

if action\_type = 'Jump Hook Shot' then JumpHookShot = 1; else JumpHookShot=0;

if action\_type = 'Running Finger Roll Shot' then RunningFingerRollShot= 1; else RunningFingerRollShot=0;

if action\_type = 'Jump Bank Shot' then JumpBankShot= 1; else JumpBankShot=0;

if action\_type = 'Turnaround Finger Roll Shot' then TurnaroundFingerRollShot= 1; else TurnaroundFingerRollShot=0;

if action\_type = 'Hook Bank Shot' then HookBankShot = 1; else HookBankShot = 0;

if action\_type = 'Driving Hook Shot' then DrivingHookShot= 1; else DrivingHookShot=0;

if action\_type = 'Running Tip Shot' then RunningTipShot= 1; else RunningTipShot=0;

if action\_type = 'Running Reverse Layup Shot' then RunningReverseLayupShot= 1; else RunningReverseLayupShot=0;

if action\_type = 'Driving Finger Roll Layup Shot' then DrivingFingerRollLayupShot= 1; else DrivingFingerRollLayupShot=0;

if action\_type = 'Fadeaway Bank shot' then FadeawayBankshot= 1; else FadeawayBankshot=0;

if action\_type = 'Pullup Jump shot' then PullupJumpshot= 1; else PullupJumpshot=0;

if action\_type = 'Finger Roll Layup Shot' then FingerRollLayupShot= 1; else FingerRollLayupShot=0;

if action\_type = 'Turnaround Fadeaway shot' then TurnaroundFadeawayshot= 1; else TurnaroundFadeawayshot=0;

if action\_type = 'Driving Reverse Layup Shot' then DrivingReverseLayupShot= 1; else DrivingReverseLayupShot=0;

if action\_type = 'Driving Slam Dunk Shot' then DrivingSlamDunkShot= 1; else DrivingSlamDunkShot=0;

if action\_type = 'Step Back Jump shot' then StepBackJumpshot= 1; else StepBackJumpshot=0;

if action\_type = 'Turnaround Bank shot' then TurnaroundBankshot= 1; else TurnaroundBankshot=0;

if action\_type = 'Reverse Slam Dunk Shot' then ReverseSlamDunkShot= 1; else ReverseSlamDunkShot=0;

if action\_type = 'Floating Jump shot' then FloatingJumpshot= 1; else FloatingJumpshot=0;

if action\_type = 'Putback Slam Dunk Shot' then PutbackSlamDunkShot= 1; else PutbackSlamDunkShot=0;

if action\_type = 'Running Bank shot' then RunningBankshot= 1; else RunningBankshot=0;

if action\_type = 'Driving Bank shot' then DrivingBankshot= 1; else DrivingBankshot=0;

if action\_type = 'Driving Jump shot' then DrivingJumpshot= 1; else DrivingJumpshot=0;

if action\_type = 'Putback Layup Shot' then PutbackLayupShot= 1; else PutbackLayupShot=0;

if action\_type = 'Putback Dunk Shot' then PutbackDunkShot= 1; else PutbackDunkShot=0;

if action\_type = 'Running Finger Roll Layup Shot' then RunningFingerRollLayupShot= 1; else RunningFingerRollLayupShot=0;

if action\_type = 'Pullup Bank shot' then PullupBankshot= 1; else PullupBankshot=0;

if action\_type = 'Running Slam Dunk Shot' then RunningSlamDunkShot= 1; else RunningSlamDunkShot=0;

if action\_type = 'Cutting Layup Shot' then CuttingLayupShot= 1; else CuttingLayupShot=0;

if action\_type = 'Driving Floating Jump Shot' then DrivingFloatingJumpShot= 1; else DrivingFloatingJumpShot=0;

if action\_type = 'Running Pull-Up Jump Shot' then RunningPullUpJumpShot= 1; else RunningPullUpJumpShot=0;

if action\_type = 'Tip Layup Shot' then TipLayupShot= 1; else TipLayupShot=0;

if action\_type = 'Driving Floating Bank Jump Shot' then DrivingFloatingBankJumpShot= 1; else DrivingFloatingBankJumpShot=0;

RUN;

proc print data=test3; run;

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* FINAL LDA model \*\*\*\*\*\*\*\*\*\*\*\*\*\*;

proc discrim data = kobe3 POOL=test crossvalidate testdata=test3 testout=a;

class shot\_made\_flag;

var period minutes\_remaining seconds\_remaining game\_date attendance arena\_temp

FieldGoal3ind FieldGoal2ind

LSL LSC RSC CENTER RIGHTSIDE BACKCOURT MIDRANGE RESTRICTEDAREA INTHEPAINT

ABOVETHEBREAK RIGHTCORNER BACKCOURT LEFTCORNER EIGHTSIXTEENFT SIXTEENTWENTYFOUR LESS8 TWENTYFOURFT BACKCOURT

JumpShot

DrivingDunkShot

LayupShot

RunningJumpShot

ReverseDunkShot

SlamDunkShot

DrivingLayupShot

TurnaroundJumpShot

ReverseLayupShot

TipShot

RunningHookShot

AlleyOopDunkShot

DunkShot

AlleyOopLayupshot

RunningDunkShot

DrivingFingerRollShot

DrivingFingerRollShot

FingerRollShot

FadeawayJumpShot

FollowUpDunkShot

HookShot

TurnaroundHookShot

JumpHookShot;run;

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* This piece of code will print Proc Discrim model's output: File a;

proc print data=a; run;