!"#\$%&'(\$!)")*\$+#,-*.',)/\$!"#\$%&'()\$"*%'#(!)(++,(-.+/0(1'#'23&4(5'\$46*#0(7288(9.9.(

! "#\$%&'()*'!")+(,+'-)."\$ / (+0")'

-)%+\$#,+''\$!" #\$%&'())*%"+*%,%-."/*0102"

1..0, &"**2"**', (+0")!" #3 %45 (%6678"9%::";<=."\$%>"?@A8"\$,%,8"B>7C86A7,D."\$%>"?@A8."EF"G;<GHIJJ; J2"

3 &4 & 5 6'') & !" #KJL2"#GHK"<L=M2"

7 / (04!" #A%&'())*%0N*%,%-OAPA(08)(2"

1..0,&'8''#\$%!" 3@>)%DA"%>)"Q8)>8A)%DA"I"=!JJ"R&"S"K!JJ"R&"C7%"T@@&"

! 4(%%\$'''' / !" T@@&!" 3 @>)%DUQ8)>8A)%D"K!=JI;!K;"

! "#\$%&'9"\$ / (+:"""";<),6\$")"#%'=0('>"" / "

! ''#\$%&' ? &%,\$05+0'') '@A&B#0\$&*C'

/6868W(7A7,8!"?\$"<J."<h."H;."@6" [\$"<<\"?\$"<JJQ"]7,*"%"N6%)8"@Y"^E^"@6" '8,,86\"?\$<; "@6"\$,%,"G; "@6"8W(7C%:8>,"]7,*"%"^E^"@6" '8,,86\"?\$<; "@6"\$,%,"G; "@6"8W(7C%:8>,"]7,*"%"^E^"@6" '8,,86\"BRR86"17C7A7@>"\$,%>)7>N\"_8A,674,8)",@"?\$"&%P@6A"%>)"&7>@6A0" `@,8!"F"N6%)8"@Y"^E^"@6" '8,,86"7A"68W(768)"Y@6"?(A,748"\$,()78A"&%P@6A0" `@,8",*%,"\$?\$B"4:%AA8A"%68")8A7N>8)"7>"%"]%D",*%,"7>"@6)86",@" '8"A(448AAY(:."7,"7A"8XR84,8)",*%,"A,()8>,A"]7::"AR8>)"%"&7>7&(&"@Y"Y@6,DIY7C8"*@(6A"Y@6"8%4*"(>7,"@Y"468)7,"#>@6&%::D",*688"*@(6A"%"(>7,"R86"]88-2."7>4:()7>N"R68R%6%,7@>"Y@6"4:%AA."R%6,747R%,7>N"7>"4@(6A8"%4,7C7,78A."4@&R:8,7>N"%AA7N>&8>,A"%>)"A@"@>0"

 $a*7A"4@(6A8"] 7::"4@C86"R*7:@A@R*D"@Y"A478>48."Y(>)\%&8>,\%:",84*>7W(8A"\%>)"R6@48)(68A."68A8\%64*"8,*74A."\%>)"\\ \&8,*@)A"@Y")\%,\%"4@::84,7@>"%>)")\%,\%"%>\%:DA7A"7>"467&7>\"!P(A,748"\%>)"467&7>@:@N74\%:"68A8\%64*."]7,*"8&R*\%A7A"@>"W(\%>,7,\%,7C8"\%>\%:DA7A0""$

\$,()8>,A"]7::":8%C8",*7A"4@(6A8"]7,*"%"Y76&"(>)86A,%>)7>N"@Y")7YY868>,"68A8%64*")8A7N>A"7>"467&7>%:"P(A,748"%>)" 467&7>@:@N744:"68A8%64*0"V>"%))7,7@>."A,()8>,A"]7::"'8"%':8",@"7>7,7%,8"%>)"4@>)(4,"%>"7>)8R8>)8>,"68A8%64*" R6@P84,."7>4:()7>N"R6@R@A7>N"&8%>7>NY(:"68A8%64*"W(8A,7@>A."68C78]7>N":7,86%,(68."%>)"4@>)(4,"%>"7>)8R8>)8>,"68A8%64*" % (8A,7@>A."68C78]7>N":7,86%,(68."%>)"4@>)(4,7>N")%,%"4@::84,7@>"%>)"'%A74"%>%:DA7A0"V,"7A"(A8Y(:",@",*7>-"@Y"68A8%64*"&8,*@)A"%A",@@:A",*%,"4%>"'8"(A8)",@"%>A]86"W(8A,7@>A"%''@(,",*8"A@47%:"]@6:)0"[@6"8X%&R:8."A@47%:"A478>,7A,A"*%C8"68:78)"@>"A,%,7A,74A",@"%>A]86"W(8A,7@>A"A(4*"%A"b1@"P(C8>7:8"A&0-86A"4@&&7,"&068")8:7>W(8>,"%4,A",*%>">@>A&0-86Acd"@6"b1@"*7N*86":8C8:A"@Y"R%,6@:A"'D":%]"8>Y@648&8>,"@YY747%:A")8468%A8"467&8cd"1(67>N",*7A"4@(6A8."D@("]7::":8%6>"A@&8"@Y",*8A8"68A8%64*"&8,*@)A"%>)"A,7A,74%:",84*>7W(8A"%>)"*@]",@"(A8",*8&",@"%>A]86"W(8A,7@>A"4@&&0>:D"4@>Y6@>,8)"'D"A@47%:"A478>,7A,A0"FA"]8"&0C8",*6@(N*",*8"4@(6A8"&%,867%:."D@("]7::"Y7>)",*%,"%>"(>)86A,%>)7>N"@Y"%"N7C8>",@R74"'(7:)A"@>"]*%,"*%A"'88>"40C8",*%A"'88>"40C868)"R68C7@(A:D0"a*(A:T,"7A"7>"D@(6"'8A,"7>,868

Fall 2020, JS114-01, ReSearch Me hodS

!

/:8% A8">@,8",*%,",*7A"7A"%"AD>4*6@>@(AI@>:7>8"4@(6A8"7>"]*74*"A,()8>,A"]7::"<2"'8"R68A8>,"7>"Z@@&"4:%AA8A."%>)"H2",%-8"@>:7>8"8X%&."%>)"4@&R:8,8"%AA7N>&8 Fall 2020, JS114-01, ReSearch Me hodS

8'' / &H''\$1:" a *868"] 7::" '8"% '@(,"MI i "*@&8] @6-"%AA7N>&8>,A",@" '8"R@A,8) "@>"E%>C%A0"E@&R:8,8) "*@&8] @6-" &(A," '8"A('&7,,8) "@>:7>80" g @("] 7::"N8,",*8"] 88-8>)A"#\$%,(6)%D"%>) "\$(>)%D2",@"4@&R:8,8",*8"%AA7N>&8>,A" a *8A8" %AA7N>&8>,A"%68" '%A8) "@>"R68C7@(A"] 88-mA"68%)7>NA0" `@":%,8"A('&7AA7@>"] 7::" '8"%448R,8)0"\$@&8"R6@ '% ':8")%,8A" @Y"*@&8] @6-"%AA7N>&8>,"%68"N7C8>"7>",*8"A4*8)(:80"

%&8:7@6%,8"7>P(A,748"7>",*876"R86A@>%:."R6@Y8AA7@>%:"%>)"47C74":7C8A0"V>)88).",*8"7&R%4,"@Y":7,86%4D"7A"8C7)8>,">@," @>:D"]7,*7>",*8"AR%>"@Y"%"AR847Y74"4@(6A8."A8&8A,86."@6"%4%)8&74"R6@N6%&"'(,"%:A@"@C86",*8"AR%>"@Y"%":7Y8,7&80"

<u>G!!7;;';#,,&%"!&)+&\$"</u>

 $a*8"F4\%)8\&74"E@(>A8:7>N"E8>,86"Y@6"nX48::8>48"7>",*8"$@47\%:"$478>48A"\#FEEn$$2"R6@C7)8A"+8>86\%:"n)(4\%,7@>"\\ \%)C7A7>N"Y@6"(>)86N6\%)(\%,8"A,()8>,A"&\%P@67>N"@6"7>,8>)7>N",@"&\%P@6"7>"\%>D"@Y",*8")8R\%6,&8>,A"7>",*8"E@::8N8"@Y"\\ \$@47\%:"$478>48A"\#E@$$20"FEEn$$"F4\%)8&74"F)C7A@6A"\%68"4@&&7,,8)",@"*8:R7>N"D@(")8C8:@R"\%"4:8\%6"R\%,*",@"N6\%)(\%,7@>"\%>)"A(RR@6,7>N"D@(6"\%4\%)8&74"A(448AA0"")$

[%::"HJHJ"e YY748"9@(6A!"3@>)%DIa*(6A)%D"L!JJ"F 3 "I";!JJ"/3 "%>)"[67)%D"G!JJ"F 3 IK!JJ"/3 0"g@("4%>"A4*8)(:8"%>"%RR@7>,&8>,"%>)"Y7>)"&@68"7>Y@6&%,7@>"%,"APA(08)(U%448AA0"

"

$0\,; 'PPQRSPI'A\&\%\&(\$,6'L\&+6''*\%I'9G'USUSI'!''\#\%\&';,6\&*\#4\&!$

''#\$!%&#\$'()\$!*%!%(+,\$&-!-.!&#/01\$!2*-#!3/*4!0.-*&\$!/0'!-#\$!0.-*&\$!2*))!+\$!5/'\$!/6/*)/+)\$!+7!\$5/*)8!!

! "#\$%&';,6&*#4&'

"

V && I '	? (+&"	3''50, %T'A&(*0)F%T'G%%0F) / &)+%T'?&(*40)&%'
<"	G#F#%+'PW"	E@::84,",*8",8X,'@@-"%>)"68%)",*8"AD::%'(A"4%68Y(::D"
"	•	11
Н"	G#F'UQRUX"	\$@47%:"\$478>48"_8A8%64*!"a*8"'%A74A"
		j %4*&%>."_0."k"\$4*(,,."_010"'
		! 6(5+&\$'P!"\$478>48."\$@478,D."%>)"E67&7>@:@N74%:"_8A8%64*"""
"	1	j%4*&%>."_0."k"\$4*(,,."_010"'
="	G#F'YPR'; &5+K'Q'	! 6 (5 + &\$' U!" a *8"/6@48AA'%>)"/6@':8&A"@Y"E67&7>@:@N74%:"_8A8%64*"""
"	,	
		j%4*&%>."_0."k"\$4*(,,."_010"'
K"	; &5+K'XRPP"	! 6(5+&\$'Y!"_8A8%64*"n,*74A"%>)"/*7:@A@R*78A""
• "	•	II I
,	; &5+K'PQRPX'	j%4*&%>."_0."k"\$4*(,,."_010"'
	1	! 6(5+&\$'Q:' E@>48R,(%:7Z%,7@>"%>)" 3 8%A(68&8>,"""
"	,	j%4*&%>."_0."k"\$4*(,,."_010"'
M"	; &5+K'UPRUZ'	! 6(5+&\$'Q:'E@>48R,(%:7Z%,7@>"%>)" 3 8%A(68&8>,"#4@>,02"

V && I '	? (+&"	3''50,%T'A&(*0)F%T'G%%0F) / &)+%T'?&(*40)&%'
<j"< th=""><th>1,+K'PWRUY'</th><th>j %4*&%>."_0." k "\$4*(,,,"_010"' ! 6(5+&\$']9!nXR867&8>,%:"18A7N>A""</th></j"<>	1,+K'PWRUY'	j %4*&%>."_0." k "\$4*(,,,"_010"' ! 6(5+&\$']9!nXR867&8>,%:"18A7N>A""
"""<<"	' 1 ,+K'U\RYS"	j %4*&%>."_0."k"\$4*(,,,"_010"#HJ<<20' ! 6(5+&\$'X:'\$(6C8D"_8A8%64*"
<h"< td=""><td>^''='UR\'</td><td>j %4*&%>."_0."k"\$4*(,,."_010"#HJ<<2' ! 6(5+&\$'W!</td></h"<>	^''='UR\'	j %4*&%>."_0."k"\$4*(,,."_010"#HJ<<2' ! 6(5+&\$'W!

Fall 2020, JS114-01, ReSearch Me hodS