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CAREER EFFECTS OF MENTAL HEALTH

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Petra Moser

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Barbara Biasi, Michael S. Dahl, and Petra Moser  
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### **ABSTRACT**

This paper investigates the career effects of mental health, focusing on depression, schizophrenia, and bipolar disorder (BD). Individual-level registry data from Denmark show that these disorders carry large earnings penalties, ranging from 34 percent for depression and 38 percent for BD to 74 percent for schizophrenia. To investigate the causal effects of mental health on a person's career, we exploit the approval of lithium as a maintenance treatment for BD in 1976. Baseline estimates compare career outcomes for people with and without access in their 20s, the typical age of onset for BD. These estimates show that access to treatment eliminates one third of the earnings penalty associated with BD and greatly reduces the risks of low or no earnings. Importantly, access to treatment closes more than half of the disability risk associated with BD.

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A data appendix is available at <http://www.nber.org/data-appendix/w29031>

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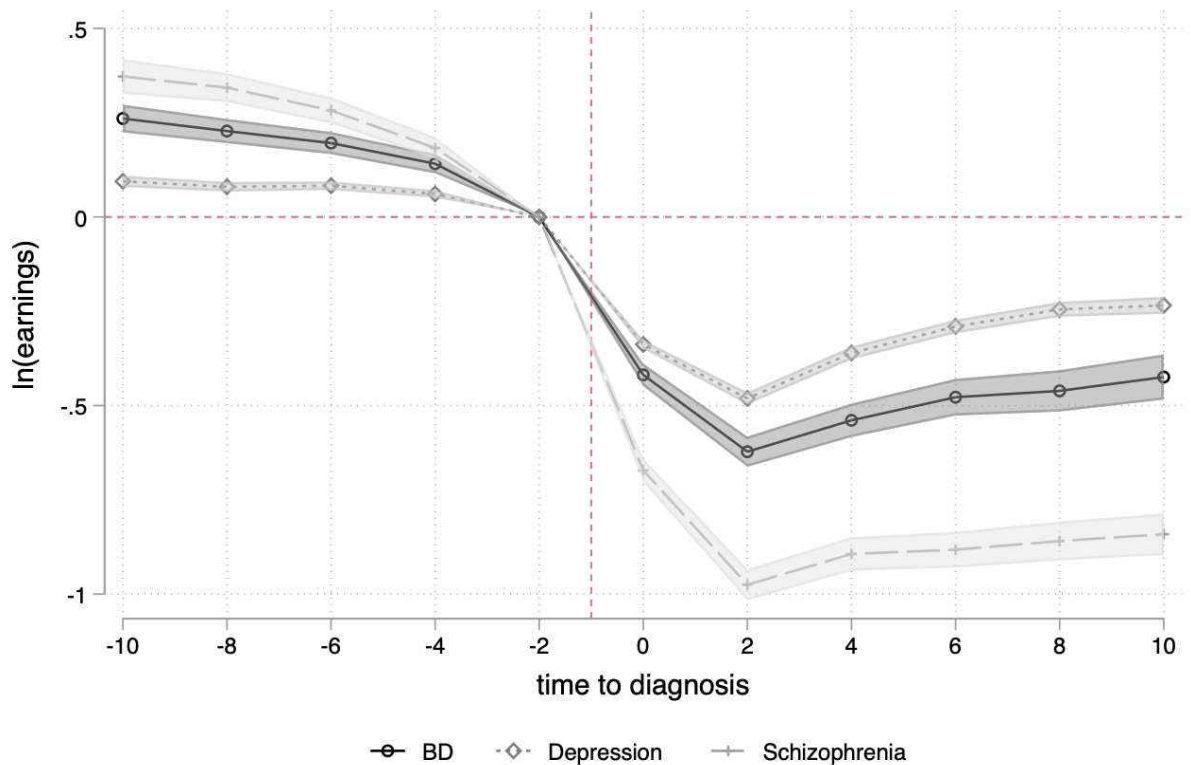




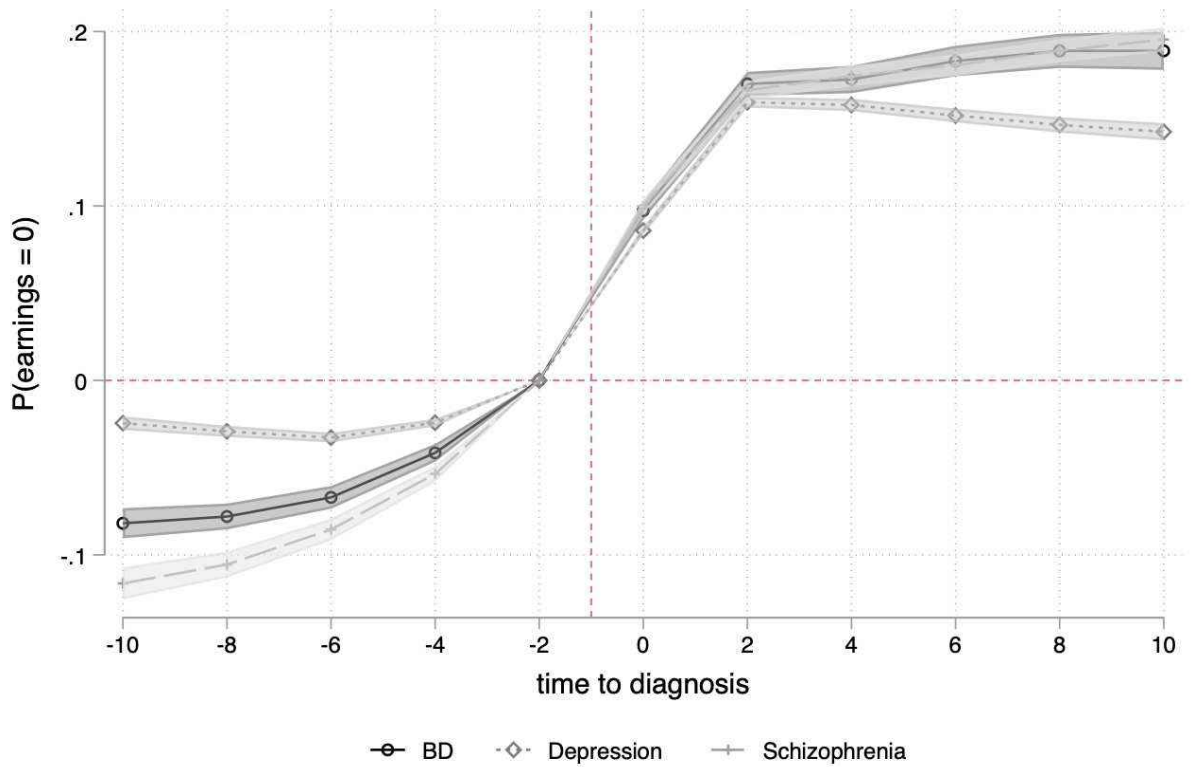






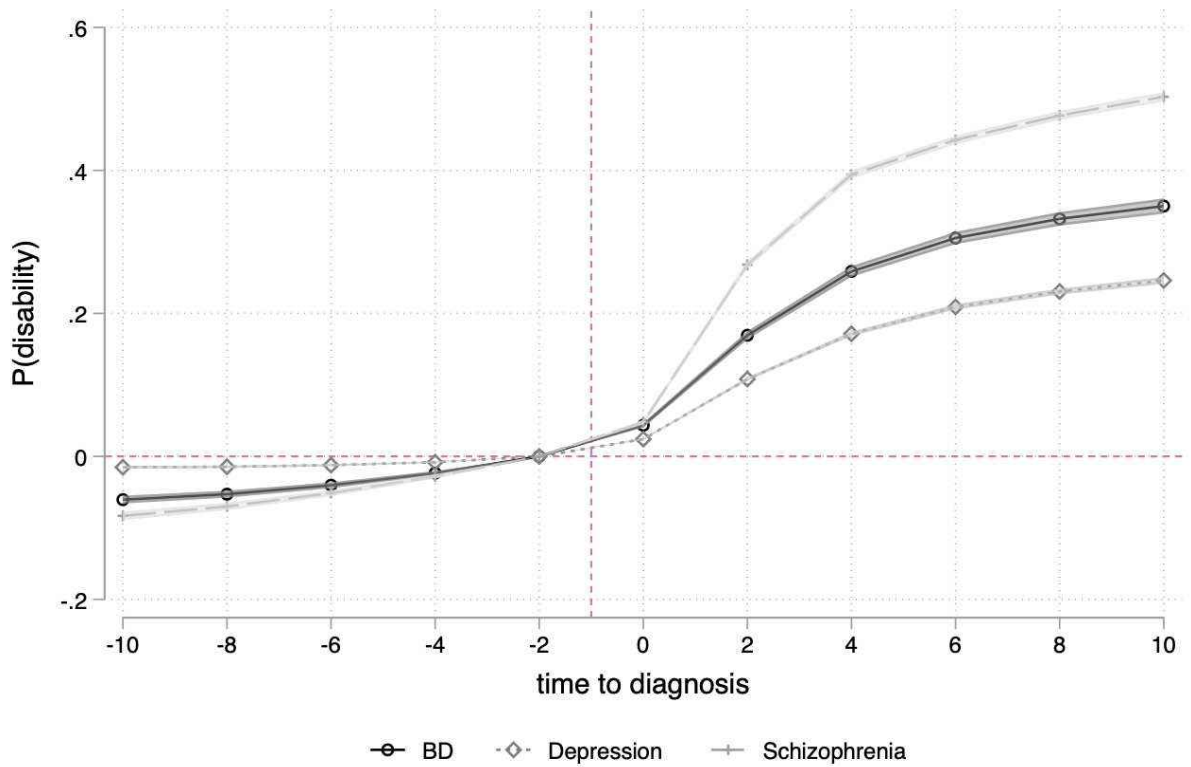


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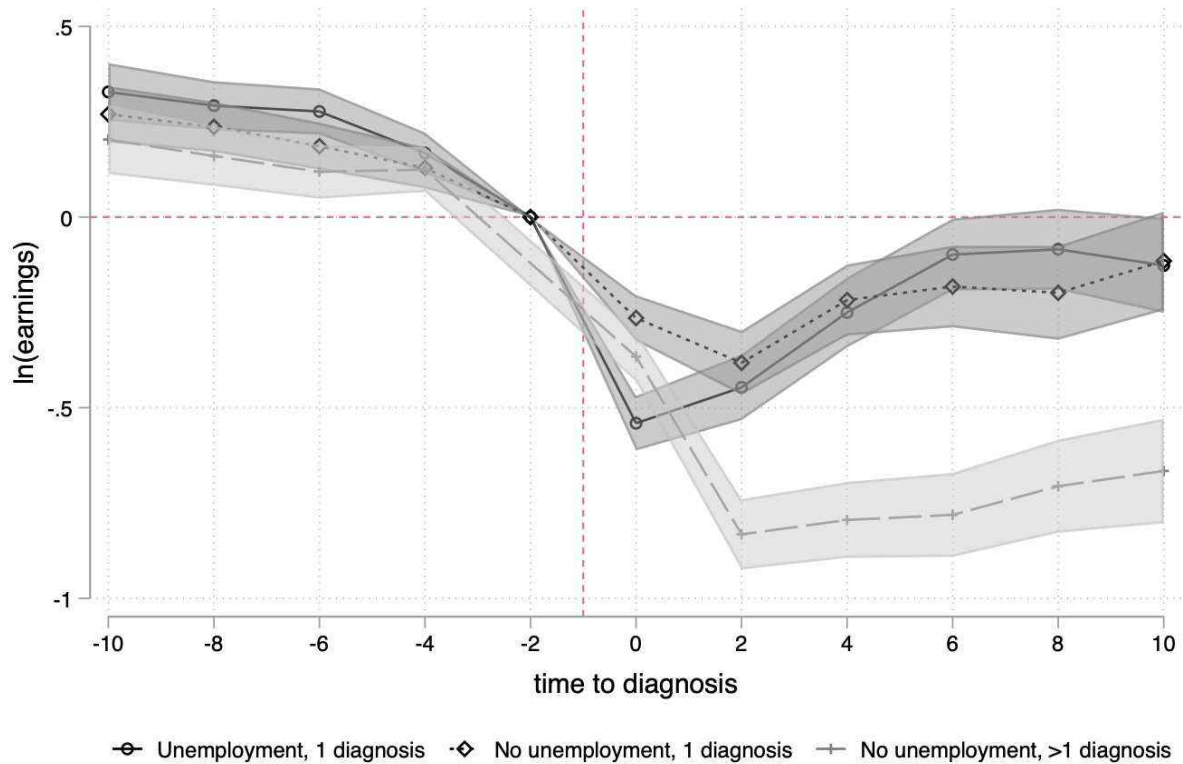




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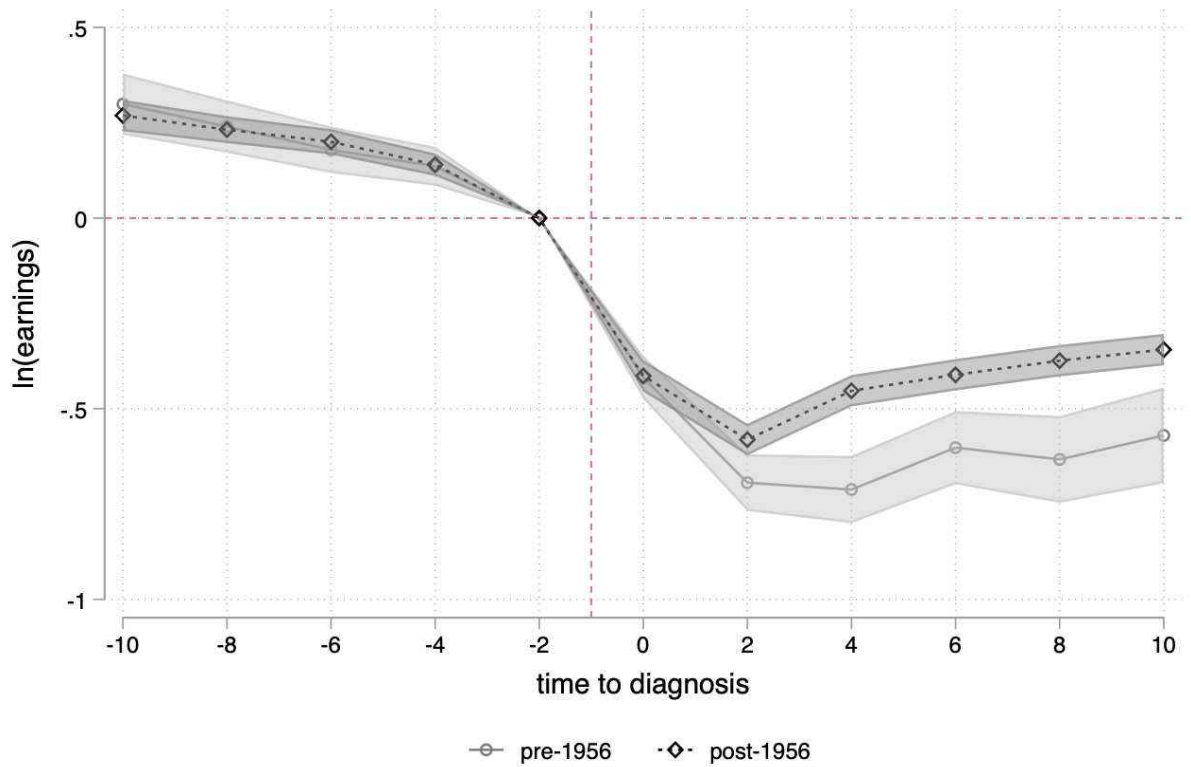
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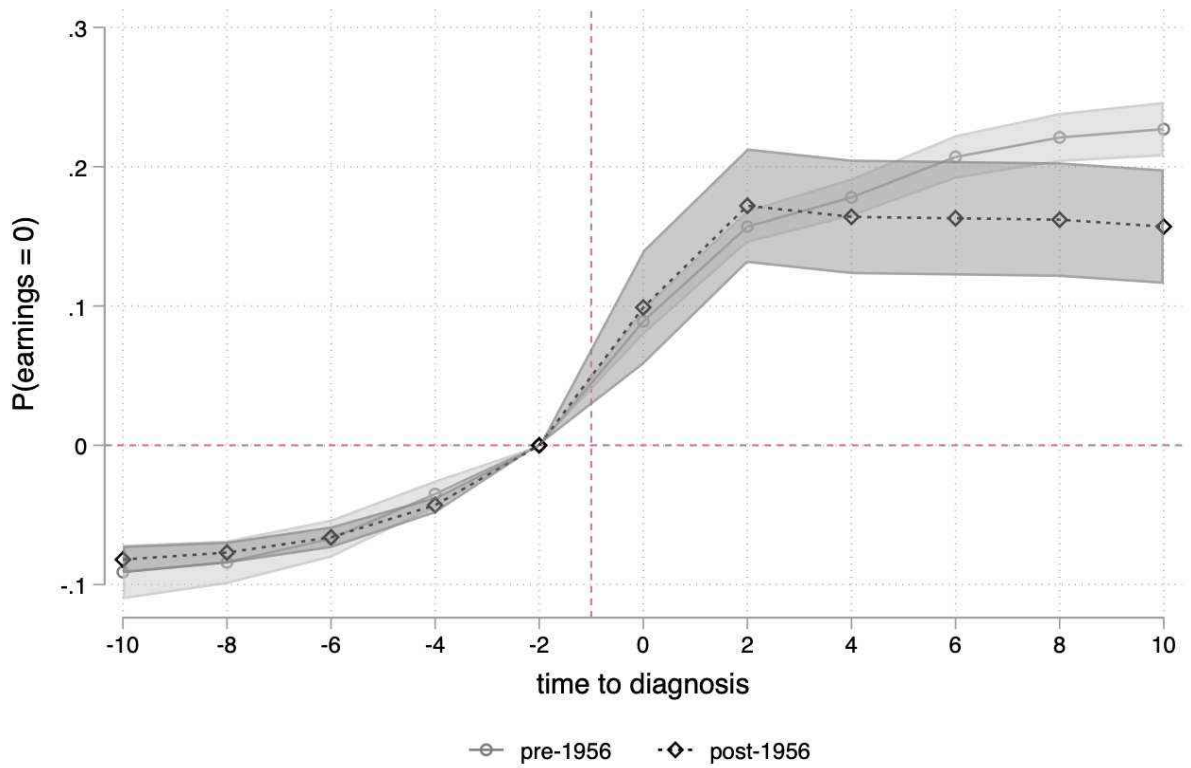
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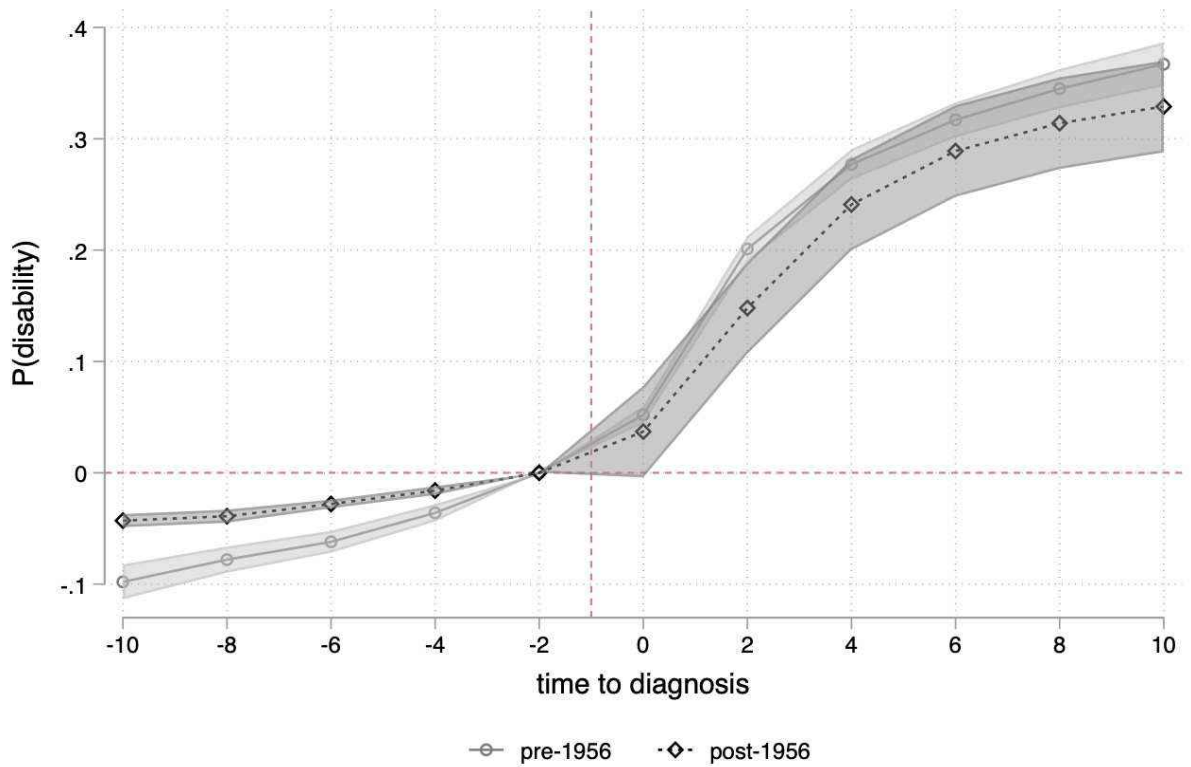


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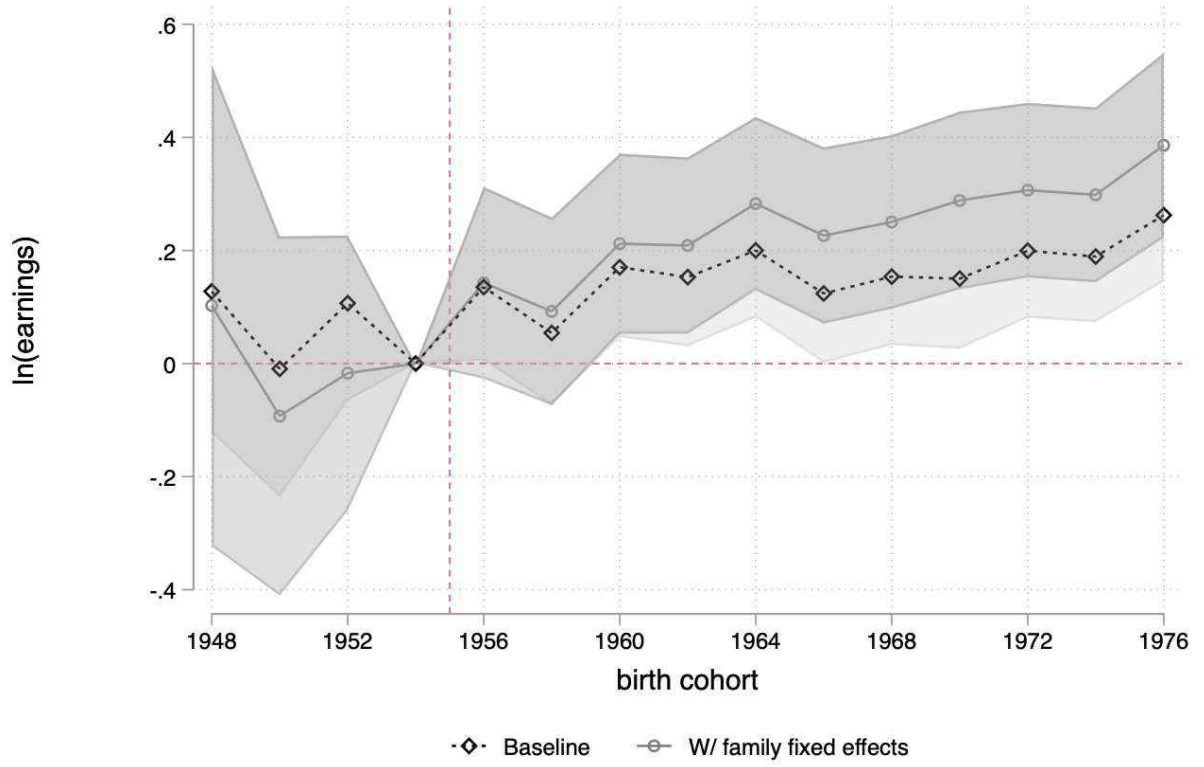


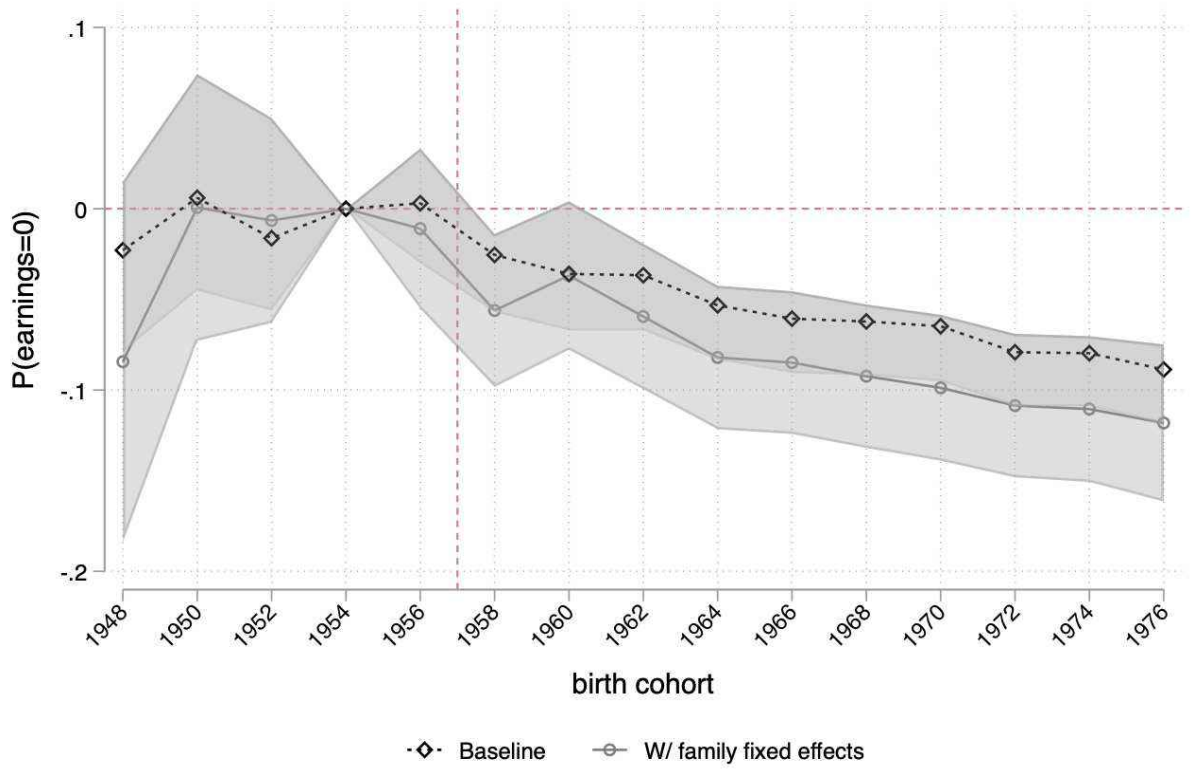
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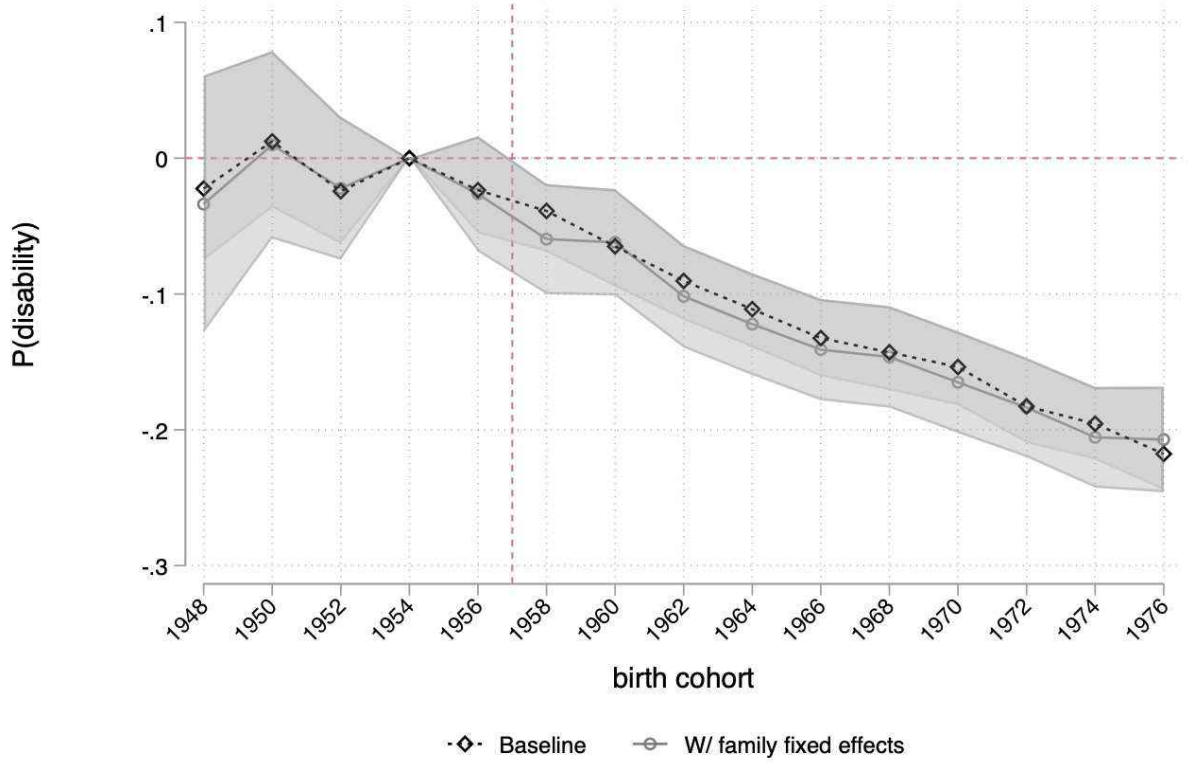
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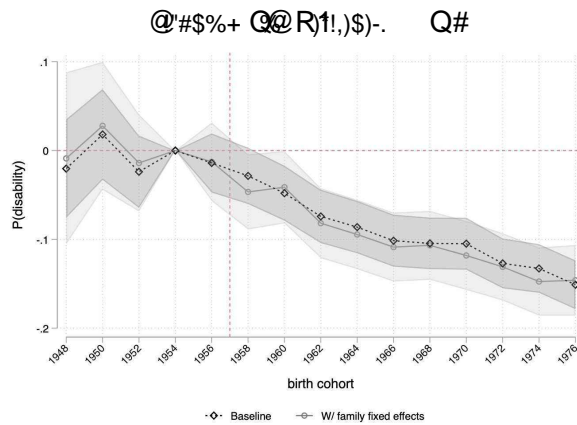
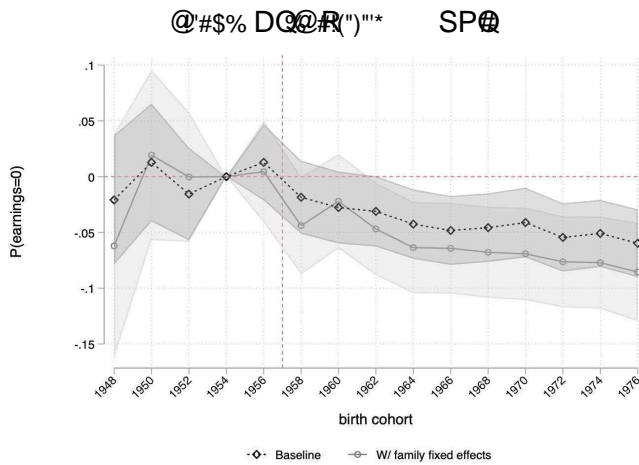
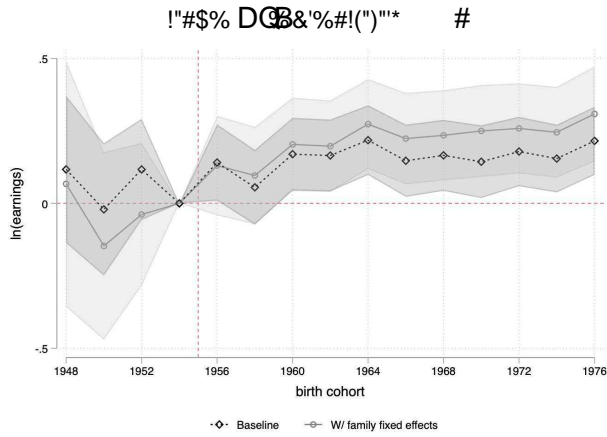






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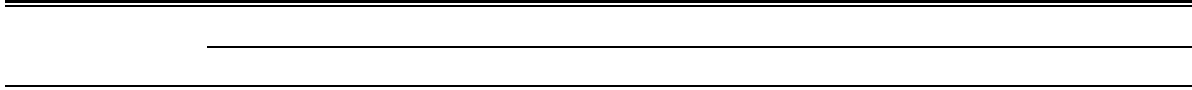
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#	12345627289:#	;345627289<=#	;3.795>717?@:#			
#	3":#	3A:#	3B:#	3%:#	3!:#	3C:#
#	#	#	#	#	#	#
D.#	E=F!C=GG	E=FCCAG	=F"HCGG	=F"HIGGC	=FA"IGGC	=FA"%GC
#	3=F="H:#	3=F=B%:	3=F==%:	3=F==!:#	3=F==%:	3=F==!:#
D.#J#KL9?#	=F""AGGG	=FA"%=GC	E=F=C!GC	E=F=MBG	E=F"AIGG	E=F"AAGC
#	3=F=A":#	3=F=BC:;	3=F==!:#	3=F==H:;	3=F==!:#	3=F==!:#
-L2?6L19#	NO#	NO#	NO#	NO#	NO#	NO#
-LPL6?#Q4#	NO#	NO#	NO#	NO#	NO#	NO#
NO56#Q4#	NO#	NO#	NO#	NO#	NO#	NO#
Q5R71@#Q	SL#	NO#	SL#	NO#	SL#	NO#
+O52#LT#	EE#	EE#	F"B%#	F"=#	F=!H#	F=%M#
.OKF#U56F#						
VE9WX56O'	=F=%!#	=FB=C#	=F=%H#	=FB%#:	=F=HA#	=F%A%:
S#	%/"C"H"C=	B"/#	%!/=M"/"A!	B!/=MM/BC	%!/=M"/"A!	B!/=MM/BC
		%=%/H!!#				
	)?52Y56Y#O66L69#72#K56O2?PO9O9#56O#Z1X9?O6OY#5?##?PO#72					
	GGG#K\F=#/#GG#K\F=#/#G#K\F=#					

!"#\$\*#\$PO#YOKO2YO2?#[5675>1O#79#?PO#25?X651#1L8567?PR#LT#O5627289/#YOT72OY#  
]58O9#52Y#72ZLRO#T6LR#9O1TEORK1L@RO2?#3ZL1XR29#"EA:^#52#72Y7Z5?L6#TL6#72Y7  
6OZO7[728#\_O6L#O5627289#72#5#87[O2#@O56#3ZL1XR29#BE%:^#52Y#TL6#72Y7[7YX519#  
3ZL1XR29#!EC:F#\$PO#[5675>1O#79#?PO#25?X651#1L8567?PR#LT#O5627289/#YOT72OY#  
ZL2Y7?7L2#5?#1O59?#L2ZO#>O?]OO2#%d(1)#52Y#549#?#TL6#72Y7[7YX519#]PL#]O6O#>L62#  
5T?O6#"H!C/#52Y#?X62OY#A=#5T?O6#17?P7XR/#?PO#R572#?6O5?RO2?#TL6#>7KL156#Y7  
5[5715>1O#72#.O2R56`#72#"HMC#-L2?6L19#72Z1XYO#72Y7Z5?L69#TL6#P5[728#6OZO7[O  
Y7582L979#(T\$)), "-%52Y#0,1"\*0+\$-,2F#.7582L9O9#Y5?5#56O#5[5715>1O#TL6#Z51O2Y56#@  
"HH!EA="!F#011#6O86O997L29#72Z1XYO#ZLPL6?#52Y#@O56#T7JOY#OTTOZ?9^#ZL1XR29#  
T7JOY#OTTOZ?9F#\$PO#95RK1O#79#6O9?67Z?OY#?L#KOLK1O#58OY#A=EC=#>L62#72#ZL  
ZL1XR29#"EA/#]O#TX6?PO6#6O9?67Z?##?PO#95RK1O#?L#KOLK1O#]7?P#KL97?7[O#O56272



\$!#\$%&@() \*% \$&!#% , \$!#(% - )\*+,-\$,\* .% ..\$\*\*%'+% \$,\$!/\$&' .%&-%'(\$%  
0,+!"#)\$0%+1% 12,\$/\$% 1!,&)&3\* .%+,%0\$+4#5)!(% 2 +&-')+&\*%!&-% \$(,%) )"#)&3\* #

#	3451674849;#	051674849:#<#	05-8:6>838?@
#	5A;#	5B;#	5";#
#	#	#	#
C-#	D=E!"FFF#	=EAGHFFF#	=EB=GFFF#
#	5=E="A;#	5=E==G;#	5=E==H;#
C-#I#JK:??	=EA=LFFF#	D=E!=FFF#	D=EAHFFF
#	5=E="B;#	5=E==G;#	5=E==H;#
C-#:8>3849#	D=E=%HFFF;	=E=BBFFF#	=E=BBFFF#
#	5=E=AH;#	5=E==%;#	5=E==!;#
C-#:8>3849#84#JK:??#MKNK7	D=E="BF#	=E=ABF#	D=E==!#
#	5=E=AG;#	5=E==%;#	5=E==!;#
2KNK7?#	OP#	OP#	OP#
OP67#Q1#	OP#	OP#	OP#
Q6R83@#Q1#	SK#	SK#	SK#
+P64#KT#-PJE#U67E#	DD#	EA=!#	E=VH#
WD:XY67PZ#	=E=%"#	=E=!#	=EA=A#
S#	"A.V=V.L!!#	"!.=HH."%B#	"!.=HH."%B#

)?64Z67Z#P77K7:#84#J67P4?NP:P:#67P#M3Y:??P7PZ#6?#?NP#84Z8[!  
FFF#J\=E=A.#FF#J\=E=!.#F#J\=EA#

!"#\$%&'NP#ZPJP4ZP4?#[6786>3P#8:#?NP#3K9678?NR#KT#P674849:#5MK3YR4#A;.#64#84Z  
P674849:#5MK3YR4#B;.#64Z#TK7#Z8:6>838?@#5MK3YR4#C;#E#NP#A#6766#84Z8[8ZY63:#  
^NK#N6[P#>PP4#Z8694K:PZ#^8?N#?N8:#MK4Z8?8K4#6?#3P6:??K4MP#(P)##PP#46A#L!#64Z#B  
A#TK7#84Z8[8ZY63:#^NK#^P7P#>K74#6T?P7#AL!%#64Z#?Y74PZ#B=#6T?P7#8K7#8YR.#?NP  
>8JK367#Z8:K7ZP7.#>PM6RP#6[6836>3P#84#-P4R67\_#84#P#Y63#E#A#TK7#84Z8[8ZY63:#  
^8?N#:8>3849:#8?#64Z'%)'+,\*-.'\*-%'/"#%0" PZ#63:#A#TK7#84Z8[8ZY63:#83849:#  
>K74# 84# MKNK7?:# 6T?P7# AL!%E# 2K4?7K3:# 84M3YZP# 84Z8M6?K7:# TK7# N6[849# 7PM  
Z8694K:8:#(7Z\$))"-.%64Z#01\*4"/12\$-\*5#NP#46?Y763#3K9678?NR#KT#?NP#Y4PRJ3K@RP4?  
64#84Z8M6?K7#TK7#>P849#P47K33PZ#84#PZYM6?8K4.#64Z#64#84Z8M6?K7#TK7#J67?D?  
Z6?6#67P#6[6836>3P#TK7#M63P4Z67#@P67:#ALL!DB=A!E#/33#7P97P::8K7#84#PZ#ZP#MKN  
PTTPM?:E# \$NP#:6RJ3P# 8:# 7P:??78M?PZ# ?K# 84Z8[8ZY63:# 69PZ# B=D%=# >K74# 84# MKN  
MK3YR4#A.#?NP#:6RJ3P#8:#TY7?NP7#7P:??78M?PZ#?K#84M3YZP#84Z8[8ZY63:#^8?N#JK:8?

\$!"#\$%&'()\*+,-./:;<=>?@A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ \_ ` { | } ~ ¡ ¢ £ ¤ ¥ ¦ § ¨ © ª « ¬ ® ¯ ° ± ² ³ ´ µ ¶ · ¸ ¹ º » ¼ ½ ¾ ¿

#	351674849: 051674849:<= 05-8:6>838?		
#	5A;#	5B;#	5";#
#	#	#	#
067P4?:#6::P?:#\#B!#	D=E=GAF#	=E="%FFF#	=E=AAFFF
#	5=E==L;#	5=E=="#	5=E==B;#
067P4?:#6::P?:#b<#H!#	=E=VGFF#	D=E=ABFF#	D=E==%F#
#	5=E=AB;#	5=E==V;#	5=E=="#
C-#	D=EVB!FF#	=EA"HFFF#	=EA=BFFF
#	5=E=AH;#	5=E==V;#	5=E==V;#
C-#I#067E#6::P?:#\#B!#	=E=VB#	D=E=AV#	D=E=B=FF
#	5=E="A;#	5=E==L;#	5=E==H;#
C-#I#067E#6::P?:#b<#H!#	=E=BF#	D=E=BGFF#	D=E="V;#
#	5=E=BL;#	5=E==G;#	5=E==H;#
-PJ7P::8K4#	D=E"HGFF	=EA=GFFF#	=E=V!FFF#
#	5=E==H;#	5=E==B;#	5=E==B;#
-PJ7P::8K4#I#067E6::P?:#\#B!	D=E=A!#	=E=A"FFF#	D=E==V#
#	5=E=AB;#	5=E==V;#	5=E=="#
-PJ7P::8K4#I#067E6::P?:#b<#	=E="LFFF#	D=E="%FFF	D=E=A!FFF
#	5=E=AB;#	5=E=="#	5=E=="#
)MN8]KJN7P486#	DAEB"VFF	=E"HVFFF#	=E"GAFF#
#	5=E=B;#	5=E==V;#	5=E==V;#
)MN8]KJN7P486#I#067E6::P?	D=EA=AFF	D=E=AVFF	D=E==H#
#	5=E="%;#	5=E==H;#	5=E==%;#
)MN8]KJN7P486#I#067E6::P?	=E=!GF#	D=E==B#	D=E=A%F
#	5=E="V;#	5=E==H;#	5=E==H;#
2KNK7?#	OP#	OP#	OP#
OP67#Q1#	OP#	OP#	OP#
Q6R83@#Q1#	SK#	SK#	SK#
+P64#KT#-PJE#U67E#	DD#	E=LB#	E="V#
WD:XY67PZ#	=EBL"#	=E"=B#	=E"GH#
S#	AL.%%=.=#	BA.%!%.BA	BA.%!%.BA

)?64Z67Z#P77K7:#84#J67P4?NP:P:#67P#M3Y:?P7PZ#6?#?NP#  
FFF#J\=E=A.#FF#J\=E=!.#F#J\=EA#

!"#\$%&'()\*+,-./:;<=>?@A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ \_ ` { | } ~ ¡ ¢ £ ¤ ¥ ¦ § ¨ © ª « ¬ ® ¯ ° ± ² ³ ´ µ ¶ · ¸ ¹ º » ¼ ½ ¾ ¿

!"#\$%&'()\*+,-./:;<=>?@A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ \_ ` { | } ~ ¡ ¢ £ ¤ ¥ ¦ § ¨ © ª « ¬ ® ¯ ° ± ² ³ ´ µ ¶ · ¸ ¹ º » ¼ ½ ¾ ¿



! "\$%&'()\*+,-./:;<=>?@A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ \_ ` { | } ~

#	345P674849: 05P674849:<: 05Z8:6>838		
#	5A;#	5B;#	5";#
#	#	#	#
C-#	D=E!%AFF	=EB==FFF#	=EBV%FF
#	5=EA";#	5=E="";#	5=E="B;#
C-#I#JK: ?#	=EA="#	D=E= HF#	D=EA BFF
#	5=EA"V;#	5=E="V;#	5=E="B;#
067P4?:#B!#JM?83P#	D=EA=HFF	=E=%"FFF#	=E="V"FFF
#	5=E=AA;#	5=E==!;#	5=E==V;#
C-#I#067P4?:#B!#JM?83P#	D=EAHL#	=E=HV#	=E= A#
#	5=EB%B;#	5=E=%%;#	5=E=%=#;
OK: ?#I#067P4?:#B!#JM?83P#	D=E= FFF	=E==LF#	D=E=ALFF
#	5=E=AA;#	5=E==!;#	5=E==V;#
C-#I#067P4?:#B!#JM?83P#I#JI	=EALA#	D=E=H=#	D=E= G#
#	5=EB%V;#	5=E=%%;#	5=E=%=#;
067P4?:#b<#H!#JM?83P#	=EA BFFF#	D=E=B%FF	D=E=B"FF
#	5=E=A=;#	5=E==";#	5=E==";#
C-#I#067P4?:#b<#H!#JM?83P#	=EAAL#	D=E=%V#	D=EABHF
#	5=EBAL;#	5=E=%=#;	5=E= G;#
OK: ?#I#067P4?:#b<#H!#JM?83P#I	D=E="FFF	=E==LFFF#	=E="A"FFF
#	5=E=A=;#	5=E==";#	5=E==";#
C-#I#067P4?:#b<#H!#JM?83P#I#I	D=E=VH#	=E=BV#	=E=L=#
#	5=EBB=#;	5=E=%=#;	5=E= G;#
2KNK7?#	OP#	OP#	OP#
OP67#Q1#	OP#	OP#	OP#
Q6R83@#Q1#	SK#	SK#	SK#
+P64#KT#-PJE#U67E#	DD#	E=GL#	E="B#
WD:XY67PZ#	=E=G%#	=E=%=#	=E=LG#
S#	AL.%%.=!E	BA.%!%.BA	BA.%!%.BA
)?64Z67Z#P77K7:#84#J67P4?NP:P:#67P#M3Y: ?P7PZ#6?#?NP#8			
FFF#J\=E=A.#FF#J\=E=!.#F#J\=EA#			

! "\$%&'()\*+,-./:;<=>?@A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ \_ ` { | } ~

! "\$%&'()\*+,-./:;<=>?@A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ \_ ` { | } ~

! "\$%&'()\*+,-./:;<=>?@A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ \_ ` { | } ~

! "\$%&'()\*+,-./:;<=>?@A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ \_ ` { | } ~

#

!"#\$%&'()\*+,-.% /:;<=>?@A1#

#	+56/789::6<1#		2/789::6<#3#41#		2/=><8>;?;@A1#	
#	/B1#	/C1#	/D1#	/E1#	/!1#	/"1#
#	#	#	#	#	#	#
F.#	G4)CEBHHH	G4)D!CHHH#	4)4%"HHH#	4)4%IHHH#	4)4%%HHH#	4)4%!HHH#
#	/4)4D41#	/4)4!1#	/4)44J1#	/4)4BE1#	/4)44J1#	/4)4BD1#
F.#K#L5<@#	4)44I#	4)C4BHHH#	G4)4B4#	G4)4D%HHH	G4)B4!HHH#	G4)B4%HHH
#	/4)4D1#	/4)4"B1#	/4)44%1#	/4)4B1#	/4)44I1#	/4)4BE1#
M#F.#7L;<5=7<#	G4)C!DHHH#	G4)C4%HHH	4)4JBHHH#	4)4"EHHH#	4)4!HHH#	4)4J"HHH#
#	/4)4CC1#	/4)4D"1#	/4)44E1#	/4)44I1#	/4)44E1#	/4)44J1#
M#F.#7L;<5=7<#K#L5<@#	4)4%IHHH#	4)4B"#	G4)4EBHHH#	G4)4B%#	G4)4B%HHH	G4)44D#
#	/4)4C!1#	/4)4DE1#	/4)44!1#	/4)44I1#	/4)44!1#	/4)44J1#
(5N59@#	O7#	O7#	O7#	O7#	O7#	O7#
O789#P0#	O7#	O7#	O7#	O7#	O7#	O7#
P8Q;?A#P0#	R5#	O7#	R5#	O7#	R5#	O7#
S78:#5T#.7L)#U89)#	GG#	GG#	)BDE#	)B4!#	)4!%#	)4EJ#
VG<WX897=#	4)4E!#	4)D4"#	4)4E%#	4)DEC#	4)4%D#	4)EC!#
R#	EB-"B%-B"4#	DB-E4E-%!!#	EI-4JB-BC!#	DI-4JJ-D"C#	EI-4JB-BC!#	DI-4JJ-D"C#

,@8:=89=#79959<#;#L897:@N7<7<#897#Y?X<@797=#8@#@N7#;=:;Z;=X8?#?7Z7?)#HHH#L[4)4B-#HH#L[

!"#\$%&'()\*+,-.% /:;<=>?@A1#  
 /Y5?XQ:<#BGC1-#8:#;=:;Y8@59#T59#^795#789::6<#Y5?XQ:<#DGE1-#8:=#8:#;=:;Y8@59#T59#;=<8>;?;@A1#W5X8Q#BHTC9##\$N7#Z89;8>??  
 ;=:;Z;=X8?<#]N5#N8Z7#>77:#=;86:5<7=#];@N#@N;<#Y5=:;@:5:#8@#?78<@#5:Y7#%["#]7W#B%#B#T-59#4B;Z;=X8?<#]N5#]797#>59:#8T@7  
 B%!"-#8:#=@X9:7=#C4#8T@79#?;@N;XQ-#@N7#Q8;:#@978@Q7:@#T59#>;L5?89#=#<59=79-#>7Y8Q7#9Z8;?8%87%\$#7)C89\_#:#B%J")#\$N  
 Y5X:@<#@N7#:XQ>79#5T#<7L898@7#F.#=:;86:5<7=#97Y7;Z7=#>7@]77:#B%#!#8:#C4B!#(5:@95?<#;:Y?X=7#8@#Y8@59#59#N8Z;:6#97  
 =;86:5<;<#5\$#,\$),"/%8:=#012,3"+2.\$/4#@N7#8@X98?#?5689;@NQ#5T#@N7#X:7QL?5AQ7:@#98@7-#8:#;=:;Y8@59#T59#>7;:6#7:95??7=#  
 ;=:;Y8@59#T59#L89@G@;Q7#]59\_)#.:86:5<7<#=#8@8#897#8Z8;?8>?7#T59#Y8??7=#89#A789<#897#]5049@#8#-#97699#F;K7-##7T7Y@<a#  
 Y5?XQ:<#C-#E-#8:#"#:;Y?X=7#T8Q;?A#T;K7=#7TT7Y@<))##\$N7#<8QL?7#;<#97<@9;Y@7=#@5#;:#B%#B#C#B#67a#C4#XQ#>59#C#Y5N59  
 TX9@N79#97<@9;Y@#@N7#<8QL?7#@5#;=:;Z;=X8?<#];@N#L5<;@;Z7#789::6<)

!"