

Marsh McLennan Flood Risk Index

Overview And Structure

['cVU'cj Yfj]Yk 'cZ' ccX'f]g_ Uhh Y'bQ Y'b

Selection Criteria

Exhibit 1: Index components, indicators, and data sources

Index component	Indicator	Data sources
	f l i j] U Ę \ UnUfX	%\$!nYUf fYh fb'dYf]cX \ UnUfX'a UdgZfca ħ\Y'K cf'X'FYgci fWg=bg]hi ħY'K F=±g' 5ei YXi Vñ: `ccXg k \]W]bVèfdcfUñY]bZcfa Uh]cb'Zfca) `7A =D) 'a cXY'gfl : 8@ 9GA &A ž<UX; 9A &!Ygž=DG@7A) 5!@žA =C 7!9GA !7<9A žBcf9GA %A ĩi bXYf' Ub F 7D, ") Zc:fV]b['gWbUF]c Zcf'X] YfYbh]ja Y \cf]ncbg: &\$%\$z&\$' \$z&\$) \$z&\$, \$" : i fh\Yf'XYHJ]gVWb VY'Zci bX]b'ħ\Y'K F=5ei YXi Vñ: `ccXg'a YħcXc`c[mXcW'a Ybh³
	7cUghU' \ UnUfX	%\$!nYUf fYh fb'dYf]cX \ UnUfX'a UdgZfca 'K F=5ei YXi Vñ: `ccXg]bVèfdcfUñY]bZcfa Uh]cb'Zfca 'ħ\Y; `cVU'H]XY'UbX'Gi f[Y'FYUbu'ng]gfl HGF Ę XUuYgYhUbX'a cXY`Z ĩi fY VèUghU'gi Vg]XYbW": i fh\Yf'XYHJ]gVWb VY'Zci bX]b' ħ\Y'K F=5ei YXi Vñ: `ccXg'a Yħ \$Y W ĩX

XcW'a Ybh' 'H\Y%\$\$!mYUf'fYH fb'dYf]cX'a Udg'Zcf'
fU]bZU'' ccX]b['k YfY'W'W'UH'X'VmdYfZcfa]b['Ub'
YI hfYa Y'j U'i Y'UbU'ng]g'cZ'h Y'Ubbi U'a Ul]a i a 'j U'i Yg'
cZXU]'mdfYV[h]hU]cb'Zfca 'a i 'h]d'Y'cVgYfj Uh]cbU'ž
fYUbU'ng]g'zUbX W]a UH'ia cXY'XUH U'gYhg"

h\Y'7]a XYI 'dfc'YVW'H\Y'Y][\hYI HfYa Y'fU]bZU''a Udg' Zcf YUW' k Ufa]b['gWbUF]c'k YfY'h Yb Uj YfU[YX'hc' dfcXi W'U'a i 'h]!a cXY'Ygh]a UhY''H\Y'a i 'h]!a cXY'' Uj YfU[Yg'k YfY'h Yb 'fYgW'YX Vmia i 'h]d' m]b['h\Ya 'Vmi h\Y'V]Ug'VtffYV]cb ZJW'cf'a Ud 'W'W' 'UH'X']b'dc]bh' "" H\Y'UfYU!k Y][\hYX'Uj YfU[Y'j U'i Y'cZYI HfYa Y'fU]bZU'']b'YUW' Vt'i bHfM'Zcf'YUW' k Ufa]b['gWbUF]c'k Ug' h\Yb W'W' 'UH'X''

Point 5. H\Y'UfYU!k Y][\hYX'Uj YfU[Y'j U'i Y'cZYI HfYa Y' fU]bZU'']b'YUW' Vt'i bHfM'Zcf'YUW' k Ufa]b[''Y'j Y' 'fUg' W'W' 'UH'X']b'dc]bhg%'UbX' ('Ek Ug'a UddYX'hc' U'fU]bZU'' \UnUfX'gVt'fY'ffUb[]b['Zfca' '%hc' %\$Ei g]b['h\Y'XYV'Yg' cZ'h\Y'X]g]f]Vi h]cb'cZ'h\Y'&\$, \$YI HfYa Y'fU]bZU'']U'i Yg' Vt'i bhf]Yg''

Point 6. C'VgYfj Uh]cbU'z'fYU'U'ng]g'z'UbX'a cXY'' g]a i 'Uh]cb'XUH\UX'X] YfYbh'fYgc'i h]cbg''DYfZcfa]b[' h\Y'cdYfU]h]cbg'XYgW]VYX']b'dc]bhg%'hc' ('fYeI]fYX'hc' fY]bh'f'c'UH'XUH'hc' h\Y'\][\Ygh'fYgc'i h]cb'Ua cb['U'' XUH'gYhg'f]C'6GE''

H\Y'hc'U' \UnUfX'gVt'fY'Zcf'YUW' Vt'i bHfM'k Ug' Ygh]a UhY'X'VmiUj YfU[]b['h\Y'f]j Yf]bY'z'Vt'UghU'z'UbX' fU]bZU'' \UnUfX'gVt'fYg''

Limitations

H\Y'&\$' \$Z&\$) \$ZUbX'&\$, \$'h]a Y'\cf]ncbg'k YfY' Uggi a YX'hc' Vt'ffYgdc'bX'hc' Z%) .7zZ&'.7z Z' ") .7'k Ufa]b[''Y'j Y'g'VUgYX'cb'7A =D) 'a i 'h]!a cXY'' ['cVU' h'Ya dYfU'fY'dfc'YVW]cbg'z'k]h'ci h'UW'Vt'i bh]b[' Zcf'X] YfYbh'W]a UhY'gYbg]h]j]h]Yg'UW'cgg'h\Y' 7A =D) YbgYa V'Y''

=bZcfa Uh]cb'cb' ccX'XYZYbgYg'k Ug'bch]bW' XYX']b' h\Y'UbU'ng]g''

8] YfYbh'fYgc'i h]cbg'cZ'h\Y'XUH'gYhg'i gYX'hc' Ygh]a UhY' fU]bZU'' ccX]b[]a dUW'YX' h\Y'f'fYdfYgYbhUh]cb'cZ YI HfYa Yg''

7A =D) W]a UhY'a cXY'g'a Umi bXYfYgh]a UhY'cf' c] YfYgh]a UhY'fU]bZU'' YI HfYa Yg'z'UbX' Vt'ffYVW]cb' ZJW'cf'g' k YfY'Udd']YX'hc' fYX'i W'gi W'V]UgYg''6]Ug'Vt'ffYVW]cb' ZJW'cf'g'UfY'Uggi a YX' Vt'bg'U'bh]b' h]a Y''

Exposure

Background

9l d'c]g' fY'gVt'fYg'fY' YVW]bZcfa Uh]cb'cb'h\Y' Vt'a dcbYb'g.

- **Human exposure** z'Ub Ygh]a UhY'cZ'h\Y'dYfW'bhU[Y' cZ'dcdi 'Uh]cb'YI d'cgYX'hc' ccX]b[]b'YUW' Vt'i bHfM
- **Economic exposure** z'Ub Ygh]a UhY'cZ'h\Y' dYfW'bhU[Y'cZ'UggYhg'YI d'cgYX'hc' ccX]b[]b' Vt'i bHfM

9l d'c]g' fY'gVt'fYg'k YfY' W'W' 'UH'X' Vmi]bh'fYgYVW]b[' dcdi 'Uh]cb'UbX'UggYhX]g]f]Vi h]cb'XUH'k]h'U'UmYf' cVU]bYX'VmVt'a V]b]b['h\Y'%'\$!mYUf'fYh'fb'dYf]cX' ['cVU']bi bXUh]cb'a Udg'Zcf'f]j Yf]bY'z'Vt'UghU'z'UbX'fU]bZU'' ccX]b['Zcf'YUW' k Ufa]b['gWbUF]c''B'c'W'Ub[Yg]b'h]a Y' cZ'h\Y'dcdi 'Uh]cb'UbX'UggYhX]g]f]Vi h]cbg'k YfY'Uggi a YX' k \Yb Ygh]a Uh]b[YI d'c]g' fY'gVt'fYg'Zcf'Z' h'fY'W]a UhY' W'Ub[Y'gWbUF]c'g'z'h'i g'cb'm]bVt'f'c'fU]b[]b'Zcfa Uh]cb' \UnUfX''

Calculation

Point 1. 5b'U[[fY[UhY'X'%'\$!mYUf'\UnUfX'a Ud'k Ug' W'YUH'X'VmiVt'a V]b]b['h\Y'f]j Yf]bY'z'Vt'UghU'z'UbX' fU]bZU'']bi bXUh]cb'a Udg'UW'cgg'YUW' cZ'h\Y'W]a UhY' gWbUF]c]g': cf'fU]bZU''z'YI HfYa Y'dfYV]d]hUh]cb'YI W'YX]b['&\$a a #XUmk Ug'i gYX'Ug'U'h'fYg'c'X'hc']XYbh]ZmU'f]g' UfYUg''H\Y'&\$' \$Z&\$) \$ZUbX'&\$, \$'h]a Y'\cf]ncbg'k YfY' Uggi a YX'hc' Vt'ffYgdc'bX'hc' Z%) .7zZ&'.7zUbX'Z' ") .7' k Ufa]b[''Y'j Y'g''

Point 2. 5ggYhj U'i Y'XUH'Z'fca ; 5F'k Ug'U[[fY[UhY'X' hc' U'fUghYf''UmYf'f]a '1' %a E'hc'dfcj]XY'U'Vt'bh]bi ci g' fYdfYgYbhUh]cb'cZYI d'c]g' fY''

Point 3. H\Y'['cVU'dcdi 'Uh]cb'f] <G@'UbX'UggYh' f] 5F'E''UmYf'g'k YfY' h\Y'b'W]ddYX'hc' h\Y'Vci bXUf]Yg'cZ' h\Y'Vt'a V]bYX'%'\$!mYUf'f]j Yf]bY'z'Vt'UghU'z'UbX'fU]bZU'']bi bXUh]cb'a Udg''

Point 4. 5'ncbU`ghUhg]Vg`cdYfUhc'k Ug'Udd`jYX'hc'gi a`
h\Y'j U'i Yg'cZdcdi `Uh]cb`UbX`UggYhg]b`h\Y`]bi bXUH\X`
UfYUgžh'i g`W`W`Uh]b[`h\Y'hcH`j U'i Yg'cZYI dcgYX`
dcdi `Uh]cb`UbX`UggYhg]b`YUW` Vti bhfmi

Point 5. H\Y'gUa Y'ncbU`ghUhg]Vg`cdYfUhc'k Ug`
Udd`jYX'hc`W`W`UhY`h\Y'hcH`j`UggYhg]UbX`dcdi `Uh]cb`
Vti bhfmi

Point 6. H\Y'dYfWbhU[Yg'cZdYcd`Y`UbX`UggYhg`
h\YfUHbYX`Vm`ccX]b[`k`YfY`W`W`UH\X`Zcf`YUW`
Vti bhfmiVmX]j`j]b[`h\Y`bi a`VYfgYgh]a`UH\X`]b`dc]bhg`
)"

Point 7. <i a`Ub`UbX`YVt`bca`j]Wl`dcgi`fYg'gVt`fYg`Zcf`
YUW`Vti bhfmiU]b[]b[`Zfca`%`hc`%\$Ek`YfY`Ygh]a`UH\X`
Zfca`h\Y`hk`c`dYfWbhU[Y`j`U'i Yg`VmVt`a`dUf]b[`h\Ya`
hc`h\Y`XYV`Yg'cZ`h\Y`Vt`ffYgdc`bX]b[`X]gh]Vi`h]cb`cZ`
dYfWbhU[Yg`UW`cgg`Vti bhf]Yg]b`&\$, \$"G`Vt`fYg`Zcf`h\Y`
Zci`f`g`W`bUf]cg`f`f`Yg`YbhX`Unž`&\$` \$ž&\$, \$Ek`YfY`U`
Ygh]a`UH\X`i`g]b[`h\Y`XYV`Yg'cZ`h\Y`&\$, \$`X]gh]Vi`h]cbg`"

Point 8. HcH`YI`dcgi`fY`gVt`fYg`k`YfY`W`W`UH\X`Vm`
Uj`YfU[]b[`h\Y`i a`Ub`UbX`YVt`bca`j]Wl`dcgi`fY`gVt`fYg`"

Limitations

H\Y`&\$` \$ž&\$) \$žUbX`&\$, \$`h]a`Y`\cf]ncbg`k`YfY`
Uggi`a`YX'hc`Vt`ffYgdc`bX`hc`Ž%)`..7žž&`..7ž`
Ž`")`..7`k`Ufa`]b[``Y`Y`g`V`U`g`Y`X`c`b`7A`=D)`a`i`h]a`cXY`
[`cVU`hYa`dYfUH`fY`dfc`YVW]cbgžk`]h`ci`hUW`Vti`bh]b[`
Zcf`X]`YfYbhW]a`UhY`gYbg]h]j`]h]Yg`UW`cgg`h\Y`
7A`=D)`YbgYa`V`Y`"

8i`Y`hc`h\Y`X]`W`hm]b`Ygh]a`Uh]b[`ccX`YI`dcgi`fYž`
h\YfY`k`Ug`U`]a`]hX`W`c]W`cZUj`U]`UV`Y`XUH`UgYhg`"8UH`
gci`fW`g`W`cgYb`hc`W`W`UH`YI`dcgi`fY`fYdfYg`YbhVYgh`
Vtcf`X]`Uj`dYfYg]W`Zcf`Zch]`cc`Y`k]V`b`h`a`g`Y`g]`W`ZcY`W`Zg]`U`c]a`Y`"

Vulnerability

Background

Ji 'bYfUV]]hmgVt'fYg'fY YVh'gcV]cYVt'bc a]W
gi gWdh[V]]h'hc' ccX]b['UbX'UFY'VUgYX'cb'h\Y'
]bX]W]h'c'fg.

- **The Human Development Index (HDI)**
W]dhi fYg'h\ fYY'X]a Ybg]cbg'cZ\i a Ub'XYj Y'cda Ybh'
h\Uh'UFY'\]]\m'fY'Yj Ub'h'c'\i a Ub j i 'bYfUV]]h'm

24 Details regarding the calculation of HDI can be found

Overlays Statistics Calculation

Background

H\Y`Cj Yf`Ung`gYVW]cb`cZh\Y`bXYI`g\ck`g`h\Y`[`cVU`
]bi`bXUh]cb`a`Udg`Zcf`f]j`Yf]bY`UbX`Vt`UghU`ccX]b[`
f%\$!mYUf`fYfi`fb`dYf]cX`a`Udg`Zfca`K`F`=g`5ei`YXi`Vh`
: `ccXg]z`UbX`h\Y`fU]bZU`]bi`bXUh]cb`a`Udg[`YbYf`UH`X`
h`fci`[`\`Zfca`h\Y`dfc`VW`gg`XYg`V]VYX`]b`h\Y`<`UnUf`X`
7U`W`U]h]cb`gYVW]cb`cZh\]g`XcW`a`Ybh`h\Y`Cj`Yf`Ung`
gYVW]cb`U`gc`dfYg`Ybhg`XUH]cb`h\Y`[`cVU`X]ghf]Vi`h]cbg`
cZi`fVUb`UFYUg`z`fi`fU`UFYUg`z`UbX`W]h]W]`]b`Zf`Ugh`fi`Vh`fY`
Ugg`Yhg`z`U`W`a`dUb]YX`Vm`_`Ym`Vt`i`bh`f`n`Yj`Y`gh`U]gh]Vg.

- **Urban Areas**žk]h`h\Y`dYf`W`bhU[`Y`cZi`fVUb`UFYUg`
Uhf]g`_`cZ`ccX]b[`"
- **Rural Areas**žk]h`h\Y`dYf`W`bhU[`Y`cZfi`fU`UFYUg`Uh`
ccX]b[`"
- **Power Plants**žk]h`h\Y`dYf`W`bhU[`Y`cZdck`Yf`
[`YbYf`U]h]cb`W`d`U`V`m`Uhf]g`_`cZ`ccX]b[`"
- **Ports and Airports**žk]h`h\Y`dYf`W`bhU[`Yg`
cZ]bh`f`b`U]h]cb`U`hf`UX`Y`j`c`i`a`Yg`f`d`c`f`hg`U`b`X`
]bh`f`b`U]h]cb`U`g`Y`U`hg`f`U]f`d`c`f`hg`U`hf]g`_`cZ`ccX]b[`"

Calculation

Point 1. 5b`U[`[`fY[`UH`X`%\$!mYUf`\`UnUf`X`a`Ud`k`Ug`
W`Y`UH`X`V`m`V`a`V]b]b[`h\Y`f]j`Yf]bY`z`Vt`UghU`z`UbX`fU]bZU`
]bi`bXUh]cb`a`Udg`U`W`c`gg`Y`U`W`c`Z`h`Y`W]a`UH`g`W`b`Uf]c`g`
:`cf`fU]bZU`z`Yi`hf`Ya`Y`df`Y`V]d]h]h]cb`Yi`W`Y`X]b[`&\$`\$`a`a`#`
X`U`m`k`U`g`i`g`Y`X`U`g`U`h`f`Y`g`\`c`X`h`c`]X`Y`b`h]Z`m`U`h`f]g`_`UFYUg`
H`Y`g`Y`a`U`d`g`k`Y`f`Y`]b`h`f`g`Y`W`X`k`]h`K`c`f`X`6`U`b`_`
V`c`i`b`X`U`f`m`X`U`h`U`b`X`h\Y`X`U`h`U`g`Y`hg`]gh`Y`X`]b`d`c`]b`hg`&`h`c`(`
h`c`Y`gh]a`UH`h\Y`dYf`W`bhU[`Yg`c`Z`f`U`b`#]`Ub`Vf` :` Zi`fV`U`V`U`U`

V`Z` \g`X`h`c`Y`
\$`g`c`Z`

Acknowledgments

Authors

Gk Yb\U'Gi fa]bg_]ZA UbU[]b['8]fYVWc:fz7`ja UH\FYg[]YbWZA Ufg\`A W@YbbUb 5Xj UbHU[Y
7`Ui X]c`GU`c]hZFYgYUFW\`A UbU[YfZA Ufg\`A W@YbbUb 5Xj UbHU[Y
GUbXfU`8i YbUgZGYb]cf`8UH\GWYb]ghZ
Hcg\]b GYei Y]fUZFYGUFW`5bU`ngHZA Ufg\`A W@YbbUb 5Xj UbHU[Y
5X]h]?cH\Uf]ZFYgYUFW`5bU`ngHZA Ufg\`A W@YbbUb 5Xj UbHU[Y
Gi`a Yf`8fU`ZFYgYUFW`5bU`ngHZA Ufg\`A W@YbbUb 5Xj UbHU[Y

Contributors

F]WUfX`Ga]h\!6]b[\Ua ž9l YW`hj Y`8]fYVWc:fZA Ufg\`A W@YbbUb 5Xj UbHU[Y
6`U]f`7\`Ua YfgZA UbU[]b['8]fYVWc:fz~b]bcj Uh]cbg]b`bZfUghf`i W`i FYZA Ufg\`A W@YbbUb 5Xj UbHU[Y
?Uj]h\U`<Uf[]UfUbZ8]fYVWc:fz<YU`h\mGcV]Yh]YgZA Ufg\`A W@YbbUb 5Xj UbHU[Y
6Yb`<cghYfz8]fYVWc:fzHFUbgZcfa Uh] Y`HYWbc`c[]YgZA Ufg\`A W@YbbUb 5Xj UbHU[Y
8Ub]Y`?Ub]Yk`g_]ZA UbU[]b['8]fYVWc:fzDi V`]WGYVWc:fZA Ufg\`A W@YbbUb 5Xj UbHU[Y
7`U]f`C`gcbZA UbU[]b['8]fYVWc:fZA Ufg\`A W@YbbUb 5Xj UbHU[Y
: fUbV]g`6ci WUfXZA UbU[]b['8]fYVWc:fZA Ufg\`A W@YbbUb 5Xj UbHU[Y
@`W`B`c`H]b[\Ua ž8]fYVWc:fzGfUH[]WDFHbYfg\]dgZA Ufg\`A W@YbbUb 5Xj UbHU[Y
GnXbYm<YXVYf[ž8]fYVWc:fz: `cVU`7cfdcfUH`GfUH[]nZA Ufg\`A W@YbbUb 5Xj UbHU[Y
A UH\Yk`9U[`Yž<YUX`cZ: `cVU`A cXY`Gc`i h]cbg]UbX`5Xj]gcfnz: i m7UfdYbhYf
A Uf`_K`YUH\Yf\YUXZA UbU[]b['8]fYVWc:fz<YUX`cZ7UHghfcd\Y`5Xj]gcfnzG95?`ž: i m7UfdYbhYf
A]WUY`Ck YbZA UbU[]b['8]fYVWc:fz: i m7UfdYbhYf
>gg]W`H`fYfZA UbU[]b['8]fYVWc:fz7UHghfcd\Y`5Xj]gcfnz: i m7UfdYbhYf
žUj]W`U`W`fz`Yb]cf`8Y] Y`cda YbhGWYb]ghZ: i m7UfdYbhYf
xgYd\`: `6YW`YfZf/`8#5Xj]gcfmGYb]cf`7UHghfcd\Y`A cXY`YfZ: i m7UfdYbhYf
>fYa mK`U]hYžGYb]cf`J]W`DfYg]XYbhž6fc_]b[ž: i m7UfdYbhYf
5a m6UfbYgž<YUX`cZ7`ja UH`UbX`Gi`ghU]bUV`]hmGfUH[]nž
; Ycf[Y`G`6U`Xk`bž7cbgi`h]b['8]fYVWc:f/`7c!`YUXYf`cZ7`ja UH`FYg[]YbWž
6Yj Yf`Ym5XUa`gž<YUX`cZJ]gi`U`bH`][YbW`UbX`75HD`Ubb]b[ž
B]Wc`Ug: Ui`ž<YUX`cZ7`ja UH`UbX`Gi`ghU]bUV`]hmF]g_ž
8Uj]X`?Y`nžGYb]cf`A UbU[Ya Ybh7cbgi`hUbtž9G: ž
; fUYa YF]XXY`ž7`ja UH`UbX`Gi`ghU]bUV`]hm7cbgi`h]b[`@YUXYfž
5`b
6Yb[*`ž<U`]`Q

; fU`V`YF`*`]`S`*`]b`%`" `c`h`U`U`
H`d`@`d`\$`%`%

