

UNFORESEEN EVENTS, NATURAL DISASTERS, AND INSURANCE RATES

Presented by:

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Introduction

- Unforeseen events, natural disasters, and increased insurance rates can affect the availability of amenities in affected areas.
- Higher insurance rates can lead to a reduction in available amenities, further impacting the economic well-being of individuals and communities.
- The economic consequences may include reduced consumer spending, migration away from affected areas, and decreased quality of life due to a lack of amenities, thereby contributing to additional regional differences.



Study Approach

- REMI utilized a 51-region, 160-industry E3+ model of all 50 states plus DC
- Input to model: Non-Pecuniary Amenity (affects migration)
- Amenity impacts on migration, further affecting regional macro variables such as employment, output, GDP, disposable personal income
- Sources: Bankrate 2023, 2024 at the state level

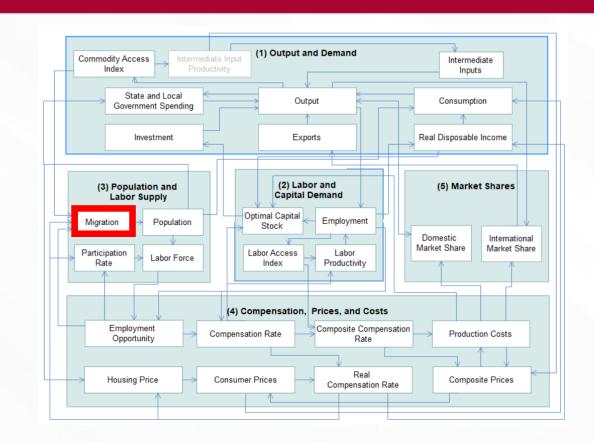


Model Linkages

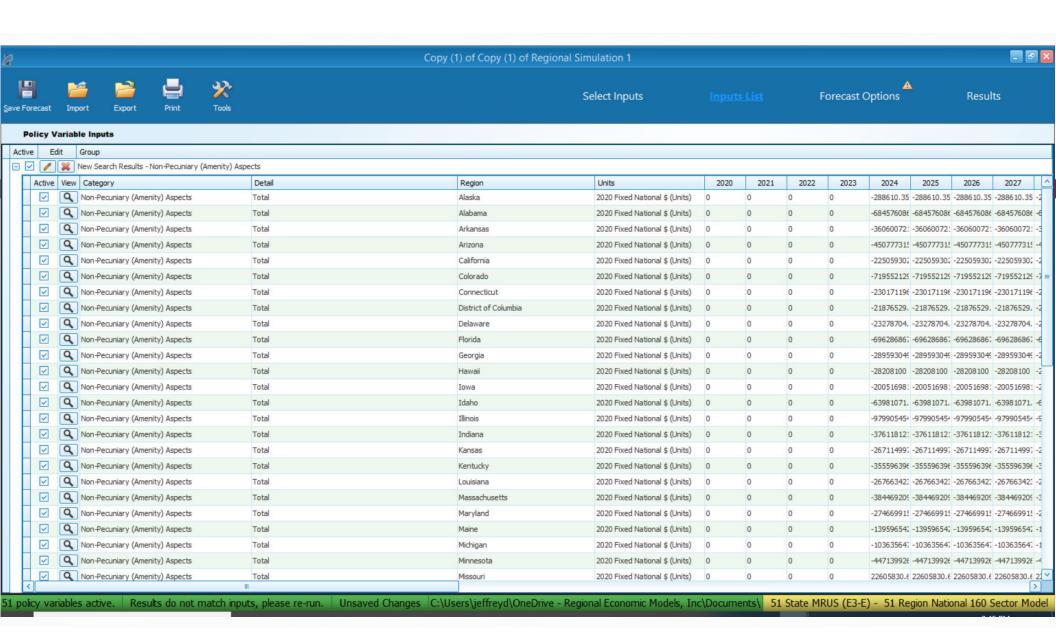
 The Amenity variable affects migration and the labor force, as shown in the equation below:

$$ECMIG_{t}^{k} = \left((\lambda^{k} + \beta_{1} \ln(REO_{t}^{k} * MIGPROD_{t}^{k}) + \beta_{2} \ln(RWR_{t}^{k} + (1 \cdot EMPPVA_{t}^{k})) * LF_{t-1}^{k} \right) + EMIPVA_{t}^{k}$$
(3-5)

Amenity variable in migration equation



what does REMI say? sm





Results: Economic Summary

Economic Su	ППагу																		
Region	Comparison Type	Forecast		Comparis	on Forecast														
l Regions 💟	Differences	Copy (1) of Copy (1) of Regional Sin	nulation 1	Standard	Regional Cor	ntrol 💟													
Cate	egory	Units	2024	2025	2026	2027	2028	2029	2030	2031 😂	2032	2033	2034	2035	2036	2037	2038	2039	2040
Total Employment		Thousands (Jobs)	-0.4882	-1.2691	-2.0051	-2.6276	-3.2328	-3.5517	-3.9478	-4.2158	-4.4875	-4.9163	-5.3043	-5.3484	-5.5384	-5.6894	-5.8601	-6.1245	-6.1
Private Non-Farm Empl	oyment	Thousands (Jobs)	-0.7653	-1.7206	-2.5758	-3.2887	-3.9657	-4.3528	-4.8092	-5.1329	-5.4573	-5.9317	-6.3607	-6.4477	-6.6768	-6.8639	-7.0669	-7.3572	-7.4
Residence Adjusted Em	nployment	Thousands	-0.5554	-1.3838	-2.1487	-2.7894	-3.4081	-3.7324	-4.1353	-4.4078	-4.6821	-5.1122	-5.5010	-5.5472	-5.7391	-5.8931	-6.0661	-6.3324	-6.3
Population		Thousands	-0.0104	-0.0389	-0.0774	-0.1175	-0.1517	-0.1733	-0.1766	-0.1567	-0.1104	-0.0360	+0.0663	+0.1942	+0.3435	+0.5087	+0.6833	+0.8605	+1.0
Labor Force		Thousands	+0.7126	+1.2316	+1.8644	+2.5361	+3.0989	+3.5608	+4.0409	+4.4049	+4.7447	+4.8837	+5.0698	+5.3403	+5.5012	+5.5293	+5.5051	+5.4049	+5.3
Gross Domestic Product	t	Billions of Fixed (2012) Dollars	+0.0432	+0.0453	+0.0455	+0.0495	+0.0496	+0.0690	+0.0785	+0.0970	+0.1114	+0.1067	+0.1036	+0.1346	+0.1479	+0.1639	+0.1756	+0.1743	+0.1
Output		Billions of Fixed (2012) Dollars	+0.0698	+0.0697	+0.0677	+0.0739	+0.0739	+0.1083	+0.1246	+0.1561	+0.1812	+0.1734	+0.1685	+0.2220	+0.2455	+0.2736	+0.2945	+0.2933	+0.3
Value-Added		Billions of Fixed (2012) Dollars	+0.0432	+0.0453	+0.0455	+0.0495	+0.0496	+0.0690	+0.0785	+0.0970	+0.1114	+0.1067	+0.1036	+0.1346	+0.1479	+0.1639	+0.1756	+0.1743	+0.1
Personal Income		Billions of Current Dollars	+0.0840	+0.1065	+0.0991	+0.0775	+0.0336	+0.0165	-0.0306	-0.0636	-0.1030	-0.1762	-0.2464	-0.2517	-0.2827	-0.3060	-0.3286	-0.3710	-0.3
Disposable Personal Inc	come	Billions of Current Dollars	+0.0637	+0.0763	+0.0616	+0.0365	-0.0057	-0.0211	-0.0655	-0.0964	-0.1324	-0.1963	-0.2579	-0.2652	-0.2939	-0.3160	-0.3374	-0.3755	-0.3
Real Disposable Person	nal Income	Billions of Fixed (2012) Dollars	+0.0410	+0.0410	+0.0415	+0.0451	+0.0421	+0.0638	+0.0634	+0.0753	+0.0828	+0.0711	+0.0641	+0.0931	+0.1011	+0.1139	+0.1250	+0.1251	+0.1
Real Disposable Person	nal Income per Capita	Thousands of Fixed (2012) Dollars	+0.0001	+0.0001	+0.0001	+0.0001	+0.0001	+0.0002	+0.0002	+0.0002	+0.0003	+0.0002	+0.0002	+0.0002	+0.0002	+0.0002	+0.0002	+0.0002	+0.0
PCE-Price Index		2012=100 (Nation)	-0.0002	-0.0003	-0.0006	-0.0010	-0.0013	-0.0017	-0.0021	-0.0025	-0.0028	-0.0032	-0.0036	-0.0039	-0.0042	-0.0045	-0.0048	-0.0050	-0.0



Results: Economic Migration by State (Top 10 Gains and Losses)

	Region	Units	2024	2025	2026	2027	2028	2029	2030 🕶
>	Texas	Thousands	+12.0129	+9.8277	+8.1858	+6.9367	+5.9142	+5.0299	+4.2861
	California	Thousands	+6.3226	+5.2023	+4.3211	+3.6346	+3.0584	+2.5887	+2.1571
	Pennsylvania	Thousands	+3.5145	+2.9351	+2.5202	+2.2102	+1.9489	+1.7266	+1.5288
	Washington	Thousands	+3.2737	+2.7799	+2.4017	+2.1075	+1.8557	+1.6355	+1.4417
	Ohio	Thousands	+3.0718	+2.5709	+2.2114	+1.9426	+1.7279	+1.5413	+1.3799
	New York	Thousands	+3.3212	+2.7727	+2.3376	+1.9926	+1.7145	+1.4818	+1.2664
	Missouri	Thousands	+2.4934	+2.0750	+1.7776	+1.5579	+1.3818	+1.2286	+1.0961
	Georgia	Thousands	+2.5529	+2.0838	+1.7402	+1.4819	+1.2766	+1.1004	+0.9588
	New Jersey	Thousands	+2.6021	+2.1153	+1.7632	+1.4815	+1.2538	+1.0812	+0.9029
	Oregon	Thousands	+1.2185	+1.0554	+0.9264	+0.8214	+0.7309	+0.6514	+0.5783
	Mississippi	Thousands	-0.3500	-0.3094	-0.2727	-0.2427	-0.2158	-0.1928	-0.1708
Ī	Colorado	Thousands	-0.8940	-0.7153	-0.5694	-0.4525	-0.3664	-0.2884	-0.236
Ī	North Carolina	Thousands	-0.8791	-0.7304	-0.6116	-0.5163	-0.4317	-0.3653	-0.303
Ī	Oklahoma	Thousands	-0.9524	-0.7772	-0.6378	-0.5293	-0.4468	-0.3779	-0.317
Ī	Arkansas	Thousands	-1.0857	-0.9017	-0.7620	-0.6552	-0.5667	-0.4923	-0.427
i	Michigan	Thousands	-1.3348	-1.0845	-0.9142	-0.7864	-0.6695	-0.5709	-0.492
1	Alabama	Thousands	-2.1492	-1.8039	-1.5386	-1.3356	-1.1635	-1.0184	-0.890
ĺ	South Carolina	Thousands	-2.2710	-1.9136	-1.6452	-1.4398	-1.2611	-1.1119	-0.976
İ	Louisiana	Thousands	-12.1119	-9.9826	-8.3813	-7.1871	-6.2241	-5.4097	-4.705
1	Florida	Thousands	-29.1342	-24.0800	-20.2558	-17.2984	-14.8505	-12.8344	-11.004

Top 10 Gains

Top 10 Losses

what does **REMI** say? sm





Region	Units	2024	2025	2026	2027	2028	2029	2030 🕶
Texas	Thousands	+5.8203	+10.2004	+13.6371	+16.4281	+18.7460	+20.6643	+22.3251
California	Thousands	+3.1228	+5.5444	+7.4897	+9.0829	+10.4063	+11.5115	+12.4403
Washington	Thousands	+1.6156	+2.8733	+3.8996	+4.7646	+5.5064	+6.1377	+6.6916
Pennsylvania	Thousands	+1.7114	+2.9855	+3.9923	+4.8238	+5.5359	+6.1403	+6.6747
New York	Thousands	+1.5974	+2.8319	+3.8144	+4.6128	+5.2741	+5.8258	+6.2986
Ohio	Thousands	+1.4748	+2.5734	+3.4415	+4.1595	+4.7702	+5.2901	+5.7626
New Jersey	Thousands	+1.2791	+2.2222	+2.9587	+3.6114	+4.1085	+4.5235	+4.9465
Missouri	Thousands	+1.2028	+2.0882	+2.7828	+3.3581	+3.8470	+4.2630	+4.6436
Georgia	Thousands	+1.1677	+2.0147	+2.6606	+3.1760	+3.6031	+3.9550	+4.2631
Massachusetts	Thousands	+0.8189	+1.4637	+2.0340	+2.4489	+2.7721	+3.0307	+3.2444
Nebraska	Thousands	-0.2986	-0.5189	-0.6841	-0.8077	-0.8978	-0.9959	-1.0241
Oklahoma	Thousands	-0.4431	-0.7690	-1.0160	-1.2124	-1.3683	-1.4941	-1.6020
Colorado	Thousands	-0.4601	-0.8062	-1.0647	-1.2576	-1.4149	-1.5278	-1.6127
North Carolina	Thousands	-0.4329	-0.7649	-1.0277	-1.2397	-1.4115	-1.5495	-1.6654
Arkansas	Thousands	-0.5003	-0.8775	-1.1744	-1.4166	-1.6174	-1.7846	-1.9310
Michigan	Thousands	-0.6401	-1.1026	-1.4600	-1.7465	-1.9763	-2, 1597	-2.3213
Alabama	Thousands	-0.9989	-1.7628	-2.3734	-2.8783	-3.3022	-3.6576	-3.9709
South Carolina	Thousands	-1.0586	-1.8695	-2.5234	-3.0713	-3.5354	-3.9307	-4.2825
Louisiana	Thousands	-5.5742	-9.7652	-13.0436	-15.7022	-17.9053	-19.7319	-21.3277
Florida	Thousands	-14.1858	-25.0374	-33.6501	-40.7204	-46.6347	-51.6003	-55.9431

Top 10 Gains

Top 10 Losses

Results: Employment by State (Top 10 / REMI Gains and Losses)

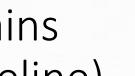


Region	Units	2024	2025	2026	2027	2028	2029	2030 🔻
Texas	Thousands (Jobs)	+1.8166	+3.2946	+4.5725	+5.6964	+6.7426	+7.5740	+8.421
California	Thousands (Jobs)	+1.4840	+2.6157	+3.5764	+4.3796	+5.0607	+5.6043	+6.094
New York	Thousands (Jobs)	+0.8020	+1.4473	+1.9997	+2.4686	+2.8769	+3.2186	+3.532
Pennsylvania	Thousands (Jobs)	+0.6947	+1.2926	+1.8379	+2.3299	+2.7736	+3.1428	+3.495
Washington	Thousands (Jobs)	+0.7208	+1.3407	+1.8934	+2.3789	+2.8086	+3.1624	+3.490
Ohio	Thousands (Jobs)	+0.5502	+1.0353	+1.4827	+1.8956	+2.2807	+2.6086	+2.930
Missouri	Thousands (Jobs)	+0.4307	+0.8108	+1.1653	+1.4935	+1.8030	+2.0639	+2.323
New Jersey	Thousands (Jobs)	+0.5046	+0.9000	+1.2565	+1.5645	+1.8443	+2.0804	+2,292
Oregon	Thousands (Jobs)	+0.3376	+0.6328	+0.8969	+1.1292	+1.3330	+1.5017	+1.656
Massachusetts	Thousands (Jobs)	+0.3404	+0.6162	+0.8246	+0.9939	+1.1346	+1.2432	+1.341
Oklahoma	Thousands (Jobs)	-0.1549	-0.2845	-0.3918	-0.4814	-0.5622	-0.6230	-0.684
Mississippi	Thousands (Jobs)	-0.1402	-0.2648	-0.3751	-0.4714	-0.5576	-0.6270	-0.693
Colorado	Thousands (Jobs)	-0.1735	-0.3173	-0.4318	-0.5219	-0.5955	-0.6470	-0.698
North Carolina	Thousands (Jobs)	-0.2166	-0.4091	-0.5758	-0.7175	-0.8403	-0.9328	-1.020
Arkansas	Thousands (Jobs)	-0.2081	-0.3930	-0.5564	-0.7004	-0.8295	-0.9345	-1.034
Michigan	Thousands (Jobs)	-0.2178	-0.4116	-0.5818	-0.7325	-0.8669	-0.9734	-1.077
Alabama	Thousands (Jobs)	-0.4388	-0.8234	-1.1656	-1.4673	-1.7408	-1.9578	-2, 169
South Carolina	Thousands (Jobs)	-0.4348	-0.8175	-1.1637	-1.4768	-1.7574	-1.9855	-2.207
Louisiana	Thousands (Jobs)	-2.2679	-4.2139	-5.9074	-7.3896	-8.7259	-9.8012	-10.851
Florida	Thousands (Jobs)	-6.0673	-11.2413	-15.8433	-19.8522	-23,4961	-26.3787	-29.188

Top 10 Gains

Top 10 Losses

what does REMI say? sm



Results: GDP by State (Top 10 Gains REMI and Losses) (% Change from Baseline)

Region	Units	2024	2025	2026	2027	2028	2029	2030 🔻
Washington	Percent	+0.0123%	+0.0225%	+0.0315%	+0.0392%	+0.0460%	+0.0513%	+0.0563%
Oregon	Percent	+0.0114%	+0.0212%	+0.0300%	+0.0377%	+0.0444%	+0.0499%	+0.0549%
South Dakota	Percent	+0.0113%	+0.0205%	+0.0281%	+0.0345%	+0.0404%	+0.0450%	+0.0497%
Alaska	Percent	+0.0117%	+0.0209%	+0.0285%	+0.0351%	+0.0409%	+0.0453%	+0.0496%
Missouri	Percent	+0.0093%	+0.0174%	+0.0248%	+0.0317%	+0.0382%	+0.0437%	+0.0491%
West Virginia	Percent	+0.0085%	+0.0156%	+0.0219%	+0.0276%	+0.0329%	+0.0372%	+0.0415%
Pennsylvania	Percent	+0.0079%	+0.0146%	+0.0206%	+0.0260%	+0.0309%	+0.0349%	+0.0386%
Wyoming	Percent	+0.0086%	+0.0155%	+0.0214%	+0.0265%	+0.0309%	+0.0345%	+0.0378%
New Hampshire	Percent	+0.0087%	+0.0157%	+0.0215%	+0.0263%	+0.0308%	+0.0344%	+0.0377%
North Dakota	Percent	+0.0085%	+0.0154%	+0.0212%	+0.0263%	+0.0306%	+0.0341%	+0.0376%
Nebraska	Percent	-0.0052%	-0.0093%	-0.0122%	-0.0144%	-0.0163%	-0.0172%	-0.0186%
Montana	Percent	-0.0049%	-0.0091%	-0.0126%	-0.0154%	-0.0179%	-0.0198%	-0.0216%
Oklahoma	Percent	-0.0055%	-0.0099%	-0.0134%	-0.0163%	-0.0188%	-0.0206%	-0.0224%
Maine	Percent	-0.0054%	-0.0102%	-0.0145%	-0.0184%	-0.0220%	-0.0249%	-0.0277%
Mississippi	Percent	-0.0080%	-0.0150%	-0.0211%	-0.0265%	-0.0312%	-0.0350%	-0.0386%
Arkansas	Percent	-0.0110%	-0.0206%	-0.0289%	-0.0362%	-0.0426%	-0.0477%	-0.0525%
Alabama	Percent	-0.0136%	-0.0255%	-0.0359%	-0.0452%	-0.0534%	-0.0601%	-0.0664%
South Carolina	Percent	-0.0136%	-0.0254%	-0.0360%	-0.0454%	-0.0537%	-0.0604%	-0.0667%
Florida	Percent	-0.0457%	-0.0835%	-0.1161%	-0.1440%	-0.1686%	-0.1884%	-0.2065%
Louisiana	Percent	-0.0623%	-0.1139%	-0.1573%	-0.1946%	-0.2279%	-0.2544%	-0.2803%

Top 10 Gains

Top 10 Losses



Trade Flows: Texas vs Florida

Γ				
	Origin	Units	Texas	₹ >-
	Demand	Billions of Fixed (2012) Dollars		+0.2801
	Texas	Billions of Fixed (2012) Dollars		+0.2170
	Rest of World	Billions of Fixed (2012) Dollars		+0.0138
	California	Billions of Fixed (2012) Dollars		+0.0113
	Louisiana	Billions of Fixed (2012) Dollars		+0.0027
	New York	Billions of Fixed (2012) Dollars		+0.0023
	Florida	Billions of Fixed (2012) Dollars		+0.0020
	Oklahoma	Billions of Fixed (2012) Dollars		+0.0019
	Arkansas	Billions of Fixed (2012) Dollars		+0.0015
	Illinois	Billions of Fixed (2012) Dollars		+0.0014
	Missouri	Billions of Fixed (2012) Dollars		+0.0013
	Colorado	Billions of Fixed (2012) Dollars		+0.0013

Origin	Units	Florida ~
Demand	Billions of Fixed (2012) Dollars	-0.9474
Florida	Billions of Fixed (2012) Dollars	-0.7157
Rest of World	Billions of Fixed (2012) Dollars	-0.0535
Texas	Billions of Fixed (2012) Dollars	-0.0232
Georgia	Billions of Fixed (2012) Dollars	-0.0169
California	Billions of Fixed (2012) Dollars	-0.0115
Louisiana	Billions of Fixed (2012) Dollars	-0.0112
New York	Billions of Fixed (2012) Dollars	-0.0106
North Carolina	Billions of Fixed (2012) Dollars	-0.0096
Ohio	Billions of Fixed (2012) Dollars	-0.0069
Alabama	Billions of Fixed (2012) Dollars	-0.0067
Pennsylvania	Billions of Fixed (2012) Dollars	-0.0060



Conclusion

- •Even though there may not be significant impacts at the national level, state-bystate impacts are more significant
- •Understanding the construction of regional economies is crucial, as some regions may be more sensitive to changes in amenities, emphasizing the importance of building resilience within regional economies.
- •Regions affected also have wider impacts on other areas that are suppliers for them by examining the trade flows between regions