

Economic Output and Risk Factors

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What is the relationship between health risk concentrations and economic output?

Calculate correlations between environmental exposures and farm sales (and/or other econ. variables) to understand economic linkages.

Correlation Coefficients between predictor X and Crop Total Sales (\$)

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## # A tibble: 7 x 4
##   predictor                correlation  p_value significance
##   <chr>                  <dbl>    <dbl> <lgl>
## 1 commodity_totals_sales_measured_in_$      0.907 1.76e-108 TRUE
## 2 income_net_cash_farm_of_operations_net_inc~ 0.867 1.78e- 87 TRUE
## 3 income_farmrelated_receipts_measured_in_$ 0.803 3.31e- 65 TRUE
## 4 income_farmrelated_operations_with_receipts 0.751 6.24e- 53 TRUE
## 5 commodity_totals_sales_measured_in_$_opera~ 0.745 1.13e- 51 TRUE
## 6 income_net_cash_farm_of_operations_net_inc~ 0.718 2.49e- 46 TRUE
## 7 income_net_cash_farm_of_operations_operati~ 0.443 3.75e- 15 TRUE
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## # A tibble: 7 x 4
##   predictor                correlation  p_value significance
##   <chr>                  <dbl>    <dbl> <lgl>
## 1 farm_sales_(100000_or_more_$)      0.830 4.68e-73 TRUE
## 2 farm_sales_(50000_to_99999_$)      0.383 2.88e-11 TRUE
## 3 farm_sales_(25000_to_49999_$)      0.346 2.32e- 9 TRUE
## 4 farm_sales_(less_than_2500_$)      0.211 3.29e- 4 TRUE
## 5 farm_sales_(10000_to_24999_$)      0.126 3.44e- 2 TRUE
## 6 farm_sales_(2500_to_4999_$)      -0.0594 3.20e- 1 FALSE
## 7 farm_sales_(5000_to_9999_$)      0.0146 8.07e- 1 FALSE
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## # A tibble: 53 x 4
##   predictor                correlation  p_value significance
##   <chr>                  <dbl>    <dbl> <lgl>
## 1 barley_acres_harvested      0.529 3.87e-12 TRUE
## 2 barley_operations_with_area_harvested      0.510 7.38e-14 TRUE
## 3 barley_production_measured_in_bu      0.536 3.16e-12 TRUE
## 4 beans_dry_edible_(excl_chickpeas_&_lima)_a~ 0.568 6.41e- 7 TRUE
## 5 beans_dry_edible_(excl_chickpeas_&_lima)_o~ 0.510 8.11e- 9 TRUE
## 6 beans_dry_edible_(excl_chickpeas_&_lima)_p~ 0.580 4.16e- 7 TRUE
## 7 corn_grain_acres_harvested      0.761 1.77e-37 TRUE
## 8 corn_grain_operations_with_area_harvested      0.802 1.07e-52 TRUE
## 9 corn_grain_production_measured_in_bu      0.776 8.04e-40 TRUE
## 10 corn_silage_acres_harvested      0.346 1.61e- 6 TRUE
## # i 43 more rows
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## # A tibble: 19 x 4
##   predictor                correlation  p_value significance
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##      <chr>                                <dbl>    <dbl> <lg1>
## 1 animal_totals_incl_products_sales_measured~ 0.378  3.94e-11 TRUE
## 2 cattle_cows_beef_inventory                0.0106 8.80e- 1 FALSE
## 3 cattle_cows_beef_operations_with_inventory 0.153   9.79e- 3 TRUE
## 4 cattle_cows_milk_inventory                 0.495   9.00e-12 TRUE
## 5 cattle_cows_milk_operations_with_inventory 0.0297 6.43e- 1 FALSE
## 6 cattle_incl_calves_inventory               0.239   4.79e- 5 TRUE
## 7 cattle_incl_calves_operations_with_invento~ 0.145   1.42e- 2 TRUE
## 8 cattle_incl_calves_operations_with_sales   0.178   2.57e- 3 TRUE
## 9 cattle_incl_calves_sales_measured_in_head  0.221   1.68e- 4 TRUE
## 10 chickens_broilers_operations_with_sales -0.0143 8.54e- 1 FALSE
## 11 chickens_broilers_sales_measured_in_head  0.245   3.68e- 2 TRUE
## 12 chickens_layers_inventory                0.00204 9.74e- 1 FALSE
## 13 chickens_layers_operations_with_inventory -0.190   1.33e- 3 TRUE
## 14 hogs_inventory                          0.596   1.20e-17 TRUE
## 15 hogs_operations_with_inventory           -0.0266 6.70e- 1 FALSE
## 16 hogs_operations_with_sales               0.0394 5.26e- 1 FALSE
## 17 hogs_sales_measured_in_head              0.595   2.88e-18 TRUE
## 18 sheep_incl_lambs_inventory               -0.148   2.01e- 2 TRUE
## 19 sheep_incl_lambs_operations_with_inventory -0.0744 2.19e- 1 FALSE

## # A tibble: 8 x 4
##   predictor                                correlation p_value significance
##   <chr>                                <dbl>    <dbl> <lg1>
## 1 ag_land_cropland_acres                0.829  2.40e-73 TRUE
## 2 ag_land_cropland_number_of_operations  0.627  1.63e-32 TRUE
## 3 ag_land_cropland_harvested_number_of_operat~ 0.601  2.31e-29 TRUE
## 4 ag_land_incl_buildings_operations_with_asse~ 0.443  3.75e-15 TRUE
## 5 ag_land_incl_buildings_asset_value_measured~ 0.356  6.39e-10 TRUE
## 6 ag_land_irrigated_number_of_operations -0.291  9.43e- 7 TRUE
## 7 ag_land_incl_buildings_asset_value_measured~ 0.265  5.89e- 6 TRUE
## 8 ag_land_irrigated_acres                -0.0869 1.63e- 1 FALSE

## # A tibble: 8 x 4
##   predictor                                correlation p_value significance
##   <chr>                                <dbl>    <dbl> <lg1>
## 1 area_operated_(1.0_to_9.9_acres)        -0.118  5.07e- 2 FALSE
## 2 area_operated_(10.0_to_49.9_acres)       0.0600 3.13e- 1 FALSE
## 3 area_operated_(1000_or_more_acres)       0.567  1.46e-25 TRUE
## 4 area_operated_(180_to_499_acres)         0.572  3.24e-26 TRUE
## 5 area_operated_(500_to_999_acres)         0.699  5.89e-43 TRUE
## 6 area_operated_(50_to_179_acres)          0.378  3.95e-11 TRUE
## 7 farm_operations_area_operated_measured_in_a~ -0.0312 6.00e- 1 FALSE
## 8 farm_operations_area_operated_measured_in_a~ 0.285  9.70e- 7 TRUE

## # A tibble: 242 x 4
##   predictor                                correlation p_value significance
##   <chr>                                <dbl>    <dbl> <lg1>
## 1 Avalanche...Annualized.Frequency        0.0495 0.641  FALSE
## 2 Avalanche...Expected.Annual.Loss...Building~ 0.0146 0.890  FALSE
## 3 Avalanche...Expected.Annual.Loss...Populati~ 0.119  0.262  FALSE
## 4 Avalanche...Expected.Annual.Loss...Populati~ 0.119  0.262  FALSE
## 5 Avalanche...Expected.Annual.Loss...Total    0.119  0.260  FALSE
## 6 Avalanche...Expected.Annual.Loss.Rate...Bui~ -0.230 0.0281 TRUE
## 7 Avalanche...Expected.Annual.Loss.Rate...Nat~ -0.293 0.00489 TRUE

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## 8 Avalanche...Expected.Annual.Loss.Rate...Pop~ -0.292 0.00494 TRUE
## 9 Avalanche...Expected.Annual.Loss.Score 0.119 0.260 FALSE
## 10 Avalanche...Exposure...Impacted.Area..sq.mi. 0.160 0.131 FALSE
## # i 232 more rows

## # A tibble: 2 x 4
## predictor correlation p_value significance
## <chr> <dbl> <dbl> <lg1>
## 1 expense_totals_operating_expense_measured_~ 0.908 3.01e-109 TRUE
## 2 expense_totals_operating_expense_measured_~ 0.750 9.15e- 53 TRUE

## # A tibble: 11 x 4
## predictor correlation p_value significance
## <chr> <dbl> <dbl> <lg1>
## 1 Expected.Annual.Loss...Agriculture.Value...~ 0.757 3.39e-54 TRUE
## 2 Expected.Annual.Loss.Rate...Agriculture...~ 0.322 2.60e- 8 TRUE
## 3 Expected.Annual.Loss...Score...Composite 0.286 9.21e- 7 TRUE
## 4 Expected.Annual.Loss...Total...Composite 0.286 9.21e- 7 TRUE
## 5 Expected.Annual.Loss.Rate...Population...C~ 0.254 1.44e- 5 TRUE
## 6 Expected.Annual.Loss.Rate...National.Perce~ 0.247 2.48e- 5 TRUE
## 7 Expected.Annual.Loss...State.Percentile...~ 0.220 1.83e- 4 TRUE
## 8 Expected.Annual.Loss...Building.Value...Co~ 0.216 2.37e- 4 TRUE
## 9 Expected.Annual.Loss.Rate...Building...Com~ 0.215 2.60e- 4 TRUE
## 10 Expected.Annual.Loss...Population...Compos~ 0.0882 1.37e- 1 FALSE
## 11 Expected.Annual.Loss...Population.Equival~ 0.0882 1.37e- 1 FALSE

## # A tibble: 2 x 4
## predictor correlation p_value significance
## <chr> <dbl> <dbl> <lg1>
## 1 farm_operations_number_of_operations 0.443 3.75e-15 TRUE
## 2 farm_operations_acres_operated 0.213 2.93e- 4 TRUE

## # A tibble: 3 x 4
## predictor correlation p_value significance
## <chr> <dbl> <dbl> <lg1>
## 1 National.Risk.Index...Value...Composite 0.270 3.67e-6 TRUE
## 2 National.Risk.Index...Score...Composite 0.270 3.67e-6 TRUE
## 3 National.Risk.Index...State.Percentile...Com~ 0.211 3.33e-4 TRUE

## # A tibble: 7 x 4
## predictor correlation p_value significance
## <chr> <dbl> <dbl> <lg1>
## 1 Community.Resilience...Score 0.369 1.30e-10 TRUE
## 2 Community.Resilience...State.Percentile 0.179 2.47e- 3 TRUE
## 3 Community.Resilience...Value 0.369 1.30e-10 TRUE
## 4 Community.Risk.Factor...Value -0.0762 2.00e- 1 FALSE
## 5 Social.Vulnerability...Score -0.0627 2.92e- 1 FALSE
## 6 Social.Vulnerability...State.Percentile 0.0616 3.00e- 1 FALSE
## 7 Social.Vulnerability.ExpectedLossRate.Adjust 0.231 8.59e- 5 TRUE

## # A tibble: 10 x 4
## predictor correlation p_value significance
## <chr> <dbl> <dbl> <lg1>
## 1 machinery_totals_asset_value_measured_in_$ 0.918 1.75e-115 TRUE
## 2 Agriculture.Value.... 0.907 1.71e-108 TRUE
## 3 govt_programs_federal_operations_with_rec~ 0.826 1.60e- 71 TRUE
## 4 machinery_totals_asset_value_measured_in_~ 0.751 7.07e- 53 TRUE

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##	5	govt_programs_federal_receipts_measured_i~	0.746	1.47e-	50	TRUE
##	6	Shape__Length	-0.255	1.35e-	5	TRUE
##	7	Area..sq.mi.	-0.241	3.82e-	5	TRUE
##	8	Shape__Area	-0.184	1.81e-	3	TRUE
##	9	Building.Value....	0.108	6.84e-	2	FALSE
##	10	Population..2020.	-0.0447	4.53e-	1	FALSE