

Pavement Management 2018 Data



Regions 1 & 2:

Interstates and All State Routes

Regions 3 & 4:

Interstates and State Routes on the NHS

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Explanation of Terms

IRI – International Roughness Index

- Measurement of the number of vertical deviations over a section of road.
- Measured in inches/mile
- Perfect is a “0”

HC IRI – Half-Car IRI

- Half-Car IRI is used by TDOT’s profilers for construction acceptance testing. The standard method that is collected by our consultants is Quarter-Car IRI. Half-Car IRI values tend to be slightly better than Quarter-Car IRI values obtained from the same location.

PSI – Pavement Smoothness Index

- Measure of the ROUGHNESS of the road on a scale of 0 – 5.
- Perfect is a “5”
- Roughness is defined as: “The deviations of a pavement surface from a true planar surface with characteristic dimensions that affect vehicle dynamics, ride quality, dynamic loads, and drainage; for example, longitudinal profile, transverse profile, and cross slope.”
- Relates to IRI through: $PSI = 5 * e^{(-0.0055*IRI)}$

PDI – Pavement Distress Index

- A measurement of the roadway DISTRESS on a scale from 0 – 5.
- Perfect is a “5”
- Distresses that are evaluated include the following: Fatigue, Rutting, Longitudinal Cracks in the Wheel Path, Patching, Block Cracking, Raveling, Transverse Cracks, & Longitudinal Cracks (Non-Wheel Path).
- Each individual distress mentioned above receives a DEDUCT VALUE based on the severity & number of distresses on a given stretch of road surface.
- All of the D.V.s are given a weight and subtracted from 5.

PQI – Pavement Quality Index

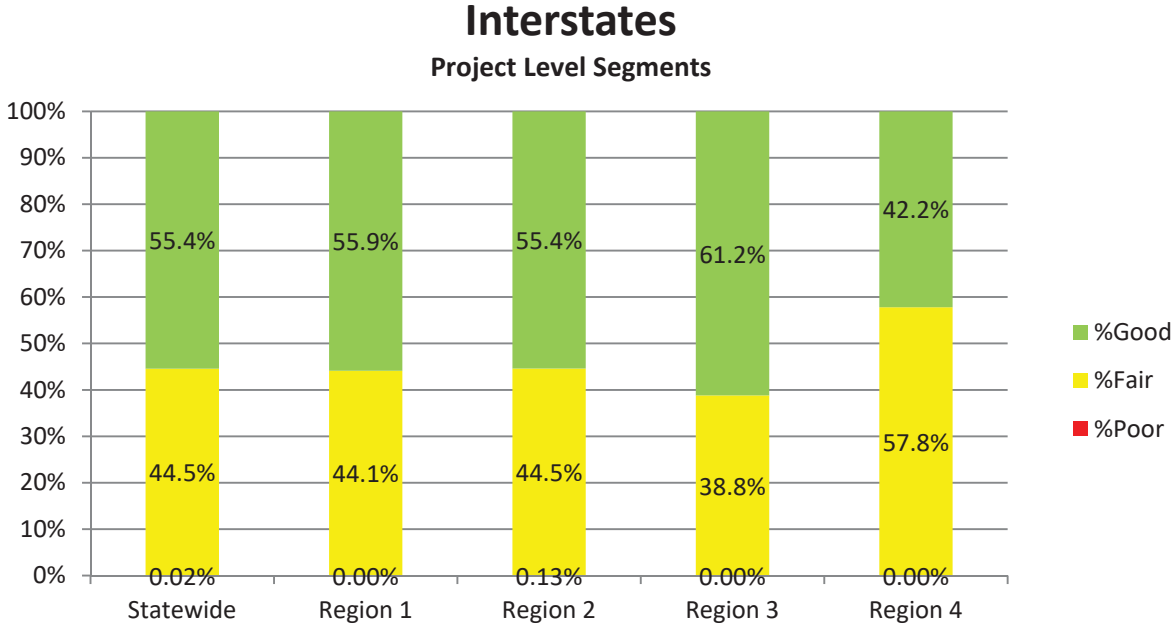
- Overall Index of the roadway on a scale from 0 – 5.
- Perfect is a “5”
- $PQI = PDI^{0.7} * PSI^{0.3}$
- PDI encompasses the largest portion of this index because Pavement Distresses indicate current problems and future deterioration of the roadway surface.

Additional Notes for Consideration

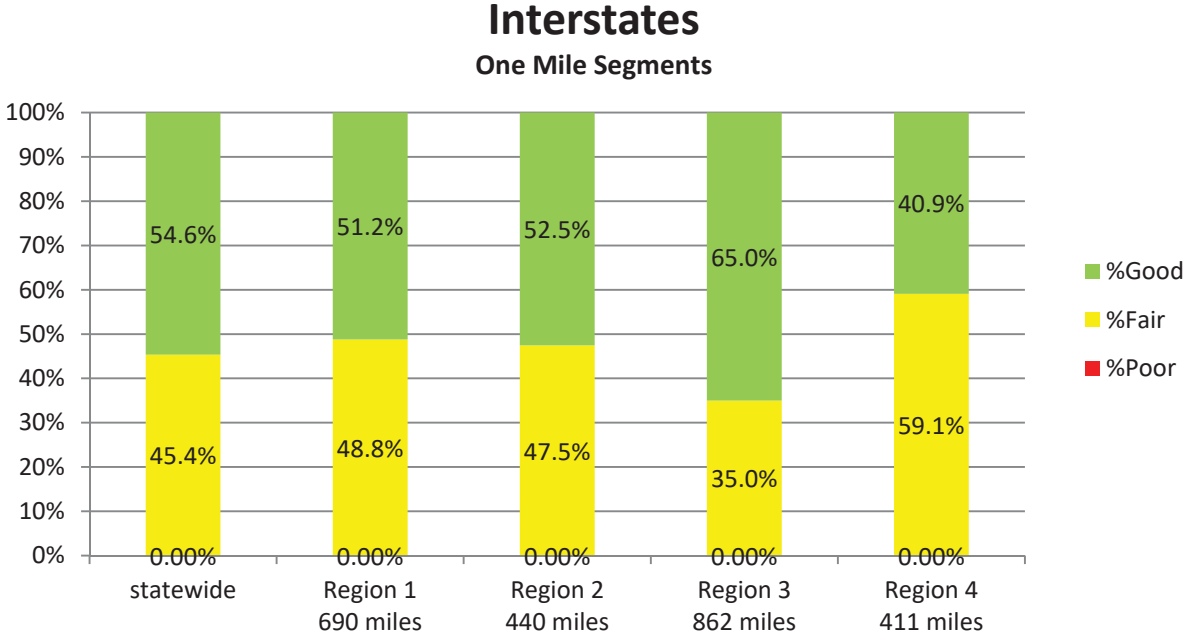
- Project length segments are created by breaking the roadway network into various-length “segments”, creating a new segment break at:
 - County lines
 - Changes in NHS/Non-NHS designation
 - Termini of known historical projects
 - Changes in pavement type (Concrete/Asphalt)
- Project length data and percentages are summarized by lane miles. One-mile segment data is processed by centerline miles.
- More information on TDOT’s definition of State of Good Repair including targets and calculation of good, fair and poor can be found in [TDOT’s Transportation Asset Management Plan \(TAMP\)](#).
- Non-NHS state route condition is collected biennially, or every other year. Region 1 and 2 non-NHS state routes are collected in even years and Regions 3 and 4 are collected in odd years. Interstate and NHS routes are collected every year. In an effort to provide a comprehensive report, full extent data from the previous years’ report is provided for off-cycle regions.

1. Statewide Pavement Conditions

1.1 Interstates

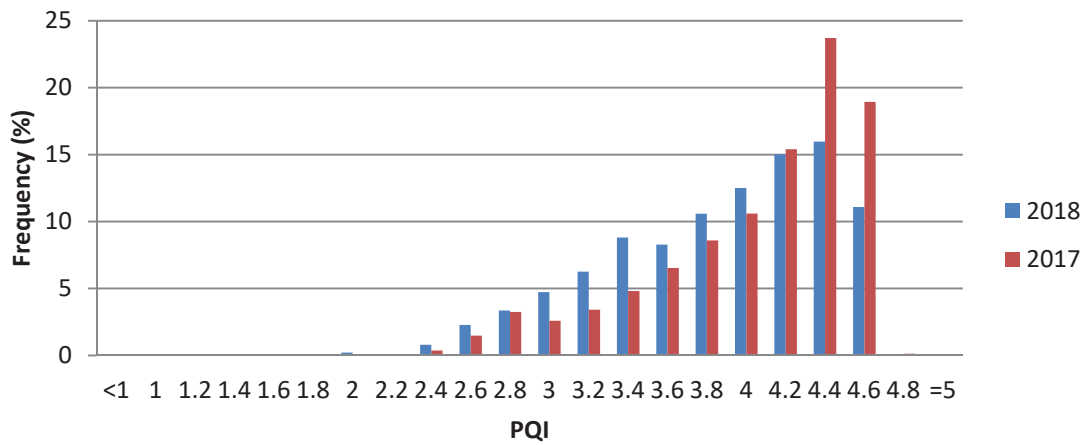
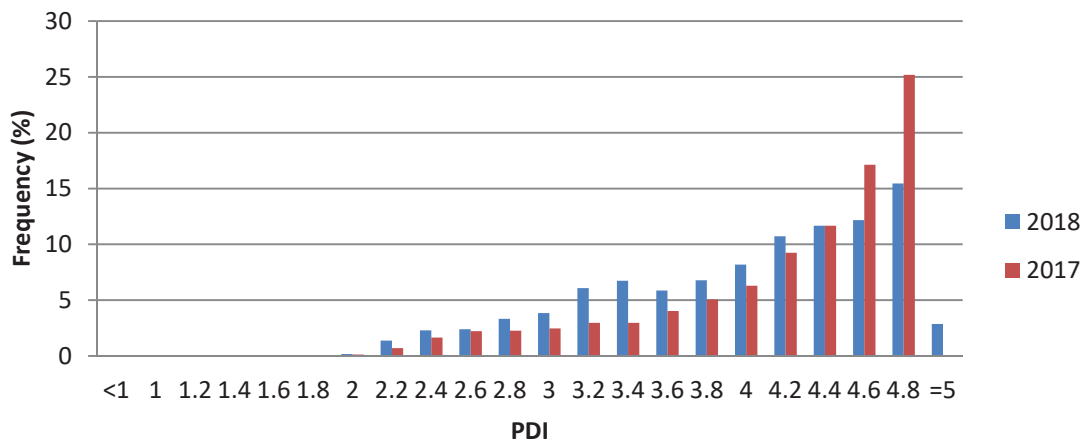
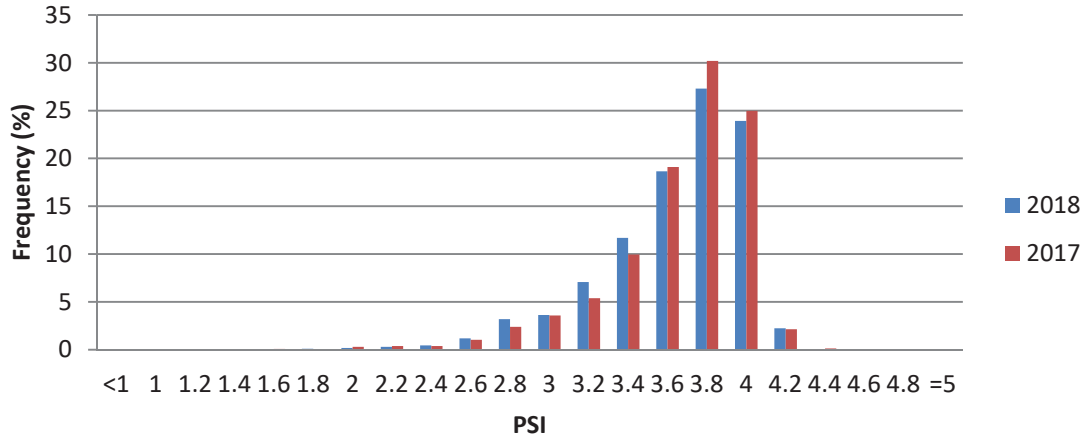


(Average PQI=3.999 for 5630 lane miles)

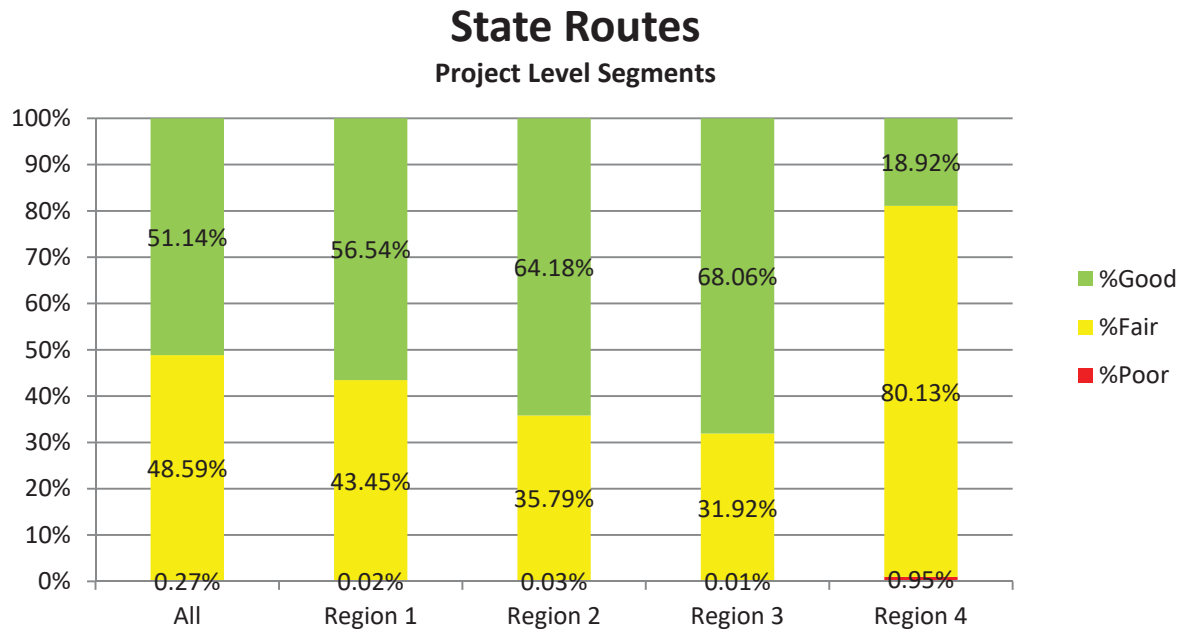


(Average PQI=3.961 for 2403 centerline miles)

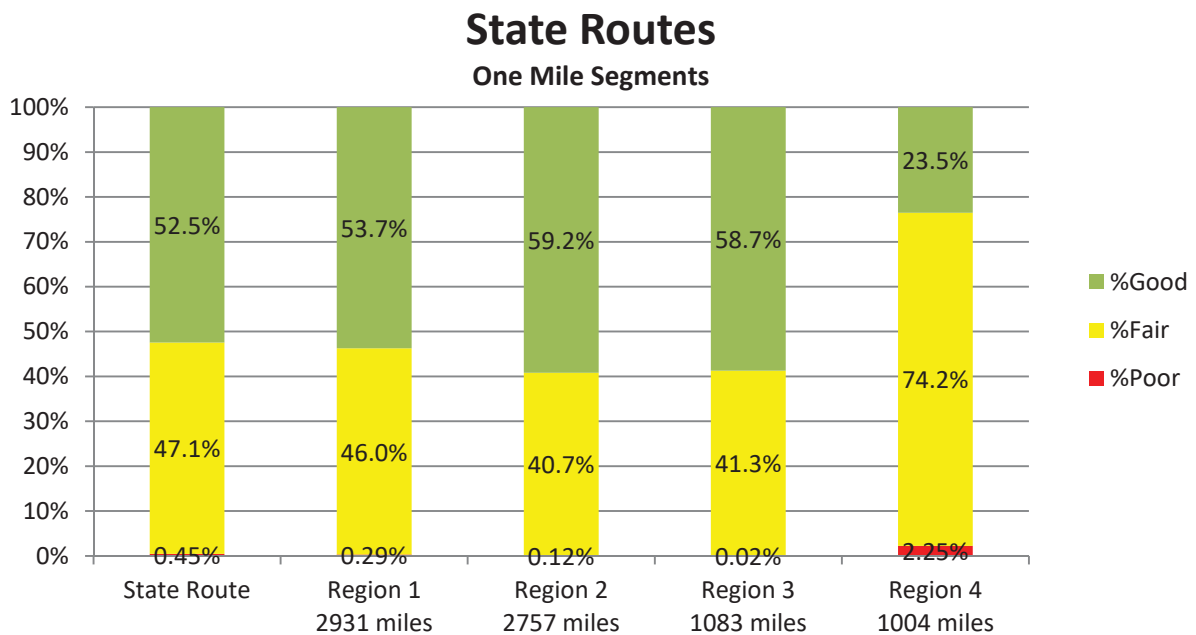
Distribution of Interstate Pavement Condition Indices - (One Mile Segments)



1.2 State Routes

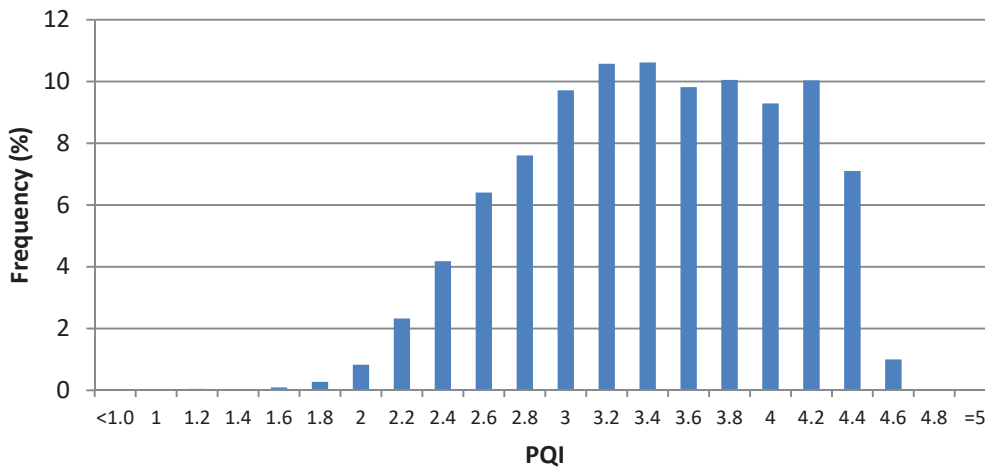
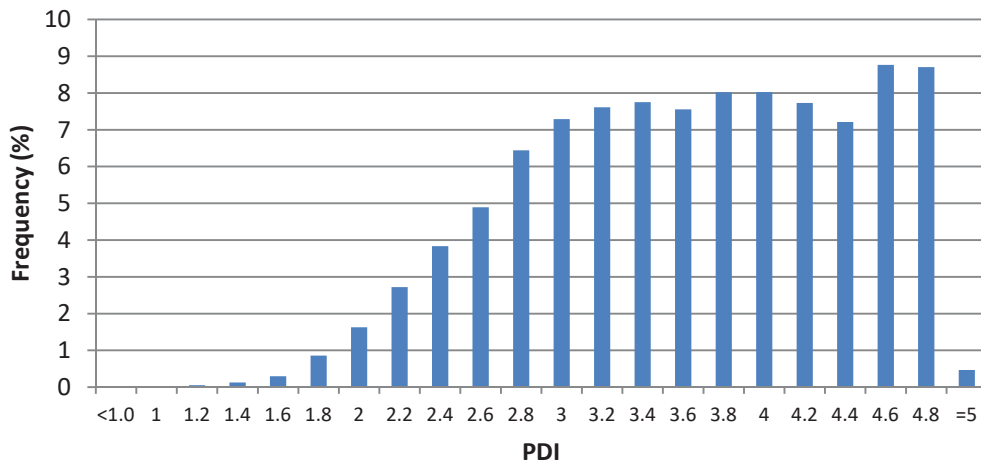
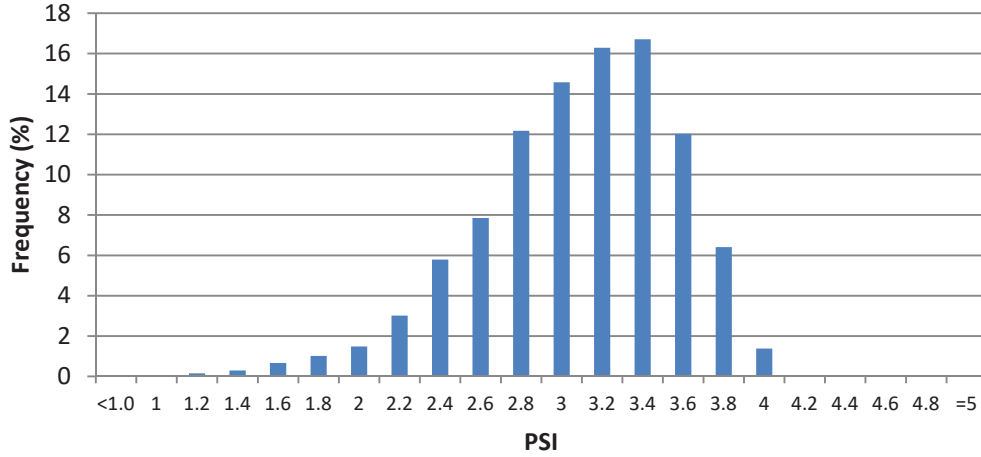


(Average PQI=3.524 for 31,347 lane miles)



(Average PQI=3.528 for 7776 centerline miles)

Distribution of State Route Pavement Condition Indices (One Mile Segments)



2. Region 1 Pavement Conditions *(Average of One Mile Segments)*

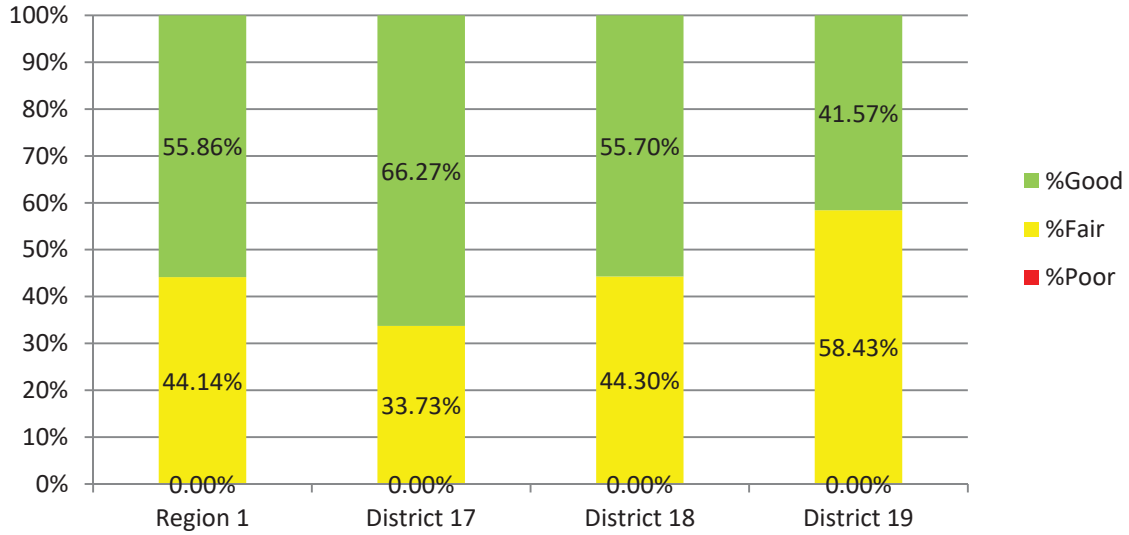
| 2018 Region 1 by District | | Interstate | | | | State Route | | |
|---------------------------|---------------|--------------|--------------|--------------|-----------------|--------------|--------------|--------------|
| District | County | Average PSI | Average PDI | Average PQI | IRI<94 in./mi.* | Average PSI | Average PDI | Average PQI |
| 17 | 10 CARTER | 3.658 | 4.554 | 4.266 | 85.13% | 3.327 | 3.990 | 3.769 |
| 17 | 30 GREENE | 4.044 | 4.445 | 4.316 | 98.91% | 3.301 | 3.969 | 3.737 |
| 17 | 32 HAMBLEN | 4.063 | 4.506 | 4.366 | 98.99% | 3.088 | 3.382 | 3.253 |
| 17 | 34 HANCOCK | | | | | 2.783 | 3.577 | 3.302 |
| 17 | 37 HAWKINS | | | | | 3.058 | 3.528 | 3.356 |
| 17 | 46 JOHNSON | | | | | 3.196 | 4.066 | 3.766 |
| 17 | 82 SULLIVAN | 3.830 | 3.812 | 3.812 | 96.56% | 3.078 | 3.642 | 3.441 |
| 17 | 86 UNICOI | 3.693 | 4.087 | 3.959 | 91.10% | 3.204 | 4.108 | 3.803 |
| 17 | 90 WASHINGTON | 3.507 | 4.247 | 4.005 | 73.01% | 3.301 | 3.977 | 3.744 |
| Average | | 3.821 | 4.178 | 4.061 | 92.26% | 3.166 | 3.793 | 3.573 |
| 18 | 1 ANDERSON | 3.914 | 4.547 | 4.342 | 96.70% | 3.040 | 3.328 | 3.210 |
| 18 | 15 COCKE | 3.640 | 3.485 | 3.514 | 90.33% | 3.005 | 4.060 | 3.697 |
| 18 | 29 GRAINGER | | | | | 3.184 | 3.676 | 3.498 |
| 18 | 45 JEFFERSON | 3.743 | 4.112 | 3.990 | 93.04% | 3.134 | 3.664 | 3.472 |
| 18 | 47 KNOX | 3.591 | 3.716 | 3.663 | 84.41% | 3.094 | 3.772 | 3.534 |
| 18 | 78 SEVIER | 3.905 | 4.200 | 4.105 | 98.32% | 3.127 | 4.174 | 3.812 |
| 18 | 87 UNION | | | | | 2.870 | 3.563 | 3.329 |
| Average | | 3.670 | 3.851 | 3.782 | 88.72% | 3.079 | 3.780 | 3.533 |
| 19 | 5 BLOUNT | 3.267 | 3.153 | 3.172 | 73.33% | 3.002 | 3.831 | 3.545 |
| 19 | 7 CAMPBELL | 3.583 | 3.763 | 3.698 | 82.14% | 3.213 | 3.628 | 3.474 |
| 19 | 13 CLAIBORNE | | | | | 3.171 | 3.387 | 3.311 |
| 19 | 53 LOUDON | 3.808 | 3.769 | 3.769 | 93.39% | 3.192 | 3.986 | 3.721 |
| 19 | 62 MONROE | 4.059 | 4.942 | 4.658 | 100.00% | 3.055 | 4.025 | 3.694 |
| 19 | 65 MORGAN | | | | | 3.257 | 3.958 | 3.720 |
| 19 | 73 ROANE | 3.681 | 3.927 | 3.844 | 92.21% | 3.348 | 3.725 | 3.593 |
| 19 | 76 SCOTT | | | | | 3.212 | 3.232 | 3.208 |
| Average | | 3.698 | 3.880 | 3.814 | 88.98% | 3.164 | 3.767 | 3.558 |
| Region 1 | | | | 3.889 | 90.05% | | | 3.556 |

Note: Percentage of IRI<=94 in./mi. is calculated based on unit length of 0.1 mile.

2.1 Region 1 Interstates

Region 1 Interstates

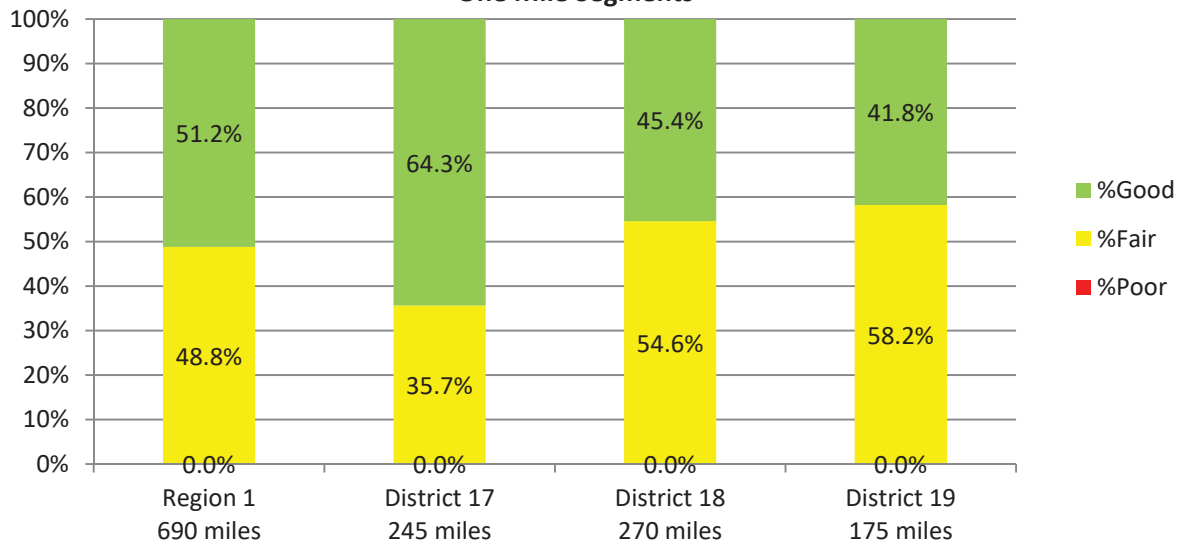
Project Level Segments



(Average POI=3.948 for 1555 lane miles)

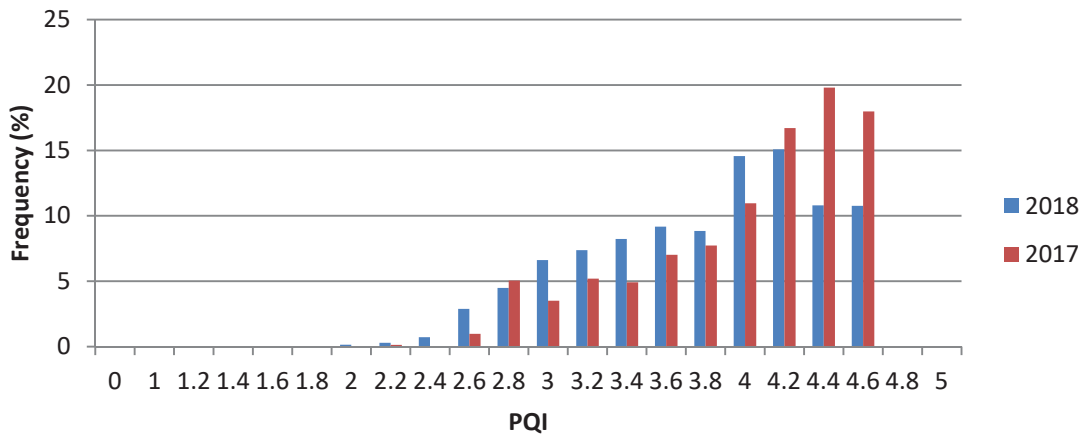
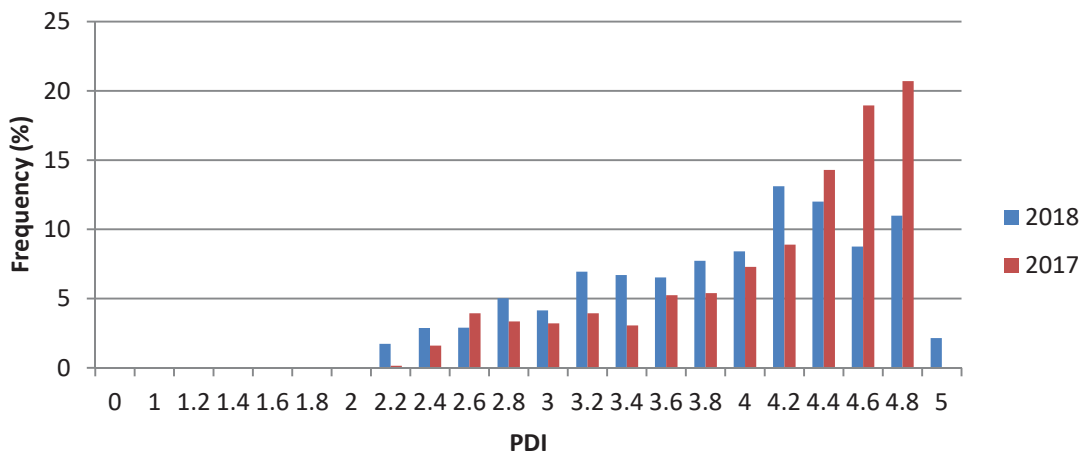
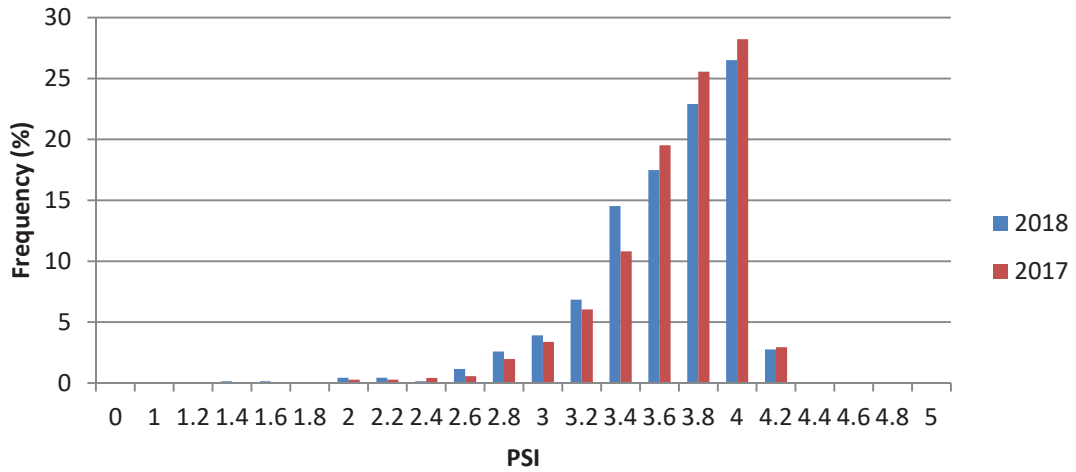
Region 1 Interstates

One Mile Segments

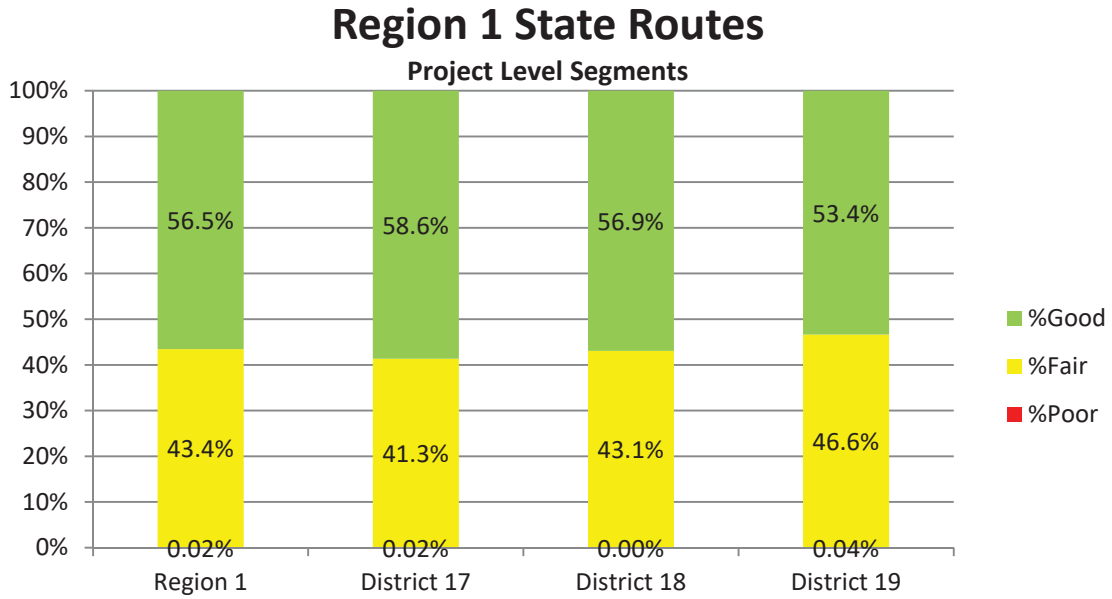


(Average POI=3.889 for 690 centerline miles)

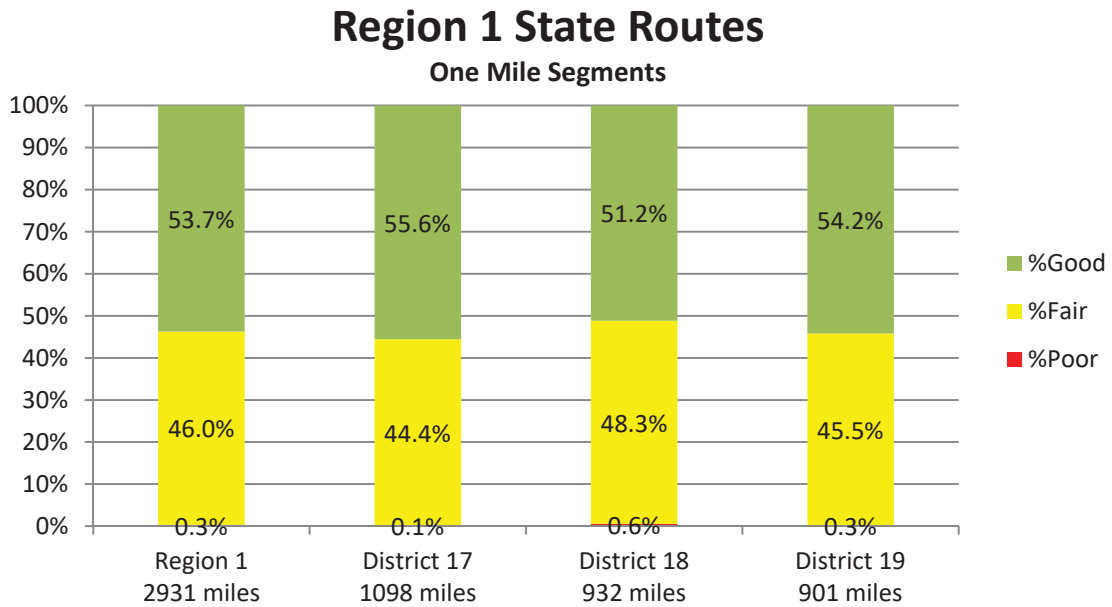
Distribution of Pavement Condition Indices- Region 1 Interstates (One Mile Segments)



2.2 Region 1 State Routes

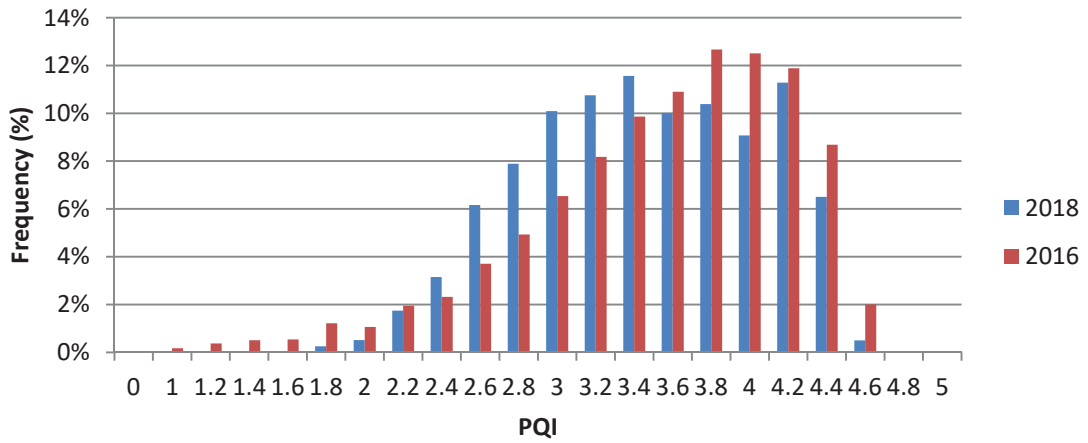
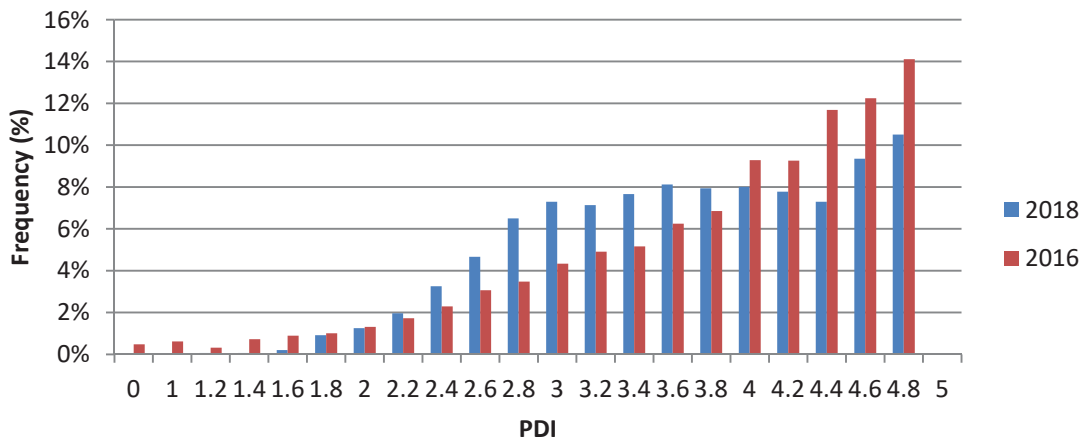
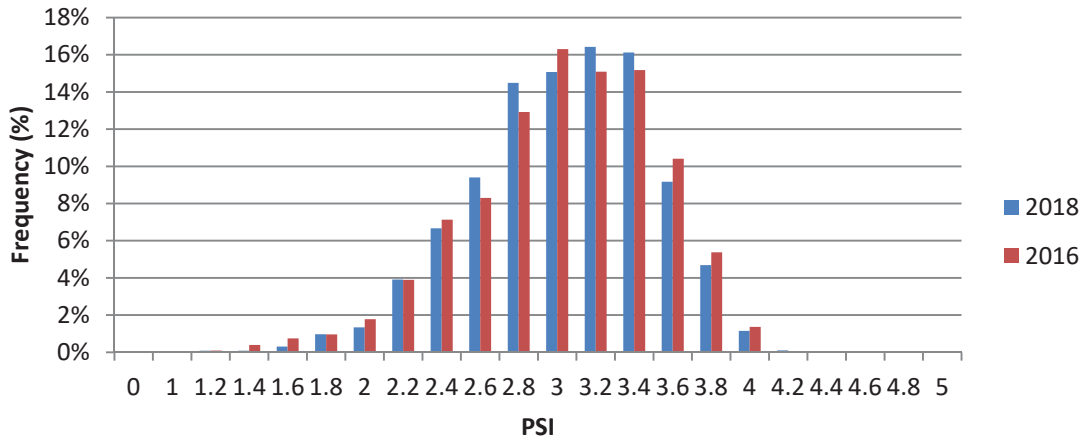


(Average PQI=3.604 for 7387 lane miles)



(Average PQI=3.556 for 2931 centerline miles)

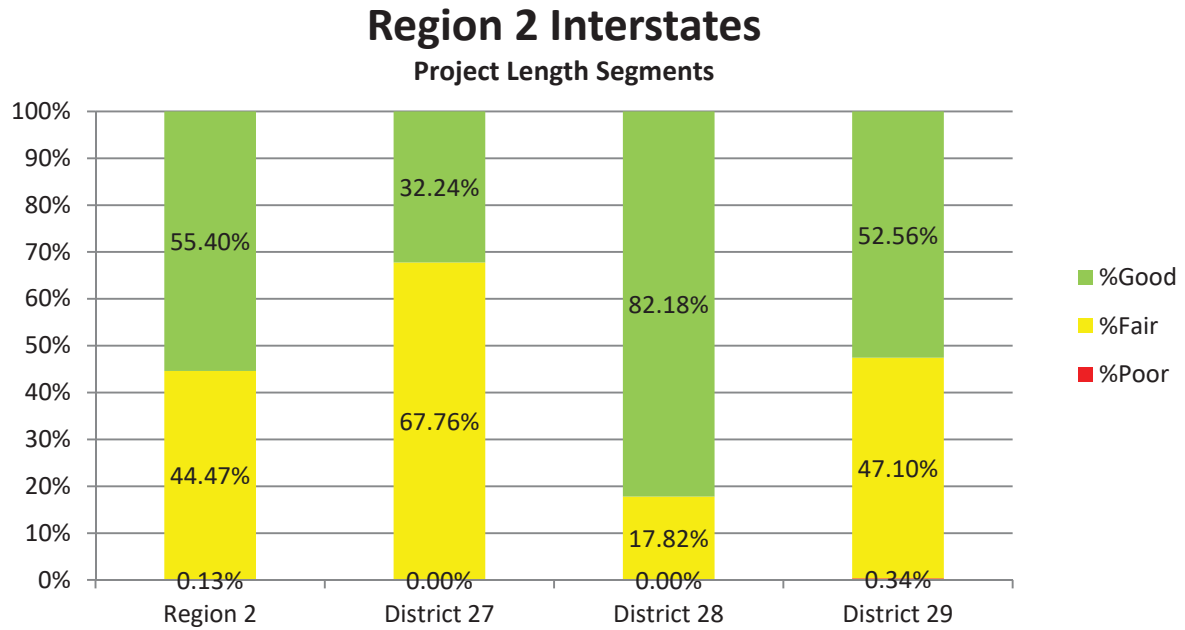
Distribution of Pavement Condition Indices - Region 1 State Routes (One Mile Segments)



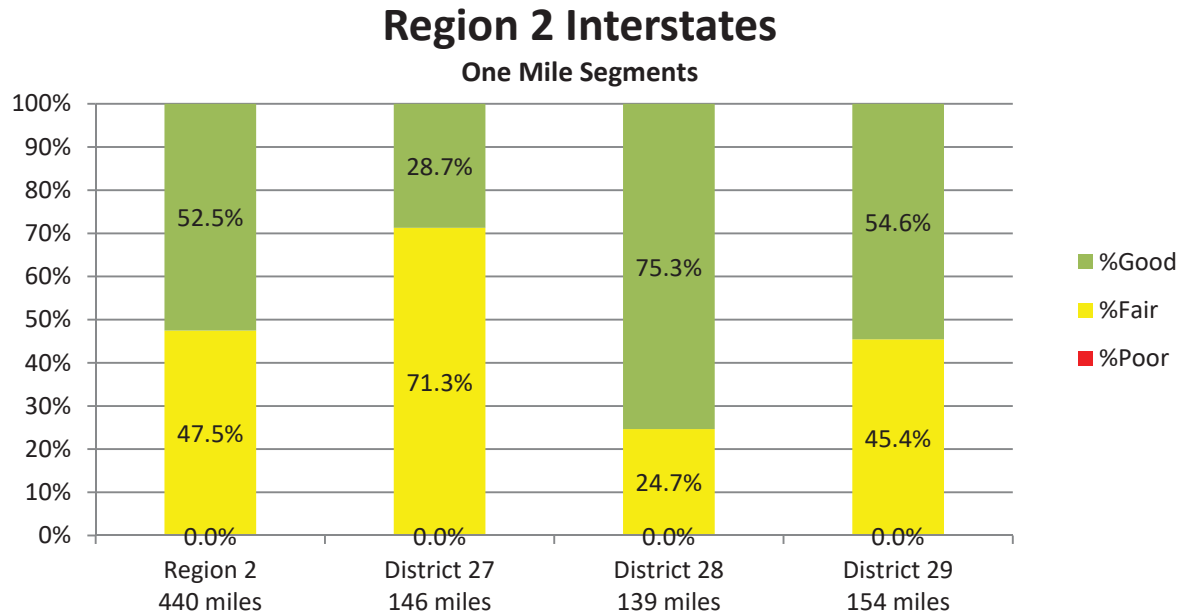
3. Region 2 Pavement Conditions *(Average of One Mile Segments)*

| 2018 Region 2 by District | | Interstate | | | | State Route | | |
|---------------------------|---------------|--------------|--------------|--------------|----------------|--------------|--------------|--------------|
| District | County | Average PSI | Average PDI | Average PQI | IRI<94 In./mi. | Average PSI | Average PDI | Average PQI |
| 27 | 14 CLAY | | | | | 3.256 | 3.925 | 3.702 |
| 27 | 18 CUMBERLAND | 3.969 | 3.618 | 3.710 | 98.75% | 3.411 | 3.778 | 3.650 |
| 27 | 21 DEKALB | | | | | 3.264 | 4.032 | 3.773 |
| 27 | 25 FENTRESS | | | | | 3.180 | 3.493 | 3.377 |
| 27 | 44 JACKSON | | | | | 3.090 | 4.007 | 3.699 |
| 27 | 67 OVERTON | | | | | 3.217 | 3.903 | 3.662 |
| 27 | 69 PICKETT | | | | | 3.237 | 4.213 | 3.885 |
| 27 | 71 PUTNAM | 3.978 | 3.737 | 3.804 | 99.06% | 3.154 | 3.822 | 3.593 |
| 27 | 93 WHITE | | | | | 3.313 | 3.777 | 3.621 |
| Average | | 3.973 | 3.678 | 3.758 | 98.91% | 3.236 | 3.856 | 3.644 |
| 28 | 4 BLEDSOE | | | | | 3.281 | 4.022 | 3.776 |
| 28 | 8 CANNON | | | | | 3.344 | 3.993 | 3.772 |
| 28 | 16 COFFEE | 3.989 | 4.341 | 4.226 | 98.84% | 3.500 | 3.732 | 3.647 |
| 28 | 26 FRANKLIN | | | | | 3.331 | 3.705 | 3.576 |
| 28 | 31 GRUNDY | 3.894 | 4.035 | 3.988 | 96.51% | 3.286 | 3.862 | 3.663 |
| 28 | 58 MARION | 4.002 | 4.498 | 4.336 | 97.51% | 3.145 | 3.908 | 3.649 |
| 28 | 77 SEQUATCHIE | | | | | 3.272 | 3.607 | 3.481 |
| 28 | 88 VAN BUREN | | | | | 3.194 | 3.749 | 3.564 |
| 28 | 89 WARREN | | | | | 3.296 | 3.696 | 3.559 |
| Average | | 3.985 | 4.381 | 4.252 | 97.98% | 3.294 | 3.794 | 3.623 |
| 29 | 6 BRADLEY | 4.110 | 4.465 | 4.352 | 100.00% | 3.267 | 3.986 | 3.745 |
| 29 | 33 HAMILTON | 3.384 | 4.144 | 3.889 | 74.60% | 3.064 | 3.936 | 3.639 |
| 29 | 54 MCMINN | 3.999 | 4.269 | 4.177 | 99.80% | 3.182 | 3.424 | 3.329 |
| 29 | 61 MEIGS | | | | | 3.198 | 3.816 | 3.598 |
| 29 | 70 POLK | | | | | 3.136 | 4.026 | 3.726 |
| 29 | 72 RHEA | | | | | 3.184 | 3.776 | 3.571 |
| Average | | 3.766 | 4.265 | 4.099 | 89.17% | 3.155 | 3.832 | 3.599 |
| Region 2 | | | | 4.034 | 95.20% | | | 3.624 |

3.1 Region 2 Interstates

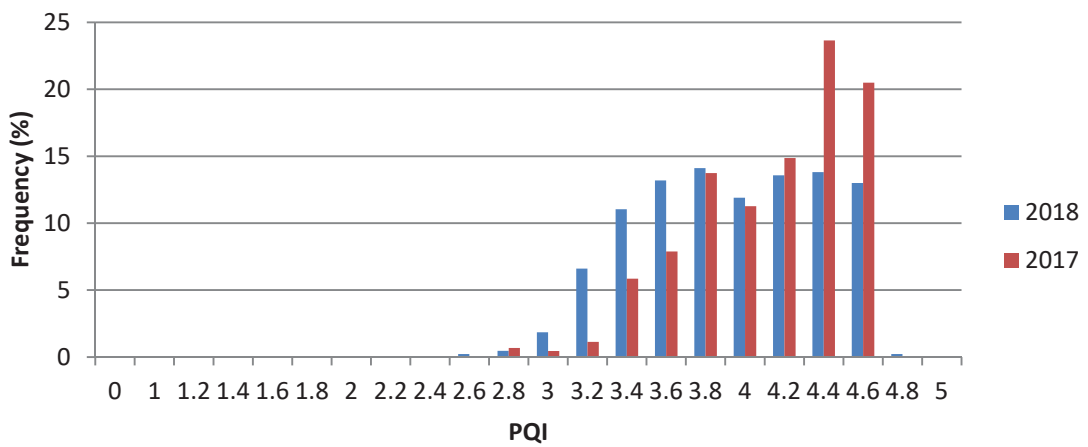
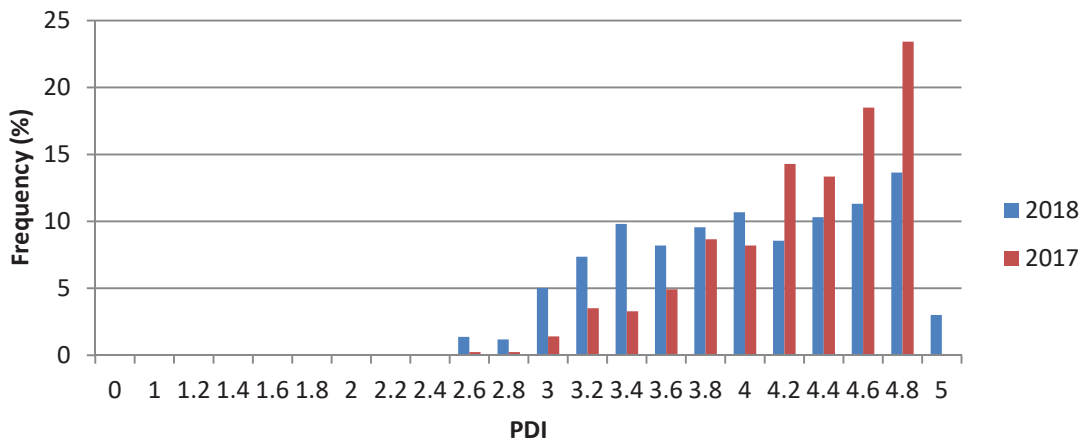
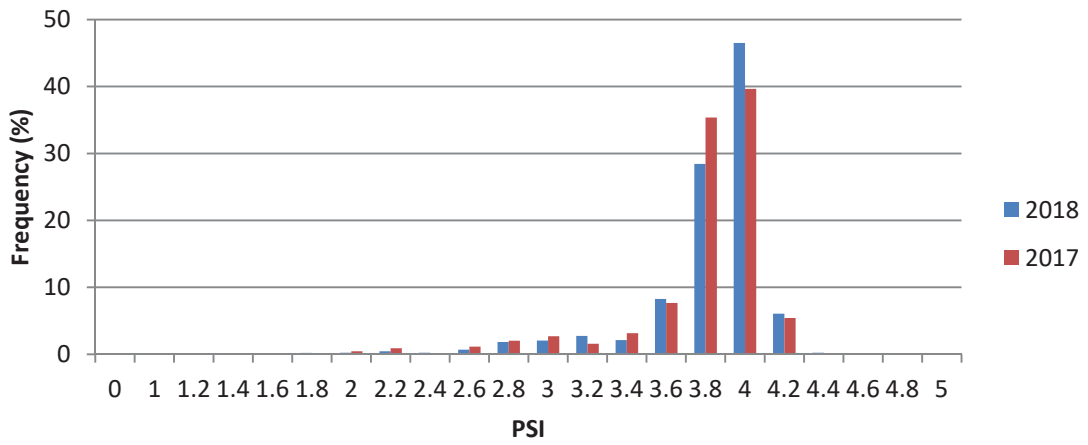


(Average PQI=4.089 for 962 lane miles)

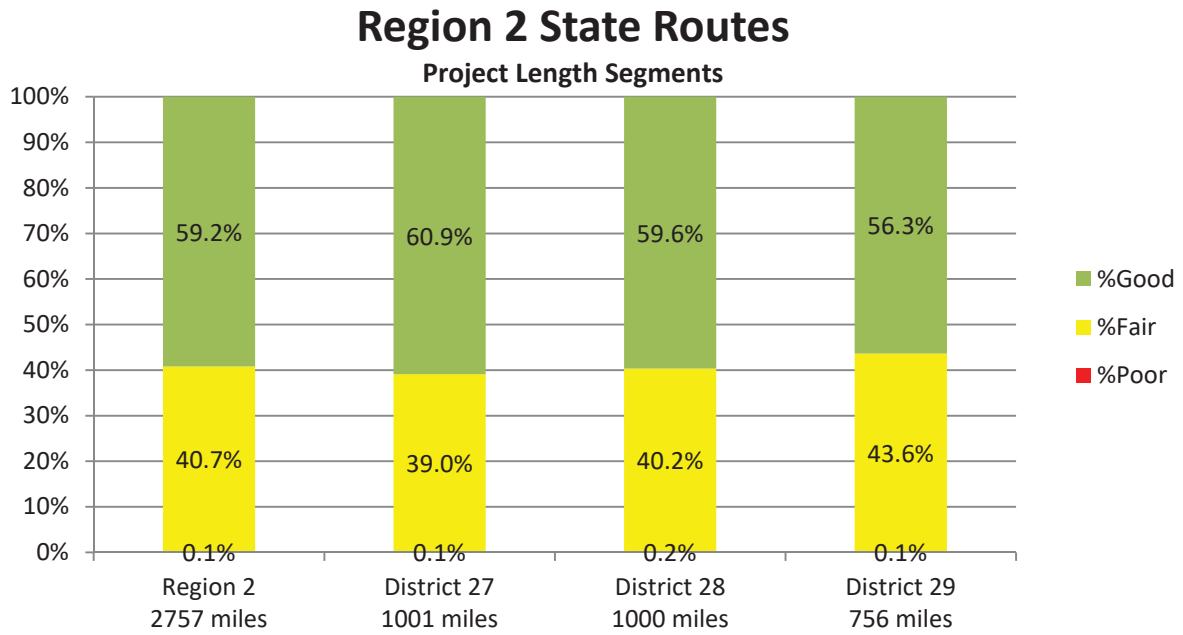


(Average PQI=4.034 for 439 centerline miles)

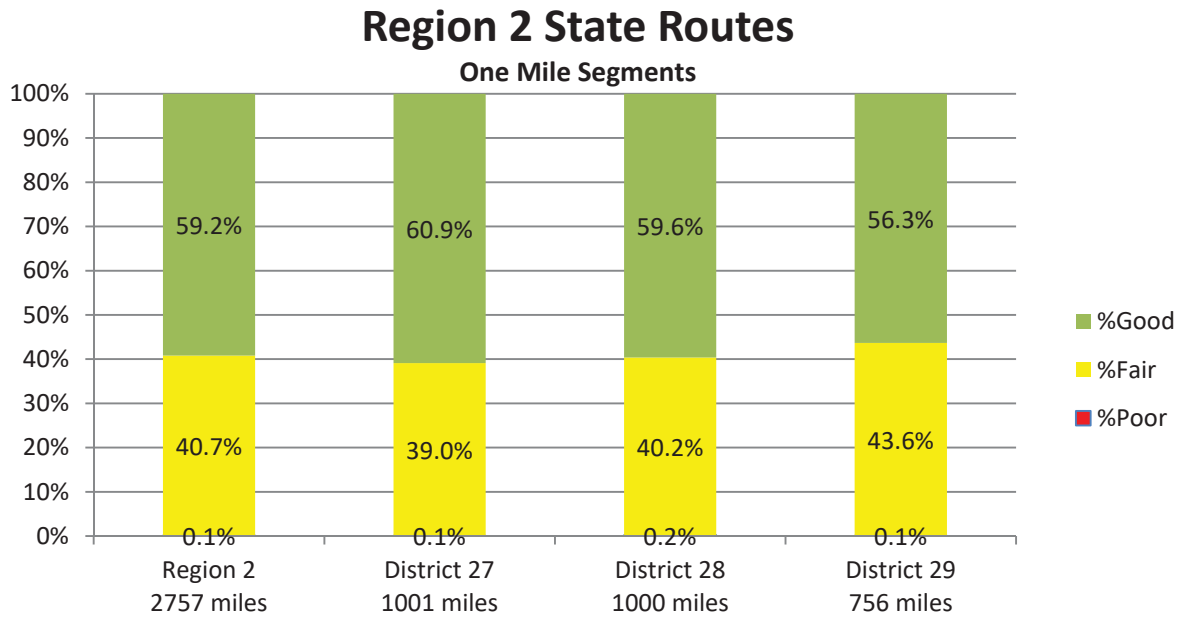
Distribution of Pavement Condition Indices- Region 2 Interstates (One Mile Segments)



3.2 Region 2 State Routes

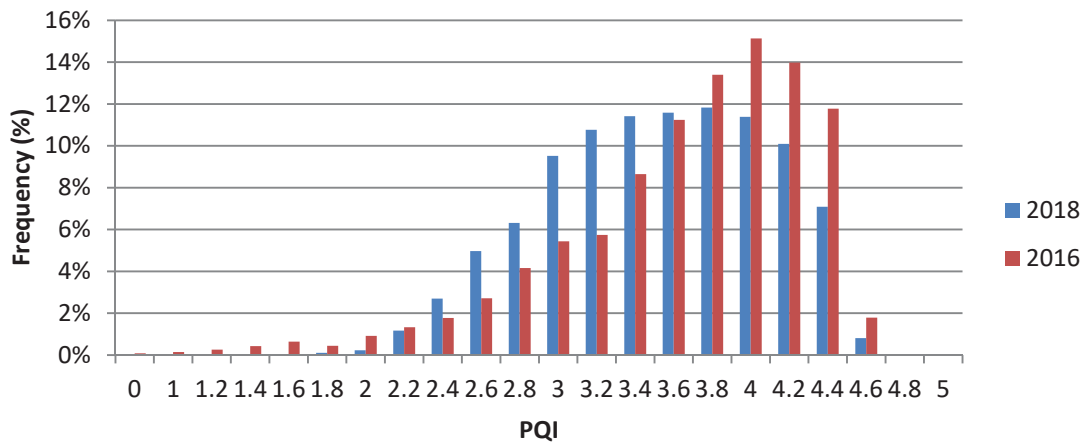
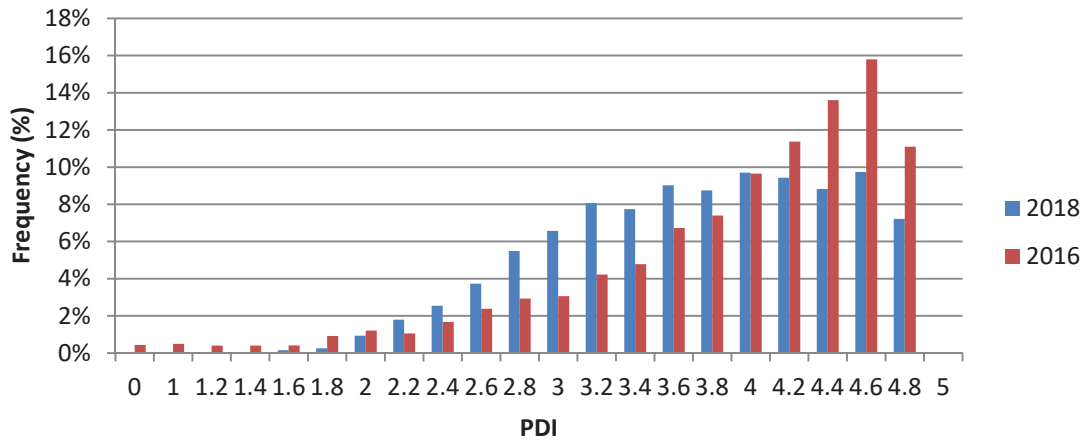
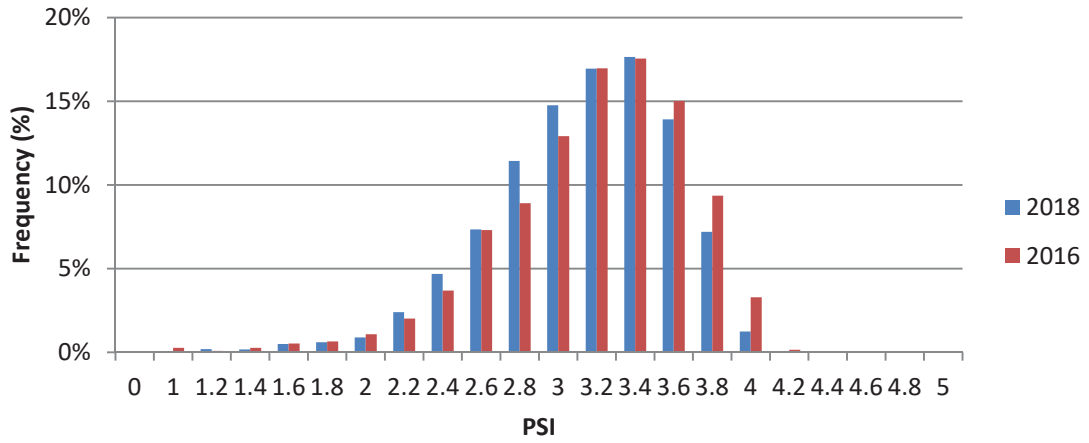


(Average PQI=3.713 for 6675 lane miles)



(Average PQI=3.624 for 2757 centerline miles)

Distribution of Pavement Condition Indices- Region 2 State Routes, One Mile Segments

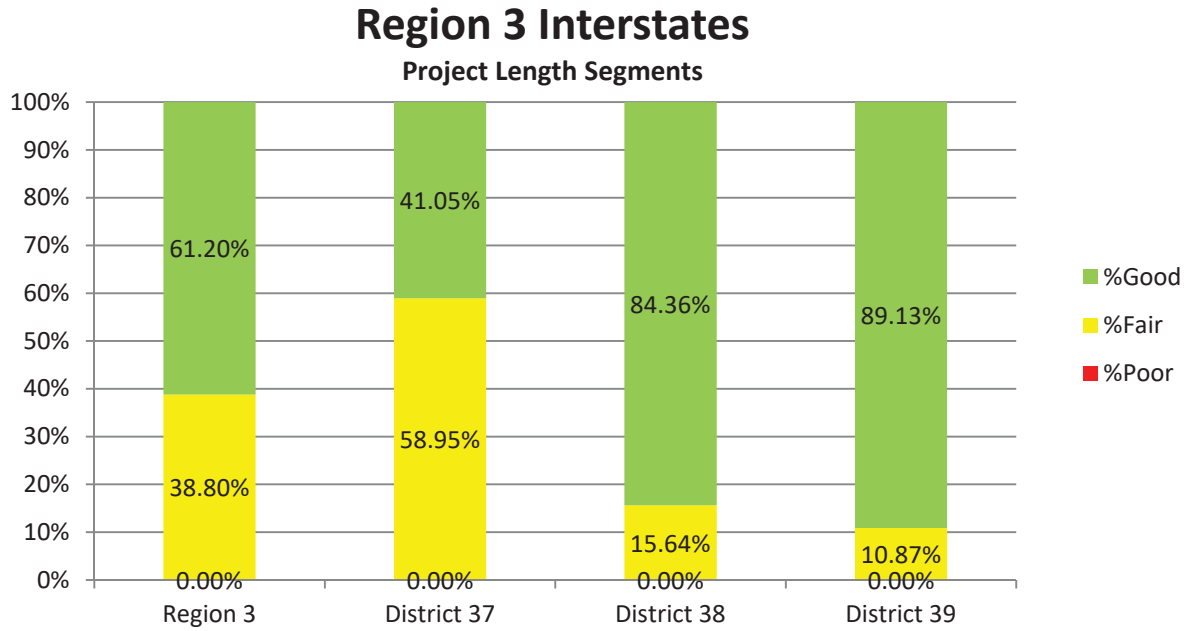


4. Region 3 Pavement Conditions (Average of One Mile Segments)*

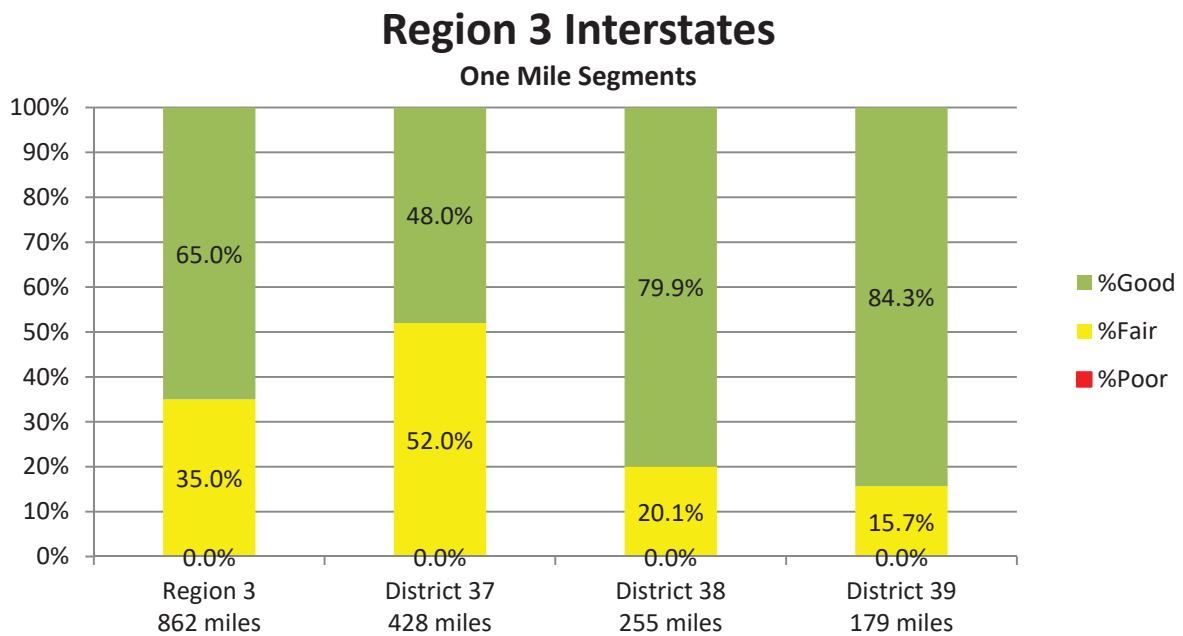
| 2018 Region 3 by District | | Interstate | | | | NHS State Route | | |
|---------------------------|---------------|--------------|--------------|--------------|----------------|-----------------|--------------|--------------|
| District | County | Average PSI | Average PDI | Average PQI | IRI< 94in./mi. | Average PSI | Average PDI | Average PQI |
| 37 | 19 DAVIDSON | 3.447 | 4.048 | 3.845 | 79.71% | 2.906 | 3.822 | 3.504 |
| 37 | 56 MACON | | | | | 3.383 | 3.992 | 3.795 |
| 37 | 80 SMITH | 3.912 | 4.233 | 4.130 | 97.38% | | | |
| 37 | 83 SUMNER | 3.604 | 3.480 | 3.509 | 92.40% | 3.309 | 3.584 | 3.484 |
| 37 | 85 TROUSDALE | | | | | | | |
| 37 | 94 WILLIAMSON | 3.584 | 4.103 | 3.925 | 86.73% | 3.208 | 4.155 | 3.835 |
| 37 | 95 WILSON | 3.752 | 4.321 | 4.136 | 95.48% | 3.188 | 4.019 | 3.741 |
| Average | | 3.584 | 4.112 | 3.935 | 86.40% | 3.113 | 3.867 | 3.608 |
| 38 | 11 CHEATHAM | 3.821 | 4.033 | 3.948 | 97.14% | | | |
| 38 | 22 DICKSON | 3.961 | 4.389 | 4.252 | 96.97% | 3.577 | 4.203 | 3.998 |
| 38 | 41 HICKMAN | 3.897 | 4.520 | 4.319 | 93.04% | | | |
| 38 | 42 HOUSTON | | | | | | | |
| 38 | 43 HUMPHREYS | 3.740 | 4.768 | 4.431 | 92.76% | | | |
| 38 | 60 MAURY | 3.906 | 4.837 | 4.537 | 99.15% | 3.413 | 3.687 | 3.588 |
| 38 | 63 MONTGOMERY | 3.996 | 4.742 | 4.503 | 99.13% | 3.345 | 3.760 | 3.616 |
| 38 | 74 ROBERTSON | 3.716 | 4.034 | 3.919 | 93.47% | 3.305 | 3.189 | 3.195 |
| 38 | 81 STEWART | | | | | 3.267 | 3.508 | 3.422 |
| Average | | 3.859 | 4.446 | 4.252 | 95.85% | 3.370 | 3.639 | 3.539 |
| 39 | 2 BEDFORD | 3.610 | 4.405 | 4.150 | 94.44% | 3.413 | 3.916 | 3.744 |
| 39 | 28 GILES | 3.767 | 4.629 | 4.350 | 96.57% | 3.319 | 3.954 | 3.741 |
| 39 | 50 LAWRENCE | | | | | 3.492 | 3.832 | 3.719 |
| 39 | 51 LEWIS | | | | | 3.648 | 4.514 | 4.229 |
| 39 | 52 LINCOLN | | | | | 3.449 | 3.876 | 3.733 |
| 39 | 59 MARSHALL | 4.002 | 4.515 | 4.351 | 99.22% | | | |
| 39 | 64 MOORE | | | | | 3.540 | 4.480 | 4.170 |
| 39 | 68 PERRY | | | | | 3.270 | 3.856 | 3.650 |
| 39 | 75 RUTHERFORD | 3.759 | 4.439 | 4.218 | 94.30% | 3.308 | 3.530 | 3.449 |
| 39 | 91 WAYNE | | | | | | | |
| Average | | 3.795 | 4.497 | 4.270 | 95.57% | 3.416 | 3.884 | 3.725 |
| Region 3 | | | | 4.098 | 91.10% | | | 3.632 |

*Only NHS State Routes were collected in Region 3 for 2018

4.1 Region 3 Interstates

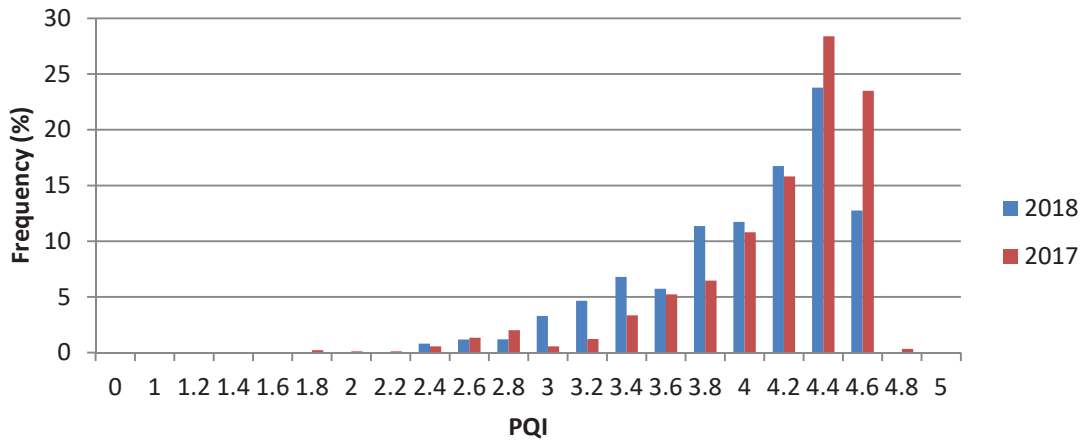
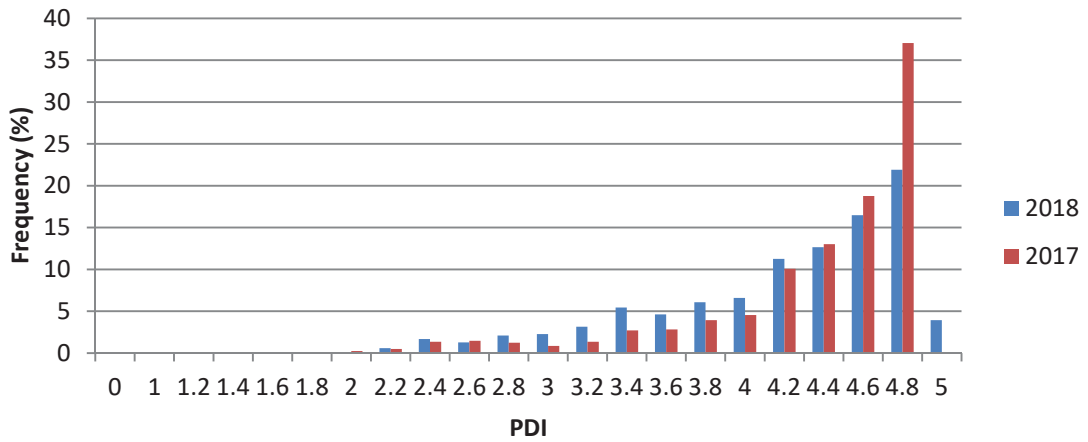
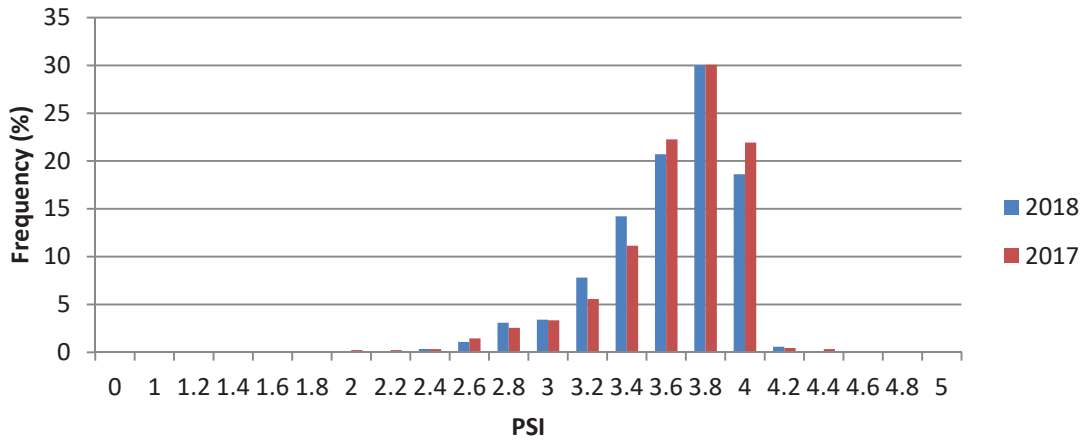


(Average POI=4.109 for 2136 lane miles)



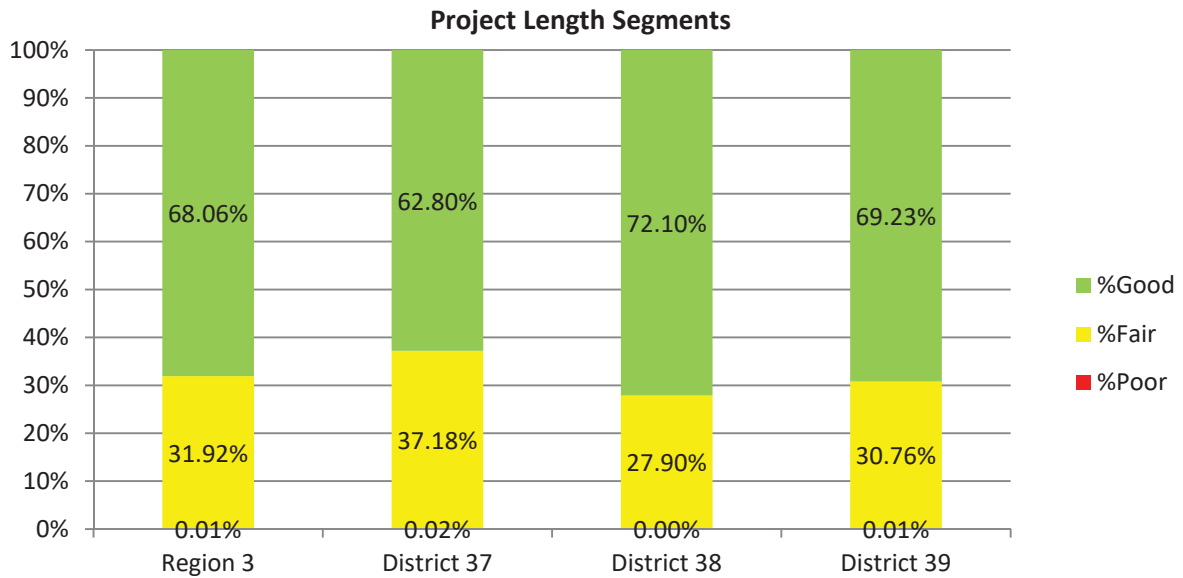
(Average POI=4.098 for 862 centerline miles)

Distribution of Pavement Condition Indices- Region 3 Interstates, One Mile Segments



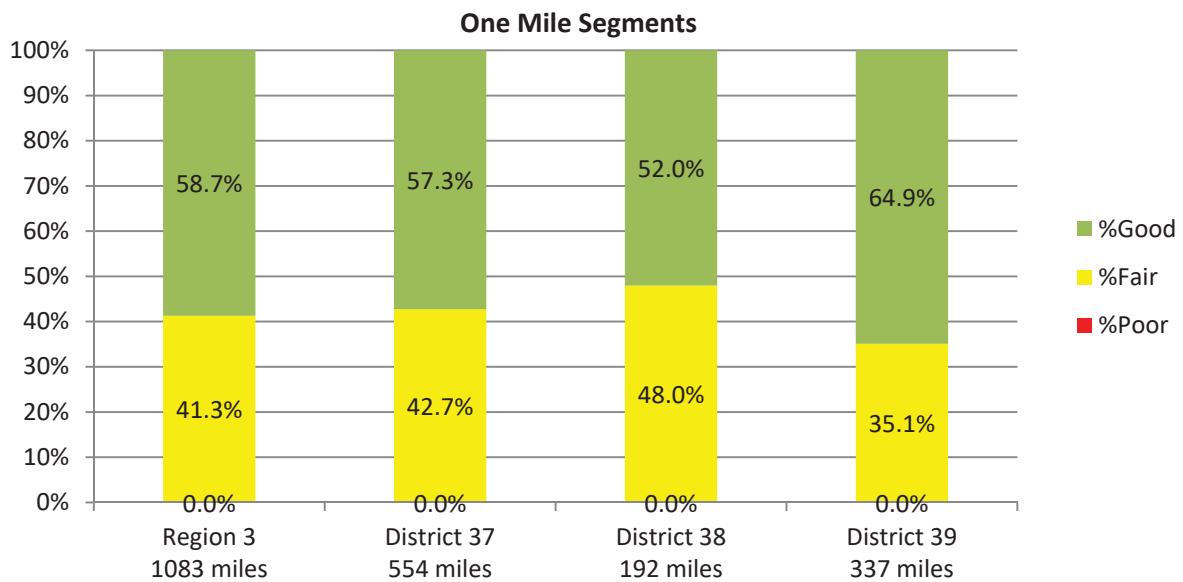
4.2 Region 3 NHS State Routes

Region 3 NHS State Routes



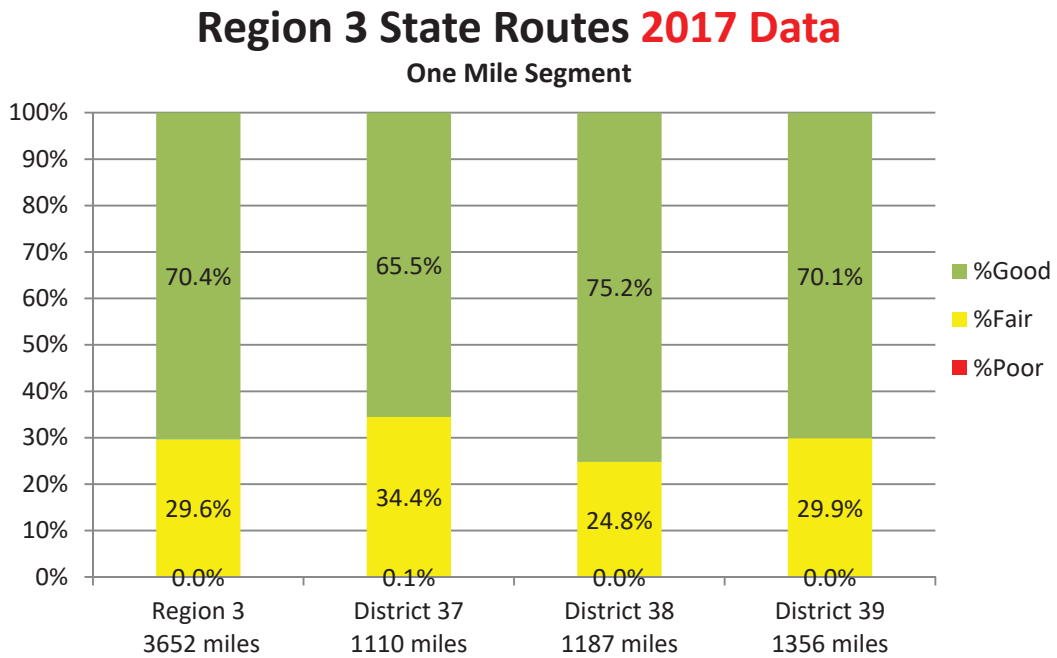
(Average PQI=3.802 for 8746 lane miles)

Region 3 NHS State Routes



(Average PQI=3.632 for 1083 centerline miles of NHS State Routes)

4.3 Region 3 State Routes, 2017



(Average PQI=3.825 for 3652 centerline miles)

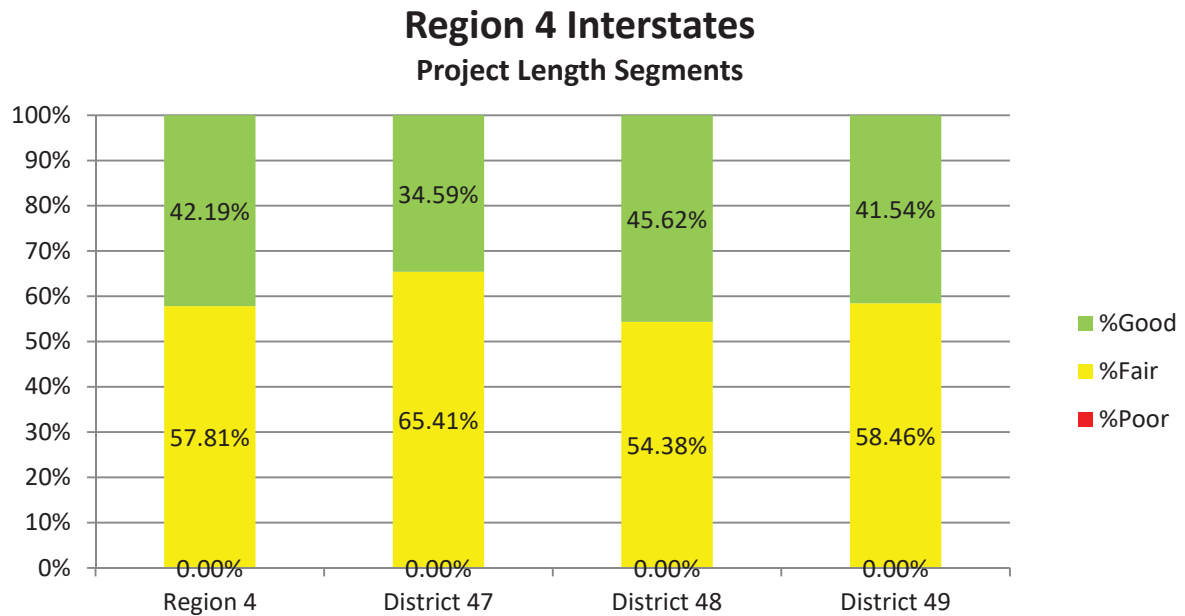
Data from the figure in this page were from 2017 pavement data delivery

5. Region 4 Pavement Conditions *(Average of One Mile Segments)**

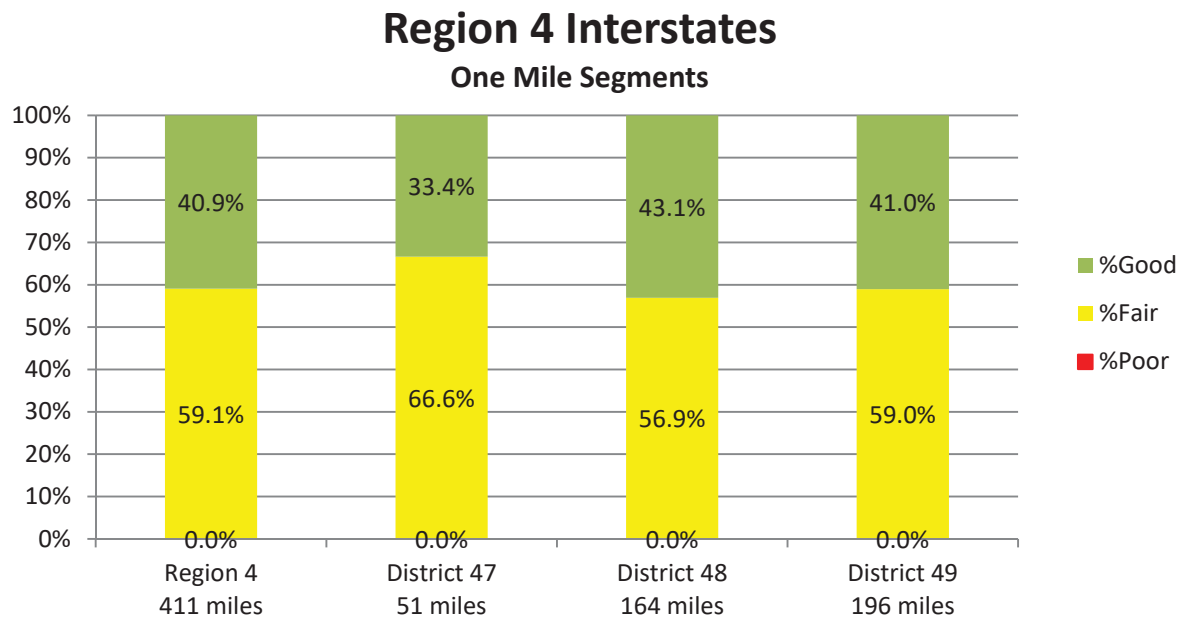
| 2018 Region 4 by District | | Interstate | | | | NHS State Route | | |
|---------------------------|---------------|--------------|--------------|--------------|----------------|-----------------|--------------|--------------|
| District | County | Average PSI | Average PDI | Average PQI | IRI<94 In./mi. | Average PSI | Average PDI | Average PQI |
| 47 | 3 BENTON | 3.839 | 4.756 | 4.458 | 92.82% | 3.773 | 4.268 | 4.104 |
| 47 | 9 CARROLL | 3.745 | 2.330 | 2.690 | 83.33% | 2.921 | 2.854 | 2.852 |
| 47 | 23 DYER | 3.690 | 3.111 | 3.257 | 91.53% | 3.169 | 3.010 | 3.038 |
| 47 | 27 GIBSON | | | | | 2.946 | 3.209 | 3.118 |
| 47 | 40 HENRY | | | | | 3.266 | 2.606 | 2.769 |
| 47 | 48 LAKE | | | | | | | |
| 47 | 66 OBION | | | | | 2.978 | 2.956 | 2.941 |
| 47 | 92 WEAKLEY | | | | | 3.256 | 3.324 | 3.287 |
| Average | | 3.743 | 3.660 | 3.658 | 91.77% | 3.139 | 3.079 | 3.076 |
| 48 | 12 CHESTER | | | | | 3.667 | 4.011 | 3.903 |
| 48 | 17 CROCKETT | | | | | 3.464 | 3.450 | 3.437 |
| 48 | 20 DECATUR | 3.863 | 2.483 | 2.830 | 100.00% | 3.392 | 3.625 | 3.539 |
| 48 | 35 HARDEMAN | | | | | 2.935 | 2.962 | 2.947 |
| 48 | 36 HARDIN | | | | | 2.976 | 3.189 | 3.098 |
| 48 | 38 HAYWOOD | 3.689 | 3.892 | 3.812 | 93.09% | 2.555 | 2.728 | 2.668 |
| 48 | 39 HENDERSON | 3.847 | 4.245 | 4.097 | 96.75% | 3.087 | 2.657 | 2.757 |
| 48 | 55 MCNAIRY | | | | | 3.170 | 3.017 | 3.047 |
| 48 | 57 MADISON | 3.471 | 3.428 | 3.426 | 83.63% | 2.936 | 3.081 | 3.021 |
| Average | | 3.675 | 3.743 | 3.698 | 91.45% | 3.082 | 3.124 | 3.094 |
| 49 | 24 FAYETTE | 3.617 | 3.424 | 3.459 | 90.83% | 3.208 | 3.365 | 3.304 |
| 49 | 49 LAUDERDALE | | | | | 3.506 | 3.141 | 3.225 |
| 49 | 79 SHELBY | 3.424 | 4.032 | 3.831 | 77.04% | 2.590 | 3.135 | 2.936 |
| 49 | 84 TIPTON | | | | | 3.121 | 3.292 | 3.222 |
| Average | | 3.470 | 3.886 | 3.742 | 80.35% | 2.805 | 3.182 | 3.039 |
| Region 4 | | | | 3.714 | 86.19% | | | 3.069 |

*Only NHS State Routes were collected in Region 4 for 2018

5.1 Region 4 Interstates

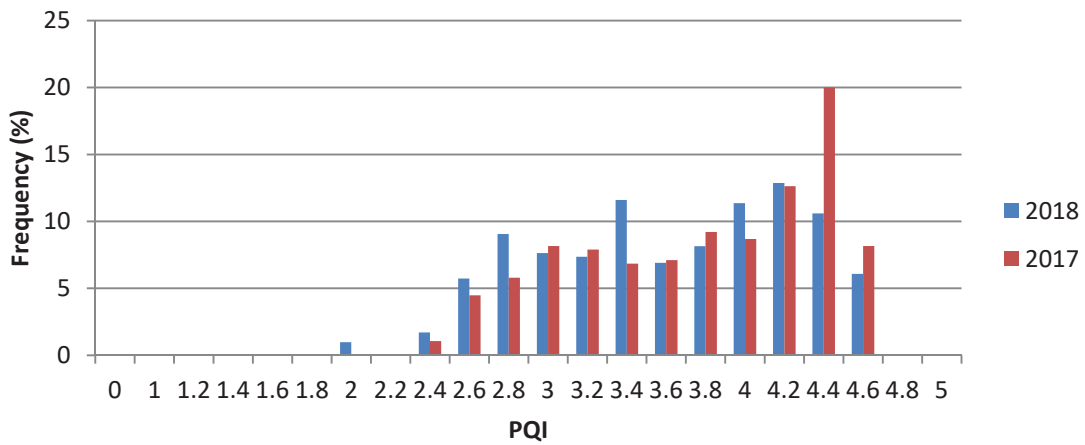
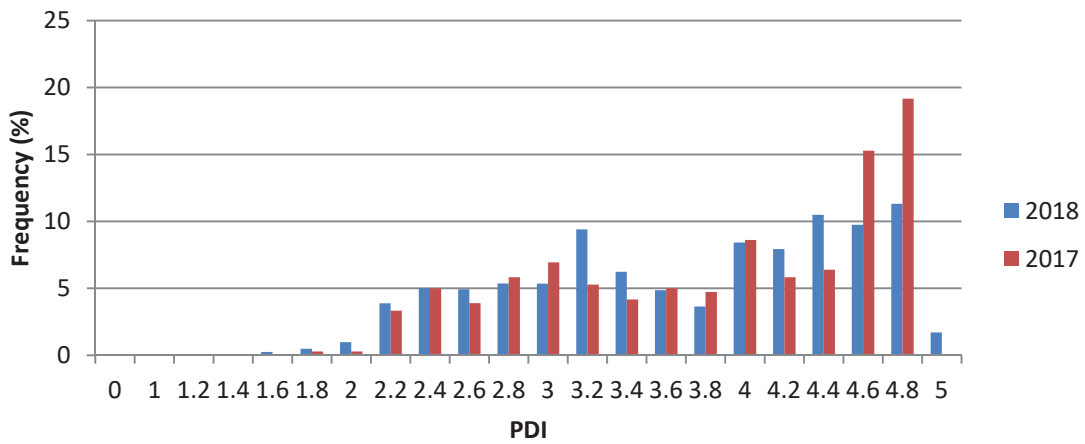
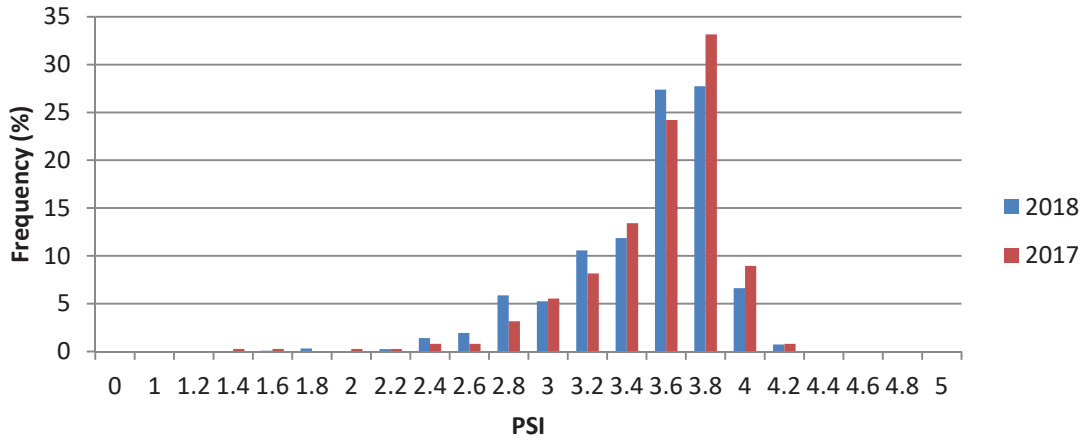


(Average PQI=3.750 for 977 lane miles)



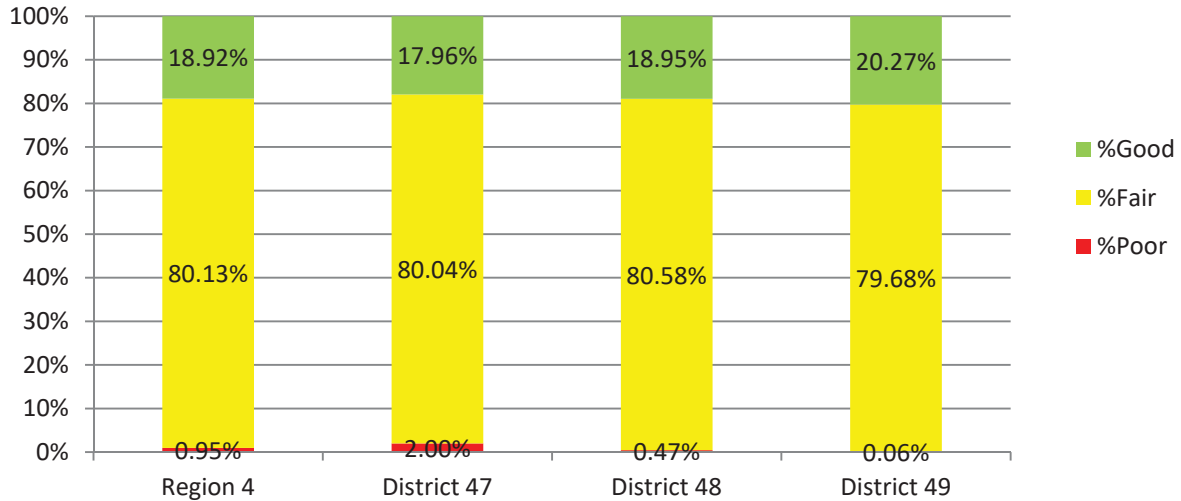
(Average PQI=3.714 for 411 centerline miles)

Distribution of Pavement Condition Indices- Region 4 Interstates, One Mile Segments



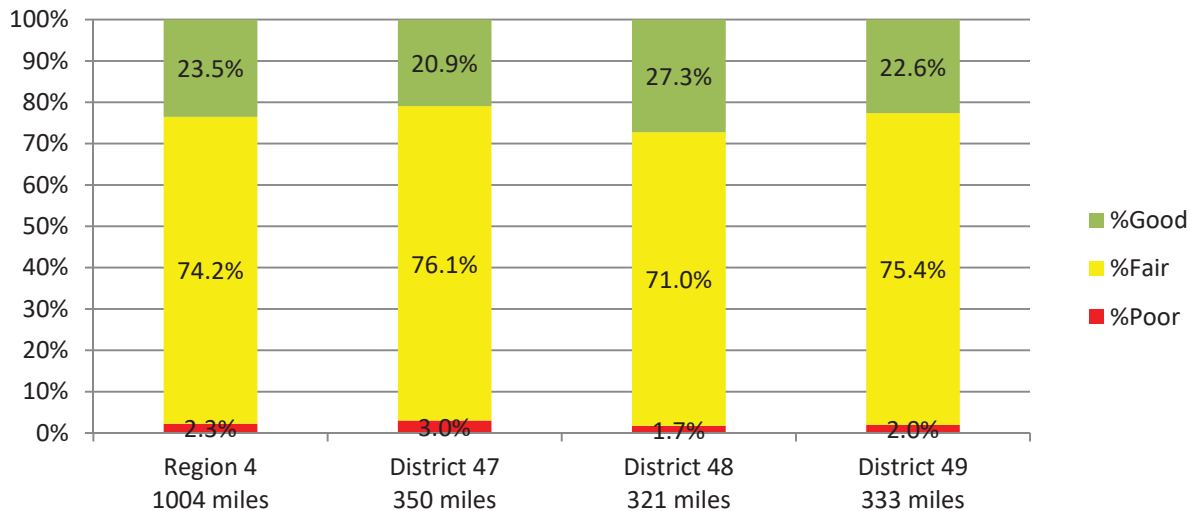
5.2 Region 4 NHS State Routes

Region 4 NHS State Routes Project Length Segments



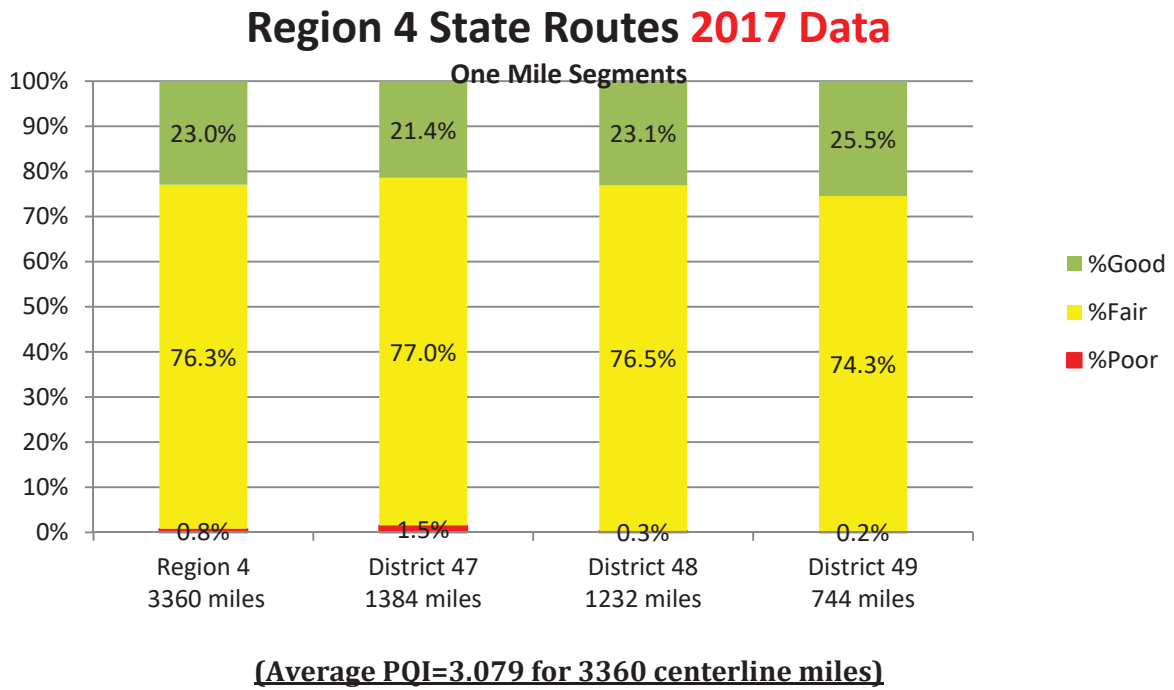
(Average POI=3.020 for 8539 lane miles)

Region 4 NHS State Routes One Mile Segments



(Average POI=3.069 for 1004 centerline miles)

5.3 Region 4 State Routes, 2017



Data from the figure in this page were from 2017 pavement data delivery