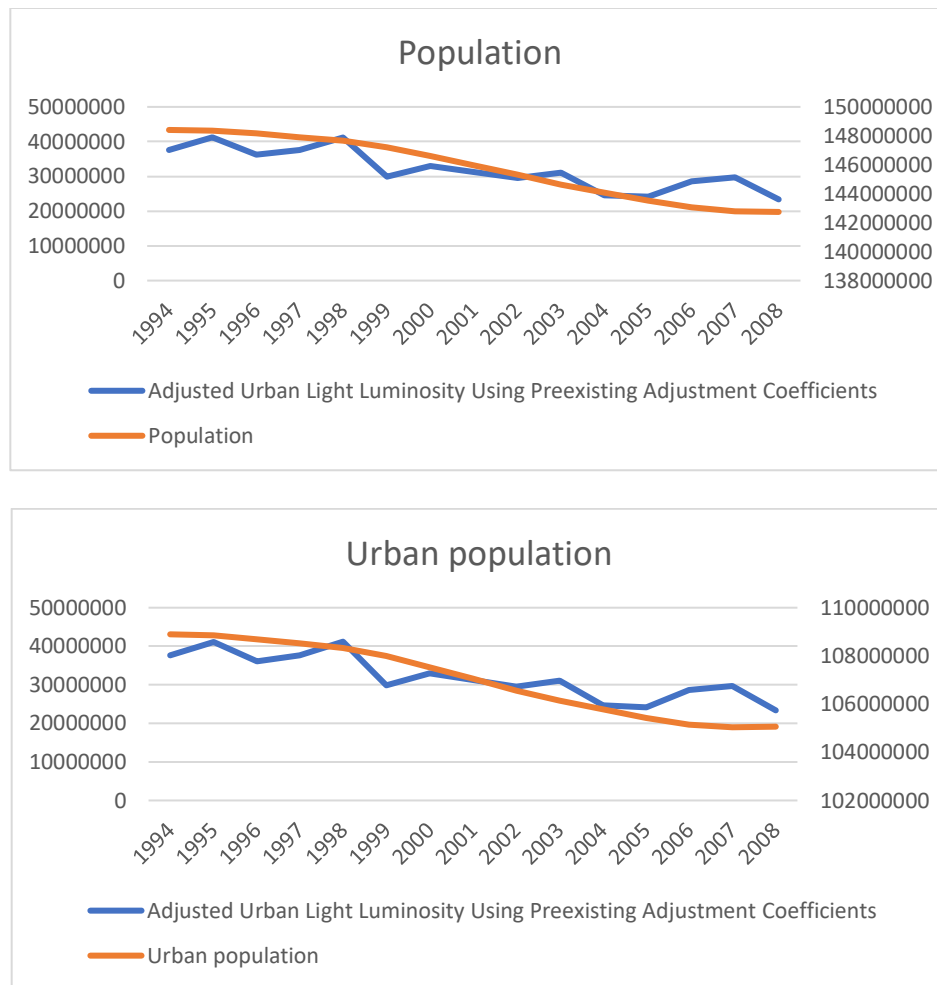


Appendix G – Urban Light Luminosity Sum with Preexisting Adjustment Coefficients

Elvidge et al. (2009) provides their adjusting coefficient based on Sicily for F12 1994-1999, F14 1997-2003, F15 2000-2008, and F16 2004-2008. Using these coefficients creates dramatically different results compared with those adjusted by the coefficients of this paper based on Volgograd Oblast. Figure G.1 shows the trend of ULL compared with trends of population, urban population, CO₂ emissions, electric power consumption, and GDP.



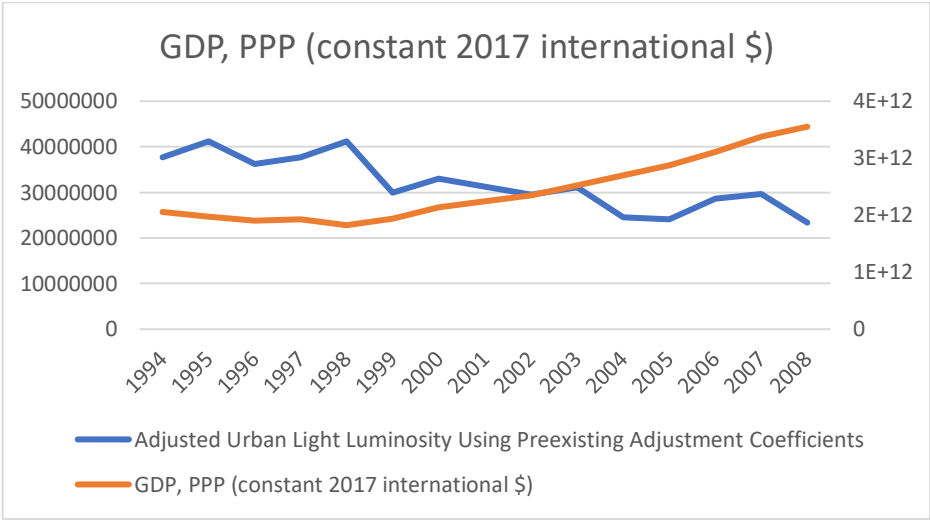
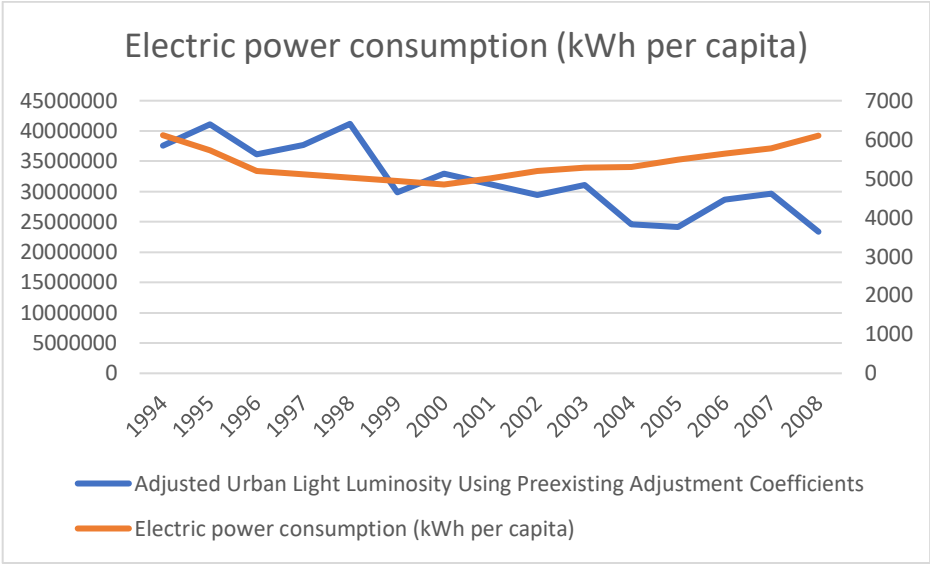
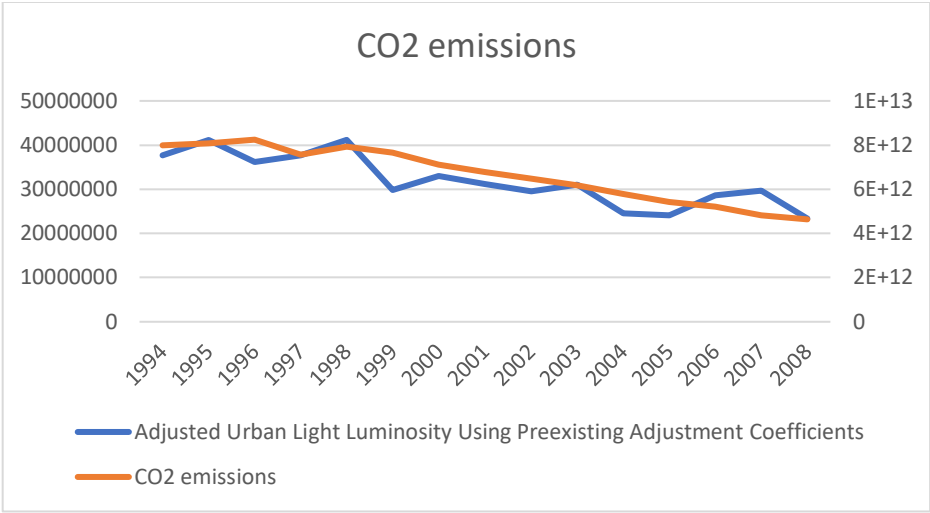
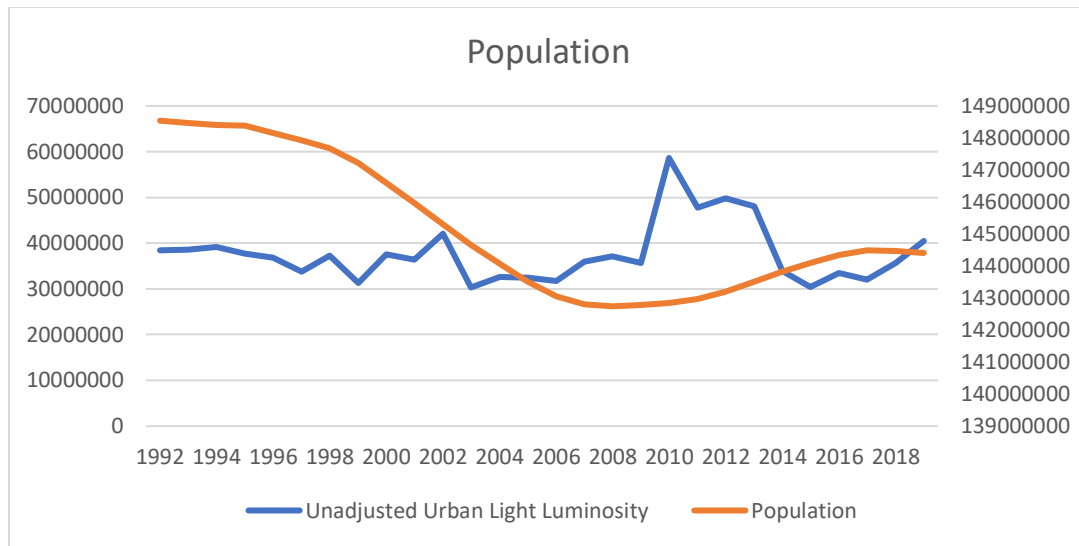
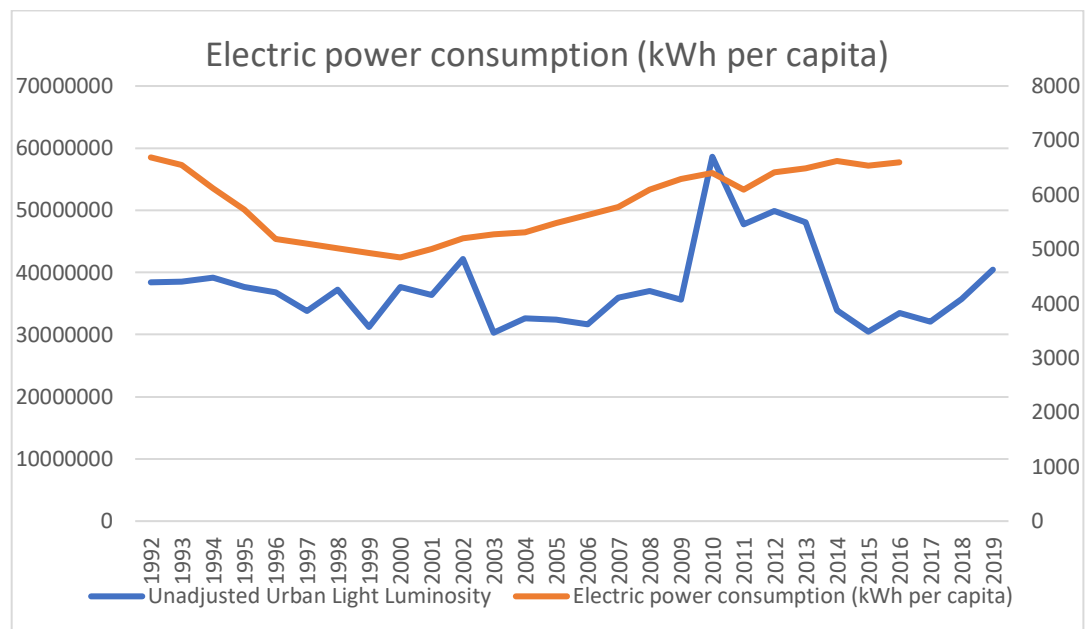
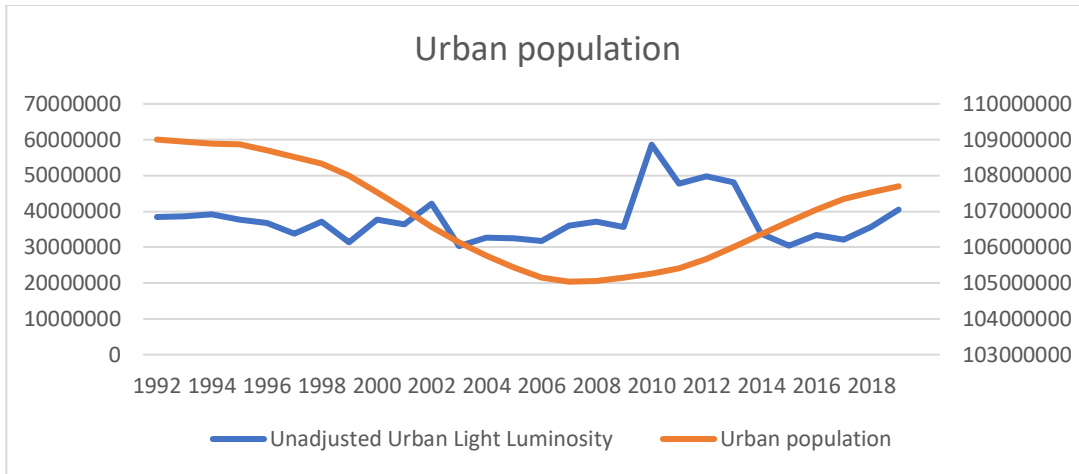


FIGURE G.1: URBAN LIGHT LUMINOSITY TRENDS BASED ON INTERCALIBRATION FROM SICILIAN DATA, CONTRASTED WITH SOCIO-ECONOMIC DATA

Using the Elvidge et al. (2009) coefficients, the trend of adjusted urban light luminosity is closer to recorded population, the urban population, and CO₂ emission. However, the trend is dramatically different from the trends of electric power consumption and GDP. Because the tiny changes in the population should not result in considerable changes in the urban light luminosity, we regard coefficients generated by Sicilian luminosity as unsuitable for Russian and Ukrainian nighttime light data adjustments.





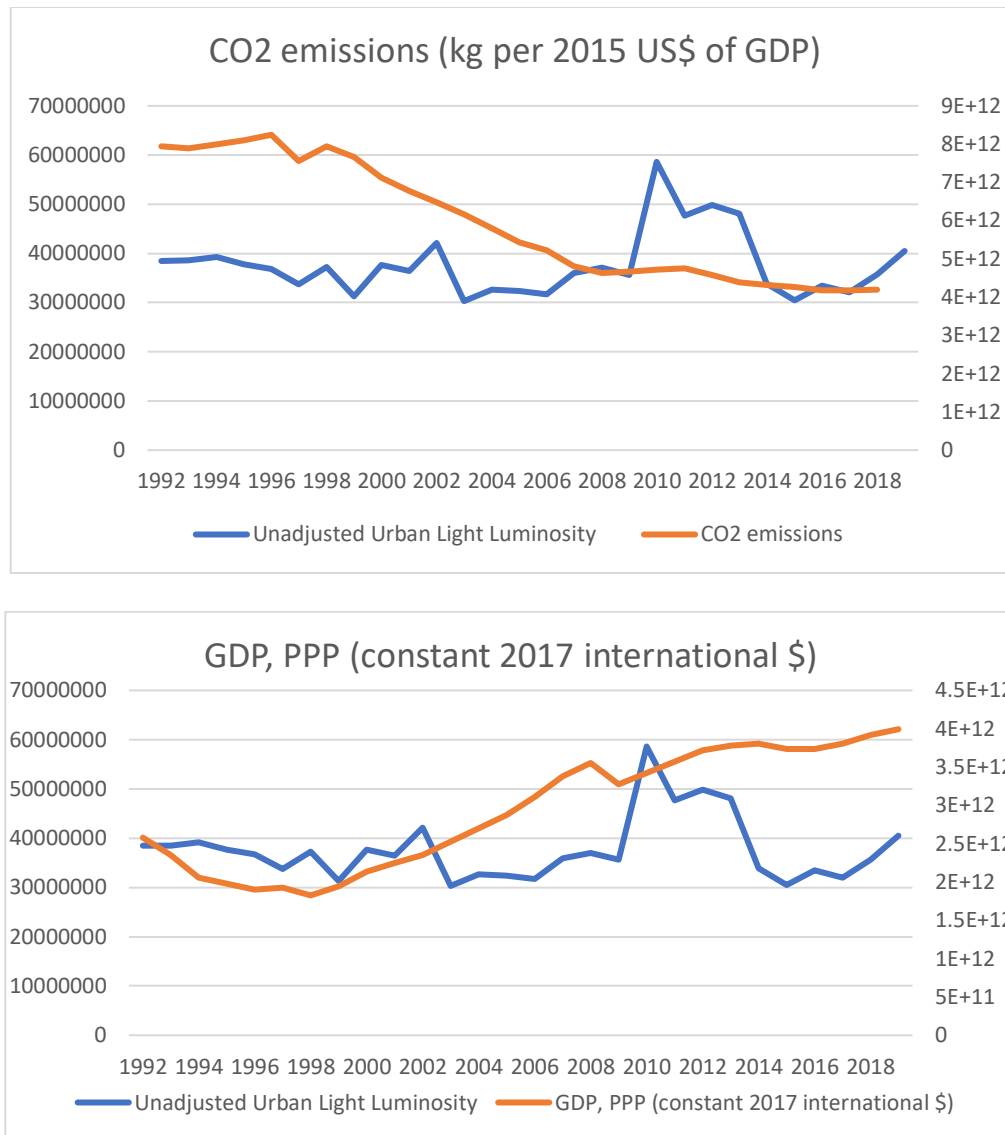


FIGURE G.2: UNADJUSTED LIGHT LUMINOSITY TRENDS BASED ON INTERCALIBRATION FROM SICILIAN DATA, CONTRASTED WITH SOCIO-ECONOMIC DATA

Figure G.2 shows the incapability of approximating other economic terms of the unadjusted light luminosity; comparisons of trends for a range of luminosity sums for Russia from 1994-2008 appear in Figure G.3.

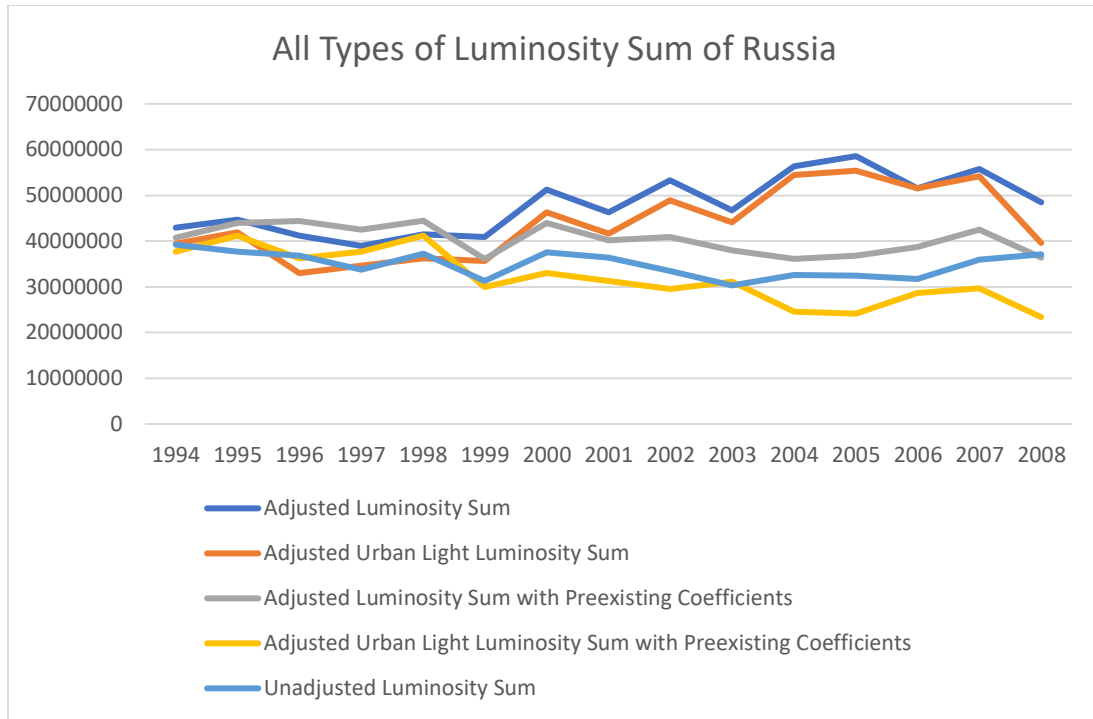


FIGURE G.3: THE TRENDS OF ALL TYPES OF LIGHT LUMINOSITY SUMS, RUSSIA 1994-2008