**File name: Plot\_DF\_Garbage.csv**

|  |  |
| --- | --- |
| **Variable name** | **Description** |
| Time | Factor data with 180 levels, from January 2001 to December 2015. |
| CityCode | Integer data from 1 to 6. New Taipei City (NTP) is noted 1, Taipei City (TPC) is 2, Taoyuan City (TYC) is 3, Taichung City (TCC) is 4, Tainan City (TNC) is 5, and Kaohsiung City is 6. |
| GarbagePerCapita | Numeric data. The amount of unsorted trash (kg/per capita). |

**File name: Plot\_DF\_BioWaste.csv**

|  |  |
| --- | --- |
| **Variable name** | **Description** |
| Time | Factor data with 144 levels, from January 2003 to December 2014. |
| CityCode | Integer data from 1 to 6. New Taipei City (NTP) is noted 1, Taipei City (TPC) is 2, Taoyuan City (TYC) is 3, Taichung City (TCC) is 4, Tainan City (TNC) is 5, and Kaohsiung City is 6. |
| BioWastePerCapita | Numeric data. The amount of biodegradable waste (kg/per capita). |

**File name: Garbage(200101-201512).csv**

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| --- | --- |
| **Variable name** | **Description** |
| Time | Factor data with 180 levels, from January 2001 to December 2015. |
| CityCode | Integer data from 1 to 6. New Taipei City (NTP) is noted 1, Taoyuan City (TYC) is 2, Taichung City (TCC) is 3, Tainan City (TNC) is 4, and Kaohsiung City is 5. |
| GarbageCollected | The amount of garbage collected (tons) |
| Income | Integer data. Annual household income (NTD, 1U$=30 NTD). |
| Monthly\_Population | Integer data. A number of inhabitant lives in City i. |
| Population0To3.Pct | Numeric data. Percentage of population aged 0 to 3. |
| HouseholdPopulation | Numeric data. A number of member per household. |
| TimeIndicator | Integer data. A sequence of numbers from 1 to 180. |
| TreatedTimeNTP | Integer data. An indicator variable is 1 if an observed time in which the policy is effective in NTP, 0 otherwise. |
| TreatedGroupNTP | Integer data. An indicator variable is 1 if an observed city is NTP, 0 otherwise. |
| TE.NTP | Integer data. The treatment effect in NTP. |
| City.TYC | Integer data. The fixed effect for TYC. |
| City.TCC | Integer data. The fixed effect for TCC. |
| City.TNC | Integer data. The fixed effect for TNC. |
| City.KSC | Integer data. The fixed effect for KSC. |
| mXX | Integer data. The fixed effect for Month XX. |
| yXXXX | Integer data. The fixed effect for Year XXXX. |
| CG\_percapita | Numeric data. The amount of unsorted trash (kg/per capita). |
| Treated\_yXXXX | Binary data. Year treatment dummies in part of XXXX year. |
| DATE\_XXXX | Binary data. The dynamic treatment effect in entire XXXX year. |

**File name: BioWaste(200301-201412).csv**

|  |  |
| --- | --- |
| **Variable name** | **Description** |
| Time | Factor data with 156 levels, from January 2003 to December 2014. |
| CityCode | Integer data from 1 to 6. New Taipei City (NTP) is noted 1, Taoyuan City (TYC) is 2, Taichung City (TCC) is 3, Tainan City (TNC) is 4, and Kaohsiung City is 5. |
| Biodegradable | Integer data. The amount of biodegradable waste (tons). |
| BiodegradableRate | Numeric data. The rate of biodegradable waste in which the amount of biodegradable waste divides the amount of total waste. |
| Income | Integer data. Annual household income (NTD, 1U$=30 NTD) |
| Monthly\_Population | Integer data. A number of inhabitant lives in City i. |
| Population0To3.Pct | Numeric data. Percentage of population aged 0 to 3. |
| HouseholdPopulation | Numeric data. A number of member per household. |
| TimeIndicator | Integer data. A sequence of numbers from 1 to 156. |
| TreatedTimeNTP | Integer data. An indicator variable is 1 if an observed time in which the policy is effective in NTP, 0 otherwise. |
| TreatedGroupNTP | Integer data. An indicator variable is 1 if an observed city is NTP, 0 otherwise. |
| TE.NTP | Integer data. The treatment effect in NTP. |
| City.TYC | Integer data. The fixed effect for TYC. |
| City.TCC | Integer data. The fixed effect for TCC. |
| City.TNC | Integer data. The fixed effect for TNC. |
| City.KSC | Integer data. The fixed effect for KSC. |
| mXX | Integer data. The fixed effect for Month XX. |
| yXXXX | Integer data. The fixed effect for Year XXXX. |
| BW\_percapita | Numeric data. The amount of biodegradable waste (kg/per capita). |
| Treated\_yXXXX | Binary data. Year treatment dummies in part of XXXX year. |
| DATE\_XXXX | Binary data. The dynamic treatment effect in entire XXXX year. |

**File name: Recycling(199801-201512).csv**

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| --- | --- |
| **Variable name** | **Description** |
| Time | Factor data with 216 levels, from January 1998 to December 2015. |
| CityCode | Integer data from 1 to 6. New Taipei City (NTP) is noted 1, Taipei City (TPC) is 2, Taoyuan City (TYC) is 3, Taichung City (TCC) is 4, Tainan City (TNC) is 5, and Kaohsiung City is 6. |
| Paper; Retort.pouch Aluminum.can; Metal; Plastic; Tires; Glass; Light.bulb; Batteries; Appliance Electronics; Textiles; Others | Numeric data. The amount of each recycling item (tons). |
| TotalR | Numeric data. The amount of total recycling (tons). |
| Income | Integer data. Annual household income (NTD, 1U$=30 NTD). |
| Monthly\_Population | Integer data. A number of inhabitant lives in City i. |
| Population0To3.Pct | Numeric data. Percentage of population aged 0 to 3. |
| HouseholdPopulation | Numeric data. A number of member per household. |
| TimeIndicator | Integer data. A sequence of numbers from 1 to 216. |
| TreatedTimeTPC | Integer data. An indicator variable is 1 if an observed time in which the policy is effective in TPC, 0 otherwise. |
| TreatedTimeNTP | Integer data. An indicator variable is 1 if an observed time in which the policy is effective in NTP, 0 otherwise. |
| TreatedGroupTPC | Integer data. An indicator variable is 1 if an observed city is TPC, 0 otherwise. |
| TreatedGroupNTP | Integer data. An indicator variable is 1 if an observed city is NTP, 0 otherwise. |
| TE.TPC | Integer data. The treatment effect in TPC. |
| TE.NTP | Integer data. The treatment effect in NTP. |
| City.TYC | Integer data. The fixed effect for TYC. |
| City.TCC | Integer data. The fixed effect for TCC. |
| City.TNC | Integer data. The fixed effect for TNC. |
| City.KSC | Integer data. The fixed effect for KSC. |
| mXX | Integer data. The fixed effect for Month XX. |
| yXXXX | Integer data. The fixed effect for Year XXXX. |
| XXXX\_percapita | Numeric data. The amount of recycling for each recycling item (kg/per capita). |
| Treated\_yXXXX | Binary data. Year treatment dummies in part of XXXX year. |
| DATE\_XXXX | Binary data. The dynamic treatment effect in entire XXXX year. |

**File name: Violations(199801-201512).csv**

|  |  |
| --- | --- |
| **Variable name** | **Description** |
| Time | Factor data with 216 levels, from January 2003 to December 2015. |
| CityCode | Integer data from 1 to 6. New Taipei City (NTP) is noted 1, Taipei City (TPC) is 2, Taoyuan City (TYC) is 3, Taichung City (TCC) is 4, Tainan City (TNC) is 5, and Kaohsiung City is 6. |
| Violation | Numeric data. A number of illegal dumping. |
| Income | Integer data. Annual household income (NTD, 1U$=30 NTD). |
| Monthly\_Population | Integer data. A number of inhabitant lives in City i. |
| Population0To3.Pct | Numeric data. Percentage of population aged 0 to 3. |
| HouseholdPopulation | Numeric data. A number of member per household. |
| TimeIndicator | Integer data. A sequence of numbers from 1 to 180. |
| TreatedTimeTPC | Integer data. An indicator variable is 1 if an observed time in which the policy is effective in TPC, 0 otherwise. |
| TreatedTimeNTP | Integer data. An indicator variable is 1 if an observed time in which the policy is effective in NTP, 0 otherwise. |
| TreatedGroupTPC | Integer data. An indicator variable is 1 if an observed city is TPC, 0 otherwise. |
| TreatedGroupNTP | Integer data. An indicator variable is 1 if an observed city is NTP, 0 otherwise. |
| TE.TPC | Integer data. The treatment effect in TPC. |
| TE.NTP | Integer data. The treatment effect in NTP. |
| City.TYC | Integer data. The fixed effect for TYC. |
| City.TCC | Integer data. The fixed effect for TCC. |
| City.TNC | Integer data. The fixed effect for TNC. |
| City.KSC | Integer data. The fixed effect for KSC. |
| mXX | Integer data. The fixed effect for Month XX. |
| yXXXX | Integer data. The fixed effect for Year XXXX. |

**File name: Placebo.Garbage(200101-201512).csv**

|  |  |
| --- | --- |
| **Variable name** | **Description** |
| Time | Factor data with 180 levels, from January 2001 to December 2015. |
| CityCode | Integer data from 1 to 6. New Taipei City (NTP) is noted 1, Taoyuan City (TYC) is 2, Taichung City (TCC) is 3, Tainan City (TNC) is 4, and Kaohsiung City is 5. |
| GarbageCollected | The amount of garbage collected (tons) |
| Income | Integer data. Annual household income (NTD, 1U$=30 NTD). |
| Monthly\_Population | Integer data. A number of inhabitant lives in City i. |
| Population0To3.Pct | Numeric data. Percentage of population aged 0 to 3. |
| HouseholdPopulation | Numeric data. A number of member per household. |
| TimeIndicator | Integer data. A sequence of numbers from 1 to 180. |
| TreatedTimeNTP | Integer data. An indicator variable is 1 if an observed time in which the policy is effective in NTP, 0 otherwise. |
| TreatedGroupNTP | Integer data. An indicator variable is 1 if an observed city is NTP, 0 otherwise. |
| TE.NTP | Integer data. The treatment effect in NTP. |
| City.TYC | Integer data. The fixed effect for TYC. |
| City.TCC | Integer data. The fixed effect for TCC. |
| City.TNC | Integer data. The fixed effect for TNC. |
| City.KSC | Integer data. The fixed effect for KSC. |
| mXX | Integer data. The fixed effect for Month XX. |
| yXXXX | Integer data. The fixed effect for Year XXXX. |
| CG\_percapita | Numeric data. The amount of unsorted trash (kg/per capita). |
| PT.YYYYMM | Binary data. Counterfactual policy dummies in MM month and YYYY year. |
| TE.YYYYMM | Binary data. Counterfactual treatment effects in MM month and YYYY year. |

**File name: Placebo.BioWaste(200301-201412).csv**

|  |  |
| --- | --- |
| **Variable name** | **Description** |
| Time | Factor data with 156 levels, from January 2003 to December 2014. |
| CityCode | Integer data from 1 to 6. New Taipei City (NTP) is noted 1, Taoyuan City (TYC) is 2, Taichung City (TCC) is 3, Tainan City (TNC) is 4, and Kaohsiung City is 5. |
| Biodegradable | Integer data. The amount of biodegradable waste (tons). |
| BiodegradableRate | Numeric data. The rate of biodegradable waste in which the amount of biodegradable waste divides the amount of total waste. |
| Income | Integer data. Annual household income (NTD, 1U$=30 NTD) |
| Monthly\_Population | Integer data. A number of inhabitant lives in City i. |
| Population0To3.Pct | Numeric data. Percentage of population aged 0 to 3. |
| HouseholdPopulation | Numeric data. A number of member per household. |
| TimeIndicator | Integer data. A sequence of numbers from 1 to 156. |
| TreatedTimeNTP | Integer data. An indicator variable is 1 if an observed time in which the policy is effective in NTP, 0 otherwise. |
| TreatedGroupNTP | Integer data. An indicator variable is 1 if an observed city is NTP, 0 otherwise. |
| TE.NTP | Integer data. The treatment effect in NTP. |
| City.TYC | Integer data. The fixed effect for TYC. |
| City.TCC | Integer data. The fixed effect for TCC. |
| City.TNC | Integer data. The fixed effect for TNC. |
| City.KSC | Integer data. The fixed effect for KSC. |
| mXX | Integer data. The fixed effect for Month XX. |
| yXXXX | Integer data. The fixed effect for Year XXXX. |
| BW\_percapita | Numeric data. The amount of biodegradable waste (kg/per capita). |
| PT.YYYYMM | Binary data. Counterfactual policy dummies in MM month and YYYY year. |
| TE.YYYYMM | Binary data. Counterfactual treatment effects in MM month and YYYY year. |

**File name: Placebo.Recycling.TPC(199801-201512).csv**

|  |  |
| --- | --- |
| **Variable name** | **Description** |
| Time | Factor data with 216 levels, from January 1998 to December 2015. |
| CityCode | Integer data from 1 to 6. New Taipei City (NTP) is noted 1, Taipei City (TPC) is 2, Taoyuan City (TYC) is 3, Taichung City (TCC) is 4, Tainan City (TNC) is 5, and Kaohsiung City is 6. |
| Paper; Retort.pouch Aluminum.can; Metal; Plastic; Tires; Glass; Light.bulb; Batteries; Appliance Electronics; Textiles; Others | Numeric data. The amount of each recycling item (tons). |
| TotalR | Numeric data. The amount of total recycling (tons). |
| Income | Integer data. Annual household income (NTD, 1U$=30 NTD). |
| Monthly\_Population | Integer data. A number of inhabitant lives in City i. |
| Population0To3.Pct | Numeric data. Percentage of population aged 0 to 3. |
| HouseholdPopulation | Numeric data. A number of member per household. |
| TimeIndicator | Integer data. A sequence of numbers from 1 to 216. |
| TreatedTimeTPC | Integer data. An indicator variable is 1 if an observed time in which the policy is effective in TPC, 0 otherwise. |
| TreatedTimeNTP | Integer data. An indicator variable is 1 if an observed time in which the policy is effective in NTP, 0 otherwise. |
| TreatedGroupTPC | Integer data. An indicator variable is 1 if an observed city is TPC, 0 otherwise. |
| TreatedGroupNTP | Integer data. An indicator variable is 1 if an observed city is NTP, 0 otherwise. |
| TE.TPC | Integer data. The treatment effect in TPC. |
| TE.NTP | Integer data. The treatment effect in NTP. |
| City.TYC | Integer data. The fixed effect for TYC. |
| City.TCC | Integer data. The fixed effect for TCC. |
| City.TNC | Integer data. The fixed effect for TNC. |
| City.KSC | Integer data. The fixed effect for KSC. |
| mXX | Integer data. The fixed effect for Month XX. |
| yXXXX | Integer data. The fixed effect for Year XXXX. |
| XXXX\_percapita | Numeric data. The amount of recycling for each recycling item (kg/per capita). |
| PT.YYYYMM | Binary data. Counterfactual policy dummies in MM month and YYYY year. |
| TE.YYYYMM | Binary data. Counterfactual treatment effects in MM month and YYYY year. |

**File name: Placebo.Recycling.NTC(199801-201512).csv**

|  |  |
| --- | --- |
| **Variable name** | **Description** |
| Time | Factor data with 216 levels, from January 1998 to December 2015. |
| CityCode | Integer data from 1 to 6. New Taipei City (NTP) is noted 1, Taipei City (TPC) is 2, Taoyuan City (TYC) is 3, Taichung City (TCC) is 4, Tainan City (TNC) is 5, and Kaohsiung City is 6. |
| Paper; Retort.pouch Aluminum.can; Metal; Plastic; Tires; Glass; Light.bulb; Batteries; Appliance Electronics; Textiles; Others | Numeric data. The amount of each recycling item (tons). |
| TotalR | Numeric data. The amount of total recycling (tons). |
| Income | Integer data. Annual household income (NTD, 1U$=30 NTD). |
| Monthly\_Population | Integer data. A number of inhabitant lives in City i. |
| Population0To3.Pct | Numeric data. Percentage of population aged 0 to 3. |
| HouseholdPopulation | Numeric data. A number of member per household. |
| TimeIndicator | Integer data. A sequence of numbers from 1 to 216. |
| TreatedTimeTPC | Integer data. An indicator variable is 1 if an observed time in which the policy is effective in TPC, 0 otherwise. |
| TreatedTimeNTP | Integer data. An indicator variable is 1 if an observed time in which the policy is effective in NTP, 0 otherwise. |
| TreatedGroupTPC | Integer data. An indicator variable is 1 if an observed city is TPC, 0 otherwise. |
| TreatedGroupNTP | Integer data. An indicator variable is 1 if an observed city is NTP, 0 otherwise. |
| TE.TPC | Integer data. The treatment effect in TPC. |
| TE.NTP | Integer data. The treatment effect in NTP. |
| City.TYC | Integer data. The fixed effect for TYC. |
| City.TCC | Integer data. The fixed effect for TCC. |
| City.TNC | Integer data. The fixed effect for TNC. |
| City.KSC | Integer data. The fixed effect for KSC. |
| mXX | Integer data. The fixed effect for Month XX. |
| yXXXX | Integer data. The fixed effect for Year XXXX. |
| XXXX\_percapita | Numeric data. The amount of recycling for each recycling item (kg/per capita). |
| PT.YYYYMM | Binary data. Counterfactual policy dummies in MM month and YYYY year. |
| TE.YYYYMM | Binary data. Counterfactual treatment effects in MM month and YYYY year. |