monthly_factor_group

October 31, 2017

```
In [1]: from utility import db_connect, query2csv
        from settings import  DBNAME, DBPASS, DBUSER, DBHOST
```

```
In [2]: qsql="""
        select
          ar.analysis_area_name as city,
          aa.mode,
          array_agg(analysis_area_id order by analysis_area_id) as analysis_area_id
        from
        baa.analysis_area_regions as ar,
        baa.analysis_areas as aa
        where ar.analysis_area_regions_id = aa.analysis_area_regions_id
        group by 1,2
        """
        csvfile='city_mode_group.csv'
        query2csv(qsql,csvfile)
```

```
<IPython.core.display.HTML object>
```

0.0.1 Create monthly city mode factor group table

```
CREATE TABLE baa_ex_sus.fg_city_mode_monthly
(
  city character varying(50) NOT NULL,
  mode baa.bp_mode NOT NULL,
  analysis_area_id_list integer[]
)
```

0.0.2 Populate monthly city mode factor group table

```
insert into baa_ex_sus.fg_city_mode_monthly(
with city_mode_group as (
select
  ar.analysis_area_name as city,
  aa.mode,
  array_agg(analysis_area_id order by analysis_area_id) as analysis_area_id_list
from
```

```
baa.analysis_area_regions as ar,
baa.analysis_areas as aa
where ar.analysis_area_regions_id = aa.analysis_area_regions_id
group by 1,2
)
```

```
In [3]: qsql="""
        select * from baa_ex_sus.fg_city_mode_monthly
        """
        csvfile='fg_city_mode_monthly.csv'
        query2csv(qsql,csvfile)
```

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<IPython.core.display.HTML object>
```

```
In [4]: qsql="""
        with d as (
          select generate_series(0,6) as dayofweek
        ),
        m as (
          select generate_series(1,12) as month
        ),
        -- daily_exclude_holiday: daily counts for sites excluding holidays
        daily_exclude_holiday as (
        select
         baaad.analysis_area_id,
         baaad.date,
         baaad.volume,
         date_part('month', baaad.date) as month,
         date_part('dow', baaad.date) as dow
        from
          baa_ex_sus.analysis_areas_daily_volume as baaad
          left join baa.holidays as baahd on baaad.date::date = baahd.holiday_date
        where
          baahd.holiday_id is null
          group by 1,2,3
        ),
        V_jmyl_exclude_holiday as (
          select
              baadv.analysis_area_id,
              to_char(baadv.date, 'YYYY') as year,
              avg(baadv.volume) as volume,
              d.dayofweek,
              m.month
          from
              daily_exclude_holiday as baadv,
              d,
              m
```

```
          where
              extract(dow from baadv.date) in (d.dayofweek)
              AND date_part('month', baadv.date) = m.month
              group by baadv.analysis_area_id, year, d.dayofweek, m.month
        ),
        monthly_madt_exclude_holiday as (
          select
              month,
              year,
              analysis_area_id,
              avg(volume) as madt
          from
              V_jmyl_exclude_holiday
              group by analysis_area_id, year, month
              having count(dayofweek)=7 -- having 7 days of data each week
        )
        select analysis_area_id, year, month, madt from monthly_madt_exclude_holida
        order by 1,2,3
        """
        csvfile='monthly_madt_exclude_holiday_ex_sus.csv'
        query2csv(qsql,csvfile)
```

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<IPython.core.display.HTML object>
```

```
In [5]: qsql="""
        with d as (
          select generate_series(0,6) as dayofweek
        ),
        m as (
          select generate_series(1,12) as month
        ),
        V_jmyl as (
          select
              baadv.analysis_area_id,
              to_char(baadv.date, 'YYYY') as year,
              avg(baadv.volume)::bigint as volume_i,
              avg(baadv.volume) as volume,
              d.dayofweek,
              m.month
          from
              baa_ex_sus.analysis_areas_daily_volume as baadv,
              d,
              m
          where
              extract(dow from baadv.date) in (d.dayofweek)
              AND date_part('month', baadv.date) = m.month
              group by baadv.analysis_area_id, year, d.dayofweek, m.month
```

```
  ),
madt as (
  select
      month,
      year,
      analysis_area_id,
      avg(volume)::bigint as volume_i,
      avg(volume) as volume
  from
      v_jmyl
      group by analysis_area_id, year, month
      having count(dayofweek)=7 -- having 7 days of data each week
),
aadt as (
select
  analysis_area_id,
  year,
  avg(volume)::bigint as AADT_i,
  round(avg(volume), 2) as AADT
from madt
  group by analysis_area_id, year
  having count(month) = 12 -- having 12 months of data
),
-- daily_exclude_holiday: daily counts for sites excluding holidays
daily_exclude_holiday as (
select
 baaad.analysis_area_id,
 baaad.date,
 baaad.volume,
 date_part('month', baaad.date) as month,
 date_part('dow', baaad.date) as dow
from
  baa_ex_sus.analysis_areas_daily_volume as baaad
  left join baa.holidays as baahd on baaad.date::date = baahd.holiday_date
where
  baahd.holiday_id is null
  group by 1,2,3
),
V_jmyl_exclude_holiday as (
  select
      baadv.analysis_area_id,
      to_char(baadv.date, 'YYYY') as year,
      avg(baadv.volume) as volume,
      d.dayofweek,
      m.month
  from
      daily_exclude_holiday as baadv,
      d,
```

```
            m
        where
            extract(dow from baadv.date) in (d.dayofweek)
            AND date_part('month', baadv.date) = m.month
            group by baadv.analysis_area_id, year, d.dayofweek, m.month
      ),
      monthly_madt_exclude_holiday as (
        select
            month,
            year,
            analysis_area_id,
            avg(volume) as madt
        from
            V_jmyl_exclude_holiday
            group by analysis_area_id, year, month
            having count(dayofweek)=7 -- having 7 days of data each week
      ),
      fm as (
      select
        madt_nh.analysis_area_id,
        madt_nh.month,
        madt_nh.year,
        round(madt_nh.madt/aadt.aadt::numeric,2) as fm
      from
        monthly_madt_exclude_holiday as madt_nh inner join aadt using(analysis_ar
      where
        aadt.aadt <> 0
      )
      select * from fm
      order by 1,3,2
      """
      csvfile='monthly_factor_ex_sus.csv'
      query2csv(qsql,csvfile)
```

```
<IPython.core.display.HTML object>
```

```
In [6]: qsql="""
        with d as (
          select generate_series(0,6) as dayofweek
        ),
        m as (
          select generate_series(1,12) as month
        ),
        V_jmyl as (
          select
              baadv.analysis_area_id,
              to_char(baadv.date, 'YYYY') as year,
```

```
        avg(baadv.volume)::bigint as volume_i,
        avg(baadv.volume) as volume,
        d.dayofweek,
        m.month
    from
        baa_ex_sus.analysis_areas_daily_volume as baadv,
        d,
        m
    where
        extract(dow from baadv.date) in (d.dayofweek)
        AND date_part('month', baadv.date) = m.month
        group by baadv.analysis_area_id, year, d.dayofweek, m.month
    ),
madt as (
    select
        month,
        year,
        analysis_area_id,
        avg(volume)::bigint as volume_i,
        avg(volume) as volume
    from
        v_jmyl
        group by analysis_area_id, year, month
        having count(dayofweek)=7 -- having 7 days of data each week
),
aadt as (
select
    analysis_area_id,
    year,
    avg(volume)::bigint as AADT_i,
    round(avg(volume), 2) as AADT
from madt
    group by analysis_area_id, year
    having count(month) = 12 -- having 12 months of data
),
-- daily_exclude_holiday: daily counts for sites excluding holidays
daily_exclude_holiday as (
select
 baaad.analysis_area_id,
 baaad.date,
 baaad.volume,
 date_part('month', baaad.date) as month,
 date_part('dow', baaad.date) as dow
from
    baa_ex_sus.analysis_areas_daily_volume as baaad
    left join baa.holidays as baahd on baaad.date::date = baahd.holiday_date
where
    baahd.holiday_id is null
```

```
  group by 1,2,3
),
V_jmyl_exclude_holiday as (
  select
      baadv.analysis_area_id,
      to_char(baadv.date, 'YYYY') as year,
      avg(baadv.volume) as volume,
      d.dayofweek,
      m.month
  from
      daily_exclude_holiday as baadv,
      d,
      m
  where
      extract(dow from baadv.date) in (d.dayofweek)
      AND date_part('month', baadv.date) = m.month
      group by baadv.analysis_area_id, year, d.dayofweek, m.month
),
monthly_madt_exclude_holiday as (
  select
      month,
      year,
      analysis_area_id,
      avg(volume) as madt
  from
      V_jmyl_exclude_holiday
      group by analysis_area_id, year, month
      having count(dayofweek)=7 -- having 7 days of data each week
),
fm as (
select
  madt_nh.analysis_area_id,
  madt_nh.month,
  madt_nh.year,
  round(madt_nh.madt/aadt.aadt::numeric,2) as fm
from
  monthly_madt_exclude_holiday as madt_nh inner join aadt using(analysis_ar
where
  aadt.aadt <> 0
),
city_mode_group as (
select
  ar.analysis_area_name as city,
  aa.mode,
  array_agg(analysis_area_id order by analysis_area_id) as analysis_area_id
from
  baa.analysis_area_regions as ar,
  baa.analysis_areas as aa
```

```
        where ar.analysis_area_regions_id = aa.analysis_area_regions_id
          group by 1,2
        )
        select
          cmg.city,
          cmg.mode,
          cmg.analysis_area_id_list,
          fm.month,
          fm.year,
          round(avg(fm.fm), 2) as fm_cmp

        from
        fm inner join city_mode_group as cmg
        on fm.analysis_area_id = Any(cmg.analysis_area_id_list::int[])
        group by 1,2,3,5,4
        order by 1,2,3,5,4
        """
        csvfile='monthly_factor_group_ex_sus.csv'
        query2csv(qsql,csvfile)
```

```
<IPython.core.display.HTML object>
```