ResultsInTables

Gaussian DGP

```
DF_MultiV_Full_GausDGP <- read.csv("DF_MultiV_Full_GaussianDGP.csv")[,-1]


DF_MultiV_Full_GausDGP %>%
  group_by(`F.method`, `R.method`, `Forecast.Horizon`) %>%
  summarise(E.ES = mean(`Energy.score`),
            E.VS = mean(`Variogram.score`)) -> DF_MultiV_Full_GausDGP

#DF_MultScores %>% dplyr::filter(`R.method` != "Base") -> DF_MultScore_Recon

DF_MultiV_Full_GausDGP %>%
  dplyr::filter(`F.method`=="ARIMA" | `R.method`=="Bottom up") -> DF_MultScores_AllTS_GausDGP

##--Calculate the skill scores--#



##--For ARIMA--##

DF_MultScores_AllTS_GausDGP %>%
  filter(`R.method`=="Bottom up") %>%
  slice() %>%
  ungroup() %>%
  dplyr::select(`E.ES`) %>% as_vector() -> BU_E.ES_AllTS_GausDGP

DF_MultScores_AllTS_GausDGP %>%
  filter(`R.method`=="Bottom up") %>%
  slice() %>%
  ungroup() %>%
  dplyr::select(`E.VS`) %>%
  as_vector() -> BU_E.VS_AllTS_GausDGP


DF_MultScores_AllTS_GausDGP %>%
  mutate(SS_E.ES = round((1-(`E.ES`/BU_E.ES_AllTS_GausDGP))*100, digits = 2),
         SS_E.VS = round((1-(`E.VS`/BU_E.VS_AllTS_GausDGP))*100, digits = 2)) -> DF_MultScore_SS_AllTS_

DF_MultScore_SS_AllTS_GausDGP %>%
  dplyr::select(-`E.ES`, -`E.VS`) -> DF_MultScore_SS_AllTS_GausDGP


# DF_MultScore_SS_AllTS_GausDGP %>%
#   dplyr::select(-`E.ES`, -`E.VS`, -`SS_E.VS`) %>%
#   spread(key = `Forecast.Horizon`, value = `SS_E.ES`) -> SS_E.ES_AllTS_GausDGP
#
# DF_MultScore_SS_AllTS_GausDGP %>%
#   dplyr::select(-`E.ES`, -`E.VS`, -`SS_E.ES`) %>%
```

```r
#   spread(key = `Forecast.Horizon`, value = `SS_E.VS`) -> SS_E.VS_AllTS_GausDGP

# View(SS_E.ES_AllTS_GausDGP)
# View(SS_E.VS_AllTS_GausDGP)



########################################
### Bottom level of the Hierarchy ###
########################################



DF_MultiV_Bot_GausDGP <- read.csv("DF_MultiV_Bot_GaussianDGP.csv")[,-1]


DF_MultiV_Bot_GausDGP %>%
  group_by(`F.method`, `R.method`, `Forecast.Horizon`) %>%
  summarise(E.LS = mean(`Variogram.score`)) -> DF_MultiV_Bot_GausDGP

#DF_MultScores %>% dplyr::filter(`R.method` != "Base") -> DF_MultScore_Recon

DF_MultiV_Bot_GausDGP %>%
  dplyr::filter(`F.method`=="ARIMA" | `R.method`=="Base") -> DF_MultScores_BotTS_GausDGP

##--Calculate the skill scores--#

DF_MultScores_BotTS_GausDGP %>%
  filter(`R.method`=="Bottom up") %>%
  slice() %>%
  ungroup() %>%
  dplyr::select(`E.LS`) %>%
  as_vector() -> BU_E.LS_BotTS_GausDGP

DF_MultScores_BotTS_GausDGP %>%
  mutate(SS_E.LS = round((1-(`E.LS`/BU_E.LS_BotTS_GausDGP))*100, digits = 2)) -> DF_MultScore_SS_BotTS_

# DF_MultScore_SS_BotTS_GausDGP %>%
#   dplyr::select(-`E.LS`) %>%
#   spread(key = `Forecast.Horizon`, value = `SS_E.LS`) -> SS_E.LS_BotTS_GausDGP

# View(SS_E.LS_BotTS_GausDGP)


DF_MultScore_SS_BotTS_GausDGP %>%
  ungroup() %>%
  pull(SS_E.LS) -> SS_E.LS

DF_MultScore_SS_AllTS_GausDGP %>%
  ungroup() %>%
  add_column(SS_E.LS = SS_E.LS) -> SkillScore_full_hier

SkillScore_full_hier %>%
```

```
  gather(key = key, value = value, SS_E.ES, SS_E.VS, SS_E.LS) %>%
  unite(temp, Forecast.Horizon, key) %>%
  spread(key = temp, value = value) %>%
  dplyr::select(R.method, `1_SS_E.ES`, `1_SS_E.VS`, `1_SS_E.LS`,
         `2_SS_E.ES`, `2_SS_E.VS`, `2_SS_E.LS`,
         `3_SS_E.ES`, `3_SS_E.VS`, `3_SS_E.LS`) %>%
  rename("ES" = `1_SS_E.ES`, "VS" = `1_SS_E.VS`, "LS" = `1_SS_E.LS`,
         "ES" = `2_SS_E.ES`, "VS" = `2_SS_E.VS`, "LS" = `2_SS_E.LS`,
         "ES" = `3_SS_E.ES`, "VS" = `3_SS_E.VS`, "LS" = `3_SS_E.LS`) %>%
   kable(format = "latex") %>% kable_styling("striped") %>%
  kableExtra::add_header_above(c(" " = 1, "h=1" = 3, "h=2" = 3, "h=3" = 3))
```

	h=1			h=2			h=3		
R.method	ES	VS	LS	ES	VS	LS	ES	VS	LS
Base	11.65	-0.12	-0.25	10.58	1.71	0.06	8.75	3.64	-0.06
Bottom up	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MinT.Sam	19.48	9.74	3.09	19.50	14.16	6.51	16.28	16.42	8.09
MinT.Shr	19.48	9.78	3.16	19.57	14.16	6.53	16.47	16.56	8.34
OLS	16.01	5.80	-0.79	15.38	8.43	0.05	13.03	10.26	0.82
WLS	18.08	7.21	0.64	17.68	10.97	2.31	14.99	13.17	3.76

Non Gaussian DGP

```
DF_MultiV_Full_NonGausDGP <- read.csv("DF_MultiV_Full_NonGaussianDGP.csv")[,-1]


DF_MultiV_Full_NonGausDGP %>%
  group_by(`F.method`, `R.method`, `Forecast.Horizon`) %>%
  summarise(E.ES = mean(`Energy.score`),
            E.VS = mean(`Variogram.score`)) -> DF_MultiV_Full_NonGausDGP

#DF_MultScores %>% dplyr::filter(`R.method` != "Base") -> DF_MultScore_Recon

DF_MultiV_Full_NonGausDGP %>%
  dplyr::filter(`F.method`=="ARIMA" | `R.method`=="Bottom up") -> DF_MultScores_AllTS_NonGausDGP

##--Calculate the skill scores--#



##--For ARIMA--##

DF_MultScores_AllTS_NonGausDGP %>%
  filter(`R.method`=="Bottom up") %>%
  slice() %>%
  ungroup() %>%
  dplyr::select(`E.ES`) %>% as_vector() -> BU_E.ES_AllTS_NonGausDGP

DF_MultScores_AllTS_NonGausDGP %>%
  filter(`R.method`=="Bottom up") %>%
  slice() %>%
```

```
  ungroup() %>%
  dplyr::select(`E.VS`) %>%
  as_vector() -> BU_E.VS_AllTS_NonGausDGP


DF_MultScores_AllTS_NonGausDGP %>%
  mutate(SS_E.ES = round((1-(`E.ES`/BU_E.ES_AllTS_NonGausDGP))*100, digits = 2),
         SS_E.VS = round((1-(`E.VS`/BU_E.VS_AllTS_NonGausDGP))*100, digits = 2)) -> DF_MultScore_SS_All

DF_MultScore_SS_AllTS_NonGausDGP %>%
  dplyr::select(-`E.ES`, -`E.VS`) -> DF_MultScore_SS_AllTS_NonGausDGP


# DF_MultScore_SS_AllTS_NonGausDGP %>%
#   dplyr::select(-`E.ES`, -`E.VS`, -`SS_E.VS`) %>%
#   spread(key = `Forecast.Horizon`, value = `SS_E.ES`) -> SS_E.ES_AllTS_NonGausDGP
#
# DF_MultScore_SS_AllTS_NonGausDGP %>%
#   dplyr::select(-`E.ES`, -`E.VS`, -`SS_E.ES`) %>%
#   spread(key = `Forecast.Horizon`, value = `SS_E.VS`) -> SS_E.VS_AllTS_NonGausDGP

# View(SS_E.ES_AllTS_NonGausDGP)
# View(SS_E.VS_AllTS_NonGausDGP)



########################################
### Bottom level of the Hierarchy ###
########################################



DF_MultiV_Bot_NonGausDGP <- read.csv("DF_MultiV_Bot_NonGaussianDGP.csv")[,-1]


DF_MultiV_Bot_NonGausDGP %>%
  group_by(`F.method`, `R.method`, `Forecast.Horizon`) %>%
  summarise(E.LS = mean(`Variogram.score`)) -> DF_MultiV_Bot_NonGausDGP

#DF_MultScores %>% dplyr::filter(`R.method` != "Base") -> DF_MultScore_Recon

DF_MultiV_Bot_NonGausDGP %>%
  dplyr::filter(`F.method`=="ARIMA" | `R.method`=="Base") -> DF_MultScores_BotTS_NonGausDGP

##--Calculate the skill scores--#

DF_MultScores_BotTS_NonGausDGP %>%
  filter(`R.method`=="Bottom up") %>%
  slice() %>%
  ungroup() %>%
  dplyr::select(`E.LS`) %>%
  as_vector() -> BU_E.LS_BotTS_NonGausDGP
```

```r
DF_MultScores_BotTS_NonGausDGP %>%
  mutate(SS_E.LS = round((1-(`E.LS`/BU_E.LS_BotTS_NonGausDGP))*100, digits = 2)) -> DF_MultScore_SS_Bot

# DF_MultScore_SS_BotTS_NonGausDGP %>%
#   dplyr::select(-`E.LS`) %>%
#   spread(key = `Forecast.Horizon`, value = `SS_E.LS`) -> SS_E.LS_BotTS_NonGausDGP

# View(SS_E.LS_BotTS_NonGausDGP)


DF_MultScore_SS_BotTS_NonGausDGP %>%
  ungroup() %>%
  pull(SS_E.LS) -> SS_E.LS

DF_MultScore_SS_AllTS_NonGausDGP %>%
  ungroup() %>%
  add_column(SS_E.LS = SS_E.LS) -> SkillScore_full_hier

SkillScore_full_hier %>%
  gather(key = key, value = value, SS_E.ES, SS_E.VS, SS_E.LS) %>%
  unite(temp, Forecast.Horizon, key) %>%
  spread(key = temp, value = value) %>%
  dplyr::select(R.method, `1_SS_E.ES`, `1_SS_E.VS`, `1_SS_E.LS`,
                `2_SS_E.ES`, `2_SS_E.VS`, `2_SS_E.LS`,
                `3_SS_E.ES`, `3_SS_E.VS`, `3_SS_E.LS`) %>%
  rename("ES" = `1_SS_E.ES`, "VS" = `1_SS_E.VS`, "LS" = `1_SS_E.LS`,
         "ES" = `2_SS_E.ES`, "VS" = `2_SS_E.VS`, "LS" = `2_SS_E.LS`,
         "ES" = `3_SS_E.ES`, "VS" = `3_SS_E.VS`, "LS" = `3_SS_E.LS`) %>%
  kable(format = "latex") %>% kable_styling("striped") %>%
  kableExtra::add_header_above(c(" " = 1, "h=1" = 3, "h=2" = 3, "h=3" = 3))
```

	h=1			h=2			h=3		
R.method	ES	VS	LS	ES	VS	LS	ES	VS	LS
Base	8.47	-2.79	-0.07	8.94	-2.09	0.09	9.20	-3.62	0.03
Bottom up	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MinT.Sam	15.02	0.59	4.40	16.94	1.02	4.30	17.88	0.64	3.42
MinT.Shr	15.04	0.69	4.52	16.98	1.34	4.55	18.00	0.66	4.01
OLS	11.26	0.17	0.65	12.27	0.48	0.47	13.12	-0.24	0.10
WLS	12.72	0.00	0.93	14.22	0.41	1.34	15.20	-0.42	0.89